ISSUE 03 · 2016 | Special Edition

Skyline

Insights into planning spaces around us

Imagining our future

A look at shifting landscapes and new ideas

The next 50 years | Tinkerers and thinkers | Rethinking mobility

ISSUE 03 · 2016 | Special Edition

Skyline

OFF THE BEATEN PATH: THE RAIL CORRIDOR HAS GONE FROM BUSY TRAIN TRACKS TO A WALKABLE GREEN CORRIDOR. WE PONDER THE POSSIBILITIES FOR TRANSPORT AND MOBILITY ON PAGE 28.

PHOTO CREDIT: CALEB MING

Contents

Editorial team
Serene Tng
Melissa Lee
Cassandra Yeap

Contributing writers
Jen Eveland
Daniel Seifert
Joseph Jones

Photographers
Cheong Yue Han
Philip Aldrup
Wilson Pang

Guest contributors
Huang Zhongwen
Wong Kai Wen
Ng Yi Wen
Vijay Liew

Videographer
Cheong Yue Han

Editorial assistant
Shannon Tan

Design
Silicon+

Published by

URBAN REDEVELOPMENT AUTHORITY

Address
45 Maxwell Road
The URA Centre
Singapore 069118

We welcome feedback and submissions. Contact us at
cassandra_yeap@ura.gov.sg
+65 6321 8317

Connect with us at
www.ura.gov.sg/skyline
facebook.com/URASingapore
twitter.com/URAsg

COVER PHOTO CREDIT: LIANG GUOSHENG

What will Singapore look like in another 50 years?

The future is for us to create. We take a look at ideas shaping our environments and lives.

The next 50 years

Foreword by **Ng Lang, chief executive officer, Urban Redevelopment Authority (URA)**

As the SG50 celebrations come to a close, something that we can all take pride in is the remarkable transformation of Singapore in the past 50 years. Singapore today is one of the most competitive economies and is linked to the world through a well-connected aviation hub and one of the largest ports. We are also regularly ranked as one of Asia's most liveable and greenest cities. We achieved all these through a planning philosophy underscored by the vision, values and ideas of our city's founding leaders that placed a strong emphasis on people and their quality of life.

Our own solutions

In the area of urban planning and management, a key approach that has set us apart is the boldness to find and adapt solutions unique to our own circumstance. In 1975, we became the first city in the world to successfully implement a road congestion pricing scheme, and subsequently control car population through the Certificate of Entitlement scheme to avoid the traffic gridlocks experienced by many cities.

We applied the same spirit of innovation to devise our own solutions in areas like housing, urban greening and water management. The public housing scheme started in the 1960s has resulted in 80 percent of Singapore's population residing in vibrant and inclusive housing towns with good quality and attractive living environments. We created a City in a Garden and immersed our city in pervasive greenery. We are probably the most advanced in using urban space as water catchment to supplement our water demand.

Starting with the *Future of Us* exhibition, the government has embarked on a conversation with Singaporeans to envisage the future we want. The outcome of this conversation will provide important inputs to help government agencies and URA formulate our future plans for Singapore. Our urban environment is getting more complex and with it the aspirations and requirements of individuals in our society. Singapore's future success will depend on our continued ability to innovate in order to meet these needs and offer an attractive liveable environment with economic opportunities to nurture people, ideas and technology.

In incremental ways, we are already test-bedding exciting new ideas in new development precincts such as Marina Bay, Jurong Lake District, and the Punggol Eco-Town. This precinct-development approach allows us to integrate solutions across developmental agencies to produce better outcomes. We are planning and designing for better walkability and a car-lite environment, improved public streets and spaces to enhance community bonding, upstream planning and integration of urban systems to optimise resource usage. When we plan a new precinct, our aim is to make it more liveable, inclusive and carbon-friendly than the last one.

New paradigms

But incremental efforts at innovation will not necessarily guarantee success in the long term. We are an island with finite land, and linear efforts to optimise space, for instance, will at some stage reach its limitations. For Singapore to continue to thrive another 50 years, we will have to explore new paradigms to reshape the living environment and rethink the way we live, work and play. Fortunately, the advancement in disruptive technology in a wide range of areas offers new, exciting opportunities. Technological breakthrough in areas like additive manufacturing, robotics and automation are already beginning to transform the nature of manufacturing, and hence how we plan for industrial

PHOTO CREDITS (CLOCKWISE FROM TOP LEFT): JEREMY HUI, CHAN WAI MENG, JONATHAN CHIANG, TAN CHOON LAI, NG GUAN SHYH

space. Advances in infocomm technologies are facilitating more flexible working arrangements like telecommuting, while advancement in technology such as in self-driving vehicles and big data management will no doubt allow us to reinvent transport and mobility in our compact urban environment. The same technology can also allow us to re-think healthcare delivery, and how to plan for a more active and independent ageing population.

We are already making adjustments in our urban plans to take advantage of these anticipated changes. For instance, URA's Master Plan 2014 will in the long run bring about two fundamental changes that favour the adoption of new paradigms. The first is the acceleration of efforts to create job centres closer to homes. Beyond the job clusters in Tampines Regional Centre, Jurong Lake District and Paya Lebar, a new area of focus is the North Coast Innovation Corridor that spans Woodlands Regional Centre and the Punggol Learning Corridor and Creative Cluster, which will allow more flexibility to use technology to configure future live-work-play-learn requirements. The second key thrust is to move away from the priority accorded to privately-owned cars. A "car-lite" city will be a very different one that prioritises the public realm for people and quality of life.

Our future

As we embark on the next 50 years, these plans shed some light on the direction we are taking in our plans for Singapore's physical environment. As the plans inevitably need to be accompanied by a change in the way we live and conduct our daily activities, it is important that they continue to be refined and enhanced through public feedback and discourse so that they have broad support.

This issue of Skyline speaks to thought leaders on the exciting future possibilities in several fields. I have no doubt their views will contribute to enriching the conversation on the future we want to create together.

PHOTO CREDIT: DANIEL CHEONG

Living large

How can we continue to enjoy highly liveable environments in future? WOHA and SUTD talk about convenience, equitability, greenery and why planning should be three-dimensional.

Writer **Joseph Jones** | Photographer **Cheong Yue Han**

"Liveability is a fuzzy term, but it's an important consideration for urban planners and architects and will continue to dominate the agenda of urban authorities," says Professor Thomas Schroepfer, the associate head of Architecture and Sustainable Design at the Singapore University of Technology and Design (SUTD), who is studying future urban typologies for enhancing liveability in Singapore, in collaboration with URA, under the Lee Kuan Yew Centre for Innovative Cities Future of Cities research project. This encompasses many aspects from socio-economic and environmental factors to accessibility of public spaces, infrastructure, spread and scale of amenities and ease and availability of local transport.

Live-work-play-learn-make

So how can we continue to enjoy quality living environments even with increasing demands and limited resources? Thomas says it's about doing more with less. He sees the potential for neighbourhoods to offer a greater plurality of amenities and cater for more live-work-play-learn-make uses. People want the convenience of employment, recreation, transport and facilities within easy reach, and this is possible with high-density compact developments. "If you increase the amenities at the same or even greater density than it was before, then high density can become the perfect marriage of a vibrant, busy, highly serviced area, which still has parks and gardens and spaces," says Richard Hassell, one of the two co-founders of the Singapore-based architecture practice, WOHA.

With these developments located at highly accessible public transport nodes, it can also support a more car-lite future where more people use active mobility options or public transport. "When you have certain amenities within close proximity that you can reach quickly by foot there is really no need to use the car at all," says Thomas.

ABOVE | A COMMUNAL SPACE AT SKYVILLE @ DAWSON.
PHOTO CREDIT: PATRICK BINGHAM-HALL

Living in a garden

WOHA incorporated 1.5 hectares of lush public gardens into the Housing Development Board's SkyVille @ Dawson, a new generation of public housing in Queenstown that is raising the bar with its clever design features, emphasising greenery, flexibility and good living. Residents get to enjoy mature rain trees and natural breeze in the common walkways and lift lobbies. Beyond this, "it is also about the public spaces within buildings and social spaces where, instead of always feeling restricted in vertical spaces, you create horizontal movements," says Wong Mun Summ, WOHA's other co-founder. These provide plenty of opportunities for residents to meet up. "Social encounters come when you walk horizontally," he adds.

WOHA is now exploring urban eco-systems – interconnected, citywide green spaces that are designed to support nature. These act as wildlife refuges in the heart of the city. Environmentally, both aesthetic and biologically functional properties can improve liveability. Aquatic plants can absorb and sequester away pollutants, attract desirable biodiversity and lower the ambient air temperature; damselflies and dragonflies eliminate mosquitoes; and plants with dust-removal and sound-reduction properties can complement more traditional engineering solutions.

"Being close to nature can result in improved physical and mental health and mitigate some of the effects associated with high-density urban environments," says Thomas. "You only have to see how Singaporeans respond to the otters in Marina Bay and Bishan Park," adds Richard. "People's spirits rise when they see wild animals."

Adaptable spaces

Another area that WOHA paid close attention to for SkyVille @ Dawson is the adaptability of its living spaces to changing needs. "It would be nice to be able to live [at SkyVille @ Dawson] for your entire life," says Mun Summ. "But then we have to think about getting married, having the first child, the second child, having a home office, working from home, having to move out because you're going to have three or four kids, and then you get old, and the grandparents want to move in. We thought through all this, and what's really important is to allow the apartment to be flexible, to actually change the configuration inside," he adds. WOHA designed the units so that they had a basic rectangular structure that enables residents to easily alter the interior as their lifestyles and needs change.

OPPOSITE AND ABOVE | SKYVILLE @ DAWSON INTEGRATES LUSHLY LANDSCAPED PUBLIC SPACES.
PHOTO CREDIT: PATRICK BINGHAM-HALL

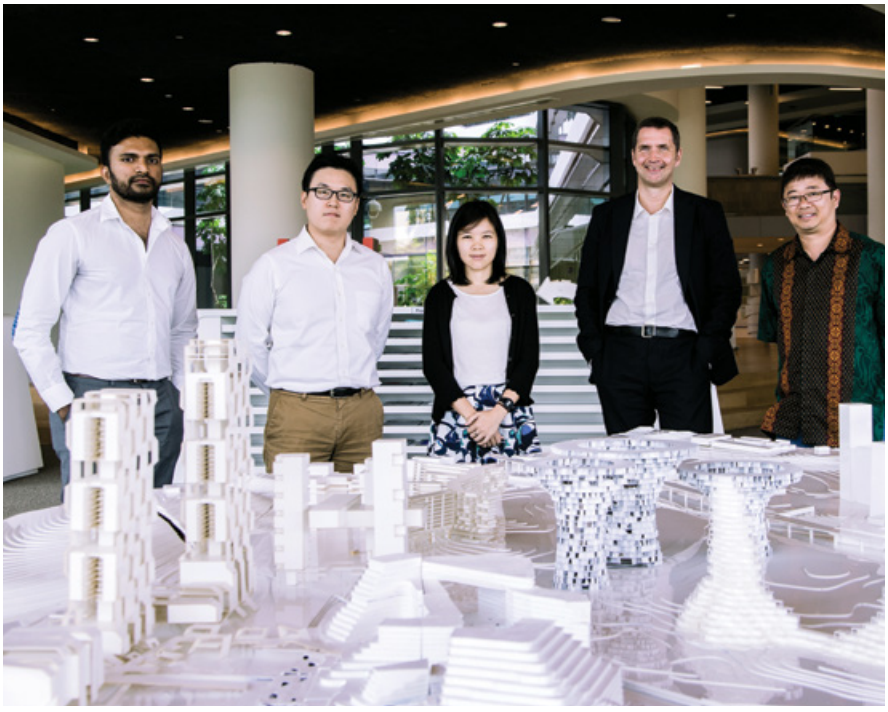
Going 3D

With our living challenges becoming more complex, perhaps there needs to be new paradigm shifts as well. “The segregation of uses has served its purpose, but as our lives get more complicated – particularly in Singapore, where we’re trying to do more and more with the same amount of land – it makes sense to plan more three-dimensionally,” says Richard.

