

BUILD SMART

A CONSTRUCTION PRODUCTIVITY MAGAZINE

OCT / NOV 2017

CHANGING THE WAY WE BUILD

SINGAPORE CONSTRUCTION PRODUCTIVITY WEEK 2017

PAGE 2



04

CONSTRUCTION INDUSTRY
TRANSFORMATION MAP

09

NEW WORKSHOP: WITH
PRODUCTIVITY COMES
QUALITY!

12

BUILD SMART CONFERENCE
2017: MORE WAYS TO BUILD
SMART!



OCT / NOV 2017

CONTENTS

CEO's Message	01
About SCPW 2017: The Future as it Happens	02
Construction Industry Transformation Map	04
A New Integrated Construction and Prefabrication Hub (ICPH) Opens!	06
What Does It Take to Shape Tomorrow's Built Environment?	07
BuildTech Asia 2017: Be Immersed in the Excitement	08
NEW workshop! With Productivity Comes Quality!	09
Inside The ICT Revolution	10
NEW! ProTech 2017: Last But Never Least	11
Build Smart Conference 2017: More Ways to Build Smart!	12
BIM Awards 2017: Saluting Innovation Champions	13
Student Events: Inspiring Tomorrow's Changemakers	14
SCAL PIA Awards 2017: Help Decide the Top 3	15
NEW! SCAL Built Environment Summit 2017: Shaping the Future of Construction	16
Calendar of Events	17

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CEO'S MESSAGE

Dear Readers,

Returning for the seventh year running, the Singapore Construction Productivity Week (SCPW) is when built environment sector stakeholders convene to share the latest developments in construction productivity and technologies. It's also the perfect opportunity to explore new ideas and network with industry peers.

In the lead-up to SCPW, we saw the official opening of Singapore's third Integrated Construction and Prefabrication Hub. Called Greyform, this multi-storey advanced manufacturing facility is equipped with some of the latest automation capabilities to produce prefabricated construction elements, such as precast walls and slabs, which are then supplied to building projects for on-site installation. There was also a visit to The Wisteria, where industry participants learnt about the processes behind another ground-breaking project that uses the "Lego" method of construction. These provide a glimpse of what the future holds for the sector – one that embraces technology to improve not just productivity, but also safety, quality and speed of construction. They also promise to create better jobs for Singaporeans in the sector.

This year, the Construction Industry Transformation Map (ITM) is also being launched at SCPW. Through the transformation process, we look forward to seeing greater investment and collaboration among firms to build up the competitiveness of the sector. More details will be shared during SCPW. Meanwhile, you can take a look at the infographics on pages 4 and 5 to for a quick overview.

In this issue, find out more about the insightful events, seminars, workshops as well as networking opportunities with trade exhibitors at SCPW:

- Learn more about the key transformation thrusts at our BCA Pavilion, and how firms can achieve better growth and competitiveness through mastering capabilities in integrated digital delivery (IDD), design for manufacturing and assembly (DfMA) and green building technologies.
- Visit the Singapore Public Sector Built Environment Leadership Pavilion, where 10 public agencies will be showcasing how they are driving productivity through cutting edge innovations and projects.
- Take part in new events such as the Productive Technology (ProTech) Demonstration for prefabricated modular mechanical, electrical and plumbing (MEP) technologies; as well as a new quality-productivity related workshop, which delves into the importance of quality in construction and how top-quality standards can be achieved with the use of productive technologies.

Happy reading, and see you at SCPW!

Mr Hugh Lim

Chief Executive Officer
 Building and Construction Authority



We are going
digital!



Build Smart will no longer be available in hardcopy by end 2017. Please subscribe to the e-copies at <https://www.bca.gov.sg/Publications/BuildSmart/buildsmart.html> to stay up to date on the latest productivity news in the industry.

THE FUTURE AS IT HAPPENS

BCA is marking our seventh SCPW with a vision for the future – one that sees Singapore’s built environment sector working even smarter, safer and faster, and expanding regionally and globally.



CREATE, DISRUPT AND INNOVATE AT SCPW 2017

<p>Exclusive site visits to see real-life productivity-enhancing technologies at work.</p>	<p>Inspiring talks from leading innovators in the built environment sector.</p>	<p>Live demonstrations of the latest cutting-edge technologies.</p>
<p>Exchange of knowledge and ideas with local and global experts.</p>	<p>New workshops that will empower you with knowledge and skills to improve construction productivity and skills to work better.</p>	



