NAVIGATING knowledge LANDSCAPES

Book of Abstracts

9th Annual NKL Conference

Digital Innovations

Zagreb, May 9-10, 2025

University of Zagreb School of Medicine

School of Public Health “Andrija Štampar”

10th Anniversary of NKL Network Constitutive Meeting

held on September 28 and 29, 2015 in Zagreb

Navigating Knowledge Landscapes – 9th Annual NKL Conference

Book of Abstracts

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Dear colleagues, distinctive scholars,

When 10 years ago in Zagreb, at the meeting held at the University of Zagreb School of Medicine, in the lecture rooms of the Department of Histology and Embryology, and Croatian Institute for Brain Research, we discussed the topics of innovative knowledge in the digital society, it was difficult to be a fortune teller and predict either further development of the digital society or the activities of the interdisciplinary network Navigating Knowledge Landscapes (NKL).

The NKL network turned to be vibrant and viable community of the scholars belonging to the various disciplines, which were inspired by challenging topics of digital society, and contributed eagerly to the numerous activities and achievements of the network.

In the same time, the challenges of digital society evolved as well and the shape of Knowledge Landscapes we discussed 10 years ago transformed accordingly. The current 9th Annual NKL Conference addresses (again) how to navigate through these dynamic virtual-nonvirtual continuum, how to perceive the Knowledge Landscapes from the citizen perspectives, but as well from the scholarly perspectives, and how to conceptualize the digital society of contemporary humans.

Welcome to Zagreb and we wish you to enjoy the old and new, in sense of Zagreb urbanism, School of Medicine architecture, and NKL network ideas and discussions.

Srećko Gajović and Vanja Kopilaš

Letter of Lucia Martinelli, MUSE – Museo della Scienza, Trento, Italy (May 9, 2025):

Dear Colleagues, dear Friends of the Knowledge Landscape Network (KLN),

I'm sorry I cannot be with you in Zagreb to participate in this exciting meeting.

This year marks an important milestone for our network:

- 10 years of existence,
- 10 years of sharing ideas,
- 10 years of working together,
- 10 years of getting to know one another,
- 10 years of mutual appreciation,
- 10 years of friendship,
- 10 years of fun!

I hope we will have many more years together and will continue to involve new colleagues in our ongoing journey—colleagues who share the values that define the scientific community: cooperation, dialogue, and inclusion. We must all stand up for these values, especially now, in times when they are increasingly under threat. Fortunately, our network is strong and committed to upholding equality, justice, and inclusivity.

It is worth remembering that KLN has deep roots in significant networks where some of us first met and discovered the joy, creativity, and potential of collaboration—leading to important publications as well.

I met Srećko thanks to the COST Action BIOOBJECTS.As editor of the *Croatian Medical Journal*, he involved me in several papers, and later invited Joachim to join us as well. I "discovered" Anna Lydia online, where she coordinated an interesting network focused on health, culture, and ethics. She also joined the COST Bio-Objects group.

Could Srećko, Anna Lydia, Joachim, and I stop our friendship and collaboration after such a great experience working together? **OF COURSE NOT!**

Zagreb—thanks to Srećko's warm hospitality—can be considered the birthplace of KLN. It was here that the idea of founding this network emerged, 10 years ago. We are proud that, over time, many more colleagues have joined KLN. Today, we have representatives from many countries, with diverse expertise, cultures, and scientific backgrounds. This is truly wonderful!

Apologies for not mentioning everyone by name, but please know that each one of you is important to this network and holds a special place in my heart.

It's amazing to recall that even COVID-19 could not stop this network. On the contrary, we met frequently online, turning the challenge into an opportunity to share our thoughts and knowledge.

Happy 10-Year Anniversary, KLN!

Peace and love,

Lucia

NAVIGATING knowledge LANDSCAPES

PROGRAMME

9th Annual NKL Conference

Digital Innovations

Zagreb, May 9-10, 2025

University of Zagreb School of Medicine

School of Public Health “Andrija Štampar”

10th Anniversary of NKL Network Constitutive Meeting

held on September 28 and 29, 2015 in Zagreb

Venue:

School of Public Health “Andrija Štampar”, University of Zagreb School of Medicine

Rockefellerova 4, 10000 Zagreb, Croatia

Friday, May 9, 2925

5 – 8 pm

Hall A

Opening of the 9th Annual NKL Conference

Keynote Invited Lectures:

Chairs: Anna Lydia Svalastog, Srećko Gajović

Marija Heffer

University of Osijek J.J. Strossmayer, School of Medicine, Osijek, Croatia

Gender biases in health issues – from mice to digital humans

Tea Vukušić Rukavina

University of Zagreb School of Medicine, School of Public Health "Andrija Štampar", Zagreb, Croatia

Digital Footprints in Healthcare: Navigating the New Frontiers of E-Professionalism

Discussion

Dinner in the Restaurant

Saturday, May 10, 2025

Hall A

9 – 10.40 am

Session 1. Digital Age

Chairs: Marija Heffer, Zoran Todorović

Vanja Kopilaš

University of Zagreb Faculty of Croatian Studies, Zagreb, Croatia

Optimization of Artificial Intelligence Use in Healthcare

Susanne Iris Bauer

University of Applied Sciences Fulda, Germany

What rules?! Applications of Digital Innovation in Higher Education vs. Personal Teaching Competencies

Renata Šribar

University Alma Mater Europaea, Faculty of Humanities, Ljubljana, Slovenia

Hope for mental, emotional and social prosperity amidst the several issues of digitalisation

Ivana Zagorac, Matija Vigato

University of Zagreb Faculty of Humanities and Social Sciences, Zagreb, Croatia

Mary in the Digital Age: The Limits of Empathy in Digitalized Spaces

Predrag Pale

University of Zagreb Faculty of Electrical Engineering and Computing, Zagreb, Croatia

Digital identitites in the digital society

10.40 – 11 am Coffee Break

11 am – 12.40 pm

Session 2. Digital Competences

Chairs: Eunjoo Choi, Vanja Kopilaš

Matjaz Vidmar

The University of Edinburgh, Institute for the Study of Science, Technology and Innovation, Scottland, UK

Towards Open Engineering: Prototyping Transitional Infrastructure Design

Joachim Allgaier (!Presentation cancelled!)

University of Applied Scienes Fulda, Germany

Navigating digital foodscapes: User-centered impacts of digital innovations on food and nutrition

Iuliana Ceausu

Carol Davila University of Medicine and Pharmacy, Bucharest, Romania

Teaching Medical Professionalism

Zoran Todorović, Ina Gajić, Nataša Opavski

University of Belgrade Faculty of Medicine & University Clinical Hospital Center "Bežanijska kosa", Belgrade, Serbia

Digitalization in antimicrobial chemotherapy decision-making

Dina Šimunić, Darko Žubrinić

University of Zagreb Faculty of Electrical Engineering and Computing, Zagreb, Croatia

AI Help in Learning Glagolitic

12.40 – 1.30 pm Lunch Break

1.30 – 3.10 pm

Session 3. Digital Assistance

Chairs: Ivana Damnjanović, Hrvoje Jurić

Jonas Hermansson. Fredrik Andersen, Hanna Marie Ihlebæk, Ann Svensson, Anna Lydia Svalastog

SV hospital group, Gothenburg & Østfold University College & University West, Trollhättan, Sweden and Norway

Innovation and diversity. On demographic changes and digital solutions in elderly care, with particular attention to elderly people with cognitive impairment.

