

TEST-SESSION

E-GOVERNMENT KNOWLEDGE MANAGEMENT USING A WIKI DESIGN CHALLENGES AND EARLY RESULTS

Rob Peters¹, Tom van Engers², Bert Mulder³, Lisette van Duivenbooden³

The creation of one administrative Europe is realised primarily by the National eGovernment programmes. National, Regional and Urban government agencies struggle with interoperability, standardisation, collaboration, service integration and ICT as enabling technology. Universities have responded initially to this need by adding legal and public governance topics to earlier MBA programmes and by teaching additional ICT courses to policy makers. Despite their valuable contribution these courses are not sufficiently addressing the real issues behind public e-service engineering. At the eEurope subgroup meeting of the 25 European leaders of National eGovernment⁴, organised by The Information Society research unit on eGovernment and the Dutch Ministry of Internal Affairs and facilitated by the company Zenc, it was acknowledged that this is the wrong approach to eGovernment training in Europe. The agreements made on new services in the area of Tax interoperability, Spatial planning standards, institutes of foreign affairs and best practices in urban management should lead to new vocational training programmes in eGovernment. eEurope cannot be a digitalized version of the existing local procedures. This subgroup gathering sparked the creation of a research programme led by the University of Amsterdam to support eGovernment training in a fundamental and at the same time applied way which was made possible by using Wiki technology. The goal of the infrastructure is to enable managers of public agencies with operational responsibilities to support their employees with relevant and up to date easy accessible knowledge. A Wiki was chosen as platform for this knowledge infrastructure because of its familiarity and the easy in which the content can be extended by large groups of contributors. This paper describes some of the challenges in designing the infrastructure using Wiki-technology as starting point. It describes early findings and the decisions that were made to adapt the architecture to increase flexibility. The research will continue towards field tests with operational agencies responsible for eg. tax enforcement and – auditing, transport, spatial planning, legal planning and social security.

1 User Needs and System Requirements

The TRIAS consortium investigated the real training needs and prepared for one open knowledge infrastructure for higher vocational training in eGovernment in accordance with the ideas of the Copenhagen declaration. Administrative managers will benefit most from an improved eGovernment curriculum, enabling him or her to improve on daily practices of current procedures. Civil servants need time to match responsibility with new ways of working to account for new operational dimensions. Numerous cases⁵ prove that Europe's future administrative coherence is based on smart standardisation in semantic terms and clever design of service delivery, rather than on political centralisation backed up by Information technology.

¹University of Amsterdam, Leibniz center for Law and Zenc

²University of Amsterdam, Leibniz center for Law

³The Hague University

⁴http://europa.eu.int/information_society/activities/egovernment_research/documentation/index_en.htm#beyond_2005

⁵Cross road bank, Belgium, social security and Eucaris, Transport sector

The first goal of the research has been to identify the training needs of change agents, project leaders and process innovators in government agencies who require to rethink eGovernment services. The research has been carried out in 6 European countries. Details of the applied method to obtain user need information can be found at the Trias Telematica website⁶. The conclusion was that a knowledge infrastructure had to facilitate many different needs and different target groups. Another conclusion has been that the more traditional elearning methods would probably be too hierarchical, too rigid and too unfriendly for the user. The problem of hierarchy is well known among developers of any architecture; all classifications run into the problem of knowledge as a networked phenomenon. It turns out to be impossible to map the knowledge required on change management, ICT architectures and administrative issues in a hierarchical structure. The knowledge is more like a cloud of concepts. The problem of usability refers to the requirements of the learning object model or LOM, used in standards for open learning systems. They often fail in practice simply because it turns out to be too tedious to enter all the metadata by hand.

2 Choice of Networked Knowledge Platform

One of the major challenges of the design of any dynamic learning environment is the fact that the knowledge has to be maintained regularly by people who invest time in it. Once the entering of content becomes too problematic, it will be very hard to keep people from dropping out of the editing process. Another requirement is the absolute need for adaptability towards differences in cultures and local situations while at the same time maintaining a *common* body of operational knowledge on eGovernment design principles and eGovernance fundamentals, like transparency.

In consequence, the research team decided to apply Wiki-technology to test the ideas on eGovernment training. First attempts to design the right knowledge infrastructure using a Wiki have been investigated by Bert Mulder at the eGovernment research unit at the University of The Hague. The domain area was healthcare and the knowledge sharing problem was the fact that professionals out of the Medical culture and those of ICT did not speak the same language and could not help each other in building workable supportive systems.

Earlier research by the authors showed increased knowledge productivity for learning systems like collaborative software (BSCW) if the designers have intense contact with the users [1],[2]. It was for this reason that a number of practitioners in eGovernment operational and eGovernment process design were included in the design team. The design of the eGovernment wiki had to fit with the mental models and concepts of practitioners while they were trying to cope with redesign issues of public services. Another target group of the infrastructure consisted of teacher-student couples, where the teacher extracts the assignments for the students, like case, case analyses and eGovernment principle on which the solution was based, using the wiki. This combination of user requirements created a design challenge towards practical usage and educational usage within the same environment.

