

# Connecting Government, Libraries, and Communities: Information Behavior Theory and Information Intermediaries in the Design of the LibEGov Tool

**Paul T. Jaeger**  
[pjaeger@umd.edu](mailto:pjaeger@umd.edu)

**Ursula Gorham**  
[ugorhos@yahoo.com](mailto:ugorhos@yahoo.com)

**John Carlo Bertot**  
[jbortot@umd.edu](mailto:jbortot@umd.edu)

**Natalie Greene Taylor**  
[ngreentaylor@gmail.com](mailto:ngreentaylor@gmail.com)

**Elizabeth Larson**  
[elclarson@gmail.com](mailto:elclarson@gmail.com)

**Ruth Lincoln**  
[rlincoln21@gmail.com](mailto:rlincoln21@gmail.com)

Information Policy & Access Center, College of Information Studies, University of Maryland

**Jonathan Lazar**  
Shutzer Fellow, Radcliffe Institute for Advanced  
Study at Harvard University  
and Towson University  
[JLazar@towson.edu](mailto:JLazar@towson.edu)

**Brian Wentz**  
Department of Computer Science and Information  
Technologies  
Frostburg State University  
[bjwentz@frostburg.edu](mailto:bjwentz@frostburg.edu)

---

## Abstract

As e-government grows in scope and complexity, an increasing number of e-government services have surpassed the digital access and literacy of many members of the public. Often referred to as the digitally excluded, these individuals seek information intermediaries – such as public libraries and other community anchor institutions – to bridge their information needs and e-government systems. In this paper, the authors describe the data - surveys, case studies, interviews, site visits, and usability and accessibility testing – used to analyze the needs of the public, libraries, and government agencies. The focus then shifts to the methods employed to develop an innovative online resource that supports these information intermediaries and partnerships. Finally, the roles of the online resource in facilitating information access for these information intermediaries are examined through the lens of the theory of information worlds to illuminate the broader implications for this work. These three sections demonstrate scholarship in action - data leading to innovation and wisdom.

*Keywords:* information behavior, information services

---

## Introduction

Despite the government's increasing reliance upon e-government to disseminate information to, and otherwise engage with, citizens, many individuals lack the means to access, understand, and use these services. These barriers to direct interactions between members of the public and government agencies have operated to impede the flow of vital information. To overcome these barriers, an increasing number of members of the public have turned to libraries to help them navigate e-government processes.

This paper focuses on the development of one particular resource that seeks to support librarians as information intermediaries and to foster the creation of partnerships to facilitate intermediation and deliver e-government. Research undertaken to date — including surveys, case studies, interviews, site visits, and usability and accessibility testing — is described and analyzed to provide readers with insight into the often divergent needs of members of the public, libraries, and government agencies. Building

upon this research, the goals of this paper are to: 1) review information behavior in the context of e-government; 2) situate e-government within the theory of information worlds framework as a means of understanding e-government information seeking behavior; 3) detail a multi-method approach used in the development of an online resource for librarians to provide e-government services and resources to their users, and 4) draw upon an understanding of e-government information behavior and the theory of information worlds framework to create a model for describing the connections between government, libraries, and communities. Although focused primarily on one e-government resource, there are also broader implications for this work. By examining the development of this resource through the lens of the theory of information worlds, this paper offers a new perspective on how libraries can best facilitate information access between government agencies and members of the public.

## Information Behavior and E-Government

As e-government has matured into a dynamic socio-technical system encompassing issues of governance, societal trends, technological change, information management, interaction, and human factors (Dawes, 2009), the delivery of information, communication, and services has become one of the central uses of e-government, raising a number of issues in terms of information behavior. Due to the ongoing evolution of this system, an increasing amount of government information and services is now available exclusively online.

From an agency perspective, the benefits are sizeable, particularly in terms of cost-savings and more efficient use of personnel time (Jaeger & Bertot, 2010, 2011). Because of these benefits, many agencies now view e-government as their primary method for interacting with members of the public (Ebbers, Pieteron, & Noordman, 2008; Streib & Navarro, 2006; Bertot & Jaeger, 2006, 2008) and increasingly use social media platforms – such as Facebook, Twitter, and Tumblr – to further these interactions (Bertot, Jaeger, & Hansen, 2012; Bertot, Jaeger, Munson, & Glaisyer, 2010; Jaeger, Bertot, & Shilton, in press).

For the average citizen, e-government access now stands as the primary means of getting government information and interacting with the government (Bertot, Jaeger, Shuler, Simmons, & Grimes, 2009). E-government services are now the vehicle through which citizens accomplish many necessary educational, economic, social, and political functions - immigration and citizenship, social services, voter registration, license application and renewal, tax payments, enrollment of children in school, and many similarly important functions (Bertot, McClure, & Jaeger, 2008; Gibson, Bertot, & McClure, 2009; Holt & Holt, 2010). Not surprisingly, interactions with members of the public are central to both of the primary reasons typically presented in favor of continuing to expand e-government: 1) engaging citizenry in government in a user-centered manner, and 2) developing quality government services and delivery systems that are efficient and effective (Bertot & Jaeger, 2008). The focus, however, has often been on making the interactions easier for the agency, not the citizen (Jaeger & Bertot, 2010).