The co-founders of WOHA suggest that as cities try to do more and more with finite resources, they must consider how to optimise what they have. Richard says that urban planners and designers have to start thinking: “How best to make use of the roof? The upper level? The ground level?” He says that WOHA believes future urban designs will be designed in a three-dimensional way, for instance, utilising roof space to cultivate solar energy in an energy-short world. “Every building has to serve a national purpose,” says Mun Summ.

An interconnected three-dimensional approach to urban development is difficult as it requires a great amount of cooperation and high-level collaboration, but WOHA believes this is critical for the future of city planning, urban and architectural design.

Video interviews with SUTD and WOHA with additional insights, are available at youtube.com/URASingapore.



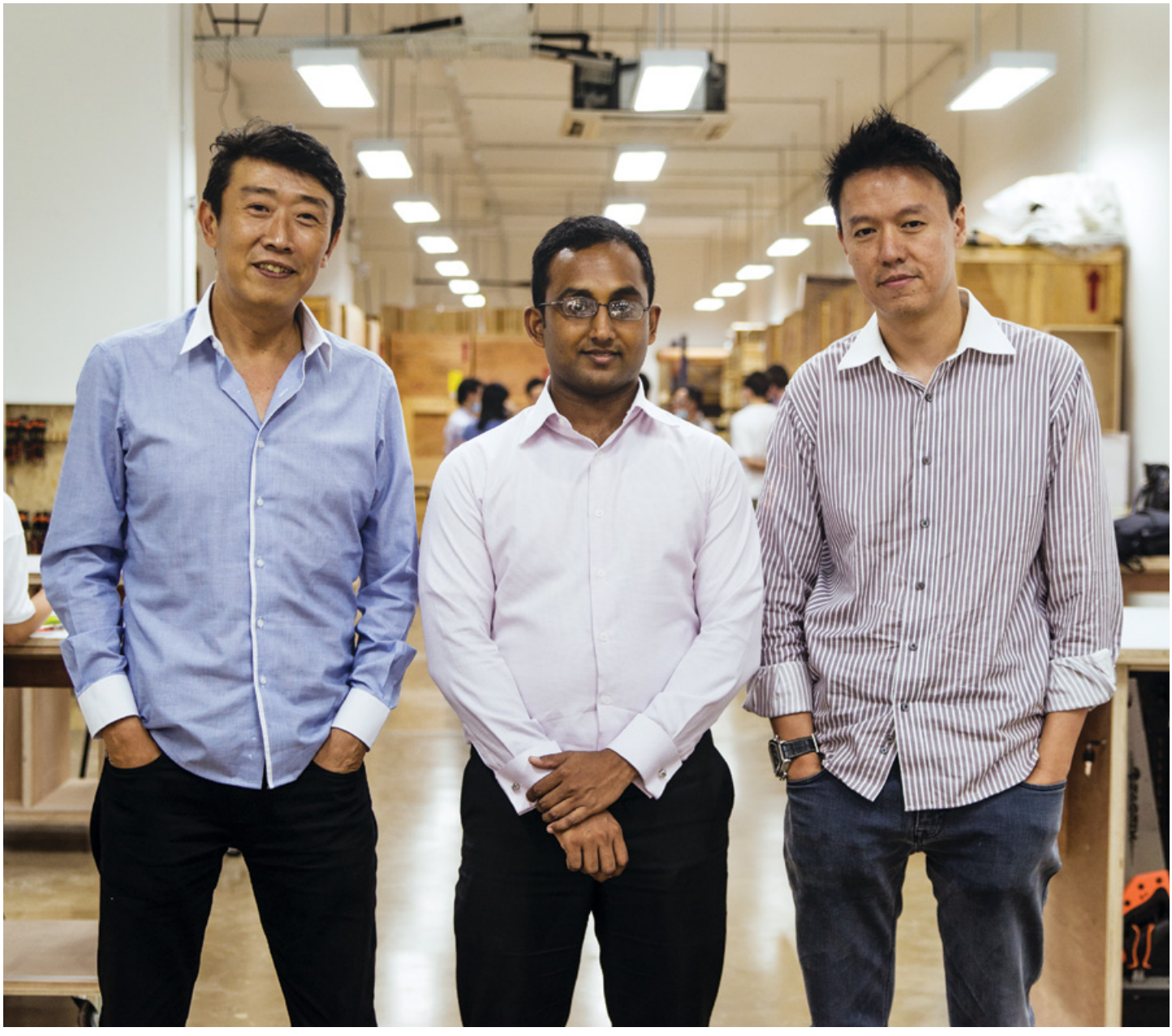
ABOVE | WOHA CO-FOUNDERS RICHARD HASSELL (LEFT) AND WONG MUN SUMM BELIEVE IN A THREE-DIMENSIONAL APPROACH TO DESIGN THAT OPTIMISES ALL AVAILABLE SPACE.

BELOW | THOMAS SCHROEPFER (SECOND FROM RIGHT) AND HIS TEAM (FROM LEFT) RAMESH PILLAI, HYUNGKYOO KIM, LYNETTE CHEAH AND JEAN YONG ARE STUDYING POSSIBLE LIVING TYPOLOGIES THAT CAN IMPROVE LIVEABILITY.

Tinkerers and thinkers

A new generation of work/learn spaces is emerging like those for the OneMaker Group, Hope Technik and the Singapore Institute of Technology's Punggol campus, fostering more innovators and thinkers.

Writer **Jen Eveland** | Photographers **Philipp Aldrup and Cheong Yue Han**



FROM LEFT | LOW CHEONG KEE, MANAGING DIRECTOR OF HOME-FIX D.I.Y PTE LTD, VEERAPPAN SWAMINATHAN, DIRECTOR OF ONEMAKER GROUP AND KELVIN ONG, CHIEF EXECUTIVE OFFICER OF FOCUSTECH VENTURES, AIM TO SET UP WORKPLACES WITH MEANING.

The future of work is more than just about making a living. Tomorrow's workers want to feel like their work has meaning, says Veerappan Swaminathan, director of OneMaker Group, a pioneer of the Maker Movement in Singapore. The Maker Movement has been gaining traction in urban centres around the world, including Singapore, as do-it-yourself enthusiasts like Veerappan establish Makerspaces.

These are bustling workshops where people congregate to share skills and knowledge as tinkerers, students, hobbyists, designers, engineers, entrepreneurs, innovators and inventors. In these spaces, makers can fabricate anything imaginable. Whether it's a customised widget that solves a very specific problem or an artisanal object crafted with finesse, the things they make share one critical similarity – they are highly customised and localised products.

Daring to disrupt

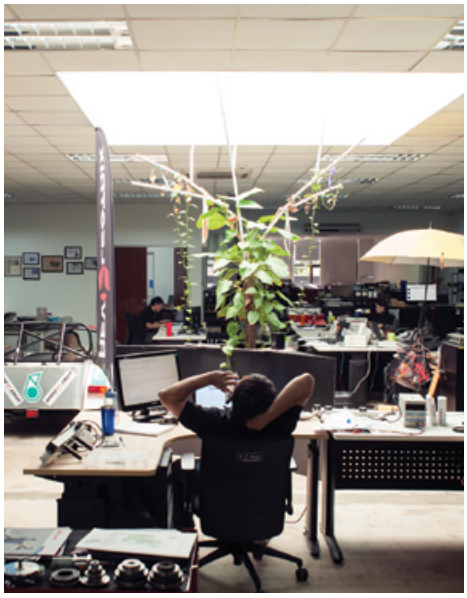
As discerning consumers become increasingly dissatisfied with mass-market goods, they're demanding niche products to suit very specific preferences and needs. Traditional modes of production are well-equipped to churn out thousands of identical items. But they will not fulfill requests for highly specialised one-off items or small lots. Hence why consumers are either making things themselves, or joining the new wave of small and medium-sized enterprises (SMEs) and micro enterprises that have begun to satisfy this area of demand by leveraging new "disruptive" technologies.

The accessibility and affordability of new technologies in additive manufacturing (or more commonly known as 3D printing), advanced robotics and automation have lowered the barriers to entry in manufacturing, creating opportunities for smaller players to get in the game, being nimble enough to respond quickly to changing market needs with experimentation and prototyping. As a production base for high-tech products, Singapore stands to benefit from increased trade in high-tech and high-value goods and services. Within this new frontier, makerspace operators like OneMaker Group and high-tech manufacturers such as homegrown HOPE Technik are leading a change in not just the way we work but how our workspaces look like as well – these and other emerging trends affecting the future of work and the economy will shape the way planners consider land uses, spaces and infrastructure needs for the future.

Makerspaces as garages

Inside an industrial space in Tai Seng, a group of young men and women gathers around an instructor who demonstrates how to use a jigsaw to cut a wooden plank. In another room, a pair of inventors hold up an arm cast made using a 3D printer that they designed and built themselves. This is XPC, a Makerspace operated by OneMaker Group and occupying about 20,000 square feet of space in the headquarters of hardware retailer Home-Fix D.I.Y.

Home-Fix is one of six companies that collaborated to establish OneMaker Group (OMG); the others are the Sustainable Living Lab (SL^2), Simplifi3D, Eian Williams Consulting, Focustech Ventures and SmartSpace. Together they operate four Makerspaces in Singapore – the Prototyping Lab @ National Design Centre, Community Lab @ United World College of South East Asia and 20 Peck Seah Street – each catering to different audiences and interests. Within these spaces, OMG provides affordable access to specialised equipment such as 3D printers, hand tools, power tools and even electronics for anyone who wishes to "make", either for the satisfaction of creative self-expression or the purpose of pursuing a marketable idea. The group also helps inventors develop prototypes and promote them, and budding entrepreneurs








OPPOSITE AND ABOVE | MAKERSPACES SET UP BY THE ONEMAKER GROUP AND HOPE TECHNIK ALLOW THEIR USERS TO CRAFT, INVENT AND CREATE.

These and other emerging trends affecting the future of work and the economy will shape the way planners consider land uses, spaces and infrastructure needs for the future.

access business support services, hot desks and start-up capital.

Veerappan says the Makerspaces accommodate people with varied levels of expertise, from young kids who want to motorise their skateboards, to artists involved in interactive installations. “We have several companies working on hardware products trying to tackle problems and bring them to production,” he says. “So some are doing it as a hobby, some are doing it as a job or career and some want to make the next big thing.”

“In Singapore, nobody has a garage,” says Low Cheong Kee, founder of Home-Fix, who would like to see more makerspaces co-located in primary and secondary schools, particularly if they’re open to the community, as well as institutes of higher learning. OMG has also considered the possibility of co-locating makerspaces in hospitals, which are a hotbed of innovation, and technology companies, which can use makerspaces as a productive way for staff to interact and benefit from “cross-pollination” of ideas.

For these reasons, the group wants to grow the makerspaces as the maker movement looks set to be an important driving force for change. When asked about their “ideal” spaces, Veerappan says that the “intent” and growing communities come first and the conventional planning model that is resource-driven may not work. “Things are changing very fast,” says Cheong Kee. “Certain rules and regulations (on land uses) may need to be reviewed further to allow for greater flexibility.”

