# Promoting U.S. Innovation and Industrial Competitiveness through Documentary Standards

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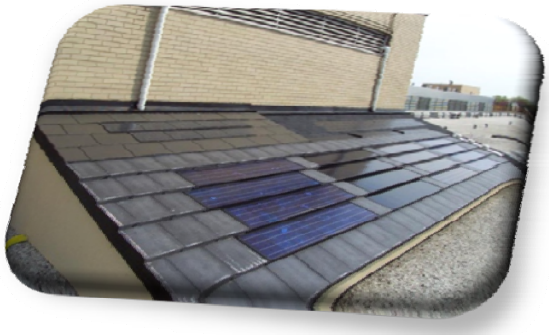
# Outline

- What is a Documentary Standard?
- How do these standards support technology and innovation?
- Who are the players?
- What are NIST roles?
- What are the major issues?
- What does the future hold?

# What is a Documentary Standard?

- A documentary standard is a document that defines a product, process, or system
- It is NOT a measurement standard or an ethics code or a regulatory limit
- Typically, a documentary standard is developed through a process in which interested and affected users determine their needs and collectively, and often consensually, write a document to address the needs
  - A consensus standard meets requirements for balance of interests, consensus, transparency, due process and an appeals process, as well as policies for intellectual property
- The United States uses more than 100,000 standards, including industry unique, consortia-developed, government unique, and full consensus

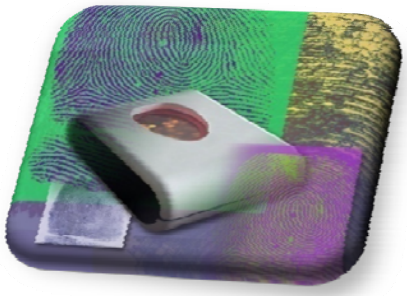
# Types of Standards



**SEMI M6-0707** Specification for Silicon Wafers for Use as Photovoltaic Solar Cells

**ANSI/ASHRAE 90.1-2007 (IP)**
Energy Standard for Buildings

**HCI USB v1.1HCI**
USB Transport



**ANSI INCITS 423.2-2008**
Information technology - Conformance Testing Methodology Standard for Biometric Data

**SAE AS 1349A**
Insert, Screw Thread, Helical Coil, Locking Performance Standard

# Standards are the Bridge Between Research and Products

- Research develops a bright idea; Standards translate that idea into reality
  - Provide structure to build products, systems and deliver services
  - Define products, materials, specifications
  - Provide platform stability for innovation
  - Enable interconnectivity and interoperability
- Protect health, safety and the environment
- Provide quality management practices

# Standards can Become Barriers to Innovation and Trade when:

- Platforms compete
- Technology frozen prematurely
- Consensus fails; standards compete
- Regulatory mandates  differ
- Deliberate trade barriers enacted

# Who are the Players?

- Multiple players In the United States
  - 400+ formal Standards Developing Organizations (SDOs)
  - Numerous consortia, Industry specific standards, government unique standards
- System designed around sectoral approach
- Loose coordination
  - American National Standards Institute (ANSI) accredits SDOs; represents the United States in ISO/IEC
  - NIST coordinates federal use of standards and conformity assessment with the private sector

# What are NIST Roles in Standards?

- Coordination and Policy Guidance
  - Execute NTTAA responsibilities to coordinate Federal standards efforts
  - Execute OMB A119; Provide guidance to NIST and Federal agencies
  - Provide guidance on procedures (using consensus standards)
  - Provide conformity assessment guidance
  - Operate National Voluntary Laboratory Accreditation Program
- Participate in technical committees
- Support the standards-related provisions of the Trade Acts
  - Operate Notify U.S.; National Center for Standards and Certification information;
  - Train foreign officials and experts on U.S. standards and conformity assessment

# The Role of the NIST Laboratories in Standards

- Transfer research results into documentary standards, including test methods, interoperability specifications, building and fire codes, protocols, etc
  - 400 NIST technical staff participate in 1300 standards committee activities
- NIST staff provide leadership for technical committees
  - Serve as chair, secretariat, etc
- NIST staff provide leadership at the Board level for SDOs
  - Serve as Chair, Vice Chair, etc.

# U.S. Standards System is Complex

- No central authority
- Multiple, competitive players
- Government is participant, not primary driver
- Strong bottoms- up system with active industry engagement
- Strong industry input
  - Difficult to start and sustain engagement

# U.S. Standards System: Strengths

- **Desirable characteristics:**
  - Voluntary, consensus-based
  - Open, transparent, balanced
  - Sector-specific
  - Strong industry, consumer input
- **Support:**
  - Speed, flexibility, market responsiveness
  - Communication (producer/user/public)
  - Competition and innovation

# U.S. Standards System: Weaknesses

- The U.S. system is not in sync with the majority of other nations
  - Decentralized versus centralized approaches
  - Diffuse authority and lack of accountability
- U.S. can be disadvantaged by lack of adequate leadership, high costs, duplicate efforts
  - Failure to learn/meet user requirements
  - Difficulty in addressing cross-sectoral needs
  - Competition among SDOs, nationally and globally
  - Heavy reliance on sales of documents

# What are the Challenges?

- U.S. industry wants globally accepted standards
- U.S. government needs standards to meet critical national needs
- No clear way to work across sectors, technology and competing interests
- Apparent competition and duplication among U.S. SDOs with each other and with ISO and IEC
  - Finances and intellectual property for SDOs create conflict with industry and users
  - Testing products and services complicated by overlapping standards
- Strong foreign competition
- Difficulty in ensuring that U.S. technology is incorporated in standards used globally
  - Pool of experts limited

# Opportunities for U.S. Standards

- Standards continue to be based on broad technical input
  - Duplicative standards eliminated
- Stronger central responsibility
  - Government better defines its requirements
  - Leverage NIST strengths more effectively
- U.S. standards and products get fair treatment in a level global playing field
- Standards development and delivery re-engineered to take advantage of IT tools