

Development of an Evaluation Tool for Participative E-Government Services: A Case Study of Electronic Participatory Budgeting Projects in Germany

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Abstract: *In recent years, web 2.0 increasingly gained importance in terms of e-government. In this context, e-participation received more and more attention. However, there are only few examinations providing a structured overview on web 2.0 implementation possibilities in participative e-government. This contribution examines these implementation possibilities using electronic Participative Budgeting projects. The web 2.0 characteristics “interaction orientation”, “personalization”, “social networking”, and “user added value” serve as evaluation criterions. The examination shows that web 2.0 implementation in German projects is still at a very low maturity level. In parts, communities have significant implementation significances concerning provided features and integration of citizens. Using the most advanced approaches we illustrate how the targeted use of web 2.0 tools can influence the Participative Budgeting success.*

Keywords: *E-government, electronic Participatory Budgeting (ePB) projects, web 2.0 characteristics, evaluation framework.*

JEL: *I18; I28; L53.*

Introduction

Taken as a whole, e-government rather represents a young field of research. However, it constantly gained in importance both in literature and practice in recent years. Today, it is one of the most dominant topics in the administrative and political discourse. Despite its significant assertion, there is still no consistent understanding of the term e-government. Consolidating the several views of the literature, e-government can be defined as “the use of new information and communication technologies (ICTs) by governments as applied to the full range of government functions. In particular, the networking potential offered by the Internet and related technologies has the potential to transform the structures and operation of government.” (OECD (2003)).

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The continuing transformation of the public administration towards customer-oriented service companies resulted in a continuous growth of the public sector's interest in modern e-government solutions to extend the range of public services (Al-Sobhi, Weerakkody & El-Haddadeh (2011)). However, the citizens have increased expectations concerning the electronic administration, too (Androniceanu, 2010). They hope for more flexible and transparent administration processes (Hill (2010): 13) as well as an extensive range of services in the Internet. As a result of this development, the phenomenon web 2.0 became more and more part of public discussion (Schellong & Girrger (2010): 3). Only the web 2.0's new functionalities and its change in usage behavior enabled a variety of modern public administration solutions in the e-governmental context (Dawes (2009)). For this purpose, particularly the stronger involvement of citizens in terms of e-participation can be mentioned.

The aim of the present contribution is the derivation of a suitable framework in the first instance. In the following, this framework will be adapted to the specific case of "electronic Participatory Budgeting". The analysis includes an overview of the present situation of electronic Participatory Budgeting projects in a web 2.0 context.

1. Modern communication tools in public administration

1.1 Web 2.0 characteristics

In recent years, hardly any other phenomenon received as much attention as web 2.0. Thereby it increasingly developed from a keyword to a widely accepted concept (Harris (2008): 46). Today, it can be regarded as commonplace (Kaczorowski et al. (2008): 4). Having been derived from the software development, the term web 2.0 was characterized by Tim O'Reilly in 2004 (O'Reilly (2005)). It indicates that we are talking about the second (2.0) version level of the world wide web. Still, there is no generally accepted and comprehensive web 2.0 definition, which continually results in different terms. Most appropriately, O'Reilly himself describes web 2.0 as:

"Web 2.0 is a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet - a more mature, distinctive medium characterized by user participation, openness, and network effects." (O'Reilly & Musser (2006) : 4)

In the past, a trend to subsume all interactive contents and services under the heading of the term web 2.0 (Alby (2008): 19) could be noted. The result was an association of the web 2.0 term with modern communication tools and social networks. Departing from these specific applications, web 2.0 primarily represents the consistent further development of the Internet medium (Kaczorowski et al. (2008): 6). In this context, a crucial aspect is the stance towards the Internet taken by the users. Consumers of prefabricated websites who cannot influence the

content have been replaced by so-called “prosumers“, who co-design the web’s content autonomously or in social networks. Furthermore, the development of the web 2.0 crucially depended on external factors such as the distribution of broadband Internet access or the development of suitable software architectures in order to achieve dynamic and integrative applications (Alby (2008): 3 ff.).

