Deliverable

24

Standardisation Roadmap v2

WP13 Standards and Collaboration

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TrustCoM

A trust and Contract Management framework enabling secure collaborative business processing in on-demand created, self-managed, scalable, and highly dynamic Virtual Organisations

SIXTH FRAMEWORK PROGRAMME

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1 Executive summary

The TrustCoM project is developing a framework for trust, security, and contract management for secure, collaborative business processing and resource sharing in dynamically-evolving Virtual Organisations. TrustCoM is committed to the adoption of open standards, and intends to build upon and extend interoperability specifications where necessary and appropriate.

Standards are a way to promote and achieve interoperability between technologies across different vendors. While businesses need to balance between agreed functionality, competitive advantage, and need for interoperability, interoperability is a key requirement in today's multi-vendor market. Standardisation is an important part of successful exploitation. TrustCoM therefore aims at building upon existing well established and accepted standards and published specifications, where appropriate. If new technology is not compatible with existing standards that are well established in the market, then it may be more difficult to commercialize this into products and services which can interact with products and services provided by others. TrustCoM furthermore intends to contribute to the evolution of, and feed research results into, standards, where and in which way appropriate.

This deliverable is version 2 of the project's Standardisation Roadmap. The Standardisation Roadmap supports and documents the standardisation activities within the TrustCoM project, and is regularly updated throughout the lifetime of the project.

The primary objectives of this version of the Standardisation Roadmap are twofold:

- With respect to the first implemented version of the TrustCoM framework, we give a precise positioning status for each relevant standard and published specification, and indicate which standards have been selected, for what purpose precisely, which specifications are effectively leveraged in the first version of the framework, which specifications will likely impact the next version of the framework, etc.
- Based on this positioning status, we give an updated forward look on the impact of standards on TrustCoM and vice versa, in each of the RTD areas identified in version 1 of the roadmap. This forward look intends to identify these standardisation areas that offer most potential for TrustCoM contributions.

This information serves two purposes. We provide feedback to the standards world on the applicability of existing specifications within the TrustCoM framework. We also inform the outside world of the standards choices made for the first version of the framework, in order to get feedback and to promote interoperability with products and services as well as research work in other projects.

It is important to emphasise that TrustCoM is an *integrated* project addressing trust, security, and contract management, for collaborative business processing, as a whole, focusing on the relationships and interactions between, and integration of, these issues, rather than investigating each of these issues separately and independently. The primary focus of the TrustCoM standardisation activity is expected to be in the creation of profiles that integrate existing standards *across* the different areas. While there are already numerous specifications addressing various issues within most of the identified areas, there are almost no concrete guidelines at all with respect to combining different specifications into a single interoperable framework.

Note that this deliverable is accompanied with an appendix – D24 Standardisation Roadmap v2 Appendix – giving updates on:

- the nature and management of the standardisation activities in the context of the project;
- the standardisation activities of the individual partners in the project;
- the relevant standardisation bodies and initiatives.

For an explanation of the TrustCoM framework and its subsystems, and for an in-depth justification of the standards selection in version 1 of the framework, we refer to the technical deliverables D9 "TrustCoM Reference Architecture", D16 "TrustCoM Conceptual Framework V1", and D19 "Basic set of TrustCoM Methods and Support Tools".

2 Introduction

The TrustCoM project [http://www.eu-trustcom.com/] is developing a framework for trust, security, and contract management for secure, collaborative business processing and resource sharing in dynamically-evolving Virtual Organisations. TrustCoM is committed to the adoption of open standards, and intends to liaise closely with the relevant industry and standardisation forums, in order to ensure that the TrustCoM framework builds upon and extends existing and emerging interoperability standards.

The term “TrustCoM Framework” stands for the principles and paradigms, the processes and functions, and the architecture and the technology that underpin trustworthy, secure, and contract-driven operations of Virtual Organisations. However, when using the term “TrustCoM framework” in this deliverable, we mainly refer to the technological aspects, and how these are related to ICT standards and specifications. Other aspects of the TrustCoM framework, such as the socio-economic analysis, have less bearing on this workpackage.

