



Web 2.0 in Government: Why and How?

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Preface

At the European Council held in Lisbon in March 2000, EU15 Heads of Government set a goal for Europe to *become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*. In 2005, the renewed Lisbon goals emphasized working for growth and jobs, including facilitating innovation through the take up of ICT and investing more in human capital.¹

Information and Communication Technologies, and related policies, play a key role in achieving the goals of the Lisbon strategy. In 2005, the new strategic framework for Information Society policy, i2010,² identified three policy priorities: the completion of a single European information space; strengthening innovation and investment in ICT research; achieving an inclusive European Information Society.

All three priorities, and especially the last one, consider the public sector to be a key ICT application field, because of the impact that ICT-enabled public services can have on economic growth, inclusion, and quality of life. Within this framework, policy actions have been taken in the eGovernment field, the eGovernment Action Plan,³ the 7th Framework Programme for Research and Development⁴ and the ICT policy support programme of the Competitiveness and Innovation Programme (CIP).⁵

The IPTS,⁶ as part of its mission to monitor emerging technologies and their socio-economic impact, has been working on a specific research line on the emerging trends of web 2.0 since 2005. The results of this monitoring exercise have been presented at high level conferences and experts group, validated in both the scientific and policy community, and published in peer-reviewed journals (Pascu, Osimo et al. 2007; Pascu, Osimo et al. 2008).

In 2007, this research has continued in a dedicated exploratory research project, EROSC. Furthermore, at the request of DG INFSO (European Commission), additional research was carried out by IPTS specifically on the implications of web 2.0 for public services such as eGovernment, eHealth and eLearning. These are all fields where IPTS has a long tradition of research in support of European policies.⁷

¹ http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm

² "i2010 – A European Information Society for growth and employment" COM(2005) 229

³ "I2010 eGovernment Action plan" COM(2006) 173

⁴ See <http://cordis.europa.eu/fp7/ict/> and Official Journal L 412 of 30/12/2006

⁵ Official Journal L 310/15 of 9/11/2006

⁶ Institute for Prospective Technological Studies, one of the seven research institutes that make up the Joint Research Centre of the European Commission

⁷ Further information on IPTS research in these fields is available at <http://is.jrc.es/pages/EAP/eS.html>

The results of the research on eGovernment are presented in this report, which combines a scientific approach with a practical purpose, in order to support the scientific debate, the policy decisions, and the actual implementation of web 2.0 projects.

Chapter 1 presents the background of eGovernment and web 2.0, which makes up the rationale for this research. Chapter 2 presents the research questions and the methodology. Chapter 3 proposes an operational definition of web 2.0 and of the different role of proactive users. Chapter 4 illustrates the results of the research, by describing the implications of web 2.0 in a set of eGovernment domains, and by presenting 6 cases. Chapter 5 provides a cross-analysis of the detailed results, in order to answer the main research questions. Chapter 6 draws the main conclusions from this analysis.

Table of contents

Preface	3
Executive summary	7
1. Background and rationale.....	11
2. Research questions and methodology	15
3. A working definition of web 2.0	17
3.1. Different roles of proactive users	18
4. Research findings	21
4.1. The domains of usage of web 2.0 in the government context.....	21
4.2. Web 2.0 for regulation	23
4.3. Web 2.0 for cross-agency cooperation.....	27
4.4. Web 2.0 for knowledge management.....	28
4.5. Web 2.0 for political participation and transparency	30
4.6. Web 2.0 for service provision	33
4.7. Web 2.0 for law enforcement.....	36
4.8. Web 2.0 for other relevant domains of government	38
5. A cross-analysis: answering the research questions.....	41
6. Conclusions: why and how web 2.0 in government?.....	49
Acknowledgements	51
References	53

List of Tables and Figures

Table 1: The eruptive growth of web 2.0 applications (source: Technorati; Wikipedia, Myspace, Youtube, Nielsen-Netratings)	13
Table 2: Full list of operational research questions and related methods	16
Table 3: List of web 2.0 initiatives, and relative domains of relevance for government	22
Table 4: Domains of impact of web 2.0 on government	23
Figure 1: % of services fully available online and % of citizens submitting forms or payments through the Internet, EU27, 2002/2007 (source: Eurostat)	12
Figure 2: Operational description of web 2.0 (adapted from O' Reilly and Forrester research)	17
Figure 3: The different role of users in web 2.0 applications. Source: IPTS re-elaboration of (Deere 2006; Rainie 2007; Young 2007)	19
Figure 4: Screenshot of Peer-to-Patent.....	25
Figure 5: Screenshot of the KM system in Allen and Overy. (Source: http://www.slideshare.net/leebryant/allen-overy-social-software-project-case-study).....	29
Figure 6: Screenshot of e-petitions.....	32
Figure 7: Screenshot of PatientOpinion.com	35
Figure 8: Screenshot of mybikelane.com	37

Executive summary

ICT has long been recognized as a key driver of government modernization. Accordingly, eGovernment has been on the policy agenda for several years, and at EU level it has been a policy priority since the eEurope Action Plan in 1999, up to the present eGovernment Action Plan.

Since 2003, a new wave of web-based applications, which now go under the name of web 2.0, have been launched with very little investment and have encountered dramatic success in terms of take-up. These applications rely on the concept of the user as a producer of: content (blog, wiki, Flickr), taste/emotion (Last.fm, de.li.cious), contacts (MySpace), and reputation/feedback (eBay, TripAdvisor).

Recent research on the impact of these technologies emphasizes the disruptive impact they have already had on the social life of people, as well as on industries such as advertising and media.

In order to support EU policy development for eGovernment, this report by IPTS⁸ aims to assess whether these trends are relevant and have implications for government-related activities.

In particular, the research addresses the following **general questions**:

- qA. Are web 2.0 applications relevant for the government context?
- qB. If they are, in what way is web 2.0 likely to have an impact on government?
- qC. How significant could this impact be?
- qD. How are web 2.0 applications implemented in the government context?

To answer these questions, the research uses a combination of a web survey of existing initiatives, desk research on the impact in the private sector, and in depth-case studies.

With regard to the scope, web 2.0 in this report is operationally defined as a combination of technologies (e.g. Ajax), applications (e.g. wiki) and values (e.g. user as a producer). The report does not only cover implementation inside and by government agencies, but also by civil society, citizens and single civil servants.

qA. Are web 2.0 applications relevant for the government context?

The long list of web 2.0 applications in the public and the private sector, collected through the web survey, shows that web 2.0 is indeed relevant and has already been applied in the government context.

The most visible impact is certainly in the field of political participation. However, the impact is visible in many other different domains, in both the front and back office:

Back office domains	Front office domains
Regulation	Service provision
Cross-agency collaboration	Political participation and transparency
Knowledge management	Law enforcement

⁸ Institute for Prospective Technological Studies, one of the seven research institutes that make up the Joint Research Centre of the European Commission

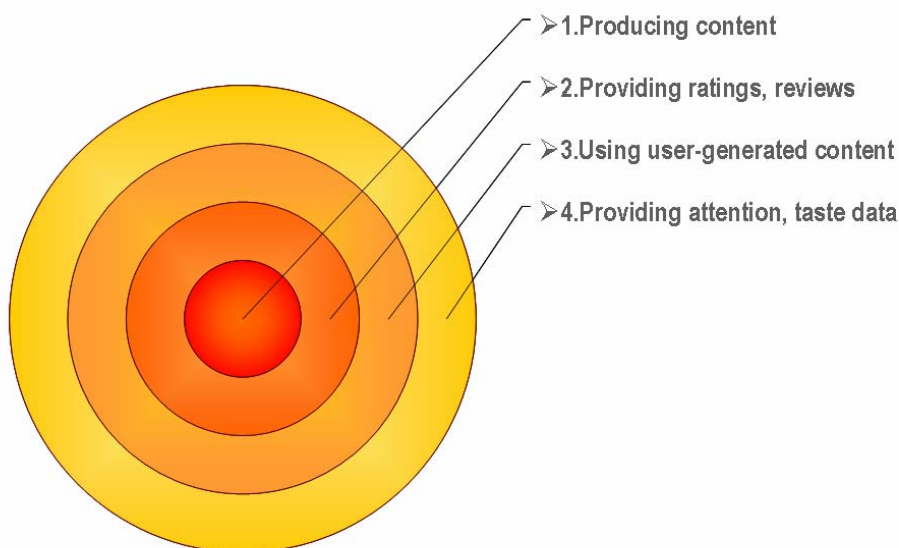
For each of these domains, the report illustrates the nature of the impact of web 2.0, and it analyzes case studies of web 2.0 application adoption in government-related activities.

The **case-studies** analyzed are the following:

- Regulation: Peer-to-Patent is a web-based platform where patent applications are published and pre-assessed by self-appointed experts on a purely voluntary basis. Evidence is then submitted to the US Patent Office for evaluation and decision.
- Cross-agency collaboration: Intellipedia is a wiki platform managed by the CIA, which enables the direct collaboration between the analysts of the 14 US Intelligence agencies.
- Knowledge management: an international law firm has implemented an internal knowledge management platform which enables informal knowledge sharing through blogs, group newfeeds, group bookmarking. While this case is from the private sector, it could easily be transferred to the public sector.
- Service provision: PatientOpinion is a website which was launched by a General Practitioner in order to improve the National Health Service. It collects and publishes patients' feedback and ratings on the services they have received at hospitals.
- Political participation: Petitions.gov.uk is an online service where citizens can submit petitions directly to the Prime Minister, and view and sign petitions submitted by other users.
- Law enforcement: Mybikelane is a website where cyclists post photos of cars illegally parked, with a view to raising awareness about the problem.

qB. In what way is web 2.0 likely to have an impact on government?

The nature of this impact is characterised mainly by a **more active user role**. Crucially, the term "users" is intended to cover both civil servants and citizens. These user roles can be diverse, as shown in the following figure:



In the figure, the central circle represents the minority of users who take an active part in designing and delivering the service. In the cases analyzed for the government context, these are, for example, analysts contributing to wiki-based intelligence reports in Intellipedia, or citizens creating a new petition online.

The second circle represents a larger number of users who support the service by providing comments and reviews, such as feedback on treatment they have received at hospitals in PatientOpinion or the rating of evidence submitted to Peer-to-Patent. These people play a fundamental role in ensuring the quality and relevance of content submitted by other users.

The third circle represents the people who use these web 2.0 applications, and benefit from the services provided by other users. For instance, this refers to people reading other patients' comments on PatientOpinion.

The fourth circle represents all Internet users, who, without any voluntary engagement, provide automatic attention and taste data simply by using an online service. In the private sector, a classic example is the "most read articles" page in online newspapers.

As levels of engagement decrease from the centre out, so the number of users increases.

The specific **benefits** of users taking a proactive role are identified as making government more:

- Simple and user-oriented: for example, PatientOpinion helps government understand user needs and the public feedback and rating system stimulates user-orientation.
- Transparent and accountable: applications such as theyworkforyou.com and planningalerts.com enable citizen awareness and monitoring of government activities.
- Participative and inclusive: eParticipation solutions such as ePetitions stimulate debate and participation in public decision-making.
- Joined-up and networked: Intellipedia and the knowledge management platform of Allen and Overy enable better collaboration across and within organisations, and reduce the "silo effect" and duplication of efforts.

Risks are also analysed - for example: low participation, participation restricted to an elite, low quality of contributions and additional "noise", loss of control due to excessive transparency, destructive behaviour by users, manipulation of content by interested parties and privacy infringements.

qC. How significant could this impact be?

In terms of the **significance** of this impact, no fully-fledged impact analysis has been possible due to the fact that these initiatives are still in the early stages. However, some evidence is available to help frame the discussion:

- Web 2.0 applications are already being used in government not only for soft issues, such as public relations and public service announcements, but also for core internal tasks such as intelligence services; reviewing patents; and enabling public participation in decision making.
- Significant take-up and impact is visible only in some cases, mostly in the back-office activities and in political participation. Intellipedia is used by the majority of analysts and led to key findings in Iraq and Nigeria; Peer-To-Patent has provided the key evidence used by the US Patent Office to assess and reject 5 patent applications already; e-Petitions has involved million of citizens and has contributed to blocking the bill proposal on road

tax charge. Take-up is particularly important as these applications rely on users input as a mechanism for quality insurance, and low take-up could make the initiatives more vulnerable to low-quality contributions, destructive behaviour and manipulation by vested interests.

- The impact of web 2.0 is converging with other long-term societal trends such as demography, empowered customers, the rise of creative knowledge workers, the importance of informal learning, user-driven innovation, the move from hierarchy to network-based forms of organisations, and the consumerization of IT.

qD. How are web 2.0 applications implemented in the government context?

In terms of how web 2.0 applications are implemented, the most **favourable context** is characterised by a high-trust, collaborative and knowledge-intensive environment. For these reasons, implementation in small-sized back-office activities appears easier to start with. Strong strategic motivation, either top-down or bottom-up, is of course important. **Transparency** and the **availability of public data** are also important prerequisites for these initiatives to flourish. However, all these prerequisites are also outputs stimulated by web 2.0-based collaboration.

In terms of **ownership**, the government plays different roles, from active promoter to passive subject. There are several examples of initiatives launched without any form of government authorisation or even without government being aware of them. In terms of implementation, the usability of applications is key, and this is achieved through continuous improvement following user feedback (**perpetual beta**).

