

# Informing Citizens via Council Information Systems

A case study of municipalities in North Rhine-Westphalia, Germany

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## ABSTRACT

Digital information about their city or municipality can enable citizens to improve their living environment through informed decisions and participation. As part of the publication of their data, many municipalities in North Rhine-Westphalia, Germany have therefore introduced so-called Council Information Systems (CIS) through which the citizens of a municipality can inform themselves about decisions affecting them and the work of their political representatives. However, these systems are often not known by citizens and sometimes challenging to find. The Open Knowledge Foundation's project *Politik bei uns* ("Politics with us") offers a promising starting point in improving the accessibility. The data of different Council Information Systems are bundled in a central portal and are thus available to a broader mass of people. This case study evaluates how this system can be further improved so that the portal meets the needs of its addressees - citizens who are not familiar with the work of a council. With the help of standardization to reduce the variation in terms chosen for labeling the different kinds of documents, an increase in accessibility can be achieved. Against this background, we took stock of the current situation concerning the existence and state of such systems in North Rhine-Westphalia and developed a taxonomy that distinguishes the more than 90 different types of documents that can be filtered in the search into a few abstract categories and thus dramatically increases the accessibility of the portal for its users. Ultimately, we were able to reduce the number of terms used in labeling the different kinds of political documents to a minimum

of four, thereby severely improving the usability for inexperienced users of Council Information Systems.

## CCS CONCEPTS

• **Applied computing~E-government** • *Information systems-Web and social media search* • *Information systems-Document filtering*

## KEYWORDS

Citizen Participation, Council Information Systems, Open Government, Open Governmental Data, Open Data, Transparency, Decision-making

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## 1 Introduction

Today every citizen is exposed to a flood of information. This includes not only the likes of social media or news but just as much the field of administrative data. Efforts in the field of Open Government work towards the goal of making sense of this overload of public data which actually can be of great interest for each citizen.

The Open Government concept requires municipalities and administrations which act according to this model to open up to their citizens. Their actions should be guided by the following three principles [6]:

- **Transparency:** The administration should publish important information promptly and in useful formats.

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- **Accountability:** The public must be informed by the administration about the background to decisions made and other activities.
- **Participation:** The administration should acknowledge the benefits of working more closely with citizens and allow them to participate in different areas.

Obama [5] recognized the potential of Open Government and administration when he signed the Memorandum on "Transparency and Open Government" and thus determined at the beginning of his presidency how a government should act under his leadership. He hoped to strengthen the population's confidence in public institutions and democracy and to increase the efficiency and effectiveness of the government.

The Organization for Economic Co-operation and Development (OECD) [7] attributes the following concrete potentials to Open Government and administrative action:

- Greater acceptance and support of government decisions through greater trust in the government on the part of citizens.
- New laws or programs can be designed more cost-effectively and with better quality through cooperation with the public.
- Reforms are more likely to be accepted by citizens, as they are more likely to understand their need as part of the process.
- By lowering barriers to active participation in policy making, there is fairer access to it.
- The effectiveness of programs and laws can be increased by involving citizens in their real needs.

One way for administrations to exploit this potential is by publishing their data. Klessmann et al. state that a government can be more transparent towards its citizens, since the data can, for example, provide them with more profound insights into the work of civil servants [8]. Furthermore, Open Data offers the population equal access to information, enabling them to participate more in politics and society [11]. This participation can take place in different ways. According to von Lucke & Geiger, citizens can easily inform themselves about certain facts or political processes by using Open Data and thus get involved, for example, in their community [11]. On the other hand, they can also use the data provided to develop a wide variety of applications that help their fellow citizens. Also, the publication of data by the administration can also have a direct positive influence on the work of the politicians, since the population has a control instrument for the authorities through the data. For example, they can track if and when money is wasted or even misappropriated [8]. The use of standards is crucial for this kind of Open Data. Metadata enables interested users to easily access and find relevant [1]. In this sense, the provision of data in standardized structures is of utmost relevance if citizens are to be informed by these data and if they are to be enabled to participate in society and politics.

