Vignettes to digitalization and the future

Sibelius Academy
8 February 2023

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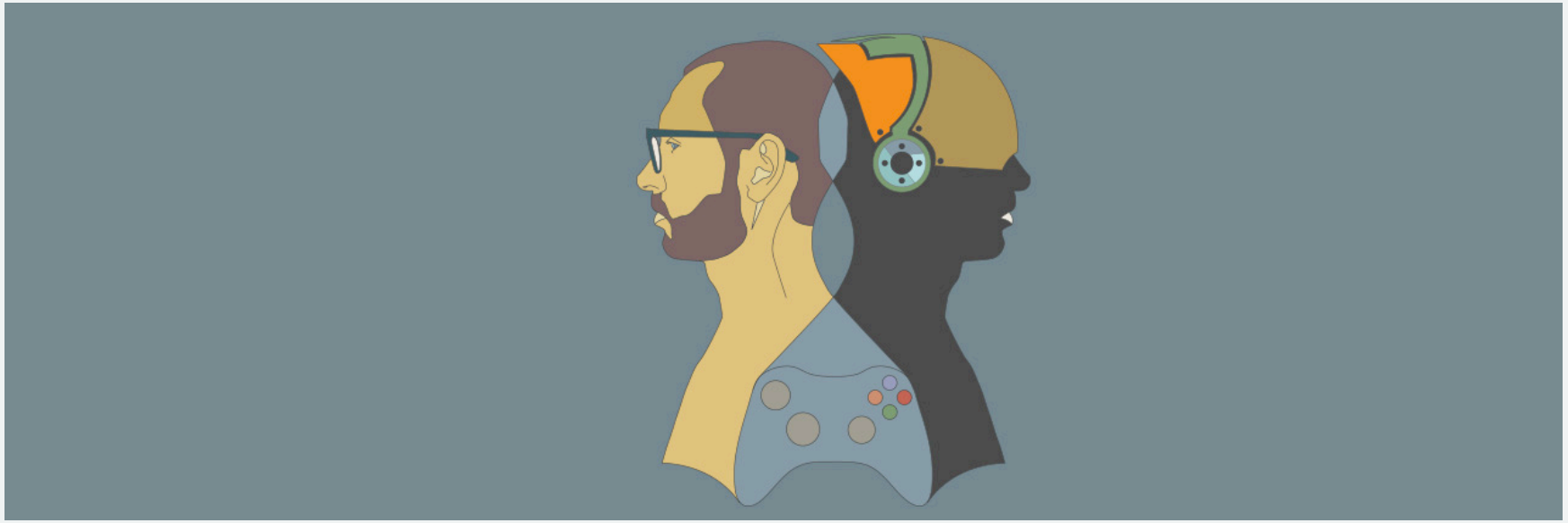
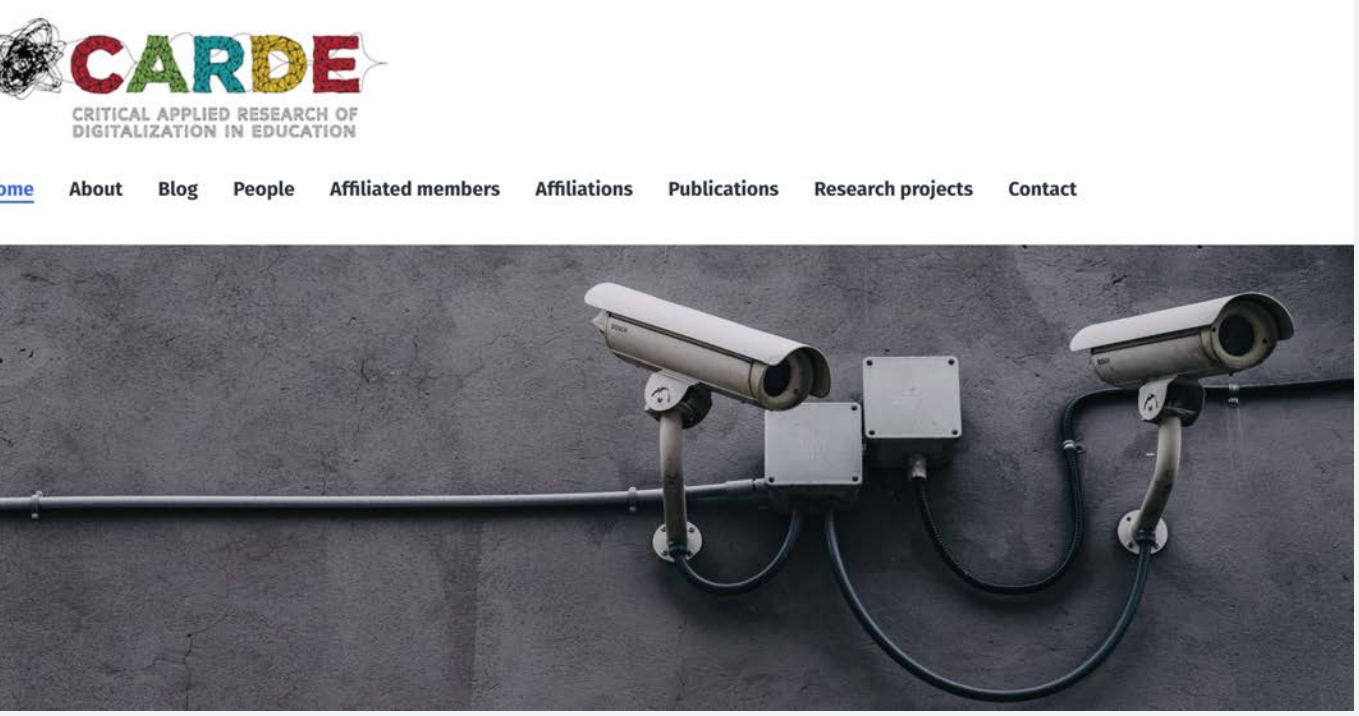
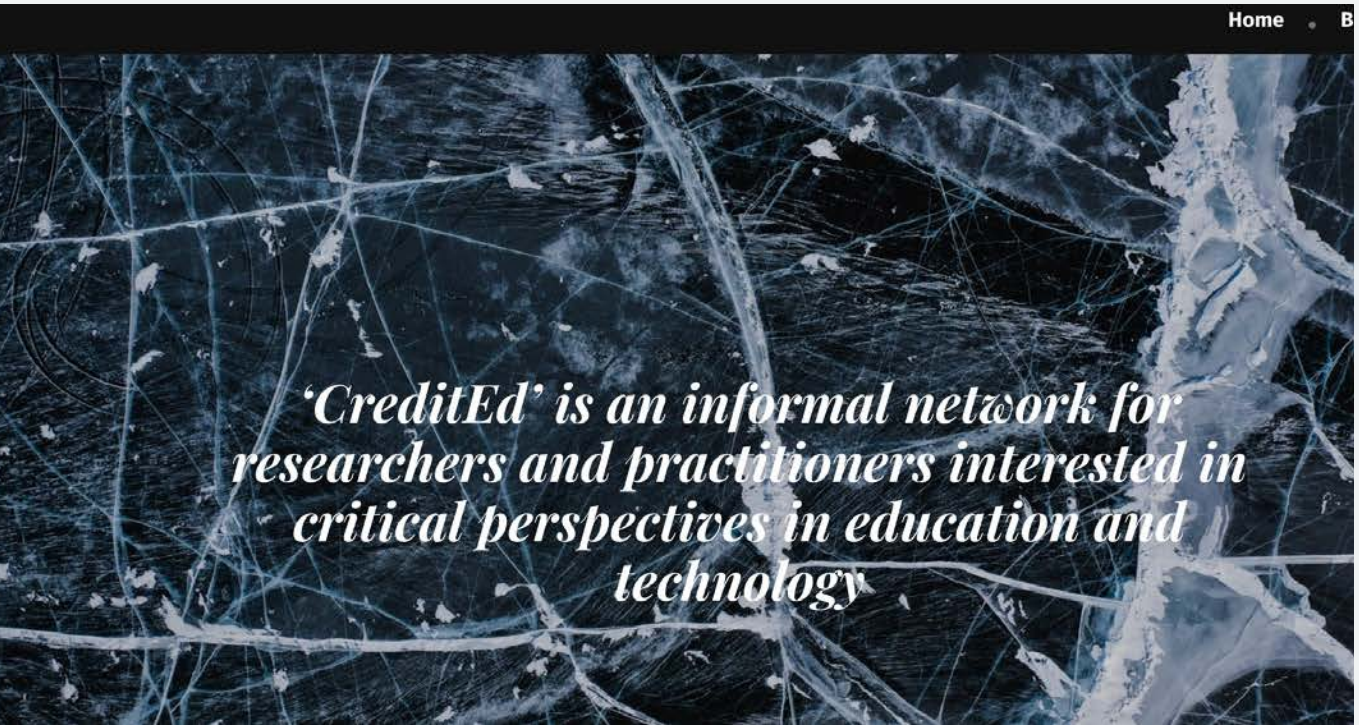
CARDE
CRITICAL APPLIED RESEARCH OF DIGITALIZATION IN EDUCATION



Background

Developer, educator, researcher in human-computer interaction, digitalization, online learning, virtual environments, learning analytics and datafication the past 15 years





