

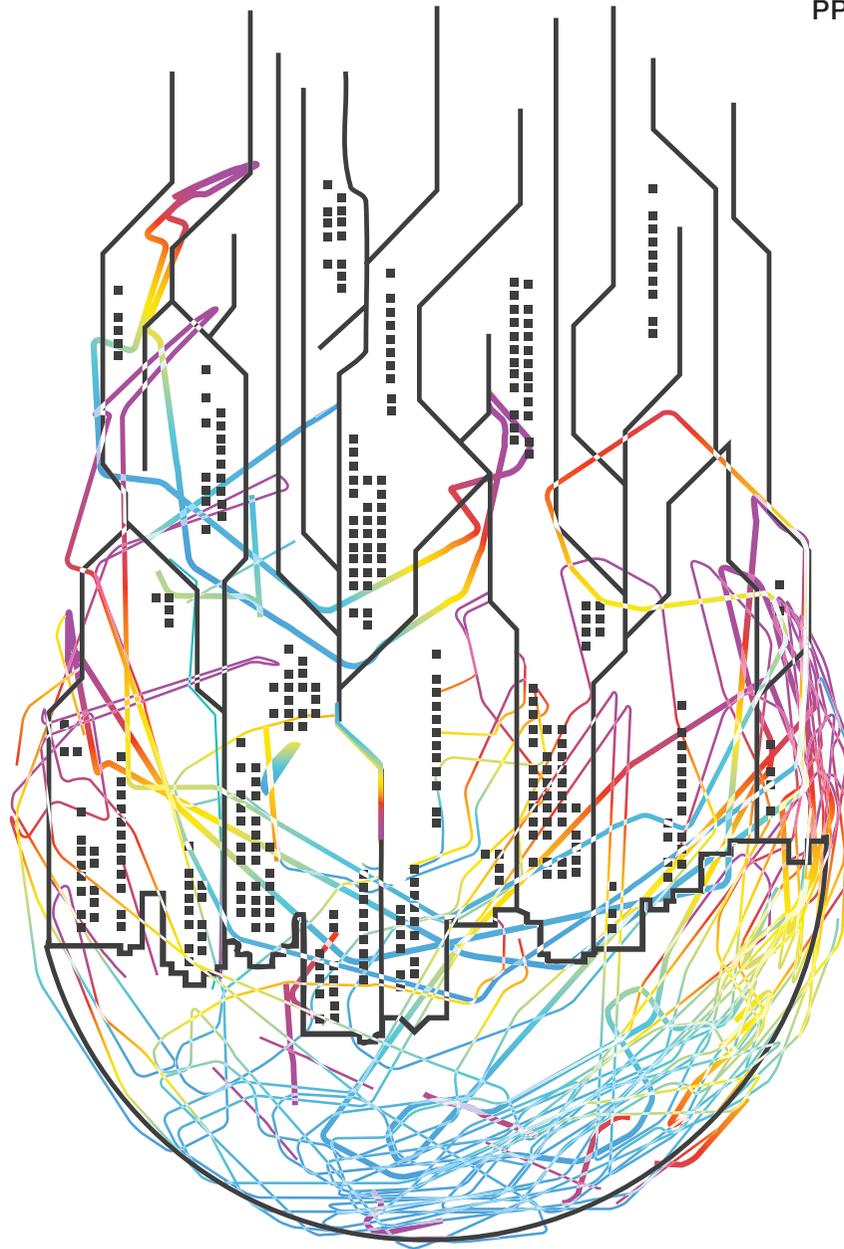
# CONSTRUCTION+

Bringing The Building And Design Industry To You

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## THE FUTURE OF CITIES

OF SMARTER COMMUNITIES & TECH

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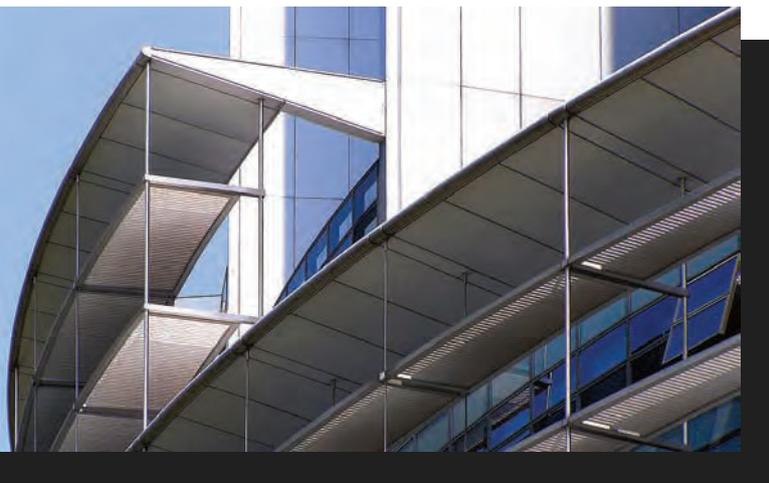
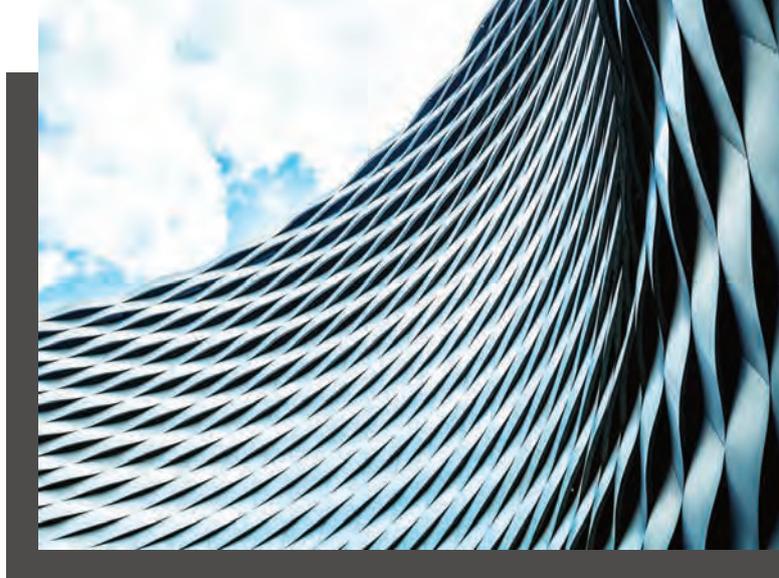
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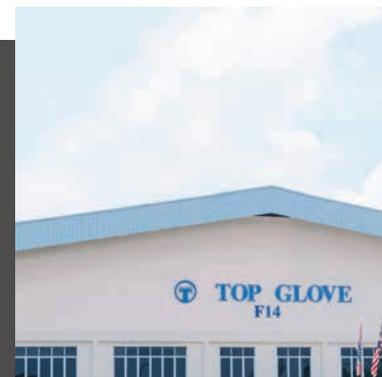
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**Three broad facts underline the urgent need to address future cities here and now. First, cities globally are growing in size and number. Second, cities are the dominant contributors to greenhouse gases and global warming. And third, almost all of the city growth is occurring in Asia and Africa.**

Allied to these three facts are three well-reasoned predictions. First, urban population growth will continue and even intensify through the remainder of this century. Second, the growth of cities today is transforming not just the city, but also the hinterlands, landscapes and regions around them. And third, if left to develop in a business-as-usual fashion, the resource demands of future city regions will exceed the biophysical limits of the planet several times over.

These three facts and three allied predictions have propelled the question of future cities far beyond the traditional city-making disciplines. Historically, a tight cluster of disciplines—construction, architecture, engineering, urban planning and urban design—took responsibility for the design, planning, construction and management of cities. Today, future cities have become a pressing concern for a vast inter-disciplinary and inter-sectoral consortium, spanning the sciences, social sciences, arts as well as government, industry and civil society.

While the emergence of this broad-based consortium has been encouraging, it is not enough. Further analysis, planning and foresight will be required, as well as deeper integration across disciplines and government, industry, academia and civil society, to build sustainable future cities.

Singapore, with its strong track-record of city-making, is ideally placed to be one of the epicentres for this enterprise. Those of us with professional affiliations to traditional city-making disciplines, including readers of *Construction+* magazine, find ourselves with the opportunity to meet a challenge that has global significance and special local resonance here in Asia.

**STEPHEN CAIRNS**

Director, Future Cities Laboratory [www.fcl.ethz.ch](http://www.fcl.ethz.ch)  
Professor, Department of Architecture, ETH Zurich  
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What do we talk about when we talk about smart cities and the future of cities?

Norliza Hashim, chief executive at Urbanice Malaysia and our Spotlight interviewee, says it means having smart communities that are well informed, have access to technologies and are empowered to make decisions. This, she says, will in turn give them a sense of belonging and responsibility to help sustain their living and working environments.

But does the future city necessarily mean a high-tech city? Perhaps the city of tomorrow has less to do with having everything digitally driven than being interconnected—between urban systems; between networks; as well as between built and natural environs. Greater interconnectedness will mean more liveable, more sustainable cities. Professor Gerhad Schmitt, founding director of Singapore-ETH Centre and commentary contributor in this issue, expounds on multidisciplinary approaches to seeking integrated solutions for urban challenges and having the necessary platforms and policies to encourage more innovation and faster uptake of new ideas.

The other commentary contributor James Park, founder and principal of JPA Design, advocates for the advent of technologies and mass production techniques to help build smarter, faster and more sustainably. This means to design and assemble future built environments and interiors with fewer resources and less waste, tapping on more efficient methodologies and new materials.

This issue also features photos of winners at BCI Asia Awards 2019 in Malaysia and Singapore, as well as BCI Asia Interior Design Awards recipients from Malaysia, Singapore, Thailand and Vietnam.

Happy reading!

**Carissa Kwok**  
Assistant editor



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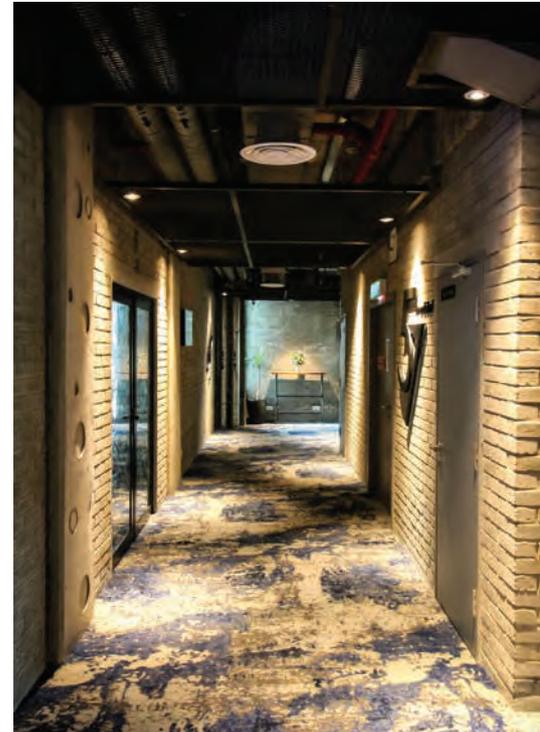
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# SUSTAINABLE CITIES FOR TOMORROW

**It's time to revisit the built environment's relationship with the natural environment**

**BY PROF GERHARD SCHMITT**

What will the city of tomorrow look like?

With the emergence of new digital technologies, coupled with the deluge of data becoming available through sensors and mobile devices, the city of tomorrow will definitely be more interconnected in many ways at different levels.

The urban dweller experiences a sense of this on a daily basis—with hassle-free electronic banking and smart

homes that 'respond' to you thanks to a range of sensors, controls and voice-recognition technology. Less obvious is the web of interconnectivity among urban systems, such as electricity, water, transport, emergency services and so on. These hidden connections and interdependencies need to be better understood to make the city of tomorrow more resilient.

The city will also be more connected physically, with more efficient public



Hoisting the roof of the Rumah Tambah, or expandable house, in Batam: a sustainable housing unit

Images by Dio Guna Putra, Urban-Rural Systems (URS) team at the Future Cities Laboratory (FCL)

## As we continue to experience the effects of climate change, every city urgently needs to take actions to mitigate it.

transport networks and services, shared transport services (such as Grab and BlueSG), and better pedestrian and cycling infrastructure. Despite its small land area of 724.2 square kilometres, Singapore will continue to grow its rail network from about 230 to about 360 kilometres by the year 2030. Jakarta has also started offering its very own rail service to alleviate its perennial traffic woes.

From the perspective of urban planning, it is important to ensure that different districts are well connected and that functions such as residence, work and leisure are better integrated. The increase in mixed-use districts will not only reduce the need and time for commuting, it will also reduce the carbon footprint of individuals and make the city more sustainable.

One of the most often overlooked perspective of connectivity considers how the built environment can be more connected, or in harmony, with the

natural environment. As we continue to experience the effects of climate change, every city urgently needs to take actions to mitigate it. How can we satisfy the density requirement to house the city's inhabitants without sacrificing nature or harming the environment? Given the high demand for energy in almost every aspect of city life, are we too late to put a halt to the climate crisis?

Many urban structures do not consume energy—they guzzle energy. Think air-conditioners in commercial buildings that blast 20 degrees Celsius cool air at office workers clad in sweaters and suits for over 12 hours a day, or shopping malls with façades that lure shoppers with flashy lights 24 hours a day, 365 days a year. These contribute to the operational carbon emissions of buildings. Moving upstream, every building is a complex combination of many processed materials, each of which contributes to the building's total embodied energy and carbon footprint.

Thus, the building and construction sector can play a more active role to decarbonise the industry.

The embodied energy of a building is the energy consumed by all of the processes associated with the production of a building, from the mining and processing of natural resources to manufacturing, transport and product delivery. Taking one step further, in the life cycle of a building, the carbon footprint keeps growing during the maintenance, replacement, deconstruction, disposal and end-of-life phases of its systems and materials.

### INNOVATING FOR THE FUTURE

All around the world, skyscrapers and tall buildings are hallmarks of cities. At the same time, there is growing demand for low-rise high-density cities, thereby allowing the application of more sustainable alternative materials, such as wood or bamboo.

At the Singapore-ETH Centre (SEC), researchers from diverse disciplines develop solutions to make the cities of tomorrow more sustainable, liveable and resilient.

A team from our Future Cities Laboratory



Interior of the Rumah Tambah

Image by Dio Guna Putra, URS team at FCL

(FCL) is examining how we can tap on regional resources to develop more sustainable alternative construction materials, such as bamboo and mycelium. Another team is incorporating these materials into low-rise housing units designed to respond to the changing needs of the inhabitants and embedding these housing units within a sustainable settlement system. Other teams are quantifying the benefits of our natural assets and developing ways to integrate them into our built environment.

In this increasingly complex world, most problems cannot be solved with a single disciplinary knowledge. Just as integrating nature into buildings requires the knowledge of landscape architects and biologists working together, the introduction of new building materials makes it necessary for material scientists, architects and engineers to work more closely together.

One of the key ingredients that enables researchers at the SEC to develop

practical solutions is organising our research based on solution-oriented teams. Disciplinary silos are broken down, and material scientists work alongside architects, cognitive scientists with programmers and urban planners, and so on.

Besides solid research and development in multidisciplinary teams, platforms to test-bed innovative technologies, facilitate dialogues and foster innovation are very important. In Switzerland, the Swiss Federal Laboratories for Materials Science and Technology, also known as EMPA, accelerates the process of innovation in the building sector through the EMPA NEST (Next Evolution in Sustainable Building Technologies). New technologies, materials and systems are tested, researched, honed and validated in realistic conditions in the NEST. The close cooperation with partners from research, industry and the public sector also helps in launching innovative building and energy technologies on the market more quickly.

# The building and construction sector, with other stakeholders, can shape cities of tomorrow into more sustainable, and therefore more liveable and resilient cities.

Specifically, the NEST unit known as 'Urban Mining & Recycling' (UMAR) is a residential module featuring structures and materials that can be fully reused, repurposed, recycled or composted when deconstructed. Our colleagues Prof Dirk E. Hebel and Felix Heisel, together with Prof Werner Sobek, devised the concept where new materials such as insulation boards made from mycelium, innovative recycling stones and recycled insulation materials are installed in a building.

Similarly, in Singapore, the ZEB@BCA Academy at the Building and Construction Authority is using the Zero Energy Building to test-bed and integrate various Green building technologies. As a critical test-bedding facility, the 4,500-square-metre building aims to produce enough energy to power itself. It functions as a demonstration project to allow professionals to learn, experience and work together to innovate and develop new knowledge and technologies.

Such test-bedding facilities are a boost to research and development on more

sustainable construction technology and materials. In addition, grants such as the Cities of Tomorrow R&D programme sees SGD150 million set aside to activate the whole R&D value chain, from industry to research community and the government, to work together to address urban challenges.

While the building and construction industry and practitioners do their part to make the industry more sustainable through innovative solutions, government agencies and industry associations can further strengthen this culture of innovation. They can provide platforms to foster innovation and exchange knowledge, as well as jointly set standards, such as better walls and windows insulation or standardising the measurement of carbon embodiment of buildings.

Moving forward together, the building and construction sector, with other stakeholders of the city, can shape cities of tomorrow into more sustainable, and therefore more liveable and resilient cities. 



**PROF GERHARD SCHMITT**  
Founding director,  
Singapore-ETH Centre  
Professor for Information Architecture,  
Swiss Federal Institute of Technology  
Zurich (ETH Zurich)

Dr Gerhard Schmitt is professor of Information Architecture at ETH Zurich (Swiss Federal Institute of Technology Zurich) and founding director of the Singapore-ETH Centre. The centre in Singapore was established in 2010 by ETH Zurich and Singapore's National Research Foundation (NRF), as part of the NRF's CREATE campus.

As the centre's director, he leads an interdisciplinary and multi-university team in developing practical solutions to some of the most pressing challenges on urban sustainability, liveability and resilience. These efforts are channelled through research programmes including the Future Cities Laboratory, Future Resilient Systems, Cooling Singapore, and Natural Capital Singapore. He currently leads the Cooling Singapore project, aimed at mitigating the urban heat island effect; and Big Data informed Urban Design and Governance project.

Prof Schmitt was awarded the European Culture of Science Award in 2010 for initiating the transition of Science City in ETH Zurich towards a zero carbon emission campus in 2007.



The UMAR unit by Werner Sobek with Dirk E. Hebel and Felix Heisel applied and tested mycelium-bound building elements as wall insulation

Image by Empa



# ARE FACTORY-BUILT SOLUTIONS THE FUTURE?

A case for rethinking, reshaping and challenging our fit-out and refurbishment approach

BY JAMES PARK

Pre-manufactured structures have been around for a very long time. One of the first known examples is the Sweet Track walkway in the United Kingdom, made of pre-fabricated timber components, which was built back in 3807 B.C. More contemporary examples range from the Crystal Palace in London to the Lustron Homes of North America in the late 1940s.

