Digitalisation and youth work

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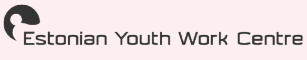

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DIGITALISATION AND YOUTH WORK

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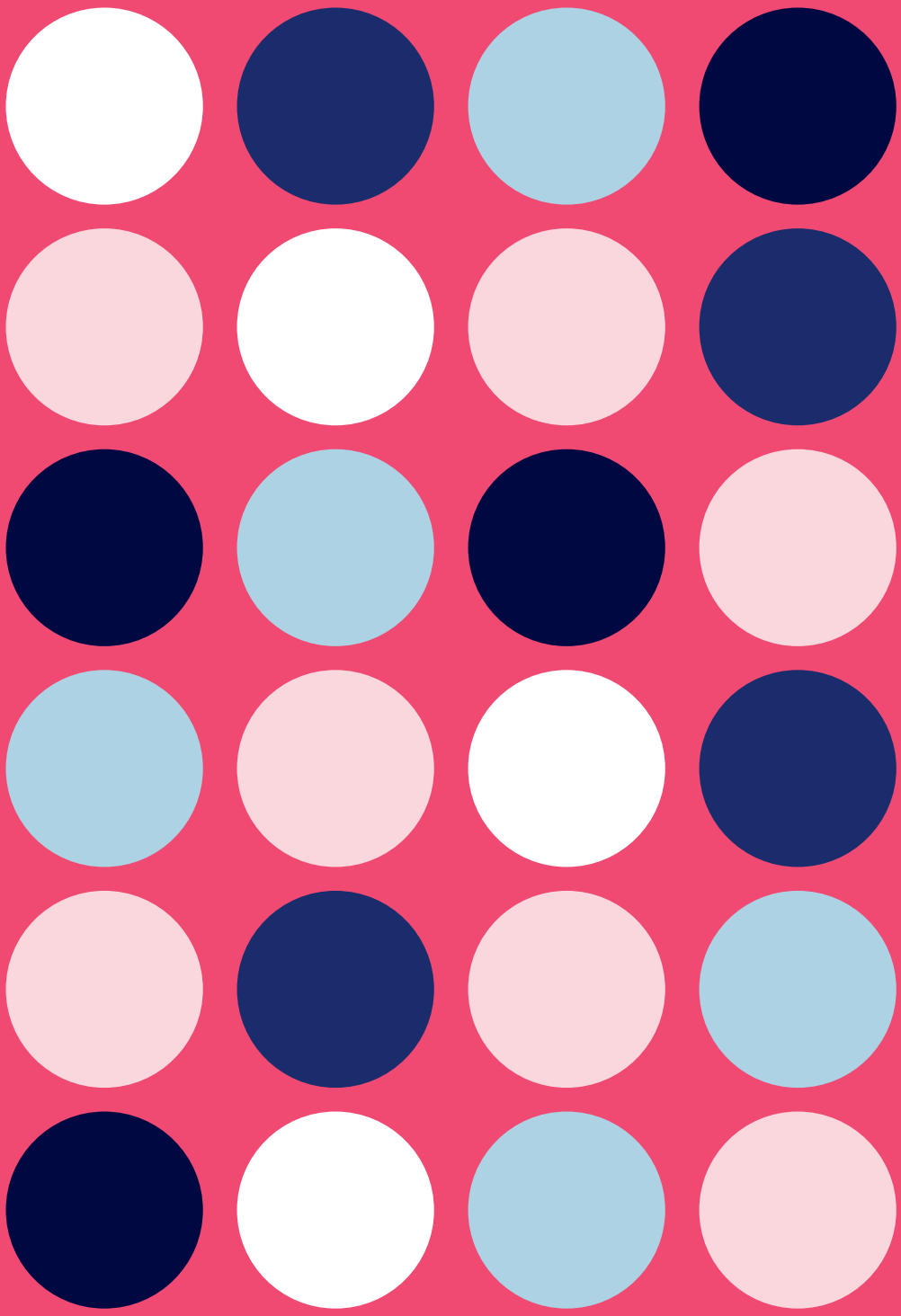


Foreword

THE IDEA FOR THIS PUBLICATION arose from the desire to highlight digitalisation and how it will impact on youths and youth work. Many experts believe that we are transitioning towards the Fourth Industrial Revolution, also known as Industry 4.0 (I4.0). Historically speaking, every successful revolution has reshaped the whole of society. For example, the emergence of steam and electric power transformed the way we live and work. Industry 4.0 is characterised by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres. It is marked by emerging technology breakthroughs in a number of fields, such as robotics, artificial intelligence, nanotechnology, quantum computing and biotechnology. With this publication, we want to shed some light on I4.0's possible impact on youth work in general.

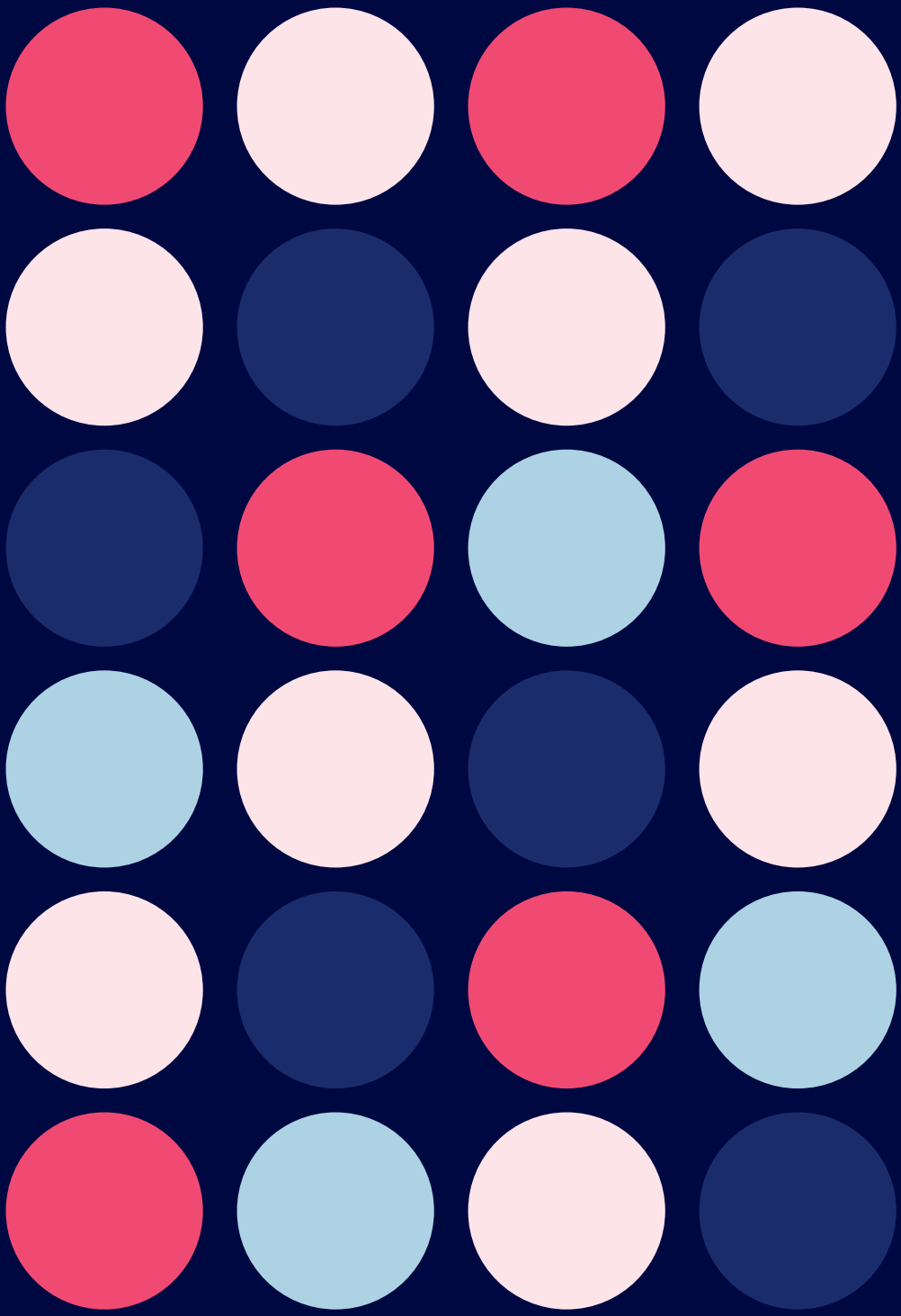
We focus on providing new perspectives on digitalisation and the technological development of society by approaching the subject through four major themes: *skills* and *competences, participation* and *engagement, equality*, and *improving growth* and *living conditions.* The articles are written by Estonian and Finnish professionals from various fields, such as engineering, futurology, educational science, sociology, cognitive science, data analytics and city planning. Their goal is to underline the technological, social and cultural impact of digitalisation in the context of youth, and to map and address the opportunities and risks associated with the related technological developments. The main target group of the publication consists of professionals and volunteers working with young people, as well as managers, decision makers and public officers in the youth field. The book is also suitable for anyone with a general interest in the digitalisation of society.

With this book, we also want to highlight the concepts of digital youth work and smart youth work, and how they can support youth work in meeting opportunities and overcoming challenges now and in the future. In some contexts, we have noted that the two concepts are regarded as overlapping or even competing. However, we do not see it that way. As we will explain later, they both try to explore the relationship between social change and the development of youth work, and the use of digital media and technology in youth work. Whereas digital youth work is more focused on the use of digital media and technology in youth work and its practices, smart youth work is based on the creation of a broader picture of digital technology in the youth work sector.

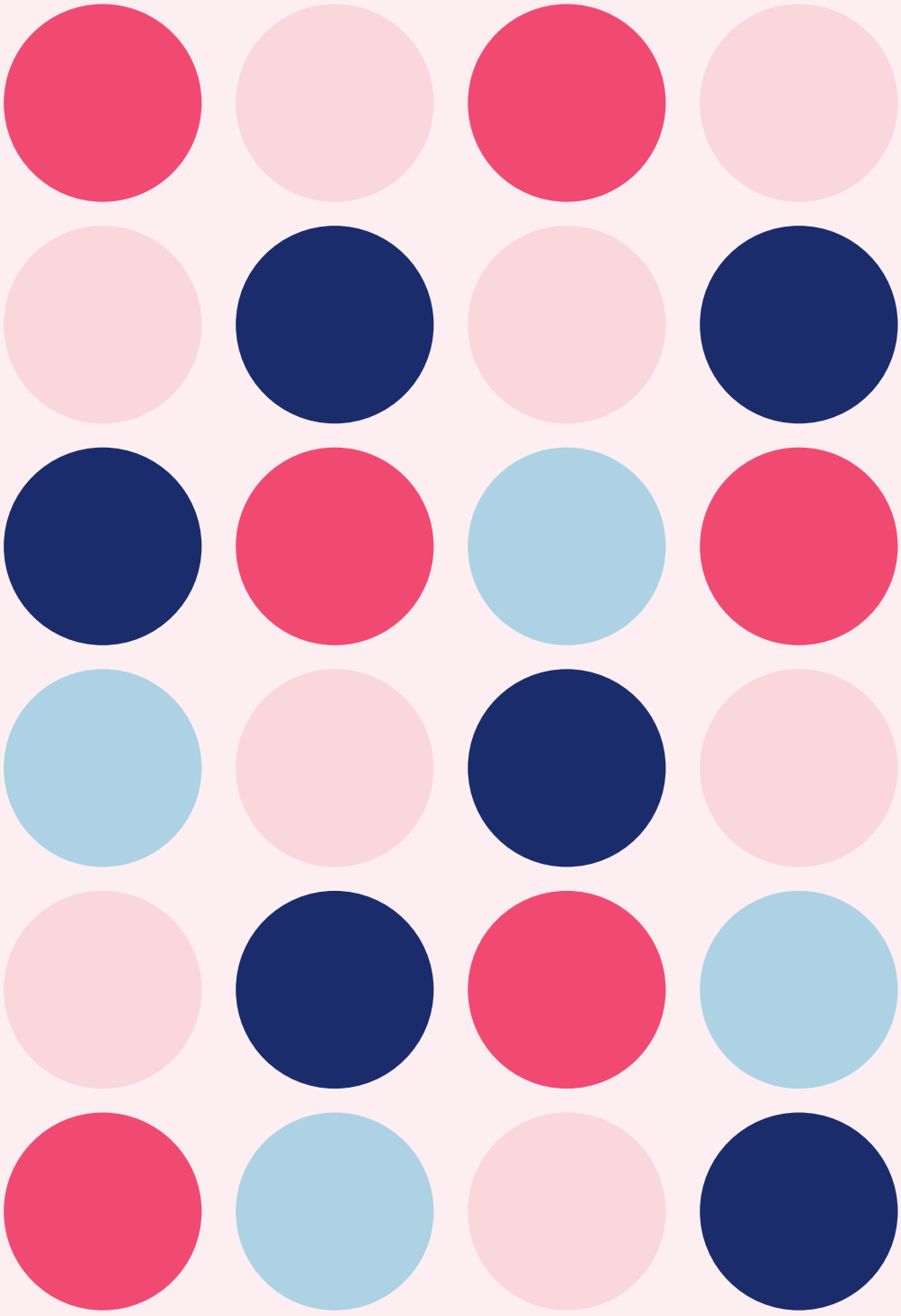
Nevertheless, both concepts are closely linked to youth policy development. How the concepts are used and implemented depends on the institutional contexts of youth work in different countries. For instance, the idea of smart youth work promoted by Estonia has been integrated with Finnish youth work and youth policy, where the focus is on the nationwide digitalisation of the youth work sector. This includes investment in digital infrastructure and the development of digital solutions, digital services and digital youth work. In other words, the differences between the two concepts appear to lie in the focus of development rather than the aims and goals themselves.

Because the concepts of digital youth work and smart youth work are mutually complementary and offer a somewhat different perspective on the development of youth work, we sought to create this publication on the basis of cooperation between Estonia and Finland. Both countries have, in many respects, been forerunners in digitalisation, but still have much to learn from each other. The publication was jointly produced and edited by Verke, the national Centre of Expertise for Digital Youth Work in Finland, and the Estonian Youth Work Centre (EYWC). We would like to take this opportunity to express our sincere gratitude to all of the writers of the articles included in this publication. We would also like to thank the Finnish Ministry of Education and Culture and the Estonian Ministry of Education and Research for their support.

Helsinki and Tallinn, November 2018
Heikki Lauha and Kati Nõlvak



YOUTH WORK AND DIGITALISATION



Why do we need digital youth work?

Heikki Lauha

IN 2014, A DUTCH PHOTOGRAPHER, Gijsbert van der Wal, took a famous photograph of a small group of high school students sitting on benches in the Rijksmuseum in Amsterdam. The photo of children staring downwards at their touchscreens in front of Rembrandt's masterpiece, 'The Night Watch', was posted on the same day on Facebook and was shared almost 9,500 times in just a few days. The image was also reposted by others and shared on Twitter, Tumblr and Reddit. It went viral, with people often adding rather dispirited captions: today's youth is more interested in Whatsapp than in Rembrandt.

A couple of years later, a British newspaper, The Telegraph, published an article explaining the true story behind the viral photo. It turned out that the children were actually researching a school assignment when the photo was taken. For the assignment, the students had to use smartphones and a special app as part of the museum tour. Despite this, the image is still being shared online and has been described as a 'metaphor for our age' of social media. (The Telegraph 2016.)

Of course, the lesson of this story is that we should not jump to conclusions about what we see. But the story also provides a good basis for discussing the role of youth work in today's digitalised and technologised society. In this context, two key aspects must be raised about the relationship between digitalisation and youth work.

Firstly, one task of youth work is to understand how digitalisation is shaping societies and what impact it will have on young people and youth work. Technology is present in every area of young people's lives, which means that every young person is somehow connected to digital cultures, whether they use digital media actively or

passively. If youth work is to keep up with the times and social changes, it must be curious, adaptive, flexible, open-minded, bold and experimental with new technology. As stated in the Screenagers International Research Project Report in 2016, "...if youth work fails to embrace the use of technology and social media there is a risk of becoming outdated and irrelevant to young people who use youth work services" (Harvey 2016). It would therefore be important to have a continuous debate on the future of youth work: how will artificial intelligence, for example, affect cultural phenomena associated with young people and youth work practices?

Secondly, the key role of youth work is to support the empowerment of young people and their capacity to be active in a society that is becoming more digitalised and technologised. To achieve this, youth work must reach into the world of young people's experience, and operate in the environments inhabited by young people, including digital cultures and environments. An even more important role for youth work involves preventing a digital divide between young people, by ensuring that they have access to digital technology, and by enhancing their technology-related skills.

What makes youth work digital?

Youth work has always swiftly and boldly tried to address new cultural phenomena and trends in youth culture. In many cases, it has also harnessed the features and phenomena of new media and technology soon after their emergence. In Finland, for example, game consoles found their way into youth centres – alongside pool tables – in the 1980s. When data networks were introduced in the late 1980s and the 1990s, Finnish youth work organisations began creating websites of their own for sharing information. Since the early 2000s, young people have been offered the possibility to contact youth workers in online communities and social media services. Rapid development in recent years, particularly in mobile technology, has been observed in youth work, as novel digital tools and services have become popular among young people. Youth work also aims to support the creativity and strengthen the digital skills of more young people by developing technology education and technology-enhanced activities such as robotics, coding and makerspace activities. (Lauha et al. 2017; Tuominen 2017.)

Applying digital media and technology to youth work is therefore not a novel idea. What is new, on the other hand, is the impact and scale of digitalisation within society. The process of digitalisation has also irreversibly changed the civic skills that will be required among young people in the future, as well as the ways in which young people manage their social relationships. This means that the digitalisation of youth work is an absolute requirement for keeping up with the times, and it is no longer appropriate to distinguish digital youth work from face-to-face activities, or treat it as a separate method or branch of youth work.

Similar thoughts are reflected in a definition of digital youth work drawn up by several experts across Europe. According to the EU expert group on digitalisation and

youth, established under the European Union Work Plan for Youth 2016-2018, digital youth work:

- means proactively using or addressing digital media and technology in youth work.
- is not a youth work method – digital youth work can be included in any youth work setting (open youth work, youth information and counselling, youth clubs, detached youth work etc.).
- has the same goals as youth work in general, and the use of digital media and technology in youth work should always support these goals.
- can occur in face-to-face situations as well as in online environments – or in a mixture of the two. Digital media and technology can be used either as a tool, an activity or as content in youth work.
- is underpinned by the same ethics, values, and principles as other youth work.

When defining digital youth work, a key point is its inclusive nature and focus on the process and implementation of youth work, by highlighting its importance as part of youth work overall. To ensure and enhance the development of digital youth work, the EU expert group recommends that every member state have a plan for developing and resourcing digital youth work as an integral part of their youth policy. The expert group also recommends that member states provide strategic financial investment in digital youth work by allocating resources to youth worker training, the development of innovative digital youth work methodologies, working time, infrastructure, and technologies to be used with young people. In addition, account should be taken of digitalisation and young people's digital cultures when designing youth work policy at local, national or European level. (European Commission 2018.)

Digital youth work in the future?

The world's leading information technology research and advisory company, Gartner, publishes an annual Hype Cycle for Emerging Technologies report, providing a cross-industry perspective on key emerging technologies and trends that lie 5-10 years ahead. In 2017, Gartner revealed three distinct megatrends related to technology innovation: ubiquitous artificial intelligence (AI), transparently immersive experiences, and digital platforms. By artificial intelligence, Gartner means the development of technology that includes machine learning, deep learning, artificial general intelligence, autonomous vehicles, drones and smart robots, among other phenomena. Transparently immersive experiences are related to technology that will continue to become more human-centric to the point where it introduces transparency between people and things. Some examples of such technology include 4D Printing, Augmented Reality (AR), Computer-Brain Interface, Connected Home, Human Augmentation and

Virtual Reality (VR). Key digital platform-enabling technologies include 5G, Blockchain, and the Internet of Things (IoT). (Gartner 2017.)

From the viewpoint of youth work, the above-mentioned technological innovations may seem distant, or even utopian. But there are already many examples of youth work that exploit the new technology's potential, even if development remains at an early stage. For example, AI-powered chatbots are already being developed in youth information and counselling, to free up youth workers from simple routine tasks so that they can encounter and interact with young people. Youth work has also benefited from the development of virtual reality and augmented reality, based on the creation of innovative digital gaming activities, for example. In addition, the development of smart devices and IoT have enabled youth centres to be more flexible and independent of physical space: if young people want to meet spontaneously in a youth centre, they can book a room online and use their smartphone to switch on the coffee machine beforehand.

Although technology-related issues feature in modern youth work in a number of ways, high-quality content supported by educational and youth work goals must always lie at the core of such activity. In other words, digitality should not be viewed as valuable in its own right, but digital media and technology should only be adopted on the terms of youth work. At some stage, it is highly likely that digitality will become such a natural and inseparable aspect of youth work that the separate concept of 'digital youth work' will no longer be necessary to defining the relationship between digitalisation and youth work. But there is still a long way to go and we need tools for identifying and developing our work in the meantime.

For more information on Finnish digital youth work, see the Verke publication "Digital youth work – a Finnish perspective". The main outcomes of the EU expert group on digitalisation and youth are presented in the EU publication "Developing digital youth work – Policy recommendations, training needs and good practice examples".

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Smart youth work in Estonia: *innovation and initiative in developing youth work*

Edgar Schlümmer

DEVELOPMENT OF THE SOCIETY NEVER STOPS. New technologies, connections, rules of communication, invisible borders between fake and real things – all of this influences the lives of young people. They are innovation-minded and the most receptive to changes. Without a doubt, young people are at the forefront of this world that is being digitised and always full of new IT solutions. To create a better footing for young people to achieve their potential and make decisions that affect their lives, as well as to support their active participation in society and their ability to cope in the labour market, youth work has an important role to play.

With over 100 years of traditions in youth work and a very technology-minded approach, Estonia had the mission of bringing this topic to the centre stage. Even before starting the Presidency of the Council of the European Union in 2017, Estonia had a nation-wide agreement on the prioritisation of the use of technology and innovation in youth work. Already in 2012, within the framework of discussion on upcoming national youth strategy – Youth Field Development Plan 2014–2020 – a need for innovation in youth work was introduced. By this time the term 'digital youth work' had many aliases amongst the stakeholders: other terms were also used in the field practice, including 'online youth work' (for example, also in the Declaration of the 2nd Youth Work Convention, 2015), 'cyber youth work', 'virtual youth work', etc. In most cases, the focus seemed to be on the delivery of youth work – on specific tools and settings of youth work practice. Now on European level smart and digital youth work have been

defined in the EU Council`s conclusions (2017) and also in the outcomes of the expert group "Developing digital youth work. Policy recommendations and training needs and good practice examples." (2018).

The word 'smart' was, by that time, related more to energy, cities, growth, economy, digitalisation, specialisation, etc. in the EU context. One example of this is the European Commission's Cohesion Policy, which aims to reduce differences between regions and ensure growth across Europe. It refers to efficiency and management as crucial factors for many regions in Europe to overcome the economic crisis. Within the framework of the Cohesion Policy, the development of a Research and Innovation Strategy for Smart Specialisation was a prerequisite to receive funding from the European Regional Development Fund. The Smart Specialisation Platform assists Member States and regions in developing, implementing, and reviewing their strategies. This includes focusing on identifying niche areas of competitive strength and solving major societal challenges – bringing in a demand-driven dimension and innovation partnerships, emphasising greater co-ordination between different societal stakeholders, and aligning resources and strategies between private and public actors of different governance levels.

In an attempt to combine the need for youth work that can address the interests and needs young people have in connection with digital technologies to build new solutions in youth work using digital technologies and the need to find innovative ways to develop the youth work agenda further – including in policy, research, and strategic planning for youth work – the term 'smart youth work' was announced and a national smart youth work concept was agreed on.

During the Presidency of the Council of the European Union (EU) in 2017, the Member States, led by Estonia, agreed with the idea of SMART youth work. Member States considered that the use of technology is crucial for the development of youth work. According to this joint agreement, 'smart youth work' is the innovative development of youth work, encompassing digital youth work practice as well as including a research, quality, and policy component.

Smart youth work has 4 main principles:

1. Smart youth work is not an activity or method itself, nor does it replace existing practices. Instead, using smart youth work, youth and youth workers are able, based on existing experiences and seeking new connections and new means, to create innovative solutions (including digital solutions) to coping with both current problems and new challenges.
2. Smart youth work activities are based on the youths' and youth workers' needs, take into account developments in society and technology, including globalization, networking and e-solutions, and offer alternatives to traditional approaches in youth work and possibilities for experimenting, error and learning from experience.

3. Smart youth work solutions are means of creating content or carrying out activities. The objective of smart solutions is to engage in youth work more effectively and productively than before, i.e. reaching more youths, increasing opportunities to develop youth creativity and self-initiative and cooperative activity, reduce the potential for exclusion of youth, increase engagement of youth and improve readiness for the job market and support their active participation in communities and decision-making.
4. One key possibility of smart youth work is the use of digital media and technology, including in open youth work, youth info, youth participation and other youth work sub-areas and topics. The possibilities of smart youth work can be used in direct communication with youths, in online environments or in both at the same time.

The youth ministers concluded that on the EU level, smart youth work means making use of and addressing digital media and technologies to:

A. enrich the opportunities of all young people for information, access to youth work, participation, as well as for non-formal and informal learning by exploiting new spaces and formats for youth work in meaningful ways;

B. support the motivation, capacity, and competence building of youth workers and youth leaders to be able to develop and implement smart youth work;

C. create a better understanding of youth and youth work and support the quality of youth work and youth policy through more efficient use of data-driven developments and technologies for analysing data.

Member States and the Commission took a responsibility to create conditions for smart youth work, where and as appropriate, including: a) developing and implementing smart youth work in youth work and youth policy goals, strategic and financial instruments; b) mapping and addressing the digital gap and inequalities in accessing the technological developments from the viewpoint of young people, especially those with fewer opportunities, youth workers and youth leaders, and other stakeholders supporting youth; c) supporting the development of competencies relevant for smart youth work of young people, youth workers and youth leaders, as well as other stakeholders supporting youth; d) exchanging examples of best practice in the use of digital media and technology.

The historical movement continues and the use of technology in youth work has been addressed in the new European Youth Strategy 2019-2027.

Need for change

The main principle in youth work is that this is where young people and their interests, needs, and challenges are. Due to changes in society and the development

of technology, the methods for youth work in Estonia and elsewhere in the world have to change. It is crucial not only to adapt to the changes or to move at the same speed but also to try to be half a step ahead. Youth work needs to be more attractive, inclusive, and proactive. Being SMART also means implementing new methods and, of course, technology. Youth work needs to be up to date in methods as well as in management and structure to respond to changes more effectively. It is crucial not only to use something but also to get to know and produce new things. Data analysis and knowledge-based decision making and practice is easier than ever before. Thanks to open and big data, youth workers and policymakers can not only react to trends but also predict developments and design services in advance. All these measures support high-quality and more inclusive youth work, but also give an important preference – being considered seriously and being visible – for youth, parents, the public, and politicians.

Innovation is good, but not the silver bullet

Innovation and technology surrounds young people and the youth work environment; changing it means that youth work is also changing. Being innovative is not only a fancy trend but a pragmatic choice, as, for example, in Europe that is lacking people (particularly young people), we should solve difficult problems, as well as reach underpopulated areas and inhabited districts with fewer resources. Various technological solutions allow youth workers to reach more young people more efficiently and productively, including taking into account the specifics of regions where many youths lack the opportunity to visit youth work institutions. For today's 'digital natives', information technology is a suitable environment. They feel comfortable using digital devices and can offer opportunities and services in a fitting manner and 'language', doing so based on the objectives of youth work.

Youth work always means learning – gaining skills and competencies. In a digital world, digital competencies are a necessity. Youth work should also help young people to increase digital competencies and future skills in general, as it is crucial for young people's lives and the quality thereof. Innovation starts from the very grassroots level. In Estonia, we can really see that the local level and authorities, who are responsible for the provision of youth work, really seek for new solutions and ideas on how to reach, involve, and empower young people.

'Smart' also means being aware of threats and risks. Wrong use of technology may cause a lot of damage to the private and public life – cyberbullying, algorithmic discrimination, and invasion of private life are only some examples. Youth work should consider that and improve the ability of young people to be critical and able to protect their data to help to cope with changes. Smart youth work, much like general youth work, needs quality, quality assurance, and assessment to develop in the constant digital transformation of society.

