

NATIONAL 4IR POLICY

The Government's direction and support



29 JUNE 2021
ECONOMIC PLANNING UNIT, PRIME MINISTER'S DEPARTMENT

1 **What is the Fourth Industrial Revolution (4IR)?**

2 **What is National 4IR Policy?**

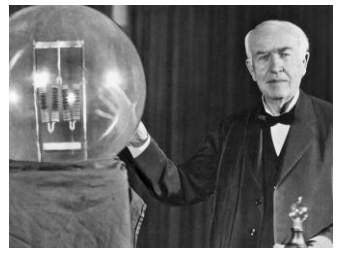
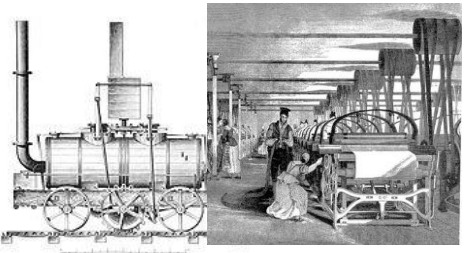
3 **Why do we need the National 4IR Policy?**

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WHAT IS THE FOURTH INDUSTRIAL REVOLUTION (4IR)?

The first three industrial revolutions transformed manufacturing and production through specific advancements

Key advancements that have triggered profound change in each revolution...



Timeline (year)

1760



1760-1840

Industry 1.0

Age of Mechanical Production

- Mechanisation of activities in textile making and printing
- Introduction of steam power for goods transportation

Impact: Emergence of factory

1840



1830-1915

Industry 2.0

Age of Science & Mass Production

- Emergence of factory for mass market production
- Widespread electrification

Impact: Longer factory operations, Improvement of living conditions through job opportunities

1969



1969-2010s

Industry 3.0

Age of Digital Revolution

- Widespread electronics application, computing power and global comms (internet)
- Automation in manufacturing

Impact: More high tech & sophisticated products, rapid exchange of information

2010



2010s onward

Industry 4.0

Digital Transformation in Manufacturing in 4IR

- Convergence of smart technologies in manufacturing, e.g. smart factory, advanced robotics, IOT

Impact: Smart factory, emerging tech across all services sector

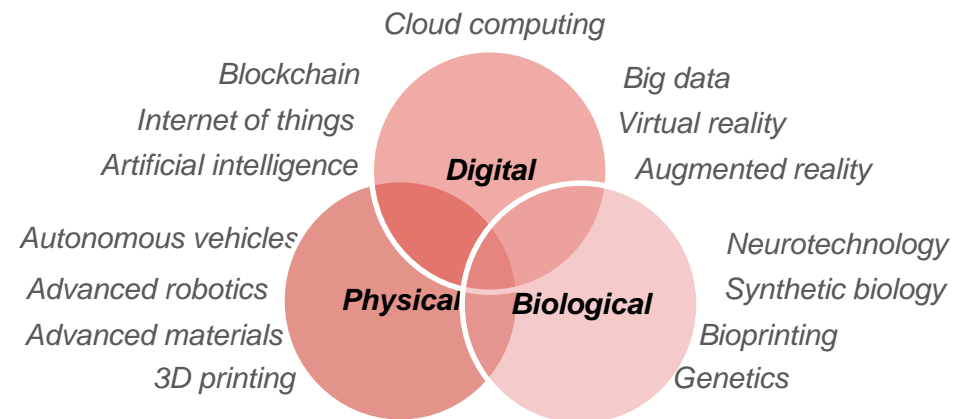
What is the Fourth Industrial Revolution (4IR)?

