

# Chapter 4

## On Challenges for Implementing ISO Standards in Software: Can Both Open and Closed Standards Be Implemented in Open Source Software?

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### **ABSTRACT**

*Over the years, the importance of open standards has been acknowledged in EU and national policies. Formal (e.g., ISO) standards are often referred to in software development and procurement. Use of formal (ISO) standards and to what extent ISO standards can be implemented in open source software is considered, with particular reference to patent licensing. It is shown that not all formal standards are open standards and that FRAND commitments may impose major challenges for use of such standards. Further policies and procedures set by standards setting organisations (SSOs) regarding the notification of standards-essential patents (SEPs) present challenges for organisations wishing to implement standards in software. This chapter elaborates implications and suggests ways of addressing the challenges identified. Use of formal standards may create barriers for implementation in open source software and inhibit an open and inclusive business-friendly ecosystem.*

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## INTRODUCTION

‘Openness’ including open standards and open source software is increasingly prevalent, but presents a number of challenges requiring effective policy and strategic initiatives. The European Commission (EC, 2013a, 2013b) and countries, such as the Netherlands (NOC, 2007), Portugal (Ballard, 2012), and the U.K. (UK, 2012a, 2015), have acknowledged the importance of open standards and have implemented initiatives accordingly.

Open standards have been discussed by researchers (e.g. Bird, 1998) and policy makers in the EU and different member countries (EU, 2004; SOU, 2009; EC, 2016; Permanent Representatives Committee, 2016) for a long time. Some member countries mandate use of open standards, based on definitions which require that standards are provided on royalty-free conditions, as part of national policy (e.g. NOC, 2007; UK, 2012a). Such policies aim to promote use of standards which have certain open properties and can thereby be used as a basis for implementation in software under different (proprietary and open source) software licenses. For example, the U.K. Government has a national policy which promotes and mandates use of specific open standards (UK, 2012a, 2012b, 2014, 2015). In Sweden, the minister responsible for municipalities has expressed support for the definition of ‘open standard’ set out in the European Interoperability Framework version 1.0 (Odell, 2009) and national framework agreements for public sector procurement of software in Sweden refer to open standards (EU, 2004; SOU, 2009; Kammarkollegiet, 2013, 2014a, 2014b, 2016) in relation to the standards which can be referenced in procurement. Further, in a response to the view that ICT standardisation needs an IPR policy which is “based on FRAND licensing terms” (EC, 2016) within the EU there are also seven EU members which express concerns and instead emphasise the importance of Open Standards “relying on Royalty Free intellectual property models in regard to software” (Permanent Representatives Committee, 2016) as a strategy for removing “barriers to innovation, particularly for SMEs” (Permanent Representatives Committee, 2016).

At the same time, there is confusion related to use of the term ‘standard’ and research shows that practitioners may regard products and applications (e.g. Microsoft Word) as standards (e.g. Lundell, 2011; Lundell et al., 2016). The study by Lundell et al. (2016) which is commissioned by the Swedish Competition Authority “found that many IT-projects in the Swedish public sector refer to closed standards which cannot be implemented in open source software” (Lundell et al., 2017). Further, the Director General for the Swedish Competition Authority expresses concerns for closed standards, as follows: “From a competition perspective it is often problematic when public sector organisations conduct IT procurement and express requirements for closed standards” (Lundell et al., 2016 (our translation)).

It has also been shown that there is confusion amongst policy makers between the two concepts of open standard and open source software (e.g. Egyedi & Enserink, 2013). Previous research results also show that many standardisation organisations neglect implementation issues and conclude that standards development and implementation activities “cannot be meaningfully separated” (Egyedi, 2007, p. 612). In particular, implementation of standards for representation of data over long life-cycles, beyond the life-cycle for any specific software, is of particular importance for long-term maintenance of data (Lundell, 2012). For these reasons, this study considers standards for representation of data and the potential for implementation of such standards in software, with a specific focus on the extent to which different standards can be implemented in open source software (i.e. software provided under a license which is recognised by Open Source Initiative (OSI, 2017)).

Previous research shows various positive effects from use of open standards (e.g. Friedrich, 2011; Ghosh, 2005; Krechmer, 2005; Lundell, 2012; Simcoe, 2006) and its potential for promotion of innova-

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