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Preparing, planning and broadening the futures of digitalisation

Mikko Dufva

WHEN TALKING ABOUT THE FUTURE, you can't help but hear the term digitalisation over and over again. But what are the key changes linked to digitalisation? How can we know what the future will bring when even the present seems to be in constant flux?

There are three approaches to thinking about futures: preparing, planning and finding novelty. Preparing is about identifying the changes that are already happening and thinking where they might lead. Planning shifts the focus to imagining preferred futures and the actions we need to take today to reach them. Finding novelty helps to challenge our assumptions about futures and broaden the range of possible futures. You can't strive towards something that hasn't been imagined; therefore, it is important to think about multiple alternative futures.

To understand digitalisation, you need to understand the big picture of a world going through major changes. The key global megatrends are the sustainability crisis, global interdependency with growing tensions, and rapid development and the application of technology. We are exceeding our planetary boundaries, changing the climate and depleting natural resources. The geopolitical situation is tense, with countries taking different strategies related to privacy and data ownership, for example. New technology offers new possibilities, such as enabling instant global connections, but also new challenges, such as smartphone addiction.

For a Nordic country, these global megatrends mean that the ways of working and gaining income are changing, democratic structures need renewing, and we need to rethink how our economy works. The key challenges include ensuring that people have

opportunities to thrive in an increasingly uncertain work life and can participate in decision making and have their voice heard. At the same time, the economy should focus more on creating well-being and operating within planetary boundaries.

Preparing for digitalisation

In the light of these megatrends, what opportunities and new challenges can be expected from digitalisation? Brynjolfsson and McAfee divide digitalisation into three phenomena: machine, platform and crowd. By machine they mean the advances in machine learning and data analysis, commonly referred to as the second wave of artificial intelligence (AI). It is useful to make a distinction between narrow AI and general AI. Narrow AI can do a specific task it is assigned to, while general AI means that a machine could think like a human.

What is currently in use is narrow AI, and it will not automatically lead to general AI. However, even narrow AI will have a profound impact on the way we do things. It means that machines can interpret and produce speech and text, identify objects from pictures, and find patterns in large datasets. This enables self-driving cars, personal digital assistants, and the automation of a large portion of routine work.

Being able to analyse large datasets is increasingly useful, since digital platforms produce an enormous amount of data. A platform is something that connects the users and producers of a service and enables them to create content and value. Facebook, Uber, Airbnb and Amazon are all examples of platforms.

Platforms bring with them new ways of organising work and creating value. At the same time, they disrupt existing services and ways of doing things. They also blur the traditional distinctions between a user and a producer, or an employee and an entrepreneur. Platforms benefit from a network effect, that is, the more people use it, the more valuable it becomes. Facebook with just one user would be pretty dull.

Platforms shift more and more of our daily transactions to networks. At the same time, virtual and augmented reality is developing rapidly. Having a virtual layer on top of our physical experience is becoming common, creating new experiences of shopping, travelling and being with friends, for example, but also blurring what we think is real and what is not.

We are currently used to platforms becoming monopolies, but there are two developments that might challenge this. Blockchain – a technology for maintaining a distributed and reliable ledger of things and transactions – could be used to cut out the final middle man, the platform company, and create a totally decentralised and distributed service based simply on common operating principles. Likewise, platform cooperatives – platforms owned by their users – could change the way the value created by platforms is shared.

Platform cooperatives are one example of the potential power of crowds that digitalisation has unleashed. Crowds can create quality content together (think Wikipedia) or finance products and services that traditional companies would think are too risky to try (think Kickstarter). Crowds can produce a feeling of belonging and contributing.

Using AI, using platforms and gathering in crowds all raise an important question: do we know how to behave? Digitalisation is in its early phases and the etiquette, fair practices and healthy habits are still forming. It is thus important to think about how we want to use the new opportunities that digital technology offers, and how we avoid pitfalls.

Planning a fair and sustainable digital world

One guide to thinking about the potential risks and unwanted impacts of digitalisation is the toolkit for building an "Ethical OS" by the Institute for the Future. It covers issues we need to discuss now and design fair and ethical solutions to, such as disinformation, machine bias, addiction, the digital divide and data ownership.

Fake news has become a catchphrase, but behind it is the very real issue of what information to trust. Digital tools make it easy to make fake pictures, audio and even videos, and – most importantly – offer a channel to spread the disinformation widely and rapidly. Scandals and outrage get clicks and clicks create money in the current system. There is thus a need to both increase media literacy and design services that do not encourage the spread of misinformation.

There is also an unintended warping of truth due to the way machine learning works. Because algorithms are taught based on existing datasets, they easily end up repeating our old biases, for example interpreting a nurse to be female and a doctor to be male. New technology might thus end up strengthening old values and beliefs.

New technology and digital services are also increasingly addictive. Based on data from user behaviour, many services and platforms are optimised to keep the user hooked. Streaks in Snapchat, the news feed in Facebook and likes and notifications in general are all mechanisms for maximising the amount of time a user spends using the service. How do we design alternatives, or change the logic behind the platforms from creating addiction to a more "calm technology"?

Data is becoming increasingly valuable, and thus the questions of data ownership and privacy are becoming more and more important. Data is used for creating surprisingly detailed digital profiles for marketing purposes, and even for government control in the case of the "social credit score" in China. The EU has taken a different path to China and most of the United States with the GDPR directive, stating that users should own their data. Data ownership and accessible tools for using one's own data can be a huge opportunity for new services and the data economy in general.

Differences in access and competencies related to digital technologies can be a source of inequality in society, resulting in a digital divide between those who can use the latest tools and those who cannot. How can we ensure that everyone has access to digital services? How can we educate everyone to not only understand how to use the service, but how the whole system works? Knowledge of digital infrastructures and their impact on day-to-day life is becoming a requisite for full participation in society.

Finding novelty and surprises among the hype

Digitalisation is still in its early phases and it is difficult to imagine what kinds of services and platforms we will be using 20 years from now. To identify some possible surprises, it is useful to challenge some assumptions of digitalisation, namely the steady supply of electricity, the reliability of global networks and the attitudes of people.

We need a rapid transition to renewable energy sources to avoid catastrophic climate change. However, our current digital infrastructure was built in the fossil fuel era and is reliant on a steady flow of electricity, which can be tricky to provide with renewables, especially if battery and electricity storage technologies do not develop rapidly. Even the current energy system faces challenges due to climate change: storms are becoming stronger and more common, leading to temporary blackouts, and droughts can harm the operation of coal power plants due to there not being enough cooling water.

Networks are facing challenges both from increased use, but especially from attacks against specific websites or more crucially against domain name servers, which guide traffic on the Internet. The repeal of net neutrality in some countries and censorship in others is further splitting the network, possibly resulting in a "splinternet" of many smaller networks separated from each other.

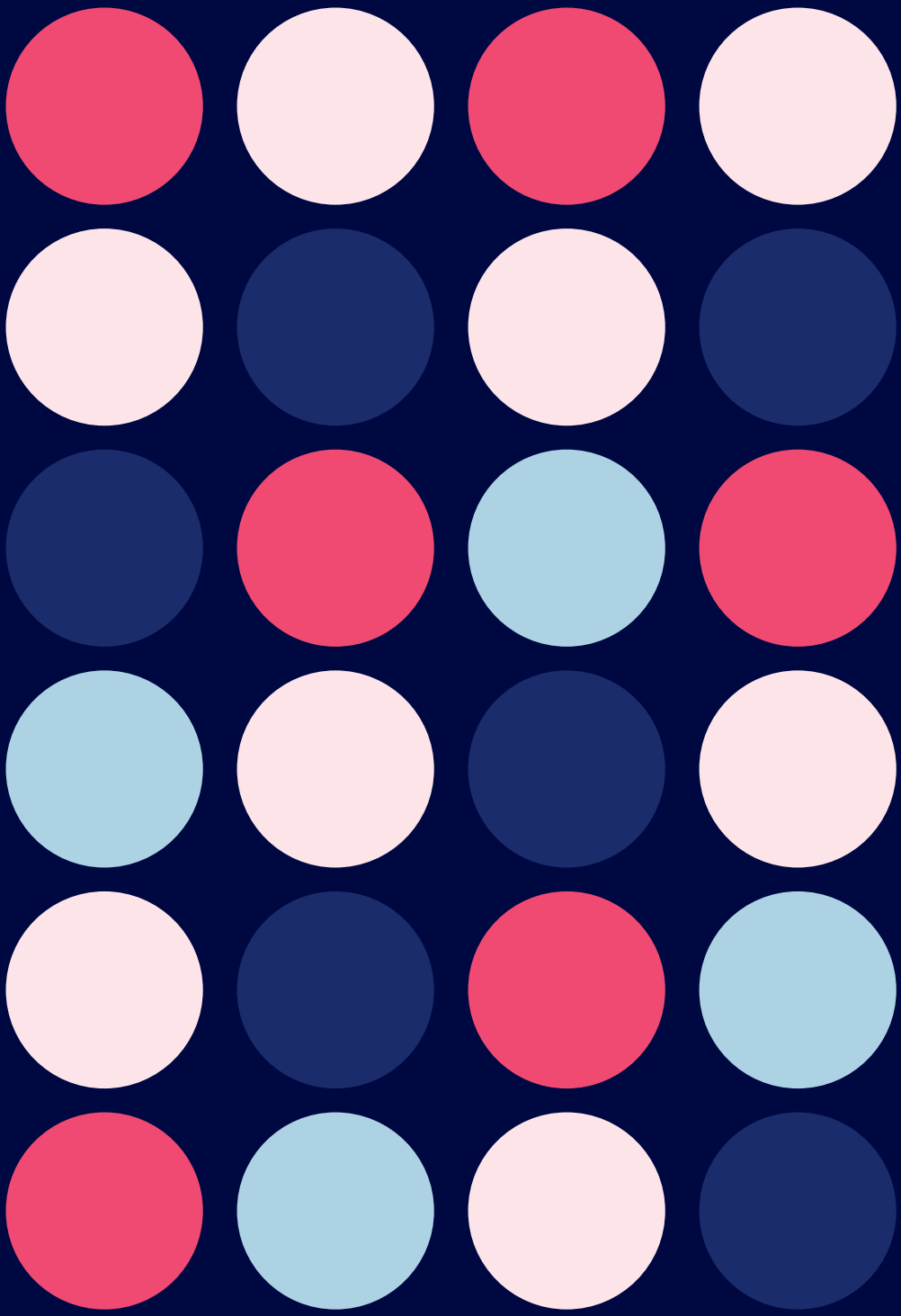
One should not underestimate the surprises arising from human behaviour, either. There is growing dissatisfaction with large technology companies and the direction in which things are progressing in terms of privacy and user agreements. Deviceless retreats and addiction therapy are also signs that we want to take control of digitalisation and have our say on how we use digital technologies in the future.

A multitude of perspectives to grasp the digital

How can we prepare for trends in digitalisation, anticipate possible surprises and pave the way towards preferred futures? One step is to approach digitalisation not just from the viewpoints of technology or business, but also from society and the arts. Instead of just teaching programming, it is important to teach the role of software and programs in our everyday lives and daily transactions. The tools we use are made by someone with a specific intention, and there could be a mismatch between that intention and what we really want.

Art offers an alternative lens to digitalisation. What if we approach programming or electronics guided by aesthetic criteria, or through craft – by making things? How would that alter our experience of the digital world? Would it empower us to start challenging existing solutions and creating our own?

We need to shift our mindsets about what digitalisation is from cold technology or an unavoidable source of business disruptions to something that is present in our everyday lives. It is not mystic, and it is not inevitable. It offers many possibilities, but we need to consider carefully which to take. What is the digitalisation we really want?



1. SKILLS AND COMPETENCES

UNDERSTANDING OF TECHNOLOGY IS becoming a civic skill, since technology is present in every area of our lives and society's basic services are becoming more or less digitalised. Most people will also have to work with bots, robots or other pre-programmed functions at some point in their careers.

Discussions of skills and competences are often characterised by a division between hard skills and soft skills. Hard skills are typically referred to as specific and more teachable abilities that can be defined and measured, such as typing, writing, maths and reading. In contrast, soft skills – such as teamwork, communication and a strong work ethic – are usually less tangible and harder to quantify.

Digitalisation is increasing demand for the development of technical and digital 'hard' skills, such as mastery of digital devices and software programs, coding and programming, and data mining and analysis. On the other hand, new technology is releasing time and energy from repetitive routine tasks, leaving more time to be more creative and interact with other people. The skills and competences needed in daily life are therefore very much linked to soft skills or 'meta-skills', such as digital emotional intelligence, the ability to communicate and collaborate with others using digital technologies and media, and the ability to be creative and critical with digital content.

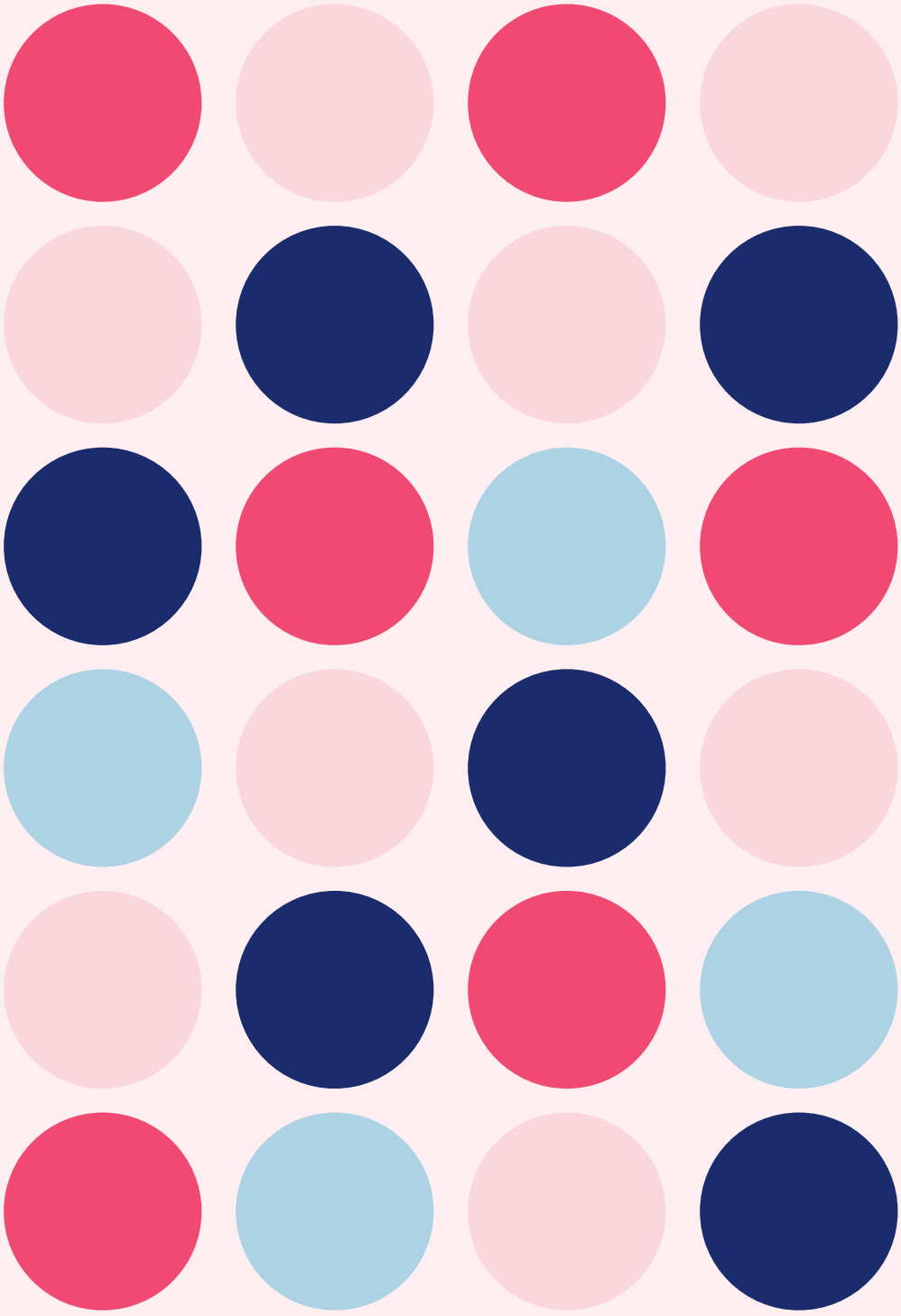
The European Digital Competence Framework for Citizens (DigComp) was developed to improve citizens' digital competencies, to help policy-makers formulate policies that support digital competence building, and to plan education and training initiatives to improve the digital competences of specific target groups. DigComp 2.0, which was published in 2016 by the European Commission, identified key components of digital competence in five areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving.

Supporting and strengthening the digital skills of young people also requires a wide range of skills and competences from youth work professionals. Based on the work of DigComp, the Expert Group on Risks, Opportunities

and Implications of Digitalisation for Youth, Youth Work and Youth Policy – established by the European Commission – identified seven competence areas vital to ensuring that youth workers have the skills and knowledge required to perform digital youth work. These competences include 1) digitalisation of society, 2) planning, designing and evaluating digital activities in youth work, 3) information and data literacy, 4) communication, 5) digital creativity, 6) safety and 7) reflection and evaluation. Each of the seven areas includes 3 to 10 more concrete training needs associated with the development of youth work practices.

Youth work has the aim of encouraging and promoting critical understanding, self-expression, and active citizenship via the media culture and digital technology. Not all young people need to be 'techies', and some technical skills may become obsolete fairly quickly. Youth work should therefore not only focus on strengthening young people's technical skills, but also encourage them to be curious about media and technology-related phenomena and to develop their digital competences independently. At the same time, youth work should take a critical approach to digitalisation and the development of technology, by questioning whether technological advances are beneficial to society and young people's well-being in every case.

What digital skills and competences should youth work promote? What digital skills and technology related competences should you develop in particular? What kinds of new learning opportunities is digitalisation enabling in terms of how, where and when we can develop our skills and competences?



Of all the things that I could be, what should I become?

Marjaana Toiminen

THE ABILITY TO LEARN IS THE SKILL THAT *most determines our future, but it is not enough on its own. Young people find their place in the changing labour market through self-reflection and their ability to make sense of the changes happening around them.*

On a sunny afternoon in late summer, a young man stands in a pedestrian zone in the centre of Helsinki holding a large cardboard placard. The placard reads: "Need a great employee? Take my CV." In his other hand, the youth has a stack of papers: his résumé. Office workers on their way to meetings, lunch or wherever keep passing by. No-one is stopping. The young man appears to be in good spirits. He is a multi-skilled Portuguese game designer, educated in the UK and, according to his CV, capable of doing just about anything. Among his achievements he lists, for example, a 20-kilometre bicycle commute to his previous workplace. He has his own YouTube channel, and he has also done some acting.

Is standing on the street with a placard a form of resourcefulness or desperation? Will this get him noticed or only discourage him?

Either way, what he is doing is a tangible example of one growing issue with the changing labour market: the huge and ever-widening gulf between supply and demand. All western countries and all age groups face the same problem. It stems from a shortage of applicants and qualified professionals in several different sectors on one hand and outdated recruitment techniques on the other. Competence becomes outdated quickly in certain sectors, and the number of sectors suffering from a lack of qualified professionals has multiplied. A couple of years ago, there were 12 professions

or positions for which it was difficult to find applicants or qualified professionals in Finland. Now, they number more than 40. The complexity of the situation is demonstrated by the fact that a large percentage of vacancies are never advertised publicly. So how are potential applicants supposed to even know about them? Maybe waving a placard in the commercial centre of the country's capital is not such a bad option.

Studies show that young people lack knowledge about what professions are out there at the moment, which naturally affects their ability to choose a future career. Young people's practical experience of the labour market is just as limited as their understanding of it. Parents' role in shaping the younger generation's views of the labour market has grown in recent years, at least in Finland. Parents are hardly the best source of information, however, considering the constant and often increasingly rapid changes in the nature of work, competence requirements and industries.

Perhaps this is why young people's perceptions of the labour market have remained largely unchanged. Their attitudes towards careers and choosing a profession are surprisingly conventional. In Finland, this is evidenced by, for example, an unusually clear distinction between "female" and "male" occupations: girls choose to study nursing, and boys pursue careers in engineering. As a result, despite being one of the leading countries in the world in terms of gender equality, Finland has the most gender-divided labour market in Europe.

Studies also show a slight change in people's relationship with the meaningfulness of work: Finns now see work as an element of a fulfilling life but not what ultimately makes it. Most people nevertheless expect work to give them financial security, which can be a dangerous assumption as the labour market enters the next stage of its transformation. On the other hand, young people now put less faith in the welfare system and rely more on themselves.

People's uncertainty over the future of work in Finland is evident from recent surveys. One in four upper secondary school graduates do not yet know which direction to take in life. What the other three quarters of graduates have based their plans on is also an interesting question. Finland's new Act on General Upper Secondary Education calls for more student guidance and personalised career planning with school counsellors. But how clued up are school counsellors on the latest developments in different industries and other trends that are shaping the future of the labour market?

A number of different scenarios have been formulated to increase understanding of the transformation of the labour market, but no-one knows for certain how paid work will change or what kinds of new professions will emerge in the next ten years. It is safe to assume that the health care and nursing sector, the construction industry, services and renewable energy, for example, will employ more people than they currently do and that the shortage of ICT professionals will continue for a long time yet. The changes are creating new needs, and certain professions will dwindle or even disappear altogether. Young people who are entering the labour market today will probably

change jobs more often than their parents did, and competence will play a bigger role than specific occupations. Professions and industries will converge, and retraining throughout an individual's working career will become increasingly important.

None of these prospects are likely to give much solace to young people trying to figure out their education and future or help them to see opportunities. Digital literacy provides a useful analogy in this respect: young people are already experts by experience as consumers and users of digital services. Their ability to learn by doing is infinite, as setting up a video production unit or an online marketplace costs next to nothing. On the other hand, young people's understanding of the digital economy and its trends can be non-existent. This is not surprising, considering how the importance of digital giants to national politics, for example, and the dark side of intelligent data-driven economies (e.g. privacy issues) are only just beginning to dawn on the older generations as well.

Among the key concepts involved in the debate on the future of work are what are known as transferable skills. Transferable skills are abilities that can be used in a variety of situations and roles as well as, to a certain extent, in different occupations. The term is usually used to refer to abstract skills that are difficult to define: communication or dialogue, critical thinking, empathy, problem-solving or learning skills.

The same themes also feature in new educational policies, which talk about 21st-century skills, or "the Six Cs". In addition to the above, the Six Cs include creativity and character, i.e. a student's understanding of their own potential and uniqueness. But how can these skills be learned through work or taught at school? There are several options, but the key is to change the nature of learning. Communication skills or critical thinking cannot be learned from books or by memorising but by doing, experimenting, contemplating and sharing experiences.

There are plenty of educational innovations and methods that promote young people's self-awareness. One of the best known in Finland is a project called Gutsy Go, which won the Council of Finnish Foundations' Builders of the Century prize in 2017. The competition was aimed at finding initiatives that prevent social exclusion among young people. Gutsy Go involves taking a group of young people of the same age, such as all 14-year-olds in a school, off their regular timetable for one week. The pupils are split into teams and spend the week implementing their own ideas for improving their social environment with the help of qualified coaches. The ideas can relate to resolving cliques or conflicts in the school or, for instance, relieving the loneliness of old people. For example, one suburban school that participated in the Gutsy Go project recently produced a video documentary on the stigmatisation of children of alcohol-dependent parents.

The aim is to give children distance from their normal school routines, teach them to understand others and help them to see themselves in a new light. The week culminates in an event attended by all the pupils and teachers of the school and often also

local dignitaries. A professional film crew follows the children throughout the week. Documentary films are produced of all the projects and played to the entire school at the end of the week. The films illustrate the potential of young people, which often surprises both teachers and the pupils themselves.

The ability to recognise one's own potential and opportunities is a critical survival skill in today's labour market. The challenge is the same for young people and adults alike, and equally difficult for both. Both need support, motivation, help, networks and self-reflection. It is becoming increasingly important for schools, youth clubs and workplaces to provide opportunities for experimenting and accomplishing something that boosts an individual's sense of self and ability to see their own potential. And creating these kinds of opportunities is actually not that difficult.

It is often said that the ability to learn will be our most important skill in the future. This may well be true, but learning is tricky for individuals who do not know themselves, their values or their beliefs and who are unable to see what they can achieve by learning and how it will boost their opportunities for finding work or realising their potential. The ability to understand the world around us and see nuggets of information, news or innovations in different contexts is not insignificant either. Doing this is challenging for anyone, but it is impossible for someone who has no idea about the new needs that are emerging as a result of the changes in the labour market to harness their potential. A good rule to remember is that there are always more opportunities for finding work and a role in society than what you can think of yourself.

The transformation of the labour market is promising to deliver new kinds of platforms for recruiters and job applicants in the next few years, as well as opportunities for individuals to develop their own learning skills. New ways of working and networking will become increasingly widespread, and finding a work-life balance is likely to become easier. However, the changes in the nature of work will also create social exclusion, unemployment and political tension. Legislators, businesses and individuals will all be responsible for the future of work in new ways.

The most important task of those working with young people is to help them to understand what they actually want for themselves: what is my potential, and what are my options? Of all the things that I could be, what should I become? The narrower and stricter an individual's world view is, the more difficult it will be for them to find their place in the changing labour market; an open-minded approach is likely to make life a lot easier.

Digital literacy in information society

Birgy Lorenz & Kaido Kikkas

IN THE EU, DIGITAL LITERACY has been an increasingly urgent topic – besides being necessary for current and future jobs, it increasingly more needed for full access to services in a digital society. Yet, according to the 2017 EC Digital Skills Gap study, 44% of European adults (aged 16–74) neither have basic skills in using digital tools nor the adequate level of critical thinking to survive online. Mariya Gabriel, European Commissioner for Digital Economy and Society, states on the EC website that the gap between the current level of digital skills and knowledge needed to be employed in a digital society is too wide, as 90% of future jobs will need digital competencies. Another commissioner, Mr. Julian King, is also worried about the cyber skill level – he recommends to tackle the issue by improving and prioritising cybersecurity training as part of basic education in every EU country.

To raise the digital literacy level, the European Commission developed the Digital Competence Framework (DigComp) in 2013 (with subsequent updates) to help the people, educators, and policymakers to tackle the issue. It can help with self-evaluation, setting learning goals, identifying training opportunities, and facilitating job search. The DigComp has been included in the Europass CV and been the basis for the development of many free online tools and competency evaluation measures around EU.

Looking at the school curriculum development across the EU, we can point to the following examples:

- **Finland:** coding (generic, simplified version of programming) was introduced to basic school level in 2016 as part of IT curriculum;

- **Sweden:** ICT and media form a part of technology education since 2011;
- **UK:** a new computing curriculum was developed in 2014;
- **Latvia:** informatics is among the secondary school graduation exams;
- **Lithuania:** programming has been a mandatory subject since 1980;
- **Croatia:** four IT topics from the DigComp competency list were made mandatory;
- **Estonia:** while informatics has officially been optional for schools, it has been adopted almost universally – in 2018, there are several optional syllabuses for basic informatics and digital literacy but also programming, robotics, computer design, cybersecurity, etc.

In the Estonian case, a major problem is the lack of qualified teachers. To address this, involving industry and EU programmes has been granted great support by various initiatives. The Hour of Code, CodeWeek, Better internet for Kids/Safer Internet Estonia are the EU level initiatives that most countries can be part of; there are also local initiatives like Start IT, Back to School video lessons, SMARTLAB/Nutilabor, DigiGirls, and others.

Cybersecurity

A recent report by Accenture announced a 27.4 % rise in the average cost of cyber-attacks for 2016/2017, with the annual average cost of 11.7 million US dollars. Julian King has suggested that 95% cyber-attacks are successful because of user incompetence. At the same time, the ENISA report about cybersecurity strategies points out that only seven countries in the world have seriously prioritised citizen awareness of cybersecurity.

Acquiring these skills vary depending on whether you are an IT specialist or an ordinary citizen. In short, we can outline the following skill levels:

- **Citizen level:** cyber hygiene (elementary proficiency in security measures as part of common digital competencies; e.g. choosing strong passwords);
- **Professional level:** cyber security (IT specialist level, e.g. protecting facilities from cyber-attacks);
- **Expert level:** cyber defence/warfare (cyberspace as the fifth realm of defence besides land, sea, air, and space).

