



CONNECT FOR SUCCESS

How connected communities unite data, systems and people



In Fulton County, Ga., which includes the city of Atlanta, officials are developing a picture of crime patterns that's clearer than ever before. Authorities can now look at crime rates across various neighborhoods, see where individual crimes were committed, note when someone is apprehended and determine where the offender resides. To connect these dots, county officials integrated the flow of information between law enforcement, judicial and property tax systems.

"We see the areas where criminal activity is most active thanks to our work in creating a connected community," says Glenn Melendez, deputy CIO for the county. "With that information, we can decide how best to assign law enforcement resources and be more preemptive in crime fighting."

Fulton County's connected community strategy represents an enlightened approach to digital modernization. The county opened communications pipelines that provide a common gateway for moving information among separate agencies, while also integrating business processes across departments and within counties. This makes it possible to pull together disparate data and disconnected workgroups to reveal new insights and drive better performance.

That's a big step forward compared to many state and local modernization efforts that may look new on the surface, but continue to operate within data bubbles behind the scenes that make it impossible to share information except through manual, often paper-based processes. As a result, many projects fail to deliver anticipated benefits.

By breaking from this mold, Fulton County not only fights crime more effectively, it supports an array of government activities and several agencies across an integrated platform. And Fulton County isn't the only jurisdiction moving in this direction.

"I think of connected communities as the transformative connections that can occur among data, systems and people, and ultimately lead to better citizen services and empirical, data-driven decision-making by all," says Lea Deesing, chief innovation officer for the city of Riverside, Calif., which has launched its own connected communities initiative.

Growing desire among public officials to integrate data, systems and processes is reflected in research from the Center for Digital Government (CDG). Better data sharing among agencies and jurisdictions was a top priority for 51 percent of state and local IT leaders responding to a 2016 CDG data survey, and almost 40 percent said they want to use information more effectively.

Another 2016 CDG survey found that lack of integration is a critical and widespread drawback of older technology. More than 60 percent of state and local IT leaders responding to that survey said more than a quarter of their key systems need upgrading, and 56 percent said the inability of those legacy systems to integrate with other technologies was a "serious concern."

Fortunately, foundational technologies to facilitate connected communities are now coming to market, but they represent just one piece of a larger puzzle. State and local officials need a comprehensive plan to successfully implement and connect all the essential components. For a number of reasons, now's the time to start the connected community journey. This paper lays out a step-by-step framework to understand the benefits and then put the technology, people and policies in place to make connected communities a reality.