Reflecting the further development of the Internet towards web 2.0 we state a constant evolution more than a radical change. The interaction of several factors shapes our contemporary understanding of the web 2.0 and differentiates it from the classical Internet (web 1.0). Considering the e-business field of research, where web 2.0 has been longer examined compared to e-government (Hill (2008): 58), there is an approach separating between four central web 2.0 dimensions (Wirtz, Schilke & Ullrich (2010): 277 ff.): The dimensions interaction orientation, personalization, social networking und user added value constitute the web 2.0 characteristics and serve as umbrella terms for a variety of concrete phenomena. In this context, **interaction orientation** describes the ability of a company (or an administration) to enter a dialogue with customers (or citizens). In the web 2.0 context, **personalization** describes the adaption of web content by a user or user groups. The dimension **social networking** describes the networking and interaction between users and the resulting user power. **User added value** includes all web 2.0 phenomena in which the user does not only appear as passive consumer, but rather contributes additional value. **Error! Reference source not found.** portrays the characteristics of the web 2.0 phenomenon and describes its most important specifications. These characteristics should serve as a starting-point for the evaluation of the web 2.0 intensity of households in the course of this analysis.

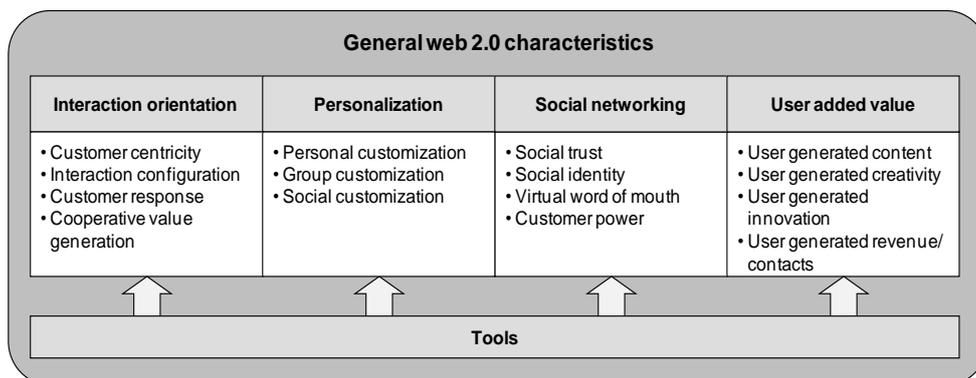


Figure 1. Web 2.0 characteristics
(Source: Wirtz, Schilke & Ullrich (2010): 280)

1.2 Web 2.0 in public administration

The web 2.0 offers a variety of possibilities concerning interaction and participation. Companies use these web 2.0 characteristics to integrate customers in their value creation activities and intensify the communication with single customers or customer groups. The web 2.0 concept is not only suitable for private companies but also and particularly for public administration. Using the web 2.0 tools in an appropriate way, higher e-governmental service innovativeness or a stronger networking between citizens and administration can be realized.

„Public affairs naturally have a strong community nexus. Therefore, the web 2.0 can frequently offer customized solutions to enforce civil co-determination and civil commitment, and the res publica concerning local and political affairs“ (Kaczorowski et al. (2008): 4)

Even though the public administration began to use web 2.0 tools relatively late, the web 2.0 could gain significant importance in e-government in recent years (Hill (2008): 58; Osimo (2010): 2). Particularly in digital information provision, the web 2.0 plays a major role today. Political and public governmental representants increasingly use the web 2.0 for the purpose of communication (Vesnic-Alujevic (2012): 1). In this context, the most widely known tools are blogs or audio-/video casts on own websites or external video platforms.

One of the most important features of the web 2.0 in the e-governmental context is its community-friendly and participative character. Citizens and administration but also citizens among themselves can enhance networking. The participation (and thus a certain influence) of citizens in politics and administration is simplified. It acts as a catalytic converter for the development of the web-based electronic participation.

In its early stage, the Internet almost exclusively made the distribution of static information and the use of simple communication tools possible. Much the same can be said about the early e-government offers which were also limited to information distribution. With the further development of the Internet to web 2.0, more complex e-governmental applications evolved. The „maturity levels“, pictured in **Error! Reference source not found.**, illustrate different evolutionary stages existing in present-day e-government. (Hiller & Bélanger (2001); Capgemini (2009): 20 f.; Wescott (2001)).

