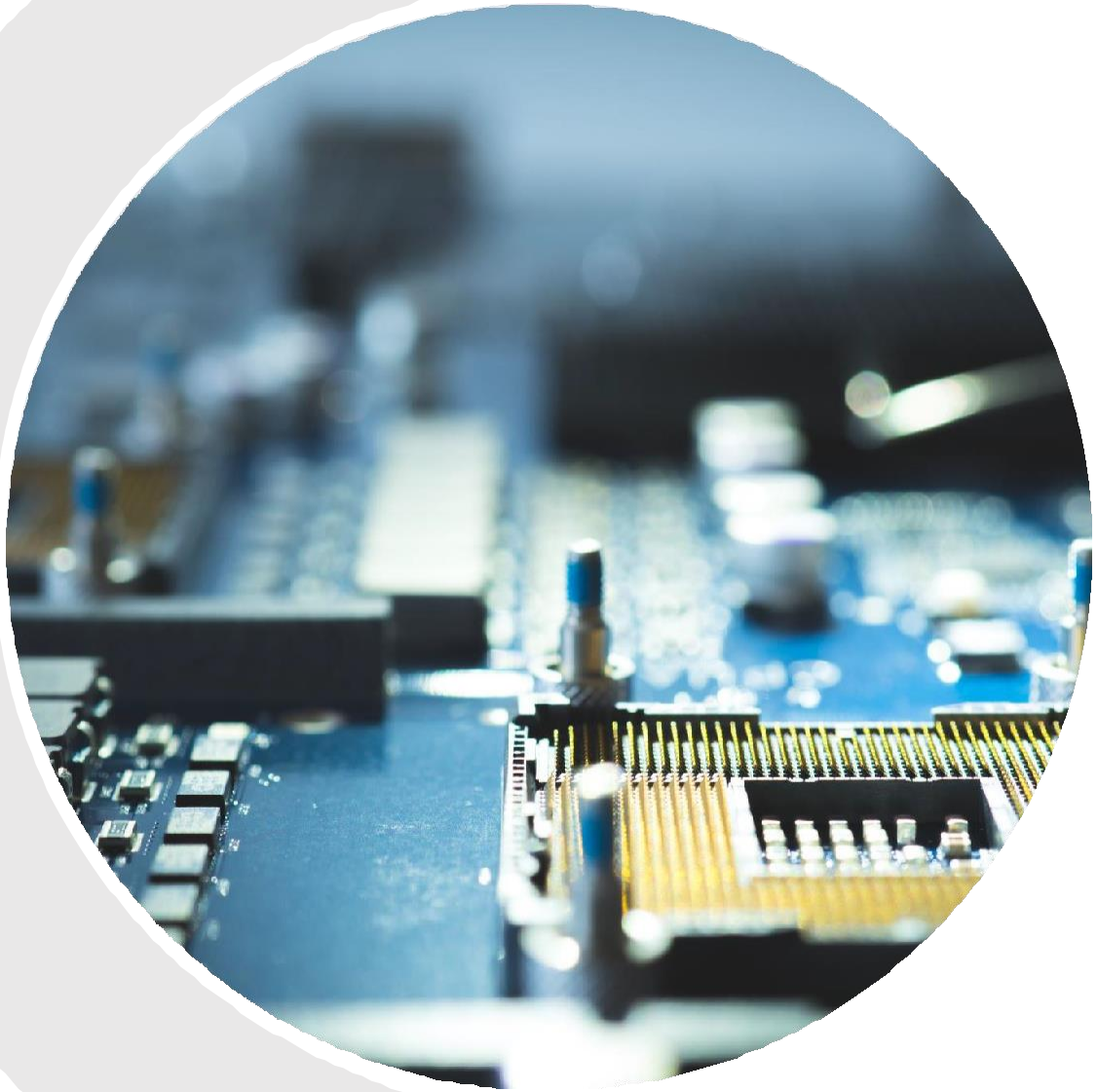

EMBRACING INDUSTRY 4.0: POLICY PERSPECTIVES

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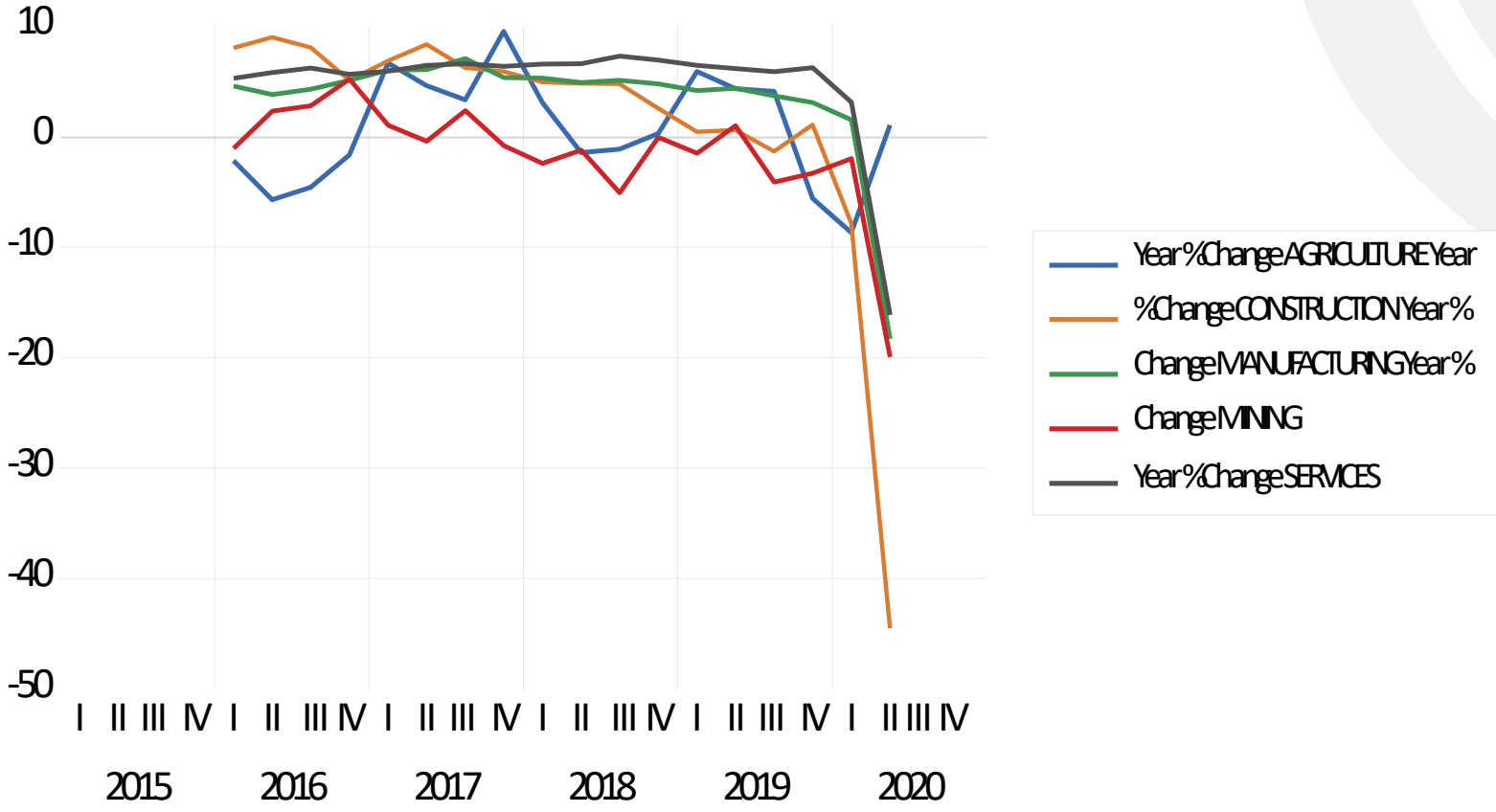
INTRODUCTION

- Structural transformation is vital – more so in this digital age.
- Significant efforts are put in place – Investment Agencies; Economic Corridor Development and others to promote investments.
- Malaysia has been successful in moving towards productive sectors via the process of industrialization (e.g. agriculture – manufacturing – services),
- More effort is needed to manage the new forms of transformation – e.g. moving towards Industry 4.0
- In doing so, institutional change is required and, at least, should be induced given market failures – via policy initiatives
- The aim of this presentation is to:

1) understand the context of industrialization in Malaysia
2) critically discuss the Malaysian national industry 4.0 namely policy design, funding approach, strategy, technology focus, implementation and institutional setting.
3) suggest way forward

THE CONTEXT – THE ECONOMY & INDUSTRIALIZATION



Structure

- Services: 55.3%
- Manufacturing – 23.3%
- Agriculture – 8.3%
- Mining – 8.5
- Construction – 4.6%

