Innovation Partnerships for Virginia
SVTC Luncheon
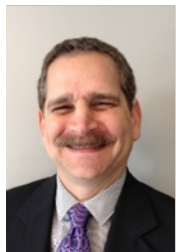
David Ihrie | CTO | CIT | CIT.ORG

David Ihrie, CTO
Center for Innovative Technology
David.Ihrie@CIT.Org

February 18, 2021

Follow us on twitter:
@CITOrg or @dihrie

Topics

- VIPA and CIT/Pilot Projects

- Virginia Smart Communities Testbed @Stafford

- Innovation Partnership with Shenandoah Valley

VIPA | CIT Mission

Virginia Innovation Partnership Authority — State legal authority

CIT — Designated Not-for-Profit VIPA Operating Entity

Entrepreneurial Ecosystems Division	Commercialization Division	Strategic Initiatives	Investment Division
Mission **Support and connection for entrepreneurial ecosystems** and stakeholders around Virginia, including startup incubators and accelerators	**Mission** **Grant funding in support of tech-based research, development and commercialization** to drive economic growth in Virginia	**Mission** **Leadership for strategic initiatives** that explore and shape programs designed to attract and grow innovation and new industries	**Mission** **Seed and early-stage funding for Virginia-based companies** with high potential for rapid growth and significant economic returns

CIT | Smart
CIT Smart Communities

Virginia Unmanned Systems Center at CIT

SCITI LABS

Smart Communities Plan and Definition

CIT | Smart
CIT Smart Communities

OBJECTIVES

1. State services to empower communities

2. Pilot Projects to Demonstrate possibilities and build local expertise

**3. Develop Virginia as coherent market and source for "Smart" technology**

"SMART"
Community-driven innovation to achieve:
- **Enhanced economic development**
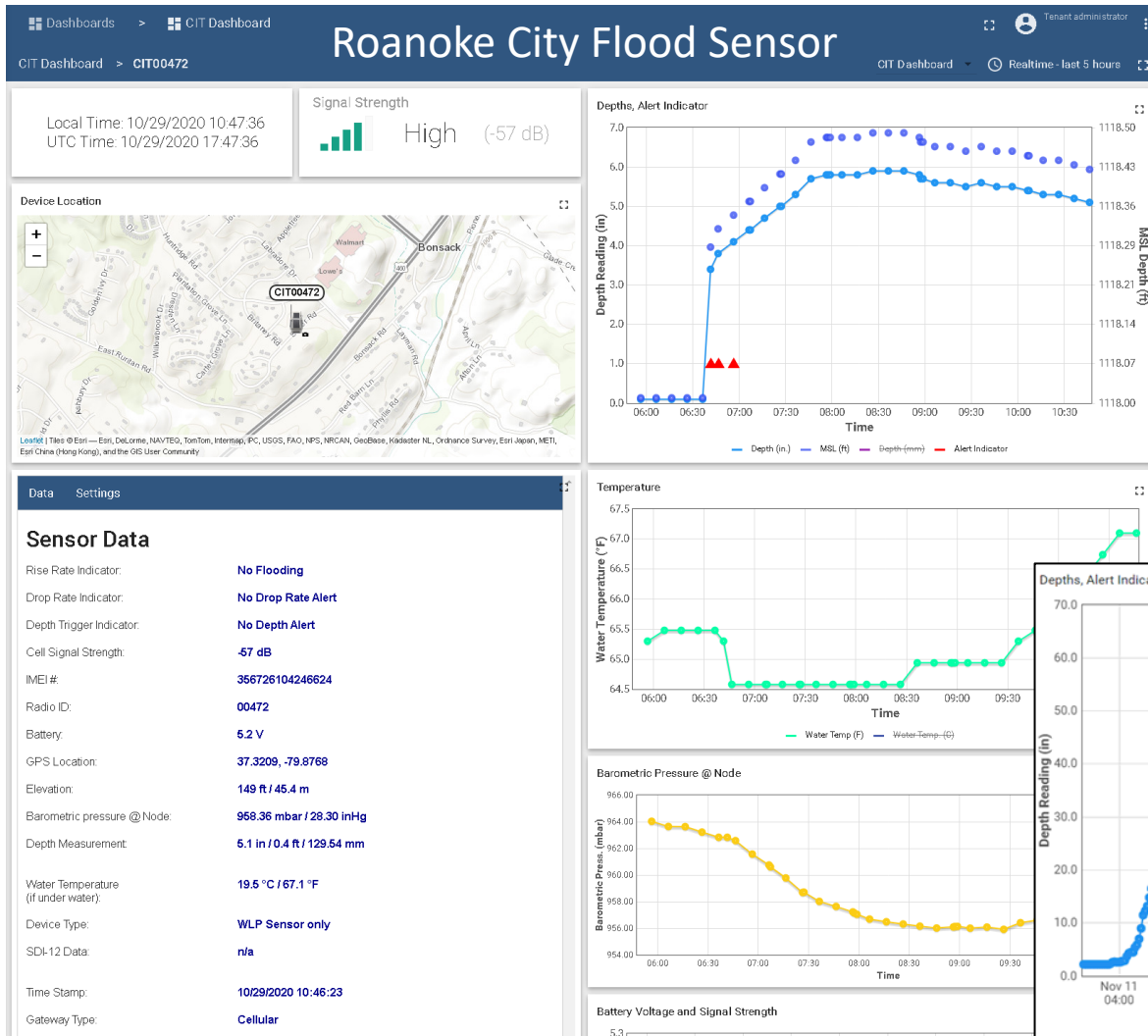- **Reduced barriers to entry for all communities**

