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"DIGITAL TRANSFORMATION TOWARD INDUSTRY 5.0 IN MALAYSIA CONSTRUCTION INDUSTRY"

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Organized by malaysiaGBC

Establish Member of Green Building Council

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Persatuan Teknologi Malaysia – Kemajuan Teknologi (Founded 1946)

HOW READY ARE WE ?

OPPORTUNITY

Industry 4.0

9 Technology Pillars – Industry 4.0

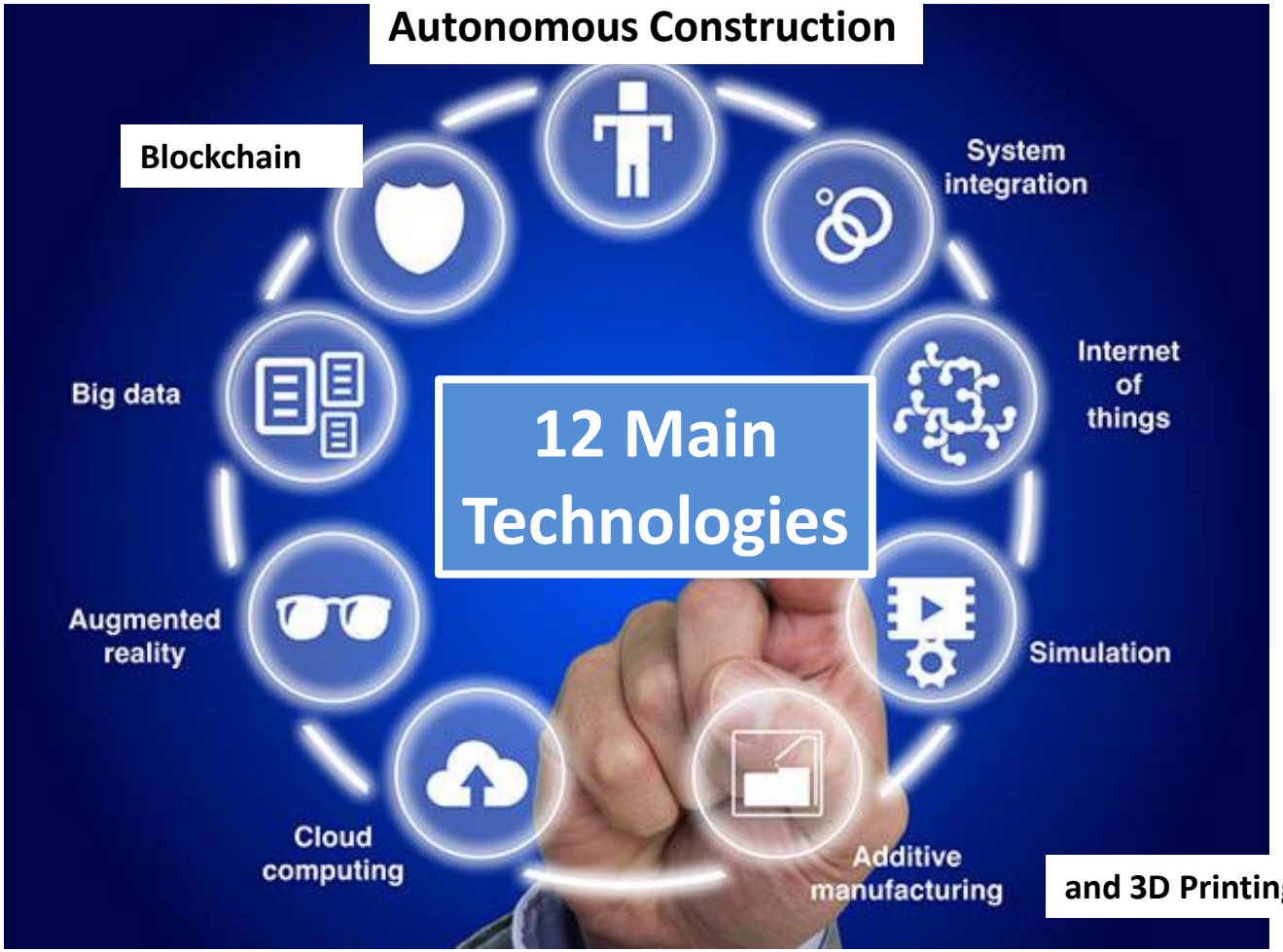
CIDB MALAYSIA

Construction 4.0 Strategic Plan (2021–2025)

Next Revolution of the Malaysian Construction Industry

- Building Information Modelling
- Prefabrication & Modular Construction
- Advance Building Material

Autonomous Construction



and 3D Printing

Industrial Revolution and Society 5.0

1.0 Mechanisation

- The introduction of industrial production equipment driven by water and steam power.

1780

2.0 Electrification

- Mass production using electrical energy and assembly lines.

1870

3.0 Automation

- Automated production due to the rise of electronics, telecommunications and computers.

1970

4.0 Digitalisation

- The use of cyber physical systems on connected devices to automate processes further.

2016

5.0 Personalisation

- The interdependence of man and machine using cognitive computing and human intelligence. Mass customization and personalization for humans.

2021

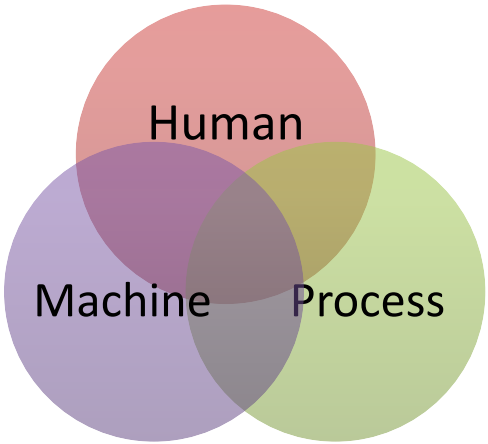
WHAT IS THE MAIN DIFFERENCE BETWEEN INDUSTRY 3.0 AND INDUSTRY 4.0?

To put in simple words the basic difference is

- In Industry 4.0 - the machines can work **autonomously** **without the intervention of a human.**

- Whereas in the industry 3.0 the machines are only automated

Industry 4.0: The fourth era of industry is the era of **Cyber Physical Systems (CPS).** CPS comprises of smart machines, storage systems and production facilities capable of **autonomously exchange information, triggering actions and control each other independently.**



WHAT IS THE MAIN DIFFERENCE BETWEEN INDUSTRY 4.0 AND INDUSTRY 5.0?

"Industry 5.0 recognises the power of industry to achieve societal goals beyond jobs and growth to become a provider of prosperity, by making production respect the boundaries of our planet and placing the wellbeing of the industry worker at the centre of the production process."

Definition by European Commission in the R&I Policy Brief (2021)
"Industry 5.0
Towards a sustainable, human-centric and resilient European industry"

European Commission

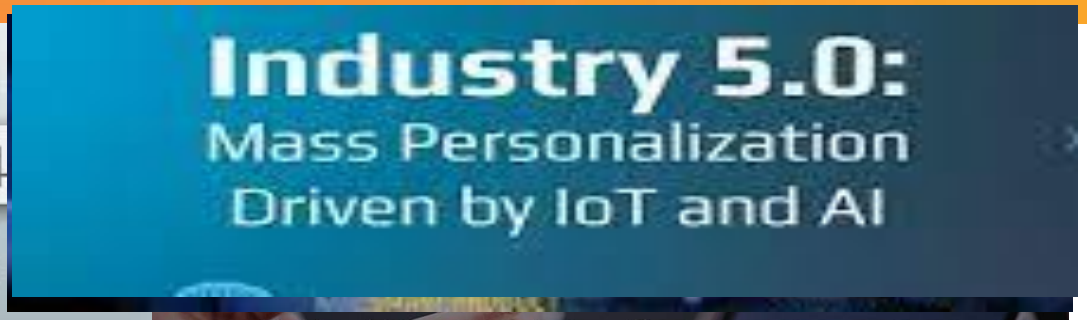
WHAT IS THE MAIN DIFFERENCE BETWEEN INDUSTRY 4.0 AND INDUSTRY 5.0?

