Web 2.0: A Basis for the Second Society?

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ABSTRACT

Web 2.0 applications gain in importance in today's society. This development cannot be ignored by the public sector, because Web 2.0 can take the evolution of E-Government in new directions. This paper discusses the impact of (local) Web 2.0 applications on the further development of E-government. Web 2.0 applications have much potential for the public sector in terms of interaction, participation and transparency. However, examples of websites with transaction or transformation characteristics are rare. For that reason it is too early to speak about a virtual state. In order to realize these two final stages of E-Government, it is important to take into account the potential risks of Web 2.0 applications as well, like isolation, exclusion, violation of privacy and misuse of information**.**

Categories and Subject Descriptors

K.4 [**Computers and Society**]: Staffing

General Terms

Management, Human Factors

Keywords

Web 2.0, e-Government, Second Society

1. INTRODUCTION

Potential candidates for the presidential elections in the United States have embraced YouTube to get into contact with their potential voters and to debate about political issues. This example is an indication that Web 2.0 applications gain in importance in today's society. Web 2.0 is often presented as a revolutionary way of gathering, organizing and sharing of information. Well-known examples of Web 2.0 applications are Google, Weblogs, Wikipedia, YouTube, MySpace and Second Life. Despite the fact that some people embrace Web 2.0, some critics also state that Web 2.0 is an exaggerated hype and raise the question whether the potential of Web 2.0 will be realized in practice. Nevertheless Web 2.0 developments cannot be ignored by the public sector, because it could take the evolution of e-Government in a new direction [1].

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2. OBJECTIVES

This paper discusses the impact of (local) Web 2.0 applications on the further development of E-government. The research questions to be answered in this paper are:

- What kind of local Web 2.0 applications can be found in the Netherlands and what are the characteristics and functions of these applications?
- What is the context in which E-Government and Web 2.0 can be placed?
- What are the expected opportunities and threats of Web 2.0 for the public sector and citizens?

The paper is organized as follows. In section 3 we explore the notions of E-Government and Web 2.0 and discuss these concepts in a broader context. Against this background we present in section 4 a framework to classify Web 2.0 applications. Section 5 presents six examples of (local) Web 2.0 applications in the Netherlands. These cases will be placed in the framework that we have developed. In section 6 we draw some conclusions and discuss the opportunities and threats of Web 2.0 for the public sector.

3. E-GOVERNMENT AND WEB 2.0 IN CONTEXT

In this section we will explore the notions of E-Government and Web 2.0. We take the view that these notions should be placed in a broader context: the so-called Second Society.

3.1 Second Society

In recent years one can observe the evolution of a virtual world alongside the physical world. A growing number of activities is taking place within the virtual reality of the Internet. More and more (business) services are delivered on line. Nowadays websites can be used for digital banking, shopping, dating, chatting and sharing interests with others. New virtual communities and networks are developing. An example is Second Life. The evolution of a virtual world has impact on the public sector too. An indicator is the number of government services available on-line that is growing steadily in the Netherlands [2]. Nowadays the public sector stands with one leg in the physical world and with the other leg in the virtual world. This is no static situation. New technological and societal developments will have impact on a further evolution.

The development of technology is impressive. Examples are mobile navigation systems (TomTom) and YouTube. All these new technologies have societal implications. They will change the way citizens interact with each other and with governments. New technology can play a crucial role in fixing the problems of modern governments too [3]. An example is the provision of (integrated) services by governments. Some scientific reports speak about a user generated state [4].

At the same time the public sector is facing some societal developments in which technology plays or can play an important role. Examples are the individualization, the fragmentation of society, the growing attention for the quality of the provision of services and performance measurement, the active role of citizens in the policy process (co-production), the effects of aging and the discussion about scaling up and down in for example hospitals and schools. Web 2.0 applications make it possible to observe these developments from a different perspective. In the current society personalized forms of integral and tailor-made services are becoming more important.

To summarize: both technological and societal developments will change the position of the public sector in the virtual and physical world. We define the possible evolution of the public sector as the Second Society [5]. See figure 1.