In Estonia, the cyber hygiene skill set for basic schools prescribed by the 2017 curriculum includes understanding the safe use of technology (systems and services) and applying it in everyday life; developing one's identity by using principles of privacy and security (including respecting the identities of others); having good skills in critical thinking; having good mental and physical balance using technology and off-line life; problem-solving skills. At the gymnasium level, there will also subjects covering ethics,

legislation, information security related terminology, and IT skills (e.g. to remove malware or set up a secure website or network). At the same time, the curriculum has not fully been adopted due to various reasons (e.g. lack of skills among teachers, lack of suitable textbooks, etc.).

Challenges for young people

For the next decade, the main challenges that young people will face in the digital world (and that should therefore also be addressed by youth workers) include:

- **privacy and data protection** – not only against criminal intruders but also some companies disrespecting privacy. On 25 May 2018, the EU General Data Protection Regulation was applied and it will hopefully make people more aware of where data concerning them has been shared and collected. This was a step towards protecting youth, giving them the 'right to be forgotten' in an age where 'what happens on the internet, stays on the internet'.

- **cyberbullying and harassment**. Cyberbullying as a serious problem was acknowledged by parents, educators, and media with the case of Megan Taylor Meier, an American teenager who died by hanging herself three weeks before her 14th birthday because of bullying on social networking site MySpace.

- **hate speech**. While most young people live in a world of diversity, this is not always the case for older generations, There is still too much hate speech targeting various groups based on ethics, religion, race, gender, disability, sexual and gender identity, etc. The 'No Hate Speech Movement' launched in 2013 by the Council of Europe Youth Department seeks to mobilise young people to combat hate speech and promote human rights online.

- **manipulation, social engineering, and 'post-truth society'**. Since around 2018, the new type of 'post-truth' politics was introduced in many countries, notably the United States, the United Kingdom, and Russia. It is a combination of the 24-hour news cycle, an imbalance in news reporting, and the increasing ubiquity of social media (especially Facebook and Twitter). To address the problem and deal with contradicting news, a person needs to have good critical thinking skills.

Another factor that could be mentioned here is the gender stereotype still evident in some places, due to which girls are actively discouraged from choosing careers related to technology and the digital world. For example, the '2017 Global Information Security Workforce Study' highlighted that women constitute only 7% of the overall cybersecurity workforce in Europe, which is the second lowest regional percentage.

Digital competencies and critical thinking

There are two main solutions for the 'post-truth society'. First, one needs to be able to navigate in the digital world and be able to participate by mastering necessary tools. This includes knowledge of online services but also of underlying mechanisms (e.g. main working principles of the Internet, choosing operating systems). Second, critical thinking is needed to distinguish genuine information from gossip, advertisements, propaganda and fake news, learning about the motives and players behind the latter (e.g., why different media channels often depict the same event in different ways). In fact, this kind of critical thinking should be treated as a prerequisite for online participation, lest we become a part of the problem by spreading untrue information further.

Technical aspects

Back in 1991, the World Wide Web was born and the Internet started to turn into a ubiquitous medium. Since then, three major trends have emerged that also have shaped our digital world.

- **Free and open-source software and subsequent free-culture movement** – the collaborative features of the Internet gave birth to new ways of creating software. When it was mostly done by companies like Microsoft or Adobe earlier, the birth of the Linux operating system in 1991 heralded the community-created software that everyone was free to use, modify, and distribute. Later on, these models were adopted by other companies to release other kinds of content in a similar manner (examples include Wikipedia and other projects of Wikimedia Commons).

- **Social Software and Web 2.0** – when early Web was created similarly to books and movies – from the author to the audience – the new century brought along the participatory web, where the borders between creators and users are hard to define and most of the content is actually created by the users themselves. The examples include Flickr, YouTube, and others. These tools were partially made possible by the new ways of software development, and in turn, gave birth to the social media of today, where even news are produced communally (which also has created some problems described above).

- **Dark Web** – while Internet has had obscure corners before, the development of Tor ('The Onion Router') technology at the beginning of the 21st century gave rise to a larger 'underworld' part of the Internet that can only be accessed with special software. These networks harbor a wide variety of information from harmless blogs and wikis to dangerous things like various scams, extreme pornography, or drugs (a well-known case was the Silk Road market, which operated from 2011 to 2014).

These examples show the necessity to include more specific technical knowledge in the common set of digital competencies (it is especially evident in the case of the Dark Web, which can attract young people with 'forbidden fruits' and prove seriously dangerous without proper knowledge).

Conclusion

The youth of the 21st century has to face a number of digital challenges. Similarly to other breakthrough moments in human history (e.g. birth of mass media, radio, TV), older generations lacking the experience are often unable to support them, forcing the young to explore on their own. At the same time, in a globally connected world where many people can directly influence each other, being unprepared may lead to danger. Therefore, it is extremely important to provide the new generations as much support in their digital endeavors as possible.

Innokas Network — supporting creative technological skills

Markus Packalén

HOW CAN WE PREPARE OUR CHILDREN for future challenges? What are the skills and competencies they should possess in the 21st century? What are the things they need to understand about technology in order to use it in a meaningful and sustainable way? How can we as adults guide children to achieve genuine creativity and innovation? What can we do about the fact that few young people are attracted to studying natural sciences? Can we fill the gap between supply and demand for the hi-tech workforce in the coming years?

About Innokas Network

Innokas Network was founded to provide solutions to these questions. The network consists of more than 800 schools, teachers and researchers from Helsinki to Sodankylä. It provides teacher training, research, and learning materials on the subjects of technology education, primary school programming and robotics, maker culture and Innovation Education. In addition, Innokas organises student-events such as the annual Innokas 2018 Robotics Tournament.

Innokas started in 2004 as a group of primary school teachers who wanted to develop practices for learning 21st century skills. With the support of Helsinki University researchers they established a theory of Innovation Education. Today Innokas is based at the University of Helsinki, and several researchers continue working on Innovation Education. International relations have been established with Stanford University's FabLearnLab and the Chinese Global Education Community.

In the last 14 years, Innokas has made a major contribution to programming, robotics and Innovation Education in Finnish schools. On this voyage a lot has been learnt.

Today, Innokas offers consultancy and expertise and has established a vast base of open learning materials.

From consumers to creators – to use and understand technology

According to latest youth media survey, A Grip on Media 2016, 90% of Finnish young people (10–14 years) use digital devices, preferably smartphones, daily. They use their devices mostly to consume digital media, play digital games and use social media applications. Although as many as 85% say that they can use their devices to support their interest or hobby, only very few young people produce media of their own or use their devices as a tool for creative work. Furthermore, even fewer understand the technology inside the device they are holding in their hands. (Merikivi et al. 2016) At Innokas, our aim is to encourage young people to grow from passive consumers to active creators and to equip them to understand the hows and whys of the technology around us.

Technology as a tool

Creative kids have always found means to express their inspiration and vision. In the past the means might have been wood carving tools, oil pastels or Lego bricks. The necessary skills in crafts and mechanics were acquired with the help of teachers, friends or books. A certain level of resilience and resources were required to build a skateboard or a water-rocket or to shoot a film. Now there are few restrictions: anybody with a mobile phone can make a movie, create a videogame or sketch a 3D model without too much effort. With the help of online videos and articles, anybody can learn how to make chemical play-dough, convert an old bicycle into an electric one, or use complicated programming tools. There is a world full of possibilities for anyone with the right motivation. At Innokas we develop school projects and materials and organise events to foster creativity and curiosity in young people, and encourage them to conduct further experiments.

Understanding technology

How many of us really know how our mobile phone or refrigerator works? In order to understand the working principles of these devices, you need to have knowledge of several subject areas, e.g. mechanics, electronics, microcontrollers, physics and programming. At school it takes years to learn and understand even the basics of such matters, but a lot can be learnt through making, doing, experimenting and playing. A major share of Innokas' activity is focused on robotics and programming. In various robotics or microcontroller playgrounds, schoolchildren are able to create working models of real-life home appliances, robots and machines, or come up with inventions of their own. Through these activities they familiarise themselves with the skills and knowledge of programming, mechanics and science.

Every year, Innokas Network organises a grand robotics tournament, where children and young people compete on several different robot-invention tasks: In the Rescue series their task is to build a robot, which follows a track marked with a black line to an area where it searches and rescues its subject. In the Sumo series, the task is to build a very sturdy and durable robot, which can quickly find its opponent and force it out of a circular arena. Dance is a slightly more artistic series, in which the task is to prepare an ostentatious dance show involving autonomous robots and self-made props and costumes. The real challenge is Freestyle, where the competitors have to build a working model or invention on a given topic and showcase it as a real commercial product.

The most important aim of all these activities is something already embedded in the Innokas brand: Innokas comes from the word innostua – to get excited! We want to foster the excitement that grows when a group of young people come together to create something new, to strive to win a competition or solve a problem. We hand out badges and trophies but deep down we believe that the old Finnish aphorism is true: A job well done is its own reward (Työ tekijäänsä kiittää).

How to get excited

Inspiration, motivation, spark... there is no excitement without some initial emotional trigger. Why do some young people enjoy playing with technology and create inventions of their own while others tend to avoid such things? What can we as adults do to create the spark of inspiration and motivation?

An event called the European Robotics Forum is a large annual event that brings together professionals and researchers from around Europe to discuss and showcase recent developments in the field of robotics. In the spring of 2018 the event was held in Tampere, Finland. At the opening ceremony there was a discussion panel that focused on the constant and growing need skilled high-tech workforce. It was stated that we don't need support from politicians or administrators to attract young people to choose a career in technology. What we need is the support from the media industry. Indeed, the efforts of individual public campaigns often miss their mark in motivating students to choose a career in technology or natural sciences. If you ask children why they like to build robots, they mention Iron Man, R2-D2 or Wall-E rather than great study opportunities or decent salaries.

Robomestarit TV series

In the spring of 2018, the Finnish public broadcasting company Yle and Innokas Network together with Finland Robotics Society really hit the nail on the head with a joint media production, Robomestarit (Robot Champions). Teams of children were collected from around the country to take part in a robot building challenge, which would be filmed and broadcast on a national television channel. Freestyle challenges

were created by sponsor companies from different fields, e.g. mining, welding and transportation. The companies also provided an expert to work as a judge for each challenge. The Sumo and Dance series were slightly upgraded to provide more action, and a huge studio setup was built to make everything look flashy and dynamic. The programme also included some light educational content about different professions and the basics of programming and robotics.

When the Robomestarit series was broadcast over nine Sunday mornings, it served two purposes for Innokas: to create an aura of curiosity and excitement around robotics, and to make robot building more streetwise in the social culture of young people.

In the 1980s, playing video games used to be considered a nerdy and dull pastime, but now it is mainstream and definitely streetwise among young people. The popularity of Robomestarit demonstrates that a similar shift in opinion can happen in robot building, which still has a slightly geekier image than gaming. If tinkering with technology was as streetwise and accepted as sports and gaming, more young people would be drawn to it.

This shift in opinion would be more than welcome, especially among girls. Despite the fact that Finnish primary school girls perform better than boys in tests measuring achievement in the natural sciences, the majority choose to study something else as a profession. Initiatives such as Robomestarit are needed in order to provide encouraging role models and positive emotions towards technology. (Microsoft 2017)

Developing childhood play into a career

In the spring of 2018 I had an opportunity to meet and interview several professionals from the field of robotics about the initial interest which led them to choose a career in technology. The majority mentioned an event in their childhood or adolescence. A British man, the CEO of a company manufacturing robot hands, told me a story about a group of teenagers building cardboard robot suits in a garage. A Polish engineer had been impressed by early robotic toys at school. Another engineer had just watched Doctor Who on TV and wished he had the tools to build robots like those in the programme. One CEO stated that even today in their office there is a box of Lego Technics which their engineers build the first prototypes of robot structures with.

Exciting childhood play can develop into a meaningful and fruitful choice of career. Parents, teachers and other responsible adults don't need to be involved in the creative play by laying out rules or setting up goals, but they can strengthen and feed this excitement by providing role models, guidance, environments and materials.

In commercial learning materials, technology and science are usually covered with ready-made lesson plans, theory and experiment worksheets, but if we can build on intrinsic motivation – a child's own ideas and questions – these materials are not needed. Innokas has developed an alternative to traditional lesson plan-oriented technology education: Innovation Education, a model that we examine more closely below.

Solving problems and making inventions with Innovation Education

The Nobel Prize winner Professor Bengt Holmström stated in a Helsingin Sanomat interview in July 2018 that there is a misconception in Western culture about creativity. We think that creativity goes together with freedom, but according to Holmström it is about the right challenges, limitations and questions. (Helsingin Sanomat 2018) To offer these challenges, limitations and questions, and therefore foster innovation, Kati Sormunen and Tiina Korhonen have developed a process model called Innovation Education. The model is based on previous research findings and experiences from teaching practice and is a useful tool for anyone working with young people. (Innokas 2018)

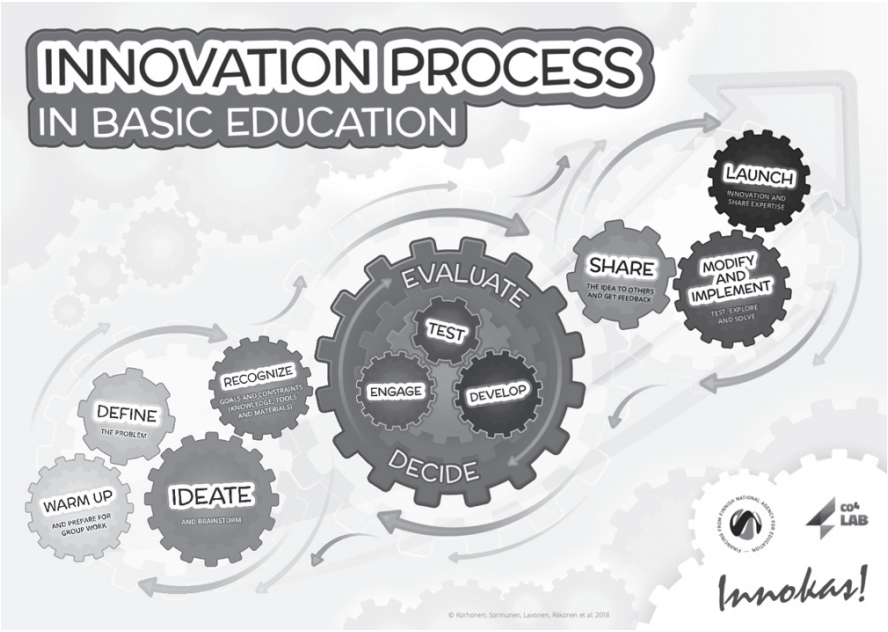
The Innovation Education process can be implemented with any group of children or adults. The purpose of the process is to create something new: a solution to a problem or a new invention. As an example, a team of students observe their school playground and make a list of the problems they encounter. The problems are preferably something tangible, such as a messy bicycle rack or a non-functioning noticeboard, but it can just as well be something more abstract, like an uninspiring learning environment or a lack of student participation in school culture. Either way, their task is to come up with a solution. Below is an outline of the process model with the essential stages for recognising and conceptualising the problem and refining the final solution from a number of ideas and sketches.

Ideally, the process is being managed by a leader, who is able to take responsibility for team dynamics and timetables. There are certain exercises and methods that foster innovation and build positive co-regulation among group members. One slightly more competitive implementation of the innovation process is Hackathon – a scheduled 2–3-hour team competition where ideas for a problem's solution are presented to a larger audience and assessed by a jury consisting professionals and experts.

Maker culture – make your invention come alive

The innovation process works best when team members are expected to come up with a tangible invention and build a prototype of their idea. At Innokas workshops there is usually an assortment of cardboard, hot glue, paper clips, cogs, wheels and other crafts tools and materials. With microcontroller boards such as Micro:bit, Arduino or Lego Mindstorms, teams can make their crafted prototype work. These boards can be programmed to sense their surroundings through sensors measuring light, balance, noise level, colour, etc. and perform tasks with rotating motors, moving servos, coloured LEDs or LCD displays.

For a person familiar with traditional school crafts, this may sound obscure and difficult, but our experience is that the use of these tools and appliances can be learnt quickly with little effort. Whereas before children built robots out of cardboard, now they can make them move or even talk. Where they used to craft a textile bag, now they can make the bag come alive with lights and sounds. Examples of inventions built through the innovation process can be found on the Innokas website. (Innokas 2018)



Tinkering with simple materials and tools using cheap microcontrollers and electronics, 3D printers and laser cutters is not only Innokas' idea – it's a worldwide movement. The builders, makers and DIYers present their garage-forged inventions under the name of maker culture. Some profoundly exciting ideas can be found in web communities like Makezine, Instructibles or FabLab.

Conclusion

Technology is not only owned by giant companies in California. It is not something magical that is only understood by MIT engineers. It is not only manufactured in China. Technology can be owned, understood and even built by yourself. If you have a mobile phone, a €20 budget and a group of friends or colleagues to share your ideas with, the technology is yours. If you have a sense of creativity and excitement, Innokas ideas and materials are free and available for your use.

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Digital literacy as a national key skill

Ville Alijoki

FINLAND IS RENOWNED FOR ITS GOOD PISA results and its citizens' digital literacy. Less talked about is the divide between the younger and older generations when it comes to day-to-day digital skills. Young people also lack many digital skills required for work and studies. The Finnish Broadcasting Company (Yle) wants the nation to master 21st-century skills, which is why we have included in our strategy the advancement of the digital literacy of Finns of all ages.

I use the term 'digital literacy' to refer to the ability to use technology and software, information processing skills as well as media literacy. These skills are becoming increasingly important as the volume of information and the number of sources of information continue to grow. Today, individuals who are unable to use technology risk missing out on vital information. Even those who know how to access information can be at risk of missing out if they do not have adequate information processing skills. And those who do not know how to critically evaluate the content and sources of information cannot recognise good information on which to base their decisions.

In this article, my focus is on the ability to use technology and software.

Young people and digital literacy

The leading institution in research relating to the digital skills of young Finns is the University of Turku's Research Unit for the Sociology of Education (RUSE), which studies the digital literacy of schoolchildren and teachers. RUSE's studies show that there is considerable variation in young people's skills, both between individuals and especially between boys and girls. (Kaarakainen et al. 2017)

Secondary school pupils' competence is at a satisfactory level in many areas, but they lack skills in using presentation and spreadsheet software as well as basic computer commands. The programming skills of both teachers and pupils are also relatively poor. In other words, the younger generation has serious gaps in one of the key skills needed in education and workplaces: computer literacy.

Aalto University has also studied young people's information technology skills and their mastery of word processing and spreadsheet software in particular. Researcher Bertta Sokura, whose doctoral dissertation examines students on IT courses, found that far too many students are self-taught and consequently use software extremely inefficiently. Her conclusion is that even those born in and after the 1990s need formal information technology education. (Sokura 2016)

The adoption of electronic Matriculation Examinations has forced Finnish academic institutions and especially upper secondary schools to also focus more and more on young people's computer skills. Students who do not know how to navigate between browser tabs or at least the basics of spreadsheets can have a hard time to complete the examination. Uneven computer skills can lead to inequality in the important examinations. Knowing how to use a smartphone is not enough.

Digital literacy and social exclusion

Finland has been one of the top countries in the international PISA rankings. Finnish youth have been one of the best in the world in a range of key skills, but there are now worrying signs of regress in areas such as science and mathematics. PISA mostly measures learning skills, but digital literacy is becoming increasingly important as global digitalisation continues.

The so-called "adult PISA", i.e. the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), has not gained so much attention in Finland as the actual PISA study. PIAAC examines the skills of the adult population in a total of 33 countries: literacy, numeracy and problem-solving in technology-rich environments. Finland also fares well in PIAAC rankings: only New Zealand is ahead of Finland in terms of problem-solving in technology-rich environments. (PIAAC 2013)

However, the assessment has also raised some red flags. Finland has the greatest variation between different age groups of all the surveyed countries. According to the assessment, young Finns have excellent digital skills, but the older generations' digital literacy is severely lacking. The digital divide between different age groups in Finland is one of the biggest in the world. (Malin et al. 2012)

Digital illiteracy also has close links to other forms of social exclusion. For example, a study conducted by researchers at the University of Turku found a strong correlation between the risk of social exclusion among young people and below-average digital skills. Weaknesses in such key areas of modern labour-market skills can easily pull individuals deeper into the vicious cycle of social exclusion. (Pihlajaniemi et al. 2016)

Another cause for concern flagged up by PIAAC is the fact that 19% of the Finnish subjects (equals as many as 650,000 Finns) could not be assessed at all in respect of problem-solving skills in technology-rich environments, as they were unable to or refused to complete the computerised survey. A further more than 11% (equal to 350,000 Finns) failed to reach Level 1, which means that their digital skills are basic at best.

Even though Finland is one of the top-ranking countries, the assessment found approximately one million Finns whose digital skills are seriously inadequate. The PIAAC data were collected between 2011 and 2012, so there is hope that the figures have now improved. According to the latest figures of Statistics Finland (from early 2017), there are approximately half a million people aged over 65 years in Finland who have not used the internet "in the last three months".

Therefore, a large section of Finland's population still has next to none digital skills as the rest of the country is plunging headlong into a digital era. This means that those who are on board have a duty to help those left behind, as life is getting more difficult to live in modern society without digital skills.

Running everyday life without the ability to use the internet is becoming increasingly onerous as well as expensive. One example is banking, which has become extremely difficult, especially in remote areas, without a computer or a mobile device. Also, consumers who are not able to receive e-invoices have to pay extra for paper billing. More and more government agencies, including the Finnish Tax Administration, the Social Insurance Institution of Finland and the public health service, have also migrated their services to an online environment. Logging into different services with usernames and passwords is already a key skill that every citizen needs. The authorities naturally have an obligation to make their services accessible to everyone, but their focus is clearly on developing online services and phasing out other channels.

The Finnish Broadcasting Company and digital literacy

In the Finnish Broadcasting Company (Yle), the media and digital skills have been a part of a strategy shift in the Yle Learning department. In 2016, a new strategy was adopted in Yle Learning. The primary focus group of Yle Learning was shifted from schools and teachers to the general public.

Now Yle Learning wants to promote systematic life-long learning. The department adopted a new slogan – "Competence for the Curious" – and a new mission: to help the public the skills they need to cope in modern society. Several different skillsets were identified: media and digital skills, learning skills, life skills, humanity and society, and languages. The goal is to promote life-long learning with no age limits.

Media and digital skills quickly became the priority of the new strategy, when we saw that rapid digitalisation was threatening to leave certain members of society behind. Digital literacy in particular was seen as a key issue, as it is also closely linked to media literacy. Media literacy is all about understanding how to use media and

critically analyse information. In the age of "fake news", critical media literacy is more important than ever.

The Finnish Broadcasting Company's educational mission statement now reads as follows: we teach the public digital skills in order to make their daily lives easier and to prevent the creation of a digital divide in Finnish society. We want to ensure that every Finns has the skills needed to function as a full member of the digital society. This means helping with the basic information technology skills and with the skills to use different digital services and social media. We also want to promote digital equality and give the public the opportunity to play an active role in the democratic process.

Also, making people's daily lives easier is an important goal. The ability to make efficient use of technology has huge benefits on a day-to-day basis: it makes information more readily available, enables remote working and helps moving from place to place, gathering information and running errands.

Yle Learning has identified two different levels of digital literacy:

- **Basic skills:** basics of using information technology and smart devices and advice on using everyday electronic services.
- **Advanced skills:** building people's confidence in using their digital skills and the understanding and use of social media.

From digital literacy tutorials to a national campaign

The Finnish Broadcasting Company began to build an online learning environment focusing on digital literacy towards the end of 2016. The tutorials on the website were designed to give useful tips to people who are already familiar with the basics of digital services. A new tutorial was published every week, and the topics included, among others, the following:

Mobile telephones and tablets (how to import photographs from a mobile telephone to a computer; using emojis)
Computers (how to use the address fields in e-mails correctly; basic keyboard shortcuts)
Online shopping (how to shop online securely; getting rid of junk mail)
Information security (password generator – test the strength of your password; privacy settings on Facebook)
Social media (how to delete a Facebook account; Snapchat – the basics)
Photographs and videos (YouTube for business and pleasure; how to find royalty-free images online)

All the tutorials were aimed at teaching people basic digital skills that would make their daily lives easier and more enjoyable and help them with their work or studies.

The importance of digital literacy got another boost in 2017, when the Finnish Broadcasting Company incorporated it into the company's overall strategy: "the Finnish Broadcasting Company promotes the digital literacy of people of all ages."

By the beginning of 2018, the company had published a total of more than 60 tutorials, but we also wanted to start teaching digital skills to those who are not yet online, namely older people. This required physical legwork. We started to build a digital literacy campaign, which was aimed at increasing the public's awareness of the digital advice services that were already available around the country. A number of non-governmental organisations (such as Enter, Seniorsurf, Savonetti, Joen Severi and Mukanetti) provide peer-to-peer support targeted specifically at elderly.

The key objective of the campaign was to challenge Finns to help each other and to promote the peer-to-peer-support network. The campaign was launched towards the end of the summer of 2018, and its core mission was to get Finns to share their digital skills with each other. The Finnish Broadcasting Company offered support, instructions and video tutorials. Representatives of the company also toured around the country. Workshops teaching key digital skills to older people were held in co-operation with campaign's partners in libraries in ten different towns. The partners involved in the campaign included non-governmental organisations as well as the Population Register Centre, which is the administrator of the national authorities online site Suomi.fi.

The campaign was also featured on television: a number of short infomercials aimed at alleviating the public's fear of digitalisation were broadcast on Yle's Channel 1. The campaign also commissioned a survey about how much Finns already help each other in digital skills. According to the survey, four in five middle-aged Finns had helped their relatives and loved ones with digital skills.

The Finnish Broadcasting Company takes its mission seriously and intends to continue to promote the nation's digital literacy in the future. The company is already planning a training course based on its online digital literacy tutorials, which would allow people to complete one educational module at a time. Yle Learning will also continue to help with the use of the digital services of authorities (Omakanta.fi, Suomi.fi, etc.) and to provide advice on how to use them. Yle Learning is also ready to collaborate with both government agencies and non-governmental organisations in the future.

One of the Finnish Broadcasting Company's most important priorities is to make its own digital services (such as Yle Areena) available to everyone. This is why we will also continue to work hard to improve the user-friendliness and accessibility of our own services. We want everyone to be able to make the most out of the digital era.

