

Chapter 10

The Decalogue of Policy Making 2.0: Results from Analysis of Case Studies on the Impact of ICT for Governance and Policy Modelling

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Abstract Despite the availability of a myriad of Information and Communication Technologies (ICT) based tools and methodologies for supporting governance and the formulation of policies, including modelling expected impacts, these have proved to be unable to cope with the dire challenges of the contemporary society. In this chapter we present the results of the analysis of a set of promising cases researched in order to understand the possible impact of what we define ‘Policy Making 2.0’, which refers to ‘a set of methodologies and technological solutions aimed at enabling better, timely and participative policy-making’. Based on the analysis of these cases we suggest a bouquet of (mostly ICT-related) practical and research recommendations that are relevant to researchers, practitioners and policy makers in order to guide the introduction and implementation of Policy Making 2.0 initiatives. We argue that this ‘decalogue’ of Policy Making 2.0 could be an operational checklist for future research and policy to further explore the potential of ICT tools for governance and policy modelling, so to make next generation policy making more ‘intelligent’ and hopefully able to solve or anticipate the societal challenges we are (and will be) confronted today and in the future.

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10.1 Introduction

The world has become increasingly interconnected, complex, and fast evolving, with the effects of policy choices and individual behaviour becoming much less predictable (Misuraca et al. 2010; Osimo et al. 2010; Charalabidis et al. 2010). Despite the thoughts and visions of previous generations, the first signs of the twenty-first century show that human society faces not only challenges that are deeply rooted in the past, but also a fairly new set of issues that are global in scale and highly dynamic, following the globalisation trend and the fast paces of our economies. In this respect, uncertainty and complexity are two distinguishing characteristics widely recognized in the literature of complexity science, chaos theories and non-linear systems. Highly improbable events (Taleb 2008) and “wicked problems” (Rittel and Webber 2008), which are outside the range of predictability based on past behaviours, dominate our lives as the (still on-going) financial and economic crisis has proven. To formulate adaptive policies for the future of the globally connected world, and for responding to today’s crises, requires the simultaneous consideration of many factors, different types of data and how these interact (Bishop and Bau-dains 2010).

In such an evolving governance landscape, Information and Communication Technologies (ICT) are important enablers for handling complexity and for driving state re-organization, openness and effectiveness in collaboration with citizens, businesses and society. In this regard, the concept of “Policy Making 2.0” emerged in the recent years and it can be defined as ‘a set of methodologies and technological solutions aimed at enabling better, timely and participative policy-making’ (CROSSOVER 2012b; Mureddu et al. 2012; Misuraca et al. 2014).

As a matter of fact, ‘Policy Making 2.0’ can be considered as an umbrella term enfolding a number of ICT-based applications which can be mapped into several overlapping areas: Web Technologies, Systems and Services Technologies, Social Informatics and Management tools, the boundaries among which are not well defined. Moreover, it is expected that the combination of emerging Web2.0 and ICT-enabled applications for collaborative governance which are largely practice-led and market-driven, with the domain of ‘modelling’ which includes different academic traditions (e.g. econometric forecasting tools, sociology of social networks analysis, societal simulation, engineering, mathematics and artificial intelligence involved in system dynamics and multi-agent modelling) could have a potential positive impact on how governance and policy-making operate (CROSSROAD 2010; Charalabidis et al. 2012; CROSSOVER 2012b; Misuraca 2012; Mureddu et al. 2012).

In general terms, in fact, modern approaches in policy making, taking into account political, economic, social, technological, environmental and legal repercussions, consider a variety of different disciplines ranging from complex systems, decision support systems, and public administration concepts, to operational research models. However, the current tools available for policy design, implementation and evaluation still seem ill suited for capturing the society’s complex and interconnected nature (Charalabidis et al. 2012; CROSSOVER 2012b; Misuraca 2012).

At the same time, social media appear as a global phenomenon around cooperation (Khan and Park 2013), collective intelligence, users generating content, sharing and connecting, with a disruptive impact on all aspects of society, government, and business (Chadwick 2009; Chang and Kannan 2008; Kavanaugh et al. 2012; Millard 2009). Furthermore, during the last years, a plethora of bottom-up initiatives (Bertot et al. 2010a; Lampathaki et al. 2010; Osimo 2008; Barkat et al. 2012; Leighninger 2011) to promote transparency, collaboration and better policy making have also emerged creating a new landscape of communication between society and the governmental authorities.

As it becomes obvious, a new age of engagement has emerged, leveraging social media for policy making as they facilitate the requisite level of collaboration both globally and locally to solve complex issues that would otherwise be impossible to address (Bertot et al. 2010b; Macmillan et al. 2008). Such communication channels make the process of engaging citizens in policy easier and less costly than ever before (Mergel et al. 2009), and citizen engagement is introduced into the policy process by using citizen sourcing to enlarge and enhance policy-advisory processes, policy making, and policy feedback (Nam 2012). As a result, a vast array of ICT-based applications, often referred to also as Government 2.0, can now provide new sources for policy advice, enabling policy makers to bring together divergent ideas that would not come from traditional sources of policy advice (Lukensmeyer and Torres 2008).

