engineering laboratory

NIST and Smart Manufacturing

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National Institute of Standards and Technology
U.S. Department of Commerce

August 2015

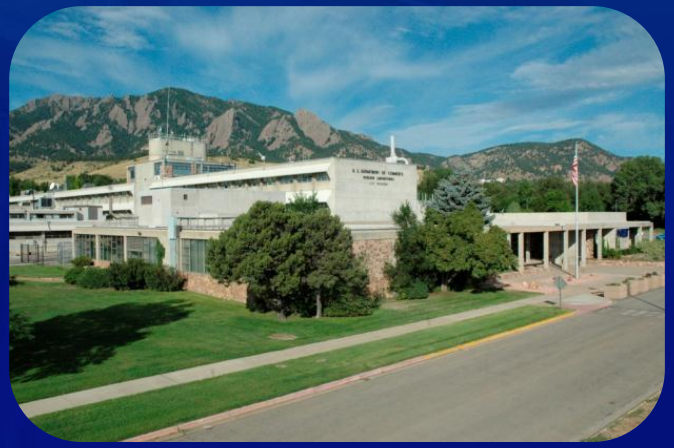
NIST
National Institute of Standards and Technology
U.S. Department of Commerce

NIST's Mission

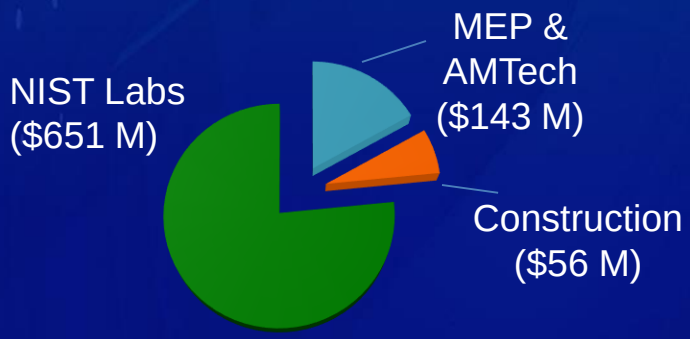
- To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life

NIST: Basic Stats and Facts

- Major assets
  - ~ 3,000 employees
  - ~ 2,700 associates and facilities users
  - ~ 1,200 field staff in partner organizations
  - Two main locations: Gaithersburg, Md., and Boulder, Colo.
  - Four Main Programs: Laboratories, MEP, AMNPO/AMTech, BPEP
  - Six external collaborative institutes: JILA, JQI, IBBR, HML, CHiMaD, NCCoE



FY 2014 Appropriations $850 M



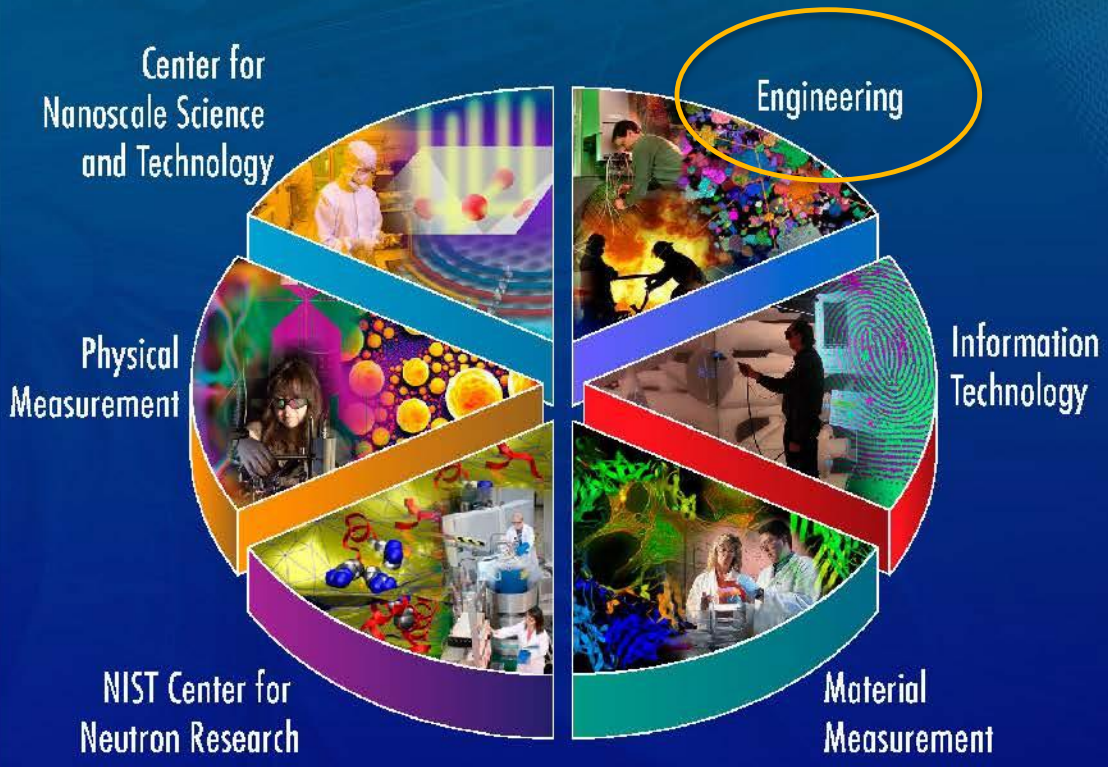
The NIST Laboratories

NIST's work enables

- Advancing manufacturing and services
- Helping ensure fair trade
- Improving public safety and security
- Improving quality of life

NIST works with

- Industry
- Academia
- Other agencies
- Government agencies
- Measurement laboratories
- Standards organizations



Providing measurement solutions for industry and the Nation

Manufacturing Drivers and Challenges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- Demand for Manufacturing Products
  - Customer demand for product variety
  - Customer demand for faster response to needs
  - Growing importance of global markets
  - Societal and economic pressure to increase sustainability
- Pressures on Industry
  - Challenges in maintaining pace with and integrating technology
  - Increasing need for asset and resource efficiency
  - Growing reliance on supply chain and need for robustness and tracking
  - Increasing security risks
  - Shorter product cycles
  - Importance of value-added services throughout the product life-cycle
  - Increasing challenges to integrate with supply chain
- Changing Workforce Skills
  - Growing scarcity of technical manufacturing talent

Technology Trends

- Digital Technologies
  - Internet of Things/Ubiquitous Sensing
  - Big data & advanced analytics
  - Cloud computing
  - Broadband communications, wireless
  - Mobile computing/apps
  - Security technologies
- Advanced Manufacturing Capabilities
  - Advances in additive processes/3D printing
  - Advances in robotics
  - Model-based everything
  - Complex systems engineering
  - Advances in materials

Smart Manufacturing: Harnessing technology to meet manufacturing challenges

Smart Manufacturing: the synthesis of advanced manufacturing capabilities and digital technologies to collaborate and create highly customizable products faster, cheaper, better, and greener

The NIST Contribution:

Measurement science and standards to drive innovation and reduce risks of adoption of Smart Manufacturing technologies

EL Smart Manufacturing Programs

Measurement science and standards to **enable system-level technologies**

- Smart Manufacturing Systems Design and Analysis
- Smart Manufacturing Operations Planning and Control

Measurement science and standards to **enable disruptive process technologies**

- Robotic Systems for Smart Manufacturing
- Measurement Science for Additive Manufacturing

Learn more at **www.nist.gov/el/goalsprograms.cfm**

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