

Workshop on "Measurability of trustworthiness of complex ICT systems and services"

Brussels, March 9th, 2009

Scope and objectives

The Future Internet¹ will likely consist of a number of complex, evolving and interacting ICT systems and services. In order to measure and assert a desired level of *trustworthiness*² in this emerging environment, the workshop aims to discuss and identify key advances and future research challenges to be addressed in terms of related metrics, methods and tools.

Motivation and goals

Considerable efforts have been spent so far all over the world for assessing the trustworthiness of operating ICT systems and services. Despite significant advances achieved though, asserting such trustworthiness remains a difficult problem and different dimensions have to be addressed. For instance, expectations for trustworthy ICT systems and services vary considerably across different application sectors, industries, and organizations, depending on criticality, openness or safety requirements. Systems and environments are quite diverse.

Nevertheless, there is a clear move towards building ever more complex ICT systems and infrastructures that are increasingly multi-policy and based on multi-level architectures. Measuring and assessing their trustworthiness will be a keystone to improve trust in their ability to provide the expected services while respecting citizens' privacy. These clearly point to an urgent need to rethink of where to set up monitors and relevant metrics in such infrastructures. They also point to rethinking which paradigms, methods and tools to employ for monitoring and asserting trustworthiness attributes and how to convey them convincingly to the users.

Therefore, the workshop aims at addressing the following problems and questions:

- **Requirements:** Why should we assess and measure trustworthiness in the Future Internet and which are the main functionalities, attributes and variables to measure for assessing it?
- **Metrics and Metrology:** What aspects of security and trustworthiness are measurable and quantifiable and which are the metrics to use? How should metrics referring to different individual technological elements and to trust and user related aspects be aggregated together to extract meaningful for a user information about the overall trustworthiness of an interaction or transaction? What should be the underlying mathematical or theoretical framework to apply for measuring (aggregated) trustworthiness and how to build measurement instruments so as to increase our confidence in measurement results? What techniques and experiences from other disciplines are usable for measuring trustworthiness?
- **Assessment paradigms, methods and tools:** What is the state of the art and what are the main blockades today for assessing and measuring trustworthiness? What is the range of confidence we

¹ The term Future Internet encompasses the emergence of future large heterogeneous and interconnected networked ICT infrastructures, as for example: the evolution of the current Internet, the Internet of "Things", future wireless and mobile systems and sensor/actuator networks, mixed-mode environments consisting of diverse computing, communication and storage capacities, and service-centric, evolving and adaptive ambient environments. It also encompasses the emergence of millions of different networked virtual constructs and entities and "virtual worlds" based on highly-distributed, virtualised communication, computing and storage resources.

² *Trustworthy ICT* is defined here as ICT that is secure, reliable and resilient to attacks and operational failures; guarantees quality of service; protects user data; ensures privacy and provides usable and trusted tools to support the user in his security management.

have in what we measure? Which are the mechanisms that will be needed by the stakeholders and the users of Future Internet systems and services so that they could change and adapt them to a desired level of trustworthiness?

- ***Measurability, transparency, accountability and market innovation:*** How to move to deploying a measurement "infrastructure" in ICT systems and how to use it to improve their performance and to market innovation? What is the potential impact of measuring trustworthiness on the transparency and accountability and ultimately on the trustworthiness of network operators, content providers and software, application and service providers? What is needed to adopt such principles and how to preempt their effective introduction and use?

The Workshop program will include invited talks and panels to discuss the above-mentioned issues and provide main **research directions** for measuring trustworthiness in Future Internet systems and services.

Venue and date

The Workshop will be held in Brussels, at the European Commission, Avenue de Beaulieu, 25 (ground floor, room S1), 1040 Brussels, on March 9th, 2009. The Workshop will include a full day program, starting expectably at 09:00 and ending at 17:00.

Organization

The Workshop is organized by the FP7 AMBER (www.amber-project.eu) and Think-Trust (www.think-trust.eu) Coordination Actions, with the active support from the European Commission's DG INFSO Unit "Trust and Security".

Contact person

Henrique Madeira <henrique@dei.uc.pt>
University of Coimbra, Centre for Informatics and Systems
Polo II- Pinhal de Marrocos, 3030-290 Coimbra, Portugal
Phone: +351-239790003 Fax: +351-239701266

Expected audience

The Workshop attendance will be on an invitation basis. Invitees will be from the members of the AMBER and Think-Trust Coordination Actions and respective Advisory Boards, and from running FP7 projects and European Technology Platforms (NESSI, eMobility, etc) that deal with security and trust measurement and assessment.