DREAMS *and* SEEDS

The role of campuses in sustainable urban development

Editors: Schewenius, Keränen, al Rawaf

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DREAMS *and* SEEDS

The role of campuses in sustainable urban development

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Prefaces

AS THIS is being written, the EU Interreg Central Baltic programme 2014–2020 has been running for nearly four years, and some of the projects, including Live Baltic Campus, are now reaching their conclusion. The programme's objective is to co-finance projects in Finland (including Åland), Estonia, Latvia and Sweden, which aim at solving common challenges together and across borders. The programme belongs to the European Territorial Cooperation framework (ETC), which provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different member states. The overarching objective of the ETC is to promote a harmonious economic, social and territorial development of the European Union as a whole.

One of the objectives of the Central Baltic programme is to improve urban planning and the urban space via joint urban planning activities. A special challenge for the projects that are co-financed under this objective is to bring added value to planning processes by cross-border collaborations. Live Baltic Campus has been one of the projects that have contributed to this challenge. It presents an innovative approach and new perspectives on the potential of urban environments. The focus of the project has been on campus areas, which can be seen as entry points for incoming students to a university city and the structures that create the urban environment. Campus areas can also be seen as microcosms that reflect the development of the city overall, thus making the campus areas true living labs for urban planning.

The Live Baltic Campus project has applied participatory planning methods in an innovative way. Using a process of active transfer of knowledge through cross-border cooperation, it has helped to bridge the development disparity gap between the countries in the Central Baltic region. Integrated campus development plans, service concepts and implementation plans for each partner region have been created via pilot projects that were co-developed between researchers, architecture and design experts, city inhabitants, and city governments. The Live Baltic Campus project has contributed to increase the share of urban areas covered by integrated urban planning in the Central Baltic region. The results will hopefully be spread further in time and space, thereby promoting the importance of liveable cities.

Samu Numminen,
Project Manager
Central Baltic Programme
2014 - 2020

A CONTINUOUS desire for knowledge drives the progress of science, and at the same time the development of the entire society. The ways in which knowledge can be acquired or created varies greatly. Not so long ago, students acquired knowledge by reading scientific literature, attending lectures and working individually in laboratories. Most of the new ideas nowadays come from collaborations between different disciplines and sectors. Surrounding spaces, whether urban or rural, metropolitan or countryside, are also sources of inspiration. Campuses represent the concentrated essence of all the forces influencing the incubation of knowledge.

The Baltic Sea Region has for years been regarded as a frontrunner in many respects among macro-regions. The region is well known for its knowledge-driven economies, signified by high quality education, technology, innovative capacity, and business sophistication. The VASAB vision, A Long-Term Perspective for the Territorial Development of the Region, aims to achieve even greater integration and harmony between these countries and sectors. The vision has already begun to turn global challenges into regional opportunities, and improve the quality of life for residents in both urban and rural areas.

The Live Baltic Campus project contributes to the VASAB vision by offering new prospects for cities and their inner neighbourhoods. Campuses, as hubs where creativity, knowledge, and ecosystems flourish in a high-quality working environment, add to the growth of the local area and community, also benefiting adjoining areas. Universities are increasingly becoming nodes for multi-faceted knowledge development, and they are the drivers behind the shared learning practices and adaptations that are connecting campus environments to the communities, of which they are a part.

Campus development planning and design are vital elements in that transformation. The Live Baltic Campus project team, through close transnational collaboration and pilot cases, are providing a significant input for the integration of campus development plans into overall urban spatial planning processes. The project demonstrates the diversity of possible approaches in implementing participatory urban design. By bringing together campus developers, city planners, university staff, students, businesses, neighbourhood citizens and other stakeholders, solutions can be found that both integrate and enhance social and ecological values, and promote local development.

It is striking how actively new developments, and the designing and redesigning of university campuses, are taking place in the cities of the Baltic Sea Region. These activities contribute to attracting young people from other regions. The main demographic challenges of the region – shrinking and ageing populations – are thus being subdued. The higher education institutions can be located within or outside the city centre; functioning as separate entities, or grouped together with other research organisations or innovation centres on the fringe of the city. However, what matters is the synergy between the city life and the spatial structure.

We hope that this book, which presents the methods for design thinking and participative urban planning as explored in the Live Baltic Campus project, will offer food for thought to planners and policy makers, and that it will serve as a useful and inspiring source for modern urban planning processes.

Tālis Linkaits,
Head of Secretariat,
Baltic Sea Region Spatial Planning Initiative VASAB,
Horizontal Action 'Spatial Planning' of the EU Strategy for the Baltic Sea Region

Forewords

Stockholm

STOCKHOLM IS growing. Over the past decade, the Stockholm County has gained 35,000 new residents annually and now is home to over one-fifth of Sweden's population. One-third of Sweden's economy and almost half of all jobs are created here. Still, the county is characterized by its nature, clean air and water which contribute greatly to its attractiveness.

However, the Stockholm region faces significant challenges. Growth has come at the expense of nature and the environment, and with social complications. There are housing shortages, with 250,000 new homes needed by 2030. Traffic, water and sewage systems are close to their capacity limits.

Ultimately, innovative measures are necessary to achieve sustainable growth in all sectors, i.e. good accessibility, attractive living environments and a favourable climate for business and innovation, while minimizing environmental and climate impact.

New knowledge, platforms and ideas are needed, for which higher education institutions play a central role. Integrated urban management and collaborative processes are key, as they enable dialogue between different stakeholder groups and help identify needs, challenges and solutions at early stages.

The results from Live Baltic Campus presented in this book provide valuable insights and useful methods that can be integrated in existing structures. This couples well with the ambition of the Environmental and Social Building Dialogue, where the county's authorities work together to overcome joint challenges, and achieve the Swedish National Environmental Quality Objectives.

This book delivers seeds for better urban futures that connect cities and citizens, and serves to spur the use of inclusive processes for sustainable growth with improved quality of life for all.

Johan Genneby,
Central Baltic Contact Point Sweden North
Business Development Manager,
County Administrative Board of Stockholm

Helsinki

THE CITY of Helsinki's vision is to be the most functional city in the world. This means smooth traffic connections, high quality public services, various housing opportunities, and pleasant living environments. The city wants to see citizens, students, universities and other stakeholders as close partners in developing the city and its services.

The university campuses form an interface between the city and the universities. The campuses should thus be easily accessible. They should be urban working spaces for students and staff. They should also be open to citizens, companies and other actors, and involve the different groups in education, projects and events.

A functioning city fortifies lively campuses, and strategic cooperation between the city and the universities helps to attract new talent and investment to the area. This book will give fascinating insights on how campuses can be developed as functional platforms for education and research, and how interaction with the surrounding community can be promoted.

Anni Sinnemäki,
Deputy Mayor for Urban Environment
City of Helsinki

Riga

THE LIVE Baltic Campus project is the first important step towards the realisation of a Science and Innovation Centre on the west bank of the River Daugava, included in the Riga Sustainable Development Strategy 2030. The Live Baltic Campus project brought interested stakeholders around the same table to build a common understanding of the current and possible future role of campuses in the city's development, and of their own role in the shared vision.

We envisage the west bank of the Daugava, which will join several university campuses, as priority development territory that will be integrated into the existing urban space of Riga. It will be well-connected, both to adjacent neighbourhoods and the city centre. It was through the Live Baltic Campus project that we learned from our Baltic Sea Region partners about how academic campuses can become the city's success cases.

Both municipal and national investment policy in Riga must support the upcoming campuses on the west bank of the Daugava with the required infrastructure. Planned infrastructure projects in these neighbourhoods include Rail Baltica, the multimodal transport hub in Torņakalns, the construction of new streets, bicycle paths and public spaces, and optimisation of the public transport network. With these ongoing and planned projects, Riga's City Council is sending a clear signal that the development of campuses is vital to the city. To become a competitive Northern European metropolis, we need to focus on bringing knowledge and creative people to Riga. The development of the Science and Innovation Centre will enable us to attract young talents to build the future economy of Riga.

Dainis Turlais,
Vice-Chairman of Development Council of Riga Planning Region
Chairman of Security, Corruption Prevention and Public Order Issues Committee of Riga City Council

Forewords

Tartu

IT IS easy to forget that cities are all about people and bringing them together. When we are closer together, we tend to be more active and therefore carry out our everyday activities more efficiently. As social beings, people also enjoy the company of others and feel more secure in places where we are not alone.

When designing a building or some other shared public space, architects create visuals to get a better idea of how the space will look after it is built. In order to enhance the attractiveness of the picture, architects tend to add a lot of people to the pictures, and blur them to create a feeling as if they are all actively using the newly created space, even those who are seated. However, in projects all around the world it is quite common that the newly created places end up as largely empty spaces, with few users and activities.

Tartu is fortunate to have a major university located right in the historical centre of the city. This means that the centre is always in active use, constantly being transformed by different activities and ideas, and overflowing with the energy of students. Thoughtful planning and design of new public buildings and open spaces, such as the university campus, increases the synergies between the city centre and the campus by adding value and visitors to the entire area. Concurrently, while enhancing the public space in the city centre with well-designed places, planners and architects don't need to worry about the capacity to fill the finished places with people; or that their visions will remain only as pretty pictures.

Instead, there is a great potential for their visions to come true, brought to life by real people who are being drawn together to enjoy the city with all their heart. The Live Baltic Campus project, by highlighting the role of campuses in a novel exploration of sustainable urban planning, has become part of that process. This book, which presents the results, is a valuable contribution to the understanding of integrated processes for urban planning, design, sustainability.

Tõnis Arjus,
Tartu City architect

Turku

THE CITY of Turku is one of the most important higher education centralizations in Finland. Since almost a fifth of its population are students, the official aim of Turku is to be the best student city in the country. The location and the atmosphere of the campus play a significant role here. The campus area in Turku—comprising of five different higher education institutions—is exceptionally compact in the context of Finland thus providing excellent grounds for livable campus planning.

To locate the key shortcomings in the campus, a survey was conducted in May 2016 as part of the Live Campus Baltic project. The findings showed that the most pressing need for students were new spaces to study, work and hangout in. Therefore, a versatile pop-up student place was launched for a week in the heart of the campus. Although the attendance was moderate the feedback received was highly positive.

As a student union representative I can personally subscribe to the flexi-space ideology. Since the facilities for student use in the campus are often scarce and building new ones is highly expensive, it is important that the existing facilities are used efficiently in a protean manner. This can be achieved through the selection of furniture and creative use of space.

Janne Salakka,
Steering group representative of Live Baltic Campus project
Member of the Executive Board, Municipal Affairs, The Student Union of the University of Turku

Uppsala

EVERY MUNICIPALITY, and each university, must take their responsibility to meet the challenges facing democracy, human rights, and the climate, which are evident around the world today. The pursuit of the Sustainable Development Goals decided by the UN offers a good opportunity for cooperation for this purpose. Arenas for meetings, both planned and unplanned, must be created and filled with life-giving activities. This book highlights some such examples, showing both the possibilities and problems that can arise when visions are to be realized.

Kollaboratoriet Uppsala is a place where our two universities take seriously the task of interacting with the surrounding community through exciting and innovative meetings and activities. Here, representatives of the universities' broad range of academic fields can both inspire and be inspired by the municipality's vibrant civil society, its citizens, and the municipality´s representatives.

The development of Campus Polacksbacken, now the location for the Ångström Laboratory and the Information Technology Center (ITC), is taking place during intensive urban development in the environmentally sensitive and valuable surroundings of these institutions. Extensive consultation involving all stakeholders is required. The importance of identifying these actors is described in this book, both from an actor-centered and an area-centered perspective.

Strengthening citizens' involvement in democratic processes is becoming an increasingly important, yet difficult and demanding task for combating populism and xenophobia.

It requires highly thoughtful action, both within our representative democratic assemblies and in the democratic bodies' contacts with citizens. One of the contributions of the book is to discuss these important processes.

Carl Lindberg,
Dr. h.c. President of Uppsala City Council

Live Baltic Campus

LIVE BALTIC CAMPUS

Project launch
OCT 2015


Photo: TU Delft

The Live Baltic Campus Expedition to the Netherlands
MAR 2016

"3 Days, 4 Cities, 11 Locations, 28 expert expeditioners from 4 countries and 6 cities"


Photo: Katariina Saarela

Project Kick-off
NOV 2015

Inventory reports made in each city


Photo: Juan Sebastian Covarrubias

Livable City Forum
Turku & Helsinki
JUN 2016

Local pilot cases to enhance stakeholder participation run in Helsinki, Riga, Tartu, Turku and Uppsala - WORKSHOPS, POP-UP EVENTS, CAMPUS STUDIES, THEME STUDIOS FOR STUDENTS....

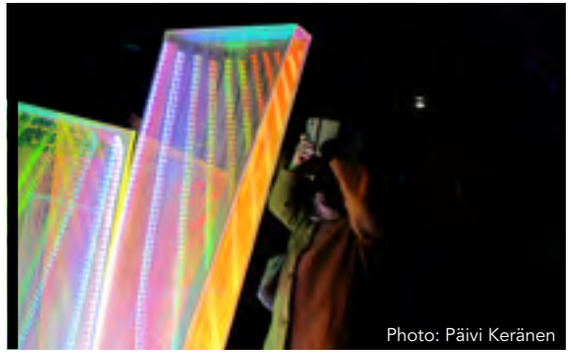


Photo: Päivi Keränen

Livable City Forum
Uppsala
NOV 2016

Study on participatory design process of Campus Albano, Stockholm completed

Photo: Andres Tennus/University of Tartu

Livable City Forum
Tartu
MAR 2017

Preliminary results presented at the VASAB workshop at the EU Strategy for Baltic Sea Region Forum
JUN 2017

Service!
Heart!
City!
Change!
Bloom!
Together!

Common core themes from the pilot cases identified

Livable City Forum
Riga
OCT 2017

Preliminary results presented at side event of the EU Week of Regions and Cities in Brussels
OCT 2017

Live Baltic Campus Development Ideas Book published
DEC 2017

Final Conference Stockholm
DEC 2017
Book 'Dreams & Seeds' published


Photo: Päivi Keränen


Photo: Didzis Grodzs

Introduction

THE ROLE of universities is transforming, expanding from one of being pure education and research facilities to increasingly becoming active partners in regional development, and incubators for innovation. The importance of their physical and social locations is simultaneously increasing in the context of urban planning and development. Cities are often perceived as innovation frontrunners, guiding the way for their regions and countries; and with the knowledge economy gaining importance, university campuses increasingly function as trailblazers, creating new, innovative development pathways for their cities.

The Live Baltic Campus project set out to explore the potential of the ongoing shift in the role of campuses in urban development. The project is based on the notion of campuses as urban spaces whose physical and social interconnections with their surrounding areas and communities should be supported. With the support from the Central Baltic Programme, six higher education institutes have collaborated to utilise design-based participatory planning methods to develop campus areas in their respective cities, while sharing their results and findings. The campuses, currently in various stages of planning, construction and development, are located in six cities from four countries: Helsinki and Turku in Finland, Tartu in Estonia, Riga in Latvia, and Stockholm and Uppsala in Sweden.

This book is a collection of two and a half years of insights acquired from the project. It combines thematic articles from leading experts, with practical case studies and inspirational visions, or "Seeds", to feed the imagination. We aspire to provide a holistic understanding of current approaches to campus design in the Central Baltic area, complemented with lessons from the wider European context.

The book consists of five sections that approach campuses from different design perspectives. The first section, Campus in the City Context, examines the developing role of campuses through time, their current status, and frames the key concepts of design thinking, sustainability and resilience in the context of the book. The second section, Design of Planning Campuses, focuses on the participatory planning process, with its benefits and hurdles, and how to approach campuses as knowledge locations. The third, Design of Built-up Campus Infrastructure, introduces the knowledge and expertise of creating inviting and inspirational settings for evolving higher education. The fourth section, Design of Campus Landscapes, discusses ways of better weaving campuses into the urban fabric, and advocates for acknowledging the importance of campus location for both the learning community and the surrounding city. The final section, Design for Campus Experience, extends the scope to also address lifestyle changes and the inclusion of new members, such as local residents, into the campus community. Presentations of practical tools for participatory campus planning processes complement these sections.

We see this book as an excellent example of both inter-regional collaboration, and the development capacity of campus communities. It is with great pride and joy that we see the fruits of the Live Baltic Campus project come together and be presented here, and we hope that you will enjoy learning from it as much as we have.

Päivi Keränen,
Project Manager,
Live Baltic Campus,
Metropolia University
of Applied Sciences

Live Baltic Campus

Campus Areas as Labs for
Participative Urban Design
10/2015 - 3/2018

PROJECT PARTNERS

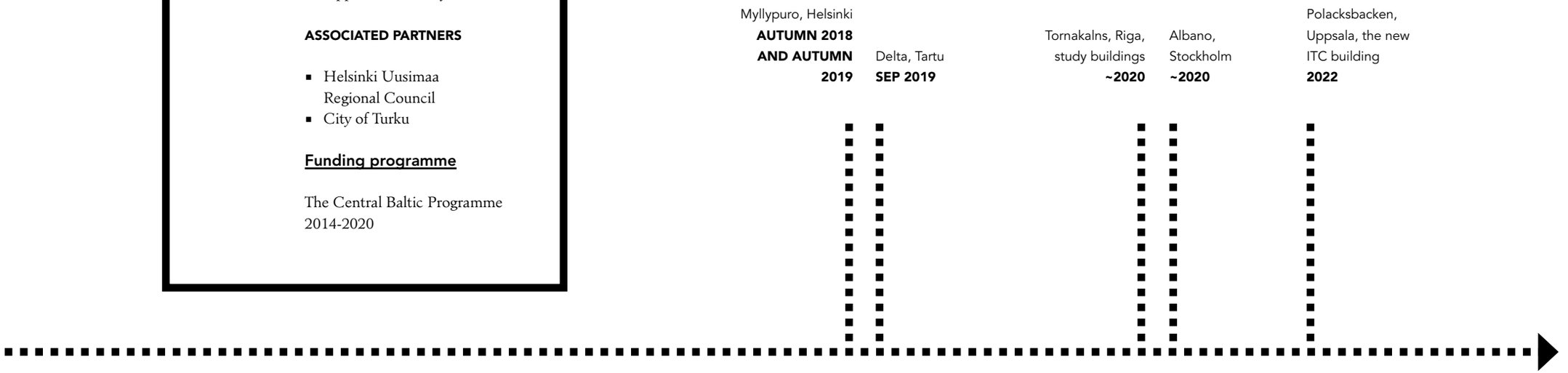
- Metropolia University of Applied Sciences
- City of Helsinki
- Riga Planning Region
- Stockholm Resilience Centre
- University of Latvia
- University of Tartu
- University of Turku
- Uppsala University

ASSOCIATED PARTNERS

- Helsinki Uusimaa Regional Council
- City of Turku

Funding programme

The Central Baltic Programme
2014-2020



Section 1.

CAMPUS IN THE CITY CONTEXT

‘The Three Ages of University Design’

UNIVERSITIES ORIGINATED in cities, and the fame of ancient seats of learning was -indeed still is- synonymous with their urban locations: Padua, Salamanca, Oxford, Paris, Göttingen, Uppsala, Helsinki, Tartu. Cities and their seats of learning were physically intertwined, whether in the mediaeval colleges and faculties whose front doors opened onto the street, or the post-renaissance universities set in monumental classical edifices that defined urban centrality. Not till the later nineteenth century did American universities begin to be established in out-of-town parks reminiscent of British boarding schools. Needing a new word for this phenomenon, its promoters used Latin word for a field: ‘campus’.

The innovation quickly caught on. Campus designs offered flexibility for expansion and the emergence of new disciplines, they meshed with twentieth century transport and communications technologies, and they echoed the Modernist Zeitgeist of sunlight and greenery. Soon the word campus had become synonymous with a university itself, whether in or out of town. It was axiomatic that universities newly formed after 1950 would be allocated open landscaped sites in ex-urban locations. Many existing universities were encouraged to relocate to new campuses. And those older civic universities that didn’t have the option of moving out of town often applied campus-style principles to their sites, turning away from adjacent streets, planting shrubs and trees as buffers to segregate academics from their surroundings, and allocating unbuilt space to parking lots so they could drive straight home to the suburbs at the end of the day.

Around the time of the millennium a radical design shift occurred. Kerstin Hoeger of ETH Zürich speaks of it as a new Denkkultur, a knowledge culture that has transformed the relationship between cities and universities. We can see the effect at every scale of campus planning, from the broadest issue of locational selection to the detailing of individual buildings. Out-of-town campuses, laid out at low density as nine-to-five workplaces, are being infilled with housing and services so they become more like regular urban extensions. Inner-city universities accustomed to think of themselves as defensive enclosures are opening links with adjacent neighbourhoods, turning buildings around to face outwards and making services available to local residents. There's a revived concern for urbanism and urbanity. Formal streets and squares -outdoor rooms with names- are replacing the nameless natural landscapes of the campus; the cafés and restaurants of street-based, mixed-use buildings provide active frontage onto the public realm; the car-parking areas that were such a prominent feature of the twentieth-century campus are being scaled down in response to the more sustainable transport habits of the millennial generation. Above all, universities are relocating to city centres and making a selling-point of their new-found urbanity: on the left bank of the Seine, Paris VII (Université Diderot) brands itself as 'immersed in the city, immersed in life', while for Arizona State University, 'ASU Downtown Campus is the place to see/ be seen in Phoenix'.

Far from being simply a matter of architectural fashion, these designs shifts respond to five profound challenges of contemporary academic life. First, sustainability: the inclusion of carbon-mitigation in universities' performance measures encourages a layout that is compact, accessible and energy-efficient. Second, recruitment and retention: universities are in fierce competition for staff and students, and since generational preferences have shifted (market research assures us) towards urban life-styles and consumption patterns, so must they. The third factor can be summed up in the words knowledge economy, and reflects awareness of how universities can enhance regional productivity through research spin-offs and business support. The fourth factor is globalisation. The more knowledge is globally networked, the greater the demand for face-to-face contact in sites of innovation. The final factor is epistemological. Today the frontiers of science and creativity lie across the boundaries between disciplines. The most fertile knowledge environments are not cells of specialisation, but interstitial spaces where different specialities come together - which is exactly the role that urban environments were historically created to perform. In the words of Janne Corneil and Philip Parsons, of Sasaki Associates:

> "Today the boundary between the university and the city must become porous, or better, non-existent. In a healthy knowledge society the university becomes the city and the city becomes the university."

Baltic universities have been at the forefront of today's reimagining of the relation between campus and city. The present collection shows them learning from each other. And for non-Baltic readers, myself included, that means some very useful lessons for the rest of world.

Michael Hebbert,
University College London

Students laying down a time capsule within the foundation stone of Myllypuro Campus in Helsinki on the 26th of September 2016.
Photo: Sofia Jokinen, Metropolia UAS

Helsinki: Universities as strategic partners for city development

THE CAMPUS network in Helsinki is experiencing big changes as Aalto University, which used to have two campuses in Helsinki, is concentrating all its activities to one big campus in Otaniemi, in the neighbouring city of Espoo. In a parallel process, Helsinki Metropolia University of Applied Sciences is concentrating its functions from almost 20 locations to four large campuses, one of which is the new campus in the suburban Myllypuro neighborhood. The Myllypuro campus is Helsinki's pilot case in the Live Baltic Campus project. The trend in Finland over the past ten years has been to merge learning institutions and campuses into bigger complexes, in order to use university premises more efficiently, to maximize synergies between different fields of study, and to save costs.

The Helsinki City Strategy 2017-2021 presents a bold vision: for Helsinki to become the most functional city in the world for its residents and visitors. For university campuses and their users, this means smooth traffic connections, high quality public services, various housing opportunities and pleasant living environments. The city further strives to be one of Europe's leading homes to innovative start-ups, and a knowledge hub for companies and individuals focused on creating positive change. The city offers its infrastructure and services to companies and researchers for testing and developing, e.g. new technology-, infrastructure- and service-solutions.

The city of Helsinki recognizes that a highly educated population is a key factor for its success. The higher education institutions play a central role in both the city's current development and for its future vitality, as they are hubs of new knowledge creation and raise new talents. Hence, the city cooperates closely with the universities and student networks in the Helsinki Metropolitan Area. For example, this cooperation includes regular meetings between the rectors and mayors in the area, and also collaborative development projects. Strategic focus areas of the cooperation between the city and the universities include developing a more functional and sustainable city together, boosting innovations and entrepreneurship, and increasing the international attractiveness of the area.

The city of Helsinki recognizes that the research and studies conducted at the universities can contribute to new solutions in urban development, concerning, for instance, smart and ecological solutions for traffic, construction and city planning. This approach benefits the city's development, its business life and academic research. To solve the complex urban challenges of both today and in the future, a wide range of actors need to be engaged in a participatory, decentralized and open approach to innovation. The role of the city is to function as an active enabler, a connector and network builder, to encourage all relevant actors to work together.

Since higher education institutions often generate new ideas and solutions, they have a lot of potential to create innovations and support entrepreneurship. The city and the universities can take common measures to grow an entrepreneurial culture among students and researchers. On a campus level, this can mean creating entrepreneurial hubs supported by the city, where people from different disciplines come together to share ideas, get inspired, and receive advice and support for becoming an entrepreneur. The campus can provide showrooms for university-based ideas and research, as well as for commercial products and services.

The decision to locate Metropolia's new Myllypuro campus in the eastern part of the city is a strategic choice. This area did not have a higher education institution, and the expectation is that the campus will create new business opportunities and play a major role in developing the area as an innovation hub. The hope is that this will bring new vitality and vigor to the suburban neighborhood and its surroundings. Interaction between the campus and the surrounding city, the inhabitants of Myllypuro and businesses, is essential.

A vision for how to maximize the benefits of the campus for business development has been developed by Metropolia in collaboration with the city and stakeholders during the Live Baltic Campus project. A long-term follow-up study on how the Myllypuro area will develop will be conducted by the city, Metropolia, and the Urban Academy; a collaboration platform for the University of Helsinki, Aalto University and the City of Helsinki. The study will map out factors such as changes in services and local businesses, demography, citizens' experiences of the area, and the built environment. This information will be important for future decision-making on regional development.

The Myllypuro campus is expected to bring new value to its surrounding area in the form of new vitality and potential economic development. The city can facilitate new ideas and innovations by functioning as a testbed for the university. The campus will also involve citizens, companies and other stakeholders in its activities, and be an active developer and educator. In this way, Metropolia's new campus in Myllypuro will be one of the central players in fulfilling the vision of the City of Helsinki of becoming the most functional city in the world.

Ida Björkbacka,
City of Helsinki

Cityscape
of Helsinki.
Photo: City
of Helsinki

Riga: Towards a new science at the confluence of architecture and economics

AS A city develops, it tends to replicate itself, repeating its own patterns of success or failure. Riga's population is shrinking, and the city is plagued by many typical, related problems: inadequate and poorly planned mobility services, uneven development in different neighbourhoods, and many vacant or abandoned buildings – while there is simultaneously a shortage of housing in other areas. The suburbanisation – well-to-do people relocating to municipalities just outside Riga – is exacerbating the problems by depriving the city of their taxes, while burdening it with increasing commuter traffic.

