

Building Educational Cooperation in Smart City

IT&Digitalisation Report

Nordplus Horizontal 2018

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Abstract

This project is formed around the common interests of participating educational institutions to provide qualified graduates to the labour market, taking into account the real needs of enterprises to perform in fast and flexible ways. The differences between what has been taught in schools and what kinds of skills enterprises actually need has grown over time, resulting in higher unemployment and enterprises that still lack a skillful workforce.

The overall aim of the project is to support the creation of a new multicultural network of knowledge transfer and innovation between educational institutions, enterprises and sector organisations, and to further support the close cooperation between these groups in Nordic and Baltic countries.

This fully corresponds to two general objectives of Nordplus 2018-2022 program which are:

- support, build on, reap the benefits of and promote innovative products and processes in education through the systematic exchange of experiences and good practice;
- contribute to the development of quality and innovation in the educational systems for lifelong learning in the participating Nordplus countries through cooperation in education and training, as well as cooperation with the labour market on development projects, exchange programmes and networking

Objectives

As partners from educational institutions experience a growing need to support students and teachers, there has been a related push for cooperation and sharing of ideas between these groups. The networking activities of the present project have been organised with this in mind. Particularly from the perspective of innovation, learning is of critical importance, taking place in horizontal networks of educational institutions of different levels, enterprises, sector organisations and others.

The cross-sectoral dimension of the project is related to the choice and participation of partners, extending from different levels withing educational organisations to businesses and sector organisations. This kind of partnership is vital as the main objective of the project is to find

and describe flexible ways, study methods and/or curricula development for meeting the rapidly changing demands of enterprises towards the specific skills of graduates. The economic sectors concerned are differing from country to country, but the ways to reach cooperation with businesses in order to enhance innovation in teaching methods or environments, could be similar or adaptable to different sectors. Therefore, it is crucial to examine today's process of cooperation with enterprises within different partnering countries and cross-sectoral educational institutions to find suitable model(s).

The concrete objectives are:

- thematic reports on three themes of the project work based learning, entrepreneurship and IT/ digitalization which entails both methodological part as well as a collection of case studies from partnering countries
- study tours implemented in these themes to evaluate and complement the reports with the results of study tours and discussions
- a handbook that entails the end results and findings of the three thematic reports;
- dissemination of handbook via events, web and other media means;
- established network that shares knowledge and works together to improve the cooperation within the network partners as well as outside.

The Estonian Entrepreneurship University of Applied Sciences takes a role as project coordinator. The responsibilities for work packages are shared between partners so that each partner has a specific role and no-one is a "silent partner" in the network. Other partners are participating in activities according to their specific interest and/or experience. Participating in the discussions, making presentations and being part of dissemination process are helping to achieve the project aims and bring extra value to the project outcome.

This project is innovative in the way that it goes beyond traditional university-enterprise cooperation. It extends also to other levels of the educational sector and sectoral organizations in order to enhance innovative solutions arising from different setups within the network. It also involves students in the process. In addition to this, one of the themes – work-based learning is an innovative study method that has not been used extensively in the world and, therefore, the members of the network are interested to learn more about it.

The long-term influence can be seen as the involvement in education has risen, graduates are satisfied with the education as they find jobs more easily after finishing school. Enterprises are

more satisfied as they find employees who are in much greater detail meeting their real needs towards the skills of employees.

International cooperation in this project adds value because:

- It enables participants to experience different cultures and environments, thus the participants (especially students) get a sense of accomplishment in international scale in the longer term. It also enables the exchange of ideas, teaching methods, and learning and have cooperation with companies (lecturers).
- From students point of view, they see innovative companies and their working environments, learn more about different themes and meet students from different countries, who share the same interests.

Development of areas concerned with intercultural and cross-cultural understanding and communication within educational and academic contexts related to new and innovative work cultures of enterprises.

Long term, it offers excellent opportunities for the Ülemiste Smart City campus companies to network and exchange knowledge together with Nordic and Baltic schools students, lectors, and experts. The long term influence can be seen as the involvement in education has risen, graduates are satisfied with the education as they find jobs more easily after finishing school. Enterprises are more satisfied as they find employees who are in much greater detail meeting their real needs towards the skills of employees.

