

SMART LOUISVILLE 0.1

This was our working draft of the Smart Louisville playbook. We used some of this work and created new content for our official Smart Louisville Playbook release in February 2020.

A Day in the Life, Smart Louisville 2040...

September 12, 2040

John wakes up and gets ready to head out for work. As he gets out of bed, his bathroom lights sense his movement and immediately turn on, the temperature is adjusted, and coffee starts brewing in the kitchen. While drinking his coffee, he tells his digital assistant to schedule a meeting with his boss for early afternoon and then has it read the morning news to him as he eats breakfast with his wife and children.

After breakfast, John goes outside to get the drone-delivered mail. When he's ready to leave, he requests an autonomous electric vehicle from the local mobility hub, which will arrive at his driveway within 2 minutes. With a yearly membership, John's family can access this hub which provides a variety of transportation options, from bicycles to electric scooters, and is also a pick up and drop off zone for a variety of mass transit options. Before getting into the car with the other three passengers heading downtown, he looks at the dashboard on the smart street light by his driveway and checks today's air quality and traffic status, both of which are great. As he leaves his house, he crosses paths with an autonomous garbage and recycling truck making its rounds for the day.

On the way to work, John is able to efficiently use his time--finishing last minute touches on the presentation he has to give and hologram-chatting with his business partner in Europe. When the car drops him off at the mobility hub near his office, he does not need to worry about finding parking and the car takes off to pick up its next set of passengers. Running five minutes late, John then hops on an electric scooter to take him the last two blocks of his commute. Walking up to the door of his office building, the security software scans his face as he approaches the front door and it unlocks for him.

After work, John and his co-workers go to the local bar for happy hour to celebrate the success of his presentation. Since street parking was removed a few years ago, this bar was able to create a nice outdoor seating area and became a go-to spot for locals. After a couple drinks and some food, John leaves and heads to the closest pick-up & drop-off zone to meet his car. As he walks there, the LED street lights around him light up immediately, completely illuminating the entire street. John's car arrives promptly, scans his face to verify it's him, and takes him back to his family safely. Another busy, but productive day in the books.

About this document

In 2040, Louisville Metro, as a community and government organization, will be transformed by technology. We will have fiber optic cable to the home in every neighborhood; sensors that will collect information on everything from odors to noise pollution; autonomous vehicles on our streets; and on and on. Louisville will offer a higher quality of life and greater economic opportunities for its residents. Technology will drive change in our physical, economic, and digital environment.

As a community, we should have a say in how technology fits into our lives, and not the other way around. Technology should help us reach our goals of economic growth, compassion, equity, and efficiency. It should not confuse or hinder our progress as a community.

The Smart Louisville Playbook aims to enhance the abilities of public service employees and residents by empowering them to solve public problems through the use of existing and emerging technologies. It does this by starting with understanding the challenges our departments and community face and then incorporating technologies that can help solve the problems rather than thinking that technology alone will fix them. This problem-driven approach looks at the full-spectrum of technologies needed to enhance a service from platforms and infrastructure needed to support technologies, to the technologies themselves, and the data-management necessary to empower government employees and residents to make data-driven decisions for our community.

This plan will be a living strategy document, updated annually, that helps Louisville Metro Government shape and guide the technological transformation of both our government and community as we build our Smart City. This will allow our government and community to adapt to and plan for changes in technology and emerging trends.

Strategic Plan Alignment

Louisville Metro is using the Smart Louisville Playbook to pursue Mayor Fischer's Strategic Plan for Louisville Metro. All present and future Smart City initiatives will bring the city closer to fulfilling his dream of creating a world-class city that provides all its residents with safe and vibrant neighborhoods, great jobs, a strong system of education and innovation, and a high quality of life. Our Smart City will not just impact the technology goals for the city, but will support all 8 of our strategic themes and 34 of our strategic goals.