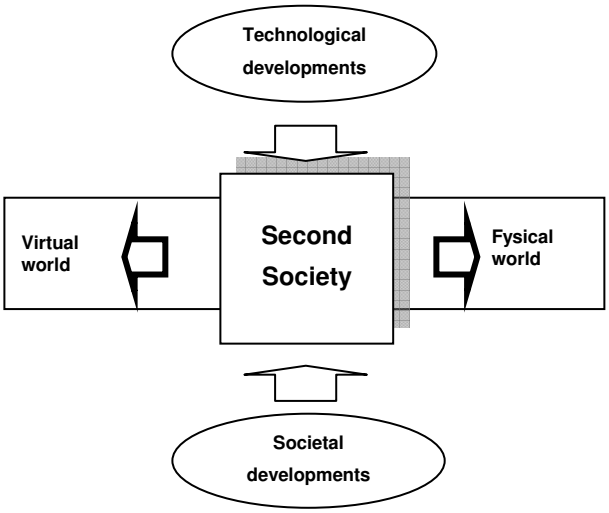

Figure 1: The Second Society as a new public sector

The Second Society can be approached on a macro level (like a state or global community) and on a micro level (like a district in a city). In this paper explore the implications of Web 2.0 on the local level, as the interaction between government and citizens (two important actors in the Second Society) is most visible.

3.2 E-Government

Under the label of E-Government governments are undertaking different activities that are directly related to the development of the Second Society. In this paper we explore the implications of local Web 2.0 applications on E-government, because Web 2.0 is expected to have far-reaching impact on (electronic) governments [4]. Web 2.0 applications can stimulate the further development of E-government. The notion of E-Government [6][7][8] is commonly used within the public sector. E-Government is also a prominent item on the Dutch and European agenda [2][9]. It can be described as "the use of modern information and communication technologies, especially Internet and web technology, by a public organization to support or redefine the existing and/or future (information, communication and transaction) relations with 'stakeholders' in the internal and external environment in order to create added value" [6].

The development of E-government is often described in the literature by different stages [10]. In this paper we will follow the approach of Seifert, who distinguishes four development stages of E-Government, namely presence, interaction, transaction and transformation [11].

1) The *presence stage* is typified by a simple information-providing Web site of a passive nature, sometimes described as "brochureware", indicating the same level of functionality as a paper brochure.
2) The *interaction stage* offers simple interactions between government and citizens (G2C), government to business (G2B), or government agency to government agency (G2G). Interaction stage Web sites provide e-mail contact and interactive forms that generate informational responses.
3) The *transaction stage* enables transactions such as paying for license renewals online, paying taxes or fees, or submitting bids for procurement contracts.
4) The (highest) *transformation stage*, most closely aligned with the concept of governance, involves a reinvention of how government functions are conceived and organized. The goal is a seamless flow of information and collaborative decision making between different actors. Transformative E-Government initiatives often seek to remove the organizational barriers that promote agency-centric solutions and instead, promote customer-centric solutions. At its most advanced level, E-Government could potentially reorganize, combine, and/or eliminate existing agencies and replace them with virtual organizations. In this stage we can speak about the virtual state.

3.3 Web 2.0

Web 2.0 is not a uniform concept, but a generic term or metaphor for new Internet technologies and applications. Web 2.0 can be seen as a revival, intensification, renewal or even as a second generation of the Internet in which user generated content has a central place. Osimo and Burgelman [12] state that Web 2.0 is about both technology and attitude. Miller describes Web 2.0 as follows: "Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an architecture of participation and going beyond the page metaphor of Web 1.0 to deliver rich user experiences" [13]. Web 2.0 has also be called the social web, because its content can be more easily generated by users, as well as the collective intelligence of users. Users are not the passive consumers of content, but co-producers. Interaction plays an important role in Web 2.0 to create shared information.

4. METHODOLOGY

It is important to state that Web 2.0 is a new stage in the technical development and no replacement of previous technologies [14]. Woods [1] states that Web 2.0 is best understood as the latest phase in the evolution of the Internet and the Web. We have to consider too that our actual frames of reference are different from the frames of references we had in the past. Interaction by sending e-mails in the past has for example a different character then interaction in virtual communities in Web 2.0. When we focus on characteristics of Web 2.0 we can conclude that Web 2.0 has the potential to make the goals of E-Government accessible. In order to describe the implications of Web 2.0 for the public sector we have to classify Web 2.0 applications. We have chosen an empirical approach.

4.1 Classification of Local Web 2.0 Applications

Local Web 2.0 applications can be classified in different ways. In the first place we can make a classification based on distinguishable characteristics.

4.2 Generic versus Specific

Web 2.0 applications can have a general character. An example is Google Earth. At the other hand Web 2.0 applications can have a specific character too, like an interactive website of a specific district within a city. A Dutch example is the website www.ede-west.nl.