Appropriate **governance mechanisms** have to be in place in order to avoid the risks listed above. **User participation** cannot simply be taken for granted but has to be proactively cultivated. To overcome the risk of offensive, illegal, destructive or low quality contributions **quality insurance, authentication and moderation** policies have been developed on a case-by-case basis and are illustrated in the case studies and in the cross-analysis. Users also play an important role in this governance model, for example by supporting quality insurance and moderation.

The following **common mistakes** have also been identified: adopting only the technology, but not the values; not putting in place the appropriate governance mechanisms; focussing on developing a proprietary web 2.0 application, while most collaboration/conversation happens outside government websites and/or across applications.

In **conclusion**, web 2.0 presents significant opportunities as well as risks for government, in several areas. Civil Society Organizations, individual citizens and civil servants are already using these applications in relation with government activities, outside the reach and control of institutions. Thus, engaging with web 2.0, and learning how to cope with this loss of control, appears not only to open avenues for a more effective administration, but also constitutes a necessary element of a risk management strategy.

1. Background and rationale

Over at least the last twenty years, the role played by governments has moved further and further away from direct service provision towards regulation and governance of services provided by a multiplicity of private and non-profit entities. Governments have put reform and innovation of the public sector into their programmes, striving to deliver more efficient and effective public services, in order to meet the increasing expectations of citizens with shrinking public budgets. The common features of the reform agenda are a more citizen-oriented and open government, better public sector performance, new forms of accountability and control, the use of market mechanisms, and more decentralised and meritocratic management of employees (OECD 2005).

ICT has long been recognized as a key strategic tool to enable these reforms. Since the late 90s, it has been central in driving the policies for reforming government (Demmke 2006). There has been substantial human and financial investment⁹ in European countries with the objective "to deliver better quality public services, reduce waiting times and improve cost effectiveness, raise productivity, and improve transparency and accountability" (EC 2003).

Substantial results have been certainly achieved in specific fields: for example, the most important services are available on the Internet to all citizens, the majority of income tax declarations are made electronically, and huge savings have been achieved through eProcurement. However, achieving the expectations and goals of the early visions has been more difficult than expected. While eGovernment included by definition a reorganisation of public administration, this change has often proved very difficult to implement (Dunleavy, Margetts et al. 2006).

Innovating the front-office also proved challenging. Citizens have been slow to adopt public services made available online through significant investment and usage rates are still low (EC 2003). As Figure 1 shows, in 2007, just above 10% of European citizens used public services through the Internet at transaction level,¹⁰ despite the fact that the number of services available online has grown considerably over the last few years and now includes the majority of basic public services (Capgemini 2007).

⁹ 11bn Euros were invested on eGovernment projects in EU countries in 2004 only (source: ECEG project)

¹⁰ Transaction is the most advanced level of interactivity of online services, enabling citizens to submit forms online and carry out the payment.

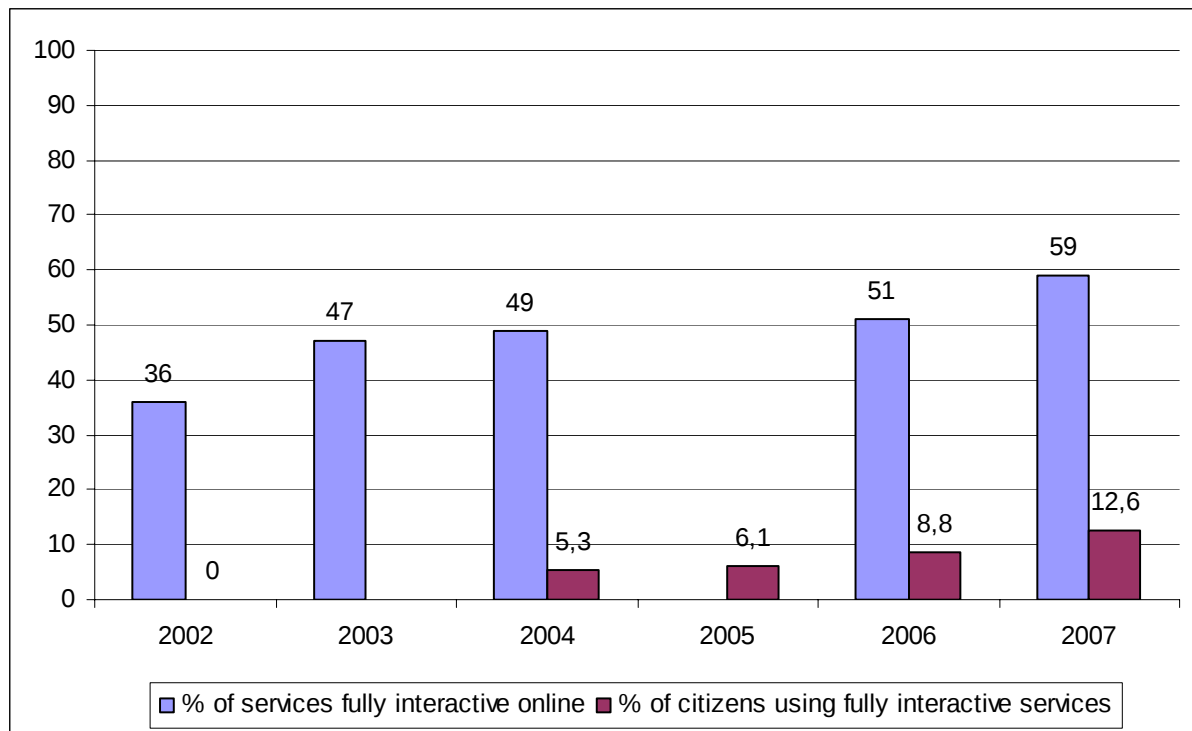


Figure 1: % of services fully available online and % of citizens submitting forms or payments through the Internet, EU27, 2002/2007 (source: Eurostat)

Against the slow growth of eGovernment usage from 2003 to today, it is somewhat ironic that, precisely in 2003, a new wave of web-based applications, which now go under the name of web 2.0, were launched with very little investment and encountered dramatic success in terms of take-up. These applications relied on the concept of the user as a producer: of content (blog, wiki, Flickr), of taste/emotion (Last.fm, de.li.cious), of goods (eBay), of contacts (MySpace), of relevance (Google pagerank), of reputation/feedback (eBay, TripAdvisor), of storage/server capacity (P2P), of connectivity (wifi sharing, mesh networks) or of intelligence (business web 2.0). The number of users of blogs, wikis, social networking websites has grown exponentially over the last 3 years (Pascu 2008)

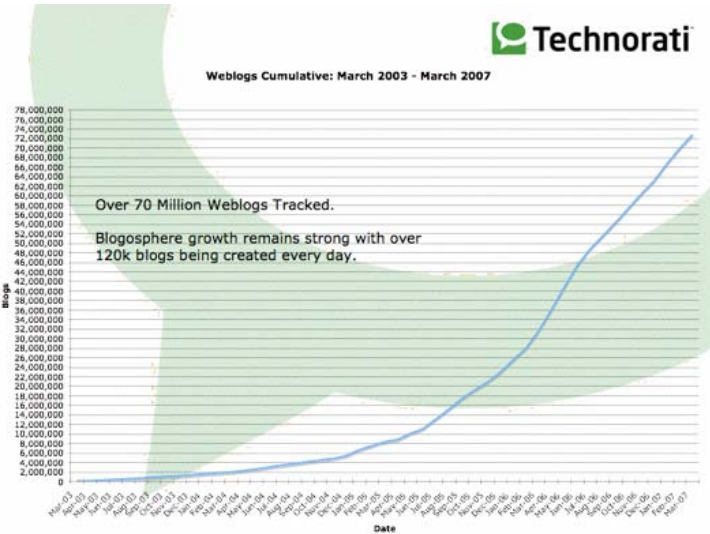
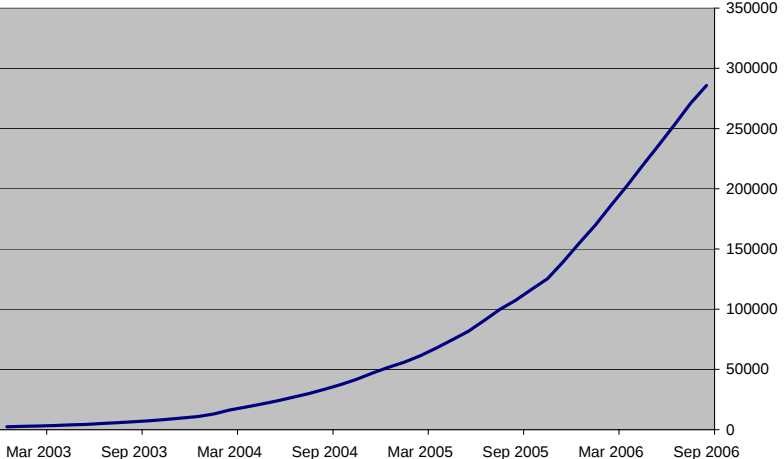
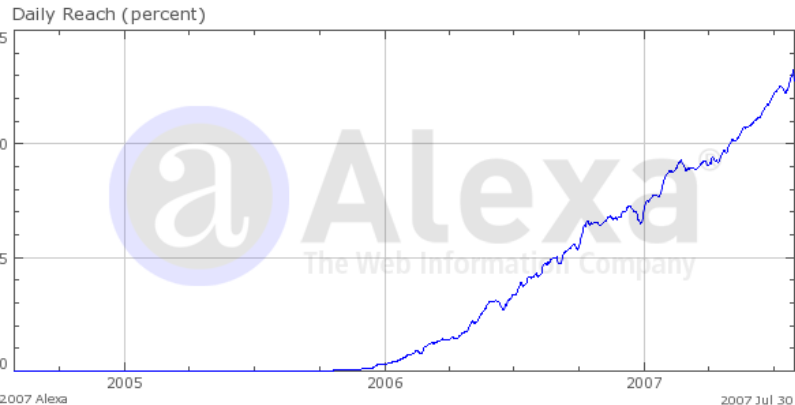
Blogs	70M blogs (March 2007), doubling every 6 months since 2003	
Wiki	Wikipedia 2M articles in the English section, (July 2007), 300.000 authors since 2003	
Social networking	Myspace 100M users, Youtube 100M video views/day, 45% of web users visit those sites (2007)	

Table 1: The eruptive growth of web 2.0 applications (source: Technorati; Wikipedia, Myspace, Youtube, Nielsen-Netratings)

There is a paradox between the slow take-up of large-scale online public services and the rapid take-up of low-budget user-driven applications. And this paradox is the starting point of this research. It suggests the need to explore **whether the impact of web 2.0 extends to the government context, or it is limited to the private sphere, to personal relations and entertainment.**

2. Research questions and methodology

The general question on the significance of web 2.0 for eGovernment can be articulated as follows:

- qE. Are web 2.0 applications relevant for the government context?
- qF. If they are, in what way is web 2.0 likely to have an impact on government?
- qG. How significant could this impact be?
- qH. How are web 2.0 applications implemented in the government context?

The following methods have been used to answer the questions:

- m1. a web survey of existing innovative web 2.0 initiatives in government-related activities, which have been tagged according to their domain of impact;
- m2. A desk-based review of existing web 2.0 applications in the private sector, in order to understand applications that could also have potential for government;
- m3. A set of case studies of existing experiences, based on desk research and interviews with the project managers.

In the following table, we present how the research questions will be operationalized in a larger set of questions, and how they will be answered by each method.

Main research questions	Operational questions	Method
qA. Is web 2.0 relevant for the government domain?		
	- Are web 2.0 applications already being used in the government context?	m1 web survey of existing innovative web 2.0 initiatives in government-related activities
	- are there applications in the private sector which can be transferred in the government context?	m1 web survey of existing innovative web 2.0 initiatives in government-related activities m2 desk-based review of existing web 2.0 applications in private sector
qB. In what way is web 2.0 likely to have an impact on government?		
	- what government activities are affected, and in what way?	m1 web survey of existing innovative web 2.0 initiatives in government-related activities m2 desk-based review of existing web 2.0 applications in the private sector.
	- What is the role of the users?	m3 Case studies

Main research questions	Operational questions	Method
	- What are the opportunities and the risks for governments?	m3 Case studies
qC. How significant could this impact be?		
	- is it used only for public relations activities, or also for core/strategic tasks?	m1 web survey of existing innovative web 2.0 initiatives in government-related activities
	- how does it help to meet the strategic goals of government?	m1 Web survey of existing innovative web 2.0 initiatives in government-related activities
	- are the applications encountering significant take-up?	m3 Case studies
	- have these applications had visible impact?	m3 Case studies
qD. How are web 2.0 applications implemented in government-related activities?		
	- What is the context and what are the prerequisites of the existing initiatives?	m3 Case study
	- who has ownership of these initiative?	m3 Case study
	- how is user participation stimulated?	m3 Case study
	- how is the quality of user contributions ensured?	m3 Case study
	- what are the mistakes to avoid?	m3 Case study

Table 2: Full list of operational research questions and related methods

3. A working definition of web 2.0

There are many definitions of web 2.0 and denominations for it (social software, social computing, participative web, user-generated content), each one capturing some dimensions and missing others (O' Reilly 2005).

In this paper, we refer to those applications which exploit the Internet's connectivity dimension to support the networking of relevant people and content. As Pang (2005) puts it, "the brilliance of social-software applications like Flickr, Delicious, and Technorati is that they recognize that computers are really good at doing certain things, like working with gigantic quantities of data, and really bad at, for example, understanding the different meanings of certain words, like 'depression.' They devote computing resources in ways that basically enhance communication, collaboration, and thinking rather than trying to substitute for them". Furthermore, the user is an integral part and co-producer of each element of the service delivered.

