

ARGUMENT MAPS AS POLICY MEMORIES FOR INFORMED DELIBERATION: A RESEARCH NOTE

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Abstract

This is an eGISE network paper. A significant area within eGovernment is concerned with systems to support democratic policy formation and decision making processes. In modern government, both local and national, consultation with interested parties is an important element in maintaining the democratic process. To date online consultation tools have used existing software tools, which are simple text based tools that were not tailored to the process. This project proposes to develop an online tool that will visualise the issues and arguments graphically as the consultation process proceeds. Using Discourse Analysis and Ontological Engineering it will create Argument Maps that will serve not only to inform participants but also the archive record of the consultation – the Policy Memory. We hypothesise that such a tool would allow citizens to become more engaged with policy formation and enhance democratic participation.

1 INTRODUCTION

Much of the work of government relates to the preparation of policy that requires widespread discussion and engagement with civic society, citizens as individuals and elected representatives. Over the last decade there has been a gradual awareness of the need to consider new tools for public engagement that enable a wider audience to contribute to the democratic debate. There is also a need for the contributions themselves to be both broader and deeper. Promoting and enabling citizen participation in such policy formation activities – eParticipation – is seen as an essential element of eDemocracy.

This proposal is concerned with information and knowledge management for evidence-based policy-making and motivated by a need to improve ICT support for online consultative processes within the public sector. Both eDemocracy and Knowledge Management (KM) have been identified as particular interests within the Network for eGovernment Integration and Systems Evaluation (eGISE).

Online consultative policy-making raises a number of challenges for interactive interfaces and information management. Democratic political participation must involve both the means to be informed and deliberative mechanisms to take part in the decision-making. By its very nature eParticipation is an information intensive process, which is interactive, incremental and dynamic. It requires meaningful messages to be extracted from large assemblages of data and information produced by multiple stakeholders. The proposed research explores the concept of ‘policy memory’, a dynamic computer supported archive that both records and supports online consultative policy-making.

2 BACKGROUND

In November 2001 the UK government published a report on “Better Policy-Making” (CPMS, 2001) based on a survey of senior policy-makers in the UK. This looked at the barriers and enablers, and identified where the policy-making process needs to change to enable policy-makers to work in a more transparent way. A subsequent report by the OECD dealing with online engagement of citizens in policy-making identifies a similar challenge:

“Knowledge input at each policy-making stage must be made available appropriately at the other stages of the process so as to enable policy to be better formulated and citizens better informed. In order to take maximum advantage of the wealth of experience that citizens collectively possess, the whole of the policy-making process needs to be considered, not just isolated decision points.” (OECD, 2004)

Funded research to date focuses mainly on citizen service needs, and ICT support for policy-making has been, in comparison, relatively neglected. The domain involves a large amount of knowledge that must be made explicit in different formats at each stage of the policy-making life cycle. This includes knowledge from many different sources and channels. Policy-making thus articulates one of the fundamental problems of information and knowledge management, that of abstraction of meaningful messages from large volumes of heterogeneous data.

Socio-technical eParticipation research has focused on the design of methods to engage different community groups and sectors of society, particularly young people. One such project in the UK, The local e-Democracy National Project (see <http://www.e-democracy.gov.uk/default.htm>) was one of 22 local e-Government National Projects initiated by the Office of the Deputy Prime Minister to help deliver the national strategy for local e-government. This project, which received £4m in public funding, was tasked with harnessing the power of new technology to encourage citizen participation in local decision-making. It explored how new technologies can change the way in which Councils engage and work with their Citizens. It looked particularly at online tools and mechanisms to engage young people in the complex policy issues that will have a direct effect on the quality of the adult lives (Whyte, et al 2005). Research has also started to address which of the currently available e-engagement tools and methods are most applicable to different government engagement contexts which has resulted in a practical guide for public authorities in the UK (Macintosh, Coleman and Lalljee, 2005).

Large scale eParticipation pilots like the “Growing City Hamburg” revealed the limited scalability of state of the art systems like the DEMOS platform. In order to handle the nearly 4000 contributions extensive (and expensive) moderation support was necessary for reading and summarizing (Trénel et al. 2003). State of the art eConsultation tools to support deliberation still use a threaded discussion forum as their basis, even though some of them now include support functions for moderation they are still limited regarding discourse analysis and visualization.