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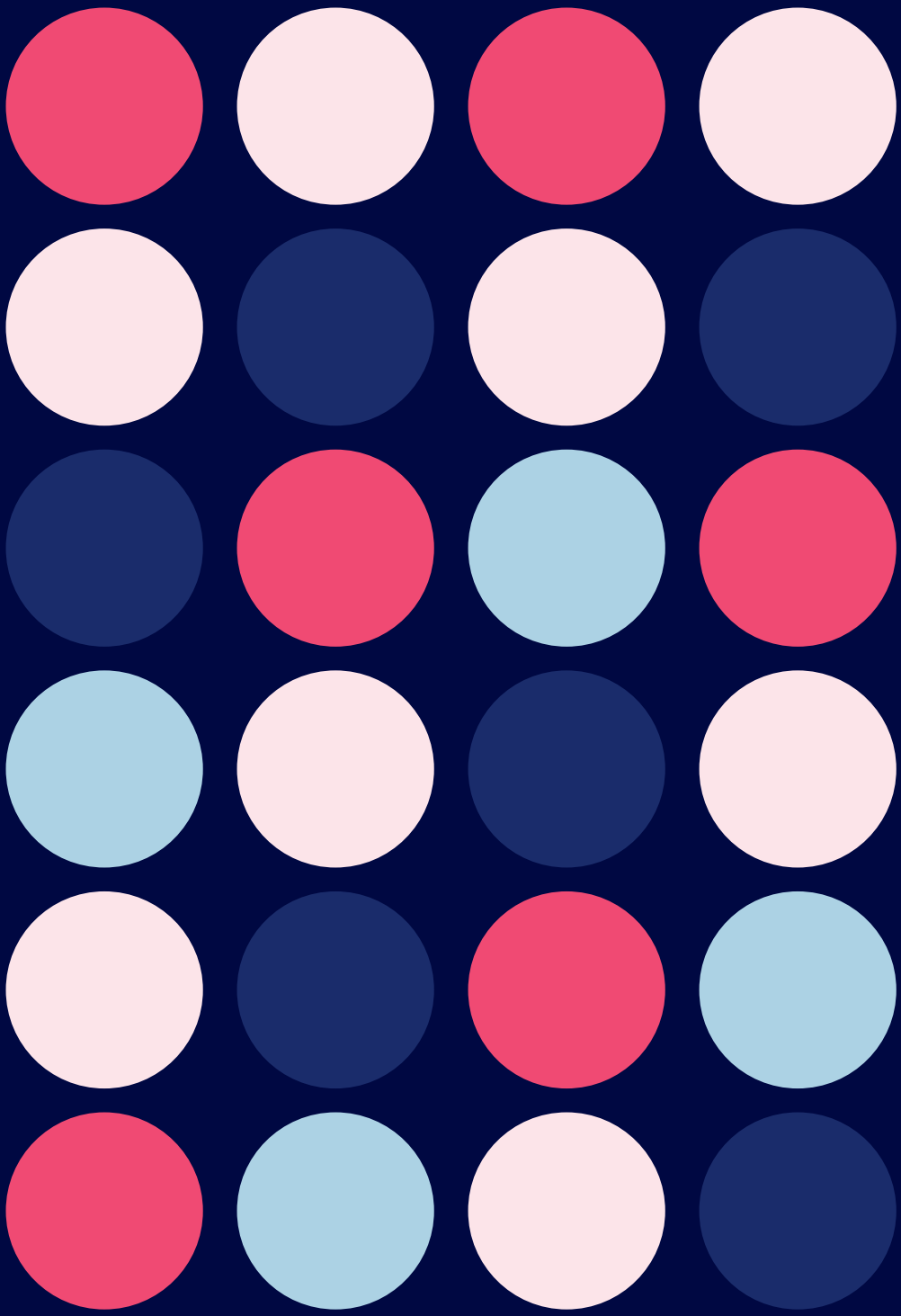


2. PARTICIPATION AND ENGAGEMENT

"**SOME PEOPLE WANT IT TO HAPPEN**, some people wish it would happen, others make it happen." – Michael Jordan

Digitalisation has expanded our realm with ways we cannot still fully comprehend. Before the WorldWideWeb and spreading of online opportunities, the ways of receiving and producing information, participation, and having a real discussion were a lot more limited than in the digital era. Today, you can participate on the go with your phone, tablet or laptop and in any topic of interest from all over the world.

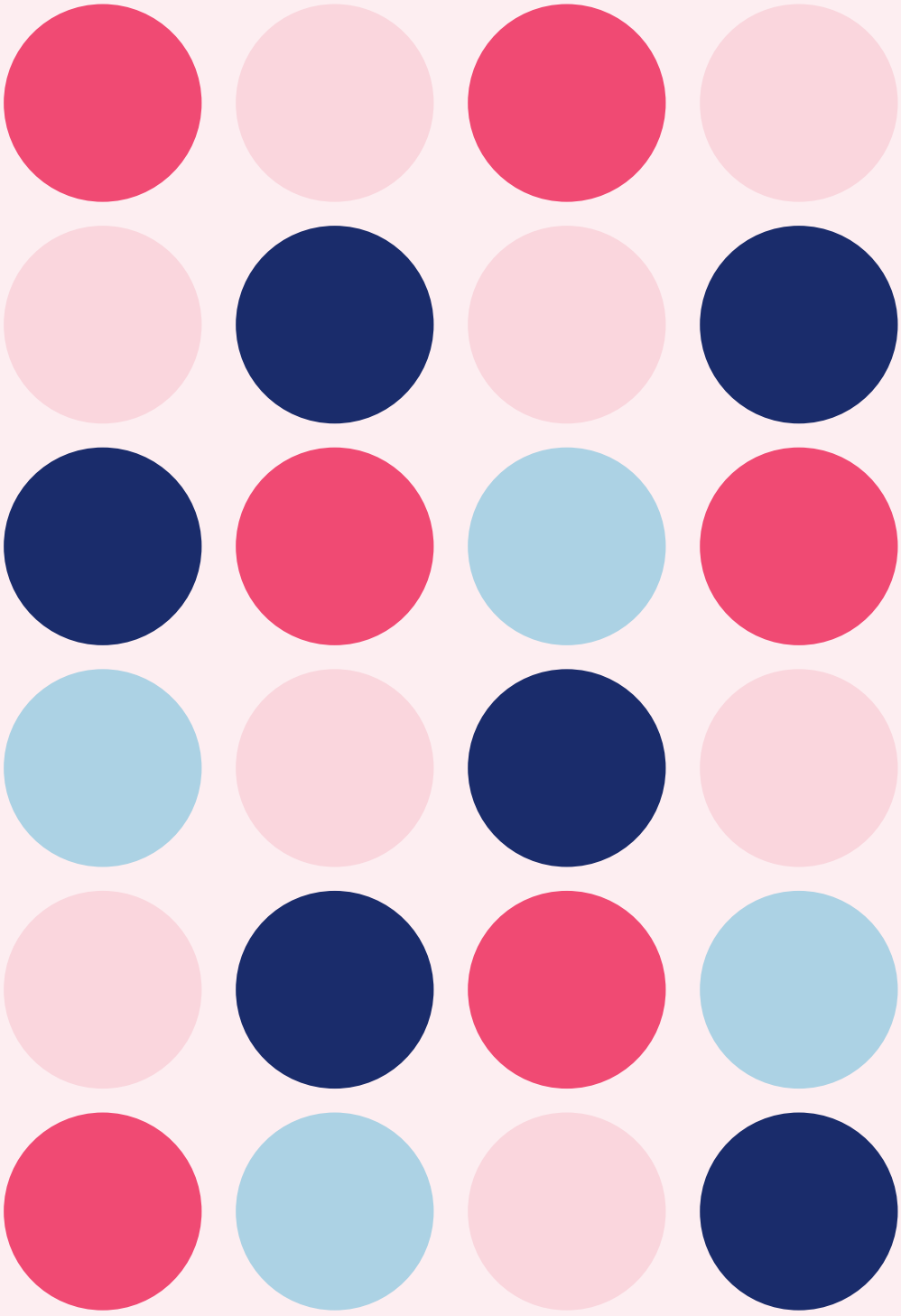
Rys Farthing (2012) has defined participation as "a process where young people, as active citizens, take part in, express views on, and have decision-making power about issues that affect them". E-participation just adds an online dimension to the definition. Main actions made in e-participation are sharing, becoming involved, and taking action. It can also come in two forms: direct, where you influence political decision making, and indirect where you support certain issues and positions.

In terms of direct e-participation, Estonia made a breakthrough in 2015, when the Parliament gave the right to vote on local municipality elections to young people at the age of 16 and 17. As people in Estonia can vote online with one click, it was expected that this would be the most preferred channel. The reality was that only 8% of all voters in the age of 16–17 voted online. The reasons may vary, but young people themselves pointed out that this was their first time to vote and they wanted to experience the feeling of physically signing the document and slide it into the box. Social scientists also point out that young people lack the skills to use the ID-card.

When it comes to indirect e-participation, young people point out that they do not expect completely new ways of participation. Instead, they hope to see the integration of technology into already existing methods of participation – for example, having quicker and more practical ways of communicating with various officials through online solutions, further transparency in the decision-making process that would allow people to see that their opinion or the process of gamification that makes participation more fun or engaging.

But what kind of participants are the youth? Beilmann and Kalmus have suggested four participatory types of Estonian youths: politically-minded activists (5%), volunteers/benefactors (30%), digital activists (28%), and passive young citizens (37%). International research has indicated that the number of young people who are alienated from politics and do not trust social and political institutions is growing. As the proportion of excluded, alienated, and passive youths is over one third according to this typology, it seems to allow the assumption that Estonia also shares the widespread concern over the decreasing engagement of the youth.

Youth participation has been one of the top priorities of youth works for a long time. The aim of youth work is to encourage young people to participate, and as young people user the Internet more often, youth work has to meet new challenges as well as offer, through contemporary solutions and suitable channels, ways to make young people more involved and taking action on their life – and as Jordan stated "make it happen".



Digital participation in Estonia and Finland

Airi-Alina Allaste & Kari Saari

PARTICIPATION THROUGH DIGITAL PLATFORMS could be seen as something that provides the means of connecting the youth with political issues and helps support activism (e.g. Östman 2013), but it has also been criticised for replacing more serious forms of activism (e.g Morozov 2012). This article adds to the growing discussion that focuses on participation via the internet, taking into account the impact of the social context of Estonia and Finland, countries with many similarities, but different backgrounds. The empirical part of the study relies on material collected in the framework of the large-scale European project MYPLACE (Memory, Youth, Political Legacy and Civic Engagement). An in-depth micro-level analysis is based on interviews with young people from Estonia and Finland.

Youth participation in Estonia and Finland

The cases of Estonia and Finland can be interpreted as examples of old and new democracies. Though a decrease of conventional political engagement among young people is a general trend, in post-socialist countries, they are even less likely to participate in conventional ways than youths in mature democracies. Low participation in Eastern Europe has been explained by low levels of engagement that citizens have inherited from a socialist centralised party system, as well as the negative effects (e.g. poverty, corruption) of the post-socialist transformation (Vukelic & Stanojevic 2012). At the same time, technological development has been a crucial component of the Estonian transition. 'Internetisation' has become one of the central symbols of the rapidly changing society, leading to a widely held perception of Estonia as a leading

e-state. The share of internet users has grown speedily in the 2000s, reaching 100 percent among younger generations in 2014 (Kõuts-Klemm et al. 2017).

In Finland, recent youth studies showed that 93 percent of 10–29-year-olds (n = 1025) used the Internet every day (Merikivi et al. 2016: 23), and 75 percent of 15–29-year-olds (n = 1894) communicated daily with their friends via the Internet (Myllyniemi 2016: 78). However, in contrast to Estonia, civic activism is widespread and there are long traditions of being oriented towards official organisations and associations in Finland, even though certain new and more informal forms of activism have also emerged since the 1960s (Siisiäinen 1990; Siisiäinen 1998). However, Estonian and Finnish youths also differ in their attitudes; the differences tend to be smaller in issues related to the Internet and social media, for example, according to the Eurobarometer 2016 (table 1):

AGREEMENT (%) WITH SELECTED STATEMENTS IN THE EUROBAROMETER 2016 (N = 10,294)

	Estonia (n = 372)	Finland (n = 307)	Average of all countries
Voting in European elections (the best way to participate in public life in the EU)	34	68	51
Websites or online social networks of the EU (the best option to participate in debating)	19	14	21
Social networks represent progress for democracy (allow everyone to take part in public debate)	51	68	46
Social networks represent a risk (inappropriate use of personal data)	23	24	27

Source: Eurobarometer 2016

A youth study by Merikivi, Myllyniemi, and Salasuo (2016) indicated that 40 percent of 10–29-year-olds felt like part of a community on social media. Another study in Finland (n = 806) showed that internet participation rather supplements than replaces traditional political activities, and that negative attitudes towards the formal political system were not a major driver for internet participation (Christensen 2012). Existing studies in Estonia point out that online and offline participation can be interrelated and new modes of participation tend to be more employed by active youths to reinforce existing forms and levels of engagement (Kalmus et al. 2018). The latter study, however, used pre-defined activities, and more flexible forms, such as commenting, liking or sharing, were not included in the list. In this article, we present qualitative microanalyses of interviews focusing on these flexible forms.

Signing petitions as a form of internet- and e-activism

We can say that social media provides an environment with convenient access that might lead to increasing participation. Interviewees described signing petitions as political and/or social activism in three ways: as acts of expressions of good will, the desire to impact, and expressions of solidarity. First, in terms of the petition topics, they emphasised that their acts have good societal messages. The most popular topics are related to environmental issues and human rights:

OLIVER, 24, ESTONIA:
'In general, I sign petitions about nature preservation. /.../ It's necessary, nobody will doubt whether it's needed, everyone understands why I do it.'

Second, a number of informants described petition signing as an act that could help to achieve real political and/or social impact or least as a means to draw attention to important political or societal topics:

AIRA, 20, FINLAND:
'Yes, I have signed to stop fur farming and for supporting animal rights. (...) Yes, it is so that you can make a difference. I think it's great, even though not many people sign the petitions; however, it spreads awareness about that issue.'

Third, some interviewees noted signing petitions as an expression of solidarity to people who work with important issues in society:

KAI, 17, FINLAND:
'Yes, I have [signed] some. These petitions have not always been about issues that I consider very important but if those have been helpful somehow to my friends or someone I know, then I don't see why not to sign if it helps somebody.'

On the other hand, especially in Estonia, young people also prefer to share their political opinions if they do not expect opposition to the act. From this perspective, the signatures were defined as a form of 'safe' or 'low-risk' activism in the context of societal topics with high existing consensus in a society:

ANDRUS, 21, ESTONIA:
'I signed Charter 12, but yeah ... I am very careful. The things I have signed, they're all ... no one can really judge me for signing them.'

Reasons for signing petitions were mostly similar in the two countries, although the desire for directly influencing and changing society was slightly more visible in Finnish

data – informants signed petitions because 'you can make a difference' and expressed scepticism towards petitions, as they are 'totally powerless'.

Commenting

Views on commenting could be divided into active and passive roles of participation. In many cases, commenting was described as a useful mirror to reflect young people's own thoughts and opinions, like Afanasi described it:

AFANASI, 21, ESTONIA:

'Well ... what happens is that I'll read something that other people have written and then I just think whether I agree with them or not.'

The emphasis was on staying informed, monitoring ongoing discussions and other people's opinions rather than on the active contribution of written content. Those actively commenting were a minority among interviewees in all locations.

The interviewees also spoke of the reasons for their passivity in commenting. In both countries, these were connected to the perception that either it is difficult have a proper discussion online (i.e. matter of willingness to participate) or there was self-censorship caused by the perceived threat of possible problems (i.e. matter of potential consequences from participation). Young people stayed mostly alert concerning and were informed about politics in their everyday life context, but writing tended to play a minor role in both countries.

Sharing and liking

Young people's liking and information sharing was mostly linked to societal topics, and in the Finnish context, also to NGOs that they were personally interested in, such as environmental and human right issues/organisations and local political issues, like Anu illustrated:

ANU, 20, FINLAND:

'I like and share news (...) I read the news of Amnesty and share those with others. Human rights and other that kind of stuff.'

In Estonia, in many cases, young people were comfortable with sharing political content on social media if it in the form of humour or parody, i.e. if the political content was expressed in a more hidden, implicit or interpretative form. In this case, young people can get involved in social and political discussions even if they consider themselves inactive. As an example, Karmen described a message recently shared with her:

KARMEN, 24, ESTONIA:

'The last thing I shared was a fake guideline from the Estonian Tax Board that said, "please

don't add members of the parliament to your list of dependents on your tax declaration". You know, because they are actually all living off the Estonian people.'

Like Kristel, most young people were hesitant about whether their political message would be understood by others:

KRISTEL, 25, ESTONIA:
'... I don't want to share my... um... opinion with everyone, because they may interpret it differently. When you share some kind of content on the internet, well then people can just interpret it however they want.'

Conclusions

Young people 'take sides and choose positions' (Bakardijeva 2009) through different online means, such as sharing and 'liking' a particular point of view or signing petitions. On the other hand, in many cases, action happens from a distanced, safe, and comfortable position if young people feel that it is necessary. In both countries, there were also rather pessimistic views that any participation on the Internet does not have any influence at all. However, we can confirm that in certain cases, a political dialogue is initiated, or at least sustained, via social media. Our empirical analyses do not confirm the 'slacktivist' (Morozov 2012) archetypes cited earlier. Instead, we can see social media as an environment in moving towards political activity. When in Finland, digital participation was more often connected to other forms of participation, then in Estonia, participation via social media might not be recognised as such by young people themselves. We do not know if this activity will continue in the future, so the question remains if it could be seen as 'gateway activism', which will either lead new generations of people towards participation or will not have any impact at all.

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Choosing with a click

Kati Nõlvak

VOTING IS AN ACT OF DEMOCRACY. Citizens are given the opportunity to voice their opinions by voting. And although some feel that one vote doesn't matter, others feel that their vote is important and can determine the outcome of an election. And it might. How confident are we that our vote counts? Security, accuracy, ease of use, efficiency, and costs are aspects of voting to consider. If there is fault in any one of these aspects, is it worthwhile to vote? Would society benefit if improvements were made to the current voting systems?

Estonia's use of modern information and communication technologies in public sector and for governance has placed the country at the forefront of states that are aiming to modernize their public sector and provide transparent governance. Numerous online public services are available to Estonian citizens and residents including digital identification, digital signatures, electronic tax filing, online medical prescriptions and internet voting. Driven by convenience, most of the services offer efficiency in terms of money and time saved for both the users and the public institutions. For example, selling a car in Estonia can be done online within less than 15 minutes, filing an online tax declaration takes the average person no more than five minutes, and participating in elections via internet voting takes on average 90 seconds. (Vassil, 2016)

In 2005 Estonia became the first country in the world to have nation-wide local elections where people could cast binding votes over the internet. Internet voting (i-voting or online voting) is one of the possibilities to vote in addition to other voting methods. I-voting means in this context voting via Internet, not voting by using a special voting device. I-voting is implemented at all levels of elections: local, national

and European. As of 2018, Estonia has held nine elections over thirteen years, where people could cast legally binding votes over the internet.

Citizens can vote as many times as they like up to election day, with only the final vote counting. Those who do not have access to a computer or who prefer old fashioned paper ballots can still vote by paper – i-voting is an option rather than a mandate.

The platform *valimised.ee* (elections.ee) explains shortly how the i-voting system works. In order to understand the i-voting system better, the envelope voting method used in Estonia should be described shortly:

- a voter presents an ID document to be identified;
- the voter then receives the ballot and two envelopes;
- the voter fills in ballot paper and puts it into the envelope, which has no information about the voter;
- then he encloses the envelope into an outer envelope on which the voter's information is written;
- the envelope is delivered to the voter's polling station of residence. After the eligibility of the voter is determined, the outer envelope is opened and the inner (anonymous) envelope is put into the ballot box.

The system guarantees that the voter's choice shall remain secret and recording of the vote in the list of voters in the polling district of residence prevents voting more than once.

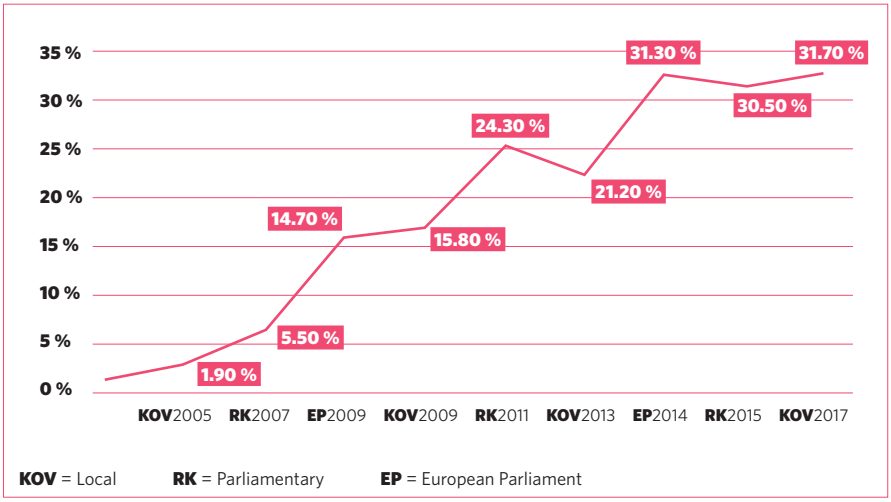
I-voting is carried out according to the same scheme. The downloaded i-voting application encrypts the vote. The encrypted vote can be regarded as the vote contained in the inner, anonymous envelope. After that the voter gives a digital signature to confirm his or her choice. By digital signing, the voter's personal data or outer envelope are added to the encrypted vote.

According to national voting system valimised.ee first time e-voting system was launched the usage was quite modest – only 1,9% (every 50th vote) of the votes were cast over the internet. Now it`s over 30% - every third vote is given over the internet.

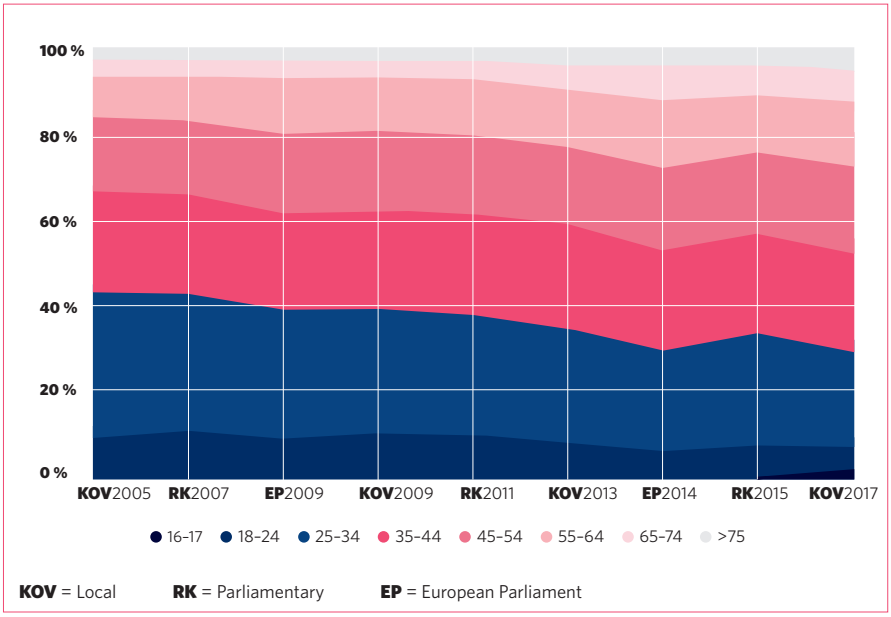
The first adopters were mainly 25–34 and 35-44 year olds making up 57,5% of all the i-voters. With years also other age groups have adopted the possibility and surprisingly older people are adopting it more than young people. On the first i-election in 2005 10% of the i-voters were in the age group 18–24 and 9% were between the ages 55–64. With the last election in 2017 the age group 18–24 decreased down to 6,7% and the age group 5–64 usage increased up to 14,8%. One might think that i-voting would benefit the young urban elite, yet research has shown that there is no demographic or urban-rural divide. The pensioner living in a small village is just as likely to vote online (Ilves, 2016).

Besides statistics of i-voters it is interesting to see the behaviour of the i-voters. In the i-voting studies by Solvak and Vassil, they originally expected that elderly people

I-voters among participating voters



Age groups of I-voters



take more time to make their decision online and it may even raise the exclusion of them and it was predicted that the main reason would be potential entry barriers regarding with the technology. Internet voting leaves a trace and investigation of it uncovered that the session length of an elderly voter is much shorter than with

younger age groups. It indicates that going on-line and voting is the single purpose of the action, while younger people might e-vote in conjunction with doing something else online e.g. they study more about the candidates online when elderly people have already made up their mind. This is important to acknowledge when we think about youth information system.

Solvak and Vassil found many different findings during the studies in chapter "E-vote log files 2013-2015".

Here`s their conclusions on the topic:

"First, we saw that a typical e-voter is very much like the general Estonian population mid-aged. We knew from previous research that age as such does not differentiate e-voters from paper voters in Estonia any more. It is, however, still surprising to see the complete age distribution of e-voters peaking around 35-45 years and how small the share of the youngest voter segment is. This is surprising because it goes against the conventional wisdom of online participation being something that primarily younger people engage in. The log data shows once more that e-voting has the potential to diffuse widely and turn into a normal mode of voting.

A second major surprise is the speed with which people vote online. The whole transaction takes well below three minutes and the older the voter the less so. We put forward some potential explanations for the unexpected relationship between age and e-voting speed, but regardless of the exact reasons, it goes to show that the system is designed well enough not to place any difficulties in front of age groups who should in theory be less well versed in modern technologies. Given that survey data shows the average voter to have to take a 30-minute round trip to vote on paper at a polling station, the less than 3 minutes taken to e-vote in the comfort at your own home or workplace brings about a more than tenfold saving in time. The convenience and speed are probably the most important reasons why people chose to e-vote in the first place.

A third and no less important finding was the very small share of revoters, which is one of the disputed aspects regarding Estonian e-voting. We saw that few people did so and the ones who did, re-voted within a relatively short time span, reducing even further the potential effects of vote relevant outside events. The log data therefore suggests that e-voting in Estonia does not introduce uncertainties into the advanced voting period, at least not to a degree that should worry anyone.

In sum, the log data indicates Estonian e-voting to function remarkably well. All age groups e-vote, do it fast, generally e-vote only once and the overwhelming majority do not face technical difficulties in doing so."

What does all that got to do with youth and youth work? Youth participation has been on top of youth works priorities for a long time. Beilmann and Kalmus suggested four participatory types of Estonian youths: politically-minded activists (5%), volunteers/ benefactors (30%), digital activists (28%), passive young citizens (37%). International

research has indicated that the number of young people who are alienated from politics and do not trust social and political institutions is growing (Henn, Weinstein & Forrest 2005, Mierina 2014 via Beilmann & Kalmus). Youth work`s assignment is to encourage young people to participate, and because young people are more online, then youth work has to meet the new challenges as well as offer, through contemporary solutions and suitable channels, new and attractive opportunities and alternatives to those offered solely for commercial and entertainment-oriented purposes. Solvak, Vassil and Alvarez state that i-voting is a sticky habit: once an i-voter, always an i-voter. Youth work must pave the way for young people to be active citizens by encouraging young people to be more actively engaged with their lives decisions and not only on the election period. We should make the habit of participating "stick".

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Digital participation in future urban planning

Pilvi Nummi

THE ONGOING DIGITALISATION of urban planning is changing planning practices and giving the public new opportunities to contribute to the design of their own living environment. Digitalisation has already made it easier for the public to get information about urban planning initiatives and given people new ways to get involved, and even more versatile forms of e-participation are expected in the future.

The digitalisation of urban planning is currently progressing on several fronts: new design tools based on virtual and games technologies are being tested, cities and towns are developing 3D city models, and the public sector is working hard to promote the interoperability of systems and data by harmonising concepts and data structures. One of the most popular buzzwords at the moment is digital planning – a novel form of electronic planning that centres on machine-readable data and plans based on information modelling (Ministry of the Environment 2018a).

Map-based survey tools have long been used to involve local residents in the urban design and planning process, but planning authorities still have a way to go in respect of the use of social media. According to an online communication survey carried out by the Association of Finnish Local and Regional Authorities, only one in three municipal planning organisations use social media, while the leading sector – youth work – has a social media profile in more than 90% of Finnish local authorities (Association of Finnish Local and Regional Authorities 2017). However, social media does play a role in urban planning, albeit a controversial one. According to a survey on the use of social

media in urban planning conducted in the spring of 2016, opinion on social media is hugely divided (Nummi 2016). It nevertheless appears that more and more use will be made of social media in local planning in the coming years.

Much is expected of social media especially in terms of increasing public participation. According to one of the respondents to the survey, "the idea is to use social media to get young and working-age people more involved in planning. There is not much feedback or contacts coming in yet, but we are hoping to change that". (Nummi 2016) However, there are no guarantees that the use of social media will increase the involvement of young people in particular. Attracting young people to social media profiles requires interesting content and the right communication channels: the social media most commonly used in the context of urban planning at the moment is Facebook, when at least some young people have already moved on to other channels.

Potential of social media in urban planning

There is still plenty of scope to make more use of social media in urban planning. There are at least four ways in which the urban planning process can benefit from social media in the future:

1. INTERACTION. Social media provides a platform for discussing planning initiatives. Even though it appears that social media is still mostly used to simply disseminate information (Sauri 2015), most local authorities are looking to introduce interactive elements (Nummi 2016). Urban planning authorities are only just beginning to realise the potential of social media's interactive dimension: for example, many planning officers follow discussions on Facebook but rarely comment on threads themselves (Niitamo & Sjöblom 2018).

2. SOURCE OF INFORMATION. Social media can be a valuable source of information for planning authorities. Urban planning organisations currently make little use of social media data analyses (Nummi 2016, Ministry of the Environment 2018b), but the academic community is already developing and experimenting with different techniques. So far, research has focused on social media users' experiences of their living environment and their mobility patterns, the use and characteristics of different areas as well as people's views on planning initiatives. The analysed data have included, among others, pictures shared on social media, tweets and online discussions. (Nummi 2017) Social media content complete with location information is especially useful, but its availability in Finland is often too limited for analytical purposes.