Igor Marinić, Lana Mužinić Marinić

Dubrava University Hospital, Department of Psychiatry, Zagreb, Croatia

The use of digital technologies in implementing an online psychiatric day hospital

Dora Korać, Ana Petak, Ida Dukić

University of Zagreb Faculty of Croatian Studies, Zagreb, Croatia

The Relationship between Problematic Internet Use and Sleep Habits among University Students

Franc Mali (!Presentation cancelled!)

University of Ljubljana, Faculty for Social Sciences, Ljubljana, Slovenia

The Relevance of Regulatory and (Bio)ethical Framework for Effective Use of Digital Technologies in Medical Care

Eunjoo Choi

Konkuk University, S. Korea

Digital Innovation: Who is its subject, and who is it for?

3.10 – 3.30 pm Coffee Break

3.30 – 5.10 pm

Session 4. Digital Humanity

Chairs: Matjaž Vidmar, Dina Šimunić

Hrvoje Jurić

University of Zagreb Faculty of Humanities and Social Sciences

Who Is the Innovator of Digital Innovations? Technology, Freedom and Responsibility

Gabriele Leone

University of Lapland, Rovaniemi, Finland & Centre for Southeast European Studies University Graz, Austria

Innovativeness in the Digital Society: Biopolitical Governmentality, Minority Populations, and the Digitalization of Control

Ivana Damjanović

University of Belgrade, Faculty of Political Science, Serbia

Innovation designed to fail: official e-participation platform in Serbia

Espen Marius Foss, Christian Sørhaug

Østfold University College & OsloMet University, Norway

Bridging the Digital Divide: Challenges and Innovations in Reintegrating Individuals Released from Analog Prisons

Srećko Gajović

University of Zagreb School of Medicine, BIMIS – Biomedical Research Center Šalata, Zagreb, Croatia

Digital Humans and Non-Humans in the Digital Society

Closing of the 9th Annual NKL Conference

5.30 – 7 pm

NKL Network Meeting

(all participants are welcomed together with the NKL Network members)

Dinner at the Restaurant

NAVIGATING knowledge LANDSCAPES

ABSTRACTS

9th Annual NKL Conference

Digital Innovations

Zagreb, May 9-10, 2025

Gender biases in health issues – from mice to digital humans

Marija Heffer, MD, PhD, Professor of Neuroscience

Department of Medical Biology and Genetics, Faculty of Medicine Osijek, J. J. Strossmayer University of Osijek, Huttlerova 4, 31000 Osijek, Croatia; mheffer@mefos.hr

Elizabeth Blackwell, the first woman to earn a medical degree, has caused considerable confusion to AI, which was uncertain whether she graduated from Geneva Medical College in New York, United States, or in Geneva, Switzerland. This is not the only instance of AI confusion regarding women, as there is significantly less data available compared to that of men, and what exists often contradicts itself.

Returning to Elizabeth, she noted that male physicians showed little regard for women and completed her medical education with the motivation to help them. Obstetrics was the field where women were most needed, and she practiced in this area for some time. She authored the first medical article written by a woman. However, her greatest contribution lies in paving the way for other women in medicine and starting the fight for their equal treatment alongside men. According to historian Yuval Noah Harari, the true struggle for women's equality was won during the Industrial Revolution and the world wars. Industries that craved labor could not ignore half of humanity, especially a wartime economy was crippled by the loss of young men. After World War II, the doors of all institutions began to slowly but inexorably open to women.

Was 80 years of human history enough for women to become "equal," and was that even what they aimed to achieve? The phrase "The worst form of inequality is to try to make unequal things equal," often misattributed to Aristotle (thanks to the internet), despite its legal and philosophical controversies, painfully rings true in a biological and medical context when discussing treatment equality between men and women. The genetic difference between any two men or any two women is 0.1%, but the difference between any man and woman is 0.5%, due to sex chromosomes. Evolutionarily speaking, the first imprinted instance of sex on DNA molecules was epigenetic, leading to differences in the expression of all chromosomes. Sex complements appeared much later, but the epigenetic differences remained. Therefore, it is not surprising that every one of our cells knows its sex, and the metabolic processes within them are dichotomous, aligned with their sex. Shouldn't medical interventions also reflect this dichotomy? Yet, modern medicine often overlooks this difference. Until recently, preclinical drug research was conducted exclusively on male animals, justified by the claim that hormonal variations during the menstrual cycle lead to considerable variability in results. It has only been in the last 10 years that the National Institutes of Health (NIH) guidelines began to recommend research on both sexes to identify physiological and pathophysiological differences. The U.S. Food and Drug Administration (FDA) also encourages preclinical drug research to involve both sexes in order to assess drug efficacy and safety. These guidelines are not stringent and apply only to new drugs, with no requirement for reevaluating already approved medications. The urgency to market drugs during the COVID-19 pandemic also contributed to neglecting these guidelines. Most studies addressing the pandemic, potential treatments, and vaccines largely ignored patient sex – another missed opportunity.

Thus, amid numerous justifications, the digitalized mass of scientific literature has been tainted by a bias towards one sex. Open-access data fuels artificial intelligence, and with respect to the good intentions of its creators, it must be stated that it too reflects a male bias. A future virtual man still awaits the creator who will, from its rib, fashion a virtual woman.

Digital Footprints in Healthcare: Navigating the New Frontiers of E-Professionalism

Tea Vukušić Rukavina

University of Zagreb School of Medicine, Andrija Štampar School of Public Health Zagreb, Croatia; tea.vukusic@snz.hr

In the digital age, the relationship between people and digital media gains more importance, including the professional behaviour of healthcare professionals on electronic media. Within these relationships, e-professionalism has emerged as a highly significant new phenomenon that is becoming extremely important for all healthcare professions. E-professionalism is a term that encompasses attitudes and behaviours that reflect traditional paradigms of professionalism among healthcare professionals, manifested through digital media. The use of social media (SM) has greatly increased among health professionals, making it necessary to investigate it in order to maintain e-professionalism. Every activity on digital media, even visiting a website without "real activity," leaves a digital footprint that can no longer be removed or erased. "Where we have been" and "what we have posted" can create a false impression of "what we seem like." This impression, the digital perception of ourselves that we create by leaving more or less visible traces in the digital media, is particularly highlighted in the environment of healthcare professionals and healthcare professions.