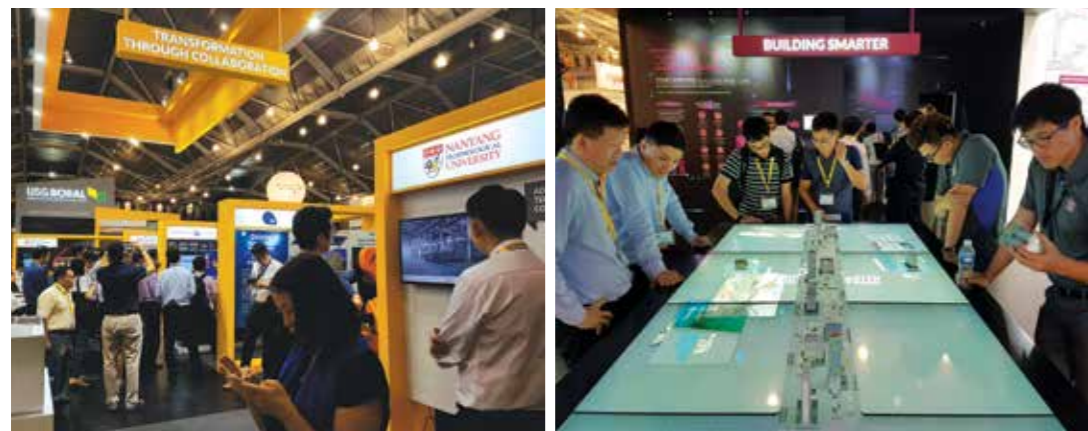
What's in store for the built environment sector and its stakeholders?

We have a plan – the Construction Industry Transformation Map – and we will be announcing it officially at SCPW’s opening ceremony. Think more smart buildings, highly-efficient construction methods, green buildings, partnerships and collaborations, as well as new job and overseas business opportunities.

All these and more, at the Singapore Construction Productivity Week (SCPW) 2017. Come join us this year and get up to speed with the latest discoveries in the built environment sector, learn from high-level keynote speeches, and make new business connections!

WHAT TO EXPECT

This year’s theme is “Embracing Innovation, Building Our Future”, where like-minded built environment professionals come together to stimulate new ideas and inspire action to ignite new breakthroughs in the sector. Over 20 events have been lined up for you to learn from the best practices and experience of local and international experts. See how you too, can reinvent the way you build through innovation.



Highlights from SCPW 2016



Embracing Innovation, BUILDING OUR FUTURE

24 - 26 OCT 2017 | For more details on SCPW, scan:

SAVE THE DATE

2017 KEY EVENTS

SCPW Official Opening Ceremony

Build Smart Conference
 • A key conference featuring topics on construction productivity and digital transformation of the industry

SCAL Built Environment Summit 2017
 • A conference by SCAL to share on the future of construction and the roles of the leaders across the built environment value chain as Singapore prepares for the future economy

24 Oct
TUE

25 Oct
WED

26 Oct
THU

BuildTech Asia
 • A leading regional trade show for the building and construction industry

BuildTech Asia Guided Tours
 • Personalised guided tours of BuildTech Asia organised for industry leaders, Government agencies, overseas delegates and students from Institutes of Higher Learning

Productivity Technology (ProTech) Demonstration
 • A showcase of Modular Prefabricated Mechanical, Electrical and Plumbing (MEP) systems

Achieving High Quality PPVC Projects
 • See industry practitioners share their project experiences with Prefabricated Prefinished Volumetric Construction (PPVC) as well as showcase the use of productive and high-quality architectural finishes.

Experiential Workshop is on 17 Oct *Pre-event*
 • An experience sharing session including sharing by project team and site visits to local Prefabricated Prefinished Volumetric Construction (PPVC) project adopting game changing technologies.

International Events

Government BIM Symposium 2017

(By invitation only)
 • The Government BIM Symposium 2017 aims provides a platform for government bodies around the world to share about their BIM implementation strategies and experiences.

A Regional Perspective on DfMA

• Happening on 23 October, this SCPW pre-event engages international experts and industry stakeholders in a knowledge sharing workshop on DfMA technologies.

Events for IHLs *(Institutes of Higher Learning)*

• SCPW provides engaging and interactive platforms to instill productivity awareness among tertiary students and help them identify productive technologies and systems

- Productivity Race & Productivity Challenge
- Productivity Workshop & Tour
- International BIM Competition
- National BIM Shoot-Out

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CONSTRUCTION INDUSTRY TRANSFORMATION MAP

The collective effort of the Industry, Institutes of Higher Learning, Union and Government



OUR VISION
 Advanced and Integrated Sector
 Progressive and Collaborative Firms
 Good Jobs for Singaporeans



GLOBAL TRENDS SHAPING THE BUILT ENVIRONMENT SECTOR



Digital Revolution

Advent of smart buildings, new construction technologies and digitalised work processes



Rapid Urbanisation

Need for advanced technologies, to build faster and better



Climate Change

Strong demand for green building expertise



3 KEY AREAS TO TRANSFORM THE SECTOR

Design for Manufacturing & Assembly (DfMA)

- Design upfront for ease of manufacturing and assembly
- Highly-automated offsite production facilities
- Efficient and clean onsite installation process



Green Buildings

- Design for Green Buildings
- Sustainable practices in operations and maintenance



Integrated Digital Delivery (IDD)

Enabled by Building Information Modelling (BIM), IDD fully integrates processes and stakeholders along the value chain, through advanced info-communications technology (ICT) and smart technologies.

HOW CAN WE TRANSFORM THE BUILT ENVIRONMENT SECTOR TOGETHER?



Increase adoption of DfMA and IDD

- Establish a robust DfMA ecosystem to make DfMA price competitive, as well as enable widespread adoption
- Develop IDD shared platforms and standards to support the adoption of IDD solutions

Build strong and capable firms

- Review public procurement practices for:
 - Better differentiation of quality
 - More transparency
 - Greater collaboration among firms

Support workforce needs and aspirations

- Attract more Singaporeans with higher-skilled jobs, more competitive salaries, and better working environments
- Build core engineering skills in transformational areas via structured professional development pathways across Pre-Employment Training (PET), internships and early job training, and Continuing Education and Training (CET).



