



MALAYSIA

2050

S M A R T C O M M U N I T I E S

What we strive for

- To be the ‘**Thought Leader**’ of the nation for matters related to science, engineering, technology and innovation.
- To **pursue excellence** in the fields of science, engineering and technology for the **benefit of all**.



Academy of Sciences Malaysia

Think Science. Celebrate Technology. Inspire Innovation

An agency under the Ministry of Science, Technology & Innovation

MEMBERS

28 Senior
Fellows

298 Fellows

19 Associates



MALE: 82% (267)



FEMALE: 18% (59)

Engineering &
Computer Sciences

76 



72 Biological, Agricultural &
Environmental Sciences

Medical &
Health Sciences

60 



43 Mathematics, Physics &
Earth Sciences

Chemical
Sciences

36 



39 Science & Technology
Development Industry

Experts: **120**
TRSM

58
YSN

Management: 71

1.0 Global Scenario



IN OTHER NATIONS

EUROPEAN UNION
Sustainable Lifestyles

FINLAND Sustainable Development

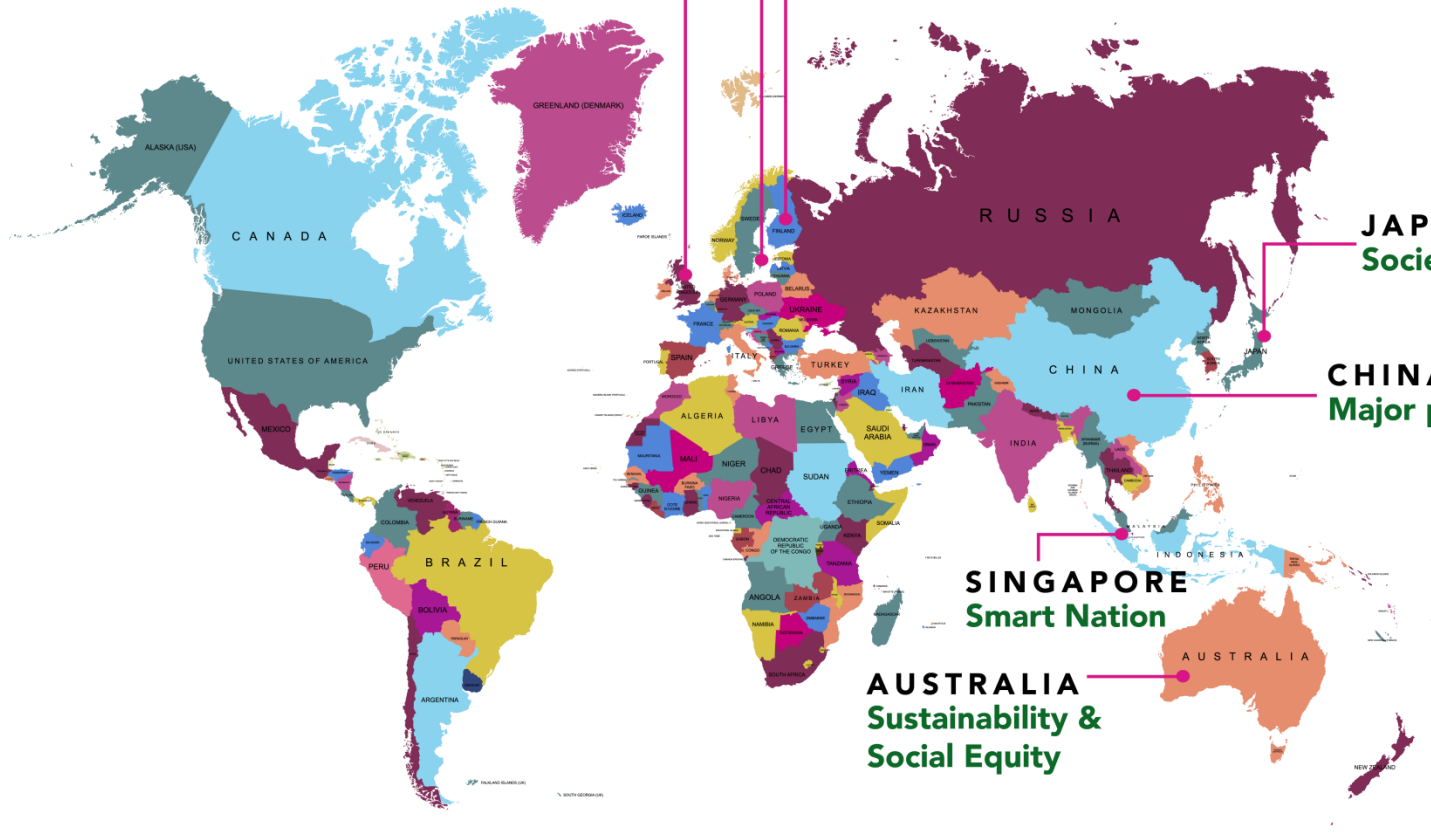
JAPAN
Society 5.0 (Super Smart Society)

