ENABLING SMARTER COMMUNITIES:

The Case of the Chicago Public Library

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Enabling Smarter Communities:
The Case of the Chicago Public Library

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INTRODUCTION

This case is part of the IMLS funded project "Enabling Smart, Inclusive, and Connected Communities: The Role of Public Libraries." For this project, the Center for Technology in Government at the University at Albany (CTG UAlbany) and the American Library Association (ALA)'s Center for the Future of Libraries partnered to better understand how public libraries can advance their role as community anchors in smart city initiatives by contributing to the community's understanding of and participation in such initiatives.

In addition to four in-depth case studies, the four-year project (2018-2021) included a literature and current practices review, which resulted in a current practices report, and two national surveys. The results from these three activities informed the creation of a policy guide and a toolbox with various resources. *The Opportunity Agenda and Roadmap Report*, as the policy guide, identifies areas of opportunity for public libraries to become strategic partners in the development of smarter, more inclusive and more connected cities and communities. The *Libraries in Smart Cities and Communities Toolbox* provides a set of resources for public libraries that seek to strengthen their role in developing a smart city/community.[1]

About the Case Studies

During late 2018 and early 2019, the project research team conducted four in-depth case studies in Chattanooga, Tennessee; Chicago, Illinois; Ignacio, Colorado; and Saratoga Springs, New York. The four locations were originally identified in the research proposal to IMLS and were selected to represent diversity in the size of the public library and the population it served, as well as geographical location in the United States. In addition, the project team looked for public libraries that had publicly documented involvement with smart city or smart community initiatives. Each of the four cases selected met this criteria.

For each location, the project team conducted on-site face-to-face interviews with individuals from the public library, local government and other stakeholders from the community. In most cases, the public library director or designee played a critical role in helping the project team identify interviewees.

Interviews for each case covered the following themes: 1) community context; 2) the library's contribution to developing smart communities; 3) benefits of the programs and services; 4) challenges, costs, and actions to address them; and 5) main lessons learned. Then, the research team discussed important similarities and differences among the cases and overall insights. The results were used to inform the development of a national survey, the preliminary development of the toolbox and the policy guide and four case study reports.

For this case study report, it's important to note that the information included and the analyses made by the CTG UAlbany research team are based on the individuals interviewed and the

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[1] All of the project's resources available at https://www.ctg.albany.edu/projects/imls2017/

status of the programs and services that the library provided during the timeframe of late 2018 through early 2019. Since that time, some of the individuals interviewed have changed jobs and a few of the public library programs and services discussed have changed.

CASE BACKGROUND

Much of this report is based on Chicago Public Library's (CPL) role in the city's 2013 City of Chicago Technology Plan. This document describes Chicago's strategy for helping the city become "smarter" through a number of initiatives. CPL was named as a key partner in several of these initiatives. CTG UAlbany conducted interviews in Chicago in December of 2018 and used the information collected to confirm and provide additional information and updates on CPL's role in designing and implementing the various library programs and services described in the plan. Please see the tables at the end of this report for a list of the individuals interviewed. Below is a brief description of the Chicago Public Library. We also describe the community context in which the library exists.

The Chicago Public Library

Since first opening its doors in 1873, CPL has served all Chicagoans with free and open places to gather, learn, connect, read and be transformed. The Library's mission is to "welcome and support all people in their enjoyment of reading and pursuit of lifelong learning. Working together, we strive to provide equal access to information, ideas and knowledge through books, programs and other resources. We believe in the freedom to read, to learn, to discover."[2] The library system's 81 branches are strategically located to provide the innovative library services, technologies and tools to the residents of a city that is made up of many different and diverse communities as described in the next section.

The Context

The City of Chicago is the third largest city in the United States, with a population of nearly three million people. Chicago is home to 2,716,450 residents, 50 wards, 77 community areas, and 100 neighborhoods. Chicago is made up of 77 community areas that are often grouped into 9 districts or "sides." The community areas are well defined and do not overlap. Each community area has one or more neighborhoods in it. Each of its 77 community areas have their own history, ambience and, most importantly, personality.