The stages of the e-governmental development reflect the maturity level of an e-government application concerning the criteria interactivity and complexity. The highest maturity level which is **participation** can also be named **e-participation** in this context (Kubicek (2010): 197). Here, citizens cannot only initiate a prefabricated administrative process. In fact, citizens get actively involved in design processes. The United Nations define e-participation as follows:

“The area of online services that opens up channels for online participation in public affairs is termed ‘e-participation’.” (United Nations (2010): 83)

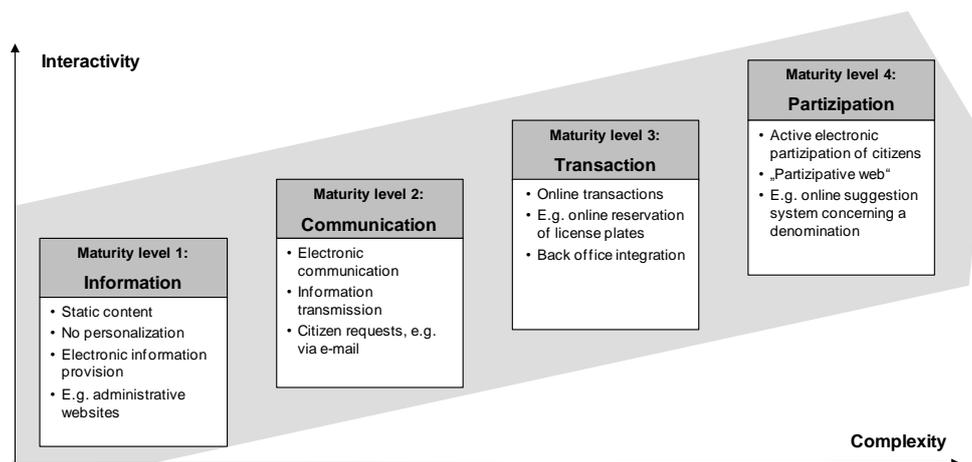


Figure 2. E-governmental maturity levels
(Source: Wirtz (2010): 100)

Although e-governmental offers with low maturity levels dominate in practice, e-participation gained increasing significance in recent years (Wirtz & Nitzsche (2010): 389). E-participation gains particular relevance in the field of local government. Here, on the one hand most of the touch points exist between citizens and administration, on the other hand citizens are more related to administration at municipal level (Kubicek (2010): 210). Specifically in public discussions, the topic is as present as never before. Public administration aspires to be more close to its citizens at all levels. The citizens for their part demand a stronger involvement in administrative processes at many points.

The web 2.0 characteristics illustrate the crucial success factors concerning more civic participation in the Internet. At its highest maturity level, e-government cannot be realized without web 2.0. On this occasion, the close connection between web 2.0 concepts and e-participation gets obvious (Westholm (2008): 33). As an example, electronic Participatory Budgets can be cited.

1.3 Electronic Participatory Budgeting

Electronic Participatory Budgeting, in the following abbreviated as ePB, drew increasing attention in recent years. Especially in Germany, more and more cities started new projects or added an electronic channel to their former offline Participatory Budgeting projects. Besides several projects, that are still running or which have just launched a participation platform, there are 107 German local administrations discussing the implementation of a Participatory Budgeting project. The majority of the administrations are taking electronic participation channels into consideration (Märker (2011)).

Originally, Participatory Budgeting served as an information platform for citizens and was also used to raise acceptance towards the budgeting of authorities (Märker & Wehner (2008): 63). In recent times, there has been a trend that citizens actively get involved in households with their expertises and new ideas. A platform which is electronically retrievable in the Internet is adequate to speak to and integrate as many citizens as possible.

*“Participatory budgeting directly involves local people in making decisions on the spending and priorities for a defined public budget.”
(PBUnt (2012))*

Based on this definition by PBUnt, our comprehension of electronic Participatory Budgeting is as follows:

“Electronic Participatory Budgeting (EPB) is the involvement of citizens in the decision making processes on the spending of a defined public budget by means of modern information and communication technologies.”