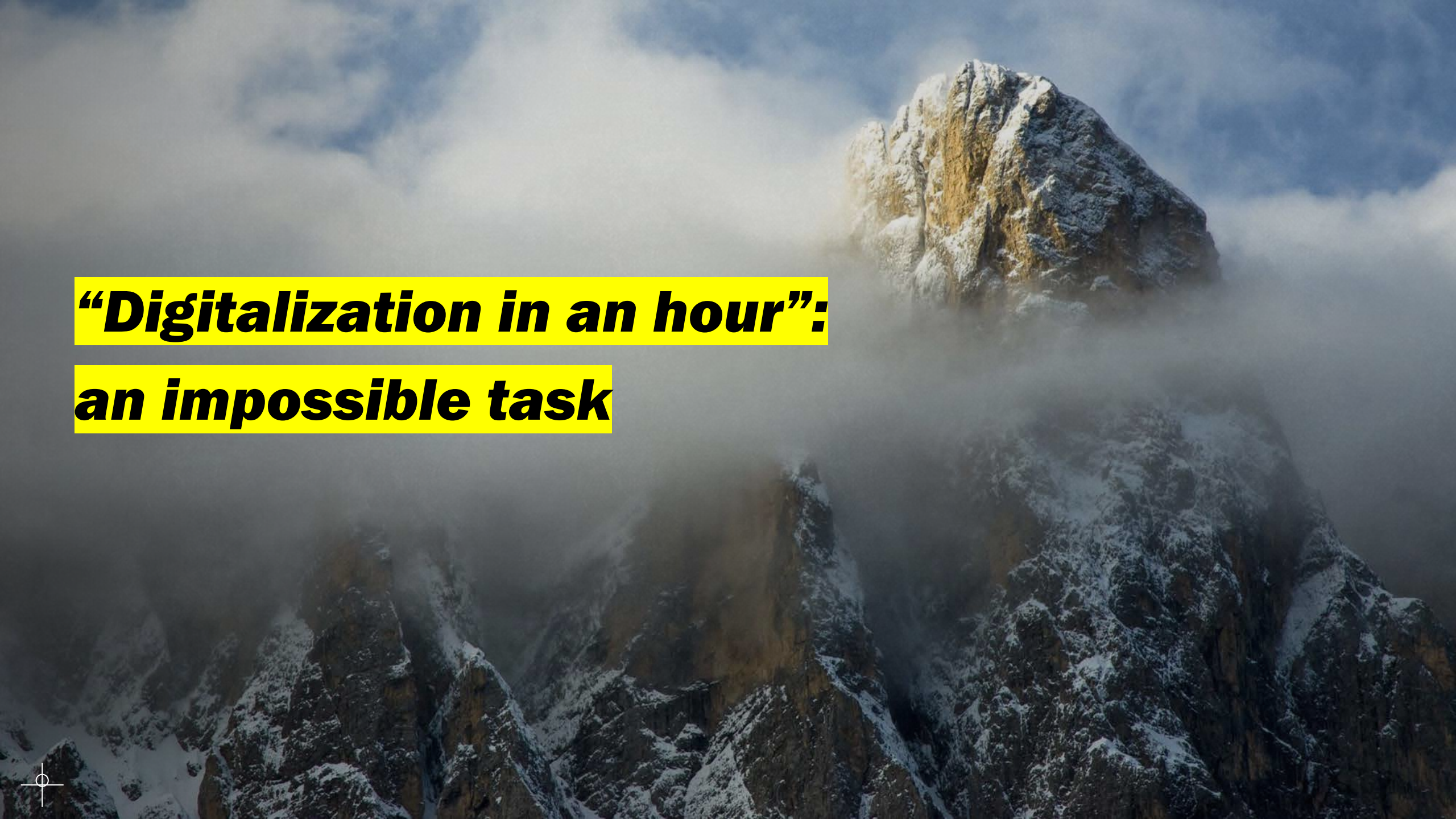
CARDE (Critical Applied Research of Digitalization in Education) research group. Co-founder.
https://carde.group

CreditEd network. An informal network for researchers and practitioners interested in critical perspectives in education and technology. Co-founder.
https://creditednetwork.wordpress.com

Current research project

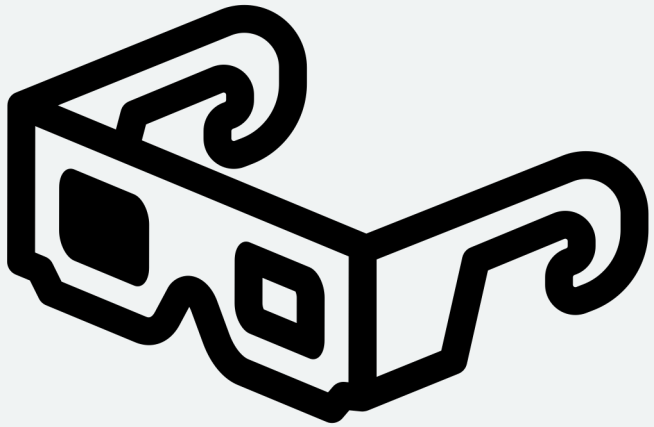
- “Speculative social science fiction of digitalization in higher education: Towards a humanized digital future”
- Funded by the Academy of Finland
- More at https://carde.group


Kino
Kosmos


“Digitalization in an hour”:
an impossible task

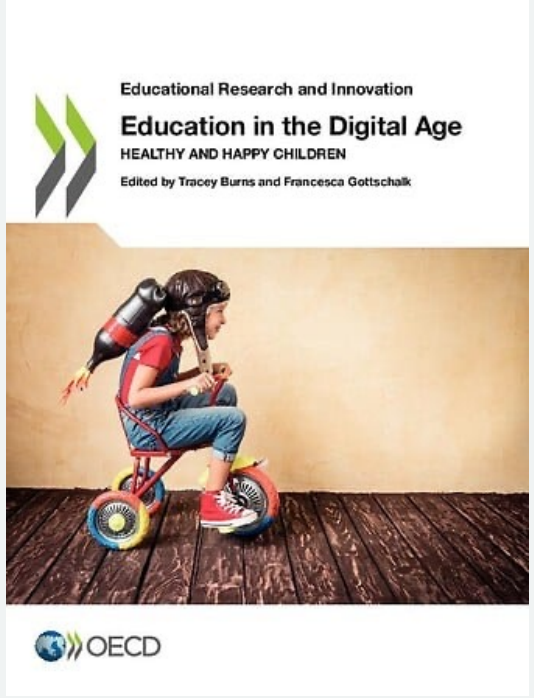
Vignettes (or “presentation structure”)

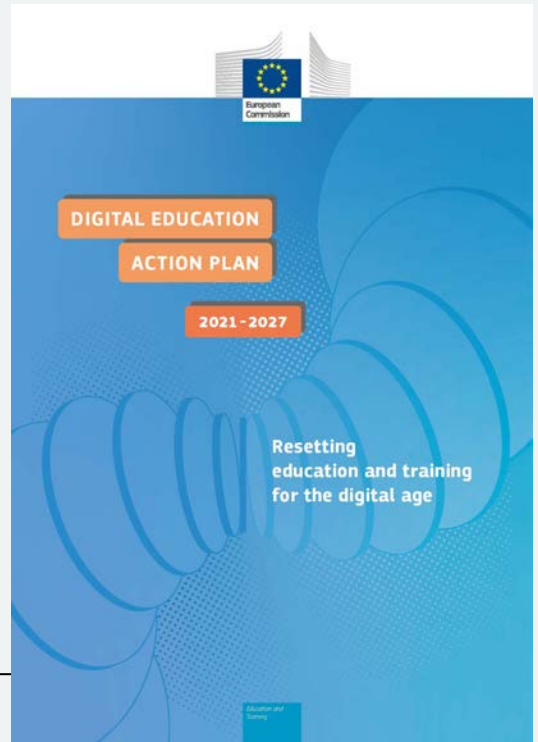
- DIGITALIZATION AND UTOPIA
- ON DATA AND ANALYTICS (IN SHORT)
- “SUCCESSFUL” IMPLEMENTATION OF TECHNOLOGY
- DIGITALIZATION AND EMBODIMENT
- DIGITALIZATION AND SUSTAINABLE DEVELOPMENT




Digitalization and Utopia
(some background to your future)

Future visions





Future visions

Sitra, the Finnish Innovation Fund, is an independent public foundation which operates directly under the supervision of the Finnish Parliament.

At home

Home is the place we know best, a place of our own in a world that can seem alien elsewhere. Home is also loaded with expectations, many of which we rarely think about unless forced to do so. This can happen when faced with a pandemic, moving house, or homelessness, for example. In the future, will "home" always be a physical location, or might the term be used to refer to one's body, a feeling or a setting?

At work

The future of work tends to be a favourite topic of foresight research. When talking about future scenarios for our working lives, it often feels as if the changes would be the same for everyone. But there is no such thing as a single future working life scenario, just as our working lives at present are not the same for all. What does work really mean now, and what will it mean in the future? Is it about having something to do, earning a living, or having the freedom to live a more relaxed day-to-day life?

In nature

The climate crisis, extreme weather conditions and loss of biodiversity are no longer things of the future: they are happening today. Our actions have shaped the environment into something never seen before. The good old days of stability are long gone, and we are embarking on an era of post-normal surprises. We are dependent on nature, but nature is not dependent on us. What direction will our relationship with nature take?

In the city

Urbanization has been a hot topic for a long time, both globally and here in Finland. Population is concentrated in cities more than ever, but of course cities are also much more than just where people live. People visit cities for work, to go shopping, attend cultural events and enjoy themselves. What will cities be like in the future? Whose hands will leave their prints in urban spaces?

Making decisions

The global decline of democracy has been apparent for the past 15 years. Democracy only works when people trust each other and the institutions and decision-makers in their society. What about at the individual level? What kind of decisions will we be making in the future, and how will we make them? What kind of assistive tools might we have, and what and who will we be able to trust when it comes to decision making?

In the metaverse

We used to talk about surfing the information superhighway; today's buzzwords are social media bubbles and the metaverse. What about tomorrow? What shape will the digital environment take in the future and what will we do there? The metaverse refers to an environment in which the digital and physical world become closely intertwined.

Mitä jos? Toisenlaisia tulevaisuuksia

Design Club Open Call

Kiia Beilinson FEMMA Planning Pasi Kärkkäinen-Tunkelo Irene Suosalo Pekko Vasantola Dario Vidal

What if? Alternative Futures

9.9.2022–12.3.2023

Mitä jos voisimme tulevaisuudessa kommunikoida lajienvälisesti, ottaa kaupungin haltuun tai mitata ja jakaa tunteita?

Pystymme helpommin kuvittelemaan sen, mitä jo on, kuin sen, mitä voisi olla. Ajattelemme tulevaisuutta helposti nykyhetken jatkumona, jossa asiat ovat usein vain nopeampia, isompia ja tehokkaampia. Tulevaisuus on kuitenkin yllättävällä tavalla yllättävä. Ei ole yhtä tulevaisuutta, joka vääjäämättä vyöryy meitä kohti, vaan tulevaisuus on nykyhetken valintojen ja tekojen summa. Siksi tulevaisuus ja sen kuvittelu kuuluu kaikille.

Mitä jos? Toisenlaisia tulevaisuuksia -näyttely kutsuu vaihtoehtoisten tulevaisuuksien äärelle. Näyttelyssä esillä olevat teokset ovat seitsemän luovan alan tekijän tulkinta toisenlaisista tulevaisuuksista, jotka toimivat näyttelyssä lähtöpisteinä erilaisten maailmojen kuvittelulle ja olemassa olevien oletusten haastamiselle.

