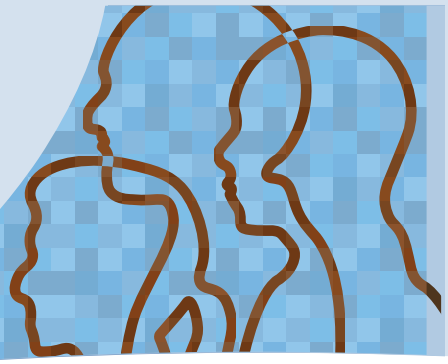
WE THE PEOPLE



Civic Technology

Open Data and Citizen Volunteers as a Resource for North Carolina Local Governments

John B. Stephens

December 2017

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Civic technology is a dynamic and rapidly developing field. To see updates on this report and learn about civic tech developments in general, please visit https://www.sog.unc.edu/resources/microsites/civictech.

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Introduction

Civic technology is an emergent area of practice where information technology (IT) experts (and citizens without specialized IT skills) volunteer their time using government-provided open data to improve government services or otherwise create public benefit. Civic tech, as it is often referred to,[1] draws on longer-standing practices, particularly e-government and civic engagement. It is also a new form of citizen–government co-production, building on the trend of greater government transparency. In this context, transparency includes appropriately sharing open data[2] and using open-source software.

Assessing if and how to engage with volunteers and small businesses in the area of civic technology will present many challenges and opportunities for North Carolina local governments. The idea of government innovation and modernization through small investments and volunteer labor may appeal to both smaller and larger jurisdictions. The greatest carrot for local governments is free expert labor using public data, which could result in computer applications that improve services. Citizens who rely on Internet-based programs and smart phones present an opportunity for local government leaders to engage citizens across many demographic groups.

In North Carolina, six volunteer organizations have operated for two or more years to promote the public good through open data and civic-minded digital innovation. In a parallel development, larger cities and counties have created open-data portals to support civic tech projects and improve employee access to data.[3] While larger jurisdictions in North Carolina, other states, Canada, and other parts of the world have utilized civic tech since about 2010, medium-sized and even smaller cities and counties should seriously consider this combination of public participation and e-government for the following reasons:

- Applications (apps) created for one locality can be re-purposed in another city or county. Many of these apps are open-source, meaning their reuse is not only free, but encouraged.
- Civic tech is one aspect of extending services and improving government through modern information and communication technology. Often described as developing from Web 1.0 (one-way information dissemination) to Web 2.0 (two-way interactions and user-generated content, in applications such as Facebook), civic tech is a part of de-centralized work for public use through online innovation.

John B. Stephens has directed the Public Dispute Resolution Program at the UNC–Chapel Hill School of Government since 1996. His expertise includes public participation, civic technology, collaborative leadership, mediation, and facilitation.

1. “Civic tech” is a useful and prevalent search term and the hashtag #civictech is common on Twitter.
2. “Open data” generally refers to aggregated data without personal identifiers.
3. Open data is useful for internal government sharing and analytics as well as supporting civic tech. In addition to the Open Data Research network (http://opendataresearch.org), large-scale vendors of open-data programs include Socrata (https://socrata.com/) and OpenDataSoft (www.opendatasoft.com/).

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- A lack of high-speed Internet and limited access to online government data and services can limit citizen flexibility, access to government services, and ways to assess and re-purpose public data. These effects of the "digital divide" can be addressed to varying degrees by civic tech solutions.[4]
- Computer coding skills are becoming easier to acquire and apply. A wider range of residents in counties and cities are capable of using open data for recreation, education, or entrepreneurial purposes.

This report is designed to help North Carolina local government leaders in the following ways:

- defining civic technology practices and describing North Carolina civic tech resources,
- highlighting accomplishments and ongoing projects in civic tech (in North Carolina and beyond),
- identifying opportunities and challenges for North Carolina local governments in civic tech, and
- providing a set of resources for education and involvement in civic tech.

4. Many local governments must deal with citizens' lack of Internet access or competence. As noted by Rachel Kelly (City of Burlington public information officer), duplicative processes of printing publications and producing videos and social media posts regarding the same information are central to the city's goal of "meeting our citizenry where they are." Email message to author, July 26, 2017.

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Part 1. Overview and Definition of Civic Technology

Civic technology overlaps with e-government, public participation, and innovation from inside and outside government. It has a range of purposes, particularly related to digital innovation, combining data, ideas, expertise, and creativity often found outside the government realm.

Defining civic tech as a set of related goals and emerging practices is not easy. Parameters are blurry. The roles of government, business, and citizen volunteers differ. A baseline definition of civic technology[1] can be stated as

1. the use of open data
2. by people outside government
3. to create new software applications or presentations of the data
4. for public benefit.

For the purposes of local government interests, especially those jurisdictions with limited budgets for IT work, volunteers working singly or in groups form an important element of the who and how of civic tech and its relationship to government policy and personnel. The components of this definition of civic tech and some variations among other definitions are discussed below.

Open Data

Open data is a prerequisite for civic tech. It has been called the "fuel" for the civic tech engine.[2] Open data is data created or held by the government, available for free use and reuse, and often combined with other data in a computer program. Data is not open data simply by virtue of existing on the Internet. The data must be application programming interface (API)–compliant, meaning it is machine readable and can be used by various software programs. Open data should also be subject to "universal participation"; its use should be open to all fields of endeavor and to any persons or groups.

The widely cited *Open Data Handbook*[3] specifies the standards for open data.[4] Some data, such as crime reporting, may be made less precise in an open format and still fulfill the primary goals of openness, transparency, and availability for unrestricted reuse.

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1. Civic technology has also been called civic hacking. See Jake Levitas, "Defining Civic Hacking: How a Common Framework Can Unite New Forms of Engagement," *Code for America Blog Archive* (June 7, 2013), https://www.codeforamerica.org/blog/2013/06/07/defining-civic-hacking/.

2. Christopher Whitaker, "Civic Tech 101," in *@CivicWhitaker Anthology*, ed. Daniel O'Neil (Chicago: The Smart Chicago Collaborative, 2015), https://www.slideshare.net/smartchicago/the-civicwhitaker-anthology-53351581.

3. Open Knowledge International, http://opendatahandbook.org/.

4. A longer definition addresses issues such as access and use, nondiscrimination, and data integrity. Open Knowledge International, "Open Definition 2.1," http://opendefinition.org/od/2.1/en/.

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Key Aspects of Open Data

- **Availability and access.** The data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the Internet. The data must also be available in a convenient and modifiable form.
- **Machine readability.** The data must be provided in a form readily processable by a computer and where the individual elements of the work can be easily accessed and modified.
- **Reuse and redistribution.** The data must be provided under terms that permit reuse and redistribution, including intermixing with other datasets.
- **Universal participation.** Everyone must be able to use, reuse, and redistribute—there should be no discrimination against fields of endeavor or against persons or groups. For example, "non-commercial" restrictions that would prevent "commercial" use, or restrictions of use for certain purposes (e.g., only in education), are not allowed.

Taken from Open Knowledge International, "What Is Open Data?", *Open Data Handbook*, http://opendatahandbook.org/guide/en/what-is-open-data/, and "Open Definition 2.1," *Open Definition*, http://opendefinition.org/od/2.1/en/.

Local governments need not start with a full-scale plan for using open data. Smaller, incremental data releases, which are API-compliant, may provide a useful test of civic tech in a particular jurisdiction.[5] Pilot and incremental data releases are addressed in Part 6.

People outside Government

Who performs civic tech? The answer differs somewhat according to activists in and analysts of the field. Civic tech and e-government occasionally overlap. Thus, civic tech can be done by government employees. As one example shows, however, a primary component of civic tech is nondirected work performed by creative and skilled IT volunteers (and others).[6] Both civic tech and e-government use data and information technology for public purposes. They differ, however, in respect to the agents and methods of development.

What types of entities can be involved in the civic tech field? Businesses are one example. In 2016 and 2017, *GovTech* magazine analyzed 100 leading companies and described civic technology as one of four market segments for companies that "[are] focused on and making a difference in—and selling to—state and local governments."[7] *GovTech* distinguishes the market segments as administrative, service delivery, intelligent infrastructure, and civic tech. The *GovTech* definition of civic tech encompasses for-profit work that serves government.

In a 2011–2013 study of the emerging civic tech field, the John S. and James L. Knight Foundation assessed grants to and private investments in both for-profit and nonprofit ventures,

5. Thanks to Bill Scanlon, Wake County Information Systems, Innovation Team, for this refinement.

6. ISL, "Apps for Democracy: An Innovation Contest," https://isl.co/work/apps-for-democracy-contest/. This particular contest was held in Washington, D.C., but similar short-term projects have been based in Chicago, New York, and Portland, Oregon.

7. "Act Two: GovTech 100 2017," *Government Technology*, http://www.govtech.com/100/.

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estimating $431 million in total funding to the civic tech field. Its report[8] distinguished eleven clusters of civic tech innovation, grouped into either "open government" or "community action" categories.

The baseline definition of civic tech provided above, focusing on the likely interests of North Carolina local government leaders, emphasizes the volunteer and social aspects of civic technology. The community–civic tech dimension builds on civic engagement means and goals. Code for America,[9] a national nonprofit, is a loosely organized international network of volunteer "brigades." Brigades are locally organized groups[10] of IT volunteers and other interested citizens (with little or no IT expertise) focusing on community needs and open data from local government.[11] Although civic tech is quite new and there are relatively few volunteer groups, one research team identifies a great potential impact of brigade–local government interactions. Through short-term "hackathons" (see page 15) and longer-term projects, the ability of local government officials to interact in a flexible but predictable way with citizens building apps "potentially represents the most significant change to established institutions and techniques of local governance."[12]

Volunteer participation and the management of civic tech projects by entities other than government[13] are key elements in most advocates' understanding of civic tech. According to a different assessment of the civic tech field, government is only one potential focus for civic tech activity. The Omidyar Network, a key funder in the civic tech area, conducted research in 2016 about the growth of civic tech and the extent that social movement analysis captures features and opportunities for that growth.[14] Its definition of *civic tech* is "any technology that is used to empower citizens or help make government more accessible, efficient, and effective," and the organization advocates for continued growth and advancement of the civic tech sector.[15] The purposeful goal of volunteer participation, and civic tech projects not directed by government, are strong elements in most advocates' understanding of civic tech. The Network published a report which identified three categories of civic tech:

- citizen to citizen (C2C): Technology that improves citizen mobilization or connections between citizens,
- citizen to government (C2G): Technology that improves the frequency or quality of interaction between citizens and government, and

8. Mayur Patel, Jon Sotsky, Sean Gourley, and Daniel Houghton, *The Emergence of Civic Tech: Investments in a Growing Field* (Miami: John S. and James L. Knight Foundation, 2013).

9. Code for America, www.codeforamerica.org/.

10. Some groups are separate or affiliated nonprofit organizations, others are less structured.

11. Occasionally this data will be combined with U.S. Census data or other government information not necessarily held by a city or county government or school system but enumerating some local phenomena.

12. John G. McNutt, Jonathan B. Justice, James M. Melitski, Michael J. Ahn, Shariq R. Siddiqui, David T. Carter, and Angela D. Kline, "The Diffusion of Civic Technology and Open Government in the United States," *Information Polity* 21, no. 2 (2016): 153–70, https://content.iospress.com/articles/information-polity/ip385.

13. Contrast this with government-directed programs such as neighborhood crime watches or recreation leagues with volunteer coaches.

14. Purpose and Omidyar Network, *Engines of Change: What Civic Tech Can Learn from Social Movements* (Redwood City, CA: Omidyar Network, 2016), http://enginesofchange.omidyar.com/docs/OmidyarEnginesOfChange.pdf.

15. Purpose and Omidyar, *Engines of Change*, 7.

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- government technology (Govtech): Innovative technology solutions that improve the efficiency and effectiveness of government service delivery.[16]

Other civic tech participants and advocates would probably not consider government technology (other than government-provided open data) a true element of civic tech. Government transparency, however, is easily understood as part of the citizen-to-government category as formulated by the Omidyar Network. According to its report, C2G technology encompasses the following:

- citizen communication and engagement,
- crowdsourcing problems and solutions,
- government transparency,
- open data,
- petitioning government,
- service delivery improvement and tools, and
- access to digital technology (e.g., municipal wifi).[17]

Two analysts argue that there are four models for why government provides open data and describe who benefits from it. The models range from a minimal government role ("data over the wall") to a participative, partnership model of citizenry—government open data. Similar to the focus on the private sector as part of civic tech, some models promote economic development and outsourcing of certain applications to private sector providers.[18] The theme among researchers that remains most relevant for North Carolina local governments is that

> across all clusters . . . civic tech has a local focus and a good portion of the sector comes to life in cities and communities. Experimentation and innovation are happening at the municipal and local levels, and these efforts are being shared and discussed throughout the sector.[19]

At the same time, however, civic tech as a field is a ". . . diverse and diffuse sector that lacks a consistent vision. . . ."[20]

A broader view of civic tech was offered in 2014 by the Knight Foundation. It conceived civic tech as drawing from government data, community organizing, and social networks. New to this concept are "collaborative consumption" and "crowdfunding" (see Figure 1). These latter two categories raise the profile of economic exchange, either in a peer-to-peer system (i.e., collaborative consumption) or through appeals for funding of good works, more associated with charity or small-scale business ventures (crowdfunding).

