DigiTranScope Autumn Institute 2020

Governance of Digitally Transformed Societies

Scientific Committee

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Introduction and Scope

DigiTranScope is a three-year research project (2017-20) of the [JRC (Joint Research Centre), Centre for Advanced Studies](#) at the European Commission, focusing on the governance of digitally transformed human societies. The project aims to provide a deeper understanding of key aspects of digital transformation to help policy-makers address the challenges facing European society over the next decades.

The Autumn Institute was an opportunity to share and discuss the findings of the project with external experts and with professionals and young researchers from academia, business, and public administration selected on the basis of an open competition and their expression of interest. A panel of judges selected 21 participants from 14 countries.

Core Topics of the Autumn Institute:

- **Data Governance:** This is a key battleground to find a European way to Artificial Intelligence (AI) and Digital Transformation. We need to find new ways of sharing data between the public sector, commercial sector, and civil society so that the value created out of data analytics and new algorithms is redistributed more equitably across all stakeholders to the benefit of European society.
- **New Forms of Policy Design, Policy Learning:** This is a topic exploring how we can develop new forms of more participative policy design, monitoring, feedback/assessment, learning loops that exploit the characteristics of digital transformation including, smart cities, gaming, digital twins, and personalisation.
- **Digital Empowerment and Social Inequalities:** How can we develop/design/foster a new path exploiting the benefits of digital transformation so that it is aimed at reducing existing social, economic, and spatial inequalities rather than exacerbating them? What is the role of local data ecosystems and co-operatives, and in general more geographically diversified policy measures, in tapping into the intrinsic characteristics of European regions and cities?

The Institute was originally planned to take place in May 2020 in Fiesole, on the hills overlooking Florence, Italy. Due to the Covid-19 crisis we had first to postpose the meeting to October and then organise it entirely online.

The spirit of the Autumn Institute was about critical thinking and mutual learning in a multi-disciplinary environment. It encouraged informal sharing and constructive feedback, focusing on participants' research projects, ideas, and critical and interdisciplinary perspectives around the pivotal applied digital social sciences practices and theories. Of course, being able to do the Institute face to face in a wonderful natural environment would have been ideal, but the through the enthusiasm of the participants we were able to achieve the same objectives also in a virtual environment to a large extent.

We report in the following sections some of the key messages from the keynotes and the of key take-aways from the perspective of the Digitranscope project.

Keynotes: Emerging Issues and Lessons Learned

Andrea Renda "Digital transformation and governance"
Senior Research Fellow and Head of Global Governance, Regulation, Innovation and the Digital Economy (GRID) at CEPS

- Prof Renda highlighted three main aspects in the digital global landscape: Virtualisation, Servitisation, and Platformisation.
- He pointed out how law and technology are highly misaligned: while digital transformations are moving rather fast law has difficulties to catch-up and update changes occurring in the emerging global digital landscape.
- Against the present backdrop, Covid-19 has revealed the critical importance of technology for economic and health resilience, making Europe's digital transformation and sovereignty a question of existential importance.
- Despite Prof Renda elaborated on the terms, equally related to sovereignty, data, digital, or even technology, in the discussion, many questions remained unanswered.
- Prof Renda argued that a protectionist 'sovereignty' may not be the good case for the EU.
- Thus, we could interpret that the EU cannot continue only to rely on its regulatory power but must become a tech superpower in its own right.
- Nonetheless, EU member states might lack a common position on tech issues or even a shared understanding of the strategic importance of digital technologies, particularly related to the AI.
- Prof Renda used the interesting modification to the mainstream 'data is the new oil' as 'trust is the new oil'. However, how to implement trust among data ecosystems in the EU?
- Prof Renda elaborated on foresight, principles, outcomes, risk-based, agility, and shared values.
- When presenting potential future scenarios, he revolved around federated cloud such as Gaia-X.

