

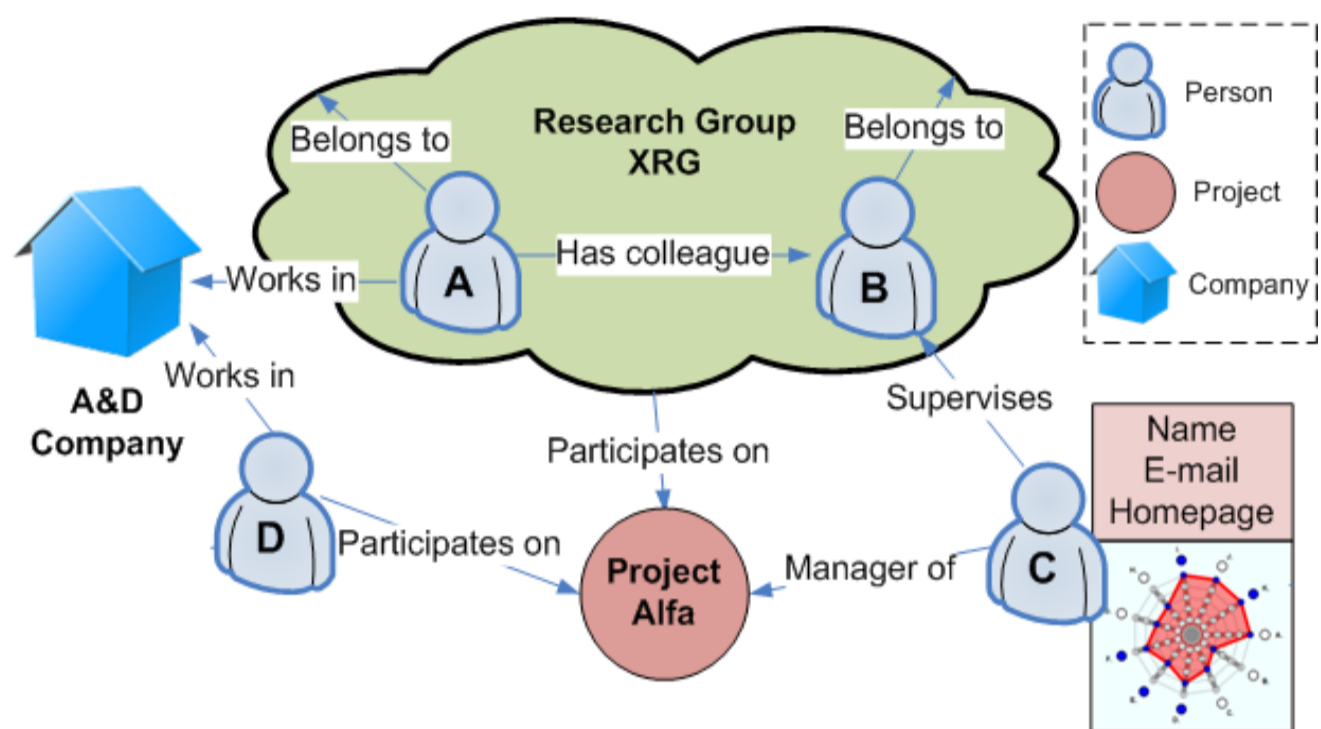


Trusting Beliefs: A Way to Comprehend Trust between Members of the Czech Informatics Community*

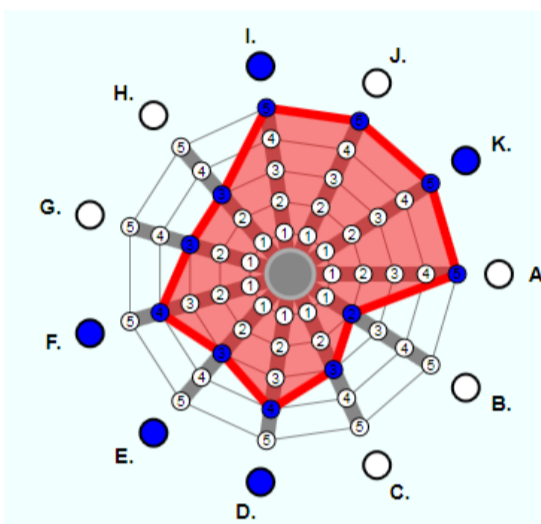
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The goal of the SoSIReCR portal [1] is to leverage the *communication* and *cooperation* among members (entities) of the Czech informatics community (students, IT professionals, researchers, academics, companies, universities, research groups, and projects) by creating a semantically underpinned social network with the members as vertices and relations between them, e.g. “a student belongs to a research group” or “a student/IT professional participates on a project/works for a company”, as edges. The whole architecture of the SoSIReCR portal is described in [2].