Thus, as regards the "people outside government" element of civic tech, there is significant variability in how business, volunteers, and government interact. For example, Code for America (CfA) categorizes civic technologists according to practice rather than employment. Thus, according to CfA, civic tech can be practiced wholly from within government, and incubator civic tech businesses can be a useful way to grow the overall field.

16. Purpose and Omidyar, *Engines of Change*, 7.
17. Purpose and Omidyar, *Engines of Change*, 38.
18. Renee E. Sieber and Peter A. Johnson, "Civic Open Data at a Crossroads: Dominant Models and Current Challenges," *Government Information Quarterly* 32, no. 3 (2015): 308–15.
19. Purpose and Omidyar, *Engines of Change*, 21.
20. Purpose and Omidyar, *Engines of Change*, 20.

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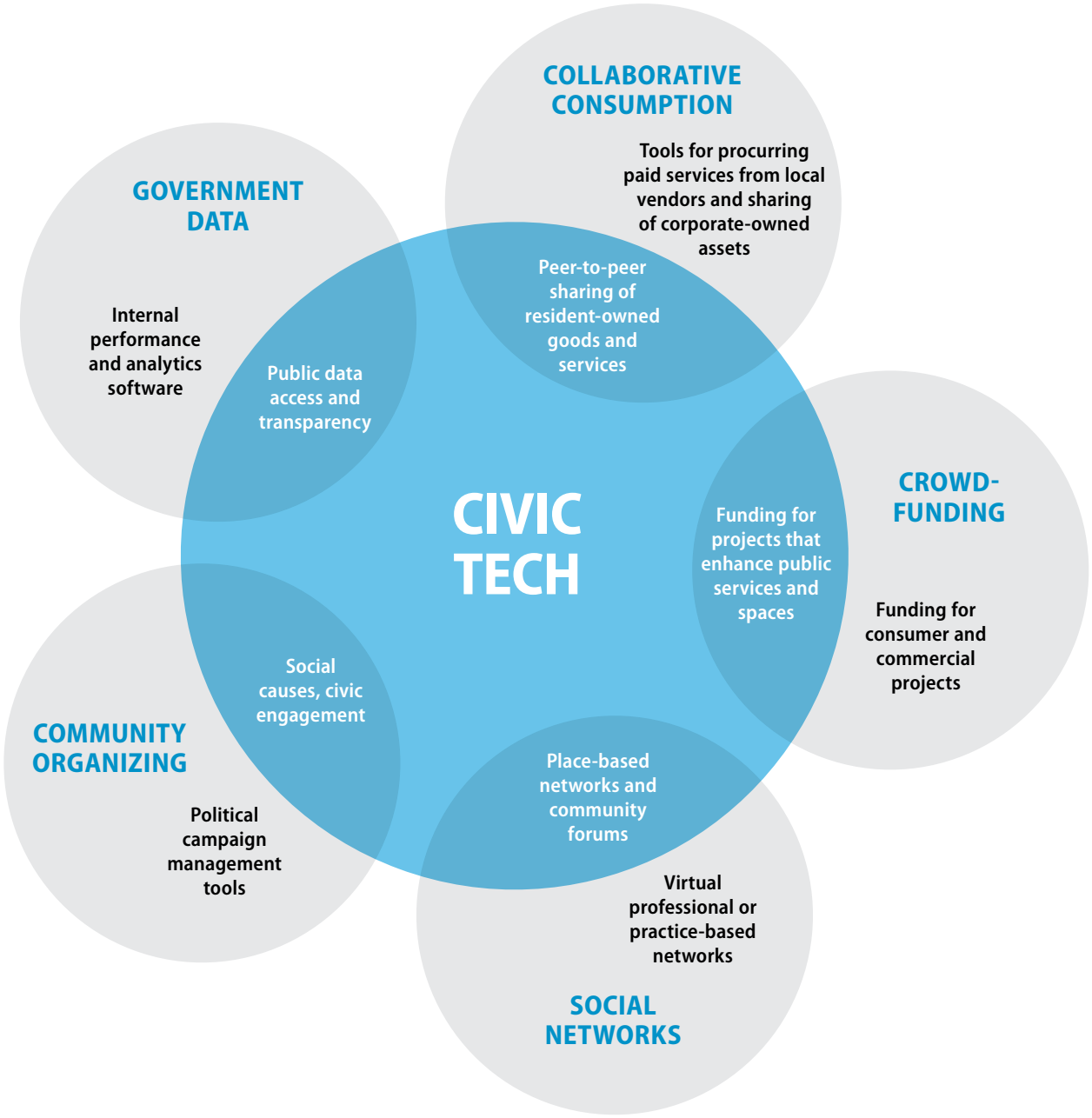
Figure 1. Civic Tech: A Convergence of Fields



Note: This review incorporates tech companies and projects from several fields of work. Only projects primarily focused on promoting civic outcomes were included.

Source: John S. and James L. Knight Foundation, "The Emergence of Civic Tech: Investments in a Growing Field," 2013, www.knightfoundation.org/media/uploads/publication_pdfs/knight-civic-tech.pdf.

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New Apps and Data Presentation

Most practitioners and analysts agree that creating new software applications or presentations of data is the hub of civic technology. One example is translating data and information held on paper into a digital format for easier access and updating. Another common effort is using geolocation and mapping software to show data or to combine data sets for visual presentations and analysis.

The building blocks for civic tech apps are datasets and web design. Data and management techniques are drawn from other sources and then presented in a way that is more useful to many in the community. Examples include "Adopt a Hydrant" and similar efforts. In Boston, the need for safe access to hydrants after snowfalls led to the organizing of community volunteers to "claim" a hydrant for clearing snow. An online system organizes these volunteers.[21] Part 2 provides other illustrations of civic tech projects and products.

Wake County provides a useful visualization of open data as the center point of five components: policy and process, internal (government) engagement with data owners, (open) portal and data expansion, community interactions, and integration with consumer applications. (See Figure 2.) The consumer applications component values having civic tech work with for-profit apps. Similarly, the volunteer aspect is captured largely by the community interactions component. In this conceptualization, there are differing opinions about how new the software needs to be and the extent of the adaptation or application. Other variables include, for example, the role social media should play in civic tech. Can content simply be provided within Twitter, Facebook, or similar platforms, or would a user-created program better serve its purpose and audience?

Public Benefit

The civic nature of civic tech lies in its desired outcome. Conceptions of public benefit range from "the common good" to "better government services" to different degrees of innovation or empowerment. Simple, far-reaching ideals are frequently a part of the beneficent characteristic of civic tech. A description of the Charlotte brigade illustrates this intent:

> Think volunteer fire brigade for the 21st Century. We are a volunteer citizen brigade. We use technology and advocacy as a tool for open government, open data and civic engagement. We work with our local government and community to use design, technology and open data to transform our city.[22]

A recurring theme used to characterize civic tech is helping to improve government. Code for America, for example, implies a hand-in-hand relationship between civic tech and government services:

- [Our] mission [is] to make government work in the digital age. Join us.
- The two biggest levers for improving people's lives at scale are technology and government. We put them together.[23]

Code for America is strongly influential in the conceptualization and direction of civic tech because of its multi-faceted work in the field: placing full-time fellows in teams to work with

21. Adopt a Hydrant, http://boston.adoptahydrant.org/.
22. Code for Charlotte, www.codeforcharlotte.org/.
23. Code for America.

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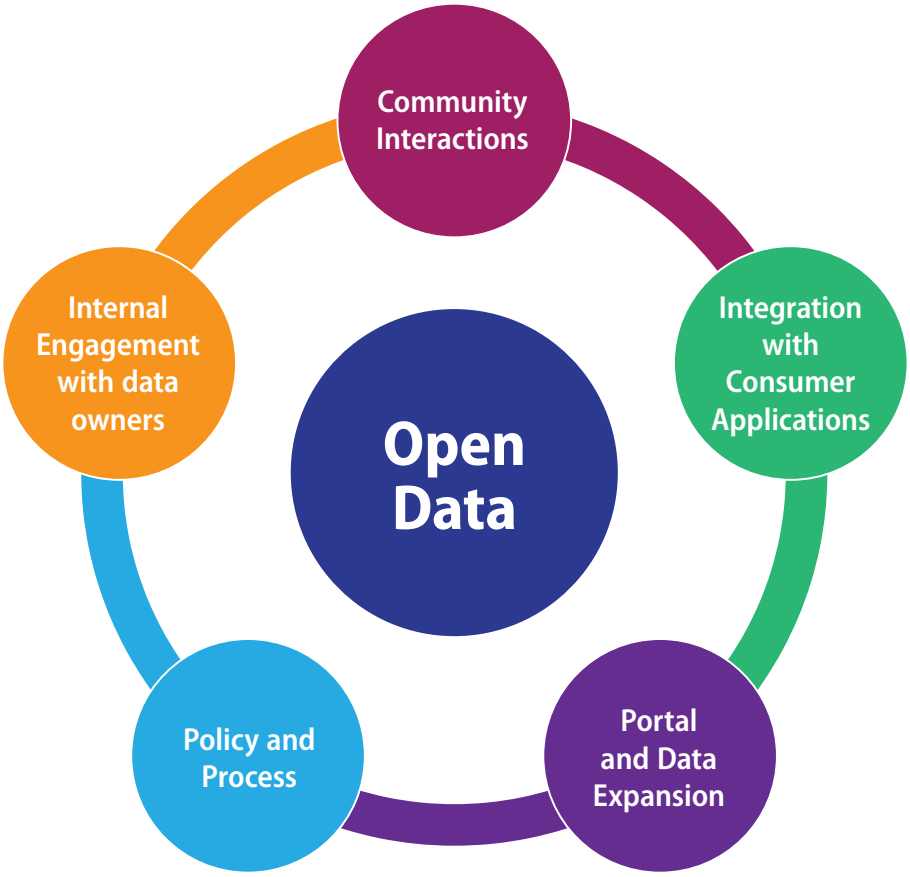
Figure 2. Wake County Conceptualization of Open Data Components



Source: William Scanlon and the Open Data Leadership Group of Wake County government, 2016.

particular local governments, convening annual summits, and supporting the network of local brigades. Therefore its ethos of "working with government" is often adopted or echoed by local brigades.

Other conceptions of the public benefit of civic tech focus on justice, equity, and openness. Citizen "empowerment" is also featured in several definitions (see Appendix A). One of the longest-running brigades portrays civic tech as enabling good government through the relevant use of technology:

> Chi Hack Night is a free, weekly event in Chicago to build, share and learn about tools to create, support, and serve the public good. We are a group of thousands of designers, academic researchers, data journalists, activists, policy wonks, web developers and curious citizens who want to make our city more just, equitable, transparent and delightful to live in through data, design and technology.[24]

24. Chi Hack Night, https://chihacknight.org/about.html.

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Illustrative Definitions of *Civic Technology* from Civic Tech Leaders and Analysts

- Tech used to empower citizens or help make government more accessible, efficient, and effective (Tech Crunch)
- Residents engaging in their communities, including sharing their time, information, and resources (Knight Foundation)
- Technology that is used for public good and betters the lives of the many, not just the few (Micah Sifry, Personal Democracy media)
- Civic technologies [used] to create, support, or serve public good (Laurenellen McCann, New America)
- Any tool or process that people as individuals or groups may use to affect the public arena (Alex Howard)

Source: Adam Hechtman, "Technology and Civic Engagement," December 20, 2016, presentation to PASS Business Analytics Virtual Group, https://www.youtube.com/watch?v=B3fHindWy4Y.

Other dimensions of civic tech include transparency and government accountability. The Sunlight Foundation, whose overall mission is "[m]aking government and politics more accountable and transparent,"[25] has supported the growth of civic tech. In its September 2017 Tactical Data Engagement guide, the Foundation concludes that

> city leaders will . . . take action in marginalized communities that often go overlooked as audiences for civic technology, open data, and transparency. Tactical Data Engagement presents a uniquely valuable opportunity for city halls to empower residents from systemically disenfranchised communities who need open data and public information to address local challenges.[26]

A final theme of civic tech focuses on maximum citizen independence and action. This conception of public benefit emphasizes organizing and activity distinct from government services. "Civic tech comes in a variety of shapes and sizes and with different goals, from encouraging dialogue to honing it for political action,"[27] noted commentator Mark Gerzon. Gerzon cites traditional political and campaign information but views its transmission through a digital platform that "provides voters with information about candidates and creates new avenues for their voices to be heard."[28]

The public benefit aspect of civic tech, then, can be said to range from incremental improvement of the status quo where government is a partner to a more skeptical and non-governmental focus which supports community or political action that challenges the status quo and may criticize government officials and policies.

25. Sunlight Foundation, https://sunlightfoundation.com/.

26. Sunlight Foundation, "A Guide to Tactical Data Engagement (Version 1.0)," *What Works Cities*, 2017, https://sunlight-foundation.gitbooks.io/tactical-data-engagement/content/, 4.

27. Mark Gerzon, "'Touchscreen Democracy': How Technology Can Recast Politics," *The Christian Science Monitor*, June 22, 2016, www.csmonitor.com/USA/Politics/Politics-Voices/2016/0622/Touchscreen-democracy-how-technology-can-recast-politics.

28. Gerzon, "'Touchscreen Democracy.'"

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Part 2. Community–Government Relationships in Civic Technology

Local government has many kinds of predictable interactions with individuals and groups in their jurisdictions. Civic tech fits some of these patterns well and differs in others. This section first summarizes methods for developing cooperative relations between local government and civic tech activists. It then contrasts a model that categorizes government–citizen interactions in three ways with how civic tech has operated in many communities. Finally, it presents the work of two analysts of civic tech–local government interaction in an effort to identify factors that affect the growth of civic tech and offer guidance for how civic tech can develop in tandem with government innovation and outreach.

