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‘How standards can help to create valuable and well-functioning markets’

- Research on patents & standards
- Commissioned studies (EC, US NAS)
- Various external roles
  - e.g., Dutch government standards board (Forum Standardisatie), IEEE-SA Europe Advisory Council
- And... teaching!
Outline

Part 1 - Introduction to Chapter 7: IPR and standardization

Part 2 - Experiences with developing a standardization teaching portfolio
Why a specific chapter on IPR and standards?

- Possible inclusion of patented technology into standards is daily business

- It is important that those that want to learn about standardization, also understand:
  - The rules and procedures that govern the inclusion of patented technologies
  - The reasons why such rules were adopted
  - The legal dimension that comes into play here
  - How (voluntary) mechanisms such as patent pools can address some of the issues
  - The role of regulators / policy makers

- Having such knowledge not only helps them to act properly if engaging in standardization, but also put this into the perspective of their firms (or organization) own interest and policy concerning this topic.
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§7.6 IPR, standards, and the legal system
§7.7 Patent pools
§7.8 Public interest and activities by regulators

Also: Summary, Quiz, Glossary, List of abbreviations, References
§7.2 IPRs and its different forms

- Introduces the basics of IPR like the exclusion rights it offers
- Emphasizes the differences in scope of the different IPRs
§7.3 Ways in which IPRs can be relevant to standards and standardization

- Introduces three main ways:
  - The text describing the standard as such (copyright)
  - Names and logo’s and their signaling function (Trademarks)
  - IPRs required to implement a standard in a product or services (patents – SEPs; sometimes copyright)
§7.4 the tension between patents and standards

Talks of
- The clash of principles between IPRs and standards
- What makes a patent essential (SEP)
- How firms obtain SEPs
- Number of declared potentially essential patents

- Concerns over patents covering standards
  - Non-availability of licenses
  - Ex post patent holdup
  - Royalty Stacking
  - Undue discrimination
§7.5 IPR policies at SDOs

Talks of
- Commitment-based policies
- Participation-based policies

As well the main licensing models (FRAND, RF)
§7.6 IPR, standards, and the legal system

Introduces main bodies of law:
- Patent law
- Private law
- Antitrust / competition law

- Explains the rise in legal disputes over SEPs
§7.7 Patent pools

Explains how patent pools can provide one-stop shopping, reduction of transaction costs, and more, but may also be difficult to establish.
§7.8 Public interest and activities by regulators

Summarizes the way regulators have addressed inclusions of patents in standards:

- Studies they commissioned
- Public consultations
- Policy documents
- Competition law enforcement
DISCLAIMER:
This chapter is intended to be a laymen’s personal introduction into the topic of IPRs and standards. It is by no means intended to provide legal guidance or to provide an interpretation of the IPR policies of ETSI or any other standard body. When dealing with standards and IPR, any party should consider the appropriate law and the applicable IPR policies of standards bodies and consult legal counsel where appropriate.
Part 2: Experiences

Experiences with developing a standardization teaching portfolio

- My context: a technical university in The Netherlands
- Identifying curriculum openings
- A series of courses on standardization (and patents)
- Continuity and vulnerability
- Collaboration with Dutch SDO and other universities
Eindhoven University of Technology

- A technical university, training engineers
- 12,000 students, 3,300 staff
- In top 10% of QS World University Rankings 2022
- Very international character
- In center of Brainport, one of the most innovative regions of the globe (ASML, NXP, Philips, DAF, Lightyear, etc.)
- New educational concepts: Student teams, Innovation Space
Audiences at TUe

Innovation, economics & management students (Bachelor, Master)
- “Standards shape the way future technologies will look like”
- “Influences rate and direction of technological change is being negotiated between stakeholders (Schmidt & Werle, 1998)”

Technical students (Bachelor, Master)
- “Knowledge of standardization important for future job and career”
- “Standards as an important source of knowledge and information”
Having motivated people that believe in the importance of a topic is one thing
Finding an opening in a curriculum is quite another thing….

- Internal processes, competition for program space and ECTS
- Role of external stimuli

At TU/e:

- 2010: Discussions of radical reform to stimulate freshman enrollment
- Decision: redesign its undergraduate studies to train the “engineer of the future”
- 2013: Introduction of the Bachelor College
- 2015: Large-scale external assessment
Identifying curriculum openings
A series of courses on standardization (and patents)

- Series of three courses (5 ECTS each)
- Over the last 10 years, ~500 students participated
- Student evaluation >8.0 (scale of 10)
  - Student: “This USE package has contributed to my development as an engineer.”
Teaching innovation