HOPE for the future

On the other side of town in Penjuru Close Industrial Estate, HOPE Technik is also reimagining the future of work and workspaces. The engineering firm has a staff strength of almost 100 divided into six different business units, each handling unique areas of high-performance technology. It’s a sci-fi-esque plethora including unmanned systems, industrial robotics, special vehicle operations, composite carbon fibre manufacturing, low-volume manufacturing and special projects that range from sea all the way to space, from a laproscopic prototype for keyhole surgery to a 19-tonne combat aircraft model used for training.

In the company’s lobby, a polished steel slide that curves down from the main office on the second floor tells visitors that this is no ordinary space. Behind it, a climbing wall leads to an open office expanse that is filled with tech toys, tools, gear and a huge rats nest of wires that HOPE founder and chief executive officer Peter Ho affectionately calls a living junkyard.

“Physical space-wise we have a very brutal open concept,” says Peter. The radio plays Led Zeppelin as team members wander in and out of the huge pantry. Meeting rooms are available for quiet time, and people can sleep in hammocks or sleeping bags in “crash areas”, a small detail that’s a big plus for people who have dedicated sleepless nights to their projects.

Happy hour is taken very seriously at HOPE, where after hours everyone mingles and shares ideas, problems and solutions. “It’s all about communication,” says Peter, “to get everyone together.” It’s also about commitment, though, as HOPE Technik is a rarity in today’s labour market – an employer who promises a career and not just a contract.

Workspace is always an issue for HOPE, with limitations affecting work flow, co-sharing and warehousing and supply processes. “We’re estimated to grow out of this space in two years,” explains Peter, who adds that the company trajectory is to double the business year-on-year.

Peter hopes to build a new facility that maximises height, the first four floors of which would be accessed by ramps for heavy vehicles so the company can do away with the capacity limitations of cargo lifts. The higher floors will continue with greenery and light in more traditional spaces with smart features to reduce operational costs. And with a wink to the company’s brand, the building’s overall shape will be a giant H.

Above all, however, it’s the height that matters. “We understand the DNA of the country,” says Peter. “Space is not what we have a lot of, it’s very costly and manufacturing is difficult because we are one

of the most expensive cities in the world." Despite all that, the future of work looks bright, thanks to an army of innovative, dedicated makers.

Campus towns

It's not just work environments that are changing – universities are also re-looking at how their campuses can be designed to nurture students for the future. The Singapore Institute of Technology (SIT)'s new campus is one such example. Integrated with future creative cluster industries in the new Punggol downtown district as part of the larger creative and learning corridor under the Master Plan 2014, the live-work-play-learn environment is envisioned to offer a new kind of ecosystem that enables academics, students and workers to benefit from a cross-sharing of resources, spaces and ideas.

Surrounding the campus is the Punggol downtown. Residents are welcome to use SIT's facilities including classrooms, workshops and a multi-purpose hall. SIT also plans to offer open lectures with visiting professors and invite SMEs in private enterprises to share their challenges for students to use as learning projects.

The new campus offers a rare opportunity for a university to design the ideal learning centre of the future. "We need to look into the crystal ball and ask ourselves what learning is going to look like in 2030,"says SIT president Professor Tan Thiam Soon. "A simple example is, 'What will a library look like in 2030 if every piece of information that you might need is in the cloud?' A library can be a place where students gather to collaborate, but does that space then need to be a library?"

"That is just one of many questions," says Thiam Soon. "What will learning look like in 2030? Can we build a campus that not only meets our needs in 2020, but can withstand the changes that will come in 2030?"

"So there is a lot of rethinking about space, connectivity, physical, virtual and how they can come together, even questioning the role of a university. If a student can learn certain things online, then what is the role of a university? If a student comes to a university, what activities can they engage in that they can't on their own? We are currently in the midst of this debate," he says.

In asking questions about space usage and design, they are asking fundamental questions about the very nature of a university education. "A student doesn't really need a university to pick up dots of knowledge; he can always Google," Thiam Soon smiles. "What a university needs to teach is how to connect the dots and how to make sense of them and apply them. That will affect the way you design your classroom, your learning spaces and the way you make sure it's fit for purpose."

Amid the discussion is a perennial topic for Singapore, and Asia as well – land scarcity.

"How do you build a university campus in a megacity where land constraint is real?" asks Thiam Soon. "A university in Singapore will never be like Cambridge or Yale. We don't have the luxury, and yet you want it to be a warm learning space. How do you create that within 12 or 15 storeys?" Amid continuing questions, people like Thiam Soon are exploring innovative answers. What will learning look like in 2030? Whatever the outcome, one can be sure it will look exciting.

For more information about the OneMaker Group and their activities, go to youtube.com/URASingapore for a video interview with the team.

ABOVE | THE NATURAL ENVIRONMENT OF THE SINGAPORE INSTITUTE OF TECHNOLOGY'S NEW CAMPUS IS INTENDED TO FACILITATE A DYNAMIC LEARNING ECOSYSTEM (ARTIST'S IMPRESSION).
IMAGE CREDIT: SINGAPORE INSTITUTE OF TECHNOLOGY

Challenging ageism

Emi Kiyota's Ibasho café is placing the elderly at the centrestage of leading resilient communities. Could this be applied to Singapore?

Writer Serene Tng

Behind Ibasho café is a group of energetic community elders who not just serve you tea, they run a farmer's market, a noodle shop and have organised over 300 events, bringing together 11,000 visitors and residents in two years. The café was founded on the premise that everyone wants to be useful to others regardless of age, social status, physical or cognitive capabilities. According to its founder, Dr Emi Kiyota, a quote she found in an elementary school in Bhutan sums up its essence: "the time to be happy is now, the place to be happy is here, and the way to be happy is to make others happy".

The café was started in 2011 as a response to the desire to rebuild communities after the Great East Japan Earthquake destroyed major parts of Ofunato, a city in the Iwate prefecture in Japan. It was the elders living in the area who wanted to do something meaningful in giving back to their community. The Ibasho Sozo Project, a non-profit group was formed and within two years, the community elders successfully led and ran an informal gathering space, overseeing all aspects of its operations from planning to finance. Since the café was completed in June 2013, all generations have connected to the space, with children coming to read books in the library, older people teaching the young and younger people helping elders navigate technology and more. Emi shares with *Skyline* how cities can build communities that integrate and value its elders.

Why start the cafe?

More than one in 10 people are over 60 years old today. By 2050, one in five people will be over 60 and 80 percent of these will be living in developing countries. With the simultaneous rise in the number of elderly and in climate-related natural disasters, societies worldwide are facing two critical challenges – caring for an unprecedented number of elderly in our society and reducing their vulnerability from disasters.

Our common perception of ageing is that the elderly are generally a vulnerable group. There is a sense of social isolation, of irrelevance, a loss of dignity and respect. This perception is not sustainable financially. If we continue to marginalise older people and treat them solely as a vulnerable group to be cared for, the demographics alone will

OPPOSITE AND ABOVE (TOP) | ELDERS AT THE IBASHO CAFÉ TRANSFER THEIR KNOWLEDGE TO THE YOUNGER GENERATION AND KEEP LOCAL TRADITIONS ALIVE THROUGH ACTIVITIES SUCH AS VEGETABLE FARMING, TEACHING TOY MAKING AND RUNNING A NOODLE SHOP.
ABOVE (BOTTOM) | A JAPANESE ELDER VISITS THE IBASHO FARM IN ORMOC, PHILIPPINES TO HELP IMPROVE IT.
PHOTO CREDIT: YASUHIRO TANAKA

bankrupt economies around the world. The Ibasho concept offers an innovative low-cost option in response to this ageing challenge. It recognises the value and resources that elders can bring being part of the solution, not only to ease economic pressures but to also live their lives with dignity and purpose. It also builds up the community's resilience and its ability to withstand shocks such as disasters and ageing by creating a strong informal support system where the elders become the catalyst to strengthen bonds among community members of all ages.

What is the value of multi-generational interactions?

As part of my graduate research, I chose to live with elders in long term care facilities to understand their needs. I noticed that while the staff did their best to provide the residents with a safe place to live, the elders still experienced feelings of loneliness, boredom, helplessness and desperation. No one really plans to or wants to live in a long term care facility.

This brings up difficult questions – would I be comfortable with having my loved one in this situation when the time comes? Would I be able to face these living conditions myself? Unfortunately, ageing is not an option. It is a natural part of our lives that nobody can avoid. So, what can we do to improve people's lives in their later years? It's not about ensuring that we have luxury or beautiful buildings. These will not make people happy. The elders living in grass huts in Africa with children at their feet are often happier than those living in assisted homes with a chandelier over their heads.

In creating a non-institutional environment filled with multi-generational interactions, the elders are not treated as people who need to be cared for but have opportunity to contribute to their community as valuable resources. There is much discussion about recognising the value of the elderly and the benefits of multi-generational interactions; however, its implementation is still a challenge. Ibasho demonstrates a practical option that is elders led, low-cost, with the potential to strengthen the social ties of people of all ages.

What does it take to make it work?

We need to firstly see the elderly as part of the solution, empowering them to be able to lead and run programmes effectively, while providing them with the support they need to develop those skills, especially in the early stages of development and operation. It is important to define the role of the experts to serve as facilitators for the elders to create their own place and programme, enabling them to become fully integrated as active participants and leaders. Involving the younger generation in the development and operational processes is also important in making it attractive for them to want to be part of the community.

The physical environment plays a part as well in fostering a sense of place and ownership. Walkability is crucial given the limited mobility amongst the elderly community. There should be easy and inexpensive access to the place. To ensure the success and long term viability of such a project, the community must find ways to involve the local government without compromising its community led approach. Part of the process is also about changing the mindsets about ageing even amongst the elderly and encouraging a strong support system.

What surprises you about the perceptions of the elderly at the start?

Ageism is deeply rooted in our society including amongst the elders themselves. Society perceives ageing as a negative thing and expects elders to be people who need to be looked after by the government. There is a sense of dependency among elderly for the government to provide all the necessary services. They are conditioned to think and behave in certain ways, suffering from a lack of self-worth. When forming the non-profit group to run the Ibasho cafe, a 67 year-old man commented to me: "Aren't we too old to start an organisation?"

What can we learn from this?

During the development phase of the project, it dawned on me that there are not many opportunities for the elderly to contribute their skills back to society. But actually every one of us has something to offer and share, whether young or old. The elders running a self-sustainable operation in the café within the Ibasho principle framework have exceeded our expectations. The elderly have a lot to offer and bring to the table. They have a wide network from their professions and through the

young people they have mentored, including a deep connection with the local community. They bring valuable experience and skills, having gone through a lot of hardships in their lives. An elderly woman's comment to me sums up the sentiments of the elders who participated in the project: "I am so glad that I am involved in the Ibasho project because I don't have to feel helpless anymore."

What are your future plans for the Ibasho cafe?
We have so far started the Ibasho café in two locations, the first one in a disaster area in Japan and the second one in Ormoc, Leyte, Philippines, an area affected by Typhoon Haiyan. I hope to be able to replicate our approach globally. Our goal is to create a global support network amongst the elders who are involved in the Ibasho project. In this network, we can facilitate peer-to-peer exchange programmes to learn from and help each other.

We would also like to develop training programmes for the elderly to take on leadership roles to set up the Ibasho project within communities in their countries. We are currently in discussion with local municipalities in Japan, public housing operators in the United States, and a local community in Nepal to develop the Ibasho café as a community driven initiative to enable local elders to age in community. We would also like to explore setting up Ibasho café-type social spaces in Singapore.