In this context, it can be considered as highly important and beneficial to study a set of best cases regarding Policy Making 2.0. Through the identification and objective verification of high impact or highly promising case studies, the dominant research directions towards Policy Making 2.0 can be recognized, reported and possibly even strengthened. Such a type of analysis has not been performed in the past, leading to non-evidence based research directions and to uncoordinated research efforts, while stakeholders see various elements that can fit under the Policy Making 2.0 umbrella as disjoint members that might belong in other domains.

This chapter presents an analysis and discussion of these issues and provides a set of practical and research recommendations addressed to all stakeholders of the domain. To this end, the remainder of the chapter is structured as follows:

Section 2 presents a quick overview of the landscape of Policy Making 2.0.

Section 3 presents the methodology through which candidate cases were collected, prioritized and the most suitable and outstanding ones were analysed in depth.

Section 4 provides a brief presentation of the selected cases, and the findings from the cross-analysis conducted.

Section 5 outlines the principles of what we have called the Decalogue of Policy Making 2.0, that is a set of practical recommendations suggested for designing and implementing interventions in the domain of Policy Making 2.0. It is complemented by recommendations for future research.

Section 6 presents some concluding remarks.

10.2 A Changing Landscape for Policy Making

The public sector collects, produces, reproduces and disseminates a wide range of information in many areas of activity, such as social, economic, geographical, weather, tourist, business, patent and educational information, commonly known as Public Sector Information (PSI) (European Commission 2003). In recent years, open data initiatives providing public sector information in “free-as-in-speech” manner for public, private and non-profit/civic consumption have flourished at an international and pan-European level. Numerous web and mobile applications exploiting open data have emerged leading to the characterization of open data as an effective engine of economic growth, social wellbeing, political accountability and public service improvement (Cabinet Office 2012). It is now well accepted that such open data also serve as a significant key ingredient in the policy making process for understanding the existing situation and feeding policy models.

However, the open challenge is how to elicit such information from open data initiatives and social media in real-time and based on reliable visual analytics and sentiment analysis techniques. During the overall model construction and use, legitimate open and social data (as two sides of the same coin (CROSSOVER 2012a)) will assist decision makers and citizens to learn how a certain system works and ultimately gain insights (knowledge) and understanding (apply the extracted knowledge from those processes) in order to successfully implement a desired policy.

It is indicative that during the last years, the European Commission has decided to invest heavily in research on these areas, mainly through the FP7¹ Objective “ICT for Governance and Policy Modelling”. One of the flagship projects for shaping the future research directions was CROSSROAD², which after following an open, crowd-sourced based iterative and technology-focused approach, bundled the open research questions in ICT for Governance and Policy Modelling for the years to come into four (4) Grand Challenges: (a) Model-based collaborative governance, (b) Data-powered collective intelligence and action, (c) Government Service Utility and (d) Scientific base of ICT-enabled governance. A follow-up project in the same direction was CROSSOVER³, which advanced the results of the CROSSROAD project, adopting a demand-driven approach and rather than focusing on the technology, as it started from the needs and the activities of policy-making and then linked the research challenges to them, while additional emphasis was placed on cases and applications for each research challenge. CROSSOVER concluded with the proposition of two major Research Challenges, namely RC-1 “Policy Modelling”, and RC-2 “Data-powered Collaborative Governance”.

The work presented in this chapter has been based on the results of a study commissioned by the European Commission’s Joint Research Centre, Institute for Prospective Technological Studies, as part of the CROSSOVER project, for collecting

¹ http://cordis.europa.eu/fp7/home_en.html.

² <http://is.jrc.ec.europa.eu/pages/EAP/CROSSROAD.html>.

³ <http://www.crossover-project.eu/>.

and analysing a representative set of case studies in Policy Making 2.0, and distilled them into solid proposals for future research directions and policy recommendations for the Policy Making 2.0 domain.

10.3 Methodological Approach

In order to reach the results and implications that are presented in this chapter, a pragmatic and coherent methodology was designed and applied for safeguarding the transparency, openness and proper documentation of the whole exercise. In these terms, the methodology chosen consisted of the following seven (7) discrete steps:

1. Identification of a large number of sources for relevant cases/initiatives, through an extensive desk research and peer-to-peer brainstorming
2. Formulation and enrichment of an initial extensive, yet not exhaustive, list of candidate cases (more than 300 entries, deriving from almost every continent and applied in various policy domains).
3. Design and implementation of a suitable Cases' Description Template, in order to capture all the necessary information regarding each case in an effective and efficient manner.
4. Definition and application of a set of "1st Round Criteria" in order to filter the initial set of candidate cases and limit their number to 25.
5. Description of the 25 selected cases, followed by the selection and further analysis of a limited set of the 10 most relevant cases, identified through a second set of criteria.
6. Definition and application of a third set of selection and prioritization criteria, in order to identify the four (4) most suitable and promising cases.
7. Extensive description of and elaboration on the four selected cases (through extensive desk research, interviews with members of each one of the four selected cases, interviews with actual users, etc.), in order to derive valuable feedback, policy implications and recommendations.

For each of the selection steps mentioned above, different criteria were used in order to filter out cases that did not seem promising or showed a low impact. The final set of criteria was constructed in an effort to identify the four outstanding cases which needed to be quite broad, but complementary to each other in order to cover various dimensions of the domain. In this context, the criteria selected tested whether the cases correspond to the Research Grand Challenges identified in the above mentioned roadmaps, whether they altogether covered the Local, Regional and International dimensions, whether they targeted different application areas than the others (e.g. Environment, Finance, Labour, Youth, etc.), etc. The final four cases selected are briefly described in the next section.

