# Organizing Collaborative Ecosystems for Sustainable Smart City Transitions

## Summary

*The Academy of Architecture and Urban Studies of Tallinn University of Technology (TalTech) invites applicants for a 4-year PhD position in the field of Urban Innovation and Sustainable Smart City Development. Under the topic "Organizing Collaborative Ecosystems for Sustainable Smart City Transitions", the PhD candidate will apply qualitative research methods to examine collaborative approaches and organizational dynamics in the framework of smart city projects.*

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| Research field: | Building and civil engineering and architecture |
| Supervisor: | Dr. Luca Mora |
| Availability: | This position is available. |
| Offered by: | School of Engineering<br>Department of Civil Engineering and Architecture |
| Application deadline: | Applications are accepted between November 16, 2020 00:00 and December 16, 2020 23:59 (Europe/Zurich) |

## Description

**Description of the PhD Project**

Smart city development exposes the coevolutionary nature of technology and society, as well as the systemic character of innovation. Bringing new technologies into society is not sufficient to improve urban sustainability. For this goal to be achieved, a sociotechnical transition path must be created through complementary actions, whose cumulative effects make it possible to replace a stabilized technological trajectory with a new configuration that works.

During this transformation process, that we call smart city transition, the sociotechnical systems of an urban environment are subject to multi-dimensional changes which enable the introduction of smart city technologies into the built environment. These changes are generated by a set of smart city projects: cross-sector projects which progressively create the conditions needed for smart city innovations and the existing sociotechnical configuration of local practices to mutually adapt. These projects set in motion a dynamic learning environment, on-site experimentation with sociotechnical innovations for smart cities, institutional reconfiguration processes, and other complementary changes which support the wider adoption of smart city technologies and make it possible to solve issues of technical and social adaptation.

Smart city transitions are triggered by complementary smart city projects, which run in parallel and transform the urban environment in a vibrant construction site. With the proliferation of smart city projects, new smart technologies, digital services, business models, market arrangements, and organizations progressively emerge in the configuration of sociotechnical urban systems, and these new elements complement or substitute the existing ones. Technological structures and physical urban infrastructure components are modified fundamentally, while urban socio-economic and environmental frame conditions, institutional settings, interorganizational collaborative arrangements, policy directions and political settings, knowledge production mechanisms, and the cultural perceptions, preferences, and behavior of urban communities.

In an effort to improve our current understanding of how sustainable smart city transitions unfold, the PhD Project aims to produce new insight into what collaborative approaches are most likely to support smart city projects which boost sustainable urban transitions. By bringing the complexity of cities' organization dynamics to the center stage, this PhD Project will attempt to build bridges between critical urban scholarship and other knowledge domains (e.g. organization studies, innovation studies, sociology, research on social network and collective behavior) in which research is conducted to how what organizational Dynamics facilitate complex ICT-related urban transformation projects and the societal challenge of enabling sustainable smart city transitions.

Examples of **relevant questions** that the proposed PhD Project could address are:

- What forms of inclusion should be adopted to achieve desired open qualities in smart city development strategy-making process?

- Do smart city projects need to combine the decentralizing principles of the crowd, such as transparency, participation and distributed cognition, with the centralizing principles of bureaucracy?
- How do the actors frame the smart city transformational process and what are their roles and responsibilities?
- What is the organization that should be charged with the task of leadership and what managerial and leadership techniques can be applied to drive the smart city development strategy forward?
- To what extent are local governments required to take an orchestration role within the collaborative ecosystem?
- What are the operational and strategic implications that city stakeholders need to be aware of in order to effectively deal with privacy concerns and controversy arising from data management?
- How can smart city projects cope with situations in which public and commercial interests and expectations diverge?
- How organizational actors address the difficulties associated with expressing and sharing their knowledge in order to enable collaboration?
- Which environmental and contextual factors affect the organizational structure of collaborative ecosystems in smart city projects?

**Responsibilities and tasks**

The FinEst Twins Smart City Center of Excellence is investing up to €15 million in the implementation of 10 large scale smart city projects in the fields of mobility, energy, built environment, data and governance. The projects are being selected through an idea competition (https://www.taltech.ee/en/smartcity), which focuses on urban challenges expressed by local governments in Estonia. These smart city projects will become the empirical setting of the PhD Project. The PhD candidate shall analyze the design and implementation process of these projects by engaging with a combination of data collection and processing techniques mainly related to qualitative research (e.g. interviews, surveys, focus groups, observational methods, content analysis, thematic coding, social network analytics). The research activity shall also be theoretically grounded and contribute to the current understanding of cross-sectoral collaborations in the context of smart city projects. The PhD candidate shall be responsible for selecting the most appropriate tools and methods for research, as well as the detail design of the research project and identification of the relevant theoretical backgrounds. The PhD candidate is also expected to disseminate the results of the research activity by producing journal articles and participating to seminars, conferences, and lectures.

**Requirements**

The applicants are required to fulfill the following requirements:

- A university degree (M.Sc.) in disciplines related to urban studies and architecture. Given the interdisciplinarity of the proposed project, consideration will also be given to applicants whose degrees are related to anthropology, business and management, development studies, economics, human geography, international relations, psychology, public administration, and sociology. We strongly encourage applications from candidates familiar with the above-mentioned qualitative research methods and techniques. Experience in the usage of mixed methods and qualitative data analysis software (e.g. Atlas.ti, QDA Miner or others) is preferred. Prior contributions or interests related to smart city research would be appreciated.
- Proven ability to carry out independent research and to work as a part of a broader team. In addition, the PhD candidate is required to have a strong interest in the presentation and publication of scientific results in high-quality scholarly journals.
- Good command of the English language (speaking and writing).

This PhD position is full-time and fully funded. Funding for this PhD Project is provided by the Horizon 2020 European project FinEst Twins (Funded under: H2020-EU.4a, Overall budget: €32 million, Duration: 2019-2026). The PhD position is part of this prestigious European project, which aims at establishing a new multidisciplinary Smart City Center of Excellence in Estonia and is the result of a joint venture between Tallinn University of Technology (Estonia), Aalto University (Finland), and Forum Virium Helsinki (Finland). Hosted at TalTech, the Smart City Center of Excellence will boost smart city research and translate scientific results into real-life innovations, by supporting the design, experimentation, and scale up of user-driven smart city solutions to urban challenges. In order to achieve this aim, the Center will mobilize all leading smart city actors and stakeholders in Estonia and facilitate the establishment of solid long-term high-level research, knowledge-transfer and innovation partnerships with the counterparts from the Helsinki region, in an effort to capitalize on the scientific research, innovation and entrepreneurship potential of the Finnish-Estonian macro region. The Center will also build bridges between existing leading smart city Center around the world.

The four-year PhD position at TalTech will make it possible to conduct research under the supervision of experienced professors and researchers working in the field of smart city transitions. The proposed project is highly international,

and the successful candidate will have the possibility to engage with a broad network of world-leading universities and research centers which are already collaborating with the supervisory team. These collaborations include representatives of Massachusetts Institute of Technology, University College London, Copenhagen Business School, City University of Hong Kong, The University of Edinburgh and Erasmus University Rotterdam, just to name a few.

The successful PhD candidate is expected to work full time for a duration of 4 years as a part of the Academy of Architecture and Urban Studies, which is located in Tõnismägi, Tallinn city center.

The PhD candidate is also required to fulfil the requirements of Tallinn University of Technology PhD Program. Additional funds will be provided for research trainings, conferences and international mobility.

To get more information or to apply online, visit https://taltech.glowbase.com/positions/193 or scan the the code on the left with your smartphone.