SARAWAK DIGITAL ECONOMY BLUEPRINT 2030

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Foreword

"It is important for Sarawak to accelerate the State's digital transformation towards an advanced digital economy and society"

The Right Honourable Datuk Patinggi Tan Sri (Dr) Abang Haji Abdul Rahman Zohari bin Tun Datuk Abang Haji Openg

Premier of Sarawak

The global economy has been severely affected by the COVID-19 pandemic, geopolitical issues and the Russia-Ukraine war. All these will have long-term effects on how the economy and financial systems operate in future. Like all the rest of the world, Malaysia in general and Sarawak, in particular, is not spared, every ethnic community and all strata of society faced the upheavals. Workers from both the public and private sectors have been affected and many of our daily interactions have been conducted virtually.

In this challenging environment, Sarawak Government under my leadership launched the Post COVID-19 Development Strategy 2030 (PCDS 2030) in 2021, outlining the plans to accelerate Sarawak's progress as a technologically advanced economy, underpinned on digital economy, green economy, and circular economy. My vision for Sarawak is that by 2030, Sarawak will be a thriving society driven by data and innovation where everyone enjoys economic prosperity, social inclusivity and a sustainable environment. This will chart the path to strategically position ourselves as a competitive State in this new era.

The growth in the digital economy has accelerated tremendously due to the pandemic, giving rise to new digital businesses, forcing traditional businesses to go online. This has resulted in millions of Malaysians to go virtual for their e-Commerce, entertainment, and even education needs. Delivery of quality and inclusive education is now dependent on high-speed internet connectivity and access to laptops and computers.

It is important for Sarawak to accelerate the State's digital transformation towards an advanced digital economy and society. According to the Organisation for Economic Co-operation & Development (OECD), a digital economy and society include all activity reliant on, or significantly enhanced by, the use of digital inputs including, technologies, infrastructure, services, data, regulatory frameworks, and capabilities and skills. As a dynamic and forward-looking State Government, we want to ensure that no Sarawakian is left behind and all are able to catch up with the wave of digitalisation. Sarawak embarked on the digital economy in 2018 with a clear direction to drive the Sarawak economy to achieve high-income and developed status by 2030. The Sarawak Digital Economy Blueprint 2030 is an economic and social development plan underpinned on United Nations Sustainable Development Goals (SDGs) that will benefit the public sector, businesses and the society through improved public service delivery, new sustainable business models and access to global market, job opportunities and social wellbeing. It is a document that will transform the whole-of-economy and society from conventional resource-based economy to environmentally sustainable technology-based economy. This is also to ensure that Sarawak will not be left behind as most developing countries are already at the forefront of digital economy.

I am confident that Investments in the digital economy foundations including digital infrastructure, human capital development, research, innovation and entrepreneurship, inclusivity, data governance and cyber security, and technology adoption will accelerate digital transformation and underpin the growth in high-skilled job opportunities and social wellbeing, investments and public-private partnerships, high-speed digital connectivity and productivity and access to global market and improved public service delivery. This means creating an ecosystem for all of us to contribute to economic prosperity, citizens wellbeing, social inclusivity and environmental sustainability.

The Right Honourable Datuk Patinggi Tan Sri (Dr) Abang Haji Abdul Rahman Zohari bin Tun Datuk Abang Haji Openg
Premier of Sarawak

Preamble

The world economy is transforming fast because of the rapid spread of new digital technologies, with major implications on nations economic growth, social wellbeing and environmental sustainability. The value of being digitally ready nation is immediately reflected in the strong correlation against indicators such as GDP per capita, innovation, digital competitiveness, e-Commerce, and others. Creating a digitally ready society requires a holistic approach across multiple areas.

The Sarawak Digital Economy Blueprint 2030 envisions for Sarawak to become a major digital economy powerhouse in the region to achieve inclusive, responsible, and sustainable socio-economic development. One of the core objectives is to encourage businesses to become creators, users and adopters of innovative business models, harness human capital to thrive in the digital economy and nurture an integrated ecosystem that allows society to embrace digital economy.

The success for a vibrant and dynamic digital economy will require Sarawak to be digitally ready to maximise digital value and market capitalisation. This will require a stable and strong digital foundation including digital infrastructure and connectivity, digital talent, technology adoption, research and innovation and start-up ecosystem, cyber security, ease of doing business, basic infrastructure amongst others to encourage investment, business development and accelerate Digital Economy in Sarawak.

Telecommunication infrastructure and connectivity is one the core enablers of Digital Economy. The Sarawak Government is ambitious and committed for Sarawak to have access to world-class, next generation connectivity that is secure and resilient enough to deal with all sorts of future challenges and foster rapid digitalisation that will transform the whole-of-economy and society. With Sarawak Government's SALURAN intervention initiative together with Federal Government's JENDELA initiative the coverage in Sarawak is expected to exceed 93% by the end of 2023.

The outcome-driven dedicated governance structure has been established to drive and monitor the Sarawak Digital Economy Blueprint 2030. As part of the process, the governance committees will determine the metrics by which success is measured through Key Performance Indicators (KPIs) and pre-set performance measurement indicators.

The Blueprint is a living document that will continue to evolve to ensure Sarawak remains on track and be adjusted where needed for Sarawak to be a developed State by 2030.

The Honourable Datuk Haji Julaihi bin Haji Narawi
Minister of Utility and Telecommunication

"The Blueprint envisions for Sarawak to become a major digital economy powerhouse in the region to achieve inclusive, responsible and sustainable socio-economic development"

The Honourable Datuk Haji Julaihi bin Haji Narawi
Minister of Utility and Telecommunication

Introduction

The Sarawak Digital Economy Strategy 2018-2022 and the establishment of the Sarawak Multimedia Authority (SMA) under the SMA Ordinance 2017 signify the beginning of Sarawak's journey into the digital economy. As the governing body, the Sarawak Multimedia Authority is tasked with leading, supervising and facilitating the development and implementation of the Sarawak's efforts in communication, multimedia and the digital economy.

The Sarawak Digital Economy Strategy 2018-2022 focused on eight (8) economic sectors and seven (7) enablers and was anchored on forty-seven (47) strategic actions, including twenty-nine (29) strategic actions for the economic sectors and eighteen (18) for the enablers and saw the implementation of one hundred fifty-four (154) initiatives.

Over the past five years, Sarawak has achieved several remarkable successes. These include the launch of S Pay Global, Sarawak's e-wallet, which has become the primary platform for business, government and private sector transactions; Batam Sarawak Internet Cable System (BaSICS) that connects Sarawak and Batam, Indonesia using submarine cable and this system forms the shortest latency route from Sarawak to Singapore; industry driven CENTEXS Digital Academy; a cooperative research & innovation Centre of Excellence for Digital Economy; TEGAS Digital Village and number of innovation hubs to accelerate innovation and start-ups; and Digital Community Centres (DCC) in rural Sarawak to address talent needs of the rural communities and inclusivity amongst others.

Moving forward, the Sarawak Digital Economy Blueprint 2030 outlines the steps that Sarawak will take to establish itself as a premier digital economy and society by 2030. This comprehensive plan builds upon the existing Sarawak Digital Economy Strategy 2018-2022 and serves as the cornerstone of the Sarawak Post COVID-19 Development Strategy 2030 (PCDS 2030). By acting as a catalyst for increased efficiency and productivity across all economic sectors, this Blueprint will foster economic prosperity, social inclusivity, and a sustainable environment.

The Sarawak Digital Economy Blueprint 2030 is anchored on five (5) strategic pillars, namely, economic growth priority areas, growing digital businesses, transforming public sector and services, adopting frontier technologies and accelerating digital readiness to ensure that Sarawak can achieve its vision. The Blueprint is supported by thirty-one (31) strategic actions and one hundred six (106) initiatives. The implementation of the proposed short, medium and long-term initiatives will enable Sarawak to achieve the outcomes and ultimately the aspiration of being a digital Sarawak by 2030.

The Honourable Datuk Amar Haji Mohamad Abu Bakar bin Marzuki
Sarawak State Secretary

“The Sarawak Digital Economy Blueprint 2030 outlines the steps that Sarawak will take to establish itself as a premier digital economy and society by 2030"

The Honourable Datuk Amar Haji Mohamad Abu Bakar bin Marzuki
Sarawak State Secretary

TABLE OF CONTENTS

Executive Summary

Nations' perspectives on their economies and society have changed due to COVID-19 pandemic. The policy decisions made by governments will decide how successfully they can build the transition to a greener, more inclusive, and more resilient economy and society. A return to "business as usual" must be avoided for the economic recovery to be strong, resilient, and to result in a shift to more sustainable practises. Instead, policies should encourage investment and behavioural changes that will increase society's resilience and lessen the likelihood of future shocks. Central to this should include an emphasis on inclusivity and well-being, alignment with long-term emission reduction targets, consideration of resilience to climate impacts, slowed biodiversity loss, and increased supply chain circularity.

The Sarawak Post COVID-19 Development Strategy 2030 (PCDS 2030) was launched by the Sarawak Government in July 2021. It provides strategy for achieving the Sarawak's vision to be a developed State by 2030, becoming a thriving society driven by data and innovation where everyone enjoys economic prosperity, social inclusivity and sustainable environment. The PCDS 2030 is anchored on six (6) economic sectors as the engines of growth. These priority sectors are manufacturing, agriculture, tourism, forestry, mining, and social services which are supported by seven (7) enablers, namely digital transformation, innovation, education & human capital, basic infrastructure, utilities, transport and renewable energy. The PCDS 2030 is underpinned on technology driven economies, namely, digital economy, green economy, and circular economy to drive economic growth, social inclusivity and environmental sustainability. To realise the aspiration of the State's PCDS 2030, the Sarawak Digital Economy Blueprint 2030 is developed as the strategic plan that outlines the actions and initiatives which will be implemented to achieve the desired outcomes.

This Blueprint envisions for Sarawak to become a major digital economy powerhouse in the region to achieve inclusive, responsible, and sustainable socio-economic development. One of the core objectives is to encourage businesses to become creators, users and adopters of innovative business models, harness human capital to thrive in the digital economy and nurture an integrated ecosystem that allows society to embrace digital economy.

Global Digital Landscape

The digital economy has evolved since the middle of the 1990s, reflecting how quickly technology is developing and how organisations, governments, and consumers utilise it. The "Internet Economy" was the focus in the late 1990s as more people began to use the internet. Since middle of the 2000s, digital economy has concentrated on how digital technology, services, goods, processes, and skills are spreading across many industries and economies.

According to Huawei & Oxford Economics 2017 report, the contribution of digital economy to the global economy will increase from 15.5% in 2016 to 24.3% in 2025. This translates to a worldwide digital economy contribution of US$23 trillion by 2025 giving every person of working age in the world an additional US$500 per year. The report also highlights the digital economy growth in 2016 was 2.5 times faster than the global economy growth and the Return on Investment (ROI) was 6.7 times higher than the non-digital ROI.

Digital economy development still is highly concentrated in two countries, United States of America and the People's Republic of China with more than 75% of cloud computing market, 50% of the world hyper scale data centres, highest rate in 5G adoption, 94% of artificial intelligence (AI) start-ups funds and 90% of the platform market capitalisation is concentrated in these two countries.

Data is core to all fast-emerging digital technologies, such as data analytics, AI, blockchain, Internet of Things (IoT), cloud computing and all Internet-based services that are needed for digital economy. There is a growing gap between the rate of digital technology adaptation and having appropriate conducive policies, regulations, and digital readiness to maximise the digital value.

Malaysia Digital Landscape

Malaysia is committed to the Information Technology (IT) and digital economy because it is a vital sector for economic growth. In order to accelerate the growth of Malaysia's digital economy development, the Malaysia Digital Economy Blueprint (MyDigital) was launched in 2021. MyDigital embeds a delivery-driven governance framework that involves partnership between the *rakyat*, businesses and government.

Digital readiness including digital infrastructure, human capital, technology adoption, investments & partnerships, ease of doing business, research and innovation and basic infrastructure is essential to maximise digital value. Malaysia is ranked 36th in Global Innovation Index 2021, 42nd in Digital Readiness Index 2021, 31st in Readiness for Frontier Technologies 2021, 12th in Ease of Doing Business Index 2020, 10th in Global Cybersecurity Index 2020 and 34th for Overall Inclusive Internet Index in 2022.

Sarawak Digital Landscape

Sarawak has been investing in digital economy in particular in the key enablers, including:

- Digital Government Readiness
- Telecommunication Infrastructure
- Innovation and Start-up Ecosystem
- Digital Talent and Inclusivity

Sarawak Digital Readiness study carried out by e-Governance Academy (eGA), highlights that in cyber security, digital engagement, cooperation, coordination, telecommunication and digital infrastructure, digital identity and digital signature, data management and secure data exchange are at a developing stage, access to services and digital skills are at an established stage and in political support and strategy, and financing model, Sarawak is rated as innovative.

Over the last five years, Sarawak and Federal Governments have invested heavily in telecommunications infrastructure to provide connectivity to all Sarawakians. Currently, the coverage is at 66.48% and is expected to reach 93.87% by the end of 2023 with the commissioning of SMART 600, JENDELA, Clawback and other broadband initiatives.

Number of Innovation hubs were established to grow high-tech start-ups and spin-ins in Sarawak. Currently there are twenty-two (22) government and businesses funded innovation hubs and a Digital Village to accelerate start-ups growth in Sarawak. These have resulted in twenty-six (26) high-tech start-ups and twenty-seven (27) high-tech research projects are undergoing acceleration towards commercialisation. Forty-five (45) Digital Community Centres were established to catalyse community socio-economic development resulting in approximately 3,000 community programmes being conducted, benefiting 80,000 participants.

Sarawak Digital Economy

The digital economy is becoming increasingly inseparable from the functioning of the economy. The different technologies and economic aspects of the digital economy can be broken down into four broad components, namely:

- **Digital Economy Foundation** comprising of telecommunications, hardware manufacturing, IT and information services;
- **Platform Economy** comprising of innovation platforms, transaction platforms and digital services;
- **Digitalised Economy** comprising of e-Commerce, digitalised economic sectors, sharing and gig economy; and
- **Data Economy** comprising of algorithmic economy, data monetisation and emerging technologies driving digital economy.

Sarawak embarked on digital economy in 2018 with clear direction to drive the State economy in achieving high-income and developed status by 2030 through digital transformation. This is also to ensure that Sarawak will not be left behind as most developing countries are already at the forefront of digital economy.

Investments in digital economy foundations including digital infrastructure, human capital development, research, innovation and entrepreneurship, inclusivity, data governance and cyber security, and technology adoption will underpin the growth in high-skilled job opportunities and social wellbeing, growth in investments and public-private partnerships, high-speed digital connectivity, productivity and access to global market and improved public service delivery.

The success of Digital Economy for Sarawak will be measured through its benefits to the society, businesses and the government.

Benefits to Society

By 2030 all Sarawakians will have:

- Access to high-speed internet services to engage in social and economic activities in improving digital inclusivity;
- There will be higher-paying jobs in Sarawak and concentration of information and communications technology (ICT) and digital industries creating high-skilled and semi-skilled jobs;
- Increased household income with digital economy contributing at least 20% to the household income;
- There will be pipeline of job-ready graduates with advanced digital skills through industry focused upskilling and reskilling programmes and structured university, Technical and Vocational Education and Training (TVET) programmes, addressing the skilled workforce needs of the businesses and public sector;
- All students will have access to online learning, this way, it will address societal digital divide; and
- Sarawakians will be digitally literate with confidence in using digital technology and protecting their privacy.

Benefits to Business

With investments in the digital economy foundations, more businesses will be able to adopt new business models, innovate, improve productivity and efficiency using ICT and frontier digital technologies, such as AI, cloud computing, IoT and 5G.

New business models and adopting digital technologies will create new high-paying jobs and give access to global market.

Digitalisations of Micro, Small and Medium Enterprises (MSMEs), investments and vibrant technology sector will drive future innovation, high-tech start-ups and value to the society.

By 2030, Sarawak expects that:

- All businesses will be digitally driven business adopting new business models with increased access to global market;
- Digital Economy will contribute approximately 20% to Sarawak's GDP (RM56.4 billion), improve productivity and production efficiency;
- Digital Economy will create between 39,000-48,750 new high-paying jobs;
- 80% digitalisation of the MSMEs;
- 50% growth in ICT and digital investments in Sarawak through InvestSarawak;
- 500 new high-tech start-ups; and
- Sarawak will have a vibrant and globally competitive technology sector.

Benefits to Government

The Sarawak State Government has put great emphasis on digital economy to ensure that it will achieve developed status by 2030.

The Government will accelerate tailored, personalised, and integrated data and citizen-driven service delivery supported by protection of data. It will unlock the power of government data to design data-driven policies and regulations to spur innovation.

The Government will enhance public sector structure and strengthen capacities and capabilities of civil servants to accelerate the adoption and integration of digital technologies and platforms to improve service delivery, workflow efficiency, productivity and ease of doing business in Sarawak.

Data play an increasing important role as an economic and strategic resource. Cross-border data flow are a new kind of international economic flow. Cross-border data flow are data trade and should be driven differently and governments need to formulate public and tax policies, legal and regulatory frameworks to maximise value from data.

Sarawak Digital Economy Strategy 2018-2022

Sarawak's Digital Economy journey commenced in 2018 with the launch of Sarawak Digital Economy Strategy 2018-2022 and the establishment of the Sarawak Multimedia Authority (SMA) under SMA Ordinance 2017. SMA is a regulatory body to spearhead, oversee and facilitate the development and implementation of the communication, multimedia and the State's Digital Economy initiatives. Key agencies, including Sarawak Digital Economy Corporation (SDEC), Centre for Technology Excellence Sarawak (CENTEXS) Digital Academy and Sarawak Information Systems (SAINS) together with private sector, universities and other agencies are part of the Sarawak's Digital Economy ecosystem responsible for the implementation of the Digital Economy initiatives.

The Sarawak Digital Economy Strategy 2018-2022 presents the ecosystem required to grow the digital economy for Sarawak. The strategy focused on eight (8) economic sectors, namely agriculture, manufacturing, tourism, smart city, e-Commerce, digital health, digital government, and social services. These eight economic sectors are driven by seven (7) enablers, namely digital infrastructure, digital skills and talent development, research, innovation and entrepreneurship, big data, cyber security, and digital inclusivity.

The Strategy is anchored on forty-seven (47) strategic actions including twenty-nine (29) strategic actions for the economic sectors and eighteen (18) strategic actions for the enablers. Sarawak Digital Economy Strategy 2018-2022 saw the implementation of one hundred fifty-four (154) initiatives over the past 5 years.

Sarawak Digital Economy Blueprint 2030

The Sarawak Digital Economy Blueprint 2030 sets out how Sarawak will secure its future as a leading digital economy and society by 2030. The Blueprint builds on the current Sarawak Digital Economy Strategy 2018-2022, is the foundation to drive Sarawak PCDS 2030 and acts as catalyst to increase the efficiencies and productivity for all economic sectors, fostering economy prosperity, social inclusivity, and environmental sustainability.

The Sarawak Digital Economy Blueprint 2030 is closely aligned with the MyDigital and takes into consideration the foresight and direction of global digital economy strategies. The Blueprint recognises that the Government plays an enabling role, with the economy driven by public and private sectors and individuals to determine our ultimate measure of success.

The Sarawak Digital Economy Blueprint 2030 is an economic and social development plan underpinned on United Nations Sustainable Development Goals (SDGs) that will benefit the public sector, businesses and the society through improved public service delivery, new sustainable business models and access to global market, new job opportunities and social wellbeing.

Sarawak Digital Economy Blueprint 2030 is a document that will transform the whole-of-economy and society from conventional resource-based economy to environmentally sustainable technology-driven economy. A dynamic digital economy will require a stable and strong digital foundation including digital infrastructure, digital talents, skills and inclusivity, data governance and cyber security, research, innovation and entrepreneurship.

The Blueprint is a living document that will continue to evolve to ensure Sarawak remains on track and be adjusted where needed for Sarawak to be a developed State by 2030.

Vision
Sarawak to be a leading Digital Economy and Society by 2030.

Mission
The Sarawak Digital Economy Blueprint 2030 will achieve the following five missions to fulfil the development for digital economy in Sarawak:

- Nurture integrated ecosystem to foster inclusive digital society;
- Build the right foundations to grow digital economy;
- Foster business growth and vibrant technology sector;
- Capitalise on digital technologies to maximise digital value; and
- Deliver simple, secure and trusted services.

Strategic Goals

The strategic goals are to:

- Accelerate the digitalisation of economic sectors;
- Strengthen economic competitiveness through digitalisation, investment and public-private partnership;
- Accelerate digital transformation of public sector;
- Create high & semi-skilled jobs;
- Foster high-income per capita & inclusive digital society;
- Grow vibrant tech sector; and
- Develop new generation of digital industries.

Outcomes

To achieve the status of Sarawak to be the leading Digital Economy and Society by 2030, Sarawak will need to:

- Create between 39,000 - 48,750 new digital jobs;
- Achieve 50% growth in investment and partnerships;
- Achieve 96% high-speed connectivity;
- Achieve 20% Digital Economy contribution to GDP (RM56.4 billion);
- Achieve RM 4,000 contribution from digital to household income;
- Create 500 high-tech start-ups; and
- Achieve 100% online service delivery and improved ease of doing business.

Strategic Pillars

The Sarawak Digital Economy Blueprint 2030 is anchored on five (5) strategic pillars to ensure that Sarawak can achieve its vision and mission and strategic goals for Sarawak to be a developed State by 2030.

The five (5) strategic pillars are:

i) **Economic Growth Priorities** – Accelerate digitalisation of economic sectors and data monetisation – boosting economic competitiveness through digitalisation.
ii) **Digital Business Development** - Supporting and growing globally competitive and vibrant technology sector, investment, trade, start-ups and spin-ins in Sarawak.
iii) **Public Sector & Services** – Deliver efficient, secure, and trusted services and improve ease of doing business.
iv) **Frontier Technologies Adoption** – Enable economy wide transformation and economic growth.
v) **Foundation for Digital Economy** – Accelerate **Digital Readiness** in infrastructure & connectivity, data governance & cyber security, digital talent & skills, research, innovation & entrepreneurship, and inclusivity.

The Blueprint is supported by thirty-one (31) strategic actions and one hundred six (106) initiatives. The implementation of the proposed short, medium and long-term initiatives will enable Sarawak to achieve the outcomes and ultimately the aspiration of being a leading digital economy and society by 2030.

To accomplish the desired outcomes, the Sarawak Digital Economy Blueprint 2030 roadmap targets are spread over three phases, namely:

Phase 1 (2025): Strengthen Digital Readiness
Enhancing digital readiness in digital infrastructure, connectivity, digital talent, technology adoption, 5G adoption, cloud computing, research and innovation, cyber security, data monetisation, data management amongst others to encourage investment, business development and accelerate Digital Economy in Sarawak. Conducive regulatory and policy framework and digital readiness will provide smooth transition to Phase 2 and 3.

Phase 2 (2027): Accelerate Digital Transformation
This phase will accelerate the digital transformation of priority economic sectors, enhance data-driven digital government services where technology and data are effectively used to benefit the society and businesses, attract high-tech investments, digitalise MSMEs and grow high-tech start-ups.

Phase 3 (2030): Digitally Developed Sarawak
By 2030 Sarawak will be digitally developed State with high ease of doing business, where the government creates conducive and agile environment for business to invest and grow, high-speed connectivity for all Sarawakians, equitable access to opportunities for all Sarawakians to uplift social-economic status and cyber secure and ethical digital environment.

Measure of Success

By 2030, there should be no distinction between the digital economy and the economy. This implies that by 2030:

- All businesses are digitally driven business using ICT and frontier digital technologies, such as AI, IoT, blockchain, immersive technologies, etc. to enhance productivity, yield, efficiency and generate high-skilled jobs;
- All Government services are easily and safely accessed online. Government service delivery will be supported by better public data availability and sharing that is used by a highly skilled public service to deliver more targeted policy and programmes;
- All transactions are electronic, integrated, and secure;
- Sarawak has a vibrant technology sector that is globally competitive;
- Sarawak has capabilities and capacity to accelerate digital transformation and bridge digital divide; and
- Smart regulations are in place to ensure Sarawak has the safe, cyber secure and vibrant environment to maximise digital value.

The Governance Structure

The Policy, Programme and Project level (3Ps) governance structure has been established to drive the strategic direction, management, implementation, and monitoring of the Sarawak Digital Economy Blueprint 2030. As part of the process, the governance committees also determine the metrics by which success is measured through Key Performance Indicators (KPIs) and pre-set performance measurement indicators.

The key features of the governance structure ensure accountability, efficiency and success through Sarawak Multimedia Authority Ordinance 2017, implementation through public, private and community partnerships, transparent and effective monitoring and evaluation process and clear timelines for measurable outcomes.

The 3P's governance structure comprises of:

- Sarawak Multimedia Authority **Members of Authority** providing strategic leadership and policy directions for Digital Economy;
- **Programme Level – Digital Economy Executive Council** providing effective management, coordination, and monitoring of the projects; and
- **Project Working Groups** responsible to lead the implementation of the initiatives and projects and provide technical expertise. All the Ministries, agencies, Government Linked Companies (GLCs), universities, private sector and the community are involved in the implementation of the digital economy initiatives.

Strategic Recommendations

Number of strategic recommendations are proposed to accelerate digital transformation and to achieve the targeted outcomes by 2030, namely:

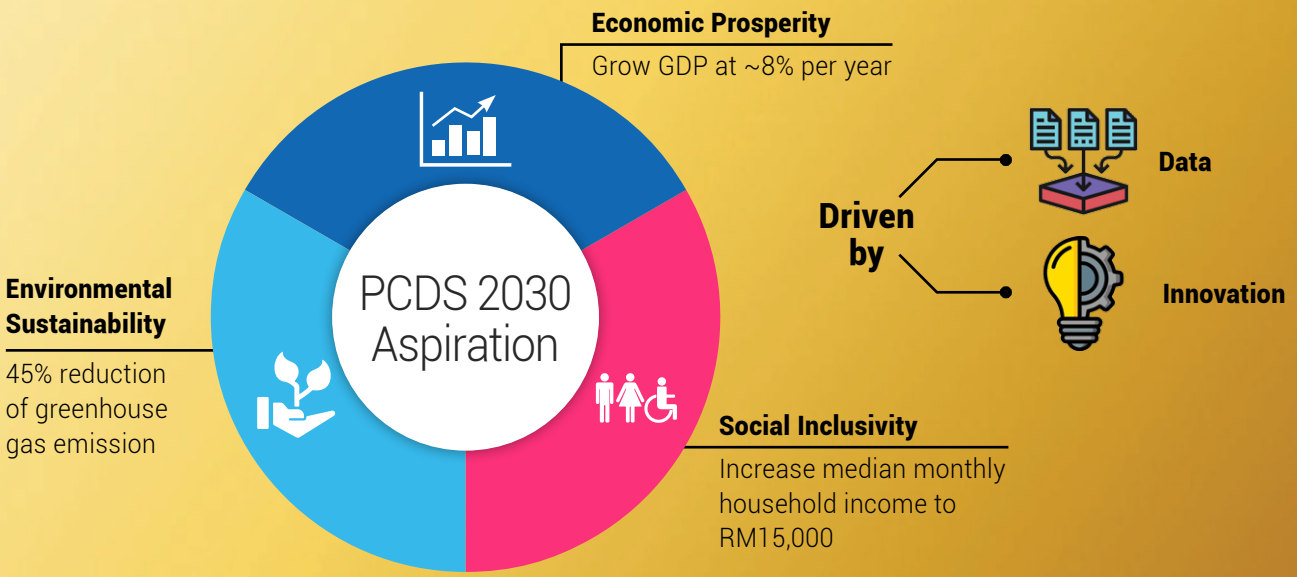
- Implementing 3Ps governance structure to drive strategic direction, management, implementation, monitoring and transparency, and to ensure accountability, efficiency, and success of digital transformation.
- Increasing Digital Foreign Direct Investment in Sarawak by operationalising InvestSarawak and establishing Digital Precincts with high-speed connectivity and infrastructure to spur innovation and accelerate digital economy growth.
- Developing and updating policies and regulations in digital technology, digital ecosystem, digital capabilities, digital government, digital industry development and digital economics to create conducive environment to accelerate and grow digital economy in Sarawak.
- Operationalising the national Cyber Security Framework by establishing the Sarawak Cyber Security team/ unit in Sarawak.
- Creating conducive business environment that supports the development of a dynamic and innovative private sector by targeting job-generating sectors; strengthening State-owned agencies; operationalising InvestSarawak; allocating targeted incentives; balancing incentives; and enhancing collaboration between the public and private sectors.
- Accelerating innovation and start-ups growth in Sarawak by establishing Start-ups Venture Capital fund and formalising e-Residency and nomads programmes.
- Long-term commitment to uplift digital capacity, digital infrastructure, digitalising MSMEs and processes to improve ease of doing business in Sarawak.

Post COVID-19 Development Strategy 2030

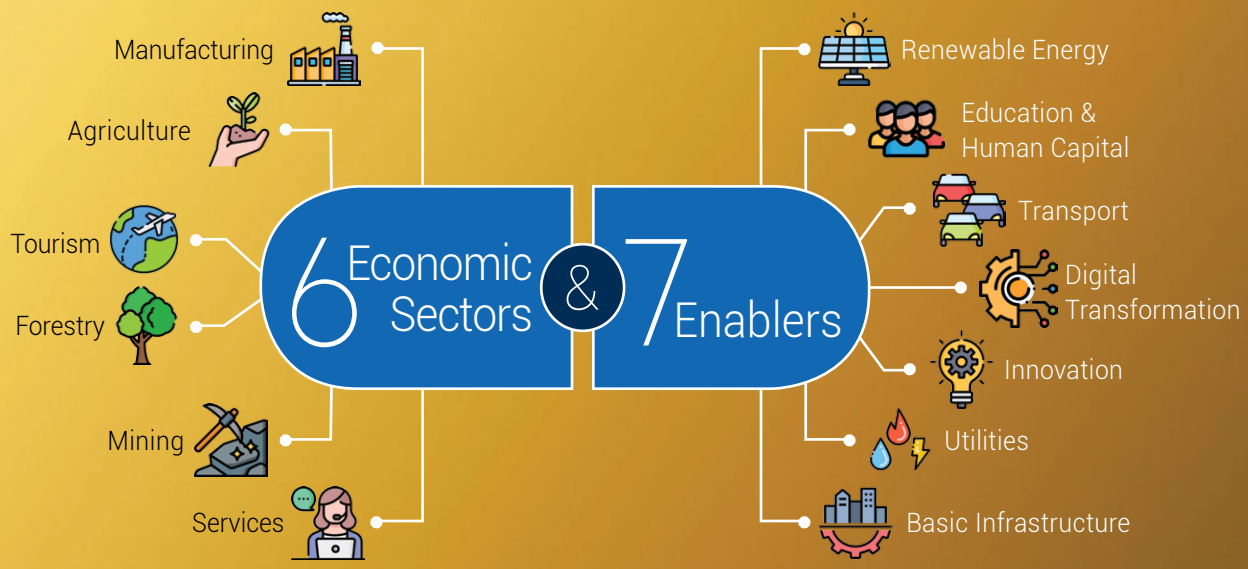
1

POST COVID-19 DEVELOPMENT STRATEGY 2030

Sarawak's aspires to be a developed state by 2030



PCDS 2030 anchored on:



Digital Economy an enabler of PCDS 2030

By digitalising economic sector

- Lower cost, increase efficiency and productivity
- New business model and access to global market
- Provide improved, efficient and secure online service delivery
- Promote inclusivity
- Encourage environmentally sustainable innovation

1.1
POST COVID-19 DEVELOPMENT STRATEGY 2030

The COVID-19 pandemic has changed how nations think about their economies and societies. The policy choices governments make will determine their success in building a transition to a greener, more inclusive and more resilient economy and society. For the economic recovery to be robust, resilient and a shift to more sustainable practises, a return to 'business as usual' need to be avoided and the policies need to trigger investment and behavioural changes that will reduce the likelihood of future shocks and increase society's resilience. Central to this approach is a focus on well-being and inclusiveness, alignment with long-term emission reduction goals, factoring in resilience to climate impacts, slowing biodiversity loss and increasing circularity of supply chains.

The Sarawak Post COVID-19 Development Strategy 2030 (PCDS 2030) [1] [2] [3] [36] was launched by the Sarawak Government in July 2021, underpinned by the seventeen (17) United Nations Sustainable Development Goals (SDGs) [4] that requires integrated action on social, environmental, and economic challenges, with a focus on inclusive, participatory development that leaves no one behind. PCDS 2030 provides strategy for achieving the Sarawak's vision to be a developed State by 2030, becoming a thriving society driven by data and innovation where everyone enjoys economic prosperity, social inclusivity and sustainable environment.

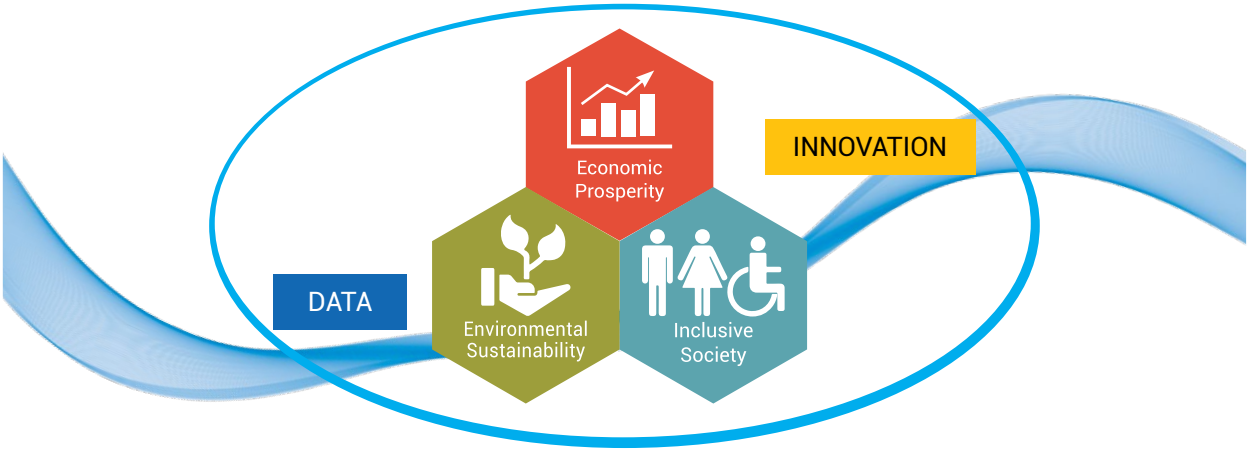


Figure 1.1: *Sarawak aspires to be a developed State by 2030 [36]*

For Sarawak to be a developed State by 2030 and to achieve economic prosperity, social inclusivity and sustainable environment, Sarawak will need to [1]:

Grow gross domestic product (GDP) at ~8.0% per year and achieve RM282 billion by 2030, from an average 3.4% annual growth between 2006-2019

Increase median monthly household income from estimated RM4,500 in 2019 to RM15,000 by 2030, driven by higher job and entrepreneurial opportunities

Ensure a clean and healthy environment for current and future generations with safely managed water and sanitisation services, sustainable forest management, as well as adoption of new technologies and innovation to support Malaysia's commitment to reduce greenhouse gas (GHG) emissions intensity of GDP by 45.0% by 2030.

The PCDS 2030 is driven by seven strategic thrusts, namely:

Figure 1.2: *PCDS 2030 Seven Strategic Thrust [36]*

1.2
ECONOMIC SECTORS

The PCDS 2030 is anchored on **six (6) economic sectors** as the engine of growth. These priority sectors are manufacturing, agriculture, tourism, forestry, mining and social services. These six (6) economic sectors are supported by **seven (7) enablers** as illustrated in Figure 1.3.

Figure 1.3: *Economic Sectors and Enablers [36]*

1.2.1 **MANUFACTURING**

The manufacturing sector aims to promote Sarawak as the preferred investment destination especially for high-value downstream activities of resource and non-resource-based industries.

This will be supported by the development of efficient ecosystem for private investment such as industrial parks equipped with basic infrastructure, utilities, and telecommunication. The initiatives include the development of Petrochemical Hub, extension of Sama Jaya High-Tech Park, Bio-industrial Park and Furniture Park amongst others.

The strategy is based on export-led growth, diversification and entrepreneurship development.

1.2.2 **AGRICULTURE**

By 2030, Sarawak aims to be a net exporter of food capitalising on smart farming, global partnership and commercial farming. Commercial agriculture will attract private investment to accelerate the productivity and growth in the sector that will provide valuable feedstock to value added downstream food processing, especially for export.

Innovative smart and precision farming will maximise yield, while optimise the use of agriculture inputs and improve the production efficiency and productivity.

Among the key initiatives are developing agrotechnology parks, high-value downstream products and smart farming programmes. The catalytic initiative would focus on fast-tract production of high-value commodity crops, fisheries and livestock.

1.2.3 **TOURISM**

Tourism is one of the key sectors to drive Sarawak's visibility and branding globally. By 2030, Sarawak aims to become a leading destination for eco-tourism and business events in Asian region which will be driven by empowered communities to conserve heritage, culture and biodiversity and to promote investment.

The main tourism strategy will be focused on enhancing business and leisure travel to and within Sarawak, developing Sarawak tourism products and assets by building upon its culture, heritage and nature assets. This will be driven by catalytic initiative including increased accessibility and connectivity, ecotourism attraction, business events, signature museum and training of tourism workforce.

1.2.4 **FORESTRY**

By 2030, the State's forestry sector aims to be globally recognised in sustainable management of tropical forest and biodiversity conservation while enhancing the rapid growth of timber industry.

The forest management practices will focus on balancing rate of deforestation and growth, increasing product yield and enhancing services obtained from forest. In addition, sustainable approaches to monetise Sarawak's resources will be implemented to provide economic opportunities for the rural communities.

Among the initiatives include replanting 200,000 hectares of degraded forest areas, implementing Carbon Credits Programmes, establish bamboo plantation and develop bamboo-based industry, certification of 4.5 million hectare of long-term forest licence area for natural forest by 2022 and 178,000 hectares of forest plantation by 2025.

1.2.5 **MINING**

The mining sector in Sarawak is currently driven by oil and gas upstream activities which provide the feedstock petrochemical industry.

Moving forward, Sarawak will explore into other mineral resources such as silica sand, rare earth elements (REE) and kaolin clay for high value downstream activities. To support this development, Sarawak will develop geological mapping to provide details such as locations, reserve volume, grades of the minerals and design business models to facilitate investments in mining industry and downstream processing activities.

The strategy will focus on strengthening the regulatory and policy framework, create an ecosystem of technical, business and financial expertise of State Minerals Management Authority (SMMA), explore mining reserves and develop potential private partnership opportunities to attract private sector investments.

1.2.6 **SOCIAL SERVICES**

The well-being of its people is at the forefront of the State Government's agenda. Under the social services sector, Sarawak aims to provide through living standard, healthy and inclusive society with affordable and innovative service delivery for all Sarawakians.

Among the key initiatives are poverty alleviation programmes, social welfare programmes such as the SarawakCare Insurance, construction of state reserve and test lab, new Normah Medical Specialist Hospital, special needs welfare services and housing schemes for eligible M40 and B40 groups.

The strategy is to assist the vulnerable, risky and affected individuals such as those with disabilities and elderly, intervention and shelter initiatives by providing support to the public through housing and healthcare schemes.

1.3 ENABLERS

1.3.1 DIGITAL TRANSFORMATION

Digitalising the economic sectors will empower the economic sectors to increase yield, production efficiencies and productivity. The transformation includes digitalisation of private sector economy, digitalisation of public service delivery, infrastructure, human capital, and ecosystem to attract and grow high-tech industry in Sarawak.

1.3.2 INNOVATION

One of the key enablers, the major benefit of innovation is its contribution to economic growth and higher productivity. Innovation will focus on developing Research & Development (R&D) capabilities and commercialisation aligned to biotechnology, digital application, renewable and green energy.

New ideas and technologies will be developed and applied, resulting to more enhanced goods and services, stimulating wages and business profitability.

1.3.3 EDUCATION AND HUMAN CAPITAL DEVELOPMENT

Tailoring education to support human capital development is important to increase work efficiency and drive economies to move up the value chain. The key initiatives include the formation of Human Capital Development Council and strengthening Sarawak Workforce Information System (SWIS), establishment of Science Centre to increase interest in Science, Technology, Engineering and Mathematics (STEM) and the establishment of five (5) International Schools in Sarawak.

1.3.4 RENEWABLE ENERGY

Sarawak aspires to be the key provider of affordable and reliable renewable energy, contributing to sustainable growth and prosperity. Public-private partnership towards expanding renewable energy generation as well as promoting exports of renewable energy and related services will be intensified.

Among the initiatives to promote renewable energy are hydrogen economy, 50MW floating solar, mini hydro projects and electric vehicles.

1.3.5 UTILITIES

Utilities services are important to support economic sectors and it need to be delivered in a reliable, economical, and sustainable manner. The key initiatives for utility development are water and electricity supply projects to achieve 100% coverage, development of Pan Sarawak Gas Pipeline to accelerate industrial development and single water entity to improve efficiency.

1.3.6 **TRANSPORT**

Key strategies are to ascertain more realistic transport demand through intensifying stakeholder collaboration, to intensify public-private partnership to attract investment, and to introduce supporting regulatory framework for integrated transport planning. Amongst major project are the Kuching Urban Transportation System (KUTS), Autonomous Rail Transit (ART), and Kuching and Sibu airport expansions.

1.3.7 **BASIC INFRASTRUCTURE**

Basic infrastructure is a key fundamental to provide access to social and economic hubs in meeting short-term needs and to support future growth. The major initiatives are the development of second trunk road, coastal road network, urban road expansions, deep-sea ports, and free industrial zones around deep-sea ports. In achieving these targets, 3-pronged strategies have been introduced namely intensify inter-agency collaboration, mobilising private sector partnership and funding, and supporting policies and regulatory interventions.

1.4
DIGITAL ECONOMY AN ENABLER OF PCDS 2030

The Sarawak Government recognises the opportunities provided by the digital economy to serve as a driver of the Post COVID-19 Development Strategy 2030 as well as a new source of fiscal revenue.

By leveraging on digital technologies such as big data and data analytics, IoT, AI, 5G, blockchain, and other technologies, Sarawak can increase productivity, improve efficiency, spur innovation, and improve livelihoods of all Sarawakians. Digital transformation will drive economic growth, social wellbeing and environmental sustainability in Sarawak through multiple channels.

Firstly, digitalising economic sectors will lower costs and increase efficiency and productivity. It will create high skilled jobs, increase household income, and lower GINI index for Sarawak from 0.387 in 2019. Secondly, businesses will adopt new business models which will make them more sustainable, competitive and give access to global market. Thirdly, Government will be able to provide improved, efficient and secure online service delivery. Fourthly, it will promote inclusion by serving markets that are currently underserved and fifthly, it will encourage environmentally sustainable innovation allowing entirely new forms of businesses and entrepreneurs to emerge.

Digital transformation of agriculture will see deployment of digital technologies and data for smart and precision farming, improving yield, productivity, production efficiency and access to market. These will contribute towards meeting the PCDS 2030 agriculture outcomes of addressing Sarawak's SSL for food and net food exporter by 2030.

Adoption of Industry 4.0 technologies, processes, and systems will see manufacturing sector with improved productivity and efficiency, better flexibility and agility, and increased profitability, contributing to sector outcomes including contribution to Sarawak's GDP, digitalisation of Micro, Small and Medium Enterprises (MSMEs), creating high-tech jobs and innovation. Industry 4.0 will also improve the customer experience through more personalised and intelligent products.

Application of digital technologies will spur innovation, growth, and globalisation of the tourism industry. Travel is essentially about connecting people and places. Leveraging digital technologies such as high-speed internet connectivity, immersive technologies, mobile payments and social platforms, and the ability to harvest data and analytics, tourism sector will be able to provide personalisation of service and experience. By capturing personal data from customers and learning more about their behavioural patterns, the sector will increasingly optimise services across the customer journey. These will contribute to meeting the tourism sector outcomes of 11% contribution to Sarawak's GDP, 7.5% increase in visitor arrival and increasing employment in tourism sector.

Digitalising the financial sector will give 24/7 availability of access to banking functions, paperless banking, automatic payments for regular utility bills, online payments for online shopping, extending banking services to remote areas, reducing the risk of counterfeit currency, strengthening privacy and security for customers among others. This will spur high-tech innovation contributing to vibrant high tech sector development, high-tech jobs among others in Sarawak.

Digital transformation of the healthcare (Digital Health) will assist healthcare providers reduce inefficiencies, improve access, reduce costs, increase quality and make medicine more personalised for patients. Digital health employs digital technologies and tools, interoperable data, artificial intelligence (AI), high-speed connectivity, immersive technologies and secure platforms to provide consumer-focused and prevention-oriented care. This will enable healthcare providers to provide efficient and high quality of services to both urban and rural Sarawak addressing affordability, lack of specialist doctors and nurses, cost of specialised equipment and services among others, thus addressing the need for quality healthcare to all Sarawakians.

Digital technology is one of the critical levers for accelerating the transition to green hydrogen – especially artificial intelligence and internet of things technologies that enables the optimisation and automation of systems through enhanced data management and analytics. Digital transformation that will expedite the green hydrogen transition, include:

- Digital twins. Digital twins can model multiple designs and scenarios, optimising each design to maximise return on investment and minimise risk.
- Monitoring and control. Artificial intelligence and internet of things technologies will provide real-time monitoring of plant operations and asset health, coupled with remote control of assets, that can reduce costs through lower energy consumption and a streamlined workforce.
- Advanced analytics. Leveraging data analytics at plant and fleet-level operations can provide corrective action recommendations to maximise yields. Energy losses can be prevented by forecasting failures and optimising operations.
- Certificates of origin. Monitoring based on artificial intelligence and internet of things technologies will guarantee the origin for monetising green hydrogen. Digitally monitored hydrogen plants will leverage near real-time data to ensure end-to-end traceability along the entire life cycle and automate input to certification process, offering more confidence and reliability, and increasing futureproofing.

Similarly, digitalisation's ability to facilitate business ecosystem collaboration across organisations and provide a line of sight across the supply chain will minimise environmental harms which is central to the realisation of a global circular economy.

Digitalisation of other priority sectors including mining, services and forestry will see improvement in operational efficiency and productivity, creation of high paid jobs and investments amongst others, contributing to improved outcomes for these sectors.

Digital Economy

2

DIGITAL ECONOMY

Global Trends & Landscape

By 2025,
Digital economy will contribute 24.3% to the global GDP and will create 97 million new jobs in the high-tech sector.

The emerging digital economy is strongly driven by various digital technologies powered by data

- Blockchain
- Internet of Things (IoT)
- Artificial Intelligence
- Connectivity
- Big Data & Data Analytics
- Cloud Computing
- Metaverse, AR/VR/XR
- 3D/4D/5D Printing
- Automation & Robotics
- Nanotechnology

Digital economy is highly concentrated in USA, Europe and China

- 94% of AI start-ups funds
- 90% of the platform market capitalisation
- 75% of cloud computing market
- 50% of the world hyper scale data centres
- 79% content created online

23% of developing countries' population still have **no internet connection**

Malaysia has been ranked at 42nd position in Digital Readiness Index
Measurement based on **seven (7)** components

- Human Capital
- Technology Infrastructure
- Technology Adoption
- Start-up Environment
- Business & Government Investments
- Ease of Doing Business
- Basic Needs

Sarawak Digital Landscape encompasses several important areas, including digital infrastructure, innovation and start-up ecosystem, and digital inclusivity. These areas are interconnected and play a vital role in the overall digital transformation of the State.

- Connectivity 66.48%
- 26 Tech Start-Ups and 27 High-Tech Research Acceleration
- 35% Online Services
- 45 Digital Community Centres & 133 PEDis
- Access to Government Services -Established
- Digital Skills -Established (540,557 participants upskilled)
- 667 MSMEs Digitalised
- Cyber Security - Developing

What is for Sarawak?