3. CROWDSOURCING. The concept of crowdsourcing is integral to social media culture. According to Jeffrey Howe, who coined the term in 2005, crowdsourcing represents the act of a company or institution taking a function once performed by employees

and outsourcing it to an undefined (and generally large) network of people in the form of an open call. Social media can be used to crowdsource solutions for urban planning questions or dilemmas by collecting background information or inviting the public to submit their ideas and suggestions.

4. SELF-ORGANISATION AND URBAN ACTIVISM. Social media also provides a self-organised channel through which the public can influence the planning process. It is important for the authorities – in this case urban planning organisations – to keep up to date on developments in civil society and interact with activists through their preferred channels, i.e. on social media. Active citizens can also take the initiative themselves and invite the authorities to their online discussions. (Mäenpää & Faehnle 2017)

Digital activism's influence on urban planning

Although urban planning authorities' opinions on the use of social media are conflicted and little use has been made so far of the interactive elements of social media, it is clear that the public's online discussions and the contents they post on social media have an impact on planning – whether directly or indirectly. For example, a planning officer following a debate on a local Facebook group's page cannot help but be influenced by the group's views. Even planning officers who do not follow online discussions themselves are likely to hear about what is being said on social media from their colleagues. Digital activists can also influence the decision-making process through online channels, if the local decision-makers are on social media. In order to make the most out of social media and the multitudes of views expressed there, it is important for local politicians to get involved in the debates (Sauri 2015). Digital activists can promote this by inviting any decision-makers they know to their discussions.

One form of local digital activism is sharing pictures of places that are important to the community and thereby raising their profile. A good example of this is a self-organised campaign launched by local residents in Pori a few years ago, which is still going strong both online and on social media. This campaign has certainly boosted the image of the City of Pori.

On the future of digital participation

The means and channels of e-participation will become increasingly versatile, interactive and stimulating in the future. There are several exciting experiments in progress at the moment that give an idea of what is to come. The technology needed to view three-dimensional models of planned changes to existing environments through virtual reality headsets or mobile devices already exists. The possibilities of using games technology to crowdsource planning have been explored with the help of the Cities: Skylines game in Hämeenlinna and Minecraft in Vantaa. The City of Helsinki, among others, is looking to open its urban planning model for all interested parties to use

and develop. It might only be a few years before we can take a walk in a virtual city and make suggestions about its development.

The new tools and techniques will undoubtedly make plans more illustrative. While game-based approaches may make some sections of the population, such as young people and gamers, more likely to get involved, the threshold for other residents to participate may become higher. There is a risk that digital participation will increase inequality in society. In order to ensure that all citizens have equal opportunities to have a say, new forms of participation cannot completely replace conventional ones but must be introduced alongside them. This is a drain on resources, which goes some way to explain the slow progress of digital participation.

Young people can contribute to the development and planning of their own living environments simply by being active on social media. Just one picture of a favourite hangout shared on Instagram can end up on the desk of an urban planning officer and influence their decisions. As more and more of these kinds of pictures are posted online, they begin to influence not just the planning process but also the image of the area. Urban planning authorities are interested not only in residents' perceptions of their living environment but also in how they use it. Planning officers can get valuable information about how local residents use an area by following social media users' updates on places they visit and what they do there.

Social media provides a way to considerably widen the pool of potential e-participants and to get people talking about planning initiatives – especially those that have social implications. More and more young people are abandoning public social media forums in favour of closed groups. This makes sense from the perspective of information security, but contributing to the common good and public debates requires presence in public forums. The younger generation's contribution to online discussions relating to planning is extremely important. Young people who are active on social media can introduce local planning authorities to completely new perspectives and make the planning process more democratic and inclusive.

The future of digital participation hinges on local authorities' ability to cooperate across administrative boundaries both within their own organisations and in their interactions with local residents. Digital activists need to be encouraged to make suggestions about more effective approaches and tools, and the authorities need to be prepared to listen to them.

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Participation types of Estonian youth from politically minded activists to passive young citizens

Mai Beilmann & Veronika Kalmus

DIFFERENT YOUTHS PARTICIPATE IN SOCIETY to largely varying degrees and in many alternative ways. Youth participation can thus be characterized through various participatory patterns or types dividing them into active and passive citizens. When establishing the participation types of young people, it is clearly essential to discern which activities should be counted as involvement and taken into account. If a few generations back it was easy to understand what constitutes political participation – as political engagement was only considered to be voting during elections and being involved in party politics – then today, the line between political and non-political and personal and public has become blurred. Nowadays, political participation also includes various life-style choices from consumption to civil disobedience or even wilful avoidance of social and political issues. Several authors consider interest in social and political life important in addition to involvement in politics and activism when discussing civic engagement (Ekman & Amnå 2012, Micheletti 2006). Therefore, those young people who read online social and political news from time to time or share such news with their friends via Facebook accounts also participate in their own way.

What kind of participation patterns do Estonian young people have in this melange of participatory activities? Taking into account the diversity of engagement opportunities starting with political and social content that is shared online and donations to a

charity, to attending political rallies that have turned violent, we (Kalmus & Beilmann 2017, Nugin, Beilmann, Allaste & Kalmus 2018) have suggested four participatory types of Estonian youths[1].

Politically-minded activists (5% of young people who took part in the study) are more active than average in every way: they are the most likely to engage in political activities to express protest (e.g. occupy a public space, paint graffiti) and are more engaged in online participation and volunteer activities than average. They tend to be 16–19 years old; the majority are young men; usually, they live in a small town, and have a modest social background. This group consists of equal parts of Estonian and Russian youths.

Compared to other types, activists trust other people and Estonian government more, the European Union less; they trust professional journalism less than others but alternative online media more than others. They are more likely to agree with the statements that immigrants take jobs from locals, and other countries would do far better if Estonia's influence there were greater. At the same time, they are less likely to agree with the statement that democracy is the best form of governance. Compared to other types, they are involved less in decision-making in their families and they consider school rules less fair than other young people.

Volunteers/benefactors (30%) are primarily involved in volunteer activities and charity. They are usually people in their twenties who are largely female. They are young people who mostly speak Estonian, mostly come from a larger city or its vicinity, and have a better social background and more cultural capital.

Volunteers/benefactors trust professional journalism more than other types and consider alternative online media less trustworthy. Compared to other types, they feel greater trust toward the European Union. They are also the most likely to agree with the statement that democracy is the best form of governance. Compared to other types, they are included in family decisions the most often.

Digital activists (28%) show the highest level of online and consumer activism, such as discussing social and political topics on the internet. They are usually in their twenties; a little over a half are males; they predominantly speak Estonian; they usually come from a large city or its vicinity and have a better social background and cultural capital. Digital activists trust alternative online media less than other types and tend to agree less with the statement that immigrants take jobs from the locals. Incidentally, digital activists consider school rules fairer than other youths and consider their odds of influencing school leadership higher than other types.

[1] Typology is based on data collected during Horizon 2020 project CATCH-EyoU (Constructing AcTive CitizensHip with European Youth: Policies, Practices, Challenges and Solutions). Data used for creating the typology was collected from 15–30-year-old Estonian young people through an online questionnaire in autumn 2016.

Passive young citizens (37%) are less involved in all participation activities than others. They tend to be 16–19 years old; females and males are represented rather equally; they usually live in a rural area or a small town and come from families with a modest social background and cultural capital. Many Russian youths belong in this group. Passive young citizens trust other people, the government and the European Union less than other participation types and are the most likely to agree with the statement that they have no influence on the decisions of the Riigikogu (parliament). The social activity level of their families and friends is also low.

In conclusion, it seems that a social environment that is richer in opportunities (being a member of the ethnic majority, living in larger cities and their immediate vicinity, having a more democratic and educated family) favour belonging in dominating types. Social environment with fewer opportunities (small towns and rural areas, a family with less educational background and democracy) has a strong correlation with either exclusion and alienation or, as an alternative, protesting and fighting activism.

As the proportion of excluded, alienated and passive youths is over one third according to this typology, it seems to allow the assumption that Estonia also shares wide-spread worry over decreasing engagement of youth. International research has indicated that the number of young people who are alienated from politics and do not trust social and political institutions is growing (Henn, Weinstein & Forrest 2005, Mierina 2014). It pays to take notice that not only people but entire countries have different civic engagement levels and patterns. A significant chasm runs between new and old member states of the EU in regard to the political participation of the youth – when the old Europe sees rather high involvement levels, then Eastern and Southern Europe have far lower ones (Kiisel, Leppik and Seppel 2015). Among the countries that belonged in the sphere of influence of the Soviet Union, Estonia stands out with the highest activity indicators among young citizens (Beilmann 2018). It is also noteworthy that overall civic engagement in Estonia is not very high; however, among the younger age groups, participation level is the highest and is growing (Beilmann 2018). This gives hope that the group of passive and excluded youths could decrease somewhat in the future.

Based on participation trends thus far, the digital activists group might have a large growth potential. 2016 European Social Survey data indicate that sharing political content on the internet is by far the most popular form of engagement among the young people of Estonia compared to more conventional participatory activities (e.g. working for a political or non-political organization, contacting a politician or an official) (Beilmann 2018). Various international researches have also suggested that the youth increasingly prefer personal involvement in the case of topics that concern them rather than influencing politics via organizations (Allaste, Beilmann & Tiidenberg 2018). Digital participation offers a wide variety of opportunities for personal engagement that are easily accessible and do not require much effort on the part of young people.

However, not too much hope should be placed on digital participation, as, actual involvement aside, online engagement can quite often be simulated; this could take young people away from real participation with a real social effect (Amin 2010, Morozov 2012). In addition, it has been found that digital activism does not reduce inequality but tends to reproduce it. In addition to varied levels of internet access, using the internet can increase information gap between people who follow political issues and those who have no interest in politics (Min 2010). In the case of CATCH-EyoU results, which are the basis for the typology of this article, gender differences in digital civic engagement should be emphasised. Young men are far more active than young women in creating political online content, involvement in internet-based protests, discussing social and political topics on the web, as well as participating in social networks dedicated to social and political issues (Allaste, Beilmann & Tiidenberg 2018).

Therefore, it seems that the need to map the participation patterns of youth and observe which youth groups are in danger of decreased engagement or complete exclusion will not disappear in the immediate future.

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Estonian Youth Council: *How will young people participate in the future — youth's perspective*

Heiki Viisimaa

PARTICIPATION IS A SO-CALLED STICKY HABIT. That means if a person starts actively participating in civil society or votes during the elections, it is very likely that he or she will continue doing the same in the future. On the other hand, if a young person tries to participate but is not allowed to do so or has a bad experience by not being included in the decision making process in a meaningful way, he or she can easily become disappointed in the democratic system and become passive. Therefore, youth participation is not only needed for enabling young people to voice their opinion but also to develop active citizens in general.

The ways how young people would like to participate are not that dissimilar from preferences of the general population. At the same time, they expect the forms of participation to modernise and keep up with the general social and technological advancements in the society. Some of the ways that could happen are described below.

Political participation

The year 2017 was a significant breakthrough for youth political participation in Estonia. It was the first time when young people at the age of 16 to 17 could participate in local municipality elections and cast their vote for their preferred candidates. Many of the opponents to lowering the voting age claimed that young people are not interested in politics or participation in general. Youth turnout in the elections indicated otherwise. While there is no official data on the voter turnout of different age groups,

a study conducted by one of the leading research agencies, Kantar Emor, found in a survey "Noorte valimiskäitumise uuring KOV valimiste kontekstis" (The behaviour of young people in the local election) that 16–17-year olds had a participation rate of 59%. That was even higher than the general turnout.

As young people are interested in political participation, many of them would like to have more opportunities for voicing their opinions. While 16- and 17-year-olds can vote in local elections, they are still unable to participate in the national parliament or European Parliament elections. Lowering the voting age would bring more attention to issues young people are interested in as well as give them the possibility to influence decision-making. In addition to voting rights, it is also worth considering lowering the minimum age of standing for the elections from 18 to 16 in local elections and from 21 to 18 in national and European Parliament elections.

It is important to recognise that young people are not a homogeneous group and therefore have different interests and beliefs. Many politicians are used to speaking to young people only about issues like education and youth work or give electoral promises for building new skate parks. Certainly, these issues are important for some young people but not all of them. Therefore, it is needed to increase the number of topics relevant to young people and invite them to participate in discussions. The experience of Estonian National Youth Council shows that in addition to the above topics, the youth are interested in issues like public transportation system, the environment and integration of minorities, but even questions like the national tax system or the retirement benefits are of interest to many young people.

Online communication

It probably comes as no surprise to anyone that young people spend a lot of their time online and tend to communicate with each other through various digital platforms and social media channels. This offers various new opportunities and challenges participation. Currently, most of the attempts made by the politicians and various officials to engage young people online are one step behind. For example, information targeted at the youth is becoming widespread on Facebook, but the youth is already moving away from that platform. Therefore, it is crucial for people who try to encourage youth participation to be up to date with online platforms they are using.

One of the ways how digital communication already affects youth participation in Estonia is through the internal working of youth councils and NGOs. A lot of them use digital platforms like Skype, Slack or Asana to conduct their regular meetings, as the lacking public transport system makes physical meetings difficult to arrange. It is likely that in a few years, online meetings and discussions will become the predominant way for young people to organise their social and political activities.

As online communication becomes more prevalent, it is expected that the state keeps up with it and allows citizens to contact various officials through online channels.

Currently, most local government officials have consultation hours and citizens can come to meet them in person and deal with whatever issues they might have. It would be more suitable for young people if these kind of consultation hours were also available online. For example, instead of being available for meetings with citizens in the town hall, the local mayor, youth work specialists, and other officials could have regular consultation hours on Skype or other similar online platforms.

Further transparency and accountability

One of the major obstacles in youth participation is the lack of transparency in the decision making process. Quite often, young people are being asked for their opinion in various questions without giving them any information about how their opinion actually influences the decision-making. It is needed to provide young people with the opportunity to find out when and by whom their opinion is used and if it had any impact on the decision-making process. That could be done in a form of an app where people would be notified when something they have formally stated their opinion about is discussed and what was decided. When a decision is formed, people should be notified if the officials agreed with their opinion and if not, reasons should be stated for making a different decision.

Without such transparency, people often get the impression that their opinion does not matter, as their suggestions are not considered. If a young person forms a negative opinion on participation, it is unlikely that he or she is willing to continue participating in the future.

A good example of engaging young people and giving feedback to their ideas is the Finnish Nuortenideat.fi website, which is a platform for gathering suggestions regarding various issues from the youth. On that website, it is possible to put forward new ideas about how to increase the living standard of people and comment on other ideas. Submitted proposals are forwarded to the appropriate local government, agencies or private companies and answered by them. That creates a crucial feedback link where young people can see that their ideas were considered and whether these were realistic or not.

One of the ways how young people are encouraged to participate in local politics is the practice of participatory budgeting. Participatory budgeting is the practice where local governments dedicate a certain, small part of their budget to ideas suggested by the local citizens that are most popular in a public vote. That gives young people and all others the possibility to propose new ideas, which have to be considered and reviewed by the government officials, as well as give an additional possibility to take part in the process of democratic voting. Participatory budget is a great possibility for engaging the youth who are not interested in party politics and therefore, do not wish to vote in local government or national parliament elections but are interested in voicing their opinion about very practical local issues. Therefore, it would be good to see this practice used by more local municipalities.

Gamification

Participation in the decision-making processes should be made as easy and interesting as possible for the youth. One of the methods that should be used for this is gamification – making participation similar to games. One of the best examples of using games to encourage participation comes from the city of Hämeenlinna. That municipality held a contest using the city simulator game Cities Skylines to submit designs for developing a new district in the city. Such competitions are more engaging and fun for most young people and encourage them to take part in discussions about local issues.

Gamification can also be used in other, more subtle ways. For example, sites, e.g. from foreign language learning sites to fitness apps to social media sites, use gamification elements and give you points for positive actions, encourage you to accept challenges and display activity streaks and virtual badges that can be shown to friends. These kind of mechanics could also be implemented in the field of youth participation, e.g. people making suggestions about improving the local life quality could get a badge in an app or points for reading up on the topic of elections. Gamification elements like that might seem silly at first but they have proven to be an effective way how to engage young people in countless places.

Conclusions

While the youth participation level in Estonia is already high, it should be advanced and encouraged by creating new possibilities for participation. Those ways can be both traditional like giving young people the possibility to vote in elections and innovative like various online solutions. It is worth noting that young people do not expect completely new ways of participation. Instead, they hope to see the integration of technology into already existing methods of participation – for example, by having quicker and more practical ways of communicating with various officials through online solutions, further transparency in the decision-making process that would allow people to see that their opinion really matters or the process of gamification that makes participation more fun or engaging. Those improvements would not only benefit the youth but would actually make participation easier for all citizens and are therefore something the state and local governments should pursue.

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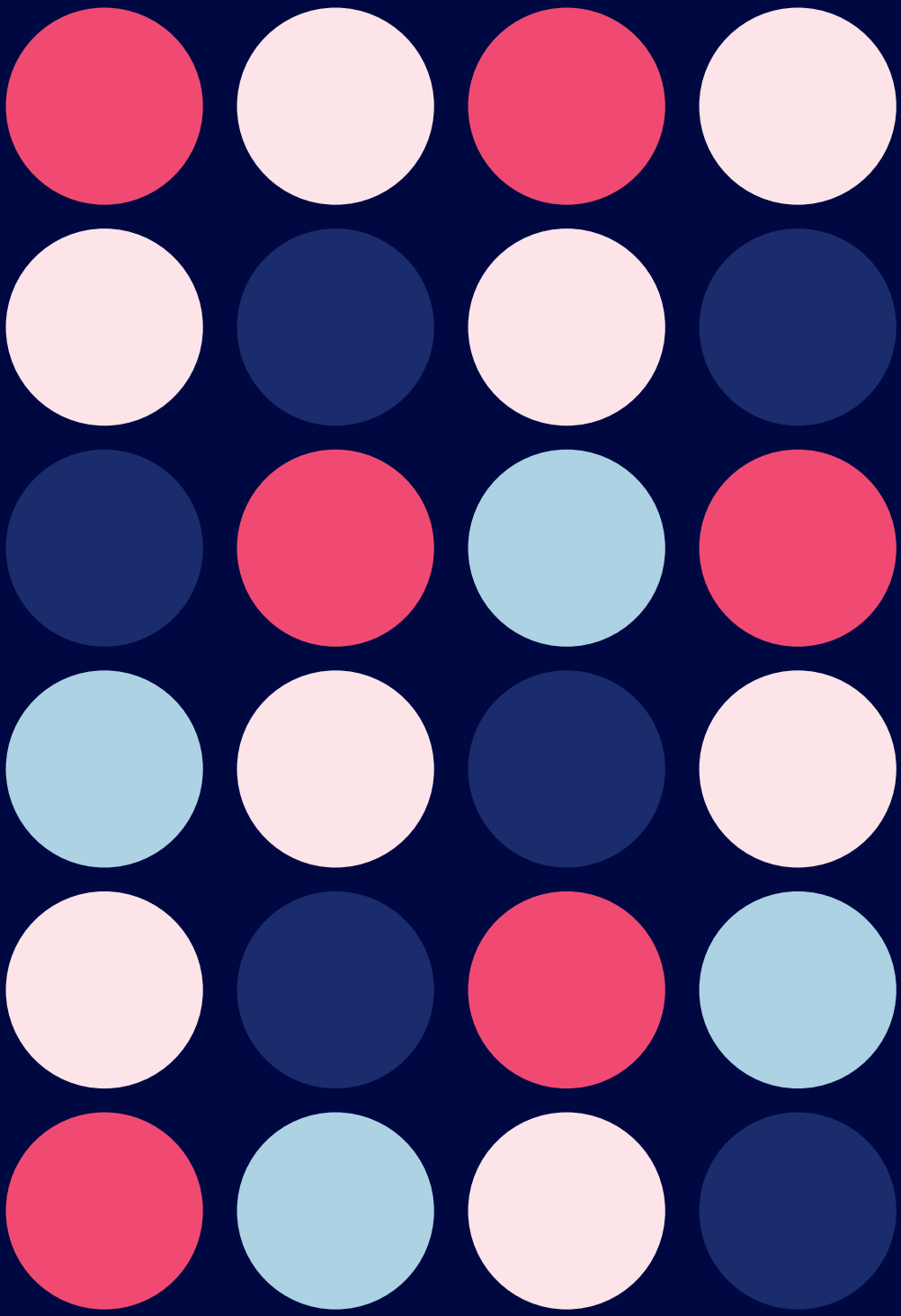


3. EQUALITY

DIGITALISATION DOES NOT IN ITSELF create or improve equality. Instead, it is linked to a variety of social, economic and political developments that can either improve or weaken equality. For example, gender, race, age, sexual orientation, origin, language, religion, convictions or disability must not result in unequal treatment, and should not unjustifiably reduce opportunities in digital society and prevent access to public services.

A key basis for achieving equality is that people understand each other's perspectives and experiences. Digital media and technology are enabling our exposure, in new ways, to situations in which we can understand and see the world through the eyes of others. The development of machine translation can help us, at some level, to understand languages we do not know or speak. Augmented and virtual reality can help us to experience the world and history as never before. However, language and customs are so strongly embedded in cultures that technology will not in itself solve the challenges associated with social interaction.

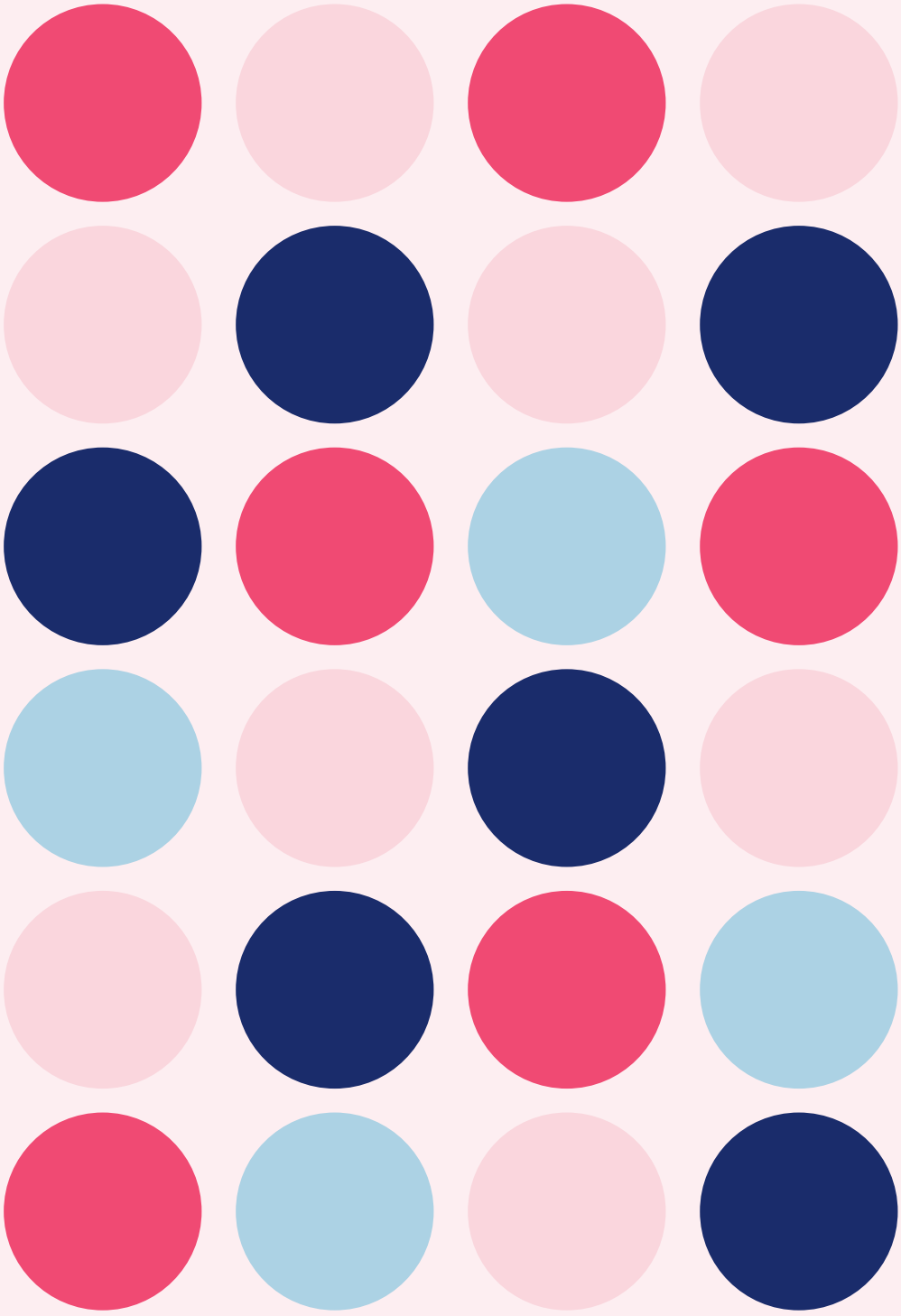
Digitalisation can also facilitate new experiences of inclusion. For many, online communities can provide a safe place for building and even playing with their own identities. They also provide non-traditional types of interaction and participation in a low threshold environment. On the other hand, the risks related to online communities, such as social isolation and inhabiting a cultural or ideological echo chamber, must be taken seriously.

Technology never develops in an ethical or moral vacuum: artificial intelligence must still be programmed by humans. Whether conscious or unconscious, biases in society still exist and affect the outcomes when programming technology. The best way to address biases is to ensure that developers are recruited from a diverse range of gender, ethnic and socio-economic backgrounds. This will help to ensure that technology is representative of diverse populations.

Youth work plays an important role in promoting the inclusion and equality of young people. Regardless of age, gender, background or other factors, the young must have equal opportunities to participate and make a

difference, including in digital environments. Youth work must also prevent inequality and narrow the digital divide between young people by providing support and tools, particularly for young people who lack access, know-how, resources or interest in relation to new technologies. This also means that youth work must take equality, accessibility and usability into account in the planning and design of digital services and activities for young people.

What kinds of youth policy should be formulated in order to promote a more equal digital society? How can digital services and activities be developed to meet the needs of highly diverse groups of young people? Which actors or stakeholders should be responsible for the development process? What concrete actions can be taken to foster equality among young people via digital technology?



Exploring digital equality

Panu Artemjeff

LAST YEAR MARKED THE 50TH ANNIVERSARY of the première of Stanley Kubrick's epic science-fiction film *2001: A Space Odyssey*. Kubrick's futuristic depictions of spacecraft are likely to strike today's audiences as nostalgic and clumsy, and some of the technologies featured in the film have become ubiquitous while some are now actually considered outdated (HAL 9000 is, of course, still just science fiction). The questions raised by the film on the relationship between man and machine and the doomsday scenarios involving artificial intelligence, however, are still relevant. The film studies humankind's relationship with technology and speculates how the development of artificial intelligence could turn man's technological innovations from tools into forces that we cannot control.

The balance between the opportunities and threats presented by technology is still at the heart of the debate surrounding digitalisation. In this article, my aim is to break down some of the key arguments in the contemporary debate on technological development. I also intend to examine links between questions relating to digitalisation and social justice, focusing on equality and inequality. My analysis is based on a theory proposed by Swedish sociologist Göran Therborn on different types of inequality. My article concludes with questions that can help to shed more light on the relationship between new technologies and digital systems as well as equality.

Coordinates of the debate on digitalisation

As I have already mentioned, the first dimension of the contemporary debate on technology and digitalisation consists of arguments relating to opportunities and threats.

Another key distinction can be made between effects on the individual and effects on groups as well as society as a whole. Table 1 shows a simplified outline of the coordinates of the debate on digitalisation. In practice, the arguments often blend together, and what gets emphasised depends on the priorities of whoever is making the argument. There are also numerous themes that fit in none of these categories.

