

Industrial Landscape

ICT /
DIGITAL
ECONOMY (DE)



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REVISION CONTROL

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EXECUTIVE SUMMARY

Malaysia has made significant strides in the field of Information and Communication Technology (ICT) and the digital economy, positioning itself as a leading player in the Southeast Asian region. This executive summary provides an overview of the current landscape, highlighting key trends, challenges, and opportunities in Malaysia's ICT and digital economy sector.

Government Support and Initiatives:

Malaysia is actively promoting digital transformation across various sectors, including government, businesses, and education. The government has introduced initiatives like the MyDigital blueprint, which aims to accelerate the adoption of digital technologies and create a digital-first nation. The Malaysian government has also been investing in e-government initiatives to improve public services, enhance transparency, and streamline administrative processes. This includes the implementation of online platforms and services for citizens and businesses.

Market Dynamics:

Malaysia has made significant investments in improving its ICT infrastructure, including the expansion of high-speed broadband and 5G networks. These developments are crucial to support the growth of digital services and industries. In addition, with the existence of vibrant start-up ecosystem, particularly in tech hubs like Cyberjaya and Penang, the government has also introduced supportive policies and incentives to encourage innovation and entrepreneurship. As for the e-commerce sector in Malaysia, the COVID-19 pandemic has further accelerated the shift towards online shopping, further boosting the digital economy. Fintech and digital payment solutions have also gained popularity in Malaysia, with consumers embracing digital wallets and mobile payment apps. Regulatory changes and collaboration between banks and fintech companies have facilitated this growth.

Issues and Challenges

As the digital landscape expands, the importance of cybersecurity becomes more pronounced. Malaysia faces challenges related to cyber threats and data privacy, emphasizing the need for robust security measures and legislation. Therefore, some of these issues and challenges may be able to be mitigated with the help of Industry Collaboration Program (ICP). With ICP, skills development can be further explored, especially in areas like data science, artificial intelligence, and cybersecurity. These efforts aim to bridge the skills gap and ensure a well-prepared workforce. On top of that, Malaysia further actively collaborates with international organizations and governments to promote digital trade and innovation through participation in regional initiatives like the Digital ASEAN and bilateral partnerships further strengthens the country's position in the digital economy landscape.

In conclusion, Malaysia's ICT and digital economy landscape is characterized by its commitment to digital transformation, infrastructure development, and fostering innovation. Challenges like cybersecurity and skills development are being addressed through proactive measures. With a focus on continued growth, Malaysia is well-positioned to be a leading player in the digital economy within the Southeast Asian region.

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01. INTRODUCTION

OBJECTIVE

The objective of this document is to provide strategic direction for implementing the Industrial Collaboration Programme (ICP) for the Information and Communication Technology (ICT), and Digital Economy (DE) Sector.

PURPOSE

- Provide strategic direction to TDA in developing ICP Requirement Documents (IRD).
- Streamline with government aspirations
- Identify related stakeholders
- Identify current local capability

SCOPE

The scope covers the landscape of the ICT/DE which encompasses 5 sub-sectors – ICT Trade, ICT Manufacturing, ICT Services, Content & Media, and eCommerce. This landscape will also cover the usage of Digital Technologies in vertical sectors (e.g., ICT in healthcare, automotive or agriculture sectors).

What is Information and Communication Technology (ICT) & Digital Economy?

Information and Communication Technology (ICT) is the use of computing and telecommunication technologies, systems, and tools to facilitate the way information is created, collected, processed, transmitted and stored.

