



# Aerospace Malaysia Innovation Centre

*Fostering Research & Technology Capabilities  
for Malaysian Aerospace Industry*

Disruptive Technologies in Aerospace Manufacturing Landscape:  
How can companies be prepared?

*Syazwan Ahmad Rashidi, AMIC*



aerospace malaysia innovation centre

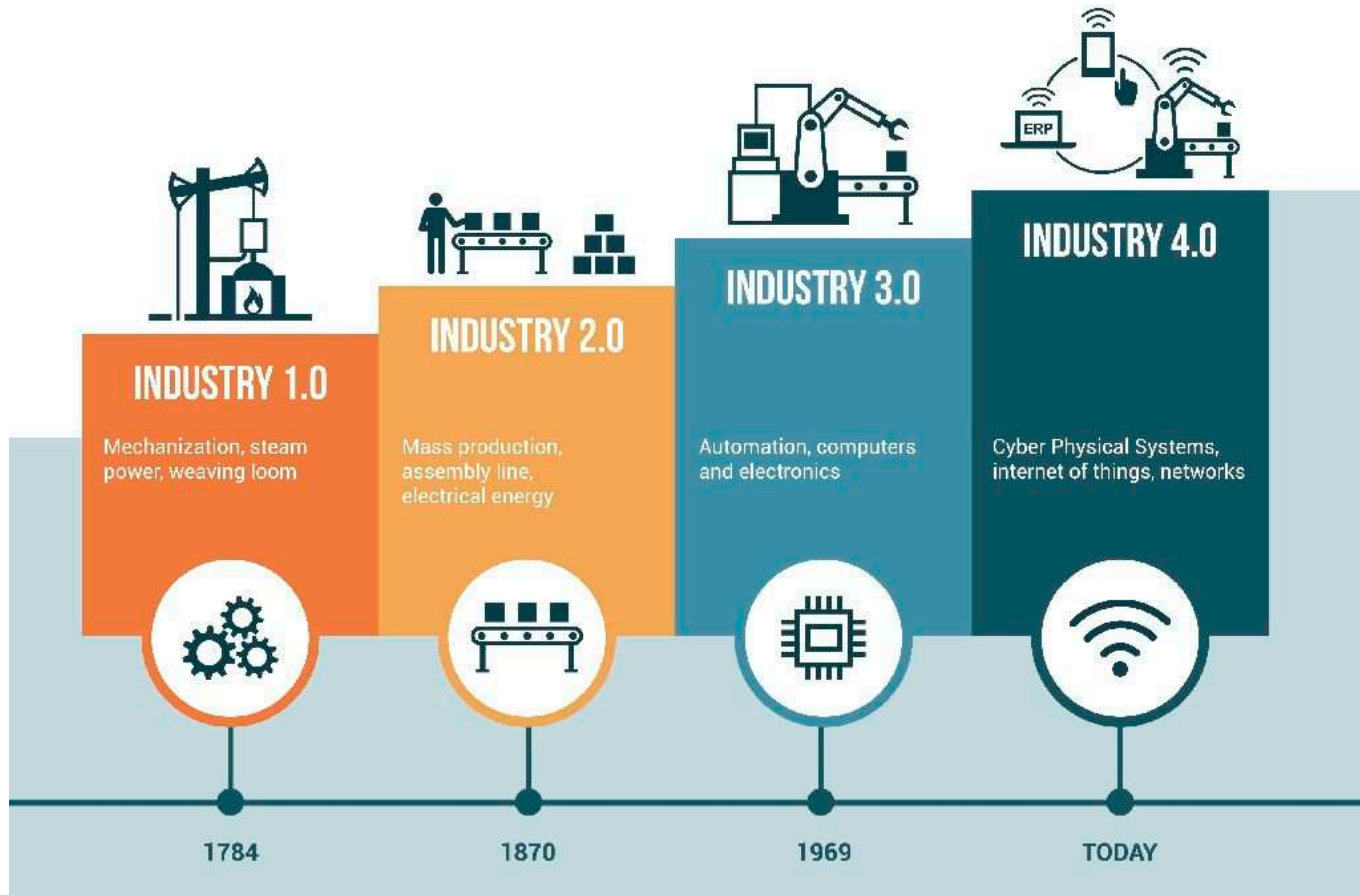
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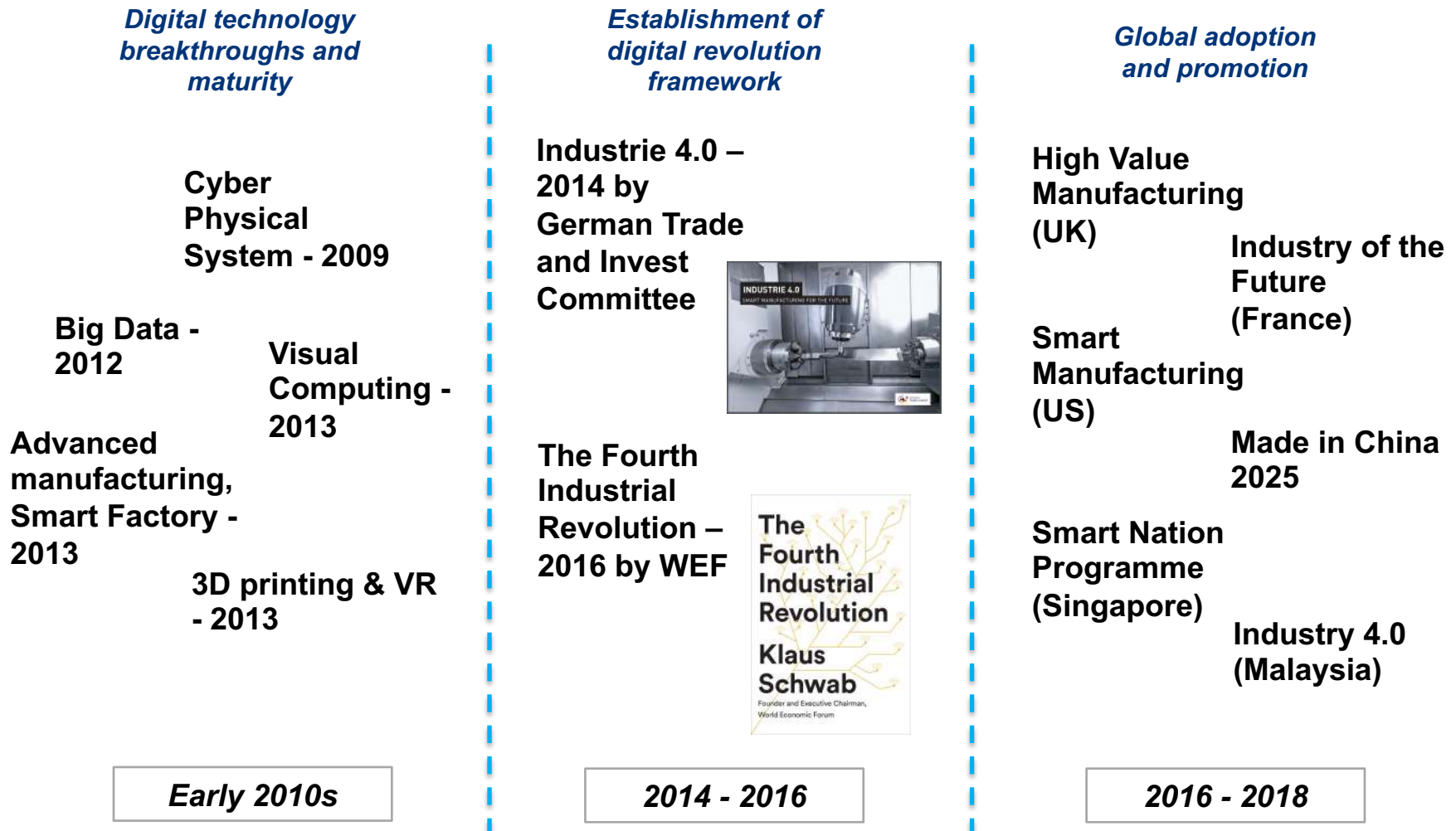


