

FP7 Consultation Workshop on ICT for Governance and Policy Modelling

BRUSSELS, 28 MAY 2008



Table of content

Table of content	3
2. Workshop objectives and setting the scene	5
2. 1 WP 2009-2010: Objectives of the consultation and state of play	5
2. 2 Briefing on previous consultations.....	5
3. Keynote speeches – facing up to change and harnessing multiple disciplines ..	6
3. 1 Wikinomics and the future of government and governance	6
3. 2 Social dynamics, policies and the future of the Internet.....	6
3. 3 From the common market to the virtual market; from national citizen to web citizen	7
3. 4 Policy modelling for economic governance in the future.....	8
3. 5 ICT and policy modelling	8
3. 6 Key note debates	9
4. Plenary presentations and discussions	10
4. 1 A Semantic approach to governance and eParticipation.....	10
4. 2 Web X.X versions - past and current trends	10
4. 3 Collaborative/mass innovation, opinion mining, filtering and aggregation	11
4. 4 ICT for governance and policy modelling.....	11
4. 5 Future research topics.....	11
4. 6 N-1-1 numbers: tapping into the wisdom of the crowds	12
4. 7 Supporting evolving agreements with Web 3.0.....	12
4. 8 Wiki debate visualisation tool	12
4. 9 Moderation of long public discussions	13
4. 10 Policy modelling and (agent based exploratory) social simulation	13
4. 11 Social media in governance and policy modelling	13
4. 12 Policy modelling, simulation, visualisation	13
5. Conclusion and next steps	14

1. Background and introduction

Today's workshop on "ICT for Governance and Policy Modelling" is the culmination of widespread discussions within the European Commission, as well as consultations with external stakeholders and experts. In introducing the workshop, Antti Ilmari Peltomäki (Deputy Director General, DG INFSO) emphasised the need for a new approach to eGovernment research which had become clear in this preceding phase. Both during the 5th and 6th RTD Framework Programmes, eGovernment research was able to demonstrate considerable and valuable impact, but now new societal challenges and a change of focus in the 7th Framework Programme require a wider scope and fresh thinking in order to identify technologies which can help modernise the government of tomorrow. There is a rapidly changing reality emerging with the 'Net Generation', new demands on the public sector, new ways of organising services, as well as the need for governance models which can accommodate the increasing involvement and aspirations of all sections of European society.

These are real and important challenges which the 7th Framework Programme can help us meet. The final decision on the allocation of a research budget for Governance and Policy Modelling has not been taken yet, however the momentum is already considerable and this workshop will help cement that. It is thus essential, that the research community, as well as the wider constituency across Europe which can benefit from this research, become actively involved. They need to continue to contribute to the consultation and ensure that innovative and forward-looking research ideas are able to take advantage of the investment when it becomes available later in 2008.

Technology research which will be needed covers a number of important areas in which government and the public sector have very explicit requirements. In order to support both small and large scale participation, and the governance models needed to accommodate this, evolving Web 2.0 tools for mass collaboration should be developed for the specific purposes of public and political debate, including reputation management and tracing and tracking functions. Future Web 3.0 tools will be important, including large scale social collaboration through networking and 'crowd-sourcing' processes, using for example GRID technologies. There will also be a need to fully exploit semantic and bottom-up ontology building processes, as well automatic metadata building, simulation and mixed reality technologies, prediction markets, opinion mining, information visualisation, collaborative filtering and consolidation.

A related new technology research area comprises the tools and applications required for the modelling and simulation of policy options by government. Semantic web applications are needed to access and visualise background knowledge repositories, translation, games and virtual worlds. Also important will be tools for process modelling, data mining, pattern recognition, visualisation and other gaming-based simulation, scenario forecasting and back-casting, and goal-based optimisation techniques. Cloud computing applications can provide the power of distributed computing for large scale data analysis and storage. Pooling web-wide computing resources across the cloud can be a key issue when simulating the behaviour and wishes of very large numbers of individuals. In all these areas a critical and necessary condition is robust security and identity controls to ensure privacy and trust, including where users are able to own their own data, and to trace, track and control the use of these data within specific regulatory and legal frameworks.

