Modelling Trust Requirements by Means of a Visualization Language

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UEL University of East London

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Agenda

- Problem statement
- How and why our visualization is expected to help the problem statement
- Who and what our visualization is for
- Our visualization
- How our visualization was derived and constructed
- How our visualization works
- Our poster - show and tell
- Validation of our visualization
- Critique of our visualization
- Next steps…

Problem Statement

- Problem Statement:
  - There is a lack of methods, languages and tools that model and reason about trust, in information systems development, with its related concepts in one allied framework
- Aim:
  - To develop a reasoning and modelling framework that will enable information system developers to consider trust and its related concepts collectively during the development of information systems

Why and How Our Visualization is Expected to Help the Problem Statement

- Why:
  - Little effort has been put into understanding how trust can be modelled and reasoned when developing information systems.
  - Equally little effort has been put into developing visual languages to support trust modeling.
- How:
  - To develop a modelling framework to assist information systems developers to consider trust during the development of information systems.
    - We aim to develop a visualization language for trust related requirements elicitation.

Who and What Our Visualization Is For

- Who:
  - To assist information system developers when considering trust during the development of information systems.
- What:
  - Our idea is to integrate this work with Secure Tropos in regards to verification and validation.
  - How are they expected to use it:
    - Via the Secure Tropos Tool

Our Visualization

- Our visualization consists of:
  - Models
  - Methods
  - Process

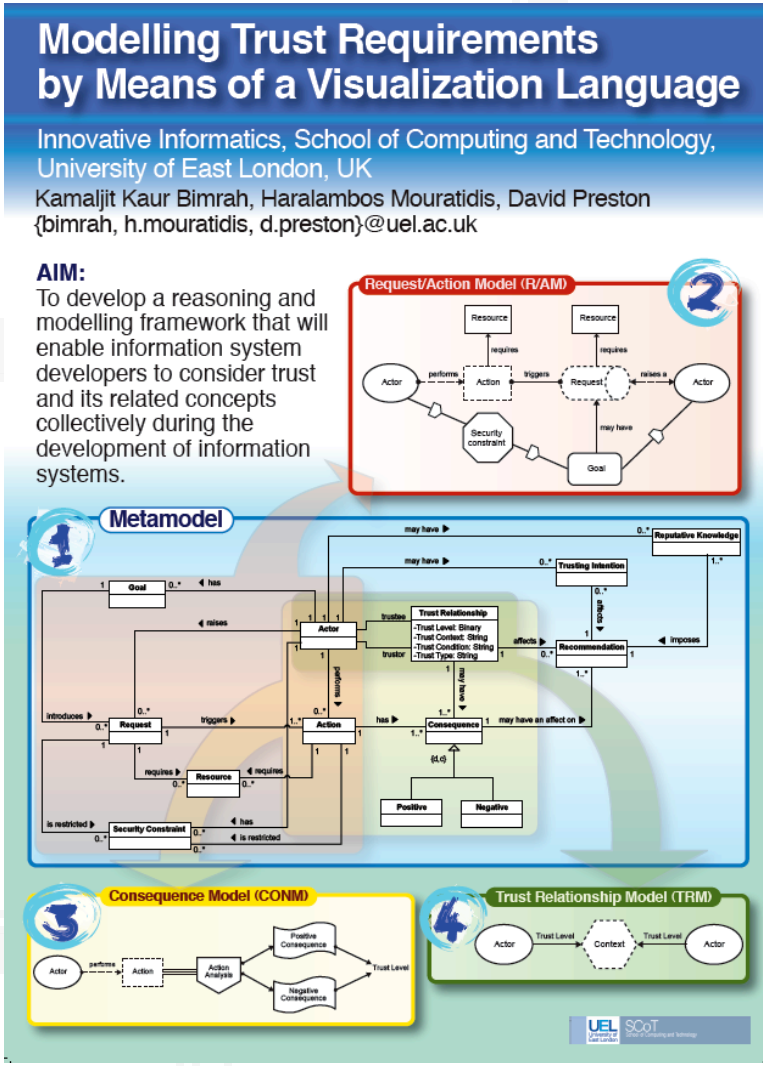
How Our Visualization Was Derived and Constructed