Despite these efforts the usability of currently developed eConsultation platforms is still very limited. The interactivity and scalability of existing tools, which is required to meet the needs of a participatory democracy, is inadequate. The type of interactivity they offer does not attract enough citizens, and if they were attracting hundreds or thousands of participants, they do not offer sufficient support to the citizens to find their way through the contributions, to the facilitators to manage and moderate input, or to the policy-makers needing to analyse inputs and understand the results. The challenge of interactivity and scalability for eParticipation remains to be resolved.

We seek to address these problems by developing a model of organisational memory for policy-making, and building a prototype based on that model. In doing so we will move away from simple linear text based structures by using Ontological Engineering, Discourse Analysis and Computer Supported Argument Visualisation to support the input, analysis and management of contributions.

This ‘Political Memory System’ is a new concept and we believe it is an important aspect of the Modernising Government programme.

2.1 Discourse Analysis and Computer Supported Argument Visualisation

Argument visualisation has been used for nearly a century as a technique for presenting complex issues in a diagrammatic form. Diagrammatic arrangements of boxes and connectors are used to replace the prose version of the argument under consideration. The boxes either carry a summary of a section of text, or contain an icon symbolising any part of an argument that occurs frequently, such as ‘question’, ‘premise’, ‘asserts’, ‘supports’ and ‘contests’. Representing prose in this way provides an easier way of comprehending the overall picture as well as enabling the user to appreciate the structure of the arguments involved. Figure 1 below shows an example of one such presentation, a decision tree, illustrating part of a parliamentary debate on the introduction of a smoking ban..

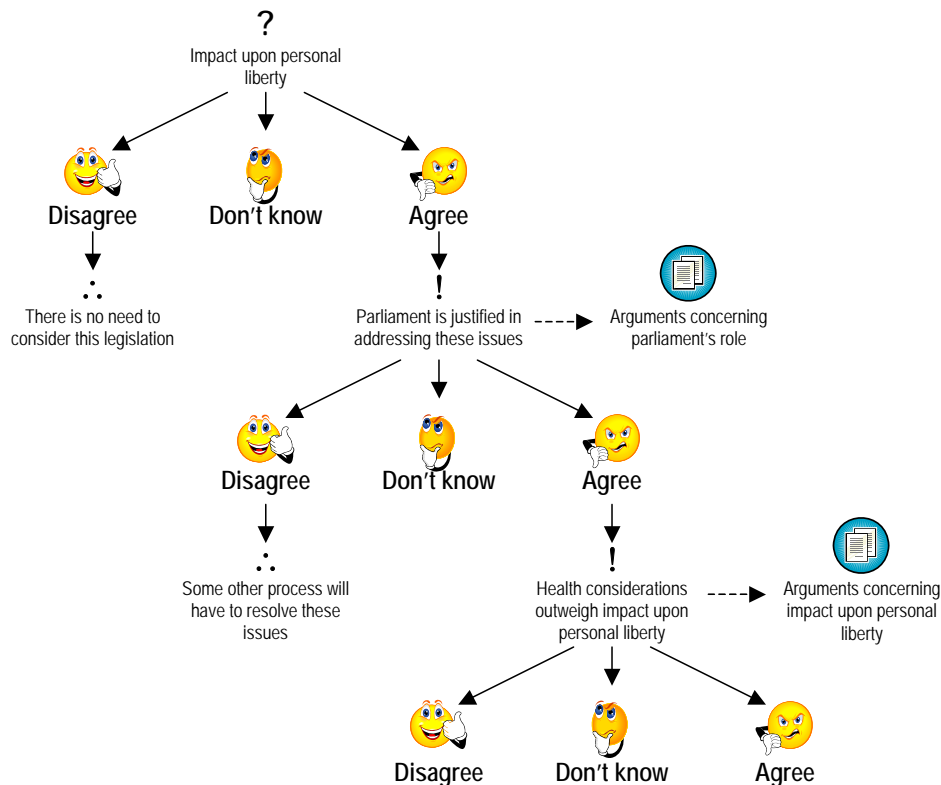


Figure 1: Decision tree view of an argument

Computer Supported Argument Visualisation (CSAV) has enjoyed success in the fields of education and commerce as a means of presenting large amounts of information in a way that makes it easy to assimilate, and as a way of addressing so-called ‘wicked’ problems (Rittel & Webber, 1973; Kunz & Rittel, 1979). CSAV (or Issue-Based Information Systems) were also identified as a key application of hypertext structures (Conclin and Begeman, 1989; Rada et al. 1990). For a concise history see Buckingham-Shum, 2003.

There is, however, little research that specifically focuses on visualisation and discourse analysis aspects of evidence-based policy development. Several commentators have discussed broader uses of technology to support the democratic process (e.g. Coleman and Gøtze, 2001; Hacker & van Dijk, 2000; Tsagarousianou et al. 1998) and others have focused on representing the legal framework for policy development (van Engers, 2001).

