Transformational Technologies in Tampa Bay

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TBITE Q1 Luncheon 2019
Tampa, Florida
March 26, 2019
What is a Smart City?

“A Smart City is one where data and technology improve people’s lives.”
A smart city uses digital, information and communication technologies to enhance quality and performance of urban services, reduce costs and resource consumption, and engage more effectively and actively with its citizens. Sectors include government services, transport management, energy, health care, water and waste.
U.S. DOT Smart City Challenge

**DOT Smart City Challenge**

- 1,400 local officials, companies, academics, and nonprofits joined our webinar.
- 800 people participated in our Smart City Forum.
- 300 companies have expressed interest in partnering.
- 78 applications received for the Smart City Challenge.
- 5 Smart City Challenge Finalists to be announced in March at SDDW.
- 1 Smart City Challenge Winner announced in June.

**Smart City Challenge Finalists**

- Portland
- Kansas City
- Columbus
- San Francisco
- Pittsburgh
- Denver
- Austin

U.S. Department of Transportation
Think of Your City As A Nervous System

Big Data:
The brain processing the signals

Sensors or IoT:
The nerve endings capturing signals

Telecom Network:
The nervous system backhauling the signals

Thoughts & Images: Dashboards & Applications
Smart Cities Cycle
Data Visualization → Smarter Action

EACH LINE REPRESENTS A DEADLY CRASH ON PORTLAND STREETS

What was the primary cause of the crash?

- SPEEDING
- DID NOT YIELD
- PERSON ILLEGALLY IN ROADWAY
- OTHER
- RECKLESS DRIVING
- IGNORED TRAFFIC SIGNAL
- CROSSED CENTER LINE
- IMPROPER LANE CHANGE
- RAN STOP SIGN
- PERSON'S CLOTHING NOT VISIBLE
- FOLLOWED TOO CLOSELY
- IMPROPER TURNING
- INATTENTION
- DROWSY DRIVER
- NONE
- WRONG WAY DRIVING
- IMPROPER OVERTAKING

What did the vehicle crash into?

- PERSON WALKING
- FIXED OBJECT
- MOTOR VEHICLE
- PERSON ON BICYCLE
- PARKED VEHICLE
- OVERTurned
- NON-COLLISION

Were drugs or alcohol involved?

- ALCOHOL
- DRUGS
- ALCOHOL & DRUGS
- NEITHER

What was the posted speed limit?

- 55 MPH
- 50 MPH
- 45 MPH
- 40 MPH
- 35 MPH
- 30 MPH
- 25 MPH
- 20 MPH

Was it at an intersection?

- INTERSECTION
- NOT AN INTERSECTION
- NOT LISTED

Day or night?

- DAWN
- DAY
- DUSK
- NIGHT
- UNKNOWN
Smart City Dashboards

London

Weather Station (CASA)
- Wind Speed: 11.8 mph
- Temperature: 11.9°C
- Humidity: 76%
- Rain Today: 1.2 mm
- Pressure: 992.0 mbar
- Forecast: Showers

Weather (METAR)
- London City Airport
- Conditions: Mostly cloudy
- Wind: SSW at 14 mph
- Temperature: 10°C

Forecast (Google)
- Thursday: 15°C
- Friday: 13°C
- Saturday: 12°C
- Sunday: 15°C

Tube Line Status (TFL)
- Bakerloo: Part Suspended
- Central: Good Service
- Circle: Good Service
- District: Good Service
- H & C: Good Service
- Jubilee: Good Service
- Metropolitan: Good Service
- Northern: Good Service
- Piccadilly: Good Service
- W & C: Good Service
- Overground: Good Service

Bike Sharing (TFL)
- Stations Full: 1.2%
- Stations Empty: 3.3%
- Bikes Available: 6617
- Bikes or Dockets Faulty: 811

Air Quality (DEFRA)
- T: Low
- 10 – V High
- Bloomsbury: 3
- Marylebone Rd: 3
- N Kensington: n/a

Geiger Counter (CASA)
- CASA Office: 10 counts per minute

River Level (PLA)
- Tower Pier: 1.18 metres at 11:02
Smart City Civic Engagement

http://www.mint-tek.com/

http://www.canadianbusiness.com/
City/University Partnership

USF and City of Tampa sign MOU on March 20, 2018

Officially joined MetroLab network on April 16, 2018
Thank you for attending the first i2a Workshop!
Core Values

- Customer Driven
- Action-Oriented
- Partnerships
- Engagement
- Transparency
- Equity
- Resilience
- Accountability
Guiding Principles for Project Development

- Scalability
- Interoperability
- User Experience
- Collaboration
- Innovation
Program Goals

- Improve safety on limited access facilities
- Improve safety on local streets and arterials
- Improve bicycle and pedestrian safety
- Provide better multimodal options
- Ready our infrastructure to adapt with future technology
## Performance Metrics

