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Exclusive Content: Rise of Smart Cities in Asia

ON THE COVER: Woodlands North Coast: 1 & 7 North Coast / Singapore



The State of Smart Cities in Asia

Interview with **Frederico Ramos**, Principal, and **Janice Tnay**, Master Planner, Aedas Singapore; and **Ning Huo**, Executive Director, Aedas Beijing.



Frederico Ramos



Janice Tnay



Ning Huo

Q: What is the current outlook of smart and sustainable cities in Asia?

A: The current outlook for smart and sustainable cities in Asia is promising. Many Asian cities are indeed becoming smarter and more sustainable, with even Singapore going beyond the Smart Cities concept to embrace the idea of a Smart Nation. Several drivers and benefits contribute to this trend.

The rapid urbanisation in Asia has led to challenges such as traffic congestion, pollution, and resource strain. Smart cities offer solutions to these challenges by optimising resource usage and improving management efficiency.

As economies in Asia continue to flourish, the growing demand for high-quality urban infrastructure and services follows suit. Smart cities can help meet these demands by leveraging technology to optimise resource usage and enhance management efficiency.

We see also that many Asian governments have also launched smart city initiatives, providing policy support and funding for the development of smart technologies and infrastructure.

The rapid development of information and communication technologies, including IoT, big data, and artificial intelligence (AI), has enabled the implementation of smart city solutions. These drivers and benefits are driving the momentum toward smarter and sustainable cities in Asia, fostering a vision of urban environments that are not only technologically advanced but also environmentally friendly and inclusive.

Q: What role do government policies and emerging technologies such as AI and IOT play in the development of smart cities in Asia?

A: Government policies and emerging technologies such as AI and IoT play pivotal roles in the development of smart cities in

Asia. Government policies set the framework for investment in infrastructure, sustainability, and innovation, creating an environment conducive to the integration of advanced technologies. These policies can incentivise public and private sector collaboration, which is essential for the implementation of smart city initiatives.

Additionally, emerging technologies like AI and IoT enable the collection and analysis of data to improve urban planning, resource management, and citizen services. AI can optimise traffic flow and energy usage, while IoT devices can enhance public safety and environmental monitoring.

Recent AI developments have the potential to transform the way we interact with urban data models from the realm of "geek specialists" to a friendly and seamless environment made easier by our AI assistants. In the future, we will move towards a realm of Human-Machine co-authorship, where each party focuses on tasks that add value to a combined outcome greater than the sum of their individual capacities.

When supported by government policies, these technologies can lead to more efficient and sustainable urban environments.

Q: How can architects and urban planners promote and accelerate the development of smart cities in Asia?

A: Architects and urban planners are pivotal in advancing smart city development in Asia. Through proactive promotion of smart city technology, they can raise awareness about its wide-ranging benefits, including carbon neutrality, efficient resource management, and streamlined operations.

Moreover, by reimagining the Built Ecosystem/Cities realm, they can innovate designs that foster sustainable living and community engagement. Their strategic decisions and innovative designs demonstrate the seamless integration of smart city strategies, contributing significantly to the overall

development of smart cities in Asia.

Embracing innovative technologies such as AI, big data, and city digital twins is vital for cultivating sustainable, efficient, and interconnected urban environments. These advancements inspire and steer the development of smart cities in Asia, ultimately creating a positive lasting impact for future generations.

Q: Can you name us some successful smart city projects in Asia?

A: Asia is home to some incredible smart city projects that are shaping the future of urban living. Aedas, a leading architecture and design firm, has been at the forefront of this movement, playing a pivotal role in the development of smart cities across the region.

One standout project is the LiJia+YueLai Smart City Area in Chongqing, China, where Aedas has been instrumental in the planning and design of the innovative Chongqing Lijia Smart Park. This groundbreaking project integrates the latest technological advancements and sustainable design to create a vibrant and efficient urban environment.

In Singapore, Aedas has made its mark with the JTC Woodlands North Coast Master Plan, which aims to transform North Woodlands into a dynamic smart business park, seamlessly blending smart technology, sustainable design principles, and car-lite green spaces to foster a vibrant live-work-play community.

These projects stand as shining examples of how Aedas is spearheading the transformation of urban landscapes,

elevating the quality of life for residents, and setting new standards for smart city development in Asia and beyond.

Q: What are the challenges of developing smart cities in Asia?

