

Building smart, inclusive cities with Dr Rizal Sebastian

Inauguration Rizal Sebastian



Future Urban Systems
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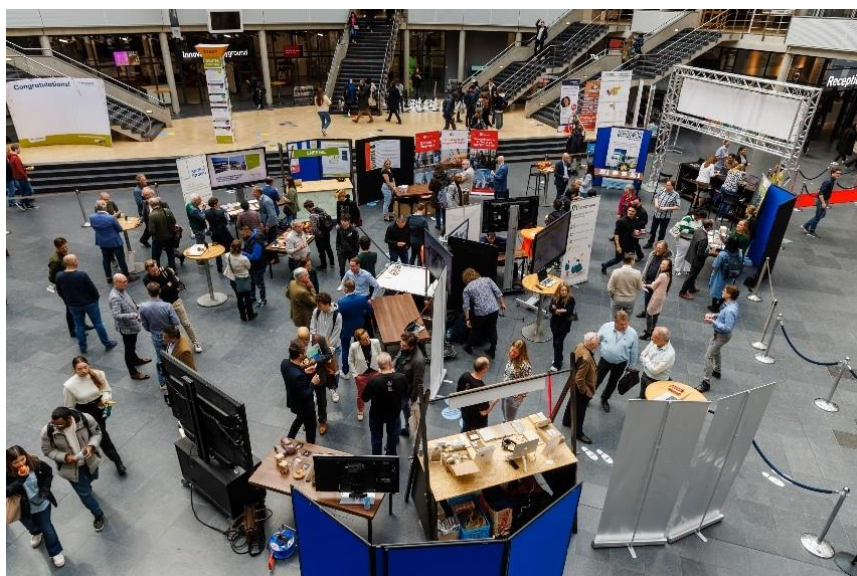
When it comes to sustainability, an area where we can make a significant impact is the urban environment, according to Dr Rizal Sebastian, our new Professor of Future Urban Systems. He is determined to make a difference through his work. “We aim to create liveable, climate-



neutral, and productive cities. Places where we can feel at home, work on wellbeing and prosperity, apply the principles of the circular economy, and respect nature,” he told the audience at his inaugural speech on 13 April 2023. “As a Professor of Future Urban Systems, I am fully committed to this aim, and I am grateful for everyone who is joining me on this mission. So, are you with me? Well then, let’s go!”

Rizal Sebastian during the inaugural speech

How do local energy communities work successfully? How can you turn your city into a living lab? And what software is available that can help us to develop and analyse future scenarios? On 13 April 2023, the Atrium at The Hague University of Applied Sciences was turned into an innovation marketplace where various partners of the research group presented new ideas. Here, visitors were given the opportunity to experience how future cities can be built through the use of immersive reality, alongside the look-and-feel of biobased building isolation materials made of recycled clothing. The visitors witnessed all kinds of innovative products and services, but above all they got to know each other better. In this respect, the abiding message of the event was crystal clear: there is great power in collaboration.

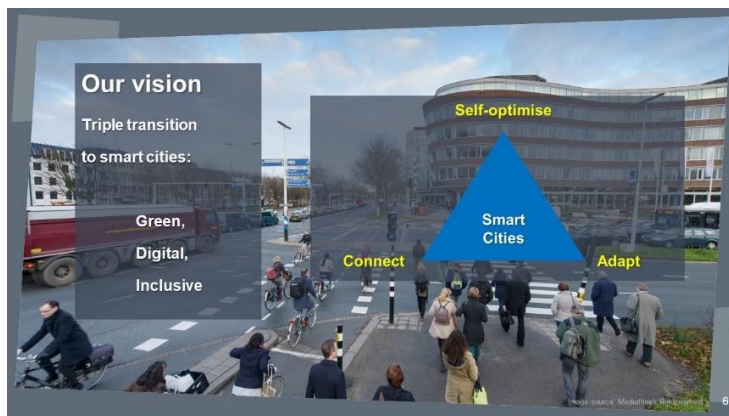


The Knowledge Market

Smart City of The Hague

Prior to Rizal's inaugural lecture, various speakers laid out the context for the new research group. Jacobine de Zwaan from the Netherlands Enterprise Agency (RVO) explained how the Netherlands and Europe as a whole are already working towards climate-neutral and smart cities. Martijn van Stam and Tijn Kuyper from the City of The Hague elaborated on precisely how this manifests in the context of the city of peace and justice. As Martijn explained,

"The Hague is one of the 100 European cities with the mission to be climate-neutral in 2030. To accomplish that goal, The Hague is working together with other cities, ministries, RVO, SMEs, interest groups, citizens, and of course, academia." Tijn proceeded to add: "We test all kinds of digital innovations that will help us with this challenge, such as, for example, in the Scheveningen living lab. The knowledge that we generate there, including the experience gained from the smart energy network, can be used in other parts of the city. Ultimately, this requires the help of the academic community. We have already worked closely with THUAS and I look forward to continuing our collaboration with Rizal!"