Definition of 4IR

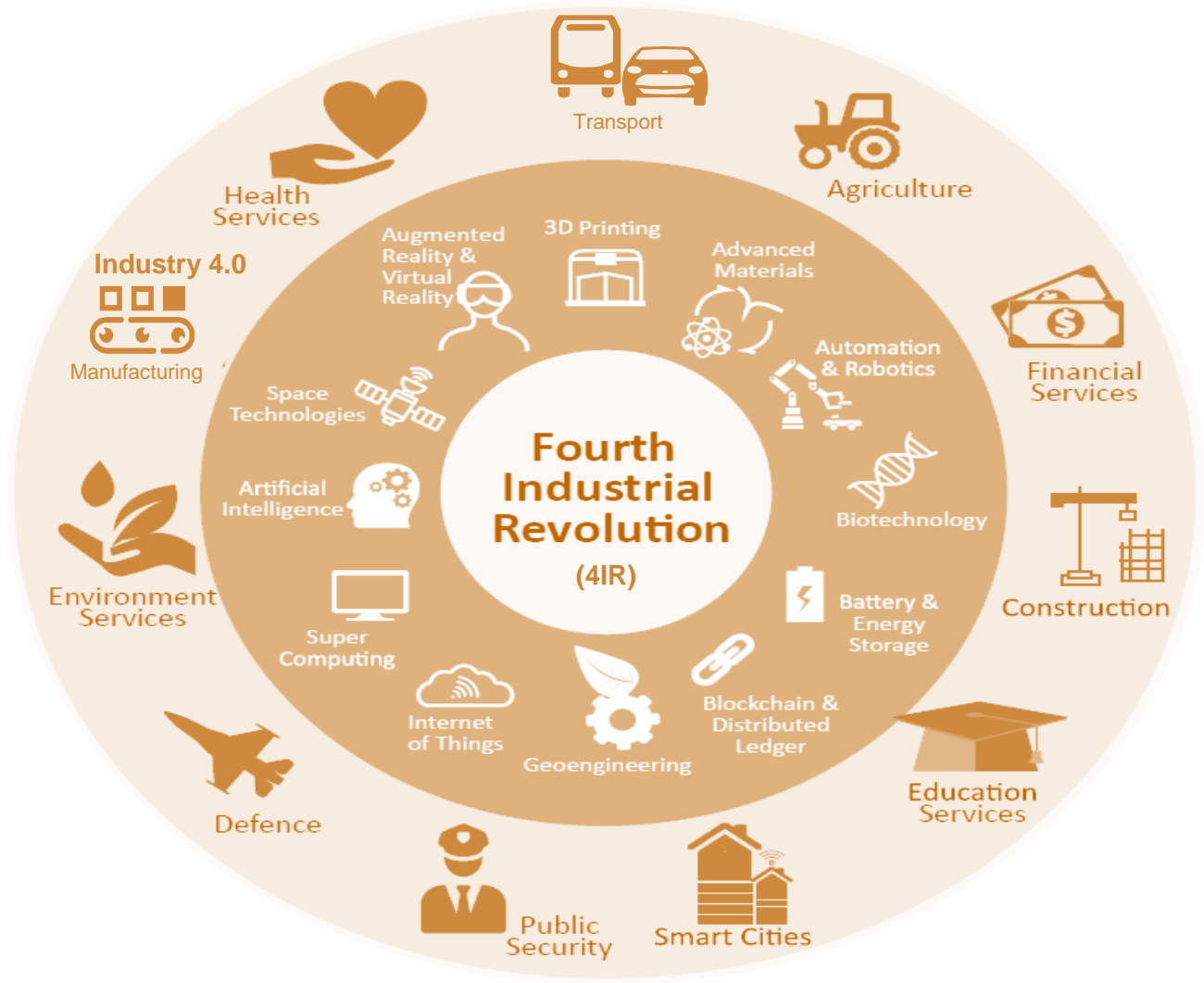
4IR refers to

- **disruptive transformation of industries through the application of emerging technologies, that**
- **permeates across digital, biological and physical space (i.e. combination of technologies, in different fields), that**
- **impacts all economic sectors and aspects of life**

4IR technologies gives rise to the convergence of the physical, digital and biological realms.



The 4IR, driven by intensification of digital revolution, is affecting not only the manufacturing sector, but almost all aspects of society.



Why does the 4IR matter?

To unlock growth opportunities and better manage economic disruptions on traditional businesses arising from the 4IR

Transportation & logistics

- Shared mobility
- 4PL logistics solution
- Integration with wholesale & retail trade (e-commerce)



Professional, scientific & technical activities

- Digital/ smart contracts
- Building Information Modelling System
- 3D scanning and photogrammetry

Healthcare

- Bio-robotics for mobility enablement
- Epigenetics
- AI diagnostics



Agriculture


- Smart farming, vertical farming
- IoT-enabled drones for fertilisation and pesticide spray

“**THE FOURTH INDUSTRIAL REVOLUTION** WILL AFFECT THE VERY ESSENCE OF OUR HUMAN EXPERIENCE.”