The project activities are focusing on three main themes:

Entrepreneurship - participating in this project can offer a clear surplus value for students and lecturers, who can meet the industry key players in Estonia, with the example of Ülemiste Smart City. The project brings together different parties (employers, students, teachers, administrators and other experts from partner countries) to exchange experiences and knowledge and build up stronger network where mutual expectations, possibilities and patterns are more clear. Another side of this topic is employability. It is a common goal for all parties. The study visits will broaden the understanding of how the enterprises work (in Estonian example), what are the different modern and innovative working cultures, what are the most urgently needed skill sets that enterprises need from their employees etc. The specific sectors for study visits will be agreed during the kickoff meeting.

Digitalisation – Estonian Entrepreneurship University of Applied Sciences has a very strong curricula within IT/startup studies. Within this package the methods and possibilities are explored of how IT/digitalisation is working within enterprises of different sectors or within the activities of different subjects (e.g. finances). The solutions (both products and/or services) of Estonia as a digi-country based on e-Estonia showroom are explored and discussed among the partners. It may entail also visits of enterprises with specific focus. Thematic report and study tour are organised within this theme.

Work-based learning – work-based learning is an innovative and rapidly growing study method of matching the skills taught in educational institutions with the new requirements of enterprises. There are very few (if any) guidelines about how to organise such cooperation, both from the point of view of educational institution and enterprise, e.g what can be the obstacles and what could be the possible solutions to overcome them, how universities can approach the enterprises or vice versa, what are the benefits to both sides etc. Thematic report and study tour are organised within this theme.

The project results will be summarized in a publicly available electronic handbook. The handbook is not only a collection of the results but serves as guidelines for other educational institutions and enterprises beyond current network about how to cooperate to achieve the best results in terms of up-to-date skills of graduates.

For more about the project: www.euas.eu/nordplus2019

Partner Institutions

Coordinating institution:

Estonian Entrepreneurship University of Applied Sciences (EUAS)

Website: https://www.euas.eu/

Facebook: https://www.facebook.com/euas.eu/

Partner institutions:

University of Akureyri (UA)

Website: <u>https://www.unak.is/</u> Facebook: <u>https://www.facebook.com/haskolinnaakureyri/</u> Twitter: @haskolinn_ak

Vilniaus kolegija / University of Applied Sciences (VIKO) Website: <u>www.viko.lt</u>, <u>www.vvf.viko.lt</u> Facebook: <u>https://www.facebook.com/viko.vvf/</u> Twitter: @vikolt

Vidzeme University of Applied Sciences (ViA) Website: <u>http://va.lv/lv</u> Facebook: <u>https://www.facebook.com/VidzemesAugstskola/</u> Twitter:@vidzaugstskola

<u>Oulu University of Applied Sciences (OUAS)</u> Website: <u>https://www.oamk.fi/fi/</u> Facebook: <u>https://www.facebook.com/oamk.ouas</u> Twitter: <u>@oamk_ouas</u>

Norwegian University of Science and Technology (NUST) Website: <u>https://www.ntnu.edu/</u> Facebook: <u>https://www.facebook.com/NtnuInternational</u>

Twitter: <u>@NTNU</u>

International School of Tallinn (IST) Website: <u>https://ist.ee/</u> Facebook: <u>https://www.facebook.com/InternationalSchoolofTallinn/</u>

<u>Mainor AS</u> Website: <u>http://mainor.ee/</u> Facebook: <u>https://www.facebook.com/EEKMainor/</u>

<u>Tampere University of Applied Sciences (TAMK)</u> Website: <u>http://www.tamk.fi/</u> Facebook: <u>https://www.facebook.com/tampereenamk/</u> Twitter: <u>@TAMK_UAS</u>

<u>Aalborg University (AAU)</u> Website: <u>https://www.aau.dk/</u> Facebook: <u>https://www.facebook.com/AalborgUniversitet/</u>

2. IT&Digitalization

2.1 Defining IT&Digitalization

Innovations are needed in the public sector as well as in companies. Fresh ideas could be developed and implemented, modernization of existing ones may be reached by involving future talents and creating a network.