As an electronic government service, it combines several aspects of electronic participation such as decision making, development of alternatives, and identification of the preferred solutions. Highly matured ePB solutions with a broad implementation of modern web 2.0 tools like social networking and a strong focus on citizen cooperation can be described as collaborative electronic participation services. It has to be taken into consideration, that today’s ePB situation was enabled not before the great variety of web 2.0 functionalities developed. (Märker & Wehner (2008): 65).

2. Use of WEB 2.0 in electronic participatory budgeting

2.1 Research design

The web 2.0 characteristics form an evaluation guide which can be used to judge the web 2.0 implementation progress in e-governmental services. In the following, these characteristics should be used to analyse the degree of web 2.0 implementation in a qualitative multiple case study. Yin notes that: A major advantage of case study research is, therefore, that new and hitherto a priori unknown variables and causal relationships can be discovered (Yin (2009): 3 ff). The selection of suitable test cases is of central importance in the case study method (Dubois & Araujo (2007): 179).

As described in section II, the web 2.0 is particularly suitable for the e-government at its highest stage of development because participation and web 2.0 are linked very closely. The ePB which normally is carried out at the same time as classical offline budgeting projects in Germany, gains more and more attention in

this context. However, not all of the ePB projects are at an adequately high stage of development to meet web 2.0 definition. This can be clarified by the example of a Participatory Budgeting project, in which citizens get informed about the last-carried out Participatory Budgeting via Internet. Despite the Participatory Budgeting, the e-government only finds itself on the maturity level “information”.

For this study 43 German ePB projects were analyzed, which have completed at least one round of Participatory Budgeting projects and plan to continue with the Participatory Budgeting project. They serve as the basic population for the selection of suitable objects of research (Märker & Rieck (2010)). Authorities which plan to realize a Participatory Budgeting project or which do not repeat the project despite its establishment, were not part of this examination. With the help of the e-governmental maturity levels, twelve authorities were identified, whose Participatory Budgeting projects already reached the participation level. **Error! Reference source not found.** provides a summary of this selection procedure.



Figure 3. E-governmental maturity levels

(Source: Märker & Rieck (2010): 3)

In the following, the chosen authorities will be compared on the basis of the web 2.0 characteristics. Finally, the web 2.0 progress will be evaluated by using the case study of ePB projects.

2.2 Web 2.0 in Participatory Budgeting

The web 2.0 characteristics presented in section II can basically be transferred to the design of Participatory Budgeting platforms in the Internet. Nevertheless, they have some peculiar characteristics in the e-governmental context and in the specific Participatory Budgeting case. Within the interaction orientation framework, this raises the essential question to what extent citizens can be integrated into administration processes and communication interfaces can be organized. For example, does the administration actively show interest in the citizens' suggestions and does it take a citizen-focused approach to gain a better understanding of wishes and suggestions? The realization of an open bilateral communication between administration and citizens (G2C) represents a significant success factor concerning the participative integration of citizens. Citizens should feel that their opinion is taken seriously and that there are no great interaction barriers.

In the context of personalization the focus is on the adaption of the application respectively platform by the citizens to suit the individual. The fact that all platforms increasingly enable its users to adjust websites to their needs and interests is an essential success factor of existing web 2.0 applications such as Facebook or Google+. At the same time, own interests can be published to get in contact with like-minded people simply and fast. Personalization should be considered especially in complex and multi-layered Participatory Budgeting projects. Citizens are able to reduce complexity which facilitates firm commitment in their own interests.

The aspect social networking describes the extent of the interaction between citizens among themselves (C2C). In this context, the design of an Internet platform significantly constitutes the degree of interaction among the persons involved and can actively be promoted or limited. The degree of interaction and the citizens' commitment can considerably be supported by features such as the possibility to write messages among each other, to invite friends to join the platform and to be informed about friends' news respectively activities. Not only the exchange between administration and citizens (G2C), but also the exchange among citizens concerning their opinions and interests (C2C) pictures an essential aspect of an ePB project.