Highlights of Industry 5.0 compared to Industry 4.0

INDUSTRY 4.0	INDUSTRY 5.0
Focus on connecting machines	Focus on delivering customer experience
Mass customization	Hyper customization
Intelligent Supply Chain	Responsive & Distributed supply chain
Smart products	Experience Activated (Interactive) Products
Manpower distanced from factories	Return of Manpower to factories


From shareholder
to stakeholder value
INDUSTRY 5.0
human-centric, sustainable
and resilient
© European Union, 2020
@EUScienceInnov
#Industry5.0
#ResearchImpactEU
European
Commission


Autonomous robots
System integration
Internet of things
Simulation
Additive manufacturing
Cloud computing
Augmented reality
Big data
Cybersecurity
Industry 4.0


Industry 5.0:
Mass Personalization
Driven by IoT and AI


Value-Driven
Delivery

"It is important to understand that IR5.0 is not a chronological continuation or the next stage of IR4.0. We must not wait until we have fully implemented IR4.0 before embarking on IR5.0"

"IR5.0 complement IR.40 with focus on Human Centric, Sustainability and Resilient"

Nation

Healthy prospects

Khairy Jamaluddin wants our public health system to be of world class. He is seeking 5% of the GDP to achieve this. > 2

The Star
people's paper
TUESDAY 16 AUGUST 2022 · PP19652/12/2020 (035234) (No. 22975) RM2.00 · 1300-88-7827 (Customer Service)

Your opinion

EMAIL editor@thestar.com.my or
MAIL The Editor, Menara Star, 15, Jalan 16/11, Section 16, 46350 Petaling Jaya.
Letters must carry the sender's full name, address and telephone number.
A pseudonym may be included.

Malaysia must be ready to embark on IR5.0

WHILE Malaysians are still excited about and getting ready for the the fourth industrial revolution, IR4.0, we should actually be preparing ourselves already for IR5.0.

The idea of IR4.0 was first mooted by World Economic Forum (WEF) founder and executive chairman Klaus Schwab during a meet in 2016. As the WEF website explains, the first industrial revolution used water and steam power to mechanise production, the second used electric power to create mass production and the third used electronics and information technology to automate production.

IR4.0 has been defined as an era of cyber-physical systems (CPS) comprising "smart machines, storage systems and production facilities capable of autonomously exchanging information, triggering actions and controlling each other independently". In simpler terms, IR4.0 integrates human, machines and processes whereas IR3.0 only involved automation.

The European Commission, in a policy paper published in 2021, introduced the concept of IR5.0, proposing that the next step in humankind's development "recognises the power of industry to achieve societal goals beyond jobs and growth to become a resilient provider of prosperity, by making production respect the boundaries of our planet and placing the well-being of the industrial worker at the centre of the production process".

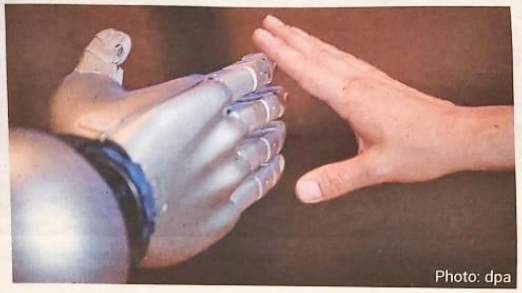


Photo: dpa

The concept is based on three pillars: a human-centric approach, sustainability and resilience.

So IR5.0 is about the collaboration between human and machine, with human intelligence working in harmony with cognitive artificial intelligence. Workers will be upskilled to carry out value added tasks in production and manufacturing by putting the human back into industry production with collaborative machines and robots.

In other words, IR5.0 will focus on personalisation and customisation to meet customer needs and expectations while adopting a sustainable and resilient approach.

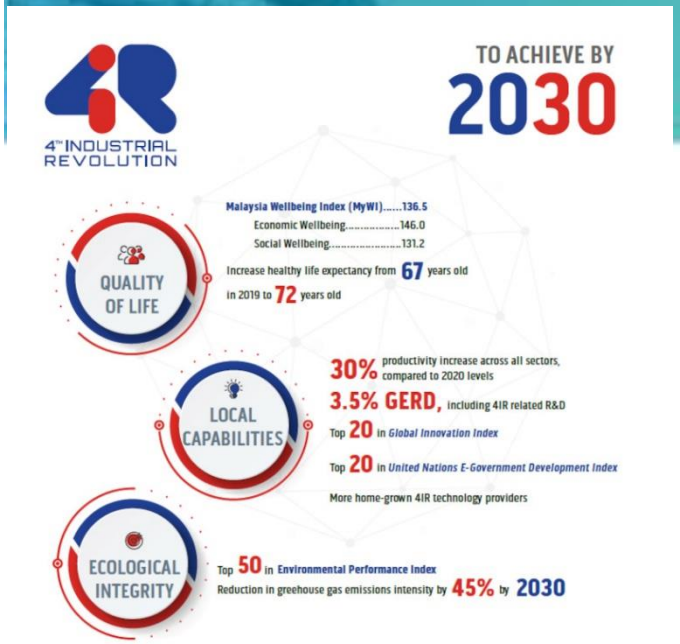
It is important to understand that IR5.0 is not a chronological continuation or the next stage of IR4.0. We must not wait until we have fully implemented IR4.0 before embarking on IR5.0. Malaysia should see the latter as complementing the former and create a clear policy and roadmap towards this more human-centric, sustainable and resilient paradigm.

The Malaysian government must have the foresight to develop initiatives and incentives for industry stakeholders to adopt and implement IR5.0 as part of the country's transformation and digitalisation agenda.

WONG CHEE FUI
Specialist
Universiti Tunku Abdul Rahman

The letter writer is a professional engineer and technologist, and a fellow of the Institution of Engineers Malaysia and the Technological Association Malaysia.

The Malaysia government has launched the **National Fourth Industrial Revolution (4IR) Policy** in 1 July 2021 with the aim to increase the country's readiness in harnessing the potential of 4IR .



The "*National Fourth Industrial Revolution (4IR) Policy"* has included the **construction sector** as one of the six supporting sectors for the nation 4IR policy in Malaysia.

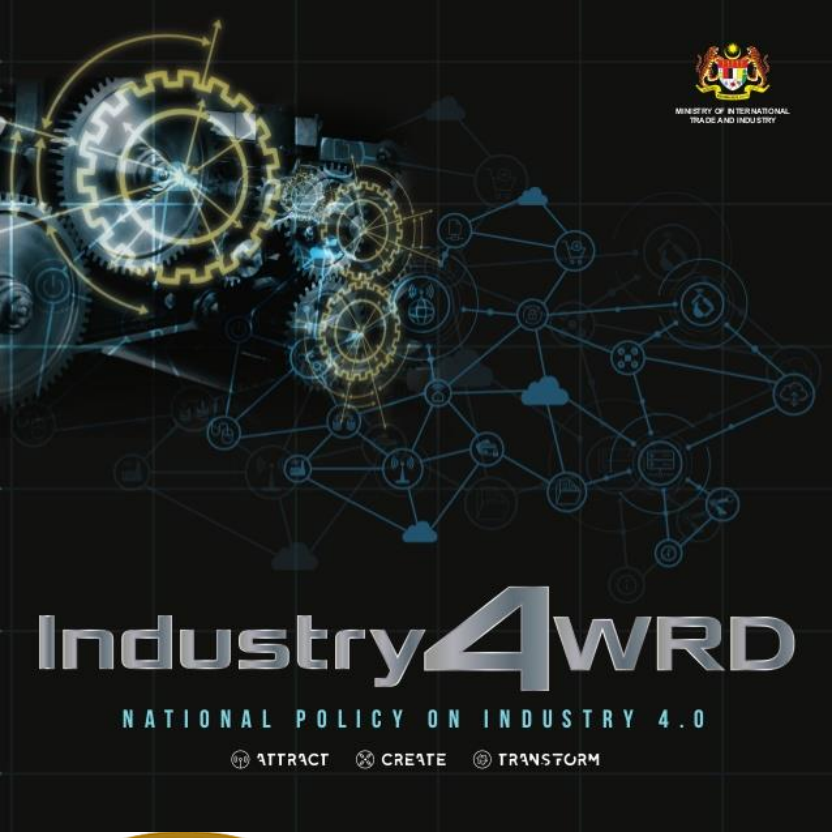
"Construction 4.0 Strategic Plan (2021-2025)" is a roadmap for the Malaysian construction sector to embrace the Fourth Industrial Revolution (IR 4.0) in ways that would transform its productivity and competitiveness.