While university buildings have traditionally been an integral part of the city centre of Riga, university campuses have also been part of the story. Construction of the Riga Technical University (RTU) campus in Ķīpsala, an island on the west bank of the River Daugava, which runs through the city of Riga, was started back in the 1970s. Plans were made as early as the 1980s for the construction of a new campus for the University of Latvia (LU) as well. The pivotal decision has now been made to concentrate Riga's education and research potential in campuses a few kilometres apart from each other, but away from the current city centre core. The decision contains the seeds of possible replications of both positive and negative consequences for the city.

Today, the two main national universities, RTU and LU, are in the process of concentrating their facilities on the west bank of the River Daugava. The plan is to construct a new University of Latvia campus, and to densify the existing Ķīpsala campus of Riga Technical University by adding new buildings. Both universities form the core of the emerging Academic City in Riga, an area which also includes two other universities and the National Library of Latvia.

The processes of building campuses are primarily driven by economic rationale. At a basic level, cost savings will be made by creating new energy-efficient buildings instead of retrofitting historical buildings, and also by a more efficient use of facilities and scientific equipment. At a more complex level, closer physical proximity of faculties within and between universities facilitates better connectivity. Physical connectivity is supported by ease of mobility and social connectivity through new possibilities for interaction, between both academic disciplines and those outside of academia – such as business, government, and different groups of society.

Languages and value propositions of economics and architecture differ, even if they do not necessarily clash. Economics measures success in terms of efficiency, return on investment, value creation, and net present value. Architecture looks for 'urban quality', working with categories such as scale, urban typologies, connectivity, density, and form following function. In this context, the design and construction of new types of spaces open new possibilities for collaborations between academic and economic actors, some of them perhaps unexpected, along with new cultures and ways of working.

The 2017 Reinhold Schmaeling conference was held as part of Livable City Forum Riga on October 5th, and was attended by some 400 professionals. An annual conference traditionally held by the Office of the Riga City Architect, this year it was co-produced together with the Latvian partners of the Live Baltic Campus project: Riga Planning Region and University of Latvia. The conference was organized with the new aim of bringing together the two disciplines of architecture/urban planning and knowledge economy, in Riga.

With key stakeholders involved both as presenters and participants (the Ministry of Economics, the Ministry of Education and Science, Riga City Council, universities, NGOs and civil society), the conference served to frame the sphere of problems faced by Riga as an aspiring 'knowledge city'. Challenges range from national-level to very local ones: from low investment in R&D and insufficient

internationalisation of teaching staff and student body, to underdeveloped mobility solutions, a shortage of local student housing, and physical obstacles to mobility between university campuses.

We, i.e. local knowledgeable professionals and citizens active in urban innovation and re-invention, need to build a discipline-transcending vision of the Academic City, aiming to connect the universities to each other and to the city. The vision needs to combine the two languages of architecture and economics, identify common values, and create an understanding of how good design and architecture can create economic value. Creating value is a long-term project, and here we can sense a tension of timelines. More short-term factors, such as the economic pressures of current planning periods, funding windows, and limited terms of municipal and rectors' offices, contrast with the intangible yet real benefits of enhanced city and university reputation, which translate into economic benefits on a much longer time scale.

Key players and stakeholders in Riga need to see the common interest in and value from collaboration, and those of us already involved need to help to bring about and expedite the vision. In a way, the wheels are already in motion: the university campuses on the west bank of the Daugava are increasingly becoming a tangible fact.

What are the possible future scenarios?

The positive scenario is one of economic and urban revitalisation: campuses serving to 'grow' the city around them; of business blocks, residential, retail and recreational facilities emerging from the brownfield territories adjacent to campuses. In this vision, modern campuses serve to catapult universities towards more competitive study and research programmes, closer cooperation among the universities themselves, and with business, public bodies and society, to solve real societal problems and strengthen Riga's knowledge potential.

The negative scenario is one of 'business as usual', or worse. Here, universities do not collaborate, and instead continue largely as islands into themselves, achieving only middling results in education and research. The campuses stagnate or shrink, the development of campus-adjacent territories is only limited, and most city life takes place in 'real' neighbourhoods. The city centre becomes devoid of students or young people in general, turning it into a giant unliveable, overpriced tourist theme-park. The campuses fail to give any new impulse to the university's transformation, and they just continue to do the same things in newer, more energy-efficient premises.

The knowledge economy that is emerging in Riga – based on new knowledge, new business models, and a new understanding of the role of science and innovation in the economy – is not easily contained in a city quarter or a definition. Surprising phenomena have recently materialised in Riga 'beneath the radar', beyond national or municipal policies; there is a thriving technology start-up scene, able to attract millions of investors' euros, and also a number of privately-funded (or even self-organised) co-working spaces for young people. In a matter of a few years, Riga has become a top destination for students of medicine. International students now account for almost 25% of the student body at Riga Stradiņš University. We will no doubt see further interesting developments in conjunction with the materialisation of Rail Baltica, the high-speed train connection between Helsinki and Berlin. If the development plays out well, Riga can benefit tremendously.

Much of the unique cityscape Riga is famed for was built during its boom years, between the 1860s and 1910s, and designed by the alumni of Riga Polytechnic School of Architecture, which was established by the local business community in 1862. Riga flourished when its science joined hands with its business, and when the city opened to the world. With today's new emphasis on higher education and research, and collaborations across academic and business sectors, we can see that the city's best years are still ahead.

Emils Rode,
Riga Planning Region

The river Daugava.
Photo: Merita Soini, Metropolia University of Applied Sciences

Moment captured on the Live Baltic Campus expedition in the Netherlands. Photo: Merita Soini, Metropolia UAS

Design Thinking: On campus experiences and development

CAMPUSES CAN arguably be seen as prime locations for building the future, by contesting conventions and seeking out new better ways of doing things. Design Thinking can offer some valuable insights for not only campus development, but also campus management and activities.

The term Design Thinking has gained a lot of attention and hype in the last ten years. However, in spite of its popularity, the definition of the concept itself remains vague. Two different discourses can be found in the literature on Design Thinking. One is rooted in design, and originates in the 1960's, while the other is used in management and is considerably younger.

In the management discourse, Design Thinking is often seen as a cure to nearly every challenge in business and society. It can be used to generate breakthrough ideas and is often described as powerful, effective and accessible approach to innovation. At the same time, remarkable doubt remains about it and its novelty. Some, especially designers, view it as nothing new; it is what and how designers work or as Don Norman says, "Design Thinking is what creative people in all disciplines have always done". Nevertheless, the design continues to expand into new arenas, such as organization development, urban design, service design and strategic planning – a stuff of campuses for example. Design is thus no longer only about creating tangible products.

The traditional design discourse discusses the way designers work and think. The discourse has long history, starting in the 1960's when design methodology became a renewed focus of study. The more recent management discourse started sometime around the millennium and focuses on the need of improving managers' skills and capabilities for better business success and competitive advantage.

Despite a lack conceptualization of the term, Design Thinking is now widely accepted, and its elements and ideas are in use. Design Thinking is often connected to a multitude of different practices, mindsets and qualities such as:

HUMAN CENTERED APPROACH has been maybe the most emphasized part of Design Thinking. It advocates an empathetic approach to understanding clients and users, their needs, and their behavior Observational and ethnographic methods can be used to achieve deep understanding of these needs. In the campus setting this means considering students, staff or other campus users as a starting point of the design.

COLLABORATIVE AND MULTI-DISCIPLINARY WORKING STYLE is another often highlighted approach, stressing the importance of involving a plethora of stakeholders. Multidisciplinary collaboration increases the knowledge gained from many different disciplines and perspectives, and can thus be useful for campus development.

THINKING BY DOING and fast prototyping refers the cyclical and iterative way designers are usually very apt with. Prototypes act both instruments of demonstration and stimulators of thinking, making the concepts of early stages more concrete. With this approach mistakes are certainly possible but are perceived as a natural part of the development process rather than a failure. Rapid prototyping can be used in all stages of campus development, but especially in the beginning of development processes to determine which actions would be most beneficial.

VISUALISING relates closely to prototyping: the concepts under development are presented in ways beyond words or symbols. Especially when dealing with intangible concepts like services, visualisations are seen as essential. Visualisations help sharing of ideas, revealing relationships and building common understanding about the concepts under consideration – and making them a valuable tool for campus development.

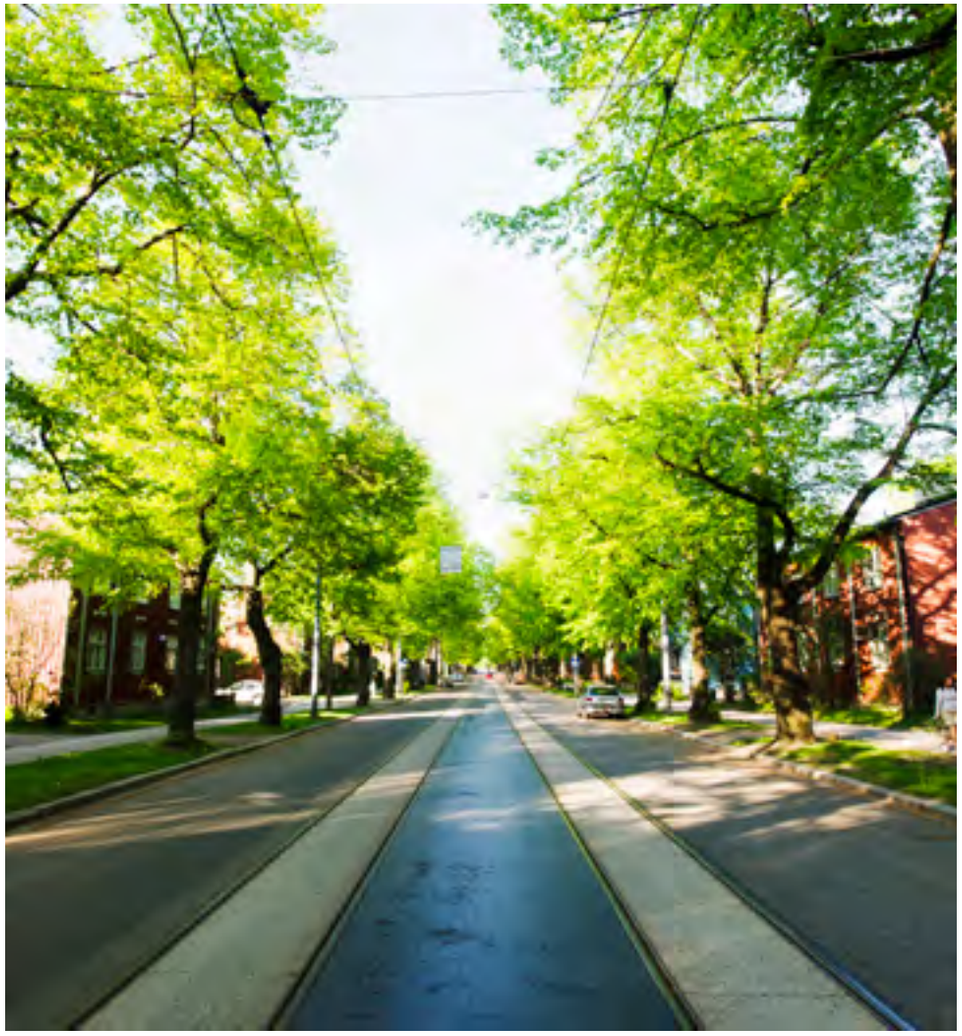
CHALLENGING THE GIVEN PROBLEM. Designers often excel in the capability of delivering solutions to design problems. Part of this is an ability to challenge any given problem: a good designer questions the design brief and tries to look beyond its boundaries. Framing, or reframing the problem in a novel way is seen to be important to the Design Thinking process.

Another typical way of working with the given problems is the 'logic of what might be' meaning that the designer imagines the situations that could be, generates new ideas and challenges accepted explanations.

HOLISTIC VIEW. Effective designers aim for a holistic view to any given problem and are interested in user's needs, which include not only practical needs but also social, cultural and environmental aspects. They attempt to understand the systems at hand, visualize the structures of those systems and their causal connections. Design thinkers strive to describe or visualize the impact of changes in one component on the others and to the system as a whole.

The Mindset of Design Thinking is seen to be optimistic and future oriented. Design Thinking requires tolerance for uncertainty and a belief that potential solutions exist surpassing the current ones. Ambiguity is to be seen as a natural part of the game, problem solving as enjoyable and finding the new opportunities and alternatives from novel domains as exciting.

Juha Ainoa,
Metropolia University of Applied Sciences



Street view from Helsinki.
Photo: Juho Kuva, Visit Finland

Resilience and Sustainable development

THE TERM "resilience" is being used in the Live Baltic Campus project - but what does it actually mean? Does it differ from sustainability and sustainable development as defined by the World Commission on Environment and Development thirty years ago: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"?

A sustainable system is one that survives or persists over time. In ecological terms, sustainability means avoiding extinction and maintaining good living conditions. Socially, it means creating just, healthy and inclusive societies for present and coming generations. Economically, it means avoiding major disruptions and collapses, and hedging against instabilities and discontinuities. Strong sustainability suggests that the economy is wholly supported by society, which in turn is wholly contained by the biophysical environment (Figure 1).

While sustainability could be viewed as a normative process rather than an end-product, resilience offers a framework for understanding the capacity of complex systems to adapt to continuous change without losing their functions, services and structures (Figure 2). In more formal terms, the Canadian ecologist C.S. Holling defined resilience as: "the capacity of a system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks – to have the same identity." With the goal to promote the normative ideals inherent in the notion of sustainable development, a resilient system allows for local self-organisation, and an increased capacity for never ending learning and adaptation. These three characteristics are similar to the resilient function of the human immune system, which holds the capacity for continuous learning and remembering historical exposure to pathogens, in turn allowing the immune system to learn and respond to future pathogens.

Diversity and redundancy (in combination) are of crucial importance for a resilient system, meaning that several distinctly different and seemingly redun-

dant elements are able to perform the same basic tasks, so that if one element gets wiped out, others can fill in.

Resilience building and campuses

Resilience thinking has been proposed, as of late, as an approach for planning and designing sustainable cities. Universities have a critical role to play, as engines driving shared learning and adaptation between the campus environments and the communities they are part of. In this way, resilience becomes a lens for conducting urban sustainability work built on an understanding of urban form and function, and which can improve the design and configuration of urban systems. Like the idea of the Live Baltic Campus Project creating a working method for participative urban planning, a resilience framework has the ability to bring together city planners, government representatives, campus developers, and different local stakeholders.

The design processes that resulted in a new vision for Campus Albano, in Stockholm, used resilience thinking as an umbrella metaphor, and it was self-organized and included civic stakeholders as well as city officials. The result was a triple helix of urban form, ecosystem services, and social institutions that helped translate novel research insights into a new vision for a campus outdoor environment. In the case of Campus Albano, both the participatory design process and the actual campus environment hold unique roles in fostering and promoting continuous learning, and adjusting the campus' form in all aspects. This, in turn, promotes resilience-building in the wider society.

Inherent in the notion of resilience are the two processes of crises and change, which by default will happen sooner or later, whether we like it or not. The question is how we deal with, adapt to, and make use of them. An example derives from the Delft University of Technology (see Section 3) where a fire that destroyed one of the university buildings gave rise to the renewal of urban design. In the spirit of participative planning, students and faculty members, together, came up with innovative design solutions for how the building could be designed and restructured – a co-creation process that would not have happened without the crisis.

In conclusion, the new Resilience paradigm which is now taking shape around the processes of sustainable development, calls for inclusive participatory design processes, taking advantage of inevitable crises and change, and being adaptable by fostering diversity and redundancy. In this way, we can increase the adaptive capacity of our economies, societies, and biosphere and truly meet the needs of the present without compromising those of the future.

Johan Colding,
The Beijer Institute of Ecological Economics,
The Royal Swedish Academy of Science,
and Stockholm Resilience Centre

Stephan Barthel,
University of Gävle,
and Stockholm Resilience Centre

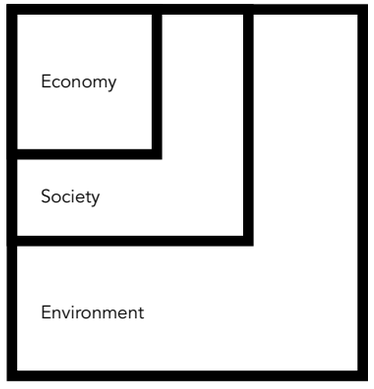


FIGURE 1.
The three nested systems of sustainability - the economy wholly contained by society, wholly contained by the biophysical environment.

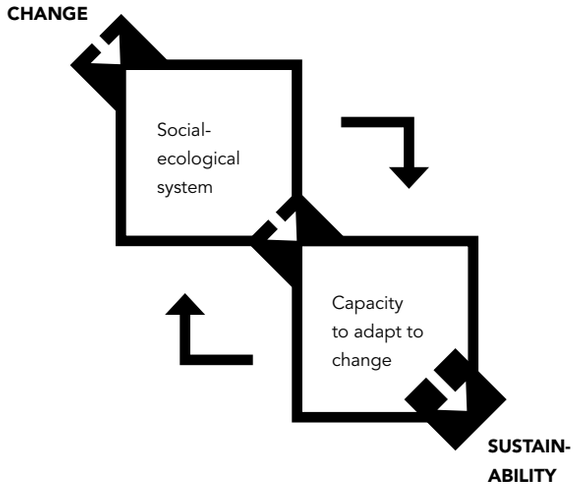


FIGURE 2.
A social-ecological system is always impacted by change and deals with it as a function of its resilience, i.e. its capacity to adapt to change and shape it in productive ways. In contrast to resilience, which is a method for dealing with change, sustainability should be viewed as a process, rather than an end-product. Source: Adapted and modified from Berkes, Colding and Folke (2003)."

CASE RIGA: TORNAKALNS CAMPUS

COOPERATION ON CAMPUS

Creating Riga's leading campus

UNIVERSITIES IN the Central Baltic region have been playing an increasingly active role in society and the economy by bridging teaching, research, and entrepreneurship. They are also key actors in the process of urban innovation. With a new campus under construction, the University of Latvia in Riga has been exploring how to bring external partners from the public and private sectors, as well as the general public, into the campus to boost the innovative capacity of the university. Within the scope of the Live Baltic Campus project, the University of Latvia explored these issues by carrying out a study on external collaboration.

The University of Latvia, one of the largest universities in the country, and the Baltic States, is located in Riga, the capital of Latvia. Riga plays a major role in the Latvian economy, contributing more than half of the country's GDP, and being the home base for 40% of the total number of Latvian enterprises. In this context, the University of Latvia has great potential to develop partnerships and collaborate with enterprises, NGOs, public sector institutions and other stakeholders.

Since 2010, the University has been developing and building a new campus in the Tornakalns neighbourhood in Riga, which will be finished by 2021. The new campus will bring together most of the faculties and institutes which are currently spread out across the city. The campus in Tornakalns is expected to offer modern study and research facilities, and to extend and increase university collaborations within the university, with partners from public and private sectors, and with society in general. Moreover, the new campus is located on the left bank of the River Daugava, which is a part of the city called the 'Science and Innovation Centre' in Riga's strategy for sustainable development. On the

The University of Latvia House of Nature is the first building completed at the Campus Tornakalns. Photo: Toms Grīnbergs, UL Communications and Innovation Department

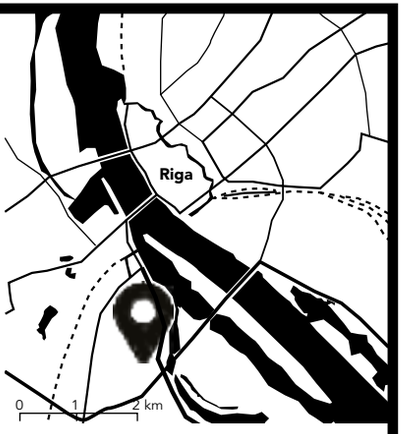
Visualisation of the Tornakalns Campus area in Riga. Illustration: Sestais Stils Architects

left bank, three other universities, the National Library, as well as a business district and headquarters of several financial institutions are situated close to each other, thereby forming Riga's Knowledge Mile. This geographic proximity is hoped to further develop cooperation among these institutions, and strengthen the innovative capacity both locally and nationally.

The study performed within the scope of the Live Baltic Campus project began with collecting data from the university's administration about existing collaborations with external partners, in order to identify the quantity of collaborations and trends in their development. Next, workshops were organized for the University of Latvia's scientists, professors, and management representatives, as well as existing and potential partners. The aim was to map out good practices, problems and obstacles the participants had experienced in current collaborations; also, to share ideas and recommendations on how to improve and strengthen collaborations. In a parallel exercise aimed at gathering information about good practices in other universities of the region, Live Baltic Campus project partners were interviewed regarding their experiences and insights on collaborations with external partners.

The ideas from the first workshop were validated and adjusted in another round of Design Thinking workshops for the University of Latvia's administrative representatives. Design Thinking is a problem-solving approach that combines a user-centred perspective with rational and analytical research to create innovative solutions. The final stage of the collaboration research was the creation of a roadmap of further steps to improve collaboration with external partners, and to establish their presence at the new campus.

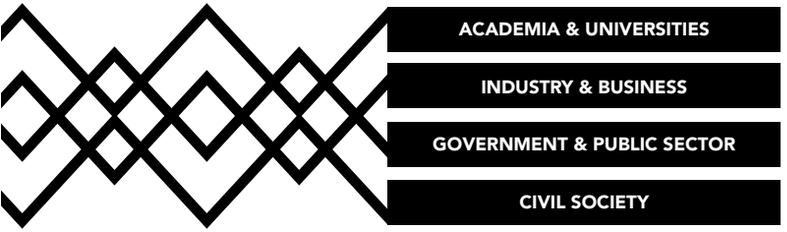
An important finding was that although the campus is still in its early stages, it's already proving the synergy concept by



Tornakalns Campus, Riga

Set in a brownfield territory a 15 min walk from Old Riga and yet functionally an island with problematic access

STATUS Under construction and in planning. Study buildings should be finished by 2020 as well as the dormitories, the sports infrastructure and technology transfer centre.
STUDENTS 12 500 - 15 000
STAFF 3 000
HIGHER EDUCATION INSTITUTION
University of Latvia
FIELDS OF STUDY
Geography, Biology, Chemistry, Medicine and Physics, Mathematics. Law, Letters, Pedagogy, Psychology, Art, Theology, History, Philosophy.
CONNECTION TO CITY
1 bus line (Doorstep), Several bus lines 7min walk, Train station 10min walk



Quadruple helix model connects academia, industry, public sector and civil society to accelerate the transfer of research and innovation results to regional growth.

Spacious and connective interiors will enable meetings at the House of Science of Tornakalns campus.
Illustration: Sestais Stils Architects

spurring collaborations. Representatives from faculties and institutes that have been relocated to the new campus state that cooperation on projects has emerged as a result of the new, facilitated daily contacts with colleagues in other faculties. The new campus, with its modern environment and open space, is a magnet for many external partners as well, who hold conferences and other industry events there.

In general, different values and ways of thinking, lengthy bureaucratic procedures, insufficient staff funding, and a lack of professional project managers who could take on the administrative side of cooperation are some of the barriers to collaborating mentioned in discussions with faculty representatives. Representatives of companies, NGOs, and municipalities feel there is also a lack of clear external motivation for cooperation with the university. There is a lot of room for improvement in cooperation within the university as well; often University of Latvia employees are not informed about the services and expertise available from other faculties, institutes, and departments. With the second building phase of the campus expected to be finished by late 2018, and the third one by 2021, it is important to capture the successes and take note of the setbacks. This experience will be used in creating an open campus that welcomes ideas, activities and people. The Live Baltic Campus project has been essential for the University of Latvia to better understand the synergy between the campus, the city, and the people – but this is just the beginning, and we are excited to build upon the concepts and experiences gained in the project.

Diāna Orlovska,
University of Latvia

Anita Kazina,
University of Latvia

University-Business Cooperation

The benefits of university collaboration with external partners have been widely acknowledged in recent decades. Universities are a significant part of the quadruple helix model, which illustrates how academia, government, industry, and civil society interact as the four main actors that are creating or discovering new knowledge, technology, products, and services. Being a university with specialisation in both STEM and social sciences and humanities, and a location in the most economically active region of the country, the University of Latvia has particularly good prerequisites for cross-disciplinary and cross-sectoral collaboration. Within the University of Latvia, there are various success stories of collaboration already; however, there are also times when collaboration fails or does not begin at all. Within the study on collaboration with external partners, existing barriers to collaboration were identified and a roadmap to facilitating various forms of cooperation was developed for the university.

Photos: Stiina Ruusuvuori

TOOL

I

Campus Service Puzzle

WHAT?

Puzzle-like tool for identifying key campus services. The interviewee selects the service personally considered the most important, then the second, and finally the third. The choice is mainly made from pre-defined service ideas but the interviewee also has the opportunity to provide hers or his own ideas.

WHY?

The campus puzzle works well for collecting relatively large amounts of information from campus users and citizens about which services they prefer to have on campus. The puzzle-like interface is easy and fun to engage with, and spurs conversation.

WHERE AND WHEN?

The tool works for assessing user value on pre-selected campus services. In addition, the puzzle functions as a social ice-breaker to initiate communication with new campus development participants. One interview takes approximately five minutes.

DESIGNERS: Teemu Haranko, Antti Kulovesi, Noora Tiirola, Ville Metsätalo, Saara Ollila

TUTOR: Juha Ainoa

Section 2.

DESIGN OF PLANNING CAMPUSES

Participatory planning: Tricky for good reasons?

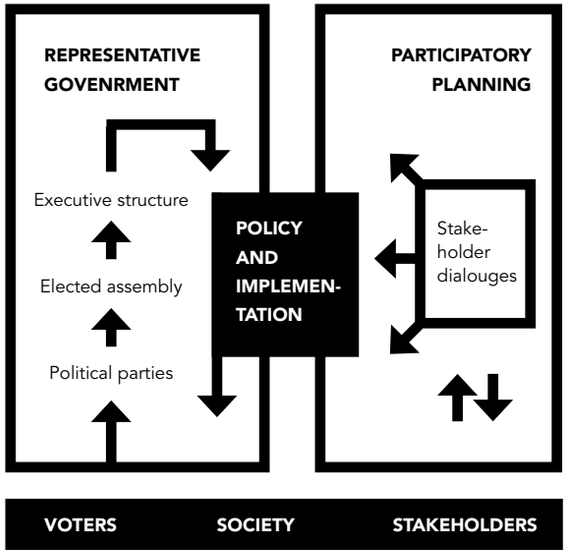


FIGURE 1.
Representative democracy and participatory planning.