By using:

Dramatically increased sensors, data, communications, analytics to improve services and foster innovation

Virginia State Action Plan

SMARTER STATES, SMARTER COMMUNITIES

NGA
NATIONAL GOVERNORS ASSOCIATION
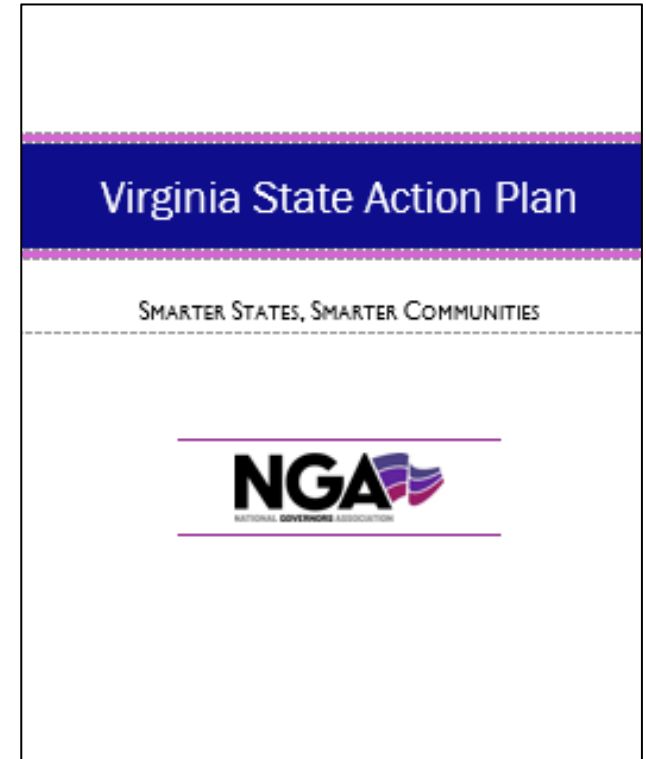
Smart Communities Pilot Project