SOCIETY
Job opportunities and social wellbeing

BUSINESS
New business models and access to global market

GOVERNMENT
Improved public service delivery

2.1
DIGITAL ECONOMY TREND AND LANDSCAPE

2.1.1 GLOBAL LANDSCAPE

The world economy is transforming fast because of the rapid spread of new digital technologies, with major implications on nations economic growth, social wellbeing and environmental sustainability. Greater levels of digitalisation of both economies and societies are creating new means for tackling global development challenges however, there are risks that digital disruptions will favour mainly those that are already well prepared to capture value in the digital economy, rather than a more inclusive development.

Since mid-1990s, the digital economy has evolved, reflecting the rapidly changing nature of technology and its use by businesses, governments and consumers. In later 1990s the emphasis was with the adoption of the internet referred to as "Internet Economy". Since mid-2000s digital economy focused on ways digital technologies, services, products, techniques and skills are diffusing across different sectors and economies.

According to Huawei & Oxford Economics report [5], the contribution of digital economy to the global economy will increase from 15.5% in 2016 to 24.3% in 2025 as highlighted in figure 2.1. This translates to a worldwide digital economy contribution of US$23 trillion dollars by 2025 giving every person of working age in the world an additional US$500 per year. The report also highlights the digital economy growth in 2016 was 2.5 times faster than the global economy growth and the Return-on-Investment (ROI) was 6.7 times higher than the non-digital ROI.

Data have become a new economic resource for creating and capturing digital value. Control over data is strategically important to be able to transform them into digital intelligence. The ability to collect, store, analyse and transform data bring added power and competitive advantages. Digital data are core to all fast-emerging digital technologies, such as data analytics, AI, blockchain, Internet of Things (IoT), cloud computing and all internet-based services.

There is a growing gap between the rate of digital technology adaptation and having appropriate conducive policies, regulations and digital readiness to maximise the digital value. Some of the areas that need to be addressed include, policies and readiness for technology adoption and data monetisation, workforce readiness, digital infrastructure and connectivity, growing vibrant technology sector and investment, bridging the digital divide, cross border data flow, research, innovation and entrepreneurship, and cyber security.

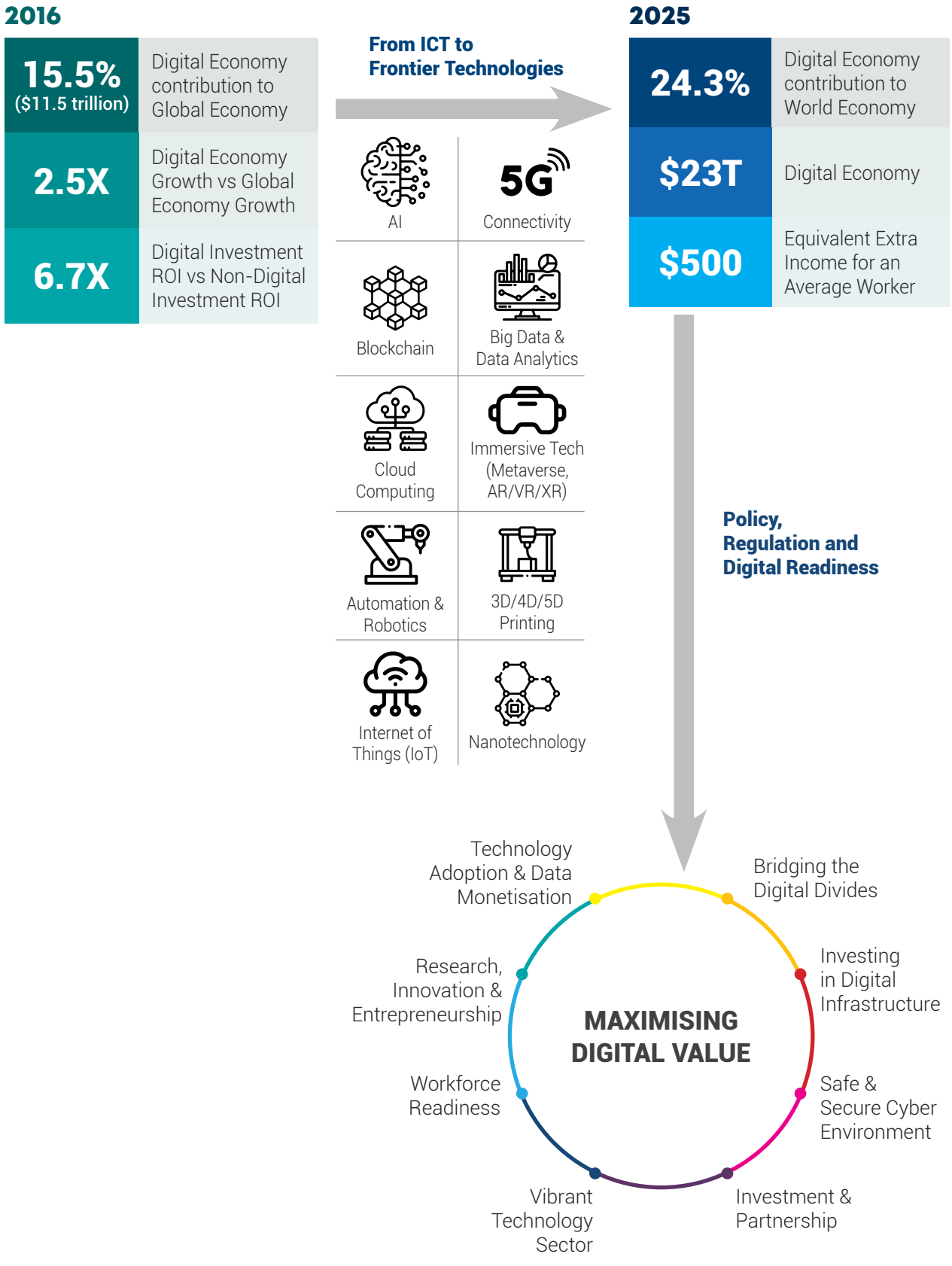


Figure 2.1: *Digital Economy Trends (Modified based on Huawei & Oxford Economics 2017 [5])*

The evolving digital economy is closely associated with several frontier technologies like AI, Blockchain, 3D printing, IoT, Cloud Computing, 5G, Big Data and Data Analytics, immersive technologies (AR/VR/MR/Metaverse) and others. Figure 2.2 highlights the contribution of frontier technologies to digital economy increasing from US$350 billion in 2018 to US$3.2 trillion by 2025 [32].

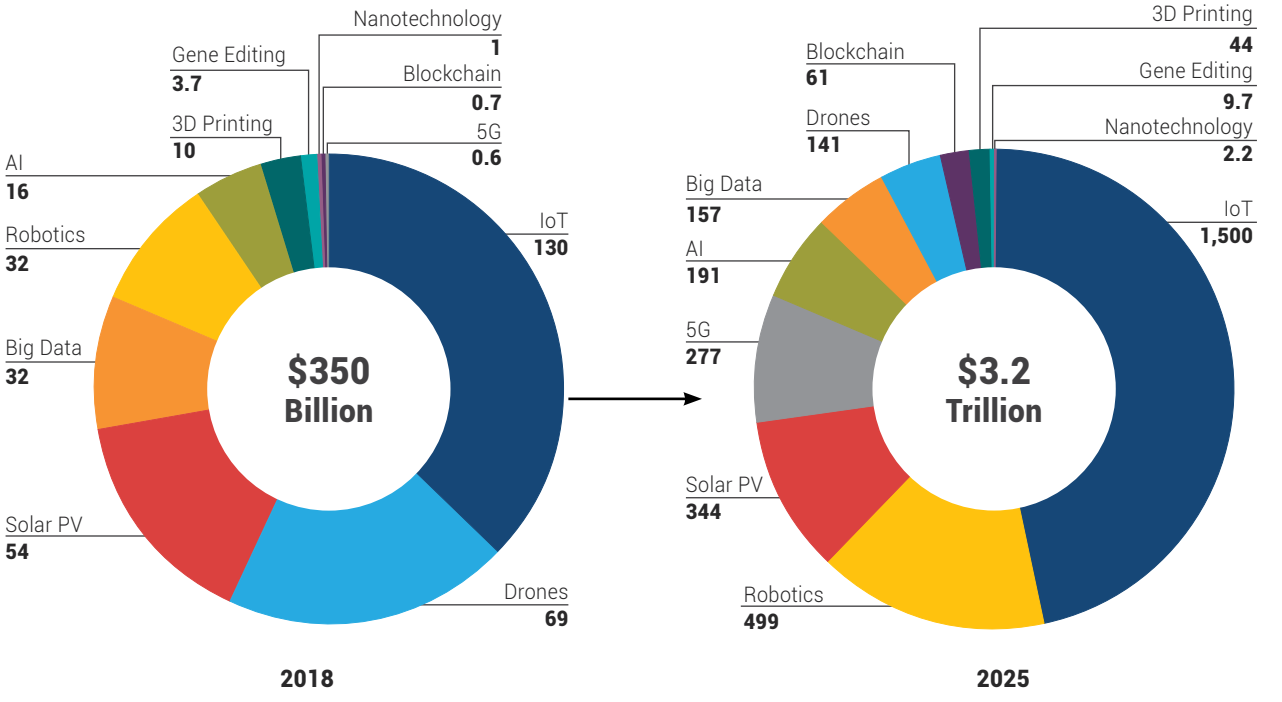


Figure 2.2: *Global contribution of frontier technologies [32]*

Global Internet Protocol (IP) traffic has grown dramatically from 100 gigabytes (GB) of traffic per day in 1992 to 100 GB per second ten years later, and it had surged to more than 46,600 GB per second in 2017, reflecting both qualitative and quantitative changes in the content. By 2022, global IP traffic has reached 150,700 GB per second [6].

Over the period of 2017–2022, North America and Asia–Pacific accounts for nearly 70% of global internet traffic.

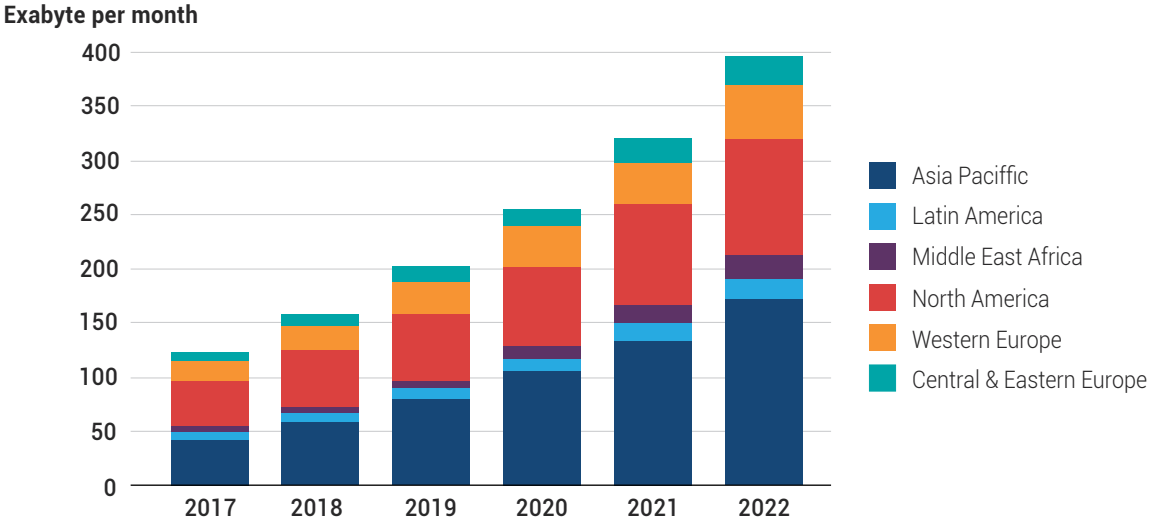


Figure 2.3: *The Internet Protocol Traffic (Exabyte per month) [6]*

According to McKinsey report [8], cross-border transaction costs will continue to be lessened, and all kinds of cross-border data flows will be made possible by developments in digital platforms, logistical technology, and data processing. The cross-border bandwidth between 2005 and 2017 surged from 5 terabits per second to 704 terabits per second, and it is projected to approach 2,000 terabits per second by 2021 [7]

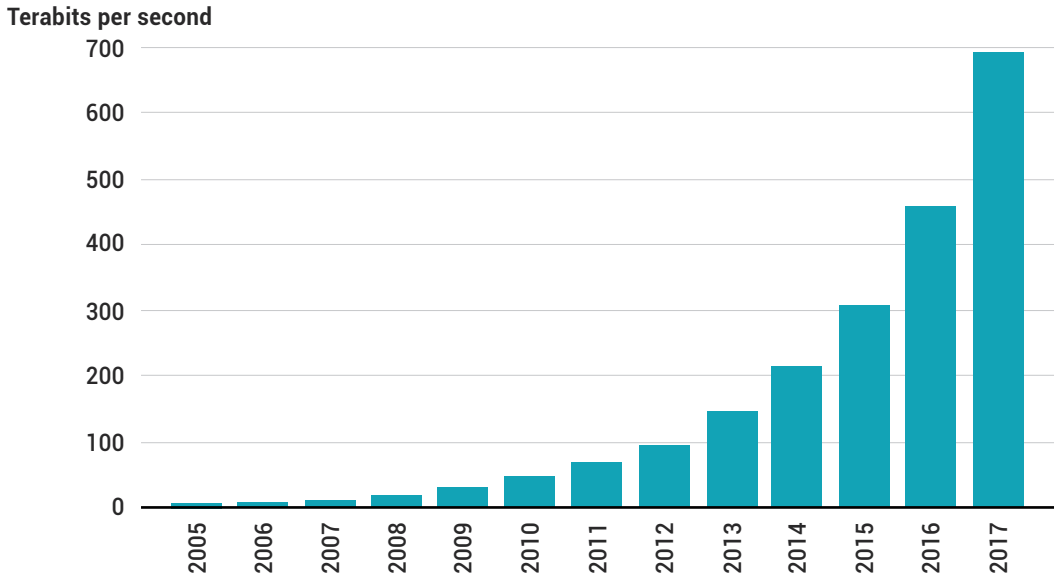


Figure 2.4: *Global cross-border bandwidth, 2005-2017 (Terabits per second) [7]*

The increasing importance of data is leading to changes in the infrastructure for data transmission, notably an exponential increase in fibre optic submarine cables. Approximately 99% of total international data transmissions run through these cables.

According to World Economic Forum (WEF) [9], 85 million jobs may be displaced by 2025 and 97 million new roles may emerge for new division of labour between humans, machines, and algorithms across 15 industries and 26 economies.

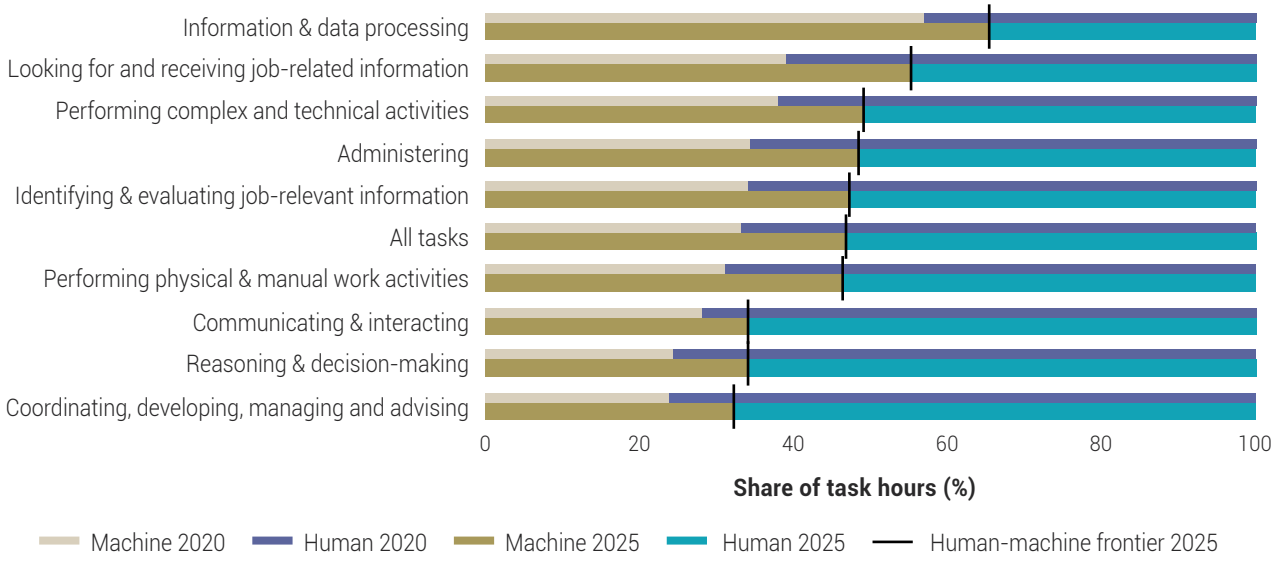


Figure 2.5: *Share of tasks performed by human's vs machines, 2020 and 2025 (expected) [9]*

According to UNCTAD Report [6] [7], digital economy development still is highly concentrated in two countries, United State of America (USA), and the People's Republic of China with more than 75% of cloud computing market, 50% of the world hyper scale data centres, highest rate in 5G adoption, 94% of AI start-ups funds and 90% of the platform market capitalisation. North America and Europe contributed 79% of the online content creation.

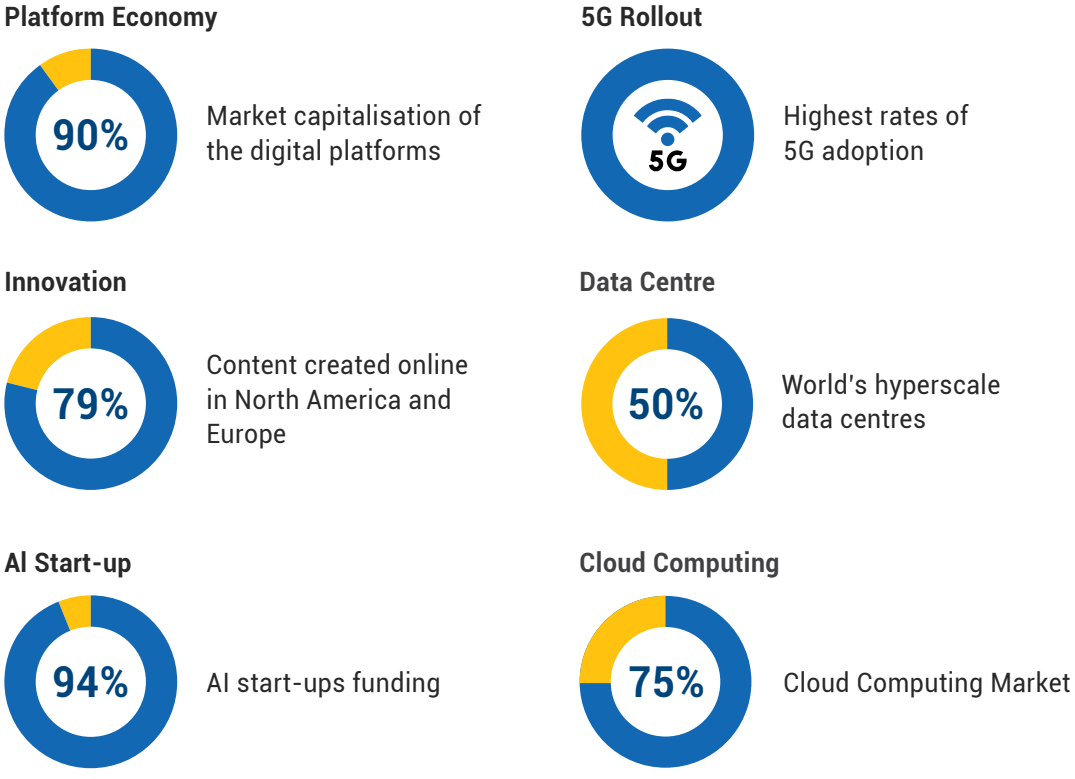


Figure 2.6: *USA and China stand out as the frontrunners in harnessing the value of data [6] [7]*

These differences are caused by highly divided digital characteristic in digital economy where 23% of the developing countries population still have no access to mobile broadband network and only 20% of the people can have access to internet in comparison to the two high digital tech countries [7]. Other factors that are causing the digital divide include the countries digital readiness including human capital development, investment, research and innovation, ease of doing business, funding, technology adoption, vibrant technology sector and digital infrastructure.

2.1.2 MALAYSIA LANDSCAPE

In order to accelerate the growth of Malaysia's digital economy development, the MyDigital [10] was launched in 2021. MyDigital embeds a delivery-driven governance framework that involves partnership between the *rakyat*, businesses and government.

Malaysia has been investing and developing its digital economy way back with the establishment of Malaysia Multimedia Super Corridor (MSC), now rebranded as Malaysia Digital (MD), to accelerate Malaysia's digital economy which has created substantial digital spillover through equitable access to digital tools, knowledge, and income opportunities.

Malaysia is committed to information technology and digital economy, as the sector is a crucial means of leapfrogging other developing nations.

Based on Malaysian Communications and Multimedia Commission (MCMC) [28] in 3rd Quarter (3Q) 2022, Malaysia has 41.9% fixed broadband connectivity penetration rates with Sarawak only having 30.3% connectivity penetration rate. For mobile broadband, Malaysia connectivity penetration rates is 124.1% meanwhile Sarawak is 112.8%. Malaysia has 3,847,300 subscriptions from premise, household, and non-household under fixed broadband category and 41,447,900 subscriptions for individual under mobile broadband category. However, Sarawak has 221,500 subscriptions for fixed broadband and 3,149,200 subscriptions for individuals for mobile broadband.

According to Speed test Global Index [29], for September 2022 Malaysia was placed 38th for download speed with the speed of 89.09 Megabit per second (Mbps) for fixed broadband and 69th for mobile broadband with download speed of 30.65 Mbps.

According to the Department of Statistics Malaysia (DOSM) [16] the contribution from Information and Communications Technology (ICT) sector is 22.6% of Malaysia's total GDP and creating 1.2 million jobs (7.7% of the total employment).

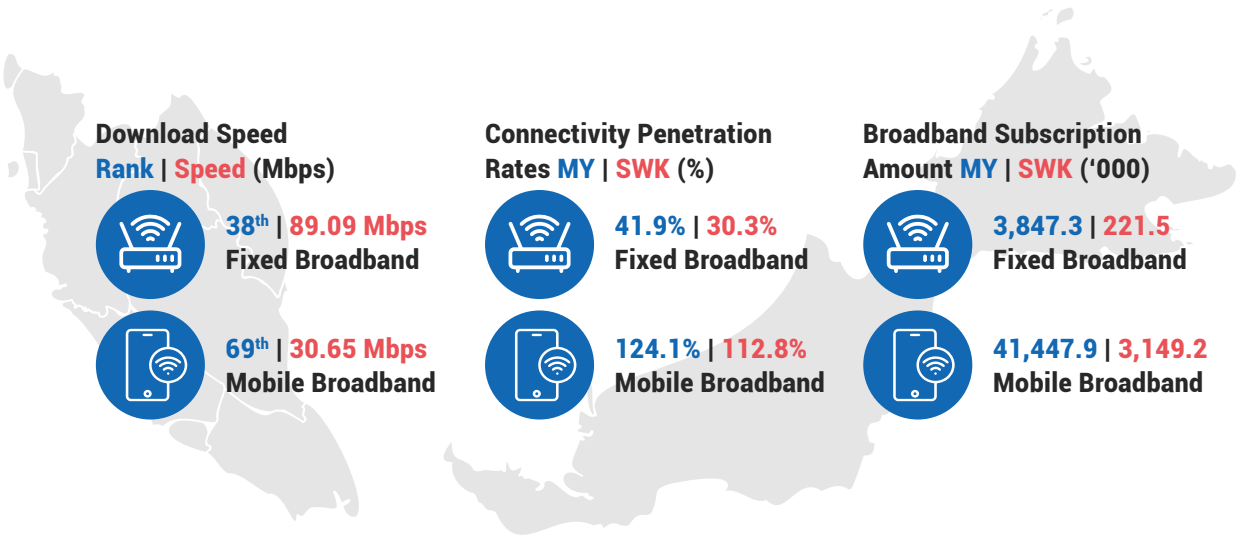


Figure 2.7: *Broadband Penetration and Subscription of Malaysia & Sarawak [28] [29]*

2.1.3 **WORLD DIGITAL ECONOMY INDEX**

Malaysia has received good rankings for several significant indices and is placed 36th for the Global Innovation Index 2021 [11], which evaluates the effectiveness of 132 economies' innovation ecosystems and keeps track of the most recent trends in global innovation.

Frontier Technologies foster new, rapidly developing innovations that rely on networking and digitalisation. The index put Malaysia in 31st position [13]. The Ease of Doing Business Index [14], which ranks Malaysia at number 12, examines regulations that enhance business flexibility and efficiency. The Global Cybersecurity Index [15] gauges a nation's commitment to cyber security and Malaysia is ranked 10th.

Malaysia is placed at 34th position for Overall Inclusive Internet Index [30] where the score is based on the internet availability, affordability, relevance, and readiness categories.

Rank	Global Innovation Index (WIPO, 2021)	Digital Rediness Index (CISCO, 2021)	Readiness for Frontier Technologies (UN, 2021)	Ease of Doing Business (WBG, 2020)	Global Cybersecurity (ITU, 2020)	Inclusive Internet Index – Overall (EIU 2022)
1	Switzerland	Singapore	USA	New Zealand	USA	Singapore
2	Sweden	Luxembourg	Switzerland	Singapore	United Kingdom	South Korea
3	USA	Iceland	United Kingdom	Hong Kong	Saudi Arabia	USA
4	United Kingdom	USA	Sweden	Denmark	Estonia	France
5	South Korea	Sweden	Singapore	South Korea	South Korea	United Kingdom
6	Netherlands	Denmark	Netherlands	USA	Singapore	New Zealand
7	Finland	South Korea	South Korea	Georgia	Spain	Spain
8	Singapore	New Zealand	Ireland	United Kingdom	Russia	Netherlands
9	Denmark	Switzerland	Germany	Norway	UAE	Taiwan
10	Germany	United Kingdom	Denmark	Sweden	Malaysia	Switzerland
	Malaysia (36)	**Malaysia (42)** 2019 (38)	**Malaysia (31)**	**Malaysia (12)**		**Malaysia (34)**

Figure 2.8: *Malaysia performance in World Digital Economy Index [11] [12] [13] [14] [15] [30] [31]*

According to the Digital Readiness Index [31], Malaysia has been ranked at 42nd position, a decline from 38th position in 2019. The Digital Readiness Index is measured based on the following components namely:

- **Human Capital** – Skilled labour force to support digital innovation (build and maintain).
- **Technology Infrastructure** – The infrastructure available to enable digital activities and connected consumers.
- **Technology Adoption** – Demand for digital products and services.
- **Start-Up Environment** – Fosters innovation within a community.
- **Business & Government Investments** – Both private and public investment in innovation and technology.
- **Ease of Doing Business** – Basic infrastructure and policies needed to support business continuity.
- **Basic Needs** – Basic needs for a population to survive and thrive.

Figure 2.9 highlights the Malaysia Digital Readiness Performance in the above seven (7) components. Based on the Digital Readiness Index Report [12], Malaysia scored 14.3 out of 25 or 57.2% in the overall components

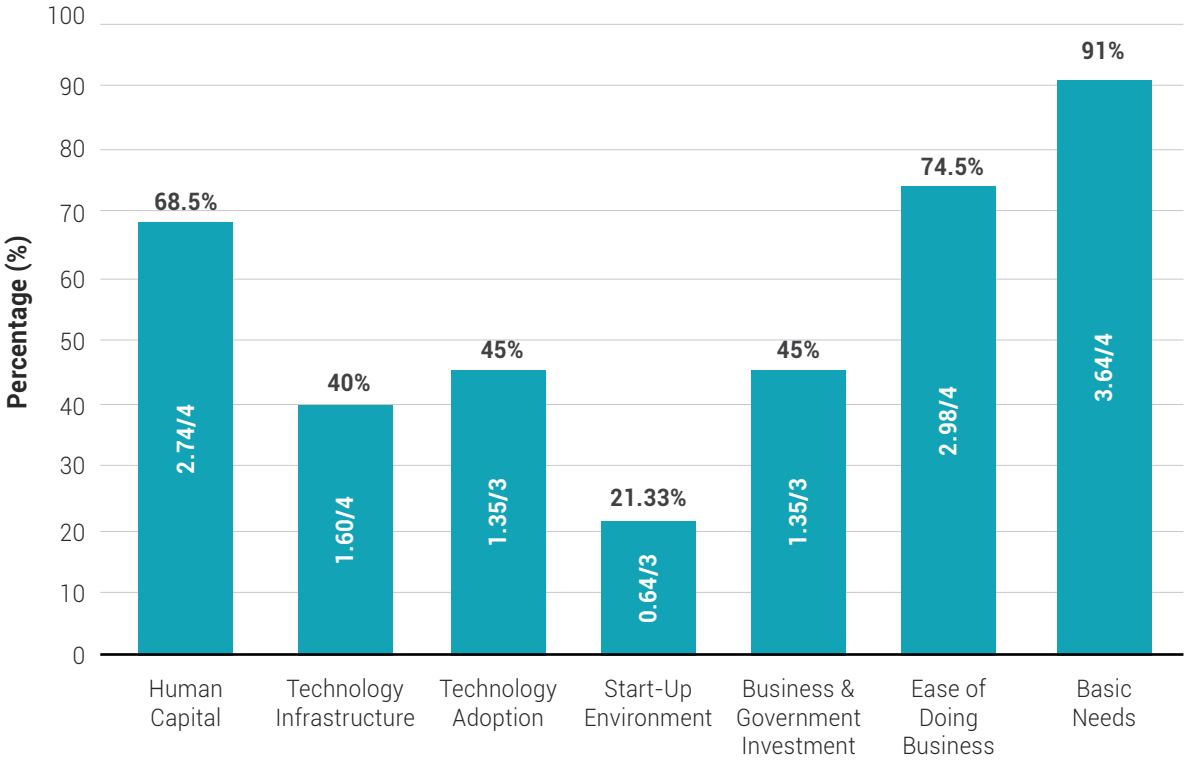


Figure 2.9: *Malaysia Digital Readiness Performance [12]*

2.1.4 **SARAWAK DIGITAL LANDSCAPE**

The first Sarawak Digital Economy Strategy was launched 2018 to accelerate Sarawak's' economic growth and shift its reliance from non-renewable resources-based economy to technology driven economy.

Sarawak has been investing in digital economy in particular in the key enablers, including:

- Digital Government Readiness
- Telecommunication Infrastructure
- Innovation and Start-up Ecosystem
- Digital Talent and Inclusivity

2.1.4.1 **Digital Government Readiness**

Sarawak Digital Readiness study was carried out by e-Governance Academy (eGA), Estonia [38]. The report assessed the readiness of eleven (11) domains, namely, political support and strategy, cooperation, digital engagement, digital skills, cyber security, access to services, data management and secure data exchange, digital identity and digital signature, telecommunication and digital infrastructure, financing model and coordination. Table 2.1 presents the Sarawak Digital Readiness. The assessment highlights that in cyber security, digital engagement, cooperation, coordination, telecommunication and digital infrastructure, digital identity and digital signature, data management and secure data exchange Sarawak is at a developing stage, access to services and digital skills Sarawak is at an established stage and in political support and strategy, and financing model, Sarawak is rated as innovative.

Table 2.1: *Sarawak Government Digital Readiness [38]*

Digital Government Domain	Sub-Domain	Assessment Summary	Initial	Developing	Established	Innovative
Political Support and Strategy	Agreement & Strategy	Digital governance priority areas are defined in the Sarawak Digital Economy Strategy 2018-2022 and empowered organisational setup in the form of SMA, SDEC, Digital Academy and SSMU exists.				
	Oversight	47 strategic actions of the strategy are published, but monitoring dashboards are missing.				
	Supporting activities	Strategic digital governance communication plan is adopted and published.				
	Legal framework	Legislation incompatible with digital governance is identified, but not yet fully supporting digital transformation.				
Coordination	Organisation & Coordination	Strategy level collaboration between SMA, SSMU, SDEC, CENTEXS, SAINS, academia, and the global technology providers is in place, engagement of civil society can be improved.				
	Cooperation of IT Managers	Chief Innovation Officers are appointed, but roles are not described, and cooperation is lacking.				

Digital Government Domain	Sub-Domain	Assessment Summary	Initial	Developing	Established	Innovative
Financing Model	Governmental Funding	Financing of digitalisation is based on the long-term strategy, development and operational costs are separated, projects monitored and results validated.				
Cyber Security	Policy & Strategy	Cyber security strategy exists at the federal level, critical infrastructure assets and operators are identified, but a mandatory standard is missing together with a strategy implementation plan; cooperation between organisation could be improved.				
	Legal Framework	Legislation exists at federal level; development of state legislation is in a planning phase.				
	Operational Management	An organisation responsible for managing cyber security incidents is appointed.				
	Partnership	International cooperation in the field of cyber security is missing.				
Telecommunication and Digital infrastructure	Architecture & Interoperability	A clear vision for digital government architecture and interoperability is missing, although SmartXchange, PKI and Document Vault exist.				
	Digital Infrastructure	Pre-conditions for data exchange exist and government data centre is used, but the full potential of mandatory data exchange is not yet being used.				
Data Management Secure Data Exchange	Management of Digital Data	Most of the government's functions and its data have been digitalised supported by the data management guidelines, but data quality processes and the digital first principle still need adoption.				
	Legal Framework	Legal framework supports use and reuse of data, but digital first and once only principles are missing.				
	Access to Data	Collected data is shared only in limited cases although demand for the data, including open data is high.				
	Secure Data Exchange	Data exchange exists at some level (e.g., through SmartXchange), open data platform exists, but does not correspond to the needs of the private sector and is outdated.				

Digital Government Domain	Sub-Domain	Assessment Summary	Initial	Developing	Established	Innovative
Digital Identity, Digital Signatures	Personal Identification	Unique identifier is issued to all citizens and is used in some government registers, but it is not yet a strong certificate-based digital identity that is widely used across sectors.				
	Digital Identification & Signatures	Legislation supports the use of digital identity and signatures, but a technical solution enabling access to public services with a strong digital identity is missing.				
Access to Services	Information on Public Services	Information about public services is available on government websites.				
	Availability of e-Services	Digital public services exist together with an online payment solution and can be used with different devices.				
	Management of Public e-Services	Development of digital public services is centrally coordinated, and helpdesk exists.				
	Awareness Raising and Inclusion	Regular campaigns of awareness-raising are held.				
Digital Skills	Public Officials	Capacity building, improvement of digital skills and reskilling are systematically approached by the designated unit.				
	Formal Education	Digital skills are taught at all school levels and universities cooperate with private sector regarding improvement of curricula.				
	General Public	Digital Community Centres focus on continuous awareness-raising and training of civil society members in cooperation with the government.				
Digital Engagement	Access to Public Information	Information about public services and open data exists together with ongoing procurements, but more emphasis could be turned to transparency of information about the legislative process.				
	e-Consultation, e-Participation	Online tools for providing feedback exist, but the legal framework for citizen participation in decision-making is missing and citizens and civil society actors are not engaged in developing e-Services.				

Digital Government Domain	Sub-Domain	Assessment Summary	Initial	Developing	Established	Innovative
Cooperation	National cooperation with other sectors	Private sector, academia and civil society representatives are not systematically involved in digital transformation committees and working groups, but certain public-private partnership projects exist.				
	International cooperation on digital governance	International cooperation takes place and best legislative practice is implemented.				

Initial: *Most of the activities are in inception phase;* ***Developing:*** *Strategy and coordination are in developing stage;* ***Established:*** *A strategic framework is in place and a division of roles exists; and* ***Innovative:*** *Processes are controlled and measured, with effective stakeholder involvement and a good balance between the top-down and bottom-up approaches.*

The assessment highlights two fundamental aspects requiring strategic attention. Firstly, the lack of strong Electronic Identification (eID) output does not enable the Government to fully benefit from digitalisation and create value for the society. Secondly, the Business Process Management (BPM) has a clear goal to digitalise 100% of public services, but the structured approach to improving the processes to get the work done, serve customers and generate business value need to be improved.

2.1.4.2 **Telecommunication Infrastructure**

SALURAN is the Sarawak Government telecommunication intervention initiative to provide connectivity to all Sarawakians. Together with the Federal Government's initiatives via MCMC, currently the 4G coverage in Sarawak is at 61.6%. Sarawak Government through the SALURAN initiative, comprising of SMART 600, WIFI SALURAN, extension of SarawakNet, Sarawak Rural Broadband Network and Federal Government's JENDELA 636 and Clawback initiatives, the coverage in Sarawak is expected to increase to 93.87% by the end of 2023.

5G technology will unlock a broad range of opportunities, including the optimisation of service delivery, decision-making, and end-user experience. This is because 5G will enable unprecedented levels of connectivity, upgrading 4G networks with five key functional drivers: superfast broadband, ultra-reliable low latency communication, massive machine-type communications, high reliability/availability and efficient energy usage. Sarawak has been given priority under the JENDELA plan to be one of the first states to roll out the 5G network. Total of five hundred and eighty-seven (587) sites are planned to be on air by 2024 giving 59.6% coverage in populated areas. Currently two hundred eighteen (218) sites have been commissioned. Figure 2.10 presents the infrastructure requirements and coverage as Sarawak commissions additional towers in coming years.

Figure 2.10: *Telecommunication Connectivity in Sarawak [39]*

2.1.4.3 **Innovation and Start-up Ecosystem**

Over the last five years, Sarawak Digital Economy strategy focused on establishing Innovation and Startup Ecosystem to grow high tech start-ups and spin-ins in Sarawak. This included establishing:

- Government, corporations and university funded satellite innovation hubs/precincts to support early-stage pre-accelerators.
- Digital Village mainly to serve as an economic development hub that nurtures start-ups and spin-ins by providing accelerator, incubation, expansion support, funding and training programmes.
- Launch Sarawak, part of Digital Village initiative to create various funding and investment opportunities for the spin-out companies.
- Landing Pads programme provides market ready start-ups and scale-ups with potential for rapid growth to land and expand into major global innovation hubs around the world.

As per Figure 2.11, twenty-two (22) innovation hubs and a digital village were established in Sarawak to accelerate, support and nurture high-tech start-ups. Currently there are three hundred and thirty-five (335) registered Angel investors in Malaysian Business Angel Network (MBAN), which has launched a Chapter in Sarawak. In 2022, twenty-six (26) high-tech start-ups and twenty-seven (27) high-tech research projects were undergoing accelerator programmes at Digital Village.

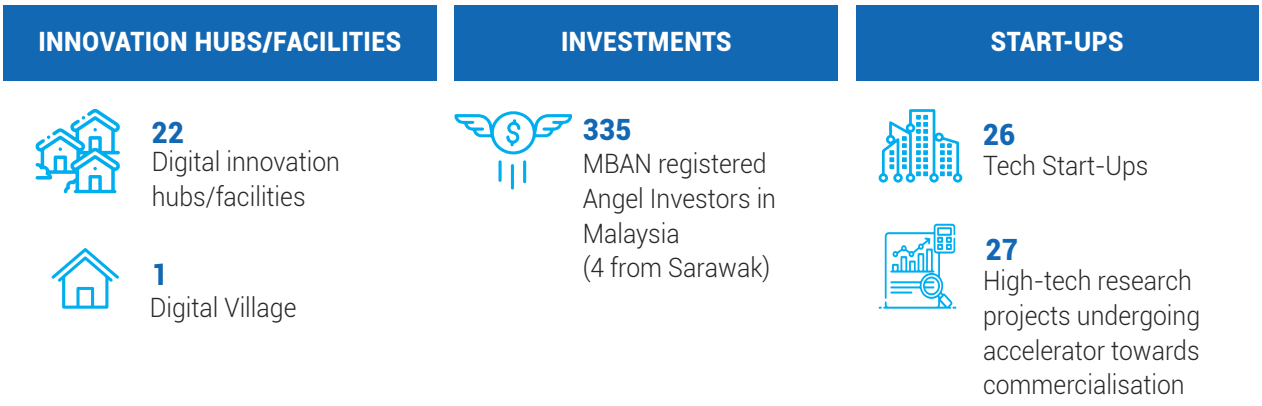


Figure 2.11: *Sarawak Innovation Ecosystem [40]*

As part of the 12MP initiative, Sarawak embarked on the digitalising the Micro, Small and Medium Enterprises (MSMEs) to support in creating new business model and growing globally competitive and vibrant technology sector. Six hundred and sixty-seven (667) MSMEs were provided the digitalisation support by the Government during 2022.

2.1.4.4 **Digital Talent and Inclusivity**

Digital skills are key to digital transformation and a significant enabler of Sarawak's Post COVID-19 Development Strategy 2030 and Digital Economy 2030 agenda. Accelerating the necessary digital talent and skills have become a key part of Sarawak's digital transformation strategies. The demand for digitally skilled workers will continue to grow as the digitalisation accelerates across all industry sectors.

Developing digital skills is critical both for job success and to participate fully in a digital society. The APEC (Asia-Pacific Economic Cooperation) closing the Digital Skills Gap Report [42] shows 75% of respondents, comprising employers, government officials and academics, note a significant skills mismatch, while over half say government agencies have a weak understanding of the digital skills landscape.

In addition to the formal digital talent and skills programs offered by the universities, TVETS and other education institutions, Sarawak Government's intervention programmes to meet the digital workforce skills need in Sarawak show approximately 540,000 participants from government agencies, private sector and community upskilled and reskilled in digital skills since 2018.

Gaps in qualifications are exacerbated by socio-economic inequities in the society, such as the lack of Internet access at home, limited training opportunities, outdated mindsets, and unequal financial situations. Digital inclusivity programmes are a continuous effort by the Sarawak Government to ensure all the *rakyat* are digitally ready to benefit from digital economy. Forty-five (45) Digital Community Centres (DCC) were established in Sarawak with twelve (12) operated by PUSTAKA and thirty-three (33) under the purview of Ministry of Public Health, Housing and Local Government (MPHLG). These DCC's are in addition to one hundred thirty-three (133) Digital Economic Centres (PEDi) established by the Federal Government. Approximately 3,000 digital inclusivity programmes have been conducted, benefiting around 80,000 community participants.

However, there is always room for improvement for digital economy and with the introduction of Sarawak Digital Economy Blueprint 2030, it is now an opportune time to drive ahead for better digital development for Sarawak.

2.2
FOURTH INDUSTRIAL REVOLUTION

Fourth Industrial Revolution (4IR) is built on foundations laid by the first three industrial revolutions [10]. The First Industrial Revolution was led by the advent of the steam engine in the 18th century, allowing production to be mechanised, and driving social change. Electricity and other technological advances led to mass production under Second Industrial Revolution.

In 1950s the emergence of computers and digital technology led to increasing automation of manufacturing and the disruption of many sectors, including banking, travel sector, transport, entertainment, energy, communication and media and others.

The 4IR is the blurring of boundaries between digital, physical, and biological domains. It is the convergence of advances in digital technologies like AI, robotics, IoT, immersive technologies, quantum computing, with physical technologies like 3D, 4D and 5D printing, robotics, materials engineering and with biological technologies like genetic engineering, biotechnology, neurotechnology, and other technologies that are bringing major economical, societal, and environmental impact.

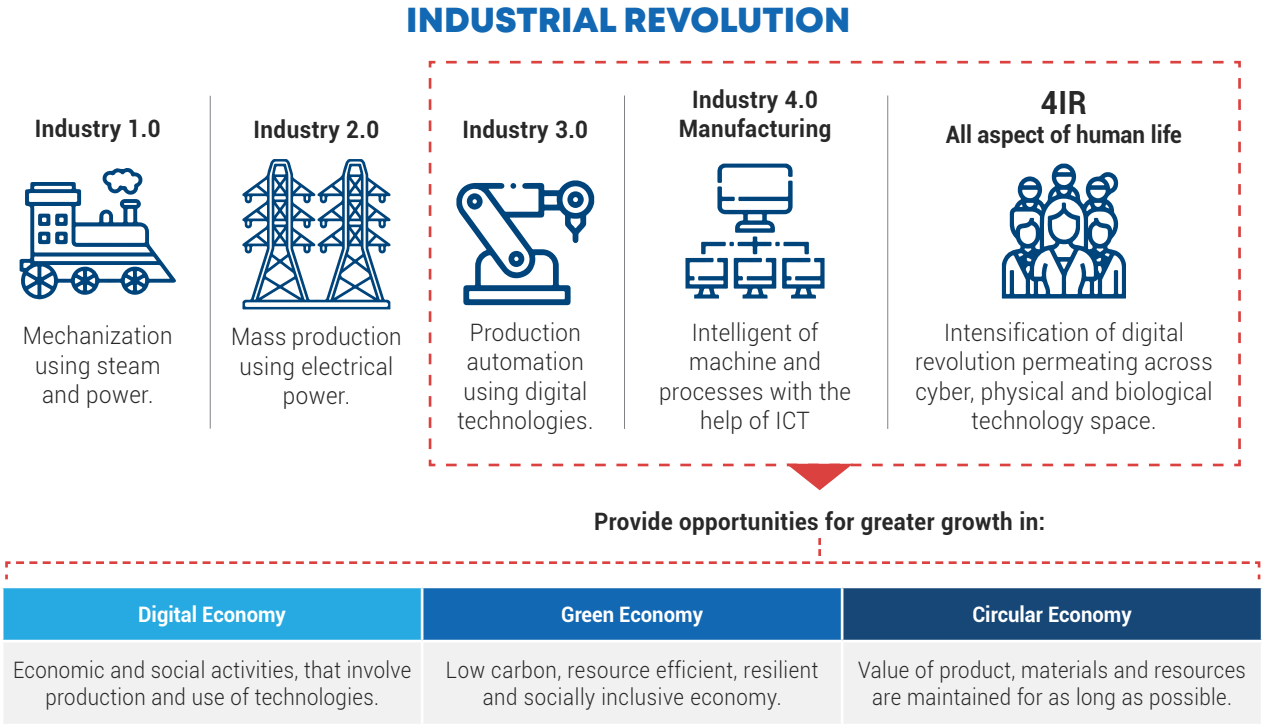


Figure 2.12: *The Progression from I1.0 – I4.0 [10]*

What was accomplished in Industry 3.0 is to be improved upon in Industry 4.0. The term "Industry 4.0" describes the intelligent networking of devices and operations using ICT. Manufacturing processes are transformed by Industry 4.0, including product design, production, operation, and maintenance. Through cyber-physical systems, it promotes automation and data sharing in manufacturing technologies and processes.

Industry 4.0, a subset of the 4IR, focusing on the manufacturing industry, whereas the 4IR embraces practically all industries and all facets of human existence, manufacturing, health services, transportation, agriculture, financial services, construction, education services, smart cities, public security, defence, and environment services.

4IR driven transformation is disrupting several sectors for example additive manufacturing and smart factories are transforming the manufacturing sector; telehealth, smart care, and digital health services are transforming the health sector; intelligent transportation systems and autonomous vehicles are transforming the transport sector; precision farming and smart farming are transforming the agriculture sector; fintech and digital banks are transforming the financial sector and advanced building materials and Building Information and Management System (BIMS) are disrupting the construction sector. Additionally, immersive technologies and metaverse online learning is transforming the education sector. Integrated operation centres, smart traffic management, smart surveillance and disaster management and public security are examples in smart city.

