

Safety and Innovation Zone Demonstration Project Summary

Department of Technology Services
May 2023



Demonstration Project Overview



What?

Innovative cross-departmental demonstration project that started in summer 2021 and concluded spring 2023. Seven light fixtures were replaced with sensor technology for the duration of the pilot providing a total of ten sensors. The sensors gathered data pertaining to: CO levels, decibel, humidity and people counts including crowd detection.

Where?

2900 block of Wilson Blvd., between N. Garfield Street and N. Fillmore Street

Why?

Evaluate the impact of sensor technologies to learn if data gathered could impact public safety emergency response preparedness and response times to incidents.

Planned Outcomes and Partners

Outcomes

- Evaluate the impact of sensor technology on public safety response
- Assess initial County data privacy approach, including public engagement
- Educate County staff on sensor technology, data privacy and data management risks and risk mitigation strategies
- Define communications approach for future efforts
- Report on project metrics

Partners

Internal

- Public Safety Communications and Emergency Management
- Fire
- Police
- Department of Technology Services

External



Sensor Analytics Dashboard

Heatmap

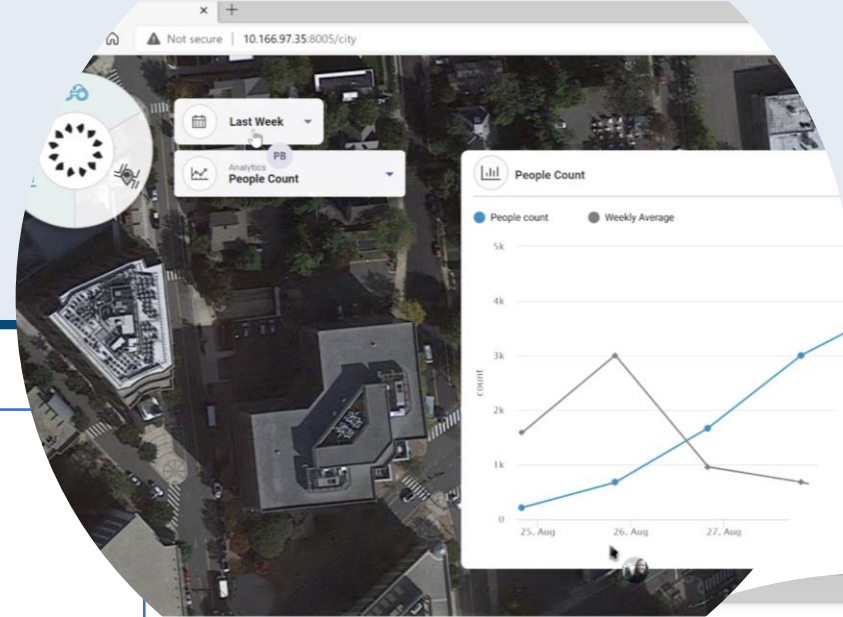
- Heatmap: displays a colored overlay on the satellite map view of the most crowded areas where people are counted relative to other areas at the specified time

Counts

- Count: Numerical information related to people counts, humidity, decibel, and CO
- Previous period comparison
- Most Crowded Area: Name of the area where the largest number of people were detected during specified time period

Graph

- Data on people counts, humidity, decibel, and CO presented in a graphical format over time selected



Sensor Feature Overview



Planned & Implemented

- Street lighting
- Lighting control
- Air quality
- Noise Level
- Humidity
- People Count
- Crowd Density



Planned & Not Implemented

- Temperature
- Inanimate object detection
- Fall detection
- Distress movement
- Vehicle count
- Micro mobility count
- Illegally parked cars
- Vehicle classification



Not Planned & Implemented

- Restricted zones

Project Communication



A [pilot webpage](#) was developed for transparency and to provide project information.



Frequently Asked Questions
County Board presentations
Safety and Innovation Zone Privacy Panel
Project Charter Privacy Impact Assessment Report
Community outreach to neighboring and interested civic associations



Webpage and documents updated as the project progressed

Sensor Related Privacy and Data Insights

Made possible through grant funding, a George Mason University team participated with the project team on privacy practice review and sensor data assessment and analysis. These are their insights:



Assessing Risk

- Data privacy risk was successfully identified, assessed, and mitigated for the project using NIST Privacy Framework and County proposed privacy principles.
- A privacy-first approach can produce interesting data while still respecting privacy.



Data is Paramount

- Data privacy and security protections can also introduce constraints and data quality challenges.
 - Data analysis was constrained by sensor outages and data quality issues.
 - Operational support for data quality and privacy risk management activities requires both skills and capacity.



Partnerships Matter

- Trust building activities proved critical to leveraging the partners' skills and establishing the underpinnings for success with future initiatives.
- Flexibility is required when piloting new data-rich technology.

Privacy Panel Recommendations

The Safety and Innovation Zone Data Privacy Oversight Panel was formed for the purpose of gaining community input and oversight on the implementation of County privacy principles for the pilot. These are the Panel insights as summarized by a grant-funded Virginia Tech Panel member.



County-wide Adoption of Privacy Best Practices

- Develop a County-wide privacy policy utilizing the project privacy principles as a starting point. Further community engagement would be appropriate to finalize the principles.
- Implement a County-wide privacy program using the National Institute of Standards and Technology (NIST) framework.



Incorporate Privacy Risk

- Incorporate the assumption of continuous risk management activities into the design of a County-wide privacy program.
- Consider updates to public engagement guidelines and partnering MOUs to address varying degrees or privacy risk.

Project Partnership Lessons Learned

The Safety and Innovation Zone project partners committed time to the pilot outcomes and the supporting processes.

The partners collectively provided these insights and lessons learned.

Continuous improvement: The team documented improvements in work processes, learning perspectives, the selected technologies and their integration which will facilitate replication and scaling of similar efforts in the future.

Visionary partnerships: The project benefited from partners' thought leadership, creating an opportunity to be at the forefront of the national dialogue on partnerships and privacy.

Community engagement: The Safety & Innovation Zone Data Privacy Oversight Panel provided a forum for community input and oversight, and could also be an opportunity for engagement with the business community, business improvement districts and chambers of commerce.

Early integration: Engaging technology vendors as early in the process as possible will be helpful to communicate intended use cases and gain an understanding of their feasibility and timeline for introduction.

To Summarize

- ✓ **Consideration of new technology** capabilities can be achieved with **little to no risk via proofs of concept** prior to investment in large-scale deployments.
- ✓ Cameras remain the backbone of current computer vision sensor technology; **training AI without the use of cameras is a maturing field** where the lack of data and numerous variables to be considered remain a challenge.
- ✓ **Data-rich initiatives are dependent on resources** with data quality and privacy skills.
- ✓ **Project-level privacy** risk management **requires significant resources** and is **not as repeatable as an enterprise-level** standards-based approach.
- ✓ **Public engagement** for proofs-of-concept initiatives should be standardized and agreed upon prior to execution. When forming **Working Groups**, intentionally **create a stand-alone body** (i.e., not beholden to Commissions or other Working Groups).