Enterprise COllaboration & INteroperability

WP 4.5: c-HI Innovative Services
Concepts and Design

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COIN Innovation Requirements (wrt. c-HI)

- Flexible Collaboration Support
  - Underneath project planning: ad-hoc collaboration environment?
- Human <-> Service Interaction Support
  - Including human-provided services
- Cross Enterprise c-HI Support
  - Who is allowed/encouraged to interact with whom across enterprise borders?
- Social and Participative Software Support
  - User-provided content, considering social influences.
- Network based Information Sharing
  - How are information and knowledge shared ad-hoc between partners?

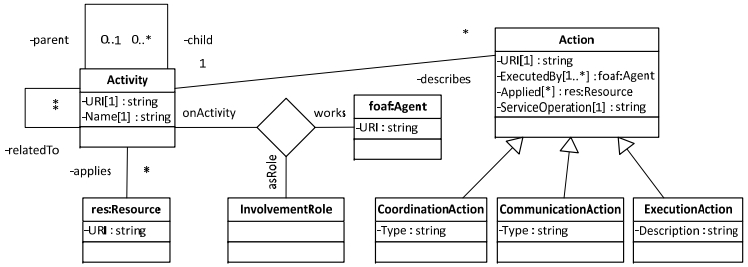
Innovative Concepts

- Activity-centric ad-hoc collaboration
- Context awareness
- Human and service interaction model in SOA
- Human provided services
- Cross-enterprise interaction models
- Collaboration trust model

Activity-centric ad-hoc collaboration

- Certain predefined structures such as tasks in work breakdown structures, describe the most important steps in a process.
- Ad-hoc activities are positioned one level underneath,
  - not modeled in advance
  - emerging when performing tasks
- *Simple Example*: In COIN work is predefined in tasks, milestones to be reached, deliverables (artifacts) to be created. Underneath: flexible collaboration: meetings are set up ad-hoc, order of software module implementation rearranged wrt. partners availability etc.

Pre-COIN Activity Model



Has to be adapted and enhanced with other concepts to meet cross-enterprise collaboration requirements.

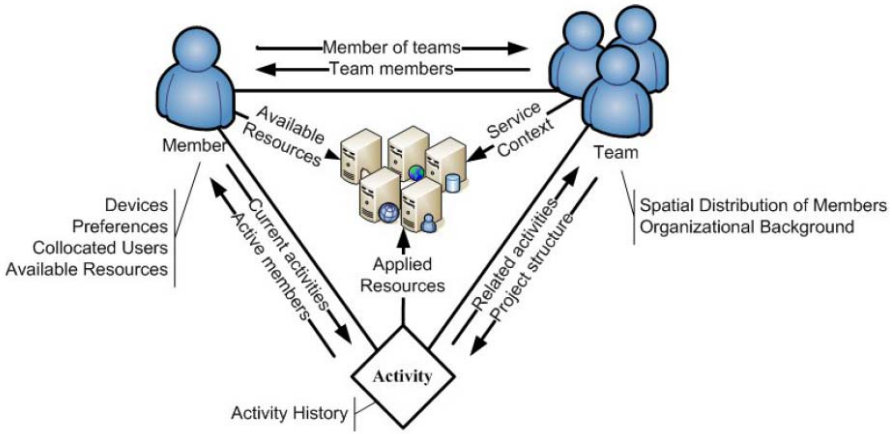
Context Awareness

What is Context?

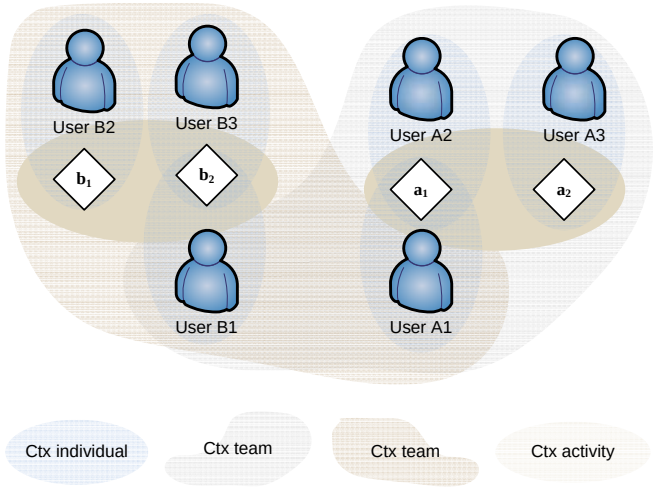
(Dey and Abowd, 2000):

> [...] any information that can be used to characterize the situation of an entity. An entity is a person, place, or object that is considered relevant to the interaction between a user and an application, including the user and applications themselves.