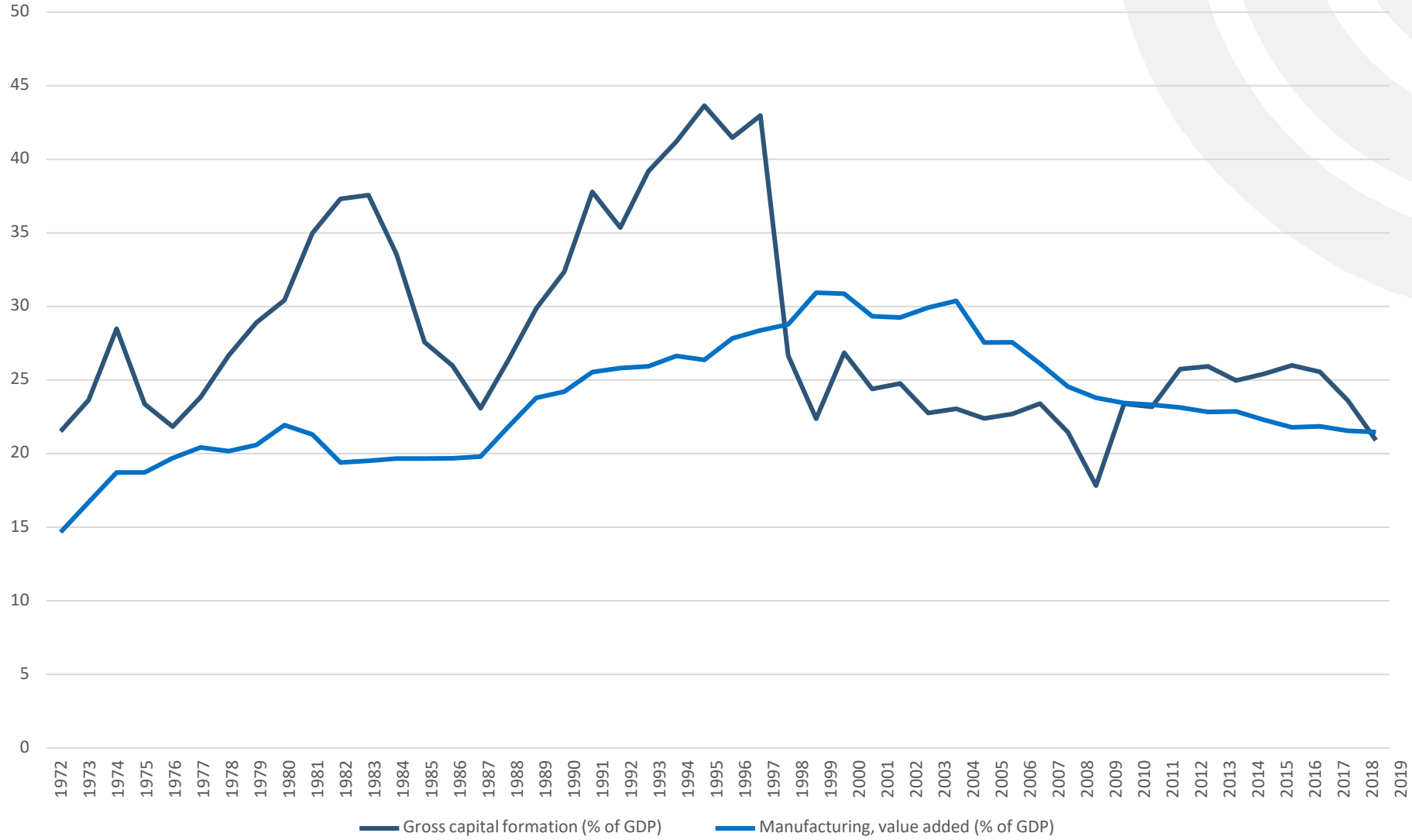
Services

Wholesale and Retail – 24%
Government Services – 16%
ICT – 11%
Finance – 9%
Real estate & Business Services – 8%

Growth

- Average - 5%
- Current – Q12020: – 0.73
- Q22020 : -17

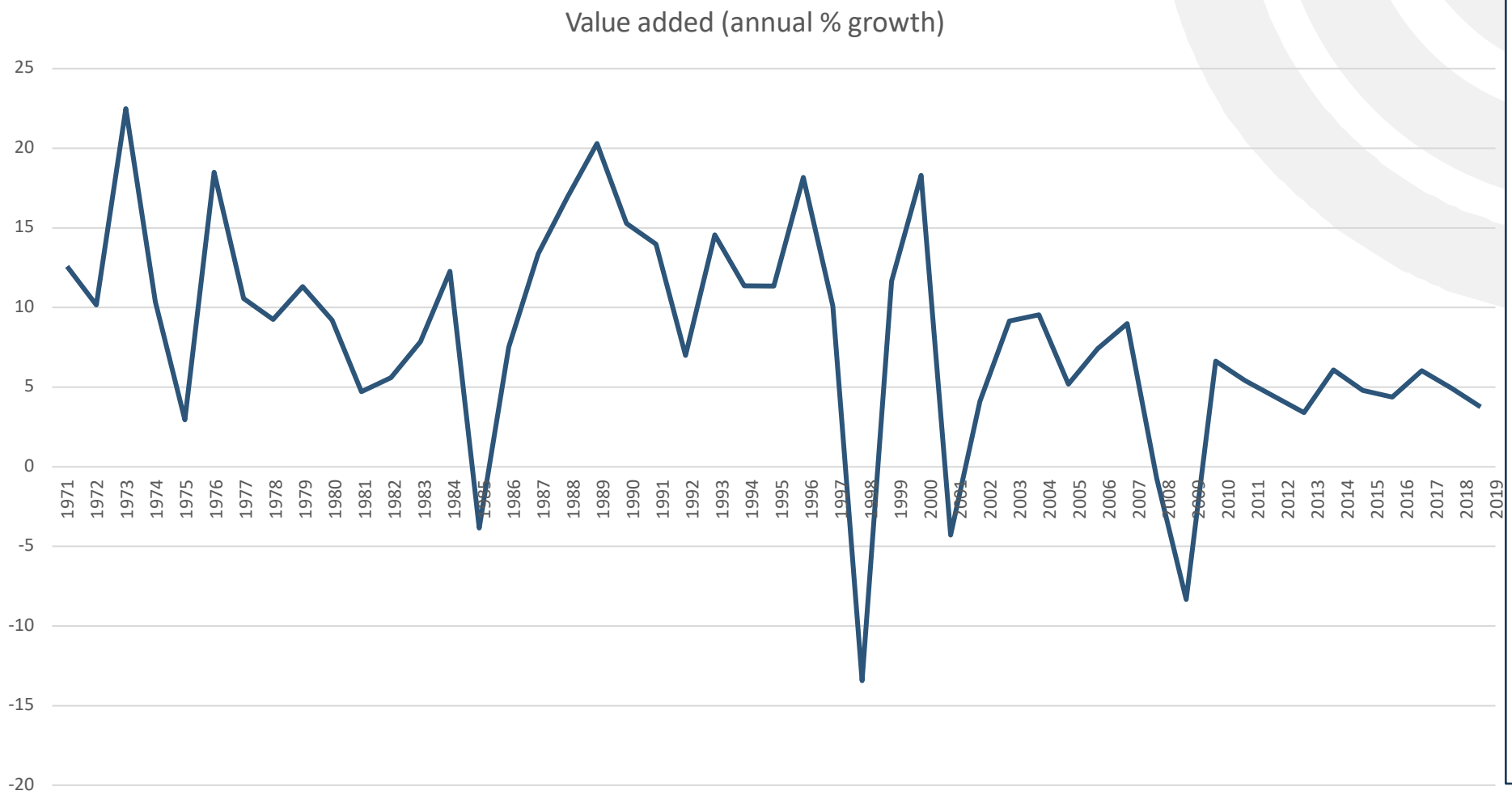
GCF & MANUFACTURING VALUE ADDED (% OF GDP)



Structure (Manufacturing)

- Signs of premature deindustrialization
- GFC has never returned to the level of pre-crisis (1997/98)
- However, overall labor productivity is increasing, but not balanced across sectors, size of enterprise, and ownership.