In order to succeed in our Smart City endeavours, Louisville Metro must first make the necessary preparations to expand the region's infrastructure and technology network, the backbones of all Smart City projects. This will lead to more extensive data-collection, ultimately bringing about more data-driven decisions and enhanced municipal services. Throughout this process, we will put an emphasis on installing solutions and infrastructure throughout Louisville to ensure all neighborhoods are benefitting from the digital transformation. Furthermore, we will collaborate with our community and private partners in order to deploy the best solutions. (Goal 6.1)

We must continue to focus on increasing government transparency in order to improve resident interaction and engagement (Goal 6.2). We will do this by regularly expanding our digital offerings and presence. Online government interactions improve the accuracy of internal operations and also provide more convenient services for residents and businesses. Furthermore, it will be easier for residents to give feedback on and get involved in Smart City projects. We will also increase the transparency, availability, and usability of information and data. Expanding our open data offerings will facilitate further research, entrepreneurship, and innovation throughout Louisville.

Smart cities require smart people. Louisville Metro needs to cultivate a technology and data-minded workforce that can fully undertake new Smart City initiatives. In addition to attracting new talent, we need to leverage the strengths and capabilities of our current employees and equip them with the required tools. We will deploy world-class skills to targeted employee segments and all prioritized working teams in the city. In addition to developing a smart workforce, we will also modernize the technology and applications used throughout Metro to increase the efficiency of our internal operations (Goals 6.3 and 6.4).

Smart technologies can be leveraged to maximize productivity and cut costs through reducing inefficiencies in the realms of security, administrative procedures, city maintenance, and more. They will help us be smarter in how we use our existing capacity and resources. Beyond cutting costs, the city can also tap into new sources of revenue provided by Smart City projects and use creative financing and revenue models to achieve scalability. (Goal 6.7)

Principles

These four fundamental principles will guide Louisville Metro Government through the Smart City transformation process to ensure all current and new initiatives foster opportunity, inclusion, engagement, and innovation.

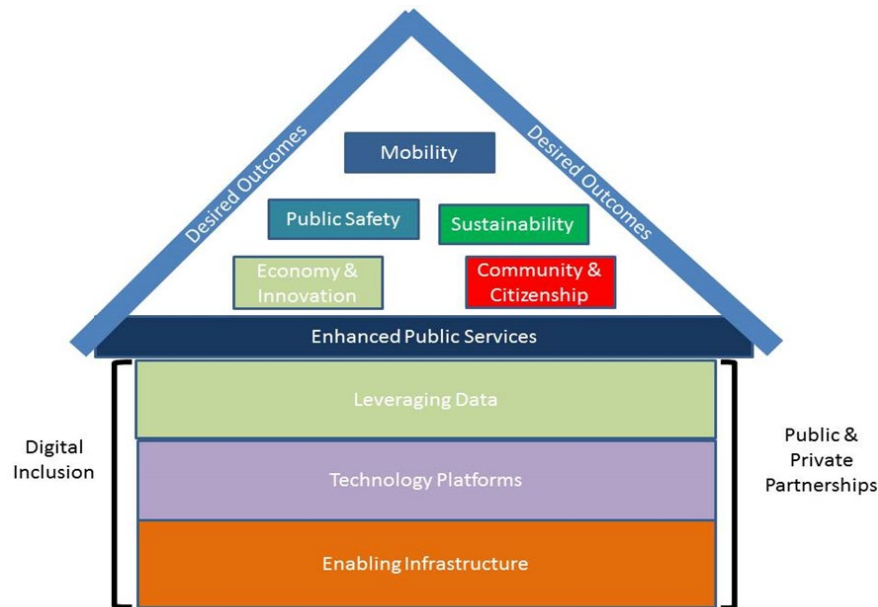
- Open Government
 - Our initiatives will increase the transparency about government operations and empower residents to get more involved with the governance of our community. We will bring government to the resident through solutions that provide the information and services that they need, when they need it, through platforms of their choice.

- Digital Inclusion
 - As Louisville transforms into a Smart City, it is important that no community or resident is left behind. Everybody should be able to participate in the digital economy. We will deploy solutions and infrastructure that will support equitable access to internet and technology throughout Louisville to benefit all of our residents.

- Privacy & Security
 - With the increasing deployment of cameras and sensors, Metro acknowledges the privacy concerns of its residents. We are committed to transparency and protecting residents. We will ensure that our residents know when and where they are being tracked and how their data will be used.
 - Increasing Information and Communication Technologies (ICT) complexity implies increasing vulnerability, both to malicious attacks and unintentional incidents. By having robust cyber security capabilities and policies in place, the safety of our residents can be ensured.