The Big Potential of Connected Communities

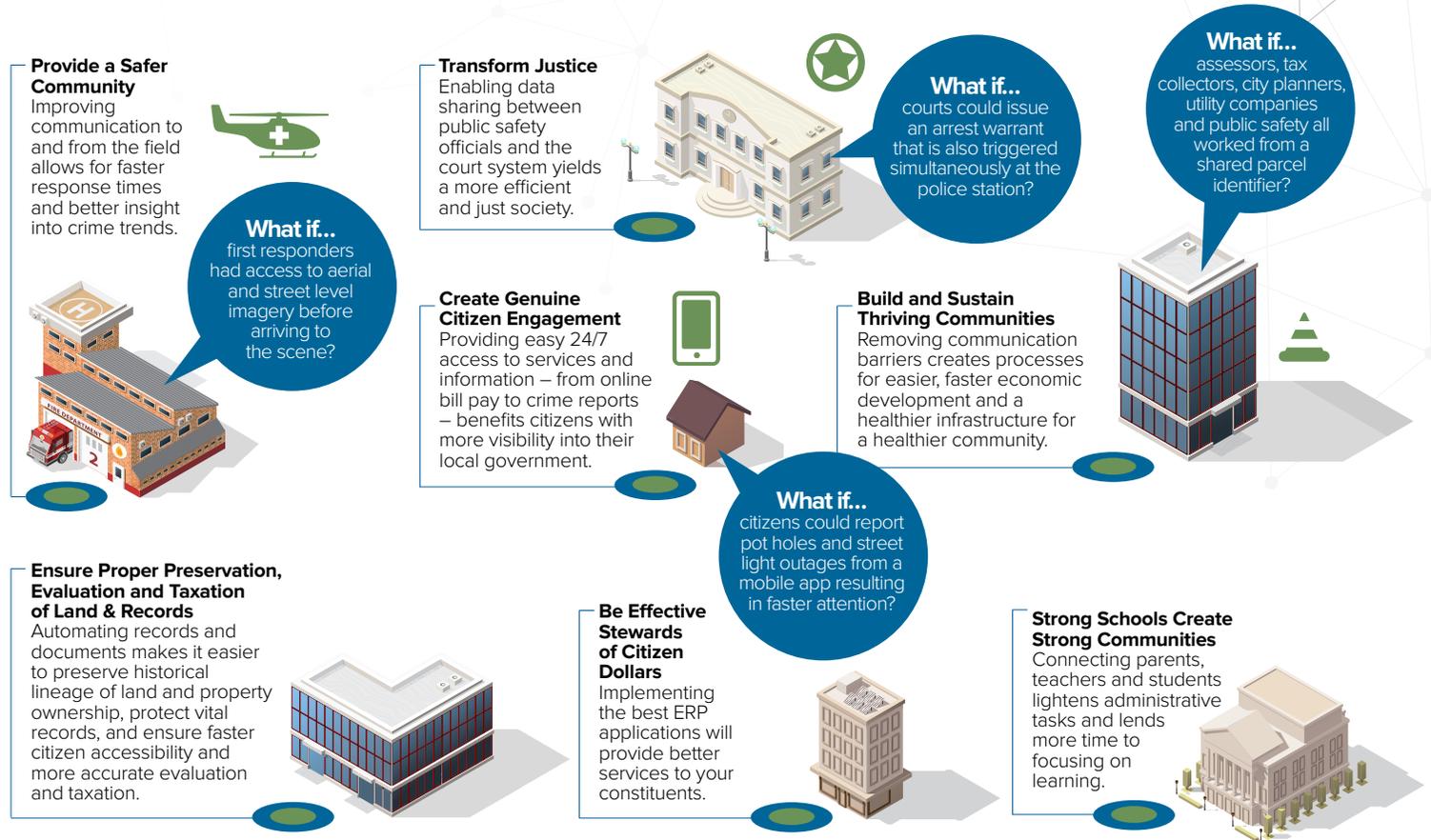
The connected communities vision paints a world where local government agencies share information and integrate workflows across departmental, political and geographical boundaries. For instance, Riverside is building on the connected communities idea to help constituents and internal



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Turning the “What Ifs” into What Is: A Connected Community Can Be a Reality



managers make better informed decisions. The city integrates spatial data from various sources to help entrepreneurs identify where to locate new businesses based on their target markets. Meanwhile, social services officials analyze relevant data to identify areas where homeless individuals are most likely to congregate so the city can proactively provide assistance.

Similarly, the state of Georgia is implementing a central repository that gathers data from counties across the state and puts it into a common format, so local officials can access and analyze information they need.

“If there’s a question with a particular judicial case related to any participating county, someone can go to that central repository rather than having to make numerous phone calls to track down an answer,” Melendez says.

As these examples show, there are many rewards that can result when agencies share data and information easily and integrate processes among departments and jurisdictions.

Seamless communication of important data improves citizen services and strengthens public safety. Connected communities strategies also spur citizen engagement by making more types of data publicly available, giving people new insight into their neighborhoods and school districts. Emerging technology platforms offer electronic portals that gather information from disparate departments and let citizens decide what information interests them most.

With the right technology and interoperability standards in place, integrated processes also could bring together county property tax records and city permitting systems. Hence, when a developer wants to develop a property for new businesses, information flows between city planners and county property records; city and county permitting and licensing departments; county appraisal and tax systems; and through the enterprise resource planning and asset maintenance departments — which improves the overall experience and makes it easier for city and county officials to do their jobs.



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Disconnection Still Reigns

Unfortunately, achieving these levels of integration is difficult today. Many government workflows aren't integrated and can't be until electronic processes replace paper-based legacy systems. Even processes that have been automated may thwart connected community efforts because they don't have technology in place for reliable information flows.

“Applications and the data they contain traditionally have been siloed, and that leads to process isolation in government agencies,” says Bruce Graham, chief strategy officer at Tyler Technologies, a software vendor for the public sector. “Systems can't talk to one another or share data, so the workflows within organizations aren't as optimized as they could be.”