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[2] https://www.chipublib.org/about-us/

Chicago's Smart Community Strategy

The City of Chicago does have a formal "smart city" strategy that is best captured in its 2013 City of Chicago Technology Plan.[3] The main purpose of this plan was to bring together all of the city's current technology initiatives, a number of which started prior and under different administrations, into a single policy roadmap. The roadmap organized the current and planned technology initiatives into five broader strategic areas:

1. Establishing next-generation infrastructure
2. Creating smart communities
3. Ensuring efficient, effective and open government
4. Working with innovators to develop solutions to city challenges
5. Encouraging Chicago's technology sector

A key characteristic of this Chicago smart city plan was its large number of diverse stakeholders who have played critical roles in leading or collaborating on the various initiatives. Chicago Public Library is one of those key partners. It is important to note that before the 2013 technology plan there was the *Smart Communities in Chicago Master Plan,* developed by Local Initiatives Support Corporation (LISC) Chicago. The study that developed this plan was supported by the City of Chicago's Digital Excellence Initiative and was done in partnership with the Chicago neighborhoods of Auburn Gresham, Chicago Lawn, Englewood, Humboldt Park and Pilsen. In this plan CPL is identified as a critical public access point for the Internet, computers and software, and digital literacy programs. The plan called for organizations like the library to enhance and expand public access to technology. The library branches were singled out specifically as examples of locations that could make a particularly high impact with advanced broadband (p. 229 of smart communities plan).

Based on this project's *dimensions of smartness[4],* the city of Chicago case showed evidence of activity in at least four of the five dimensions*.* For the first and second dimensions (*technology deployed throughout the city/community* and *innovation (mainly technological innovation*), the city has deployed a number of smart technologies throughout the community. These deployments go beyond broadband Internet infrastructure and have involved innovative uses of technology mainly in the form of different sensors as part of the Array of Things initiative.

For the third and fourth dimensions (c*ommunity/stakeholder engagement in city/community matters* and *citizen participation/engagement in city/community matters*), Chicago used both stakeholder engagement and citizen participation in an effort to increase the success and sustainability of these technologies within the community, as well as increase the positive impact on the community's residents. Finally, as with each of our four cases, the *impact*

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[3] https://techplan.cityofchicago.org/wp-content/uploads/2013/09/cityofchicago-techplan.pdf
[4] Technology deployed throughout the city/community, innovation (mainly technological innovation), community/stakeholder engagement in city/community matters, citizen participation/engagement in city/community matters, and impact.

dimension is one that is the most difficult to assess. In general, cities and public libraries measure outputs but do not assess long-term impact. Yet, it seems that the smart city/community initiatives in Chicago as well as the programs and services of CPL are making an impact in the community. In the following section we describe some of the efforts of the City of Chicago, and CPL specifically, that contribute to the development of smart citizens in particular, and a smart community in general.

LIBRARY CONTRIBUTION TO DEVELOP A SMARTER COMMUNITY

Governments in the United States and beyond are investing in a wide range of technologies to make their communities smarter. However, smart communities are built by smart citizens. Smart citizens are aware of and have the opportunity to benefit from what technology has to offer. Further, they can contribute to smart city/community strategies and help build the city/community they live in. Public libraries recognize this and invest in and design programs and services to help library patrons to become smart citizens by accessing, understanding, and purposefully using technology.

Chicago Public Library has been both a formal and active partner in the city's smart community efforts beginning with the 2013 plan and over the course of several mayoral administrations since then. In addition, the library has played an important role in each of the *dimensions of smartness*. Therefore, Chicago serves as an example for other public libraries to learn how they can use existing and design future programs and services to help make sure smart city/community initiatives in their community have a measurable and desired impact and truly make their communities smarter.

The active participation of numerous and diverse partners was a key characteristic of Chicago's 2013 smart city plan. Chicago Public Library was one of these critical collaborators. In the plan, CPL is identified as directly supporting eight of the 15 initiatives. Below are some highlights of how the library supported those initiatives and helped contribute to smarter communities in Chicago.