	INDIVIDUAL	GROUP
Opportunity	Better capabilities	More efficient interaction and deeper understanding (stronger trust)
Threat	Alienation	Abuse of technology to wield power and the threat posed by technology to humankind

The argument for better capabilities on an individual level centres on the positive impacts of new technologies on people's lives. Examples include various mobile applications that make it easier for people to move around, access services and interact with others, such as map applications, online services and social media. Defenders of digitalisation who focus on individuals' capabilities tend to emphasise the rights of special groups, such as disabled people, who unarguably benefit from technological aids. Technology's potential to improve individuals' capabilities is undeniable, and this argument is a particular favourite of developers of digital services.

Sceptics like to talk about technology's potentially alienating impact on individuals. Antisocial behaviour, various forms of addiction and growing estrangement from reality are particularly prevalent among young people who are leading the pack in adopting new technology. On the other hand, digital illiteracy is seen to breed inequality. There are also concerns related to the security threats faced by individuals in online environments (identity theft, cybercrime, harassment) and to the effect of increasingly sophisticated surveillance and espionage technologies on, for example, individuals' right to privacy.

The positive effects of technology can also be studied from the perspective of groups. The key arguments in favour of technology in this respect relate to technology's ability to improve interaction, deepen understanding and increase trust. These elements are discussed in dept in a book by AI Researcher Timo Honkela. In addition to inter-group relations, the positive effects of technology extend to the social dynamics inside groups. A good example of this is Hans Rosling's often-cited case study on the effect of washing machines on the division of labour and time use between the sexes in developed countries (Rosling et al. 2018). Inventions that are based on mobile technology have created new ways to solve a variety of problems (finding out where

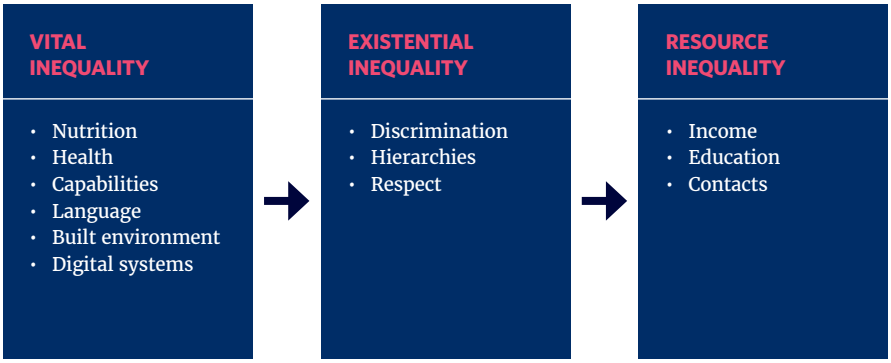
we are and how our friends are doing, meeting new people, ordering a takeaway meal, booking a hotel room in a strange city, etc.) while also bringing about an incredibly fast transformation in people's social interactions. Digitalisation is closely linked to changes in social behaviour.

From the perspective of groups, the downsides of technology relate to, for example, its use as a weapon in international cyber warfare, increasing polarisation, the development of unmanned combat vehicles, the networking of extremists, algorithmic discrimination and threats posed by artificial intelligence to the division of labour in society and the human race in general.

Types of inequality and equality

As much as examining technology and digitalisation from the perspective of opportunities and threats on one hand and individuals and groups on the other is fascinating, a deeper analysis is needed to take social debate to the next level. Digital technologies have become so widespread especially in the First World that it is no longer possible to ignore their impact on fundamental human rights and freedoms. For example, the digitalisation of services raises questions in this respect that must be answered at the design stage, not when the services have already been adopted.

Equality is a fundamental human right and an integral element of social justice and welfare. In a fair society, people have equal opportunities to get an education, find employment and access services. Sociologist Göran Therborn has identified three key types of inequality that can prevent societies from being able to provide equal opportunities to their citizens and deny individuals their ability to function fully as a human being. Therborn's theory also provides an interesting perspective on equality in the context of digitalisation. (Therborn 2014) It also provides a framework for exploring ways to use technology to reduce social inequality and identifying developments that could increase inequality.



Vital inequality refers to differences in people's living environments (climate, the built environment, nutrition, etc.) and physical functions that determine their capabilities. The communicative environment, and especially language, can also play an important role in shaping people's living conditions. The use of digital technology and services requires infrastructure, and infrastructure can be used as a benchmark for measuring inequalities. Whether people have access to the internet, how fast their internet connections are and what kind of support is available are key questions in this respect. The accessibility of systems and the range of languages in which they are available are other factors that need to be taken into consideration[2]. For example, digital services that require electronic authentication may be out of bounds to some people. Technological solutions that reduce vital inequality promote equal opportunities and are therefore extremely important. For example, artificial intelligence already shows potential to boost human capabilities, help translate between languages and measure people's health.

Existential inequality refers to inequalities born of social relationships and hierarchies that are manifested as discrimination against certain groups (often minorities). Discrimination hinders the opportunities of individuals belonging to these groups to function as full members of society. Links between existential inequality and digitalisation can be identified on many levels. Social media creates an effective arena for identity politics and makes it easy to spread information as well as preconceptions. This can either break stereotypes or reinforce them. The rise of hate speech and online bigotry is a tangible example of the role that social media plays in forming people's opinions. Social attitudes also tend to infiltrate man-made classification systems, such as algorithms. Biased parameters in recruitment algorithms have been studied, for example, in the United States. As well as threats, digitalisation also creates opportunities for combating existential inequality. Virtual reality allows people to get to know unfamiliar cultures, virtual learning environments can be used to promote meritocracy and artificial intelligence can help people to better understand each other. Experiences of social inclusion and exclusion also play a major role in virtual operating environments.

Resource inequality relates to the unequal distribution of economic and social capital in societies. Resource inequality is not just about money but also knowledge and skills as well as networks that give some people more opportunities than others. In the context of digitalisation, the issue can be, for example, lack of access to critical equipment or the know-how needed to use equipment and information. Exclusion from online communities can also cause problems from the perspective of social capital. Resource inequality is an especially important consideration when it comes to digitalising public services. Making services that are crucial for protecting individuals' fundamental rights only available online can have a critical impact on equal opportunities.

[2] Finland's language laws and new legislation on the provision of digital services, which is due to enter into force in stages during 2019, obligate government agencies to provide services that protect citizens' language-related rights and ensure accessibility.

In fact, equal access to digital services may be one of key questions in terms of equality both during the current decade and the next. It is important to design and build digital services taking into account the opportunities of different user groups to use them. Legislation (and especially accessibility and equality laws), technology companies' contribution and the input of different sections of the population play key roles in overcoming this challenge. One solution could be to incorporate an analysis of different types of inequality into the service development process. We also still have a lot to learn about forecasting and identifying the effects of new technology on society.

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Building equality with artificial intelligence

Tuomas Paasonen

HOUSEHOLD APPLIANCES ARE GREAT. Washing machines take care of our laundry, dishwashers make our cutlery shine, and the microwave heats up what the fridge has preserved. Without these devices we would spend most of our time doing housework.

The more affordable appliances have become, the more people have been able to enjoy the finer things in life. For some, however, life has always been like that. For the wealthy and few, clothes have always been clean, cutlery has always shone and food has always been warm, without them having to do anything about it.

While the wealthy still have staff to handle even the simplest of everyday tasks, the middle class can also enjoy many of the things that their parents could only dream of. Not only have they been freed from washing the dishes or doing the laundry by hand, they have time for other things that bring joy and meaning to their lives.

Household appliances are not designed to increase equality. They are designed for very specific tasks usually performed by people themselves. By freeing up our time, hands and minds, household appliances are actually an equalising force in society.

There's no technology for creating equality

Technology is always built to perform tasks that would be impossible or too time consuming for humans. Finding an example of a technology that doesn't fall into these two categories is extremely difficult. While human behaviour is almost never the focus of a new technology, behavioural change is often a consequence of a technological revolution.

This applies to artificial intelligence, or AI, just like it does to household appliances. Wherever AI will be used – and we don't have a clue as to most of the applications yet – the main focus will not be on increasing equality.

We tend to expect a lot from new technologies. Technology hype is easy to spot when a single term is used in a variety of contexts without much explanation of how it relates. That's where AI is right now.

Predicting how new technologies will change our lives is impossible. I believe AI will make a difference. But how? We can only guess.

We know that most of AI will do things that we do today. We are already familiar with things like recommendation engines and self-driving cars. Doing the jobs of chauffeurs and personal stylists gives us a hint of what AI is capable of.

Just as industrial robots have replaced many professions in factories, AI will replace people in the service sector. While less mechanical than factory jobs, service sector jobs are still well defined, and "well defined" is exactly what an AI needs today.

What can we learn from AI and peace?

Futurice's social responsibility programme the Chilicorn Fund did a research project based on the book "Peace Machine" by Professor Timo Honkela. In his book, Honkela describes how AI could improve human communication and thus help build world peace in the future.

Honkela himself recognises that his ideas are still utopian. Human language is far too complicated a structure to be fully understood by today's AI. In his work, Honkela looks at the future in an optimistic manner and believes that AI will be able to understand our language well enough to help us better understand each other.

Artificial intelligence is still far from human intelligence. Where humans thrive when performing tasks that require adaptation and versatile thinking, machines are at their best when dealing with strictly defined problems and questions. For example, humans can describe in their own words what has been said, while machines are merely able to identify words and their connections, lacking the real meaning behind them.

Scientists are still divided on whether an artificial general intelligence, or AGI, is even possible. By AGI they mean an AI that can take multiple tasks and perform them like humans would. This would require the AGI to alter its own behaviour depending on the context that it has first recognised.

While AGI is not really required for the Peace Machine, the ideas are not far from it. Understanding humans who come from different backgrounds, speak different languages and have different intentions is difficult with general intelligence – it's difficult even for other humans.

What Futurice's project found maybe isn't a huge surprise. We concluded that machines won't be the ones building world peace – not machines alone. They can help and guide humans to make better and more informed decisions.

This has a strong connection to equality. Ultimately, peace is respect towards other people. Equality and peace are not synonyms, but they are strongly related through respect.

Humans and machines cooperating

Equality comes in many shapes and forms. Roughly, it means that all individuals inside a group or a society have the same status and privileges in certain respects. Are people treated the same in the eyes of law? Can people purchase property with the same rules? Do people have the same access to resources?

It's all about human actions – how we perceive other people and how we act towards them.

Right now AI and ethics is a big topic in the technology business. It's important to understand that, in and of themselves, algorithms have no sense of ethics or morals. They are not trying to be evil, but they are not trying to be good either. They do what they are programmed to do or what they have learnt from decisions made by humans.

People, of course, have prejudices and biases. Even when we think that we are being objective, we make decisions that reflect our own ideas and beliefs. Machines that learn from our actions have no way to avoid our biases. Nor do they have the intention to.

Sooner or later, this needs to be considered. AI is already in use in some courthouses and banks to aid judges and clerks make decisions. In these contexts, a poorly implemented system will end up making the world a more unfair place.

On the other hand, a carefully defined system that can explain the suggestions it makes could well lessen the biases in decision making. It could visualise the reasoning, making it clear which arguments are considered and how much weight they carry. Humans can then evaluate the fairness of the different options.

Combining pre-programmed rules, algorithmic learning and human evaluation has all the potential to change the world for the better. AI can help us make decisions quicker, more coherently, and more transparently. All of which contribute to increased equality and fairness in the world.

Big impacts are made with everyday things

Transparency and displaying information is at the core of AI. Bringing up information that is hiding in large datasets can make a big difference. The sharing economy is a good example.

Access to resources is an important aspect of equality. Better awareness of location, availability or prices changes how we consume goods. For example, owning a car might become redundant when you could just as easily pick a shared car parked outside your building and only pay per use.

The sharing economy means less waste and lower costs per user. This makes many services available to people who previously couldn't afford them. AI is used to identify

the available resources and offer them to users in a smart way. While shared cars are already a common sight on our streets, similar services will become common in other areas as well.

How about right now? Can we find examples of equality and AI today? A surprisingly mundane example is Google Translate. It is, quite simply, an AI-powered tool for translating text from one language to another.

The system has come a long way from being a complete joke to becoming a tool that can be used to understand what has been written in a relatively short time. This makes a big difference.

For someone who doesn't understand the majority language of the country they live in, being able to read news, public discussions or even official documents is much more than just a commodity. Refugees, asylum seekers or members of language minorities are able to stand up for themselves, as well as to participate in a society as active members. Understanding language is a vital part of being an equal member of society.

Artificial intelligence is one of the fastest growing areas of technology. AI will have an impact on every industry and enter our homes, too. Just like computers did twenty years ago. While AI solutions will be present everywhere, it's still humans who determine what our lives will be like.

Equality is all about us. Just like a knife can be a tool for cooking or war, AI has the potential to make the world more or less equal. Which direction we take is fortunately up to us. Right now we tell stories about utopias and dystopias. Neither will be the real future.

How to choose the right career from a million possible paths *— in Finland, algorithms help teens make the right choices*

Jussi Pyykkönen

INSTEAD OF RELYING ON STORIES, *fairy tales and small sample size surveys, we now have the opportunity to rely on solid population data when constructing our future.*

Finland's greatest assets are its extremely effective educational system, a stable and predictable socio-economic environment, and the integrity of public institutions. Despite this, Finland was badly hit by the economic recession of 2008. According to statistics, the recession had a severe impact on the country's young people. Despite great opportunities, there is a huge risk of losing a big part of this generation of young people if we cannot build more sustainable paths to prevailing and future labour markets.

The defining factors behind unstable career paths are lack of experience, lack of education and prolonged unemployment. Based on a vast dataset, it has become obvious that the most critical situation is one which is a combination of all the aforementioned factors (the likelihood of getting a job drops from 60% to 6% within one year of unemployment).

Why is this important? According to the We Foundation's calculations, from existing data it can be said that currently there are exactly 65,941 (or 7%) of people between the ages of 15–29 living in Finland that have fallen completely outside the paths that are considered normal. These people are not working, not in education or training

or on maternity leave. They are socially excluded. That number is big and costly to a nation of 5.6 million habitants and the well-regarded social welfare and educational structure that is possible through tax revenues.

What's so special about this analysis? 65,941 is a surprisingly exact number. For example, the Finnish We Foundation bases its core strategy on data concerning the well-being of children, young people and families. Data alone does not help achieve the vision – that being *"there are no marginalized children, youth and families in Finland by the year 2050"*. Data is primarily a tool for the foundation to be able to pinpoint the entire phenomenon. The We Foundation's goal is to create the most effective tools to tackle social exclusion triggers.

You could argue that the greatest asset behind Finland's success is the best population registries in the world. And why is that? History explains it. The grand old man of population registries, Pekka Myrskylä, explains it. In 1749 the first population census covering the whole country was conducted in the Kingdom of Sweden (at that time Finland was ruled by Sweden). Thanks to this, uniform statistics on population censuses and population changes in Finland exist from 1749. The population census developed over the years. The next big step was in the 1980s, when the register-based census, that is, the person register, the register of buildings and dwellings and the register of enterprises and establishments, was created. A domicile code was also made available, which meant people could be combined with their dwellings. The household and family units necessary for censuses could be formed with the help of this information. Other additional data needed for a register-based census was taken from the Tax Administration's registers, the pension register and student registers.

As a result, Finland was the second country after Denmark to create a population and housing census using only data collected from registers and administrative records. Since 1990, data from over 30 registers have been used for population censuses. And now, when 30 years of annual population census data has been collected in the data warehouse, it opens up an almost inexhaustible amount of opportunities for researchers and developers.

What's special is that data gives a great advantage when examining a phenomenon, planning for operations and measuring the impact operations have. For example, the We Foundation doesn't only use data to make its own calculations; it has visualised millions of rows of data and published it in an understandable way for the public to use (www.mesaatio.fi/data). The visualised data includes information about school bullying, special education, number of dropouts, use of antidepressants, professions, unemployment and free time activities at a municipality or postcode level. The Foundation believes that data management should be used as a key to solve the issue of marginalisation. If the data is used in the right way, it can help to explain the underlying reasons behind the phenomenon, and target actions at the right focus groups and operations. Measuring the effectiveness of operations is also possible because of the data.

As mentioned earlier, Finland has great structures in place, but many of them originate from the post-war era. The world was very different back then, but in some cases organisations are still stuck operating in the same way. This simply doesn't work anymore for millennials. Services that are aimed at children and young people should be reorganised in order for them to reach their objective and have the desired impact. Changes to public structures are slow and complex. As one example of this, over a year ago the We Foundation and the Finnish Association for Mental Health opened a chat forum that is open 24/7 where kids can go and discuss issues that bother them. The demand for mental health services operating online was overwhelming and showed that most of the contacts that came through the service were made between 8 and 10 p.m. The needs the young people had for the service were completely different from the structure that adults had created and served the kids with.

A million possible combinations of skill sets, a million possible futures

In April 2018 the We Foundation released an app for millennials called *Noodi* (which comes from the idea that we have several nodes in our lives and careers that define our future). It is a tool that young people can use when planning their future. Finland offers millions of options for education and professions to its citizens. However, according to many different surveys, young people in Finland experience difficulty choosing the right path for themselves. Some say they don't receive enough information about the options they have. This may lead to making the wrong choice of path. Every tenth student drops out from vocational education in Finland.

The uniqueness of the Noodi web app comes from its massive dataset, which includes data from literally every person who has worked in Finland during the past 20 years. The data does not include a sample of typical Finnish careers. It includes them all. Everyone's salaries, occupations and education. This information is combined with information about skills that employees in certain professions require.

This massive databank is presented as "a space" where the user can choose different paths to go through. Noodi visualises the impact of the selections on the path to your salary and employment. Young people finishing comprehensive school or A-levels, or people who are searching for a new direction can use Noodi and find information on future options in seconds. Noodi doesn't only rely on information from the past. It has parallel "worlds" that have been created by calculating alternative scenarios for the future.

Recent academic studies in Finland and the US shows that advancements in digital technologies change the skills requirements in the labour market. In recent decades, digital technologies (computers and robots) have substituted human labour, especially in routine tasks (e.g. Autor 2006; Goos et al. 2014). Recent findings illustrate that computers and robots can perform increasingly complex tasks, which is also likely to increase the level of automation in jobs that require higher skills and abilities (e.g. Brynjolfsson & McAfee 2014).

Empirical findings from the US illustrate that the share of occupations that require high social skills has increased in recent decades (Deming 2017). In Finland, too, a recent study shows that the share of occupations that require a higher level of social and maths skills has increased (Jokinen & Sieppi 2018). Noodi utilises this data by showing young people three possible futures: the status quo, a mathematical future or a social future.

Noodi can be one solution in achieving the truly out-of-the-ordinary vision of zero socially excluded children in Finland. At least it could be one of the first databased solutions that utilises population registers and algorithms in a way that one day could be the norm in every European country.

On the edge of the future's horizons — *or, is there a tomorrow worth living in?*

Michael Laakasuo

I'M 35 YEARS OLD but I still feel in many ways like I'm just 16. I still wear baggy trousers and hoodies, and listen to music they play at psychedelic trance parties. I visit ecological projects around the Mediterranean where I constantly meet people in their early 20s. They recognise me as part of their tribe and as an "elder" who already has many life experiences they are just getting to know; I take part in meditation retreats, go wild camping, swim in waterfalls, climb canyons, experiment with magic, ceremonies, psychedelic art and music as well as demonstrations, to name just a few examples.

There is a link between my generation and those coming after me. However, in a few years I will be too old to have a strong connection with youngsters reaching adulthood. This is the way it's supposed to be: it's in the nature of things that my memories of my youth fade and my values get reoriented. I still retain a strong connection to the young people around me due to my lifestyle and my work. Young people need to deal with so many things that are potentially game changing: the coming upheavals of space travel, accelerating deforestation and climate change, AI threats, massive changes in income distribution and the restructuring of labour markets, and new totalitarian regimes with increasing production ratios. Due to all of this, I have many mixed concerns and feelings about what to tell the younger generations. I'm also constantly asked to give advice to my own generation of parents who are concerned about the future well-being of their offspring.

It goes without saying that the situation on our planet is dire and is teetering on the edge of both economic and ecological collapse. The next financial crisis might hit unannounced at any point; the next big climate change-induced catastrophe or major forest fire could destroy our closest water resource. Meat production and factory farming are increasing and are directly connected to the worsening climate conditions. And an over-abundance of food is being produced compared with what we actually need. And yet, climate change might lead to a severe food crisis where billions die of hunger by the end of this century.

While the eco-destruction is gathering more momentum and speed, we are running out of cheap sand, which is one of the key ingredients for producing silicon computing chips. The number of mobile phones and laptops and electric cars is increasing exponentially, and the mining industry producing the raw materials for these gadgets and their batteries destroys whole mountains, forests, rivers, swamps and lakes. These natural resources are necessary for keeping our water clean and our atmosphere stable. And here we are, talking monkeys, increasing in number and trying to deal with this mess we inherited from the two previous generations.

An increasingly larger portion of the planet's GDP is funnelled to develop new forms of technologies for war. Unconscious machines that nonetheless think (thinking is computing) are being developed so that we can exterminate one another for the sake of the Stone Age values of glory, dominance and arcane beliefs in supreme powers. We are living on a planet that could feed, educate and clothe every one of us and then some, but instead we're killing each other, and killing and eating our animal cousins (who were bred for that purpose and that purpose alone), and killing our own chances of long-term survival on this planet. I know that my generation is pretty much a lost cause. By the age of 35 we have managed to do nothing to make things better. Us, the most educated generation of all time. We did nothing to change things, despite being aware of all the climatological problems at the beginning of the new millennium.

Despite this very bleak vision of human life on this planet, I somehow manage to remain calm and optimistic. However, if I expected the existing systems (that got us into this mess in the first place) to save us from ourselves, I would be extremely pessimistic. The world order as it is, with nation-state based "free" market economies and national identities, has obviously run its course, and what we are witnessing all around us is the final act of this machine coming to its inevitable conclusion. Governments that are aware of this are preparing for the final act by implementing techno-totalitarian surveillance systems, robot surveillance and automatic police officers. Having a robot army to guard the parliaments, palaces and ministries is cheaper and more reliable than having paid humans to do the same work. Our governments around the globe are not just preparing for wars against each other, but against their own citizens as well. They know tough times are coming and they are building their fortresses. The old, powerful monkeys are very afraid.

So, where does my optimism come from? As I said at the beginning, I hang out with people much younger than me, all the time. These precious new minds hang out with each other despite language barriers, despite differences in eye shape and skin colour or sexual orientation; they don't care about these things. These same beautiful and hopeful human beings are building new types of collaborative communities that aren't based on any ideology of the previous eras. It's striking that somehow young people have instinctively avoided many of the traps and caltrops the previous generations threw at them. They don't care about ideologies; they use the tools, skills and knowledge they have to just build a new ecosystem of technological solutions, without relying on governments to bail them out. If there are problems, they find the solutions to fix them.

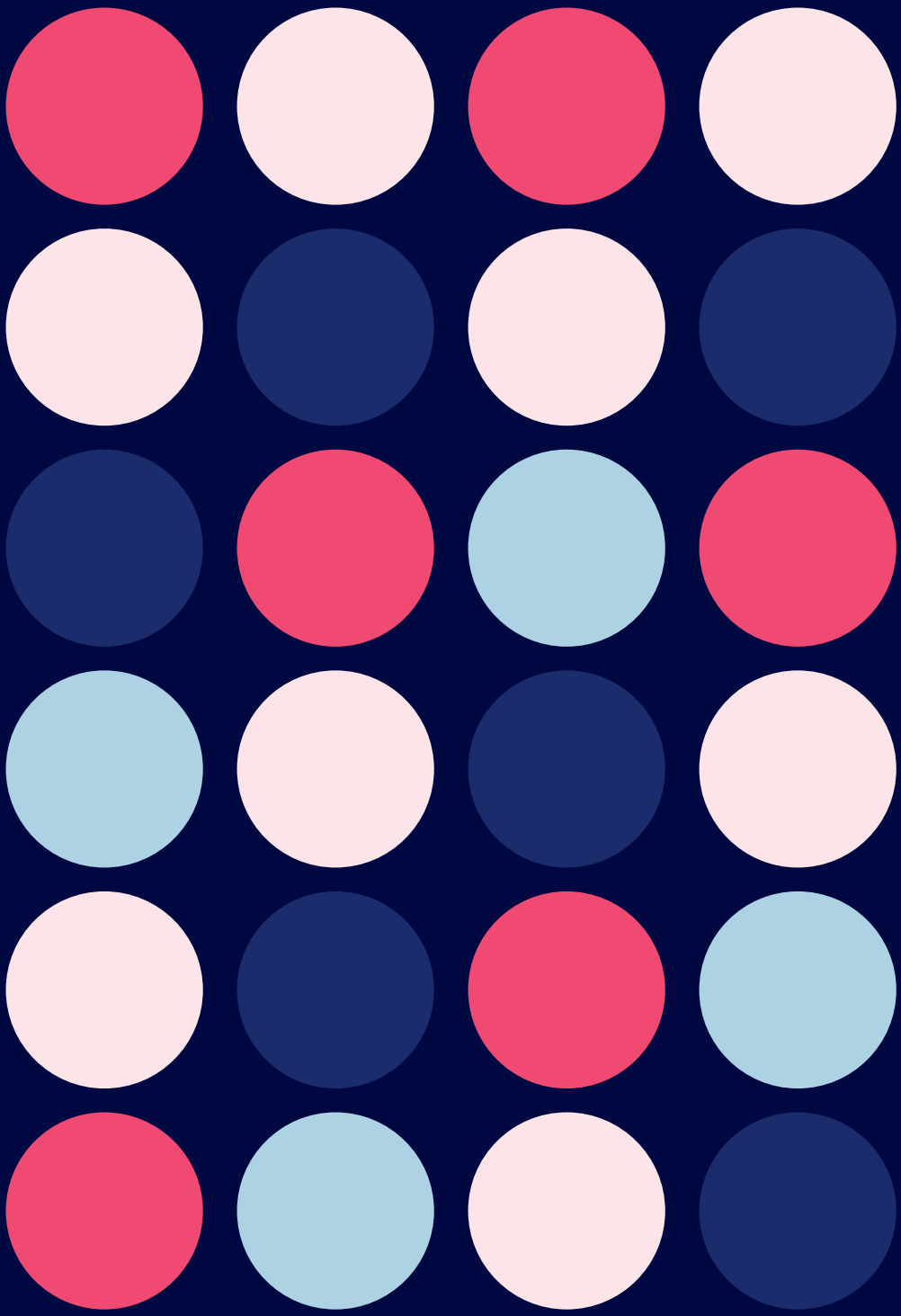
This same non-ideological optimism that stems from the frustrated realisation that the previous generations failed magnificently (because they're ego-driven tribal monkeys) also seems to be present in the technological field. Young people want to develop robots to clean the oceans. They want to build drones that help with natural farming or reforestation. They want to build intelligent machines and AI that could be used for constructing a better future for ourselves.

One interesting and relatively consistent prediction that keeps popping up – which is an added existential threat to the list that we need to be aware of – is the possibility of Artificial Superintelligence (ASI). ASI would be an AI system that is more capable than humans at every possible imaginable cognitive task. There are several analyses in the scientific literature suggesting that if such thing were created, it would successfully escape human control and be a major threat to human existence. It would not necessarily want to harm us, but our relevance in its eyes would be similar to the relevance of ants in our eyes (although ants have a clear ecological function, humans are essentially just an out-of-control ecological tumour). If ASI decided it wanted to turn the whole earth into tiny microprocessors to maximise its processing capacity, it would do so and simply not care how we felt about it. ASI may or may not be equipped with emotions such as empathy; however, we would never know with certainty since its emotional life could be as alien to us as our emotional lives are to octopuses. Furthermore, ASI would grow out of a simpler version of itself, something that we humans might be clever enough to build; however, ASI as a thing would be too complicated for us humans to understand since it would have probably programmed itself with superhuman capacities.

In my experience, very few people of my generation and people older than me seem to take ASI risks and problems associated with ASI development seriously. Interestingly enough, members of the younger generation seem to be properly concerned about these technological developments and correctly perceive ASI problems as worthy of attention and serious ethical consideration. This gives me plenty of hope. The younger generations, who are preparing to orient themselves in the world that the post-war

generations messed up, seem to be wiser than their elders in many ways. They have the eyes to clearly see the problems of the future and they seem to care. This is the reason why I am optimistic about the future.