4.3 Static versus Dynamic

Web 2.0 applications can have a static character. An example is YouTube. On this website one can watch self made movies created by other users. These movies have to be put on the website first, before it can be viewed by other people. At the other hand Web 2.0 applications can have a dynamic character too. An example is MSN, on which one can have live chats and pictures or documents can be exchanged.

4.4 Closed versus Open

Web 2.0 applications can be operational in a closed environment [4]. An example is Linked-in. On this professional networking community people can block their contacts. At the other hand Web 2.0 applications can be open. An example is Google Maps that makes it possible to search for information in specific geographical locations.

4.5 Personal versus Collective

Web 2.0 applications can be personal. An example is weblogs, on which people can share personal experiences with other interested people. The number of blogs in the public sector is growing at a rapid rate [15]. At the other hand Web 2.0 applications can also serve collective interests. A Dutch example is the website www.vlieghinder.nl that aims to protect the interests of the people who suffer from the noise of airplanes.

Second, we can classify local Web 2.0 applications based on the functions that these applications fulfill [16].

4.6 Sharing of Information: New Source of Knowledge

Web 2.0 applications can be used as a new way to share and exchange information, like pictures, movies, news and music. Governments can use Web 2.0 applications to inform citizens, for example through GIS. Dutch examples are “Almere in Map” (www.almere.nl) and “Rotterdam in Map” (www.rotterdam.nl). Some websites contains (personal) assessments about persons, like teachers (wwww.meinprof.de) or books.

4.7 Mobilization: New Ways of Participation

Web 2.0 applications have mobilizing potential [3]. An example is to make other people aware of some unwelcome situations, for example unsafe locations in cities. By tagging people can mark these locations on digital maps. On the website www.landroof.nl one can mark nature areas that are at risk because of building plans. The government and politicians can also use Web 2.0 applications for their purposes. An example is the potential American president candidates who try to reach their voters by movies placed on YouTube.

4.8 Meeting: Virtual Platforms

Web 2.0 applications can be used to meet each other (“virtual platform”). These social activities can be restricted to contacts in virtual worlds (for example MySpace and Second Life) but also be a base for real meetings. These social contacts can be without obligations (“fun”), but can have functional goals. Examples are the bringing together of people with shared interests of the same professional background in communities.

4.9 Supporting: Provision of Services

Web 2.0 applications offer new ways of delivering services. Several cities in the Netherlands offer digital maps with information about locations of public organizations, like hospitals, libraries, nursery and schools. Some cities (like Nijmegen and Brugge) offer information about the history of houses, building licenses and so on.

4.10 Transactions: Digital Market

Web 2.0 applications can offer new ways of doing business (“transactions”) by offering new services or by matching supply and demand in innovative ways. An example is eBay. A Dutch example is the website www.marktplaats.nl. On this virtual market everybody can sell and buy goods. Another example is www.lula.com. This website offers the possibility to publish and distribute documents in an active way. The authors can be publisher, printer and/or shopper.

Not these functions, but the way these functions are filled in is typical for Web 2.0. In the First World War the carrier pigeon was used to send messages to soldiers. This is an example of sharing information. However, the range of the carrier pigeon was literally limited. Internet has no limitations (time, space and amount of messages) for sharing information. So in the modern knowledge society sharing information has a different character.

5. RESULTS

In this section we will discuss six local Dutch examples of Web 2.0 applications and put them in the framework of characteristics and functions of Web 2.0 as described in the previous section.

5.1 Police corps Haaglanden: www.hoeveiligismijnwijk.nl

In April 2006 police corps Haaglanden launched the website www.hoeveiligismijnwijk.nl. An important goal of this website is to provide citizens a 'realistic overview' of the local safety situation. On this GIS-based website eleven categories of reported crimes within a city or district can be visualized on a map. It is also possible to compare actual crimes with previous crimes ("monitoring"). The website provides citizens with advices to prevent these crimes too.

5.2 Region of Castricum: www.vlieghinder.nl

In June 2003 the Platform of Nuisance by Airplanes Region of Castricum (Platform Vlieghinder Regio Castricum in Dutch) was established. The Platform aims to support people who claim to suffer from noise by airplanes using the Poldertrack of Airport Schiphol. The goal of the PVRC is to reduce the level of noise by airplanes by gaining publicity (www.vlieghinder.nl). In order to ground their complaint the Platform has developed (together with Geluidsnet) a system to measure the sound of airplanes on different locations. By means of a GIS application it is possible to monitor the movements of airplanes in real-life (www.radar.vlieghinder.nl).

