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## Envisioning Digital Europe 2030: Scenarios for ICT in Future Governance and Policy Modelling

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### Purpose<sup>1</sup>

This foresight exercise was conducted as part of the *CROSSROAD Project – A Participative Roadmap for ICT Research on Electronic Governance and Policy Modelling*, a FP7 Support Action that aimed to provide strategic direction, define a shared vision, and inspire collaborative, interdisciplinary and multi-stakeholder research in the domain. This research set out to help policy makers implement the *Digital Agenda for Europe*, the flagship initiative of the *EU 2020 strategy* launched to increase EU growth and competitiveness in the fast-evolving global landscape and address the grand challenges our world is confronted with today.

<sup>1</sup> The views expressed in this brief are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

### Combining ICT for Governance and Modelling to Assess Policy Impacts

In 2009, the European Commission's Seventh Framework Programme (Work Programme ICT 2009-2010) launched a programme of research on ICT for governance and policy modelling, joining two complementary research fields that have traditionally been separate:

- the governance and participation toolbox, which includes technologies such as mass conversation and collaboration tools; and
- the policy modelling domain, which includes forecasting, agent-based modelling, simulation and visualisation.

These ICT tools for governance and policy modelling aim to improve public decision-making in a complex age, enable policy-making and governance to become more effective and more intelligent, and accelerate the learning path embedded in the overall policy cycle.

In 2010, the European Commission funded the support action: *CROSSROAD – A Participative Roadmap for ICT Research on Electronic Governance and Policy*

*Modelling* ([www.crossroad-eu.net](http://www.crossroad-eu.net)) in order to advance the identification of emerging technologies, new governance models and novel application scenarios in the field of governance and policy modelling.

The main goal of the CROSSROAD project was to design the Future Research Roadmap for this domain and to structure a research agenda, which could be fully embraced by the research and practice communities.

Overall, the research roadmap aims to push the boundaries of traditional e-government research to new limits and help resolve the complex societal challenges Europe is facing by applying ICT-enabled innovations and collaborative policy modelling approaches, which include the harnessing of collective intelligence, agent-based modelling, visual analytics and simulation, just to mention a few.

In this context, a foresight exercise was conducted to look at the future of ICT-enabled governance and develop a vision of the role of ICT research in shaping a digital European society in 2030 through four thought-provoking visionary scenarios.



## Change Driven by Social Values, Attitudes & Paradigm Shifts

The scenario design developed aimed to provide a structured framework for analysis of current and future challenges related to research on ICT tools for governance and policy modelling techniques. The scenario framework proposed was chosen to stimulate further debate and reflection on possible, radical alternative scenarios. It takes today's world and constructs images of possible future worlds, highlighting ways in which key uncertainties could develop. The aim is to present clues and key impact dimensions, thus increasing the ability to foresee possible development paths for the application of ICT tools for governance and policy modelling techniques. Thus risks can be anticipated and better preparation can be made to take advantage of future opportunities. In turn, this outlines key elements to be taken into consideration for the further roadmapping and impact assessment of future research in this domain.

### Four Views on European Information Society

Instead of attempting to forecast possible future ICT-enabled scenarios, four internally consistent – but radical – views were defined of what the future European Information Society might look like in 2030. These give four distinctly different visions of what Europe's governance and policy making system could be and what the implications of each could be for citizens, business and public services.

Following the mapping and analysis of the state of the art in research themes related to ICT for governance, policy modelling and the identification of emerging trends, the main impacts on future research in this area were defined. They were further refined through an analysis of existing scenario exercises and the current shaping of policies and strategies for the development of the European Information Society.

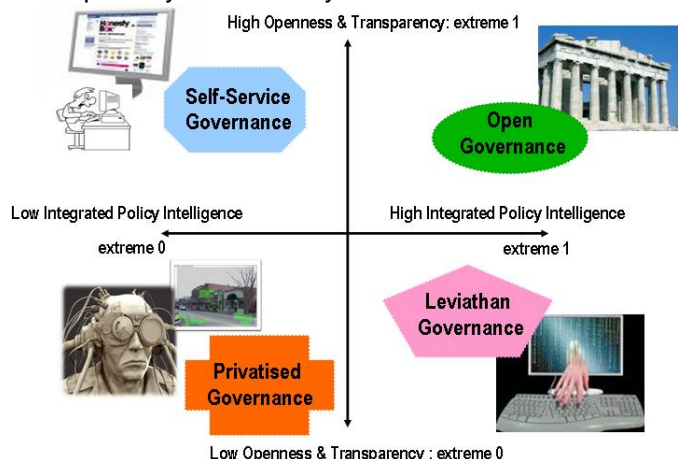
The uncertainties underlying the scenario design were: 1) the nature of the dominant societal value system (more inclusive, open and transparent or exclusive, fractured and restrictive), and 2) what the response (partial or complete, proactive or reactive) could be to the acquisition and integration of policy intelligence techniques in support of data processing, modelling, visualisation and simulation for evidence-based policy making.

