

Esri SMART COMMUNITIES

CASE STUDY SERIES



GROWING AN OPEN, SMART CITY ECOSYSTEM

Charlotte, North Carolina

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CITY PROFILE:

Charlotte, North Carolina



Population Size: 809,958 (2014 US Census Estimate)

GIS Program: Hybrid using both a Centralized and Decentralized Approach

Number of Departments Using GIS: 13

Total FTEs: 2

Core Budget: \$316,000

What Is a Smart Community?

Local governments are looking for ways to build safe, healthy, resilient communities for their constituents. Citizens are calling on governments to be more transparent, efficient, collaborative, and productive. A government that meets these challenges is a **Smart Community**. How will you strive to meet these needs?

Technology is the defining factor for a smart community. It is modern technology that enables departments to increase communication, effectiveness, and openness. Technology gives governments and their citizens access to powerful information that they can leverage to make more informed decisions.

Smart Communities promote efficiency. Time no longer has to be wasted in duplication of efforts by different staff. Departments can now share relevant and timely information throughout the organization, helping staff across all departments collaborate and deliver a higher level of service. With a common information system like GIS, staff have access to the tools they need to create, manage, and share authoritative information and applications.

It doesn't matter how big or small your community is, where you are located, or how unique your needs may be, **any** community can be a Smart Community.

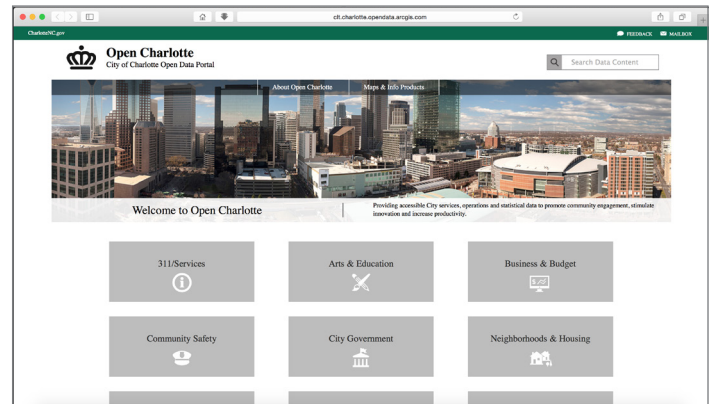
GROWING AN OPEN, SMART CITY ECOSYSTEM

Charlotte, North Carolina

In 2013 Charlotte City Manager Ron Carlee put community engagement on the public agenda to enrich Charlotte's position as a community of choice for living and working. One of the initiatives that grew from the community engagement strategy was the establishment of an open data program that included both the development of an open data policy and the implementation of an open data portal where city data sets could be posted.

While the policy was being formulated, Twyla McDermott, City of Charlotte Corporate Strategic Programs Manager, began implementation of Charlotte's open data portal. McDermott had successfully secured initial funding in the FY2015 budget for the portal by stressing the *transformative* nature of the project. Not only would the open data portal support the city manager's community engagement strategy for government transparency, access to open data would spark civic innovation in direct support the city's [High Growth Entrepreneurial Strategy](#). This intentional *smart resident* approach was recognized as key element in positioning Charlotte as a premier *smart city*.

Open Data Portal. Charlotte's Open Data Portal project was chartered in June 2014 and an internal team, comprised of city staff members from the enterprise GIS team and the business intelligence community, began implementation of a pilot portal based on Esri's ArcGIS Open Data technology. The ArcGIS Open Data software was selected because the software was already licensed for use under the city's enterprise license agreement with Esri. The open data portal site was configured in a very short timeframe with technical assistance by Esri staff. The portal was designed by Charlotte's corporate communications & marketing department as the first site to showcase city's new website redesign. The pilot included departmental GIS data and city staff salary data to demonstrate integration of non-spatial data.



The City of Charlotte Open Data Portal accommodates all data—both spatial and non-spatial datasets.

After a 2-month pilot soft-launch period, the Charlotte Open Data Portal (www.opencharlotte.net) went live in December 2014. The timing coincided with the conclusion of Charlotte's Code for America Fellowship Program which included the launch of Citygram, an application to demonstrate the value of open data to the public. The Citygram application was completed by the Code for Charlotte Brigade, following up on the initial software framework developed under the Code for America Fellowship program.

Citygram consumes data from the open data portal and translates the 'geek speak' into simple human language. Residents subscribe to receive specific notifications by their designated geographic areas(s) of interest. Email or text message notifications to residents are triggered by event dates in the datasets and are delivered to users only when the event is within the location parameter. For example, a resident can subscribe to rezoning notifications within a ½ mile distance from their home address. Since the Charlotte-Mecklenburg Planning Department maintains the rezoning database in ArcGIS format as part of their regular operations the data is always current on the open data portal.

Even though Charlotte's Open Data Portal is based on Esri ArcGIS technology, not all data on the portal is spatial. Non-spatial data published on the portal includes city staff salaries and fiscal budget data. These are datasets frequently requested via public records requests. In this regard, the open data portal improves the city's records management process: city staff members now proactively publish popular datasets on the portal and simply direct requestors to the open data portal for self-service fulfillment. Once at the portal, users can select their preferred format for the data—as a spreadsheet, API or shapefile.

