Using Smart Technologies to Drive Regional Transformation

NTIA Webinar Series

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May 20, 2020
Participants

Moderator:
• Jean Rice, Senior Broadband Specialist, NTIA’s BroadbandUSA

Presenters:
• Mark Fisher, President and CEO, Council of the Great Lakes Region
• Dominic Papa, Vice President, Smart States Initiative, Arizona Commerce Authority
• Jonathon Fink, Professor of Geology and Director of the Digital City Testbed Center, Portland State University
Helpful Information

Questions
• Please type questions in the Q&A box on the right hand side of the screen. Questions will be taken after the final presenter.

Presentation
• The presentation along with a transcript and recording will be available on the BroadbandUSA website within 7 days of this webinar under Events/past events.
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Smart Region Transformational Opportunities

- Access
- Mobility
- Inclusion
- Sustainability
- Innovation
- Work
- Cost Savings
- Economic Development
- Smart Regions
- Smart Agriculture
- Smart Water, Electricity, Waste
- Education
- Health
- Resiliency
- Smart Buildings
- Cybersecurity
- Civic Engagement
- Data Driven Decisions
- Workforce Development
- Civic Engagement
- Privacy
- Government
GCTC Smart Regions Collaborative

**Principal Partners:**

- Tri-State Region (PA, WV, OH) Food System Project
- Wabash Heartland Innovation Network (WHIN) – Advancing Agriculture and Manufacturing via IoT
- Lake Tahoe Basin End Warning System and Bi-State Next Gen 911 Dispatch and Traffic Management Center
- The Great Lakes Smart and Sustainable Cities Cluster
- Supercomputer Modeling and Artificial Intelligence Cluster for Smart Cities and Regions
- Greater Washington Smart Region Movement
- Portland/Seattle/Vancouver Area Cascadia Initiative
- San Mateo County
- Smart Regions Initiative, Silicon Valley
- ASEAN Digitally Twinned Smart Cities
- State of Arizona
Value of the GCTC Smart Regions Collaborative

- Elevates smart cities and communities conversations to the regional level
- Encourages the formation of teams that span across jurisdictions, sectors, and disciplines
- Regional projects not limited to one particular issue area (can address resiliency, health, public safety, agriculture, mobility, and more)
- Highlights that regional, smart approaches are critical to reach people living in ALL types of communities
Value of the GCTC Smart Regions Collaborative

Create a blueprint that empowers local, regional, and tribal leaders to build their own smart region strategies.

Link participants to information, technical assistance, and connections to relevant industry professionals.

Allow plenty of opportunities for peer-to-peer networking.

Hold regular discussions on topics that come up as challenges in most smart region efforts.
The Freeway and Arterial System of Transportation (FAST) is one of the first truly integrated Intelligent Transportation System (ITS) organizations in the country.

Red River Regional Dispatch 1st to cross state lines working under a Joint Powers Agreement (JPA) servicing all law enforcement, fire, and medical response.

The San Francisco Bay Area Water Emergency Transportation Authority carries over 2.8 million passengers annually utilizing a fleet of 14 high speed passenger-only ferry vessels with coordinated water transit response to regional emergencies.
WABASH HEARTLAND INNOVATION NETWORK

We exist to cultivate a regional ecosystem that empowers globally competitive businesses to plant and grow in the Wabash Heartland.

We envision the Wabash Heartland as a global leader of digital agriculture and next-gen manufacturing empowered by smart IoT platforms.

Engage agriculture producers/businesses in the region and develop career-ready certificates, digital-readiness trainings, and agriculture IoT testbeds.

Enable real-time analytics of manufacturing systems, develop workforce education opportunities, and IoT testbeds.

Invest in innovative place-making projects that increase education, vitality, and connectivity.

Smart technology. Smart region. Smart future.

http://WHIN.org
National Supercomputing and Artificial Intelligence SuperCluster for Smart Cities and Regions

Super Computing
Partner eco-system
Data economies
Solution Marketplace
Artificial Intelligence ICT Systems
Innovation Testbeds
Policy and Ethics
Global Reach
Resiliency
Cities, Regions, Rural
Mark Fisher, President and CEO, Council of the Great Lakes Region
BroadbandUSA Webinar:

Smart, Sustainable Great Lakes Cities Cluster

Mark Fisher
President & CEO
Council of the Great Lakes Region
OUR VISION
To create the most prosperous, innovative, sustainable, and welcoming region in the world.

