Roadmap on Digital Trade Standards in ASEAN

Supported by the Australian Government through the Australia for ASEAN Futures Initiative

Roadmap on Digital Trade Standards in ASEAN

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States of the Association are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.
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ISBN xxx

ASEAN: A Community of Opportunities for All

General information on ASEAN appears online at the ASEAN Website: www.asean.org

The Roadmap on Digital Trade Standards in ASEAN was developed with the support from the Government of Australia through the Australia for ASEAN Futures Initiative (Aus4ASEAN Futures).

Roadmap on Digital Trade Standards in ASEAN

The ASEAN Secretariat
Jakarta

Contents

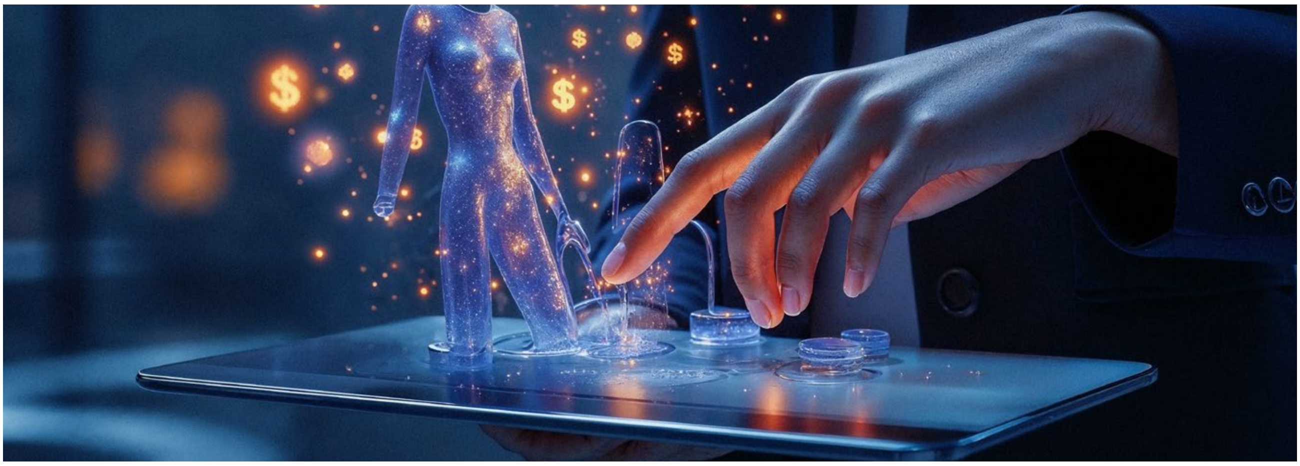
Table of Acronyms

ACCED	ASEAN Coordinating Committee on E-Commerce and Digital Economy
ACCMSME	ASEAN Coordinating Committee on Micro, Small and Medium Enterprises
ACCSQ	ASEAN Consultative Committee for Standards and Quality
ACTS	ASEAN Customs Transit System
ACW	ASEAN Committee on Women
ADGSOM	ASEAN Digital Senior Officials Meeting
ADII	ASEAN Digital Integration Index
AHLPCP	ASEAN High-Level Principle on Consumer Protection
AI	Artificial Intelligence
AMS	ASEAN Member States
APEC	Asia-Pacific Economic Cooperation
ASAPCP	ASEAN Strategic Action Plan on Consumer Protection
ASEAN	Association of Southeast Asian Nations
ASW	ASEAN Single Window
ASWSC	ASEAN Single Window Steering Committee
B2B	Business to Business
B2C	Business to Consumer
B2G	Business to Government
CBDCs	Central Bank Digital Currencies
CBDF	Cross Border Data Flows
CBPR	Cross Border Privacy Rules
CBPR+	Cross-border Payments and Reporting Plus
CIS	Center for Internet Security
COC	Code of Conduct
COSTI	Committee on Science, Technology and Innovation
CPMI	Committee on Payments and Market Infrastructures
CSF	Cybersecurity Framework
DEAs	Digital Economy Agreements
DEFA	ASEAN's Digital Economy Framework Agreement
DLT	Distributed Ledger Technology
DMF	Data Management Framework
DTS	Digital Trade Standards
DTSCWG	Digital Trade Standards and Conformance Working Group
FID	Finance Integration Division

FIDO	Fast Identity Online
FTAs	Free Trade Agreements
FW	Framework
G2G	Government to Government
GDP	Gross Domestic Product
GII	Global Innovation Index
GXB	Global Exchange for Business
GXR	Global Exchange for Research
IDC	International Data Corporation
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IP+	Interoperable Payments Plus
ISO	International Organization for Standardization
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
JSON	JavaScript Object Notation
LEI	Legal Entity Identifier
MCCs	Model Contractual Clauses
MLEC	Model Law on Electronic Commerce
MLETR	Model Law on Electronic Transferable Records
MSAI	Microsoft Artificial Intelligence
NIST	National Institute of Standards and Technology
ODR	Online Dispute Resolution
OECD	Organisation for Economic Co-operation and Development
OPR	Office of Policy and Research
PEPPOL	Pan-European Public Procurement On-Line
PDP	Personal Data Protection
RTIR	Real Time Invoice Reporting
RT-RPS	Real Time Retail Payment Systems
SC42	Subcommittee 42 (Artificial Intelligence)
SPCD	Strategic Plan of Customs Development
TR	Technical Reference
UBIN	Unified Business Identification Number
UML	Unified Modelling Language
UMM	UN/CEFACT Modelling Methodology

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNCITRAL	United Nations Commission on International Trade Law
$US	United States Dollar
W3C	World Wide Web Consortium
WC-FINC	Working Committee on Financial Inclusion
WC-PSS	Working Committee on Payment and Settlement Systems
WTO	World Trade Organization
XML	Extensible Markup Language

Executive Summary



Source: Freepik.com, Title 'Futuristic technology concept'

Digital transformation is a key priority for ASEAN as the innovation and adoption of technologies facilitate and catalyse economic development and integration across the region and beyond. A critical enabler of digital transformation is the harmonisation of digital trade standards (DTS), which plays a central role in aligning the diverse digital ecosystems of ASEAN member states (AMS). By establishing common frameworks and protocols, ASEAN can create a more interoperable digital environment, reduce barriers to digital trade, and provide businesses and consumers with greater access to regional and global markets.

Based on Access Partnership's analysis of digital economy agreements (DEAs) and free trade agreements (FTAs) with commitments to harmonise DTS (e.g., e-authentication, e-commerce, e-invoicing, paperless trade, digital payments) between 2018-2021, it is estimated that DTS harmonisation has increased exports by 9.9% for economies with harmonised DTS than those without. If similar harmonisation were achieved across AMS, it is estimated that up to US$158 billion (equivalent to 4.5% of the region's GDP) could be added to AMS economies, and almost 10 million jobs could be supported across the region.

Recognising that standards are a cross-cutting theme across many of ASEAN's initiatives, a Roadmap on Digital Trade Standards for ASEAN (ASEAN DTS Roadmap) will provide a holistic perspective and recommended approach towards harmonising digital trade standards across existing and imminent ASEAN strategies, roadmaps and initiatives, while considering recent global and regional developments.

1.1 Vision and Strategic Outcomes

The vision of the ASEAN DTS Roadmap is to provide recommendations to help ASEAN achieve greater interoperability through strengthened alignment, adoption, and harmonisation of standards in key digital trade areas. The increased interoperability through standards harmonisation will in turn drive digital transformation, foster innovation, and provide ASEAN member states with commercially meaningful opportunities access larger markets, both regionally and globally, at lower marginal costs.

The harmonisation of digital trade standards ultimately aims to reduce non-tariff barriers to trade, facilitate and accelerate digital trade and integration in the region, and contribute to realising ASEAN's digital transformation and economic integration agenda. As such, the ASEAN DTS Roadmap aims to support the achievement of three strategic outcomes for the region, namely, to foster sustainable and inclusive growth, simplify digital trade flows, and enhance digital integration.

Figure 1. Strategic Framework for ASEAN DTS Roadmap

ASEAN Digital Trade Standards Roadmap: Strategic Framework

Strategic Outcomes

Vision

Achieve interoperability through strengthened alignment, adoption, and harmonisation of standards in key digital trade areas to drive digital transformation, foster innovation, and provide ASEAN member states commercially meaningful opportunities to fully realise the potential benefits of accessing larger markets, both regionally and globally.

Approach to standards Harmonisation

Leverage ASEAN's existing approach to standards harmonisation:

- Encourage the adoption of international standards by National Standards Bodies (NSBs) of AMS.
- Where international standards are not yet available, ASEAN will explore harmonisation at a regional level and promote mutual recognition of conformity assessment results.

Digital Trade Areas

Digital Trade Logistics & Delivery	Digital Transactions	Digital Trust	Cooperation on Emerging Topics
• Last Mile Delivery • Customs Framework • Transaction Assurance	• Cross-border E-commerce • E-invoicing • Payments	• Digital ID and Authentication • Cybersecurity • Online Safety • Cross-border Data Protection and Privacy	• A • Blockchain • Cloud Computing

Categories of Action Areas

- Policy Alignment and Coordination
- Capacity Building and Technical Assistance
- Digital Infrastructure Development

Criteria for Standards Prioritisation and Harmonisation

- Impact on ASEAN's Digital Trade
- Alignment with ASEAN's Flagship Digital Initiatives and International Best Practices
- Commercial Viability and Interest
- Status of Standards Adoption and Implementation across AMS

ASEAN's Flagship Digital Initiatives

The ASEAN DTS Roadmap seeks to align with, complement, and contribute to ASEAN's flagship digital initiatives.

- ASEAN Digital Masterplan 2025
- ASEAN ICT Masterplan 2020
- ASEAN Digital Masterplan 2030 (Targeted to be finalised in 2025)
- Tracking of World IP Organization (WIPO) Global Innovation Index (GII), under ASEAN Digital Integration Index (ADII)

• ASEAN Single Window • ASEAN Customs Transit System(ACTS) • Guidelines of Exchange Information on E-commerce Data between Customs Administration and E-commerce Operator (Targeted to be finalised in 2025)	• ASEAN Agreement on Electronic Commerce • ASEAN Payments Policy Framework (FW) for Cross-Border Real Time Retail Payment Systems (RT-RPS) • Handbook on E-commerce and Competition in ASEAN • Gap analysis on ASEAN IP e-commerce regulatory landscape	• Unique Business Identification Number (UBIN) • ASEAN Digital Credentials Platform • ASEAN Cybersecurity Cooperation Strategy 2021-2025 • ASEAN Guidelines on Consumer Protection in E-commerce • ASEAN Online Business Code of Conduct (ASEAN COG) • ASEAN Online Dispute Resolution Guidelines • ASEAN Framework on Personal Data Protection • ASEAN Data Management Framework • ASEAN Model Contractual Clauses on Cross Border Data Flow • ASEAN Certification Mechanism for Cross-Border Data Flow (Targeted to be finalised in 2025) • ASEAN Cybersecurity Cooperation Strategy 2026-2030 (Targeted to be finalised in 2025)	• ASEAN Guide on AI Governance and Ethics • ASEAN Responsible AI Roadmap (Targeted to be finalised in 2024)

Source: Access Partnership analysis

1.2 Objectives for Key Digital Trade Areas

Standards play an important role in facilitating digital trade in four key areas, namely:

1. **Digital trade logistics and delivery,** which includes last mile delivery, customs frameworks, and transactions assurance;
2. **Digital transactions,** which includes cross-border e-commerce, e-invoicing, and digital payments;
3. **Digital trust,** which includes digital identity (ID) and authentication, cybersecurity, online safety (including consumer protection), and cross-border data protection and privacy; and
4. **Cooperation on emerging topics,** which includes artificial intelligence (AI), blockchain, and cloud computing.

To identify the areas in which ASEAN should prioritise standards harmonisation, four key factors were taken into consideration, namely the potential impact of standards on ASEAN's digital trade (including by taking social inclusion into account), commercial viability and interest, the alignment with ASEAN's initiatives and international best practices, and the status of standards adoption across AMS. Based on these considerations, standards adoption, harmonisation and implementation are recommended to be prioritised towards achieving the following objectives for the respective digital trade areas:

Table 1. Objectives for Key Digital Trade Areas

Digital Trade Area and Sub-area	End-objectives
1. Digital Trade Logistics and Delivery	• Develop the new generation of ASEAN Single Window to enable electronic exchange of cross-border trade related documents among AMS[1]
1.1 Last mile delivery	• Develop an ASEAN Last Mile Delivery Framework
1.2 Customs Framework	• Develop the new generation of ASEAN Single Window[2] • Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators • Study on the New Generation of the ACTS (ACTS 2.0) to upgrade the existing system, improve its utilization, extend it to new modes of transport, and explore potential expansion to other interested countries, where possible
1.3 Transaction Assurance	• Increase adoption of the International Organization for Standardization (ISO)/TC 321 Transaction assurance in E-commerce by AMS, as well as inclusion of this standard in subsequent work plan reviews of the Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce

[1] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window
[2] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window

2. Digital Transactions	• Increase adoption of United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce (MLEC) and Model Law on Electronic Transferable Records (MLETR), in alignment with World Trade Organization (WTO) Trade Facilitation standards • Increase adoption of interoperable standards for digital payments
2.1 Cross-border e-commerce	• Increase awareness, alignment and adoption of adoption of UNCITRAL MLEC and MLETR, in alignment with WTO Trade Facilitation standards
2.2 E-invoicing	• Increase adoption of international e-invoicing standards and/or harmonisation of national e-invoicing Systems to international e-invoicing standards
2.3 Payments	• Adoption of the ISO 20022 standard in both the Retail Payment Systems and Large Value Payment Systems, across all 10 AMS; and increased alignment with global payment standards such as Cross-border Payments and Reporting Plus (CBPR+), Interoperable Payments Plus (IP+), and Committee on Payments and Market Infrastructures (CPMI) harmonisation
3. Digital Trust	• Increase adoption of international cybersecurity standards and standardised best practices for cyber hygiene • Harmonise data protection regulations and cross-border data transfer mechanisms • Increase adoption of ASEAN Model Contractual Clauses on Cross Border Data Flow amongst domestic businesses through guidance on operationalisation • Develop the ASEAN Unified Business Identification Number (UBIN) Roadmap
3.1 Digital ID and Authentication	• Develop the implementation roadmap to establish regionally comparable and recognised UBIN in ASEAN
3.2 Cybersecurity	• Adopt of the ISO/IEC (International Electrotechnical Commission) 27001 and 27002 standards across all 10 AMS
3.3 Online Safety	• Enhance the ASEAN Online Business Code of Conduct
3.4 Cross-border Data Protection and Privacy	• Increase adoption of ASEAN Model Contractual Clauses on Cross Border Data Flow amongst domestic businesses through guidance on operationalisation
4. Cooperation on emerging topics	• Develop regional frameworks/standards for use of emerging technologies • Increase awareness of emerging technologies to be better positioned to harness them

4.1 AI	• Enhance the ASEAN Online Business Code of Conduct
4.2 Blockchain	• Increase participation in the development of international blockchain standards
4.3 Cloud Computing	• Develop an ASEAN Framework for Cloud Computing

Source: Access Partnership analysis

1.2.1.1 Categories of Action Areas

To ensure a comprehensive set of recommendations for achieving these end objectives, the recommendations will be categorised under three main categories:

- **Policy Alignment and Coordination:** Focuses on harmonising digital trade policies, establishing a coordinated regulatory framework, and fostering regional cooperation through regular dialogues and joint initiatives.
- **Capacity Building and Technical Assistance:** Provides education, technical assistance, and institutional support to strengthen the capabilities of governments and regulatory bodies in adopting digital trade standards.
- **Digital Infrastructure Development:** Emphasises investments in digital infrastructure, cybersecurity, and interoperability to build a resilient digital ecosystem that supports seamless cross-border digital trade.

1.3 Key Recommendations for Harmonising DTS in ASEAN

A comprehensive set of recommendations have correspondingly been developed towards achieving the objectives for each respective digital trade area. The recommendations have been grouped into three areas:

- **Policy Alignment and Coordination,** which focuses on harmonising digital trade policies, establishing a coordinated regulatory framework, and fostering regional cooperation through regular dialogues and joint initiatives;
- **Capacity Building and Technical Assistance,** which provides education, technical assistance, and institutional support to strengthen the capabilities of governments and regulatory bodies in adopting digital trade standards; and
- **Digital Infrastructure Development,** which emphasises investments in digital infrastructure, cybersecurity, and interoperability to build a resilient digital ecosystem that supports seamless cross-border digital trade.

These recommendations could be implemented over the next 10 years (2025-2034), with short-term milestones being undertaken in the next 1-2 years (2025-2026), medium-term milestones in the next 3-5 years (2027-2029), and long-term milestones over the next 5-10 years (2030-2034). Notwithstanding this, the ASEAN DTS Roadmap is envisioned to be adaptable to constantly evolving global and regional developments. As such, it is recommended that implementation of the key recommendations should be periodically monitored, reviewed and adjusted, where relevant, including taking into consideration any lessons learned from the implementation of earlier initiatives. Notably, it is recommended for a mid-term review to be conducted around the fifth year of the Roadmap, which would be around 2029.

Table 2 provides a high-level overview of selected recommendations for harmonising DTS for each of the respective digital trade areas.

Table 2. Overview of Selected Recommendations across Digital Trade Areas

Digital Trade Area and Sub-area	Selected Recommendations
DIGITAL TRADE AREA 1: DIGITAL TRADE LOGISTICS AND DELIVERY	
Last Mile Delivery	Recommendation: • Develop an ASEAN last mile delivery framework
	Rationale: In the rapidly expanding e-commerce landscape and the rise of direct-to-consumer transactions, last mile delivery has emerged as a critical driver of ASEAN's digital economy. A well-developed last mile ecosystem enhances supply chain resilience, directly supporting the ASEAN Agreement on Electronic Commerce's goal to increase e-commerce adoption and utilisation across the region.[3] Last mile delivery standards are important in enabling logistics providers to optimise operations, reduce costs, and improve service quality. Although there is a lack of international standards for last mile delivery, some AMS, such as Singapore, Malaysia, and Indonesia, have initiated efforts to establish national frameworks. In this regard, developing an ASEAN-level framework that outlines general last mile delivery principles for the region would promote regional interoperability and cooperation, boosting efficiency and reducing costs in cross-border trade.
Customs Framework	Recommendation: • Develop the new generation of ASEAN Single Window[4] • Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators • Study on the New Generation of the ACTS (ACTS 2.0) to upgrade the existing system, improve its utilization, extend it to new modes of transport, and explore potential expansion to other interested countries, where possible.
	Rationale: ASEAN has made a robust commitment for AMS to simplify and harmonise customs procedures, tracing back to the ASEAN Agreement on Customs signed in 1997.[5] Despite significant progress in reducing trade and customs barriers, there still exists considerable variance in customs

[3] ASEAN (2019) ASEAN E-Commerce, https://asean.org/our-communities/economic-community/asean-e-commerce/
[4] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window
[5] ASEAN (1997) ASEAN Agreement on Customs, https://asean.org/wp-content/uploads/2020/12/ASEAN-Agreement-on-Customs-2.pdf

Customs Framework

processing times. With the rise of technologies and digital platforms enabling more transactions beyond bulk and batch business-to-business (B2B) trade, AMS could benefit greatly from greater integration and simplification of customs processes and frameworks through the harmonisation of standards related to customs framework.

The ASEAN Single Window (ASW) has been a pioneer regional initiative, enabling the electronic exchange of cross-border trade related documents among AMS. With the accelerating pace of digital technologies and a growing demand for cross-border paperless trade from both governmental and private sectors, there is much impetus to unlock greater potential by facilitating interoperability with both Government (G2G) and Private sectors (B2G), as well as interoperability within the private sector (B2B).

The Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators are being developed under the Strategic Plan of Customs Development (SPCD) for 2026-2030, aiming to enhance the efficiency and security of cross-border e-commerce within ASEAN.[6] The guidelines are designed to establish a clear framework for data exchange, ensuring smooth and secure interactions between customs authorities and e-commerce operators, thus supporting the growth of global trade. The significance of the guidelines lies in their potential to streamline customs procedures, reduce delays, and enhance the security of e-commerce transactions across the region. By providing a standardised approach to data exchange, the guidelines will facilitate more efficient cross-border trade, contributing to ASEAN's broader goals of economic integration and digital transformation.

Despite its progress, challenges in optimising transit procedures continue to limit the full potential of the ASEAN Customs Transit System (ACTS). As a 2025 priority, a study on the Next Generation of ACTS (ACTS 2.0) aims to assess these challenges and identify ways to enhance the system's effectiveness in facilitating cross-border trade.

The study will explore opportunities to upgrade the ACTS, improve its utilisation, and expand its scope to other modes of transport, such as rail, air, sea, and multimodal by 2030. It will also assess the feasibility of connecting remaining AMS and neighbouring non-ASEAN countries while also assessing the potential integration with the ASW and other customs systems to enhance digital interoperability. Additionally, it will quantify the benefits of ACTS through data analysis and stakeholder insights, providing a benchmark for private sector engagement. The findings will support efforts to strengthen ACTS' sustainability, ensuring AMS can independently manage the system and reinforcing ASEAN's commitment to seamless trade facilitation.

[6] ASEAN (2024) Joint Media Statement of the 33rd Meeting of the ASEAN Directors-General of Customs, https://asean.org/wp-content/uploads/2024/06/Final-Joint-Media-Statement-of-the-33rd-ASEAN-DGs-of-Customs-Meeting.pdf

Transaction Assurance

Recommendation:

- Increase adoption of the ISO/TC 321 Transaction Assurance in E-Commerce by AMS, as well as inclusion of this standard in subsequent work plan reviews of the Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce

Rationale:

Building trust between buyers and sellers is essential for fostering market growth and establishing a sustainable digital trade ecosystem. Transaction assurance for e-commerce activities is paramount given that the transactions can take place in the absence of physical verification.

International standards on transaction assurance are vital for e-commerce, providing a framework for secure and trustworthy transactions. These standards play a vital role in safeguarding e-commerce activities by mitigating risks and fostering trust among participants. While some AMS are actively engaged in ISO/TC 321, there is currently limited information regarding the adoption of these standards across the region.

Given that transaction assurance standards are still evolving, they are not yet included in the Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce.[7] However, AMS have a strategic opportunity to influence the development and adoption of these standards. Active participation in the standards-setting process would ensure that regional interests are represented in the development of e-commerce standards.

Therefore, the recommendation for increased adoption of ISO/TC 321 transaction assurance standards by AMS, along with their inclusion in future reviews of the ASEAN e-commerce work plan, is critical. This would not only enhance the region's digital trade infrastructure but also bolster consumer confidence, leading to greater participation in the digital economy.

[7] ASEAN (2022) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2022/03/Work-Plan-E-commerce-Agreement_endorsed_logo.pdf

DIGITAL TRADE AREA 2: Digital Transactions

Cross-border e-commerce	Recommendation: • Increase awareness, alignment and adoption of UNCITRAL MLEC and MLETR, in alignment with WTO Trade Facilitation standards
	Rationale: Cross-border e-commerce has been an increasingly prevalent theme across regional trade agreements and economic integration arrangements given its impact on the region's digital economy. ASEAN's digital economy is forecasted to triple by the end of the decade through the natural adoption of digital technologies, expanding from approximately US$300 billion to nearly US$1 trillion by 2030.[8] Moreover, progressive rules in DEFA would double this value contribution, unlocking US$2 trillion for the ASEAN digital economy.[9] International standards are crucial to enabling this growth by ensuring consistency, reliability, and interoperability across cross-border e-commerce systems. Notably, eight out of 10 AMS have integrated the UNCITRAL Model Law on Electronic Commerce (MLEC) into their national legal frameworks. With the remaining two AMS[10] having enacted their own legal regulations to affirm the legality of electronic transactions, the region is on the cusp of achieving full harmonisation in this area. On the other hand, adoption of UNCITRAL MLETR is limited, with only Singapore having adopted the convention due to the recency of the standard. The Study on the ASEAN DEFA has underscored the critical importance of MLETR for future digital trade, and global interest in the standard is growing.[11] Notably, G7 economies are actively exploring MLETR's applicability through white papers, feasibility studies, and other initiatives. Given the increasing global momentum and the role of UNCITRAL standards in facilitating digital trade, the recommendation for AMS to increase their adoption of both MLEC and MLETR, in alignment with WTO Trade Facilitation standards, is crucial to enable ASEAN to fully leverage the opportunities presented by the rapidly expanding digital economy.

[8] ASEAN Secretariat (2023) Digital Economy Framework Agreement (DEFA): ASEAN to leap forward its digital economy and unlock US$2 Tn by 2030, https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/
[9] ASEAN Secretariat (2023) Digital Economy Framework Agreement (DEFA): ASEAN to leap forward its digital economy and unlock US$2 Tn by 2030, https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/
[10] Note: The two AMS are Indonesia and Myanmar. Sources: Data Guidance (2008) Law of the Republic of Indonesia No. 11 of 2008 concerning Electronic Information and Transactions, https://www.dataguidance.com/legal-research/law-republic-indonesia-no-11-2008-concerning; Myanmar Law Library (2021) State Administration Council Law No. 07/2021 - Law amending the Electronic Transaction Law, https://myanmar-law-library.org/law-library/laws-and-regulations/laws/myanmar-laws-1988-until-now/state-administration-council-2021/myanmar-laws-2021/state-administration-council-law-no-07-2021-law-amending-the-electronic.html
[11] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)

<table>
<tr>
<td rowspan="2">E-invoicing</td>
<td>Recommendation:

• Increase adoption of international e-invoicing Standards and/or harmonisation of national e-invoicing systems to international e-invoicing standards</td>
</tr>
<tr>
<td>Rationale:

E-invoicing is a key driver of digital transactions in the region, streamlining administrative processes, enhancing transparency, reducing fraud risks, and enabling faster, smoother transactions. The adoption of internationally recognised e-invoicing standards is crucial in shaping the ASEAN e-invoicing landscape, as these standards define common requirements, specifications, and guidelines that facilitate interoperability across diverse e-invoicing systems, thereby supporting cross-border trade.

In ASEAN, progress has already been made in implementing international standards. For instance, Thailand's Electronic Transactions Development Agency has adopted UN/CEFACT e-invoicing standards. Additionally, Malaysia and Singapore have adopted the Pan-European Public Procurement On-Line (PEPPOL) standard,[12] with other AMS, such as Vietnam, likely to follow suit.[13] Thailand and the Philippines have based their e-invoicing systems on the Republic of Korea's Real Time Invoice Reporting (RTIR) model, demonstrating a regional effort toward aligning with international standards and practices.

Therefore, the recommendation for increased adoption of international e-invoicing standards, or the harmonisation of national systems with these standards, is essential in driving greater interoperability, enhancing regional digital trade capabilities, and position ASEAN as a leader in global digital trade.</td>
</tr>
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[12] PEPPOL (2020), Singapore—Country profile, https://peppol.eu/what-is-peppol/peppol-country-profiles/singapore-country-profile; MDEC (2024) National E-invoicing Initiative, https://mdec.my/national-einvoicing

[13] PEPPOL (2020), Singapore—Country profile, https://peppol.eu/what-is-peppol/peppol-country-profiles/singapore-country-profile; MDEC (2024) National E-invoicing Initiative, https://mdec.my/national-einvoicing

Payments	Recommendation: • Adopt the ISO 20022 standard in both the Retail Payment Systems and Large Value Payment Systems, across all 10 AMS; and increase alignment with global payment standards such as CBPR+, IP+, and CPMI harmonisation. Rationale: Digital payments have been a key driver of economic growth in the ASEAN region, with gross digital payments across the six largest ASEAN economies reaching US$806 billion in 2022, and projections indicating growth to US$1.2 trillion by 2025.[14] The adoption of international payment standards is essential for ensuring greater interoperability and digital integration with the global financial system. This facilitates smoother cross-border trade, strengthens financial infrastructure, and enhances ASEAN's competitiveness in the global marketplace. Currently, the adoption of international payments standards, such as Legal Entity Identifiers (LEIs) and the QR Code ISO/IEC 18004 standard, varies across AMS. Therefore, increasing alignment with international payment standards, including ISO 20022 in both Retail Payment Systems and Large Value Payment Systems, as well as standards such as CBPR+, IP+, and CPMI harmonisation, is necessary. This alignment will support greater cross-border payment efficiency, promote financial inclusivity, and ensure ASEAN's continued leadership in the digital economy.
DIGITAL TRADE AREA 3: Digital Trust	
Digital ID and Authentication	Recommendation: • Develop the implementation roadmap to establish regionally comparable and recognised UBIN in ASEAN Rationale: Digital trust is a fundamental pillar of a thriving digital economy, and the Unified Business Identification Number (UBIN) and digital identity systems play a critical role in enhancing digital trust by ensuring accurate identification and verification of businesses and consumers. This increased trust underpins the security and transparency of digital

[14] WEF Forum (2023) ASEAN Instant Cross-border Payments, https://www.weforum.org/agenda/2023/11/asean-instant-cross-border-payments-paynow-promptpay/

Digital ID and Authentication	transactions, which are essential for boosting intra- and inter-ASEAN trade. Digital ID standards are vital to enabling secure and trusted cross-border transactions by fostering interoperability among digital IDs. This enhances cross-border trade, making transactions more efficient and reliable while promoting regional economic integration. While there is limited information on the adoption of ISO/IEC 24745:2022 across ASEAN Member States (AMS), two AMS—Thailand's Electronic Transactions Development Agency and Vietnam's Ministry of Information and Communication—are government-level members of the Fast Identity Online (FIDO) Alliance, which oversees the FIDO Universal Authentication Framework. Currently, nine out of 10 AMS have implemented foundational ID systems, while the Philippines is in the process of implementation.[15] Given the current fragmented digital ID landscape across the region, the development of the Implementation Roadmap to Establish a Regionally Comparable and UBIN in ASEAN is critical. This roadmap will help establish a cohesive and interoperable UBIN system, which is anticipated to become a cornerstone of the ASEAN digital economy. By enhancing access to financing and promoting the interoperability of business registers among ASEAN Member States (AMS), this initiative will facilitate cross-border trade and significantly boost the region's competitiveness in the global digital economy.
Cybersecurity	<u>Recommendation:</u> • Adopt the ISO/IEC 27001 and 27002 standards across all 10 AMS <u>Rationale:</u> Amidst the rapid expansion of ASEAN's digital trade ecosystem, the region also faces a growing number of cyber threats. Notably, Southeast Asia bore a significant share of global Advanced Persistent Threat (APT) campaigns, with 68 out of 86 attacks targeting countries such as Singapore, Thailand, Vietnam, and Indonesia.[16] International Cybersecurity standards serve as crucial safeguards against financial losses stemming from supply chain disruptions to software vulnerabilities.[17] Therefore, adopting international cybersecurity standards is paramount to safeguarding the integrity and sustainability of ASEAN's digital trade ecosystem.

[15] ASEAN (2021) ASEAN Digital Masterplan, https://asean.org/wp-content/uploads/2021/09/ASEAN-Digital-Masterplan-EDITED.pdf
[16] Cyfirma (2023) Singapore and Southeast Asia Threat Landscape, https://www.cyfirma.com/research/singapore-and-southeast-asia-threat-landscape/
[17] Brookings (2019) Cybersecurity and Digital Trade: Getting it Right, https://www.brookings.edu/articles/cybersecurity-and-digital-trade-getting-it-right/

Cybersecurity	The adoption of international cybersecurity standards across AMS varies. The ISO/IEC 27001 and 27002 standards are widely recognised and adopted in Singapore,[18] Indonesia, Malaysia, the Philippines and Vietnam.[19] To address the growing cyber threats and ensure comprehensive protection, it is essential for all 10 AMS to adopt these standards. This will not only bolster the region's cybersecurity posture but also enhance overall trust in digital transactions, support regional integration, and safeguard ASEAN's position in the global digital economy.
Online Safety	Recommendation: • Enhance the ASEAN Online Business Code of Conduct Rationale: Online safety is vital for digital trade in ASEAN, safeguarding businesses and consumers from cyber threats such as fraud, data breaches, and scams that can erode trust and hinder transactions. While robust online safety measures ensure the reliability and security of digital platforms, many national laws governing e-commerce in the region are outdated, highlighting the need for the adoption of up-to-date international standards. However, there is no single international "online consumer protection" standard; instead, online safety is addressed through broader frameworks like software development or e-commerce standardisation. The ISO/IEC 27001 and 27002 standards are widely recognised and adopted in countries like Singapore, Indonesia, Malaysia, the Philippines, and Vietnam, there is limited evidence which suggests the adoption of these standards in other AMS. At the national level, AMS are at vastly different stages in the development of legislative frameworks for consumer protection and e-commerce. Some AMS currently lack consumer protection legislation for e-commerce transactions, while others have draft laws or have already established decrees addressing specific aspects of e-commerce. In response, ASEAN has introduced the ASEAN Online Business Code of Conduct, outlining core commitments that online businesses can adopt to improve consumer protection. Enhancing the ASEAN Online Business Code of Conduct by providing more detailed guidance for online businesses, ensuring alignment with national laws on consumer protection and online safety across AMS, is essential for modernising consumer protection frameworks and keeping pace with the region's rapidly evolving digital trade landscape.

[18] IMDA (2023) Singapore IT Standards Established, https://www.imda.gov.sg/-/media/imda/files/regulations-and-licensing/licensing/ict-standards-and-quality-of-service/industry-committees-and-working-groups/it-standards-committee/singapore-it-standards.pdf
[19] Pacific Forum International (2024) Cyber ASEAN: Advancing Cyber Resiliency and Capacity in Southeast Asia, https://downloads.ctfassets.net/corl1354p0t3/750MZKJ7tfh9NSwTdPviqG/9dec46e2d311f2f8b130c28600a55fba/CyberAsean_Report.pdf

Online Safety	The ASEAN Guidelines on Consumer Protection in E-commerce, a soft law instrument to guide policymakers.[20] The Guidelines constitute a priority deliverable under the (revised) Implementation Schedule of the ASEAN Strategic Action Plan on Consumer Protection (ASAPCP) 2016-2025, supporting the modernisation and gradual convergence of consumer protection laws in the AMS.[21] Developing an updated edition of the ASAPCP is essential to modernising consumer protection frameworks and ensuring that they evolve in line with the region's fast-changing digital trade environment.
Cross-border Data Protection and Privacy	Recommendation: • Increase adoption of ASEAN Model Contractual Clauses (MCCs) on Cross Border Data Flows amongst domestic businesses through guidance on operationalisation Rationale: The expansion of ASEAN's digital economy is driving a surge in digital trade, resulting in significant cross-border data flows that include personal, social, and business information. As these data movements intensify, there is a growing need to strengthen frameworks for data privacy and protection. Establishing a robust data protection regime is essential not only to foster trust between businesses and consumers but also to enhance confidence among trading partners, thereby creating a secure environment for digital transactions. Harmonising data protection and privacy standards within ASEAN could substantially accelerate the growth of digital trade. For businesses, especially in AMS like Brunei Darussalam, Cambodia, Lao PDR, and Myanmar—where data protection regulations are still developing—harmonised standards would offer much-needed certainty and reduce compliance costs.[22] Currently, businesses operating across multiple ASEAN countries face a complex regulatory landscape, navigating diverse rules regarding personal data protection, transfer, and storage. By standardising these regulations, ASEAN can remove barriers to cross-border business activities, such as data localisation requirements and restrictions on data transfers, thus facilitating smoother operations across the region. A harmonised framework would also strengthen ASEAN's position as a significant player in global discussions on data governance and norm-setting. Although international data protection standards often serve as best practices rather than legally binding regulations, ASEAN has made strides

[20] ASEAN (2023) ASEAN Guidelines on Consumer Impact E-commerce, https://asean.org/wp-content/uploads/2023/03/ASEAN-Guidelines-on-Consumer-Impact-E-COMMERCE_V2-1.pdf
[21] ASEAN (2021) The ASEAN Strategic Action Plan For Consumer Protection (ASAPCP) 2016-2025,https://asean.org/wp-content/uploads/2021/01/ASEAN-Strategic-Action-Plan-for-Consumer-Protection-2016-2025-ASAPCP-2025.pdf
[22] ACI Perspectives (2024) ASEAN'S Fragmenting Data Regulatory Framework: What's the Way Forward?, https://aciperspectives.com/2024/04/17/aseans-fragmenting-data-regulatory-framework-whats-the-way-forward/

Cross-border Data Protection and Privacy	toward alignment. Notably, the MCCs were introduced in 2021, offering a set of standard contractual terms for businesses to use when transferring personal data across borders. Promoting the adoption of these MCCs among domestic businesses would help streamline compliance with legal and regulatory requirements across ASEAN, further advancing regional integration in digital trade.

DIGITAL TRADE AREA 4: Cooperation on emerging topics

AI	Recommendation: • Increase participation in the development and implementation of International AI Standards
	Rationale: AI holds immense potential to transform industries, streamline processes, and create new economic opportunities. According to Kearney's estimates, AI could contribute US$1trillion to the ASEAN economy by 2030.[23] AI standards play a pivotal role in advancing digital trade within the ASEAN region by providing a framework for interoperability, transparency, and trust. While information on the adoption of specific ISO standards remains limited, several ASEAN Member States (AMS) are actively participating in international AI standardisation efforts through ISO/IEC JTC 1/SC 42, with Malaysia, the Philippines, and Singapore as participating members, and Indonesia as an observing member. AI is an emerging priority for ASEAN, with concerted efforts underway across various fronts. Notably, ASEAN recently unveiled the *ASEAN Guide on AI Governance and Ethics*,[24] demonstrating the region's commitment to ramping up coordinated responses to issues that are already impacting all levels of society. The ASEAN Working Group on AI Governance (WG-AI) under the ASEAN Digital Senior Officers Meeting (ADGSOM) has been set up to coordinate AI governance efforts in the region. The WG-AI has since expanded the ASEAN AI Guide to address the governance of generative AI. The Expanded ASEAN Guide on AI Governance and Ethics – Generative AI was endorsed by the ADGMIN and published in January 2025. As emerging technologies like AI continue to evolve, both technologically and in terms of standardisation discussions, there is no urgent need for ASEAN to immediately harmonise standards in these areas. Instead, ASEAN should actively engage in current and future work on international

[23] Kearney (2020) Racing toward the future: artificial intelligence in Southeast Asia, https://www.middle-east.kearney.com/service/digital-analytics/article/-/insights/racing-toward-the-future-artificial-intelligence-in-southeast-asia
[24] ASEAN (2024) ASEAN Guide on AI Governance and Ethics, https://asean.org/book/asean-guide-on-ai-governance-and-ethics/

AI	standards related to AI, closely monitor ongoing developments, and maintain active engagement with National Standards Bodies and the private sector, ensuring alignment with the latest advancements in this rapidly changing landscape.
Blockchain	Recommendation: • Increase participation in the development of international blockchain standards Rationale: Cooperation on and governance of emerging technologies such as blockchain is critical for ASEAN to unlock the full potential of digital trade. With governments and private investors increasingly recognising their transformative capabilities, investments in digital transformation across the Asia Pacific region are set to soar, with IDC forecasting expenditures to hit US$1 trillion by 2026, up from US$500 billion in 2022.[25] Blockchain standards are crucial for promoting interoperability across diverse platforms, fostering trust in transactions, and ensuring regulatory compliance within ASEAN's digital trade ecosystem. Despite being an emerging technology, blockchain has already seen significant progress in international standardisation efforts, led by ISO/IEC. While there is limited information on the adoption of blockchain standards across AMS, several Member States, including Malaysia, Singapore, and Thailand, are active participants in ISO TC/307, while Cambodia, Indonesia, and the Philippines are observing members.[26] Given that blockchain is still an emerging technology, there is no immediate urgency to harmonise standards. ASEAN should adopt a proactive approach by actively engage in current and future work on international standards related to Blockchain, closely monitoring technological developments, and actively participating in ongoing standardisation efforts. Continued engagement with National Standards Bodies and the private sector will ensure ASEAN remains aligned with global advancements, positioning the region to fully capitalise on the benefits of blockchain.

[25] IDC Reports (2022) Digital Spending in Asia Pacific to Reach US$1.05 Trillion by 2026, https://www.idc.com/getdoc.jsp?containerId=prAP49852022
[26] ISO (2024) ISO/TC 307, https://www.iso.org/committee/6266604.html?view=participation

Cloud Computing	<u>Recommendation:</u> • Develop an ASEAN Framework for Cloud Computing <u>Rationale:</u> Cloud computing is vital to ASEAN's digital trade as it provides scalable, cost-efficient infrastructure that enables businesses to innovate and grow without heavy upfront investments in physical IT resources. It enhances cross-border digital transactions by offering secure, reliable, and easily accessible platforms for data storage and processing. Cloud computing standards are key to ensuring interoperability between different platforms and services, facilitating seamless data exchange and operations across cloud systems.[27] These standards build trust among users by safeguarding data protection,[28] and support the scalability of digital services, enabling smaller businesses such as MSMEs to compete on a level playing field with larger corporations.[29] As ASEAN pursues deeper digital integration, cloud computing standards become indispensable for achieving regional economic integration and global competitiveness. While there is limited information on the adoption of cloud computing standards across AMS, several Member States are already involved in ISO JTC1/SC 27 Information security, cybersecurity and privacy protection, the Joint Technical Committee responsible for publishing the ISO standards on cloud computing.[30] Indonesia, Malaysia, Philippines, and Singapore are participating members, and Thailand and Vietnam are observing members.[31] As cloud computing technology and its standardisation efforts continue to develop, ASEAN should focus on closely monitoring these developments and maintaining active engagement with National Standards Bodies and the private sector. Aligning with global advancements will help ASEAN ensure long-term success in digital trade without the immediate need for harmonised standards across the region.

Source: Access Partnership analysis

[27] CMU (2012) The Role of Standards in Cloud Computing Interoperability, https://insights.sei.cmu.edu/documents/2235/2012_004_001_28143.pdf
[28] Economist Impact (2020) The journey to the cloud in ASEAN, https://impact.economist.com/perspectives/sites/default/files/eiu_vmware_up_in_the_air_infographic.pdf
[29] Kloud9 (2024) The Evolution and Impact of Cloud Computing in the Digital Age, https://www.kloud9it.com/2024/03/the-evolution-and-impact-of-cloud-computing-in-the-digital-age/
[30] ISO (2024) ISO/IEC JTC 1/SC 27, https://www.iso.org/committee/45306.html
[31] ISO (2024) ISO/IEC JTC 1/SC 27, https://www.iso.org/committee/45306.html

1. Introduction

Source: Freepik.com, Title: 'Still life of supply chain representation'

This section will provide the background of the ASEAN Digital Trade Standards (DTS) Roadmap within the context of ASEAN's broader digital transformation and economic integration agenda. It will highlight the crucial role that standards play in realising ASEAN's overall digital integration agenda and provide an overview of the different types of standards involved.

1.1 Background

ASEAN's digital transformation agenda (including the Bandar Seri Begawan Roadmap,[32] ASEAN Digital Masterplan 2025,[33] and ASEAN Cybersecurity Cooperation Strategy 2021-2025[34]) recognises that the adoption of harmonised digital trade standards[35] can benefit the overall regional economy by removing technical barriers to trade,[36] thereby facilitating access to larger (potentially global) markets and enabling economies of scale, including enhancing productivity and reducing costs. The adoption of harmonised standards will not only help to set out specifications and procedures to ensure consistent implementation of processes, technologies, and methods, but – when developed properly and deployed well – also help to enable a high benchmark for the quality, reliability, safety and security of goods and services being delivered into a market.

The ASEAN Consultative Committee for Standards and Quality (ACCSQ) has embarked on this task through the Digital Trade Standards and Conformance Working Group (DTSCWG). The DTSCWG's 2021-2025 Work Programme focuses on three pillars: (1) facilitating digital transactions (e.g., e-commerce/digital platform, e-invoicing, and e-payment); (2) facilitating digital trade, logistics and delivery (e.g., last mile delivery); and (3) facilitating digital trust (e.g., digital identity and cybersecurity).[37] The next pivotal step for ASEAN is to develop a roadmap on digital trade standards for the region. The adoption of a Roadmap on Digital Trade Standards in ASEAN (ASEAN DTS Roadmap) has been identified as a Priority Economic Deliverable for the Lao PDR ASEAN Chairmanship in 2024.

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[32] ASEAN (2021) Bandar Seri Begawan Roadmap, https://asean.org/wp-content/uploads/2021/10/Bandar-Seri-Begawan-Roadmap-on-ASEAN-Digital-Transformation-Agenda_Endorsed.pdf
[33] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/
[34] ASEAN (2022) ASEAN Cybersecurity Cooperation Strategy 2021-2025, https://asean.org/wp-content/uploads/2022/02/01-ASEAN-Cybersecurity-Cooperation-Paper-2021-2025_final-23-0122.pdf
[35] Note: This use of the term "harmonised standards/standards harmonisation" in this report is aligned with the definition of harmonised standards in the ASEAN Guidelines for Harmonisation of Standards, "standards on the same subject approved by the National Standards Bodies of ASEAN Member States, that establish interchangeability of products, processes and services or mutual understanding of test results or information provided according to these standards and are based on endorsed Reference Standards or, (ii) Reference standards that are referred to in regulations of an ASEAN Member States (DIR) and have not been adopted as national standards of the Member State". Source: ASEAN (2022) ASEAN Guidelines for Harmonisation of Standards, https://asean.org/wp-content/uploads/2023/05/ASEAN-Guidelines-for-Harmonisation-of-Standards-2022-Version.pdf
[36] ASEAN (2022) ASEAN Guidelines for Harmonisation of Standards, https://asean.org/wp-content/uploads/2023/05/ASEAN-Guidelines-for-Harmonisation-of-Standards-2022-Version.pdf
[37] ASEAN (2021) DTSCWG Infographic, https://asean.org/wp-content/uploads/2021/12/DTSCWG-Infographic-final.pdf

The ASEAN DTS Roadmap aims to contribute to realising ASEAN's digital transformation agenda by facilitating and accelerating digital trade and digital integration in the region. The Roadmap will provide a holistic perspective and approach towards harmonising digital trade standards across existing (and imminent) ASEAN strategies, roadmaps, and initiatives while taking into consideration recent global and regional developments. It will also provide recommendations identifying, prioritising, and sequencing the adoption of harmonised digital trade standards across a range of key areas over the short, medium, and long term, to enable ASEAN to fully realise the potential economic benefits of harmonised digital trade standards. This approach will help mitigate the risk of limited coordination on the approach to standards, which could result in fragmentation and ineffective implementation due to a dilution of resources across a multitude of areas at a given period.

The ASEAN DTS Roadmap will comprise the following sections:

- **Potential Economic Benefits of Harmonised DTS in ASEAN:** This section will provide an estimation of the potential economic benefits of harmonised digital trade standards in ASEAN.

- **Trends and Progress of DTS in ASEAN:**
  - Identification of Key Areas for Digital Trade: This subsection will identify key digital trade areas in ASEAN and assess the role and availability of international standards in these areas.
  - Gap Assessment of Standards: This subsection will evaluate the current state of standards in each area, identifying gaps and challenges in standards across AMS and the broader ASEAN region.

- **Strategic Framework for Harmonising DTS in ASEAN:** This section will outline a strategic framework for achieving harmonisation of digital trade standards across the ASEAN region, detailing the strategic outcomes, vision, criteria for standards prioritisation and harmonisation of the Roadmap.

- **Key Initiatives for Harmonising DTS in ASEAN:** This section will highlight recommended key initiatives and actions to be considered by the DTSCWG and ACCSQ to promote and achieve the harmonisation of digital trade standards within ASEAN, including collaborative efforts, capacity-building activities, and policy recommendations.

1.2 ASEAN Flagship Digital Initiatives

ASEAN is embarking on a series of digital initiatives aimed at enhancing regional connectivity, fostering innovation, and driving economic growth across Member States. These flagship initiatives seek to leverage digital technologies to create a more integrated and competitive regional digital economy. Moreover, these digital initiatives are crucial for ensuring inclusive growth, as they strive to bridge the digital divide thereby providing equitable access to digital tools and services across Member States. Through these digital initiatives, ASEAN aims to drive inclusive and sustainable growth, positioning itself as a leading digital community and economic bloc in the digital era.[38]

ASEAN's flagship digital initiatives include:[39]

1. **ASEAN Digital Masterplan 2025**
2. **ASEAN ICT Masterplan 2020**
3. **ASEAN Digital Masterplan 2030** (Targeted to be finalised in 2025)

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[38] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/
[39] Note: These digital initiatives will be further detailed in the Annex.

4. **Tracking of World IP Organization** (WIPO) **Global Innovation Index** (GII), under **ASEAN Digital Integration Index** (ADII)
5. **ASEAN Single Window** (ASW)
6. **ASEAN Customs Transit System** (ACTS)
7. **Guidelines of Exchange Information on E-commerce Data between Customs Administration and E-commerce Operator** (Targeted to be finalised in 2025)
8. **ASEAN Agreement on Electronic Commerce**
9. **ASEAN Payments Policy Framework (FW) for Cross-Border Real Time Retail Payment Systems** (RT-RPS)
10. **Handbook on E-commerce and Competition in ASEAN**
11. **Gap analysis on ASEAN IP e-commerce regulatory landscape**
12. **ASEAN Unique Business Identification Number (UBIN) Roadmap**
13. **ASEAN Digital Credentials Platform**
14. **ASEAN Cybersecurity Cooperation Strategy 2021-2025**
15. **ASEAN Guidelines on Consumer Protection in E-commerce**
16. **ASEAN Online Business Code of Conduct** (ASEAN COC)
17. **ASEAN Online Dispute Resolution Guidelines**
18. **ASEAN Framework on Personal Data Protection** (PDP)
19. **ASEAN Data Management Framework** (DMF)
20. **ASEAN Model Contractual Clauses on Cross Border Data Flow** (Targeted to be finalised in 2025)
21. **ASEAN Certification Mechanism for Cross-Border Data Flow** (Targeted to be finalised in 2025)
22. **ASEAN Cybersecurity Cooperation Strategy 2026-2030** (Targeted to be finalised in 2025)
23. **ASEAN Guide on AI Governance and Ethics**
24. **ASEAN Responsible AI Roadmap** (Targeted to be finalised in Mid-2024)

1.3 The Role of Standards in ASEAN’s Digital Trade

Within this context, there is a significant role for digital trade standards to play in ASEAN's digital trade landscape. The harmonisation of standards will facilitate and accelerate digital trade and digital integration in ASEAN. As electronic means become increasingly prevalent for ordering and delivering goods and services, there is a growing need to enhance the awareness and harmonisation of technical and legal standards in digital trade. By establishing consistent specifications and procedures, harmonised digital trade standards ensure that digital systems are interoperable, and that goods and services are mutually compatible in terms of quality, reliability, safety, and security. Streamlined digital trade processes and reduced digital trade costs in the region will, in turn, provide access to larger markets, thereby increasing the potential benefits from economies of scale.