10.4 Presentation and Cross Analysis of the selected cases

2050 Pathways Analysis

2050 Pathways⁴ is a platform built by the UK Department of Energy and Climate Change (DECC) to help policy makers, the energy industry and the public understand policy choices regarding alternative energy consumption options. For each sector of the economy, four alternative trajectories have been developed, ranging from little or no effort to reduce emissions or save energy (level 1) to extremely ambitious changes that push towards the physical or technical limits of what can be achieved (level 4).

GLEAM

GLEAM⁵, the global epidemic and mobility model, is a discrete stochastic epidemic computational model based on a meta-population approach in which the world is defined in geographical census areas connected in a network of interactions by human travel fluxes corresponding to transportation infrastructures and mobility patterns. The GLEAM 2.0 simulation engine includes a multi-scale mobility model integrating different layers of transportation networks ranging from the long range airline connections to the short range daily commuting pattern. Real-world data on population and mobility networks are used and integrate those in structured spatial epidemic models to generate data driven simulations of the worldwide spread of infectious diseases. GLEAM moved beyond research in the H1N1 epidemic case; the forecast derived from the application of GLEAM was considered particularly accurate and successful, compared to any previous effort.

Opinion Space

Opinion Space 3.0⁶, launched by the U.S. Department of State, bridges the worlds of politics and social media in an interactive visualization forum, where users can engage in open dialog on foreign affairs and global policies. It invites users to share their perspectives and ideas in an innovative visual “opinion map” that will illustrate which ideas result in the most discussions and which ideas are judged most insightful by the community of participants. Using an experimental gaming model, Opinion Space incorporates techniques from deliberative polling, collaborative filtering, and multidimensional visualization. The result is a self-organizing system

⁴ <https://www.gov.uk/2050-pathways-analysis>.

⁵ <http://www.gleamviz.org>.

⁶ <http://www.state.gov/opinionspace/>.

that uses an intuitive graphical “map” that displays patterns, trends, and insights as they emerge and employs the wisdom of crowds to identify and highlight the most insightful ideas.

UrbanSim

UrbanSim⁷ is a software-based demographic and development modelling tool for integrated planning and analysis of urban development, incorporating the interactions between land use, transportation, environment, economy and public policy with demographic information. It simulates in a 3D environment the choices of individual households, businesses, and parcel landowners and developers, interacting in urban real estate markets and connected by a multi-modal transportation system. The 3D output of the aforementioned process is presented using indicators, which are variables that convey information on significant aspects of the simulation results. UrbanSim differs from these approaches by drawing together choice theory, a simulation of real estate markets, and statistical methods in order to achieve accurate estimation of the necessary model parameters (such as land policies, infrastructure choices, etc.) in order to calibrate uncertainty in its system. UrbanSim has proved its acceptance by the targeted end users as it has been already applied in many cases (mostly in the US), including Eugene-Springfield—Oregon, Detroit—Michigan, Salt Lake City—Utah, San Francisco—California and Seattle—Washington. In Europe, applications of the UrbanSim system include Paris, Brussels, Belgium and Zurich.

Cross Analysis of the Case Studies

The four cases identified have been investigated in depth and a cross-analysis took place to compare findings and distil key recommendations towards policy makers who embark on a “Policy Making 2.0” case.

Emerging from the need to solve real problems, all cases have been initiated either by governments or as a result of collaboration between researchers and governments, in a top-down approach. In particular, GLEAM and Opinion Space 3.0 were initially introduced as research initiatives that gathered significant attention and subsequent funding from public authorities. In fact, all cases build on a wide range of research techniques and exemplify how research can be applied in real-life settings.

Multi-disciplinarity in the teams behind all cases has brought together different perspectives and ensured appropriate modelling of policy options and interpretation of outcomes. Building a dynamic dialogue with the policy makers and all external stakeholders (from NGOs, academia, industry, experts) has provided significant in-

⁷ <http://www.urbansim.org>.

sights and feedback to all cases. The real support by public officials has been though instrumental in the success of all cases.

To address the targeted needs of policy makers and citizens and to allow them to contribute in a more efficient and productive way to the policy issue at stake, dedicated tools have been developed. Simple interfaces (like gaming environments in the 2050 Pathways Analysis, or interactive visualizations in GLEAM, Opinion Space 3.0, and UrbanSim) have proved effective in engaging and keeping the interest of people with not a specific case-related background (such as in simulation, modelling, etc.) and have been strongly endorsed in practically all cases. Through the visual interfaces, users are in a position to create their own models and investigate specific issues that they are interested in. Naturally, in each case, the required learning curve to understand and use a policy model significantly varies (and is depending on the complexity of the policy model(s) running in the background for policy makers).

In all cases, the power of high-quality data at an appropriate level and format to be incorporated into policy models is indisputable. Open data have been exploited to an extent in the case of 2050 Pathways Analysis and GLEAM. In Opinion Space 3.0, the necessary data are in effect provided by the users and policy makers. UrbanSim on its behalf and GLEAM up to a degree take stock of proprietary data that had acquisition cost and limits on distribution.