SMePROF project was a research project from the Croatian Science Foundation, with the full name “Dangers and Benefits of Social Networks: e-professionalism of healthcare professionals”, and it lasted from May 9, 2018, to November 1, 2023.

The project's objectives were to analyse the frequency and manner of use of social networks among healthcare professionals, which included populations of students, teachers, and healthcare professionals in several targeted professions (medical doctors, dental doctors, and medical nurses and technicians). Additionally, the project aimed to determine whether and how the content posted on social networks affects professionalism competence, what the dangers and benefits of using social networks for healthcare professionals are, and how safety and professionalism can be improved in their everyday professional work.

The first research topic (2018–2020) focused on defining the concept of e-professionalism and researching the attitudes and behaviours of students and teachers at the School of Medicine and the School of Dental Medicine, University of Zagreb, Croatia, regarding e-professionalism. The second research topic (2021–2022) focused on the e-professionalism of medical doctors and dental doctors in Croatia. The third research topic (2023) tested the effectiveness of the published guidelines for promoting e-professionalism among students.

This presentation will demonstrate all the new insights gained from the SMePROF project, resulting not only in the production of empirical findings but also in practical guidelines that the medical and dental professions can use to manage and evaluate the e-professionalism of their members. Furthermore, out of necessity (but also out of academic curiosity), a series of new measurement instruments were produced and validated, enabling the measurement and comparison of e-professionalism within and between individual healthcare professions.

Optimization of Artificial Intelligence Use in Healthcare

Vanja Kopilaš

University of Zagreb Faculty of Croatian Studies, Zagreb, Croatia; vkopilas@hrstud.hr

Artificial Intelligence (AI) is rapidly reshaping healthcare. Its impactful application is visible in various areas such as medical imaging, predictive analytics, health records management, clinical decision support, and personalized medicine. As a prominent force in digital innovation, AI offers considerable promise in enhancing diagnostic accuracy, optimizing clinical workflows, and improving patient outcomes. In order to discover full potential of AI, it is first required to gain basic understanding of how such innovations are created, adapted, and meaningfully integrated into real-world contexts.

In mental health care, AI has introduced new avenues for early detection, risk assessment, and personalized treatment. At the same time, it raises pressing concerns around data privacy, algorithmic bias, and the risk of reducing human-centered care to automated processes. This dual nature of AI — as both an enabler and a disruptor — highlights the complexity of innovativeness in a digital society.

Effective optimization of AI in healthcare relies on high-quality, interoperable data, transparent and explainable algorithms, and seamless integration with existing clinical systems. Additionally, it requires a strong commitment to ethical and regulatory standards. Drawing on experiences from different healthcare domains, best practices can be identified alongside common challenges that hinder responsible implementation.

Navigating these issues requires a collaborative approach, engaging clinicians, data scientists, ethicists, and policymakers to ensure that digital innovations are scalable, equitable, and sustainable. The evolving relationship between AI and healthcare not only reflects the transformative capacity of digital technologies but also underscores the importance of balancing efficiency with empathy, precision with personalization, and innovation with accountability. As AI continues to shape the future of healthcare, critical reflection on its challenges, benefits, and risks remains essential.

What rules?! Applications of Digital Innovation in Higher Education vs. Personal Teaching Competencies – Results from an Impact-Analysis on Teaching – with and without digital Innovations.

Susanne Iris Bauer, PhD Student, M.A. Social Works, Coordination of the Project H^3- HyFlex, HighTech & HighTouch, Orcid ID: 0009-0001-2694-9025

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In the Project of H^3- HyFlex, HighTech & HighTouch[1], founded by the Stiftung Innovation in der Hochschullehre (StIL) in Germany Digital Innovations are developed and tested in Blended Learning Studies of Social Works: Five Teams at different Universities of Applied Sciences in Germany and the Center of Fernstudien (zfh) explored in different working packages student life cycle-accompanying as well as module-centered innovations to emphasize successful teaching and studying. Developed were Learning Nuggets like Escape Rooms, Quizzes and Podcasts, Augmented Reality scenarios were produced for situation-analysis for contents of social work, that are ethically and practically difficult to teach, didactic concepts for hybrid online-onsite-settings and synchrone/asynchrone-settings and finally there was the impact-analysis that tried to take in structural frames for teaching and learning at different Universities, general conditions in the Blended Learning Studies in Bachelor and master-degrees, based on the university-cooperations of BASA-online[2]- and maps-Master[3]- studies with more than 20 years of experience in Blended Learning, as well as didactical frameworks like constructive Alignement, teaching personalities, student-centered teaching and competency-centered exams. Furthermore the students evaluations and results were considered. The data was operationalized and analyzed with a propensity score matching- aiming for an instrument that allows universities to develop quality of their studies as well as utilizing data für the process of akkreditation of Studies. The Impact-Analysis found, that the main influence on success in Teaching and Learning is closely connected with what we called the „Personal Teaching Competency“ (Jänsch, Bauer, & Gromann, Okt 2024) more than the used digital tools: drawn from the meta-Studies of Teaching-interventions by John Hattie (Hattie, 2023)and the five teaching perspectives by Pratt & Smulders (Pratt & Smulders, 2016) as well as the analysis of about 40 interviews with teachers, these factors can be presented and lines of matching to digital innovations and personal style of teaching can be drawn, to allow teachers to reflectively find out what matters in their teaching and which applications do enhance their lessons in digital settings as well as on-site. The meaning of these results as an offer of orientation in the flooding by digital tools in Higher Education are discussed – what differences can be made? How is the influence on the processes to be fostered? Which space does inclusivity need to not get lost in these processes?

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[1] More about H^3 -HyFlex, HighTech & HighTouch: www.h3-basa-maps.de

[2] BASA-online: Blended Learning Studies B. A. Social Works at eight Universities of Applied Sciences in Germany since 22 years: www.basa-online.de

[3] Maps master: Blended Learning Studies M. A. Social Works at 4 Universities of Applied Sciences in Germany since 219 years: www.maps-master.de

Hope for mental, emotional and social prosperity amidst the several issues of digitalisation

Renata Šribar

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Digitalisation in itself is an ambivalent phenomenon in terms of benefits and potential harms. As it permeates all domains of contemporary life, the present conference paper perspective focuses on the contemporary psychophysical and societal positioning of human beings and their social groupings, their life competences, and corporeal vulnarabilities tested in the smart technology environments. According to the research approach in humanities the critical reflection of the impact of digitalisation is the fundamental consideration. The catastrophic discourse of the death-driven civilisation has to be juxtapositioned to the down to earth vision of the potentially unique societal role of the social group of educated and socially active elders, i.e. baby boomer' intelligentsia.