Rolls-Royce AIRBUS

# Stages of Industrial Revolution



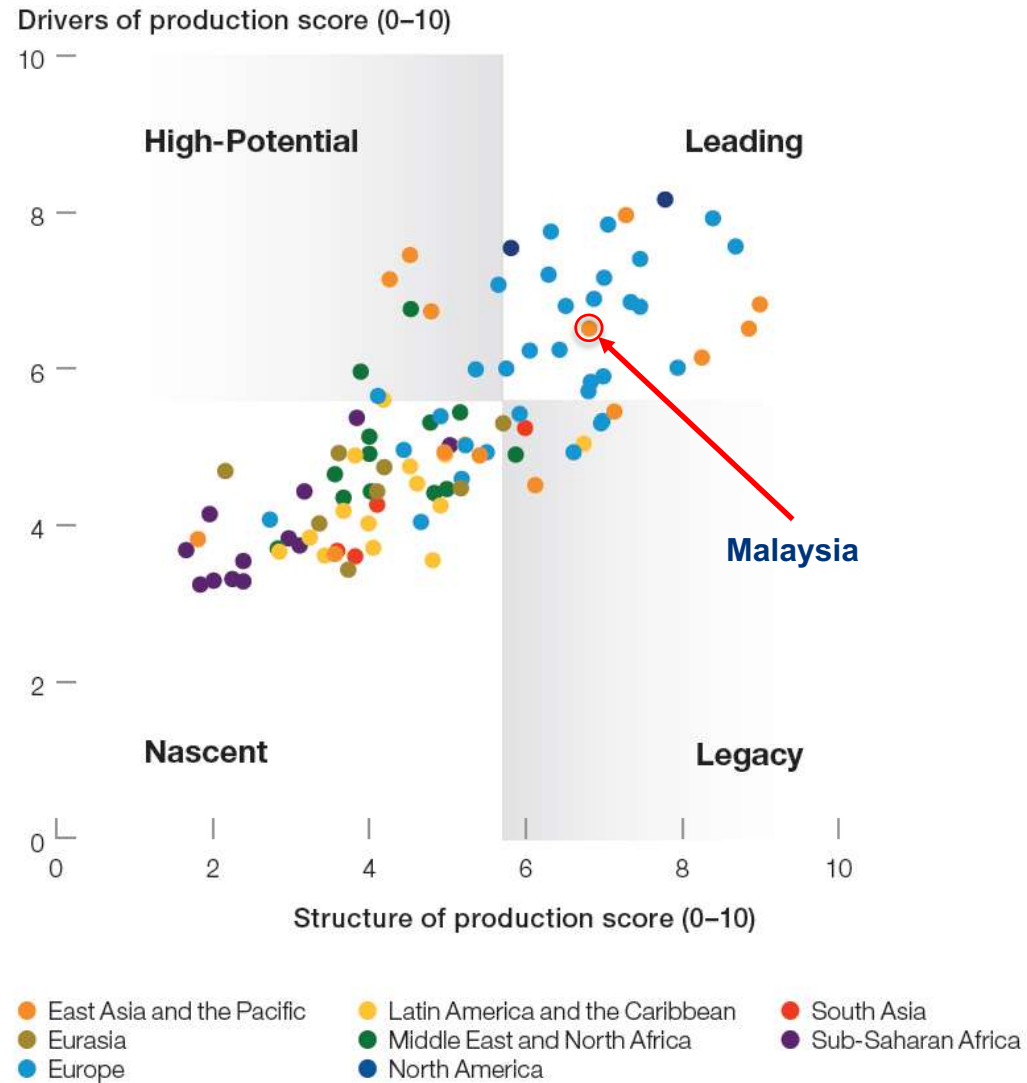
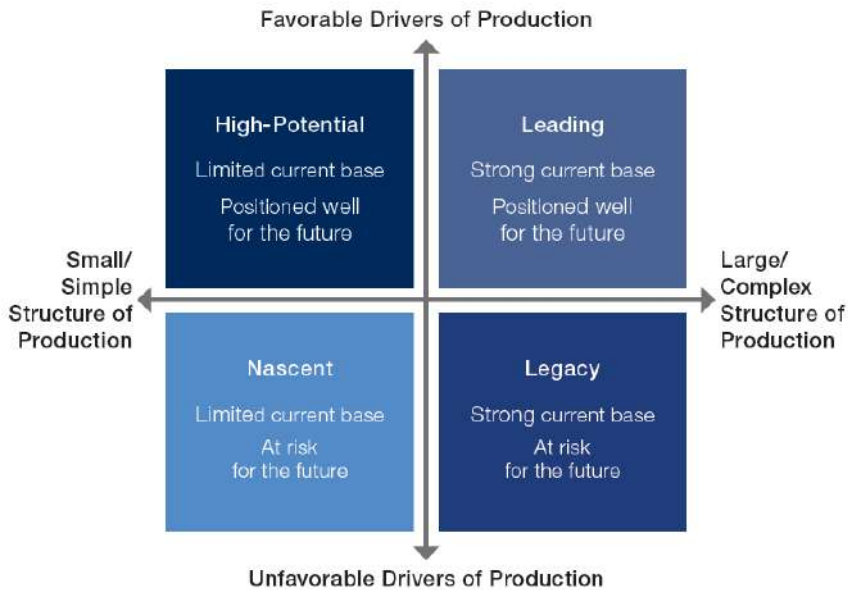
# Backgrounds of Industrial Revolution 4.0