Teaching method: blended learning

- Regular lectures
- “Masterclasses” by engineers
- Guest lectures (>10)
  - Professionals
  - Government reps
  - Scholars
- Quizzes
- Essays (esp. on ethics)
- Assignments & group work
- Role playing games
Finding good tools in COVID times: gather.town
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INTRODUCING BROAD SKILLS IN HIGHER ENGINEERING EDUCATION: THE PATENTS AND STANDARDS COURSES AT EINDHOVEN UNIVERSITY OF TECHNOLOGY

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Over the years, the engineering profession has changed and evolved. The expectations the employers and society have of engineers nowadays are different from those of a few decades ago, and universities have been trying to respond to these changing needs by rethinking and reengineering their courses. This paper describes the large-scale efforts by Eindhoven University of Technology to design its entire undergraduate program. More specifically, it elaborates on a series of three courses on patents and standards to illustrate how new academic innovations have been put into practice while also reporting a critical evaluation of these reforms. We conclude that the undergraduate program evolution has led to an almost 30% rise in intake. Additionally, despite confronting our belief that this is a better way to train engineers, the new approach has also been challenging and not always appreciated by students as much as we would like. In regards to the patents and standards courses in particular, the efforts to reinforce teamwork while maintaining student satisfaction levels eventually proved to be successful.

Keywords: Patents education; Bachelor curriculum; Engineering education; University education

INTRODUCTION: THE ENGINEER OF THE FUTURE

What employers and society expect from engineers has changed dramatically compared with earlier decades. While deep technical knowledge and problem-solving skills remain important, today’s engineers also need to know how to operate in diverse environments, often within complex multidisciplinary teams. They are expected to be lifelong learners, understanding and appreciating both the social and ethical dimensions and implications of their work. Moreover, they are expected to contribute towards solutions to ‘grand challenges’ in fields such as sustainable energy, health, aging, mobility, environment, and global development.

The above realities have prompted a worldwide debate on the engineer of the future. Technological developments, as well as societal changes, have prompted educational institutes to think critically about education design and the future requirements for engineers. The discussions on curriculum and educational approaches for engineering studies, however, are considerably older. Back in 1999, the Massachusetts Institute of Technology (MIT) was the first engineering university to introduce Humanities, Arts, and Social Sciences (HASS) after the Committee on Educational Survey (1949) had concluded that, in addition to sciences and engineering fundamentals, there should also be a clear curricular focus on the mastery of problems arising from the impact of science and technology on society (11). Today, the
Continuity and vulnerability

However….

Positions in teaching curricula are vulnerable…

During a current redesign of the bachelor teaching program, we need again to defend our beliefs and find a way to bring our topics in

Sitting back is not an option.
Collaboration with Dutch SDO and other universities

In 2020: the establishment of SOONS:

- Extensive collaboration on research and education in standards between:
  - Dutch SDO NEN
  - 4 Dutch universities
- Funding for several Ph.D. projects
- Guest lectures in partnering institutions
- Proposal to host 2024 EURAS conference
Stimulating Education about Standardization – Activities and perspectives of National Standards Bodies

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Abstract: Standardization is essential for business and society. However, many people remain unaware of this. Education about Standardization (EEd) would be one solution to this awareness. EEd has been a topic of research for several decades. Literature suggests that National Standards Bodies (NSBs) can play a role in stimulating EEd, but this is rarely the case. This research aims to investigate why NSBs do or do not stimulate EEd and hear their perspectives on EEd. Based on the literature and insights from experts in the field, a survey was prepared and sent to NSBs. Next, stories behind the data were revealed during in-depth interviews with NSB experts. This resulted in EEd activities NSBs undertake. This article presents what NSBs do not, and how they do mobilize EEd activities. This is one of the first studies that focus on NSBs in fostering EEd.

Keywords: Education about Standardization, National Standards Bodies, ISO, Strategy

1. Introduction

In recent decades, the value of standards has become widely recognized, and its scope has broadened to include complex systems and sustainability. While this expansion makes standardization even more relevant, many stakeholders, including governmental and industry experts, know little about standards and standardization at strategic, tactical, and operational levels (European Commission, 2022). Indeed, previous research has identified a significant knowledge deficit among students and the general public with regard to standardization (e.g., Kaneswara, 2020; Poole, 2002; Vanhercke, 2020). Education is the solution to such a knowledge gap, and indeed, policymakers have expressed the need for Education about Standardization (EEd), e.g., the Asia Pacific Economic Cooperation (APEC) and the European Commission (2022). These policymakers recognize the role of NSBs in stimulating EEd. Academic research addressed the NSB role as well (D. Buit, et al., 2009; H. J. de Vries, 2011; H. J. de Vries et al., 2014). Indeed, standards bodies have taken initiatives and reported these at conferences of the International Cooperation for Education about Standardization (ICES) and the Academic Days of the World Standards Cooperation (WSC) – a cooperation between the
Any further questions?

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