2. Workshop objectives and setting the scene

2.1 WP 2009-2010: Objectives of the consultation and state of play

David Broster (Head of Unit, eGovernment & CIP Operations) outlined the context of today's workshop within the wider remit and activities of DG INFSO and the eGovernment and CIP Operations Unit. There has now been a decade of eGovernment research and implementation supported by the European Commission, culminating in the 2006 Action Plan which provides a framework and targets for all Member States to 2010. The basis for the consultation taking place today is the proposed research topics for an ICT for Governance and Policy Modelling work programme for 2009-2010, as introduced in the background paper attached as Annex 1 to this report. Work is currently also underway to prepare for the next phase of eGovernment post 2010, agreements on which are expected to be put in place at the next Ministerial Conference in Sweden in the second half of 2009. These are likely to include new policy orientations, the next phase of implementation support, and a new research agenda which can build on the 2009-2010 research agenda we are now preparing.

These developments should be seen in the context of the changing role of ICT in eGovernment which has evolved from a focus on efficiency and cost saving in the early 2000s, to include a strong emphasis on effectiveness and the delivery of quality services in the mid 2000s. The next stage, which we must now address, is the need to include a strong governance perspective where citizens and businesses seek empowerment, and where both geographic boundaries and the roles of administrations, the private and civil sectors, as well as users, are all blurring.

A timeline can be traced between 2008 and 2015 in which participative eGovernance develops from the social domain of mass collaboration and social networking, enabling users to also become providers, to the professional domain now getting underway in which practitioners also take up the new tools to provide better services and better governance arrangements between the various actors. The next step from about 2010 will be the political and policy domain in which all actors, including users, will be able to participate in decision- and policy-making and engage in simultaneous multi-lingual debate. Continuous opinion streaming will be possible, and new forms of digital legitimacy and governance models will be required to accommodate this new reality.

Today's consultation workshop will help shape the research agenda during the first phase of these developments, so it must recognise these wider trends and help guide the way forward as not all scenarios are necessarily desirable. It is clear we will need cross-domain and multi-disciplinary research in these areas which exploits innovative ICT research supported by road mapping and networking activities.

2.2 Briefing on previous consultations



Jeremy Millard (Centre for Policy & Business Analysis, Danish Technological Institute) set the scene by describing the path leading to today's workshop. A consultation workshop with 25 top European stakeholders was held on 18 October 2007 in Brussels. The aim was to highlight the rationale and priorities for FP7 eGovernment research with a view to addressing future challenges running up to 2020. Two priority themes were considered and developed in some detail -- 'MyGovernment 2020' and 'Pan-European Semantic eGovernment Space'. This was followed in January 2008 when 9 high level experts, from both Europe and North America, responded favourably to a briefing paper prepared by the Head of the eGovernment Unit on research at EU level on eGovernance and eParticipation in support of an eSociety. This focused on how ICT based disruptions impinge on democratic, consultative and policy making processes within government and the public sector.]

As a result, the two main themes to be presented and discussed during today's workshop were prepared -- 'Governance and Participation Toolbox' and 'Policy Modelling, Simulation and Visualisation'. After today's consultation, the next step will be to finalise and agree the relevant text of the 2009-2010 FP7 Work Programme and ensure that the research constituency is sufficiently aware and actively supportive of this new research agenda.

3. Keynote speeches – facing up to change and harnessing multiple disciplines

3.1 Wikinomics and the future of government and governance



Anthony Williams (Vice President, Government 2.0, nGenera, and co-author of “Wikinomics”) placed the deep changes underway in the architecture of government within wider developments of social mass collaboration movements, and new innovation in the private sector. These are often made by small companies through bottom-up networking rather than in hierarchical, linear organisations, and herald a profound shift in governance from a focus on transactions to one embracing citizen engagement and empowerment.

New governance models are needed to meet these challenges and leverage the power of the technology. Governments need to demonstrate much greater agility if they are to successfully solve the large scale problems which now threaten to overwhelm their capacities. People are becoming increasingly educated and connected and expect to be consulted and involved, not least because this is what they experience now in their social and commercial lives. Already a number of guiding principles can be discerned for such governance models. They need to be transparent, participatory, collaborative, responsive, informed and accountable, each of which are long held aspirations, but can now all be delivered for the first time with intelligent use of the technology.

Communities of interest are a key building block in this process as they provide arenas for deep conversations in all walks of life. Governments have yet, however, learned how to leverage the power of these communities in all the areas in which they have a mandate, and this will also involve opening up their boundaries to bring in non-government expertise and resources. These communities, together with rich user profiles and access to the vast reserves of public data already available, much of which can be supplied by people themselves from their everyday lives and experiences, will lead to the growth of much broader and more flexible policy networks. For this to happen, engagement and policy-modelling toolkits will be needed providing connection, deliberation, forecasting and processing modules. Genuine political engagement can be created which exploits a large number of engagement methodologies, many of which already exist in other sectors such as gaming and open source, and which will lead to deep changes in the roles and powers of government.