OUR MISSION
CGLR will lead a new era of economic growth, environmental protection, and individual well-being by connecting diverse interests and sectors across the Great Lakes Region to one another, discovering solutions to complex policy problems, and influencing decisions that affect the region’s long-term competitiveness and sustainability.
Great Lakes Megaregion – A Key Drive of North America’s Economic Growth and Sustainability

- **21%** of the world’s surface fresh water
- **107 million people** eight states; two provinces
- **51 million jobs**, or 1/3 of the combined U.S. and Canadian workforce
- **3rd largest economy** in the world if the Region were a country
Smart, Sustainable Great Lakes Cities Cluster, launched in 2019, aims to create a unique, binational platform that will allow the region to collaborate in:

– **Co-developing and testing protocols** and standards to support the deployment of smart solutions in an open, regional environment;
– Demonstrating and **scaling smart solutions**, as well as sharing best practices and lessons learned, in a non-commercial sandbox;
– Taking advantage of **shared investment and procurement** opportunities; and,
– Adopting new techniques for **measuring and communicating sustainability**, from the city-level, to the regional and national level.
Defiance, Ohio is the first demonstration project:

- The tri-state Maumee River Watershed is the largest in the Great Lakes basin.
- Maumee River basin governments spending $1 billion on CSO improvements.
- But, 85% of the Maumee River’s nutrient loading passes the City of Defiance from upstream, non-point sources.
- To improve Defiance’s drinking water and ensure investments have impact, city’s focus has shifted to source water partnerships.
- Smart, digital solutions a key component of future protection efforts.
Defiance and Ohio are ideal for the first pilot project because Governor Mike DeWine has made harmful algae blooms in Lake Erie and state-wide broadband top priorities:

- **H2Ohio Initiative**
  - Water Quality Funding

- **Innovate Ohio**
  - Broadband Funding

- **Results Ohio**
  - Leverage Private Funding

- **USDA Farm Bill**
  - Rural Broadband Funding
“Big challenges require broader and more strategic thinking on multiple fronts; we believe that these innovative and collaborative efforts will lead to better outcomes for water quality, not just in Defiance, but throughout the Great Lakes Region. The City of Defiance is dedicated to working closely with the Council of Great Lakes Region and Defiance County in order to protect water quality while supporting the local economy and agriculture in our region.” – **Jeff Leonard, City Administrator for Defiance, Ohio**
Priority Areas of Focus for the Smart, Sustainable Great Lakes Cities Cluster

- Manufacturing
- Agriculture
- Energy
- Borders
- Transportation
- Sustainability
Next Steps

• Secure Cluster members and partners, and form steering committee.

• Develop Cluster vision, strategy, and multi-year action plan.

• Procure funding to start, scale and sustain the Cluster, and to seed demonstration projects.

• Promote and scale Defiance pilot, and invite new collaborators and funders to support the project.

• Launch Smart, Sustainable Great Lakes Cities webinar series to share best practices.
Get Involved.

Mark Fisher President & CEO
Council of the Great Lakes Region

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mark@councilgreatlakesregion.org
Using Smart Technologies to Drive Regional Transformation

Thank you, Mark!
Dominic Papa, Vice President, Smart States Initiative, Arizona Commerce Authority
May 20, 2020

SMART CITY 3.0
SMART REGION 1.0
SMART STATE 0.5

Disrupting Governance to Drive Digital Transformation at Scale
Communities across the globe are deploying technology to compete globally, accelerate solutions to real challenges facing their residents, and enhance the quality of life and well-being for all residents and businesses. Communities that fail to adapt risk becoming part of the digital dustbowl.

Over time, cities have come to understand that it is not a single project that makes them smart, rather it is the process of using technology to continually improve government efficiency, enhance citizen well-being and solve complex problems.

