



# Construction 4.0 Strategic Plan (2021-2025)

Next Revolution of the Malaysian Construction Industry

## Construction 4.0 Strategic Plan

### Strategic Thrust 1 Building Capacity



The rapid growth of technological changes requires current and future talents to be competent and well trained. The construction industry requires an agile workforce, whom are bright, ready and willing to deliver this transformational change. Strategies to nurture talents for all construction stakeholders should be the foundation of a comprehensive workforce ecosystem.

### Strategic Thrust 2 Excellence Research, Innovation, Commercialisation and Entrepreneurship (RICE)



A strategic programme for innovation is required with the aim to support RICE activities. Recognising the importance of RICE in Construction 4.0, a holistic RICE programme that covers all research deficiencies will ensure significant potential and benefits in transforming construction industry. A collaborative research effort between industry, academia and the government will produce an impactful research portfolio with potential to move towards an applied approach.

### Strategic Thrust 3 Smart Integrated Technologies, Innovation and Infrastructure



Construction 4.0 is changing the traditional way to design, construct and maintain buildings, which in the past had been carried out independently and without reference to the multiple stakeholders. This could be possible if technologies are integrated in a common platform along with the project whole life cycle. The use of new digital technologies makes it possible to gather and analyse data across the design team and supply chains – enabling faster, more flexible and more efficient processes to produce higher-quality buildings or infrastructures at reduced costs. This change would be highly dependent on complex tools, powerful infrastructure networks and reliable security networks.

### Strategic Thrust 4 Enhanced Business Environment



Business development serves the purpose of 'developing' the business in some way, which can be conducted by any organisation (small, medium or large) or non-profit or for-profit enterprises. A strong business development strategy allows construction organisations to create strong relationships with potential businesses and generate revenue. Enhancing business environments for the industry can be done through identifying symbiotic customers and partnerships, building relationships and developing solutions that could be realised in truly equitable terms.

### Resources Leadership People

- Preparing future workforce for Construction 4.0
- Develop and deliver Construction 4.0 awareness and programme for stakeholders
- Develop apprenticeship programme for construction 4.0
- Enhanced skills programme for construction supply chain towards Construction 4.0 implementation

Create mechanisms to support innovators and technology adopters

- Establish Technopreneurship Development, Initiatives and Programme (TDIP) for construction industry players to shift towards digital transformation phases
- Prepare graduates for Construction 4.0 technologies by integration of STEM (Science, Technology, Engineering and Mathematics) and Technical and Vocational Education Training (TVET)
- Nurture an active community of integrated technology adopters
- Provide high impact program with supporting initiative in Construction 4.0
- Readiness assessment to gauge the Construction 4.0 level of competency for stakeholders

### Sustainable Innovations Expertise Perspectives

- Strengthen Quadruple Helix: Government-Industry-Academia-Civil Society partnership for Construction 4.0 innovation & technology transfer
- Attractive incentive to encourage the sustainability of the RICE programme
- Utilise high-impact R&D output in technology innovation for commercialisation
- Create financial mechanism for R&D funding linked to Construction 4.0

Driving research and innovation in Construction 4.0

- Improve evidence-based approach for the construction industry
- Utilise leading talent to stimulate creativity and innovation
- Enhance home-grown technology labs to trial and showcase local innovation
- Develop and improve R&D to promote, deliver and provide smart construction initiatives with technological changes to build a competitive industry

### Performance Integration Policy Collaboration

- Improve Government policy intervention
- Improve multi-stakeholder partnership to enhance Construction 4.0 infrastructure
- Review and strengthen existing legislation, policies, guidelines for a holistic digital construction ecosystem by adopting strategy workforce planning
- Incentivise for Construction 4.0 innovation scheme to encourage the early implementation and adoption
- Enforcement of new technology implementation for local companies

Enhance collaboration of disruptive technology and data centre repository

- Identify the needs of upgrading existing infrastructure towards implementation of Construction 4.0
- Leverage and enhance the integration of existing data platform for construction data sharing
- Encourage the usage of real-time data for monitoring update and utilise big data analytic for decision making process and insights
- Intise emerging technologies in construction practices
- Enhance CIBD-COMVINCE platform as one stop centre