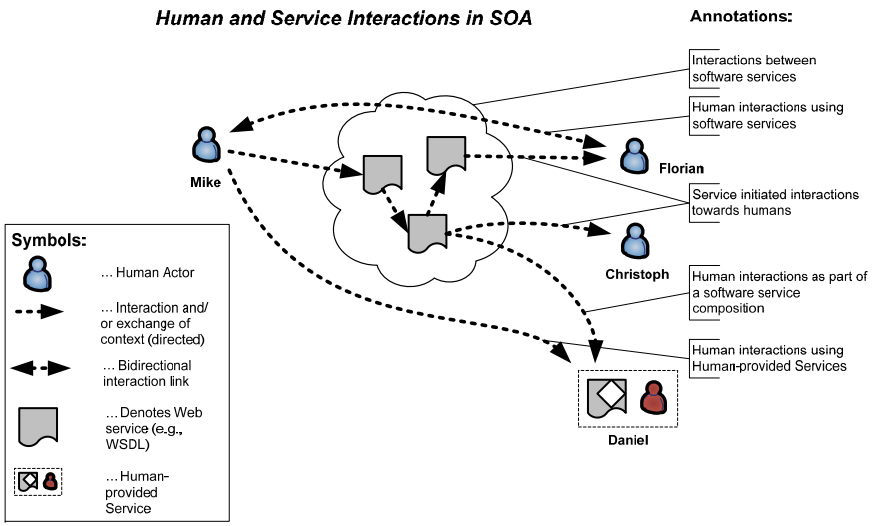
Context: More than Location



Contextual Scopes



Human and Service Interactions



Human Provided Services

- Definition of Services (including interfaces)
- Specification of Interactions
- Provisioning of HPSs
- Discover + interact with other users/HPSs

→HPS as the means which unifies humans and services in one consistent way

(ex: include humans in a process/activity wrt. particular services they offer).

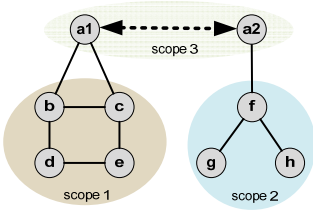
Cross-Enterprise Interaction Models (1)

- Common Interaction Models
  - Broker
  - Proxy
  - Delegation
  - Mashing
  - …
- BUT wrt. cross-enterprise collaboration context

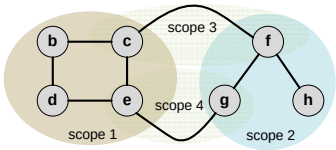
Cross-Enterprise Interaction Models (2)

Examples in COIN

- Delegation: contact persons share information (part of context), about work to perform, requirements, products.



- Mashing: entities connect together and interact directly.



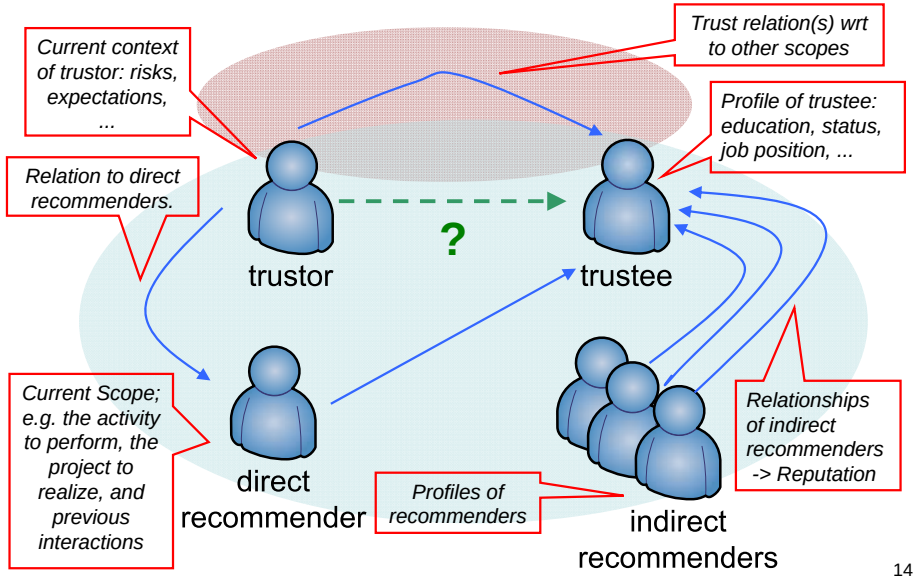
Collaboration Trust Model

Definition of Trust

- Trust is an **expectation**
  - based on **available collaboration data** (e.g., emerging from HIs wrt. a particular scope),
  - one entity has about another's future behavior
  - to **perform activities** dependably, securely, and reliably
  - within a **specified context**.

