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**Bridging the digital divide:  
libraries providing access for all?**

## “Libraries and the national public information system”

### Bridging the digital divide in the world of e-government

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#### Background – what is e-government?

E-government is basically defined as provision of public information and services by the Internet [*Global...* (2007)]. OECD specifies it as „the use of information and communication technologies, and particularly the Internet, as a tool to achieve better government” [*The e-Government Project Website* (2005)]. Another popular definition states that e-government is „the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees” [*At The Dawn of E-Government..*], which emphasizes the influence of technologies used on the accessibility of public sector services for the benefit of citizens, business partners and employees.

According to the World Bank e-government refers to public sector institutions use of information technologies, which enable the transformation of relationships with citizens, business representatives and other units of the sector in question. The technologies discussed may improve the provision of public services to the citizens and relationships with business and industry, strengthen the status of citizens by means of their access to information and increase the effectiveness of public sector management [*Definition...*].

The Council of Europe employs the concept of e-governance to emphasize the importance of relations between the state and its citizens – e-governance refers directly to being in government, including the citizen governance, while e-government refers to the informatization of public sector. According to the Council most important aspects of this phenomenon include e-democracy and contacts between the state and the civil society [*E-governance...*]. Helen Michel explicitly defines e-government as a system where citizens fulfill their duties toward the state (including the participation in the elections), whereas in e-governance citizens are the source of various initiatives as well as active and willing partners of the government. This definition of e-governance implies the higher level of development of electronic information systems and services [Michel, H. (2005)]. In a similar manner Matthias

Finger and Gaëlle Pécoud describe e-governance as a term broader to e-government and covering three main areas of: e-government (how countries employ new information and communication technologies (ICT) to rationalize the provision of services), e-rulemaking (to what extent countries employ ICT to rationalize the lawmaking) and e-democracy (to what extent countries employ new technologies to involve citizens in the decision-making processes) [Finger, M.; Pécoud, G. (2003)].

The development of information and communication technologies influences the increase in importance of information and its flows. This in turn, in the case of institutions dealing mostly with information resources (their acquisition, transfer, processing and circulation), raises the need for reorganizing various processes and adjusting the structure of resources to users' changing needs and growing information demands. According to Mayer-Schönberger, e-government overconcentrates on technologies and their application, leaving users aside. As a result of this, highly sophisticated solutions are implemented but remain unused [Mayer-Schönberger, V. (2006)]. Within this context i-government means that the designers of electronic systems of public information and services shift their attention from informatization to the organization of information.

One of attempts at providing the typology of public information systems was made within the research performed for e-Government Readiness Index where five models of electronic systems of public information and services were defined [UN Global ... (2006)]:

- centralized (organized around the main national portal, methods of presenting information imply high level of uniformity),
- decentralized (based on individual sites built for specific institutions, initiatives and programs, where interinstitutional portals provide only references and methods of presenting information do not imply the existence of widely implemented standards),
- networked (where the number and nature of links between various sites assign them a systemic character),
- e-participation model (the core of which are tools enabling citizens to become involved in decision-making)
- e-services (where the informatization of processes such as BackOffice and FrontOffice is considered an absolute priority in the development of e-government systems).

### **Purpose of this paper and methods**

The study of literature on public information systems shows that research in that field mostly concerns specific solutions, in particular methods for the provision of access to selected services or organization of content within portals. These detailed discussions and proposals lack systemic approach, particularly libraries seem to be left aside. The discipline of information science seems to be especially underrepresented in the research in area of e-government. This paper forms an attempt to fill the gap in question.

Strategic documents on e-government lack long-term goals, coherent and uniform vision of public information system and ideas for the subject organization of this system. This clearly implies the need for the development of a model serving as a regulatory centerpiece of e-government system. The main objective of this paper is to specify guidelines for integration of library system and e-government system at central, regional and local level through the identification of key recommendations.

Conclusions for guidelines on the public information system in Poland are based on the results of the analysis involving general characterization of e-government, research on the uniformity and centralization of 15 national public information systems and detailed

characterization of e-government in the United States of America, the European Union and Poland.