- Reduce injuries and fatalities
- Reduce multi-car collisions
- Improve travel times on road
- Reduce per incident costs
- Reduce Road Ranger response times
- Reduce abandoned vehicle rates

- Reduce traffic violations
- Reduce pedestrian detection failures
- Reduce gap in real-time data and reported conditions
- Increase dedicated bike/ped facilities

- Increase number of connected users
- Increase transit ridership
- Better access to choices for all
- Improve modal-split
- Improve access to jobs/services for all
- Improve personal travel time

- Increase miles of CAV compatible
- Increase number of shared, discoverable data sources
- Increase number of agencies with shared communication infrastructure
- Increase number of innovative intersections
Smart Cities Kick-off

Smart Cities Alliance Kick-off Meeting – December 15, 2017
# Implementation Strategy

<table>
<thead>
<tr>
<th>THEME</th>
<th>DESCRIPTION</th>
<th>SAMPLE PROOF OF CONCEPT</th>
<th>SAMPLE PROJECT</th>
<th>SAMPLE PROJECT</th>
<th>SAMPLE PROJECT</th>
<th>VISION</th>
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<tbody>
<tr>
<td>Data Platform</td>
<td>The fusion and analysis of data from across the region brought together in one platform to enable the maximum amount of insight to be collected and shared among all participating agencies</td>
<td>Introduce a cloud based data platform that is focused on road and transit data sets throughout the region and open to all public sector users</td>
<td>Develop business case, funding and full commercial strategy together with a RFP based on the learning on the Proof of Concept</td>
<td>Secure supplier and transition the proof of concept to the new platform and extend geographic coverage across the region</td>
<td>Introduce private sector data sets through new collaborative agreements enabling use of less physical sensors on the network</td>
<td>To use ‘big data’ to optimize mobility movement across the region, inform our future planning strategies and drive efficiency savings</td>
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Proactive Management
Toolbox of solutions
Connectivity

Users ➤ Vehicles ➤ Devices ➤ infrastructure
Increasing levels of automation

Vehicles ▶ Fleets ▶ Management

▸ Rear View Camera
▸ Reverse Sensing System
▸ Tire Pressure Monitoring
▸ Adaptive Cruise Control
▸ Forward Collision Warning
▸ Blind Spot Information System
▸ Cross-Traffic Alert
▸ Lane-Keeping System
▸ Active Park Assist
▸ 911 Assist
▸ Traffic Sign Recognition
▸ Driver Alert
▸ Pedestrian Alert
▸ Active City Stop
USF Connected and Autonomous Transportation Systems Lab

- Full scale CAV – 2016 Lincoln MKZ Hybrid
- Lidar, Radar, Video, Mobileye, NovAtel, by-wire control platform, Savari DSRC On-board Unit
- Level 3 longitudinal and latitudinal control in mixed traffic

Scaled CAVs to test CAV algorithms in a controlled environment.
CUTR Multimodal Data Platform

Sources:
- Traveler
  - Location
  - Decisions
- Vehicle
  - Transit
  - Light Vehicle
  - Freight
- Infrastructure
  - Loop
  - Radar
  - Other

Uses:
- Envir.
  - Mobility
  - Safety
  - Other
- Other
  - Queue
  - Warning
  - Other
  - Eco-Drive
  - Measurement
  - Traveler Information
  - Variable Speed Limits
  - Other
15 Years of PORTAL

Real Time Monitoring

Bottleneck Diagnosis for Modeling/Simulation

Optimizing Transportation Management Deployments

Performance Measurement and Management

Evaluation

2 TB

ODOT 30B Records

WSDOT 10B Records

PORTAL

portal.its.pdx.edu
What’s in the CUTR Archive So Far

- FDOT via RITIS and NPMRDS
- City of Tampa Traffic Signal and Bluetooth
- USF Bullrunner
- HART AVL and APC
- PSTA AVL and APC
- Coast Bikeshare and Share-a-Bull
- USF SAFE Team
- ...More coming soon
Next Steps @ CUTR

- Multimodal Data PORTAL
- Unbiased, rigorous clearinghouse for local, regional, statewide data
- Freeway, transit, bike sharing, freight, arterial, pedestrian, etc.
- Platform for performance measurement
- Engage with students, researchers, practitioners, citizens, decision makers
- Contextualize with smart city concepts
- We want to work with you!
Main Points

- “Data are too valuable to be used only once.”
- “Management of the transportation system cannot be done without knowledge of its performance.”
- Archived data useful for many stakeholders
- Keep raw data, include quality control, metadata
- Principles: truth in data, share data freely, open source, platform for innovation
- Multimodal: highway, transit, arterial, pedestrian, bicycle, freight, safety
- Integrate into performance measurement and decision support
- Involve university researchers – public/private/academic collaboration
Don’t Forget

- Ultimately we are trying to create places where people want to be!
- And let’s not be victims of technology
Thank you!

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