Chapter 7
IPR and standards

Rudi Bekkers

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Forming the Next Generation of ICT Standards People: A Day of Teaching Standardization

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A Day of Teaching Standardization

Rudi Bekkers

Full Professor of Standardisation and Intellectual Property at Eindhoven University of Technology (TU/e)

'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!

ETSI MEMBER

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

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.

Chapter 7

Table of content of the chapter:

- Also: Summary, Quiz, Glossary, List of abbreviations, References

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§7.2 IPRs and its different forms

- Introduces the basics of IPR like the exclusion rights it offers
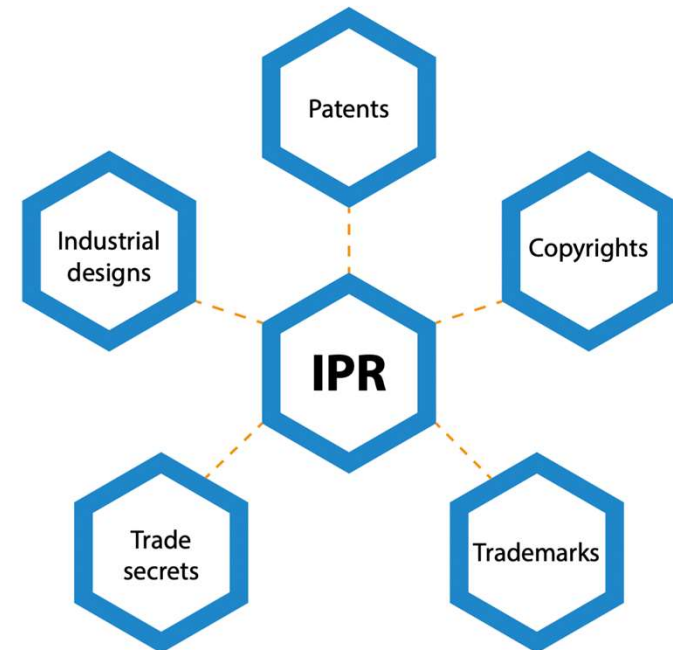- Emphasizes the differences in scope of the different IPRs

Figure 7.1: Types of IPR

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§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)
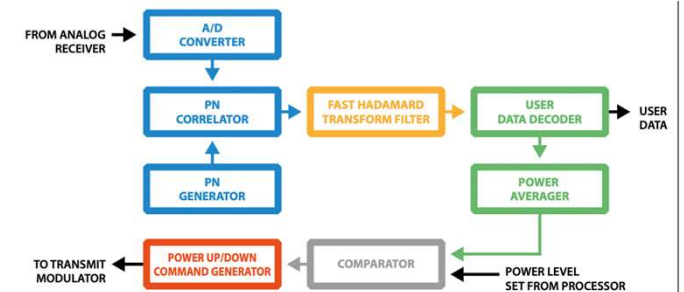
Short guide through the sections

§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

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§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
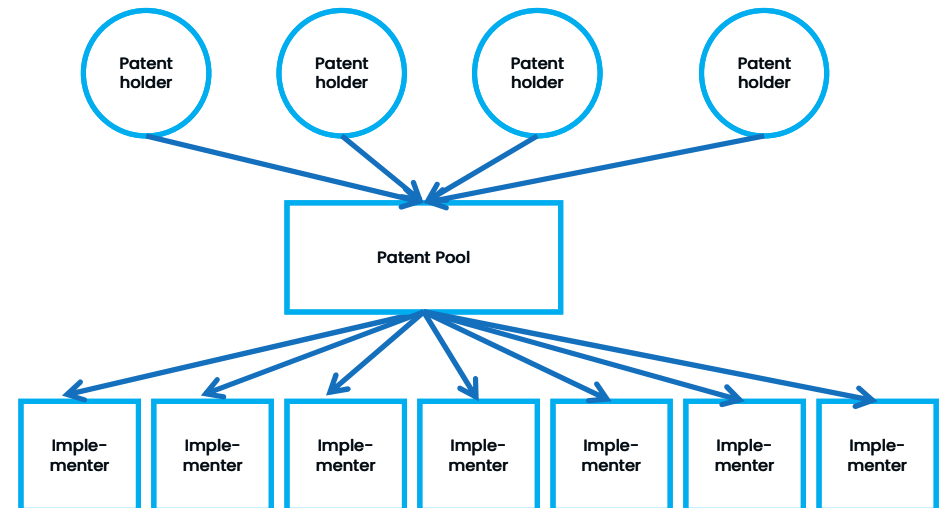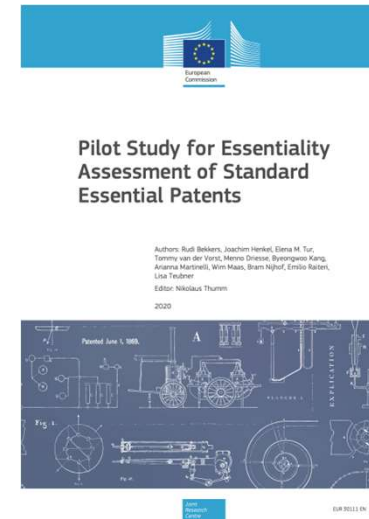
Short guide through the sections

