CENTER FOR URBAN SCIENCE+PROGRESS

The Promise of Urban Informatics

ANSI Joint Member Forum

April 4, 2013

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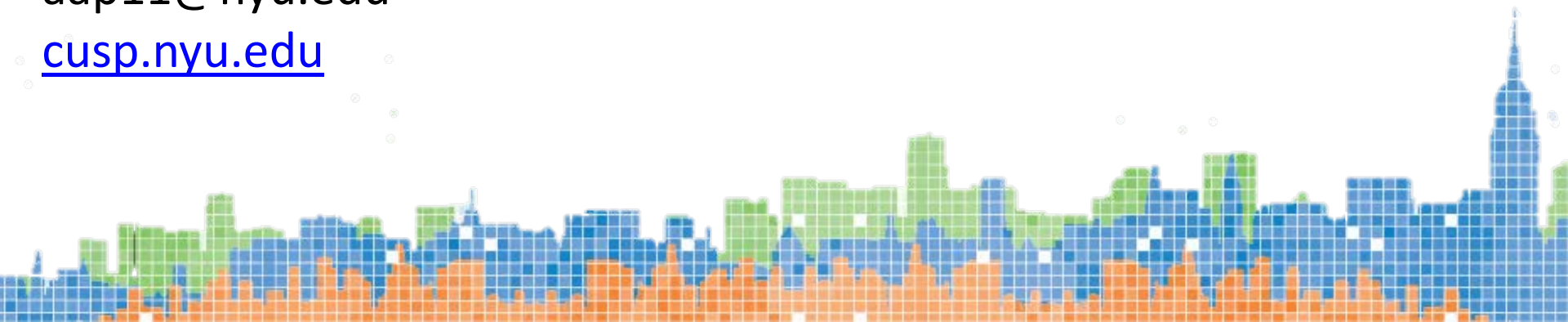
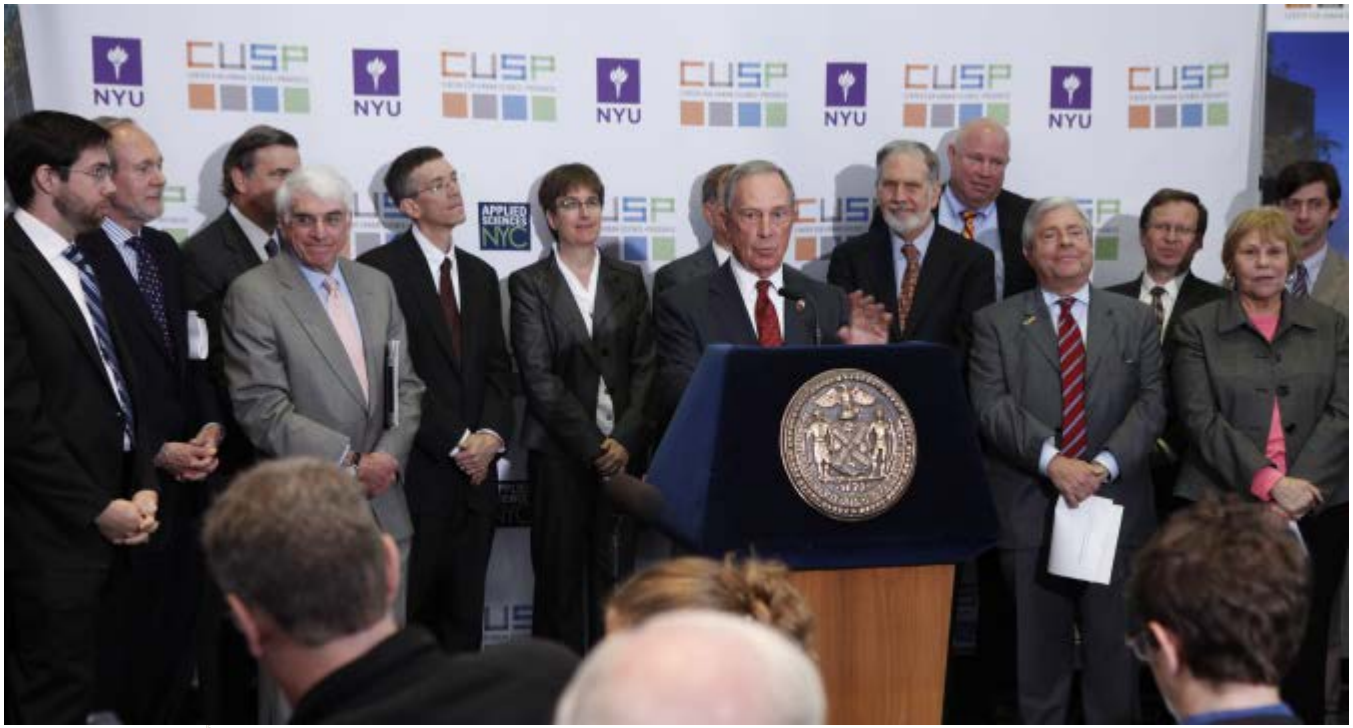