Despite recognizing the network effect of social media and Web2.0 technologies, the four cases confirm that their use for the policy-making domain is often accompanied by some scepticism or too much enthusiasm. Interaction with social media is limited to publishing relevant stories in the user's social media accounts while a more efficient exploitation of social data is envisaged as a future research challenge in most cases studied.

Funding has also been a non-negligible factor for keeping the cases live as various additional functionalities and components have been gradually introduced in the course of each case's life span.

All cases have succeeded in informing policy makers in a documented manner. The use of policy models seems rather diverse, focusing at different abstraction levels and ranging from elaborate stochastic models (in GLEAM and UrbanSim) to more lightweight models (that can be depicted in excel spread sheets like in 2050 Pathways Analysis). As anticipated, behind each model, there are assumptions, modelling compromises, incomplete/missing data, etc. so looking at solely the numbers is not sufficient. The role of policy makers and field-experts (acting e.g. as consultants) indeed remains crucial across the policy making procedure.

To measure impact, typically, no specific KPIs were set from the inception of the cases. However, the numbers of visitors and of interactions have demonstrated their success and impact that has been reinforced with the help of appropriate stakeholders' engagement strategies that have been put in place. It needs to be noted that in some cases (GLEAM) users resorted to the corresponding platform as a result of a natural phenomenon (i.e. H1N1 pandemic) whereas in others (Opinion Space 3.0 and 2050 Pathways Analysis), it was the outcome of large press coverage.

By studying cases that had strong internalization aspects (i.e. transferring experience from national to international level in 2050 Pathways Analysis, from US to EU

in UrbanSim), the different culture dimension emerges and should not be neglected as it may decide the success of a case in different geographic settings.

As end users and stakeholders testify, in order for these cases to become popular and to be actively used, the teams working behind the tools have organised a high number of workshops, surveys and other demonstrations and dissemination events have been carried out. In addition, on-going research and applied collaborations with public administrations, research institutes and other types of organisations evince the usefulness and existing impact of the selected cases and have helped the teams to further innovate on their initial idea and elaborate on how to provide a continuously improving product/service.

In these lines, it has been also reported that all of the four cases consider further dissemination of their concept, tools and results; social channels/media should play an active role towards this direction, while visualization of findings/results is considered as key in the quest to attract end users, as it has the potential to turn complex issues to digestible and comprehensible results.

10.5 Discussion and Recommendations

The analysis of case studies conducted in the period between September 2012 and February 2013, provided the authors with a comprehensive and detailed view of the Policy Making 2.0 domain. It has also to be noted that Policy Making 2.0-oriented initiatives are not something that has come up only in the last few years; many of the recognized cases (including UrbanSim that is amongst the selected four and can be definitely considered innovative still today) have their origins about 15 years ago, or even more.

As the extensive desk research and the interviews proved, achieving an actually large number of end-users is more challenging than initially thought almost in every case. New technologies (e.g. simulation and visualization technologies) constitute a catalyst towards more end-user friendly interfaces; nevertheless, targeted effort has to take place in order both to attract and sustain end-users.

This and other insights that have been gained in the course of the analysis underpinning the chapter are summarised in the form of practical recommendations for policy makers and other stakeholders as the ‘Decalogue of Policy Making 2.0’, which is further complemented by a set of high-level research recommendations.

The Decalogue of Policy Making 2.0

On the basis of the experience of the four cases as studied and elaborated by the authors and as reflected in the interaction with stakeholders, a set of policy implications has been derived. Such implications have been formulated into the following concrete recommendations (“the Decalogue of Policy Making 2.0”) that should be taken into account by policy makers and stakeholders when initiating similar endeavours.

This set of recommendations is addressed towards not only policy makers, but also modellers, practitioners, researchers and Policy Making 2.0 case development teams, which should all work together in a collaborative manner towards delivering effective and added value applications and methodologies to advance policy making. With this audience in mind, the study presents in the following paragraphs the complete set of recommendations characterized as the “Decalogue” as it aims at infusing a very practical and applicable philosophy to all stakeholders. It is crucial for all of them to understand and acknowledge all recommendations for a complete case, even if some of them refer to specific actors and not to the overall set of stakeholders. Such a mutual understanding will allow more fruitful collaborations in the future and more result-oriented activities, where both parties will be able to comprehend the requirements and the work carried out by each set of actors.

As such, the recommendations that are presented below are also classified:

- Based on the stakeholder groups they refer to, which are:
 - Policy Makers
 - Modellers
 - Researchers
- Based on their scope regarding the overall case development that can be divided in the following phases
 - Business Model and Strategy definition of the case
 - Implementation and Technology Aspects
 - Engagement of Stakeholders

The practical recommendations identified, which represent the proposed Decalogue of Policy Making 2.0 are depicted in the Fig. 10.1 below, classified per stakeholders involved and scope of intervention.

1. *Build your case in Policy Making 2.0 in an agile manner*

Capitalizing on the experiences gained in the Web 2.0 era, cases in Policy Making 2.0 should follow the agile pattern implementing light-applications with constant, iterative cycles of design, development and testing. Since building a generic model to cover all aspects is impossible and specialization in certain domains and application of already established knowledge is the most recommended way to go, platforms/apps and their accompanying policy models should be gradually developed incorporating feedback received in each major and minor release.

