The Emergence of Standards Education and Research
– A Panel Discussion –
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- Director of ICSR
  - International Center for Standards Research

- Faculty of CU ITP (University of Colorado)
  - oldest university course in standards

- 30 years in computers and communications engineering

- 20 years in standards committees (chair & secretary)
Outline

- Standards not a defined “discipline” in academia
- Standardization touches all disciplines
- How do we learn about standards practice?
  - How to approach standards education
- What are current research and education activities?
  - courses, curriculum, research agenda, conferences
  - relationship between research and education in the university
Traditions of a “discipline”

- Conferences and meetings
- Academic curricula and research agenda

BUT –

- Standards are still hidden
  - from public and from management

- Standards touch every discipline
  - business, management, economics, engineering, social sciences, political science, sociology, law
ANSI Plays an Important Role

- Emphasis on higher education
  - ANSI Education Committee
  - inter-organizational coordination
  - international collaboration

- Academic curricula activities
  - Kelly/Purcell—Catholic University
  - Bloomfield —University of Colorado
ANSI Initiatives on Education

- Continuing education — long history
- New initiatives – NSS
  - ANSI Education and Training
  - *Ad Hoc* Committee on Standards Awareness and Education
  - university ad hoc group
- Drivers
  - declining membership in ANSI
  - U.S. strategic competitiveness issues in global trade
University Educator Point of View

- Trying to respond or lead
  - provide what industry wants or needs
  - government/university/industry complex

- Confusion between research and education roles
  - trying to tie these back together
  - interdisciplinary confusion and tension

- In standards — research and education inseparable
  - inherently interdisciplinary
  - research feeds teaching, and *vice versa*
Academic Activity in Standards Research

- University of Aachen (Germany)
- Technical University of Delft (The Netherlands)
- Erasmus University (The Netherlands)
- University of Edinburgh (UK)
- University of the Bundeswher (Germany)
- Catholic University (USA)
- Northwestern University (USA)
- University of Colorado (USA)
Academic Activity in Standards Research

- University of Aachen (RWTH)
  - SIIT 99 (1st IEEE Conference on Standardization and Innovation in Information Technology) (Sept. 1999)
- Technical University of Delft
  - 6th EURAS workshop on Standards, Compatibility and Infrastructure Development (May 2001)
- University der Bundeswehr, Hamburg
  - 1st Interdisciplinary Workshop on Standardization Research (May 1999)
Academic Activity in Standards Research

- University der Bundeswehr, Hamburg
  - 2nd Interdisciplinary Workshop on Standardization Research (September 2001)

- University of Colorado, Boulder
  - SIIT 2001: (2nd IEEE Conference on Standardization and Innovation in Information Technology) (Oct. 2001)
Academic Activity in Standards Research

- Events and publications
  - Conferences, proceedings, and conference papers
  - Books, Journals, and journal articles
- New Scholarly Journal (JITSR)
  - Int’l Jour. of IT Standards & Standardization Res.
- Case studies
- Theoretical foundations
- Student/faculty research
- Courses and curricula
Academic Activity in Standards Research

KEY ISSUES

- Curriculum development
- CU ITP: oldest interdisciplinary standards course
  - *TLEN 5190* — offered since early 1980s
  - employs books, journal articles, corporate and trade association literature, guest speakers, websites and list servers
- Rapid change in telecom and IT
- How to manage standards education—not tied to a discipline
Academic Activity in Standards Research

KEY ISSUES

- Not a “discipline”
- Part of all disciplines
- How located in the university structure?
- How results are assessed
Institutional Perspectives

- ISO Bulletin (June 99)
- Editorial and 3 articles on standards education
- Integral with all disciplines
  - legal, moral, technical
- Standardization not a separate academic discipline
Institutional Perspectives

- Standards Engineering (Jan/Feb 2001)
  - Dr. Kelly, Catholic University

- Standards education as:
  - Integration of standardization education into engineering curricula
  - Part of requirements for accreditation of engineering programs
Future of Standards Research and Education

- Depends on development of research agenda
  - scientific paradigm (problems, solutions & methods)

- Depends on universities working with industry and government
  - TU Delft
  - University of Aachen
  - University of Hamburg
  - University of Colorado-Boulder
  - The Catholic University
  - EURAS
  - ICSR
Future of Standards Research and Education

■ CHALLENGES

➢ Prototyping and evaluation of new approaches

➢ Changing subject matter

➢ Cultural dependencies

➢ Inadequate theoretical foundations
Future of Standards Research and Education

- OPPORTUNITIES
  - Develop courses
    - case studies
    - multimedia materials
    - new learning technologies
  - demonstrate tangible benefits
  - Professional and academic recognition
  - Novel directions for research thesis topics
Example of a new conference, dealing with an array of problems

Interdisciplinary perspective

Government/university/industry cooperation

Multidisciplinary sessions
American National Standards Institute

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