A: The development of smart cities in Asia presents a number of compelling challenges. One of the key obstacles is the need to integrate new technologies with existing infrastructure in a way that is efficient, sustainable, and inclusive. In addition, ensuring data privacy and cybersecurity in a connected urban environment is a critical concern that must be carefully navigated.

Another significant challenge is the need for broad stakeholder collaboration, spanning public and private sectors, communities, and academia. Developing smart cities requires a coordinated effort and shared vision to address issues such as energy efficiency, transportation systems, and public services.

Furthermore, a key challenge is to ensure that the benefits of smart city initiatives are accessible to all citizens, including marginalised communities. Implementing equitable policies and inclusive decision-making processes will play a pivotal role in addressing social disparities and ensuring that the benefits of smart cities are enjoyed by all.

In the face of these challenges, it is essential to foster innovation and creativity, leveraging the diverse talent and expertise present in Asian countries. Embracing these challenges as opportunities for positive transformation, we can work towards creating smart cities that enhance the quality of life for all residents, promote sustainability, and drive economic growth.

Interview with **Steven Fry-Harris**, Associate Director, IT & AV, Cundall; and **Annie Nguyen**, Associate Director, Building Automation, Cundall.



Steven Fry-Harris



Annie Nguyen

Q: What is the current outlook of smart and sustainable cities in Asia?

Steven: Climate resilience and climate risk both play a major role as drivers for smart city and technology adoption, as they are a priority for governments in the Asia region. In a lot of

the smart city benchmarking that occurs globally, smart and sustainable go hand in hand. It's all matched up, the United Nations Sustainable Development Goals and other benchmarks such as the different International Telecommunications Union benchmarks, which are all about smart, sustainable cities.

Annie: There are a lot more people in the property sector talking about smart and sustainable buildings. Clients will ask us what the steps are if they want to do a smart building that is also sustainable. The current technology enables us to do so many things to improve energy performance, water efficiency, comfort and the occupant experience, but many clients are concerned about cost, and this prevents them from going ahead and implementing the initiatives.

For smart and sustainable cities, projects can range from relatively small interventions such as a flood detection alert system through a major scale such as a district masterplan. While cost is always a significant factor, governments in Asia can also encourage more companies and urban master planners to be a part of making the transformation through incentives such as green financing or carbon taxes and so forth.

Q: What role do government policies and emerging technologies such as AI and IOT play in the development of smart cities in Asia?

Steven: The use of smart cities approaches such as digital twins of cities help improve planning decisions and understand risk, and this is a priority for governments in the region. AI can provide feedback on decisions, for example, if a proposal is being made to develop a specific site, it can automatically consider how other factors such as proximity to flood-exposed land, the impact of other buildings on natural light levels, how close people will be to means of egress if needed, and so forth.

It all drives towards smarter thinking through leveraging data and analytics to use them as a force for achieving positive change and impact.

Annie: If it's a push or initiative by the government, they will generally always make it happen. Singapore is one of the smartest cities in the world and also aims to be a green country. To this end, many things have been implemented, for example, for traffic they are looking at changing how road use is charged. Instead of cameras on the gantries at very crowded areas during only certain times, the new approach aims to use new IoT and AI technologies so people will be charged road taxes and fees based on actual distance travelled per day.

Q: How can MEP and engineering firms promote and accelerate the development of smart cities in Asia?

Steven: From our perspective as engineering consultants, it's about asking those data questions up front. If we can ask these questions of, how are we going to benchmark an area? And if we understand how this area is going to be benchmarked, we can have that conversation with the urban master planners and the architects. We can make recommendations about how they can benchmark and have clear measurable outcomes that can deliver benefits for your clients and for your community.

And the data and benchmarking also act as a validation exercise for the architects and the urban master planners, so they can create a commensurate and exuberant beautiful city that also acts as a sponge city, mitigates flood impact and reduces the risk of climate-related population migration. The result is an urban plan and built form which is also built on very clear foundations that identify it as a sustainable and

climate resilient area. So, we can use this data that will in no way diminish the look and feel, the approach and the overall outcomes for project.

Having that data validation process and that data collection process is a hugely powerful tool to validate the architectural approach, to inform the local community and to make it a more sustainable and more achievable project. It also identifies replicative processes, planning processes and automated flows, triggering developments for social infrastructure – these are all aspects to expedite developments, reduce time and waste for financing schemes and increase construction output.

Annie: For a smart city project it is important to work hand in hand with the policy makers. It is really important to know what the aspiration is for that area, and then propose the best options that can align with that. Smart cities also need to be people-centric – it's not just about collecting data. The best solutions are those that increase the wellbeing, safety and amenity for citizens.