## 1.1 Council Information Systems (CIS)

One particular manifestation of the values and goals of Open Government and the active use of Open Data is the introduction of Council Information Systems, which are a special kind of information system. Information systems are used to collect, manipulate, store and process data into information [9]. More and more German municipalities use this kind of system to make a variety of documents and information concerning the council work accessible to the public. The documents and information presented with the help of Council Information Systems range from simple dates of council sessions to more specific and in-depth data like meeting documents, transcripts, resolutions or petitions [10]. By making those kinds of documents available to the public, the citizens of the communities are enabled to participate in ways that would not be accessible without those kinds of computer and web-driven technologies used in Council Information Systems. The Council Information Systems in Germany are based on software provided by different companies, for example, *Session*<sup>1</sup> and *SD.net*<sup>2</sup>. The Council Information Systems make participation possible in the form of being informed about current political topics independent of restrictions like time and place. Citizens can retrieve all the information that accrue in local politics whenever they feel a need to get an insight. All that is needed is an internet connection. By being given the opportunity to get all those insights the citizens can evaluate and monitor the work of the politicians and make decisions on their political engagement based on a wide range of information. That way Council Information Systems add further to creating and workings towards the idea of Open Government and its three principles by providing additional transparency, ensuring accountability and making information and participation possible on a municipal level for everyone in the community. But not only the citizens benefit from the wide-ranging values of such systems. The council members of each municipality can equally use its Council Information System in a similar way and thereby gain a much broader sense of the political environment in which they operate on a day-to-day basis by having access to all documents that could be of importance for their political work. The publication of documents and information via Council Information Systems in Germany and the federal state of North Rhine-Westphalia (NRW) in particular is regulated on a legal basis. The primary basis for the provision of public administrative data in NRW is the law on freedom of access to information<sup>3</sup>. The precise purpose of this law via paragraph 1 is to ensure the access to information of public authorities as well as to determine the conditions of this access. Furthermore, NRW has a law on the promotion of electronic administration (EgovG NRW<sup>4</sup>), just as there is one at the national level. This law is valid for the administrative activities of the authorities of each state, as well as the individual communities and associations. Additionally, there is an applicable law on the access to digital

<sup>1</sup> <https://somasos.de/loesungen/sitzungsmanagement/session/>

<sup>2</sup> <https://www.sitzungsdienst.net/produkte/sitzungsdienst/>

<sup>3</sup> [https://recht.nrw.de/lmi/owa/br\\_text\\_anzeigen?v\\_id=4820020930120743668](https://recht.nrw.de/lmi/owa/br_text_anzeigen?v_id=4820020930120743668)

<sup>4</sup> [https://recht.nrw.de/lmi/owa/br\\_text\\_anzeigen?v\\_id=73520171220150354215](https://recht.nrw.de/lmi/owa/br_text_anzeigen?v_id=73520171220150354215)

geodata (GeoZG NRW<sup>5</sup>) which regulates the access to geodata, geodata services and metadata that are available from corresponding sites and the use of that range of data. All authorities and communities of a particular state are obligated to release accruing data. Aside from those laws concerning the publication of documents and information the Open.NRW-strategy [2] of the state government of NRW is also worth mentioning as it was agreed on by the state government and therefore is of great relevance regarding the provision of Open Data as well. Open.NRW is a working group which deals with Open Data and is subordinate to the CIO of the state and thereby the ministry for economy, innovation, digitalization, and energy. According to the strategy, the provision of Open Government Data is of high importance even if the specific data does not satisfy the ten principles of Open Government Data.