- Co-creation
 - Louisville will continue to be a center of innovation. Metro Government understands that we cannot solve all of the city's problems on its own. Some problems are already being solved by the private sector and community. We will encourage collaboration between government, private, and community partners on innovation projects that solve civic problems.

Smart Louisville Platform



Overview

Turning Louisville into a Smart City requires government to enhance the capabilities of employees by empowering them with the technology and data tools they need to perform at the highest level possible. To accomplish this goal requires a modern government technology and data platform for them to use in order to make Louisville a better place to live for all of our residents. In the short-term, our Smart City Platform will power better services for our residents and improve our operational efficiency. In the long-term, we believe this platform will be the foundation for all our government service delivery to residents. Like sewer and water infrastructure improvements a hundred years ago, governments are now developing smart city platforms which will be essential in providing a better life for residents and an edge in the global economy.

The Smart City requires three ingredients: Infrastructure, Technology, and Data. Infrastructure provides the communications and hardware architecture for technology to move and process data. Technology comprises the devices and applications that collect data, enable resident interaction, or other like services. And, Data drives the improved decision-making processes for both government employees and residents. This playbook lays out the strategy for building the Smart City Platform necessary to drive our community forward in both the near- and long-term. And with this Platform, current and future Smart City projects will have the foundation needed to advance Louisville's goals within Mobility, Health & Sustainability, Public Safety, Economy & Innovation, and Community & Citizenship.

Guided by our four principles, we will design our Smart City projects to align with, support, and improve the daily work of our organization's employees as they provide services to our community to empower the government employee providing direct services to the public.

Infrastructure

Description:

Think of Smart City Infrastructure as the facilitation layer. The elements that comprise this layer facilitate the movement and storage of information from the city to the places where employees will be able to take advantage of it. Currently, this is done through things like our limited municipal fiber network and data center. But, we need to improve and expand on our current capabilities to ensure we can handle the increased technology and data requirements of our departments.

Goal:

Build the necessary technology and data infrastructure to power our government in the 21st century

Technology

Description:

Everyday, there are new technologies coming onto the market that allow governments to know more about the city and do more to serve people. Technologies, like sensors and drones, could help us better understand what is actually happening in communities and help our employees deliver better, more efficient services to our residents. The Technology layer of our Smart City platform will rely on our Smart City infrastructure to help our employees deploy and use these technologies to collect data and deliver enhanced services to our residents.

Goal

Establish an innovation testbed in Louisville

Data

Description:

The ultimate goal of the infrastructure and technology layers is to generate and collect the data necessary for our employees to deliver the best possible services to our residents. The Smart City platform will provide our employees with more data than they have ever had to deal with, so our systems, and most importantly, our workforce must be ready for this deluge of information. This will require a trained workforce that can glean insights from big data in order to make data-driven decisions and create data systems that provide them with the information they need, rather than all of the information possible. And, all of this need to be pushed down to the lowest level possible. We want our front-line decision makers to have the information they need to make the correct decisions and our executive to have the information they need to evaluate the decisions made by their employees and the direction of their department

Goal:

Empower data-driven decision making throughout our government

Metrics:

- # of Data Scouts
- # of Data Academy Participants

Strategy

- Data Governance
- Data Academy
- Artificial Intelligence pilots

Strategic Outcomes

Mobility

Smart mobility is the backbone for growth in today's urban environments. People need to travel from one place to another, be it for leisure or for work, and businesses need to deliver their goods and services when they're wanted. Mobility can encompass everything from mass transit, walking and car and bike-sharing services to private and commercial vehicles. The next steps are all about making transport in Louisville more connected, more efficient, and more environmentally friendly. We will help solve systemic travel and safety issues for vehicles, pedestrians, bicycles, while also embracing emerging technologies like autonomous vehicles, electric vehicles, and bus rapid transit. We will forge public and private partnerships to prepare for new regulatory and technological challenges, anticipate emerging technologies, and establish best practices. We will develop and maintain transportation technology and data infrastructure to encourage innovation and promote accountability.

