Enterprise COllaboration & INteroperability

COIN Winter School

The COIN IP Project

Technical and Business Innovation

Ljubjana, Nov 28th 2011
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COIN Coordination Team

The COIN Vision & Motto

COIN VISION: *"By 2020 enterprise collaboration and interoperability services will become an invisible, pervasive and self-adaptive knowledge and business utility at disposal of the European networked enterprises from any industrial sector and domain in order to rapidly set-up, efficiently manage and effectively operate different forms of business collaborations, from the most traditional supply chains to the most advanced and dynamic business ecosystems."*

COIN MOTTO: *"Enterprise Interoperability and Enterprise Collaboration are the two sides of the same COIN"*

The COIN Integrated Project

Project No: 216256

Project Full Name: Collaboration & Interoperability for Networked Enterprises

Duration: 48 months

Start date: January 1st 2008

Partnership: 27 partners, 16 countries

Strategic Objective: FP7 ICT-2007.1.3

ICT in support of the networked enterprise

Total Eligible Cost: 16M EURO

EC Contribution: 11M EURO

The COIN Consortium & Funnel Model

The COIN Metaphore

COIN MOTTO:

"Enterprise Interoperability and Enterprise Collaboration are the two sides of the same COIN"

- **The SIDE A of the COIN:** Enterprise Interoperability

- **The SIDE B of the COIN:** Enterprise Collaboration

- **The Substrate of the COIN:** Service Platform

- **The Value of the COIN:** Software as a Service-Utility SaaS-U

- **The Market of the COIN:** Enterprise Networks (mainly SMEs)
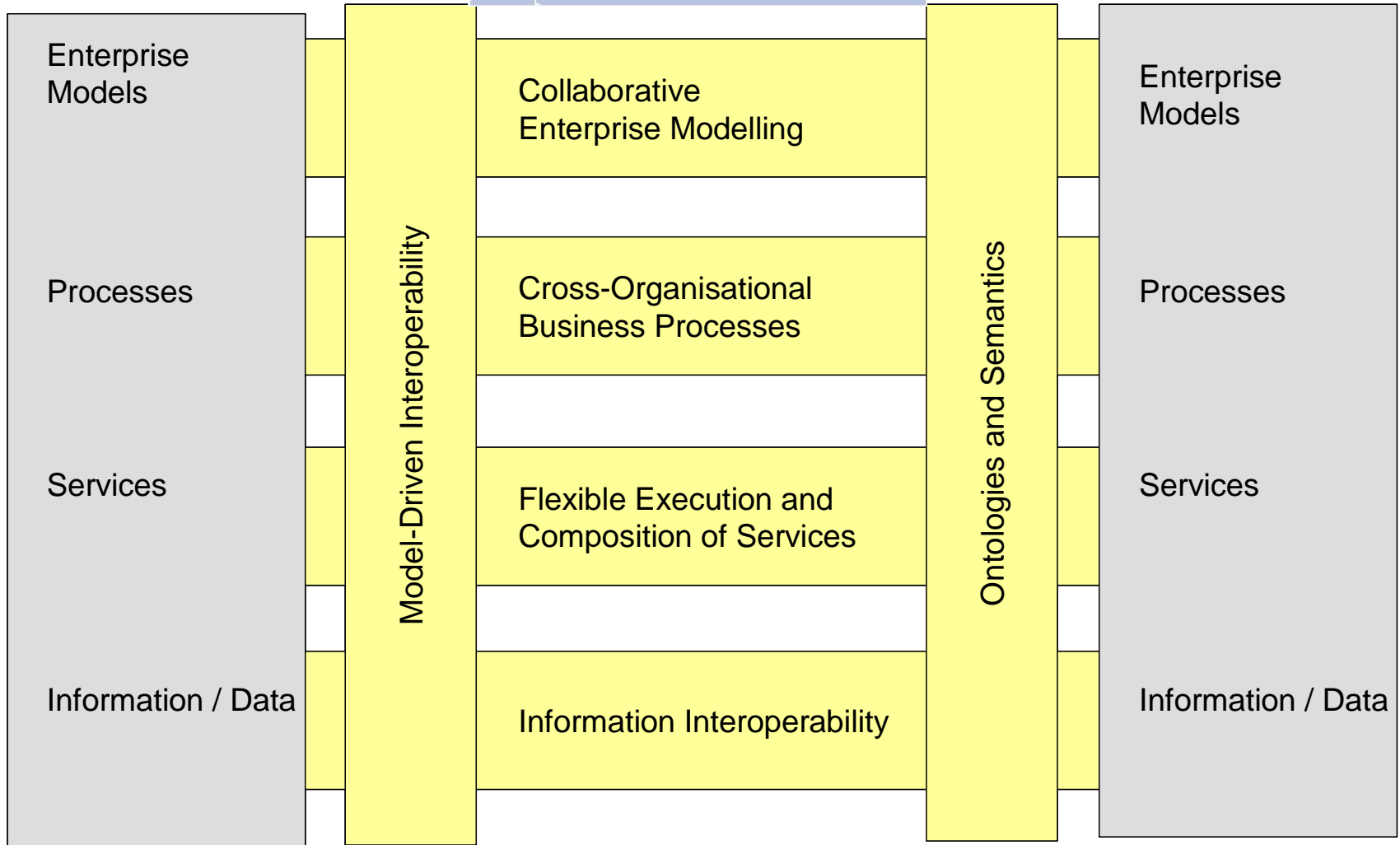
The COIN DOW 5 Objectives

1. To design and develop a pervasive, adaptive **Service Platform** to host Baseline and Innovative COIN services for EI and EC and make them available under innovative on-demand, utility-oriented business models (i.e. the SaaS-U model) to European enterprises (and SMEs in particular) for running their business in a secure, reliable and efficient way.

2. To consolidate and stabilize the ICT results of both EC and EI FP6 research into some **Baseline Services** which constitute the service foundations for COIN.

3. To further enlarge, extend and improve the baseline services, by developing other more **Innovative Services** in the EC and EI fields, which could take into account the most recent and promising technology challenges (in the field of Web 2.0, semantic web, space computing) and put them at service of EC and EI purposes.

4. To represent a **pathway to convergence** for these two fundamental research streams: EI and EC, by integrating in the same project the most prominent stakeholders of the two research fields coming both from industry and from universities and research centres.

5. To **demonstrate, experiment, trial and assess** the project results into realistic industrial scenarios offered by our 6 test cases in Aeronautics (Aeronautic Cluster of Andalusia, Spain), Automotive (the Automotive Cluster of Slovenia), Aerospace (the Lazio Connect virtual enterprise network Italy), Pulp & Paper (the Poyry consultancy service providers), Healthcare (the VEN network in U.K.) and ICT (the Hungarian Association of ICT companies).

