Urban Districts

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SMART SPATIAL PLANNING

Rapid prototyping of a new district

An adaptive AI-led master plan was developed to guide the creation of comprehensive urban planning and design variants for a new district. The resulting planning tool assisted designers in this and other complex urban planning processes.

- Development of an adaptive master plan model that allowed rapid prototyping of urban design variants for a new urban district.

- An integrated digital urban master, which includes various simulations — for traffic, solar radiation, microclimate, energy demand, economic potential etc.

- The urban planning tool was developed for worldwide use.

- The developed tools are part of a collection of components for Grasshopper/Rhino3D.

smart & resilient cities

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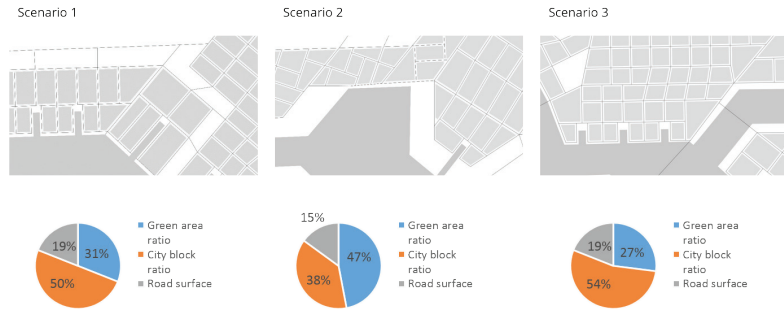**Reinhard König**
reinhard.koenig@ait.ac.at

This project aimed to reveal the transformational potential of computational rapid prototyping for a 400-hectare container terminal in the Port of Singapore. The Tanjong Pagar terminal occupies a central location within the neighbouring city's Central Business District and offers a direct connection to the Jurong East Business District.

The project team developed an adaptive digital master planning tool that integrates various urban planning and design dimensions, such as traffic and landscape planning. The master planning tool can rapidly provide planners and decision makers with a wide range of quantified urban planning and design scenarios.

The tool's computational method allows for quick adjustments or changes in design, while providing instant performance evaluations.

The project-developed master plan represents a highly comprehensive planning study that provides a valid base for further design detailing by planning experts. A study of the container terminal provided decision makers with three scenarios and proved that, according to local building codes, the new Tanjong Pagar Waterfront District could be developed as a mixed-use area with a gross floor area of 12 million square metres.

Scenario 1 Scenario 2 Scenario 3

Scenario 1: Green area ratio 19%, City block ratio 31%, Road surface 50%
Scenario 2: Green area ratio 47%, City block ratio 38%, Road surface 15%
Scenario 3: Green area ratio 27%, City block ratio 54%, Road surface 19%

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//01 Comparison of the 3 scenarios

Computational urban design strategy
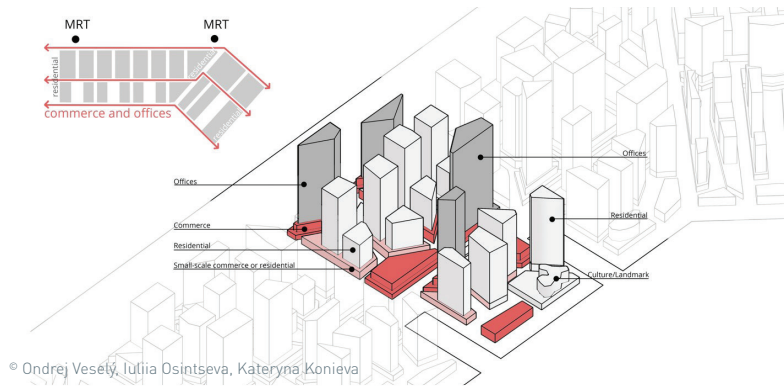
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//02 Building use

Tanjong Pagar
W a t e r f r o n t
A Procedural Urban Design Project in Singapore

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