The following programs and services are organized into three categories: *developing smart citizens*, *enabling citizen participation*, and *providing an innovation environment* (Gasco-Hernandez et al, 2021). We briefly explain these categories at the beginning of each section.

Developing Smart Citizens

This category refers to public libraries' digital inclusion and digital literacy efforts. First, it includes the Internet-enabled services that public libraries offer their communities. These services include free public access to broadband Internet, Internet-enabled computers, wireless Internet access (Wi-Fi), e-books, wireless printers and more advanced technologies such as 3D printers and other development technologies (Mersand et al, 2019, IPAC, 2014a). In rural and low-income urban neighborhoods, this service is a particularly valuable lifeline for the

community due to the lack of broad availability of these technologies in households (Alemanne et al., 2011; Goodman, 2014; Hildreth, 2012).

Second, developing smarter citizens can be enhanced through digital literacy programs and services, which in public libraries include offering training and assistance for patrons on how to effectively use a range of technologies such as computers, tablets, mobile devices, printers and the Internet. Public libraries provide a range of training, starting with basic computer skills, to more advanced productivity and other software and applications that are commonly available and in use. In addition to formal training classes, public libraries offer community members the opportunity to schedule or even drop in unscheduled to get help from a librarian on how to use a particular type of technology, computer software, or application (Gorichanaz & Turner, 2017; Jerkov et al, 2015; IPAC, 2014b).

Access to High Speed Internet and Public Computers

As of 2013, CPL made free Wi-Fi available in all its locations across every neighborhood in the city, making it the city's largest provider of public computers and free wireless Internet access. In addition, CPL had over 2,500 public computers across its neighborhood branch libraries that residents access to Microsoft Office 2013, Windows 7, and increased memory, "so they pursue career, educational, and other interests."

To keep pace with increasing user demand, CPL reaffirmed its commitment to continuously upgrading its network. This directly supported Chicago's Smart City's plan **Initiative 6 Free Wireless Service**. Beyond library patron's ability to access high speed Internet at the library, CPL works with various providers to offer a Wi-Fi hotspot lending program at select CPL branches. Through this program, residents can borrow Internet access for their homes. This library service, available for checkout in 13 libraries as of 2016, directly supports the City's plan **Initiative 7 Low-cost Broadband**. To help fund this service the library secured a grant from the Knight Foundation and Google. Information on Wi-Fi hotspot borrowing: https://www.chipublib.org/news/borrow-a-wifi-hotspot-from-chicago-public-library/. Once that grant period ended, CPL identified funding to continue support of this program in 13 branches.

The City's **Initiative 8 Engage Youth** was focused on "providing students with technology skills and engaging them to become interested in technology as a career are critical to Chicago's future as a digitally literate, tech-friendly city." To help meet that goal, CPL was part of a digital literacy collaboration with community partners led by DePaul University to design and implement a badge system that identified and awarded attainment of the skills, wherever they were earned throughout the city—in libraries, museums, after-school programs, community-based organizations or online. In support of this initiative CPL also participated in the City's Summer Learning Challenge program. For this program CPL typically engaged more than 60,000

kids in STEAM (Science, Technology, Engineering, Art, and Math) skills through a variety of activities, including reading, attending programs and field trips, using the Internet, solving engineering challenges and making artistic connections.

For **Initiative 11 Public Computer Access**, CPL along with other organizations not only increased residents' access to high-speed Internet but also assisted residents with using the Internet effectively. This was achieved by providing public computers and useful software, connected to the Internet. In order to help Chicagoans use the Internet effectively, CPL provided "Cyber Navigators." These Chicago Public Library Foundation grant-funded positions helped patrons with any questions or provided assistance in using the computers and software.

For example, Cyber Navigators were available if someone came into the library needing to apply for a job, if applying for the job required that you have an email address and submit your resume online. Of note, 95-96% of all jobs now require online applications.

CPL's impressive availability of public computers and commonly used computer software with high-speed Internet access at all of its 81 branches also support *developing smarter citizens*.

