



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

NATIONAL
STANDARDS
STRATEGY
FOR THE
UNITED STATES



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)
- SIIT 2003 (Oct. 2003)

■ 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

SIIT 2003 - October 21-3, 2003

3rd IEEE Conference on Standardization and
Innovation information Technology

www.siit2003.org



- Example of a new conference, dealing with an array of problems
- Interdisciplinary perspective
- Government/university/industry cooperation
- Multidisciplinary sessions



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