Notably, the ASEAN Digital Masterplan 2025 underscores the significance of harmonising standards across ASEAN to ensure interoperability with regional frameworks such as the Asia-Pacific Economic Cooperation (APEC) Cross-border Privacy Rules (CBPR) framework and the European Union (EU)’s General Data Protection Regulation (GDPR).[40] The masterplan specifically mentions that substantial efforts have been made to map standards and regulations across ASEAN to identify opportunities for harmonisation, such as the review of e-commerce legislation.

[40] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/

1.4 Typology of Standards

Standards are documents which provide rules, guidelines and characteristics for products, services, and processes.[41] They are often developed by consensus and approved by recognised standards bodies.[42]

Similarly, international standards are created through the consensus of experts from different countries and are approved by globally recognised organisations, such as the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU).[43] These international standards follow the principles set by the WTO Technical Barriers to Trade (TBT) Committee, which ensures that standards, guides, and recommendations are aligned with Articles 2, 5, and Annex 3 of the WTO TBT Agreement.[44]

In addition to international standards, other standards created by national/regional governments, multi-lateral organisations and industry associations are frequently referenced. For example, standards set by the United Nations Economic Commission for Europe (UNECE), the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) and the National Institute for Standards and Technology (NIST) are commonly used in different digital trade areas.

The nature of standards can vary significantly, and the number of parties (individuals, organisations, industries, or countries) involved in their development and consensus-building process can also differ.

Where some standards primarily function as advisory guidelines and rely on voluntary compliance, other standards are stipulated in regulations, laws and government-sanctioned industry codes, making them legally binding. Legally binding standards are typically established by national standards-making bodies or governing authorities, and often draw from prevailing international standards to regulate the domestic market. Conversely, non-legally binding standards may be industry-led and are meant to guide best practices.

At the ASEAN regional level, standards and conformance are overseen by the ACCSQ. The ACCSQ, through its different working groups and product working groups including the Working Group on Standards and DTSCWG, have been active in the harmonisation of national standards with international standards on digital trade. The ACCSQ also oversee the overall development and implementation of mutual recognition arrangements on conformity assessment results of sectors within its purview.[45]

Building on ACCSQ's efforts over the past three decades, it is essential to assess and prioritise current and emerging priorities across the digital trade areas to advance the ASEAN Digital Economy agenda. Given the rapid development of digital technologies, it is necessary to consider both legally binding and non-legally binding standards to balance the need for swift guidance with enforceable conformance. This report will primarily focus on legally binding and widely adopted international standards (e.g., International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC), National Institute of Standards and Technology (NIST), United Nations Commission on International Trade Law (UNCITRAL). In new and emerging areas, selected industry practices may also be explored to encourage widespread harmonisation and strengthen future-proofing.

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[41] World Trade Organisation (n.d.) Technical Information on Technical Barriers to Trade, https://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm
[42] World Trade Organisation (n.d.) Technical Information on Technical Barriers to Trade, https://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm
[43] International Electrotechnical Commission (n.d.) International standard, https://www.iec.ch/publications/international-standards
[44] World Trade Organisation (n.d.) Technical Information on Technical Barriers to Trade, https://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm
[45] ASEAN (2015) ASEAN Guidelines on Standards, Technical Regulations and Conformity Assessment Procedures, ASEAN-Guideline-on-Standards-Technical-Regulations-and-Conformity-Assessment-Procedures-1.pdf

1.5 Definition of adoption, harmonisation, and mutual recognition

For over a decade, ASEAN has been advocating for greater alignment of standards to facilitate trade across the region.

The effort began in 2009 with the introduction of the ASEAN Trade in Goods Agreement (ATIGA), which aims to create a single market and production base to facilitate the free flow of goods and enhance economic integration within ASEAN.[46] This objective was further expanded in the ASEAN Economic Community Blueprint 2025 (AEC 2025) which emphasises the importance of reducing trade protection and compliance costs in dealing with Non-Tariff Measures (NTM).[47] In particular, AEC 2025 proposes several strategic measures to achieve the above, which include: (1) accelerating the implementation and harmonisation of standards and technical regulations, (2) improving the quality and capability of conformity assessment, (3) enhancing information exchange on standards and conformity procedures.[48]

Based on this overarching goal, the ASEAN Guidelines on Standards, Technical Regulations and Conformity Assessment Procedures (AG-STRACAP) was developed. As a seminal document, AG-STRACAP provides guidance on "ASEAN policies with regard to the harmonisation of standards, metrology, conformity assessment, as well as the implementation of technical regulations, post market surveillance, mutual recognition arrangements and ASEAN Harmonised Regulatory Regimes".[49] Following AG-STRACAP, the ASEAN Guidelines for Accreditation and Conformity Assessment,[50] the ASEAN Guidelines for Harmonisation of Standards,[51] and the Guidelines for the Development of Mutual Recognition Agreements,[52] were developed to provide guidance to AMS to facilitate the implementation of the provisions of AG-STRACAP. As a preamble, the report will refer to the following definitions summarised from the above guidelines.

A. **Adoption of regional/ international standards:** Adoption of a regional or international standard refers to the publication of regional and national normative document based on a relevant regional/international standard, or endorsement of the regional/ international standard as having the same status as a national normative document, with any deviations from the regional/ international standard identified.[53] The adoption of standards is usually done by National Standards Bodies (NSB).

B. **Harmonised standards:** Harmonised standards refer to standards on the same subject approved by NSBs of AMS that establish interchangeability of products, processes and services or mutual understanding of tests results or information provided based on endorsed Reference Standards. Additionally, it can refer to Reference standards that are referred to in AMS and have not been adopted as national standards of AMS. In this context, Reference standards are defined as international or other published standards endorsed to be used as the basis of harmonisation in ASEAN.[54]

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[46] ASEAN (2009) ASEAN Trade in Goods Agreement,https://asean.org/wp-content/uploads/2020/12/ASEAN-Trade-in-Goods-Agreement-Cha-am-Thailand-26-February-2009.pdf
[47] ASEAN Secretariat (2015) ASEAN Economic Community Blueprint 2025,https://asean.org/wp-content/uploads/2021/08/AECBP_2025r_FINAL.pdf
[48] ASEAN Secretariat (2015) ASEAN Economic Community Blueprint 2025,https://asean.org/wp-content/uploads/2021/08/AECBP_2025r_FINAL.pdf
[49] ASEAN Secretariat (2015) ASEAN Guidelines on Standards, Technical Regulations and Conformity Assessment Procedures,https://asean.org/wp-content/uploads/2017/09/ASEAN-Guidelines-on-Standards-Technical-Regulations-and-Conformity-Assessment-Procedures.pdf
[50] ASEAN Secretariat (2015) ASEAN Guidelines for Accreditation and Conformity Assessment,https://asean.org/wp-content/uploads/images/2015/July/ASEAN_Guidelines_for_Accreditation_and_Conformity_Assessment/ASEAN_Guidelines_for_Accreditation_and_Conformity_Final.pdf
[51] ASEAN Secretariat (2023) ASEAN Guidelines for Harmonisation of Standards,https://asean.org/wp-content/uploads/2023/05/ASEAN-Guidelines-for-Harmonisation-of-Standards-2022-Version.pdf
[52] ASEAN Secretariat (2018) Guidelines for the Development of Mutual Recognition Arrangements (Second Edition),https://asean.org/wp-content/uploads/2021/10/Guidelines-for-the-Development-of-MRAs-Second-Edition-September-2018.pdf
[53] ISO/IEC(2005) Regional or national adoption of International Standards and other International Deliverables,https://www.interamericancoalition-medtech.org/regulatory-convergence/wp-content/uploads/sites/4/2021/06/iso_iec_guide_21_regional_national_adoption_international_standards_part_1.pdf
[54] ASEAN Secretariat (2023) ASEAN Guidelines for Harmonisation of Standards,https://asean.org/wp-content/uploads/2023/05/ASEAN-Guidelines-for-Harmonisation-of-Standards-2022-Version.pdf

C. **Mutual recognition of conformity assessment results:** Mutual recognition of conformity assessment results pertains to the acceptance of procedures (e.g., test reports and certifications of compliance)[55] used to verify compliance with the importing country's standards. This does not imply that the standards themselves are mutually recognised; rather, the importing country acknowledges the competency of the exporting country's conformity assessment bodies to conduct testing or certification according to the importing country's standards.

[55] ASEAN (n.d.) How MRAs Help Industry in the Region,https://asean.org/wp-content/uploads/2021/08/What-is-MRAs.pdf

2. Potential Economic Benefits of Harmonised DTS in ASEAN

Source: frameangel - Freepik.com, Title: 'ASEAN Economic Community flags, southeast Asia countries and sky background'

This section presents an analysis of the potential economic benefits from harmonising DTS in ASEAN. Through a reduction in trade costs by facilitating cross-border transactions, harmonised DTS can drive significant economic benefits. In ASEAN, where intra-ASEAN trade already constitutes 21% of GDP,[56] harmonised DTS are especially crucial for unlocking the full potential of trade for economic growth through digital integration. Prior harmonisation efforts, such as under the ASEAN Single Window (ASW), has since proven to streamline trade transactions, generating estimated cost savings of US$150 million in 2022.[57] Chapter 3 further details AMS efforts in DTS harmonisation and their impact on digital trade.

Research has shown that harmonising standards in general can boost economic growth and productivity.[58] However, there has been limited empirical research on the impact of harmonising DTS, for several reasons. First, the focus has generally been on product standards, while DTS are related to cross-cutting concepts like e-authentication, e-payments and digital identities.[59] This makes it challenging to isolate its specific effects. Second, the impact of harmonising DTS has a more indirect and complex relationship with stakeholder behaviour compared to direct policy measures like tariffs. Third, the lack of consistent data on the stakeholder-level implementation of harmonised DTS within each economy makes robust empirical analysis difficult.

Against this background, this analysis seeks to present additional empirical evidence to bolster the case for AMS to accelerate efforts in DTS harmonisation. The analysis finds that successful implementation of harmonised DTS in the fields of e-invoicing and digital payments could contribute to increasing exports by up to 9.9%. An uplift in trade volumes of this quantum in ASEAN would translate into higher GDP of US$158 billion (equivalent to 4.5% of regional GDP in 2022), and potentially support 10 million jobs across AMS. While the impact of DTS harmonisation on other digital trade areas (e.g., e-authentication, paperless trade) are yet to be observed, other studies have provided evidence of the positive impact of trade facilitation measures in these areas on trade flows and the wider economy, lending credence to the economic benefits of DTS harmonisation.

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[56] ASEANstats (2024), ASEAN Statistical Brief Volume VIII, May 2024, https://www.aseanstats.org/wp-content/uploads/2024/05/ASB-202405-03.pdf
[57] The ASEAN Magazine (2024), A Starting Point, Not the Finish Line: The ASEAN Comprehensive Recovery Framework, https://theaseanmagazine.asean.org/article/asean-comprehensive-recovery-framework/#:~:text=Digitalisation%20efforts%2C%20such%20as%20optimising,million%20days%20of%20business%20operations
[58] For instance, a report by the British Standards Institute (BSI) found that standards accounted for 37.4% of annual productivity growth in the UK, translating to an extra AUD15.63m of GDP in 2013. CEBR (2015). The Economic Contribution of Standards to the UK Economy, https://www.bsigroup.com/LocalFiles/en-GB/standards/BSI-The-Economic-Contribution-of-Standards-to-the-UK-Economy-UK-EN.pdf
[59] Access Partnership (2020), Australia-Singapore Digital Economy Cooperation on Standards: Research Report, https://asean-au-dts.org/wp-content/uploads/2023/03/DTS_Australia-Singapore-Joint-Report.pdf

APEC estimated trade facilitation provisions on e-authentication to contribute up to a 45.8% increase in digitally ordered trade;[60] while the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) estimated that a full region-wide implementation of paperless trade across the Asia-Pacific can uplift exports by US$257 billion annually.[61]

This evidence suggests that harmonised DTS can move the needle for trade, but it is only one part of the journey to drive trade and economic growth. To maximise the benefits of harmonised DTS will require deliberate action from AMS on standardisation initiatives, as well as to make progress on trade facilitation more broadly.

2.1 Estimating the economic benefits

To estimate the potential economic benefits of harmonised DTS in ASEAN, this study adopted a novel approach to codify DTS harmonisation and estimating its potential impact on trade flows, and its contribution to AMS economies. It employed a methodology consisting of three distinct phases (Detailed in Figure 2).

Figure 2. Methodology Used in Estimating the Potential Economic Impact of DTS

This study employed a novel methodology consisting of three phases

This study takes a novel approach to codify DTS harmonisation and estimating its potential impact on trade flows and its economic contribution, through three distinct phases.

1 Measuring DTS harmonisation

This study uses ratified in-force digital trade provisions of the strongest commitment as the indicator for harmonised DTS.

It focuses on the digital trade areas of paperless trade, electronic authentication, e-invoicing, digital payments, e-commerce, and electronic transferable records

2 Analysing the impact of DTS harmonisation on trade flows

Econometric analysis was conducted using the structural gravity model of trade.

The model employed the Poisson Pseudo-Maximum Likelihood (PPML) estimator with exporter-time, importer-time and exporter-importer fixed effects, as well as a binary RTA variable to disaggregate its impact.

3 Estimating the potential economic benefit for ASEAN

Increased trade, driven by the reduction in trade barriers resulting from harmonised standards, induces domestic production, leading to higher employment, income, and overall economic activity.

By examining the change in final demand resulting from increased exports, the corresponding change in value added and jobs were estimated.

Source: Access Partnership analysis

[60] APEC Committee on Trade and Investment (2023). Economic impact of adopting digital trade rules: Evidence from APEC member economies. Available at: https://www.apec.org/docs/default-source/publications/2023/3/economic-impact-of-adopting-digital-trade-rules-evidence-from-apec-member-economies/223_cti_economic-impact-of-adopting-digital-trade-rules.pdf
[61] Shepherd and Duval (2015). Estimating the benefits of cross-border paperless trade in Asia and the Pacific. ESCAP. Available at: https://www.unescap.org/sites/default/d8files/Part%20II_Chapter%20V_Estimating%20the%20benefits%20of%20cross-border%20paperless%20trade_0.pdf

2.1.1 Phase 1: Measuring DTS harmonisation

Harmonisation of DTS involves the common adoption of international standards for processes, technologies, and systems.[62] However, tracking bilateral interoperability and adoption of DTS at the stakeholder level has proven difficult.

This study instead used ratified digital trade provisions in force as the indicator for harmonised DTS. Leveraging on the Trade Agreement Provisions on E-Commerce and Data (TAPED) dataset, preferential trade agreements consisting of an e-commerce and/or a digital trade chapter between the years of 2018-2021 were selected. While preferential trade agreements with digital trade provisions have been in force prior to 2018, they mainly revolved around the inclusion of paperless trading.[64] Broader forms of trade facilitation addressing other digital trade areas (e.g., electronic authentication, electronic signatures, electronic payments) only gained traction nearer to 2018, where landmark agreements such as the ASEAN Agreement on Electronic Commerce extended digital trade commitments to wider digital obligations. In particular, standalone digital trade agreements (DTAs) and digital economy agreements (DEAs) proliferated in 2020, following the Japan-US DTA that came into effect in 2020.[65]

By extracting selected provisions within these DEAs and updated digital trade provisions within free trade agreements (FTAs) that explicitly reference specific international standards (i.e., ISO, IEC, UNCITRAL Model Law), this study identified relevant international DTS agreed upon by DEA/FTA signatories for mutual implementation, compliance, and/or acceptance. These agreements included articles on measures to promote, ensure, and adopt interoperability across systems and processes, as well as compliance with UNCITRAL Laws and digital economy standards.

The advantage of using digital trade provisions as a proxy for harmonised DTS is its ability to provide a consistent measure of harmonised standards and interoperability, which is beneficial where multiple standards exist across digital trade areas. For example, cross-border payments currently involve both ISO 20022 and the older SWIFT Messaging Types (MT) standards.[66] Choosing either standard as a proxy for harmonised DTS raises concerns related to self-selection, in which banks with more modernised and developed payment systems would have been able to transition more seamlessly to ISO 20022. Instead, by using digital trade provisions as a proxy avoids this problem by aligning DTS without relying on the use of a single standard. An alternative would be to measure stakeholder-level adoption, but this is often incomplete and unreliable due to the lack of consistent data. Using digital trade provisions offers a more practical approach.

This approach is predicated on the assumption that the inclusion of digital trade provisions in DEAs and FTAs serves as a reliable indicator of the adoption of harmonised international standards, particularly in facilitating interoperability between bilateral trading pairs. The presence of these provisions indicate that countries have likely made or are more likely to make substantive implementation efforts and achieved the material adoption of standards in the corresponding digital trade areas, even though the provisions themselves may not provide granular insights into real-time adoption rates at the individual stakeholder or system level.

There are varying degrees to which harmonisation of DTS have been conceptualised and enforced within DEAs and FTAs. Where some DEAs/FTAs include a general acknowledgement of the importance of interoperable systems, others contain explicit provisions requiring signatories to

[62] ASEAN-Australia Digital Trade Standards Initiative (n.d.) Importance of International Standards, https://asean-au-dts.org/importance-of-international-standards/
[63] University of Lucerne (2023) TAPED, https://www.unilu.ch/en/faculties/faculty-of-law/professorships/burri-mira/research/taped/
[64] ISEAS (2021) Digital Commitments in ASEAN's Free Trade Agreements, https://www.iseas.edu.sg/articles-commentaries/iseas-perspective/2021-163-digital-commitments-in-aseans-free-trade-agreements-by-tham-siew-yean/
[65] UNESCAP (2022) Trade agreements in Asia and the Pacific: Bigger, deeper, digital and more supportive of sustainable development?, https://www.unescap.org/kp/2022/trade-agreements-asia-and-pacific-bigger-deeper-digital-and-more-supportive-sustainable-20222023
[66] Compact (2020), The industry challenge towards ISO 20022 as a global payments standard, https://www.compact.nl/pdf/C-2020-2-Ommen.pdf

actively collaborate and ensure the compatibility and interoperability of their systems and processes, referencing specific standards or frameworks like PEPPOL or ISO 20022.[67]

Table 3 shows the scoring system used to assess the relative strength of DTS harmonisation commitments. The ascending order of categories correspond to the increasing strength of clauses (e.g., the consideration of international standards, explicit intent for harmonisation and wider adoption), with commitments in category 5 encompassing all prior commitments from categories 1 through 4. To ensure the strongest possible coherence to on-the-ground harmonisation of these standards, this study employed the strictest possible standard for a provision to qualify as DTS harmonisation. That is, a commitment is qualified as DTS harmonisation (score of 1) only if it has been classified as category 5, i.e., it demonstrates a clear intent for greater adoption of the harmonised DTS. In terms of coverage, this analysis focused on the digital trade areas where efforts to harmonise DTS have been most prevalent; these included paperless trade, electronic authentication, e-invoicing, digital payments, e-commerce, and electronic transferable records (Table 3).

Table 3. Scoring of digital trade provisions according to strength of commitments to interoperability and harmonised standards

Scoring of Harmonised DTS	Relative Strength of category	Category	Digital Trade Standards					
			Paperless Trade	Electronic Authentication	E-Invoicing	Digital Payments	UNCITRAL Model Law of E-Commerce	UNCITRAL Electronic Transferable Records
0	0	No mention	-	-	-	-	-	-
0	1	**Mention of** *digital trade area*	Accept trade document as legal equivalent of the paper version of the document; non-denial of digital trade documents.	Accept digital authentication as legal equivalent of the paper version of the document; non-denial of trade documents.	The Parties recognise the importance of e-invoicing to increase the efficiency, accuracy, and reliability of commercial transactions.	The Parties recognise the importance of safe and secure, efficient, and interoperable e-payment systems.	NIL	NIL
0	2	**Mention of** *cooperation and/or interoperability*	Cooperate bilaterally and in international fora on matters related to paperless trading, such as enhancing the standardisation and acceptance of electronic trade administration documents.	Encourage the use of interoperable e-authentication.	The Parties agree to cooperate and collaborate on initiatives which promote, encourage, support, of facilitate the adoption of e-invoicing.	Each Party shall encourage the use of safe and secure, efficient, and interoperable e-payment systems to facilitate e-commerce in accordance with its laws and regulations.	NIL	NIL

[67] For example, in the implementation of paperless trading, provisions within the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) only requires signatories to cooperate in international fora to enhance mutual acceptance of digital documents in trade. This is in contrast to the Singapore-Australia Digital Economy Agreement (SADEA), which requires signatories to accept digital documents in trade, as well as endeavour towards establishing a single window and developing data exchange systems in enhancing paperless trade.

Scoring of Harmonised DTS	Relative Strength of category	Category	Digital Trade Standards					
			Paperless Trade	Electronic Authentication	E-Invoicing	Digital Payments	UNCITRAL Model Law of E-Commerce	UNCITRAL Electronic Transferable Records
0	3	**Mention** of *international guidelines / frameworks / standards*	Take into account principles and guidelines agreed by relevant international bodies.	NIL	Take into account international frameworks when developing measures related to e-invoicing.	Take into account, for relevant electronic payment systems, international standards for electronic payment messaging for electronic data exchange between financial institutions and service suppliers to enable greater interoperability between payment systems.	NIL	NIL
0	4	**Intent** for *harmonised DTS/ interoperable systems*	Endeavour to develop data exchange systems to support the exchange of data relating to trade administration documents.	NIL	Recognise the economic importance of promoting the global adoption of interoperable e-invoicing systems; To this end, the Parties shall endeavour to share best practices and collaborate on promoting the adoption of interoperable systems for e-invoicing.	NIL	NIL	NIL
0	5	**Intent** for *greater adoption – both high level and implementation*	Recognise that the data exchange systems should be compatible and interoperable with each other; To this end, the Parties recognise the role of internationally recognised and if available, open standards in the development and governance of the data exchange systems.	The Parties shall maintain or adopt, as soon as practicable, measures based on international norms for electronic authentication.	The Parties shall collaborate on initiatives which promote, encourage, support or facilitate the adoption of e-invoicing by enterprises; To this end, the Parties shall endeavour to: (a) promote the existence of policies, infrastructure and processes that support e-invoicing; and (b) generate awareness of, and build capacity for, e-invoicing.	Adopt, for relevant electronic payment systems, international standards for electronic payment messaging, such as the ISO 20022 Universal Financial Industry Message Scheme, for electronic data exchange between financial institutions and services suppliers to enable greater interoperability between electronic payment systems.	Each Party shall maintain a legal framework governing electronic transactions consistent with the principles of the UNCITRAL Model Law on Electronic Commerce (1996).	Each Party shall endeavour to adopt the UNCITRAL Model Law on Electronic Transferable Records (2017).

2.1.2 Phase 2: Analysing the impact of DTS harmonisation on trade flows

To estimate the impact of DTS harmonisation on bilateral trade flows, this study employed a structural gravity model, which is widely used to study and quantify the effects of various determinants of international trade. The structural gravity model in this analysis used the Poisson Pseudo-Maximum Likelihood (PPML) estimator, which is preferred for its ability to address heteroskedasticity in trade data and accommodate zero trade flows.[68] Exporter-time and importer-time fixed effects controlled for unobserved factors that affect trade flows over time, while exporter-importer fixed effects controlled for time-invariant unobserved factors specific to the bilateral relationship between two economies. A binary variable representing the presence of regional trade agreements (RTAs) between each exporter-importer pair was also included to disaggregate the impact of RTAs from the impact of DTS harmonisation.

BOX 1: Structural gravity model specifications

The structural gravity model in this analysis employed the Armington-Constant Elasticity of Substitution (CES) version of the structural gravity model (Anderson and van Wincoop, 2003),[69] estimated via the PPML estimator.

$$X_{ij} = \frac{Y_i E_j}{Y} \left(\frac{t_{ij}}{S_i P_j}\right)^{1-\sigma}$$

In this equation, X_{ij} are the value of exports from country *i* to country *j*, Y_i is country *i*'s domestic production, E_j is country *j*'s aggregate expenditure, Y is global production, t_{ij} is the bilateral cost of trading between country *i* to country *j*, and σ is the elasticity of substitution among goods from varying source countries. The structural terms S_i and P_j represent multilateral resistance within the exporting and importing countries (i.e., the ease of market access for country i's export, and the ease of market access for country *j*'s imports, respectively).

This can also be expressed in a fixed effects equation.

$$X_{ijt} = \exp\left[\gamma_{it} + \eta_{jt} + \lambda_{ij} + \beta Z_{ijt}\right] + \varepsilon_{ijt}$$

In this equation, γ_{it} are exporter time-varying fixed effects, η_{jt} are importer time-varying fixed effects, λ_{ij} are exporter-importer time-invariant fixed effects, and Z_{ijt} is the vector of time-variant bilateral determinants of trade, including DTS harmonisation and the presence of RTAs between each exporter-importer pair.

To ensure a robust analysis, further adjustments to the model were made. For instance, 2-year lagged variables were introduced to account for the potential delayed impact of DTS harmonisation on trade flows. Data was drawn from Comtrade and the Organisation for Economic Co-operation and Development (OECD)-World Trade Organization (WTO) Balanced International Trade in Services dataset, which provides bilateral trade flow data, and the CEPII database, which provides data on bilateral gravity variables such as distance and common language.

Source: WTO (2016) An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model, https://unctad.org/system/files/official-document/gds2016d3_en.pdf and Access Partnership analysis

[68] WTO (2016) An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model, https://unctad.org/system/files/official-document/gds2016d3_en.pdf
[69] WTO (2016) An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model, https://unctad.org/system/files/official-document/gds2016d3_en.pdf

2.1.3 Phase 3: Estimating the potential economic benefit for ASEAN

Increased trade, driven by the reduction in trade costs resulting from harmonised standards, induces domestic production, contributing to higher economic activity across the economy, which is seen in higher employment and incomes. To estimate the economic contributions from the economy-wide spillover effects of this higher economic activity, this study leveraged input-output (IO) tables from the World Input-Output Databases (WIOD) Project and the Asian Development Bank (ADB) Data Library to capture the interdependencies between economic sectors. By examining the change in final demand resulting from increased exports due to DTS harmonisation, the corresponding change in value added across industries was estimated. Employment multipliers were also computed from International Labour Organization (ILO) data and used to estimate the jobs supported by the change in economic activity above.

2.2 Examination of Past Harmonisation Impacts

Examination of past harmonisation impacts may provide a glimpse into how the ongoing harmonisation of DTS could impact AMS, now and in the future. The analysis from Phase 1 and 2 revealed that progress on DTS harmonisation globally from 2018 to 2021 increased exports by up to 9.9% for economies with certain harmonised standards compared to those without (Box 2).

BOX 2: Gravity Model Analysis: Impact of DTS Harmonisation Provisions from 2018 to 2021

Trade in Goods and Services	E-authentication	Paperless trade	E-Invoicing	Digital Payments	UNCITRAL Model Law of E-Commerce	UNCITRAL Model Law on Electronic Transferable Records
X_t	0.0319 (0.0266)	0.0558 (0.0750)	0.0992*** (0.0323)	0.0917*** (0.0316)	-0.0046 (0.0306)	0.0432* (0.0261)
X_{t-1}	-	0.1013 (0.0691)	0.0946 (0.0888)	0.0949 (0.0890)	0.0294* (0.0174)	0.1005 (0.0898)
X_{t-2}	-	-	-	-	-0.0541 (0.1021)	-
rta_wto	0.0344 (0.0440)	0.0314 (0.0438)	0.0316 (0.0438)	0.0315 (0.0438)	0.0300 (0.0443)	0.0354 (0.0441)
Observations	24,210	24,210	24,210	24,210	24,210	24,210
Squared Cor.	0.99930	0.99930	0.99930	0.99930	0.99931	0.99930
Pseudo R2	0.99923	0.99923	0.99923	0.99923	0.99923	0.99923
BIC	1.85 e^{11}	1.84 e^{11}	1.84 e^{11}	1.84 e^{11}	1.84 e^{11}	1.84 e^{11}

*This table presents estimates derived from the gravity model of trade. Exporter-importer, exporter-year, and importer-year fixed effects were included in all specifications but not reported for brevity. Standard errors were clustered at the exporter-importer pair level and are reported in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01*

The estimated impact from this study (9.9% export gain) is broadly aligned with estimated impacts of comparable trade facilitation measures.[70] While trade facilitation measures include a wider range of policies and procedures other than DTS harmonisation, there is limited empirical research on the economic impact of DTS harmonisation in isolation. Thus, to validate and contextualise our findings in the literature, we compare our results with existing research on trade facilitation measures related to the digital trade areas of DTS harmonisation identified in Chapter 3.

On paperless trade, a key area of DTS harmonisation, UNESCAP (2014) found that reduced trade costs stemming from partial paperless trade reforms across the region can lead to a 9% gain in exports on average for APAC, while full reforms can increase exports by about 15%.[71] The mutual implementation of paperless trade reforms is directly relevant to cross-border trade facilitation measures that DTS harmonisation drives towards, suggest that our finding is within reasonable bounds.

In relation to e-commerce, another key area, González, Sorescu and Kaynak (2023) concluded that signing an RTA with an e-commerce provision increases overall exports by 10.3% for high-income countries and emerging economies by 16.9%, with impacts varying based on the depth of the e-commerce provisions.[72]

In terms of trade facilitation more broadly, studies on the impact of the Trade Facilitation Index (TFI) on trade may serve as a good comparator. The TFI is tabulated based on an economy's customs and regulation environment and reflects the extent of compliance with trade agreements and the enforceability of regulations. Hoekman and Nicita (2011) found that improving low-income economies' TFI scores to the average of middle-income economies increased exports by 12.6% on average.[73] While the TFI covers a wider range of trade areas than just DTS harmonisation, the positive impact of TFI improvements on trade is broadly aligned with our findings.

The estimated impact from DTS harmonisation is consistent with the expected outcomes from similar trade facilitation measures, despite the limited literature directly addressing DTS harmonisation.

2.3 Potential Economic Benefits for ASEAN

If similar harmonisation were achieved across AMS such that it was able to achieve an equivalent 9.9% increase in exports, the potential economic benefits are substantial (Figure 3):

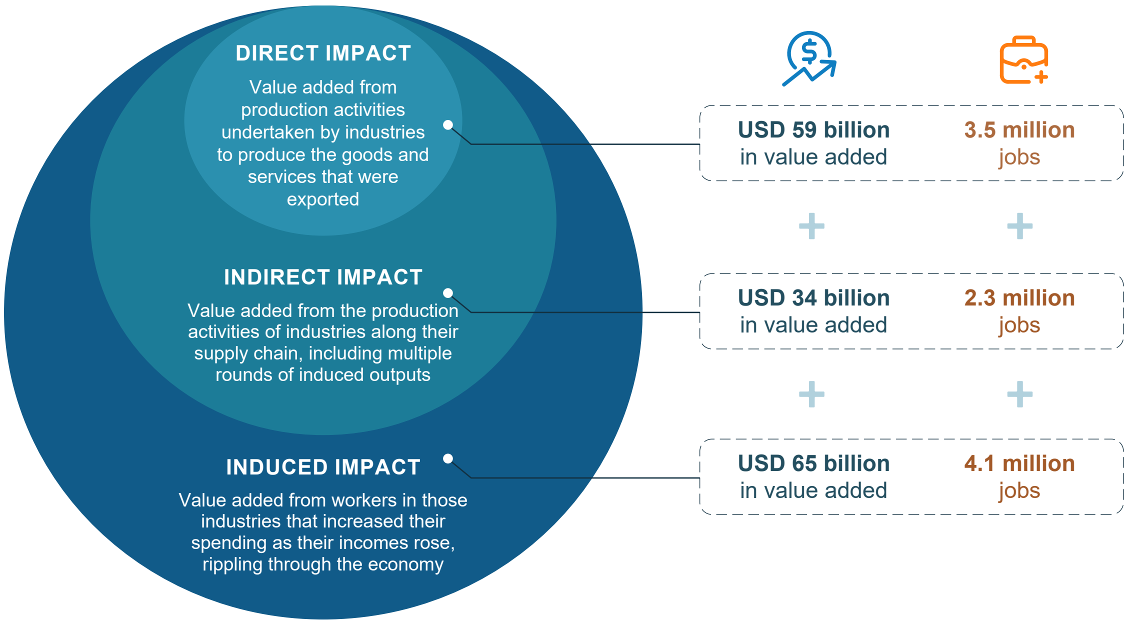
- **Economic Contribution: Up to US$158 billion (or 4.5% of their total GDP)** could be added to AMS economies through increased domestic production and subsequent consumer spending from additional income for workers.
- **Jobs Supported:** This economic activity could support almost 10 million jobs across AMS economies (measured as full-time equivalents, or FTEs).

[70] International agencies and regional initiatives have adopted various definitions of trade facilitation, emphasising its different aspects. Here, we adopt UNESCAP's definition to include policies and processes that reduce the cost, time, and uncertainty associated with engaging in international trade but exclude traditional trade instruments such as tariffs, import quotas, and other similar nontariff barriers. UNESCAP (2013), Designing and Implementing Trade Facilitation in Asia and the Pacific 2013 Update, https://www.unescap.org/sites/default/d8files/4%20-%20Part%20I_An%20Overview%20Of%20Trade%20Facilitation.pdf
[71] UNESCAP (2014), Estimating the benefits of cross-border paperless trade in Asia and the Pacific, https://www.unescap.org/sites/default/d8files/Part%20II_Chapter%20V_Estimating%20the%20benefits%20of%20cross-border%20paperless%20trade_0.pdf
[72] González, Sorescu and Kaynak (2023), Of Bytes and Trade: Quantifying the Impact of Digitalisation on Trade, https://www.oecd.org/en/publications/of-bytes-and-trade-quantifying-the-impact-of-digitalisation-on-trade_11889f2a-en.html
[73] Hoekman and Nicita (2011), Trade Policy, Trade Costs, and Developing Country Trade, https://www.sciencedirect.com/science/article/abs/pii/S0305750X11001434

Figure 3. Potential Economic Benefits of DTS harmonisation in ASEAN

DTS harmonisation could contribute USD 158 billion in value added to regional GDP (~4.5%) and support almost 10 million jobs in ASEAN

Breakdown[1] of value added and employment impact from DTS harmonisation[2]



Notes:

1. Myanmar and Lao PDR have been excluded; the former does not publish official supply and use and input-output tables while the latter's supply and use tables do not include data on compensation of employees.
2. This study uses ratified in-force digital trade provisions of the strongest commitment as the measure for harmonised DTS, e.g., "Adopt, for relevant electronic payment systems, international standards for electronic payment messaging, such as the ISO 20022 Universal Financial Industry Message Scheme, for electronic data exchange between financial institutions and services suppliers to enable greater interoperability between electronic payment systems." compared to a weaker provision, "Each Party shall encourage the use of safe and secure, efficient, and interoperable e-payment systems to facilitate e-commerce in accordance with its laws and regulations."

Source: Access Partnership analysis

These estimates underscore the significant potential of DTS harmonisation to drive economic growth, create employment opportunities, and enhance the overall competitiveness of the ASEAN region. This presents a compelling case to ASEAN economies to further their digital integration efforts, both in expanding regional cooperation, as well as extending the harmonisation of DTS to other digital trade areas such as cooperation on emerging topics, online safety, cybersecurity, and cross-border data protection.

While the potential economic benefits are substantial, several considerations need to be addressed to fully realise these benefits. These challenges, as identified in the gap assessment in Chapter 3, include diverse legal and regulatory frameworks, capacity constraints, and varying levels of technological infrastructure and stakeholder awareness across AMS. The strategic framework and recommendations outlined in Chapters 4 and 5 aim to address these challenges and guide ASEAN towards a harmonised and thriving digital trade environment.

3. Overview of DTS in ASEAN

Source: @savagerus - Freepik.com, Title: 'A map of the world with lit up lines'

This section will provide an overview of the current landscape of DTS in ASEAN. Specifically, it will: (a) identify the key digital trade areas within ASEAN and assess the role and availability of international standards in the identified areas; and (b) evaluate the current state of standards adoption in each area, identifying gaps and challenges in standards adoption across AMS and the broader ASEAN region.

3.1 Identification of Key Digital Trade Areas

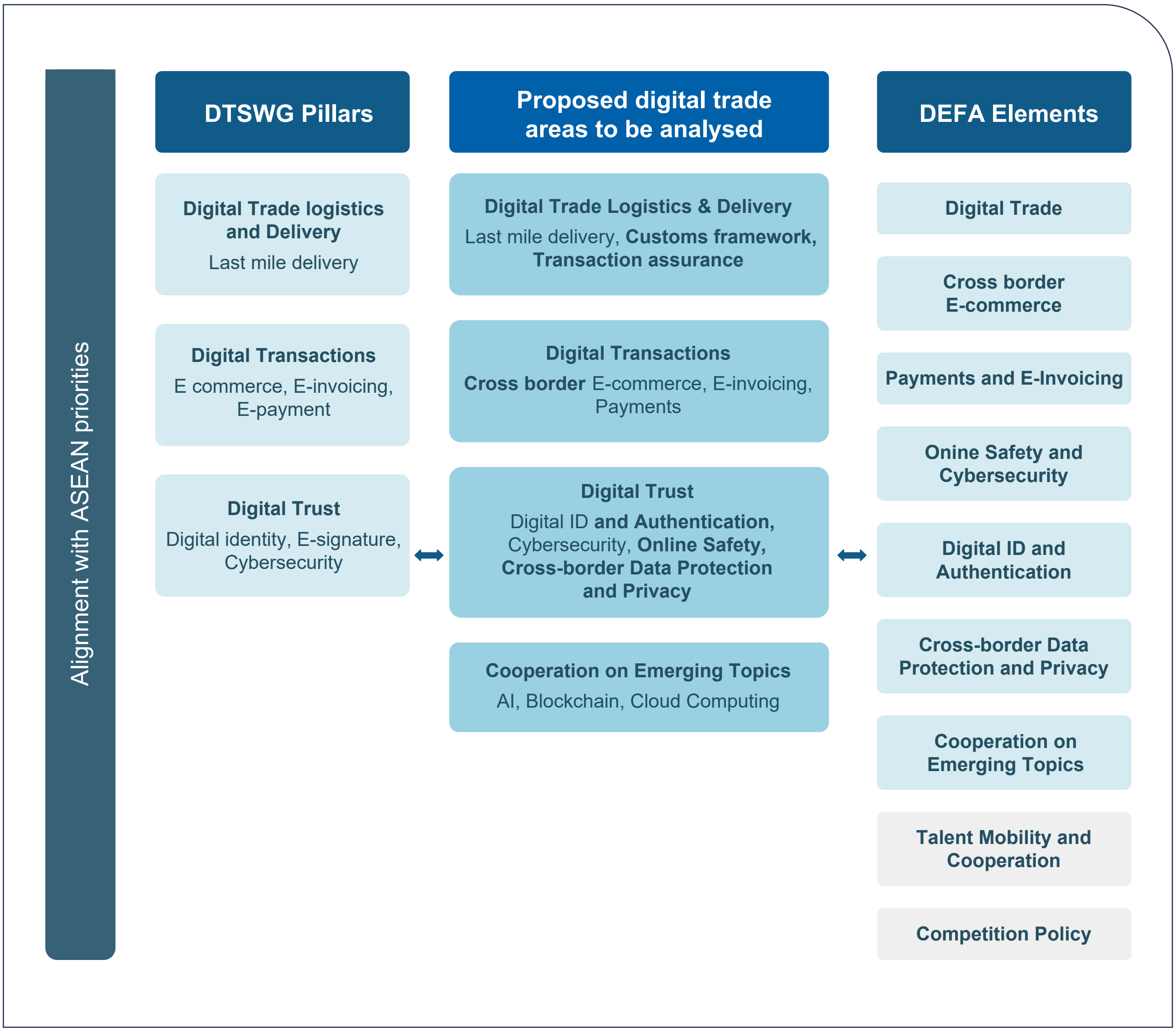
To develop a DTS roadmap that is relevant to ASEAN, it is essential to prioritise key digital trade areas where the region should focus its cooperation efforts. These digital trade areas are determined based on the following considerations:

- **Importance and Role of Standards:** Understanding how standards influence and support each digital trade area.
- **Identification of Existing Standards:** Identify key international standards relevant for each area. Where international standards are not available, identify relevant industry standards.
- **Current Status of Standards Adoption in ASEAN:** Assessing the current status of standards adoption in each area, and identifying key priorities and challenges faced in standards adoption across AMS and the broader ASEAN region.
- **Ongoing and Emerging Global and Regional Discussions:** Taking into account current and emerging discussions at both global and regional levels, especially for new and emerging areas.

Additionally, these key areas should align with the existing ASEAN agenda, including the key pillars of the Digital Trade Standards and Conformance Working Group (DTSCWG) and the key elements of the ASEAN Digital Economy Framework Agreement (DEFA).

Based on these considerations, four digital trade areas have been identified, as shown in Figure 4 below.

Figure 4. Identification of Digital Trade Areas



Source: Access Partnership analysis

Within each digital trade area, key sub-areas that are current or emerging priorities for ASEAN have been identified. An overview of these digital trade areas and their respective sub-areas is provided in Table 4 below.

Table 4. On the Cooperation on Emerging Topics, Cloud Computing

	Digital Trade Area	Digital Trade Sub-Area
1	Digital Trade Logistics and Delivery	Last Mile Delivery
		Customs Framework
		Transaction Assurance
2	Digital Transactions	Cross-border E-commerce
		E-invoicing
		Payments
3	Digital Trust	Digital ID and Authentication
		Cybersecurity
		Online Safety
		Cross-border Data Protection and Privacy
4	Cooperation on Emerging Topics	AI
		Blockchain
		Cloud computing

Source: Access Partnership analysis

3.2 Gap Assessment of DTS Adoption across ASEAN

This section will assess the current state of standards adoption in each area by considering the following aspects:

- **Within the broader digital trade area:** Evaluate the (a) significance of the identified area to ASEAN's digital trade, (b) relevance of the sub-areas to ASEAN's digital trade, and the (c) importance of standards within the digital trade area; and

- **Within each specific sub-area (where applicable):** Examine the (a) role of standards within the context of each sub-area, (b) existing international standards, (c) current status of standards adoption across AMS and ASEAN; and (d) linkages with other sub-areas.

3.2.1 Digital Trade Logistics and Delivery

1. Importance of identified area to ASEAN's digital trade

ASEAN has undertaken numerous initiatives to cultivate a robust digital trade ecosystem, exemplified by the **ASEAN Single Window** (ASW)[74], as well as the **ASEAN Agreement on Electronic Commerce**[75] and the associated implementation Work Plan[76]. These initiatives collectively underscore the significance of seamless cross-border digital trade in bolstering the region's competitiveness and fostering economic dynamism. Notably, the *Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce* has outlined key regional priorities aimed at facilitating the engagement of Micro, Small, and Medium Enterprises (MSMEs) in cross-border trade and e-commerce, promoting inclusive growth, narrowing development gaps, and enhancing transparency in the e-commerce ecosystem.[77] Within the domain of digital trade logistics and delivery, three key sub-areas have been identified where standards play a critical role: (1) last mile delivery, (2) customs framework, and (3) transaction assurance.

2. Relevance of sub-areas to ASEAN: (DTSCWG priority, DEFA priority, ASEAN agenda/agreement)

Last mile delivery plays a pivotal role in enhancing the competitiveness of local businesses across ASEAN. With a diverse mix of growing MSMEs and large corporations, reliable and efficient delivery services are essential to ensure the timely delivery of goods, particularly in sectors such as healthcare and agriculture. Additionally, the surge in digital platforms and e-commerce in ASEAN has heightened demand for last mile delivery services.[78] As consumers shift towards online shopping, businesses face mounting pressure to deliver a wide range of products swiftly and efficiently. Effective last mile delivery services are essential to meet these expectations, reduce transportation costs, and enhance logistical efficiency, thereby supporting the continued growth of the digital economy.[79]

Building on the success of ASEAN Single Window (ASW),[80] ASEAN can further accelerate efforts to simplify customs framework and process. This includes advancing alignment on customs processing, implementing a risk assessment approach to e-commerce shipments, and establishing release windows for low-risk shipments at points of departure and arrival.

Lastly, building trust between buyers and sellers in the marketplace is imperative for fostering market growth and establishing a sustainable digital trade ecosystem. Transaction assurance for e-commerce activities is paramount given that the transactions can take place in the absence of physical verification. In this regard, there is a growing need for a comprehensive standard around e-commerce transaction assurance, which is necessary to underpin initiatives such as the **ASEAN Trust Mark Scheme**[81] and **ASEAN Guidelines on Online Dispute Resolution**[82].

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[74] IASEAN Secretariat (n.d.) ASEAN Single Window, https://asean.org/our-communities/economic-community/asean-single-window/
[75] ASEAN (2019) ASEAN Agreement on Electronic Commerce, https://agreement.asean.org/media/download/20190306035048.pdf
[76] ASEAN (2022) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2022/03/Work-Plan-E-commerce-Agreement_endorsed_logo.pdf
[77] ASEAN (2022) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2022/03/Work-Plan-E-commerce-Agreement_endorsed_logo.pdf
[78] McKinsey (2022) E-commerce is entering a new phase in Southeast Asia. Are logistics players prepared?, https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/e-commerce-is-entering-a-new-phase-in-southeast-asia-are-logistics-players-prepared
[79] PwC (2016) The future of logistics, https://www.pwc.com/sg/en/publications/assets/future-of-the-logistics-industry.pdf
[80] ASEAN Secretariat (n.d.) ASEAN Single Window, https://asean.org/our-communities/economic-community/asean-single-window/
[81] ASEAN (2022) Feasibility Study of ASEAN Trust Mark Scheme, https://asean.org/wp-content/uploads/2022/11/Feasibility-Study-of-ASEAN-Trust-Mark-Scheme-Final-Report.pdf
[82] ASEAN (2022) ASEAN Guidelines on Online Dispute Resolution (ODR), https://asean.org/wp-content/uploads/2022/04/ASEAN-ODR-Guidelines-FINAL.pdf

3. Importance and role of standards within the identified digital trade area

Standards have always been a big and key part of lowering technical trade barriers and addressing non-tariff issues. Non-tariff issues can include different product specifications, regulations on safety and quality, and the existence of requirements including pre-market approval requirements. While standards have been put in place for many areas of conventional trade, the digitalisation of trade processes across the supply chain and last mile brings forth new sets of challenges that need to be harmonised.

The three identified sub-areas, (1) last mile delivery, (2) customs framework, and (3) transaction assurance are among those where harmonised digital solutions can significantly enhance the capacity for the region's economic community to engage in digital trade.

3.2.1.1 Last Mile Delivery

1. Importance of standards in this sub-area

In the age of booming e-commerce and growing direct-to-consumer transactions, last mile delivery has become a key driver of growth for ASEAN's digital economy. In Indonesia, for example, online shopping is estimated to account for 60% of the total volume of sales in the country.[83] A robust last mile ecosystem supports supply chain resilience, aligning with the ASEAN Agreement on Electronic Commerce's objective to develop and intensify e-commerce usage.[84]

Despite accelerated e-commerce adoption, ASEAN faces distinct challenges in last mile delivery due to its diverse geographical and demographic landscape. In Malaysia and Thailand, logistics providers are well-developed and rank highly in service provision yet encounter significant last mile delivery issues necessitating optimisation for efficiency and customer satisfaction.[85] However, these countries still encounter significant last mile delivery issues that require attention to optimise efficiency and customer satisfaction. In the Philippines and Vietnam, the metropolitan areas benefit from a dense network of small-scale logistics operators, which ensures relatively efficient delivery services.[86] However, extending these services to rural areas proves difficult due to less developed infrastructure and the higher costs associated with longer delivery routes. Indonesia presents a unique logistical challenge. The country's archipelago includes over 15,000 islands, but only about 53% of its population resides in urban areas.[87] This geographic spread poses complex logistical hurdles for effective last mile delivery, particularly in ensuring timely and cost-effective delivery services across such a fragmented area.

As such, last mile delivery standards are crucial for enhancing delivery operations' efficiency, reliability, and sustainability, while mitigating bottlenecks resulting from fragmented systems and standards. These standards establish a framework for consistency and quality in the final stage of the delivery process, encompassing aspects such as delivery times, package handling, tracking systems, and customer communication. Adhering to standardised practices enables logistics providers to optimise operations, reduce costs, and improve customer satisfaction.[88] Moreover, standardised last mile delivery processes promote environmental sustainability by reducing unnecessary fuel consumption

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83 McKinsey (2018) How online commerce is driving Indonesia's economic development, https://www.mckinsey.com/spContent/digital_archipelago/index.html

84 ASEAN (2019) ASEAN E-Commerce, https://asean.org/our-communities/economic-community/asean-e-commerce/

85 YCP Solidiance (2023) Logistics in SEA: Exploring Innovations Within Last Mile Logistics, https://ycpsolidiance.com/white-paper/logistics-last-mile-southeast-asia

86 YCP Solidiance (2023) Logistics in SEA: Exploring Innovations Within Last Mile Logistics, https://ycpsolidiance.com/white-paper/logistics-last-mile-southeast-asia

87 Dezan Shira & Associates (2011) Master Plan Acceleration and Expansion of Indonesia Economic Development 2011-2025, https://www.aseanbriefing.com/news/wp-content/uploads/2023/10/ASEAN_Indonesia_Master-Plan-Acceleration-and-Expansion-of-Indonesia-Economic-Development-2011-2025.pdf

88 AWS (2023) AWS last mile solution for faster delivery, lower costs, and a better customer experience, https://aws.amazon.com/blogs/supply-chain/aws-last-mile-solution-for-faster-delivery-lower-costs-and-a-better-customer-experience/

and emissions through optimised route planning and vehicle utilisation.[89] Additionally, harmonised standards foster interoperability and collaboration among logistics companies, bolstering efficiency and cost-effectiveness in cross-border trade. Finally, enhancing the efficiency and expanding the reach of delivery operations to remote areas will foster inclusive and equitable development. This will enable a broader range of products to be accessible to rural areas, ensuring that rural communities have equal and timely access to products as their urban counterparts. Overall, the establishment and adoption of last mile delivery standards across ASEAN are crucial for cultivating a competitive and resilient e-commerce ecosystem.

Key standards of interest to ASEAN

Globally, standards on last mile delivery are still nascent, with a general lack of comprehensive standards. This places ASEAN in a unique position to lead and influence the development of these standards. Leading standards in last mile delivery should encompass key components addressing packaging, labelling, and data exchange issues. Singapore's **Technical Reference 105 (TR 105)**[90] stands out as one of the few standards in this domain, developed to improve the end consumer's experience across four key areas:

- Improve productivity of LMDs by standardising packaging and labelling guidelines, which reduces delivery failure rates and optimises storage and delivery schedules.
- Enable data exchange and harmonisation across marketplaces, sellers and LSP platforms to safeguard data and reduce delivery failure frequency for end consumers.
- Align datasets between marketplaces and LSP platforms and standardise information conveyed to end consumers. This will allow end consumers to better track the status of their parcels and communicate with LMD stakeholders at critical touchpoints.
- Enhance operational processes and practices in LMDs through guidelines on delivery logistics, instructions, and authorisation across key modes of delivery. This will facilitate more efficient and punctual contactless deliveries.