COIN Side A: state-of-the-art

ATHENA
■ European Integrated Project ■

Provided

Required

Enterprise Models

Processes

Services

Information / Data

Model-Driven Interoperability

Collaborative Enterprise Modelling

Cross-Organisational Business Processes

Flexible Execution and Composition of Services

Information Interoperability

Ontologies and Semantics

Enterprise Models

Processes

Services

Information / Data

COIN Side A: main innovations

- **The COIN Interoperability Space**

  ➢ To address **Information, Knowledge and Business** interoperability

  ➢ To support the **Federated** interoperability approach

  ➢ To integrate **Model- and Semantic- driven** interoperability methods

  ➢ To enable **Knowledge Profiles** semantic mediation

  ➢ To synchronize and optimize **collaboration Business Processes**

  ➢ To go beyond state-of-the-art 1:1 transactions:

    ✓ Supporting **1:1 negotiations** (e.g. supplier-customer)

    ✓ Enabling **1:n relations** (e.g. tender-bidders)

    ✓ Allowing **n:m agreements** (e.g. sellers-buyers)

COIN Side A: future outlook

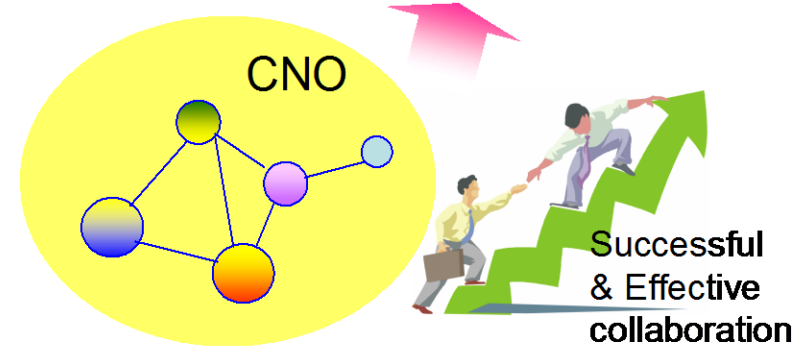- **EI as part of the Future Internet vision: the Internet as the Universal Business System**
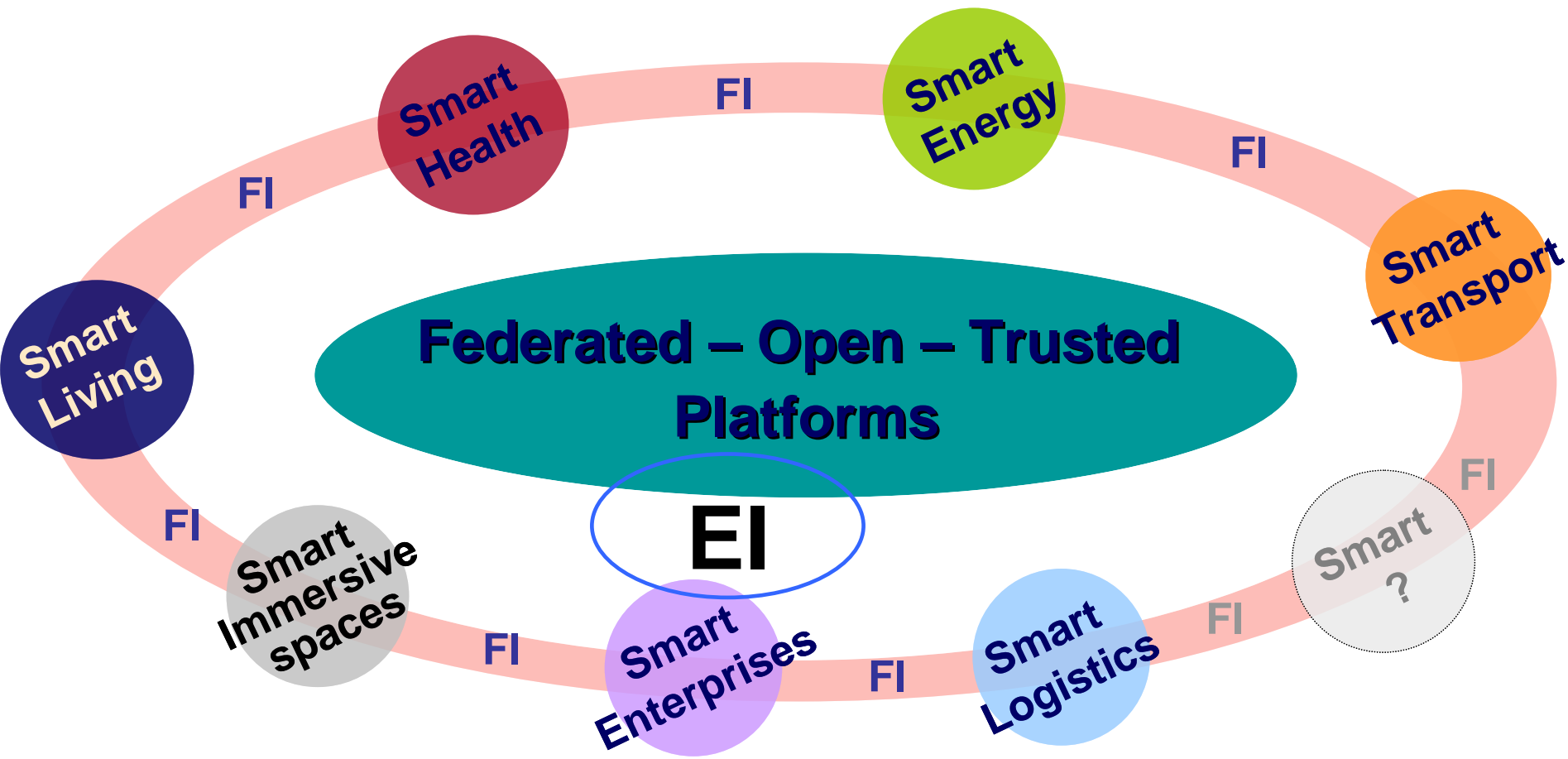
COIN Side B: state-of-the-art

Business Opportunity

Market turbulence

Short window of opportunity

Fast configuration of a temporary consortium well suited to the needs

Preparedness

Breeding Environments { VBE PVC

CNO

Successful & Effective collaboration

Management / Governance

CNO creation

Metamorphosis

© The ECOLEAD Integrated Project

Digital Business Ecosystem

ECOLEAD

COIN Side B: main innovations

- **The COIN Collaboration Space**

  - ➢ To allow **Endogenous** generation of Business Opportunities (LivingLabs & Open Innovation)

  - ➢ To support **Product Design, Production Planning, Project Mgmt**

  - ➢ To enable **Co-operativity** of Enterprise Applications (groups as users)

  - ➢ To support **Web 2.0** and participative services (Enterprise 2.0)

  - ➢ To involve also the Customers in the whole life-cycle of **Virtual Organizations** (VOs):

    - ✓ **VO preparation** (get the enterprises prepared to form VOs)

    - ✓ **VO creation** (select partners and competencies)

    - ✓ **VO operations & mgmt** (performance indicators definition-governance)