The process of reaching conclusions in this field started with the analysis of the public information system of the United States (the winner of eGovernment Readiness Index ranking). Highly advanced and integrated American system makes it a source of numerous best practices as regards the availability of public information and services. The demand for the analysis of the European Union public information system results from its connection to the national systems of public information, regarding both the policy for the development of e-government and its operation after implementation. Only with the conclusions on the formal aspects of the system (characteristic features of e-government, level of system uniformity and centralization) and its organizational structure (the analysis of public information systems of the United States, the European Union and Poland) it became possible to develop recommendations for the optimal model.

Guidelines for the organization of public information system were defined on the basis of 25 conclusions reached during the analysis. Conclusions in question served to specify 11 issues: standards for visual uniformity of webpages at central level, standards for content published on webpages at central level, central portal, interinstitutional portals, convergence of information technologies and resources, e-participation, flexibilization of the system, networking of the system, complementing other electronic information resources and services, personalization of access to information and services, complementing non-electronic information resources and services for which separate detailed recommendations were proposed.

The selection of the sample of national public information systems to be included in the research was based on the following criteria: official language of a given country (preferred English, French, German or Spanish) and level of system implementation (preferred countries high in UN Global e-Government Readiness Report 2005 ranking). The analyzed sample included systems from 15 countries: Australia, Austria, Belgium, Czech Republic, France, Spain, India, Ireland, Canada, Malta, Germany, New Zealand, Singapore, the United States of America and Great Britain.

Next, the sample of 30 public information websites for each country was selected. The size of the sample was limited with the number of public information systems available for the countries in question. While it was possible to select 30 appropriate websites in the case of Canada or India, it was difficult to identify more pages of a required character in the case of Czech or Maltese public information system [*Global e-Government Survey* (2001)]. Thus a total of 450 websites from 15 national public information systems was analyzed.

According to the results of research on websites usage, more than the half of all Internet users evaluate the potential usefulness of a given website and its adequacy for their information needs within 30 seconds after its download [Starak, Y. (2005)]. This considered, the analysis of the system uniformity was limited to the appearance and organization of home sites, i.e. the main pages of public information websites. The research did not include the analysis of inner organizational and visual coherence of individual pages. Technologies underlying website development and operation were also ignored as statistical data show users consider data on website software or its conformance with W3C standards to be of secondary importance.

The analysis presented in the paper concerns FrontOffice level only, all issues related to BackOffice features of e-government systems are omitted, including interoperability standards, standards for data description and exchange (including metadata systems), informatization of services and reorganization of administrative processes.

Data on respective public information systems constituting the research sample were collected from October 2006 to January 2007.

In order to enable the analysis of the organization of national public information systems included in the sample the following schema including a number of criteria was developed:

for vertical organization: legislation on visualization (regulations on methods of presenting content within electronic environment, shared by all institutions at central level), legislation on content type and structure (regulations on the scope of content published within electronic environment, shared by all institutions at central level), fixed system structure based on the structure of public administration (lack of interinstitutional portals, websites of individual institutions perform leading roles in the system), some/all information published exclusively by a delegated body independent of institutions which prepare information (the entity which prepares information /and the one that information refers to/ is obliged to send it to an external institution to have it published in the electronic environment),

for horizontal organization: shared portal for all types of clients (implementation of a single point of access to information addressed to three main user groups: citizens, businessmen and public sector employees), some/all information simultaneously published on various types of portals (in order to create several points of access to information within the system, intentional redundancy is introduced, with information repeated on the website of the institution which prepared it as well as on the subject gateways, portals addressed to specific audience, etc.), delivery of public services beyond the website of the institution being a final service provider (the public service within electronic environment is not delivered on the website of the institution being a provider of services in question), identification of shared stages for various services (defining shared stages in the process of service providing and offering them within a single internet service, e.g. bill payment).

Criteria „legislation on visualization” and „legislation on content type and structure” were verified on the basis of the analysis of acts and strategic documents on public information systems in individual countries. All remaining criteria were verified on the basis of the analysis of the structure of national public information systems.