MANUFACTURING VALUE ADDED GROWTH



Structural Weaknesses (Manufacturing)

- Declining Value-Added Growth
- Competitiveness
- Capability
- Innovation
- Product & Technology Upgrading
- Low knowledge content & lack of learning

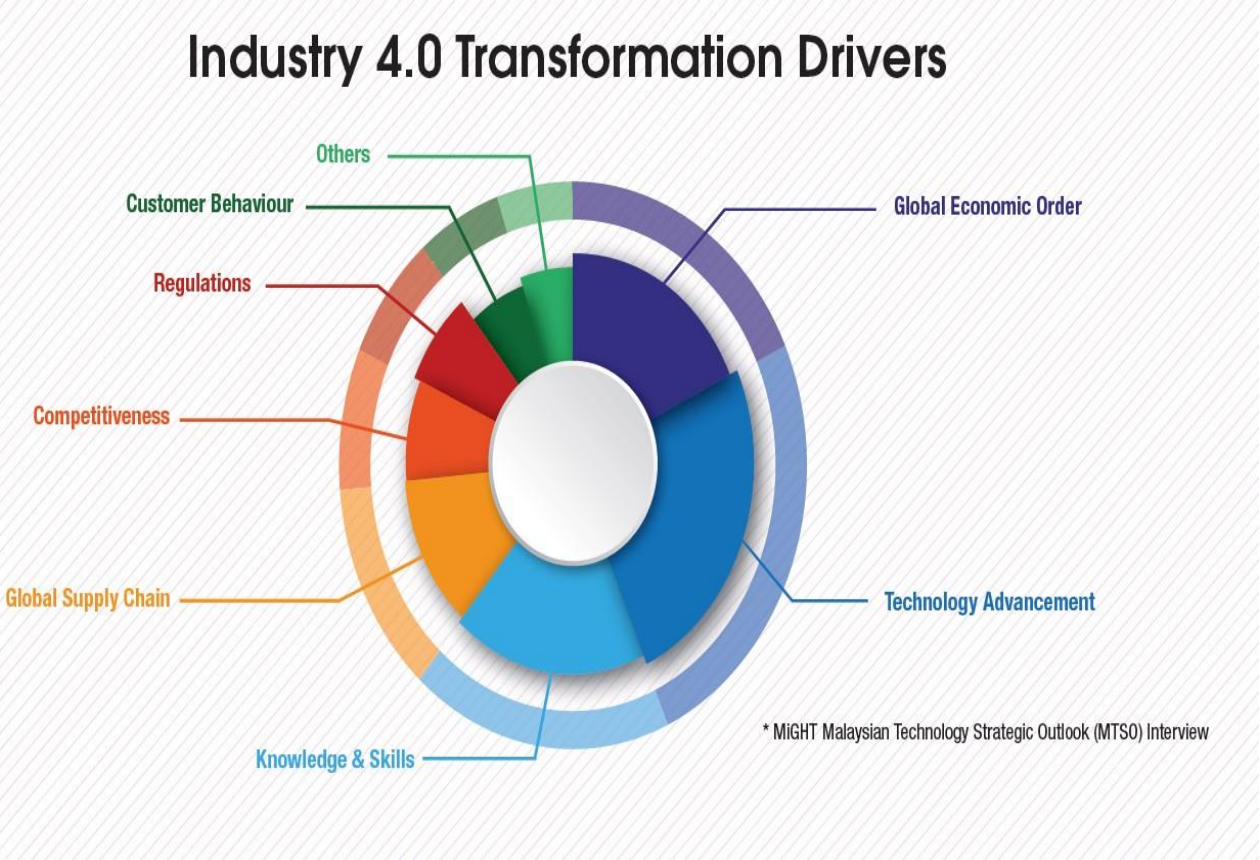
INDUSTRY 4.0 POLICY (INDUSTRY4WRD POLICY)

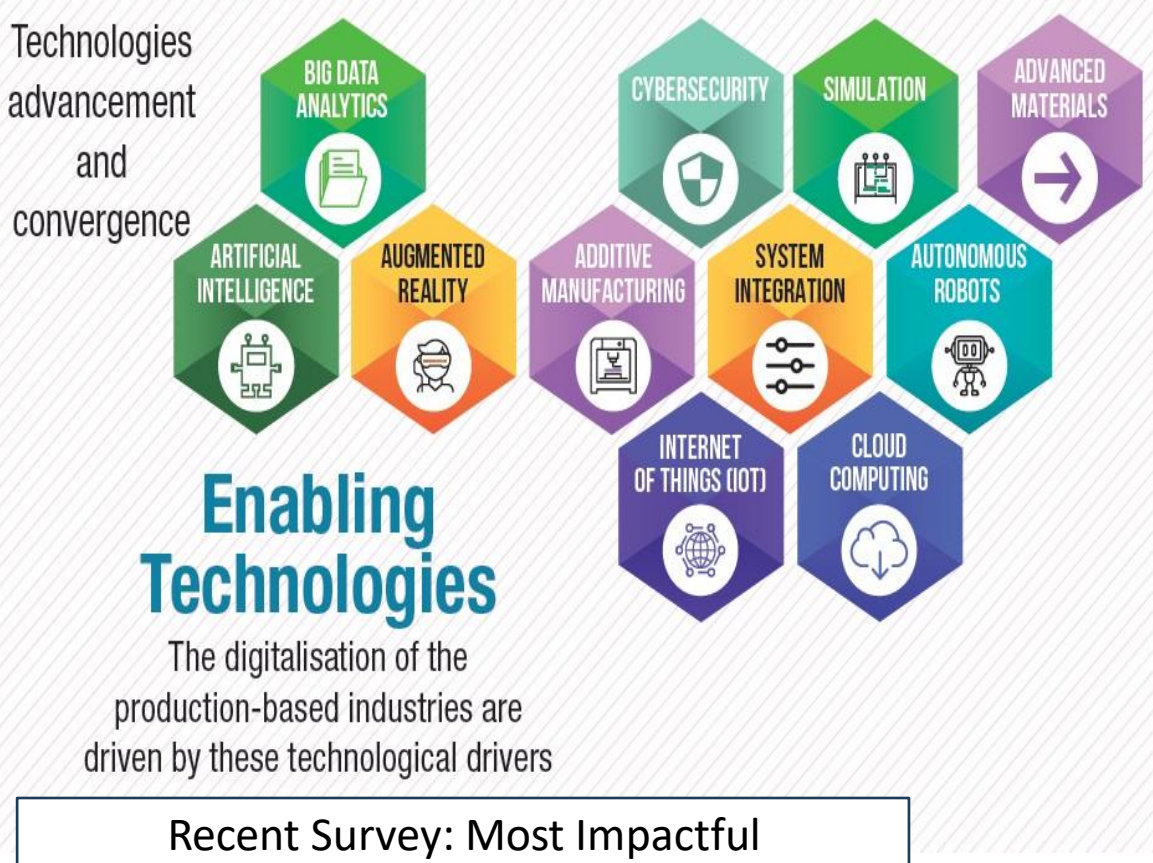
- On Oct 31, 2018, MITI launched the National Industry 4.0 - Industry4WRD policy Framework
- MITI – One of the lead agency