    - ✓ **VO dissolution** (inheritance and knowledge transfer)
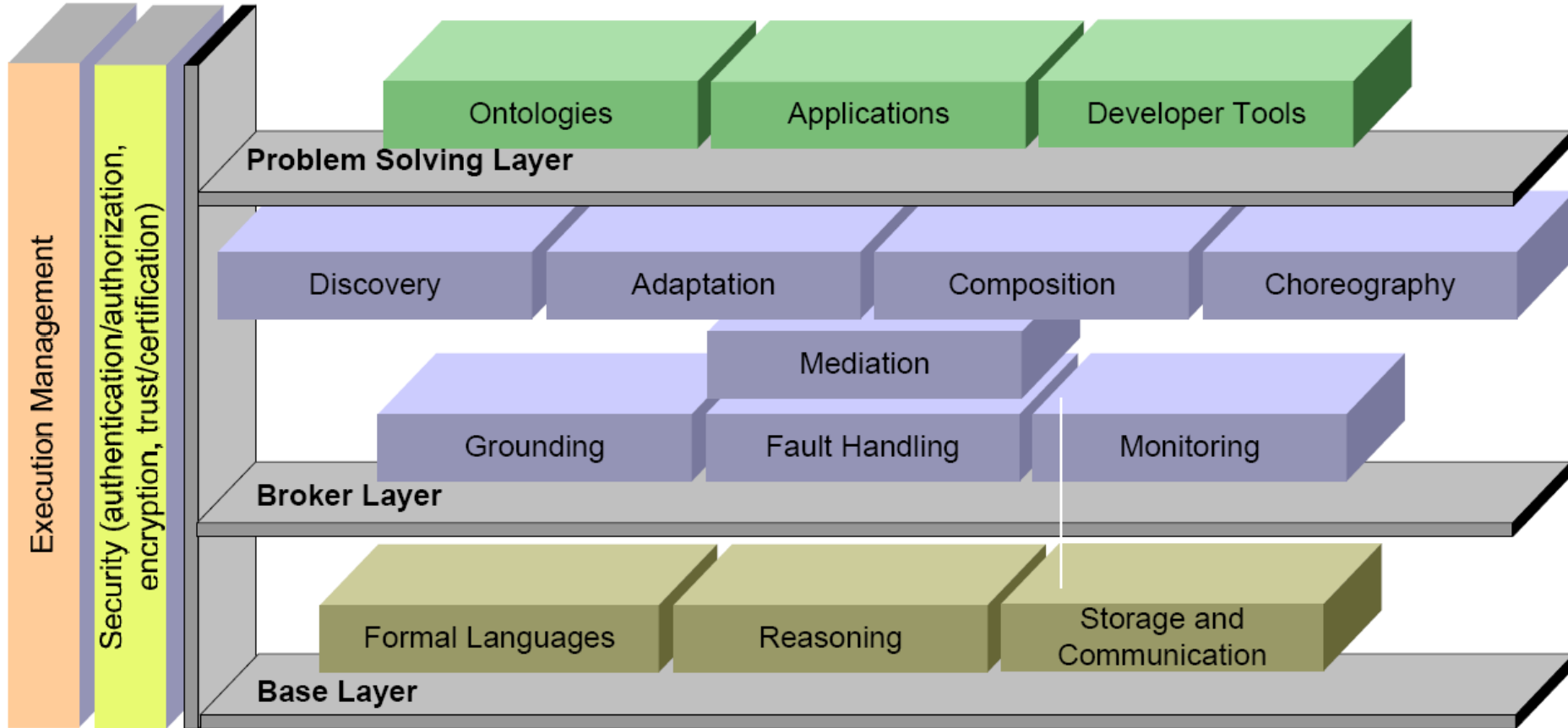
COIN Side B: future outlook

- **The Innovation Ecosystem**
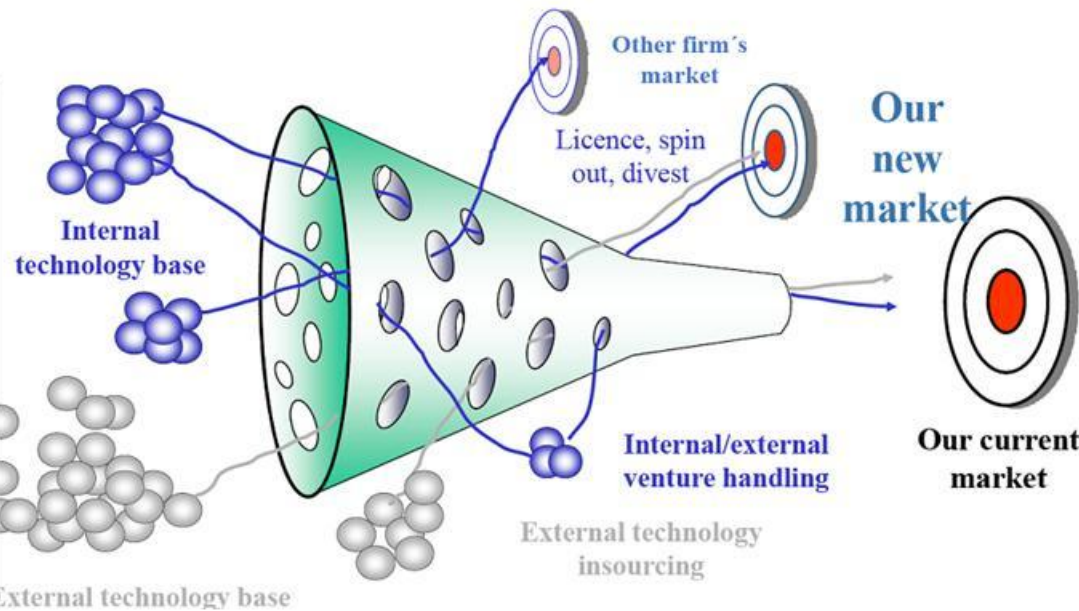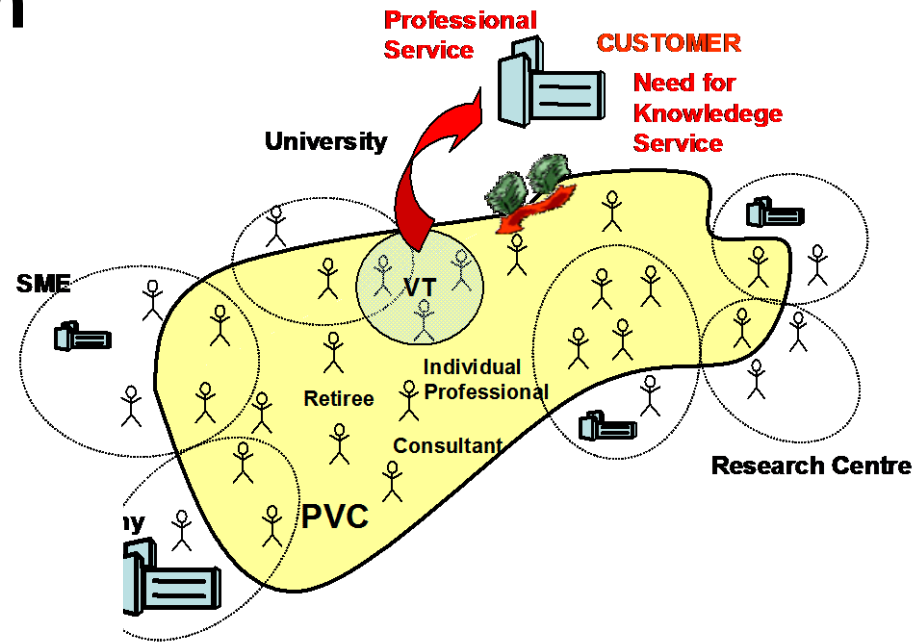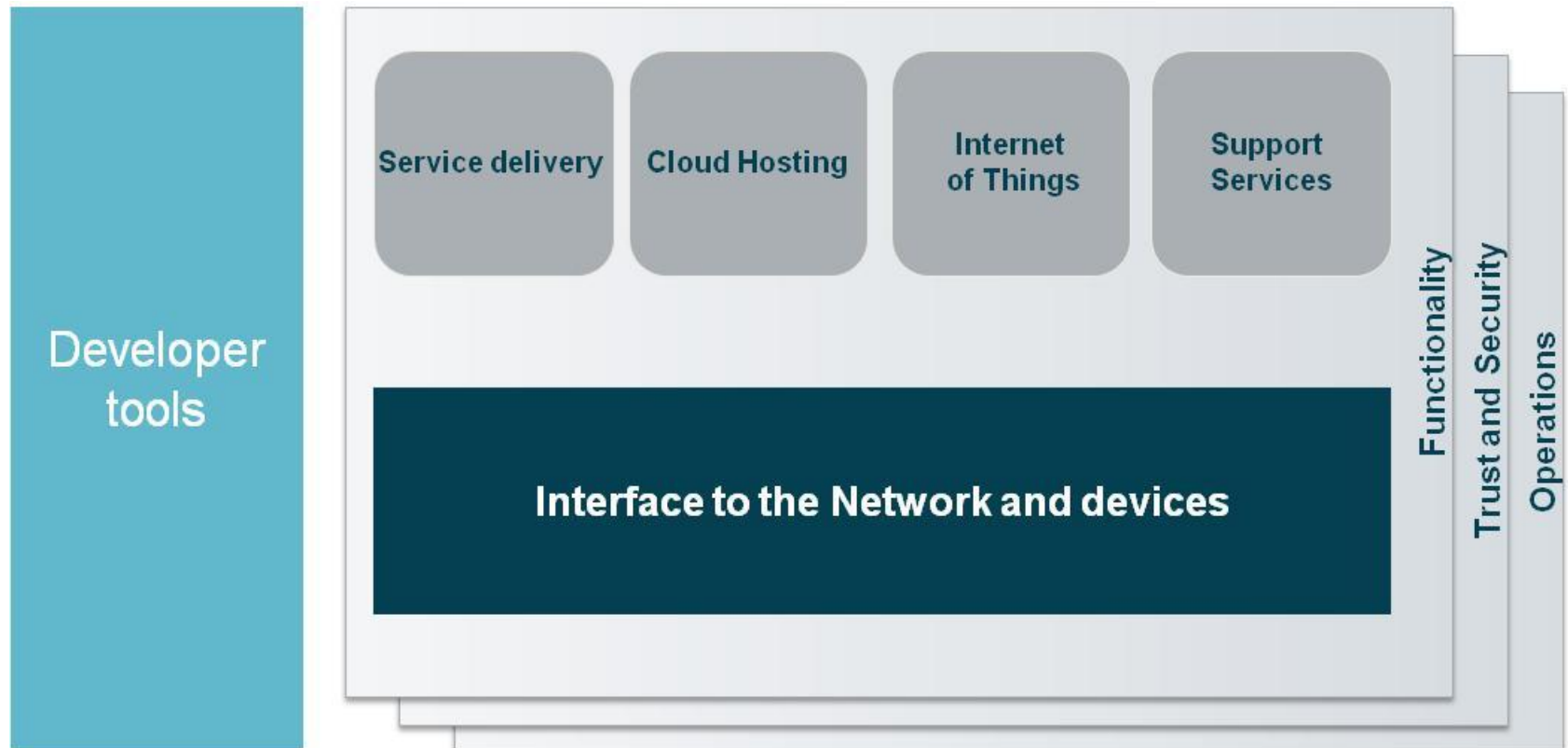
COIN Metal: state-of-the-art