Ernst Ekkehard "Tomorrow @ Work: The AI trilemma" ernst.pdf
Macroeconomist at the International Labour Organisation

- Ekkehard advocated directed technological progress, and proper (public) management of the data economy.
- He attempted to link up social inequality, productivity, and environmental impact by addressing an optimal equation based on network system analysis: decreasing jobs, increasing wages, and reducing impact on environment.
- His main statement eminently elucidated how so far, AI has not lifted productivity growth, having a direct effect on many aspects of citizens' wellbeing.
- For him, the data economy is fuelling inequality further without the right policies, particularly addressing data portability, open innovation systems, and data as labour.
- Probably, the latter may lead us to consider platform and data co-operatives as viable policy framework in regions and cities where the conditions are favourable.

- Furthermore, Ekkehard elaborated on the potential benefits of AI for citizens' wellbeing through (i) digital taxation, (ii) digital social security, (iii) profit sharing and wage negotiation, (iv) sovereign data wealth fund, and (v) strengthening resilience. It goes without saying though that data infrastructure, institutions, and ecosystems are not ready yet or are in their early stage of development for such operations at the European level (Calzada & Almirall, 2020).

Gianluca Misuraca "AI & Public Sector Innovation in a Data-Driven Society: Shaping Digital Europe 2040" misuraca.pdf
Senior scientist in the area of Digital Governance and Social Innovation

- Misuraca framed the future scenario of the Digital Europe 2040 by elaborating on four potential scenarios: (i) DIY democracy, (ii) private Algocracy, (iii) Super Collaborative Government, and (iv) over-regulatocracy.
- According to Misuraca, there are limited robust empirical evidences on the effects of digital government transformation, especially on less measurable impacts such as inclusion, legitimacy, and participation.
- Misuraca asked whether expectations are coupled with socio-political trends.
- He suggested exploring the potential for public value creation at local and regional level through a systematic review of innovative public services and their digital local ecosystems.
- In this direction, it could be prominent for the future of the EU to take the lead on the democratic innovation and digital resilience in a pandemic society, putting citizens in the centre, beyond factors and boundaries.

Cosmina Dorobantu "Policy resilience in a crisis: can data science help?" dorobantou.pdf
Deputy Programme Director for Public Policy, and Policy Fellow of the Alan Turing Institute

- Dorobantu presented four areas of data science for policy:
  - Use data science and AI to inform policymaking
  - Improve the provision of public services
  - Build ethical foundations for the use of data science and AI in policymaking
  - Contribute to policy that governs the use of data science and AI
- Against the backdrop of COVID-19, five tools have been used so far:
  - Simulation and evaluation: Impact of various lockdown measures
  - Measurement and detection: Detect health-related misinformation
  - Prediction and forecasting: Predict where the next outbreak will be
  - Personalisation: Personalise treatment plans
  - Ethics and governance: to understand the full impact of contact tracing apps
- Dorobantu highlighted the need for governments to possess real-time, transferable, and fine-grained data to cross organisational boundaries.
- Beyond epidemiological and socio-economic models, the discussion surfaced the need for breaking silos at the public institutions and the requirement for encouraging interdisciplinary research.
- Actually, according to her, current models do not deal well with surprises, interconnectedness, and uncertainties.

- Among the recommendations suggested, she advocated the following ones:
  - Use data science to do what humans cannot do
  - Make sure the right data are available
  - Build integrative models
  - Prioritise uncertainty quantification
  - Aim for targeted interventions

Giulia Pastorella, and Richard Budel, Perspectives from the industry sector
President of Softlab Environment & Infrastructure

- Pastorella indicated an increasing trend towards making industry more responsible for their actions, including legal liability
- The second important trend is the increasing balkanization and fragmentation of the IT stacks, including different legal environments, and technological change decentralising the infrastructure towards the edge and data on the devices that capture it.
- European industry has a particularly difficult time caught in between the geopolitical challenges between the US and China without a full IT stack of their own, but being dependent on one or other for it.
- Budel elaborated from the smart city perspective by putting the private sector permanently innovating.
- When addressing the relationship of smart city citizenship, Budel presented the triple-helix model by explicitly referring to the private and public sector and citizenship.
- The interplay among them resulted in an interesting and fruitful discussion.