Therefore, we propose an operational description of what is included in the definition of web 2.0, instrumental to the purpose of this paper.

Web 2.0 is composed of a set of technologies, of applications, and "values" (see Figure 2).

Values	User as producer, Collective intelligence, Perpetual beta, Extreme ease of use
Applications	Blog, Wiki, Podcast, RSS feeds, Tagging, Social networks, Search engine, MPOGames
Technologies	Ajax, XML, Open API, Microformats, Flash/Flex,

Figure 2: Operational description of web 2.0 (adapted from O' Reilly and Forrester research)

From the technological point of view, the building blocks of web 2.0 are innovations introduced over recent years to increase the usability, integration and re-use of web applications. We refer to Ajax, XML, Open API, Microformats, Flash/Flex.

Largely based on these building blocks, new applications have been developed that allow for easy publishing, information sharing, and collaboration, e.g. Blog, Wiki (e.g. Wikipedia), Podcast, RSS feeds, Tagging (e.g. Flickr, del.icio.us), Social networks (e.g. Facebook, Myspace), Search engine, Massive Multyplayer Online Games (e.g. World of Warcraft, Second Life). These are the core applications which are commonly identified as web 2.0.

However, what really distinguishes these applications is that they share the same "values". They build on the knowledge and skills of the user, and they can even enable the user to build

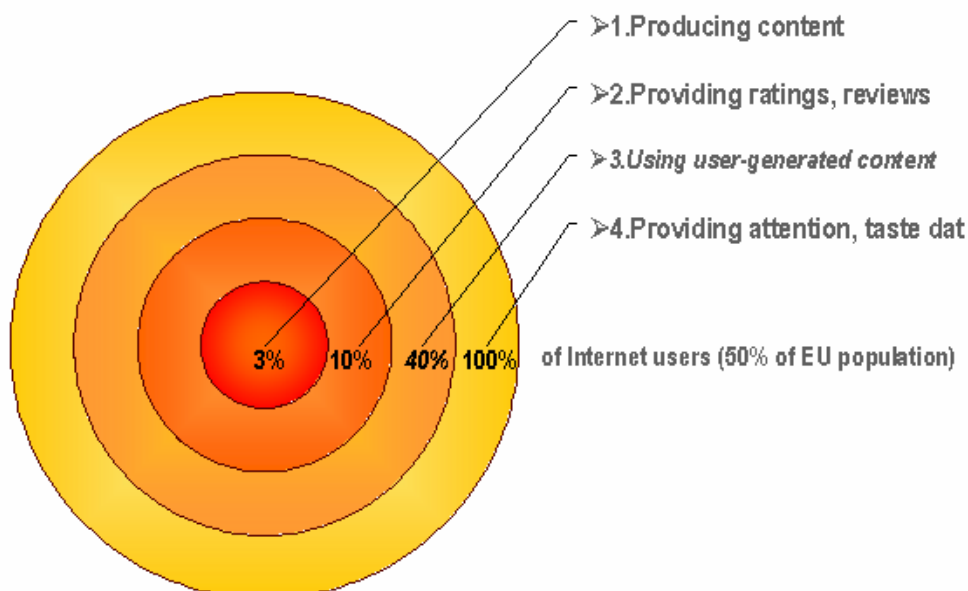
a service (user as producer), as described in Figure 3, so that applications "get better the more people use it"(O' Reilly 2005). User contributions are made more meaningful and rich through collaboration and networking between users, so that the total is more than the sum of the individual contributions (collective intelligence). The quality control system and filtering relies strongly on peer review by other users. On the operational level of IT development, applications are first released in beta format in order to include early user feedback, and often are continuously improved (perpetual beta), rather than following a linear development process from "definition of functional specification" to "final release". User feedback is necessary to ensure maximum usability of the applications. Usability is important because these applications rely on user contributions. Therefore take-up is not only an index of success, but often a condition for the continued existence of the service delivered. Rather than providing a full definition of these values, they will be illustrated by the cases in Chapter 4.

For this research, we take into account web 2.0 initiatives which adopt the technologies, the applications and the values listed above.

3.1. *Different roles of proactive users*

New technological trends are difficult to capture by existing statistics. Few official statistics exist, and data provided by private sources are not comparable and of diverse quality. The different sources are, however, consistent in showing the exponential rise of web 2.0 application take-up over the last 3 years, albeit from a very small basis. In this chapter, we will try to shed some light on the real significance of these trends, by describing how many people, as a proportion of total internet users, are using web 2.0, and for what purpose.

By integrating existing data (Deere 2006; Rainie 2007; Young 2007),¹¹ we can identify four types of web 2.0 usage, with different degrees of user involvement, and find indications of the percentage of internet users who are involved.



¹¹ Eurostat data 2006 for overall Internet usage, Forrester (2007 – data from 2007), PEW (2007 – data from 2007) and IPSOS-MORI (2006 – data from 2006) for usage of web 2.0

Figure 3: The different role of users in web 2.0 applications. Source: IPTS re-elaboration of (Deere 2006; Rainie 2007; Young 2007)

The core users of web 2.0 are those generating fully-fledged content, such as blogs, wikipedia articles, videos on YouTube. These represent a small minority of Internet users, generally younger and more IT-savvy. For European countries, (Deere 2006) estimates that 3% of Internet users write blogs.¹²

A second circle represents those people who provide feedback, comments, and reviews of existing content. This includes, for example, people who rate products, write reviews for Amazon, tag bookmarks on del.icio.us, or even click on the "love or ban" buttons on online radios such as LastFM. We estimate these to make up around 10% of the Internet population in Europe.¹³

The third circle is composed of Internet users who access, read and watch the content produced by the two inner circles. Although not active, these users benefit from new web 2.0 applications and values. For example, customers read others' reviews before booking a hotel or buying a book. We estimate around 40% of Internet users fit into this category.¹⁴

The fourth circle regroups all Internet users who, though they do not deliberately use web 2.0 applications, provide input and intelligence that is transformed by web 2.0 applications into services for other users. The act of buying a book on Amazon is exploited by the website functionality "Customers who bought this book also bought". Reading a newspaper article on elpais.com provides input into the "most read" section of the website. Searching for a term on the website of the State of Delaware (US) becomes a tag which is displayed on the homepage for other users to look at.

Of course, the data in Figure 3 are only estimates based on available data. However, the most important point here is not about the exact percentage of people, but that web 2.0 is used not only by the few people posting blog entries and videos on Youtube.com, but by a large share of the population – for some applications, all Internet users.

This identification of four levels of participation is important because it sheds light on the different potential services that can be built out of user engagement. It is no longer possible to distinguish sharply between passive and active users, because web 2.0 applications are even able to exploit the activity and the knowledge of passive users in order to build better services for all users.

¹² For the U.S, Rainie (2007) and Young (2007) propose a value of 13%.

¹³ Deere (2006) states that 7-11% of Internet users post reviews about product/services, and Young (2007) proposes a figure of 19% for the category of "critics", and 15% for "collectors" in the U.S.

¹⁴ based on data by Deere (2006) (in Europe, 17% read blogs, 40% read other customer's reviews), Rainie (2007) (36% of Internet users in U.S. use wikipedia) and Young (2007) (33% in U.S. are spectators).

4. Research findings

This chapter illustrates the main results of the study. First, it presents an overview of the domains where web 2.0 applications can be used. It then outlines how each of these domains could undergo change through the adoption of web 2.0 applications. Every domain of relevance is described in a self-contained chapter, in order to help readers who may be interested only in one, or a few domains. Therefore, some repetitions can be found between chapters.

For six of these domains, case studies are presented. These provide a closer look at how this happens in reality, analysing the context, implementation, governance, usage and benefit of these cases. The case studies should not be considered necessarily as good practice, but as examples that best illustrate the dynamics of web 2.0.

4.1. The domains of usage of web 2.0 in the government context

In order to answer the first two research questions, a web survey and a review of existing initiatives in the public and private sector was carried out.

This data collection showed that there are many initiatives that have adopted web 2.0 applications in the government context, and that there are relevant applications in the private sector, which could be transferred to the government context.

Every initiative or type of initiative has been "tagged" with keywords indicating the domain of government activity where it can be used. In the case of an initiative in the private sector, the "tag" indicates the domain of government activity where it could be transferred.

Name	Domains of usage in government	link
Aboliamoli.eu	Regulation, law enforcement	www.aboliamoli.eu
Alaska State agencies database,	Cross-agency collaboration	http://wikis.ala.org/godort/index.php/alaska
CAISI wiki,	Cross-agency collaboration	www.caisi.ca
California wildfires	Service provision	http://gigaom.com/2007/10/23/web-20-the-california-fire-crisis/
Caughtya	Law enforcement	www.caughtya.org
Census mash-ups	Regulation, knowledge management	http://www.gcensus.com/faq.php
Change	Participation	www.change.org
Chicagocrime	Law enforcement, public sector information	www.chicagocrime.org
Commentonthis	Participation,	www.commentonthis.com
Cyberbullying campaign	Public communication	http://www.ifilm.com/video/2848115
Davosconversation	Participation, public communication	www.davosconversation.org
Tag-based search of Delaware State portal	Service provision	www.delaware.gov
Directionlessgov	Service provision	www.directionlessgov.com
Farmsubsidy	Transparency, public sector information	www.farmsubsidy.org
fixmystreet	Service provision	www.fixmystreet.com
France presidential elections on secondlife and blogs	Participation	Not available (many different blogs)
Ganfyd	Knowledge management, human resources	www.ganfyd.org

Name	Domains of usage in government	link
	management	
Gapminder	Knowledge management, regulation, public sector information	www.gapminder.com
Intellipedia	Cross-agency collaboration, knowledge management, human resources management	not available (intranet)
Katrina help	Service provision	http://katrinahelp.info/
Maplight.com	Transparency, public sector information, participation	www.maplight.com
Mybikelane	Law enforcement, transport	www.mybikelane.com
Netmums	Service provision	www.netmums.com
OpenGorotto	Public communication, human resources management	http://open-gorotto.jp/
PatientOpinion	Service provision, human resources management	www.patientopinion.com
Peer-to-Patent	Regulation, knowledge management,	www.peertopatent.com
Planningalerts.com	Transparency, public sector information	www.planningalerts.com
Police using YouTube	Law enforcement, police	www.youtube.com
Ratemyteachers	Service provision	www.ratemyteachers.com
San Francisco bus passes	Service provision, public sector information	http://www.skot9000.com/muni/
Self-help groups Equip	Service provision	http://www.equip.nhs.uk/
Theyworkforyou	Participation, transparency, public sector information, public communication	www.theyworkforyou.com
UK floods	Service provision, disaster management	http://www.edparsons.com/?p=504
US agencies recruiting online	Human resources management	http://chronicle.com/wiredcampus/index.php?id=1830
UtahNationalParks	Service provision, Human resources management	http://davidfletcher.blogspot.com/2006/12/state-parks-in-tagzania.html
WebCameron	Participation	www.webcameron.org.uk
Schools Appeals	Service provision	www.schoolappeals.org.uk
Examples from the private sector		
Allen and Overy	Knowledge management, Human resources management	Not available (intranet)
Customer ratings	Service provision	e.g. www.tripadvisor.com
Corporate blogging	Public communication	e.g. blog by Bob Lutz GM Vice-chairman http://fastlane.gmblogs.com/archives/2007/04/let_me_tell_you_1.html
Crowdsourcing helpdesk	Service provision	http://www.businessweek.com/innovate/content/feb2007/id20070201_774736.htm
Reputation management systems	Public procurement systems	www.ebay.com
GoogleEarth open api	Interoperability	http://earth.google.com

Table 3: List of web 2.0 initiatives, and relative domains of relevance for government

This exercise enabled the identification of a set of domains of government activity for which web 2.0 solutions could be relevant (see Table 4).

Back office domains	Front office domains
Regulation	Political participation and transparency
Cross-agency collaboration	Service provision
Knowledge management	Law enforcement

Table 4: Domains of impact of web 2.0 on government

In addition, relevant impact is also envisaged, but not fully analysed, in areas such as interoperability, human resource management, public procurement, reuse of public sector information and public communication.

This tagging exercise shows that web 2.0 can affect many different domains of government activity. While the debate is mostly focused on the impact in citizen-government relations (the so-called front-office) at present, this analysis shows that web 2.0 applications are also relevant for the back office activities of public administration.

These domains are not designed to be a fully self-consistent taxonomy of government functions. Some are government activities, like regulation; some are specific processes, like knowledge management; some are policy issues, like reuse of public sector information. These are traditional domains of information-intensive government activity and concern, where ICT plays a key role and many eGovernment initiatives have been launched (Bekkers and Homburg 2005). They are therefore meaningful domains for policy-makers and practitioners, where a significant degree of change can happen because of the adoption of web 2.0 solutions.

This list is not designed to be complete, either. Web 2.0 deployment is far from mature, and its future development and adoption is difficult to predict. Some of these domains of usage will prove irrelevant, and others will emerge. These applications are inherently subject to creative adoption on the part of users, so it would be a contradiction to rigidly define "what you can do" with web 2.0.

