Chapter 60
ICT Standardization

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ABSTRACT

The chapter first looks at the links that exist between standards and standardization on the one hand and innovation and economics on the other. It then offers a brief description of a typical standards setting process. The complex "web" of standards setting organizations in the ICT sector is discussed next. Subsequently, a flexible tool to describe the characteristics of an SSO is introduced. It can be deployed by firms to identify the SSO that is best suited for a planned standardization activity. This selection is only part of the fairly complex task of standardization management, which will be described next. Finally, the chapter will briefly discuss national standardization strategies.

INTRODUCTION

According to the definition adopted by the International Organization for Standardization (ISO) a standard is a document, "established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context" [ISO, 2015]. The fact that standards are established 'by consensus[1]' distinguishes them from legislation. Typically, the use of standards is voluntary. However, through legislation they may become mandatory (e.g. many health and safety standards) or 'quasi-mandatory' (e.g. Harmonized European Standards).

Standards – in a very general sense – have been with humankind for quite some time. About 4,000 years ago the first alphabets emerged, enabling new forms of communication and information storage. Around the 7th century BC the Lydians invented the first coin-based currency; it established the basis for easier inter-regional trading. The advent of the railroad in the 19th century resulted in a need for technical standards, e.g. those that enabled compatibility between individual parts of technical artifacts, defining e.g. the width of railway gauges, the diameter of screws, etc. This was once more reinforced when mass production generated a demand for interchangeable parts. In parallel, the invention of the electric telegraph in 1837 triggered the development of standards in the field of electrical communication technology. In 1865, the International Telegraph Union – to become the International Telecom-

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munication Union[2] (ITU) in 1932 – was founded by twenty nation states. The other major international standards setting bodies, the International Electrotechnical Commission (IEC) and ISO, were founded in 1906 and 1947, respectively.

In the field of Information and Communication Technologies (ICT) international standards are the major mechanism to ensure interoperability between systems. Frequently, ICT standards also describe a commonly agreed platform upon which innovations can be based. Moreover, standards in general are a valuable means of technology transfer. They have also been used as policy tools – for example, they are a major pillar of the European Single Market. Standards' potential economic implications must also not be under-estimated. A new standard may be used to extend a market, or even help open up a new one. Intellectual Property Rights (IPR), mostly patents, also play a major role here. That is, standards must also be considered as strategic tools. The above suggests that standards are not just technical documents but that they may have ramifications well beyond technology. Accordingly, they should no longer be considered as pure 'public goods', i.e. as something that is non-rival and non-excludable [Deneulin & Townsend, 2007]. Rather, these days standards are typically seen as impure public goods, or club goods; they are non-rival and excludable, just like e.g. satellite TV, cinemas or private parks (see also e.g. [Hawkins, 2009]). This is largely due to the frequent incorporation of IPR into standards.

Against this background, this chapter will first briefly look at the links between standards and standardization, innovation and economics. It will then offer a brief description of a typical standards setting process. The complex 'web' of Standards Setting Organizations in the ICT sector will be discussed next. Subsequently, a flexible tool to describe the characteristics of an SSO will be discussed. It can be deployed by firms to identify the SSO that is best suited for a planned standardization activity. This selection is only part of the fairly complex task of standardization management, which will be described next. Finally, the chapter will briefly discuss national standardization strategies.

BACKGROUND

Not so long ago standardization and innovation were considered as almost mutually exclusive (see e.g. [Hemenway, 1975], reported in [Farrell & Saloner, 1985]). This has changed by now. In fact, close links between standardization and innovation may often be identified. Today, standardization is no longer considered an impediment to innovation. However, the unqualified claim that 'standards foster innovation' does not fully reflect reality either. Swann & Lambert [2010] observe that standards do both – enable and constrain innovation – but that the enabling aspect is much more important. Specifically, they note that *"… standardization does constrain activities but in doing so creates an infrastructure to help trade and subsequent innovation. Standardization is not just about limiting variety by defining norms for given technologies in given markets. Standardization helps to achieve credibility, focus and critical mass in markets for new technologies*" (p. 370).

That is, especially in the field of ICT many standards describe a commonly agreed platform upon which innovations can be based and marketed. Accordingly, standards may be, and indeed are, used as strategic tools. For example, a new standard can extend a market, or even help open up a whole new one (just think what GSM did for mobile communication). On the other hand, backing and subsequently being locked into a 'wrong' technology (i.e. one that does not get standardized) may well ruin at least smaller companies.