KLAUS SCHWAB
FOUNDER & EXECUTIVE CHAIRMAN,
WORLD ECONOMIC FORUM

- New business opportunities**
- New value creation**
- Efficiency/ productivity gains**
- Transformation of 3D jobs**
- Improved work-life balance**
- New job creation**

Strategic approach were undertaken by other countries where technology plays key role in socio-economic development to achieve national aspirations




Leverage technological advancements to become smart, green and safe country



In areas such as:

- Integrate data, network (5G) and AI into industries and government
- Low-carbon energy through smart grid, EV, hydrogen vehicles and renewable energy
- Tech-based infra for schools and higher education




Society 5.0 - Incorporate new technologies to balance economic development, with resolutions of social problems

Economic advancement	Resolution of social problems
<ul style="list-style-type: none"> • The demand for energy is increasing • The demand for foodstuffs is increasing • Lifespan is becoming longer, and the aging society is advancing • International competition is becoming increasingly severe • Concentration of wealth and regional inequality are growing 	<ul style="list-style-type: none"> • Reduction of GHG emissions • Increased production and reduced loss of foodstuffs • Mitigation of costs associated with the aging society • Promotion of sustainable industrialization • redistribution of wealth, and correction of regional inequality

Incorporating new technologies such as IoT, robotics, AI, and big data in all industries and social activities, provide goods and services that granularly address manifold latent needs without disparity

to balance economic advancement with the resolution of social problems



Benefit everyone regardless of age and gender

Everyday life is happy and fun

provide goods and services that granularly address manifold latent needs without disparity

advance fusion of cyberspace and physical space

Liberated from cumbersome work, effectively utilizing time

More convenient, safe and secure life

to balance economic advancement with the resolution of social problems



Harnessing the potential of artificial intelligence (AI) for socioeconomic benefits

Singapore rolls out national strategy on artificial intelligence for 'impactful' social, economic benefits



"Government has committed more than S\$500 million to fund AI activities under the Research, Innovation and Enterprise 2020 (RIE2020) plan" - Minister Heng Swee Keat (Nov, 2019)

Source: Korean New Deal; Channel News asia, Government of Japan Cabinet Office

Malaysia must be prepared as the world become more connected and competitive, or risk being left behind

Our Society



80%
Malaysians has access to internet

71%
Malaysians use smartphones

9 of 10
Malaysians go online via smartphone

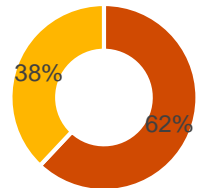
Our Businesses



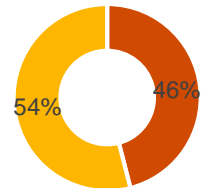
41.0%
of Malaysia's GDP contributed by SMEs 2020

62.7%
SMEs Malaysia in early stages of digital maturity

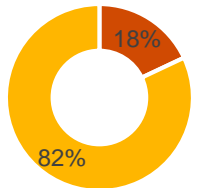
Digital adoption by businesses in Malaysia



Connected to Internet
Not Connected to Internet

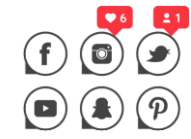


Has Fixed Broadband
No Fixed Broadband



Has Web Presence
No Web Presence

Where is Malaysia globally?



6th Social media penetration

Other countries: Saudi Arabia 1st, Singapore 4th, UK 18th, Japan 28th, Switzerland 33rd, Germany 38th

27th

In terms of ability of to provide high levels of prosperity to citizens, based on WEF **Global Competitive Index 2019**

- 1st**
- 7th**
- 28th**

35th

of 129 in overall innovation performance based on WEF **Global Innovation Index 2019**

- 1st**
- 8th**
- 15th**

However, in the aspect of regulatory environment Malaysia ranks relatively low at 64th

Source: Malaysia's Digital Economy, World Bank 2018; Internet Users Survey 2018, MCMC; We are Social and Hootsuite Digital Malaysia 2019; WEF Global Competitive Index 2019, Global Innovation Index 2019

Malaysia can harness the full potential of 4IR for sustainable growth while mitigating the associated risks

To mitigate potential social-related risks arising from 4IR



Job displacement

Changing skills and labour requirements

Digital divide

Inequal opportunities between the have's and have-nots, further affecting income, rural-urban and gender equalities



Societal well-being

Excessive device use leads to negative impacts on family institution and social connection

Ethics and values

Risk of irresponsible use and manipulation of technologies by businesses and society



Eroding trust in society

Increasing cyber attacks, fast distribution of information in society

To help address existing socio-environmental challenges and grow sustainably



World Happiness Report

81/ 149
(2021)



Environmental Performance Index

68/ 180
(2020)



Carbon emission per capita Malaysia is **25%** higher than its peers



5x increases in the number of reported cyber threat incidents from 2008 to 2018



Heavy reliance on **low-skilled foreign workers**

1.9 mil or 66% low-skilled

Documented workers **1.7 mil** (2010)

+70.6%

2.9 mil (2019)

Source:, World Bank (2020), DOSM (2020), MOHR (Aug 2020), Malaysian Economic Statistics Review Vol1/2020

In Malaysia, various efforts to improve society wellbeing and economic sectors by leveraging technological advancements

