Enterprise COllaboration & INteroperability

COIN Innovative Services

COIN Summer School
Aachen, October 19th 2010

Michele Sesana
TXT e-solutions S.p.A.
Topics

• COIN Methodology for Innovative Services
• COIN Innovative Services Overview
• COIN EC Services
  – Collaborative Product Development (cPD)
  – Collaborative Production Planning (cPP)
  – Collaborative Project Management (cPM)
  – Collaborative Human Interaction (cHI)
• COIN EI Services
  – Information Interoperability
  – Knowledge Interoperability
  – Business Interoperability
What has been already Presented

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  – Information Interoperability
  – Knowledge Interoperability
  – Business Interoperability

Kim Jansson (VTT)
Today h11.00-13.00

Francesco Taglino (CNR)
Today h9.00-10.30
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## Methodology Flow

<table>
<thead>
<tr>
<th>Requirements Collection</th>
<th>Completed</th>
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<tbody>
<tr>
<td>First Specification</td>
<td>Completed</td>
</tr>
<tr>
<td>First Prototype Implementation</td>
<td>Completed</td>
</tr>
<tr>
<td>End User Test</td>
<td>Completed</td>
</tr>
<tr>
<td>- Workflows</td>
<td></td>
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<tr>
<td>- Test report</td>
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<tr>
<td>Final Specification</td>
<td>Completed</td>
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<td>Final Prototype Implementation</td>
<td>Ongoing – December 2010</td>
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<tr>
<td>- Additional developments</td>
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<td>- Add-ons/plugins on the first version</td>
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<tr>
<td>- New services</td>
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<tr>
<td>End User Test</td>
<td>Coming Soon – From January 2011</td>
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<tr>
<td>- Workflows</td>
<td></td>
</tr>
<tr>
<td>- Test report</td>
<td></td>
</tr>
</tbody>
</table>
Overview

COIN Collaboration Platform

<Use Cases>
<Workflows Models>
<Workflows Execution>
<EC Services>
<EI Services>
Legacy Systems

End-Users
Business Processes

End-Users

SP4

SP5
## WF Modelling

### 7. The supplier and sub-suppliers use the Interoperability Spaces service (IS WP 5.2) to negotiate the manufacturing contract. After the negotiation starts, every participant can change and modify the document (according to specific access rights) in order to define its own proposal concerning the business opportunity described by the document.

<table>
<thead>
<tr>
<th>S</th>
<th>Lead Contract Negotiation</th>
<th>Interoperability Space Service (WP 5.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Negotiate Contract</td>
<td>Interoperability Space Service (WP 5.2)</td>
</tr>
</tbody>
</table>

### 8. Supplier’s purchase department selects the offer and sub-suppliers that best fits the needs (price, delivery, other business condition). Once the negotiation phase is over and the sub-supplier is selected, the final version of the document represents the manufacturing

<table>
<thead>
<tr>
<th>S</th>
<th>Close negotiation with success</th>
<th>Interoperability Space Service (WP 5.2)</th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>Partner selection</td>
<td>VOCreation Service (BS)</td>
</tr>
</tbody>
</table>
Innov. Srv. In Workflows

C3P Service
(ConN EC - cPP Service)

Manual Activity

Web-service call (Legacy System)

Semantic Interoperability
Runtime Engine SIRE
(ConN EI – Data Interop Service)
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Numbers