Efforts:

- readiness assessment,
- intervention program (Grants and others),
- high speed broadband connectivity to potential industrial parks,
- enhancing competence centers at public higher learning institutions, and
- reskilling program - technology and skills gaps

INDUSTRY 4.0 POLICY

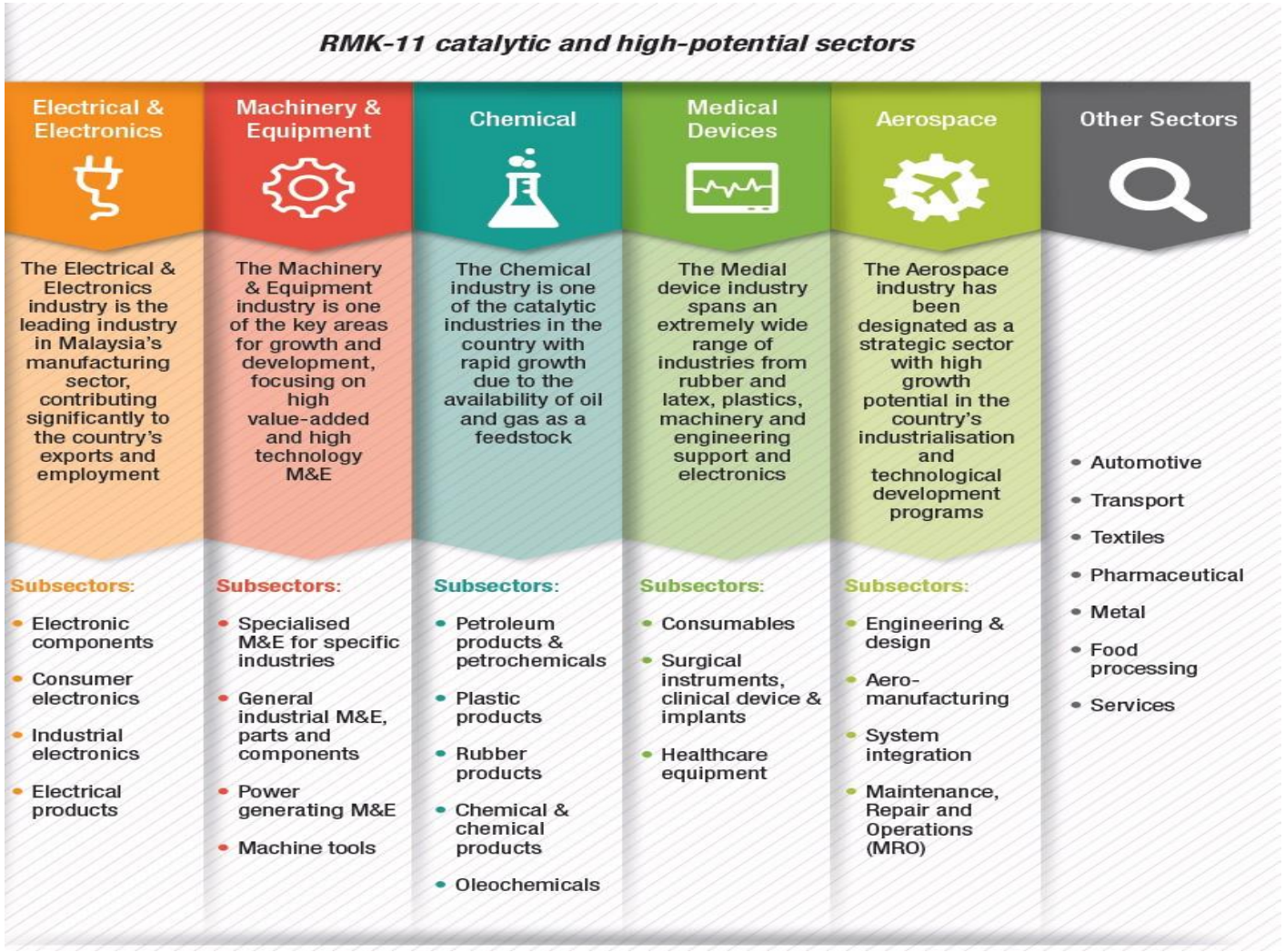




MITI, 2019

Recent Survey: Most Impactful Technologies:
Cloud Computing
Big Data Analytics
IoT

INDUSTRY 4.0 POLICY – SECTORAL FOCUS



Focus: Manufacturing & Manufacturing related services

Debate: Targeting Horizontal (All Sectors) & Vertical (Activities and Processes)

Pandemic – Game Changing

Needs New and Revised Industrial Policy – IMP, Sectoral Policies

MITI, 2019

INDUSTRY 4.0 POLICY

The policy rightly addressed the issues and challenges –

- Demand Side: awareness, access to best practices, innovation, digital readiness, skills, & financing.
- Supply Side: Governance, Funding, Training Providers, Ecosystem support, standards, infrastructure.