Blockchain technology application for vaccination certificates

Malaysia, Singapore use blockchain technology for vaccination certificates, says KJ




Drone tech in precision farming

Growing drone tech as emerging industry

World Economic Forum & MDEC Announce Collaboration on Drones

By Digital News Asia January 24, 2020



- Objective is to co-design and pilot policy principles & regulatory frameworks
- Partnership firmly establishes Malaysia as the Heart of Digital ASEAN

AirAsia launches urban drone delivery sandbox with NTIS

By Digital News Asia March 8, 2021

- Hopes 6-month sandbox engagement will pave way for deployment
- Mosti aims for govt to facilitate a more vibrant drone tech ecosystem

Partnership between MaGIC and Air Asia for Urban drone delivery Sandbox, to develop the long-term viability of urban drone delivery service

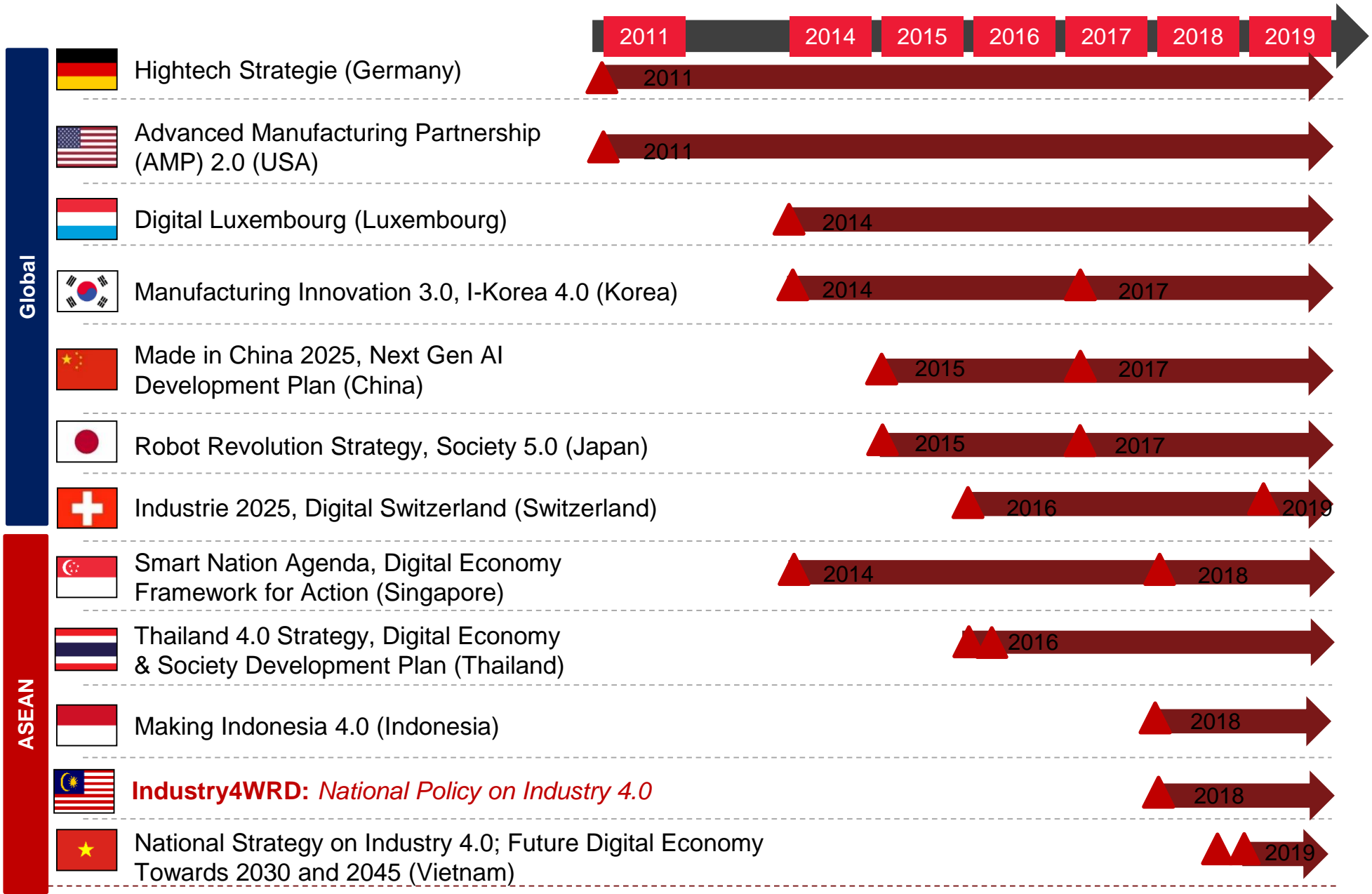



Catalysing growth through data centre industry as key enabler in ecosystem



“Microsoft is establishing its first data center in Malaysia, which is expected to create 19,000 jobs and generate US\$4.6 billion in revenue for the country”