4.2. Web 2.0 for regulation

The role of government in western economies has changed significantly over the last twenty years. Broadly speaking, its role has shifted from direct service provision to regulation, as in the case of telecommunications, education, and healthcare. This does not imply that the role of government is less important. As the OECD report on government modernization (OECD 2005) puts it: "government has a larger role in the societies of OECD countries than two decades ago. But the nature of the public policy problems and the methods to deal with them are still undergoing deep change. Governments are moving away from the direct provision of services towards a greater role for private and non-profit entities and increased regulation of markets. Governments' regulatory reach is also extending into new socio-economic areas."

This trend, unlikely to change over the next few years, will pose challenges to government, especially in view of the tightening of public budgets. The challenges are likely to be in terms of (Noveck 2008):

- an increased quantity of work to be carried out with fewer resources, and

- the increasing need to make complex decisions without the benefit of adequate information

The effects of web 2.0 are already visible in regulatory activities, mainly:

- in a more direct and open engagement of external resources (citizens and experts) in specific phases of the decision-making process. For example, the case study on the US Patent Office (below) shows how the patenting process could be opened up in the initial intelligence-gathering phase, using the collaborative gathering and filtering of existing evidence by self-appointed experts, in order to assess the inventive step of a patent application. Other applications, such as sense.us and gapminder.com, use the collaborative effort of individuals to elaborate and visualize large amounts of public data on policy-relevant complex issues from different perspectives. This shows how peer-based collaboration could support the regulatory process, which would however remain in the remit of government.
- At the same time, the regulation task of government is likely to change as consumers are increasingly empowered by the availability of information on the Internet, and particularly by the horizontal sharing of information among consumers, such as customers' reviews, ratings, reputation management systems. This trend, reinforced by web 2.0 applications, is reducing the information asymmetry between suppliers and customers, and "making the market more perfect",¹⁵ thereby changing the role of government in consumer protection.
- Furthermore, individual citizens are likely to take a more proactive role in demanding and pushing regulation by government. An example of this concerns the fees charged by mobile operators in Italy for adding credit to a phone. A single citizen, having failed to obtain an answer from the national regulator, collected 800,000 signatures through blogs and websites, and sent them to the European Commission. Following a clarification request from the EC, the Italian Antitrust authority started an investigation and finally induced the Italian government to outlaw the additional charge (www.aboliamoli.eu).

As this example shows, the decision about involving citizens in the regulatory process does not lie in the hands of government only, but sometimes has to be accepted as a matter-of- fact.

4.2.1. CASE: Peer-to-Patent

Peer-to-Patent is an initiative launched by the New York Law School (Prof. Beth Noveck), and endorsed by the US Patent Office. It aims to improve the process for reviewing patents, which is made slower and less effective by the high number of patents to be processed and the technical knowledge required. Peer-to-Patent opens up the first phase of the patent review process (reviewing the prior art) to voluntary contributions by participants. These are assessed and rated by the participants themselves. The most relevant references are then submitted to the US Patent Office for the official review, which is made simpler by the contributions, selection and comments made by the participants.

¹⁵ Interview with Bob Young, founder of Lulu.com (a provider of self-publishing services)

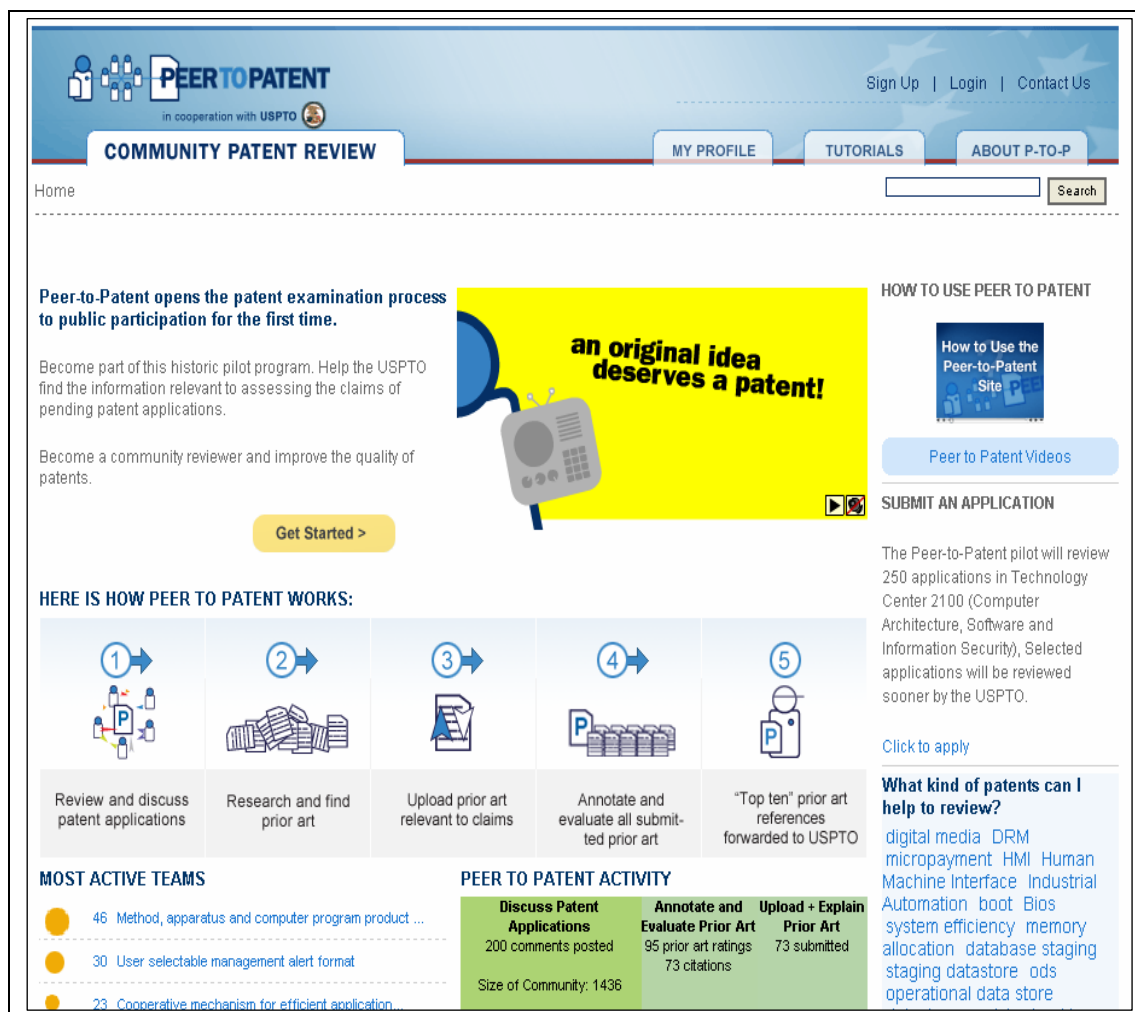


Figure 4: Screenshot of Peer-to-Patent

Challenge addressed	Patent Offices worldwide are facing increasing challenges, because of the increasing number of patent requests to be examined, and the difficulty to ensure that the examiners have adequate knowledge. The result is a delay in examining the applications, and very high rate of approval (more than 90%), leading to a high rate of legal complaints.
Context	This is a knowledge-intensive part of government activities. The Patent Office is the paradigmatic example of the challenge facing regulatory agencies: how to make complex decisions without the benefit of adequate information.
Functionalities	The Peer-to-Patent project opens up the initial phases of the patent examination process. In particular, it aims to involve external experts in assessing the current state of the art on the issue addressed by the patent. Experts review patent applications, propose relevant state-of-the-art material, assess the proposed material and rank it, in order to enable the US Patent Office to examine only the most relevant information ("top 10") when deciding whether to grant the patent.

Role of users	Participating experts research and find prior art (producing content). Participating experts rate all submitted prior art (rating and commenting) Government users (Patent Office) use the content and the ratings of the experts (using user-generated content and ratings).
What is new?	Open information on patent applications. Voluntary engagement of external experts to perform an internal government function. Non-restricted participation - expertise is self-declared and valued ex-post by other participants. Content is rated and ranked according to its relevance by participants.
Ownership	New York Law School launched the project, which was officially endorsed by the US Patent Office. It is now a partnership of Government, academia and the private sector (sponsors include IBM, Microsoft, HP etc.).
Cost	New York Law School incubated and supported this project. In addition, the one-off budget of approximately \$1.5 Million has been funded half by foundations, including the MacArthur Foundation and the Omidyar Network, and half by corporate sponsors, including IBM, Microsoft, HP and other IT companies.
Quality assurance	The community is self-regulating: 1) Experts rank the claims of a patent application to identify the most relevant/representative ones, in order to focus community attention and labour where most needed, 2) Experts rank prior art submitted by the community in response to a patent application, in order to create manageable and searchable output for patent examiner, 3) Experts rate other participants, in order to encourage the right kind of participation.
Authentication	Weak: blog style. Participants provide only valid e-mail address, username and password.
Usage	Between the launch of Peer-to- Patent on June 15 2007 and February 2008: 1,932 people have signed up to be reviewers. Reviewers have posted 170 instances of prior art for 35 applications. There are currently 7 applications available for public review from: Microsoft , IBM, Red Hat, Intel, HP, GE
Drivers of participation	Desire for peer recognition is the foreseen driver.
Benefits	Faster decision-making process, Better decisions, Interest declared from Patent Offices in Europe.
Risks	Low participation, Low quality input, Manipulation of input, Abuse of information contained in patent applications.
Further information	www.peertopatent.com http://dotank.nyls.edu/communitypatent/

Box 1: The case of Peer-to-Patent

4.3. Web 2.0 for cross-agency cooperation

Internal fragmentation between institutional levels, agencies, departments, often referred to as the silo effect, reduces the efficiency and effectiveness of government actions. In recent years, disasters such as 9-11 and the Katrina Hurricane exposed how lack of collaboration between separate government agencies can hinder the efforts for preventing or reacting to these disasters.

Promoting more collaboration across agencies, or ‘joined-up’ government, has been one of the key objectives of government modernization.

Wikis in particular are starting to be used in companies and also in government to enhance cooperation within and across organisations.

Their application in the eGovernment context is to be found:

- in the coordinated delivery of services to homeless people by different social and health service providers (CAISI, Alaska social services),
- in coordinating the reaction of the different agencies involved when reacting to natural disasters, including possible contributions from citizens. Gartner devoted a report on the usage of wiki in disaster recovery, mainly to collate information from disparate sources,¹⁶
- in warfare and intelligence, for collating information and drafting intelligence reports across separate agencies and without regard to hierarchies (Intellipedia, see case below),
- in support of the internal policy-making process; for example, using wiki to streamline inter-department or inter-governmental consultation.

4.3.1. CASE: Intellipedia

Intellipedia is a wiki-based platform which enables the direct collaborative drafting of intelligence reports by analysts from different intelligence agencies, with little or no hierarchical filtering (McConnell 2007). For obvious reasons, this being an internal application, no screenshot is available.

Challenge addressed	Silo effect within government, which can weaken the effectiveness of the intelligence effort.
Context	Intelligence agencies of the U.S. were under pressure after failing to prevent 9-11. Investigation pointed to the failure of internal coordination as one of the reasons. Strong reform was then launched from the top, using wiki as a tool. At the same time, younger analysts demanded this reform from the bottom.
Functionalities	This wikipedia-like software allows analysts from different agencies to produce joint reports, which are more robust as they also include dissenting voices.
Role of users	Analysts produce joint reports (producing content). Analysts edit and validate contributions from other analysts (providing

¹⁶ <http://www.gartner.com/DisplayDocument?id=503986>

	ratings and feedback).
What is new?	Direct analyst-to-analyst sharing of information. Informal cooperation, no hierarchy.
Ownership	Intellipedia is a project of the Office of the Director of National Intelligence, which is the head of the U.S. intelligence community. Analysts belonging to the 16 agencies of the community participate.
Cost	No information available, but the MediaWiki software is free, distributed under the terms of the GNU General Public Licence.
Quality assurance	Self-regulated. Viewpoints are publicly attributed to the agencies, offices, and individuals participating, and analysts whose judgments most often turn out to be correct, are rewarded.
Authentication	Strong, running on a super-secure intranet
Usage	According to internal officials, it is used today by two-thirds of the analysts. Sixteen months after its creation, officials say, the top-secret version of Intellipedia (hosted on JWICS) has 29,255 articles, with an average of 114 new articles and more than 4,800 edits to articles added each working day. Main tool used in drafting key intelligence reports (Nigeria, Iraqi insurgents using chlorine in explosives).
Drivers of participation	Intellipedia editors award shovels to users to reward exemplary contributions ("Wiki gardening") and to encourage others in the community to contribute.
Benefits	Better decisions by avoiding the silo effect and information bottlenecks
Risks	Possible breaches of sensitive information. But according to internal officials, it is worth it: "the key is risk management, not risk avoidance". ¹⁷
Further information	http://defensenews.com/story.php?F=2733832&C=america http://en.wikipedia.org/wiki/Intellipedia http://www.usatoday.com/tech/news/techinnovations/2006-11-02-intellipedia_x.htm

Box 2: The case of Intellipedia

4.4. Web 2.0 for knowledge management

Governments are typically considered knowledge-intensive organisations, and will become increasingly so in the future (OECD 2005). Knowledge management is key to improving the efficiency and effectiveness of government.

While traditional knowledge management systems are applied to structured knowledge, web 2.0 applications (social software, folksonomies, and wiki) are particularly effective in enabling the sharing of informal and tacit knowledge internally, among employees. Furthermore, they enable finding, selecting and using external niche competences, which is especially useful for the challenge facing regulatory agencies, which increasingly have to make complex decision without the benefit of adequate information (OECD 2005).