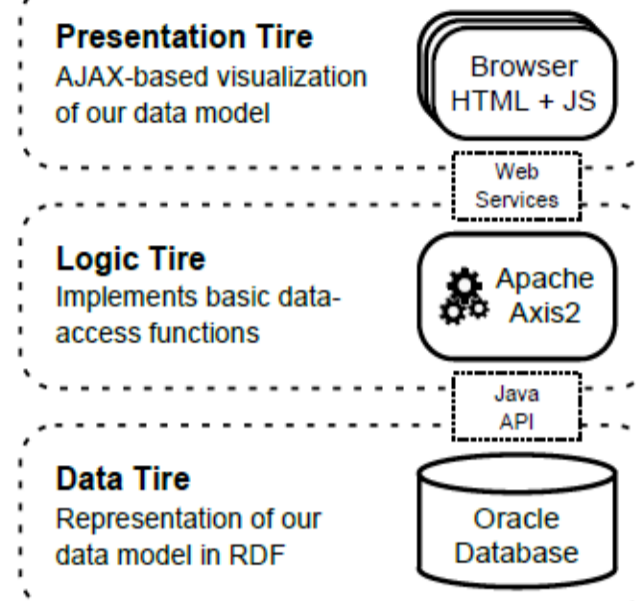


Professional Profile



Professional profiles of members hold information about to which extend the member (student, IT professional, researcher, academic) is an expert in the given domain of informatics or to which extent the entity knows the given domain (university, company).

Architecture



Motivation for the SoSIReCR Portal - Problematic Scenarios

- P1:** Students/IT professionals/researchers cannot compare their abilities (i) with other persons, (ii) with the typical abilities of employees working at certain positions or (iii) with the typical levels of knowledge of other universities' graduates. As a result, they cannot properly justify their price in the employment market.
- P2:** Students/researchers/academics do not know who is working on similar research topics at other universities and, as a result, they cannot unify their efforts to make the research more effective and publish at more prestigious conferences.
- P3:** Companies/universities searching students/IT professionals/researchers/academics for their projects cannot quickly and easily find suitable candidates who would like join the project and have the desired expertise.
- P4:** Students/IT professionals/researchers/academics do not know which companies/universities are looking for new employees and in which domains of expertise.
- P5:** Companies do not know the typical aggregated knowledge of students/IT professionals/researchers/academics in various regions of the Czech Republic -- this information would help them when setting up new branches.

Use Cases of the SoSIReCR Portal

- U1:** A person is comparing his/her professional profile with another person's professional profile. (motivated by **P1**)
- U2:** A young researcher is searching another researcher for a future academic collaboration – writing a paper. (**P2**)
- U3:** A project (the manager of the project) is searching suitable persons to complete the project team. (**P3**)
- U4:** A student/IT professional/researcher/academic is looking for a job/collaboration on the project. (**P4**)
- U5:** A company (i.e. the responsible person in that company) is aggregating professional profiles of the persons in the chosen region of the Czech Republic. (**P5**)

Trusting Beliefs

The aspect of trust of an entity in another entity in the social network is of crucial importance in all use cases U1 - U5. *Trust (trusting intention)* is the extent to which one entity (*trustor*) is willing to depend on the other entity (*trustee*) in a given situation with a feeling of relative security, even though negative consequences are possible [3]. In social networks, we need to distinguish two dimensions of trust widely supported in the literature [5] - trust in a trustee who is a *target entity* (i.e. the entity the trustor is considering to work with in the use cases U2 or U3) and trust in a trustee who is a *recommender* (the entity who recommends the target entity).

Trust is typically comprehended as a “black box” and indivisible concept, e.g. in [5]. Since trust is so complex concept [7], semantics of such “black box” trust is ambiguous [6]. Therefore, we decided to comprehend trust in the social network behind the SoSIReCR portal as a set of *beliefs* forming trust [3].