Architects and urban planners are really important in shaping the areas we live in. Using the available technologies to be able to properly design and advise clients on the potential outputs, they can promote the adoption of a smart and sustainable environment.

Q: Can you name us some successful smart city projects in Asia?

Steven: In global indexes of smart cities worldwide, two Asia cities are consistently in the top 20 – Seoul and Singapore. The challenge then becomes, how do you stay there? The forthcoming challenges will be digital trust, cyber security and technical maintenance. Bridging from the 5th to the 6th and 7th Industrial Revolutions, public perception around AI and how we leverage AI will come under increasing scrutiny.

Annie: Singapore's aspiration to be a smart nation has driven its policy to create more possibilities for itself beyond what it imagined possible. It has digitalized 99% of the government services from end to end, invested in infrastructure to create shared open platforms for businesses and citizens to learn and develop. It encouraged more investment in technology and talent to promote digital economy and society. The achievement can be as simple as installing flood sensors in the drain system, so if the drain has a certain amount of water inside then they will issue an alert and say there's excess water – and the sensors will send the data directly to one platform so the authorities can see all across Singapore what is happening. A few other examples are robot cleaners in public places, driverless vehicles in parks, odor sensors in public toilets, etc.

Q: What are the challenges of developing smart cities in Asia?

Annie: Many clients need to look at the numbers, such as what will they save on energy costs, or gain in time savings on maintenance or management efficiency, so having the data to demonstrate the return on investment and the time periods involved is something the sector needs.



Steven: There needs to be a focus on what smart city indicators are actually measuring. They are not assessing if your building can win an award or be the tallest or look the prettiest, the indicators are social-centric. The UN Habitat Guide for People4-Centred Smart Cities is all about the community. So, if you are talking about a digital twin of a city or region, there might be layers that show things like flood risk, or how many doctors there are in an area to serve how large a population.

All the different stakeholder groups need to be included and considered – citizens, business, the government – and that is because you need people in the region or city to connect to this and engage with it.

This all starts to drive public trust back into the approach in a very clear and visible manner, deliberately spotlighted. This trust and openness transcends to investment, academia, businesses and social infrastructure. Smart cities are stronger when they harness the community. It can act as additional data sources, create buy in from the community on schemes, win votes, support planning applications, and create harmony.

Finally, this is also key when presented with challenging situations. Climate threat is increasing, as seen by recent heat threats in the region, smart cities can support mitigating these threats but communal trust in smart city systems and the authorities implementing them is key to harness the power of this data and the opportunities it can realise.

Interview with **David Calkins**, Co-Regional Managing Principal - Asia Pacific and Middle East Gensler.



David Calkins

Q: What is the current outlook of smart and sustainable cities in Asia?

A: Urbanization in Asia is accelerating, with cities increasingly adopting innovative technologies to enhance living conditions, sustainability, and efficiency. According to the IMD Smart City Index 2024, which defines a smart city as an urban setting that applies technology to enhance the benefits and diminish the shortcomings of urbanization, most Asian cities have improved their rankings compared to the previous year. For example, Singapore is now one of the top five "smartest" cities globally and leads in Asia.

Smart cities offer a big opportunity to use technology to make urban areas more efficient, livable, and sustainable. This means integrating tech with urban renewal projects, community development strategies, and impactful ideas aimed at creating fairer cities. By doing this, we can improve human experiences and build urban environments that are resilient and inclusive.

Q: What role do government policies and emerging technologies such as AI and IOT play in the development

of smart cities in Asia?

A: Government policies are really key when it comes to developing smart cities in Asia. A lot of Asian governments have rolled out strategic frameworks and policies to boost smart city growth. Take Singapore, for example, the Smart Nation initiative is fostering a culture of innovation and experimentation by having the right policies and legislation in place, alongside strong support for research and collaboration from both the public and private sectors.

Research and innovation initiatives, like the Research, Innovation and Enterprise plan and AI Singapore, aim to drive technology translation, bolster the innovation capabilities of local enterprises, and leverage emerging tech breakthroughs to develop, prototype, and pilot cutting-edge technological solutions.

Cross-border collaboration also plays a crucial role in the development of smart cities in Asia. The ASEAN Smart Cities Network, set up in 2018, provides a platform for cities from the ten ASEAN member states to share ideas and solutions, driving smart city projects across the region. By fostering