The peer-to-peer exchange programmes can have a significant impact particularly on those who are able to share and impart knowledge from their experience of running the cafe. An elder from the Ibasho café who was involved in helping to set up the Ibasho café in the Philippines shared: "I've always thought that helping people in other countries is beyond us. But I realise that we don't have to be part of the United Nations or international organisations to make a difference. Any one of us can be useful and be of help. We have received so much help from others in rebuilding our communities that now is our turn to do something for the people in the Philippines. There is a lot I want to do with them and to learn from them. I hope we can help each other for a long time."

What can planners and designers learn from this, in addressing the issue of ageing in cities?
Creating spaces and places for people to gather in an informal setting is important in building up resilient communities and providing the elderly with a sense of purpose. From the project, we found that Ibasho users had more friends, a higher sense of self-efficacy and belonging to their community. We need to find ways to continuously bring the younger and older generations together, fostering a culture where they can learn from one other. We need to start breaking down age-segregated places, for example childcare centres or the libraries. We need to ensure that such spaces and communities are all inclusive, to include and link up to people who are dissimilar or from other communities.

The quality of our physical environments does matter although the environment alone by itself does not address all of the ageing challenge. But the environment itself does have a strong impact on how we view and behave in relating to each other. Many of the ageing related service buildings tend to have a certain institutional look and feel that may signal that the environment is more for the elderly. In designing spaces where the elderly will gather, we need to be mindful to design spaces that break down the barriers, to make the environment as attractive, comfortable and safe as possible. It is also important to empower and include the elders throughout the design, construction and programme development and operation to strengthen a sense of ownership of the place. Because the elders at the Ibasho café were so deeply involved in the design and process, they were so proud to bring their friends and families around.

Community-driven projects like the Ibasho café cannot solve all the issues related to global ageing or the vulnerability of elders during and after natural disasters. But such projects give the elderly power and self-determination, showing that they have much to give and can foster greater engagement amongst all members of the community. By creating a place where elders can help their neighbours, the Ibasho café has made the community stronger and more integrated. The Ibasho approach offers a long-term sustainable model of incorporating elders more fully into their communities that can enrich their lives. It presents a nuanced way to build up more resilient communities.

More information on the Ibasho café can be found on www.ibasho.org.

Dr Emi Kiyota is an environmental gerontologist and organisational culture change expert. She focuses on initiatives to improve the quality of the built environment for long-term care and ageing services and is a consultant to numerous age-friendly design projects for senior housing, hospitals, and clinical care centres in the United States, Europe, Asia and Africa. Emi is also a frequent speaker on these issues to audiences of both academics and practitioners. She formed the not-for-profit international organisation called Ibasho with a group of like-minded colleagues in 2010, embodying the Japanese concept of "a place where one feels at home being one's self." She is also a member of URA's International Panel of Experts.

OPPOSITE | ELDERS BUILD BOOKSHELVES AND HOST A TRADITIONAL FESTIVAL.
ABOVE | EMI (SECOND ROW, FIFTH FROM RIGHT) WITH THE CORE MEMBERS OF THE OFUNATO IBASHO CAFÉ AND VISITING ELDERS FROM THE PHILIPPINES.
PHOTO CREDIT: YASUHIRO TANAKA

Power of the public space

The PubliCity movement is redefining the way we are using public spaces – more are coming out to play.

Writer **Daniel Seifer**t | Photographer **Wilson Pang**

As the clocks chime 6pm in the small Spanish town of Sabadelle, a strange sight wanders across the public square: a bald man in a tuxedo. He's clutching a cello. He begins to play quietly. Seconds later he's joined by another cello, then an oboe and five violins. Within a few minutes there's a full orchestra (complete with a choir) belting out Beethoven's O*de to Joy*. This flash mob attracted nearly 64.5 million views on Youtube since 2012. It's a testimony to what you can do with a plain old patch of public space, a handful of instruments and some 230-year-old public domain music.

This flash mob phenomenon is just one facet demonstrating how cities around the world are waking up to public spaces, and asking what it can do to add some playground fun and sparkle to the neighbourhood. So how is Singapore playing its part?

Space possibilities

To find out, we check in with one of the driving forces behind PubliCity, a URA initiative started in 2013 to celebrate spaces through design and community engagement. It's a ten-year project, says Marcia Morley, URA's executive architect and one of the first phases is simple. "It's actually about realising the potential of a lot of existing public spaces."

Singapore, she marvels, boasts an amazing amount of public spaces, much more than people would think. Her voice echoes slightly, as we're sitting in just one such example: the pop-up park in the URA Centre. What was formerly an empty space has been dolled up with inviting seats and grass mats. Who would have thought?

"We've got a perception issue at the moment. People think that they cannot use space or cannot do things in a space in a certain way," says Marcia. "So the first part is about demonstrating possibilities. We're activating spaces ourselves with pop up programmes, like this pop up park at URA. So it's us jumping into the deep end taking on the responsibility of providing platforms to activate public space, but always trying to get someone from the community to actually take the role of managing the space while we're activating it." Ownership, she says, should always rest with the public as well, so they feel part of the process.

But perhaps there's a question that should be answered first: why bother with public spaces at all? How do they affect a city? For one thing, they give us a reason to go outside. That's important, now that we spend the majority of our time sitting at work, slumped in cars and lounging at home. There's a pressing need to get people outdoors, moving, interacting and socialising. Public spaces can do that, says Amanda Burden. She ought to know – she was the chief city planner for New York City under Mayor Bloomberg. "If there is any one lesson that I have learned in my life as a city planner," she said in a stellar TED talk, "it is that public spaces have power."

And, as she adds, "It's not just the number of people using them, it's the even greater number of people who feel better about their city just knowing that they are there. Public space can change how you live in a city, [and] how you feel about a city."

Honk if you love aromatherapy!

Enter PARK(ing) Day, which aims to change how we feel about the unofficial mascot of cities everywhere: parking lots. A global annual event, the URA and Housing Development Board supported this from 2014, seeing the opportunity to get people to re-look at public spaces and the potential of them, starting with the ordinary car park lot. For a day, people get to 'own' a lot and can do anything they want with it.

People came out in full force on 18 September 2015 for PARK(ing) Day in spite of the haze, turning 140 car park lots into fun and interesting public spaces. One of them is Lorenzo Petrillo, an Italian designer based in Singapore. His goal? To transform nearly the entire stretch of Keong Saik Road's parking spaces into an amusement park. Goodbye cars, hello comfy seats (surrounded by fresh herbs

ABOVE | NEIGHBOURS INTERACT AND PLAY IN A BACK ALLEY DURING DOOR TO DOOR, A STREET FESTIVAL HELD AT EVERTON PARK IN 2015 THAT GOT RESIDENTS RETHINKING THEIR PUBLIC SPACES.

for a quick whiff of aromatherapy), artworks, and even a small dipping pool. It's a lofty project, but Keong Saik is in safe hands. This ain't Lorenzo's first rodeo: he designed similar amusements for public spaces in Milan, including screenings, pop-up bars, and foosball tables on wheels. As Lorenzo sums up that particular Italian extravaganza, "Our instructions were: give back piazzas to the people."

What's more, he's passionate about human-centred design, and feels cities need it more than ever. "My big frustration is that cities are developing around cars," he sighs. And yes, he admits, it's difficult to shift our dependence on autos down a gear, but "as a designer I can tell you there's always a solution. If we develop and improve public transport, or work on car sharing, this city can be even more beautiful."

Listening to him, you get the sense that public spaces can be the sweet antidote to a global problem. "A common issue around the world is that people are becoming selfish, protecting their own property and space." The government here, he says with praise, has wisely invested in creating racial and national harmony. Now it's time to zoom in and push a sense of community. "In my experience what public events do is not only transform a public space and show how to enjoy it in a different way, but also get people to socialise."

In fact, Lorenzo's efforts have already brought the businesses of Keong Saik together. "I'm excited because some of the other stakeholders want to do stuff too, asking can I do a bakery class? Another lady wants to do a workshop on cutting clothes. An Indian restaurant will bring Bollywood dancers. So you see how all these cultures come together."

Knock knock, it's art

Happily, initiatives like this are popping up everywhere thanks to people like Lorenzo and Sean Gwee, the mind behind Door to Door. Because of Sean and his team, Everton Park's back alleys were transformed with their own amusement park flair. A band of doodlers – named, coincidentally, Band of Doodlers – pimped out a blank wall with funky artwork. Henna artists turned passerby arms into living sketchbooks. Homemade kampong games were being played by giggling kids. Jugglers made clubs and hoops dance acrobatically in the air. All this, says Sean, was set up for under $100.

"What we really like about these street festivals is people aren't used to these events happening in their alleys," Sean smiles as he sits next to the Door to Door mini-lending library. "It's an oh, I didn't know you could do that kind of thing. Just getting people to think like this is a huge success, to get them to rethink their spaces." Sean's mom certainly is. As he speaks, his mother whoops as she scores a strike on a small free-for-all grass bowling strip.

Much like Mrs Gwee's bowling ball, Door to Door has been a smashing success. After two incarnations of the event, the local community took up the baton, and sought permission to paint the wall in an even bigger scale as a community art project. Much like the movie *Pay It Forward*, it seems that one person with a generous idea can spread it to others. Before you know it, a good deed has gone viral.

That's a philosophy Social Creatives completely understands. The local non-profit art group champions the power of artwork to rewire our brains and hearts, all while beautifying our surroundings. It's much more than just painting on walls, says Siti Hawa Ahmad Yussof, a member of Social Creatives. "The back story of it is to actually connect people and to give them ownership of their surroundings." Take a physical step to beautify your neighbourhood, and something amazing happens. "What I loved most when working with Social Creatives was the sense of camaraderie we mutually feel with each other; almost like another family away from family."

Story of five birds

More than that, Social Creatives' work can bridge social gaps in society, connecting the affluent with those who need help, says Siti. "We've done several projects in one-room flats, and these always bring back interesting stories." In one flat, the company's artistic manager met a young child wearing a school uniform, despite it being a weekend. Curious, he asked why. The child replied that there was nothing else to wear.

"Another story is of a resident requesting for five birds to be painted onto the wall. When asked why, he said it was to signify his children, who had already left the nest and disowned him," Siti says quietly. "It's stories like these that tug at the heartstrings and force us to reflect; to be grateful for our blessings; to be more appreciative of the people in our lives."

Scratch the surface and you find an army of Singaporeans who say that transforming society can start in a public space. Koh Hui Ling, associate director of Drama Box, is one of them. One of this group's most innovative projects is GoLi – The Moving Theatre, a giant inflatable venue that can be

ABOVE | IN 2015, POP-UP PARKS TOOK OVER THE ROADS ON PARK(ING) DAY, A GLOBAL MOVEMENT THAT RECLAIMS PARKING LOTS FOR PEDESTRIANS.

ABOVE (TOP) | RESIDENTS PARTICIPATE IN STREET ART AT THE FIRST STREETS FOR PEOPLE CAR-FREE ZONE AT MAJU AVENUE IN 2015. STREETS FOR PEOPLE IS A PROGRAMME BY URA THAT SUPPORTS COMMUNITIES' PROPOSALS TO IMPLEMENT SHORT-TERM OR REGULAR CAR-FREE ZONES.

set up anywhere to accommodate a performance. "GoLi is meant to be an iconic gathering space for public, and the public recognises it as a space where play, imagination and dialogues happen."

Many of their pieces centre around social inequality, and they've worked with associations such as Migrant Workers and AWARE Singapore to highlight these problems. "I do not dare to think so nobly that we can help the needy, but I certainly hope we can use theatre to highlight and to dialogue tough issues."