3.2 Social dynamics, policies and the future of the Internet



Elmar Husmann (Manager, Strategy & Change – Innovation, IBM) sketched out the future of the Internet in terms of technology trends, based on ubiquitous network availability, cloud-computing and increasing bandwidth. This is being matched by usage trends, such as the exponential growth of Internet take-up, social networking, online communities and massive multi-user environments.

This all presents profound challenges and opportunities for governance. First, it is leveraging new ways of participation, where government is seen as just one form of collectivity alongside other forms which are emerging as ICT is taken up, such as social and commercial communities and networks. We already see the burgeoning growth of massive multi-user virtual environments such as gaming and social networking. These are being used in the consultation and policy sphere, for example by the recent IBM Habitat Jam run in cooperation with the United Nations which involved 39,000 people from 39 countries over a three day period, resulting in 72 new ideas. Similar such jams have engaged over 360,000 people since 2002.

Second, the need for trust in the digital age becomes ever more critical as government knows more about the citizen and the citizen knows more about government, and raises serious concern about security and privacy. A prime example here is human genetic data and how governments handle these, which also has a profound ethical dimension. In 2005, IBM and

National Geographic launched a project to collect DNA voluntarily submitted by ordinary people to help determine their family lineage and their geographic provenance. Today, such data are increasingly being used to combat global terrorism, as well as tackle large scale disease outbreaks and social disruptions. In each case, however, there is the potential for data mis-use, so new policies are needed to counter-balance this.

Third, the combination of technology and usage trends enables new policies and simulations to be developed and implemented which address these and other societal issues. IBM researchers are working with micro-societies, such as Iceland's 400,000 population, to develop a full scale understanding of service systems, including policy and regulatory needs. This encompasses both quantitative data sets from surveys and observatories, as well as qualitative information from, for example, interviews. The data go down to the individual level, but do so anonymously, thereby representing the real characteristics of the whole society. Developing such virtual society simulators requires combining computing and social science as well as collaboration across old silos in the different sectors and between different academic disciplines. Further, it requires a new way to test technology, not as technology in isolation, but to test it in interaction with society, whether this be through IBM's virtual society labs which are society- or community-wide, or real life testing in, for example, living labs.

3. 3 From the common market to the virtual market; from national citizen to web citizen



Andy Mulholland (Global Technology Officer, Capgemini) started by pointing out some differences between the private and public sectors. The former believe that markets control things, so they must be aware of the opportunities and threats, whilst the latter believe that they control things and thus have not yet recognised the opportunities and threats. Governments therefore are faced with a huge challenge, even though many do not yet realise this, so we should be deeply uncomfortable. As an example, there will be a

borderless state for IT operations by 2015, in which CIOs will source their IT from global offshore locations or suffer competitive disadvantage. The need for global sourcing will also extend to the 'best' combinations of everything we need and wish to do. Globalisation means, in fact, 'wanting the best', which is not just low costs but also the best in all other ways. No nation state, not even the EU, can draw a line around itself and declare that 'this is ours to control'. This will apply equally to the public sector as to the private sector, if it does not already do so.

The role of technology in this is critical. We still tend to treat ICT as if it were bolted on to society, but this is no longer the case. It implies a new way thinking, for example, if this presentation was being given to Capgemini staff, many instant messages would already have been exchanged, and the one-way presentation would be a multi-way conversation. We will see the revolution more clearly as the workforce changes, as young employees already demand a very different world. It's not about just ICT, but represents a fusing together of a vast range of technologies, products, services, and most importantly of all, a life style change. We thus need to think differently in the EU, and particularly about people, job mobility and education. We need especially to understand the rise of China and India and the vast reserves of well educated people who are now competing for what we think are our jobs, but for how much longer?

We need to re-think the leverage model of our society. How do we teach people to handle things they, or we, haven't yet seen? In research and development we often worry about who gets the value, but it's clear that the main benefit is participation. Individuals often adopt technologies before corporations – personal value comes before corporate value, whilst public value typically comes last. The EU clearly does not spend enough on RTD compared to the large ICT corporations. The challenge is to keep people up to date, but this is becoming an ever more difficult challenge, given the burgeoning growth of information, and how can we use such information to make useful predictions? What we can understand, however, is the need to address certain issues, with the prime example of organisational and governance arrangements to enable us to compete and survive in the future.