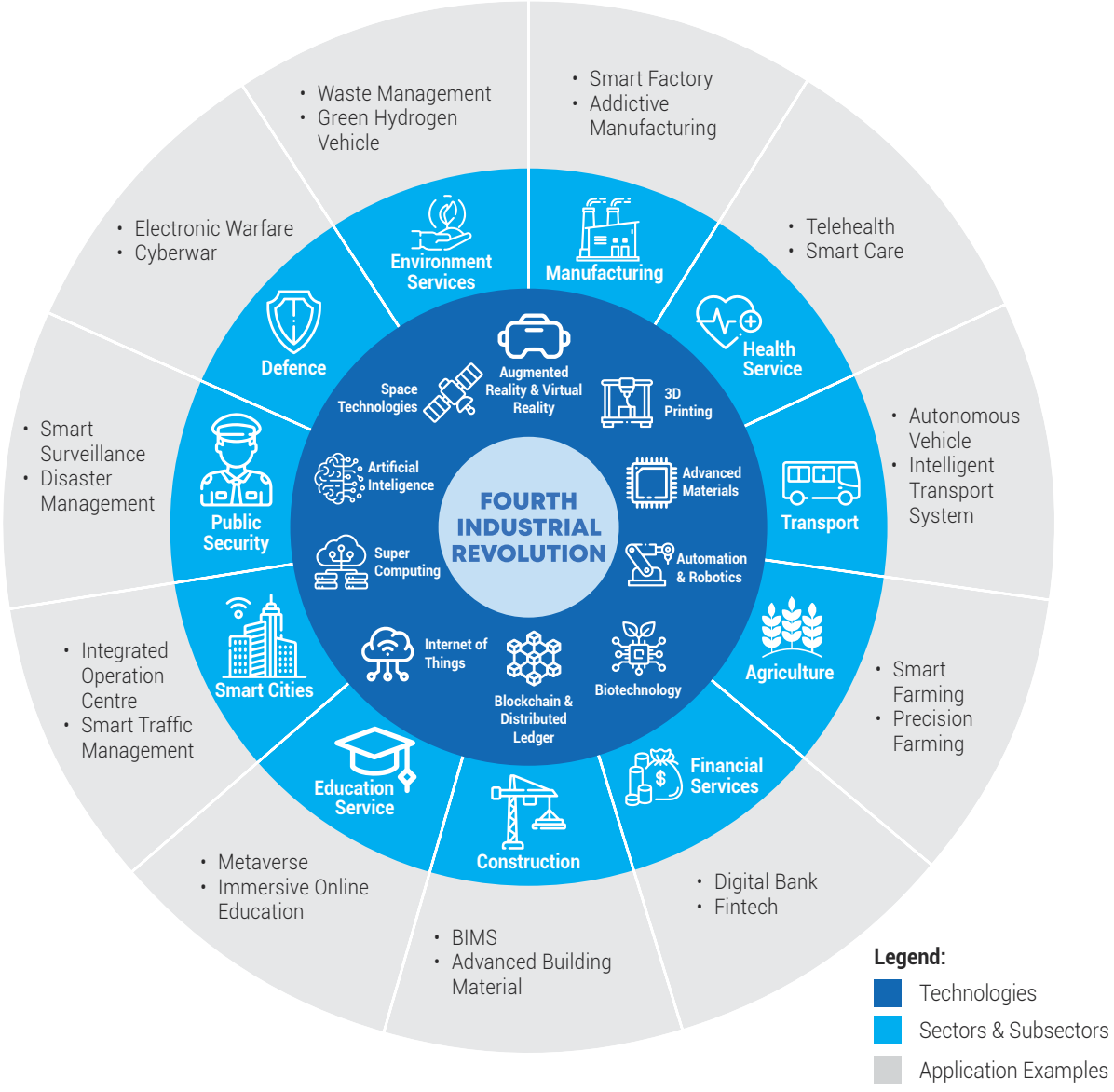


Figure 2.13: *Fourth Industrial Revolution (4IR), Technologies, Subsectors & Application (Modified based on 4IR Malaysian Report) [33]*

2.3
WHAT IS DIGITAL ECONOMY?

With digital technologies and data underpinning ever more transactions, the digital economy is becoming increasingly inseparable from the functioning of the economy.

Digital economy is not just some technology project. It is a global marketplace that is defined, enabled, and facilitated by information & communication technologies, digital technologies and data. It is economic activities generated by billions of daily online connections among individuals, businesses, devices, data and processes that requires organisations to rethink their business models to maximise the digital value.

The different technologies and economic aspects of the digital economy can be represented by four broad digital roadmaps:

- **Digital Economy Foundation** - economy driven by telecommunication, hardware manufacturing, IT and information services;
- **Platform Economy** - economy driven by innovation platforms, transaction platforms and digital services;
- **Digitalised Economy** - economy driven by e-Commerce, sharing and gig economy and digitalised economic sectors; and
- **Data Economy** - economy driven by algorithmic economy, data monetisation, cyber security and emerging technologies.

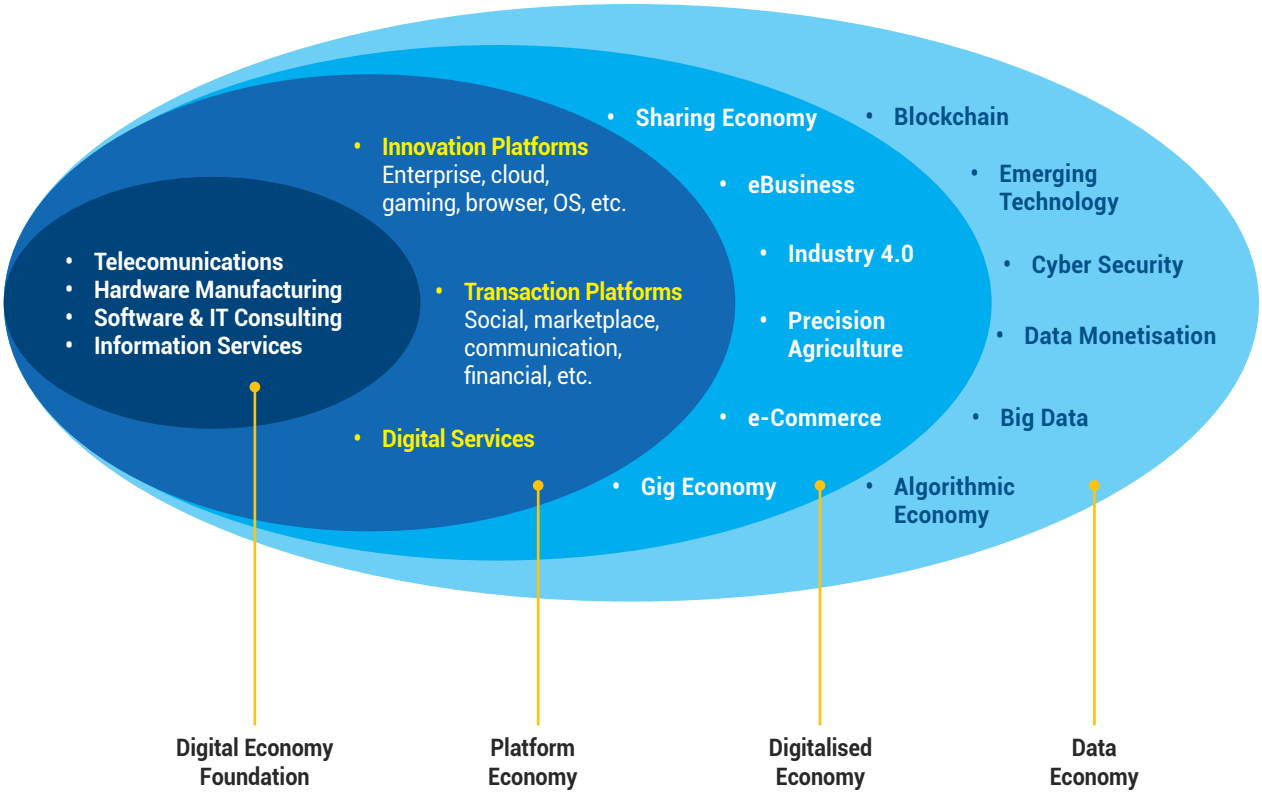


Figure 2.14: *Roadmap of Digital Economy (Modified based on Bukht and Heeks, 2017) [26]*

2.4 DIGITAL ECONOMY AND SOCIETY

Box 2.1: Digital Economy and Society Defined [17]

Based on Organisation for Economic Co-operation and Development (OECD), digital economy and society include all activity reliant on, or significantly enhanced by, the use of digital inputs including:

- **Technologies:** The tools and products that help us work and in our everyday lives such as smartphones, robotics, and automation.
- **Infrastructure:** The systems that keep us connected and online such as mobile and broadband services and location-based technologies (like GPS).
- **Services:** The processes, culture and business models that enable a user-centric end-to-end service such as digital platforms, software and cloud storage.
- **Data:** The basic element that can be processed or produced by a computer to convey information, including the facts, statistics, instructions, concepts, or other information capable of being communicated, analysed or processed by an individual or by other means including a computer, electronic and automated means.
- **Regulatory frameworks:** That oversee the efficient, safe and reliable functioning of the digital economy, including the standards that underpin the operation of digital technologies and infrastructure.
- **Capabilities and skills:** The application of skills and knowledge that ensures people are able to use digital technologies and participate in society. All businesses, consumers and government that use and are responsible for these inputs are part of a digital economy and society.

2.5 WHAT IS FOR SARAWAK?

The Sarawak State Government is committed to securing Sarawak's future economic, social and environmental prosperity and digital economy will be the key catalyst to achieve the PCDS 2030 outcomes.

Sarawak made a bold move by initiating Sarawak's digital economy agenda in 2018. The Governments' clear direction is to drive the State economy to achieve high income and developed status by 2030, through digital transformation.

This is also to ensure that Sarawak will not be left behind as most developing countries are already at the forefront of digital economy.

Investments in digital economy foundations including digital infrastructure, human capital development, research, innovation and entrepreneurship, inclusivity, cyber security, and technology adoption will underpin the growth in high-skilled job opportunities and social wellbeing, productivity and access to global market and improved public service delivery.

The successes of Digital Economy for Sarawak will be measured through outcomes to the various stakeholders such as society, businesses and the government.

2.5.1 **BENEFITS TO SOCIETY**

By 2030 all Sarawakians will have:

- Access to high-speed internet services to engage in social and economic activities and improving digital inclusivity;
- There will be higher-paying jobs in Sarawak and concentration of ICT and digital industries creating high-skilled and semi-skilled jobs;
- Increased household income with digital economy contributing at least 20% to the household income. This will result in lowering the GINI index for Sarawak from 0.387 in 2019;
- There will be pipeline of job-ready graduates with advanced digital skills through industry focused upskilling and reskilling programmes and structured university, TVET programmes, addressing the skilled workforce needs of the businesses and public sector;
- All students will have access to online learning, this way, it will address societal digital divide; and
- Sarawakians will be digitally literate with confidence in using digital technology and protecting their privacy.

2.5.2 **BENEFITS TO BUSINESS**

With investments in the digital economy foundations, more businesses will be able to adopt new business models, innovate, improve productivity and efficiency using ICT and frontier digital technologies, such as AI, cloud computing, IoT and 5G.

New business models and adopting digital technologies will create new high-paying jobs and give access to global market. Digitalisations of MSMEs, investments and vibrant technology sector will drive future innovation, high-tech start-ups and create value to the society.

By 2030, Sarawak expects that:

- All businesses will be digitally driven business adopting new business models with increased access to global market;
- Digital Economy will contribute approximately 20% to Sarawak's GDP (RM56.4 billion), improve productivity and production efficiency;
- Digital Economy will create between 39,000-48,750 new high-paying jobs;
- 80% of MSMEs will be digitalised;
- There will be 50% growth in ICT and digital investments in Sarawak;
- There will be 500 new high-tech start-ups; and
- Sarawak will have a vibrant and globally competitive technology sector.

2.5.3 **BENEFITS TO GOVERNMENT**

The Government will accelerate tailored, personalised and integrated data and citizen-driven service delivery supported by protection of data. It will unlock the power of government data to design data-driven policies and regulations to spur innovation.

The Government will enhance public sector structure and strengthen capacities and capabilities of civil servants to accelerate the adoption and integration of digital technologies and platforms to improve service delivery, workflow efficiency, productivity and ease of doing business in Sarawak.

Data play an increasing important role as an economic and strategic resource. Cross-border data flow are a new type of international economic flow. Cross-border data flow are data trade and should be driven differently and governments need to formulate public and tax policies, legal and regulatory frameworks to maximise value from data.

Sarawak Digital Economy Strategy 2018-2022

3

SARAWAK DIGITAL ECONOMY STRATEGY 2018-2022

Vision

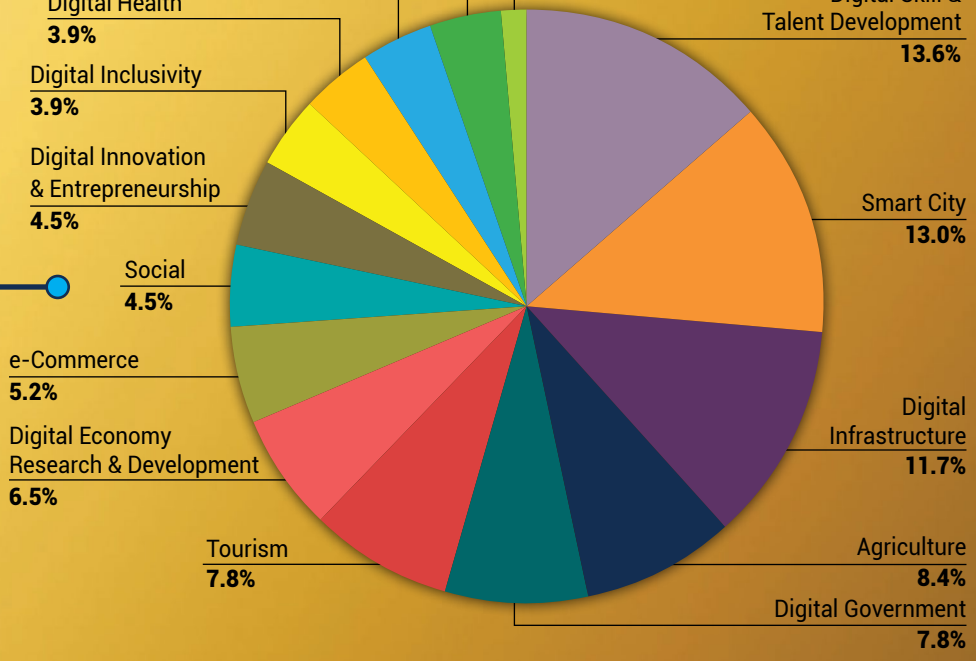
Sarawak New Economy Powered by Knowledge, Innovation & Digital Technology

Mission

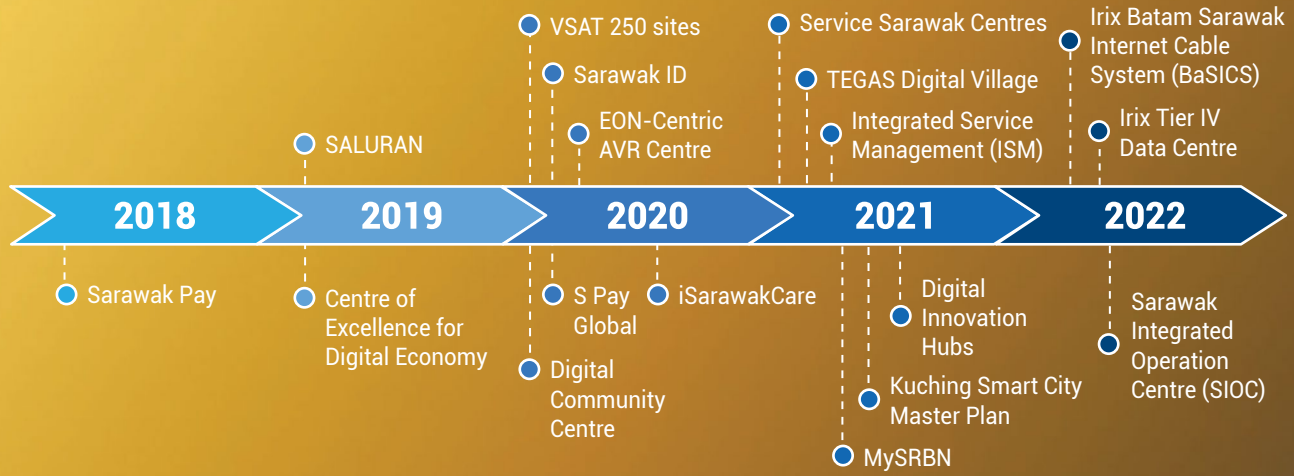
- Accelerate Sarawak's Economic Growth
- Reduce Socio-Economic Divide
- Increase Employability of Youth

Sarawak Digital Economy Strategy 2018-2022 is anchored on 47 strategic actions and supported by

154 Projects Implemented in



Sarawak Digital Economy Strategy 2018-2022 Journey



3.1
SARAWAK DIGITAL ECONOMY JOURNEY

Sarawak's Digital Economy transformation commenced in 2018 with the launch of Sarawak Digital Economy Strategy 2018-2022 [18] and the establishment of the **Sarawak Multimedia Authority (SMA)** under SMA Ordinance 2017 [19]. SMA is a regulatory body to spearhead, oversee and facilitate the development and implementation of the communication, multimedia and the State's Digital Economy initiatives. The following key agencies were also established as part of the Sarawak's Digital Economy ecosystem responsible for the implementation of the Digital Economy initiatives.

Sarawak Digital Economy Corporation (SDEC) launched in June 2020, is entrusted to lead the implementation of Sarawak's Digital Economy initiatives focusing on private sector economy, digital infrastructure, research, innovation and entrepreneurship.

Centre for Technology Excellence Sarawak (CENTEXS) Digital Academy established in 2019, is entrusted to provide industry-relevant training and skills development focusing on school leavers, graduates and industry employees to meet the workforce needs of Digital Economy.

Sarawak Information Systems (SAINS) is entrusted to lead the implementation of Sarawak's Digital Economy initiatives focusing on Government Services.

These agencies work closely with the Ministries, Government Linked Companies (GLCs), universities, TVET and technical colleges, private sector and communities to accelerate digital transformation in Sarawak.

The Sarawak government launched the State's e-wallet, S Pay Global (formerly called Sarawak Pay), a fintech solution which promotes cashless payment. The S Pay Global users have increased tremendously over the years as community prefer not to use cash for their daily transaction. This is also contributing to the participation of local retailers in the State.

Over the last five years, efforts were intensified on digital infrastructure and connectivity, digitalisation of MSMEs and talent development for digital economy. Sarawak Government initiated Sarawak Linking Urban, Rural and Nation (SALURAN) initiative to provide connectivity to the people of Sarawak. Under SALURAN initiative, Sarawak will build 600 telecommunication towers complementing MCMC P*elan Jalinan Digital Negara* (JENDELA) programme [20]. Sarawak Rural Broadband Network (MySRBN), first State owned 4G ready and 5G oriented network was launched to provide connectivity in rural areas of Sarawak. Sarawak Government has also equipped 250 sites with Very Small-Aperture Terminal (VSAT) to provide connectivity in far-reaching and remote areas.

Strategically located on the outskirts of Kuching, Sarawak, Irix also established the first and only Tier IV designed and certified carrier-neutral and green Data Centre (DC) in Sarawak [21]. Another initiative by Irix is Batam Sarawak Internet Cable System (BaSICS) that connects Sarawak and Batam, Indonesia using submarine cable and this system forms the shortest latency route from Sarawak to Singapore [22].

The Kuching Smart City Master Plan [23] was launched in 2021, a focused five-year plan to support Sarawak's push into the digital economy, and to prepare the citizens and businesses to embrace the incoming challenges so as to keep pace with global developments. The Master Plan focuses in seven (7) domains where digital

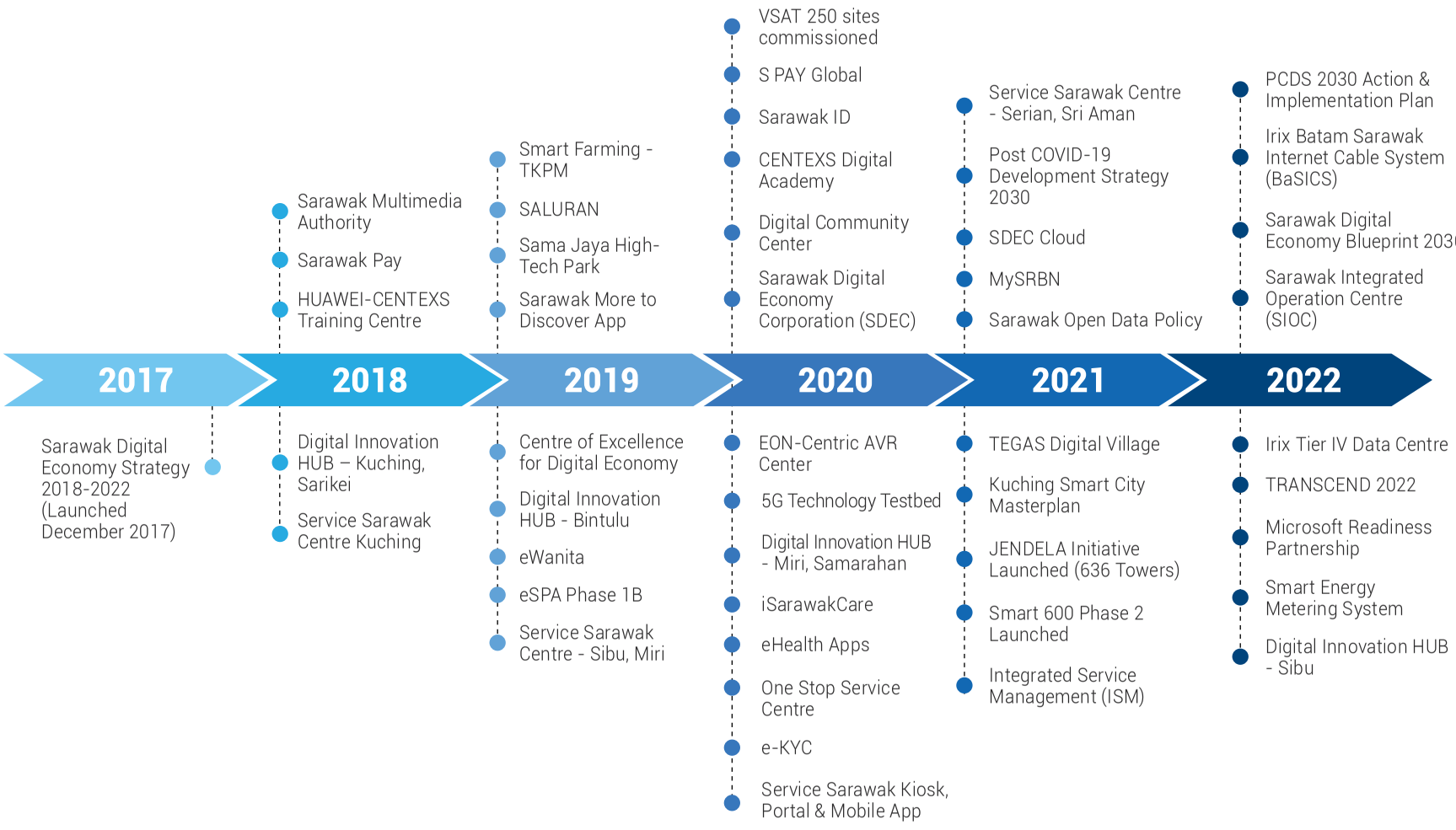


Figure 3.1: *Sarawak Digital Economy Journey*

technology and digital infrastructure play a strong catalytic role in the transformation of the seven (7) domains namely economy, living, environment, digital government, mobility, safety and security, and emergency and disaster management.

Sarawak Open Data Policy [24] was launched in 2021 to modernise and improve data sharing in the public sector and accelerate innovation.

The Government also undertook efforts to build digital talents for the present and future digital economy workforce needs through universities, TVET, training colleges and CENTEXS. CENTEXS Digital Academy was launched in 2020, in partnership with the multinational technology companies, including EON Reality, Huawei, Bosch Rexroth, Keysight, Microsoft, IBM and others to address the talent and skills needs for digital economy. Forty-five (45) Digital Community Centres (DCC) were also established in rural Sarawak to address talent needs of the rural communities and inclusivity.

Centre of Excellence for Digital Economy, a cooperative research and innovation Centre, was established in partnership with all the Sarawak and selected leading overseas universities, leading multi-national technology companies and the Sarawak Government to engage in translational research and innovation, accelerate knowledge transfer and commercialisation and foster industry and workforce transformations.

The ecosystem includes university-based research centres in data science and digital technologies, open laboratory to translate research outcomes and Proof of Concept solutions and products, and industry focused testbeds to support research and training, technology and solution showcase and workforce and industry transformation.

Number of Government funded innovation hubs and Digital Village and private sector funded innovation hubs were established in Sarawak to accelerate technology transfer, commercialisation and growing high technology start-ups in Sarawak. The Sarawak Digital Ecosystem provides services and opportunities for start-ups including co-working space, development programmes, funding and investment opportunities, technology partners, research and development platforms as well as international market access. It also serves as a unified branding for Sarawak in an effort to cultivate and grow healthy partnership and exchanges with other start-up ecosystems outside Sarawak.

Additionally, the Government launched number of programmes to digitalise and grow MSMEs, businesses and society as a whole. The Sarawak Government also provided financial aid *Bantuan Khas Sarawakku Sayang* (BKSS) through its fintech mobile platform, S Pay Global to vulnerable groups.

PCDS 2030 was launched in 2021 for Sarawak to be a thriving society by 2030, driven by data and innovation where everyone enjoys economic prosperity, social inclusivity, and sustainable environment.

3.2
SARAWAK DIGITAL ECONOMY STRATEGY 2018-2022

The Sarawak Digital Economy Strategy 2018-2022 was launched in December 2017, which sets a clear direction for Sarawak to take advantage of opportunities offered by digital transformation, thus creating a high-income State while improving the well-being of the society.

Vision

Sarawak new economy powered by knowledge, innovation and digital technology

Mission

- Accelerate Sarawak's economic growth
- Reduce socio-economic divide
- Increase employability of youth

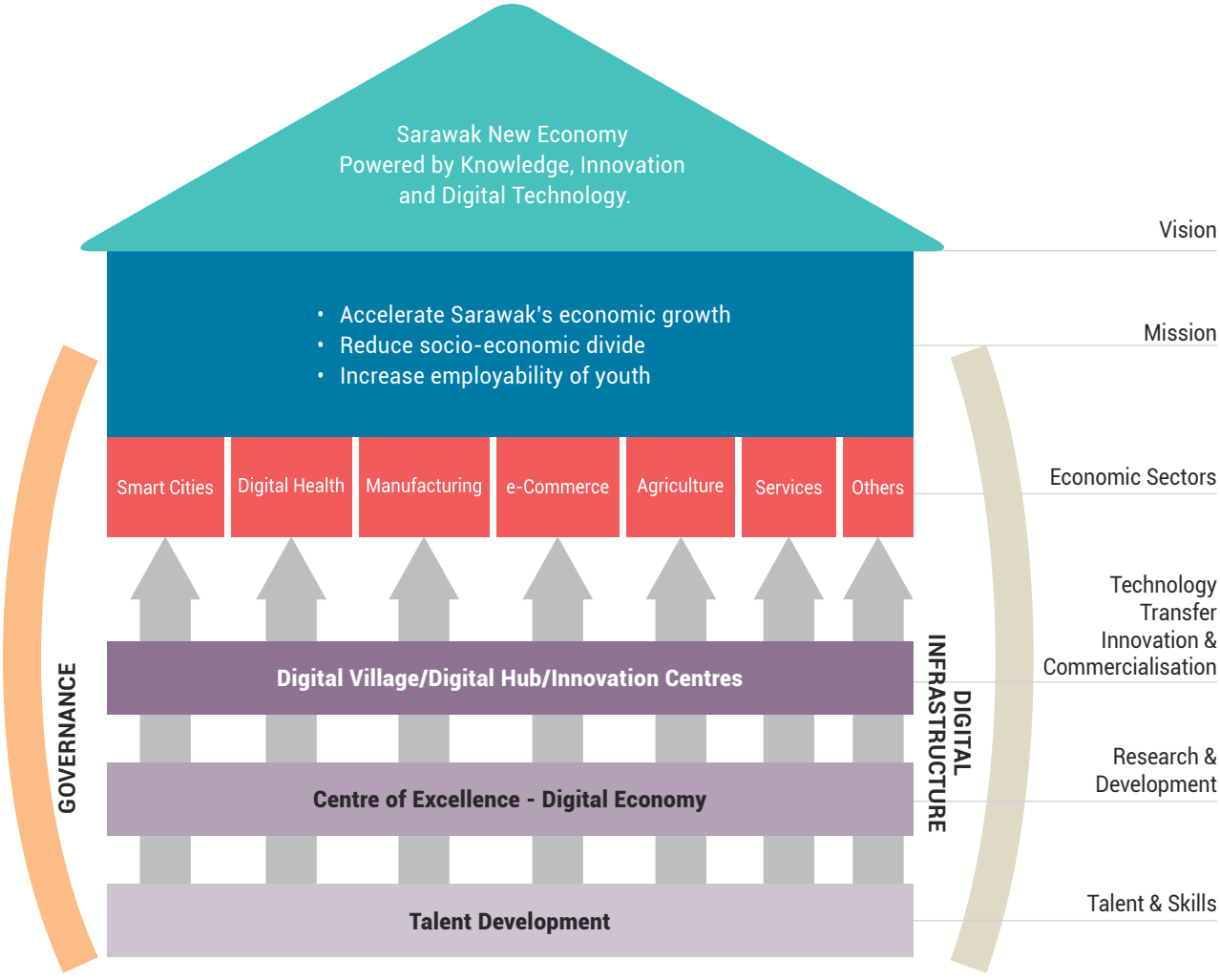


Figure 3.2: *Sarawak Digital Economy 2018-2022 Framework [18]*

The Sarawak Digital Economy Strategy 2018-2022 presents the ecosystem required to grow digital economy for Sarawak. The strategy focuses on eight (8) economic sectors, namely agriculture, manufacturing, tourism, smart city, e-Commerce, digital health, digital government and social services. These eight (8) economic sectors are driven by seven (7) enablers, namely digital infrastructure, digital skills and talent development, research, innovation and entrepreneurship, digital & data, cyber security and digital inclusivity.

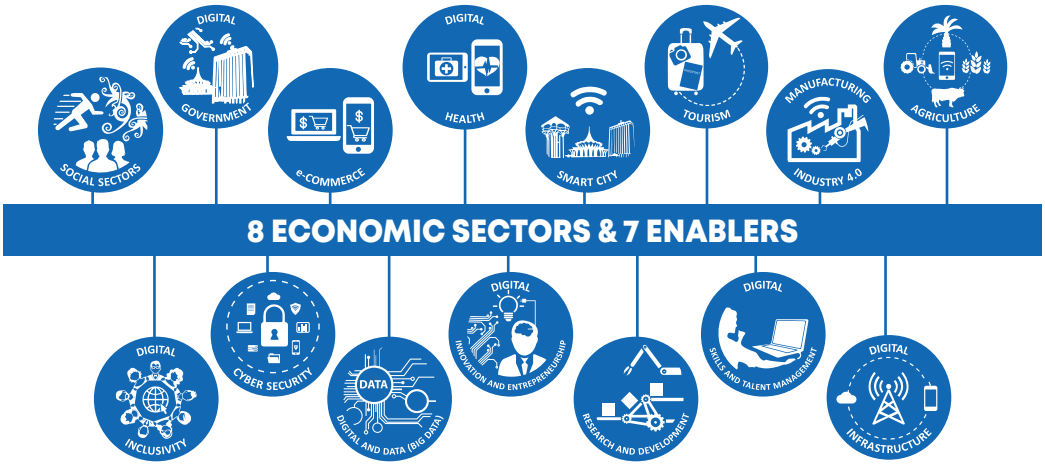
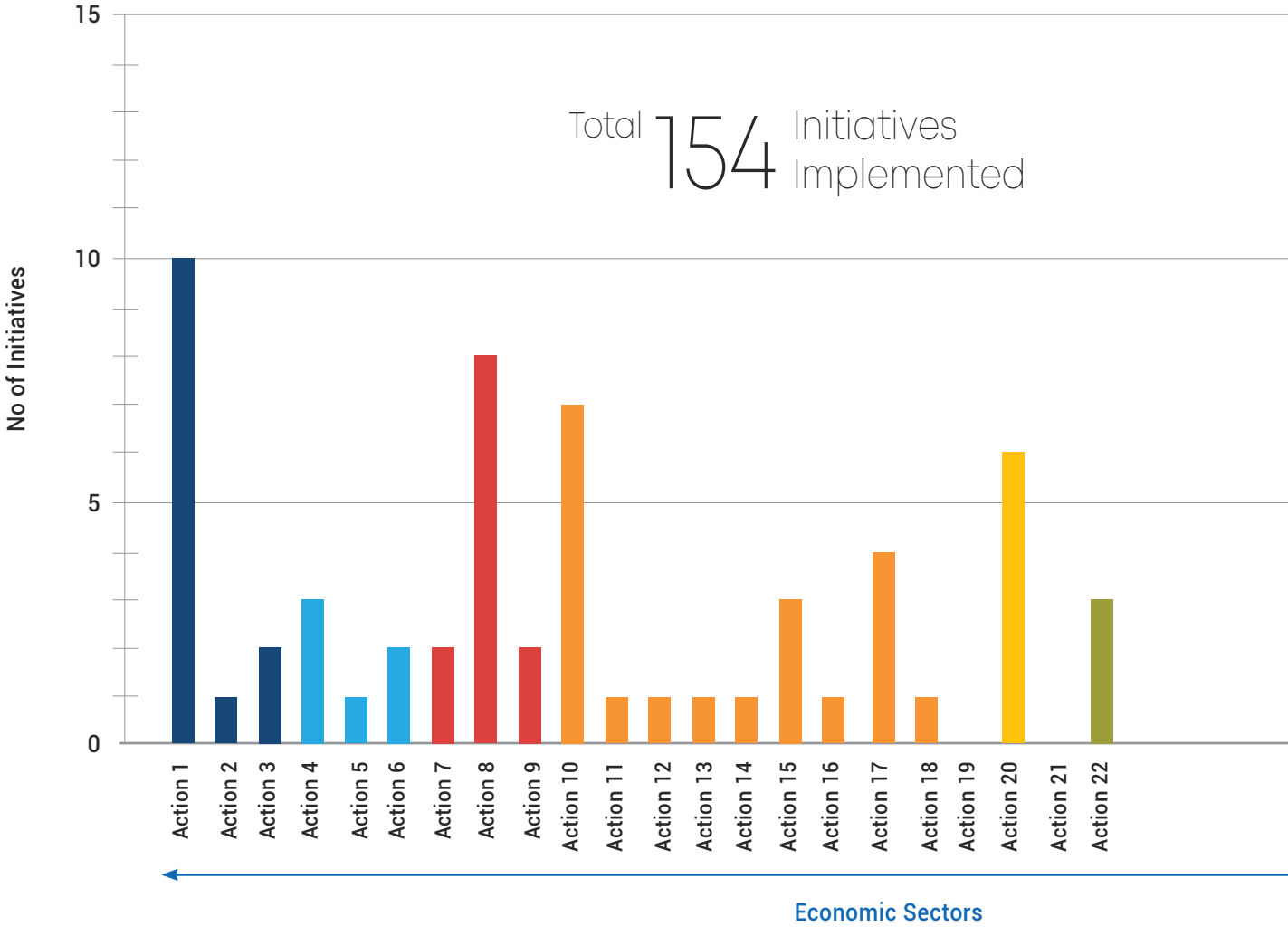


Figure 3.3: *Economic Sectors and Enablers [18]*

The Strategy is anchored on forty-seven (47) strategic actions with twenty-nine (29) strategic actions for the economic sectors and eighteen (18) strategic actions for the enablers. One hundred and fifty-four (154) projects were implemented during 2018-2022.

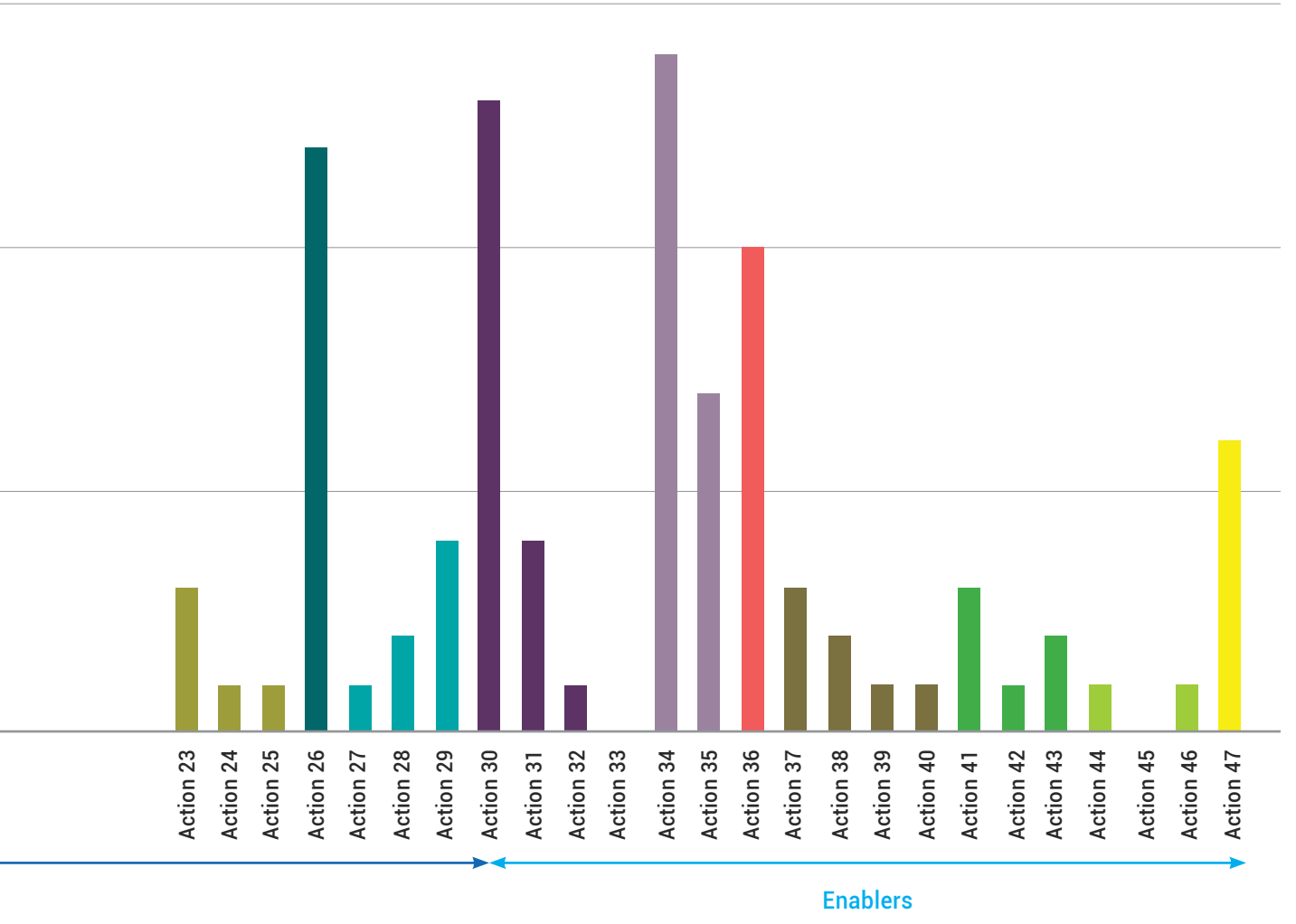
Figure 3.4: *Sarawak Digital Economy 2018-2022 Strategic Actions [25]*

Figure 3.5 presents the breakdown of projects implemented under each strategic action of the Sarawak Digital Economy Strategy 2018-2022. Figure 3.6 presents the percentage distribution of projects for each sector and enabler.



Strategic Actions

- Agriculture
- Manufacturing Industry 4.0
- Tourism
- Smart City
- Digital Health
- e-Commerce
- Digital Government
- Social
- Digital Infrastructure
- Digital Skill & Talent Development
- Digital Economy Research & Development
- Digital Innovation & Entrepreneurship
- Digital & Data (Big Data)
- Cyber Security
- Digital Inclusivity



Remarks:

- Action 19 & Action 21 - health matter under federal
- SALURAN initiative contributes to Action 33
- ESGA initiative contributes to Action 45

Figure 3.5: *Number of projects implemented during 2018-2022*

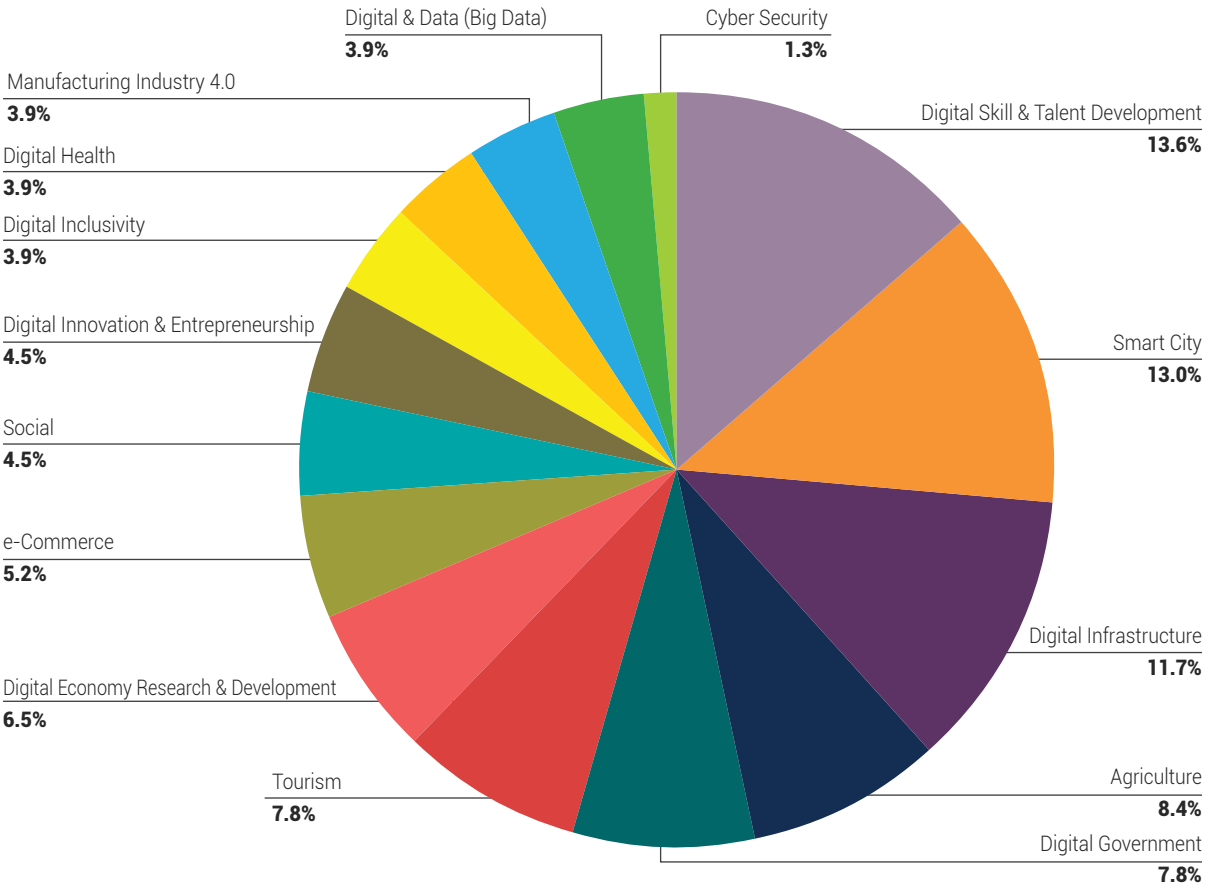


Figure 3.6: *Distribution of projects by sectors and enablers during 2018-2022*

3.3 STRATEGIC ACTIONS & INITIATIVES

3.3.1 AGRICULTURE

Agriculture is a major economic sector in Sarawak, contributing significantly to employment and food production. Agriculture sector aims to capitalise on digital technologies and data to accelerate productivity, improve production efficiency and production yield.

Digitalisation of the sector will result in:

- Higher yield and improved production efficiency and productivity;
- Better access to overseas markets for agriculture production from corporate entities, entrepreneurs and small holders; and
- Strong linkages between producers and exporters to ensure reliability of supply.

3.3.1.1 Strategic Actions & Initiatives

Action 1: Adopt information and communications technology (ICT) and digital technologies in transforming the agricultural sector and driving innovation.

Action 2: Establish efficient distribution system for agriculture inputs and products

Action 3: Develop new markets and expand existing ones for agriculture produce and products.

Thirteen (13) projects under agriculture sector were implemented over the last five years, including IoT enabled Smart Farming (Rampangi, Agricultural Research Centre (ARC) Semongok, Institute of Agricultural (IPS), Kabuloh, Agricultural Training Centre (ATC)), GPS-based fleet management system; and IoT for fieldwork monitoring.

3.3.1.2 **Case Study - Agriculture**

Box 3.1: Smart Agriculture – *Taman Kekal Pengeluaran Makanan* (TKPM) [25]

Implementation of IoT technologies at TKPM Rampangi green houses have been fully integrated. The implementation of a modern and smart agriculture approach consists of forty (40) green houses that are operated by fourteen (14) farmers.

Since the implementation of smart farming methodology at TKPM Rampangi, farmers have managed to obtain good yields and quality of crops and this in turn has contributed to the increase in their revenue.

Implementation of smart farming was also successfully implemented at the Agriculture Institute (AI), Agriculture Research Centre (ARC) Semenggok, IPS, Northern Region Agriculture Research Centre (NRARC) Kabuloh, and Agriculture Training Centre (ATC) Oya.

Based on the achievements, the Sarawak government has planned to adopt IoT technology at more locations and agricultural stations throughout the state under the PCDS 2030.

The TKPM Rampangi, smart farming methods have increased the productivity by 20% and significantly increased farmers' revenue.

3.3.2 MANUFACTURING - INDUSTRY 4.0

The manufacturing sector aims to leapfrog into Industry 4.0 and to accelerate the digitisation of the small and medium-sized enterprises. Industry 4.0 increases the productivity, efficiency, precision and agility of manufacturing and services. Industry 4.0 allows manufacturers to better react to market demands.

3.3.2.1 Strategic Actions & Initiatives

Action 4: Adopt Industry 4.0 to fuel the digital transformation of the manufacturing sector.

Many of the industries in Sarawak are operating in and around Industry 2.0 and Industry 3.0. The Sama Jaya High Tech Park in Kuching, Sarawak has the potential to offer existing industries to move to Industry 4.0. Potential industries to adopt Industry 4.0 are wood-based industry, shipbuilding, high-tech solar and semiconductor and energy-intensive industries.

Action 5: Explore various opportunities for alternative energy.

Sarawak can explore opportunity in hydrogen fuel cell plant for alternative energy as it is environmentally friendly and taking advantages of Sarawak's abundant water resources and renewable green energy. Hydrogen fuel cells can be applied to a wide range of industrial and transport applications.

Action 6: Provide incentives to grow local MSMEs and to provide opportunities for globalisation.

There is a need to set up incubators and e-Commerce portals for MSMEs. The Government will collaborate with the private sector to promote e-Commerce.

Six (6) projects under manufacturing sector were implemented over the last five years, including enhancing the ecosystem for Sama Jaya high-tech park, technology evaluation and improvement study for hydrogen mobility pilot project and development of the State entrepreneur system phase 2 (Sarawak Micro Credit Scheme).

3.3.2.2 **Case Study - Manufacturing**

Box 3.2: Ecosystem for Sama Jaya High-Tech Park [25]

An Integrated Security System to monitor the entry and exit points at Sama Jaya High-Tech Park under the purview of the Ministry of International Trade, Industry and Investment (MINTRED) was implemented to enhance the security at the industrial park.

The development of the system consists of 2 phases:

- Phase 1: This phase included the development and implementation of the Vehicle Access Control System (VACS) and Surveillance System.
- Phase 2: This phase included the enhancement on VACS to support payment collection module and Contractor Application Module with additional five (5) cameras and one (1) server power supply unit, installation of Radio-Frequency Identification (RFID) Scanner at checkpoints and subscription of Unifi.

The installation of the VACS and Surveillance System has increased the level of security at Sama Jaya from 50% to 98%.

3.3.3 **TOURISM**

Tourism is an important sector of Sarawak's economy and has a great potential for growth with Sarawak widely regarded as a destination for ecotourism.

3.3.3.1 **Strategic Actions & Initiatives**

Action 7: Promote Sarawak through Digital Media.

Migrating the tourism industry into digital marketing by engaging specialist(s) in tourism digital marketing to improve tourism sales and revenue.

Action 8: Provide a digital platform for tourism product and service providers to enhance their business.