Other countries, including our neighbours have policies and action plans in place to harness 4IR and grow their digital economy



▲ Launch year of document

BACKGROUND OF THE NATIONAL 4IR POLICY

Representatives from Ministries, agencies and private sector have been engaged through various platforms to obtain inputs and feedback

External Reference

A total of 24 rounds through the studies' governance mechanism

8 rounds of Taskforce, 8 rounds of Technical Committee, 8 rounds of Steering Committee for the inception, interim, draft final and final stage of the studies. The committees comprise of representatives from 22 Ministries and agencies.

25 ministries, 51 agencies, 7 state gov, 460 companies, 22 industry associations, 33 tech providers

Stakeholders engaged throughout the two studies to validate issues, obtain on-ground insights, seek feedback and syndication the findings. Medium included, interview, focused meeting and public sector and private sector 4IR readiness survey.

Refer to various international organisations such as WEF, OECD, UN, World Bank

Desktop research included using literatures and publications produced by international organisation.



WHAT IS NATIONAL AIR POLICY?

What is National 4IR Policy?

National 4IR Policy

Steers strategic socio-economic transformation through ethical use of 4IR technologies.

An overarching policy that:

- ✓ Drives **policy coherence** and supports the delivery of national interests
- ✓ Provides guidelines to address risks from 4IR technology whilst preserving **values and culture**
- ✓ **Creates conducive ecosystem** to accelerate digitalisation through convergence of technologies, disciplines and facilitating the emergence of new business models

What do we intend to achieve?

Towards balanced, responsible and sustainable growth



Business growth in all sectors



Socio-environmental well-being for all



Fit-for-future government

How do we deliver?

- **Whole-of-nation approach (People-Public-Private Partnership (PPPP))**
- **Outcome-oriented cohesive strategies and initiatives**
- **Delivery-driven governance structure**

Digital economy and 4IR are interdependent and mutually reinforcing

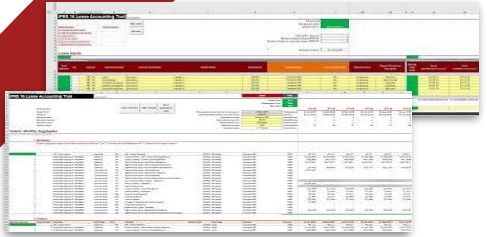


Charts the trajectory of the digital economy contribution to the Malaysian economy and builds the foundation to drive digitalisation across the nation, including bridging the digital gap.

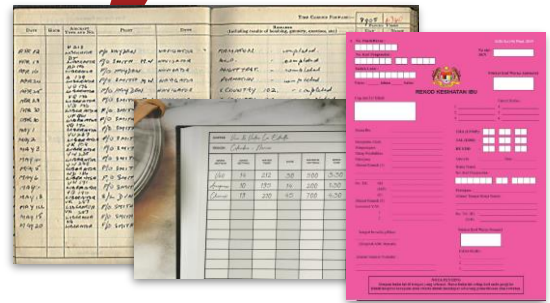


Outlines the key focus areas which impact the *rakyat*, businesses and government, in order to seize growth opportunities and to address potential risks arising from 4IR