We also know that there will be massive changes in the way we work, and that the 'C' in ICT is already becoming 'collaboration' rather than 'communication'. We need a new collaborative

model if we are to protect and enhance our rights and resources, but not one based on an old democracy model as previously understood. Instead, the issue is participation, although this is as yet poorly developed even locally let alone globally. At present we only think about voting, but we have not yet adequately explored what we can participate in, with whom, and what our entitlements are. How can we use new ICT to improve how participation works, how we make policies and how we take decisions? We do not know how universal participation will work. This is a huge pressing problem, and it is ours right now.

3. 4 Policy modelling for economic governance in the future



Ali Bayar (President of EcoMod Network, Free University of Brussels) reminded us that some governments do not yet have any policy making or modelling tools, but that many are now starting to develop and apply these across all their fields of competence, also in developing countries. Some are also using policy modelling to evaluate possible policy impacts through forecasting and scenarios, also at the international scale such as in the context of climate change and Kyoto. Once sceptical policy makers are now starting to change their minds once they see what policy

modelling can do. Politicians can also use policy modelling to help to sell their policies to the public, for example as a way of justifying the policy approach adopted, but also to spread the risk of failure by involving the policy modelling and expert community in responsibility for decisions.

The state of the art in policy modelling is heavily focused on economic modelling where a large number of tools are already being used, often built by academia or consultants for governments. There is also a small modelling team in the European Commission. There are, however, very few policy modellers, although their number are growing fast, and this is a problem for updating and maintaining those models which do exist, so many quickly become out of date. There are also numerous modelling theories but few useful data to validate the models, which causes many problems especially as what is really needed are different models for different problems/policies, but which can then be compared and linked. This also affects the EU where even the best data tend to be weak, as for example in analyzing the impact of the Structure Funds on regional development.

The pressing question thus becomes how can we improve models to get better policy making and implementation. There tends to be a big difference between the academic approach to policy modelling, where there is a need to publish, and the policy approach where the need is for dynamic detail. One solution is to become more collaborative rather than, as at present, quite isolationist in model building. We need to see policy modelling as a technical platform to accommodate different models and databases reflecting the diverse theories and approaches which are needed, together with an international network of model builders.

The modelling platform thus needs to be relevant for decision-makers and the real issues they are confronting, and which facilitates simulation, projection, impact analysis, etc. Such platforms thus need to be transparent, rather than a black box. Their code needs to be accessible (probably open source), with user friendly interfaces, and available as an open access model, for example on the Internet also for running simulations. Similarly, updating of the model platform and databases is important. Finally, confidentiality and privacy are necessary so individual people and companies can not be identified, but this needs to be balanced with the desire of individual citizens and businesses to be able to model what the precise impact of a given policy is for them.

3. 5 ICT and policy modelling



Scott Moss (Director of the Centre for Policy Modelling, Manchester Metropolitan University) made it clear from the start that policy modelling tools are not given but should be developed in interaction with the requirements of both the policy and the policy analyst. Thus, the nature of social policy is very important in determining the type of model required, for example whether a policy is intended to influence or to modify the collective behaviour of individuals, perhaps through enforcement. However,

the real challenge is the unpredictability of such collective behaviour, because we do not really

understand how individuals respond to policy inducements given that their dense social networks and patterns of interaction lead to huge complexity. Forecasting is therefore extremely difficult, so we need a range of tools which can be determined or modified by the policy problem itself, not given a-priori. Such tools can include agent modelling which is often rule-based and may be driven by evidence, systems dynamics based on social interaction (although this is hard to capture), and econometric and statistical analysis which can be incompatible with complexity.

An important question to address is whether these and other modelling tools should be bottom-up or top-down. Essentially, the former approach starts by understanding the problem at a micro scale involving a lot of qualitative data, and uses, for example, grounded theory, soft systems or agent-based modelling to capture a lot of the complexity, but may be difficult to apply to other contexts. The top-down approach, on the other hand, is determined more by existing tools at a macro scale involving mainly quantitative data, and can include such approaches as systems dynamics and foresight processes, but which do not capture complexity very easily although they are more readily applicable in other contexts.

The fundamental challenge is what do policy makers want – a simple check list, answers, increasing detail, or something else? And what do 20 million citizens want if we open up participation? Those who are interested in policies are likely to be concerned about single issues, so the challenge is how to bring these together. There are all kinds of stakeholders and pressure groups concerned with individual policy issues and proposals. The most promising role for policy modelling is to capture these different positions in ways that render the differences clear and precise. How do their assumptions differ with respect to behaviour and/or context? Typically, there is a common core model within which there can be variations that capture the assumptions of different stakeholders. There is then at least one variant of the basic model for each participant whose views are modelled at all. If the model is also evidence based as far as possible, then issues of fact can be settled and the different analyses based on belief and assertion are represented formally and therefore precisely. It is not possible to get ‘truth’ from modelling, but models can provide precision, for example in relation to what people are saying.