COLLABORATION AND stakeholder participation are key components of contemporary planning promising a wide range of benefits, including the creation of new knowledge, increased coordination amongst stakeholders, and increased legitimacy to the planning process and its outcome. Indeed, the "knowledge economy" of our time, and the close link between the welfare of the city and the development of the university, drives the call for a more integrated and holistic city planning and campus development.

However, collaborative and participatory planning is not self-implementing. Reported problems and shortcomings include ambiguous, episodic, peripheral, asymmetric and frustrating collaborative practices.

Some of these challenges, I claim, are not simply due to misunderstandings, mistakes or outdated bureaucratic planning routines. Some of them exist for good reasons and are deliberately designed into the planning system as mechanisms for safeguarding democracy. As a matter of fact, in most liberal democracies and welfare states, direct participation by, and increased collaboration with stakeholders in planning could be regarded as a radical idea – at least when it comes to public decisions in relation to physical planning. It challenges our understanding of the roles of politicians, planners or citizens. It would therefore be a mistake to believe that such participation and collaboration is non-controversial only because many talk enthusiastically about it.

Participatory planning and representative democracy

Although the body of literature on stakeholder collaborations and participatory planning has grown remarkably during recent years, empirical findings about its outcomes are inconsistent and somewhat puzzling. While earlier research primarily emphasised the positive effects of stakeholder involvement, recent research has also drawn our attention to other aspects, including how the costs of organizing and maintaining collaborative relations may hamper substantive design and/or policy development (Schalk 2017; Hertting 2007). Participatory planning often risks becoming talk rather than action; as a search for appropriate procedures rather than innovative policies and plans. In such situations, the potential substantive gains from participation are lost in relation to the institutional costs of organising relevant stakeholders into collaborative networks.

Against such a background, the idea that participatory planning and representative democracy are supplementary and mutually supportive is naïve, and therefore counterproductive. The ambition to integrate "horizontal" participatory dialogues on the with "vertical" accountability relations of representative systems of democracy risks being the cause of such institutional costs, and the reason why innovative plans are difficult to implement.

Participatory planning as an artform that is tricky for good reasons

As illustrated in the left part of Figure 1, at the core of representative democracy are regular and free elections on political parties in which citizens appoint their representatives, and the delegation of political mandates to executive governments. It is done in combination with a hierarchically organised implementation structure for the execution of political decisions. Top down hierarchic implementation assures and completes the accountability chain. The understanding of the vertical logic of accountability, legitimised by elections, has been labelled the "parliamentary chain" of representative democracy.

In terms of impact on democratic constitutions, representative democracy is the world´s most popular political project. Its "vertical" procedures are essential for democratic values, such as political equality (one man, one vote) and accountability. Adding "horizontal" participation to this system is therefore challenging to the values and norms the representative system is built to serve.

Conflicting norms and notions about accountability may therefore become real when abstract ideas about participation are transformed into everyday practices among citizens, stakeholders, planners and policymakers. The problem is more delicate than one of bureaucratic malice or inertia: it is about a conflict over different ideas about democratic accountability. Organizing participatory planning that is productive for innovation and integrated for implementation is therefore an artform that is tricky for good reasons.

Nils Hertting,
Institute for Housing and Urban Research, Uppsala University

Participative walk in the Myllypuro neighbourhood, Helsinki.
Photo: Juan Sebastian Covarrubias, Metropolia UAS

The Campus: Innovation hotspot and city redevelopment catalyst

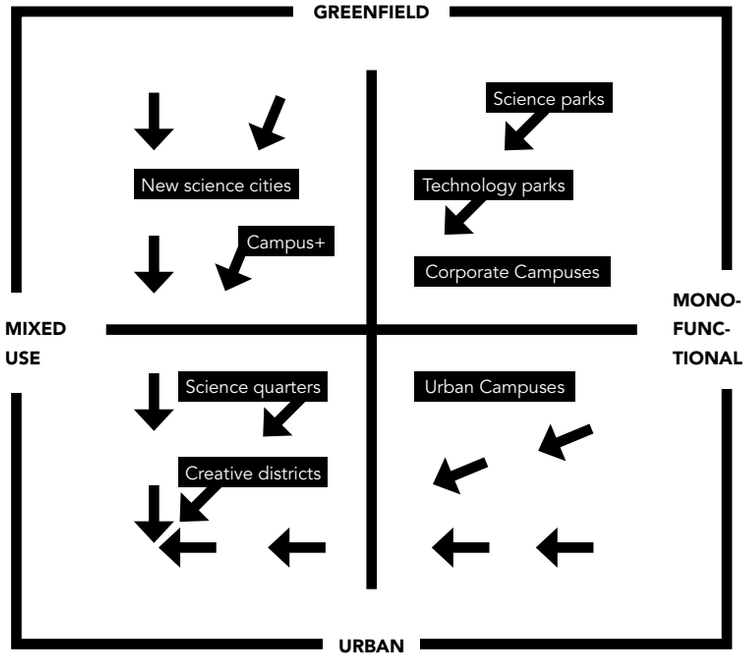


FIGURE 1.
Knowledge hotspot typology

IN THE last decade, the idea has gained ground that campuses should be more than mono-functional areas with buildings for science and education. They are becoming more "urbanised", and we expect more from them as hotspots of innovation and business development. This chapter describes and explains these trends, and highlights a number of emerging issues regarding the planning of such urban knowledge hotspots.

The urbanisation of campuses and other knowledge hotspots

In Europe, we see a rich and growing variety of knowledge hotspots: university campuses, technology parks, science parks, corporate campuses, etcetera. These areas exist for a number of reasons: first of all, to house research and education. But increasingly also nurture the growth of technology firms, to facilitate knowledge transfer between universities and companies, to act as a seedbed for start-ups, to stimulate innovation, to regenerate derelict urban eras, to lift a region or city into the knowledge economy, to attract foreign investment, to sustain local political discourses or to make money on real estate speculation.

In figure 1, these hotspots are divided along two axes: below, we have ones that are integrated in the city, and above, there Greenfield hotspots, built outside the city at a greenfield location; to the right, we see mono-functional hotspots, with only have offices, labs and working spaces; to the left, there are the mixed-use hotspots, with a mix of function including housing, retail, leisure etc.

Our research over the last few years suggests that the wind in this picture definitely comes from the north-east. Knowledge hotspots are moving from greenfield, mono-functional concepts to more urban and mixed use areas. The knowledge economy is becoming more urban, integrated with city life.

This happens in two ways. First, traditional mono-functional science parks and campuses are being urbanised: redesigned and "retrofitted" to include more diversity. New functions are added, such as residential zones, business incubators, retail, and cultural facilities. It is tried to transform them by attracting visitors from outside the area, through events, cultural facilities, or by adding consumer attractions like shopping malls or cinemas. A very good example is Kista, in Stockholm.

Kista Science City, Stockholm

Since the 1970s Kista Science City has developed gradually into an internationally leading Information and Communication Technology (ICT) cluster. The area is located 15 KM outside Stockholm city centre. Kista is the home of more than 1,000 ICT-companies, large and small, and more than 20,000 employees work there. There are over 5000 students and 1100 scientists. The area developed as a business park, with employees commuting from other areas in the Stockholm region. After office hours the area is dead, except for the shopping mall that is built on top of the metro/train station. In the last decade, it was felt to make the area more lively and diverse. Although Kista is functioning well (its companies are flourishing, many new ones came in), key decision makers in the area believe that leaving the area unchanged would undermine Kista's long-term innovative identity, and make it increasingly difficult for companies in Kista to attract skilled staff. Hence a massive "urbanisation offensive" was launched. Over the years, the main street was redesigned, and now has shops, coffee houses, restaurants etc. The Kista Tower was built, with a lot of amenities on its first floors, and it attracts many people at lunchtime. Recently, new plans were drawn up to further urbanise the area: plans to build a high-quality residential quarter, to open a secondary school –with a technology profile-, and also to build an exhibition centre where technology meets culture and arts. It should attract visitors from outside into the area.

Secondly, new campuses, science parks and technology parks are nowadays built in a more mixed way from the start, as part of the urban fabric, and no longer at greenfield locations. Examples are Dortmund's Phoenix area, or the new urban campus of the Amsterdam University of Applied Sciences.

What is behind this shift towards urbanisation and diversification? A number of factors can be discerned:

- The rise of open and networked innovation practices where companies and knowledge institutes innovate together and work in all sorts of alliances; splendid isolation is no longer a blessing.
- A blurring of boundaries between disciplines and emerging interplays between technology, design, finance, and behavioural sciences in the development of new products and services; "Neue Kombinationen" of all these knowledge types seem more likely to emerge in exciting urban environments that facilitate serendipity
- Changing preferences of highly educated people concerning their working environment –they increasingly prefer a social place, well connected, with a strong identity and amenities nearby. Employees seek flexible combinations of working, parenting, caring and leisure, and denser, mixed urban areas are more fit for that.
- A shift from hierarchical structures to networked and project-oriented ways of working (a "project economy"): innovative companies often work on projects with changing partners from within and outside their own organisation; an open, flexible and accessible workplace is important to facilitate these new ways of working.

Realising these trends, many city planners in Europe have trashed the greenfield science park model, and replaced it by a more compact urban "New York City" innovation concept: keywords are vibrancy, liveliness and diversity in a densely built environment; a mix of old and new architecture, filled with offices but also restaurants, hotels, all sorts of leisure and retail functions, culture etc. These types of areas are more dynamic, they facilitate unexpected encounters between people, they have plenty of networking places. Innovation is not planned or managed, it "emerges" in this dynamic urban cocktail. Proponents of this new model call for mixing functions and open architectures, with many meeting places and central points. They advocate self-governance; rather than deploying rigid zoning or planning, give people and firms room to shape their own innovative environments that fit their needs best. Urban campus models are more sustainable, because they tend to be much more accessible by public transport, and their facilities can be shared by more users.

There is another reason for the "urbanisation" of campuses and knowledge hotspots: city planners realise that technology hubs and campuses can be important catalysts of urban life: they bring a lot of buzz and liveliness (especially when they attract many students) and help to sustain amenities that can also be used by other citizens, like restaurants, café's etc. Then there is the argument of visibility. Research institutes, universities and innovative companies nowadays the flagships of the urban economy, and we want to see them. Urban hotspots can help to boost the image of a city as innovative knowledge city. Politicians are very sensitive to this.

Development challenges

Developing a campus as urban knowledge hotspot is a complex challenge. Typically, there is not only one developer or owner, like the university used to be in the old days: more actors are involved. In the following, I will view urban knowledge hotspots through two lenses: 1) as innovation catalyst, 2) as a form of sustainable city development.

THE CAMPUS AS INNOVATION CATALYST. Planners always hope that a new hotspot will boost innovation. The argument is very simple: putting research groups, innovative companies, institutes and people close to each other will stimulate formal and informal networking. Moreover, actors may share expensive facilities like labs or exhibition spaces, which saves costs. Is it true? Can a hotspot become a catalyst for innovation? Unfortunately, there is not much empirical evidence this thesis. But there are indications that good management and choosing the right concept matters.

We identified a number of policy instruments that can help to turn the knowledge hotspot into a real innovation catalyst:

Control the tenant mix to some extent, to ensure that eventual synergies may emerge.

Design spaces to promote interaction: create an environment with the right balance between openness and privacy, with open and co-creation spaces, meeting places, etc. that invite interaction

Enable facility sharing: setting up business models to share (expensive) facilities may increase efficiency, and the facilities can become a place for (unexpected) encounters in their own right. Sports and leisure facilities can be shared between campus users and citizens that live in the neighbourhood.

Promote the formation of communities, to give people a sense of belonging and to promote encounters. This can be done through events, by organising lectures, etc.

When a campus has developed a good reputation as innovation hotbed, a positive spiral can be set in motion. For instance, it helps to attract better employees. This is what the research director of Philips Research told us: when the Eindhoven High Tech Campus (HTC) was ready, it became much easier to attract skilled engineers from Asia and US. The manager of Novartis' new campus in Basel also stressed the global competition for the best brains. Offering a great and inspiring working environment is a key tool to hire the best people, the prime source of competitiveness. This is why Novartis is investing so heavily in their new "urban" corporate campus. Also, being in a hotspot can help research groups or companies to work more efficiently. It provides access to knowledge and facilities, but also gives them a stronger image as innovative company. In our research, we found that this "image part" is a very important aspect. In Eindhoven, smaller companies told us that they are happy to pay a relatively high rent to locate at the campus. Not only because of the facilities –many of them don't even use them- but also because the solid image of the HTC helps them to be more credible for large clients. As someone put it, "if you are located there, you must be a good company. Even if you are small".

THE CAMPUS AS CITY DEVELOPMENT CATALYST. The development of a knowledge hotspot is a form of city development or redevelopment. What happens there is not only relevant for the direct stakeholders, such as the investor, the developer, and the tenants, but also for the citizens, the neighbourhood and the city at large. This is especially the case when a campus is developed within the dense urban fabric. Compared to the greenfield situation, the surroundings are much more complex, which gives rise to a number of challenges: how to deal with the sur-

The Digital Hub, Ireland

In Dublin, Ireland, we found an interesting example how to deal with heritage and the surrounding community. There, the 'Digital Hub' (www.digitalhub.com) was developed in the year 2000. This Digital Hub is a cluster of digital content and technology companies. It is located in a distressed neighborhood, at the premises of the well-known Guinness-brewery. The offices and buildings were upgraded and refurbished, but part of the old brewery is also still active; you can smell the beer here. This makes it a very special place, with a distinct identity, and people love to be there. Meanwhile, about 100 companies have located in the Hub. The government did not want to develop and 'elitist island' in the middle of this working class area, and took several measures to link the Hub with its surroundings. One of the ambitions was to make the residents benefit from the Hub as well. After many discussions with neighborhood organisations, it was concluded that training and education could make the link between the Digital Hub and the neighbouring working class area. They signed agreements with 16 schools in the area, and a special agency was set up to manage the cooperation. In the schools, entrepreneurs from the Digital Hub provide training sessions about ICT and new media. Also, they organise excursions for schoolchildren to the Hub, and during school holidays they offer all kinds of workshops, for example on making rap songs or games using digital technologies. For older students, there are courses about how to start a business. The programme appears to be a success; a recent study showed that children in the area are relatively good at using computers and digital techniques.

We can learn from the Dublin case that mixing old and new architecture and activities can yield surprising results. We can also learn that a good process of stakeholder involvement helps to improve social support for these developments, and to link the knowledge economy to social development.

Scenery over potential future knowledge mile of Riga. Photo: Merita Soini

rounding neighbourhood, with citizens that already live there, the shared use of public spaces. Managing this well asks for the deployment of participatory planning and conflict resolution methods (and universities or big companies are not used to work or think in this way). Key questions to be asked are: Who owns and runs the area? Who is responsible for what is happening there? Where do public and private spaces start and end? How should the growing flows of people and traffic? What is the nature and identity of the location? And last but not least, what's in it for the citizens who already live there?

Some dilemmas and challenges

Planning urban innovation hotspots is complex, and every situation is different and needs its own approach. Here are some dilemmas and challenges that developers face:

URBAN PLANNING FOR INNOVATION is problematic in its own right. Most successful knowledge hotspots were never planned as such, they emerged out of a diverse and thrilling urban environment. This is especially true for the current wave of innovations in new media that are socio-cultural inspired rather than technological.

OPENNESS VS SECRECY AND PROTECTION. The dominant discourse about open innovation hides the reality of the struggle of innovators to find the balance between openness and protection, between sharing and hiding, between giving and taking. Innovation planners are wise to take this into account when planning knowledge hotspots.

THE WATERBED EFFECT. Does the new campus development merely attract activities from elsewhere in the city (in that case, exit planning is part of the deal), or does it have "generative" effects (promoting extra innovation, attracting activity from outside)?

1+1=3? The hotspot will fail as innovation catalyst when stakeholders and tenants merely see it as a new premise to continue their business as usual. The challenge is to use the development to achieve conceptual innovations (for example a radically different relation between academia and business).

In dense urban environments, there will be a lot of tensions and conflicts of interest between the main campus owners and users on the one hand, and the surrounding neighbourhood on the other. The success of planning such campuses largely depends on the way these tensions are managed, and to what extent the new campus generates visible benefits for the neighbourhood.

Willem van Winden, Urban Economic Studies at Amsterdam University of Applied Sciences

Mārtiņš Enģelis guiding a bike tour for Live Baltic Campus experts in Riga. Photo: Didzis Grodzs

Experiencing the Knowledge City

MĀRTIŅŠ ENĢELIS is a young Latvian with a background in the studies of Social Sciences and New Media. He has recently started working as Head of Tourism Product Development Division at the Investment and Development Agency of Latvia. However, to many active citizens and guests of Riga, Mārtiņš is best known as an Urban Explorer: a person who is keen to learn about his home city and to share his insights with others. We discuss the vision of a Knowledge City, a city where the knowledge economy lives, a vibrant place that encourages innovation, and attracts and nurtures talent. We reflect around the overarching question: how can we go from today's Riga towards the vision of the Knowledge City?

ER: What, in your opinion, makes a good Knowledge City?

ME: Opportunities for networking is definitely a key element, because it is essential to exchange experiences, results and energy, and to simply greet other people. The municipality needs to be open-minded and recognise the city as a playground for different types of knowledge creation. A Knowledge City should be a dynamic environment where interventions such as rent regulation for students, young and old are made to prevent gentrification, and to create an environment that enables studies, experiments, networking and research. Finally, a Knowledge City goes beyond focusing on natural sciences; it includes vibrant culture and social life, and offers access for everyone to continuously learn through art, events, architecture, literature, multimedia, and design.

ER: What can bicycle-riding urban explorers, like yourself, mean to the city?

ME: Everyone can be a bicycle-riding explorer, and there is beauty to have bicycle riding as a default option rather than an optional extra or as an underground movement. A bike is what I call intelligent mobility – it offers the possibility of fast or slow mobility, and you control your own pace. Michel de Certeau says the walker, or in this case the cyclist, actualises one's own possibilities and prohibitions, identifies fixes to some of the prohibitions or invents new patterns of walking within the person's own choosing. The point is, no one should determine the borders of anyone's spatial choices.

ER: It is my conviction that cities are built of words, of language(s) that live there. What do you make of this?

ME: Well, yes, everything consists of language, because it tells a story in a directly perceptible or Aesopian language: audible, visible, semiotic. In the urban environment, there is the language of art, of architecture, even street language, meaning slang or jargon. I once did, for a short time, a project called 'Deaddrop Riga' to prove that every single place of the city, wherever one gets dropped off, can tell a story, and by practicing this technique we can find an "über-guide" that can interpret any impulse in the city into spoken language. It was a training for me to generate stories from nods I recognise in architecture, street life, from history, sociology, and politics.

ER: As someone who explores and experiences the city of Riga first-hand, what do you think people will be seeking from the city in the future?

ME: Quietness will be valued more than ever, which can be achieved by strongly limiting the number of motorised vehicles in urban areas, more cycling and more electric vehicles/public transportation. Urban Meditation, a sense of calm and peace instilled from listening to natural sounds, will be increasingly popular: wind rustling through leaves, birds tweeting, and sounds of waves and water, supported by the presence of generous amounts of plants, trees, and greenspaces. Light noise and the presence of unpleasant, "noisy" architecture such as public spaces or shopfronts overflowing with bright, pulsating advertisements will decrease. The activities now concentrated in the city centre (shopping, leisure, sightseeing, etc.) will relocate outwards, and make the neighbourhoods in today's urban outskirts livelier. With this quiet city, a particular noise will emerge: the sound of political and social activism. Maybe, when cities quiet down, the people's voice can be finally heard?

ER: In a time when we all are increasingly becoming temporary visitors to places, i.e. medical tourists, culture tourists, educational tourists, can we still be good stewards of our surroundings?

ME: When describing a "good" tourist, I have a saying: authenticity appears when you disappear. When, as a traveller, you are neutral and blend in with the crowd, you can experience and capture the real destination; its nature, habits, ways of living, its locals and locality. This intelligent disassociation can help you not only to blend in better at the destination, but also to rediscover your own neighbourhood, the place you return to after travels. As a local, though, calling the city your home usually only applies to your neighbourhood, while the rest of the metropolitan area can become different to one's usual environment, that is, a tourist destination of some sort.

Emils Rode,
Riga Planning Region

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CASE STOCKHOLM: CAMPUS ALBANO

SOCIAL-ECOLOGICAL, INTEGRATED PLANNING AND DESIGN

The rise of a new Campus and a new planning and design approach

Social and ecological services design makes the campus a living landscape.

Passageways designed for walking and bicycling enhances accessibility and connectivity. Illustrations: BSK Arkitekter

CONSTRUCTION OF Campus Albano - the newest addition to Stockholm University in Sweden - began in 2015 and is expected to welcome its first tenants in 2020. It stretches over 150,000 m^2 out of which 50,000 m^2 will be built-up area, and include over 1000 student housing apartments in addition to teaching facilities. It will altogether host 15,000 students and scholars. Campus Albano will improve the connectivity and exchange between the existing institutions of higher education in Stockholm, which together form the Science City: Stockholm University, Karolinska Institute, and the KTH Royal Institute of Technology.

The campus is located in the Stockholm National Urban Park, the world's first urban national park, which has strongly dictated the project's design demands and potential. The planning and design process took more than fifteen years (1999-2016) from idea to the start of the construction.

At the start-up of the process, a competition was launched that attracted contributions both from Sweden and abroad. A winning design proposal was selected and turned into a zoning plan proposal. It was, however, rejected and the City Architect was tasked with re-developing the plan for the new campus. In parallel to the formal planning process, a self-organised group consisting amongst others of researchers in architecture and systems ecology, known as the Patchwork group, started to develop an alternative vision for Albano. The representatives in the group reacted to the absence of a sustainability perspective in the Campus Albano outdoor design, and the lack of considerations taken to the ecological conditions.

The Patchwork Group contributed strongly to making the campus development both an integrated planning and integrated design process. It initiated a collaboration with the real estate owner Akademiska Hus and representatives of the Stockholm University to consolidate and present their own, alternative vision. During this collaborative working process, several civil society groups were contacted and included as collaborative partners in the project. The most prominent group was The Ecopark Association (FFE) - a local umbrella organisation for a great number of interest group active in the National Urban Park. Eventually, a few individuals from the Patchwork Group worked together with the City Architect on the design of the new buildings.

The original Patchwork vision for the spatial elements of Campus Albano was that – when possible – each and all should support both social values and ecosystem services. The buildings were designed to be an extension, rather than a disruption, of the natural landscape in the National Urban Park. A strong focus was on multi-dimensional connectivity: transport routes were designed to encourage bicycling and walking, and to provide connections within the campus, between the institutions of higher education, and between the city and the new campus. The inclusion of nature based solution consisting of native biodiversity supported ecological connectivity between the campus site, the surrounding, biodiversity-rich national park, and the green areas in the city. Green walls, green roofs, solar panels, and rooftop spaces open for the campus users were prominent features of the building designs. Spaces between buildings were designed to offer places to meet and interact, and places for gardening to encourage involvement in the landscape management by the campus users.

The design created by the Patchwork Group drew on resilience thinking and on social-ecological urbanism, which strive to integrate ecosystem services and nature based solutions at par with social services in the physical design of buildings and outdoor spaces. The final designs by the Patchwork Group, and the City Architect's team, respectively, were merged into one zoning plan presented in 2012, and accepted in 2015.

While the approved zoning plan has kept several of the elements in the vision originally developed by the Patchwork Group, several of the more innovative proposals for green and blue elements, along with the focus on connectivity, were disregarded. The design process continues, however, even as construction of Campus Albano commenced in 2015, and the final details are still being developed in parallel with the construction, planned to reach its end by 2021. Together with Akademiska Hus and Svenska Bostäder (the real estate owners and prospectors) a Reference Group including, among others, members from the Patchwork Group, The Ecopark Association (FFE), a local allotment association, and a landscape architect has continued to work actively to finalise the challenges of enacting the zoning plan. Hence, Campus Albano is a good, real-world example of a truly collaborative design process.

Maria Schewenius,
Stockholm Resilience Centre

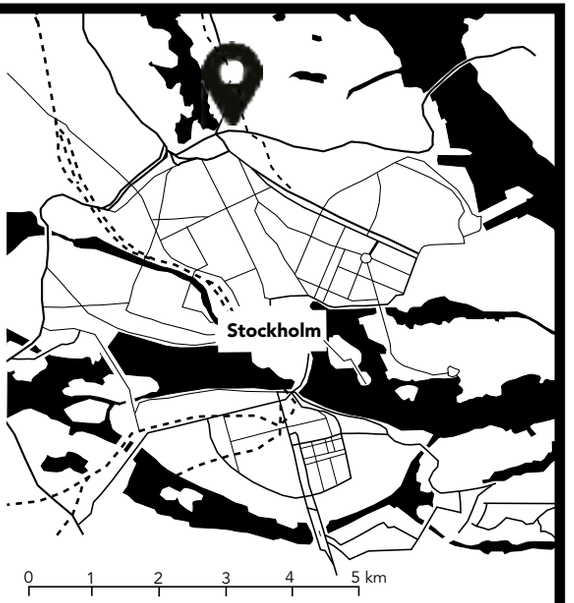
Johan Colding,
Stockholm Resilience Centre and
The Beijer Institute, Royal Swedish Academy of Sciences

Stephan Barthel,
Stockholm Resilience Centre and
The University of Gävle

Open, adaptable spaces welcome interactions and for uses to change over time.
Illustration: BSK Arkitekter

Social-Ecological Urbanism

Social-Ecological Urbanism is an approach for research, urban planning and design developed along with the Campus Albano process. It emphasises the integration of urbanity and ecological services and the inclusion of a multitude of stakeholders in the planning and design processess. It integrates resilience thinking, institutional theory, urban morphology and social-ecological systems. In bringing these views together in the design process it aims to come up with solutions that foster the capacity to continuously adapt and transform in relation to social and ecological changes.