§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

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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….

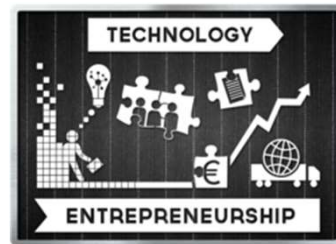- Internal processes, competition for program space and ECTS
- Role of external stimuli

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)

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PATENTS, DESIGN RIGHTS & STANDARDS
PATENT APPROVED

- Series of three courses (5 ECTS each)

- Over the last 10 year, ~500 students participated

- Student evaluation >8.0 (scale of 10)
  - Student: *"This USE package has contributed to my development as an engineer."*
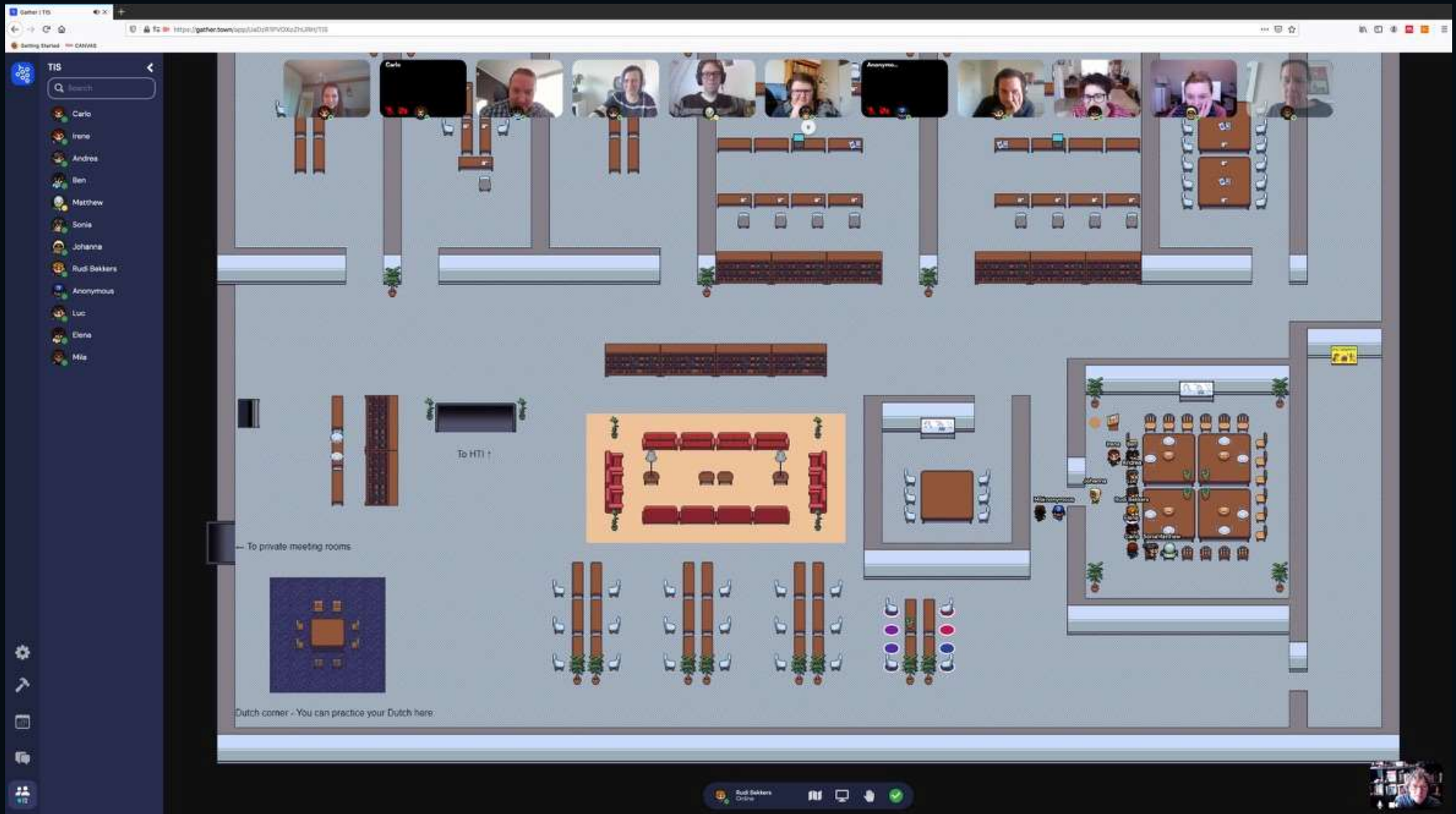
Teaching innovation
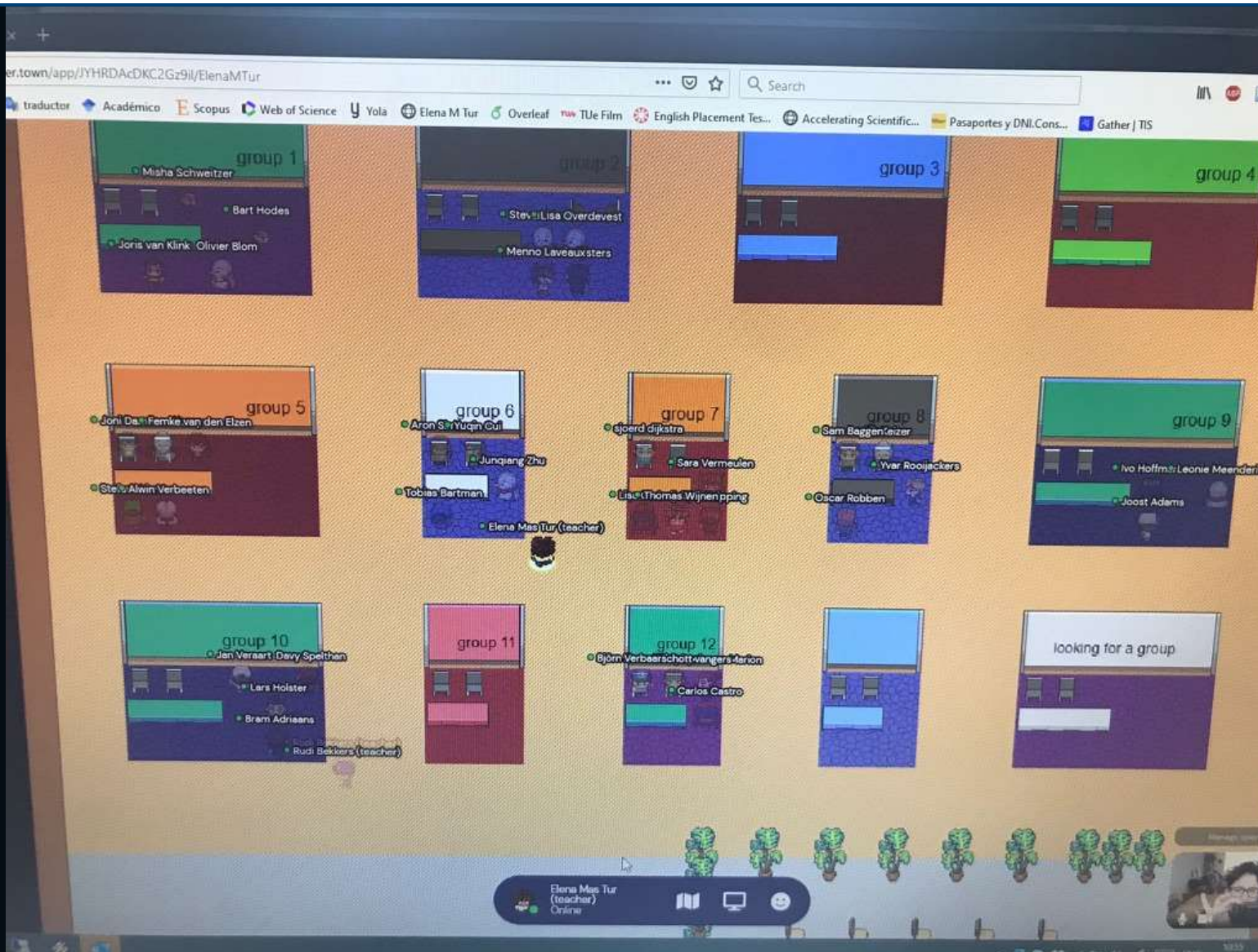
Teaching method: blended learning