[illegible] tulevaisuuksista pohjautuu tulevaisuustalo Sitran [illegible] tunnistettu ja tulkittu tulevaisuuden [illegible] sämme. Teokset [illegible] kotona, [illegible]

Design Club on Designmuseon yritysverkosto, jonka jäsenet [illegible] liiketoimintaansa muotoillun avulla. *Mitä jos? Toisenlaisia tulevaisuuksia* on [illegible] toteutuva Design Club Open Call -näyttelysarjaa, jonka puitteissa etsitään vaikuttavia [illegible] tarjotaan yrityksille mahdollisuus olla tukemassa uusia luovia avauksia. Tämän vuoden näyttelyn [illegible] teemana oli *uusi tieto*.

What if we were capable of interspecies communication, could appropriate a city, or measure and share our emotions?

It is easier for us to imagine things that already exist than to envision those that might be. We often think of the future as a continuum of the present, with the same things but faster, bigger and more efficient. The future, however, surprises us in surprising ways. No single future is surging inevitably upon us; rather, the future is the sum of the decisions and actions we take in the present. That is why imagining the future belongs to everyone.

The *What if? Alternative Futures* exhibition invites you to explore speculations of future. The six works in the exhibition present interpretations of alternative futures constructed by creative professionals. They offer us resources with which to imagine different worlds of tomorrow and challenge our current expectations of the future.

The exhibition exploring alternative futures is based on future fund Sitra's *Weak Signals* report, which identifies and interprets unexpected future phenomena, as well as their potential impacts on our lives. The works are organised according to the six themes through which weak signals were studied: at home, [illegible] nature, in the city, making decisions and at the metaverse.

The Sustainable Development Goals Report 2022

United Nations

To recover from the COVID-19 pandemic and deliver global sustainability, we need an urgent rescue effort for the SDGs. We must deliver on our commitments to support the world's most vulnerable people, communities and nations. Creating a global economy that works for all will require bold action. Greater investment in data infrastructure is needed to efficiently target investments now, anticipate future demands, avoid crises from descending into full-blown conflict and plan the urgent steps needed to achieve the 2030 Agenda.

António Guterres
Secretary-General of the United Nations

MINISTRY OF EDUCATION AND CULTURE

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OPETUS- JA KULTTUURIMINISTERIÖ / EN / AREAS OF EXPERTISE / HIGHER EDUCATION AND RESEARCH / POLICY AND DEVELOPMENT IN HIGHER EDUCATION AND SCIENCE / VISION 2030

Higher education and research

- Higher education institutions and science agencies
- Policy and development in higher education and science
  - International strategy for higher education and research
- Steering, financing and agreements
- Higher education and degrees
- Science and research
- Statistics

Vision for higher education and research in 2030

The vision for the Finnish higher education and research in 2030 was drawn up in cooperation with higher education institutions and other stakeholders and was published in October 2017.

NB: This project has ended and the webpage will no longer be updated.

The purpose was to formulate a future scenario which enables the development of a high-quality, effective and internationally competitive higher education system in Finland by the year 2030.

In the course of this work, different alternatives and models for improving the Finnish higher education system were examined and their impacts and feasibility assessed. The development needs of the Finnish higher education and research were reviewed and the future desired state defined on the basis of the changes in the national and international operating environment.

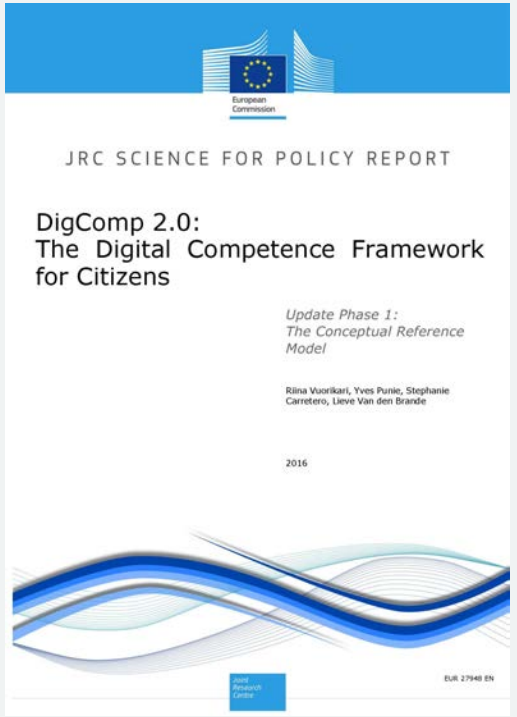
The work was carried out in broad and open cooperation with the higher education institutions and their staff, students and stakeholders.

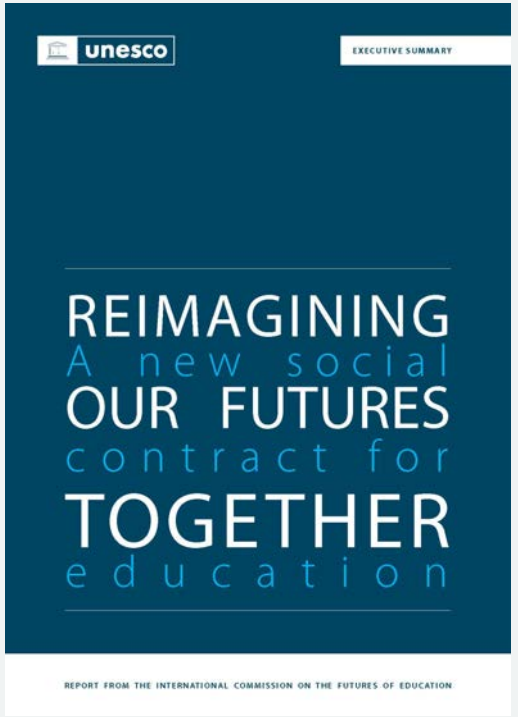
See also

Roadmap for Implementing Vision 2030 PDF 736kB 31.1.2019

Proposal for Finland PDF 467kB 24.10.2017

OECD report on collaboration among higher education institutions PDF 1.1MB 17.11.2017





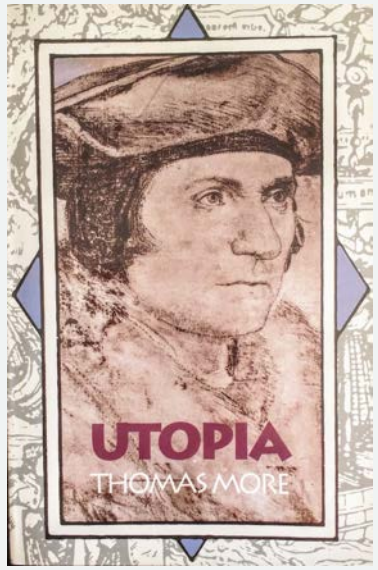
Future visions and policies

Key statements of the story

1. “The future is more uncertain than ever”
2. “Digitalization is disrupting/transforming [your field here]” (digitalization as challenge)
3. “There is huge potential in digitalization to transform [your field here]” (digitalization as potential)
4. “[Your field here] is outdated/not yet fulfilling its potential”
5. “Digitalization of [your field here] can ensure a better future”

Utopian elements in the documents

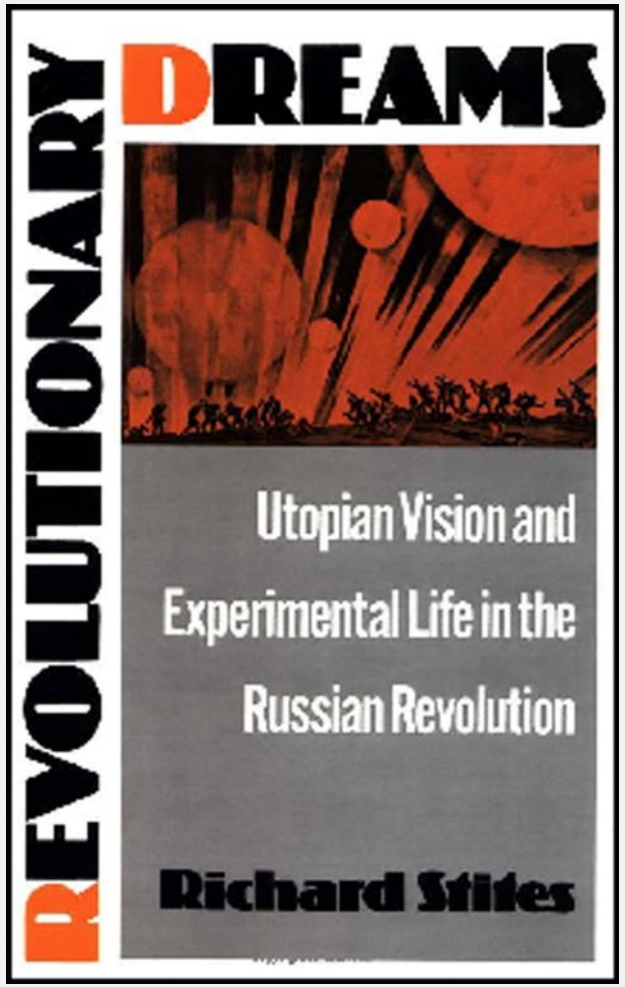
"Utopia":
Thomas More coined the word as the title and locus of his 1516 Utopia in a pun which conflates *outopos* or no place and *eutopos* or a "good place". Consequently utopia is widely understood as an imagined perfect society or wishfully constructed place which does not and cannot exist. (Ruth Levitas, Utopia as Method, 2013, p. 3)

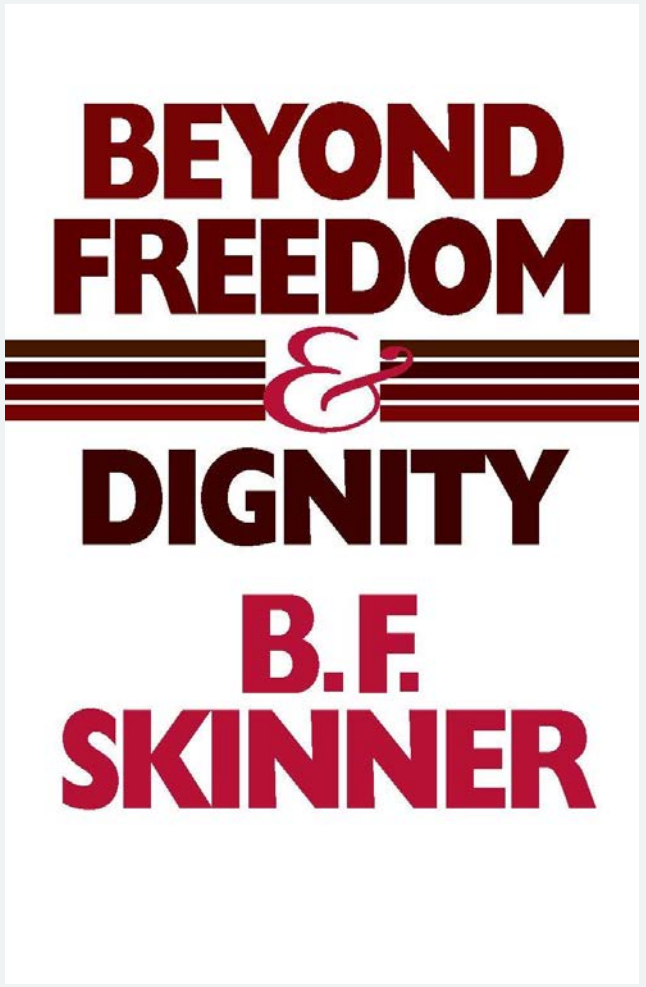


1. There is something wrong with the current state of things (also posing a sense of 'crisis')
2. (Technological) solutions or blueprints on how the world could be changed "better"
3. Implicitly defining what is desirable or "better"

