

eGovernment 2.0 – How can Government benefit from web 2.0?

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ABSTRACT

The purpose of this paper is to identify the major global trends in social computing/ collaborative computing as they seem to evolve under the 'web 2.0' heading, evaluate possible future trends seen from a technology point of view as well as from a socio-economic perspective and compare these trends to the current state and need for eGovernment. Finally, some general guidelines, ideas and projections for eGovernment will be proposed and discussed.

Keywords: web 2.0, social computing, citizen self service, autonomous IT, social inclusion, eGovernment, blogging, wikis,

1. BACKGROUND

As the number of global internet subscribers approaches the 1 billion mark and the importance of IT as a means to enhance social contacts across limits of time and space, the nature as well as the artefacts of the IT applications are changing dramatically; the trend, typically labelled web 2.0, is making it's inroad into almost all industries from gaming, media & entertainment, retail sales, news, to education and leisure industries at large. In a very short period, the uptake of applications like Skype, MySpace, Wikipedia, and YouTube has exploded. The underlying trend is clear: technologies and ease of use for making people connect and communicate is highly appealing.

Governments around the World are trying to catch up with the rapidly growing challenges on how to make public service and administration transparent, effective and efficient in spite of a the ever growing demand for services from a still more knowledgeable population and an adverse demographic development that puts pressure on the resources and on the traditional business models for Government

2. TECHNOLOGIES

Web 2.0 is a somewhat ambiguous term to describe the technological developed trends that are being deployed during the last few years. The terminology covers a broad spectre from software key components like advanced search engines, RSS-feeds, advanced parsers and video streaming techniques to grid computing and virtual reality. The relationship with the infrastructure and the emergence of true open standards for communication and particularly open data formats are some of the key accelerators. Technology convergence as seen in iPod's will lead to new ways of living together, working together.[17]

2.1 Key Characteristics of web 2.0 Technologies

Web 2.0 technologies are using the web as a platform:

This does not require any heavy SW installation on a client - it is a light weight programming model

In order to accomplish this, you need to have open standards and a Service Oriented Approach. Rather than programming it requires and is based on assembling services. Syndication of data, videos, pictures, music are just a few examples.

Focus is on connecting people - not computers

In US the tools to do this are described as 'folksonomies' – tools and techniques for creating wiki's, blogs as well as the use of tagging and feeds, which automatically will help other participants in a network to share your favourite links and ideas.

Rich User experience

One of the promising and widely used technologies is AJAX – Asynchronous JavaScript and XML – which may be best illustrated by Google maps and minimum lags when you move around the globe. Several parallel development projects to enable 'mash',

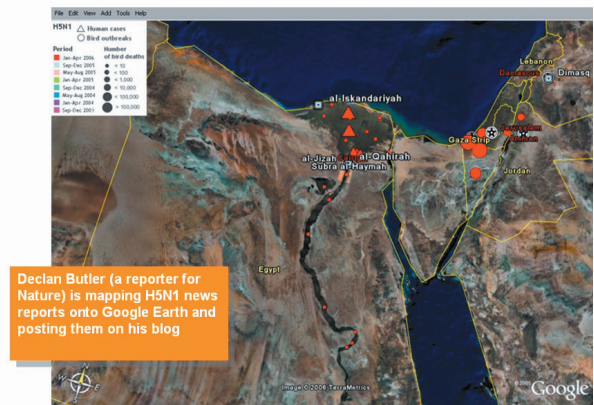


Figure 1: 'Mash up' – Observations of H5N1 mapped onto a Google map

Harnessing collective intelligence

To accomplish this, advanced search algorithms, parsers and 'mash up' technologies are required – Business Intelligence solutions are being developed side by side with intelligence systems for surveillance, video capturing, pattern recognition, and identity resolution. Also language translation tools are be-

coming more and more advanced and will be a normal feature in a few years.

Web 2.0 is NOT Web 3.0!

The term 'Web 3.0' has a different meaning and refers to thought and ideas on transforming the Web into a database, to make Data content accessible by multiple non-browser applications and to leverage new types of artificial intelligence, Semantic Web - sometimes called the Geospatial Web. This is not to be mixed up with the imminent web 2.0 opportunities and technologies.