- 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

Finding good tools in COVID times: gather.town

Further resources

INTRODUCING BROAD SKILLS IN HIGHER ENGINEERING EDUCATION: THE PATENTS AND STANDARDS COURSES AT EINDHOVEN UNIVERSITY OF TECHNOLOGY

Rudi Bekkers and Gunter Bombaerts

School of Innovation Sciences, Eindhoven University of Technology, Eindhoven, Netherlands

Over the years, the engineering profession has changed and evolved. The expectations that employers and society have of engineers nowadays are different from those of even a few decades ago, and universities have been trying to respond to these changing needs by rethinking and redesigning their courses. This paper describes the large-scale efforts by Eindhoven University of Technology to redesign 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 redesign has led to an almost 50% rise in intake. Additionally, despite confirming 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 increase workload while maintaining student satisfaction levels eventually proved to be successful.

Key words: 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 the 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 1949, 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 science 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 (1). Today, the

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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.

STICHTING **ONDERZOEK** + **ONDERWIJS** + **NORMALISATIE** + **STANDAARDISATIE**

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

Journal of Standardization

TU Delft — Journal of Standardisation

Open for submissions
2021-09-06

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Stimulating Education about Standardization – Activities and perspectives of National Standards Bodies

Lucas Catalani Gabriel[1,2,*], Henk J. de Vries[3,4], Belinda Cleeland[1]
[1]International Organization for Standardization (ISO)
[2]Institute of Sociological Research, University of Geneva
[3]Rotterdam School of Management, Erasmus University
[4]Delft University of Technology, faculty of Technology, Policy and Management

Abstract: Standardization is essential for business and society. However, many people remain unaware of this. Education about Standardization (EaS) would be one solution to increase awareness. EaS has been a topic of research for several decades. Literature suggests that National Standards Bodies (NSBs) can play a core role in stimulating EaS – but is this actually the case? This research aims to investigate what NSBs do in stimulating EaS and hear their perspectives on EaS. 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. The results from 90 NSBs all over the world show that they believe there is a need for EaS and most of them have activities in this field. They also share insights about what should be achieved in the following years, potential solutions to reach their objectives, and the future of EaS. This article advances knowledge in the field of EaS, with a focus on the role, actions, and perspectives of NSBs. This work also provides suggestions on how NSBs can foster EaS together with other stakeholders. This is one of the first studies with a focus on NSBs in fostering EaS.

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

1. Introduction

In recent decades, the value of standards has become widely recognized, and their scope has broadened to feature 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., Kanevskaia, 2020; Puiu, 2020; Vasileva, 2020). Education is the solution to such a knowledge gap, and indeed, policymakers have expressed the need for Education about Standardisation (EaS), e.g., the Asia Pacific Economic Cooperation (APEC, 2006) and the European Commission (2022). These policymakers recognize the role of NSBs in stimulating EaS. Academic research addressed the NSB role as well (D. Choi 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?

Contact me:

r.n.a.bekkers@tue.nl

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