Albano Campus, Stockholm

Campus located in urban national park with social-ecological integrated planning and design approach

STATUS
The student- and researcher accommodations, and the university buildings are expected to be ready around year 2020

STUDENTS AND STAFF
15 000

HIGHER EDUCATION INSTITUTION
Stockholm University
KTH Royal Institute of Technology

FIELDS OF STUDY
The campus will host a number of institutions with research covering a range of disciplines, both from KTH Royal Institute of Technology and Stockholm University

CONNECTION TO CITY
Bus, bicycle, and train

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CASE UPPSALA: CAMPUS POLACKSBACKEN

LOCATION, SURROUNDINGS, STAKEHOLDERS

Today a campus in the Uppsala outskirts; tomorrow constituting a vibrant urban nexus

The new ITC building planned at the Polacksbacken area in front of the Ångström Laboratory (visible in the background). Illustration: Tema Arkitekter

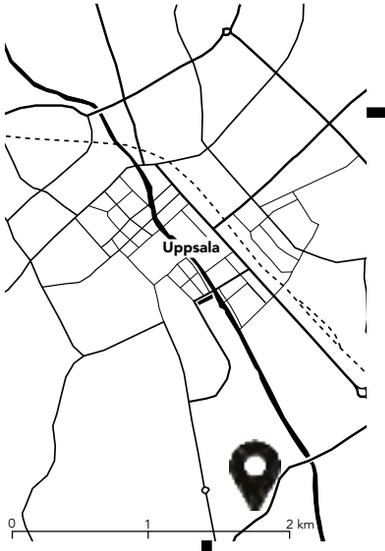
THE POLACKSBACKEN campus is constituted of two parts; a set of former military barracks, which presently house the Department of Information Technology (ITC), and the Ångström Laboratory, which had its third and latest part erected in 2006. A fourth part, which will accommodate the ITC in the future, will be constructed north of the laboratory.

The transformation of the Polacksbacken campus is taking place in the context of intensive urban development in surrounding areas. Moving the ITC opens up opportunities to house new activities in the old barracks, with the aim to better connect the university to the surrounding city. It also encourages reflection on how else the university can be an active partner in the future urban context.

In the near future, the campus will become the geographical link between the new Södra staden and the city center of Uppsala. Plans for the area where the campus is located include improvement of the public transportation from the city center to the Swedish Agricultural University (SLU), passing the University hospital (Akademiska sjukhuset), the Biomedical Center (BMC), Uppsala Science Park, and the Polacksbacken campus.

Polacksbacken is also surrounded by three recreational areas of very high ecological value. The Polacksbacken area is situated on and next to the Kronåsen Glacial Till Hill, which provides for the major ground water supply of Uppsala town. The Kronåsen Hill, together with the Geijer's Valley, constitute a 10 ha nature preserve and the first of these recreational areas, accessible through the hiking trail Gula stigen (the "Yellow Path"). The Kronparken Forest, which is merely 25 ha, is the second area and is one of

Aerial view of Polacksbacken, situated three kilometres from Uppsala city centre. Illustration: Tema Arkitekter



Polacksbacken Campus, Uppsala

In the urban outskirts today, but expected to be surrounded by an expanding urban structure in 10-15 years

STATUS
Will undergo a transformation when the new building for the Information Technology Center (ITC) is completed in 2022.

STUDENTS
Polacksbacken 11 000 students.
The Department of IT 4000 students.

STAFF
The Department of IT 290.
Polacksbacken 1370.

HIGHER EDUCATION INSTITUTION
Uppsala University

FIELDS OF STUDY
Chemistry, Physics, Engineering, Mathematics, Computer Science and IT

CONNECTIONS TO THE CITY
Bus lines 4 and 12, biking easy (~3 km south) from the city centre

the oldest forests in Sweden. It connects Stadsskogen (the City Forest), the third area of 100 ha, with the Fyris River and the Årike Fyris nature reserve, located at the river banks south of Uppsala.

Spatially, this location makes the transformation of the Polacksbacken Campus very interesting for exploring models and methods for campus planning. In the near future, it will become the geographical link between the new Södra staden and the city center of Uppsala. It is here where the more traditional academic functions of research and teaching may be complemented with new types of residential, commercial, recreational and infrastructure functions of the campus. At the same time, the campus transformation process creates an opportunity for the City of Uppsala to find new paths for implementing a number of strategic goals concerning the reduction of urban footprints, housing, attracting business, cultural heritage, tourism, social integration, etc. Therefore, we can expect that the development of Polacksbacken will attract additional local actors with aims and concerns far beyond academic research and teaching. In Polacksbacken, we may assume that campus planning will become a case study of wider city politics.

Identifying stakeholders of Polacksbacken

As the attempts to plan or redesign Polacksbacken activate connections and contingencies between a range of different concerns, vested in different groups and individuals of the city, careful and ambitious stakeholder analysis will become indispensable for the successful collaborative navigation of the development process. In the case of Campus Polacksbacken, we found that making a distinction between actor-centered and area-centered stakeholder analysis was productive. Actor-centered stakeholder analysis starts from the perspective of a specific actor or organisation, i.e. the owner of the campus, and defines "any group or individual who can affect or is affected by the achievement of the organisation's objectives" as a stakeholder (Freeman 1984). An area-centered stakeholder analysis takes a substantive problem or a geographical area, rather than a specific actor, as its starting point (in this case the neighborhood Polacksbacken). From this perspective, a stakeholder is defined as any group who can affect or is affected by the development of the area. In order to facilitate a more holistic perspective and better grasp the complexity of the current transformation process, the stakeholder analysis of the Campus Polackbacken transformation has been informed by the area-centered approach (illustrated in Figure 1).

Identifying stakeholders (through either actor or area centered analysis) is the first step of any stakeholder analysis. Drawing on previous research, we used the case of the Campus Polacksbacken transformation to develop the subsequent steps of stakeholder analysis, with a particular eye to issues such as differences in power resources and dialogue capacity among stakeholders. Hence, at

The north trailhead of Gula stigen (the "Yellow Path"), and an information board at the entrance of the Kronparken forest. Photo: Henrik Ottosson

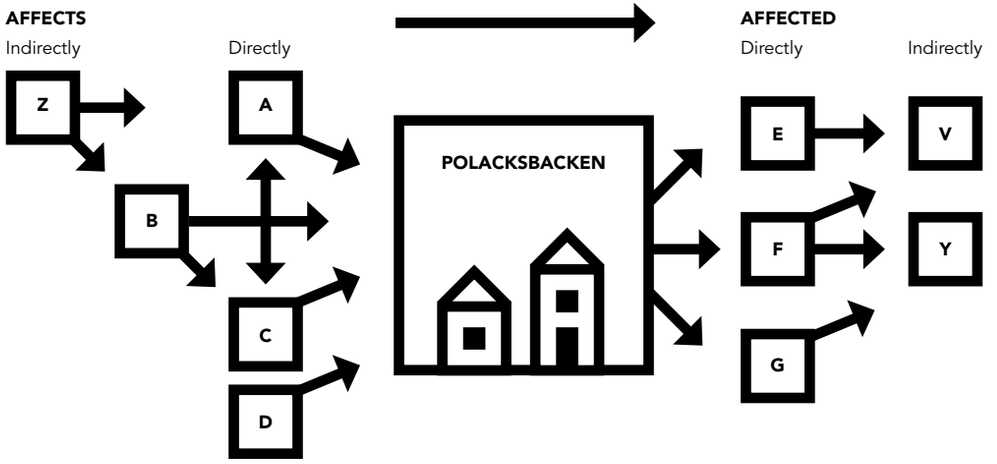


FIGURE 1.
Area-centered stakeholder identification

the very heart of our eight step stakeholder analysis approach is the ambition to go beyond dominating discourses about campus development and urban renewal; and to combine more holistic-oriented procedures with the articulation of specific group interests, such as researchers, service providers, property owners, and students. The ultimate aim of the method is to provide a more comprehensive and nuanced map of stakeholders and stakeholder positions in relation to campus development.

Nils Hertting,
Institute of Housing and Urban Research,
Uppsala University

Henrik Ottosson,
Department of Chemistry - Ångström Laboratory,
Uppsala University

Stakeholders of Campus Polacksbacken

The geographic location of Campus Polacksbacken in the broader context of intensive urban development fuels the transformation process with political and social concerns beyond those directly linked to traditional academia, and beyond those directly linked to the property owner, research groups or students. Issues of power, representation and representation capacity hence become critical and challenge traditional methods for stakeholder analysis. In this chapter, we have outlined the challenges in relation to the Polacksbacken case, and our solution in terms of an actor-centered stakeholder analysis approach in eight steps.

Steps of actor-centered stakeholder analysis

STEP 1 Critical analyses of general discourses and ideas on campus development in policy documents, handbooks etc.

STEP 2 Constructing survey questions based on step 1

STEP 3 Survey 1 on ideas about the role of campuses in the city and interdependencies in relation to campus development

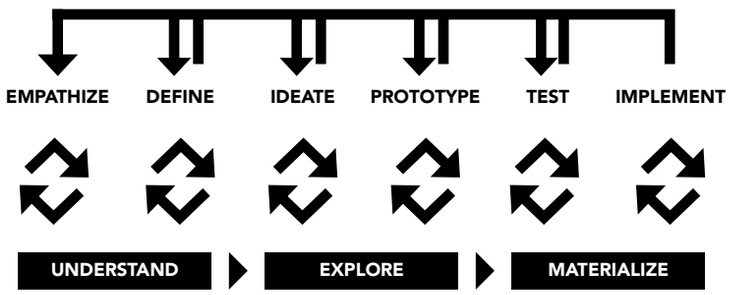
STEP 4 Selection and distribution of dialogue participants to workshops (based on survey 1)

STEP 5 Dialogue treatment: one "agonistic workshop" and one "consensus-oriented workshop"

STEP 6 Survey 2 poses the same questions as in Survey 1 to participants in workshops

STEP 7 Analyses: Mapping interests and interdependencies in city and campus development

STEP 8 Reflexive analysis: dominating discourses, missing interests and "representation capacity"



DESIGN PROCESS

Photo: Noora Hokkanen

Design Thinking Methodology

Design thinking doesn't start with a given design brief or problem, but instead begins by seeking to understand the context and **EMPATHIZE** with its subjects, often through inclusive and participatory design labs or workshops. Once this has been achieved, designers are then free to **DEFINE** the problem space. This prepares the ground for further exploring the boundaries of a problem, and it requires designers and co-designers to brainstorm and **IDEATE** as many potential solutions as possible. From this initially large and dense pool of ideas are drawn a few of the most promising solutions, according to the needs of the problem definition, which are then carried forward as prototypes. The act of creating **PROTOTYPES**, in itself, further refines these solutions, and once sufficiently representative of a final product they are ready to be tested for their validity in addressing the design problem and users' needs. If a proposed solution makes it this far, it can be considered ready to proceed to full **IMPLEMENTATION**; if not, design teams can return to previous stages in the process to refine or reformulate solutions, or even conduct further consultations with users in order to redefine the design problem. It is through these six stages, which typically define the concept of Design Thinking, that innovative and user-oriented solutions can be found to intractable design problems.

"[Design Thinking] puts the tools of design into the hands of people who may never have thought of themselves as designers and applies them to a vastly greater range of problems."
– Tim Brown of IDEO

AUTHOR: Rawaf al Rawaf, Stockholm Resilience Centre

ALBANO IN THE FUTURE URBAN LANDSCAPE.

CREATIVE ACADEMIC ENVIRONMENT.

ALBANO IN THE ECOLOGICAL LANDSCAPE.

ALBANO IN THE CONTEXT OF HISTORY AND ART.

ENVIRONMENTAL FRIENDLY BUILDINGS.

Multi-Stakeholder Conferences

Multi-stakeholder conferences can be especially helpful in identifying specific points of disagreement and compromise, for understanding the larger issues and concerns involved to help map the power landscape, and perhaps even re-evaluating a project's needs and criteria.

In the case the Albano Resilient Campus*, the contentious location legally permitted within Stockholm's National Urban Park, and opposition by local stakeholders and environmental protection NGOs, frustrated the planned expansion of Stockholm University's Albano campus for more than 15 years. What finally broke the impasse was an interdisciplinary coalition of administrators, architects, and researchers studying the social-ecological effects of the nearby allotment gardens, known as the Patchwork group. They seized a window of opportunity, a legal review of the latest campus proposal, to form a working group and organise three multi-stakeholder conferences with city planners, opposition groups, and the project developers. Together, they developed and proposed an alternative vision, the Albano Resilient Campus, with many of its elements ultimately being incorporated into the final design proposal of what is to become Campus Albano. Involving stakeholders in the development process from the beginning offers designers and developers opportunities for tapping an invaluable cache of local knowledge, and soliciting novel ideas from future inhabitants. It simultaneously forms the key relationships and trust building that are the integral to projects' social-ecological resilience and sustainability.

*The initial name of the Patchwork's alternative vision of what later became Campus Albano, presented in the publications Principles of Social-Ecological Urbanism by Barthel et al., 2013. Available online.

AUTHOR:
Rawaf al Rawaf,
Stockholm Resilience Centre

Section 3.

DESIGN OF BUILT-UP CAMPU INFRASTRUCTUR

Lessons from BK City – after the fire – for university buildings of the future

AFTER A FIRE that completely destroyed TU Delft's Architecture building in 2008 a team of specialists, designers and managers had the task to re-accommodate more than 3000 students and more than 800 staff members. Within ten days they decided to create a new, temporary home base ("BK City") in a heritage building that was vacant at that time and about to be transformed to apartments. After a few months, the first users moved there and the rest followed within half a year after the fire. For many reasons the faculty community decided to stay.

This chapter summarizes ten lessons that were drawn from the original brief, which were strategic ambitions that were translated into functional requirements by the brief team and to concepts by the design team. The construction & facilities team of TU Delft implemented the solutions. Eventually the users of the building demonstrated whether a solution was successful, or not.

The teams decided to use this crisis as an opportunity to test innovative concepts and experiment with new ways of working. In this way, BK City became an ideal case study for further research.

Lesson #1 Design the building as a city

The name "BK City" already reveals that it was designed as a city (and BK is an abbreviation for "Bouwkunde", the Dutch name of TU Delft's Faculty of Architecture and the Built Environment). Increasingly, campuses are places that welcome many daily visitors, and exchange students and temporary researchers. That requires buildings that accommodate dynamic communities, which also no longer have nine-to-five working hours.

BK City's floorplan has a main street, home to a bookshop and print shop, with an espresso bar on one end and conference rooms on the other. When walking through the main street, users pass two "squares" with public functions and many models and posters that show both education and research. When leaving the main street, the other streets lead to more private functions. However, the best parts of the building are allocated to public functions and are places to share.

Lesson #2 Reduce m² - trade quantity for quality of space

The former faculty building, which accommodated the Architecture faculty since 1970, was a high-rise building of 42.000 m² and fourteen floors. The current BK City building is a 1920s building with high ceilings, three main floors and some mezzanines totalling 36.000 m². This includes the extra floor area of the two extensions that were added to the original heritage building to accommodate some large-scale facilities to share.

Background

BK City is the name of the Architecture building at Julianalaan 134 in Delft, Netherlands – close to the historical inner city of Delft. This building from the 1920s was transformed into a vibrant, creative student city and research workplace in 2008/2009, after a fire completely destroyed the old building (May 13, 2008) at Berlageweg 1 in Delft, on the south side of the TU Delft campus. The Faculty of Architecture had a new home in less than half a year after the fire, which is still considered unbelievably quick, given the 32.000 m² gross floor area of BK City. In the next half-year, two atriums were added to the existing building (+4.000 m²). The whole BK City project was completed within 1 year after the fire.

In her function as associate professor, Alexandra den Heijer has been studying campus management for more than fifteen years, and leads TU Delft's Campus Research Team that publishes frequently about the past, present and future of the university campus. After being a member of the BK City project team (chair brief team) in 2008 Alexandra den Heijer wrote many publications about the making of BK City. In 2018 – ten years after the fire – the use of BK City in the past decade will be thoroughly evaluated. This chapter elaborates upon ten lessons learned from making and using BK City that are relevant for planners, designers and managers of university buildings.

Another opportunity of the crisis was that the "new" building was 15% smaller than the old building: that allowed the teams to reduce the footprint. At the same time the faculty was growing: more students and more (temporary) employees. The challenge was to reduce quantity (of m^2) and to increase quality. Investing in higher quality could only be possible by saving money on quantity. With this argument, the BK City project team convinced the faculty community to share more space. As a reward, they would get quality of place in return.

Lesson #3 Invest in visible quality

Due to the extremely tight time schedule of the 2008 transformation of an old building, the project team chose to invest in visible quality and to cherish old details that characterised the more than ninety years old heritage building. Both strategies were used to distract users from unfinished parts of the building at that time and turned out to be successful: anno 2017 some parts of the building are still "unfinished" and that adds to the character of the building (and the faculty).

The lesson to invest in visible quality refers to both adding new quality and highlighting exciting qualities of an old building. In the case of a faculty of architecture, the strategy to keep old details visible also had a link to the educational programme: the history of the building also has many lessons for today's students and the architects of the future.

Lesson #4 Embrace academic history: use heritage for branding

When the project team chose a heritage building over a new building (also in the long term), the faculty community was more enthusiastic than expected. With so many designers among the users, one would think that they would prefer the opportunity to start all over again. Eventually, the team realised that academic heritage is highly valued by academic communities, certainly by a community that just lost their building.

Many European universities that still have heritage buildings in their portfolios, discover that the faculties that use them often prefer staying in their old building (with functional defects) over moving to a new building, which is also related to the fact that heritage buildings are more often situated in the city centre, or in multi-functional urban areas. The emotional attachment of users to new buildings can also take a long time.

Lesson #5 Avoid individual territory

In the former faculty building the increasingly dynamic community was already struggling with space. The perception was that the building was full but in reality, many spaces were vacant. Paradoxically, users were dissatisfied because there was not enough space, while there often was plenty. This is a common problem on campus, confirmed by research over the years. After the fire this

The BK City is situated towards the inner City of Delft. Photo: TU Delft

Investing in the visible quality in practice. Photo: Jalmari Sarla, Metropolia UAS

was the biggest challenge: how to avoid this problem in the BK City building, while still creating a building that users consider their home base.

The BK City project team decided to experiment by providing a working environment without individual territories: "no names on the doors". Zones of the building were allocated to departments that could allocate subzones – or particular spaces – to sections, but were advised not to allocate workplaces to individuals. In fact, the faculty would not have fitted in the building, if the project team would have allocated workplaces to individual researchers or professors. Considering the constant dynamics in the workforce – more and more guest professors, part-time positions and temporary researchers - this also seemed like a wise decision.

Since 2008 the faculty has gone through many changes for which the building proved to be resilient. A thorough analysis will be made in 2018, when the faculty will have used the building for ten years. Over the years many employees have become more flexible, while others still prefer to sit at the same desk, when they are there. In any case, the culture has changed: in the former building many employees had workplaces "that no-one else could use when they were not there"; in the BK City building many zones are considered places to share. This changed mindset already makes a difference.

Lesson #6 Implement flexible concepts, but avoid standardization

The implementation of flexible concepts was important to provide an inspiring building in the long term. However, a flexible concept is often synonymous with anonymous and standardised. On top of that, they are usually implemented as an "open plan" solution in large spaces. The BK City project team tried to create a concept that was both flexible and different in every zone. Considering the large number of desks in the building – more than 450 – the risk of "one size fits all" was always there.

In the beginning the staff members hardly had any paper archive left, due to the fire. The faculty invested in more mobile devices – laptops and phones – to contribute to the employees' flexibility. Nonetheless, the office space was clean and uniform in the beginning. The unique character of the work environment was not found at the workplace itself, but at the departmental zone that is was part of. Identity was found in public places; private rooms were more uniform and exchangeable. Over the years the private rooms have gotten more unique characteristics as well, which project team BK City considers an important lesson.

Lesson #7 Make it feel like home

The design team chose colourful carpet and design (home) furniture, to add to the sense of home. This was considered important for the employees, which had to work in a more flexible environment that needed to be compensated with extra quality and unique character. Additionally, with a rapidly increasing international population, the faculty realised that many students left their home country to study and that the university has a responsibility to welcome them with a "home away from home": working environments and public zones that feel like home. Accommodating an academic community rather than a collection of individuals was an important ambition of the BK City project team.

Lesson #8 Allow students and staff to decorate their working environment

While both the office zones and studio spaces had a clean-desk policy from the start, it was equally important to allow both employees and students to use the walls, book shelves and coffee tables for new publications, work-in-progress and whatever they are proud of. The faculty became aware of the fact that the need of people to mark their territory and add a personal touch to their working environment should not be suppressed, but moved to other objects and to another level (from individual place to group zone).

Lesson #9 Make it a showroom

As a consequence of the faculty allowing students and staff to demonstrate their

Summary of lessons for faculty buildings

#1 Design the building as a city
#2 Reduce m^2 - trade quantity for quality of space
#3 Invest in visible quality
#4 Embrace academic history: use heritage for branding
#5 Avoid individual territory
#6 Implement flexible concepts, but avoid standardization
#7 Make it feel like home
#8 Allow students and staff to decorate their working environment
#9 Make it a showroom
#10 Make sure people can see each other('s) work

work in shared spaces, BK City has become a showroom for the faculty's education and research. Every visitor that walks through the building gets an impression of the quality and quantity of the faculty's output during the academic year. And – more importantly – faculty members see each other's work, which was also was an important goal.

Lesson #10 Make sure people can see each other('s) work

Innovation is dependent on cross-overs between different scientific disciplines and research fields. Serendipity – the phenomenon of finding valuable insights not sought for – is encouraged by either consciously or unconsciously observing work of others. More awareness of the body of knowledge produced by the faculty contributes to more interdisciplinary connections in research and education.

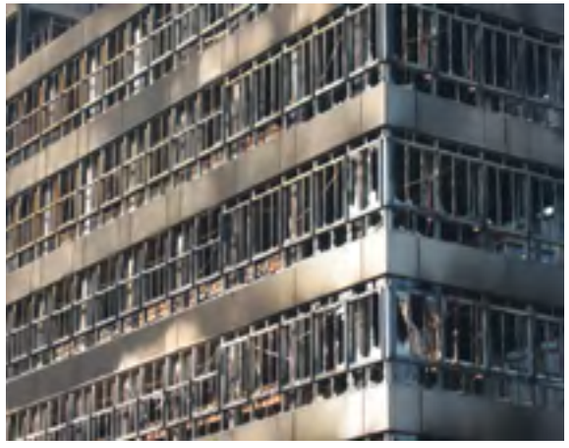
The built environment can contribute to this phenomenon by providing enough space to exhibit the (best) products, by sharing print facilities and coffee machines and by creating a working environment that is more open (than closed). At the same time, this will contribute to community building and more (and stronger) connections in the network organisations that universities have become.

Conclusions

With the decision to create more public space to share and less private territory the BK City project team aimed at encouraging serendipity, innovation and community building. The trade-off between quantity (less) and quality of space (more) was a parallel shift that also contributed to a more resource-efficient strategy and more sustainable campus.

In 2018 BK City will be evaluated, ten years after the fire and ten years in use. Until then, there are many reasons to believe that BK City adds to the faculty's goals, considering the top-3 world ranking, international network and reputation among peers, which all have been improved in the past ten years. Nevertheless, it is not easy to prove a cause-effect relation. Adding value with the built environment – from city level to building components, with respect to scarce resources – is what many preach at the Faculty of Architecture and the Built Environment. "Practise what you preach" as a campus strategy has seemed to be successful. However, visiting BK City is always recommended for personal judgement.

Dr. ir. Alexandra den Heijer,
Delft University of Technology
(TU Delft)



Make sure people can see each other('s) work.
Photo: Alexandra den Heijer

The old Architecture building of TU Delft was completely destroyed in a fire in 2008.
Photo: Hans de Jonge

Building Relationships: Inside the walls of sustainable campuses

AS THE processes of teaching and learning change with time, so do the user needs and demands, and with that also the design of university buildings and campuses. A well-designed modern campus building enhances the university experience by stimulating activity, in turn engaging the people in the use and continuous management of the building. Associate Professor Alexandra den Heijer (see also Chapter 3.1) defines a number of paradoxes that surround our experience of contemporary campuses: "we are increasingly paperless, but we still like to read physical books. We can work from where we want, but we like to be in some form of familiar territory. We think working is a social activity, but for many activities we need a quiet space. University campuses need to address both aspects of each of the three paradoxes."

Modern campuses are typically designed to be welcoming, accessible, vibrant, and open - a modern agora. They aim to invoke a sense of fresh spirit, excitement about the place and people, and inspiration. Below are some examples of the new pillars upon which the designs of contemporary campuses rest, which separately or together can guide campus development.

A future-proof campus is a modern co-working space with cutting-edge technologies. The spaces vary from virtual to physical, from flexible to territorial and from social to quiet. Learning technologies and teaching methods continue to advance, therefore physical spaces for learning are designed to be adaptable, flexible and seamlessly integrated with technology. Overall adaptability is a key component, as the increasing quality and thereby use of online learning platforms can be expected to change the need for use of the physical spaces. The interior infrastructure of the buildings on a future proof campus acknowledges aesthetical, economical, ecological and social sustainability, even if few campuses today live up to that vision. These five drivers guide the design process from beginning to end.

Adaptable learning environments enable a diversity of teaching strategies, and provide a space for students to take an active role in their learning, with the teachers acting as facilitators of the process. Flexible elements in the interior design, such as movable walls through which the size of a working space can be adjusted, allow for adapting the indoor space to changing needs. Formal and informal learning spaces complement each other, providing possibilities to perform daily tasks in the most convenient space. The campus spaces are also designed to encourage meetings across disciplines, and equip students with advanced skills in communication, collaboration and technology. Sustainable campus interiors and furnishings are flexible. The campuses support the culture of education, the image of knowledge and the learning activities.

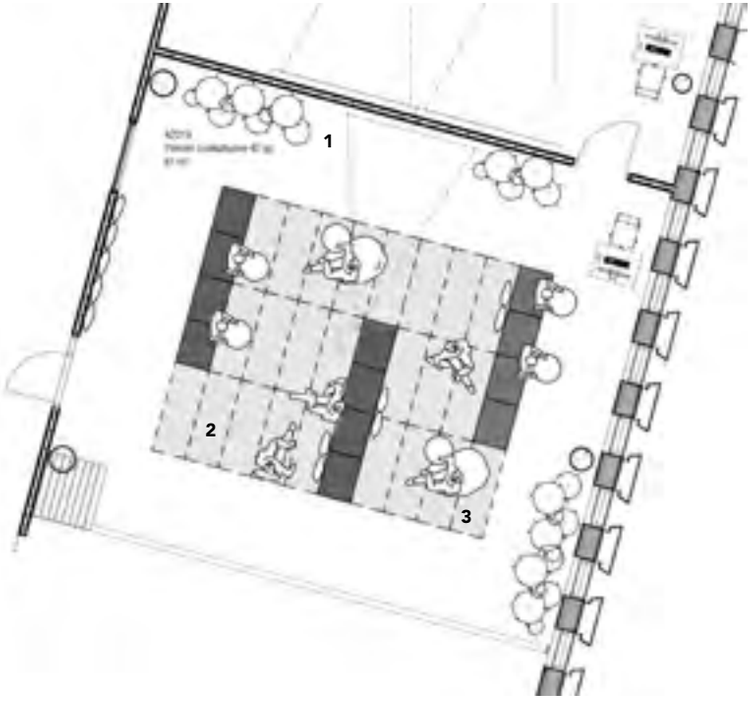
User centered design enables users to participate in the planning process from the very beginning. Involving the intended users in the design of campus buildings is an integral part of the process of fostering stewardship by creating an emotional bond between the users and the buildings.