Collaboration Trust Model Concepts

Simple Scenario



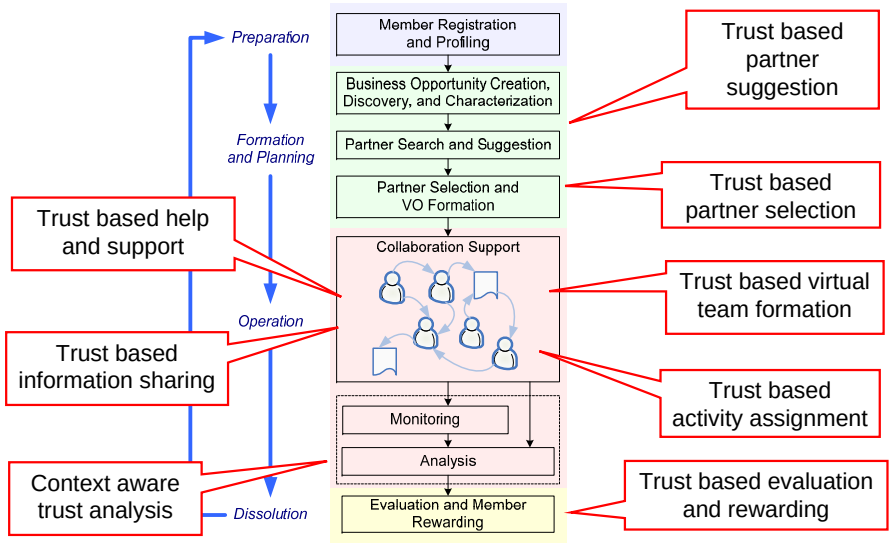
Collaboration Trust Model

Potential Data Sources to determine relations

- **Competencies Service** contains information about competencies and skills; furthermore about virtual teams built during collaborations.
- **Communication Services** deliver information about who communicated with whom how long and extensive respectively, and several more metrics depending on the type of communication channel (e-mail, IM, etc.).
- **Activity Service** stores structural information about tasks to perform, participating people, and services and resources used to reach a particular goal.
- **Document Management Service** logs who works on which documents.
- **Service Invocation Logging** (needs an agreed Access Layer) can monitor who uses which services, how many errors occur during the usage etc.
- **Rewarding Services** from the COIN Baseline offer human feedback.

Collaboration Trust Model

Application in COIN

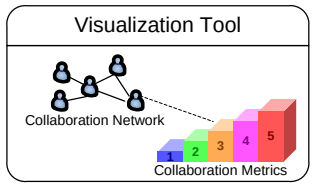


c-HI Innovative Services Overview

- Collected end-user requirements:
  - Collaboration visualization tool
  - Secure login and information sharing
  - Open discussion and development forum
  - Help and support tool
- We plan to develop one tool for each requirement, utilizing presented innovative concepts.

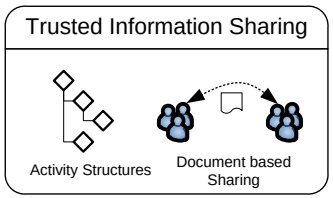
Visualization Tool

- Visualizes calculated collaboration metrics of the network from various sources, including COIN Baseline services.
- E.g., Actors and their interactions of different types, competencies relations, performed activities, collected experiences...
- Underlying trust emergence service supports other WP 4.x tools.
- ***Innovation*:** automatic trust emergence between humans util. various sources



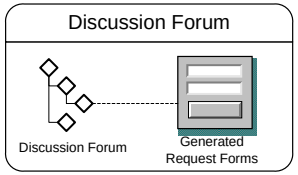
Trusted Information Sharing

- Sharing of business related information, such as processes, activities, and related artifacts.
- Establishes therefore links between actors, their shared resources, and their context.
- Realized with e.g., a common document sharing service, however with using trust management above.
- ***Innovation***: Sharing not based on policies but on trust emerging from HIs.



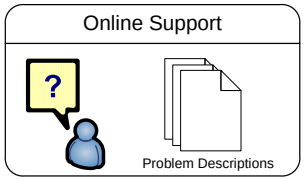
Open Discussion and Development Forum

- Based on existing Web 2.0 technologies (blog, forum etc.).
- Users can offer and share their capabilities via HPS within a forum, by linking HPS entries to posts and comments.
- Shared Knowledge and HPSs can be searched
- ***Innovation:*** Mashup Humans in a seamless Web 2.0 manner considering trust relationships

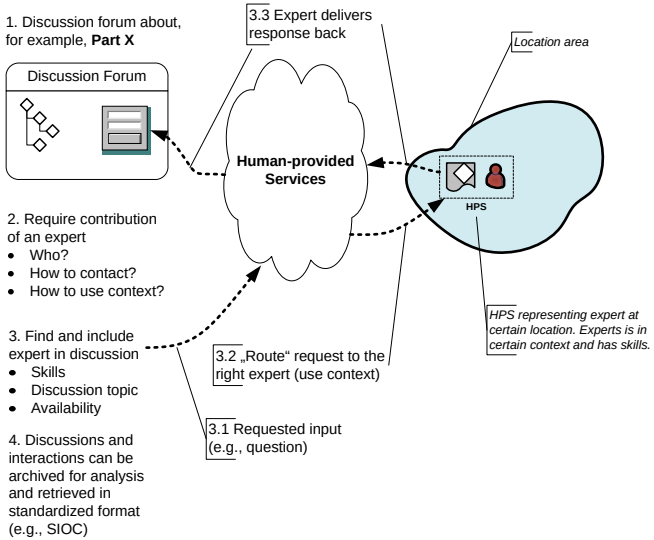


Online Help and Support

- Finding the right person based on situational awareness.
- Based on context the Online Support tool can route requests to the best available expert considering priority constraints.
- Can be realized by using communication services and the concept of HPS.
- ***Innovation:*** Involving experts context and trust dependent, using various channels.



Combined Example



Questions & Answers, Discussion...

Thanks.

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