• Final specification innovative services:
  • 18 services for the EC side of the COIN
    • 5 new
  • 13 services for the EI side of the COIN
    • 4 new
<table>
<thead>
<tr>
<th>WP</th>
<th>Service</th>
<th>Acronym</th>
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<tbody>
<tr>
<td>4.2 c-PD</td>
<td>Semantic Cluster Management Services</td>
<td>SCMS</td>
</tr>
<tr>
<td>4.2 c-PD</td>
<td>Document Management and Collaborative 3D Designer Service</td>
<td>DM&amp;C3D</td>
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<tr>
<td>4.2 c-PD</td>
<td>Advanced Semantic Cluster Management Service</td>
<td>ASCM</td>
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<tr>
<td>4.3 c-PP</td>
<td>Collaborative Production Planning Platform</td>
<td>C3P</td>
</tr>
<tr>
<td>4.3 c-PP</td>
<td>SaaS Production Planning Service</td>
<td>PPS</td>
</tr>
<tr>
<td>4.3 c-PP</td>
<td>Collaborative Quality Management Service</td>
<td>cQMS</td>
</tr>
<tr>
<td>4.3 c-PP</td>
<td>Supply Chain Information Services</td>
<td>SCIS</td>
</tr>
<tr>
<td>4.3 c-PP</td>
<td>Service oriented text enrichment services</td>
<td>SOTES</td>
</tr>
<tr>
<td>4.4 c-PM</td>
<td>Project alignment booster</td>
<td>PAB</td>
</tr>
<tr>
<td></td>
<td><em>Configure alignment model service</em></td>
<td>PAB - CACMS</td>
</tr>
<tr>
<td></td>
<td><em>Project alignment profile service</em></td>
<td>PAB - PAPS</td>
</tr>
<tr>
<td></td>
<td><em>Partner alignment indicator service</em></td>
<td>PAB - PAIS</td>
</tr>
<tr>
<td></td>
<td><em>Competency deviations service</em></td>
<td>PAB - CDS</td>
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<tr>
<td></td>
<td><em>Learning activity service</em></td>
<td>LAS</td>
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<tr>
<td>4.4 c-PM</td>
<td>Online Meeting Service</td>
<td>OMS</td>
</tr>
<tr>
<td>4.4 c-PM</td>
<td>Collaboration for Project Management</td>
<td>Coll4Pm</td>
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<tr>
<td>4.5 c-HI</td>
<td>Collaboration Visualization Tool</td>
<td>CVT</td>
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<tr>
<td>4.5 c-HI</td>
<td>Trusted Information Sharing</td>
<td>TIS</td>
</tr>
<tr>
<td>4.5 c-HI</td>
<td>Trusted Online Help and Support</td>
<td>TOHS</td>
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</tbody>
</table>
## EI Innovative Services List

<table>
<thead>
<tr>
<th>WP</th>
<th>Service</th>
<th>Acronym</th>
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</thead>
<tbody>
<tr>
<td>5.2 II</td>
<td>Semantic Mapping Discovery Service</td>
<td>SMDS</td>
</tr>
<tr>
<td>5.2 II</td>
<td>Semantic Reconciliation Rules Generation Service</td>
<td>SRRGS</td>
</tr>
<tr>
<td>5.2 II</td>
<td>Semantic Interoperability Runtime Engine</td>
<td>SIRE</td>
</tr>
<tr>
<td>5.2 II</td>
<td>SourceToTarget Mediator Generation Service</td>
<td>S2T</td>
</tr>
<tr>
<td>5.2 II</td>
<td>Interoperability Space Service</td>
<td>ISS</td>
</tr>
<tr>
<td>5.3 KI</td>
<td>Social Ontology Building and Evolution Service</td>
<td>SOBE</td>
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<tr>
<td>5.3 KI</td>
<td>Enterprise Semantic Profiling services</td>
<td>ESPS</td>
</tr>
<tr>
<td>5.3 KI</td>
<td>Enterprise Semantic Matchmaking Service</td>
<td>ESMS</td>
</tr>
<tr>
<td>5.3 KI</td>
<td>Collaborative Network Semantic Assessment service</td>
<td>CNSA</td>
</tr>
<tr>
<td>5.3 KI</td>
<td>Semantic Assessment of Company Entrance in the CN</td>
<td>SACE</td>
</tr>
<tr>
<td>5.3 KI</td>
<td>Competencies Transfer from VO to CN</td>
<td>CTS</td>
</tr>
<tr>
<td>5.4 BI</td>
<td>Cross-Organizational Business Process Interoperability Services</td>
<td>CBPip</td>
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<tr>
<td></td>
<td>CBPip private to public transformation</td>
<td>CBPip_P2P</td>
</tr>
<tr>
<td></td>
<td>CBPip Gap Detection</td>
<td>CBPip_Gap</td>
</tr>
</tbody>
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Main results achieved so far:

- Use case description for SMEs in c-PD and functional analysis completed

- Collaborative Knowledge-based Product model.
  - first prototype completed: Semantic Cluster Management System (SCMS)
  - final prototype ongoing

- 3D data and collaboration through visualization
  - first prototype completed: Collaborative 3D Designer Service (C3DDS)
  - final prototype ongoing
Collaborative - Product Development Services

• Semantic Cluster Management Services (SCMS)

Problems addressed:

– A new product is going to be developed. We need to find **which companies** (or **group** of companies, working in collaboration) have produced in the past a specific **part of the product**, or can provide the **needed service**.

– Usually, clusters are of **considerable size**, (supply chains, collaborative networks and business ecosystems should be taken into account), and the right information for product development (companies, products, services, materials, timing, etc) is **hard to find**.
Collaborative - Product Development Services

• Semantic Cluster Management Services (SCMS)

Objectives:

– **Semantic search for products or services** needed in the product development process, based on the product structure ontology.

– **Semantic search for companies** that provide the required product / service in a product development process, taking into account related competences.
Collaborative - Product Development Services

- Semantic Cluster Management Services (SCMS)
Semantic searches are based on a product and service ontology built for the cluster.
Collaborative - Product Development Services

- Semantic Cluster Management Services (SCMS)

Architecture used in Semantic Cluster Management Services (SCMS).
SCMS video
Collaborative - Product Development Services

• Collaborative 3D Designer Service: C3DDS

Objectives:

– Web service to support visualization, annotation and inspection of 3D design models in multidisciplinary and distributed teams.
Collaborative - Product Development Services

- Collaborative 3D Designer Service: C3DDS

- Dissemination of 3D product designs and online annotations of the 3D file
Collaborative - Product Development Services

• Collaborative 3D Designer Service: C3DDS

Next Steps:

– **Version control of 3D designs and annotations** to support Collaborative Product Development processes.

- **Semantic integration of annotations and documents.** Integrating semantic annotations in the 3D file, regarding different aspects of the product (functionality, manufacturing, design, etc)

- Linking this functionalities with **project management** tools
C3DDS video
COIN c-Production Planning (WP4.3)

• **Main challenges addressed**
  - Strong Support to Collaboration among value-chain actors
  - Collaborative creation of Production Plans
  - Collaborative prediction and management of exception
  - Software design following SaaS paradigm
  - Enhance Process Quality

• **Main results achieved**
  - PnP Collaborative Production Planning Portal (C3P)
  - SaaS Production Planning Service (PPS)
  - Collaborative Quality Management Service (cQMS)
  - Supply Chain Intelligence Service (SCIS)
Collaborative Production Planning Platform (C3P)

- Creation of a Collaborative Production Plan
- Support collaboration among value-chain actors
- Give an user-centered approach to Production Planning by usage of Virtual Rooms
- Manage value-chain changes
- Point of access to other two services
- Next Steps
  - Provide privacy mechanism on information access
Supplier private process

Collaboration in Virtual rooms

Receiver private process
C3P video
Production Planning Service (PPS)

- Create a SaaS Production Plan system
- Encapsulate functionalities in re-usable web-service
- Create a single repository for different companies
- Next Steps
  - Enhance functionalities on planning and warning module
What is the cQMS Prototype?