Urban performance currently depends not only on a city's endowment of hard infrastructure (physical capital) but also, and increasingly so, on the availability and quality of knowledge communication and social support (human and social capital). The latter form of capital is decisive for urban competitiveness. Against this background, the concept of the "smart city" has been introduced as a strategic device to encompass modern urban production factors in a common framework and, in particular, to highlight the importance of Information and Communication Technologies (ICTs) in the last 20 years for enhancing the competitive profile of a city¹ (Caragliu et. al. 2011).

Cities are becoming smart – in the way we can automate routine functions serving individual persons, buildings and traffic systems, as well as in ways that enable us – in real time – to monitor, understand, analyse and plan the city to improve the efficiency, equity and quality of life for its citizens. This is changing the way we can prepare across multiple time scales, raising the prospect that cities can be made smarter in the long term by continuous reflection in the short term² (Batty et. al. 2012).

Smart technology	Smart people	Smart governance	
(Competitiveness)	(Social and Human Capital)	(Participation)	
- Innovative spirit	- Level of certification	- Participation in	
- Entrepreneurship	- Affinity to lifelong	decision-making	
- Economic image and	learning	- Public and social	
trademarks	- Social and ethnic	services	
- Productivity	plurality	- Transport governance	
- Flexibility of labour	- Flexibility	- Political strategies and	
market	- Creativity	perspectives	

¹Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of urban technology*, *18*(2), 65-82.

² Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., ... & Portugali, Y. (2012). Smart cities of the future. *The European Physical Journal Special Topics*, *214*(1), 481-518.

 International embeddedness Ability to transform 	 Cosmopolitanism/ Open-mindedness Participation in public life 		
Smart mobility	Smart environment	Smart living	
(Transport and ICT)	(Natural resources)	(Quality of life)	
 Local accessibility (Inter-)national accessibility Availability of ICT- infrastructure Sustainable, innovative and safe transport systems 	 Attractivity of natural conditions Pollution Environmental protection Sustainable resource management 	 Cultural facilities Health conditions Individual safety Housing quality Education facilities Touristic attractivity Social cohesion 	

In business, digitalization most often refers to enabling, improving and/or transforming business operations and/or business functions and/or business models/processes and/or activities, by leveraging digital technologies and a broader use and context of digitized data, turned into actionable, knowledge, with a specific benefit in mind³ (Parviainen et. al. 2017). Meeting the digital future demands a three-part response. Digital innovation will require information technology (IT) to ideate, or dream the digital dream, and execute in close partnership with colleagues, in an exploratory way, with an understanding of the potential of new trends. Digitalization includes focusing on business models, having digital leadership capability, treating colleagues as partners and engaging with external customers⁴ (Gartner 2014).

2.2 Aim, Objectives and Programme

The second study tour 'Challenges of digitalization in smart cities' took place in Ülemiste City, Tallinn, Estonia from June 3rd through the 5th, 2019. The study tour aimed to organize activities, such as lectures, case studies, and meetings, and share experience and knowledge between participants and partners – improving cooperation, collaboration and communication skills.

³Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the digitalization challenge: How to benefit from digitalization in practice. *International journal of information systems and project management*, *5*(1), 63-77.

⁴ Gartner, Inc. (2014). Taming the Digital Dragon: The 2014 CIO Agenda. *Insights From the 2014 Gartner CIO Agenda Report*, 1-10.

The objectives:

- 1. To provide students with an opportunity to meet business companies and to work in international teams developing solutions for real business problems.
- 2. To improve student cooperation, collaboration and communication skills by working in international teams.
- 3. To introduce generated solutions, which can be implemented for the Ülemiste City business company cases.
- 4. To organize networking meetings to expand horizons and get to know other cultures.
- 5. To provide open lectures for study tour participants and Ülemiste City business companies staff and allow sharing of experience and opinions in the panel discussion.

The study tour planned to find out: What is digitalization in smart cities? Why should entrepreneurs think about digitalization? How can it improve our lives? What can companies implement to provide digitalization and educate clients/users/others about it?

Under the stated objectives, three main target groups were involved in the study tour activities: students, lecturers, and business companies. More than 40 students, teachers, and entrepreneurs from six different countries attended the study tour.