Another standard of interest in this area is the **GS1 Labelling standards**, which have been highlighted in the *Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce*.[91] The standard entails a set of rules and guidelines which aims at making logistics units and trade items physically identifiable using barcodes and RFID.[92]

AMS can consider closely monitoring the ongoing work by the United Nations Economic Commission for Europe (UNECE) regarding parcel goods traceability in last mile delivery[93], which is linked to ISO/TC 154 Project Group 9.

AMS can also consider working with the European Committee for Standardization (CEN), which has been mandated by the EU to work on the Last Mile project, on the development of last mile delivery standards.[94]

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[89] DiVA Portal (2023) Innovative Sustainable Urban Last Mile, http://norden.diva-portal.org/smash/get/diva2:1825831/FULLTEXT01.pdf
[90] Singapore Standards (2022) guidelines for last mile delivery of parcels, https://www.singaporestandardseshop.sg/Product/GetPdf?fileName=220610150929TR%20105-2022%20Preview.pdf&pdtid=f8064951-7c48-416d-9e45-44bc44e29421
[91] ASEAN (2022) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2022/03/Work-Plan-E-commerce-Agreement_endorsed_logo.pdf
[92] GS1 Australia (n.d.) About GS1 Standards, https://www.gs1au.org/standards
[93] UNECE (2023), Parcel Goods Traceability in Last Mile Delivery,https://unece.org/sites/default/files/2023-10/03Oct_PM_T%2BL_Parcel-goods-traceability.pdf
[94] GS1 Europe (n.d.) Last Mile Delivery, https://gs1.eu/activities/last-mile-delivery/

2. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

Several AMS have been working on developing the national last mile delivery framework, including the Singapore Standards Council, Malaysia's Malaysia Digital Economy Corporation, and Indonesia's Ministry of Communication and Information Technology. Singapore stands out as the lead in this area with the development of the first last mile delivery standards in 2016. In October 2022, Singapore's postal service provider, Singpost, in partnership with Singapore Standards Council, introduced a new standard for last mile delivery of parcels, known as TR105.[95] The new standard provides guidance to the e-commerce industry, including retailers and logistics providers, to standardise processes and practices in key areas, to raise operational efficiencies and improve the overall e-commerce customer experience.

Beyond ASEAN, the EU has started an inquiry on how to develop recommendations for last mile delivery of parcels, which include driving regulatory change, enhancing labelling and cross-border postal rate system harmonisation, and marrying parcel ID and parcel content.[96] The Erasmus+ Programme of the EU has also co-funded a report on *Regulatory Recommendations for Last Mile Delivery* which delves into the training requirements for transport operators.[97] It provides recommendations at both national and international levels to incorporate last mile delivery training and qualifications into the EC VET principles and the European Qualifications Framework (EQF). This qualification aims to be transferable across EU countries, enhancing its impact and simplifying the recognition of qualifications for individuals relocating to other countries.[98]

3. Linkages to other sub-area(s) / Any other considerations

Last mile delivery is crucial for the advancement of Micro, Small, and Medium-sized Enterprises (MSMEs) in ASEAN. It significantly affects the competitiveness of local businesses. Reliable and efficient delivery services are vital for ensuring the timely delivery of goods, especially in sectors like healthcare and agriculture, which directly impact individuals, including women and vulnerable groups in society. ASEAN is home to over 70 million MSMEs, accounting for approximately 98% of total enterprises in the region. These enterprises contribute significantly to employment, GDP, and national exports. The number of women entrepreneurs in ASEAN has been steadily increasing, with over 60 million women operating businesses across the region. Both urban and rural areas have seen significant growth in women-led MSMEs, which play a critical role in promoting inclusive growth and narrowing gender development gaps.

The Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce has highlighted key regional priorities aimed at facilitating MSMEs' engagement in cross-border trade and e-commerce transactions. It is recognised that digitalisation has benefitted large corporations more than MSMEs due to their capacity and resources to adapt to new technology and innovation. However, digital trade policies have the potential to narrow development gaps by creating employment opportunities for vulnerable groups, including women, rural villagers, indigenous communities, and persons with disabilities as business owners or workers. Encouragingly, there is a global trend to improve digital trade participation among these marginalised individuals, which is also growing in ASEAN.

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[95] SingPost (2022) Singapore introduces a new industry standard for eCommerce and logistics players to boost customer satisfaction and operational efficiencies, https://www.singpost.com/about-us/news-releases/singapore-introduces-new-industry-standard-ecommerce-and-logistics-players
[96] GS1 (2017) Ecommerce Europe, https://www.gs1.org/sites/default/files/04_-_last_mile_delivery_standardisation_101017_wct.pdf.
[97] Movetia (2022) Last Mile Delivery – Training for Last Mile Drivers in Safe and Sustainable Urban Areas, https://ec.europa.eu/programmes/erasmus-plus/project-result-content/c8fc35d1-3645-4318-b606-58488688cb99/LAST_MILE_IO4_Regulatory_Recommendations_Report_EN.pdf
[98] Movetia (2022) Last Mile Delivery – Training for Last Mile Drivers in Safe and Sustainable Urban Areas, https://ec.europa.eu/programmes/erasmus-plus/project-result-content/c8fc35d1-3645-4318-b606-58488688cb99/LAST_MILE_IO4_Regulatory_Recommendations_Report_EN.pdf

Although ASEAN is one of the fastest-growing economies globally, the adoption of Digital Trade Systems by MSMEs in the region remains limited and fragmented. However, initiatives such as the ASEAN Digital Masterplan 2025 and the ASEAN Cybersecurity Cooperation Strategy 2021-2025 emphasise inclusivity by empowering women and other marginalised groups through digital trade policies and instruments. ASEAN has been working on initiatives to increase women participation in digital trade by providing greater access to comprehensive market financial services platforms and business networks, such as the ASEAN-Australia Digital Trade Standards Initiative. This is particularly important for women and minority-led MSMEs as they often face barriers to accessing traditional financial systems. Enabling Digital Trade Systems for MSMEs will have multiple benefits, including boosting GDP, promoting gender equality, and enhancing social inclusion, in line with the ASEAN Economic Community agenda 2025 and beyond.

3.2.1.2 Customs Framework

1. Importance of standards in this sub-area

ASEAN has made a robust commitment for AMS to simplify and harmonise customs procedures, tracing back to the ASEAN Agreement on Customs signed in 1997.[99] Despite significant progress in reducing trade and customs barriers, there still exists considerable variance in customs processing times. With the rapid advancement of technologies and digital platforms enabling more transactions beyond bulk and batch business-to-business (B2B) trade, AMS could benefit greatly from greater integration and simplification of customs processes and frameworks. The **Regional Comprehensive Economic Partnership (RCEP)**, for instance, underscores the importance of simplifying custom procedures for the clearance of low-value shipments.[100]

International standards, such as those established by the World Customs Organization (WCO), play a pivotal role in simplifying customs processes within ASEAN, due to several key benefits. Customs standards provide a uniform set of guidelines and practices that all member countries can follow, which greatly reduces the complexity and variability of customs procedures at different borders. This standardisation facilitates smoother and faster cross-border trade, essential for a region characterised by diverse regulatory systems. Additionally, customs standards help in enhancing transparency and predictability in customs operations, which boosts the confidence of businesses in the region's trade framework.[101] By adopting these international standards, ASEAN countries can also ensure they are implementing globally recognised best practices in customs processing, which aligns with the growing emphasis on trade integration in trade agreements. Overall, the adoption of customs standards by ASEAN countries supports more efficient trade, contributes to economic integration, and promotes regional competitiveness in the global market.

2. Key international standards of interest to ASEAN

The World Customs Organization (WCO) **SAFE Framework** of Standards to Secure and Facilitate Global Trade, commonly referred to as the WCO SAFE Framework, is a set of standards designed to enhance the security and facilitation of international trade.[102] Established by the WCO in 2005, this framework aims to effectively and efficiently secure and facilitate the global trade supply chain. The SAFE Framework seeks to standardise customs procedures across member countries, which helps in reducing bottlenecks and simplifying the processes for international trade. This includes the use of a common set of data elements in the electronic transmission of information to and from customs authorities.[103]

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[99] ASEAN (1997) ASEAN Agreement on Customs, https://asean.org/wp-content/uploads/2020/12/ASEAN-Agreement-on-Customs-2.pdf
[100] Enterprise Singapore (n.d.) RCEP, https://www.enterprisesg.gov.sg/grow-your-business/go-global/international-agreements/free-trade-agreements/find-an-fta/rcep
[101] WCO (n.d.) SAFE Framework of Standards, https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/safe-package/safe-framework-of-standards.pdf
[102] WCO (n.d.) SAFE Framework of Standards, https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/safe-package/safe-framework-of-standards.pdf
[103] WCO (n.d.) SAFE Framework of Standards, https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/safe-package/safe-framework-of-standards.pdf

A significant feature of the SAFE Framework is the **Authorized Economic Operator (AEO) Program**, which involves certifying businesses as compliant with WCO or equivalent security standards. AEO-certified businesses are considered secure traders and enjoy various benefits, such as fewer inspections and expedited processing through customs.[104]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

A key ASEAN initiative is the ASEAN Single Window (ASW). The ASW was first developed in 2005 as part of the ASEAN Economic Community Blueprint to expedite and enable cross-border exchanges of electronic trade documents among AMS by integrating National Single Windows (NSW) of AMS.[105] The ASW follows the WCO Data Model, which is data foundation for cross-border data exchange especially for the implementation of Single Window systems.[106] Similar to the WCO Data Model, the ASW comprises six building blocks, with each building block following specific standards recommended by respective agencies.

The table below outlines the standards under each building block:

Table 5. ASEAN Single Window (ASW) Building Blocks and Standards

Building Block	Standard
Business Process Model	UN/CEFACT Modelling Methodology (UMM)
Harmonised Data Set	United Nations Trade Data Elements Directory
Information Models	Unified Modelling Language (UML)
International Codes Standard	Multiple standards, depends on the recommendation of respective agencies. Most of the standards are included in the Standards Toolkit for Cross-Border Paperless Trade[107]
Message Implementation Guidelines	Multiple standards, document owner to identify the format of the e-document. Most of the standards are included in the Standards Toolkit for Cross-Border Paperless Trade[108]
Electronic Messages	XML/JSON

Source: Information provided by ASEC (2024)

[104] WCO (n.d.) SAFE Framework of Standards, https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/facilitation/instruments-and-tools/tools/safe-package/safe-framework-of-standards.pdf
[105] ASEAN (n.d.) ASEAN Single Window Trade, https://asean.org/our-communities/economic-community/asean-single-window/
[106] WCO Data Model Guidance (2023), The building blocks of the WCO Data Model, https://wiki.datamodel.wcoomd.org/en/technical-guide/building-blocks
[107] International Chamber of Commerce (2022) Standards Toolkit for Cross Border Paperless Trade, https://iccwbo.org/news-publications/policies-reports/standards-toolkit-for-cross-border-paperless-trade/
[108] International Chamber of Commerce (2022) Standards Toolkit for Cross Border Paperless Trade, https://iccwbo.org/news-publications/policies-reports/standards-toolkit-for-cross-border-paperless-trade/

In 2019, all AMS implemented full transmission of electronic form D under **ASEAN Trade in Goods Agreement (e-ATIGA)**.[109] In 2020, the electronic exchange of ASEAN Customs Declaration Document (ACDD) was added to the ASW. Currently, this electronic exchange is in place across eight AMS, including Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam.[1110] The ASW is being expanded to support more types of electronic trade-related documents, such as the electronic Phytosanitary (e-Phyto) certificate and the electronic Animal Health (e-AH) certificate.[111]

4. Linkages to other sub-area(s) / Any other considerations

Customs standards fall under the purview of the ASEAN Coordinating Committee on Customs (CCC) and the Customs Working Groups, and development is well underway. Nevertheless, there may be areas of alignment in documentation standards that necessitate further coordination with other sub-areas identified in this Roadmap, including paperless trade and transaction assurance standards.

3.2.1.3 Transaction Assurance

1. Importance of standards in this sub-area

Transaction assurance in e-commerce refers to the processes and technologies that ensure the security, integrity, and reliability of transactions conducted online. This encompasses everything from the moment a consumer begins interacting with an e-commerce platform to the final completion of the transaction, including post-purchase support and services.

International standards on transaction assurance are vital for e-commerce, providing a framework that ensures secure and trustworthy transactions. These standards instil consumer confidence by mandating adherence to recognised security practices and safeguarding transaction integrity and customer data through measures such as encryption and authentication protocols. By setting benchmarks for security, these standards mitigate fraud and data breaches, which are critical concerns in digital transactions. Additionally, international standards facilitate cross-border trade. Such standards simplify operations by minimising the complexities associated with navigating diverse regulatory environments, thereby enhancing overall efficiency and reducing operational costs. These international standards are ultimately indispensable for promoting a secure, efficient, and globally integrated e-commerce ecosystem, aligning with existing ASEAN initiatives such as the ASEAN Agreement on Electronic Commerce, ASEAN Work Programme on Electronic Commerce 2017-2021, and ASEAN Guideline on Accountabilities & Responsibilities of E-marketplace Providers.[112]

2. Key international standards of interest to ASEAN

There are several key standards published by the ISO/TC 321 Transaction assurance in E-commerce, a technical committee formed to focus on standardising processes to ensure transaction assurance in e-commerce. The work of TC 321 is particularly important as e-commerce continues to expand globally, bringing with it increased challenges related to transaction security, customer trust, and overall transaction integrity. Relevant standards currently in development under ISO/TC321 and pertinent to ASEAN include **ISO/DIS 32122** Transaction assurance in e-commerce

[109] ASEAN Single Window Trade Facilitation for the ASEAN Economic Community (n.d.) What is the ASEAN Single Window, https://asw.asean.org/
[110] Customs SG (n.d.) ASEAN Customs Declaration Document (ACDD), https://www.customs.gov.sg/businesses/international-connectivity/acdd/
[111] ASEAN Single Window Trade Facilitation for the ASEAN Economic Community (n.d.) What is the ASEAN Single Window, https://asw.asean.org/
[112] EU-ASEAN Business Council (2022) Building Trust in ASEAN's E-Commerce, https://www.eu-asean.eu/wp-content/uploads/2022/02/E-Commerce-Paper_22-Feb.pdf

— Guidelines for offering online dispute resolution services, **ISO/AWI TR 32121** Transaction assurance in e-commerce — Practices for developing terms of use for B2C e-commerce platform, and **ISO/FDIS 32120** Transaction assurance in E-commerce — Guidelines on sharing goods quality assurance traceability information in E-commerce supply chains.[113]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

While there is limited information available on the adoption of the ISO standards outlined above, several AMS are already involved in ISO TC/321, with Singapore as a participating member, and Indonesia, Malaysia, and the Philippines as observing members.[114]

As transaction assurance standards are still under development, they are not presently included in the *Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce.*[115] In this regard, AMS stand to benefit from active participation and agenda-setting in the development of e-commerce standards, with the goal of eventual adoption and harmonisation, to ensure that the region's interests are represented.

Beyond ASEAN, the EU has established the eIDAS regulation, which provides a framework for digital identity and authentication to facilitate secure cross-border transactions. Its goal is to build trust in electronic interactions and promote seamless digital services throughout the EU.[116] The regulation on electronic identification and trust services marked a significant step towards establishing a predictable regulatory environment. Its main objective was to build confidence in cross-border electronic transactions while enhancing the efficiency of online services and e-commerce platforms. By focusing on electronic identification (eID) and trust service providers. This regulation aims to eliminate barriers that hinder the seamless use of trust services and eID across EU member states.[117]

4. Linkages to other sub-area(s) / Any other considerations

This sub-area falls under the purview of the ASEAN Coordinating Committee on Electronic Commerce and Digital Economy (ACCED). Given the critical importance of payment security and transaction integrity in e-commerce, TC321 has highlighted the need to collaborate with ISO/TC 68 (Financial Services), ISO/IEC/JTC1/SC 27 (IT Security Techniques), and other relevant technical committees (TCs) as required.[118] In alignment with this objective, developments in this sub-area should also consider enhancing coordination with developments in the other sub-areas including Payments and Cybersecurity.

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[113] Note: At the time of writing (July 2024), there is limited information available on these standards as they are still under development. ISO (n.d.) ISO/TC 321 Transactions Assurance in E-commerce, https://www.iso.org/committee/7145156.html
[114] ISO (n.d.) ISO/TC 321 Participation, https://www.iso.org/committee/7145156.html?view=participation
[115] EU-ASEAN Business Council (2022) Building Trust in ASEAN's E-Commerce, https://www.eu-asean.eu/wp-content/uploads/2022/02/E-Commerce-Paper_22-Feb.pdf
[116] European Parliament (2014) Regulation (EU) No 910/2014 of the European Parliament and of the Council, electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0910-20240520
[117] European Parliament (2014) Regulation (EU) No 910/2014 of the European Parliament and of the Council, electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0910-20240520
[118] ASC X9 (2019) ASC X9 To Serve as U.S. Technical Advisory Group for ISO Standards Committee TC 321 – Transaction Assurance in E-commerce, https://x9.org/wp-content/uploads/2019/11/X9-TAG-for-ISO-TC-321-FINAL.pdf

3.2.2 Digital Transactions

1. Importance of identified area to ASEAN's digital trade

In recent years, ASEAN has witnessed significant growth in digital payments, with gross digital payments across the six largest ASEAN economies reaching US$ 806 billion in 2022, and is expected to soar to US$ 1.2 trillion by 2025.[119]

Beyond their role in driving ASEAN's digital trade and fostering regional integration, payment systems are also essential for facilitating digital transactions across borders and currencies. These digital transactions underpin ASEAN's digital trade, establishing ASEAN as a dynamic hub for digital trade, which in turn serves as the backbone for the region's economic dynamism and competitiveness.

This increases the importance of seamless cross-border e-commerce transactions, which enable businesses to expand their reach, facilitating trade across the region with minimal friction. To support this, e-invoicing streamlines administrative processes, enhances transparency, minimises the risk of fraud, and makes transactions smoother and faster. Strengthening these digital transaction mechanisms can bolster ASEAN's digital trade ecosystem. Specifically, it can lower trade barriers through reducing entry barriers for MSMEs to compete with complying with separate standards for each ASEAN market, improve communication and automation by increasing speed and efficiency through easing fragmentation, narrow development gaps, and maintain its competitive edge in the global market.

2. Relevance of sub-areas to ASEAN: (DTSCWG priority, DEFA priority, ASEAN agenda/agreement)

Cross-border e-commerce has been an increasingly prevalent theme across regional trade agreements and economic integration arrangements, as countries streamline trade processes, enhance market access, and bolster international economic ties. Numerous ASEAN studies have identified the significant benefit that e-commerce offers for ASEAN. According to estimates by the Boston Consulting Group, ASEAN's digital economy is forecasted to triple by the end of the decade through the natural adoption of digital technologies, expanding from approximately US$ 300 billion to nearly US$ 1 trillion by 2030.[120] Moreover, progressive rules in DEFA would double this value contribution, unlocking US$ 2 trillion for the ASEAN digital economy.[121]

The importance of e-invoicing to ASEAN and the development of digital trade is also reiterated on several fronts. Within DTSCWG, e-invoicing is highlighted as a key sub-pillar for DTSCWG under *Facilitating Digital Transactions*.[122] Through the DTS Initiative, significant work including research and capacity-building deliverables has gone into fostering awareness and insights to support the greater adoption among AMS. DTSCWG has also commissioned a study on the landscape of E-Invoicing adoption in ASEAN, supported by IMDA Singapore in 2022.[123]

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[119] WEF Forum (2023) ASEAN Instant Cross-border Payments, https://www.weforum.org/agenda/2023/11/asean-instant-cross-border-payments-paynow-promptpay/.
[120] ASEAN Secretariat (2023) Digital Economy Framework Agreement (DEFA): ASEAN to leap forward its digital economy and unlock US$2 Tn by 2030, https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/
[121] ASEAN Secretariat (2023) Digital Economy Framework Agreement (DEFA): ASEAN to leap forward its digital economy and unlock US$2 Tn by 2030, https://asean.org/asean-defa-study-projects-digital-economy-leap-to-us2tn-by-2030/
[122] ASEAN (2021) DTSCWG Infographic, https://asean.org/wp-content/uploads/2021/12/DTSCWG-Infographic-final.pdf
[123] IMDA (2022) ENGAGE Newsletter Issue 7, https://www.imda.gov.sg/-/media/imda/files/programme/nationwide-e-invoicing-framework/engage-newsletter-issue-7-jul--dec-2022.pdf

In addition, the Study on the DEFA recommends the adoption of standards and interoperability measures for e-invoicing, with specific mention of the **PEPPOL** framework.[124] There is a demonstrated high level of interest in capacity building on e-invoicing through DEFA negotiations.

Lastly, payments play a cross-cutting role in enabling digital transactions, which in turn drive ASEAN's digital trade and foster regional integration. As ASEAN emerges as a dynamic hub for digital commerce, efficient payment systems are essential for facilitating transactions across borders and currencies. Moreover, as ASEAN strives for deeper economic integration, interoperable payment systems are vital for promoting cross-border trade and investment, and for accelerating the growth of digital trade in ASEAN.[125]

3. Importance and role of standards within the identified digital trade area

Standards are crucial in facilitating digital transactions, as they help address varying regulatory requirements and security protocols. These standards ensure interoperability, security, and efficiency across different platforms and jurisdictions. As digital trade continues to grow, the harmonisation of standards becomes increasingly important to manage the complexities of cross-border e-commerce, digital payments, and e-invoicing. Establishing uniform standards for digital transactions not only enhances trust and reliability but also reduces costs and streamlines processes, enabling smoother and more secure digital trade.

In these sub-areas, (1) cross-border e-commerce, (2) e-invoicing, and (3) payments, harmonised digital standards can substantially increase trust for business and consumers alike, fostering a suitable environment where all parties have the certainty and confidence to engage in digital trade.

3.2.2.1 Cross-border E-commerce

1. Why are standards important for this sub-area (e.g., Need, benefit to the digital trade, benefit to the region, etc.)

International standards play a crucial role in facilitating the implementation of trade by ensuring consistency, reliability, and interoperability across cross-border e-commerce. These standards establish common protocols and frameworks that enable seamless interaction between businesses and consumers.

2. Key international standards of interest to ASEAN

The United Nations Commission on International Trade Law (UNCITRAL) **Model Law on Electronic Commerce (MLEC)** was established in 1996 to facilitate international trade by recognising and accommodating the use of electronic communications in commercial transactions. Its primary aim is to offer national legislatures a blueprint for modernising and harmonising their laws on aspects of legal treatment for electronic records and signatures, thus promoting the validity and legal effect of electronic formats over traditional paper-based methods.[126] Due to the long runway for adoption, most countries have adopted the standards, but comprehensive implementation may still be in progress.

The **Model Law on Electronic Transferable Records (MLETR)** was developed by UNCITRAL in 2017 to provide legal grounds for the use of electronic transferable records both domestically and

[124] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement: Final Report
[125] ADB (2023) Unlocking ASEAN’s Digital Economy Entails Embracing Trustworthy and Inclusive Payments Systems, https://seads.adb.org/solutions/unlocking-aseans-digital-economy-entails-embracing-trustworthy-and-inclusive-payments
[126] UNICTRAL (n.d.) UNCITRAL Model Law on Electronic Commerce (1996) with additional article 5 bis as adopted in 1998, https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_commerce

across borders. Legal recognition extends most electronic records the equivalent recognition to transferable documents or instruments in paper form, such as bills of lading, promissory notes, and checks.[127] This recognition is crucial for enabling the digitalisation of trade documentation, which can significantly streamline trade processes. MLETR is designed to be technology-neutral, which means it does not prescribe specific technologies or processes. This flexibility allows different countries and businesses to implement the model law in a way that aligns with their technological capabilities and legal systems. Comprehensive adoption of MLETR facilitates the transition from paper-based to electronic documentation, which can lead to significant cost savings. The costs associated with printing, storing, and physically transporting paper documents are substantially reduced, and the speed of transactions can increase, benefiting all parties involved in trade.

3. Current status of standards adoption in ASEAN

The majority of AMS, where eight out of ten have integrated the UNCITRAL Model Law on Electronic Commerce into their national legal frameworks, following recommendations and assessments conducted by UNCITRAL. Indonesia and Myanmar stand out as exceptions in this regard.

In Indonesia, the legal framework governing electronic transactions is outlined in *Law Number 11 of 2008*, commonly referred to as the Electronic Information and Transactions Law. This law establishes the legal basis for electronic signatures, electronic records, and other aspects of digital commerce.[128] Similarly, Myanmar has enacted its own set of regulations through the *Electronic Transactions Law*, which has seen updates in 2004, 2014, and most recently in 2021. This law also recognises the validity of electronic records and signatures, facilitating electronic commerce.[129] While both Indonesia's and Myanmar's laws affirm the legality of electronic transactions, there may be discrepancies that need to be aligned to facilitate harmonisation across ASEAN.

On the other hand, due to the recency of the standard, adoption of UNCITRAL MLETR is limited, with only Singapore having adopted the convention. Interest in MLETR adoption is high globally, including notable action from G7 economies to develop supporting whitepaper, explore applicability, and undertake feasibility assessment, but Singapore is uniquely ahead in its adoption.[130] Despite this, MLETR is poised to be a critical standard moving forward, as highlighted in the Study on the ASEAN DEFA.[131] It will likely be a provision of interest in future FTA negotiations over the longer term, similar to the incorporation of UN Model Law on ECommerce in the Regional Comprehensive Economic Partnership (RCEP).

4. Linkages to other sub-area(s) / Any other considerations

This sub-area falls under the purview of the ASEAN Coordinating Committee on Electronic Commerce (ACCEC). Developments in this sub-area should also consider enhancing coordination with developments in the other sub-areas including Payments and Cybersecurity.

Over the medium and long term, the UNCITRAL MLETR will also serve as a foundational element for the adoption of blockchain and distributed ledger technology (DLT) into the framework of digital trade and supply chain processes as it compasses specifications on privacy, electronic signatures, and verifiability.[132]

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[127] UNICTRAL (2017) UNCITRAL Model Law on Electronic Transferable Records (2017), https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_transferable_records
[128] Data Guidance (2008) Law of the Republic of Indonesia No. 11 of 2008 concerning Electronic Information and Transactions, https://www.dataguidance.com/legal-research/law-republic-indonesia-no-11-2008-concerning
[129] Myanmar Law Library (2021) State Administration Council Law No. 07/2021 - Law amending the Electronic Transaction Law, https://myanmar-law-library.org/law-library/laws-and-regulations/laws/myanmar-laws-1988-until-now/state-administration-council-2021/myanmar-laws-2021/state-administration-council-law-no-07-2021-law-amending-the-electronic.html
[130] Trade Finance Global (2023) Status update: MLETR adoption in the G7 and emerging markets, https://www.tradefinanceglobal.com/posts/status-update-mletr-adoption-in-the-g7-and-emerging-markets/
[131] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[132] UN/CEFACT (2023) White Paper, Transfer of Model Law on Electronic Transferable Records, https://unece.org/sites/default/files/2023-09/WhitePaper_Transfer-MLETR.pdf

3.2.2.2 E-Invoicing

1. Why are standards important for this sub-area (e.g., Need, benefit to the digital trade, benefit to the region, etc.)

The adoption of internationally recognised e-invoicing standards plays a pivotal role in shaping the landscape of e-invoicing within the ASEAN region. These standards play a crucial role in articulating common requirements, specifications, guidelines, or characteristics in e-invoicing systems. By aligning and harmonising diverse technical requirements, these standards facilitate interoperability among different e-invoicing systems, thereby promoting cross-border trade.

Furthermore, adherence to e-invoicing standards fosters trust by ensuring compliance with safety and reliability specifications. This trust is paramount for businesses and stakeholders, bolstering confidence in e-invoicing systems.

2. Key international standards of interest to ASEAN

A prominent e-invoicing standard is the **Pan-European Public Procurement On-Line (PEPPOL)** standard, which was initiated and funded by the European Commission and the PEPPOL consortium members. Launched in 2008, it sets the specifications that standardise infrastructural elements and technical specifications for businesses to exchange procurement documents—including e-invoices—with governments across Europe.[133] This common standard allows users to choose their preferred accounting platforms, while being able to exchange invoices with their suppliers who may not be using the same platform. Documents are exchanged through Access Points, which serve as gateways into the PEPPOL network. Access Points take up the responsibility of mapping invoices of various formats into the standard format and sending them to the receiving Access Points through the PEPPOL network.

In addition to PEPPOL, the **United Nations Centre for Trade Facilitation and Electronic Business' (UN/CEFACT) e-invoicing standards** also stand out, including the **Cross-Industry Invoice (CII) and e-Business Standard**. These standards are aligned with the global cross-industry supply chain reference data model. The UN/CEFACT CII, in particular, can be used in any sector, for any commodity, and was chosen in 2016 as one of two obligatory standards within the EU for public procurement.[134]

3. Current status of standards adoption in ASEAN

With regards to UN/CEFACT e-invoicing standards Thailand has adopted the e-Business Standard.[135]

With regards to the PEPPOL standard, so far, Malaysia and Singapore are the only countries that have adopted this,[136] though others, such as Vietnam, may soon follow.[137] While other AMS have not adopted the PEPPOL standard for their e-invoicing systems, Thailand and the Philippines have modelled their e-invoice systems after the Republic of Korea (ROK)'s e-invoice model based on Real Time Invoice Reporting (RTIR).

The RITR requires Value-Added Tax (VAT) registrants to report e-invoices to the government in near real-time, mainly through an official government portal, third-party provider service, or self-built

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[133] IMDA (n.d.) PEPPOL, https://www.imda.gov.sg/-/media/imda/files/industry-development/infrastructure/technology/peppol-factsheet--website-final.pdf
[134] UNECE (2018), Executive Guide, eInvoicing, https://unece.org/fileadmin/DAM/cefact/GuidanceMaterials/ExecutiveGuides/eInvoicing-ExecGuide_Eng.pdf
[135] Based on insights from the bilateral consultation "Adoption and Implementation of Digital Trade Standards in ASEAN" on 28 August 2024, which featured six experts from the UK Mission to ASEAN.
[136] PEPPOL (2020), Singapore—Country profile, https://peppol.eu/what-is-peppol/peppol-country-profiles/singapore-country-profile; MDEC (2024) National E-invoicing Initiative, https://mdec.my/national-einvoicing
[137] The Global Treasurer (2019) The PEPPOL Network: On the highway to Asian and Trans-Tasman markets, www.theglobaltreasurer.com/2019/12/13/the-peppol-network-on-the-highway-to-asian-and-trans-tasman-markets

e-invoice issuance system.[138] While there are no regulations or standards on invoice exchange under this model, each government can outline its own set of standardised technical specifications and infrastructural elements for taxpayers to submit and exchange invoice documents with the government.[139]

Despite the increased adoption of e-invoicing in the region, several challenges remain in the way of expanding the scope of e-invoicing in a seamless, harmonised manner. The digital trade landscape is largely fragmented in ASEAN, involving a wide range of stakeholders that each have their own organisational priorities and operational constraints. Domestically, companies, officials, and policymakers must coordinate phasing out requirements for paper documentation within and across sectors. Across borders, AMS are faced with the difficulty of coordinating legal and regulatory environments, messaging standards/formats, security measures, transmission mechanisms, and storage requirements. There are also variations in how AMS enforce and promote universally accessible systems and processes, and the extent to which these are informed by a disability-inclusive approach. These complexities underscore the need for concerted efforts to overcome barriers and foster a more cohesive and inclusive e-invoicing ecosystem across ASEAN.

4. Linkages to other sub-area(s) / Any other considerations

N/A

3.2.2.3 Payments

1. Importance of standards in this sub-area

Payment standards are instrumental in facilitating cross-border digital transactions within ASEAN. These standards provide a common framework and set of protocols for conducting cross-border payments, ensuring interoperability and compatibility among various financial institutions and payment systems across the region. By adopting internationally recognised payment standards, AMS can enhance the reliability, security, and speed of financial transactions, thereby promoting greater trust and confidence in the regional financial ecosystem. Moreover, adherence to international payment standards helps to reduce transaction costs, minimise errors, and mitigate risks associated with cross-border payments, thus fostering a conducive environment for trade and investment within ASEAN. Furthermore, alignment with global payment standards enables AMS to better integrate into the broader international financial system, facilitating smoother cross-border trade and enhancing the region's competitiveness on the global stage. Adherence to international payment standards in ASEAN also enables the region to stay at the forefront of innovation, particularly with emerging payment technologies like real-time payments. Overall, payment standards play a significant role in supporting economic growth, promoting financial inclusion, and advancing financing integration across ASEAN.

As businesses increasingly rely on digital platforms for transactions, payment standards play a vital role in facilitating efficient cross-border payments in ASEAN. These standards establish a common, interoperable standard for all stages in the payments value chain.[140] By streamlining payment processes and enabling swift and secure transactions across borders, these standards empower businesses, particularly MSMEs, to access global markets.

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[138] SNI Technology (2022) Mandatory e-invoicing in South Korea in 2022, https://snitechnology.net/mandatory-e-invoicing-in-south-korea-in-2022/
[139] Pagero (2022) The rise of e-invoicing CTC models across the world, www.pagero.com/blog/e-invoicing-ctc-models/
[140] The Society for Worldwide Interbank Financial Telecommunication (2024) Why ISO20022?, https://www.swift.com/standards/iso-20022/supercharge-your-payments-business/chapter-2

2. Key international standards of interest to ASEAN

The **ISO 20022 Universal Financial Industry Message Scheme** is a significant international standard for electronic data interchange between financial institutions. This standard promotes interoperability by creating a common language for payments worldwide and provides a unified approach to existing financial standards, such as **ISO 15022 - Scheme for Messages (Data Field Dictionary), Part 1 - Data Field and Message Design Rules and Guidelines and Part 2 - Maintenance of the Data Field Dictionary and Catalogue of Messages**.[141] Additionally, **ISO 8583 Financial-transaction-card-originated messages — Interchange message specifications** specifies the message format that describes credit card and debit card data exchanges between devices and card issuer.[142]

ISO 20022 is notably highlighted in the Study on the ASEAN DEFA, reflecting its importance in the digital trade landscape.[143] Furthermore, the AEC 2025 Blueprint underscores the adoption of ISO 20022 by 2025 as a key objective for regional financial integration and the development of payments and settlement systems across ASEAN markets.

In addition, the **Global Legal Entity Identifier (LEI)** is another international standard that is pertinent to facilitating cross-border payments. The LEI, a 20-character alpha-numeric code, is based on the ISO 17442 standard developed by the ISO.[144] The LEI enables precise, instantaneous, and automated identification of any originator or beneficiary legal entity across borders. This foundational requirement enables consumers, businesses, and financial institutions to ensure that funds are transferred across international borders to the correct entity.[145] The LEI thus facilitates faster, more cost-effective, transparent, and inclusive cross-border payment transactions.[146]

The Financial Stability Board (FSB) has endorsed LEI as a means to advance the goals of its G20-endorsed Roadmap for Enhancing Cross-Border Payments.[147] As part of this initiative, and in collaboration with other industry standard-setting bodies, the FSB is currently working to promote standardised use in ISO 20022 payments messaging to mitigate constraints in cross-border payments, and realise the potential benefits of the LEI in strengthening data standardisation, supporting straight-through-processing (STP), customer due diligence (CDD) processes and sanction screening.

Finally, as a payment standard, a consortium of major credit card companies has developed specifications for card-based payment systems. It has been designed to be universally compatible with various payment systems worldwide, ensuring secure transaction processing. **The EMVCo standard** has been made the basis of the implementation of the QR system in Indonesia (QRIS).[148] In addition, EMV Chip is a standard for including digital data in every transactions. **The EMV Contact and Contactless Chip Standards**, on the other hand, makes chip transactions secure and reduce the risk of counterfeit fraud.[149]

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[141] The Society for Worldwide Interbank Financial Telecommunication (2017) Achieving Financial Integration in the ASEAN Region, https://www.eu-asean.eu/wp-content/uploads/2022/02/63371b_c07c932e824d43c5b4589754ffd80a89.pdf
[142] ISO (2023) ISO 8583:2023 Financial-transaction-card-originated messages — Interchange message specification, https://www.iso.org/obp/ui/en/#iso:std:iso:8583:ed-3:v1:en
[143] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[144] GLEIF (2024) Introducing the LEI, https://www.gleif.org/en/about-lei/introducing-the-legal-entity-identifier-lei
[145] GLEIF (2024) Cross-border payments, https://www.gleif.org/en/lei-solutions/featuring-the-lei/cross-border-payments
[146] Note: While many financial institutions already use the IBAN (International Bank Account Number) and BIC (Bank Identifier Code) systems to identify bank accounts and financial institutions for cross-border transactions, these identifiers focus primarily on account-level information. The LEI provides a complementary layer of transparency by identifying the legal entities behind the transactions, rather than just the accounts or institutions involved. This additional clarity is essential for reducing risk, improving compliance with anti-money laundering (AML) and counter-terrorism financing (CTF) regulations, and fostering trust within the international payments ecosystem. Source: SWIFT (n.d.) IBAN, https://www.swift.com/standards/data-standards/iban-international-bank-account-number
[147] GLEIF (2024) Cross-border payments, https://www.gleif.org/en/lei-solutions/featuring-the-lei/cross-border-payments
[148] USAID (2021) ASEAN Digital Integration Index: Measuring Digital Integration to Inform Economic Policies, https://asean.org/wp-content/uploads/2021/09/ADII-Report-2021.pdf
[149] EMVCo (n.d.) EMV specifications & Associated Bulletins, https://www.emvco.com/specifications/?tax%5Bspecifications_categories%5D%5B32%5D%5B%5D=477

Other than standards created by EMVCo, the PCI Security Standards Council (PCI SSC) is another global forum which develop standards for global payment account data security.[150] Two standards of relevance are the **PCI-3 Domain Server Core(3DS)**, a technical standard that enable consumer authentication when making card-not-present online transactions,[151] and **PCI Data Security Standard (PSI DSS)** which provides a baseline of technical and operational requirements designed to protect cardholders and payment account data.[152]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

In recent years, AMS have made significant strides in transforming their payment systems and adapting them to ISO20022. Currently, nine AMS Retail Payment Systems (RPS) follow ISO20022, while further progress needs to be made on Large Value Payment Systems (LVPS) to achieve full adoption (please refer to Table 6 below). Achieving widespread adoption across LVPS will foster interoperability among systems within ASEAN.

Table 6. Adoption of ISO 20022 across ASEAN

<table>
<tr><th>ASEAN
Member State</th><th>Retail Payment
Systems (RPS)</th><th>Large Value Payment
Systems (LVPS)</th></tr>
<tr><td>Brunei Darussalam</td><td rowspan="3">Adopted</td><td rowspan="2">Adopted</td></tr>
<tr><td>Cambodia</td></tr>
<tr><td>Indonesia</td><td>Not yet adopted</td></tr>
<tr><td>Lao PDR</td><td>Not yet adopted</td><td rowspan="2">Adopted</td></tr>
<tr><td>Malaysia</td><td rowspan="6">Adopted</td></tr>
<tr><td>Myanmar</td><td>Adopted(TBC)</td></tr>
<tr><td>Philippines</td><td rowspan="3">Adopted</td></tr>
<tr><td>Singapore</td></tr>
<tr><td>Thailand</td></tr>
<tr><td>Vietnam</td><td>Not yet adopted (TBC)</td></tr>
</table>

Source: ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA) and feedback from the Regional Consultation Forum on 29 August 2024.

The adoption of LEIs across AMS varies significantly across AMS, as illustrated in Table 7 below. While countries such as Singapore, Malaysia, Thailand, and Indonesia have demonstrated considerable progress in implementing LEIs, other countries such as Brunei Darussalam, Lao PDR, and Myanmar are still in the nascent stages of adoption.

[150] PCI (2024) About Us, https://www.pcisecuritystandards.org/about_us/
[151] PCI (2024) PCI 3DS Core, https://www.pcisecuritystandards.org/standards/pci-3ds-core/
[152] PCI (2024) PCI Data Security Standard (PCI DSS), https://www.pcisecuritystandards.org/standards/pci-dss/

Table 7. Adoption of LEI across ASEAN

ASEAN Member State	Active LEI count in March 2024
Brunei Darussalam	37
Cambodia	29
Indonesia	1,194
Lao PDR	14
Malaysia	1,744
Myanmar	6
Philippines	598
Singapore	10,369
Thailand	1,726
Vietnam	285

Source: LEI (2024) LEI Statistics, https://www.gleif.org/en/lei-data/global-lei-index/lei-statistics

Note: As there is limited information on the level of LEI adoption in ASEAN, we have provided the active LEI count in each AMS to provide a general snapshot of the current state of LEI adoption across the region.

The adoption of LEIs across ASEAN remains uneven primarily due to disparities in regulatory frameworks, infrastructure preparedness, and varying levels of market participant awareness. Countries like Brunei Darussalam, Cambodia, Lao PDR, and Myanmar encounter barriers in adopting LEI, including the fees for switching, adoption, and renewals, challenges in adapting legacy technological systems to encompass the LEI, as well as a perceived lack of benefits of adopting the LEI.[153]

The QR Code has enjoyed widespread adoption in the ASEAN and is increasingly becoming a component to deepen financial integration in the region. Across individual AMS, governments, through their respective central banks, have been adopting a national QR code standard which is based on the EMVCo standards of interoperability. Meanwhile, compliance with the ISO/IEC 18004 standard varies, with only a few AMS mandating its adoption as a government-recognised standard. The current status of the adoption of QR code standards across ASEAN is outlined in Table 8 below.

[153] FSB (2022) Options to Improve Adoption of The LEI, in Particular for Use in Cross-border Payments, https://www.fsb.org/wp-content/uploads/P070722.pdf

Table 8. Adoption of QR Code standards across ASEAN

ASEAN Member State	ISO /IEC 18004	EMVCo
Brunei Darussalam	No information	Ongoing initiatives
Cambodia	No information	Adopted (KHQR)
Indonesia	Country-level standard	Adopted with adjustment (QRIS)
Lao PDR	No information	Adopted (Lao QR)
Malaysia	No information	Adopted (DuitNow QR)
Myanmar	No information	To be adopted (MMQR)
Philippines	Country-level standard	Adopted (QRPh)
Singapore	Country-level standard	Adopted (SGQR)
Thailand	Country-level standard	Adopted (PromptPay)
Vietnam	Country-level standard	Adopted (VietQR)

Source: Access Partnership analysis from publicly available sources[154] and feedback from the Regional Consultation Forum on 29 August 2024

Regional cross-border payment linkages between AMS have been actively established to allow residents to pay for goods and services in local currencies using a QR Code.[155] Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Thailand, Singapore, and Vietnam have already established these linkages through the Regional Payment Connectivity Initiative (RPC), with other AMS expected to establish respective linkages soon.[156]

Nonetheless, the main challenge foreseen in the adoption of QR codes is ensuring strong safety and security to mitigate risks such as fraud, while also educating the public on its availability and proper use. Ensuring robust security protocols is essential, as tampered QR codes could lead to unauthorised transactions or redirect users to malicious websites, posing significant risks of security breaches and fraud. Additionally, educating the public on how to use this new service safely and effectively is crucial for its successful adoption. Clear guidance on using the service safely and effectively will not only prevent misuse but also build user confidence, which is vital for the widespread adoption of digital payments.

4. Linkages to other sub-area(s) / Any other considerations

The expansion of cross-border e-commerce drives demand for efficient payment solutions, accelerating the adoption of QR codes and other cross-border payment technologies across ASEAN. These dynamic underscores the crucial role of cross-border payments in facilitating economic connectivity within the region.

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[154] See BCG (2023) Interoperable QR Code Payment System in ASEAN: What It Means for the World, https://web-assets.bcg.com/9c/ac/72af6ed244c39123f679ffc899ee/bcg-asean-interoperable-qr-code-payment-ecosystem-in-asean.pdf; Monetary Authority of Singapore (2023) MAS to Launch SGQR+ Proof of Concept to Enhance Interoperability for QR Payments, https://www.mas.gov.sg/news/media-releases/2023/mas-to-launch-sgqrplus-proof-of-concept-to-enhance-interoperability-for-qr-payments; Singapore Standards (2015) ISO/IEC 18004:2015, https://www.singaporestandardseshop.sg/Product/SSPdtDetail/d7aeb163-96d6-1c70-e302-39fc432119e0; National Bank of Cambodia (2020); Bakong as a payment switch (2020), https://bakong.nbc.gov.kh/en/download/KHQR/integration/KHQR%20Content%20Guideline%20v.1.3.pdf; The Jakarta Post (2019) Bank Indonesia launches national QR code, https://www.thejakartapost.com/news/2019/05/27/bank-indonesia-launches-national-standard-qr-code.html; Favian (2024) Tap into the Future: Exploring Apple Pay and Google Play in Indonesia's Payment Landscape, https://www.linkedin.com/pulse/tap-future-exploring-apple-pay-google-indonesias-favian-d-a--wdolc; Makhapun et al. (2011) The embedding of Thai in QR code; https://ieeexplore.ieee.org/document/5947888; LuatVietnam (2023) Application of QR codes in receiving and handling administrative procedures, https://english.luatvietnam.vn/legal-updates/application-of-qr-codes-in-receiving-and-handling-administrative-procedures-892-93763-article.html; Bangko Sentral ng Pilipinas (2020) QR Ph FAQs (for Person to Person), https://www.bsp.gov.ph/Media_and_Research/Primers%20Faqs/QR_Ph_P2P_FAQs.pdf; PayNet (2024) DuitNow QR, https://docs.developer.paynet.my/docs/duitnowqr/testdata/domesticissuer; Myanmar National Portal (2023) CBM to launch Digital Payment Switch, https://myanmar.gov.mm/news-media/news/latest-news/-/asset_publisher/idasset354/content/cbm-to-launch-digital-payment-switch; Digital VN (2023) VietQR launched to promote digital transformation in banking sector, https://digitalvn.vn/vietqr-launched-to-promote-digital-transformation-in-banking-sector/

[155] BSP (2024) Brunei Darussalam Central Bank (BDCB) and Bank of the Lao PDR (BOL) Formally Join the Regional Payment Connectivity Initiative (RPC), https://www.bsp.gov.ph/SitePages/MediaAndResearch/MediaDisp.aspx?ItemId=7051

[156] BSP (2024) Brunei Darussalam Central Bank (BDCB) and Bank of the Lao PDR (BOL) Formally Join the Regional Payment Connectivity Initiative (RPC), https://www.bsp.gov.ph/SitePages/MediaAndResearch/MediaDisp.aspx?ItemId=7051

3.2.3 Digital Trust

1. Importance of identified area to ASEAN's digital trade

The expansion of ASEAN's digital economy is driving an increase in digital trade, underpinned by a significant volume of cross-border data movements, constituting personal, social, and business data. As cross-border data flows within the region intensify, there is an urgent need to strengthen the framework for data privacy and protection. Establishing a robust data protection and privacy regime, as well as a secure digital environment, is essential to foster trust between businesses and consumers, as well as among trading partners and stakeholders. This would be crucial for the continued development of digital trade.

Amidst the rapid expansion of ASEAN's digital trade ecosystem, the region also faces a growing number of cyber threats. The 2021 Interpol ASEAN Cyberthreat Assessment highlighted a diverse array of cyber threats targeting the region, including phishing, ransomware, e-commerce data interception, and cyber scams.[157] The situation seems to have worsened considerably, with cybercrime in Southeast Asia surging by a staggering 82% between 2021 and 2022.[158] Notably, Southeast Asia bore a significant share of global Advanced Persistent Threat (APT) campaigns, with 68 out of 86 attacks targeting countries such as Singapore, Thailand, Vietnam, and Indonesia.[159]

Lastly, as individuals, businesses, and governments increasingly rely on digital transactions and online activities in their daily lives, the demand for secure, trusted, and instantly verifiable identities is rapidly increasing. Digital identity (ID) is a cornerstone of building a robust digital economy, eliminating the need for in-person authentication of individuals and documents by providing digital access to various online services. Moreover, digital ID serves as a crucial tool for expanding financial inclusion, which is particularly pertinent in ASEAN, where an estimated 65 million people lack a legally recognised form of identity.[160] Notably, the widespread adoption of digital ID is anticipated to bring an additional US 200-400 million in economic value to ASEAN in 2030,[161] or an average benefit of 6% of national GDP per AMS.[162] Within the domain of digital trust, four key sub-areas have been identified where standards play a critical role.

2. Relevance of sub-areas to ASEAN: (DTSCWG priority, DEFA priority, ASEAN agenda/agreement)

The importance of digital ID is iterated as a priority for ASEAN on various fronts. Digital ID is recognised as a priority area under the DTSCWG's *Digital Trust pillar*.[163] In addition, the Study on the ASEAN DEFA recommends the adoption of a legal framework to digital identity and authentication, for both corporate and individual use.[164] Specifically, e-signatures are highlighted under both the DTSCWG's *Digital Trust pillar*[165] and the Study on the ASEAN DEFA which recommends the adoption of e-signatures.[166] This builds upon the **UNCITRAL Model Law on Electronic Commerce (MLEC)**[167] and the first e-ASEAN Reference Framework for Electronic Commerce Legal Infrastructure signed in 2001,[168] which highlights digital signatures as a key e-commerce area.

[157] Interpol (2021) Interpol report charts top cyberthreats in Southeast Asia, https://www.interpol.int/en/News-and-Events/News/2021/INTERPOL-report-charts-top-cyberthreats-in-Southeast-Asia
[158] Fulcrum (2023) Strengthening Cyber Resilience in Southeast Asia, https://fulcrum.sg/strengthening-cyber-resilience-in-southeast-asia/
[159] Cyfirma (2023) Singapore and Southeast Asia Threat Landscape, https://www.cyfirma.com/research/singapore-and-southeast-asia-threat-landscape/
[160] US-ASEAN Business Council (n.d.) Digital Identity in ASEAN, https://www.usasean.org/article/digital-identity-asean
[161] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[162] McKinsey Global Institute (2019) Digital identification: A key to inclusive growth, https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20identification%20A%20key%20to%20inclusive%20growth/MGI-Digital-identification-Report.ashx
[163] ASEAN (2021) DTSCWG, https://asean.org/wp-content/uploads/2021/12/DTSCWG-Infographic-final.pdf
[164] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[165] ASEAN (2021) DTSCWG, https://asean.org/wp-content/uploads/2021/12/DTSCWG-Infographic-final.pdf
[166] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[167] UNICTRAL (1996) UNCITRAL Model Law on Electronic Commerce (MLEC), https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_commerce
[168] ASEAN (2012) E-ASEAN Reference Framework for Electronic Commerce Legal Infrastructure, https://asean.org/wp-content/uploads/images/2012/Economic/TELMIN/e-Asean%20Reference%20Framework.pdf

The importance of cybersecurity to ASEAN is underscored across various fronts. Within DTSCWG, cybersecurity is a key priority area within *Facilitating digital trust*, one of the three core pillars under the 2021-2025 work programme.[169] The Study on the ASEAN DEFA has also highlighted the need to advance the progress of cybersecurity preparedness and readiness within ASEAN and recommends the establishment of standardised regulations and procedures in accordance with international standards to enhance security and facilitate operating compliance.[170] Furthermore, ASEAN, as a regional platform has also developed the ASEAN Cybersecurity Cooperation Strategy 2018-2020 and 2021-2025, which focuses on promoting regional initiatives aimed at advancing cyber readiness cooperation, strengthening regional cyber policy coordination, and enhancing trust in cyberspace.[171]

Alongside cybersecurity, online safety is another key priority for the ASEAN region. The ASEAN Digital Masterplan 2025 emphasises the importance of delivering trusted digital services and preventing harm to consumers as one of its key outcomes.[172] Additionally, the Study on the ASEAN DEFA recommends the adoption and promotion of ASEAN Online Dispute Resolution (ODR) under its sub-provision, which outlines the options and guidelines for the design of national ODR systems for consumer protection. Furthermore, the Study advocates for enhancing the legal framework for online consumer protection to meet international standards.[173]

Lastly, cross-border data protection and privacy has also been highlighted on several fronts within the ASEAN context. The Study on the ASEAN DEFA recommends the free flow of information, and the enhancement of personal data protection with reference to common international standards.[174] In addition, the ASEAN Framework on Digital Data Government highlighted the need for ASEAN to establish enabling frameworks and policies on data governance, and to coordinate the development and harmonisation of personal data protection regulations.[175] These priorities demonstrate ASEAN's commitment to fostering a secure and trustworthy digital environment for cross-border data protection and privacy.