- Survey shows: Funding, Change management
- Success in Embracing : ROI (business sense); organizational change; human resources - operational

INDUSTRY 4.0 POLICY FRAMEWORK

- Shifting Factors – People, Process and Technology
- The Enablers - Funding, Infrastructure, Regulations, Skills and Talents, Technology
- 13 Strategies:
  - Funding – 2 Strategies: Outcome based Incentives & Innovative Financing Products
  - Infrastructure – 3 Strategies: Digital Connectivity, Digitalization, Service Providers
  - Regulations - 3 Strategies: Awareness, Platform (integrate manufacturing and services), Data Integration and Sharing
  - Skills – 2 Strategies: Upskilling Workforce & Future Talents
  - Technology – 3 Strategies: Digital & Technology Labs as well as collaboration, standards & safety, R&D, Innovation and entrepreneurship.
- Brief Action Plan/Program (38) and outcome are highlighted.
- The policy assigns respective implementation agencies.

ASSESSMENT OF THE POLICY – BROAD ASSESSMENT

- Target Audience – Manufacturing & SMEs
- Sector Focus – 11th Malaysia Plan sectoral focus.
- Technology Focus – Generic (11 technologies)
- Budget – Not specified – aligned to existing programs and incentives – mostly matching grants and tax incentives.
- Funding Approach – Public Driven (with some private initiatives)
- Strategy Focus – Deployment, application and Adoption (less R&D based)
- Implementation Strategy – Coordinated Implementation
- Approach – Top down

ASSESSMENT OF THE POLICY PROGRESS

DIMENSIONS	INDUSTRY 4.0 POLICY FRAMEWORK	ASSESSMENT
Regulatory and Institution	A comprehensive I4 Policy Framework	Adequate
	Review and amendment of legislations and regulations for I4	In progress
	Facilitation for data integrity, standards, sharing security to facilitate seamless integration of I4	In progress
	Intra-governmental coordination in I4 policy formulation ;implementation, monitoring	X
	Awareness programme/initiatives across all stakeholders	X
	Platform to assess and develop I4 capabilities	X
	Mechanism of the Consultations for the I4 development	X
	National Strategic/Action Plan on IoT, Digital Trade Zone, Internet Economy,E-commerce and others related strategies for I4	Partially
Human Capital	Review of Education Policy	X
	I4 Education Promotion (Schools)	Partially
	I4 Education Promotion (Higher Learning/Training Institutions)	Partially
	Business-Academia collaboration	X

Chandran, 2020; Preliminary Assessment –based on expert opinion : Note: X Areas that needs more efforts