Action 9: Personalisation of tourist experience online.

Twelve (12) projects under tourism sector were implemented, including Development of Sarawak travel portal & application, tourism virtual reality and augmented reality applications.

3.3.3.2 **Case Study - Tourism**

Box 3.3: "Sarawak More to Discover" Application [25]

The concept of the "Sarawak More to Discover" web portal and mobile application for both local and foreign visitors to Sarawak to enhance their travel experience in Sarawak.

The web portal and mobile app "Sarawak More to Discover" promotes the culture, adventure, nature, food, and festivals (CANFF), which are uniquely Sarawakian and just waiting to be discovered. Through the integration of 360° view, street view, virtual reality (VR), augmented reality (AR), and 3D modelling of Sarawak's unique destinations, which include heritage buildings, scenic sites, national parks, artefacts, and foods, both the web portal and mobile application offer unique experiences to users. Users can immerse themselves in Sarawak's rich culture and heritage and learn about its regional specialties with just a touch of their fingertips.

The "Sarawak More to Discover" Application won the Merit Mention Award at the Top In Tech Innovation Awards 2021 for "Most Impactful Public Sector Agency Driving Digital Adoption".

3.3.4 **SMART CITY**

The digital transformation of Sarawak is to improve the quality of life and become Smart Sarawak which means the use of smart infrastructures, utilities, systems and talents to produce greater economic growth, better governance and efficient management of transportation, water, energy, waste and a more resilient infrastructure that can cope and withstand natural disasters such as floods.

3.3.4.1 **Strategic Actions & Initiatives**

Action 10: Provide clean, reliable and cost- efficient energy using smart technologies.

Action 11: Provide efficient water supply services leveraging on smart technologies.

Action 12: Develop a smart solid waste management system.

Action 13: Enhance the efficiency of wastewater management to prevent pollution and water-borne diseases.

Action 14: Develop a flood management and response system.

Action 15: Ensure efficient development of sustainable housing and enhance convenience, safety and comfort for city dwellers.

Action 16: Implement Green Building Index (GBI) in new government and private non-residential buildings in major cities and towns.

Action 17: Establish a comfortable and safe mobility for commuters using smart technologies.

Action 18: Develop integrated logistics solutions to support e-Commerce.

Twenty (20) projects under smart city sector were implemented since 2018, including Sarawak Integrated Operation Centre (SIOC), Kuching Smart City Master Plan, Green Building Index (GBI), Miri Smart City and Smart Traffic Light.

3.3.4.2 **Case Study – Smart City**

Box 3.4: Kuching Smart City [25]

Kuching Smart City Master Plan

The objective of this project is to support the Sarawak Digital Economy Strategy's Smart City anchor sector by planning for the implementation of a Kuching Smart City that meets the needs of its stakeholders including areas such as raising people's standards of living and wellbeing, driving economic prosperity and providing people with a sustainable environment.

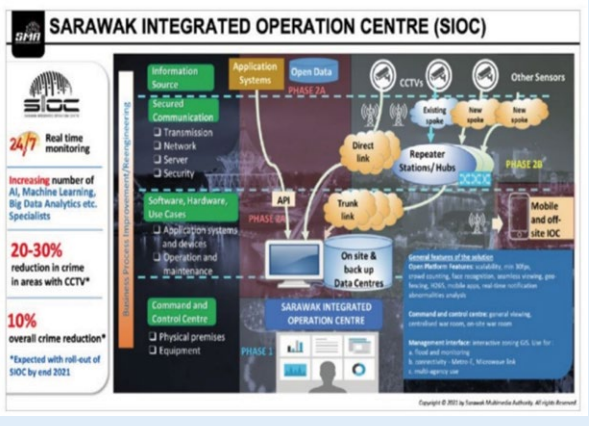
The plan outlines the development and implementation of nine (9) shared services, which are the core operating system. The plan includes the collaboration amongst the private sector, communities, and other government agencies for the improvement and enhancement of the ecosystem. This is a strategy to encourage service ownership, collaboration, and synergy the will benefit of society, economy and the environment.

Sarawak Integrated Operation Centre (SIOC)

SIOC is a core Operating System platform to support the planning, monitoring and coordination and operation of smart cities and activities with external parties such as State agencies, private sectors and others.

The Centre is an integrated platform, linking all the municipalities, ministries, agencies and others as a centralised digital solutions and digital infrastructure platform for Smart City use cases. With this, it is also able to extend the scope and coverage of state-of-the-art smart city services State-wide. The Centre provides a real-time collaboration environment that monitor, manage, and effectively handle events and incidents in Sarawak. SIOC was established as an All-in-One digital platform to address seven (7) service areas: safety and security, living, mobility, environment, economy, digital government, emergency and disaster management.

The SIOC is a 24/7 real time working system and as one of the outcome is expected to reduce crime in Kuching by 20-30%.



3.3.5 DIGITAL HEALTH

The focus in Digital Health is to improve the accessibility and quality of medical and health services in rural and remote Sarawak using digital technology.

3.3.5.1 Strategic Actions & Initiatives

Action 19: Increase accessibility and improve level of medical and health services.

The challenge is to provide healthcare services to remote areas not accessible by road. Digital connectivity, big data analytics, visualisation and sensor technologies can enable delivery of healthcare services both in urban and rural areas, where patient and practitioners are far from one another.

Action 20: Safeguard the health of people who are living, staying and working in Sarawak.

A comprehensive and integrated online system will be implemented to enable a comprehensive health and medical screening for all foreign workers employed in Sarawak.

Action 21: Provide world-class specialist healthcare services and grow health tourism in Sarawak.

Health tourism in Sarawak is another area with huge potential for growth which can be enhanced through:

- Modernising healthcare services to promote health tourism in Sarawak.
- Increase participation of private healthcare facilities in health tourism.
- Encourage and prepare private healthcare facilities in niche areas which generate revenue for the state.

Six (6) projects under digital health sector were implemented, including Online Application for Permission to Enter and Exit Sarawak, Online Application e-Health Declaration and Digital Tracking, and QMunity.

3.3.5.2 **Case Study – Digital Health**

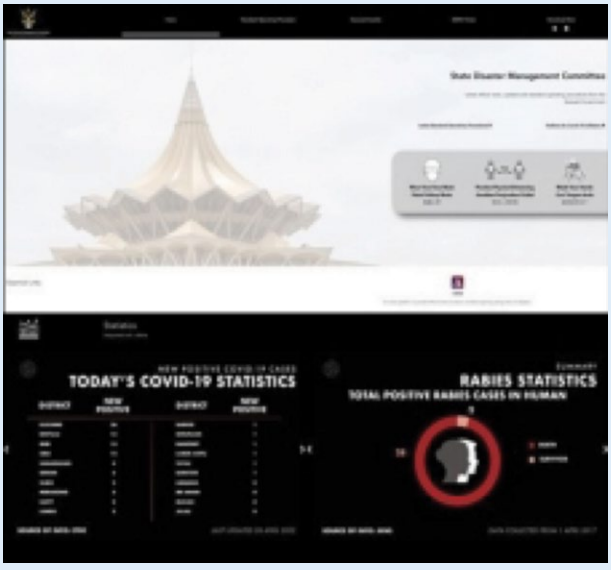
Box 3.5: Online Application e-Health Declaration and Digital Tracking [25] [37]

In response to the Movement Control Order (MCO) in 2020, the Sarawak Government implemented enterSarawak system and e-Health Declaration Form (eHDF) System to curb COVID-19 outbreak in Sarawak.

Travellers traveling to Sarawak during the enforcement period will have to apply remotely, for permission to enter and exit via the respective Sarawak's Point of Entry (PoE) through the enterSarawak system. The Sarawak Immigration Department officers at the respective PoE will then take the cue from this platform, which is integrated to the immigration system, before letting successful applicant(s) into the State.

The eHDF system was developed and implemented to record the travellers' mandatory health declaration when entering Sarawak. The eHDF system helps the incoming travellers as well as facilitating the Sarawak government in decision making via data collected to mitigate the spread of COVID-19 throughout the State. In addition to the mandatory eHDF declaration, those incoming travellers are issued unique QR-coded wristbands (Digital Tracking Wristbands) to digitally report their location on daily basis.

Based on eHDF statistics, there were more than 460,000 total users registered as of 2021.



3.3.6 **e-COMMERCE**

e-Commerce is one of the main areas which Sarawak can exploit to accelerate digital economy. It eliminates the limitations of time and geographical distance and streamlines operations and lowers costs, opening new markets for small and medium enterprises in both rural and urban areas.

3.3.6.1 **Strategic Actions & Initiatives**

Action 22: Improve the Sarawak e-Commerce and services ecosystem.

The Sarawak e-Commerce ecosystem is improved through:

- Setting up Digital Free Trade Zone (DFTZ);
- Efficient e-Commerce fulfilment hub(s) to serve local and regional needs; and
- Capabilities and talent development in digital technologies, big data, cyber security and fintech.

Action 23: Increase awareness of Sarawak products and services through digital platform.

Through the digital platform, local products and services are promoted via:

- Marketing and branding online;
- Collaborating with established online marketplace platforms; and
- eNetworking between buyers and sellers.

Action 24: Increase e-Commerce adoption.

Approaches to encourage adoption of e-Commerce among rural small enterprises include:

- Educating consumers and promoting safe online transactions; and
- Providing e-Commerce facilities to rural communities.

Action 25: Create a FinTech platform that provides technological and business tools to secure a competitive advantage in current and future markets.

Since 2018, eight (8) projects under e-Commerce have been implemented, including development and implementation of Integrated System for *Jabatan Keluarga dan Wanita Sarawak* (JWKS) eWanita project (ePreneurs) and S Pay Global Fintech Platform & Operation.

3.3.6.2 **Case Study – e-Commerce**

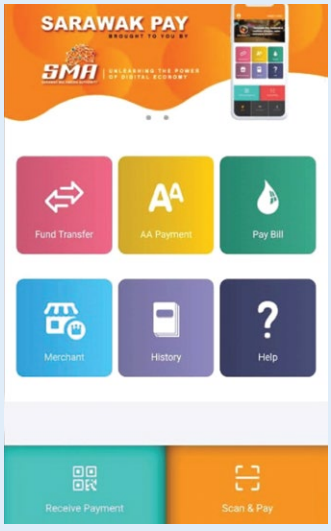
Box 3.6: S Pay Global [25] [37]

The Sarawak Government's fintech mobile application, S Pay Global (formerly known as Sarawak Pay), offers easy and secure e-wallet features which is managed by SiliconNet Technologies Sdn Bhd (SNT) and is accredited by Bank Negara Malaysia.

Customers can use digital payments to pay bills and make purchases. Users can enjoy the benefits of cashless purchases by topping up their e-wallets through online banking, credit cards, and the Bank Simpanan Nasional (BSN) agents.

Some of its features include scanning and paying with QR codes, splitting bills among S Pay Global users, performing fund transfers, sending eGifts for various occasions, earning loyalty rewards points, taking advantage of discount coupons within loyalty rewards, buying and renewing insurance, paying study loans, ordering food, making donations, paying for parking, subscribing to services, managing bills, top up via Internet Banking or credit/debit card (Visa & Mastercard), top up & withdrawal via BSN Agent, eGift for different occasions and others.

Currently there are 650,000 users and 90,000 registered merchants with a total of 61,000,000 transactions worth RM2.6 billion.



3.3.7 **DIGITAL GOVERNMENT**

The goal for Sarawak Digital Government is to build seamless government services for citizens and businesses through innovative digital technology.

3.3.7.1 **Strategic Actions & Initiatives**

Action 26: Initiate Digital Government based on five principles.

Open Government
Open Government is about sharing of government information resources with other agencies and with the community. This encourages value-creation from the information resources.

Data-Centric Government
Data-centric Government employs big data and data analytics at and between all levels for better decision making and service. It enables development of new and innovative services and apps.

Innovative Government
Innovative Government is about agility and resourcefulness in leveraging on opportunities and adapting to changes.

Excellent Service Delivery
The objective is to develop and implement customer-centric services. As the commitment to provide excellent service delivery to the people, the State Government has implemented the One Stop Customer-Centric Frontline Service platform called Service Sarawak that have multiple service channels preferred by the customers namely digital online, counter and kiosk. This is the platform for all agencies to have their service made available for the convenience of the customers.

As of 2022, there were five (5) Service Sarawak centres in Kuching, Serian, Sri Aman, Sibu, and Miri. There are fifteen (15) Service Sarawak kiosks throughout Sarawak. Service Sarawak Portal (service.sarawak.gov.my) and Service Sarawak apps serve digital channel for the people to access to multiple agencies service information, the only services and payment service.

As of 31st October 2022, it had served a total of 1,382,620 customers with 2,258,237 transactions and revenue collected of more than RM2.0 billion.

Excellent Digital Governance
ICT functions of the government is aligned to its policies to improve ease of doing businesses.

Twelve (12) projects under digital government sector have been implemented, including open data portal & application, development & implementation of Digital Media Management System for *Unit Komunikasi Awam Sarawak* (UKAS) and e-Know Your Customer (e-KYC).

3.3.7.2 **Case Study – Digital Government**

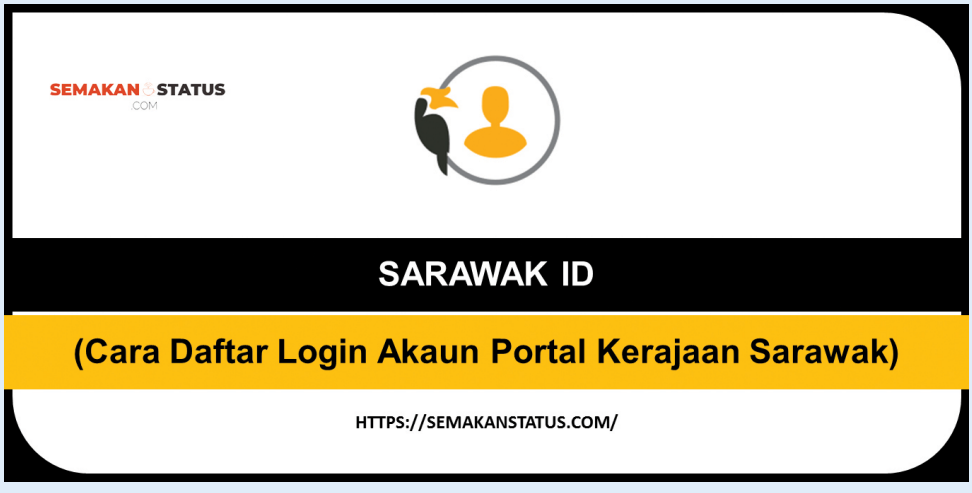
Box 3.7: Sarawak ID [25] [37]

Digital Identity is one of the most important technological developments over the last few years. It is expected that digital identity management will become a primary concern for individuals all over the world to serve the e-Commerce platform and other online services.

As part of the Sarawak Digital Economy agenda, Sarawak implemented its own Digital ID called "Sarawak ID". Sarawak ID has played a vital role in implementing digital services for the public and the local MSMEs.

Sarawak ID is a single online identity that provides the public with a simpler, easier and more secure access to Sarawak Government digital services. It provides a single point of authentication to ease users having to remember multiple passwords or having to login to multiple applications with the same passwords.

At the end of December 2021, there were 775,958 registered users, 16,192,736 usages and 104,581 user verification with e-KYC.



3.3.8 SOCIAL SECTORS

3.3.8.1 Strategic Actions & Initiatives

Action 27: Rollout smart digital technology in sports to enhance spectator experience and attendance at the stadium to foster game development, eSports, marketing and sport science.

Action 28: Preserve the value of our heritage and culture physically and digitally to enhance tourism in Sarawak.

Action 29: Accelerate the social development support to disadvantaged communities through the use of digital and data technologies.

Seven (7) projects under social sector were implemented, including S Pay Global Fintech platform & operation, *Bantuan Khas Sarawakku Sayang,* iSarawakCare, and Sarawak Stadium Master Plan.

3.3.8.2 Case Study – Social Sectors

Box 3.8: iSarawakCare [25]

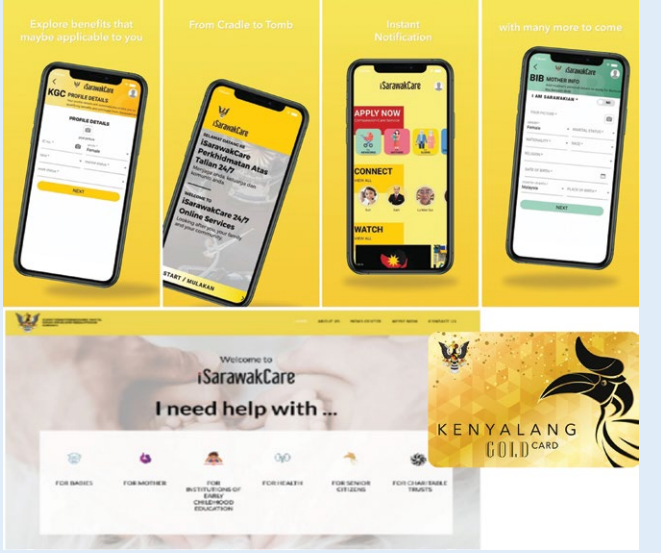
iSarawakCare (iSC) is the Ministry of Women, Child Development and Community Welfare (KPWK)'s initiatives for the well-being of all Sarawakians. It is a comprehensive digital platform for benefits, incentives, and social welfare assistance which was implemented in accordance with the requirements of the State Government, State agencies, businesses and the community, including but not limited to catering for other loyalty, assistance and incentive programmes.

The online feature of the platform allows users to apply at any time from any location, while also providing real-time updates between system administrators and users on the progress of the government's programmes. The iSarawakCare portal is connected with existing systems in Sarawak, including SarawakNet, Sarawak ID, State Treasury, banks, and federal government services, living true to its tagline of "One Click at Your Service".

In acknowledgment of the Ministry's efforts to digitise government services, the iSarawakCare online application won the "Digital Government Services" award in 2022 at the London Design Awards.

The current projects included in the iSC platform are:

- Endowment Grant
- Maternity Incentive
- Early Childhood Education support
- Haemodialysis Aid
- Kenyalang Gold Card
- *Lembaga Amanah Kebajikan Bukan Islam*
- Social Issue First Information Report



3.3.9 **DIGITAL INFRASTRUCTURE**

High-speed connectivity is essential in all areas of Sarawak to accelerate digital economy.

3.3.9.1 **Strategic Actions & Initiatives**

Action 30: Develop the infrastructure in more cost-effective way using Hub and Spoke development concept in all towns in Sarawak.

Action 31: Develop an international internet gateway in Sarawak and a new submarine cable system to connect directly to international internet gateway.

Action 32: Liberalise the infrastructure sector to attract foreign digital businesses to set up their operation in Sarawak.

Action 33: Provide affordable and high-speed internet access for the masses through carrier independent backhaul and backbone data transmission services.

Eighteen (18) projects under digital infrastructure enabler were implemented since 2018, including SMART Phase 1 & Phase 2, WIFI SALURAN, MySRBN, VSAT, Tier IV Data Centre and Batam Sarawak Internet Cable System (BaSICS).

3.3.9.2 **Case Study – Digital Infrastructure**

Box 3.9: Sarawak Linking Urban, Rural and Nation (SALURAN) [25]

SALURAN is a Sarawak Government initiative to provide connectivity to all Sarawakians. The ultimate goal of SALURAN is to extend the reach of the 4G network through the upgrading of existing infrastructure to expand the telecommunication coverage to all areas in Sarawak, including rural and less economically viable areas in Sarawak, a function which was solely managed by the Federal Government in the past via MCMC.

Together with the Federal Government's initiatives via MCMC, including JENDELA, Broadband Wireless Access, and upgrading existing infrastructure from 3G to 4G, the Sarawak Government through the SALURAN initiative, comprising of SMART Phase 1 & 2, WIFI SALURAN, extension of SarawakNet, Sarawak Rural Broadband Network and others will gradually increase the coverage from 66.48% to an average of 93.87% in Sarawak.

SMART Phase 1 & 2

Sarawak's government has committed to construct SMART initiative throughout the State to provide long-term connectivity for all communities in Sarawak. A total of 300 towers under SMART Phase 1 have been completed, and a further 300 towers will be built under SMART Phase 2.

DIVISION	No. of Structures
Kuching	33
Serian	23
Samarahan	22
Sri Aman	79
Betong	43
Kapit	14
Sibu	7
Sarikei	30
Mukah	11
Bintulu	22
Miri	11
Limbang	5
TOTAL	300

SMART Phase 1 Site Location

ACTIVITY:

Smart Phase 1:
Construction of telecommunication towers

SMART Phase 1 Commissioning:
Installation of communication equipment

SMART Phase 2:
Commenced in Q2 2022

3.3.10 DIGITAL SKILLS AND TALENT DEVELOPMENT

There is a need to create digitally skilled human resource required for the Sarawak Digital Economy. We also need to encourage students to study STEM in schools, universities and TVET institutions and to choose ICT related careers.

In order to address the industry needs on engineering and ICT workforce and graduate employability, talents need to be developed either through industry-relevant curricula, continuous skills development, sourcing of talents from overseas or forging partnetships with industries in educating and training youths.

3.3.10.1 **Strategic Actions & Initiatives**

Action 34: Build, develop and head hunt a workforce that is agile, digital-savvy and industry-ready.

Action 35: Strengthen current STEM and ICT education in primary, secondary and tertiary institutions.

Twenty-one (21) projects under digital skill and talent development enabler were completed since 2018, including upskilling/reskilling of graduates for digital economy, digital competency development for State Civil Service, Sarawak innovation, establishment of industry focused digital training centres and development of data professionals.

3.3.10.2 **Case Study – Digital Skills and Talent Development**

Box 3.10: Industry Focused Digital Economy Training Centres

In 2020, Sarawak Government established CENTEXS Digital Academy to spearhead the skills needs development for digital economy.

The Academy is established in partnership with leading global technology companies, including EON Reality, Huawei Technologies, Microsoft, Bosch Rexroth, Keysight Technologies and others. This partnership model will see Digital Academy as a leading industry focused regional training Centre with programmes in big data & data analytics, IoT, software, cyber security, immersive technologies (AR/VR/Metaverse), telecommunications, Industry 4.0 and others to meet the skills needs for digital economy.

The Immersive Technology (AR/VR/Metaverse) Centre, a partnership between **EON Reality** and CENTEXS, focuses on industry-focused training, research, innovation and commercialisation in virtual and augmented reality.

The partnership with **Huawei Technologies** show the establishment of first digital laboratory in Southeast Asia in telecommunication hardware, software and 5G skills development. Some of the programmes offered include microwave hardware installation, wireless hardware installation, mobile application development, FTTx OSP hardware installation, 5G and others. The partnership with **Microsoft** focuses on education technology solutions connecting teachers, students, employers and local community through leading edge technology skills development. This includes skills development in computer science, data science, cloud computing, IT infrastructure and management and cyber security among others.

The Industry 4.0 (I4.0) Centre, a partnership between **Bosch Rexroth** and CENTEXS focuses on Industry 4.0 readiness programmes including automation & robotics, cyber-physical system, process controls, IoT, visualisation and others. The Internet of Things Centre, a partnership between **Keysight Technologies** and CENTEXS focuses in IoT skills development and applications in key economic sectors including agriculture, manufacturing, services, mining, forestry, tourism amongst others.

These industry-focused facilities and research driven industry-relevant training has made Sarawak the regional leader in digital training. Recently the Federal Government of Malaysia announced CENTEXS as the key Digital Training hub for Malaysia.

3.3.11 RESEARCH AND DEVELOPMENT

Research & Development is a fundamental to the long-term growth of the Sarawak Digital Economy. Key research areas include, big data and data analytics, software innovation, AI, cloud computing, IoT, advanced visualisation, automation and robotics, cyber security, social and business innovations and others.

3.3.11.1 Strategic Action & Initiatives

Action 36: Establish a Centre of Excellence (CoE) to engage in fundamental and translational research in core areas of digital economy and other economic sectors in partnership with universities, industry, governments and community.

Ten (10) projects were implemented under R&D enabler, including Cooperative Centre of Excellence for Digital Economy, university-based research labs in Big Data, IoT, Blockchain, automation and robotics, 5G, cyber security, cloud computing, research and innovation Open Lab, translational research scholarship programme and industry focused testbeds.

3.3.11.2 **Case Study – Research and Development**

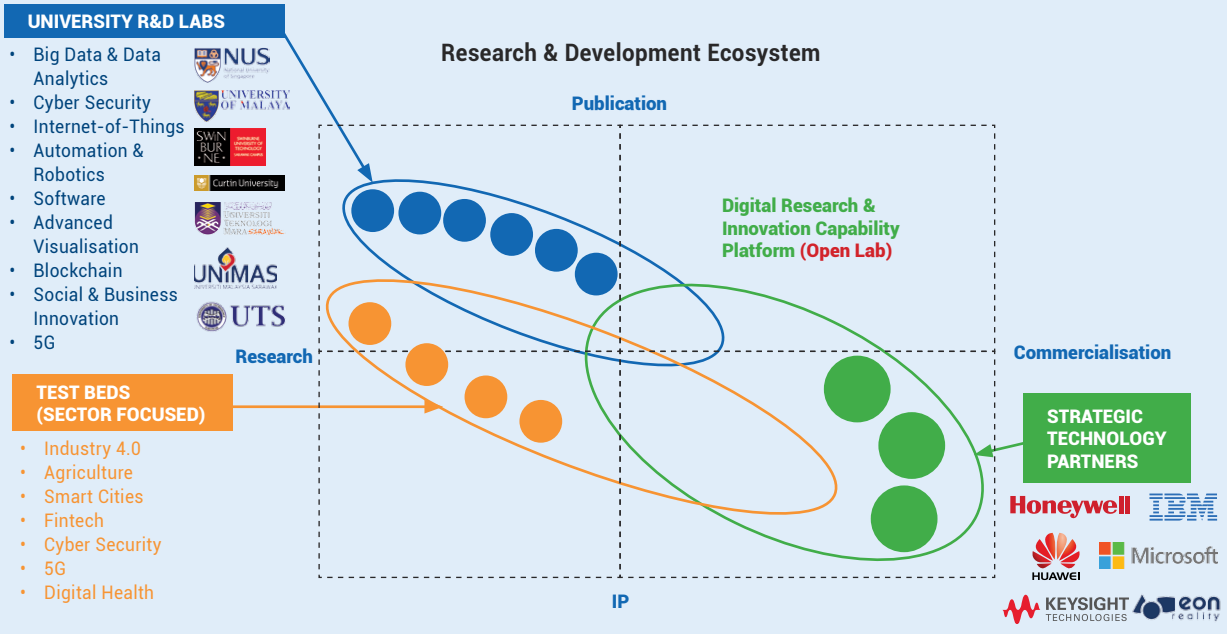
Box 3.11: Centre of Excellence for Digital Economy

The CoE for Digital Economy was launched in 2019 to engage in fundamental and translational research and transition the outcomes of research into public & private sector in core areas of Digital Economy and other economic sectors in partnership with universities, industry, government and community.

The CoE is cooperative Research and Development Centre including Sarawakian and leading overseas universities, multinational technology companies and the State Government of Sarawak. The ecosystem is based on:

- University based R&D laboratories in key research areas;
- Open laboratory to transition the outcomes of research to public and private sectors; and
- Testbeds in key areas to showcase the technology and solutions, platform for research and training, and workforce and industry transformation.

Since its establishment the Centre has engaged in funded Master and PhD research projects resulting in number of publications in journals and conferences, PhD and Master completions and number of new IPs and start-ups. The outcomes have also led to investments from technology companies and private sector in research and development.



3.3.12 DIGITAL INNOVATION AND ENTREPRENEURSHIP

Technology transfer and commercialisation is crucial to stimulate economic growth. It allows aspiring digital entrepreneurs to gain the know-how and assistance they require to fast-track their business success. Digital Economy innovation and entrepreneurship ecosystem includes several innovation hubs including government, universities, corporations and community-based innovation hubs feeding into the Digital Village.

3.3.12.1 **Strategic Actions & Initiatives**

Action 37: To establish one innovation centre in each division and facilitate others (private sectors, universities and communities).

Innovation hubs and centres are important early-stage pre-accelerators that support communities and start-ups through mentoring, skills-building and infrastructure support.

Action 38: Establish Digital Village to facilitate technology transfer and commercialisation and accelerate the maturity of start-ups through global accelerator partnership programmes. The potential start-ups are accelerated through the Digital Village to maturity.

Action 39: Establish "Launch Sarawak" Program at Digital Village to provide a transformative pathway to support innovation, intellectual property creation and spin-offs.

"Launch Sarawak" will offer the following services:

- Consultancy to generate or enhance innovative business ideas;
- Connecting start-ups with investors and Venture Capitalists;
- Supporting start-ups to scale-up, and develop value-added services; and
- Promoting innovation and nurturing start-up culture through workshops and exhibitions, etc.

Action 40: Setup "Digital Landing Pads" overseas to promote Sarawak as destination for high-tech innovation and entrepreneurship as well as to encourage both domestic and foreign investment.

Seven (7) projects under digital innovation & entrepreneurship enabler were implemented since 2018 including TEGAS Digital Village, innovation hubs in each division, and accelerator programme.

3.3.12.2 **Case Study – Digital Innovation and Entrepreneurship**

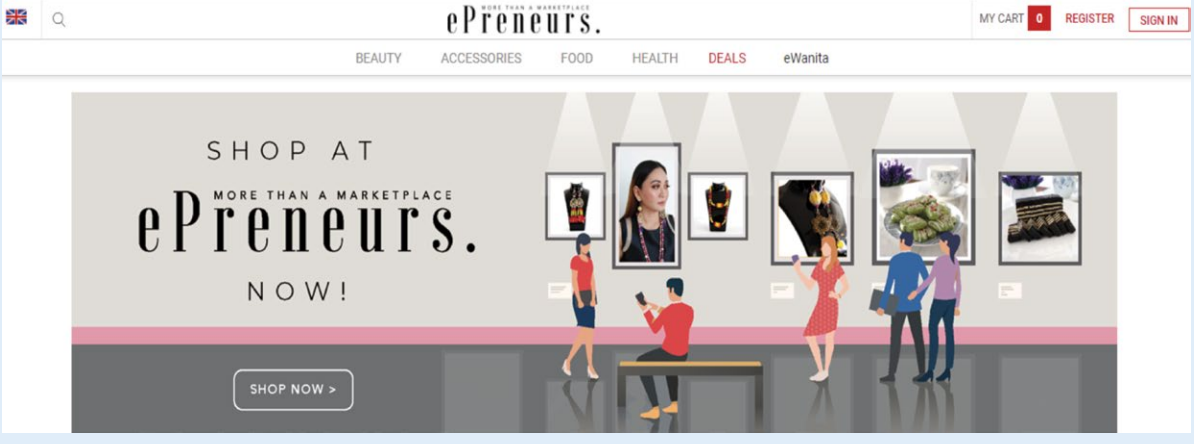
Box 3.12: eWanita Project [25]

The project is part of the Sarawak's digital economy plan, facilitating connections between women-owned enterprises to foster cooperation, social engagement, and empowerment with the main goal of "digitally altering the women of Sarawak" by uniting them in an engaging online community.

In accordance with Ministry of Women, Child Development and Community Welfare focus on safety of women "in good hands", technology development company, SOCOE, introduced eWanita helpline application which acts as a communication mechanism where women in need can get assistance from the appropriate authorities. It is also integrated with existing technology such as Sarawak ID and S Pay Global that redefines how people live and work as well as making regular transaction.

Additionally, an integrated application, ePreneurs, an online marketplace, encourages sustainable growth while enabling women to contribute more economically and live better lives by bridging access barriers to digital resources. Training programme provides guidance to woman on how to be sustainable in their endeavours as well as acquire new skills so that they are prepared for the demands of a technologically advanced market.

eWanita platform, is a crucial step in developing e-Commerce as a means of promoting more female emancipation in Sarawak and elsewhere.



3.3.13 DIGITAL AND DATA (BIG DATA)

The use of Big Data is crucial in supporting data-driven decision-making and accelerate digital economy.

3.3.13.1 **Strategic Actions & Initiative**

Action 41: Collect data from current and future digital services to support data-driven decision-making.

Action 42: Monetise Big Data.

> Big data can be used to create new opportunities for extracting more value and generating measurable economic benefits from existing data available in the State data repository as well as new data that is generated through the digital economy activities.

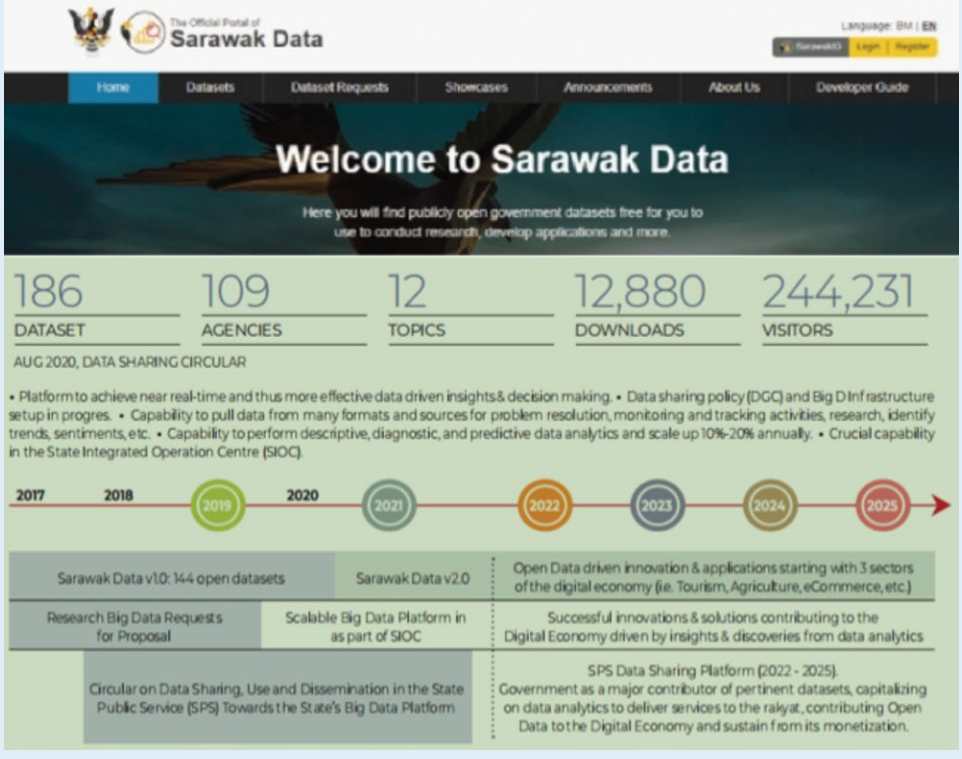
Action 43: Develop an Open Data Ecosystem.

Six (6) projects were completed under digital & data (big data) enabler, including setting of SIOC - big data infrastructure & platform, Sarawak open data policy and open data portal & application.

3.3.13.2 **Case Study – Digital and Data (Big Data)**

Box 3.13: Sarawak Open Data Portal and Application [25]

Development of an Open Data platform, an application to manage the creation and maintenance of datasets, and the generation of Application Programming Interfaces (APIs) from the datasets to enable Sarawak Government agencies to publish open data to the public. The Open Data Platform can be accessed at www.data.sarawak.gov.my.



3.3.14 **CYBER SECURITY**

The Sarawak Government identifies cyber security as one of the key pillars to support Sarawak grow and sustain Digital Economy.

3.3.14.1 **Strategic Actions & Initiatives**

Action 44: Develop a cyber security code of practice to improve awareness about cyber security.

Action 45: Create an effective legal framework to tackle cyber risks in Sarawak.

Action 46: Protect the State's Critical Information Infrastructure (CII).

Two (2) projects were completed under cyber security enabler including training on legislation related to digital economy and cyber security awareness training.

3.3.15 DIGITAL INCLUSIVITY

The digital inclusivity programmes are a continuous effort to ensure all the *rakyat* are ready and benefit the digital economy initiatives carried out in Sarawak.

3.3.15.1 Strategic Action & Initiatives

Action 47: Establish a digital-ready community through developing digital skills and competencies and promoting inclusive digital participation.

In order to ensure inclusion of all communities in the Digital Economy, Sarawak needs to ensure that there is access to digital infrastructure and services, digital skills and competencies, inclusive digital participation and building confidence, and achieving broadband coverage state-wide.

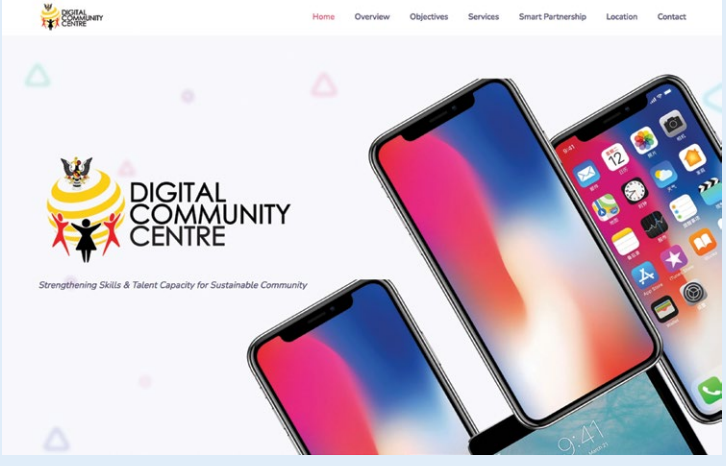
Six (6) projects were completed under digital inclusivity enabler including digital community centres, digital readiness and e-Learning system (PANDei).

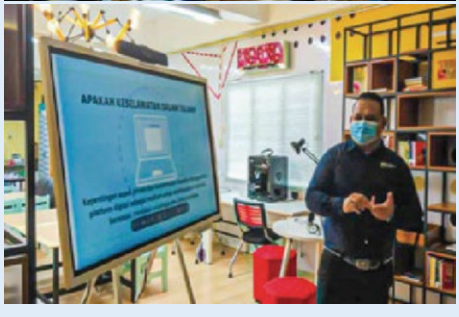
3.3.15.2 Case Study – Digital Inclusivity

Box 3.14: Sarawak Digital Community Centre [37]

Sarawak Digital Community Centre (DCC) was established to catalyse the community's socio-economic development through digital inclusivity. DCC's primary goals are to build digital skills and capacity, as well as socioeconomic development, community empowerment, and a sustainable and resilient community.

There are currently forty-five (45) DCCs equipped with broadband internet services, personal computers, laptops, tablets, printers, projectors, smart TV, maker space equipment including 3D printers and 3D pens, and video conferencing facilities to benefit the surrounding communities. CCTV cameras have been installed for safety. 2,963 programmes were carried out benefiting 79,955 participants.





Sarawak Digital Economy Blueprint 2030

4

SARAWAK DIGITAL ECONOMY BLUEPRINT 2030

Vision

SARAWAK to be a leading Digital Economy and Society by 2030

Mission

- Nurture integrated ecosystem
- Build foundations to grow digital economy
- Foster business growth
- Capitalise on digital technologies
- Deliver secure and trusted government services

Current Status

- Connectivity 66.48%
- 26 Tech Start-Ups and 27 High-Tech Research Acceleration
- 35% Online Services
- 45 Digital Community Centres and 133 PEDis
- Access to Government Services - Established
- Digital Skills - Established (540,557 participants upskilled)
- 667 MSMEs Digitalised
- Cyber Security - Developing

Leading to

Expected Outcome in 2030

- 39,000 to 48,750 New Skilled Jobs
- 50% Growth in Investment and Partnerships
- 96% High-Speed Connectivity
- 20% Contribution to GDP
- RM4,000 Contribution to Household Income
- 500 High-Tech Start-Ups
- 100% Online Service Delivery

5 Strategic Pillars

31 Strategic Actions

106 Initiatives

There is a growing gap between **Rate of Digital Technology Adaptation** and **Policies, Regulations and Digital Readiness**

- Technology adoption and data monetisation
- Bridging the digital divides
- Investing in digital infrastructure
- Safe and secure cyber environment
- Investment and partnership
- Workforce readiness
- Vibrant technology sector
- Research, innovation, and entrepreneurship

KEY DRIVERS for DIGITAL READINESS

- Digital Infrastructure and Connectivity
- Human Capital – Digital Talent and Skills
- Data Governance
- Cyber Security
- Research, Innovation and Entrepreneurship
- Digital Inclusivity

4.1
SARAWAK DIGITAL ECONOMY BLUEPRINT 2030 OVERVIEW

The Sarawak Digital Economy Blueprint 2030 sets out how Sarawak will secure its future as a leading digital economy and society by 2030. The Blueprint builds on the current Digital Economy Strategy 2018-2022, is the foundation to drive Sarawak PCDS 2030 and acts as a catalyst to increase the efficiencies and productivity to all economic sectors, fostering economy prosperity, social inclusivity and environmental sustainability.

The Sarawak Digital Economy Blueprint 2030 is closely aligned with MyDigital and takes into consideration the foresight and direction of global digital economy blueprints, UNCTAD reports and underpinned on the United Nations SDGs [4] [6] [7] [9] [10] [17] [34] [35]. The Blueprint recognises that the Government plays an enabling role, with the economy driven by both public and private sectors and individuals to determine our ultimate measures of success.

The Sarawak Digital Economy Blueprint 2030 is an economic, social and environmentally sustainable development plan that will benefit the public sector, businesses and the society through improved public service delivery, new sustainable business models and access to global market job opportunities and social wellbeing.

The success of this Blueprint depends heavily on a strategic partnership between government, businesses and the society. The government plays an enabling role by providing the legal and social framework within which the digital economy operates, aligns digital initiatives with the State development strategy, maintains competition in the marketplace, ensures appropriate investment in the foundation of digital economy and takes actions to stabilise the economy. Businesses create goods and services, invest in the digital initiatives and drive the economic growth contributing the GDP and productivity, recruit households as labour and provide them with salaries and benefits.

Sarawak Digital Economy Blueprint 2030 is a document that will transform the whole-of-economy and society from conventional resource-based economy to environmentally sustainable technology-driven economy. A dynamic digital economy will require a stable and strong digital foundation including digital infrastructure, digital talents, skills and inclusivity, data governance and cyber security, research, innovation and entrepreneurship.

The Blueprint is a living document that will continue to evolve to ensure Sarawak remains on track and be adjusted where needed for Sarawak to be a developed State by 2030.

4.2 FOUNDATIONS OF DIGITAL ECONOMY

The value of being digitally ready nation is immediately reflected in the strong correlation against indicators such as GDP per capita, innovation, digital competitiveness, e-Commerce, e-Government, and others. Creating a digitally ready society requires a holistic approach across multiple areas. The success for a vibrant and dynamic digital economy will require Sarawak to be digitally ready to maximise digital value and market capitalisation. The key drivers of digital readiness are:

- **Digital Infrastructure and Connectivity**
  Digital infrastructure including high-speed connectivity, data centres, IoT infrastructure, cloud computing are foundations for the advancement in digital economy development.

- **Human Capital - Digital Talent & Skills**
  Ability to utilise and create advance digital services and grow digital economy requires workforce with appropriate digital talents and skills.

- **Data Governance**
  Data governance is the process of managing the availability, usability, integrity and security of the data in enterprise systems, based on standards and policies. Effective data governance ensures that data is consistent and trustworthy and doesn't get misused. It's increasingly critical as organisations face new data privacy regulations and rely more and more on data analytics to help optimise operations and drive business decision-making.

- **Cyber Security**
  Cybercrime is becoming a big business globally and has cost the global economy US$6 trillion in 2021[27]. Cyber security and trust are essential to grow digital economy. It is important to protect all categories of data from theft and damage and minimise the chances of cyber-attacks. Cyber security governance, policies and regulations, compliance and human capital are the key to ensure safe and secure digital environment for all to access.

- **Research, Innovation, and Entrepreneurship**
  Research, innovation and entrepreneurship in digital technologies, including artificial intelligence, blockchain, IoT, immersive technologies, 5G, big data, data analytics, cyber security and others are key to the growth of digital economy. Research and innovation stimulate technology creation and later investment in the technology to create opportunity for business.

- **Digital Inclusivity**
  Digital inclusion is the capability of individuals to enjoy the benefits of being online and use technology confidently to improve their day-to-day lives. To create a more inclusive community, three elements must be addressed to ensure digitally inclusive society, namely:
  - Access – the availability of the internet and connected devices.
  - Affordability – the financial means to get online.
  - Digital Ability – confidence to use the internet safely.

Sarawak to become the leading digital economy and society by 2030 will require Sarawak to focus on growing both public and private sector economics. Sarawak government provides a stable digital infrastructure, trained and skilled digital human capital and cyber security for the people to invest in digital businesses, share knowledge on the digital platform, to ensure the achievement of digital economy vision. The role of the Government is to ensure all sectors are ready to participate in the new era of digital economy.

4.3
SARAWAK DIGITAL ECONOMY BLUEPRINT 2030 FRAMEWORK

Vision

Sarawak to be a **leading Digital Economy and Society by 2030**.

Mission

The Sarawak Digital Economy Blueprint 2030 is driven by the following mission statements to fulfil the development for digital economy and society in Sarawak:

- Nurture integrated ecosystem to foster inclusive digital society;
- Build the right foundations to grow digital economy;
- Foster business growth and vibrant technology sector;
- Capitalise on digital technologies to maximise digital value; and
- Deliver simple, secure and trusted government services.

Strategic Goals

The strategic goals are to:

- Accelerate the digitalisation of economic sectors;
- Strengthen economic competitiveness through digitalisation, investment and public-private partnership;
- Accelerate digital transformation of public sector;
- Create high and semi-skilled jobs;
- Foster high-income per capita & inclusive digital society;
- Grow vibrant technology sector; and
- Develop new generation of digital industries.

Outcomes

To achieve the status of Sarawak to be the leading Digital Economy and Society by 2030, Sarawak will need to:

- Create between 39,000 to 48,750 new semi and high-skilled digital jobs.
- Achieve 50% growth in investment and partnerships.
- Achieve 96% high-speed connectivity throughout Sarawak.
- Achieve 20% digital economy contribution to Sarawak's GDP by 2030 (RM56.4 billion).
- Achieve RM4,000 average contribution from digital economy to household income.
- Create 500 high-tech start-ups.
- Achieve 100% online service delivery and improved ease of doing business.

Figure 4.1 presents the Sarawak Digital Economy Blueprint 2030 Framework to achieve the above outcomes.