But not all challenges associated with cross-jurisdictional process flows are technical. “We need strong involvement from the surrounding communities to implement this strategy,” says Jennifer Hartley, deputy auditor for special operations for Clermont County, Ohio. “The executives of these communities have to be willing to support this change and manage the change within their own communities.”

Internal policies, and perhaps even new legislation, also must be crafted for connected communities to have cross-jurisdictional protection of private information and controls for financial transactions, according to Chris Mehlman, Clermont County's deputy auditor for financial operations.

First Steps for Building Connected Communities

Establishing connected communities is a long-term endeavor that fosters connections that grow over time. Government IT managers can start the journey by focusing on four critical steps.

1 Build an evidence-based business case to modernize technology and convince senior executives and legislators to fund new investments.

Pioneers of connected communities are doing this with the help of small projects chosen for a single department or workgroup. These become test cases to document results and prove the concept.

Important metrics, such as time saved by streamlining business processes, cost reductions from lower workforce requirements and the elimination of paper, and heightened citizen and staff satisfaction will demonstrate the value of moving the connected-community strategy forward. In addition, these projects can flag any unanticipated implementation problems and provide lessons that can be applied to larger rollouts.

Choose pilot projects that can deliver clear benefits in a relatively short time, but also provide a foundation for a series of future projects that continue to add value.

Early successes may not only overcome the skepticism of senior leaders, they may unleash a flow of ideas from people wanting to accelerate the pace of change.

“I have a notebook of recommendations from my users — things they want to change so processes can be more integrated and streamlined,” Melendez says. “Over the last 18 months, we've implemented more than 485 changes related to the integration of processes and workflows, and I still have many more requests.”

2 Create a solid technology foundation.

An important step when preparing for or launching a connected community strategy is to update government applications with modern workflows in mind. One important way to do this is to standardize on a single, integrated platform rather than trying to connect many standalone applications.

Fulton County is taking the integrated platform approach. “About three years ago, we consolidated our judicial systems into a single integrated platform supporting the county jail, prosecution, law enforcement and judicial case management operations,” says Melendez. “That has helped immensely with information sharing because being on the same platform means the data shares a common format, which makes it possible to establish connections across different areas.”

Ohio’s Clermont County is starting down this path by implementing a single vendor’s suite of government applications, including enterprise resource planning; tax and appraisals; revenue collection; financial reporting; information collection and archiving; and GIS-based planning, permitting and licensing. This helps create electronic workflows and paperless processes that bring efficiencies to purchasing, invoicing, timesheets, payroll processing and benefits processing.

“Many of these products connect to each other currently, and we would like to expand these connections so that we can streamline processes,” Hartley says.

Besides taking a new look at applications, government IT organizations should consider components within the underlying IT infrastructure. A service-oriented architecture (SOA), which many organizations have migrated to in recent years, uses standard industry interfaces that enable organizations to combine services into new processes.

“This allows us to create a layer of abstraction between the data and back-end system processes, facilitating cleaner handshaking between systems,” Deesing says. “It also means that if one system is upgraded, we only have to adjust the layer of abstraction on one side of the equation — preventing a complete rewrite of interfaces for two or more systems.”

A key element of SOA frameworks is an enterprise service bus (ESB), which provides a digital communications pipeline

that enables applications to “subscribe” to events. So, when a conviction is recorded in a judicial system, for example, it automatically triggers an update via the virtual ESB in a case management application. With this communications channel in place, information can flow across network boundaries and process workflows.

SOA and components like an ESB are examples of the underlying technology for integrated workflows that counties and cities can use with their internal systems. But data sharing becomes a bigger challenge across governmental boundaries. Fulton County is looking for ways to optimize how nearly 50 individual law enforcement agencies in the county transmit data.

“Each agency has a unique way of submitting traffic offenses, misdemeanors and other citation information to us,” Melendez says. “Some bring it in a box; others send it as email; others fax it to us. We are taking steps now to digitize the input of data into our case management system.”