Recommendations presented here only refer to issues specific and corresponding to webpages included in the electronic public information system. In particular, 25 conclusions resulting from the analysis considered, 11 key issues were identified and provided with appropriate recommendations in the subsequent points of this chapter: standards for content and visual uniformity of webpages at central level, central portal, interinstitutional portals, convergence of information technologies and resources, networking the system, 9) complementing other electronic information resources and services, 10) personalization of access to information and services, 11) complementing non-electronic information resources and services.

## Findings

The analysis shows, that in general public information systems are far from being coherent, both in the area of content and layout. The creation of uniform electronic public information systems requires common standards for all webpages included in the system at central level. However, overstandardization of public institution webpages results in excessive rigidity of the system, including the necessity to introduce a body to control the implementation of those standards. In general it is assumed, that introducing common layout solutions makes it easier for end-users to navigate the system. The standard for visual uniformity of webpages of public sector institutions also enables the identification of the website as an official service, which means information has more credibility. However, our analysis showed that apart from Canadian system (in which *Common Look and Feel for the Internet* standards have been introduced), public institution's websites are far from being uniform.

The design of the structure of electronic public information system requires the consideration of a central portal performing the function of „one-stop shop” to public sector information resources. Such a portal should enable access to public sector information and services, simultaneously regulating the system so as to provide users with easy access to information included in other websites constituting the system (reference function). One of the examples of best practice in the development of central portals is British service Directgov, where information is arranged according to subject categories, individual institutions and information needs of selected user groups. The application of multifaceted organization of information helps users to reach information with the most comfortable search methods. Directgov includes basic information on a given subject and references where more information is requested. Another important option of this service is the provision of information on new websites created by public institutions.

In the case of the European Union member countries the organization of national public information systems should include the structure of EU information resources to ensure the implementation of the vision for European information space [i2010]. Consequently, central portal of national public information system should ensure equal treatment of information from the European Union web services and national public information system.

The creation of central portal which provides effective access to information resources and services of public sector is fundamental for the effectiveness of whole e-government system as it implies limited knowledge of the users on public information system and public administration system. In case of Poland, where we have no such service, it means that users have to harvest information scattered across entire system.

We have also found that appropriate organization of public information system includes appropriate horizontalization ensured at FrontOffice level. This may be achieved, for instance, with interinstitutional portals, making them perform an important role in the structure of public information system. On the one hand they guarantee appropriate degree of system horizontalization as regards information presented at FrontOffice level, on the other hand they express the system organization directed at users' needs. Simultaneously the introduction of interinstitutional portals stabilizes the structure of the system, limiting the influence of institutional transformations periodically occurring in central administration structures.

The basic purpose for introducing interinstitutional portals into the structure of the system is the limitation of the influence of user's knowledge about public administration system on the effective retrieval of information. In the case of institutional portals reflecting the structure of

public administration, non-integrated resources become highly problematic, forcing users to search numerous web services and demanding awareness of their existence.

Electronic public information system cannot be created without the consideration of various types of media, in particular mobile devices and digital TV. In the process of designing electronic system of public information and services it is necessary to consider conditions resulting from the convergence of information technologies and resources. Digital TV seems so far to be the best solution especially in case of older users.

The development of information and communication technologies has enabled the convergence of information resources, formerly largely independent because of limits characteristic of traditional methods of producing, collecting, processing and circulating information. The multitude of information types included in the resources of public institutions, making public sector a main information provider in each country, guarantees a special added value for information products offered by public institutions. However, this process requires extensive convergence of information resources.

The convergence of resources, visible in the field of commercial information products, requires public sector institutions to answer the demand for shared provision of content derived from the holdings of many institutions, far beyond the standards appropriate for interinstitutional portals. Subject gateways or websites addressed to selected groups of clients show information intended to be published on WWW. The convergence of information resources leads to the integration of information resources collected within separate databases by various institutions.

The implemented optimal model of public information system should guarantee a level of resource integration sufficient for shared circulation of those resources – for instance a search query “William Shakespeare” put into the search tool of Culture portal should produce a list of answers containing textual information (e.g. Shakespeare’s biographical note prepared for the website, works by William Shakespeare found on the National Library online catalog, full texts of these works available from the digital library), graphic information (e.g. portraits of William Shakespeare or paintings inspired by his works held by the National Museum) and even audiovisual information (for instance, multimedia files with TV shows from the archives of public television).