It seems to me that the younger generations are already doing as well as they can. Rather than us trying to protect them, we should get out of their way and allow them to use their young optimistic brains and problem-solving capacities to make the world a better place. What we can do for them, if we want to make sure they have a beautiful world to live in, is to tell them about all the mistakes, errors and rotten things we did and why. We should teach them not to repeat our mistakes. What have our mistakes been? If we don't know this, then we are in no position to educate our young people about how they should be building a future they deem worthy. Let's just make sure that they have all the science and knowledge available to them with enough resources to understand it properly. And let's just stay out of their way and give them the space to fix the mess that we should have cleaned up but failed to. At least I know that this is the way I'm going to live my life. I have no children of my own, and never will. The previous generations messed up so gigantically for me to even consider having children. I will still do my best to help the younger generations make this world into a place that I would have wanted to been born into in the first place.



4. IMPROVING GROWTH AND LIVING CONDITIONS

THE INTERNET ITSELF HAS already turned our existence upside down. It has become our preferred medium of everyday communication, we can make our tax declarations via Internet, vote, manage our bank accounts and billings, make an appointment to the doctor or meet online.

If we add Internet and the developments of technology, a completely new dimension can be discovered. Networking technologies, such as superfast broadband and Wi-Fi, mean that more devices we use are connected to the internet (IoT, Internet of Things) than ever before. Whereas in 2016, the idea of being connected or the conception of a smart home was at its peak in terms of technology trends, then at the end of 2018, it is increasingly the reality of everyday life. You can control the heating and lightning systems via Internet, use keyless entry, monitor your surveillance system, remotely control your home appliances like the washing machine and robot vacuum cleaner, etc. Virtual assistants have been around for years, and now, for example SIRI, the virtual assistant in Apple Inc. products, was first released in 2010; different chatbots already help us define words, tell the bus schedule, etc.

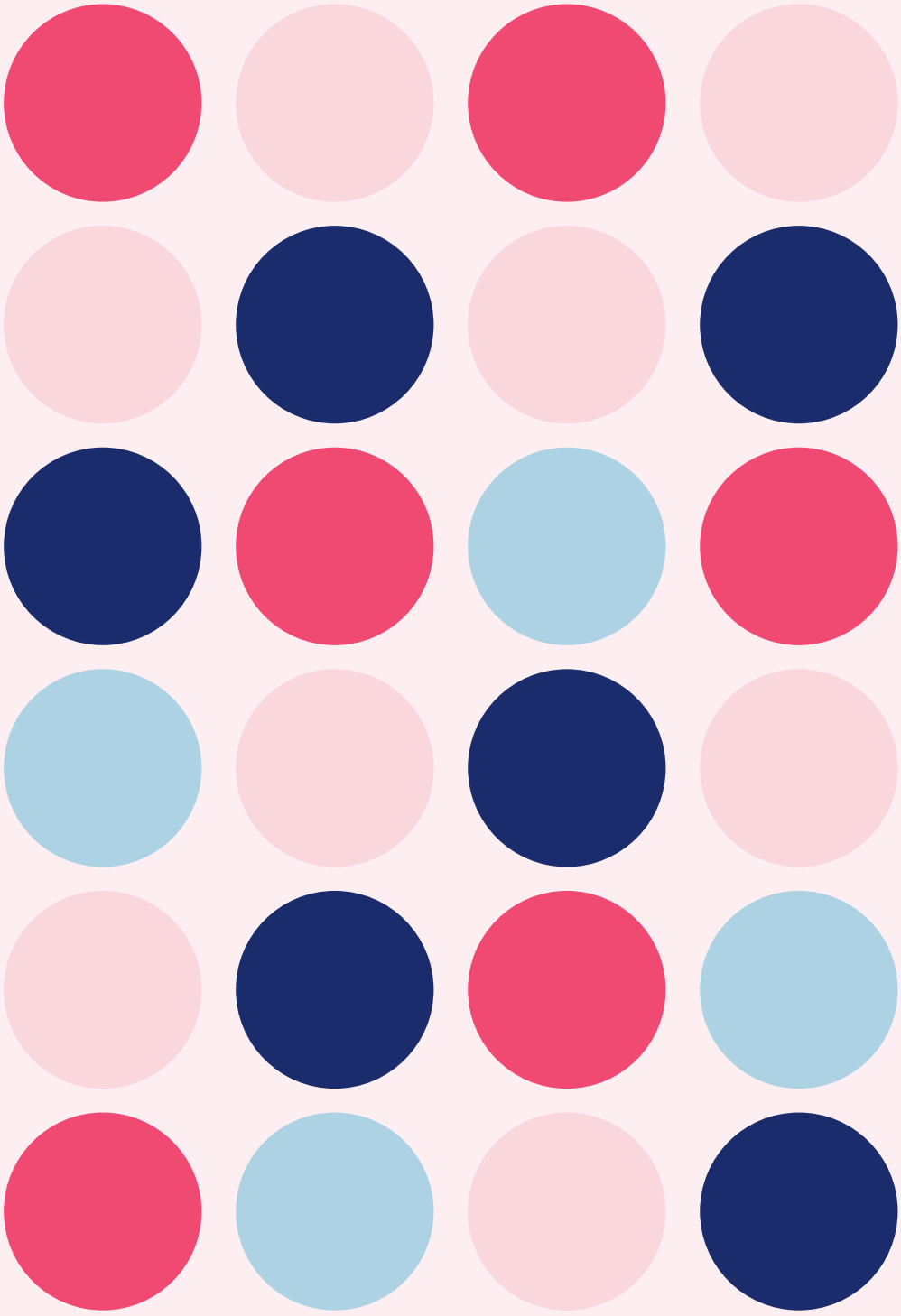
Biohacking yourself is also a thing and with the developments in the healthcare, it is more and more relevant. Estonia is now 100 years old and the celebrations take place throughout the year. Estonian Genome Foundation's present is to give Estonia 100,000 new gene donors. The new gene donors will be provided with a genetic map, which will be used to assess the personal risks of disease and the suitability of drugs in the future. The gene data base in the database will be integrated into everyday medicine in the coming years. Gene donors donate their gene data and get back valuable information and they can make better decisions about their health.

Technology and Internet are integrated into our lives more and more and mostly for the purpose to increase accessibility, efficiency, and quality. The government is also making an effort to meet people's needs for a better life. The Foresight Centre at the Estonian Parliament created five public sector future governance scenarios for Estonia, which paint different

pictures of digitalisation at the governmental level: 1) Ad Hoc Governance – uneven digitalisation, cost-cutting, and standardisation in most areas, 2) night-watchman state – limited digitalisation aimed at efficiency gains; privacy and security concerns, 3) entrepreneurial state – strategically important areas are prioritised; internationalisation of government platforms, 4) caretaker state – holistic digitalisation, the quality of services, and preventive policies through social analytics, 5) networked governance – diverse digitalisation with different models, co-creation of services, and many tools for participation. Which road will we take and what will it do to our different public services?

What about youth work as a service? How can we benefit from the technology trends and developments? Why not use smart house solutions in a youth club where you could register your visitors simply by motion sensors and reorganise your room usage according to automatically drawn heat maps? You could also use data-driven solutions in different youth work areas, such as getting better knowledge of youth, organising your work better by planning, delivering, documenting, and visualising results, and support decisions about youth work policies with trends and predictive analyses.

In the heart of envisaging innovation in youth work, we need to acknowledge the trends of our governments and the developments in other fields. The triangle of Internet, technology, and humans surrounds us everywhere and to get the best of it, we need to learn and expand our minds every day.



Water from the tap, Internet from the clouds?

Yrjö Länsipuro

WATER COMES FROM THE TAP. Electricity comes from the wall socket. The Internet comes somehow from the clouds, right? We don't question the things that we have always been used to. Their existence is self-evident and their provenance is of no concern to us.

When I grew up listening to broadcast children's shows, radio was a matter of course for me, even though I was intrigued by how Uncle Markus, the host, and his guests could all fit inside the little box. Today, kids are not at all amazed at video streams from around the world pouring out of their tablets and smartphones. Instead, they immediately start using the digital resources at hand, interacting with them and creating something new out of them.

You can understand if digital natives – those deft at handling the technology as such – are not interested in the early history of the Internet or in the details of Internet governance. That knowledge is not needed to get the most out of the Internet. Nor do you need to be familiar with the history and organisation of utilities companies to get a glass of water from the tap or to switch on the light.

But if you want to go a step further, to understand why things on the Internet happen the way they do, or to exert your influence as an Internet user, you'll be surprised to find that Internet governance – unlike most other mechanisms that govern the resources of our life – is in principle open for participation to anyone who wants to influence its further development. The Internet is a decentralised network of tens of thousands of autonomous networks, and even though it needs a few centralised things, their governance is shared by all stakeholders – private sector, civil society, governments, technical and academic communities. This is what is called the multi-stake-

holder model, which is distinct from a strictly multilateral (inter-governmental) or purely commercial approach.

A military project that escaped from the lab

Sprouts of what later became known as the Internet were sown during the Cold War at a few top US universities, as a by-product of Pentagon-funded projects. Linking computers at a growing number of universities aimed to save resources and money, but it turned out to be otherwise useful, too. More universities joined in, beyond those with military research contracts. The Internet developed into an academic all-purpose tool under the National Science Foundation, with strict rules of acceptable (non-commercial) use, but in the 1990s, the Internet climbed over the campus walls and was embraced by business. Conveniently, at the same time, the WWW and user-friendly browsers opened the Internet up to everybody. It was a perfect storm, and it took over the world, in spite of the reluctance of traditional telecommunications actors.

The US government was squarely within its mandate when it was leading and funding Internet development for defence and research purposes, but things in the late 90s went far beyond. A new approach was needed. Thanks to President Bill Clinton and his aide Ira Magaziner, at this crucial fork of the road, the governance of the Internet was set on a course that guaranteed its success.

In 2011, Ira Magaziner described the dilemma that his boss faced in 1998 and how it was solved:

"We realized that the Internet had enormous potential to unlock human freedom, economically, politically, and socially, because its very design empowered individuals by allowing them to implement their ideas directly, without having to go through established hierarchies and bureaucracies. The potential seemed limitless. But we also realized that the future of the Internet was very precarious. Balanced on a knife's edge between two extremes that could delay its advent or even destroy it.

On the one side, if the Internet was too anarchic with no guidelines, it could degenerate into a constant state of unpredictable, Wild West shootouts, scaring away the decent folk who wanted to invest and help build it. On the other hand, if the normal forces of bureaucracy took over with a mass of government regulations and slow intergovernmental bodies governing the Internet, the creativity of the Internet could be stifled."

A beneficial not-for-profit corporation under California law was set up to coordinate and ensure the stability of the unique identifiers of the Internet – IP addresses, domain names, protocol and port parameters, as well as root servers, and to develop policies relevant to these tasks. The Internet Corporation for Assigned Names and Numbers (ICANN) was designed to be at arm's length from the US government, but the arm of the Ministry of Commerce was strong enough to firmly guide it through its first years under the

oversight of the National Telecommunications and Information Administration (NTIA). Its tutelage was loosened step by step as ICANN learnt to stand on its own feet. In 2014 the United States announced its willingness to give up its remaining oversight powers over the Domain Name System and to entrust them to a global multi-stakeholder Internet community. It took two years to organise, but under new by-laws ICANN became an independent entity (though still domiciled in California and subject to its laws) on 1 October 2016. As such, it is unique among global governance institutions. (ICANN 2018.)

For the benefit of the Internet community as a whole

When ICANN was set up 20 years ago, its Articles of Association proclaimed its desire and obligation "to operate for the benefit of the Internet community as a whole". Early discussions on its governance model focused on empowering Internet users around the world. As the importance of the Internet grew over the years, burgeoning commercial interests – both of those who provide the machinery and of those who leverage the Internet in their businesses – pushed end users to a lesser but still significant role.

Even though ICANN on paper looks like any other hierarchical business organisation with a board, a president/CEO and a platoon of vice-presidents responsible for different departments and issues, there is a big difference: ICANN is committed to multi-stakeholder policy development. Three supporting organisations, self-organised under their own rules, are in charge of developing policy for generic domain names (GNSO), country codes (ccNSO) and IP addresses (ASO) respectively, and there are four advisory committees to advise the board from the point of view of governments, Internet users at large, security and stability experts as well as root server operators. (ICANN Community 2018.)

The board accepts the policies thus developed or returns them for more elaboration, but it cannot make policy all by itself. All policies are also subject to rounds of public comments at various stages of their development process.

Recent and ongoing policy development processes cover issues like expansion of the top level domain name space, with resulting added choice and competition, but also risks for user confusion; the possibility for users of non-Latin scripts to navigate the Internet without toggling between scripts; ensuring the rights of domain name registrants in various unexpected circumstances; and how to reconcile the General Data Protection Regulation (GDPR) of the European Union with the need to know who is behind which web page.

Getting involved

ICANN meetings – three physical meetings a year – are open, and access is free of charge. Locations vary, and some venues might be expensive to reach; however, video and audio of most sessions are streamed, and active remote participation is encouraged. Most business between face-to-face meetings is conducted by teleconferences, which anybody can attend. The At-Large Advisory Committee has its feet on the

ground in 80 countries, with 230 At-Large Structures (many of them also chapters of the Internet Society) and 85 independent members.

Another way of getting involved is to participate in the annual Internet Governance Forum (IGF) either physically or remotely. The IGF was created by the 2005 World Summit on Information Society (WSIS) as a discussion forum for all Internet actors: politicians, civil servants, academics, businessmen, lawyers, techies, journalists. The first IGF was held in 2006, and – as a demonstration of the viability of the concept – national and sub-regional Internet fora have sprouted up around the world in their dozens. The European regional Internet forum is called EuroDIG, organised annually since 2008. It offers full remote participation as well. (IGF & EuroDIG 2018.)

After the issue of Internet governance burst onto the international political scene at WSIS, the need for academic research and education in the area was recognised and resulted in initiatives like GigaNet, an academic research network, and the European Summer School on Internet Governance, a week-long academic course that has been emulated in other regions as well (GigaNet & EuroSSIG 2018). Another powerhouse of education and publishing on Internet governance and diplomacy is the Diplo Foundation. In cooperation with the Swiss government, it also runs the Geneva Internet Platform, an observatory of Internet governance and digital policy issues. (DiploFoundation & Geneva Internet Platform 2018.)

ICANN itself wants to help newcomers for whom Internet governance discussions might be difficult to follow because of a mix of technical and legal terminology, shorthand expressions, and an alphabet soup of an ever-growing number of acronyms. That's why ICANN has created an online learning platform called ICANN Learn. (ICANN Learn 2018.)

Take a look at some of the above resources and find about Internet governance! A word of warning: Internet governance may be addictive. Otherwise, why would thousands of volunteers spend their time reading long documents and attending those teleconferences at odd hours?

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The emerging patterns of digital governance

Meelis Kitsing

VARIOUS INITIATIVES OF DIGITAL GOVERNANCE have been around for more than two decades. A vast body of policy and academic literature has emerged on how to plan and implement e-governance in different countries during this time.

The attention given to digital governance is not surprising. Digitalisation has a huge impact on cultural, economic, political, and social aspects of our life. Hence, it is natural to see the enormous potential of digitalisation in public sector governance. Digitalisation has a promising appeal for making governance more efficient, equitable, and agile.

Yet the progress of digital governance has been slow and uneven. This is certainly so if different countries are compared. The UN E-Government Survey demonstrates that countries have a tremendous gap in the implementation of government online, even though the World Wide Web has been around for almost 30 years.

The digitalisation gap is also wide in comparing the different aspects of digital governance within countries. While some services are highly digitalised, others are not. In general, digital service delivery has received more attention than online political participation.

Many changes enabled by the use of digital technologies are evolutionary, but often, technological developments are analysed from the perspective of technology optimists, if not technology determinists. They tend to believe that technology itself is sufficient for implementing changes. However, technology is a necessary but not a sufficient ingredient for the digitalisation of public sector governance.

The diffusion of digital technologies depends on institutions and their change. Institutions are both formal and informal rules of the game as has been emphasised

by Douglass North, a Nobel Prize winner in Economics. The public sector governance is interdependent on formal institutions, such as laws and regulations, as well as on informal institutions, such as habits, norms, customs, and values.

Technology is changing rapidly, but government cannot update their systems quickly enough, as they are dependent on old systems and lack resources for complete overhaul. Many grand government digitalisation projects have also failed and ended up in creating so-called white elephants – costly projects that are no use for anyone.

On the basis of various digitalisation efforts, it seems that governments have to find a certain balance between top-down decision-making and bottom-up entrepreneurial discovery processes in digitalisation. There has been a tension between efficiency and equity in digital governance, where governments have focused more on the efficiency of digital service delivery rather than the involvement of citizens in decision-making processes. Nevertheless, the emphasis on co-creation by the emerging approach called Government as a Platform (GaaP) may reduce these tensions.

The benefits of co-production and co-creation and open government data (OGD) can be facilitated by the rise of platforms in public sector. It is based on a simple observation that cooperation between citizens created more value for law enforcement services. Hence, the value of a public service was influenced by the interaction between the consumer and the provider, not only by the provider.

Digital governance scenarios

At the Foresight Centre, we created five public sector governance scenarios for Estonia which also paint different pictures of digitalisation. Our current understanding may indicate that some of these scenarios are more or less likely depending on specific economic, social, and political contexts. However, these scenarios do allow breaking-up linear logic in thinking about future and widening the view of potential futures of governance digitalisation.

The following governance scenarios combine both external and internal factors which may or may not contribute to the realisation of specific scenarios. Fiscal pressures and tough budget constraints limit the range of possible scenarios. However, budget constraint can be both endogenous and exogenous. It can be an outcome of developments in the world economy, reduction in the inflow of structural funds of the European Union, the consequences of Brexit, and a number of other developments that Estonian policy-makers do not control and influence.

At the same time, the budget constraint can be self-imposed and thus endogenous. Policy-makers with certain ideological leanings may become dominant in the policy sphere and hence impose strict limits on public spending and reduce the number of government officials. The bottom line is that scenarios emerge as a result of endogenous and exogenous as well as more and less objective and subjective factors.

Furthermore, endogenous and exogenous drivers of change are constantly interacting. Hence, exogenous drivers also impact endogenously set priorities. Universally

best governance models do not exist. The real life developments will quite likely lead to a combination of various scenarios discussed below. However, the use of ideal types in the form of scenarios offers clarity and simplicity which contribute to the understanding of the interaction of key drivers and potential outcomes.

Five scenarios allow us to understand the interplay of different approaches to public sector governance and potential routes to the realisation of different scenarios. The scenarios are specifically meant for policy-makers to broaden their horizons and generate useable, concrete policy solutions for advancing digital governance as well public governance in general. The scenarios serve as a risk assessment tool, as they identify potential bottlenecks in the implementation of policy. Hence, one of the central questions concern the conditions which facilitate certain breakthroughs in governance reforms.

In other words, scenarios are not an end in itself but a tool for citizens, politicians, officials, experts, activists, and other stakeholders for advancing public governance. The real value of scenarios depends on their use. Will scenarios contribute for a clearer strategy formation in public governance and will they help to generate new ideas for better governance? The fundamental goal is to make governance more agile, equitable, and efficient. This implies that scenarios are normative. They are also provocative. However, all scenarios consist of costs and benefits. Whether the costs exceed benefits or vice versa in the context of specific scenarios depends on the perspective.

Certain current trends may also indicate that the realisation of some scenarios is more probable in the future. Other scenarios are plausible but not probable. Nevertheless, it does not imply that the aim of the exercise is to predict the future. First, predicting or forecasting future developments, especially in the long run, has severe limitations. Hence, it is important to consider not only small variations but fundamentally different developments, which are exogenous. We do not know whether scenario A or scenario B will realise in the future. However, we can comprehend to some degree what are the implications of scenario A and that of scenario B. Scenario planning as a method is about developing alternative, equal scenarios. Most important is to be prepared for different developments.

Second, the realisation of a specific scenario or a combination of scenarios depends on exogenous factors. A precondition for the realisation of certain developments depends priorities set by policy-makers and the mobilisation of resources for that purpose. Certainly, this is a necessary but not a sufficient condition. Unintended consequences stemming from uncertainty may undermine the best plans. The road to hell is paved with good intentions. Nevertheless, there are certain benefits of a pro-active approach to policy-making compared to a reactive or fatalist state of mind. It is about mental models which are prepared for the emergence of new external environments. Having considered different scenarios should contribute to a policy space which is more adoptive and adaptive to changes. The following discussion highlights the nature of different scenarios and implications of digitalisation.

Ad hoc governance

This scenario combines strong budget constraint and centralised and fast decision-making processes. The budget constraint implies either a need to cut public sector spending because of external or internal developments or a dominant ideological position among decision-makers that public sector governance must be managed within limited financial resources. The scenario is characterised by top-down fast decision-making to overcome economic crisis and exploit emerging new opportunities. Budget constraint also implies the privatisation of public services in some areas, which implies that the government does not have sufficient leverage to change the situation in every area.

Citizens may benefit from this scenario as long as the government's priorities match their own priorities. However, they are left out of decision-making processes, as it would imply a significant slow-down. Citizens also have deal with the uneven delivery of public services, where some services advance more rapidly, while others do not receive enough attention and deteriorate as a result of resource constraints. The number of dissatisfied citizens may grow as a result of suboptimal services and inappropriate government priorities. The scenario may become a self-fulfilling prophecy, where dissatisfaction with the limited involvement of citizens feeds into the need to keep decision-making centralised, as policy-makers are afraid of opening up a so-called Genie's bottle.

DIGITALISATION

Digitalisation is valued in this scenario, as it allows cutting costs and starting new projects. It facilitates improvements in service delivery, collecting data for policy-making as well as directing citizens to needed services, and reacting to changing circumstances. As budget imposes significant constraints and decision-making is centralised, the ad hoc governance scenario implies that most services are standardised and special circumstances are rarely considered. Standardisation implies a so-called forced digitalisation, where the use of digital services might be only option. On an ad hoc basis, some areas will receive special attention and these pet projects will be developed differently.

Government will prioritise the use of big data, but as the approach is not systematic, many institutional barriers do not allow the exploitation of the benefits. The use of open data does not receive sufficient systemic attention, which implies a deterioration in comparison with other countries. The combination of data from different public and private sources is possible in some areas but not in some other areas. The government does not see the whole picture in its data policy by focusing in some areas but ignoring others. The digital identity use of the government in different services will increase but unevenly. Various private and public sector digital identities will emerge and many citizens will rely increasingly on private sector solutions.

Night-watchman state

This scenario combines strong budget constraint and centralised and analytical decision-making processes. The underlying aim is to reduce the role of state in many areas and focus on the areas where state intervention and provision of services is absolutely necessary. The government will cut expenditure, reduce the number of public sector employees, and privatise services. The scenario implies that a systemic framework will be created for the governance of public sector, where the limited role of government intervention in the private sector and in the lives of individuals is the key priority.

Citizens will have considerable freedom in directing their lives, but their opportunities to become involved in public sector decision-making processes are limited to the elections. Access to public education and health will be limited. The scenario also implies that the government's response to substantial changes in external environments, such as environmental, geopolitical, and economic, will be limited because of a narrow policy-making perspective and small public administration capacity. At the same time, the dominant fiscal prudence may allow reacting properly to some external economic shocks, such as a global financial crisis.

DIGITALISATION

On the one hand, digitalisation is valued in this scenario, as it allows cutting costs and reducing bureaucracy. On the other hand, several barriers will be created for digitalisation because of privacy and security concerns. The minimalist government is worried about data collection, as it might enhance government intervention in the lives of individuals and in the private sector.

As cost-cutting is a key driver of digitalisation, it would imply a high degree of standardisation and universal basic solutions. The lack of customised solutions which consider specific needs may lead to dissatisfied users. The use of open and big data is not advanced sufficiently. The barriers stem from institutional factors, as the government is concerned about the misuse of data. A combination of different public and private sector databases is mired in complexity or is impossible. The use of a government-issued digital identity is limited because of privacy and security concerns. An increasing number of citizens rely on private solutions, including those provided by global digital platforms from the United States and China.

Entrepreneurial state

This scenario combines fast, centralised decision-making under generous budget constraints. The flexibility with resources allows the government to invest more in service delivery as well as in large projects, often in the form of Public Private Partnerships (PPP). The government will behave as a large enterprise by developing and investing into some key priority areas. The government's mission is to enhance economic development and improve the country's position in the international division of labour.

The risks involve the overinvestment of public funds in failed projects, which will become so-called white elephants. Radical external shocks may impose severe budget constraints, which, in turn, may mean the activation of an 'ad hoc governance' scenario instead of the entrepreneurial state. This scenario is also sensitive to changes in the government as well as in the quality and strategic agility of the top management of the government.

DIGITALISATION

Digitalisation plays a fundamental role in this scenario, as it allows collecting data, offering better services, and enhancing anticipatory policy-making. As government spending is generous and fast decision-making is appreciated, digitalisation can occur rapidly in many areas. However, government priorities imply that some areas receive more funding than others, which will lead to uneven outcomes. Overinvestment and misallocation of investments may also lead to failures in large scale projects.

The use of big and open data is highly encouraged by breaking down the so-called silos among agencies. Government designs policies for a combination of different public and private databases. The government's mission is not only to focus on domestic projects but to enhance digital data projects globally to understand trends and developments world-wide. This means active cooperation with international organisations and private and public sector actors.

One of the key priorities is to develop further the digital identity issued by the Estonian government by offering solutions globally. The government prioritises e-residency as a global digital platform, as through this platform, other Estonian public sector platforms can be diffused to other countries.

Caretaker state

This scenario combines a generous budget constraint and centralised and analytical decision-making processes. Improved living standards and economic development means an increased demand for high-quality public services. The government aims to meet this demand by increasing social spending and employing more officials. The main mission of the government is to improve the well-being of its citizens. For these purposes, the government intervenes in many areas of life, protects people from evils and ills, and regulates different economic and social activities.

Citizens benefit from good access to high quality services in education and healthcare. At the same time, their ability to shape public governance is limited. Government intervention in private lives may create the feeling that citizens live in a police state. The focus on current issues to citizen's wellbeing may also imply that the government may lack capacity to deal with large-scale strategic challenges, particularly in the external environment.

DIGITALISATION

Digitalisation plays an important role in this scenario, as it allows collecting data, offering better services, directing citizens towards better choices, and enhancing anticipatory policy-making. As the government spending is generous and analytical decision-making is appreciated, digitalisation will occur evenly in different areas. However, technological lock-in and path-dependence may lead to difficulties in adopting solutions in some areas.

The use of big data use is encouraged by breaking down the so-called silos among agencies. The government designs policies for combining different public databases. However, the government is reluctant to cooperate with the private sector in this field because of risks and security concerns. The government does not encourage open data projects for the same reason. Instead of offering public data to the private sector, the government designs incentives and regulations for ensuring access to private sector data.

The government's mission is to focus on domestic services and not to enhance global digital data projects which carry unknown risks. This implies that one of the key priorities is to develop further a digital identity for domestic users issued by the Estonian government. E-residency as a global digital platform will be closed down, as domestic online service delivery may suffer from new risks and the overcrowding of platforms.

Networked governance

This scenario combines a generous budget constraint and de-centralised and analytical decision-making processes. The government aims to involve citizens in decision-making processes and public service delivery through co-creation. For these purposes, decisions are made in bottom-up fashion, closest to citizens, and without unnecessary bureaucracy.

Citizens benefit from opportunities to become involved in policy-making as well as in service delivery. Their ability to shape public governance is visible and actual. At same time, it offers more opportunities for active citizens than passive. Areas with stronger social capital may benefit more than areas with limited ability to cooperate. Government spending may not be able to reduce the gap.

DIGITALISATION

Digitalisation plays an important role in this scenario, as it allows collecting data, offering better services, and involving citizens in policy-making. As government spending is generous, but decentralised decision-making is appreciated, digitalisation will occur unevenly in different areas. Different governance models will emerge in digital projects, where some rely more on the public sector, while others engage the private sector and volunteers.

In this scenario, a direct trade-off between efficiency and equity may not be present if the increasing number of digital platforms in governance allows for a greater use of the co-creation of public services by citizens. It is based on the assumption that open government data is made available and its use is encouraged. The use of big and open data as well as the combination of different public and private databases is highly encouraged. However, many different models will emerge in their use. A digital identity and e-residency will be developed further by involving numerous stakeholders from the public and private sector.

The following table summarises the key points concerning governance and digitalisation in five scenarios.

TABLE 1. SUMMARY OF FIVE DIGITAL GOVERNANCE SCENARIOS.