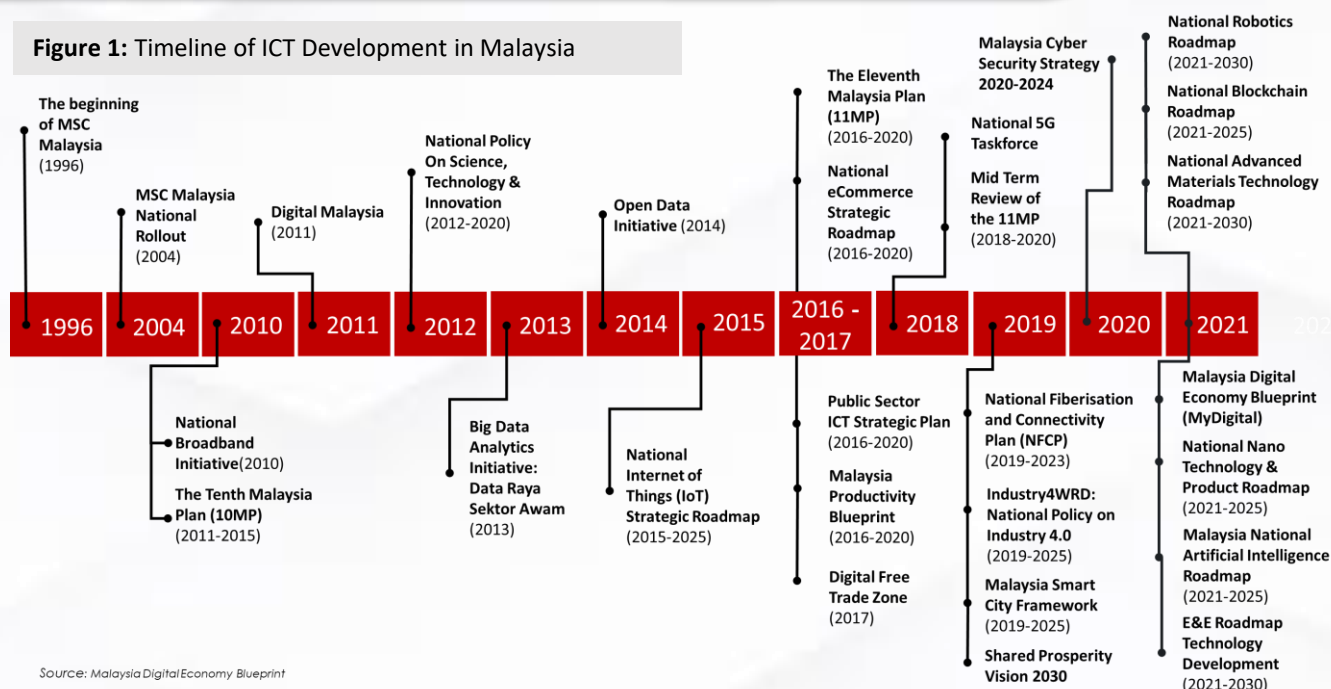
Digital economy is the economic activity that results from billions of everyday online connections among people, business, devices, data and processes. The backbone of the digital economy is the hyperconnectivity which means growing interconnectedness of people, organizations, and machines that results from the internet, mobile technology and the Internet of things (IoT).

As of 2023, the key digital technology focus in Malaysia listed by MDEC are as below:

- | | | |
|--|---|--|
| <input type="checkbox"/> Data Centre / Cloud | <input type="checkbox"/> Robotics / Automation | <input type="checkbox"/> Internet of Things (IoT) |
| <input type="checkbox"/> Cybersecurity | <input type="checkbox"/> Artificial Intelligence / Big Data | <input type="checkbox"/> Advance Network Connectivity / Telecommunication Technology |
| <input type="checkbox"/> Drone Tech | <input type="checkbox"/> Creative Media | <input type="checkbox"/> Integrated Circuit Design Embedded Software |
| <input type="checkbox"/> Blockchain | | |

ICT DEVELOPMENT IN MALAYSIA

Figure 1: Timeline of ICT Development in Malaysia



Source: Malaysia Digital Economy Blueprint

The development of Information and Communication Technology (ICT) in Malaysia has been significant and transformative over the years. As shown in Figure 1, the Malaysian government has played a pivotal role in promoting ICT development. In 1996, the Multimedia Super Corridor (MSC) was one of the earliest initiative aimed at creating a high-tech business zone by offering tax incentives and infrastructure support to attract technology companies.

With the increase in internet penetration, the Malaysian government has also boosted the effort to expand access and improve digital inclusion. For example, the introduction of e-government services such as MyGovernment portal, has enhanced administrative efficiency and convenience for Malaysians.

In addition, Malaysia has also embraced mobile technology, with high rates of mobile phone usage which leads to the growth of mobile banking, e-commerce, and various mobile applications. The country has fostered a dynamic tech startup ecosystem, with government programs and incentives which encourage entrepreneurship, particularly in cities like Kuala Lumpur and Penang.