For more info, visit the ITM webpage on the BCA website



A NEW INTEGRATED CONSTRUCTION AND PREFABRICATION HUB (ICPH) OPENS!

Singapore's third ICPH has been launched, putting the built environment sector on the road to even more productivity breakthroughs.

An ICPH is a multi-storey advanced manufacturing facility that produces prefabricated construction elements such as precast walls, columns and beams, with a high degree of automation. Plans to develop ICPHs on land with 30-year lease term was introduced back in 2012, as part of the efforts to drive up productivity in the sector.



On 3 October, about 200 industry stakeholders and government agency representatives witnessed the grand opening of Greyform Building, a new ICPH by Straits Construction Singapore Pte Ltd. The launch was officiated by guest-of-honour, Minister for Finance Mr Heng Swee Keat, and he was taken on an exclusive tour of the facility together with the invited guests.

What are the advantages of ICPHs

- **Optimises land use** by consolidating construction processes of many sites in a single facility
- **50% to 70% less manpower** is required as compared to conventional production methods in open precast yards
- As a fully-sheltered production facility, it has the advantage of a **better-controlled environment**, thanks to the absence of weather elements. This also improves the quality of prefabricated components, and minimises disturbance to the surrounding residents.
- **Creates new and higher-skilled jobs** requiring multi-disciplinary skills in construction, manufacturing, logistics and info-comm technologies
- **Facilitates greater collaboration** among team members of a building project, through the use of Building Information Modelling (BIM) from the design to manufacturing stage of the project

4 Key Capabilities of the Greyform Building

1. Automated Pallet Circulation

As the name suggests, this system facilitates precast concrete components production with a moving metal platform that goes through a cycle of the various stages (i.e. from cleaning, oiling → formwork placement to form the mould → concreting → demoulding).



2. Automated Robotic Shuttering

A unique feature where the robots analyse the inputs from BIM on the different types of precast concrete components before placing the magnetic formwork onto a metal pallet to form moulds that hold the shape of the precast concrete component.



Photo credits: Greyform Pte Ltd

3. Steel Reinforcement Fabrication

At the second level of the ICPH, there are four types of machines which can automatically weld, cut, bend and assemble customised steel mesh, reinforcement bars and cages placed within the precast concrete components.



Photo credits: Greyform Pte Ltd

4. Automated Precast Storage

This automated storage system tracks the project information and delivery schedules of the different racks of precast concrete components produced by the factory. It then automatically retrieves and places the racks of precast concrete components onto the waiting trailers, hence shortening standby time.



Photo credits: Greyform Pte Ltd

WHAT DOES IT TAKE TO SHAPE TOMORROW'S BUILT ENVIRONMENT?

At two workshops leading up to SCPW 2017, built environment experts and professionals discussed the latest productivity-enhancing building technologies used by firms in Singapore and beyond.



Photo credits: Singapore Engineering & Construction Pte Ltd

Prefabricating Our Future: A Case Study on a Local Steel PPVC Development

The inner workings of Prefabricated Prefinished Volumetric Construction (PPVC), unveiled and witnessed first-hand! Over 90 participants joined us at the second edition of our Experiential Workshop on 17 October – one that aims to help them learn about productive construction methods through a touch-and-see walkthrough experience. This year, the project team behind The Wisteria (a shopping and residential development), shared its experiences and learning points in adopting PPVC technologies, including the design, manufacturing and implementation processes. Participants also visited the site to observe ongoing PPVC installations and the interior of a completed PPVC module.

NEW!

A REGIONAL PERSPECTIVE ON DFMA

Held at the BCA Academy on 23 October, this workshop was a platform for built environment stakeholders, both local and international, to rub shoulders and explore new business opportunities and partnerships. Experts also shared their knowledge on the latest updates on Design for Manufacture and Assembly (DfMA) technologies such as PPVC and structural steel systems.

Topics

SINGAPORE'S JOURNEY IN DRIVING CONSTRUCTION PRODUCTIVITY



Speaker:
Ms Leong-Kok Su Ming,
 Deputy Group Director of Construction Productivity and Quality, BCA

CHINA'S EXPERIENCE IN BUILDING INDUSTRIALISATION



Speaker:
Mr Weixi,
 Chancellor of Prefabricated Building Research Institute of China Institute of Building Standard Design & Research

STEEL STRUCTURE DEVELOPMENT IN CHINA AND THE REGION



Speaker:
Mr Hou Zhaoxin,
 Chief Engineer of National Engineering Research Center for Steel Structure

BE IMMERSED IN THE EXCITEMENT

BuildTech Asia 2017 International Building Technology Expo

A part of **SCPW** SINGAPORE CONSTRUCTION PRODUCTIVITY WEEK 2017

**Singapore EXPO Hall 3 and Max Atria
 24 to 26 October 2017**

The seventh edition of BuildTech Asia will once again showcase technologies that address the challenges of building and construction across the industry.