Providing an Innovation Environment

The programs and services in this category demonstrate how public libraries serve as knowledge hubs and innovation environments where social gathering, interactive learning, and creative production, including the development of entrepreneurship and civic innovation, take place (Leorke et al. 2018; Vilariño et al. 2018; Ylipulli and Luusua 2019). In addition, through these programs and services, public libraries offer their communities a safe and inclusive space where technology may be used to improve how citizens, businesses, and other groups engage and conduct business with government (Ayre and Craner 2017).

One of CPL's well known and more recent programs YOUmedia also directly supports Chicago's goal to educate and engage young people in technology. YOUmedia space for middle school and high school students is currently available in 28 libraries throughout Chicago. In each space, mentors, and later a growing number of teen librarians, work with students on project-based learning with a variety of media, including printed material and technology and digital tools, like 3D printers, still and video cameras, drawing tablets, and video and photo editing software. YOUmedia website: https://www.chipublib.org/programs-and-partnerships/youmedia/.

The tech plan's **Initiative 9 Digital Skills Training** is similar to Initiative 8 (Engage Youth), but rather than focus on exposing students to technology, the city worked to offer digital training and hands-on technology experience to increase all residents' digital literacy. One of the library's key programs to support this initiative was the creation of its Maker Lab.

Initially set up in 2013 as a six-month experiment to explore the role of the library in maker spaces, the library decided to keep the Maker Lab open due to positive community feedback. Since then, it has been expanded to additional branches. The Maker Lab, like YOUmedia, provides workshops on and then open access to technologies such as digital design software, 3D printers, laser cutters and electronic cutters. The primary goal here is to provide Chicago residents with the opportunity to learn how to use digital production and manufacturing tools. In similar fashion to other library programs and services that are a part of the city's tech plan, the Maker Lab was funded in part by a grant from the IMLS and Motorola Mobility Foundation through Chicago Public Library Foundation.

The Maker Lab then provided Chicagoans with a bridge to the next level of digital literacy with the opportunity to learn about more advanced technologies. However, other Chicago stakeholders would be responsible for digital literacy programs beyond that. "The way to get this all out was we all sat together, and that's really important. I think the library is sometimes seen as that space to start those conversations. We have no problem with saying, 'you know what? We've taken this as far as we can go.'"

Enabling Citizen Participation

Programs and services in this category can also include the role public libraries play in helping citizens engage with government and other stakeholders and participate in the planning for and process of making the community smarter. For example, using the public library and its staff to facilitate a conversation on which technologies and how they will be used will actually benefit the community and its needs (Maxwell, 2018).

Space for Bringing together Residents and Smart Community Developers

In addition to the specific program and services discussed above, CPL played another critical role in the City of Chicago's smart city initiatives. Implementers of the city's smart community plan used the public library branches to gather feedback from -- and inform citizens about -- the smart technologies that were going to be deployed in their neighborhoods. They used branches to hold public meetings on these various smart technology projects. For example, in 2016, when the Chicago Tech Collaborative was developing the smart cities-focused *Array of Things* project, they planned to deploy the first sensor in the Pilsen neighborhood. This led them to utilize the Lozano Branch. The team held a public meeting to inform the community about the project and gather feedback on the associated privacy and governance policies for the sensors that were going to be deployed. "The thing about the libraries is that almost all of them are accessible by public transit. If there are specific language needs of the community almost all of them have those resources at the ready. It's no accident that we leveraged the library space as a really simple and powerful way to reach people and make people feel welcome." ... "We have

a saying that you have to meet the people where they are. And libraries are where communities are." … "It is sort of a one stop shop in terms of inclusion, convenience, and trust."

Another example is when the city was improving its 311 service - a non-emergency phone number that people can call in many cities to find information about services, make complaints, or report problems. 311 systems are widely viewed as examples of smart city initiatives. The City of Chicago used the library for initial focus groups and designed workshop sessions before the new technology was deployed. They put a priority on communities where the use of the 311 system was relatively low. It was in these communities that the city used library branches to hold the workshops. In addition to using the library branches to hold these design sessions, city and library staff trained library Cyber Navigators on how to use the system. "We developed training specific to residents so that for people who may be less comfortable with the tools, there is some kind of support built for them."