Investments in ICT education and research have contributed to the development of a skilled workforce and innovation. Digital infrastructure, including high-speed broadband networks, has improved connectivity, laying the foundation for a growing digital economy. Recognizing the importance of cybersecurity, the government has implemented policies and strategies to safeguard digital infrastructure and data from cyber threats. E-commerce has seen significant growth, supported by the availability of online marketplaces and digital payment systems.

Malaysia has actively engaged in international collaborations and trade agreements, positioning itself as a regional technology hub. In summary, Malaysia's ICT development has been characterized by strong government support, investments in infrastructure and education, a dynamic tech ecosystem, and an increasing focus on digital inclusion and cybersecurity, contributing to economic growth and modernization.

02. INDUSTRY OVERVIEW



Figure 2: Overview of size of ICT industry in Malaysia and its contribution to the Malaysian economy as of 2020, as reported by Department of Statistics (DOSM).

ICT SUBSECTORS

Information and communication technology (ICT) services assume a central role in empowering digital economic growth. Therefore, in order for Malaysia to establish itself as a digital nation, it needs to prepare to adapt and innovate to sustain its economic growth. It is well known that new business segments built around innovative technologies are leading to a growth of highly skilled jobs and productivity in communities large and small. This creative and vibrant industry encompasses a variety of activities such as:

ICT Manufacturing

- ✓ Computer and peripheral equipment
- ✓ Electronic components and board
- ✓ Communication equipment
- ✓ consumer electronic

ICT Services

- ✓ Telecommunication
- ✓ Computer programming
- ✓ Data Management
- ✓ Information and related services
- ✓ Leasing or rental services
- ✓ Software

ICT Content & Media

- ✓ Publishing of books, periodicals
- ✓ Creative & Digital Content (e.g., esports, gaming & animation)
- ✓ Motion picture, video, TV programs
- ✓ Other content and media (e.g., online content. Music, etc.)

ICT Trade

- ✓ Wholesale
- ✓ Retail

Sources: MIDA

03. INDUSTRY LANDSCAPE

STAKEHOLDERS AND KEY PLAYERS

LEAD MINISTRIES AND AGENCIES

- Ministry of Communication and Digital Malaysia
- MDEC
- Cybersecurity Malaysia
- Akademi Sains Malaysia
- NACSA
- EPU
- MIMOS
- MRANTI
- MIGHT
- MAMPU
- MCMC
- MOSTI

UNIVERSITIES / RESEARCH INSTITUTIONS

PREMIER DIGITAL TECH POLYTECHNICS

- Politeknik Ungku Omar (PUO)
- Politeknik Sultan Mizan Zainal Abidin (PSMZA)
- Politeknik Sultan Idris Shah (PSIS)
- Politeknik Mesing (PMJ)
- Politeknik Balik Pulau (PBU)

PREMIER DIGITAL TECH UNIVERSITIES

- Universiti Malaya (UM)
- Universiti Teknologi Malaysia (UTM)
- Universiti Teknologi MARA (UiTM)
- Taylor's University
- Multimedia University (MMU)
- Asia Pacific University of Technology & Innovation (APU)
- Sunway University
- Tunku Abdul Rahman University College
- HELP University
- International Islamic University Malaysia (IIUM)
- Universiti Tunku Abdul Rahman (UTAR)

INDUSTRY

- Telekom Malaysia
- Maxis
- Celcom Axiata
- Digi Telecommunication
- Huawei Malaysia
- Oracle Malaysia
- TIME
- AWS
- EDARAN IT
- HEITECH PADU
- IBM Malaysia
- Fusionex
- Microsoft Malaysia
- DATASONIC
- INTEL Malaysia

*****Note: Non-Exhaustive List**

04. STRATEGIC DOCUMENT ANALYSIS

NATIONAL POLICIES / STRATEGIC DOCUMENTS

KEY STRATEGIES / THRUSTS

Malaysia Cyber Security Strategy
(2020-2024)

- Effective Governance and Management
- Strengthening Legislative Framework and Enforcement
- Catalyzing World Class Innovation, Technology, R&D, and Industry
- Enhancing Capacity & Capability Building, Awareness and Education
- Strengthening Global Collaboration

National Policy on Industry 4.0
(Industry4WRD)
(2018-2025)