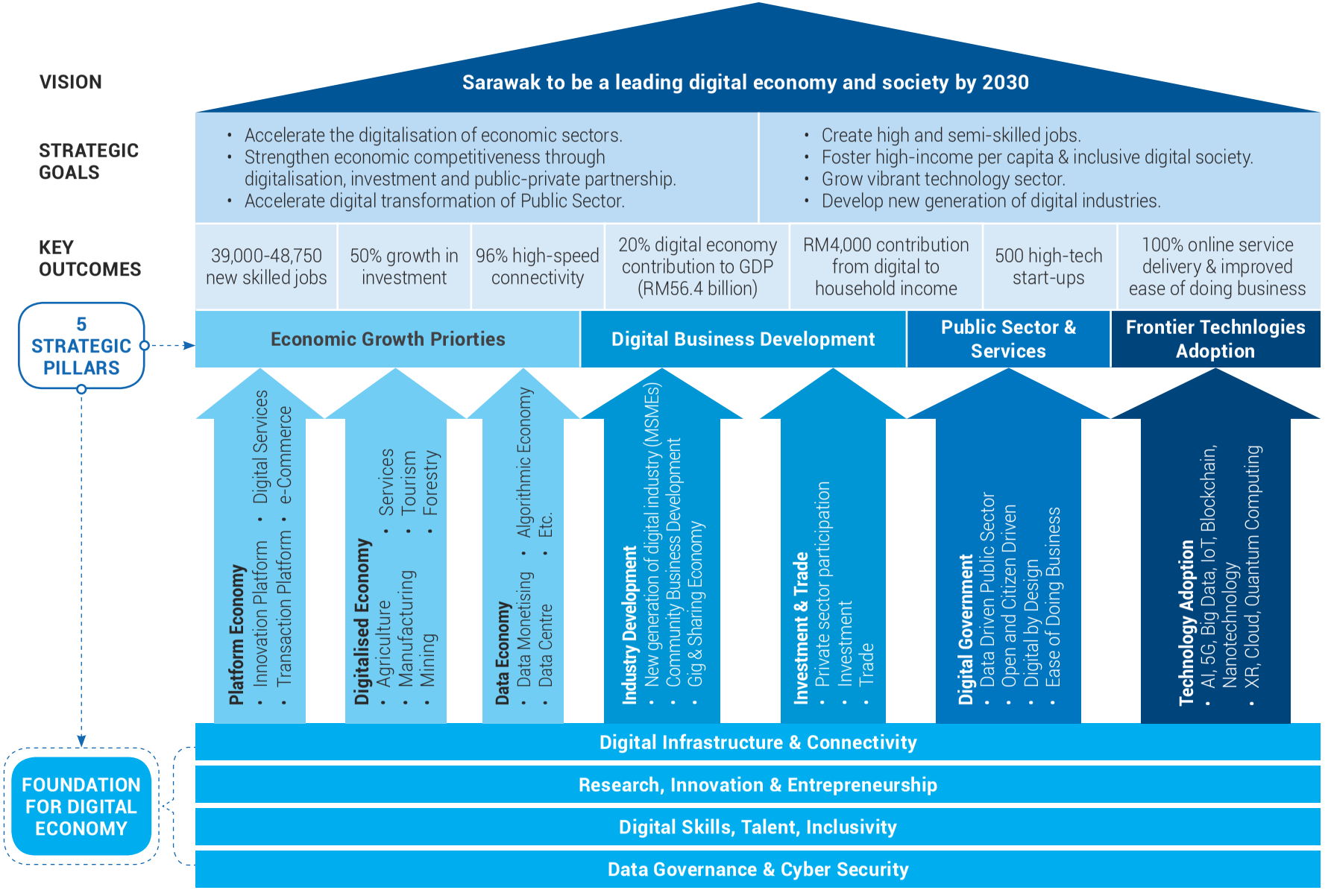


Figure 4.1: *Sarawak Digital Economy Blueprint 2030 Framework*

4.4
STRATEGIC PILLARS

The Sarawak Digital Economy Blueprint 2030 is built on five strategic pillars to ensure that Sarawak can achieve its vision, mission, strategic goals and outcomes for Sarawak to be a leading digital economy and society by 2030.

The five strategic pillars are:

- **Economic Growth Priorities**
  Accelerate digitalisation of economic sectors and data monetisation – boosting economic competitiveness through digitalisation;

- **Digital Business Development**
  Supporting and growing globally competitive and vibrant technology sector, investments, trade, start-ups and spin-ins in Sarawak;

- **Public Sector & Services**
  Deliver efficient, secure, and trusted services and improve ease of doing business;

- **Frontier Technologies Adoption**
  Enable economy wide transformation and economic growth; and

- **Foundation for Digital Economy**
  Accelerate **Digital Readiness** in infrastructure & connectivity, data governance & cyber security, digital talent & skills, research, innovation & entrepreneurship, and inclusivity.

The Sarawak Digital Economy Blueprint 2030 is driven by thirty-one (31) strategic actions and one hundred and six (106) initiatives to achieve the outcomes.

SARAWAK DIGITAL ECONOMY BLUEPRINT 2030				
5 STRATEGIC PILLARS				
Economic Growth Priorties	**Digital Business Development**	**Public Sector & Services**	**Frontier Technologies Adoption**	**Foundation for Digital Economy**
31 STRATEGIC ACTIONS				
S1: Support development and commercialisation of technology-enabled platform to drive growth opportunities.	**S1:** Introduce dynamic and innovative financial and outcome-based incentives.	**S1:** Accelerate tailored, personalised, and integrated service delivery supported by data protection.	**S1:** Facilitate adoption of digital technologies among businesses and communities.	**S1:** Provide high-speed, reliable and affordable internet connectivity to all Sarawakians.
S2: Facilitate adoption of new business models to boost productivity, create jobs and grow businesses.	**S2:** Create and implement mechanism to assess and address digital readiness of public and private sectors & community.	**S2:** Unlock the power of government data to spur innovation.	**S2:** Prioritise the adoption of digital technologies for policy formulation, implementation, and regulatory functions.	**S2:** Establish global standard digital infrastructure to accelerate digital transformation.
S3: Strengthen efficient framework to increase data creation, access sharing, innovation, and monetisation.	**S3:** Review and update policy and regulations to enhance business development, ease of doing business and foreign investment.	**S3:** Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity.	**S3:** Prioritise financial incentives to accelerate technology adoption.	**S3:** Accelerate research, innovation, entrepreneurship, and commercialisation.
S4: Strengthen capabilities and infrastructure for data hosting, processing and data interoperability.	**S4:** Accelerate innovation and entrepreneurial activities and commercialisation activities to grow new generation of digital industry.	**S4:** Enhance public sectors' structure and strengthen capacity and capabilities of civil servants.	**S4:** Catalyse AI opportunities in public & private sectors.	**S4:** Accelerate industry focused reskilling and upskilling of existing workforce.
S5: Accelerate digitalisation of priority economic sector.	**S5:** Establish the digital industry clusters to accelerate industry development.	**S5:** Enhance regulatory compliance through fit-for-purpose regulations that are data and digitally enabled and are efficiently administered.		**S5:** Match talent needs with the future needs of digital economy.
	S6: Empower improvised sector of the communities in the digital economy through entrepreneurship, sharing economy and gig economy.			**S6:** Integrating digital skills into education at primary and secondary level.
				S7: Foster equal access to digital economy opportunities to all Sarawakians.
				S8: Accelerate digital skills in the community.
				S9: Enhance cyber security ecosystem, governance, uptake and awareness by public & private sectors and community.
				S10: Enhance baseline security and resilience for critical infrastructure.
				S11: Enhance data governance, protection & privacy policies, standards, and processes.
106 INITIATIVES				

Figure 4.2: *Sarawak Digital Economy Blueprint 2030 Strategic Pillars and Strategic Actions*

4.5
OUTCOMES

To achieve the status of Sarawak to be the leading Digital Economy and Society by 2030, Sarawak will need to:

- **Create between 39,000 to 48,750 new semi and high-skilled digital jobs**
  Based on PCDS 2030 data from PwC [1], by 2030 Sarawak will create 195,000 new jobs when compared with 2019 job data for Sarawak with 55% of the employment in the services sector (e-Commerce, tourism, healthcare, ICT, retail, education, financial & insurance, professional services, transport & logistics, entertainment, hospitality, etc), 18% in the agriculture sector, 15% in manufacturing sector amongst others.

  According to Malaysia Digital Economy Corporation (MDEC) Report Q4 2021 [41], the fastest growing digital jobs in Malaysia were digital engineer (+20%), data scientist (+18%), developers (+18%), digital specialist (+13%), data analyst (+13%), Software engineers (+10%) amongst others.

  With the acceleration of Digital Economy in Sarawak with the digitalisation of priority economic sectors, digital businesses, public sector, technology adoption, innovation and start-ups will see the demand for workforce with talent and skills in data analytics, data entry, AI, software development, various programming languages, information technology, finance, machine learning, cloud computing, cyber security, information security, digital marketing, GIS, hardware, software and system engineering, IoT, web services, amongst others. Based on the global trends and forecast, Digital Economy is expected to contribute 20-25% or 39,000-48,750 high-skilled digital jobs in the economic sectors and the enablers by 2030 in Sarawak. Sarawak Government through digital skills intervention programmes, has seen over 540,000 participants from the government agencies, private sector and the community upskilled and reskilled in digital skills since 2018 to meet the digital workforce demand.

- **Achieve 50% growth in investment and partnerships**
  Currently the digital investment in Sarawak is mostly Domestic Direct Investment (DDI) in telecommunication infrastructure by businesses including Irix, Reach Ten, Danawa Resources, Maxis, Celcom, Telekom Malaysia (TM), SACOFA amongst others. There is very low Foreign Direct Investment (FDI) in digital economy in Sarawak, in particular in digital services and technology.

  Sarawak established InvestSarawak in 2022 as a one stop Agency to accelerate investment in Sarawak. The drivers for digital investments are different from that of manufacturing or brick and mortar investment. Operationalising InvestSarawak with a dedicated team focusing on digital investments will catalyse the growth in digital investment, particularly in digital services, digital technology and digital infrastructure including data centres and IoT infrastructure. The investment strategy will need to focus on the key drivers including conducive policies, copyright laws and IP protection, high-speed national and international connectivity, availability of skilled workforce, tax incentives, cyber security maturity among others.

- **Achieve 96% high-speed connectivity throughout Sarawak**
  The current 4G coverage in Sarawak is at 61.6%. With the commissioning of SMART 600, JENDELA and Clawback initiatives, the coverage is expected to reach 93.87% by the end of 2023 and more than 96% by 2030 through the commissioning of 7,000 telecommunication towers.

  The commissioning of five hundred and eighty-seven (587) 5G sites by 2024 will give 59.6% 5G coverage in populated areas of Sarawak. Currently, two hundred eighteen (218) sites have been commissioned.

- **Achieve 20% Digital Economy contribution to Sarawak's GDP by 2030 (RM56.4 billion)**
  Based on PCDS 2030 data, for Sarawak to become a high-income state by 2030, its GDP would need to grow at 8% per year to achieve RM282 billion GDP target in 2030 from RM137 billion in 2019. Based on the global and regional trends and forecast by Huawei and Oxford Economics [5], and digital economy as the key driver of PCDS 2030, will contribute at least 20% or RM56.4 billion to the Sarawak GDP by 2030. The major contributing sectors include services, manufacturing, mining, e-Commerce, agriculture, and green and circular economy. This will require new business models, private sector participation and investments, data centres in Sarawak to facilitate cross-border data flow, data monetisation, improving ease of doing business in Sarawak, amongst others.

- **Achieve RM4,000 average contribution from digital economy to household income**
  Sarawak's social inclusivity agenda is to increase the median monthly household income from estimated RM4,500 in 2019 to RM15,000 by 2030, driven by higher job and entrepreneurial activities. Sarawak Digital Economy Blueprint 2030 focuses on accelerating digitalisation of economic sectors, digital start-ups and spin-ins, private sector investments and high-tech business growth, data monetisation and digital inclusivity which will accelerate the creation of new high and semi-skilled jobs opportunities for all Sarawakians. It is forecasted that Digital Economy will create approximately 40,000 digital jobs contributing additional RM4,000 to household income by 2030.

- **Create 500 high-tech start-ups**
  Over the last five years, Sarawak focused on establishing conducive innovation and start-ups ecosystem to accelerate the growth of high-tech start-ups and spin-ins. This includes twenty-two (22) government and private sector funded innovation hubs and Digital Village in Sarawak. MBAN Sarawak (Angel investment), launch Sarawak focusing on accelerator programs, business development support, angel and corporation investors and Venture Capital, landing pads and spin-in ecosystem including e-Residency and nomads programmes to accelerate start-ups in Sarawak. In 2022, twenty-six (26) high-tech start-ups and twenty-seven (27) high-tech research projects are undergoing accelerator programmes at the Digital Village. With the digital innovation, start-up and spin-in ecosystem in place, Sarawak should be able to accelerate the creation of 500 high-tech start-ups by 2030.

- **Achieve 100% online service delivery and improved ease of doing business**
  Sarawak will need to ensure that appropriate policies and processes are in place to achieve 100% online service by 2030. These include policies and readiness in technology adoption, data management, cyber security, cloud strategy, diversification of service providers, ICT workforce development amongst others. Currently Sarawak Government services are 35% online and with the policies and readiness in place Sarawak should be able to achieve 100% online service by 2030.

Table 4.1 *Summary of current and targeted outcomes*

Target Area	Current Status	Expected Status in 2030	Way Forward
Digital Infrastructure and connectivity	• 3239 towers • 66.48% coverage • 5G - 218 sites commissioned • Submarine cable link – Kuching to Batam to Singapore • Data Centres - Irix Tier IV, SAINS & SDEC	• 4581 towers • 94% coverage by 2023 • 96% coverage by 2030 • 5G – 587 sites commissioned by 2024 • Five Data Centres in Sarawak	• Commissioning of SMART 600, JENDELA and Clawback initiatives by 2023. • 7,000 commissioned towers to provide 99% coverage • InvestSarawak to spearhead digital investment in Sarawak
Innovation and Start-ups	• 22 Innovation Hubs • 1 Digital Village • 335 Malaysian Angel Investors • 26 tech start-ups • 27 high-tech research acceleration	• 500 new high-tech start-ups and spin-ins	• Establish Start-ups Venture Capital fund • Formalise e-Residency & nomads programmes • Strengthen start-up and spin-in ecosystem • Establish digital R&D grant
Digital Investments –FDI & DDI	• Telecommunication infrastructure investments – Reach Ten, Irix, SACOFA, Danawa Resources, Maxis, TM, Celcom and others • Limited FDI in digital – LONGI, Taiyo Yuden	• 50% growth in digital investment in Sarawak	• Operationalise InvestSarawak to focus on digital investments • Establish digital precincts • InvestSarawak to collect data on digital DDI & FDI in Sarawak
Government Services	• 35% online service delivery • Access of Government services at established stage • Digital workforce at established stage	• 100% online Government services • 100% cashless payment • 100% digitally literate Sarawak Civil Service	• Ensure appropriate policies and processes in place to accelerate online services • Accelerate adoption of digital technologies • Diversification of service providers
Cyber Security	• Developing level in Sarawak • Lacks management & governance structure • Lack of compliance & enforcement • Lacks policies, regulations, standards, processes and guidelines. • Low levels of expertise, capacity, research & innovation in cyber security	• Cyber secure Sarawak	• Operationalise national Cyber Security Framework • Establish Cyber Security team/ unit to oversee Cyber Security policies, compliance, ICT systems, data governance, incident response and recovery, risks & audit for the Government, businesses and citizen including critical infrastructure
MSMEs Digitalisation	• 667 MSMEs digitalised	• 80% MSMEs digitalised by 2030	• Incentives and awareness programmes • InvestSarawak to collect data on digital MSMEs

Target Area	Current Status	Expected Status in 2030	Way Forward
High-tech Jobs	• Currently major digital jobs are in e-Commerce and services sector (finance and banking, education, research, utilities, tourism amongst others)	• 39,000-48,750 new skilled jobs • Major sectors for job growth - 55% in services sector, 18% in agriculture, 15% in manufacturing • Key job growth areas - data analytics, data entry, AI, software development, various programming languages, information technology, finance, machine learning, cloud computing, cyber security, information security, digital marketing, GIS, hardware, software and system engineering, IoT, web services, amongst others	• Appropriate policies, readiness and regulations to maximise digital value and job creation
Contribution of Sarawak GDP	• Economic modelling needs to be commissioned to gauge digital economy contribution to Sarawak GDP	• 20% contribution to Sarawak GDP (RM56.4 billion) based on economic modelling by Huawei & Oxford Economics • Major contributing sectors - services, manufacturing, mining, e-Commerce, agriculture, and green and circular economy	• Study on digital economy contribution to Sarawak GDP • Requires new business models, private sector participation and investments, data centres to facilitate cross-border data flow, data monetisation, and improving the ease of doing business
Household Income	• Economic and social modelling needs to be commissioned to gauge digital economy contribution to household income	• 25% digital contribution to household income – approximately RM4,000 per month	• Study on digital economy contribution to household income • Accelerating digital inclusivity to expedite the creation of new high and semi-skilled jobs opportunities. • Approximately 40,000 jobs created contributing to household income

4.6
ROADMAP TO TARGETED OUTCOMES

The Sarawak Digital Economy Blueprint 2030 aims to make Sarawak the leading digital economy and society by 2030 by strengthen the digital foundations, accelerating digital transformation of priority economic sectors, growing digital businesses, transforming public sector and services, and adopting frontier technologies to ensure digitally developed Sarawak by 2030.

The implementation of the proposed short-term, medium-term and long-term initiatives will enable Sarawak to achieve the outcomes and ultimately the aspiration of being a digital Sarawak by 2030.

To accomplish the desired outcomes, the Sarawak Digital Economy Blueprint 2030 roadmap targets are spread over three phases, namely:

Phase 1 (2025): Strengthen Digital Readiness
Enhancing digital readiness in digital infrastructure, connectivity, digital talent, technology adoption, 5G adoption, cloud computing, research and innovation, cyber security, data monetisation, data management amongst others to encourage investment, business development and accelerate Digital Economy in Sarawak. Conducive regulatory and policy framework will provide smooth transition to Phase 2 and 3.

This phase will see the operationalisation of InvestSarawak with a dedicated team focusing on digital investment. This will accelerate digital investments, both Foreign and Domestic Direct Investments (FDI & DDI) in Sarawak. The focus will be on attracting FDI and DDI in digital infrastructure, services and technology adoption.

Operationalisation of Cyber Security in Sarawak will involve the establishment of a Cyber Security team/unit focusing on governance and management, legislation and policy, compliance and enforcement, research, innovation, capacity and capability building, Information & Communication Technology systems, incident response and disaster recovery, risks and audit amongst others.

With the commissioning of additional 1,342 towers, telecommunication coverage will reach 94% during this phase. Similarly with the digitalisation of the digital services, technology adoption and appropriate policies in place, at least 50% of the Government services will be online.

Phase 2 (2027): Accelerate Digital Transformation
This phase will accelerate the digital transformation of priority economic sectors, enhance data-driven digital government services where technology and data are effectively used to benefit the society and businesses, attract high-tech investments and digitalise MSMEs and grow high-tech start-ups.

Phase 3 (2030): Digitally Developed Sarawak
By 2030 Sarawak will be digitally developed State with high ease of doing business, where the government creates conducive and agile environment for business to invest and grow, high-speed connectivity of 100 Mbps in urban Sarawak and 30 Mbps in rural Sarawak, equitable access to opportunities for all Sarawakians to uplift social-economic status and cyber secure and ethical digital environment.

Table 4.2 summarises the roadmap to targeted outcomes.

Table 4.2 *Roadmap to targeted outcomes*

PHASE 1 (2025) Strengthen Digital Readiness	PHASE 2 (2027) Accelerate Digital Transformation	PHASE 3 (2030) Digitally Developed Sarawak
TARGETS • 100% conducive digital policies and regulatory framework • 50% online government services • 94% high-speed connectivity • 80% competent & agile digital workforce • Operationalise cyber security framework • Operationalise InvestSarawak – ICT Investment	**TARGETS** • 80% online government services • 100% cashless payment option by ministries/ agencies • 100% digitally literate civil servants • 200 high-tech start-ups • Establish digital accelerator in each ministry/agency • All students to have access to online learning	**TARGETS** • 100% online government services • 20% contribution to Sarawak GDP (RM56.4 billion) • 39,000-48,750 new skilled jobs • 96% of the household with access to high-speed internet • Equitable access to opportunities and inclusive digital society • 50% growth in digital investment • 80% digitally literate society • 500 new high-tech start-ups • 80% of the MSMEs digitalised

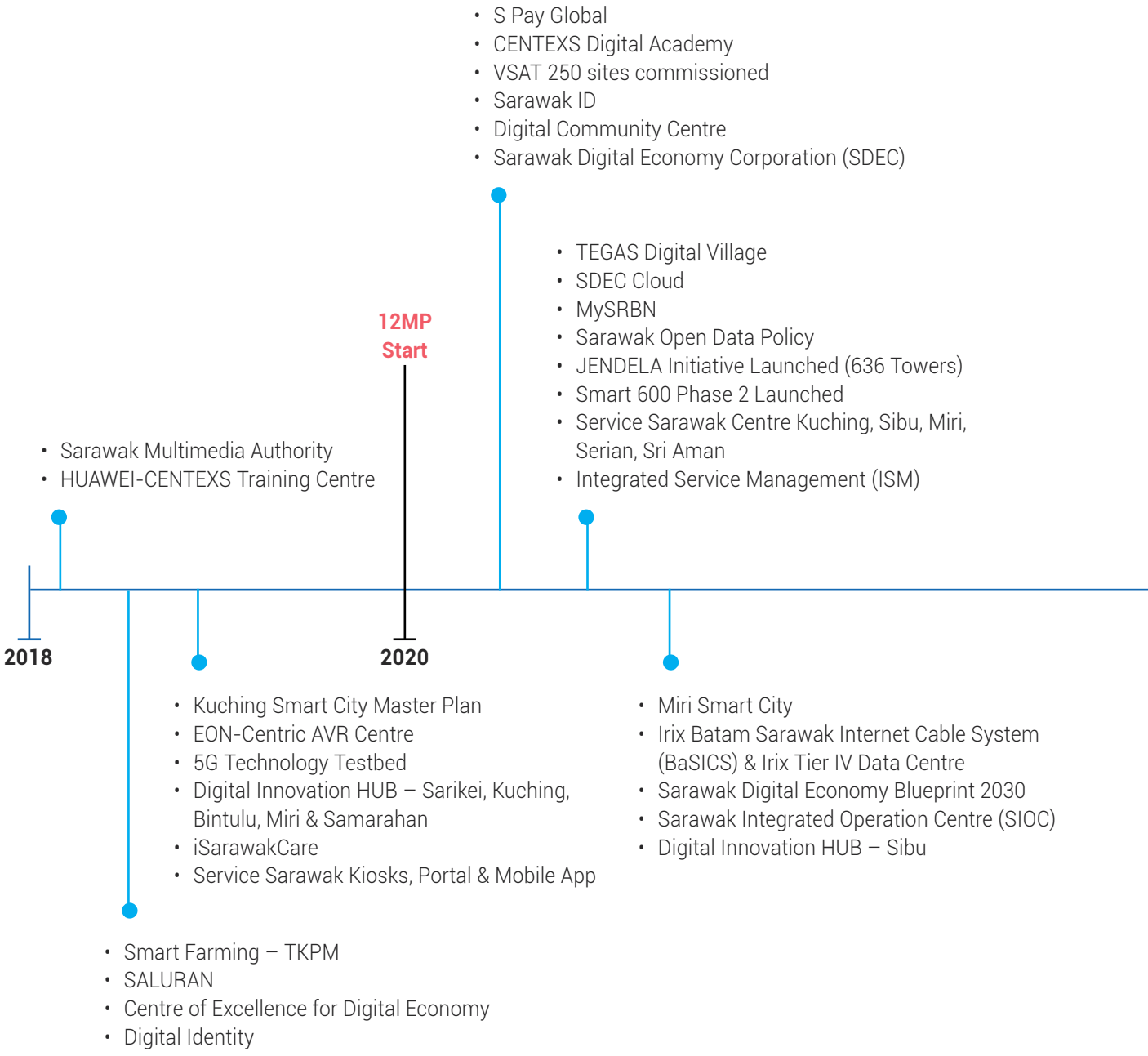
4.7 MEASURE OF SUCCESS

By 2030, there should be no distinction between the digital economy and the economy. This implies that by 2030:

- All businesses are digitally driven business using ICT and frontier digital technologies, such as AI, IoT, blockchain, immersive technologies, and others. to enhance productivity, yield, efficiency and generate high-skilled jobs;
- All Government services are easily and safely accessed online. Government service delivery will be supported by better public data availability and sharing that is used by a highly skilled public servants to deliver more targeted policy, services and programmes to businesses and communities;
- All Government transactions are electronic, integrated, and secure;
- Sarawak has a vibrant technology sector that is globally competitive;
- Sarawak has capabilities and capacity to accelerate digital transformation and bridge digital divide; and
- Smart regulations are in place to ensure Sarawak has the safe, cyber secure and vibrant environment to maximise digital value.

The success of this Blueprint depends heavily on a strategic partnership between government, businesses and the society. The government plays an enabling role by providing the legal and social framework within which the digital economy operates, aligns digital initiatives with the State development strategy, maintains competition in the marketplace, ensures appropriate investment in the foundation of digital economy and takes actions to stabilise the economy. Businesses create goods and services, invest in the digital initiatives and drive the economic growth contributing the GDP and productivity, recruit households as labour and provide them with salaries and benefit.

Figure 4.3 summarises the digital economy roadmap and measure of success.


• S Pay Global
• CENTEXS Digital Academy
• VSAT 250 sites commissioned
• Sarawak ID
• Digital Community Centre
• Sarawak Digital Economy Corporation (SDEC)
• TEGAS Digital Village
• SDEC Cloud
• MySRBN
• Sarawak Open Data Policy
• JENDELA Initiative Launched (636 Towers)
• Smart 600 Phase 2 Launched
• Service Sarawak Centre Kuching, Sibu, Miri, Serian, Sri Aman
• Integrated Service Management (ISM)
12MP Start
• Sarawak Multimedia Authority
• HUAWEI-CENTEXS Training Centre
2018
2020
• Kuching Smart City Master Plan
• EON-Centric AVR Centre
• 5G Technology Testbed
• Digital Innovation HUB – Sarikei, Kuching, Bintulu, Miri & Samarahan
• iSarawakCare
• Service Sarawak Kiosks, Portal & Mobile App
• Miri Smart City
• Irix Batam Sarawak Internet Cable System (BaSICS) & Irix Tier IV Data Centre
• Sarawak Digital Economy Blueprint 2030
• Sarawak Integrated Operation Centre (SIOC)
• Digital Innovation HUB – Sibu
• Smart Farming – TKPM
• SALURAN
• Centre of Excellence for Digital Economy
• Digital Identity

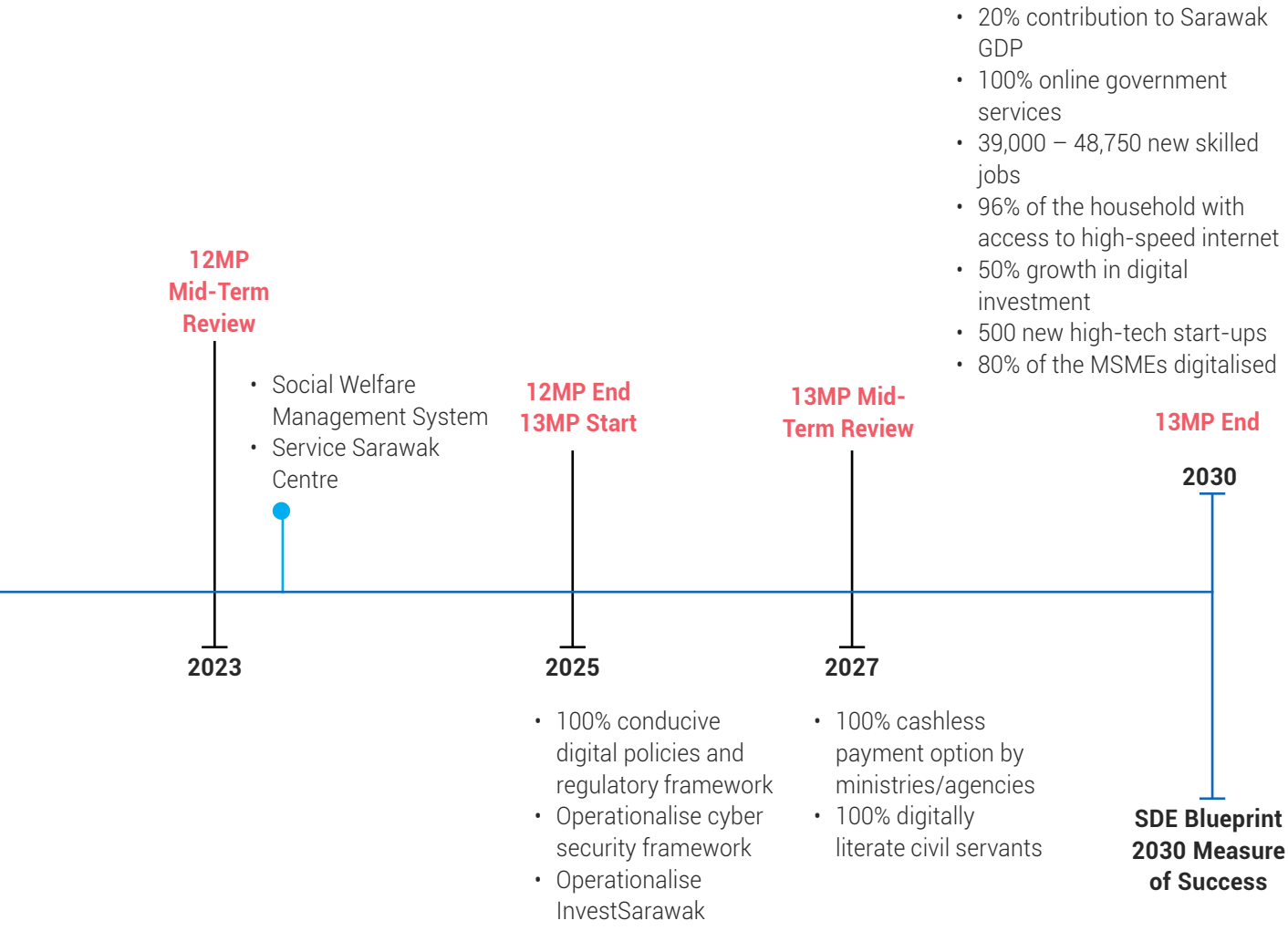


Figure 4.3: *Digital Economy Roadmap 2030 and Measure of Success*

Accelerating Digital Economy

5

ACCELERATING DIGITAL ECONOMY

Sarawak Digital Economy Blueprint 2030 Strategic Pillars

Strategic Pillar 1
Economic Growth Priorities
Accelerate the digitalisation of economic sectors and the monetisation of data

Strategic Pillar 2
Digital Business Development
Support and develop the technology industry, including start-ups

Strategic Pillar 3
Public Sector and Services
Improve the ease of doing business

Strategic Pillar 4
Frontier Technologies Adoption
Accelerate economic growth

Strategic Pillar 5
Foundation for Digital Economy
Reduce digital divide and maximise digital value

The five strategic pillars are supported by 31 strategic actions and 106 initiatives that spread over **short-term, medium-term** and **long-term**

5.1
STRATEGIC PILLARS, STRATEGIC ACTIONS AND INITIATIVES

The Sarawak Digital Economy Blueprint 2030 is built on five (5) strategic pillars which are supported by thirty-one (31) strategic actions and one hundred six (106) initiatives to ensure that Sarawak can achieve the outcomes for Sarawak Digital Economy Blueprint 2030. Table 5.1 lists the strategies and initiatives for each strategic pillar spread over short, medium and long-term.

Table 5.1: *Strategic Pillars, Strategic Actions and Initiatives*

Strategic Pillars	Strategic Actions	Initiatives			
		Short Term	Medium Term	Long Term	Total
Economic Growth Priorities	S1	-	2	-	2
	S2	3	1	-	4
	S3	2	1	1	4
	S4	-	2	-	2
	S5	-	4	1	5
Strategic Pillar 1 Total	**5**	**5**	**10**	**2**	**17**
Digital Business Development	S1	1	4	-	5
	S2	2	1	-	3
	S3	-	1	-	1
	S4	-	1	1	2
	S5	-	-	2	2
	S6	-	1	1	2
Strategic Pillar 2 Total	**6**	**3**	**8**	**4**	**15**
Public Sector & Services	S1	3	10	-	13
	S2	4	4	-	8
	S3	6	3	2	11
	S4	-	1	-	1
	S5	2	-	-	2
Strategic Pillar 3 Total	**5**	**15**	**18**	**2**	**35**
Frontier Technologies Adoption	S1	1	2	1	4
	S2	3	2	-	5
	S3	-	2	1	3
	S4	2	1	-	3
Strategic Pillar 4 Total	**4**	**6**	**7**	**2**	**15**

Strategic Pillars	Strategic Actions	Initiatives			
		Short Term	Medium Term	Long Term	Total
Foundation for Digital Economy	S1	1	2	1	4
	S2	-	-	1	1
	S3	3	-	1	4
	S4	1	1	1	3
	S5	-	1	-	1
	S6	-	-	2	2
	S7	1	-	1	2
	S8	1	-	2	3
	S9	-	1	-	1
	S10	-	-	1	1
	S11	2	-	-	2
Strategic Pillar 5 Total	**11**	**9**	**5**	**10**	**24**
Total	**31**	**38**	**48**	**20**	**106**

5.1.1 STRATEGIC PILLAR 1: ECONOMIC GROWTH PRIORITIES

The Sarawak Post COVID-19 Development Strategy has identified six priority economic sectors across the economy where public, private and community partnerships will accelerate economic growth.

This strategic pillar focuses on:

- Platform Economy including innovation platforms, transaction platforms, digital services and e-Commerce;
- Digitalisation of Economic Sectors
  The focus will be to accelerate the digitalisation of the economic sectors, namely agriculture, manufacturing, tourism, mining, forestry and services industry to improve yield, productivity and efficiency; and
- Data Economy focusing on data monetisation, algorithmic economy among others.

The Economic Growth Priorities strategic pillar is anchored on five (5) strategic actions, namely:

I. Support the development and commercialisation of technology-enabled platform to drive growth opportunities.
II. Facilitate the adoption of new business models to boost productivity, create jobs and grow businesses.
III. Strengthen efficient framework to increase data creation, access sharing, innovation, and monetisation.
IV. Strengthen capabilities and infrastructure for data hosting, processing, and data interoperability.
V. Accelerate digitalisation of priority economic sectors.

The five (5) strategic actions for the Economic Growth Priorities strategic pillar are supported by seventeen (17) initiatives comprising of five (5) short-term, ten (10) medium-term and two (2) long-term initiatives.

Table 5.2: *Strategic Pillar 1: Economic Growth Priorities*

Strategic Pillar: Economic Growth Priorities	
Strategic Action (S1): Support the development and commercialisation of technology-enabled platform to drive growth opportunities	
Initiative: e-Commerce & Fintech Platform	
OBJECTIVE The objectives of this initiative are: • To increase Sarawak Economy ecosystem and improve household income per capita; and • To provide assistance to local entrepreneur to leverage online platform for businesses. **DESCRIPTION** The e-Commerce and Fintech platform initiative is to consolidate and establish the State Integrated e-Commerce Platform through collaborations, Joint-Venture and smart partnership with the existing e-Commerce platforms such as Shopee, Lazada, Alibaba, Amazon etc. This will contribute to provide multiple e-Commerce channel for local entrepreneurs to market their products and uplifting their income.	**OUTCOMES** The local entrepreneurs will have equal opportunities to utilise the digital entrepreneurs platform in uplifting their income per capital and socioeconomic status. **TARGET** 30,000 new local entrepreneurs recruited by end of year 2030. **TIMELINE** 2022 - 2027 **LEAD AGENCY (IES)** SDEC/EPU/Private Sector/SAINS
Initiative: Sarawak Integrated Operation Centre (SIOC)	
OBJECTIVE The objectives of this initiative are: • To establish digital infrastructure to cater big data, data analytics, security and surveillance, traffic management and as an Operating System (OS) for smart city management in Sarawak; and • To facilitate public feedbacks, emergency and rescue operations, disaster management and war room for special operations. **DESCRIPTION** The establishment of the Sarawak Integrated Operation Centre (SIOC) started in 2019 and is expected to be completed by the end of 2025. SIOC will provide comprehensive controlling and management environment for State Government to coordinate and organise day-to-day activities and to facilitate decision making by the Sarawak Government.	**OUTCOMES** Efficient centralised management of cities in the State. **TARGET** Centralised Integrated Operation Centre to coordinate, monitor and manage the day-to-day operations/businesses of government agencies, private and public. **TIMELINE** 2022 - 2027 **LEAD AGENCY (IES)** SMA/SCSDU/STIU

Strategic Pillar: Economic Growth Priorities

Strategic Action (S2): Facilitate the adoption of new business models to boost productivity, create jobs and grow businesses

Initiative: Enhancement of Sarawak Travel Portal and Application

OBJECTIVE

The objectives of this initiative are:

- To develop single window for Sarawak tourism industry for effective information sharing and dissemination on tourist attraction places in Sarawak; and
- To include e-Commerce function and features into existing platform to accommodate the tourism industry business needs.

DESCRIPTION

An enhancement of the existing tourism portal and applications to include e-Commerce features and functions and to leverage on S Pay Global (e-Wallet) platform for payment gateway. The platform would be developed in web base and mobile application.

OUTCOMES

Sarawak Travel App, an effective tool for industry players to develop, manage, and distribute tourism product and services globally, and grow visitor economy.

TARGET

Single platform to support the tourism industry in Sarawak.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MTCP/STB/Private Sector

Initiative: Visitor Tracking System at National Parks

OBJECTIVE

The objectives of this initiative are:

- To develop comprehensive tourist management system for National Parks in the State; and
- To monitor the tourist movement/activities in the parks.

DESCRIPTION

The development of visitors tracking system is to provide holistic platform for SFC in managing National Parks in the state.

This system will be integrated with other systems (e-ticketing, e-booking) and big data platform, data analytic tools for analysis and to guide the Ministry of Tourism in planning purposes.

OUTCOMES

100% secure, smart, convenient and connected tourist centric system at Bako National Park via Visitor Tracking App.

TARGET

Unified tracking systems at National Parks in Sarawak for easy management and to facilitate the SFC on future planning and decision making.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

FD/SFC/Private Sector/MTCP

Strategic Pillar: Economic Growth Priorities

Strategic Action (S2): Facilitate the adoption of new business models to boost productivity, create jobs and grow businesses

Initiative: Visitor Management System

OBJECTIVE

The objectives of this initiative are:

- To ensure effective management and monitoring of visitors entering Sarawak;
- To provide accurate landing visitor's information, reduce operational cost and increase the efficiency for internal functionality and processes; and
- To establish comprehensive open access tourism database.

DESCRIPTION

The Visitor Management System is a comprehensive platform for the Ministry of Tourism, Creative Industry and Performing Arts Sarawak (MTCP) and other stakeholders to view, manage, monitor, and process the landing visitor's information and increase the efficiency of relevant frontline authorities at all Airports in Sarawak.

OUTCOMES

- Master directory and inventory of visitors and tourist agents' activities in Sarawak throughout the year; and
- 60% contribution to tourism industry revenue.

TARGET

Holistic platform to monitor and process visitors' information.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MTCP

Initiative: Development of Digital Economy Policy, Procedure and Guideline (PPG)

OBJECTIVE

The objective of this initiative is to ensure that PPGs document related to communication and multimedia activities in Sarawak are developed, well-managed and published as a standard documents and guidance for government agencies, private and individual in Sarawak.

DESCRIPTION

This initiative aims to develop comprehensive policies, procedures, guidelines and regulations on communication and multimedia activities in Sarawak. It is also to ensure the compliances from all government agencies, private and individual in Sarawak in carrying out any programmes, projects/ initiatives related to Digital Economy and digital government.

OUTCOMES

Effective implementation of the initiatives related to communication and multimedia in the State to support the aspiration of the State Government to achieve high income status by year 2030.

TARGET

Relevant Digital Economy PPGs developed, endorsed and issued.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA/SCSDU/STIU

Strategic Pillar: Economic Growth Priorities

Strategic Action (S3): Strengthen efficient framework to increase data creation, access, sharing, innovation and monetisation

Initiative: State Intellectual Property Framework

OBJECTIVE

The objectives of this initiative are:

- To protect and secure intellectual property related to communication and multimedia;
- To promote favourable climate for Foreign Direct Investment into the State; and
- To foster the creation of disruptive innovation in products, processes and/or services that will drive the State socio-economic growth.

DESCRIPTION

SMA will be the central body to manage and coordinate the protection of the Sarawak Government Agencies and Community Intellectual Property Right via filing of Copyright (CC), Trademark (TM), Geographical Indication (GI), Patent, Utility Innovation, Industrial Design, Integrated Circuit Layout Design and Plant Varieties.

OUTCOMES

- 100% multimedia and telecommunication IPs registered;
- Monetising IPs to generate revenue for the State Government; and
- Contribute towards 8% economic growth for Sarawak.

TARGET

Efficient IP management and commercialization platform.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA

Initiative: Data Monetisation

OBJECTIVE

The objective of this initiative is to provide comprehensive frameworks and initiatives for data monetisation, maximise data usage and facilitate data sharing by agencies.

DESCRIPTION

The initiative will encompass the development of the frameworks, standard operating procedures and regulations for the monetisation of the data owned by the Sarawak Government.

OUTCOMES

Contribute 8% per annum.

TARGET

- Standardised framework for data monetisation; and
- Guidelines for data gathering, sharing and commercialisation.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

Agencies/Private Sector/SDEC/SAINS

Strategic Pillar: Economic Growth Priorities

Strategic Action (S3): Strengthen efficient framework to increase data creation, access, sharing, innovation and monetisation

Initiative: Geographical Information System for Agriculture

OBJECTIVE

The objectives of this initiative are:

- To provide platform to capitalise on the use of Geographic Information System (GIS) and spatial-based analytics to improve yield and quality of food/ agriculture production and products;
- To increase the efficiency of conducting study and research related to soil fertility; and
- To consolidate satellite images, aerial photogrammetry and GIS data for agriculture application.

DESCRIPTION

The initiative is to develop a comprehensive system for geotechnical engineering and agriculture to support data analyst to improve agriculture produce. It also aims to facilitate geotechnical engineer to conduct investigation, study, research for engineering works and design.

OUTCOMES

- Improved yield and quality of food/ agriculture production and products, geotechnical engineering works and design; and
- 80% efficiency improvement of the GIS platform.

TARGET

Comprehensive system for geotechnical engineering and agriculture.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

M-FICORD/JKR/SDEC/SAINS

Initiative: Online International Journal of Business Events and Legacies

OBJECTIVE

The objective of this initiative is to provide one stop centre and an open access journal that aims to publish original research and industry viewpoint articles on business event issues from various events.

DESCRIPTION

This initiative aims to publish industry viewpoint articles on business event and tourism event such as Meetings, Incentives, Conferences, and Exhibitions (MICE), business matching ideas, and economic, social and tourism legacies. All journal, research and industry viewpoint articles consist of all disciplinary perspectives and papers will share information that address contemporary issues to advance theory and practice.

OUTCOMES

Increase the efficiency of information sharing among researchers.

TARGET

Open Access journal that are widely used by business event planners, industry and academia.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MTCP/BES

Strategic Pillar: Economic Growth Priorities

Strategic Action (S4): Strengthen capabilities and infrastructure for data hosting, processing and data interoperability

Initiative: Data Centre and Services

OBJECTIVE

The objective of this initiative is to establish secured data infrastructure and cloud data security including hardware and software for storing, processing and analysing data.

DESCRIPTION

The establishment of big data infrastructure that entails the tools and agents that collect data, the software systems and physical storage media, network, and the application environments with analytics tools to analyse data. Setup of data dictionary (data cataloging), data warehouse and data exchange platform for data sharing between Sarawak Civil Service and data driven decision making in SCS.

It is also to attract investment in Data Centre in Sarawak from local and international players.

OUTCOMES

- Increased cross border flow;
- 100% state data utilisation (data from data lake, data warehouse and data mart); and
- Catalyst for providing Sarawak as a safe and secure place for data storage and services.

TARGET

- 3 Data Centre are established by global companies;
- Centralised, shared big data processing infrastructure; and
- Data monetisation services.

TIMELINE

2021 - 2027

LEAD AGENCY (IES)

SDEC/SAINS/Private Sector

Initiative: Development and Implementation of Blockchain Capability

OBJECTIVE

The objective of this initiative is to study the implementation of blockchain technology solutions in the current digital economy initiatives platform such as digital identity, financial technology, big data, cyber security and IoT.

DESCRIPTION

A blockchain technology is widely used to accelerate the transaction processes, quicker, cheaper, secure and more efficient, while using less energy and preventing duplication of effort on information sharing.

OUTCOMES

- Efficient, effective, and secure service delivery for both public & government sectors; and
- Accurate and reliable information from the primary source.

TARGET

Comprehensive study and implementation of blockchain solutions across government platforms.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA/SDEC/SAINS/Private Sector

Strategic Pillar: Economic Growth Priorities

Strategic Action (S5): Accelerate digitalisation of priority economic sectors

Initiative: Smart Farming

OBJECTIVE

The objectives of this initiative are:

- Promote and encourage adoption of technologies in agriculture sector; and
- Ensure the transformation of agriculture sector through digital technologies and green environment.

DESCRIPTION

The initiatives consist of:

- The Smart Farming project to accelerate the transformation of agricultural sector by adoption of digital technologies and solutions;
- Implementation of IoT Smart Farming at all Agriculture Stations in the State; and
- Centralised open data platform among industry players.

OUTCOMES

Increased smart farming adoption and generate new business line via data sharing/open data initiatives.

TARGET

- 50% increase in agriculture yield;
- 40% increase in farmer's household income; and
- Reduce labour operation costs by 40%.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

M-FICORD /DOA/SDEC/Private Sector

Initiative: Adoption of Digital Technologies to increase Productivity

OBJECTIVE

The objectives of this initiative are:

- To establish Industry 4.0 (I4.0) testbeds and collaborative platforms, especially in partnership with technology partners; and
- To develop programmes in manufacturing subsectors in particular Micro, Small and Medium (MSMEs).

DESCRIPTION

In the current I4.0, manufacturing sector is exploring the adoption of emerging digital technologies (e.g., IoT, AI, Big data, 3D printing) for improving sustainability, productivity and production efficiency. This initiative focus on how the manufacturing sector can adopt digital technologies successfully and accelerate the digitalisation of MSMEs.

OUTCOMES

- Contribution towards 20% to Sarawak GDP by 2030;
- 40% increase in Small and Medium Enterprises (SMEs) registered in Sarawak;
- Increase in number of SMEs adopting digital platform;
- Greater access to key enabling I4.0 technologies and partners for local MSMEs, along with stronger collaboration in utilising new technologies across value chains; and
- Increase in overall productivity growth and worker skills to reduce potential job losses.

TARGET

- Identified gaps on adoption of latest technology;
- 200 MSMEs participation per year;
- Increase in the rate of digital adoption in businesses;
- Contribution towards 30% increase in labour productivity across all industries; and
- Contribute to creation of at least 50 start-ups

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MINTRED/SDEC/Private Sector

Strategic Pillar: Economic Growth Priorities

Strategic Action (S5): Accelerate digitalisation of priority economic sectors

Initiative: Agrotechnology Park Development Programme

OBJECTIVE

The objectives of this initiative are:

- To showcase agrotechnology and their application through smart and precision farming;
- To create integrated foundation and ecosystem to facilitate food security, improve efficiency and food distribution;
- To support agro-businesses and attract domestic and global investment in production, processing, logistic and supply chain; and
- To facilitate research and innovation, training and human capital development.

DESCRIPTION

This initiative will support the planning and operation of agrotechnology park towards a sustainable growth and increase in farmers' participation and sales in digital marketplace.

OUTCOMES

- Enhanced food security;
- Growth in Agro-based investments and partnerships;
- Increase revenue for farmers;
- Higher living standards for farmers and social wellbeing;
- Improved rural employability;
- Significant contribution to Sarawak's GDP;
- Growth in Agro entrepreneurs' start-ups; and
- Reduce food wastage.

TARGET

- Agrotech Park in each district of Sarawak;
- Creation of 50 start-ups in Agro businesses;
- Investments and partnership with private sector; and
- Contribute to 30% uplift in labour productivity.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

M-FICORD/DOA/Private Sector

Initiative: Digital Tourism

OBJECTIVE

The objectives of this initiative are:

- To establish a comprehensive open database for Sarawak; and
- To strengthen digital marketing activities to enable wider connection and engagement with clients and stakeholders.

DESCRIPTION

This initiative focuses on how digital technologies and data are used to organise, manage and enhance traveller experience. This initiative will use all the tools/platform of digital transformation to change on how we travel and how the sector itself operates.

OUTCOMES

- Higher GDP contribution – accounting for 11% by 2030;
- Increased arrivals – 7.5% annual growth rate in visitor arrivals with increased length of stay from 5.5 nights to 7.5 nights;
- Employment generation – 25% of total employment in the tourism & hospitality sector;
- Accurate and informed decision making by stakeholders and increased innovation in the tourism ecosystem; and
- More competitive tourism industry.

TARGET

- Contribute to creation of at least 50 start-ups by 2030;
- Increase in digital adoption rate across business; and
- Contribute to 30% uplift in labour productivity across all sectors.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MTCP/SDEC/Private Sector

Strategic Pillar: Economic Growth Priorities

Strategic Action (S5): Accelerate digitalisation of priority economic sectors

Initiative: Smart Metering System

OBJECTIVE

The objectives of this initiative are:

- To improve reliability, efficiency, performance and quality of service to consumer; and
- To increase the uptake of distributed electricity generation.