CHINA

Major power in SET

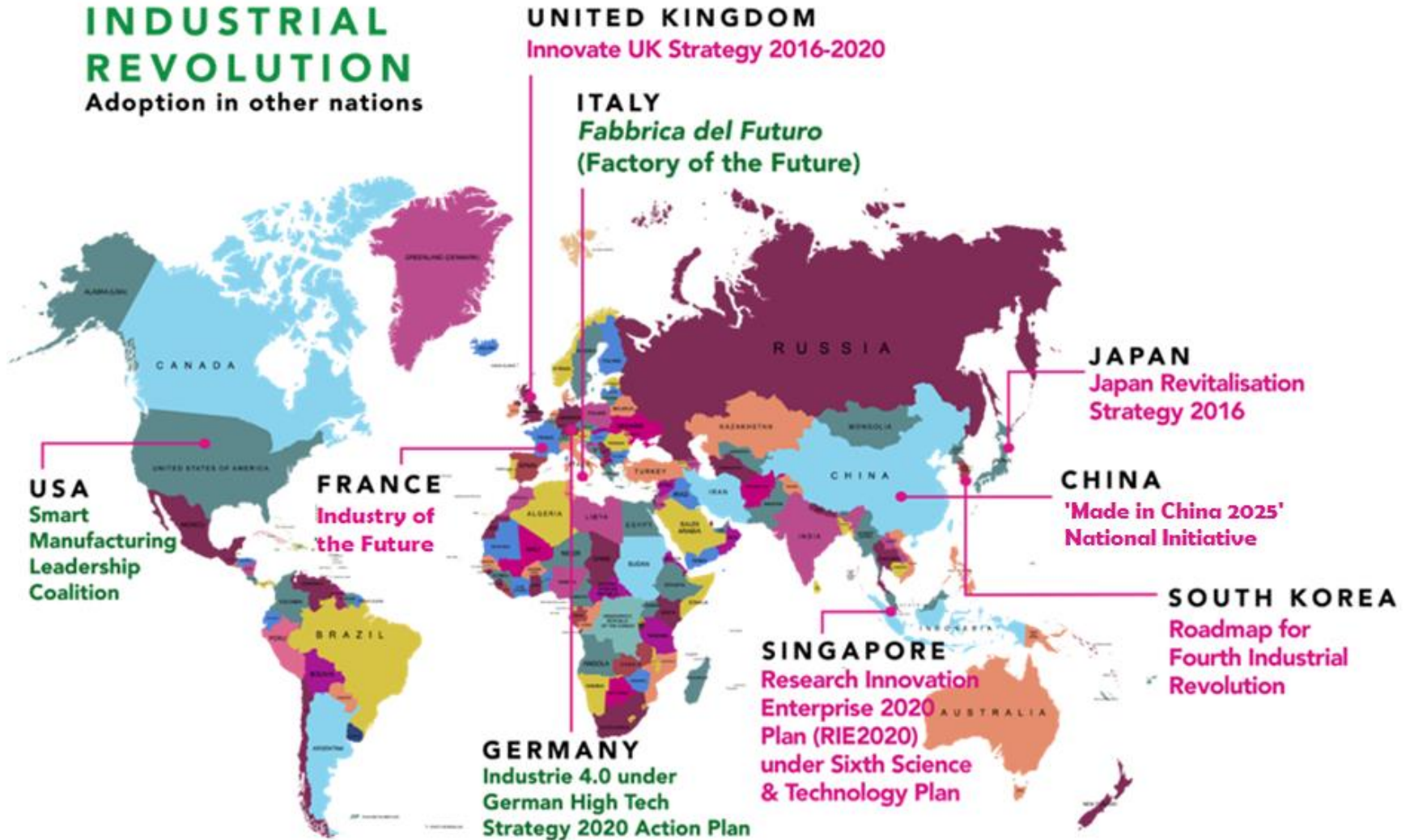
SINGAPORE
Smart Nation

AUSTRALIA – Sustainability & Social Equity



FOURTH INDUSTRIAL REVOLUTION

Adoption in other nations



Global Outlook

Top 5 Mega Trends



Rapid urbanisation



Demographic & social change



Technological breakthroughs



Shift in global economic power



Climate change & resource scarcity

Source: Megatrends PWC, 2017

Top 5 Global Risks



Extreme weather events



Large-scale involuntary migration



Major natural disasters



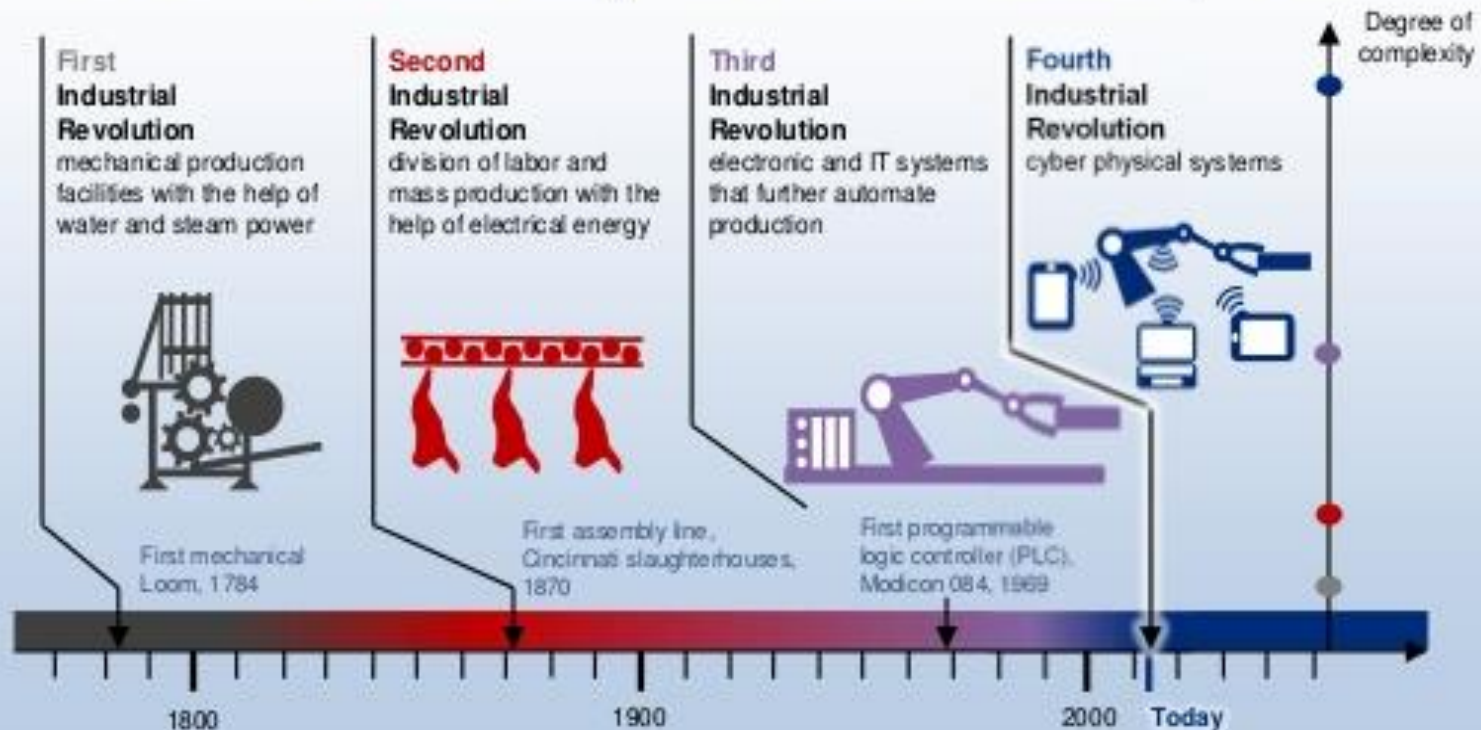
Large-scale terrorist attacks



Massive incident of data fraud/theft

Source: Global Risks Report WEF, 2017

From Industry 1.0 to Industry 4.0



Source: Deloitte, Industry 4.0 Challenges and solutions for the digital transformation and use of exponential technologies.

TIME ZONES

ZONE 1: 2010-2015

ZONE 2: 2015-2020

ZONE 3: 2020-2025

ZONE 4: 2025-2035

ZONE 5: 2035-2050

Notes on time travel

This map is a broad representation of some of the trends and technology coming into play. Important events are carried out at weekends and timelines should check to see whether time is still available before commencing any journey. Helpful suggestions concerning new modes and accessories are always welcome.

If you wish to travel outside of Zone 1 you are advised to bring your own food and water. Timelines are also critical to bring their own supplies of food and water although suggestions are welcome if you have to well-timed paths. Also note that travel into Zone 5 is not available for people aged over 75 years of age.

AS and A2 Points of this map

Full colour points of this map are available to anyone that wants it. A small charge is levied to cover print and postage costs only. Content-related (non-technical) - stating whether you'd like the AS or A2, and saying which country the map is to be delivered to. Delivery is available to anyone in the world. Alternatively, just print this out yourself (at minimum recommended).

Sources

Material for this map has been sourced from a number of publications including Future Files and What's Next.



www.futuretrendbook.com

What's Next
www.whatsnext.com

Acknowledgements

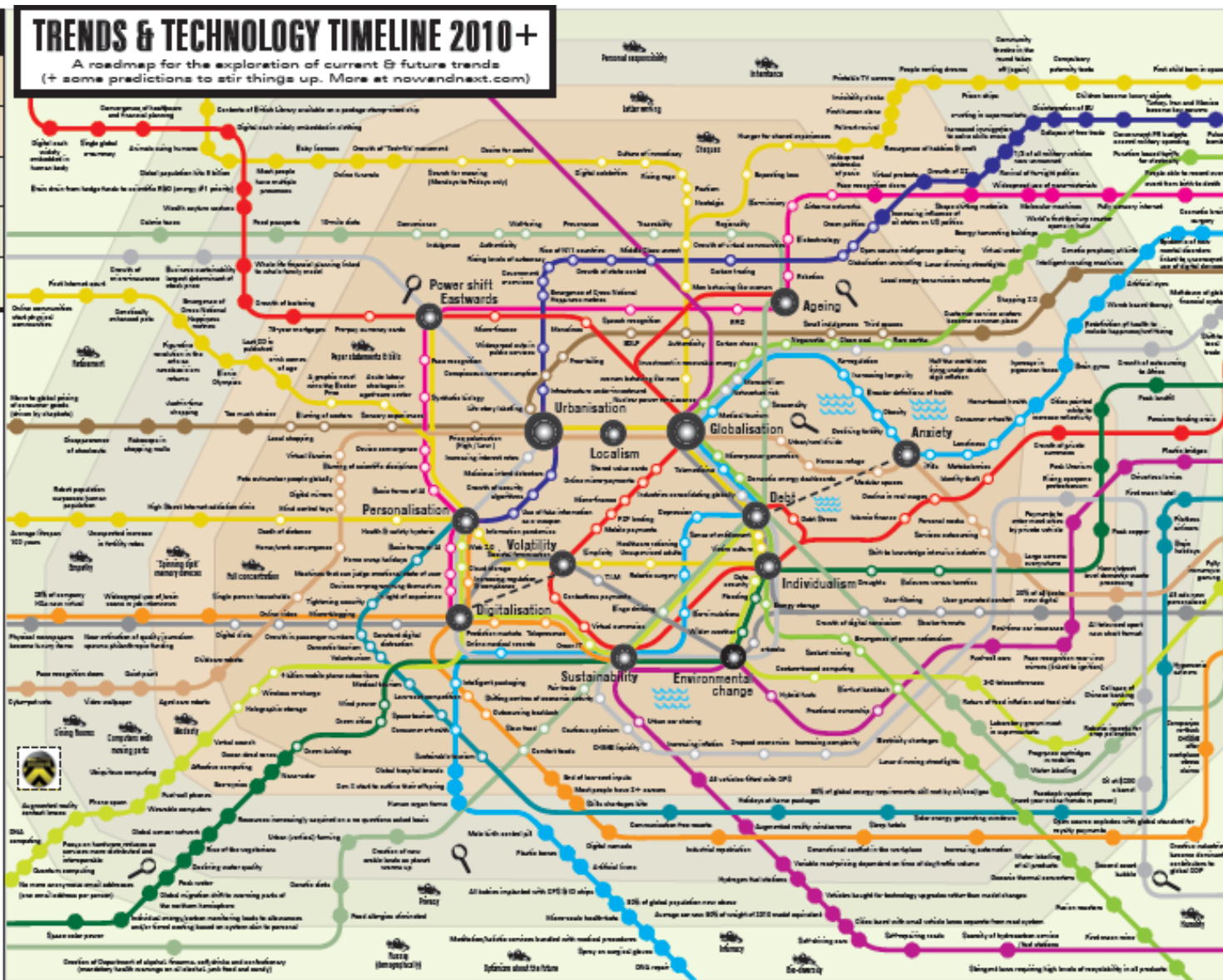
The map was conceived and created by Richard Mason at Novendnext with some help from Benjamin Fraser at Sage. Also thanks to Oliver Brown, Mike Jackson and Scott Brown.