- ## Statewide Flood Sensor Network

Water Depth during November 2020 Storms
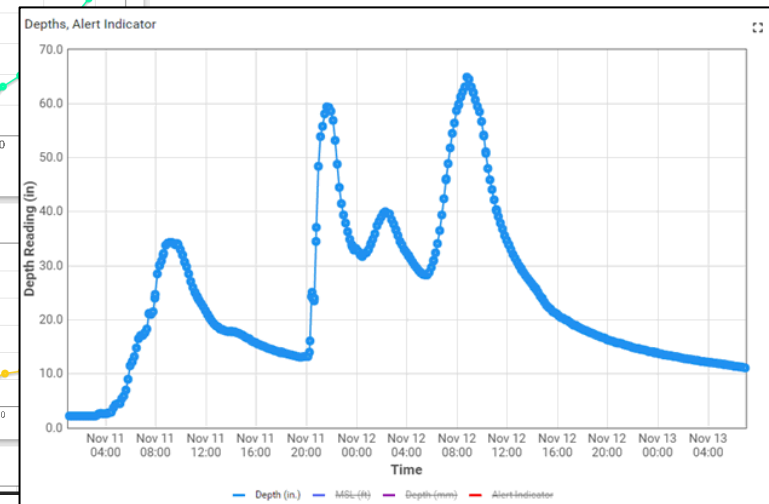
Smart Communities Pilot Project

- Wildfire Detection at the Urban Interface

Air Quality Sensor from Germany Being Adapted to Detect Wildfire Ignition

Ammonia

Particulates
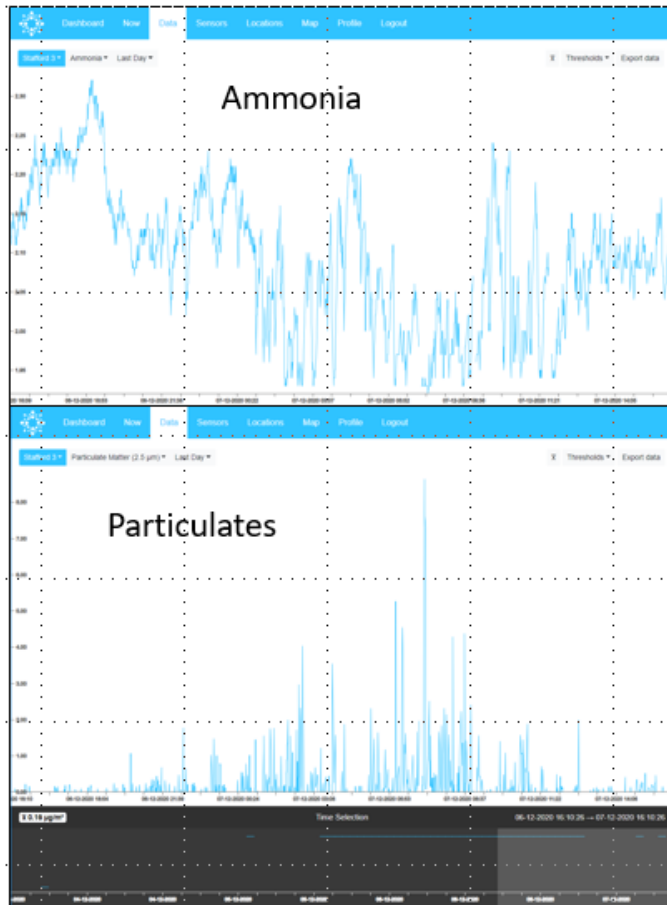
Stafford County
Sensor Readings
(2 of many)