The following activities were included (see study tour program, annexe 2):

Lectures, including an open lecture about how artificial intelligence simplifies our life, ABB Robot's (YuMi) performance and introducing Estonia as E-country from an IT and digitalisation perspective.

Networking meetings, including explanations, introduction and aims of case studies, dividing into teams and team leads introduction.

Case studies providing teams with a problem description and the main information about a company and its clients, working on problems, following the structure and aims of the canvas, mapping problems and using IT and teamwork knowledge, finding the best solution, co-working with mentors, making conclusions and phrase solutions, making a presentation and preparing to pitch ideas.

Presentations with public pitching to representatives of companies and employees of Ülemiste City, presenting solutions.

2.3 Creative Campus

The Creative Campus has been organized and aims to encourage students to demonstrate their cooperation, collaboration and communication skills working on real business problems, which were presented by business companies. The study tour target was to give students practical output and innovation opportunity to work together with real estate developer Ülemiste City.

Cooperation between educational institutions, enterprises and sector organizations has been well-developed. According to participant feedback about teamwork, collaboration and communication, it was successful and will continue. During this project, the focus was on partnership, and the results were good.

Thoughts about cooperation, collaboration and communication from participants:

"Companies found the ideas presented at the mini-hackathon valuable and planned to develop them in cooperation with students in the near future."

"Students offered fresh ideas for refuting the widely spread myth that secure passwords must always contain different case letters, numbers and punctuation."

"Cooperation and communication with students will continue since the offered solutions were not only exciting but also truly practical and applicable."

"The quality of the offered solutions is proven by the fact that cooperation between Nordea and students from the hackathon will continue in the future, and the university will begin to direct talented student to Nordea."

Problem-Solution Fit canvas (see Canvas, annexe 1) a defined purpose was made during working on solutions. The canvas included customer segments, problems or pains, triggers to act, customer limitations, problem root or cause, behaviour and intensity, channels of behaviour solutions, etc. Final ideas were presented, giving a solution, argumentation, target group and explaining how it works.

Two teams offered Zone real practical solutions for making people pay more attention to their passwords. According to the teams, a built-in password generator would make finding a password easy, and the user would not get confused. One specific solution included a story-based password generator that creates a strong password and deletes all of the user's data. The crux of the idea is that the user feeds the tool a simple story, e.g., that they live in a green five-storey house, and the generator offers up several long but memorable passwords based on that.

Students had to design and present a plan to make Nordea more famous in Estonia and attract people speaking Scandinavian languages to the service centres here. Both teams working on Nordea's problem came up with several solutions out of which the need for good marketing campaigns and the importance of job offer packages stood out. The quality of the offered solutions is proven by the fact that a partnership between Nordea and students from the hackathon will continue in the future, and the university will begin to direct talented students to Nordea. Nordea Bank ABP Estonia received confirmation that cooperation with students is valuable and Estonian Entrepreneurship University of Applied Sciences and Nordea plan to found a joint scholarship fund for finance students.

There were highlighted current issues and offers of a web platform that could be used to navigate, even without Wi-Fi, with the help of screens installed across the city to better navigate the Ülemiste City. This would help visitors find the right parking house or building and even precise rooms.

To solve a task given by Qualitas Medical Centre, students had to take on the role of a marketing expert and try to see the viewpoints of both medical staff and the patient to find a solution that suited both parties. The teams on the Qualitas case came up with not one but two or three solutions for making patients more aware of various services. Exciting and applicable ideas were presented; answers ranged from Google adverts to patients' bonus systems and ways to make people more trusting of the institution.

The project had its participants use group chat on Facebook. The work was then able to follow. Facebook chat also made it possible to get the tacit knowledge about how to successfully implement transnational work. Information about the latest project activities and results were published on the university Facebook pages and websites.

2.4 Open Lecture

During the third day of study, tour students and lecturers participated in the open lecture 'Meet the future of Artificial Intelligence (AI)', where four speakers presented their views on digitalisation and information technology roles in our lives. Roksoloana Sliusar is an Automation Specialist at ABB and gave a presentation concerning the unique ABB dual-arm collaborative robot YuMi, the first real collaborative robot in the world. Also, specialists spoke about automated business processes and using networked robotics in offices. Marten Kaevats, Estonian National digital advisor, introduced future steps and trends in Artificial Intelligence. Mats Kyyro, Experimentation Designer at OP Labs, OP Financial Group's internal accelerator, was speaking about Artificial Intelligence in fintech industries. Tõnis Jaaniste, Chief Engineer of Milrem Robotics AS, spoke about the benefits of Artificial Intelligence to the war industry and where the future may bring us.