3. Importance and role of standards within the identified digital trade area

As digital interactions increase in scale, frequency, and complexity across ASEAN, there is a growing imperative to enhance digital trust through the harmonisation of standards. These standards are essential for ensuring data protection, privacy, and cybersecurity, which are fundamental to fostering trust among businesses and consumers. Harmonised standards can improve threat management, mitigate financial losses from cyber incidents, and ensure business continuity. Additionally, they ensure compliance with regulatory requirements across different industries, particularly those designated as nationally critical sectors or Critical Information Infrastructure (CII).

3.2.3.1 Digital ID and Authentication

1. Importance of standards in this sub-area

Digital ID standards are key to unlocking ASEAN's digital trade potential. Digital ID standards foster interoperable digital IDs and empower individuals and businesses to securely participate in online activities. This, in turn, facilitates and boosts intra- and inter-ASEAN trade by enabling secure and trusted cross-border transactions,[176] building user trust in digital identities across various use

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[169] ASEAN (2021) DTSCWG, https://asean.org/wp-content/uploads/2021/12/DTSCWG-Infographic-final.pdf
[170] Boston Consulting Group (2023), Final Report: Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[171] ASEAN (2022) ASEAN Cybersecurity Cooperation Strategy (2021-2025), https://asean.org/wp-content/uploads/2022/02/01-ASEAN-Cybersecurity-Cooperation-Paper-2021-2025_final-23-0122.pdf
[172] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/
[173] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[174] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[175] ASEAN Telecommunications and Information Technology Ministers Meeting (2012) Framework on Digital Data Governance, https://asean.org/wp-content/uploads/2012/05/6B-ASEAN-Framework-on-Digital-Data-Governance_Endorsedv1.pdf
[176] US-ASEAN Business Council (2023) Digital Identity in ASEAN, https://www.usasean.org/article/digital-identity-asean

cases,[177] and lowering transaction costs for businesses operating regionally.[178]

Standardised entity ID systems are crucial for unlocking the full potential of MSMEs in ASEAN's booming digital trade landscape. By breaking down digital identity silos, these standards can streamline verification processes, enabling access to government services and finance, and significantly reduce the cost of doing business across borders.[179] In particular, for MSMEs, standardised entity IDs remove burdensome verification and administrative hurdles, as well as complex systems and compliance procedures. With MSMEs accounting for over 95% of total businesses in ASEAN, but only 18% of total exports on average,[180] removing such barriers is key to enabling these businesses to thrive, empowering them to access global markets and further driving innovation and job creation.

ASEAN has also been actively advancing initiatives such as the development of the region-wide Unique Business Identification Number (UBIN) system and the ASEAN UBIN implementation roadmap.[181] These efforts are pivotal in enhancing the capacity of businesses, including MSMEs, to engage in digital transactions, access digital services, and establish digital ownership.

2. Key international standards of interest to ASEAN

The **Global Legal Entity Identifier (LEI)** is amongst the primary standards for corporate digital identity. Created in the aftermath of the 2008 financial crisis, the LEI, a 20-character alpha-numeric code, is based on the ISO 17442 standard developed by the ISO.[182] The LEI enables precise, instantaneous, and automated identification of any originator or beneficiary legal entity across borders. This foundational requirement enables consumers, businesses, and financial institutions to ensure that funds are transferred across international borders to the correct entity.[183] Adoption of the LEI system would increase transparency across the ASEAN economy, help banks conduct due diligence processes, and increase access to finance for MSMEs, among other benefits.[184] The Financial Stability Board (FSB) has endorsed LEI as a means to advance the goals of its G20-endorsed Roadmap for Enhancing Cross-Border Payments.[185]

There is a wide range of standards available for biometrics, including competing standards for capturing face and fingerprint images, as well as varying ISO/IEC standards for fingerprint, iris, and face biometrics.[186]

Among these, a notable international standard is the **ISO/IEC 24745:2022 Information security, cybersecurity and privacy protection – Biometric information protection**.[187] Its predecessor, ISO/IEC 24745:2011 Information Technology - Security Techniques - Biometric Information Protection, was recommended in the research report on “Australia-Singapore Digital Economy Cooperation on Standards”.[188] This standard offers guidance around safeguarding biometric information according to diverse requirements for confidentiality, integrity, and the ability to renew or

[180] GSMA (2018) Digital identities: Advancing digital societies in Asia Pacific, https://data.gsmaintelligence.com/api-web/v2/research-file download?id=30933435&file=Digital%20identities%20advancing%20digital%20societies%20in%20Asia%20Pacific.pdf
[181] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[182] World Trade Organisation and World Economic Forum (2022) The Promise of TradeTech: Policy approaches to harness trade digitalization, https://www.wto.org/english/res_e/publications_e/tradtechpolicyharddigit0422_e.htm
[183] The International Chamber of Commerce & Google (2022), MSME Digital Exports in Southeast Asia – A study of MSME digital exports in 10 ASEAN markets https://iccwbo.org/news-publications/policies-reports/msme-digital-exports-in-southeast-asia-a-study-of-msme-digital-exports-in-10-asean-markets/
[184] ASEAN (2023) AEM JMS, https://asean.org/wp-content/uploads/2023/08/AEM-55-JMS_19-Aug.pdf
[185] LEI (2024) Introducing the LEI, https://www.gleif.org/en/about-lei/introducing-the-legal-entity-identifier-lei
[186] LEI (2024) Cross-border payments, https://www.gleif.org/en/lei-solutions/featuring-the-lei/cross-border-payments
[187] Asian Development Bank (2019), Legal Entity Identifier Accessibility: A Survey by the Trade Finance Program https://www.adb.org/sites/default/files/publication/505076/adb-brief-109-legal-entity-identifier-tfp-survey.pdf
[188] GLEIF (2024) Cross-border payments, https://www.gleif.org/en/lei-solutions/featuring-the-lei/cross-border-payments
[189] International Bank for Reconstruction and Development and The World Bank (2017) Technical Standards for Digital Identity Systems for Digital Identity, Draft for Discussion, https://thedocs.worldbank.org/en/doc/579151515518705630-0190022018/original/ID4DTechnicalStandardsforDigitalIdentity.pdf

revoke during both storage and transfer. It outlines the criteria for securely and privacy-compliantly managing and processing biometric data.[189]

Additionally, the **FIDO Universal Authentication Framework** is a significant standard developed by the FIDO Alliance, an open industry association focusing on authentication and device attestation. This framework delineates protocols designed to support various authentication methods, including biometrics.[190]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

The adoption of LEIs across AMS varies significantly across AMS, as illustrated in Table 9 below. While countries such as Singapore, Malaysia, Thailand, and Indonesia have demonstrated considerable progress in implementing LEIs, other countries such as Brunei Darussalam, Lao PDR, and Myanmar are still in the nascent stages of adoption. Although the digital identity adoption rate across ASEAN stands at 30%.[191]

Table 9. Adoption of LEI across ASEAN

ASEAN Member State	Active LEI count in March 2024
Brunei Darussalam	37
Cambodia	29
Indonesia	1,194
Lao PDR	14
Malaysia	1,744
Myanmar	6
Philippines	598
Singapore	10,369
Thailand	1,726
Vietnam	285

Note: As there is limited information on the level of LEI adoption in ASEAN, we have provided the active LEI count in each AMS to provide a general snapshot of the current state of LEI adoption across the region.

Source: LEI (2024) LEI Statistics, https://www.gleif.org/en/lei-data/global-lei-index/lei-statistics

That being said, research has shown that a great number of MSMEs within the region already utilise corporate digital identity for a number of purposes, including accessing health and government services.[192] Amongst AMS, Singapore's corporate digital identity system is the most advanced, facilitating G2B, B2B, and B2C transactions. The country's Corppass enables domestic and foreign legal entities to access government digital services,[193] while the Myinfo business service enables entities to consent to the sharing of their corporate and applicants' personal data securely with other businesses.

[189] ISO (n.d.) ISO/IEC 24745:2022 Information security, cybersecurity and privacy protection – Biometric information protection, https://www.iso.org/standard/75302.html
[190] TRPC (2020) Australia-Singapore Digital Trade Standards, https://www.dfat.gov.au/sites/default/files/australia-singapore-digital-trade-standards-research-report.pdf; Honey Consulting (2022) Digital Identity in APEC: Deepening Trust, Inclusion and Interoperability in the Digital Economy, https://km.fti.or.th/wp-content/uploads/2023/06/ABAC-Digital-Identity-Report.pdf
[191] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement: Final Report
[192] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[193] World Bank (2022) National Digital Identity and Government Data Sharing in Singapore: A Case Study of Singpass and APEX,https://documents1.worldbank.org/curated/en/099300010212228518/pdf/P171592079b3e50d70a1630d5663205bf94.pdf

Building on existing efforts in the region, ASEAN is currently working on improving businesses' access to financing across AMS by way of the UBIN. The aim of the UBIN is to develop an interoperable digital infrastructure to promote interoperability of business registers among AMS.[194] In addition, the work being done to launch the ASEAN Digital Credentials Platform (AKREDI) this year will seek to support entities by creating a digital trust platform for professional and business identities, attributes and assets, which will redefine accreditation, authentication, and KYC processes in ASEAN, especially for the purposes of cross-border mobility of talents, businesses and investments.[195] The AKREDI will work by way of a mobile app containing a digital wallet.

There is limited information available about the adoption level of ISO/IEC 24745:2022 across AMS. With respect to the FIDO Universal Authentication Framework, two AMS, Thailand's Electronic Transactions Development Agency and Vietnam's Ministry of Information and Communication, are among the few government-level members of the FIDO Alliance[196], which oversees the FIDO Universal Authentication Framework.

Currently, nine out of ten AMS have implemented foundational ID systems, while the Philippines is in the process of implementation.[197] Despite this progress, several challenges remain. One significant challenge is ensuring interoperability between these domestic digital identity schemes across ASEAN.[198] Divergent regulatory frameworks governing digital identity prevent AMS schemes from being used across borders. These differences restrict the legal recognition of an individual's digital identity in different countries and discourage individuals from embracing digital identity solutions.

Notably, while the average coverage across AMS for national identity surpasses 90%, the average adoption rate for digital identity is only approximately 30%.[199] Research into consumer behaviour and attitudes across AMS revealed that although there is considerable interest in and awareness of digital identities, their adoption is hindered by several factors. Chief among these are concerns regarding privacy and security. Many individuals perceive existing cybersecurity measures, digital identity infrastructures, and related legislation as inadequate or insufficient to guarantee the protection of personal data and individual rights.[200] Additionally, the adoption of personal digital identity schemes is hampered by a lack of sufficient digital literacy skills and understanding of digital identity, along with limited trust in digital identity solution providers.[201] It is also important to note that Singapore is the only AMS that has enabled digital IDs which allow e-transactions for both public and private sectors.[202]

Beyond ASEAN, the EU has established the EU Digital ID Regulation, which aims to create interoperability among governments, citizens, and industry within a single framework across 27 countries.[203] Its scope extends beyond European borders, with the EU actively pursuing broader international interoperability. For instance, on April 30th, the EU and Japan signed a Memorandum of Cooperation to align their Digital ID systems with the EU's Digital ID wallet and trust services. Similarly, countries that share the EU's values and goals for a secure and trusted digital economy, such as Singapore, are also being engaged.[204]

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[194] ASEAN (2023) AEM JMS, https://asean.org/wp-content/uploads/2023/08/AEM-55-JMS_19-Aug.pdf
[195] TrustGrid (n.d.) The ASEAN Digital Credentials Platform,https://trustgrid.com/the-asean-digital-credentials-platform-akredi/
[196] FIDO Alliance (n.d.) FIDO Members https://fidoalliance.org/members/
[197] ASEAN (2021) ASEAN Digital Masterplan, https://asean.org/wp-content/uploads/2021/09/ASEAN-Digital-Masterplan-EDITED.pdf
[198] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[199] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[200] EngageMedia (2023) State of Digital Identification Systems in South and Southeast Asia, https://engagemedia.org/wp-content/uploads/2023/07/Report-on-the-State-of-Digital-Identification-in-South-and-Southeast-Asia-2023.pdf
[201] VISA (2022) Consumer Payment Attitudes Study: Navigating a New Era in Payments, https://www.visa.co.th/dam/VCOM/regional/ap/documents/visa-cpa-report-smt-2022.pdf
[202] ASEAN (2021) ASEAN Digital Masterplan, https://asean.org/wp-content/uploads/2021/09/ASEAN-Digital-Masterplan-EDITED.pdf; Sawasdee Thailand (2023) Digital ID Framework: Access to online services of the public and private sectors, https://thailand.go.th/issue-focus-detail/001_05_005-2
[203] European Commission (2024) The EU Digital Identity Framework Regulation Enters into Force, https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/The+Digital+Identity+Regulation+Enters+into+Force
[204] European Commission (2024) The EU Digital Identity Framework Regulation Enters into Force, https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/The+Digital+Identity+Regulation+Enters+into+Force

4. Linkages to other sub-area(s) / Any other considerations

Entity identification and authentication, as well as biometrics, play an important role in both cross-border e-commerce and cross-border payments as they facilitate identification and authentication of individuals and businesses.

In 2022, central banks in Indonesia, Malaysia, the Philippines, Singapore, and Thailand agreed to develop an interlinked and interoperable digital payment and identity system to facilitate cheaper, faster, more inclusive, and more transparent cross-border transactions.[205]

Lastly, biometrics are also closely tied with cross-border data privacy and protection frameworks that are necessary to ensure the secure transmission of personal data.[206]

3.2.3.2 Cybersecurity

1. Importance of standards in this sub-area

In today's increasingly hostile digital terrain, robust cybersecurity frameworks and policies have become indispensable for nurturing the growth of digital trade in ASEAN. Robust cybersecurity protections not only inspire trust among consumers and businesses for online transactions but also facilitate the development of resilient trade networks. These measures serve as crucial safeguards against financial losses stemming from supply chain disruptions to software vulnerabilities.[207] Therefore, developing cybersecurity capabilities and standards is paramount to safeguarding the integrity and sustainability of ASEAN's digital trade ecosystem.

2. Key international standards of interest to ASEAN

The *ISO/IEC 27000* series is a family of standards that cover a broad range of best practices for managing information security risks and implementing security controls. Specifically, there are two standards under this series that are most widely adopted by AMS, ISO/IEC 27001 and ISO 27002.[208] **ISO/IEC 27001 Information security, cybersecurity and privacy protection — Information security management systems — Requirements** is a standard which lays out requirements for establishing information security systems and assessing information security risks in organisations.[209] **ISO/IEC 27002 Information technology — Security techniques — Code of Practice for information security controls** offers guidelines for information security standards and management practices that can be adopted by organisations when managing information security risk environments.[210] In addition to ISO/IEC 27001 and 27002, **27551:2021 Information security, cybersecurity and privacy protection — Requirements for attribute-based unlinkable entity authentication** which establishes requirements for attribute-based unlinkable entity authentication (ABUEA).[211]

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[205] Monetary Authority of Singapore (2022) Central Banks of Indonesia, Malaysia, Philippines, Singapore and Thailand Seal Cooperation in Regional Payment Connectivity, https://www.mas.gov.sg/news/media-releases/2022/central-banks-of-indonesia-malaysia-philippines-singapore-and-thailand-seal-cooperation-in-regional-payment-connectivity
[206] Mohammad Thoriq Bahri (2022) Immigration Biometric Data Exchange Among ASEAN Member States: Opportunities and Challenges in Legislations, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4292444
[207] Brookings (2019) Cybersecurity and Digital Trade: Getting it Right, https://www.brookings.edu/articles/cybersecurity-and-digital-trade-getting-it-right/
[208] AIC (2020) Subject: Asia Internet Coalition (AIC) Comments on the Guide to Managing Data Intermediaries (DIs) under the Singapore Personal Data Protection Act ("PDPA"),https://aicasia.org/wp-content/uploads/2020/07/Asia-Internet-Coalition-AIC-Comments-on-the-Guide-to-Managing-Data-Intermediaries-DIs-under-the-Singapore-Personal-Data-Protection-Act-%E2%80%9CPDPA%E2%80%9D_29062020.pdf
[209] ARC-ASEAN Secretariat Resource Centre (2024), ISO/IEC 27001:2013 Information Technology- Security Techniques- Information Security Management Systems- Requirements Technical Corrigendum 2, https://resourcecentre.asean.org/Book_Detail/?ID=2761
[210] ARC-ASEAN Secretariat Resource Centre (2024), ISO/IEC 27002:2013 Information Technology – Security Techniques- Code of Practice for Information Security Controls, https://resourcecentre.asean.org/Book_Detail/?ID=2760
[211] ISO/IEC (2021) ISO/IEC 27551:2021 - Information security, cybersecurity and privacy protection — Requirements for attribute-based unlinkable entity authentication, https://www.iso.org/standard/72018.html

Apart from ISO/IEC standards, standards and frameworks from the NIST are also commonly referenced in cybersecurity practices. Notably, **NIST Cybersecurity Framework (CSF) 2.0** provides an overview to the industry, government, and organisation to manage cybersecurity efforts, and provides guidance on controls and practices that can be adopted to achieve desired cybersecurity outcomes.[212] **NIST Risk Management Framework**, on the other hand, offers information on processes that can be leveraged by organisations to manage information security and privacy risks.[213]

In addition to the above, the Centre for Internet Security (CIS) also provides guidance on cybersecurity practices. The organisation developed CIS Benchmarks which detailed best practices and baselines for secure system configurations for different vendors and product families.[214]***CIS Controls***, such as CIS Controls v8, were developed with reference to international standards and frameworks to assist organisations in improving their cybersecurity posture.[215] CIS Controls are recommended and endorsed by NIST, the European Telecommunications Standards Institute (ETSI), and the Centre for Protection of National Infrastructure (CPNI) in the United Kingdom (UK).[216]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

The adoption of international cybersecurity standards across AMS varies. The ISO/IEC 27001 and 27002 standards are widely recognised and adopted in Singapore,[217] Indonesia, Malaysia, the Philippines and Vietnam.[218] For example, Singapore developed Cyber Essentials as ‘lightweight’ cybersecurity standards for organisations to get started in their cybersecurity journey, and Cyber Trust as a stepping stone for international certification such as ISO/IEC 27001.[219] However, there is limited evidence which suggests the adoption of these standards in other AMS.

Progress in the adoption of international cybersecurity standards remains slow-paced due to several factors. Firstly, AMS hold differing views on cyber issues, leading to varying degrees of prioritisation for cybersecurity within national policies.[220] Secondly, there are significant disparities in cybersecurity capabilities across AMS, stemming from differing levels of commitment to cybersecurity. According to the Global Cybersecurity Index compiled by the International Telecommunication Union in 2020, some AMS have limited technical capabilities at both national and sectoral levels, hindering their ability to develop cybersecurity strategies and establish dedicated cybersecurity agencies.[221] Thirdly, there is still a lack of cybersecurity skills and talent in the ASEAN workforce, despite partnerships with academic institutions are helping to bridge the skills gap.[222] Lastly, costs remain a challenge for businesses, especially MSMEs, in adopting cybersecurity standards. While quantifiable standards and certifications are essential to build digital trust, they should be flexibility in offering various compliance options that cater to different levels of implementation costs and timeframes.[223]

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[212] NIST (2024) The NIST Cybersecurity Framework (CSF) 2.0, https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.29.pdf
[213] NIST (2024) NIST Risk Management Framework, https://csrc.nist.gov/projects/risk-management
[214] CIS (2024) CIS Benchmarks List, https://www.cisecurity.org/cis-benchmarks
[215] CIS (2024) CIS Critical Security Controls, https://www.cisecurity.org/controls
[216] CIS (2024) CIS Critical Security Controls FAQ, https://www.cisecurity.org/controls/cis-controls-faq
[217] IMDA (2023) Singapore IT Standards Established,https://www.imda.gov.sg/-/media/imda/files/regulations-and-licensing/licensing/ict-standards-and-quality-of-service/industry-committees-and-working-groups/it-standards-committee/singapore-it-standards.pdf
[218] Pacific Forum International (2024) Cyber ASEAN: Advancing Cyber Resiliency and Capacity in Southeast Asia, https://downloads.ctfassets.net/corl1354p0t3/750MZKJ7tfh9NSwTdPviqG/9dec46e2d311f2f8b130c28600a55fba/CyberAsean_Report.pdf
[219] Cyber Security Agency (n.d.) Cyber Essentials, https://www.csa.gov.sg/our-programmes/support-for-enterprises/sg-cyber-safe-programme/cybersecurity-certification-scheme-for-organisation/cyber-essentials
[220] Pacific Forum International (2024) Cyber ASEAN: Advancing Cyber Resiliency and Capacity in Southeast Asia, https://downloads.ctfassets.net/corl1354p0t3/750MZKJ7tfh9NSwTdPviqG/9dec46e2d311f2f8b130c28600a55fba/CyberAsean_Report.pdf
[221] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[222] Based on insights from the virtual industry roundtable “Adoption and Implementation of Digital Trade Standards in ASEAN” on 3 July 2024, which featured nine industry experts from six AMS, including Cambodia, Lao PDR, Malaysia, the Philippines, Singapore, and Thailand.
[223] Based on insights from the virtual industry roundtable “Adoption and Implementation of Digital Trade Standards in ASEAN” on 3 July 2024, which featured nine industry experts from six AMS, including Cambodia, Lao PDR, Malaysia, the Philippines, Singapore, and Thailand.

Despite these challenges, ASEAN recognises the importance of harmonised cybersecurity standards. Notably, **the ASEAN Cybersecurity Strategy (2021-2025)** emphasised the importance of embracing common security standards and frameworks through promoting the adoption of international cybersecurity standards.[224]

To navigate the evolving digital landscape, it is essential to emphasise how international standards complement, rather than replace, existing industry-specific regulations, particularly in sectors like banking and finance. Additionally, with the growing adoption of cloud computing, a re-evaluation of security standards is necessary to ensure they remain appropriate and effective in this dynamic environment.[225]

4. Linkages to other sub-area(s) / Any other considerations

N/A

3.2.3.3 Online Safety

1. Importance of standards in this sub-area

Standards play a crucial role in ensuring online safety, especially in a rapidly evolving digital landscape where regulations often lag behind technological advancements. In the ASEAN region, many national legislations and policies governing aspects of e-commerce are more than a decade old, making the adoption of up-to-date safety standards even more essential.

Adherence to recognised safety standards fosters interoperability between different systems, promoting trust among businesses, consumers, and trading partners. When stakeholders comply with common standards, it establishes a baseline of security expectations, which enhances confidence in digital transactions. This trust is fundamental for the continued growth of digital trade, as it encourages more businesses and consumers to engage in online activities without fear of security breaches or fraud.

Moreover, online safety standards often align with legal and regulatory requirements related to data protection and privacy. By adhering to these standards, businesses can ensure compliance with these obligations, thereby reducing the risk of legal issues and penalties. This alignment not only protects consumers but also supports businesses in maintaining their reputations and avoiding costly regulatory fines.

The importance of standards in online safety lies in their ability to bridge the gap between outdated regulations and current technological needs. They provide a uniform framework that enhances security, promotes trust, and ensures compliance with legal requirements, all of which are critical for the sustainable growth of digital trade in the ASEAN region.

[224] ASEAN (2022) ASEAN Cybersecurity Cooperation Strategy (2021-2025), https://asean.org/wp-content/uploads/2022/02/01-ASEAN-Cybersecurity-Cooperation-Paper-2021-2025_final-23-0122.pdf
[225] Based on insights from the virtual industry roundtable "Adoption and Implementation of Digital Trade Standards in ASEAN" on 3 July 2024, which featured nine industry experts from six AMS, including Cambodia, Lao PDR, Malaysia, the Philippines, Singapore, and Thailand.

2. Key international standards of interest to ASEAN

Key international standards of interest include **ISO/IEC 27001:2022** and **ISO/IEC 27002:2022**, which provide a foundation for information security, cybersecurity, and privacy protection, forming the basis for many current guidelines. **ISO/DIS 32122**,[226] a standard still under development, will offer guidelines for transaction assurance in e-commerce, including online dispute resolution services. **NIST SP 800-53** establishes guidelines and best practices for security and privacy controls in information systems and organisations, ensuring robust protection against cyber threats and safeguarding sensitive data exchanged in digital trade.

The **ASEAN Strategic Action Plan on Consumer Protection (ASAPCP) 2016-2025** highlights the significance of developing **ASEAN ODR Guidelines** as a priority deliverable. The ASEAN ODR Guidelines provide practical orientation and actionable steps for AMS to design and operationalise national ODR systems.[227] By following these standards, AMS can work towards a cohesive and efficient ASEAN ODR Network, which will significantly enhance consumer confidence in the ASEAN Economic Community (AEC) and cross-border transactions.

Currently, there is no single "online consumer protection" standard from international standardisation organisations. Instead, online consumer protection is often addressed within broader standardisation efforts such as those related to software development or e-commerce. The multifaceted nature of online safety—including financial, technical, and ethical aspects—complicates the creation of universally agreed-upon standards.

Within ASEAN, the ASEAN Committee on Consumer Protection (ACCP) is considering to include the development of a comprehensive code of conduct and consumer protection pledge in the ASAPCP 2030.

In the wider global landscape, other countries and regions have made strides in bolstering consumer protection in the digital economy. In 2021, the G7 agreed on Digital Trade Principles that include safeguards for workers, consumers and businesses. According to the Digital Trade Principles from the G7, international standards for information and communication technologies should be crafted in accordance with the six principles established by the WTO Technical Barriers to Trade Committee: (1) transparency, (2) openness, (3) impartiality and consensus, (4) effectiveness and relevance, (5) coherence, and the (6) development dimension.[228] These are very high level but highlight the relevance of developing standards to protect consumers online.[229]

Notably, in 2023, the EU endorsed the Consumer Protection Pledge, which garnered support from various companies. This pledge outlines key measures aimed at empowering consumers and promoting transparency in online transactions. These measures include facilitating specific consumer rights, enhancing the transparency and reliability of consumer reviews, advocating for transparent influencer marketing practices, and offering comprehensive training on EU consumer protection laws.[230] While this initiative is not a standard per se, it could serve as a valuable example as ASEAN progresses in its efforts to create a safer online environment for consumers.

[226] ISO (2024) ISO/DIS 32122, https://www.iso.org/standard/84834.html
[227] ASEAN (n.d.) ASEAN ODR Guidelines, https://asean.org/book/asean-guidelines-on-online-dispute-resolution-odr/
[228] G7 (2021) Trade Ministers Comuniqué, https://www.mofa.go.jp/mofaj/files/100251122.pdf
[229] G7 (2021) Trade Ministers Comuniqué, https://www.mofa.go.jp/mofaj/files/100251122.pdf
[230] European Commission (2023) Consumer Protection Pledge,https://commission.europa.eu/document/8d85b491-81d4-487e-9de9-cb071c8dba41_en

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

The adoption of international online safety standards across AMS varies. While the ISO/IEC 27001 and 27002 standards are widely recognised and adopted in Singapore,[231] Indonesia, Malaysia, the Philippines and Vietnam,[232] there is limited evidence which suggests the adoption of these standards in other AMS.

The adoption of ODR standards has been an emerging priority for ASEAN, and the Bandar Seri Begawan Roadmap has highlighted the need to develop and implement the ASEAN ODR mechanism for cross-border consumer complaints.[233]

Progress in the adoption of ODR standards across ASEAN remains slow due to several challenges. Firstly, the diverse legal frameworks and difficulties in the technical standardisation of different ODR systems make it difficult for AMS to adopt the ASEAN ODR. Secondly, there is limited knowledge and capacity from the government and industry, as well as users of the ODR platforms. Thirdly, there is limited public awareness and trust in ODR mechanisms. In this regard, strong regulatory and institutional support is necessary to enforce ODR standards and ensure compliance, including legal provisions for ODR and bodies to oversee and manage ODR processes.

At the national level, AMS are at vastly different stages in the development of legislative frameworks for consumer protection and e-commerce. Some AMS currently lack consumer protection legislation specifically formulated for e-commerce transactions, while others have draft laws or have already established decrees addressing specific aspects of e-commerce.

The diverse landscape of legislative development reflects the complex interplay of socio-economic, technological, and institutional factors shaping the digital trade ecosystem within ASEAN. Firstly, disparities in legal systems, cultural norms, and levels of economic development across AMS contribute to divergent approaches to policymaking. Some AMS may prioritise other legislative agendas over consumer protection and e-commerce, reflecting differing national priorities and resource allocations. Additionally, the complexity of digital trade presents unique challenges that require careful consideration and adaptation within individual national contexts. Factors such as technological readiness, institutional capacity, and stakeholder engagement further influence the pace and scope of legislative development. Moreover, the evolving nature of digital technologies necessitates continuous review and adaptation of legal frameworks, leading to variations in progress across AMS.

At the regional level, ASEAN has taken significant steps to address online safety on various fronts. A key effort particularly involves combating child online exploitation and abuse. It has developed the Declaration and the Regional Plan of Action on the Protection of Children from all Forms of Online Exploitation and Abuse in ASEAN (ASEAN RPA on COEA) to ensure a coordinated approach among member states. These initiatives prioritise several measures to protect children online, including enhancing legal frameworks, strengthening law enforcement capabilities, establishing specialised units to coordinate investigations, improving support services for children, and promoting awareness through education programs and school curricula. ASEAN also emphasises private sector engagement to develop effective mechanisms for detecting and reporting illegal content related to child exploitation.[234]

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[231] IMDA (2023) Singapore IT Standards Established, https://www.imda.gov.sg/-/media/imda/files/regulations-and-licensing/licensing/ict-standards-and-quality-of-service/industry-committees-and-working-groups/it-standards-committee/singapore-it-standards.pdf
[232] Pacific Forum International (2024) Cyber ASEAN: Advancing Cyber Resiliency and Capacity in Southeast Asia, https://downloads.ctfassets.net/corl1354p0t3/750MZKJ7tfh9NSwTdPviqG/9dec46e2d311f2f8b130c28600a55fba/CyberAsean_Report.pdf
[233] ASEAN (2021) Bandar Seri Begawan Roadmap, https://asean.org/wp-content/uploads/2021/10/Bandar-Seri-Begawan-Roadmap-on-ASEAN-Digital-Transformation-Agenda_Endorsed.pdf
[234] ASEAN (n.d.) Shaping a safer digital world for children together, https://asean.org/shaping-a-safer-digital-world-for-children-together/

Apart from this, the region has developed the **ASEAN Guidelines on Consumer Protection in E-commerce**, a soft law instrument to guide policymakers.[235] The Guidelines constitute a priority deliverable under the **(updated) ASEAN Strategic Action Plan on Consumer Protection (ASAPCP) 2016-2025**, supporting the modernisation and gradual convergence of consumer protection laws in the AMS.[236] Moreover, the Guidelines reinforce **ASEAN's High-Level Principle on Consumer Protection (AHLPCP) No. 8**, which advocates for the safeguarding of consumers engaged in electronic commerce.[237] Additionally, there has been research going on about the Trust Mark Scheme, which would examine whether such a tool would be advantageous for the region.[238]

The Guidelines also serve to complement and enhance the **ASEAN Online Business Code of Conduct (ASEAN COC)**, which functions as a tool to encourage the adoption of voluntary pledges by online businesses (including MSMEs) in ASEAN on how to act responsibly and fairly towards consumers.[239] The CoC covers 15 core commitments that can easily be applied and adapted in different contexts, such as complying with laws and regulations, ensuring quality and safety of products and services, ensuring data privacy, and ensuring the safety of online payments. These commitments are designed with broad language and aim to initiate discussions among businesses, while also providing guidance for compliance tailored to the legal contexts of individual AMS.

4. Linkages to other sub-area(s) / Any other considerations

Online Dispute Resolution (ODR) is closely linked to other digital trade standards such as online payments, QR codes, and cross-border commerce. These connections are crucial for creating a seamless and trustworthy digital trade environment.

For online payments, ODR systems ensure that disputes arising from transactions are resolved efficiently, enhancing consumer confidence and promoting the use of digital payment methods. In the context of QR codes, which facilitate quick and secure transactions, ODR provides a mechanism for addressing any issues that may arise, thus supporting the reliability of these technologies.

Cross-border commerce particularly benefits from ODR by providing a standardised approach to resolving disputes between parties in different countries. This harmonisation of standards across various digital trade aspects helps reduce friction, promote smoother transactions, and foster trust among international trading partners.

On the other hand, online consumer protection is closely linked to emerging technologies such as AI, blockchain, and cloud computing. Ensuring the safety of online platforms is crucial for building trust and facilitating the widespread adoption of these innovations.

3.2.3.4 Cross-border Data Protection and Privacy

1. Importance of standards in this sub-area

Enforcing harmonised standards within ASEAN could significantly accelerate the development of digital trade. From an industry perspective, implementing a harmonised data protection and privacy framework can provide businesses with greater certainty, particularly in AMS such as Brunei Darussalam, Cambodia, Lao PDR, and Myanmar, where relevant regulations are currently lacking.[240]

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[235] ASEAN (2023) ASEAN Guidelines on Consumer Impact E-commerce, https://asean.org/wp-content/uploads/2023/03/ASEAN-Guidelines-on-Consumer-Impact-E-COMMERCE_V2-1.pdf
[236] ASEAN (2021) The ASEAN Strategic Action Plan For Consumer Protection (ASAPCP) 2016-2025,https://asean.org/wp-content/uploads/2021/01/ASEAN-Strategic-Action-Plan-for-Consumer-Protection-2016-2025-ASAPCP-2025.pdf
[237] ASEAN (n.d.) High-Level Principles on Consumer Protection, https://aseanconsumer.org/cterms-regional-cooperation-in-asean/asean-high-level-principles-on-consumer-protection
[238] ASEAN (2022) Feasibility Study of ASEAN Trust Mark Scheme, https://asean.org/wp-content/uploads/2022/11/Feasibility-Study-of-ASEAN-Trust-Mark-Scheme-Final-Report.pdf
[239] ASEAN (2020) ASEAN Online Business Code of Conduct, https://aseanconsumer.org/file/post_image/2020-02-26%20ASEAN%20COC%20(fin).pdf
[240] ACI Perspectives (2024) ASEAN'S Fragmenting Data Regulatory Framework: What's the Way Forward?, https://aciperspectives.com/2024/04/17/aseans-fragmenting-data-regulatory-framework-whats-the-way-forward/

More importantly, harmonised data protection and privacy rules reduce compliance costs for businesses operating across the region. At present, businesses operating across several countries in ASEAN must navigate varying regulations concerning personal data protection, data transfer, storage and collection requirements. In this regard, standardising data protection and privacy standards can eliminate barriers to cross-border business activities, such as data localisation and cross-border data transfer restrictions.[241] Regionally, establishing a harmonised data protection and privacy framework is fundamental to strengthening ASEAN's position as a key player in global data governance conversations on standards and norm-setting.[242]

2. Key international standards of interest to ASEAN

In the realm of cross-border data protection and privacy, international standards typically serve as best practice guidelines rather than legally binding regulations. This is primarily due to the inherent challenge of establishing universally applicable or acceptable data protection and privacy standards across diverse nations, given variations in legal frameworks, cultural norms, and geopolitical interests.

Nonetheless, key international standards include the ISO/IEC 27000 family of standards, which outlines fundamental data protection principles. For example, **the ISO/IEC 27701 Extension to ISO/IEC 27001 and ISO/IEC 27002 for privacy information management — Requirements and guidelines** provides guidance on privacy information management,[243] and the **ISO/IEC 27010 Information technology — Security techniques — Information security management for inter-sector and inter-organizational communications** provides guidelines and general principles relating to initiating, implementing, maintaining, and improving information security in inter-organisation information security and exchange.[244] Additionally, prominent international standards from NIST, including the **NIST SP 800-60 Guide for Mapping Types of Information and Systems to Security Categories**, and **FIPS 199 Standards for Security Categorisation for Federal Information and Information Systems**, are commonly referenced regionally and internationally.[245]

As these international standards typically serve as guiding principles, ASEAN has taken proactive steps to develop several frameworks tailored to offer region-specific guidance on data protection and privacy, data management, and data flow.

The **ASEAN Framework on Personal Data Protection (PDP)** was formulated in 2016 by AMS to establish a set of principles to strengthen personal data protection among AMS. AMS were expected to promote and implement the Principles of Personal Data Protection in their national laws under the Framework.[246] The principles include provisions on consent, notification, purpose, access, and correction, amongst others.[247]

The **ASEAN Data Management Framework (DMF)** was endorsed in 2018. Under the Framework, ASEAN as a bloc sets out various strategic priorities, principles and initiatives which aim at coordinating AMS's regulatory approaches towards data governance. The strategic priorities include data lifecycle & ecosystem, cross-border data flows, digitalising emerging technologies, as well as legal and regulatory harmonisation.[248] Under these strategic priorities, four initiatives were identified to support digital data

[241] ACI Perspectives (2024) ASEAN'S Fragmenting Data Regulatory Framework: What's the Way Forward?, https://aciperspectives.com/2024/04/17/aseans-fragmenting-data-regulatory-framework-whats-the-way-forward/
[242] RSIS (2023) Global Data Governance: ASEAN Pathways to Regional and International Leadership, https://www.rsis.edu.sg/rsis-publication/rsis/global-data-governance-asean-pathways-to-regional-and-international-leadership/
[243] ISO (2019) ISO/IEC 27701:2019, https://www.iso.org/standard/71670.html
[244] ISO (2015) ISO/IEC 28010:2015, https://www.iso.org/standard/68427.html
[245] ASEAN (2021) ASEAN Data Management Framework, https://asean.org/wp-content/uploads/2021/08/ASEAN-Data-Management-Framework.pdf
[246] Deloitte (2018) Data and Privacy Protection in ASEAN: What does it Mean for Businesses in the Region, https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/risk/sea-risk-data-privacy-in-asean.pdf
[247] ASEAN Telecommunications and Information Technology Ministers Meeting (2016) Framework on Personal Data Protection, https://asean.org/wp-content/uploads/2012/05/10-ASEAN-Framework-on-PDP.pdf
[248] ASEAN (2021) ASEAN Data Management Framework, https://asean.org/wp-content/uploads/2021/08/ASEAN-Data-Management-Framework.pdf

governance. These initiatives include the ASEAN Data Classification Framework, ASEAN Cross Border Data Flows (CBDF) Mechanism, ASEAN Digital Innovation Forum and ASEAN Data Protection and Privacy Forum.[249]

In 2021, the **ASEAN Model Contractual Clauses on Cross Border Data Flows (MCCs)** was developed by ASEAN. The MCCs serve as template contractual terms and conditions for businesses to incorporate in binding legal agreements to govern the transfer of personal data across borders. The MCCs are promoted as a tool to help businesses comply with AMS legal and regulatory requirements.

Other prominent frameworks in the region include the **APEC CBPR** was developed by APEC member economies to establish baseline protections for cross-border transfer of personal data in accordance with the *APEC Privacy Framework*.[250] Under the CBPR, businesses can undergo a voluntary certification mechanism which would enable them to transfer personal data among CBPR-certified companies across jurisdictions.[251]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

While there is limited data available on the adoption of international standards by AMS, the region has seen some instances of standards alignment in national data protection regulations. For example, the Personal Data Protection Act (PDPA) of Singapore follows international privacy standards such as ISO 27001 and the APEC CBPR in distinguishing between organisations and data intermediaries.[252]

Regarding the adoption of ASEAN Frameworks, all AMS have recognised and endorsed the PDP, DMF, and the MCCs. However, there is limited information on the actual implementation of these frameworks within the respective AMS. To facilitate adoption, AMS were encouraged to develop capacity development programmes and guidelines on the DMF.[253] Additionally, AMS were advised to promote MCCs amongst domestic businesses by providing guidance on operationalisation.[254] For example, the Personal Data Protection Commission (PDPC) of Singapore published a *Guidance for Use of ASEAN Model Contractual Clauses for Cross Border Data Flows in Singapore* to assist businesses in adopting and using the MCCs.[255] Regarding the adoption of the CBPR, given that not all AMS are part of APEC, only Singapore and the Philippines are part of the APEC CBPR.[256]

Participants in the Industry Roundtable also pointed out that data localisation laws might hinder cross-border data sharing efforts.[257] To address these concerns, organisations could consider adopting technological solutions such as Privacy Enhancing Technologies (PET). Such technologies are currently gaining traction globally, and in Singapore, there are initiatives such as the Privacy

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[249] ASEAN (2021) ASEAN Data Management Framework, https://asean.org/wp-content/uploads/2021/08/ASEAN-Data-Management-Framework.pdf
[250] Robinson, L., K. Kizawa and E. Ronchi (2021) Interoperability of Privacy and Data Protection Frameworks, https://goingdigital.oecd.org/data/notes/No21_ToolkitNote_PrivacyDataInteroperability.pdf
[251] IMDA (2024) APEC Cross Border Privacy Rules (CBPR) System, https://www.imda.gov.sg/how-we-can-help/cross-border-privacy-rules-certification
[252] PDPC (2023) The Distinction between Organisations and Data Intermediaries and Why It Matters, https://www.pdpc.gov.sg/the-distinction-between-organisations-and-data-intermediaries-and-why-it-matters
[253] ASEAN Digital Ministers' Meeting (ADGMIN) (2021) 1st ASEAN Digital Ministers' Meeting (ADGMIN) 2020 Implementing Guidelines for ASEAN Data Management Framework and ASEAN Cross Border Data Flows Mechanism, https://asean.org/wp-content/uploads/2021/08/Implementing-Guidelines-for-ASEAN-Data-Management-Framework-and-Cross-Border-Data-Flows.pdf
[254] ASEAN Digital Ministers' Meeting (ADGMIN) (2021) 1st ASEAN Digital Ministers' Meeting (ADGMIN) 2020 Implementing Guidelines for ASEAN Data Management Framework and ASEAN Cross Border Data Flows Mechanism, https://asean.org/wp-content/uploads/2021/08/Implementing-Guidelines-for-ASEAN-Data-Management-Framework-and-Cross-Border-Data-Flows.pdf
[255] PDPC (2021) Guidance for Use of ASEAN Model Contractual Clauses for Cross Border Data Flows in Singapore,https://www.pdpc.gov.sg/-/media/files/pdpc/pdf-files/practical-guidance-provided-by-pdpc/singapore-guidance-for-use-of-asean-mccs---010921.pdf
[256] https://www.pdpc.gov.sg/news-and-events/announcements/2020/06/singapore-now-recognises-apec-cbpr-and-prp-certifications-under-pdpa; https://privacy.gov.ph/ph-joins-apec-privacy-system/
[257] Based on insights from the virtual industry roundtable "Adoption and Implementation of Digital Trade Standards in ASEAN" on 3 July 2024, which featured nine industry experts from six AMS, including Cambodia, Lao PDR, Malaysia, the Philippines, Singapore, and Thailand.

Enhancing Technologies Sandbox by the Singapore IMDA and PDPC.[258] PETs aim to preserve and enhance the privacy of individuals in processing personal data, where there are some PETs which facilitate collaborative data processing while ensuring that data remains within the organisation's boundaries and ownership, thus potentially addressing localisation requirements, and preserving data security and privacy.

Several challenges hinder the widespread adoption of regional and international data frameworks across AMS. First, the fragmented nature of data regulations across AMS has created a compliance nightmare for businesses operating regionally.[259] In addition, the constant changes and ambiguities in how these regulations are applied result in significant inefficiencies and costs for the private sector.[260] Second, AMS are at vastly different stages of data protection. Some AMS have yet to implement data protection regulations,[261] and may prioritise establishing their own regulations before adopting regional or international standards. Thirdly, while some AMS like the Philippines, Thailand, Malaysia, and Singapore have established dedicated data protection agencies, others lack a dedicated central body overseeing data protection. The absence of a coordinated entity can hinder the harmonisation of standards due to limitations in both technical expertise and financial capacity.

4. Linkages to other sub-area(s) / Any other considerations

N/A

3.2.4 Cooperation on Emerging Topics

1. Importance of identified area to ASEAN's digital trade

Cooperation on and governance of emerging technologies such as artificial intelligence (AI), blockchain, and cloud computing is critical for ASEAN to unlock the full potential of digital trade. While these technologies are relatively nascent, they hold significant power to transform industries, streamline processes, and create new economic opportunities. According to Kearney's estimates, AI has the potential to contribute US$1 trillion to the ASEAN economy by 2030.[262] With governments and private investors increasingly recognising their transformative capabilities, investments in digital transformation across the Asia Pacific region are set to soar, with IDC forecasting expenditures to hit US$ 1 trillion by 2026, up from US$ 500 billion in 2022.[263]

To harness the full potential of these emerging technologies, ASEAN should develop a forward-looking vision for cooperation on these emerging technologies. By leveraging collective expertise and resources, AMS can address regulatory gaps, promote interoperability across borders, and build trust in these nascent technologies. This collaborative approach will pave the way for a secure and innovative regional digital trade ecosystem.

2. Relevance of sub-areas to ASEAN: (DTSCWG priority, DEFA priority, ASEAN agenda/agreement)

The importance of cooperation on emerging technologies is iterated as an emerging priority for ASEAN on various fronts. Notably, the Study on the ASEAN DEFA recommends regional collaboration in emerging areas including AI and blockchain to drive growth through innovation.[264]

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[258] IMDA (2024) Privacy Enhancing Technology Sandboxes, https://www.imda.gov.sg/how-we-can-help/data-innovation/privacy-enhancing-technology-sandboxes
[259] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[260] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)
[261] Deloitte (n.d.) Data and Privacy Protection in ASEAN, https://www2.deloitte.com/id/en/pages/risk/articles/data-privacy-in-asean.html
[262] Kearney (2020) Racing toward the future: artificial intelligence in Southeast Asia, https://www.middle-east.kearney.com/service/digital-analytics/article/-/insights/racing-toward-the-future-artificial-intelligence-in-southeast-asia
[263] IDC Reports (2022) Digital Spending in Asia Pacific to Reach US$1.05 Trillion by 2026, https://www.idc.com/getdoc.jsp?containerId=prAP49852022
[264] ASEAN Secretariat (2023) Study on the ASEAN Digital Economy Framework Agreement (DEFA)

In the realm of AI, ASEAN has unveiled the *ASEAN Guide on AI Governance and Ethics*,[265] which establishes common principles and recommends best practices for the implementation of responsible AI in ASEAN.

Similarly, in the realm of Blockchain, ASEAN has published a study on *Blockchain for Digital Government – the ASEAN way*. This study examines the opportunities, challenges, and gaps in adopting blockchain technologies for government service digital transformation and provides recommendations on how AMS can leverage this technology to create trusted and transparent digital services.[266]

Lastly, cloud computing was added to the list of key ICT skills in ASEAN in 2014,[270] and was featured in the ASEAN ICT Masterplan 2020 under the key action area to "establish a model cloud computing platform for use by private and public sectors".[268]

3. Importance and role of standards within the identified digital trade area

Standards in AI, blockchain, and cloud computing play a critical role in enabling ASEAN to realise the full potential of these emerging technologies. Firstly, standards are essential for promoting interoperability, efficiency, scalability, and ease of use of novel technologies.[269] This is particularly important in ASEAN where member states have divergent regulations and practices regarding emerging technologies.[270] Secondly, standards are vital for building trust and confidence among stakeholders by addressing risks such as data security and privacy concerns associated with these technologies.[271] Thirdly, the adoption of international standards in AI, blockchain, and cloud computing not only streamlines processes and improves productivity but also enables ASEAN to remain competitive in the global digital marketplace.

3.2.4.1 AI

1. Importance of identified area to ASEAN's digital trade

AI standards play a pivotal role in advancing digital trade within the ASEAN region by providing a framework for interoperability, transparency, and trust. These standards establish common guidelines and specifications for the development, deployment, and use of AI technologies, ensuring compatibility and seamless integration across diverse systems and platforms. By promoting interoperability, AI standards facilitate the exchange of data and information, enabling businesses to leverage AI-driven solutions for enhanced productivity, efficiency, and innovation in digital trade activities.

Moreover, AI standards contribute to building trust and confidence among stakeholders by ensuring adherence to ethical principles, data privacy regulations, and cybersecurity measures. In the ASEAN region, where digital transformation is rapidly reshaping economies and industries, the adoption of AI standards fosters a conducive environment for collaboration, investment, and growth in AI-driven digital trade initiatives. By aligning with international best practices and standards, AMS can harness the full potential of AI technologies to drive economic development, foster inclusive growth, and enhance competitiveness in the global digital economy.

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[265] ASEAN (2024) ASEAN Guide on AI Governance and Ethics, https://asean.org/book/asean-guide-on-ai-governance-and-ethics/
[266] ASEAN (2021) Blockchain for digital government – the ASEAN way, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf
[267] ASEAN (2015) ASEAN ICT Skill Definition and Certification References, https://asean.org/wp-content/uploads/2015/12/Edited-ICT-3.pdf
[268] ASEAN (2020) ASEAN ICT Masterplan 2020, https://asean.org/wp-content/uploads/images/2015/November/ICT/15b%20--%20AIM%202020_Publication_Final.pdf
[269] European Commission (2024) Blockchain standards, https://digital-strategy.ec.europa.eu/en/policies/blockchain-standards
[270] Bowergroup Asia (2024) ASEAN Announces Much-Anticipated Guide on AI Governance and Ethics, https://bowergroupasia.com/asean-announces-much-anticipated-guide-on-ai-governance-and-ethics/
[271] UNESCO (2024) Enabling AI governance and innovation through standards, https://www.unesco.org/en/articles/enabling-ai-governance-and-innovation-through-standards

2. Key international standards of interest to ASEAN

The landscape of AI standards is still in its early stages of development, with pioneering efforts led by organisations such as the ISO/IEC SC42, the NIST and the Institute of Electrical and Electronics Engineers (IEEE).