With its eye-catching, bouncy castle façade, GoLi can hopefully be seen as a blend of architecture and sculpture, says Hui Ling. "We all have been educated to think that land is scarce in Singapore. So I guess it is important for us to continue thinking about how to use our space creatively and critically, beyond economic needs but helping the basic needs of human beings – the need to belong, socialise and bond."

Less kiasu, more coolness

The campaign to storm public spaces with positivity is going strong, it seems. What needs to be done to keep up the momentum? "A big hurdle is just overcoming the idea that you can actually take a chance," Marcia shares. "Because Singapore has grown so quickly and been so successful, the current mindset is you have to be super kiasu and make sure everything will succeed completely." Hopefully, says Marcia, this mindset can be shifted to something that breeds more proactive, fearless projects, where "if you fail it's okay, you've given it a go."

For Lorenzo, one hurdle to overcome is more practical: the weather. "At first I thought one problem is the heat and rain. But then you look at photos of people 50 years ago, and everything happened outdoors. So I've started believing that this feeling can come back. People have been spoiled by aircon a bit."

Luckily he has some daydreams for cool projects. "I have one idea, a massive waterslide a couple hundred metres long. It would be fun, fresh, easy." Another brainwave? A bench that doubles as a social-hub-meets-disco. "I also designed a rocking chair for six people. One of my dreams is to have 50 of these on the east coast. And to rock, the people have to interact with each other to swing back and forth. You could have solar panels on top, install wi-fi points, it could give local information, play music, have a map."

Seats that literally rock? It's probably people like Lorenzo that city planner Amanda Burden had in mind when she said, "I believe that a successful city is like a fabulous party. People stay because they are having a great time."

For more information on PubliCity, go to ura.sg/publicitysg. Relive Park(ing) Day 2015 in a video featuring some of the participants and their exciting ideas at youtube.com/URASingapore.

This article was first published in Going Places Singapore, an e-magazine about urban issues that affect us and rediscovering our city – www.goingplacessingapore.sg

TOP RIGHT | "GOLI – THE MOVING THEATRE" BRINGS PLAYS TO THE PUBLIC IN UNEXPECTED PLACES.
PHOTO CREDIT: ZINKIE AW PHOTOGRAPHY AND DESIGN FOR DRAMA BOX

Rethinking mobility

There are multiple roads to solving our mobility dilemma.

Writer **Jen Eveland**

Urban mobility is one of the most difficult challenges facing city leaders today because transportation affects economies, communities and the environment in equal measure. For Singapore, where 710 square kilometers accommodates over five million people, the mobility challenge becomes even more critical. 12 percent of the island's total land area is lost to roads – close to the 14 percent occupied by housing. Rapid urbanisation, rising carbon dioxide levels and resource scarcity will place even more demands on the transportation system.

The writing is on the wall for the personal automobile as climate change moves to the forefront of our individual and collective awareness. In short: a transportation system built around cars is simply unsustainable. Instead, Singapore has begun to push for a greater use of public transport and to develop disruptive technologies to offer new transport options that will use space more efficiently, such as self-driving vehicles (SDVs) which can be used for shared purposes. The city is also laying the foundation for an environment that is conducive for active mobility such as walking and cycling.

Making strides for active mobility

The focus on walking and cycling is in fact an integral part of the Master Plan of 2014, which also incorporates a National Cycling Plan. The Land Transport Master Plan 2013, by the Land Transport Authority (LTA), has called for proposals for a public bike-sharing system, with plans to pilot them by the end of 2015.

Similar efforts will soon be seen in Ang Mo Kio, where new measures will establish walking and cycling paths, pedestrian priority zones at bus stops, traffic calming measures, bike crossings and parking facilities and a corridor connecting the Yio Chu Kang MRT station to Bishan-Ang Mo Kio Park, all by 2018. Plans are also underway for a code of conduct to promote safety and mutual consideration between all road and pavement users.

"The desired end state is one where we have a safe on and off-road environment and where there is mutual respect among pedestrians, motorists and cyclists," says Jeffery Goh, president of the Singapore Cycling Federation. "There is no better time than the present," says Jeffery, "to introduce a purposeful and deliberate programme to educate and bring greater awareness on safe cycling etiquette and skills. More so now, as there is a significant growth in the number of recreational and serious cyclists as well as those who use bicycles for commuting purposes."

Tropical cities like Singapore also have special considerations when it comes to the comfort of pedestrians and cyclists amid the heat and heavy rains. As such there is a greater need for facilities like shade, shelter and end-of-trip amenities. Commuters who walk or cycle can be helped by infrastructure that allows seamless connectivity and integrates transit nodes for the first and last miles of their journeys.

Sharing space with grace

A new set of pavement users is jockeying for position among pedestrians and cyclists – scooters. Use of small electric motorised vehicles, called e-scooters, is becoming popular. Not surprising, as these vehicles can travel up to 60 kilometres with an added battery pack on a single charge, and fold within seconds for carrying on buses and trains.

The Big Wheel Scooters Singapore (BWSS), an online community for e-scooter users, has grown to 7,200 members in just two years since its founding in 2013, and BWSS chairman Denis Koh believes there are many more scooter riders who have yet to join. Denis says that ideally e-scooters can supplement the first and last miles of a commute, with riders scooting to the nearest Mass Rapid Transit station, folding the scooter to enter the train, and then scooting from the station to their workplace. "This way of commuting is clean, it's green, it's viable and sustainable," says Denis. However, he believes that Singapore needs to develop rules and norms for usage.

"We need some form of control and what can or cannot be done," says Denis. "We can then promote the safe and harmonious use of shared spaces. The authorities have placed extensive capital expenditure on infrastructure creating wider footpaths and cycling lanes. An Active Mobility Unit has also been set up," he says, of the recent initiative by the LTA to coordinate routes within the city and

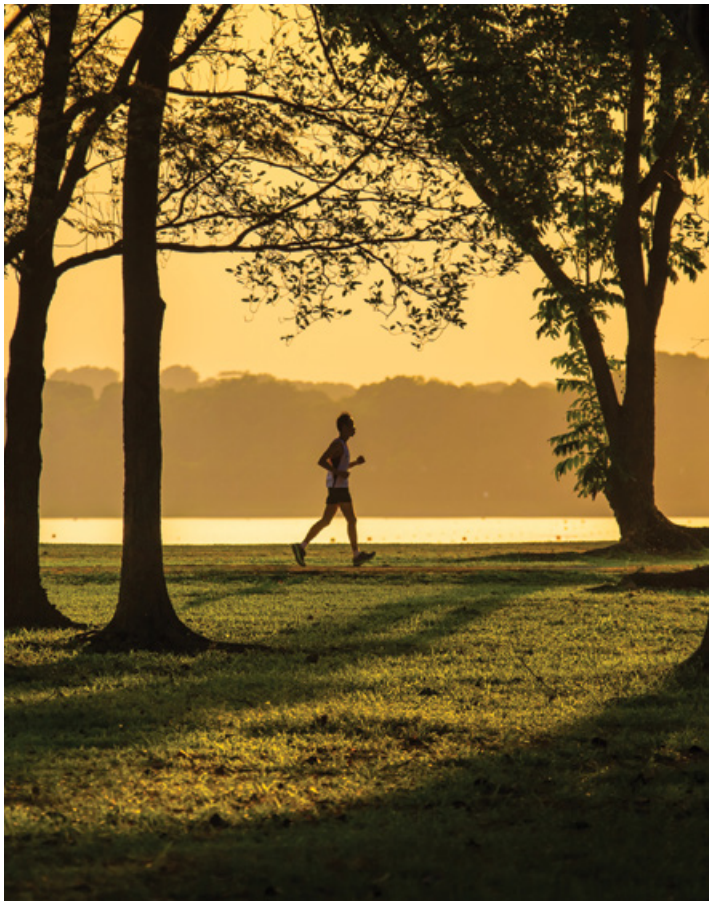


PHOTO CREDIT (CLOCKWISE FROM TOP RIGHT): KRISTIAN ERIC MAGLALANG, CHAN WAI MENG, GINA NG ZHI TING

education initiatives among all users, including pedestrians, cyclers and scooters.

Denis says that BWSS will continue to engage the community, educate and perhaps provide safety training for scooters. In fact, they have already produced a safety video. He has also been working on an insurance scheme for personal mobility device users.

The role of technology

Three areas of technology and innovation have been identified that will propel Singapore's public transportation system into the future: data analytics, the interface between commuters and transport service providers and SDVs.

In the area of data analytics, the LTA's Planet project, a joint project with business and technical partners, is already pooling data at a central depository and providing new ways to analyse this information to observe areas of congestion. The URA and LTA are also teaming up with the Future Cities Laboratory, a research partnership between the Swiss Federal Institute of Technology (ETH Zurich) and Singapore's National Research Foundation at the Singapore-ETH Centre for Global Environmental Sustainability. The MATSim Singapore project is a multi-agent simulation model that will simulate commuters' travel patterns and behaviours.

Effective tools for commuters provide a level of convenience that can steer them towards mass transit choices, such as the LTA's MyTransport.SG portal, which provides links to land transport-related apps, interactive maps and the latest government campaigns and initiatives. Mobile apps like Beeline, developed by the Infocomm Development Authority and LTA, uses data analytics to provide Singapore's first crowdsourced bus service platform, cleverly adapting service to demand. Third-party taxi booking apps like Grab Taxi and ridesharing apps like Uber are also gaining popularity.

Other innovations involve seamless payment systems, such as Be-In-Be-Out, a hands-free technology which can detect commuters without their having to tap a card or their phones. Singapore-based DP Architects has also proposed smart bus stops that incorporate wi-fi, phone charging and way-finding.

Driverless cars

Despite a comprehensive active mobility plan and extensive network of trains and buses, there will still be demand for personal transportation, but it must take a different approach to the glut of fossil fuel-burning automobiles in use today. Tomorrow's personal transportation will most likely take the form of pods that will cover the transportation needs of individuals for short hops and for the first and last mile part of their long journeys, according to Professor Daniela Rus, Autonomous Vehicle principal investigator at the Singapore-MIT Alliance for Research and Technology and director of the Computer Science and Artificial Intelligence Laboratory at the Massachusetts Institute of Technology.

Mobility on demand will see a transportation network connected to an information technology infrastructure and also to people, allowing the system to adapt to people's needs using real-time and historical transportation data to determine routes and locations of stops. This mobility on demand will be facilitated by state-of-the-art technologies for self-driving vehicles, says Daniela.

Trials are already underway here. The Committee on Autonomous Road Transport for Singapore is exploring the future of SDVs in Singapore, and to support its efforts the LTA has formed a partnership with A*STAR, Singapore's leading research and development agency, to create the Singapore Autonomous Vehicle Initiative (SAVI). SAVI trials under the SMART MIT-NUS alliance have taken place at Jurong Lake District and the National University of Singapore campus, with trials also ongoing at one-north connecting Biopolis, Fusionopolis and Mediapolis over public road networks.

The Ministry of Transport estimates that in 10 or 15 years, the number of passenger vehicles in Singapore will be reduced by a third thanks to SDVs.

"Taking a driverless car will be as easy as using a smartphone," says Daniela, "and the commute will let you return calls and catch up on your favorite podcasts. After driving people to their destination, the robot pods will drive themselves to the next customer, using demand-matching and coordination algorithms to optimise the operations of the fleet and minimise people's waiting time."

But she says there are many technological and policy challenges before SDVs are broadly deployed.