Web 2.0 applications have been deployed within private companies to answer some key questions:

- Which articles do senior managers think are important this morning?
- Which newsfeeds do my favorite colleagues use?

¹⁷ http://www.usatoday.com/tech/news/techinnovations/2006-11-02-intellipedia_x.htm

- What discussion topics are hot in a project team (things you can't anticipate)?
- Who is expert/working on this specific topic?

These questions are very relevant within public organisations as well and these "enterprise 2.0" (McAfee 2006) solutions could be adopted in the government context, within and across organisations.

These questions can be answered by applying a set of web 2.0 solutions:

- Blogs and wikis for discussion and collaboration,
- Collaborative filtering of information, recommendation systems, bookmark sharing (tags, RSS feeds),
- On top of this: algorithms applied to users' attention data and behaviour.

4.4.1. CASE: Allen and Overy

Allen and Overy is a well established international law firm, founded in 1930 with 4,500 employees and offices in 19 countries. In order to optimize information flows within the company, they implemented an internal knowledge management system based on web 2.0 applications.

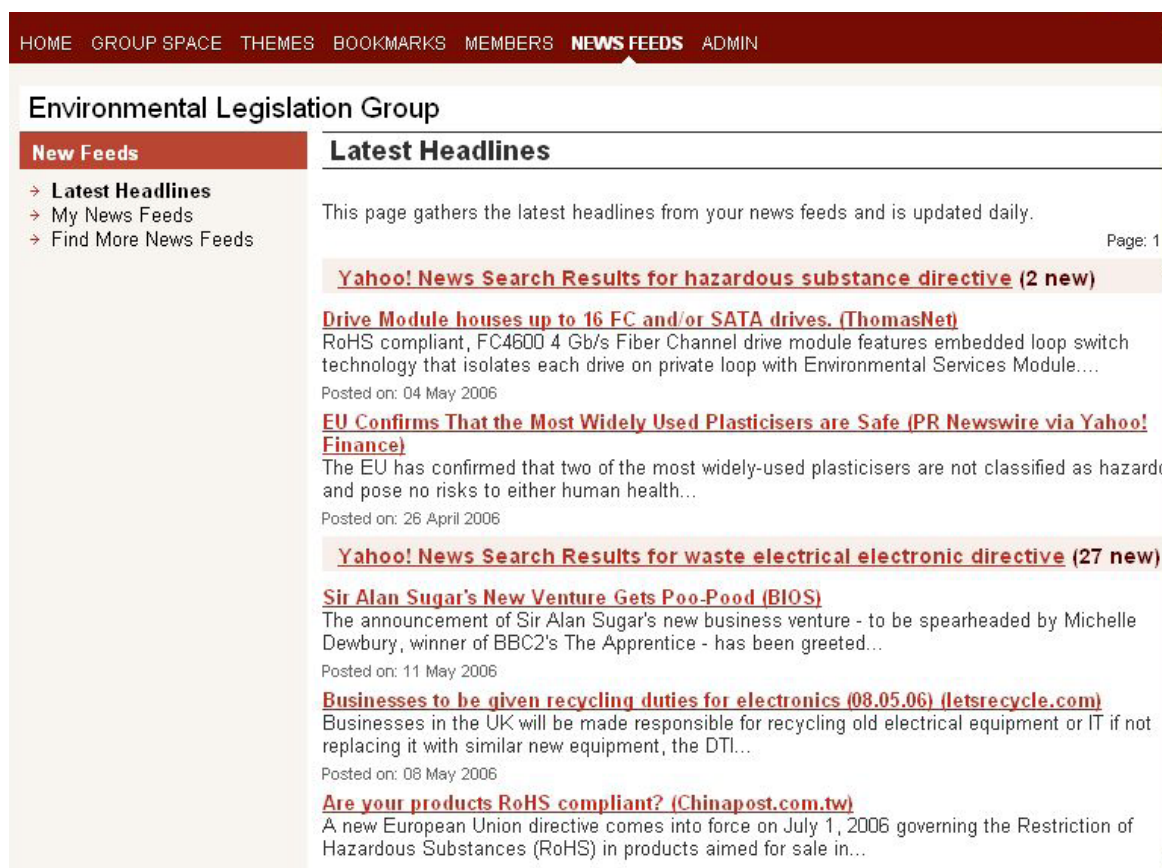


Figure 5: Screenshot of the KM system in Allen and Overy. (Source: <http://www.slideshare.net/leebryant/allen-overly-social-software-project-case-study>)

Challenge addressed	Sharing tacit knowledge, Understanding who does what, Facilitating the learning process for newcomers.
Context	Knowledge-intensive sector, Collaborative culture, Dealing with sensitive topics and data.
Functionalities	Group blogs; group tags; social bookmarking; group newsfeeds (see screen caption) with attention data built in, Deployed with fast iterative approach – no large scale IT project.
Role of users	Users produce blog entries (producing content). Users voluntarily recommend, bookmark, and tag content (producing ratings and feedback). Users automatically produce recommendations for content (producing attention, and taste data).
What is new?	Capacity to share tacit knowledge, recommendations, collective filtering.
Ownership	Launched by the knowledge management department.
Cost	Not known.
Quality assurance	Soft governance, light moderation, keeping the wiki attitude. Deployed in groups with high collaborative culture. Sensitive (client-related) data is not discussed.
Authentication	Strong, integrated with enterprise Single Sign-on
Usage	Extreme ease of use: "Just three screen shots or two minutes of an online demo." Pilot: 3 month pilot for 3 groups. Now, 20 months later, 30 groups. 30% employees use it. Became internal standard for collaboration.
Drivers of participation	Desire for recognition drives participation
Benefits	Increased awareness of what others are doing – less duplication of effort, Reduction in internal e-mails sent, Better learning and knowledge creation.
Risks	Lack of participation, Raising non desired issues, Sharing sensitive data.
Further information	www.ikmagazine.com http://www.slideshare.net/leebyrant/allen-overy-social-software-project-case-study

Box 3: the case of Allen and Overy

4.5. Web 2.0 for political participation and transparency

The decline in citizen engagement in the public sphere has long been one of the main challenges of modern government (Finer 1997; Dutton and Peltu 2007). ICT has been considered as a strategic tool for reinforcing citizens engagement for some time, through eDemocracy and eParticipation initiatives, though it has had mixed success so far (Bryant and Wilcox 2007).

Political participation is arguably the domain where the impact of web 2.0 is now visible and mature (Kohut 2008). Bloggers have been very influential in elections since 2004, and social networking tools are now a fundamental tool for many politicians, in the U.S. and also in Europe. According to HitWise data, blogs have surpassed traditional media as greatest driver of traffic to political websites.¹⁸ Besides political campaigning, there are already examples of social computing applications in the consultative process. This does not imply embracing direct democracy versus representative democracy, but opens up new possibilities for participation and engagement.

A particular role in eParticipation is played by the policies on transparency. The trend towards enhanced transparency is one of the key changes of future government (Frissen, Millard et al. 2007). Most EU countries have adopted a Freedom of Information Act, which establishes the right and modalities of citizen access to public information. The Council of Europe is currently working on the European Convention on Access to Official Documents, which will reinforce the legal basis of citizens' rights to access public information (Jäderblom 2007). Many web 2.0 initiatives are being set up to enhance the transparency of public processes. They use, re-aggregate and analyze public data to monitor the behaviour of civil servants and politicians. Often data are publicly available but their potentially disruptive impact results from the re-elaboration of data in a more meaningful and understandable way.

There are relevant examples of applications in other eParticipation activities:

- Politicians using web 2.0 applications for a more direct contact with the electorate. In many EU countries, politicians have blogs and participate in social networking websites. In the UK, both Tony Blair and David Cameron made extensive usage of video-streaming services such as YouTube; in France, the parties of the presidential candidates Le Pen, Royal and Sarkozy opened headquarters in Second Life.
- Bringing citizens' participation upstream: Commentonthis.com allows citizens to share their views on the details of key government documents, which have been split into paragraphs in order to make them "commentable".
- Monitoring public representatives: the URL of the initiative Theyworkforyou.com illustrates the change well. Voters expect consistent behaviour from their representatives and are able to closely monitor it, thanks to a service which re-packages public information in a usable way.
- Applications such as planningalerts.com and farmsubsidy.org enable citizens to monitor administrative procedures such as planning applications and public funding.
- Opening discussion forums: the Davos forum, where strong confrontations of the anti-global movement took place, opened up to bloggers and Second Life residents (www.davosconversation.org)
- Easy creation of pressure groups for specific causes: change.org is a platform where participants can find other people interested in the same causes, and also connect to politicians sharing their views.

In most cases, these are initiatives carried out by the civil society, without any involvement, authorisation or funding by government itself. However, some public administrations are making an effort to present data in a user-friendly way (for example, the initiatives of the Sardinia Region¹⁹ and Hungarian government²⁰ for monitoring structural fund spending).

¹⁸ http://weblogs.hitwise.com/bill-tancer/2006/09/blogs_increasing_influencer_in.html

¹⁹ <http://www.regione.sardegna.it/argomenti/progetti/>

4.5.1. CASE: e-petitions

E-petitions is an initiative launched by the office of the Prime Minister in the UK. It allows people to submit petitions directly to the PM, and to see and sign petitions created by other people.

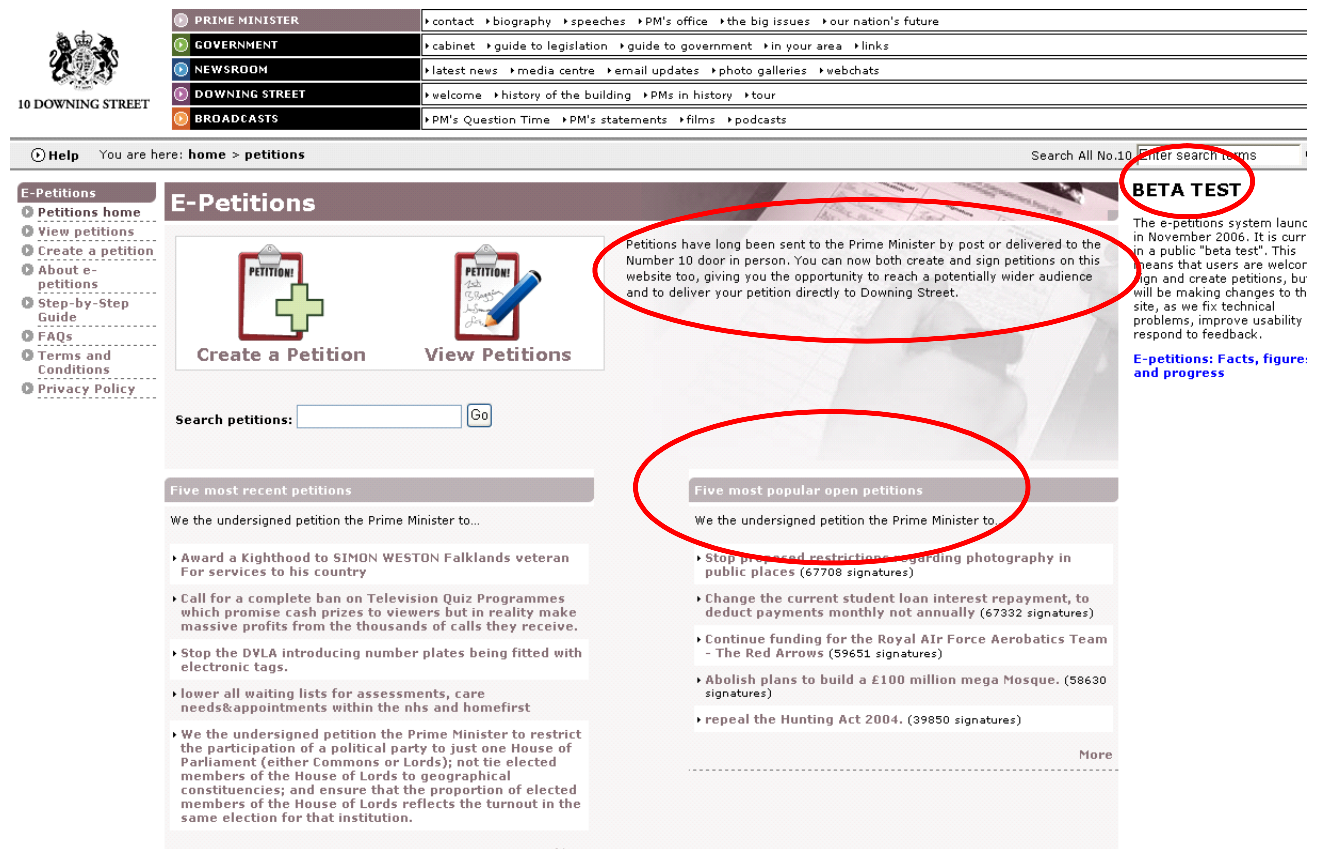


Figure 6: Screenshot of e-petitions

Challenge addressed	Building a stronger connection between the Prime Minister and citizens.
Context	Official Downing Street website.
Functionalities	Users can launch a petition, or see and sign petitions submitted by other users. Users can also see which petitions were rejected and why; and the most popular petitions.
Role of users	Users launch petitions (creating content). Users sign other petitions (providing rating and feedback).
What is new?	Previously, petitions were always sent to the PM, but other people couldn't see petitions submitted by other people or subscribe to them. Also, the answers were not readily accessible.