Cristina Capineri, Digital platforms: interfacing the space of flows and the space of place capineri.pdf
Professor of Geography at the University of Siena

- Capineri framed her presentation in relation to the platform society by citing Van Dijck et al. 2018, who define a platform as a fuelled of data, automated and organised through algorithms and interfaces, formalized through ownership relations driven by business model, and governed through user agreement.
- Actually a platform was presented as a digital infrastructure which enable interaction among different user groups working like intermediaries.
- By following this introduction, she brought the popular platform capitalism paradigm as defined by Srnicek (2016).
- By presenting the case of AirBnB in Florence, by quoting Castells' space of flows, the analysis resulted in open questions related to digital platforms.
- Particularly she pointed out the importance of managing:
  - Data ownership: by rhetorically asking whether platforms own data.
  - Data accessibility: by emphasising the requirement for skills requirements.
  - Relevant for urban/town planning: by examining in-depth market behaviours and spatial choices.
  - Overwhelming tourism and the need for a governance framework for this issue.

Digitranscope findings

Henk Scholten, The experiments within the Digitranscope project: Digital Twins, City Operating System, Dashboards and the role of stakeholders (scholten.ppsx)
Free University of Amsterdam, and GEODAN

Our changing society is confronted with complex issues in a number of fields, amongst which mobility, sustainability, health and energy supply.

Since we entered the era of the Internet of Things (IoT), Big Data, and emerging technologies such as Artificial Intelligence (AI) and Machine Learning, we can call upon information and communication technologies (ICTs) to help us address the above challenges. What could be the role of Government in coordinating this process?

In order to explore the possibilities, we have developed the concept of Digital Twins, City Operating Systems and Smart City Dashboards and we have set up a lab environment to test the data and technology components, discuss data governance issues but above all involve the people of the place, including children and policy makers.

We have applied the experiments with the support of the City of Amsterdam and the Johan Cruijff ArenA. The lessons learned have been further explored in the City of Duisburg.

Overall, the main objective of the experiments was to explore the concepts of Digital Twinning, City Operating Systems and the access to complex information by the use of a Dashboard and to involve the potential stakeholders. From a technology and data perspective the explorations were successful. For the involvement of stakeholders, we were successful in getting them involved, however the real involvement is still something to be tested.

Jiri Hradec, Data for Policy (hradec.pdf)
European Commission Joint Research Centre

- Hradec looked into the issues arising from the use of over-aggregated data and offered a solution based on probabilistic synthetic population integrated with behavioural studies and linked to the rest of the statistical system.
- To demonstrate capabilities of this approach he has shown several use cases where only the model's ability to find a pattern in complex systems helped to discover sociodemographic barriers to policy implementation.
- This approach is expected to become crucial enabler in building a simulation framework also known as the Digital Twins for policy anticipation and review. This environment improves current policy processes by complete vertical integration and bottom-up propagation of issues.

Marina Micheli, Data Governance Models (micheli.pdf)
European Commission Joint Research Centre

- Micheli presented a research on current emerging models for the governance of data[1]. The study looked at current data practices, for sharing, controlling and using personal data, which address the asymmetries of power between data subjects and data collectors that characterize the current data economy.
- Data sharing pools, data cooperatives, public data trusts, and personal data sovereignty are the four emerging data governance models addressed in the study. Four main aspects were highlighted for each of those: stakeholders' relations, value creation, underlying principles and limitations. The models are ideal types and current data practices might adhere to them to different degrees.
- All models address the power unbalances of the current system and three increase data subjects' possibilities to control and benefit from their personal data through different kinds of intermediaries (ie. a cooperative, a public body, a digital service).
- The value of the study is to provide an heuristic tool that emphasize the power relations embedded in data practices for the governance of data. New labels and notions, such as "data trusts", adopted to define innovative data initiatives could conceal rather different understandings of power and value. The models could therefore help to clarify what are the implications behind such practices and guide future empirical research and policy-making on data governance.
- The actual use cases that implement the principles of these models are still pilots or niche initiatives. Therefore, the upcoming regulations will be decisive for supporting citizens' and public bodies' role in data governance.