Accordingly, the key impact dimensions were classified on two axes: degree of openness and transparency (axis y) and degree of integration in policy intelligence (axis x). The axes represent ways in which social and policy trends could develop.

Based on these dimensions, scenarios were then developed in a narrative manner as descriptions of possible outcomes in selected key areas, representative of the European context, where emerging trends related to the development of ICT tools for governance and policy modelling techniques could have an impact.

## The Open Society...

The vertical axis indicates the degree of openness and transparency in a society in terms of democratic and



collaborative governance, which could be further enabled by ICTs. The most open and transparent society would be one where even traditional state functions are completely replaced by non-state actors through opening-up and linking public sector information for re-use. Such a society would be characterised by open standards and principles of transparency and accountability in governance and public management. An important aspect of this scenario would be the regulatory and technological solutions and also the socio-cultural attitudes to the basic digital rights underpinning the future Information Society. In fact, the concept of openness is not strictly related to technological solutions but rather to socio-cultural and organisational aspects that can be enabled and supported by technological advancement.

### ...and the Integration of Knowledge

The horizontal axis shows the degree of integration of data and knowledge and the mode of enabling collaboration between all stakeholders in policy design and decision-making. This involves the possibility – enabled by ICTs – to mash up data and information available from different sources in an 'intelligent way', meaning in a way that is efficient, effective and suitable to generate public value. It also involves the extent to which users, individually or as members of formal and informal social networks, can contribute to the co-design of policies, simulating and visualising the effects of legal and policy decisions, and engage in real-time monitoring and prior assessment of possible expected impacts at local, regional, national and pan-European levels. This horizontal axis is also associated with the capacity and willingness of policy actors to share power and change decision-making mechanisms in order to facilitate the re-definition of basic democratic freedoms in a collaborative fashion. This could go to the extreme of redesigning the traditional mission of the state and the role played by governance stakeholders. Again, ICTs are not the driving force; rather change is driven by changes in social values, attitudes and new paradigm shifts in

terms of information management, knowledge sharing

and the allocation of resources.

## Scenarios for Digital Europe 2030

In the **Open Governance** Scenario, users will enjoy unprecedented access to information and knowledge. By shifting cognitive capacities to machines, humans will be freed from the work of memorising and processing data and information and will be able to focus on critical thinking and developing new analytical skills. This will enhance collective intelligence (both human and ICT-enabled). Humans will be able to use policy modelling techniques to help solve global challenges. Possibilities for the provision of personalised and real-time public services will be opened up. The online engagement of citizens and various governance stakeholders will increase. Citizens, businesses and researchers will have direct access to data they need, and this will create new opportunities for people to interact with and influence governance and policy-making processes and help to make progress in solving societal problems. Governance processes and policy-making mechanisms will be based on intelligent, ICT-enabled simulation and visualisation systems, which will be able to find meaning in confusion and solve novel problems independently of human-acquired knowledge. New, open ways of producing and sharing knowledge will radically change traditional governance and decision-making. This will herald an era of open innovation, with unimagined opportunities for research and technological development. Public, private and third sector institutions will start to listen more carefully to their stakeholders, and a sort of 'molecular democracy' will arise.

The **Leviathan Governance** Scenario assumes that an 'enlightened oligarchy' will emerge that uses high-tech tools and systems to collect and manage public information and services. Judgement and decision-making will be based on analytical processing of factual information from the many by the few for the benefit of all. Full-scale automatic simulations and policy intelligence tools will facilitate decision-making and the oligarchs will simply approve the recommendations of these tools for the best policy option for the majority of citizens. 'Real-time governance' will be possible where the government/citizen relationship is under total control. Public service delivery will be personalised without people having to ask, thus saving a great deal of time. Citizens will trust the government and will be willing to delegate their right of initiative. They will be persuaded to be happy with this situation, as no human-caused problems will exist; emotions and thoughts will be controlled and directed towards the public good. Citizens' choices will be restricted by predefined and pre-calculated algorithms that optimise people's performance. However, information overload or potential failure of information systems to respond to critical, unforeseen situations would result in chaos, with humans and devices not knowing how to respond.

In the **Privatised Governance** Scenario, society will be shaped by decisions taken by corporate business representatives. Discussion on social issues and about the role and behaviour of citizens will be muted, as people will be pawns whose needs and desires will be managed by large corporations. Interactive and participatory governance mechanisms will be sidelined, along with democracy as we know it today. Simulations based on data gathered by sensors and collected from continuously monitoring and analysing networks, businesses, customers and the environment will produce global information that will nonetheless be fragmented and owned by corporations. Systems will be threatened by frequent attacks from independent groups and dissident communities. The media will be owned by the large corporations and will generally support them. Misinformation and jamming campaigns will be launched, making it necessary to verify all information and data. In this scenario, there will be opportunities for high innovation and development due to the pressure of competition on a free market. However, such opportunities will be useful only for the limited number of users able to afford them. Risks will arise due to private interests and fragmentation of the public good, leading to a 'fragmented society' where social welfare services will not be guaranteed to all, thus exacerbating possible social tensions and conflicts.