This year, over 120 companies across the world will present the latest productivity-enhancing and cutting-edge technologies, and 8,000 visitors from over 30 countries are expected to attend.

Areas of Focus

- Construction Machinery & Equipment
- Productive Technologies
- Building Materials
- Architectural Solutions & Quality Finishes
- And more!



SINGAPORE PUBLIC SECTOR BUILT ENVIRONMENT LEADERSHIP PAVILION

The Public Sector Pavilion returns bigger than before, with ten local government agencies including JTC, HDB, LTA, IMDA, NTU, MHA, PUB, MOHH, NEA and PA participating in the Pavilion with BCA. Together, the agencies will showcase their collective efforts in taking the lead to drive productivity through the adoption of game-changing technologies and productive construction IT in their projects.



NEW WORKSHOP! WITH PRODUCTIVITY COMES QUALITY!

On achieving high quality PPVC projects

See industry practitioners share their project experiences with Prefabricated Prefinished Volumetric Construction (PPVC) as well as showcase the use of productive and high-quality architectural finishes. Plus, an exclusive guided tour at the BuildTech Asia Exhibition!

**Singapore EXPO Hall 3
 25 October 2017
 9am to 1pm**

TIME	TOPICS	SPEAKERS
9.00am	Achieving high Quality Mark score for the first PPVC Executive Condominium – The Brownstone	Mr Alan Yeo Teambuild Engineering & Construction Pte Ltd
9.40am	Best Practices on Agglomerated Stones	Ms Jesseline Yap Mapei Far East Pte Ltd
10.05am	Best Practices on Vinyl Flooring	Mr Brandon Heng Spazio Concepts Pte Ltd
10.30am	Tea Break	
11.00am	Best Practices on Drywall	Ms Susan Lai USG Boral Singapore
11.20am	Ensuring Good Quality PPVC Modules in the Manufacturing Process	Mr Khor Yew Chai Moderna Homes Pte. Ltd
12.00pm	Guided tour of BuildTech Asia Exhibition	
1.00pm	End of Workshop	

Our Speakers

Mr Alan Yeo

Teambuild Engineering & Construction Pte Ltd, Executive Director

A BCA scholarship recipient, Mr Yeo began his career at Teambuild in 2009 as an Assistant Project Engineer and over the years, rose through the ranks to become Project Manager. Projects he has been involved in include the construction of Punggol Secondary School, the Haite Aviation Factory, and most recently, The Brownstone Executive Condominium. He shares his team's experience of using the PPVC method to build The Brownstone, and thoughts on achieving a high Quality Mark score for the project.

Ms Susan Lai

USG Boral Singapore, Business Development Director

Ms Lai has been instrumental in driving new initiatives for non-conventional construction methods such as modular construction (PBUs and PPVC) since she joined the company in 2014. Armed with a strong grasp of not just marketing, but also technical knowledge on new products and systems, she will discuss the different types of drywall, how best to install them and more.

Ms Jesseline Yap

Mapei Far East Pte Ltd, Senior Manager

Having specialised in tile- and stone-related works and materials for over 25 years, Ms Yap is well-versed in related product knowledge and best industry standards. She has also conducted numerous seminars and technical talks on tile and stone works. Look out for her presentation on achieving good workmanship and productivity in installing agglomerated stone flooring.

Mr Khor Yew Chai

Moderna Homes Pte Ltd, Executive Director

Mr Khor has held various senior management positions in the management of multi-disciplinary integrated construction, engineering and building works. Glean new insights as he shares his experience on achieving high-quality PPVC modules in the manufacturing process.

Mr Brandon Heng

Spazio Concepts Pte Ltd

Mr Heng has been involved in the various aspects of public and private projects management. He is also currently involved in Green Products Listing and Project Management (Archi-Products) for the first PPVC Executive Condominium – The Brownstone, Commercial projects & HDB BTO/Upgrading projects. Join him at his talk as he shares some of the best practices for quality vinyl flooring.

Who Should Attend:

- Developers
- Architects
- Engineers
- Contractors
- Resident Engineers
- Resident Technical Officers



Register at
<https://www.bca.gov.sg/events/scpw/achieving-high-quality-ppvc-projects.html>



INSIDE THE ICT REVOLUTION

Enter the world of ICT solutions that help people and businesses work and communicate better, easier and faster. Talk to those who have taken the next step towards productivity with such cutting-edge solutions, and discover new possibilities for your own work.

Singapore EXPO Hall 3 • 24 to 26 October 2017

They Did ICT! Check out these two companies that have successfully used ICT to up their productivity levels.

GOING PAPERLESS

LC&T (1971) Pte Ltd

Technology Adopted:

Paperless Defects Inspection System

Vendor: FINALCAD



Construction company LC&T (1971) Pte Ltd has seen more than 200% improvement in productivity for its Tampines Nursing Home project ever since it adopted a paperless defects inspection system by FINALCAD in January 2017. FINALCAD is a provider of mobile apps and predictive analytics that helps contractors, architects and developers anticipate and fix issues that surface during construction processes.