Igor Calzada, Digital Transformations & (Smart) City (calzada.pdf)
European Commission Joint Research Centre & University of Oxford
- Calzada (2020)[2] presented the final results of the H2020-Smart Cities and Communities-Replicate project by focusing on the following research question:
    - Why might replication not be happening among smart cities as a:
        - Unidirectional
        - Hierarchical
        - Solutionist
        - Mechanistic
        - And technocratic process?
- In doing so, the presentation attempted to shed light on future research and policy interface of digital transformations, (smart) cities, and citizenship.
- He quoted Harari, Williams, and Habermas by arguing that our current urban living is mediated by AI, cannot be more technocratic than democratic.
- As such, he argued that technology is never neutral and it has the potential and capacity to be used socially and politically for quite different purpose.
- Against the post-COVID-19 backdrop, five conclusions were presented regarding the policy design experimented from the social innovation perspective over the last five years of the project in H2020-SCC-Replicate project among 6 European cities (San Sebastian in Spain, Bristol in the UK, Florence in Italy, Essen in Germany, Lausanne in Switzerland, and Nilüfer in Turkey) and 36 partners by conducting an action research process entitled *City-to-City-Learning* (www.replicate-project.eu/city2citylearning):

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[1] https://journals.sagepub.com/doi/10.1177/2053951720948087
[2] https://www.mdpi.com/2624-6511/3/3/49#cite

- From Unidirectional to Multidirectional: Unidirectional replication strategies may not be readily adopted by fellow cities primarily because of the lack of adaptability to local contexts and possibly due to the fact that cities require more complex and elaborated interventions to achieve broad social acceptance.
- From Hierarchical to Radial: The given hierarchical model might, not necessarily, but even unwittingly, exclude the perspectives and interests of citizens and particular groups of stakeholders.
- From Mechanistic to Dynamic: The identification of a different typology of stakeholders and, particularly, specific stakeholders in each city now allows fellow cities to follow a dynamic approach.
- From Solutionist to Iterative: Due to the iterative process beyond the solutionist logic, fellow cities have included two main aspects in their replication plans: (i) data governance and how to protect citizens' digital vulnerabilities and (ii) specific pandemic measurements.
- From Technocratic to Democratic: There is significant room for maneuver for local stakeholders in their ability to pick and choose, adapt, and prototype between innumerable intervention models and networks.

- Ultimately, by widely covering several timely post-COVID-19 challenges and topics related to the aftermath in European hyper-connected and hyper-virialized societies, from the digital transformation, (smart) cities and particularly citizenship perspective, he announced his new book entitled *Smart City Citizenship* published by Elsevier[3].

Steven Luitjens: digital transformation and central government: the case of the Netherlands. Ministry of Interior, Government of the Netherlands. Liujens.pdf

Steven identified three main models in the current datification landscape:

1) to *maximize financial profits*: datafication as the easiest way in history for privately owned platforms to make unprecedented amounts of money - the dominant paradigm in the US;
2) to *maximize political control*: datafication as the easiest way in history for government controlled platforms to gain unprecedented state power over society - the dominant paradigm in China;
3) to *maximize confusion*: datafication as the easiest way in history for everybody who has an interest to create massive insecurity, uncertainty, distrust and outright chaos and to destabilize society wherever and whenever they like - the dominant paradigm for all sorts of individuals and groups, including state actors.

He argued that governments today lack sufficient understanding of the radical changes taking place in society and are more concerned with the datafication of politics than about the politics of datafication. He argued therefore for joined European action and for an approach that is more holistic and systemic on the one hand but also allows flexibility and experimentation and does not only try to react to change. His key take-away messages were:

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[3] https://www.elsevier.com/books/smart-city-citizenship/calzada/978-0-12-815300-0

1. It's not about embracing or rejecting digitization and datafication.
2. It's about governments that fully understand the dynamics of what is happening and know which buttons to turn.
3. It's about regaining sovereignty: being the master or the slave of digital transformation.
4. It's about safeguarding a resilient and inclusive society.
5. And it's urgent to stop discussing and start acting!