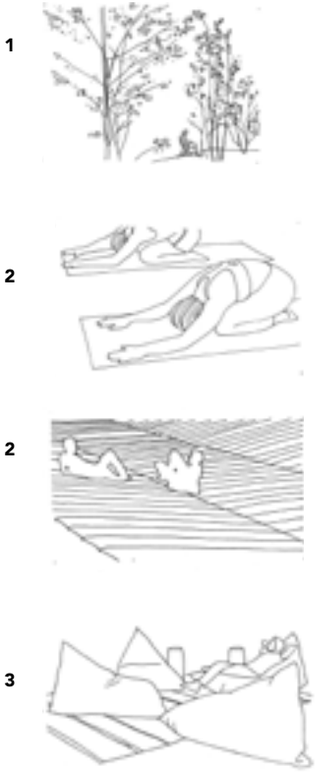
A healthy working environment aims to decrease feelings of stress, and enhance both physical and mental wellbeing. The design of the working space focuses on supporting a positive, or lower a negative environmental impact. The design solutions can further reduce the risk of falling ill, the maintenance costs, and the CO_2 footprints of the buildings. Emission free materials enhance indoor air quality, and support the health of students and employees. Ergonomic furniture and indoor noise reduction increase user comfort. Adjustable artificial lighting combined with natural light increases mental stimulation and energy efficiency.

A meaningful environment increases user satisfaction and wellness among the campus community. Think of the feeling when you cannot wait to get work to continue the interaction with your co-workers, sit down for a nice cup of coffee and keep going with the inspiring projects you are working with. This is the place to go with a big smile. There is always something new learn and to look forward to. This kind of user satisfaction arises when people feel engagement. The architecture is respectful to the users, and users behave respectfully in the spaces when the aesthetics, accessibility and functionality match. It is like a good relationship, feeling attracted and taking care of each other.

Merita Soini,
Metropolia University of Applied Sciences

Entrance, informal learning in the corridor, vertical connections - 3D models from Myllypuro Campus. “Lofty open lobbies connect the floors and enhance the community spirit. The learning spaces open up and continue to the corridors. Campus building is a motivational learning tool, where each space functions as a learning space. The interior design premise is authentic, rough, and has a casual atmosphere. The lively color scheme functions as orientation and recognition cues.” – Rainer Mahlamäki, Architect
Illustration: Lahdelma & Mahlamäki Architects, Architects LPV





The learning spaces include those specifically designed tatami room for the education of health and wellbeing professionals.
Illustrations: Sistem Interior Architects Ltd

Let cities come to life!

SUPPORTING THE WELLBEING OF NATURE AND HUMANS BY CULTIVATING GREEN INFRASTRUCTURE AND ECOSYSTEM SERVICES IN THE URBAN LANDSCAPE.

Nature's evolution over millions of years has resulted in a capacity to perform functions that are crucial for human wellbeing, and indeed for our survival. An urban landscape designed and governed to allow nature to perform those functions hold several opportunities to promote both social and ecological resilience. This potential, in a time when multiple emerging changes threaten to scale up to insurmountable challenges, is vital and call for some reflection.

Since the beginning of industrialization, cities have increasingly become synonymous with built-up asphalt and concrete-dominated landscapes. Less space and opportunity for harvesting essential natural resources within the cities themselves, coupled with continuous urbanisation have made the cities increasingly dependent on large-scale systems such as global food trade. Cities are today one of the main drivers behind global system changes, such as climate change, land-use changes, and biodiversity degradation.

Urban areas also typically change their surrounding landscapes through built-up structures that disrupt the natural ecological flows of marine and terrestrial flora and fauna, and through emissions polluting land, water, and air. With first the introduction of concrete, and later with an increasingly complex technological infrastructure, came the idea that the urban landscape could be controlled and even functionally optimised, a notion that is at odds with ecological dynamics and a world constantly undergoing change.

Large-scale, global changes also have specific regional and local effects. In the Nordic countries, some of the most notable changes include changing temperatures and seasonal patterns, which alters the composition of the biodiversity, lead to more frequent but unevenly distributed heavy rain events, and rising sea levels. The changes are expected to have knock-on effects like new diseases and problems with fresh water provisioning. Meanwhile, cities are also facing social issues such as an increasing number of people leading unhealthy lifestyles – characterised by unhealthy diets, insufficient amounts of exercise, and excessive levels of stress – and increased socio-economic disparities. These combined forces of change are calling for cities to build social and ecological resilience; i.e. to increase their capacity to mitigate and adapt to changes while retaining their core functions, or their identities. Strategic resilience building also opens a window of opportunity to redirect development towards sustainability.

The multifunctionality of ecosystems, or the capacity to perform several functions or services simultaneously, is central to the idea of trying to find green or blue solutions to problems conventionally dealt with by engineered, technical alternatives. Space in cities tend to be contested, especially during phases of rapid urbanisation, and elements that only cater for a particular interest or user group tend to be outcompeted or conflictual. It is easier to argue their claim to space by making sure that green spaces, and necessary functional components like water treatment units, serve multiple purposes.

Cities hold largely untapped potential and promise. Especially old cities have a long history as gradually changing cultural landscapes where human society and local biodiversity have developed together over time. The many different types of green areas, such as parks, allotment gardens, forested areas, balcony plantations, gardens and rooftop terraces often make cities the home to a richer biodiversity than can be found in the surrounding, agriculture-dominated landscapes. Conscious design to meet primarily human demands can also have positive effects for biodiversity and ecological functions. For example, appreciation of the aesthetic qualities and the desire to have them present for as much of the year as possible, have led to a rich floral biodiversity that also helps cities support ecological functions such as pollination. With increasing recognition of such synergies, urban design can both support the functions of healthy ecosystems and their more indirect benefits, and create an everyday environment that supports human wellbeing. However, it calls for design solutions beyond roads built for cars, and buildings made of bricks and concrete.

Maria Schewenius, Stockholm Resilience Centre

Erik Andersson, Stockholm Resilience Centre

Urban gardening in Helsinki. Photo: City of Helsinki

Ecosystem Services

THE TERM ecosystem services refers to all the benefits that people obtain from nature. The services can be divided into four categories: provisioning, such as the production of food and water; regulating, such as the control of climate and pollination; supporting, such as primary production and nutrient cycles; and cultural, such as spiritual and recreational benefits. It is important to keep in mind that although originated in ecological processes and functions, many of these services need human mediation or facilitation to be turned into actual benefits to people.

Even though the prevailing image of a city is that of a concrete jungle far removed from its green equivalent, the city itself manifests many of the features of our now human dominated world – it is where culture, biodiversity, ecological processes and technological innovation meet. By consciously incorporating green and blue elements in our cities – leaving behind the ideal of the 1950s of a green lawn as something exciting and progressive, and instead understanding the more complex functions and interactions of the natural elements, and of the human and ecological interconnections – we can start to bring back ecological functions into our cities and explore ways to make the cities more liveable and sustainable. In doing so, we can improve the balance of the global and local systems that was disrupted wholly or partly by the establishment of today's modern cities.

Ecosystem services, while in principle flows of benefits from nature to people, are not independent of or apart from society. They are increasingly recognised as co-created features of the urban landscape, a view supported by the development of disciplines such as urban ecology, landscape architecture, and resilience thinking. For example, urban gardening and food production may depend on healthy soils, photosynthesis and a number of other ecological factors. The final benefits, however, be it food, the pleasure of seeing plants grow or to socialise with your fellow gardeners, require human mediation. That mediation, or contribution includes additional resources like tools, knowledge and social capital. The inclusion of the human factors in the understanding of ecosystem services calls for design and planning approaches that treat the urban landscape as an intrinsically interconnected social-ecological system. Benefits need to be grounded both in functioning urban ecosystems and the social arrangements set up around them. Two great challenges, or possible starting points, for constructing the needed design and planning approaches are; a) how to construct or enhance functioning ecosystems to support urban development and long-term sustainability, and b) how to create urban landscapes that welcome a diversity of urban residents to engage in the management of the ecosystems.

Greenery amidst urban fabric at the allotment garden of Ruskeasuo, Helsinki. Photo: Henna Helander, City of Helsinki

The baseline for making sure we continue to have access to ecosystem services in our cities is to ensure that there is space for biodiversity to thrive not just in the high quality core of the green and blue infrastructure but throughout the city. An example can be found in the Campus Albano project (see texts 3.2 and 3.5), and even more so in the alternative vision, Albano Resilient Campus, which strived to combine social and ecological features and qualities throughout its design components. Fundamentally, three different types of performative elements are included in this campus: Active Ground constitutes the division of land, buildings or space into several functional units with the aim to encourage a multitude of uses and user groups. It can refer to public roads and passages, the establishment of different land-uses and activities such as urban gardening or nature-based playgrounds, and green roofs and walls. Performative Buildings refer to buildings designed to connect to the larger landscape and thus support ecosystem functions and human wellbeing. The buildings have the potential to support biodiversity and crucial ecosystem functions such as pollination, food production, and freshwater purification, while regulating indoors temperature and retaining rainwater. Green Arteries include for example transportation routes designed to be ecological corridors, which makes the campus accessible to the public, and connect between on-campus departments, the different institutions of higher education, and to the city, while supporting biodiversity.

The experiences from Albano, and other similar cases where social and ecological values alike are integrated and prioritized, are not only interesting for their novelty but also crucial for our future quality of life. Hopefully, the leading examples of today are but the first early steps towards the design of the next generation cities, guiding a continuous search for innovative solutions and integration of social-ecological values.

Maria Schewenius,
Stockholm Resilience Centre

Erik Andersson,
Stockholm Resilience Centre

Green and blue infrastructure

The concept of urban green and blue infrastructure refers to the inclusion of the full range of designed to natural vegetation and aquatic elements inside a built-up landscape. Designed elements include for example green walls and roofs, and can also include wetlands. Examples of common 'natural' elements include parks, forests, lakes, and streams. As the word infrastructure implies, these systems are not just assemblages of green and blue space; quality and function comes in part from the flows and exchange between the individual elements. The benefits of integrating green and blue infrastructure with the built-up environment are several: it supports biodiversity by connecting green and blue elements both within the city and to the larger region. Integrated infrastructures like bioswales, wetlands, and treed pocket parks, can also provide effective nature-based solutions like low-cost greywater purification and storm water management. Green walls and roofs can increase the comfort in buildings by regulating the temperature when it is hot or cold. Green and blue spaces also open up opportunities for people to engage in their local environment and take responsibility for example for cultivation patches. Being constantly close to nature, i.e. having a view of green, the possibility to walk or sit in grass, and smelling flowers or listening to water all help to support human mental wellbeing.

CASE TURKU

FIELD NOTES ON A CHANGING CAMPUS DESIGN

Identifying user preferences for the renewal of a campus cluster

TURKU IS a city in south-west Finland with more than 180,000 inhabitants, and it hosted the first academia in Finland, established in the 17th century. Today, the city has six universities and universities of applied sciences (hereafter together referred to as higher education institutions) that act as strong drivers for the local and regional economy and development. Five of the institutions form a dense cluster of campuses (i.e. the campus cluster) in the central part of the city, which is estimated to attract more than 20,000 students and 4,000 staff. In this text, we discuss some of the emerging trends of higher education campus development as experienced in Turku.

Demand for modern facilities

A main challenge that faces campus managers, developers, and planners alike is that of aged campus buildings that don't meet today's needs for flexible learning spaces, and facilities that can support co-operation with actors outside

Turku Campus Cluster.
Photo: University of Turku,
University Communications

Students working in the campus library. Photo: University of Turku, University Communications

Collecting user insights for campus development by Live Baltic Campus Pop-up action. Photo: Johanna Aaltonen

of academia. In Turku, this generally applies to buildings that were built or renovated before the 21st century. In addition to their inadequacy to meet present educational demands, the buildings are expensive to renovate to more adaptable uses, and are often inefficient in terms of space and energy use.

However, some of the aged buildings represent the identities of their higher education institutions, and also serve as landmarks and architectural highlights of their time. Significant buildings, like the headquarters of the University of Turku, are thus being maintained.

Another visible trend in the modernisation of campus areas is the ongoing infill development and optimisation of locations. For example, the Novia University of Applied Sciences has recently moved its headquarters from the outskirts of the campus cluster into newly renovated premises closer to the Åbo Akademi University. The move brought the Novia University to a more central location, and these the two mainly Swedish-speaking units in town closer together.

Moving towards increasing collaboration

The closer collaborations have led to the higher education institutions sharing new campus buildings such as the ICT-City, which was one of the first shared buildings, already established in 2006; and the Medisiina D, which is under construction as of 2017. There are also examples of the co-production of services like the Campus Sport initiative, which enables students and staff to use any of the six institutions´ sports services and facilities, regardless of their home institution. Future shared services can, for example, include libraries, international student services, and IT services.

We co-organized a future campus workshop in the Turku Future Forum by the City of Turku, as a local Live Baltic Campus activity. In the workshop, we asked the participating academic students and staff, and different stakeholders such as people from the city: "What would make the current campus cluster ten times better in the future?" Some of the most important insights were that Turku offered versatile and shared study programs, but mobility and the information flow between the institutions could be improved. Turku could also strengthen its image as a working life oriented student city, for example, by adding connections between higher education professors, researchers and local companies. It was also pointed out that international students could be integrated even better with local student communities, the city and the local businesses.

How about daily life?

As another Live Baltic Campus project activity, we organised participatory stands in key locations within the campus cluster to find out what students, staff and visitors thought about the services and activities on-site. The activity

showed an insufficiency in regards to two key issues: the provisioning of services on campus, and the development of the local transport network. Students clearly wanted more diverse spaces to study, work, hangout, meet, and organise events. A shared wish for all the user groups was that the cafes and restaurants would stay open longer, beyond only the lunch hours. Bikers wished for better routes, while car users complained about a lack of nearby car parks.

The results are significant, as the need for campuses to be able to provide their users with everyday urban qualities is becoming even more urgent, a trend that is expected to continue over the coming years. For example, the number of students and staff is expected to grow by the thousands after completion of the Tuas Kupittaa Campus of the Turku University of Applied Sciences, which is under construction as of 2017.

Johanna Aaltonen,
University of Turku

Tiina Anttila,
Brahea Centre at the University of Turku

Joint planning for liveable spaces

Service design methods can allow us to identify user-friendly campus designs but sustainable campus design also needs rational planning and identity creation. Turku would benefit from a stronger and shared vision for the continued development of the campus cluster. Yet, the strengths of service design methods are in enabling the translation of public policies into personal involvement and action. This is one of the key goals in creating liveable spaces, because campuses need to fundamentally work in a social sense. A comprehensive and practical development plan for the campus cluster, one which includes the everyday services, the buildings, the open areas, and the connections inside the campus cluster and to the city, is needed. Such plan would strongly benefit from being developed in collaboration with concerned groups.

Turku Campus Cluster

A city-centre campus that connects the old and the new Turku.

STATUS Continuously developing

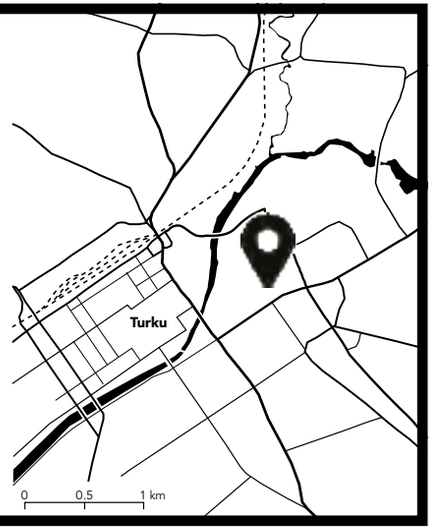
STUDENTS est. 28 000 in the cluster area

STAFF est. 4 000 on cluster area

HIGHER EDUCATION INSTITUTION
University of Turku, the Åbo Akademi University, the Turku University of Applied Sciences, and the Novia University of Applied Sciences

FIELDS OF STUDY
multidisciplinary, bilingual (Finnish/Swedish)

CONNECTION TO THE CITY
railway station, motorway, passenger cars, regional and local buses, light traffic lanes



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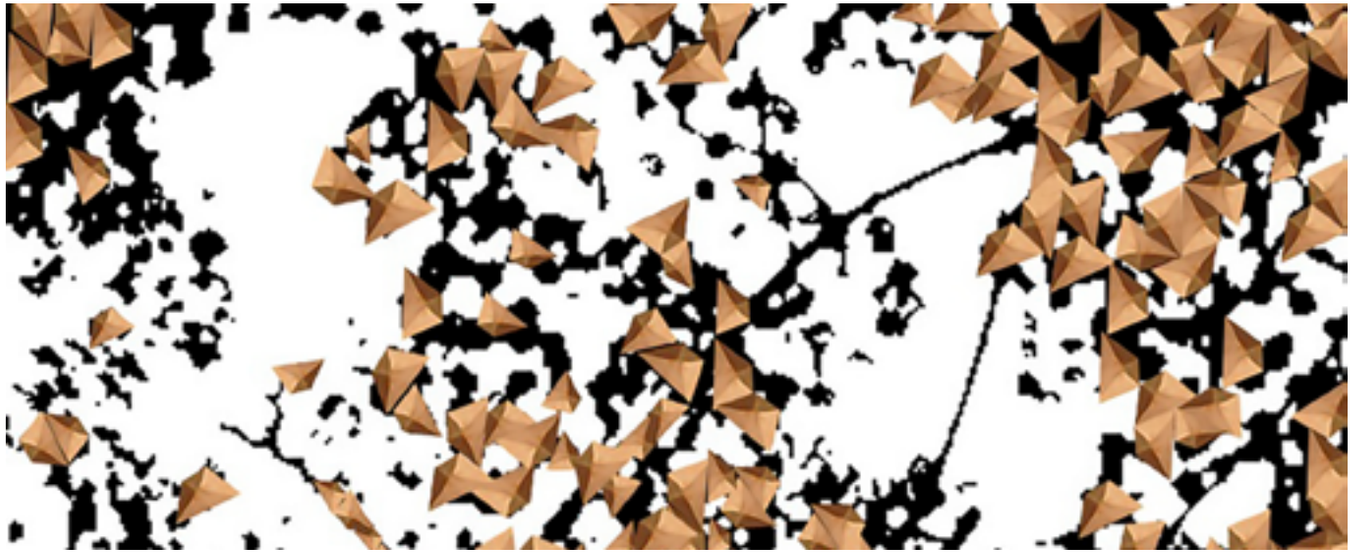
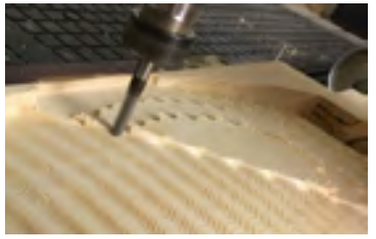




From Forest to Campus

DESIGNERS / STUDENTS OF ARCHITECTURE AND DESIGN
Tiia Westerholm, Jenny Tiitinen, Marja Ilmarinen, Suvi Wallius-Valo, Kia Tengström, Niina Rissanen

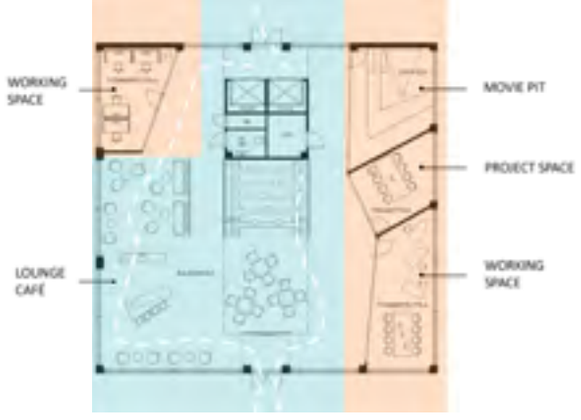
TUTOR Merita Soini

Tall spruces, pines, birches and aspens along a small creek - this beautiful little mixed forest hid the busy highway from Myllypuro mall and Metro station. A long time ago the neighbourhood people spent time in this green forest, they picked berries, had picnics, kids played and climbed up the trees. These trees crew on the Metropolia campus site, they have seen Myllypuro's life for decades, and all their hidden stories are still in the wood cells.

This valuable material will have a new life inside the campus building. From Forest to Campus is a design project for Metropolia students. It is about learning the life cycle of wood, recognizing wood species, processing the material from the very beginning, and transforming the material to some functional wooden artefact. The local material and the history inspire designers. The aim is to design bring back memories and joy for the users when picking up the story of this wood.

The project started in the Autumn 2015. Students went in the forest with time, chose the grandest trees and tagged them for the project before felling for the campus construction site. While the lumber is drying and resting in outdoor storage for 2 years the students have time to ideate and design utility articles and interior elements for the campus. There are already concept ideas for wall paneling, luminaires, swings, stools and serving dishes. These concepts are under design development process and we are looking forward to see the final outcome at Metropolia campus which will be finished by 2019.


SAUNA
GYM
PATIO
OUTDOOR TERRACE


WORKING SPACE
MOVIE PIT
PROJECT SPACE
LOUNGE CAFE
WORKING SPACE

Students re-thinking student housing

DESIGNERS COMMUNAL SPACES:
Tia Aitola, Oona Auramo and Heli Koskinen

REDESIGN OF SHARED APARTMENTS:
An Duong, Edit Heikkinen and Vilma Kukkonen

TUTORS: Juha Ainoa and Pasi Pänkäläinen

The Foundation for Student Housing in the Helsinki Region, Hoas, plans to build three new apartment buildings in Myllypuro, close to the campus of Metropolia University of Applied Sciences currently under construction. Annexed to Live Baltic Campus, Hoas invited Metropolia's design students to propose ideas for the coming project.

One group focused on designing and identifying the best locations for shared recreational and co-working spaces: the ground floor for a lounge, event and working area, and the top floor for a sauna, gym, patio and rooftop terrace for parties. An online application for making reservations was also drafted. The open, modern design strives to create an attractive, welcoming atmosphere for the building. The same concept can be applied to older buildings to create similar effects, for example by removing walls from the ground floor, enlarging windows for creating open, bright spaces, and conscious renewal of the furniture.

The second group designed a service concept of shared apartments including an option for a regular cleaning service of the shared living spaces, and a person living in the building responsible for minor repair work. Multiple suggestions on how to increase the level of comfort of the living spaces, organise joint activities among the residents, and run a marketing campaign to spread the concept were also introduced.

Photo:
Juan Sebastian
Covarrubias

TOOL

III

Map-based participatory design workshop

WHAT?

A modular mini-toolkit poster that can be used as an instructional tool for facilitators.

WHY, WHERE AND WHEN?

The method is intended for use in the initial user research phase of design challenges dealing with an urban development context. The method aims to collect human-centred insights about the local environment, and creating new concepts for cooperation between local stakeholders

DESIGNER: Jalmari Sarla

TUTOR: Juha Ainoa

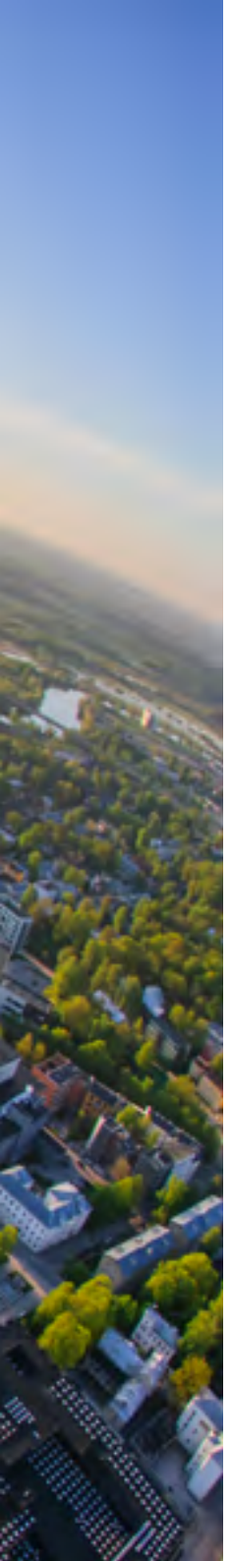
The tool is available in Sarla's BA thesis 'Development of a Participatory Design Workshop Concept for Solving Urban Challenges'

Photo:
Juan Sebastian
Covarrubias

Photos:
Jalmari Sarla

Section 4.

DESIGN OF CAMPUS LANDSCAPES



Aerial scenery of Tartu. Photo: University of Tartu

Experimental study for planning Tartu campuses based on mobile phone tracking

SUBURBAN CAMPUSES INCREASE MOBILITY NEEDS AND TRAFFIC LOAD.

A city is a complex organism under constant spatial change which influences the everyday activity nodes and mobility choices of people. Good urban planning is a difficult task, since every resident, visitor, or employee of the city has his or her own taste and values. Sensing and understanding these values is essential for creating a good city.

Digital data is rapidly growing as a source of population data, such as people's preferences in the urban landscape, means of travelling, and transport routes. Digital means such as electronic questionnaires, social media forums, and mobile-phone-based participatory methods allow for a quick collection of data from a large number of people. A Facebook poll or an analysis of transport companies' travel databases can be performed within days, whereas conducting a traditional survey takes at least half a year.

Tartu is a relatively small town in Estonia with around 100,000 residents. One of its primary spatial planning tasks since the last half of the 20th century has been to determine whether to keep the higher education institutions in the central town, or to locate planned complementary research and educational campuses at the fringe of the city. While the city centre benefits from the interwoven historical campus area (Figure 1), it is often more feasible to establish new facilities in more distant areas. In an attempt to create a balanced solution, both the inner city and suburban campus areas are in use in Tartu. However, the effects of their respective locations in the city and its residents need to be mapped out, in order to guide the next development decisions.

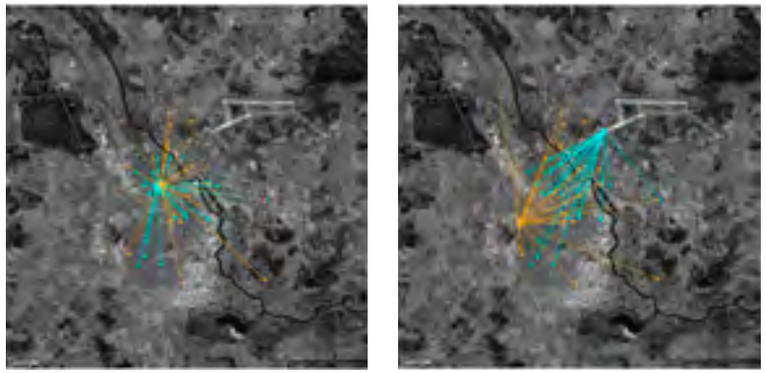


FIGURE 2.
The location of places of residence and work of respondents before and after the workplace was relocated from the central city to the urban fringe.
Source: Mobility Lab of University of Tartu. Basemap: Google

FIGURE 1.
A vivid moment in the old town of Tartu filled with students, with the fresco of the nearby university main building in the background.
Photo: Andres Tennus, University of Tartu

FIGURE 3.
The vicinity of the Maarjamõisa campus area and the Estonian National Archives surrounded with car parks.
Photo: Andres Tennus, University of Tartu

Within the Live Baltic Campus project, the Department of Geography of the University of Tartu in cooperation with urban planners, city and university officials, and environmental and computer scientists, conducted a leading experimental space-time research study on people's use of urban space, mapped out by smartphone tracking. The aim of the study was to identify the impact of smart workplaces on the space-time use of citizens within Tartu. In particular, the study asked how the (re)location of educational, research, and cultural institutions influences:

- people's mobility, use of transport, and their environmental consequences;
- people's use of the city centre;
- people's everyday activities and preferred places of activity in the city;
- people's time use for various activities and travelling;
- people's satisfaction with the location of their workplace and working conditions.