2.1 TrustCoM standardisation objectives

Achieving the scientific and technological objectives of TrustCoM necessitates integration in several dimensions, including standards. Standards are a way to promote and achieve interoperability between technologies across different vendors. While businesses need to balance between agreed functionality, competitive advantage, and need for interoperability, interoperability is a key requirement in today’s multi-vendor market. Standardisation is an important part of successful exploitation. TrustCoM therefore aims at building upon – where appropriate – existing well established and accepted standards and published specifications, as the basis for the TrustCoM framework. If new technology is not compatible with existing standards that are well established in the market, then it may be more difficult to commercialize this into products and services which can interact with products and services provided by others. TrustCoM furthermore plays a significant role in testing and enhancing emerging standards and interoperability guidelines, and intends to contribute to the evolution of, and feed research results into, standards, where and in which way appropriate.

The overall objectives of the TrustCoM standardisation activity are twofold:

1. The standardisation activity must ensure that TrustCoM leverages the most up to date relevant standards and interoperability guidelines within its framework specifications and reference architecture. Existing / candidate open standards, and their associated software and systems engineering paradigms, will provide the basis for the applied research and technological development of TrustCoM.
2. The standardisation activity must ensure that the results of TrustCoM contribute to the future developments of standards for trust, security and contract management, where appropriate. Proposed improvements of these standards will be realised as interoperable extensions or revisions. TrustCoM will also be breaking ground in areas where no candidate specifications exist. In such areas, TrustCoM will propose new standards based on its Framework specifications, which are put forward to the appropriate technical committees for development and eventual ratification.

It is important to emphasise that TrustCoM is an *integrated* project addressing trust, security, and contract management, for collaborative business processing, as a whole, focusing on the relationships and interactions between, and integration of, these issues, rather than investigating each of these issues separately and independently. The primary focus of the TrustCoM standardisation activity is expected to be in the creation of profiles that integrate existing standards *across* the different areas. While there are already numerous specifications addressing various issues within most of the identified areas, there are almost no concrete guidelines at all with respect to combining different specifications into a single interoperable framework.

2.2 Scope and outline of this deliverable

This deliverable is version 2 of the project's Standardisation Roadmap. The Standardisation Roadmap supports and documents the standardisation activities within the TrustCoM project, and is regularly updated throughout the lifetime of the project. The first version of the Standardisation Roadmap was made available at the end of the project's initial scoping and requirements phase, and established a first baseline for further standardisation activities. Version 1 of the roadmap identified the standardisation areas which are relevant to the project, and provided an initial assessment of the state of standardisation in each of these areas.

The primary objectives of this version of the Standardisation Roadmap are twofold:

- With respect to the first implemented version of the TrustCoM framework, we give a precise positioning status for each relevant standard and published specification, and indicate which standards have been selected, for what purpose precisely, which specifications are effectively leveraged in the first version of the framework, which specifications will likely impact the next version of the framework, etc.
- Based on this positioning status, we give an updated forward look on the impact of standards on TrustCoM and vice versa, in each of the RTD areas identified in version 1 of the roadmap. This forward look intends to identify these standardisation areas that offer most potential for TrustCoM contributions.

This information intends to serve two purposes. We provide feedback to the standards world on the applicability of existing specifications within the TrustCoM framework. We also inform the outside world of the standards choices made for the first version of the framework, in order to get feedback and to promote interoperability with products and services as well as other research work.

This deliverable collects the positioning status across the technical WPs, but does not intend to provide an in-depth justification for each specific positioning. We refer to the technical deliverables for specific technical details.

In addition to the primary objectives, the appendices to this deliverable give an update on:

- the nature and management of the standardisation activities in the context of the project;
- the standardisation activities of the individual partners in the project;
- the relevant standardisation bodies and initiatives.

With each update of the Standardisation Roadmap, the focus shifts from the "standards adoption" to the "standards contribution" objective. While this version of the roadmap concentrates on the adoption of standards in the first version of the framework, the next version of the roadmap is expected to focus more on the assessment and planning of the project's standards impact based on the internal evaluation of a more mature version of the framework.

2.3 TrustCoM standardisation approach

This section provides some background as to what TrustCoM considers as being a "standard", which standards areas are generally relevant to TrustCoM, and which kind of standards contributions are envisaged.

The appendix to this document describes how the standardisation activities within TrustCoM are coordinated and supported. TrustCoM is substantially involved in a number of IST project clustering and concertation activities. The appendix includes an outline and activity report of these and other standards-related liaison activities.