The factor user added value describes how citizens can integrate own ideas and knowledge such as improvement suggestions into the platform and thus into the administration's planning (C2G). In this context, there is a need to consider how much the suggestion scheme is standardized by the administration in order to simplify the internal treatment of suggestions. In some cases, the administration makes suggestions and wants them to be evaluated only by the citizens. If citizens have the opportunity to make their own suggestions, the administration is able to operate those with the help of a specified pattern (e.g. categories like road construction or school system). In contrast, a completely free suggestion system

mostly carried out with (offline) surveys, citizens' fora etc. The Internet is only seen as an additional communication channel. Within the scope of budgeting projects, other communities shift a large part of the added value (here: the collaboration of citizens in the context of budgeting projects) to the Internet. This heterogeneity is also reflected in the differing implementation progress of the web 2.0 characteristics.

■ Interaction orientation

Citizens' integration in administrative processes as well as the design of communication interfaces are considerable aspects of the interaction orientation. It is particularly relevant, how open the administration is to citizens' remarks and how the citizens' suggestions are processed at the competent authorities. Although all observed projects revise citizens' suggestions in the administrations, there are definitely differences in terms of completeness, scale, and time horizon of the revision.

While all suggestions are proved in the competent authorities in Bergheim for example, in Cologne only the top 100 rated suggestions are forwarded to the administration. Furthermore, differences concerning the revision's date can be noted.

In some communities like Bad Honnef and Bergheim for example, revisions are mostly performed as a follow-up, while Berlin Friedrichshain-Kreuzberg performs its revisions always at the end of a month. Communities like Trier or Essen try to perform contemporary revisions. In principle, some communities divide the budgeting process in different stages and thus explicitly separate between the suggestions' date and its revision. In the context of high interactivity, a contemporary revision is desirable, since citizens can get feedback respectively further information or administrative matters can be brought into an eventual discussion.

Not only the revision, but also the commentation of suggestions through the administration represent an aspect of the interaction orientation. While some Participatory Budgeting projects follow the principle to let the suggestions be discussed among themselves, some communities respond or request explanations in case of obscurities. In this context, the Participatory Budgeting project of Berlin Lichtenberg has to be stressed, where in addition to a very good moderation a contemporary reaction of the according department happens. Furthermore, Trier's project can be stressed, where instead of administrative feedback local parliamentary groups actively response to the suggestions. In total, it can be determined that a contemporary administrative reaction to the citizens' suggestions is desirable and constitutes a success factor concerning the platform. The active participation and visible reaction of the administration signalize citizens, that they are taken seriously and have the opportunity to influence governmental decisions. Furthermore, issues can be depicted in a transparent manner by the introduction of the administrative point of view. Thus, higher acceptance can be created.

The final aspect of the interaction orientation is the internal further processing of suggestions as well as the communication of this step. As mentioned in the section above, in some Participatory Budgeting projects citizens are able to realize at first sight, that all suggestions are revised and taken seriously by the administration. In other platforms such as Cologne, only the top-rated suggestions are revised. A visible reaction happens only in parts. In individual cases, this can lead to a citizens' sullenness, when suggestions are only relevant for a small minority and are not considered for further processing due to little interest. Some communities counteract through an internal revision of all suggestions and communicate actively. For example, the website of Potsdam's project displays the following message in such a case:

“During the pre-selection (priorization while decentralise district meetings or by Internet), this suggestion did not obtain a sufficient number of points from the citizens and therefore could not be taken into consideration during the further processing of the 2011 Participatory Budgeting. However, such a rejection does not mean the suggestion will receive no further attention. The suggestion was forwarded to the State Capital Potsdam's relevant department for information and potential consideration.” (Potsdam (2010))

Finally, reflecting the comparison of the twelve available Participatory Budgeting projects in terms of interaction orientation, very good approaches already exist in parts. Nevertheless, some projects still have potential concerning an increase of interactivity. Altogether, the examined projects have a medium maturity level in respect of interaction orientation.

■ Personalization

In order to create strong user identification with the internet platform respectively citizen identification in this case, a high level of individualization can be advantageous. Concerning Participatory Budgeting, the citizens' ability to create an individual profile, to provide personal data on the platform, make the data visible for other users and to adapt the website to personal needs were examined.

The first step towards a personalization is the citizen's registration to make sure a personalization on the platform will be possible. All examined projects match this requirement. The citizen has to register using a user name which has not to be conform with the real name to ensure anonymity, a desired password and a valid email address. Furthermore, citizens can be granted the opportunity to make personal data viewable for other platform users.