Interest in Cooperation

Civic tech advocates believe that open data is vital to a transparent and accountable government. Making data accessible is not, therefore, a matter of government officials doing a favor for civic tech advocates. Rather, it is about taking reasonable steps to release data, with regular updates, so that citizens are informed and can make their own judgments about government activities. A logical step in this direction is to create a base of understanding and cooperation around open data so civic tech advocates have the data to do their work. Code for America promotes this type of cooperation to guide brigade development and activities.

The Code for America *Brigade Organizer's Playbook* says "[G]overnment [partners] are key to brigades"[1] because they offer many assets. The relationship should be reciprocal. "Brigades support local governments by working together on events and civic technology projects."[2] The *Playbook's* eight-item checklist guides brigade organizers from introductions and getting to know potential government partners to outreach and involvement.[3] Recently, a civic tech advocate who has worked for local government and served as a brigade leader provided input on acknowledging and appreciating government officials' experience and productive ways to communicate ideas for civic tech innovations.[4]

1. Monique Baena-Tan, Andrew Hyder, Christopher Whitaker, and Hannah Young, *Brigade Organizer's Playbook V.1* (Code for America Brigade, 2015), http://brigade.codeforamerica.org/brigade/static/Playbook_PDF_2_2016.pdf, 5.

2. Baena-Tan et al., *Brigade Organizer's Playbook*, 5.

3. Baena-Tan et al., *Brigade Organizer's Playbook*, 5. For another resource on brigade development, see Hannah Young, "10 Ways to Collaborate w/Gov," *Code for America Blog Archive* (August 29, 2013), www.codeforamerica.org/blog/2013/08/29/10-ways-to-collaborate-w-gov/.

4. Jesse Biroscak, "How Civic Tech Volunteers Should Engage Government Staff," *Code for America Blogpost* (June 18, 2017), https://medium.com/code-for-america/https-medium-com-jbiroscak-how-civic-tech-volunteers-should-engage-government-staff-d3a9f8eed3bd.

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Some brigades concentrate their efforts as much or more on nonprofit and civic groups as on local government. Code for (Washington) DC, for example, does not have a formal relationship with the city government; it works with nonprofit and advocacy groups on projects such as monitoring local campaign finance, matching students with community-service organizations via an online application, and making public library resources more accessible by bringing them to the digital platforms city residents already use.[5] Code for Detroit, similarly, focuses more on utilizing nongovernment information and assets. The organization does draw on government data, but it also utilizes a "localWiki" that assembles data from other sources to present information on local media, neighborhoods, and other topics of interest.[6] Other brigades establish or contribute to local wikis that extend well beyond the boundaries of government-provided open data.[7]

The Intersection of Civic Tech and a Citizen Engagement Framework

Many public managers have established programs to use citizen engagement to support government goals. Examples include volunteer tutors in public schools, neighborhood watch groups that work with police departments, and short-term events such as stream cleanups. Civic tech, when practiced by volunteers, fits some of the patterns inherent in working with county or city governments, but it presents its own set of expectations about how to navigate these relationships.

One framework, formulated by John Clayton Thomas in 2012, uses citizen engagement research to guide public managers seeking citizen participation. It compares resident, business, and civic group interactions with state and local government.[8] In this conceptualization, public managers should assess and guide citizen participation in three distinct ways: the public should be viewed in its role as citizens, as customers, or as partners. In brief, *citizens* participate in decision making, and government managers can prepare and guide this type of public input. *Customers* seek products or services. There is an explicit exchange relationship, and the quantity and quality of products or services are the responsibility of a government provider. Finally, *partners* engage in co-production in which each contributes resources to reach a mutual objective. Recycling is one example: Government sets the goals and rules for reducing solid waste and redirecting it, but citizen behavior must align with these goals and rules in order for recycling to work.

While Thomas does mention Internet tools such as online surveys and focus groups in terms of "customer information"[9] and public-involvement techniques,[10] he does not apply these concepts to the open-data movement or advocacy by "cyber-citizens" for purposes of policy change and making data open for volunteer application developers.

Of Thomas's three categories, civic tech probably best fits the notion of public participants as *customers*. Civic tech needs application programming interface (API)–compliant data, and government provides it. However, unlike services such as solid waste collection that involve a specific fee,

5. Code for DC, https://codefordc.org/projects/.

6. Localwiki for Detroit, https://localwiki.org/detroit/Neighborhoods.

7. See, for example, the localwiki for Charlotte, https://localwiki.org/charlotte/.

8. John Clayton Thomas, *Citizen, Customer, Partner: Engaging the Public in Public Management* (Armonk, NY: M.E. Sharpe, 2012).

9. Thomas, *Citizen, Customer, Partner*, 69–70, 77–80.

10. Thomas, *Citizen, Customer, Partner*, 190–93.

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open data is expected to be provided to users for free. Moreover, there is no limit on how many, or which, users access the data; users may, for example, reside outside the jurisdiction.

On the other hand, civic tech advocacy for open-data policies and programs fits Thomas's *citizen* role of public participation. Some civic tech advocates seek an elected board resolution of general support for open data. Some cities have adopted formal open-data policies.[11] Figure 3 lists North Carolina local government jurisdictions with open-data policies. As discussed below, government workers may be asked to consult regularly with civic tech participants about which data sets to place on open-data portals. Citizens can use open data to influence policies related to any number of government concerns—such as public safety, education, and social services—where data can "shine a light" on program effectiveness and broader policy goals.

Figure 3. North Carolina Jurisdictions with Open-Data Policies

Asheville—Council Resolution (Oct. 13, 2015), www.opendatapolicies.org/doc/asheville-nc-2015-10-13/

Charlotte—IT Policy (Jan. 1, 2015), www.opendatapolicies.org/doc/charlotte-nc-2015-01-01/

Durham—Administrative Policy (Nov. 23, 2015), www.opendatapolicies.org/doc/durham-nc-2015-11-23/

Greensboro—Launch of Open Data Portal (Oct. 20, 2016), https://data.greensboro-nc.gov/

Guilford County—Draft Open Data Policy (Sept. 12, 2017), https://mymadison.io/documents/guilford-county-open-data-policy

Raleigh—Legislation (Feb. 7, 2012), www.opendatapolicies.org/doc/raleigh-nc-2012-02-07/

Source (in part): Open-Data Policy Collection, www.opendatapolicies.org/browse/.

Thomas's *partner* role is not as clear-cut in the context of civic tech. The design principles Thomas offers for helping government employees interact with partners are premised on the government offering guidance, and even control, of the partnership. For example, three of the seven design principles are as follows:

- defining in advance what assistance is wanted or needed;
- where assistance is needed or desired, considering "how to enhance the public's ability to provide the assistance";
- Retaining the option to apply sanctions if and where responsible cooperation does not occur based on other incentives.[12]

These principles do not apply to civic tech businesses and volunteers. The government neither defines the kind of assistance needed nor applies sanctions. In other words, government officials do not set the terms of assistance by citizens as partners.

Civic tech partnerships or co-production, therefore, are different than what public managers have experienced with citizen engagement in general. In the context of government open-data

11. See "Open Data Policies in State and Local Government (Interactive Map)," *Government Technology*, http://www.govtech.com/data/Are-Governments-Committed-to-Open-Data-Interactive-Map.html.

12. Thomas, *Citizen, Customer, Partner*, 216.

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portals, once the data is "set free" there are no expectations for an ongoing government–citizen relationship with the data.[13]

Thomas also shows how in practice citizen engagement can quickly shift among the citizen, customer, and partner roles. He provides a hypothetical reporting of a pothole (customer) where a government official receiving the call about the pothole could ask about the scope of the problem. The official might ask, "Exactly where is the pothole? How big is it, and how much danger does it pose?"[14] The caller who answers these questions helps the official pinpoint the problem. Thus, the caller seeking a service (customer) provides essential information beyond the simple request and becomes a partner to some extent.[15] A similar crossover occurs when a resident calls to report suspicious activity (i.e., as a customer), and the government official then informs the caller about an upcoming meeting for residents to discuss crime problems (the caller shifts to a citizen role).[16] A final example of this overlap comes from Thomas's research about intergovernmental roles regarding transportation issues in Georgia. Although the state Department of Transportation provides a service to local governments, local government officials play multiple roles in their interactions with the department. "[Local government officials] even see themselves in roles that might appear to conflict—in particular as both customers and overseers (i.e., principals). For these stakeholders, it appears more common than not for them to come to a state agency in more than one role at a time."[17]

Civic tech provides several illustrations of the overlap that Thomas describes. One example occurs when a single information request results in the government making the data open and freely accessible on its website. This request (by a customer) can lead to government officials thinking about providing that same data through their open-data portal (the customer now fills the partner or citizen role). Similarly, civic tech participants work on two sides of open data—as citizen advocates for policies and resources to create open data, and then as customers of such data.

Hackathons

Despite being created in the IT world, "hacking" is now being applied to a wide range of problems and innovations. Joshua Tauberer, for instance, offers two definitions:

- hacking—creative problem-solving that does not have to involve technology, and
- hackathon—any event of any duration where people meet to solve problems.[18]

Common in the software development world, a hackathon is a short-term effort to address a need or problem by creating and testing computer code. The event typically lasts a few hours up to two or three days and often follows a "sprint format" in which multiple programmers work on portions of the overall app.[19] Hackathons have gained popularity among a range of local governments,

13. One analyst has coined the term "exoproduction" to emphasize the do-it-yourself ethos of civic tech working with government open data. Mark Headd, *How to Talk to Civic Hackers* (2016), www.civichacking.guide/.
14. Thomas, *Citizen, Customer, Partner*, 202.
15. Thomas, *Citizen, Customer, Partner*, 202.
16. Thomas, *Citizen, Customer, Partner*, 205.
17. Thomas, *Citizen, Customer, Partner*, 203.
18. "How to Run a Successful Hackathon," https://hackathon.guide/.
19. Wikipedia, "Hackathon," https://en.wikipedia.org/wiki/Hackathon.

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which either sponsor or participate in them.[20] In North Carolina, hackathons have been one form of interaction between civic tech volunteers and elected and appointed government officials. In civic tech, hackathons involve open data and one or more problems posed to IT specialists (web designers, database managers, and software engineers). The goal may be a prototype, and there is no expectation for a completed, fully functioning app.[21]

Hackathons on public issues, or involving local government, have gained some academic attention. Canadian researchers have offered critiques and analysis of the role of government officials in these gatherings. In addition, there is ambiguity about the exact goals of these hackathons.[22] Hackathons offer a forum for public participation via data and app development. One critique is that the success of a hackathon is sometimes measured by the degree of participation rather than the creation of a useful product.[23] A second concern is whether the hackathon goal of "free app" development becomes a shadow form of procurement that bypasses standards assuring open competition and, sometimes, outreach to under-represented contractors. The culture of open volunteer innovation may clash with rules regulating public notice and appropriate compensation of services provided to government. In 2014 one study called for more rigorous research to ". . . differentiate between hackathons as stunts, or as innovative citizen–government interactions with reciprocal benefits that produce new technologies and ideas that respond to citizen challenges and needs."[24] Another study by the same authors later concluded, however, that ". . . at this particular moment, civic hackathons appear to be more valuable to local governments as a tool for engagement than as a technique for getting free or subsidized labour in the form of app building."[25]

Government Employee Factors

Civic tech, and internal government IT work on open data, innovation, and government service improvement, suggest the need for changes in certain relationships, skills, and job expectations. One study focuses on creating a better fit between government data IT expertise and citizen volunteer energy and creativity.[26] The study developed the idea of government employees (with IT expertise or data and service knowledge) as "info-mediaries" who can benefit from community feedback and assist in the development of civic tech:

> These findings signal the importance of municipal open data needing stewardship in the form of municipal staff familiar with the data, their format and structure

20. Tracking the decentralized nature of hackathons is difficult. For data on locations and sponsorship by local government, see Code for America, "National Day of Civic Hacking," https://www.codeforamerica.org/events/national-day-of-civic-hacking-2017; Nick Hadjigeorge, "Hacking the Hackathon" (GovEx, January 14, 2016), https://govex.jhu.edu/wiki/hacking-the-hackathon/; Pamela J. Robinson and Peter A. Johnson, "Civic Hackathons: New Terrain for Local Government-Citizen Interaction?," *Urban Planning* 1, no. 2 (2016): 71, www.cogitatiopress.com/urbanplanning/article/view/627.

21. Peter Johnson and Pamela Robinson, "Civic Hackathons: Innovation, Procurement, or Civic Engagement?," *Review of Policy Research* 31, no. 4 (2014): 349–57.