“The technology is easy, it’s the people and the process that are difficult.”
National Leading Cities
SMART CITY CHALLENGE
TRANSPORTATION REIMAGINED
COLUMBUS

$140 Million
Challenges for Smart Cities 2.0

• Lack the internal talent and knowledge of technology

• DEATH BY PILOTS - Limited budgets and limited staff - inability to scale

• Bureaucracy, silos within organization hinders cross-departmental collaboration

• Procurement costs

• Procurement process slows down innovation

• Risk averse
SMART REGION: BY THE NUMBERS

Largest Public Research Institution in the Nation: ASU

#1 Most Innovative University in the Country X5: ASU

Largest Community College System in the Country: MCC

Fastest Growing County in the U.S.: Maricopa County

4th Largest County in the U.S.: Maricopa County

5th Largest City in the Country: Phoenix

22 Cities and Towns Coming Together to Build

1st Smart Region in the Country: Arizona

Partners: ASU, MAG, GPEC, MCC
If you want to go fast, go alone.
If you want to go far, **GO TOGETHER!**

FIRST-OF-ITS-KIND

Technology & Innovation “Do-Tank”

**RESEARCH**
What is the challenge we want to solve?

**DEVELOP**
What are the outcomes we want to achieve?

**DEPLOY**
What are the technology solutions required?
“CONNECTIVE” GOVERNANCE

- Drive the creation of opportunity projects.
- Determines which projects to focus on.
- Develop plan to deploy or research/test solutions.
- Manages the process and provides support.

RESIDENTS NEEDS AND CHALLENGES
LEADERSHIP COUNCIL
OPPORTUNITY PROJECT TEAMS
EXECUTIVE TEAM
FACING CHALLENGES

Insurmountable challenges demand unprecedented levels of **COLLABORATION**!

- The Consortium is the permanent platform that allows governments, private industry and academic research institutions to collaboratively design and develop new innovative technology pilots that advance solutions to public challenges, have a measurable impact, and the potential to scale.

- The Consortium is designed to ensure that **ALL** the communities across the Phoenix Metropolitan region have the tools and skills necessary to evolve and prosper in the new digital age.

The Consortium will be the innovation engine of the region that moves projects forward from challenge to solution at scale.
CAN WE GO FURTHER?

If you want to go fast, go alone. If you want to go far, GO TOGETHER!
SMART CITIES 4.0: BUILDING THE SMART STATE

➢ A unified, policy-driven approach to digital transformation.

➢ Vertical and horizontal alignment across all levels of government.

➢ Leverage regional platforms to advance sector-specific focus and accelerate the commercialization of technologies and solutions.
IAM Institute of Automated Mobility

Shaping the future of transportation safety, science, and policy
The large-scale market and societal disruption being caused by automated vehicles and the lack of safety standards is slowing down the commercialization of technology and putting the industry at risk.
An industry-driven, government supported, technology-neutral platform to drive the validation of consistent safety standards and policies that do not yet exist.
Why a Smart State

- Technology disruption is a global force we must confront and harness together to our advantage.

- Developments in digital technology present opportunities for Arizona to enhance our strengths, overcome our economic challenges and physical limits, and build new sources of comparative advantage.

How do we become a Smart State

- In a Smart State, we will see transformation in key domains – health, mobility, urban solutions, finance, and education (still to be determined).

- This means every industry, business and government (at all levels) stepping up to collaborate and accelerate our digitalization efforts, to drive a state-wide movement.

- A unified approach built on a strong systems foundation with clear, connected, and aligned investment channels.
CHALLENGE?
REMOTE STUDENT LEARNING

Invest

Scale

Develop

Commercialize

Test & Prove
WHETHER YOU THINK YOU CAN, OR THINK YOU CAN’T… YOU’RE RIGHT!
Using Smart Technologies to Drive Regional Transformation

Thank you, Dominic!
Jonathon Fink, Professor of Geology and Director of the Digital City Testbed Center, Portland State University
Digital Cities Testbed Center: Evaluating Digital Technologies in the Cascadia Corridor

Jonathan Fink
Portland State University
Digital City Testbed Center Director
What is a “Smart” or “Digital” City?

“Smart Cities” refers to the use of digital technology (sensors, cloud computing, analytics, visualization) to improve urban operations and residents’ quality of life.
The *Promise* of Smart Cities

- Technology can improve operations, access, equity, health, environment

**Improve City Operations**

**Universal Accessibility**

**Equitable Opportunity**

**Better Health Outcomes**

**Emissions Reduction**
The *Risks* of Smart Cities

- Concerns about security, ethics, equity, monopolies, non-interoperability
Three *Challenges* of Smart Cities

- How do **cities** evaluate their smart options?
- How does the **public** assess smart futures?
- How do **companies** align smart products?
All These Groups Need *Tech* to be *Tested*

How do **cities** evaluate their smart options?