COIN Metal: main innovations

- **The COIN Generic Service Platform**

  ➢ An implementation of a **SESA** (Semantically Enabled Service Architecture)

  ➢ To support dynamic **Search-Discovery-Composition-Execution**

  ➢ To enalble **Intelligent Reasoning** capabilities (Negotiation, Agents)

  ➢ To support **Scalability & Pervasiveness** (P2P registries-repositories)

  ➢ To enable **AAA Security** properties :

    ✓ **Authentication** (including identity management)

    ✓ **Authorization** (including access rights and single sign-on)

    ✓ **Accounting** (including monitoring, charging & billing)

    ✓ **Privacy & Data Protection** (including cryptography)

COIN Metal: future outlook

- **The Global Service Delivery Platform (GSDP) integrated into the FI PPP Core Platform**

COIN Value: state-of-the-art

Software as a Service is the delivery of application functionality via a subscription model. The customer does not take ownership of the software but rather 'rents' a total solution that is delivered remotely. (IBM)

Application Hosting Model	Software as a Service Model
Customer pays on delivery of software	Customer pays for delivery of functional services
Customer responsible for software performance	Provider responsible for software performance
Customer responsible to customize software to business requirements	Customer responsible to configure software to business requirements
Customer pays maintenance to fix software	Provider fixes software or pays penalty for failure to meet service levels
Customer buys upgrades to keep current	Provider ensures currency of solution

COIN Value: main innovations

- **The COIN SaaS-Utility model**

  - ➢ An **evolution** of SaaS towards commoditized ICT services

  - ➢ Study and Design new **Business Models** for SaaS-U

  - ➢ Identify and develop a **Value Proposition** for SaaS-U

  - ➢ Support the identification of criteria and **Design Principles** for EI/EC services to be provided as utilities

  - ➢ An implementation of the **ISU Grand Challenge** (interoperability service utility)

    - ✓ Available at (very) low cost

    - ✓ Accessible in principle by all enterprises (universal access)

    - ✓ "Guaranteed" to a certain extent & at a certain (set of common rules)

    - ✓ Not controlled or owned by any single private entity

COIN Market: starting point (1)

EC form / EI challenge	Knowledge i/op	Business i/op
Supply Chains	Aerospace DTA Lazio (ITA)	Automotive Slovenian Net (SLO) ***
Collaborative Networks	ICT Network (HUN)	Aeronautic Cluster of Andalusia (SPA)
Business Ecosystems	Pulp & Paper Poyry (FIN)	Healthcare VEN (UK)

*** Wed, Nov. 30 – h10:45

ISOIN
Andalusian Aeronautic Cluster
Business Use Case

COIN Market: Business Collaborative Networks

· **Openness** for the cluster, to other prime contractors and other business opportunities. Relation with other clusters

· **Open call for tender** processes. **Competence selection** of partners.

EADS

Research centers

· Increase **communication** between companies, University and research centers.

· **SaaS business models** in software implementation that **reduce costs, time and difficulty** for companies in the use of new services.

· Increase **collaboration** in business opportunities among companies, sharing valuable information without neglecting security.