“Official Document Utopias”

- These documents build a picture of a future X which can be ensured with digitalization/datafication
- They build the future they only claim to predict
- Possible futures become *a* future





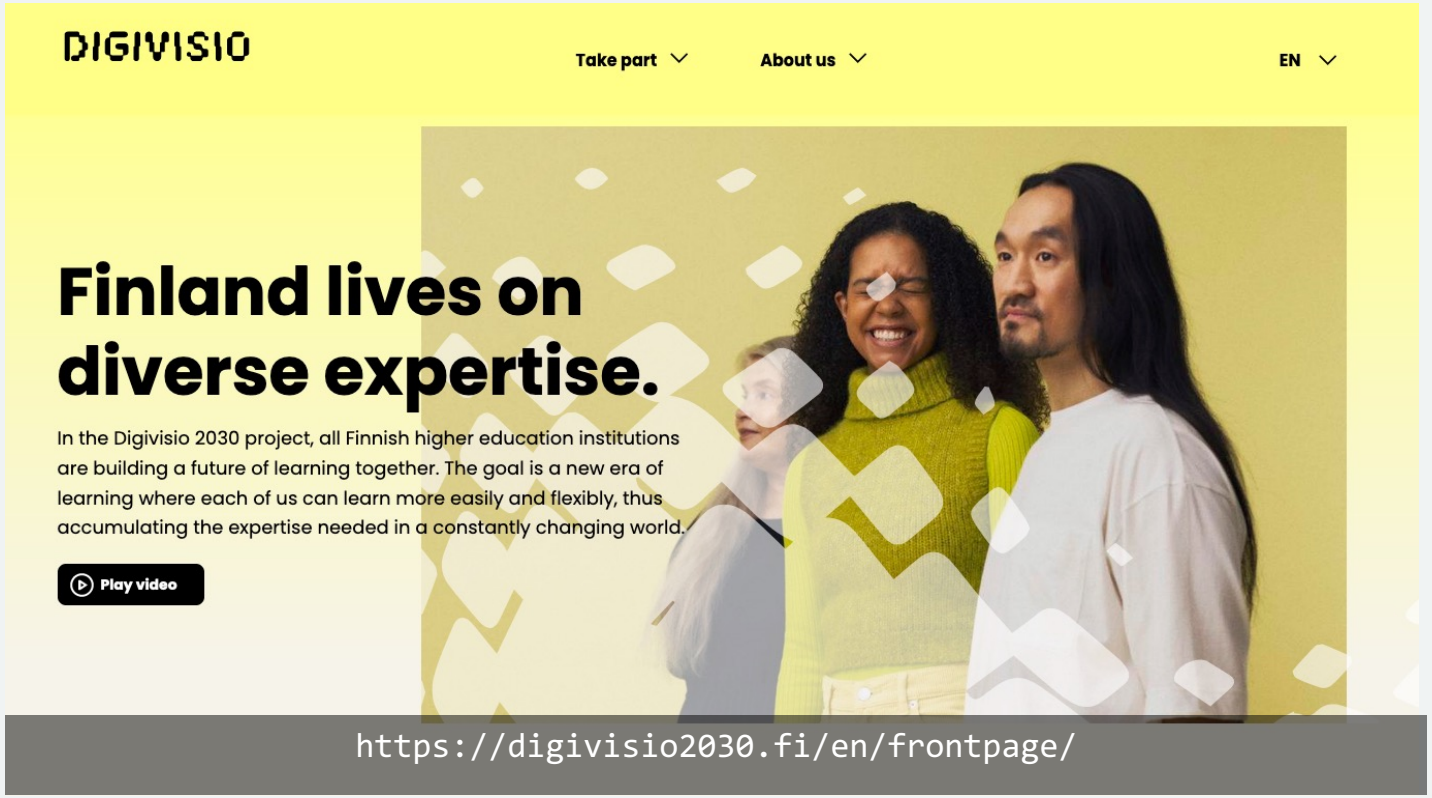
Technological and science utopias

In summary...

Pandora's Box, E1: The Engineers' Plot (36:41)
https://www.youtube.com/watch?v=h3gwyHNo7MI

Pandora's Box, subtitled A Fable From the Age of Science, is a six part 1992 BBC documentary television series written and produced by Adam Curtis.

Digivisio 2030: Operationalizing a technological utopia?



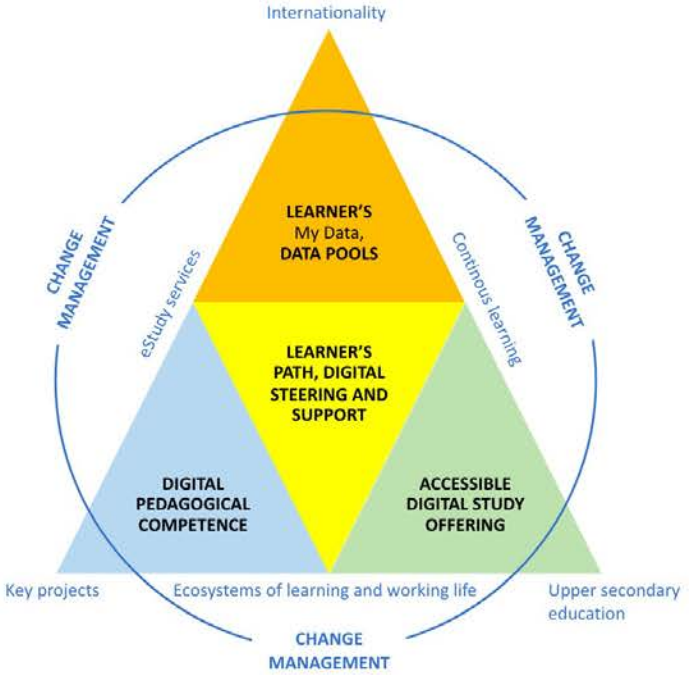
https://digivisio2030.fi/en/frontpage/

- Funded by the Finnish Ministry of Education and Culture
- Digivisio 2030 is a joint project whose aim is to create a future for learning that benefits higher education institutions, learners and our society as a whole.
- All 38 Finnish higher education institutions have signed the project's participation agreement, and the project office was established at the end of 2020. (https://digivisio2030.fi/en/basic-information-on-the-digivisio-2030-project)

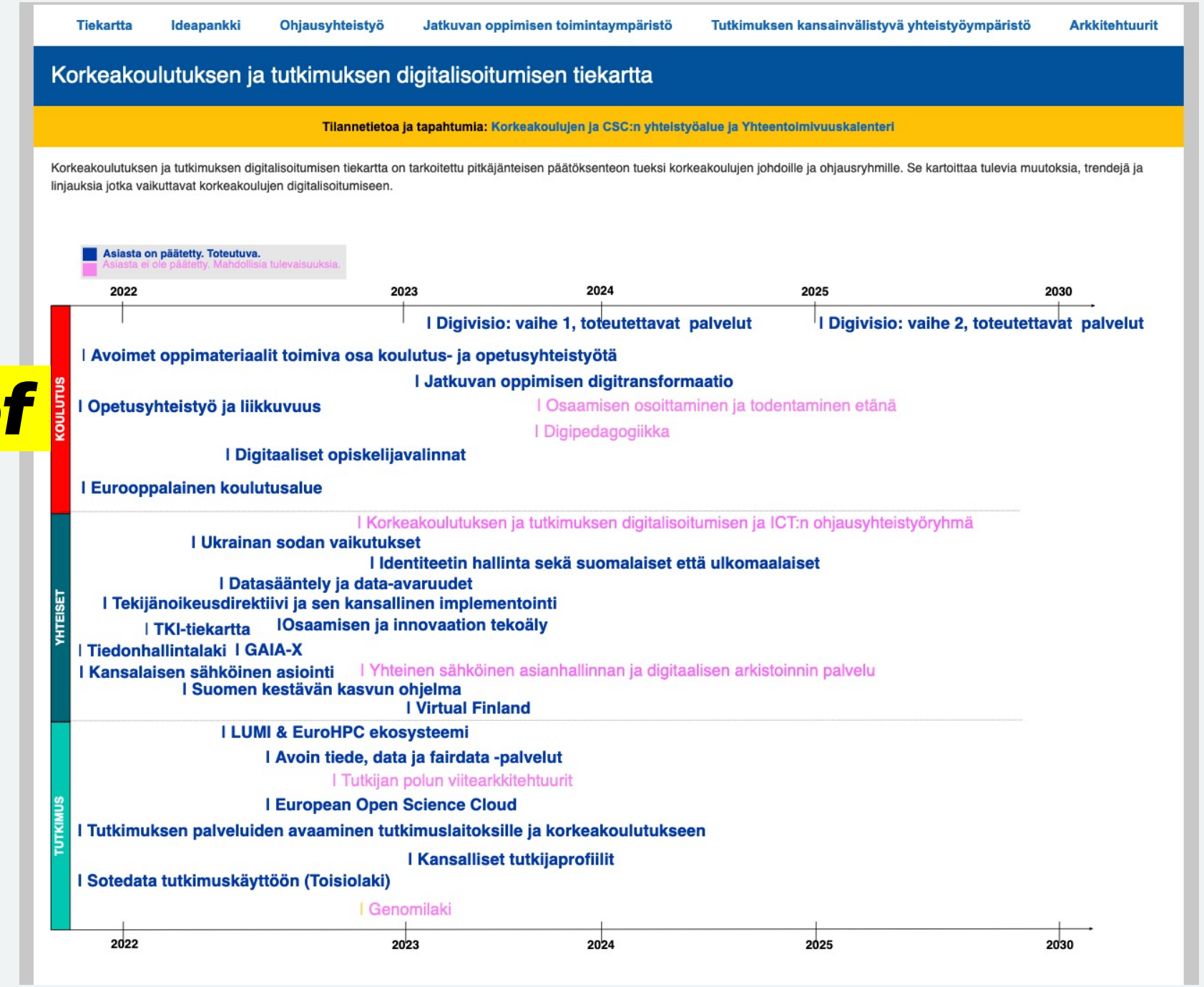
A national digital service platform

The objective of the program is to create, as mutual and stakeholder cooperation, by 2030

1. **A National digital service platform that**
   a) enables the compatibility of digital services between higher education institutions,
   b) provides the learner's "my data" service and integrates the accumulation of the learner's competence before and after the higher education institution to the learning and career path and
   c) improves the compatibility of the actors' IT services and lowers the threshold for utilising national solutions.
2. **Guidance based on digital pedagogics, the learner's path and shared data, which**
   a) supports studies and student well-being regardless of time and place and in an accessible manner,
   b) Brings AI solutions as an aid in guidance, and
   c) places the learner's benefit at the centre of development.
3. **Support for change management for higher education institutions, so that we can**
   a) introduce the national digital service platform
   b) digitize student administration processes and admission to higher education institutions,
   c) support the development of higher education institutions into open communities managed by information, and
   d) make data available for individuals and society.