## 1.2 Open Standards: OParl

The JSON interface OParl<sup>6</sup> offers a possibility to reach as many people as possible with the data from Council Information Systems. This open standard was developed in collaboration with the Open Knowledge Foundation Germany<sup>7</sup> and various CIS software providers. The data from regional Council Information Systems, which allow the use of this interface, are automatically uploaded to *Politik bei uns* and made available there with the council data of many different municipalities. An often-mentioned problem with conventional Council Information Systems is that they are optimized for use by administrations and politicians and therefore citizens may have difficulties finding access to these portals. OParl, therefore, offers not only the possibility to provide the data in a central location, but also to present it in a new and informative way. With this approach, OParl's developers aim to provide council data that meets the requirements of Open Data and reach as many users as possible. The aim is to make the work of city councils more transparent and to give citizens the opportunity to inform and participate easier.

## 1.3 Focus in this contribution

In this paper, we will assess the status quo regarding Council Information Systems within North Rhine-Westphalia and, based on this status, evaluate how these systems can be improved in order to provide citizens with even easier access to the data. The decision to choose NRW for this case study was made based on different factors. First of all, the project *Politik bei uns* is unparalleled in Germany. The portal mainly consists of data concerning municipalities in North Rhine-Westphalia and can, therefore, be considered a reference implementation for this new, open standard which more and more states are working towards implementing. Also, NRW possesses a high concentration of communities in many of which there already are efforts in using concepts of Open Data and Open Government to improve citizen participation [3]. The state

government promotes numerous projects in this context, for example, *Politik bei uns*<sup>8</sup>, which bundles numerous Council Information Systems from many municipalities in Germany into one central portal and thus making it available to a broader mass of people in a much more accessible manner. As the state government already promotes this project, we chose to examine the portal *Politik bei uns*, on which the data from Council Information Systems of different municipalities are bundled and available. Through further standardization, our goal is to encourage more municipalities to join the project and citizens to use this service thus continuously expanding the principles of Open Government in the federal state of North Rhine-Westphalia.

## 2 Methods

As the goal of this paper is to examine the Council Information Systems particularly in North Rhine-Westphalia, we analyzed all municipalities in this state. The final list consisted of 396 municipalities that are recorded in the register. For those 396 municipalities, we examined their Council Information Systems. Therefore, it was checked whether the municipality uses an independent website for its Council Information System and if there are any additional features like a hit counter. Furthermore, we analyzed which specific system is used.

The next step of the evaluation then involved a detailed look at the municipalities that are included on the website of *Politik bei uns* to answer these research issues. The site is a project of the Open Knowledge Foundation Germany and is operated with the aim to make decisions of city or district councils more transparent and thus to inform the citizens about relevant topics and to offer them the possibility of participation. The Open Knowledge Foundation uses the OParl interface to process the public data of the municipalities participating in the project and offer it jointly on the platform *Politik bei uns*, which was created with the goal of making local politics more transparent and searchable, thereby increasing participation. During the work on this paper, we also had the chance to speak to the developers behind *Politik bei uns* to get an insight on the intentions pursued with their portal. Figure 1 shows the search options available to the users.

<sup>5</sup> [https://recht.nrw.de/lmi/owa/br\\_text\\_anzeigen?v\\_id=10000000000000000408](https://recht.nrw.de/lmi/owa/br_text_anzeigen?v_id=10000000000000000408)

<sup>6</sup> <https://oparl.org/>

<sup>7</sup> <https://okfn.de/>

<sup>8</sup> <https://politik-bei-uns.de/>

**Figure 1 Searchbar on the platform Politik bei uns**

A total of 34 municipalities from NRW which already have an OParl interface have joined this project, and 82,733 datasets from municipalities in North Rhine-Westphalia are available on the platform (cited 15.01.2019). The other municipalities located in NRW are not listed on *Politik bei uns* as they do not have the necessary OParl interface. This data is divided into various categories; such as bills or inquiries. The available datasets coming from those 34 municipalities were then examined in greater depth. Therefore, the full range of topics was sorted into a much smaller set of categories with the goal of simplification and standardization. The website lists documents under 98 different categories which were then condensed into eight different broader categories. The next step consisted of analyzing how many documents for each top-level category were available for each municipality listed on the website.