This brief overview of the important harmful, and potentially harmful effects of digitalisation is as well supported by the results of some scientific research. The amount of radio waves, which is defined as unproblematic regarding the impact on human corporeality, cannot be sustained. The doses of radio waves are already unmanageable; consequentially the normative restrictions are in vain (Nyberg et al, 2024). The problem of public security is being addressed according to the mode of current factual terrorist actions (EC, Joint Research Centre, 2022), whereby the risks of large-scale terrorist attacks on complex digital systems are neglected although such terrorist threats already exist. Research results regarding the use of contemporary ICT devices and services and the effects in the social groups of minors and adults indicate a decline in concentration, inhibited emotions, weakening of social bonds, etc. (Cladis, 2028). The most worrying phenomenon in youngsters is the ignorance of values and anti-values embedded in digitalised information. The consequential psychosocial phenomena, such as peer homicide and suicides among teens are symptoms of troubled cultures.

Balancing the destructive tendencies is conditioned by the potentiality of the segment of population where digitalisation may be utterly beneficial on individual and societal level. The social groups of older people who are still agile enough to face the new digitalised world may profit by delving into the technological skills related challenges. Such trainings and activities strengthen memory, promote mental flexibility and emotional resilience (Small et all, 2020). Besides, their self-confidence is consolidated since older people are experientially more enabled to avoid bad habits of overuse. Digitalisation enables them to interact socially even in periods of poor physical condition and, above all, to access information and materials that help them regain and maintain good psychophysical condition. Yet contextually most important societal good of digital literacy of older people is their competence to transfer knowledge on values, and practice of virtues acquired in traditional analogue humanistic education. Such societal positioning of elders is destined to revive the "discourses lived within" (Høyen in Wright, 2020) on life in general as relational and balanced process, and ethics comprising prosocial values such as reflexivity, emotional stability, interpersonal support, honesty, transparency, cooperation, and agency for the common good.

Mary in the Digital Age: The Limits of Empathy in Digitalized Spaces

Ivana Zagorac and Matija Vigato

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In 1982, philosopher Frank Jackson proposed a thought experiment involving an imaginary scientist named Mary, who is an expert on colours. In this experiment, Mary possesses extensive objective knowledge about colours but, since she lives in a purely black-and-white environment, lacks any subjective experience of seeing colour herself. Only when Mary actually experiences colour does she gain subjective insight into what colour truly feels like.

This thought experiment is frequently invoked in the philosophy of mind to illustrate the crucial distinction between objective knowledge and subjective experience (qualia). In this paper, we explore whether this same distinction can illuminate fundamental characteristics of empathy and help define the boundaries of artificial intelligence. Specifically, we examine how differentiating objective knowledge from subjective experience informs our understanding of embodiment and the co-construction of empathy, the authenticity versus functional imitation of empathy, and the nature of intersubjectivity. Finally, we question whether empathy mediated by digital technologies can give rise to a new type of empathic experience that enhances the quality of human life.

Keywords: objective knowledge, subjective experience, artificial intelligence, empathy, intersubjectivity

Digital identities in digital society

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In the physical world, our identity is a composite of various elements: gender, age, education, occupation, hobbies, and social circles. This identity is shaped both by how others perceive us and by how we perceive and express ourselves. Each of these components influences the others, and we cannot fully explore, experience, develop, or express them in complete isolation.

In the digital realm, however, each of these components can be expressed and developed separately, isolated from our other identity components. This offers novel and significant opportunities for self-exploration and expression, as well as for playing truthful yet "specialized" roles within digital society. However, this characteristic of the digital world also enables individuals to create fake identities with the intention of deceiving others for unfair gain or to cause harm.

Furthermore, with the advent of artificial intelligence, personalized, specialized software agents are increasingly becoming an integral part of our online presence. Sophisticated software will act on our behalf in areas such as finance, travel, business, and virtually every aspect of life and work. They will interact with other agents, web applications, and people via email, instant messaging, and telephone, completing a variety of tasks based on our expressed or assumed interests and needs. They will be acting on our behalf and will be perceived by others to represent us, at least to some extent. To what extent are these agents part of our identity? What is our responsibility for their actions? Will other people perceive them completely as us or at least as an extension of our identity?

Another exciting and significant opportunity is the creation of a “personal digital transcript,” software capable of conversing in our own way. Is it possible for such an entity to fully mimic our identity? What steps and methods are required to extract our personality, values, attitudes, beliefs, and emotions?

Finally, is it possible to create true, general artificial intelligence comparable to our own, and also a conscious one encompassing all human traits: intuition, emotions, and empathy? If humans are creating it, whose identity will it be modelled against?

Keywords: Digital Identity, AI Agents, Personal Digital Transcript, Identity Mimicry, Conscious Intelligence

Towards Open Engineering: Prototyping Transitional Infrastructure Design

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In the past few decades, public(s) have become increasingly involved in the making of science and technology. Paradigms such as citizen science and responsible research and innovation (RRI) have paved the way to a more direct engagement of stakeholder groups and communities with the making of techno-scientific futures. However, a major challenge remains with engaging public(s) with (re-)design of systems and infrastructures. In particular, complex systems in transition, such as the interplay of infrastructure and natural resources management often remain in the purview of engineers and planners, with only limited scrutiny afforded to public representatives and public(s) themselves.

With the looming climate emergency, as well as the digital pivot arising from the latest phase of IT revolution and post-Covid-19 working reality, a radical (re-)development of infrastructural systems has particular urgency. Two (conflicting) directions are emerging – the distribution of assets and governance, whilst centralising data and intelligence. In order to reconcile the operation of such systems, imaginative user-centred platforms are required – but their development is slow.

In this paper, a series of new approaches to socio-technical systems (re)design are put forward. Building on the Multi-level perspectives (MLP) framework, a roadmap for Open Engineering is being put forward combining living laboratory configuration(s), strategic mapping and alignment tools and futures design methodology. Working with Open Prototyping methodology, and using contemporary micro case studies from the development of next generation of spaceports and artificial intelligence/machine learning in climate-related creative interventions, this paper puts forward a possible way for Open Engineering to (re-)make individual, institutional and infrastructural futures.

Keywords: socio-technical systems, AI, space, open engineering, living laboratory

Navigating digital foodscapes: User-centered impacts of digital innovations on food and nutrition

Joachim Allgaier

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Digital innovation has profoundly transformed the food landscape, reshaping how individuals interact with food. As users increasingly turn to digital innovations — for online grocery shopping, dietary self-tracking, food delivery, meal inspiration and planning, and social media food communities — their relationship with food is evolving in complex ways.

The introduction of e-commerce and mobile applications has made buying and preparing food more convenient. Users have access to a wide range of products, often with the ability to compare prices and find healthier options more easily than ever before – if they know how. In addition, social media platforms could democratize food culture, allowing individuals to discover different cuisines, share recipes, learn cooking skills and participate in online communities that celebrate culinary creativity. Such platforms could foster connections and exchanges among users, educate users about healthy eating, and promote collective learning about food practices.