The challenges that e-government poses for information behavior among members of the public are significant and varied. As of 2012, 20% of adults in the United States are not Internet users, with persons with disabilities, older adults, non-English speakers, those who did not complete high school, and those with low incomes being the most likely to not use the Internet (Zickuhr & Smith, 2012). Even for Internet users, e-government services are often limited by difficulties in searching for and locating the desired information, a general lack of familiarity with the structure of government, lack of education about the value of e-government, language barriers, and attitudes toward technology and government among many users (Jaeger & Thompson, 2003, 2004). All of these significant issues of information behavior have virtually escaped consideration in the development and refinement of e-government in the nearly two decades since the launch of the Web. If they are discussed, they are often presented as a technology-based digital divide, with little attention paid to the inability of certain populations to engage in increasingly digital government services. An awareness of this e-government divide is beginning to build as part of larger digital literacy and digital inclusion initiatives (IMLS, 2011; NTIA, 2011), but widespread awareness remains elusive.

Many members of the public have overcome e-government challenges by seeking information intermediaries to assist them in their usage of e-government. As providers of free public access to the Internet, the public library has served as the primary – or often only available – access point for e-government access, training, and assistance in communities across the country (Bertot, 2009). In a

sense, serving as guarantor of access and training is a natural extension of the established social roles of the public library. “The public library is one place that is culturally ingrained as a trusted source of free and open information access and exchange” (Jaeger & Burnett, 2005, p. 487). Given the complexities of many services, “even if Americans had all the hardware they needed to access every bit of government information they required, many would still need the help of skilled librarians whose job it is to be familiar with multiple systems of access to government systems” (Heanue, 2001, p. 124).

Several years ago, it became commonplace for government agencies to direct users with questions about their websites to the local public library (Bertot et al, 2006a, 2006b; Bertot, McClure, & Jaeger, 2008). Now, many federal, state, and local government agencies continue to rely upon public libraries to provide residents with access to and guidance in using e-government, directing residents to the nearest public library to obtain this assistance (Bertot et al, 2006a, 2006b; Jaeger, 2009; Jaeger & Bertot, 2009). For example, the Florida Department of Children and Families reduced the number of case workers and assistance providers by more than 3,000 positions due to its implementation of the AccessFlorida online application system, resulting in near complete lack of available agency staff from which users can seek assistance (Gibson, Bertot, & McClure, 2009).

Government agencies indicate that relying on libraries for e-government access and assistance allows the agencies to focus on other issues (Bertot *et al.*, 2006a, 2006b; Fisher, Becker, & Crandall, 2010). However, the provision of access assistance by public libraries creates a range of service, funding, technology, and political challenges for the libraries (Bertot & McClure, 2007; Jaeger & Bertot, 2011). While the E-government Act of 2002 included language regarding the need for federal government assessment of the impacts of the law on public libraries and other social institutions, such studies were never funded or conducted. As a result, the advent of e-government has raised enormous issues of information behavior within the context of government information, communication, and services that have yet to be adequately addressed.

## The Theory of Information Worlds

In designing the goals and method for this project, the authors opted to employ the theory of information worlds as the conceptual framework for understanding the roles of information behavior in e-government usage. The theory of information worlds provides a framework for understanding and studying the multiple interactions between information, information behavior, and the many different social contexts within which it exists – from the micro (small worlds) to the meso (intermediate) to the macro (the lifeworld).

Building on the work of Elfreda Chatman and Jurgen Habermas, the theory argues that information behavior is shaped simultaneously by both immediate influences, such as friends, family, co-workers, and trusted information sources of the small worlds in which the individual lives, as well as larger social influences, including public sphere institutions, media, technology, and politics (Burnett & Jaeger, 2008, 2012; Jaeger & Burnett, 2010). These levels, though separate, do not function in isolation, and to ignore any level in examining information behavior results in an incomplete picture of the social contexts of the information. As such, scholarly explorations of information behavior should account for the different levels to fully understand the social drivers of information behavior and the uses of information in society.

The theory of information worlds seeks to expand the perspective brought to studies of information behavior in society and to increase understanding of the myriad ways in which information plays a significant role in social, political, and personal lives. In examining these social structures, and the ways in which they constantly interact with and reshape one another, the theory of information worlds focuses on five social elements:

- Social norms: a world’s shared sense of the appropriateness of social appearances and observable behaviors;
- Social types: the roles that define actors and how they are perceived within a world;
- Information value: a world’s shared sense of a scale of the importance of information;
- Information behavior: the full range of behaviors and activities related to information available to members of a world; and
- Boundaries: the places at which information worlds come into contact with each other and across which communication and information exchange can – but may or may not – take place.