2. *Continuously embed high-quality (open) data into your policy models*

No matter how well-defined or detailed a policy model is, high-quality data represent the holy grail of policy making. Particular attention thus needs to be given to collect, filter, curate and intelligently tap bottom-up data, available from multiple sources, i.e. through open data initiatives, social media and participatory sensing tools. As current policy making cases typically struggle to cope with too much or too little data, reliable data sources need to be foreseen from the very beginning and incorporated in policy models in a real-time manner to allow for pragmatically informed decisions.

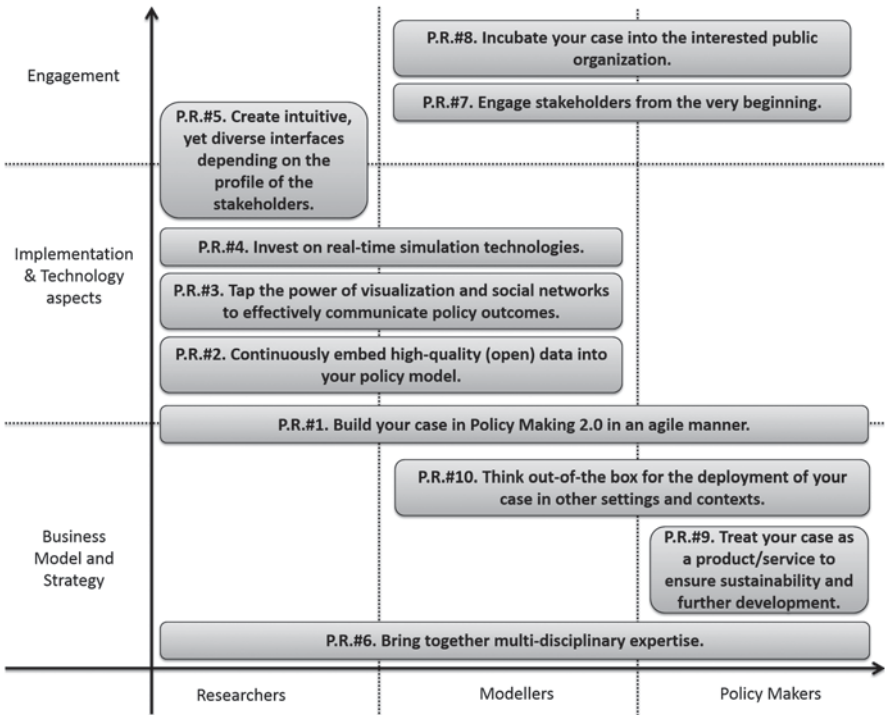


Fig. 10.1 The decalogue of policy making 2.0

3. Tap the power of visualization and social networks to effectively communicate policy outcomes

Policy models typically hinder such a high level of complexity that tends to discourage stakeholders from trying to understand the policy issue at stake. In essence, visualization holds the promise of providing valuable insights to non-specialists while social networks provide an unprecedented opportunity for spreading knowledge. By taking the best of breed out of both research streams, a case is by-design more tuned to solicit concrete inputs from its stakeholders.

Stakeholders Addressed: Researchers, Modellers

Scope of Recommendation: Implementation & Technology Aspects

4. Invest on real-time simulation technologies

In a rapidly moving world, the importance of real-time data and simulation for quick decisions gains more and more momentum. To this end, it is necessary for a case not only to gather real-time data, but to allow for the direct experimentation with the policy models to anticipate the outcomes of various policy alternatives. Only through advanced simulation capabilities, different models can be calibrated at a satisfactory degree and eventually converge to best policy options.

5. Create intuitive, yet diverse interfaces depending on the profile of the stakeholders

Policy models by their nature depict part of the reality as conceived by policy makers and interpreted by policy modellers. In order to bridge the gap of modelling literacy, though, all stakeholders irrespectively of their background need to understand the effect of their own actions on the models. Finding the balance between complexity which is required for the policy making purposes and simplicity to ensure high engagement is always a challenging task. To this direction, intuitive interfaces (which are also accessible from multiple devices and platforms) in order to engage a wide range of stakeholders (policy modellers, policy makers and citizens) seem a crucial success factor.

6. Bring together multi-disciplinary expertise

The need for multi-disciplinary approaches in policy making has been long debated during the last years. With policy challenges that are both global in nature and local in required action, it is more necessary that ever to bring in a wide range of expertise that will not only construct a solid and close to reality model, but also interpret the results correctly and catch the realm of citizens. It needs to be noted that such expertise should emerge from research, practitioners, policy makers, NGOs and other stakeholders who are motivated to be heavily involved. Significant added value is attached to a case in Policy Making 2.0 by establishing a balance between research activities and real-life applications to constantly improve the actual impact of the ICT tools.

7. Engage stakeholders from the very beginning

In order to consider a case in Policy Making 2.0 as successful, a wide range of innumerable stakeholders needs to be involved at various engagement levels: from active, everyday participation to merely briefing. Opening up dialogue with all stakeholders is a time consuming task that should not be underestimated. To this end, an engagement strategy with targeted activities for each stakeholder group needs to be outlined and put into effect from the very beginning, although it might seem difficult when dealing with pure research concepts. Successful cases get known one way or another via word of mouth/Web2.0 and satisfied users are the best ambassadors of a case.