However, the emerging digital food landscapes also present a number of notable challenges. The overwhelming abundance of information and options can lead to decision fatigue, making it more difficult to make healthy or appropriate food choices. Furthermore, the reliance on digital platforms can exacerbate food equity issues, as not all individuals have equal access to digital innovations, potentially widening the gap between different socio-economic groups. In addition, influential actors on social media often encourage consumption patterns that may contribute to unhealthy eating behaviors or promote harmful body images. The temptation of quick and convenient meal solutions could lead to reduced culinary skills and reliance on processed foods. Online marketing successfully targets vulnerable groups and promotes unhealthy foods and unnecessary food supplements. There are also growing concerns about privacy, cybersecurity and the commercialization of eating habits, with users often unaware of how their information may be used by digital food service providers.

The entire food value chain has been digitally transformed in the recent years. Digital transformation involves the increasing interconnectedness of platforms, systems and applications, but also of physical objects, plants, animals and human bodies. A range of different digital foodscapes emerge as a result. Digital foodscapes hereby represent a convergence of food culture and consumption, technology, and social interaction, shaping how individuals perceive, purchase, engage with, and consume food in the modern world.

Digital foodscapes vary along dietary and lifestyle lines, age, gender, nationality, and region. Successfully navigating these environments requires technical skills, nutritional knowledge, and culinary capabilities. A recent addition is the implementation of artificial intelligence, such as for recipe inspiration, meal planning or nutritional advice, which means that prompting skills and AI knowledge are also required to successfully use this digital innovation. In the presentation, I will summarize some insights and findings about the complex navigation of digital foodscapes from a user-centered view and provide some illustrative examples from previous research on food and nutrition in digital foodscapes.

Teaching medical professionalism

Iuliana Ceausu, MD, PhD, Professor of Obstetrics and Gynecology, Head of the "Dr. I. Cantacuzino" Obstetrics and Gynecology Clinic

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In modern health curricula, teaching medical professionalism is increasing, based on six elements: altruism, accountability, excellence, duty, honour and integrity, and respect for others. Among the large numbers of definitions for medical professionalism, the consensus is to consider a behavioural component.

Research is more and more a structural part of the medical practice, by understanding, interpretation, appliance and, not at last, combining research with clinical practice. As it was learnt during the pandemic, shortening the time from research to bedside of the patient needs a profound understanding and practice of all the criteria of medical professionalism.

The presentation aims to introduce medical professionalism principles and the necessity of introducing them in the medical curricula for students, residents, PhD students, and postgraduate students as a teaching outcome.

Digitalization in antimicrobial chemotherapy decision-making

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Antimicrobial resistance is rising, and the number of new antibiotics is small. In the arena dominated by difficult-to-treat bacteria (DTR), especially Gram-negative, it is essential to choose the best antibiotic in a timely manner and use it for the benefit of the patient, with minimal progression of resistance, during the optimal time and in the optimal dose. One way to overcome this problem is the WHO-initiated One Health Approach and the introduction of Digital Health Technology (DHT). DHT includes tools and devices that can create and process data in order to protect and improve health and cure diseases: health information technology, wearable devices, mobile health, telehealth, and personalized medicine (PMID: 39547911). Of course, the introduction of new methods of detecting pathogens with their resistance factors (PCR, RT-PCR, Next Generation Sequencing) through the widespread use of fast point-of-care techniques (such as Pneumonia Panel and Respiratory Panel) significantly improved the diagnosis of infectious diseases, i.e. surveillance systems. Thus, present viruses and bacteria are quickly detected, resistance factors are determined, and the difference between colonization and infection in a particular patient is established. The margin for empiric chemotherapy is narrowed (according to the guidelines), and the decision is made based on the evaluation of all available evidence. In order to reduce unintentional error (bias), avoid bias in decision-making (not to mention the pressure of the pharmaceutical industry to use their drug), and ensure optimal (rational) pharmacotherapy, it is crucial to provide artificial intelligence (AI) assistance in antimicrobial chemotherapy. There are numerous pros and cons regarding the introduction of DHT in antimicrobial diagnostics and therapy, but it should be emphasized that their introduction is imperative since the irrational treatment of infectious diseases is a first-rate ethical issue; let's remember that by doing so, we reduce the possibilities of our children and generations to come to successfully fight infectious diseases.

AI Help in Learning Glagolitic

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The Glagolitic script, an ancient alphabet, holds historical and cultural significance in the development of Slavic languages and cultures. Despite its importance, the Glagolitic alphabet is less commonly studied today compared to more widely used scripts like Latin and Cyrillic. The advent of Artificial Intelligence (AI) offers an innovative and effective way to teach and preserve this ancient script. AI can play a pivotal role in modern education by making the learning process more engaging, personalized, and accessible to a broader audience.

AI technologies, particularly machine learning, can be utilized in several ways to support the learning of Glagolitic. One of the primary advantages is the ability to offer personalized learning experiences. AI can assess a student's proficiency in recognizing, writing, and pronouncing Glagolitic letters, adapting lessons and quizzes based on their progress and difficulty level. For instance, a student struggling with a specific letter would be presented with more exercises and review material, ensuring targeted reinforcement. This adaptive learning system contrasts with traditional one-size-fits-all methods, making it especially useful for self-paced learning.

Another area where AI can enhance Glagolitic learning is through interactive exercises. AI-powered chatbots and digital tutors can simulate conversations or act as guides, offering immediate feedback on pronunciation and letter recognition. These AI tools can provide learners with an immersive environment, where they interact with the script, practice pronunciation, and even receive instant corrections. For example, a learner can ask an AI chatbot about the meaning or sound of a specific Glagolitic letter, and the system can offer a response based on historical and linguistic data. This interactive approach increases student engagement and retention.

AI can also be applied to handwriting recognition and writing practice. With Optical Character Recognition (OCR) technology, AI can analyze handwritten Glagolitic letters, offering feedback on the accuracy of stroke order and overall letter formation. Such tools can be invaluable for students attempting to master the intricate shapes of Glagolitic symbols, which can be challenging for beginners. This would provide learners with immediate, actionable insights into improving their handwriting, allowing them to progress faster and with more confidence.

Furthermore, AI can assist in gamification, turning the learning process into an enjoyable and rewarding experience. AI algorithms can power games that involve recognizing Glagolitic characters, completing puzzles, and achieving goals based on the learner's progress. This gamified approach motivates students and makes the process of learning a historical script feel more modern and fun.

In conclusion, AI's ability to personalize learning, provide immediate feedback, and offer interactive, immersive experiences makes it an invaluable tool for teaching the Glagolitic alphabet. As technology continues to evolve, its integration into language and script education can significantly contribute to the preservation and revitalization of ancient writing systems like Glagolitic, ensuring they remain accessible to future generations of learners.

Innovation and diversity. On demographic changes and digital solutions in elderly care, with particular attention to elderly people with cognitive impairment.