### Growth Opportunity Dynamic

- Enhance stakeholders' local and international partnerships to increase the business growth of the construction industry
- Develop collaborative business model for local player towards Construction 4.0
- Establish local workforce competency through technology transfer and collaboration with international entities
- Benchmarking programme to identify the gaps of technology with the Construction 4.0 leading country
- Business matching programme to business opportunity by covering the whole life-cycle value
- To establish outreach programme to increased utilisation of local technologies and innovation

Creating collaborative governance ecosystems through government intervention

- Diversity of funding sources by tapping alternative finance instruments for stakeholders including SMEs
- Increase the utilisation of local technologies and innovation
- Provide incentives for building start-up companies (SMEs)
- Increase competency of local stakeholders through technology transfer and collaboration with international entities

Promote the role that foreign direct investment or collaboration that would play as a mechanism for local construction organisations to access the international market

- Develop collaborative business models for local organisations to be involved in high impact programs
- Strengthen public-private partnerships to improve ease of doing business locally and internationally
- Establish multi-national organisation partnerships with other countries

## Introduction

The Construction 4.0 strategic plan is developed to enable the government, industry, and academia within the construction industry to respond to the rapid changes towards the Fourth Industrial Revolution (IR4.0). The strategic plan provides a pathway to transform the Malaysian construction industry towards the next industrial revolution by developing a series of Comprehensive Strategic Plans and Strategic Thrusts. This strategic document explains the core values and strategic thrusts to facilitate the implementation of Construction 4.0 for the period of five years (2021-2025). The strategy was developed in collaboration with experts from a multi-disciplinary and inter-disciplinary group of stakeholders, aimed along the construction value chain, including suppliers of building materials, construction equipment, contractors, engineering, architecture, and planning firms, as well as project owners and developers.



# A Glance of Construction 4.0 Strategic Plan 2021-2025

In order to realise the potential and benefits of Construction 4.0, a five-year strategic plan was developed in collaboration with multiple stakeholders in the construction industry. This section will outline the overarching strategic framework for Construction 4.0.

**Vision** To be the leading Construction 4.0 country in the South East Asian Region.

**Mission** Empowering transformation of the Malaysian construction industry through smart construction for the future society.

Sustainable Productive Smart

## Core Values



## Objectives



## 12 Technologies



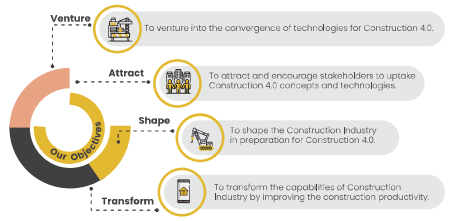
## Strategic Thrust



## Enablers



1. 3D Printing & Additive Manufacturing
2. Artificial Intelligence
3. Advanced Building Materials
4. Prefabrication & Modular Construction
5. Blockchain
6. Building Information Modelling (BIM)
7. Augmented Reality & Virtualisation
8. 3D Scanning and Photogrammetry
9. Big Data and Predictive Analytics
10. Autonomous Construction
11. Internet of Things
12. Cloud and Realtime Collaboration



**Well being**  
Improving wellbeing will have a positive impact on performance. Having a work-life balance can provide a happy and healthy working environment and experience.



**Productivity**  
Productivity in construction will improve the overall performance rate. This includes quality of work and efficiency of labour to finish on time. Productivity performance measurement includes methods, efforts and effectiveness of a system to be able to dictate the performance of Construction 4.0.

**Safety & Health**  
An effective safety & health program may prevent accidents on construction sites. This core value must be instilled in all participants as this has direct relation to fatalities, injuries and diseases that indirectly affect the community's surrounding safety.

**Sustainability & Resiliency**  
Sustainability in construction is reflected by reducing its impact on the environment. This includes using recyclable resources, reducing energy consumption and waste, creating an environmentally friendly workplace and protecting the nature of environment. On the other hand, resilience is reflected towards the ability to withstand against natural and manmade disasters and disturbance. It also emphasises on resiliency against the growing threats towards technology (such as cybersecurity). So, it is important to protect the industry from threats without disrupting business innovation and growth.

**Integrity**  
Integrity is reflected towards the behaviour of organisations when conducting business. Excellent ethical practices by stakeholders often lead to a business integrity. Therefore, the value of a construction industry is to bring the heart of integrity especially in deal in the era of IR 4.0.