"Our work at SMART demonstrated self-driving vehicles at low speeds in low complexity environments," says Daniela. "We need to develop algorithms and systems for safe self-driving at high speeds in complex environments and inclement weather. Policy makers need to consider the access, liability, safety, and security issues around self-driving cars."

Accessibility for everyone

Whether for recreation or commute, the key to successful urban mobility will be an inclusive and sharing mentality among every path, rail and road user. That's a broad spectrum, one that covers pedestrians, cyclers, scooters, mass transit riders, personal transport users and even travelers with special needs.

"I look forward to a zero-barrier environment where people can choose to wheelchair, walk, cycle on walkways around the entire island of Singapore," says Dr William Tan, a paralympic athlete and ultra-marathoner. "It is so heartwarming that, enabled by the provision of accessible facilities, many with challenges in mobility are participating and integrating with mainstream communities," he adds.

Denis also embraces this spirit of inclusivity when he says: "There is no one solution to handle active mobility in the city state. It would be an ongoing process to ensure harmony amongst all stakeholders."

A look at self-driving vehicles

Pang Kin Keong, Permanent Secretary of the Ministry of Transport (MOT) is leading the Committee on Autonomous Road Transport for Singapore. He believes self-driving vehicles have the revolutionary potential to shape Singapore's transport system and shares his vision and excitement on getting self-driving vehicles (SDVs) on the road.

How close are we to putting SDVs on the road?
I think the world is about 10 to 15 years away from public use and deployment. Looking at the pace of development and amount of research globally, I would venture that it'll be sooner rather than later.

How are we gearing ourselves to tap on the technology?
We've kicked off several trials, not just to test the technology, but more interestingly, transportation and mobility concepts based on the technology. Concurrently, LTA is working on a regulatory and liability framework that will enable public use of self-driving vehicles. The trials will allow us to gain important insights into the regulatory and infrastructural requirements that we will eventually need to put in place, as well as commuter behaviour and mindsets when using and interacting with such vehicles.

Our ultimate vision is to deploy self-driving vehicles as an integral part of our public transport network, to improve intra-town and first-last mile mobility, and to help us overcome manpower constraints as well.

How will SDVs shape the future of transport in Singapore?
They have revolutionary potential to shape Singapore's transport system, not just evolutionary. Most of the buzz surrounding SDVs has been about how they will transform driving for the car owner. That day will come and we are preparing for it. However, replacing one driven car today with one driverless car tomorrow is not what the Singapore Government is most excited about. It will not reduce the number of cars on our roads, nor reduce the amount of land needed for roads and car parks.

What is revolutionary is applying the technology to public and shared forms of transport, bringing new forms of mobility for the masses with the convenience and comfort of private transport. Imagine if you can call for a demand-driven, dynamically-routed, point-to-point self-driving pod through your mobile app, for your intra-town or first-last mile travel, connecting you to the MRT station or neighbourhood amenity.

PHOTO CREDIT: MINISTRY OF TRANSPORT

How can they shape our lifestyles and even help businesses?
The most significant limitations of our current transportation system are availability of manpower and the fact that we have limited land. The latter means that we cannot sustainably build our transportation system around private cars. And for those who take public transport, the first and last mile experience is still not great. Self-driving technology and new mobility concepts based on such technology can help us overcome these constraints.

We can and should also imagine future towns to be car-lite or even car-free. We can reclaim some of the road and car park spaces and convert them into lush greenery and recreational spaces for residents.

In freight transport, SDVs can help businesses increase productivity and reduce manpower reliance. With the tight labour market in Singapore, the trucking industry faces particular hiring challenges. The autonomous truck platooning technology that MOT and Port of Singapore Authority are exploring can help the industry to do more with fewer drivers. Each driver can now command more trucks and ferry more containers during each leg of travel.

We are also looking at deploying autonomous utility vehicles such as road sweepers and smaller-sized All-Terrain-Litter-Vehicles deployed for cleaning pavements. These utility vehicles can operate at night and not contribute to road traffic during the day.

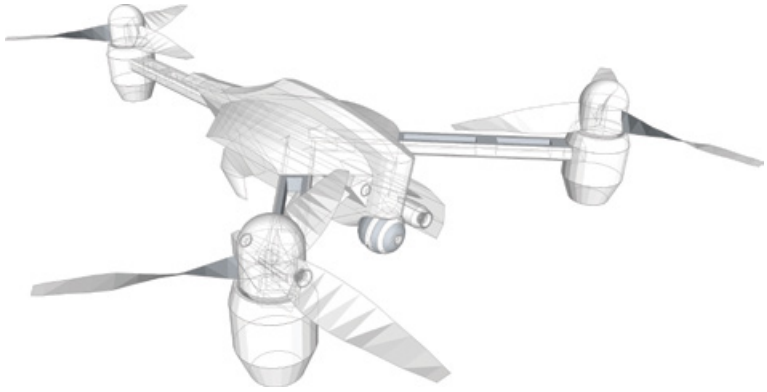
How do you see SDVs used in towns in future?
This is an area we are most excited about. We are studying how to incorporate self-driving mobility concepts into our urban plans and designs for future towns, and of course also to retrofit existing towns.

We can envision a very different town of the future, with a vastly different landscape and improved living environment. A town where intra-town and first-last mile travel is largely through cycling, walking and self-driving pods, where the surface of the town is no longer dominated by roads, car parks and the noise and pollution brought about by cars, but greenery, pedestrians, cyclists and clean, quiet and safe self-driving pods. And only at the basement levels, we have roads for freight traffic, mass public transport, and cars for those who still want to own cars.

If you had access to a SDV, how would you use it?
I would give up my car for my daily commute to the office. I would call for a self-driving pod to pick me up from the doorstep of my house and send me to the train station. And I'd spend the commute time catching up on my reading or on sleep! (Instead of having to focus on driving and navigating and being exasperated by traffic jams and inconsiderate drivers...)

The Ministry of Transport set up the Committee on Autonomous Road Transport for Singapore in August 2015 to provide strategic directions on the SDV deployment and use in Singapore. The Committee comprises experts from various fields, with 18 members from government agencies like LTA, URA and HDB and private sector organisations such as Toyota, Continental, ST Kinetics, CISCO, MIT, Singapore Technologies Kinetics and the UK Behavioural Insights Team.

ABOVE | SELF-DRIVING VEHICLE-ENABLED TOWN CENTRES COULD BE INTEGRATED INTO FUTURE PLANS (ARTIST'S IMPRESSION).
IMAGE CREDIT: MINISTRY OF TRANSPORT



Anthony Townsend on the smart city

How “smart” our tech is depends on how we use it.

Writer **Cassandra Yeap**

Forecaster and urban planner Anthony Townsend has been writing, speaking and consulting on urbanisation, ubiquitous computing, technology-led innovation and economic development for many years. He talks about what it means to be a truly smart city addressing urban issues.

What is a smart city?
It is a collection of stakeholders in the government, industry and civic sectors who are using new digital technologies to address timeless urban problems. All cities are smart by this definition – it is impossible to do anything in a city today that doesn’t involve digital technology in at least a minor role. There are very few problems that were unsolvable without digital technology. Rather, technology can help remove barriers and constraints that were previously insurmountable using conventional ways of addressing a problem.

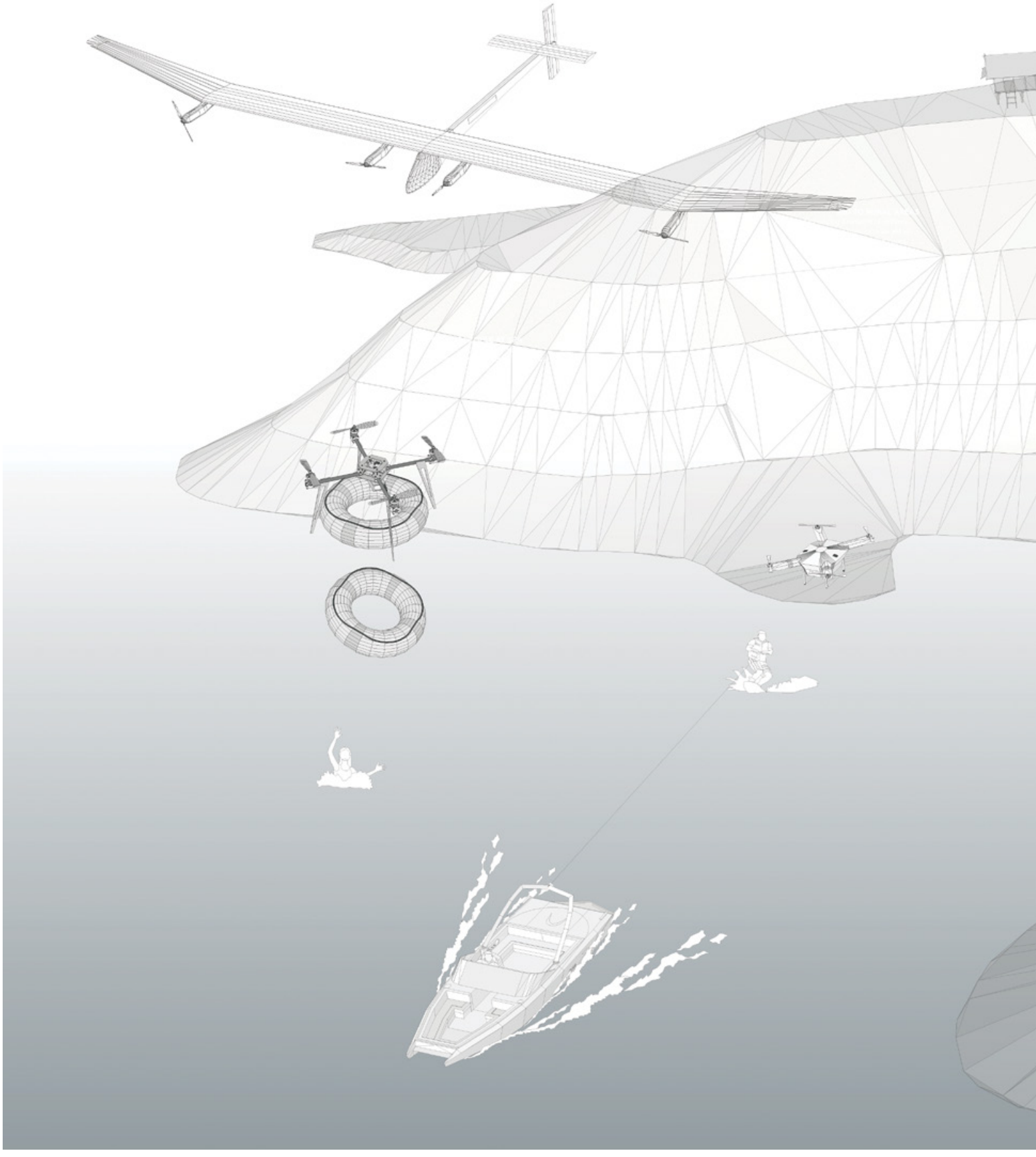
But technology won’t work unless there are two other key ingredients – both people in government and the population need to buy into its value proposition. There must be a widespread appreciation of both the benefits and the limitations of technology.