The ISO/IEC JTC 1/SC 42 Committee is at the forefront of developing AI-related standards. It has been actively working on a large portfolio, with 27 published ISO standards and 31 ISO standards under development.[272]

For example, the standard **ISO/IEC TR 24028:2020** on the trustworthiness of AI[273] covers issues like transparency and explainability, **while ISO/IEC TR 24027**[274] addresses bias in AI decision-making—among many other AI-specific standards.[275] Other major initiatives include **ISO/IEC Draft International Standard (DIS) 24668 on Process Management Frameworks for Big Data Analytics, ISO/IEC DIS 23053 on a Framework for AI Systems using Machine Learning**, and **ISO/IEC New Project (NP) 38507 on Governance Implications of the Use of Artificial Intelligence by Organizations**.[276]

Notably, the ISO recently published the world's first AI management system standard **ISO/IEC 42001:2023**. Designed to ensure the responsible development and use of AI systems, this standard outlines the requirements for establishing, implementing, maintaining, and continually improving an Artificial Intelligence Management System (AIMS) within organisations.[277] This standard paves the way for the development of future standards aimed at fostering responsible innovation and the adoption of AI. In addition to the above, ISO/ IEC 5339:2024 Information technology – Artificial intelligence-Guidance for AI applications is another foundational standard which expounds of the characteristics of AI applications and the stakeholders involved in the AI system life cycle.[278]

Furthermore, data quality has a significant impact on AI systems. AI systems that are trained on poor-quality data and unstructured data sets can result in high error rates and other negative consequences. The use of data standards[279] goes beyond ensuring interoperability across data sources and can be used to demonstrate data integrity and accuracy across heterogeneous datasets, providing quality assurance and supporting the development of responsible AI systems. In this context, the **ISO/IEC SD 5259** series of standards, and specifically ISO/ IEC 5259:2024 on data quality for analytics and machine learning is an important part of the equation.[280]

The **NIST AI Risk Management Framework (RMF)** on the other hand, focuses on AI-related pre-standardisation research work that goes into the standards and conformity. The NIST AI RMF is a framework developed to better manage risks to individuals, organisations, and society associated with AI. It is intended for voluntary use and to improve the ability to incorporate trustworthiness considerations into the design, development, use, and evaluation of AI products, services, and systems.[281]

The IEEE has also been heavily involved in the development of systems governing autonomous system design and has developed several standards pertaining to ethics. The P7000 series of standards, for example, seeks to address specific issues in the intersection of technological and ethical considerations that are faced by Autonomous and Intelligent Systems (AIS).[282]

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[272] ISO (2021) Standards by ISO/IEC JTC 1/SC 42, www.iso.org/committee/6794475/x/catalogue/p/1/u/1/w/0/d/0
[273] ISO (2020) ISO/IEC TR 24028:2020 - Overview of trustworthiness in artificial intelligence, www.iso.org/standard/77608.html
[274] ISO (2021) ISO/IEC TR 24027:2021 - Bias in AI systems and AI aided decision-making, www.iso.org/standard/77607.html
[275] ISO (2023) Catalogue of standards by ISO/IEC JTC 1/SC 42, www.iso.org/committee/6794475/x/catalogue
[276] ISO (2023) ISO/IEC JTC 1/SC 42 Artificial intelligence, www.iso.org/committee/6794475/x/catalogue/p/0/u/1/w/0/d/0
[277] ISO (2023) ISO/IEC 42001:2023 - Artificial intelligence Management system, www.iso.org/standard/81230.html
[278] ISO (2024) ISO/IEC 5339:2024 Information technology — Artificial intelligence — Guidance for AI applications,https://www.iso.org/obp/ui/en/#iso:std:iso-iec:5339:ed-1:v1:en
[279] Note: Data standards refer to the rules by which data are described and recorded.
[280] ISO (2024) ISO/IEC5259-1:2024 , https://www.iso.org/standard/81088.html
[281] NIST (2024) AI RMF, https://www.nist.gov/itl/ai-risk-management-framework/ai-rmf-development
[282] IEEE Standards Association (n.d.) Autonomous Systems, https://standards.ieee.org/industry-connections/ec/autonomous-systems.html

In this regard, **IEEE 7000-2021** on addressing ethical concerns during system design is a clear standout for ASEAN economies.[283] Other highlights include standards governing the deployment of AI within specific contexts.[284] These include **IEEE P2247.1** governing the classification of AI-driven adaptive instructional systems, or **IEEE P2660.1** on practices for the integration of low-level automation functions and other software agents in industrial control platforms. Such standards notably lay the groundwork for more granular implementations of AI within specific sectors such as education and industrial manufacturing.

In addition to standard-setting organisations, various multilateral bodies have been developing their own frameworks and guidelines for AI deployment and development on the international stage. The OECD has updated its AI Principles, providing a blueprint for future policy frameworks.[285] The United Nations Educational, Scientific and Cultural Organization (UNESCO) produced the first-ever global standard on AI ethics, the *Recommendation on the Ethics of Artificial Intelligence*, in November 2021.[286] Furthermore, the United Nations General Assembly adopted a landmark resolution on AI, which emphasised the need for safe, secure, and trustworthy AI.[287]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

While there is limited information available on the adoption of the ISO standards outlined above, several AMS are already involved in ISO/IEC JTC 1/SC 42, with Malaysia, Philippines, and Singapore as participating members, and Indonesia as an observing member.[288] Notably, Singapore has mapped its AI Verify Framework[289], a testing framework (comprising more than 90 process checks along 11 ethical principles) and software toolkit (comprising technical tests for Fairness, Explainability and Robustness), to the NIST AI RMF[290] and ISO/IEC 42001:2023[291]. In 2024, ISO/IEC 42001 was adopted as Singapore Standard SS ISO/IEC 42001.

AI is an emerging priority for ASEAN, with concerted efforts underway across various fronts. Notably, ASEAN recently unveiled the *Expanded ASEAN Guide on AI Governance and Ethics – Generative AI*,[292] demonstrating the region's commitment to ramping up coordinated responses to issues that are already impacting all levels of society. The Guide provides regional best practice guidance on AI governance and ethics, definitions for key AI-related concepts, an AI risk impact assessment template, and a set of national-level and regional-level recommendations for AMS to implement AI systems responsibly.[293] The ASEAN Working Group on AI Governance (WG-AI) under the ASEAN Digital Senior Officers Meeting (ADGSOM) has been set up to coordinate AI governance efforts in the region.

In addition to the Guide, the ASEAN Committee on Science, Technology and Innovation (COSTI) has started identifying the most urgent policy, legal, and regulatory gaps related to the implementation of generative AI implementation in ASEAN, with a view to providing recommendations to best address them.[294] These efforts will culminate in a *Discussion Paper on the Responsible Development and Use of Generative AI in ASEAN* to enhance the governance and adoption of generative AI in the region, with an aimed completion in early 2024.[295]

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[283] IEEE Standards Association (2021) IEEE 7000-2021, https://standards.ieee.org/ieee/7000/6781/
[284] IEEE Standards Association (2021) AI Systems Related Standards, https://standards.ieee.org/initiatives/artificial-intelligence-systems/standards.html#2247
[285] OECD (2024) OECD updates AI Principles to stay abreast of rapid technological developments, https://www.oecd.org/en/about/news/press-releases/2024/05/oecd-updates-ai-principles-to-stay-abreast-of-rapid-technological-developments.html
[286] UNESCO (2021) Ethics of Artificial Intelligence, https://www.unesco.org/en/artificial-intelligence/recommendation-ethics
[287] United Nations (2024) General Assembly adopts landmark resolution on artificial intelligence, https://news.un.org/en/story/2024/03/1147831
[288] ISO (2021) Standards by ISO/IEC JTC 1/SC 42, www.iso.org/committee/6794475/x/catalogue/p/1/u/1/w/0/d/0
[289] AI Verify Foundation (2024) AI Verify, https://aiverifyfoundation.sg/what-is-ai-verify/
[290] IMDA (2023) Crosswalk with NIST AI RMF, https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/nist-imda-joint-mapping-exercise
[291] IMDA (2024) Crosswalk with ISO/IEC 42001, https://aiverifyfoundation.sg/resources/#crosswalk-with-iso42001
[292] ASEAN (2024) ASEAN Guide on AI Governance and Ethics, https://asean.org/book/asean-guide-on-ai-governance-and-ethics/
[293] ASEAN (2024) ASEAN Guide on AI Governance and Ethics, https://asean.org/book/asean-guide-on-ai-governance-and-ethics/
[294] AI Asia Pacific Institute (2023) Responsible Development and Use of Generative AI in ASEAN: Workshop Pre-Read Material, draft shared by the AI Asia Pacific Institute in December 2023.
[295] AI Asia Pacific Institute (2023) Responsible Development and Use of Generative AI in ASEAN: Workshop Pre-Read Material, draft shared by the AI Asia Pacific Institute in December 2023.

On AMS' participation in standards setting, it is worth noting that Singapore, Philippines, Malaysia and Indonesia joined **ISO/IEC JTC 1/ SC 42**. Singapore, Philippines and Malaysia have reached participant status, indicating that they have sufficient technical capacity to meaningfully contribute to ongoing technical discussions and voting mechanisms.[296] Indonesia on the other hand is at the SC42 plenary as an observing member.[297] Having invested heavily in AI research and development and significantly improved their AI capabilities, Singapore and the Philippines thus have an interest in contributing to standards development. Singapore has also signalled its intent to submit a New Work Item Proposal at SC42, focused on testing methodologies for generative AI systems.

The adoption of AI standards across AMS faces several challenges. Apart from the relatively nascent AI standard development landscape, there is limited awareness and understanding of AI standards, which hinders the adoption of AI standards in the region. Moreover, concerns surrounding data privacy, security, and ethical considerations pose significant obstacles to standardising AI practices across the diverse cultural and legal landscapes within ASEAN.

4. Linkages to other sub-area(s) / Any other considerations

N/A

3.2.4.2 Blockchain

1. Importance of identified area to ASEAN's digital trade

Blockchain standards are vital for promoting interoperability among diverse platforms, enhancing trust in transactions, and ensuring regulatory compliance. By establishing common protocols for data exchange and verification, these standards streamline digital trade processes and foster confidence among stakeholders.[298] They also provide clarity on regulatory requirements, reducing legal risks and uncertainties for businesses operating within the region.[299] Overall, blockchain standards play a crucial role in driving efficiency, security, and reliability in digital trade transactions across ASEAN.

2. Key international standards of interest to ASEAN

Despite being an emerging technology, blockchain has already seen the development of several international standards.

Among these, the **ISO/TC 307** Blockchain and Distributed Ledger Technologies committee is at the forefront of this standardisation effort. One notable standard is the **ISO 22739:2024 Blockchain and Distributed Ledger Technologies Vocabulary**, which defines fundamental terminology for blockchain and distributed ledger technologies.[300] This standard is significant in fostering a common understanding of blockchain concepts and terminology, thereby promoting the harmonisation of blockchain practices and regulations. Additionally, **ISO 23257:22 Blockchain and Distributed Ledger Technologies- Reference Architecture** specifies the functional components, roles and activities of blockchain and distributed ledger technology.[301] Furthermore, **ISO/WD TS 23516 Blockchain and Distributed Ledger Technology Interoperability Framework**, currently in development, aims to facilitate communication between different blockchain systems,[302] ensuring smooth data exchange and interoperability across various stakeholders in the supply chain

[296] ISO (n.d.) iso/IEC JTC 1/SC 42 Participation,https://www.iso.org/committee/6794475.html;?view=participation
[297] ISO (n.d.) iso/IEC JTC 1/SC 42 Participation, https://www.iso.org/committee/6794475.html;?view=participation
[298] European Commission (2024) Blockchain standards, https://digital-strategy.ec.europa.eu/en/policies/blockchain-standards
[299] European Commission (2024) Blockchain standards, https://digital-strategy.ec.europa.eu/en/policies/blockchain-standards
[300] ISO (2024) ISO 22739:2024 Blockchain and distributed ledger technologies Vocabulary, https://www.iso.org/standard/82208.html
[301] ISO (2024) ISO 23257:2022 Blockchain and Distributed Ledger Technologies — Reference Architecture, https://www.iso.org/standard/75093.html
[302] ISO (2024) ISO/CD TS 23516 Blockchain and Distributed Ledger Technology Interoperability Framework, https://www.iso.org/standard/82098.html

ecosystem. Separately, **ISO/TR 23244:2020 Blockchain and Distributed Ledger Technologies - Privacy and Personally Identifiable Information Protection Considerations** provides an overview of privacy and personally identifiable information (PII) protection as applied to blockchain and distributed ledger technologies systems.[303]

The IEEE Standards Association has also published several blockchain standards. Notably, the **IEEE Standard for Blockchain Interoperability Data Authentication and Communication Protocol** provides interfaces and protocols of data authentication and communication for blockchain interoperability.[304]

Another set of blockchain standards of interest is **GS1's global standards for identification and structured data**. These standards enable blockchain network users to scale enterprise adoption and maintain a single, shared version of the truth about supply chain and logistics events, thereby enhancing data integrity and trust between parties by reducing data duplication and reconciliation.[305]

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

There is limited information available on the adoption of the standards mentioned above. That said, several AMS are already involved in ISO TC/307, with Malaysia, Singapore, and Thailand as participating members, and Cambodia, Indonesia, and the Philippines as observing members.[306]

Despite various blockchain initiatives being rolled out by AMS (outlined in Table 10 below), the actual adoption of blockchain technology remains low within the region. For example, the implementation of blockchain for government e-services in ASEAN is still at a nascent stage, with less than 5% of projects being live.[307]

This low adoption can be attributed to several challenges. Firstly, there is limited understanding of blockchain technology's benefits and potential use cases among businesses and governments in the region, including AMS regulators.[308] Secondly, some AMS face budgetary constraints in developing the necessary ecosystem and infrastructure for blockchain implementation.[309] Thirdly, technical barriers such as interoperability issues between different blockchain platforms and scalability concerns pose significant obstacles to adoption. Addressing these challenges will require collaborative efforts to develop interoperable standards, address security and privacy concerns, and allocate resources effectively to support blockchain initiatives in ASEAN.

Within this context, ASEAN has been driving efforts to foster greater dialogue and examination of blockchain. ASEAN has published a study on *Blockchain for digital government – the ASEAN* way. This study examines the opportunities, challenges, and gaps in adopting blockchain technologies for government service digital transformations and provides recommendations on how AMS can leverage this technology to create trusted and transparent digital services.[310] Additionally, initiatives like the ASEAN Blockchain Consortium aim to foster and drive cross-border collaboration in promoting blockchain technology adoption across the region.[311]

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303 ISO (2024) ISO/TR 23244:2020 Blockchain and Distributed Ledger Technologies — Privacy and Personally Identifiable Information Protection Considerations, https://www.iso.org/standard/75061.html
304 IEEE SA (2024) IEEE Standard for Blockchain Interoperability Data Authentication and Communication Protocol, https://standards.ieee.org/ieee/3205/10237/
305 GS1 (2024) Blockchain, https://www.gs1.org/node/4261
306 ISO (2024) ISO/TC 307, https://www.iso.org/committee/6266604.html?view=participation
307 ASEAN (2021) Blockchain for digital government – the ASEAN way, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf
308 ASEAN (2021) Blockchain for digital government – the ASEAN way, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf
309 ASEAN (2022) ASEAN Blockchain for Digital Government, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf
310 ASEAN (2021) Blockchain for digital government – the ASEAN way, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf
311 The Business Times (2021) ASEAN Blockchain Consortium formed to drive cross-border collaboration, https://www.businesstimes.com.sg/international/asean/asean-blockchain-consortium-formed-drive-cross-border-collaboration

Table 10. Blockchain Initiatives across AMS

ASEAN Member State	Blockchain Initiatives	Details
Brunei Darussalam	N/A Note: The Central Bank of Brunei Darussalam issued limited guidance on cryptocurrencies other than to warn the public of its risks the public that “cryptocurrencies are not legal tender in Brunei Darussalam and are not regulated by AMBD”.	
Cambodia	Bakong	Blockchain-based payment and money transfer system introduced by the National Bank of Cambodia. It is designed specifically to facilitate secure and efficient digital payments and transactions within Cambodia.
Indonesia	Asosiasi Blockchain Indonesia	Indonesian Blockchain Association is a non-profit organisation established to promote the adoption and development of blockchain technology in Indonesia. The initiative aims to mobilise and organise blockchain technology actors in creating a quality business environment.
Lao PDR	Digital Currency Trial	In 2021, the Government of Laos has authorised six companies to trade and mine cryptocurrencies.
Malaysia	National Blockchain Roadmap 2021-2025	Ministry of Science, Technology and Innovation (MOSTI) has engaged with various stakeholders, including industry, academia, government agencies, and Non-governmental organizations (NGOs), to develop Malaysia’s National Blockchain Roadmap that outlines action plans to embrace blockchain technology.
	The Industry Government Group for High Technology (MIGHT)	Malaysia to use blockchain for bettering Islamic finance, renewable energy and palm oil sectors.
Myanmar	In 2019, the Central Bank of Myanmar formally approved the adoption of blockchain technology for the national payment system. However, progress on new developments has been hindered by political events.	
Philippines	Tokenised bonds	Using blockchain technology for the distribution of government bonds
Singapore	Singapore Blockchain Innovation Programme (SBIP)	Government-led initiative aimed at promoting and accelerating the adoption of blockchain technology across various industries in Singapore. This collaborative effort involves Enterprise Singapore, IMDA, and the National Research Foundation (NRF) Singapore
	Project Ubin	An initiative led by the Monetary Authority of Singapore to explore the use of blockchain technology for payments and securities.
Thailand	Thailand Blockchain Community Initiative (BCI)	A collaborative project between banks and companies under supervision from the Bank of Thailand with the main objective of applying blockchain technology in Thailand's financial industry.
	Digital Asset Act	The Thailand Digital Asset Act, also referred to as the Digital Asset Business Decree, is a regulatory framework implemented by the Thai government to oversee digital asset activities within the nation.
	Inthanon Project	A joint initiative between the Bank of Thailand (BOT) and the Hong Kong Monetary Authority (HKMA) to explore the application of Distributed Ledger Technology (DLT) to increase efficiency in cross-border funds transfers.
Vietnam	Smart City	Ho Chi Minh City introduced a blockchain infrastructure to support its smart city transformation.

Source: ASEAN (2022) Blockchain for Digital Government, https://asean.org/wp-content/uploads/2022/02/02-Final-_-Report-Blockchain-for-digital-government.pdf; Asia and the Global Economy (2022) The ASEAN blockchain roadmap, https://www.sciencedirect.com/science/article/pii/S266711152200024X

Beyond ASEAN, other countries and regions are also striving to create favourable conditions for the adoption of blockchain technology. In 2019, the European Commission introduced its Blockchain Strategy to foster a robust blockchain ecosystem in Europe. This strategy is founded on five key principles: (1) interoperability, (2) data protection, (3) cybersecurity, (4) digital identity, and (5) environmental sustainability.[312] It includes several initiatives aimed at developing and harmonising policy and legal frameworks to support blockchain growth.

For example, the European Commission promotes interoperability and standards by participating in the work of ISO TC 307, European Telecommunications Standards Institute's Industry Specification Group Permissioned Distributed Ledger (ETSI ISG PDL) , European Committee for Standardisation and European Committee for Electrotechnical Standardisation's Joint Technical Committee 19 (CEN-CENELEC JTC19), Institute of Electrical and Electronic Engineers (IEEE), and the International Telecommunication Union's Telecommunication Standardisation Sector (ITU-T).[313] Additionally, to prevent legal and regulatory fragmentation, the Commission proposed regulations for crypto assets, updated anti-money laundering rules for crypto assets,[314] and established a European Blockchain Regulatory Sandbox to increase legal certainty for blockchain solutions in Europe.[315]

4. Linkages to other sub-area(s) / Any other considerations

Blockchain is linked to various domains including digital identities and authentication, and cybersecurity. Blockchain enables the creation of decentralised digital identity systems by providing secure and immutable records of identity information, including entity authentication and biometrics. Additionally, blockchain-based security solutions can address cybersecurity risks by leveraging the technology's immutability to safeguard against data breaches and unauthorised access. These linkages underscore how blockchain can play a crucial role in improving digital identity management and cybersecurity across different sectors.

3.2.4.3 Cloud Computing

1. Importance of identified area to ASEAN's digital trade

Cloud computing standards enable interoperability between different platforms and services, facilitating seamless data exchange and operations across cloud systems.[316] These standards set benchmarks for service reliability, enhance cybersecurity through uniform protocols for data protection, and build trust among users.[317] Moreover, they support the scalability of digital services, enabling smaller businesses such as MSMEs to compete on a level playing field with larger corporations.[318] As ASEAN pursues deeper digital integration, cloud computing standards become indispensable for achieving regional economic integration and global competitiveness.

2. Key international standards of interest to ASEAN

Key international standards for cloud computing include **ISO/IEC 27017:2015** Information technology — Security techniques — Code of practice for information security controls based on ISO/IEC 27002 for cloud services, which provides guidelines for information security controls applicable to the provision and use of cloud services,[319] **and ISO/IEC 27018:2019** Information technology — Security

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[312] European Commission (n.d.) Blockchain Strategy, https://digital-strategy.ec.europa.eu/en/policies/blockchain-strategy
[313] European Commission (n.d.) Blockchain Strategy, https://digital-strategy.ec.europa.eu/en/policies/blockchain-strategy
[314] European Commission (n.d.) Blockchain Strategy, https://digital-strategy.ec.europa.eu/en/policies/blockchain-strategy
[315] European Commission (n.d.) European Blockchain Regulatory Sandbox, https://digital-finance-platform.ec.europa.eu/cross-border-services/ebsi
[316] CMU (2012) The Role of Standards in Cloud Computing Interoperability, https://insights.sei.cmu.edu/documents/2235/2012_004_001_28143.pdf
[317] Economist Impact (2020) The journey to the cloud in ASEAN, https://impact.economist.com/perspectives/sites/default/files/eiu_vmware_up_in_the_air_infographic.pdf
[318] Kloud9 (2024) The Evolution and Impact of Cloud Computing in the Digital Age, https://www.kloud9it.com/2024/03/the-evolution-and-impact-of-cloud-computing-in-the-digital-age/
[319] ISO (2024) ISO/IEC 27017:2015, https://www.iso.org/standard/43757.html

techniques — Code of practice for protection of PII in public clouds acting as PII processors, which provides a code of practice for the protection of PII processors.[320] Adoption of these standards reduces the risk of breaches, ensuring data protection in digital trade.

Notably, the Cloud Security Alliance (CSA) **Cloud Controls Matrix (CCM)** is considered the de-facto standard for cloud security assurance and compliance within the industry. The CCM provides a cybersecurity control framework specifically designed for cloud computing, which can be used as a tool for the systematic assessment of a cloud implementation, and provides guidance on which security controls should be implemented by which actor within the cloud supply chain.[321] Other standards of interest include the **NIST Cloud Computing Reference Architecture**[322] and the **NIST Definition of Cloud Computing**,[323] which explore key aspects of cloud computing architecture and definitions.

3. Current status of standards adoption in ASEAN, including ongoing efforts, imminent plans, and key challenges in standards adoption across AMS and ASEAN

While there is limited information available on the adoption of the standards outlined above, several AMS are already involved in ISO JTC1/SC 27 Information security, cybersecurity and privacy protection, the ISO Joint Technical Committee (JTC) responsible for publishing the above ISO standards on cloud computing.[324] Indonesia, Malaysia, Philippines, and Singapore are participating members, and Thailand and Vietnam are observing members.[325]

Across the region, AMS have been gradually showing more interest in cloud services. For example, the Cloud First Strategy, a global initiative prioritising cloud services over traditional centralised data services, has been adopted by Singapore, Malaysia, the Philippines, Vietnam, and Thailand.[326] Notably, the ASEAN Digital Masterplan 2025 highlights the importance of establishing comprehensive policy and regulatory frameworks for cloud computing, big data platforms, and data protection within the region.[327]

However, cloud computing adoption in ASEAN remains relatively low due to several factors. One primary reason is the region's diverse operating environments, including varying levels of technological infrastructure and digital literacy among member states. The digital divide within ASEAN affects internet access, which is essential for utilising cloud services effectively.[328] Additionally, concerns about data privacy and security, coupled with regulatory challenges, have contributed to hesitancy among businesses and governments to fully embrace cloud computing solutions. Limited awareness and understanding of the benefits of cloud technology, as well as the perceived complexity of migration and integration processes, further hinder widespread adoption. Overcoming these barriers will require concerted efforts to address infrastructure gaps, enhance digital literacy, and establish clearer regulatory frameworks to build trust and confidence in cloud computing services across the ASEAN region.

4. Linkages to other sub-area(s) / Any other considerations

N/A

[320] ISO (2024) ISO/IEC 27018:2019, https://www.iso.org/standard/76559.html
[321] CSA (2021) Cloud Controls Matrix (CCM), https://cloudsecurityalliance.org/research/cloud-controls-matrix
[322] NIST (2011) NIST Cloud Computing Reference Architecture, https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication500-292.pdf
[323] NIST (2011) The NIST Definition of Cloud Computing, https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf
[324] ISO (2024) ISO/IEC JTC 1/SC 27, https://www.iso.org/committee/45306.html
[325] ISO (2024) ISO/IEC JTC 1/SC 27, https://www.iso.org/committee/45306.html
[326] Malaysia (n.d.) MyGovernment Goverment Cloud Services, https://www.malaysia.gov.my/portal/content/31183
[327] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/
[328] Economist Impact (2020) The journey to the cloud in ASEAN, https://impact.economist.com/perspectives/sites/default/files/eiu_vmware_up_in_the_air_infographic.pdf

3.3 Conclusion and Next Steps

The gap assessment has highlighted several overarching challenges that AMS face in the adoption and/or implementation of digital trade standards:

- **Diverse Legal and Regulatory Frameworks:** A wide array of legal and regulatory frameworks across AMS creates inconsistencies and complexities in harmonising standards. This makes it difficult to adopt and implement common digital trade standards.
- **Capacity and Resource Constraints:** Many AMS face capacity constraints in terms of human resources, financial resources, and technological expertise. These limitations hinder their ability to effectively adopt and comply with digital trade standards.
- **Disparate Technological Infrastructure:** Variations in technological infrastructure and capabilities across AMS pose challenges in ensuring interoperability and compatibility with digital trade standards.
- **Low Stakeholder Awareness:** Many AMS policymakers and businesses lack awareness and understanding of the importance and benefits of DTS adoption.

These identified challenges have been used to inform the development of the strategic framework and key recommendations in Chapters 4 and 5.

4. Strategic Framework for Harmonising DTS in ASEAN

Source: Author: natanaelginting - Freepik.com, Title 'Digital World Map Hologram Blue Background'

4.1 Strategic Framework

The strategic framework for the ASEAN Digital Trade Standards (DTS) Roadmap serves as a comprehensive approach to developing a cohesive and efficient digital trade environment across the region. This chapter articulates the key elements of the strategic framework including: (1) strategic outcomes, (2) vision, (3) mapping of digital trade areas and end-objectives for standards harmonisation in each digital trade area, (4) categories of action areas, (5) criteria for standards prioritisation and harmonisation, and (6) ASEAN's flagship digital initiatives. This framework supports AMS in aligning with regional initiatives and international best practices, enhancing ASEAN's competitiveness in the global digital economy.

4.1.1 Strategic Outcomes

The roadmap seeks to achieve three strategic outcomes: (1) Fostering Sustainable and Inclusive Growth, (2) Simplifying Digital Trade Flows, and (3) Enhancing Digital Integration. The following section details the three key strategic outcomes.

Fostering Sustainable and Inclusive Regional Growth

The ASEAN DTS Roadmap aims to foster sustainable and inclusive regional growth through the promotion of harmonised digital trade standards. By aligning digital trade standards, ASEAN can experience both inclusive economic and societal growth. On the economic front, the establishment of common frameworks and standards can reduce trade barriers, enhance trade facilitation, and drive income distribution and per capital growth,[329] ensuring that all nations have equitable opportunities to participate in and benefit from the digital economy. Beyond financial gains, harmonisation of digital trade standards can cultivate an inclusive digital society, supporting all stakeholders, including MSMEs and the marginalised communities. For example, there are around 60 million women-owned

[329] IMF (2020) Determinants of Inclusive Growth in ASEAN, https://www.imf.org/en/Publications/WP/Issues/2020/07/03/Determinants-of-Inclusive-Growth-in-ASEAN-49547

Figure 5. Strategic Framework for ASEAN DTS Roadmap

ASEAN Digital Trade Standards Roadmap: Strategic Framework

Strategic Outcomes

Vision

Achieve interoperability through strengthened alignment, adoption, and harmonisation of standards in key digital trade areas to drive digital transformation, foster innovation, and provide ASEAN member states commercially meaningful opportunities to fully realise the potential benefits of accessing larger markets, both regionally and globally.

Approach to standards Harmonisation

Leverage ASEAN's existing approach to standards harmonisation:

- Encourage the adoption of international standards by National Standards Bodies (NSBs) of AMS.
- Where international standards are not yet available, ASEAN will explore harmonisation at a regional level and promote mutual recognition of conformity assessment results.

Digital Trade Areas

Digital Trade Logistics & Delivery	Digital Transactions	Digital Trust	Cooperation on Emerging Topics
• Last Mile Delivery • Customs Framework • Transaction Assurance	• Cross-border E-commerce • E-invoicing • Payments	• Digital ID and Authentication • Cybersecurity • Online Safety • Cross-border Data Protection and Privacy	• Artificial Intelligence (AI) • Blockchain • Cloud Computing

Categories of Action Areas

- **Policy Alignment and Coordination**
- **Capacity Building and Technical Assistance**
- **Digital Infrastructure Development**

Criteria for Standards Prioritisation and Harmonisation

- Impact on ASEAN's Digital Trade
- Alignment with ASEAN's Flagship Digital Initiatives and International Best Practices
- Commercial Viability and Interest
- Status of Standards Adoption and Implementation across AMS

ASEAN's Flagship Digital Initiatives

The ASEAN DTS Roadmap seeks to align with, complement, and contribute to ASEAN's flagship digital initiatives.

- ASEAN Digital Masterplan 2025
- ASEAN ICT Masterplan 2020
- ASEAN Digital Masterplan 2030 (Targeted to be finalised in 2025)
- Tracking of World IP Organization (WIPO) Global Innovation Index (GII), under ASEAN Digital Integration Index (ADII)

• ASEAN Single Window • ASEAN Customs Transit System (ACTS) • Guidelines of Exchange Information on E-commerce Data between Customs Administration and E-commerce Operator (Targeted to be finalised in 2025)	• ASEAN Agreement on Electronic Commerce • ASEAN Payments Policy Framework (FW) for Cross-Border Real Time Retail Payment Systems (RT-RPS) • Handbook on E-commerce and Competition in ASEAN • Gap analysis on ASEAN IP e-commerce regulatory landscape	• Unique Business Identification Number (UBIN) • ASEAN Digital Credentials Platform • ASEAN Cybersecurity Cooperation Strategy 2021-2025 • ASEAN Guidelines on Consumer Protection in E-commerce • ASEAN Online Business Code of Conduct (ASEAN COG) • ASEAN Online Dispute Resolution Guidelines • ASEAN Framework on Personal Data Protection • ASEAN Data Management Framework • ASEAN Model Contractual Clauses on Cross Border Data Flow • ASEAN Certification Mechanism for Cross-Border Data Flow (Targeted to be finalised in 2025) • ASEAN Cybersecurity Cooperation Strategy 2026-2030 (Targeted to be finalised in 2025)	• ASEAN Guide on AI Governance and Ethics • ASEAN Responsible AI Roadmap (Targeted to be finalised in 2024)

Source: Access Partnership analysis

and operated businesses in the region, many of which face significant challenges such as limited access to finance, technology, and low levels of financial and digital literacy.[330] Harmonising digital trade standards could unlock opportunities for these female-owned and operated MSMEs, as well as other marginalised groups, thereby enhancing accessibility, efficiency, and living standards[331]. Further, the implementation of the Roadmap will help align policies and coordinate efforts to drive the adoption of digital trade standards, prioritise capacity-building initiatives, and drive investments in digital infrastructure across less developed regions. These collective efforts all serve to support long-term economic and societal growth that is inclusive and beneficial for all member states.

Simplifying Digital Trade Flows

A critical strategic outcome of the roadmap is the simplification of digital trade flows, facilitated by the harmonisation of digital trade standards. Standardising regulatory processes and data formats reduces complexities and costs associated with digital trade, enabling businesses of all sizes to engage more easily in international commerce. This streamlining effort eliminates the need for businesses to navigate diverse national regulations, resulting in faster customs clearance and lower administrative overheads. Such harmonisation enhances transparency and predictability in the trading environment, thereby strengthening the competitiveness of the ASEAN digital economy. Overall, the harmonisation of digital trade standards is crucial to trade facilitation and elimination of non-tariff barriers or technical barriers to trade.

Enhancing Digital Integration

Enhancing digital integration within ASEAN is crucial for achieving an interoperable regional market. By establishing uniform protocols and frameworks, ASEAN facilitates cross-border data exchange and interoperability among member states. This integration not only supports the seamless flow of digital transactions but also nurtures an environment conducive to innovation. An interoperable digital market encourages businesses to scale their operations regionally and globally more efficiently, unlocking new economic opportunities across diverse sectors.

4.1.2 Vision

The vision of the ASEAN DTS Roadmap is to achieve interoperability through strengthened alignment, adoption, and harmonisation of standards in key digital trade areas. This vision aims to foster ASEAN's collective interest to participate and influence international standards to support ASEAN business interests and to enable greater market access and inclusion in the global value chain. In the long run, the vision is to drive digital transformation, stimulate innovation, and unlock significant commercial opportunities for AMS,

This Roadmap acknowledges the fast-changing landscape of digital technologies and the inherent challenge of balancing innovation with the establishment of necessary frameworks and standards for digital trade, especially concerning emerging technologies. It is crucial that standards do not hinder innovation. Instead, they should be designed to accommodate new use cases and applications, ensuring they act as enablers for unlocking the full potential of digital trade rather than as mere bureaucratic measures.

[330] ESCAP (2022) Strengthening Women's Entrepreneurship in National Micro, Small and Medium Enterprise Policies and Action Plans: Toolkit for Policymakers, https://asean.org/wp-content/uploads/2022/11/FINAL-Policy-Toolkit-Strengthening-Womens-Entrepreneurship-in-MSME.pdf
[331] UNTAD (2022) Digital Trade: Opportunities and Actions for Developing Countries, https://unctad.org/system/files/official-document/presspb2021d10_en.pdf

4.1.3 ASEAN's Approach to Standards Harmonisation

Standards harmonisation plays a crucial role in enabling and facilitating digital trade. By aligning technical requirements and regulatory practices, countries can reduce trade barriers, enhance interoperability, maintain technology neutrality, and foster a more integrated economic environment.

This Roadmap reinforces ASEAN's existing approach to standards harmonisation, which encourages the adoption of international standards by National Standards Bodies (NSBs) of AMS. Where international standards are not yet available, ASEAN will explore harmonisation at a regional level and advance mutual recognition of conformity assessment results. This approach is in alignment ASEAN's broader efforts to drive greater standards harmonisation, as outlined in key documents such as the ASEAN Guidelines for Harmonisation of Standards, the ASEAN Guidelines for Accreditation and Conformity Assessment, and the Guidelines for Mutual Recognition Agreements, among others.

Adoption of Harmonised Standards

Harmonised standards refer to standards on the same subject approved by National Standards Bodies (NSBs) of AMS that establish interchangeability of products, processes, services or mutual understanding of tests results or information provided based on endorsed Reference Standards. Reference Standards are international/ published standards endorsed to be used as the basis of harmonisation in ASEAN, but not yet adopted as national standards of AMS.[332]

The adoption of harmonised standards by AMS can ensure consistency and uniformity in technical requirements, testing procedures, and regulatory compliance. This reduces trade barriers, promotes interoperability, and facilitates cross-border digital trade, thereby enhancing consumer confidence and promoting global market integration.

Mutual Recognition of Conformity Assessment Results

Mutual Recognition of Conformity Assessment Results refers to the acceptance of procedures (e.g. test reports and certification of compliance) used to verify compliance with the importing country's standards.[333] This means that importing country acknowledges the competency of the exporting country's conformity assessment bodies to conduct testing or certification according to the importing country's standards.

To facilitate the mutual recognition of conformity assessment results, Mutual Recognition Agreements (MRAs), which are agreements between two or more countries to recognise each other's conformity assessments, such as testing, certification, and inspection results, play a crucial role. These agreements, whether bilateral or regional, help reduce technical barriers to trade and promote regulatory convergence. MRAs can streamline compliance processes, reduce duplication of testing and certification, and enhance trust between trading partners.

[332] ASEAN Secretariat (2023) ASEAN Guidelines for Harmonisation of Standards,https://asean.org/wp-content/uploads/2023/05/ASEAN-Guidelines-for-Harmonisation-of-Standards-2022-Version.pdf
[333] ASEAN (n.d.) How MRAs Help Industry in the Region,https://asean.org/wp-content/uploads/2021/08/What-is-MRAs.pdf

4.1.4 Digital Trade Areas

4.1.4.1 Mapping of Digital Trade Areas

The roadmap has identified the following key digital trade areas and sub-areas that ASEAN and its member states should prioritise for standards harmonisation efforts. These areas are analysed in detail in Chapter 4.

Table 11. Digital Trade Areas and Sub-areas

	Digital Trade Area	Sub-Area
1	**Digital Trade Logistics and Delivery**	Last Mile Delivery
		Customs Framework
		Transaction Assurance
2	**Digital Transactions**	Cross-border E-commerce
		E-invoicing
		Payments
3	**Digital Trust**	Digital ID and Authentication
		Cybersecurity
		Online Safety
		Cross-border Data Protection and Privacy
4	**Cooperation on Emerging Topics**	AI
		Blockchain
		Cloud Computing

Source: Access Partnership analysis

4.1.4.2 Objectives for Key Digital Trade Areas

The end-objectives for standards adoption and implementation in the digital trade areas are essential for enabling AMS to monitor and track their progress in harmonising standards. These objectives provide contextualised, targeted, and measurable goals for AMS to assess their progress in standards harmonisation. By setting clear end goals, AMS can identify areas requiring further alignment and improvement, fostering a cohesive and integrated digital economy across the region. This structured approach supports continuous alignment and adoption of digital trade standards, ultimately contributing to the three strategic outcomes outlined in Chapter 4.1.1.

The table below outlines the end-objectives of standards adoption and implementation for each digital trade area and sub-area.

Table 12. Objectives for Key Digital Trade Areas

Digital Trade Area and Sub-area	End-objectives for standards adoption/implementation in the digital trade area and sub-area
Digital Trade Logistics and Delivery	• Develop the new generation of ASEAN Single Window to enable electronic exchange of cross-border trade related documents among AMS[334]
Last Mile Felivery	• Develop an ASEAN Last Mile Delivery Framework
Customs Framework	• Develop the new generation of ASEAN Single Window[335] • Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators
Transaction Assurance	• Increase adoption of the ISO/TC 321 Transaction assurance in E-commerce by AMS, as well as inclusion of this standard in subsequent work plan reviews of the Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce
Digital Transactions	• Increase awareness, alignment and adoption of UNCITRAL MLEC and MLETR, in alignment with WTO Trade Facilitation standards • Increase the implementation of interoperable standards for digital payments
Cross-border E-commerce	• Increase awareness, alignment and adoption of UNCITRAL MLEC and MLETR, in alignment with WTO Trade Facilitation standards

[334] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window
[335] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window

E-invoicing	• Increase adoption of e-invoicing standards and/or harmonisation of national e-invoicing system with international e-invoicing standards
Payments	• Adopt the ISO 20022 standard in both the Retail Payment Systems and Large Value Payment Systems, across all 10 AMS; and increase alignment with global payment standards such as CBPR+, IP+, and CPMI harmonisation.
Digital Trust	• Increase adoption of international cybersecurity standards and standardised best practices for cyber hygiene • Harmonise data protection regulations and cross-border data transfer mechanisms • Increase adoption of ASEAN Model Contractual Clauses on Cross Border Data Flow amongst domestic businesses through guidance on operationalisation • Develop the ASEAN UBIN Roadmap
Digital ID and Authentication	• Develop the implementation roadmap to establish regionally comparable and recognised UBIN in ASEAN
Cybersecurity	• Adopt the ISO/IEC 27001 and 27002 standards across all 10 AMS
Online Safety	• Enhance the ASEAN Online Business Code of Conduct
Cross-border Data Protection and Privacy	• Increase adoption of ASEAN Model Contractual Clauses on Cross Border Data Flow amongst domestic businesses through guidance on operationalisation
Cooperation on Emerging Topics	• Develop regional frameworks/standards for use of emerging technologies • Increase awareness of emerging technologies to be better positioned to harness them
AI	• Increase participation in the development and implementation of International AI Standards
Blockchain	• Increase participation in the development of international blockchain standards
Cloud Computing	• Develop an ASEAN Framework for Cloud Computing

Source: Access Partnership analysis

4.1.5 Categories of Action Areas

To ensure a comprehensive set of recommendations for achieving these end objectives, the recommendations will be categorised under three main categories: (1) Policy Alignment and Coordination, (2) Capacity Building and Technical Assistance, and (3) Digital Infrastructure Development.

Policy Alignment and Coordination

Policy alignment and coordination are essential for creating an interoperable and inclusive digital trade environment within ASEAN. Recommendations in this category focus on harmonising digital trade policies across member states, establishing coordinated regulatory frameworks, and enhancing regional cooperation. Key actions include adopting digital trade standards, creating a coordinated regulatory framework that aligns with international standards while addressing ASEAN-specific needs, and promoting collaborative efforts through regular dialogues, joint initiatives, and shared best practices.

Capacity Building and Technical Assistance

Capacity building and technical assistance are critical for empowering AMS with the knowledge and skills necessary to adopt and implement digital trade standards. This category focuses on providing training and education programmes, offering technical assistance, and building institutional capacity. By enhancing the technical expertise of ASEAN government stakeholders, industry, regulatory bodies, and trade organisations, AMS can effectively oversee and enforce digital trade standards, ensuring successful implementation and compliance. Key actions include implementing training initiatives, providing consultancy services and practical guidance, and strengthening the organisational structures and processes of relevant institutions.

Digital Infrastructure Development

Digital infrastructure development is fundamental to supporting a robust and resilient digital trade ecosystem in ASEAN. This category focuses on investing in and upgrading the digital infrastructure necessary for digital trade, ensuring cybersecurity and data protection, and promoting interoperability and connectivity. By developing reliable digital infrastructure and adopting international best practices in cybersecurity and data protection, AMS can facilitate seamless digital transactions and build digital trust. Key actions include developing high-speed internet, data centres, and cloud services, implementing robust cybersecurity measures, and standardising technical protocols to enhance interoperability and connectivity across borders.

By categorising the recommendations into these three key categories, ASEAN can systematically address the multifaceted challenges of digital trade. This structured approach will enable member states to implement targeted measures that collectively contribute to a cohesive and integrated digital economy, driving sustainable growth and innovation in the region.

4.1.6 Criteria for Standards Prioritisation and Harmonisation

Defining criteria for prioritising and harmonising digital trade standards is crucial for AMS to identify which standards should be prioritised to maximise economic benefits, ensure regulatory coherence, and foster regional integration.

The four key criteria include (1) Impact on ASEAN's Digital Trade, (2) Alignment with ASEAN's Flagship Digital Initiatives and International Best Practices, (3) Commercial Viability and Interest, and (4) Status of Standards Adoption and Implementation Across AMS.

Impact on ASEAN's Digital Trade

This Roadmap prioritises digital trade standards that would have the greatest impact on ASEAN's digital economy to maximise economic benefits, enhance interoperability, and facilitate regulatory coherence. By focusing on impactful standards, ASEAN can drive innovation, enhance regional digital integration, and reduce compliance costs for businesses, especially MSMEs. Prioritising these standards is essential for fostering a dynamic and competitive digital economy across the region.

Alignment with ASEAN's Flagship Digital Initiatives and International Best Practices

This Roadmap prioritises digital trade standards that align with ASEAN's flagship digital initiatives and international best practices to foster regional coherence and global competitiveness. Standards should be consistent with the broader objectives of the ASEAN Economic Community (AEC), the Digital Economy Framework Agreement (DEFA), and ASEAN's flagship digital initiatives (elaborated in the Annex of this report). Additionally, they should reflect internationally recognised best practices to facilitate global trade and integration. This alignment ensures that AMS can collectively advance towards regional goals while maintaining compatibility with international standards, thus enhancing the region's attractiveness as a unified digital market.

Commercial Viability and Interest

The commercial viability and interest of standards are critical factors in the prioritisation of standards. Standards that offer clear economic benefits and have strong support from the private sector are more likely to be successfully implemented and adopted. This includes evaluating the potential for standards to drive cost savings, efficiency gains, and market expansion opportunities for businesses within ASEAN. Prioritising commercially viable standards ensures that the efforts invested in harmonisation translate into tangible economic growth and development, benefiting both businesses and consumers across the region.

Status of Standards Adoption and Implementation across AMS

Another key criterion for prioritising standards is the current status of standards adoption and implementation, which has been analysed in Chapter 3. Prioritising standards that are already partially adopted or have a clear implementation roadmap can facilitate smoother harmonisation and quicker realisation of benefits. This approach builds on existing efforts and accelerates the achievement of an interoperable digital trade environment.

4.2 Key Considerations in Designing The Roadmap

The ASEAN DTS Roadmap is designed with several key considerations to ensure its relevance, effectiveness, and adaptability in the rapidly evolving digital landscape. The key considerations include (1) Measuring Impact and Outcomes, (2) Regular Monitoring and Review, and (3) Stakeholder Engagement and Collaboration.

Measuring Impact and Outcomes

Effective implementation of the roadmap requires robust mechanisms for measuring impact and outcomes. Each recommendation in Chapter 5 incorporates key performance indicators (KPIs)/measures of progress to enable AMS and ASEAN sectoral bodies to track progress towards the end-objectives. Regular reporting and transparency in results are crucial for demonstrating the value of the roadmap and fostering accountability among AMS.

Regular Monitoring and Review

The Roadmap is envisioned to be a “living document” that is designed to be dynamic and capable of accommodating changes in technology, market conditions, and regulatory environments. It is imperative that the Roadmap should undergo regular monitoring, review and revision, where necessary, to continually enhance its effectiveness and relevance amidst the evolving digital landscape. Notably, it is recommended for a mid-term review to be conducted around the fifth year of the Roadmap, which would be around 2029. These reviews allow AMS to comprehensively assess progress made, challenges encountered, and developments and opportunities in changing digital trade landscape. By systematically evaluating implemented standards and initiatives with clear procedures and institutional frameworks, AMS can identify areas needing adjustment or enhancement, ensuring alignment with evolving regional needs and priorities.

Stakeholder Engagement and Collaboration

Implementing the key recommendations in the Roadmap requires active engagement and collaboration with a wide range of stakeholders, including ASEAN sectoral bodies, AMS government agencies and regulators, private sector representatives, and civil society organisations. Gender inclusivity should be accounted for to ensure that feedback from marginalised groups is considered when developing or reshaping digital trade policies and standards. This inclusive approach ensures that the roadmap addresses the diverse needs and perspectives of all parties involved in digital trade. Regular consultations, feedback mechanisms, and information transparency are essential for maintaining stakeholder buy-in and participation, and ensuring that the recommendations are practical, impactful, and widely supported.

Incorporating these considerations into the ASEAN DTS Roadmap reinforces its dynamic and effective role in advancing digital trade standards harmonisation across ASEAN. This approach not only supports continuous improvement but also fosters innovation and promotes sustainable, inclusive economic growth within the region.

5. Key Recommendations for Harmonising DTS in ASEAN

Source: Author: frameangel - Freepik.com, Title 'ASEAN Economic Community flags, southeast Asia countries and sky background'

This chapter will outline key initiatives and actions to be led by ASEAN Sectoral Bodies and AMS policymakers to promote and achieve the harmonisation of digital trade standards within ASEAN.

5.1 Overview of Key ASEAN Digital Initiatives

This section highlights three key digital initiatives that ASEAN should prioritise due to their critical importance and cross-cutting impact across various areas. By focusing on the harmonisation of digital trade standards in these key digital initiatives, ASEAN can accelerate its path to digital transformation and economic integration by streamlining regulatory alignment, fostering a culture of continuous improvement and innovation, and enhancing digital infrastructure.

Key ASEAN Digital Initiative 1: Development of the New Generation of ASEAN Single Window

The ASEAN Single Window (ASW) is a pivotal regional initiative that has significantly advanced digital trade in the region by enabling a seamless trade experience via electronic documents and interoperable processes.[336] Given the rapid advancements in digital technology and the growing demand for cross-border paperless trade, there is a pressing need to develop a new generation of the ASW. The new generation ASW will not only streamline customs procedures but can also enable real-time tracking and verification of trade documents, significantly reducing the risk of fraud and errors whilst improving the security and reliability of electronic trade processes.

The benefits of developing the new generation ASW cuts across all four of the identified digital trade areas. Beyond its direct role in improving the state of digital trade logistics and delivery through improvements to customs frameworks and transaction assurance, it would also support cross-border e-commerce by facilitating digital transactions. The integration of blockchain technology will further bolster security and foster digital trust.

Overall, the new generation ASW will pave the way for a more robust and resilient regional trade network, marking a critical step toward modernising ASEAN's trade facilitation mechanisms and enabling ASEAN to realise the full potential of cross-border paperless trade.

[336] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window

Key ASEAN Digital Initiative 2: Development of the ASEAN UBIN Roadmap

Another key regional initiative is the development of the Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN (UBIN Roadmap). The UBIN Roadmap is essential for establishing a regionally recognised and comparable UBIN system, which is expected to become a foundational element of the ASEAN digital economy.[337]

The UBIN system aims to provide an interoperable digital identification framework for businesses across ASEAN member states. Implementing the UBIN system can streamline various aspects of business operations, from verifying business credentials to facilitating regulatory compliance. By providing a unique identifier for each business, the UBIN system simplifies the verification process, enhances transparency, and reduces the risk of fraud. This uniformity is essential for the growth of digital payments and e-commerce within the region, making transactions more secure and reliable.

In parallel, interoperable domestic digital identity schemes for individuals will eliminate the need for in-person authentication by providing digital access to online services. This will support regional goals of digital and financial inclusion, particularly in ASEAN, where an estimated 65 million people lack a legally recognised form of identity.[338]

Trust is a fundamental component of a thriving digital economy, and the UBIN and digital identity system enhances digital trust by ensuring that businesses and consumers can be accurately identified and verified. This increased transparency will build confidence among trading partners, consumers, and regulatory bodies, enhancing the security of digital transactions and accelerating processes like customs clearance and transaction assurance.

Overall, the ASEAN UBIN Roadmap represents a pivotal initiative that will underpin the region's digital economy, fostering a more secure, efficient, and reliable business environment.