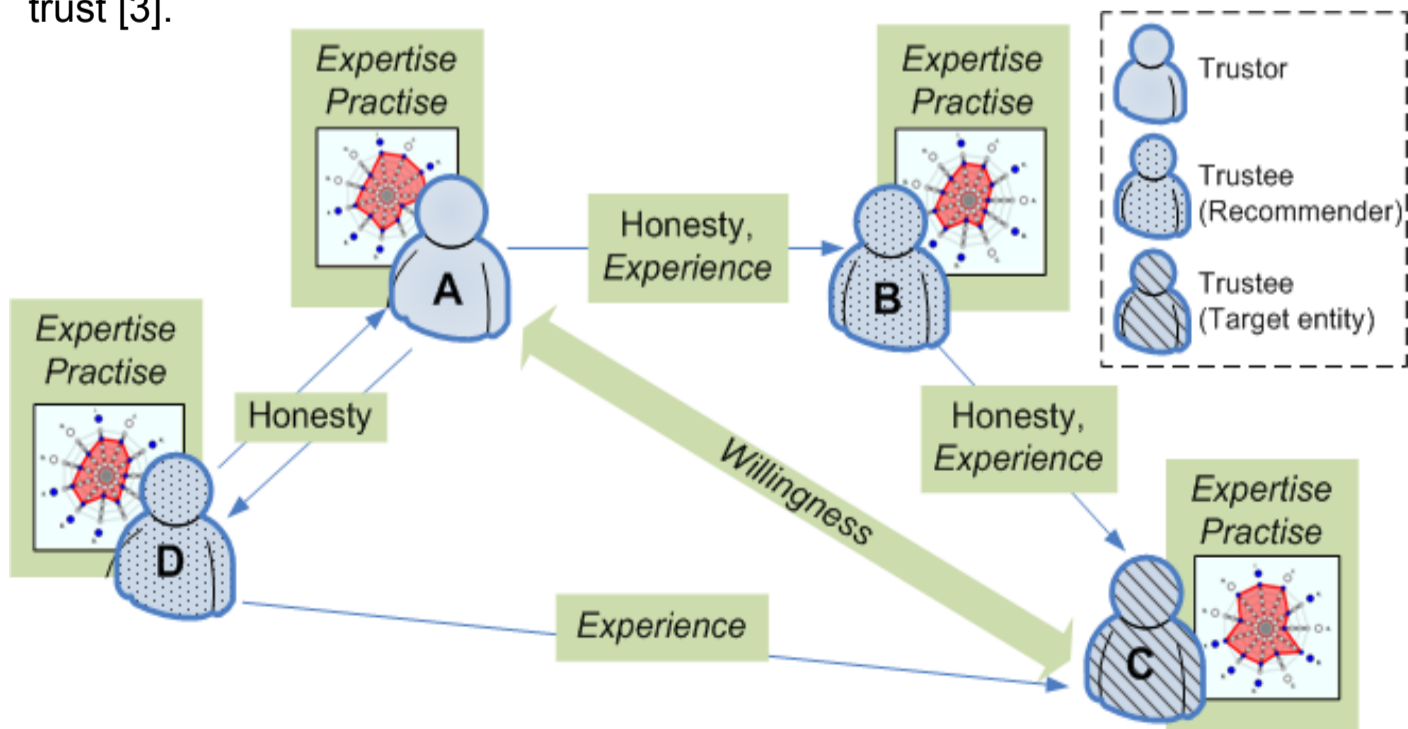


Table below depicts the beliefs identified in the SoSIReCR portal and relevant for the given use cases U1 - U5. The abbreviation *T (R)* in the table represents that the belief is relevant in the given use case for trusting intentions where the trustee is a target entity (recommender). The process of selection of the proper sets of beliefs, which (1) are justified by the literature and (2) relevant for the given use cases U1 – U5 in the SoSIReCR portal is described and evaluated in [4].

Belief	Description	U1	U2	U3	U4	U5
Experience	Does the trustor have previous (positive) experience with the trustee?	T/R	T/R	T/R	T/R	
Expertise	What is the trustee's expertise in the relevant axes of the professional profile?		T/R	T/R	T/R	T/R
Honesty	Does the profiles of the trustee correspond with the reality?	T/R	T/R	T/R	T/R	T/R
Practise	What is the trustee's practise in the relevant axes of the professional profile?		T/R	T/R	T/R	T/R
Willingness	Would the target entity be willing to cooperate with the trustor for the duration of the project/common work?		T	T	T	

Figure on the left illustrates the different approaches when quantifying beliefs (expertise and practise are quantified for a single entity; honesty, experience, and willingness are quantified based on a trustor and a trustee). By not quantifying trust directly, but deriving trust from the quantifications of the beliefs, which are more intuitive concepts than the rather abstract concept of trust (“black box”), the confusion of social network's members regarding the comprehension of trust is minimized.

Conclusions

In this poster, we discussed the concept of trust in the SoSIReCR portal, which is crucial in all use cases U1 – U5 motivated by the problematic scenarios P1 - P5. In the SoSIReCR portal, trust is comprehended as a set of beliefs - experience, expertise, honesty, practise, and willingness. As a result, the ambiguity in trust semantics is minimized. We are persuaded that this approach should be used when computing trust in social networks.

[1] SoSIReCR - Social network of the computer scientists in the regions of the Czech Republic. (http://www.sosirecr.cz/index_en.php)

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[3] D. Harrison Mcknight and Norman L. Chervany. The Meanings of Trust. Technical report, University of Minnesota, Carlson School of Management, 1996.

[4] T. Knap and I. Mlynkova. Revealing Beliefs Influencing Trust between Members of the Czech Informatics Community. Submitted to SocInfo, 2011. (<http://www.ksi.mff.cuni.cz/~knap/files/Beliefs.pdf>)

[5] J. A. Golbeck. Computing and Applying Trust in Web-based Social Networks. PhD thesis, College Park, MD, USA, 2005.

[6] T. Heath. Information-seeking on the Web with Trusted Social Networks from Theory to Systems. PhD thesis, Milton Keynes, UK, 2008.

[7] A. Josang, R. Ismail, and C. Boyd. A Survey of Trust and Reputation Systems for Online Service Provision. Decision Support Systems, 43(2):618-644, 2007.

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