---

As with the social structures within information worlds, the elements are interrelated and constantly interact with and influence one another.

As localized information worlds, each small world has its own social norms, social types, information behavior, and understanding of information value. The members of each small world have established ways in which information is accessed, understood, and exchanged within their world and the degree to which it is shared with others outside the small world. A typical person is a part of many small worlds – friends, family, co-workers, people with shared hobbies, and so forth - and there is no real limit to the number of small worlds to which an individual can belong. Only in extreme circumstances of social isolation can an individual exist in only one small world.

Any one of these small worlds may offer many places where its members are able to interact with members of other small worlds. Information moves through the boundaries between worlds via people who are members of two worlds or through interaction between members of two small worlds in a place where members of different small worlds are exposed to other perspectives. Further, the contact between small worlds and other inputs from the lifeworld can lead to the creation of new worlds as information passing over the boundaries between worlds either blurs those boundaries or otherwise transforms or changes information behaviors and perceptions of information value. Encountering other small worlds can occur through public sphere institutions, such as in a public library, or through new technological avenues of communication and exchange, such as social networks on the Internet. As information moves through boundaries between small worlds, the information is treated, understood, and used differently in each small world in line with the social norms of that world. As a result, the same information may have a different role within each small world.

Together, these small worlds constitute the lifeworld of information. The way that, as a group, the small worlds in the lifeworld treat information will shape how the information is treated within the lifeworld as a whole. As the information moves between small worlds, more and more small worlds will decide how to treat this information, generating an overall perception of the information across the lifeworld. The more small worlds that are exposed to information, the more exchange between small worlds there will be, and the better chances there will be for a democratic perception of and approach to the information.

However, beyond the small worlds, there are also influences at play in the lifeworld that shape the way that small worlds perceive information. Some of these influences increase contact between small worlds and promote democratic engagement in the lifeworld. Libraries, schools, and other public sphere organizations exist specifically to ensure that information continues to move between the small worlds and members of each small world are exposed to other small worlds. In sharp contrast, other influences serve to constrain the movement of information between small worlds or constrict the socially acceptable perceptions of information. The most influential information worlds – such as those who possess political power or those who control the media – can use their power to push back against the collective small worlds to enforce a minority perception on the majority, asserting control over the information in the lifeworld.

Some influences on small worlds and the lifeworld are inherently neutral, but can increase or decrease information access and exchange. ICTs, such as the Internet and online social networks, act as a way for small worlds to connect in new ways and to reach other small worlds that would not otherwise touch their boundaries but they can also work to homogenize perspectives or enforce hegemonic perspectives of small but powerful small worlds on the lifeworld. In total, the small worlds are shaped by all of these larger influences, but also have the power collectively to define the parameters of the external influences.

The theory of information worlds, thus, attempts to account for all of these social and structural elements at work in the shaping of information behavior within a society. While there is obviously great benefit in studying the ways in which information behavior is shaped by the micro, the meso, or the macro level, studying them across levels will provide a much richer and more nuanced understanding of the ways in which information is perceived and moves through society. Though the theory of information worlds presents a much more complex approach, it is intended to compensate the researcher by providing a more thorough and realistic picture of the issues being studied.

---

## LibEGov Project Methodology

The study's methodology was designed to account for the micro, the meso, or the macro level influences on the information behaviors of members of the public, public librarians, and government agency employees in using e-government to deliver e-government. The data collection efforts, which examined information behavior considerations from the perspectives of members of the public, government agencies, and public libraries, sought to explore the following research questions: 1) What e-government service roles do public libraries provide to their communities? 2) What partnerships have libraries formed with government agencies in the provision of e-government services? 3) What are the success factors and/or barriers to forming partnerships with government agencies? 4) What are the challenges that libraries face in serving as e-government providers? To answer these questions, the study used an iterative multi-method design that provided both qualitative and quantitative data regarding the information behavior context of e-government services.

The first step in the data collection was to gather the agencies' perspectives – what they wanted to accomplish through e-government and how they designed their online presence to account for information behavior of members of the public. Representatives of five federal agencies were interviewed, and the findings from these interviews provided the government perspective on the process of e-government intermediation.

The next data collection method gathered information about the information behavior of members of the public when seeking to interact with e-government through libraries. The 2011-2012 Public Library Funding & Technology Access Survey (PLFTAS) is the 14<sup>th</sup> in a series of public library Internet access surveys conducted since 1994 (Bertot *et al.*, 2012). The survey was conducted between September 2011 and November 2011, yielding 7,260 responses, a response rate of 83.1%. The survey drew a proportionate-to-size stratified random sample that considered the metropolitan status of the library (i.e., urban, suburban, and rural). More specific methodology issues regarding the survey are available at <http://www.plinternetsurvey.org>.