# Frontline of the Industrial Revolution 4.0



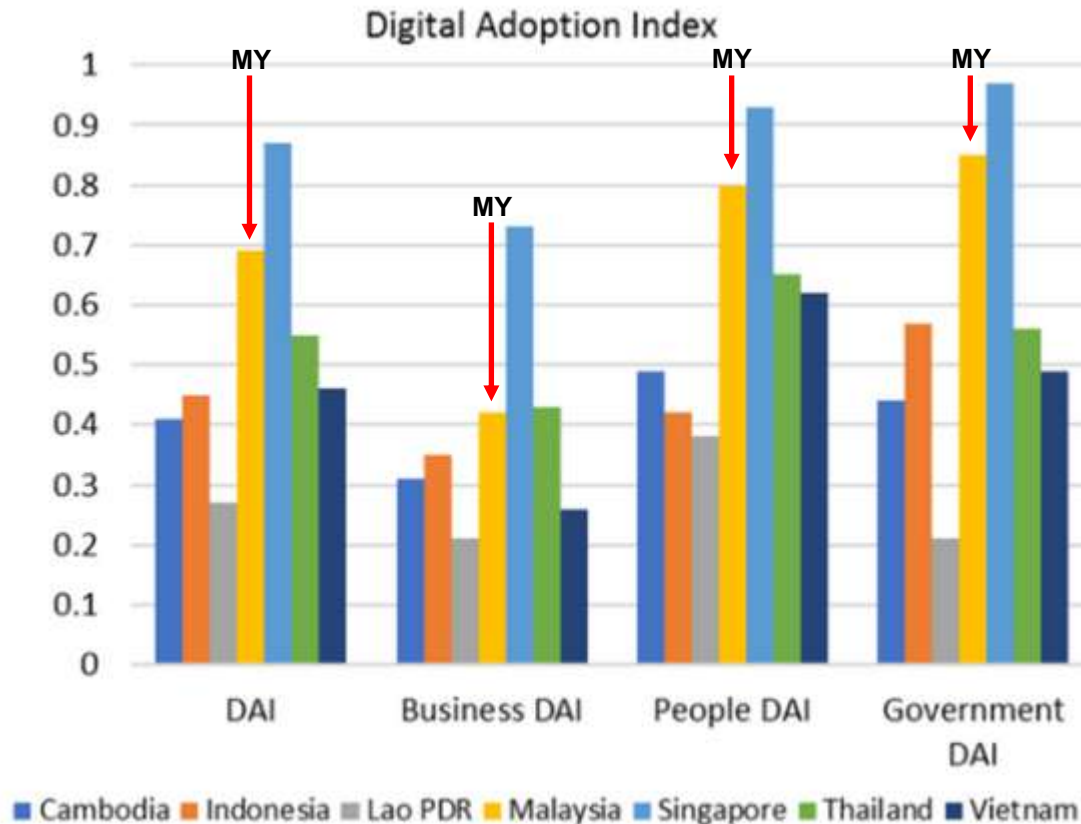
Source: Akademi Sains Malaysia, 2017





		Structure of Production		Drivers of Production		
Region	Country	Score	Rank	Score	Rank	
	Leading Countries					
		Austria	7.46	9	6.79	18
		Belgium	6.51	24	6.80	17
		Canada	5.81	33	7.54	7
		China	8.25	5	6.14	25
		Czech Republic	7.94	6	6.01	26
		Denmark	6.29	27	7.20	10
		Estonia	5.75	34	6.00	27
		Finland	7.00	14	7.16	11
		France	6.87	18	6.89	14
		Germany	8.68	3	7.56	6
		Ireland	7.34	10	6.85	15
		Israel	6.43	25	6.24	23
		Italy	6.99	15	5.90	30
		Japan	8.99	1	6.82	16
		Korea, Rep.	8.85	2	6.51	21
		Malaysia	6.81	20	6.51	22
		Netherlands	6.32	26	7.75	5
		Poland	6.83	19	5.83	31
		Singapore	7.28	11	7.96	2
		Slovenia	6.80	21	5.71	32
		Spain	6.05	29	6.23	24
		Sweden	7.46	8	7.40	9
		Switzerland	8.39	4	7.92	3
		United Kingdom	7.05	13	7.84	4
		United States	7.78	7	8.16	1

# Digital Adoption Index among SEA countries...



## On Malaysian aerospace landscape...



# Malaysian Aerospace Market on Different Sectors

## Manufacturing

**Rate increase required from OEMs**, demand from Global Supply Chain will intensify. New requirements of **smart manufacturing (data-driven) and technology improvement**.

IR4.0 & digitalization are key to tap into a **US\$ 5.3 trillion growth**.

## Training

SEA region alone requires **210,000+ pilots** and **220,000+ technician**. Malaysia can play a major role, “**blended learning**” essential to command a **RM 55 billion market**.