However, there is a paucity of literature on pre-manufactured interiors. Perhaps an early example is the use of flat and sliding screens to define interior space—most associated with

the Japanese shoji—which appeared in China circa 400 B.C. More recently, this is associated with concepts such as Action Office, the open-plan office system with adjustable, modular furniture that created the much-despised office cubicles of the 1960s.

Other ambitious projects include the Dymaxion House, originally designed by Buckminster Fuller in 1930, and redesigned in 1945, to be mass-produced, sustainable autonomous single-family dwellings that are earthquake and storm resistant. Supported by a central column from

## These mass production processes can easily apply to both refurbishment and new build projects.

which all permanent utility cables would be suspended, it allowed the rest of the interior space to remain modular and flexible. Notably, the Dymaxion House was conceived to be entirely factory built, using processes, materials and technology commonly found in automotive factories of the day. It was to be the living machine of the future that could be flat-packed and shipped anywhere in the world. Although never built, the Dymaxion's design demonstrated forward-thinking and influential innovations in prefabrication and sustainability.

There are also the modular hotels with its pre-manufactured interiors. The most exciting project is the upcoming AC Hotel Nomad by Marriott in New York. At 360 feet high, it will be the world's tallest modular building with 26 storeys and 168 rooms. The guestrooms will be prefabricated off-site and fully outfitted, down to the beds, sheets, pillow, flooring and even toiletries.

### PREFABRICATED REFURBISHMENTS?

But the key question I want to pose is: Why can't pre-manufactured interiors be appropriate for existing buildings and luxury interiors?

After all, the advantages are significant:

- More efficient use of labour
- Less need for on-site skilled labour
- A controlled factory environment with protection from the elements
- Elimination of messy, labour-intensive wet processes
- Less waste—which equates to more sustainable construction and the opportunity to use more advanced, sustainable materials
- Better quality control
- Shorter time from start of contract to hotel occupancy
- Through the above, lower design-to-installation cost and lower whole life cost

But perhaps the most intriguing advantage is one that, at first glance, is less obvious. The use of pre-manufactured interiors means that interior fit-out is free from noise and air pollution. Where many cities restrict working times (e.g. 9am to 5pm in Singapore), there is a case to be made to the authorities for 24-hour work, which would slash fit-out times and costs.

What is required to achieve this within

a refurbishment programme?

First of all, you need a solid team of highly experienced product, industrial and interior designers, and MEP engineers with an understanding of the whole construction and fit-out process, all working together coherently to push the boundaries of technology and materials.

Let's look at parallel examples. Aviation interiors—such as Singapore Airlines' latest business class cabin, which we recently designed, along with cabin interiors for Cathay Pacific, Brussels



The guestrooms at the upcoming AC Hotel Nomad in New York will be prefabricated and fully outfitted off-site

*Design and image by Danny Forster & Architecture*



Business class cabins are examples of classy and smart pre-manufactured interiors

Image by JPA Design

## Now is the time to look seriously at new ways of combining inspired design with technology, new materials and mass production processes in our interior spaces.

Airlines, Garuda Indonesia and Hawaiian Airlines—are in many ways the ultimate expression of smart spaces. A cabin is much like a small hotel—a workstation, entertainment centre, dining ‘room’, lounge seat and a nice bed all in one. Our designers were challenged to use every millimetre of space to create an ergonomic seat and cabin design. The interiors are designed, engineered and pre-manufactured in large numbers in a controlled environment and are among the final fixtures installed in the aircraft.

The everyday car is also a good example. While the exterior of a car has typically been the focal point of any new model launch, the interior has become increasingly important to meet consumers’ increased expectations.

Designers have to pay close attention to all areas—from the cabin shape, materials, air vents and dashboard to the technology used—to ensure the car connects with its users and performs intuitively. The interiors are then mass manufactured and fitted by robots.

Based on these parallel industry examples, couldn’t the interiors of hotels and buildings be designed using similar processes, materials and intelligent methodologies? This could transform the building industry and the use of space, creating innovative, high-end designs and far more affordable environments quickly and efficiently. These mass production processes can easily apply to both refurbishment and new build projects.

Such a concept is especially beneficial in dense metropolitan cities where space is a luxury. For instance, in Hong Kong, prefabricated interiors would lift the ambience and quality of an interior space, while allowing for specifications that can maximise every available square foot—all installed in a fraction of the time and at a reduced cost compared with a ‘typical’ refurbishment.

It is also helpful in areas undergoing rapid urbanisation or high tourist arrivals. For instance, in 2017, around 2.4 million Muslims descended on Mecca to perform the hajj pilgrimage. Of these, 1.8 million came from outside Saudi Arabia—and the numbers are expected to double. With factory-built solutions, high-density accommodation to cater for the growing number of pilgrims can be built in a shorter time frame and at a lower cost.

At a larger scale, pre-manufactured building processes can go a very long way in easing the global housing shortage.

At JPA Design, we are currently prefabricating interiors for a co-living project in Singapore. While co-living may not be for everyone, the concept has gained traction over the years, providing affordable and conveniently located spaces and community experiences. The personal spaces such as bedrooms and bathrooms present the perfect opportunity to use the pre-manufactured approach. We are currently collaborating with industry leaders to refine fixing details and installation methods.

### COMBINING DESIGN & TECHNOLOGY

We are embracing technological advancements in our daily lives—from the cars we drive, the airplanes we fly, the hotels we stay in and the way we make a phone call—as these make life easier, more convenient, more efficient and more pleasing to look at.

Now is the time to look seriously at new ways of combining inspired design with technology, new materials and mass production processes in our interior spaces. No doubt design trends have changed over the years—designers have done brilliant things with textures, colours, materials and form—but have we really challenged ourselves with how we're fitting-out our spaces? Have we really tapped into the huge advancements that we have in manufacturing industries to revolutionise the interiors industry?

With the obvious benefits of pre-manufacturing, we should be striving to rethink, reshape and challenge our fit-out and refurbishment approach to revolutionise the way we re-use old buildings and the way we create homes, hotels and most of our built environment. 



**JAMES PARK**  
Founder and Principal, JPA Design

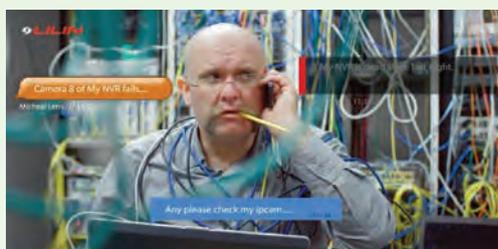
Park is primarily involved in business development and providing overall direction to JPA's Singapore, UK and Dubai offices, as well as facilitating selected far-reaching projects.

Graduating from the Architectural Association, he set up James Park Associates in the early 1980s. In its early days, the firm was involved with transport interiors, most notably the re-designs for the iconic Venice-Simplon-Orient Express and, subsequently, the design and engineering for the Eastern and Oriental Express in Singapore. As a result, James Park Associates Pte Ltd was born in Singapore, growing from a small interiors and architectural consultancy to one specialising in premium environments for the hospitality and transportation sectors.

## Lilin Releases Maintenance Devicehub DH032 & Device Cloud of Device Management for Installers

LILIN DeviceHub DH032, can manage IP cameras and NVRs via LILINHub Apps and LILIN Device Cloud. LILIN device management cloud, known as Device Cloud, can receive recording status, online status, and operational status sent by LILIN DeviceHub. If there is an issue for an IP camera, installers are able to perform remote PoE power reboot for that IP camera via LILIN Web Smart PoE switch. This is to make sure that devices are constantly in operation.

LILIN installers can manage LILIN network camera and NVR/ DVR devices at the installation sites. In most cases, the network devices are left unmanaged for many years, and the NVR/ DVR devices are no longer recording or the IP cameras get disconnected. The network devices maintenance information can be managed through LILIN Device Cloud and LILINHub Apps. LILINHub App also sends push notifications for LILIN installers for device management purposes.



LILIN installers often receive their customers' maintenance requests at the busiest time. With LILIN Device Cloud and LILINHub Apps, installers can immediately perform remote NVR/ DVR hard disk recording analysis, camera SD card recording analysis, NVR/ DVR device health analysis, and camera disconnection analysis. LILIN installers can immediately achieve the maintenance operation through a remote reboot mechanism, and the installers can

arrange for technicians to go to sites later. This allows for LILIN installers to efficiently manage customer visits in a better way.

LILIN DeviceHub and device management cloud can be used for unmanned CCTV sites. The unmanned CCTV rooms with CCTV equipment installed are usually located at remote places. It is costly to send people to maintain these devices. LILIN installers are able to utilize LILIN P2P NVR through a 4G router for video, Navigator systems for central video management, and Navigator's Google Map for installation sites' video management. With LILIN DeviceHub and Device Cloud, LILIN installers can now use this platform to provide maintenance management services and achieve higher efficiency and gain monthly recurring revenue.

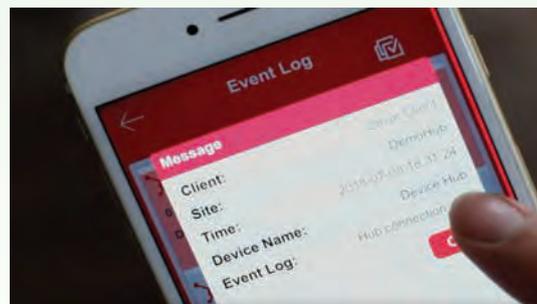
Mr. Steve Hu, Product Manager of LILIN, said: "We are very pleased to release LILIN DeviceHub and the

Device Cloud to solve the problems of long-term unattended CCTV equipment by using Device Cloud and LILIN DeviceHub. No one knows when the NVR does not record, the camera gets disconnected, or CCTV devices are broken. These issues can be remotely managed through LILIN Device Cloud and LILINHub Apps. The solves the most troublesome personnel dispatching issues, which includes expensive traveling costs and maintenance operation of LILIN installers. LILIN Device Cloud, a device management service platform, provides extra recurrent revenue for LILIN installers by servicing device operation management for end users. The goal is to achieve a win-win situation between the installers and their customers."

As for security concerns, LILIN Device Cloud communicates to LILIN DH032 DeviceHub using HTTPs protocol. LILIN Device Cloud and LILIN DeviceHub are also HTTPs based with an encrypted database for extra protection. The LILIN DeviceHub is designed for providing secured IoT device maintenance management.

In the near future, LILIN will provide the integration of power SmartPlug for other non-PoE devices to support more IoT devices.

For more info:  
[www.meritlilin.com](http://www.meritlilin.com)





Left to Right: Er. Tan Seng Chuan, WES 2019 Conference Advisor, Er. Edwin Khew, Immediate Past President of IES, Er. Dr Lee Bee Wah, IES Honorary Council Member, Er. Prof Lim Kok Hwa, WES 2019 Conference Chairman, Dr Vivian Balakrishnan, Minister for Foreign Affairs, Prof Yeoh Lean Weng, President of IES, Dr Richard Kwok, Deputy President of IES and Mr Ong Eng Teck, IES Honorary Secretary



Dr Vivian Balakrishnan, Minister for Foreign Affairs, addressing some 800 engineers, scientists, delegates and business leaders at the Opening Ceremony of the World Engineers Summit 2019

UPCOMING EVENT  
**PLACEMAKER WEEK ASEAN**  
 4–8 November 2019

The inaugural Placemaker Week ASEAN will be a regional gathering of international and local placemaking experts, activists and city makers to share experiences, projects and innovations for vibrant public spaces and thriving cities.

The programme is also initiated to help cities within Southeast Asia to benefit from a collaborative approach to better placemaking in support of the United Nation's Sustainable Development Goals 11 (SDGs).

Held over two weeks within Kuala Lumpur's creative and cultural district, the programme includes education workshops, design charrettes, place games and seminars, culminating in a two-day plenary session. Various programmes will also take place in Penang, Johor Bahru, Putrajaya and Klang.

The three main themes for Placemaker Week are waterfronts, historical streets and healthy communities.

The Placemaker Week ASEAN is presented by Think City and UN Habitat and co-presented by Nextdoor Property Communications Sdn Bhd, European placemaking advocate STIPO and the Malaysian Institute of Planners (MIP). Kuala Lumpur City Hall (DBKL), British Council Malaysia, Air Asia Foundation and Citi Foundation are supporters.



Hamdan Abdul Majeed, managing director of Think City Sdn Bhd (left) with Senator Dato' Raja Kamarul Bahrin, Deputy Minister of Housing and Local Government, at the official launch of the Placemaker Week ASEAN

**WORLD ENGINEERS SUMMIT 2019**  
 27–30 August 2019

The Institution of Engineers, Singapore (IES) kicked off the World Engineers Summit (WES) 2019 on 28 August 2019 at the Suntec Singapore Convention and Exhibition Centre. Dr Vivian Balakrishnan, Minister for Foreign Affairs, graced the opening ceremony as the guest-of-honour.

About 68 per cent of the world's population is expected to be living in urban areas by 2050. In the face of such unprecedented growth, WES 2019 placed the spotlight on critical and escalating issues such as climate change, pollution and traffic congestion. More than 800 international engineers from around the world have gathered to exchange knowledge, expertise and ideas in using and managing of technologies to build greater sustainability, liveability, economic security and climate resilience for cities.

Conference highlights included tracks on climate change: mitigation and adaptation; connectivity and mobility; sustainable energy; Industry 4.0 and beyond; water and sustainable environment; and smart infrastructure. Additionally, there was an inaugural track on building sustainable cities in Asia, organised jointly by IES and Institution of Professional Engineers, Japan (IPEJ). His Excellency, Jun Yamazaki, Ambassador of Japan to Singapore, also gave a speech as a guest speaker at the opening ceremony.

At a conference dinner on 29 August, winners of the IES Prestigious Engineering Achievement Awards 2019 received their awards from Dr Amy Khor, Senior Minister of State, Ministry of the Environment and Water Resources and Ministry of Health. The awards recognised projects that have contributed to engineering progress and enhancing the quality of life of Singaporeans.



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# BCI ASIA AWARDS 2019

SINGAPORE | 7 JUNE 2019 | FAIRMONT SINGAPORE  
MALAYSIA | 21 JUNE 2019 | JW MARRIOTT HOTEL KUALA LUMPUR

## RECOGNISING THE BEST IN ARCHITECTURE, DESIGN AND PROPERTY DEVELOPMENT

The 15<sup>th</sup> BCI Asia Awards celebrated excellence and leadership in the building and design industry. The annual BCI Asia Awards ceremony was held in seven different Asian territories, including Singapore, Malaysia, Hong Kong SAR, Indonesia, the Philippines, Thailand and Vietnam.

The Singapore event was held on 7 June 2019, while the Malaysian event was held on 21 June 2019. Both evenings drew hundreds of distinguished guests and served as a platform for networking among elite architecture firms, property developers, manufacturers and service providers.

The highlight of the events was the BCI Asia Top 10 Awards, which recognised the most active architecture and developer firms in the respective countries—based on the highest value of projects under construction during the last full calendar year, weighted by the extent of their sustainability efforts. For architecture firms, pre-tender projects were included to recognise early

incorporation of Green design efforts.

Singapore's Top 10 architecture firms have a combined USD18.48 billion portfolio of projects scheduled to start construction this year, while the Top 10 developers have a USD2.48 billion portfolio. The portfolios of Malaysia's Top 10 architecture firms and developers are valued at USD5.79 billion and USD1.65 billion, respectively.

Apart from the BCI Asia Top 10 Awards, FuturArc Prize (FAP), FuturArc Green Leadership Award (FGLA) and BCI Asia Interior Design Awards (IDA) were also presented at the events.

This 2019 instalment of FAP—Asia's leading Green building design competition—asked entrants to investigate what it means to live in a hyper-dense city in Asia, with no less than 100,000 people per square kilometre.

FGLA recognises the teams behind Green built projects that have demonstrated the best in architectural innovation and

environmental stewardship in the region.

The BCI Asia IDA lauds excellent interior architectural designs from across the region in seven categories.

Special thanks to our award and event partners and exhibitors for making the BCI Asia Awards 2019 in Singapore and Malaysia a success!

Singapore's BCI Asia Awards were proudly presented by Technal, Daikin, Gessi, Hafele, Signify, Ariston, Armstrong Flooring, Knauf and Permasteelisa Group.

Malaysia's BCI Asia Awards were proudly presented by Jotun, Hafele, Hansgrohe, Rigel, Bostik Findley, Greenseal Products, Mapei Malaysia, KH Shutters, Space Products, Lumicon, Skidata Malaysia, Terreal Malaysia, Bacfree, Cemseal, Graphenstone and HIKVision.

Platinum Sponsors for FAP and IDA were Schüco and An Cuong Wood Working JSC respectively. Gold Sponsors for IDA were Malloca and Gessi.

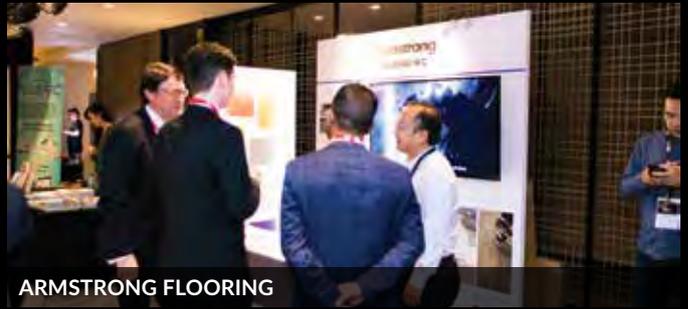
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## TOP 10 ARCHITECTS SINGAPORE



Congratulations to ADDP Architects LLP, Architects 61 Pte Ltd, Design Link Architects Pte Ltd, DP Architects Pte Ltd, ID Architects Pte Ltd, Surbana Jurong Consultants Pte Ltd, SAA Architects Pte Ltd, RSP Architects Planners & Engineers (Pte) Ltd, P&T Consultants Pte Ltd and ONG&ONG Pte Ltd

## TOP 10 DEVELOPERS SINGAPORE



Congratulations to City Developments Ltd, Gardens Development Pte Ltd (A Keppel Land-Wing Tai JV); Hoi Hup Realty Pte Ltd, Logan Property (Singapore) Company Pte Ltd, Nanshan Group Singapore Co Pte Ltd, SLB Development Ltd, Roxy-Pacific Holdings Ltd, Qingjian Realty (South Pacific) Group Pte Ltd, Oxley Holdings Ltd and S P Setia

## TOP 10 ARCHITECTS MALAYSIA



Congratulations to Akipraktis, Akitek Akiprima Sdn Bhd, Arkitek KDI Sdn Bhd, ArchiMatrix Sdn Bhd, CHY Architects Sdn Bhd, VERITAS Architects Sdn Bhd, T & T Architect Sdn Bhd, SA Architects Sdn Bhd, RDC Arkitek Sdn Bhd and NWKA Architects Sdn Bhd

## TOP 10 DEVELOPERS MALAYSIA



Congratulations to Eco World Development Group Bhd, Gamuda Land, KSL Holdings Bhd, LBS Bina Group Bhd, Tropicana Corporation Bhd, Sunway Bhd, S P Setia Bhd, SkyWorld Development Group Bhd, Sime Darby Property Bhd and Mah Sing Group Bhd



# BCI ASIA INTERIOR DESIGN AWARDS (IDA)

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# BCI ASIA INTERIOR DESIGN AWARDS (IDA)

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SODA (SPIRIT OF DESIGN ANALOGY)



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# These are the winner and merit recipients from Malaysia, Singapore, Thailand and Vietnam. The awardees from Hong Kong (China) and Indonesia are featured in the respective local editions of Construction+ magazine and website.