"Building Information Modelling (BIM)"
"Prefabrication & Modular Construction" (IBS)
Advance Building Materials
has been identified among the twelve main technology in Malaysia CIDB "Construction 4.0 Strategic Plan 2021-2025".

Building Information Modelling

Prefabrication & Modular Construction

Advance Building Material



HOW READY ARE WE ?

OPPORTUNITY

Malaysia

National Policy on Industry 4.0 (Industry4WRD)

- The Government will allocate **RM 210 million** to support the transition and migration to Industry 4.0.
- MPC will carry out Readiness Assessments to assist up to 500 Small Medium Enterprises (SMEs) to migrate to Industry 4.0 technologies.
- Industry4WRD Readiness Assessment (Industry4WRD-RA) is a comprehensive programme to help firm assess their capabilities and readiness to adopt Industry 4.0 technologies and processes.

NOV 2018

Malaysia

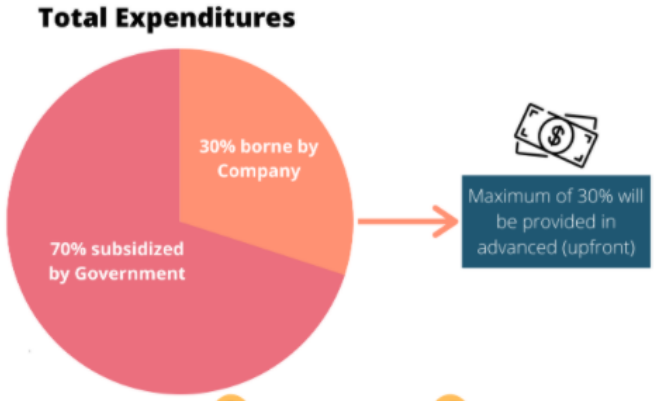
HOW READY ARE WE ?

OPPORTUNITY

National Policy on Industry 4.0 (Industry4WRD)

Industry4WRD Intervention Fund

It is a **matching grant (70:30) on reimbursable basis** based on eligible expenditures, up to a maximum grant of Ringgit Malaysia Five Hundred Thousand (RM500,000.00)

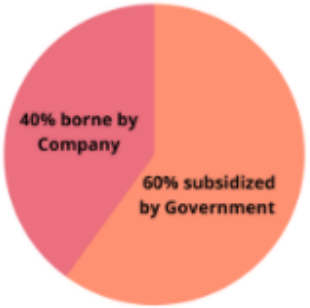


Start → 1 Received upfront grant (maximum 30%) from MIDA → 2 The initial expenditures to be utilised by the upfront grant → 3 The following expenditures to be borne by company → 4 Claim the remaining grant from MIDA → End

Industry4WRD Domestic Investment Strategic Fund (DISF)

- Introduced in Budget 2019
- Objective is to assist companies that have undergone the Industry4WRD Readiness Assessment (RA) programme to migrate into Industry 4.0

Matching grant (60:40) on reimbursable basis for the eligible expenditures



- Eligible only to companies that have undergone the Industry4WRD Readiness Assessment (RA) programme with Malaysian equity ownership of at least 60%
- Effective date of application is from the date of approval of Industry 4WRD RA Report (MPC's letter) until 31 December 2021

THE CONSTRUCTION INDUSTRY

HOW READY ARE WE ?

McKinsey Global Institute industry digitization index; 2015 or latest available data

Relatively low digitization — Relatively high digitization

● Digital leaders within relatively undigitized sectors

Sector	Assets: Overall digitization[1]	Assets: Digital spending	Assets: Digital asset stock	Usage: Transactions	Usage: Interactions	Usage: Business processes	Usage: Market making	Labor: Digital spending on workers	Labor: Digital capital deepening	Labor: Digitization of work
ICT[2]										
Media										
Professional services										
Finance and insurance										
Wholesale trade										
Advanced manufacturing										
Oil and gas										
Utilities										
Chemicals and pharmaceuticals										
Basic goods manufacturing										
Mining										
Real estate	●									
Transportation and warehousing	●									
Education	●									
Retail trade	●									
Entertainment and recreation										
Personal and local services										
Government	●									
Healthcare										
Hospitality	●									
Construction										
Agriculture and hunting										

CONSTRUCTION IS ONE OF THE LEAST DIGITIZED SECTORS

Construction is towards the bottom when it comes to digitization, with only agriculture and hunting falling beneath it. Many of these areas are less complex and could reduce the cost of services if automated (eg., transactions, business processes, etc.).

Source : McKinsey Global Institute Industry digitization Index , Analysis

THE CONSTRUCTION INDUSTRY

DIGITAL TRANSFORMATION– IN CONSTRUCTION INDUSTRY ???

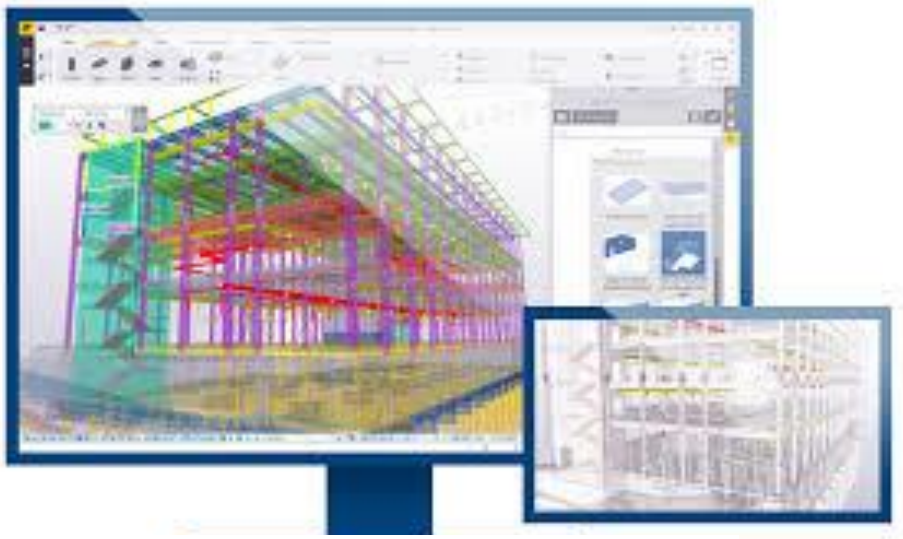
CONSTRUCTION 4.0

The Construction industry is starting to see the impact of Digital Transformation in terms of the technologies to be used and building specifications.

The construction industry is going through a major change with innovative new technologies pushing for industry penetration updating and upgrading current ones.