The **Self-service Governance** Scenario envisages a society where citizens will be empowered to play the role of policy makers. In small expert communities, citizens will devise policies according to the do-it-yourself principle; they will choose from a menu of public services those they need and consent to. This ICT-enabled, self-organised society will be able to address emerging problems faster than traditional government could. Its creative, contextual solutions could prove to be more robust and resilient in a crisis. Nevertheless, the diversity of opinions between discrete communities may result in the deepening of existing divides and a lack of social cohesion. Insularity will afflict minorities most severely, as they lack local social networks and may run into communication problems due to language and cultural differences. However, thanks to efficient translation tools, the dissipative communities may, in the end, create a vibrant cross-cultural and multi-language society. The difference between success and failure will be marked by the distinction between creative group thinking and 'crowd stupidity'. The process of the gradual disappearance of institutions and lack of trust in government will result in the need for new trust providers. Reputation management, for content and people, will play a significant role in service provision. As the majority of citizens will not be interested in participating in governance due to the lack of engagement culture, new Caesars may emerge who unify disparate groups but damage the subtle equilibrium between self-serving and collaborative cultures.

## A Radically Different World Due to ICT Disruptions

In all the scenarios developed, the world in 2030 is expected to be radically different from today's due to the unprecedented growth and speed of ICT uptake in several fields and the related impact ICT tools that enable governance and policy modelling techniques may have. The influences and drivers of innovation and renewal in the public sector, combined with increased financial pressure on states, will result not only in change, but will also affect the pace at which the state adapts to the new environment, to its new roles and to increased engagement with stakeholders and users.

Whichever scenario dominates in the future, conventional wisdom and familiar governance models will be challenged in the coming years as ICT-based disruptions impinge on democratic, consultative and policy-making processes. There is already evidence that the scope and scale of the transformations to come will have a major impact on society.

Since 2005, there has been a phenomenal growth in mass on-line collaborative applications, which has captured the imagination and creative potential of millions of participants – particularly the younger generations. In addition to new forms of leisure pursuits, community-building activities have also entered the political arena. Hence, these tools herald the transition to a different form of dynamically participative governance models.

### Current Governance Models Not Appropriate

While such scenarios are readily imaginable, it is recognised that we currently do not have appropriate governance models, process flows or analytical tools with which to properly understand, interpret, visualise and harness the forces that could be unleashed. Present governance processes provide laws and regulations, interpret and define societal norms and deliver societal support services. Their legitimacy is derived through democratic processes combined with a requirement for transparency and accountability.

In a world that is increasingly using non-physical communication and borderless interaction, the traditional

roles and responsibilities of public administrations will be subject to considerable change, and classical boundaries between citizens and their governments will become increasingly blurred. The balance of power between governments, societal actors and the population will have to adapt to these challenging new possibilities.

The scenarios developed as part of CROSSROAD served as an input to be compared with the integrated analysis of the state of the art in the domain of ICT for governance and policy modelling. Based on this comparison, a gap analysis was conducted to identify an exhaustive list of specific gaps where on-going research activities will not meet the long-term needs outlined by the future scenarios.

Through a participatory foresight process it was possible to bring together not only experts and interested parties from academia and research, industry and government, but also to involve directly policy-makers and other interested stakeholders. This exercise resulted in a substantial contribution to shaping the roadmapping of future research in the domain, thus proving to be useful and needed.

### New Tools to Fully Exploit Mass Collaboration

Altogether, and due to the increasing demand for openness, transparency and collaboration that address broad governance and policy-making challenges, the scenarios identify the need for developing and applying ICT tools and applications that fully exploit the potential of mass collaboration and the open and participatory paradigm underpinning future technological developments and policy directions in Europe.

Research and innovation investment in this domain could create value for the EU community and avoid fragmentation of research efforts. It will require the development of a joint strategic research agenda on ICT for governance and policy modelling to support the building of an open, innovative and inclusive Digital Europe 2030. Innovation, sustainability, economic recovery and growth will in fact depend more and more on the ability of policy makers to envision clearly and effectively both the root causes and the possible solutions to complex, globalised issues.

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## Sources and References

European Commission, JRC-IPTS Scientific & Technical Report (2010) Envisioning Digital Europe 2030: Scenarios for ICT in Future Governance and Policy Modelling, Editors: Gianluca Misuraca and Wainer Lusoli, EUR 24614 EN – 12/2010 – <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=3879>

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