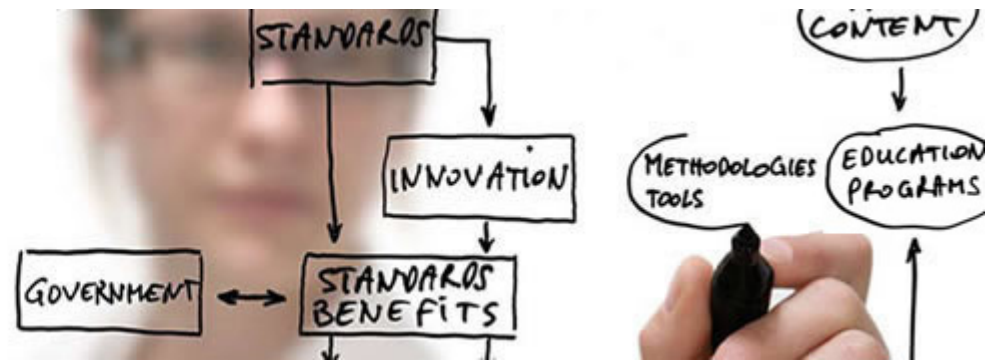




WSC Academic  
Week 2010



# Assessing *Documentary* Standards at NIST

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# Outline

- NIST's Standards Services Division
- A NIST tradition of *microeconomic* impact assessments
- Documentary standards as “infratechnology”
- Infratechnology mitigates barriers to innovation
- Identifying and tracking NIST support of SDOs
- Two-tier approach to assessing impact and determining ROI
  - Exploratory descriptive case studies
  - Quantitative economic impact assessments
- Selecting and executing quantitative case study impact assessment

# NIST's Standards Services Division

- Many roles involving standardization
  - Federal standards coordination
  - International coordination
  - Conformity assessment programs
  - WTO TBT technical offices
  - Training, education and outreach
- One role is to study the impact of standardization

*SSD's ultimate goal is to provide sound advice to the NIST community about documentary standards efforts that best utilize NIST resources.*

# NIST Tradition of *Microeconomic* Impact Assessments

- The NIST evaluation community has conducted numerous economic impact assessments\* which:
  - Fulfill Government Performance and Results Act requirements for performance evaluation data
  - Evaluate completed and ongoing research and related projects
  - Support strategic planning processes
  - Provide management with information on the nature and magnitude of NIST research projects
  - Inform the policy and budget communities of the economic returns to society from NIST projects

\* [http://www.nist.gov/director/planning/impact\\_assessment.cfm](http://www.nist.gov/director/planning/impact_assessment.cfm)

# NIST Tradition of *Microeconomic* Impact Assessments *(Continued)*

- SSD's effort to assess the economic impact of *documentary* standards builds on NIST's microeconomic assessment tradition
- Also suggest that NIST investments complement private investment in proprietary technologies

*A distinguishing feature of NIST's microeconomic impact assessments is their focus on the mechanisms by which specific technologies enter an industry's value chain and create economic value. The attention to historical details — what really happened — is important to establishing the veracity of the impact assessment.*

# “Infratechnology”

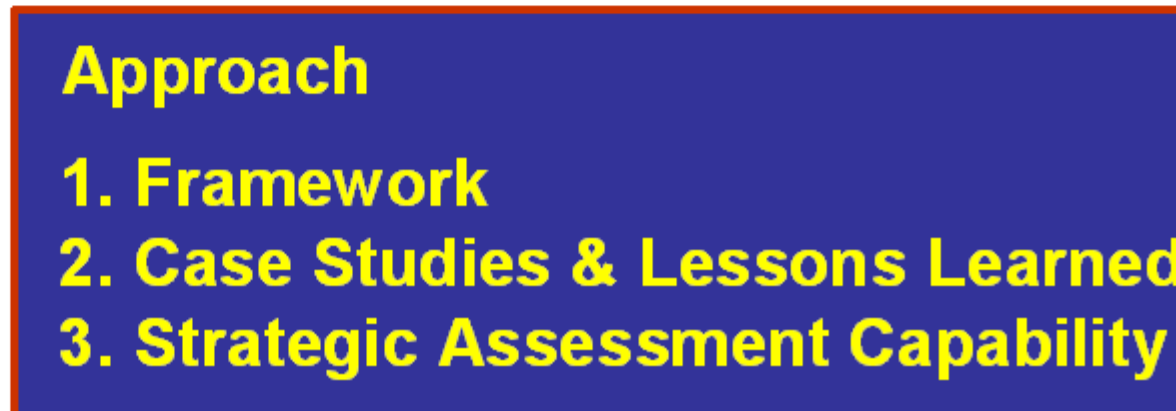
- Term introduced to describe the “technical tools” used to support technology based economic growth
- Infratechnologies include:
  - Measurement and test methods
  - Artifacts such as standard reference materials that allow these methods to be used efficiently
  - Scientific and engineering databases
  - Process models
  - Technical basis for both physical and functional interfaces between components of systems technologies.