## Command Center

### Smart Video Wall

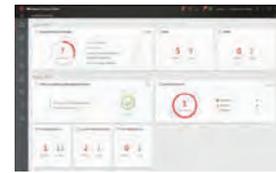


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### Digital Signage



- Videos, animation, images
- Advertisement, notice

### Access Control



- Face Recognition
- Fingerprint
- Card Access

### Intrusion Alarm



- Intrusion Detection
- Emergency & Panic Station
- Perimeter Detection
- Passive Infrared System

### Business Intelligence



- People Counting
- Heatmap
- Route Analysis

### Vehicle Entrance & Exit



- License Plate Recognition
- Under Vehicle Surveillance
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### Visitor Management



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## VITALLY PASSES BS 8414 LARGE-SCALE FIRE TEST

As our cities grow denser and higher, fire risks also increase significantly. Notable disasters, such as Grenfell Tower in London and the Employees Provident Fund building (KWSP) on Jalan Gasing, Malaysia, highlight how quickly flames can spread through the external cladding systems of multi-storey buildings, leaving destruction and loss in its wake.

Hence, the buildings of the future should not only comply with the highest demands of design and sustainability, but also meet the latest technical requirements of fire protection. This includes choosing the right grade of aluminium composite panels in external cladding systems in terms of performance in the case of a fire.

Following the Grenfell Tower incident, the UK-based British Research Establishment (BRE)— an international multidisciplinary building science centre—proposed an improved testing method on fire safety to comply to the British Standards Institutions (BSI).

The new and improved standards to test cladding systems are the BS 8414-1:2015+A1:2017 for masonry face and BS 8414-2:2015+A1:2017 for structural steel frame. The test methods were developed in 2015 and amendments were made in June 2017.

Buildings with cladding systems in Malaysia will now have to pass the BS 8414 before obtaining the Certificate of Compliance and Completion (CCC).

Vitaly Industries Sdn Bhd is the first ACP manufacturer and supplier in Malaysia to conduct and pass the BS8414-1 test for external cladding systems.

The test was carried out at SIRIM QAS International test lab facilities at Rasa, Hulu Selangor, one of the largest accredited labs in the country and the first in Southeast Asia with BS 8414 testing facilities and services.

The large-scale fire test for Vitaly's FR ACP encompassed cladding panels, railing systems, fixings and cavity barriers. The test evaluates whether a cladding system subjected to fire breaking out of an opening (such as a window) in an external wall will result in excessive fire spread up the side of the building and the potential for fire to re-enter at a higher level.

The mineral-filled core of Vitaly's FR ACP comprises an environmentally-friendly non-halogenated component with superior fire-retardant capabilities. When heated, the mineral-filled core produces water vapour instead of toxic gases, and the release of this vapour helps to continuously cool down the building and suppress smoke.



Vitaly's BS8414-1 test conducted @SIRIM Rasa

The surface coating of Vitaly's FR ACP is finished with high performance Kynar 500® PVDF (fluorocarbon) paint. The coating system meets the industry's stringent performance requirement according to AAMA 2605, with exceptional resistance to fading, chalking, peeling, dirt collection and chemical staining.

Vitaly's FR ACP also tested in compliance with Class O certification as an individual material that meets the fire safety requirements of component tests. It is certified to BOMBA, PPS & MS2571:2017. Apart from third-party certifications, Vitaly Industries also has an in-house QC lab to ensure the product's quality—covering raw materials, in-process and finished product inspections. As a local manufacturer, Vitaly Industries also helps in solving delivery lead time issues.

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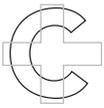


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## NORLIZA HASHIM

**Norliza specialises in promoting sustainable development and providing innovative planning solutions that contribute towards the quality of life of local communities.**

**T**rained in urban planning, Norliza founded AJM Planning and Urban Design Group Sdn Bhd 26 years ago, and her experience covers a wide spectrum of the planning discipline, both locally and globally. She has served as secretary general of the Eastern Organisation of Planning and Human Settlement, as well as president of the Malaysian Institute of Planners.

Currently, she wears the hat of chief executive at Urbanice Malaysia. Established in June 2016 under the Ministry of Housing and Local Government (KPKT), Urbanice Malaysia serves as a centre of excellence to create better cities in Malaysia. It promotes sustainable and climate-responsive urban development through knowledge sharing, urban innovations, partnership programmes and multi-stakeholder engagements.

Norliza shares her thoughts with

*Construction+* on what it takes to build sustainable cities and communities—one of the Sustainable Development Goals (SDGs) and key focus of the New Urban Agenda (NUA) (see sidebar for more information).

### **How are we approaching the SDGs in Malaysia?**

At the federal level, we have the Economic Planning Unit (under the Ministry of Economic Affairs) coordinating with all the agencies and ministries to look at the implementation and coordination of the SDGs at a policy level. I believe we will see much more of this in the 12th Malaysia Plan as a lot of discussions are on the table.

On our side, we know that policy change is not easy and takes some time. That's why at Urbanice, our focus is more on the bottom-up approach. Last year, we did roadshows to create awareness about

SDGs and the NUA. From there, we looked at which local authority is willing to work with us; currently we are working with Shah Alam and Alor Gajah, as well as with the local authorities in Sabah.

We have a '3+1 approach'. We help the local authorities to map out what they have done currently to see where they are and what they have done so far. We then sit down with them to establish and realign their vision and priorities. Then we work with them to prepare a roadmap to help them be more focused on how to achieve their targeted SDGs.

The '+1' is to encourage one or more of these local authorities to go for the voluntary local reporting (VLR) at the United Nations. With the VLR, our local authorities can measure and be accountable for their progress and achievements. We have working links with international organisations, such as United

Cities and Local Governments (UCLG) and Institute for Global Environmental Strategies (IGES), which are ready to assist our local authorities if they choose to do the VLR.

**Apart from working with these local authorities, what other initiatives is Urbanice Malaysia focusing on this year?**

At Urbanice, we do applied research and projects that roll out policies. We are assisting the Ministry to develop the Cities 4.0 policy, which will bring the Smart City Framework to a more holistic level.

Under Cities 4.0, we started an Urban Innovation Hub (UIH) to initially focus on three major areas i.e., Urban Mobility; Urban Systems and Services; and Urban Housing and Communities, and where we work with different tech vendors to test different solutions that can assist cities overcome some of their problems. We have an e-mobility project that we are piloting in Penang and Putrajaya. And we're trying to see where we can pilot kinetic walkways to reap energy from people walking. We are also installing solar panels for renewable energy at the Sentul Murni public housing area, to generate revenue that can be used to pay for the maintenance and upkeep of the residence's common area power consumption.

We are rolling out some programmes under the National Community Policy by KPKT. We have started community hubs at PPR Beringin and PPR Taman Dagang. We discuss with the local communities to find out what they need and what they want, for example, a space for tuition, reading area or a toy library, and we built them a centre using recycled cabins that are repurposed accordingly. At Taman Dagang, we are introducing urban farming, solar panels and rainwater harvesting, and we hope the community hub will also be a learning centre on sustainable features of a building.

In our second phase, we plan to introduce technologies that can generate income for the communities, which includes equipment that converts food waste to



Norliza sharing at the World Urban Forum 2017

food pellets, or cooking oil to diesel oil. However, we will only proceed if the community agrees to the proposals. We are thankful for the kind donations received thus far, and we hope to raise more funds so that we can provide residents some seed money and grants to start these local economy community projects.

**Why is community engagement so important?**

I foresee that our future work will have a lot to do with communities as cities are about people and their rights to the city. We cannot just roll out a law or policy and expect people to change. The programmes we do are geared towards educating communities on the importance of being responsible towards the environment.

When we talk about smart cities, we need to have smart communities and these are communities that are well informed, have access to technologies and are empowered to make decisions. This will give them a sense of belonging and will make them more responsible—that's what the sustainability agenda is about.

For example, you cannot reduce waste if communities don't do it, so they need to find a reason to do it. For a long time, there was no reason to do it—someone will just pick up their rubbish for them. (In Selangor, we produce almost 7,000

tonnes of rubbish a day. If we don't reduce our rubbish, we will end up with more landfill than development land!) We have to help people really understand what limited resources we have and how to be more resource efficient.

**What about multi-stakeholder engagement?**

We want to create more champions of sustainable cities, to encourage people to localise the SDGs and think of the NUA as a way forward to solve the problems we are facing.

I always tell my team that we should never do a programme alone. We have to think of multiple outcomes and engage with multiple stakeholders. By bringing in other stakeholders, hopefully they will not only benefit from it, but also be inspired to replicate it and develop the idea or initiatives even further.

Our Malaysia 100 Year City programme, for example, brought in 11 local universities to think of solutions for our future cities (see Student Feature on Kuching). This will be an annual programme that I hope will achieve something big in the end.

**As an urban planner, what would you do if you could hit the reset button on a city like Kuala Lumpur?**

As a town planner in Malaysia, frankly it is very challenging and as much as I have



Making KL more walkable via more small parks and green spaces is one improvement Norliza would like to see

been involved to date, it is still not easy to get the plan you would ideally want to happen. In Kuala Lumpur, we just need to get all the stakeholders to agree on what's best for Kuala Lumpur.

It is not that we don't have good plans and ideas, but I think we are too restricted in how we do things. For example, when we look at traffic problems in the city, it's either City Hall's or the developer's problem. But it takes more than one policy or one department to solve the congestion issue. We need to relook at some of the planning policies, public transport policies, parking policies, car automobile policies, energy policies, carbon policies, etc.

In Singapore, for example, car parks are managed by the Land Transport Authority because they look at car parks and public transportation as part of its supporting infrastructure. But in Malaysia, car park requirements are regulated by the local authorities, and the integration of its supply with the rolling out of public transit is somewhat missing.

If there is a chance to really look at KL, it's the opportunity to bring the whole ecosystem together and work in a more integrated and cohesive manner. Integration is core—you have to take

away the silo policies and mentality. There should be no segregation of responsibilities. We need partnerships and collaboration to get the best outcome.

When our team was working on the KL City Plan, we had about 60 engagements with the people in KL. While some started with negativity, at the end of the day, as we listened to them, everyone was very responsive and cooperative. I do think the people of KL are a mature and well-informed society that knows what they want, so the opportunity to work with them is definitely there.

**What is one improvement you would like to see?**

I would like our city to be more walkable. In Kuala Lumpur, it can be very stressful and strenuous even for able-bodied people to walk in the city, as there are often no assisted means, such as ramps, escalators and lifts.

Making the city walkable is one of the most challenging things to do because you have to create space for people to walk, and a lot of the spaces in our cities belong to someone. We need to learn to compromise and share spaces, have more small parks and green spaces, and make the city an enjoyable space to explore and live

in. In developed cities, private spaces are being allowed through block connectors, providing sheltered and comfortable environment for the public to walk through and making the city more permeable.

#### **What role does technology play in the cities of tomorrow?**

Cities are going through very dynamic changes almost every other day. That's why I think with smart technologies, we should be able to respond faster and to be more adaptive to these changes.

Despite having set up e-government more than 20 years ago with the development of Putrajaya, Malaysia has not been very fast in terms of adopting new technologies in cities' solutions. Some countries that have started later than us, such as Vietnam and Myanmar, or even Dubai, have leapfrogged over us to fully embrace digitalisation and emerging new technologies.

We need to have open data that allows us better understanding of the issues we face and encourage public participation for solutions. And we need to focus on innovative action-based research that will encourage citizens and industries to find solutions for public problems. For example, in South Korea, a lot of money is being spent on research—that's why they are very fast in adapting to new needs and demands.

If we are serious about being smart and sustainable, we need to really understand what our local issues are and use technology to assist us. Malaysia is generally a low- to middle-income nation, so the solutions should be for the masses, not just the top 20 per cent. I think communication technology is one that has helped bridge the gap between rural, sub-urban and urban communities. And once we are able to enhance the speed and coverage in the entire country, then the rural-urban areas can be more balanced, knowledge-wise, and opportunities for local industries at village areas can be enhanced with fintech and e-commerce in place today.

#### **Your firm, AJM Planning and Urban Design Group, was involved in the comprehensive development plan for Iskandar Malaysia. What smart city elements in the plan are you most proud of?**

I'm proud that we proposed the Iskandar Malaysia Urban Observatory—a data centre that is managed by the Iskandar Regional Development Authority (IRDA) for strategic planning of the region through evidence-based spatial planning to guide future growth and development. This platform allows for the sharing of data and information among all the agencies and stakeholders in Johor and can act as an urban statistics centre. Hopefully this can also assist in good decision-making as the agencies can use the data to predict various needs for the region such as housing demand, improved water security and planning for public transportation, among others.

I'm also glad that we planned for the cleaning and rehabilitation of Sungai Seget. Sungai Seget is a short river, and the catchment is small, so it's not too difficult compared to other river cleaning projects elsewhere. Sometimes you have to do the low-lying fruits that are just as impactful.

We have also incorporated a public transit system, the bus rapid transit (BRT) being the main system for the region. This is currently being further developed and we are very hopeful it will take off soon, because it will be a real showcase for Malaysia on how an integrated bus system that is less expensive than LRT and MRT lines can be just as effective in addressing local traffic issues.

I am very fortunate to have been given the opportunity to lead the formulation of Iskandar Malaysia Comprehensive Development Plan 1 and 2, and I believe positioning southern Johor as a new economic region has led to much development and progress in the state now. I don't think we can ever stop development and urbanisation, but we must ensure that the development is responsible and sustainable. 

#### **SUSTAINABLE DEVELOPMENT GOALS (SDGs)**

In September 2015 at the United Nations Summit, 193 nations adopted the 17 SDGs of the 2030 Agenda for Sustainable Development, which are committed to ending poverty, protecting the planet and ensuring prosperity for all. The 17 SDGs include: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; and partnerships for the goals.

#### **THE NEW URBAN AGENDA (NUA)**

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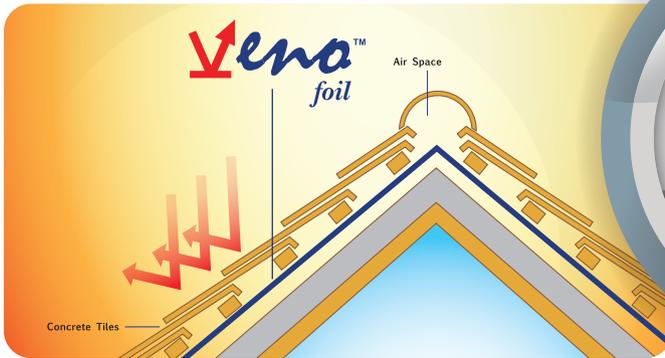


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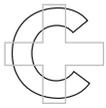
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## HELEN SMITH-YEO

**With a love for history, culture and art, the fusion of Western perspectives with her own Asian origins has fuelled Helen Smith-Yeo's inspirations for transformative creativity as well as timeless designs.**

**A**s principal at STX Landscape Architects—a Singapore-based firm of landscape architects and urban designers—Smith-Yeo is very hands-on in providing direction in the design, management and planning for diverse landscaping projects throughout the region.

She shares her thoughts with *Construction+*.

### **What has inspired or shaped you as a landscape architect?**

I'm very interested in cross-culturalism and how ideas, traditions and historical norms get transplanted from the country of origin to a completely different environment and context. I do not believe in being chained to one culture, one country or one belief system or way of thinking.

This is why—after studying architecture at the National University of Singapore, earning my Master's in Landscape Architecture at Harvard, and working for more than 26 years in Asia—I decided to go back to school in 2017, but this time in Europe (at the École Nationale Supérieure de Paysage at Versailles, France).

I felt the need to be exposed to the European way of thinking to round out the experiences and the inputs I had from Asia and America. For this I studied French from scratch to university level, and through it, I gained in-depth knowledge of a new culture and exposure to how Europeans regard the landscape and the practice of landscape architecture. This was a personal quest to enrich my own mind.

### **How would you describe your design philosophy?**

My fundamentals are fairly simple—our landscapes should enhance the quality of life and serve the common good of their users and the earth. I feel strongly about the creation of beautiful environments because I believe we can contribute to human existence when we design landscapes that not only nurture and heal but are also timeless—in the sense that they are designed for functional longevity, rather than following fad or fashion.

### **You founded STX Landscape Architects (then known as Sitetectonix) back in 1995. What would you say is a major strength of the firm?**

Our major strength is our design, the

conviction we have in ourselves and the rigour with which we do our work. A good design has no benefit if it remains good only on paper. For that design to be well translated into a built form and space that people inhabit—without it being heavily diluted—takes a lot of hard work, integrity and conviction on our part to fight for the proper technical provisions and necessary execution.