- A program to identify missing inter-dependencies between partners in order to define needed communication channels to reduce quality problems in collaborative business.
- Therefore it analyses well-defined description texts of every material of a BOM (1st step)
- Future work: Analyse full Competence Profiling of collaboration partners
Research need: Towards an Inter-organisational Perspective for Managing Quality in Business Networks

(1) Level of individual network actors in an organisation (intra-organisational viewpoint; relations between single persons in different departments)
→ Covered by existing QM initiatives

(2) Level of single organisations in a network (intra-organisational viewpoint; relations between departments within an organisation)
→ Covered by existing QM initiatives

(3) Level of inter-organisational relations (inter-organisational viewpoint; relations between networks member)

(4) Level of institutional contexts (inter-organisational viewpoint; relations between networks)

Source:
Level 3 following Gilbert 2003
- Communication interfaces affect process quality and thus product quality
- Coordination to avoid incidents resulting from misunderstandings and lack of information

→ Identification of inter-organisational dependencies to support processes quality
Next Steps (1): Model Communication Structures by Competences

- Each actor’s unique combination of products/services, resources and skills constitutes its identity as competence in the Value Network

- **Product/Service**: core product/service of a company, which are attractive from the perspective of the customer and the market, and which could make a substantial contribution to the business network

- **Processes (Business Processes)**: All the core processes that are needed to offer the company’s product/service to the business network

- **Skills (Technology)**: Theoretical and practical knowledge, skills and abilities that are used to develop the product/service

Source: Information model to represent competence (according to Molina and Bremer, 1997)
cQMS Prototype - Overview

Existing Communication / BOM Structure
cQMS Prototype - Overview

Detected Possible Inter-dependencies
cQMS Prototype - Overview

Additional Communication Channels to be checked
cQMS Prototype - Overview

Recommendations
Integration

The cQMS has to be smoothly integrated in the Collaborative Production Planning Platform (C3P).
**COIN c-Project Management (WP4.4)**

**Main challenges**
WP4.4 Develops services for project partners and citizens to participate in and interact with the PM process.

- Develop services for **“The Social and Collaborative internet based project management”**

- Enable project stakeholders in PM to create and interact with content rather than just consume information

- To manage co-operational processes with differences in language & ontology, working culture, work ethics, legal systems and time zones & latitudes

**Results achieved**

- **New type of services for industry in change**
  - Project Alignment Booster – Services
  - Collaboration for Project Management (CollP) – Services for Collaborative creation of a reference project WBS - Services
  - Collaborative project meeting space. Management of project meeting processes over different time zones and latitudes (From agenda planning to minutes distribution) - Specification
Collaboration for Project Management Service

Coll$^{4}$P$_{M}$

Collaborative Management of Collaborative Project

The way of work that is not supported by existing system. In this modality there are more than one actor involved in the creation and management of the Gantt, everyone with a different tool usually used in the scope of internal processes of different companies.

Decision taken involves different companies.

The service rely on existing Gantt services, providing a collaboration space in which decision are taken

Major functionalities of the service:

• Collaborative proposal
• Collaborative acceptance of proposal
• Collaborative changes management
• Activities notification (new proposal, phone call request, etc)
• Context aware environment
• Individual communication services and Individual availability
• Shared log
• Shared documentation

Coll$^{4}$P$_{M}$
Coll$^4$P$^M$ video
COIN c-Human Interaction (WP4.5)

- **Flexible Collaboration Support**
  - Ad-hoc activities underneath pre-planned project structures.

- **Human Interaction Support in SOA**
  - Guidance of interactions based on observed collaboration performance.

- **Trust-based c-HI Support**
  - Optimization of partner selection and group formation.

- **Active Participation of Humans in SOA**
  - Flexible context-aware discovery and ad-hoc involvement of experts in a service-oriented manner.