However, Walton (2003) considered argumentation schemes for legal reasoning and recent research in CSAV (see Kirschner et al. 2003) demonstrates such techniques being used in facilitating multi-stakeholder deliberation in business processes and industrial conflicts. The CSAV communicates the key ideas in complex public debates, thus enabling faster assimilation, critical thinking about complex arguments, and supporting strategic goal setting in businesses. It has been demonstrated that not only do such techniques make it easier for participants in the debate to follow where lines of thought have taken them, but once a decision has been taken, the argument visualisation constitutes a readily accessible justification for a particular decision or recommendation. If organisations have experienced an improvement in employee relations with less dissatisfaction being expressed at policies, then such CSAV techniques have a potentially important role to play in engaging citizens in democratic decision-making leading to better policy-making and a more engaged citizenry. As such CSAV has the potential to provide a readily accessible medium by which citizens can follow and join in online public debates on policy issues (Renton & Macintosh, 2005).

3 AIMS AND OBJECTIVES

The overall aim of this proposal is to create a technical platform that can be used to support, inform stakeholders, and manage the process online consultative policy-making debate. This platform will provide a novel visualisation and retrieval system (a 'policy memory') for policy-making, by using a combination of CSAV-based argument mapping and discourse analysis techniques. The specific project objectives are:

1. To determine the extent to which a combination of ontologies, argument visualisation and discourse analysis techniques can be technically feasible and manageable within a policy-making context.
2. To specify and develop an eParticipation platform consisting of:
 - An argument visualisation front-end to support informed, deliberative scrutiny of policy by citizens;
 - A large scale discourse analysis back-end to support the articulation of evidence-based policy by government;
 - An evolving policy memory to support the large assemblages of data and information produced by multiple stakeholders over time.
3. To evaluate the platform's ability to support a cascade model of incremental evidence where the emerging archive allows re-use of the policy evidence at successive points in a series of consultation exercises during policy formulation.
4. To assess the acceptability of such a 'political memory' to the various stakeholders concerned with the emerging policy.

3.1 The eParticipation platform and 'policy memory'

In order to address the overall aim of this research a prototype platform will be developed and evaluated. Conceptually the platform will support the following sequence of processes:

- Identification and abstraction of the key issues and arguments from individual online submissions using an argument discourse ontology.
- Use the above abstractions to develop argument map(s), which visualises the relationships between issues and arguments and with hyperlinks to related documents.
- Use the above as input to the discourse analysis of the contributions to determine arguments flows, conflict issues and consensus.
- Archive and re-use the above produced argument engagement map(s) and associated analysis - the policy memory - to inform successive consultations.

Figure 2 shows an overview of the eParticipation platform architecture, which is based on the conventional MVC pattern (Rumbaugh, 1994).

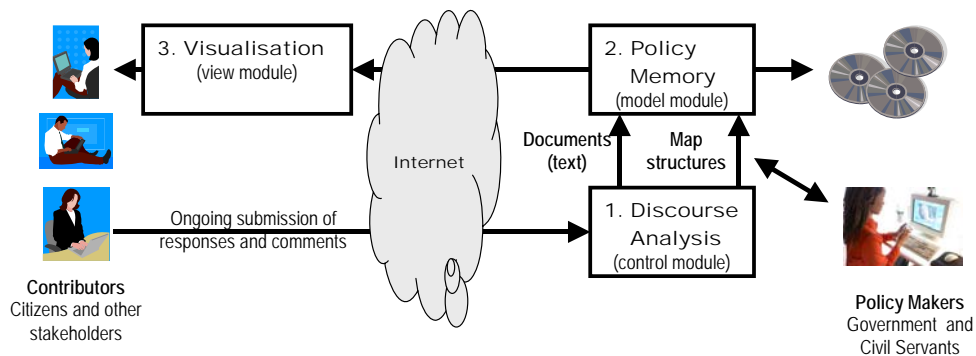


Figure 2: Outline Architecture

A key element of this CSAV system is the discourse analysis module that interprets the contributor's textual statements and generates the views to enable facilitators to support citizen deliberation in policy formulation. Policy-making through stakeholder participation articulates one of the fundamental problems of information and knowledge management, that of abstraction of meaningful messages from large volumes of heterogeneous data. Despite the fact there are a large number of commercially available front-end engagement tools for government to deploy there is limited support for analysis of citizens' contributions to facilitate their input influencing the political agenda. We seek to address this problem by designing discourse analysis techniques for large-scale information sources.

