

VieTE – ENABLING TRUST EMERGENCE IN SERVICE-ORIENTED COLLABORATIVE ENVIRONMENTS

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http://www.infosys.tuwien.ac.at/prototyp/VieTE/VieTE_index.html

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Overview

- Motivation and Introduction
- Challenges
- The fundamental Concepts of Trust in SoA
 - Definition
 - Influences on Trust
 - View of Trust
- Approach for Trust Determination
 - From Data to Trust
 - Interaction Analysis
 - VieTE Architecture
- Conclusion

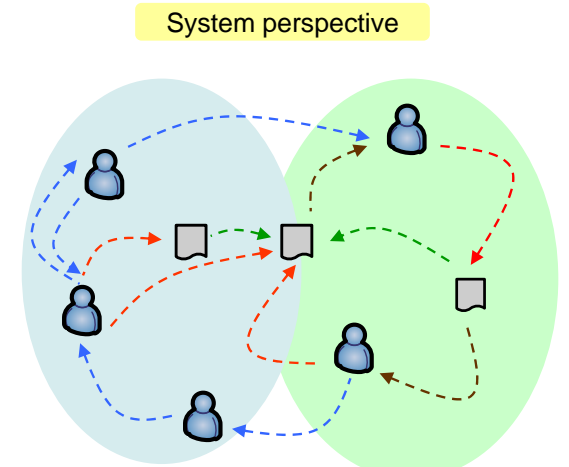
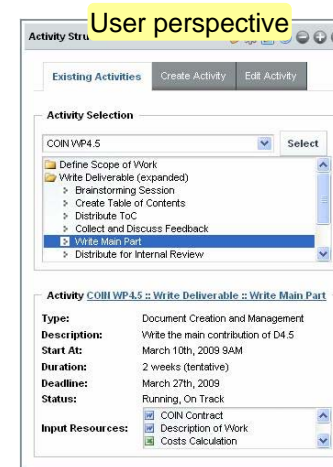
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Motivation

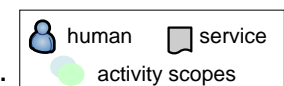
- Open dynamic ecosystem
 - humans and services
 - joining/leaving the environment dynamically
 - humans managing work flexibly on their own
- Distributed communication and coordination
 - anytime, anywhere
- Massive Collaboration
 - large sets of humans and services

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Flexible Collaboration Environment



Humans and services **interacting** to perform work described by activities.



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- Context-aware collaboration
 - context models describing the activity scopes
- Connecting widely distributed actors
 - Service-oriented Architectures (SoA)
- Dynamically find and use services
 - need for trust in services
- Dynamically find and collaborate with humans
 - need for trust in humans

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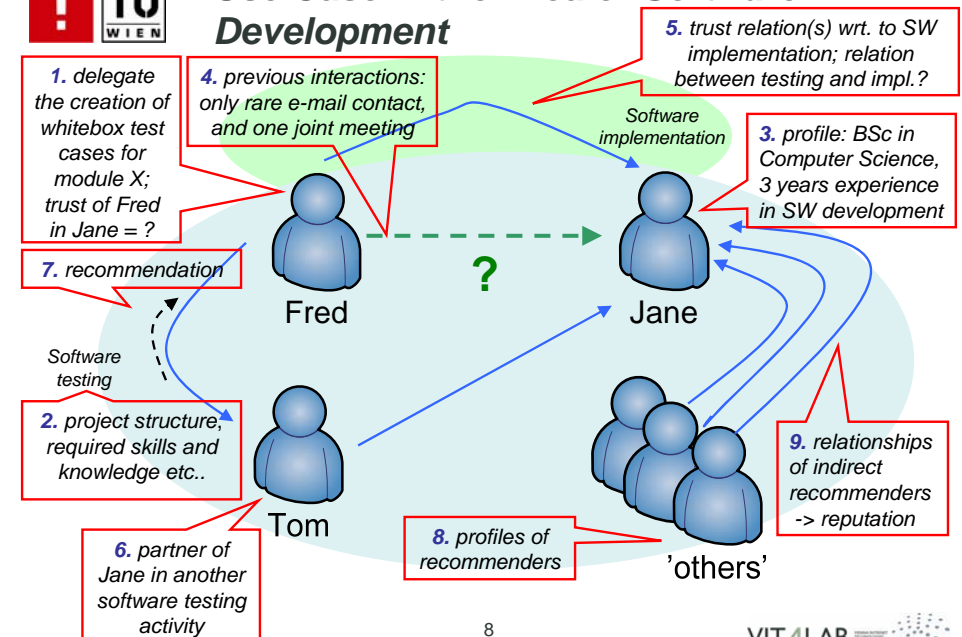
- Identify fundamental **concepts of trust in SoA**
- Enable **automatic determination of trust** for dynamic human/service compositions
- Identify **data influencing trust**
- **Architecture** enabling collecting, managing and analyzing data for trust determination

One uniform platform to manage **trust in **humans and in services** in distributed service-oriented environments.**

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- Trust reflects the **expectation**
 - one entity has about another's future behavior
- to **perform given activities** dependably, securely, and reliably
- based on experiences from **previous interactions**

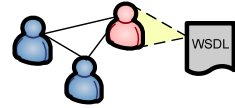
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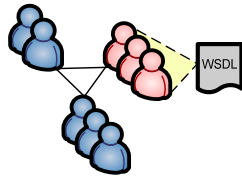
How trustworthy is an Entity?