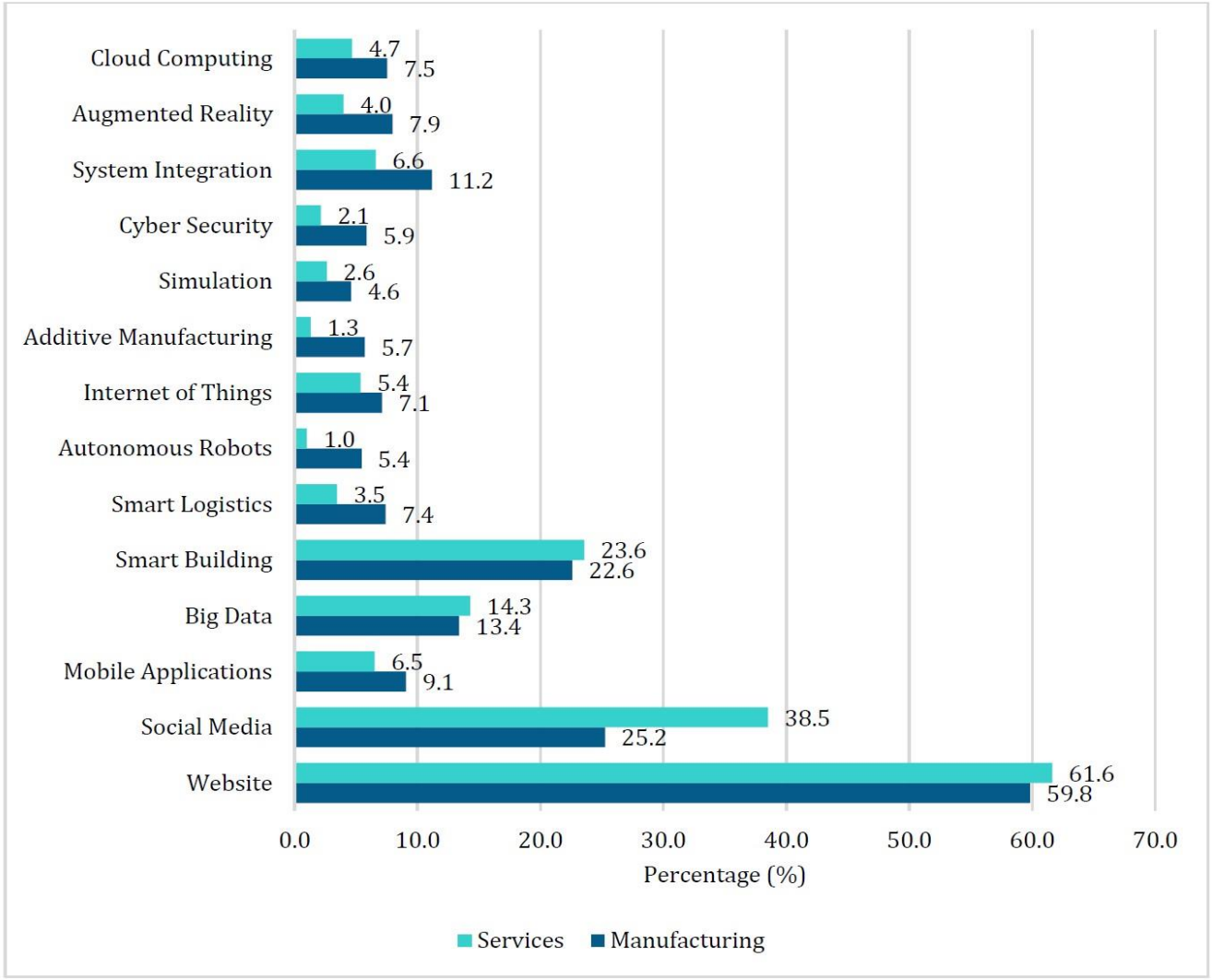
ASSESSMENT OF THE POLICY PROGRESS

DIMENSIONS	INDUSTRY 4.0 POLICY FRAMEWORK	ASSESSMENT
STI Policy	STI Policy for I4	X
	STI Strategic and Technology Focus	Partially
	Technology & R&D Programs	X
	Technology and Innovation (Incentives/Grants)	Partially
SEM Development	Promotion for automation and digitalization	Adequate
	ICT Technology Adoption and Promotion	X - among SMEs
Digital Transformation	Access to Smart Technologies and Standards	Limited
	Support for Creative Industries - Digitalisation, Adoption of ToT, AI and others.	Partially
	Data Security – Cyber Security Initiatives	In progress
Trade and Investment	Investment Promotion in Strategic Sectors of I4	Adequate
	Export Promotion Initiatives in Strategic Sectors of I4	Adequate
	International Cooperation and Collaboration	X

Chandran, 2020; Preliminary Assessment –based on expert opinion : Note: X Areas that needs more efforts

PROGRESS & KEY CHALLENGES

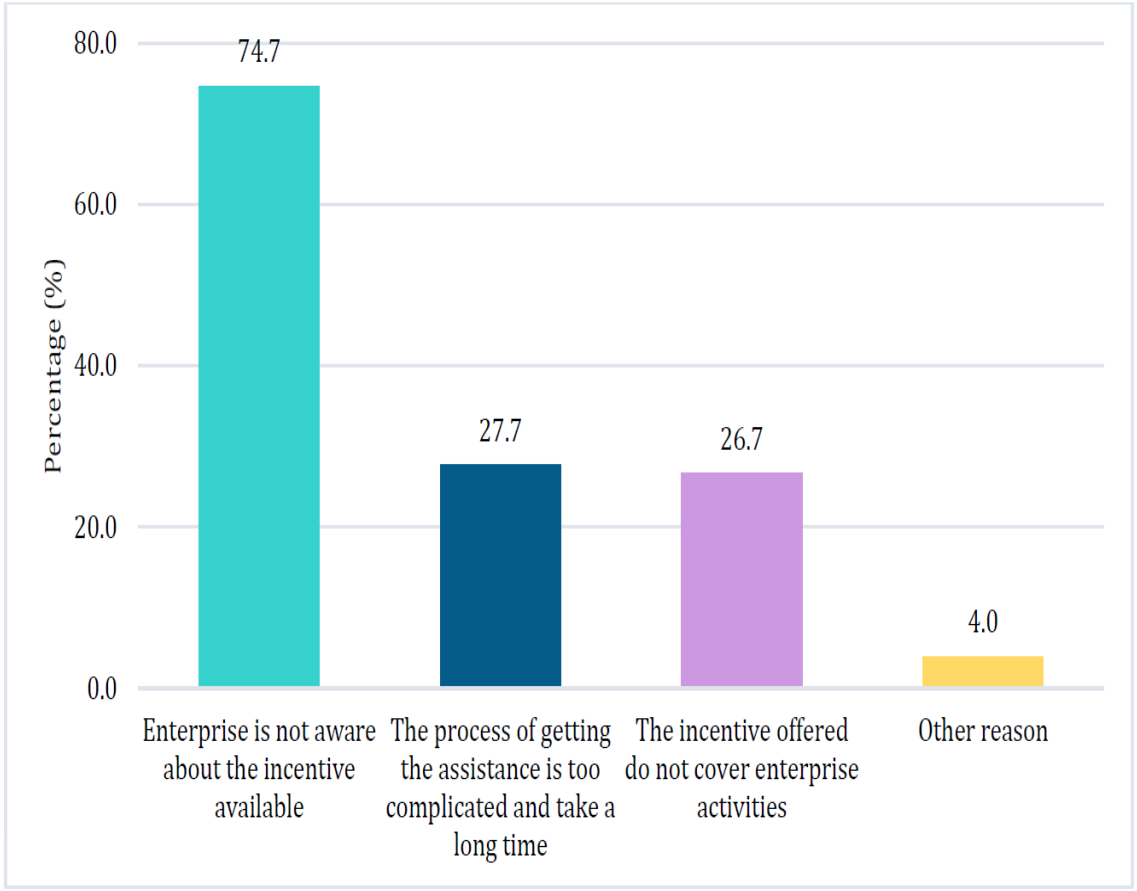
- Low adoption rate
- Mostly simple marketing technologies – relevant for micro and small businesses
- SMEs need more attention.



MOSTI, 2020; Note based on survey of 1303 services and 717 manufacturing sectors

PROGRESS & KEY CHALLENGES

Types of Government Support	Percentage (%)		
	Small	Medium	Large
Technical consultancy services (e.g. assistance related to new technologies through technology transfer)	4.2	4.2	3.0
Technical support services (e.g. evaluation of equipment, implementation of productivity improvements, registration of patents)	4.8	4.3	3.4
Duty free importation of machinery or equipment	8.6	5.3	2.9
Commercialisation of R&D Fund	2.5	2.8	1.5
Tax incentive	9.0	6.4	3.8
R&D grant	2.9	2.9	1.7
Innovation grant	2.1	3.1	2.1



MOSTI, 2020; Note based on survey of 1303 services and 717 manufacturing sectors

KEY FOR POLICY SUCCESS

POLICY COORDINATION

- Ministerial and Agency Coordination
- Policy complementary

FINANCING & FISCAL CONSTRAINTS

- Macroeconomics
- Debt
- Investments

REGULATORY REFORM

- Supporting experimentation. E.g. blockchain
- Data sharing
- Cyber security
- Custom and Smart Shipping
- Improving regulatory access and feedback