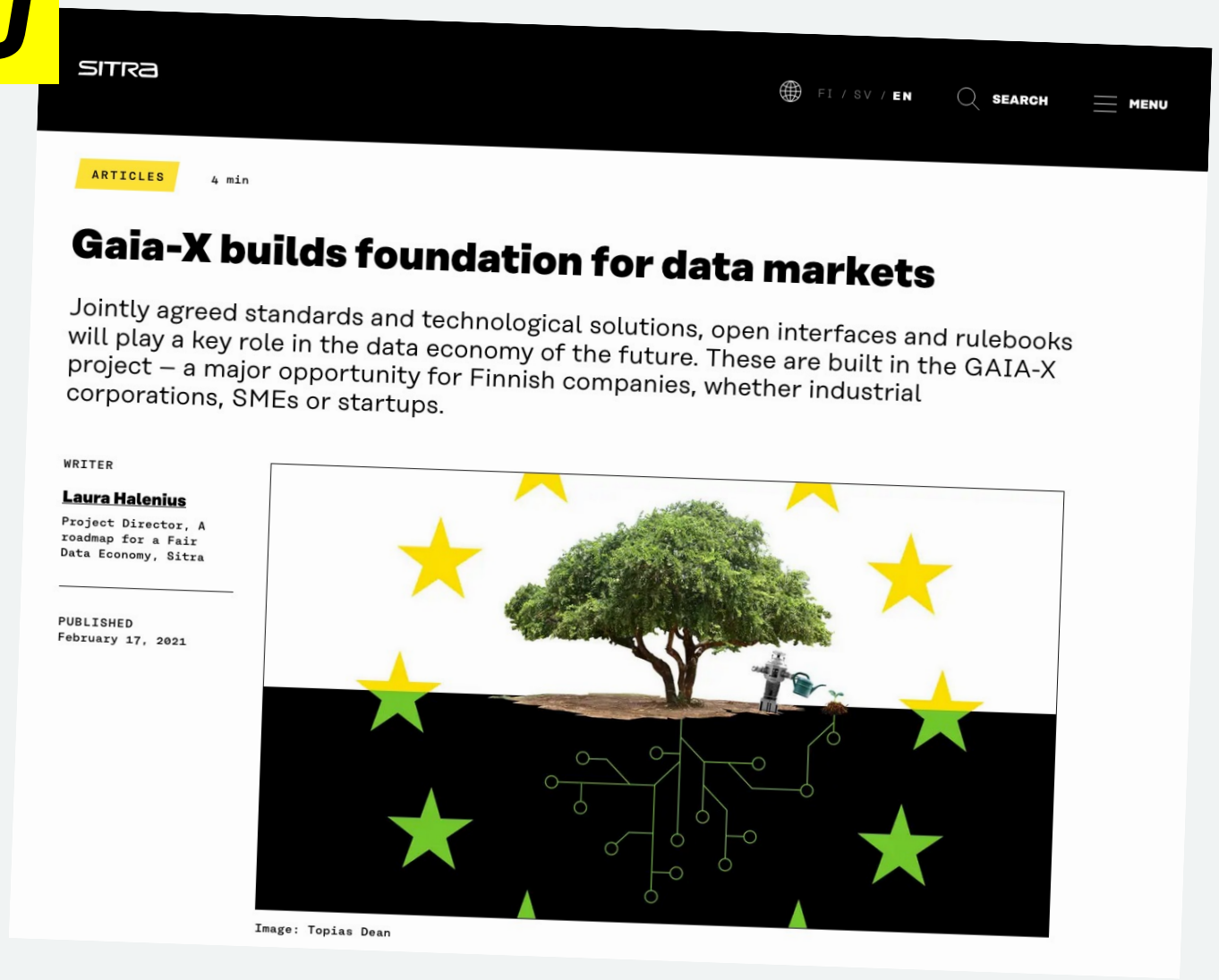
Roadmap for digitalization of Finnish higher education and research



Connection to EU data markets

“GAIA-X is a major European initiative for trusted data sharing. It has already strong support from German and French governments and close links to European Commission. More than 300 organizations from various countries are already involved in GAIA-X. Still, the project is open to new European interested parties to join us in its development.”
https://wiki.eduuni.fi/display/CSCTICTOR/GAIA-X

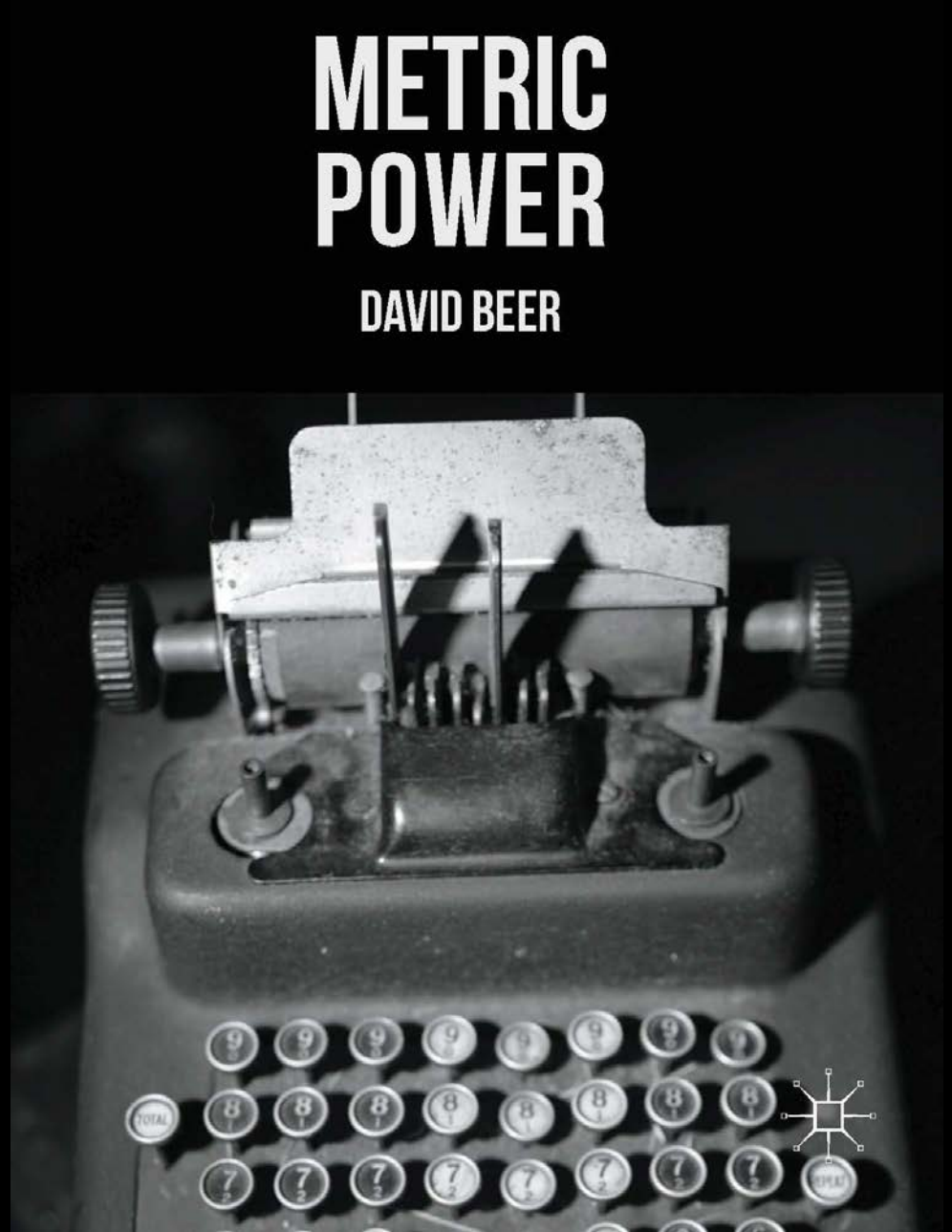
CSC – IT Center for Science is a Finnish center of expertise in information technology owned by the Finnish state and higher education institutions.
https://www.csc.fi/en/about-us




Data and analytics
(a quick side-note)

Technology and the abstraction of life

- In short, learning analytics (LA) are technologies that *gather, analyze* and *visualize data* that is produced when users interact on digital (learning) platforms such as Moodle (same on social media platforms)
- General conclusion from the research: For learning analytics to “work”, we need to gather data throughout the course and not only in the end.
- In other words: LA technologies don’t necessarily work unless you redesign courses to fit data gathering, machine reading and measuring.
- So, the question then is, what changes?



“we should in fact see metrics as being central to the ordering, division, and construction of the social world today. We are governed, managed, and corralled by metrics; they act upon us and through us.”

(Beer 2016, 169)

So what should we do then (or nothing)?