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Topic: The aging European population is a diverse and rapidly growing group, more are expected to live longer, both those with good health and those with chronic diseases. This calls for an increasing need to plan the care of elderly in the future. What is generally overlooked, is that this demographic change also includes a rapidly growing group of people with chronic or progressive cognitive impairment, for example intellectual disability or dementia.

The aim: of this presentation is to describe a method for planning health care for elderly that consider the demographic changes of elderly with cognitive impairment in Europe, in particular Norway and Sweden.

Research Question (RQ): Regarding the growing aging population in Europe, the general answer from society (politics and policy work) is technological innovation and digitalization. Our RQ is: How can crowdsourcing be used to co-create care of elderly people with cognitive impairment. This gives both present and future users of elderly care and the possibility of participating in the designing of the care that they receive.

Material: We will start out by designing a prognosis model that estimates the prevalence of elderly people with cognitive impairment for the next thirty years in Norway and Sweden.

Secondly, we will investigate how the perspective of elderly people with cognitive impairment are included in strategic documents, policy work and plans for the growing elderly population in Norway and Sweden as a case study. This identifies the scope of the group in present society and discuss how this will impact the group ‘elderly’ in need of care in the years to come.

Thirdly, we will use our competence and relevant research in care for elderly with cognitive impairment, together with digital crowdsourcing to co-create the elderly care of the future.

The use of digital technologies in implementing an online psychiatric day hospital

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The Covid 19 pandemic accelerated the integration of digital technologies into psychiatric practice, prompting the development of novel remote service models. Among these, the online psychiatric day hospital has emerged as a viable alternative to traditional in-person care, providing structured therapeutic interventions in a virtual environment. This presentation offers an overview of recent developments in the field, including the integration of online group therapy into psychiatric day hospital services.

The transition to digital platforms has opened new opportunities for continuity of care and increased accessibility of mental health services. However, alongside benefits, such as greater flexibility for patients, a number of challenges have emerged that directly impact the therapeutic process. Reduced non-verbal communication, difficulties in sustaining engagement, and varying levels of digital literacy of patients introduce certain complexities to effective treatment delivery. These factors become particularly relevant in group settings, where the therapeutic process relies on subtle interpersonal dynamics and a shared emotional space. In virtual settings, the therapeutic alliance must often be nurtured through intentional verbal communication and structured interaction, prompting clinicians to adapt their facilitation style and session pacing.

Based on an analysis of current evidence and clinical experience, this presentation will explore the benefits, limitations, and conditions under which online psychiatric programs can function effectively. Key areas of focus include patient selection, therapeutic structure and format, technological adaptation, and the transformed clinical setting.

Our experience highlights both the potential and the limitations of digital transformation in mental health care. While remote formats cannot fully replicate the depth of in-person interaction, they can successfully complement conventional models when thoughtfully integrated. The experience presented here may inform ongoing discussions regarding the role of digital innovation in the future development of mental health and welfare services.

The Relationship between Problematic Internet Use and Sleep Habits among University Students

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The prevalence of internet use among young adults is notably high. Although it offers numerous benefits, it also carries certain risks, particularly in the development of addictive behaviors. Problematic internet use has been associated with various mental health issues, including poor sleep quality. Using electronic devices in bed can increase cognitive, emotional and physiological arousal, potentially disrupting the process of falling asleep. Research indicates that more than half of students experience poor sleep quality. Sleep quality is a significant predictor of both physical and mental health and is associated with numerous health outcomes. Both sleep deprivation and excessive sleep increase the risk of engaging in health-risk behaviors, such as smoking, alcohol consumption, reduced physical activity, and addiction to digital devices. As internet use has become an essential part of students' lives, whether for academic assignments, communication, or leisure, maintaining good sleep quality and establishing healthy sleep habits is crucial. This study aims to examine the relationship between problematic internet use and sleep habits among university students.

A total of 129 students participated in the study. The data from two generations of psychology students (third-year, predominantly female) were combined for the research. The Core Consensus Sleep Diary (CSD-M, Carney et al., 2012) was used to monitor sleep habits, while the Internet Addiction Test (IAT, Young, 1998) assessed tendencies toward internet addiction. After receiving instructions on how to maintain the sleep diary, students recorded their sleep habits over six days (four weekdays and two weekend days). They completed the diary every morning upon waking up, while the IAT was completed online.

The results indicated that the sleep habits of our participants were consistent with trends and expectations from the literature. On average, students experience insufficient sleep, with their sleep duration at the lower end of the recommended range for young adults (7 to 9 hours). They tend to sleep approximately half an hour longer on weekends compared to weekdays and perceive the quality of their sleep to be better on weekends than during the week. According to the IAT results, 17.3% of students reported not being addicted, 58.7% reported low levels of addiction and average online use, while 24% of them showed moderate symptoms of internet addiction. None of the results indicated severe level of internet addiction. The results of IAT were not correlated with sleep habits in our sample, which may be attributed to the characteristics of the sample. However, levels of internet addiction higher than those found in our sample could certainly impair sleep quality and contribute to impaired mental and physical health. Additional studies are necessary to understand the relationship between overall digital technology use and sleep quality in order to protect mental health and prevent adverse outcomes.

Keywords: internet addiction; sleep diary; sleep quality; sleep habits; university students

The Relevance of Regulatory and (Bio)ethical Framework for Effective Use of Digital Technologies in Medical Care

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Digital technologies, together with robotics and, more recently, the extremely rapid development of generative artificial intelligence (AI), are becoming an indispensable part of healthcare. Healthcare is particularly crucial in today's societies due to the rapid increase in the proportion of older adults. For instance, according to the World Health Organization, about one third of Europe's population is expected to be 60 years or older by 2050 (WHO 2024). Because of these unprecedented demographic challenges—primarily in the developed world, including Europe—it is anticipated that digital technologies will play an increasingly important role in supporting clinicians, surgeons, and healthcare professionals in decision-making, reducing errors, and improving diagnoses, treatment selection, and patient outcomes. In the past few years, progress in the field of generative AI has helped drive a "digital revolution" in medical care. Examples include healthy aging initiatives (e.g., telepresence of AI tools in care homes to prevent cognitive and physical decline) and online monitoring (e.g., AI-powered wearable devices for self-care in private homes and to track disease progression in older individuals), etc. Overall, the use of generative AI is inexorably leading us toward "personalized medicine," which promises to enhance the quality of healthcare for elderly individuals. This group of population is most dependent on affordable and accessible medical treatment.

In my contribution, I aim to show why establishing a suitable regulatory and (bio)ethical framework at both the macro and micro levels is critical for effectively developing and using digital technology in medical care. The development and implementation of these new technologies also depend on how we address, both in principle and in practice, key ELSI questions—such as how risk assessment in medicine is defined, how the boundary between medical treatment and human enhancement is determined, and how GDPR regulations and informed consent are interpreted in medical contexts, etc. My central thesis in the paper will be that the current regulatory and bioethical framework at the EU level is shaped by relatively restrictive ethical and legal principles regarding the use of generative AI and genomic science in healthcare. This may pose an obstacle for Europe in the global race, alongside China and the United States, to deliver high-quality healthcare for older adults.