According to Mr Tey Seng Kong, Senior Project Manager, the company's site defects management process previously involved pinning written notices on office walls and using Microsoft Excel software to sort files manually. This was time-consuming and fraught with communication hurdles at times. With the FINALCAD software and apps, staff can now easily classify defects into categories such as causes, location and responsibilities. The ease of presentation also enables contractors to present a breakdown of defects to the respective subcontractors to take action on, which aids in speeding up issue resolution.

LEAN AND GROW

Hexacon Construction Pte Ltd

Technology Adopted:

LeanPlanDo (Lean Construction Management)

Vendor: Lean Station



For main contractors like Hexacon Construction Pte Ltd, project conditions are dynamic, which give rise to many unforeseen circumstances. Such situations decrease productivity and increase downtime. This motivated the company to adopt a Lean Construction Management software, LeanPlanDo. LeanPlanDo is a project management software which aids in the smooth planning and communication processes for building and construction projects. This tool aligns all parties in the team through notification of on critical events and updates from team members and subcontractors, task insights and a personal dashboard, enabling them to swiftly identify and respond to site issues.

Twelve months into the company's transition, Mr Jason Yeo, Project Manager, has observed that constraints are better managed, as staff can anticipate and resolve issues in advance. All parties are also clear about each others' areas of responsibilities, which helps them carry out various duties in sync and more effectively. "This minimises time wastage, and we are able to utilise our resources better," adds Mr Yeo.

Visit the ICT booths at the BuildTech Asia trade exhibition to discover the potential of technology



NEW! PROTECH 2017:

LAST BUT NEVER LEAST

Mechanical, electrical and plumbing (MEP) services are traditionally constructed type-by-type at the last stage of building works, on tight schedules. But prefabrication is set to ease this. Find out how, first hand.

NEW!

Jointly organised by BCA and Gammon Pte. Ltd, subsidiary of Balfour Beatty (UK)

Singapore EXPO Hall 3 • 24 to 26 October 2017 • 10am to 6pm

Daily live demonstrations of building services using prefabricated modular prefabricated MEP modules await. Watch for yourself, how the modules are put together offsite before being delivered to the job site for safe, efficient and high-quality assembly. These live demonstrations will take place every morning over the three days. Don't miss them!



Prefabricated MEP Ceiling Module
 Photo credits: DSG Modular, Newcastle, England, UK



Prefabricated MEP Ceiling Module
 Photo credits: DSG Modular, Newcastle, England, UK



Testing and commissioning of prefabricated MEP Ceiling Module in the factory
 Photo credits: DSG Modular, Newcastle, England, UK



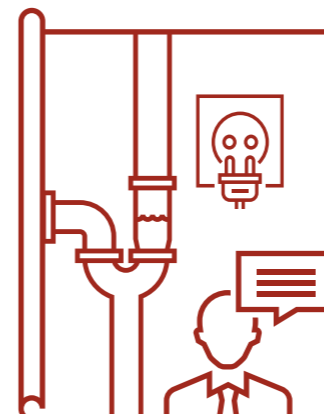
Fabrication of prefabricated MEP ceiling module in the factory
 Photo credits: DSG Modular, Newcastle, England, UK



Prefabricated Pump Skid Module
 Photo credits: DSG Modular, Newcastle, England, UK



Prefabricated Riser Module
 Photo credits: Laing O'Rourke



MEP in a Nutshell

Like other Design for Manufacturing and Assembly (DfMA) technologies, MEP modules improve construction productivity and workplace safety and quality, as well as minimise noise and disruptions to the surroundings – but for systems such as air-conditioning ducts, electrical power supply and water supply pipework.

Speak to the Experts!

Visitors are welcome to approach and glean insights from industry experts, who will share their success stories and expertise, and address burning questions of all who ask!



MORE WAYS TO BUILD SMART!

Embracing Innovation, Building Our Future – at Build Smart Conference 2017

Max Atria @ Singapore EXPO, Level 2 • 24 to 25 October 2017

TWO DAYS. THOUSANDS OF OPPORTUNITIES TO LEARN, SHARE AND ENGAGE.

Here's where built environment professionals from the region and beyond convene to share, empower and spark new ideas in construction productivity. All with the same vision – to transform the built environment sector into one that is integrated, technology-advanced and productive. Our esteemed speakers will share their insights and case studies on smart building and construction technologies.

OVER 20 LOCAL AND INTERNATIONAL SPEAKERS...



SPEAKER: DR JOHN KEUNG
 Dean BCA Academy, Singapore
Topic: Singapore Construction Productivity: Achievement and Aspirations

Hear about construction productivity, and efforts made by the Singapore Government and industry to address challenges faced along the journey. And get a glimpse into Singapore's Construction Productivity plan for the next five to ten years.



SPEAKER: ER KOH BENG THONG
 Chief Healthcare Infrastructure Projects Officer, MOH Holdings (MOHH)
Topic: MOHH's Construction Productivity Roadmap – A Public Agency's Sharing

By 2030, one in five in Singapore will be 65 years old and above, compared to one in nine today. This is why expanding the capacity of our healthcare infrastructure has been one of Singapore's key priorities. Find out more about MOHH's experience in adopting prefabrication technologies to meet this need.