- **Adaptive Network-based Information Sharing**
  - Dynamically adapting document sharing behavior relying on social relations and collaborative success.
COIN c-Human Interaction (WP4.5) - Services Overview

- Collaboration Visualization Tool (CVT)
  - Visualization of actors, relations, interaction metrics
  - Application: group formation, team evaluation

- Trusted Online Help and Support (TOHS)
  - Context-aware discovery and involvement of experts in ongoing collaborations

- Trusted Information Sharing (TIS)
  - Self-adaptive access rights management of documents based on collaboration strength
  - Suitable for highly dynamic collaboration networks
Collab. Visualization Tool (CVT)

• Visualization of Community Structures
  – Individuals
    • Registered profiles (central database)
    • Dynamic profile data
  – Relations described by metrics

• Application Scenario
  – Group Formation
  – Social Campaigns
  – Team Evaluation

• Innovative Concepts
  – Automatically managed/updated profiles and relations
  – Evidence-based structures through mining
CVT Architecture

Collaboration Visualization Tool
- Visualize Humans and Services
- Relations
- Collaboration metrics

Tools
- Interaction Logging
- Interaction Analysis
- Collaboration Network Provider
- Competencies WS
- Activity WS

Services
- Interactions
- Collaboration Network
- Central Database
- Activity Data

Data

http://madrid.vitalab.tuwien.ac.at:8152/coin/cvt-demo-sw/
CVT Demo (1/5)
Basic User Interface
CVT Demo (3/5)
Customized Metric Visualization
CVT Demo (4/5)
Temporal Evolution
CVT Demo (5/5)
Direct Interactions with Users
Trusted Online Help/Sup. (TOHS)

- Flexible discovery and involvement of trustworthy experts
  - Dynamically changing skills
  - Contextual constraints to find best available expert
  - Personal preferences and social trust relations

- Application Scenarios
  - Expert Discovery
  - Team Assembly
  - Interest Group Formation

- Innovative Concepts
  - Personalized expert discovery
  - Flexible involvement of experts
TOHS Architecture

Trusted Online Help and Support

Request For Support (RFS), Delegation, and Trusted Selection

Tools

Collaboration Baseline Integration

Basic Expert Capabilities

Services

Data

CompetenciesWS

ActivityWS

Expert Lookup

Message Routing Layer

Central Database

Activity Data

Service Registry

RFS Store

Rule Base

http://copenhagen.vitalab.tuwien.ac.at/TOHS/
TOHS Demo (1/5)
Basic Search

Trusted Online Help and Support

Software engineering, web services, programming, ...

TOHS Search

Context parameters (optional)

- Expert is online (via Skype)
- HPS interaction (via Web services)
- Apply metric: Availability
  set value for minimum threshold (a number between 1..100)

Sign in as user

To learn more about COIN visit http://www.coin-ip.eu
Trusted Online Help and Support

All skills:

AND

TOHS Search All Skills

One or more of specified skills:

Software/SE/Specifications/Languages

OR

TOHS Search One or More

Context parameters (optional):

- Expert is online (via Skype)
- HPS interaction (via Web services)
- Apply metric: Availability

Sign in as user

To learn more about COIN visit http://www.coin-ip.eu.
TOHS Demo (3/5)

Advanced Search

Trusted Online Help and Support

One or more of specified skills:

- Software/SE/Specifications/Languages
- Software/SE/Specifications/Analysis

Context parameters (optional):

- Expert is online (via Skype)
- HPS interaction (via Web services)
- Apply metric: Availability = 50

Personal Trust
TOHS Demo (5/5)
Contact Expert

Trusted Online Help and Support offered by:

- **Daniel Schall**
  - Skills:
    - Software/SE/Specifications/Analysis
    - Software/SE/Specifications/Languages
    - FOAF 1 (knows 20) Explore Profile

- **Florian Skopik**
  - Skills:
    - Software/SE/Specifications/Languages
    - FOAF 1 (knows 3) Explore Profile

Click user to contact.

**Request For Support Information**
(User: 13, Skype: Online)

- **Subject:**
- **RPS Description:**

[Submit]

**Contact via Skype**

To learn more about COIN visit [http://www.coin-ip.eu](http://www.coin-ip.eu).

