Smart Cities Institute Launch
March 1-2, 2018
METRO21: SMART CITIES INSTITUTE
An Overview

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Mission

Develop 21st century solutions to the challenges facing metropolitan regions.
Metro21 Quick Facts

Formed in 2014, **Metro21** spun out of Traffic21, Carnegie Mellon’s successful transportation institute and two USDOT National University Transportation Centers.

**Metro21** is a university-wide institute.

**Metro21**’s backbone is its strong partnerships with government agencies, the private sector and the non-profit sector.
Early seed funding by the Henry L. Hillman Foundation supplemented by university internal funds and grants from the Pentair and IBM Corporations made possible the launch of the campus-wide Metro21 Initiative in July 2014.

Generous investments by the Heinz Endowments, Richard King Mellon Foundation and Buhl Foundation added to the current momentum.
Memorandum of Understanding
Between
Carnegie Mellon University
Metro21 Initiative
and
The Honorable Mayor of the City of Pittsburgh

This Memorandum of Understanding (MOU) sets forth the terms and understandings between the named parties to pursue their mutual interest to research, develop, deploy and evaluate technology and analytically based solutions to the problems facing the systems and infrastructure that serve the quality of life and economy of the City of Pittsburgh and other communities, cities, states and metropolises around the globe.

Memorandum of Understanding
Between
Carnegie Mellon University
Metro21 Initiative
and
The County of Allegheny

This Memorandum of Understanding (MOU) sets forth the understandings between the named parties to pursue their mutual interest to research, develop, deploy and evaluate technology and analytically based solutions to the problems facing the systems and infrastructure that serve the quality of life and economy of Allegheny County and other communities, cities, states and metropolises around the globe.

Background
Allegheny County ("the County"), like other urban counties around the country, faces complex challenges involving interacting infrastructure networks and systems. It is critical to understand that these problems are not confined to Allegheny County alone, but are part of a larger network that spans across the state and beyond. This memorandum is intended to formalize the commitment of the parties to work together to address these challenges.

These MOUs demonstrate the commitment of the parties to work together to address the complex challenges facing the regions and communities they serve. The MOUs will provide a framework for collaboration, research, and the deployment of innovative solutions to improve the quality of life and economic vitality of the regions they serve.
Carnegie Mellon University

College of Fine Arts

Dietrich College of Humanities and Social Sciences

College of Engineering

Heinz College

School of Computer Science

Tepper School of Business
Executive Committee

Robert Dammon, Dean, Tepper School of Business

James Garrett, Dean, College of Engineering

Farnam Jahanian, Interim President, Carnegie Mellon University

Ramayya Krishnan, Dean, Heinz College of Information Systems and Public Policy

Dan Martin, Dean, College of Fine Arts

Andrew Moore, Dean, School of Computer Science

Richard Scheines, Dean, Dietrich College of Humanities and Social Sciences
The Metro21 Family
Metro21 Partners at CMU

- Block Center for Technology and Society
- Center for the Future of Work
- Remaking Cities Institute
- Wilton E. Scott Institute for Energy Innovation
Metros

Transport  Water  Gas  Telecomm  Law & Order  Healthcare  Air Quality
A Smart City: A “System of Systems”

Far greater than an assembly of technologies and data

- Safe mobility
- Net zero energy
- Clean air and water
- Economic prosperity
- Safe and healthy citizens
- Smart buildings and infrastructure
- ...
Building Blocks

Transportation/mobility
Digital and physical infrastructure
Communications backbone
Sensing and Actuators
Cloud and “Edge” Computing
Security & Privacy

Users

Citizens

Businesses

Communities

City Workers

Planners

Policy Makers
**Pillars of Metro21**

**Inter-disciplinary** focus:
people, technology and policy

**Intellectual** core:
scholarship, science and education

**Solutions to real-world problems:**
Research, Development and Deployment (RD&D)
Metro21: An Innovation Engine

- Ubiquitous sensing
- Connected & automated vehicles
- Video and data analytics
- AI and Big Data
- Multi-dimensional optimization
- 5G communications
- Cyber-physical security
- Urban planning
- Policy enablers
- Economic models
- ...
Metro21: A Change Agent

- Digital and communications infrastructure - OPERA
- Robotics and AI - Surtrac
- Mobility – ridesharing and autonomous vehicles (AVs)
- Data sharing among the silos
- Policy – sustainable revenues and equitable benefits
Innovation and Entrepreneurship

Metro21 has built momentum that has launched several startups.
Scholarship – Core to Metro21

• Education

• Science of smart cities

• Policy and economic implications
Science of Smart Cities

• How can we model a city?
• How can we test an intervention or enhancement before implementing it in practice?
• How can solutions scale with growth?
• Can solutions be parameterized for generalization and specialization?
• Can we have full-fledged textbooks on how to build, operate, scale and optimize cities?
Metro21 Approach

Innovation Axis

Deployment Axis

Smart Belt Coalition
PA, OH and MI

Carnegie Mellon University
Yielding better mobility, safety, air/noise/water quality, healthcare, law enforcement, ... Equitably and affordably to all residents and businesses of a metro region.
Summary

• The Metro21: Smart Cities Institute will leverage innovations in technology, policy and their interplay to have a positive impact on metropolitan societies.

• Metro21 aims to solve real-world problems assisted by an intellectual core of scholarship, education and expanding knowledge.

• Metro21 seeks to develop a science of smart cities.

• Metro21 will work closely with government, private sector and non-profit partners.
We invite you to join us to make our cities much better places to live in.