22. Johnson and Robinson, "Civic Hackathons: Innovation, Procurement," 349–57.

23. Johnson and Robinson, "Civic Hackathons: Innovation, Procurement," 349–57.

24. Johnson and Robinson, "Civic Hackathons: Innovation, Procurement," 356.

25. Robinson and Johnson, "Civic Hackathons: New Terrain," 71.

26. Robinson and Johnson, "Civic Hackathons: New Terrain," 65–74.

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> and also municipal staff with knowledge and experience in the areas of application related to the data. Through participation in civic hackathon events, municipal staff reported gaining valuable feedback about what kinds of data residents want, how well the data sets are structured, and how these data sets might inform actions taken by residents. This feedback opportunity reinforces the importance of municipal staff needing to participate at the events, acting as info-mediaries that can facilitate the creation of information from the raw open data (Janssen & Zuiderwijk, 2014). These findings also help position civic hackathons as an event that contributes to broader participatory open data efforts and that also may serve as an entry point for residents to participate in other civic engagement efforts.[27]

Local Government Views of Civic Tech

Beyond the short-term interaction characteristic of hackathons, government employees and volunteers or businesses in the civic tech field establish ongoing relationships through periodic contact. As discussed previously, such relationships are the stated goal of Code for America brigades and a common feature of North Carolina civic tech groups. There are many anecdotes about government–brigade interactions, but two studies offer more structured data-gathering and analysis related to these relationships.[28] Both authors are participant–observers of civic tech, with different relationships to individual brigades and the wider civic technology field. In addition, government officials' experiences of civic hacking described in this report provide guidance to local elected and appointed officials on the challenges and opportunities presented by civic tech.

In June through September of 2015, this author conducted 31 semi-structured interviews with local government officials who had relationships with one of four brigades from the following regions: Charlotte, Durham, and Raleigh, North Carolina; and the Hampton Roads, Virginia, area.[29] The author elicited responses about the pros and cons of interacting with the brigades and collected data from a range of local government participants. Some employees had regular and cooperative relationships with the brigades. Others reported limited or unsatisfactory interactions. Evaluations about the civic tech participants, and the nature of the interactions, were overall positive. Most respondents identified two or more features that provided value to either their government duties or the broader community.

Fourteen themes emerged from content analysis of these responses, and these in turn are distilled into four groups of positive attributes about civic tech–local government interactions.[30]

The first focuses on the brigade participants' characteristics and work on open data: their expertise, youth, innovativeness, enthusiasm, and diversity of views. In short, civic tech volunteers bring something different and useful to open data. A second grouping of themes relates to the mutual benefit of the interaction. Government employees involved with open data are gratified

27. Robinson and Johnson, "Civic Hackathons: New Terrain," 72.

28. John Stephens, "Study of Local Government Officials' Experience with Civic Technology: Hampton Roads, VA; and Charlotte, Durham, and Raleigh, NC" (working paper, 2015), www.sog.unc.edu/sites/www.sog.unc.edu/files/general_media/Study%20of%20Local%20Government%20Officials%20Experience%20with%20Civic%20Technology.pdf (with thanks to Micah Guindon for research assistance); Headd, *How to Talk to Civic Hackers*.

29. Stephens, "Study of Local Government Officials' Experience."

30. Stephens, "Study of Local Government Officials' Experience."

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that brigade work raises the awareness of community members and government leaders about ways to use open data. Interviewees noted examples of mutual education—about information technology applications on the one hand and government operations and limitations on the other. More than one interviewee noted that brigades help assess what open data could next be prepared and released.

A third amalgam of reflections on the civic tech experiences of local government employees involves the products of the brigades. The apps developed are relevant and highly valuable compared to private-sector IT work. Government officials observe that some apps are gaining users and many can be modified from brigade to brigade to reach more localities.

A final set of themes concerns the value of building relationships between brigades and government. The brigades serve as good sounding boards about "what the community thinks," and short-term brigade-sponsored events (such as hackathons and open-data days) create positive exposure and attract people interested in open-source software, government accountability, and contributing to the public good.

Bill Scanlon, Wake County Information Systems, Innovation Team, noted some beneficial aspects that brigade–government interactions provided government employees. Producing something, however modest, compared to the often slow, cautious mode of government operations boosts the morale of these employees. Scanlon observed, "People can be energized by the opportunity to participate in something that might create a real change, even if small, in an area where they work in every day."[31] Secondly, employees have the opportunity to learn new concepts and broaden their knowledge. The mix of technology, user design, and entrepreneurial activity is a very positive experience even if a particular project isn't selected by the community or doesn't move forward. Civic tech events often occur outside of most government employees' regular work hours. Given the benefits, however, if employees are allowed to participate on a volunteer basis only, even the extra work time will be considered a valuable investment.

Civic Tech–Government Relationship Building

Mark Headd is an IT specialist who served as Philadelphia's chief data officer from 2012 to 2014 and worked with the civic tech firm Accela. Since 2016, he has been an innovation specialist with the federal government's Technology Transformation Service.[32] Headd recently interviewed former and current local government officials who support civic tech and local brigades.[33] He concludes that "[t]he process of using data and technology to improve the way governments work is now inextricably linked to how effective governments are at engaging with outside data users and technologists."[34] Summarizing the history of co-production by government and citizens, Headd considers civic tech the latest and most wide-ranging of these efforts. In fact, since open data does not require active coordination between citizens and government, he defines much of the work

31. Bill Scanlon, email message to author, August 7, 2017.

32. See Civic Innovations, https://civic.io/about/; U.S. General Services Administration, Technology Transformation Service, https://www.gsa.gov/about-us/organization/federal-acquisition-service/technology-transformation-service.

33. Headd, *How to Talk to Civic Hackers*. Headd includes a list of his interview questions in the appendix. He does not report the number of interviewees, their demographics, or other information about their experiences with civic tech.

34. Headd, *How to Talk to Civic Hackers*, 11.

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of civic tech as *exoproduction*: citizens independently using the resource of open data without government organization or guidance.[35]

Headd zeros in on a key distinction of civic tech compared to government use of other outside expertise:

> The modern civic technology movement sits firmly in the tradition of co-production and helps extend it by enabling services and solutions to be developed in ways that don't fall under the direct control of government and do not require governments to transfer money or authority to outside parties.[36]

He also distinguishes the motivation of civic tech volunteers from that of other government-related volunteers. Cleaning up a stream in one's neighborhood, for example, is motivated at least in part by self-interest. "The motivations for participating in a volunteer technology effort are more nuanced than for other kinds of volunteer activities because the people creating a civic technology solution may not be the people who end up using the solution,"[37] he points out.

Headd's survey respondents reinforce this author's research[38] as regards three areas of positive civic tech interactions between government personnel and citizens:

- encountering fresh insights and perspectives,
- accessing talent not present in (at least some) local governments, and
- imagining new tools or approaches, and providing resources to create them.

Headd also cites the potential benefit of stronger data analytics—investigating ways to connect government departments with researchers and data scientists to answer some of the participants' big questions using open data.

Case studies provide several examples of civic tech products from different cities.[39] Although the apps are from larger cities, Headd emphasizes their potential benefits for medium-sized municipalities as well:

- Chicago—Using Predictive Analytics to Find Dirty Beaches,
- Louisville—Preventing Fires in Vacant Buildings,
- Philadelphia—Building a Mobile App for Transit Riders, and
- Syracuse—Making Better Use of Road Data.

Headd and the author have also identified barriers to civic tech or potential misalignment of some civic tech activities with goals of local government. These issues and additional details about impressions and experiences of local government workers and civic tech participants are discussed in Parts 4 and 5.

35. Headd, *How to Talk to Civic Hackers*, 16–17.
36. Headd, *How to Talk to Civic Hackers*, 21.
37. Headd, How to Talk to Civic Hackers, 34.
38. Stephens, "Study of Local Government Officials' Experience."
39. Headd, *How to Talk to Civic Hackers*, 25–31.

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Part 3. North Carolina Civic Tech Groups and Events

In comparison to other states, North Carolina's civic technology cohort is geographically diverse, has a strong degree of expertise, exhibits solid relationships with local government employees and a few elected officials, and is part of the national leadership of brigades. Some brigade leaders (captains) are also government employees (e.g., City of Asheville, City of Greensboro, Wake County), while others are in private industry with connections to civic technology (e.g., Red Hat, in Raleigh; Caktus, in Durham). Many brigade members are employed in IT. The potential weakness of civic tech in the state (described in Part 4) is that it tends to focus on larger cities and therefore may have limited applications outside major metropolitan areas.

Summaries of the leadership and activities of the brigades and key hackathon and other civic technology events are provided below.

Six Brigades: Local Volunteer Civic Tech Groups

Asheville

Asheville's brigade was started in 2012 by two city Information Technology Department employees with the support of CIO Jonathan Feldman. In early 2014 the brigade initiated an effort to enact a municipal open-data policy. It was adopted by the Asheville City Council in October 2015.[1] Recent brigade projects have included the following:

- the collection and repair of used computers to provide Internet access for homeless individuals;
- the Buncombe County Reentry Resources Hub, a website for people reentering the community after incarceration;[2]
- voting tools for the November 2016 election;
- data analyses of arrests of homeless individuals and local public housing demographics;
- North Carolina Megaphone, a tool for contacting all state legislature members;[3] and
- an open budget site for the City of Asheville in 2014 and 2015.[4]

The current focus areas of the Code for Asheville brigade are connecting volunteers to citizen groups and issues during monthly community nights and facilitating data-driven conversation in

1. Resolution No. 15-189, http://coablog.ashevillenc.gov/wp-content/uploads/2016/02/Resolution-No.-15-189.pdf.
2. Buncombe County Reentry Resources Hub, www.buncombereentryhub.org/.
3. North Carolina Megaphone, www.ncmegaphone.com/.
4. "Explore the City of Asheville Budget with Collaborative Online Tool," Asheville City Source, http://coablog.ashevillenc.gov/2015/06/explore-the-city-of-asheville-budget-with-collaborative-online-tool/.

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the community and with government agencies. The Asheville municipal government has continued to maintain a strong partnership with Code for Asheville, hosting monthly meetings in community centers and sponsoring the 2017 Open Data Day event,[5] a series of conversations around open data and the community, media, and government.

Separate from the brigade's work, but in a common vein of making government information more useful to the general citizenry, staff from the City of Asheville developed an app called SimpliCity.[6] Aligned with open-source principles, the code is freely available to government workers or interested citizens to apply in other communities.

Cary

Even before there was a Code for Cary, on February 13, 2013, the city council enacted A Resolution Supporting the Cary Open Data Day Hackathon on February 23, 2013.[7] A November 2013 "Hack Day" followed, which focused on development information held by the town government. In 2014–2015 Co-captains Robert Campbell and Ian Henshaw devised a strategic plan to set the brigade's course. An open-data portal resulted from this effort.[8] Moreover, the brigade (and others) draw from the open data for "Town of Cary Data Stories," which provides context and a narrative for certain data.[9] Cary's open-data platform includes data visualizations such as maps of traffic crash locations and other events. As of March 2017, brigade projects include a development visualization app showing permits and zoning actions, a water usage app, the Town of Cary website, a public art finder,[10] and the Cary Local Wiki.[11] Since the fall of 2016, the Town of Cary has employed an innovation and analytics manager who is the former co-captain of Code for Raleigh. Recently a coordinated brigade–town government event to create innovative solutions to connect open data with voice recognition technology was held at the Cary Town Hall campus.[12]

Charlotte

Beginning in 2014 three Code for America fellows worked in the Charlotte city government for 11 months. Code for Charlotte developed in parallel with the fellows' projects with city agencies. The efforts of these fellows and the brigade led to the Citygram application,[13] which is also used in New York City and Lexington, Kentucky.[14] In 2015 the City of Charlotte implemented a skilled volunteer engagement agreement to clarify how Code for Charlotte will maintain the Citygram applications in exchange for financial support to the brigade.[15]

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5. "City of Asheville to Partner with Code for Asheville," www.asheville.com/news/2017/02/city-asheville-partner-code-asheville-open-data-day/; and https://digitalsimplicity.io/?s=open+data+day.
6. See http://simplicity.ashevillenc.gov/#/search.
7. See http://carync.iqm2.com/Citizens/FileOpen.aspx?Type=12&ID=1019&Inline=True.
8. Town of Cary, North Carolina, Open Data, https://townofcary.opendatasoft.com/page/home/.
9. Town of Cary, North Carolina, https://townofcary.opendatasoft.com/page/storydirectory/.
10. See http://www.caryvisualart.org/.
11. See https://localwiki.org/cary/.
12. Triangle Code for America, "Cary Civic Tech Hack Night: Amazon Alexa Open Data Skill," www.meetup.com/Triangle-Code-for-America/events/238131916/.
13. See https://www.citygram.org/charlotte.
14. See https://www.citygram.org/.
15. Skilled Volunteer Engagement Partnership Grant Agreement—Citygram Application, January-December 2015, on file with the author.

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North Carolina Brigades Online Information

Asheville—www.codeforasheville.org/

Cary—www.codeforcary.org/

Charlotte—www.codeforcharlotte.org/

Durham—http://codefordurham.com/

Greensboro—http://codeforgreensboro.org/

Raleigh—www.codeforraleigh.com/

Triangle Area—www.meetup.com/Triangle-Code-for-America/ acts as a regional information hub for Code for Raleigh, Code for Cary, and Code for Durham

Winston-Salem—had a brigade effort for portions of 2015–16 but is inactive as of February 2017

North Carolina—https://brigades.opendatanetwork.com/brigade?brigade=Code%20for%20North%20Carolina

The brigade has been involved in numerous other projects. In 2016 it devised a digital upgrade to a paper-based system for the Charlotte–Mecklenburg Police Department to provide Christmas presents for underprivileged children. In 2016 Code for Charlotte built a digital platform[16] that helped organize and speed up the process, allowing the department to deliver Christmas gifts to over 1,700 children. Other projects include data visualizations of the city budget in collaboration with the City of Charlotte's Finance Department and support for an improved text-message system for food stamp beneficiaries to access their electronic benefits balance.[17] Modernizing communication about food stamp issues is a "forked" (shared) project from a Code for America effort in California.[18]

As of December 2017, brigade Co-captain Jill Bjers serves on the National Advisory Council on brigades for Code for America.[19]

Durham

Code for Durham has bi-monthly meetings hosted by a downtown software company.[20] This brigade hosted the June 2016 National Day of Civic Hacking, including about 90 participants from the Triangle region. In August of 2017, leaders in government open-data efforts and interested community members gathered in a Civic Spark Day to explore ideas and make headway on existing projects.[21]

For about two years (2015–2016), one of the Durham brigade co-captains was contracted to manage the City of Raleigh's open-data portal.[22] This overlap promoted stronger communication

16. CMPD Winter Gift Project, https://codeforcharlotte.atlassian.net/wiki/spaces/GIFT.

17. Code for Charlotte Projects, www.codeforcharlotte.org/projects/.

18. GitHub/Code for America, https://github.com/codeforamerica/balance.

19. Code for America, National Advisory Council Election Results and Next Steps, https://medium.com/code-for-america/national-advisory-council-election-results-and-next-steps-54c53ece6ae2#.8necn1lh8.

