



INTERNATIONAL

INVITED SESSION SUMMARY

Title of Session:

Science of Tooling - Framing A Design Science for Digital Tools in the Urban Context

Name, Title and Affiliation of Chair:

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Details of Session (including aim and scope):

In the context of the digital transformation of urban environments and recent smart city developments, a large number of novel IT solutions have emerged over the past years. The explosive growth of digital urban solutions, however, comes along with substantial conceptual and technological incoherences and incompatibilities. While on the one hand the urgent demand for new solutions for managing and operating urban systems (e.g. mobility, construction, social and natural environment) results in many parallel and nonaligned developments, there is lack of systematic approaches that is capable of translating pressing urban challenges into technological solutions. This translational deficit extends beyond the scope of mere technological design and development to issues of application, uptake and operations by the relevant stakeholders in city administrations, planning agencies, or municipal corporations. Urban data science and solutions engineering still being relatively new fields of research and development, only few overarching frameworks and regulating principles exist that can effectively steer the creation of new digital tools for urban development, planning and management.

On this background, the invited session wants to bring together technological and methodological expertise for the design & development of digital solutions for cities. In the broader scope, the sessions targets a comprehensive framework for applied research and innovation that merges technological expertise in IT solutions design with specific knowledge about urban systems. We want to discuss key conditioners of the rapid growth of digital urban solutions, review successful approaches, and scrutinise sample cases as to their capacity for generalisation of design principles and process models.

Specific topics of interest include but not limited to:

- Urban Data Platforms
- Digital Urban Twins
- City Dashboards and Monitors
- Agile Design Processes
- GovTech Solution Design
- Geospatial analytics
- Sociospatial / environmental simulations
- Urban IoT and CPS
- Data driven urban design and planning
- Complex (Urban) System Modelling
- Mixed Reality applications and user interaction
- Generative AI, ML
- Decision support systems, / decision making
- Smart city & smart building data

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

- Digital City Science @ HafenCity University Hamburg (HCU)
- City Intelligence Lab @ Austrian Institute of Technology (AIT)
- City Science Group @ Massachusetts Institute of Technology (MIT)
- Fraunhofer Institute for Work Organisation (FhG-IAO)
- Smart City Association Germany (BVSC)
- Knowledge Architecture Lab, TU Dresden (TUD)

Website URL of Call for Papers (if any):

<https://digital-city-science.de/>

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