+Technology

+GDP

+GNI

+Employment

+Skillset

# Current Status of Aerospace Market Based on Different Sectors

## Sustainable Aviation

Malaysia is part of CORSIA, and R&T on Sustainable Bio-jet fuel and Bio-materials are part of AMIC's R&T program.

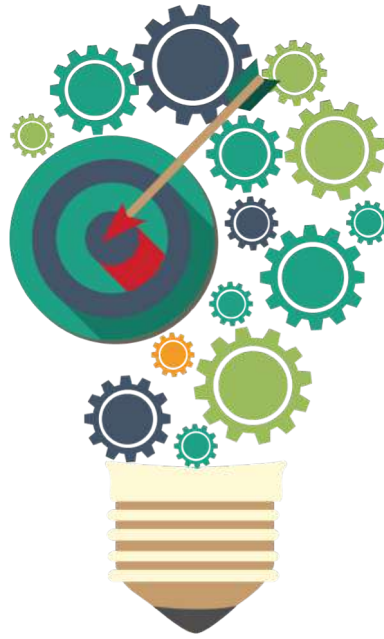
A potential RM700 million/year market locally, and **RM 2.5 billion/year market regionally** (exports)

## Maintenance

Rapid growing market. **5% market capture** is a **RM 23.43 billion/year business**. Or a **RM 1 billion/year increase** (seen only in 2012-2013).