How does the **public** assess smart futures?

How do **companies** align smart products?
Campuses can be Ideal Smart City Testbeds
Digital City Testbed Center seeks to fill this gap

- **Urban-immersed**: 55 acres
  - Portland State University

- **Greenfield development**: 18 acres
  - Oregon Museum of Science & Industry

- **Autonomous**: 990 acres
  - University of British Columbia
Digital City Testbed

Network

2019

PSU

OMSI

UBC

2020

UW

PDX Airport

2021

Microsoft

OR Health & Sci Unit

Oregon Zoo
Digital City Testbed **Rationale**

1. Test before deployment
2. Partnering with cities is critical
3. Use academic, corporate, non-profit campuses
4. Focus on “Cascadia” region of OR, WA, and BC
5. Address replicability, interoperability, and data sovereignty
6. Emphasize social science and policy-relevant issues
7. Applications: accessibility, resilience, and public education
"Smart" Urban Applications and Technology

- Hello Lamp Post
- Sensible Building Science
- Egoism Cities
- Downtown.ai
- Ike Smart City
- Array of Things
- Digital
- Numina
- Wayfarer
- PREP Hub
- Urban Leap
- Nearby Explorer
PSU-PDX Smart Campus *Corridor*

**Issues**
- Seismic Preparedness
- Restricted Mobility
- Restricted Vision
- Bike-car Collisions
- Outdoor Air Quality
- Indoor Air Quality
- Building Occupancy
- Public Education
- Public Feedback
PSU-PDX Smart Campus Corridor

PREPHUB
Accessibility map

AccessMap

Array of Things

Sensible Building Science

Hello Lamppost

Ike Smart City

Air Advice

Numina

PSU-PDX Smart Campus Corridor
Track near-collisions of vehicles with bikes, pedestrians

- Vehicle tracking
- Bicycle tracking
- Pedestrian tracking

- Smart PDX and DCTC shared cost
- Deploying first on UBC campus
- Camera anonymizes all images
Help people in wheelchairs avoid steep slopes

- Maps topography and obstructions
- Tracks accessible elevators
- Finds routes with gentlest slope

- Developed at Univ. of Washington
- 1st on UW campus, then UBC, PSU
- Useful for cities and universities
Smart urban innovation can apply at all scales

- Household/block
- Neighborhood/Campus
- City
- Metro
- Regional (Megapolitan)

Smaller scales easier to influence
Larger scales have more impact
Expand from Campus to District Scale

OMSI = 18 acres

Central Eastside = 600 acres

Central Eastside Industrial Preserve
Expand from Campus to District Scale

Brooklyn Navy Yard
NY

Bellevue Spring District
WA

Central Eastside
Industrial Preserve

OMSI District
Expand from City Scale to Metropolitan Scale to Megapolitan Scale
Vancouver, Seattle and Portland form the **Cascadia Innovation Corridor**

- Homogeneous
- Green
- Socially aware
- Tech-savvy
- Geologically unstable
Summary: DCTC and Cascadia Corridor

- Cities and universities partner to evaluate tech on campuses
- Assess positives and negatives of urban technology
- Co-locate technologies to look for new synergies
- Scale from campus to district to city to metro to megapolitan
Using Smart Technologies to Drive Regional Transformation

Thank you, Jonathon!
Using Smart Technologies to Drive Regional Transformation

Questions and Comments

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Utilizing Federal Data to Measure the Digital Divide
June 17, 2020
2:00 pm EST

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https://broadbandusa.ntia.doc.gov/event
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For General Information:
202-482-2048
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https://broadbandusa.ntia.doc.gov/resources

To Request Technical Assistance (TA):
Broadband TA Request Form -
https://broadbandusa.ntia.doc.gov/ntia-common-content/how-we-can-help

BBUSA Resources
• Implementing a Broadband Network Vision: A Toolkit for Local and Tribal Governments
• Community Broadband Roadmap Toolkit
• Guide to Federal Funding of Broadband Projects
• Using Partnerships to Power Smart Cities