Key ASEAN Digital Initiative 3: Increase Adoption of MCCs Amongst Domestic Businesses

Increasing the adoption of legal tools that promote digital trust and legal certainty can significantly enhance cross-border data flows. These tools can improve transparency by clearly defining the rights and obligations of parties involved in digital transactions, thereby fostering trust among businesses and their stakeholders. Notably, the MCCs incorporate data protection and transfer standards. As such, its adoption allows businesses to ensure alignment with international standards, strengthen digital trust and safeguarding against cyber threats.

For example, the Joint Guide to ASEAN MCC and GDPR Standards Contractual Clauses (SCCs) was developed to promote interoperability between regional contractual clauses. By aligning ASEAN MCCs with GDPR SCCs, businesses can ensure compliance with GDPR's stringent data protection standards, which are crucial for EU-ASEAN data transfers and building of digital trust in the region. The Cross-Border Privacy Rules (CBPR) in APEC also supports this by providing a consistent privacy protection mechanism across APEC economies, ensuring that data transfers within the region and with external partners (like the EU) maintain privacy standards and legal certainty.

While MCCs may have a less immediate impact compared to other key recommendations, their role is no less crucial. Data transfer is fundamental to all digital trade activities, and ensuring its security and reliability is crucial for the broader digital economy. By standardising data protection practices, MCCs create a secure digital environment which supports the growth of digital trade across the region.

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[337] ASEAN (2024) Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN, https://asean.org/wp-content/uploads/2024/04/TOR_UBIN-Implementation-Roadmap_final-1.pdf
[338] US-ASEAN Business Council (n.d.) Digital Identity in ASEAN, https://www.usasean.org/article/digital-identity-asean

5.2 Digital Trade Standards Roadmap

This section outlines key recommendations for ASEAN Sectoral Bodies and AMS policymakers to strengthen alignment and harmonisation of standards across four digital trade areas: (1) Digital Trade Logistics and Delivery, (2) Digital Transactions, (3) Digital Trust, and (4) Cooperation on Emerging Topics.

Each recommendation/action area includes objectives, target areas, milestones and tentative timeframe, relevant ASEAN Sectoral Bodies, and measures of progress. As detailed in Chapter 4.1.4, the recommendations will be categorised into three main categories: (1) Policy Alignment and Coordination, (2) Capacity Building and Technical Assistance, and (3) Digital Infrastructure Development.[339]

The Roadmap covers a 10-year period (2025-2034), with short term milestones anticipated to be executed within 1-2 years, medium term milestones in 3-5 years, and long-term milestones in 5-10 years. However, the actual executive may vary based on several factors, including the prioritisation of digital trade areas, pact of collaboration, policy implementation, and potential regulatory reforms, among others.

[339] The recommendations and action areas focus on the most impactful and urgent priorities within each digital trade sub-area and may not include actions across all three categories

Roadmap for Digital Trade Area 1: Digital Trade Logistics and Delivery

5.2.1 SUB-AREA: LAST MILE DELIVERY

5.2.1.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[340]	Relevant ASEAN Sectoral Bodies	Measure(s) of Progress
Key Action Area	**6.2.1.1 Develop an ASEAN Last Mile Delivery Framework**			
Objective(s)	• **Harmonising Last Mile Delivery Practices:** Developing a regional last mile delivery framework provides certainty for logistics providers operating across jurisdictions, enabling interoperable digital trade across borders, increased efficiency, and improved overall service quality. • **Facilitating Cross-border E-Commerce:** Enhancing cross-border e-commerce by creating a standardised last mile delivery framework that streamlines processes, reduces delivery times, and lowers costs, making it easier for businesses to expand their reach within ASEAN. • **Enhancing Consumer Experience:** Improving the e-commerce customer experience by adopting best practices from leading nations, ensuring reliable, timely, and transparent delivery services across the region. • **Encouraging participation of AMS in shaping consumer policies:** Incorporating feedback from AMS on consumer policies can better reflect current regulations and practices in the ASEAN region			
6.2.1.1 **Develop an ASEAN Last Mile Delivery Framework**	• **Regional Framework Development:** Create an ASEAN Last Mile Delivery Framework that outlines the key principles and minimum standards for last mile delivery. This framework would provide a common foundation while allowing flexibility for national adaptations. • **Mutual Recognition Agreements:** Promote the **establishment** of mutual recognition agreements among AMS to acknowledge and accept each other's national last mile delivery standards, ensuring they align with the core principles of the regional framework. • **Phased Implementation:** Implement the regional framework and mutual recognition in phases, starting with pilot projects in selected member states to refine the approach.	Short-Term: • Conduct a comprehensive review of existing and upcoming national last mile delivery standards across AMS to identify gaps and opportunities for harmonisation. • Form a working group comprising representatives from each AMS to draft the ASEAN Last Mile Delivery Framework, including stakeholder consultations. Medium-Term: • Pilot the ASEAN Last Mile Delivery Framework in select AMS to assess feasibility and effectiveness. • Gather feedback from pilot implementations and refine the standard based on results and stakeholder input. • Officially adopt the ASEAN Last Mile Delivery Framework across all AMS, promoting awareness and training on its application. Long-Term: • Monitor and evaluate the implementation of the standard through periodic reviews and stakeholder feedback.	Coordinating sectoral bodies: • ASEAN Digital Senior Officials Meeting (ADGSOM) • Digital Trade Standards and Conformance Working Group (DTSCWG) • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Adoption Rate:** Number of AMS adopting the ASEAN Last Mile Delivery Framework within the specified timeframe. • **Delivery Performance Metrics:** Reduction in delivery times and improvement in customer satisfaction scores, measured through surveys and tracking systems. • **Operational Efficiency Improvements:** Enhanced operational efficiency metrics among logistics providers, including reductions in operational costs and improvements in delivery success rates.

[340] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		• Update and improve the standard as necessary to keep pace with technological advancements, market changes, and evolving consumer expectations. • Promote the ASEAN Last Mile Delivery Framework standard globally to attract foreign investment and partnerships, enhancing the region's reputation as a hub for e-commerce logistics.		

5.2.1.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[341]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.1.2 Strengthen Skills and Competencies Related to Last Mile Delivery**			
Objective(s)	• **Enhancing Workforce Skills:** Providing targeted training and development programmes for logistics professionals to improve skills in last mile delivery. • **Promoting Knowledge Sharing:** Facilitating exchange programmes and workshops for AMS to learn from successful last mile delivery models and practices.			
6.2.1.2 **Strengthen Skills and Competencies Related to Last Mile Delivery**	• **Training Programmes:** Develop comprehensive training modules focused on last mile delivery logistics, e-commerce technologies, and customer service excellence. • **Resource Development:** Create accessible resources, such as toolkits and guidelines, for AMS to implement best practices in last mile delivery. • **Mentorship Initiatives:** Establish mentorship schemes linking experienced logistics professionals with emerging talent in the region.	Short-Term: • Assess training needs and skill gaps within the last mile delivery sector across AMS. • Launch pilot training programmes in selected AMS, focusing on essential skills and competencies. Medium-Term: • Evaluate the effectiveness of pilot programmes and expand training offerings based on feedback. • Develop partnerships with educational institutions and industry associations for continuous learning opportunities. Long-Term: • Establish a regional certification programme for professionals in last mile delivery. • Regularly update training content to reflect technological advancements and changing market dynamics.	Coordinating sectoral bodies: • ASEAN Digital Senior Officials Meeting (ADGSOM) • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) Supporting sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Training Participation Rates:** Number of individuals trained across AMS in last mile delivery competencies. • **Skill Improvement Metrics:** Improvements in participant skills, assessed through pre- and post-training evaluations. • **Mentorship Engagement:** Number of mentorship matches established and success stories documented.

[341] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

5.2.1.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[342]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.1.3 Strengthen the Underlying Digital Infrastructure for Last Mile Delivery**			
Objective(s)	• **Enhancing Digital Connectivity and Infrastructure:** Developing reliable and secure systems that can support efficient and smooth last mile delivery. • **Integrating Digital Technologies:** Implementing technologies that can provide real-time tracking and visibility of deliveries, and automate processes to improve transparency, customer satisfaction, and efficiency.			
6.2.1.3 **Strengthen the Underlying Digital Infrastructure for Last Mile Delivery**	• **Internet of Things (IoT) Integration:** Develop an IoT-connected ecosystem where delivery hubs, vehicles, and packages are linked through IoT networks for seamless data exchange, allowing them to monitor location, temperature, and condition in real-time. • **Artificial Intelligence (AI) and Machine Learning (ML) Deployment:** Leverage AI algorithms for route optimisation and ML models to predict delivery demand and allocate resources accordingly, reducing delivery times and increasing efficiency. • **Digital Platforms Migration:** Create digital platforms and applications that centralise delivery management, allowing for efficient coordination between suppliers, delivery personnel, and customers, whilst allowing customers to track their deliveries in real-time, provide feedback, and communicate with delivery personnel.	Short-Term: • Conduct pilot projects in select urban areas to test IoT integration with delivery hubs, vehicles, and packages. • Develop and test AI algorithms for route optimisation in select pilot cities. • Implement initial ML models for demand forecasting in pilot regions. • Develop and launch a pilot digital platform for delivery management in select urban areas. • Create mobile applications for delivery personnel and customers, featuring real-time tracking and communication tools. Medium-Term: • Integrate IoT monitoring platform with existing delivery management systems. • Integrate AI and ML tools with existing delivery management systems for seamless operation. • Implement additional features for the digital platform such as customer feedback integration and automated delivery scheduling. Long-Term: • Continuously refine and update AI algorithms and ML models to adapt to changing delivery patterns and new data. • Continuous improvement and scaling of the IoT-connected ecosystem to include more advanced features such as predictive maintenance and automated alerts. • Continuously update and enhance the platform and applications to incorporate new technologies and user feedback.	Coordinating sectoral bodies: • ASEAN Digital Senior Officials Meeting (ADGSOM) • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) Supporting sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **IoT Sensor Deployment:** Number of delivery vehicles and packages equipped with IoT sensors. • **Real-Time Monitoring Implementation:** Number of delivery hubs with real-time IoT monitoring capabilities. • **AI Route Optimisation:** Percentage reduction in average delivery time due to AI route optimisation. • **Digital Platform Adoption:** Measure the adoption rate of digital platforms and applications among suppliers, delivery personnel, and customers, tracking the transition from traditional to digital delivery management systems. • **Operational Coordination:** Assess improvements in coordination and communication between suppliers, delivery personnel, and customers, focusing on the efficiency and effectiveness of delivery management through the digital platforms.

[342] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

5.2.2 SUB-AREA: CUSTOMS FRAMEWORK

5.2.2.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[343]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.2.1 Develop the New Generation of ASW[344]**			
Objective(s)	• **Enhancing Trust and Security:** Utilising security technologies to ensure trusted interoperability among governments and businesses, improving the security and reliability of electronic trade processes. • **Increasing Trade Efficiency:** Improving efficiency and transparency in customs operations by leveraging technology and best practices, reducing clearance times and administrative burdens for businesses.			
6.2.2.1 **Develop the New Generation of ASEAN Single Window**	• **Conduct Study on New Generation of the ASEAN Single Window:** Conduct analysis on the policy, technical, and legal aspects of the ASW, including relevant global practices and recommendations, and examine the prioritisation and timeline for e-documents to be exchanged with ASEAN Dialogue Partners or the other private sector.	Short-Term: • Conduct a study/analysis on the possible e-document to be exchanged to support the decision on prioritising the cooperation within ASEAN and with potential ASEAN Dialogue Partners or the private sector. • Conduct a Study/Analysis on the possible Security Technologies for Exchanging electronic transactions and documents Among Governments and Businesses in ASEAN Member Countries. • Develop recommendations on technical and legal best practice, to use as a basis for discussion and negotiation with ASEAN Dialogue Partners or the private sector. Medium-Term: • Based on the study, provide a technical and legal basis that enables cross-border paperless trade by enabling the end-to-end flow of business transactions (G2G, B2G and B2B transactions) and will complement the implementation of ASEAN Digital Economy. Long-Term: • Launch the pilot phase of the new generation of ASW. • Establish a mechanism to monitor the implementation of recommendations. • Perform impact assessments to evaluate the effectiveness of the new ASW.	Lead sectoral body: • ASEAN Single Window Steering Committee (ASWSC)	General measures of progress include: • **Completion of study:** Timely completion of each phase of the study, including preliminary research, in-depth analysis, recommendations development, and finalisation. • **Adoption of Recommendations:** Formal adoption of policy, technical, and legal recommendations by relevant ASEAN sectoral bodies and member states.

[343] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.
[344] ASEAN (2024) Lao PDR 2024 PED Concept Note: Complete the Study on the New Generation of ASEAN Single Window.

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[345]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.2.2 Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators**			
Objective(s)	• **Establish a clear framework for data exchange:** By providing a standardised approach to data exchange, the guidelines ensure smooth and secure interactions between customs authorities and e-commerce operators, thus facilitating more efficient cross-border trade.			
6.2.2.2 **Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators**	• **Develop Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators:** The guidelines serve to provide a clear framework for the exchange of e-commerce data between customs administrations and e-commerce operators, streamlining customs processes, reducing delays, and facilitating more efficient cross-border trade.	Short-Term: • Finalise the Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators, aligning with international best practices (such as the WCO SAFE Framework of Standards, WCO Cross-Border E-Commerce Framework of Standards, and the Resolution of the Policy Commission of the WCO on the Guiding Principles for Cross-Border E-Commerce (Luxor Resolution))) and international data exchange standards (e.g., UN/EDIFACT, ISO standards, WCO Data Model). • Endorse guidelines across all 10 ASEAN Member States. Medium-Term: • Refine the draft guidelines based on feedback from stakeholder consultations. • Conduct training and awareness campaigns to ensure that Customs Administrations and E-Commerce Operators understand how to implement the guidelines. Long-Term: • Monitor and assess the effectiveness of the guidelines regularly, • where it is implemented, making adjustments as needed. • Ensure that the guidelines are aligned with any new international trade facilitation standards and evolving global e-commerce practices.	Lead sectoral body: • Customs Procedures and Trade Facilitation Working Group (CPTFWG)	General measures of progress include: • **Finalisation of the Guidelines:** The official release and dissemination of the Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators. • **Reduction in Customs Processing Times for E-Commerce Shipments:** Monitor the reduction in the time it takes for customs to process e-commerce shipments.

[345] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		• Strengthen ASEAN's cross-border e-commerce ecosystem by further integrating customs-e-commerce data exchanges into broader digital trade initiatives (e.g., the new generation of the ASEAN Single Window).		

5.2.2.2 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[346]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.2.3 Strengthen the Underlying Digital Infrastructure for the ASEAN Single Window**			
Objective(s)	• **Streamlining Customs Operations:** Enhancing digital systems to enable efficient processing and sharing of electronic trade documents across AMS. • **Building a Robust Decentralised Alternative Framework:** Implementing a secure decentralised alternatives infrastructure that supports trusted interoperability for electronic trade documentation and fosters transparency in customs processes.			
6.2.2.3 **Strengthen the Underlying Digital Infrastructure for the ASEAN Single Window**	• **Strengthen capabilities to support the ASEAN Single Window:** Develop a system enhancement based on recommendations from the study on the new generation of ASEAN Single Window. • **Digital Connectivity Enhancements:** Improve digital connectivity between AMS to facilitate real-time data sharing and streamline customs clearance processes.[347]	Medium-Term: • Launch the system enhancement based on recommendations from the study on the new generation of ASEAN Single Window. Long-Term: • Explore decentralised alternatives, such as verifiable credentials, for trusted interoperability, as suggested by the World Wide Web Consortium (W3C), to connect governments and businesses, ensuring secure and efficient exchange of electronic trade documents.	Lead sectoral body: • ASEAN Single Window Steering Committee (ASWSC)	General measures of progress include: • **System enhancement:** Number of AMS implementing the system enhancement based on the recommendations. • **Document Processing Time:** Reduction in time taken for customs clearance.

[346] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

[347] Note: The specific type of digital connectivity enhancement would be dependent on the analysis from the study on the New Generation of ASEAN Single Window.

5.2.3 SUB-AREA: TRANSACTION ASSURANCE

5.2.3.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[348]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.3.1 Increase adoption of the ISO/TC 321 standard into the Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce**			
Objective(s)	• **Revising Policy Frameworks:** Incorporating the ISO/TC 321 into policy frameworks enhances the overall effectiveness of digital trade and e-commerce strategies within AMS. • **Enhancing Governance:** Strengthening governance frameworks for electronic commerce through the adoption of recognised transaction assurance standards.			
6.2.3.1 **Integrate ISO/TC 321 standard into the Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce**	• **Work Plan Integration:** Incorporate ISO/TC 321 standards in subsequent work plan reviews of the ASEAN Agreement on Electronic Commerce. • **Regulatory Alignment:** Ensure alignment of national policies with regional transaction assurance standards. • **Stakeholder Engagement:** Engage key stakeholders, including policymakers and industry leaders, to support the integration process.	Short-Term: • Review current work plans and identify gaps in transaction assurance. • Formulate a strategy for the inclusion of transaction assurance standards in the work plan. • Conduct stakeholder consultations to gather feedback and build consensus. Medium-Term: • Integrate ISO/TC 321 standards into the work plan. • Align national policies with the updated work plan. • Monitor and assess the implementation of the new standards. Long-Term: • Continuously review and update the work plan to reflect new developments in transaction assurance. • Promote the work plan's standards regionally and globally. • Measure the impact of the integrated standards on e-commerce growth and security.	Lead sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG) This could be supported by the following bod(ies): • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Policy Adoption:** Number of AMS National Standards Body adopting ISO/TC 321 standards • **Work Plan Updates:** Frequency and quality of updates to the ASEAN Agreement on Electronic Commerce work plan. • **E-Commerce Growth:** Increase in the volume and value of secure e-commerce transactions within ASEAN.

[348] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

5.2.3.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[349]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.3.2 Increase Adoption of the ISO/TC 321 Transaction Assurance Standard among AMS**			
Objective(s)	• **Building Technical Expertise:** Developing the technical expertise of AMS in transaction assurance to ensure effective adoption and implementation of ISO/TC 321 standards. • **Enhancing Compliance:** Assisting AMS in meeting international transaction assurance standards to enhance compliance and facilitate cross-border e-commerce. • **Strengthening Institutional Capacity:** Improving the capacity of national institutions to support the adoption and enforcement of transaction assurance standards.			
6.2.3.2 **Increase Adoption of the ISO/TC 321 Transaction Assurance Standard among AMS**	• **Training Programmes:** Develop comprehensive training programmes on ISO/TC 321 standards for regulators and industry professionals. • **Technical Assistance:** Provide technical assistance to AMS for the implementation and monitoring of transaction assurance standards. • **Institutional Support:** Strengthen the capacity of national institutions to support standard adoption.	Short-Term: • Develop and deliver training programmes on transaction assurance standards. • Establish technical assistance teams to support AMS. • Initiate institutional capacity-building initiatives. Medium-Term: • Implement training across all AMS. • Monitor and evaluate the effectiveness of technical assistance. • Enhance institutional support mechanisms. Long-Term: • Ensure ongoing professional development for regulators and industry professionals. • Continuously update training and technical assistance programmes. • Maintain robust institutional support for standard adoption and enforcement.	Lead sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG) Supporting body: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Training Participation:** Number of regulators and industry professionals trained. • **Technical Assistance:** Number of AMS receiving technical assistance. • **Institutional Capacity:** Improvement in the capacity of national institutions to support standard adoption. • **Compliance Rates:** Increase in compliance with ISO/TC 321 standards across AMS

[349] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

5.2.3.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[350]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.3.3 Strengthen Digital Infrastructure for Transaction Assurance**			
Objective(s)	• **Supporting Innovation:** Encouraging innovation to support evolving transaction assurance needs and promote digital trade.			
6.2.3.3 **Strengthen Digital Infrastructure for Transaction Assurance**	• **Integrated After-Sales Service Software:** Upgrade and enhance digital after-sales service software to enhance transaction assurance. • **Innovation Hubs:** Establish innovation hubs to foster advancements in digital infrastructure and transaction assurance technologies.	Short-Term: • Conduct a needs assessment to identify the specific requirements for integrated after-sales service software. • Launch initial innovation hubs focused on transaction assurance technologies. Medium-Term: • Implement the after-sales service software in pilot AMS and gather feedback from users for improvements. • Expand innovation hubs and support collaborative projects. Long-Term: • Roll out the software across all AMS, ensuring seamless integration with existing platforms. • Promote continuous innovation and adoption of new technologies.	Lead sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM) Supporting body: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Customer Satisfaction:** Increase in customer satisfaction ratings related to after-sales support and services. • **Innovation Projects:** Number of innovation projects and collaborations in transaction assurance technologies.

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Roadmap for Digital Trade Area 2: Digital Transactions

5.2.4 SUB-AREA: CROSS-BORDER E-COMMERCE

5.2.4.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[351]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.4.1 Enhancing Integration of UNCITRAL Model Law on Electronic Commerce (MLEC) and Adoption of Model Law on Electronic Transferable Records (MLETR) into AMS National Legal Frameworks**			
Objective(s)	• **Streamlining Trade Processes:** Enhancing the efficiency of trade processes by implementing the UNCITRAL MLEC and MLETR across ASEAN. • **Aligning with International Standards:** Ensuring that ASEAN's trade facilitation measures align with international standards, particularly those of the WTO.			
6.2.4.1 **Integration of UNCITRAL Model Law on Electronic Commerce (MLEC) and Adoption of Model Law on Electronic Transferable Records (MLETR) into AMS National Legal Frameworks**	• **Legal Framework Harmonisation:** Align national legal frameworks with international standards set by MLEC and MLETR to ensure consistency and legal certainty in electronic commerce and transferable records.	Short-Term: • Conduct a comprehensive review of existing national laws to identify gaps and inconsistencies with MLEC and MLETR. • Organise workshops, seminars, and information sessions to educate stakeholders on the benefits of integrating MLEC and MLETR. • Build a coalition of support among legislators, businesses, and civil society organisations. Medium-Term: • Develop draft amendments or new laws based on the gap analysis and stakeholder feedback. • Circulate draft proposals for public consultation and refine them based on feedback. • Present the finalised legislative proposals to the relevant legislative bodies for consideration. • Conduct training sessions and workshops for legal practitioners, regulators, and businesses on the new laws and their practical implications. • Develop and distribute implementation guidelines, toolkits, and best practice manuals. Long-Term: • Ensure the new legal frameworks are fully implemented and operational across all jurisdictions. • Establish mechanisms for ongoing monitoring and enforcement to ensure compliance with the new laws. • Engage in international forums and initiatives to align national laws with international standards and practices, enhancing cross-border trade and legal certainty.	Lead sectoral body: ASEAN Senior Law Officials Meeting (ASLOM) Coordinating body: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Legislative Adoption Rate:** Measure the number of AMS that have passed legislation aligning their national legal frameworks with MLEC and MLETR standards. • **Stakeholder Engagement and Training:** Track the number of workshops, seminars, and training sessions conducted for stakeholders, and measure participant feedback to ensure high levels of understanding and preparedness. • **Compliance and Enforcement Monitoring:** Assess the compliance rates with the new legal frameworks through regular audits and evaluations and monitor the effectiveness of enforcement mechanisms to ensure legal certainty and consistency.

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5.2.4.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[352]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.4.2 Increase Adoption of the ISO/TC 321 Transaction Assurance Standard among AMS**			
Objective(s)	• **Building Capacity:** Enhancing the capacity of AMS to implement and utilise the UNCITRAL MLEC and MLETR effectively. • **Promoting Knowledge Sharing:** Facilitating the sharing of best practices and knowledge on e-commerce standards. • **Supporting MSMEs:** Providing targeted assistance to MSMEs to help them navigate and benefit from the adoption of UNCITRAL MLEC and MLETR.			
6.2.4.2 **Support the Implementation of UNCITRAL MLEC and MLETR, especially for MSMEs**	• **Training Programmes:** Develop and deliver training programmes on UNCITRAL MLEC and MLETR. • **Knowledge Sharing Platforms:** Establish platforms for sharing best practices and experiences, accessible to MSMEs. • **MSME Support Initiatives:** Create initiatives to support MSMEs in adopting paperless trade solutions.	Short-Term: • Develop training materials and conduct workshops on UNCITRAL MLEC and MLETR. • Launch an online platform for knowledge sharing and collaboration with accessible design and resources for MSMEs. • Initiate support programmes for MSMEs. Medium-Term: • Facilitate regular knowledge sharing sessions and conferences. • Provide ongoing support and resources for MSMEs. Long-Term: • Ensure continuous professional development for stakeholders. • Maintain and enhance the knowledge sharing platform. • Monitor and evaluate the impact of MSME support initiatives.	Coordinating sectoral body: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) Supporting body: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)	General measures of progress include: • **Training Participation:** Number of participants in training programmes. • **Knowledge Sharing:** Frequency and quality of knowledge sharing sessions. • **MSME Support:** Number of MSMEs receiving support and their success rates. • **Stakeholder Competence:** Improvement in stakeholder competence and confidence.

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5.2.4.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[353]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.4.3 Develop Robust Digital Infrastructure for Cross-Border E-Commerce**			
Objective(s)	• **Boosts Trade Efficiency and Economic Integration:** Developing secure and interoperable digital payment systems streamlines cross-border transactions, reduces transaction costs, and facilitates quicker settlements, which boosts trade efficiency and economic integration among AMS. This creates a more competitive regional market, attracts international investments, and promotes economic growth. • **Supports Scalable and Reliable E-Commerce Operations:** Enhancing regional e-commerce platforms and improving digital connectivity ensures that businesses can operate seamlessly across borders, manage inventories effectively, and handle logistics efficiently. This supports scalable and reliable e-commerce operations, fosters innovation, and improves the overall competitiveness of AMS in the global digital economy.			
6.2.4.3 **Develop Robust Digital Infrastructure for Cross-Border E-Commerce**	• **Cross-Border E-Commerce Platforms:** Support the transition of domestic-focused e-commerce platforms into regional e-commerce platforms, which can offer integrated support for safe and secure cross-border digital payments, and multi-currency and multi-language support.	Short-Term: • Conduct an assessment of current domestic e-commerce platforms to identify gaps and opportunities for regional expansion. • Develop a strategic plan for transitioning to regional platforms, including integration needs for digital payments, multi-currency, and multi-language support. • Implement initial upgrades to existing platforms to support multi-currency and multi-language features. • Launch pilot programs with selected e-commerce platforms to test cross-border payment integrations and regional functionality. Medium-Term: • Support the full transition of domestic e-commerce platforms to regional platforms by expanding multi-currency and multi-language capabilities. • Integrate secure cross-border digital payment solutions into the platforms to facilitate seamless transactions across ASEAN countries. • Establish partnerships with regional payment gateways and financial institutions to ensure compatibility and security. • Conduct extensive testing to ensure the platforms operate effectively across multiple countries and address any issues identified during the pilot phase.	Lead sectoral body: ASEAN Digital Senior Officials' Meeting (ADGSOM) Supporting body: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Platform Integration and Usage Rates:** Track the percentage of domestic e-commerce platforms that have transitioned to regional platforms with integrated cross-border payment solutions and multi-currency, multi-language support. • **Transaction Volume:** Measure the volume and success rates of cross-border transactions processed through the upgraded platforms. • **User Satisfaction and Feedback:** Gather feedback from businesses and consumers using the regional e-commerce platforms to assess satisfaction levels with new features and functionality.

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		Long-Term: • Optimise and scale the regional e-commerce platforms to handle increased traffic and transactions as more businesses adopt cross-border capabilities. • Continuously update the platforms based on user feedback and emerging regional and international standards.		

5.2.5 SUB-AREA: E-INVOICING

5.2.5.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[354]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.5.1 Increase Adoption of International E-invoicing Standards and/or Harmonisation of National e-invoicing Systems to International E-invoicing Standards**			
Objective(s)	• **Enhanced Interoperability and Efficiency:** Reviewing and evaluating e-invoicing standards that promote seamless interoperability between systems across different countries and sectors, streamlining invoicing processes and reducing errors, processing times, and administrative costs for businesses and governments. • **Facilitated Cross-Border Trade:** Harmonising national e-invoicing systems enhances cross-border trade by providing a consistent and standardised framework for electronic invoicing, simplifying compliance and reducing barriers to trade between countries and businesses. • **Streamlined Implementation and Consistency:** A regional task force to conduct feasibility study to review various e-invoicing standards to inform member states of the e-invoicing landscape, allowing for future decision-making on e-voicing standards and processes harmonisation, leading to smoother integration and interoperability between national systems.			
6.2.5.1 **Increased Adoption of E-invoicing Standard and/or Harmonisation of National e-invoicing Systems**	• **Regional Coordination and Support:** Establish a regional task force or working group to coordinate harmonisation efforts • **Conduct Feasibility Study:** Conduct feasibility study, including a gap analysis, to evaluate various international e-invoicing standards that could be adopted. • **Regional Guidelines:** Develop and disseminate regional guidelines and best practices for aligning national e-invoicing systems.	Short-Term: • Establish a regional task force or working group with representatives from each AMS, including policymakers, technical experts, and industry stakeholders. • Develop a framework outlining the coordination mechanisms, communication channels, and decision-making processes for the task force. • Assess the current state of e-invoicing systems and e-invoicing standards in each AMS through conducting a feasibility study to establish a baseline for harmonisation efforts. Medium-Term: • Develop and disseminate regional guidelines and best practices for aligning national e-invoicing systems.	Coordinating sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Task Force Formation:** Track the formation of the regional task force and its activities such as regular quarterly meetings and documented progress reports. • **Guideline Development and Dissemination:** Track the development and dissemination of regional guidelines and best practices for aligning national e-invoicing systems e-invoicing standards.

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		• Launch pilot projects in selected AMS to test and refine the harmonisation strategies and support mechanisms. • Develop and publish case studies highlighting successful implementations and lessons learned. Long-Term: • Evolve the task force's role to include ongoing support, monitoring, and updating of harmonisation efforts. • Conduct a comprehensive evaluation of the task force's impact on e-invoicing standard adoption and harmonisation efforts across AMS. • Explore opportunities for expanding regional collaboration to include additional stakeholders or address new challenges in e-invoicing harmonisation.		

5.2.5.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[355]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.5.2 Establish Support Mechanisms to Support the Adoption and Implementation of E-invoicing Standards**			
Objective(s)	• **Facilitates a Smooth Transition:** Support mechanisms, such as technical assistance and consultancy services, help businesses and governments navigate the complexities of integrating e-invoicing standards into their existing systems, ensuring a smoother and more efficient transition with minimal disruption to operations. • **Reduces Adoption Barriers:** By providing best practice resources and capacity building initiatives, support mechanisms lower the barriers to adopting the e-invoicing standards, making it more accessible to a broader range of organisations and encouraging widespread adoption and compliance.			
6.2.5.2 **Establish Support Mechanisms to Support the Adoption and Implementation of E-invoicing standards**	• **Technical Support for AMS:** Provide technical assistance and consultancy services to help businesses and governments with the transition to e-invoicing standards, including system integration and troubleshooting support. • **Best Practice Resources for Industry:** Create and disseminate comprehensive implementation manuals and best practice documents tailored to different sectors and business sizes.	Short-Term: • Conduct research to identify existing best practices and gaps related to e-invoicing standards adoption. • Conduct research to identify barriers to MSME e-invoicing standards adoption. • Develop and draft best practice guides and implementation resources tailored to various sectors and organisational sizes. • Publish and distribute initial resources to AMS stakeholders and make them available online.	Coordinating sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Adoption of E-invoicing Standard by AMS:** Measure the number of organisations that successfully integrate relevant e-invoicing standards into their e-invoicing systems. • **Development of Best Practice Resources:** Track the development and dissemination of best practice guides and resources for e-invoicing standards adoption.

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	• **Capacity Building for AMS Policymakers:** Organise workshops and training sessions to educate AMS policymakers on the technical and operational aspects of e-invoicing standards adoption, and mechanisms to harmonise national e-invoicing systems. • **MSME Uptake:** Facilitate uptake of e-invoicing standards by MSMEs by creating a mechanism to support the transition.	• Plan and schedule the first series of capacity-building workshops or training sessions for policymakers and technical staff. • Conduct at least two initial workshops focusing on the fundamentals of e-invoicing standards and its benefits. • Establish a framework for providing technical support, including staffing and resource allocation. • Launch initial technical support services to assist AMS with the early stages of e-invoicing standards adoption, with the support of technical experts and consultancy firms. • Begin tracking support requests and issues to monitor initial uptake and effectiveness. Medium-Term: • Expand the range of best practice resources based on feedback and emerging needs, including case studies and sector-specific guides. • Regularly update the resources to reflect new developments and improvements in relevant e-invoicing standards. • Increase the distribution of resources through additional channels, such as industry conferences and online platforms. • Foster regional collaboration by hosting joint workshops with multiple AMS to encourage cross-border knowledge sharing on the mechanisms to harmonise national e-invoicing systems. • Launch initial support services to facilitate implementation of e-invoicing standards by MSMEs. Long-Term: • Introduce advanced training modules covering complex aspects of e-invoicing standards implementation and integration. • Enhance technical support services based on feedback, including more detailed guidance and troubleshooting. • Enhance and expand scope of support services to facilitate widespread implementation of e-invoicing standards by MSMEs. • Establish a comprehensive library of best practice resources, including updated guides, toolkits, and best practice case studies. • Develop an integrated support system that includes online resources, dedicated helpdesks, and expert consultancy.		• **Capacity Building Workshops:** Track the number of capacity-building workshops organised for AMS policymakers and stakeholders. • **MSME Uptake:** Level of uptake of e-invoicing standards by MSMEs.

5.2.5.3 Category 3: Digital Infrastructure Development

<table>
<tr><th>Action Area</th><th>Target Area(s)</th><th>Proposed Milestone(s) and Tentative Timeframe[356]</th><th>Responsible Parties</th><th>Measure(s) of Progress</th></tr>
<tr><td>Key Action Area</td><td colspan="4">6.2.5.3 Strengthening Digital Infrastructure for E-invoicing Standards Adoption and Harmonisation</td></tr>
<tr><td>Objective(s)</td><td colspan="4">• Facilitate Seamless Data Exchange: Enhancing interoperability platforms ensures smooth integration and data exchange between e-invoicing standards-compliant systems and existing national e-invoicing infrastructures, leading to more efficient transactions and reduced operational bottlenecks.
• Ensure Data Security and Trustworthiness: Upgrading security and compliance measures safeguards for transactions and data exchanges, maintaining the integrity and trustworthiness of the e-invoicing infrastructure, which is crucial for gaining the confidence of businesses and governments.</td></tr>
<tr><td>6.2.5.3

Strengthening Digital Infrastructure for E-invoicing Adoption and Harmonisation</td><td>• Enhance Interoperability Platforms: Establishing or updating infrastructure to ensure seamless data exchange and integration with the e-invoicing standards compliant-networks. Middleware solutions should be implemented to bridge any compatibility gaps between e-invoicing standards and existing national systems, thereby enabling smoother and more efficient transactions.
• Upgrade Security and Compliance Measures: Implement robust security protocols and encryption standards to protect transactions and data exchanges. Develop compliance monitoring tools and processes to ensure that all systems conform to security and regulatory requirements, thereby maintaining the integrity and trustworthiness of the e-invoicing infrastructure.</td><td>Short-Term:
• Develop a detailed plan for upgrading infrastructure and implementing middleware solutions and implementing/upgrading basic security protocols and encryption standards.
• Begin development of middleware solutions to bridge compatibility gaps between national systems and e-invoicing standards.
• Conduct a comprehensive assessment of existing e-invoicing infrastructures and identify gaps and compatibility issues.
• Conduct initial testing of middleware in a controlled environment to ensure functionality and identify any issues.
• Develop an initial compliance framework to monitor adherence to relevant e-invoicing standards' security requirements.

Medium-Term:
• Implement advanced security measures, including multi-layered encryption and real-time threat detection systems, and other upgrades to national e-invoicing infrastructure to support seamless data exchange with e-invoicing standards compliant-networks.
• Conduct regular security audits and penetration testing to identify and mitigate potential threats.
• Develop and deploy compliance monitoring tools and processes to ensure continuous adherence to relevant e-invoicing standards' security and regulatory requirements.</td><td>Coordinating sectoral bodies:
• ASEAN Digital Senior Officials Meeting (ADGSOM)
• ASEAN Coordinating Committee on E-Commerce and Digital Economy
• ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)

Supporting Sectoral Body:

• Digital Trade Standards and Conformance Working Group (DTSCWG)</td><td>General measures of progress include:
• Interoperability Performance: Assess the performance of interoperability platforms by monitoring transaction success rates and processing times.
• Security Compliance and Incident Reduction: Track the number of AMS that meet relevant e-invoicing standards' security and compliance standards through regular audits and monitor the reduction in security incidents related to e-invoicing systems.</td></tr>
</table>

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		• Roll out middleware solutions across different regions and sectors, ensuring widespread adoption. • Conduct comprehensive testing of upgraded infrastructure and middleware solutions to ensure full interoperability with the e-invoicing standard-compliant networks. • Address any issues or bugs identified during testing to ensure smooth and efficient transactions. Long-Term: • Continuously update security protocols to address emerging threats and vulnerabilities. • Monitor the performance of upgraded infrastructure and middleware solutions, making adjustments and optimisations as needed.		

5.2.6 SUB-AREA: PAYMENTS

5.2.6.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[357]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.6.1 Support the Full Adoption of ISO 20022 in Retail Payment Systems (RPS) and Large Value Payment Systems (LVPS) across AMS and Increase Alignment with International Payment Guidelines Standards**			
Objective(s)	• **Full Adoption of International Payment Standards across AMS:** The ISO 20022 standard promotes interoperability by creating a common language for payments worldwide and provides a unified approach to existing financial standards. Driving the full adoption of the ISO 20022 standard in Retail Payment Systems (RPS) and Large Value Payment Systems (LVPS) across AMS will be crucial for facilitating electronic data interchange between financial institutions globally. • **Strengthened Alignment with Global Standards:** Strengthened alignment with global standards like CBPR+ and IP+ are important because it ensures consistency, reduces fragmentation, and enhances the interoperability of cross-border payment systems, fostering smoother and more efficient international transactions.			
6.2.6.1 **Support the Full Adoption of ISO 20022 in Retail Payment Systems (RPS) and Large Value Payment Systems (LVPS) across AMS**	• **Regulatory Harmonisation and Policy Alignment:** Facilitate regular workshops and forums for regulators and policymakers across AMS to collaboratively address regulatory challenges, align policies for the adoption of ISO 20022 in RPS and LVPS, and foster alignment with international payment guidelines such as the (Cross-border Payments and Reporting Plus) CBPR+, ISO 20022 IP+ Guidelines, and Committee on Payments and Market Infrastructures (CPMI) harmonisation requirements.	Short-Term: • Conduct initial workshops to discuss the current regulatory landscape and identify key challenges and areas for alignment. • Establish an inter-governmental task force with representatives from each AMS. • Clearly define the objectives and scope of the task force. • Develop an initial draft of the ASEAN-specific market practices guide, drawing on global standards like CBPR+ and IP+ as benchmarks for cross-border payments.	Lead sectoral body: • Working Committee on Payment and Settlement Systems (WC-PSS)	General measures of progress include: • **Increased AMS adoption of ISO 20022 across RPS and LVPS:** Track the increase in number of AMS that have adopted ISO 20022 in both RPS and LVPS. • **Effectiveness of Inter-Governmental Collaboration and Coordination:** Monitor the number and effectiveness of task force meetings and track the completion of deliverables such as pilot projects.

[357] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

	• **Inter-Governmental Collaboration and Coordination:** Establish an inter-governmental task force to oversee and coordinate the region-wide adoption of ISO 20022, as well as alignment with global standards such as CBPR+, IP+, by promoting regular dialogue and knowledge sharing among AMS governments. • **Development of a Market Practices Guide for ASEAN Cross-Border Payments:** Develop a Market Practices Guide that will provide guidelines to AMS on how alignment with global standards such as CBPR+ or IP+ should be followed in the ASEAN context.	Medium-Term: • Continue regular workshops and forums to address specific regulatory challenges and work towards policy alignment and alignment with global standards. • Develop and circulate draft policy recommendations based on workshop outcomes. • Engage in consultations with stakeholders to gather feedback on the draft recommendations. • Initiate pilot projects focusing on alignment with global standards such as CBPR+ and IP+ in selected AMS to test and refine the proposed policies and coordination strategies. • Refine and finalise the market practices guide to address any gaps or issues identified, focusing on alignment with global standards across member states. Long-Term: • Scale up successful pilot projects across all AMS, ensuring strengthened alignment with global standards such as CBPR+ and IP+ in selected AMS to test and refine the proposed policies and coordination strategies. • Strengthened alignment with global standards such as the (Cross-border Payments and Reporting Plus) CBPR+, IP+ Guidelines, and Committee on Payments and Market Infrastructures (CPMI) harmonisation requirements. • Full adoption of ISO 20022 across all AMS. • Establish a monitoring and evaluation mechanism to assess the impact and effectiveness of the policy changes. • Establish a mechanism for regular updates to the market practices guide, ensuring it remains aligned with evolving global payment standards and practices, as well as maintaining its relevance for new cross-border payment innovations.		General measures of progress include: • **Implementation of Policy Recommendations:** Assess the extent to which AMS have adopted the recommended policies and evaluate the progress of ISO 20022 implementation. • **Development of a Market Practices Guide for ASEAN Cross-border Payments:** Develop and finalise the market practice guide AMS on how to align with global standards such as CBPR+ or IP+.

5.2.6.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[358]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.6.2 Strengthen Institutional Capacity Among Regulators and Financial Institutions to Implement ISO 20022**			
Objective(s)	• **Providing Training and Education:** Conducting comprehensive training programs for regulators, financial institutions, and businesses on ISO 20022, QR codes, and LEI. • **Offering Technical Support:** Providing ongoing technical assistance to AMS in upgrading payment infrastructure and regulatory frameworks. • **Promoting Public Awareness:** Educating consumers and businesses on the benefits of digital payment systems.			
6.2.6.2 **Strengthen Institutional Capacity Among Regulators and Financial Institutions to Implement ISO20022**	• **Training Programs:** Provide targeted training programmes for financial institutions, regulators, and other stakeholders on the benefits and technical aspects of ISO 20022, as well as raising awareness on enhanced data fields and alignment with global standards such as CBPR+, IP+, and CPMI harmonisation. • **Public Awareness Campaigns:** Engage with key stakeholders, including financial institutions, payment service providers, and regulators, to promote awareness and commitment to adopting ISO 20022 standards.	Short-Term: • Conduct a needs assessment to identify the specific training requirements for financial institutions, regulators, and other stakeholders. • Create comprehensive training materials and modules covering the benefits and technical aspects of ISO 20022, as well as raising awareness on enhanced data fields and alignment with global standards such as CBPR+, IP+, and CPMI harmonisation. • Implement pilot training sessions to test and refine the content and delivery methods. • Create a strategy for public awareness campaigns, including key messages, channels, and engagement tactics. • Begin the initial phase of the public awareness campaign, including informational webinars, newsletters, and promotional materials. Medium-Term: • Launch the full-scale training programme across all target groups, including regular sessions and workshops. • Sustain public awareness efforts through continuous outreach and education. Long-Term: • Develop and implement advanced training modules to address emerging trends and new developments related to ISO 20022, as well as latest developments on global standards such as CBPR+, IP+, and CPMI harmonisation.	Lead sectoral body: • Working Committee on Payment and Settlement Systems (WC-PSS)	General measures of progress include: • **Training Participation:** Number of participants in training programs and workshops. • **Public Awareness Campaigns:** Measure the reach and impact of the awareness campaigns by tracking engagement metrics. • **Feedback and Effectiveness:** Assess the effectiveness of the training and awareness efforts through participant feedback and impact surveys.

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		• Conduct a comprehensive impact assessment to evaluate the long-term effectiveness of the training programmes and make adjustments as needed. • Strengthen long-term partnerships with industry leaders and stakeholders to ensure ongoing commitment and support for ISO 20022 adoption.		

5.2.6.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[359]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.6.3 Develop and Enhance Digital Payment Infrastructure in Line with International and Regional Priorities**			
Objective(s)	• **Developing Integrated Cross-Border Payment Systems:** Developing the necessary payment infrastructure to support international and regional initiatives such as Project Nexus, ASEAN Interoperable QR Code Framework, and the Regional Payment Connectivity Initiative in facilitating interoperable cross-border digital transactions. • **Increasing Digital and Mobile Payment Adoption:** Providing simplified and secure payment solutions for consumers through improved access to digital payment instruments.			
6.2.6.3 **Develop and Enhance Digital Payment Infrastructure in Line with International and Regional Priorities**	• **Alignment of Payment Systems:** Align domestic payment rails and systems with international standards/guidelines in the Nexus Scheme Rulebook and ASEAN Interoperable QR Code Framework, as well as global standards such as CBPR+, IP+, and CPMI harmonisation to ensure compatibility and interoperability. • **Enhanced Connectivity:** Expand cross-border instant payment linkages between AMS. Expand broadband and mobile internet infrastructure to reach underserved areas, enabling seamless access to digital payment platforms and lowering associated costs. • **Long-term Infrastructure Investment:** Investing in the long-term development of digital payment infrastructure aligned with international standards to support scalability and future-proofing against technological advancements. This investment should consider emerging technologies, such as distributed ledger technology (DLT), particularly in the context of ongoing exploration of Central Bank Digital Currencies (CBDCs) within the region.	Short-Term: • Conduct comprehensive reviews of domestic payment systems against Nexus Scheme Rulebook and ASEAN QR code standards, as well as global standards such as CBPR+, IP+, and CPMI harmonisation, to develop initial implementation plans for aligning payment systems with international standards. • Conduct a comprehensive review of existing national instant payment systems within ASEAN, identifying opportunities for interoperability and the technical requirements for cross-border linkages. • Assess current broadband and mobile internet infrastructure gaps in underserved areas. • Initiate initial expansion projects to improve digital connectivity in underserved regions. Medium-Term: • Begin phased implementation of upgrades to domestic payment rails to meet international standards. • Expand cross-border instant payment linkages between AMS.	Lead sectoral body: • Working Committee on Payment and Settlement Systems (WC-PSS)	General measures of progress include: • **Payment Rails Alignment:** Progress in the alignment of regional payment rails. • **Mobile Payment Adoption:** Percentage of mobile payment transactions and user adoption rates across AMS. • **Cross-Border Payment Systems:** Volume of successful cross-border transactions facilitated by the new systems.

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		• Execute rollout of broadband and mobile internet infrastructure upgrades in high-priority regions. • Monitor impact of enhanced connectivity on digital payment adoption and usage. Long-Term: • Achieve full integration of domestic payment systems with standards/guidelines in the Nexus Scheme Rulebook and ASEAN Interoperable QR Code Framework, as well as global standards such as CBPR+, IP+, and CPMI harmonisation. • Achieve full integration of cross-border instant payment systems across all AMS, enabling seamless cross-border real-time payments throughout the region. • Explore the potential for linking ASEAN's cross-border payment systems with other global networks, facilitating instant payments beyond the region. • Ensure sustained investment in maintaining and upgrading digital connectivity infrastructure. • Plan for future upgrades and expansions to digital payment infrastructure to meet technological advancements.		

Roadmap for Digital Trade Area 3: Digital Trust

5.2.7 SUB-AREA: DIGITAL ID AND AUTHENTICATION

5.2.7.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[360]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.7.1 Develop the Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN**			
Objective(s)	• **Regulatory Convergence:** Developing a shared understanding of digital ID and authentication to promote regulatory convergence. • **Boosting Trade and Economic Competitiveness:** Developing a mutually recognisable and interoperable digital ID and authentication scheme facilitates secure and trusted cross-border transactions, thus boosting intra-ASEAN trade, as well as ASEAN's economic competitiveness.			
6.2.7.1 **Develop the Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN**	• **Develop the Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN:** Develop a strategic and structured plan for the development of an interoperable digital infrastructure to promote interoperability of business registers among AMS.	Short-Term: • Conduct stakeholder consultations to gather feedback and build consensus. • Conduct a comprehensive review of existing and upcoming digital ID and authentication legislation, regulatory initiatives, and standards across AMS to identify gaps and opportunities for harmonisation.	Lead sectoral body: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)	General measures of progress include: • **Regulatory Harmonisation:** level of harmonisation of legal and regulatory frameworks across AMS.

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[382] At the time of writing (July 2024), the Roadmap falls under the purview of DTSCWG. Where necessary/relevant, other sectoral bodies under the AEC may be involved with the implementation of the Roadmap.

	• **Regional Framework Development:** Create an ASEAN regional framework that outlines the key definitions, principles and minimum standards for digital ID and authentication across all 10 AMS. This framework would provide a common foundation to support interoperability while allowing flexibility for national adaptations. • **Stakeholder Engagement:** Engage key stakeholders, including policymakers and industry leaders, to support the development of the UBIN Roadmap.	• Conduct comprehensive studies to identify the technical, operational, and legal requirements and gaps for the ASEAN UBIN Roadmap. • Establish common definitions, principles, standards, practices and protocols for UBIN Roadmap and ASEAN regional digital identity scheme. • Draft and approve a preliminary ASEAN regional digital ID and authentication framework, incorporating feedback from industry experts. • Draft and approve UBIN Roadmap, including outlining key milestones, activities, timelines and resources required at both the national and regional levels. Medium-Term: • Harmonise digital ID and authentication legal and regulatory policies across AMS. • Establish an ASEAN-wide regulatory sandbox to test and refine the UBIN system. • Pilot the UBIN system across select case studies. • Pilot interoperable ASEAN regional digital identity scheme across select use cases. Long-Term: • Update UBIN system based on outcomes of pilot studies. • Achieve full scale implementation of UBIN system and ASEAN regional digital identity scheme. • Continuously monitor, update, and enhance UBIN system and ASEAN regional digital identity scheme based on feedback and technological advancements.	Supporting sectoral bodies: • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) • ASEAN Committee on Women (ACW)	General measures of progress include: • **Adoption Rate:** Number of businesses adopting the ASEAN UBIN system within the specified timeframe, and number of users adopting regional digital identity schemes. • **Interoperability:** Number of cross-border services and transactions facilitated by UBIN system and regional digital identity scheme.