One of the targeted deliverables of the open data portal project is progress towards a federated open data solution for the community. "Residents do not always know the service boundaries of the city or county," says McDermott. "A combined or federated open data portal would greatly simplify the data discovery experience for the resident. We believe a 'one-stop' portal experience is achievable and discussions have already begun with county and library system partners."

Open Data Policy. Under the leadership of City of Charlotte Chief of Staff Carol Jennings, the [Charlotte Open Data Policy](#) was signed by City Manager Ron Carlee on January 1, 2015. The intent of the policy is to achieve a number of objectives for transparency, civic engagement and economic development. The policy outlines responsibilities for city departments to provide access to non-private, non-restricted data. The policy also designates the

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innovation & technology department with responsibilities to enforce the open data policy by maintaining the open data portal, working with the departments on opening operational datasets and assisting the departments on implementation of open data projects.

The policy also addresses privacy and sensitive information concerns with specific reference to the city's restricted data policy. For example the city salary dataset, published on a quarterly basis by the human resources department, is cleansed to ensure that confidentiality of certain positions (e.g., undercover police officers) is preserved. Conformance to existing web and communication standards and policies is also included in the policy.

Governance of the city's portal is provided by an open data advisory team, an inter-departmental group including

The goal of Charlotte's Smart City Cabinet is to foster, support and sustain partnerships that provide the city with a competitive edge in the global community. Open data is core to specific objectives towards this goal:

- 1. Achieve internal efficiencies between departments by providing ready access to city departmental operational data**
- 2. Use data to improve and enhance the city's portfolio of services**
- 3. Support the city's strategic initiative for Community Engagement by providing residents with open, transparent access to public data**
- 4. Support the city's High Growth Entrepreneurship Strategy by enabling civic technologists and other parties to leverage public data for new products, services and markets**
- 5. Integrate and participate with the larger external smart city effort in Charlotte.**

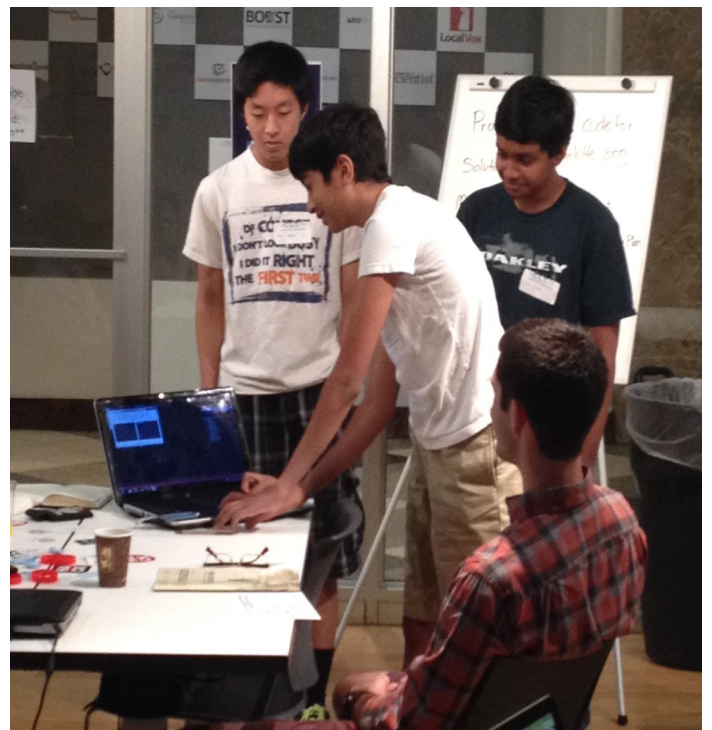


staff representing four perspectives: homeland security, information security, human resources and legal. The team considers the appropriateness of data sets to make available on the portal. As a general rule of the thumb, no data is restricted except that of a private nature or a security concern. Standard processes for preparing the data for use on the portal are part of the larger open data practice intended to establish the institutional knowledge for Charlotte's Open Data program.

Code for Charlotte Brigade: the Civic Tech Movement in Charlotte.

A key stakeholder in Charlotte's open city evolution is the Code for Charlotte Brigade, the local group of 600+ individuals dedicated to open government. McDermott and current Brigade Captain Jim van Fleet formed the brigade in January 2014. Since this time, the city has maintained a close relationship with members to work on solutions that help residents connect with their city government. Representatives from the city's neighborhood & business services department as well as the innovation & technology department serve on the brigade's leadership team. "We know the brigade's priorities for projects and data" explained McDermott. "We actively work within the city departments and with other government agencies to promote dialogue for project solutions and to open more data."

The brigade continues to work on a myriad of projects in Charlotte. In addition to Citygram, the brigade is working on Charlotte's Open Budget application that will enable the visualization of where public dollars are budgeted by department and other finer grained divisions. A future phase



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will show how, in near real-time, city expenditures line up to the budget. Other projects under the brigade portfolio include Adopt-A-Thing and a local wiki.