8. Incubate your case into the interested public organization

Typically, research is conducted in kind of “sterilized” laboratory environments with little interaction with the end-users. In the case of Policy Making 2.0, research needs to go hand-in-hand with practice in order to allow for quick implementation of ideas in real-life settings. Along these lines, research teams should incubate in public organizations with a policy agenda in order to ensure smooth communication and seamless advancement of research through its direct application.

Such an approach will also help to research teams to validate their assumptions based on real-life data and policy makers will be able to propose requirements, as captured during operation, which will help to further optimize the offered solutions.

Public organisations should thus build specialized teams within their structure that will consist of not only policy experts but also from researchers that have developed the offered solutions in order to streamline the process of exploiting the full potential of the offered tools and for connecting practice with research.

9. Treat your case as a product/service to ensure sustainability and further development

Following the paradigm of enterprise software (i.e. ERP or CRM) and services, cases in Policy Making 2.0 should be viewed under a long-term perspective for their target audience and potential clients that are no others than policy makers. They should not represent a one-off effort that may become obsolete and deprecated, but rather represent the commitment of the corresponding public organization to keep the initiative live through periodic funding injections.

By treating a case as a service/product, the interest of the research and stakeholder community can be more effectively maintained, the underlying models can be further elaborated and optimized and the sustainability of the offered solution can be maintained in a more proper and effective manner. Of course, alternative sources of funding may be also discovered and utilized. At the bottom line, policy makers should realize that Policy Making 2.0 cases, in other ICT domain (such as Social Media), possess a ROI that cannot be measured and witnessed directly, however benefits do exist and they can only be sustained by the proper funding instruments.

10. Think out-of-the box for the deployment of your case in other settings and contexts

The team responsible for a case in Policy Making 2.0 should keep its horizons open and ensure its maximum outreach both within and beyond the organization for which it was originally developed. Interaction with stakeholders from different domains may pave new directions for the application of a case and cover diverse needs of policy makers that had not been originally foreseen. As such it is important to spread the knowledge and the overall experience of a case with as many stakeholders as possible in order to trigger their eagerness and explore new horizons that may lie ahead.

Research Recommendations

Based on the analysis performed and briefly presented in this chapter the authors also came up with a short list of high-level recommendations that could be used to engrave future roadmapping of research in the domain of Policy Making 2.0.

1. Think of the composing Elements not as Individual Elements, but as Nodes in a Connected Graph

Highly complex environments have a unique characteristic: the elements they include are related and linked to each other based on various types of relationships.

Such behaviour seems natural as Policy Making 2.0 is a domain that contains diverse research fields that should however be combined and tackled in parallel in order to deliver working and usable applications and methodologies that could support the everyday policy making procedures. This is also a need that derives directly from the fact that such applications target many different stakeholder groups, with diverse backgrounds and thus it is necessary to combine different parts of the identified research challenges.

2. *Build Clusters of Research Challenges and Define Policy Making 2.0 “Enablers”*

Based on the findings of the four case studies and taking the CROSSOVER Roadmap as a reference point, it seems that research challenges “Collaborative Modelling”, “Immersive Simulation”, “Output Analysis and Knowledge Synthesis”, “Open Government Data”, “Big Data” and “Visual Analytics” are met more times than the rest. This could lead to the creation of different clusters around them, as they seem to be quite dominant and present in most cases.

Moreover, as also mentioned before, numerous links between the various research challenges of the two Grand Challenges exist. This reality should be considered alongside Research Recommendation #1 in order to construct clusters of research challenges that could lead to more applied research in order to move more quickly from purely theoretical investigation of issues to the development of real life applications and methodologies.

Policy Making 2.0 “Enablers” can be seen as bits of supportive technologies and methodologies that can be directly exported from neighbouring domains and could be used to support the creation of applications and Policy Making 2.0 tools. These include elements from domains such as Identity Management, Cloud Computing, Social Media, Mobile Technologies, Human Computer Interaction, etc. that are being thoroughly researched and have already delivered quite substantial results. In this context, Policy Making 2.0 should identify the best-of-breed solutions coming from these domains and directly introduce them to existing or under development cases in order to refrain from re-inventing the wheel, but focusing on the research topics and themes that are more relevant to the policy making cycle and to the decision procedures that need to be improved. To this extend the crosschecking of the existing research questions with a well-defined and structured taxonomy documenting the current knowledge of the domain and of the neighbouring ones should take place.