Green, digital and inclusive

Collaboration is second nature to Rizal. This is evident in the fact that Rizal combines his professorship with serving both as a senior advisor on digitalisation for the sustainable built environment and a scientific expert for the European Commission. His commitment to collaboration can most clearly be discerned in his research vision. As he noted in his inaugural lecture: "The European Committee promotes the Twin

Transition, which stands for green and digital. At Future Urban Systems we turn this into a Triple Transition: green, digital, and *inclusive*. We are not aiming just for any smart city, but rather smart cities where people can live in harmony with each other, with nature, and within a conducive business environment. So, working together with people who live in the city is absolutely essential. We want the city to constantly adapt to its inhabitants. By enabling human-machine interactions between people and urban systems, a city can adapt to the changing needs of its users."

Digitalisation is for everyone

Rizal explained that in addition to creating more inclusivity, digital solutions will also enable connectivity between the various systems that sustain cities, such as energy, water, and mobility systems. "And finally, they will enable seamless dataflows that will allow buildings and infrastructures to self-optimize their performance throughout their lifecycle," he added. "In our vision, digitalisation is not something for the future, nor is it an exclusive thing for sophisticated people only. Rather, digitalisation is for everyone – in education, research, and practice – and it should serve as a *key enabler* for achieving our sustainability goals. There are several illustrative examples of how this can work in practice within the construction sector. For example, Dutch homeowners can already explore the measures for renovations

using the online platform VerbeterJeHuis.nl provided by the RVO, whilst at the innovation marketplace in the Atrium you can see how residents can reshape their neighbourhood by playing a *serious game with immersive technologies*. This game allows them, amongst other things, to create more space for vegetation in public spaces in order to reduce urban heat stress. Artificial Intelligence, digital twins and immersive reality also provide new opportunities for SMEs in the construction process to quickly find and communicate solutions for sustainable renovations of the building stock.”



Extending circular construction in cities

Circular construction is an important focal point of the research group. This comprises three elements, according to Rizal. “First, how to retrieve, re-use or re-purpose components and materials from existing buildings; second, how to minimise the logistics of construction materials in cities by creating circular resource flows within local areas; and third, when new

construction materials are needed, how to maximise the use of bio-based materials. Many research projects within Future Urban Systems target the realisation of maximum impact in the construction sector, such as our plan for a feasibility study on digital twin application for the circular development of a new campus in the horticultural area in Westland, and an EU Horizon research proposal on data acquisition of existing building materials, which uses the Binckhorst urban area in The Hague as a field lab. Also think, for example, of applying smart scanning and ultrasonic techniques to detect construction materials.”



All about the people

Alongside circular construction, climate adaptation and energy transition are also important areas of research at Future Urban Systems.

Concerning the latter theme, Rizal and his colleagues recently completed a study investigating how to build the needed trust within local energy communities. “The human factor is important in everything the research group does,” Rizal once again stressed. “Of course, we are brought together by the knowledge content, but the way we work together is of equal importance. That is why I want to highlight my wonderful research group, or – as they say in Dutch – my ‘kenniskring’ (knowledge circle), and the students who work with us. Thanks to these remarkable people, we have already had an incredibly fruitful year, and I have great confidence in the future.”



The group photo of all THUAS speakers during the inauguration

About Rizal

Rizal Sebastian has been a Professor of Future Urban Systems in the faculty of Technology, Innovation & Society at THUAS since 1 May 2022. He studied architecture and building technology in Bandung (Indonesia) and completed a master's degree in Construction Management in London (UK) prior to joining an international engineering firm. In 2007, he successfully defended his PhD thesis on the integral design process at Delft University of Technology. He has spent the last twenty-three years combining research with practice. Over the course of many national and international innovation projects, he has accumulated knowledge and experience in developing and applying digital technologies for smart cities and a sustainable built environment.

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