AIRBUS

AIRBUS MILITARY

Regional Government

Universities of Sevilla and Cádiz

· Increase **Interoperability** among companies of the cluster and outside the cluster, facilitating the use of these services to the end user. SaaS can use **accepted standards in aeronautics** and by **main software developers**, enabling the integration of application and platforms.
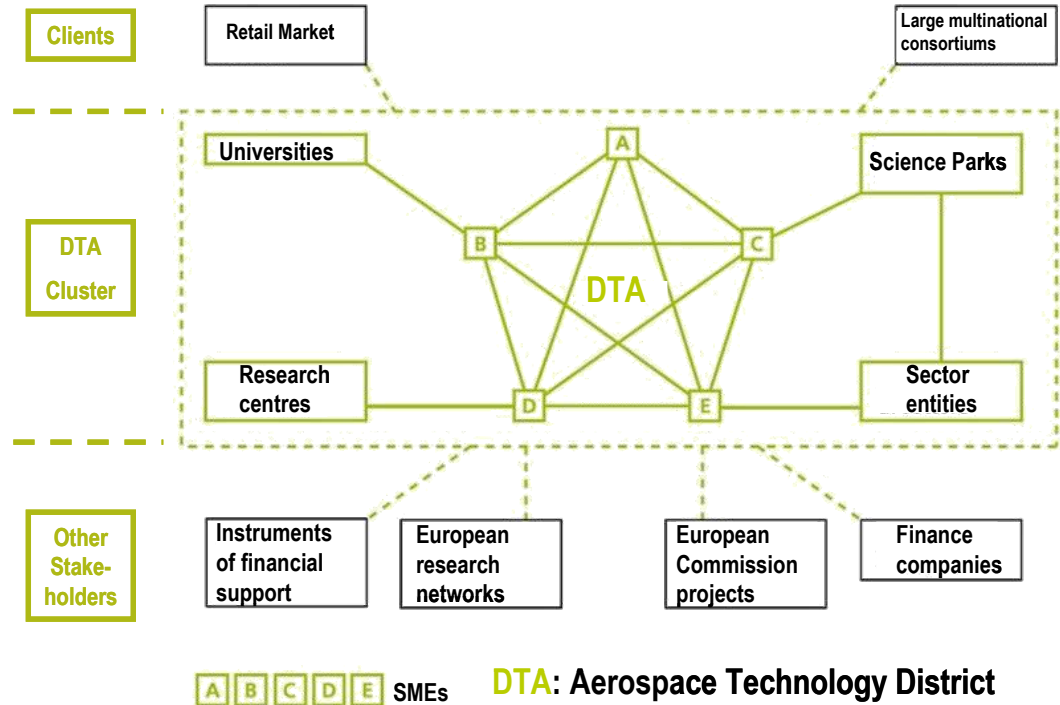
Arospace DTA Lazio Business Use Case
Aerospace Domain

Regione Lazio's Aerospace Sector

The Aerospace industry in Lazio:

- **250 prominent sized companies**

- **30,000** employees

- **5 Billion** Euro turnover

- **10 Research Centres**

- **5 Universities**

- **5 Technological Parks**

- **4 Engineering Faculties**, **12 Departments, 30 Postgraduate and Graduate courses**

- **3,000 Professors, Researchers and Specialists** involved in R&D activities in aerospace fields

- **Incubators and Support services for technology transfer and start-up creation**

Clients

Retail Market

Large multinational consortiums

DTA Cluster

Universities

Science Parks

DTA

Research centres

Sector entities

Other Stake-holders

Instruments of financial support

European research networks

European Commission projects

Finance companies

A B C D E SMEs

DTA: Aerospace Technology District

www.lazio-aerospazio.it

Lazio Aerospace Technology Cluster

Areas of expertise

- several major aerospace companies and SMEs operating in space, aeronautics for civil and military customers

- communications and avionics systems

- traditional and advanced materials

- aeronautical fleet maintenance management; airport facilities and logistic services

- design of solid fuel engines and components for the Ariane and Vega rockets as well as manufacture of important parts of complete air-to-air and land-to-air missile launching systems

- design and manufacture of airplane and helicopter subsets and components

- design and manufacture of important aeronautical systems and equipment for civil and military aircraft

Regione Lazio's Aerospace Sector main EC& EI challenges

- The Aerospace Technological District (DTA) sees a major concentration of large, medium and small enterprises involved in the aerospace supply chain

- DTA actors lack of adoption of innovative EC&EI services

- DTA actors scarcely aggregate to achieve business benefits due to lack of EI&EC software tools

To improve current status, two demonstrator are under development:

1. collaborative production planning of satellite antennas
2. knowledge interoperability (KI) applied to competence and skill management mapping of DTA's stakeholders

C-PP Satellite Antennas

COIN EC services and COIN system effects:

- Increase production rate with no increase o IT systems costs thanks to SaaS paradigm adoption

- Reduce time and cost of production

- Improve effectiveness and efficiency of communications among supply chain actors

- New business opportunities thanks to access to a wider market picture
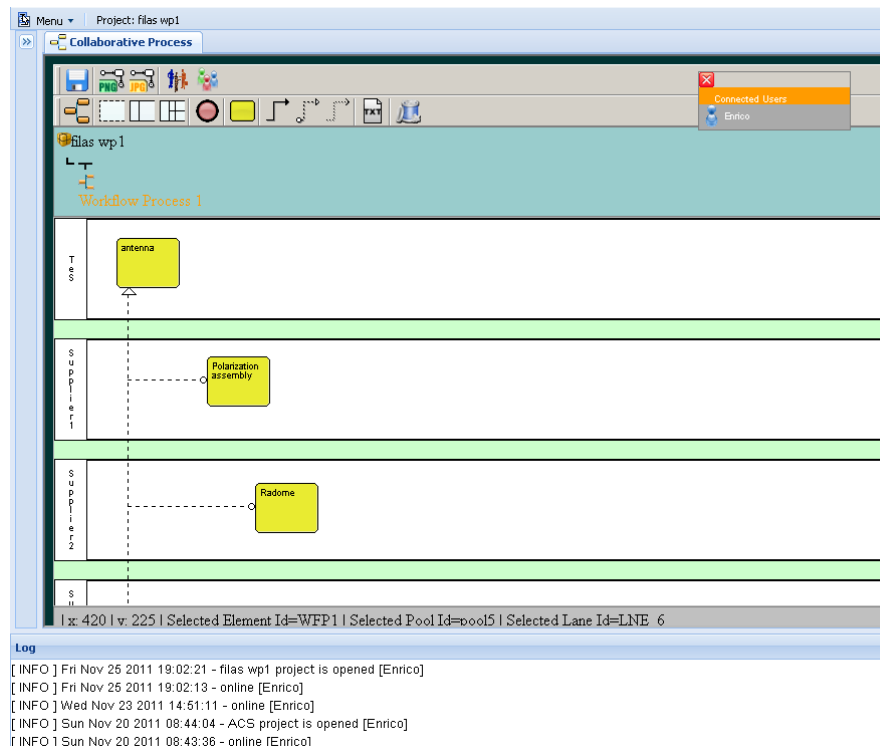
KI applied to competence and skill management mapping

COIN KI services and COIN system effects:

- Have an up-to-date picture of the capabilities of the DTA cluster

- Provide crucial business tools to identify DTA strengths, weaknesses and gaps

- Give a clear picture of the DTA business, technological and industrial competence scenario

- Address specific measures, policies and incentives to support DTA actors' business development and so increase competitiveness and create new business opportunities for DTA cluster actors