Some of the major technologies advancement in Construction Industry are :

(1) Building Information Modelling (BIM)
(2) Industrialised Building System (IBS)
(3) Drone Technologies
(4) Green Building and Sustainable Construction
(5) 3D Printing and other new emerging technologies



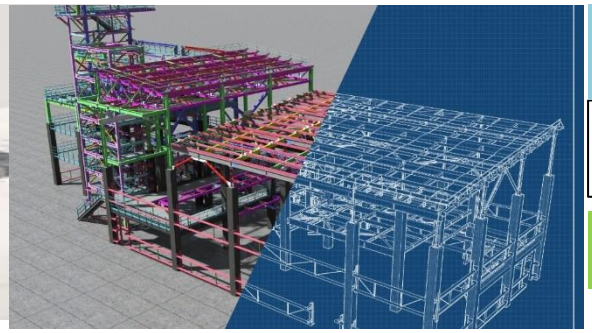
What is Building Information Modelling (BIM) ?

BIM in Malaysia Context is defines as :

> "A modelling technology and associated set of processes to produce, communicate, analyse and use of digital information models throughout construction project life-cycle"

CIDB MALAYSIA

BIM Definition by CIDB National Steering Committee 2013
Source : BIM Roadmap for Construction Industry Workshop Report (Series 2) (CIDB 2016)



Malaysia

BIM ADOPTION LEVEL?

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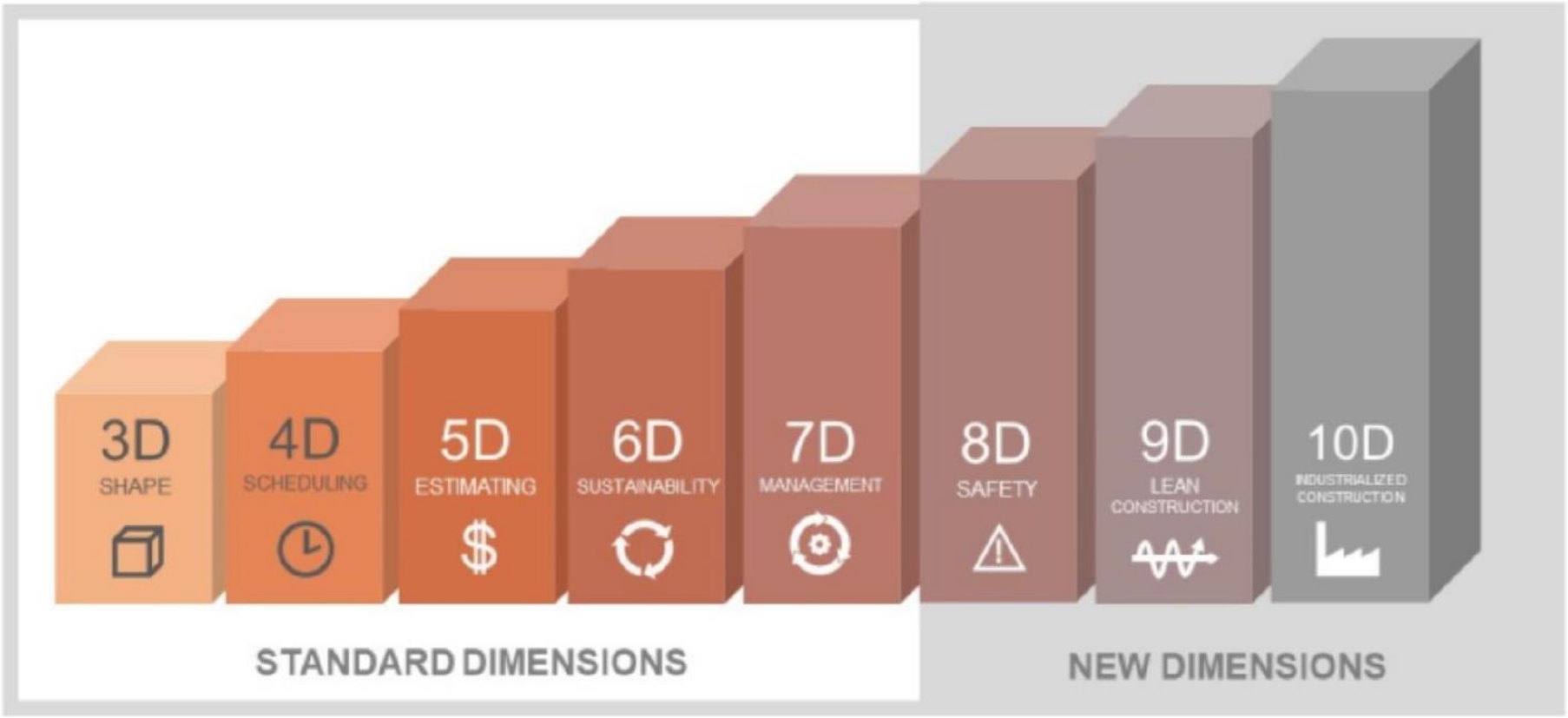
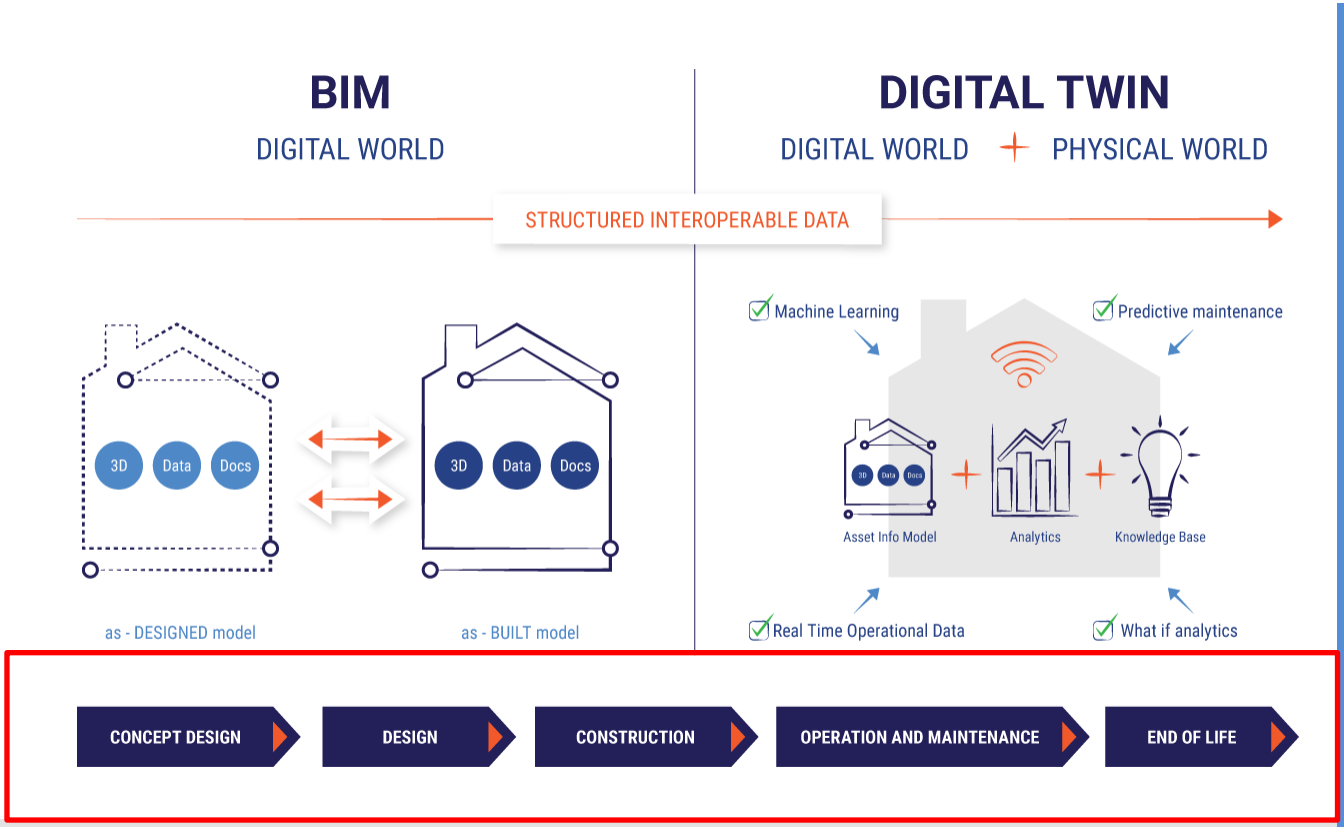
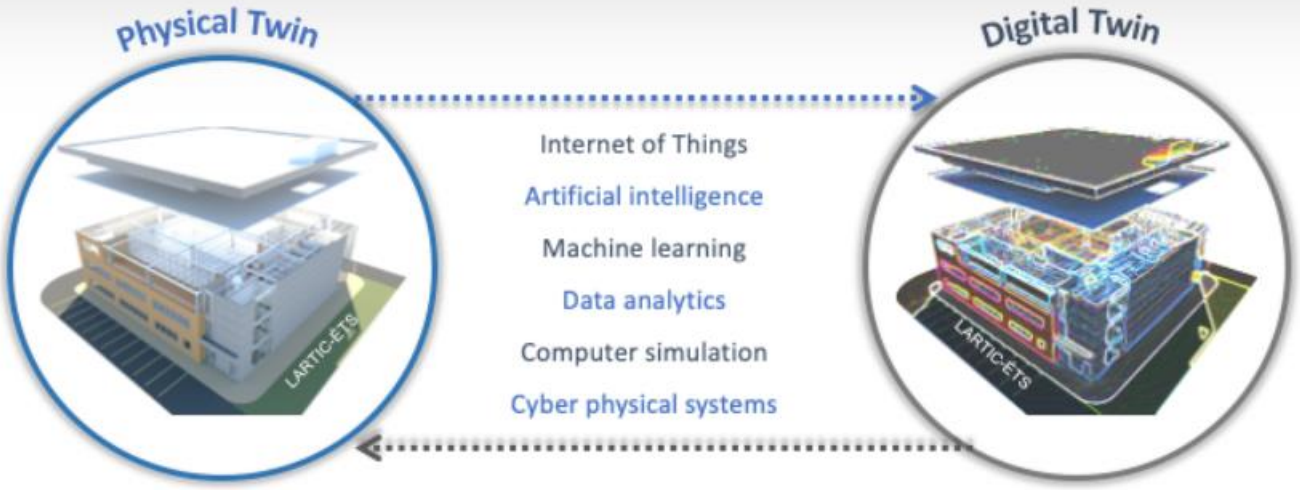
The Future of Building Information Modelling (BIM)