The experimental study was conducted among students and academic staff of the University of Tartu, and employees of the Estonian National Archives and Estonian National Museum. The latter institutions both faced workplace relocation from the central town to the fringe of the city during the research period.

The study covered 260 individuals, and data collection lasted from March 2016 to October 2017. Smartphone GPS sensors were used to map out the use of urban space, visited locations and the preferred mode of transport of respondents. Smartphone data were complemented by semantic information from individual interviews.

The initial results of the study showed that the relocation of institutions in Tartu increased the employees' median home-to-work distance from 1.5 km to 3.1 km (Figure 2). Both car and public transportation use increased at the cost of decreased light traffic. Large, visually unappealing parking areas around the new workplaces contributed to creating a negative impression of the research, educational, and cultural institutions (Figure 3).

Smartphone tracking showed that the employees at relocated workplaces spent fewer and shorter visits to the city centre and its close vicinity (Figure 4). However, relocation significantly increased the frequency of transits through the city centre due to the need to surpass the bridges over the River Emajõgi, and traffic via the main transportation routes around the city centre. Detailed results of the study will be announced in early 2018, and these will be involved in the spatial planning decisions of the city and the continued development of university campuses in Tartu.

New research methodology and software solutions for space-time research, based on smartphone data, were developed within the study. Interest in applying the results to other cities and programmes was expressed, for example by Riigi Kinnisvara AS (the State Real Estate Ltd.), which supported parts of the project with funding. Riigi Kinnisvara is developing a state housing programme in Estonia, which will significantly change the location of workplaces in several Estonian cities.

The study aimed to further the science of digital data-based research methods, and for the results to benefit other universities in the Baltic Sea region and beyond. The study has already inspired a new project in cooperation with the Smart City Institute of Shanghai University.

Rein Ahas, Age Poom,
Anto Aasa & Siiri Silm
Department of Geography,
University of Tartu

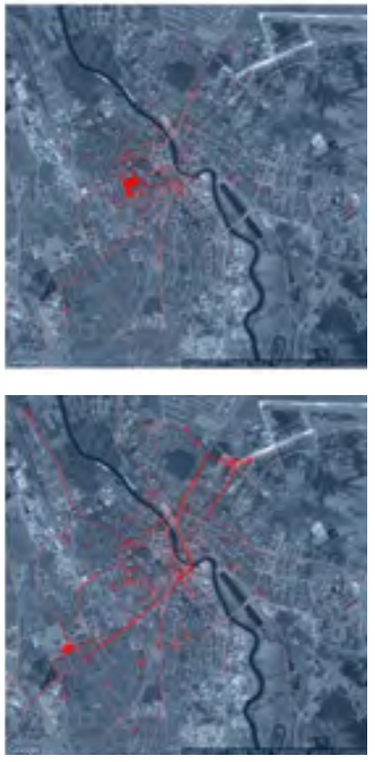


FIGURE 4.
A comparison of the use of city space before and after workplace relocation in 2016. Left: Before relocation from central city, the city centre hosted various activities of employees, and supported the use of light travel modes. Right: After the relocation to the north-east or southwest fringe of the city, employees have fewer opportunities to use services close to new workplaces, they undertake significantly less visits to city centre, and they spend more time in motorized travel.
Source: Mobility Lab of University of Tartu Basemap: Google

Albano – a role model for sustainable urban design

LOCATED A stone's throw away from central Stockholm, inside the first Urban National Park and just in the nexus between the University of Stockholm, the KTH Royal Institute of Technology, and the Karolinska Institute, is the Albano area. What is today little more than a decommissioned industrial site will within a few years' time become a strategically important hub for 15,000 students and researchers, linking the three universities together.

As the University of Stockholm and KTH Royal Institute of Technology (KTH) develop, new modern premises are needed, where the universities can work and collaborate with each other and the surrounding society. In November of 2015, the ground was broken for the construction of Campus Albano. On the site that previously consisted of an abandoned gravel field crossed by the railway Värtabanan, Akademiska Hus and Svenska Bostäder are now building a green, flourishing, and sustainable campus. Here, a coherent university area is emerging – from Stockholm University in the north, via KTH, over to the Hagastaden area where the Karolinska Institute is located in the west. In total 100,000 square metres of university premises and around 1,000 student apartments are being built, along with areas designated for restaurants, cafés, and other commercial services. The diversity of establishments and activities will contribute to a living city environment, where students and researchers will be able to live and work.

Sustainable urban design

The development of Campus Albano takes place in harmony with nature, and the objective is to become a role model in sustainable urban development. Long-term consideration to the environment from all aspects guides the project development. It concerns everything from material choices to the design of bicycle lanes and teaching environments. Research on sustainable urban development has been integrated into the planning process by a group of researchers from Stockholm Resilience Centre at the University of Stockholm and the KTH School of Architecture, who were commissioned by Akademiska Hus to provide their opinions and suggestions based on social-ecological urban design. Researchers actively participating this way in a planning process makes Albano a unique project. The university area is also one of the pilot projects in the Citylab Action, which is organised by the Swedish Green Building Council, with the aim to share knowledge about- and promote sustainable development.

Increased biodiversity

As Albano emerges, great care is taken with respect to its biodiversity. For example, there are a series of efforts to strengthen the possibility for increased species diversity of bees, other insects, and birds. New nature-based solutions are being created on the site: water systems for grey water treatment, elements for an improved micro climate, and outdoors environments designed to strengthen the dispersal corridors for plants and animals between the Urban National Park and the park Hagaparken. Biotopes and plants are chosen based on the surrounding landscape, and placed

Actors

ZONING PLAN OWNER:
The City of Stockholm

TENANTS: Stockholm University and KTH

DEVELOPER, THE UNIVERSITY BUILDINGS: Akademiska Hus

DEVELOPER, THE STUDENT- AND RESEARCHER ACCOMMODATION:
Svenska Bostäder

ARCHITECTS, THE UNIVERSITY PREMISES: BSK Arkitekter, Cedervall Arkitekter, and Christensen och Co Architects

ARCHITECTS, THE STUDENT HOUSING:
Tyréns, Brunnberg & Forshed, Tovatt Architects, and Planners och Joliark

ARCHITECTS, THE OUTDOOR ENVIRONMENT: Nivå Landskapsarkitektur

Timeline

BREAKING GROUND: November, 2015

PLANNED FIRST OCCUPANCY OF THE UNIVERSITY PREMISES: 2020

PLANNED FIRST OCCUPANCY OF THE ACCOMMODATION: 2021

so that they support known, ecological dispersal paths. Through green roof landscapes with large open terraces, where students, co-workers and the public have access, the university buildings become integrated parts of the park environment. With research also showing that greenery and recreation lead to better academic performance, several different types of profits are to be made.

Meeting places in focus

Albano is to be built so that the needs for different rooms for meetings are met. Many times, new research discoveries are made when different disciplines collaborate, and stimulating unexpected meetings can thus ultimately spur new scientific findings. The buildings of Albano will be designed with active and open ground floors, to the greatest extent possible. The businesses that are planned to be in the university buildings, such as cafés, restaurants, and livelier study places, are placed in connection with important main passageways to provide the prerequisites for spontaneous meetings between students, researchers, local inhabitants and passers-by in general.

In order to further facilitate the contact between the universities and the city centre, pedestrian and bicycling paths will be built with connections to the universities. Bicycles will be "prioritised traffic", which means that streets and bicycle paths are planned so they have as few hills as possible, and that bicycle garages are built as close as possible to the building entrances.

Social passageways

New educational forms are constantly being developed, and institutions are changing. Therefore, we have put a strong emphasis on flexibility and adaptability in Albano. The low constructions are intertwined with an inner social passageway, where institutions can grow between the blocks. Important functions like auditoria and study places are placed towards the social passageway, which gives the possibility of synergies between students and researchers.

The Albano Street will become one of the most important passageways. Here, the built-up elements are integrated with the green roof terraces, and create an entirely new type of public space. Designed to feature a lot of greenery, the Albano Street will provide space for recreation and meetings between people. School students will be able to partake in the activities of the local House of Science, and visitors to the Urban National Park will be given the opportunity to explore the landscape and sit down in an open café with service on the terrace.

Akademiska Hus

Image rendering of the future Campus Albano, with KTH and the Stockholm city centre in the top of the image (i.e. south).
Aerial photo: Lennart Johansson
Montage: BSK Arkitekter


C A S E

CASE RIGA: KNOWLEDGE MILE RIGA

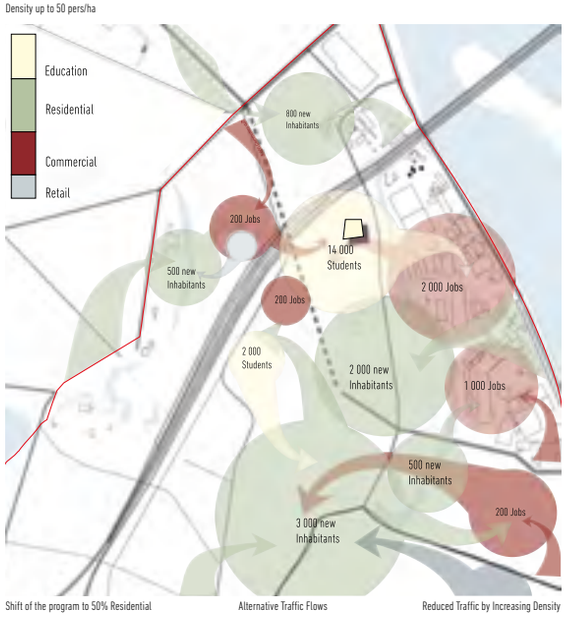
FROM KNOWLEDGE PLACES TO KNOWLEDGE SPACES

Scale model of the Knowledge Mile scenario by the Architecture students of RISEBA University.
Photo: Ilze Paklone

Co-designing four universities into a collaborative network

WHEN THE University of Latvia opened its first academic campus in Pardaugava, an area on the west bank of the city of Riga, in 2015, it marked the beginning of an unprecedented shift in the city's academic geography. The campus is the first step of a much larger project: around the year 2022, all of the four largest academic institutions in Latvia will be concentrated in Pardaugava, in close proximity to each other. The University of Latvia will build two new campuses, and three of the existing academic institutions in the area are renovating and adding new facilities. The renovations are being done with the aim

FUTURE POPULATION



Scenario of future population of the Knowledge Mile area.
Visualisation: RISEBA, Faculty of Architecture and Design"

to improve the existing infrastructure, and to accommodate the growing numbers of foreign students.

This process reflects both national and municipal development plans, which envision the territory of Pardaugava becoming a Science and Innovation Centre (SIC) by the year 2030. However, while the current municipal vision prioritises academic and innovative functions in the territory, it lacks a detailed plan for how to meet these goals. Guidance is also lacking for both planning and taking action to enhance collaboration between universities. At the same time, the universities are facing a declining number of local students, while the competition is fierce between the universities of Riga, and those of other cities, to attract foreign students, researchers and other experts.

Previous campus development projects and attempts to create interconnected Knowledge Places have centered the design around the use of cars. This is likely the result of a mismatch between planners, developers and investors on one hand, and the campuses' intended users on the other. Unfortunately, this separation creates an opening for external political or corporate interests, rather than the interests of the students, professors, or local area inhabitants to become the determining factors for the design of the plans.

There is thus a clear need to create and nurture a culture of collaborations, to increase the provisioning of public services such as transport, and include green spaces to attract students, expert staff, and visitors to the future campus.

To this end, this chapter explores the design proposition of joining the four large academic campuses into an integrated Knowledge Mile. The concept proposes several important interventions in the ongoing planning and development of the area where the campuses will be located. First, the geographic proximity between the campuses will invite them to move beyond viewing themselves as four discrete entities to envision a more compact, interconnected knowledge centre. The aim of consciously designing the landscape and social structures to connect the campuses can support competitiveness and an interchange of knowledge, which in turn can foster learning and enhance the quality of education and research. Second, the concept proposes improvements in accessibility, such as convenient public transport, pedestrian walkways and cycling routes. It is a way to generate opportunities for more cooperation among universities, academics and students, and the private sector seeking a qualified workforce or opportunities for innovation. Third, it proposes that the design process should be more open, public and engaging. The aim is to animate and infuse the territory with values which are in line with the needs of the economy, society and local community.

Imaginative spatial scenarios

The proposal to create a Knowledge Mile stems from the work of ten students and three professors at an architectural design studio at the RISEBA Faculty of Architecture and Design, Riga. The proposal rethinks the development plans of existing academic campuses – the University of Latvia, Riga Technical University, RISEBA and Riga Stradins University – into a more coherent, dynamic knowledge network.

The chosen territory of the Knowledge Mile falls within the geographical scope of the Live Baltic Campus project activities in Riga, and that of the prospective development of the main national academic campuses. Imaginative spatial scenarios in the proposal were meant to be reflexive and alternative, rather than in line with formal planning policies.

The design studio analysed the demography and spatial constellation of the area defined by the Riga City Council as the future Science and Innovation Centre, and posed the question of who will study, work and otherwise benefit from the development.

According to a rough estimate done by the design studio, the trend of declining student numbers may turn as foreign student numbers continues to increase. Up to 32 000 students can be learning, working and living in Pardaugava by 2020 – up from the current 19 000. The student body would represent a

critical mass of talent, innovation and production capacity, thereby enhancing the competitiveness of Riga in the wider Baltic Sea Region. The vision of the Knowledge Mile in Riga thus has the potential to play a prominent role in the re-invention and regeneration of the city. However, the current modes of urban planning have to adapt to a more open, collaborative and iterative approach.

Fostering community building and cooperation

The expansion of the academic campuses into a single location means that the cost of land and the density of Pardaugava will increase. An influx of industries, services, residents and workers can therefore be expected. The development is far from being completely positive as it will likely also push gentrification, leading to increased rental and living costs, and the commercialisation of public spaces. Over time, the relocation of the campuses to Pardaugava could make it increasingly difficult for the current inhabitants to remain, and also replace the current local community spirit with something less personal and characterful.

The Knowledge Mile is designed around values that correlate to emerging trends in cities and campus design around the Baltic Sea and beyond: pedestrian access, livability, green territories and attractive public spaces. This design makes the most of the geographic proximity of the different universities by suggesting new pedestrian and cyclist passages, as well as activity hotspots in the public green spaces. The focus on accessibility and openness should not only lead to improved cooperation among the administrative and academic bodies of the four universities but also ameliorate the quality of life among the current and future residents of the area.

The vision is to make the Knowledge Mile in Riga a hotspot of creativity and innovation, and transform the city to meet the needs of its different inhabitants. To fulfill the vision, novel urban qualities such as those defined by the RISEBA students need to be included and prioritised in the planning and development phase from the beginning.

The design of the proposed Riga Knowledge Mile attempts to turn closed Knowledge Places into open and accessible Knowledge Spaces, and to make the area beneficial not only for students and businesses, but also for the wider public and local community; indeed, for the city at large. Urban design has the power to propel novel approaches to urban development and continuously shapes and reshapes the city's identity. The Knowledge Mile is an experimental node within Riga's urban planning, and it is the area's prospective spatial backbone. Therefore, the Knowledge Mile holds the potential to determine both the landscape- and infrastructural design, and the community development of the area.

Viesturs Celmiņš, Thomas Stellmach, and Ilze Paklone

Knowledge Mile Riga

HIGHER EDUCATION INSTITUTIONS
Riga Technical University, Riga Stradiņš University, University of Latvia, RISEBA University

STATUS All four universities already have premises in the area, and campus development shows a potential for developing into a more coherent, dynamic knowledge network.

STUDENTS Currently 19 000 students, 2020 estimated up to 32 000

FIELDS OF STUDY multidisciplinary

CONNECTION TO CITY
Situated on the left bank of the river Daugava and connected to the city centre with two bridges

CASE TARTU: THE CENTRAL CAMPUS, AND CAMPUS MAARJAMOISA

CAMPUSES AS INFLUENTIAL ACTORS

The historic university campus is an integral part of the central town and contributes to a vibrant urban environment, while the newer suburban campus brings the need for better connectivity and new transport options to the local development agenda.

THE UNIVERSITY of Tartu has long been an integral part of and driver behind the development of the City of Tartu. The first compact university campus was founded in the beginning of the 19th century during the Age of Enlightenment, when architect Johann Wilhelm Krause planned a complex of buildings at Dome Hill and its foot (Maiste et al. 2017; Figure 1). During that time, the downtown area also experienced a massive renewal impelled by a previous fire, resulting in a compelling complex of classical style buildings mixed with greenery. This beauty has been preserved, and today still constitutes the core of the university and the old town of Tartu.

The needs of the university have evolved over time, and a wider arc of buildings associated with the university has been gradually established towards the southern part of the city (Figure 2). In 1911, the university received the fields of Maarjamõisa manor as a gift from the state. This led to the establishment of a second campus, located 2–3 km southwest from today's downtown area. The Maarjamõisa campus is dedicated to medicinal and natural sciences, and hosts a nationally leading university hospital as well as labs, clinics, and general study areas. The campus is located in a low-rise residential district, together with Tartu Health Care College, Tamme Gymnasium, and the Estonian National Archives.

The main building of the University of Tartu is located in the city centre. Photo: University of Tartu


TARTU ÜLIKOOL

FIGURE 1.
The plan of Tartu by J. W. Krause in 1819. The buildings associated with the university are marked on the Dome Hill, the university main building is located close to the Town Hall Square in the downtown area (marked in pink) and the then-newly established botanical garden is seen next to the River Emajõgi. The Struve Geodetic Arc is the first accurate measurement of a meridian in the world and passes through the Tartu Observatory on the Dome Hill.
Illustration: EAA.402.5.28 L 73.

FIGURE 2.
The University of Tartu is anchored primarily to the city centre and the Maarjamõisa campus in the south-east part of the city. The key concern in uniting the campuses is to overcome the spatial separation caused by the railway.
Source: Virtual tour of the University of Tartu, Basemap: Google

The respective possibilities of central and suburban campuses

Today the students of the University of Tartu alone represent over 10% of the town's population. The large representation of students, their changing needs and expectations for the university, and a changing urban context calls for a revision of the roles for the different university campuses in Tartu.

New spatial development principles of the higher education institutions were established by the Higher Education Thematic Plan, developed between 2010–2013, and led by the Tartu City Government. The plan aimed to identify ways to maintain the character of Tartu as a vivid, young, and spatially integrated university town, and to improve the spatial connectivity of the campuses with each other and the city's transport infrastructure.

The decision was made to concentrate the Humaniora and Socialia fields of study to the historic central campus, and those of Realia, Naturalia and Medicina to the suburban Maarjamõisa campus. Dormitories for student accommodation remained in the town centre in order to keep students a part of the central urban fabric. The importance of the presence of the university in the town centre has been emphasised by the recent decision to develop a new IT-and-business-oriented study complex called Delta (see p 96-97) on the banks of the River Emajõgi, on the edge of central Tartu.

The development of the Maarjamõisa campus, which has hitherto been rather ad hoc, is now detailed in a recent zoning plan. The focus is on increasing the functionality of the area by establishing indoor and outdoor recreation areas, better dining options, and even some housing. An important part of the plan is to provide options for university-business cooperation models, and to reserve land for knowledge-intensive activities such as the development of a science park. Special attention is paid to connectivity of the facilities within the campus, and light travel transit options such as walkways and bicycle lanes. New parking lots will be located behind the buildings to prevent them from visually dominating the area.

Connecting the city centre and suburban campus

Due to the distant location of the suburban Maarjamõisa campus, it is necessary to pay special attention to its accessibility and connectivity. Today, only two transit routes link the city centre to Maarjamõisa: one of them is loaded with heavy traffic, and both of them suffer from complicated railway crossings.

It is of vital importance to the University of Tartu to provide its students, staff, and visitors with a smooth spatial connection between the town centre and the Maarjamõisa campus. The accessibility of the Maarjamõisa campus is especially relevant since the university clinic serves as the primary health care centre for the whole of Southern Estonia.

Connecting the central town with the Maarjamõisa neighbourhood includes several issues that need to be addressed: finding solutions to the barrier that the railway currently presents, developing light travel mode routes, and improving overall transport safety.

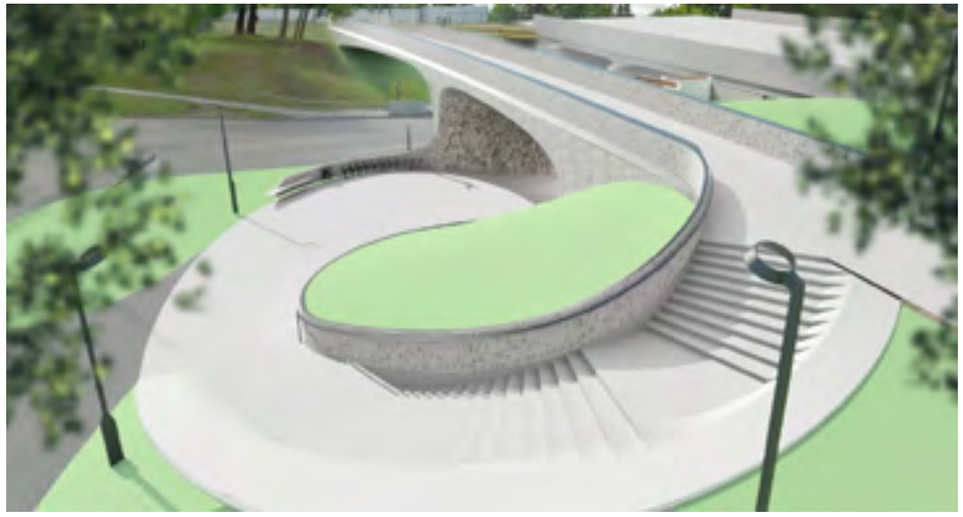
The current situation is about to change, as railway crossings and parts of the connecting routes for the campuses are about to undergo major reconstruction work. The main railway tunnel on Riia Street, also the main artery of Tartu, will be reshaped into a more spacious, comfortable, and safe crossing for pedestrians and cyclists (Figure 3). In addition, Vanemuise Street, a major section of one of the routes between the campuses, will be opened up for light travel modes at the cost of less convenient car use and parking.

The town's agenda is, however, even more ambitious. The recently adopted comprehensive plan foresees a tramway to Tartu, which is notable considering the town only has 100,000 inhabitants. The idea of the tram has received considerably high support, while the exact route is still undefined. The tramway should interlink Annelinn, the main high-density residential district, via the city centre to the Maarjamõisa neighbourhood. Linking the campuses spatially improves student and staff mobility, integrates different academic fields, and improves the flow of knowledge throughout the city.

The case of Tartu shows that integration and connectivity of spatial areas are both scale-dependent and constantly evolving. The activities of the Live Baltic Campus project have helped to create and disseminate an understanding of the importance of these two elements, and of possible approaches to local campus transformations. In line with the project's objective, the initiated transformation of the city's campuses from classical to modern, with focus on connectivity, accessibility, and integration, has already begun to lead a transformation of the town at large.

Age Poom, Pille Metspalu & Indrek Ranniku

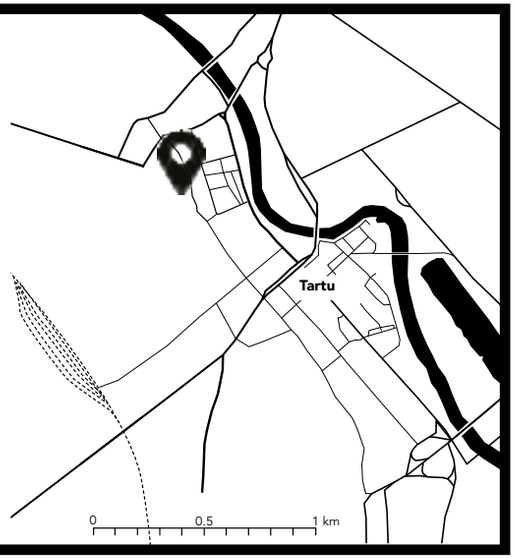
FIGURE 3.
The winning design for the reconstructed railway tunnel at Riia Street.
Author: Part OÜ, Sille Pihlak, Siim Tuksam



University of Tartu

Historic campus area intertwined with highly functional city centre and greenery

STATUS: Established in 1632, higher education in Estonian language since 1919
STUDENTS: 13,000
STAFF: 2,900
FIELDS OF STUDY:
Arts and Humanities, Social Sciences, Science and Technology, Medicine
CONNECTION TO CITY:
Walking, cycling, bus, car



University of Tartu

The history of Estonian higher educational leads back to AD 1632, when the Swedish king Gustavus Adolphus founded Academia Dorpatensis, the forerunner of the University of Tartu. Since then, the university has been the leading centre of research and higher education in Estonia. Currently, the university belongs in the top 1.2% of the world's best universities (QS World University Rankings 2017/18). It is the only classical university in Estonia and has approximately 13,000 students and 2,900 employees.

The University of Tartu together with other higher education institutions – the University of Life Sciences, Tartu Art College, the Estonian National Defence College, the Estonian Aviation Academy, Tartu Health Care College, and Tartu College of the Tallinn University of Technology – commonly make up the image of Tartu as a university town. The employment of nearly half of the working-age population of Tartu is associated with the higher education institutions.

Delta study complex – anchoring the university to the central city

THE MOST influential spatial decision by the University of Tartu in the year 2016 was on how to find the best location for a new IT study complex, later named Delta. The main question was whether the university was going to move its IT-related units away from the central town to the Maarjamõisa science-and-technology-oriented campus, or let the units remain in the town centre where the IT study complex could be developed together with its business-and-practice-oriented extension.

The city government together with IT enterprises strongly favoured the location in the centre, where the historical university campus is tightly interwoven with the central town. The university administration initially favoured the Maarjamõisa campus. The local community near the central campus was concerned about the need to fell trees at the fringe of a park to make space for the new campus. A compromise was made, placing the Delta study complex on the west bank of the river Emajõgi, in an area that has struggled to recover after it was destroyed during the Second World War. This location connects Delta to the town centre, while it simultaneously densifies and revitalises the local neighbourhood.