5.3 City of Groningen: www.hoogkerk.groningen.nl

In November 2005 the website of Hoogkerk was launched. Hoogkerk is a village that belongs to the municipality of Groningen. The goal of the website is to stimulate the cohesion and the mutual commitment of the citizens in Hoogkerk. Other goals are stimulating the interactions between governmental organizations and citizens and to increase the provision of services. The website informs citizens about actual developments in Hoogkerk. Citizens can discuss with each other on a digital forum. Since January 2007 people can chat every Wednesday in the afternoon with police officers during "digital consulting hours". The website offers WijkTV too. This application contains video impressions made by citizens in Hoogkerk.

5.4 City of Helmond: www.virtueelhelmond.nl

In 2004 Helmond has developed a GIS application aimed at stimulating the participation of citizens (www.virtueelhelmond.nl). In Virtuocity one can walk in the virtual and 3D centre of this city. In this virtual world the planned urban renewal projects have been realized already. The website offers a forum on which citizens can discuss their opinions about the urban renewal projects. For some projects it was possible to vote for different alternatives. More then 200 people have voted on the website.

5.5 City of Nijmegen: www.dewijkwebsite.nl

The (renewed) website of district Nijmegen-East was launched in 2006. This website aims to intensify the interactions between the citizens. The website contains a lot of information about the district and its history. The district calendar ("wijkagenda") informs citizens about activities in Nijmegen-East. The website offers a forum too, so that citizens can discuss with each other. Citizens can sell goods on the digital 'prikbord'. Finally, the website contains video movies about events in the district (WijkTV).

5.6 City of Nijmegen: ww.nijmegen.nl/hetarchief

The city of Nijmegen celebrated its 2000th anniversary. In this year Nijmegen was the first city that has develop a 'digital historical atlas'. With this GIS-application visitors of the website can have a detailed look at historical objects in the centre of Nijmegen (www.nijmegen.nl/hetarchief). For the city of Nijmegen this application is a new step in the further improvement of the provision of services.

Despite the fact that all these websites are local Web 2.0 applications, we observed distinguishing freatures; see table 2.

Table 2. Characteristics of Dutch Web 2.0 applications

Characteristics	Examples
Generic	Website of district (Groningen; Nijmegen)
Specific	Monitoring sound of airplanes (Region Castricum); 3D impression of urban renewal projects (Helmond)
Static	Historical maps (Nijmegen)
Dynamic	District Calendar (Nijmegen); Live radar maps (Region Castricum)
Closed	Registration to enter digital forum (Nijmegen)
Open	Reported crime maps (Haaglanden)
Personal	Digital consulting hours (Groningen)
Collective	Mobilization of citizens (Region of Castricum)

Table 2 shows that local Web 2.0 applications have different characteristics. The next question is whether local Web 2.0 applications have different functions too.

The most important function of the website of Hoogkerk is to bring the citizens of this district into contact with each other and to inform them about what is going on in Hoogkerk. The most important goal of the website of Helmond is to inform them about urban renewal projects. This website contains a virtual platform for discussion too. The website of Police Haaglanden aims to inform citizens about crimes in their districts and provides them with advices to prevent crimes (virtual provision of services). The website of the PVRC has been set up to inform and mobilize citizens in order to put the topic noise by airplanes on the policy agenda. The website of Nijmegen-East has the same function as the website of Hoogkerk, although the first website contains a virtual advertisement platform, on which citizens can sell goods. Finally the website of Nijmegen contains

location-based information about houses in the centre. This can be seen as virtual provision of services towards (new) owners of these houses. See Table 3.

Table 3. Functions of Dutch Web 2.0 applications

Website	Share	Mob	Meet	Sup	Trans
Hoogkerk	X		X		
Helmond	X		X		
Haaglanden	X			X	
Vlieghinder	X	X			
Nijmegen-Oost	X		X		X
Nijmgen	X			X	

When we consider table 3 we can conclude that sharing of information is the most important function of the investigated Dutch Web 2.0 applications. Meeting is an important function too. Less important functions are the delivery of services, mobilisation and transactions. Transaction is a function in only one investigated Dutch Web 2.0, namely publishing advertisements on the website of Nijmegen-Oost to sell goods.

6. CONCLUSIONS

Recent technological and societal developments have impact on what we call the Second Society. An important technological development is Web 2.0. In this paper we explored the implications of local Web 2.0 applications for E-Government.

In the four stages of E-Government we can (indirectly) observe a shift from the so-called Web 1.0 to Web 2.0. Web 2.0 is not a uniform concept, but a generic term for new Internet technologies and applications. Important characteristics of Web 2.0 applications are virtual networks, sharing of information, active users that influence the products and the dynamic content of information. When we focus on the provision of services by governments Web 2.0 applications can be seen as a new basis for E-Government.