The lectures were inspiring and made everyone think about how vital digitalization is in the modern world. AI is evolving, and much effort is invested in improving and developing it. The future is closer than we think, and technologies, as well as digitalisation, is growing rapidly. For example, face recognition is already implemented, but the question is – will there be an option to pay for your meal, clothes, etc. by only scanning your face? Nearly everything that is seen as a problem can be solved by thinking about how to digitalise it. Lecturers suggested thinking outside the box to find these solutions by recognizing how and what to digitalize to improve lives. Collaboration, cooperation and communication allow us to see a problem from another point of view so it is easier to find a working solution.

2.5 Outcomes

There should be constant IT support and knowledge updates concerning how to use technologies given to students, teachers, entrepreneurs and other involved persons to provide digitalization of social processes.

It is necessary to respect an interdisciplinary approach when searching for solutions with IT/ digitalization related problems (focal group research methodology approach: problem-solving groups with different backgrounds, various study areas and different ages).

Nowadays, most university researchers support IT/digitalization industry research practices, so there is a need for deeper integration – especially among different socio-technical processes like technologies, IT, public governance, sustainable policies development, ethics, psychology, pedagogics and others.

IT/digital area specialists/experts must update their skill sets and mindsets with experiences and competencies from other areas, especially social and humanitarian.

Modern-world challenges with IT/digitalization require advanced policies of the state economy and industry development (proposed activities must be stated and executed in logical and sustainable ways with a target to zero-emission and non-polluting systems). As a derivative from the Smart City project hackathon activity during the IT/digitalization study tour, an internet (online) hackathon approach should be introduced to solve IT/digitalization and social challenges.

As the first stage of an "online hackathon", a concept basis must be created an "open pool" of companies' challenges for students' teams (in forms of open or closed working groups).

The integration of representatives/specialists from successful IT/digital industry companies as mentors into the university study process must be made on a regular and systematic basis.

Proper education for children from the start regarding how to use computers in productive and sustainable ways without danger of "computer sickness" and addictions is necessary, for instance:

- learning how to create valuable IT/digital content but not just to consume it;

- educating children that a computer cannot solve all problems in real life;

- understanding how mental and physical activities are interconnected and must be in balance.

For specialists in different social areas (humanitarians, social science representatives, economists, politicians, etc.), there is a need for advanced, specialized courses in IT/digitalization/programming to understand the scope of modern developments.

"Smart development" is a core component in most "next level" society development models.

The "Smart City" has proven very successful, and as an important concept is the "leading force" for further IT/digital industries' sustainable development activities.

Conclusion

There should be constant IT support and knowledge updates on how to use technologies given to students, teachers, entrepreneurs and other involved persons to provide digitalization. An aim should be clear – why it is necessary to make solutions digitalized and who is the target audience?

It is essential to compare the benefits and risks before developing a solution for digitalization in a smart city. Examples of digitalization in other cities should be analyzed. Efficacy of a new digitalized solution should be clear to avoid a situation where the old solution works faster uses fewer resources or is more user-friendly. It is essential to educate the target audience, explaining the importance of the solutions and getting their acceptance. There should not be solutions implemented only because the city wants to be digitalised or defined as a smart city. Every digitalised solution deployed should be based on successful problem-solving and being aware of the risks.

Risks include:

- Financial aspects (costs of developing and implementing a solution, planning future costs like system maintenance, support, improvements, etc.)
- Technology development (technologies develop rapidly and should keep up with the latest and most beneficial)
- Infrastructure (infrastructure should meet the requirements required to implement smart solutions while maintaining historical heritage)
- Cyberattacks and privacy (if the system crashes, users cannot do their daily tasks and financial resources are being lost), etc.

Technology is changing the classroom of today. Simulators in professional education and simulation-based training are involved in the learning process. Technology is meant to complement teachers, not to replace them.