In order to guarantee networking of the system it is necessary to define connections (use of links) among elements constituting the system. This may be partially solved with the selection of a number of main system webpages, i.e. webpages addressed to the largest possible group of potential recipients (e.g. main portal, portal addressed to businessmen, subject portal on health issues) followed by the introduction of the obligation to include standardized graphic navigation elements leading to afore-mentioned portals in all webpages building the system.

Electronic system of public information and services should be complementary to other electronic resources and services. Services created by public institutions should not duplicate solutions offered by other entities free of charge – it is important to consider here added value of the new service/information.

One of solutions expected by the users is the possibility of integrated access to information and services, which requires, among else, the introduction of personalized access option. Logged-in users should be guaranteed access to services appropriate to their profiles of public service recipients. Information needs and services used by various differ to a large extent. Personalization of access, in particular within the central portal, should enable the adjustment of structure and scope of presented content to individual user’s needs, including the location

of the content.

Particularly, personalization should grant users the role of co-creators of their own homepages within the central portal. It is possible, among else, with the selection list available during registration, which enables users to choose types of information they consider most important (such a list should be editable in the administrative view of user account management, permitting the introduction of various changes and adjustment of the homepage to changing profile of the user). The introduction of such solution requires portal developers to make an assumption about users having the best knowledge of their own information needs.

In the context of personalization and development of systems co-created by users, which is related to increasingly blurred division between the sender and the recipient of the message, interesting solutions include, for instance, iGoogle service. Each iGoogle user can create his own personalized homepage, the structure of which is fully dependent on user preferences. Selecting a desired number from the multitude of available modules leads to the creation of a page which includes only information answering user's individual needs. Modules can be added, removed and reshuffled on the page any time users wish to do that.

The analysis of available modules, including those created by Internet users, shows this tool to be used by many public institutions, for instance in the United States of America (e.g. Department of Energy, National Health Institute, NASA). Usually modules contain references and are created with RSS technology, although a module such as Washington State Library enables searching of the online public access catalog of that library.

Designers of electronic systems of public information and services should take into consideration traditional methods of communication and transmission of information. Researches show that an average user communicating with public sector (to obtain service or information) uses three communication channels (e.g. website, call center, personal contact) [Pieterson, W., Ebbers, W. (2007)]. Therefore electronic public information system should be complementary to other methods of communication. In particular it should be assumed that the role of channels other than electronic ones is larger in such countries as Poland, still undergoing the process of informatization and resource digitization.

One of most important elements of content published within portals (institutional portals, subject gateways, etc.) should be information on non-digitized resources, which may be useful in satisfying users' information needs. It implies not only publishing information on such resources but also providing information on access methods, location, etc. The fulfillment of user needs demands the integration of information on paper resources with information on digital content available online. It is also necessary to ensure methods of contacting public institution representatives other than electronic ones, e.g. call centers, personal contact.

Our findings show, that in properly organized public information system users get tools allowing them to browse, search and use public websites. Such system is involves standards for layout and type of content, one-stop shops (e.g. central portal), allows contact by different means (electronic, face to face, phone) and personalization, as well as is complementary to other electronic and traditional resources and services. However reality is usually far from this. There are some examples of good practices – e.g. undergoing website rationalization process in Great Britain (transferring most of the online content to the central portal Directgov), however in most countries, including Poland, those requirements are not being met.

## Libraries as intermediaries

Bringing government online created in many areas a gap, which is being filled by intermediaries. In more simple cases institutions and/or individuals just help users getting the information: e.g. elder people can use as intermediaries their children/grandchildren. However in many cases intermediaries are private companies who benefit financially from it. Of course private sector is a source of helpful solutions and innovations, for which users want to pay. Good example of such solution is American portal Intelius. It allows users access to multiple databases of public sector. In theory each user could do the same job on his own – look through the content of e.g. 60 databases. Since it would require a lot of time some users are willing to pay someone to do it for them. As a result Intelius fills the gap created by bringing online huge number of databases, which are accessible separately.