Max Craglia: AI: a European perspective in a contested world [(craglia.ppsx)](craglia.ppsx)
European Commission, Joint Research Centre

Craglia set the debate around artificial intelligence (AI) in the context of the global geopolitical competition on this technology and on the underpinning data. Who controls data, controls to a large extent the development of AI and its applications. In China the government t has access to all user data by default, in the US, the large commercial web-tech companies harness data from all over the world through their platforms.

Europe is trying to find its own path to the development and exploitation of AI that is human-centric and ethical and several initiatives have been adopted including a European strategy and Coordinated Plan in 2018, a set of ethical guidelines in 2019, and a White paper setting the framework for a consultation on a risk-based regulatory framework for AI in 2020. Central to the development of AI are however a greater degree of sovereignty over both technology and data so that the richness of European data is harnessed to the benefit of European society.

In this respect, the flagship report on AI (Craglia et al. 2018) raised the important issue that if no active policy is taken it is likely that AI will exacerbate existing social, economic and geographic inequalities in Europe. Therefore, the report advocated the establishment of local ecosystems among public administrations, companies, educational establishments and civil society to share data, and develop AI applications addressing them, while at the same time providing opportunities for learning and for new products and services.

The importance of a more inclusive development of technology and AI is further demonstrated by the Covid-19 crisis, and the subsequent lockdowns, that has penalized in particular the more vulnerable groups in society, and the poorer regions in Europe. Therefore, aside from a European response and strategy we need to develop also more locally focused ones centered on the most vulnerable.

Overall Outcomes

How to produce social impact with digital transformation and distribute the benefits of digitalization across society

A common thread among the presentations and discussions concerned how to direct the digital transformation for the benefit of society and, in particular, how to distribute the value that is produced through AI and datafication. The Covid-19 crisis has clearly shown the

importance of data and technology for addressing pressing societal relevant issues, such as improving health and economic resilience. Across the presentations, several participants mentioned how technology could help (or has been helping) tackle Covid-19 related problems. For instance, by enhancing prediction and forecasting, through network analysis and machine learning, with a view to prevent collapses and further emergencies. Simulation and evaluation comprise another important area in which data science and AI can help policy makers in the context of the current pandemic – as they have been adopted to assess the impact of the various lockdown measures.

At the present time, however, the **digital transformation has, to a large extent, not yet delivered the social and economic benefits expected.** AI has not helped in reducing inequality, fostering productivity and growth, or reducing the ecological footprint (Ekkehard). Digital platforms are capturing socially produced value and not redistributing it; platforms such as AirBnB have been fostering uneven urban transformations reproducing well-known patterns of value concentration and social inequalities (Capineri). In the public sector there is still limited empirical evidence of the effects of digital transformation in improving governance, in terms of fostering inclusion, legitimacy and participation, and the use of AI is still rather "elementary" not producing paradigmatic change (Misuraca). Furthermore, the Covid-19 emergency has exposed the lack of resilience in policy-making systems: governments lack real-time fine-grained data that can cross organisational boundaries; very often, the ways in which governments are structured and run (departmentalism) work against the successful adoption of data science and AI (Dorobantu). Thus, the opportunities of digital transformation for improving societies, social welfare and resilience, are still a **potential to be realized**.

Europe needs to act as soon as possible and the EU Commission is expected to play a key role both in terms of technological/data sovereignty and in promoting a human-centred digital transformation that help sustain our societies. In EU, there is an increasing debate on the impact of technologies on our society. It is now recognized that the power of tech giants has to be addressed, the public sphere has to be regulated, and we need to manage the "algocracy" that comes out of this (Misuraca).