In Situ Bog Fire Near Hamburg
Detected from 60Km

Modeling Actual CA Fires to
Simulate for Lab Sensitivity Tests

Testing Diesel Exhaust
to reduce false positives

Smart Communities Pilot Project

- Conduit, Fiber, Pole and Sensor Design for Fredericksburg Smart River Walk Park
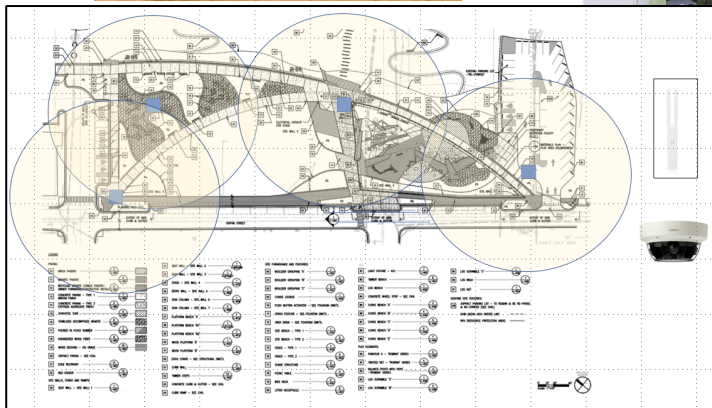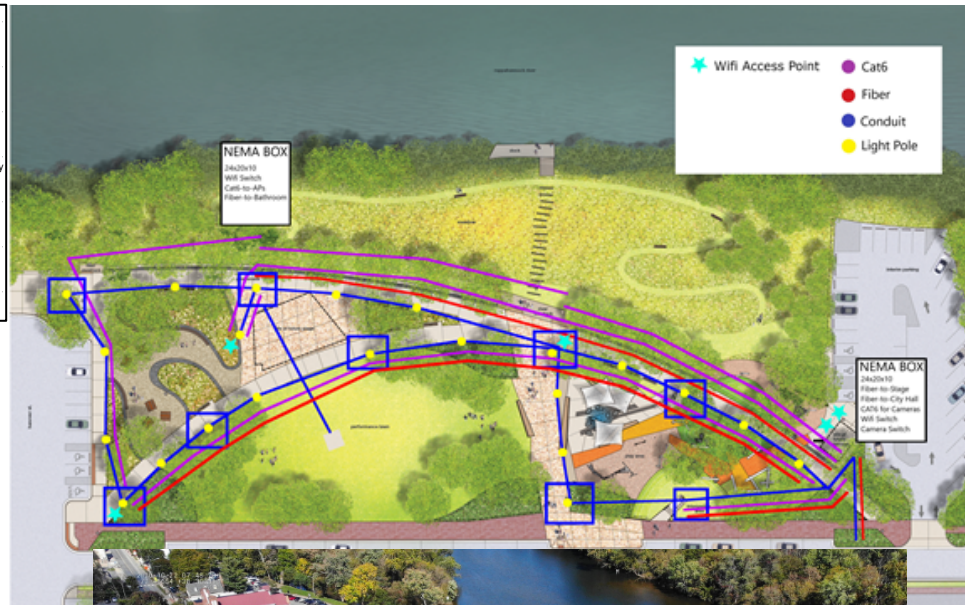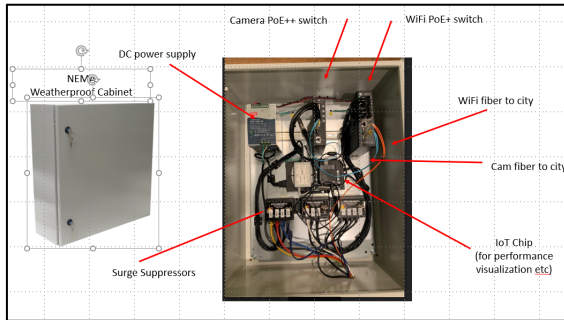
Smart Communities Pilot Project

- ## Indoor Smart Sensors for Energy Savings and Safety

Easy Access Views and Understanding
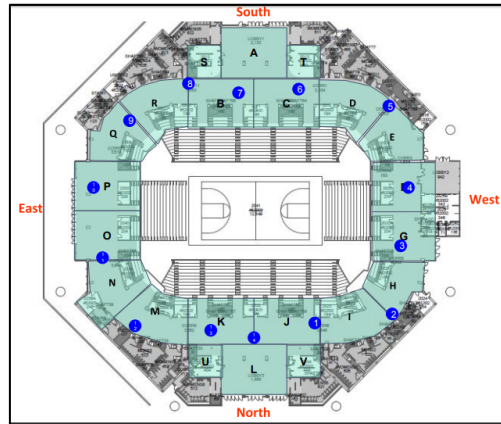
Occupancy Zones