3. *Promote Shift from Gov Labs to Open Apps*

One of the fundamental characteristics of Policy Making 2.0 is the inclusion of citizens in the decision making process through their interaction with various tools. Of course, the direct inclusion of the complete society is not always possible (and in some cases also not desirable). Although many citizens poses skills that allow them to utilise the various tools and methods, most of them are complex enough to be used by the whole population targeted. This situation is quite evident today and up to a fact this is one of the main issues behind the lock-up situation of Policy Making 2.0 in a top-down approach, where a clearly bottom-up (crowdsourced based)

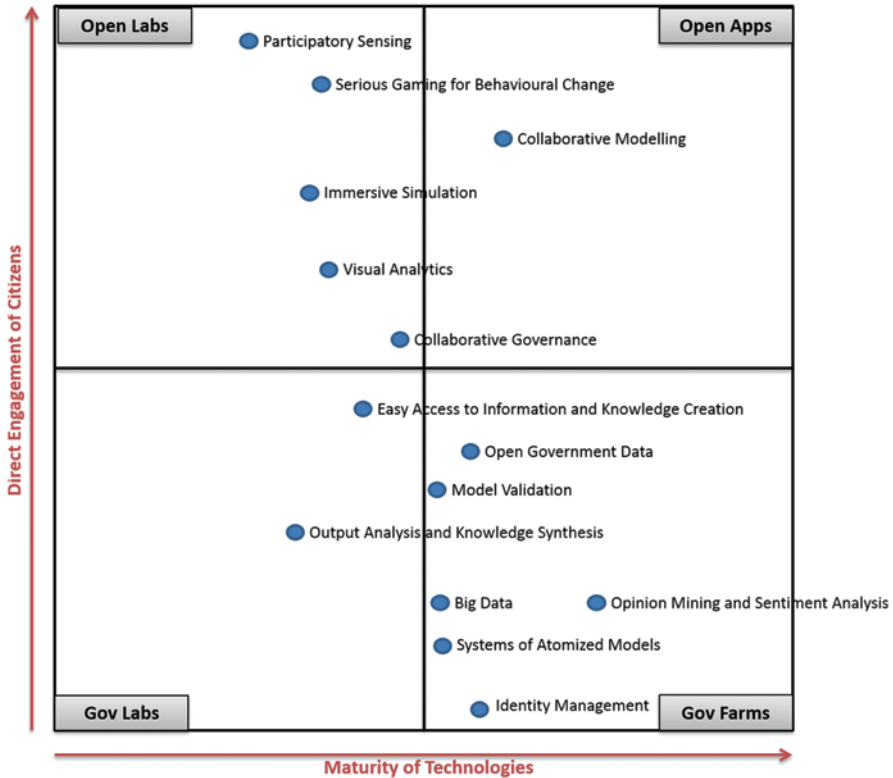


Fig. 10.2 Magic quadrant of research challenges

approach that is actively being exploited and used by high level policy makers, is severely lacking at the moment.

As the “magic quadrant” in Fig. 10.2 reveals, the current landscape could be divided in four spaces:

- “Gov Labs” where applications are still highly experimental and they are only addressed (or can be used) by policy experts,
- “Gov Farms” where again policy experts are the users but applications and tools are in a highly mature and operational state,
- “Open Labs” where direct engagement of citizens is quite high but applications are again experimental, and finally
- “Open Apps” where there exist at the same time high engagement of citizens and maturity of applications to be used for everyday purposes.

The purpose of this “magic quadrant” is to act as a “sample” of the current Policy Making 2.0 landscape, and therefore the placement of the research challenges represents the “median” value of the actual placement on this 2D area of the elements// tools/technologies/methodologies they include.

As this figure reveals, most of the research challenges that involve the direct engagement of citizens are still considered as quite immature, and this also argues for their lower utilisation and verifies their importance for the research roadmap. At the same time, the research challenges that at the moment do not engage citizens in a direct manner, are considered more mature, however they have just passed the infancy years and results of their utilisation and impact on the policy making process became evident only in the last few years.

In this context, although these are considered as more “ready-to-use”, research is still required in order to put them on production platforms. The further research required will not only further improve them and integrate them in the everyday activities of policy makers, but will also enhance their social characteristics so that they will eventually engage citizens in a more direct way.

4. *Define the Timing Horizon for Research*

A final practical recommendation for future research roadmaps, which is generated as a consequence of the analysis of the four case studies and as indirect implication of the previous roadmap recommendations is that all research challenges should be clearly accompanied by a time horizon. Such a horizon shall focus research effort towards achieving measurable and quantifiable results in a given time frame.

Figure 10.3 presents a conceptual hype curve (or hype cycle) regarding the research challenges as identified in the latest roadmap on Policy Making 2.0 (CROSS-OVER 2013). This hype curve is based on information that derives from:

- the current trends of the ICT (in general) and of the Policy Modelling domain
- the views that have been recorded during the interviews that took place during the study. This was possible as the interview people elaborated their thoughts on the future research activities regarding their case, the desirable improvements and the potential extensions in terms of utilisation and exploitation of emerging or existing technologies and methodologies over an horizon of the next upcoming 10 years.

By looking at the figure it should be considered that the placement of each research challenge on the curve has been performed having in mind both the mature and the immature sub-areas it contains. In general, the position of the different research challenges on the curve in Fig. 10.3 is in accordance with their maturity level as presented in Fig. 10.2.

As a result, an indicative timeframe for research can be drawn, grouping research challenges into those that are considered:

- more mature and could deliver concrete results in a short term horizon of no more than 3 years,
- on the verge of maturity and could produce results within 3 to 5 years of research and
- still in infancy and require more intense and long-lasting research efforts, putting their major concrete contribution to the domain of Policy Making 2.0 in a timeframe that lies 5 to 10 years ahead from today.