3. SOCIAL PROGRAMMING BASIS FOR eGov 2.0

But even if the basic web 2.0 technologies are now in place and are important for the next leap forward, it is the societal and participatory aspect of the emerging business models that represent the most radical change we will expect to witness. Some of the models we see to day may not survive, while others are thriving to the extent that nobody had foreseen: 200.000 new videos are uploaded to YouTube everyday, 200 mio blogs exist on typePad, and Wikipedia holds almost 4 mio articles in 10 languages.

The social programming model used is called 'front end integration' or 'Crowd Sourcing'. While 'Crowd Sourcing' now has been applied to customer participation or even customer lead innovation and product development, it is still not widely experienced within development of public or health care areas, even if some promising examples exist; what we do see though is a number of individual initiatives to create communities, gather interest groups around temporary cases (An emergency situation, a criminal case, communicative diseases) or more permanent and on-going (rate my teacher, evaluate quality of other public services, dating, network for patient groups, elderly etc.)

4. STRUCTURING THE SOCIAL PROGRAMMING UNIVERSE

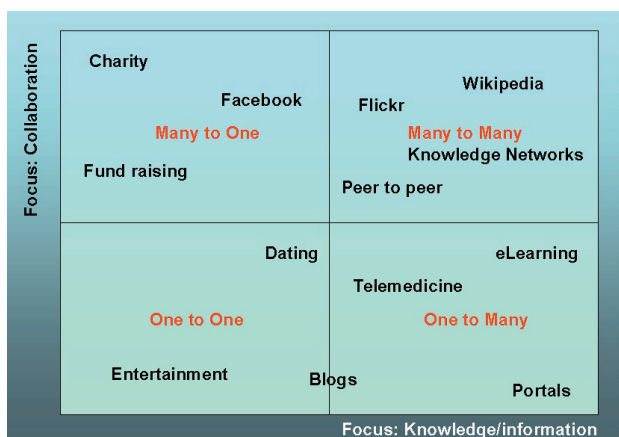


Figure 2: Topology of Social Programming Models

In figure 2 we have tried to structure the universe of the different social programming models; on the vertical axes we plot

the degree of collaboration from person-to-person to real communities ('us') and on the horizontal scale we visualize the amount of knowledge content in the communication model in question.

Somewhere in the middle of the diagram we will find a limited, number of involved persons that share viewpoints and exchange information and knowledge. This may happen in an open environment or in a closed forum. It may be a network of networks (like a Plaxo or LinkedIn community)

On the lower right side of the model we have the traditional web 1.0 models: a company or a public entity that establish an (information-rich) portal, which an individual could visit. In some cases this is a very well working interactive service, like the eGovernment services that are constantly being assessed globally or regionally. [13]

On the upper right side of the model we find the innovative, open and collaborative models, where individual persons or organisations share and develop new know how. In our terminology this quadrant represents the true spirit of web 2.0 and will be where new, disruptive solutions will appear.

It is not our message that societal changes are being brought about solely by the introduction of new technology like web 2.0 techniques but rather that the interaction between social changes such as globalisation, like networked organisations and the new generation's take-up of digital tools is determining the playground for new inter-human relations and interaction, even forcing the acceptance of new technology.

5. CURRENT STATE OF EGOVERNMENT AND 'BEST PRACTICES'

In Europe the 4th ministerial eGovernment Conference in Lisbon in September 2007 [15] dealt with improving eGovernment. The theme of the conference was 'Reaping the benefits of eGovernment' and among the key focus areas was the issue how web 2.0 technologies could help achieve the targets set by the i2010 objectives. The Institute for Prospective Technology Studies (IPTS) summed up the recommendations and provided a number of 'best practices' cases from Europe and other countries, which can be used as a starting point.