The importance of ICT in all this is in:

- the formalisation of positions in ways that both enable the different pressure groups to engage with the assessment of the representations of their respective views, and enable the different pressure groups and the policy agencies to see precisely how and why their views differ from those of other pressure groups
- the incorporation of evidence into the models from both statistical and qualitative social databases
- the integration of relevant natural science and engineering models with the social models - particularly important for environmental models and to assess the relative benefits of competing policy concerns.

Traditional modelling approaches in the social sciences have been theory-driven and therefore top-down. Policy modelling as being developed in the social simulation community is increasingly evidence-driven and therefore bottom-up. These are two extremes that are never in practice realised but they also represent ideal-types. By virtue of formalisation and the more ready incorporation of evidence, ICT enhances the possibilities for and promise of evidence-based, hence bottom-up, policy modelling that is more in line with the historical development of natural science models and theories.]

3. 6 Key note debates

A lively discussion resulted from the keynotes, raising the prospect that in ten years time some of these tools could be used to simulate the impacts of, for example, tax changes thereby making it easier to hold politicians to account, but also enabling individual citizens to predict the precise impact on their own personal finances. At the same time, it would educate everybody concerning the extent to which different policies interact and that economic and social, as well as environmental, impacts all need to be taken into account and balanced in some way. This raises the question of policy conflicts and trade offs, and how these are dealt with both by governments and by the electorate. Models can, as explained, bring more precision, also in relation to the links between policies and their trade-offs, especially at a time

when the number of pressing issues increases alongside complexity. But models cannot tell you what to do, only what conflicts and outcomes are possible or likely.

As people themselves become more familiar with participation and using policy models, we can expect they will use them more wisely, and this, in turn, will improve legitimacy. However, if people view policy selection like shopping this could become dangerous, so conversation is needed after which views tend to become less polarised. Participation and policy modelling which become accessible to large numbers of people through ICT also requires education and training, not just in ICT, but in the policy process as well. This should reduce the democratic deficit in the longer term, although this also depends on how we come to define democracy.

We can also see a development in policy making styles from 'done to' to 'done for' to 'done with'. The first results in alienation, the second less so, whilst the third should result in low alienation and less conflict. An excellent topical example is the Democratic primary contest between Obama and Clinton. The latter's campaign has tended to be more traditional, top-down and reliant on a relatively small number of large donations. Obama's campaign, on the other hand, is more innovative in its use of the Internet and social networking tools, and thus more bottom-up and reliant on small scale donations, but these have been on massive scale which overall have boosted campaign finances much more than Clinton's.

ICT has a decisive role in many of these developments. It could enable, almost for the first time, the precise tracking of changes which are independent of specific policy proposals but within which they are inevitably embedded. It enables more precise and larger scale simulations to take place and thus increases understanding. For example, once we get the tools right in a governance context, mass collaboration is in principle much cheaper and more precise than mass interviews. The 'wisdom of the crowd' may be crowding in on us.

4. Plenary presentations and discussions

The afternoon session of the consultation workshop was devoted to short presentations from participants and more wide-ranging discussion around the proposed FP7 research agenda and topics.

4.1 A Semantic approach to governance and eParticipation

Michele Missikoff (LEKS, IASI-CNR) argued for using advanced technical solutions which already exist today, such as mobile telephony, SMS, the Internet and news media through a single point of access. What is missing is the cultural approach and supportive organisational models which exploit semantic technologies and provide highly simplified, easy to use and automatic feedback on questions and comments. During discussion, the point was raised that this is only a small shift based on today's technology, rather than a jump to, for example, Web 2.0, and is similar to current twittering, though would be a step on and perhaps also a stepping stone for many.

4.2 Web X.X versions - past and current trends

Marko Grobelni (Jozef Grobelnik Institute, Ljubljana, Slovenia) traced developments from Web 1.0 through 1.5, to 2.0 and then 3.0, the latter being the AI dream in which common sense knowledge and reasoning provide a so-called 'Cyc ontology'. This is already a working system (www.cyceurope.com) and can address everyday problems, including, for example, questions like who killed the Lebanese President by providing justification statements and sources. It can also assess possible news bias in the broadcasts of CNN and Aljazeera by analysing the occurrence of keywords, as well as visualising news trends.