Map-based sensor feeds
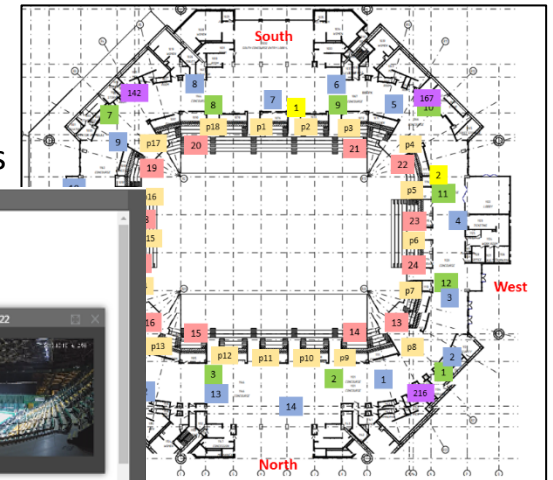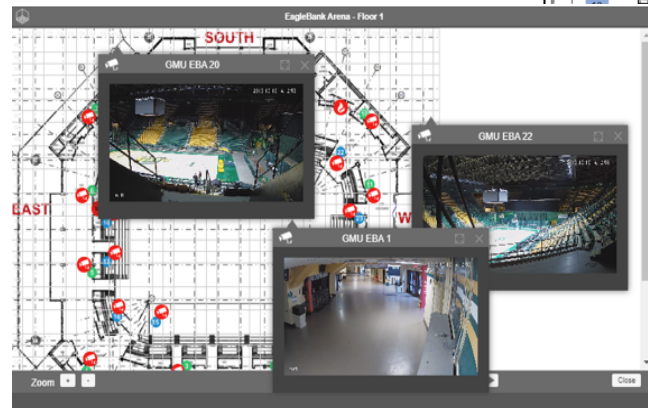
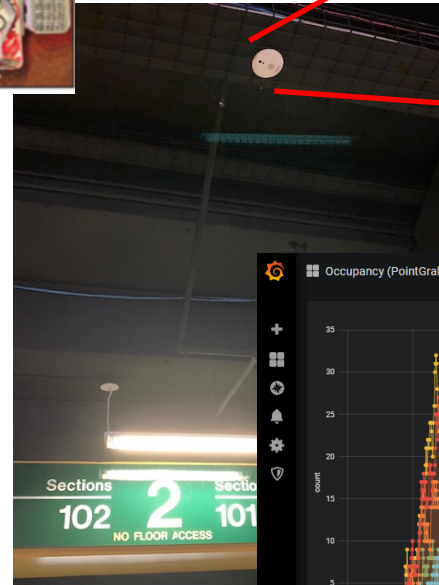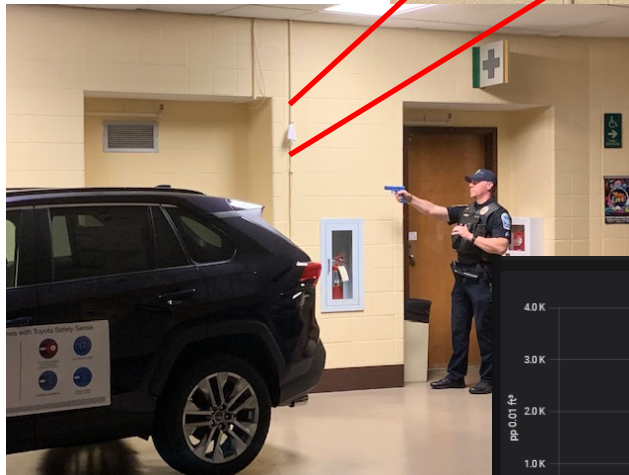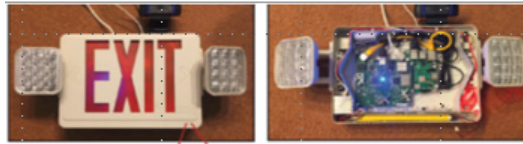Technical Data
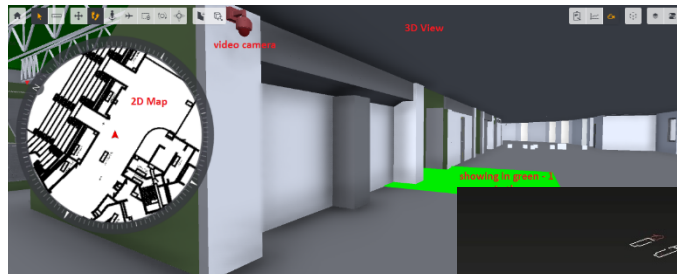
2D and 3D Rendering
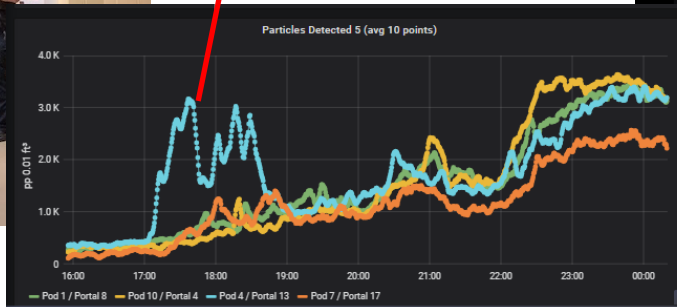
Full Digital Twin
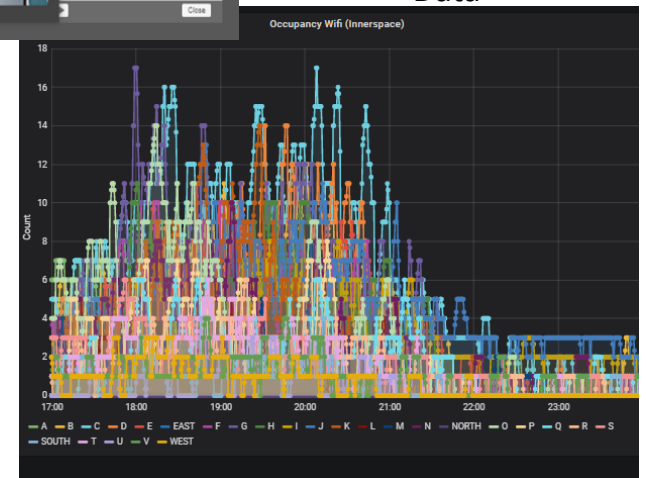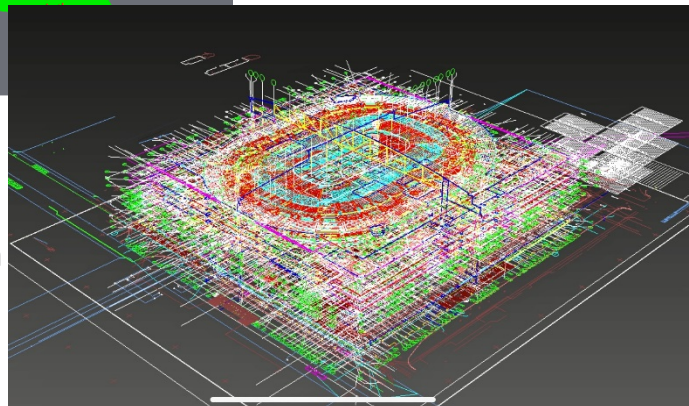
Smart Communities Pilot Project