- Our modelling language is based on previous work on the development of an ontology for trust [20], which was based on an ontological analysis that took into account a number of existing ontologies.
- Related Work
  - Girogini (2006) define a modelling framework to model trust relationships using the Tropos methodology.
  - Similarly, in (Grandison, 2001), trust relationships are identified with no supplementary enlightenment on *how* they exist.
  - The TrustCoM project (Wilson, 2007) has developed a framework that supports trust, security and contract issues related to dynamic virtual organisations.
  - UMLsec (Jürjens, 2004) is an extension of UML.
  - Similarly, SecureUML (Basin, 2007) provides a language for specifying access control policies for actions on protected resources.
  - Secure Tropos (Mouratidis, 2005) is a security-aware methodology.
  - CORAS (Dimitrakos, 2002) is a European project.

How Our Visualization Works

- Information system developers will be able to reason (and model) trust during the development of information systems.
- Will be enhancing the SecTro Tool with our added Trust elements.
  - The developers will input their trust issues in the Secure Tropos Tool.

Our Poster - Show and Tell…



Validation of Our Visualization I

- Using Secure Tropos Giorgini et al. have tried to model the various trust considerations that exist in such network of actors.
  - '*The General Practitioner not only depends on the Nurse to Provide Primary Care, but he/she trusts the Nurse to achieve this goal*'. (Giorgini *et al*, 2006).

- However, one of the important limitations of their approach is the lack of modeling all the components of a trust relationship as discussed in previous sections.

Figure 1: Trust Relationship Between GP and Nurse

Validation of Our Visualization II

- It is also important to understand how the trust relationship is operationalised within the network of actors in an information system.

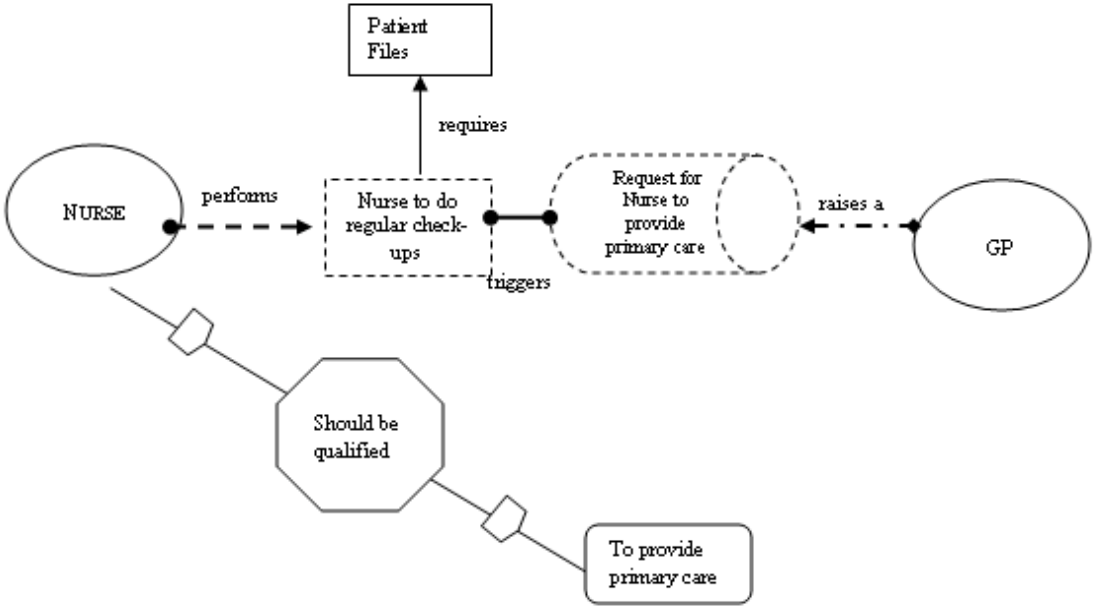


Figure 2: As per our Trust Modelling Language

Critique of Our Visualization

- Weaknesses:
  - Currently not complete:
    - Validation is not yet complete.
- Strengths:
  - Once complete, will be able to:
    - Understand how trust can be modelled and reasoned when developing information systems.
    - Will have a corresponding tool.

Next Steps...

- Complete validation with the eSAP case study
- Develop appropriate methods to form a complete trust-aware framework.
- Integrate this work with Secure Tropos.

Re-Cap

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Thank-You!  Question Time! 

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