Privacy-aware social networks: models, taxonomies and logics

PhD Proposal
MAP-i 2013-14

January, 2014

1 Motivation

Cover story:

- increased relevance of *e-identities in global scenarios*: preservation/protection, sharing/negotiation
- emergence of *decentralised social networks and the role of privacy policies in their interoperability* (internal and external, e.g. with institutional information systems)
- privacy as a *new dimension/domain* (adding to safety and security), ubiquitous in everyday life (not only social nets, but also in smart grid, surveillance, pervasive health-care, etc)

2 Goals

This thesis proposal aims at advancing foundational and applied research around the theme os privacy in formal or informal social networks, namely,

- To enable people to effectively control their shared e-identity across different social networks, providing mechanisms to enlarge/limit/isolate/distribute/localize e-identities.
- To promote the safe and flexible interoperability of decentralised social networks, as well as with institutional information systems (e.g. state, companies).

Therefore, in broad terms the thesis contributions are expected

- To provide a *proper (formal) foundation for privacy* (as a subject/issue/domain of multiple faces and another vertex in the triangle *safety-security-privacy*)
- To characterise *privacy patterns and policies in different scenarios* (e.g., classical social-nets, automatic network building, etc) and how they compose, propagate and are implemented.
- To develop *models, calculi, techniques and algorithms to specify, identify, reason and ensure privacy-aware policies in social networks.*

3 Work topics

It is envisaged that the thesis will be developed around the following four areas (possibly with different emphasis):

Privacy Patterns and Properties.

Objectives:

- identification of privacy policies, their implementations and enforcing mechanisms in current social networks
- development of an ontology of privacy patterns from both privacy policies (how they are enforced in actual networks) and user privacy profiles (how people perceive them).

Formal Models for Privacy and Privacy-awareness in Social Nets.

Objectives:

- development of formal models and taxonomies for privacy patterns
- development of a formal model of a social network on top of which privacy patterns and properties related to privacy-awareness can be identified and checked

Logics and Calculi for Privacy

Objectives:

- development of domain-specific languages for analysis of privacy patterns and privacy-awareness
- development of a calculus of privacy patterns composition and propagation
- development of a (tool-supported) logic framework to reason about privacy properties

4 Context

Research Units. HASLab INESC TEC

Supervisors.

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