- It is expected an increase of business opportunities of 15%
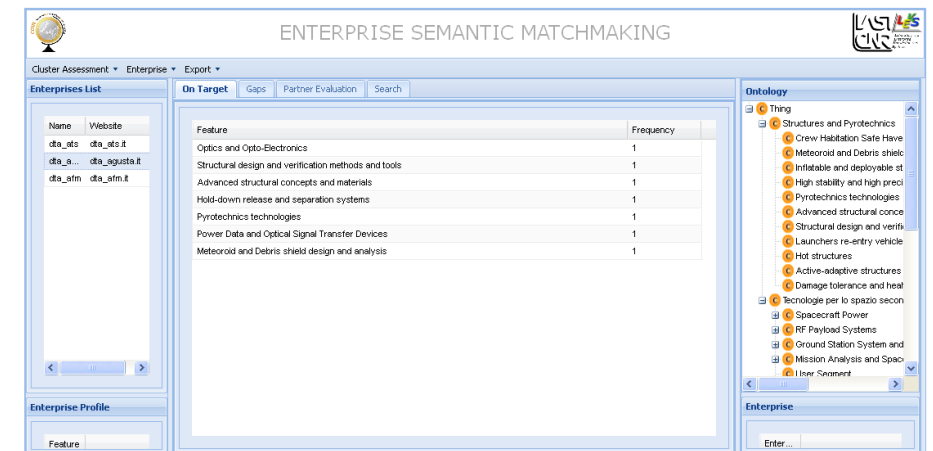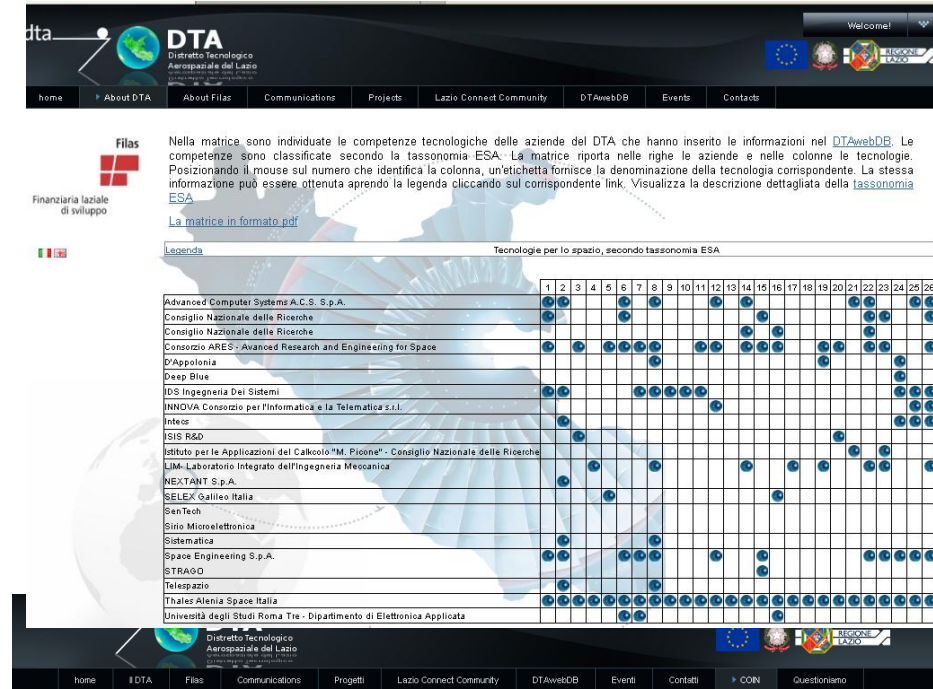
ICT Network Business Use Case
ICT Domain

IVSZ overview

IVSZ – Hungarian Association of IT Companies

- Voice of Hungarian ICT Industry (largest ICT association in HU)
- 300+ Hungarian ICT companies (SMEs, Enterprises)
- Service provision, networking, representation of interest

IVSZ Innovation working group

- Innovative, association member IT companies
- 40+ members
  - 30+ SMEs
  - 5+ large companies
  - 3 research centers
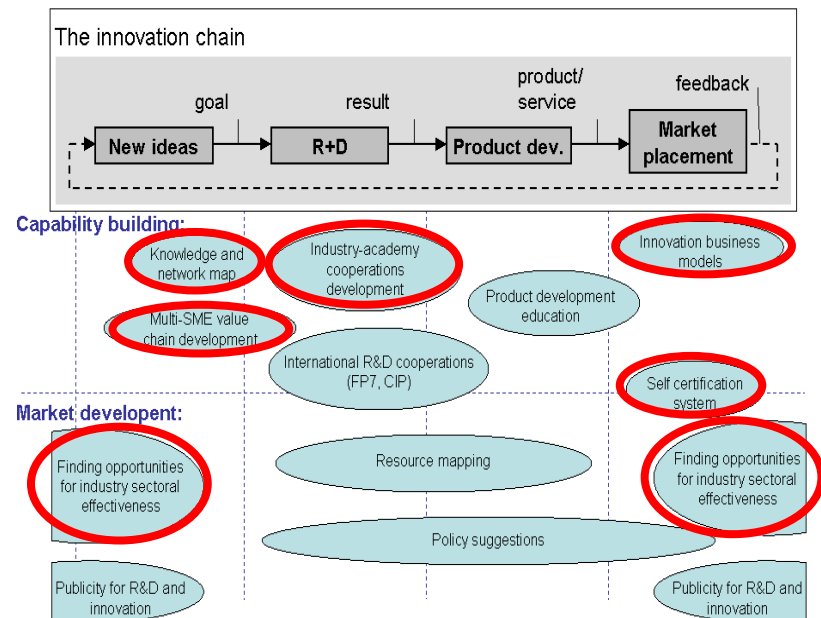
Business Scenario: Building Cooperations with other industry organizations

- **Argument**: ICT technologies are enabling technologies – they make other sectors more competitive

- **Goal**: turn this statement into practice and increase the ICT penetration in a number of industry sectors

Automotive industry

Production industry

ICT industry

Other industries

Construction industry
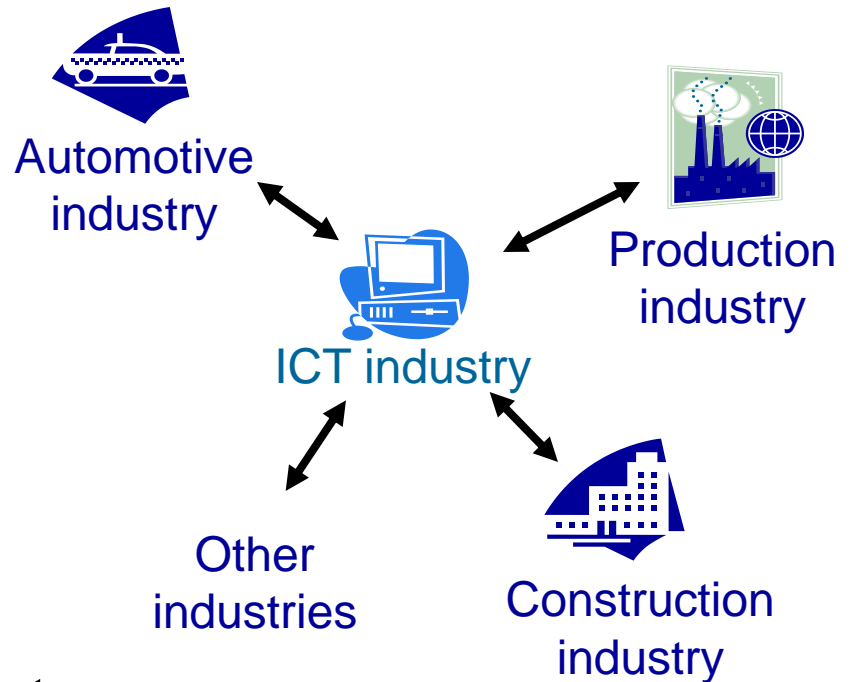
Methodology/process – for each sector
- Bringing together clusters from ICT and the other sector
- Understanding each other and challenges
- Exchanging information on experiences and knowledge
- Defining ICT based innovation projects

IVSZ main EC& EI challenges

Challenges

- Difficulty in keeping up-to-date members competencies
- Difficulties in understanding each other
- Problems with trusting each other
- Difficulty in information exchange / communication

Expectations from COIN services

- Systematic and (semi-)automatic competency management
- More flexible collaboration
- More efficient communication and meetings
- Broader information supply from members