Current Challenges:

One of the top mobility challenges the city faces is traffic congestion and the high number of miles Louisvillians drive each day. This is due to a lack in efficient and effective transportation options offered in the city. In 2016, the daily VMT (Vehicle Miles Traveled) in Louisville was 20,037,000. In 2017, Louisville was ranked 44 out of 240 U.S. cities in terms of worst congestion.

Goals:

- Reduce Congestion
- Reduce congestion

Current Initiatives

- Waze WARP
 - Starting in August 2015, Louisville Metro partnered with Waze to improve our communication with residents around road closures and our understanding of traffic patterns in our community. This partnership entails Louisville Metro providing publicly available data to Waze related to mobility in Louisville (road closures, parking, etc.) and Waze sharing anonymized, near real-time data from local waze users including the locations of traffic congestion and incidents in the Louisville Metro Area
- Connection 21
 - ADD DESCRIPTION
- Dixie BRT
 - A collaboration between the Transit Authority of River City (TARC), KY Transportation Cabinet, and Louisville Metro Public Works to create new transit

solutions that move people quickly where they need to go. This system will provide bus lanes in certain areas, signal prioritization for buses approaching traffic lights, and new buses to provide service in the corridor.

- Current Projects? Autonomous Vehicle Plan
- Traffic Data Warehouse
- Building out our Intelligent Transportation Systems (ICT) Network

Health & Sustainability

The Mayor's vision is for Louisville to be one of the nation's greenest and most environmentally friendly cities--one that is safe, vibrant and offers a prosperous future for its residents. This playbook will be used to further the sustainability goals of our city. We will use technology to better understand and solve the health and environmental challenges our community faces in order to create a culture of sustainability in Louisville and to ensure the health, wellness, and prosperity of all present and future residents.

Challenges:

Louisville Metro must work on eradicating the environmental challenges facing the city. Improving air quality is crucial as Louisville is the 13th most polluted city in the nation, according to the American Lung Association. Additionally, we must increase our efforts in reducing the city's carbon footprint as Louisville has the fifth-highest carbon footprint per capita among the 100 largest metropolitan areas according to the Brookings Institute. Another pressing issue facing the city is that Louisville's urban heat island is growing faster than any other U.S. city. Areas with the greatest heat island effect are up to 10 times warmer than other parts of Louisville.

Goals:

- Decrease transportation-related greenhouse gas emissions by 20%

Current Initiatives

- AIRLouisville
 - The first-of-its-kind data-driven collaboration among public, private and philanthropic organizations to use digital health technology to improve asthma. The goal is to equip thousands of residents with sensors for their asthma inhalers that tracks when, where, and how often the inhaler is used. This data can help patients manage their symptoms and also help city leaders make smart decisions about how to reduce the number of asthma attacks.

Future Strategies/Next Steps

- Expanding our electric vehicle charging network

Public Safety

This playbook and Smart City initiatives will help Louisville become a city of safe neighborhoods, where all residents feel secure, supported, and prepared for lifelong success.. Even though Louisville is ranked as the fourth safest city by the FBI when compared to our seventeen peer cities, we still experience an unacceptable average of 263 violent death and 56 homicides a year. In today's rapidly changing world, it is increasingly important that the infrastructure and technology needed to support public safety initiatives are in place. Digital technology represents a novel way to improve safety, promote stronger ties between law enforcement and the community, integrate solutions such as video, data, and analytics effectively, and give security officials stronger tools for outreach and coordination. We will use technology to further the safety goals of the city and support the operations of our departments in order to improve the safety and well-being of Louisville's residents.

Challenges:

Louisville experiences high violent and property crime. The city has a higher crime rate than similarly sized metropolitan areas, with a rate of 54 per one thousand residents. Gun violence is another issue Louisville has struggled with. The city was ranked 11th out of the 60 deadliest cities in the US, with 107 homicides in 2017.