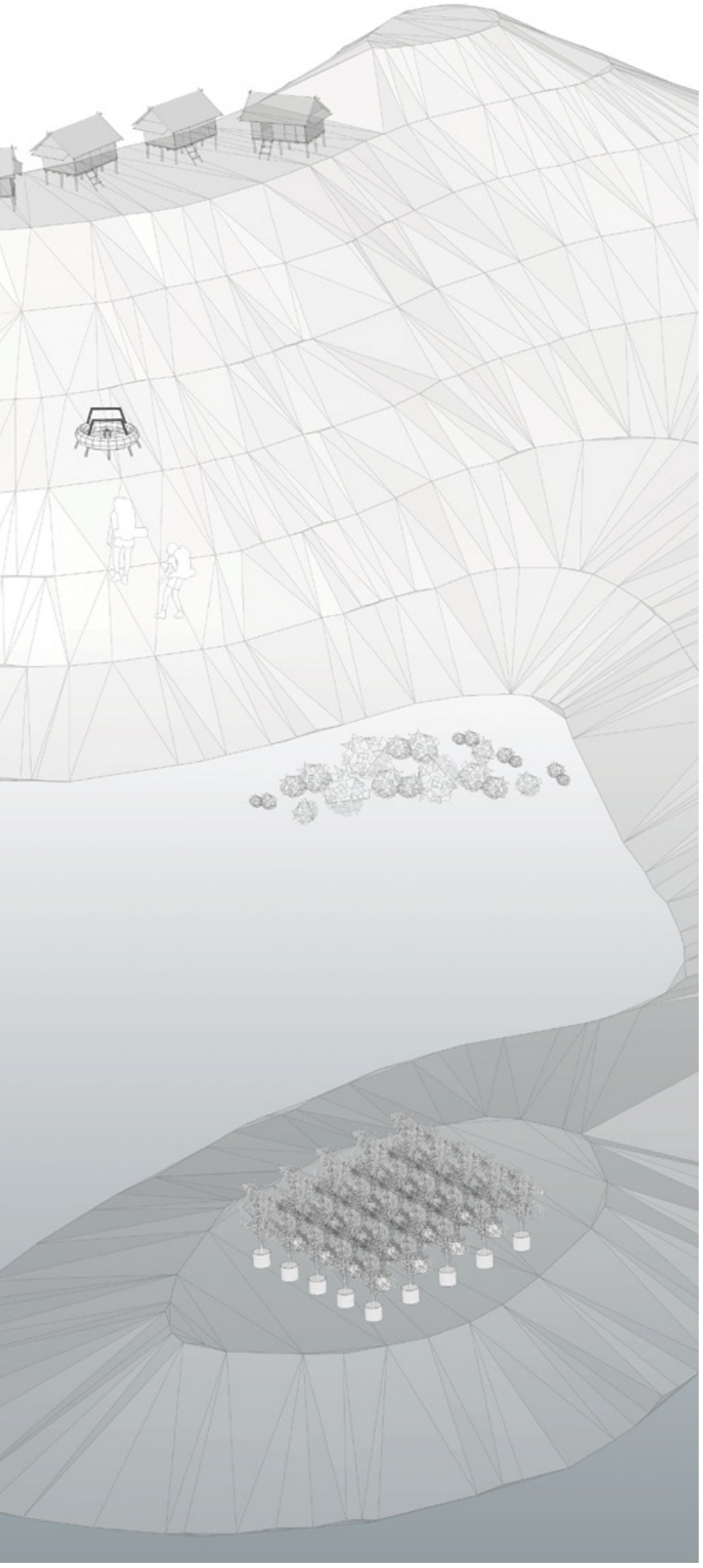
What are some pitfalls of a smart city?
I think there is one pitfall from which all the others emerge, and that is a lack of foresight. Cities really need to develop a systematic process and capacity for evaluating new technology ideas and solutions rather than blindly embracing the latest, greatest thing.

How are Asian cities embracing the smart city?
Asian cities have done a much better job in thinking long-term about infrastructure and economic development than other parts of the world. They have demonstrated the foresight and ability to act that these kinds of initiatives require, and of course everyone recognises that Singapore is at the front of the pack.

What other parts of the world, notably the United States, have done much more effectively is define a role for citizens to set the agenda and implement parts of the vision. I think part of this reflects different understandings of the role of the state in different parts of the world and countries, but it also reflects different views about where innovations come from. And for all the foresight, I worry that the Asia model may be too centrally-directed and rigid for its own good.

How can Singapore leverage on technology wisely as a city-state?
This is Singapore’s great advantage that no other city really has. Urban planning and national economic planning can serve the same vision. It has and will continue to be a source of advantage for smart city development. The major shortcoming I see is that it may provide too much resources! What’s driving a lot of innovation in other cities is scarcity – the need to do more with less – that is really leading to some extremely creative problem-solving and new innovation and governance models. In that sense, Singapore may have it too easy.





How could urban planning be done differently for a smart city?
This is a question that urban planners are just starting to address. Frankly, it could go either way – the tools could empower either top-down or bottom-up planning and we see evidence of both.

We can learn a lot from what happened in the 1960s when computers were first widely used in urban planning by government, and the severe backlash against technocratic computer-assisted planning that occurred in many parts of the world. The difference now is that computing and data are much more widely accessible but it's not clear if that will change the dynamic much. I suspect many conflicts in the years to come will show us the way.

Much of today's tech goes towards solving problems that modernisations of the past have created. Can we avoid creating more new problems and risks?
Absolutely not. Which is why we need to get much better at assessing risks and identifying and mitigating unintended consequences. Environmental planning has shown us this is possible, although it probably means slowing down and incurring additional costs. But in the long-run it will be cheaper for society as a whole.

How can the government encourage ground-up efforts for smarter cities?
It needs to listen to (the public) when they say things the government doesn't agree with or doesn't like. It's as simple as that – engage them.

What is one area that you foresee major changes in the next five years with advancements in technology?
Transportation is going to see a massive period of change that will be really gathering steam by then – Uber is just the beginning. The Internet of Things will mature, and we will start to see its great benefits and its utterly tremendous and frightening risks for privacy and cybersecurity. If all goes well, I hope, we may finally see some genuinely viable greenfield smart cities of the future.

Dr Anthony Townsend is an urban planner and forecaster whose writing, public speaking, activism and consulting focus on urbanisation, ubiquitous computing, technology innovation and economic development. He holds posts as Senior Research Scientist at New York University's Rudin Center for Transportation and fellow at the Data & Society Research Institute, a think-do tank located in New York City. Anthony was co-founder of NYCwireless, a pioneer in the community broadband movement, and was named one of Planetizen's "Leading Thinkers in Urban Planning & Technology" and "Top 100 Thinkers" tracking the Internet of things by Postscapes. His first book, Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia, was published by W.W. Norton & Co in 2013. His personal website is www.anthonymobile.com.

ABOVE | APPLICATIONS OF TECHNOLOGY SUCH AS DRONES COULD INCLUDE RESCUE MISSIONS, ENHANCING ATHLETES' TRAININGS AND HUMANITARIAN AID TO RURAL AREAS.

Walking the ground

The need to manage more complex urban challenges and the availability of volumes of data is seeing a shift in the way planning is done. URA and Esri talk about the potential of leveraging technology to really 'walk the ground' and the need for greater dialogue and exchange.

Writer **Cassandra Yeap** | Photographer **Cheong Yue Han**

"Our ultimate aim is to take the technology out of planning so planners are able to concentrate on the planning aspects and not be so focused on the process of uploading, cleaning and capturing data. Technology can help them with data capture and integration with relevant systems while they walk the ground and talk to the residents in the various towns," says Benjamin Chan, on his vision of URA's Digital Planning Lab as its director.

The Lab was set up in 2013 to exploit advanced digital planning tools and emerging technologies to transform the way planners work. Benjamin sees a possible shift in to a more data-driven focus in future. "If the digital planning tools are well designed and used, it will help us better understand the workings of the city through real-time data, enhance our ability to identify emerging concerns and trends and enable planners to better understand the impact and implications of different planning scenarios," he adds.

A new toolbox

He is already seeing shifts in the way planners work with the use of technology. Digital planning tools are helping to automate the generation of scenarios for long term concept planning for example, saving significant time and manpower resources. Technology is also enabling planners to access large volumes of data island-wide and more granular ones localised to towns and neighbourhoods to make more informed decisions. He sees this happening through the E Planner, one of the first tools that the Lab developed.

It has become a significant one-stop, geospatial planning analytics multi-platform for URA planners and others from various government agencies to

ABOVE | DIGITAL PLANNING LAB DIRECTOR BENJAMIN CHAN (LEFT) AND EXECUTIVE ARCHITECT EUGENE LAU ARE TAPPING ON TECHNOLOGY FOR MORE COMPREHENSIVE, RESPONSIVE URBAN PLANNING.

access and visualise over 90 data sets easily. Many different types of data and information layers can be generated at any time, from building types to demographics, opening up possible new insights for planners when considering the location of amenities, the quality of spaces and other infrastructure and development needs.

Captured in 3D

It's not just 2D layers that are being generated. "We have been working with 3D modellers to produce an inventory of 3D digital models of the developments in Singapore, including street furniture and landscaping. To date, 130 square kilometers of models have been completed. To utilise these models efficiently, we have also developed a set of rules specific to URA's planning guidelines to be used in the 3D Geographic Information System (GIS) platform (Esri City Engine) to do large scale 3D simulations, in partnership with Esri Inc," shares Eugene Lau, URA's executive architect who is driving many of the 3D modelling efforts. This is strengthening the way planners and architects are visualising the city when considering important view corridors to landmarks and waterfronts or determining if a building is too tall or wall-like and more.

Leveraging on the advancements in the drone technology, planners are also prototyping 3D models of specific buildings, for example, on the NUS Baba House, in collaboration with local drones firm Avetics. Excited about the possibilities, Kelvin Ang, URA's director of Conservation Management thinks 3D models can offer a new dimension and experience of conserved buildings. "Beyond serving as a digital document of our heritage for more to enjoy and appreciate, the models enable us to access rooftops and other aspects of the buildings easily and quickly, to help better plan and manage changes and restoration over time," he says.

Eugene also sees 3D digital models as a great way to share key ideas with the public. "We tapped on our collection of 3D models to produce flythroughs of Jurong Lake District and Woodlands Regional Centre to better convey our ideas during the Draft Master Plan 2013 Exhibition. We have received feedback that many found it easier to understand our plans."

Interactive Scenario-Based Planning

On a larger scale, in order to produce the most optimal plans, planners need to take into account an increasingly diverse range of inter-dependent factors, from infrastructure facilities, to local amenities, demographics and transport networks. Platforms like the GIS-Enabled Mapping, Modelling and Analysis (GEMMA) application are allowing planners to analyse the dynamics between these

ABOVE | APPLICATIONS SUCH AS (FROM LEFT) E PLANNER AND CITYENGINE ALLOW PLANNERS TO CONSIDER MULTIPLE LAYERS OF INFORMATION AND DATA ABOUT AN AREA. DRONES HELP PLANNERS OBSERVE AND MANAGE CHANGES IN CONSERVED BUILDINGS.

factors in simulations, and will enable quick assessments of alternative scenarios to lead to more robust planning.

Another important tool being developed is a simulation software to guide climate-sensitive urban planning and design – the Quantitative Urban Environment Simulation Tool (QUEST). This is a collaboration with the National Environment Agency and A*STAR Institute of High Performance Computing. Supported by the Ministry of National Development and National Research Foundation*, this tool couples high-resolution atmospheric modelling with urban-scale computational fluid dynamics modelling, to generate wind, temperature and thermal comfort simulations at different planning scales. This would help planners better understand how micro-climate and thermal comfort may change with future urban development and climate change, and consider suitable interventions. The research team is currently working on a prototype tool for Jurong Lake District, with the potential to extend this to the whole island in the next phase.