5.2.7.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[361]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.7.2 Facilitate Widespread Adoption of Digital ID and Authentication Systems**			
Objective(s)	• **Building Technical Expertise:** Developing the technical expertise of AMS in digital ID and authentication to ensure effective development, adoption, and implementation of UBIN Roadmap and ASEAN regional digital identity scheme. • **Raising Awareness:** Raising awareness and improving understanding of the benefits and usage of UBIN and the regional digital identity scheme. • **Enhancing Institutional Readiness and Capabilities:** Providing support for AMS institutions to roll out UBIN and the regional identity scheme.			
6.2.7.2 **Facilitate Widespread Adoption of Digital ID and Authentication Systems**	• **Digital Literacy Training:** Develop and execute digital literacy training programs for consumers and businesses, particularly MSMEs, on the use cases for and the purpose and benefits of digital ID and authentication. • **Public Awareness Campaigns:** Develop and execute public campaigns to promote the adoption of digital ID and authentication, including UBIN. • **Institutional Support and Technical Assistance:** Strengthen the capacity of national institutions to support rollout of UBIN system and regional digital identity scheme and strengthen collaboration and information sharing among AMS to address challenges and share best practices. Provide technical assistance to AMS governments and agencies for the implementation and monitoring of the UBIN system and the regional digital identity scheme.	Short-Term: • Assess training needs and digital literacy skill gaps across AMS private sector and society. • Launch pilot training programmes in selected AMS, focusing on essential skills and competencies for users and MSMEs. • Launch public awareness campaigns on digital ID and authentication efforts in ASEAN. • Assess gaps in current institutional capacities and develop region-wide mechanism for public sector collaboration and information sharing across AMS. Medium-Term: • Evaluate the effectiveness of pilot programmes and expand training offerings based on feedback. • Develop partnerships with educational institutions and industry associations for continuous learning opportunities. • Sustain public awareness efforts through continuous outreach and education. • Expand public sector support mechanism to provide technical assistance on the implementation and monitoring of the UBIN system and the regional digital identity scheme. Long-Term: • Institutionalise continuous professional development programs.	Coordinating sectoral body: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) Supporting sectoral body: • ASEAN Committee on Women (ACW)	General measures of progress include: • **Participation Rates:** Measure the number of individuals participating in cybersecurity skill development programs across ASEAN member states. This includes tracking enrolment in training courses, workshops, and certification programs. • **Adoption Rate:** Number of businesses adopting the ASEAN UBIN system within the specified timeframe, and number of users adopting regional digital identity schemes. • **Skill Improvement Metrics:** Improvements in participant skills, assessed through pre- and post-training evaluations. • **Stakeholder Engagement:** Number of stakeholders engaged and feedback collected.

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		• Regularly update training content to reflect technological advancements and changing market dynamics and regulatory and policy frameworks. • Maintain robust institutional support for the UBIN system and the regional digital identity scheme. • Enhance collaboration with global partners for best practices in digital ID and authentication systems development.		

5.2.7.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[362]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.7.3 Strengthen Digital Infrastructure for Transaction Assurance**			
Objective(s)	• **Developing Interoperable Digital ID and Authentication Systems:** Developing the necessary interoperable digital ID and authentication infrastructure to support the UBIN system and national digital identity schemes in facilitating seamless cross-border transactions. • **Increasing Digital ID and Authentication Adoption:** Providing simplified and secure digital ID and authentication solutions for consumers and businesses.			
6.2.7.3 **Strengthen the Underlying Digital Infrastructure for the ASEAN UBIN System and Regional Digital Identity Scheme**	• **Interoperable Systems:** Update existing or develop new national digital identity schemes to promote cross-border interoperability across AMS. • **Digital Infrastructure for UBIN:** Implement technical solutions to establish an interoperable, decentralised UBIN system in ASEAN. • **Cybersecurity Infrastructure:** Strengthen cybersecurity measures to protect data in digital ID and authentication schemes for consumers and businesses. • **Enhanced Connectivity:** Expand broadband and mobile internet infrastructure to reach underserved areas, enabling seamless access to the regional digital identity schemes and lowering associated costs.	Short-Term: • Assess current cybersecurity needs for a regional digital identity scheme across AMS. • Assess and develop options for technical solutions for the UBIN system and the regional digital identity scheme. • Assess current broadband and mobile internet infrastructure gaps in underserved areas. • Initiate expansion projects to improve digital connectivity in underserved regions. Medium-Term: • Pilot technical solutions for a cybersecure, interoperable, decentralised UBIN system and a regional digital identity scheme across select case studies. • Execute rollout of broadband and mobile internet infrastructure upgrades in high-priority regions. • Monitor impact of enhanced connectivity on digital identity adoption and usage.	Lead sectoral body: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) Supporting sectoral body: • ASEAN Committee on Women (ACW)	General measures of progress include: • **User Satisfaction:** Number of successful and seamless cross-border transactions and user satisfaction rates across time. • **Increase in Digital Transactions:** Number of cross-border services and transactions facilitated by UBIN system and regional digital identity scheme.

362 The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		Long-Term: • Achieve full functionality and interoperability of the UBIN system and the regional digital identity scheme. • Ensure sustained investment in maintaining and upgrading digital connectivity infrastructure. • Plan for future upgrades and expansions to digital ID and authentication infrastructure to meet technological advancements.		

5.2.8 SUB-AREA: CYBERSECURITY

5.2.7.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[363]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.8.1 Develop a Regional Approach to Cybersecurity and the Adoption of International Cybersecurity Standards Across AMS**			
Objective(s)	• **Regulatory harmonisation:** Developing an ASEAN-wide cybersecurity strategy to harmonise national cybersecurity policies and support the adoption of ISO/IEC 27001 and 27002. • **Enhancing digital trust for consumers and businesses:** Widespread implementation and integration of international cybersecurity standards to improve security and trust towards digital services, and online transactions and activities.			
6.2.8.1 **Develop a Regional Approach to Cybersecurity and the Adoption of International Cybersecurity Standards Across AMS**	• **ASEAN Cybersecurity Cooperation Strategy (2026-2030):** Update the existing collaborative framework in support of convergence between AMS governments around cybersecurity policy and priorities to facilitate the adoption of international cybersecurity standards ISO/IEC 27001, 27002 and 27551:2021.	Short-Term: • Evaluate outcomes and lessons learned from the implementation of the ASEAN Cybersecurity Cooperation Strategy (2021-2025). • Define common areas of priority in cybersecurity policy and establish a shared understanding of cybersecurity for the 2026-2030 iteration of the Strategy. • Draft and implement ASEAN Cybersecurity Cooperation Strategy (2031-2035) in line with updated evaluation of AMS cybersecurity priorities. • Develop platform for regular governmental exchange in support of the implementation of ISO/IEC 27001, 27002, and 27551:2021, alongside national standards that serve as stepping stones, by the remaining ASEAN member states.	Lead sectoral body: • ASEAN Network Security Action Council (ANSAC) Supporting sectoral bodies body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Convergence of cybersecurity priorities:** Assess the converge of cybersecurity policy priorities amongst AMS governments. • **Policy Adoption:** Number of AMS integrating of ISO/IEC 27001 and 27002 standards into their national policies. • **Regional cybersecurity standards:** Evaluate and assess the adoption of regional cybersecurity standards for 5G, IoT, medical devices, AI, Quantum Cryptography, connected vehicles, smart mobility and Smart City implementation in contrast to adoption of ISO/IEC 27001 and 27002.

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		• Identify relevant cybersecurity standards for ICT (e.g. ISO/IEC 15408 and 18045) and emerging technologies, such as IoT (e.g. EN303645 and ISO/IEC 27404), connected medical devices, AI, quantum cryptography, connected vehicles, smart phone and mobile apps. Medium-Term: • Implement ASEAN Cybersecurity Cooperation Strategy (2026-2030) and regularly monitor progress against planned actions. • Facilitate regular governmental knowledge sharing sessions and events. • Provide ongoing support and resources for regulatory harmonisation. • Provide ongoing support and resources for the adoption of ISO/IEC 27001 and 27002, alongside national standards that serve as stepping stones, and achieve full integration of standards into national regulation of remaining AMS. • Review ASEAN Cybersecurity Cooperation Strategy (2026-2030). • Harmonise standards across ASEAN and adoption of relevant cybersecurity standards for ICT and emerging technologies. Long-Term: • Achieve seamless regulatory convergence across AMS for cybersecurity. • Draft and implement ASEAN Cybersecurity Cooperation Strategy (2031-2035) in line with updated evaluation of AMS cybersecurity priorities. • Institutionalise continuous updates and enhancements to ISO/IEC 27001 and 27002 standards and ensure ISO/IEC 27001 and 27002 serve as the basis for future regional standards where these are developed.		

5.2.8.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[364]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.8.1 Bridging the Cybersecurity Skills Gap and Enhancing Capacities for the Adoption of International Cybersecurity Standards**			
Objective(s)	• **Addressing the Skills Gap:** Bridging the cybersecurity skills gap in ASEAN to adopt International Cybersecurity Standards at national and regional level to support digital trade standards. • **Promoting the Use of International Cybersecurity Standards and Enhancing Compliance:** Providing technical assistance to support ASEAN governments and businesses in implementing and integrating ISO/IEC 27001 and 27002. • **Economic Competitiveness:** Developing cybersecurity skills regionally enhances ASEAN's economic competitiveness by fostering innovation, attracting investments, and propelling economic growth.			
6.2.8.1 **Bridging the Cybersecurity Skills Gap and Enhancing Capacities for the Adoption of International Cybersecurity Standards**	• **Regional Collaboration Framework and ASEAN Cybersecurity Support Centre:** Establish a collaborative framework among ASEAN member states to coordinate and implement cybersecurity skill development programs effectively through a complementary ASEAN Cybersecurity Support Centre. The Support Centre will synergise its efforts with existing cybersecurity capacity building centres in the region including the ASEAN-Japan Cybersecurity Capacity Building Centre (AJCCBC) and the ASEAN-Singapore Cybersecurity Centre of Excellence (ASCCE) to both ASEAN governments and the private sector to: 1) facilitate training on technical and operational matters, cybersecurity policy, legislation, and strategy, 2) facilitate a shared understanding of the benefits of international cybersecurity standards ISO/IEC 27001 and 27002, and 3) promote and facilitate the sharing of best practices, resources, and expertise, ensuring alignment with regional priorities and needs in cybersecurity skill development, in relation to adoption of DTS. It will also provide technical assistance and guidance for the adoption, implementation	Short-Term: • Formulate a collaborative framework agreement among ASEAN member states to facilitate the coordination of cybersecurity skill development programs. Define the roles, responsibilities, and governance structure of the framework and the ASEAN Cybersecurity Support Centre. • Conduct a comprehensive needs assessment to identify the specific cybersecurity-related competencies required by AMS governments and ASEAN's workforce. • Based on the assessment findings, design tailored training programs. • Formalise the ASEAN Cybersecurity Support Centre and launch pilot programs for cybersecurity skills development in the private and public sectors. Medium-Term: • Sustain public awareness efforts through continuous outreach and education. • Expand ASEAN Cybersecurity Support Centre services and capabilities through public-private partnerships, support programs for MSMEs, and regional cybersecurity workshops and conferences. • Provide technical assistance to remaining AMS government for the adoption of ISO/IEC 27001 and 27002.	Lead sectoral body: • ASEAN Network Security Action Council (ANSAC) Supporting sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Skill Acquisition:** Assess the acquisition of cybersecurity-related competencies among participants. This can be measured through pre- and post-training evaluations to gauge improvements in skills. • **Participation Rates:** Measure the number of individuals participating in cybersecurity skill development programs across ASEAN member states. This includes tracking enrolment in training courses, workshops, and certification programs. • **Employment Outcomes:** Monitor the transition of program participants into cybersecurity-related employment opportunities. Track employment rates, job placements, and career advancements among individuals who have completed cybersecurity skill development programs.

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	and integration of cybersecurity standards, notably ISO/IEC 27001 and 27002. To streamline regional resources, the Support Centre could consider hosting its operations at existing cybersecurity capacity building centres such as the ASCCE.	• Provide technical assistance to businesses across all AMS for the implementation and integration of ISO/IEC 27001 and 27002. Long-Term: • Continuously enhance the content and delivery methods of programs to adapt to evolving technological trends, workforce demands, and feedback from the Support Centre. • Expand the reach and scope of cybersecurity skill development programs to reach a broader audience across ASEAN countries. • Institutionalise technical assistance and support for businesses for the implementation and integration of ISO/IEC 27001 and 27002. • Enhance collaboration with global partners for best practices.		• **Industry Engagement:** Evaluate the level of industry engagement and collaboration in the design and delivery of cybersecurity skill development programs. Measure the number of partnerships established with companies, industry associations, and other organisations to ensure the relevance and effectiveness of training initiatives. • **Adoption Rate:** Evaluate and track the adoption of and compliance with ISO/IEC 27001 and 27002 across businesses in ASEAN.

5.2.8.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[365]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.8.3 Develop Secure Infrastructure in Line with International and Regional Priorities**			
Objective(s)	• **Enhancing security and resilience across AMS:** Ensuring existing and future technologies and digital infrastructures align with regionally accepted cybersecurity standards and priorities. • **Supporting innovation:** Encouraging innovation to support evolving cybersecurity needs and promote digital trade.			
6.2.8.3 **Develop Secure Infrastructure in Line with International and Regional Priorities**	• **Long-term Infrastructure Investment:** Investing in the long-term development of cloud infrastructure and secure data centre infrastructure aligned with international standards to support scalability and futureproofing against technological advancements. • **Innovation Hubs & Sandboxes:** Promote and support R&D initiatives in cybersecure technologies through incubators, regulatory sandboxes, and pilot projects to test new technologies and business models.	Short-Term: • Conduct a comprehensive assessment of infrastructure needs across AMS. • Initiate public-private partnerships to develop innovation hubs and sandboxes regionally. • Initiate initial expansion projects to improve and secure digital infrastructure. Medium-Term: • Launch innovation hubs and regulatory sandboxes for testing existing and new technologies to comply with ISO/IEC 27001 and 27002. • Finalise improvements and secure all cloud and data infrastructure.	Lead sectoral body: • ASEAN Network Security Action Council (ANSAC)	General measures of progress include: • **Output from Innovation Hubs:** Track the number of successful projects and startups emerging from innovation hubs and sandboxes. • **Investment in R&D:** Monitor the amount of investment in cybersecurity research and development initiatives.

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		Long-Term: • Plan for future upgrades and expansions to cloud infrastructure and data centre infrastructure to meet technological advancements. • Plan for future upgrades and changes in international standards. • Promote continuous innovation and adoption of new technologies.		

5.2.9 SUB-AREA: ONLINE SAFETY[366]

5.2.9.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[367]	Responsible Parties	Measure(s) of Progress
Key Action Area	**5.2.9.1 Enhance the ASEAN Online Business Code of Conduct**			
Objective(s)	• **Promote Business Compliance to Consumer Protection Law:** Increase confidence of consumers and compliance of online businesses to ensure safety of consumers in online activities and transactions by adopting the ASEAN Online Business Code of Conduct.			
5.2.9.1 **Enhance the ASEAN Online Business Code of Conduct**	• **Enhance the ASEAN Online Business Code of Conduct:** Enhance the ASEAN Online Business Code of Conduct to provide a more detailed guidance for each business actors in the digital economy ecosystem.[368] • **Stakeholder Engagement:** Engage key stakeholders, including relevant regulators, businesses, (including MSMEs), and consumer organisations to support the development and dissemination of the updated ASEAN Online Business Code of Conduct.	Short-Term: • Establish a regional taskforce comprising of ACCP, ACCMSME, AMS government representatives, businesses (including MSMEs) and consumer protection organisations. • Conduct a review of the ASEAN Online Business Code of Conduct with existing and upcoming legislation, regulatory initiatives and standards across AMS to identify gaps and opportunities in consumer protection and online safety. • Conduct stakeholder consultations to gather feedback and build consensus. Medium-Term: • Draft and approve the updated ASEAN Online Business Code of Conduct, outlining key updates, activities, timeline and resources required at both national and regional levels and incorporating feedback from regulators and industry experts. Ensure the alignment of the updated ASEAN Online Business Code of Conduct with ASEAN's High-Level Principles on Consumer Protection.	Lead sectoral body: • ASEAN Committee on Consumer Protection (ACCP) Supporting sectoral bodies: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED) • SOMTC Working Group on Cybercrime (WG on CC)	General measures of progress include: • **Development of sector-specific guidelines:** Completion of draft detailed guidance for key business actors, including e-commerce platforms, payment service providers, logistics operators, and consumers, ensuring clear standards of conduct for each group. • **Stakeholder feedback:** Gather feedback from industry stakeholders on the effectiveness and clarity of the ASEAN Online Business Code of Conduct. • **Adoption and dissemination:** Publish and promote the enhanced Code of Conduct.

[366] The ASEAN Committee on Consumer Protection (ACCP) will update their ASEAN Capacity Building Roadmap in 2025. As such, recommendations under Category 2: Capacity building and technical assistance are removed to accommodate for the updated direction and initiatives under ACCP's ASEAN Capacity Building Roadmap in 2025.

[367] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

[368] ASEAN Secretariat (2020) ASEAN Online Business Code of Conduct, https://aseanconsumer.org/file/post_image/2020-02-26%20ASEAN%20COC%20(fin).pdf

		• Develop complementary guides and training materials to support industry and national adoption of the ASEAN Online Business Code of Conduct across the AMS. • Continued engagement with stakeholders to monitor the adoption of the ASEAN Online Business Code of Conduct. Long-Term: • Achieve full-scale adoption of the ASEAN Online Business Code of Conduct among AMS and industry stakeholders. • Continue to monitor, update and enhance the ASEAN Online Business Code of Conduct based on feedback and regulatory changes across AMS.		

5.2.9.2 *Category 3: Digital Infrastructure Development*

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[369]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.9.3 Strengthen Digital Infrastructure for Online Safety**			
Objective(s)	• **Supporting Innovation:** Encouraging innovation to support evolving online safety and consumer protection needs and promote digital trade. • **Empowering Consumers and Promoting Business Compliance:** Increased advocacy to consumers and businesses on emerging consumer protection issues in the digital economy			
6.2.9.3 **Strengthen Digital Infrastructure for Online Safety**	• **Infrastructure Upgrades:** Upgrade and enhance digital infrastructure to support online safety and consumer protection standards. • **Innovation Hubs & Sandboxes:** Promote and support R&D initiatives in online safety and consumer protection-related technologies through incubators, regulatory sandboxes, and pilot projects to test new standards, technologies, use cases, and business models. • **Long-term Infrastructure Investment:** Investing in the long-term development of technologies aligned with international standards to support scalability and futureproofing against technological advancements.	Short-Term: • Conduct a comprehensive assessment of digital infrastructure needs across AMS. • Assess current cybersecurity needs across AMS in relation to ODR systems. • Initiate public-private partnerships to develop innovation hubs and sandboxes regionally. • Conduct consumers awareness campaign on emerging consumer protection issues in the digital economy. • Develop tools to promote business compliance. Medium-Term: • Pilot solutions for cybersecure, interoperable ODR systems.	Lead sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM) Supporting sectoral bodies: • ASEAN Committee on Consumer Protection (ACCP) • ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	General measures of progress include: • **Investment in R&D:** Monitor the amount of investment in online safety and consumer protection technology research and development initiatives. • **Output from Innovation Hubs:** Track the number of successful projects and startups emerging from innovation hubs and sandboxes. • **Consumer Empowerment:** Improvement in the ASEAN Consumer Empowerment Index.

[397] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.
[398] At the time of writing (July 2024), the Roadmap falls under the purview of DTSCWG. Where necessary/relevant, other sectoral bodies under the AEC may be involved with the implementation of the Roadmap.

	• **Cybersecurity Infrastructure:** Strengthen cybersecurity measures to ensure safety across digital activities and transactions. • **Empowering Consumers and Promoting Business Compliance:** increase consumers awareness on emerging consumer protection issues in the digital economy and promote business compliance on consumer protection law.	• Expand innovation hubs and support collaborative projects. • Promote business compliance tools. • Regularly conduct regional consumer protection campaigns. Long-Term: • Achieve full functionality and interoperability of ODR systems across AMS. • Plan for future upgrades and expansions to online safety-related infrastructure to meet technological advancements. • Promote continuous innovation and adoption of new technologies. • Improve consumer's confidence and awareness on consumer protection issues in the digital economy. • Increase compliance of the consumer protection law by businesses in the digital economy.	• ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) • SOMTC Working Group on Cybercrime (WG on CC)	

5.2.10 SUB-AREA: CROSS-BORDER DATA PROTECTION AND PRIVACY

5.2.10.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[370]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.10.1 Develop and Harmonise Data Governance, Privacy and Protection, and Regulatory and Legislative Frameworks**			
Objective(s)	• Regulatory Convergence: Promoting regional regulatory convergence on data protection and privacy frameworks. • Enhance Security and Trust: Increase confidence of cross-border online activities and transactions by enabling global alignment and adopting references to common international standards.			
6.2.10.1 **Develop and Harmonise Data Governance, Privacy and Protection, and Regulatory and Legislative Frameworks**	• **Stakeholder Engagement:** Engage key stakeholders, including policymakers, industry leaders, MSMEs, academia and civil society representatives to support the development and harmonisation of data governance, privacy and protection frameworks. • **Regional Framework Development:** Create a broad ASEAN regional framework that outlines the key definitions, principles and minimum standards for data governance, privacy and protection across all 10 AMS.	Short-Term: • Establish a regional taskforce comprising AMS government representatives, industry, academia, and civil society. • Conduct a comprehensive review of existing and upcoming legislation, regulatory initiatives, and standards across AMS to identify gaps and opportunities for policy and regulatory convergence. • Conduct comprehensive studies to identify the technical, operational, and legal requirements and gaps for a regional data governance, privacy and protection framework.	Lead sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM) Supporting sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM)	General measures of progress include: • **Convergence of national cloud-computing related policy and regulatory frameworks:** Assess the converge of legislation amongst AMS governments. • **Policy Adoption:** Number of AMS integrating common international standards into their national policies.

[370] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		• Establish common definitions, principles, international standards, practices for this regional framework. • Conduct stakeholder consultations to gather feedback and build consensus. Medium-Term: • Draft and approve a regional framework, outlining key milestones, activities, timelines and resources required at both the national and regional levels and incorporating feedback from industry experts. • Develop guidelines to support the implementation of the regional framework and related standards. • Launch convergence of national legal and regulatory policies across AMS in relation to cloud computing. • Continued engagement with stakeholders to review success of regional cloud computing framework. Long-Term: • Achieve full scale convergence of national legal and regulatory policies across AMS. • Continuously monitor, update, and enhance regional framework based on feedback and technological advancements.		• **Industry Feedback:** Gather feedback from industry stakeholders on the effectiveness and clarity of the regulatory framework.

5.2.10.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[371]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.10.2 Increase Adoption of MCCs amongst Domestic Businesses**			
Objective(s)	• **Boosting Trade and Economic Competitiveness:** Enabling the free flow of data across borders facilitates speedier cross-border transactions and activities, thus boosting intra-ASEAN trade, as well as ASEAN's economic competitiveness. • **Boost Private Sector Capabilities:** Supporting businesses to understand and meet necessary requirements around data privacy and protection for adopting MCCs through guidelines, best practices, and advisory services. • **Enhancing Institutional Readiness and Capabilities:** Providing support for AMS institutions to develop and harmonise data governance, protection and privacy legislative and regulatory frameworks.			
6.2.10.2 **Increase Adoption of MCCs amongst Domestic Businesses**	• **Guidance for Operationalising MCCs:** Develop guidelines for domestic businesses to operationalise MCCs.	Short-Term: • Assess training and compliance needs and skill gaps across AMS businesses. • Launch pilot training programmes in selected AMS, focusing on essential skills and competencies for MSMEs.	Lead sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM) • Working Group on Digital Data Governance (WG-DDG)	General measures of progress include: • **Adoption Rate:** Increase in number of MCCs being adopted by domestic businesses as the primary tool for cross-border data flows.

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402 At the time of writing (July 2024), the Roadmap falls under the purview of DTSCWG. Where necessary/relevant, other sectoral bodies under the AEC may be involved with the implementation of the Roadmap.

	• **Advisory Services and Training Programs:** Develop and execute training programs and certification programs for businesses, particularly MSMEs, on data privacy and protection legislative frameworks. Provide advisory services to support with the implementation and adoption of MCCs and reduce administrative burden of cross-border data flows. • **Institutional Support and Technical Assistance:** Strengthen the capacity of national institutions to develop and harmonise data governance, privacy and protection regulations and adopt standards. Strengthen collaboration and information sharing among AMS to address challenges and share best practices and provide technical assistance to AMS governments and agencies.	• Develop initial guidance for businesses to operationalise MCCs. Engage with stakeholders from the public and private sector for feedback on draft guidance and update guidance according to feedback. • Assess gaps in current institutional capacities and develop region-wide mechanism for public sector training, collaboration and information sharing across AMS. Medium-Term: • Evaluate the effectiveness of pilot programmes and expand training offerings based on feedback to other businesses. • Develop partnerships with educational institutions and industry associations for continuous learning opportunities. • Develop certification programs in collaboration with international bodies to ensure that professionals are well-versed in the implementation and management of MCCs. • Adopt guidance for businesses to operationalise MCCs. • Expand public sector support mechanism to provide technical assistance on the implementation of data governance, privacy and protection regulation, and monitoring of compliance by industry. • Implement monitoring and evaluation mechanisms to assess the effectiveness and impact of training programs and advisory services. Collect feedback from participants and stakeholders to identify areas for improvement and optimisation. Long-Term: • Regularly update training content to reflect technological advancements and changing market dynamics and regulatory and policy frameworks. • Review guidance for businesses to operationalise MCCs and update to reflect changes in regulatory and policy frameworks. • Maintain robust institutional support for national and regional institutions. • Enhance collaboration with global partners for best practices in cross-border data flows.		• **Skill Improvement Metrics:** Improvements in participant skills, assessed through pre- and post-training evaluations. • **Stakeholder Engagement:** Number of stakeholders engaged and feedback collected.

5.2.10.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[372]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.10.3 Develop Infrastructure to Support the Free Flow of Data Across AMS**			
Objective(s)	• **Secure and Seamless Data Flows:** Developing and enhancing the relevant digital infrastructure to ensure seamless and secure data flows across borders.			
6.2.10.3 **Develop Infrastructure to Support the Free Flow of Data Across AMS**	• **Digital Infrastructure for Data Flows:** Promote the use of technologies, such as cloud, that support cyber and operational resilience for trusted data flows. Promote the development of local and regional data centres with advanced security measures to enhance data sovereignty and reduce latency. • **R&D:** Support R&D initiatives to explore new technologies and best practices in data governance and privacy.	Short-Term: • Conduct a comprehensive assessment of digital infrastructure needs across AMS. • Initiate public-private partnerships in support of piloting R&D projects. Medium-Term: • Roll out cloud technologies and pilot data centre infrastructure projects in select AMS. Long-Term: • Plan for future upgrades and expansions to cloud computing and data centre infrastructure to meet technological advancements. • Promote continuous innovation and adoption of new technologies.	Lead sectoral body: • ASEAN Digital Senior Officials' Meeting (ADGSOM)	General measures of progress include: • **Investment in R&D:** Monitor the amount of investment in R&D initiatives. • **Cross-Border Data Flows:** Volume of successful cross-border data flows facilitated by the new frameworks.

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Roadmap for Digital Trade Area 4: Cooperation on Emerging Topics

5.2.11 SUB-AREA: AI

5.2.11.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[373]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.11.1 Inclusive Engagement in the Development and Implementation of International AI Standards**			
Objective(s)	• **Inclusive Engagement in International Standards Development:** By advocating for inclusivity and representation of all AMS in global AI standards discussions, ASEAN ensures that its diverse perspectives and interests are taken into account. This approach contributes to the development of a more informed and inclusive global framework for AI standards.			
6.2.11.1 **Inclusive Engagement in the Development and Implementation of International AI Standards**	• **Inclusive ASEAN Engagement in the Development of Global AI Standards:** Foster active and collaborative participation from all 10 AMS in shaping global AI standards, leveraging the expertise and resources of local, regional, and international stakeholders from the private and public sectors.	Short-Term: • Identify and reach out to key ASEAN working groups and policymakers from all 10 AMS to contribute to the development of global AI standards. • Engage with stakeholders from government, industry, academia, and civil society to gather insights and priorities for ASEAN's participation in global AI standards development. • Identify areas of expertise and resources within ASEAN that can contribute effectively to the development of global AI standards. Medium-Term: • Launch collaborative projects among ASEAN member states to address specific aspects of AI standards development, such as data privacy, algorithm transparency, and ethical considerations. • Forge partnerships with international organisations, standards bodies, and experts to facilitate knowledge exchange and capacity building in AI standards development. • Conduct research and analysis to identify gaps and opportunities in existing global AI standards frameworks and develop recommendations for ASEAN's contributions, while ensuring that international standards adopted domestically do not create unnecessary obstacles to digital trade. Long-Term: • Develop concrete proposals and contributions from ASEAN to be submitted to relevant global AI standards development bodies and initiatives.	Lead sectoral body: • ASEAN Working Group on AI (AI-WG) Supporting sectoral bodies: • Committee on Science, Technology & Innovation (COSTI) • Digital Trade Standards and Conformance Working Group (DTSCWG)	General measures of progress include: • **Identification of ASEAN Expertise:** Evaluate the identification and mapping of expertise and resources within ASEAN that can contribute to global AI standards development, including technical knowledge, research capabilities, and policy expertise. • **Initiation of Collaborative Projects:** Monitor the initiation and progress of collaborative projects among ASEAN member states aimed at addressing specific aspects of AI standards development. • **Partnership Formation:** Track the establishment of partnerships with international organisations, standards bodies, and experts to facilitate knowledge exchange and capacity building in AI standards development. • **Research and Analysis Outputs:** Assess the quality and relevance of research and analysis conducted to identify gaps and opportunities in global AI standards frameworks, as well as the development of recommendations for ASEAN's contributions.

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		• Advocate for the adoption and integration of ASEAN's contributions in global AI standards discussions, highlighting the region's unique perspectives and experiences. • Maintain ongoing engagement with global AI standards development processes, ensuring that ASEAN's interests and priorities are represented and considered in the evolution of international standards. • Review periodically any standards and regulations that have been adopted domestically to increase alignment with international standards.		• **ASEAN's Contributions to Standards Development:** Measure progress in the drafting and refinement of concrete proposals and contributions from ASEAN to be submitted to relevant global AI standards development bodies and initiatives.

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[374]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.11.1 Regional AI Policy Alignment and Development**			
Objective(s)	• **Shape Regional Policy Development:** AMS should actively participate in regional forums and ASEAN Working Group on AI Governance meetings and contribute insights, perspectives, national experiences, and best practices to promote the implementation of the AI governance principles in the ASEAN Guide on AI Governance and Ethics. • **Curate and Document Use Cases:** AMS can collaborate to compile a comprehensive compendium of use cases highlighting how organisations across various sectors in ASEAN have implemented or aligned their AI governance practices with the ASEAN Guide on AI Governance and Ethics. This repository of use cases can provide insights into the practical application of responsible AI principles in different contexts and industries. • **Shape Regional Generative AI Governance Landscape:** AMS can jointly develop regional guidelines for generative AI that address its unique risks and challenges for the region.			
6.2.11.1a **Regional AI Policy Alignment and Development**	• **Active Engagement in Regional Forums:** Engage proactively in regional forums, such as ASEAN Working Group on AI Governance meetings and conferences to contribute insights, perspectives, national experiences, and best practices. • **Case Study Compilation:** Contribute to the compendium of case studies that demonstrate how organisations and/or government agencies have aligned/implemented their AI governance practices with the *ASEAN Guide on AI Governance and Ethics* and tailored the Guide to their industry needs and nature of business and benefited from the responsible use of AI.	Short-Term: • Designate representatives to actively engage and contribute insights, perspectives, and national experiences. • Initiate collaboration with relevant stakeholders to compile case studies demonstrating alignment with ASEAN Guide on AI Governance and Ethics. • Gather information on organisations and government agencies that have implemented responsible AI practices and benefited from them. Medium-Term: • Actively engage in regional forums, sharing insights on national experiences and best practices in the implementation of responsible AI governance practices in various sectors	Lead sectoral body: • ASEAN Working Group on AI (AI-WG)	General measures of progress include: • **Representation in ASEAN Working Group on AI Governance:** Monitor the country's active participation through its representative in the ASEAN Working Group on AI Governance. • **Participation Rate in Regional Forums:** Gauge the country's engagement in regional AI forums by tracking the frequency of attendance and the degree of involvement in discussions and initiatives.

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		• Finalise the compilation of case studies showcasing successful alignment with the ASEAN Guide on AI Governance and Ethics. Long-Term: • Publish the compendium of AI case studies for dissemination among stakeholders in the region. • Maintain active participation in regional forums and working groups, ensuring ongoing contribution of insights and experiences.		• **Contribution to Case Study Compilation:** Track the number of case studies demonstrating alignment with the *ASEAN Guide on AI Governance and Ethics* contributed to the compendium. Monitor the diversity of sectors and organisations represented in the case studies.

6.2.11.1b **Expanded ASEAN Guide on AI Governance and Ethics - Generative AI**	• **Developed the *Expanded ASEAN Guide on AI Governance and Ethics - Generative AI* (published in January 2025):** Supplements and supports the ASEAN Guide on AI Governance and Ethics (2024) to promote responsible adoption of Generative AI.	Short-Term: • Worked with appointed consultant to adapt the Guide to address the governance of generative AI, including their potential applications, risks, and ethical implications. Medium-Term: • Conducted virtual briefings by the appointed consultant to share and consult WG-AI on the latest drafts of the Expanded Guide. • Collaborated with ASEAN member states, Dialogue Partners and industry stakeholders to refine the draft Expanded Guide. • Ensured alignment with the overarching principles of the ASEAN AI Governance framework. Long-Term: • Finalised the Expanded Guide based on feedback received during the consultation process. • Published the Expanded Guide in January 2025. Continue to support the dissemination of the Expanded Guide to ensure widespread awareness and adoption of the guidelines among stakeholders across the ASEAN .	Lead sectoral body: • ASEAN Working Group on AI (AI-WG)	General measures of progress include: • **Quality and Depth of Country-Specific Input:** Assess the depth and quality of the country's input, encompassing specific challenges, potential applications, and ethical considerations relevant to Generative AI. • **Active Participation and Collaboration:** Monitor the country's level of engagement throughout the development process of the regional guidelines. This includes participation in stakeholder meetings, joint drafting efforts, and providing constructive feedback on the draft guidelines.

5.2.11.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[375]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.11.2 Advance Regional Capacity-Building and Knowledge-Sharing**			
Objective(s)	• **Build Regional Capacity:** Enhance regional capacity for responsible AI by equipping regional stakeholders with the knowledge and skills to implement responsible AI practices. • **Foster Sustainable Capacity-Building:** Empowering local experts with essential knowledge, skills, and resources to independently conduct workshops within their countries cultivates a self-sustaining ecosystem of expertise, ensuring the long-term impact of capacity-building initiatives. • **Facilitate Knowledge Sharing:** Foster the exchange of expertise, best practices, and lessons learned on AI governance and implementation among ASEAN member states through regional knowledge-sharing forums.			
6.2.11.2 **Advance Regional Capacity-Building and Knowledge-Sharing**	• **Regional Capacity Building Workshops:** Facilitate workshops, training programs, and knowledge-sharing sessions at the regional level to enhance understanding and proficiency in implementing responsible AI practices across diverse stakeholders. • **Train-the-Trainer Empowerment:** Provide local experts with the necessary knowledge, skills, and resources to independently conduct workshops within their countries, ensuring sustainability and long-term impact in capacity-building initiatives.	Short-Term: • Conduct a needs assessment to identify knowledge gaps and priorities for regional stakeholders regarding responsible AI practices. • Develop workshop curriculum and materials tailored to the needs identified in the assessment. • Secure funding and partnerships for hosting the first regional capacity building workshop. • Conduct the first regional workshop with participation from diverse stakeholders (government, industry, academia, civil society). Medium-Term: • Expand the scope of regional capacity building workshops to cover advanced topics and emerging trends in responsible AI, such as AI ethics, bias mitigation, and transparency. • Collaborate with subject matter experts and partner organisations to develop specialised training modules tailored to the specific needs of different stakeholder groups.	Lead sectoral body: • ASEAN Working Group on AI (AI-WG) Supporting sectoral bodies: • Committee on Science, Technology & Innovation (COSTI)	General measures of progress include: • **Number of regional capacity building workshops conducted:** Track the number of regional capacity building workshops successfully held within the targeted timeframe. • **Participant diversity:** Measure the diversity of participants attending the workshops (government, industry, academia, civil society) to assess inclusivity. • **Impact of regional capacity building workshops:** Consider implementing pre- and post-workshop assessments or knowledge retention surveys to gauge the effectiveness of workshops in imparting knowledge on responsible AI practices.

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		• Track and evaluate the effectiveness of capacity building programs based on participant feedback and knowledge retention. Long-Term: • Implement train-the-trainer programs to empower local experts from member countries with the skills and resources needed to independently conduct capacity building workshops within their respective countries. • Provide ongoing support and mentorship to trained trainers to ensure the quality and sustainability of capacity building initiatives at the national level. • Develop a sustainable funding model to support ongoing capacity building programs. • Conduct regional conferences to showcase best practices from capacity building programs and foster collaboration.		• **Number of Local Trainers Empowered:** Measure the number of local experts who have been trained to independently conduct workshops within their countries. • **Number of workshops:** conducted independently by local trainers.

5.2.11.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[376]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.11.3 Advance the Development and Accessibility of Digital Infrastructure and Connectivity for AI**			
Objective(s)	• **Fostering Innovation and Economic Growth:** Robust digital infrastructure and connectivity is essential for facilitating the development and deployment of AI technologies. By investing in high-speed broadband networks, data centres, and cloud computing services, a conducive ecosystem can be developed to drive innovation and economic growth. • **Accelerate AI Development:** Expedite the pace of AI development by providing reliable and localised access to high-performance computing (HPC) infrastructure and capabilities, enabling developers and researchers to tackle complex AI challenges and accelerate the deployment of AI technologies in real-world applications. • **Promoting Social Inclusion and Equity:** Access to digital infrastructure and connectivity is essential for ensuring that all segments of society can benefit from AI advancements. Extending high-speed broadband networks to underserved and remote areas and promoting affordable and accessible digital services can bridge the digital divide and foster greater inclusion.			
6.2.11.3 **Advance the Development and Accessibility of Digital Infrastructure and Connectivity for AI**	• **Enhance ICT Infrastructure, Wireless Networks, and Broadband Speed and Capacity:** Invest in upgrading existing infrastructure to support higher speeds and capacities, ensuring reliable connectivity for AI applications.	Short-term: • Evaluate current broadband infrastructure to identify areas requiring immediate upgrades for enhanced speed and capacity. • Assess the readiness of existing data centres to support increased data processing demands.	Lead sectoral body: • ASEAN Working Group on AI (AI-WG) This could be	General measures of progress include: • **Percentage increase in broadband coverage:** Measure the expansion of broadband internet access to previously underserved areas by calculating the percentage increase in coverage over time.

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	• Cloud Computing Adoption: Promote the adoption of cloud computing services to provide scalable and cost-effective infrastructure for AI development and deployment. • Develop and Upgrade Data Centres: Build and upgrade data centre facilities to accommodate the growing demand for storage and processing of data generated by AI applications. • Provide Access to High-Performance Computing Infrastructure and Capabilities: Invest in the establishment and expansion of high-performance computing (HPC) infrastructure to provide access to advanced computing capabilities necessary for AI innovation.	• Initiate pilot projects to test upgrades in selected areas, focusing on improving broadband speed and capacity. • Explore cloud computing services for small-scale AI applications to assess feasibility and benefits. • Assess the current state of high-performance computing infrastructure and identify gaps in availability and accessibility for AI research and development. Medium-term: • Begin large-scale upgrades of broadband infrastructure to enhance speed and capacity across ASEAN regions. • Commence the development of new data centres and the upgrade of existing facilities to accommodate the growing demand for data storage and processing. • Implement measures to ensure data centre security and compliance with AI governance standards. • Initiate the process of expanding high-performance computing infrastructure by securing funding and launching construction or procurement projects for new facilities or upgrades. Long-term: • Complete comprehensive upgrades of broadband infrastructure, achieving consistent high-speed connectivity across all ASEAN countries. • Implement measures to ensure equitable access to enhanced broadband services, particularly in underserved and remote areas. • Fully integrate cloud computing services into AI development and deployment strategies, leveraging scalable and cost-effective infrastructure. • Expand data centre capacity to meet the increasing demand for data storage and processing driven by AI applications. • Implement and complete the construction or upgrade of high-performance computing facilities, ensuring that they meet the necessary specifications for supporting AI research and development activities.	Supporting sectoral body: • Committee on Science, Technology & Innovation (COSTI)	• **Data Centre Expansion:** Track the increase in the number of data centres built or upgraded to meet the demand for data storage and processing. Monitor progress by assessing completed construction projects, expanded storage capacities, and infrastructure enhancements. • **Cloud Computing Adoption Rate:** Evaluate the adoption of cloud computing services among organisations. Measure progress by observing the migration of operations to cloud platforms, growth in hosted data and workloads, and achieved cost savings and efficiencies. • **Utilisation Rates:** Track the utilisation rates of HPC infrastructure, indicating the extent to which resources are effectively utilised for AI research and development. • **Number and quality of AI research projects and innovations facilitated by access to HPC infrastructure:** This measure assesses the impact of HPC resources on the generation of AI research outputs and innovations, indicating the effectiveness of infrastructure expansion and resource allocation in driving progress in the field.

5.2.12 SUB-AREA: BLOCKCHAIN

5.2.12.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[377]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.12.1 Increased Participation in the Development of International Blockchain Standards**			
Objective(s)	• **Inclusive Engagement in International Standards Development:** To enhance stakeholder engagement in the creation and implementation of international blockchain standards, promoting interoperability, security, and innovation across the ASEAN region. This increased participation aims to ensure comprehensive, inclusive standards that drive sustainable growth and trust in blockchain technologies.			
6.2.12.1 **Increased Participation in the Development of International Blockchain Standards**	• **Increased Participation in the Development of International Blockchain Standards:** Foster greater AMS involvement in the ISO/TC 307 Blockchain and Distributed Ledger Technologies committee, encouraging active participate in and contribution to the development of international blockchain standards.	Short-Term: • Conduct initial workshops and seminars to raise awareness and build capacity among AMS policymakers on the importance and benefits of participating in the development of blockchain standards. • Facilitate active participation of AMS representatives in key international blockchain standard-setting bodies such as the ISO/IEC. Medium-Term: • Implement advanced training programs for AMS representatives to improve their technical knowledge and negotiation skills in ISO/IEC blockchain standards discussions. • Encourage AMS to become participating members in ISO/TC 307. • Facilitate regular meetings among AMS representatives to share insights, align positions, and develop joint contributions to ISO/TC 307. Long-Term: • Establish partnerships with key international stakeholders in ISO/IEC to influence blockchain standards and ensure AMS priorities are represented. • Encourage and support AMS representatives in seeking leadership roles within the ISO/TC 307 committee. • Regularly review and update AMS blockchain standards in line with ISO/TC 307 developments, ensuring ongoing relevance and alignment.	Lead sectoral body: • Digital Trade Standards and Conformance Working Group (DTSCWG) Supporting sectoral body: • Committee on Science, Technology & Innovation (COSTI)	General measures of progress include: • **Representation Levels:** Track the number of AMS representatives actively participating in ISO/TC 307 meetings and working groups. • **Leadership Roles:** Monitor the progression of AMS experts into leadership positions within ISO/TC 307 committees or as rapporteurs for specific standards. • **Contributions to Standards:** Measure the quantity and quality of contributions made by AMS stakeholders to the formulation and refinement of international blockchain standards within ISO/TC 307.

[377] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

5.2.12.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[378]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.12.2 Strengthen Awareness and Understanding of Blockchain Technologies**			
Objective(s)	• **Secure and Seamless Data Flows:** Developing and enhancing the relevant digital infrastructure to ensure seamless and secure data flows across borders.			
6.2.12.2 **Strengthen Awareness and Understanding of Blockchain Technologies**	• **Training Programmes for Policymakers and Regulators:** Develop and implement comprehensive training sessions and workshops tailored for AMS policymakers and regulators to deepen their understanding of blockchain technology, its regulatory implications, and potential benefits for government operations and services. • **Educational Initiatives for the Private Sector:** Launch educational initiatives, including seminars, webinars, and certification courses, aimed at enhancing the knowledge of blockchain technologies among business leaders and professionals in the private sector, with a focus on real-world applications and industry-specific use cases. • **Development and Distribution of Adoption Toolkits:** Create and distribute practical toolkits that include step-by-step guides, case studies, and implementation strategies to assist businesses, particularly MSMEs, in integrating blockchain technologies into their operations efficiently and effectively. • **Best Practices and Guidelines Compilation:** Compile and disseminate a comprehensive set of best practices and guidelines for blockchain adoption, covering aspects such as security, scalability, regulatory compliance, and interoperability to support businesses in navigating the complexities of blockchain technology.	Short-Term: • Conduct a comprehensive needs assessment to identify the specific training and educational requirements of AMS policymakers, regulators, and private sector stakeholders. • Launch pilot training programmes in selected AMS, focusing on essential skills and competencies. • Start the first round of educational seminars and webinars for private sector leaders and professionals. • Begin the creation of practical toolkits, including initial drafts of step-by-step guides and case studies. Engage with industry experts and stakeholders, including SMEs, to ensure the toolkits meet real-world needs and standards. Medium-Term: • Roll out comprehensive training programmes across all AMS, targeting a broader audience of policymakers, regulators, and private sector professionals. • Introduce blockchain-related certification courses and advanced training modules to further deepen expertise. • Finalise and distribute the adoption toolkits to businesses, particularly MSMEs, through various channels, including online platforms, industry associations, and government agencies. • Provide support and follow-up sessions to assist businesses in using the toolkits effectively.	Coordinating sectoral bodies: • Digital Trade Standards and Conformance Working Group (DTSCWG) • Committee on Science, Technology & Innovation (COSTI)	General measures of progress include: • **Participation Rates:** Measure the number of private sector stakeholders participating in blockchain skill development programs across AMS. This includes tracking enrolment in training courses, workshops, and certification programs. • **Distribution and Access:** Measure the reach and accessibility of the toolkits by tracking downloads, distributions, and the number of businesses, including MSMEs, that have received the toolkits. • **Case Studies and Success Stories:** Document and analyse case studies and success stories of businesses that have successfully adopted blockchain technologies, highlighting the impact and benefits realised. • **Adoption Rate:** Number of businesses adopting blockchain technologies within the specified timeframe, and the level of blockchain technology adoption among MSMEs, supported by government initiatives.

[378] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		Long-Term: • Establish ongoing training programmes and continuous professional development opportunities to keep policymakers, regulators, and private sector professionals updated on the latest advancements in blockchain technology. • Regularly update training content to reflect technological advancements and changing market dynamics. • Maintain robust institutional support for future advancements in blockchain technologies and standards. • Enhance collaboration with global partners for best practices in blockchain. • Achieve widespread adoption of blockchain technologies across various sectors, with a significant number of MSMEs and large enterprises integrating blockchain into their operations.		

5.2.12.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[379]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.12.3 Support Increased Deployment of Blockchain through Digital Infrastructure Support**			
Objective(s)	• **Facilitate Increased Adoption of Blockchain Technologies:** Providing digital infrastructure support enables the integration and operational efficiency of blockchain technologies across various sectors, thereby facilitating the ease of deployment of blockchain technologies across the region.			
6.2.12.3 **Support Increased Deployment of Blockchain through Digital Infrastructure Support**	• **Innovation Hubs & Sandboxes:** Promote and support R&D initiatives in blockchain technologies through incubators, regulatory sandboxes, and pilot projects to test new technologies, use cases, and business models. • **Long-term Infrastructure Investment:** Investing in the long-term development of blockchain technologies aligned with international standards to support scalability and futureproofing against technological advancements.	Short-Term: • Expand the reach and capabilities of existing innovation hubs and regulatory sandboxes across ASEAN member states, fostering a collaborative ecosystem for blockchain R&D. • Support a diverse range of pilot projects and experiments within sandboxes, focusing on emerging technologies and innovative applications of blockchain in various industries.	Lead sectoral body: • Committee on Science, Technology & Innovation (COSTI)	General measures of progress include: • **Number of Pilot Projects Launched:** Track the number of blockchain pilot projects initiated within innovation hubs and regulatory sandboxes across ASEAN. • **Implementation Success Rate:** Measure the success rate of pilot projects in terms of achieving their stated objectives, such as improving efficiency, transparency, or cost-effectiveness.

[379] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

	• Public-private Partnerships: Promote public-private partnerships to drive pilot projects and large-scale implementations of blockchain technologies in key sectors such as finance, supply chain, healthcare, and government services. These collaborative efforts will demonstrate the practical benefits of blockchain and encourage broader adoption.	• Implement pilot projects in finance, supply chain, healthcare, and government services sectors, monitoring their progress and evaluating their impact on efficiency, transparency, and cost-effectiveness. • Facilitate knowledge sharing and best practice dissemination among stakeholders involved in pilot projects, promoting lessons learned and successful case studies to encourage broader adoption of blockchain technologies. Medium-Term: • Begin phased investments in blockchain infrastructure upgrades and expansions, prioritising interoperability and compliance with evolving international standards. • Scale up successful pilot projects into large-scale implementations, integrating blockchain technologies into core business processes and public services across ASEAN. Long-Term: • Achieve full integration of blockchain technologies across most vertical use cases. • Plan for future upgrades and expansions to blockchain-related infrastructure to meet technological advancements. • Establish one or more recognised centres of excellence in blockchain innovation within ASEAN, attracting global talent and investment to drive continuous R&D advancements. • Forge international partnerships with leading blockchain hubs and research institutions to exchange knowledge, collaborate on joint projects, and set global benchmarks for blockchain innovation.		• **Number of Public-private Partnerships Established:** Count the number of formal partnerships between public entities (government agencies) and private sector companies to implement blockchain solutions. • **Investment in Blockchain** Infrastructure: Track the amount of investment allocated towards upgrading and expanding blockchain infrastructure within ASEAN, focusing on scalability and interoperability.

5.2.13 SUB-AREA: CLOUD COMPUTING

5.2.13.1 Category 1: Policy Alignment and Coordination

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[380]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.13.1 Develop an ASEAN Framework for Cloud Computing**			
Objective(s)	• **Regulatory Convergence:** Establishing a cohesive framework for cloud computing within ASEAN to foster regulatory convergence, ensuring consistent policies and practices that promote innovation while addressing regulatory challenges across member states. • **Aligning with International Standards:** Aligning ASEAN's cloud computing regulations and standards with international benchmarks to enhance interoperability, security, and trust in regional cloud services, thereby facilitating seamless integration into the global digital economy.			
6.2.13.1 **Develop an ASEAN Framework for Cloud Computing**	• **Regional Framework Development:** Develop an ASEAN framework that outlines the key definitions, principles and minimum standards for cloud computing across all 10 AMS. This framework should consider the specific needs of cloud computing, including data protection, cybersecurity, and intellectual property right, and refer to ISO/IEC TR 22678:2019 Information technology - Cloud computing - Guidance for policy development for guidance.[381] • **Stakeholder Engagement:** Engage key stakeholders, including policymakers, industry leaders, MSMEs, academia and civil society representatives to support the development of a regional framework.	Short-Term: • Establish a regional taskforce comprising AMS government representatives, industry, academia, and civil society. • Conduct a comprehensive review of existing and upcoming legislation, regulatory initiatives, and standards across AMS to identify gaps and opportunities for policy and regulatory convergence. • Conduct comprehensive studies to identify the technical, operational, and legal requirements and gaps for a regional cloud computing framework. • Establish common definitions, principles, standards, practices for a regional cloud computing framework. • Conduct stakeholder consultations to gather feedback and build consensus. Medium-Term: • Draft and approve a regional cloud computing framework, outlining key milestones, activities, timelines and resources required at both the national and regional levels and incorporating feedback from industry experts. Ensure alignment of regional framework with international cloud computing standards, practices, and benchmarks. • Develop guidelines to support the implementation of the regional cloud computing framework and related standards.	Lead sectoral body: • Committee on Science, Technology & Innovation (COSTI) Supporting sectoral body: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)	General measures of progress include: • **Drafting and Finalising the ASEAN Framework:** Complete the drafting of the ASEAN framework for cloud computing, including definitions, principles, and minimum standards, through collaborative working groups and consultations with AMS. Finalise the framework by obtaining consensus and approval from ASEAN Member States, ensuring alignment with regional priorities and international best practices. • **Level of Adoption by AMS:** Achieve formal adoption of the ASEAN framework by all 10 AMS, either through ratification in regional agreements or integration into national legislation and policies. • **Alignment with International Standards:** Assess the level of alignment between the ASEAN framework and international standards and best practices in cloud computing.