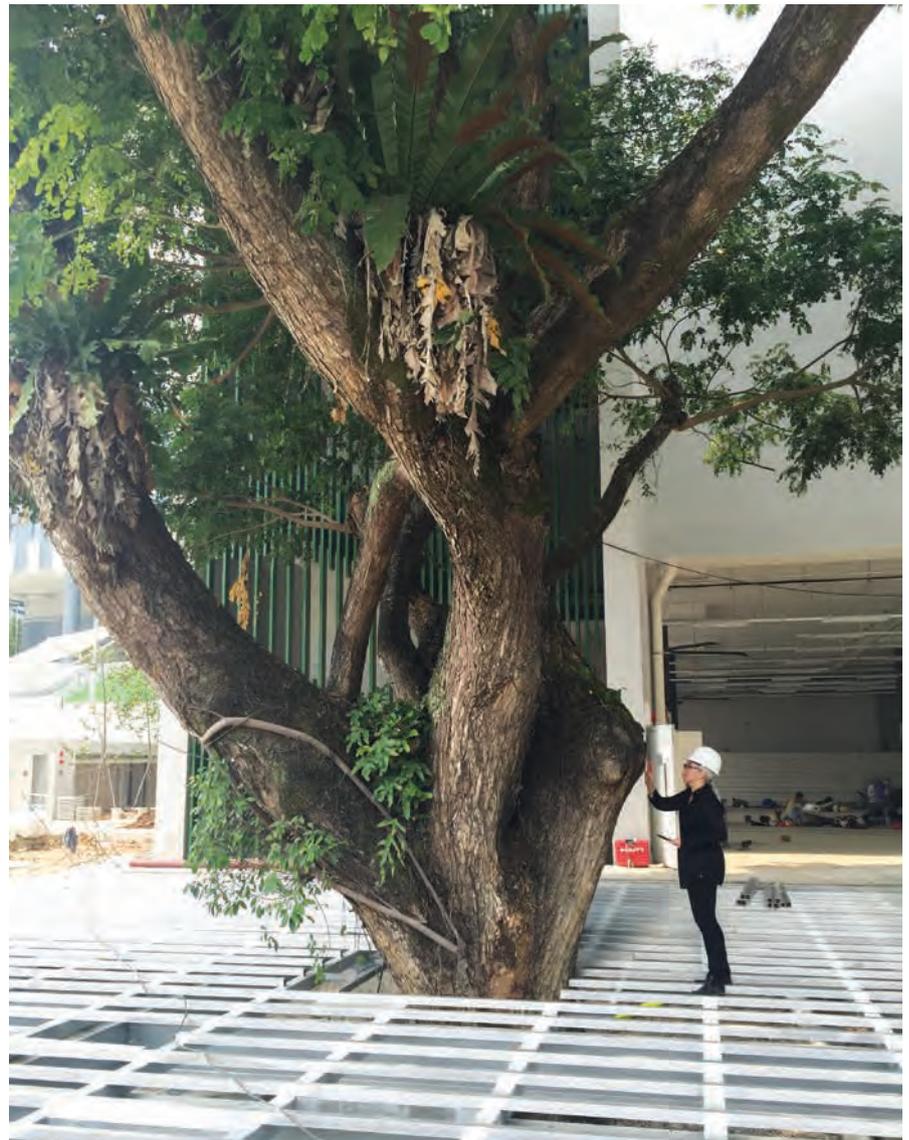
As we are rather 'old school', we like to train every landscape architect in our practice to do everything—even things they may not like to do—despite it being time consuming because it creates a more holistic professional. Till now, we have maintained an office of around 30 individuals, which we feel is the optimal size to enable all principals and directors to still be involved in every stage of a project's design.

The creation and crafting of meaningful, sustainable, enriching and enjoyable places for a holistic environment is best portrayed through our educational work. Throughout the duration of such a project until its completion and handover, our clients also gain a real sense of respect for the landscape with a vision that provides a healthier equilibrium between profitability, sustainability and societal (user) needs.

**How does landscape architecture contribute towards creating better cities of the future?**

Landscape architecture as a profession is adept, because it is both an art and a science, more so than any other profession. Ultimately, beyond just survival, what matters to people is still their quality of life, and with a future that is fast and intense, landscape architecture's role is to make everyday life in our urban spaces more than viable—the antithesis of bleak and grey futures like those depicted in movies such as "Blade Runner".

Mitigating heat islands, reducing glare and reflectance, absorbing pollutants and filtering toxins, slowing down run-

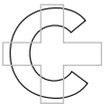


Smith-Yeo: Landscape architecture's role is to make everyday life in our urban spaces more than viable

off and designing measures to counter flooding, increasing bio-diversity, reinstating beauty all these are the major but non-exhaustive ways that landscape architecture has played out its role as 'steward of the land'.

**What do you think are the major challenges faced by the landscape architecture industry in Singapore in general?**

I think the sometimes shallow and indiscriminate cosmetic use of greenery, using the colour 'green' to imply the idea of sustainability and what we internally call 'greenwashing'.



Unilever HQ, Mumbai: Rangoli-like floor patterns formed with reflective stainless steel

## **We often try to bring in cultural underpinnings or local elements that help identify a project to its time and place.**

What should be done is to really promote a holistic view and integration of greenery that recognises and gives privilege to the maintenance needs and life cycle changes of planting, because a big part of our profession is dealing with living things and working in a way that is respectful of nature and her own ebb and flow.

There's always this dichotomy between managing costs and creating the best design possible. Clients need to realise that upfront spending can contribute towards the longevity and easier maintenance of a project. For example, if the green vertical elements are not crazy easy to maintain, they're only going to look good for the first two to three years.

Sometimes we have contentious relationships with project engineers

because we ask for soil and good access. This makes the project more expensive to deliver, but in the long run, it's better for the project, its users and its carers. For example, if the soil is not deep enough for trees, it will be detrimental to their long-term sustainability and survivability, which will damage the image of the project and the developer. This is definitely something we will not accept as the landscape architect of the project.

The idea of saving trees, for example, is another thing that everybody talks about, but when it comes down to actually doing it, regrettably a lot of people start to squirm and attempt to find ways around it because it is easier, cheaper and faster to flatten the land and build without things literally 'standing' in the way. We always push to encourage them to do otherwise

## What should be done is to really promote a holistic view and integration of greenery that recognises and gives privilege to the maintenance needs and life cycle changes of planting.

because these trees are part of the history of the site, and they bring an important continuum and a sense of timelessness to the project when finished. In addition, they bring immediate benefits, in terms aesthetics and environmental cooling to the development, from day one, which new trees are unable to do.

For example, with our National University of Singapore (NUS) project, we wanted to design an environment that would give users a sense of belonging and well-being, anchored in a timeless landscape. The retention of many existing large trees contributes towards that sense of place and of belonging within a greater construct.

### How do you incorporate your interest in cross-culturalism in your designs?

We try to curate the existing elements of a site, drawing from its cultural overtones according to what might be valuable and have meaning. In addition, when we work in foreign countries, we often try to bring in cultural underpinnings or local elements that help identify the project to its time and place.

An example is the project we did for the Unilever headquarters in Mumbai. Unilever is a Dutch-Anglo multinational company implanted into India, so we tried to reinterpret certain aspects of Indian culture, including Diwali, the

festival of lights. Based on the concept of the Rangoli—patterns designed by combining grains of sand—we used modern materials to create a series of dots that combine together to form different geometries within the building's floor. The dots are stainless steel and semi-reflective, and the pattern changes as you move through the space, dramatising the way the light enters through the sky-lit internal street during the day. We wanted to use elements of kinetics, combined with cultural tradition, to create something distinctive that anchors the project in its host country.

### How do you want to be remembered for with regards to design?

That we craft beautiful memorable spaces. We want to create spaces and places that people can fall in love with. We believe that beauty is important and is the one thing that can elevate the spirit and soothe the soul. 🌿



Trees bring an important continuum and a sense of timelessness to a project

# BATU MAUNG WASTE TRANSFER STATION

In the early days, garbage on Penang Island was sent to the landfill in Nibong Tebal, Seberang Perai, via a barge from the Batu Maung jetty. Since 2011, garbage has been going through the Ampang Jajar waste transfer station, a transit point that is shared with the Seberang Perai Municipal Council on the mainland.

As capacity increased over the years, plans were made for Penang Island City Council (MBPP) to have its own waste transfer station on the island—an integrated solid waste management system to efficiently handle all issues related to the transfer and disposal of bulk and domestic waste.

Located within the Bayan Lepas Free Industrial Zone—right next to the Penang Second Bridge—the waste-managing facility’s design seeks to set itself apart, both operationally and aesthetically, as a benchmark facility of its kind.

The project consists of a waste transfer station with a vertical-type compaction system, a Green waste building for managing recyclable bulk waste, a leachate and waste water treatment plant, and an office building with auditorium and education gallery. The facility is also equipped with a complete dust and odour-treatment system, where the suction hoods will divert odours to a scrubber system for treatment prior to release into the environment.



The plant is an iconic gateway to Penang Island



Architecturally, the design concept for the built form is derived from the silo tube—which is explored and articulated in various ways throughout the site. This forms a distinctive identity that sets it apart from the usual orthogonal industrial and facility building typology.

This, of course, posed its share of challenges as the circular tubes and the station's diagonal windows are contrasting built forms, making it difficult to ensure all voids are enclosed for weatherproofing. To counter that, the metal cladding on the tube is projected over the diagonal windows and the internal spaces are recessed to minimise the weather effect.

For large buildings such as the waste transfer station and the Green waste building, steelworks are essential to achieve a longer roof span and more column-free spaces. Metal cladding and roofing are used extensively for their durability, practicality and 'industrial-like' appearance.

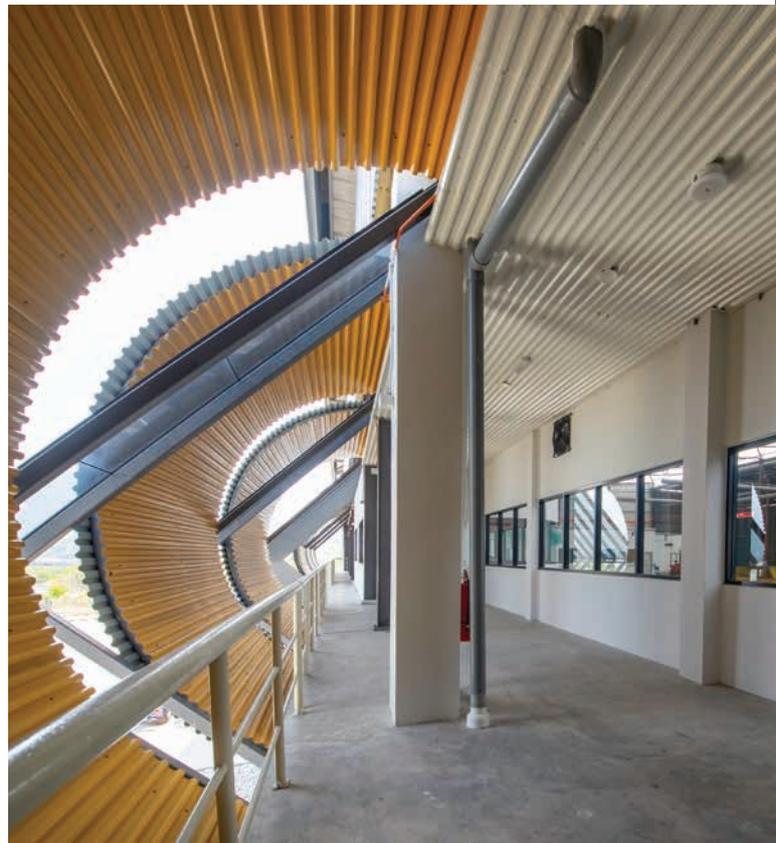
One of the key features of the facility is the visitors' corridor—an educational route that takes guests through the facility's operations. To show as much of the operations as possible in a short route, 'silo tubes' are carved into the building's façade, guiding visitors' views towards different stages while unveiling a variety of spatial experiences. Engineering mechanisms for ventilation using negative pressure are installed along the corridor to ensure there is no foul smell.

Due to extreme weather conditions during the monsoon season, the buildings are all low-rise, with plenty of tree planting to minimise strong wind exposure and to harmonise with the waterfront.

The ample open spaces on the 53,500-square-metre site are used for driveways for operational trucks, a landscaped pond for storing treated waste water, and green spaces, pedestrian promenades and bicycle lanes at the periphery as an extension of the island's current bicycle network under the state's Green Connectors project. The bicycle lanes are well equipped with bike racks, resting benches, shelters and trees, unlocking multiple vista points of the project. 📍



A benchmark facility next to the Penang Second Bridge



The visitors' corridor runs parallel to the operation line



## PROJECT DATA

### Project Name

Batu Maung Waste Transfer Station

### Location

Batu Maung, Penang, Malaysia

### Completion Date

December 2018

### Site Area

53,500 square metres

### Gross Floor Area

12,200 square metres

### Client

Majlis Bandaraya Pulau Pinang

### Concessionaire

Eurasia Express Sdn Bhd (EESB)

### Proponents

EESB; CN-NL Waste Solution Co Ltd

### Project Coordinators

Mariam Zainuddin;  
C.C. Lim; H.H. Tan

### Project Operator

EESB

### Project Originator

Kenny Yeoh

### Architecture Firm

KH Architect

### Principal Architect

Ar Lee Kok Hua

### Architectural Design Team

Yeong Zhi Mei; Lee Min Zhao;  
Tan Shih Huey

### Chief ID Coordinator

Nurul Atasha

### Interior Design Firm

Zids Design Sdn Bhd

### Principal Designer

Selson Liew

### Civil & Structural Engineer

Jurutera Pakatan Sdn Bhd

### M&E Engineer

Perunding P.L.A.

### Quantity Surveyor

Kuantibina Sdn Bhd

### Landscape Architect

Perunding Hijau Reka Sdn Bhd

### Green Building Consultant

ALM Green Sdn Bhd

### Environmental Consultant

KenEp Resources (Asia) Sdn Bhd

### Images

Ooi Way Sean;

Lee Video Productions Sdn Bhd  
(drone photography)

### Roof & Metal Cladding

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The landscaped pond collects treated waste water and harvested rainwater

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Benches with trees as divider and sunshade

## BEACH STREET SIDE LANE UPGRADING WORKS

This project in Penang was undertaken as a CSR contribution by Bank of China, as part of the local council's initiative to create a more liveable city.

Running next to Bank of China's heritage building, the side lane connects between Beach Street and Weld Quay.

The overall architecture expression is simple yet meaningful, transforming a 'dead' area into a lively and dynamic pocket space, yet blending well into the UNESCO World Heritage Site without any bulky construction.

The main designs are found on the ground and on less elevated

structures, such as the benches. Dynamic floor patterns, created using concrete pavers and green elements, also demarcate a clear separation of the bike lane and pedestrian walkway for user safety.

Benches are fitted with plants for landscaping and shade, with metal grating at the base in the bank's corporate red colour. The site is also lit up at night with lighting poles that sport Chinese motif patterns, creating a welcoming ambience for users.

To prevent flooding or water ponding in the side lane, the entire site is constructed with sub-soil drainage so rainwater can go directly into the ground instead of flowing on the surface. 



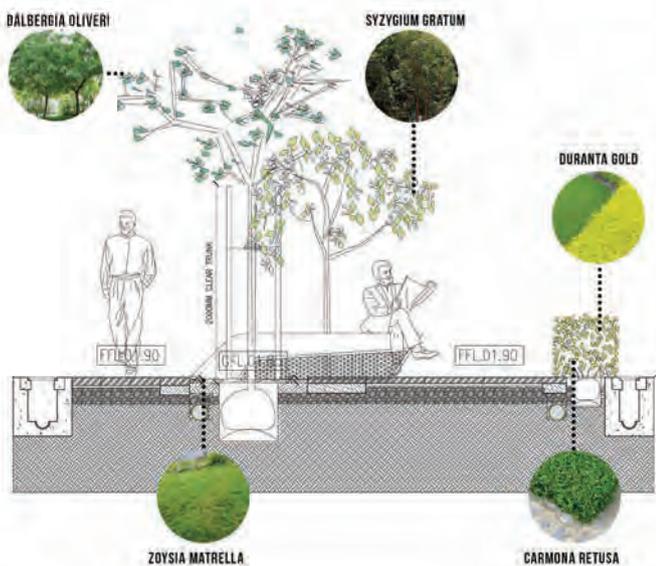
A lively and dynamic pocket space



Clear separation of bike lane and pedestrian walkway



Side lane plan



Landscaping

## PROJECT DATA

**Project Name**  
Beach Street side lane  
upgrading works

**Location**  
Beside Bank of China, Beach  
Street, George Town, Penang,  
Malaysia

**Completion Date**  
17 November 2018

**Length of Road**  
45 metres

**Client**  
Bank of China (M) Bhd

**Owner**  
Majlis Bandaraya Pulau Pinang  
(MBPP)

**Architecture Firm**  
CKHO Architect

**Principal Architect**  
Ar Ho Chin Keng

**Civil & Structural Engineer**  
AE Engineering Consultancy

**Main Contractor**  
Yuan Seng Building Trading  
Sdn Bhd

**Images**  
CKHO Architect; Ahnaf Samsury

# CIDB CONVENTION CENTRE, SARAWAK

The CIDB Convention Centre, with its double-volume convention hall, is designed to subtly blend with the surrounding landscape and be in communion with nature.

Despite its massive massing, it boasts a sense of lightness and simplicity, invoking curiosity with its distinctive shape and transparent boundaries.

Instead of the conventional enclosed walls, the building's skin is actually a fixture of semi-open corridors with decorative louvres and polycarbonate. The interior spaces are 'partitioned' by the semi-open corridors, forming inviting nooks and crannies.

## BEST OF SARAWAK

Partially rising atop a pond, the centre combines the best of Sarawak architecture, taking into account its culture and environment while integrating modern technology for an ecologically-designed product.

The exposed spun pile that forms part of the building support is derived from the Rumah Orang Ulu's Belian timber columns, the ellipse-shaped layout and roof design is inspired by the ethnic Bidayuh Baruk house, while the semi-open corridors are from the long verandas that serve as communal family spaces in traditional Sarawak Malay houses.



Ethnic Dayak motives peek through the louvre skin



The Dayak floral motif silhouettes behind the louvres cast decorative shadows on the corridor floor, while the pond is reminiscent of traditional village houses built close to water sources. Cut-outs in the slabs allow the cool air from the pond below to flow through the corridors, creating a natural cross and stack ventilation.

One of the challenges during construction was the piling and foundation works on the existing pond, which required water to be drained out from the pond (revealing a resident crocodile!). Once the works were completed and the pond refilled, all discharge outlets to the river had to be securely protected to avoid crocodiles from returning.

#### PREFAB & GREEN

The construction industry in Sarawak usually opts for conventional design instead of industrialised building systems (IBS) due to logistics, budgetary constraints and lack of installation expertise.

However, this project successfully implemented IBS with a score above 70 per cent, despite it being the contractor's first time constructing using prefabrication. During the design stage, both the consultant team and the client brainstormed on how to minimise or eradicate possible issues regarding the construction and design.

The building's layout design provided some technical challenges. The surveyor had to carefully plot all the necessary setting out and piling positions to ensure a perfect ellipse shape. The building's shape helps to protect against rain burst and reduce wind impact.

The roofing works also took a bit of time due to its twisting gradient. The louvres were installed at different heights, and calculations had to be redone on site to ensure everything fitted well together.

The whole site could be further developed in the future to obtain scoring for the Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCrest) as well. Because of its ecologically-sustainable design with its open-corridor concept and capillary system theory, there is an estimated saving of 30 per cent in the use of electricity and air-conditioning. 



Slab cut-outs allow cool air from the pond below to circulate in building



The main entrance, inspired by the mouth of a cage



Benches and planter boxes incorporated along the perimeter corridors



## PROJECT DATA

### Project Name

CIDB Convention Centre,  
Sarawak

### Location

Petrajaya, Kuching,  
Sarawak, Malaysia

### Completion Date

29 January 2018

### Site Area

240,958 square metres

### Gross Floor Area

4,765 square metres

### Building Height

1 storey

### Client

CIDB Malaysia

### Building Inspection Auditor

SGS Malaysia Sdn Bhd

### Architecture Firm

Arkiskape Sdn Bhd

### Principal Architects

Ar Hj Sumardi Ghazalee;  
Ar Desmond Kuek

### Project Architect

Irwan Iswandi Mohammed

### Civil & Structural Engineer

Perunding Azra

### MEP Engineer

Konsortium Bumi Consultants  
& Services Sdn Bhd

### Quantity Surveyor

Juruukur Bahan Tema Sdn Bhd

### Landscape Architect

Perunding K.A.S.