SPEAKER: MR SEUNGHWAN LEE
 CEO of SEN Engineering Group, Korea
Gaining Competitive Advantage through Innovative Value Engineering Solutions

SEN Engineering Group's new Prefab Steel Reinforced Concrete (F-PSRC) column system has been tried and tested in over 50 construction projects across Korea. This system dramatically increases onsite productivity by eliminating the need for temporary scaffolding works and formwork. Discover the possibilities this new system holds for building companies in Singapore.

Day 1: 11 am to 5pm

Focus: Productive Construction Technologies

- Prefabricated Prefinished Volumetric Construction (PPVC)
- Mechanical, Electrical & Plumbing (MEP) system and methodologies.
- and more innovative technologies!

New @Build Smart Conference 2017!

Plenary session: Innovation and Productivity: The Next Step

Day 2: 9am to 5pm

Focus: Digital Transformation, Internet of Things, Knowledge-Driven Solutions

- Virtual Design and Construction (VDC)
- Building Information Modelling (BIM)
- Internet of Things (IoT)

View the full programme outline at



SALUTING INNOVATION CHAMPIONS

BCA BIM AWARDS 2017 (PROJECT CATEGORY) WINNERS

The BCA Building Information Modelling (BIM) Awards returns for its fourth edition to recognise project teams' efforts to work smarter through innovative BIM technologies and Virtual Design and Construction (VDC) processes. Congratulations to the 22 winning teams! The Platinum and GoldPlus winners will be receiving their awards at the SCPW 2017 open ceremony!

Singapore EXPO, Max Atria • 24 October 2017



BCA BIM AWARDS 2017 (PROJECT CATEGORY) IN NUMBERS

Submissions received: 22
 Platinum Award: 3
 Gold^{PLUS} Award: 11
 GOLD Award: 8

MEET THE PLATINUM WINNERS

These teams have been conferred top honours for their exemplary use of BIM/VDC.

PROJECT	PROJECT TEAM	HEAR FROM THE WINNERS!
NTU Learning HUB North  <i>Photo credits:</i> • Richard Kirk Architects Pty Ltd • DCA Architects Pte Ltd • AECOM Singapore Pte Ltd • KTP Consultants Pte Ltd	DCA Architects Pte Ltd Nanyang Technological University Lian Ho Lee Construction Pte Ltd KTP Consultants Pte Ltd AECOM Singapore Pte Ltd	<p>“Site conditions are usually very stringent for most projects. BIM/VDC helps to identify the constraints and assists the team in planning and coordinating items to resolve these issues upfront.”</p> <p>Mr Gordon Yu Assistant BIM Manager, AECOM Singapore Pte Ltd</p>
National Centre for Infectious Diseases and Centre for Healthcare Innovation  <i>Photo credits:</i> • CPG Consultants Pte Ltd • Kajima Overseas Asia Pte Ltd	Kajima Overseas Asia Pte Ltd MOH Holdings Pte Ltd CPG Consultants Pte Ltd (Architectural) CPG Consultants Pte Ltd (M&E) CPG Consultants Pte Ltd (QS)	<p>“End users’ needs presented in BIM-based 3D visualisation provides better clarity and helps a lot in firming up requirements and clinical workflow.”</p> <p>Ms Chin Oi Ching Deputy Director, MOH Holdings Pte Ltd</p>
Construction of Tunnels from Crossover Tunnels to Springleaf Station for Thomson-East Coast Line (Contract T207)  <i>Photo credits:</i> • DCA Architects Pte Ltd • Shimizu Corporation	Shimizu Corporation Land Transport Authority Geoconsult Asia Singapore Pte Ltd Raito Kogyo Co, Ltd. Singapore Branch Kok Tong Construction Pte Ltd Richee Engineering Enterprise Pte Ltd	<p>“BIM/VDC breaks down the communication barriers through effective sharing of information and knowledge, and helps to promote integration of teamwork and collaboration among project stakeholders.”</p> <p>Ms Chuo Wei Ling BIM Manager, Shimizu Corporation</p>

INSPIRING TOMORROW'S CHANGEMAKERS

As part of SCPW 2017, BCA has spearheaded a series of competitions and events to instil greater awareness and understanding of productive technologies amongst students from Institutes of Higher Learning (IHLs).

HELD DURING THE WEEK!

Productivity Workshop
 25 October 2017 • 1.30pm to 5pm



This workshop aims to enhance students' understanding of the built environment sector and its careers, as well as the industry's productivity efforts. Topics include the benefits of using productivity-enhancing innovations such as Design for Manufacturing and Assembly (DfMA) technologies and Prefabricated Prefinished Volumetric Construction (PPVC), featuring Nanyang Technological University's new sports hall and The Wisteria (the first PPVC development under the Government Land Sales programme) as case studies. Participants can also hear about built environment scholarships and sponsorships, and visit the BuildTech Asia exhibition to learn first-hand from exhibitors about the latest innovations on the market.

Productivity Race
 26 October 2017 • 9am to 3pm



An Amazing Race-style competition, this event is designed to expose students to the various game changing technologies which help transform the built environment sector. Students will also get to learn more about the built environment careers and scholarships at the event. Students will compete in teams to complete challenges at game stations within the Singapore EXPO.

BCA also organised competitions for the students in the lead-up to SCPW. Winners will receive their awards at the prize presentations held at the Singapore EXPO!