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TRENDS & TECHNOLOGY TIMELINE 2010+

A roadmap for the exploration of current & future trends (+ some predictions to stir things up. More at novendnext.com)



LEGEND

1. Society & Culture

2. Geopolitics

3. Energy & raw materials

4. Science & technology

5. Healthcare & Medicine

6. Retail & leisure

7. The Economy

8. Financial services

9. Environment & Climate

10. Food & drink

11. Transport

12. Travel & tourism

13. Home & family

14. IT & telecoms

15. News & Media

16. Work & Business

Mega trend

Trend

Prediction

Dangerous currents

Peer visibility

High-speed link

Partial main

Global risks

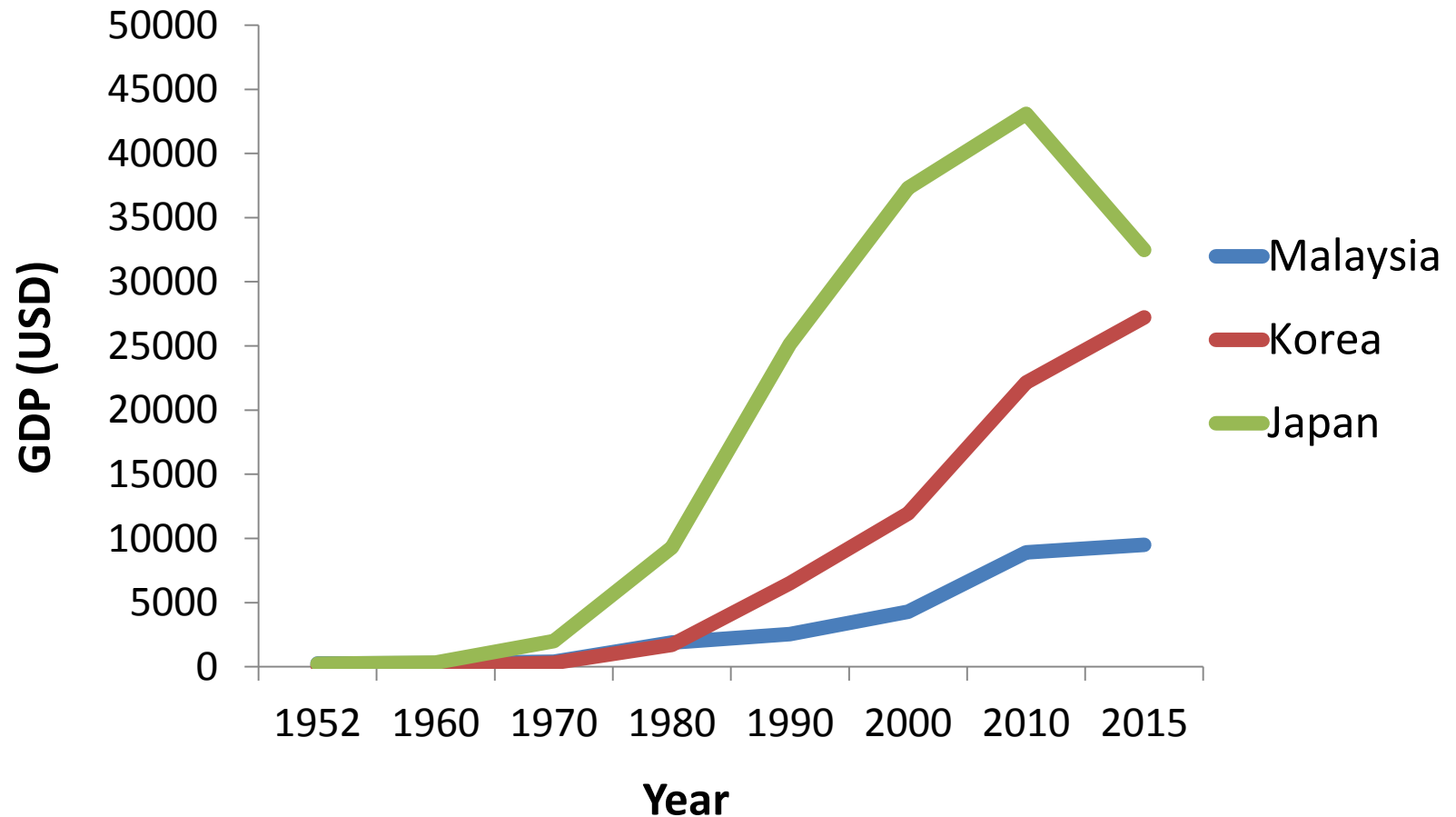
* Low probability impact events that could destroy or threaten trends and predictions

- Commodity price spikes
- Raw materials shortages
- Mass migration of population
- Nuclear terrorism
- Internet breakdowns
- Electricity shortages
- Rapid increase in cyber crime
- Critical infrastructure attack
- Pagan stakeholder
- RMD proliferation
- Green energy bubble
- Generic terrorism
- Collapse of US dollar
- Global supply chain disruption
- Terrorist attack on urban water supply
- US-China conflict
- Israel/Palestine conflict
- Biopharm A link to cancer
- Geographical expansion of Russia
- Major earthquake in major city
- Global pandemic
- Conflict with North Korea
- Political disintegration of Saudi Arabia
- Systemic failure of financial system
- Fundamentalist takeover in Pakistan
- Middle class revolution
- Collapse of China
- Mobile phone link to cancer
- Credit Default Swaps
- Pagan asteroid
- Major nano-tech accident
- Space weather disruption to comms
- Aliens visit earth
- Return of the Messiah
- People taking trend maps too seriously

2.0 Where we are now



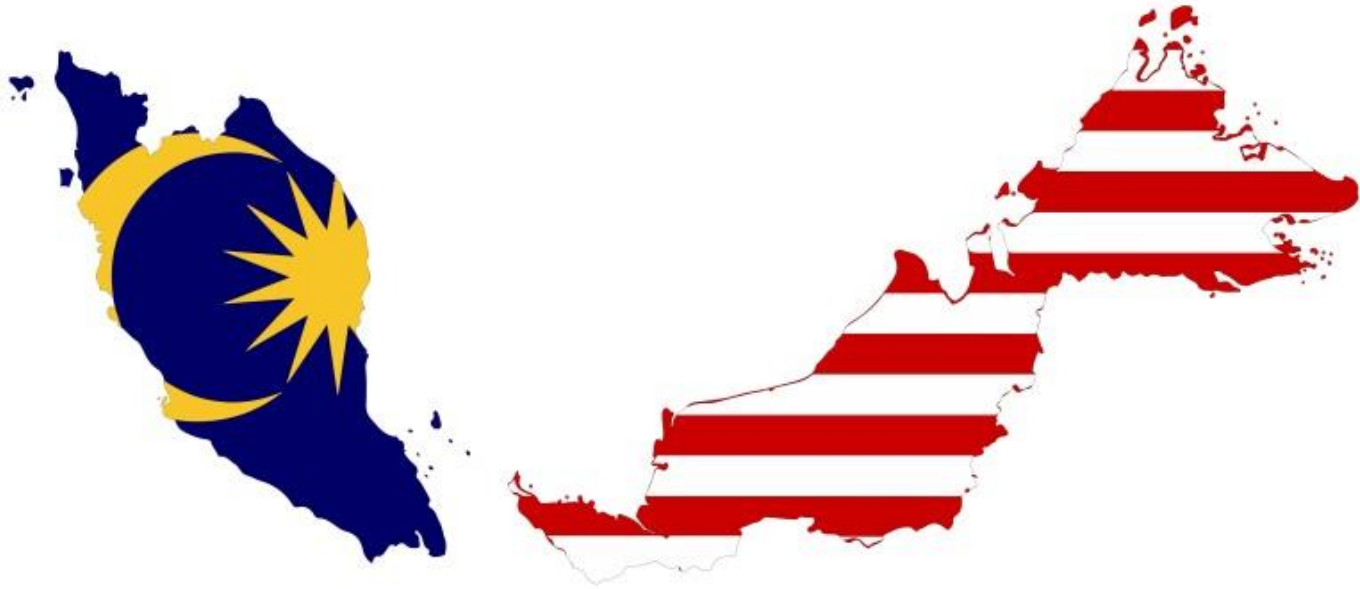
Economic Growth comparison between Malaysia, South Korea and Japan from 1952 to 2015



Source:

Kunio, (2004). The comparative economic performance of Malaysia : An Analysis. *Southeast Asian Studies* 42, 1
Knoema, (2017). *GDP per Capita by Country*.

National Initiatives



New Economy
Policy

1971

1991

Vision 2020
-6th Malaysia Plan-

ASM Malaysia
2050 Agenda

2009

2010

National
Transformation
Program

Malaysia 2050:
Foresight Initiative

2015

2016

National
Transformation
2050 (TN50)
-Budget 2017-

What have we pledged so far?



A Developed
Nation by
2020



Committed to 2030
Agenda for
Sustainable
Development



Reduce GHG
emission intensity
(per unit of GDP) to
45 % by 2030



Top 20 countries in
the world in
economy,
happiness and
creativity &
innovation

National Transformation 2050 (TN50)

Aim: One of the top 20 nations in the world



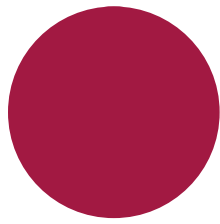
**Economic
Growth**



**Happiness
Index**



**Creativity &
Innovation**



No	Economic World Bank (GDP-PPP), 2015	Happiness (World Happiness Report 2016)	Creativity and Innovative (Global Innovation Index, 2016)
1	China	Denmark	Switzerland
2	USA	Switzerland	Sweden
3	India	Iceland	United Kingdom
4	Japan	Norway	USA
5	Germany	Finland	Finland
6	Russia	Canada	Singapore
7	Brazil	Netherlands	Ireland
8	Indonesia	New Zealand	Denmark
9	United Kingdom	Australia	Netherlands
10	France	Sweden	Germany
Malaysia	26	47	35

The background of the slide is the Malaysian flag, featuring a blue canton with a yellow crescent and a 14-pointed star, and seven horizontal stripes of red and white. The flag is shown waving.

3.0 Proposed Vision: SMART COMMUNITIES 2050

The Future We Desire.....