**Skype for Real-time Communication**
Trusted Info. Sharing (TIS)

- **Document-centric Information Sharing**
  - Sharing based on dynamically adapting social and collaborative network structures
    - Altering Social relations
    - Flexible activity participation

- **Application Scenario**
  - Sharing of sensitive data in highly flexible collaboration scenarios
  - Sharing of information in social campaigns

- **Innovative Concepts**
  - Dynamically adapting access rights based on social relations and previous collaborations
  - Facilitate collaborations through active sharing
TIS - Fundamental Scenario

- Sharing of information depends on collaboration strength rather than static roles
- Collaboration attitude may change over time
  - Dynamically controlled access rights
  - No manual intervention required

Collaboration strength determined through:
- Availability on request
- Joint Activity Success
- Interest Similarities
TIS Architecture

Trusted Information Sharing Tool
- Sharing
- Configuration
- Transformation

Tools
- DocumentWS
- ActivityWS
- Collaboration Network Provider
- Information Sharing Backend

Services
- Resource Database
- Activity Data
- Collaboration Network
- Profile Sets Sharing Rules

Data

http://copenhagen.vitalab.tuwien.ac.at/InfoService/Default.aspx
Selecting Sharing Scope

1. CHOOSE ACTIVITY

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Activity URI</th>
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<td>actual writing task</td>
<td><a href="http://www.in-context.eu/Activity/Activity#167">http://www.in-context.eu/Activity/Activity#167</a></td>
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<tr>
<td>IS CR</td>
<td>Camera Ready preparation of IS</td>
<td><a href="http://www.in-context.eu/Activity/Activity#168">http://www.in-context.eu/Activity/Activity#168</a></td>
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</tbody>
</table>

Found: 7 Records
Trusted Information Sharing in Service-oriented Collaborative Networks

Florian Skopik
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Daniel Schall
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Schahram Dustdar
TU Vienna
dustdar@infosys.tuwien.ac.at

This is the main text expressed in HTML blah 123...

2009-09-11T10:40:47.0Z

http://svn.infosys.tuwien.ac.at/papers/tis/main.tex
TIS Demo (3/4)
Defining Rules

- Access to author section is slightly restricted
- Access to document body even more
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COIN Information Interoperability (WP5.2)

- Interoperability Space
  - Publish/Subscribe
  - Federated Approach
  - Micro-services
  - UBL 1.0 – UBL 2.0
  - DK-TK invoices

- Payload Negotiation
  - 1:1, 1:n, n:m
  - ACS negotiation contract (buyer\supplier)

- Semantic Interoperability
  - A generic complete suite
  - Unified Approach
  - 21 Rules
  - AIDIMA order exchange (Furniture)
COIN Knowledge Interoperability (WP5.3)

- Modeling CN competences asset
  - Social Ontology Building of CS
  - Automatic knowledge extraction from txt docs
  - Social participation of experts community (voting, discussing)
  - Example: IND ICT CS core ontology
  - Enterprise Semantic Profiling
  - Ontology-based filtering of enterprises related docs
  - Semantic profiles as ontology-based feature vectors (OFV)

- Assessing the current and evolving CS asset
  - Based on Information content-driven computation of semantic measures (coverage and similarity) between semantic profiles

CN = Collaborative Network
CS = Competences & Skills
COIN Process Interoperability (WP5.4)

**Challenges**
- Define the scope of business process interoperability
- Categorize and classify interoperability gaps
- Develop innovative services to ensure business process interoperability
- Provide service primitives to purge the gaps during collaborative process model design-time

**Results**
- Solid concept of business process interoperability
  - Overall scenario
  - Gap categorization and classification
- Prototypical implementation of Business Interoperability Services:
  - Transformation Service (to transform private business processes into view processes applying SBVR rules)
  - CBPip Gap Detection Service (to identify CBPip gaps)
- EXAMPLE
  - Transformation of private processes to public views
  - Detection of interoperability gaps
Objective of COIN WP5.4