Sign In – My Intelius  
View My Reports

<< Return to Home

**PEOPLE SEARCH RESULTS** Search Again >>

86 People found that match **Kowalski** in the state of **New York**.  
Click on the **Name** or **View Details** link for more info.

✓ = Available See Details on All 86 People!

	Name	Age	Previous Cities	DOB	Phone	Address	Avg. Income	Avg. Home Value	Relatives
1	<a href="#">Kowalski Rosalie Badrian</a> <a href="#">View Details</a>	61	Whitestone, NY Oakland Gardens, NY New York, NY Brooklyn, NY Fresh Meadows, NY	✓	✓	✓	✓	✓	
2	<a href="#">Kowalski Nicole</a> <a href="#">View Details</a>	39	Holtsville, NY Farmingville, NY East Moriches, NY Manorville, NY Aquebogue, NY	✓	✓	✓	✓	✓	
3	<a href="#">Kowalski Kerin</a> <a href="#">View Details</a>	36	Bayside, NY Long Beach, NY Sunnyside, NY Cortland, NY New York, NY	✓	✓	✓	✓	✓	
4	<a href="#">Kowalski Lesley Topiol</a> <a href="#">View Details</a>	43	Clifton Park, NY Albany, NY Washington, DC Jefferson City, MO New Rochelle, NY	✓	✓	✓	✓	✓	

Source: <http://www.intelius.com/search-summary-out.php?ReportType=1>

In some cases however intermediaries take an advantage of purely designed e-government and benefit from for example digital divide, not bringing any added value to the service.

Libraries are important part of the public information system. From the beginning they have been included in European strategies – lending books is one of the 20 public services defined in eEurope strategy as the most important and to be brought online as soon as possible. However, in our opinion, the role of libraries in this context is much broader. In countries like USA or Great Britain library is a go-to place for getting information on public sector and its services. Canadian National Library is responsible for managing the Core Subject Thesaurus, which is used for classification of public documents. Both federal government in USA and European Commission have created networks of depository libraries granting access to their documents and databases.

The Federal Depository Library Program, which has begun in XIX century, includes currently 1250 libraries. The system used to be based on paper collections of publications printed by public offices, however when the information society came, it had to be reshaped. Government Printing Office estimated that in 2006 around 65% titles published by this

institution were available only in electronic version [Rawan, A. (2006), p. 6]. Electronic documents are also sent to FDLs, however in the world based on Internet, it is just a matter of time when those documents will be available in free access through central database for everyone to use. At first there was a problem with finding new identity and purpose in the digital public information system – what can libraries do except allowing access to books? The answer was simple - librarians can find information for users faster, they can get to sources users never heard of, and probably can understand it better. As a result new service AskUS-FDLP has been proposed through which librarians offer help by email, chatrooms and phone.

European Union's network of Documentation Centers is based on the same principle. They get paper documents as well as access to their electronic versions (now mostly also available at the EUROPA portal) from The Publications Office of the European Union. Librarians at EDC's also bring professional help in finding information.

### **Where Polish libraries will go?**

Public libraries in Poland, apart from traditional services and obligations coming from Freedom of Information Law (all public institutions in Poland have to publish a website containing some basic information on their structure, funds and so on) are not involved in activities within public information system.

A recent study within Libraries Development Program shows some examples of good practices. All of them come from individual initiatives led by the librarians themselves and have local range. For example a library can host a meeting during which citizens will get information about polish tax system (in cooperation with tax office), can learn how to write CV (in cooperation with unemployment office) and so on.

In June 2009 Institute of Information Science and Books Studies held a workshop during which librarians and academics worked on model of library as a part of public information system. They pointed out that in Poland the biggest obstacle is lack of cooperation of public institutions at the local level. Libraries don't receive public documents and publications even when they directly ask for them. The conclusion was that making a library important part of public information system – e.g. intermediaries for people suffering from digital divide – currently relies solely on local librarians ability to fight their way through vertical organization of public sector and lack of cooperation (at the information level) between institutions.

Since local libraries are usually small and employ few librarians they require different approach than big libraries. It is important to know that even in case of those libraries they can play important role in public information system – especially that quite often they are the only source of information for the citizens.

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