US National Institute of Standards and Technology (NIST)

- Information Technology Laboratory

Computer Security Division

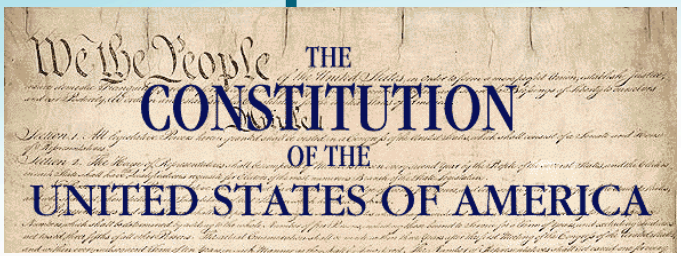
ITL Purpose

Cultivate Trust in IT and Metrology

Division Purpose

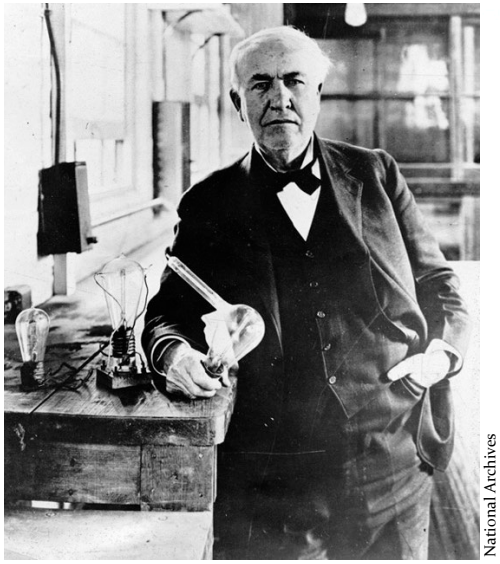
Cultivating ITs Roots of Trust

The Importance of Standards



Article I, Section 8: The Congress shall have the power to…*fix the standard of weights and measures*

- National Bureau of Standards established by Congress in 1901
- Eight different "authoritative" values for the gallon
- Electrical industry needed standards
- American instruments sent abroad for calibration
- Consumer products and construction materials uneven in quality and unreliable


National Archives

Estimated that 80% of global merchandise trade is influenced by testing and other measurement-related requirements of regulations and standards

NIST has two main campuses

Gaithersburg, MD

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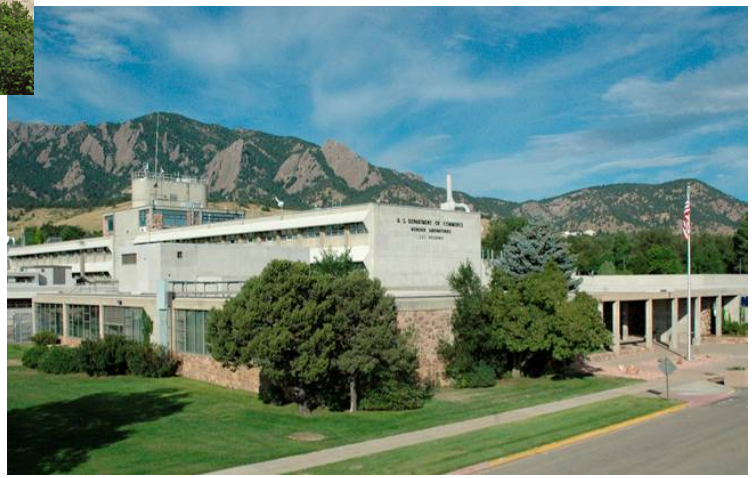
Boulder, CO



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NIST Products and Services

Measurement Research

- ~ 2,200 publications per year

Standard Reference Data

- ~ 100 different types
- ~ 6,000 units sold per year
- ~ 226 million data downloads per year

Standard Reference Materials

- ~ 1,300 products available
- ~ 30,000 units sold per year

Calibration Tests

- ~ 18,000 tests per year

Laboratory Accreditation

- ~ 800 accreditations of testing and calibration labs

Cybersecurity Technical Portfolio

- Cryptography
- Risk Management
- Identity and Access Management
- Testing and Validation

- Software Security, Vulnerability Metrics and Configurations
- Emerging Technologies

Persistence – Excellence - Impact

Cryptography

- Use the crypto you will need at end of life, not start of project. Be agile if you can.
- Transitions are coming
- Buy, don't build; if you can. Buy the good stuff
- Push for interoperability that "up-plays" with your partners

Risk Management

- Speak each others language through common (standard) mechanisms
  - Cybersecurity Framework/SP 800-53/SP 800-39
  - Express your cybersecurity requirements, understand abilities of shared infrastructures, promote your capabilities – Understand
  - Prioritize to protect mission/business essentials
  - IT Controls != Safety ?
  - Leverage Safety, Resilience, Redundancy into cybersecurity capabilities
  - This is a threat model

Identity and Access Management

- Who can access your systems/vehicles/bus/satellites?
  - How do you know?
- What is running on your systems?
  - How do you know?
- What resources are being accessed/used?
  - How do you know?

Good questions to to Protect/Response/Recover/Improve

Vulnerabilities, Configs

- Use of legacy software, hardware, firmware
- Understanding technical vulnerabilities
  - How bad is bad?
- Using secure configurations of software
- Ensuring secure configurations of software

Tools, References and Products

- Papers, Standards, Guidance
- Tools and Testing
  - Software, Cryptography, Identity
- Data References
  - Vulnerabilities, IT Products, Configurations
- Expanded use of GIT Hub, AWS for Distribution
  - Beacon, Test Vectors, SCAP, APPVett, Document Reviews

Find all these resources

https://www.csrc.nist.gov

Publications

Crypto Module Validation Program

NIST Risk Management Framework

Cyber Security Framework

https://www.nvd.nist.gov

Vulnerabilities

Configurations