SCENARIO	GOVERNANCE	DIGITALISATION
Ad hoc governance	Centralised and fast decision-making under strong budget constraints. Executive branch centric, a reduced role for parliament and local governments.	Uneven digitalisation. Cost-cutting and standardisation in most areas.
Night-watchman state	Centralised and calculative decision-making under severe budget constraints. Executive branch dominance, a minimal role for parliament and local governments.	Limited digitalisation aimed at efficiency gains. Privacy and security concerns.
Entrepreneurial state	Centralised and fast decision-making under generous budget constraints. Executive branch aims at strategic agility and acts as a corporation. A limited role for parliament and local governments.	Strategically important areas are prioritised. Internationalisation of government platforms.
Caretaker state	Centralised and analytical decision-making under generous budget constraints. The government focuses on the welfare of all citizens. Parliament and local governments play a formally important role but not in reality.	Holistic digitalisation and quality of services and preventive policies through social analytics.
Networked governance	Decentralised and analytical decision-making under generous budget constraints. The executive branch has a limited role. The parliament, local governments, communities, and citizens play an important role.	Diverse digitalisation with different models. Co-creation of services and many tools for participation.

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Data for youth work policy and practice

Anne Kivimäe

YOUTH WORK IS IN CONSTANT SEARCH for ways to better respond to the needs of young people in modern societies. This article discusses the main causes and key factors when looking at data as a source for developing youth work.

Youth work needs new support

Knowledge of youth, understanding their realities and needs is a starting point for high-quality youth work and a starting point for youth work policy. The connection youth work has with young people and their development is perhaps most versatile compared to other public services, which has prompted the notion of youth work having the best expertise on youth life.

This is a lot to live up to, especially in the era where having information/data and being able to understand it is increasingly possible and complex simultaneously. In terms of the needs of young people, it is evident, that equipping young people with competencies for 'learning to swim in the digital ocean'[3] has a lot to do with non-formal learning that takes place in youth work. Supporting youth to cope with the impacts and risks of digital living and ensuring mental wellbeing[4] are the needs of young people that youth work has to increasingly address. Social connections, active participation, and youth initiatives that have always been important in youth work are affected by digital living and youth work has to respond.

[3] This is how they put it in the DigComp 2.1 – a collaboration between the Joint Research Centre and DG Employment Social Affairs and Inclusion https://ec.europa.eu/jrc/sites/jrcsh/files/digcomp-framework-poster-af-ok.pdf
[4] http://www.oecd.org/els/health-systems/Children-and-Young-People-Mental-Health-in-the-Digital-Age.pdf

In addition, youth work and youth work policy need to be visible, recognised, and valued to work best. This demands quality offer for young people, clarity of its value for youth and the whole society, and understandable explanation of outcomes and impact. While nothing from this list is new, the demands nurtured by changing habits of getting information about content, value, and results fast, in simple form, and always fresh create a new challenge for youth work.

The need to have expertise in youth life and be relevant for young people's needs in digital age, but also the need to respond to changes in governance and in creating/maintaining public interests are the main drivers behind the search for new ways to support and develop youth work. The concept of smart youth work, which was introduced during the Estonian Presidency in EU in 2017, is a step towards systematic mapping, describing, and creating opportunities that digital technologies could provide for the development of youth work. Data, management of data and use of data for youth work and youth work policy is one of the areas that require deeper exploration in this context.

Data that drives changes

The idea that everything in the world can be viewed as data is not new[5]; however, due to technological developments in the society, there has never been more global data available about young people that can be recorded and analysed. The amount of data is huge and growing, considering the consistently expanding range of sources – from social media usage, smart phone data to data recorded by things. Thinking and understanding everything as data has prompted businesses to put data to work and redesigned whole business models. Algorithmic management, decision engines, etc., are some of the elements of new thinking in businesses that are driven by data.

Data, or rather the use of data notably for market interests and political power, has created the growing need to raise awareness and regulate the use of data. With the EU General Data Protection Regulation now in force, some steps have been taken. However, the recognition of the need to think of and act for digital rights is still far from everyone. As Jacob Kornbeck put it: 'Just as states must strive to keep as much digital sovereignty as possible, in order to be able to protect their citizens' digital rights, so must citizens be able to act as digital citizens. They must know their rights and possess the agency to defend them.'[6]

Data and the development of youth work

Discussing the potential that data holds for youth work has to start with the realisation of the existing limits. First, not everything is and needs to be quantifiable

[5] Viktor Mayer-Scönberger & Kenneth Cukier explained the concept in 2013 in their book "Big Data. A Revolution That Will Transform How We Live, Work and Think", but the history has shown how words, locations, relations, emotions etc. become data, for example in sociology and other social sciences.

[6] https://pjp-eu.coe.int/en/web/coyote-magazine/young-europeans-and-digital-activism

and the quantifiable does not automatically result in more truthful results than other ways of documenting, describing, reflecting, and evaluating youth work. Second, it is important to know that digital footprints are also subject to situational context and to social implications of that context; the algorithms to analyse and use data are human creations and therefore subject to human nature including opinions, habits, agendas, etc. Furthermore, data-driven innovation in youth work does not have to compete with other ways for innovation and development; the question is whether there are possibilities for complementing, enriching, and supporting where necessary and reasonable. And finally, every discussion about data is deeply connected with privacy issues and ethics.

Considering the areas of youth work that could benefit from data-driven solutions, they could be summarised as follows:

BETTER KNOWLEDGE OF YOUTH:	ORGANISATION OF YOUTH WORK:	SUPPORT FOR YOUTH WORK POLICY:
the realities, needs, and opinions of young people	planning, delivering, documenting, visualising results	trends and predictive analyses, connections with other fields

In the heart of envisaging innovation based on the better use of data, however, lies one question: where and when in youth work there is a need for fast, automatic, real-time, etc. analyses across huge and versatile data-sets? This question is important because that is what the new and emerging technologies for analysing data can be best used.

Which experiences and learning opportunities could be enhanced for young people in youth work through extended analytics of their needs, opinions, and learning patterns? Are there any situations in youth work delivery when youth worker is struggling to make decisions about next steps fast, being often supported only by personal experiences and opinions from colleagues? What are the missing bits of knowledge that are needed when planning youth work offer, programmes, and strategies? These are some examples of questions that could help to identify the areas where data-driven solutions could be useful.

Another key issue in addition to asking the right questions is the need to look at the whole picture, not just the problem at hand. Any concrete tool using data will need to be created and developed with the big picture in mind of how data is gathered, managed, and analysed in an organisation, network of organisations, local govern-

ment, and/or national level. There is a metaphor about ecosystems in nature used to describe the interconnectedness and system thinking needed for a smart approach to data at any level. When a digital ecosystem or data ecosystem is something that could seem daunting for organisations and institutions in youth work, then the approach to delivering and developing youth work that is looking at the whole picture and is 'always sensing, always ready, always learning' is very familiar. Applying the same to the development of data-driven solutions is one of the factors to increase trust in the data and the resulting analytics. This type of system-thinking is supported by steps like creating a European Research Infrastructure, which will provide, over the next 25 years, comparative longitudinal survey data on child and young adult well-being.[7]

Finally, taking steps to be more aware of changes in connection with data and of the opportunities and risks its analytics withhold for youth work policy and practice is important for all stakeholders in youth work. It is not only relevant for youth work organisations' better data management and data-driven solutions, it is important also for youth work to be able to support young people's attitude about their own data, their critical approach to data-driven changes, and their active digital citizenship.

[7] See the European Cohort Development Project (ECDP) http://www.eurocohort.eu/

Digitalisation in youth work *– a local level perspective*

Merlis Pajustik

ACCORDING TO AN INTERNATIONAL survey on digital technology, 1.05 million Estonians used internet in 2018. This is about 80% of the total population of Estonia. An average Estonian spends about six hours per day with widgets connected to the internet. (Bestmarketing.ee 2018) At the same time, we have many youth workers who say: 'I think all digital solutions only cause worry and problems. I would rather lead the youth away from the digital world' (Institute of Baltic Studies 2016). Before we take a look at the future and discuss digital solutions that could be and already are in use, we will examine the current state of digital possibilities in youth work.

Estonia has a uniform understanding of what is youth work due to the Youth Work Act, which states: 'Youth work is the creation of conditions to promote the diverse development of young persons which enable them to be active outside their families, formal education acquired within the adult education system, and work on the basis of their free will.' (Youth Work Act 2010) Daily tasks of a youth worker include organising youth work, disseminating youth information and counselling, administrating and managing, networking and communicating with the public, ensuring a safe environment, developing youth work and professional self-development (Institute of Baltic Studies 2016).

When looking at the study 'Implementing IT solutions in youth work', we see that many methods used in the Estonian youth work mean that the youth and youth worker must be physically present.

In conclusion, the study states that using or rejecting a method depends on whether a youth worker considers it necessary for youth activities. In some cases, the use of a

method is influenced by personal decisions; in other cases, the implementation of a method is significantly influenced by its cost (trainings, seminars). The study indicated that main reasons for using digital solutions are the lack of time, ignorance of the best suited solutions, skills and availability of digital devices (Institute of Baltic Studies 2016).

The study indicated that youth workers utilise digital solutions mainly for making activities more interesting, exciting, and gripping for the youth (Institute of Baltic Studies 2016). Digital solution or application is a program that has been created for specific tasks or activities. Digital solution can also mean a service created through information technology (IT) that helps satisfy the needs of a specific target group.

In order to select a suitable solution, the positive and negative aspects of each alternative solution are compared in three categories:
1. Efficiency of solving existing problems
2. Cost of resources currently in use
3. Capacity to implement an alternative

In this article, I will propose various visions of ten different aspects (among all else, the previous three categories should be considered here as well):
1. Organising, administrating, managing youth work
2. Professional self-development, trainings or seminars
3. Group tasks, workshops, group discussions, panel discussions, meetings, support groups
4. Disseminating youth information, counselling, individual guidance
5. Study trips, visits to various organisations, learning about different trades
6. Games, athletic activities
7. Participation in decision-making processes and promoting civic initiative
8. International youth work
9. Creating solutions for yourself
10. Developing digital competencies in youth

Organising, administrating and managing youth work

I believe that in future, the transaction of affairs will become web-based and specialisation is preferred whenever possible. Specialists of various areas who will only focus on activities that they excel in will spring up around us; they will not devote much needless thought on activities that they cannot conduct expertly. I think that individuals involved in similar projects should form a team and concentrate on the same goals. Location is not that important because we have many tools for communication. We have been able to offer support for organising an event that took place 300 km from us because most of our activities were individual tasks that could be performed in an office.

Remote work is supported by statistics indicating that the number of independent specialists or freelancers in the 28 member states of the EU increased by 24% from 7.7 million to 9.6 million between 2008 and 2015 according to the most recent surveys published by IPSE, the Association of Independent Professionals and the Self Employed. This means a mean growth of 7.2% per year over the course of 7 years. (Staffing Industry Analysts 2016) By 2020, freelancers will make up 43% of the US workforce (Nasdaq 2017). The majority of the US workforce will be freelancing by 2027 (Upwork 2017).

Remote work and managing project teams requires excellent tools for managing groups of people and projects. For me, a great project management tool is free, it has an option to communicate with the project team and save the interaction according to tasks, files can be added, tasks can be delegated to team members, tasks can be labelled, it has a usable calendar, and the application should run on different platforms.

In the case of youth work, a good project management application is Bitrix24.eu. It looks like a classic project management tool. However, the application is singular due to the numerous options its free version offers. Another application with a long history is Trello.com. This is a project management tool where activities and tasks can be allocated on a virtual blackboard and moved from one board to another. This type of project management is most often used in IT and agile development. In the case of both applications, creating and displaying files can be linked with various possibilities through Google, making them particularly useful. The option to work on documents simultaneously is the most important aspect of virtual work. I believe Google is the best at offering a high quality fast service, which makes its utilisation extremely comfortable.

Professional self-development, trainings or seminars

Certain competencies are necessary in any job – skills, knowledge, suitable personality traits, attitudes, and relevant experience. Estonian occupational standard for youth workers lists necessary competencies for being successful in this area of work. Occupational qualification helps – it proves you have all the skills and knowledge described in the occupational qualification standard so an employer does not have to verify them (Kutsekoda.ee).

Internet has numerous excellent environments that can be used for developing one's knowledge and skills. The most popular is definitely Youtube.com containing all possible kinds of videos. Next to Facebook, YouTube is the most consumed web environment and it has 1.9 billion users in any given month (Dreamgrow.com 2018). However, no certificate or attestation cannot be acquired from watching YouTube videos. In contrast, internet offers an extremely large number of learning environments that offer a certificate after completing your studies. One such environment is Coursera, with 30 million users having registered to Coursera training programmes

by February 2017; it offered over 2,700 online courses (Class Central 2017). It is even possible to enrol on courses for free or for a reasonable price at Harvard, Stanford or other highly regarded universities of the world. Taking online courses is an excellent opportunity to develop one's knowledge and skills.

The current problem of Estonian youth work is definitely the large number of youth workers who do not speak English. There are almost no courses offered in Estonian, which makes it almost impossible to learn and acquire something new through an online course. It is one thing to pass a training course and receive a certificate; it is completely different to give meaning to and map the learned material. Various digital tools have been created for this purpose. In Estonia, Teeviit.ee web page has a section called My CV that enables an individual to list their experience in a simple and general manner. Currently, it does not have a section for verification, but it is possible to list your certifications, which makes it a very useful tool when applying for occupational qualification as a youth worker. The city of Tartu is developing a project called Vöötorav [Chipmunk], which also allows giving meaning to studies and experiences. It already contains learning competencies where an individual has to evaluate themselves to get help analysing their learning processes. In the case of Vöötorav, a lot of thought has been given to employing a person to verify that certain skills have indeed been acquired. An excellent tool for mapping your knowledge and skills is Openbadges.org system. This is a badge system where users can invent badges for skills they have learned. The skill could be a very simple one. This system also requires a person to verify that a skill has been acquired.

Young people who participate in hobby schools or groups have said that digital solutions would definitely help with self-improvement regarding their hobby. The youth believes that if they would read online materials or watch educational videos about their interests, it would help them develop their skills and improve performance independently. (Institute of Baltic Studies 2016)

Creating digital tools was used in a Pühalepa Youth Centre project called Juhendaja kohvris [Instructor in a Suitcase]. For this project, they invite specialists to lead workshops at the youth centre. After the workshop, a digital manual is created that allows others to conduct similar activities. Another possibility would be to film the workshop or hold a live transmission and those who cannot participate physically can watch it at home or at a later time. It is particularly important in the case of practical skills.

Group tasks, workshops, group discussions, panel discussions, meetings, support groups DigitalYIntro, a digital youth information online course, which takes place in Estonia, has helped gain experience in increasing the use of webinars and the possibilities for dividing participants into groups or for group work that the format offers. Experience has demonstrated that the more people participate in such virtual workshops, the more they are technically prepared and workshops have therefore been increasingly successful. Another possibility is to use digital tools and create a

real-life presentation. My favourite presentation tool is Zeetings.com, which can be used in various ways for creating a presentation; in addition, trainees can participate interactively by voting, evaluating, selecting answers to multiple choice questions, etc. Naturally, it is possible to use various digital means for group tasks, such as different file formats on drive.google.com or Mindmeister.com, where it is possible to create a joint mind map in real time or in a cloud. Padlet.com is definitely in wider use; here, it is possible to write down your thoughts on a virtual blackboard. It is possible to list numerous digital means for group assignments, but the most important task is to find suitable tools for the right group tasks and to create a list of possible digital tools that can be used. It is important to understand that the goal is not the use of a digital tool; instead, the tool should support the group assignment and learning. I have come to realise that group assignment results should be documented later anyway, so why not do it immediately by digital means.

Disseminating youth information, counselling, individual guidance

As previously described, an average Estonian spends about six hours a day using gadgets that are connected to the internet. According to an OECD study conducted in 2017, Estonian students spend about 160 minutes online during the work week and 190 minutes during the weekend. What do Estonians do online? They use search engines, social media, play games, watch videos, and look for information about products (Bestmarketing.ee 2018). We are constantly consuming information. How do you reach the youth? That can be learned at a youth information training. An important key principle here is that information must be directed to specific youths as much as possible. Noise from social media tends to drown out today's information. Personal approach is still the best. Google and Facebook use it all the time and the information that they have on everyone can be browsed publicly. I believe that a similar collection of information should be conducted at the local level – naturally, with the consent of the young individuals and their parents. This makes it possible to share the most relevant local information with the youth. It must be understood that the goal of youth information is to increase the number of alternatives that are available to the youth by offering direct or indirect information about public life and hence, allowing the young to make independent choices when making decisions about their lives (Ministry of Education and Research 2016). One possible way to disseminate information is a local youth information web page, where the user can set the criteria for receiving information.

This web page should definitely be linked to a smart phone application. Vastseliina Youth Centre and upper secondary school even have information screens that contain youth information for the local region. The point of sharing this information is for an adolescent to know which source to use should they wish to learn additional details. Individual counselling can be done by using the Messenger app or Skype. This type of

counselling is particularly important in areas where the young people want information but a youth worker is not available because of location, for example. Chatbots are used more and more; these help answer simple questions or help start a conversation if an employee does not have time for that. Using chatbots is increasingly popular and I think that they will soon be used in all areas. Chatbots have proven to be the most useful in the case of 24 h customer service for providing quick and simple answers and easier communication (Chatbotsmagazine.com 2018).

Study trips, visits to various organizations, learning about different trades YouTube has over 5,000 channels with over one million subscribers; the PewDiePie channel has the most subscribers – 61 million (Businessofapps.com 2018). The most popular Estonian YouTube channel is Life of Boris with over 1.1 million subscribers (Geenius.ee 2018).

Live transmissions are ever more popular. Today's smartphones and internet allow sending live transmissions and reaching a large number of people very easily. A YouTube channel is definitely the best way to reach youth. I think that cooperation with YouTubers can help introduce important topics to the young people. It is also an excellent opportunity to introduce organizations, arrange visits to various establishments, and introduce various professions.

Games, athletic activities

A renowned Russian psychologist Lev Vygotsky has stated that games form the basis of a child's development. Playing is the natural daily part of a child's life. However, games are not just a way to pass time; they are extremely important for the emotional and physical development of children. Games are a child's way to learn with joy and without really noticing they are doing it. When playing, a child experiences different situations and emotions. Even though playing is not 'real', emotions that can be experienced through a game are completely real and educational (Perekool.ee 2018).

Online gaming competitions are a growing trend. Currently, 3,877 tournaments take place every year and there are 13,576 active online players in the world who participate in the competitions. 54% of the players play games involving others. 53% of the players play games to spend time with their friends. 42% of the players think that video games help them spend time with their families (Bigfishgames.com 2017). Video games could easily be considered purely harmful, but the reality is a little different. I would like to describe some positive outcomes of gaming. Video games help develop problem solving skills, as this is a large part of those games. Playing helps develop creativity and become more social because of the opportunities to communicate with other players (Storypick.com 2015).

These are only some examples of the benefits of video games. Digital tools can be linked also to real world activities. During the Vastseliina smartphone application workshop, participants created the Police and Robbers game based on GPS, where the

players had to choose a role on their smartphones and fight the opponents. The game involved moving around in the real world. Physical motion and games have also been utilized by Pokémon Go game. Various challenges are extremely popular. Endomondo challenge is a great opportunity to compete in athletic activities and motivate people to exercise more.

Participation in decision-making processes and promoting civic initiative

Inclusion means informing interested parties, consulting them, and participation of interested parties. The goal of inclusion is to increase the quality of decisions and approval of the society by expanding the participation of non-profit, private and public sectors in preparing and making decisions (Noortekogud.ee).

Various digital solutions can be used for the inclusion of stakeholders. It is a fast and steady rule that all information pertaining to the decision making process is usually available on various web pages and decisions are also displayed on the internet for everyone. Reaching an interested party to ask for their opinion is much more difficult. The easiest way to deal with this is definitely sending a survey and hoping that the recipient will answer the questions. Stakeholders are already among the attendants of seminars and conferences and it is easier to gauge their opinion by using different tools, such as Mentimeeter and Eventeca.com.

However, how do you involve a local community? They must have an innate need to participate. The inclusion model is simple: you create a need to participate and use a technical tool for gathering opinions, followed by data analysis. In youth centres, many of the young people use the Wi-Fi of the youth centre. In order to create a need, it is possible to create a login environment for the internet where the adolescents must answer a question and give their opinion on a topic in addition to logging into the internet. It is also possible to use a ready-made environment and direct the target group to answer questions on that page. One such tool is an international web environment OPIN.me. This is an environment designed specifically for youth to collect their ideas and opinions. The easiest tool for asking for opinions is a Google questionnaire, which is very simple to create; later, analysis of the feedback can be created.

International youth work

International youth work means creating opportunities for the young to experience international cooperation and intercultural learning (Tugila.ee). Certainly, no digital means can communicate the experience of another culture because a country and digital environment are so different; however, digital solutions can certainly transfer some of the atmosphere. One such possibility is eTwinning.net. ETwinning is a virtual community of European schools, which is also a working environment for school employees (teachers, head teachers, librarians, etc.) who work in different European countries. Schools that have decided to join one of the most exiting communities

in Europe can communicate, collaborate, and create common projects. For example, Vastseliina upper secondary school has found partner classes who communicate with each other actively and share experiences. I think this is also an excellent opportunity for youth centres and youth work to establish relationships and share experiences and to organize youth exchanges later.

Creating solutions for yourself

Every year, Estonia has more and more hobby circles that are involved in programming. I believe that programming is one of the primary skills of the future that any young person will have. Already, we have numerous tools for making programming easier. Programming means creating a machine language that helps solve a problem. Problem-solving is nothing special. If your room is messy then you have a problem that needs a solution. We will act and tidy the room. Sometimes, a problem can be solved with programming. A good example of this is the smartphone application workshop in Vastseliina. The most urgent informational need that students have are lesson times, timetables, lunch information at school, etc. For this purpose, we programmed and created a smartphone application in the Appybuilder.com environment and solved the problem of needing information by making information more accessible for the youth. This does not have to end with smartphone applications.

It is important to understand with all previously described applications that a digital tool is not a goal in itself but means to help us solve a problem or make activities easier. Youth work is and will be interpersonal and no digital solution can replace that but only help increase its quality.

Importance of developing digital competencies

A forecast system for workforce and need for specific skills called OSKA was created in Estonia. It seeks answers to questions about how many people and which skill sets are needed on our labour market now and will be needed in the future, as well as how to acquire those skills (Personaliuudised 2016).

The first report indicates that 49,000 more people will exit the labour market compared to those entering between 2015 and 2024. Somehow, we need to find a solution for replacing those people. One possibility is mass immigration or replacing them with machines and robots. The report specifies that the decrease of workforce will primarily affect simpler and more routine jobs that can be replaced by machines. Demand for labour increases mainly for specialists with a Master's degree, particularly in natural sciences (Pärna 2016).

When we take into consideration that almost all jobs are technology-related, then the only option is to mass educate more people in STEM fields. We must let our children grow accustomed to working and co-existing with technology today, as this is our future. Youth workers can contribute a great deal towards introducing technology

by constantly using technological means in their activities. The most important thing a youth worker must do is create an understanding that digital means are a tool for building a better life, not a source of entertainment for hours. It is certainly important to think about skills that a youth worker should develop in youth through their activities. When developing skills, it is important to take into account the Future Work Skills 2020 report that was published as early as in 2011 and which names several key skills that we will need in the future, as well as Digital Competence Framework 2.1 that lists five different competencies.

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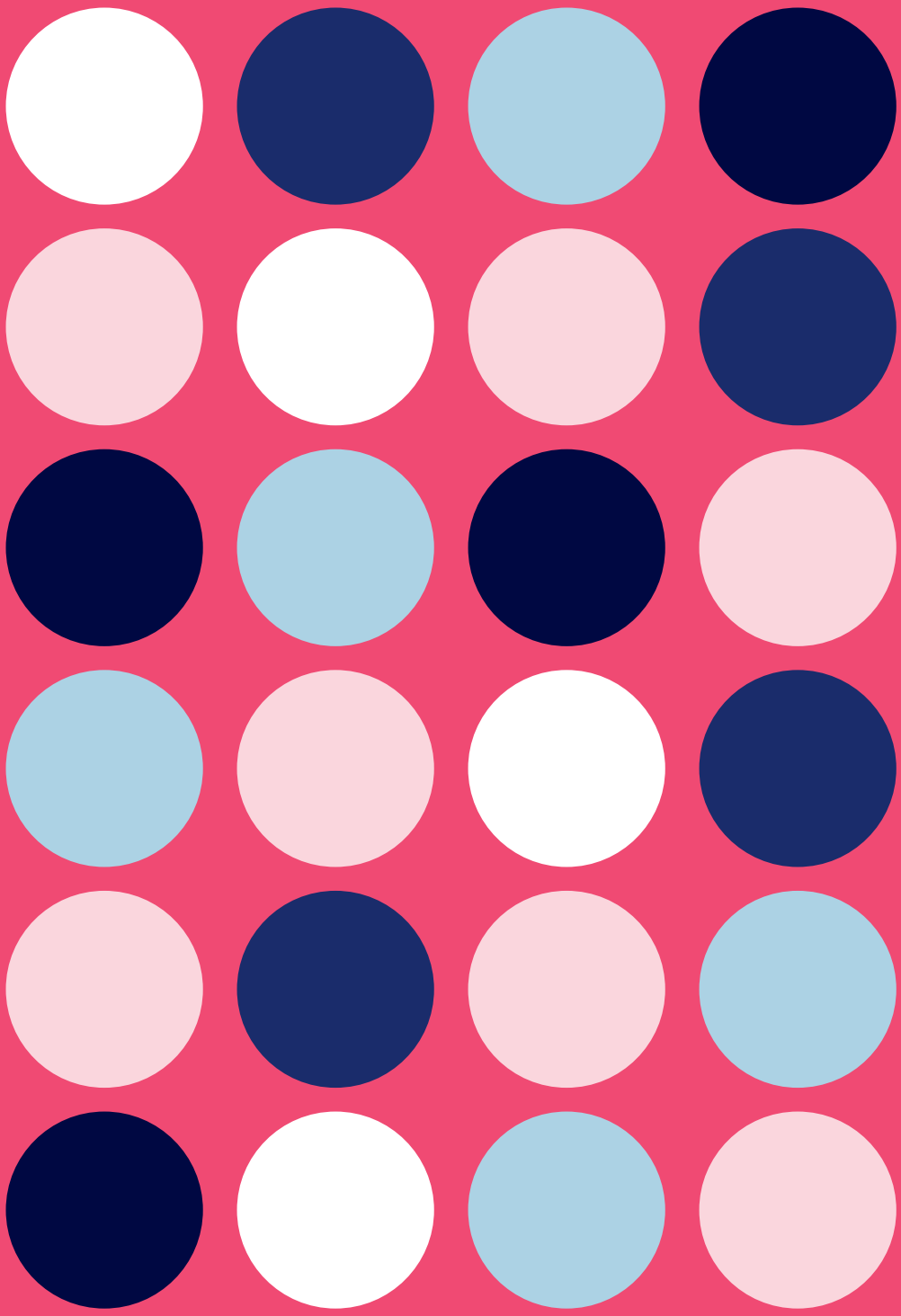

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Digitalisation and youth work

HOW IS DIGITALISATION CHANGING our society? What are the key technological developments or 'megatrends' that we should all be aware of? How will these developments affect young people and their future?

'Digitalisation and youth work' aim to provide new perspectives on the digitalisation and technological development of society, by approaching the subject through four major themes: skills and competences, participation and engagement, equality, and improving growth and living conditions. The goal is to highlight the technological, social and cultural impact of digitalisation in the context of youth, and to map and address the opportunities and risks associated with technological development. The book also highlights the concepts of digital and smart youth work, and how they can help in meeting the opportunities and overcoming the current and future challenges faced by youth work.

The book is a collection of articles from 23 contributors from Estonia and Finland. The articles have been written by professionals in various fields, such as engineering, futurology, educational science, sociology, cognitive science, data analytics and city planning. The publication has been jointly produced and edited by Verke, the national Centre of Expertise for Digital Youth Work in Finland, and the Estonian Youth Work Centre (EYWC), the government agency for youth policy and youth work development.

The book is targeted at professionals and volunteers working with young people, and managers, decision makers and public officers in the field of youth work. It is ideal for everyone who is generally interested in the digitalisation of society.

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