Building upon the PLFTAS data, the third stage of data collection sought to enhance the understanding of e-government-related information behavior of members of the public through site visits to seven public libraries in five states (Connecticut, Florida, Georgia, Maryland, and Texas). The site visits included interviews with state library staff, government officials, and community organization leaders, all of which occurred between April 2011 and October 2011. For this component of the study, the authors sought to include geographically dispersed public libraries that serve a diverse set of communities (e.g., rural, suburban, and urban; high immigrant concentrations; underserved populations; high poverty). Library characteristics, such as size, number of staff, and known e-government partnerships, also factored into the selection process. In advance of the site visits, research was undertaken to identify existing e-government collaborative approaches, leading to a preliminary assessment of "best practices" that guided the development of the online resource.

The aggregate and generalizable data regarding public library e-government service provision and challenges generated from the survey, together with the on-the-ground assessments of library and government collaborative efforts offered by the site visits and interviews, provide rich insight into the context in which libraries are currently providing e-government services. Based upon the findings from these interrelated data collection efforts, the authors were able to identify key elements to be included in an e-government Web resource (LibEGov), initially focused on the areas of immigration and taxation. The LibEGov resource is intended to foster the role of public librarians as an information intermediary between members of the public and government agencies. This is accomplished through provision of references, best practices, resources, social media, and interactive tools to facilitate intermediation and the delivery of e-government services. Central to LibEGov are a number of features intended to support information behavior that leads to successful engagement with e-government, including: 1) detailed guidance on how to conduct a community needs assessment; 2) a tool to help librarians better understand complex immigration processes; 3) strategies for identifying and reaching out to potential partners; and 4) a community forum that encourages users to share their e-government experiences with one another.

Upon conclusion of the data collection efforts, the project team began the development of the Web resource's site design and content. Iterative usability testing during the development and refinement of the system has served to ensure that the perspective of the public librarians – the intended users of the site – was central to the completed LibEGov resource. The usability testing was conducted at public

libraries, allowing librarians to test sample queries in the resource in the setting in which they will be using the resource to address information needs of members of the public. In line with best practices in usability and accessibility testing (Dumas & Redish, 1999), the task lists and survey instruments were pilot tested before data collection began. For each of the two rounds of usability testing, 35 library staff evaluated the LibEGov web resource, representing libraries in urban, suburban, and rural areas. These numbers exceed the generally accepted number of participants in usability testing (Lazar, Feng, & Hochheiser, 2010; Turner, Lewis, & Nielsen, 2006). The first phase focused on usability tasks in the following four areas: user account registration and functionality, information seeking, bookshelf functionality, and blog/forum usage. The second phase occurred after additional content had been added to the site, so it focused primarily on information seeking behavior.

Additionally, two experts in interface accessibility individually used a structured, 3-phase approach to assessing the accessibility of LibEGov: listening to a web page with a screen reader while visually viewing the page, using typical non-visual navigational techniques, and code inspections to ensure compliance with each paragraph of the Section 508 interface regulations. This widely accepted approach ensures compliance with the law, addresses different types of disabilities (for instance, since the keyboard access required by screen reader users is also what users with motor impairments need), and allows for multiple viewpoints of the accessibility features of the website (Lazar *et al*, 2010; Lazar, Wentz, Biggers, *et al*, 2011; Lazar, Wentz, Bogdan, *et al*, 2011). In anticipation of a wide release of the resource during the summer of 2013, the next phase of the project will include field testing of LibEGov through workshops at which additional feedback regarding content and design will be solicited from public librarians and employees of government agencies.

### **From Theory to Method to Design**

The methods used in the data collection undertaken to inform the design of the LibEGov resource employed a range of concepts from the theory of information worlds. The survey and case studies collected information on the information behavior of members of the public in the library, capturing the micro level influences and small worlds behavior. These same data collection methods, in conjunction with the usability testing, collected the information behavior of the librarians in their roles as intermediaries, recording the intermediate, meso level influences and behavior. The interviews with government agencies focused on the macro level influences and lifeworld behavior that frame the e-government-related behavior at the other levels. The ultimate goal for LibEGov is to serve as a boundary – a place at which communication and information exchange related to e-government can take place across the small worlds of members of the public, public librarians, and government agencies. In order for LibEGov to function in this capacity, however, it must account for the information behaviors of each relevant party. Through a synthesis of the findings from various data collection efforts, a clear picture of the different information behaviors that needed to be captured by LibEGov has emerged.

As the public library serves as the intermediary between members of the public and e-government, the emphasis in each data collection effort was placed firmly on information behavior in the library. The members of the public comprise one key group of small worlds, as the different small worlds in a community may have different information behavior and intermediation needs in relation to e-government. The public librarians, in trying to meet these e-government needs, also stand as their own small world of information. Thus, in the context of e-government, the library is not only ensuring information flows between various small worlds in the community; it is ensuring information flows between community members and the government.