“Success factors for implementing technology”

5 factors of a “successful” implementation of technology in an organization

- The study was conducted in 2013 in an Australia university context in organization-wide transition process from one learning management system to another.
- The background literature is from various areas on implementing technology
- One should be critical about these results and using them as they suggest change = progress = positive

Herrington, Reeves, & Oliver, 2010

5 factors of a “successful” implementation of technology in an organization

1. Develop clear institutional enablers: Vision, strategy, objectives and policies
2. Develop the right kind of culture
3. Have the right support people for implementation
4. Focus on the end users’ needs
5. Provide better usability

Herrington, Reeves, & Oliver, 2010

Success factors	Description
1. Develop clear institutional enablers: Vision, strategy, objectives and policies	• Provide a clear vision, strategies and policies • Allocate resources, and workload relief at critical times • Create clear measurable goals. Evaluate success. • Provide systematic and coordinated communication that support change

Success factors	Description
2. Develop the right kind of culture	• Engage and promote ownership • Build a positive and inclusive team culture • Provide mentors, ‘technology champions’ as well as access to expert performances. • Support, value and reward innovations

Success factors	Description
3. Have the right support people for implementation	• Have a staff of high quality in technical, design, but also in human interaction and communication aspects.

Success factors	Description
4. Focus on the end users' needs	• Provide (personal) training and resources, relevant for the needs of the end users • Support in pedagogy, instructional design and technology • Move from technocratic emphasis to a user-emphasis • Focus on finding solutions • Address earlier beliefs, skills and knowledge, and give room for reflection

Success factors	Description
5. Provide better usability	• New systems need to appear easier and reliable than old systems • Evaluate success

But this is where it often goes...

- +20 years of service
- From optimism to the sense of bureaucracy
- Outcome has been alienation of one’s work and loss of the sense of agency instead of being eager to develop

Research Article

The life and times of university teachers in the era of digitalization: A tragedy

Hanna Teräs, Marko Teräs & Juha Suoranta

Received 22 Apr 2021, Accepted 26 Feb 2022, Published online: 03 Mar 2022

Download citation https://doi.org/10.1080/17439884.2022.2048393 Check for updates

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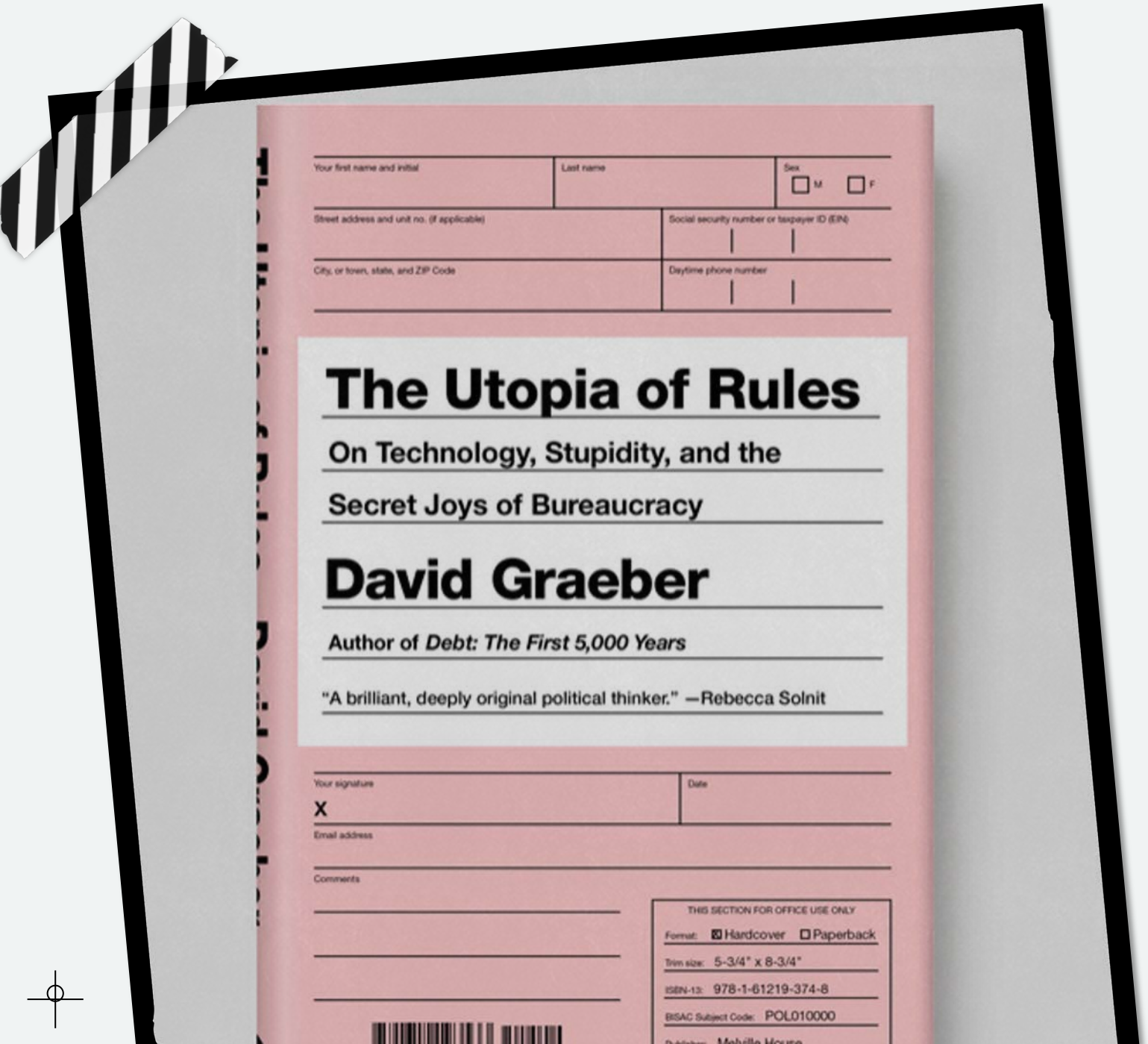
ABSTRACT

Although digitalization has become an everyday phenomenon in higher education (HE), there is still limited understanding on how HE teachers experience the digitalized work environment. In this article we utilize narrative research methodology to share HE teachers’ voices, addressing the following questions: What is the lived experience of being a teacher in digitalizing higher education? How has digitalization shaped the work environment in higher education? What meaning do HE teachers make of digitalization? The research participants are six university teachers with significant work experience. The findings are reported in the form of a classic tragedy narrative, which reveals that the rise of managerialism and neoliberalization in HE has changed teachers’ work and the role of digital tools play in it, and teachers are experiencing an increasing sense of alienation. In conclusion, we elaborate these experiences theoretically and paint a picture of today’s digitalized work environment in HE.

KEYWORDS: Digitalization higher education narrative research humanized technology



"All bureaucracies are to a certain degree utopian, in the sense that they propose an abstract ideal that real human beings can never live up to."

(Graeber 2015, 26-7)

Critiques of ’digital’ futures

instead of asking, what ‘solutions’ (in the shape of digital educational technologies) can we *invent*, we want to ask what ‘solutions’ (…) can we *destroy*?

A ‘postdigital’ mindset should be open to imaginaries that include both the dismantling of current systems, as well as entirely non-digital solutions.

Commentaries | Open Access | Published: 19 January 2023

Deliberately Destructive Speculative Design

Lina Rahm & Jörgen Rahm-Skågeby

Postdigital Science and Education (2023) | Cite this article

188 Accesses | 2 Altmetric | Metrics

Why Deliberate Destruction?

A number of recent *Postdigital Science and Education* articles have discussed the strengths and limitations of future-oriented and speculative methods in education (Cerratto Pargman et al. 2022; Houlden and Veletsianos 2022; Suoranta et al. 2022; Traxler et al. 2021). For example, Traxler et al. (2021) present an encompassing survey relating to the question of ‘what’s next?’ Using epistemological positions emerging from studies of mobilities, futures, and the postdigital, the authors perform a joint, but also contrasting, reading of what futures could hold. Their conclusion is manifold, but one of the insights that stand out is that futures, and privileged positions from where we may project such futures, need to be scrutinized in themselves. But how can the ‘not-yetness’ of digital systems be studied?

https://link.springer.com/article/10.1007/s42438-023-00390-z


Digitalization and
‘embodiment’

Virtual environment (VE) experience

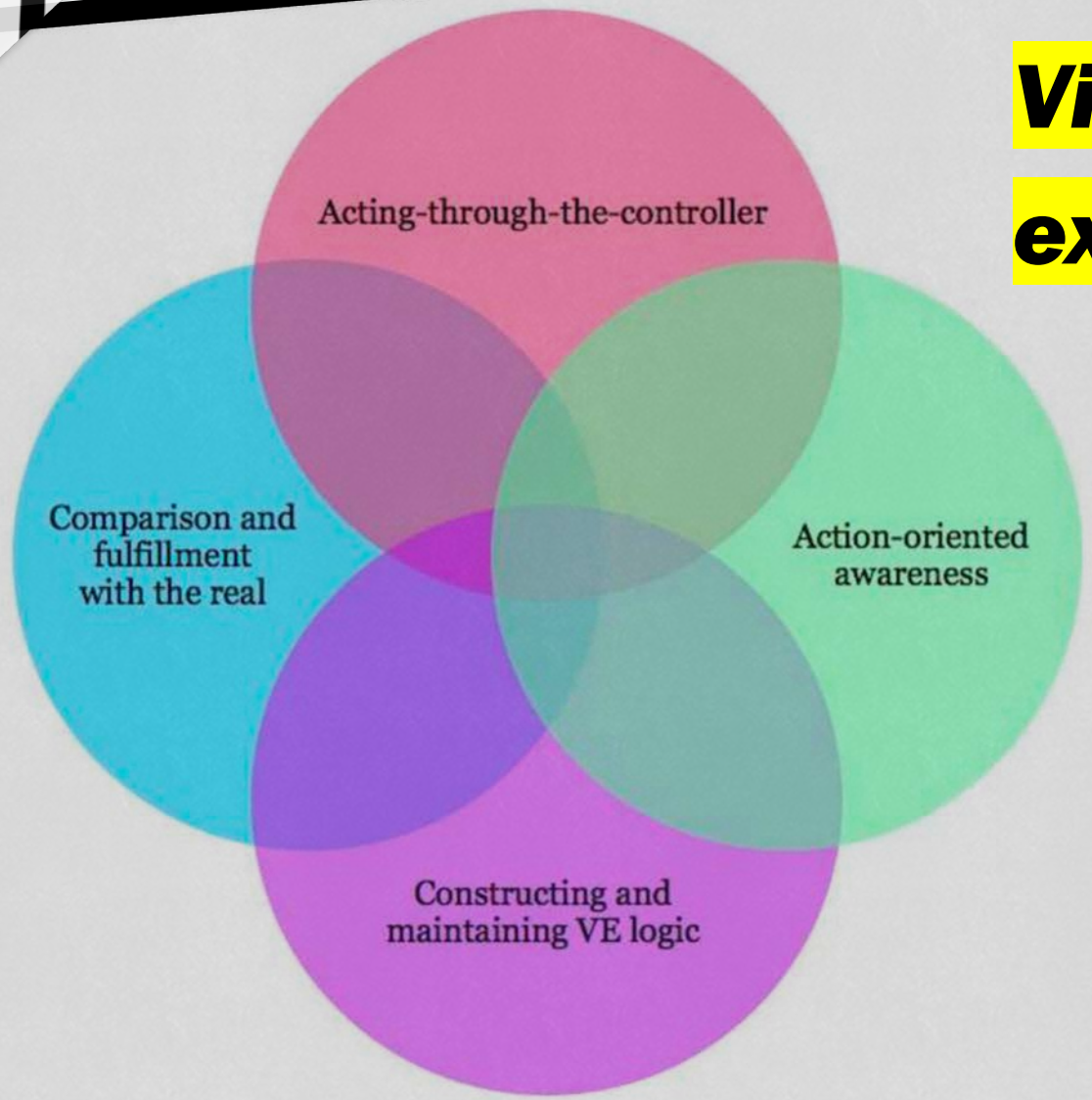


Figure: Four interrelated constituents of the VE experience

- The aim of the study was to understand how users experience VEs in a hazardous environments context.
- The participants were employees using VEs (video games) for hazardous environments training in the gas and chemical sectors in Western Australia.
- Giorgi's (2009; 1985) descriptive phenomenological method.