HARMONIOUS



PROSPEROUS



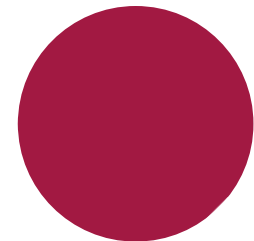
SUSTAINABLE



Happiness
Index

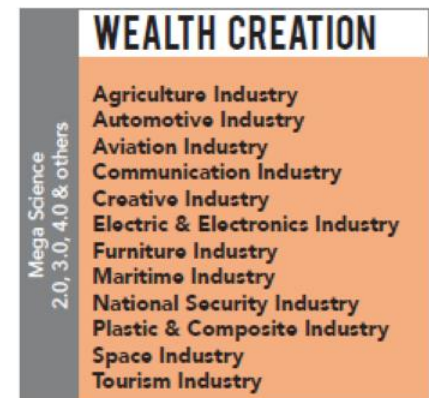
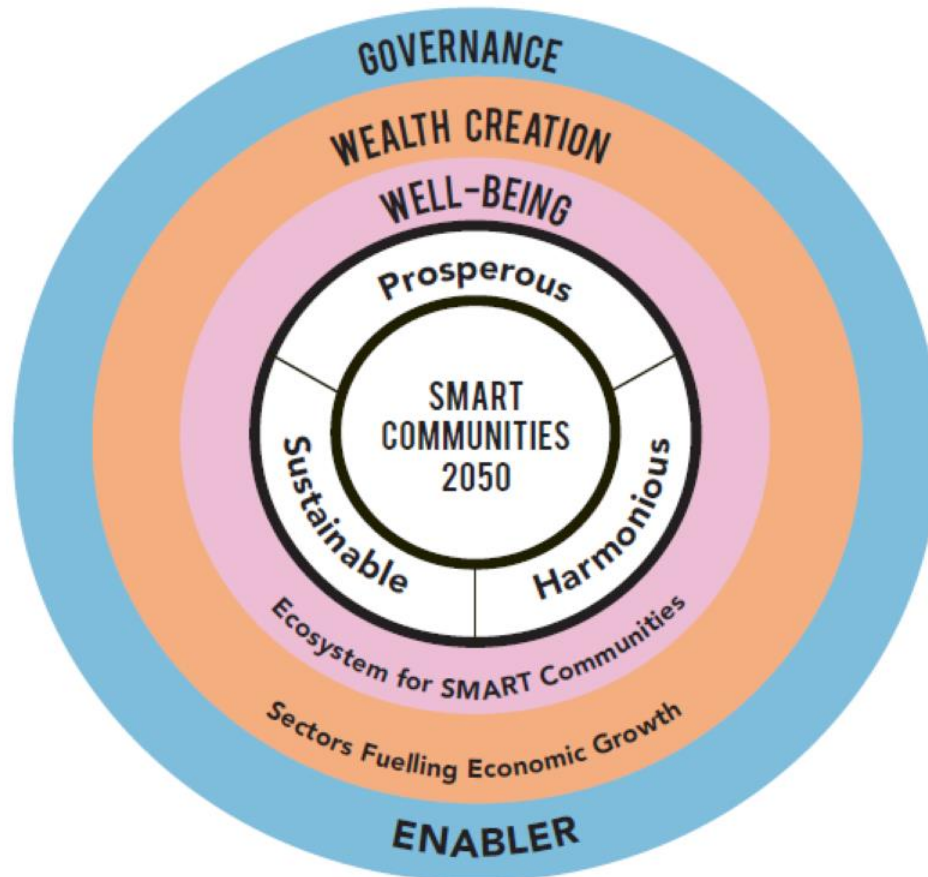


Creativity &
Innovation



Economic
Growth

SUSTAINABLE DEVELOPMENT FRAMEWORK FOR MALAYSIA



Source: ASM

MALAYSIA

2050

SMART COMMUNITIES

Science & Technology

Geopolitics

Society & Culture

Economy & Finance

FORESIGHT INITIATIVE

MEGA SCIENCE

1.0



Water



Energy



Health



Agriculture



Biodiversity

2.0



Housing



Infrastructure



Transportation



Environment



Electronics & Electronics

3.0



Furniture



Automotive



Creative



Tourism



Plastics & Composites

ESET

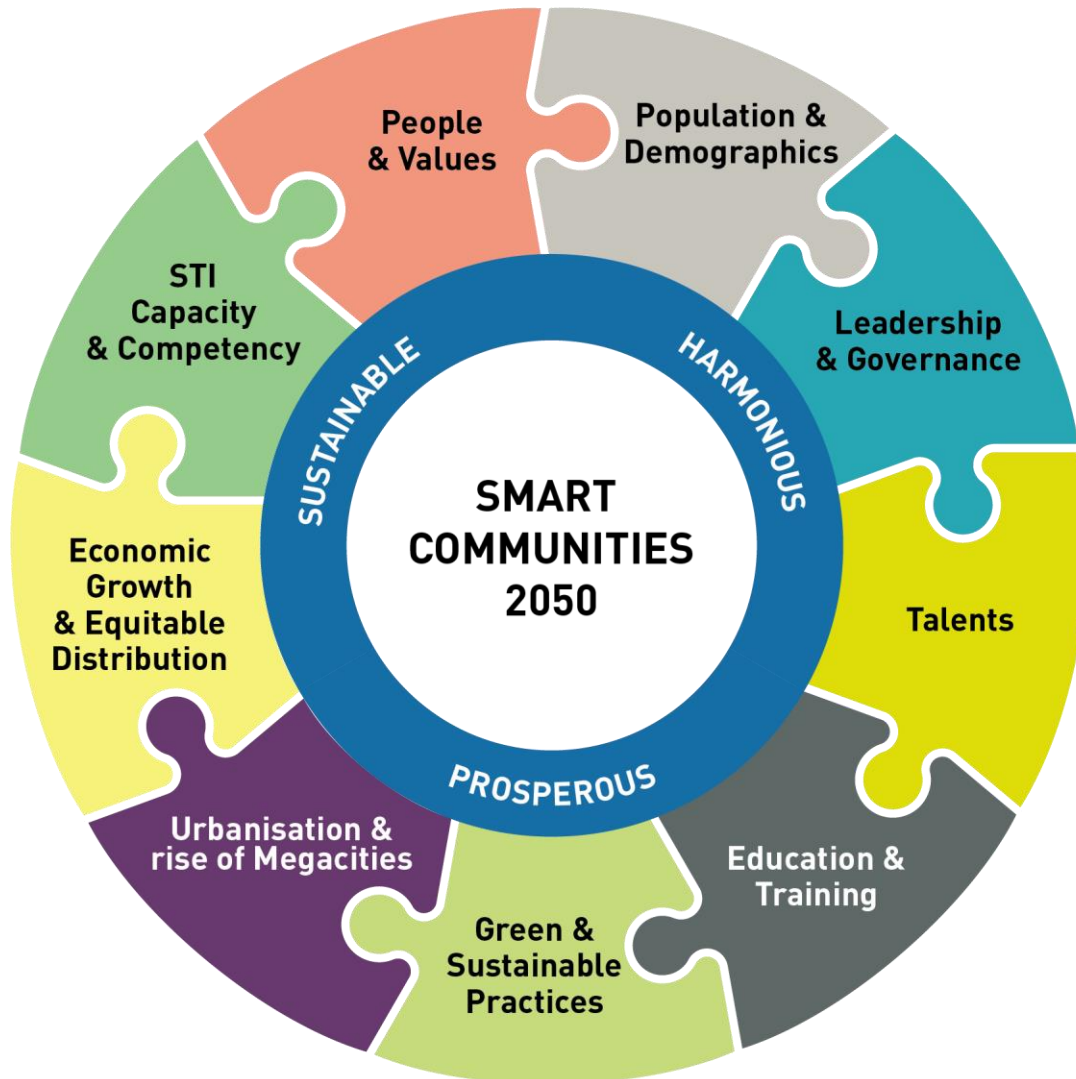
Emerging Science,
Engineering and
Technology