International BIM Competition Prize Presentation
 24 October 2017

In its third edition, this competition is designed to help students from all over the world sharpen their BIM knowledge and skills, under the mentorship of industry practitioners. Earlier this year, students were tasked to develop a concept design for the partial redevelopment of a maximum 20-storey academic tower at the BCA Academy. Designs were judged based on computational design, analysis and optimisation of the DfMA approach, as well as sustainability, constructability and productivity considerations. Over 65 teams comprising 352 tertiary students from nine different countries including Denmark, India, Iran, Italy, Poland, Singapore, Sudan, Turkey and USA took part in this year's competition. The nine winning teams will receive their awards at the SCPW 2017 Opening Ceremony.



BIM Shoot-Out Competition Prize Presentation
 26 October 2017

In this two-hour competition, 113 students from five IHLs pit their skills against each other to create the most outstanding Building Information Modelling (BIM) models. The competition took place on 28 September, where the teams competed in three different categories – Architecture, Structural and Mechanical, Electrical and Plumbing (MEP) aspects of BIM technology. Find out which nine (three winners for each category) bagged top positions at the awards presentation ceremony.

Productivity Challenge Prize Presentation
 26 October 2017



This edition of the Productivity Challenge had students competing to showcase their understanding of buildable systems and labour-efficient construction methods. The six-week Challenge took place from August to September, where 15 teams were given a scenario from an actual project to test their skills and knowledge. Based on information provided on The Principal Garden condominium project site, each team completed a BIM model, and put in place buildable systems and labour-efficient construction methods for the project while considering site constraints. See which five teams will emerge winners!

HELP DECIDE THE TOP 3

SCAL PRODUCTIVITY AND INNOVATION AWARDS (PIA) 2017

Simple innovations, significant workflow improvements – see the work of the Top 10 teams which have made it to the finals, and how you can help decide which three get top spots.

Organised by Singapore Contractors Association Ltd (SCAL)
 Supported by BCA, HDB, JTC, SIA
 Singapore EXPO Hall 3 • 24 to 25 October 2017



SCAL PIA is back for its second edition! This year, it continues to encourage industry firms to up their productivity efforts and create innovative solutions and ideas from the ground-up.

Visit the BuildTech Asia 2017 to vote for the solution you find most productive and innovative. Public voting will contribute to 20% of each team's final score. The top three winners will be announced at the SCAL Built Environment Summit on 26 October.

THE TOP 10 INNOVATIVE SOLUTIONS

CS Construction & Geotechnic Pte Ltd



Reinforced Concrete (RC) Pile Handler Machine

Expand Construction Pte Ltd



Hydraulic Ring Static Pile Breaker

Megastone Holdings Pte Ltd



Smart Lifting Gear

Straits Construction Singapore Pte Ltd



Easy Safe Adjustable Riser Platform (ESARP)

Wai Fong Construction Pte Ltd



Travellator Hanging Platform

Koh Brothers Building and Civil Engineering Contractor (Pte) Ltd



Auto-Level Grading System



Moveable Lifting Frame Wall Formwork



Non-Staging System for Sheet Piling Works

Hexacon Construction Pte Ltd



Three Sling Technique

Tiong Seng Contractors Private Limited



Design for Manufacturing and Assembly Solution using Stack & Tilt-Up Construction

Visit their booths to find out more about their innovative solutions!



Here's where leaders across the global built environment value chain come together, to share perspectives on their roles in shaping Singapore's future economy. This year's theme is "Construction in the Future Economy", and you can expect discussions on:

- What it takes for the built environment sector to remain relevant
- The World Economic Forum's "The Future of Construction" report
- Singapore's "Construction Industry Transformation Roadmap"
- Areas such as productivity and innovation, regulations, collaboration and internationalisation

The winners of the SCAL Productivity and Innovation Awards 2017 will also be announced at this event. Find out more about the top 10 finalists on page 15.



Visit <http://www.scal-academy.com.sg/seminars/oct-26-built-environment-summit-2017-construction-in-the-future-economy> for the full event outline.



SCAL Built Environment Summit 2017 Construction In The Future Economy

MAX Atria @ Singapore EXPO • 26 October 2017 • 9am to 1pm (Registration starts at 8.30am)



Topic: **Robotics Transforms Construction and Built Environment**
Professor Thomas Bock from the Technical University of Munich will discuss how technological revolution, now heading to the fourth stage, will transform the way we build.



Topic: **Current and Future Trends of Smart Cities and Sustainability**
Mr Gerhard Stryi-Hipp, Head of Group Smart Cities & Energy Policy at Fraunhofer Institute for Solar Energy Systems ISE will share insights on what the future holds for cities around the world.



Topic: **The Construction Industry Transformation Map**
 A new plan has been put in place to transform the built environment sector in Singapore even more by 2020. Be one of the first to hear about the Construction Industry Transformation Map (ITM), a government-industry collaborative plan to bring the built environment sector forward for the future economy, in this featured talk by **Mr Lam Kong Hong**, Executive Director of SCAL.



Keynote Speaker
Dr Michael Max Buehler, Head of Infrastructure and Urban Development at the World Economic Forum
 Bringing with him over 17 years' experience of academia, industry and consulting experience globally in engineering & construction, mining and real estate sectors, Dr Buehler will share on **Shaping the Future of Construction**.