20. Caktus Group, https://www.caktusgroup.com/.

21. Caktus Group, Civic Spark Day, www.caktusgroup.com/events/civic-spark-day/; twitter.com/codefordurham/status/897615774763888640.

22. City of Raleigh—Open Data, https://data.raleighnc.gov/.

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between the Raleigh and Durham brigades. Code for Durham advised Durham city and county officials on creating a shared open-data portal, which was established in 2015.[23]

Recent or ongoing projects of the Durham brigade include the following:

- NC Food Inspector, a map-based website[24] to give citizens easy access to current and past public health scores at restaurants in the community. The app illustrates how the Center for Disease Control and Prevention's five risk factors of foodborne illness relate to a restaurant's inspection score. It is being extended to neighboring Wake County.
- Durham School Navigator. Similar to a 2012 Boston project, this app helps parents of K–12 students understand their public school choices by combining geographic and other data.[25]
- Initial scoping work with a social justice organization to visualize data from a statewide government source about law enforcement traffic stops and racial characteristics of drivers and officers. The bulk of this project moved to a partnership between the software firm of one of the brigade co-captains, and the Southern Coalition for Social Justice. This work[26] has inspired similar analysis of traffic-stop data in Illinois and Maryland.

Greensboro

Code for Greensboro has had monthly hack nights since March 2015.[27] As of March 2017 Code for Greensboro is a 501(c)(3) organization and is fundraising and applying for local grants.[28] In November 2015 the brigade organized Civicon, a hackathon and conference with over 200 participants that garnered financial support from local and national technology companies. App development awards were given for best idea, best design, and impact.[29]

Code for Greensboro meets regularly in an IT and entrepreneurship co-working space, HQ Greensboro.[30] Currently the Greensboro brigade is working with Code for Asheville to extend online information to help people reentering the community after incarceration to Guilford County. Initiated by the Asheville brigade, the NC Reentry Resources Project[31] has provided a general template that can be used by other county or city groups and enhanced with local resources. The Greensboro brigade also has a formal Tech Education initiative. The group hosts workshops and classes on various open-source technology tools with the goal of breaking down technical barriers to member contributions to its open-source projects.[32]

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23. Open Data: City and County of Durham, https://opendurham.nc.gov/page/home/.
24. See https://ncfoodinspector.com/.
25. See https://durhamschoolnavigator.org/#/.
26. See https://opendatapolicing.com/.
27. See https://www.meetup.com/Code-for-Greensboro/events/past/?scroll=true#past.
28. For more information, see the Code for Greensboro blog, http://blog.codeforgreensboro.org/.
29. See http://hackathon.codeforgreensboro.org/.
30. See https://hqgreensboro.com/. HQ Raleigh and HQ Charlotte also have connections to their cities' brigades.
31. "Update on Plans for the NC Reentry Resources Project" (March 19, 2017), https://docs.google.com/document/d/1JTGanUKeVDJrIX-DJBcQztQjPTXtrO-plEqk3WGp8rA/edit#heading=h.uyj343gqe1qn.
32. Code for Greensboro Meetup, https://www.meetup.com/Code-for-Greensboro/events/238216720/; Code for Greensboro on Facebook, https://www.facebook.com/hqgreensboro/posts/630582013776015:0.

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Apart from the region's brigade, the City of Greensboro was recognized for its open-data portal in the GovTech 2015 Digital Cities Award program.[33]

Raleigh

Code for Raleigh has strong connections to county and city government open data and to the tech community. The brigade meets monthly for hack nights and planning, organizes the annual CityCamp NC conference,[34] and is supported by sponsors such as Red Hat (a leader in open-source software).

In 2015, brigade members assessed the City of Raleigh's Budget Explorer, an interactive visualization web application for citizens that simplifies explanations of how tax money is spent. The brigade has also mapped and advised on the city's affordable housing needs. In 2017 Code for Raleigh has strengthened its partnership with county officials and seeks to link civic app projects to initiatives and goals proposed by the county commissioners. Upcoming projects and events will be determined by initiatives the brigade and the local government share. As of December 2017, Co-captain Jason Hibbets (a project manager and web architect at Red Hat) serves on the National Advisory Council on brigades to Code for America.[35]

Cross-Brigade Communication

To facilitate communication, the Code for Cary, Code for Raleigh, and Code for Durham groups use the Meetup.com umbrella group Triangle Code for America[36] for postings of regular meetings of the separate brigades and joint gatherings such as CityCamp NC and NC Datapalooza[37] (described below). Similarly, Code for North Carolina is a platform to support communication and project-sharing across all six brigades.[38]

Brigade Participation and Outreach

The number of brigade participants is hard to pin down. Commonly a large number of people are listed in the Meetup.com group for each brigade, but only a fraction appear for hack nights or other events. For example, the author has attended several Code for Durham hack nights since 2015, at which the attendance typically ranges from 10 to 20. As of September 2017, Triangle Code for America Meetup.com (which includes Raleigh and Cary) lists 1,147 members.[39]

Some brigade members may contribute to coding remotely rather than come to regular meetings, which are usually called "hack nights." Some participate both remotely and in person, but there are no reliable figures about membership and level of activity for the North Carolina and other state brigades. Larger hackathons, such as the National Day of Civic Hacking, have attracted

33. See http://www.govtech.com/dc/digital-cities/Digital-Cities-Survey-2015-Winners-Announced.html.
34. See http://citycampnc.org/.
35. Code for America, National Advisory Council Election, https://medium.com/code-for-america/national-advisory-council-election-results-and-next-steps-54c53ece6ae2#.8necn1lh8.
36. See https://www.meetup.com/Triangle-Code-for-America/events/237653415/.
37. See http://www.ncdatapalooza.com/.
38. Brigade Open Data Sharing Platform, Code for North Carolina, https://brigades.opendatanetwork.com/brigade?brigade=Code%20for%20North%20Carolina.
39. See www.meetup.com/Triangle-Code-for-America/members/.

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100–250 people, although many are one-time attendees and are not regular members of the Triangle brigades.

Civic Tech Events in North Carolina

Apart from monthly or bimonthly gatherings focusing on their "regular work," the six North Carolina brigades act independently or collaborate with each other to organize various outreach events. As noted above in the discussion on the history of Code for Cary, civic tech events can operate outside of brigade management yet still be catalysts for involvement by government officials and interested citizens. Since about 2014, four regular outreach hackathons or special events have become part of the annual North Carolina civic tech calendar.

Open Data Day. Open Data Day has been held in conjunction with different brigades since about 2013. In 2017, events were held in Charlotte[40] and Asheville,[41] and an umbrella online platform publicizes and supports these events worldwide.[42]

NC Datapalooza. This event has been held annually since 2013; the current competition concludes in November 2017. It includes a contest for app development with awards to three finalists. It is characterized by a stronger connection between for-profit IT developers and government open data.[43] NC Datapalooza provides easily accessible links to 11 government open-data portals in North Carolina and to related ESRI data sets.[44] The organizers have included captains from three brigades, private-sector IT leaders, a Wake County IT Department official, and a person from the Salvation Army.[45]

National Day of Civic Hacking. One of the earliest Code for America initiatives, this event features a sprint-style format in its broad outreach to noncoders and coders in its efforts to address community needs. As noted above, in 2016 the Cary, Raleigh, and Durham brigades coordinated a single event held in Durham. Charlotte held an event across two days that same year. The National Day of Civic Hacking usually occurs in June in many areas; the Cary, Durham, and Raleigh brigades held their event in September 2017.

CityCamp NC. CityCamp NC originated as CityCamp–Raleigh with a Triangle region focus in 2011–2014. In 2015 it expanded its goals and increased participation, becoming a statewide event. It is currently a two- to three-day gathering including plenary presentations, breakout project demos, and a one-day hackathon period. CityCamp NC seeks to bridge coder and noncoder interest in government transparency, civic engagement, and journalism related to public issues. It follows an international model for outreach to journalists and civic participation with and without a focus on technological innovation.[46] CityCamp NC has been fairly successful in providing local government elected officials, CIOs, and others a way to share their goals, needs, and challenges in

40. Open Data Day CLT, http://codeforcharlotte.org/events/.
41. Code for Asheville, Open Data Day 2017, http://www.codeforasheville.org/open-data-day-2017/.
42. See http://opendataday.org/.
43. See http://www.ncdatapalooza.com/.
44. See http://www.ncdatapalooza.com/nc-datapalooza-open-data/.
45. See http://www.ncdatapalooza.com/organizers/.
46. "CityCamp is a series of civic-focused community events around the world that inspire collaboration and innovation between local residents, governments, organizations and businesses." http://citycamp.com/.

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North Carolina Civic Tech: 2017 Special Outreach Events

March 4—Open Data Day

- Asheville—http://coablog.ashevillenc.gov/2017/02/asheville-to-partner-with-code-for-asheville-for-open-data-day/
- Charlotte—https://logicaladvantage.com/event/open-data-day/

August 12—Civic Spark (Durham)—https://www.caktusgroup.com/events/civic-spark-day/ and https://twitter.com/codefordurham/status/897615774763888640

September 23—National Day of Civic Hacking (Greensboro)—https://www.meetup.com/Code-for-Greensboro/events/242578748/

September 28–30—CityCamp NC (Raleigh and statewide)—http://citycampnc.org/

September 30–November 13—NC Datapalooza—http://www.ncdatapalooza.com/nc-datapalooza-2017-timeline/

the realm of cooperative hacking. The network of CityCamps has a playbook to help new regions with their events.[47]

A history of CityCamp in Raleigh, and its relation to other civic tech developments in the Research Triangle region, was authored by a Code for Raleigh co-captain in September 2017.[48]

Other events and efforts. There are probably many versions of small-scale hackathons associated with university campuses, tech volunteers, or other civic groups. Some relevant past events involving ongoing groups that are pursuing significant civic or government-oriented activities include the following:

- In 2015 an Emergency Management Hackshop, #hack2prepare,[49] was held in Wilmington.
- In 2016 the N.C. Bar Association sponsored a hackathon focused on developing apps to assist low-income individuals and their attorneys.[50]
- High school students in one North Carolina school have been working on open data and visualization projects. Twyla McDermott, a leading civic tech innovator formerly with the City of Charlotte, is supporting a student group at Discovery High School in Newton. In cooperation with Newton city officials, the students are developing "For the Civic Good," an app to collect data with the goal of transforming Newton "from a small city into a smart small city by connecting schools, government, citizens, and businesses with technology-based solutions."[51] Another project uses a special mapping app, Story Maps, to

47. *CityCamp Playbook*, https://docs.google.com/document/d/1AWfTSB1MMbWCdgzuESQF4izY8vKBxRAC_Afch-8uRCQ/edit#heading=h.evfs3d5fs0qb.

48. See Jason Hibbets, "Seven Years of Civic Tech in the Triangle," medium.com (September 27, 2017), https://medium.com/@jhibbets/7-years-of-civic-tech-in-the-triangle-1652b5023b55.

49. Code for Raleigh, http://www.codeforraleigh.com/blog/emergency_management_hackshop-hack2prepare.

50. Amber Nimocks, "Tech Solutions for Access Gap Born at Hackathon," *NC Lawyer* 26:3 (2016): 27.

51. See Keith Wilson, "For the Civic Good," *The Compass, Newton–Conover's Online Newsletter for Educators,* http://nccscurriculum.org/2015/09/18/for-the-civic-good/.

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CityCamp Goals

Each CityCamp has four main goals:

- bring together local government officials, municipal employees, experts, developers, designers, citizens, and journalists to share perspectives and insights about the cities in which they live;
- create and maintain patterns for using the Web to facilitate local government transparency and effective local governance;
- foster communities of practice and advocacy on the role of the Web, mobile communication, online information, and open data in cities; and
- create outcomes that participants will act upon after the event is over.

Source: http://citycamp.govfresh.com/about/.

examine every building in the downtown area as part of Newton's downtown revitalization program.[52]

- NC Data4Good is a civic-oriented movement among data scientists and visualization experts seeking to analyze and convey their findings for the purpose of social progress. Data4Good programs in the United States and beyond[53] include DataKind,[54] the model for NC Data4Good. DataKind has several approaches to sharing knowledge, one of which is to establish partnerships between data science experts and nonprofit organizations. NC Data4Good members work predominantly in the Research Triangle region. In 2015 the organization sponsored an event to benefit the United Way of the Greater Triangle, and in 2016[55] it partnered with social innovators to address childhood hunger and improve access to fresh, nutritious food in Wake, Durham, Orange, and Johnston counties.[56] In early 2017, NC Data4Good completed a survey of member interest and was formulating new projects.[57]

52. See Minutes, Regular Meeting of the Newton City Council, April 19, 2016, http://www.newtonnc.gov/041916_City_Council_minutes.pdf.