Digitalisation

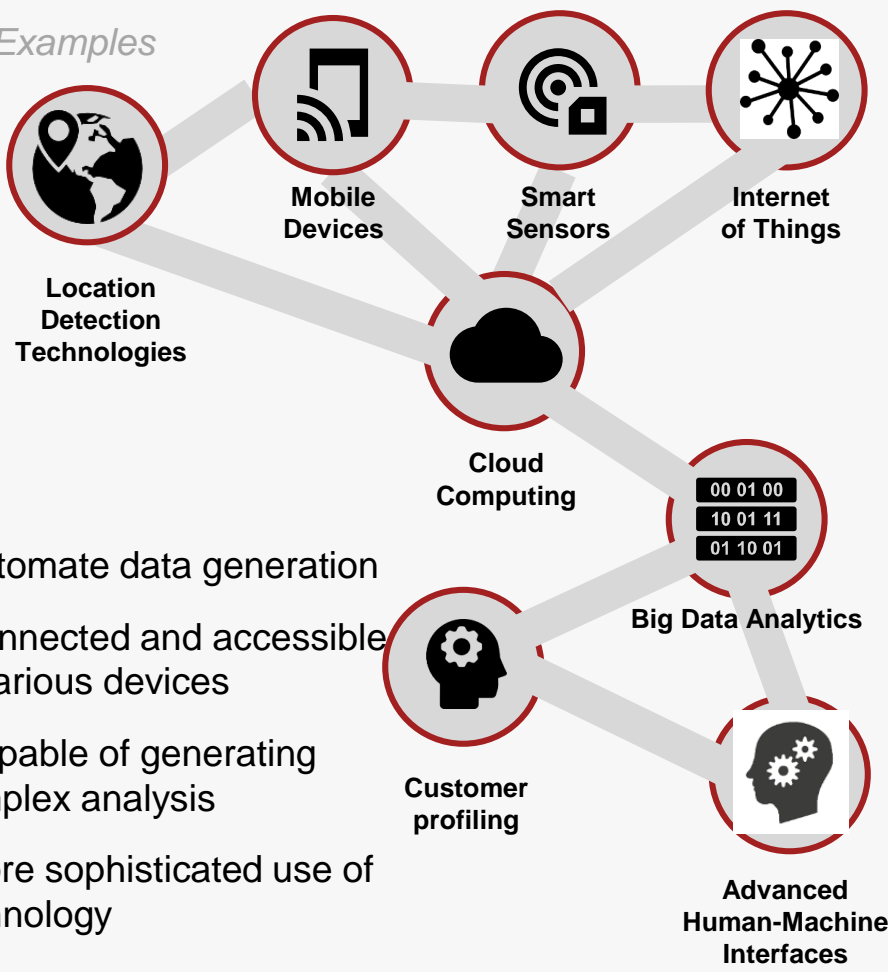


Data entry into softwares



Traditional log-book/
hand-written records

4IR Examples



- Automate data generation
- Connected and accessible to various devices
- Capable of generating complex analysis
- More sophisticated use of technology

What is National 4IR Policy? - the vision & outcomes



TO ACHIEVE BY 2030

QUALITY OF LIFE



- **Malaysian Wellbeing Index(MyWI)* 136.5**
- Longer and healthier life span
- Safer and secured living
- Meaningful use of time

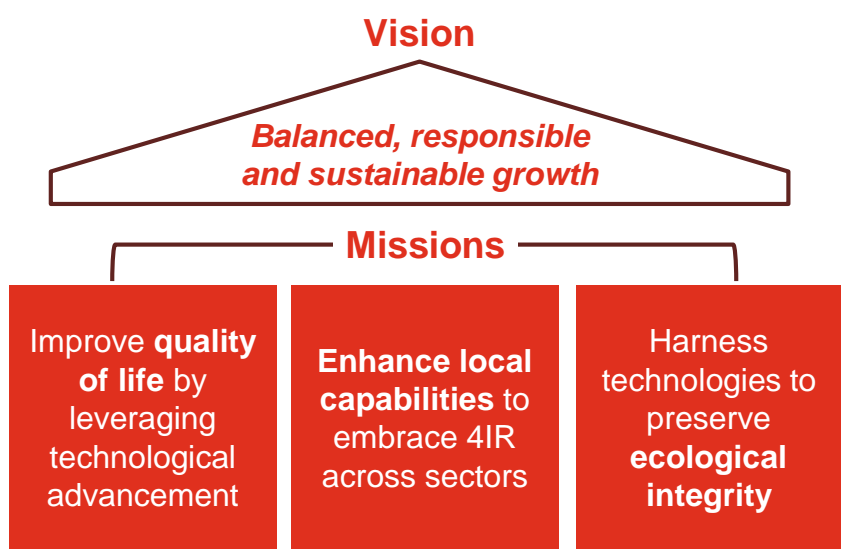
LOCAL CAPABILITIES

- Top 20 in Global Innovation Index
- 30% productivity increase across all sectors, compared to 2020 levels
- More higher-paid jobs
- Fit-for-future education and talent
- 3.5% GERD, including for 4IR related R&D
- More home-grown 4IR technology providers
- More efficient government services

ECOLOGICAL INTEGRITY



- Top 50 in Environmental Performance Index
- Reduce GHG emissions intensity by 45% by 2030