Professor David Osimo from IPTS [18] suggested that Governments evaluated the current portfolio of offerings and particularly looked for new solutions in the following order:

Back Office solutions and support systems:

- Regulatory systems and applications to make them easier to apply and use
- Cross Agency Collaboration applications to break down traditional silos
- Knowledge Management – improving collaboration and localisation between experts
- Interoperability as a theme
- Human Resource Management applications embracing the employees
- Public Procurement and tendering – effective interaction between buyers, specialists and vendors
- Innovation in a more general sense – like improving new ideas and re-thinking processes

Front Office Systems – services towards citizens

- Service delivery to the public
- eParticipation – encouraging citizens to participate in - improving services, quality of life, environment, traffic, and social conditions
- Law enforcement – improving security of neighbourhood
- Public Sector information – making it transparent, complete, accessible
- Improving Social inclusion – of minorities, handicapped, immigrants

www.peertopatent.org aims at making the regulatory framework on patents easier to deal with for holders of good ideas that are able to include peers in the refinement of the idea before actually turning in an (expensive) patent application. [1]

Intellipedia is used across 16 agencies in US that are dealing with intelligence work. As such, it is created in a closed, secure network – but as the agencies are hiring new analysts, all the techniques used are the ones known and mastered by any teenager.

In Denmark the Ministry of Finances, housing the “Digital Taskforce”, have created a Wiki for the purpose of creating an integration model, for the public sector servants to participate in modernising the IT infrastructure. (See *oim.modernisering.dk*) [2]

Also in Denmark, *sundhed.dk* (‘health.dk’) has launched a forum (*diabeteschat.dk*) where diabetes patients can exchange knowledge and exchange experiences about their disease. The initiative keep the patient from feeling alone as it is possible to connect in a social context with peers. [3]

UK Government is using *YouTube* as a tool for ‘viral marketing’. One of the recent examples was a video showing the impact on Global Warming as an inspiration for the citizens to save energy and reduce CO2 exhaustion. This is a clear example of eParticipation.

In UK patients discuss and rate their experiences resulting from a hospital treatment at *patientopinion.co.uk* for the hospital to become more aware of the end-users experiences and to get (free) knowledge. This knowledge is vital for the NHS-administrators of the health sector, trying to answer questions on where to make things better, cheaper, and more effective.[4]

In US (*nyc.mybikelane.com*) bikers have created a site where one can complain about road conditions, trucks and cars blocking bike lanes. Pictures are taken and license plates are registered and merged with geographic data in order to create a collective knowledge on where problems exist, and to speak up, taking advantage of the network at large, to the local government. [5]

Following the Hurricane Katrina in New Orleans, a solution to help localize the misplaced persons and family members was established by 2 persons in just 2 days after the incident. It is called *www.scipionus.com*. [6]

Value Jam is a true web 2.0 technology developed by and run by IBM. [7] It has been used externally as a pre-conference

global discussion forum by UN in connection with the Habitat conference in Canada on the deteriorating living conditions in major cities around the World. People from all over the World joined up and met at Internet cafés and meeting places or participated from home in a discussion of priorities and important aspects of city dwelling. (See [7] www.habitatjam.com).

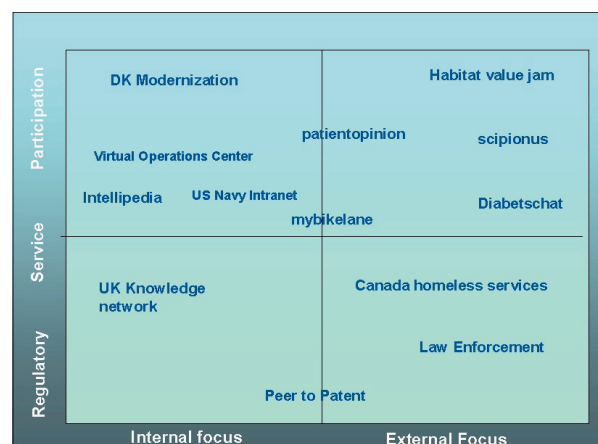


Figure 3: Overview of current state – best practices/examples

6. RECENT TRENDS - GOV 2.0

Since September 2008 the World has changed profoundly and the need for national as well as international collaboration between Governments, Governments and business and Governments and citizens have never been more obvious; and as the core of web 2.0 can be seen as a new paradigm of collaboration and inclusion, it came as no surprise that these tools have been deployed in some of the major efforts to stem the financial tide. The most markedly of course has been the presidential campaign of Barack Obama, which is already breaking down the traditional tight walls around the White House. (See ref [19] Government Transition WiKi 2009 White House).