The main reason for choosing a Wiki is the fact that Wikipedia has proven the added value of a simple system with a high capability to capture networked knowledge and it had shown usability in the wikipedia language communities. Wikipedia is based on the concept of the “creative commons”, which is not only a license scheme, but also a concept to describe the joint efforts of a community to share knowledge resources in an open way. “creative commons” was first applied in the music and art industry, but it is now used to describe initiatives like Google Earth (or rather the Keyhole community) Wikipedia, YouTube, Blogs and even games.

⁶www.triastelematica.org

These initiatives are bottom up, using a common infrastructure and are managed by several different governance principles operating simultaneously. One of the governing principles set by Wikipedia-founder Jimbo Wales, is that all people can edit. Jimbo Wales himself admits⁷ that in practice a core group of workers contribute to each wikipedia language domain and that conflicts require coaching. He states that his authoritarian judgement is applied with great care since the more it is used, the less influence it has. For the eGovernment wiki it was decided to start with a limited team of specialist editors, however. This implies passwords and selection mechanisms. The control of dynamic knowledge systems where contributions are made in distributed ways and where top down control is sensitive is recognised as a fast emerging research area by the authors. Another reason to use the Wiki technology for the European eGovernment knowledge base is the fact that a Wiki can easily refer to the Wikipedia. The ambition of the knowledge infrastructure is to cover a certain knowledge domain to a reasonable level of depth. Beyond this domain the wiki technology allows for easy knowledge acquisition using the “general” Wikipedia. The challenge now is to restrict editors to the domain chosen.

2.1 Technological Choices

There are a large number of dedicated Wiki’s used for learning. We decided to use Mediawiki for the following reasons:

- fast development of functionality given the fact that Wikipedia was using Mediawiki;
- continuity and no or little risk of “forking” between product development communities;
- availability of multimedia content features;
- availability of Ajax which supports easier shifting in the navigation lay-out;
- Import and export of the semantic web standard XML-RDF;

Wiki’s in general and therefore also Mediawiki does have a number of limitations. It is not clock-based as for example the “Nestor” Authorware, meaning that running animation is out of the question. It has little administrative control compared to heavy duty Content management systems. It is not designed for teaching and assignments. It is rather simple in its use of graphics.

Wiki’s tend to be organically networked, rather than structures. The main technical challenge has been to adapt this lack of structuring features to the requirements of teaching methods, like cases and assignments. For this purpose the team applied features as “templates” and “categories” and ‘trees’ in very creative ways.

Wiki’s are regarded as “Web 2.0 technology” [4] and Wiki’s used for learning are subsequently named “eLearning 2.0”. The message is that still a lot of research is required to understand the mechanics of many people “mashing” infrastructures and small pieces of content together into a workable platforms. Tom Kare describes as characteristics to such an environment:

- Small pieces of content
- Delivered close to time and place of work
- Likely delivered in pieces over time as part of a program

There is a large gap between the culture of government and even eGovenment and the culture of fast and short knowledge exchange that is common in 2.0 technologies, however.

⁷presentation Holland Open Software conference, Amsterdam 2005

3 Additional Challenges

3.1 The Challenge of Value Free Knowledge for eGovernment in Europe.

Following the governance system of the Wikipedia it was decided to use intersubjectivity as the counter balancing power against personal and potentially biased knowledge. Given the fact that there is no value-free knowledge, and certainly not in European government views, it was made obligatory to link any viewpoint to a set of “eGovernment principles”. These core principles would be defined first by a number of established professors with a track-record in science and in practice. The next wave of contributions would then follow the example of quality standards set by those early experts.

A particular challenge in the case of this project is how to cope with the many differences between the local situations. These differences are manifold. Despite these differences in legal culture, technology, organisational culture, political and administrative procedures etc., we hope to be able to develop a common understanding of the key elements of eGovernment and provide a basis for strengthening cooperation and reuse of best practices within Europe. One way of bridging these differences is in the cooperation needed for establish an European eGovernment training programme, which requires the developers of training material involved to understand these differences and formulate the common grounds of eGovernment. To enable take-up, local examples and best practices will be needed to clarify the general concepts of eGovernment. However with the development of a common eGovernment practice in Europe the number of generic best practices will grow over time. Suggestions were made to allow for different principles depending on different political backgrounds and the future will prove if this turns out to be a supportive notion.

3.2 Content Core Architecture in a Knowledge Network

The core challenge of a wiki based platform for knowledge production is the design of the content core. This is a concept used to describe the nucleus of the networked system which many future editors will be using as starting point for the contribution of content. The general Wikipedia is a network without a nucleus. Within Wikipedia everything can potentially be linked to everything else. Creating a nucleus is almost against the common belief of the Wikipedia community that its content should grow organically. For the purpose of this domain specific Wiki like this eGovernment Wiki, it turned out to be a necessary design feature to have a specific core. One of the main reasons is that students need guidance and should be able to follow certain controllable paths.