The data collected revealed a great deal about the social norms, social types, information value, and information behavior of members of the public in seeking e-government information, communication, and services. It is entirely within the social norms and social types of the small world of public librarians to try to meet these e-government needs, as evidenced by the vast majority of public libraries that report providing an array of e-government services and support (see Table 1). A wide range of questions in the survey and the case studies revealed how small worlds are seeking help with e-government in libraries, the specific information problems they are seeking to address, and the types of assistance needed to promote effective information behavior. Hartford Public Library (HPL) in Connecticut – one of the libraries at which a site visit was conducted – has developed a comprehensive approach to addressing these issues in the realm of immigration. The American Place (TAP), through a partnership with United States

Citizenship and Immigration Services (USCIS), makes effective use of the library's in-house resources to help an increasingly diverse group of recent immigrants secure citizenship and develop its English language skills by offering English as a second language (ESL) classes, life skills workshops, instruction on the use of the Internet and various software, and assistance with applying for the annual U.S. State Department visa lottery. Viewed through the lens of the theory of the information worlds, recent immigrants are a small world with very distinctive information needs, as well as unique social norms, social types, information value, and information behavior.

Table 1

*E-Government Roles and Services of the Public Library Outlets, by Metropolitan Status*

E-Government roles and services	Metropolitan Status			
	Urban	Suburban	Rural	Overall
Staff provide assistance to patrons applying for or accessing e-government services	97.3% (n=2,131)	96.6% (n=4,118)	96.4% (n=6,358)	96.6% (n=12,607)
Staff provide as needed assistance to patrons for understanding how to access and use e-government Websites	93.6% (n=2,050)	91.9% (n=3,917)	91.1% (n=6,008)	91.8% (n=11,976)
Staff provide assistance to patrons for understanding government programs and services	57.8% (n=1,266)	52.9% (n=2,254)	45.6% (n=3,008)	50.0% (n=6,528)
Staff provide assistance to patrons for completing government forms	71.0% (n=1,555)	70.6% (n=3,010)	70.7% (n=4,667)	70.7% (n=9,230)
The library developed guides, tip sheets, or other tools to help patrons use e-government Websites and services	33.6% (n=735)	22.2% (n=945)	15.3% (n=1,006)	20.6% (n=2,686)
The library offers training classes regarding the use of government Websites, understanding government programs, and completing electronic forms	24.5% (n=537)	11.9% (n=509)	6.2% (n=411)	11.2% (n=1,457)
The library partnered with government agencies, non-profit organizations, and others to provide e-government services	43.1% (n=941)	32.6% (n=1,386)	25.7% (n=1,690)	30.9% (n=4,017)
The library worked with government agencies (local, state, or federal) to help agencies improve their Websites and/or e-government services	12.3% (n=270)	13.1% (n=556)	9.3% (n=612)	11.0% (n=1,438)
The library has at least one staff member with significant knowledge and skills in provision of e- government services	31.4% (n=687)	25.0% (n=1,067)	20.0% (n=1,324)	23.6% (n=3,078)
Will not total 100%, as categories are not mutually exclusive				

In an effort to make immigration information more easily accessible to those individuals who most need it, HPL created an electronic information center that provides links to the most frequently requested items on the USCIS website (e.g., forms, online case status check), as well as to legal and support service providers (Naficy, 2009). By identifying these needs, as well as the problems that recent immigrants face in meeting these needs, TAP has been able to serve as an effective intermediary by facilitating unimpeded information flows between this particular small world and the government.

The data collection confirms the long-standing belief that the public library is the one community institution in which marginalized small worlds in the community – to which individuals of low socio-economic status, education and/or literacy levels, older adults, and non-English speakers belong – can seek and receive help interacting with e-government. The emphasis placed on e-government services and support also demonstrates that e-government is given high information value within the small world of public librarians. The current information behavior of public librarians, however, demonstrates a clear

need for a tool such as LibEGov to support their ability to meet the vast and complicated information needs related to e-government.

As reported on the 2011-2012 PLFTAS survey, overall, adequate staffing was the greatest challenge faced by libraries in meeting patron e-Government needs (44.9 percent). E-government expertise was also a challenge, with 50.5 percent of libraries reporting that library staff does not have the necessary expertise to meet patron e-Government needs. This lack of expertise manifests itself in various ways, including the inability of library staff to guide users through e-government transactions governed by often-complex legal and regulatory implementations (e.g., citizenship). The experience of Austin Public Library (APL) in Texas – another site visit library – highlights several of the challenges that public libraries face in providing e-government services. APL has been operating New Immigrant Centers at multiple branches, offering materials for citizenship and English language study in multiple languages and formats since 2000. In recent years, however, the delivery of these services has been hindered by, among other factors, the inability of the library's resources to effectively meet the needs of immigrants. By way of example, websites and web resources have yet to be translated into appropriate languages, due to constraints on staff time. Here, the small world of librarians is aware of the information needs of the small world of recent immigrants, but there are information barriers in place that prevent the necessary information from passing over the boundaries between these two worlds.

