

# Chapter 13

## ICT Standards Management: Architectural Challenges and Management Opportunities

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### ABSTRACT

*This chapter explores opportunities to manage standards and standardization with a particular focus on the information and communication technologies (ICT) sector. It looks at the historical “management” of standards primarily in the United States, highlighting government and industrial approaches and the forces that have shaped the management process. It then turns to the current pressures and forces facing the management of ICT standards and standardization and makes some suggestions for activities that might enhance the management of standards.*

### INTRODUCTION

This article explores opportunities to manage standards and standardization with a particular focus on the information and communication technologies (ICT) sector. It looks at the historical “management” of standards primarily in the United States highlighting government and industrial approaches and the forces that have shaped the management process. It then turns to the current pressures and forces facing the management of ICT standards and standardization and makes some suggestions for activities that might enhance the management of standards.

### AN HISTORICAL PERSPECTIVE: FOCUS ON THE UNITED STATES

It is somewhat misleading to believe that we manage standards and the standardization process. Broadly, standards serve to improve commerce. Nations try to cope with the myriad forces which impact commerce and standards organizations and government agencies work to produce standards and manage standardization are one part of that endeavor. The United States, often held up as a prime example of

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business and industry led standardization, highlights some of the relationships between government and industry in this process. Over the last fifty years, developments in the ICT arena provide a prime example of how outside forces impact standards and standardization in a period of rapid change. Both reviews can inform a view of how the management process for standards and standardization might be improved.

Standards for communication (languages) and commerce (money) have been with us for more than two millennia. Few would argue that these developments were “managed”. In the last millennia, there have been at least two broad periods of standardization. (Some might argue for three or four periods, but this analysis begins with just two.) The first period of managed standardization can be observed to begin with government control of weights and measures and monetary standards written into the constitutions of governments. Which nation was first is not as important as the centuries long tradition of governmental control of instruments deemed essential to commerce. A second period of managed standards begins with the industrial revolution. Scientific and technical standards were called for and to a large degree they became the purview of professional societies and industry. In some countries, governments played a facilitating role. In others, the government was inactive, as was largely the case in the United States. A few examples set the stage.

In order to schedule trains, railroads needed standard time. In Great Britain, standard time for the railroads was adopted in 1847. In the United States, the industry adopted standard time in 1870 (two time zones) and 1883 (four zones). This process was managed by the railroad industry out of a need. The U.S. government did not adopt standard time until 1912. Similarly, the infamous QWERTY keyboard standard arose from the dominance of the early Remington typewriter (No. 2) introduced in 1878 based on the patented design of the 1867 Sholes and Glidden typewriter. The arrangement was intended to prevent jams of hammers striking during the upstroke. The QWERTY keyboard, the IBM PC, the Microsoft Word document format are all examples of the many standards that arose based on various factors that led to market dominance. It would be hard to imagine that they were managed although it might be argued that “fast-tracking” of publicly available specifications is one management response to this situation.

Over the twentieth century, standards were increasingly set by professional societies such as the American Society of Civil Engineers (ACSE) and the American Society of Mechanical Engineers. Indeed, in part due to the prevalence of boiler explosions, the American Society of Mechanical Engineers established standards for boiler construction. ACSE provides standards for the construction of bridges and other civil structures. The development of standards for fire equipment and safety is often linked to the Baltimore fire. The fact is that fires in Chicago, San Francisco and other cities faced similar challenges. In Baltimore, the problem was highlighted by the number of cities that tried to provide help, but were unable to connect their equipment because of incompatible connections. The National Fire Protection Association adopted a national standard for fire hydrant and hose connections. While the standardization of fire hydrants and hose couplings grew, it was not an immediate accomplishment, and even today some cities have equipment that is non-standard. A 2004 study by NIST found:

*Most of the major cities in the U.S. do not have standard fire hydrants and fire-hose couplings. In fact, only 18 out of the 48 most populated cities have both small hose and pumper connections on fire hydrants that comply with the NFPA standard. (Seck and Evans, 2004, p.11)*

While professional societies provide guidance and assistance, few would suggest a coordinated management plan existed for the adoption of their standards.

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