Increase MRO capability through digitalization + IR4.0

**+Sustainability/Environment    +GDP    +GNI    +Employment    +Skillset**



**How does digital transformations drive companies' competitive edges?**

# Disruptive natures of IR4.0



**Interoperability**



**Virtualization**



**Real-Time Capability**



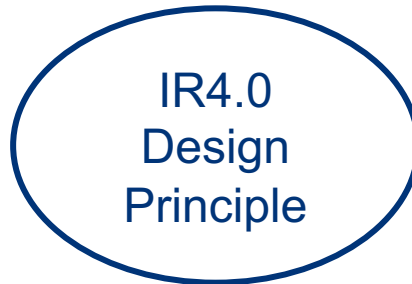
**Service-Orientation**



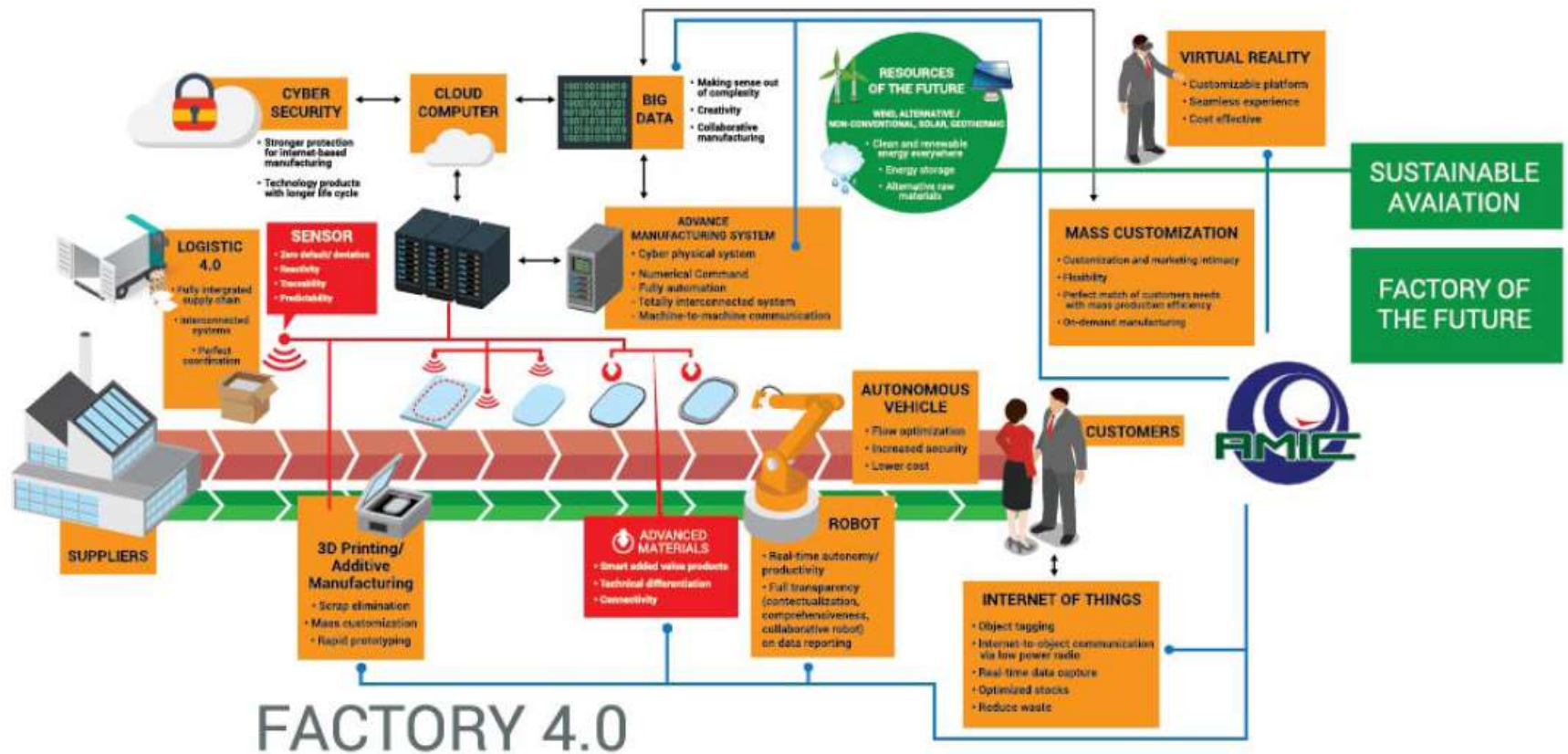
**Modularity**



**Decentralization**



# Elements of Digitization within Aero-manufacturing



# How companies can be prepared for IR4.0? (or are the companies ready for this?)

## ***First step***

- IR4.0 Readiness Assessment

## ***Second step***

- Digitization Roadmap and Technologies Development  
(*Operations, Productions, Human Capital*)

## ***Third step***

- Integrated Implementation  
(*Resources tagging, centralized monitoring, tracking and tracing*)