DESCRIPTION

Smart metering network provision for remote reading feature is established at targeted areas state-wide. Smart metering infrastructure with communication module will enable monitoring and analysis of load profile and meter reading remotely improving efficiency, productivity and cost.

OUTCOMES

- Providing safe, reliable and 100% coverage for water and electricity;
- Reduce non-revenue water to 25% and domestic water consumption;
- Better electricity and water network planning;
- Improved customer service;
- Reduce downtime; and
- Improved quality and supply.

TARGET

- Target 50% of total active customers are installed with smart meters by 2025; and
- Timely & accurate bills to customers (targeted approx. 50% of total active customers by 2027).

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MUT/SEB/JBALB

5.1.2 **STRATEGIC PILLAR 2: DIGITAL BUSINESS DEVELOPMENT**

This strategic pillar will focus on supporting and growing globally competitive and vibrant technology sector, including start-ups in Sarawak.

The core components include:

- Digital Industry Development focusing new generation of digital MSMEs, start-ups and community business development. Digital capability and digitalisation across MSMEs to support new business models increasing profitability and efficiency;
- Modern high-tech sector focusing on growing globally competitive, vibrant and sustainable technology sector; and
- Investment and trade focusing on Foreign Direct Investments (FDI), Domestic Direct Investment (DDI), public-private partnerships and competitive export sectors in digital technologies, solutions and services aligned with the economic growth priorities.

To allow business-driven growth, it is essential to continue to lower the regulatory barriers to investment. Modernising policies and regulations around competition, investment, finance, safety and security will accelerate innovation, opening up new economic opportunities. Given that digital technologies allow more equitable access to global market, it is important to have regulatory framework in place to capitalise opportunities offered by the international market.

The Digital Business Development strategic pillar is anchored on six (6) strategic actions, namely:

i. Introduce dynamic and innovative financial and outcome-based incentives.
ii. Create and implement the mechanism to assess and address digital readiness of public and private sectors & community.
iii. Review and update policy and regulations to enhance business development, ease of doing business and foreign investment.
iv. Accelerate innovation, entrepreneurial and commercialisation activities to grow new generation of digital industry.
v. Establish digital industry cluster to accelerate industry development.
vi. Empower improvised sector of the communities in the digital economy through entrepreneurship, sharing economy and gig economy.

The six (6) strategic actions for the Digital Business Development strategic pillar are supported by fifteen (15) initiatives comprising of three (3) short-term, eight (8) medium-term and four (4) long-term initiatives.

Table 5.3: *Strategic Pillar 2: Digital Business Development*

Strategic Pillar: Digital Business Development	
Strategic Action (S1): Introduce the dynamic and innovative financial and outcome-based incentives	
Initiative: Go Digital Consultancy Program	
OBJECTIVE The objectives of this initiative are: • To promote productivity, technology integration and innovation, increase access to finance and enhance market access and internationalisation; and • To promote entrepreneurship and human capital development. **DESCRIPTION** Go Digital Consultancy Program focuses on strategic measures and processes to enhance their competitiveness, resilience and innovations such as Micro, Small and Medium Enterprises (MSMEs) on digitalisation.	**OUTCOMES** • Effective use of technology by Micro, Small and Medium Enterprises to enhance their throughput and financial efficiency; and • 2,000 new MSMEs engagement per year, 30% onboarded, and 500 unique visitors to the platform. **TARGET** Development of one online platform and 12 outreach and onboarding are delivered. **TIMELINE** 2022 - 2027 **LEAD AGENCY (IES)** MINTRED/SDEC
Initiative: S Pay Global	
OBJECTIVE The objective of this initiative is to enhance S Pay Global (Fintech solution) suite for the State to promote cashless transaction among the government agencies, business communities and the public. **DESCRIPTION** The initiative will include: • Development and enhancement of the S Pay Global application for both iOS & android platforms; • Provision of the high-availability Fintech servers; and • Incorporate the state government agencies and business communities' bills in the Fintech suite.	**OUTCOMES** 60% of Sarawakian using S Pay Global for daily transactions. **TARGET** e-Commerce and cross border transaction through S Pay Global App. **TIMELINE** 2022 - 2025 **LEAD AGENCY (IES)** EPU/SAINS

Strategic Pillar: Digital Business Development

Strategic Action (S1): Introduce the dynamic and innovative financial and outcome-based incentives

Initiative: Sarawak Digital Bank

OBJECTIVE

The objective of this initiative is to facilitate businesses and e-Commerce in development and financial activities for digital transaction through Sarawak Digital Bank.

DESCRIPTION

This initiative is to establish Sarawak's first Digital Bank to support businesses and e-Commerce activities for digital transaction.

OUTCOMES

Ease of payments and financial support for businesses and e-Commerce activities.

TARGET

Establishment of Sarawak Digital Bank.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

EPU

Initiative: Incentive Programmes for Digital Economy

OBJECTIVE

The objective of this initiative is to increase user base and user's loyalty in S Pay Global and other government services.

DESCRIPTION

Incentive programmes for digital economy includes partnership-based financing framework, training grants, market development fund, R&D expenditure & initiatives, venture capital, start-up grant and Go Digital consultancy program.

OUTCOMES

Increased revenue to Sarawak via the commercialised products in the market and increased job opportunities in digital economy

TARGET

- Financing framework;
- 10 R&D training grants program; and
- 10 Go Digital consultancy programs.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC/SCSDU/STIU/EPU/SMA/SAINS/ Private Sector

Strategic Pillar: Digital Business Development

Strategic Action (S1): Introduce the dynamic and innovative financial and outcome-based incentives

Initiative: Digital Academy Industry Training Centres

OBJECTIVE

The objective of this initiative is to increase the potential local technology expert graduates from Digital Academy courses, that are able to contribute to the State's Digital Economy initiatives.

DESCRIPTION

CENTEXS Digital Academy Industry Training Centres involves the establishment of industry standard training labs/centres in partnership with Amazon Web Services, Bosch Rexroth, IBM, Microsoft and Keysight Technologies and others in various areas. The project also consists of infrastructure, facilities, programmes development aligned to the skills demand for digital economy.

OUTCOMES

- 60% job readiness with workforce equipped on specific skills required by Industry by 2027; and
- 100% Industry Certified Training centre and Micro-credentials Certifications.

TARGET

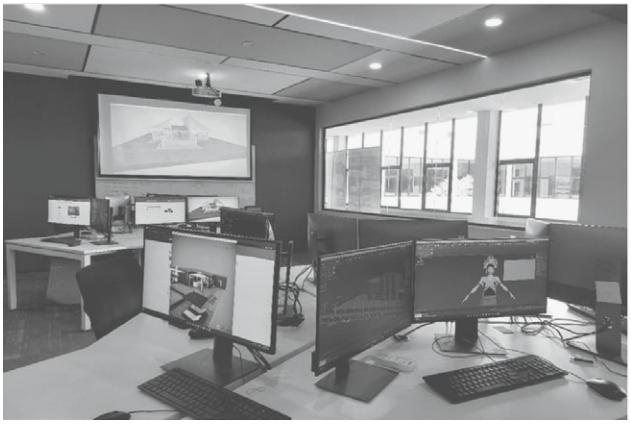
- 6 conducive and state-of-the-art training centres;
- Industry Standard Technologies and Tools; and
- 42 Certified Industry Trainers.

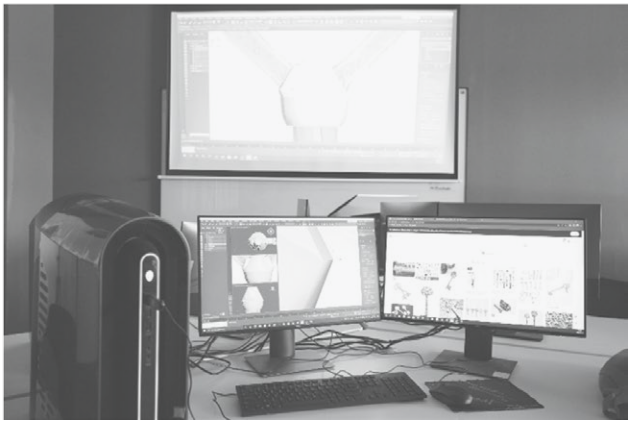
TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MEITD/CENTEXS/Private Sector





Strategic Pillar: Digital Business Development

Strategic Action (S2): Create and implement mechanism to assess and address digital readiness of public and private sectors & community

Initiative: Digital Readiness for Sarawak

OBJECTIVE

The objective of this initiative is to conduct studies and assess the digital readiness of Sarawak for Digital Economy.

DESCRIPTION

Comprehensive studies and reports on digital readiness including digital infrastructure human capital, research & innovation, ease of doing business, investment, cyber security, technology adoption, start-up ecosystem and inclusivity.

OUTCOMES

Digital readiness index for Sarawak

TARGET

- Digital readiness report; and
- Digital gaps and challenges in infrastructure, human capital, data governance and cyber security, research & innovation, investment, technology adoption and ease of doing business.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA/SDEC

Initiative: Human Resource Management System

OBJECTIVE

The objectives of this initiatives are:

- To provide ease of access to government workforce data and information; and
- To manage the human resource in Sarawak.

DESCRIPTION

Comprehensive system to record and retrieve the state workforce data and information for supply and demand. The Workforce Online Data System also automates attendance tracking, improves workforce productivity, promotes a culture of workforce safety and compliance, flexible scheduling, anywhere access.

OUTCOMES

Efficient decision making on recruitment based on the analysis of the supply of talents and gap between supply and demand to support talent demand in the State.

TARGET

A comprehensive workforce online system.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MEITD/CENTEXS/Universities/TVET

Strategic Pillar: Digital Business Development

Strategic Action (S2): Create and implement mechanism to assess and address digital readiness of public and private sectors & community

Initiative: Database for Industry Readiness

OBJECTIVE

The objective of this initiative is to establish database and data centre for data, record management and analysis of readiness related projects such as e-Commerce, R&D, cybersecurity, agriculture, manufacturing, digital inclusivity etc.

DESCRIPTION

Government to set up an integrated database for digital economy initiatives for analysis of the data for decision making by the Sarawak Government. It will also accelerate innovation and data monetisation.

OUTCOMES

Increased efficiency in project management.

TARGET

Integrated databases incorporating multiple data from distributed data centres.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SDEC/SMA/CENTEXS

Strategic Pillar: Digital Business Development

Strategic Action (S3): Review and update policy and regulations to enhance business development to ease of doing business and foreign investment

Initiative: InvestSarawak

OBJECTIVE

The objective of this initiative is to provide policy, procedure and guidelines for ICT business investments in the State.

DESCRIPTION

The proposed function of InvestSarawak is a One-Stop Agency that represents the State in investments and trade promotion and helps position Sarawak as a preferred destination for ICT investment and trading partner.

OUTCOMES

- Increase in digital investment in Sarawak by 50%; and
- Improved business registrationy.

TARGET

Complete policy, procedures and guidelines for domestic and foreign investments for digital economy.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

EPU/SFS/MINTRED/SMA

Strategic Pillar: Digital Business Development

Strategic Action (S4): Accelerate innovation, entrepreneurial and commercialisation activities to grow new generation of digital industry

Initiative: High-Tech Entrepreneurship Development Programme

OBJECTIVE

The objectives of this initiative are:

- To provide customised support for high tech entrepreneurs within various industry, focusing on the manufacturing of IoT and high-tech products; and
- To provide financial opportunities to high caliber technology industries, including foreign direct investment.

DESCRIPTION

Support entrepreneurship and the development of high-tech industry that manufactures digital products for digital economy such as development and production of IoT devices and services by provisioning funds or grants, acquiring equity, consultancy, product marketing etc.

OUTCOMES

- Contribution towards 50% growth in high-tech investment; and
- Spur high-tech industry development in Sarawak.

TARGET

- 20% increase in commercialised local technologies, products, and services; and
- 20 start-ups per year.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

SDEC/MINTRED/Private Sector/Universities

Initiative: Launch Sarawak

OBJECTIVE

The objective of this initiative is to develop technology incubation programmes for the local start-up companies.

DESCRIPTION

Provide MSMEs incubation programs, Landing Pad programmes and technology grants for potential technology start-ups and MSMEs to help to drive the digital economy initiatives in the State.

OUTCOMES

Increased revenue and scalability of the start-ups and MSMEs.

TARGET

50 Launch Sarawak programmes per year organised for the start-ups and MSMEs.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MINTRED/SDEC/SAINS

Strategic Pillar: Digital Business Development

Strategic Action (S5): Establish the digital industry cluster to accelerate industry development

Initiative: Digital Village and Digital Innovation Hubs

OBJECTIVE

The objectives of this initiative are:

- To synergise the innovation entrepreneurship opportunities at the digital innovation hubs across Sarawak in all 12 divisions; and
- To establish, operate, and implement initiatives and programs at Digital Village to mature and scale up start-ups.

DESCRIPTION

Establishment and operationalisation of innovation hubs and Digital Village in partnership with government, business, universities and communities throughout Sarawak to grow and scale up start-ups.

OUTCOMES

Increase in the number of start-ups and job opportunities in digital sectors.

TARGET

- 10 international engagements for scale up start-ups from Digital Village;
- Successful investments for start-ups; and
- 3 scale up start-ups per year exposed through landing pads outside Sarawak.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

TEGAS/SDEC/Private Sector/Universities

Initiative: Digital Industry Technology Park

OBJECTIVE

The objectives of this initiative are:

- To explore the opportunities to the development of digital industry technology parks in Sarawak; and
- To develop the principle, policy and guidelines for the development of digital industry technology park in Sarawak.

DESCRIPTION

The initiative focuses on the development of the industry technology park to attract FDI and DDI in Sarawak.

OUTCOMES

Contribution towards 50% increase in digital investment in Sarawak.

TARGET

- High technology parks development policy, procedures and guidelines;
- Investment grants for high technology parks; and
- Two industrial technology parks.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MINTRED/EPU

Strategic Pillar: Digital Business Development

Strategic Action (S6): Empower improvised sector of the communities in the digital economy through entrepreneurship, sharing economy and gig economy

Initiative: Start-up Ecosystem Development Programme

OBJECTIVE

The objective of this initiative is to deliver a unified vision of the Sarawak Digital and Innovation Ecosystem.

DESCRIPTION

This initiative focuses on engagement with special interest groups, businesses and communities to develop start-ups and entrepreneurship development programmes in Sarawak.

OUTCOMES

- 1,000 high-skilled tech developers trained; and
- 1,000 foreign tech talents based in Sarawak by 2030.

TARGET

- 20 successful scale up start-up with increased business revenue are produced; and
- Programmes and criteria (Developer community, mentorship programme, etc.).

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

SDEC/TEGAS/MINTRED/Universities/ Private Sector

Initiative: Community Digital Literacy Programme

OBJECTIVE

The objective of this initiative is to develop community digital literacy programmes for rural and semi urban areas.

DESCRIPTION

Community Digital Literacy Programme is used to provide trainings and upskilling at rural and semi urban areas to empower citizens to participate in digital economy and reduce digital divide.

OUTCOMES

- Reduced digital divide between rural and urban areas; and
- Lower GINI coefficient index for Sarawak.

TARGET

300 digital literacy programmes state-wide.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MEITD/PUSTAKA/CENTEXS

5.1.3 **STRATEGIC PILLAR 3: PUBLIC SECTOR AND SERVICES**

This strategic pillar will accelerate the transformation of public sector and services focusing on higher ease of doing business, where the government provides highly conducive service environment for businesses and society.

The strategic pillar focuses on leveraging digital technologies, data and digital intelligence to provide data and citizen-driven, efficient, secure and trusted online government services.

The Public Sector and Services strategic pillar is anchored on five (5) strategic actions, namely:

i. Accelerate tailored, personalised and integrated service delivery supported by data protection.
ii. Unlock the power of government data to spur innovation.
iii. Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity.
iv. Enhance public sectors' structure and strengthen capacity and capabilities of civil servants.
v. Enhance regulatory compliance through fit-for-purpose policies and regulations that are data and digitally enabled and are efficiently administered.

The five (5) strategic actions for the Public Sector and Services strategic pillar are supported by thirty-five (35) initiatives comprising of fifteen (15) short-term, eighteen (18) medium-term and two (2) long-term initiatives.

Table 5.4: *Strategic Pillar 3: Public Sector and Services*

Strategic Pillar: Public Sector & Services	
Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection	
Initiative: Smart City Ecosystem	
OBJECTIVE The objective of this initiative is to develop Smart City initiatives in accordance with the National Smart City Framework. **DESCRIPTION** Smart City Ecosystem involves the transformation of major cities in State to improve the quality of life, reduce carbon footprint and spur investments for the city development. It includes the integrated smart city development plan, smart initiatives for all major cities/towns including smart traffic light junctions, smart flood management and smart surveillance system integrated with SIOC, the solutions/ deliverables of Miri Smart City and OKSHE smart community programmes.	**OUTCOMES** • Reduce the carbon footprint by 20%; and • Improve the quality of citizen's life in the State **TARGET** Integrated Smart City Development Plan **TIMELINE** 2022 - 2027 **LEAD AGENCY (IES)** MPHLG/SMA/Agencies/SAINS/ Private Sectors
Initiative: Irrigation Network SCADA System	
OBJECTIVE The objective of this initiative is to implement Irrigation Network SCADA System for field irrigation. **DESCRIPTION** This initiative focuses on the implementation of systematic, integrated, reliable, efficient, and cost saving system for irrigation and water supply management.	**OUTCOMES** Control system to Increase water supply efficiency to optimum level for field irrigation to safeguard production and livelihoods of farmers. **TARGET** An integrated network SCADA control system for paddy field irrigation. **TIMELINE** 2022 - 2027 **LEAD AGENCY (IES)** MUT/DID

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Security Management System

OBJECTIVE

The objectives of this initiative are:

- To support unified security access to all Government agencies;
- To develop an information collection and analysis system to enhance the State security; and
- To support its socio-economic development and conduct security research for policy formulation and enforcement.

DESCRIPTION

Efficient security management solutions and operations in terms of documentation, accuracy of information, real-time records and user-friendly system to support the physical security of Government agencies. A decision support system for collecting data that will be used to plan, make decisions and implement accurate, fast and effective governance on security matters.

OUTCOMES

- Zero trespassing of illegal entry into government agencies;
- Improve the security access in government premises; and
- 100% accurate decision making driven by data on security matters.

TARGET

A Unified Security and Access Control System. A comprehensive security components and capabilities to prevent, monitor and record activities through ICT-based technology to maintain and upgrade physical security at government offices.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

UKPN

Initiative: Integrated Project Management System

OBJECTIVE

The objective of this initiative is to manage, monitor, report all the projects' development, implementation and monitoring by the State Government Agencies.

DESCRIPTION

Integrated Project Management System is an ICT solution in managing, monitoring and controlling the physical and non-physical projects implemented by the government agencies by compiling all statistics and data for update and report on the projects' progress to all stakeholders.

OUTCOMES

- Improved efficiency in monitoring of the physical and non-physical projects; and
- Improved efficiency on funding distribution and monitoring of the performance of the projects.

TARGET

Comprehensive integrated project management system.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

EPU/SMA/SIMU

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Financial and Asset Management

OBJECTIVE

The objectives of this initiative are:

- To enable the accrual accounting concept in financial management;
- To establish holistic platform for efficient and transparent procurement processes management for the State agencies (State e-procurement);
- To improve the transparency, operational efficiencies and accountability in public sector financial management (SIFBAS); and
- To improve the management of asset for effective planning, registration, maintenance and disposal of asset.

DESCRIPTION

An online platform for providing the accrual accounting and improve the transparency in financial management. The platform will also manage the asset effectively via planning, registration, maintenance and disposal of the asset of the government.

OUTCOMES

- Improved efficiency in financial management;
- Reduced time of procurement cycle and lower operational cost; and
- Improved asset management.

TARGET

A comprehensive online platform for financial and asset management.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SFSO/SCSDU/STIU

Initiative: Integrated Service Delivery System

OBJECTIVE

The objectives of this initiatives are:

- To deploy web integrated with dynamic web Content Management System (CMS)'s functionality;
- To efficiently manage government services;
- To improve the efficiency in providing real time information on port operation;
- To achieve end-to-end government services through innovative use of digital technologies; and
- To develop one-stop integrated mobile platform for efficient service delivery to all Sarawakians.

DESCRIPTION

This initiative involves the development and deployment of a fast web based mobile platform which is user friendly with dynamic web CMS functionality for efficient and responsive web operation. The initiative also includes development of system on the real time information on port operation for efficient decision making by port authorities.

OUTCOMES

- 100% government services are online by 2030;
- Integrated digital services;
- Lower administrative cost and more efficient service delivery;
- Strengthen regulations and governance supporting digital government initiative; and
- Improved efficiency and ease of doing business with the Government.

TARGET

- Appropriate policies, procedures, guidelines and regulations; and
- Adoption of digital technologies to improve efficiency and service delivery.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

SCSDU/STIU/MIPD/Port Authorities

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Social Management Platform

OBJECTIVE

The objectives of this initiative are:

- To provide single online platform to access the religion related services such as Islamic and other religion related matters in Sarawak;
- To provide efficient service delivery to the public and to support internal operations of *Majlis Agama Islam Sarawak* (MAIS) and syariah services; and
- To have monitoring system on "UP" core function and dashboard for decision making.

DESCRIPTION

A single online platform that enables the public to access the online services related to Islamic matters such as eDakwah, eMunakahat, eMasjid, Syariah and other religion related matters. The online platform also supports internal operation of MAIS and *Jabatan Kehakiman Syariah Sarawak* on harmonised *adat* marriages procedure and syariah services. This initiative also involves the development of the system for public to access online services related to other religion related matters. In addition, this initiative also includes the monitoring system on UP core function and dashboard for decision making support for hight management.

OUTCOMES

- Effective management of the online services related to religion matters; and
- Efficient service delivery to public and improved internal operation through integrated services with other government applications.

TARGET

Online single platform for providing services on Islamic related matters, other religion related matters and improved service delivery to the public.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SCSDU/STIU/MAIS/UNIFOR/JAIS/ *Jabatan Kehakiman Syariah Sarawak*

Initiative: Online Business Management System

OBJECTIVE

The objectives of this initiative are:

- To register the business community profile;
- To verify the companies; and
- To reuse the company data for other business services or government assistance.

DESCRIPTION

A web-based system for business community to search existing business names and register new business through business names search and registration system, and to apply business trade license at District Office. The submission of the company's application for manufacturing permit to MINTRED via "eICC" includes sensitive business information such as investment amount, machinery, technical know-how etc. Contractor and Consultant Management System (CCMS) for registration of contractor and consultant on classification head/subhead for works category.

OUTCOMES

- Improved ease of doing trading by the business community;
- Improved ease of companies to embark on industrial projects in Sarawak; and
- Improved ease of contractor and consultant to participate in government tender projects.

TARGET

50% of businesses registration.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SCSDU/STIU/Agencies

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Water Level Monitoring System Based on Hydrological Telemetry Data

OBJECTIVE

The objectives of this initiative are:

- To provide accurate and early alert and warning of extreme event such as flood and drought to mitigate damage and enable proper coordination of essential disaster relief operations and management; and
- To support major water resources/supply project such as hydroelectric dams.

DESCRIPTION

This initiative is to develop a warming system on the flood and drought event. With this system, the government agency can view the rainfall & water level information, climate information and telemetry system. They can also monitor Hydrological Telemetry System (HTS) performance and generate mobile summary reports.

OUTCOMES

- Increase in efficiency in flood and drought prevention and management; and
- Prevention of property and asset loss due to flood and drought.

TARGET

Central Information Telemetry Network, System Dashboard, Hydrological Data Management (HDM) and hydrological Station Operation and Maintenance System (HSOMS).

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MUT/DID

Initiative: Urban Drainage Information Management System (UDIMS)

OBJECTIVE

The objectives of this initiatives are:

- To improve the business processes and performance though Digital Economy initiatives to enable end-to-end services from Sarawak Government to project proponent (consultants/developer); and
- To digitalise the submission of consultant/developer on urban drainage plans with PKI solutions.

DESCRIPTION

The urban drainage information system comprises of desktop and web-based application to facilitate various stakeholders to access UDIMS spatial information through digital platform. This initiative also aims to generate certificate for digital signing, integrated with the Integrated Service Management (ISM) and public workspace for viewing and sign-off.

OUTCOMES

Ease of access and effective planning, design and management of the drainage infrastructure development and maintenance throughout Sarawak.

TARGET

- Digitalised online service provider submission system; and
- Digitalised business and workflow process.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MUT/DID

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Digitalisation of Water Supply

OBJECTIVE

The objectives of this initiative are:

- To provide water supply reporting system (WORMS); and
- To improve the information on meter bills issued to customer (JWBS).

DESCRIPTION

WORMS involves the development of water supply operation reporting system including daily & monthly reporting on plant operation, fuel, chemical stock, water quality, chemical dosing, electricity, water usage and others. This also includes the implementation of mobile application for WORMS for offline recording to areas without internet connectivity.

This initiative also involves meter reading bills with water consumption charge, payment system, Service Sarawak reconciliation, accrual accounting interfacing, and outstanding charges reservation.

OUTCOMES

- Improve service delivery efficiency and improved customer service experience;
- Improved monitoring and reporting of water supply, which in return will increase water quality and water services; and
- Improved consumers quality of life with supply of clean and quality water.

TARGET

- Digitalised water monitoring and reporting platform; and
- Digitalised billing system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MUT/JBALB

Initiative: Information System for Utilities

OBJECTIVE

The objectives of this initiative are:

- To provide e-Gas services, online accredited institution (e-Water, e-Gas & eMINDS), online electricity license application, data analytics & dashboard, online payment; and
- To provide end-to-end online services for customers to access services anytime, anywhere.

DESCRIPTION

The initiative includes the enhancement of (e-Gas) services to be integrated with ISM, digital signature, e-Letter/e-Certificate at public workspace. This includes online registration/renewal of accredited institution module (for e-Water, e-Gas, eMINDS), online electrical installation registration and reporting, e-Billing for water royalty. It also includes sharing for water catchment and infrastructure spatial data from JBALB via SHARES Centralised platform.

OUTCOMES

- Improve efficiency in service process and reduce service delivery time;
- Enhance revenue collection and comply requirement from Treasury Department; and
- Data analytics for projection and decision-making.

TARGET

- End-to-end digitalised online service delivery; and
- Digitalised decision support system.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MUT/SCSDU/STIU

Strategic Pillar: Public Sector & Services

Strategic Action (S1): Accelerate tailored, personalised and integrated service delivery supported by data protection

Initiative: Online Monitoring System for Sewer Network

OBJECTIVE

The objective of this initiative is to address the problem of blockages and overflow of sewage and carry out preventive maintenance by flushing and clearing of sewer line at a predetermined interval at the identified hotspot areas.

DESCRIPTION

This initiative is about the usage of technology for monitoring and maintenance and having predictive and preventive maintenance for the system.

OUTCOMES

Improved efficiency of maintenance and monitoring of sewer network system.

TARGET

Online sewer network monitoring system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

Sewerage Department

Strategic Pillar: Public Sector & Services

Strategic Action (S2): Unlock the power of government data to spur innovation

Initiative: Digital Innovation Clusters

OBJECTIVE

The objectives of this initiative are:

- To establish demand-based private-led digital innovation cluster; and
- To provide a platform and access to the universities entrepreneurs to accelerate product development and commercialisation.

DESCRIPTION

The initiative focuses on establishing innovation ecosystem and access to government data to spur research, innovation and commercialisation. The initiative will also focus on adequate supply of competent talent as an enabler to grow start-ups.

OUTCOMES

- Contribution to Sarawak's GDP;
- 30 start-ups per year;
- Increased number of R&D talents; and
- New high-tech jobs.

TARGET

- 20 programmes/workshops;
- 30 Intellectual Property (IP) registered related to this initiative; and
- Innovation hubs in each district.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SDEC/TEGAS/Private Sectors/Universities

Initiative: e-Learning Module for Digital Economy

OBJECTIVE

The objectives of this initiative are:

- To provide online Learning Management System (LMS) for training and courses with tracking and monitoring approach;
- To effectively deliver Sarawak digital economy skills and talent development programs to end-users; and
- To empower & provide local agencies and training providers with platform in providing training to the end users.

DESCRIPTION

Development of e-Learning module leveraging on high tech equipment including AR/VR to deliver contents and to promote and support potential use cases such as telemedicine, mining etc. The initiative also aims to enable blended learning and training, certification and mentoring for public and industry/private sectors that covers all economic sectors, digital skills and technologies.

OUTCOMES

- 30% increase in number of digital talents with skills required in digital economy in Sarawak; and
- Enhanced core competencies of workers in digital economy industry.

TARGET

- Online and immersive simulation-based e-learning modules;
- 3D Models and IPs in economic sectors in the areas such as telemedicine, mining, industry 4.0 (manufacturing), oil & gas, tourism etc.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MEITD/CENTEXS

Strategic Pillar: Public Sector & Services

Strategic Action (S2): Unlock the power of government data to spur innovation

Initiative: Biodiversity Contents Creation Programmes for Digital Economy

OBJECTIVE

The objectives of this initiative are:

- To create a more sustainable environment which will not increase the carbon footprint, cost or have any negative impact to the environment;
- To develop more biodiversity tourisms programs and interactions with international stakeholders; and
- To develop more biodiversity training and learning program in cultivate more professionals trained in the State.

DESCRIPTION

The initiative focuses on the biodiversity contents creation program focusing in social, tourism, and agriculture sectors and includes professional certificate in biodiversity tourisms, lifelong learning; short courses and repository including digitising Sarawak Natural Heritages (Biodiversity).

OUTCOMES

30% increase in number of professionals trained in the biodiversity tourism in Sarawak.

TARGET

7,500 Sarawakians are trained in biodiversity contents creation.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SBC/Universities/CENTEXS

Initiative: One Utility Bill (OUB)

OBJECTIVE

The objectives of this initiative are:

- To study and develop OUB platform which combines utilities bill charges for Water and Electricity into a single bill;
- To improve water resource management efficiency; and
- To manage the online application on the competent person/contractor and utility licensing for electricity, gas distribution, water supply product certificate, rural water supply and electrification projects.

DESCRIPTION

This initiative involves the development of OUB system which consists of Water, Gas and Electricity as a single bill. The system also caters for any new utility services added in the future. The system also aims to provide comprehensive water monitoring command centre in managing complaints and issues related to water distribution.

OUTCOMES

- Consolidation of consumer bills into one billing system;
- Integrated service delivery to consumers;
- Increased customer satisfaction rating to 85%; and
- Effective monitoring of water distribution digitally.

TARGET

- Integrated billing system for water, electricity and gas; and
- Establishment of one command centre for water supply and distribution.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MUT/SDEC

Strategic Pillar: Public Sector & Services

Strategic Action (S2): Unlock the power of government data to spur innovation

Initiative: Environmental Quality Monitoring and Analysis System

OBJECTIVE

The objectives of this initiatives are:

- To carry out comprehensive study on air and water quality;
- To plan, install air and water quality monitoring sensors and stations state-wide;
- To establish IoT and mobile communication network to enable remote monitoring of environment quality; and
- To set up monitoring, data collection and analysis capability for decision support in regard to water and air quality management.

DESCRIPTION

The initiative focuses on the development of a platform to monitor, manage and control the environment, air and water quality index through the installation of the IoT devices and sensors.

OUTCOMES

Real time monitoring of air and water quality and ability to link to other information for analysis, research, development planning and resource management.

TARGET

Integrated platform and IoT sensor for NREB, JBALB, KWB and DID stations.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

NREB/MUDENR/JBALB/KWB/DID/MUT

Initiative: Economic Sector Focused Testbeds

OBJECTIVE

The objectives of this initiative are:

- To provide platform for research, training and innovation;
- To showcase the 4IR technology and solutions for industry and workforce transformation; and
- To facilitate the digitalisation of MSMEs.

DESCRIPTION

This initiative aims to accelerate workforce and industry transformation and provide platform for training, education and research and showcasing new technologies, solutions, applications, products, services, security and processes, thus accelerating digital transformation of the economic sectors.

OUTCOMES

- Industry and workforce transformation;
- Increased number of digitally skilled workforce to drive Digital Economy; and
- Showcase technology and solutions to spur innovation and high-tech industry development.

TARGET

- Six testbeds facility and 30 technology showcase/use cases;
- 12 Proof-of-concept and prototype technology solutions; and
- 20 strategic partnerships with universities and businesses.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC/Private Sector/Universities

Strategic Pillar: Public Sector & Services

Strategic Action (S2): Unlock the power of government data to spur innovation

Initiative: State Data Management

OBJECTIVE

The objectives of this initiative are:

- To share and publish Open Data in various machine-readable and informative formats to the public;
- To enable the public to request or discover, understand and download Open Data files;
- To encourage the use of data sets for innovative and new product such as development of new application/system by start-ups/individual; and
- To enable the use of application programming interface to access Open Data.

DESCRIPTION

This initiative involves the Open Data, Open Source and Open Interface Initiative and Open Data Portal Application. This initiative will include further development of metadata frameworks, policies, governance, standards, best practices and platforms to enable sharing and interoperability of digital data resources between state government agencies, federal government agencies, private sector and the public.

OUTCOMES

30% citizen and business centric applications to be developed/enhanced by external parties using the open data, open source or open Application Programming Interfaces (APIs).

TARGET

- 80% data integrated with existing platform; and
- 1000 datasets, 20 open-source apps, and 100 open APIs on the platform.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA/SCSDU/STIU/PUSTAKA

Initiative: State Record Management System

OBJECTIVE

The objective of this initiative is to develop a unified digitalised records management system in managing the life cycle of government valued records from creation, classification, use and preparation for archival.

DESCRIPTION

This initiative involves the development of the State Record Architecture, standards and management involving creation of records, data conversion, cataloguing, storage, archiving, backup facilities, digitisation facility, trainings, change management throughout the life cycle of every record classification.

OUTCOMES

- Reduced government operation cost on physical documentation records;
- Improved efficiency/performance of the government services delivery; and
- Reduced risk of data loss.

TARGET

An integrated State Record Management system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA/SCSDU/STIU/PUSTAKA

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Initiative: Physical Infrastructure and Utility Mapping

OBJECTIVE

The objectives of the initiative are:

- To develop and implement a centralised digital repository known as the Unified Utilities Asset Database Management System;
- To manage the State's utilities assets; and
- To achieves smarter and more comfortable living.

DESCRIPTION

The initiative focuses on one stop system development to enhance the State's physical infrastructure and utility mapping services in 3D Geospatial mapping, data repository and 3D city model for planning and development.

OUTCOMES

- Faster and efficient approval of development projects; and
- More efficient maintenance and servicing of utility and infrastructure, leading to cost savings.

TARGET

A one stop physical infrastructure and utility mapping data system and process.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SCSDU/STIU/L&S/MUT

Initiative: Sarawak Foreign Workers Health Management System (SaFHIS)

OBJECTIVE

The objective of this initiative is to implement, manage and supervise a comprehensive health and medical screening programme for all foreign workers in Sarawak.

DESCRIPTION

A system to document the screening of health issues for foreign workers when they make their entry into and throughout their stay in Sarawak. The system is designed and managed by medical professionals with expertise in public health, occupational health, radiology, laboratory services and other related specialties. These medical professionals are able to inform Immigration if the foreign worker is healthy to work in Sarawak.

OUTCOMES

100% end-to-end Health Monitoring and Verification process.

TARGET

One integrated Foreign Workers Health System.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

UP/ILMU

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Initiative: State BIM Monitoring and Analysis

OBJECTIVE

The objectives of this initiative are:

- To develop BIM system for building construction and management;
- To increase the efficiency of project management and delivery;
- To facilitate efficient project planning and monitoring; and
- To provide reports such as quality assurance performance reports, quality compliance reports, violation reports among others.

DESCRIPTION

This initiative includes development of BIM monitoring and analysis system that will enable the agencies to collaborate on the digital drawing via BIM that improves the communication and reduces cost. It will increase design, implementation and work efficiency and reduce risks and wastages.

OUTCOMES

Improved resource utilisation, efficiency and product quality for the construction industry.

TARGET

A web-based BIM system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

JKR/SDEC

Initiative: Citizen Centric Digital Government Platform

OBJECTIVE

The objectives of this initiative are:

- To develop policy, procedures and guidelines for citizen centric digital government;
- To create citizen and environment friendly urban living and workspace; and
- To integrate key systems via API for data sharing and exchange.

DESCRIPTION

The initiative focuses on developing citizen centric platform for Housing and Urban Development with strategies in ensuring sufficient development of sustainable housing with enhanced convenience, safety and comfort for city dwellers.

OUTCOMES

Improved quality of life and ease of doing business.

TARGET

Standard Policies, Procedure and Guideline on the development of digital government platform.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SCSDU/STIU

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Incentive: Sarawak Minerals Information System

OBJECTIVE

The objectives of this initiatives are:

- To develop Sarawak Mining Policy to support the implementation of Sarawak Mining Masterplan; and
- To develop "One Stop System" to monitor the activities involving the mining industries.

DESCRIPTION

Sarawak Minerals Information System is a system to monitor the activities related to the mining industries. The system is a comprehensive system that provides geospatial data and capabilities for planning and decision making.

OUTCOMES

- Effective planning and decision making;
- Lower exploration costs;
- Growth in sustainable and thriving mining industry; and
- Increase foreign investment into State mining sector.

TARGET

- Sarawak Mining Policy; and
- A comprehensive system for Minerals Information in Sarawak with geospatial data and capabilities for planning and decision making.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MUDeNR

Initiative: Digital Health Platform

OBJECTIVE

The objective of this initiative is to develop integrated health system connected to all medical facilities in Sarawak.

DESCRIPTION

Digital Health system is developed to provide community a one stop centre for health services for rural and urban community and storage of all the related health records in the Sarawak Government system. This system enables the synchronisation of patient data among health facilities through electronic medical records system. The integrated digital health system enables the government and health agencies to further their studies to upgrade the health sectors including facilities, medication and professional skills of the medical professionals.

OUTCOMES

- Secure patient healthcare information data records; and
- Improve efficiency of the services provided by the health facilities to the public.

TARGET

Integrated one health system connected to all medical facilities in the State.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

JKNS

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Initiative: Online Wildlife Licensing System

OBJECTIVE

The objectives of this initiative are:

- To develop an online wildlife licensing system for the agency to monitor, manage wildlife license application, renewal and sharing of relevant research and innovation data for public awareness; and
- To foster sharing of the statistical information on wildlife activities in Sarawak for agencies/public's reference and research purposes.

DESCRIPTION

A system will focus on delivering 100% end-to-end wildlife licensing application and renewal processes. The Online Wildlife Licensing System also involves the development of the dashboard for viewing of relevant statistics and data for overall wildlife licensing application such as renewal, pending or expiry status.

OUTCOMES

- Increase public awareness on state's Wildlife license application process, statistics and important notice announcement; and
- Reduce the risk of the illegal hunting/ poaching and wildlife related trade in the state.

TARGET

Online Wildlife Licensing Module

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MUDeNR

Initiative: Enhance Digital Ecosystem for High-Tech Parks

OBJECTIVE

The objective of this initiative is to establish an integrated Security System for entry and exit of authorised personnel and vehicles in High-Tech Park/ Free Industrial Park.

DESCRIPTION

The enhancement of the High-Tech Park's integrated security system involves the monitoring and recording of all the access into the High-Tech Park. It also reduces the long queue at the Security Guard House and improves the security surveillance in the High-Tech Park where all the events in the area are monitored and recorded.

OUTCOMES

- Reduction in the number of crimes at the High-Tech Park;
- Reduction in the number of cases of illegal trade activities; and
- Efficient traceable and real-time data on movement access.

TARGET

A comprehensive and Integrated Security System for entry and exit of authorised personnel and vehicles.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MINTRED/SDEC

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Initiative: Innovative Digital Solution for Local Councils

OBJECTIVE

The objective of this initiative is to digitalise the work processes for efficient service delivery to the public.

DESCRIPTION

The initiative focuses on digitalising existing manual processes to streamline daily operations in providing fast, efficient integrated services to the public.

OUTCOMES

- Increase productivity; and
- Improved and efficient service to the public.

TARGET

Digitalising of:

- Financial, budgeting and accounting System;
- Human Resource Management System;
- Asset Management System;
- Procurement Management System;
- Valuation System;
- Licensing System;
- Fleet Management System;
- Building Control System;
- Legal Management System; and
- Operations Monitoring System.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MPHLG/DBKU/MBKS/Other local councils

Initiative: Integrated Geographic Information System (GIS) for Local Councils

OBJECTIVE

The objectives of this initiative are:

- To integrate GIS database; and
- To interface GIS data to other applications.

DESCRIPTION

Immediate and real time data request is crucial for strategic decision making and response. This initiative focuses on developing integrated GIS to improve service delivery by councils, smart city development and e-service.

OUTCOMES

- Effective city management; and
- Reduce hardcopy data usage.

TARGET

- An integrated GIS;
- Complete training and infrastructure;
- Geo-database commissioning and provision of new geo-database; and
- GIS data development and integration.

TIMELINE

2024 - 2030

LEAD AGENCY (IES)

MPHLG/DBKU/MBKS/Other local councils

Strategic Pillar: Public Sector & Services

Strategic Action (S3): Accelerate the adoption and integration of digital technology/platform to improve service delivery, workflow efficiency and productivity

Initiative: Public Service Platform

OBJECTIVE

The objectives of this initiative are:

- To implement Digital Identity as the single sign on to access to government digital services;
- To enhance the current One Stop Communication Channel - *Talikhidmat* to provide better quality service to the public;
- To extend the One Stop Customer-Centric Service Delivery Platform – Service Sarawak throughout Sarawak for the convenience of the people in accessing government services; and
- Integrated Service Management (ISM) framework for service and data integration that support end-to-end service digitalisation so that services can be delivered efficiently and seamlessly.

DESCRIPTION

Common and Supporting Platform involves numerous initiatives such as implementation of Sarawak ID as Digital Identity to access Government online Service, ISM as the central access to government services, *Talikhidmat* with better services and Service Sarawak Centre on the extension of the Service Sarawak Kiosk throughout Sarawak.

OUTCOMES

- 50% improvement in addressing public complaints; and
- Safe and secure access to government online services.

TARGET

- Secure digital identity access system for government;
- Sarawak Service Centres; and
- ISM framework.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SCSDU/STIU

Strategic Pillar: Public Sector & Services

Strategic Action (S4): Enhance public sectors' structure, and strengthen capacity and capabilities of civil servants

Initiative: Digital Talent Development and Management

OBJECTIVE

The objective of this initiative is to strengthen the competency and skills of the government officers via trainings and programmes related to Digital transformation of Sarawak Civil Service.

DESCRIPTION

The Digital Talent Development and Management includes the training programmes to increase the skills and competencies of the government officers in Digital Technology and applications so that they are able to lead and drive the digital transformation in their organisation.

OUTCOMES

- 100% digitally skilled workforce to drive the digital transformation of the public sector; and
- Increase competency and work productivity of the government officer.

TARGET

50 training programmes for Public Services and GLCs.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

HRDMU/SCSDU/STIU/Leadership Institute

Strategic Pillar: Public Sector & Services

Strategic Action (S5): Enhance regulatory compliance through fit-for-purpose policies and regulations that are data and digitally enabled and are efficiently administered

Initiative: Development of Enterprise Architecture (EA)

OBJECTIVE

The objective of the Development of Enterprise Architecture is to study, analyse, design and develop an overall EA for the Sarawak Digital Economy ecosystem.

DESCRIPTION

The EA is to be implementable and cover all business, data, application and technology areas of the State Government, the private sector, Institutions of Higher Learnings and public (including foreigners). The initiative also aims to develop the enterprise architecture in the organisation and prevent the practitioners of enterprise architecture from being locked into proprietary methods, ensure that resources are utilised efficiently and providing timely and consistent services in cost-effective manner while meeting the expectations of the public and stakeholders.

OUTCOMES

- Shared resources, seamless integration, ability to scale up systems, cost and effort savings, better user experience;
- Increased number of trained and certified EA officers; and
- Improved efficiency and performance of the government services.

TARGET

A comprehensive development of enterprise architecture for government agencies.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA

Initiative: Develop Policy, Procedure and Guideline (PPG) on Regulatory Compliance

OBJECTIVE

The objective of the initiative is to develop PPG framework on regulatory compliance for Sarawak government agencies and public for communications and multimedia activities in Sarawak.

DESCRIPTION

SMA is responsible to spearhead, oversee and facilitate the implementation of communication, multimedia and Digital Economy initiatives in Sarawak. The initiative focuses on developing comprehensive PPGs frameworks, policies and regulatory compliance to ensure that the initiatives are developed and implemented in accordance with standard and best practices to accelerate digital transformation in Sarawak.

OUTCOMES

- 100% compliance of the government agencies and public on communications and multimedia activities in Sarawak; and
- Standardisation and integration of systems developed by government agencies.

TARGET

A comprehensive development of PPGs on Regulatory Compliance on communication, multimedia and Digital Economy initiatives in Sarawak.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA

5.1.4 **STRATEGIC PILLAR 4: FRONTIER TECHNOLOGIES ADOPTION**

Adoption of emerging digital technologies is an important enabler for economic growth. Prioritising the adoption of the emerging technologies like artificial intelligence, internet-of-things, blockchain, data analytics, 5G, immersive technologies, cloud computing, and others will drive future productivity and prosperity. Developing the understanding of these technologies, policies and regulatory framework, building capability and capacity and keeping pace with the changes in technology will accelerate the value from digital transformation.

The Frontier Technologies Adoption strategic pillar is anchored on four (4) strategic actions, namely:

i. Facilitate adoption of digital technologies among businesses and communities.
ii. Prioritise the adoption of digital technologies for policy formulation, implementation and regulatory functions.
iii. Prioritise financial incentives to accelerate technology adoption.
iv. Catalyse Artificial Intelligence opportunities in public and private sectors.

The four (4) strategic actions for the Frontier Technologies Adoption strategic pillar are supported by fifteen (15) initiatives comprising of six (6) short-term, seven (7) medium- term and two (2) long-term initiatives.

Table 5.5: *Strategic Pillar 4: Adoption of Frontier Technologies*

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S1): Facilitate adoption of digital technologies among businesses & communities

Initiative: Business Digitalisation Programme

OBJECTIVE

The objective of this initiative is to assist the SMEs on digitalisation of their business and processes for enhancing their competitiveness, resilience and innovativeness.

DESCRIPTION

The SME Business Digitalisation Program focuses on strategic measures to assist SMEs on digitalisation programme as part of the drive towards equitable economic development, bringing greater benefit to Sarawak's economy. The programme will be continuously conducted to ensure all participants can adapt and adopt new methodology of business ecosystem.

OUTCOMES

- 80% MSMEs digitalised; and
- 50% increase in business competitiveness and 10% increase in revenue in business.

TARGET

- Industry standard platform;
- 1,000 businesses on boarded onto digitalisation annually; and
- Tracking: SERAPI (Ecosystem platform) and Digital Business Listing platform operational by 2023.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MINTRED/SDEC/Private Sector

Initiative: Technology Demonstrator Project/5G Demonstrator Project

OBJECTIVE

The objective of this initiative is to facilitate the enhancement and development of digital infrastructure and accelerate digital economy transformation via 5G ecosystem in Sarawak.

DESCRIPTION

This initiative is more towards the actual demonstration of use cases in the economic sectors contributing to economic and social values to Sarawak. Each of these use cases will includes planning activities, development of the specific network services, and the final integration to the realisation of the actual demonstration.

OUTCOMES

5G use cases in priority sectors, including manufacturing, port operation, education, digital health, smart city, and others.

TARGET

- Functional 5G testbeds;
- 5G user training; and
- 5G go-live.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC/Private Sector

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S1): Facilitate adoption of digital technologies among businesses & communities

Initiative: Creative Digital Content Development

OBJECTIVE

The objective of this initiative is to develop digital content skill and capabilities for marketing and business strategy.

DESCRIPTION

This initiative is to develop the digital inclusivity and literacy skills and creation of digital content in line with current trends of animation, gaming, interactive media, digital comics and VRX.

OUTCOMES

To increase the revenues up to 10% which are generated from Intellectual Property (IP), digital content and media.