If the nucleus of a networked knowledge “cloud” is chosen in the wrong way, the development will soon run into problems of a different classification order; 1) it will be hard to see a navigational path for the user and 2) a networked hierarchy in a domain is still a hierarchy; the wrong choice will create “competing” nuclei, thereby confusing any attempt of structure. The difference between no specific domain and having a domain by definition implies having the empirical or theoretical “roots” of that domain described.

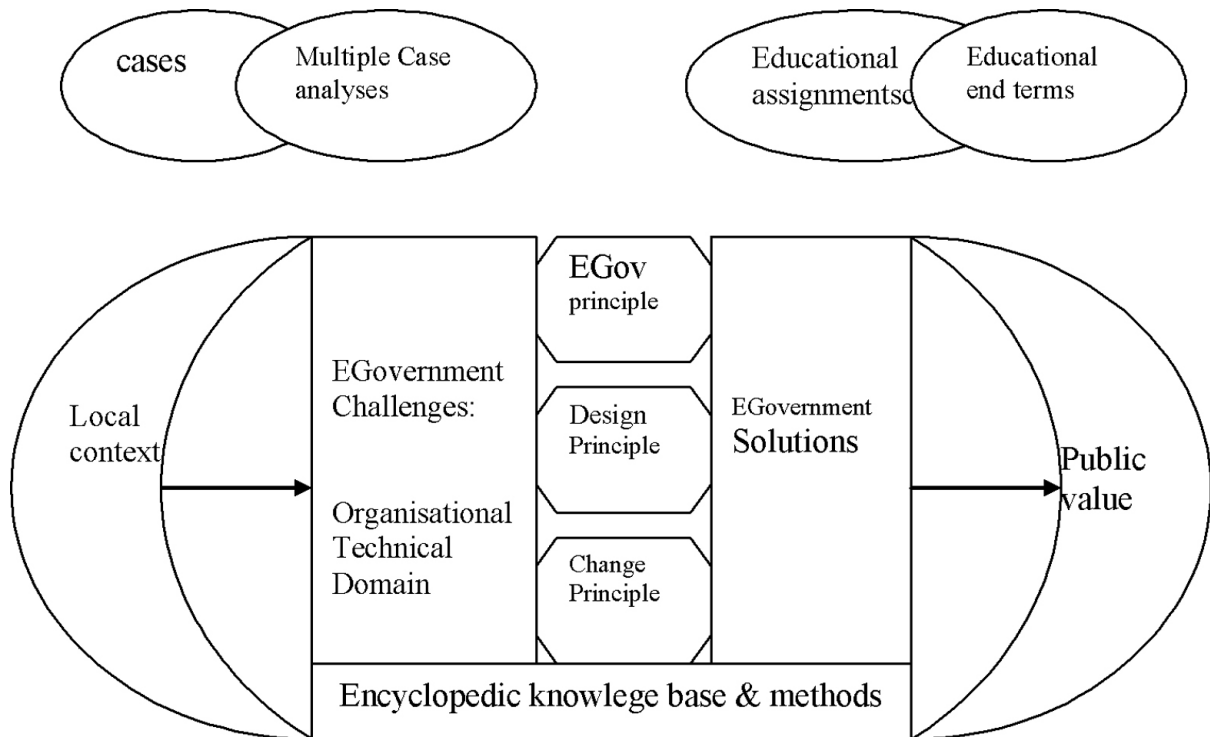


Figure 1: core content structure Trias eGovernment Wiki

3.3 The Challenge of Boundaries; Where to Stop?

The design team has been pre-occupied with one other central notion to the design of this infrastructure; the content had to be relevant for eGovernment, not to government in general. This meant that future contributors had to be “seduced” to stick to eGovernment as the domain that covers those problems arising when ICT technologies are being applied to solve administrative issues between governments and citizens and between governments and governments. For this reason it was decided to use the template feature of Wiki. The template feature allows for a certain control of the editor, since he or she is “helped” with a template of specific headlines towards a certain content format. The team came up with a limited set of templates for “eGovernment principles”, eGovernment Challenges, eGovernment Solutions, eGovernment cases, eGovernment encyclopaedic pages, eGovernment assignments and eGovernment case analyses⁸. This will not solve all problems of growth, but it will at least offer the administration a way to govern the content.

4 Conclusions and Further Research

The most important research conclusion so far is that this specific Wiki-technology allows for the functionality required by the trainers of eGovernment change agents. The Wiki especially allows for common body of knowledge amidst a variety of viewpoints and application areas. The platform easily allows for future specifications given cultural differences and local circumstances. A wiki can “grow” in unpredictable terms allowing for uncertainties once the initial content architecture is set right. There are some problems with adaptations of templates for editors and there are navigational problems with a system that is not designed for pre-defined navigation.

⁸see the demonstrator of the research at wiki.triastelematica.org ,login =trias,password=wiki12

Further research should focus on the controllability of the infrastructures initiated by creative commons initiatives like wiki's and Google Earth for specific purposes. Further research of this specific eGovernment programme will focus on testing with managers and trainers of operational agencies in the summer of 2007. A wiki, as part of the Web 2.0 development, is uncommon to the management culture of government. This might imply some time lack in uptake.

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