Teräs, M. (2017). *The Lived Experience of Virtual Environments: A Phenomenological Study* [Curtin University]. http://hdl.handle.net/20.500.11937/69353

Embodiment, the often missing aspect of our (digital) experience

- Our perception is embodied in a way that making sense of our surroundings is bodily and intentional: what we observe in the world is based on our goals and intentions. We make sense and meaning through bodily interaction with the world.
- When designing presentations and interactions with visualisations, we should make transparent what do we mean by referring to modes such as ‘natural interaction‘. If we consider interaction from a phenomenological perspective, natural means our everyday being in the world, and how things are given to us in our interaction with the world. We experience with our body as we are in the world.
- Technology can and will extend and alter this experience, often in unpredictable ways.
- From this perspective, going to the theatre is a certain kind of an embodied experience as is watching Netflix or playing video games.

Teräs, M., & Raghunathan, S. (2015). Big Data Visualisation in Immersive Virtual Reality Environments: Embodied Phenomenological Perspectives to Interaction. *ICTACT Journal on Soft Computing*, *05*(04), 1009–1015. https://doi.org/10.21917/ijsc.2015.0141

Digitalization and sustainable development

Discplaimer: I am not really an expert in this topic

UN’s Sustainable Development Goals (2030 Agenda)

”To stay ahead of crises, significantly more investment in data and statistics will be necessary.” (p. 60) Not much on “digitalization” as such.

Algoritmi voi ratkaista kaikki maailman ongelmat

AlphaFold-algoritmi on oppinut jäljittelemään yhtä elimistön vaikeimmista rakenteista. Tuloksena syntyy uusia lääkeaineita kaiken maailman sairauksiin. Samalla tekniikalla voidaan ratkaista myös muita ongelmia – jopa ilmastokriisi.

AlphaFold murtaa koodin

DeepMind löi suurmestarin

TEKNIIKKA // TEKOÄLY

Google hoitaa niin syövän kuin ilmastokriisinkin

Googlen omistaman DeepMindin algoritmia ylistetään kaikkialla, ja se on jo alkanut ratkoa aikamme kiperimpiä ongelmia.

SÄÄENNUSTEET — UKKOSKUUROT ILMAANTUVAT YLLÄTTÄEN

LÄPIMURTO: DeepMind voittaa aiemmat menetelmät 8 kertaa 9:stä.

ONGELMA

RATKAISU

SYÖPÄDIAGNOOSIT — MAMMOGRAFIA PALJASTAA SYÖVÄN

LÄPIMURTO: DeepMind tekee varmemman diagnoosin kuin syöpälääkäri.

ONGELMA

RATKAISU

Everything done and solved

- (Left): Algorithm can solve all the problems in the world
- (Right): Google will treat both cancer and climate crisis

(Science Illustrated / Tieteen kuvalehti 4/2022)

The government seems to thinks so

Finland will be the world's leading user of digitalisation in higher education and continuous learning based on it. (p. 34)

Finland will be able to capitalise on knowledge produced in other parts of the world and global megatrends, including the potential created by digitalisation and artificial intelligence.

Technological advancement changes skills needs and influences the type of knowledge and skills the education system should produce. Due to the structural change in the world of work, which is accelerated by digitalisation, some tasks will disappear in the labour market; however, new tasks which often have higher skills requirements will replace them over the long term.

Digitalisation has also not been found to improve learning outcomes in general, and even at best, the positive impacts are limited to restricted ways of using technologies

How might this affect the performing arts?

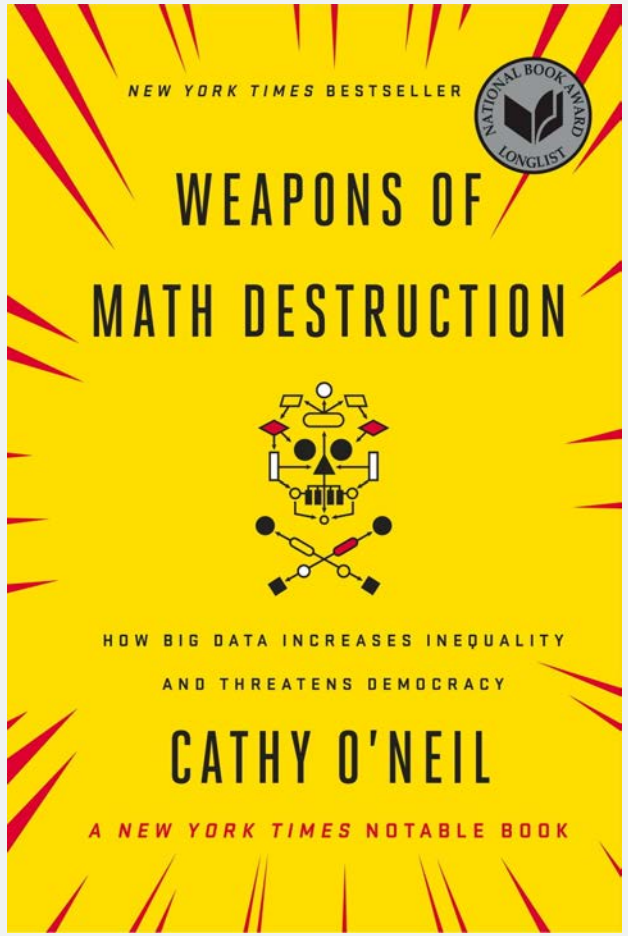
“Sustainable development”

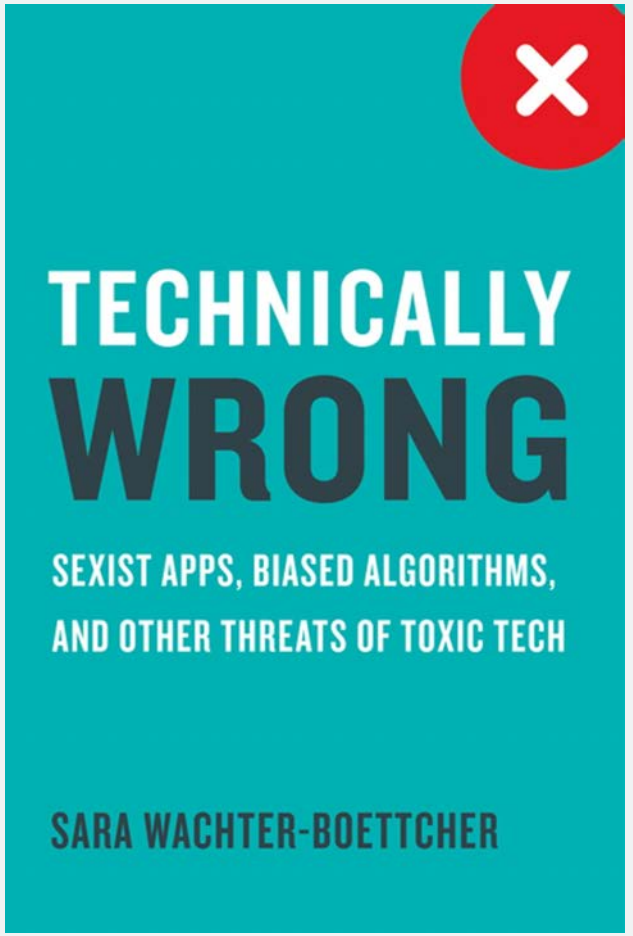
Solutions to these problems can be found by making better use of the potential offered by ICT in reducing emissions and increasing resource efficiency while creating markets for Finnish know-how in the design of software, energy-efficient equipment and data centres, among other things. (p. 95)

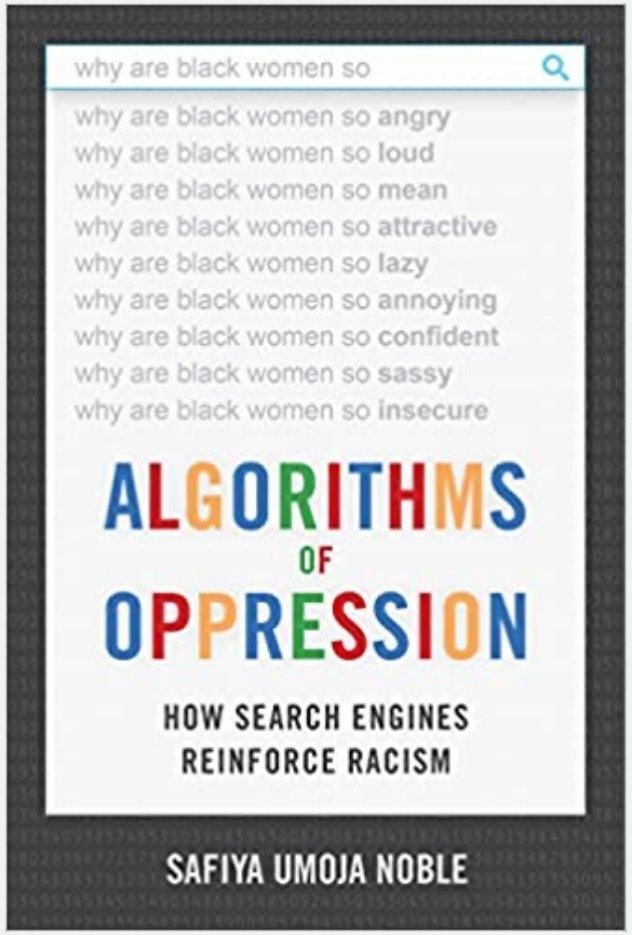
While new climate solutions are an immense opportunity for businesses, developing them will require strong and systematic digitalisation of society, education and research, RDI funding and enabling the exports of climate solutions. (p. 96)