- Funding & Outcome-based Incentives
- Enabling Ecosystem & Efficient Digital Infrastructure
- Regulatory Framework & Industry Adoption
- Upskilling Existing & Producing Future Talent
- Access to Smart Technologies & Standards

National IoT Strategic Roadmap

- Create A Conducive IoT Industry Ecosystem
- Strengthen Technopreneur Capabilities In The Apps And Services Layer
- Malaysia As The Regional Development Hub for IoT

National Blockchain Roadmap (2021-2025)

- Establish conducive environment to proliferate the growth and sustainable blockchain ecosystem
- Develop multi-disciplinary digital technology
- Encourage learning and opportunities for developer community
- Facilitate conducive and transparent approach to spur transformational change

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NATIONAL POLICIES / STRATEGIC DOCUMENTS

KEY STRATEGIES / THRUSTS

National Advanced Materials Technology Roadmap (2021-2030)

- Accelerating materials innovation ecosystem via effective Policies and Regulations
- Enhancing the competitiveness of local industries via integrated Physical and Digital Infrastructure
- Empowering business sustainability via the establishment of Consortium as a 'one-stop center'
- Enhancing Malaysia's capabilities in material development via conducive R&D&C&I activities
- Nurturing world-class talent via strategic partnership

National Robotics Roadmap (2021-2030)

- Developing sustainable ecosystem & governance
- Nurturing & developing industry-ready talent for robotics
- Advancing & intensifying Research, Development, Commercialization, Innovation and Economy (RCCIE)
- Strengthening standards, safety & regulations
- Mitigation of socio-economic issues

Nano Technology and Products Roadmap (2021-2025)

- A responsive STI management
- Technological advancement in R&D&C&I
- Industry based on local technology

04. STRATEGIC DOCUMENT ANALYSIS

NATIONAL POLICIES / STRATEGIC DOCUMENTS	KEY STRATEGIES / THRUSTS
<p>Malaysia National Artificial Intelligence Roadmap (2021-2025)</p>	<ul style="list-style-type: none"> • Establishing AI Governance • Advancing AI in R&D • Escalating Digital Infrastructure to Enable AI • Kick-starting a national AI innovation ecosystem • Acculturating AI • Fostering AI talents
<p>Electrical & Electronics (E&E) Roadmap: Technology Development (2021-2030)</p>	<ul style="list-style-type: none"> • Investment, incentives, funding and grants allocation based on GDP contribution • Centralized one-stop center enhancing the support services and value chain development • Partnering universities with industry players for the development of formal education • Introducing government intervention in terms of policy guidance and regulation for local components and technologies content
<p>Malaysia Smart City Framework</p>	<ul style="list-style-type: none"> • Smart Economy • Smart Living • Smart Environment • Smart Government • Smart People • Smart Mobility • Smart Digital Infrastructure
<p>The National Digital Economy Blueprint (MyDigital)</p>	<ul style="list-style-type: none"> • Drive Digital Transformation In Public Sector • Boost Economic Competitiveness Via Digitalization • Build Enabling Digital Infrastructure • Build Agile And Competent Digital Talent • Create An Inclusive Digital Society • Build Trusted, Secure And Ethical Digital Environment

05. GAPS



LOCALISATION

- Lack of visibility on local SME capabilities
- Finding the right business partners to complement existing offerings



HUMAN CAPITAL DEVELOPMENT

- Lack of subject matter expert in various ICT cluster e.g., Data scientist, Cybersecurity, etc.
- Competition with multinationals for the best talent
- Reduction in future employment opportunities due to introduction of automation & AI technologies



RESEARCH DEVELOPMENT & COMMERCIALISATION (R&D&C)

- Lack of joint R&D to develop new solutions
- Lack of breakthrough innovations/creations



TRANSFER OF TECHNOLOGY/KNOWLEDGE

- Dependency on and use of foreign technologies
- IP is a heavily guarded asset
- High barrier to entry (e.g., cost, legal etc.) to obtain better IP
- Limited capabilities to fully exploit IP
- Lack of comprehensive IP strategy



INVESTMENTS

- Stiff competition for strategic investments from regional hubs (e.g., Indonesia, Hong Kong & Singapore)
- Lack of investments from renown industry players (e.g., Google, Microsoft)



MARKET ACCESS

- Limited marketing funds
- Lack of visibility on local SME capabilities
- Need for enhanced access to global markets for local companies

06. FOCUS AREA

CYBERSECURITY



- ❑ Talent development program for skilled workforce via universities / training institutions which offers cybersecurity courses and certifications.