Using the theory of information worlds to better understand the information behaviors of members of the public as they seek to interact with e-government, as well as of public librarians in their role as e-government intermediaries, LibEGov has been conceptualized as a boundary over which e-government information, communications, and services pass to each of the small worlds touched by e-government. Content in the areas of immigration and taxation were targeted to librarians and the small worlds they represent. Designed for users to pick and choose relevant content, the site recognizes different user groups and encourages librarians to learn more about their community through needs assessments and the discovery of relevant partners in their areas. At the same time, the site attempts to present this range of content as a continuum of services, ranging from ready reference materials librarians traditionally use for quickly looking up facts and figures to suggestions on how to implement subject-specific outreach programming in the users' own libraries. The use of social media by government agencies has been highlighted as a way to thin the boundaries between the agencies and librarians, acting as both news delivery and feedback mechanisms.

The bookshelf feature was designed for users to gather relevant content for future reference. A forum designed for interaction among librarians and between librarians and agency representatives encourages meso-to-meso discussions, as well as meso-to-micro interactions. Posting to the forum requires logging in, but anyone may read through the threads. Forum users are encouraged to submit practices that have worked in their library or common issues they have come across in the course of delivering e-government services, allowing small worlds to fit into the lifeworld of e-government.

## Conclusion

The primary goal of the research into LibEGov has been the development of a tool to facilitate information access between government agencies, information intermediaries, and members of the public. However, as this paper details, the lens of the theory of information worlds can also provide a new perspective on the facilitation of information behavior that leads to successful interactions with e-government information, communication, and services by diverse populations within a community.

Through the information worlds theoretical lens, the study offers a range of findings that inform the development of the LibEGov resource. These include:

- In order to serve as a useful and effective resource, LibEGov needs to bridge the multiple small worlds of agencies, librarians, communities, and users. Though the site is not intended to serve the public directly, it must help librarians navigate the small worlds of multiple user communities that require a range of assistance in order to engage in e-government.
- Librarians, agencies, and users each exhibit different information behaviors, and assume different roles vis-à-vis these behaviors, which can create conflict among these groups. For example, agencies are often concerned with the efficiency of their e-government services, particularly costs. This often results in a transactional approach that emphasizes legalistic and perfunctory information dissemination. Users, on the other hand, are concerned with effectiveness and ease

of use so as to meet their information and e-government needs. Serving as intermediaries, librarians are concerned with both efficiency and effectiveness, and are often forced to fill gaps created by the implementation of e-government services by agencies and the inability of users to successfully engage with these services.

- Intermediaries may not interact with one another as they focus upon meeting the information needs of the particular small worlds they serve, leading to isolation in terms of their e-government service operations. The breadth of e-government information that intermediaries must track, however, makes meso-to-meso interactions vital to the control of this particular service area. Putting the small worlds into the context of the large e-government lifeworld encourages collaboration and creating a forum in which this interaction can take place is one step in the progression of increased interaction among intermediaries.
- The library as an intermediary institution has a unique opportunity to encourage small-world interaction and to change the way the lifeworld of government information is disseminated. While users are segmented into their own groups, libraries offer a place to bring users with similar needs together, potentially creating a critical mass that can influence the agencies providing the information. Librarians in this respect can act as change agents in the lifeworld and as representatives of individuals from various small worlds, but only if agencies give them the opportunity to voice their observations.
- The library also has the opportunity to create connections between and links within small worlds that can foster interactions, communication, and lessen isolation. This can create broader communities to facilitate user, agency, and library e-government efforts.
- Libraries should not assume that others are aware of the place they occupy within and among information worlds. They must continue to promote the various ways they are already facilitating flows of information between the small worlds they serve and government agencies so that resources such as LibEGov reach the greatest possible audience.
- Agencies must recognize the existence of the small worlds of user groups and ensure that information is available in different formats, languages, and venues. Along with varying information behavior, small worlds will have different cultural expectations, different attitudes about e-government, and different means of accessing the information. By connecting with libraries through LibEGov, agencies can learn more about the diverse e-government needs of various small worlds, with the goal of providing information through different accessible means and supporting libraries in their efforts to transfer information to their users via these different means.

These same lessons can also help in broader considerations of connecting government, intermediaries, and members of the public through e-government in future research and subsequent development of online tools. For the vast majority of e-government projects, the focus has been on a “one size fits all” approach to user groups, with little thought to differing needs of user populations (Bertot & Jaeger, 2006, 2008). Yet, as this study shows, information behavior theory can help to connect e-government and its stakeholder groups. Beyond the theory of information worlds, there are many other theories of information behavior that can be applied in the context of e-government access and usage (Spink & Heinstrom, 2012). Ultimately, creating linkages between theoretical perspectives on information behavior to e-government information, communication, and services may prove to be instrumental in efforts to overcome many of the barriers to e-government usage currently faced by different populations.

