

Nordic Edge/UiS Research Symposium on Smart Cities

Wednesday, 22 September 2021 - Wednesday, 22 September 2021

Viktoría Hotel

Scientific Programme

Open Innovation and Rapid Entrepreneurialism during Crises: the good, the bad, and the ugly

The pandemic painfully revealed the importance of knowledge sharing, “rapid entrepreneurialism,” and balancing business and societal needs with health and safety. This panel questions how open innovation and interoperable and adaptable hardware and software (“quick-fixes”) have helped businesses and other stakeholders solve grand challenges and wicked problems like climate change and the Covid-19 pandemic. It also invites discussion about the contrasts between how collaboration has led to genuinely ground-breaking solutions against ventures that have proven ineffective, even exploitative, that put profits above everything else. Similarly, we ask to what extent do crises allow collaborative ventures to challenge normative values (for example), such as privacy and data protection, and where the bounds lie even when life-death decisions are at stake.

We invite relevant topics exploring two questions: are agility and openness something to embrace, or should we control them? And how ‘open’ should open innovation be when faced with genuine life-death decisions?

Convenors: Tegg Westbrook, tegg.westbrook@uis.no, Department of Safety, Economics, and Planning, Faculty of Science and Technology.

Xiangyu Quan, xiangyu.quan@uis.no, Department of Innovation, Management and Marketing, UiS Business School

Smart-Product-Service-Systems of the Future

Technological innovation and new digital technologies are radically changing the world. In particular, there is an attempt to convert business models focused on one-time sales into business models with recurring revenues, e.g., via supplementary (digital) services. Thereby, products are combined with additional services, whereas this integration of both disciplines causes a new complexity. This complexity, combined with a technology-oriented perspective, requires new systematic approaches to develop and implement these smart-product-service systems (PSS). Core aspects are the reduction of uncertainty and better preparation for future evolutions of the customer needs.

In particular, in the following, the most relevant topics are highlighted:

- Technologies enabling new service and PSS offering.
- Development of PSS and as-a-Service Business Models.
- Challenges and opportunities in the implementation of Smart Service strategies.
- Cases and applications.

Convenor: Jan Frick, jan.frick@uis.no, UiS Business School (manager CIAM)

Positive Energy Districts as vehicle towards smart and sustainable cities

Europe is pushing forward the energy transition by stepping up from building level innovations to district and city the pioneering concept of Positive Energy Districts (PEDs).

The EU's Strategic Energy Technology Plan (SET-Plan) has set out a vision to create 100 PEDs in Europe by 2025.

Linked to the New Leipzig Charta's Green, Just, and Productive City proclamation, PEDs are seen to be the right vehicle for the transition towards smart and sustainable cities and communities. Besides technological innovation within the energy system, PEDs call additionally for innovation and collaboration in diverse fields. They ask for cross-sectoral cooperation and engagement, open innovation, early involvement of diverse stakeholders within an integrated planning and development process.

With the first PEDs established in Europe, it is time to look at experiences and learnings gained so far and identify further research gaps. We do raise the question how PEDs can contribute to a sustainable transition of cities and communities.

We therefore welcome contributions that explore the following topics related to PED:

- User-centred approaches and behavioral change
- Integrative planning concepts for PEDs
- Knowledge transfer and continuation from planning to operation of PEDs
- Development of new policy instruments
- Upscaling and replication of pilot projects
- Social innovation and multi-stakeholder collaboration, citizen participation
- Barriers and success factors for PEDs
- The role of space and context to establish PEDs
- Case studies and demonstration projects
- Social equity in PEDs

Convenors: Joint panel of Urban Europe Research Alliance (UERA) TWG 2.1 and European Energy Research Alliance Joint Programme Smart Cities (EERA JP SC)

Monika Heyder (EIFER), monika.heyder@eifer.org

Daniela Baer (SINTEF) Daniela.Baer@sintef.no

Gudrun Haindlmaier (AIT/University of Vienna) Gudrun.Haindlmaier@ait.ac.at,
gudrun.haindlmaier@univie.ac.at