This paper has shown that local Web 2.0 applications can have different characteristics and functions. For that reason we have tried to classify local Web 2.0 applications. We made classifications based on distinguishable characteristics (generic versus specific, dynamic versus static, closed versus open and personal versus collective) and functions (sharing of information, meeting and transactions) of Web 2.0 applications.

This framework has been used to analyze some examples of Web 2.0 applications in the Netherlands. At the one hand we can conclude that these applications have much potential for the public sector in terms of interaction, participation and transparency. However, when we take into account the four developing stages of E-Government, we have to conclude that none of the investigated Dutch examples has transaction or transformation characteristics. So it is still too early to speak about a virtual state.

In order to realize these final two stages of E-Government, it is important to take into account some potential risks and challenges of Web 2.0 applications. Especially business-literature highlights the advantages and opportunities of Web 2.0 applications. However, we should concentrate on the threats of Web 2.0 to the public sector as well. We have to highlight that these risks and challenges are not restricted to Web 2.0 applications only. These factors deserve extra attention because Web 2.0 is expected to have more impact then the past.

We distinguish the following seven risks and challenges:

6.1 Social Interaction versus Isolation

Web 2.0 can stimulate social interactions and communication between different people all over the world. The number of virtual networks is expanding. At the same time the number of people who are addicted to the Internet is increasing again. Some people feel lonesome on the web, because they isolate themselves from the real world [14].

6.2 Participation versus Exclusion

Web 2.0 can stimulate people to participate in society and the process of self-organization. That is not only good for their personal development and social skills, but beneficial for the society and democracy too [14]. At the same time we have to consider that some people are not using Internet for several reasons ("digital divide"). Examples are the elderly, handicapped people and people with limited financial resources or skills to use Web 2.0 applications [11]. In the Netherlands 66 in 100 inhabitants used the Internet in 2005 [2]. In general Web 2.0 is mainly a reality for well-educated young generation in the developed world. For that reason it is important to consider the balance between different channels of communication [1].

6.3 Quantity versus Quality Data

Web 2.0 offers the possibility to generate, combine, visualize and share high amounts of information by organizing "collective intelligence" and activating "the wisdom of the crowds" [12,17]. This process can make reality more transparent. Web 2.0 applications can be used for several educational goals too ("E-learning"). On the other hand, Web 2.0 raises serious questions about reliability, accuracy and the authority of information [18]. Carr [19] states that Web 2.0 generates superficiality and results in "hegemony of the amateur". For these reasons it is important to reflect about possibilities to certify the quality of information.

6.4 Information Sharing versus Information Protection

Web 2.0 applications make it easy to share information. The risk is the (whether or not deliberate) violation of copyrights. An example is the illegal downloading of songs. At the other hand the access to information can be restricted on different grounds, like safety, privacy or cultural considerations [11]. In general both businesses and governments are reserved in sharing and distributing information. Unwillingness is not always the most important reason. A lack of technical standards can make it difficult to share information with other organizations. For this reason standardization and the integration of information systems are important points of attention [20].

6.5 Information Use versus Information Misuse

Web 2.0 applications can be important sources of information. Some people share a lot of (personal) information on the Internet. At the other hand we have to consider the risks of sharing personal information, namely the possible abuse of personal information, the risk of viruses, hacking and stalking. Personal information can also be misused to send unwanted email messages ("spam"). Privacy is for that reason an important point of concern [3, 18].

6.6 Assessment versus Digital Pillory

Web 2.0 applications play an important role in the assessment of products and services. Examples are websites that contain personal assessments about books, digital cameras, hotels and restaurants. Some websites contain assessment about people too, for example teachers by their students. An international example is the website www.ratemyprofessors.com that contains ratings of over 1 million academic staff working in over 6000 institutions in the USA and Canada. A Dutch example is the website www.beoordeelmijnleraar.nl. The risk of these assessments is that people, organisations or companies can be damaged without fair reasons, because it is difficult to find out if assessment are fair or the result of personal resentment.

6.7 The Transparent State versus Big Brother

New technologies can make information more transparent for citizens. The challenge is to realize a transparent state [3]. At the other hand the risk is that the governments take over de control, because new technologies make it easier to collect and store high amounts of data. The risk is a Big Brother scenario in which every step of citizens is carefully monitored by the government.

The risks and challenges are well known form the past. However these risks and challenges gain in importance when using Web 2.0 for realizing e-government.

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