Global City Teams Challenge

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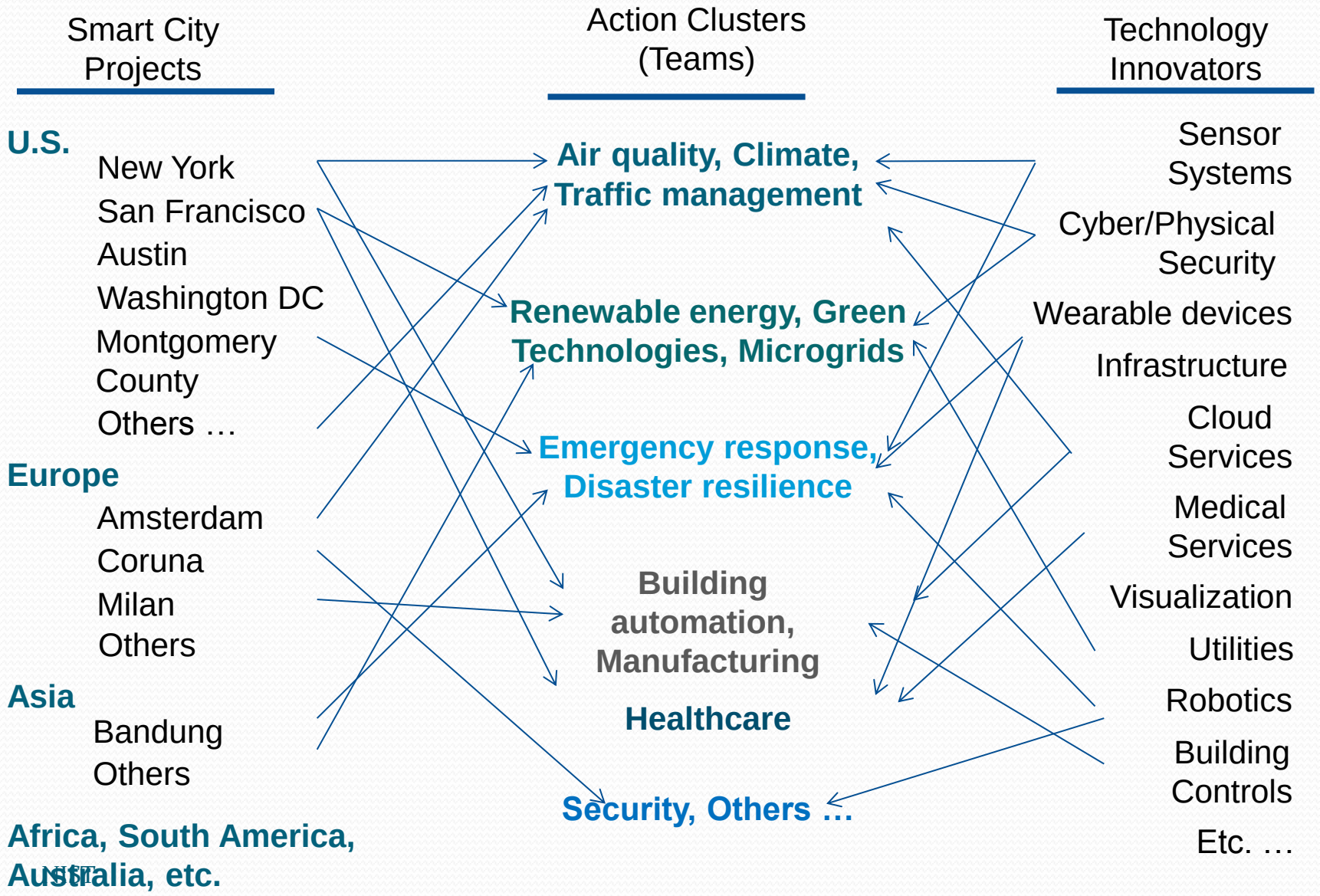
Opportunity for Smart Cities

- Smart Cities/Communities are increasingly turning to advanced technologies to improve services, promote economic growth, and enhance the quality of life.
- Many IoT/CPS innovators already have technologies (i.e., building blocks) and their impact can be maximized by fostering collaboration among the innovators to create interconnected solutions to provide tangible benefits to end users.
- Current deployments of IoT/CPS are fragmented lacking interoperability and standards.
- Many smart community efforts are one-off projects with heavy emphasis on customization and inadequate consideration for future upgradability and extensibility, which end up causing increased cost and inefficiency. As a result, many Smart Cities/Communities deployments are isolated and do not enjoy the economy of scale.

The Goal of the Challenge

- Establish and demonstrate replicable, scalable and sustainable models for incubation and deployment of interoperable, adaptable and configurable IoT/CPS technologies and solutions in Smart Communities/Cities.