This is an essential part of most of the web 2.0 applications which show a community approach. Users of communities like Facebook or Google+ often reveal personal data very willingly and in detail. First, this seems to be surprising, since German population often has been sensitized concerning personal data protection issues by media and different campaigns. On the other hand, some new and

interesting functionalities are only possible by submission of personal data. Additionally, users with similar interests can be discovered and contacted. Users have to balance between data protection concerns and potential functionalities and very often choose the second option in the web 2.0 context (Laudon, Laudon & Schoder (2010)).

Furthermore, in contrast to other web 2.0 applications, users do not have the opportunity to present themselves in the examined Participatory Budgeting projects. In Potsdam and Trier, citizens can supply their address, although the address is only used for analysis purpose by the administration and will not be viewable for other users.

In Bad Honnef, Berlin Lichtenberg, Freiburg, Hamburg and Cologne, citizens are able to upload at least a profile picture. Merely Berlin Friedrichshain-Kreuzberg goes further and enables citizens to supply personal interests, hobbies, participations in initiatives etc. Some Participatory Budgeting projects additionally enable citizens to supply their age or a homepage, for example. Overall, personalization possibilities are very limited. They rather make you think of a forum (web 1.0) than reflecting web 2.0 opportunities.

Similar to existing web 2.0 applications citizens' profiles provide support in terms of users with similar interests come together and establish discussions. Knowledge concerning other users' age, educational background, interests etc. additionally simplify a better understanding of statements and point of views within a discussion. In this context, anonymity advantages have to be weighed against a more rudimentary networking.

Another aspect of the personalization is the website's adaptability to individual needs. In principle, some ePB projects allow to follow the citizens' suggestions resp. to subscribe to them. Furthermore, the platforms do not provide additional personalization options. In contrast, web 2.0 applications normally allow a start page modification according to personal wishes, a display of interest-specific news or an installation of individual applications (apps). Looking at the examined Participatory Budgeting projects, this function was not or only rudimentarily established

In total, talking about personalization as a web 2.0 characteristic it must be acknowledged that it shows only a low maturity level in the context of Participatory Budgeting projects. The implementation of e-participation by different communities rather remind of web 1.0 times while cutting-edge web 2.0 developments only are insufficiently taken up. An increased individualization could help to make Participatory Budgeting more attractive to citizens.

■ Social Networking

In a web 2.0 context, the fundamental idea of social networking becomes more and more important in everyday's internet life of people. Taking part in an ePB project, many inhabitants of a city are in touch with each other and share opinions and interests. This kind of interaction between citizens can be supported

by web 2.0 functionalities. An essential function is the possibility of networked communication (Kielholz (2008): 4 f.). This was realized at the Participatory Budgeting projects of Bad Honnef, Freiburg and Hamburg, where citizens can send messages using the platform. Some other communities have also implemented a certain kind of message transmission, however citizens' messages are sent via email and further interaction between citizens takes platform-external place via email. This reduces the platform commitment as well as the mean length of stay. As a result, this can potentially lead to lower participation.

Another key aspect of social networking is making friends virtually respectively maintaining existing friendships. Only Bad Honnef has realized a list of friends, to provide citizens a faster access to other interesting profiles of citizens.

Overall, the Participatory Budgeting project of Bad Honnef strongly relies on a forum engine. Therefore, the functionality of the friend list derives from the forum area. Modern web 2.0 applications like Facebook for example, go beyond the functionality already existing in fora. Their central point is making friends, furnished with lots of additional features. In general, none of the Participatory Budgeting projects adequately realize this specific web 2.0 factor.

Network size is an essential aspect of social networks. Web 2.0 platforms are typically designed such that the individuals' benefit (direct network effects (Farrell & Saloner (1985): 70; Varian (2003): 31)) raises with an increasing number of participants. Users should be given the opportunity to make friends aware of the platform or even invite them. Well over half of the examined Participatory Budgeting projects have implemented such a function while differing in emphasizing it. The recommendation function usually enables citizens to call third parties' attention to a specific suggestion concerning Participatory Budgeting projects. Friends usually have similar interests respectively views and by courtesy of a specific topic interest in the platform can be raised.