- Individual View



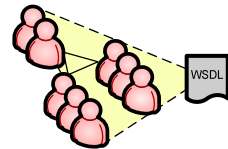
- Team View

- individual views
- recommendations



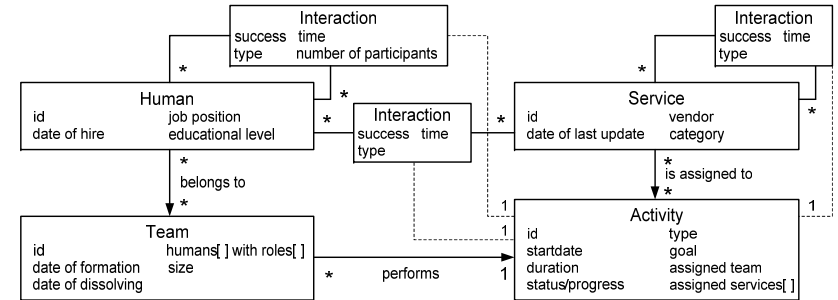
- Global View

- reputation



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From Data to Trust



- Classification of interactions

- human-human (e.g., instant messaging)
- human-service (e.g., document management)
- service-service (e.g., service composition)
- service-human (e.g., event reminder)

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Interaction Analysis

- Interaction metrics

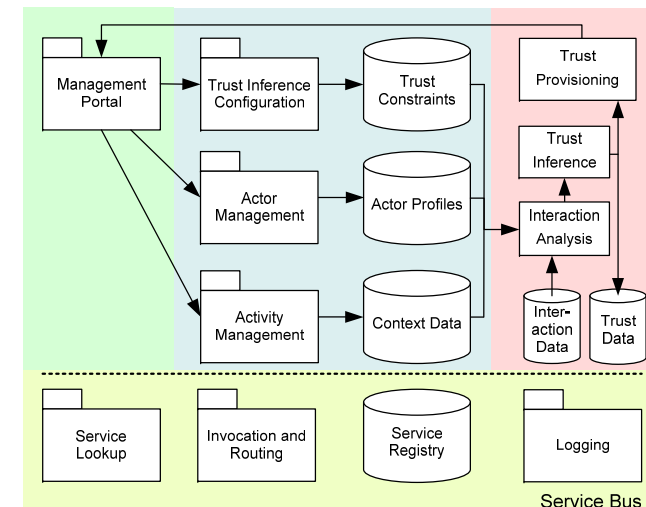
- describing the **collaboration behavior**
- with respect to particular **activity scopes**
- from a certain **view**

- Examples:

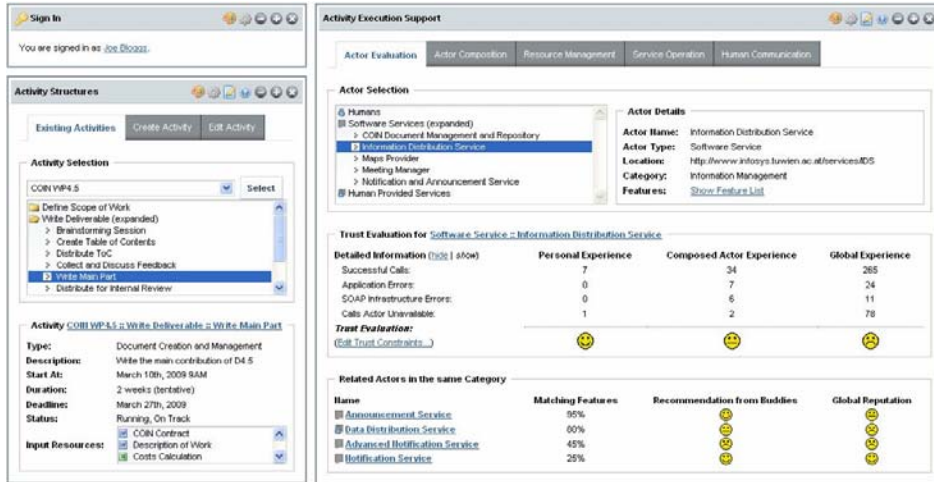
- individual view*: a human rates a service based on the rate of successful compared to all interactions.
- team view*: distribution of service interactions across the participants in an activity
- global view*: similar to team view but considering a broader activity scope and different teams

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VieTE Architecture The Vienna Trust Emergence Framework



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The screenshot displays the VieTE Management Portal interface. On the left, there is a sidebar with 'Activity Structures' and 'Activity Selection' sections. The main area shows 'Activity Execution Support' with tabs for 'Actor Evaluation', 'Actor Composition', 'Resource Management', 'Service Operation', and 'Human Communication'. The 'Actor Selection' section lists various actors like 'Humans', 'Software Services', and 'Information Distribution Service'. The 'Actor Details' section provides information for the selected actor, including its name, type, location, category, and features. Below this, there is a 'Trust Evaluation' section with a table showing 'Detailed Information' for 'Software Service - Information Distribution Service'.

Detailed Information (hide show)	Personal Experience	Composed Actor Experience	Global Experience
Successful Calls:	7	34	265
Application Errors:	0	7	24
SOAP Infrastructure Errors:	0	6	11
Calls Actor Unavailable:	1	2	78

Trust Evaluation: (Edit Trust Constraints...)

Related Actors in the same Category	Matching Features	Recommendation from Buddies	Global Reputation
Announcement Service	95%	😊😊😊	😊😊😊
Data Distribution Service	60%	😊😊😊	😊😊😊
Advanced Notification Service	45%	😊😊😊	😊😊😊
Notification Service	25%	😊😊😊	😊😊😊

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- Contributions
 - definition of **fundamental concepts** of trust in SOA
 - identification of **data** on which trust relies
 - **design of VieTE's** service-oriented architecture
 - implementation and evaluation of a first **prototype**

- Future work includes
 - testing of more complex **trust metrics**
 - **algorithms** to deal with different data sets
 - **refinement of VieTE's** architecture
 - **evaluation** in real collaboration environments

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Thanks.

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