Digitalisation also has links to sustainable development themes, which influence the future of education. Due to the enormous demand for energy caused by digitalisation, an international team of scientists points out in its recent overview of topical themes of the field that, over the last decades, not only have digital technologies been deployed globally in teaching but obsolete devices have also increasingly been disposed of in the name of educational innovations. (p. 84-85)

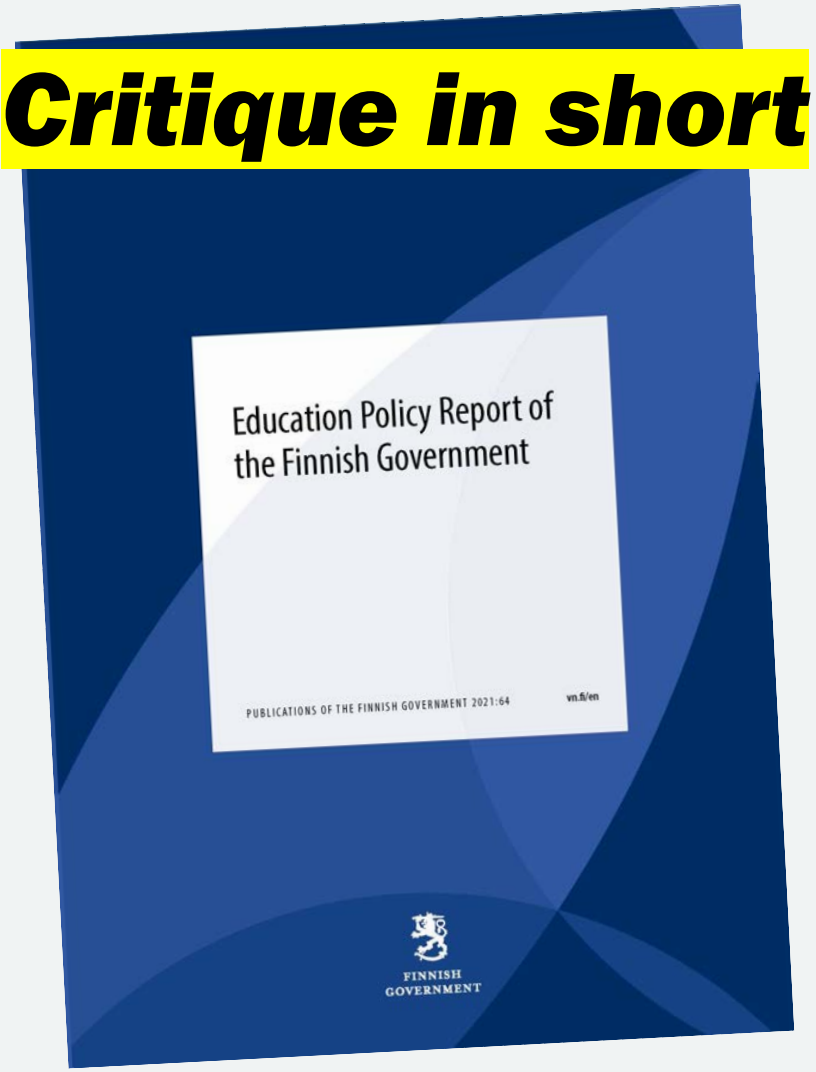
Everything solved – or is it really?







Critique in short



- Aren’t technologies always becoming obsolete due to new developments? There will always be “old” devices, as the market economy needs new products to generate growth.
- The main contradiction of digitalization and sustainability: Digitalization is part of the climate crisis which however is suggested to be solved with digitalization
- Sustainable development is as if a side-note in the positive grand narrative of digitalization in which *the potential of* digital solutions will save the day in ways which are not well defined but only referred to. It is faith in Eden, a technological utopia.
- **How would you transfer these thoughts to the future of performing arts?**

3. Performing arts education promotes ecologically and socially sustainable lifestyles. The common direction is towards a sustainable life on Earth, and the activities are based on sustainable consumption strategies. Preserving cultural heritage also addresses the issues of sustainable ways of life. Education and training in performing arts supports the growth of eco-social awareness and a responsible relationship with the world and strengthens social and mental well-being: working together supersedes competition, meaningfulness supersedes indifference, presence supersedes absence, sense of togetherness supersedes loneliness, experiences supersede result-orientation, movement supersedes passivity, playfulness supersedes stagnation, encounters supersede distance, trust supersedes mistrust and dialogue supersedes hierarchies.

Vision 2030 for performing arts education

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7. Technologies are used in the teaching of performing arts in a responsible and purposeful manner that suits the artistic field in question. At the core of education and training in performing arts is multi-sensory and embodied encounters, where digital technology meets its limits. Performing arts education provides the opportunity to explore social, cultural and multimedia phenomena related to digital technology. Digital technology is approached from the perspective of art and art pedagogy. The known disadvantages and interests of the digital technology industry are acknowledged, which is why digital practices are well-calculated, necessary and sustainable in terms of art pedagogy.

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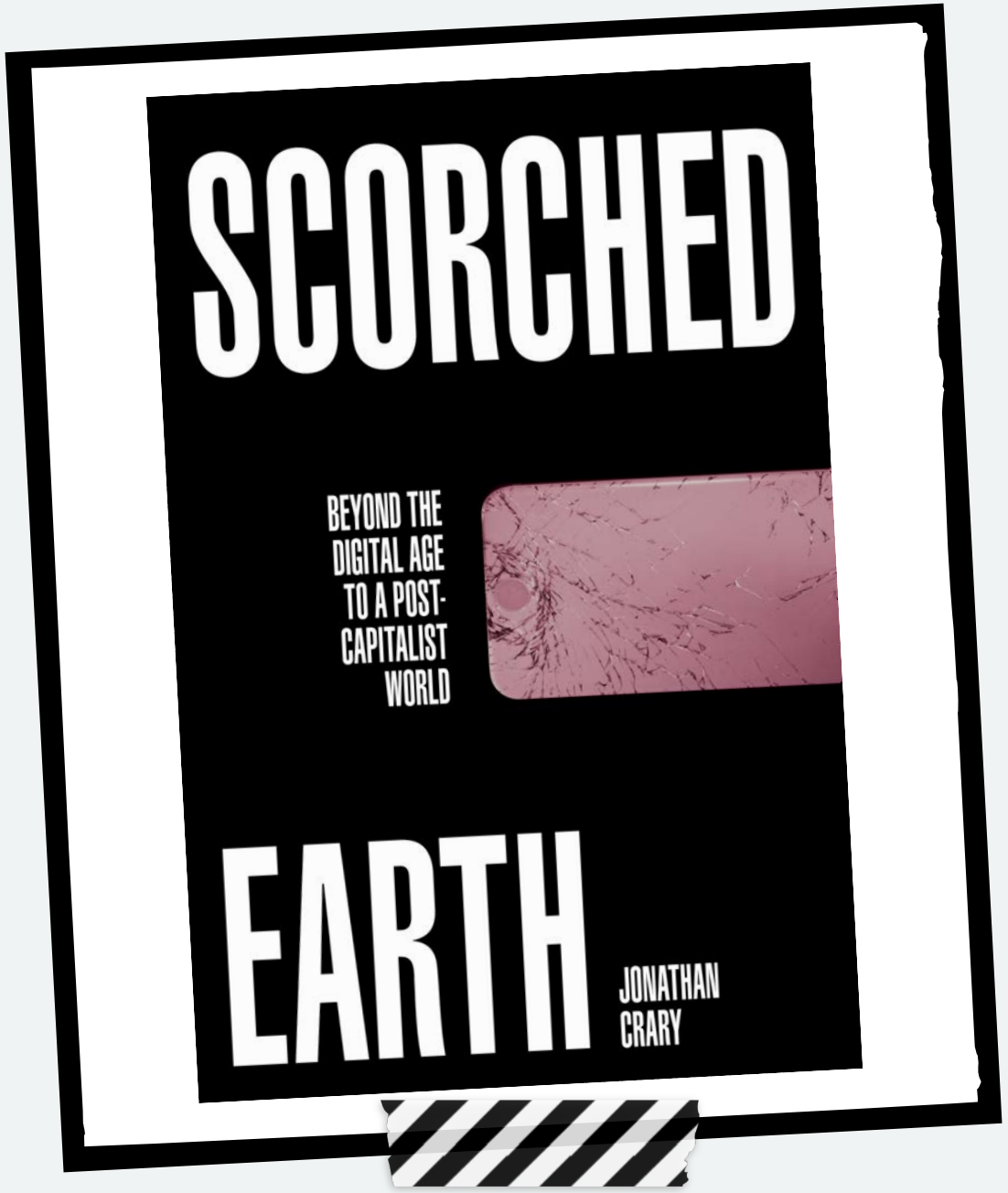

Critiques of 'digital' futures

"It is remarkable that at a moment of unparalleled danger for the future of the planet, for the very survival of human and animal life, that so many people should voluntarily confine themselves in the desiccated digital closets devised by a handful of sociocidal corporations.

Pathways to a different world will not be found by internet search engines. Rather, what is needed is exploration and creative receptivity to all the resources and practices developed over the long history of human societies for thousands of years." (Crary, 2022, p. 129)

Critiques of ’digital’ futures

- The end of oil is the end of the production machine
- It doesn’t seem so as the availability of fossil fuels and belief in the potential of new technologies and alternative forms of energy is ever-present

(Salminen and Vadén, 2015, p. 11)

Some concluding thoughts

Some concluding thoughts

+ The story of digitalization is an abstract and general story which often promises more and different things what it actually delivers.
+ The story of the *potential* of digitalization (or technology) hides its contradictions
+ Datafication and analytics appear promising. Still, measuring requires abstraction of life and not only reflects reality but focuses us on things that can be measured
+ Technology is multistable: it will always affect and change human behavior and the context where it is implemented, often in unpredictable ways. Also, the context and people will change the use of technology.
+ Tech trends will come and go, and it might be wise to anchor ourselves to something else. Difficult, as technological trends are imposed on us.
+ On the level of practice, in performing arts we might want to look at how new technologies change ‘embodiment’ (both the performer and the audience)
+ Digitalization & Sustainable development = ?

Oh, one last thought...

What if digitalization is not?

Thank you

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