Another aspect of social networking is the possibility to be increasingly informed about friend activities in the context of web 2.0 portals. Users regularly get news updates. Therefore, they are motivated to use the platform frequently. Within the framework of Participatory Budgeting projects, this seems to be useful since citizens easily understand which suggestions friends are committed to. This usually results in a discussion among them. Since no Participatory Budgeting project contains such a web 2.0 friend list (which is a mandatory requirement), this aspect is completely lacking.

All in all, social networking still has a low maturity level in German Participatory Budgeting projects. There are good approaches, but there is still high potential to extend citizens' interaction in a web 2.0 manner.

■ User added value

In the context of user added value, internet platform users create additional value and supply it to the community (mostly) free of charge. In Participatory Budgeting projects, citizens supply information, creativity in terms of suggestions as well as views in terms of comments and rating while generating additional value.

Concerning the way how citizens can submit suggestions, there is a striking difference between platforms. The projects of Essen and Solingen are primarily set up as a tool for financial restructuring and serve as a possibility to let citizens discuss and vote on economy measures planned by the administration. In the course of this discussion, own suggestions can be submitted by the citizens but they are hidden and not explicitly classified as citizens' suggestion in discussions.

The remaining Participatory Budgeting projects which were part of this examination show a freer suggestion system at this point. They do not limit citizens to the suggestions of the administration. A freer proposal system is more in the spirit of the web 2.0 respectively participatory web.

On all platforms, there can be conducted an active discussion, both about the suggestions of the administration and also about the citizens' ones. Citizens get the chance to discuss their suggestions and express their opinion. Furthermore, the Participatory Budgeting projects of Bergheim, Berlin Lichtenberg, Berlin Friedrichshain-Kreuzberg, Essen, Hamburg, Cologne, Potsdam, Solingen and Trier allow the rating of suggestions in a defined scale. On most of the platforms, the rating can take place at any time. In Potsdam and Solingen, the rating is only allowed in a so-called "evaluation stage".

Some Participatory Budgeting projects go beyond collecting suggestions, comments and ratings by allowing citizens an interactive design of the whole project and offering a Participatory Budgeting calculator including an integrated proposal system. This leads to visualization how virtual operations affect the mutable overall project. At this point, Hamburg's project has to be stressed because citizens have the opportunity to plan single Participatory Budgeting project items as well as to draft, to comment, and to rate suggestions. Thus, this project covers the entire spectrum concerning user added value.

It can be stated that user added value is at a high maturity level. Compared to the criteria examined so far, it shows the highest maturity level.

■ Integration of external services

The integration of external services is an essential feature of current web 2.0 instruments and is being subsumed under the notion of the term mash-up (Yee (2008): 4, Campesato & Nilson (2011): 305 f.). Berlin Lichtenberg, Berlin

Friedrichshain-Kreuzberg as well as Potsdam enrich their websites with Google Maps to illustrate suggestions which are related to a certain place on a map. Twitter is also often integrated and used by Cologne, Potsdam as well as Solingen to spread news concerning their Participatory Budgeting projects. Trier also uses Twitter, but not only for news concerning the project but also to keep citizens additionally informed about every new suggestion (via RSS-Feed in addition to Twitter). As a result, citizens are provided a further communication channel within the framework of ePB projects. A further type of communication is used by Trier while using videocasts on Youtube to provide information and comments concerning the Participatory Budgeting project. These videocasts are additionally embedded into the project's homepage. Among other extended communication services some Participatory Budgeting projects use applications which support coordinated work. For example, Hamburg and Freiburg use Wikis for coordination and make citizens' collaborative work possible. Potsdam's project is outstanding regarding the integration of external applications. It has its own Facebook page, a Google Maps integration, a Twitter channel, and a great number of possibilities to raise friends' interest in the respective project e.g. MySpace, Mister Wong etc.). Overall, the integration of external applications (except Potsdam) is at a very low maturity level. It offers great potential for a better integration of external applications to strengthen the own platform's attractiveness.

To draw a final conclusion after this analysis, the different characteristics of web 2.0 applications strongly differ in current Participatory Budgeting projects. There is an enormous development potential in some areas. Figure 5 reviews the findings of this comparison.