BIO, DIGITAL, NANO,
GREEN & NEURO

NEO

New Economic
Opportunities
in STI-based
Industries

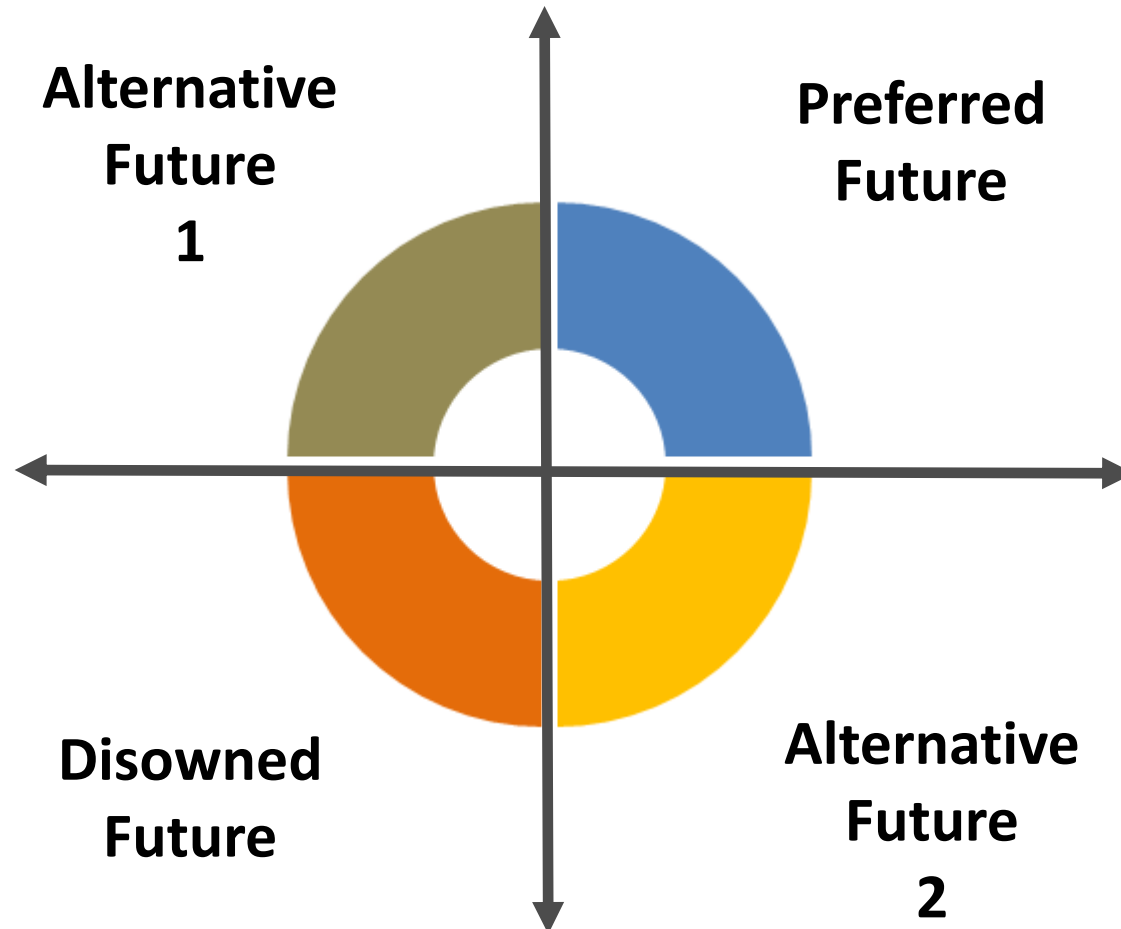
9 Key Drivers of Change



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9 key drivers towards realising SMART Communities as featured in the Malaysia 2050: Foresight Initiative

If you'd like to know more about this work, please go to www.akademisains.gov.my to contact us.

Foresight Initiative



Mega Science (MS) Studies

MS 1.0 (2010): 5 SECTORS (WEHAB)



Water



Energy



Health



Agriculture



Biodiversity

RATIONALE

Addressing
basic
necessities

MS 2.0 (2013): 5 SECTORS (HITEE)



Housing



Infrastructure



Transportation



Environment



Electricals &
Electronics

Tackling
people's
wellbeing

HOW
STI
PLAYS
A ROLE

MS 3.0 (2015): 5 SECTORS (FACT/PC)



Furniture



Automotive



Creative

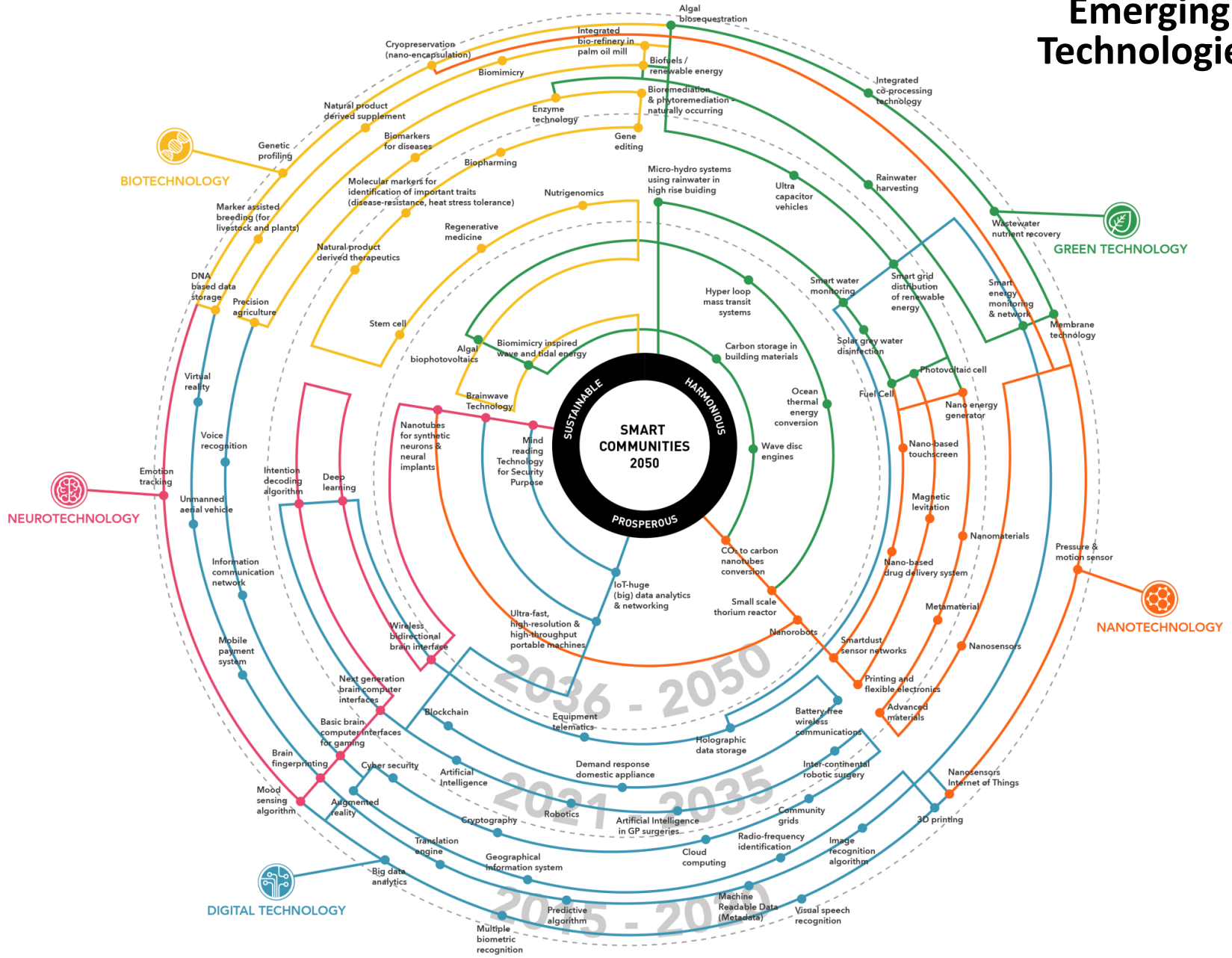


Tourism







Plastics & Composites

Catalysing key
economic
sectors
through
STI for wealth
creation



New Economic Opportunities (NEO)

INDUSTRY	WHERE WE ARE...	OUR STRENGTHS	STI BASED ENABLERS	FOCUS AREA
 Manufacturing	23% GDP 2015 <small>BNM, 2016</small>	Legacy, know-how, high value	Advanced Automation & Robotics	Industry 4.0
 Services	53.5% GDP 2015 <small>BNM, 2016</small>	Global reference point & digital infrastructure	Blockchain	Fintech in Islamic Finance
 Health & Wellness	RM9.8 Billion GNI 2015 <small>PEMANDU, 2015</small>	Expertise, network & infrastructure	ICT & other Enabling Technologies	e-Health Delivery System
 Halal	7.5% GDP 2015 <small>HDC, 2017</small>	Track record, world class (certification) Strong regulatory framework	ICT based Delivery System	Halal Supply Chain