IVSZ scenarios

1. Building a project group
2. Create/update ICT ontology and Company semantics profiles
3. Industry-ICT Competencies and Skills semantic gap analysis
4. Project Idea generation workshops
5. Create innovation project team
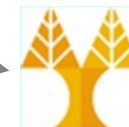
COIN Market: starting point (2)

Hierarchical Collaboration	**Production and manufacturing KTU (LT)**	**Logistic LODER (TR)**
Collaborative Networks	**Civil Engineering UPB (RO)**	**Marine Shipping UCY (CY)**
Living Labs	**Media & Digital Technologies FAVIT (BG)*** **	**Agri-food WIRELESSINFO (CZ)**

*** Wed, Nov. 30 – h10:45

Eastern Europe

University of Kaunas

WIRELESSINFO

University of Cyprus

COIN SP7 Use Cases

Pilot/ Topic	Sector Domain	COIN Platforms	COIN Services	New Services
UPB, RM	Civil Construction	Yes	WP4.2-4-5 WP5.3	C-PD C-HI MS Project
UCY, CY	Marine Shipping	Yes	WP4.1-5 WP5.2	UBL i/op DA-DESK
FAVIT, BG	Media & Content	Own CMS FAVIT	WP4.5 WP5.2	Cyrillic, Ont FAVIT-CP
Loder, TK	Transport & Logistics	Yes	WP4.4 WP5.1-2	UBL Turkish axapta lams
KTU, LT	Discrete Manufact.	Yes	WP4.1-3 WP5.2	UBL i/op centas rivile
Wireless info, CZ	Agriculture & Food	Own DSS Pre-Farm	WP4.2-5 WP5.1	Ontology Geospatial

COIN Eastern Europe
Turkish Business Use Case
Transport and Logistic Domain

TURKISH LOGISTICS ASSOCIATION

Big Potential:
Logistics Sector in Turkey

❑ Total Logistics Sector Business Volume in Turkey is € 70 Billion and Total Logistics & Transportation Companies Business Value is € 40 Billion.

❑ According to the Gross Domestic Product values in 2009, transport, storage and communication sub-sectors constitute 13% of total GDP value

Scenario

Sector: Chemical/Paint

Subject: "Collaborative Transportation of paints from paint manufacturer to its customers"

Case SME: Dinçer Lojistik

Selected Clients: Polisan and Kayalar

Objective: Increasing the customer services to the highest level by decreasing the logistics costs

Factors Effecting The Objective: vehicle occupancy, route optimization, delivery time, resource optimization, transportation damage rate, defective shipping rate

Business Specification:

-Dinçer Lojistik provides the transportation of paints for 225.000 Ton/Year where the total paint industry production value in Turkey is 800,000 Ton/Year.

Total Logistics Sector Business Volume in Turkey is € 70 Billion andTotal Logistics & Transportation Companies Business Value is € 40 Billion

- The total number of course is 28.695 per year where Dinçer Lojistik revenue is € 12.820.513 per year and total distance is 12.510.000 km/year

Collaborative Transportation of paints from paint manufacturer to its customers

DİNÇER LOJİSTİK is an SME, member of LODER.

Dinçer Lojistik is focused on:

- Domestic and inner-city transportation,
- Domestic and inner-city distribution,
- Complete and partial transport,
- Fleet Transport services,
- Storage services,
- Round transport

Mainly in the Chemical Sector

Dinçer Lojistik is located in İstanbul and provides logistics services in all over Turkey (3 zones: 1=1 day, 2=2 days, 3=3 days distribution zones)

Collaborative Transportation of paints from paint manufacturer to its customers

DINÇER LOJISTIK is an SME, member of LODER.

Dinçer Lojisti...

– Domestic an...
– Domestic an...
– Complete an...
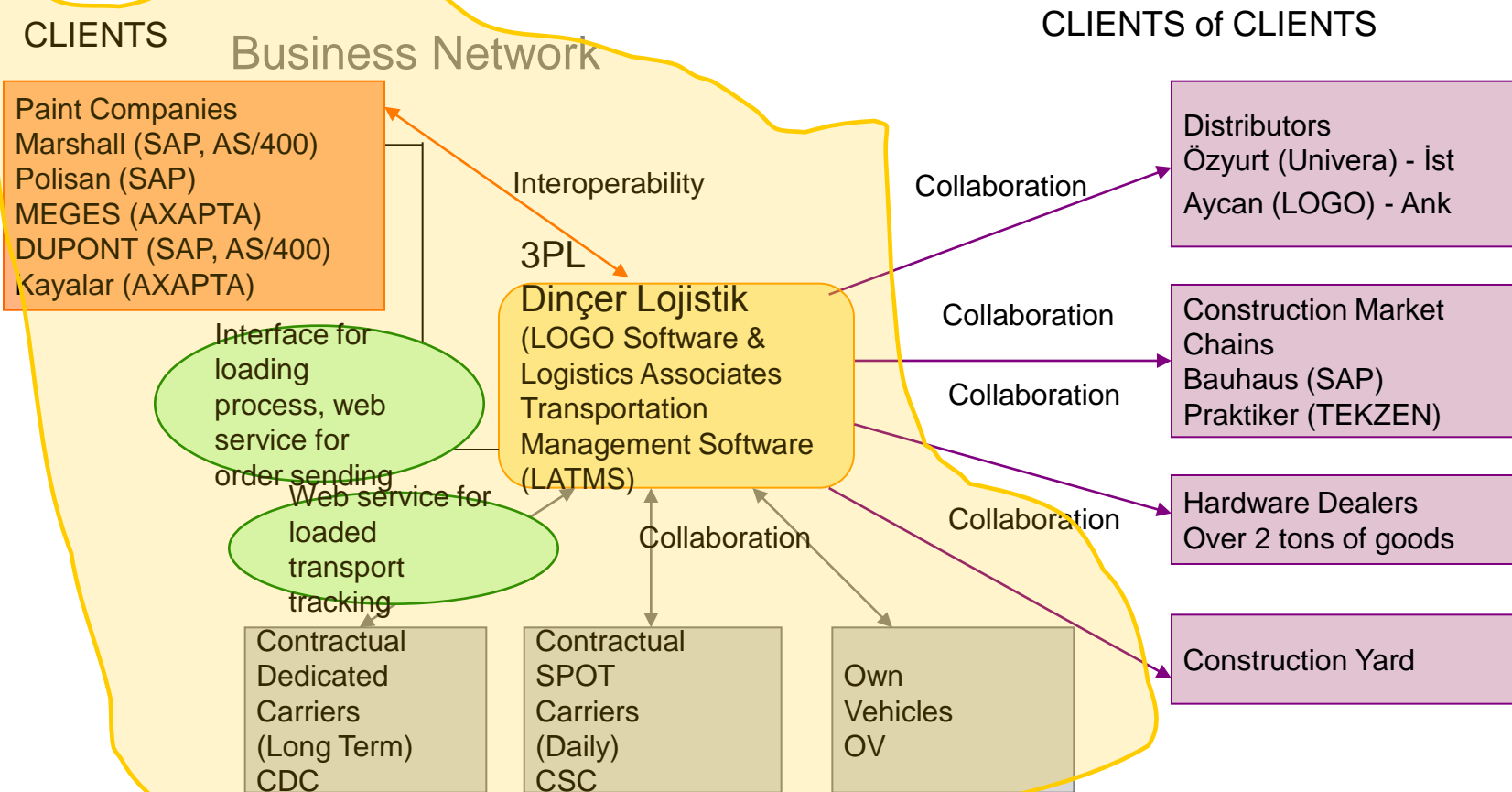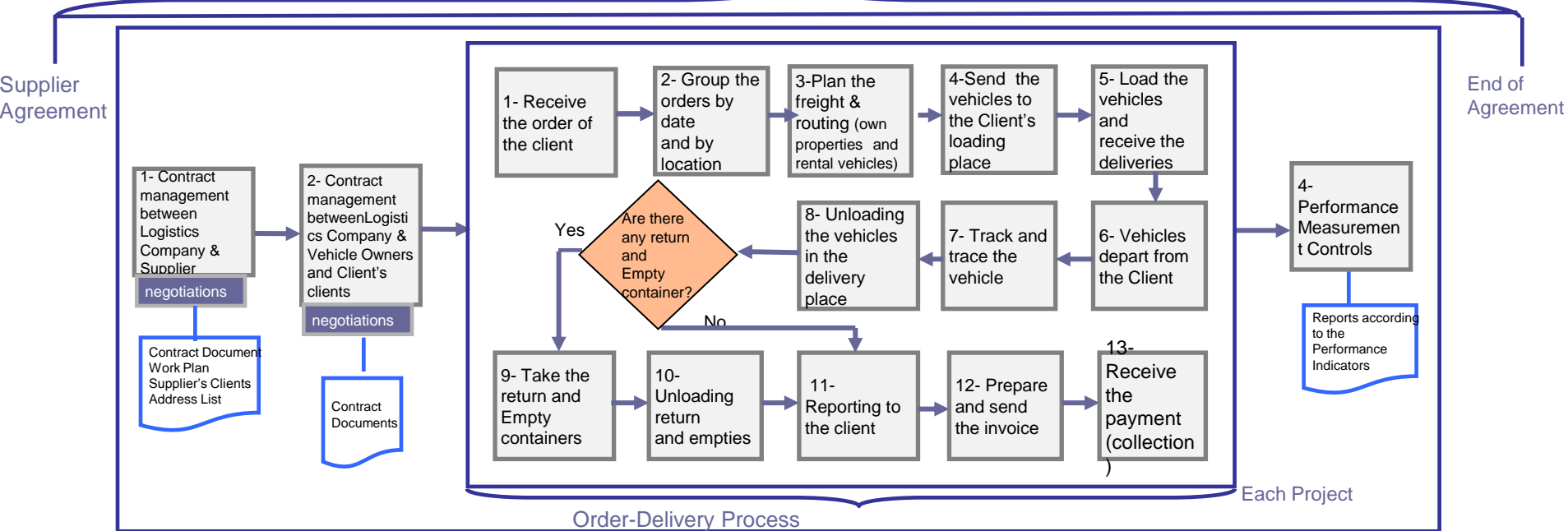– Fleet Transp...
– Storage serv...
– Round trans...