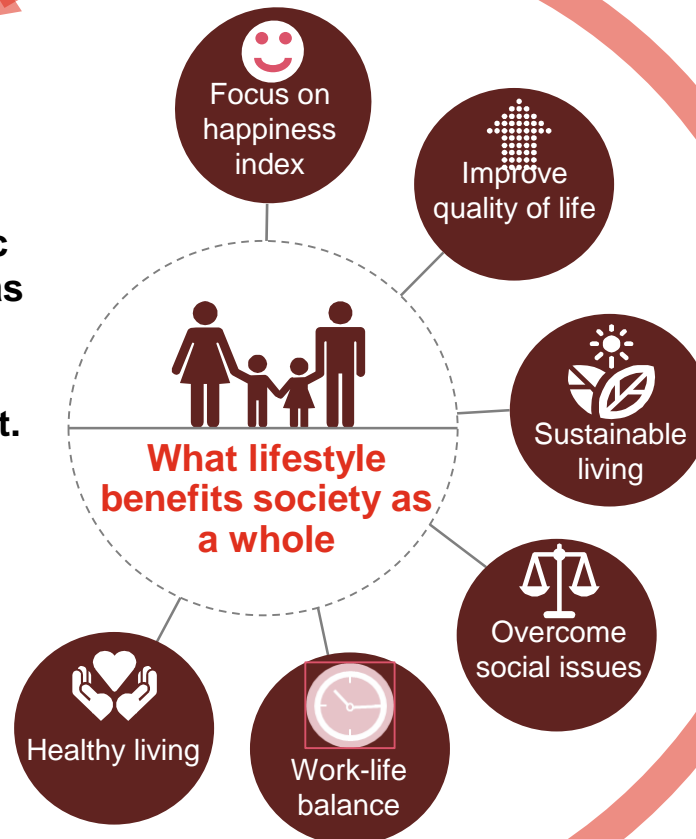


**HOW DO WE ACHIEVE THE
ASPIRATION OF THE
NATIONAL AIR POLICY?**

How do we achieve the aspiration of the National 4IR Policy?

Human-centric approach

Technology that supports the desired lifestyle, while preserving humanistic and societal values, as well as cultural heritage, focusing on wellbeing of the rakyat.



- **Social well-being** as the fundamentals
- Envisions **aspired lifestyle**
- **Leverage technology** to achieve the aspirations
- Embraces the fundamental **cultural and value heritage**, as well as **humanity**

How do we achieve the aspiration of the National 4IR Policy?

OBJECTIVES

- 1. Seizing economic growth opportunities arising from 4IR
- 2. Creating a conducive ecosystem to cope with 4IR
- 3. Building trust and an inclusive digital society

4 POLICY RESPONSES

Equip the *rakyat* with 4IR knowledge and skill sets



Forge a connected nation through digital infrastructure development



Future-proof regulations to be agile with technological changes

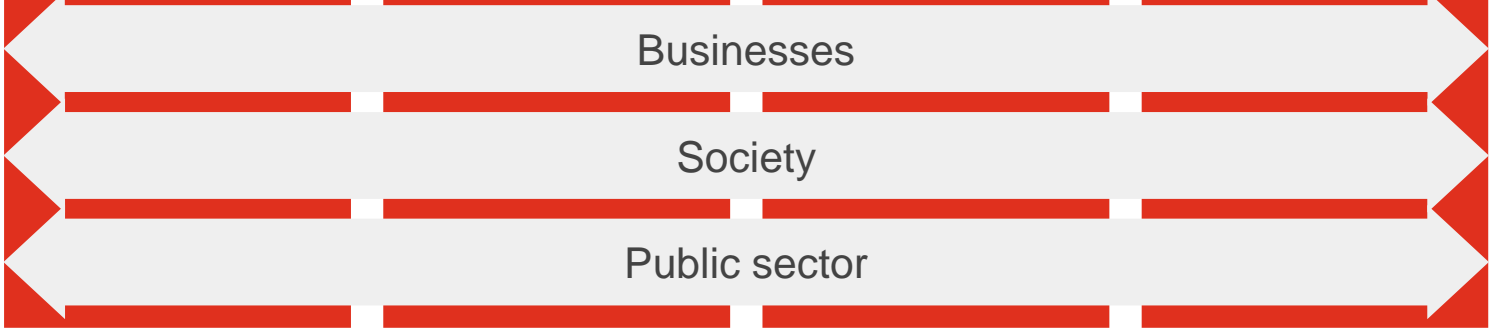


Accelerate 4IR technology innovation and adoption



16 STRATEGIES

32 NATIONAL INITIATIVES



How do we achieve the aspiration of the National 4IR Policy?