53. The Data Science Community, The European Knowledge Hub for Bigdata and Datascience, https://datasciencebe.com/tag/data4good/.

54. See http://www.datakind.org/datacorps.

55. Innovate United, 2016 Childhood Hunger Challenge, http://ncdata4good.github.io/UWchallenge/.

56. Innovate United, 2016 Childhood Hunger Challenge; NC Data4Good SlideShare, www.slideshare.net/IanHenshaw/ncd4-g-todd2016.

57. See https://www.meetup.com/NC-Data4Good/events/236796192/.

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Part 4. Challenges for Local Government Involvement in Civic Tech

From the viewpoint of local government officials, potential and actual barriers to reaping the benefits of civic tech efforts are due to two different factors. First are the limitations inherent in local government officials' duties and work schedules and a related misalignment between government and brigade work culture.[1] Second, project management, technical, and perceptual tripwires may also make collaboration between public officials and civic tech volunteers difficult.

Two analyses outline these challenges. As discussed in Part 2, the author conducted interviews with 31 local government officials who had worked with one of four brigades (three in North Carolina and one in Virginia).[2] Mark Headd's analysis originated from his direct, extensive experience since 2012 as a leader in the civic tech field and from interviews with local government officials.[3] The following six challenges also derive from the author's personal observation of and participation in civic tech groups and events[4] and from Code for America brigade documents and webinars.

Potential Limitations on Government Employees' Time Investment

Brigade meetings and other face-to-face activities occur almost exclusively outside of typical Monday–Friday, 8–5 government work hours. Many events take place on weekends. Several interviewees considered this an impediment to activity involvement for an array of government agency personnel.[5] Many government workers do extend themselves timewise—either on a volunteer basis or with a supervisor's understanding or support. Sometimes these workers are compensated for this type of civic tech outreach.[6] However, either volunteering time for these activities or requiring employees to do so can be difficult. Government employees have competing priorities and limitations: family and personal activities outside of work hours, transportation issues, or the impracticality of an added workload. For example, three interviewees referred specifically to being short-staffed in their units. Because they were already managing a heavier workload, devoting time to brigade communication or projects would be particularly challenging, if not impossible.[7] One interviewee noted, however, that "[i]t is extra time, but I enjoy it. There is some

1. John Stephens, "Study of Local Government Officials' Experience with Civic Technology: Hampton Roads, VA; and Charlotte, Durham, and Raleigh, NC" (working paper, 2015), www.sog.unc.edu/sites/www.sog.unc.edu/files/general_media/Study%20of%20Local%20Government%20Officials%20Experience%20with%20Civic%20Technology.pdf (with thanks to Micah Guindon for research assistance).
2. Stephens, "Study of Local Government Officials' Experience."
3. Mark Headd, *How to Talk to Civic Hackers* (2016), www.civichacking.guide/.
4. See Appendix B for a list of civic tech events and activities in which the author has participated.
5. Stephens, "Study of Local Government Officials' Experience."
6. Stephens, "Study of Local Government Officials' Experience."
7. Stephens, "Study of Local Government Officials' Experience."

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crossover—some of my 'at home work' may be connected to [regular] work needs but [are] sidelights to brigade interests. It adds up to about three hours a month."[8] Thus, the timing and methods of brigade civic tech work may limit the degree of local government involvement, since such events are usually considered beyond the duties and work hours of most employees.

Work Culture Disparities

Seven public employees interviewed by the author described how government worker emphasis on avoiding mistakes and following procedures contrasts with brigade orientation toward fast-paced change, iterative release of software, and handling risk by simply improving versions of apps in rapid succession. Government workers, in contrast, are often oriented toward caution, accountability, and considered buy-in from various stakeholders as principles of action. Brigades, often reflecting contemporary IT start-up and innovation expectations, promote individual innovation, speed, prototyping, and "lean" or "agile" software development.[9] Brigade participants and other civic tech contributors value incomplete or "glitchy" software and do not consider it a failure. In contrast, government employees are often concerned about negative media, upset consumers, and critical oversight by elected officials. Government respondents noted that sometimes civic tech volunteers expressed impatience with these disparities between government workplace culture and the typically more entrepreneurial IT approach.[10]

In a similar vein, the possible mismatch between common government expectations of volunteers and the operation of civic tech was indentified in other research:

> Traditional approaches to external engagement where governments seek to leverage outside expertise may not be a good fit for engaging with volunteers from the world of civic technology. Traditional methods often don't accommodate a more collaborative approach to problem scoping and solution identification which can be essential to working with a community made up of highly-motivated, highly-skilled, and creative members.[11]

Other interviewees pinpointed the risk of negative outcomes of data use—either misinterpretation of data or negative portrayal of the government—as concerns of some of their colleagues, but rarely of the interviewees themselves. "We are always worried people will use the data inappropriately," said one respondent. "For example, crime data: people take it and publish it on the web."[12]

8. Stephens, "Study of Local Government Officials' Experience."

9. Monique Baena-Tan, Andrew Hyder, Christopher Whitaker, and Hannah Young, *Brigade Organizer's Playbook V.1* (Code for America Brigade, 2015), http://brigade.codeforamerica.org/brigade/static/Playbook_PDF_2_2016.pdf, 12; AgileConnection, https://www.agileconnection.com/; David J. Anderson, "Lean Software Development" (Microsoft, Developer Network, November 2011 and November 2012), https://msdn.microsoft.com/en-us/library/hh533841(v=vs.120).aspx.

10. Stephens, "Study of Local Government Officials' Experience"; Jesse Biroscak, "How Civic Tech Volunteers Should Engage Government Staff," *Code for America Blogpost*, June 18, 2017, https://medium.com/code-for-america/https-medium-com-jbiroscak-how-civic-tech-volunteers-should-engage-government-staff-d3a9f8eed3bd.

11. Headd, *How to Talk to Civic Hackers*, 39.

12. Stephens, "Study of Local Government Officials' Experience."

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Expectations and Accountability

The flexibility and innovation of brigade work can lead to incomplete or inaccurate communication with government officials. While expressing appreciation for volunteer energy and interest, several government employee interviewees noted a need to clarify expectations and accountability in working relationships with civic tech participants. As one interviewee reported, "There's no contract and no list of deliverables. I just have to make myself available, hoping this will get done eventually." Similarly, another person offered: "I don't feel like I can ask as many questions as I would if it was staff. I have a feeling that there is not enough time to intrude because of their volunteer time."[13] Likewise, a civic tech advocate who has worked in government and supervised civic tech volunteers observes justified skepticism when many volunteers show interest in projects but do not follow through.[14]

Headd observed a different aspect of the mismatched expectations of civic tech participants and government staff that he terms "the free work problem."[15] Public officials may view civic tech volunteers as direct extensions of government IT staff, which could lead to some conflict when volunteers and government employees work together. To address this issue, he advises that "[e]ngaging [the civic tech] community requires an understanding that members want to be a part of both building the solution and helping identify the problem to be worked on."[16]

Project Selection, Fit, and Follow-Through

The goals of civic tech brigades do not always coalesce well with the characteristics of government open data and its perceived purposes, according to some interviewees. Brigade membership and operations are open and dynamic, and as a result participants often propose and pursue many ideas over a period of time. These activities often do not culminate in completed applications. In addition, reliance on individual initiative can result in little commitment to maintenance of an existing app, which is usually less interesting and exciting than a new venture. Some respondents noted the following:

- "At [a civic IT event] I was on a team to build an app to let folks know about locations of [resources important to low-income residents]. We won that contest, but the project dissolved kind of quickly, so I pitched it to the brigade group. It got onto the board as a priority project. I noticed if there isn't a champion to cheer the project on it gets pushed aside."[17]
- "People don't want to replicate their day jobs so volunteers are biased to the newest thing.[18]

Follow-through is a related weakness in the brigade volunteer culture, in the experience of some interviewees. As one noted, "[One challenge is] finding a problem that will get their full attention and sticking with it until completion. The commitment part is hard. Wanting to follow through even if it gets attention up front [is an issue]."[19] Another aspect of project follow-through,

13. Stephens, "Study of Local Government Officials' Experience."
14. Biroscak, "How Civic Tech Volunteers Should Engage Government Staff."
15. Headd, *How to Talk to Civic Hackers*, 36–37.
16. Headd, *How to Talk to Civic Hackers*, 37.
17. Stephens, "Study of Local Government Officials' Experience."
18. Stephens, "Study of Local Government Officials' Experience."
19. Stephens, "Study of Local Government Officials' Experience."

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and civic tech sustainability in general, is the question of whether governments will adopt the app for continued maintenance. As one of Headd's government interviewees commented, "There's literally no mechanism by which government can 'catch the ball.' The way we procure and build software is out of sync with both user needs and the realities of the modern market."[20] Headd also notes instances of civic tech volunteer-created apps either not being adopted by an agency, or an agency duplicating work with its own version of the online service, both of which soured relations with the local brigades.

One North Carolina local government official noted the desire for clearer communication between civic tech volunteers and their local governments. More pre-project interaction could better assure identification of needs and the applicability of civic tech apps to those needs.[21]

Disparity between App Development Goals and User Needs

Headd distinguishes the motivation of civic tech volunteers from that of other government-connected volunteers. Some people are motivated by more self-beneficial goals, such as clearing up a stream in one's neighborhood. "The motivations for participating in a volunteer technology effort are more nuanced than for other kinds of volunteer activities because the people creating a civic technology solution may not be the people who end up using the solution,"[22] he notes. For example, some groups that need public services may have limited access to web-based programs. These often lower-income and minority populations may have dissimilar backgrounds and interests than those of civic tech volunteers. As Headd observes, "[T]he composition of volunteer technology groups may not reflect the diverse range of stakeholders that benefit from specific public services."[23] He believes governments should inform civic tech volunteers about constituent groups, their needs, and technology barriers. Encouraging the development of new civic tech ideas and individual initiatives while promoting the needs of certain populations may call for diplomacy, however.[24] Approaches for engaging likely "civic users" to ensure the relevance of apps in development are described in Part 6.[25]

Government Barriers to Civic Tech Online Tools

Headd describes a technological barrier to the use of online civic tech tools: access to websites and applications by government users may be restricted due to IT security policies. "[G]overnment employees may face barriers in accessing the tools and platforms that [civic technology] groups use to congregate and communicate," he says. "Some government agencies place strict limits on access to certain websites that can extend to the most common platforms used by civic technologists (Slack, GitHub, Trello, and some social media) to collaborate on projects and share ideas."[26]

20. Headd, *How to Talk to Civic Hackers*, 38.
21. Rachel Kelly, City of Burlington public information officer, email message to author, July 26, 2017.
22. Headd, *How to Talk to Civic Hackers*, 34.
23. Headd, *How to Talk to Civic Hackers*, 37.
24. Headd, *How to Talk to Civic Hackers,* 38.
25. See the discussion of civic user testing (CUT) groups in Part 6.
26. Headd, *How to Talk to Civic Hackers,* 35.

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Part 5. Opportunities, Benefits, and Local Government Civic Tech Advocates

What can North Carolina local government personnel—elected officials and employees—do to engage civic technology opportunities? Qualitative research and the experiences of government employees and civic tech advocates reveal some consistent answers. This part draws on this material to focus on the benefits and opportunities open data and civic tech work can provide. As discussed in Part 3, larger North Carolina cities with active brigades are already pursuing these opportunities.

Civic Tech Alignment with Government Trends and Goals

Civic tech activities complement some of the goals and programs of many North Carolina local governments. Fostering transparency, for example, is a significant focus of local government and is reflected in trends such as police body-worn cameras, social media presence, and open-data portals. Although civic technology draws on open data specifically, it can promote government openness and help build trust and accountability in local jurisdictions through a variety of activities.

Innovation through collaborative environments is another approach governments use to create programs and find solutions. Examples include contests for employees' cost-saving ideas, crowdsourcing to address questions or problems, and pilot efforts to test service delivery methods. Civic technology can be a component of a local government innovation strategy. One thing to keep in mind, however, is that civic tech activists usually work independently of government priorities. Nonetheless, civic tech illustrates an intersection of voluntarism (and the time and talents of nongovernment participants) and the search for solutions benefiting public purposes, through innovation.[1]

Third, civic tech promotes civic engagement and co-production (or exoproduction) among groups that skew toward younger (but more male) and somewhat ethnically diverse citizens.[2] In contrast to traditional public participation formats—citizen advisory boards and public hearings—outreach to citizens through civic tech holds promise to reach people traditionally less likely to volunteer time to help local government.

Finally, civic tech can potentially better serve the public through useful, state-of-the-art software, often suited to mobile devices. As suggested earlier, these apps could be jointly supported by government and a civic tech brigade, maintained solely by a brigade, or built by a brigade and transferred to government responsibility.

1. Durham recently sponsored a 12-week program in which local entrepreneurs were encouraged to use open data and other government resources in various innovative activities that would benefit the city. See https://durhamnc.gov/3165/Innovate-Durham.

2. According to author observation of North Carolina brigades and reports by brigade captains.

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North Carolina Local Government Officials with Civic Tech Experience

North Carolina local government officials may want to contact someone of similar position and responsibilities about civic tech opportunities. Below are some government officials who are helping to build civic technology in their communities.