- ## Indoor Smart Sensors for Energy Savings and Safety

Multiple Plug and Play Sensors

Hospitality Room Occupancy
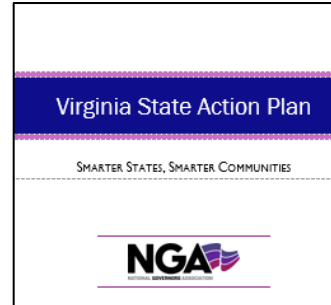
Popcorn Machine Detected
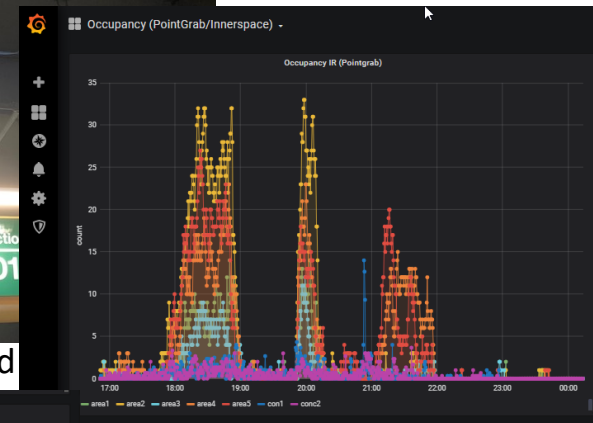
Topics