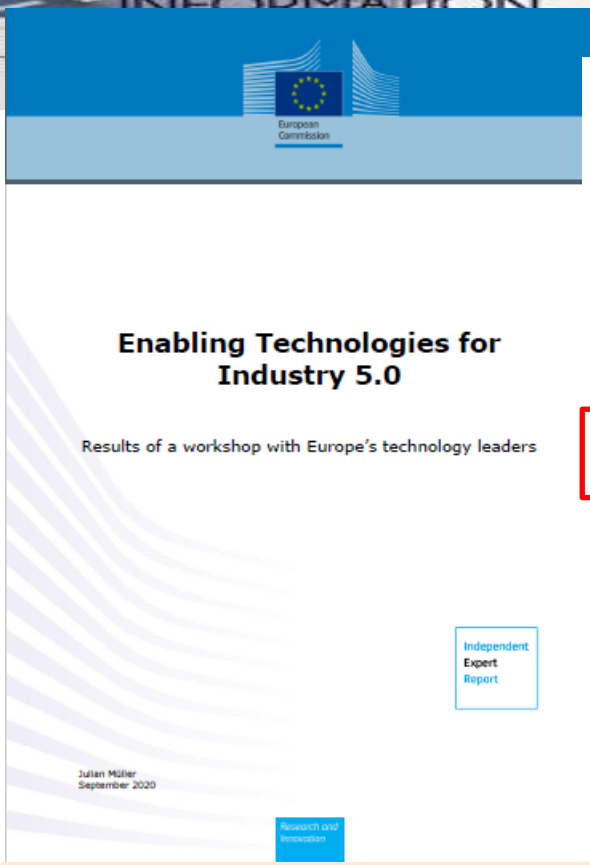
BIM Dimension







A digital twin can be defined as a digital replica of an object, a process or a system, with which it maintains a living link in order to provide the elements and the dynamics of its functioning throughout its life cycle.



The technologies supporting the concept of Industry 5.0 include:

- **Human-centric solutions and human-machine-interaction** technologies that interconnect and combine the strengths of humans and machines.
- **Bio-inspired technologies and smart materials** that allow materials with embedded sensors and enhanced features while being recyclable.
- **Real time based digital twins and simulation** to model entire systems.
- **Cyber safe data transmission, storage, and analysis technologies** that are able to handle data and system interoperability.
- **Artificial Intelligence** e.g. to detect causalities in complex, dynamic systems, leading to actionable intelligence.
- **Technologies for energy efficiency and trustworthy autonomy** as the above-named technologies will require large amounts of energy.

Enabling Technologies for Industry 5.0

Results of a workshop with Europe's technology leaders

European Commission

September 2020

European Commission

What is Industrialised Building System (IBS) ?

*"**Industrialised building system or IBS** means the technique of construction whereby components are manufactured in a controlled environment, either at site or off site, and subsequently transported, positioned and assembled into construction works"*

CIDB ACT 520 , Seksyen 2(1)

Design

Form a Completed Unit

Production

Installation

Delivery

Types of Industrialised Building System (IBS) System and Components in Malaysia

1	Precast concrete framing, panel and box systems
2	Steel framework systems
3	Prefabricated timber framing systems
4	Steel framing systems
5	Blockwork systems
6	Innovative System

STANDARD INDUSTRI PEMBINAAN

(CONSTRUCTION INDUSTRY STANDARD)

CIS 18:2018

MANUAL FOR IBS CONTENT SCORING SYSTEM (IBS SCORE)

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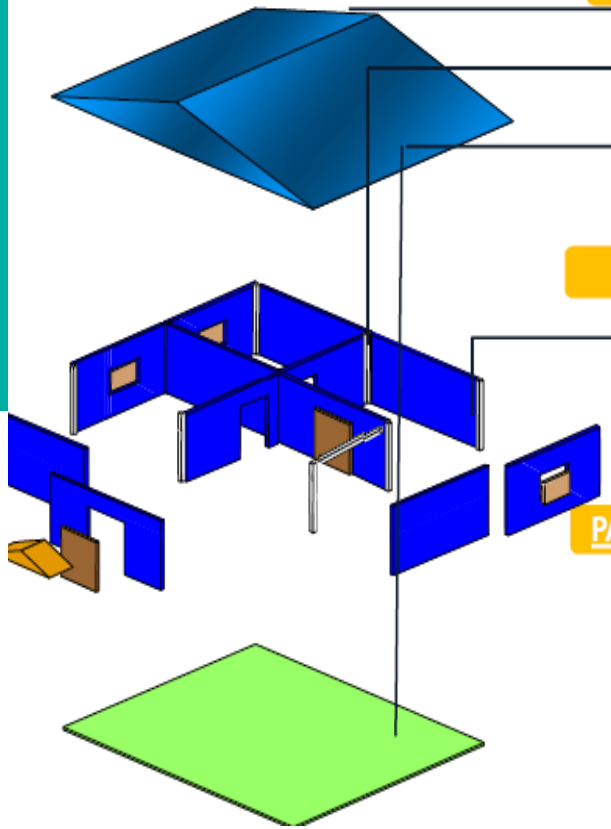
CONSTRUCTION INDUSTRY DEVELOPMENT BOARD MALAYSIA