10 SECTORAL FOCUS

60 SECTORAL INITIATIVES

5 FOUNDATIONAL TECHNOLOGIES

Sectors focus with potential integration with global value chain



Manufacturing



Transportation and logistics



Healthcare

Sectors supporting socio-economic needs



Education



Agriculture



Utilities

Sectors that drive technology adoption



Finance and insurance



Professional, scientific and technical services



Wholesale and retail trade



Tourism

Supporting sectors



Construction



Arts, entertainment and recreation services



Real estate



Mining and quarrying



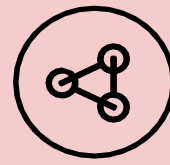
Information and communication services



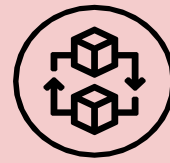
Administrative and support services



Artificial Intelligence



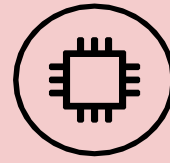
Internet Of Things



Blockchain

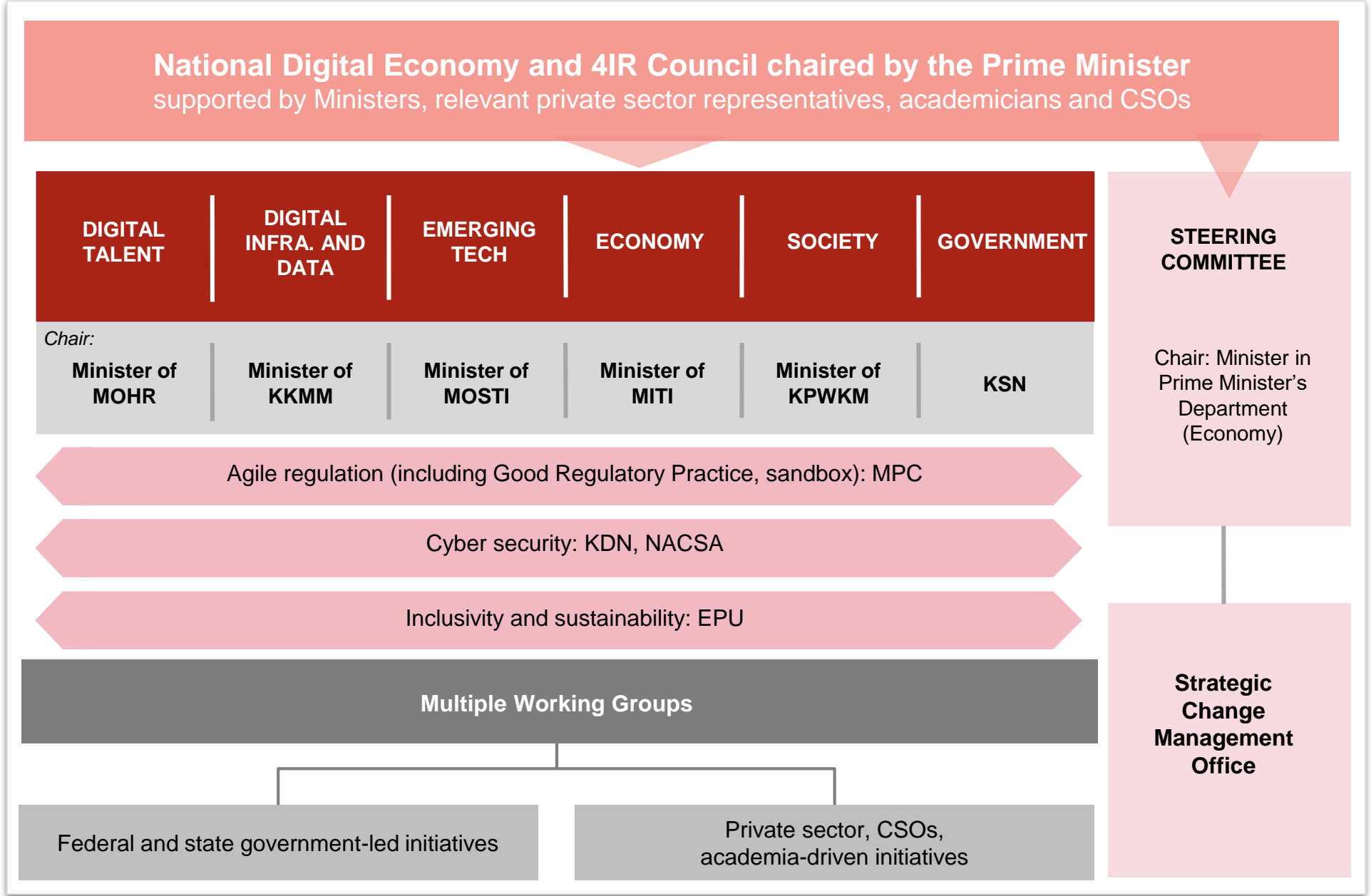


Cloud Computing and Big Data Analytics



Advanced Materials and Technologies

How do we achieve the aspiration of the National 4IR Policy?



Thank you