### Main Contractor

High Wealth Sdn Bhd

### Images

CIDB Malaysia, United G.I.  
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# MENARA JLAND

Menara JLand is the newest addition to the Johor Bahru city skyline.

Its asymmetrical form conjures a modern urban sculpture that can be appreciated from different angles. Its contemporary façade design, geometric appeal and sheer height make it a welcoming 'gateway' from both land and sea.

The tower fits harmoniously with the surrounding architecture, in particular its neighbouring Menara Komtar, which consolidates the design geometry and unifies the silhouette.

This 30-storey Grade 'A' office tower is perched atop a seven-storey retail podium known as Komtar JBCC. Its floor plates taper towards the observatory deck on the 34<sup>th</sup> floor, where it offers 360-degree aerial views of downtown Johor Bahru and Singapore from its cantilevered glass sky walk.

## GREEN CONSCIOUS

The GBI gold-rated tower incorporates a cold-warped unitised aluminium curtainwall system that provides ample natural lighting, boosts energy efficiency and acts as a waterproof barrier. Electronic air filters promote better air quality in the indoor environment and keep adverse pollutants at bay.

Double glazed low-E windows, custom venetian blinds and light shelves channel daylight into the building, reducing the use of artificial lighting and eliminating direct sunlight glare without sacrificing good outdoor views. These strategies enable usable daylight levels to be achieved up to 4 to 5 metres from the façade, which makes for a more conducive working environment for occupants.



Menara JLand (right) fits harmoniously with Menara Komtar (with purple lights)



Other sustainability features include low-energy lighting, energy-efficient equipment and fittings, rainwater harvesting system and connectivity to the city's public transit network. It is connected via a covered footpath to the Sultan Iskandar Building (CIQ).

A total of 18 sky gardens, each located on alternate floors, create an extensive green network throughout the building. All timber doors located at the lift lobbies are MTCC-certified, while 70 per cent of all construction waste was diverted from the landfill to the recycling centre.

As the building has only eight lift cores, the management invested in a destination-controlled lift system for more efficient vertical transportation. These smart lifts—the first of their kind in Johor Bahru—automatically coordinate and optimise the lift journey for users and reduce waiting time to less than 40 seconds, even at peak hours.

### CONSTRUCTION CHALLENGES

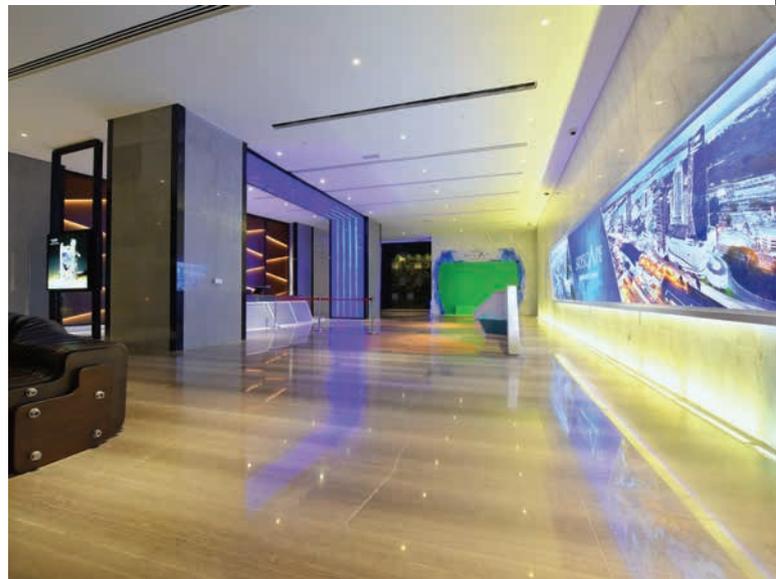
The main challenge for this project was the very limited site area—nestled between the trunk road of Jalan Tun Abdul Razak and Jalan Wong Ah Fook—which hindered construction progress. Building materials could only be hoisted up between 10 pm and 6 am, with minimum storage area, and concreting work could also only be done at night to minimise risks to business activities at the neighbouring buildings.

Menara JLand was constructed on the existing KOMTAR JBCC. This, together with the connection of the office tower to the shopping complex, added to the complexity of tasks involved, particularly in the design, construction process and regulatory procedures. Notwithstanding the above, Menara JLand has become the first building in the city to have multiple CCCs within the same complex.

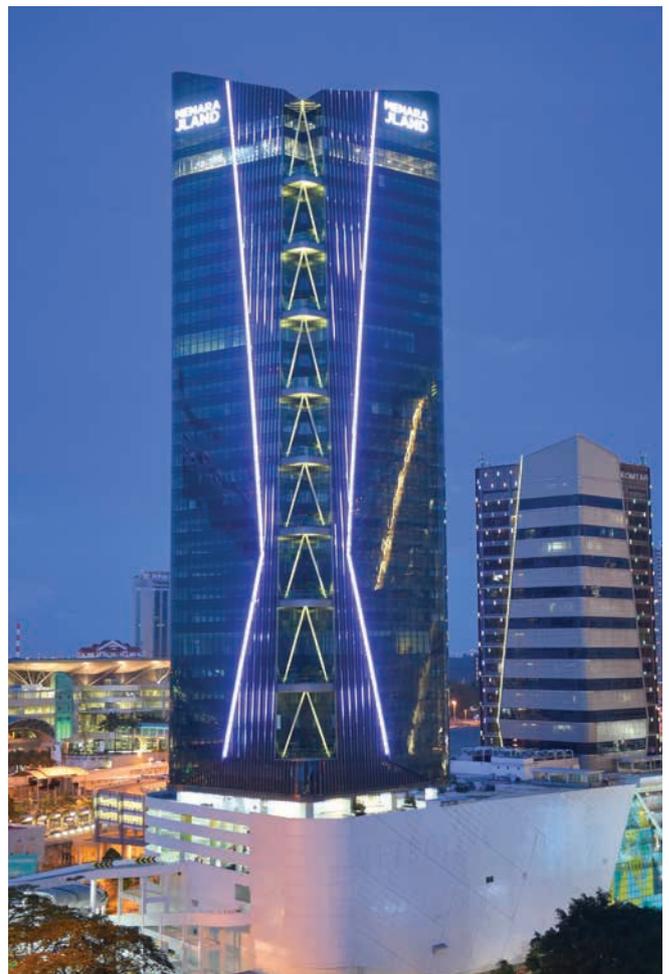
The building obtained a QCLASSIC certification for quality workmanship from CIDB with a score of 75 per cent. 



Main office lobby reception



Observatory deck ticketing counter



A distinctive asymmetrical 'urban sculpture'



Skyscape: the first aerial entertainment space in Johor

#### PROJECT DATA

##### Project Name

Menara JLand

##### Location

Jalan Wong Ah Fook, Johor Bahru, Johor, Malaysia

##### Completion Date

January 2018

##### Gross Floor Area

38,000 square metres

##### Building Height

37 storeys

##### Developer

Johor Land Bhd

##### Project Manager

Abdul Rahim Zulkawi

##### Architecture Firm

VERITAS Architects Sdn Bhd

##### Principal Architect

Md Shah Jaffar

##### Project Architect

Nadzeem Abdullah

##### Interior Design Firm

VERITAS Interiors

##### Principal Designer

Regina Thangam

##### Civil & Structural Engineer

Perunding Gemilang Jaya

Sdn Bhd

##### Mechanical & Electrical Engineer

Jutera Budiman (M&E) Sdn Bhd

##### Quantity Surveyor

ARH Jurukur Bahan Sdn Bhd

##### Façade Consultant

Pintar Jaya (M) Sdn Bhd

##### Landscape Architect

DIC Design Sdn Bhd

##### Green Building Consultant

VERITAS Environment Sdn Bhd

##### Main Contractor

MRCB Builders Sdn Bhd

##### Images

Johor Land Bhd



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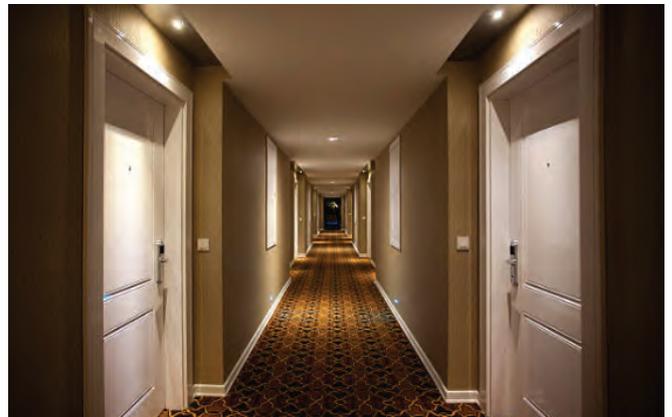
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# ANG MO KIO POLYCLINIC

**A** BCA Universal Design Mark GoldPLUS Award project, the Ang Mo Kio Polyclinic is designed to serve the growing needs of multi-generational families in Ang Mo Kio, Bishan and Serangoon.

To this end, it incorporates features that are friendly to the elderly and those with limited mobility—including more spacious passageways, stepless entries, handrails with braille, a bilingual main directory, seats with grab bars, trailing bars on corridors, wider consultation rooms and lift lobbies that cater for wheelchair users.

Perhaps more importantly is the patient-centric spatial planning—the result of a lot of thought and consultation with healthcare professionals. The internal layout is designed for efficiency, with a central spine running along the site, which

free up more space on the first storey. Distinctive motifs and colour-themed wayfinding signages are used on different floors for easy identification and navigation.

Services are also planned to minimise patient movements across floors. For example, chronic patients can have blood pressure and body mass index measurements, blood test, consultation and payment done on the same floor. Consultation rooms are planned as team-based clusters, with interconnecting doors to facilitate communication among healthcare providers and continuity of care for patients.

The architects also studied the existing local building typologies and various social gathering nodes within the neighbourhood, including how users or patients would react with the building programme and layout.



Spacious dedicated alighting and boarding bay



Team-based clusters minimise distances to other services

With this understanding, a community plaza was conceived as the heart and soul of the building to foster engagement. A natural gathering space for patients and the community, the plaza is designed for flexible use and activities such as road shows, healthy cooking demonstrations and communal exercise sessions.

Waiting areas on various floors are fitted with large window panels for visual relief and to allow visitors to enjoy the greenery while waiting. The building's façade, with its varied patterns, is precast for more efficient design and construction.

The final result is a conducive and therapeutic environment for patients and clinical users of all generations and needs. 

#### PROJECT DATA

##### Project Name

Ang Mo Kio Polyclinic

##### Location

21, Ang Mo Kio Central 2, Singapore

##### Completion Date

September 2017 (TOP)

##### Site Area

3,200 square metres

##### Gross Floor Area

8,750 square metres

##### Building Height

6 storeys; 31.15 metres

##### Client

Ministry of Health (MOH), Singapore

##### Project Management

Arcadis Pte Ltd

##### Architecture Firm

Surbana Jurong Consultants Pte Ltd

##### Principal Architect

Lim Keng Yong

##### Interior Design Firm

Context Architects Pte Ltd

##### Structural Engineer

Surbana Jurong Consultants

##### MEP Engineer

Surbana Jurong Consultants

##### Quantity Surveyor

Mott MacDonald Singapore Pte Ltd

##### Landscape Architect

Surbana Jurong Consultants

##### Green Mark Consultant

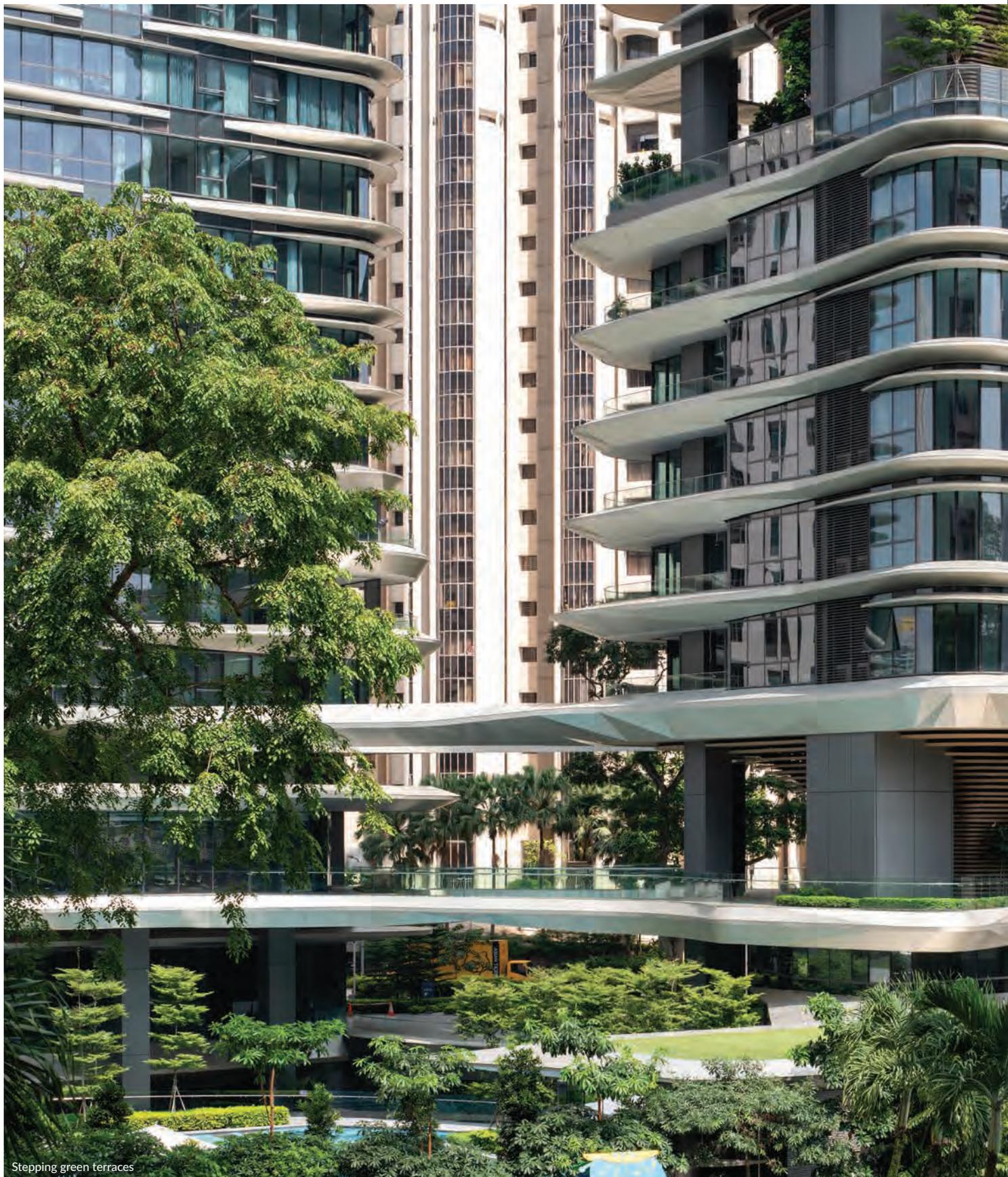
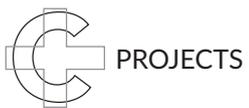
Surbana Jurong Consultants

##### Main Contractor

H P Construction & Engineering Pte Ltd

##### Images

Surbana Jurong Consultants



Stepping green terraces



## NEW FUTURA

Nestled in Singapore's Leonie Hill, New Futura's two 36-storey condominium towers feature rigorous patterns, bold curves and precise detail—creating a distinct figure in the city's skyline that responds to the energetic urban context.

The curvilinear design language is translated throughout—from the crown, towers and sky gardens to the landscape, podium and amenities. The reflective sculpted metal façade changes colour with the weather and time of day, contributing to the active nature of the design.

The towers are linked by a bridge, which is bifurcated to preserve view corridors and to allow sunlight into the parking area below. Public and private spaces are woven together throughout, with six sky gardens, shared sky pools and lounging areas punctuating the glass façade at varied intervals. Asymmetrical overhangs create gradual steps that facilitate an energetic transition from top to bottom and weave together dispersed green spaces. The generous use of wood blends seamlessly into the terraced garden spaces.

The design also incorporates modernised feature elements from the historic tower that previously stood at that site. For example, the large overhang of the original tower has been reimagined as a series of sculpted metal balconies and sunshades.

The entrance features a dramatic double-height entry lobby, while a sunken garden is incorporated into the below-grade parking facility. The efficiently-planned floor plates accommodate 124 units—each featuring private elevator doors that open into spacious living and dining rooms, with balconies to capture the city views.

The two towers occupy 25 per cent of the total site footprint, while the rest of the space is used for a wide range of amenities, including a jogging track, dining facilities, clubhouse, various pool facilities, playground and cabana.

#### GREEN MEASURES

Passive cooling systems, water and energy efficiency, and environmental quality and protection—such as the conservation of existing trees and the use of Green Label-certified materials—are some of the sustainability solutions used in this project.

The custom unitised curtain wall system enhances quality control during fabrication and facilitates rapid installation. High-performance insulating glass with an advanced, low-E coating optimises thermal control while filling the interiors with ample natural light.

The gracefully curved aluminium fins on the façade further reduce direct solar radiation, while acting as light shelves that bring indirect sunlight further into the building. The balconies provide additional shade, while the sky and roof terraces also help collect and manage storm water. 



The bifurcated connecting bridge allows light into the parking below



Sky gardens are located at various levels



Sunken garden



Swimming pool



#### PROJECT DATA

<b>Project Name</b> New Futura	<b>Interior Design Firm</b> Axis ID Pte Ltd
<b>Location</b> 14, Leonie Hill Road, Singapore	<b>Civil &amp; Structural Engineer</b> KTP Consultants Pte Ltd
<b>Completion Date</b> November 2017	<b>MEP Engineer</b> Squire Mech Pte Ltd
<b>Site Area</b> 8,085 square metres	<b>Quantity Surveyor</b> Davis Langdon KPK (Singapore) Pte Ltd
<b>Gross Floor Area</b> 23,217 square metres	<b>Lighting Consultant</b> Light Cibles Pte Ltd
<b>Building Height</b> 36 storeys each; 160 meters	<b>Landscape Architect</b> Coopers Hill Singapore Pte Ltd
<b>Number of Units</b> 124	<b>Façade Consultant</b> HCCH Consulting Pte Ltd
<b>Developer</b> City Developments Ltd	<b>Demolition Contractor</b> Aik Sun Demolition & Engineering Pte Ltd
<b>Design Consultant</b> Skidmore, Owings & Merrill LLP (SOM)	<b>Main Contractor</b> Dragages Singapore Pte Ltd
<b>Design Team</b> Roger Duffy; Anthony Vacchione; Li Shao; Colin Koop; Peter Fajak; Jongwon Lee; Kwong Yung Yu	<b>Images</b> SOM
<b>Local Design Firm</b> ADDP Architects LLP	



The Arc provides cross-campus links to adjacent buildings



## NTU LEARNING HUB 'THE ARC'

**T**he Arc, the second learning hub facility at Singapore's Nanyang Technological University (NTU), seeks to transform the delivery of higher education with cutting-edge spaces that promote active social learning in an open and revitalised landscape setting.

