Chapter 2

The Basics of ICT Standardization

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Who I am at a glance

- Full Professor at Department of Naval, Electrical, Electronic, and Telecommunication Engineering (DITEN), University of Genoa
- Deputy Director of CNIT (National Inter-University Consortium for Telecommunications).
- Responsible of the CNIT participations to ETSI and ITU-T
- Member of ETSI EE and Cyber TCs and ITU-T Group 5.
- Coordinator of the Genoa University Master Course in Internet and Multimedia Engineering
Outline

- Chapter 2 design goals (requirements)
- Content short description
- Teaching suggestions (from direct and indirect personal experiences)
- Questions & discussion
In designing this chapter, we had specific objectives/requirements (adopted in both editions). Some objectives are specific for the chapter, others are common for all the book.

In particular, our main objectives were to have content:

- accessible and effective even for readers starting from scratch;
- comprehensive and self-contained;
- introductory to all subsequent contents/chapters.
Accessible and effective even for readers starting from scratch means (among others):

- simple and easily readable;
- with many examples;
- without too much specific wording;
- support a seamless reading of the entire chapter.
Main goals (3/4)

Comprehensive and self-contained means (among others):

- to respect the modular approach adopted for the whole book;
- to include the minimum basic knowledge for understanding the entire subject;
- to include the adopted basic definitions.
Main goals (4/4)

An entry point for all subsequent contents/chapters means (among others) that:

- it touches a large part of the arguments explained in detail in the following chapters;
- it can act as a sort of “guide” for people looking to select specific topics, thanks to the many included pointers to the other chapters;
- the book can be customized (in some sense) by adding to the first chapter a sub-selection of the next ones.
The sections:

- Basic of standardization
- Benefits and risks of standardization
- ICT standardization landscape
- The standardization process at a glance
- Using standards
2.1 Basic of standardization

- First definition of standard and SDOs, difference between “de facto” and SDO standards.

- Impact of standards on our life.

- Definition of formal standardization and relationships with regulation.
2.2 Benefits and risks of standardization

- **Benefits** on innovation, trade and competition, safety and sustainability.
  - analyzed with respect to both society and industrial points of views.

- **Risks** of jeopardized innovation, not fair competitions and inconsistencies of standards
  - All the risks include a part of “Measures to put in place to minimize risks”
2.3 ICT standardization landscape

- Classification of SDOs
  - Geographical coverage
  - Technical scope of activities
  - Level of recognition from regulatory or political organizations

2.4 The standardization process at a glance

- Standard development process
- Main characteristics of a standard
Chapter 1 content (4/5)

2.5 Using standard

- How to find a standard
  - Select relevant SDOs
  - Identifying and accessing SDO documents
- Understanding structure and formalism of the standards
Teaching suggestions

The scenario in which my experience refers:

- Full Professor at Polytechnical School (engineer + architecture faculties) of the University of Genoa
- Expertise is in the area of Telecommunication Networks and Cyber Security
- Involved mainly in curricula of Telecommunication, Computer Science and Electronics
  - Coordinator of a Master’s course in Internet and Multimedia Engineering
  - I taught/tech classes at all three main university levels: Bachelor’s, Master’s, and doctoral degrees (but most of my classes are in Master’s courses).
- A large part of current experience refers to the first edition of the book.
- I must remind you that in the covid period the restrictions influenced the results and perceptions of both students and teachers.
A crucial preliminary remark concerns the time needed to teach the subject.

- Engineering courses usually are already heavily loaded with topics that most lecturers consider indispensable.
- Although this subject is, in my opinion, also indispensable for a modern engineer, it often does not enjoy great popularity among teachers.
- To include it in the curricula, therefore, often requires a minimalist approach in terms of teaching time, at least initially.
- This approach obviously makes it more difficult for the teacher to be effective and attractive to students.

- Considering this problem, I have included two time-ratings in the following slides: the minimal and the optimal one.
Teaching suggestions

How long and where to teach the argument in my experience:

- At first University level (Bachelor)
  - the main goal might be to make the students aware of the topic and its relevance.
  - This result can be achieved by using the chapter 2 content only
    - as a part of a course (more effective, with the topic part of the examination)
    - or in a seminar that can be eventually offered to more than one degree (more efficient)
- The requested teaching time: 2 – 3 hours (6 hours).
Teaching suggestions

How long and where to teach the argument in my experience

- **At second University level (Master)**
  - my personal reference content is chapter 2 (Introduction), chapter 3 (ecosystem), chapter 4 (production of standard) + hints to some of the other chapters (mainly 5 and 7)
  - Presented as one of the topics of a class (e.g., Telecommunication Network, Wireless technologies)
  - The requested teaching time: 6 – 10 hours (*25 hours*)

- **At Ph.D. level**
  - The entire book (with some chapters summarized at least partially)
  - Presented in a dedicated course
  - The requested teaching time: 18 hours (*30 hours*)
A frequent behavior of engineering students

- They generally focus mainly on two types of contents:
  - those with a lot of mathematics, modelling, and physics
    - mainly because they are considered the most difficult ones
  - those that involve significant application and practical activities
    - Because they are more fun and because you can easily understand their interest in a future job
Teaching suggestions

The standardization topic at first is out from these two categories:

- so, the topic potentially might not attract students, who sometimes tend to classify it as partially boring and not so relevant (apparently too simple).
- beyond the personal ability of the teacher to make the subject taught interesting and relevant, additional effective ways to increase the interest on this subject can be:
  - to link strictly one or more technical arguments with the standard description.
  - to use many examples and especially introduce practical experiences and projects.
  - to create relationships with eventual Soft-Skill classes.
Any further questions?

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