²⁰ <http://www.anti-lop.gov.hu/>

Ownership	Hosted on the UK Prime Minister's website. Run for the government by MySociety.org, a non-profit organization which has many similar services (fixmystreet.com, theyworkforyou.com, pledgebank.com etc.).
Cost	Not known.
Quality assurance	Ex-post moderation (nearly all petitions are listed).
Authentication	Weak authentication (blog-style) to enhance ease-of-use.
Usage	Launched as beta, 15 major changes in first 48 hours, building on user feedback. 2.1 million users in 6 months, one petition reached 1.8 million signatures.
Benefits	Enhanced participation of citizens.
Risks	Low participation. Destructive behaviour (insults, political criticisms, etc.).

Box 4: the case of ePetitions

4.6. Web 2.0 for service provision

Providing high-quality, easy-to-use services in the face of citizens' rising expectations and diminishing budgets is one of the government challenges where ICT has played a significant role over last few years. Providing online services has been one of the main goals of eGovernment strategies in virtually all countries. Yet the take-up of these services is not fully satisfactory, and problems seem to lie in the usability and findability of the services (Ramboll 2004).

Web 2.0 applications enable a change in the role of the users, who participate more proactively in service delivery, as much in the private sector as in the public. The value of the specific competence and skills of the users is widely recognized as a unique source of service improvement (Mayo and Steinberg 2007).

In particular:

- Users or civil society organisations directly co-produce part of the public services, often re-packaging information already available on public websites using freely available software. San Francisco citizens published information on the points where bus passes are sold, in a usable map based on GoogleMaps, whereas the public website only published this list by postcode in a non-usable way. A civil society organization in the UK created a website which merges results of Google searches and the search engine of the main government portal (direct.gov.uk), in order to make searches on the government website more relevant.²¹ Online self-support groups (such as netmums.com) integrate public services by providing important support and sources of information on social and health issues.
- A particularly relevant application field is disaster management. Blogs, wikis, and mashed-up maps have been widely used in natural disasters such as hurricane Katrina,

²¹ <http://www.directionlessgov.com/>

the earthquake in Nijgata (Japan), floodings in UK, and wildfires in Southern California.²²

- Citizens can share knowledge and "tips" on how to deal with specific administrative problems and exceptions, just as the private sector user fora complement helpdesk services for very specific problems. In the UK, citizens share information on how to make appeals against decisions for school acceptance.²³
- Users publicly rate/give feedback on public services, in order to support other citizens' choices (when available) or to stimulate quality improvement. Publishing users' reviews, already a traditional feature in many consumer-related websites like amazon.com and tripadvisor.com, can be implemented for public services. Patient Opinion allows users to share ratings and comments on hospital services, and ratemyteachers.com does the same for teachers. Citizens also share their photos and comments (positive and negative) on existing generic platform such as Flickr.
- Online services are made more usable by using previous behaviour by citizens online to help other citizens, in the same way Amazon can suggest new books using the recommendation feature "customer who bought this also bought". For example, the website of the State of Delaware shows the "most searched terms" as a tag cloud on the homepage.²⁴

A one can see, these applications can be implemented by government, but can also be implemented (and often already have been) by individual citizens and civil society organisations.

4.6.1. CASE: Patient Opinion

PatientOpinion is a service that was launched by a General Practitioner in order to improve the National Health Service. It aims to foster a dialogue between patients and health providers. Patients can comment, review and rate the services they have received at healthcare facilities and can see the reviews of other patients. It is similar to the service provided by "Tripadvisor" for reviewing hotels.

²² <http://katrinahelp.info/>; <http://home.kyodo.co.jp/index.php> ; <http://www.edparsons.com/?p=504> ; <http://gigaom.com/2007/10/23/web-20-the-california-fire-crisis/>

²³ <http://www.schoolappeals.org.uk/>

²⁴ www.delaware.gov




this is our NHS...
 let's make it better



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[Help](#)
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What is this about?

Patient Opinion is all about enabling patients to share their experiences of health care, and by doing so help other patients — and perhaps even change the NHS.

As well as allowing everyone to see what patients are saying about their services, it also offers a way to feed the experience of patients back to the NHS so that their insights and ideas can be put to good use.

Latest Patient Opinions

“My friend was a patient in Arr ...”

31 August 2007 , 17:34 PM

Deirdre Hewitt on Arrows Park Hospital

“I had a gallbladder removal on ...”

30 August 2007 , 12:02 PM

(anonymous) on Derriford Hospital, General Surgery

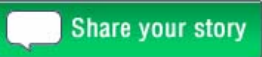
“My Father has been in Southend ...”

29 August 2007 , 17:02 PM

k sheehan on Southend Hospital

Your opinion

If you have been to hospital recently, either as a patient or as a carer or friend or someone else, please tell us about your experience



Compare hospitals

Enter your postcode to compare hospitals in your area and see what people are saying about them

Your postcode

What service ? (optional)

Figure 7: Screenshot of PatientOpinion.com

Challenge addressed	Improving the quality of public health. Understanding user needs.
Context	Specific public service where some degree of market mechanism / choice have been introduced. Delicate themes, dealing with personal issues.
Functionalities	The website enables patients to share their feedback on the treatment received at the hospital. Feedback is both quantitative (ratings) and qualitative (blog entries).
Role of users	Users provide ratings and reviews.
What is new?	Public sharing of feedback.
Ownership	Launched by a social enterprise founded for this purpose by a General Practitioner, with initial support from the National Health Service.
Cost	Not known.
Quality assurance	Comments are moderated and edited by the moderators to ensure privacy and respect, but the moderator role is often played by other patients with longer experience with PatientOpinion.
Authentication	Weak, blog style (username and e-mail).
Usage	3,000 comments in 9 months, 38 health providers subscribed to receive periodic update on feedback.
Drivers of participation	An internal assessment found that most contributions are motivated by altruism and gratitude.
Benefits	Enabling informed choices (for citizens). Understanding user needs (for government). Monitoring quality compliance for service improvement.
Risks	Low participation. Destructive behaviour.
Further information	http://www.patientopinion.org.uk/

Box 5: the case of PatientOpinion.com

4.7. Web 2.0 for law enforcement

Law enforcement is a core competence of government. There are, however, several ways in which web 2.0 could change the way laws are enforced, including a more proactive role for citizens:

- Citizens are able to monitor other citizens, and publicly shame them in order to enforce the law. There are several examples of this "little brother" phenomenon. Caughtya.org and mybikelane.org are websites where people post photos of cars parked on disabled parking and bike lanes, respectively. This, of course, raises issues of privacy invasion and excessive social control. At the same time, increased social control can in the long term lead to less need for monitoring by government.
- Citizens can be highly effective in monitoring the behaviour of governments and civil servants. Fixmystreet.com is a website launched by Mysociety where citizens can "report, view, or discuss local problems (like graffiti, fly tipping, broken paving slabs,

or street lighting)", and report whether the local authority has fixed it (or not). Uncivilservants.org publishes photos of government cars illegally parked.

- Citizens can share, monitor and highlight problems that concern them. A Chicago resident created Chicagocrime.org, where public data on local crime are browsable by crime type and street, and geo-referenced using GoogleMaps.
- Government can proactively look for citizen' collaboration using existing social networking. Police in Canada, the US, and the UK have been using YouTube in order to disseminate video footage, with a view to identifying criminals caught by surveillance cameras.²⁵
- However, communication and collaboration tools can be effectively used in order to share information among citizens in order to avoid law enforcement. A typical example is the sharing of information on the location of speed cameras, even by geo-referencing them on GoogleMaps.

4.7.1. CASE: MyBikeLane

Mybikelane is a website that was launched by a New York citizen who was annoyed by cars parking in bike lanes. He therefore created a website and asked fellow cyclists to post photos of cars illegally parked, with a view to raising awareness about the problem.

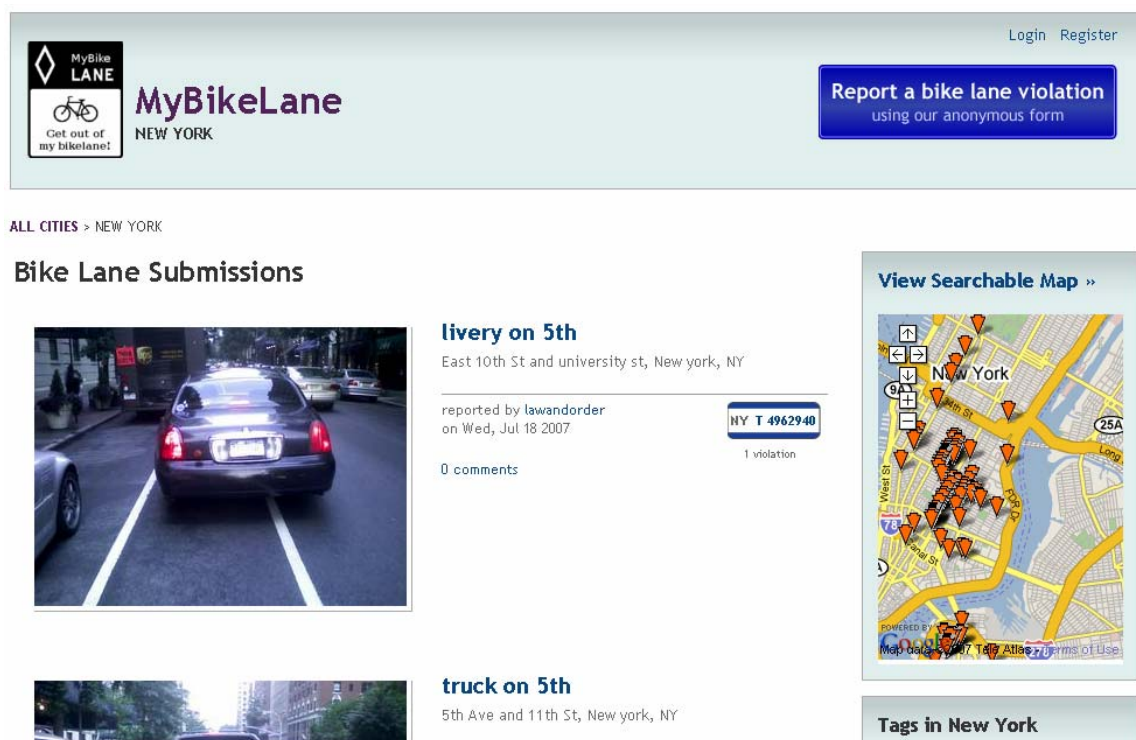


Figure 8: Screenshot of mybikelane.com

²⁵ <http://www.tricity.com/tristate/tri/news.apx.-content-articles-TRI-2008-01-14-0010.html>;
<http://technology.canoe.ca/Internet/2006/12/15/2806655-cp.html>

Challenge addressed	Disturbance and danger caused to cyclist by the many cars parking on byke lanes.
Context	Traffic control is a core government activity.
Functionalities	People can post online photos of cars parked in bike lanes. Infractions are geo-referenced using googleMaps and car plates are published and ranked according to the number of infractions.
Role of users	Users created the website and post the photos of road infractions (creating content).
What is new?	Public shaming of bad parkers.
Ownership	The site was launched by an individual citizen on his own initiative.
Cost	Likely to be low, based on open source software and free services such as googlemaps.
Quality assurance	No control on the kind of input, just soft rules of non-violence. Webmaster has the last word on any decision.
Authentication	Weak, just username and password.
Usage	The largest community is in New York, with 1,432 contributions from 628 members.
Drivers of participation	Frustration with bad parkers
Benefits	Inducing better behaviour by car drivers.
Risks	Privacy invasion, destructive behaviour, low participation.
Further information	www.mybikelane.com

Box 6: The case of Mybikelane.com

4.8. Web 2.0 for other relevant domains of government

There are other domains where web 2.0 poses opportunities and risks for government. While no primary research (such as case studies) has been carried out in these domains, enough evidence has been collected to justify the identification of these as domains of potential impact of web 2.0 applications. However, additional research work is needed to spell out the specific implications more clearly.

Here, we simply point to a set of open questions regarding specific domains and link them to on-going discussions on the web:

- Interoperability: web 2.0 applications use new "lighter" formats for interoperability (RSS, GeoRSS, KML, REST). Are these alternatives, or are they complementary to what is currently used in government (SOAP, WSDL, WMS, WFS)?²⁶

²⁶ See Gartner eGovernment blog at <http://blog.gartner.com/blog/government.php?itemid=1852>; Di Maio A. 2007. "Web 2.0 in Government: a blessing and a curse" Presentation, Gartner Inc.; and Ed Parsons blog at <http://www.edparsons.com/?p=497> and comments

- Public communication: how can traditional government communication such as Public Service Announcements be adapted to the new social media? How can a balance between the new expectation of informal and personal communication be merged with the institutional role of civil servants?²⁷
- Public Sector Information (PSI): the debate (EC 1998; EC 2003) on PSI focussed very much on enabling or limiting re-use of PSI for business purposes, and the related cost and benefits. It now becomes clear that besides opportunities for economic growth, there are significant opportunities for social benefits and public value. Citizens are able to build added-value services re-using public data (such as Planningalerts.com). This could change significantly the terms of the debate in favour of greater availability of public data.
- Human Resources Management: Decentralisation of decision-making functions has been one of the general (albeit disputed) trends in government (Demmke 2006). As shown by the example of Intellipedia, web 2.0 applications are used for less hierarchical forms of collaboration and could therefore reinforce the trend towards flatter organisations.
- Public Procurement: while procurement rules generally forbid government to take into account reputation and previous performance in the decision-making process, there are cases in the US where reputation-management systems (like eBay's) have been built into eProcurement platforms in order to make the procurement process more effective (Kelman 2002; Picci 2007). There have been proposals to introduce this feature, for example, in the Italian central procurement platform (Spagnolo and Dini 2004).