Sustainable mobility in smart cities

Urban mobility is currently undergoing several revolutions, i.e. the electrification and automation of vehicular transport, an increase of shared mobility and micro mobility, Mobility As A Service (MAAS), promoting active travel and walkability, and a stronger focus of environmental sustainability and social equality and justice. With the goal being less negative environmental impacts, fewer traffic accidents and better urban environments, a reduction of private car transport seems inevitable and a rethinking of urban travel and mobility space is imminent. But there are many ways to address these issues, and several of them are currently put into place in European cities, such as road toll, parking restrictions, car-free developments, LRTs/BRTs and improved public transport, mobility hubs, car sharing/pooling, automated vehicle test zones, e-scooters and city bike shares, dedicated bicycle infrastructure and pedestrianisation, as well as campaigns and personal travel planning.

While there is evidence to support the effects of these individual measures in certain contexts, a systematic/coherent body of knowledge on these different measures, their effects and impacts as well as their interaction effects is still lacking. To achieve more sustainable urban mobility, safer

urban travel, and attractive urban living, we need to understand what works where, how, why, and for whom? Therefore, high-quality research into the effects of technological, infrastructure, and policy developments on urban travel behavior and attitudes is paramount. This multi-disciplinary research panel will therefore address urban transport measures, their environmental effects, and social impacts, as well as issues such as social acceptability and cost.

Convenors: Daniela Müller-Eie,

University of Stavanger | Department of Safety, Economics, and Planning & David McArthur,
School of Social & Political Sciences, University of Glasgow.

Enabling Smart Cities: From current communication technologies to 5G and beyond

Communication technologies are enabling smart cities. The panel is mainly focused on current and future communication technologies and their impact on the smart city.

The target of the panel is to have interdisciplinary discussions between different actors in the smart city: from the researchers in the various fields to the network operators; from the communication technology manufacturers to the software developers; from the services providers to the users; from municipalities to citizen communities.

Any smart city theme can be investigated together with communication technologies: education and knowledge; arts and culture; safety; climate and sustainability; mobility and transport; democracy and participation; innovation and entrepreneurship.

Relevant paper topics can be:

- Emerging communication technologies in smart cities;
- Applications based on communication technologies;
- Services based on communication technologies;
- Use case scenarios that exploit communication technologies;
- Applications based on cross-silos data sharing and computing embedded with security and privacy;
- Emerging communication technologies for cooperative, connected, and automated mobility for intelligent transport systems;
- Security, dependability, and performance of ICT technologies in smart city;
- Convergence of communication and computing (from cloud to edge and fog computing);
- Artificial intelligence in communication technologies.

Convenors:

Gianfranco Nencioni, gianfranco.nencioni@uis.no, University of Stavanger

Chunming Rong, chunming.rong@uis.no, University of Stavanger

Naeem Khademi, Naeem.khademi@uis.no, University of Stavanger

Citizenship, citizen participation and citizenship education in the development of Smart and Sustainable Cities: Environmental, science and technology perspectives.

The concept of global citizenship and citizenship education, related to the growing interdependency and interconnectedness between societies in economic, environmental, political, and social areas, and grounded in universal values, is a way of understanding and acting, relating the individual to

others and the environment (Sund & Öhman, 2011; UNESCO, 2015).

There is a broadly unspoken separation between environmental issues and educational themes, traditionally related to sustainability and science and technology issues and learning, traditionally not associated with sustainability. The concept of citizenship (education) opens opportunities to interdisciplinary related subjects, concepts, research, and practices, to various understandings of local, global, and especially urban systems and environments, and to the Global Sustainable Development Goals (UNESCO, 2015).

This panel aims to gather people from various fields, interested in interdisciplinary collaboration for the development of smart and sustainable cities, and in the concept of citizenship, citizen participation, and citizenship education. This is especially related to all various participants, such as children and adults, in a city's society.