Charlotte: Smart + Connected. Implementation of Charlotte's Open Data Portal has spurred innovation at the city. In early 2015, Charlotte's Smart City program manifested with awareness of the increase in demand for digital services, the increase in devices connected to the network and the need to work smarter. The city chartered the Smart City Cabinet, sponsored by the city manager's office, to achieve the benefits of using technology and data to deliver services and advance engagement with residents. These benefits are envisioned to range from external economic development opportunities to internal process efficiency to position Charlotte in the global competitive market and improve service delivery at a time of constrained public funds. To achieve the benefits of being a connected, tech-savvy community, Charlotte acknowledges the needs to be proactive, intentional, inclusive and transparent.

Esri has partnered with the city on several demonstration projects that help advance Charlotte towards its goal and to help communicate the story. A Smart City 3D model was developed to serve as the canvas for display of real-time operational data and for analytics overlay. Use cases for the 3D model are in development with several city departments. Additionally, Esri is assisting the city with the Smart City Story map that catalogues existing smart city-connected investments like BigBelly trash receptacles and road condition sensors.

In addition to the Smart City program, the city manager's office is sponsoring the new i2 Lab, where innovation, ideas and city employees unite. The i2 (innovation + innovation) lab has held several events designed to cultivate good ideas—process, technical or mechanical—from existing staff members. Charlotte i2 labs are structured brainstorms designed to let employees practice creativity and generate ideas that may help solve the city's most perplexing problems. This approach seeks to harness the collective brainpower of the city's 7,500 person workforce and sends the message that innovation and creativity are encouraged.

Charlotte's open data portal, its commitment to community engagement, its entrepreneurial spirit and its emergent culture of innovation have caught the attention of Bloomberg Philanthropies with Charlotte now participating in the foundation's What Works Cities program. The What Works Cities program recognizes a municipality's commitment to using data and evidence for innovation. In Charlotte, the resources will focus on maturing the organization towards data-driven decisions.

"We have found already, and anticipate many more analytical products, will grow out of having the open data portal available. The University of North Carolina—Charlotte and the State of North Carolina have both taken advantage of city data. The portal has been an important resource for several hackathons that require data to create applications or for analysis. The availability of data from the portal enables new holistic analytic work to be done. As a result, the city sees the need for a data scientist role in the future. Our approach will be to evolve our GIS analysts into business intelligence architects to meet this need," McDermott said.

The Expanding Relevance of GIS. GIS data has been at the heart of the city's open data movement and the new entrepreneurial approach the city has taken to data. Many local governments are stove-piped organizations with little cross-departmental collaboration. The City of Charlotte has implemented a hybrid enterprise GIS governance model that represents a centralized and decentralized approach. Charlotte maintains a central GIS enterprise team and almost all city departments employ a GIS professional on their team. There are only two departments—finance and human resources—that do not use GIS capabilities, but the GIS will be interfaced with the finance system later this year and the gap will narrow.

The prevalence of GIS and the highly skilled GIS professional staff resources throughout the whole city organization helps tighten allegiance between departments and with external partners. Any department can tap into the business intelligence work being done by other departments. One emergent initiative is to have a resident-facing GIS that provides easy access for users to create their own maps from the rich array of data in the open data portal. Smart residents plus open data plus location savvy add spark to the smart city ecosystem. McDermott notes, "Data is and always has been a key priority for Charlotte's GIS staff. Our GIS professionals know the value of data and have focused on quality and preparation of metadata that thoroughly documents the data. Having GIS professionals involved in the open data portal and the Smart City program was a good decision. It's in the right hands."

Methodology

The author conducted an individual interview with the city of Charlotte's GIS Manager, Twyla McDermott. A set of interview questions guided the discussion. The author used a conversational interviewing technique to more fully explore the participant's experiences and perceptions of the GIS program. The interview was tape recorded and reviewed in compiling notes for this report. The author sought written permission prior to attributing a quote to an individual. The author wish to thank the city of Charlotte and Ms. McDermott for taking the time to discuss Charlotte's GIS program. Her contribution to the study was invaluable.

Study Participant

Twyla McDermott, Corporate IT Program Manager, City of Charlotte, North Carolina

About Esri

Esri inspires and enables people to positively impact the future through a deeper, geographic understanding of the changing world around them. Our technology enables organizations to create responsible and sustainable solutions to problems at local and global scales.

At Esri, we believe that geography is at the heart of a more resilient and sustainable future. Governments, industry leaders, academics, and nongovernmental organizations (NGOs) trust us to connect them with the analytic knowledge they need to make these critical decisions that shape the planet.

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About ICMA

ICMA, the International City/County Management Association, advances professional local government worldwide. The organization's mission is to create excellence in local governance by developing and fostering professional management to build better communities.

ICMA identifies leading practices to address the needs of local governments and professionals serving communities globally. We provide services, research, publications, data and information, peer and results-oriented assistance, and training and professional development to thousands of city, town, and county leaders and other individuals and organizations throughout the world. The management decisions made by ICMA's members affect millions of people living in thousands of communities, ranging in size from small towns to large metropolitan areas.

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