# “Infratechnology”

- Infratechnologies must be shared to be effective, giving them a “public goods” quality
- The “public goods” aspect of infratechnologies provides the economic rationale for collective action by industry and/or government
- Documentary standards have been shown to be important factors in reducing risks and transactions costs in product and services market

# Framework for Standards Development Assessment

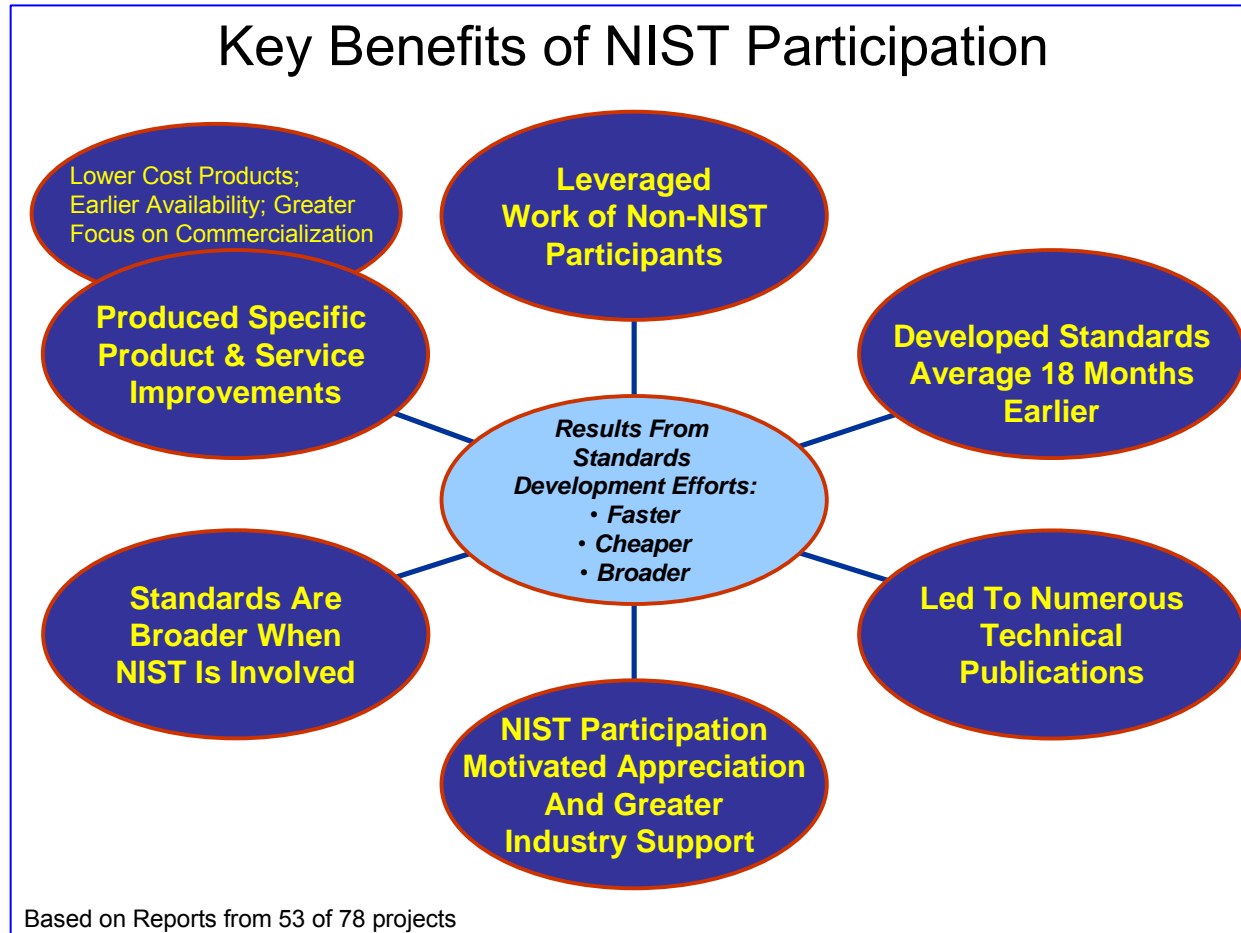
## Collaboration, Creation, Technical Precision, Reporting