CUSP is Part of the NYC Applied Sciences Initiative

Mayoral Announcement April 23, 2012



What does it mean to instrument a city?

Infrastructure

Condition, operations

Environment

Meteorology, pollution, noise, flora, fauna

People

Relationships, location, economic /communications activities, health, nutrition, opinions, …

Properly acquired, integrated, and analyzed, data can

- Take government beyond imperfect understanding
  - Better (and more efficient) operations, better planning, better policy
- Improve governance and citizen engagement
- Enable the private sector to develop new services for citizens, governments, firms
- Enable a revolution in the social sciences

Urban Data Sources

- **Organic data flows**
  - Administrative records (census, permits, …)
  - Transactions (sales, communications, …)
  - Operational (traffic, transit, utilities, health system, …)
- **Sensors**
  - Personal (location, activity, physiological)
  - Fixed *in situ* sensors
  - Crowd sourcing (mobile phones, …)
  - Choke points (people, vehicles)
- **Opportunities for "novel" sensor technologies**
  - Visible, infrared and spectral imagery
  - RADAR, LIDAR
  - Gravity and magnetic
  - Seismic, acoustic
  - Ionizing radiation, biological, chemical
  - …

What can cities do with the data?

- **Optimize operations**
  - traffic flow, utility loads, services delivery, …
- **Monitor infrastructure conditions**
  - bridges, potholes, leaks, …
- **Infrastructure planning**
  - zoning, public transit, utilities
- **Improve regulatory compliance** (“nudges”, efficient enforcement)
- **Public health**
  - Nutrition, epidemiology, environmental impacts
- **Abnormal conditions**
  - Hazard detection, emergency management
- **Data-driven formulation of data-driven policies and investments**
  - Low-Income Home Energy Assistance Program, road pricing and congestion charging, …
- **Better inform the citizenry**
- **Enhance economic performance and competitiveness**

The CUSP Partnership

University Partners

- NYU/ NYU-Poly
- University of Toronto
- University of Warwick
- CUNY
- IIT-Bombay
- Carnegie Mellon University

National Laboratories

- Lawrence Livermore
- Los Alamos
- Sandia
- Brookhaven

Industrial Partners

- IBM
- Cisco
- Xerox
- Con Edison, Lutron, National Grid, Siemens
- AECOM, Arup, IDEO

City & State Agency Partners

- City of New York
  - Transportation
  - Buildings
  - Sanitation
  - Citywide Administrative Services
  - Design and Construction
  - City Planning
  - Finance
  - Health and Mental Hygiene
  - Environmental Protection
  - Information Technology and Telecommunications
  - Parks and Recreation
  - Police Department
  - Fire Department
- MTA
- Port Authority of NY & NJ

A diverse set of other organizations have expressed interest in joining the partnership.

In 5-10 Years, CUSP will be a major center for research and education in Urban Informatics

- 50 full-time senior researchers
  - 30 faculty, 20 industrial
- 30 Postdocs
- 430 Masters students and 100 PhD candidates
- Located in Downtown Brooklyn
  - 60,000 ft^2 leased in 1 MetroTech
  - 150,000 ft^2 + 40,000 ft^2 incubator post-2017 in 370 Jay Street
- Government (esp. Federal), corporate, philanthropic, academic funding to $70M/yr

CUSP Facilities Being Developed

- **Data access policies, technologies, infrastructure**
- **Urban Observatory**
- **“SimCity for real”**
- **Quantified Community**