DATA OWNERSHIP & SECURITY

- Proper platform
- Access to public Information
- Public Sector Innovation

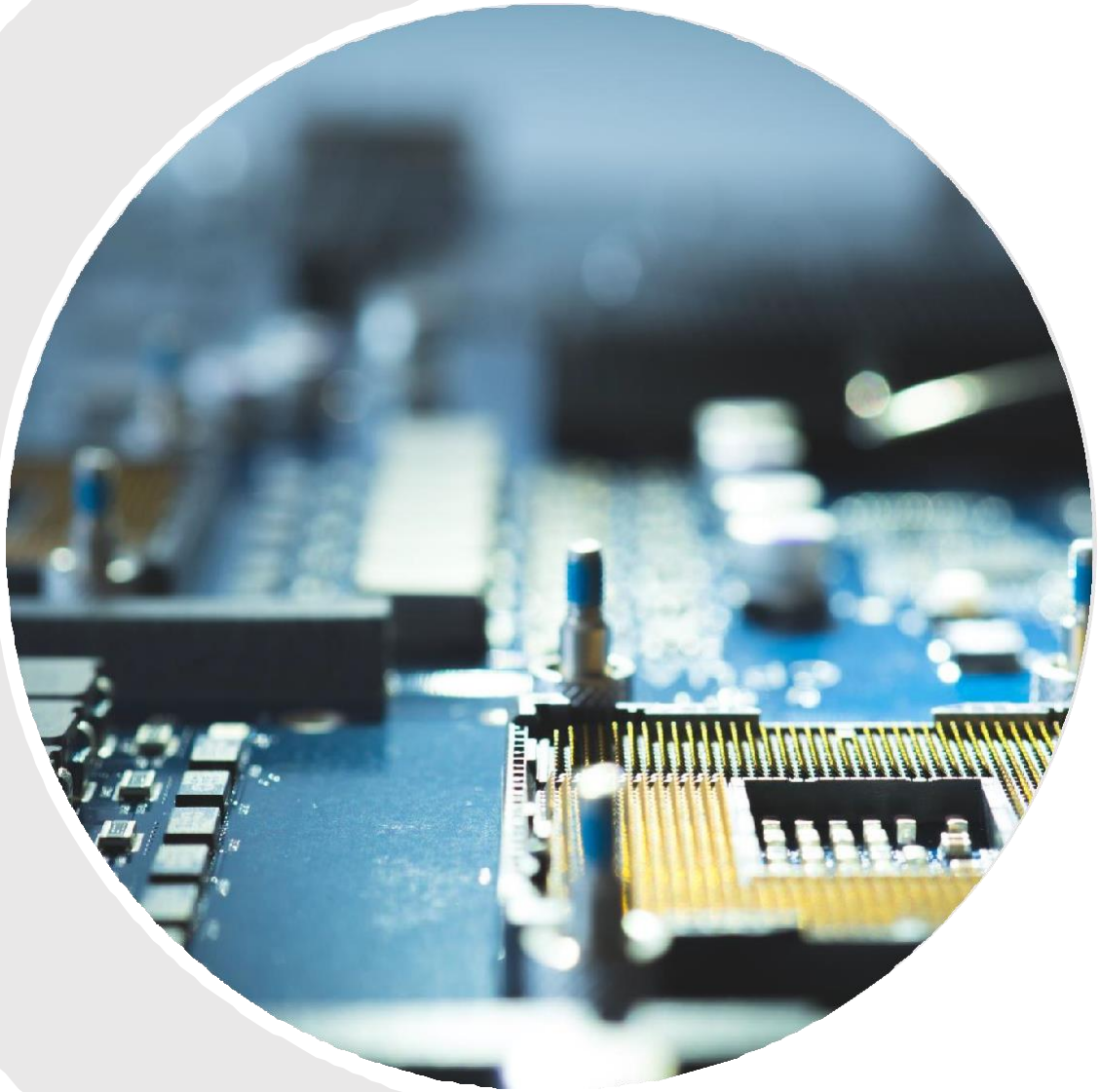
WAY FORWARD

- System Thinking - Positioning and Aligning Industry 4.0 – Circular Economy, SDGs (Including any Stimulus Package)

	Circularity Criteria							
Enabling Technologies	**Energy efficiency**	**Material efficiency**	**Less waste**	**Less emissions**	**More safety**	**Higher flexibility**	**Sustainable product**	**Customizable product**
Technologies for 'self assembly'	**	**	*			***	**	***
Innovative micro/nano- manufacturing processes	***	***	**		**	***	***	***
Additive manufacturing	*	***	***		*	***	**	***
Flexible Sheet-to Sheet (S2S) and Roll-to-Roll (R2R)	**	**	***	**	**	***	**	**
Innovative physical, chemical and physicochemical processes	***	***	**			***	***	***
Integration of non-conventional technologies and conventional technologies	***	***	**			***	***	***
Methods for handing of parts, metrology and inspection	***	***	**			***	***	***
Photonics based materials processing technologies	***	***	***	**	**	***	***	***
Collecting, dismantling, sorting and recycling processes	***	***	***	***	***	***	***	***
Shaping technology for difficult to shape materials	***	***	***	***	**	***	**	***
ICT solutions for factory floor and physical world inclusion	***	***	***	***	***	***	***	***
ICT solutions for modelling, simulation and management tools	***	***	***	***	***	***	***	***
Control technologies, Robots and Automation	***	***	***	***	***	***	***	***

WAY FORWARD

- Focus on Learning Economy – interactive learning; agents are less competent in learning processes e.g. self-discovery, limited collaboration.
- Recognize FDI Led-Growth Limits – Information asymmetric is value assets (managers will protect it – especially technology related); there is no zero-sum game – limited technology & knowledge spillover - Position FDI – complement the missing link (industry value chain), adoption of technology, embedded technology etc.
- Positioning Trade – tariffs, NTMs, trade zones, and others.
- Human Centric – Beyond Training – e.g. HRDF - wage subsidies; assess to best practices.
- Enabling Infrastructure – geographical spread, capacity etc.



THANKYOU

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