Standardization:
Towards an Agenda for Research

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ABSTRACT

Standardization research is a fairly new and is a still-evolving field of research, with possibly major practical ramifications. This article presents a summary of the authors' subjective views of the most pressing research topics in the field. These include, among others, standards (e.g. incorporation of ethical issues), the potential impact of standards, the corporate management of standardization and legal issues like Intellectual Property Rights (IPR). In addition, gaps have been identified with a respect to a basic understanding of standardization, suggesting a need for better education in the field.

INTRODUCTION

As readers of this journal will know, standardization research is highly multidisciplinary. Contributing disciplines include engineering, social sciences, and humanities. Researchers in these disciplines may have very diverse views and ideas regarding necessary future research priorities. In order to further research in the field – and to keep it relevant for practice – these different views need to be aligned and incorporated into an overarching research agenda.

So, the question for the standardization research field as such is: What should be the future emphasis in standardization research? This question was discussed at the annual conference of the European Academy for Standardisation (EURAS) in Dublin, in June 2018. This paper summarizes the individual contributions that had been submitted by the co-authors of this paper. Obviously, this introduces a certain bias, as these contributions tend to reflect the research interests of the respective individual contributors. But we feel it does give a reasonably good insight into the open problems at hand in the field of standardization research.

Trends

Research tends to reflect current trends in a field (of course, it should also set trends) and standardization research is no exception. A first trend is that individual products and services are increasingly incorporated into systems. Looking back in history, most standards were developed to set requirements on products and production processes, and to specify the associated test methods. After the Second World War, but in particular during the last three decades, numerous standards for services and for management systems have been developed as well. More recently, standards relating to complex systems have been added. This creates the need for 'architectures' of standards, the exact nature of which certainly represents a topic for standardization research.

Companies and other organizations are increasingly interconnected through supply chains and networks. This is another more recent trend, which is obviously related to the one above. In such an environment, standards at different levels (e.g. technical, semantic) are crucial to enable interoperability. This need as such is not new, but the ongoing integration of physical flows and information flows via e.g. the Internet of Things puts common standards higher on the agenda. Many ICT standards have been developed by industry consortia and sometimes by individual companies, whereas most other fields mainly rely on formal standards. However, the integration of technologies (into e.g. smart manufacturing or intelligent transport systems) brings the different areas of standardization closer together and will eventually render the distinction between ICT and other standards meaningless. In addition, standards coming from such diverse sources raise new questions about the coherence of the set of standards needed for a field and the implications this may have for standardization processes and the governance of standardization. Especially the increasing trend of software-driven value generation increases the pressure on formal standards making in non-ICT-related areas. Research about this digitalization can help finding a balanced approach to not just making more standards but maintaining an opportunity for consensus creation in a way that benefits not just commercial companies but society as a whole.

The decrease of market share of formal standardization in the growing market for standards may be considered a third trend that still needs further analysis. Not only is the number of consortia that develop standards growing, also NGOs increasingly develop standards for e.g. fair trade or environmental aspects, and the increasing attention for sustainability may further enhance this proliferation of standards. This leads to a mess of standards – one might conclude that the world is in need of an International Organization for Standardization. Apparently, the current ways of working of ISO and IEC (and their national members) and ITU and, at the European level, of CEN, CENELEC and ETSI need some reforms to make them better fit to meet market needs – but how? And is this feasible at all in the first place? Or do the close links to policy making at the global, regional and national levels hinder rather than stimulate effective standards creation?

The fact that also NGOs become active in standards setting highlights a fourth trend. For quite some time now standardization has moved away from working mainly in the technical domain to also cover the business domain and, more recently, also addressing societal issues. For instance, all 17 United Nations Sustainable Development Goals (United Nations, 2018) link to standardization in one way or another.

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