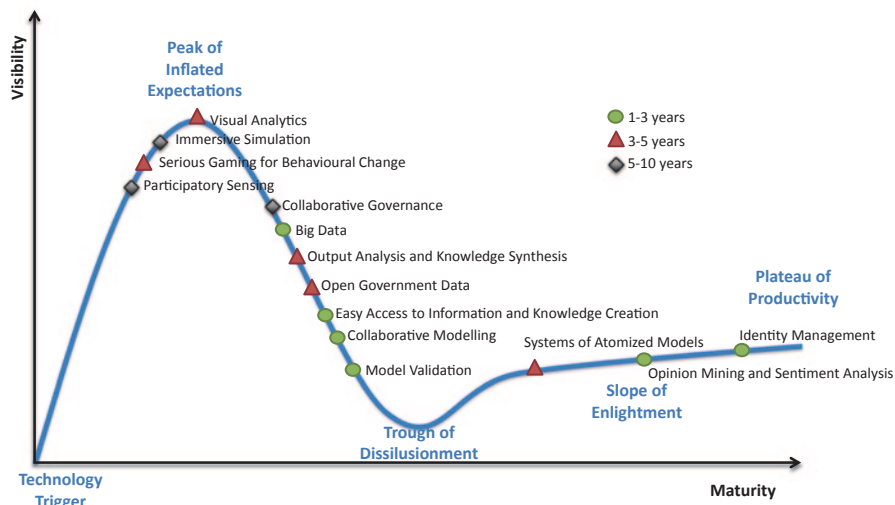


Fig. 10.3 Policy making 2.0 research challenges hype curve

Based on the previous recommendations, it has to be noted that the timeline presented in Fig. 10.3 is neither fixed, nor it represents the complete view of the domain. It is heavily based on the four investigated cases of the study and although they are considered representative enough for the Policy Making domain, opinions of experts in all these fields are necessary in order to adjust the placement of these research challenges on the hype curve.

Moreover, despite the fact that these cases are highly representative of the domain, further investigation of other cases and exploration of the links between the various research challenges is required in order to optimise the time horizon for future research. In addition, a cross analysis of these timelines, of the graph relationships of the research challenges and of their position regarding their maturity and engagement of citizens is required in order to derive to the final roadmap that will reveal well-coordinated mechanisms for exposing the potential of the domain in the most quick and efficient way.

10.6 Conclusions

All in all, the recommendations suggested in this chapter are aligned with the character of the Policy Making 2.0 domain, which calls for more open, collaborative and evidence-based decisions. These needs are still not covered, as the analysis conducted reveals that many of these prerequisites are still missing even after so many years of research. Seamless access to information and data, preferably following an open and not costly approach are still missing, while agencies are over-protective and reluctant to the idea of sharing their data while at the same time other datasets

are too expensive to be used by research teams. At the same time, policy makers are still treating emerging cases as “freeware” products and are not investing in the further development of them, nor in the necessary personnel that possess the required background to turn the results of these tools to digestible facts and figures for policy makers. Moreover, there is confusion about which tools are for citizens and which for policy makers, while almost all research efforts follow a top-down approach, neglecting the fact that open innovation and crowdsourcing is gaining a tremendous momentum in the Web2.0 era.

This study ends up with two sets of recommendations addressed both to policy makers and to practitioners/researchers of the Policy Making 2.0 domain. The first set of recommendations, which has been generated by analysing and identifying these issues, deals with the presentation of policy implications as captured by the analysis and the interviews conducted with people involved in the various cases identified.

Despite the impact and the benefits for both researchers and policy makers that future research will bring, it is inarguable that relevant communities are “not yet there” when it comes to fully exploiting the benefits of ICT for governance and policy-making and interweaving ICT within the policy domain. In fact, one of the main reasons and needs behind designing relevant research roadmaps is to deal with this reality. It is difficult to deny that there is an urgent need for better policy-making to drive Europe out of its current crisis contributing towards the achievement of the objectives of the Europe 2020 strategy; at the same time there is still a considerable gap between the potential and the real impact of ICT tools in support of governance and policy-making.

An initiative from various policy-related organisations and/or entities to agree on and formulate an integrated roadmap based on the recommendations presented in the document at hand would be consider of high added value by the authors. Effective and efficient collaboration amongst all stakeholders (e.g. governmental organisations, regional administrations, NGOs, researchers, developers, social scientists), based on the lessons learnt for successful and unsuccessful initiatives of the past, could lead to highly useful and substantial initiatives on Policy Making.

In this respect, the phenomenon defined as Policy Making 2.0 is clearly only at the beginning. The Decalogue of Policy Making 2.0 presented in this chapter is a starting set of practical recommendations that should be taken into consideration in order to address complex problems and societal challenges through the use and with the support of ICT. This should allow the ‘next’ generations of policy makers to rely on better evidence for policy design, tapping also on the staggering amount of interactive simulations and visualizations capabilities that emerging ICT allows. This should add to the legitimacy of the decisions taken by policy makers at all governance levels, while enabling citizens to understand, participate and even change their behaviour.

Disclaimer The views expressed in this paper are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

Acknowledgements This chapter is based on the research titled “Researching and Drafting of Four Case Studies on Applications of ICT solutions for governance and policy modelling” that was commissioned by the European Commission’s Joint Research Centre, Institute for Prospective Technological Studies, in the frame of the “CROSSOVER” project, a support action funded by the EC 7th Framework Programme.

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