The Policy Memory, to provide the underlying infrastructure for the mapping visualisation and analysis over time, is another key component. Effective participation involves a large amount of information and knowledge that must be made explicit in different formats throughout the lengthy process of developing fact-based policy. This includes knowledge from many different expert sources and participation channels. Therefore it is important to investigate the concept of a Policy Memory, a dynamic computer supported archive that both supports deliberative eParticipation and records the policy generation processes over time.

4 RESEARCH METHODOLOGY

The City of Edinburgh Council has agreed provide valuable corpus data with which to exercise the eParticipation platform. This data will focus on a substantive and controversial policy development initiative that has lasted over 2 years to introduce traffic congestion charging to the City. Over this 2 year period there have been numerous consultations which in February 2005 culminated in a referendum. All this data will be made available for analysis and use for in developing and evaluating the eParticipation platform.

Initial work will need to characterise current practice and developing policy engagement scenarios. This will result in a model of the current policy-making and citizen engagement processes, which will be used throughout the research. Firstly, this will enable a model of online policy engagement to be developed which will establish the baseline requirements for the policy memory. Secondly it will allow the development of policy engagement scenarios that update the political memory. In addition to an analysis of the congestion charging data, semi-structured interviews (one-to-one) and workshops (one-to-many) will be held with the reference group.

Detailed development of the platform tools will follow a more conventional software engineering approach with particular attention to socio-technical issues and HCI designs. Paper and rapid prototyping techniques will be employed to resolve these usability issues.

Developing a model for representing argument discourse in policy making (the policy memory structure) involves constructing a meta ontological model and investigating the associated representational issues specific to stakeholder engagement in policy-making. The meta ontology will be based on existing discourse ontologies and extended by considering the type of responses by stakeholders to consultations. It will be validated through workshops with those with experience of manually analysing consultation contributions.

To investigate the extent to which the platform and related ontology can be used to archive and access the ‘policy memory’, the platform will be tested using policy related documents and electronic contributions from the existing policy consultation. The “owners” of this existing policy consultation will be asked to validate the resulting political memory. It will also be piloted with citizens in a controlled environment.

4.1 The programme of work

To achieve the project objectives is organized into the following work packages:

- Characterisation of current practice and development policy engagement scenarios
- Design and development of Argument Maps and Discourse Analysis
- Design and development policy memory infrastructure
- Critical evaluation of the eParticipation platform in operation.

5 CONCLUSION

The proposed research area is both novel and complex. Firstly, it addresses the need to support a disparate group of individuals to reach conclusions as opposed to previous work that has supported communities of like-thinking individuals wishing to reach an agreed goal. Secondly much of the previous work on supporting dialogue and argument consensus has been developed to support real-time, face-to-face meetings as opposed to remote asynchronous deliberation with disparate groups.

It will enhance the state-of-the-art by:

- Providing a visualisation of the substance of an eParticipation exercise in terms of the “issues” and “arguments” which surface during the debate – there have been no previous in-depth studies of how acceptable such argument visualisation approach are for policy-making.
- Enabling scalable discourse capture and analysis with semantic (ontology-based) enrichment – in the past discourse analysis of eParticipation has typically focused on quantitative metrics rather than analysis of argument flows.
- Providing an evolving policy memory model capable of supporting a cascading flow of multi-media contextual evidence – no previous studies have captured such evidence over multiple stakeholder engagements.

5.1 Community benefits

In the first instance the City of Edinburgh Council and the Scottish Parliament, as participants in the research, will gain immediate benefits from an improved understanding of eParticipation and the use of both CSAV and Discourse Analysis tools. They will also be in a position to exploit the eParticipation platform at the end of the project. In the longer term, through dissemination activities, the know-how and the platform will be available to other government agencies at UK national and local levels as well as across Europe.

The overarching non-technical objective is to engage more citizens in informed dialogue on policy formulation, improving the democratic legitimacy of government. Even partial success will progress our knowledge on eParticipation in a number of ways and benefit a number of groups. One can consider there to be three main beneficiaries of this research project. Firstly there are civil society

organisations and citizens as individuals who need to be aware of policy issues that might affect them and therefore need the means by which to contribute to informed debate on the issues. Secondly there are the elected representatives who need to be aware of policy issues that affect their constituents and as councillors, MPs, MEPS and MSPs, they require the means to reach out and consult them. Thirdly there are the professionals – the policymakers and government civic participation experts who require new instruments to effectively engage in evidence-based policy formulation.

Acknowledgement

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