ADVANCED COMMUNICATIONS AT NIST

BY THE NUMBERS

69 %
Growth of global mobile data traffic in 2014 *(Cisco)*

$41 billion
Raised for research in auction of wireless spectrum
(Dept. of Commerce)

497 million
New mobile devices and connections in 2014 *(Cisco)*

54 partners
Support Public Safety Communications Research at the Commerce Labs in Boulder, Colo. *(NIST)*

What do smartphones, military and public-safety radios, wearable devices and smart vehicles have in common? They all depend on wireless spectrum to send data, voice and images. Increasing demand from these and countless other wireless applications are crowding the airwaves as the Internet of Things grows with more and more connected devices. New technologies are needed to ensure currently available spectrum and any new spectrum, namely in the millimeter wave, is used more efficiently; and that will require collaboration and coordination, as well as rigorous testing. These efforts also will support development of a seamless, broadband public safety communications network across the United States.

What NIST Does

Through its Communications Technology Laboratory (CTL), NIST promotes the development and deployment of advanced communications technologies through research and development in both the metrology and understanding of physical phenomena, materials capabilities and complex systems. NIST performs research in high-speed electronics, wireless systems metrology, antennas, network design and optimization, spectrum sharing and public safety communications. The Center for Advanced Communications, a joint effort between NIST and the National Technology Information Administration, provides opportunities for collaborative R&D and access to test-bed resources.

Program Goals:

- Pioneer new technology platforms for advanced communications.
- Support the adoption of standard technologies into commercial networks.
- Provide research, development, testing and evaluation to foster nationwide first-responder communications interoperability.
- Promote interdisciplinary research, development and testing in advanced communications.
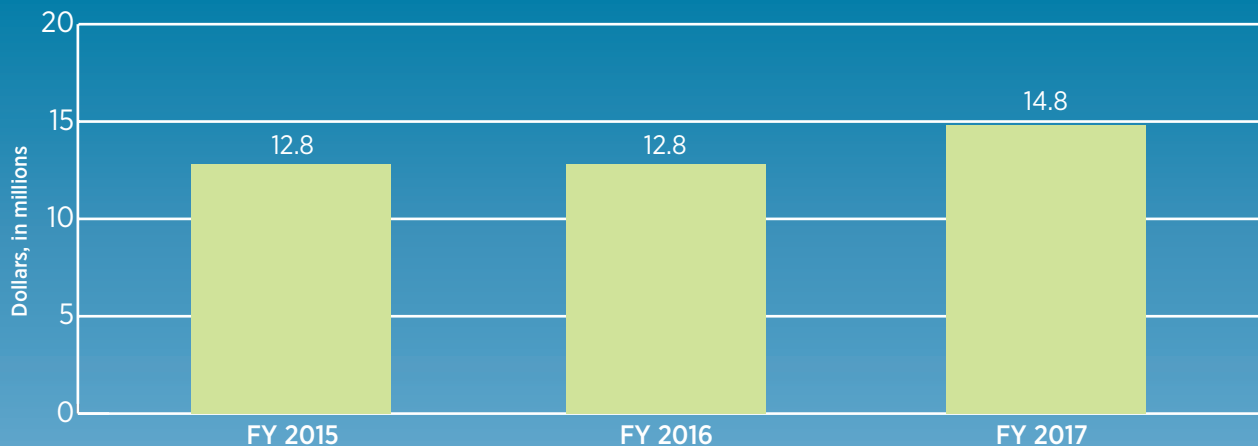
NIST
National Institute of Standards and Technology
U.S. Department of Commerce

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Recent Program Highlights

- The Public Safety Communications Research (PSCR) program within CTL hosted more than 500 participants from government, public safety and industry at its 2015 annual Public Safety Broadband Stakeholder Meeting.

- The PSCR Published the *Public Safety R&D Location Based Services (LBS) Roadmap*, is developing the *Public Safety R&D Analytics Roadmap*, and is initiating development of the *Public Safety R&D Enhanced User Interface Roadmap*.

- The National Advanced Spectrum and Communications Test Network (NASCTN) was established in March 2015 to organize a national network of federal, academic and commercial facilities that would provide the testing, modeling and analysis needed to develop and deploy spectrum-sharing technologies.

- The NASCTN launched three projects to address spectrum-sharing issues in three frequency bands: the Citizens Broadband Radio Band (CBRB), Advanced Wireless Service (AWS-3) and the Global Positioning System (GPS).

- Kicked off the 5G Millimeter Wave Channel Model Alliance to address the need for accurate channel propagation measurements and models that characterize the millimeter wave bands. To date, the alliance counts over 90 participants from industry, academia and other government organizations.

Budget

Dollars, in millions

FY 2015	FY 2016	FY 2017
12.8	12.8	14.8

New for FY 2017

NIST is working to revolutionize public safety communications and increase the nation's communications capacity. The request includes a total increase of $2 million for NIST to:

- Conduct research and assist with the development of standards, technologies and applications to advance wireless public safety communications.

- Conduct research to increase spectrum efficiency and improve spectrum sharing.

- Develop new measurements for next-generation 5G wireless networks and promote the development and deployment of advanced optical fiber communications technologies.