The panel welcomes contributions that inspire discussions crossing the humanities, social and natural sciences.

Convenors: Barbara Maria Sageidet, University of Stavanger, and Johana Montalvan Castilla, University of Stavanger

Measuring the Built Environment's form and performance

The rise of information technologies for collecting, storing, and analysing data has led to an enormous expansion of the possibilities to study urban form and its performance. It is possible to track in real-time how urban spaces are used. Moreover, many databases have collected information for considerable periods, making it possible to study spatial and social phenomena retrospectively. The built environment is a highly complex system composed of cities and the infrastructures connecting them. The scale runs from home, neighbourhood, city, region and beyond. The built environment's configuration influences societies as a whole and individuals' livelihoods, health and well-being, and life satisfaction. It also affects efficiency in using resources such as energy, space, and time, which has been a central concern in planning for sustainability. This panel wants to explore how, using new information and communication technologies, the built environment influences sustainable development in its multiple dimensions: quality of life, environmental footprints, and economic performance. The purpose is to share new perspectives, concepts, and techniques to study the built environment in the digital age. We welcome research using big data analysis, pattern recognition techniques, GIS, GPS tracking, lidar, satellite surveillance, and other advanced technologies to study the built environment form and performance. The panel aims at a multidisciplinary audience, combining perspectives from engineering, environmental sciences, and the social sciences.

Convenor: Fabio Hernández Palacio, Associate professor
University of Stavanger | Department of Safety, Economics and Planning
fabio.hernandez@uis.no

Social and spatial justice in times of transition

Major recent crises such as the 2008 financial crisis and the Covid-19 pandemic expose and magnify inequalities in society. With every such crisis new – and enduring – imaginaries of a

supposedly better society come to the fore to suggest how to transition towards better futures. For every such future, however, there is a need to critically interrogate whose interests the transition represents and serves, how it is implemented and ultimately who the winners and losers of different pathways would be.

The collective mission of the sub-theme is to present interdisciplinary research on social and spatial justice in three on-going and mutually related transitions: (1) green transitions, (2) participatory turns, and (3) smart digitalisation. In the context of each transition, the subtheme addresses critical questions relating to the social and spatial justice of (a) transition methods, (b) transition trajectories, and (c) transition outcomes.

Social and spatial justice can be regulated through legislation, shared norms and social conventions, through competition between different interests and through the exercising of different forms of power. Individuals and groups – influencing and/or affected by – social and spatial justice in societal transitions, can have very different understandings of the current situation and problem definition. Valuation of the situation, related aspects and imagined futures, can differ much.

We encourage novel, critical, artistic, and un-conventional approaches to understanding social and spatial justice in transitions to present empirical, conceptual, and theoretical contributions as well as research and innovation ideas for realizing just solutions in transitions

Convenors: Kristiane M. Lindland: Kristiane.m.lindland@uis.no, University of Stavanger

Jens Kae Fisker: Jens.k.fisker@uis.no, University of Stavanger

Anders Riel-Müller: Anders.riel@uis.no, University of Stavanger

Siddharth Sareen: Siddharth.sareen@uis.no, University of Stavanger

Ragnhild Sjurseike: Ragnhild.sjurseike@uis.no, University of Stavanger

From governing to living the smart city

This cross-disciplinary panel will discuss the possibilities and pitfalls associated with:

- (1) mixing and blurring of corporate and state logics in urban governance;
- (2) transformation of the institutional arrangements to create a smart city;

(3) creeping commodification of urban dwellers as data points to be harvested by digital platforms and smart city technologies;

and (4) growing interpenetration of digital platforms and urban space.

These issues are highly interconnected. Therefore, any city embarking on a smart city future needs to address them one way or another. Panellists will approach the interface between cities and technologies with a point of departure in their own research.