The Approach



Process of GCTC 2015

- Kickoff Workshop (Sept 2014)
  - Provide an opportunity for the participants to meet each other
  - Team building - cities, companies, academic institutions, and non-profits (16 teams created)
  - Establish core teams and set the goals of the teams
- Tech Jam (Feb 2015)
  - Mid-core workshop to review the progress (33 teams reported)
  - Teams report their progress and finalized plans to achieve the goals
  - Recruit additional team members
  - New teams get formed
- Expo (June 2015)
  - Invite stakeholders and interested parties
  - Show off the accomplishments and celebrate the success (64 teams)
  - Share the experiences with other teams and media/public

LinkNYC by City Bridge

First-of-its-kind communications network that will bring the fastest available municipal Wi-Fi to millions of New Yorkers and visitors

Source:

New York City, Qualcomm Incorporated, Titan360, Control Group, COMARK Corporation, Antenna Design

ARIBO

ARIBO marries technology and operational context to demonstrate and experiment with autonomous vehicle systems in real-world, semi-controlled environments. It is a *practical-to-tactical* approach that will guide the U.S. application of, and investment in, robotic technologies and automated vehicle policy. ARIBO is the U.S. self-driving living laboratory...

GLOBAL CITIES CHALLENGE 2015

ARIBO has grown from 3 automated vehicle pilots in Smart America Challenge to 9 for Global Cities Challenge. The routes are expanding to longer, mixed use and even public streets (Seattle, Tampa). We are also expanding the types of vehicles to include new mid-sized electric shuttles and full-size electric city buses. Our goal is 20 sites and at least 100 vehicles by 2017.

Energy Storage based Adaptive Demand Response in Smart Commercial Buildings

Objective:

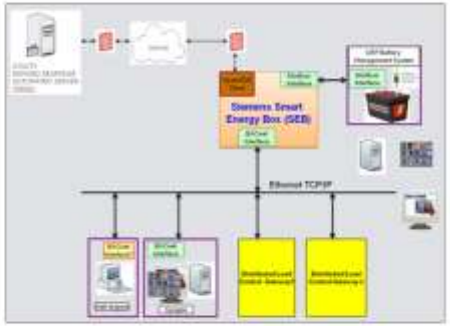
To develop and demonstrate how battery electrical storage can be used synergistically in conjunction with a commercial building's other DR capabilities.

Impacts:

- Reduce grid stress and rate payer cost
- Spur technology innovation
- Reduce environmental impacts
- Improve grid reliability

Domains/Sectors:

- Advanced battery technology
- Smart grid and smart building systems
- Building-based cyber physical systems and relevant control algorithms



URBAN ELECTRIC GRID @ NIST | SIEMENS | COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK | NY BES+ NEW YORK BATTERY AND ENERGY STORAGE TECHNOLOGY CONSORTIUM | CUNY The City University of New York

Connected, Intelligent Transit

Smart City Applications

NIST

GCTC Expo on June 1 at National Building Museum in Washington DC

Source: National Building Museum web site

- Exhibitions and presentations from over 64 teams in partnership with 50+ municipal governments
- Special Session with the **King Willem-Alexander and Queen Maxima** of the Netherlands
- Keynote Speeches
  - **Anthony Foxx**, US Secretary of Transportation
  - **Tom Kalil**, Deputy Director of White House Office of Science and Technology Policy
  - **Willie May**, Director of NIST and Under Secretary of Commerce
  - **Jim Kurose**, Assistant Director, NSF
- 1500 attendees including smart cities experts, CPS/IoT stakeholders, cities, communities, federal governments, industry and academia
- 50+ media outlets from around the world

Smart City/IoT Standards/Frameworks

- Establishment of a Smart Cities Framework
  - Informed by the record established by the Challenge, address standards and measurement challenges in deploying IoT and CPS in Smart Cities/Communities to serve as the basis for the framework

- Initiation of a IoT Global Connectivity Fabric Framework
  - Based on the inputs from the participants and the outcome of the Challenge, initiate architectures guidelines for interconnected "systems of systems" and a common data exchange/data analytics model for large scale IoT deployments.

For More Information

- Contact
  - Sokwoo Rhee (sokwoo.rhee@nist.gov)
- Challenge web site: Meet the action clusters
  - www.globalcityteams.org
- NIST information site
  - http://nist.gov/cps/sagc.cfm
- Social Media
  - Twitter #globalcityteams
- Webcast replay of the GCTC Expo (June 1, 2015)
  - https://www.youtube.com/watch?v=tLnFbLS4AtY&list=PLLiocXmoHP8iQBmCdgNnILPLAyPMAojYF
- SmartAmerica Round One web site
  - http://www.smartamerica.org/