During discussion, the research question was stated as transforming non-structured data into structured and useful information in a cost-effective manner. This process can automate some aspects of data coding, and could be used, for example, to build a knowledge repository of nuclear waste technology, validated by experts and interrogable by all citizens. This could thereby provide more balanced and consistent answers to questions seen by all, compared with the present situation in which one citizen asks one civil servant or politician and gets an answer few other people see. A major research challenge for the semantic approach is the huge task of developing and pulling together all the diverse ontologies into something interoperable

and meaningful, and how to make sense of unstructured data from different media like text, voice, video, data, etc. Related to this, is the challenge of bringing the semantics and the reasoning together, and determining what is the 'truth' or what is the 'best' answer, and how this is done.

4. 3 Collaborative/mass innovation, opinion mining, filtering and aggregation

David Osimo (IPTS, DG JRC, Seville) provided many examples from this highly innovative field, including collaboration in patent peer review, crowd-sourcing content on the disruption of bike lanes, collaboration in public broadcasting regulation, visualizing comments on the BBC white spectrum, Gapminder with its many eyes making public data more visible using Google Earth, etc. However, costs and the time needed are still too high for mass participation especially across platforms. The current lessons are probably that more use should be made of reputation management through rating systems, and that social applications generally complement existing approaches rather than substitute for them. Institutions are probably needed even more, and we should probably not try to develop eDemocracy systems which do everything, but instead look at how they can augment and enhance what already takes place.

During discussion, it was pointed out how research shows that the new tools are good at telling us what people think on a specific issue on a small scale, but not on a general level or large scale. Thus, the challenge is both how to engage more people but also how to make it meaningful. It is clear that the technology can lower the barriers to participation, especially in situations where the government wants to talk about one thing and the citizens another. The question is should we 'artificially' try to grow participation when it's not there, or should ICT help to find new forms of latent participation which may be there but which we cannot see as it currently has no outlet?

It may be that political participation is decreasing (or is it – look at Irak and the Obama phenomenon), but other forms could increase if we ask what citizens wish to discuss, and then give them control and ownership. One promising development is location-based participation, for example help re-design the park you're walking in, or the hospital organisation which kept you waiting and you think you have a solution, i.e. an event creates the opportunity for dialogue. Overall, it is clear that the participation issue is far from clear cut, so we need better taxonomies, but that participation almost certainly reflects interest and what people see as important in their everyday lives. So we need to make the 'architecture' of participation much more flexible and open-ended, with new balances between top-down and bottom-up forms, probably with more weight on the latter.

4. 4 ICT for governance and policy modelling

Tom Van Engers discussed the regulatory basis in the context of semantic web, arguing that it needs new architectures enabling both a new dynamic as well as some stability. Thus, how can we combine different knowledge domains (such as tax, trade, labour market) into new social contracts for designing and planning (ex ante) as well as for assessment (ex post)? For example, when designing Airbus, we need to know whether it complies with legislation and regulation. During discussion, the point was made that the issue is how technology and people interact, and that interactions differ enormously. We are quite good at facilitating and understanding small scale well-defined events but do not know how to scale this up, mainly because it has never happened before. Participation is not a snapshot like polling or voting, but takes place over time, so it is difficult to get attention and commitment. On a massive scale, how is this done and who does it?

4. 5 Future research topics

Ulrike Greiner (SAP Research) proposed research which enables constituents to define or influence the decision-making process through the application of domain-specific process building blocks, and the semi-automatic analysis of processes to ensure that proposed changes comply with legislation. Different national policies and legislation are a barrier to the cross-border trade of services, but this can be facilitated using appropriate models of such legislation and governance procedures, for example for billing, payment, contract closure, etc. During discussion it was pointed out that the semi-automatic scanning and coding of legislation will always involve some interpretation (this is also the case even within national

systems, let alone cross-border), so software alone should not try to fully represent legal systems, and should probably be related to the overall policy cycle.

4. 6 N-1-1 numbers: tapping into the wisdom of the crowds

Alexander R. Schellong (CSC Deutschland Solutions GmbH) explained the potential use of single unified three digit phone numbers for information and service provision in government. (e.g. 116 for the EU, 115 Germany, 101 the UK). The high penetration rate of mobile devices compared to Internet/PCs, means that the phone channel can bridge various access barriers to government. Among them being the digital divide, socio-economic status, lack of citizenship or today's complexity of government. It allows governments to tap into citizens latent knowledge and genuine needs. The mobile channel could be used for voting, or to support policy making and public management. Possible research in this field is to re-evaluate the different channels, especially mobile messages, SMS, Twitter messages, government contact centre interactions, etc. (not just the Internet), and explore ways to use citizen inputs via all channels to tap into the 'wisdom of the crowd', as happened with Hurricane Katrina, the Niigata earthquake, the progress of California fires, SMS messages on rubbish dumping, graffiti, street crime, etc. The challenge here is how to integrate such data inputs into governance structures and processes, especially because of the increased transparency this would bring. For example, would three such Twitter messages constitute grounds for action by the authorities, and how can we match the channel input and Web 2.0 with the need for social justice, equality participation and governance.