The purpose for this campaign was described as a platform for changing Government:

- To facilitate an open marketplace of ideas and recommendations on transition strategies for the next administration.
- To serve as a repository for transition strategy documents, white papers, links, resources, etc.
- To serve as forum for dialogue and related announcements.
- To provide a place where strategists for the presidential campaigns (e.g. future technology “czars”) might share their visions.
- To track key transition issues and personnel moves of the new administration in 2009.

Based on the success of the new US President, the World’s political leaders are eagerly trying to learn to master web 2.0. The new generation of politicians are all embracing Facebook, Twitter and YouTube, and a number of public campaigns, so far primarily directed against young people, are being launched using this kind of tools. To some politicians it may come as a big surprise that this is not a media to ‘control’ voters - it is an open, transparent marketplace for exchange of opinions.

The Financial Crisis also changed the relations between the financial advisors and their customers, and in this sector web 2.0 is being deployed to regain confidence and create a new openness. One would expect that as the Government financial aid packages are being implemented, the transparency requests that come along with the Government Aid also count for use of faster and more reliable feed back mechanisms between the financial sector, the controlling agencies, the politicians and the general public.

The impact of the crisis is taking its toll in any industry including Government. This means that although the pressure for new and more effective IT solutions has never been so heavy, the funding capabilities are limited as funds are being redirected to people and sectors in need. The answer to this is to deploy web 2.0 technologies as they typically can be implemented incrementally requiring fewer resources and making better use of information and services already existing using mash-up or similar technologies. So the take-up of web 2.0 in Government is accelerating.

See for instance [22] for a blog on interesting cases from Canada, US and some international experiences.

7. FUTURE IMPACT ON GOVERNMENT

It seems that there is a general acceptance of the trend among teenagers to be 'always on'; using mobile phones equipped with video cameras, browser capabilities, MMS-services and i-phones, so it is fair to expect that this 'addiction' that is the way-of-life in the teenage years, will stick with the citizens of tomorrow.

As communication channels are omnipresent and capacity is growing, the days of the laptop and the idea of carrying around a lot of data may be gone before we know of it. As these teenagers grow up and outperform their elder brothers and sisters 'only' brought up by PC's and web 1.0, it may even influence the way we are thinking democracy today.

So how would Governments 10 years from now look like in a World where everybody expects data, information and communication to be available all the time?

Before Government engage in rethinking services and citizen relationship to embrace these changes in a meaningful way, certain basic features in the IT infrastructure needs to be put in place:

- Identity Management
- An enhanced model for data ownership
- A trust model for public services/services offered on behalf of the public sector

7.1 ID Management

As Government cannot exist in a World consisting of masked and anonymous individuals, a practical and acceptable way of identifying the Citizens (and aliens) must be put in place, which at the same time can guarantee maintenance of the privacy laws. This is more than requiring that every citizen has a 'smart card' it is in fact a requirement of Government being able to identify individuals' public acts - and at the same time establish law-and-technology fences protecting citizens' private spheres, where Government will not check identities nor control behaviour.

7.2 An enhanced Model for Data Ownership

This is required because there is a potential problem in the way that traditional bureaucracies look upon the data bases collected and used for administrative purposes. It is particularly noticeable in the Health sector, where Doctors tend to believe that Patients' Journals belong to them - not to the Patients. The

same goes for other types of citizens' records: The Authority that collects and stores the data does not take into account that the data belong to the persons (or legal entities) which they describe, sometimes to great intimacy - and occasionally erroneously!

So a change in attitude, in legislation and in access rights management is needed: Eurocities' sub-organisation 'The Knowledge Society', formerly known as Telecities' has invented an e-Citizens Charter, which underlines that data about the citizens belong to the citizen, that the authorities act as custodians and gate keepers, and further that the Citizen has a right to his/her data - as well as an obligation to correct them, if needed.

7.3 Federated Trust Model for Services and Entities

The third requirement on the infrastructure is to establish a trust model for the services offered as part of - or on behalf of Government. As this is rapidly required when Governments are beginning to deploy shared services centres, or - as a consequence of lack of new employees - are forced to outsource even basis services, it becomes necessary to implement a trust model for which services are in fact endorsed and secure and which are simply 'pirates'.