4.0

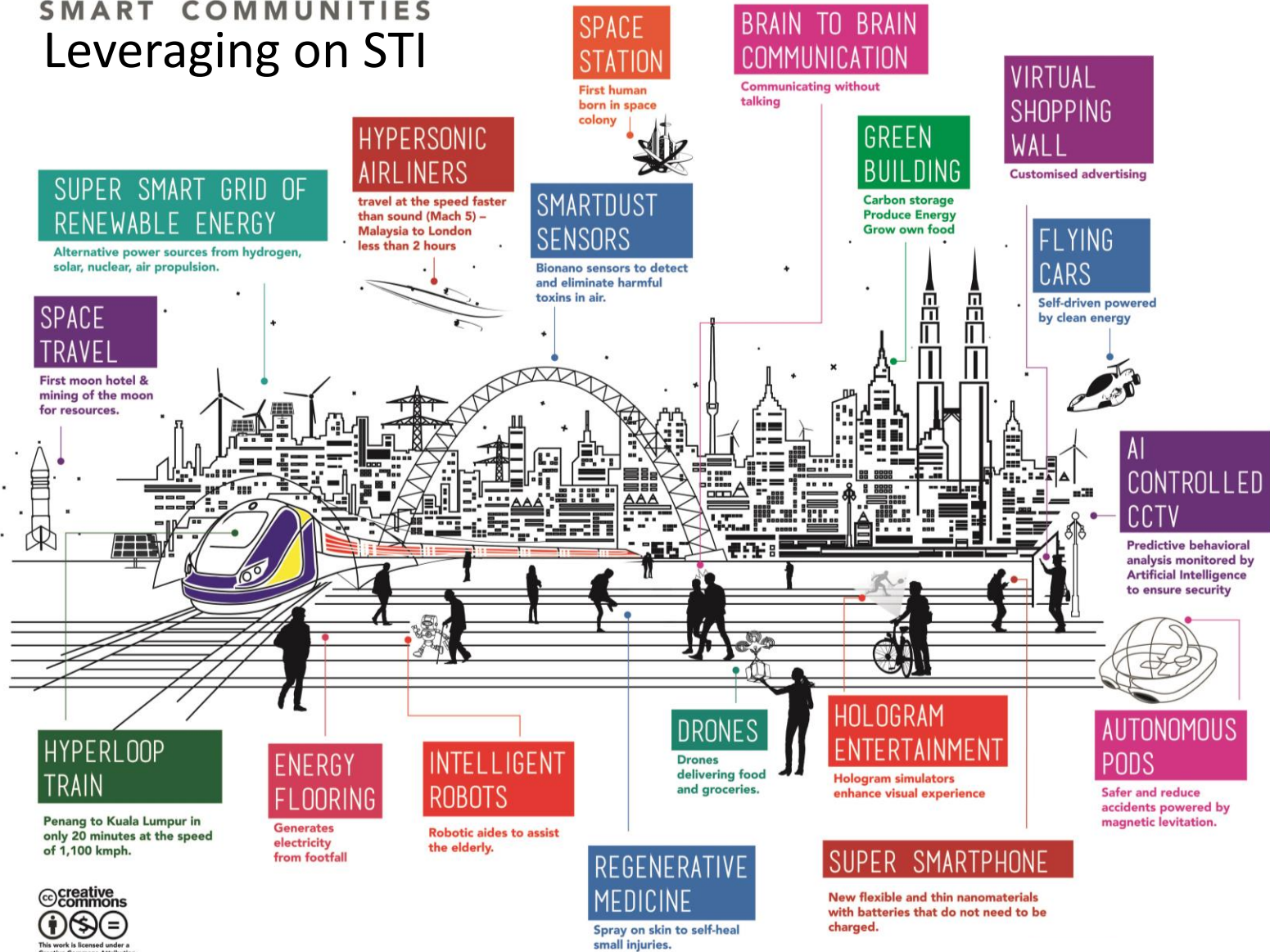
Society of the Future



MALAYSIA 2050

SMART COMMUNITIES

Leveraging on STI



CC creative commons

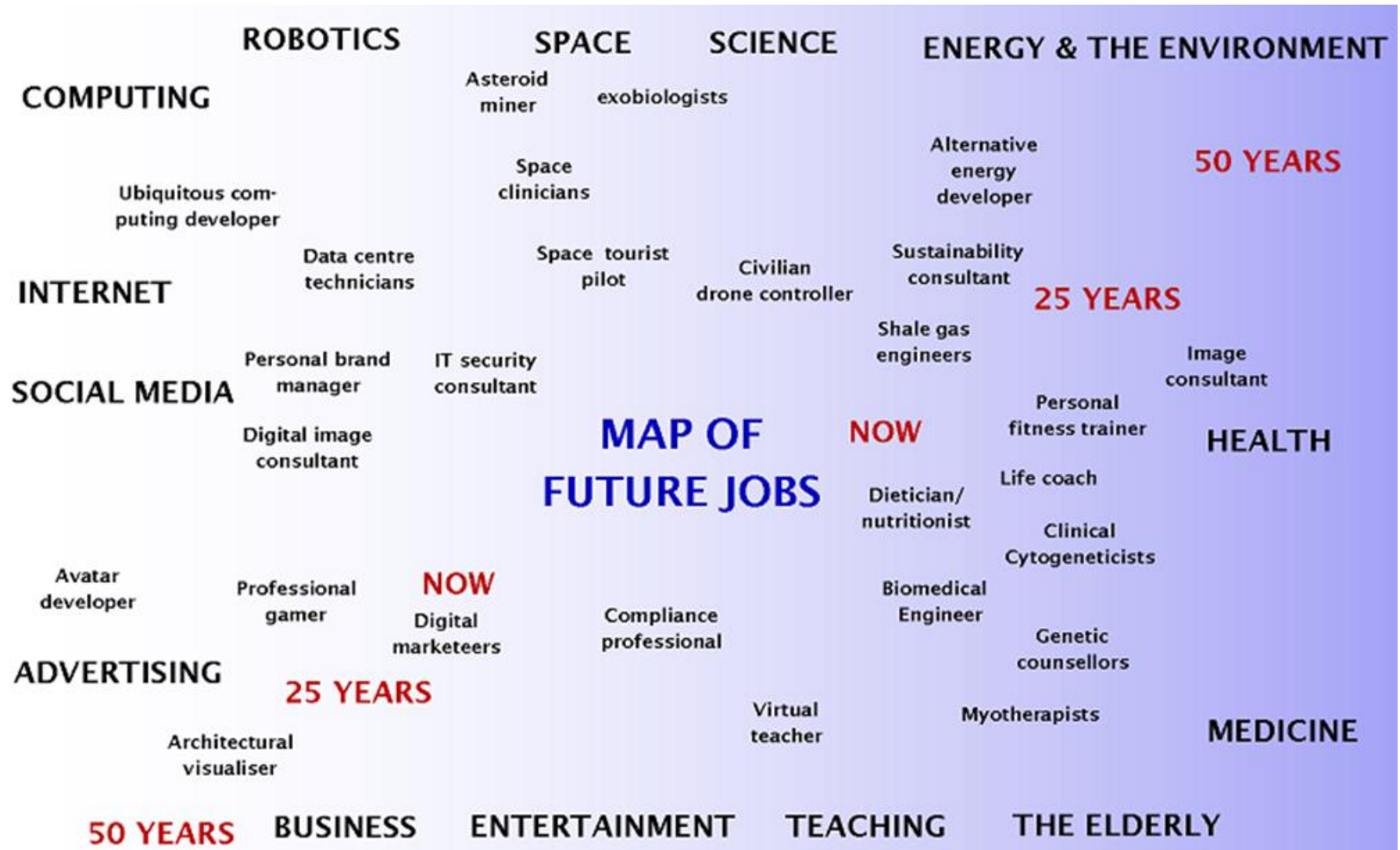


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Findings from Malaysia 2050: Foresight and Emerging Technologies

If you'd like to know more about this work, please go to www.malaysia2050.gov.my to contact us.

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#malaysia2050 #asmforesights

Future Jobs



Source: University of Kent, Careers and Employability Service

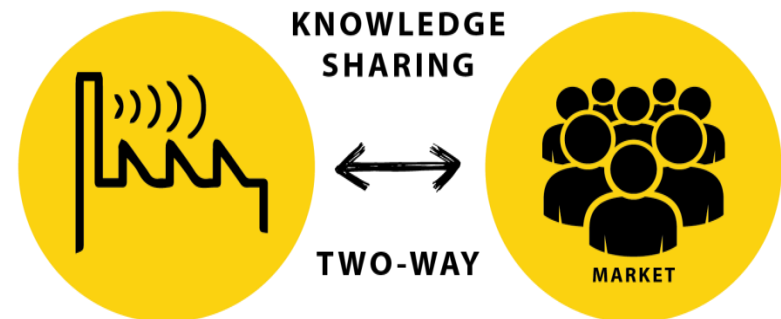
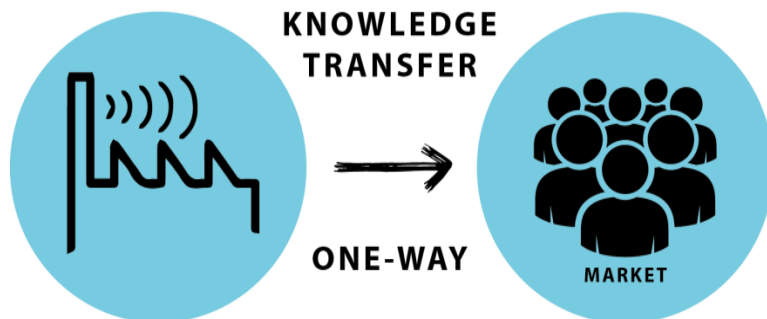


