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 and Service Interactions in SOA**

- Mike
- Florida
- Christoph
- Daniel

**Annotations:**
- Interactions between software services
- Human interactions using software services
- Service initiated interactions towards humans

**Symbols:**
- Human Actor
- Interaction and/or exchange of context directed
- Bidirectional interaction link
- Discuss/End
- HPS as human provided services

**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

- Current context of trustor: risks, expectations, ...
- Relation to direct recommenders:
  - Current Scope; e.g. the activity to perform, the project to realize, and previous interactions
  - Profiles of recommender(s)
- Profiles of trustee: education, status, job position, ...
- Relationships of indirect recommenders -> Reputation

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.

Application in COIN

- Trust based partner suggestion
- Trust based partner selection
- Trust based virtual team formation
- Trust based activity assignment
- Trust based evaluation and rewarding

Context aware trust analysis
- Trust based help and support
- Trust based information sharing
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.

Questions & Answers, Discussion...

Thanks.

skopik@infosys.tuwien.ac.at