The winning design by KIRK, in association with DCA Architects, features a series of 'learning platforms' tuned to setting and place, catering for different learning patterns, modes and technologies.

The building programme includes 56 'smart' classrooms with 30 to 72 clustered seats, 13 project discussion rooms, a 108-seat lecture theatre, student hub and chillout zones, food and retail tenancies and workshop spaces.

Gone are the days of traditional classrooms where students sit passively in rows. The design response intentionally transcends the cellular planning model and becomes a more effective open learning environment. The active learning spaces are designed for flexibility and dynamic participation, integrating space, pedagogy and technology-enhanced active learning (TEAL) facilities.



Ventilated atrium that 'breathes' naturally

Beyond its functional role in facilitating collaboration and learning, The Arc stands as a vibrant campus heart with its iconic architecture. Its open curves, translucency and permeability welcomes the university community at the North Spine and provides cross-campus links to adjacent buildings.

The development—Singapore's first Green Mark Platinum building—also sets a new benchmark for sustainable tropical architecture. Instead of walls, it has aluminium sunscreens that reduce solar glare and heat and keeps rain out, while allowing ventilation throughout the day—making it a building that 'breathes'.

Using computational fluid dynamics (CFD) and micro-climate analysis, the design consultant modelled how comfort levels could be maximised by accelerating outside air movement through the permeable building. This ensured 30 per cent of the floor area could be naturally ventilated.

The building's air-conditioning system uses passive cooling coils to chill the air without the use of fans. These coils cool the air as it sinks downwards, which moves warm air upwards. Other eco-friendly features include energy-saving LED lighting, motion sensors and solar-powered systems.

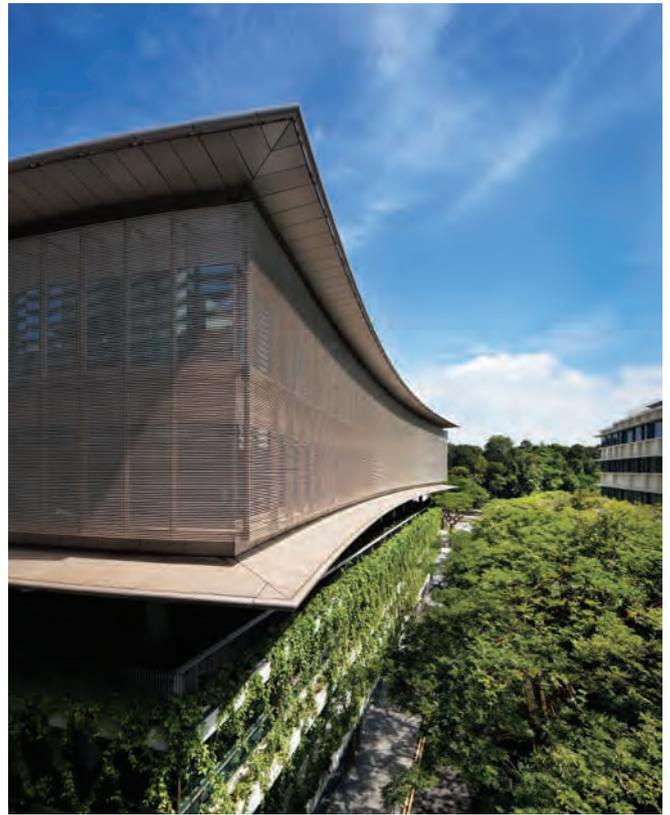
The final product is a building that is distinctly regional, reflecting and responding directly to the local climate. 



Tropical architecture reimaged



Aluminium sunscreens reduce solar glare and keep rain out



Permeable skin



#### PROJECT DATA

**Project Name**

NTU Learning Hub 'The Arc'

**Location**

76, Nanyang Drive, Singapore

**Completion Date**

January 2018 (TOP)

**Site Area**

9,650 square metres

**Gross Floor Area**

18,113 square metres

**Building Height**

6 storeys

**Client**

The Nanyang Technological University (NTU)

**Design Consultant**

KIRK

**Design Team**

Richard Kirk; Jonathan Ward;  
Greg Clarke;  
Karl Eckermann; Lamare  
Wimberly

**Architecture Firm**

DCA Architects

**Principal Architect**

Khoo Poh Bin

**Interior Design Firm**

I.DCA Pte Ltd

**Civil & Structural Engineer**

KTP Consultants

**Mechanical Engineer**

AECOM Singapore Pte Ltd

**Quantity Surveyor**

WT Partnership (S) Pte Ltd

**Green Building Consultant**

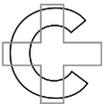
Building System and  
Diagnostics Pte Ltd

**Main Contractor**

Lian Ho Lee Construction  
(Pte) Ltd

**Images**

Patrick Bingham-Hall; KIRK



The enveloping aluminium louvres resemble woven fabric, representing the textile industry



# NICCA INNOVATION CENTER

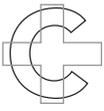
**N**ICCA Innovation Center serves as a research facility for a chemical manufacturer group that has been based in Fukui Prefecture since 1941.

Located within an urban environment lined with residential houses, it is designed as an innovation hub—a bazaar for the exchange of knowledge and skills—to bring people ‘from the world to Fukui’.

The enveloping aluminium louvres on the façade resemble woven fabric, representing the textile industry with which the company is closely associated. They hide pipes while mitigating the sun’s rays from the east and filtering the surroundings.

Commons—open-concept hot-desking offices—are located in the centre of the building as multipurpose spaces that facilitate active interactions and ‘cross-fertilisation’ of ideas and approaches. The commons are also linked seamlessly to the various laboratories, which have been ‘opened’ up with glass walls—liberating researchers from the solitude of work and inspiring interaction within an integrated research community.

While the commons on the second and third floors are intended for employees, there is a public common on the first floor that is open to visitors and people from the community. In that space, there is also a showcase, café, cafeteria, practical laboratory, hair salon and hall.



The 'street' offers a multi-layered view of the building's spaces

A 'street' connecting the first through fourth floor allows a bird's eye view and multi-layered experience of the building's spaces. This 'street' is intentionally made longer than necessary to elicit more encounters with researchers.

Idea Tables are set up in the hallways to encourage collaboration, while contemplation rooms and library offer some personal space.

### A COMFORTABLE CAVERN

Louvre-like slits in the concrete ceiling, with a parallelogram cross-section, function as passageways for natural light and wind into the interiors. The gabled top light can be opened and closed to capture the prevailing wind that blows north-south over the Fukui plains, drawing it into the commons by gravity-based ventilation.

To reduce the heat from the natural lighting, the sun's movements were calculated to determine the angle and aesthetics of the ceiling slits. Thermal active building system (TABS) pipes within the slabs and walls provide radiant air-conditioning using Fukui's abundant groundwater. After the groundwater cools the solar radiation, it is used in the laboratories, toilets, sprinklers and for melting snow. A thermal storage-type system is used to pump hot water for heating during winter. 



Glass walls connect laboratories seamlessly to the commons



#### PROJECT DATA

**Project Name**  
NICCA Innovation Center

**Location**  
Fukui, Japan

**Completion Date**  
November 2017

**Site Area**  
12,360.37 square metres

**Gross Floor Area**  
7,495.73 square metres

**Architecture Firm**  
Tetsuo Kobori Architects

**Structural Engineer**  
Arup

**Mechanical Engineer**  
Arup

**Images**  
Takahiro Arai

Public commons



Groundwater cools air that is then sucked into the building



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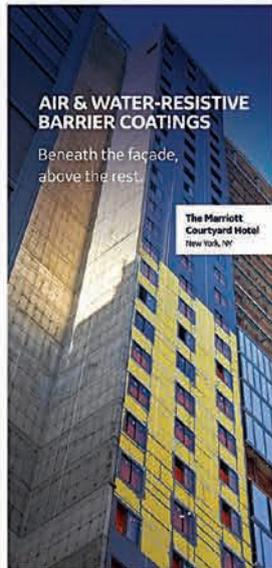


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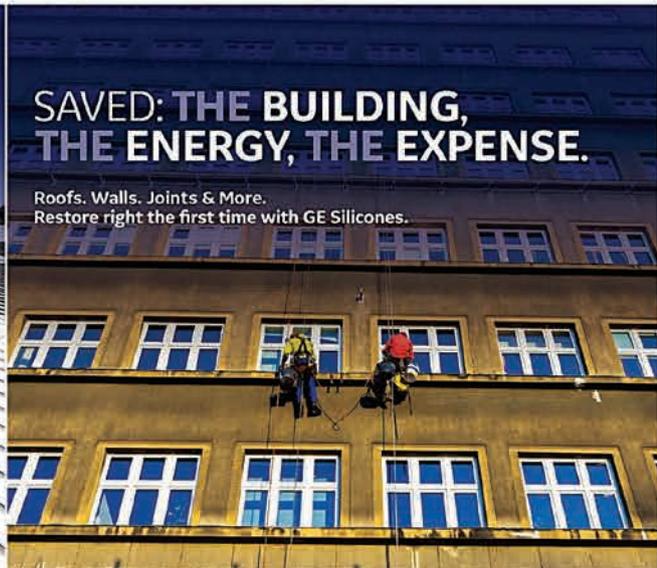
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TV wall ledge and AV room fixtures are elevated off the ground for easy cleaning



## SHARON PHANG RESIDENCE

This luxurious private residence in Kajang is designed with a clever mix of timeless classics and modern elegance.

Stepping into the home, one is greeted by an open and bright family-friendly setting. Vertical forms on the wall continuously draw the eye upwards to the high ceiling. Polished marble and touches of brass contrast with classic-looking wall panels and white and muted colours for a subtle yet direct implementation of *yin and yang*.

For a young family, practicality is key. Ample storage for clutter control seamlessly blend with the classical wall panels, while the TV wall ledge and AV room fixtures are elevated off the ground for easy cleaning.

The layout is optimised for efficiency. For example, the powder room is cleverly positioned at the empty space beneath the staircase. A large reflective black feature wall visually enlarges the elegant and cosy space.

The designers also sought out creative ways to implement environmental features by capitalising on the surrounding landscape. The scenic family area at the first floor is highlighted by a large single-framed window. Apart from bringing natural light into the room, the window also acts as a 'live' artwork that is constantly changing. 



A large single-framed window in the family area acts as a 'live' artwork



An open and bright family-friendly setting with a high ceiling



Dining area and breakfast counter

**PROJECT DATA**

**Project Name**  
Sharon Phang Residence

**Location**  
Sierramas Kajang, Selangor, Malaysia

**Completion Date**  
January 2017

**Site Area**  
5,688 square feet

**Building Height**  
3 storeys

**Client/Owner**  
Sharon Phang

**Interior Design Firm**  
Ooi Design & Associates Sdn Bhd

**Principal Designer**  
Ooi Boon Seong

**Lighting Consultant**  
Tsen Lighting

**Main Contractor**  
Ornamental Details & Aesthetic Sdn Bhd

**Images**  
Gavinyam Studio



Polished marble and touches of brass for a modern elegant look



A large reflective black feature wall visually enlarges the cosy powder room



# TERMINAL 4, CHANGI AIRPORT

Singapore Changi Airport's Terminal 4 (T4) delivers the future of airport terminals with its state-of-the-art and user-friendly facilities and timeless design.

The design vision for T4 was carefully crafted after intense study of existing airport passenger behaviours and a desire to celebrate Singapore's personality. The result is a 'future-ready' terminal that offers a vibrant immersive experience, with pockets of surprises.

The terminal's interior pays detailed attention to architectural structures, soft finishing, lighting effects and ergonomic and passenger-friendly furniture and facilities.

A contemporary petal motif—based on the orchid, Singapore's national flower—appears ubiquitously in various locations, from the skylights to the marble flooring and carpets, creating a coherent design language.

With an abundance of skylights and glass walls, T4 not only provides an ambient daytime experience but also simulates a natural environment for more than half a million plants and trees, spread across 2,000 square metres of landscaping. The Boulevard of Trees along the departure corridor, for one, consists of more than 160 ficus trees.

## TRANSPARENCY OF SPACE

The Benoy design team identified key moments in the passenger's journey to find ways to reduce stressors in wayfinding, immigration and security, and general sense of place.

Oversized signages, centralised security screening and open spaces help passengers move through the terminal effortlessly. In the departure hall, the check-in islands are angled towards the common immigration control area as a natural and intuitive wayfinding.



The Heritage Zone: a showcase of Singapore's local culture and architectural heritage



A walk-through integrated retail concept, with double-height shopfronts, greet shoppers right after the clearance processes. The pièce de résistance is the 300-metre-long Central Galleria: a glazed, open space separating airside and landside areas running the length of the terminal. The design enables departing passengers to stay in visual contact with their friends and family and provides a glimpse of what awaits in the transit lounge.

#### SEAMLESS AND REFRESHING

T4 engages with passengers through a theatre of different experiences, heritage-themed façades, immersive LED digital displays and more.

Notably, the Petalclouds kinetic installation in the Central Galleria evokes the impression of clouds moving slowly in the sky. The harmonic, collective choreography of six identical sculptures results in a continuous interplay of form, animated light and reflections that can be seen from all around the terminal.

The art collection at T4 showcases an eclectic mix of contemporary works by local and foreign artists, with a diverse blend of mediums, sizes and imagery, which weaves a narrative that converges art and travel.

#### FAST TECHNOLOGY

T4 was conceived with the vision to rethink travel and break new ground through innovative concepts of operation and terminal design, to address capacity needs as well as improve efficiency and manpower productivity.

Facial recognition software enables passengers to check-in at their own convenience, while computed tomography (CT) and automated tray return systems are used for security screening of hand-carry luggage. AI technology and millimetre wave technology is used for quick and easy passenger screening.

The project has also been accorded the Green Mark Gold Plus and Universal Accessibility awards for its sustainability and accessibility features, such as its energy-efficient baggage claim system and ample natural lighting. 



The Petalclouds kinetic installation suspended 200 metres across the Central Galleria



The nature-inspired boarding gate



Overview of the departure hall with petal-shaped skylights

**PROJECT DATA**

**Project Name**  
Terminal 4, Changi Airport

**Location**  
Singapore

**Completion Date**  
2017

**Gross Floor Area**  
225,000 square metres

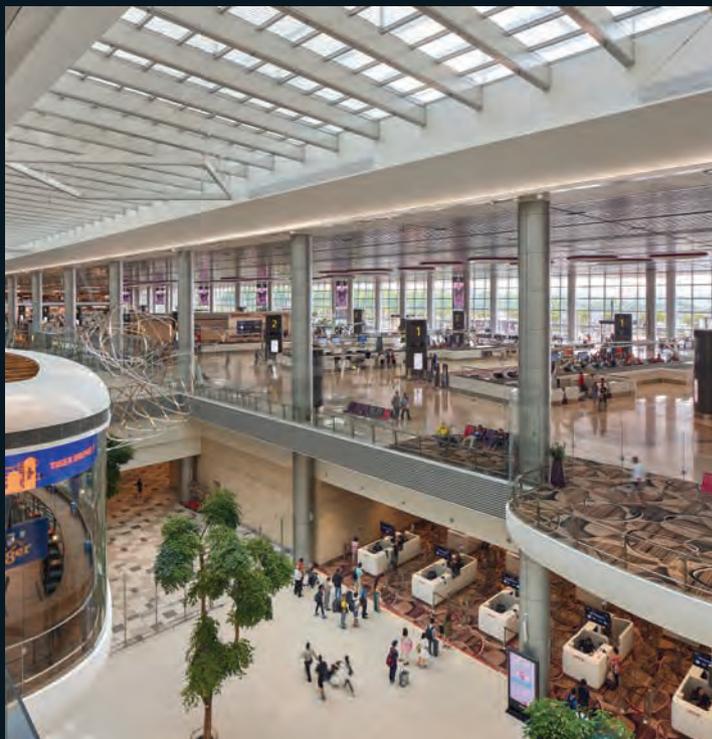
**Client/Owner**  
Changi Airport Group

**Concept Design Architect**  
Benoy

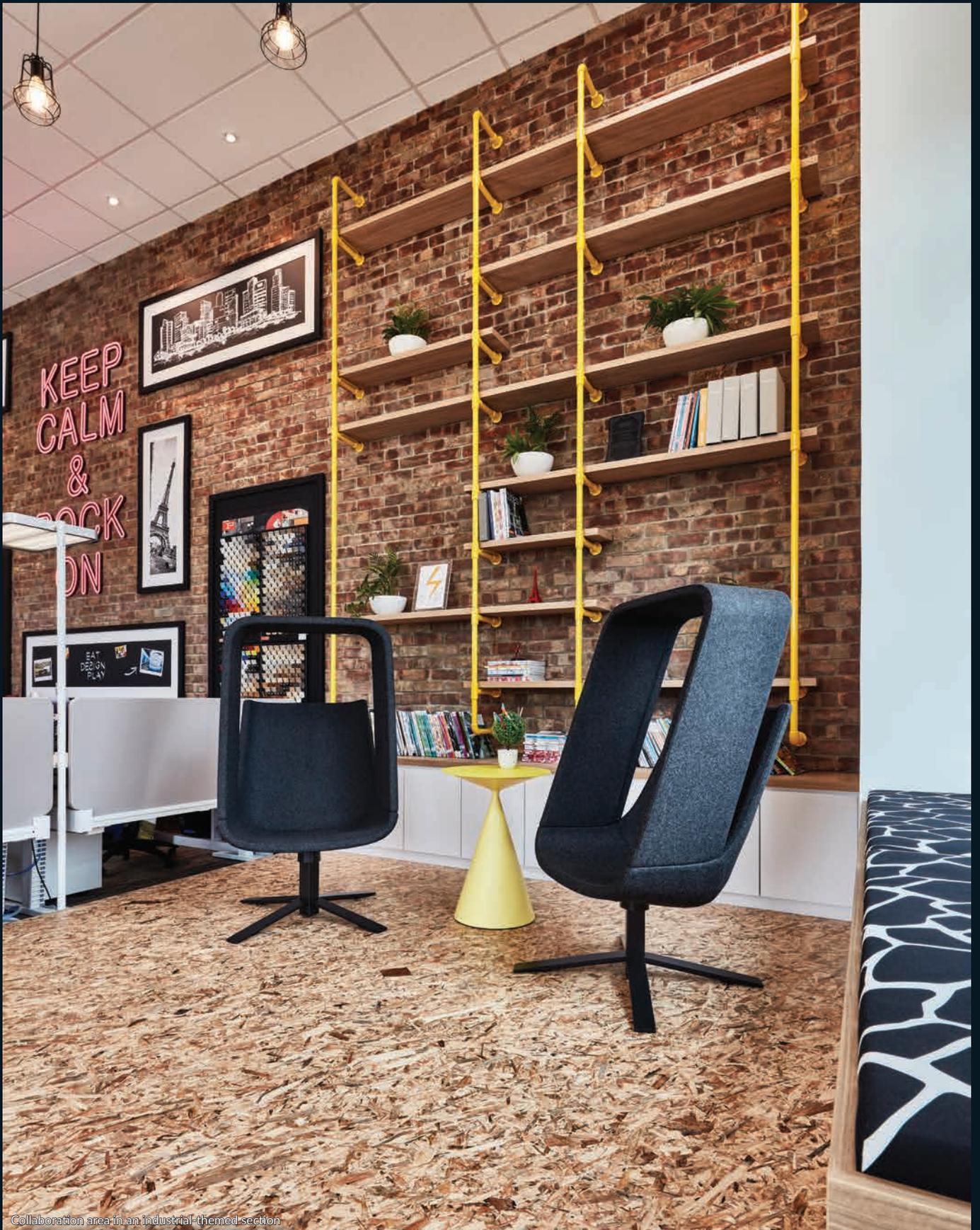
**Executive Architect**  
SAA Architects

**Interior & Wayfinding Designer**  
Benoy

**Images**  
Benoy



A 'future-ready' terminal offering a vibrant immersive experience



Collaboration area in an industrial-themed section



A green wall with a canopy of twinkling LED 'raindrops'

# ID21 OFFICE

ID21's move to a loftier duplex unit in the same office block presented an opportunity for the firm to give its staff a more generous and inspiring premises. As well as reinvent workplace design to showcase its creative capabilities.