- VIPA and CIT

- Virginia Smart Communities Testbed @Stafford

- Innovation Partnership with Shenandoah Valley

Virginia Smart Communities Evolution

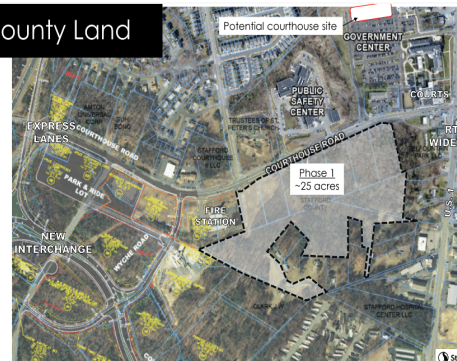**Virginia Smart Communities "Phase I" 2017 – Oct 2018**

Oct 2018 – Dec 2019

Virginia Smart Communities Testbed

Direct Path: Testing to Implementation

"Smart Stafford" new Town Center

Stafford Ph II

Stafford Gov Complex

Fountain Park

https://www.youtube.com/watch?v=M9F875UnnrE&feature=youtu.be
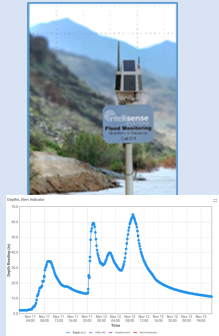
- Demonstrate
- Educate
- Validate

- Transition
- Support
- Evolve

Smart Community Testbed Connects Data to People

VIRGINIA SMART
COMMUNITY TESTBED
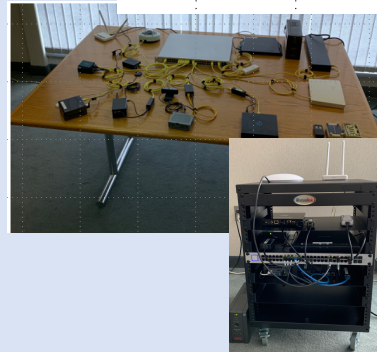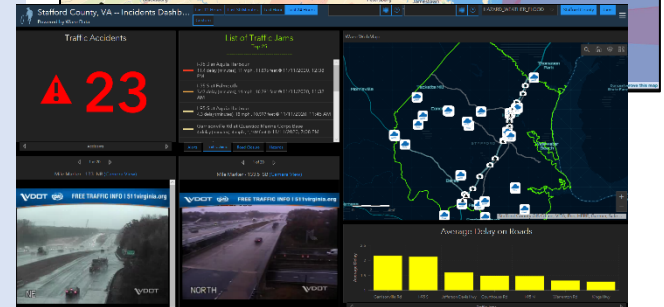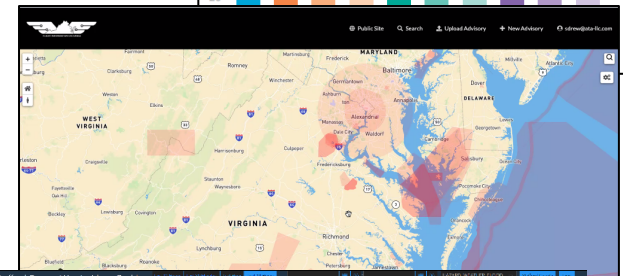STAFFORD, VA

Collect

Connect

Converge

Correlate

Communicate

IoT Testbed Rack

Commonwealth
Data Trust

Camera PoE++ switch — WiFi PoE+ switch

DC power supply

NEMA
Weatherproof Cabinet

WiFi fiber to city

Cam fiber to city

IoT Chip
(for performance
visualization etc)

Surge Suppressors

Overall City Score
Child Well-being
Education Quality
Educational Attainment
Financial Empowerment
Neighborhoods
Health and Safety
Policing
Court Reform