CIDB Construction Industry Development Board Malaysia

IBS SCORE CALCULATION



PART 1 : STRUCTURE SYSTEM - 50 SCORE

- Roof Structure
- Beam
- Column
- Floor Structure

PART 2 : WALL SYSTEM - 20 SCORE

- Wall/Panel

PART 3 : OTHER SIMPLIFIED CONSTRUCTION - 30 SCORE

- MC on MS 1064
- Repetitiveness
- Productivity

IBS SCORE CALCULATION is based CIDB – CIS 18 : 2018
Manual for IBS Content Scoring System (IBS Score)

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Opportunity and Incentives in IBS Adoptation

No		INCENTIVES
1	POLICY	➢ Public Project > 10 million to have 70 IBS Score ➢ Private Project > 50 million to have 50 IBS Score
2	INCENTIVES	➢ Levy Exemption on private sector residential project with minimum 50 IBS Score ➢ Tax Incentives ➢ IBS Promotion Fund by SME Bank (Min 500k – Max RM10 million)
3	RESOURCES / PROFESSIONALS/ MANUFACTURER / CONTRACTOR / INSTALLER	As of 2019 ➢ IBS Professional (4,372) *(1,000 to be trained yearly)* ➢ IBS Manufacturer / Distributer (300) *(20 to be registered yearly)* ➢ IBS Contractor (11,630) *(2,500 to be trained yearly)* ➢ IBS Installer (12,780) *(850 to be trained yearly)*
4	STANDARD / GUIDELINES	➢ CIS 18 : 2018 Manual for IBS Content Scoring System (IBS Score) ➢ CIS 24 : 2018 IBS Manufacturer & Product Assessment & Certification (IBS) ➢ MS 1064 : Guide to Modular Coordination in Building (Preferred Size) ➢ BIM Library – Digital IBS Catalogues

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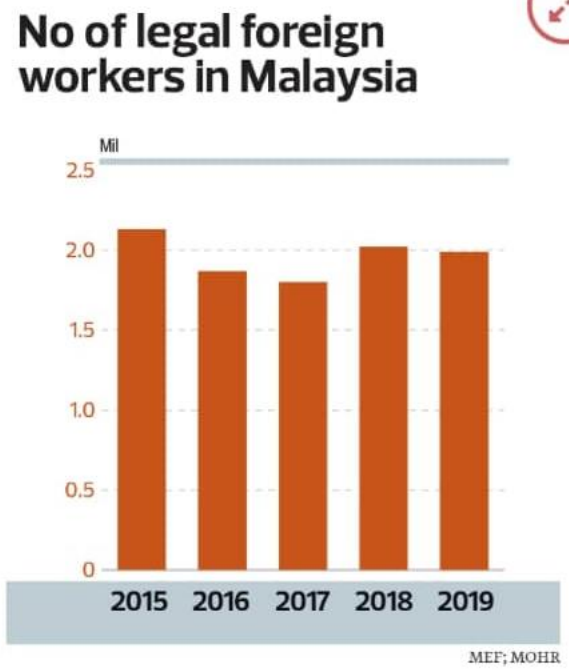
Barrier in IBS Adoption

CHEAP LABOUR COST

Relatively cheap and abundant supply of foreign labours in Malaysia industry



TheStar

'No new intake of foreign workers till year end'

NATION

Tuesday, 23 Jun 2020

PUTRAJAYA: There will be no new in
of foreign workers in all sectors until

THE EDGE MARKETS MAKE BETTER DECISIONS | MY

Edge Weekly

The State of the Nation: Foreign labour freeze a blow for dependent industries

The blanket ban might offer a temporary fix, but many believe it is impossible to fully substitute the gap that foreign workers fill. (Photo by Shahrin Yahya/The

MALAYSIAN STANDARD MS 1064-10:2018

Guide to modular coordination in buildings - Part 10: Coordinating sizes and preferred sizes for reinforced concrete components (First revision)

Preferred sizes

ICS: 25.060.10

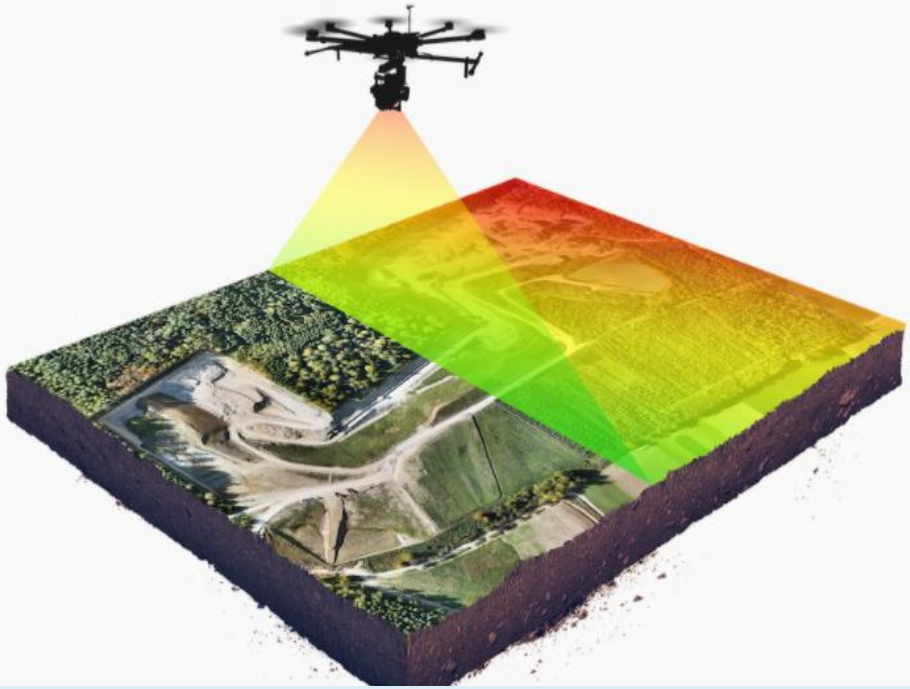
Descriptors: modular coordination, coordinating sizes, preferred sizes, beam, column, wall, slab

Dia Of Pile D mm	Throat Thickness A mm	W mm	Root R mm
250	8.5	4.0	2.0
300	8.5	4.0	2.0
350	8.5	4.0	2.0
400	10	4.5	2.0
450	10	4.5	2.0
500	12	5.0	2.0
600	12	5.0	2.0
700	14	6.0	2.0
800	14	6.0	2.0
900	14	6.0	2.0
1000	14	6.0	2.0
1200	14	6.0	2.0

CONSTRUCTION
Industry 4.0

CONSTRUCTION 4.0
NEW CONSTRUCTION TECHNOLOGY

- DRONE / UAV MAPPING SURVEY



Benefits

- Light & Mobile System, Fast Deployment to Site
- Fast Data Processing, Quick Result Delivery
- Accurate & Reliable Data

DRONE / Unmanned Aerial Vehicle (UAV) – Mapping Survey

LIDAR, “Light Detection And Ranging,” uses sensor that sends out pulses of laser light and measures the exact time it takes for these pulses to return as they bounce from the ground. It also measures the intensity of that reflection.