Digital Innovation: Who is its subject, and who is it for?

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If we consider digital technology an innovation, technological progress follows a forward-driven trajectory, with individuals playing their roles within sub-disciplinary areas. Humans persist in their pursuit of progress. But what if humans chose to do nothing? If they deliberately decided to do nothing, the condition of life on Earth would improve. The dominant discourses in this era are climate change and digital innovations, but society tends to prioritize smart cities, circular economies, and AI, often at the expense of addressing the climate change driving the "sixth extinction." Notably, the former frames a narrative of progress, while the latter conveys an apocalyptic warning. Humanity has arrived at this point by clinging to the idea of progress.

The term "innovation" signifies change driven by new ideas, yet the forces that lead and spread this change are ultimately technology and capital. People are drawn to optimistic terms like progress and substitution and enthusiastically embrace entertainment and gratification. Just as the Anthropocene connects climate change to human actions, discussions on what we should or should not do often fail to sustain public attention. It is much easier to create, consume, and discard than to broaden the scope of restraint and prohibition. Regardless of how much destruction it has inflicted on its surroundings, humanity's success in development and expansion stands as historical evidence of its dominance. Digital technology seeks to enhance information accessibility, boost productivity, and foster resource efficiency and environmental sustainability through ideas such as smart cities and circular economies. However, the digital technologies and infrastructure enabling these advancements rely on resource extraction, which comes at an ecological cost. While digital technology and data-driven industries may seem immaterial, their foundation is deeply rooted in materials. Semiconductors, batteries, and servers require raw materials from nature, and extracting and processing these materials impacts ecosystems.

Materials, specifically rare earth elements (REEs) essential for smartphones, computers, data servers, and electric vehicle batteries, contribute to soil and water pollution and carbon emissions during extraction. Some rare earth mines in China release radioactive waste, contaminating the surrounding environment. Meanwhile, in Africa and South America, unregulated mining leads to ecological destruction and labor exploitation. Furthermore, as digital technologies advance, energy consumption for data storage and processing continues to skyrocket. Data centers consume vast amounts of electricity, driving the relentless extraction of fossil fuels from the Earth.

Nevertheless, the seemingly inevitable course is to press forward, following the trajectories of Agricultural and Industrial Revolutions into the era of Digital Innovation. Although Anthropocene discourse has undeniably influenced ideological shifts, it is often primarily consumed within art, culture, and literature. Therefore, the cessation of development advocated by these fields has the limitation of remaining confined to their discourse. However, this limitation is a limitation for all of us.

Keywords: digital innovations, materials, resource extraction, climate change

Who Is the Innovator of Digital Innovations? Technology, Freedom and Responsibility

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Rapid, radical and all-encompassing digitalization of the world and life certainly brings numerous benefits, but it also confronts us with numerous challenges and problems, both practical (ethical, social, political, legal) and theoretical (epistemological, anthropological, ontological). Therefore, we should not approach this issue in a short-term and utilitarian way, but in a long-term and normative way. In the words of Jürgen Mittestraß, in addition to "instrumental knowledge", we also need "orientational knowledge". Orientational knowledge enables not only a comprehensive view and articulation of problems, with the aim of solving them as best as possible, but also an understanding of the nature and essence of certain phenomena, in this case the phenomenon of digitalization.

On this basis, when speaking of digitalization and digital innovations, the crucial question is about the context, sources and implications, as well as the subject(s) of this epochal process: who creates, encourages and directs it? This question, philosophically and ethically posed, leads us to consider power, responsibility and freedom in the technological society, culture and civilization.

We will approach this question by considering the global context formed by bureaucratic-militaristic politics, neoliberal-capitalist economy, and modern technoscience, which reduces wisdom and knowledge to information, and information to data (to use the well-known image of Russell Ackoff's "DIKW pyramid"), which not only does not contribute to the way people (individuals and communities) find their way in the technological world, but also continuously increases chaos and undermines attempts to find or establish any orientation marks. This tripartite system (the ruling forms of technoscience, economy, and politics) should, however, be considered first within the context of the "biopolitical paradigm" (Michel Foucault, Giorgio Agamben), and then with regard to the broader and deeper understanding of "technology" (Karl Marx, Martin Heidegger, Hans Jonas, Hannah Arendt, Jacques Ellul, Ivan Illich, Günther Anders).

The technological system in which (or, better said, under whose rule) we live, at first glance, makes human life easier and more comfortable, primarily because it is easy and comfortable to live without responsibility, and in the current situation it is difficult or even impossible to precisely determine not only individual, but also collective responsibility for actions and their consequences. However, only our being corrupted by the daily benefits of the products of technology (and digitalization), our superficiality and (self)oblivion can prevent us from noticing that human beings and humanity have thus deprived themselves of the power to create and direct their own lives and their own future. The technological system has already become autopoietic and autonomous. Therefore, the answer to the question "Who is the innovator of digital innovations?" is, in fact, "Nobody". Nevertheless, if we agree to such an answer and surrender, without thinking, to the flow of technological-digitalization trends, we must face the implication lucidly presented by Jacques Ellul: "In the whole of our technological society the work is so fragmented and broken up into small pieces that no one is responsible. But no one is free either."

Innovativeness in the Digital Society: Biopolitical Governmentality, Minority Populations, and the Digitalization of Control

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The progressive entanglement of digital technologies within regimes of governance signals a mutation in the biopolitical administration of minorities, refugees, and displaced populations. No longer confined to disciplinary mechanisms or sovereign decrees, the exercise of power now operates through digital apparatuses that structure the very conditions of visibility, mobility, and political existence. Innovativeness in the digital society is not simply a vector of economic progress but a dispositif of governmentality, wherein states do not merely govern subjects but constitute them—regulating life, inscribing bodies into circuits of control, and producing hierarchies of inclusion and exclusion. This paper interrogates the intersection of digital innovativeness and biopolitical techniques, tracing how contemporary power configurations deploy algorithmic rationalities, data infrastructures, and predictive analytics to administer those positioned at the periphery of sovereignty. The refugee, the stateless, the racialized minority—each is subjected to technologies of legibility that claim to render them knowable, manageable, and securitized. Biometric identification, AI-driven risk assessments, and blockchain-based humanitarian infrastructures function not merely as neutral instruments but as mechanisms through which the state extends its reach into populations' biological and social existence. These technologies, framed as innovations in governance, must be understood within a broader genealogy of state power, one that continuously rearticulates the distinction between who belongs and who remains exterior to the political order.