Much of the space is deliberately kept neutral and subtle, with the spatial identity infused into the visitor's journey. From the outside, a heavy oxidized copper sliding door, with a discreet laser cut logo, gives away little of what lies inside.

Upon entering, visitors are greeted by a rainforest-themed reception, before turning the corner to face a bright and vibrant office. This element of surprise continues around every turn, heightened by the experience of each distinct area.

To achieve a balance of social interaction, collaboration and

individual concentration, department-based work areas are carved out and seamlessly woven into the flow of the open-plan space.

The double-volume height and live greenery in the back office and workstation areas contribute towards an airy, naturally-lit environment for employee wellbeing.

All enclosed rooms are built in glass to allow visual connectivity, while meeting rooms stand as raised centrepieces. A variety of collaboration furniture—from large discussion counters to configurable lounge seats enhanced with tech connectivity—allows for spontaneous discussions.

While not a big office, it contains a variety of 'worlds' that staff can disappear into. In one industrial-themed section, an



Fixed desk area with desk lighting

oversized neon sign on a feature wall banishes workplace monotony, while another area evokes serenity with lush greenery built into storage features.

From a canopy of twinkling LED 'raindrops' and creative magnetic staff portraits in the meeting rooms to cloud-inspired sponged effect tiles and hand-patterned carpet tiles that echo pebbles and textures from nature ... the result is a curiously different and inviting office.

Sustainability is another key point of innovation. Plants feature in many areas, from free-standing fiddle-leaf fig trees to miniature fern potted gardens, and rows of greenery double as partitions. Desk lighting allows for comfortable personal illumination and reduced wastage from less-efficient overhead lights.

Much of the furniture and carpentry from the previous office are incorporated into the interiors, while new furnishings and carpeting are Green-certified. A low false ceiling in a section of the back office allowed the reuse of glass partitions from the previous office.

During the construction process, key concerns were resource scheduling and safety due to the high ceiling, which were addressed with efficient scheduling of the scissors lift and meticulous risk assessment and mitigation. 



Breakout area and pantry



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Magnetic team portraits can be rearranged to introduce the project team during presentations



**PROJECT DATA**

**Project Name**  
ID21 Office

**Location**  
Great World City East Office  
Tower, Singapore

**Completion Date**  
June 2017

**Gross Floor Area**  
572 square metres

**Interior Design Firm**  
ID21

**Interior Fit-Out Contractor**  
ID21

**Images**  
ID21

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# IBIS HOTEL INANAM, KOTA KINABALU

Located on the outskirts of the city, in an unassuming commercial district, this hotel overlooks the sea and is set against a backdrop of rolling hills with a picturesque view of Mount Kinabalu.

To set it apart from the many tourist hotels in the city, the designers created an aesthetic with an industrial, raw back-to-basics feel that celebrates the essence and quality of natural materials.

This was translated through exposed concrete shear walls; steel mesh ceilings; gabion wall features; concrete cast reception table; timber bed frames; mesh wardrobes; steel rebar and chequered plate staircase; fair-faced clay brick façade feature walls and CNC-cut steel plate signage; among others.

The design-and-build contractors added value to the locally-sourced raw materials with creative design solutions. For example, the standard clay brick façade is combined with uplighting to achieve a textured effect from afar. The concrete columns are specially cast with circular patterns and chamfers. The solid timber carpentry and bedheads comprise local timber mixed with some hard (*selangan batu*) timber for variations in colour, which are then finger jointed, planed flat, cut to size and lacquer sprayed. 



Bar and café with exposed M&E ducting as a ceiling feature





Buffet counters with custom-made finger-jointed solid timber and steel legs



Raw concrete cast reception desk with exposed steel plate and recessed lighting detail



Pre-function area with a grand exposed ceiling



Suite rooms with a play of fresh and muted colours



## PROJECT DATA

### Project Name

Ibis Hotel Inanam,  
Kota Kinabalu

### Location

Taipan, Inanam, Kota Kinabalu,  
Sabah, Malaysia

### Completion Date

February 2018

### Site Area

2,350.2 square metres

### Gross Floor Area

10,429.3 square metres

### Building Height

12 storeys

### Number of Rooms

185

### Client/Owner

Inanam Properties Sdn Bhd

### Architecture Firm

Asima Architects Sdn Bhd

### Principal Architect

K.H. Lim

### Interior Design Firm

JWA Design & Build Sdn Bhd

### Principal Designer

Ar James Wong Kein Peng

### Civil & Structural Engineer

Jurutera Perunding Bumi Reka

### Mechanical & Electrical

#### Engineer

Power Project Consultant  
Sdn Bhd

### Quantity Surveyor

SP Perunding

### Lighting Consultant

Lightcraft Project Sdn Bhd

### Main Contractor

Rayzamas Jaya Sdn Bhd

### Interior Fit-Out Contractor

JWA Design & Build Sdn Bhd



An experiential and immersive retail experience

## DURASPORT RETAIL STORE

Located in the iconic Jewel Changi Airport, the new Durasport store offers an experiential and immersive retail experience.

Targeting a growing but relatively untapped market segment—the ‘ultra-performance’ athlete and sporting enthusiast—there are four hands-on zones, allowing customers to sample and test sportswear or equipment before purchasing.

In-store simulators include an immersive ski simulator, an interactive non-motorised climbing wall with a rotating surface, a ‘magic mirror’ that allows customers to virtually ‘try on’ ski clothing, a swim bench and an interactive cycling trainer.

To draw traffic to this new-to-market brand, the store façade is designed to appear as if in dynamic motion, conveying a sense of active sporting activities.

Tectonically, high-grade stainless steel is used in a disciplined and cohesive manner as the primary spatial material: an intentional reference to the typical R&D laboratory environment in which the store’s innovative and high performance products would have been developed.

The customised display system with integrated LED lighting allows for extended flexibility across the product and size range. 



Cycle zone



A dynamic store entrance



Arctic zone display with a 'magic mirror'

**PROJECT DATA**

**Project Name**

Durasport Retail Store

**Location**

Changi Jewel Airport, Singapore

**Completion Date**

1 April 2019

**Client**

Durasafe Pte Ltd

**Interior Design Firm**

Ministry of Design

**Design Team**

Colin Seah; Joyce Low; Kevin Leong; Fai Suvisith; Justin Lu; Nong Chotipatoomwan; Maggie Lek; Richard Herman

**Gross Floor Area**

183 square metres

**Interior Fit-Out Contractor**

Kingsmen Projects Pte Ltd

**Images**

CI&A Photography; Edward Hendricks

# PHRONTISTRY@ SCOTTS SQUARE

This home office offers a 'thinking place' in the midst of one of the busiest parts of the city.

Interior designer TA.LE Architects removed many of the internal walls to open up the space to fit an art gallery, a living area, a garden and an open-concept bathroom and kitchenette.

A series of full-height sliding glass doors along the living area opens up to a garden with large potted plants on the exterior balcony, blurring the boundary between indoors and outdoors.

A steel frame display shelf with onyx wood veneer—a play of horizontal planes and subtle vertical lines—brings focus to the room. A set of moveable sofas offers a perch from which to enjoy the city view and garden.

The floor, laid in Arabascato book-match finish, depicts a seamless flow of stone river—reflecting one's thought process during deep thinking. The calligraphy brushstroke-like designs on the marble fit in with the gallery theme. A large 'Wave' feature painting behind the walnut slab office table provides a splash of colour.

The open kitchen and bathroom liberate the limited interior space. Imported Lava stone is used for the bathroom's wall cladding, while tinted black glass with an ultra-reflective surface on one side is used for the glass enclosure. 



The 'Wave' painting adds a splash of colour





A steel frame display shelf with ebony wood veneer is the highlight of the room



The open kitchen and bathroom liberate the limited interior space

#### PROJECT DATA

**Project Name**  
Phrontistery@Scotts Square

**Location**  
6, Scotts Rd, Singapore

**Completion Date**  
May 2019

**Gross Floor Area**  
50 square metres

**Interior Design Firm**  
TA.LE Architects

**Principal Designer**  
Tay Yanling

**Interior Fit-Out Contractor**  
4plus8 Pte Ltd

**Images**  
TA.LE Architects

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The farmstay provides an experience of past cultures and traditional ways of living.

# AHSA FARMSTAY

AHSA Farmstay is designed to be a generator for change for the local Northern Thai community, allowing them to share their culture and traditional ways of living while generating a steady source of income through sustainable tourism.

Set among active paddy fields, the buildings comprise of a homestay cluster and a day tour cluster, where local food production is showcased in an immersive way.

The project celebrates the beauty of vernacular architecture, which is adapted to cater for foreigners. For example, the pavilions are fitted with a raised platform so that visitors are able to take a break from sitting on the floor and stretch their legs.

All interiors are designed as a continuation of the exterior, with everyday household items, adapted local crafts, and an overhead storage that is ergonomically designed for a range of occupants. *Kapoms* (large cylindrical baskets woven from leaves that are used to store rice) are integrated in the main kitchen unit. The application of colours, spaciousness and natural elements, as well as the textures and shapes of the furniture, helps enhance the sense of comfort and happiness.

The homestay clusters give off a traditional compact living vibe. The guest bedrooms are designed with a double-layered façade that insulates against extreme heat and facilitates cross-ventilation when the shutters are open.

The buildings are mainly made of reclaimed timber, earth-mixed concrete and locally sourced roofing tiles.

Reclaimed timber has its own charms and beauty as it shows variations of tone and texture. While the initial material cost is lower than freshly milled standardised planks, reclaimed timber does require more labour hours and involves a complicated process to dismantle and reassemble. The project architect worked closely with the contractor and craftsmen to guide them through the process. Extensive documentation of individual planks was done to minimise construction cost and material wastage.

All wooden structures are raised on concrete stumps, raising the wood from the ground and allowing the structure to stay dry during flash floods from the mountain.

The construction of the project relied primarily on renewable



Double-layered façade acts as an insulator against extreme heat



Raised platform adjacent to the field create a comfortable break-time for visitors to enjoy the scenery



The homestay is set amidst paddy fields

resources. Rainwater is collected in a natural reservoir to a hill and piped to the site for use during construction and operations. Earth used in the concrete render mix is extracted from the site, which extends the existing paddy fields to increase food production capacity.

The project is currently connected to the national grid for electricity. However, the design has provisions for photovoltaic panels and storage spaces for batteries, which will be installed when adequate funding is achieved.

The buildings are part of the first phase of the overall development and are designed as replicable prototype units for ease of future expansion. The design development and construction involved the local villagers to the extent that the community is currently building new units that are self-tweaked to better match their needs and circumstances as the project expands. 



The interiors are designed to create a soothing, peaceful atmosphere



The open-concept kitchen connects with the natural surroundings

## PROJECT DATA

**Project Name**  
AHSA Farmstay

**Location**  
Mae Chan, Chiang Rai, Thailand

**Completion Date**  
31 May 2018

**Site Area**  
88,744 square metres

**Gross Floor Area**  
772.79 square metres

**Building Height**  
6.9 meters

**Client/Owner**  
Rung Rak Chan Co.,Ltd.

**Architecture Firm**  
Creative Crews Ltd

**Principal Architects**  
Ekkachan Eiamananwattana;  
Puiphai Khunawat

**Interior Design Firm**  
Creative Crews Ltd

**Principal Designer**  
Ekkachan Eiamananwattana

**Civil & Structural Engineer**  
Wor Consultant Co.,Ltd.

**Mechanical & Electrical  
Engineer**  
EXM Consultant Co.,Ltd.

**Quantity Surveyors**  
Puiphai Khunawat; Ekkachan  
Eiamananwattana;  
Jirakit Panomphongphisarn

**Main Contractor**  
Creative Builder

**Interior Fit-Out Contractors**  
Bundajai Co.,Ltd.;  
Creative Crews Ltd

**Images**  
Thitaya Tan; Baan Lae Suan



The free-form interior evokes an organic feel

## SINGHA COMPLEX RETAIL PODIUM

Located in the Huai Khwang district of Bangkok—at one of the city's busiest intersections—this mixed-use project combines a lifestyle mall, a Grade A office and a luxury condominium.

As the Singha brand is best known for its beer, the elements and colour scheme of the complex are derived from barley stalks and the amber hue of beer. The design of the building itself is a modern, elegant abstraction of the grain's natural form and colour. Mimicking the stalk and spikelet, the building's façade wraps around the base of the structure, peeling back at the tower's crown to reveal a tiered cluster of telescoping floors.

The four-storey retail podium below houses a mini supermarket, café and bakery, health and wellness service providers, shopping and restaurants.

The interior design of the mall is inspired by the architectural theme. A similar palette of colour accents and geometric shapes are articulated throughout, particularly in the rest area, canteen and interior sitting spaces.

The free-form curved feature wall at the lift lobby area is combined with traditional Japanese-inspired silk screen patterns, painting schemes and wooden elements. Plant materials and lots of greens evoke a serene urban environment.

The ceiling over the open shops on the ground floor feature a decorative mesh material that adds to the story of the space—an alternation between full and empty volumes, an interplay of lights and shadows, and a state between placid stability and dynamic movement. Every column is clad with a natural material and stone veneer that is inherently light and thin, yet strong when bent to emphasise curved corners, for an organic feel.

The designers set out to create a cohesive experience of inclusive commercial spaces for retail tenants. The tenancy spaces are compartmentalised and defined with the use of feature timber fin ceilings and stretched vinyl membranes. This allows different tenants to personalise their own space for a variety of purposes, whether for alfresco dining, open shops or even indoor gardens. 



The colour accents and geometric shapes complement the sitting spaces



The tenancy spaces are defined with the use of feature timber fin ceilings and vinyl membranes

#### PROJECT DATA

**Project Name**  
Singha Complex Retail Podium

**Location**  
1788, New Petchaburi Road,  
Huai Kwang District, Bangkok,  
Thailand

**Completion Date**  
October 2018

**Site Area**  
14,491 square metres

**Gross Floor Area**  
120,000 square metres

**Building Height**  
42 storeys; 203 metres

**Client/Owner**  
Singha Estate PCL

**Architecture Firm**  
Design 103 International Ltd

**Interior Design Firm**  
Steven J. Leach Jr +  
Associates Ltd

**Principal Designer**  
Sumet Malaluxami

**Civil & Structural Engineer**  
Aurecon Consulting (Thailand)  
Co.,Ltd.

**Mechanical & Electrical  
Engineer**  
EEC Engineering Network  
Co.,Ltd.

**Quantity Surveyor**  
Arcadis (Thailand) Ltd

**Lighting Consultant**  
WithLight Co.,Ltd.

**Landscape Architect**  
T.R.O.P : terrains + open space

**Green Building Consultant**  
ISET (Thailand)

**Main Contractor**  
Italian-Thai Development PLC

**Interior Fit-Out Contractors**  
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Timesenterprise Co.,Ltd.;  
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# MALAYSIA

## 360 BOULEVARD



## GEM MALL



PROJECT TITLE	PROJECT TYPE	LOCATION	DEVELOPER	ARCHITECT/ CONSULTANT	CONSTRUCTION START	ESTIMATED PROJECT VALUE (RM 'MILLION)
360 Boulevard	Shopping Centre, Residential, Offices	Kota Kinabalu, Sabah	Homesign Network Sdn Bhd JV Borneo Kemuncak Riang Sdn Bhd	Simplex Architects & Associates Sdn Bhd	Q4 2019	200
Coronation Square: Health & Wellness Tower	Health, Retail	Johor Bahru, Johore	Coronade Properties Sdn Bhd	T.R. Hamzah & Yeang Sdn Bhd	Q4 2019	200
Damai Suria @ Subang	Residential	Shah Alam, Selangor	NPO Builders Sdn Bhd (subsidiary Of Titijaya Group)	DMP Architects Sdn Bhd	Q4 2019	100
Emerald 9 @ Cheras	Residential, Hotel, Offices	Cheras, Selangor	GLM Emerald Square Cheras Sdn Bhd	RSP Architects Sdn Bhd	Q4 2019	800
GEM Megamall	Shopping Centre	Perai, Penang	Regata Maju Sdn Bhd (a Subsidiary Of Belleview Group)	GDP Architects Sdn Bhd	Q4 2019	100
Moolan Suites	Office	Ipoh, Perak	LLC Development Sdn Bhd	Zone Architect	Q4 2019	30
Pullman Melaka Gateway	Hotel	Melaka Tengah, Malacca	KAJ Development Sdn Bhd	DP Architects Sdn Bhd	Q4 2019	250
Penang Times Square (Phase 4): The Central	Hotel	Georgetown, Penang	Ivory Gleneary Sdn Bhd	G & A Consultancy Sdn Bhd	Q4 2019	242
The Arcuz @ Kelana Jaya	Residential	Petaling Jaya, Selangor	Exsimas Development Sdn Bhd	Tan'ck Architect	Q4 2019	85
Trx Residence: Phase 1C	Residential	Kuala Lumpur	Lendlease Projects (M) Sdn Bhd	Grimshaw Architects & GDP Architects Sdn Bhd	Q4 2019	67