As pointed out by Andrea Renda, **the digital transformation (AI, data ecosystems, etc.) should be a "means to an end"**. Therefore, the aim is not to be competitive, but to use the digital transformation to address clear objectives, such as those of the Sustainable Development Goals. The digital transformation has to be principles-based following the EU values (respect for human autonomy, the prevention of harm, fairness, and explicability). In the field of AI such principles have been transformed into requirements, and then included into a platform for assessment to improve their *operalisations*. The challenge is to **put these principles in practice to achieve concrete outcomes**. A methodology for doing so is **embedding principles in (software) code**, not necessary only in legal code. In relation to this, AI should not be thought as a way of replacing what humans are doing. As claimed by Dorobantu, the advantage of using data science and AI does not come from replacing what humans can do, it comes from applying this technology so that it can do things human can't do and produce a better understanding of interconnected areas. Furthermore, a clear plan of targeted interventions would allow making use of these technologies better instead of following "blank policies".

Data governance is crucial for sharing the benefits generated by the digital transformation more equally across society. Several paths of interventions have been considered during the Institute.

At the level of individuals, one discussion revolved around the role of citizens as data subjects. It is established that citizens, as users of digital platforms, are constantly producing value, often as a by-product of their everyday activities, but that they are not rewarded for it. At the contrary, they might experience a negative impact from such participation on a personal level (in case of data misuses, bias and discriminations) and on a societal level (rising inequalities, low-paid jobs, gentrifications processes). The right for data portability (GDPR art. 20) is a first step to address the power unbalances between data subjects and platforms, but the participants in the Institute identified ways in which it should be enhanced. For instance, Ekkehard argued that citizens should be monetary rewarded for the revenues they generate ("data as labour"), while Micheli presented a research conducted by DigiTranScope on the emerging data governance models beyond that of big techs.

At the level of the organisations, another strand of discussion concerned how to enhance data sharing and public sector innovation overall. Sharing the benefits of the digital transformation across societies would require to further increase the portability of data, from a platform to another, as well as data sharing from one kind of organisation to another. Relevant recommendations to enhance data sharing to create public benefits included: make sure the right data are available to public authorities, breaking silos and competition between government departments, creating a digital transformation culture within the public administration, building capacities to exploit predictive analytics and cognitive technologies in public sector, and foster innovative public procurement (Dorobantu, Misuraca).

Finally, the discussion on the governance of data moved **at the geo-political level**. Digital sovereignty has been discussed as a future scenario for Europe. Misuraca noted that this Commission presented itself as the "Geopolitical EU Commission". At the international level, there is indeed a tension on the data & technological sovereignty, which is increasingly cited at the highest level in EU policy debates. On this regard, Ekkehard imagined a data economy for the public good, sustained by resources at the national or international level to create "sovereign data wealth fund" that would enable to share more widely the benefits of big tech.

Critical issues that have to be addressed by the EU for the governance of the digital transformation to distribute better the value generated by data across society include:

- **Foresight policy making**. An example could be the publication of the Data Strategy, which, as Renda recalls, has not been thought for today data market (largely based on data saved on the clouds of big tech), but for the next five years (data close to the devices at the edge of the network): rules and policies have to be developed for the future of the data market. "Do not try to solve tomorrow the problem of yesterday" he recommended.
- **More research** is needed to explore the potential for public value creation at local and regional level through a systematic review of innovative public services and their digital local ecosystems (Misuraca).

- **Build a trustworthy digital environment**: Promote trust among EU data ecosystems enhancing fair and secure data sharing among actors that people trust (Renda).
- **Balancing risks and benefits**: Risks are not visited in the lab, they are visible when technology is adopted and interacts with human beings and other digital technologies (Renda). In the context of public sector innovation, through data and AI, there is currently little evidence of what works as well as of what is actually threatening services quality (Misuraca). Precautionary principle: intervene and regulate to avoid unknown risks. A new governance innovation for EU will be to balance precaution and cost-benefit approaches.

The programme of the Institute, speaker's bios, presentations and video recordings of the key sessions, including presentations by the teams of participants, are available on the DIgitranscope website. Please see:

https://ec.europa.eu/jrc/communities/en/community/digitranscope-digital-transformation-and-governance-human-society/event/digitranscope-0