Questions to be addressed include, but are not limited to, the following: What happens when IT firms are tasked with building smart cities and what are the implications for urban governance and democracy? Are existing institutional arrangements capable of bringing about smart cities, or do we need more radical changes to transform the government itself to create a smart city? What is the difference between platforms that operate for the city and its residents and platforms that benefit by extracting value from the city? How can civic crowdfunding be used for urban development and regeneration projects? How do smart city technologies 'sense' and 'make sense' of a city? How is urban space rendered codable and programmable? How do we use human sensors to do the same job in everyday life?

These questions imply a topical progression from how smart cities are governed to how they are lived.

Convenors: Jens Kaae Fisker: jens.k.fisker@uis.no, University of Stavanger

Veronika Budovska: veronika.budovska@uis.no, University of Stavanger

Towards Climate-Neutral and Socially Innovative Cities

How can research-driven societal innovation help shape the development and implementation of climate-neutral, socially innovative cities and communities in the Nordics, Europe and globally? In this session, we invite participants to present their research adapted to local context, scale, history and people, and hence different concrete challenges, in response to the European Mission “100 climate-neutral cities by 2030 – by and for the citizens”.

Relevant topics include:

- Sustainable, circular, climate-neutral cities: Innovative design, solutions, governance and business models with co-benefits such as urban resilience, health, well-being, and job creation;
- Social and societal innovation: bringing together the widest possible range of stakeholders — labour, community and civic groups, commercial actors, and researchers — into collaborations for imagining and implementing concrete steps toward achieving climate-neutrality;
- New Nordic/European Bauhaus: Firmly connecting sustainability, aesthetics and inclusion, in cooperation between artistic, cultural and creative sectors, science and technology;
- A new role for innovation, experimentation, and learning together with stakeholders through the systematic use of urban living labs, experimental zones and sandboxes;
- The 15-minute city, with integrated spatial and mobility planning, and sustainable, accessible, safe and inclusive public spaces;
- Digital transformation and smart data in cities and communities to create societies where it is easy to live, move and work and where the transformation enables sustainable businesses.

Convenors: Annemie Wyckmans, Annemie.wyckmans@ntnu.no, NTNU
Berit Laanke, berit.laanke@sintef.no, SINTEF

New European Bauhaus

In this session, we invite participants to present their research-driven societal innovation towards the New European Bauhaus: expanding and strengthening the dialogue between the arts and technology, the sciences and culture, to create actionable and sustainable futures.

The heart of the session lies in mobilizing the arts as well as the larger cultural and creative sectors to take a leading role in shaping our climate-neutral, sustainable and inclusive futures. Developing an integrated concept of technological and cultural, social and societal innovation, while seeing sustainability, aesthetics, and inclusion as complementary and interrelated dimensions, allows us to imagine and explore novel pathways to impact and to take decisive steps toward achieving widespread climate-neutrality.

We invite participants to present diverse research methodologies — from scientific to practice-based and artistic —, and to explore the potentials, impacts and values of novel alliances across sectors, actors and contexts beyond the conventional frames of governmentality, disciplinary and sectoral boundaries.

Relevant topics include, but are not restricted to, how to:

- Engage, advise and support diverse urban constituencies at every scale, from small towns to major metropolis, from rural areas to the periphery;

- Initiate local pilots to reach out to and involve SMEs and industry — connecting artists, architects, designers, social researchers, scientists and engineers in open labs and collaborative collocation hubs;
- Develop, stress-test, and evaluate R&I solutions by bringing together the widest possible range of stakeholders, including, but not limited to, labor unions and social movements, community and civic groups, finance and commercial actors, as well as researchers and policy-makers;
- Co-create new, experimental forms of registering, measuring, and documenting impact, value, and progress.

Convenors: Florian Schneider, florian.schneider@ntnu.no, NTNU
Mari Sanden, mari.sanden@ntnu.no, NTNU
Annemie Wyckmans, Annemie.wyckmans@ntnu.no, NTNU