5.0

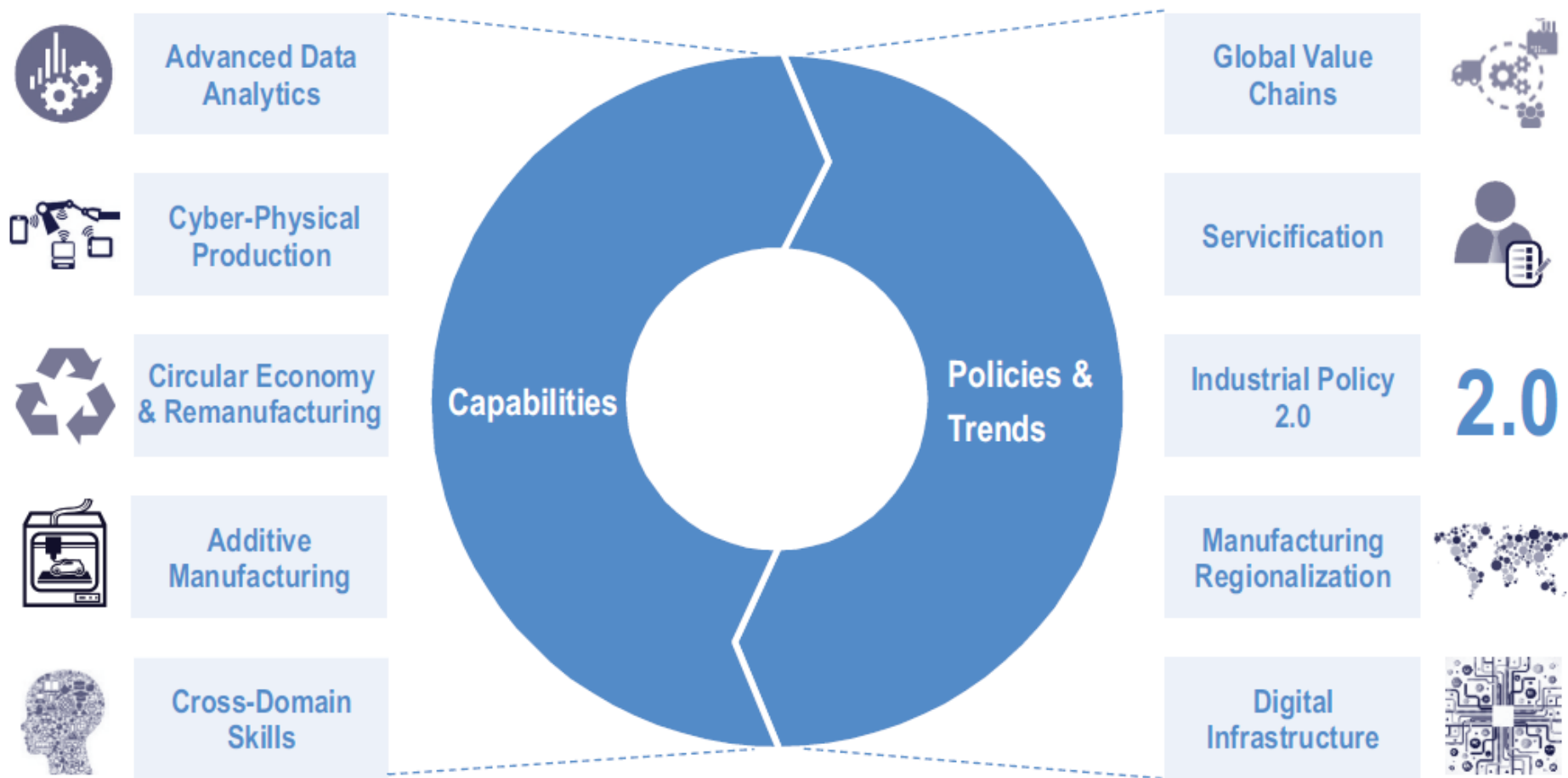
Industries of the Future

TRANSFORMATION FROM TRADITIONAL TO NEW ECONOMY

Resource focused	→	Knowledge intensive
Labour intensive	→	High-skilled talents
Requires control	→	Requires collaboration
Vertical	→	Horizontal trust orientation
Mass production	→	Mass customization
Proximity is important	→	Location less significant
Rigid	→	Flexible
Capitalist	→	Profit Sharing



Key Trends for the Future of Manufacturing



Sources: Global Agenda Council on the Future of Manufacturing, Whiteshield Partners framing

Skills . Innovation and technology . Public-private partnerships

(Source: WEF, 2016)

Case Study: Local Motors

Founded in 2007

116 employees

52,000 community members

5 micro factories (+-22,000 sq feet)

Local Motors backed by Siemens software



Case Study: ASM Mega Science 3.0



Plastics &
Composites

GLOBAL OUTLOOK

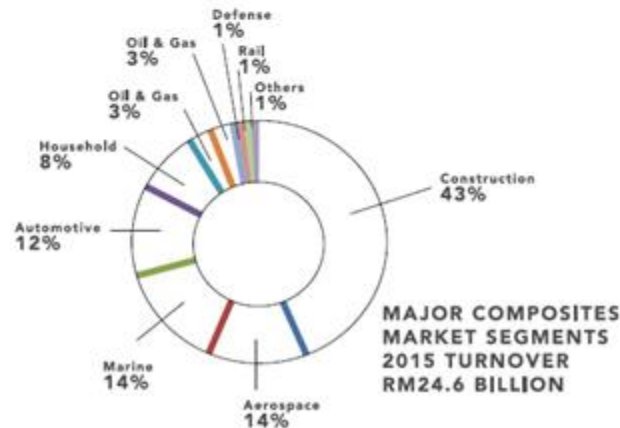
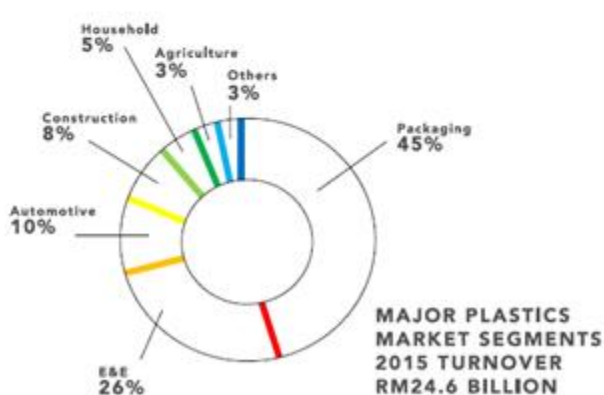
PLASTICS AND COMPOSITES PRODUCTION

**USD 3 TRILLION
BY 2050**

ASIA
IS EXPECTED TO HAVE
APPROXIMATELY
50%
OF THE MARKET SHARE

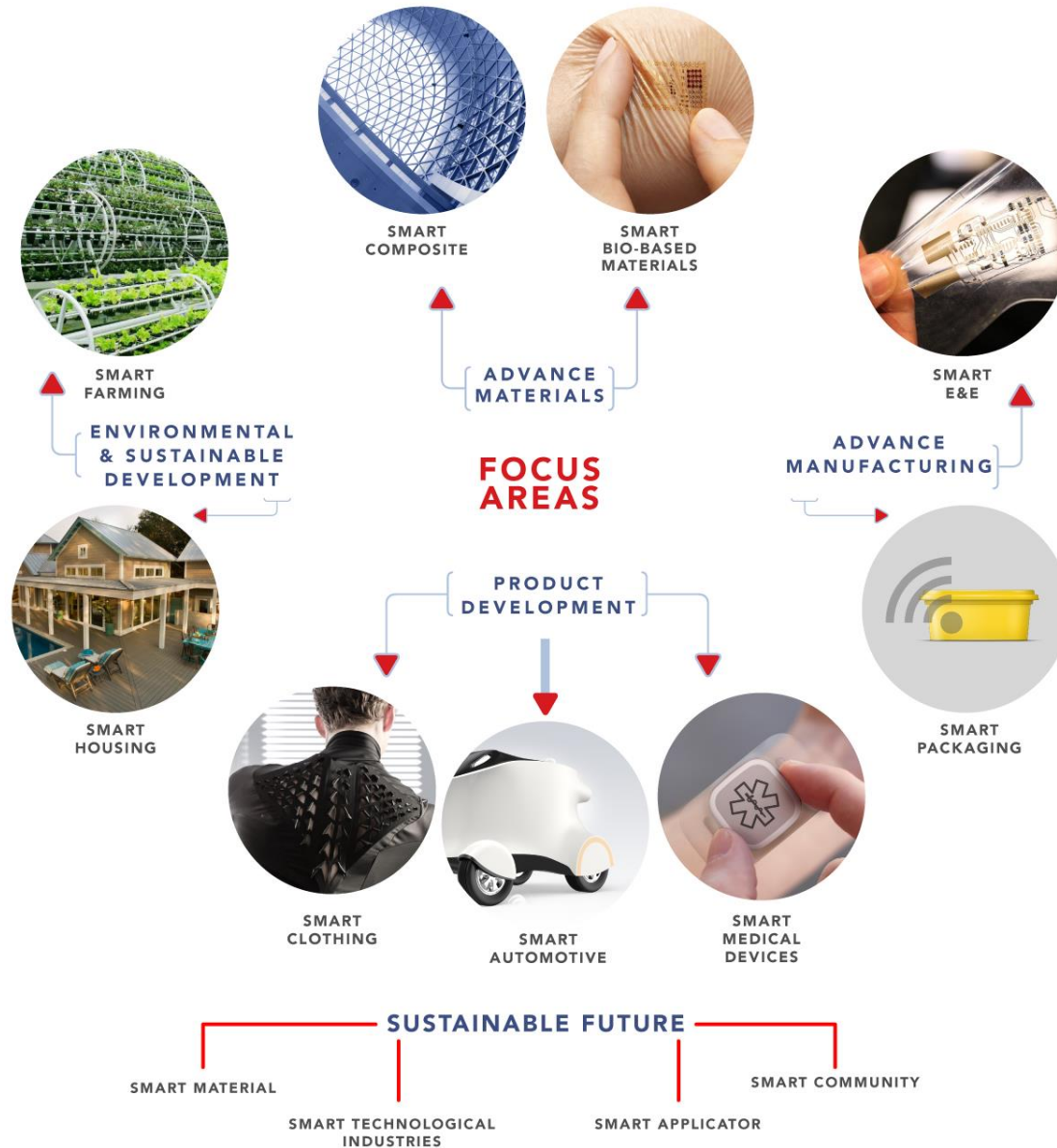
PLASTICS &
COMPOSITES

NATIONAL OUTLOOK



BY **2050**
PLASTICS & COMPOSITES WILL
CONTRIBUTE AN ESTIMATED:

RM190bil IN REVENUE
/ **RM100bil** IN EXPORT



6.0

Proposed Strategies



Knowledge intensive



Collaborative network



Leadership



Knowledge intensive

WHAT IF GLOBALIZATION WAS ABOUT KNOWLEDGE INSTEAD OF TRADE?