2018 Equity Scores

45.57   26   44   58   40   48   40   54   40   61

List of Traffic Jams

Traffic Accidents

⚠ 23

Average Delay on Roads

Security & Privacy

Smart Community Testbed Pilot Projects – Commonwealth Data Trust

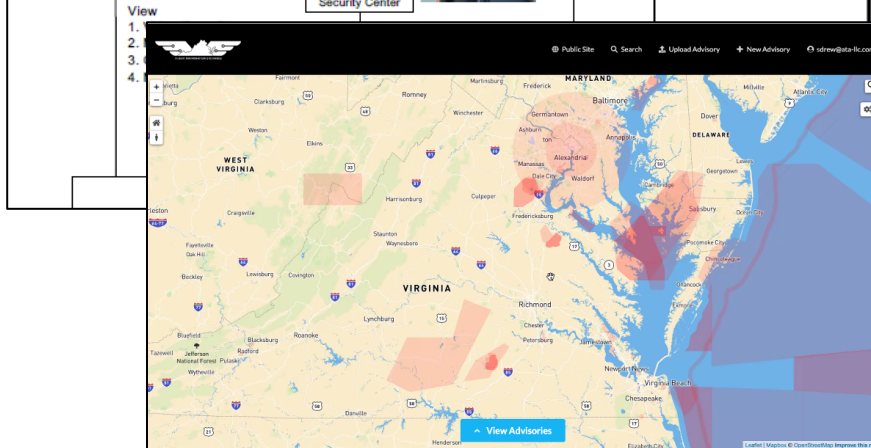
Secure Data Enclave

Smart Community Testbed Pilot Projects

VIRGINIA SMART COMMUNITY TESTBED STAFFORD, VA

Public Safety UAV/VA-FIX

Other Infrastructure – VDOT RM3P/Dominion Power Grid Wastewater Testing

Topics

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Defining A Pilot Project

Virginia State Action Plan

SMARTER STATES, SMARTER COMMUNITIES

NGA

"Community-Driven Innovation"

Equitable

Regional

Resilient

- State services to empower communities
- Pilot Projects to Demonstrate possibilities and build local expertise
- Economic Development for all Virginians

Enablers

- What is a community issue (use case) that needs to be addressed?
- Is it important enough that people will volunteer time to address it?
- Who are the stakeholders?
- Are they willing to participate?
- Who are the community champions?

Technology

- Are there technical capabilities in the community relevant to the use case?
- Would a pilot project reduce risk or prove something new?
- Could it be a model for others?
- What are the gaps? Are there external capabilities to fill those gaps?

Sustainment

- What are the long term prospects?
- How does a pilot project scale?
- Is there a business model to support it?
- How will it be funded?
- Provisions for ongoing innovation?
- Are public equities preserved (data security, privacy, social equity, etc)?

CIT's Role In Pilot Projects
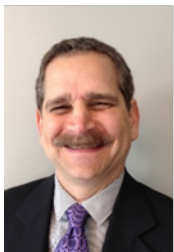
"Community-Driven Innovation"

May Be a CIT Role	Not a CIT Role
• Help convene stakeholders	• Form a community stakeholder group
• Support Community considerations of potential pilot projects	• Define a pilot project for a community
• Suggest technical architectures, use cases, technology approaches, or vendors	• Define a solution
• Provide initial funding to help reduce technology or process risk/$50K typical	• Provide funding for a procurement, scale-up, or sustainment
• Contract for initial capabilities as part of a community-based pilot	• Conduct a procurement
• Structure and support evaluation of pilot capabilities	• Competitive source selection
• Support or potentially lead proposals to expand initial pilots	• Go find external funding sources (Feds, Foundations, Sponsors...)
• Help define sustainable business models for longer-term implementation	• Ask the legislature for funding

Discussion – Three Initial Thoughts Based on Prior Interactions

- Autonomous Shuttle Services Around JMU/Harrisonburg

- Transportation Infrastructure project such as EV, or Multi-Mode Home-to-Job Transportation

- Use of Drones for Infrastructure Inspection

Thank You!

More information at: CIT.Org/VASmart

David Ihrie, CTO
Center for Innovative Technology
David.Ihrie@CIT.Org

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February 18, 2021

SHENANDOAH VALLEY
TECHNOLOGY COUNCIL