To clearly show the structure of the different top-level categories and its subcategories we chose to use a taxonomy as our method of representation. With the help of a taxonomy, it is possible to display lexical hierarchies with connected nodes that represent a mother-daughter or a sister-relation between the different dimensions. In setting up the taxonomy, we followed the approach of Nickerson et al. [4]. On this basis, we first examined the terms to be classified, which are currently used on *Politik bei uns*. In the next step, we looked for general characteristics of these objects, i.e. possible similarities or differences between these terms. Based on this initial classification of the terms into different dimensions, a preliminary taxonomy with seven such dimensions was created. Each of these formed dimensions has specific characteristics, which share the terms contained in it with one another. In the following step, we examined these dimensions and their properties to see if further dimensions might have been necessary, e.g., due to different properties of the contained terms. Meanwhile, we also checked if some of the dimensions were similar enough to be merged. This step is repeated until the taxonomy has reached its final state, i.e., all terms in the dimensions have similar properties. As a result, we could finally reduce our original seven dimensions to four. For each of these four dimensions, we then searched for characteristics that described the properties of the terms contained in them as

comprehensively as possible, thus defining the top-level category of each dimension.

### 3 Results

As the first step of our evaluation of Council Information Systems in North Rhine-Westphalia involved a closer look at the 396 municipalities recorded in the register concerning the existence of such systems, our research generated an overview of the current situation (Table 1). Of those 396 municipalities, only nine did not have a Council Information System of any form. We tried to contact those nine municipalities without a CIS to find out why they do not have such a system and whether an implementation is planned for the future. Eight of the contacted municipalities answered our request, unanimously expressing the intention of implementing a Council Information System in the very near future. The stocktaking regarding the specific systems used by the municipalities revealed that the two most used providers for Council Information Systems in the examined municipalities by far were *SD.net* with 175 users and *Session* with 114 users. Twenty-seven municipalities make use of *more-rubin*. The system *Provox* is used in 22 cases, while 21 municipalities use the provider *AllrisNet*. The least used systems were *BürgerPLUS* and *RatPlus*, utilized by two municipalities each and *Consilium* which only one municipality uses. Twenty-three municipalities do not use external software to run their Council Information System but choose their own implementation to present the council data. The examination may indeed show, that a majority of municipalities in North Rhine-Westphalia already possess and make use of a Council Information System; however, it became apparent during our research, that those systems are often quite difficult to find and challenging for its users.

**Table 1: Software distribution of Council Information Systems in NRW, Germany**

CIS	# Implementations in NRW
SD.net	175
Session	114
more-rubin	27
No external Software	23
Provox	22
AllrisNet	21
BürgerPLUS	2
RatPlus	2
Consilium	1
None	9

In the light of the objective of this contribution to further standardize the service *Politik bei uns* and thereby make Council Information Systems more accessible to citizens, we created a taxonomy for the intra-site search to reduce the 98 document types that can be filtered in the search to a minimum. For reasons of clarity, we chose to present the developed taxonomy in the form of a table (Table 2). We were able to create four top-

level categories in which all document types of the search can be sorted. The following terms form the broader categories of our taxonomy: "bill," "request," "information" and "other." The smallest of these categories, with only two different types of documents, is the category "other," in which only document types for which there is no designation have been divided. In the "bill" category, a total of 14 different types of documents were initially divided into subcategories, with five of these again serving as the upper category for further "bills." For example, the term "draft resolution" serves as a generic term for 15 different types of draft resolutions. In the taxonomy developed, the category "bills" includes all document types that serve as bills for a council, irrespective of the purpose of this bill.