²⁷ See the interesting debate on <http://www.psnetwork.org.nz/blog/2007/02/19/principles-public-sector-socialmedia/>

5. A cross-analysis: answering the research questions

In this chapter, the evidence presented so far is re-analyzed in order to answer the main research questions. For each research question, the arguments are presented following the structure of the operational research questions, as illustrated in Table 2.

qA. Is web 2.0 relevant for the government domain?

The wide range of experiences presented in Chapter 4 shows that web 2.0 applications are indeed used and important not only for personal issues and social activities, but also as work-related productivity tools.

Companies are already using web 2.0 for improving internal collaboration and knowledge flows and their relations with customers, while customers use them to share ratings and reviews to help them with their purchases.

In the government context, web 2.0 technologies, applications and values have been already adopted in many areas of activity, both in the back and in the front office, by employees and by citizens. The continuous emergence of such initiatives shows that there is still large potential for experimenting with new applications.

qB. In what way is web 2.0 likely to have an impact on government?

Chapter 4 provides a full description of the main areas of government where the adoption of web 2.0 could have a significant impact, and the nature of this impact. There are several areas of change, covering both back and front office, involving both civil servants and citizens (see Table 4 page 13).

The nature of this impact is characterised mainly by a more active user role. Crucially, the term "users" is intended to cover both civil servants and citizens. These user roles can include diverse activities, as described in Figure 3:

- designing and delivering the service, as in mybikelane.org;
- providing comments and reviews, as in PatientOpinion and Peer-to-patent;
- providing automatic attention and taste data by using the service, as in the case of Allen and Overy, and of the state of Delaware where search terms performed by users become tag clouds on the homepage (www.delaware.gov).

This proactive user role also implies that governments have no power to decide whether or not web 2.0 applications should be adopted and implemented, either by civil servants or citizens.

Individual workers are bringing these applications inside public and private organisations: for example, on 15 March 2008, there were 4,090 members of the European Commission network on Facebook. Web 2.0 applications usually do not require installation on one's computer, therefore it is much more difficult for a central IT department to control and limit the usage of these applications.

Civil society organizations, and individual citizens are able to create services outside institutional control. Services such as theyworkforyou.com, planningalerts.com, directionlessgov.com, have been created using information publicly available, without any involvement, authorisation or funding by government. An important enabling factor is that

cost barriers to entry are now very low, due to the use of open source software and to the cost of storage having dropped in recent years.

However interesting they might be, web 2.0 applications do not replace existing systems but are complementary to them. For example, ERP systems will not be made redundant and replaced by social software solutions, but rather social software solutions could be integrated with ERP systems in order to make more relevant information emerge.

The opportunities provided by web 2.0 applications do not lie simply in the transfer of productivity tools from the private sector, but are related to specific strategic goals of government reform. In particular, the cases presented in Chapter 4 illustrate how web 2.0 applications can help to achieve the long-desired goals of government reform, that have not been fully achieved by eGovernment strategies as described in the introduction, by making government more:

- Simple and user-oriented: for example, PatientOpinion helps government understand user needs and the public feedback and rating system stimulates user-orientation.
- Transparent and accountable: applications such as theyworkforyou.com and planningalerts.com enable citizens' awareness and monitoring of government activities.
- Participative and inclusive: eParticipation solutions such as ePetitions stimulate debate and participation in public decision-making.
- Joined-up and networked: Intellipedia and the knowledge management platform of Allen and Overy enable better collaboration across and within organisations, reduce the "silo effect" and duplication of efforts.

Besides the benefits, however, these initiatives also have risks. These generally pertain to common risks of web 2.0, as described in recent literature (Zimmer 2008), but assume a particular relevance in the government context because of its institutional role and universal service obligations (Osimo and Centeno 2007):

- Low participation: the first and foremost challenge of collaborative efforts is to ensure that users participate and contribute. It might seem obvious, but the usage of blogs and wikis does not lead automatically to greater user involvement.
- Participation restricted to an elite: similarly to any internet service, most web 2.0 applications are used by the cultural and economic elite. The investment on web 2.0 applications can seem to make societal divides wider by giving more voice to those that already have it. For example, the users of the ePetitions website most probably do not reflect the British population as a whole and decisions taken only on the basis of the petitions submitted on this website would give more influence to the most mature internet users.
- low quality of contributions and additional "noise": most user-generated content is considered of low quality and can hinder the finding of good quality content and the delivery of good-quality service (Keen 2007).²⁸
- Loss of control due to excessive transparency. There have been cases where opening-up the conversation has led to loss of control and loss of credibility. Blogs by ministers and

²⁸ For example, there is anecdotal evidence that the collective effort to search for the missing millionaire Steve Fossett hindered, rather than helped, the search (<http://www.itworldcanada.com/a/9819fdb5-a76a-4045-bf18-83bae6ea5056.html>)

civil servants have released sensitive information in an incorrect and sometimes illegal manner.²⁹

- Destructive behaviour by users. Conversations can take a negative turn and have a negative impact on trust and collaboration. For example, rating websites have been used to launch personal attacks on teachers, such as the case of ratemyteachers.com
- Manipulation of content by interested parties. There are many supporters of the view that when social media become mainstream, vested interests would take over the content production. This has been already seen in the case of wikipedia, where entries have been modified by organisations such as Wal-Mart and the CIA.³⁰
- privacy issues: web 2.0 users appear not to be fully aware of the implications of publishing their details on the web (Hogben 2007), and web 2.0 applications in the government context could become a further source of sensitive information being published.

It is important that these risks are taken into account and dealt with. According to the person in charge of Intellipedia for the CIA, "the key is risk management, not risk avoidance". Section qD below describes the governance mechanisms put in place to manage these risks.

qC. How significant could this impact be?

This question is most challenging, as it requires that we try to foresee the present and future significance of trends which are just emerging. While it is impossible to firmly answer it, as its significance is very much subject to users and government behaviour, it is possible to address the operational questions in order to shed some light on its significance.

Firstly web 2.0 applications are already being used in government not only for soft issues, such as public relations and public service announcements. They are being used for core internal tasks such as intelligence services; reviewing patents; enabling public participation in decision making.

These experiences address some of the key challenges of government (Centeno, Bavel et al. 2004): understanding users' needs (PatientOpinion); making decisions in complex and technical domains without the benefit of full information (Peer-to-Patent); and better cross-department and cross-agency collaboration (Intellipedia, Allen & Overy).

However, the impact will emerge only if these applications are extensively used. As these experiences have been only recently launched, more time is needed to assess their take-up. At this stage, more mature experiences such as Intellipedia and Allen and Overy have become widely used inside the organisations. The use of the Downing Street petitions system has been impressive but only for some "flagship" petitions, namely the one against the road tax charge which collected nearly 2 million signatures. The other experiences show some interesting participation rates, but certainly not the exponential growth shown by other web 2.0 applications. This is an important issue as large participation is a pre-requisite for successful quality insurance of user-generated content. In the words of Professor Beth Noveck, the inventor of Peer-to-Patent, "many participants in the process dilutes the effect of bad apples or unconstructive participants"(Noveck 2008). Therefore, low participation could not only limit the quantity of users' contribution, but also undermine the quality of the service provided.

²⁹ See <http://www.blogging4business.info/B4B/2478> and <http://www.timesonline.co.uk/tol/news/politics/article3512007.ece>

³⁰ See <http://news.bbc.co.uk/2/hi/technology/6947532.stm>

Overall, it appears that the current usage of web 2.0 applications in the government context is diverse, and cannot be taken for granted.

Because these initiatives are still in the early stages, it is impossible and arguably inappropriate to assess their impact. However, we offer some anecdotal evidence that sheds some light on the significance of the impact. Certainly, the fact that high level public bodies (CIA, US Patent Office, Downing Street) have adopted these applications is a sign of their relevance. In the case of Intellipedia, there is (self-reported) evidence that the wiki has been the main tool for discovering, for example, how Iraqi insurgents used chlorine in their explosives.

The only field where there is some evidence on impact is that of political participation, with particular regard to political campaigning. Blogs played a key role in the US 2004 presidential elections, and in the referendum on the EU constitution in France (Pascu, Osimo et al. 2008). At present social networks are playing a very important role in the 2008 US presidential elections (Kohut 2008). With regard to the cases presented here, the petition against the road tax charge, signed by nearly 2 million citizens, managed to block the proposed legislation.

Finally, the impact of web 2.0 is likely to be enhanced by convergence with other longer-term socio-economic trends which are likely to persist in the future.

- From a purely demographic viewpoint, web 2.0 applications are used by a majority of teenagers (Pascu 2008), who will soon enter the labour market and bring these applications in their working environments. In the case of Intellipedia, for example, the introduction of wiki tools was also implemented in response to the demand of younger analysts.
- The empowerment of customers, who are now much more informed in their purchasing choices thanks to wider availability of information on the web and horizontal information sharing between consumers (Economist 2005);
- The increasing percentage of creative knowledge workers in the labour force (Drucker 2001; Florida 2002), who expect not only monetary compensation or jobs-for-life, but visibility and recognition by their peers;
- The importance of informal learning by peers through "communities of practice" (Wenger 1998) and of social capital in personal and territorial development (Putnam, Leonardi et al. 1993);
- The trend from hierarchy to network-based organisations (Williamson 1985), with informal cross-enterprise collaboration (Grabher 1993) and flatter forms of organisation within companies (Nonaka and Takeuchi 1995);
- The value of a non-linear innovation model, driven by constant interaction with users and markets rather than pushed from the R&D laboratory (von Hippel 1976);
- The consumerization of IT, where the consumer market has become more innovative than the enterprise market for IT solutions and individual employees bring applications and devices into the company they work for (Gartner 2007).

qD. How can web 2.0 applications be implemented in the eGovernment context?

One of the key enabling factors for successful web 2.0 implementations is trust. Cases such as Intellipedia and Allen and Overy show that implementation is easier in the back office, especially in groups with an existing tradition of collaboration. Crucially, these collaborative

initiatives can create a virtuous circle, where trust is not only a prerequisite, but also an output of cooperation, reinforced by social tools such as reputation-management systems.

Most of these cases are applied in highly **knowledge-intensive domains**, such as the patenting review, where the need for leveraging specific knowledge is greater. Drivers for user contributions are the desire for recognition, but also altruism and gratitude.

Also, the introduction of these disruptive applications was motivated by a **strong strategic/political will**. Intellipedia, for example, set out to reinforce cross-agency collaboration, in the aftermath of the perceived failures of the intelligence agencies in preventing 9-11. ePetitions aimed to reconnect politicians and citizens. Moreover, this strong push can be bottom-up: many initiatives were carried out without the endorsement, and sometimes without the knowledge, of the institutions officially in charge (such as the NHS in the case of PatientOpinion and the New York Police Department for MyBikeLane).

Many web 2.0 experiences (such as Theyworkforyou.com, Chicagocrime.org) are based on the re-elaboration of public data. The **wide availability of public data for re-use** seems to be an important enabling factor for web 2.0 application to flourish. Indeed, the managers of these initiatives agreed that wider availability of public data was their main recommendation to policy makers.

There are also important lessons to be learnt from how these projects are implemented.

In terms of **ownership**, government plays different roles. In the Intellipedia case, the service is entirely under the control of the government. In the case of ePetitions, government contracted a civil society organisation (MySociety) to design and run the project. In the case of PatientOpinion, the NHS initially supported the project financially, and now hospital and health institutions buy its services. Finally, in the case of Mybikelane.org, the project has been run outside any form of government influence.

One of the common features of the cases described is the strong focus on **usability**. For this reason, applications are released in **beta version** and undergo many revisions in the first days of usage, following users' behaviour and feedback. In the case of ePetitions, 15 major changes were made in the first 48 hours, building on users' feedback. When asked by the author about the key novelty of MySociety applications in the field of eParticipation, the director of MySociety.org answered "Usability and flexibility".

The risks described in the section on question qB above have to be addressed with adequate governance mechanisms.

Users' participation cannot simply be expected but has to be proactively cultivated. The main drivers of participation are the desire for visibility/recognition by peers and generosity. The incentives for participation are the visibility given to the users' contributions (e.g. in Peer-to-Patent), the recognition of most active users (the "wiki gardening" of Intellipedia), the proactive encouragement of comments by reaching out to the users (PatientOpinion). There is no evidence so far of more structured incentives, such as linking the contributions to the wiki to some form of performance assessment of employees.

With regard to the potential enhancement of societal divides, the risk is similar to existing eGovernment services delivered over the web. The scope and implications of the initiatives have to be clear and limited. Outward facing applications such as PatientOpinion and ePetitions do not substitute existing feedback/consultation mechanisms, but integrate them by adding another (and more effective) channel. Furthermore, if developed in line with the usability approach of web 2.0, these applications are likely to enlarge the participation. In

other cases, more inwardly-oriented such as Peer-to-Patent, the universality of the service is not a requirement.