Elected Officials

- Lori Bush, town council member, Cary
- Esther E. Manheimer, mayor, Asheville

Chief Information Officers or Chief Technology Officers and Key Staff

- Jonathan Feldman, Asheville
- Eric Jackson, Asheville, brigade co-captain
- Jason Marshall, Greensboro, brigade captain
- Chris Mathews, Wake County, data scientist and brigade co-captain
- Jane Nickles, Greensboro

Top Managers, Agency Supervisors, and Staff

- Laura Biediger, City of Durham, neighborhood improvement services
- Bill Scanlon, Wake County Information Systems, Innovation Team
- Reid Serozi, Town of Cary, innovation and analytics manager (former Code for Raleigh co-captain)
- Carter Vickery, Wake County GIS
- Tom Warschauer, Charlotte, assistant director for community engagement, Department of Housing and Neighborhood Services

General Benefits and Opportunities

As discussed in Part 2, anecdotes and more systematic research point to a variety of advantages that civic tech provides to the public sector. They encompass the following categories:

- brigade participants' expertise, youth, innovativeness, enthusiasm, and diversity of views;
- mutual benefits in government worker–community member interactions; and
- valuable results of civic tech work—the apps and who benefits from them.

Limitations on Community Involvement

Although a local government may have the culture and policies to support civic tech activities, it might have difficulty finding community volunteers to do the work. This is especially true if a community has a higher proportion of residents with lower computer technical abilities and educational levels and less financial stability. Lower household incomes and educational attainment logically limit people's ability to donate their time. Despite the availability of open data, citizens may have fewer IT skills to contribute to civic tech projects. Consequently, local governments may prefer to engage for-profit organizations to acquire apps and other application programming interface-type technologies.[3]

3. Thanks to Rachel Kelly, City of Burlington, for guidance on this point.

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Part 6. Potential Direction and Reach of Civic Tech

Since civic tech is an emerging field, there is uncertainty about its exact components and limitations, and it is difficult to predict its development. For instance, with the availability of more open data and the capacity of individuals or small groups to identify apps that people are willing to purchase, the volunteer aspect of civic tech may diminish and small and large businesses may come to predominate the field.[1] Alternatively, following the "information is power" motto, civic tech may come to play a more activist and gadfly role, where data release and analysis are adopted by journalists, advocacy groups, and political parties that have an eye toward being watchdogs of government policies and programs.

The following questions seem most relevant to local governments considering civic tech connections. They were chosen because the value of civic tech depends on the goals, participation, and sustainability of civic tech groups as they navigate relationships with government and the wider community.

- Can civic tech be extended beyond large cities and counties?
- Can brigades attract more non-IT specialists and diversify the membership and interests of participants?
- Can brigades persist as volunteer-managed groups?
- Is civic tech relevant to lower-tech and lower-resourced counties and cities in North Carolina?
- Should county and city governments pilot one or two datasets as open data to gauge the community's interest in civic tech?
- What range of relationships preserve the interests of both government officials and civic tech volunteers?
- How can local government managers decide if an app developed in another locality will fit their needs?

Extension beyond Large Jurisdictions

Approximately 1.7 million people reside in the jurisdictions covered by the six North Carolina "Code for" brigades and could theoretically benefit from civic tech. Since the state's population is about 10 million, the current brigade format for civic tech could affect somewhat less than 20 percent of all North Carolina residents. Civic tech could potentially benefit three other cities that

1. For a perspective on investment opportunities in civic tech, see Stacy Donohue, "Civic Tech Is Ready for Investment," Crunch Network (April 29, 2015), https://techcrunch.com/2015/04/29/civic-tech-is-ready-for-investment/.

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have open-data portals: Chapel Hill[2] (population 60,000), Wake Forest[3] (population 34,500), and Fayetteville[4] (population 208,000).[5] Currently there are no brigade-style civic tech volunteer organizations in these communities that could use the data provided through the portals.[6]

Civic tech apps developed by North Carolina brigades (and other groups nationwide) could potentially benefit other localities through reuse and adaptation to local data. For example, several brigades have a version of Boston's "Adopt a Hydrant" app to help organize community volunteers to monitor and clean a small piece of public infrastructure (clearing snow from a fire hydrant; clearing a storm drain). Code for Durham, for example, is adapting the idea for volunteers to clear storm drains.[7]

While there have been some initial successful instances of app-sharing, the only cross-brigade example in North Carolina is a WordPress information website about resources for former offenders.[8] Code for Asheville and Code for Greensboro are leading an effort to extend this program to all 100 counties with local-level customized information.[9]

What might be the minimum population floor for supporting a brigade? Code for Asheville, in a town of about 87,000 residents, is one of the smaller brigades nationally.[10] One of its leaders gathered similar brigades in small-population communities at the November 2016 Code for America summit.[11] Thus, while large cities host most brigades, at least a few brigades are located in towns with fewer than 100,000 inhabitants. Given the examples of the Asheville and Greensboro brigades creating a resource targeted for adaptation to all North Carolina counties, some medium-sized counties may find open data and civic technology efforts worthwhile. Approximately 13 counties in North Carolina with populations between 140,000 and 220,000 do not currently have brigades.

A related consideration is whether there are enough skilled IT professionals available to work in medium- and smaller-sized communities. This can be gauged, in part, by the accessibility of relevant North Carolina community college courses and the number of recent graduates. First, all 58 community colleges offer coursework related to database design and programming. Second, approximately 1,000 students recently earned an associate's degree or certificate in IT fields

2. Town of Chapel Hill, Chapel Hill Open Data, www.chapelhillopendata.org/page/home1/.

3. Town of Wake Forest, Open Data Portal, https://data2-wakeforestnc.opendata.arcgis.com/.

4. City of Fayetteville, Open Data Portal, http://data.fayettevillenc.gov/.

5. Population statistics are available through the N.C. League of Municipalities. See Cities by Population, www.nclm.org/resource-center/municipalities/Pages/By%20Population.aspx#25000. Also see N.C. Budget and Management, Municipal Population Estimates, www.osbm.nc.gov/demog/municipal-estimates.

6. As of November 2017, there appears to be a nascent brigade in Chapel Hill. See www.codeforchapelhill.com/; David Green, Library Systems Manager, Chapel Hill Public Library, email message to author, October 31, 2017.

7. See https://github.com/codefordurham/adopt-a-drain.

8. See Part 3 for the description of this program as created by Code for Asheville and Code for Greensboro.

9. Buncombe County Reentry Resources Hub, http://www.buncombereentryhub.org/; NC Reentry Resources Hub, www.codeforasheville.org/help-wanted/ and https://github.com/CodeForNC/reentry-resources-hub.

10. Its number of volunteers, however, is often on par with brigades in larger cities.

11. See "Brigades in Small Places," discussion of November 1 session at Code for America Conference, Oakland, CA, https://docs.google.com/document/d/1IgpTUhs51CZG3yC3L3GbVCAVGQ1eOj71pN-2ve01H1Y/edit.

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such as programming, database management, and computer technology integration.[12] Although this information does not definitively prove IT skill availability across the state, it does suggest that—beyond four-year degrees and private-sector IT clusters in metropolitan areas—civic tech expertise could be available in many smaller communities.

Diversification of Brigades

A key challenge for civic tech is how well brigades, and other related activities, reflect the interests and needs of a community. An established finding in local government civic engagement research is that individuals who serve on advisory boards, come to public hearings, and participate in activities other than elections tend to be older, wealthy, and white.[13] The author's observation and reports of several brigade leaders indicate that, while brigades do attract younger residents and community newcomers, whites and longer-term residents still tend to make up the majority of brigade membership. Although civic tech participants have sought broader demographic representation in many ways, including working with community organizations and researching user needs,[14] most brigades have modest success in outreach to all segments of their communities.

Local governments can assist brigades in diversifying membership by identifying community and civic groups that can partner with civic tech experts on public projects. After all, by its very definition civic tech is aimed toward public benefit. Many of its advocates thus want to focus their work on programs that will assist people most in need of community or government support.

To identify community needs and include a broader range of user input, some brigades have implemented civic user testing (CUT) groups. As applications are prototyped, formal processes are employed to determine if likely users find them helpful. Chicago, Oakland, Detroit, Miami, and San Jose brigades have formal CUT systems,[15] and many others have informal approaches. Such testing programs could recruit more participation by different segments of the community earlier in project development.

Brigades and Volunteer Managers

Brigade co-captains and project leads must make a significant time commitment to fulfill their duties. Balancing these commitments with those of work, family, and other activities can be quite challenging. In fact, the National Advisory Council (NAC) for brigades nationwide has identified burnout as a leading concern related to brigade leaders.

12. Chreatha Alston, N.C. Community College System, email message to author, August 31, 2017. From May 15, 2016, to May 14, 2017, there were 1,068 graduates, but there may be some overlap between the total number of associate's degrees (516) and certificates (719) across seven curricula.

13. Nancy Roberts, "Direct Citizen Participation: Challenges and Dilemmas," in *The Age of Direct Citizen Participation* (New York: M. E. Sharpe, 2008).

14. Monique Baena-Tan, Andrew Hyder, Christopher Whitaker, and Hannah Young, *Brigade Organizer's Playbook V.1* (Code for America Brigade, 2015), http://brigade.codeforamerica.org/brigade/static/Playbook_PDF_2_2016.pdf.

15. One example of a CUT effort is from Detroit. See http://www.datadrivendetroit.org/cutgroup/.

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> Both brigade leaders and members are feeling the stress of their heroic efforts and volunteering their time to run brigades. We found that brigades that built out a more robust leadership core with defined responsibilities did not exhibit as much burnout. However, we recognize that many brigades depend just on one or two people to get off the ground and continue to keep the lights on.[16]

In May 2017 the NAC recognized the need for brigade leaders to identify signs of burnout and to develop ways of coping with their leadership burdens. Members also discussed creating a Brigade Leadership Academy to help leaders assess "different levels of using technology, data, and design to build up their communities."[17]

In North Carolina, brigade leadership has changed somewhat, but has remained fairly consistent from initiation to the present. Code for NC maintains a list of brigade projects and sponsors informal, but regular, exchanges among brigade leaders. Code for Charlotte leadership met monthly throughout 2016, attracting three to six attendees and posting its meeting notes.[18]

One solution to the problem of burnout and leadership continuity might be to have one captain in each brigade who is employed in a stable, probably government-based, IT job that allows for regular volunteering time without excessively impinging on job responsibilities. The Asheville, Greensboro, and Raleigh brigades all have captains who are government IT employees.

Relevance of Civic Technology to Low-Tech and Low-Resource Communities

Without open data, civic tech is stymied. Civic tech will work in smaller rural regions only if jurisdictions in these areas have sufficient kinds of data to put into open-data formats and available expertise to translate that data into usable formats. How can these difficulties be addressed?

One resource for local governments has been peer assistance focused on IT needs, especially those related to internal business operations. The North Carolina Local Government Information Systems Association (NCLGISA) and the School of Government Center for Public Technology (CPT) coordinate a system where city and county CIOs in North Carolina can ask for specific help. A "strike team" is assembled to respond to help requests based on the expertise and availability of IT colleagues in the state. This team offers free, short-term assistance. Examples of such cross-jurisdiction assistance include the following:

- assessing overall technology investment strategies within a governmental entity to assist with strategic technology planning within a lifecycle;
- reviewing specifications and proposals for individual technology applications, such as enterprise resource planning systems, financial systems, and so forth;
- assisting with recovery during times of natural, manmade, or technological disasters; and
- assisting with interviewing and hiring key IT personnel.

16. Jason Hibbets, "Fighting Burnout and Doubling Down on Support for Local Leaders" (Code for America, 2017), https://medium.com/code-for-america/fighting-burnout-and-doubling-down-on-support-for-local-leaders-65cb0d380c3d.

17. Hibbets, "Fighting Burnout."

18. See http://codeforcharlotte.org/blog/.

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The example of North Carolina government-to-government IT assistance may provide a model for civic tech endeavors. The existing strike team approach could be utilized by civic tech volunteers in work with their open-data local government counterparts. Potential limitations on travel by civic tech volunteers due to jobs or other obligations could be addressed by remote interaction (via teleconferences or webinars). Local governments could create a modified team to supplement the current strike team system and link to NCLGISA and CPT, but doing so would depend on skill sets and technological compatibility.[19]

Another example of peer assistance is brigade work with a nearby small town or rural county government to explore civic tech possibilities. Similarly, brigades, local governments, or both could select two or three medium-sized cities or counties and provide them concentrated civic tech assistance in order to build a set of promising practices. These could be captured in a draft guide that could then be used by similar localities for more self-help on civic tech, lessening the need for external assistance. One potential pool of such municipalities are the 19 North Carolina towns with populations between 30,000 and 100,000.

Finally, neighboring small- to medium-population jurisdictions could form partnerships, perhaps in combination with councils of government, to increase opportunities for civic tech engagement and activities in a variety of previously underserved communities.

Pilots to Gauge Community Interest in Civic Tech

City and county governments can potentially release one or more datasets as open data to determine if there is community interest in civic tech projects and activities.[20] This process would follow several steps. First, a local government could "open" certain data for internal consumption. Choosing data relevant to one or more government priorities can be the starting point for a pilot on open data. For example, affordable housing is a concern in many jurisdictions. Identifying and sharing information from the federal Department of Housing and Urban Development, local housing authorities, and other sources can be first steps in engaging government employees in planning, neighborhood services, homelessness prevention and support, and related programs.