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		Bad Honnef	Bergheim	Berlin Lichtenberg	Berlin Marzahn-Hellersdorf	Berlin Friedrichshain-Kreuzberg	Essen	Freiburg	Hamburg	Cologne	Potsdam	Solingen	Trier	
Integration of external applications	Other							✓			✓		✓	
	Twitter									✓	✓		✓	
	Facebook										✓	✓	✓	
	Google Maps			✓		✓					✓			
User added value	Interactive design of the whole electronic participatory budgeting projects						(✓)	✓	✓					
	Rating of citizens' suggestions		✓	✓		✓	✓			✓	(✓)	(✓)	✓	
	Commentation of citizens' suggestions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	(✓)	✓	
	Open formulation of suggestions	✓	✓	✓	✓	✓	(✓)	✓	✓	✓	✓		✓	
Social networking	News are displayed within the network													
	Mail invitation of friends / page recommendation			✓	✓				✓		✓			
	Friends list												✓	
	Sending each other messages							✓	✓	✓				
Personalization	Page customization for individual needs and preferences													
	Citizens can share personal information and make it visible (e.g. interests, pictures etc.)			(✓)		✓		(✓)	(✓)	(✓)				
	Register/ Createing an own account	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Interaction orientation	Administration processes suggestion directly intern	✓		✓		(✓)					✓			
	Administration comments on suggestions			✓		✓	✓		✓	(✓)	(✓)	(✓)	(✓)	
	Administration checks on suggestions	✓		✓		✓	✓		✓	(✓)	✓		✓	

○ Very low ● Low ● Medium ● High ● Very high

Figure 5. Comparison of ePB projects

Summary / outlook

The examination of German ePB projects has shown that web 2.0 has become increasingly prevalent in e-government. All of the considered case studies provide their citizens the possibility to participate in the budgeting of the particular project via Internet. Concerning ePB projects, there is a distinct trend toward web 2.0 aspects. However, there are in parts implementation differences concerning the provision of functionalities and citizens' integration. Most of all, the analysis showed that web 2.0 characteristics were considered and implemented to a different degree.

Concerning interaction orientation it was determined that the examined projects show a medium maturity level. Although there are initial indications, but on the whole the interactivity between administration and citizens can still be increased. In contrast, the implementation of personalization has not yet far advanced. A higher individualization could simplify citizens' engagement according to their interests and thus help to raise the platform's attractiveness. Concerning social networking it was determined that this web 2.0 characteristic has a low maturity level, too. Despite promising attempts there is still high potential to stronger integrate social networking aspects in the ePB projects. It should be emphasized that the social networking aspect shows the highest maturity level in this context. The user added value aspect can be stressed because it shows the highest maturity level in this context. On the contrary, the integration of external applications is only used insufficiently.

Overall, it must be acknowledged that ePB is still on an early stage. Although web 2.0 implementation is relatively far advanced in some of the analyzed ePB projects, they only represent individual cases in view of approximately 14,000 communities in Germany. In contrast to many rapidly growing web 2.0 applications, most of the ePB projects are falling short of expectations concerning the number of users. Therefore, there barely are network effects to be found. The analysis also showed how communities can counteract this development. For example, Potsdam encourages citizens to invite friends using different communication channels in order to get them involved and support citizens' suggestions. However, this represents only a first step. The web 2.0 offers a large number of only insufficiently used tools to create direct network effects and raise the attractiveness of ePB projects.

In the process of this analysis, the framework adapted from e-business turned out to be an appropriate research tool. All identified criterias could have been used for evaluation and thus enabled the comparison of the different ePB services. From this, it can be concluded that the framework presented here is directly applicable to other participative e-governmental services. However, this also represents the central limitation of this study. The web 2.0 framework was only adjusted for the special ePB context. A general suitability for the evaluation of e-governmental services in the web 2.0 could have been assumed, but not derived

from this study especially because the present analysis only covers German ePB projects. Therefore, further research studies should adopt the presented framework to further e-governmental web 2.0 services. Additionally, an international analysis of the findings gained in a national context in this study will be of great interest to derive recommendations for future action concerning the web 2.0 integration of e-governmental services in general and epB projects in particular.

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