TARGET

- 5 IPs contents are produced per annum; and
- 500 participants per year.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SDEC/Private Sector

Initiative: Feasibility Study and Implementation of Digital Certificates

OBJECTIVE

The objective of this initiative is to utilise the Sarawak Government online transactions with Citizen (G2C), businesses (G2B) and other Governments (G2G) that are authenticated and securely transacted.

DESCRIPTION

This initiative aims to improve secure environment of Sarawak Government online transactions to boost the business process with Citizen (G2C), businesses (G2B) and other Governments (G2G) that are authenticated and securely transacted.

OUTCOMES

- 100% secure transaction; and
- Increased customer satisfaction.

TARGET

State's own Certificate Authority or equivalent to promote trusted online digital economy and digital government activities.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA/SCSDU/STIU

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S2): Prioritise the adoption of digital technologies for policy formulation, implementation and regulatory functions

Initiative: Rainforest Guardian System

OBJECTIVE

The objective of this initiative is to provide alerts to rainforest enforcement on illegal activities through the adoption of Artificial Intelligence (AI) technology and renewable energy.

DESCRIPTION

The Rainforest Guardian System is a Proof of Concept (PoC) study and implementation with initial 15 units of rainforest guardian from Rainforest Connection California with cloud platform and training for relevant enforcement and operation staff from relevant agencies.

OUTCOMES

Enforcement agencies can respond faster by 80% to the alerts to prevent and eradicate illegal logging, poaching and other activities endangering wildlife population.

TARGET

Rainforest Guardian System.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

FD/SFC/Private Sector

Initiative: 3D Web-Based System

OBJECTIVE

The objectives of this initiative are:

- To develop 3D web-based system and User Acceptance Test (UAT);
- To implement 3D web-based system for city planning; and
- To develop and conduct training programmes.

DESCRIPTION

A web-based system to publish and view 3D City profiles of major towns in Sarawak for effective city planning.

OUTCOMES

80% efficiency sharing and utilisation of 3D datasets to generate more value-added benefits to the State of Sarawak

TARGET

- A web-based system to publish, visualise and share 3D City Modelling dataset for major towns and cities in Sarawak; and
- A 3D datasets central repository by year 2027.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC/JKR/SAINS/Private Sector

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S2): Prioritise the adoption of digital technologies for policy formulation, implementation and regulatory functions

Initiative: Integrated IoT - ERP System

OBJECTIVE

The objective of this initiative is to ensure optimal growing conditions for oil palm and effective usage of resources such as labour and machineries.

DESCRIPTION

The initiative is to develop integrated IoT ERP system in line with the government objective of modernisation agriculture through the use of digital technology/IoT to improve plantation operation. Currently Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) and its group of companies are using multiple systems and operating on different platform based on respective Operating Units' requirements.

OUTCOMES

- Automated operation processes and increase ease of doing business;
- Improved efficiency and better operation control by 70%; and
- Improved yield by 40%.

TARGET

Comprehensive ERP system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SALCRA/Private Sector

Initiative: Geospatial Integrated Information System (SALIIS)

OBJECTIVE

The objectives of this initiative are

- To consolidate all SALCRA's survey/ mapping data into a centralised geodatabase;
- To integrate different data sets using spatial location; and
- To evaluate suitability and capability, estimate and predict, interpret and understand using spatial analysis.

DESCRIPTION

GIS technology and system have increased dramatically in popularity, use, and interest over the past decade. Today, organization and groups of all types use Geographical Information System (GIS) for a wide variety of spatial activities.

OUTCOMES

- Better land development planning;
- Accurate estate inventory; and
- 50% increased of productivity.

TARGET

Online integrated information system for Geospatial services, land record, land planning and land management.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

M-FICORD/SALCRA

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S2): Prioritise the adoption of digital technologies for policy formulation, implementation and regulatory functions

Initiative: Animal Identification and Traceability System

OBJECTIVE

The objective of this initiative is to develop animal identification and traceability system solution.

DESCRIPTION

Development of the system to recognise and trace the animal for monitoring, mapping, reporting and research purposes by Department of Veterinary Services Sarawak (DVS).

OUTCOMES

50% increase in efficiency in identifying animals for mapping purposes.

TARGET

An integrated animal identification and tracking system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

DVS/SDEC

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S3): Prioritise financial incentives to accelerate technology adoption

Initiative: Industry Linkage Fund

OBJECTIVE

The objective of this initiative is to establish industry linkage matching grant scheme to accelerate strategic research & innovation in partnership between public and private sectors.

DESCRIPTION

The Industry Linkage grant scheme is a funding program to support translational research and innovation in collaboration with universities and industry on research projects which have the potential to increase Sarawak's capability to commercialise and enhance the industry's competitiveness in the global marketplace.

OUTCOMES

- Increase in revenue from Intellectual Property (IP) commercialisation and innovation projects;
- 30% increase in strategic translational research in Sarawak to create marketable and innovative products; and
- 60% increase in job opportunities due to extensive funding in research and innovation projects.

TARGET

50% increase in research and innovation projects from industry linkage fund.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC/Private Sector/Universities

Initiative: Micro, Small and Medium Enterprises (MSMEs) Digitalisation Grants/Vouchers

OBJECTIVE

The objective of this initiative is to provide grants/ vouchers to digitalise MSMEs.

DESCRIPTION

Provision of grants/vouchers to MSMEs in digitising their business and operations to foster competitiveness and access to domestic and global market.

OUTCOMES

- Improved access to global market;
- Reduction of the cost of operations; and
- Increased job opportunities.

TARGET

80% of MSMEs digitalised

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MINTRED/SDEC

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S3): Prioritise financial incentives to accelerate technology adoption

Initiative: Platform as a Service (PaaS) for Micro, Small and Medium Enterprises (MSMEs)

OBJECTIVE

The objective of this initiative is to provide integrated platform for MSMEs to develop and promote their product and services digitally to domestic and global market.

DESCRIPTION

Platform for MSMEs to develop, promote and market their products and solutions digitally and increase their competitiveness, market share and revenue.

OUTCOMES

- Increased job opportunities;
- Increased market penetration;
- Increased revenue; and
- More competitive businesses.

TARGET

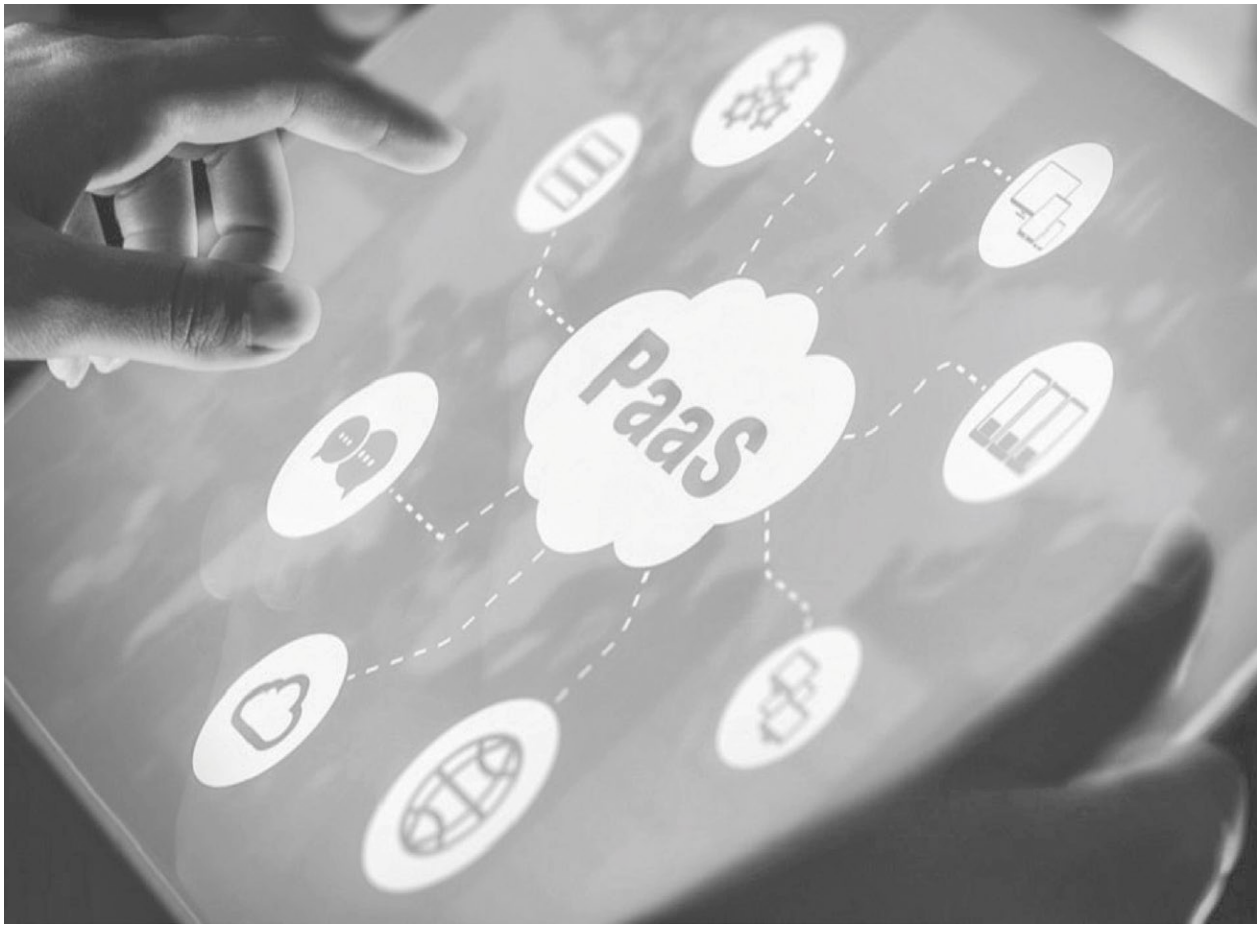
Digital Platforms as a Service to MSMEs

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MINTRED/SDEC



Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S4): Catalyse AI opportunities in public and private sectors

Initiative: Artificial Intelligence (AI) driven Forensic Timber Identification and Forest Protection

OBJECTIVE

The objective of this initiative is to provide AI driven forensic timber identification system to protect the forest and generate revenue from timber identification.

DESCRIPTION

AI and Forensic Timber Identification for timber enable every timber to be traced to the stump and concession area leading to reduction in illegal logging, mixing of illegal logs with legal logs and better protection of forest.

OUTCOMES

- Reduction in illegal logging and improved authentication logged timber;
- Improved protection of forest; and
- 70% improvement in timber product management.

TARGET

A comprehensive AI driven forensic timber identification system.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

FD

Initiative: Artificial Intelligence (AI) Adoption Plan

OBJECTIVE

The objectives of this initiative are:

- To develop AI action plan including acquisition and adoption of AI technology and talent requirements;
- To develop State AI framework and strategy to support AI development and ethical deployment opportunities by public and private sectors; and
- To develop and implement AI policies, procedures and guidelines for the adoption of AI by government and businesses.

DESCRIPTION

The initiative focuses on the development of AI action plan and explores opportunities in public and private sectors to adopt and implement AI and machine leaning solutions to achieve more efficient, cost effective and reliable services.

OUTCOMES

- Improved efficiency and productivity;
- Increased high-tech jobs opportunities;
- Contribution to Sarawak's GDP; and
- Improved competency in AI.

TARGET

- Appropriate policies, procedures, and guidelines; and
- Comprehensive AI adoption plan.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA

Strategic Pillar: Frontier Technologies Adoption

Strategic Action (S4): Catalyse AI opportunities in public and private sectors

Initiative: 3D Cave Modelling

OBJECTIVE

The objectives of this initiative are:

- To develop 3D models of the caves in TPAs using the LIDAR technology;
- To investigate cave biodiversity for research and tourism sector; and
- To promote Sarawak's unique natural attraction to the world.

DESCRIPTION

This initiative will focus on developing 3D Cave modelling for totally protected areas in Sarawak. The initiative will include LIDAR-based mapping of the cave structure, cave survey, data analysis and modelling.

OUTCOMES

Contribution to Sarawak GDP in tourism sector and 50% improvement in outreach.

TARGET

Data repository system for 3D cave modelling.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MTCP/SDEC/SFC/FD

5.1.5 **STRATEGIC PILLAR 5: FOUNDATION FOR DIGITAL ECONOMY**

A dynamic digital economy requires whole-of-economy digital readiness to maximise digital value and provide foundation for a stable and sustainable digital economy and society. This strategic pillar includes:

- Digital Infrastructure & Connectivity;
- Data Governance;
- Cyber Security;
- Human Capital, Digital Talent & Skills;
- Research, Innovation & Entrepreneurship; and
- Inclusivity.

The Sarawak Government has made significant investments in the foundations for digital economy over the last five years to ensure that the digital infrastructure, digital talents and skills, policies and regulations are in place to accelerate economic growth.

The Foundation of Digital Economy strategic pillar is anchored on eleven (11) strategic actions, namely:

i. Provide high-speed, reliable and affordable internet connectivity to all Sarawakians.
ii. Establish global standard digital infrastructure to accelerate digital transformation.
iii. Accelerate research, innovation, entrepreneurship and commercialisation.
iv. Accelerate industry focused re-skilling and up-skilling of existing workforce.
v. Match talent needs with the future needs of digital economy.
vi. Integrating digital skills into education at primary and secondary level.
vii. Foster equal access to digital economy opportunities to all Sarawakians.
viii. Accelerate digital skills in the community.
ix. Enhance cyber security ecosystem, governance, uptake and awareness by public and private sectors and community.
x. Enhance baseline security and resilience for critical infrastructure.
xi. Enhance data governance, protection and privacy policies, standards and processes.

The eleven (11) strategic actions for the Foundation for Digital Economy strategic pillar are supported by twenty-four (24) initiatives comprising of nine (9) short-term, five (5) medium-term and ten (10) long-term initiatives.

Table 5.6: *Strategic Pillar 5: Foundation for Digital Economy*

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S1): Provide high-speed, reliable and affordable internet connectivity to all Sarawakians

Initiative: Digital Telecommunication Infrastructure

OBJECTIVE

The objectives of this initiative are:

- To provide high-speed and reliable telecommunication connectivity and services across Sarawak.

DESCRIPTION

The focus of the initiative is to provide 4G LTE network to user across Sarawak to enjoy the high-speed internet connectivity and to participate in digital economy. The initiatives include Sarawak Multimedia Authority Rural Telecommunication (SMART), JENDELA, MySRBN (Fixed Wireless Access) and SALURAN, VSAT among others.

OUTCOMES

- Reduce digital divide between rural and urban Sarawak; and
- Increase the adoption and participation in digital initiatives by all Sarawakians.

TARGET

- Improved network connectivity to 96%;
- Increase the ease of doing business by 80%; and
- Productivity increases by 70% in services in industrial parks.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MUT/SDEC/MCMC/SAINS/Private Sector

Initiative: Increase SarawakNet Capacity

OBJECTIVE

The objective of this initiative is to upgrade the network equipment for WBM, STROPI, Old DUN, TYT Office and new DUN to new equipment for efficient LAN performance scope.

DESCRIPTION

This initiative involves carrying out of the necessary cabling, access point installations and network services to improve the connectivity at government offices.

OUTCOMES

Increase in work efficiency and productivity by 80%.

TARGET

Increase the network connectivity and stability of the SarawakNet.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MUT/SCSDU/STIU/SAINS

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S1): Provide high-speed, reliable and affordable internet connectivity to all Sarawakians

Initiative: 5G for Sarawak Agrotechnology and Bio-industrial Parks

OBJECTIVE

The objective of this initiative is:

- To install 5G towers at Semenggok Agriculture Center and Sarawak bio-industrial parks to spur direct investments, innovation and high-tech industry development.

DESCRIPTION

5G connectivity is essential to boost agriculture and biotechnology business opportunities, promote research and commercialisation, attract and spur both local and foreign investments through public-private partnerships, foster the growth of new businesses and the advancement of high-tech innovation and technology.

OUTCOMES

- 50% improvement in biotechnology and agrotechnology investments in Sarawak; and
- Increase in high-tech jobs and start-ups.

TARGET

5G-ready agrotechnology and bio-industrial park.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MUT/M-FICORD/SBC/Private Sector

Initiative: Sarawak Border Control

OBJECTIVE

The objectives of this initiative are:

- To provide solutions and infrastructure for Sarawak border protection;
- To link Border Patrol to SIOC in order to provide comprehensive border CCTV monitoring; and
- To link Border Patrol to SOJAR by providing more digitalised military force to strengthen border security.

DESCRIPTION

Providing better solutions on border patrol and linking Border patrol to SIOC and SOJAR to strengthen border security with digital technology such as CCTV, drone surveillance, command centre, satellite communication and telecommunication military smartphone.

OUTCOMES

Improved communication on border patrol and reduction of crimes by 80%.

TARGET

- Completion of Tower and Telecommunication infrastructure; and
- Increase number of towers by 70% for ease of communication.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SDEC

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S2): Establish global standard digital infrastructure to accelerate digital transformation

Initiative: Data Centre and Services

OBJECTIVE

The objectives of this initiative are:

- To establish tier I, II, III and IV Data Centres in Sarawak; and
- To increase data traffic into Sarawak.

DESCRIPTION

The initiative focuses on the establishment of Data Centres in Sarawak to accelerate establishment of Data Centres, data monetising services and increase opportunities for cross-border data flow into Sarawak leading to economic and social benefits.

OUTCOMES

- Increase in potential foreign investment in Data Centre in Sarawak;
- Economic growth through cross-border data flow; and
- Increase in revenue from data monetization, cross-border data flow and Data Centre services.

TARGET

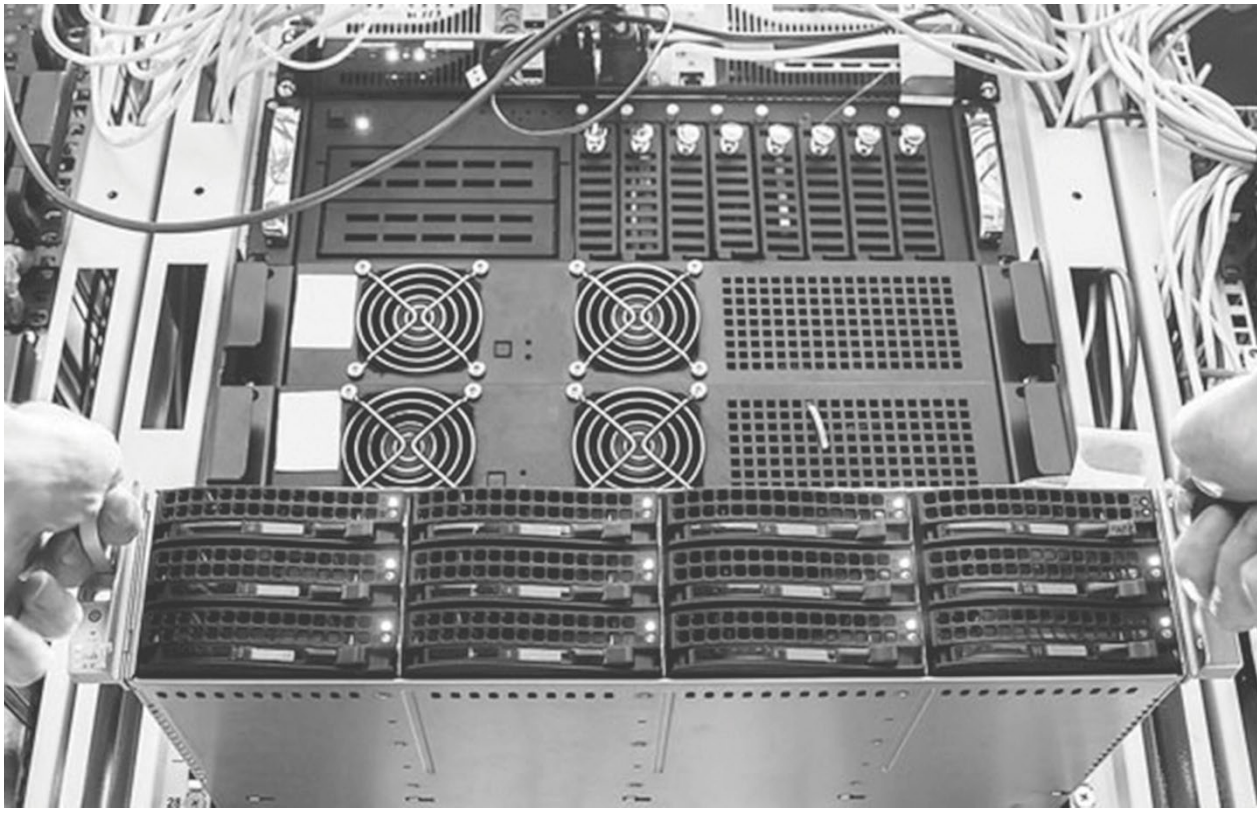
Establishment of 5 Data Centres in Sarawak by 2030.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

SMA/EPU/SDEC/SAINS/Private Sector



Strategic Pillar: Foundation for Digital Economy

Strategic Action (S3): Accelerate research, innovation, entrepreneurship & commercialisation

Initiative: R&D Scholarship for Digital Economy

OBJECTIVE

The objectives of this initiative are:

- To grow the pool of experts in digital technology to participate in research, development, commercialisation activity in Sarawak; and
- To ensure the continuity of research activities in digital technologies and applications in Sarawak.

DESCRIPTION

Government and industry funded R&D scholarships for digital economy to produce pool of experts in digital technologies and application areas and ensure the continuity of research activities in digital economy in Sarawak.

OUTCOMES

- 50% increase in expertise in digital technologies and solutions;
- New Intellectual Properties (IPs) that can be commercialised;
- Increased PhD/Master graduates; and
- New high-tech start-ups.

TARGET

- 20 R&D scholarships per year; and
- 50% local expertise in digital economy areas such as AI, cybersecurity, blockchain and Big data analytics, I4.0, IoT, cloud computing and others.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SDEC/Universities/Private Sector

Initiative: Centre of Excellence in Digital Economy

OBJECTIVE

The objectives of this initiatives are:

- To engage in translational research, innovation and commercialisation in digital & data sciences, social and business innovation in partnership with industry, government, universities & community; and
- To transition the outcomes of research into public and private sectors.

DESCRIPTION

The cooperative research and innovation Centre of Excellence in Digital Economy focuses on translational research in core areas of digital economy in partnership with universities, industry, government and community.

OUTCOMES

- 50% increase of commercialisation activity and contribution to Sarawak's GDP;
- 10 new Intellectual Property (IP) generation that can be commercialised; and
- Increased opportunity for high-tech jobs.

TARGET

- 10 R&D engagements & training programs with university and industry per year; and
- 10 high-tech start-ups.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SDEC/Universities/Private Sector

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S3): Accelerate research, innovation, entrepreneurship & commercialisation

Initiative: Conferences and Workshops

OBJECTIVE

The objectives of this initiative are:

- To create a platform for knowledge sharing & collaboration between researchers and industry players in digital economy;
- To gain insight on best practices and implementation experience from other countries;
- To close the digital transformation gap between government, university and industry; and
- To run International Digital Economy Conference Sarawak (IDECS) annually in collaboration with national and global digital economy partners.

DESCRIPTION

This initiative is to strengthen knowledge sharing, networking and collaboration through conferences, workshops and exhibitions in partnership with governments, universities and industries. This will also attract core international players and speakers to share their thoughts and achievements.

OUTCOMES

- Increased collaboration with government, universities & industry;
- Increased adoption of technology;
- Increase in skilled workforce and knowledge transfer to drive the digital economy; and
- Knowledge sharing and networking in digital economy.

TARGET

- 10 conferences, seminar and workshops;
- 60% international speakers; and
- 60% increase in exhibition and international delegates.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MEITD/SMA/SDEC/Agencies/Private Sector/Universities

Initiative: AI-Focused Research and Innovation Centre

OBJECTIVE

The objectives of this initiative are:

- To establish advanced metabolomics, proteomics, phenotyping and genotyping laboratories;
- To develop AI-assisted data mining techniques for natural product discovery; and
- To promote and foster innovation and multi-disciplinary research through good practices and partnerships.

DESCRIPTION

This initiative focuses on to enriching existing data repository by identifying the key value data for big data analytics and for the development of AI-driven natural product discovery. Project components include data generation, database development and AI development.

OUTCOMES

Research and development driven by AI that can accelerate the talent development in robotics and data analytics.

TARGET

A platform that utilises data analytics incorporated with AI to target natural products viable for commercial development.

TIMELINE

2021 - 2030

LEAD AGENCY (IES)

MEITD/SBC/Universities/Private Sector

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S4): Accelerate industry focused reskilling and upskilling of existing workforce

Initiative: Upskilling and Reskilling Programmes for Digital Economy

OBJECTIVE

The objectives of this initiative are:

- To ensure adequate supply of competent talent to support the workforce needs of the digital economy; and
- To develop local training providers to contribute to economic prosperity of Sarawak.

DESCRIPTION

Industry certified technical training programmes including building capability to effectively utilise and manage productive use of industry standard tools and systems.

OUTCOMES

Job ready graduates to meet the workforce requirements of Sarawak's digital economy.

TARGET

Industry focused digital talent development programmes.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MEITD/CENTEXS/Universities/TVET

Initiative: Building Automation System (BAS)

OBJECTIVE

The objectives of this initiatives are:

- To develop the students with the programming and automation skills in home & building control for BAS.

DESCRIPTION

The initiative focuses on developing Building Automation training for students to upgrade their skills especially in programming and automation that relates in home & building control for BAS.

OUTCOMES

Improved building energy management, cost saving, secure environment, and personalised workplace experience.

TARGET

20 training programmes in building automation.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MEITD/CENTEXS/TVET/Universities

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S4): Accelerate industry focused reskilling and upskilling of existing workforce

Initiative: Immersive Technologies Based Learning

OBJECTIVE

The objectives of this initiatives are:

- To develop immersive simulation-based e-learning module leveraging high-tech equipment and technologies including AR/VR/XR/Metaverse.

DESCRIPTION

Simulation based learning has been shown to offer the best learning outcomes in various educational and workplace settings. This initiative includes the delivery of contents and to promote and support potential application areas such as telemedicine, mining etc.

OUTCOMES

Increased AR/VR/XR talents to meet the skills need of industry.

TARGET

Industry certified training programmes for immersive simulation-based learning.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MEITD/CENTEXS/TVET/Universities

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S5): Match talent needs with the future needs of digital economy

Initiative: Workforce Competency Database System

OBJECTIVE

The objectives of this initiative are:

- To develop a workforce competency database to assess the talent needs of the industry in Sarawak; and
- To provide analytic reports on workforce requirements for industry development in the State.

DESCRIPTION

To facilitate skill and talent matching to meet the workforce requirements of the industry, monitoring and providing feedback/inputs wherever necessary to address the workforce requirements.

OUTCOMES

- Improved workforce management; and
- Improved employability.

TARGET

- Workforce Competency database; and
- A comprehensive study report, to facilitate skill and talent matching to meet the workforce needs of the industry.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

MEITD/HRDMU/SMA/CENTEXS/TVET/ Universities/SCOPE

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S6): Integrating digital skills into education at primary and secondary level

Initiative: Digital Skills Development through Digital Community Centre (DCC) & PEDi

OBJECTIVE

The objectives of this initiative are:

- To establish digital skills development fund and expand community development program through DCC and PEDi; and
- To ensure that all communities in Sarawak can benefit from the digital skills and foster improvement in community revenues.

DESCRIPTION

The focus of this initiative is to foster digital skills development through establishment of digital skills development fund to expand community development program through DCC and PEDi.

OUTCOMES

Talented and skilled community in digital skills to effectively participate in digital economy.

TARGET

100 training programmes in upskilling and reskilling.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MEITD/MCMC/PUSTAKA

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S6): Integrating digital skills into education at primary and secondary level

Initiative: Cultivating Digital and STEM Skills Amongst Teachers and Students

OBJECTIVE

The objectives of this initiative are:

- Encourage schools and teachers to use digital technologies for virtual learning;
- Create and implement technical guidelines for the use of digital technology and data in the education sector;
- Introduce STEM subjects in primary schools; and
- Create digital teachers' community in schools and provide digital professional programmes for teachers.

DESCRIPTION

This initiative is critical as it foster digital citizenship in education system. Its main focus is to embed broader set of digital and STEM skills that can assist teachers in maximising their learning abilities and improve students' capabilities for future employability.

OUTCOMES

- STEM enrolment of 40%;
- 30,000 primary school students from poor households will have access to STEM & Digital skills knowledge;
- Continuous improvement of digital educational materials at a lower cost;
- Improved online education access; and
- Effective data custodianship for students while protecting all user.

TARGET

- Module and toolkits for STEM & digital programme in schools;
- Implementation, monitoring and auditing report for STEM & digital programme in school;
- Evaluation report for STEM & digital programme in schools;
- All students in Sarawak to have access to online learning;
- Increase in digital adoption rate across businesses;
- All schools in Sarawak to use digital tools and technology; and
- Secure and reliable education system.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MEITD/MoE/CENTEXS/TVET/Universities

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S7): Foster equal access to digital economy opportunities to all Sarawakians

Initiative: Digital Community Centre (DCC)

OBJECTIVE

The objectives of this initiative are:

- To bridge the digital divide as well as the information gaps amongst communities in Sarawak;
- To provide platform for creating awareness, accessibility, and utilisation of available resources; and
- To develop the local capacity building in digital skills and socio-economic development in all districts in Sarawak.

DESCRIPTION

To encourage the use of digital technology in daily life, the government is transforming the existing rural library into a DCC to provide digital training and skills development of underserved Sarawakians so that they can effectively participate in digital economy.

OUTCOMES

Leverage the existing local libraries to provide digital training programs for the local community in order to help generate new skills needed for employment.

TARGET

44 DCCs (12 Urban DCC under PUSTAKA & 32 Rural DCC under Ministry of Public Health, Housing and Local Government (MPHLG).

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

MEITD/PUSTAKA

Initiative: *Pusat Ekonomi Digital Keluarga Malaysia* (PEDi)

OBJECTIVE

The objectives of this initiative are:

- To ensure the provisioning of collective internet access facilities & digital entrepreneurship programme for the underserved, rural and urban-poor areas;
- To empower community training and upskilling through digital literacy programme; and
- To advance the livelihood and income generation of community by leveraging on digital platforms for e-Commerce and marketing activities (digital entrepreneurship).

DESCRIPTION

The initiative aims on advancing the livelihood and income generation of the underserved community by leveraging on digital platforms, infrastructure and services. PEDi is the initiative of the Federal Government funded by the Universal Service Provision fund (USP fund), administered by MCMC.

OUTCOMES

- Increased of local entrepreneur by 35% statewide on online marketplace;
- New jobs created through PEDi guided online entrepreneurship programme; and
- Increased income generated by the trained entrepreneurs.

TARGET

Setup PEDi in every division in the State.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

MCMC/PUSTAKA

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S8): Accelerate digital skills in the community

Initiative: e-Learning System PANDei

OBJECTIVE

The objective of this initiative is to provide training and awareness programme to rural community through e-learning system: PANDei.

DESCRIPTION

e-Learning System: PANDei focuses on upskilling and reskilling training for local rural community in digital technology and usage so that they can better participate in digital economy.

OUTCOMES

- Improved digital inclusivity and improved participation in digital economy initiatives;
- Increased job and entrepreneurship opportunities;
- Improved household income; and
- Reduced digital divide.

TARGET

10 training programmes for rural communities in Sarawak.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

PUSTAKA/MCMC

Initiative: Digital Awareness Programme

OBJECTIVE

The objectives of this initiatives are:

- To engage local communities to promote Digital Economy initiatives;
- To provide feedback to the local communities during roadshows;
- To organise workshop, brainstorming session on the programme; and
- To publish latest Digital Economy products and services on supporting media.

DESCRIPTION

Community centres or libraries are focal points for learning and to acquire skills in technology. Libraries or community centres being positioned as community resource and digital centres through its technology accessibility, digital content access, digital literacy and programmes and services.

OUTCOMES

- Increased audience reach on Digital Economy messaging complementing reach by radio, social media and other media;
- Greater visibility and understanding of the roles and undertakings of the key implementers and success stories of businesses and other players; and
- Minimised information gaps on current Digital Economy policies and initiatives in the state.

TARGET

Digital content, social media promotion on radio programmes and information gathering on viewer's feedback.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

PUSTAKA

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S8): Accelerate digital skills in the community

Initiative: Capacity Building of Local Communities in Entrepreneurship and Digital Technology

OBJECTIVE

The objectives of this initiative are:

- Provide virtual accessibility to cultural products and services through high-resolution image technologies including virtual and augmented reality; and
- Develop and train digital skillset in the creative industry.

DESCRIPTION

This initiative aims to improve digital skills and capacity, as well as socioeconomic development, community empowerment, and the development of a sustainable and resilient community.

OUTCOMES

- 1,800 poor households involved in handicraft entrepreneurship and will earn monthly income of above RM7,575 by 2030; and
- Sarawak as hub for digital content development.

TARGET

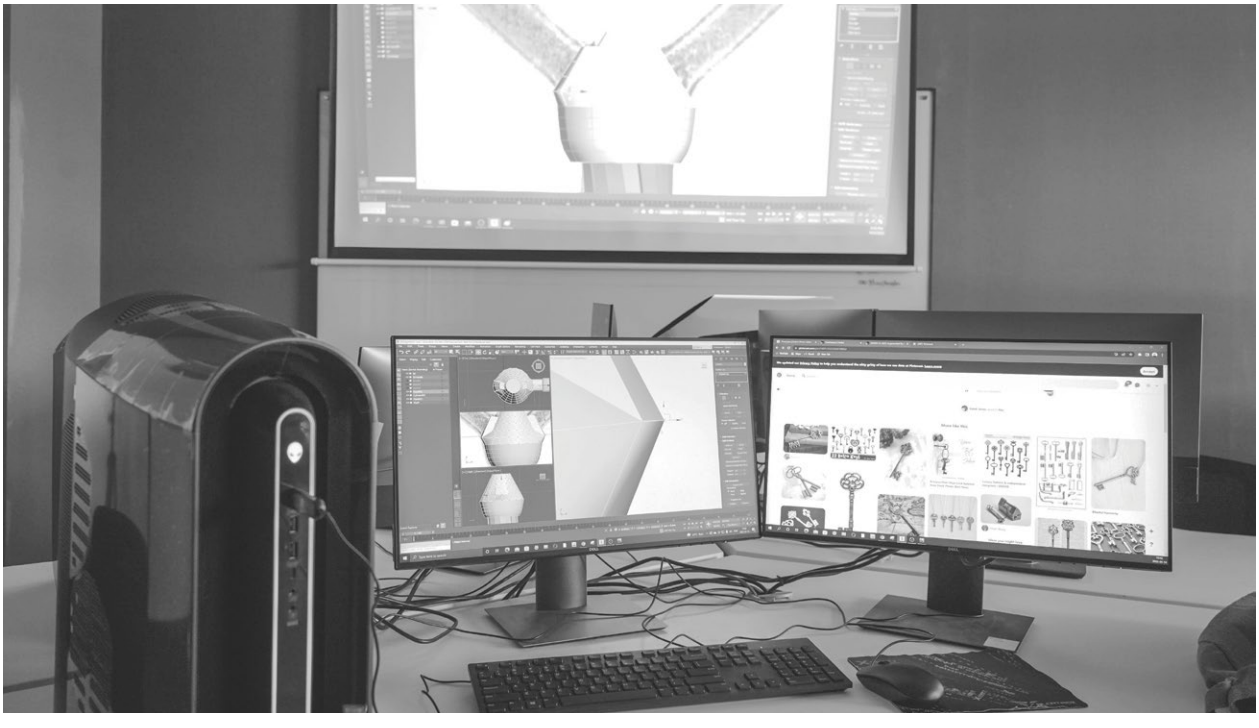
- Increase in digital adoption by rural communities;
- Contribute to 30% increase in labour productivity; and
- 10 Intellectual Properties (Ips) created in digital content.

TIMELINE

2019 - 2030

LEAD AGENCY (IES)

PUSTAKA/CENTEXS/SDEC



Strategic Pillar: Foundation for Digital Economy

Strategic Action (S9): Enhance cyber security ecosystem, governance, uptake and awareness by public & private sectors and community

Initiative: Cyber Security Awareness Programme

OBJECTIVE

The objectives of this initiative are:

- To provide guidelines and best practices in cyber security for the public and private sectors;
- To organise international conferences, seminars and workshops in cyber security; and
- To organise cyber security awareness programmes.

DESCRIPTION

This project addresses the need of cyber security code of practice and awareness programmes to protect the cyber space in Sarawak. The initiative consists of provision of policies, guidelines and best practices on cyber security for the government, businesses and public and development and delivery of cyber security awareness programmes.

OUTCOMES

100% secured online transactions through the digital economy platforms.

TARGET

10 cyber security code of practice and awareness programmes annually.

TIMELINE

2022 - 2027

LEAD AGENCY (IES)

SMA/SCSDU/STIU

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S10): Enhance baseline security and resilience for critical infrastructure

Initiative: State's Cyber Security Development and Management

OBJECTIVE

The objectives of this initiative are:

- To develop cyber security policy and framework of Sarawak;
- To establish the State cyber security Governance & Management structure;
- To develop cyber security talents for the State;
- To establish the State cyber security centre; and
- To manage risk related to cyber security.

DESCRIPTION

A cyber security management framework and team to monitor, response, recover and combat any of the cyber security threats in State.

OUTCOMES

Increased talents and resilience in tackling cyber security threats and crimes.

TARGET

- Establish Cyber Security Council and Cyber Security Unit;
- Operationalise cyber security Framework;
- PPG for cyber security;
- 30% increase in talents in cyber security areas for each organisation; and
- Establish State Cyber Security Research Centre.

TIMELINE

2022 - 2030

LEAD AGENCY (IES)

SMA/SCSDU/STIU

Strategic Pillar: Foundation for Digital Economy

Strategic Action (S11): Enhance data governance, protection & privacy policies, standards and processes

Initiative: Data Protection Framework and Data Leak Protection Policy

OBJECTIVE

The objectives of this initiative are:

- To develop data protection framework and data leak protection policy for all government data; and
- To promote the data protection to the State agencies, businesses and community.

DESCRIPTION

This initiative focuses on the development of data protection framework and data leak protection policy to protect data sovereignty and data loss or data misuse.

OUTCOMES

50% efficiency in protecting data sovereignty and data loss or misuse.

TARGET

Comprehensive framework and policy on data protection and data leak.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA/SCSDU/STIU

Initiative: Communication and Multimedia Compliance

OBJECTIVE

The objectives of this initiative are:

- To disseminate, distribute and create awareness on legal framework, policies and regulations for the protection of personal data, data residency, data sovereignty, data sharing and utilisation in Sarawak.

DESCRIPTION

This initiative focuses on the development, endorsement and roll-out of legal framework, policies and regulations for communication and multimedia activities in the State.

OUTCOMES

Reduction of personal data loss and reduction in cybercrimes.

TARGET

Data sharing and data protection policy for Sarawak.

TIMELINE

2022 - 2025

LEAD AGENCY (IES)

SMA/SCSDU/STIU

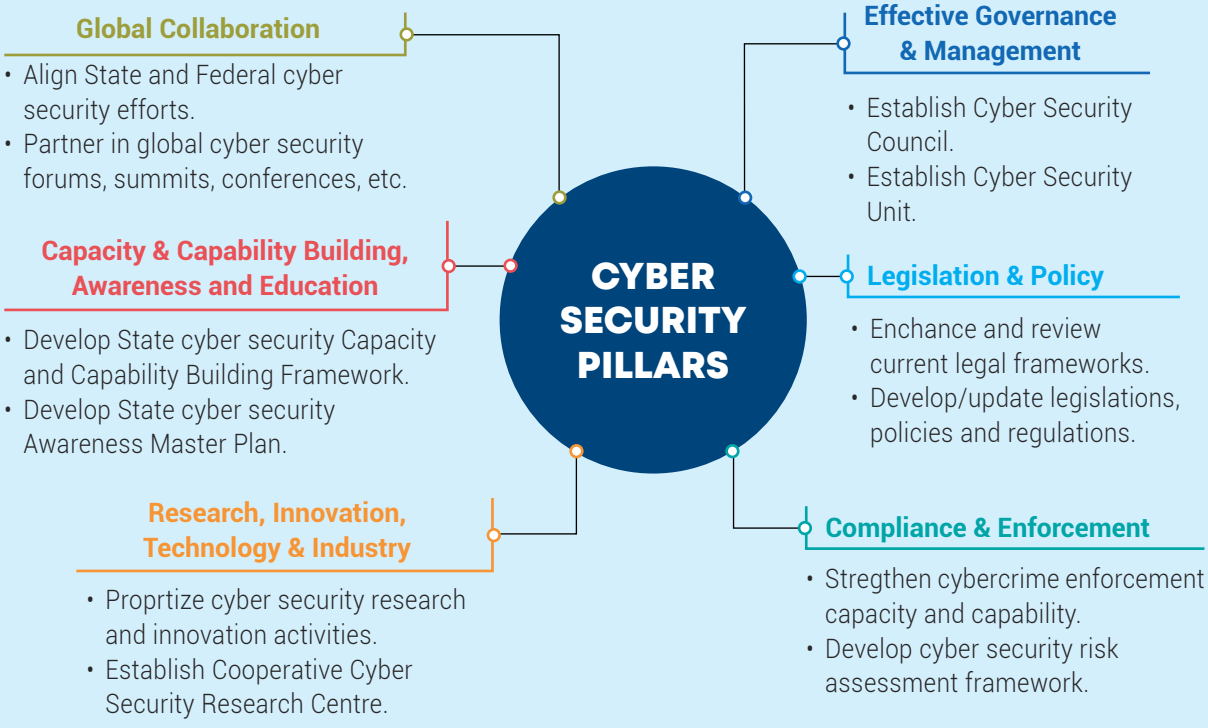
Box 5.1: Operationalising Cyber Security in Sarawak

Cybercrime is a very fast-growing business, and as such cyber security is no longer a technological 'option' but a societal need. It is not only about data and information protection but includes critical infrastructure, transport system, healthcare, manufacturing, retail & finance, societal aspects and more. Cybercrime cost the world US$6 trillion in 2021 [27]. This is the largest transfer of economic wealth in history.

Disruptive technologies such as AI, Blockchain and Quantum computing will have an impact on the way cyber security will need to be achieved.

Since cyber security risks cannot be eliminated, the question is, how can it be mitigated? Cooperation and collaboration, knowledge and timely communication regarding the threats and how to address them will be an important step going forward. Education is of equal importance, both for end-users and for industries: cultivating a security-conscious approach such as security-by-design and security-by-default will help to mitigate the risks at an early stage.

However, cyber-attacks will still take place because cybercrime is a business. Therefore, it is crucial to be ready to face them with the lowest impact possible on the overall system. Sarawak Government is accelerating the operationalisation of Cyber Security Framework focusing on effective governance and management, legislation and policy, compliance & enforcement, research, innovation and technology industry, capacity & capability building and collaboration.




SMART
SOLAR PV
SOLARVERT


ZERO EMISSION

Governance Structure

6

GOVERNANCE STRUCTURE

Drive **strategic direction**, **implementation** and **monitoring**

Ensure **accountability**, **efficiency** and success through **public**, **private** and **community partnership**

Transparent and **effective** monitoring and evaluation process and clear timelines for measurable outcomes

Policy Level — Advise on strategic direction, policy and regulation

Programme Level — Project coordination and monitoring, compliance and performance

Project Level — Project Implementation

6.1
GOVERNANCE STRUCTURE

The Policy, Programme and Project level (3Ps) governance structure has been established to drive the strategic direction, management, implementation and monitoring of the Sarawak Digital Economy Blueprint 2030. As part of the process, the governance committees also determine the metrics by which success is measured through Key Performance Indicators (KPIs) and pre-set performance measurement indicators.

Digital Economy governance structure is presented in Figure 6.1. The key features of the governance structure ensure accountability, efficiency and success through Sarawak Multimedia Authority ordinance, implementation through public, private and community partnerships, transparent and effective monitoring and evaluation process and clear timelines for measurable outcomes. Number of key agencies are responsible for the management, implementation and monitoring of the Sarawak Digital Economy Blueprint 2030.

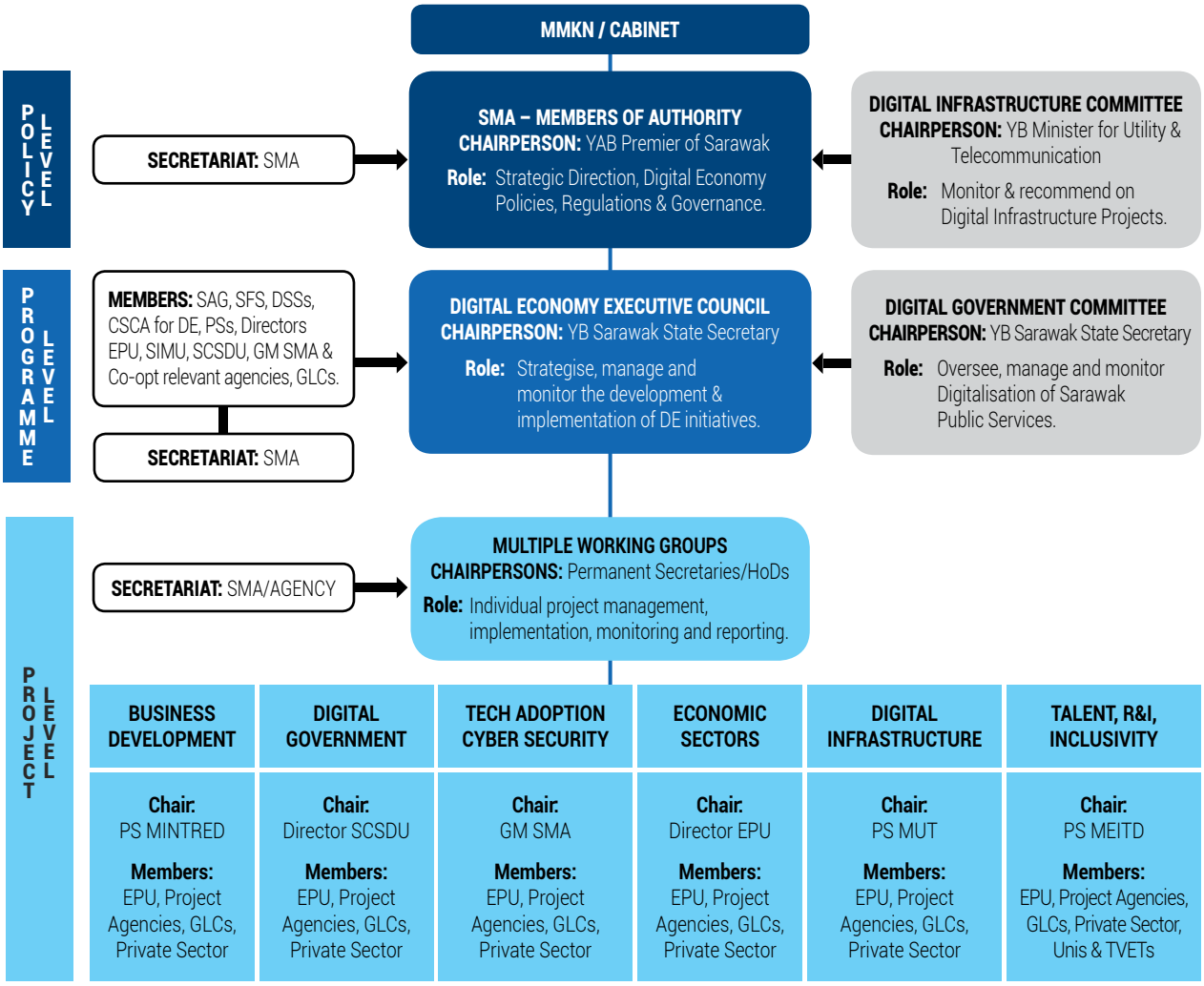


Figure 6.1: *Digital Economy Governance Structure*

The governance structure comprises of:

- Sarawak Multimedia Authority **Members of Authority** providing strategic leadership and policy directions for Digital Economy. The SMA Members of Authority are supported by four sub-committees, namely:
  i. Digital Government Committee
  ii. Establishment Committee
  iii. Finance and Tender Committee
  iv. Audit and Risk Committee
- **Programme Level – Digital Economy Executive Council** provides effective management, coordination and project monitoring.
- **Project Working Groups** responsible to lead the implementation of the initiatives and provide technical expertise. All the Ministries, agencies, GLCs, universities, Technical and Vocational Education and Training (TVET), technical colleges and private sector are involved in the implementation of the digital economy initiatives.