## References

- Bertot, J. C. (2009). Public access technologies in public libraries: Impacts and implications. *Information Technology & Libraries*, 28(2), 84-95.
- Bertot, J. C. (2011). Public libraries and the Internet: A retrospective, challenges, and issues moving forward. In J. C. Bertot, P. T. Jaeger, & C. R. McClure (Eds.), *Public libraries and the Internet: Roles, perspectives, and implications* (pp. 15-35). Westport, CT: Libraries Unlimited.
- Bertot, J. C., et al. (2012). *Public Libraries and the Internet 2012: Study results and findings*. College Park, MD: Information Policy & Access Center, University of Maryland.

- Bertot, J. C., & Jaeger, P. T. (2006). User-centered e-government: Challenges and benefits for government Web sites. *Government Information Quarterly*, 23, 163-168.
- Bertot, J. C., & Jaeger, P. T. (2008). The e-government paradox: Better customer service doesn't necessarily cost less. *Government Information Quarterly*, 25, 149-154.
- Bertot, J. C., Jaeger, P. T., & Hansen, D. (2012). The impact of policies on government social media usage: Issues, challenges, and recommendations. *Government Information Quarterly*, 29, 30-40.
- Bertot, J. C., Jaeger, P. T., Langa, L. A., & McClure, C. R. (2006a). Public access computing and Internet access in public libraries: The role of public libraries in e-government and emergency situations. *First Monday*, 11(9). Retrieved from [http://www.firstmonday.org/issues/issue11\\_9/bertot/index.html](http://www.firstmonday.org/issues/issue11_9/bertot/index.html)
- Bertot, J. C., Jaeger, P. T., Langa, L. A., & McClure, C. R. (2006b). Drafted: I want you to deliver e-government. *Library Journal*, 131(13), 34-39.
- Bertot, J. C., Jaeger, P. T., Munson, S., & Glaisyer, T. (2010). Engaging the public in open government: The policy and government application of social media technology for government transparency. *IEEE Computer*, 43(11), 53-59.
- Bertot, J. C., Jaeger, P. T., Shuler, J. A., Simmons, S. N., & Grimes, J. M. (2009). Reconciling government documents and e-government: Government information in policy, librarianship, and education. *Government Information Quarterly*, 26, 433-436.
- Bertot, J. C., & McClure, C. R. (2007). Assessing sufficiency and quality of bandwidth for public libraries. *Information Technology and Libraries*, 26(1): 14-22.
- Bertot, J. C., McClure, C. R., & Jaeger, P. T. (2008). The impacts of free public Internet access on public library patrons and communities. *Library Quarterly*, 78, 285-301.
- Burnett, G. B., & Jaeger, P. T. (2008). Small worlds, lifeworlds, and information: The ramifications of the information behaviors of social groups in public policy and the public sphere. *Information Research*, 13(2) paper 346. Retrieved from <http://InformationR.net/ir/13-2/paper346.html>
- Burnett, G., & Jaeger, P. T. (2012). Information worlds: Social context and information behavior. In A. Spink & J. Heinstrom (Eds.), *New research in information behavior* (pp. 161-180). London: Emerald.
- Dawes, S. S. (2009). Governance in the digital age: A research and action framework for an uncertain future. *Government Information Quarterly*, 26, 257-264.
- Dumas, J. S. & Redish, J. C. (1999). *A practical guide to usability testing*. Portland: Intellect Books.
- Ebbers, W. E., Pieterse, W. J., & Noordman, H. N. (2008). Electronic government: Rethinking channel management strategies. *Government Information Quarterly*, 25, 181-201.
- Fisher, K. E., Becker, S., & Crandall, M. (2010). E-government service use and impact through public libraries: Preliminary findings from a national study of public access computing in public libraries. *Proceedings of the 43rd Hawaii International Conference on System Sciences*, 1-10.
- Gibson, A. N., Bertot, J. C., & McClure, C. R. (2009). Emerging roles of public libraries as e-government providers. Paper presented at the 42<sup>nd</sup> Hawaii International Conference on Systems Sciences.
- Heanue, A. (2001). In support of democracy: The library role in public access to government information. In Kranich, N. (Ed.), *Libraries & Democracy: The Cornerstones of Liberty* (pp. 121-128). Chicago: American Library Association.
- Holt, L. E., & Holt, G. E. (2010). *Public library services for the poor: Doing all we can*. Chicago: ALA Editions.
- Institute of Museum and Library Services. (2011). *Building digitally inclusive communities*. Retrieved from <http://www.ims.gov/resources/resources.shtm>
- Jaeger, P. T. (2008). Building e-government into the Library & Information Science curriculum: The future of government information and services. *Journal of Education for Library and Information Science*, 49, 167-179.
- Jaeger, P. T. (2009). Public libraries and local e-government. In C. G. Reddick (Ed.), *Handbook on research on strategies for local e-government adoption and implementation: Comparative studies* (pp. 647-660). Hershey, PA: IGI Global.
- Jaeger, P. T., & Bertot, J. C. (2009). E-government education in public libraries: New service roles and expanding social responsibilities. *Journal of Education for Library and Information Science*, 50, 40-50.
- Jaeger, P. T., & Bertot, J. C. (2010a). Designing, implementing, and evaluating user-centered and citizen-centered e-government. *International Journal of Electronic Government Research*, 6(2), 1-17.