Produce : 3D- Digital Terrain Model with GIS and Aerial Mapping

LIDAR

CONSTRUCTION
Industry 4.0

CONSTRUCTION 4.0
NEW CONSTRUCTION TECHNOLOGY

- DRONE – SITE MONITORING / SUPERVISION

DRONE - Site Supervision and Monitoring

Drone are used for Site Supervision and Progress Monitoring

MONITOR - View all activity, with daily automated reporting of equipment, sub/direct personnel and materials

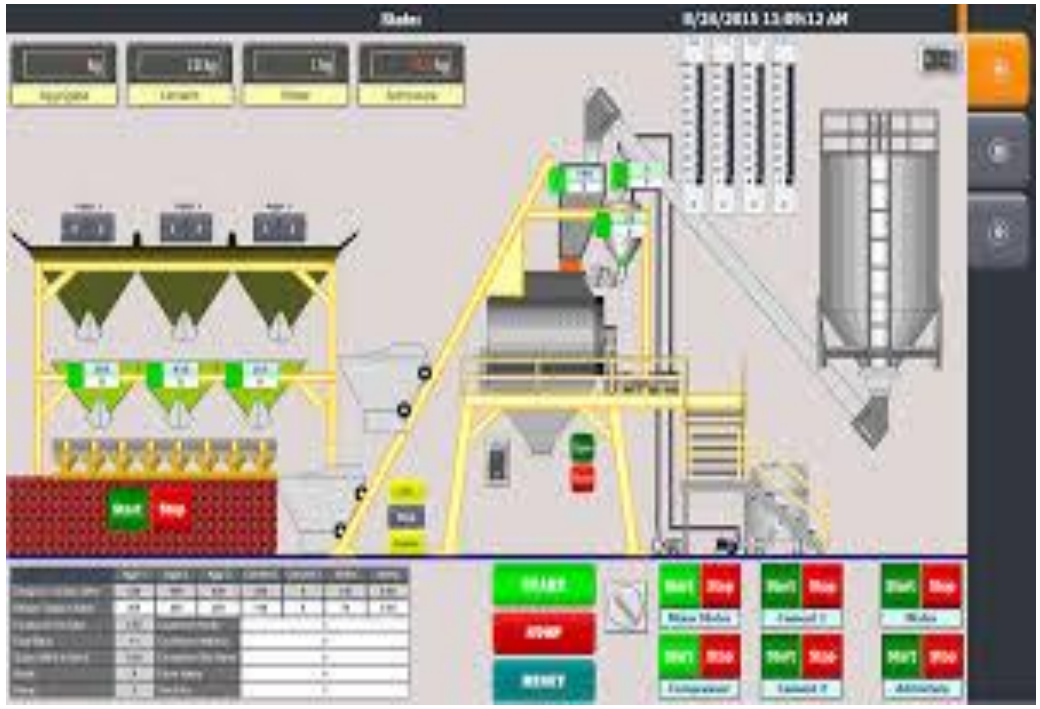
SAFETY - spot safety hazards before they become safety incidents, and flag violating behavior as it occurs to reduce accidents

SAFETY

CONSTRUCTION
Industry 4.0

CONSTRUCTION 4.0
NEW CONSTRUCTION TECHNOLOGY

- FULLY AUTOMATED CONCRETE BATCHING PLANT



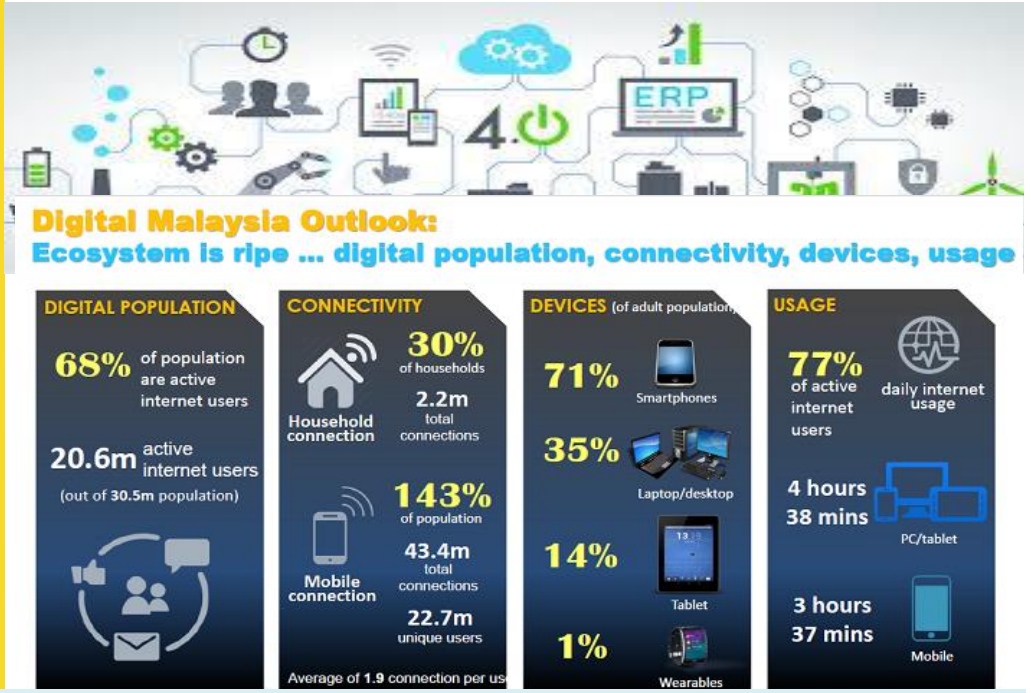
CONSTRUCTION READY MIX BATCHING PLANT - FULLY AUTOMATION

Concrete batching plant is working fully automatic automation so just one person will be enough to control the whole system. All the equipment can be operated by fully automatic systems.

Benefits : Consistent Quality and Reduced Error and Hazard

SAFETY

CONSTRUCTION 4.0
NEW CONSTRUCTION TECHNOLOGY
- DIGITALISATION COLLABORATION MOBILITY



DIGITALIZATION OF CONSTRUCTION DOCUMENTATION PROCESS

Construction Record Management – Site Diary, Inspection Forms ; Specification, Contract Documents, Project Quality Plan, Construction Schedule ; Project Safety and Health Record can all be Digitalise; Analysis and incorporated Building Information Modelling for Information Integrations

Benefits : Easy of Access ; Data Base Management; Data Collaboration; Information Sharing; Safety and Security; Information Storage and Safe Keeping

3D Printing

NEW STRAITS TIMES
Celebrating 175 years

BUSINESS

SCIB, CIDB to carry out R&D on building structures with new 3D machine

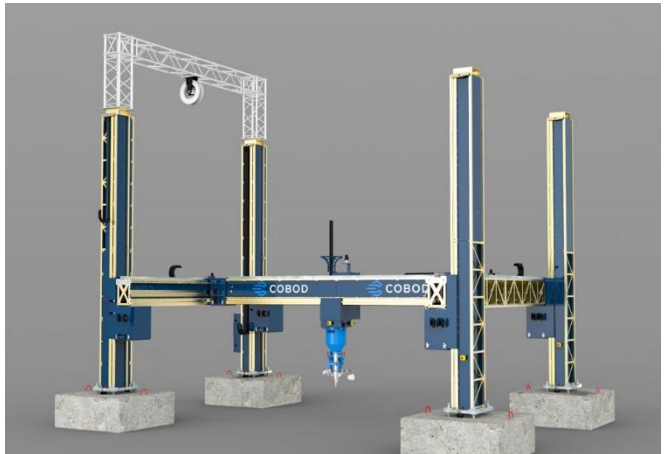
By NST Business
October 30, 2021 @ 10:11pm

Sarawak Consolidated Industries Bhd (SCIB) chief operating officer Chai Tze Khang (left) with Construction Industry Development Board Malaysia deputy chief executive Datuk Ir Elias Ismail together with SCIB senior business development manager Ivonson Kwee.

KUALA LUMPUR: Sarawak Consolidated Industries Bhd (SCIB) today held a site visit to

"SCIB is actively collaborating with the Construction Industry Development Board of Malaysia (CIDB) to promote this technology to the Public Works Department and many other relevant authorities as we believe it will improve the construction industry's efficiency and productivity," he said in a statement on Saturday (Oct 30).