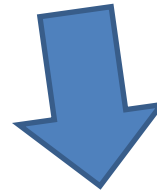
Richard Baldwin, The Great Convergence, 2016



People driven
initiatives



Movement of
people



Diffusion of
knowledge



Diffusion of
technology



Collaborative Networks

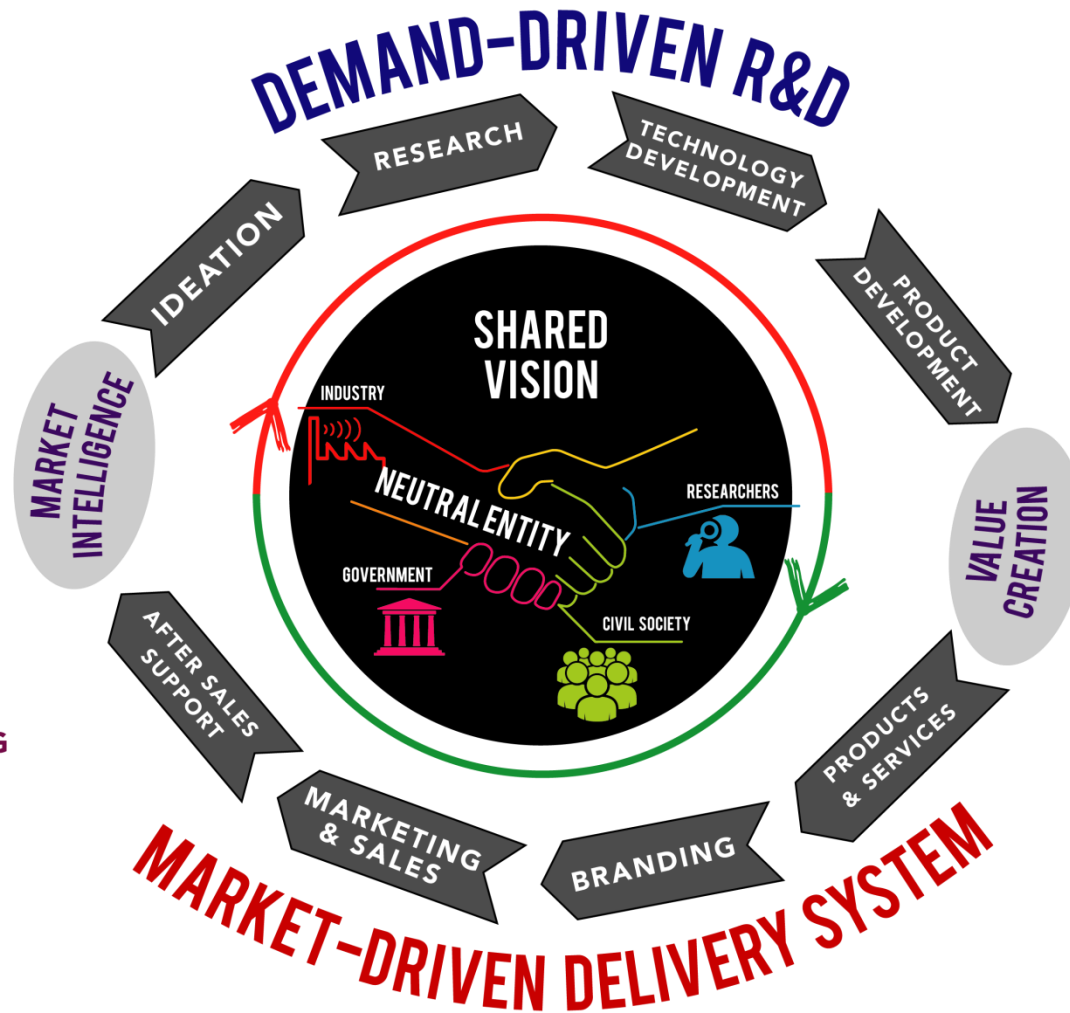
REALITY CHECK



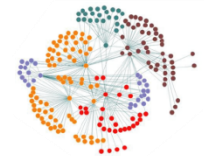
INDUSTRY GROWTH
CHALLENGES



INDUSTRY-DRIVEN
STRATEGIC PLANNING



OUTCOMES



KNOWLEDGE
CLUSTERS



TALENT HUB

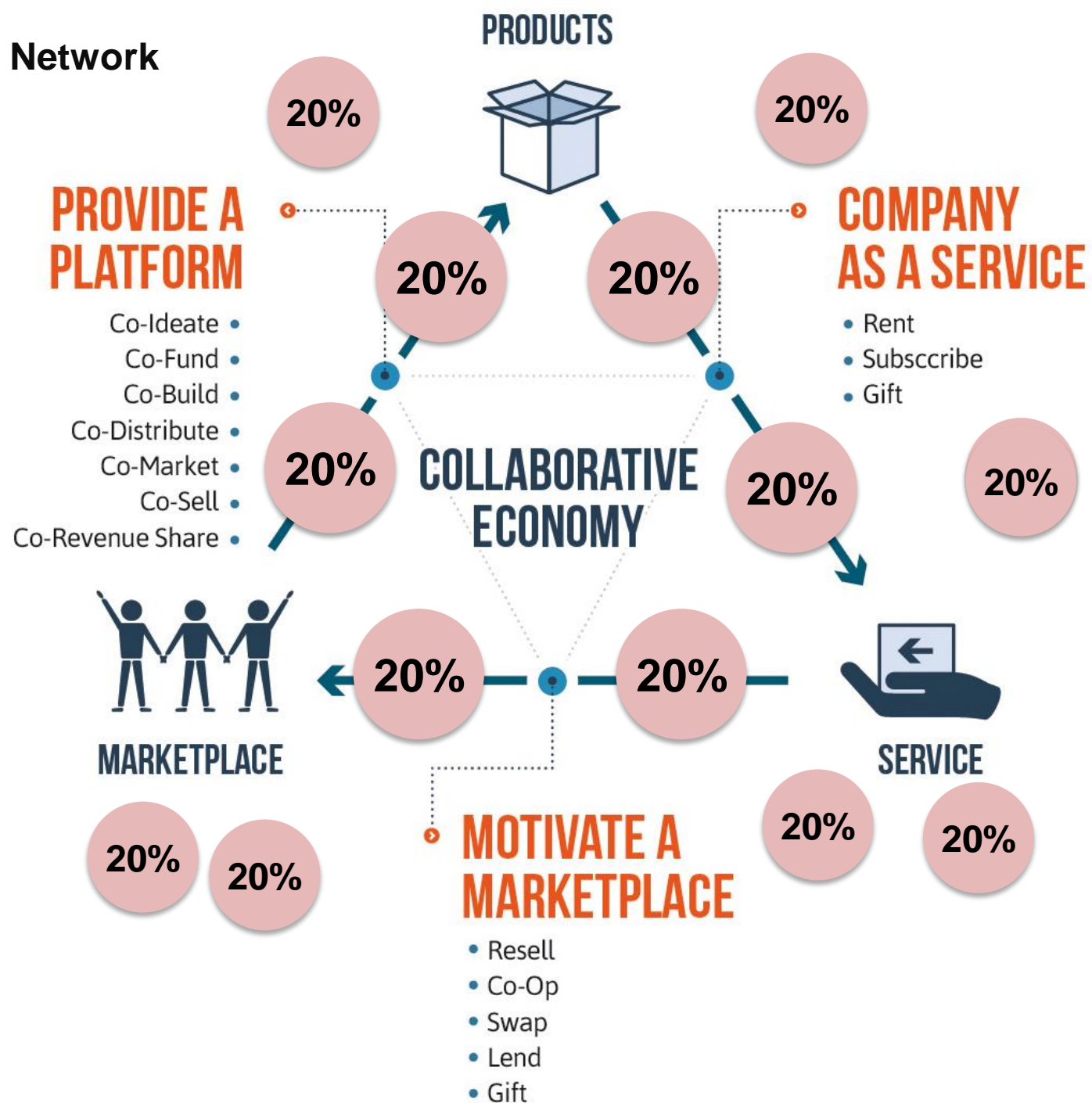


DISRUPTIVE
INNOVATION



Collaborative Network

Collaborative Economy: Value Chain



Leadership vs Management

The Manager

Administers
Counts value
Maintains
Focuses on systems and structure
Relies on control
Has a short-range view
Always has his or her eye on the bottom line
Accepts the status quo
Is the classic good soldier
Does things right

The Leader

Innovates
Creates value
Develops
Focuses on people
Inspires trust
Has a long-range perspective
Always has his or her eye on the horizon
Challenges the status quo
Is his or her own person
Does the right thing

MALAYSIA STI MASTER PLAN 2020-2030

ASM Fellows/YSN/MOSTI

Group 1: Infrastructure & Ecosystem

- Mr Azim Ng Abdullah
- Associate Professor Dr Ahmad Taufek Abdul Rahman (YSN-ASM/ UiTM)

Group 2: Funding & Incentives

- Dato' Ir (Dr) Andy Seo Kian Haw FASc
- Ir Dr Nordin Ramli (YSN-ASM/ MIMOS)

Group 3: Talent & Human Capital

- Professor Dr Abdul Rahman Mohamed FASc
- Associate Professor Dr Oi Boon Hong @ Ong Boon Hoong (YSN-ASM/ UM)

Group 4: Technology & Standards

- Tn Hj Ahmad Khairuddin Sha'aban (Expert, Mega Science 3.0)
- Associate Professor Dr Aduwati Bt Sali (YSN-ASM/ UPM)

“If we fail to plan, we plan to fail”

Benjamin Franklin