6.2 DIGITAL ECONOMY EXECUTIVE COUNCIL

The Digital Economy Executive Council is responsible to:

- Oversee and manage the digital economy projects approval and funding process through Sarawak's Economic Planning Unit and State Financial Secretary's Office;
- Coordinate and align the initiatives with the SDE 2030 and Post COVID-19 Development Strategy (PCDS) 2030.
- Coordinate the projects proposals from the agencies, GLCs and private sector;
- Oversee the development of the Action and Implementation plan for Sarawak Digital Economy Blueprint 2030 initiatives;
- Oversee and advise on multiple downstream projects, ecosystem development, partnerships, regulatory and policy support, talent development, innovation, funding and digital infrastructure, connectivity, and cyber security;
- Oversee the development of the framework for transparent projects monitoring, reporting and the metrics by which success is measured through KPIs;
- Coordinate and oversee the monitoring, evaluation and reporting on all the SDE 2030 initiative, projects and programmes; and
- Coordinate interoperability among ministries, departments, agencies, Government Linked Companies (GLSs) and private sector.

6.3 PROJECT WORKING GROUP

The project will be managed by individual Project Working Groups responsible for:

- Project work plan;
- Review and monitor project progress;
- Provide advice and guidance to the project team;
- Review and advise on project deliverables;
- Ensure project close out procedure is completed;
- Resource management;
- Stakeholder management;
- Risk management; and
- Reporting and documentation.

Strategic Recommendations

7

7.1
STRATEGIC RECOMMENDATIONS

The Sarawak Digital Economy Blueprint 2030 sets out how Sarawak will secure its future as a leading Digital Economy and Society by 2030. The blueprint focuses on five pillars, namely economic growth priority areas, growing digital businesses, transforming the public sector and services, adopting frontier technologies and accelerating digital readiness to ensure that Sarawak can achieve its digital vision.

Transformations including globalisation, the fourth industrial revolution (4IR), digitalisation, low carbon and circular economy are having far-reaching economic, social, and environmental impacts in Sarawak. The following strategic recommendations are proposed to accelerate digital transformation to achieve the targeted outcomes by 2030.

7.1.1 GOVERNANCE

The governance structure needs to drive the strategic direction, management, implementation, monitoring and transparency of the Sarawak Digital Economy Blueprint 2030 and determine the metrics by which success is measured through Key Performance Indicators (KPIs). The recommendation is to establish 3Ps (Policy, Programme and Project) governance structure to ensure accountability, efficiency, and success of digital transformation.

Currently, the implementation of Digital Economy initiatives are very fragmented and lacks policies, investment & technology adoption strategies, monitoring and performance measurement framework. It is recommended to establish **Digital Economy Executive Council**, chaired by the Sarawak State Secretary, to advice, strategise and monitor the development and implementation of Digital Economy initiatives in Sarawak.

7.1.2 DIGITAL INVESTMENTS

One of the key pillars of Sarawak Digital Economy Blueprint 2030 is to grow digital investments and digital businesses in Sarawak. Currently, there are very low Foreign Direct Investment (FDI) in digital economy in Sarawak. The drivers for digital investments are different from that of manufacturing or brick and mortar investments. To attract and grow digital investments in Sarawak will need appropriate policies and ecosystem to support digital services, digital infrastructure (data centres, IoT infrastructures and telecommunication) and digital technology adoption.

The recommendation is to operationalise **InvestSarawak** with a team focusing on digital investment in Sarawak. The investment strategy will need to focus on the key drivers for digital investments including conducive policies, copyright laws and IP protection, high-speed national and international connectivity, availability of skilled workforce, R&D credits and tax incentives, ease of establishing businesses, domestic data centres, cyber security maturity among others. It is also recommended that Sarawak Government establish **Digital Precincts** with high-speed national and international connectivity, basic infrastructure, and close to talent hubs to attract digital investments including data centres, digital service industry and spur digital innovation.

7.1.3 **POLICIES AND REGULATIONS**

The policy recommendations are aimed to provide guidance, efficiency, accountability, clarity and conducive environment to accelerate and grow private sector investments and Sarawak's digital economy agenda. The areas that will need policy development and updates include:

- **Digital Technology** – AI adoption, Broadband policy, 5G strategy, IP policy, cyber security policy and strategy, data governance, protection, usage, access, interoperability, quality and privacy policies, cloud strategy, data monetisation policy, policies on information & communications technology systems and software, amongst others.
- **Digital Ecosystem** - digital services and platform taxation, telecommunication policies and regulations, emerging technology regulations, digital business support amongst others.
- **Digital Capabilities** – digital inclusion and awareness, digital talent and skills, R&D policy, digital innovation & entrepreneurship policy, digital readiness policy, digital workforce development policy amongst others.
- **Digital Government** – Government acts as a platform, addressing users' needs in public service design and delivery, focussing on policies, processes and procedures to support digital by design, user-driven, data-driven, open by default and secure government services.
- **Digital Industry Development** – digital business support, open data policy, 4IR adoption policy, data integration policy, industry development strategy amongst others.
- **Economics** – cross-border data flow policy, taxation, investment policies & regulations, amongst others.

It is recommended that Sarawak Multimedia Authority (SMA) in partnership with Ministries, agencies and Federal Government engage in developing appropriate policies, regulations and framework to create a conducive environment to accelerate digital economy in Sarawak.

7.1.4 **CYBER SECURITY**

Cybercrime is a very fast-growing business (US$6 trillion in 2021), and as such cyber security is no longer a technological 'option' but a societal need. It is not only about data and information protection but includes critical infrastructure, transport system, healthcare, manufacturing, retail & finance, societal aspects and more. Disruptive technologies such as Artificial Intelligence, Blockchain and Quantum computing will have an impact on the way cyber security will need to be achieved.

It is recommended that Sarawak Government to operationalise the national Cyber Security Framework by establishing the **Cyber Security team/unit**, supported by Cyber Security Centre, focusing on effective governance and management, legislation and policy, compliance & enforcement, research, innovation and technology industry, capacity & capability building and collaboration.

7.1.5 **PRIVATE SECTOR ECONOMY**

Sarawak to become a leading digital economy and society by 2030 will require Sarawak to focus on growing private sector economy, including both home-grown businesses and foreign investments. Digital business development is one of the key pillars of the Sarawak Digital Economy Blueprint 2030. The focus is on supporting and growing globally competitive and vibrant private sector, including [43]:

- **Conducive Business Environment**
  - Reducing the cost of starting business – ensuring efficient business registration systems, etc.
  - Improving the ease of doing business – policies & incentives, land titles, infrastructure, etc.
  - Expanding and upgrading business support services
- **Access to Finance**
  - Promoting alternate sources of funding
  - Increasing entrepreneurs' financial literacy
- **Attracting Foreign Direct Investment**
  - Providing targeted incentives
  - Ensuring efficient administrative procedures
  - Operationalising investment promotion agencies
  - Expanding export platforms
- **Developing Human Capital**
  - Investing in research and innovation ecosystem
  - Implementing policies that facilitate digital skills development
  - Growing linkages between businesses and academic institutions
- **Improving Access to Market**
  - Physical and digital infrastructure

Strategic initiative that will support the development of a dynamic and innovative private sector economy include:

- Targeting job-generating sectors and supporting the development of enterprises with a significant potential for job creation.
- Strengthening State-owned agencies in attracting investment, promoting exports and providing targeted business support services.
- Operationalise InvestSarawak to help businesses set up, promote their businesses and to facilitate domestic and foreign investment.
- Allocating targeted incentives to attract investment in strategic sectors
- Balancing incentives, to support the development of a competitive market that contributes to economic growth, job creation and poverty reduction.
- Enhancing collaboration between the public and private sectors in business and infrastructure development.

7.1.6 **INNOVATION AND START-UP ECOSYSTEM**

The Post COVID-19 Development Strategy 2030 is driven by data and innovation. Technological innovation is the main driver for economic growth and human progress and brings benefits by increasing productivity, new and better goods and services that improve the overall standard of living of the citizens. Spending on innovation, research and development as well as investment in the innovation ecosystem, supports competition and economic progress. Innovation policies including intellectual property rights, patent protections, contracts, freedom to travel, incentives, regulations and regulatory regimes play important role in fostering innovation, start-ups and spin-ins. Lack of funding and zero-interest loans for early-stage start-ups is a major hurdle in growing start-ups and spin-ins in Sarawak.

To accelerate innovation and start-ups growth in Sarawak it is recommended that Sarawak Government in partnership with the business community,

- Establish **Start-up Venture Capital fund** and formalise **e-Residency** and **nomads programmes** to support and accelerate start-ups and spin-ins in Sarawak.
- Establish **Digital Research and Development (R&D) grant** to support start-up focused research, development and commercialisation. R&D is important because it provides powerful knowledge and insights, leading to improvements to existing processes where efficiency can be increased, and costs reduced.

7.1.7 **DIGITAL READINESS**

Digital technologies are advancing at lightning speed and are becoming an integral part of the society globally. It is important that our society are getting connected to the knowledge and tools they need to succeed in the digital economy from real-world digital skill sets and career connections to creating spaces and developing infrastructure for local innovation to flourish. The key drivers of digital readiness include:

- **Digital Infrastructure** including telecommunication, broadband access, IoT infrastructure and data centre amongst others.
- **Technology Adoption** including the adoption of cloud services, internet usage, 5G, Artificial Intelligence, data analytics, Internet-of-Things, mobile device penetration, 4IR amongst others.
- **Human Capital** including digital literacy rate, digital talent and skills, labour force participation amongst others.
- **Innovation and Start-Up Environment** including Venture Capital and Angel investments, Government and corporation investments, patents amongst others.
- **Ease of Doing Business** including policies, regulations, business registrations, digitalised Government processes and services, taxes and trading across borders amongst others.
- **Business and Government Investments** including FDI and DDI in digital services, adoption and infrastructure, research and development, talent development, renewable energy amongst others.
- **Basic Infrastructure** including access to electricity, roads and transport, safe drinking water amongst others.

It is important that the Government and private sector together engage in long-term commitment to uplift capacity, knowledge and participation of Sarawakians, establish appropriate infrastructure to accelerate digital economy, incentivise technology adoption by MSMEs, establish venture capital funds to accelerate the development of start-ups and spin-ins and digitalise Government processes to improve ease of doing business with businesses and citizens. It is recommended that Sarawak Government use **SAMUDAH** as a platform to address long-term digital readiness for Sarawak.

Appendices

APPENDIX A: **REFERENCES**

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APPENDIX B: **LIST OF FIGURES**

APPENDIX C: **LIST OF TABLES**

APPENDIX D: **LIST OF BOXES**

APPENDIX E: **GLOSSARY**

3G	Third generation of wireless mobile telecommunications technology
4G	Fourth generation of wireless mobile telecommunications technology
5G	Fifth generation of wireless mobile telecommunications technology
GINI	A synthetic indicator that captures the level of inequality for a given variable and population

APPENDIX F: **ABBREVIATIONS**

3D	Three-dimensional form
3Ps	Policy, Programme and Project
4D	Four-dimensional form
4G	Fourth generation mobile network
4IR	Fourth Industrial Revolution
5G	Fifth generation mobile network
5D	5-dimensional form
AI	Agriculture Institute
AI	Artificial Intelligence
APIs	Application Programming Interfaces
APEC	Asia-Pacific Economic Cooperation
AR	Augmented Reality
ARC	Agriculture Research Centre
ART	Autonomous Rail Transit
ATC	Agriculture Training Centre
B40	Bottom 40%
BAS	Building Automation System
BaSICS	Batam Sarawak Internet Cable System
BES	Business Event Sarawak
BIMS	Building Information and Management System
BKSS	*Bantuan Khas Sarawakku Sayang*
BPM	Business Process Management
BSN	*Bank Simpanan Nasional*
CANFF	Culture, Adventure, Nature, Food and Festivals
CCMS	Contractor and Consultant Management System
CCTV	Closed-circuit television
CENTEXS	Centre for Technology Excellence Sarawak
CII	Critical Information Infrastructure
CMS	Content Management System
CoE	Centre of Excellence
DBKU	Dewan Bandaraya Kuching Utara
DC	Data Centre
DCC	Digital Community Centre
DDI	Domestic Direct Investment
DFTZ	Digital Free Trade Zone
DID	Department of Irrigation and Drainage
DOA	Department of Agriculture
DOSM	Department of Statistics Malaysia
DUN	*Dewan Undangan Negeri*
DVS	Department of Veterinary Services Sarawak
E2E	End-to-end
EA	Enterprise Architecture
e-KYC	e-Know Your Customer
eGA	e-Governance Academy
eHDF	Electronic Health Declaration Form
eICC	Electronic Industrial Coordination Committee
eID	Electronic Identification
EPU	Economic Planning Unit

ERP	Enterprise Resource Planning
FD	Forest Department Sarawak
FDI	Foreign Direct Investment
FTTx	Fibre to the X
G2B	Government-to-business
G2C	Government-to-citizen
G2G	Government-to-government
GB	Gigabytes
GBI	Green Building Index
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GI	Geographical Indication
GIS	Geographical Information System
GLCs	Government Linked Companies
GLSs	Government Linked Services
GPS	Global Positioning System
HDM	Hydrological Data Management
HRDMU	Human Resource Development Management Unit
HSOMS	Hydrological Stations Operation and Maintenance System
HTS	Hydrological Telemetry System
I4.0	Industry 4.0
IBM	International Business Machine
ICT	Information and Communications Technology
ID	Identification
IDECS	International Digital Economy Conference Sarawak
IoT	Internet of Things
IP	Internet Protocol
IPS	Institute of Agricultural
iSC	iSarawakCare
ISM	Integrated Service Management
IT	Information Technology
JAIS	*Jabatan Agama Islam Sarawak*
JBALB	*Jabatan Bekalan Air Luar Bandar*
JENDELA	*Jalinan Digital Negara*
JKNS	*Jabatan Kesihatan Negeri Sarawak*
JKR	*Jabatan Kerja Raya*
JWKS	*Jabatan Wanita dan Keluarga Sarawak*
KPIs	Key Performance Indicators
KUTS	Kuching Urban Transportation System
KWB	Kuching Water Board
L&S	Land and Survey Department
LAN	Local Area Network
LIDAR	Light detection and ranging
LMS	Learning Management System
LTE	Long Term Evolution
LTI	LinkedIn Talent Insights
M40	Middle 40%
MAIS	*Majlis Agama Islam Sarawak*
MBAN	Malaysian Business Angel Network
MBKS	*Majlis Bandaraya Kuching Selatan*

Mbps	Megabit per second
MCMC	Malaysian Communications and Multimedia Commission
MCO	Movement Control Order
MD	Malaysia Digital
MDEC	Malaysia Digital Economy Corporation
MEITD	Ministry of Education, Innovation and Talent Development
M-FICORD	Ministry of Food Industry, Commodity and Regional Development
MICE	Meetings, Incentives, Conferences, and Exhibitions
MINTRED	Ministry of International Trade, Industry and Investment
MIPD	Ministry of Infrastructure and Port Development Sarawak
MoE	Ministry of Education
MPHLG	Ministry of Public Health, Housing and Local Government
MSC	Malaysia Multimedia Super Corridor
MSMEs	Micro, Small and Medium Enterprises
MTCP	Ministry of Tourism, Creative Industry and Performing Arts
MUDeNR	Ministry of Natural Resources and Urban Development
MUT	Ministry of Utilities
MySRBN	Sarawak Rural Broadband Network
NRARC	Northern Region Agriculture Research Centre
NREB	Natural Resources and Environment Board
OECD	Organisation for Economic Co-operation and Development
OKSHE	Old Kuching Smart Heritage
OS	Operating System
OSP	Open Settlement Protocol
OUB	One Utility Bill
PaaS	Platform as a Service
PANDei	People Accessible Network for Digital Empowerment and Inclusivity
PCDS 2030	Post COVID-19 Development Strategy 2030
PEDi	*Pusat Ekonomi Digital Keluarga Malaysia*
PFI	Private Funding Initiative
PKI	Public key infrastructure
PoC	Proof-of-Concept
PoE	Point of Entry
Q1	First Quarter
Q2	Second Quarter
Q3	Third Quarter
Q4	Fourth Quarter
QR	Quick Response
R&D	Research and development
REE	Rare Earth Elements
RFID	Radio-Frequency Identification
RM	Ringgit Malaysia
ROI	Return on Investment
SaFHIS	Sarawak Foreign Workers Health Management System
SAINS	Sarawak Information Systems Sdn Bhd
SALCRA	Sarawak Land Consolidation and Rehabilitation Authority
SALIIS	Geospatial Integrated Information System
SALURAN	Sarawak Linking Urban, Rural, and Nation
SBC	Sarawak Biodiversity Centre
SCADA	Supervisory Control and Data Acquisition

SCOPE	Sarawak Centre of Performance Excellence
SCS	Sarawak Civil Service
SCSDU	Sarawak Civil Service Digitalisation Unit
SDEC	Sarawak Digital Economy Corporation
SDGs	Sustainable Development Goals
SEB	Sarawak Energy Berhad
SAMUDAH	*Pasukan Petugas Khas Pemudahcara Perniagaan Peringkat Negeri Sarawak*
SFC	Sarawak Forestry Corporation
SFSO	State Financial Secretary Office
SIFBAS	State Integrated Financial, Budgeting, Accounting System
SIOC	Sarawak Integrated Operation Centre
SMA	Sarawak Multimedia Authority
SMART	Sarawak Multimedia Authority Rural Telecommunication
SMEs	Small and Medium Enterprises
SMMA	State Minerals Management Authority
SNT	SiliconNet Technologies Sdn Bhd
SSL	Self-Sufficient Level
SSMU	State Service Modernisation Unit
STB	Sarawak Tourism Board
STEM	Science, Technology, Engineering and Mathematics
STIU	Sarawak Transformation & Innovation Unit
STROPI	Sarawak Tropical Peat Research Institute
SWIS	Sarawak Workforce Information System
TKPM	*Taman Kekal Pengeluaran Makanan*
TM	*Telekom Malaysia Berhad*
TM	Trademark
TVET	Technical and Vocational Education and Training
TYT	*Tuan Yang Terutama*
UAT	User Acceptance Test
UDIMS	Urban Drainage Information Management System
UKAS	*Unit Komunikasi Awam Sarawak*
UKPN	*Unit Keselamatan dan Penguatkuasaan Negeri*
UNCTAD	United Nations Conference on Trade and Development
UNIFOR	Unit for Other Religions
UNIMAS	University of Malaysia, Sarawak
USA	United States of America
USP	Universal Service Provision
VACS	Vehicle Access Control System
VR	Virtual Reality
VRX	Virtual Reality Experience
VSAT	Very-small-aperture terminal
WBM	*Wisma Bapa Malaysia*
WEF	World Economic Forum
WORMS	Water supply reporting system
XR	Extended Reality

APPENDIX G: **ACKNOWLEDGEMENT**

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LAWS OF SARAWAK

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Chapter 73

SARAWAK MULTIMEDIA AUTHORITY ORDINANCE, 2017

SARAWAK MULTIMEDIA AUTHORITY ORDINANCE, 2017

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Date of Assent ... ... 30th November, 2017

Date of Publication in *Gazette* ... ... 8th December, 2017

SARAWAK MULTIMEDIA AUTHORITY ORDINANCE, 2017

ARRANGEMENT OF SECTIONS

PART I

PRELIMINARY

Section

PART II

ESTABLISHMENT OF THE AUTHORITY

PART III

FUNCTIONS AND POWERS

PART IV

FINANCE AND ACCOUNTING PROCEDURE

Section

PART V

ENFORCEMENT AND INVESTIGATION

PART VI

OFFENCES AND PENALTIES

PART VII

REGULATIONS

LAWS OF SARAWAK

Chapter 73

SARAWAK MULTIMEDIA AUTHORITY ORDINANCE, 2017

An Ordinance to establish the Sarawak Multimedia Authority as an entity to be the Authority in the State for communication and multimedia activities and for matters connected therewith.

[1st December, 2017]
(*Swk. L.N. 232/2017*)

Enacted by the Legislature of Sarawak—

PART I

PRELIMINARY

Short title and commencement

1.—(1) This Ordinance may be cited as the Sarawak Multimedia Authority Ordinance, 2017.

(2) This Ordinance shall come into force on such date as the Chief Minister may by notification in the *Gazette*, appoint, and the Chief Minister may appoint different dates for the coming into force of different parts or provisions of this Ordinance.

Interpretation

2. In this Ordinance—

"Authority" means the Sarawak Multimedia Authority established under section 3;

"body corporate" means any body, corporation or authority constituted or incorporated under any State law;

"Chairman" means the Chairman of the Authority and includes any person appointed by the Chief Minister to temporarily discharge the functions and duties of the Chairman;

"communication" means any communication, whether between persons and persons, things and things, or persons and things, in the form of sound, data, text, visual images, signals or any other form or any combination of those forms;

"communication and multimedia activities" includes activities related to communication and the development of digital infrastructure, cyber security, talent development, e-commerce, research and development in digital technology, digital innovation and entrepreneurship and digital government;

"communication and multimedia technology products" includes any invention, discovery, process or system developed or any literary works or information resources produced, prepared or written from any communication and multimedia activities;

"functions" means the functions of the Authority and includes its duties;

"General Manager" means the General Manager of the Authority appointed under section 7;

"Government" means the Government of the State of Sarawak;

"member" means a member of the Authority under section 4;

"Minister" means the Chief Minister or any member of the Majlis Mesyuarat Kerajaan Negeri who has been assigned by the Chief Minister, to have the responsibilities for communication, multimedia and for matters connected therewith;

"multimedia" means a form such as text, audio, images, animations, video, interactive content, signal or data or any combination thereof;

"State Planning Authority" means the State Planning Authority as defined under the Land Code ***[Cap. 81 (1958 Ed.)]***.

PART II

ESTABLISHMENT OF THE AUTHORITY

Establishment of Sarawak Multimedia Authority

3.—(1) There shall be established a body to be known as the "Sarawak Multimedia Authority" which shall be a body corporate with perpetual succession and a common seal and shall, by that name, be capable of—

(*a*) suing and be sued;

(*b*) acquiring, owning, holding, leasing or disposing of property, both movable and immovable; and

(*c*) doing such other acts or things as bodies corporate may lawfully do.

(2) The Authority shall—

(*a*) for all purposes of the Land Code ***[Cap. 81 (1958 Ed.)]*** be deemed a native; and

(*b*) for the purposes of Part X of the Land Code ***[Cap. 81 (1958 Ed.)]*** be deemed a public servant.

Membership of the Authority

4.—(1) The Authority shall consist of the following members—

(*a*) the Chief Minister as Chairman;

(*b*) three *ex officio* members, namely:

(i) the State Secretary;

(ii) the State Attorney-General; and

(iii) the State Financial Secretary; and

(*c*) not less than five and not more than seven other members with appropriate experience, knowledge or expertise in communication and multimedia.

(2) The members referred to in section 4(1)(*c*) shall be appointed by the Majlis Mesyuarat Kerajaan Negeri.

(3) Subject to this Ordinance, the appointment referred to in subsection (2) shall be for a term not exceeding three years and subject to such terms and conditions as the Majlis Mesyuarat Kerajaan Negeri may determine but shall be eligible for re-appointment:

Provided that the appointment may at any time be revoked or terminated by the Majlis Mesyuarat Kerajaan Negeri without assigning any reasons thereto.

(4) Any member of the Authority appointed under subsection (2) may resign his position by notice in writing addressed to the Chief Minister.

(5) Members of the Authority may be paid such allowances, remuneration and honorarium as may be determined by the Majlis Mesyuarat Kerajaan Negeri from time to time.

Meetings of the Authority

5. All meetings of the Authority and the regulation of its affairs and proceedings shall be conducted in accordance with the provisions of the Schedule.

Powers of the Authority, *etc.*, not affected by vacancy, *etc.*

6. The powers of the Authority under this Ordinance shall not, unless the contrary intention appears, be affected by—

(*a*) any vacancy in the membership thereof;

(*b*) the fact that it is afterwards discovered that there was any defect in the appointment or qualification of a person purporting to be a member thereof; or

(*c*) the fact that there was any irregularity in the convening of any meeting thereof.

Appointment of General Manager and other employees

7.—(1) The Authority shall appoint a General Manager on such terms and conditions as he may determine.

(2) The General Manager shall be responsible for the proper administration and management of the functions and affairs of the Authority in accordance with its direction, policy and decision and shall also be the Secretary to the Authority.

(3) The General Manager shall attend meetings of the Authority, but shall have no right of voting on any issue, matter or resolution before, or under consideration, by the Authority.

(4) If the General Manager is temporarily unable to perform his duties by reason of illness or otherwise, another person may be appointed by the Chairman to act in the place of the General Manager during any such period of absence from duty.

(5) The Authority may from time to time appoint such other officers, employees and agents as it thinks fit for the effective discharge of its functions and powers, on such terms and conditions as it may determine.

Corporate seal, execution of documents, *etc.*

8.—(1) The corporate seal of the Authority shall be in the custody of the General Manager.

(2) The corporate seal of the Authority shall be authenticated by the signature of its Chairman (or any other member authorized in writing by the Authority) and the General Manager, and when so authenticated, shall be judicially and officially noticed.

(3) All documents and instruments which are not required by any written law to be executed under seal, may be executed on behalf of the Authority by the Chairman (or any other member authorized in writing by the Authority) and the General Manager.

(4) All statutory records and minutes of all meetings and proceedings of the Authority and any of its committees shall be kept and maintained by the General Manager.

PART III

FUNCTIONS AND POWERS

Functions of the Authority

9. The Authority shall have all the functions imposed on it under any State laws and, without prejudice to the generality of the foregoing, the Authority shall also have the following functions:

(*a*) to advise the Government on all matters concerning the State policy objectives for communications and multimedia activities to develop the State digital economy including:

(i) the development of digital infrastructure;

(ii) cyber security;

(iii) talent development;

(iv) e-commerce;

(v) research and development in digital technology;

(vi) digital innovation and entrepreneurship; and

(vii) digital government.

(*b*) to implement and enforce the provisions of State laws related to any communications and multimedia activities;

(*c*) to consider and recommend reforms to State laws relating to any communications and multimedia activities;

(*d*) to formulate, monitor, review strategies and standards for the development of information resources and systems for the collection, storage, transmission and dissemination thereof;

(*e*) to supervise and monitor communications and multimedia activities in the State;

(*f*) to support, direct, stimulate and facilitate research and development in communication and multimedia activities in the State;

(*g*) to co-ordinate, direct, monitor and assist research and development in communication and multimedia activities undertaken

by Government departments, statutory bodies, companies or corporations owned or controlled by the Government and to facilitate co-operation, communication, exchange of knowledge, ideas and information between them.

(*h*) to encourage and promote the development of the communications and multimedia industry including in the area of research and training in the State;

(*i*) to approve, monitor, review, co-ordinate and determine priorities and strategies for the implementation of communication and multimedia development plans by or amongst departments, agencies and institutions of the Government;

(*j*) to develop for the Government, the framework for information technology and information resources management and process, and the utilization of such technology;

(*k*) to promote and facilitate research and improvement in electronic network systems and processes, application and technologies associated therewith;

(*l*) to assess manpower needs in the fields of communications and multimedia, and engage in programmes for training and developing such human resources;

(*m*) to undertake exchanges and joint programmes with other national and international organizations or institutions connected with information resources and systems, communication and multimedia;

(*n*) to render assistance in any form to, and to promote cooperation and coordination amongst, persons engaged in communications and multimedia activities in the State;

(*o*) to facilitate the application and usage of systems and technologies for e-commerce by companies and business communities in the conduct of their business and the promotion of their products in the State; and

(*p*) to carry out any function as may be prescribed by State laws.

Powers of the Authority

10.—(1) The Authority shall have power to do all things that are necessary or convenient to be done for or in connection with the performance or discharge of its functions and, in particular, may—

(*a*) appoint committees consisting of persons who may or may not be members of the Authority, and assign or delegate to any such committees such functions and powers as it may determine;

(*b*) appoint any person with the requisite knowledge, expertise and experience in communication and multimedia as adviser or consultant for the Authority and may form a panel of advisers or consultants to advise or assist the Authority in the discharge of its functions;

(*c*) incorporate or participate in the incorporation of companies or enter into any joint ventures for the purposes of this Ordinance;

(*d*) approve any applications for the erection, use, maintenance or operation of any structures, communication towers on any land or building and any other incidental works, including laying of cables, for purposes of communication and multimedia activities in the State;

(*e*) provide guidelines relating to the use of, or research or studies carried out on communication and multimedia resources and products in the State;

(*f*) provide scholarships, grants, loans or other incentives for training or research related to communication and multimedia;

(*g*) publish or sponsor the publication of periodicals, books and other materials in relation to communication and multimedia and hold copyrights therein;

(*h*) provide grants, loans or advances to, or subscribe stocks, shares, bonds or debentures of companies or corporations whose principal business is related to communication and multimedia;

(*i*) secure, hold and be registered as owner or proprietor of any copyrights, patents or intellectual property rights over any

communication and multimedia products written, produced or prepared by the Government or its agencies or any body corporate or the Authority or any committee appointed by the Authority, or any of its officers, employees or agents;

(*j*) lend, lease or otherwise permit the use of any of the communication and multimedia resources and products developed or invented by or belonging to the Authority upon such terms and conditions as the Authority may impose and to determine the rate of fees, charges, levies, royalties or other dues related thereto;

(*k*) hold for and on behalf of the Government all rights and properties described in section 12 or which accrued to or have been acquired by the Government or upon its direction and to act as a trustee for the Government in relation thereto;

(*l*) receive donations or contributions from any source and raise funds by all lawful means;

(*m*) enter into contracts, establish trusts and generally regulate transactions of all businesses involving or connected with the Authority;

(*n*) issue directions or guidelines on the use of terminologies and nomenclatures relating to communication and multimedia activities in the State; and

(*o*) do anything incidental to or necessary for the discharge of its functions under this Ordinance.

(2) Notwithstanding subsection (1)(*d*), the Authority shall have the power to regulate the erection of telecommunication towers and facilities which have been erected pursuant to any approval granted by the State Planning Authority prior to the coming into force of this Ordinance, including the design and location thereof.

(3) The Authority may, in addition to the functions and powers provided under this Ordinance, exercise such other functions and powers as may be authorized in writing by the Majlis Mesyuarat Kerajaan Negeri.

Directions by Minister to Government departments or agencies

11. The Minister may from time to time give to Government departments or agencies, general or special directions, not inconsistent with the provisions of this Ordinance and any such direction shall become binding on such Government departments or agencies, who shall forthwith take all steps necessary or expedient to give effect thereto.

Vesting of rights *etc*.

12.—(1) All rights and properties in every communication and multimedia products which by virtue of any applicable intellectual property legislation subsists in favour of or belongs or accrued to or vested in the Government shall as from the date of commencement of this Ordinance be vested, without any further transfer or conveyance, in the Authority who shall hold the same as a trustee for the Government.

(2) The Authority shall, at such interval as may be determined by the direction from the Chief Minister, publish in the *Gazette* a list of all rights and properties in works which by virtue of subsection (1) have been vested in the Authority or held by the Authority as a trustee for the Government.

(3) For the purpose of this section, the rights vested shall in relation to works include rights to any communication and multimedia products and rights in respect of any application for the registration of any intellectual property rights under any written law, whether future or contingent and rights in revision or remainder.

Directions by Majlis Mesyuarat Kerajaan Negeri

13. The Majlis Mesyuarat Kerajaan Negeri may give to the Authority such directions, not inconsistent with the provisions of this Ordinance, on the discharge and exercise by the Authority of its functions and powers under this Ordinance, and the Authority shall give effect to such directions.

Protection from personal liability

14.—(1) No suit or other legal proceedings shall lie personally against any member, officer, or employee of the Authority or other person acting under the direction of the Authority for anything done in good faith or intended to be done in the execution or purported execution of the provisions of this Ordinance.

(2) The Public Authorities Protection Act 1948 ***[Act 198]*** shall apply to any action, suit, prosecution or proceedings against the Minister or the Authority or any officer or employee in respect of any act, neglect or default done or committed by any of them in such capacity.

Public servants

15. All members, officers and employees of the Authority shall be deemed to be public servants for the purposes of the Penal Code ***[Act 574]***.

PART IV

FINANCE AND ACCOUNTING PROCEDURE

Grants to the Authority

16. For the purpose of enabling the Authority to carry out its functions and powers under this Ordinance, the Government may, from time to time, make grants to the Authority of such sums of money as it may determine.

Establishment of Fund

17.—(1) All money received, raised or earned by the Authority shall forthwith be paid into such banks or other financial institutions as may from time to time be decided by the Authority to the credit of a fund to be called the Sarawak Multimedia Authority Fund (referred to in this Ordinance as "the Fund") which shall be controlled and administered by the Authority, subject to the directions of the Majlis Mesyuarat Kerajaan Negeri.

(2) The Authority shall open and maintain an account or accounts with such bank or other financial institutions in Malaysia as the Authority thinks fit, and any such account shall be operated by such person or persons as may from time to time be authorized in that behalf by the Authority.

Purposes of Fund

18. The money standing to the credit of the Fund shall be devoted solely to and for the following purposes:

(*a*) the payment of the expenses of or connected with the administration and management of the Authority;

(*b*) the administration, management and operation of any resource centres or facilities established or managed by the Authority for the purpose of the performance or discharge of its functions;

(*c*) the advancement, research and development of the communication and multimedia activities and towards implementation, operation and maintenance of the State's communication and multimedia activities and objectives;

(*d*) the repayment of any loans, liabilities or other borrowings of the Authority including interests and financial charges accrued thereon;

(*e*) the payment of all remunerations, benefits and privileges of, or accorded to members, officers and employees of the Authority and for payment of fees and other sums due to or claimed by contractors, agents, advisors and consultants engaged or appointed by the Authority;

(*f*) the payment of all fees and other expenses and costs relating to the registration of any intellectual property rights belonging to or vested in the Government or the Authority in Malaysia or overseas; and

(*g*) the payment of all expenses necessary for carrying out functions and powers of the Authority and for any other purposes under this Ordinance.

Investment of moneys

19. All moneys not immediately required to be expended in the meeting of any obligations or the discharge of any functions of the Authority may be invested in any bank or financial institution licensed under the Financial Services Act 2013 ***[Act 758]*** or Islamic Financial Services Act 2013 ***[Act 759]***, or in such other investments or securities as may from time to time be approved by the Authority.

Power to borrow

20. The Authority may, from time to time for the purposes of this Ordinance, raise loans from the Government or, with the consent of the Majlis Mesyuarat Kerajaan Negeri, from any other sources.

Vesting of properties

21. Without prejudice to section 12, the Majlis Mesyuarat Kerajaan Negeri may, by notification in the *Gazette*, vest in the Authority any properties as may be considered necessary to enable the Authority to carry out its functions and powers under this Ordinance.

Annual report

22. The Authority shall, as soon as possible after the close of each financial year, submit to the Majlis Mesyuarat Kerajaan Negeri an annual report on the activities of the Authority during that financial year, and the Chief Minister cause a copy of the report to be laid before the Dewan Undangan Negeri.

Accounts of Authority

23.—(1) The Authority shall keep proper accounts and other records of its own and shall prepare in respect of each financial year a statement of its accounts in a form approved by the Majlis Mesyuarat Kerajaan Negeri.

(2) The accounts of the Authority shall be audited by a qualified auditor appointed annually by the Authority with the approval of the State Financial Authority and the auditor shall make a report on the accounts examined by him.

(3) As soon as the accounts of the Authority have been audited in accordance with subsection (2), a copy of the statement of accounts together with a copy of any report made by the auditor shall be submitted to the Majlis Mesyuarat Kerajaan Negeri, for its examination and approval, and thereafter the Chief Minister shall cause a copy thereof to be laid before the Dewan Undangan Negeri.

(4) The Statutory Bodies (Financial and Accounting Procedure) Ordinance, 1995 ***[Cap. 15]***, shall apply to the Authority.

Annual estimates

24. The Authority shall obtain in advance the approval of the Majlis Mesyuarat Kerajaan Negeri for its annual estimates of expenditure and for any supplementary estimates of its expenditure.

PART V

ENFORCEMENT AND INVESTIGATION

Appointment and power of authorized officer

25.—(1) The Chief Minister may in writing authorize any public officers or officers of the Authority to exercise the powers of enforcement under this Ordinance.

(2) Any such officer shall be deemed to be a public servant within the meaning of the Penal Code ***[Act 574]***.

(3) In exercising any powers of enforcement under this Ordinance, an authorized officer shall on demand produce to the person against whom he is acting the authority issued to him by the Chief Minister.

(4) An authorized officer shall have the powers to investigate any offences provided for by State laws related to communication and multimedia activities and shall also have all the powers as provided under the Criminal Procedure Code ***[Act 593]*** relating to arrests, searches, seizures, disposal of seized articles and investigations.

PART VI

OFFENCES AND PENALTIES

Erection of structures, *etc.*

26.—(1) No person shall erect, use, maintain or operate any structures for purposes of communication and multimedia activities including communications towers on any land or building in the State unless the erection, use and the maintaining or operation of such structures have been approved by the Authority.

(2) Any person contravening the provisions of subsection (1) shall be guilty of an offence and shall, upon conviction, be punished with a fine not exceeding one million ringgit or imprisonment for a term not exceeding ten years or to both:

Provided that nothing in this section shall affect the powers conferred on any other relevant authorities by any other written laws.

Obligation of secrecy

27.—(1) No member, officer or employee of the Authority or any person undertaking communication and multimedia activities approved by the Authority shall disclose or disseminate any information obtained by him in the course of the performance of his functions or powers or undertaking such activities unless written consent for such disclosure or dissemination has been obtained from the Authority or that such information has already been published in pursuance of this Ordinance.

(2) Any person contravening the provisions of subsection (1) shall be guilty of an offence and shall, upon conviction, be punished with a fine not exceeding fifty thousand ringgit or imprisonment for a term not exceeding three years or to both.

False statements, *etc.*

28. Any person who makes any false or misleading statement, orally, in writing or in any forms whatsoever, or has reason to believe such statement is false or misleading, in connection with any matters arising under this Ordinance, commits an offence and shall, on

conviction, be liable to a fine not exceeding one hundred thousand ringgit or imprisonment for a term of not exceeding three years or to both.

Failure to disclose information, *etc.*

29. Any person who fails to disclose or omits to give any relevant information or evidence or documents that he knows to be relevant or has reason to believe to be relevant, in connection with any matters arising under this Ordinance, commits an offence and shall, on conviction, be liable to a fine not exceeding one hundred thousand ringgit or imprisonment for a term not exceeding three years or to both.

Offences for non-compliance

30. Unless otherwise provided for under this Ordinance, any person who fails to comply with any provisions under this Ordinance commits an offence and shall, upon conviction, be liable to a fine not exceeding one hundred thousand or to imprisonment for a term not exceeding five years or to both.

Offences committed by corporations

31.—(1) Where a person charged with an offence under this Ordinance is a body corporate, every person who, at the time of the commission of such offence, is an officer of that body corporate may be charged jointly in the same proceedings with the body corporate, and where the body corporate is convicted of the offence charged, every such director or officer shall be deemed to be guilty of the offence unless he proves that the offence has been committed without his knowledge or that he took reasonable precautions to prevent its commission, or in the case of a continuing offence, the continuation thereof.

(2) For the purpose of this section, the expression "officer" has the same meaning as assigned to it in the Companies Act 2016 ***[Act 777]***.

Conduct of prosecution

32. Prosecution for offences against this Ordinance or its rules may be conducted by the Public Prosecutor or any person authorized in writing by him pursuant to section 377(*b*) of the Criminal Procedure Code ***[Act 593]***.

Power to compound

33.—(1) All offences under this Ordinance or regulations made hereunder are compoundable.

(2) Any officer authorized in writing by the Authority may compound any offence punishable under this Ordinance or any regulations made under this Ordinance, by collecting from the person reasonably suspected of having committed the offence, such sum of money not exceeding one-half of the amount of the maximum fine to which that person would have been liable if he had been convicted of the offence, within such time as may be specified in the offer.

(3) Where an offer made under subsection (2) is not accepted within the time specified in the offer or within such extended period as the Authority may grant, prosecution for the offence may be instituted at any time thereafter against the person to whom the offer was made.

(4) Where an offence has been compounded under subsection (1), no prosecution shall be instituted in respect of the offence against the person whom the offer to compound was made.

(5) All sums of money accepted under subsection (2) shall be paid into the State Consolidated Fund.

PART VII

REGULATIONS

Regulations

34.—(1) The Majlis Mesyuarat Kerajaan Negeri may make regulations as may be necessary or expedient for the purposes of carrying into effect the provisions of this Ordinance.

(2) Without prejudice to the generality of subsection (1), the Majlis Mesyuarat Kerajaan Negeri may also make regulations for the following purposes:

(*a*) to regulate the development of digital infrastructure, cyber security, talent development, e-commerce, research and development in digital technology, digital innovation and entrepreneurship, and digital government in the State;

(*b*) to regulate the development of information resources and systems for the collection, storage, transmission and dissemination thereof in the State;

(*c*) to regulate the implementation of communication and multimedia development plans by or amongst departments, agencies and institutions of the Government;

(*d*) to regulate the application and usage of systems and technologies for e-commerce by companies and business communities in the conduct of their business and the promotion of their products in the State;

(*e*) to regulate the erection, usage, maintenance or operation of any structures, communication towers on any land or building and any other incidental works, including laying of cables, for purposes of communication and multimedia activities in the State;

(*f*) to prescribe the scale of fees relating to the use of, or research or studies carried out on communication and multimedia resources and products in the State;

(*g*) to prescribe such fees as may be necessary for the purposes of this Ordinance; and

(*h*) to prescribe offences and its penalties:

Provided that a contravention of such offences shall be punishable by a fine not exceeding five hundred thousand ringgit and with imprisonment of a term not exceeding three years or to both.

(3) For the purpose of this section, "regulate" includes the power to issue licences and permits.

PART VIII

MISCELLANEOUS

Delegation of functions and powers

35.—(1) The Authority may, with the approval of the Majlis Mesyuarat Kerajaan Negeri, and subject to such conditions or restrictions as it deems fit, delegate to any committee appointed under section 10(1)(*a*), or to the General Manager or any officer of the Authority, or any company incorporated by the Authority and its subsidiaries, all or any of the functions and powers vested in the Authority by this Ordinance, (other than the power to delegate conferred by this section).

(2) Notwithstanding the delegation of functions or powers under this section, the Authority may continue to perform any of its functions or exercise any powers conferred upon it under this Ordinance.

Discipline and disciplinary procedure

36. The provisions of the Statutory Bodies (Conduct and Discipline) Ordinance, 2004 ***[Cap. 57]*** shall apply to the General Manager, officers and employees appointed under section 7.

Legal representation

37.—(1) In respect of any civil proceedings by or against the Authority—

(*a*) the State Attorney-General or any public officers authorized by him;

(*b*) an advocate appointed by the Authority; or

(*c*) an officer of the Authority duly authorized in writing by the Authority,

may appear and represent the Authority in such proceedings before any court.

(2) For the purpose of this section "civil proceedings" include an arbitration conducted under the Arbitration Act 2005 ***[Act 646]*** and

any proceedings where the court exercises its additional powers under section 25(2) of the Courts of Judicature Act 1964 ***[Act 91]***.

Power to amend Schedule

38. The Majlis Mesyuarat Kerajaan Negeri may, by notification in the *Gazette*, amend the Schedule.

PART IX

REPEAL AND SAVINGS

Repeal and Savings

39.—(1) The Sarawak Information Technology and Resources Council Ordinance, 1999 ***[Cap. 28]*** (hereinafter referred to as the "repealed Ordinance"), is repealed.

(2) Notwithstanding subsection (1), all rules, orders, directions, appointments, proclamations, licences, rights, privileges or other acts or things made or done under or in accordance with the repealed Ordinance, shall continue in force until amended, revoked or replaced pursuant to this Ordinance.

(3) Any prosecution, action, suit, claim, proceeding or inquiry which has been instituted, filed, commenced or made under the repealed Ordinance and is still pending and not finally disposed of or existing immediately before the date of commencement of this Ordinance shall be continued and be determined or completed or disposed of in all respects under the provisions of the repealed Ordinance as if this Ordinance had not been enacted.

(4) On the date appointed by the Chief Minister for this Ordinance to come into force—

(*a*) the Sarawak Information Technology and Resources Council (hereinafter referred to as "the Council") established under section 3(1) of the repealed Ordinance shall cease to exist and shall cease to exercise the powers and to perform the functions prescribed by the repealed Ordinance;

(*b*) the members of the Council or members of any committee established by it shall cease to hold office; and

(*c*) the properties, rights and liabilities to which the Council was entitled or subjected to shall, by virtue of this section, be transferred to and vested in the Authority without further conveyance, assignment or transfer whatsoever, to become the absolute properties, rights and liabilities of the Authority save that all intellectual property rights other than those relating to communication and multimedia activities be transferred to and vested in the Sarawak Research and Development Council.

(5) Every chose-in-action, rights and liabilities transferred by virtue of subsection (4)(*c*) to the Authority may, after the coming into force of this Ordinance, be sued on, recovered or enforced by the Authority in its own name and it shall not be necessary for the Council to give prior notice to the person whose rights and liabilities is affected by such transfer.

(6) Save as otherwise provided in the Ordinance—

(*a*) the provisions of this Ordinance shall have effect notwithstanding anything contrary contained in any agreements, undertakings or arrangements relating to communication and multimedia activities executed before or after the commencement of this Ordinance; and

(*b*) any provisions contained in such agreements, undertakings or arrangements shall to the extent to which it is repugnant to the provisions of this Ordinance become or be void as the case maybe.

SCHEDULE

MEETINGS

(Section 5)

Meetings

1.—(1) All meetings of the Authority shall be presided over by the Chairman or in his absence, by any member appointed for that purpose by the Chairman.

(2) The quorum of any meeting of the Authority shall be five including the Chairman.

(3) If for any question to be determined by the Authority there is an equality of votes, the Chairman shall have a casting vote.

(4) Subject to subparagraphs (1), (2), (3) and paragraph 2, the Authority shall regulate its own procedures.

Frequency of meeting

2.—(1) Except with the written approval of the Chief Minister, the Authority shall hold at least two meetings in every calendar year.

(2) Meetings of the Authority shall be called by the Chairman and notice of such meetings shall be issued and signed by the Secretary or any person specifically authorized by the Secretary.

Authority may invite others to meetings

3. The Authority may request any person (not being a member of the Council) to attend any meeting or deliberation of the Authority for the purpose of advising it on any matter under discussion, but any person so attending shall have no right to vote at the said meeting or deliberation.

Minutes

4.—(1) The Authority shall cause minutes of all its meetings to be maintained and kept in a proper form.

(2) Any minutes of meetings of the Authority shall, if duly signed by the Chairman or by the member presiding in his absence, as the case may be, be admissible in evidence in all legal proceedings without further proof and every meeting of the Authority in respect of the proceedings of which minutes have been so made shall be deemed to have been duly convened and held and all members thereat to have been duly qualified to act.

(3) Members are entitled to copies of such minutes but shall not, without the permission of the Chairman, transmit, distribute or permit access thereto, to any person who is not a member of the Authority.

Principal office

5.—(1) The Authority shall have a principal office and no change in the principal office may be effected without the prior written approval of the Chief Minister.

(2) The minutes of the Authority, its common seal and all its statutory and accounting records shall be kept at the principal office.

Disclosure of interests

6. A member of the Authority whether directly or indirectly, by himself or his spouse or children, having any interest in any company or undertaking with which the Authority proposes to make any contract or whether directly or indirectly having any interest in any such contract or in any matter under discussion by the Authority shall disclose to the Authority the fact of his interest and the nature thereof, and such disclosure shall be recorded in the minutes of the meetings of the Authority and, unless specifically authorized thereto by the Chairman, such member shall take no part in any deliberation or decision of the Authority relating to the contract or matter.

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