BLOCKCHAIN



- ❑ Talent development program for blockchain developer
- ❑ Enhancement in awareness and understanding of blockchain technologies among business, government agencies and public.
- ❑ Development of adequate infrastructure to support the use of blockchain technology in various industries.

INTERNET OF THINGS (IOT)



- ❑ Enhancement / Development of adequate infrastructure to support IoT deployment effectively and ensuring robust security measures (e.g., robust internet connectivity and data centers)
- ❑ Enhancement of data management and analytics for IoT devices / services

ARTIFICIAL INTELLIGENCE (AI)



- ❑ Investment in increasing AI professionals, which include data scientist, machine learning engineers and AI researchers.
- ❑ Development / Enhancement of adequate infrastructure to support AI requirements through investment in high-performance computing resources.

CLOUD COMPUTING



- ❑ Enhancement / Development of adequate infrastructure to support cloud computing deployment effectively and ensuring robust security measures (e.g., robust internet connectivity and data centers)

***Note: List are non-exhaustive

TECHNOLOGY FOCUS AREA

CYBERSECURITY



- Advanced Threat and Detection Prevention
- Incident Response and Recovery
- Threat Intelligence
- Mobile Device Management
- Data Privacy
- Network Security
- Cloud Privacy

BLOCKCHAIN



- Healthcare:** To maintain secure and interoperable health records and improve the transparency and security of pharmaceutical supply chains.
- Supply Chain Management:** To enhance transparency and traceability of products and ensuring authenticity of goods.

INTERNET OF THINGS (IOT)



- Smart Cities:** Application of traffic management, waste management and energy efficiency
- Agriculture:** To monitor and manage crop conditions, optimization of irrigation
- Healthcare:** Application in wearables, and remote patient monitoring

ARTIFICIAL INTELLIGENCE (AI)



- Healthcare:** Application in medical imaging analysis, disease diagnosis, patient management and drug discovery
- Smart Cities:** Application in traffic management, waste management and energy efficiency
- Data Analytics and Business Intelligence:** Application in various industries to gain insights and supporting data-driven decision-making.

CLOUD COMPUTING



- Healthcare:** Application in electronic health records, telemedicine, and data analytics
- Cybersecurity:** Organizations are focusing on ensuring data privacy, regulatory compliance in the cloud environment

***Note: List are non-exhaustive

07. ICP POTENTIAL PROGRAMMES

HUMAN CAPITAL DEVELOPMENT

NO.	INITIATIVES/POTENTIAL PROGRAMMES
1.	Initiate industry-academia collaborations amongst local agencies & their international counterparts to produce technology experts and think tanks.
2.	Internship/mentorship programs with the right-fit talent in the chosen technology areas.
3.	To attract global experts through value-added incentive packages to develop local talent.

TRANSFER OF TECHNOLOGY

NO.	INITIATIVES/POTENTIAL PROGRAMMES
1.	To acquire the latest technology from ICP OEMs through TOT activities and collaborations.
2.	To collaborate with local ICT/DE drivers and IP agencies in promoting local IPs to ICP partner countries / OEMs

INVESTMENT

NO.	INITIATIVES/POTENTIAL PROGRAMMES
1.	Development of a regional data center management services
2.	Development of Centre of Excellence for chosen technology focus areas

R&D&C

NO.	INITIATIVES/POTENTIAL PROGRAMMES
1.	Development in digital healthcare technologies, such as telemedicine, remote patient monitoring and electronic health records.
2.	Development in blockchain technology which includes supply chain management, e-governance, and digital identity solutions.

08. POTENTIAL BENEFITS

Increasing adoption & adaptation of new technology and innovation in ICT and DE



Increase in technical know-how for government, industry players and technical institutions in handling latest technology in cybersecurity, big data analysis, artificial intelligence etc.

Increasing number of high skilled workers through professional certifications and competency trainings.



Reducing the dependencies on foreign capabilities in handling ICT related issues and challenges