- 
- Jaeger, P. T., & Bertot, J. C. (2011). Responsibility rolls down: Public libraries and the social and policy obligations of ensuring access to e-government and government information. *Public Library Quarterly*, 30, 1-25.
- Jaeger, P. T., Bertot, J. C., & Shilton, K. (in press). Information policy and social media: Framing government-citizen Web 2.0 interactions. In C. G. Reddick & S. K. Aikins (Eds.), *Web 2.0 Technologies and Democratic Governance: Political, Policy and Management Implications*. London: Springer.
- Jaeger, P. T., & Burnett, G. (2005). Information access and exchange among small worlds in a democratic society: The role of policy in redefining information behavior in the post-9/11 United States. *Library Quarterly*, 75(4), 464-495.
- Jaeger, P. T., & Burnett, G. (2010). *Information worlds: Social context, technology, & information behavior in the age of the Internet*. London: Routledge.
- Jaeger, P. T., & Thompson, K. M. (2003). E-government around the world: Lessons, challenges, and new directions. *Government Information Quarterly*, 20(4), 389-394.
- Jaeger, P. T., & Thompson, K. M. (2004). Social information behavior and the democratic process: Information poverty, normative behavior, and electronic government in the United States. *Library & Information Science Research*, 26(1), 94-107.
- Lazar, J., Beavan, P., Brown, J., Coffey, D., Nolf, B., Poole, R., Turk, R., Waith, V., Wall, T., Weber, K., & Wenger, B. (2010). Investigating the accessibility of state government websites in Maryland. In P. Langdon, P. Clarkson and P. Robinson (Eds.), *Designing inclusive interactions--Proceedings of the 2010 Cambridge Workshop on Universal Access and Assistive Technology* (pp. 69-78). London: Springer-Verlag.
- Lazar, J., Feng, J., and Hochheiser, H. (2010). *Research methods in human-computer interaction*. Chichester, UK: John Wiley and Sons.
- Lazar, J., Wentz, B., Bogdan, M., Clowney, E., Davis, M., Guiffo, J., Gunnarsson, D., Hanks, D., Harris, J., Holt, B., Kitchin, M., Motayne, M., Nzokou, R., Sedaghat, L., & Stern, K. (2011). [Potential pricing discrimination due to inaccessible websites](#). *Proceedings of INTERACT 2011* (pp. 108-114).
- Lazar, J., Wentz, B., Akeley, C., Almulhim, M., Barmoy, S., Beavan, P., Beck, C., Blair, A., Bortz, A., Bradley, B., Carter, M., Crouch, D., Dehmer, G., Gorman, M., Gregory, C., Lanier, E., McIntee, A., Nelson, R., Ritgert, D., Rogers, R., Rosenwald, S., Sullivan, S., Wells, J., Willis, C., Wingo-Jones, K., and Yatto, T. (2012). Equal Access to Information? Evaluating the Accessibility of Public Library Websites in the State of Maryland. In P. Langdon, J. Clarkson, P. Robinson, J. Lazar, and A. Heylighen, (eds.) *Designing Inclusive Systems: Designing Inclusion for Real-world Applications*. London: Springer-Verlag, 185-194.
- Naficy, H. (2009). Centering essential immigrant help on the library Web site: The American Place (TAP) at Hartford Public Library. *Public Library Quarterly*, 28(2): 162-175.
- National Telecommunications Infrastructure Agency. (2011). *Digital literacy initiative: Fact sheet*. Available: [http://www.digitalliteracy.gov/sites/digitalliteracy.gov/files/Digital\\_Literacy\\_Fact\\_Sheet\\_051311.pdf](http://www.digitalliteracy.gov/sites/digitalliteracy.gov/files/Digital_Literacy_Fact_Sheet_051311.pdf)
- Spink, A., & Heinstrom, J. (Eds.). (2012). *New research in information behaviour*. London: Emerald.
- Streib, G., & Navarro, I. (2006). Citizen demand for interactive e-government: The case of Georgia consumer services. *American Review of Public Administration*, 36, 288-300.
- Turner, C. W., Lewis, J. R., & Nielsen, J. (2006). Determining usability test sample size. *International Encyclopedia of Ergonomics and Human Factors* (pp. 3084-3088).
- Zickuhr, K., & Smith, A., (2012). *Digital differences*. Washington DC: Pew Internet and the American Life Project. Retrieved from <http://pewinternet.org/Reports/2012/Digital-differences.asp>