Implementing digitalization in schools means a change in the classroom model is required. The 'traditional classroom' model includes lectures where students listen to a professor and then work on their homework after lessons. The 'flipped classroom' model is more digitalized as students can watch lecture material online and then come together to participate in classroom activities to improve their skills and knowledge.

In the modern world, a student is self-motivated to learn using digital solutions. Using MOOCs is a new way to learn something. MOOC stands for Massive Open Online Course. Massive – up to 10,000 students; Open – free, anybody can register; Online – through the internet; Course – with a defined start and ongoing support. MOOCs consist of many short videos, online assignment submission, discussion forums, online activities, formative assessments and final tests.

Inspirational video lectures, like TEDx, can be found online. These lectures provide an opportunity to widen horizons, get to know anything students are interested in and have a little rest from working on assignments, assessments or tests.

Methods to do digitalization in schools:

- Replace the 'traditional classroom' model with the 'flipped classroom' model
- Use MOOCs (Massive Open Online Course)
- Inspirational video lectures online

Important criteria that would motivate schools to focus on digitalization – a clear indication that students would benefit and time-economy on designing and redesigning courses.

As a result, from Study tour II, solutions were developed, described and presented after defining the target group, identifying problem areas and defining the areas of interest. Throughout the event, students could communicate with the companies, gather info, learn more about them and, thus, promote cooperation moving forward.

The goal of the event was reached – to bring together international talent and companies and to create new partnership opportunities.

Evaluation of the communication while working on solutions was made during and after the solution-making process. Evaluations of collaboration and cooperation between participants were made after the solution presentations. Conclusions were made based on interviews and discussions.

Students expanded their career opportunities and network. Lecturers and business companies had an option for international cooperation.

There were no deviations from the planned outcomes during this project activity.

References

Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M., ... & Portugali, Y. (2012). Smart cities of the future. *The European Physical Journal Special Topics*, 214(1), 481-518.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of urban technology*, *18*(2), 65-82.

Gartner, Inc. (2014). Taming the Digital Dragon: The 2014 CIO Agenda. Insights From the

2014 Gartner CIO Agenda Report, 1-10.

Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the digitalization challenge: How to benefit from digitalization in practice. *International journal of information systems and project management*, *5*(1), 63-77.

Meissner, A., Müller, M., Hermann, A., & Metternich, J. (2018). Digitalization as a catalyst for lean production: A learning factory approach for digital shop floor management. *Procedia Manufacturing*, *23*, *81-86*.

Okkonen, J., Vuori, V., & Palvalin, M. (2019). Digitalization Changing Work: Employees' View on the Benefits and Hindrances. *In International Conference on Information Technology* & *Systems (pp. 165-176). Springer, Cham.*

McKee, M., van Schalkwyk, M. C., & Stuckler, D. (2019). The second information revolution: digitalization brings opportunities and concerns for public health. *European journal of public health*, *29*(*Supplement_3*), *3-6*.

Paulsen, M. (2018). The good, the bad and the ugly-how schools construe digitalization. *Proceedings of Pragmatic Constructivism*, 8(1), 9-10.

Appendices

Appendices 1

Canvas by IdeaHackers (http://solutioncanvas.com/)

Goal of canvas is to help entrepreneurs find solutions that actually work in the real world.

Segments 1, 6, 5 are responsible for customer state fit.

Segments 2, 9, 7 are responsible for problem – behaviour fit.

Segments 3, 4, 8 are responsible for communication – channel fit.

Segment 10 is your solution guess.

1. CUSTOMER SEGMENT(S) (Who is your customer?)	6. CUSTOMER STATE LIMITATIONS (Explore limitations to buy/use your product or service.)	5. AVAILABLE SOLUTIONS (How are you going to be different than competition?)
2. PROBLEMS / PAINS + frequency (Focus on frequent, costly or urgent problem to solve.)	9. ROOT / CAUSE of every problem (Understand the cause of the problem.)	7. BEHAVIOUR + it's intensity (Tap into, resemble or support existing behaviour.)
3. TRIGGERS TO ACT (Design triggers that fit real life, spark associations, make it familiar.)	10. YOUR SOLUTION (Your 'down to Earth' solution guess.)	8. CHANNELS OF BEHAVIOUR online + offline (Be where your customers are.)
4. EMOTIONS (Add emotions for stronger message.)		