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That’s still a work in progress, and leveraging the cloud offers a possible solution. In some areas, particularly applications that manage public information, cloud-based data indexes can let agencies and municipalities voluntarily share valuable information with each other while still maintaining control and security. For example, Tyler Technologies has a data exchange function that provides a national index of criminal justice records that organizations voluntarily share for searching, linking and analyzing data across jurisdictions. Information is shared under a strict set of guidelines and authorizations that the sharing agency specifies.

“This enables us to look at criminal records not just in Fulton County, but from any other county in the country that uses the exchange, while maintaining control,” Melendez says. “If we pick somebody up here in Fulton County, we can look at their judicial records from across the nation.”

Similarly, some court case management systems can publish data about individuals and outstanding warrants in the exchange so adjoining courts or those in the same region can query the data.

3 Develop a practical plan to transition from existing systems and processes to modern digital capabilities.

While open standards are available for ESBs and other components of SOA platforms, additional standards must be developed for full application and workflow interoperability when organizations use technology from multiple vendors. During this maturation period, how should organizations get the data-sharing capabilities they need, while putting themselves in a position to adopt open or de facto standards once they're widely embraced throughout government?

Injecting new practices into the procurement process is one important answer. Look beyond acquiring systems for an individual department or business process. Instead, take time to see how new acquisitions could fit into a larger picture that includes shared data and workflows.

Government officials say it's important to include developers and system administrators in the procurement process. "They will know the types of data conversion and interconnectivity questions to ask," Deesing says. "The answers to such questions can make or break your connected community implementation budget."

Riverside includes connected community requirements with its RFPs. "When going to bid for a new system, we ask vendors if they support SOA; can they provide documentation of their available web services; and do they have open data publishing features built in to their system?" Deesing says.

"We also see the Internet of Things having a big impact on the city in the future, so we're currently evaluating our standards — how do we collect data from all of these devices, secure it, make it useful and make accurate decisions based on this information?" she says.

Other questions explore the availability of industry standard application programming interfaces (APIs) and support for industry standard GIS data and systems, according to Deesing. Among the areas her department is considering is how to write interfaces built on open standards that allow other applications, departments, outside agencies and even the public to use them.

"We want to open up our data so the public can write applications that solve government problems that we may not even know we have yet," she says.

4 Proactively manage change.

Government officials who are putting connected community strategies in place readily acknowledge that managing the expectations of public-sector personnel directly impacts the success of these projects.

"The biggest challenge with connected communities is change management," Mehlman says.

There are two reasons for this. First, cross-departmental and jurisdictional workflows are difficult concepts for people to wrap their heads around. Government staffs typically focus on business processes within their own jurisdictions.

"Many people in government feel like they own their department's data," Graham says. "The idea of sharing information and business processes across organizations isn't a prevalent way of thinking right now."

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Second, a connected community dramatically changes government processes, with many of them transforming from paper-based to electronic workflows. That drives fundamental change in how people perform their jobs, and may stoke fears that automation will trigger staff reductions.

How are early proponents of connected community projects handling these issues? "We addressed change management issues by providing training and having staff available to help those departments be comfortable with the system and the changes in processes," Hartley says.

Besides having senior management regularly communicate the vision of connected communities, project managers also should seek out influential staff members who embrace the