The non-library stakeholders we spoke to told us that they strongly believe that the smart city/community initiatives that the city has adopted has been more inclusive because of CPL's active involvement in the implementation. One stakeholder commented, "I think that that program has been successful and people have felt welcome in that community and have been willing to provide feedback on technology. Because we leverage library spaces. We again see the inclusive force the library has in the community to organize around a topic, to introduce a new topic to the community, to facilitate community dialogue, and be a general resource and a welcoming place for people to go."

Future Actions to Contribute to the Development of Smart Communities

Continuing the digital literacy programs with increased focus on diversity and tracking impact

Part of future actions for CPL in the continued development of a smarter Chicago will focus on much of what they are already doing but ensuring that the current programs and services described above are supported with strong technical infrastructure and staff support. "I don't see that the core of what we do will be changing... we will continue to focus on our three tenants of strengthening communities, economic advancement, and lifelong learning." The library realizes that you cannot advance economically if you do not have an email address. Having an email address along with basic digital skills is needed first and then the library will be ready to help residents take the next steps in developing greater digital skills and familiarity with technology.

The other focus area is around diversity and inclusion: making sure that all Chicagoans, regardless of race, age, or socio-economic status have the opportunity to benefit from the library's programs. For example, the CPL Maker Lab has a higher percentage of women users than traditional maker labs.

The key is being aware of the composition of patrons using it in the first place and then putting increased emphasis on making sure these programs and the library itself is "a safe space where people who didn't necessarily feel like they were included can be included and learn and explore these things and then they continue to move on with that: Access for all."

Leveraging the library space and librarians to engage citizens on new community technologies

From the city government's perspective, future actions are focused on continued improvement to the telecommunications infrastructure to maintain current smart city services, as well as implement new ones. The vision of former Mayor Rahm Emanuel was for Chicago to become a responsive city where technology is fueling inclusion, engagement opportunity and innovation for everyone. One key to doing this is modernizing the city's infrastructure to help the city run efficiently and provide citizen services more effectively. This includes upgrading the Internet as the backbone of all smart city initiatives and then looking to modernize other infrastructure as Chicago looks to deploy a citywide lighting management system, improve traffic congestion, and in general, leverage what the industry has to offer in terms of Internet of Things and 5G.

As the city and the other key stakeholders responsible for Chicago's continued investment in and deployment of new technologies, all of these organizations, including CPL, see the library playing a very important role. That role centers on using library branches as spaces for engaging with residents in Chicago's communities and neighborhoods where they plan on deploying sensors and other new technologies. The city's smart technology ecosystem collectively believes that gaining citizen feedback, trust and understanding of these technologies is key in their successful implementation.

"Librarians and all the branches understand their communities and have relationships within their communities. So, engaging them more in the planning processes, would be really important. They also have an understanding of their community in terms of who's using technology and how they're using it."

The above section describes how the library is used to engage with citizens within neighborhoods where the city is looking to deploy a specific sensor or other new technology related to an improved government service. However, the city is also looking to the library to help in a broader effort to expose Chicagoans to smart technologies. Importantly, this is not

limited to one specific age group such as teens. Moreover, the library sees an important need and opportunity to target adults when it comes to new technologies. The library is also looking more holistically about how they deliver programming and experiences for adults to help demystify technologies that they are not familiar with.

BENEFITS OF THE PROGRAMS AND SERVICES

The library's programs and services described above have contributed to developing a smarter community in two main ways. First, CPL has helped the residents of Chicago learn more about and become comfortable with technology so they can take advantage of the multiple opportunities it has to offer. In addition, using public libraries as spaces to bring citizens together with the city government and other partners who were working to build a smarter Chicago provided an opportunity for citizens to learn about the technologies and technology driven programs and services and provide feedback on them prior to their implementation.

CHALLENGES AND COSTS AND ACTIONS TO ADDRESS THEM

Budget Constraints

One challenge identified from the interviews was dealing with finite resources and making sure the programs and services that the library develops with those resources are meeting the needs of Chicagoans. "I haven't met anyone that works for the library that isn't juggling lots of different projects and has some kind of resource constraint. So, really any amount of time they spend on new and experimental types of projects is an opportunity to take funding from an essential service for residents."

