iTrust Survey

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Nine by Nine

http://www.ninebynine.net/

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iTrust

- "The aim of iTrust is to provide a forum for *cross-disciplinary* investigation of the application of trust as a means of establishing *security and confidence* in the *global computing infrastructure*, recognizing trust as a crucial enabler for meaningful and mutually beneficial interactions."
  - http://www.itrust.uoc.gr/
  - (my emphasis)

Goals of this talk

- Reviewing iTrust activity
  - exemplified by conference papers

- Looking for multidisciplinary results
  - what are the contributions from non-computing disciplines?

- What is the overall "shape" of new understanding coming from iTrust work

- System implementation perspective
  - what guidance is offered?

Method

- Read through all main papers in LNCS proceedings of first two public iTrust conferences
  - 48 papers
  - Not including short papers
- Summarize content of each paper
  - attempt to reflect content, not evaluate
- Pick out key themes in each paper
  - subjective, subject to differing views

Method (continued)

- Data collected using Notation3 (a variant of RDF)
  - http://www.ninebynine.org/iTrust/iTrust-survey.n3

  About Notation3:
  - http://www.w3.org/DesignIssues/Notation3.html
  - http://www.w3.org/2000/10/swap/Primer.html

- Processed using simple CWM rules
  - http://www.w3.org/2000/10/swap/doc/cwm.html

- Reviewed summaries looking for themes

Raw data:
Multidisciplinary themes

- Computing - 39 papers
- Economics - 8 papers
- Legal - 4 papers
- Philosophy - 1 paper
- Logic - 1 paper
- Psychology - 4 papers
- Sociology - 8 papers
- Statistics - 6 papers

Raw data:
Other recurring topics

- Privacy - 4 papers
- Reputation - 12 papers

Raw data:
Computing + topic

- Computing + Economics - 6 papers
- Computing + Legal - 2 papers
- Computing + Philosophy - 1 paper
- Computing + Psychology - 3 papers
- Computing + Sociology - 5 papers
- Computing + Statistics - 4 papers
- Computing + Privacy - 4 papers
- Computing + Reputation - 11 papers

Defining trust

- 23 different definitions found
  - Two economics papers used the same definition!

- Common themes:
  - Subjective
  - Expectation or belief about another's behaviour
  - Related to specific context
  - Risk of trusting behaviour
  - Basis for decision with incomplete information
  - Based on past evidence

Other observations

- Very few papers without a strong computing element
- Many papers about computing with input from some other discipline(s)
- Reputation/recommendation systems lead use of trust in implemented systems
- A strong strand of economic theory informing reputation systems

More general observations

- Conference papers are not the whole story
- Work in logic of trust is not really connecting with systems using trust

Observations about trust

- Computing with trust necessarily (?) ignores many subtleties
- The 1994 PhD thesis of S. Marsh seems to be seminal in computation of trust
- "First transaction" trust is challenging
- Reduced importance of specific identity
- Recommendation/reputation systems
  - consensus to separate trust in some action from trust in recommendation

Some specific observations (1)

- The social aspect of trust is only lightly acknowledged by computing systems
  - cf. lncs2995_266_276, lncs2995_146_160
  - Modelling goodwill, community vs individual benefit?

- Different approaches to trust with and without 3rd party participation
  - cf. lncs2692_17_32, lncs2692_46_58

Some specific observations (2)

- Increased trust may come at the cost of privacy
  - cf. lncs2995_108_119, lncs2995_108_119
- Empirical data concerning human trusting behaviour is patchy
  - cf. lncs2692_165_178, lncs2995_206_220

On the Web

- This presentation (PPT and PDF)
  - http://www.ninebynine.org/iTrust/iTrustSurvey.ppt
  - http://www.ninebynine.org/iTrust/iTrustSurvey.pdf

- Raw survey data (Notation3 and HTML)
  - http://www.ninebynine.org/iTrust/iTrust-survey.n3
  - http://www.ninebynine.org/iTrust/iTrust-survey.html

- Survey processing rules (Notation3)
  - http://www.ninebynine.org/iTrust/TrustRules.n3

- Processed survey data (Notation3)
  - http://www.ninebynine.org/iTrust/TrustResults.n3

Discussion

- Are there other major themes?
- Most results directed to computing professionals?
- Is trust more than just another technique for achieving security?
- Economic/sociological input seems focused on reputation/recommender systems?
- Can/should computing with trust recognize its social subtleties?