Furthermore, we created the category "request" in which all kinds of documents can be found, such as concerns or inquiries. Four different document types were initially sorted as subcategories, of which the two terms "concern" and "inquiry" each serve as a generic term for further document types. In the last category, "information," one can find documents that either serve as information for a council or have been produced by a council and can, therefore, serve as a basis of information for interested citizens, such as council averages. A total of 13 document types have been sorted as subcategories, of which two each serve as generic terms for other similar document types. In the category "information" one can find decisions and resolutions of the councils of *Politik bei uns*. For these document types, it would be entirely justifiable to create a separate top-level category, as it was also the case in a preliminary version of our taxonomy. With this division, however, the broader category "information" and the hypothetical broader category "decisions" would be relatively small. In order to standardize the document types as comprehensively as possible, we, therefore, decided to also classify the resolutions under the "information" category, since these documents are information about the work of the councils for the citizens in the broadest sense.

**Table 2: Overview of the taxonomy for Council Information Systems within Politik bei uns**

Information (information)	Vorlage (bill)	Anliegen (issue)	Sonstige s (other)
<b>urgent decisions</b>	<b>draft resolution</b>	<b>request</b>	<b>no specification</b>
urgent decision	draft template	citizen request	
urgent decision DB	draft template	action request	
urgent decision staff	GB		
urgent decision HFA	draft template	request SPD	<b>other</b>
urgent decision €	AK traffic		
	draft template	state request	
	public		
	draft template	(inactive)	
	LIL/GM		
	draft template	request CDU	
	sewage work		
<b>notifications</b>	draft template	general request	
	municipal utilities		
Notification	draft template	request FDP	
	from Eigenbtr. Rettd.		
notification (inactive)	04 draft template	request UWV	
	staff		
	draft template	request	
	facility management		
<b>info GB</b>	draft template	B90/Grüne	
	LB		
<b>info staff</b>	draft template	request	
	not public	CDU/SPD	
<b>info LB</b>	draft template	request	Die Linke
	(RPA)		
	draft template	request AfD	
	waterworks		
<b>administrative addition</b>		request (inactive)	
	<b>decision template</b>	request €	
<b>construction, planning, tourism and economic development</b>	<b>general template</b>	<b>request/inquiry</b>	
	<b>bill</b>	<b>hearing</b>	
<b>youth, school, social affairs, culture and sport</b>	<b>recommendation template (inactive)</b>	<b>inquiry</b>	
		inquiry UWV	

	<b>council proposal</b>	inquiry
<b>additional explanation</b>		B90/Grüne
	<b>urgent bill</b>	inquiry
<b>status information</b>	<b>bill</b>	CDU/SPD
		inquiry Die Linke
	<b>property template</b>	inquiry AfD
<b>emergency decision</b>		inquiry CDU
	<b>bill administrative council AöR</b>	inquiry SPD
<b>emergency HF gem. §60 paragraph 1 GO NW appr. emergency §60 paragraph 1 GO NW appr. emergency §60 paragraph 1 GO NW quick decision</b>	<b>d. I session template (ols)</b>	inquiry BüFo
	<b>staff template</b>	inquiry general
	<b>d. I session template</b>	
	<b>d. I communication template sewage work communication template LIL/GM communication template waterworks</b>	
<b>notice</b>		
	<b>board template</b>	board template €
<b>resolution SPD</b>		
<b>resolution B90/Grüne</b>		
<b>resolution CDU</b>	<b>information template</b>	
<b>resolution AfD</b>	information template	not public
<b>resolution FDP</b>	04 information template	staff
<b>resolution Linke</b>	20 information template	FD