The 3D construction printer arrived in Malaysia in September 2021 and SCIB is working together with the CIDB to carry out research and development in the area of establishing standards and regulations for 3D printing for buildings or structures in the country.



3D Printer

CONSTRUCTION
Industry 4.0

CONSTRUCTION 4.0
NEW EMERGING CONSTRUCTION TECHNOLOGY

3D Printing

Augment Reality / Virtual Reality

[Virtual Show House]

[Virtual Campus]

Autonomous Construction Robots

Green Building and Green Building Rating Tools

malaysiaGBC

green building index

Moving Forward

Moving Forward towards Construction 4.0?

Challenges	Opportunities
Lack of awareness on the concept of Digital Transformation (Industry 4.0) and its benefits; The Construction Industry lack awareness of the concept of Industry 4.0 particularly for the Construction 4.0 technology. Generally there is still a misperception that the adoption of new construction technologies will have cost implications	**Leverages on the benefits of Construction Technology 4.0** The improvement in efficiency and productivity as well as manpower reduction and time saving will eventually add value and improve the construction projects.

Moving Forward

Moving Forward towards Construction 4.0?

Challenges

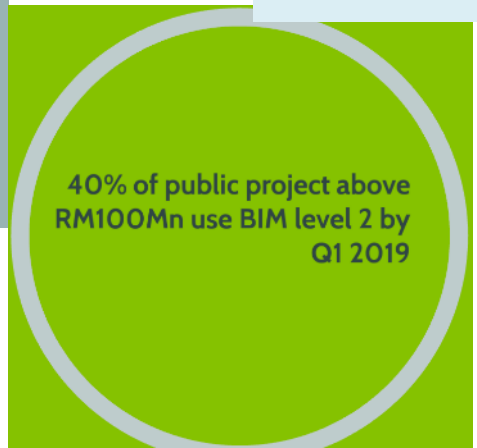
Incentives for companies to move toward Digital Transformation Industry 4.0;

Leverage of Government Policy and Incentives

Industry4WRD Readiness Assessment
(Industry4WRD-RA) is a comprehensive programme to help firm assess their capabilities and readiness to adopt Industry 4.0 technologies and processes.

CITP 2016 – 2020
Technology Thrust focused on BIM and IBS

Construction 4.0 Strategic Plan (2021-2025)



Moving Forward

Moving Forward towards Construction 4.0?

Leverage of Government Policy and Incentives

CIDB MALAYSIA

myBIM malaysia

POLICY

INCENTIVES
- Subsidised BIM Training
- BIM Transformation Fund

MANDATING
- Requirements for Public Projects
  - RM100 mil & above to implement Level 2 BIM by 2019
  - 5 pilot projects to implement Level 3 BIM by 2020
- BIM eSubmission Pilot Projects
  - 4 selected PBT (PJC, MBPJ, MPK, MBMB)

FACILITATE ADOPTION

- BIM Guide
- BIM Roadmap
- CIS : BIM Implementation
- JKR PAPs/RDS
- National BIM Library

CIDB IBS

INSENTIVES

- Levy Exemption on private sector residential project with minimum 50 IBS Score
- Tax Incentives

- IBS Promotion Fund by SME Bank (Min 500k – Max RM10 million

CONSTRUCTION
Industry 4.0

Moving Forward

Moving Forward towards Construction 4.0?

Challenges

Mismatch skillsets and lack of right talent/human capital;

Leverage Training available

myBIM malaysia

TRAINING

BIM Personel Trained & Certified:

2016	556 pax
2017	582 pax
2018	target 400 pax

- BIM Software Training
- BIM Concept Module
- BIM Modeler Module
- BIM Coordinator Module
- BIM Manager Module

CIDB ibs

IBS Centre

Moving Forward

Construction 4.0 Moving Forward towards?

Nation

Healthy prospects

Khairy Jamaluddin wants our public health system to be of world class. He is seeking 5% of the GDP to achieve this. > 2

The Star
people's paper

TUESDAY 16 AUGUST 2022 · PP19652/12/2020 (035234) (No: 22975) RM2.00 · 1300-88-7827 (Customer Service)

Your opinion

EMAIL editor@thestar.com.my or MAIL The Editor, Menara Star, 15, Jalan 16/11, Section 16, 46350 Petaling Jaya. Letters must carry the sender's full name, address and telephone number. A pseudonym may be included.

Malaysia must be ready to embark on IR5.0

WHILE Malaysians are still excited about and getting ready for the the fourth industrial revolution, IR4.0, we should actually be preparing ourselves already for IR5.0.

The idea of IR4.0 was first mooted by World Economic Forum (WEF) founder and executive chairman Klaus Schwab during a meet in 2016. As the WEF website explains, the first industrial revolution used water and steam power to mechanise production, the second used electric power to create mass production and the third used electronics and information technology to automate production.

IR4.0 has been defined as an era of cyber-physical systems (CPS) comprising "smart machines, storage systems and production facilities capable of autonomously exchanging information, triggering actions and controlling each other independently". In simpler terms, IR4.0 integrates human, machines and processes whereas IR3.0 only involved automation.

The European Commission, in a policy paper published in 2021, introduced the concept of IR5.0, proposing that the next step in humankind's development "recognises the power of industry to achieve societal goals beyond jobs and growth to become a resilient provider of prosperity, by making production respect the boundaries of our planet and placing the well-being of the industrial worker at the centre of the production process".

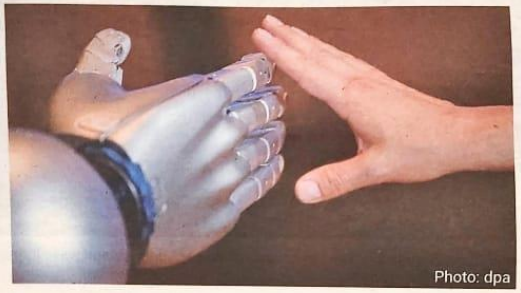


Photo: dpa

The concept is based on three pillars: a human-centric approach, sustainability and resilience.

So IR5.0 is about the collaboration between human and machine, with human intelligence working in harmony with cognitive artificial intelligence. Workers will be upskilled to carry out value added tasks in production and manufacturing by putting the human back into industry production with collaborative machines and robots.

In other words, IR5.0 will focus on personalisation and customisation to meet customer needs and expectations while adopting a sustainable and resilient approach.

It is important to understand that IR5.0 is not a chronological continuation or the next stage of IR4.0. We must not wait until we have fully implemented IR4.0 before embarking on IR5.0. Malaysia should see the latter as complementing the former and create a clear policy and roadmap towards this more human-centric, sustainable and resilient paradigm.

The Malaysian government must have the foresight to develop initiatives and incentives for industry stakeholders to adopt and implement IR5.0 as part of the country's transformation and digitalisation agenda.

WONG CHEE FUI
Specialist
Universiti Tunku Abdul Rahman

The letter writer is a professional engineer and technologist, and a fellow of the Institution of Engineers Malaysia and the Technological Association Malaysia.

"It is important to understand that IR5.0 is not a chronoligical continuation or the next stage of IR4.0. We must not wait until we have fully implemented IR4.0 before embarking on IR5.0"

"IR5.0 complement IR.40 with focus on Human Centric, Sustainability and Resilient"

CONCLUSION

Overall, construction industry players must thoroughly consider the evolving needs of the industry in end-to-end project management to draw on the Construction Industry 4.0 emerging technologies. The only way to achieve this is to embrace technology and productivity-enhancing innovations to improve decision making and work procedures.

The risk of not adopting to Digital Transformation for Construction Industry, is the Construction Player who do not adopt will face their Kodak or Nokia moment, where they suddenly find that their process are no longer needed and a competitor has redefined the product and the industry

"The Fourth Industrial Revolution, finally, will change not only what we do but also who we are.

It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships."

—Klaus Schwab, The Fourth Industrial Revolution

Thank You

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