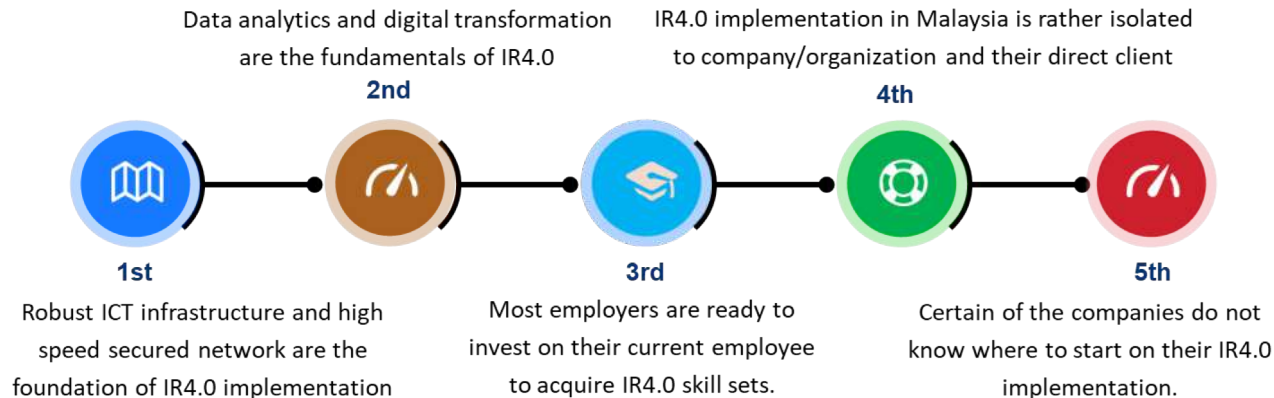
## ***Fourth step***

- Continuous improvements and performance tracking

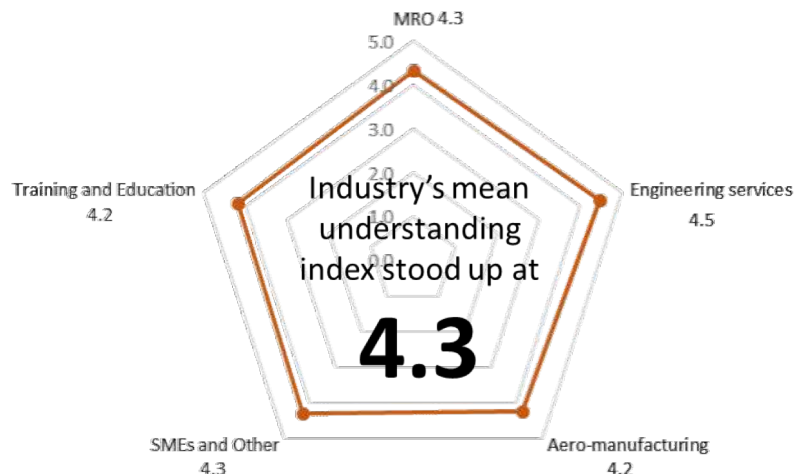


**Lets see our previous  
IR4.0 Readiness Assessment results...**

# Survey Result Highlights



## UNDERSTANDING OF INDUSTRY 4.0



Main drivers for IR4.0 implementation

- 79% - Organization**
- 77% - Customers**
- 68% - Supply Chain**

Impact desired from IR4.0 implementation

- 57% - OPEX reduction**
- 54% - Improved quality**
- 51% - Rapid output**

# Survey Result Highlights

However only  
**2 out of 5**  
sectors reported to  
be ready to adopt  
IR4.0 culture

Percentage of  
respondent that  
said their  
organization is  
ready to embrace  
IR4.0  
**65%**

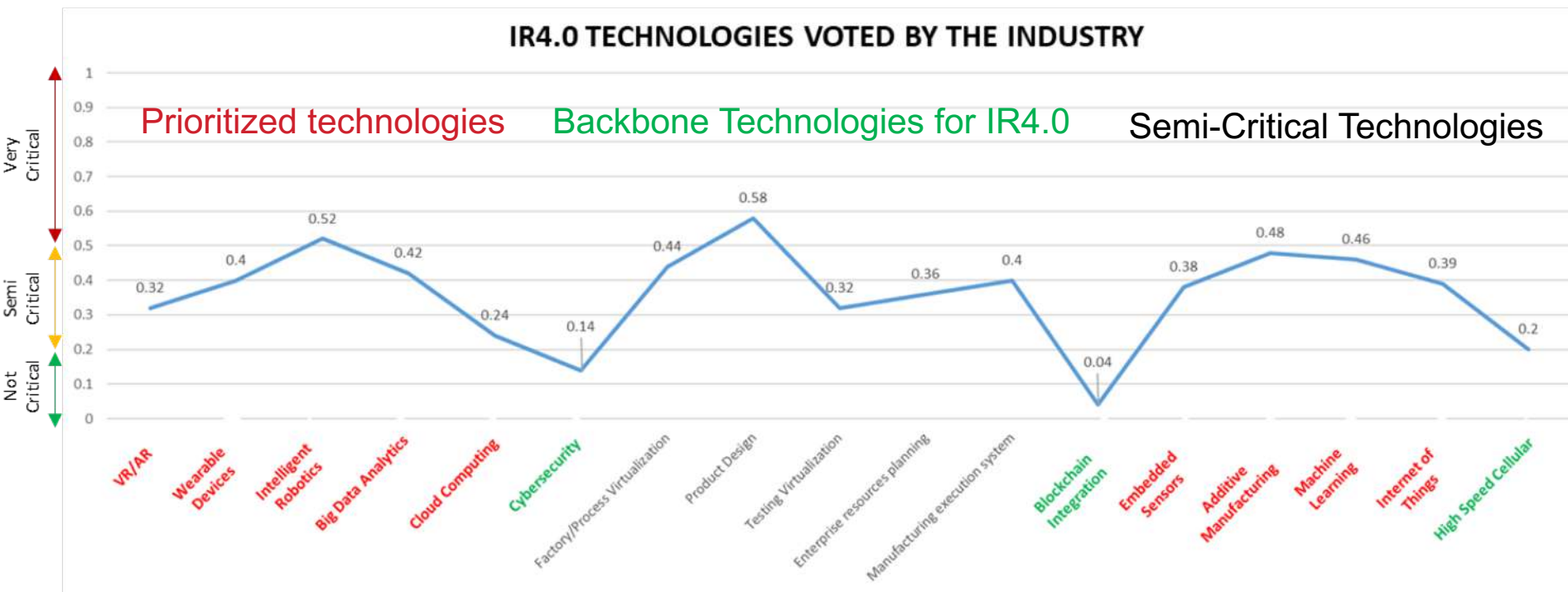
Nevertheless  
**62%**  
of the respondent  
mentioned that they have  
the investment  
capabilities for IR4.0  
adoption

only  
**54%**  
has end-to-end IT  
infrastructure  
within their  
organization

**76%**  
of respondent  
voiced that the  
cyber-security is  
very critical

**4 out of 5**  
sectors think that the  
cybersecurity should be at  
national level (except  
MRO – private level)

# Survey Result Highlights



- VR/AR
- Wearable Devices
- Intelligent Robotics
- Big Data Analytics
- Cloud Computing
- Embedded Sensors
- Additive Manufacturing
- Machine Learning
- Internet of Things
- Cybersecurity
- Blockchain Integration
- High Speed Cellular
- Process Virtualization
- Product Design
- Testing Virtualization
- Enterprise resource planning
- Manufacturing Execution System