To overcome the risk of offensive, illegal, destructive or low quality contributions **quality insurance, authentication** and **moderation** policies have been developed on a case by case basis. Here, an important difference emerges between applications built for internal users only and those that are open to the public.

The internal ones (Intellipedia, Allen and Overy) have strong authentication linked to the organisation Single Sign On infrastructure. Users know exactly who is writing what, therefore contributors are accountable and the risk of destructive behaviour is lower. Authentication is strong, moderation is weak. Furthermore, no formal quality insurance mechanisms are in place – contributions are part of employees' normal work. Discussion and peer review play an important role.

Applications open to the public follow a different path. As contributions are voluntary, barriers to contributions have to be very low to encourage participation. Therefore, authentication is in all cases weak, only requiring a nickname and an e-mail address. On the other hand, moderation and quality insurance mechanisms are stronger, and also very transparent. In the case of PatientOpinion, contributions are heavily moderated to avoid personal attacks and prevent privacy issues. In the case of ePetitions, every petition is assessed to check its conformance to the service rules. Most of the unacceptable petitions (such as political party issues) are published on a separate part of the website, and an explanation is provided as to why they have not been accepted. In the case of Peer-to-Patent, quality insurance is left to the participants, who are expected to rate the contributions of the participants, and let the good content emerge. Finally, in the case of a one-man project such as MyBikeLane, contributions are anonymous and no quality insurance mechanisms are in place.

Appropriate governance methods are currently being discussed, partly based on existing codes. Key references are the work carried out by the New Zealand Network of Public Sector Communicators, such as the 10 principles for public sector social media,³¹ or the reflections of the BBC web team.³² In the recent "Civil Serf" case in the UK, a civil servant blogged anonymously about internal government functioning and information, and the blog was then closed. The following debate largely agreed that the existing Civil Service Code is a key starting point for governing these controversies.³³ However, at the time of writing no consolidation of the different reflections about the governance of users' contribution in web 2.0 applications has been carried out.

To sum up, quality insurance and moderation happens generally **ex ante** in the **internal** applications (through strong authentication and the organisation's rule) and **ex post** in the applications open to the **public** (through strong moderation and peer-review). Within the ex-post case, users are also involved in the quality insurance, through rating and collective filtering, and moderation, by signalling or dealing with unsuitable content/comments. This refers to the second and fourth kind of user involvement in Figure 3 at page 19.

Existing experience and literature also point to a set of **common mistakes** that should be avoided.

³¹ <http://www.psnetwork.org.nz/blog/2007/02/19/principles-public-sector-socialmedia/>

³² http://www.tomski.com/archive/new_archive/000063.html

³³ See <http://simonmcmanus.com/2008/03/10/rest-in-peace-civil-serf/> and all the blog entries tagged with "civilserf" in Technorati.

One of the most common mistakes, typical of a hyped technology such as web 2.0 now, is considering that adding wiki, blogs and social networking features on a website is sufficient to achieve the goals of user involvement and contribution. In fact, the web is full of non-used blogs and wiki. User participation is not easy to achieve, it needs a dedicated effort and especially an open and flexible approach that encourages contributions as described above. No rigid ex-ante planning is possible, but rather an effort should be made to let user participation emerge in often unpredictable ways. For example, it is not possible to predict the number of participants and contributions in a social network. It is necessary to invest in trial and error, beta testing and continuous improvement listening to users' feedback. One of the great advantages of web 2.0 is that it lowers the cost of errors, as very little investment is needed to launch a collaboration. However, simply adopting the technologies, without embracing the value, will have little or negative impact.

While it is necessary to maintain an open approach, a totally hands-off approach and lack of governance are unlikely to ensure the appropriate participation or avoid the risks of destructive behaviour. Appropriate governance methods have to be put in place, as described above. Collaboration and trust are built over time, through interaction, transparency and respect. Strong moderation can be accepted, but guidelines and policies about what is allowed and what is not should be clearly spelled out. For example, ePetitions clarifies which petitions have not been accepted and why.

Another common mistake is to assume that web 2.0 applications have to be implemented centrally, e.g. building a social networking application on an institutional website. Instead, collaboration, exchange and conversation on government issues happen mostly outside institutional websites or across applications. As we have seen, many initiatives have already been carried out by citizens and the civil society. It is important to let these initiatives flourish, by partnering with them rather than trying to reproduce them on a public website – taking into account the principle of horizontal subsidiarity. If the choice is made to implement a dedicated application, such as a social networking feature, it must be interoperable with other platforms.

6. Conclusions: why and how web 2.0 in government?

There is sufficient evidence presented here to say that web 2.0 applications are relevant for many different domains of eGovernment, besides the well known examples of their use in facilitating political participation.

Web 2.0 applications have much to contribute to the key goals of better, simpler, joined-up and networked government. There is anecdotal evidence of positive impact in individual web 2.0 projects; however no fully-fledged impact assessment has been carried out, as these projects are still in their early stages. We also know that evidence of ICT impact is typically only visible several years after investment.

Users can contribute to improving public services and already do so. That is not to say that all citizens will contribute and participate, but rather that some will. However, many more citizens than we have been used to will contribute to providing a better or an additional service. Furthermore, we know that even weaker forms of participation can be useful for service improvement (Figure 3).

While there are certainly strong elements of hype in the notion of web 2.0, many underlying socio-economic trends make us think that the key features are not just a passing fashion but part of a wider change. The teen-agers of today will soon enter the public workforce and/or become users of government services. Additionally, long-term trends of customer empowerment, creative knowledge workers, global competition, flatter and looser forms of work organisation, and user-driven innovation are all conducive to, and are being enabled by, web 2.0 applications.

This should encourage government to start experimenting with these applications. Most applications are free or cheap, which makes experimentation easier. It is not a matter of simply adopting the technology: opening a blog or a wiki on the government website will not by itself enhance citizen participation. Instead, it is about moving towards a more open and transparent relation with users, embracing the values of web 2.0. As we have seen, these solutions are implemented through a trial and error mechanism, and an iterative development through "beta" releases. This learning path includes working on appropriate governance mechanisms which ensure that user involvement is compatible with government's overall role and goals.

This is not to say that public administrations should fully embrace web 2.0 in all their eGovernment activities: other technologies and applications are very much needed in key domains such as interoperability, privacy and security. Web 2.0 is one more tool to pursue public goals, it is complementary to and does not replace existing eGovernment initiatives. Furthermore, there are important risks which have to be dealt with, such as destructive behaviour, privacy violations, and low quality services and content.

But as we have seen, citizens and civil servants are already using these applications in relation to government activities, and therefore governments are not in a position to decide whether these applications are used in public services, or not. As the project manager of Intellipedia puts it, "the key is risk management, not risk avoidance".

Therefore, to experiment and engage with these applications is not only potentially beneficial, but probably the safest option for government. This paper illustrates why and how this can be done in the different domains of government activity.

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References

- Bekkers, V. J. J. M. and V. E. Homburg (2005). The Information Ecology of E-Government: E-Government as Institutional and Technological Innovation in Public Administration. Amsterdam ; Washington, DC, IOS.
- Bryant, L. and D. Wilcox (2007). Many-to-Many: Lessons from Web 2.0 for Participation and E-democracy. Post Party Politics, Involve.
- Capgemini (2007). The User Challenge: Benchmarking The Supply Of Online Public Services, European Commission.
- Centeno, C., R. V. Bavel, et al. (2004). eGovernment in the EU in the next decade: the vision and key challenges, European Commission Joint Research Centre.
- Deere, G. E. (2006). The Business Impact of Blogs, Ipsos-Mori.
- Demmke, C. H., G. Meyer R. EC (2006). Decentralisation and accountability as focus of public administration modernisation. EIPA. Wien, Austrian Federal Chancellery.
- Drucker, P. F. (2001). Knowledge work and knowledge society : the social transformations of this century, Boston Spa : The British Library.
- Dunleavy, P., H. Margetts, et al. (2006). "New Public Management Is Dead - Long Live Digital-Era Governance." Journal of Public Administration Research and Theory **16**(3): 467-494.
- Dutton, W. and M. Peltu (2007). Reconfiguring Government–Public Engagements: Enhancing the Communicative Power of Citizens. Oxford, Oxford Internet Institute.
- EC (1998). Public sector information : a key resource for Europe. Green paper on public sector information in the information society. D. INFSO, European Commission. **COM(1998)585**.
- EC (2003). Directive 2003/98/ec of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information. Official Journal 345 of 31.12.2003.
- EC (2003). The Role of eGovernment for Europe's Future, European Commission. **COM(2003) 567**.
- Economist (2005). Crowned at last. The Economist.
- Finer, S. E. E. (1997). The history of government from the earliest times. Vol.3, Empires, monarchies, and the modern state. Oxford, Oxford University Press.
- Florida, R. L. (2002). The rise of the creative class : and how it's transforming work, leisure, community and everyday life. New York, Basic Books.
- Frissen, V., J. Millard, et al. (2007). The future of eGovernment: An exploration of ICT-driven models of eGovernment for the EU in 2020. D. Osimo, D. Zinnbauer and A. Bianchi, Joint Research Centre.
- Gartner (2007). Consumerization: the IT civil war. Gartner.
- Grabher, G. (1993). The embedded firm: on the socioeconomics of industrial networks, London, Routledge.
- Hogben, G. (2007). Security Issues and Recommendations for Online Social Networks. Position Paper. ENISA, European Network and Information Security Agency.

- Jäderblom, H. (2007). Access to information laws: Country differences, lessons and perspectives. ESF Conference on Electronic democracy: achievements and challenges, Vadstena, Sweden, European Science Foundation.
- Keen, A. (2007). The cult of the amateur : how today's internet is killing our culture. New York ; London, Doubleday.
- Kelman, S. (2002). "Remaking Federal Procurement." Public Contracts Law Journal **31**: pp. 581-622.
- Kohut, A. E. (2008). Social Networking and Online Videos Take Off: Internet's broader role in campaign 2008. T. P. R. Center, The PEW research center.
- Mayo, E. and T. Steinberg (2007). The Power of Information: An independent review, Cabinet Office.
- McAfee, A. E. (2006). "Enterprise 2.0: The Dawn of Emergent Collaboration." MIT Sloan Management Review **47**(3).
- McConnell, M. E. (2007). "Overhauling Intelligence." Foreign Affairs.
- Nonaka, I. and H. Takeuchi (1995). The knowledge-creating company: how Japanese companies create the dynamics of innovation. New York ; Oxford, Oxford University Press.
- Noveck, B. E. (2008). "Wiki-government." Democracy: A Journal of Ideas(7).
- O' Reilly, T. E. (2005). "What is web 2.0." from:
<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>.
- OECD (2005). Modernising government : the way forward. Paris, France, OECD.
- Osimo, D. and C. Centeno (2007). The elephant and the mice: will web 2.0 change public services? e-Challenges. Den Haag.
- Pascu, C. (2008). An empirical analysis of social computing. EuroCPR2008 Conference: Innovations in communications: The role of users, industry, and policy. Sevilla.
- Pascu, C., D. Osimo, et al. (2007). "The potential disruptive impact of Internet 2 based technologies " First Monday **12**(3).
- Pascu, C., D. Osimo, et al. (2008). "Social computing: implications for the EU social innovation landscape." Foresight **10**(1).
- Picci, L. (2007). Dal "Modello Consip" ad un "Sistema di procurement nazionale". Lo stato compratore. L. Fiorentino. Bologna, Il Mulino.
- Putnam, R. D., R. Leonardi, et al. (1993). Making democracy work : civic traditions in modern Italy. Princeton, N. J., Princeton University Press.
- Rainie, L. E. (2007). Wikipedia users. P. E. W. Internet.
- Ramboll (2004). Top of the web. User Satisfaction and Usage: Survey of eGovernment services, European Commission.
- Spagnolo, G. and F. Dini (2004). Meccanismi reputazionali e mercati elettronici: problematiche economiche e possibili soluzioni per il public procurement, CONSIP.
- von Hippel, E. (1976). "The Dominant Role of Users in the Scientific Instrument Innovation Process." Research policy **5**(3): 212-239.

- Wenger, E. (1998). Communities of practice : learning, meaning, and identity. Cambridge, Cambridge University Press.
- Williamson, O. E. (1985). The economic institutions of capitalism: firms, markets, relational contracting. New York, Free Press; London: Collier Macmillan.
- Young, O. (2007). Topic Overview: Web 2.0, Forrester Research.
- Zimmer, M. (2008). "Preface: Critical Perspective on web 2.0." First Monday 13(3).

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Abstract

Since 2003, a new wave of web-based applications, which now go under the name of web 2.0, have been launched with very little investment and have encountered dramatic success in terms of take-up. These applications rely on the concept of the user as a producer: of content (blog, wiki, Flickr), of taste/emotion (Last.fm, de.li.cious), of contacts (MySpace), and of reputation/feedback (eBay, TripAdvisor).

This report looks at how these applications are used and can be used in government-related activities. Based on a survey of existing initiatives in the public and private sector, it argues that web 2.0 applications affect both front and back office activities, such as: regulation, cross-agency collaboration, knowledge management, service provision, political participation and transparency, and law enforcement. For each of these domains, it spells out the key implications and analyzes existing cases. Finally, it draws some lessons to be learnt from existing cases, as well as possible policy options for government. Overall, web 2.0 is already used in many areas of government activity, often without the authorisation or even the knowledge of governmental institutions. To start experimenting with these applications appears to be not only potentially beneficial, but probably the safest option for government.

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