In the context of the stocktaking of the various Council Information Systems in North Rhine-Westphalia, it turned out that all municipalities either already operate a Council Information System or are planning to do so in the foreseeable future. This result suggests that the topic is relevant in the municipalities investigated. Nevertheless, from our point of view, the implementation is unfortunately inadequate in most cases. In many cases, it is difficult or even impossible to find the CIS alone due to incorrect or missing links to the portals. However, also the portals themselves are in many cases not user-friendly. The approach taken in the *Politik bei uns* project to make the data from the individual Council Information Systems available automatically via an interface in a superordinate, clear portal offers an excellent opportunity to make the data accessible to a broader public. However, vast amounts of data come together here, which can have a clear and dissuasive effect on many users. We, therefore, consider it a very promising approach to further standardize the data in order to make it even easier for users to access. The taxonomy we built throughout the work on this paper can be considered the first step towards a more standardized approach towards the presentation of political documents. Reducing the labeling of the recorded data to a minimum of varying terms and more importantly selecting those terms more appropriately and thus making the documents readily accessible to the citizens. The current usage of severely difficult and complicated terms makes it close to impossible for users of the Council Information Systems to understand with what kind of documents they are faced if they are not familiar with the exact denotations. This contradicts all principles of Open Government and its goal of contributing to a more informed society.

Another approach towards enhancing the accessibility could be to remove the human involvement in choosing and assigning the terms for the documents by having this kind of manual categorization and instead using text mining to achieve an auto-categorization of the terms. This would further reduce the work for the municipalities by eliminating all efforts concerning the assignment of terms. However, there is a risk of losing comprehensibility by going with this approach.

In addition to the minimization of varying terms in labeling the presented documents, there are a few other areas in which the accessibility of the data listed on the *Politik bei uns* web portal could be increased drastically. The main aspect which, in our opinion, would benefit the user most, could be the implementation of a semantic search. With the help of such a tool, citizens could precisely search for thematic areas they are interested in learning more about, without being required to know the exact terminology of the different kinds of council documents that are listed in the system. By further standardizing the data from Council Information Systems as exemplary shown with the help of our taxonomy and implementing proceeding tools such as for example a semantic search, the principles of Open Government can be made accessible to larger sections of the population and correspond to the actual intention of this concept, i.e. to inform citizens and enable them to participate.

#### 4 Discussion

With a much broader view on the issue of accessibility not only the high variance of terms describing the recorded data is problematic but also the general reachability of government data on web portals like those presented in this work. The municipalities need to focus on achieving a higher grade of publicity for points of contact of their citizens with governmental data concerning them. The improvement of those offerings needs to go hand in hand with efforts to introduce them to a more significant number of citizens.

## 5 Future Work

Building a taxonomy for a more user-friendly and easier-to-use search is only the first step towards enabling more people to access public council data and help them make better decisions. The next step is to get in touch with the developers of *Politik bei uns* again and to develop a test system according to the existing taxonomy. A conversion of already existing documents using our taxonomy is necessary and easy to carry out. It remains to be examined whether the previous categories are retained and supplemented by the new top-level categories so that more detailed filtering remains possible. The implementation and analysis of a user test in this system can provide insights into whether users will find more relevant results through the improved search. This may reveal that the proposed main categories are too unspecific, and users are confronted with too many results. In this case, a revision of the taxonomy would be necessary and the creation of more specific categories. Also, the system of the portal should also be revised with the *Politik bei uns* developers, so that newly inserted documents use the proposed taxonomy.

As the measures we suggest in order to optimize the usage of Council Information Systems are developed based on our findings during the evaluation process of the different Systems there is not yet an empirical foundation on which improvements would be desirable for users of the Systems. In order to cover the needs and wishes of users we are also planning a major study on the user-friendliness of Council Information Systems, which should provide information on different areas concerning the use of such systems by citizens. Therefore, we want to evaluate, whether the citizens know about Council Information Systems, if they already make use of them and how the provision of data can be improved from their perspectives. To find out about the users' point of view, we plan on distributing questionnaires at various locations in NRW and thus obtain the opinion of the citizens. The feasibility of these ideas will be discussed with IT service providers and members of city councils. The goal of those efforts is to gain an impression on which aspects of citizen information should be focalized by the municipalities in their efforts of providing governmental data, possibilities ranging from pure information to participation or communication. At present, such systems generally only offer the possibility of receiving information.

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