4. 7 Supporting evolving agreements with Web 3.0

Emanuele Della Valle (CEFRIEL) described Web 3.0 as Web 2.0 (architecture of participation) plus semantic web, which will enable a process of 'agreeing while disagreeing' in which parties agree on general principles but then only commit to a subset of possible implications and retain the rest as disagreements. The purpose is therefore to distinguish between commitment (agreement) and disagreement, and make this transparent and known so it can be tackled if desired. The research challenge is to develop a comprehensive methodology for this.

4. 8 Wiki debate visualisation tool

David Price (Debategraph) presented a wiki-debate visualisation tool that helps move Web 2.0 from the social to the political sphere. The current policy system is not coping with the complexities of policy making and the potential conflict between issues. What is needed are tools to both engage people and to make this meaningful, for example through sharing and externalising thinking and views by structuring these in direct relation to the issues at hand. People grouping around an issue would build comprehensive maps of the problem, designed to open up thinking by making the best arguments on all sides of any debate freely available and continuously open to challenge and improvement by all. Thus everybody would be able to state their case, engage the opposing arguments, create and reshape debates, add new points, rate and filter arguments, and monitor and share debates via RSS and embedded widgets.

This is a web-based, creative commons project which enables policy makers and stakeholders to benefit from the collective insight and intelligence of the global community. If 20 million people are involved, the amount of commonality will be huge, and it's important to keep not just the areas of commonality visible but also the fertile areas around the edges from which new ideas emerge. Where 98 people agree and 2 disagree, the goal is both to strengthen the 98 and to work with the 2 and not lose them. A key initial objective is to surface the real disagreements and conflicts and make these clear through mapping and externalising the reasoning through chains of argumentation which people can directly comment on or contribute to. Also those who do not wish to comment will be able to see and understand the argument, even if they disagree, and this is critical for building trust. This can be used, for example, with citizens' juries, negotiations, debates, decision-making, etc., in each case making arguments and decisions explicit. Although this has already been piloted with the UK Prime Minister's Office, the research challenge is to further develop the visualisation tools to enable this, including the issue-specific as well as the substantive common ontologies needed.

Discussion focused on how such ontological structures remain 'neutral' through mapping all the arguments of a debate in order to represent all views, as well as providing relations to other debates, and always enabling the addition of new inputs. As all the maps will be

provisional, policy makers will be able to link to them in real time for rapid evidence-based decision support. Some of the constraints are that there will always be a balance between the real complexity of issues and argumentation, on the one hand, and the need for simplicity on the other. Decisions involve structured thinking and this is not easy for everyone, so a learning curve may be needed. One way to ease this may be through the automatic prompting of lines of argument used by others (cf. Amazon's prompts that 'people who purchased this book also purchased that book'), as well as the tagging of arguments to link to other sources for more information. None of these solve the problem, but do lessen it and provide greater transparency, and lead to greater exposure to alternative ideas and arguments rather than the clustering of people only around the arguments and views they already share.

4. 9 Moderation of long public discussions

Neenad Stojanovic (FZI, University of Karlsruhe) argued that the Web 2.0 philosophy is rooted in free, open communities without central coordination and pre-determined goals and strategies. However, in order to ensure high quality and long public discussions, some form of moderation is required but of a new kind. This should provide a framework for characterising and structuring the discussion which ensures it is focused on the agreed topic, that the best experts can be involved and that there is genuine debate and opinion exchange. This can be done using ICT to provide discussion cockpits that ensure indicative visualisation of participants' messages, and the mapping of topic distributions across a number of social networks. Discussion focused on the relation of this moderation approach to the wiki debate visualisation tool discussed above, and how this can be expressed in terms of the moderator function as part of a wider model encompassing different stakeholder roles.

4. 10 Policy modelling and (agent based exploratory) social simulation

J. Balsa da Silva described how policy modelling employing agent-based exploratory social simulation can be used to design, test and compare complex policy scenarios, such as in the areas of housing, environment, tax compliance, agri-food systems and marketing. Social simulation would look to change individual behaviour, for example the combinations of tax and other incentives which would be most likely to reduce the carbon footprint can be tested by comparing the possible outcomes and selecting what seems to work best. Discussion focused on individuals' ICT behaviour, or their digital footprint, which can be traced by examining their click through activity, as well as on how the public sector uses personal data, or whether it should restrict itself to aggregated data only in order to respect privacy issues.