Goals:

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- Reduce violent and property crime offenses each calendar year in Russell Neighborhood

Current Initiatives:

- Metrowatch Camera System (city-owned 350+ camera network)
 - The camera network is used in conjunction with the Real Time Crime Center to help officers respond rapidly to disturbances and have relevant information about events that occur at the scene of an incident.
- ShotSpotter Gunshot Detection System
 - The ShotSpotter sensors use acoustic technology to detect gunshot sounds. This technology is deployed to assist officers in responding to gunfire events that are often times unreported or delayed in being reported.
 - The desired outcome is collection of evidence and equipping officers with accurate information within 90 seconds

Future Strategies/Next Steps

- Continue to expand camera network
- Autonomous Drone Integration with ShotSpotter system

Economy & Innovation

Smart City technologies will accelerate Louisville's economic growth. Job creation and higher wages, maintaining a globally competitive and attractive business environment, and developing a culture of research and innovation throughout Louisville are all goals we can accomplish with the support of Smart City initiatives. Louisville Metro will promote economic development by making investments in areas, such as infrastructure, that make business investment more appealing and make Louisville a frontrunner in providing innovative solutions for both the private market and our community.

Challenges:

Louisville's median wage isn't increasing fast enough to keep up with peer cities, while the cost of living is not declining enough, or at all. There is also stagnation in the growth of the city's technology sector. This is in part due to the lack of STEM/IT-trained people in the workforce. Solving both of these issues is necessary for boosting Louisville's economic growth and maintaining a globally competitive and attractive business environment.

Goals:

- Double the number of high-wage jobs created by 2024, from the 15,000 predicted to 30,000
- Improve median annual wages, adjusted for cost of living, to the top half (1/2) of peer cities by 2020 and top third (1/3) by 2030.

Current Initiatives

- LFIT / KY Wired
 - Metro will partner with the Kentucky Communications Network Authority to roll out 90+ new miles of fiber optic cable that will serve as a backbone to enabling our smart cities technologies. In addition to providing connectivity to sensors, cameras, and facilities, we believe public private partnerships can work both ways, and plan to lease excess capacity along these routes to providers that will improve internet services to residents and businesses.
- Open Government Coalition
 - A network of governments pooling technical talent to collaborate on open source projects with reproducible, impactful results, saving time and money
 - Example Projects
 - Waze CCP Processor
 - SpeedUpLouisville.com
 - Open Data Visualizer
- Wireless Smoke Detectors
 - In 2015, Louisville Metro Government in conjunction with a local makerspace, LVL1, hosted a hackathon to help us deal with solving fires in vacant and abandoned properties. The winning solution was a device that would listen for

the alarm sound of a standard issue smoke detector and then send a signal to the appropriate entity. After a successful pilot, we are expanding the program to 150 homes in the Russell Neighborhood in late 2018.

Future Strategies/Next Steps

- Establish Louisville as an Innovation Testbed
 - Goal: Conduct 2 pilots each year

Community

Louisville Metro will only meet our Smart City objectives if our residents are involved in the design and transformation. Louisvillians can make help by co-creating on Smart City projects, by proactively using the city's ICT infrastructure, and by giving feedback and recommendations. It is important that we increase the transparency of our government and create more opportunities for our residents to participate. Making technology more accessible will empower residents to be connected and engaged. Opening up more data will get the community and businesses more involved in addressing civic issues. Increasing co-working spaces throughout Louisville will bring our city together and foster a culture of collaboration and innovation.

Challenges:

The Digital Divide continues to be a challenge facing Louisville and most cities around the country. Currently, 29% of Louisville residents still do not have home broadband access. In order to create a more equal playing field for participation in the digital economy, Louisville Metro needs to continue its digital inclusion efforts. Furthermore, we need to improve community engagement and participation to ensure our work is in line with the needs of our residents.

Goals:

- Improve Citizen Interaction and Transparency by annually expanding our digital offerings and presence as well as increasing transparency, availability and usability of information
- Increase Inclusion and Create Equity
 - Improve home internet access by 15%

Current Initiatives

- Digital Inclusion
 - Since publishing the Digital Inclusion Plan in 2017, Louisville Metro Government has been working to address the digital needs of our community through the focus areas of connectivity, hardware, and digital skills. Connectivity initiatives, such as low-cost internet sign-up promotion, seek to decrease the number of households in Louisville Metro that do not have access to home internet service. Hardware initiatives, like the Fern Creek High School computer refurbishment and redistribution program, aim to increase the number of households that have access to a desktop or laptop computer. As for digital skills, Louisville Metro supports partners like the Louisville Free Public Library and other community organizations that are already leading the way in providing quality education- and skills-based training for Louisville residents.
- Open Data
 - Our Open Data portal (data.louisvilleky.gov) makes a large selection of our local governmental data available to the public and partners. We aim to make our data available in machine-readable format and, when possible, in an application

programming interface (API) for increased usability. Through the Open Data portal, we increase the transparency of our operations and allow our residents and partners to help us co-create solutions to community problems using our data.

