



Chapter VIII

Policy-Driven Signing Frameworks in Open Electronic Transactions¹

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ABSTRACT

Electronically signed transactions typically associate the applied electronic signature with the signed data and implicitly with the terms and conditions related to the scope of the performed transaction. Some aspects of the association between an electronic signature and the transaction can be conveyed by means of a signature policy. Signature policies are a set of rules for the creation and validation of an electronic signature, under which an electronic signature can be determined to be valid. This chapter suggest however, that additional transaction constraints might be conveyed by means of a signature policy. Standardization work has highlighted signature policies as a significant element to leverage trust in electronic commerce transactions that make use of electronic signatures. Summing up technological, organizational and legal concerns, this chapter addresses issues related to the content, form and function of signature policies within a transaction context.

INTRODUCTION

Security and legal safety are constant business requirements regardless of the means of communications. In electronic transactions, policy frameworks conveyed by service providers can be used to delimit the usages for which an electronic transaction or an electronic signature might be used. Policy-driven limitations have been mandated in prevailing standards in areas like, e.g., electronic signatures. A widely used type of such policy limitations can be found in the area of electronic signatures such as certificate policies, for example that a Certification Authority (CA) is typically required to make available to subscribers and relying parties.

Trading partners involved in online business transactions often use policy further to provide notices of limitations to the usage of electronic signatures in transaction contexts. Examples of transaction-based policy constraints might include such limitations as roles undertaken to carry out a certain process.

Signature policies might be used to denote information on the validation and verification of an electronic signature. Additional content includes transaction-specific limitations and constraints that could be interesting for the end users and relying parties with regard to a transaction.

In large transactions that use electronic signatures, signature policies can be used to convey signature-specific information possibly acting under a role. This chapter argues that signature policies can, therefore, become a means to convey certain conditions in a transaction such as role-specific constraints with a view to enhance trust and legal safety.

An application example of this approach can be sought in the area of electronic invoices. Electronic invoices are addressed in the Council Directive 2001/115/EC of December 20, 2001, amending Directive 77/388/EEC with a view to simplifying, modernizing, and harmonizing the conditions laid down for invoicing with respect to value-added tax. Introducing certain policy limitations to roles and transactions can further enhance the functionality described in this directive. The added value for the end user can include greater legal safety with respect to the transaction involved and the validation data thereof.

The remainder of this chapter discusses the common concepts of signature policies, and sets out an example based on electronic invoices.

OPEN E-COMMERCE FRAMEWORKS

Applications of electronic commerce can be seen in two broad areas, namely free form and structured. Open EDI (Electronic Data Interchange) has been an early example case of a transaction framework that aims at using structured data formats and is delivered over open networks to effect commercial transactions without necessarily having to rely on a prearranged transaction framework. Open EDI is significant as it addresses several priorities for a business transaction, such as support for multiple data formats, usage of open networks, etc., that can support diverse application areas, such as invoicing, healthcare, transportation, etc. The open EDI working group of the International Standards Organization defines open EDI (ISO, 1994):

“Open EDI is called EDI among autonomous, multiple participants using public standards and aiming towards interoperability over time, business sectors, information

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