The trust model that is currently implemented around digital signatures - particularly within the EU, but also in some of the Far East countries - calls for a centralized federated security model, where the identity of the individual accessing a service or a web site will be controlled by a Certificate Authority, typically a Government controlled or at least certified authority.

This is a feasible way of securing that the individuals that participate in Gov2.0 services and social communities can be identified and do not act as anonymous persons. But it may be too much to ask for in a number of situations; One thing is to participate in a social service role, where you are assisting a person in need where your full identity is required to be revealed for that person to trust you, but if you are participating merely in a general advisory role for the local Government on where the next expansion of the subway should be, the only thing that is needed is to be sure that you are a member of the community.

In other words: We need to have a user-centric trust model, where the user can decide how much 'identity' to reveal: A real person, a person over 18 year, a local citizen, a person's name but no address, full identity. User centric Identity models are being developed and they are perfectly fit for web 2.0.

An European Study - PRIME - [20] led by the IBM Research center in Zurich, Switzerland, received the IPPA Global award for developing a set of standards, recommendations and a prototype for a User Centric Identity Management Scheme that would provide the capabilities listed above.

7.4 What will be the Response of Government?

Governments around the World may choose to react in any of 3 ways to the current trends in technology, the web 2.0 development and the need for security and ID management plus the ever increasing financial pressures:

- Behave as a 'big sister' - taking care of the citizens as much as you can with less and less resources, but at all cost try to control environment and keep down social unrest.
- Retreat and cut down on spending and services, try to rationalize, use shared service centres, out-source what ever possible and accept social unrest to a certain degree
- Be proactive: Involve all citizens early on, accept citizens' rights to their own data and invite them in as a creative partner together with NGO's, patient groups, encourage networks and self-control [12]

It seems that the future optimum solution will be to open access to hitherto Governmentally protected and owned data (guided by proper, user-centric ID management and securing privacy!) and leaving control to the constituents of tomorrow and positively help them to create blogs, wiki's, second life social workspaces. Maybe taking the lead in difficult areas – and then leave it to the users.

8. eGOVERNMENT 2.0: SUMMARY OF RECOMMENDATIONS

In 2009 it is now a fact that Facebook is the most popular web-application of all - even in China. This means that all teenagers of today will be 'Technology Natives' when they start studying and working. (Some of them might have found out that you shouldn't reveal everything about yourself on the net). This is a promise for the acceptance of Gov 2.0 solutions, but it puts another sort of pressure on tomorrow's government organisations as employers. These youngsters will be looking for WiKi's, for chatrooms, for collaborative on-line services when they eventually will be looking for jobs.

So where will we see the most obvious use of web 2.0 technologies in Government? As a tool for making the employees more productive? As a way to let citizens serve themselves? As a tool to improve growth and prosperity locally, nationally? Or, as has been demonstrated in the US Presidential Election - as a tool to strengthen democracy? Or, maybe - as a tool to increase security in the society by having everybody watch his neighbour ?

We want to stress that the last possibility is certainly not a recommendation from our side. We mention it because politicians need to choose, to set standards for what is socially acceptable and what is not. The democratic values need to be strengthened by the application of technology, not weakened.

But as the most creative, new and disruptive ideas and business models on the Internet have proved to be impossible to predict then rather than focus on HOW things could be done, it seems safer to point out some of the areas where a further deployment of web 2.0 techniques and business models are likely to happen:

eDemocracy can be looked upon as an example where we do have some experience and as the number of politicians that create blogs and sign up for Facebook pages, this is an obvious area where traditional party structure might be replaced by more volatile, but much more outspoken fora for various interest groups; if political parties want to maintain a structured and controlled environment, it seems safe to expect more directed, maybe even internationally strong networks that have the potential to change the political landscape.

The network of opinions does not recognize any borderlines - in this way it is also a channel to those minority groups that are suppressed, struggling for acceptance in their countries.