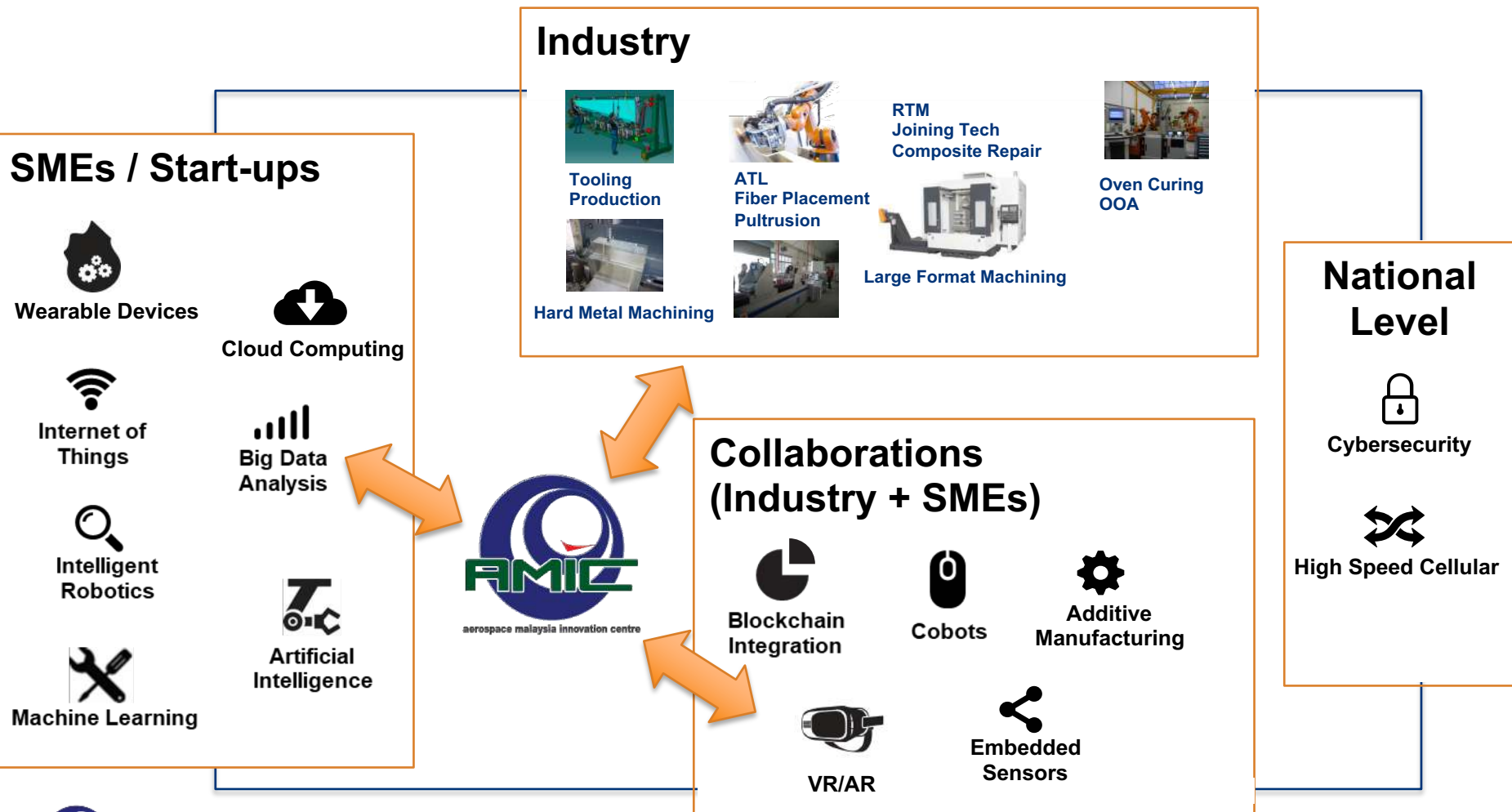
# Conclusion

- There is a **sizable aerospace market & demand** to be met.
- Great potential for aero-SMEs **to upscale** themselves as all the infrastructures and government incentives are well established.
- Many **IR4.0 domains** need to be **developed together** with non-aerospace players (supporting the ecosystem).
- Let's engage AMIC for **IR4.0 Readiness Assessment**, as well as future IR4.0 R&T collaboration.



# What do AMIC offers?

## Focused Collaboration





# Thank You



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