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Engineering Standards in the U.S. – Development and Academia

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“Scientist discover the world that exists; engineers create the world that never was.”

Theodor Von Kármán
“Standards support the global economy and improve the quality of life.”

Willie E. May
Under Secretary of Commerce, 2015
Overview

• Need for Standards Educations
• Engineering Standards Development
• Educational Perspective
• The IOT Landscape
• Conclusion
Engineering Standards

Drives Technology
Fuels the Global Economy

Loss of Expertise
Minimal Exposure
STANDARDS DEVELOPMENT ORGANIZATIONS
43 Organizations

179 Industry Sectors

19500 International Classifications
United States Standards Strategy

Sectoral Stakeholders + Standards Developers = Sectoral Focus
EDUCATIONAL PERSPECTIVE
Employers

Academia

What Industry Needs

What Academia Provides
Educational Perspective

• Limited opportunities for standards education
  – On-Job-training
  – Courses offered by SDO’s
  – Post Graduate Courses

• Implementation through Accreditation
ABET – Worldwide Accreditation Standard

ABET accreditation assures program meets the quality standards of the profession for which that program prepares graduates.

- 4005 programs
- 32 Countries
- 85 million graduates
- 793 Colleges and Universities
EAC General Criteria 5(c)

• “a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

• Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

• One year is the lesser of 32 semester hours (or equivalent) or one-fourth of the total credits required for graduation.”
NIST Standards Development Project

Began in 2012 to support the integration of standards education into engineering programs
Funded Project Title

• Developing Standards-Based Educational Modules for Green Buildings and Sustainable Materials
• Standards-Aligned Design for Smart Sustainable Cities
• Incorporating Standards Education into the Digital Forensics Curriculum
ASME Standards Infusion Project

• Threads standards education through curriculum for both mechanical engineering and mechanical engineering technology.
Infusion Project Goals

400 ME/MET Programs
5,000 Faculty
150,000 Students
20 Countries
IOT – STANDARDS
A LANDSCAPE TO CONCUR
Conclusion

• Academia must continue enhancing experiences for standards education.
• Government support of standards education programs is needed to enhance awareness and utility.
• Partnerships between SDO, Government and Academia are important.