Digital governance increasingly depends on preemptive logic, where risk influences intervention strategies. Predictive algorithms categorize individuals to foresee threats, making them governable based on assigned probabilistic futures rather than actual actions. In refugee management, algorithms adjudicate asylum claims, and biometric databases influence movement rights, creating new dynamics of visibility and invisibility, with individuals becoming mere data points devoid of rights. Digital infrastructures extend beyond borders, diffusing power across territories and institutions. The biopolitical management of minorities in the digital age involves territorial sovereignty and infrastructural control as states, corporations, and humanitarian agencies converge in managing life. Algorithmic governance, framed as security and efficiency, filters populations, distinguishing those recognized from others in digital limbo. However, within these control mechanisms lies the potential for resistance. The same digital infrastructures that render subjects visible to power also serve as spaces of counter-conduct, where refugees and displaced populations use appropriate technological tools, encrypt communication, and subvert digital regimes of control. Thus, this paper seeks to unfold the ambivalence of digital governance, interrogating whether innovativeness in the digital society will consolidate the normative order of exclusion or may open possibilities for rearticulating political agency in the face of algorithmic governmentality. These Automated processes aimed at improving administrative efficiency often lack transparency and accountability, exacerbating

structural inequalities and digital exclusion for ethnic minorities. Digital surveillance disproportionately targets these communities, reinforcing historical discrimination.

Additionally, digital innovations have transformed border regimes into complex systems using drones, facial recognition, and biometric technologies for migration control. The reliance on digital identity systems for refugees raises ethical concerns about data privacy and the potential creation of a permanent digital underclass. Asylum seekers face the paradox of being monitored yet politically invisible. However, digital innovation can empower minorities and displaced populations through digital activism, encrypted communication, and decentralized identity systems, providing avenues for resistance against state control. This analysis argues that discussions on digital innovation must critically examine its interplay with biopolitical control and the rights of marginalized groups, highlighting how technology can either reinforce exclusion or promote inclusion and political agency.

Innovation designed to fail: official e-participation platform in Serbia

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One of the strategic areas of interest of every Serbian government in the 21st century was development of e-government services. It was at least partly motivated by the country's firm orientation towards accession to the European Union, and the need to conform the legislation and policies to the European framework. The first practical steps were taken in 2005, with the introduction of some e-services and gradual building of official websites, and the national portal, e-Uprava, was introduced in 2006. The scope of services offered (or, sometimes, moved completely) online is growing ever since.

However, the first steps towards institutionalization of online citizens' participation in Serbia had been taken much later, in 2010, with the introduction of the *e-participation* feature as a part of the official national e-government platform. Since then, the platform's features have been updated permanently, and the platform underwent two transformations - it was renamed *e-public discussions* in 2015 and *e-consultations* in 2022. This has significantly contributed to the high rankings of Serbia in the UN e-Participation index, which shot from 135th place in 2010 to 15th in 2022 (the last year for which the data is available). However, the e-participation features, usually referred to as *e-democracy*, seem to be hardly ever used by citizens. Building on previous research, I intend to explore, in more depth, the reasons for this state of affairs. My main hypothesis is that the Serbian e-participation platform shows features of a "reform designed to fail" (Newton 2012).

In order to examine this hypothesis, I will analyze the available public information - from the e-participation platform itself, but also from the relevant policy documents as well as media reports. In addition, I will use the existing body of literature on similar e-participation projects in other countries and try to identify the features that make them successful, in terms of citizens' engagement. Of special interest is the comparison with a counterpart project in Croatia, given the similarities between the two countries.

Bridging the Digital Divide: Challenges and Innovations in Reintegrating Individuals Released from Analog Prisons

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In Toreld & Foss (2023), we examine the impact of digitalization on re/integration efforts within 'analogue bubbles' in a digital society, particularly focusing on prisoners. Our study reveals that the digital society complicates re/integration for inmates and increases prison staff workload. Addressing the digital access gap for prisoners requires significant effort, time, and technical skills, resulting in inconsistent service provision depending on individual employees' competence. This raises challenges related to *the principle of normality* during imprisonment and the legal principle that *imprisonment should solely deprive liberty*, not cause unintended negative effects.

In this paper we follow ex-prisoners who served long sentences without digital communication access, exploring the obstacles they face post-release and their perspectives on societal digitalization. These individuals were sidelined during rapid digital transformation affecting essential services like finances, housing, and employment. The Church City Mission supports them in accessing digitalized services.

We also draw on interviews with prison staff, which highlight the extraordinary initiatives implemented by the Norwegian Correctional Services during the COVID-19 pandemic, such as distributing iPads to inmates for unsupervised communication with their families. This initiative fostered meaningful connections, enabling inmates to interact with their children and personalize their environments. However, the digitalization of communication also introduces new dimensions of supervision and control.

Our findings relate to Gilles Deleuze's concept of "Societies of Control," suggesting that increasing digital oversight by corporate and welfare state institutions reduces critical resistance. This study highlights innovative civil society efforts to bridge the digital divide and responds to sociotechnological advancements driven by policy, emphasizing the overlooked areas of technoscience and the responses from individuals in transitional situations.

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Digital Humans and Non-Humans in the Digital Society

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Two major principles recognized as a basis of healthcare are medical paternalism (where medical professionals are in control) and person-centered care (where the patients/citizens are in control). However, it is widely neglected that there is a third partner in the process of healthcare being described as technology. The complex medical procedures and the digitization of the medical records generate a substantial collection of data describing the patient and her/his health. Subsequently, who is taken care about is not the patient itself, but as well the collection of the corresponding data describing the patient. The evaluation of the medical treatment could be "subjective" as reported by the patient, but as well "objective" as measured by the change of the status of the corresponding data collection. The data collections being the subjects of the medical treatments and the measure of the treatment effectiveness already create digital equivalents of the human subjects, i.e. the digital humans. Being digitized and transformed into collections of data, the patients are disembodied, although the very body of the patient is what is treated.

The explained paradigm of disembodied digital human can be contrasted by its opposite, a non-human digital agent being a priori a collection of the data, but to be used/employed/exploited for societal purpose providing a service to the human members of the society. To be appreciated by the humans as a source of the intended service, it is to be expected that the non-human agent will acquire some features of the human being (e.g. ability to communicate, human-like appearance, resemblance of human behavior). Subsequently, in this opposite process of embodiment, the data collections of the non-human agents obtain human features. The non-human agents require as well maintenance and care. In case of malfunction (i.e. disease), the repairment process would be (again) directed to the data collection of the non-human agent restoring its functionality and improving its embodiment.

In the same way as the difference between digital humans and non-human agents starts to be blurred, the societal decision-making processes are not only taken by human members of the society, but they can be outsourced to the non-human agents. For example, the expensive medical procedures (e.g. cancer treatments) are usually not decided by a medical professional, or by a patient who would be a subject of such procedure, but by an algorithm based on a collection of data (assuring that the money would be well/rationally spent). The "objectiveness" of non-human agent is preferred by society for these complex decisions, even claiming the compliance to the ethical guidelines.

In conclusion, here I claim that in the current digital society the partnership of taking care on each other, humans caring for non-humans and vice versa, is already established. This partnership of care represents a possible base for a future together.