Topics for Discussion

- LEaRN Collaborative Introductions
- Project Overview
- Status Update Topics:
  - Sensor Platforms
  - Deployment Strategy
  - Data Management
  - Outreach/Community Engagement

LEaRN Lafayette Engagement & Research Network
EPA Smart City Air Solution Summary
Guiding Principles from the Challenge

• **Deploy 250 to 500 sensors in a community:** Communities must describe procure and deploy 250 to 500 air quality sensors.

• **Community involvement in purchasing and using the sensors:** The community and its residents will provide funds for the sensors in order to ensure citizen engagement and better data quality.

• **Identification of partners and project sustainability:** EPA will provide prizes to the winning communities. The community and its residents will provide funds and establish partnerships to implement the strategy.

• **Be transparent in terms of making the data open and describing the data management plans:** The data from the sensors will be available for free and in machine-readable form. The data management plan describes how data will be managed in all parts of the information life cycle.
Objectives and Expected Benefits

• Identifying best practices for managing big data within our community as we implement a comprehensive plan for growth in the Acadiana region.

• Learn how Lafayette will manage large volumes of Smart City data, including environmental, transportation and other sources.

• Learn how to best engage citizens in collecting, understanding and using data within their community → increased civic engagement.

• How can we use data from many sensors to better understand environmental condition and its relationship to human health.

• Provide other cities, businesses, citizens and EPA with real-world lessons about data management through agile and experimental design.
The LEaRN Collaborative
LEaRN Collaborative: Advisory Board

Providing subject matter expertise, best practices and project guidance
### LEaRN Collaborative: Lafayette Consolidated Government

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<thead>
<tr>
<th>Commitment</th>
<th>Expertise and Resources</th>
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<tr>
<td>▪ Infrastructure for sensor deployment across community</td>
<td>▪ Has implemented IoT sensors for traffic congestion; will be cross referenced with air quality data</td>
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<td>▪ Establish an Open Data Portal via existing Esri Enterprise License</td>
<td>▪ The Lafayette Comprehensive Plan sets forth objectives that lessons learned around Smart Cities will inform and accelerate</td>
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<td>▪ Will utilize effort to inform &amp; launch an Open Data Policy for LCG</td>
<td>▪ LUS Fiber accelerates deployment</td>
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<td>▪ LUS Fiber for Gigabit App connectivity for Sensor Network</td>
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LUS Fiber accelerates deployment
# LEaRN Collaborative: UL Lafayette

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<td>- Incorporating LEaRN projects into School of Engineering, School of Geosciences and School of Computing and Informatics</td>
<td>- UL specialization in IoT/Big Data</td>
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<td>- Professors and students will assist in sensor development, calibration, O&amp;M, outreach</td>
<td>- NSF funded data analytics and research center</td>
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<td>- LITE Center for Sensor and Network Gateway</td>
<td>- US Ignite Community partner</td>
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<td>- UL Researchers focused on Air Quality studies for sensor deployment</td>
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**LEaRN Collaborative: CGI**

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<td>▪ Supplemental funding for up to 400 sensors</td>
<td>▪ Global IT solutions provider with proven experience in Smart Cities, IoT and complex data management</td>
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<td>▪ IoT data management solution</td>
<td>▪ Existing partner with Lafayette with over 350 members in community</td>
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<td>▪ Technical data management and system integration consulting</td>
<td>▪ More than 35 years of mission support state, local and federal environmental customers</td>
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Technical Solution Summary

Deploying 300 Air Quality Sensors
StormNet Solution Overview

- **Cloud based** – Industry standard big data platforms
- **Event Hub and Apache Storm** – Real-time capture and processing
- **Cassandra** – persistent secondary storage
- **Azure Machine Learning** – Quickly adopted to capture and display any number of predictions
- **NodeJS/Express** – Communication between multiple components
- **API-based live streaming data dashboard** - Leaflet/Bootstrap/HighCharts
Sample: Real-time Data Visualization in Browser

Demonstration of sample data visualization
Status Update Report
Sensor Platform
Deployment Strategy
Data Management and API Strategy

- OGC SensorThings API Strategy and Update
- Azure Cloud Hosting Status
- Open Source License
- Open Data Portal
Community Engagement Activities

- Educational sessions with LPSS students from K-12 to engage in LEaRN Collaborative activities related to Air Quality
- Educational/outreach sessions with general public hosted across the library network.
- University and Community College: Student engagement activities on project topics such as sensor assembly, software/application development, data visualization and citizen science
- Social Media via Twitter, Facebook and Instagram