CPL as well as their partners agreed that one important way to address this challenge was through a mix of prioritizing and then piloting new programs and services to make sure they met community needs but also to provide an opportunity to gather feedback to make improvements. This approach has proven to be critically important as it demonstrates value and increases confidence that the programs and services the library picks are the right choice.

From the non-library partners who are working on smart city/community initiatives one challenge is doing more engagement directly with residents, when you have finite resources affecting the ability to do sustained engagement and reach greater numbers of people. Working with other partners like the library helps them achieve more than what they would if they were acting alone. This is particularly true when it comes to engaging residents.

The Cost of Collaboration

Chicago has a great ecosystem of partners working together to make the city and its communities smarter. However, the stakeholders interviewed readily admitted that collaboration is costly. "I think a lot of it has to do with the different paces that people work at. We've been really invigorated by the presence of philanthropic corporations and foundations. For example, how we engage with academics and the timeline and like norms of collaboration in academia is very different than industry. The same goes for working with government and the private sector. Everyone has different priorities. So, I would say that collaborating with these different types of partners (is) probably the biggest challenge."

High Cost of Technology

Dealing with the relatively high cost of technology infrastructure and technology-focused programs is another challenge. To manage the high and ongoing cost of technology for the

library, CPL takes advantage of the federal government's E-Rate Program. It's a government reimbursement program that discounts the purchase of telecommunications services for libraries and schools. As far as how the larger network of smart city partners deals with technology costs, Chicago has done a very good job of partnering with industry and foundations. "With our model, we have funding from our industry members. And I think that's really worked for us."

Securing Buy-In

Another challenge is securing buy-in from the public and other influential stakeholders that the library should be involved with and investing public resources in these technology focused initiatives rather than programs and services that more closely align with traditional perceptions on what a library is and should do. "Just because [smart city/community initiatives] is traditionally an area that the library doesn't play a role in, there can be challenges around buy in and whether the library should be involved at all."

Overcoming this challenge involves making sure the library maintains its core programs and services and continues to do them well. For CPL this means continuing to provide books, DVDs, CDs, public computers with Internet access, and programs like story time. If the library continues to do that, it can offer new and different programs and services. However, they need to do new programs and services well.

MAIN LESSONS LEARNED

Strong Smart Communities Ecosystem

Chicago has an excellent mix of public, nonprofit, academic and industry groups that are committed to making the city smarter through technology-enabled programs and services. This can serve as a model for other public libraries that are interested in developing a particular program or service but realize that their library doesn't have the necessary resources or expertise to make it a reality. "I think we do have a great ecosystem in Chicago that also can help enable and make some of these things really happen within communities across the city." Each individual organization -- whether the city IT department or the library -- has a limited capability and reach when it comes to what they can do on their own. However, when they take some of their ideas and strategies and amplify them across the nonprofits, academic and research institutions, and the private sector, the quality and quantity of what can be achieved expands significantly.

Strong and Collaborative Leadership from the City

What was apparent from the interviews is that current and past mayors have been committed to the idea of technology-enabled smart programs and services for the city of Chicago. This vision has translated into strong leadership from the city Chief Information Officer, which can be characterized as collaborative, among other things. This has been very beneficial to the library as the city strives to make sure it is involved in not only the day-to-day operational aspects of providing programs and services that support smarter communities, but also in the early planning process to help inform and improve the city's overall smart community strategies. "We created a technology strategy group with leadership from across all city agencies that includes the library. Everyone will have a seat at the table and then everyone will be able to understand where they may contribute."

Strong Philanthropic Community

While this might be something unique to the Chicago, it's important to highlight that the city has a very strong philanthropic community. In reviewing the organizations that provide financial support to the Chicago Public Library Foundation for many of the library's programs and services that directly support the city's tech plan, there is strong participation by corporations and foundations. For example, Chicago is the home of the MacArthur Foundation, but also has numerous other community-focused foundations and trusts that have supported the city's smart community initiatives. "I think the fact that we have those philanthropies really spurs a lot of innovation and that's a big enabler of this work in technology."