4. 11 Social media in governance and policy modelling

Robbert Fisher (Buzztrend) explained how expressions of opinion made by everyone informally and in an unstructured and spontaneous manner in the social media can be analysed for their underlying 'buzz'. The question is can such 'buzz' obtained from blogs, fora, news, etc., reliably measure what is taking place and the actual currents of opinion and meaning? The answer seems to be yes, at least in the context of the Democratic Party's primary elections in the US, where the underlying 'buzz' of opinions on the two candidates did seem to correlate with voting results. However, although these 'opinion buzz' tools, as well as related approaches like sentiment analysis, are currently being used in the commercial domain, they have not yet been properly applied to the political arena. Issues for research include the quality of the input, ontologies needed to match policy models, cost effectiveness and 'authority' in terms of where the buzz originates and how it is used. Discussion centred on how fraud could be prevented, for example by groups trying to bias results by copying similar comments en masse to sway an argument, and whether there is a role for a moderator here or can anti-fraud measures to detect this be automated?

4. 12 Policy modelling, simulation, visualisation

Virginia Dignum (Utrecht University) focused on the inherent complexity of policy modelling, simulation and visualisation, and thus the research needed to identify appropriate support tools and building blocks. The challenge is to dynamically link the relatively simple macro level of, for example, regulations, to the complexity of the micro level of agent and individual behaviour. This can be done by conducting research which can model the meso level integration of the top-down prescription of 'required' behaviour with the bottom-up

description of actual behaviour. Discussion focused on the role of such models which can be used to apply differential meaning to behaviour, for example, by automating part of a discussion so the model generates possible outputs for further discussion and/or selection. This would be a bottom-up, endogenous contribution to policy modelling derived directly from the particular problem at hand, rather than one derived from an imposed exogenous structure.

5. Conclusion and next steps

In commenting on the wide range of interesting and important research ideas discussed, David Broster (Head of Unit, eGovernment & CIP Operations) suggested that more specialised workshops could be set up focusing on the two research topics proposed for the 2009-2010 Work Plan, i.e. 'Governance and Participation Toolbox' and 'Policy Modelling, Simulation and Visualisation'. (See the background paper attached as Annex 1 to this report.)

Given that the allocation of a research budget for governance and policy modelling is not yet certain, there is still a strong need to lobby for the positive endorsement of decision makers, including national representatives. This area is new, innovative and original, so must not be lost. It represents an important step on from traditional eGovernment research into the era of Web 2.0 and Web 3.0. It attempts to harness developments in social networking and policy modelling, both of which see a rapidly growing constituency which now needs to be consolidated and expanded. An important next step, therefore, is to rapidly build a vibrant, coherent and inter-connected multi-disciplinary research community focusing on this area, which draws upon and integrates the expertise, resources and attention of the many single disciples already strongly active. Additional events will need to be staged, hosted by different stakeholders including from the research community itself, culminating in the Lyon ICT Conference in November, but continuing afterwards into the roll-out of the 2009-2010 work programme.

Aniyan Varghese (eGovernment Unit & CIP Operations) outlined the research principles of the proposed 2009-2010 Work Plan as the need for medium term research which would have an impact in 2015 to 2020. We should expect the unexpected, such as the complete transformation of ICT, market structures, value chains and business models. The research challenge is therefore to explore more innovative options than normal, and to focus on higher risk ICT collaborative research.

The proposed ICT for Governance and Policy Modelling topics are expected to be part of Challenge 7: ICT for Independent Living, Inclusion and Governance. Research instruments available are likely to be 'Small or medium-scaled focused research actions' (STREPS), as well as Coordination Actions (CAs) and Specific Support Actions (SAs).

Important upcoming deadlines include:

- 16 June 2008, final proposals for network sessions for the ICT 2008 Conference in Lyon, 25-27 November 2008
- June 2008, when the second draft of the Work Plan will be submitted for discussion in July 2008
- October 2008, when the final draft Work Plan is submitted to ICTC for opinion in October 2008
- November, adoption of the Work Plan
- November 2008, ICT Call 4 launch
- June/July 2009, ICT Call launch 5
- December 2009, ICT Call launch 6.

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You are invited to provide your comments, views and contributions on the recently launched ePractice Community on "ICT for Governance and Policy Modelling" by visiting the ePractice website: <http://www.epractice.eu/community/egovernance>