# Identifying and Tracking NIST Support of SDOs

- Canvassing effort in response to “awareness vacuum”
  - *Selected Impacts of Documentary Standards Supported by NIST*, March 2007 (NISTIR 7398)
  - *Selected Impacts of Documentary Standards Supported by NIST*, 2008 Edition (NISTIR 7548)
    - 404 NIST personnel involved in 1398 documentary standards committees
    - 78 self-reported their involvement in “high-impact” documentary standards efforts
  - Reported project characteristics include
    - Estimate of NIST time dedicated to standard development effort
    - Estimate of non-NIST time dedicated to standard development effort
    - Industry group/consortium participation
    - Resulting publications
    - New/improved product availability due to standard promulgation
    - Brief characterization of the *documentary* standard’s economic outcome

# Benefits of NIST Participation in Standards Development






# Standard for the Flammability of Mattress Sets



# Standards to Support Environmental Regulations

 <small>ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES®</small>		<b>Material Composition Declaration</b>		<small>This document is a declaration of the substances within the manufacturer listed item. Note: if the item is an assembly with lower level parts, the declaration encompasses all lower level materials for which the manufacturer has engineering responsibility.</small>							
<small>© Copyright 2005. IPC, Bannockburn, Illinois. All rights reserved under both international and Pan-American copyright conventions.</small>		<small>Adobe Reader version 7.0.5 is required to complete this declaration.</small>									
1752-2 1.1		IPC Web Site for Information on IPC-1752 Standard <a href="http://www.ipc.org/IPC-175x">http://www.ipc.org/IPC-175x</a>			<b>Form Type *</b> Request/Reply		<b>Declaration Class *</b> Class 1 - RoHS Yes/No				
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My supplier ID		<small>The File Type and Destination fields control how the form is submitted by the supplier. Consult your IT staff for configuration.</small>				<b>File Type</b> PDF	Destination - URL or Email Address		<input type="checkbox"/> Supplier provides Mfr Item Version & Manufacturing Site.		
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Alternate Recommendation						Alternate Item Comments					

# Two-Tier Approach to Assessing Impact

- ***Develop a conceptual framework — through a series of descriptive case studies*** — for talking about, communicating, and exploring the nature and impact of NIST’s *documentary* standards efforts
  - What “kinds” of documentary standards can be distinguished?
  - Do NIST’s activities cluster along dimensions that might make them distinguishable in terms of underlying technologies, or industries served, or in terms of their national or international scope?
  - What is the extent of NIST’s participation in the various “kinds” of documentary standards development efforts?
  - What other types of organizations are involved?
- ***Conduct selected quantitative economic impact assessments*** to verify and extend the conceptual framework for understanding, and eventually managing, the *documentary* standards in which NIST is involved

*SSD’s approach is drawing on both microeconomic literature and case study research literature to create a multi-faceted understanding of the impact of documentary standards*

# ***Selecting*** Impact Assessment Cases — ***Documentary*** Standards

- Started with 9 candidate projects from NISTIR 7548 with “good profiles;” conducted brief, focused interviews with NIST project leaders
- Down-selected to 3 on the basis of practical considerations
  - Does project involve a developing a voluntary consensus standard?
  - Are NIST project personnel supportive?
  - Are industry personnel supportive?
- Conducted in-depth interview concerning project history; project resources; project outputs; and hypothesized outcomes with NIST personnel *and some* industry representatives
- Down-select to 1 project judged, on the basis of experience, to be executable within time and budget constraints

# ***Executing*** Impact Assessment Cases — ***Documentary*** Standards

- **Extensive background Q&A** with NIST personnel and industry representatives involved in the standard development process
- **Economic Impact Assessment Strategy**
  - A series of hypotheses concerning how the documentary standard (and underlying infratechnology) create value; over what period of time; and the comparison scenario (“compared to what?”) for estimating economic value
  - Covering both presumed “consensus time reduction” and the value of underlying “infratechnology” provided by NIST
- **Survey to estimate industry costs and benefits**
- **Estimation of NIST costs**
- **Calculation of Return on Investment**
- **Impact Assessment**

*We are currently in the midst of the industry survey process*

# Conclusions?

- Too early but we believe that the study will tell us that standards:
  - provide technology guidance
  - facilitate innovation
  - offer cost savings and help develop markets
- We also believe that NIST involvement in the process can help to further enhance the benefits of standards

# Stay Tuned

- Results from our first impact assessment of a *documentary* standard should be available in a by the end of the year
- More information about NIST's conceptual scheme should be available in 2011
- Will continue monitoring and possibly using new ISO methodology

*SSD is developing a base of knowledge with which to advise the documentary standards community and NIST management on the best use of NIST's expertise*

# For Further Information

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