

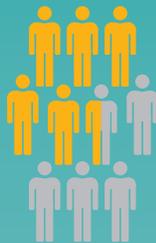
# SMART CITIES/CPS AT NIST

## BY THE NUMBERS

**54 percent**

Of the world's population lives in cities

*(United Nations)*



**100+**

Cities and organizations have joined NIST's Global City Teams

Challenge to create smart cities

**15 percent**

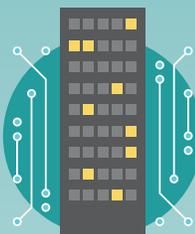
Of cities worldwide are pursuing smart city opportunities

*(IDC Corp.)*

**\$40 billion**

Projected global market for smart city technologies and services by 2020

*(UK-BIS)*



## The Challenge

Communities ranging from small towns to megacities are looking to the power of emerging Internet of Things technologies to better manage their resources and improve everything from health and safety to education and transportation. They can meet their smart city needs with cyber physical systems (CPS)—interconnected hybrids of engineered and IT systems—if certain engineering, security, and measurement challenges can be addressed.

## What NIST Does

- Fosters collaborations that demonstrate that Internet of Things and CPS technologies can boost U.S. competitiveness and provide concrete socioeconomic benefits such as job creation, new business opportunities, economic growth, and improved quality of life.
- Provides a science-based foundation for smart city technologies through its expertise in engineering, information and communications technologies, materials science, and physics.
- Develops performance standards, measurement tools, and guidance that enable city leaders and technology innovators to design and implement effective solutions.

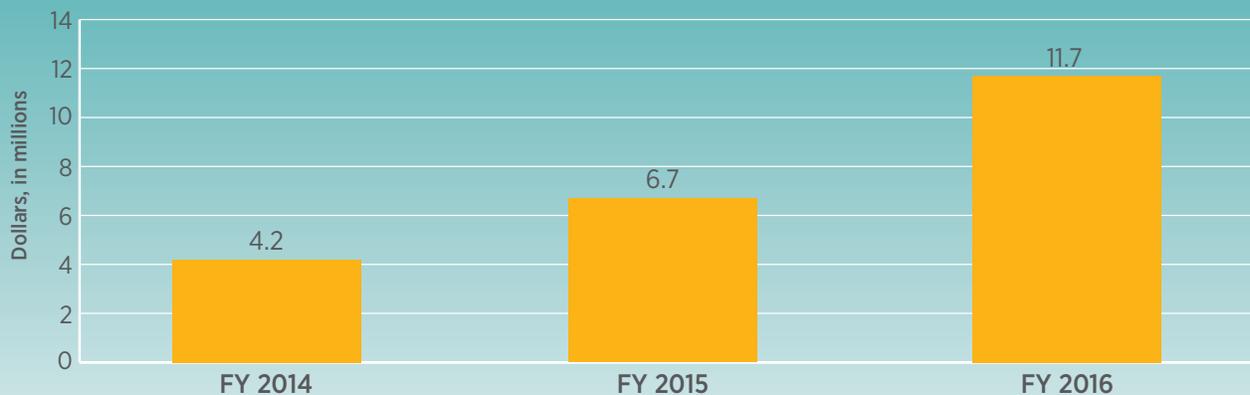
## Program Goals

- Establish measurement science principles for smart city systems design and analysis.
- Coordinate the development of standards and guidelines for smart city interoperability.
- Promote the emergence of smart city test beds for science-based design.
- Pioneer IT building blocks for smart city solutions.

## Recent Program Highlights

- Conducted the SmartAmerica Challenge that brought together entrepreneurs, innovators, researchers, and city leaders from more than 100 organizations to demonstrate how CPS can improve health care, enable effective disaster response, and provide safer living and working environments.
- Launched the Global City Teams Challenge with more than 30 teams of technology innovators, researchers, and cities, including San Francisco, Calif.; Columbus, Ohio; and Annapolis, Md. The teams will demonstrate smart city platforms and architectures that are interoperable and standards-based and can be deployed across cities, regions, nations, and around the world.
- Convened a CPS Public Working Group with more than 200 worldwide participants from industry, government, and academia to develop a shared reference architecture that includes provisions for cybersecurity, data interoperability, and timing.

## Budget



## New for FY 2016

NIST requested an increase of \$5 million and 14 new full-time employees for research and development in Smart Cities/Cyber Physical Systems. This increase will leverage NIST's deep expertise in a number of CPS domains, including advanced manufacturing, smart grid, buildings and structures, health technologies, emergency response, materials science, cybersecurity, and more.

With the requested funds, NIST will focus on:

- Developing the measurement science tools (e.g., real-time sensing and at-scale performance validation) city planners and technology innovators need to develop safe, efficient, and interconnected smart city solutions.
- Working with industry and other stakeholders to develop consensus standards needed for interoperable systems.
- Building a smart city test bed at NIST to support the science-based design of smart city infrastructure, enabling virtual testing of performance and integration.
- Ensuring that cybersecurity and privacy protections are built into the design of smart system solutions.