Appendices 2

Nordplus Ülemiste City 2nd Study Tour: Challenges of digitalization in smart cities

Where and when: 03rd-05th June 2019 in Ülemiste City, Tallinn, Estonia.

Time	Students	Employers	Project partners (admin.)	Lecturers	Location
		1 ^s	^t day, 03.06.2019		
14.00 – 15.00				Öpik Conference Centre, Valukoja 8, room Supernoova	
15.00 -	e-Estonian Briefing Cer				Öpik Conference Centre,
16.00	Estonia as E-country is going to be introduced from IT and digitalization perspective.			Valukoja 8,	
16.00 – 17.45	Briefing meeting for Pr		-		EUAS, Suur-Sõjamäe 10a, room Ülo Pärnits,
18.00	(entrepreneur aims of case stBriefing about	s from the modera , lectured in EUAS :udies	a ator of Study tour Andrei Hru) and explanations, introduc udies and dividing into team	tion and	Restoran Viktoria, Keevise 6
	l		^d day, 04.06.2019		l
09.00- 13.00	information about co Teams start to work o (was explained at the	mpany and clients on problem(s), foll e kick-off); problems and usin ;;	owing the structure and aim ng IT and teamwork knowle	s of canvas	Estonian Entrepreneurship University of Applied Sciences (EUAS), Suur- Sõjamäe 10a, Different Rooms
13.00 -	Lunch				Restoran Dvigatel,
14.00					Lõõtsa 6
14.00 – 17.00	Case study continues Teams continue their Teams make conclus Teams make present the next morning) fo	ons and try to phi ations and prepa	rase their solutions; re to pitch their ideas (final	pitching is	Estonian Entrepreneurship University of Applied Sciences (EUAS), Suur- Sõjamäe 10a, Different Rooms
19.00	Dinner at Old town				"Golden piglet" Suur-
					Karja 17, Old town
0.00	Construction Construction		^d day, 05.06.2019		Estavian
9.00 – 10.30		to representative	s (the solutions). es of companies and employ ndings (presentations).	ees of ÜC;	Estonian Entrepreneurship University of Applied Sciences (EUAS), Suur- Sõjamäe 10a, Room 227
10.30 – 10.45	Coffee break				Estonian Entrepreneurship University of Applied

		Sciences (EUAS), Suur- Sõjamäe 10a, Room 228
10.45 -	Case study final - students' teams pitches (the solutions).	Estonian
11.45	• Public pitching to representatives of companies and employees of ÜC;	Entrepreneurship
	• Teams present their solutions/findings (presentations).	University of Applied
		Sciences (EUAS), Suur-
		Sõjamäe 10a,
		Room 227
11.45 –	Study Tour conclusions and handing out diplomas	Estonian
12.15	Closing statements from Mait Rungi and Katrin Sulg (Mainor	Entrepreneurship
	Ülemiste).	University of Applied
		Sciences (EUAS), Suur-
		Sõjamäe 10a,
		Room 227
12.15 –	Lunch	Estonian
13.00		Entrepreneurship
		University of Applied
		Sciences (EUAS), Suur-
		Sõjamäe 10a,
		Room 228
13.00 –	ABB Robots (YuMi) performance	Öpik Conference Centre,
13.30		Valukoja 8,
		room Supernoova
13.30 –	Open lecture "How artificial intelligence simplifies our life?" Register here: <u>FB</u>	Öpik Conference Centre,
15.30	LINK SIIA	Valukoja 8,
	"Small but significant e-helpers and IA future trends", who helps Estonia	room Supernoova
	(Estonia government and society are using a lot of artificial intelligence and	
	they are behind the success story. Marten is going to introduce future steps and trends in AI.	
	Marten Kaevats, Estonian National digital advisor.	
	Mats Kyyro, Experimentation designer at OP Lab, OP Financial Group's	
	internal accelerator; speaking about AI in fintech industries.	
	Tõnis Jaaniste, Milrem Robotics AS , Chief engineer of Milrem Robotics AS; speaks about the benefits from IA to war industry and what the future may	
	bring.	
15.30	Closing	