[380] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.
[381] ISO(2024) ISO/IEC TR 22678:2019 Information technology — Cloud computing — Guidance for policy development,https://www.iso.org/obp/ui/en/#iso:std:iso-iec:tr:22678:ed-1:v1:en

		• Launch convergence of national legal and regulatory policies across AMS in relation to cloud computing. • Continued engagement with stakeholders to review success of regional cloud computing framework. Long-Term: • Achieve full scale convergence of national legal and regulatory policies across AMS in relation to cloud computing. • Continuously monitor, update, and enhance regional cloud computing framework based on feedback and technological advancements.		

5.2.13.2 Category 2: Capacity Building and Technical Assistance

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[382]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.13.2 Strengthen Skills and Competencies Related to Cloud Computing**			
Objective(s)	• **Enhancing Cloud-Specific Digital Skills:** Providing targeted training and development programmes for professionals to improve expertise and cloud-specific digital skills across the population. • **Promoting Knowledge Sharing:** Facilitating exchange programmes and workshops for AMS to learn about the benefits of cloud technologies and best practices in cloud computing. • **Raise Awareness:** Raising awareness and improving understanding of the benefits and usage of cloud computing. • **Facilitate Adoption of Cloud Technology:** Support adoption of cloud technologies through toolkits, guidelines, and best practices for businesses, including MSMEs.			
6.2.13.2 **Strengthen Skills and Competencies Related to Cloud Computing**	• **Training Programs:** Develop and execute digital literacy training programs and comprehensive training modules for public sector employees, IT professionals, and students on the use cases for and the purpose and benefits of cloud computing. • **Public Awareness Campaigns:** Develop and execute public campaigns to promote the adoption of cloud computing. • **Resource Development:** Create accessible resources, such as toolkits and guidelines, for businesses implement best practices in cloud computing, particularly MSMEs.	Short-Term: • Assess training needs and skill gap with relation to cloud-specific digital skills across AMS. • Launch pilot training programmes in selected AMS, focusing on essential skills and competencies. • Launch public awareness campaigns on cloud computing efforts in ASEAN. Medium-Term: • Evaluate the effectiveness of pilot programmes and expand training offerings based on feedback. • Develop partnerships with educational institutions and industry associations for continuous learning opportunities. • Sustain public awareness efforts through continuous outreach and education.	Lead sectoral body: • Committee on Science, Technology & Innovation (COSTI) Supporting sectoral bodies: • ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)	General measures of progress include: • **Training Participation Rates:** Number of individuals trained across AMS in cloud computing competencies. • **Skill Improvement Metrics:** Improvements in participant skills, assessed through pre- and post-training evaluations. • **MSME Cloud Adoption Rate:** Measure the increase in cloud technology adoption among MSMEs, supported by government initiatives.

[382] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		• Implement comprehensive advisory services and incentive programs for MSMEs. Long-Term: • Establish a regional certification programme for professionals in cloud computing. • Regularly update training content to reflect technological advancements and changing market dynamics. • Institutionalise continuous professional development programs. • Enhance collaboration with global partners for best practices in cloud computing.		

5.2.13.3 Category 3: Digital Infrastructure Development

Action Area	Target Area(s)	Proposed Milestone(s) and Tentative Timeframe[383]	Responsible Parties	Measure(s) of Progress
Key Action Area	**6.2.13.3 Develop Cloud Computing Infrastructure in Line with Regional Priorities**			
Objective(s)	• **Alignment with international and regional priorities and standards:** Ensuring existing and future cloud technologies align with regional and international standards. • **Increasing Adoption of Cloud Technologies:** Enhancing investment opportunities for the testing and adoption of secure cloud technologies.			
6.2.13.3 **Develop Cloud Computing Infrastructure in Line with Regional Priorities**	• **Digital Connectivity Enhancements:** Prioritise investments in high-speed broadband infrastructure to ensure widespread and reliable internet access. • **Innovation Hubs & Sandboxes:** Promote and support R&D initiatives in cloud computing technologies through incubators, regulatory sandboxes, and pilot projects to test new cloud technologies and business models. • **Long-term Infrastructure Investment:** Investing in the long-term development of cloud computing and data centre infrastructure aligned with international standards to support scalability and futureproofing against technological advancements.	Short-Term: • Conduct a comprehensive assessment of digital infrastructure needs across AMS. • Initiate public-private partnerships to develop innovation hubs and sandboxes regionally. • Initiate initial expansion projects to improve digital connectivity in underserved regions. Medium-Term: • Launch innovation hubs and regulatory sandboxes for testing existing and new technologies to meet international and/or regional standards. • Execute rollout of broadband and mobile internet infrastructure upgrades in high-priority regions. • Monitor impact of enhanced connectivity on cloud technology adoption and usage.	Lead sectoral body: • Committee on Science, Technology & Innovation (COSTI)	General measures of progress include: • **Infrastructure Readiness:** Develop and track scores for broadband connectivity and data centre availability across AMS. • **Investment in R&D:** Monitor the amount of investment in cloud computing research and development initiatives. • **Output from Innovation Hubs:** Track the number of successful projects and startups emerging from innovation hubs and sandboxes.

[383] The duration of short/medium/long-term is not specified as it may vary based on the pace of collaboration, policy implementation and reforms across each ASEAN sectoral body. This approach ensures flexibility and adaptability according to the dynamics and unique contexts of each AMS.

		Long-Term: • Plan for future upgrades and expansions to cloud computing and data centre infrastructure to meet technological advancements. • Promote continuous innovation and adoption of new technologies.		

6. Conclusion

Source: Author: tawatchai07 - Freepik.com, Title 'Aerial view of panyee island in Phang Nga, Thailand.'

The ASEAN DTS Roadmap recognises that harmonising standards has been identified as a key priority for facilitating trade and economic integration in the region, including in the ASEAN Economic Community (AEC) Blueprint 2025, the ASEAN Trade in Goods Agreement (ATIGA), the Bandar Seri Begawan (BSB) Roadmap, ASEAN Digital Masterplan (ADM) 2025, and ASEAN Cybersecurity Cooperation Strategy 2021-2025. Building on previous standards and conformance initiatives, and complementing ongoing key digital initiatives in the region, the ASEAN DTS Roadmap provides a holistic perspective and prioritised approach towards harmonising DTS, so as to remove non-tariff barriers to trade, facilitate digital trade and integration, and ultimately contribute to the sustainable and inclusive growth of ASEAN.

Given the cross-cutting nature of standards across various areas that are pivotal to digital trade, the implementation of the recommendations outlined in the ASEAN DTS Roadmap will require continued collaboration and coordination across the AMS, ASEAN Sectoral Bodies, ASEAN Dialogue Partners, and industry. In addition, continuously evolving global and regional developments, including in technological advancements and the role of standards, will require periodic monitoring, reviews, and potentially adjustments, where relevant. In this regard, clear procedures and institutional frameworks to facilitate collaboration and coordination, including with the private sector, will be important and beneficial towards maximising and unlocking the potential benefits of harmonised DTS to the region. In contrast, delays in effectively adopting and harmonising standards towards strengthening interoperability could result in missed opportunities for the region – in terms of lowering costs, accessing larger markets, increasing trade, supporting employment, and promoting inclusion.

Annex I: ASEAN's Flagship Digital Initiatives

The ASEAN DTS Roadmap seeks to align with, complement, and contribute to enhance ASEAN's flagship digital initiatives. As detailed in Chapter 1.3, the harmonisation of digital trade standards play an important role in facilitating and accelerating digital trade and integration within the region. By establishing consistent technical and legal standards, ASEAN can drive greater interoperability, streamline digital trade processes, and expand market access, thereby fostering sustainable and inclusive and regional growth.

Cross-cutting ASEAN Digital Initiatives

ASEAN Digital Masterplan 2025

The ASEAN Digital Masterplan 2025 (ADM 2025) is a strategic framework aimed at guiding the region's digital transformation.[384] It focuses on enhancing digital infrastructure, fostering digital innovation, and promoting digital skills across ASEAN member states. The masterplan outlines key initiatives to improve connectivity, cybersecurity, and regulatory frameworks to create a conducive environment for digital growth.

Driving this initiative include the rapid digitalisation of economies and the need for a coordinated regional approach to maximise the benefits of the digital economy. The masterplan addresses disparities in digital readiness among member states and aims to create a more inclusive and resilient digital ecosystem. It supports ASEAN's broader goals of economic integration, competitiveness, and sustainable development by leveraging digital technologies to drive growth and innovation.

The significance of ADM 2025 lies in its potential to transform the region's digital landscape. By prioritising infrastructure development, innovation, and skills enhancement, the masterplan aims to bridge the digital divide, boost economic productivity, and enhance the region's global competitiveness. It is a crucial step towards achieving a digitally connected and economically integrated ASEAN, fostering greater collaboration and shared prosperity among member states.

ASEAN ICT Masterplan 2020

The ASEAN ICT Masterplan 2020 outlines a strategic framework for enhancing connectivity, driving innovation in information and communication technology (ICT), and building digital skills to drive economic growth and regional integration.[385]

Driving factors behind this initiative include the need to improve digital infrastructure, address disparities in ICT development among member states, and support the digital economy. By aligning with ASEAN's broader goals of economic integration and competitiveness, the Masterplan seeks to create a more connected and technologically advanced region.

The ASEAN ICT Masterplan 2020 plays an important role in guiding the growth of digital transformation and bridging the digital divide in the region. By setting clear priorities and targets for ICT development, it helps member states enhance their digital capabilities, support innovation, and drive economic growth. This initiative contributes to a more integrated and resilient digital economy, facilitating regional collaboration and enhancing ASEAN's global competitiveness.

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[384] ASEAN (2021) ASEAN Digital Masterplan 2025, https://asean.org/book/asean-digital-masterplan-2025/
[385] ASEAN (2020) ASEAN ICT Masterplan 2020, https://asean.org/wp-content/uploads/images/2015/November/ICT/15b%20--%20AIM%202020_Publication_Final.pdf

ASEAN Digital Masterplan 2030 (Targeted to be finalised in 2025)

The ASEAN Digital Masterplan 2030 (ADM 2030) is designed to accelerate digital transformation across the ASEAN region, building upon the accomplishments of ADM 2025. By integrating recommendations from the ADM 2025 Midterm Review Study and introducing solutions to address challenges encountered during the earlier implementation phase, ADM 2030 ensures that ASEAN's digital landscape continues to evolve and improve.

Driving factors behind ADM 2030 include the need to sustain momentum in digital development, address gaps identified in ADM 2025 and align regional efforts with the broader goals of the ASEAN Community Vision 2045. This initiative supports ASEAN's objective of fostering a digitally integrated and innovative region by advancing collaborative efforts and leveraging emerging technologies.

The significance of ADM 2030 lies in its role as a roadmap for ASEAN's digital future, providing tailored strategies to guide member states through the next phase of digital advancement. By addressing previous challenges and setting clear goals for the future, ADM 2030 ensures that ASEAN remains on track to achieve its vision of a connected, inclusive, and sustainable digital economy by 2030.

ASEAN Flagship Digital Initiatives relevant to Digital Trade Logistics and Delivery

ASEAN Single Window

The ASEAN Single Window (ASW) is a regional initiative aimed at expediting and simplifying customs clearance processes across ASEAN member states.[386] It facilitates the electronic exchange of trade-related documents, allowing for faster and more efficient processing of cross-border shipments. The ASW connects the National Single Windows of each member state, enabling seamless data sharing and reducing the need for physical documentation.

Driving factors behind this initiative include the need to enhance trade facilitation, reduce logistics costs, and improve the overall efficiency of supply chains within the region. The ASW addresses challenges such as bureaucratic delays, inconsistent customs procedures, and the high cost of trade transactions. By streamlining these processes, the ASW supports ASEAN's broader goals of economic integration and competitiveness.

The ASEAN Single Window is a significant regional initiative that seeks to boost intra-ASEAN trade and investment. By providing a more efficient and transparent customs clearance system, the ASW reduces the time and cost associated with moving goods across borders. This initiative not only enhances the ease of doing business within ASEAN but also strengthens the region's position as a global trade hub. It plays a crucial role in promoting economic growth, fostering regional cooperation, and achieving the ASEAN Economic Community's vision of a single market and production base.

The ASEAN Customs Transit System (ACTS)

The ASEAN Customs Transit System (ACTS) is designed to streamline and standardise customs procedures for the transit of goods across ASEAN member states.[387] It enables the electronic tracking and management of goods as they move through multiple countries, reducing delays and improving efficiency in cross-border trade.

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386 ASEAN (n.d.) ASEAN Single Window Trade, https://asean.org/our-communities/economic-community/asean-single-window/
387 ASEAN (n.d.) ASEAN Customs Transit System – Information Portal, https://acts.asean.org/

Driven by the need to enhance trade facilitation, reduce transit times, and minimise administrative burdens, the ACTS supports ASEAN's broader goals of regional economic integration and seamless trade by providing a unified system for managing customs transit.

The significance of the ACTS lies in its ability to simplify and expedite the movement of goods across borders, thereby boosting trade efficiency and reducing costs. By offering a coordinated approach to customs transit, it helps enhance regional trade connectivity and supports the growth of intra-ASEAN commerce, contributing to a more integrated and competitive regional economy.

ASEAN Flagship Digital Initiatives relevant to Digital Transactions

Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators

The Guidelines for the Exchange of Information on E-Commerce Data between Customs Administrations and E-Commerce Operators are being developed under the Strategic Plan of Customs Development (SPCD) 15 on E-Commerce, aiming to enhance the efficiency and security of cross-border e-commerce within ASEAN. These guidelines are designed to establish a clear framework for data exchange, ensuring smooth and secure interactions between customs authorities and e-commerce operators, thus supporting the growth of global trade.

The 33rd Directors-General of Customs (DGs Customs) Meeting in June 2024 tasked the Coordinating Committee on Customs (CCC) and the Customs Procedures and Trade Facilitation Working Group (CPTFWG) to develop the Guidelines for the Exchange Information on E-Commerce Data between Customs Administrations and E-Commerce Operators. The drafting process is currently being undertaken, and the guideline is expected to be endorsed at the 34th DGs Customs Meeting in June 2025.

Driving factors behind this initiative include the rapid expansion of cross-border e-commerce, the need to address gaps in the current data exchange processes, and the goal of harmonising practices across ASEAN member states. The development of these guidelines is informed by a 2023 survey on the Luxor Resolution, which assessed the implementation of e-commerce principles and highlighted gaps among AMS.

The significance of these guidelines lies in their potential to streamline customs procedures, reduce delays, and enhance the security of e-commerce transactions across the region. By providing a standardised approach to data exchange, the guidelines will facilitate more efficient cross-border trade, contributing to ASEAN's broader goals of economic integration and digital transformation.

ASEAN Agreement on Electronic Commerce

The ASEAN Agreement on Electronic Commerce[388] and its associated implementation plan[389] are aimed at facilitating cross-border e-commerce transactions within the ASEAN region. It establishes a legal and regulatory framework to promote seamless and secure electronic commerce, addressing key areas such as consumer protection, data privacy, cybersecurity, and electronic payment systems. The agreement aims to harmonise e-commerce regulations across member states, making it easier for businesses to operate and consumers to shop online across borders.

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[388] ASEAN (2019) ASEAN Agreement on Electronic Commerce, https://agreement.asean.org/media/download/20190306035048.pdf
[389] ASEAN (2022) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2022/03/Work-Plan-E-commerce-Agreement_endorsed_logo.pdf

Driven by the rapid growth of e-commerce in the region, this agreement supports the broader ASEAN goal of economic integration by fostering a conducive environment for e-commerce, which is a critical driver of economic growth and innovation. It also addresses the need for regional cooperation to tackle challenges such as fraud, data breaches, and differing regulatory standards.

The significance of the ASEAN Agreement on Electronic Commerce lies in its potential to boost regional trade and economic development. By providing a consistent and secure framework for e-commerce, the agreement enhances business opportunities, encourages investment, and increases consumer trust in online transactions. It plays a crucial role in building a more competitive and inclusive digital economy, facilitating greater participation in the global digital marketplace, and supporting ASEAN's vision of a highly integrated and cohesive regional economy.

ASEAN Payments Policy Framework for Cross-Border Real Time Retail Payment Systems (RT-RPS)

The ASEAN Payments Policy Framework for Cross-Border Real Time Retail Payment Systems (RT-RPS) aims to standardise and enhance cross-border real-time retail payment systems within the ASEAN region.[390] It provides a unified set of guidelines and best practices to ensure interoperability, security, and efficiency in real-time payment transactions across member states.

This framework was driven by the growing demand for instant cross-border transactions, the need for harmonised payment standards, and the desire to improve financial inclusion. The framework supports ASEAN's broader goals of economic integration and digital transformation by facilitating smoother and faster cross-border payments.

The significance of the ASEAN Payments Policy Framework lies in its ability to streamline and secure cross-border retail payments, enhancing the efficiency and reliability of financial transactions. By providing a consistent policy framework, it helps reduce transaction costs, improve accessibility, and foster greater regional economic connectivity, contributing to a more integrated and robust digital financial ecosystem.

Handbook on E-commerce and Competition in ASEAN

The Handbook on E-commerce and Competition in ASEAN offers a comprehensive guide to understanding and addressing competition issues arising in the e-commerce sector.[391] It provides practical insights and guidelines for ensuring fair competition, preventing anti-competitive practices, and fostering a competitive online marketplace.

This handbook is driven by the rapid expansion of e-commerce, the unique competition challenges it presents, and the need for harmonised approaches to regulatory enforcement across member states. It supports ASEAN's broader goals of creating a level playing field in digital markets and enhancing regional economic integration.

The significance of the handbook lies in its ability to equip regulators and businesses with the tools needed to navigate the complexities of e-commerce competition. By offering detailed guidance on competition policy and enforcement, it helps prevent market abuses, promotes fair practices, and supports the sustainable growth of the e-commerce sector. This initiative contributes to a more robust and equitable digital economy in ASEAN.

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[390] ASEAN (2020) ASEAN Payments Policy Framework for Cross-Border Real Time Retail Payments within the ASEAN Region, https://afcwp.asean.org/wp-content/uploads/2020/07/Annex-E.-ASEAN-Payments-Policy-Framework.pdf
[391] ASEAN (2017) Handbook on Competition & E-Commerce in ASEAN, https://asean-competition.org/read-news-handbook-on-competition-e-commerce-in-asean

ASEAN Flagship Digital Initiatives Relevant to Digital Trust

ASEAN Unique Business Identification Number (UBIN) Roadmap

The ASEAN UBIN Roadmap aims to create a standardised business ID system across ASEAN.[392] This unique identifier will streamline business interactions and regulatory processes, enhancing data accuracy and reducing administrative burdens.

The UBIN Roadmap addresses the challenge of fragmented business IDs, supporting ASEAN's goal of a more integrated and efficient digital economy, aligning with the ASEAN Economic Community vision by simplifying cross-border trade and investment.

The UBIN initiative is crucial for transforming business interactions within ASEAN. By providing a unified ID system, it simplifies compliance, reduces fraud risk, and improves data accuracy, thereby fostering a more transparent and efficient business environment and supporting regional economic growth.

ASEAN Digital Credentials Platform

The ASEAN Digital Credentials Platform (AKREDI) will seek to support entities by creating a digital trust platform for professional and business identities, attributes and assets, which will redefine accreditation, authentication, and KYC processes in ASEAN, especially for the purposes of cross-border mobility of talents, businesses and investments[393]. The AKREDI will work by way of a mobile app containing a digital wallet.

The platform also addresses the need for seamless cross-border recognition of skills and qualifications, crucial for ASEAN's economic integration. It tackles challenges such as credential fraud and inefficiencies in verification processes, supporting workforce mobility and enhancing trust and transparency in the digital economy.

The platform's significance lies in its ability to streamline credential management, reduce administrative burdens, and promote trust in qualifications. It supports career advancement, business operations, and economic integration within ASEAN, facilitating professional mobility, continuous learning, and workforce resilience, ultimately boosting regional economic growth and competitiveness.

ASEAN Cybersecurity Cooperation Strategy 2021-2025

The ASEAN Cybersecurity Cooperation Strategy 2021-2025 is a comprehensive framework designed to enhance cybersecurity across the ASEAN region.[394] It focuses on strengthening regional collaboration, building capacity, and developing robust policies and frameworks to protect against cyber threats. The strategy aims to improve the resilience of critical infrastructure, enhance incident response capabilities, and promote information sharing among member states.

Driving factors behind this initiative include the increasing frequency and sophistication of cyber threats, the growing reliance on digital technologies, and the need for a unified regional approach to cybersecurity. The strategy addresses the diverse cybersecurity capabilities and preparedness levels across ASEAN member states, aiming to create a more secure and resilient digital environment. It supports ASEAN's broader objectives of digital transformation and economic integration by ensuring that the digital ecosystem is secure and trustworthy.

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[392] ASEAN (2024) Implementation Roadmap to Establish Regionally Comparable and Recognised UBIN in ASEAN, https://asean.org/wp-content/uploads/2024/04/TOR_UBIN-Implementation-Roadmap_final-1.pdf
[393] TrustGrid (n.d.) The ASEAN Digital Credentials Platform, https://trustgrid.com/the-asean-digital-credentials-platform-akredi/
[394] ASEAN (2022) ASEAN Cybersecurity Cooperation Strategy 2021-2025, https://asean.org/wp-content/uploads/2022/02/01-ASEAN-Cybersecurity-Cooperation-Paper-2021-2025_final-23-0122.pdf

The significance of the ASEAN Cybersecurity Cooperation Strategy 2021-2025 lies in its potential to bolster regional security and stability. By fostering collaboration and capacity building, the strategy aims to mitigate cyber risks, protect critical infrastructure, and build a culture of cybersecurity awareness. This initiative not only safeguards the digital economy but also strengthens the region's ability to respond to cyber incidents, promoting trust and confidence in digital technologies and contributing to the overall economic growth and competitiveness of ASEAN.

ASEAN Guidelines on Consumer Protection in E-commerce

The ASEAN Guidelines on Consumer Protection in E-commerce aim to enhance consumer confidence and trust in online transactions across the ASEAN region.[395] These guidelines provide a comprehensive framework for protecting consumers' rights in the digital marketplace, covering areas such as transparency, data protection, dispute resolution, and the responsibilities of e-commerce platforms. The guidelines seek to ensure that consumers are well-informed, secure, and treated fairly when engaging in e-commerce activities.

Driving factors behind this initiative include the rapid growth of e-commerce, the need to address varying levels of consumer protection across member states, and the desire to create a harmonised regulatory environment. The guidelines support ASEAN’s broader goals of fostering a safe and trustworthy digital economy, promoting cross-border e-commerce, and enhancing regional integration by aligning consumer protection standards.

The significance of the ASEAN Guidelines on Consumer Protection in E-commerce lies in their potential to boost consumer confidence and participation in the digital economy. By establishing clear and consistent protections, the guidelines help reduce the risk of fraud, enhance data security, and provide effective mechanisms for resolving disputes. This initiative not only benefits consumers but also supports businesses by creating a more predictable and secure e-commerce environment. Ultimately, the guidelines contribute to the growth of e-commerce, foster regional economic integration, and help achieve ASEAN’s vision of a highly competitive and resilient digital economy.

ASEAN Online Business Code of Conduct (ASEAN COC)

The ASEAN Online Business Code of Conduct (ASEAN COC) aims to establish ethical guidelines for online businesses in ASEAN, covering consumer rights, data protection, advertising standards, and dispute resolution.[396] It promotes fair, transparent, and responsible business practices to ensure a trustworthy digital marketplace.

This initiative is driven by the rapid expansion of e-commerce, the need for unified regulations, and the desire to mitigate risks such as fraud and data breaches. The ASEAN COC supports ASEAN’s broader goals of digital transformation and economic integration by aligning business practices with international standards.

The significance of the ASEAN COC lies in its ability to build consumer trust, promote fair competition, and support a safer online environment. By ensuring ethical practices, it benefits both consumers and businesses, contributing to the growth of e-commerce and fostering regional economic integration.

[395] ASEAN (2023) ASEAN Guidelines on Consumer Impact E-commerce, https://asean.org/wp-content/uploads/2023/03/ASEAN-Guidelines-on-Consumer-Impact-E-COMMERCE_V2-1.pdf
[396] ASEAN (2020) ASEAN Online Business Code of Conduct, https://aseanconsumer.org/file/post_image/2020-02-26%20ASEAN%20COC%20(fin).pdf

ASEAN Online Dispute Resolution Guidelines

The ASEAN ODR Guidelines provide a structured framework for resolving disputes arising from online transactions within the ASEAN region.[397] These guidelines outline procedures and best practices for handling disputes electronically, ensuring that parties can resolve issues efficiently and fairly without needing to resort to traditional legal processes.

Driving factors behind this initiative include the rapid growth of e-commerce, the increasing volume of online transactions, and the need for accessible and effective dispute resolution mechanisms. The guidelines support ASEAN's broader goals of enhancing digital trade and consumer protection by providing a unified approach to managing online disputes.

The significance of the ASEAN ODR Guidelines lies in their ability to offer a streamlined and accessible solution for resolving disputes in the digital marketplace. By facilitating quicker and more efficient resolutions, they help build consumer confidence, reduce the burden on traditional legal systems, and support the growth of a secure and trustworthy online environment in the region.

ASEAN Framework on Personal Data Protection (PDP)

The The ASEAN Framework on Personal Data Protection (PDP) aims to establish a unified approach to safeguarding personal data across the ASEAN region.[398] It provides guidelines for data privacy, security, and the rights of individuals, ensuring that personal information is handled responsibly and transparently by businesses and government entities.

Driving factors behind this initiative include the increasing digitalisation of economies, the rise in data breaches, and the need for consistent data protection standards across member states. The framework supports ASEAN's broader goals of digital integration and trust in the digital economy by aligning data protection practices with international norms.

The significance of the ASEAN PDP lies in its potential to enhance consumer trust and data security in the region. By providing clear and consistent guidelines, it helps reduce the risk of data misuse and breaches, fostering a safer digital environment. This initiative not only protects individuals' privacy but also supports businesses by creating a predictable regulatory environment, ultimately contributing to regional economic growth and digital innovation.

ASEAN Data Management Framework (DMF)

The The ASEAN Data Management Framework (DMF) aims to provide a comprehensive set of guidelines for the effective management of data across the ASEAN region.[399] It focuses on best practices for data governance, data security, and data quality, ensuring that businesses and governments can handle data efficiently and responsibly.

Key drivers behind this initiative include the growing importance of data in the digital economy, the need for harmonised data management practices, and the desire to enhance data-driven decision-making. The ASEAN DMF supports ASEAN's broader goals of digital transformation and economic integration by promoting a cohesive approach to data management.

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[397] ASEAN (n.d.) ASEAN ODR Guidelines, https://asean.org/book/asean-guidelines-on-online-dispute-resolution-odr/

[398] ASEAN Telecommunications and Information Technology Ministers Meeting (2016) Framework on Personal Data Protection, https://asean.org/wp-content/uploads/2012/05/10-ASEAN-Framework-on-PDP.pdf

[399] ASEAN (2021) ASEAN Data Management Framework, https://asean.org/wp-content/uploads/2021/08/ASEAN-Data-Management-Framework.pdf

The significance of the ASEAN DMF lies in its ability to improve data governance and security in the region. By establishing clear standards and practices, the ASEAN DMF helps organisations manage data more effectively, reducing risks and enhancing operational efficiency. This initiative supports the development of a robust digital economy, fostering innovation and competitiveness while contributing to regional economic growth.

ASEAN Model Contractual Clauses on Cross Border Data Flow

The ASEAN Model Contractual Clauses on Cross Border Data Flow (MCCs) aim to facilitate the secure and compliant transfer of personal data across ASEAN member states.[400] The MCCs provide a standardised set of terms and conditions that businesses can use to ensure data protection and regulatory compliance during cross-border data transfers.

Driving factors behind this initiative include the increasing volume of cross-border data flows, the need to harmonise data protection regulations, and the desire to support the digital economy. The model clauses support ASEAN's broader goals of regional integration and digital transformation by providing a consistent framework for data transfers.

The significance of the MCCs lies in their potential to simplify and secure international data transfers. By providing clear and standardised contractual terms, these clauses help businesses navigate regulatory complexities and ensure data protection. This initiative not only enhances consumer trust but also supports businesses in their cross-border operations, contributing to the growth of the regional digital economy and fostering greater economic integration.

ASEAN Certification Mechanism for Cross-Border Data Flow (Targeted to be finalised in 2025)

The ASEAN Certification Mechanism for Cross-Border Data Flow (ACCDF) is being explored as another data transfer mechanism between AMS and external partners. Building on the ASEAN DMF adopted in 2021, the ACCDF aims to provide a structured and recognised certification process to enhance the security and efficiency of cross-border data flows within the region.

Driving factors behind this initiative include the need to support seamless and secure data exchanges across borders, the desire to build on the voluntary and non-binding guidance provided by the DMF, and the goal of creating a robust mechanism under the ASEAN Framework on Digital Data Governance. The ACCDF is expected to complement existing frameworks and guidelines, ensuring that businesses can navigate cross-border data transfers with greater confidence and compliance.

The significance of the ACCDF lies in its potential to standardise and strengthen data governance practices across the region. By establishing a recognised certification process, the initiative will help build trust among AMS and their external partners, facilitating smoother data exchanges and supporting the region's broader goals of digital integration and economic growth.

ASEAN Cybersecurity Cooperation Strategy 2026-2030 (Targeted to be finalised in 2025)

The ASEAN Cybersecurity Cooperation Strategy 2026-2030 aims to build on the achievements of previous strategies by establishing an advanced framework for regional cyberspace. This new strategy will focus on fostering stronger collaboration and enhancing information sharing among ASEAN Member States (AMS) to effectively address evolving cyber threats, ensuring a secure

[400] ASEAN (2021) ASEAN Model Contractual Clauses for Cross Border Data Flows,
https://asean.org/wp-content/uploads/3-ASEAN-Model-Contractual-Clauses-for-Cross-Border-Data-Flows_Final.pdf

digital environment conducive to economic growth and social development.

Driving factors behind this initiative include the growing complexity of cyber threats, the need to sustain and expand on the progress made under the 2017-2020 and 2021-2025 strategies, and the importance of a unified regional approach to cybersecurity. The strategy will also emphasise capacity-building programs and promote cybersecurity awareness among governments, businesses, and the public, encouraging better cyber hygiene and risk management practices across the region.

The significance of the ASEAN Cybersecurity Cooperation Strategy 2026-2030 lies in its potential to further strengthen the region's cybersecurity capabilities and resilience. By fostering collaboration and enhancing awareness, the strategy will help create a safer digital landscape, supporting the continued growth of ASEAN's digital economy and contributing to regional stability and prosperity.

ASEAN Flagship Digital Initiatives Relevant to Cooperation on Emerging Topics

ASEAN Guide on AI Governance and Ethics

The ASEAN Guide on AI Governance and Ethics aims to establish a framework for the ethical development and deployment of artificial intelligence within the ASEAN region.[401] It provides guidelines on transparency, accountability, fairness, and privacy to ensure that AI technologies are used responsibly and beneficially.

Key drivers behind this initiative include the rapid advancement of AI technologies, the need to address ethical and governance challenges, and the desire to promote trust in AI systems. The guide supports ASEAN's broader goals of digital transformation and innovation by fostering a responsible AI ecosystem.

The significance of the ASEAN Guide on AI Governance and Ethics lies in its ability to guide the ethical use of AI, enhancing public trust and ensuring equitable outcomes. By providing clear governance and ethical guidelines, it helps mitigate risks associated with AI, such as bias and privacy concerns. This initiative supports sustainable AI development, promoting innovation while safeguarding societal values and contributing to regional economic growth.

Expanded ASEAN Guide on AI Governance and Ethics – Generative AI

The Expanded ASEAN Guide on AI Governance and Ethics supplements and supports the ASEAN Guide on AI Governance and Ethics (2024) with policy considerations related to generative AI (Gen AI). It provides a view of the opportunities and risks of Gen AI and recommends a range of policy actions for ASEAN to support its responsible adoption. These recommendations emphasise the importance of promoting the numerous benefits of Gen AI alongside thoughtful, proportional, and regionally interoperable measures that ensure its safety.

ASEAN Responsible AI Roadmap (Targeted to be finalised in Mid-2024)

The ASEAN Responsible AI Roadmap is developed to provide actionable steps for ASEAN policymakers and stakeholders to create the ideal conditions for responsible AI to flourish in the region, as well as for AMS to leverage and enable responsible AI in a meaningful, impactful, and sustainable manner by 2030, aligning with ASEAN's broader objectives for ethical AI governance.

Driving factors behind this initiative include the rapid growth of AI technologies, the need to address ethical considerations in AI deployment, and the desire to complement existing frameworks like the ASEAN Guide on AI Governance and Ethics. The roadmap aims to support AMS in navigating the complexities of AI development while ensuring that its benefits are widely and equitably distributed.

The significance of the ASEAN Responsible AI Roadmap lies in its potential to position the region as a leader in ethical AI practices. By providing a clear framework for responsible AI, the roadmap will help ensure that AI technologies are developed and used in ways that align with regional values and contribute to sustainable development, ultimately enhancing ASEAN's global competitiveness in the AI domain.

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[401] ASEAN (2024) ASEAN Guide on AI Governance and Ethics, https://asean.org/book/asean-guide-on-ai-governance-and-ethics/

The harmonisation of digital trade standards plays a crucial role in complementing and enhancing the effectiveness of ASEAN's flagship digital initiatives. By establishing consistent technical and legal standards, ASEAN can drive greater interoperability, streamline digital trade processes, and reduce barriers to cross-border transactions. This not only fosters a more integrated and efficient regional economy but also supports sustainable and inclusive growth. Ultimately, the harmonisation of digital trade standards is essential for achieving ASEAN's vision of a digitally connected and economically integrated community, boosting the region's global competitiveness, and ensuring shared prosperity among member states.

Annex II: Selected ASEAN Sectoral Bodies and their governance structures

This section presents an overview of the sectoral bodies mentioned in Chapter 5 of the Roadmap, including the description of its scope, its reporting line, and the working groups under the sectoral body.

Sectoral Body	Description	Reporting Line	Working Groups under the Sectoral Body
ASEAN Committee on Consumer Protection (ACCP)	The ACCP's role is to ensure that consumer protection measures, including laws, regulations and policies, are in place in all AMS; consumers' access to information is enhanced, mechanisms for consumer redress and product recalls are in place, and institutional capacity strengthened. These are reflected in the strategic approaches adopted under the AEC Blueprint 2015-2025 and the more detailed initiatives under the ASEAN Strategic Action Plan on Consumer Protection (ASAPCP 2025). The ASEAN Committee on Consumer Protection (ACCP) was established in 2007 by the ASEAN Economic Ministers in 2007 and is comprised of representatives of consumer protection agencies of AMS. Some of the main tasks of the ACCP are as follows:[402] • To promote the exchange of information and experience on consumer protection policies and laws and practices among and between AMS. • Encourage the development and implementation of effective consumer protection laws and policies. • Empower ASEAN consumers through the provision of accurate information through online knowledge centers; and • Hold regular stakeholder engagements or consultations.	ACCP -> AEM	There is a mention in the official website of "its three Working Groups", but the research did not yield them being identified by name in official documentation.

[402] ASEAN (2024) Structure of the ACCP, https://aseanconsumer.org/about-regional-cooperation-structure-of-the-accp

	The ASEAN Consumer Associations Network (ACAN) was established in 2018 to bring together national consumer associations of ASEAN to discuss and exchange views on best practices and experiences on the challenges and management of consumer protection issues. Regular consultations are held between the ACCP and the ACAN as its main task are as follows: • Provide support to the implementation of the ASEAN Strategic Action Plan on Consumer Protection by giving feedback and recommendations; and • Provide information on cross-border consumer complaints. The ACCP adopted the ASEAN Strategic Action Plan for Consumer Protection (ASAPCP) 2025 which identifies 4 goals: • A common ASEAN consumer protection framework is established. • A high common level of consumer empowerment and protection is ensured. • High consumer confidence in the AEC and cross-border commercial transactions is instituted. • Consumer concerns in all ASEAN policies are integrated.		
ASEAN Committee on Women (ACW)	ACW is mandated to oversee and coordinate ASEAN's cooperation on promoting gender equality and the empowerment of all women and girls.[403] Its programmatic work began with the implementation of the Work Plan for Women's Advancement and Gender Equality (2005-2010), which is based upon the 1988 Declaration on the Advancement of Women in ASEAN. This was succeeded by the Work Plan to Operationalize the Declaration on the Elimination of Violence against Women (2006-2010).	ACW -> ASEAN Ministerial Meeting on Women (AMMW)	ASEAN Commission on the Promotion and Protection of the Rights of Women and Children (ACWC) Joint Ad-hoc Working Group on Gender Mainstreaming: Ad-hoc working group established to develop a comprehensive regional strategy to mainstream gender perspectives across all ASEAN Community pillars.

[403] ASEAN Secretariat (2024) Major Sectoral Bodies/Committees, https://asean.org/our-communities/asean-socio-cultural-community/gender-rights-of-women-and-children/major-sectoral-bodies-committees/

ASEAN Coordinating Committee on E-Commerce and Digital Economy (ACCED)	ACCED was established in 2016 to strengthen coordination mechanisms on regional e-commerce efforts in ASEAN.[404] It is responsible for delivering the Work Plan on the Implementation of the ASEAN Agreement on Electronic Commerce 2021-2025. ACCED also has a supervisory role by ensuring that it is appraised of the annual growth in the size of the e-commerce sector in ASEAN to measure the efficacy of the Work Plan, as well as the mid-term and final review of the Work Plan.[405] Moreover, as per the Work Plan, ACCED also has the following responsibilities, amongst others:[406] • Identify and address regulatory gaps. • Focus on initiatives that support MSMEs in leveraging e-commerce. • Ensure that e-commerce initiatives contribute to inclusive growth and narrow development gaps within ASEAN. • Enhance transparency and stakeholder engagement in the e-commerce ecosystem. • Develop and implement capacity-building initiatives to support e-commerce development. • Work on harmonising e-commerce laws and regulations across AMS. As per Annex A of the Work Plan, ACCED has been identified as the Lead Implementing Body for the following activities, amongst others:[407] • Capacity Building Programme for relevant AMS authorities requiring technical and legal assistance in the implementation of e-transactions laws.	ACCED -> SEOM -> AEM	N/A

404 ASEAN Secretariat (2024) ASEAN E-Commerce, https://asean.org/our-communities/economic-community/asean-e-commerce/
405 ASEAN (2021) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2021/09/Work-Plan-Ecommerce-Agreement_Annex-A_Endorsed.pdf
406 ASEAN (2021) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2021/09/Work-Plan-Ecommerce-Agreement_Annex-A_Endorsed.pdf
407 ASEAN (2021) Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, https://asean.org/wp-content/uploads/2021/09/Work-Plan-Ecommerce-Agreement_Annex-A_Endorsed.pdf

	• Laws Reporting Scheme under which AMS shall provide a national plan to align e-transactions laws and regulations with any of the prescribed UNCITRAL legislative texts. • Law Incorporation Workshops with AMS to solve common problems in adopting the UN Convention on Electronic Communications domestic law and regulations.		
ASEAN Coordinating Committee on MSMEs (ACCMSME)	ACCMSME is the ASEAN body responsible for strengthening MSMEs' participation in ASEAN and in deepening and broadening their contribution to ASEAN's economic growth. It facilitates the implementation, monitoring and evaluation of ASEAN Strategic Action Plan for SME Development 2016-2025 (SAP SMED 2025), with the mission to create globally competitive, resilient and innovative MSMEs that are seamlessly integrated to the ASEAN community and to achieve inclusive development in the region.	ACCMSME -> SEOM -> AEM	ASEAN MSME Advisory Board (AMAB), comprising private sector representatives nominated by ACCMSME, provides strategic policy inputs on MSME development to the Ministers and guidance on high priority matters to ACCMSME.
ASEAN Digital Senior Officials' Meeting (ADGSOM)	ADGSOM aims to promote cooperation through various initiatives and projects to address common challenges, such as scams, AI, data protection, and bridging the urban-rural digital divide.[408]	ADGSOM -> ASEAN Digital Ministers Meeting (ADGMIN)	ADGSOM Working Group, established to discuss ADGSOM's cooperation activities work plan and the activities implementation.[409]
ASEAN Network Security Action Council (ANSAC)	ANSAC was established in 2012 as mandated by AIM2015. ANSAC is in charge of coordinating ASEAN cybersecurity cooperation activities in the digital sector.	ANSAC -> ADGSOM Working Group -> ASEAN Digital Senior Officials Meeting (ADGSOM) -> ASEAN Digital Ministers Meeting (ADGMIN)	N/A

[408] ASEAN Secretariat (2024) Major Sectoral Bodies/Committees, https://asean.org/our-communities/economic-community/asean-digital-sector/major-sectoral-bodies-committees/
[409] ASEAN Secretariat (2024) Major Sectoral Bodies/Committees, https://asean.org/our-communities/economic-community/asean-digital-sector/major-sectoral-bodies-committees/

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<td>ASEAN Senior Law Officials Meeting (ASLOM)</td>
<td>ASLOM aims to discuss the development of law and legal matters of common concern and interest to AMS.

Its mandate is to address all common matters pertaining to legal cooperation to support ASEAN integration initiatives in all AMS. Initial legal cooperation of ASLOM and the ASEAN Law Ministers’ Meeting (ALAWMM) covers the following areas:
Legal education and legal research.
Exchange of legal materials.
Judicial cooperation.</td>
<td>ASLOM -> ALAWMM</td>
<td>N/A</td>
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<td>ASEAN Single Window Steering Committee (ASWSC)</td>
<td>The ASEAN Single Window Steering Committee (ASWSC) was established to:[410]
Oversee the overall coordination and required synchronisation of actions at the national level and regional level policy to promote effective implementation and operation of the ASEAN Single Window (ASW); and
Consider the needs of future development of the ASW, including expansion of the ASW to accommodate the exchange of additional trade-related document through the ASW system, and the possibilities to expand the ASW with Dialogue Partners.</td>
<td>ASWSC -> ASEAN Directors-General of Customs’ Meeting (ASEAN DGs of Customs) -> SEOM</td>
<td>The ASWSC is supported by two subsidiary bodies:[411]
The Working Group on Technical Matters for the ASW (TWG), focusing on business process analysis and Information and Communication Technology (ICT) system development; and
The Working Group on Legal Regulatory for the ASW (LWG), established to assist in the construction of the legal framework for the establishment, operation and expansion of ASW.</td>
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410 ASEAN Secretariat (2024) ASEAN Single Window, https://asean.org/our-communities/economic-community/asean-single-window/
411 ASEAN Secretariat (2024) ASEAN Single Window, https://asean.org/our-communities/economic-community/asean-single-window/

ASEAN Working Group on AI Governance (AI-WG)	Following the endorsement of the ASEAN Guide on AI Governance and Ethics (2024), the ASEAN Working Group on AI Governance (WG-AI) was established in March 2024 to drive and oversee AI governance initiatives. The Working Group consists of representatives from each of the ASEAN AMS. It facilitates ADGSOM's role as the overall lead ASEAN sectoral body coordinating and advising on all AI matters in ASEAN. The Working Group has completed the development of the Expanded ASEAN Guide on AI Governance and Ethics – Generative AI, which addresses the opportunities and risks of Gen AI and provides policy recommendations for the responsible use of AI. The expanded Guide was endorsed at the 5th ASEAN Digital Ministers Meeting in Thailand in January 2025.	Working Group on AI Governance (WG-AI) -> ASEAN Digital Senior Officials Meeting (ADGSOM) -> ASEAN Digital Ministers Meeting (ADGMIN)	N/A
Committee on Science, Technology & Innovation (COSTI)	The policies for the ASEAN S&T cooperation are set by the annual Meetings of the ASEAN Ministers for Science and Technology. The ASEAN COSTI is responsible for setting directions, coordinating activities of subsidiary groups, creating public awareness of regional S&T activities and their contribution to economic development, and reviewing overall progress of collaboration, including the progress of its relations with the ASEAN's Dialogue Partners as well as other external collaborators.	COSTI -> ASEAN Ministerial Meeting on Science, Technology and Innovation (AMMSTI)	The Science and Technology Division of the Sectoral Development Directorate of the ASEAN Economic Community (AEC) Department of the ASEAN Secretariat provides the ASEAN COSTI with coordinating and technical support functions.
Customs Procedures and Trade Facilitation Working Group (CPTFWG)	The Customs working group that synchronize technical efforts to secure expeditious customs clearance and release for the free flow of goods and commodities as well as factors of production in ASEAN and in international trade.	ASEAN Customs via the following two mechanisms: ASEAN DGs of Customs Meeting; and Coordinating Committee on Customs (CCC). CPTFWG -> Coordinating Committee on	Sub Working Group on ASEAN Customs Transit System (SWG-ACTS) Technical Sub-Working Group on Classification (TSWGC) Sub-Working Group on ASEAN AEO MRA (SWG-AAMRA)

		Customs -> ASEAN Directors-General of Customs (ASEAN DGs of Customs) Meeting -> SEOM	
Digital Trade Standards and Conformance Working Group (DTSCWG)	Established in March 2020, under the ASEAN Consultative Committee for Standards and Quality (ACCSQ), DTSCWG's mandate is to:[412] • Exchange information on standards, regulations, procedures, policies, best practices, technical requirements, and governance related to e-commerce/digital trade and its relevant supporting services/business activities in AMS. • Identify areas for harmonisation of standards, regulations, technical requirements, procedures, and best practices, develop and monitor sectoral mutual recognition arrangements (MRAs). • Identify the technical infrastructure needs on standards, conformity assessment, technical regulation to support initiatives in e-commerce/digital trade. • To promote awareness and adoption of harmonised technical requirements/standards within AMS where applicable. • Identify technical assistance and capacity-building needed to support the initiatives in e-commerce/digital trade; and • Engage relevant regulatory institutions, private sector organisations, ASEAN sectoral bodies and other relevant organisations to review trade-related implementation issues and explore collaborative initiatives in the harmonisation, standardisation and conformity assessment of the digital trade.	DTSCWG -> ASEAN Consultative Committee for Standards & Quality (ACCSQ) -> Senior Economic Officials Meeting (SEOM) -> ASEAN Economic Ministers (AEM)	N/A

[412] Vietnam E-Commerce and Digital Economy Agency (2022) In Focus, aseandts.com

SOMTC Working Group on Cybercrime (WG on CC)	The WG on CC provides a platform for ASEAN AMS to collaborate on capacity building, training and sharing of information related to combating cybercrime. It is also a platform for ASEAN AMS to: (a) discuss and adopt a coordinated approach to deal with cybercrime; (b) follow up on recommendations on cybercrime from other ASEAN-related fora; and (c) engage Dialogue Partners on cybercrime collaboration.[413] The scope of the WG on CC is as follows: (a) To facilitate information sharing on cybercrime related issues such as trends, best practices, and new techniques and tools; The WG on CC will create a framework for information sharing among the relevant institutions in ASEAN AMS that are involved in preventing and combating cybercrime. This will also serve to enhance regional cooperation and coordination on cybercrime related issues. 2 (b)To establish regular points of contact for cybercrime cooperation; The WG on CC will identify a single Point of Contact in the policy and security and law enforcement institutions of the ASEAN AMS, to facilitate networking and lateral coordination for cybercrime law enforcement cooperation and capacity building. The Points of Contact will also report any issues or outcomes of the WG on CC via their SOMTC national focal points for SOMTC/AMMTC's decision. (c) To develop capability building and training initiatives; The WG on CC will develop regional training programmes and regular conferences to enhance capabilities in combating cybercrime. (d)To identify critical areas for collaboration within the ASEAN AMS and with Dialogue Partners, on cybercrime; and The WG on CC will enable the ASEAN AMS to surface their needs so that collaborative solutions can be found, with the support of Dialogue Partners where appropriate, to effectively combat cybercrime. (e) To explore possible collaboration with strategic private	WG on CC -> Senior Officials Meeting on Transnational Crime (SOMTC) -> ADGSOM -> ADGMIN	N/A

[461] ASEAN Secretariat (2014) ASEAN Working Group on Cybercrime Terms of Reference, https://asean.org/wp-content/uploads/2021/01/DOC-8-Adopted-TOR-ASEAN-Cybercrime-Working-Group.pdf

	sector partners. While effective law enforcement action is a crucial element in fighting cyber-threats, engaging all stakeholders, especially those belonging to the technology sector, is also critical to improving ASEAN AMS' capabilities to effectively detect, suppress and combat cybercrime. The WG on CC will leverage the strength and expertise of AMS and create strategic partnerships with regional and international entities, the private sector and academia in research and innovation.		
Working Committee on Payment and Settlement Systems (WC-PSS)	WC-PSS was established in 2010 to prepare the PSS of AMS in embracing the AEC by conducting studies and providing policy recommendation for the development of the PSS and the cooperation as well as the harmonization of the ASEAN PSS. The WC-PSS has already completed the environmental scan of the real-time retail payment systems of the AMS. It has also finalized the ASEAN Payments Policy Framework for Cross-border Real Time Retail Payment and its Implementing Policy Guidelines.	WC-PSS -> ASEAN Finance Deputy Minister's Meeting (AFDM) and the ASEAN Central Bank Deputies Meeting (ACDM) -> AFMGM	N/A
Working Group on Digital Data Governance (WG-DDG)	WG-DDG was established in 2018 to develop the ASEAN Framework on Digital Data Governance and implement the Framework's key initiatives.[414]	Working Group on Digital Data Governance (WG-DDG) -> ASEAN Digital Senior Officials Meeting (ADGSOM) -> ASEAN Digital Ministers Meeting (ADGMIN)	N/A

[414] ASEAN Secretariat (2024) Major Sectoral Bodies/Committees, https://asean.org/our-communities/economic-community/asean-digital-sector/major-sectoral-bodies-committees/

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