The prominent position of Delta being adjacent to the town centre required the arrangement of an architectural competition in order to determine the most suitable design for the new campus. The guidelines of the competition stated that the complex had to provide a welcoming and contemporary urban space to tenants and visitors alike, encourage activity on the river bank via an open design, and retain the visual corridor to the old town; particularly to the town hall that is located on the other side of the river. The winners, the architects from the company Arhitekt11, situated the complex between the neighbouring park, the river, existing houses, and transport routes; and, they designed it as a pedestrian-friendly urban environment with high quality landscape architecture that addresses both aesthetics and social and ecological functions. The spatial arrangement and technical settings of Delta also support low-carbon energy and transport solutions.

The multifunctional indoor environment will provide inspiring conditions for studying and working. In addition to traditional lecture or seminar halls, labs, and office spaces, the study complex will involve a variety of flexible and open workspaces, and recreation areas offering various activities such as table tennis, cooking, or relaxing, for both students and staff. Delta is being designed as a joint centre for education, research, innovation, businesses, and student activities; a heart for the university on the left bank of the river. Suitably, the IT study complex became "Delta" as a result of a public naming competition.

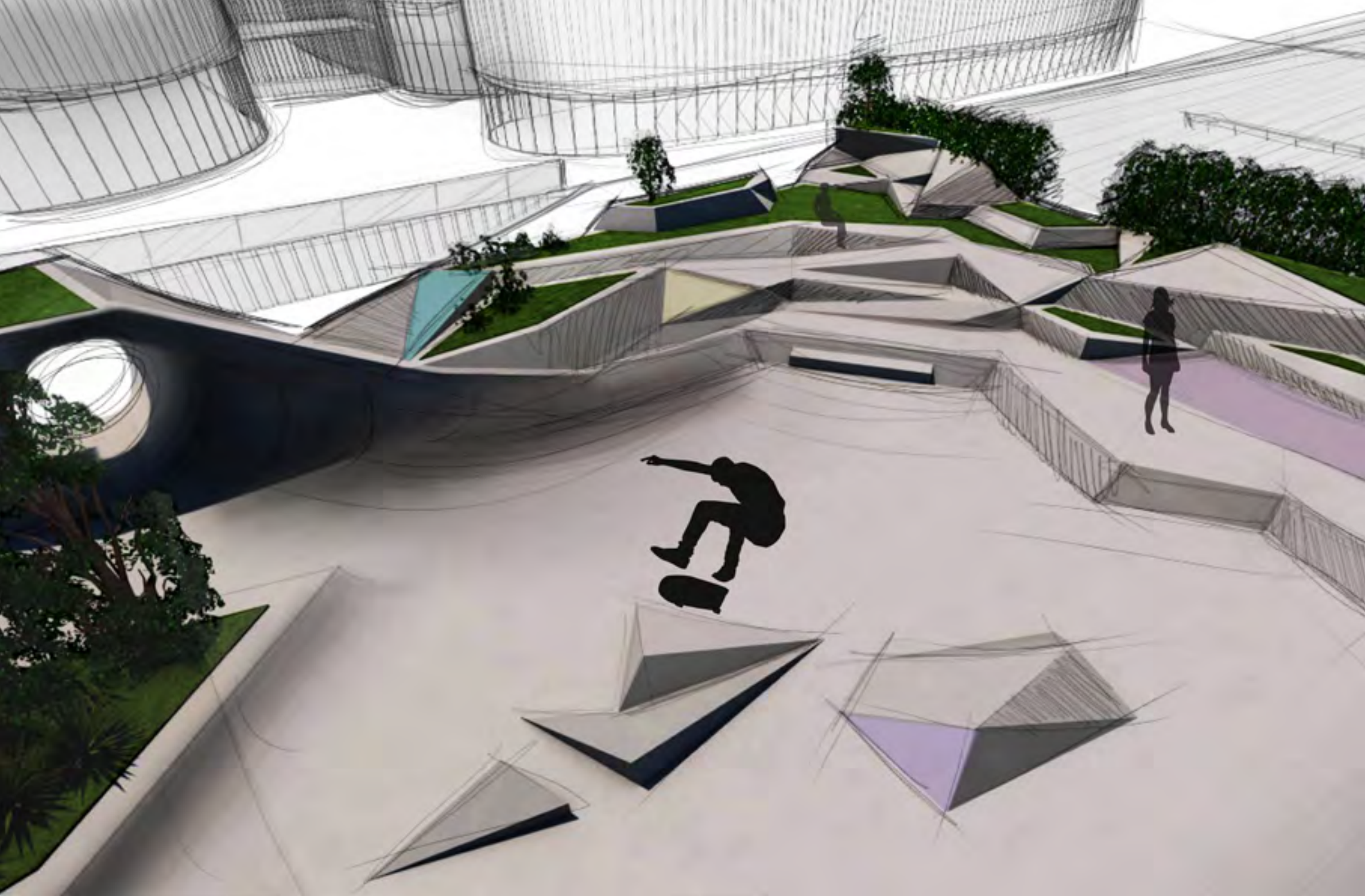
Delta is planned to open in 2019. It will host the Institute of Computer Science, the Institute of Mathematics and Statistics, the School of Economics and Business Administration, related student unions, an innovation lab, and a large number of IT firms. It is expected to attract 2,500 students and about 600 staff members. The cooperation with the IT sector enables spatially and structurally integrated study and practice options for students throughout their studies, from bachelor to doctoral level, with strong incentives for future entrepreneurship. The Delta study complex will become a landmark of contemporary standards in education, research, and university-business cooperation.

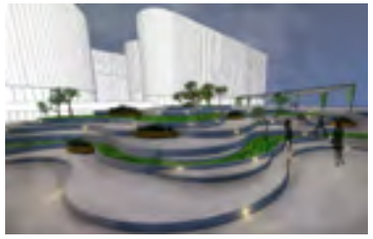
Age Poom,
University of Tartu

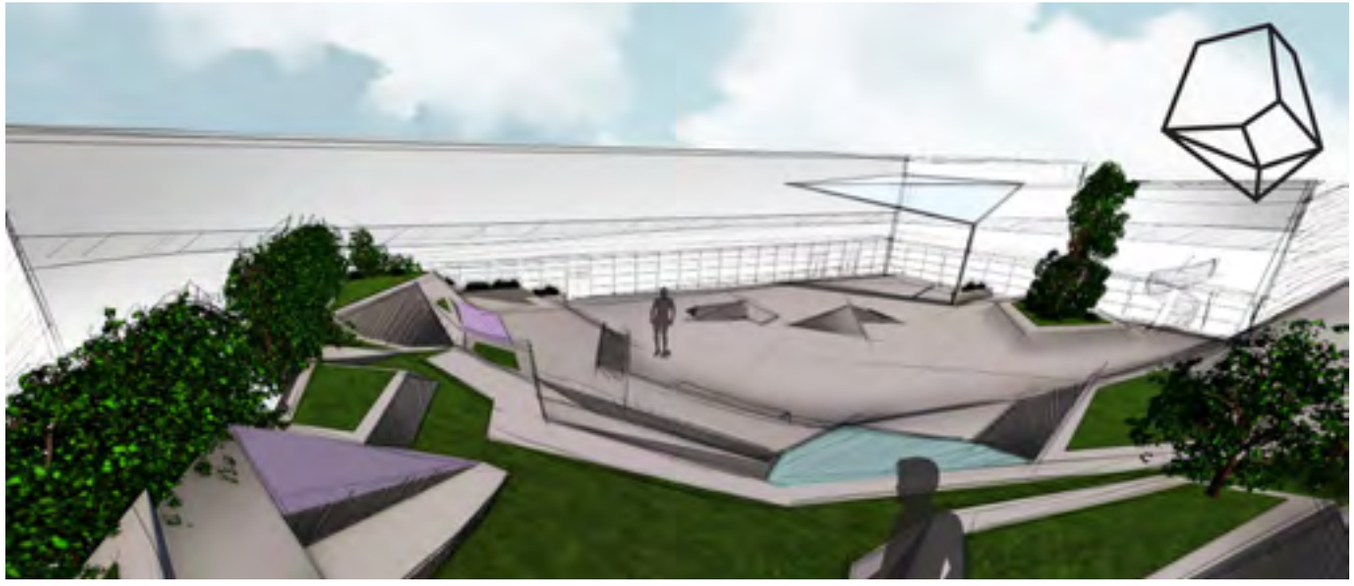
Tõnis Arjus,
City of Tartu

The winning architecture of Delta study complex at the River Emajõgi.
Illustration: Arhitekt11

Delta study complex activates the connection with the River Emajõgi.
Illustration: Arhitekt11







The Place to Be – Myllypuro Campus Square

DESIGNERS:
Amanda Ainesmaa, Anna Lehtonen, Laura Vaisto, Noora Vartiainen and Robert Ylihoikka

TUTORS:
Juha Ainoa and Pasi Pänkäläinen

In the neighbourhood of Myllypuro, Helsinki, a new public square is about to form between the main entrance to Metropolia's future campus, the metro station, and the sports hall 'Liikuntamylly'. Inspired by the study visit destinations included in the Live Baltic Campus inspiration tour to the Netherlands in 2016, the City Planning Department invited Metropolia students and staff to co-ideate possibilities for the square. Following the brief of establishing an inviting public space and a landmark for the neighbourhood, Metropolia's design students took on the challenge and created concepts for The Place to Be in Myllypuro.

The student propositions for the space focus on functionality and cosiness: the design 'Puro Park' revolves around urban gardening, and the design 'Kulma Park' provides a campus yard especially suited for the skateboard community. The greyness of the buildings surrounding the square can be balanced with colourful murals. The light grey wall of the box-like sports hall also has potential to serve as a screen for outdoor cinema events.

Photos: Stiina Ruusuvuori

TOOL

IV

Space-Activity User Kit for active interviews

WHAT?

A puzzle-like tool for mapping out stakeholder views on preferred campus services and facilities, the spatial aspects and connections of the services and facilities, as well as preferred user groups.

WHY?

The tool enables the interviewee to play with different alternatives, and develop and visualise ideas.

WHERE AND WHEN?

A tool mainly intended to be used during interviews with external stakeholders, such as companies and sectoral agencies who have strong collaboration potential with the campus community. One interview takes approximately 30-45 minutes. In addition, it serves as a tool in facilitated workshops, where groups of different campus users can build common visions of the future campus and its services.

DESIGNERS: Sini Mäkinen, Kati Pihko, Matias Lehmusjärvi, Sipi Rossi, Noora Vartiainen

TUTOR: Juha Ainoa

Section 5.

DESIGN FOR THE CAMPUS EXPERIENCE

On lifestyle considerations in campus planning

IN THEIR book from 2007, *Campus and the City*, editors Höger and Christiaanse list a series of recommendations that should be followed when planning, designing, and redesigning a campus. Broadly generalising, these guidelines relate to a variety of urban, cultural, economic, environmental issues, and also have a strong bearing on transport and mobility (connectivity, accessibility, flexibility) and the interaction with the spatial context. Today's modern campuses comprise more than just university and college-related buildings and infrastructures, such as offices, libraries, laboratories and lecture halls. They also involve a mixture of other functions, such as residence halls, student centres, dining halls and shops, and recreational and park-like settings. Campuses are also very diverse, whether located in or outside the city boundaries, scattered or concentrated, green- or brownfield, high- or low-tech, corporate by nature or public. The campus can no longer exist in isolation. Campuses have an impact on the wider urban environment and are impacted by that wider environment. The campus has become a city; the city has become a campus. Both play an important role in shaping each other. That said, developing and planning a campus has a lot to do with developing and planning a city; and what holds true for one also applies to the other. In both cases, the ultimate goal is to create more liveable and sustainable communities. Hence, policies and investment strategies are needed that contribute to sustainable campuses. This implies encouraging safe, reliable and economical transportation options, promoting equitable and affordable student housing, and enhancing economic competitiveness. It also involves creating centres of knowledge and learning, supporting community revitalisation, and promoting healthy, safe and walkable neighbourhoods in different (rural, urban or suburban) settings. In sum, campus planning touches upon a series of dimensions that need to be taken into account; dimensions ranging from urban, cultural, economic, to landscape, social and psychological.

Clearly there is a strong relationship in how cities and urban regions envisage sustainable development, and how the campuses of the future see this. Both pursue the same goals, both use the same tools. So besides trying to answer the question how infrastructure, architecture and urban design can be used to consciously stimulate and create social, cultural, and economic life in and around universities and corporate centres, we also want to understand what kinds of strategies the dynamic synergies can best nurture the dynamic synergies needed to create sustainable centres of knowledge and learning.

In their edited book published in 2015, *Adaptive Mobility, A new Policy and Research Agenda on Mobility in Horizontal Metropolises,* Boelens, Lauwers and Witlox state that developing a sustainable policy implies that governments have to focus on creating high-quality, liveable areas with acceptable standards of access to goods and activities. Such sustainable urban development aims to shorten distances between locations of activities so that more sustainable transport modes besides automobiles will be used, resulting in reduced emissions, and resource and energy use. The core feature of such a sustainability policy is the reduction in the use of motorised vehicles, including both cars and

Bridge of Kaarsild over the river Emajogi in Tartu.
Photo: University of Tartu

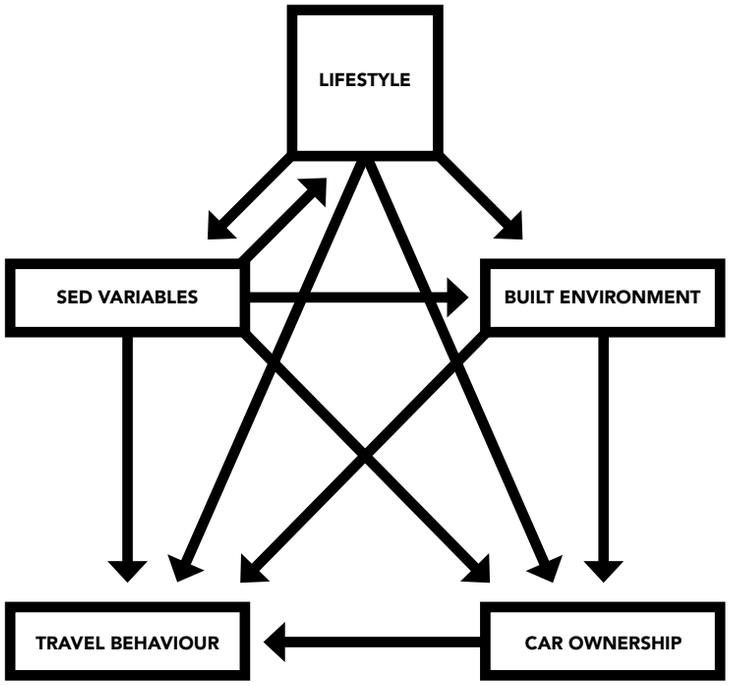


FIGURE 1.
Based on Van Acker et al. (2011)

trucks. Although numerous incentives exist that contribute to creating a more sustainable mobility in the short term, the impression is that each of these policies start at the wrong end of the story. They focus on minimising the social and environmental impact of growing mobility, rather than addressing resilient socio-spatial and mobility planning. Instead, the focus is on the hardware part of the issue, e.g. infrastructure, vehicles, public transport means. As a consequence, attention is hardly paid to how this infrastructure is used or could be used better.

Clearly, sustainable planning involves promoting sustainable behaviour. It has to do with trying to change peoples' life choices, realising a shift in their mindset, and looking for a swing in governance and policy-making towards more sustainable solutions. This policy shift is also closely related to topics of smart architecture, land use, energy, and health and safety. The key point is how we can influence people's behaviour; how can a shift in thinking be realised? Answering these questions implies thinking about people's underlying opinions and orientations, including beliefs, interests and views. It relates to attitudes, status, and preferences; often generalised to a person's lifestyle.

Van Acker, in the 2015 article "Defining, measuring, and using the lifestyle concept in modal choice research", pleads for a growing policy attention towards a more lifestyle adaptive approach of (mobility) planning. Lifestyle research in travel behaviour is not new, but often the concept refers to stage-of-life or household composition, which means that only general objective socio-economic characteristics are being analysed. A more sophisticated overview of the lifestyle concept in terms of definitions and measurement methods towards a so-called sociographic lifestyle approach focussing on a behavioural orientation–values, attitudes and preferences–and latent factors motivating behaviour patterns is needed. An additional complication is that lifestyles also need to be considered as dynamic rather than as static and given.

The lifestyle dimension should be not forgotten, or minimised. In explaining travel behaviour (as depicted in the figure below), lifestyle has a direct impact, but travel behaviour is also indirectly influenced by the built environment (i.e., the 3D's: density/diversity/design), the socio-economic-demographic (SED) variables, and car ownership. The same holds true for the impact of lifestyle considerations in campus planning. Campus planning is directly related to urban planning, culture, the economy, and the environment, which in turn are influenced by lifestyle. But the lifestyle itself also directly impacts the campus planning procedure.

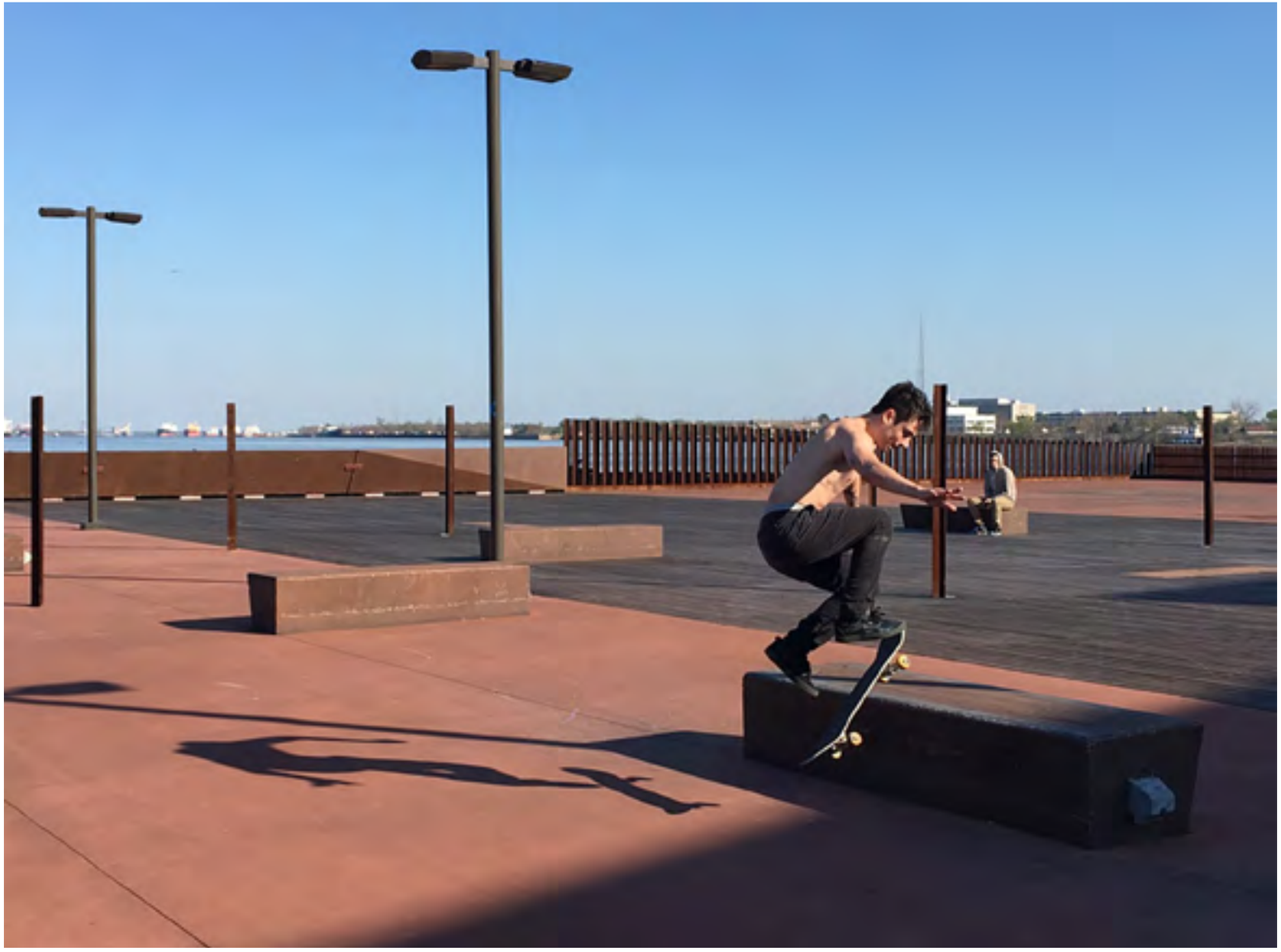
In terms of campus planning, an analogy can be made to the book by Boelens et al., in putting forward a new, adaptive mobility planning agenda. They argue that what is needed is an interaction between society, space and mobility driven by radical transitions (disruptions) from the traditional to more complex, nonlinear approaches. This transition is characterised by three major challenges (or lines of thought):

- Going from generic towards situational approaches and implying taking into account changing settings of accessibility, lifestyles, and their interaction with society, health and space.
- Going from rigid and stable to smart adaptive approaches, and implying making use of ongoing new technological means, including shared and interactive design.
- Going from top-down strategies towards structural couplings and co-evolution which implies focusing on adaptive, actor-relational approaches, in changing settings of formal and informal initiatives in planning.

An identical process can be followed in which a new, adaptive campus planning agenda can be pursued.

Frank Witlox,
Ghent University,
Department of Geography
University of Tartu,
Department of Geography

Lifestyles bring new meanings to urban space. Photo: Merita Soini



Campuses of the future should put life before lectures

WITH STUDENTS now able to attend classes and perform many other academic tasks online, university campuses have become less about traditional lecture-based teaching and more about learning the softer skills needed in an ever-changing world. The campuses thus need to adapt to meet the changing needs, demands, and uses in a time when virtually all information is readily available online.

Many university campuses are still designed around a traditional model of higher education in which students visit academic premises primarily to attend lectures. Nowadays, however, campuses are primarily places of interaction where students exchange ideas and form social relationships. Campuses also play an important role in helping students to learn and practise the skills and abilities that are increasingly valued in today's world, namely: emotional intelligence, empathy, and problem-solving.

This article summarises four of our key insights as design professionals about the changing role of campuses. The insights are based on interviews with university students in Finland, and on our own experience of working with campus design.

1. Campus spaces should be so inviting that students don't want to leave

Before WiFi became virtually ubiquitous, the most popular cafés were the ones that offered it for free. People would stay longer if they could surf the internet for as long as they wanted. A similar principle applies to campuses today. Walk around inside the buildings and common areas of any academic institution, and you will see that students gather in spots that offer printing, comfortable seating, power sockets or affordable coffee. These have become basic needs, and a must for attracting students to the campus.

Campuses should embrace this behaviour by creating different types of environments for different needs: storing items, socialising, charging laptops, and finding peaceful, quiet places for studying.

> "I love working here. I've been here every day for the past two weeks."
> Student

2. Campuses should get people talking, listening and bonding

For most students, the relationships formed during their studies are what they value and remember the most. Finding like-minded people on campus not only makes everyday life more fun, it can even be the foundation for lifelong friendships and business relationships.

Campuses should be designed to bolster the formation of these relationships and the communities that can grow out of them, with spaces and activities that encourage people to interact, share ideas and build trust. Campuses have an important role to play in fostering the

1. INVITING CAMPUS SPACES
The Cave Room concept has gone from idea to execution in the new Aalto University Harald Herlin Learning Centre. It's a place to focus and immerse yourself in whatever you set your mind to. Kuudes designed the space by co-creating new service concepts with students, faculty members and other staff.
Photo: Kuudes Helsinki

2. TALKING, LISTENING, AND BONDING
In addition to creating meeting hubs, events, and locations that encourage new encounters, university campuses should also support well-functioning teamwork.
Photo: Aalto University School of Business, Silla Virmajoki

sense of belonging and pride that any successful community feels.

> "While of course I remember the principles, theories and other information I learned during my studies, without a doubt the most crucial part of my academic experience was the network of hundreds of people that the school has given me access to." Alumni

3. Campuses should inspire you to experiment with multi-disciplinary solutions

Higher education is not just about obtaining an academic degree. For many students, it's also a way to explore their passions, which progressive academic environments should be equipped to support.

We tend to stretch our abilities and work harder when we are inspired and motivated. Success often comes when we are given the freedom and support to do what we do best. Campuses should facilitate this by creating an environment where students have the support to experiment, and with the goal of helping them to find purpose and fulfilment in their professional lives.

As an increasing variety of professions demand multidisciplinary skills, campuses should be designed to blur the line between faculties, thus inspiring and encouraging students to explore cross-disciplinary solutions to academic and societal challenges.

> "I truly found my motivation to study only when I realised what I really want to do. Now I'm just focused on that goal." Student

4. Campuses should help students to get a taste of the working life

Our research has shown that very often students focus solely on what's going on within their own faculty. This inwardly-focused thinking can easily prevent students from being open to ideas from other disciplines, or sharing their own ideas with others. Campuses can help to tackle this by instilling a sense of pride in students and faculty members. When people are proud of something, they are more likely to communicate about it. Communication, in turn, can create name recognition for the academic institution, attract funding and draw in the best lecturers in a self-reinforcing virtuous cycle.

Open communication is also important in creating a bridge between the academic life and society as a whole. Students learn best by doing, and real-life projects outside the classroom, in collaboration with companies and other institutions, are thus of vital importance.

> "If you want to be a researcher, there is no substitute for personal relationships. So, I always try to meet as many people as I can in events that could benefit my career." Student

What do we take away from this?

University campuses and their facilities will continue to play an important role in bringing students together, encouraging them to think critically, and helping them to build links to the outside world; even as learning is likely to increasingly take place mainly through digital channels.

The shift in the way we work, and the change in the skills we need has been so quick that many campuses have not yet been able to adjust. A campus should be a place where knowledge, lifelong learners and businesses meet in an environment in which students naturally want to immerse themselves. A campus should embody the vision of the institution it is home to, by visually and spatially expressing the institution's values and culture through every aspect of the physical environment.

As the next generation of university campuses has begun to emerge, the time is right to explore the vast range of design options these new environments demand and inspire.

Susanna Ollila & Tiina Toivola, Nordic insight, strategy and design agency Kuudes Helsinki

4. DESIGNED CHALLENGES
Hackathons and challenge-based competitions, organised together with companies, are one of the new channels helping students to get connected to the business world.
Photo: Veeti Haapsamo, City of Helsinki

3. INSPIRATION TO EXPERIMENT
The concept for the new Think Corner at the University of Helsinki was created by Kuudes, in close collaboration with the university and its stakeholders. The Think Corner aims to get students, researchers and partners from different fields to co-operate more and learn collaboratively. It opened its doors in September 2017.
Photo: Kuudes Helsinki

Education for Sustainable Development: The rise of a new science

MUCH OF modern education is based on the Newtonian and Cartesian approaches of rationality, causality, mechanistic interpretation, silo thinking, and reductionism. Although such approaches have resulted in unparalleled advances in development and industrialisation, the over-reliance on rationality, whilst neglecting and ignoring emotions, have led us to an unsustainable present and threatened future.