Second, this open data can be publicized to a range of community groups such as civic and faith-based organizations, neighborhood associations, developers, and county and city advisory board members. These groups can assess the information—with their own IT expertise or with assistance by government IT staff—to see if it offers insights into their goals and programs.

Finally, after these groups engage with one area of government open data, interested residents can provide input on other kinds of data related to community problems and goals. This kind of pilot or phased approach allows for more organized interaction between community volunteers and government data managers. Local governments can be assured that there is interest in or demand for certain kinds of data before its release.[21]

19. Shannon Tufts, CPT Director, email message to author, June 29, 2017.

20. The author's analysis and input from several local government officials support this point. Thanks to Kip Padgett, Wake Forest town manager, and Bill Scanlon, Wake County IT Division, for their contributions to this discussion.

21. Wake Forest piloted an open data release using this phased approach in 2016–2017.

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Productive and Mutually Respectful Government–Civic Tech Relationships

Part 2 discussed many possible forms of cooperative civic tech–government interaction. Part 4 described constraints of and frustrations with these interactions. Local governments who provide open data are particularly interested in the following:

- exhibiting transparency in act and reputation,
- sharing public resources for citizen inspection and reuse, and
- seeking data uses that promote the public good as well as align with local government priorities.

In general, the interests of citizen civic tech practitioners include the following:

- having access to timely, relevant, and up-to-date application programming interface–compliant data;
- providing input on the release and maintenance of local government open data;
- motivating and enabling interested citizens and IT-skilled residents to use the open data; and
- creating applications that address community needs or opportunities.

Civic tech advocates and local government officials actually have these and many other priorities in common. Civic tech activists, for example, would like to expand the reach of civic tech to more communities and increase its influence in areas already served by brigades and civic tech start-up companies. In what ways might this be accomplished?

Extending the expertise of civic tech to various community groups and projects can happen in several ways. Instead of creating a brigade as a separate volunteer group requiring administrative time and resources, civic tech advocates can work within communities and with a variety of interested citizens and organizations. A loose meet-up network may serve as an updated "bulletin board" for people who want to match civic tech skills with community needs. For example, during most of 2016, Code for Asheville suspended its regular hack nights in order to attend meetings of other community and civic groups, learn about their concerns, and explore ways to partner on civic tech projects.

Similarly, sustaining brigade-developed applications benefits civic tech groups, local governments, and the populace in general. In larger jurisdictions local governments could assist with the necessary maintenance—while keeping the code open-source—and create entrepreneurial opportunities for interested start-ups to adapt an app and implement it in other jurisdictions. Combining the ease of open-source apps with potential incentives for new brigade–local government partnerships or entrepreneurial efforts could help sustain brigades while extending local government civic tech solutions to more communities in need.[22]

If the current six North Carolina brigades expanded their focus throughout their respective metropolitan regions, they could reach about 5.5 million people.[23] Even with this expansion, only about half of the state's residents would benefit from brigade endeavors. How can smaller local

22. Thanks to Bill Scanlon for this analysis.

23. U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010, to July 1, 2016, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2016_PEPANNRES&src=pt.

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governments, who often have IT resource and expertise constraints, generate interest and enthusiasm in civic tech activities?

First, smaller towns in a metropolitan region can combine ideas, data, and other resources to attract the interest of civic tech enthusiasts. Some common needs or issues, such as transportation, health care, and education, are regional in nature and not confined within city limits. Wake Forest, for example, has an open-data portal. Would smaller jurisdictions in the vicinity be willing to take a regional approach to such issues and engage outside citizen IT expertise and community interests to identify datasets and generate apps?

A related question is how brigades across North America can efficiently address various local government officials' civic tech needs and enhance their understanding of civic tech issues. The ways in which individual brigades share and coordinate work continue to evolve. In September 2016, the National Advisory Council (NAC) of brigades was formed to work with Code for America to define roles and activities.[24] In October 2017, a gathering of brigade leaders from the United States and Canada continued work on development of individual brigades, cross-brigade cooperation, and strengthening civic tech in general. Among the topics relevant to brigade-government relations were the following:

- rural and small brigades,
- the involvement of non-developers in civic tech projects and the creation of brigade communities that welcome all people, and
- ways to partner with cities to develop new projects.[25]

There are many opportunities to build cooperative relationships between the communities served by the six state brigades and civic tech practitioners and volunteers. These partnerships, in turn, can benefit the local governments and the civic tech organizations who engage in them.

Applicability of Apps to Different Localities

Local government managers may initially find it less risky to use internal (or contract) IT expertise to create an app for local use. How can a local government determine if an app already developed in another jurisdiction can be adapted to meet its needs? The answer to this question often depends on the level of local leaders' IT knowledge. As a first step, those generally aware of e-participation, e-government, or civic tech might, for example, review the kinds of applications highlighted in a 2016 ICMA publication.[26] Mobile apps for helping residents utilize greenways and other low-risk endeavors could serve as initial tests of the interest in and feasibility of using internal IT resources to address citizens' needs.

Second, Code for America includes an informal network of local government leaders—department heads, city and county managers, and others—who can serve as sounding boards for North Carolina city and county managers who seek new uses for their data. Part 5 of this report includes a list of local government officials in the state with civic tech experience. Third, those with more

24. Jill Bjers, https://medium.com/code-for-america/national-advisory-council-join-us-6641049e5094.

25. See "Brigade Congress 2017 Unconference Sessions," https://docs.google.com/spreadsheets/d/17WhiOXQhBuBN1GxDxt9a4ZWTgwSv2j0gOP6r8dBoDDA/edit#gid=615573586.

26. See John Stephens, "Local Government That Clicks: Free Apps + Skilled Civic Tech Volunteers," *Public Management* 98 (4) (2016): 16–19, https://www.sog.unc.edu/about/news/local-government-clicks.

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IT expertise can review the short descriptions and specifications on the Code for America GitHub repository.[27] A list with short titles of applications is an excellent starting point.[28] One application, which helps communities publish and maintain a social services database and allows developers to build effective applications that serve underprivileged residents, provides technical information[29] about demonstration, local installation, and software standards. This application is used in San Mateo County, California.[30]

In May 2017 the NAC reiterated its goal of supporting high-quality, open-source code and addressed topline plans for the development of projects or apps (those deployed, in progress, or minimally viable) and the designation of a specific knowledgeable contact person for each app. This work, in conjuction with that of the Shared Knowledge Base Team, could eventually result in an online catalogue of available apps that local governments could adapt and use in their localities.[31]

27. See https://github.com/codeforamerica.
28. Code for America Projects, https://codeforamerica.github.io/.
29. See https://github.com/codeforamerica/ohana-api.
30. Ohana API Documentation, http://codeforamerica.github.io/ohana-api-docs/#introduction.
31. Hibbets, "Fighting Burnout."

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Conclusion

Civic technology is a new area of practice where public participation engages a particular form of e-government: Open data is made available for non-government use in creating apps for public benefit.

This report defined the term *civic technology* and summarized different understandings of its scope. It has mapped the general civic tech ecosystem, with particular focus on practices and active groups in North Carolina. Finally, it described opportunities and challenges for North Carolina local governments interested in civic tech and provided an initial assessment of the future development of this dynamic and promising field.

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Appendix A. Civic Technology: Selected Resources

The following list of documents, organizations, and news and communication sites have been selected with three criteria in mind:

- They provide resources for local government officials as they explore the field and identify applications or information most relevant to their public involvement and program efficiency interests.
- They promote ongoing communication channels among civic tech advocates, users, and skeptics.
- They provide either a general overview of concepts and activities or more detailed information on implementation programs and strategies.

Websites

Comprehensive View: The Civic Tech Landscape

Civic Tech Field Guide: https://docs.google.com/spreadsheets/d/1FzmvVAKOOFdixCs7oz88cz9g1fFPHDlg0AHgHCwhf4A/edit#gid=963594345

Code for America Resources

- Brigade list: https://www.codeforamerica.org/join-us/volunteer-with-us/list-of-all-brigades
- Blog: https://medium.com/code-for-america
- Catalogue of projects: http://brigade.codeforamerica.org/brigade/projects

Guides and Analyses Resources

Sunlight Foundation

- A Guide to Tactical Data Engagement: https://sunlightfoundation.com/2017/09/19/introducing-a-guide-to-tactical-data-engagement/
- Open Data Policy Guidelines: https://sunlightfoundation.com/opendataguidelines/

mySociety (United Kingdom) Resources

- Measuring the Impacts of Civic Technology: https://www.mysociety.org/our-research/
- Annual International Conference—The Impacts of Civic Technology (TICTeC): http://tictec.mysociety.org/

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Using a local government open-data portal—Video Guides (Edmonton, Alberta, Canada): https://data.edmonton.ca/videos#sorting-datasets

Reporting of News and Events

Medium.com, Civic Technology: https://medium.com/search?q=civic%20technology

Civic Hall, Civicist blog: https://civichall.org/civicist/

The GovLab (offers weekly compilations of tech-related open government innovation): http://www.thegovlab.org/

City of Asheville Information Technology Services Department blog: https://digitalsimplicity.io

Twitter: search using hashtags #civictech, #opendata, and #OpenDataDay2017

Selected Books, Guides, and Articles

Frecks, Lora. "Civic Hacking: Citizens Creating New Digital Government Interfaces." In *Routledge Handbook on Information Technology in Government.* Edited by Yu-Che Chen and Michael J. Ahn. New York: Routledge Press, 2017.

Headd, Mark. *How to Talk to Civic Hackers*. GitBook, 2016, https://www.civichacking.guide/.

Hibbets, Jason. *The Foundation for an Open Source City*. Raleigh, NC: Lulu, 2013. Available at www.theopensourcecity.com.

McCann, Laurenellen. *Experimental Modes of Civic Engagement in Civic Tech.* Edited by Daniel X. O'Neil. Chicago, IL: The Smart Chicago Collaborative, (2015), http://www.smartchicagocollaborative.org/work/special-initiatives/deep-dive/experimental-modes-of-civic-engagement-in-civic-tech/.

Sifry, Micah, and Jessica McKenzie, eds. *A Lever and a Place to Stand: How Civic Tech Can Move the World*. New York: Personal Democracy Media, 2015, https://civichall.org/books/lever/.

Stephens, John. "Local Government That Clicks: Free Apps + Skilled Civic Tech Volunteers." *Public Management* 98 (4) (2016): 16–19, https://www.sog.unc.edu/about/news/local-government-clicks.

Whitaker, Christopher. *The @CivicWhitaker Anthology.* Edited by Daniel O'Neil. Chicago: The Smart Chicago Collaborative, 2015, https://www.slideshare.net/smartchicago/the-civicwhitaker-anthology-53351581.

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Appendix B. Author's Civic Tech Experience: Research and Participation

In addition to the research cited in the text, the author has been involved with the Code for Durham brigade and other civic tech groups and conferences. Additional volunteer and research experience follows.

Observation and Participation

Code for Durham

- Approximately 10 regular hack night meetings since 2015
- National Day of Civic Hacking (Triangle area event), volunteer staff (registration and observation of some parts of the day's events), June 2016
- Civic Spark, August 2017

Code for Cary, hack night observation, about November 2016

Code for Charlotte

- Hack night observations, December 2015, March 2016, November 2016
- Announcement of Citygram and completion of Code for America fellows' work with Code for Charlotte, December 2015
- Periodic phone and email contact with Co-captains Jill Bjers and Jim Van Fleet and City of Charlotte key contact Twyla McDermott, since 2015

Code for Greensboro, hack night observation, December 2016

Code for Hampton Roads, (VA), hack night observation, June 2015

CityCamp NC Conference

- Conference participant, September 2015
- Conference participant and moderator of panel of CIOs from local government and universities, September 2016
- Conference participant, September 2017

Code for America Summit, Oakland, CA, November 2015

Code for America Brigade Congress, Philadelphia, October 13–15, 2017

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National brigade assessment and development of National Advisory Council (NAC) since 2016

- Participant in webinars organized by Code for America, January–October 2016, https://docs.google.com/presentation/d/17fp1uRTWjIQWmlJmGFYMJ85uY2XCOZIZGh_YAMqC0zQ/edit#slide=id.g127da18dd3_0_375
- Participant, NAC webinars, 2017
  - January overview: https://docs.google.com/presentation/d/1Kmq1Tpzn2LDSGNE2zLEMtQQVnI4Z6x65Yq5tYeR8cdA/edit#slide=id.g1bf8700804_0_160
  - Particpant in the Shared Knowledge Base Brigade Action Team since March 2017, https://docs.google.com/document/d/13_RMFzkMPAt2bRyAZgh83t_T0y0zNOC1VRl-z3XVH2vQ/edit

Conference and Communications

"Civic Technology Opportunities and Challenges: North Carolina Local Government Examples and Research Agenda," conference presentation with Eric Jackson, co-captain, Code for Asheville; Carter Vickery, Wake County, GIS; Bill Scanlon, Wake County, Information Systems; Sabrina Willard, UNC–Chapel Hill MPA student, Southeast Conference of Public Administration, Raleigh, NC, October 2016.

Periodic contact with civic tech organizers, researchers, and leaders

- NC Brigade leaders, since 2014
- Mark Leech, City of Albuquerque
- Emily Shaw, mySociety
- Lora Mae Frecks, University of Nebraska Omaha
- Chris Whitaker, Code for America brigade liaison since 2016 and co-leader of Chicago Civic Tech
- Code for America staff: Nicole Neditch, Andrew Hyder, Monique Baena-Tan, Hannah Young

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