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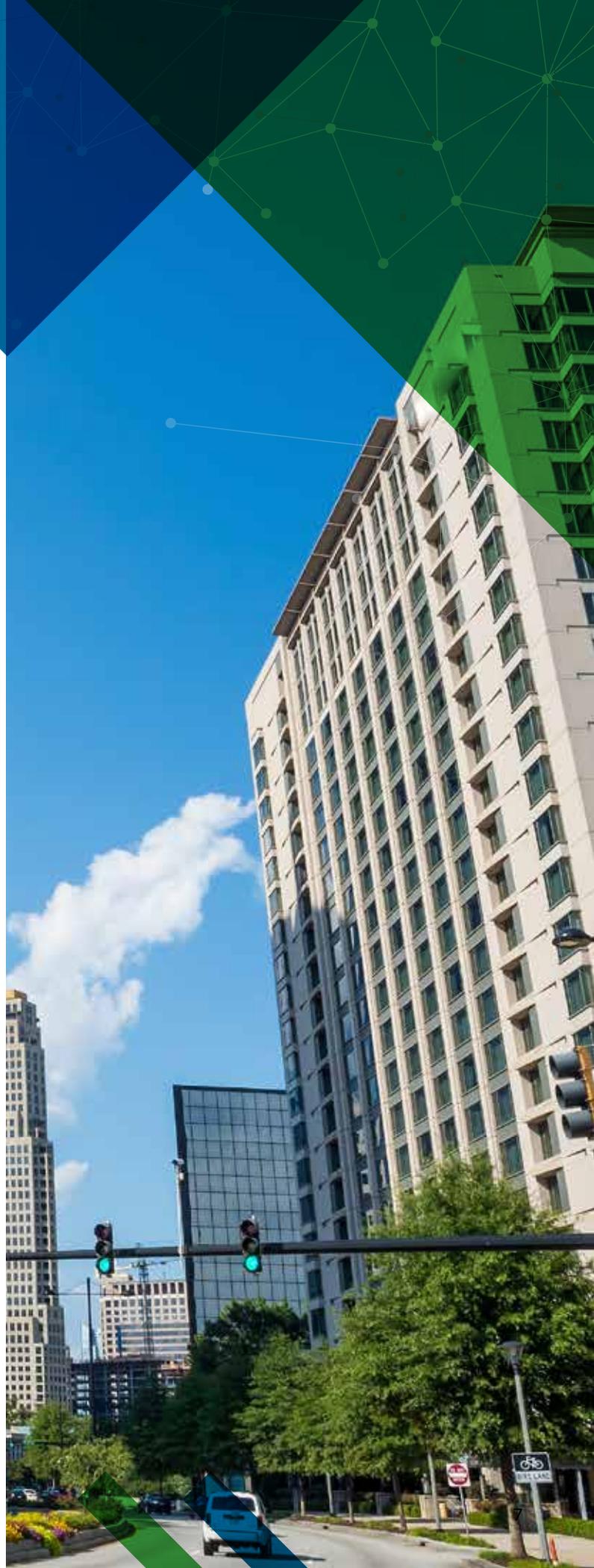
concept and can promote it to peers, Melendez says. But change management has implications beyond departments and municipalities. “We are in no position as a county agency to tell the state of Georgia or the Georgia State Police what platform they should use to issue citations,” Melendez says. “So, we have to work with other agencies to help build a common understanding about how we all can interact with each other.”

He regularly meets with agencies throughout the state to identify interoperability opportunities and challenges, and to discuss next steps. “It takes a lot of legwork and talking to the right people to achieve data sharing and integrated processes,” Melendez says. “But by cultivating mutual understanding, we can get close to bringing data together that is not on the same platform but which is valuable to all of us.”

Connect to the Future

As connected community projects in Georgia, California, Ohio and elsewhere show, forward-looking governments are reengineering internal systems to achieve the full benefits of modernization. Fortunately, this reengineering process doesn’t have to be long and expensive, thanks to a host of new options like integrated, end-to-end platforms designed for state and local government, as well as reliable SOA technology that facilitates data sharing. IT managers expect integrations will be even easier in the future as open industry standards become widely available, enabling governments to architect backend systems based on common protocols.

With the necessary technology components steadily maturing, the bigger challenge for officials is navigating the cultural and legislative issues that can stall the free flow of information among agencies. However, with clear change management policies based on emerging best practices, and well-chosen pilot projects that demonstrate concrete benefits, new connected communities initiatives can improve government services, heighten citizen and employee satisfaction, and deliver on mission goals with the collective power of city and county collaboration. In short, when government connects with like-minded peers, everyone succeeds.





About Tyler Technologies, Inc.

Tyler Technologies (NYSE: TYL) is a leading provider of end-to-end information management solutions and services for local governments. Tyler partners with clients to empower the public sector — cities, counties, schools and other government entities — to become more efficient, more accessible and more responsive to the needs of their constituents. Tyler's client base includes more than 15,000 local government offices in all 50 states, Canada, the Caribbean, the United Kingdom and other international locations. In 2017, Forbes ranked Tyler on its "Most Innovative Growth Companies" list, and it has named Tyler one of "America's Best Small Companies" eight times. The company has been included six times on the Barron's 400 Index, a measure of the most promising companies in America. More information about Tyler Technologies, headquartered in Plano, Texas, can be found at tylertech.com.