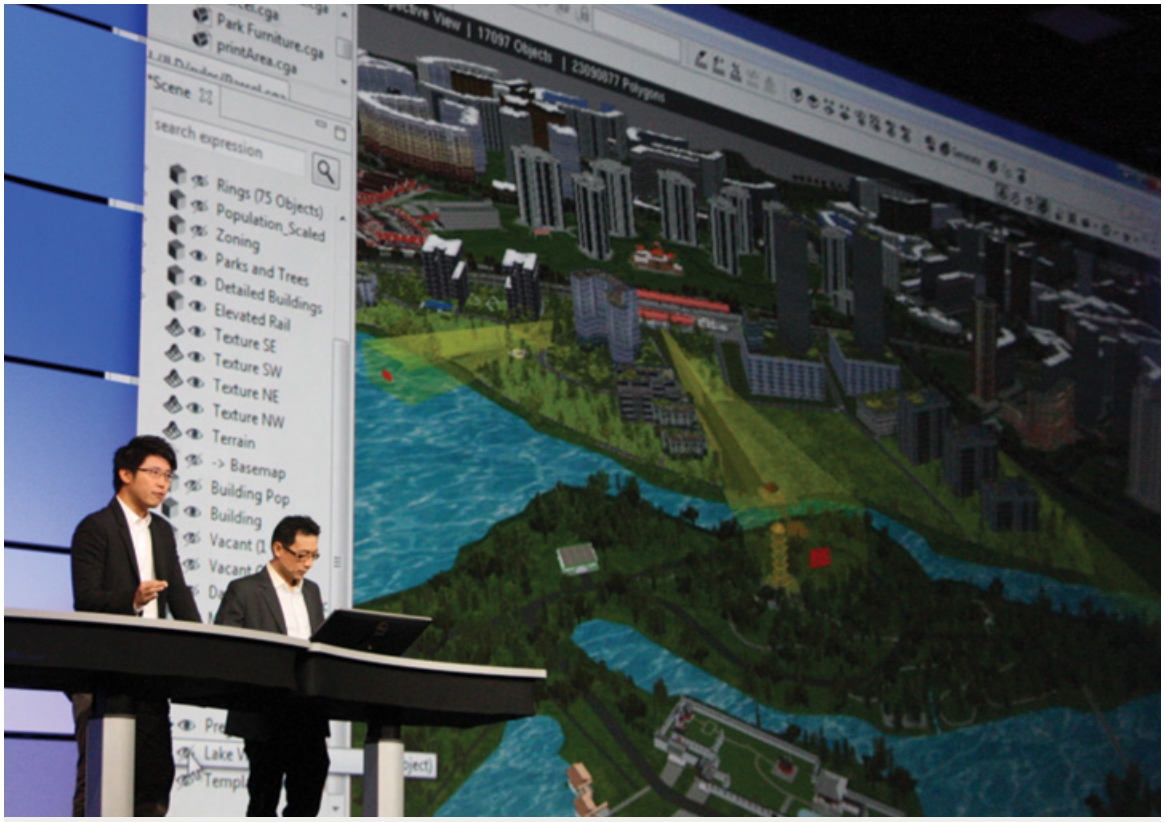
Dialogue and exchange of ideas

Ultimately, the value of planning tools and platforms is only as good as what you put into it. Beyond tapping on technology per se, there needs to be continuous dialogue and exchange. More platforms are being pursued to support this, both externally and within URA to fuel this. URA's Urban Lab platform initiated in 2015 has been showcasing emerging technologies and cutting edge research work on urban solutions, bringing together academics, government and private sector, to further greater exchange and ideas. Some areas covered so far include exploring the use of drones for a range of uses and strategies for a more energy-secure future.

Yammer, a social networking platform initiated in-house in URA in 2013 has gained traction amongst planners and architects as a key channel to share ideas, feedback on projects and inspiring developments in other cities. Some of the ideas from this platform have been implemented, like running trials to simplify signage for car park rates, creating pop-up projects to enhance public spaces and exploring the use of artificial sunlight for underground developments. This simple and easy-to-use platform has helped planners to stay curious and push boundaries in seeking out new insights for better planning outcomes.

Video interviews with Benjamin Chan and Eugene Lau are available at youtube.com/URASingapore.

*under L2 NIC Award No. L2NICCFP1-2013-6



Smart mapping

Esri is a forerunner in Geographic Information Systems technology. We catch up with Thomas Pramotedham, Esri Singapore's chief executive officer, on the potential of smart mapping in addressing urban challenges and how citizens can be involved too.

What is the potential of smart mapping?
Smart mapping – delivered through Geographic Information Systems (GIS) technology – offers important analytical capabilities for urban planners and policy makers. The technology underpins a great number of essential services within many of the world's most progressive cities, from improving traffic condition, optimising the delivery of health services, to policy development, providing decision makers a unique analytical vantage point to make more informed choices.

It can also play an important role in citizen engagement and education. Community sourced information can be fused with traditional land base and infrastructure information to offer more insightful views of an active city in terms of historical or real time patterns. With the visual nature and universal language of maps, policy makers can also better explain complex issues to diverse citizen groups or distil large and diverse data into visually simple layers.

What are the latest advancements you are most excited about?
In the recent years, we've seen a clear shift in the level of sophistication of Esri's 3D mapping solutions, real-time data collection, analysis tools and indoor tracking capabilities. The latest generation of smart mapping enables policy-makers, urban planners and developers to fully appreciate the cultural, economic and environmental impacts of a development by presenting options in a real-world context. In-built temporal analysis capabilities also furnish decision makers with the foresight to look beyond today to see how a proposal may impact the inhabitants of a city for generations to come.

There are also exciting developments in the area of real-time big data analytics, introducing a greater level of insight for decision makers, especially in the areas of crime prevention, transport network optimisation, asset tracking and emergency response. One emerging but untapped area is indoor tracking technology. It is in its early stages of

ABOVE | URA PLANNERS PRESENT THE CITYENGINE TOOL AT THE ESRI INTERNATIONAL USER CONFERENCE IN 2014.

application but offers the opportunity to holistically optimise environments, creating fully integrated, intelligent spaces – a true 'white space' for urban planners and developers.

How can smart mapping help address real urban issues?
Governments in various cities have leveraged on GIS technology to lower carbon emissions, better allocate medical services, manage the delivery of water and energy, reduce commute times and even connect people via ride-share apps. In Los Angeles, for example, GIS technology is being used to involve communities in the transformation of city streetscapes to improve neighbourhood liveability. Meanwhile, here in Singapore, smart mapping is underpinning planning and development activities.

There are also countless instances where smart maps have been leveraged on to alert authorities of crimes in progress, an unfolding natural disaster and urgent public works. In each instance, the source of information has been concerned citizens. Meaningful data sources can be made readily available to the community to empower citizens to also develop solutions – be they via smart maps or smart apps.

What are potential pitfalls to watch for?
While there are many benefits in using smart maps, there are two key areas that require careful navigation. Firstly, when developing a smart mapping application, it is essential to use quality, optimised data. You can have the most sophisticated GIS technology in the world, but if your data is unreliable or compromised, any application produced would be worthless or (in extreme cases) potentially dangerous.

Secondly, it is integral to marry smart mapping technology with the skills and knowledge of GIS professionals and experienced planners. It takes great people to drive great technology. Like any technology platform, the value of its output relies heavily on the information input into the system and the skills of the parties who configure it.

PHOTO CREDIT: LENNEY LEONG

At a glance

We check out the latest initiatives and ideas shaping the landscapes and neighbourhoods around us.

Power to the public space
From life-sized games, to piano performances and a birds ecological corridor under an MRT track – we are rethinking the uses of public spaces around us. PubliCity, a movement started in 2013 to activate and celebrate public spaces, is gaining momentum. More information on PubliCity can be found at ura.sg/publicitysg. Watch out for more programmes and activities in 2016.

More walking and cycling
Walking and cycling just got easier with cycling path options in Ang Mo Kio town and from Bishan-Ang Mo Kio Park into the city with plans to improve the Kallang Park Connector. Walking around the Civic District is more memorable with major enhancement works completed and car-free Sundays from 28 February 2016. Enjoy another vantage point for views of Marina Bay with the Jubilee Bridge.

Rail Corridor for the community
Nikken Sekkei and local landscape firm Tierra Design won in the Rail Corridor Request for Proposal (RFP) on 9 November 2015 for their thoughtful Concept Master Plan, Lines of Life. URA has been actively engaging the community on this extraordinary space since the railway line closure in 2011. Singaporeans also participated in a site visit and community workshop on realising plans for the Rail Corridor in January 2016 as part of the SGfuture dialogue series. Look out for the roving exhibition on the winning proposals from March 2016 and give your feedback at ura.sg/railrfp.

Rail Corridor RFP

Rail Corridor Concept Master Plan winners:
Nikken Sekkei Ltd and Tierra Design

Concept Designs for Choa Chu Kang and the adaptive reuse of the former Tanjong Pagar Railway Station: MKPL Architects Pte Ltd and Turenscape International Ltd

Celebrating good designs
The National Gallery Singapore won both the President's Design Award (PDA) and the URA Architectural Heritage Award (AHA) in 2015. The building held up an excellent balance between radical transformation of the monuments' identities and the exacting conservation of its heritage.

PDA 2015 Designer of the Year
Dr Colin K. Okashimo
Sculptor & Landscape Architect
Colin K. Okashimo and Associates

Franklin Po Sui Seng
Principal
Tierra Design (S) Pte Ltd

Siew Man Kok
Chairman and Founding Director
MKPL Architects Pte Ltd

PDA 2015 Design of the Year (Architecture)
National Gallery of Singapore
Studio Milou Singapore Pte Ltd
Jean-Francois Milou and Team

CPG Consultants Pte Ltd
Lee Soo Khoong and Team

The Oliv
W Architects Pte Ltd
Mok Wei Wei and Team

Sunray Woodcraft Construction Headquarters
DP Architects Pte Ltd
Angelene Chan and Team

AHA 2015 winners
9 & 11 Empress Place
(Victoria Theatre and Concert Hall)

1 St Andrew's Road
(National Gallery Singapore)

12, 13 & 17 Rochester Park

66 Pheng Geck Avenue
(Alkaff Upper Serangoon Mosque)

Rethinking energy
In its third instalment, URA's Urban Lab, a platform sharing cutting edge ideas and urban solutions, partnered Electricite de France (EDF), one of the leading innovators of energy, in an exhibition in October 2015 to relook at our energy challenges, exploring prototypes, experiments and ideas, inspiring a more energy-secure future. More information about Urban Lab is at http://ura.sg/urbanlab.

Latest books
Two new books are now out!

Greening the Vertical Garden City, by Henry Steed, shares comprehensive and practical insights on greening our vertical spaces featuring many case studies.

A River Transformed, Singapore River and Marina Bay, by Timothy Augur, traces the dramatic transformation of the Singapore River and creation of Marina Bay, celebrating stories of triumph and innovation. View a collection of rare photographs from the book, with videos, at The URA Centre ground floor until 16 February 2016.

A STEPPED PLAZA ALONG QUEEN ELIZABETH WALK – ONE OF THE RECENT ENHANCEMENTS TO THE CIVIC DISTRICT – HAS BROUGHT PEOPLE CLOSER TO THE WATERFRONT.

COME 28 FEBRURARY, THE CIVIC DISTRICT WILL BE CLOSED TO TRAFFIC TO FORM A CYCLING AND WALKING ROUTE AROUND THE HISTORIC AREA, IN A CAR-FREE TRIAL THAT WILL TAKE PLACE EVERY LAST SUNDAY OF THE MONTH. THIS IS THE LATEST OF 12 CAR-FREE ZONES THAT HAVE BEEN DESIGNATED TO DATE BY URA.