2.3.1 The concept of "Standard"

2.3.1.1 Role of "standards"

The main role of IT "standards" is to *promote interoperability across different vendors' platforms*. However, vendors are businesses who need to maintain competitive advantage through their own unique selling points. Therefore, successful standards are defined at a core layer in the information architecture at which most major vendors agree that the advantage of interoperability outweighs the need for competitive advantage.

In the web and web services areas, URL's, HTTP and XML are standardised, since the need for interoperability outweighs competitive advantage for these core technologies. The packaging technology of SOAP, and the Web Service Description Language (WSDL) are also examples of core technologies where the required functionality is agreed, and the need for interoperability outweighs the need for competitive advantage.

Our initial assessment of the currently available standards relevant to TrustCoM – as outlined in version 1 of the roadmap – revealed that higher up the stack (see also Figure 1 below) there is not always clear agreement on either the required functionality or how competitive advantage can be supported by standards. Chapter 3 of this document gives a detailed overview of the positioning of the TrustCoM project with respect to various existing standards and specifications, in the context of the first implemented version of the framework.

2.3.1.2 Different notions of "standard"

The term "standard" can cover different notions, ranging from a public specification issued by a set of companies, to a 'real' standard issued by a recognized standardisation body. We distinguish between the following types of "standards":

a. *De facto standards* – a technology that is used by a vast majority of the users of a function. It may for example be in a product from a single supplier that dominates the market; or it may be a patented technology that is used in a range of products under license; etc. A *de facto* standard may be embraced by a standardisation initiative, and eventually become a consortium recommendation, or a *de jure* standard. The important thing is that it is very widely used, meets the needs for functionality, and supports interoperability.

b. *De jure standards* – standards from entities with a legal status in international or national law such the ISO, national standards bodies (e.g. BSI in the UK, ANSI in the US) or continental standards (e.g. European standards). These are strong in the health and safety related areas, in business quality measures and in long term IT areas. In IT these standards do not have to be implemented, or ever used; they just have to be agreed by the appropriate committee procedure – which can take many years.

c. *Consortium recommendations* – Groups of companies agree that a technology is recommended by them to provide some functionality. Such consortia vary in size from groups of a few large manufacturers (e.g. Microsoft, IBM and BEA), through OASIS and W3C to IETF. They also vary in the time it takes to establish a recommendation and the consensus that is behind it.[1]

[1] W3C takes 6 months to establish a working group on a technology, and then 18 months to 3 years to agree on a recommendation, which is only released if there are working interoperable implementations of all functions in the technology, and enough of the members of W3C support it. In contrast, OASIS in theory may allow three (3) individuals to set up an OASIS Technical Committee (TC) to work on a draft standard specification. Upon completion of a specification the TC may approve the work as a Committee Draft. The approval of a Committee Draft requires at least 2/3 of the total membership of a TC voting to approve and no more than 1/4 voting to disapprove. Before the TC can submit its Committee Draft to OASIS membership for review and approval as an OASIS Standard, the TC must conduct a public review of the work. Review must take place for a minimum of 30 days. Unlike W3C, however, approval of an OASIS TC draft as an OASIS standard does *not* necessitate that there are working interoperable implementations of all functions in the technology.

Standard or Specification	Standards initiative	Version / Status	Date	Reference
Interchange (XMI)		2.1 (current)		s/formal/xmi.htm
UML Profile for Modeling Quality of Service and Fault Tolerance Characteristics and Mechanisms	OMG	Adopted Specification	1 Jun 2004	http://www.omg.org/docs/ptc/04-06-01.pdf
BPMN	BPMI	1.0	3 May 2004	http://www.bpmn.org/
GSS-API	IETF	RFC	Jan 2000	http://www.ietf.org/rfc/rfc2743.txt
IODEF	IETF	ID	8 Aug 2005	http://www.ietf.org/internet-drafts/draft-ietf-inch-iodef-04.txt
Learning Object Metadata (LOM)	IEEE (LTSC)	Draft Standard	15 Jul 2002	http://ltsc.ieee.org/wg12/20020612-Final-LOM-Draft.html
Learner Information Package (IMS-LIP)	IMS Global Learning Consortium	1.0.1	17 Jan 2005	http://www.imsglobal.org/profiles/