NO.	DATES	EVENT	VENUE	ORGANISER	CONTACT PERSON & DETAILS
1	(Full-time - 10th Intake) Starting in Nov 2017 Application closing date: 15 Oct 2017	Bachelor of Construction Management (Building) (Honours)_FULL TIME (awarded by The University of Newcastle, Australia)	BCA Academy, 200 Braddell Road	BCA - University of Newcastle	Ms Bernice Ang (Programme) / Ms Zhuo Xiuyun (Enrolment) 6248 9944 / 6248 9881 bernice_ang@bca.gov.sg / zhuo_xiuyun@bca.gov.sg
2	23 Oct 2017	Workshop on Regional Perspectives in Design for Manufacturing and Assembly (DfMA) NEW			
3		Official opening ceremony of the Singapore Construction Productivity Week (SCPW) 2017		BCA	BCA_SCPW@bca.gov.sg
4	24 Oct 2017	SCPW 2017: BIM Awards Ceremony			
5		SCPW 2017: International BIM Competition Prize Presentation			
6		SCPW 2017: BuildTech Asia and Guided Tours		BCA and Sphere Exhibits	buildtechasia@sph.com.sg
7	24 Oct - 26 Oct 2017	SCPW 2017: Productive Technology (ProTech) NEW		BCA	
8		SCPW 2017: SCAL Productivity & Innovation Awards (PIA)		BCA and SCAL	
9	24 - 25 Oct 2017	SCPW 2017: Build Smart Conference	Singapore EXPO		
10		SCPW 2017: Institutes of Higher Learning (IHL) Productivity Workshop			
11	25 Oct 2017	SCPW 2017: Achieving High Quality PPVC Projects workshop NEW		BCA	BCA_SCPW@bca.gov.sg
12		SCPW 2017: IHL Productivity Race			
13		SCPW 2017: IHL Productivity Challenge Prize Presentation			
14	26 Oct 2017	SCPW 2017: National BIM Shoot-Out Prize Presentation			
15		SCPW 2017: SCAL Built Environment Summit NEW			
16	1 & 2 Nov 2017	Managing Project Teams Effectively			
17	3 Nov 2017	Code of Practice on Buildability			
18	6 - 9 Nov 2017	Certification Course in BIM Management			
19	7 Nov 2017	Good Industry Practices (Drywall Installation including Wet Areas Application)			
20	9 Nov 2017	Workplace Safety and Health (WSH) Conference 2017 NEW WSH Excellence Through Advanced Technologies in Construction Industry	BCA Academy, 200 Braddell Road	BCA Academy	Corporate Services (Marketing) 6248 9824 bca_academy@bca.gov.sg
21	10 Nov 2017	Civil Defence Shelter Seminar 2017 NEW Design, Construction and Commissioning of Household and Storey Shelters			
22	13 - 16 Nov 2017	Certification Course in BIM Modelling (Structure Track)			
23	14 Nov 2017	Good Industry Practices (Timber Flooring)			
24	15 Nov 2017	Basic Concept in Construction Productivity Enhancement (BCCPE)			
25	17 Nov 2017 29 Dec 2017 14:00 - 17:00	BCA - SCAL Productivity Clinic	Singapore Contractors Association Limited (SCAL) Construction House, 1 Bukit Merah Lane 2, Singapore 159760	BCA and SCAL	Ms Jeanette 6278 9577 jeanette@scal.com.sg
26	20, 23 & 27 Nov 2017	Site Management of Precast Concrete Construction			
27	28 Nov 2017	The Basics of Design for Manufacturing and Assembly (DfMA)			
28	29 & 30 Nov 2017	BIM Scheduling and Process Management			
29		Specialist Diploma in Underground Construction NEW	BCA Academy, 200 Braddell Road	BCA Academy	Corporate Services (Marketing) 6248 9824 bca_academy@bca.gov.sg
30		Specialist Diploma in Virtual Design & Construction			
31		Specialist Diploma in Lean Construction			
32	Starting in Jan 2018 (Application closing: 27 Oct 2017)	Specialist Diploma in Design for Manufacturing & Assembly			

CONSTRUCTION PRODUCTIVITY AND CAPABILITY FUND (CPCF)



WORKFORCE TRAINING AND UPGRADING (WTU) SCHEME

Facilitates upgrading of workforce at all levels by co-funding up to 90% of the cost for selected skills assessment and training courses*



MECHANISATION CREDIT (MECHC) SCHEME

Provides assistance to builders to defray up to 70% of equipment costs*



PRODUCTIVITY INNOVATION PROJECT (PIP) SCHEME

Provides assistance to companies to defray up to 70% of the cost for adopting more productive work processes*



SCHOLARSHIP AND SPONSORSHIP PROGRAMMES

In partnership with built environment firms, BCA will co-fund scholarship and sponsorship programmes at the undergraduate, diploma, ITE, supervisory and foreman levels*



BUILDING INFORMATION MODELLING (BIM) FUND

Co-funds up to 70% of the supportable cost incurred by firms when leveraging BIM technology to improve multi-disciplinary collaboration*

**Terms and conditions apply.*

For more information, please visit www.bca.gov.sg/CPCF/cpcf.html