During the last three decades, an increasing number of higher educational institutions have been engaged in embedding sustainable development into their systems, including education, research, campus operations, community outreach, and assessment and reporting. In 2013, some colleagues and I had the fortune to complement these five elements with a proposal for collaborating with other universities; making sustainable development an integral part of the institutional framework; encouraging on-campus life experiences; and 'Educating-the-Educators' programmes. It is important to recognise that higher education institutions are highly complex, and the implementation of education for sustainable development thus needs to be addressed through holistic and systemic thinking.

A number of declarations, charters, and partnerships have been developed to foster education for sustainable development. These started with the Stockholm Conference in 1972, where education was formally recognised on an international level to play an important role in fostering environmental protection and conservation. Other important milestones have included: the Talloires Declaration, the Swansea Declaration, and the Barcelona Declaration. More than 1,000 university leaders have ratified their commitment to advance this work by signing the initiatives.

In addition to signing declarations, charters, and partnerships, other efforts have ranged from involvement in regional development, to the reduction of greenhouse gas emissions, and to leaders' perceptions of the topic.

A number of tools have been developed to assess and report about sustainability in universities, including the Auditing Instrument for Sustainable Higher Education (AISHE), the Graphical Assessment of Sustainability in Universities (GASU) tool, the Campus Sustainability Assessment Framework (CSAF), and the Sustainability Tool for Assessing Universities' Curricula Holistically (STAUNCH®). A key area driving education for sustainable development has been its inclusion in curricula. The inclusion has ranged from adding some coverage of environmental issues and material in an existing course to a specific course on sustainability, sustainable development intertwined in regular courses, sustainable development as a specialisation, and to entire degrees.

A paradigm revolution is needed to break through existing knowledge barriers and current unsustainable mental models, and foster metanoia, a shift of mind-set or lifestyle, for sustainability. New ways of learning are needed, which actively and consciously engage in the use and protection of natural resources, and the safeguarding and improvement of societal well-being, for this generation and future ones. This revolution has to be based on holism (i.e. examining a thing from outside and ask questions while it works), transdisciplinarity, systems thinking, and long-term thinking. Education for sustainable development plays a key role in this paradigm revolution.

Sustainable development research and practice has increased considerably for the last twenty years. During this time, education for sustainable development has developed its own language and structure, and has created a collective memory. It has evolved from a tradition of conducting case studies to critically questioning them, and to developing tools, methods, and theories. It can thus be claimed that education for sustainable development has become a new science.

Rodrigo Lozano,
University of Gävle
Organisational Sustainability, Ltd.

Theater performance ‘Medan Klockan Tickar’ held in Kollaboratoriet Uppsala.
Photo: Uppsala University

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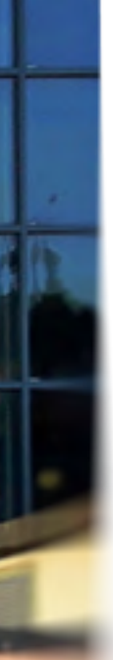


CASE UPPSALA: KOLLABORATORIET

AN EXPERIMENTAL SPACE FOR COLLABORATION

A new space in the centre of Uppsala, encouraging boundary-crossing collaborations

A collaborative garden on the sidewalk outside Kollaboratoriet Uppsala. Photo: Sanna Gunnarsson

THE UPPSALA COLLABORATORY (Kollaboratoriet Uppsala) is a pilot project for a new type of physical meeting space in an urban campus environment. The aim is to invite new collaborations between academia and civil society, between art and science, and to support social innovation with a focus on social and environmental challenges. The Collaboratory is located in Uppsala University's buildings in the city center, and on the ground floor facing the street, making it easily accessible to the public. The space is designed for activities with up to 40 people, in an area of about 80m², and flexible furniture options allow for many types of activities and group sizes. The space has so far been provided free of charge, events may be open to the public or by invitation, and activities can be hosted by the management team or independently by those who use the room.

The Uppsala Collaboratory opens up a new space for possibilities in a time of complex and rising social, economic and environmental challenges. Learning, collaboration, and innovation across boundaries are increasingly important approaches for managing the challeng-

es, which demand creative, empowering, and accessible working environments. The Uppsala Collaboratory strives to provide citizens and various societal actors with a space to meet and discuss sustainability issues, and together find new ways for their engagement.

The Collaboratory draws inspiration from several sources, including the boundary-crossing, interdisciplinary, student-driven culture and model cultivated since 1992 at the Center for Environment and Development Studies (CEMUS); a joint center between Uppsala University and the Swedish University of Agricultural Sciences, and part of the Uppsala Live Baltic Campus group. Another source of inspiration are the ideas of Katrin Muff (2014), thought leader on transformations, sustainability, and responsibility, who sees a 'Collaboratory' as an extension of the process of doing research into the public spaces of the city; and Sacha Kagan (2015), author and founder of the arts and science network Cultura 21, who argues for a great need of 'spaces for possibilities' in which scientists and artists meet around complex and wicked problems that require transdisciplinary responses. The aim of these spaces is to enhance the 'response-abilities' of communities in the face of large scale paradigmatic challenges like climate change.

The conceptual development of the Uppsala Collaboratory was guided by workshops and dialogues with experts and local actors over a period of seven months, between September 2016 and March 2017. The first seeds of the idea were planted when Keri Facer, Professor of Educational and Social Futures at the University of Bristol, visited in September 2016 for a lecture and open workshop in Uppsala. Facer shared ideas and research on working with new ways of organising the collaboration between formal educational institutions and the wider society. Continued development has been carried out in dialogue between the university, local stakeholders, the Live Baltic Campus project partners, and visiting scholars from Bergen where similar spaces are being developed.

The interest in the Uppsala Collaboratory has been considerable, with a preliminary total of 147 events being held during 2017 (counted mid-November). Events have included art exhibitions, public seminars, an innovation day, theater performances, network meetings and panel conversations. In thinking of the next steps and potential futures of the Uppsala Collaboratory, key questions include its organisation and financing. A number of actors have expressed an interest in the continuation of the activities and opportunities that the Uppsala Collaboratory has enabled, and discussions concerning its future are ongoing.

Sanna Gunnarsson
and Lakin Anderson,
CEMUS, Uppsala University

Examples of events held at the Uppsala Collaboratory

All events at the Uppsala Collaboratory should connect to at least one of its three themes:

OPENING NEW, VALUABLE CHANNELS BETWEEN ACADEMIA AND CIVIL SOCIETY

Here, the goal is to open up new channels between the university and civil society and invite a flow of exchanges that run in several directions. For example, a network engaged in housing issues in Uppsala, consisting of local organisations, citizens and scholars, have been meeting every month in the Uppsala Collaboratory, sharing their experiences and knowledge, and organising joint events.

CROSSOVERS OF SCIENCE, ART AND CULTURE IN THE SHADOW OF GLOBAL CHALLENGES AND TRANSITIONS

Artists, activists, authors and performers are invited to communicate on social and environmental issues in ways that people in universities, including professors, researchers, and students typically don't. The aim is to create spaces and moments for artistic expression, for breaking norms and routines, for challenging established wisdoms and accessing emotions. For example, a theater performance, Medan Klockan Tickar (While the Clock Ticks), by Riksteatern (The National Swedish Theater Company), Dramaten, Östgötateatern, and the Stockholm Environment Institute, brought together climate scientists and theater performers to reflect on the existential nature of doing climate science today.

SUPPORTING NEW PATHWAYS FOR SOCIAL INNOVATION AND ACTION TOWARDS SUSTAINABLE FUTURES

The Uppsala Collaboratory seeks to support new pathways for social and technical innovation as a way of meeting the challenges and complexity of achieving sustainable societies. On April 21, the event Bike Town, a competitive innovation day on mobility, was held at the Uppsala Collaboratory. Teams of students and citizens jointly developed ideas and innovations on how to improve the situation in four different cases. The outcomes of the event were presented to the groups involved.

Kollaboratoriet Uppsala

A multi-purpose space for collaborations, crossing boundaries, and developing ideas for a better world

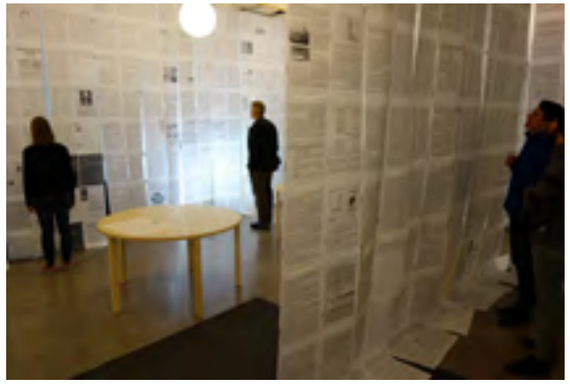
STATUS Temporary space

HIGHER EDUCATION INSTITUTION
Uppsala University

FIELDS OF STUDY
multidisciplinary coordinated by CEMUS - The Centre for Environment and Development Studies

CONNECTION TO THE CITY
Situated in the city centre

Collaboration in action on the innovation day 'Bike town'.
Photo: Uppsala University



Art installation 'Calm Emergency' at Kollaboratoriet Uppsala.
Photo: Isak Stoddard, Uppsala University

CASE HELSINKI: MYLLYPURO CAMPUS

A CAMPUS COMMUNITY IN THE MAKING

From residential neighbourhood to aspiring learning community

Visualisation of the Future Myllypuro Campus of Metropolia University of Applied Sciences. Illustration: Lahdelma & Mahlamäki Architects, Architects LPV

Health and Well being students leading activities in Myllypuro Neighbourhood Day. Photo: Kanerva Mantila, Metropolia UAS

CAMPUSES HAVE certain magic about them. As places for learning and discovery, and, just as importantly, for questioning and challenging, they guide the way into the future. Campuses should be seen as more than mere buildings and study environments for the students. They are also communities.

The construction of the new campus in Myllypuro, which will host part of the Metropolia University of Applied Sciences, has a pioneer streak. The campus will be the second higher education establishment situated in eastern Helsinki, and the very first to be accessible

The spatial concept of the Myllypuro Loop creates a vision of an inviting urban space between the future campus, Liikuntamylly Sports hall and metro station.
Illustration: MUUAN, Uusi Kaupunki architect collective

'Living Green Refill' provides visions for infill building while preserving the local nature in Myllypuro.
Illustration: JADA Architects, Uusi Kaupunki architect collective

to the public. The current concentration of higher education institutions in the western parts of the metropolitan area translates into significantly different economic and demographic figures for that region. Thus, the placement of the new campus in the east is decidedly an act of guided regional development.

Built during the 1960s, Myllypuro can easily be described as a typical Finnish suburban neighbourhood with many green spaces. It is also easily accessible from the city centre, being only a short metro-ride away. Rather unjustly, the area, along with most of eastern Helsinki, competes with prejudices, often spread by people with no personal experience of the place. Its image is, however, constantly improving.

Overall, the potential of forming a symbiotic relationship between Myllypuro and the new Metropolia campus also provides the potential of forming a learning community characterised by the traits of the next generation university campuses. The campus will host education programs in health, wellbeing, and construction. The plentiful sport facilities and other health related public services in the area can help to improve the quality of the studies, and translate the professional studies into practice. Combined, these provide excellent prerequisites for the area to function as a local test-bed for innovations of national and even international relevance, addressing challenges related to urban health and wellbeing, healthy building practices, and an aging population.

The campus can also boost the vitality of the neighbourhood. Currently, the majority of Myllypuro residents are over 40 years of age, and every fifth resident is over the age of 65. The local mean income is lower than the Helsinki average. The area calls for younger, educated people to balance out and strengthen the local economy and community. In response to this, three new student apartment buildings are to be constructed in the area within the next few years. As a practical contribution to local everyday life, the students will be able to provide the residents with accessible wellbeing services, such as physiotherapy, podiatry and osteopathy, as part of their studies. Participation in joint activities involving both the campus and the neighbourhood can further increase the overall liveability, and boost the already high community spirit.

In order to fulfil the potential of the future campus, connections between the communities of Myllypuro and Metropolia need to be fostered, thereby establishing a foundation for a new campus community. The Live Baltic Campus project has approached this by bringing people together and facilitating joint development. The aim has been to give the community building a head start while the construction work is still ongoing. The main outreach event was the "Pop-up Metropolia Campus", which brought campus information, activities, and people to the busy Myllypuro Mall for a two-week period.

Co-ideating on Myllypuro Campus Square in a workshop part of Helsinki City Planning Fair 2017.
Photo: Päivi Keränen. Metropolia UAS

Illustration by the Myllypuro Seniors' Club depicting a walk in Myllypuro gifted to the Live Baltic Campus team at the Pop-up event.

Urban development evening of the Student Union of Metropolia held together with the City of Helsinki and Myllypuro Resident Association.
Photo: Päivi Keränen, Metropolia UAS

The nearby Comprehensive Service Centre is one of the established local connections, providing public elderly care and rehabilitation; a specialisation shared with several of Metropolia's degree programmes. Based on the shared interest, practical collaborations with internships, classes conducted in the Centre, and tailored continuing professional education have been mapped out and launched. Joint research, development and innovation projects have also been drafted and initiated, with the main focus being on the development of supported service housing, a theme that utilises multidisciplinary expertise, which will be hosted on the Myllypuro campus.

The participatory "New Myllypuro!" workshop further investigated the capacity of the area to bloom into a hotspot for wellbeing. Based on input from the local community, architects from the Uusi Kaupunki collective together with Live Baltic Campus contributors created the vision and spatial concept of "the Myllypuro Loop". The concept connects the well-being related local service providers, communities, public actors, and the future campus along a themed path and shared brand, thus increasing the participants' visibility and accessibility. The inclusion of the architects as facilitators of the stakeholder participation allowed for translating the ideas and notions into spatial urban visions. Other visions addressed the local concern for preserving nature whilst the number of inhabitants increases; the need to create space for knowledge exchange; and to spread and nest the campus activities within the surrounding district.

Forming a campus community that includes not only students and staff, but also enterprises, associations, residents, and civic officials, cannot be pursued solely by making plans. The close collaboration between Metropolia and the city of Helsinki that commenced in the Live Baltic Campus project can be expected to only increase after completion of the campus' physical construction. In order to advance on the path of integrating the campus as an active member of the surrounding society, interaction and encounters with the stakeholders will be needed continuously. The discipline of design can in turn continue to provide tools for creating conditions that can enable and manage the interactions, and thus pave the way towards a lively campus community.

Päivi Keränen,
Metropolia University of Applied Sciences

Myllypuro Campus, Helsinki

New, suburban Myllypuro Campus - boosting local vitality and creating space for innovative cooperation

STATUS
Under construction, to be completed in two phases in July 2018 and August 2019.
STUDENTS 6000
STAFF 500
HIGHER EDUCATION INSTITUTION
Metropolia University of Applied Sciences
FIELDS OF STUDY
Social Sciences and Health Care, Construction and Real Estate and also University Management and Centralized Shared Service
CONNECTION TO CITY
By metro, 9 bus lines, car and bicycle

Design Thinking – History

"Everyone designs who devises courses of action aimed at changing existing situations into preferred ones."
– Herbert Simon

AUTHOR: Rawaf al Rawaf,
Stockholm Resilience Centre

In the 1970s, the design theorists and researchers Horst Rittel and Melvin Webber developed a two-class categorisation of design problems: 1) Determinate problems, exhibiting a linear process of design from problem definition to problem solution; and 2) Indeterminate "Wicked" problems which have no single "correct" answer, and whose solutions are iterative and open-ended. The latter type of problems tends to be the effects of other, higher order problems exhibiting the traits of complexity: emergence, nonlinear dynamics, and thresholds.

Roots of Design Thinking
The Macy meetings, held by the American Josiah Macy Jr. Foundation in the 1940s-50s, were a series of interdisciplinary conferences characterized by short presentations followed by lengthy group discussions, where participants' reliance on scientific authority or expertise in their fields was actively discouraged. These meetings offered the participants collaborative intellectual exploration and freedom from conventional disciplinary moorings. They were instrumental in advancing the concepts of both complex systems thinking, and social psychology and group dynamics.

Other contemporaries of the Macy group, i.e. the Tavistock Institute of Human Relations and the Connecticut State Inter-racial Commission, were also studying task-oriented group dynamics, and each developed strategies for multi-disciplinary problem solving concerning unstructured, indeterminate and wicked problems.

From these earlier explorations, two distinct flavors or approaches to Design Thinking evolved: 1) Whole System, or Change Labs, emphasizing group dynamics and building interdisciplinary collaboration, which adopt a complex adaptive systems perspective and focus on finding solutions to broader challenges, like climate change or poverty; and 2) Design Labs, emphasizing prototyping and -typically technological- innovation, which tend to focus more narrowly on product or service design, and user experience. The term Design Thinking was popularized and developed in part by Tim Brown, of the design firm IDEO, and his book Change by Design.

Photo: Katariina Saarela

TOOL

V

Pop-up Campus

WHAT?

A simulation of campus activities outside of campus premises, organized with the purpose of sharing and collecting information on and from the local community and the future campus users, and to enable them to become familiar with each other and their environment.

WHY?

Pop-up Campus is a useful tool for community-building. Personal encounters and discussions build mutual trust and understanding, which are prerequisites for the co-design of campus development. Spending time at the location offers insights to the participants, that otherwise would be difficult to obtain, valuable for the planning of the campus and its activities.

WHERE AND WHEN?

The activities organised within the Pop-up Campus determine its most suitable timing. The location and accessibility for people in the area to participate are common key ingredients.

In the two-week Pop-up Metropolia Campus event, the emphasis was on bringing the staff and students to the site of the future campus, Myllypuro. The aim was to provide the local community with initial insights on the activities, services, premises and people the future campus will host. The pop-up space consisted of a poster exhibition and flexible furnishing to allow organisation of different types of sessions. Coffee proved to be a good way to lure people in and strike up conversations.

VISUAL AND SPATIAL DESIGNER OF POP-UP METROPOLIA CAMPUS:
Sara Grönberg

ORGANISERS: Petra Lassenius, Päivi Keränen, Katariina Saarela, Juha Ainoa and Juha Kyyrö

Identifying the common core themes for campus development

MAPS, blog posts, service concepts, surveys, reports - working together to explore the participatory design methods for campuses while simultaneously conducting local pilots in the six Live Baltic Campus partner cities has produced a vast amount of outputs and insights. A data analysis of the information produced by the project partners led to the identification of 44 sub-themes, which in turn were grouped into six core themes. Together, they form a holistic view of perspectives that are important for understanding both how more sustainable and inviting campuses can be created, and how they can inspire more sustainable urban development overall. The themes are presented in more detail below.

The Great Sextet - City, Change, Together, Bloom, Service and Heart

The core theme 'City' deals with a campus in its wider context, including the surrounding city and region. The information gathered in the Live Baltic Campus project shows that accessibility and connectivity are key aspects for intertwining the campus with the existing urban structure, and that time and resources used in commuting have a significant effect on happiness and ecological sustainability. The surrounding city also presents limitations to campus development with existing buildings, infrastructure, and protected natural areas. At the same time, the city provides a unique identity to the campus surroundings, and added opportunities.

'Change' is a constant and increasingly present element in our urban societies. For example, the need to adapt to climate change, or to meet the demand for digitalisation can both represent a challenge to campus areas, and provide them with new opportunities. Structures and systems, both physical and spiritual, need to be adaptable and flexible. Resilience, or the capacity of a system to absorb changes while maintaining its core functions, supported by adaptability and flexibility, is key for tackling the obstacles of ever-changing contexts.

'Together' highlights the importance of collaborations across sectors and levels, and enabling synergies. In a campus context, it means to support transdisciplinary studies, student-staff collaborations, programs with international focus, and involving the local community and business in learning and innovation processes.

'Bloom' focuses on establishing the view of campus areas as places for knowledge distribution, sources of acceleration for the local economy, and guides to more sustainable lifestyles. Campus areas can be places for open-minded and failsafe innovation that benefits society. Generating business and innovations should be a way to seek new opportunities to deal with current challenges, in harmony with nature and the environment.

'Service' refers to the student services and physical infrastructure that supports the studies, and the free-time functions for students, staff, and visitors. Services such as cafés, gyms, Wi-Fi, and study places bring food for the mind and body and enjoyment, and can encourage round-the-clock life for the campus. Services provide an opportunity to connect the campus to the local community by acting as test-bed for student projects, and by providing services to the campus.

'Heart' emphasises that people are the base of every community and form the core of the campus. Face-to-face meetings remain important, even with the emergence of new digital media. A campus has to enable both organised and spontaneous gatherings for both small and large groups, and in the form of information-packed lectures or reckless parties.

The full result of the above-mentioned process is presented in the Live Baltic Campus Development Idea Book, which aims to guide the continued activities of the Live Baltic Campus participants and their local partners. It acts as a record of ideas and presents important findings from the Live Baltic Campus pilot projects. The Development Idea Book is produced by the designer collective Uusi Kaupunki.

Aleksi Rastas,
Uusi Kaupunki

Päivi Keränen,
Live Baltic Campus

Visualisation of how the core theme Heart could be applied in the urban space in Myllypuro.
Illustration: MUUAN, Uusi Kaupunki Architect Collective

Authors, editors and reviewers

Johanna Aaltonen
Project Manager,
University of Turku

Anto Aasa
Research Fellow in
Human Geography,
University of Tartu

Rein Ahas
Professor of Human Geography,
University of Tartu

Juha Ainoa
Senior Lecturer of Design,
Metropolia University of
Applied Sciences

Erik Andersson
Associate Professor,
Stockholm Resilience Centre

Lakin Anderson
Coordinator,
Centre for Environment and
Development Studies,
Uppsala University

Tiina Anttila
Project Expert,
Brahea Centre at the
University of Turku

Tõnis Arjus
City Architect,
City of Tartu

Stephan Barthel
Theme leader,
Urban social-ecological systems,
Stockholm Resilience Centre
Associate Professor,
University of Gävle

Ida Björkbacka
Senior Planning Officer,
Economic Development –
University Cooperation,
City of Helsinki

Viesturs Celmiņš
Urban Planner; Project Expert,
University of Latvia

Johan Colding
Theme leader,
Urban social-ecological systems,
Stockholm Resilience Centre
Associate Professor,
The Beijer Institute
of Ecological Economics,
The Royal Swedish Academy
of Sciences

Mārtiņš Enģelis
Head of Tourism Product
Development Division,
Investment and Development
Agency of Latvia

Johan Genneby
Business Development Manager,
County Administrative Board
of Stockholm
Central Baltic Contact Point
Sweden North

Sanna Gunnarsson
Coordinator,
Centre for Environment and
Development Studies,
Uppsala University

Michael Hebbert
Professor of Town Planning,
University College London

Alexandra den Heijer
Associate Professor in Real
Estate Management,
Delft University of Technology

Nils Hertting
Associate Professor at the
Department of Government
and Institute for Housing and
Urban Research,
Uppsala University

Anita Kazina
Project Coordinator,
University of Latvia

Päivi Keränen
Project Manager,
Lead Partner,
Live Baltic Campus
(Central Baltic)
Metropolia University of
Applied Sciences

Carl Lindberg
President,
Uppsala City Council

Tālis Linkaits
Head of Secretariat,
Vision and Strategies around
the Baltic Sea

Rodrigo Lozano
Associate Professor,
Department of Industrial
Development,
IT and Land Management,
University of Gävle
Organisational Sustainability Ltd.

Pille Metspalu
Head of Comperehensive
Planning and Regional
Development,
Hendrikson & Ko

Samu Numminen
Project Manager, Environment,
Central Baltic Programme
2014-2020

Susanna Ollila
Senior Service Designer,
Kuudes Ltd

Diāna Orlovska
Project Coordinator,
University of Latvia

Henrik Ottosson
Associate Professor at the
Department of Chemistry –
Ångström Laboratory,
Uppsala University

Ilze Paklone
Assistant Professor,
Architecture and Design,
RISEBA University

Age Poom
Lecturer in Environmental
Management,
University of Tartu

Indrek Ranniku
Head of Master Planning
and Development Service,
City of Tartu

Aleksi Rastas
Architect,
Founding Member of
Uusi Kaupunki

Rawaf al Rawaf
Research Assistant,
Urban social-ecological systems,
Stockholm Resilience Centre,
Stockholm University

Emils Rode
Senior Advisor,
Riga Planning Region

Janne Salakka
Member of the Executive Board,
Student Union of the
University of Turku

Maria Schewenius
Project Manager,
Urban social-ecological systems,
Stockholm Resilience Centre,
Stockholm University

Siiri Silm
Research Fellow in
Human Geography,
University of Tartu

Anni Sinnemäki
Deputy Mayor for Urban
Environment,
City of Helsinki

Merita Soini
Senior Lecturer of Design,
Metropolia University of
Applied Sciences

Thomas Stellmach
Guest Chair for Urban Space,
Planning and Urban
Regeneration,
RISEBA University

Tiina Toivola
Account Director,
Kuudes Ltd

Dainis Turlais
Deputy Chairman of the
Development Council,
Riga Planning Region
Chairman of the Committee
of Security,
Corruption Prevention and
Public Order Issues,
Riga City Council

Willem van Winden
Professor of Urban
Economic Studies,
The Amsterdam University of
Applied Sciences

Frank Witlox
Visiting Professor at the
Department of Geography,
University of Tartu
Professor of Economic
Geography at the Geography
Department, Ghent University

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The Live Baltic Campus funders and partners

The role of universities is changing, expanding from being purely education and research institutions towards one of being active partners in local and regional urban development. As incubators for knowledge development, critical thinking, and innovations, universities and campuses are becoming increasingly important for identifying, designing, and implementing pathways to sustainable urban development.

The project Live Baltic Campus has explored how university campuses can serve as local living labs and guides for new planning and design approaches. The project has aimed to build capacity in urban planning and design to harness the potential of changing social, ecological and financial contexts. Six higher education institutes in cities around the Central Baltic area have collaborated to utilise participatory design methods in developing their local campuses, and to share their results.

Campus development, much like urban planning in general, relates to the concepts of dreams and seeds: visions of the future, and a continuous flow of, often small, actions and decisions required for bringing the visions into reality. This book is a compilation of the insights, perspectives, and practical examples stemming from the two-year joint exploration to find the necessary ingredients and local measurements for sustainable urban campuses.

EUROPEAN UNION
European Regional Development Fund

Interreg
Central Baltic

Stockholm Resilience Centre

Stockholm University

Metropolia
University of Applied Sciences