“Development of innovative services to ensure business process interoperability”

• Context
  – Cross-organizational Business Processes (CBPs)

• Main focus
  – Identification of CBPip gaps.
    A CBPip gap is a condition through which the CBP workflow process execution leads to unsuccessful business collaboration
  – Provision of service primitives to purge these gaps during collaborative process model design-time
Contents

• The overall Business Process Interoperability Scenario

• Step1: Transformation of private processes to public views
  – SBVR Vocabulary for Visibility Rules
  – SBVR annotations and Visibility Rules
  **Demo:** Web Service for Private2Public transformation

• Step2: Detection of interoperability gaps
  – Categories and Classes of Interoperability Gaps
  – Deadlock detection patterns
  – Examples
  **Demo:** Web Service for CBP interoperability gap detection

• CBPip Web Services, Innovations, Benefits for SME‘s
Overall Scenario

CBPip Gap Category: Business Level Gap at Design Time, Class: Deadlock, Type: Improper Structure

Company A models private process BP\textsubscript{A}

Company A publishes BP\textsubscript{A} as view process BP\textsubscript{A'}

Company B models private process BP\textsubscript{B}

Company B publishes BP\textsubscript{B} as view process BP\textsubscript{B'}

Some actor C models collaborative business process CBP\textsubscript{C} integrating view processes BP\textsubscript{A'} and BP\textsubscript{B'}

Step 1

Step 2
Infrastructure and Standards

- **BxModeller**
  - Developed by Engineering Informatica and University of Salento
  - Completely web-based (Java, JSP, Ajax, MySQL)
  - Graphical tool for BPMN editing
  - XPDL 1.0\2.0
  - Open source

- **Why BxModeller**
  - BPMN for business level
  - XPDL for IT level
  - Completely web-based
  - Large known technologies
  - Open source
  - Easy to extend and easy to integrate
  - Easy and intuitive to use

- **Standards**
  - SBVR (OMG), BPMN (OMG), XPDL (WfMC)
Step 1: Transformation of private processes to public views

The company has already defined a set of Rules which specify the access rights to different elements of the processes.

The rules are applied to the Private Process the company want to publish.

Given some parameters, the transformation is able to generate different public views.

The company has defined a set of Rules which specify the access rights to different elements of the processes.

- All blueprints are private.
- Services involving X are shown only to Y
- Service X can only be shown to trusted partner Y
- Partner doing business X is able to do Y with Act1

Transformation: Generate view for X

Given some parameters, the transformation is able to generate different public views.
Step 2: Detection of Interoperability Gaps

- Categories of interoperability Gap
  - Business Level (vs. IT Level)
  - Design Time (vs. Run Time)

- Classes of interoperability gaps
  - **Deadlock**
    - A deadlock in a process model is given if a certain instance of the model (but not necessarily all) cannot continue working, while it has not yet reached its end [Awad, Puhlmann, 2008]

  - **Interface mismatch**
    - An interface mismatch in a collaborative business process model is a serious impediment that prevents two separately-modeled business processes of successful interoperation due to different design assumptions
Exemplary List of investigated Deadlock Patterns

• Loop
  – occurs when there is an execution path from the output of an AND-join back to a subset of its input points.

• Multiple Source
  – The process has multiple start points that are later on synchronized.

• Improper Structure
  – an AND-join receives input that early started from an XOR-split.
Webservices
Innovations, benefits for SME’S

• Services
  1. Private2public Transformation Service
  2. CBPip-Gap-Detection Service

• Innovations: Provision of …
  • Business rules for public views, making use of state-of-the-art standards
  • Private/public transformation
  • Interoperability gap detection patterns as web service

• Benefits for SME‘s:
  • Improves cross-organizational interoperability
  • Improves readability and flexibility of production of public views
  • Applicability of interoperability gap detection patterns not only to CBPs, but also to private business processes
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