- Innovation Advisory Council
 - A diverse collection of residents with a variety of backgrounds, appointed by executive order, to advise the mayor on the city's innovation efforts. They are responsible for overseeing the operations of the LouieLab and providing feedback on the Office of Civic Innovation's strategy.
- American Printing House for the Blind-- Indoor Explorer
 - Indoor Explorer takes advantage of small bluetooth low energy beacons that periodically transmit brief bursts of data. By using this data these beacons produce, the mobile application facilitates accessibility in indoor spaces for blind and visually impaired residents.
- LouieLab
 - A co-creation space located in downtown Louisville that functions as the front-door for collaboration between Louisville Metro and our community. Co-located with the Office of Performance Improvement and Innovation, LouieLab provides co-working and training space, along with meeting rooms, for community groups to co-create solutions for civic problems.

Future Strategies/Next Steps

- Open up more public and private sector data in digital forms to facilitate research/innovation

Toolbox

- Hackathons
 - These are collaborative problem-solving events lasting from one day to a week. These civic-minded events usually involve collaboration between internal government agencies and external partners. At these events, we work with our partners to develop challenges that will be solved by hackathon participants. We use hackathons for three purposes: one, to quickly evaluate the potential of projects to scale; two, to scan our community and partners for idea generation and exploration; three, to engage our civic tech community about some of our community's biggest challenges.
 - Example:
 - CDA Hackathon
- Training
 - Digital Badges, Reading club, tour, analog hackathon
- Innovation Projects
 - We use innovation projects to evaluate the potential of Smart City solutions for usability, relevance, and scalability. These projects have a shorter timeframe than standard government technology projects and aim to enhance the abilities of our public service agencies. A standard innovation project is cross-departmental, and more often than not, includes external partners.
 - Example:
 - Waze Data Processing
- Internal Consulting
 - With the rise of importance of technology in the everyday functioning of our enterprise, departments are exploring and deploying new technologies at an unprecedented pace. Our team uses our expertise in the technology sector to help departments research, plan, and deploy new technologies in ways that give them immediate benefits and set them up for success in the long-term.
 - Example:
 - ITS/Tech Modernization for Traffic
- RFP review
 - Often when exploring or contracting for new technology, departments do not have the internal expertise or industry knowledge to ask all of the right questions. We work with departments to review and develop Requests for Proposals to ensure that they put themselves in the best financial and technical position possible while achieving their intended goals.
 - Example:
 - Shot Spotter
- Policy Development and Revision:
 - Technology is changing the way our government does business. In light of that fact, we work with key agencies to develop or update policies to reflect international best practices in technology.

- Example:
 - Small Cell Policy
 - Update of Comprehensive Plan public participation
- Revenue Generation/Cost Sharing:
 - The first question asked when talking about Smart City projects is “How are we going to pay for this?”. Our team works to find opportunities to generate revenue or share costs across agencies through public-private partnerships and cross-departmental collaboration.
 - Example:
 - LFIT / KY Wired
- Collective Impact
 - As a government agency, we have relationships with a variety of different entities and groups across our community. This allows us to connect different groups with shared goals and help them generate mutually beneficial Smart City solutions. Our role in these projects to to play the role of convener and facilitator rather than the driving force or project managers.
 - Example:
 - Humana Bold Goal
- Crowdsourcing
 - Crowdsourcing is an effective tool for governments to use to understand their community in new ways. Through crowdsourcing, residents can now passively or directly provide feedback and data to us on their own terms. By sharing data and direct feedback with the government, our residents help us understand our community in new ways.
 - Example:
 - SpeedUpLouisville.com