Source: BCI Asia Research

# SINGAPORE

## REZI 24

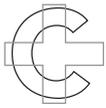


## FYVE DERBYSHIRE



PROJECT TITLE	PROJECT TYPE	LOCATION	DEVELOPER	ARCHITECT/ CONSULTANT	CONSTRUCTION START	ESTIMATED PROJECT VALUE (SGD 'MILLION)
Alteration, Addition & Upgrading works (Apartments, Shops & Mosque)	Mixed Use	51 Bencoolen Street	WBD Legacy Pte. Ltd	Swan & Maclaren Architects Pte Ltd	Q4 2019	15
Anchorvale Crescent EC	Residential	Anchorvale Crescent, Sengkang	Gamuda (Singapore) Pte Ltd and Evia Real Estate (8) Pte Ltd JV	AGA Architects Pte Ltd	Q4 2019	100
Anglo Chinese School (Junior)	Institutional	16 Windstedt Road	Ministry of Education	Architects Vista Pte Ltd	Q4 2019	10.75
Botanic @ Cluny Park	Residential	71 Cluny Park Road	Cluny Development Pte Ltd	LT&TAVID Architects Pte Ltd	Q4 2019	20.63
Factory (former Forte)	Industrial	29 New Industrial Road	Soilbuild Group Holdings	ID Architects Pte Ltd	Q4 2019	20
Fyve Derbyshire	Residential	5 Derbyshire Road	RH Developments Two	KYOOB Architects Pte Ltd	Q4 2019	12.06
North South Corridor Tunnel (Contract N108)	Infrastructure	Marymount Lane/ Pemimpin Place	Land Transport Authority (LTA)	AECOM Singapore Pte Ltd	Q4 2019	446.02
People Bee Hoon Factory: alterations & additions	Industrial	10 Chin Bee Drive	People Bee Hoon Factory Pte Ltd	BK Consulting Engineers Pte Ltd	Q4 2019	7.20
Rezi 24	Residential	Lorong 24 Geylang	Development 24 Pte. Ltd	Park + Associates Pte Ltd	Q4 2019	26
Verdale Condominium	Residential	Jalan Jurong Kechil	COHL Singapore and CSC Land Group	P&T Consultants Pte Ltd	Q4 2019	60

Source: BCI Asia Research



Bigger, wider and connected pathways consider pedestrians' thermal comfort

# KUCHING—URBAN MOBILITY STRATEGIES FOR A 22<sup>ND</sup>-CENTURY INTELLIGENT CITY

In conjunction with Malaysia Urban Forum 2019, Urbanice Malaysia's 'Malaysia 100 Year City' programme encouraged students from various local universities to reimagine what cities will look like 100 years from now and to share their ideas, solutions and concepts to address the challenges of future urban living.

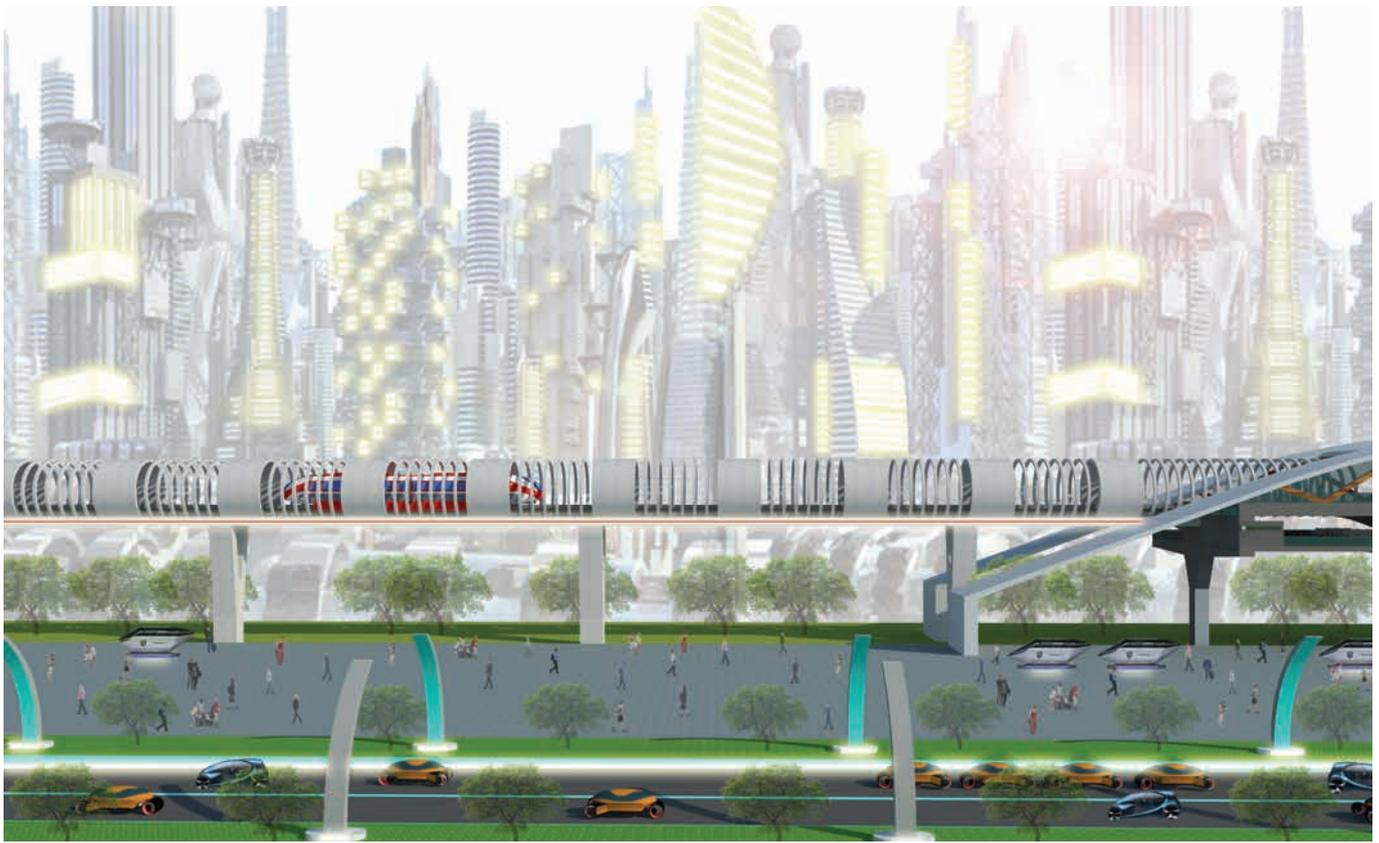
In this project, Team UTM chose Kuching as its project site as it is a city filled with abundant opportunities and potential for economic expansion over the next 100-year period. The project looks into the social life of the people of Kuching—the way they travel and the current state of mobility in the city.

Based on the team's analysis and surveys, people in Kuching have a very high dependence on private vehicles for transportation. This leads to traffic jams during peak times

throughout the city—an average of 30 minutes daily—which will lead to loss of productivity and high petrol combustion. Projections also show that the population is expected to increase to 8.4 million in the year 2110, which the city will need to support.

To solve these issues, the team's proposal is an integration of solutions—to connect people through public transportation, with a choice of walking and riding—that are environmentally-friendly and beneficial to the city. One advantage Kuching has is its abundance of land, which provides higher opportunity and freedom in introducing something new and innovative.

The proposed solution to prepare for future mobility is divided into two phases. The first phase is building the demand, and the second phase is building the ecosystem. This is crucial

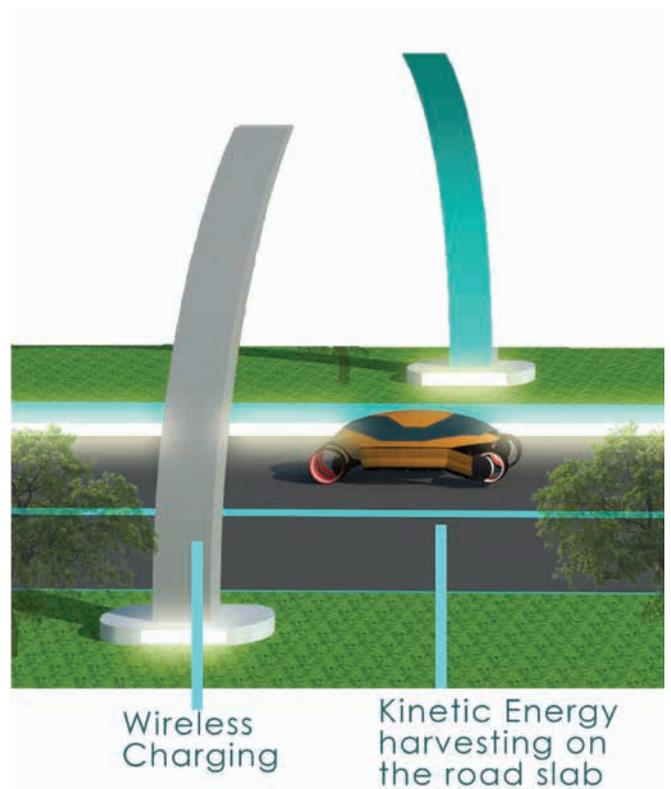


The future of Kuching will include building up an ecosystem where everything is integrated and connected

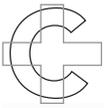
as the primary constraint to the proposed solution is the preference of the people in the way they choose to move about. A solution of a train or MRT system on its own is not able to change people's lifestyle immediately, thus the need to change the mindset of the community towards a more sustainable transportation system.

The first phase aims to change the preferred method of travelling with a reward system that would attract more users. It also includes the introduction of technologies that are able to generate energy, such as SMART STREEk and SCOONETIC. The former are pavement tiles that convert kinetic energy from pedestrian footsteps into renewable electricity that can be stored in lithium polymer batteries, while the latter is a smart scooter with a battery that can be charged by energy produced and converted from its braking technology.

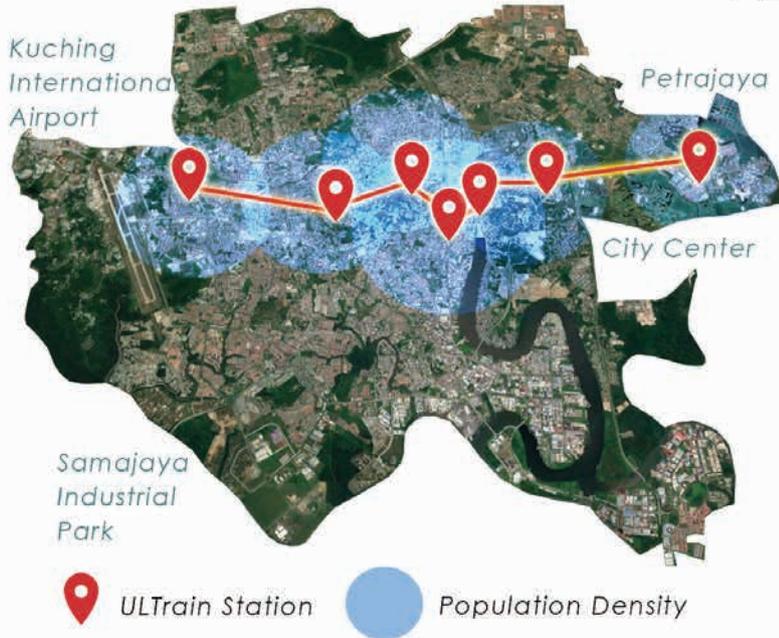
The second phase includes two main components, Kar and ULTrain. Kar is a technology where autonomous vehicles can be booked on a demand-basis and wirelessly charged using energy harvested from road slabs. Kar aims to solve the first and last mile issue, where people can now integrate between different modes of transportations seamlessly. The ULTrain, which is aimed for longer distance travel, works using the concept of a superfast aero-dynamic turbo tube with electromagnetism induction to harvest kinetic energy.



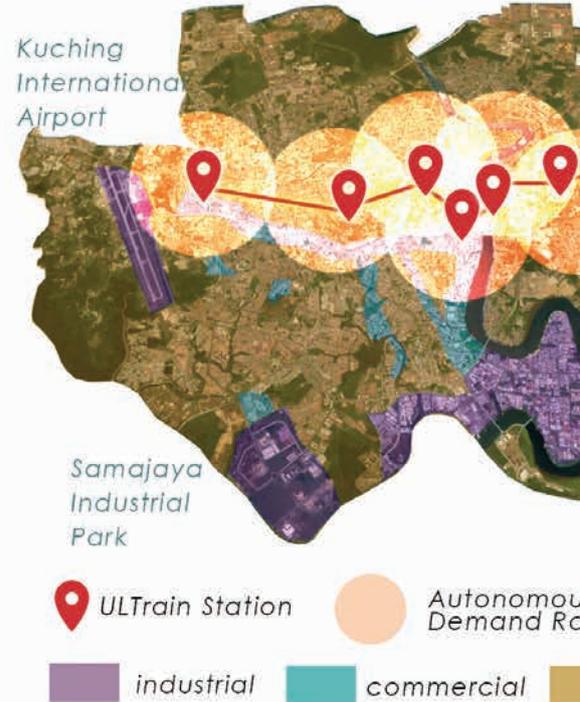
Kar operates with kinetic energy harvesting from the road slabs and wireless charging



## ULTrain Station



## On-Demand Driverless

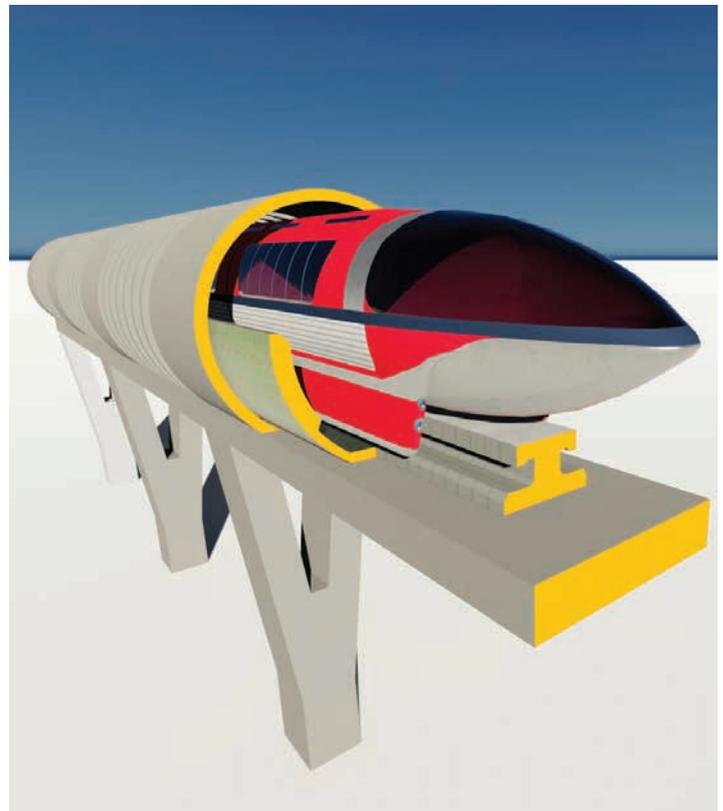


The proposed first ULTrain line is located at the densely-populated core area

By understanding where people travel most to and how they travel, the team also plotted out suitable terminals for ULTrains. The very first line would be from the Kuching Airport to the waterfront area to cater to tourists and visitors, before expanding towards the other parts of the city. Although the implementation of ULTrain may be costly during the construction phase, it is expected to reduce car dependency by 55 per cent and, once completed, generate an estimated RM52 million annually from kinetic energy harvesting technologies. This will provide additional income to the state government as well as quality jobs for the Kuching-ites.

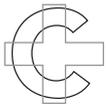
These technologies are currently still being developed, such as the kinetic paving by London-based Pavegen. These solutions will require collaboration between many start-ups and stakeholders to make it work. It also aims to maximise the use of local talents, especially the younger generations, in Kuching to contribute in building up the future of the city and the local workforce to ease the installation process. Another challenge is logistics, as there is limited access in bringing these materials into Kuching.

Future mobility requires an entire ecosystem that is integrated, connected and complementary for each component, so that people will be able to choose how they move about, in a fast, affordable and yet still comfortable manner. 🗣️



ULTrain prototype design





Entrance to the community kitchen

# THE RAMEH FUGANG

This student project features a Eurasian lifestyle-themed community kitchen in Singapore.

The Rameh Fugang means the 'Gathering Kitchen' in the Kristang language. The kitchen offers a space for families, Eurasian Families especially, to cook meals together. Children participate in the process with their parents—an indirect way of passing on culture to the next generation in the context of food. It also provides the experience of a typical afternoon for Eurasians and a platform for families to socialise.

The community kitchen will be located at the Sam @8Q building in Bras Basah, between Waterloo Street and Queen Street, which was a part of the first Eurasian Enclave in Singapore. The Sam @8Q building, which was formerly the primary school wing of the Catholic High School, is currently home to changing contemporary art exhibitions, including a popular annual children's art exhibition. As a result, families would already be familiar with the site and area.

The programme includes a community kitchen (The Fugang), a bakery (The Afternoon Tea) serving signature Eurasian snacks, and a dining/seating area (The Rameh) for families to dine together.

The kitchens are laid out in a way that is playful and effective for families, with double chair heights around the kitchen island to aid the learning process. The 30-metre-long kitchen is divided into three separate spaces for different cuisines. To avoid blocking off or cluttering each section, the set-up of each kitchen is identical, just differentiated with distinctive accent colours. This allows an open circulation between each space and creates a big picture view of the community kitchen.

The existing columns in the building are placed in a way that results in a narrow hallway and an asymmetrical layout. This hallway is transformed into a dining space where the columns now frame each seating area seamlessly.

The spatial structure of the dining/seating area was developed based on a Eurasian calendar in 3D. The special events for the community in the year are marked down in a calendar grid, creating shapes that are then folded in a certain manner to form the structure base of the space.

The use of cherry wood and Terrazzo Veneziano promote a welcoming, homey and playful ambience. 



The bakery serving signature Eurasian snacks



The Fugang, or community kitchen



The Rameh, or dining seating area



The existing columns frame each seating area



The space is divided into a dining area, flanked by a bakery, with a three-part kitchen

**PROJECT DATA**

**Student Name**

Kirana Ariana Gunawan

**School**

Nanyang Academy of Fine Arts (NAFA), Singapore

**Programme**

Diploma in Design (Interior and Exhibition)

**Supervisor/Instructor**

Sabrina Long (Dean, School of Art & Design)

**Project Name**

The Rameh Fugang

**Project Year**

2018

**Location**

SAM @8Q, 8 Queen St, Singapore

**Gross Floor Area**

886 square metres

**Building Height**

2 storeys

**Images**

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