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The Staff

Not surprisingly, the non-library professionals we interviewed pointed out that one of the keys to Chicago's smart community's successes was the librarians and other library staff. "I think CPL particularly have really innovative staff. The libraries are just very willing to partner on lots of different things even if they're not something that the library traditionally works on."

FINAL COMMENTS

The fact that CPL helps provide all Chicagoans with the opportunity to improve their digital skills and learn about these new technologies directly impacts exactly how smart the City of Chicago can become. The CPL plays a critical role in helping Chicago be a smart community. The library is a trusted community space and provider of services that are critical to ensuring that Chicago is bringing everybody along on the smart city journey. The library is an inclusive force in the smart city work.

REFERENCES

Alemanne, N., Mandel, L., & McClure, C. (2011). The rural public library as leader in community broadband services. (Chapter 3). *Library Technology Reports, 47*(6), 19–28.

Ayre, L. B. & Craner, J. (2017). "Technology Column: Public Libraries as Civic Technology Hubs." *Public Library Quarterly* 36(4):367–74. doi: 10.1080/01616846.2017.1405236.

Gasco-Hernandez, M., Yerden, X., Burke, G. B. & Gil-Garcia, J. R. (2021). The Potential Role of Public Libraries in a Quadruple Helix Model of Smart City Development: Lessons from Chattanooga, TN. Manuscript submitted for publication.

Goodman, E. (2014). "Smart cities" meet "anchor institutions": the case of broadband and the public library. (Smart Law for Smart Cities: Regulation, Technology, and the Future of Cities). *Fordham Urban Law Journal, 41*(5), 1665–1694. https://ir.lawnet.fordham.edu/ulj/vol41/iss5/6.

Gorichanaz, T. & Turner, D. (2017). All the Community's a Stage: The Public Library's Part in Community Information Provision. *The Library Quarterly, 87*(2), 99-116. https://doi.org/10.1086/690737.

Hildreth, S. (2012). Inspiring Libraries as Community Anchors. *National Civic Review, 101*(4), 44–47. https://doi.org/10.1002/nc.21093.

Information Policy & Access Center (IPAC), University of Maryland. (2014a). *Public Libraries & Access*. Retrieved from https://digitalinclusion.umd.edu/issue-briefs.

Information Policy & Access Center, University of Maryland. (2014b). *Public Libraries & Digital Literacy*. Retrieved from https://digitalinclusion.umd.edu/issue-briefs.

Jerkov, A., Sofronijevic, A., & Stanisic, D.K. (2015). Smart and Sustainable Library: Information Literacy Hub of a New City. In: Kurbanoglu S., Boustany J., Špiranec S., Grassian E., Mizrachi D., Roy L. (eds) *Information Literacy: Moving Toward Sustainability.* ECIL 2015. Communications in Computer and Information Science (pp. 22-30). Springer, Cham.

Leorke, D., Wyatt, D, & McQuire, S. (2018). "'More than Just a Library': Public Libraries in the 'Smart City.'" City, Culture and Society 15:37–44. doi: 10.1016/j.ccs.2018.05.002.

Maxwell, L. (2018). "The importance of the "smartivist" - how smart citizens accelerate smart city development." Retrieved from https://hub.beesmart.city/strategy/smartivist-accelerate-smart-city-development.

Mersand, S., Gasco-Hernandez, M., Udoh, E., & Gil-Garcia, J. R. (2019). Public libraries as anchor institutions in smart communities: Current practices and future development. *Proceedings of the 52nd Hawaii International Conference on System Sciences* (pp. 1-10).

Vilariño, F. & Karatzas, D. (2018). "The Library Living Lab: A Collaborative Innovation Model for Public Libraries." *Technology Innovation Management Review* 8(12):17–25. doi: 10.22215/timreview/1202.

Ylipulli, J. & Luusua, A. (2019). "Without Libraries What Have We?: Public Libraries as Nodes for Technological Empowerment in the Era of Smart Cities, AI and Big Data." Paper presented at the 9th International Conference on Communities & Technologies - Transforming Communities. Vienna, Austria.

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