Health Care Networks are already emerging as focus for new ideas and network building; the adverse demographic development, the ageing population and the increased number of people suffering from life style inflicted chronic diseases coupled

with the still fewer persons actively engaged in health care delivery, simply makes it mandatory to rethink this area;

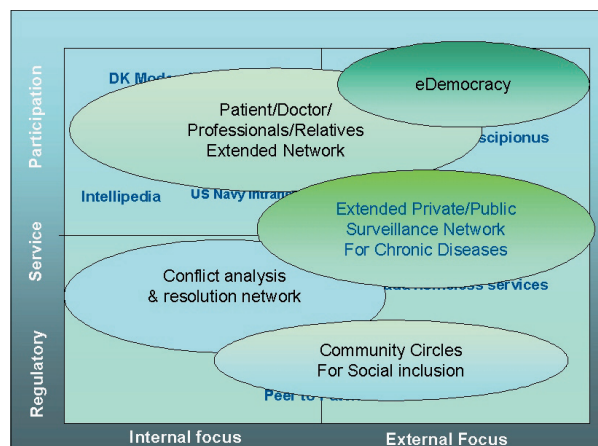


Figure 4: Key areas for emerging eGov 2.0 applications

Governments could play a large role in engaging NGO's, private networks of friends and family and actively establishing frameworks and platforms for specialist and health care workers.

Public/Private Surveillance Networks to ensure higher utilization of scarce number of skilled social workers and support staff; This trend may very well be supported by the globalisation trend in some key areas crossing fiscal boundaries – and potentially also involving the medical industry as well as various payer models, insurance companies, municipalities and regions.

Community Circles are already mushrooming, and it may be one of the most promising fields for pro-active Governments to try to break down barriers between ethnical and cultural groups by addressing the young users by applying their own tools and techniques. As a supplement to youth clubs, a *virtual social network* with the capability of making it easier for young persons, that may otherwise risk dropping out, find friends, role models, substitute for big brothers or a missing father.

Social inclusion using the Facebook or YouTube models and appealing use of mobile devices may be the best we can do for integration in our European societies of multi-ethnicity.

If Governments observe the caveats mentioned, it would be possible to deploy the web 2.0 tools in an inclusive way to help seniors stay in contact with relatives, to embrace immigrants and help produce a security net for real welfare and community building.

Health Care and social care for elderly is one of the more promising areas for the application of web 2.0 technologies - and eGovernment 2.0 is all about empowering the citizens for whom the government exists.

(P.S.: even EU is blogging away: www.epractice.eu/blog/75 - it is here to stay!) [18]

Lyngby, Denmark, February 8, 2009

Useful Links:

- [1] Peer to patent: www.peertopatent.org
- [2] Danish eGovernment website: oim.modernisering.dk
- [3] Diabetes chat: diabeteschat.dk
- [4] Patients opinion: patientopinion.co.uk
- [5] My bike lane: nyc.mybikelane.com
- [6] Scipionus: www.scipionus.com
- [7] IBM discussion: www.habitatjam.com
- [8] 4th Ministerial Conference on eGov: IPTS and Forrester 2007: is.jrc.es/pages/EAP/eS.html
- [9] Politicians blogging: www.egovblog.com/2006/12/19/politicians-in-europe-take-advantage-of-web-20/
- [10] Best practices link www.epractice.eu/document/3928
- [11] Annual Report 2007: ec.europa.eu/information_society/eeurope/i2010/key_documents/index_en.htm
- [12] The True Impact on eGov – Telecities 2007: www.atp.nl/congresses/telecities/Telecities%20Hinssen.pdf
- [13] ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/online_availability_2006.pdf
- EU maturity analysis/Cap Gemini
- [14] http://www.fcw.com/print/22_2/flipside/151369-1.html?topic=egovernment
- [15] www.slideshare.net/osimod/web2-0-for-egovernment-why-and-how/ 4th Ministerial Conference 2007:
- [16] www.ccegov.eu/downloads/Handbook_Final_031207.pdf
- [17] www-306.ibm.com/software/info/web20/ - IBM Web 2.0 examples/solutions & strategy
- [18] EU on Web 2.0: www.epractice.eu/blog/75
- [19] <http://govtransition2009.wik.is/> - White House - Government Transition Wiki
- [20] PRIME - Privacy and Identity Management for Europe - <https://www.prime-project.eu/>
- [21] IBM Research Center, User Centric ID Management - http://www.zurich.ibm.com/news/08/iapp_award.html
- [22] Blog covering web 2.0 in Canada, US and some international references <http://government20bestpractices.pbwiki.com/FrontPage>

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