Mainly in the Ch...

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Services
Transportation and Logistics
Project Management
Storage and Distribution Services
Inventory Management
Domestic Distribution Service
Added Value Services

zone 3

1 gün
2 gün
3 gün

Collaborative Transportation of paints from paint manufacturer to its customers

Dinçer Lojistik transports paints of the paint producers (Polisan and Kayalar) to the paint producers' clients: distributors, construction market chains, hardware dealers and construction yards by making agreements with carriers and plans the transportation service in collaboration with the clients of the client.
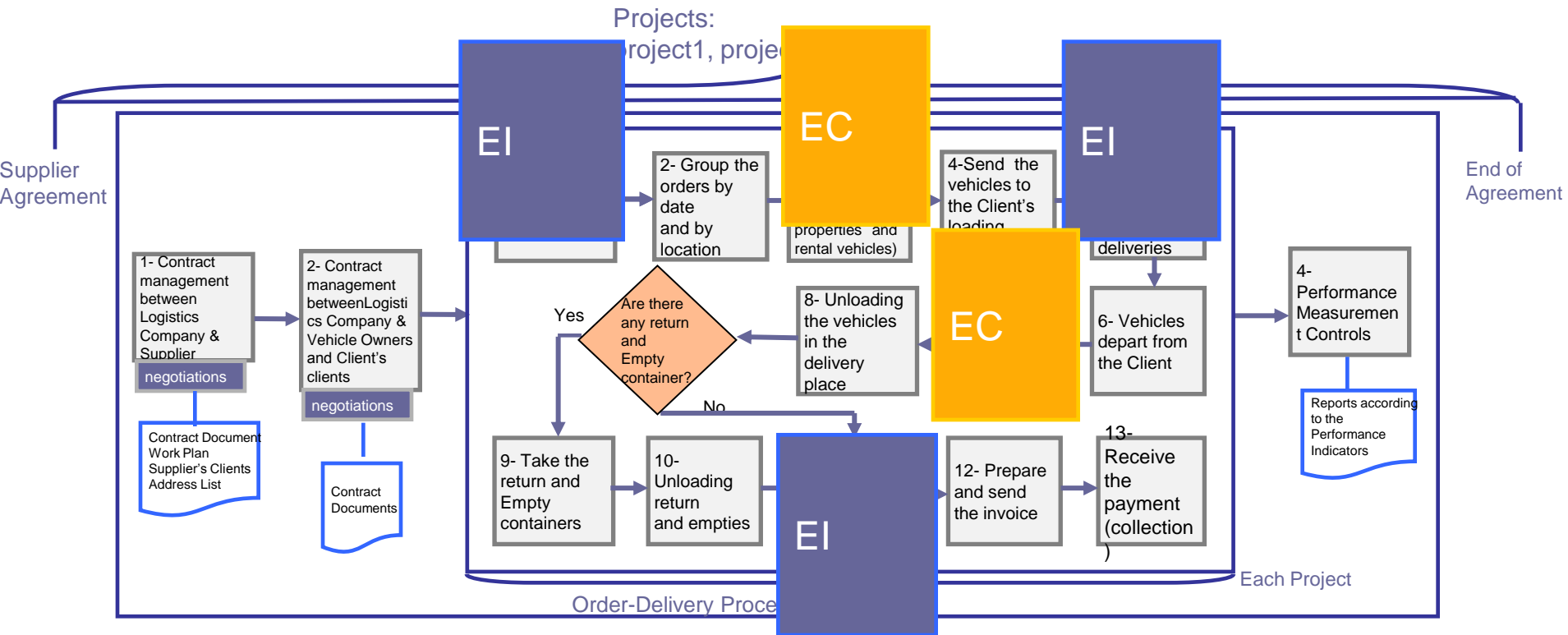
CLIENTS

Business Network

CLIENTS of CLIENTS

Paint Companies
Marshall (SAP, AS/400)
Polisan (SAP)
MEGES (AXAPTA)
DUPONT (SAP, AS/400)
Kayalar (AXAPTA)

Interoperability

3PL
Dinçer Lojistik
(LOGO Software &
Logistics Associates
Transportation
Management Software
(LATMS)

Interface for loading process, web service for order sending

Web service for loaded transport tracking

Collaboration

Distributors
Özyurt (Univera) - İst
Aycan (LOGO) - Ank

Collaboration

Construction Market Chains
Bauhaus (SAP)
Praktiker (TEKZEN)

Collaboration

Collaboration

Hardware Dealers
Over 2 tons of goods

Collaboration

Construction Yard

Contractual Dedicated Carriers (Long Term) CDC

Contractual SPOT Carriers (Daily) CSC

Own Vehicles OV

Domestic transport, packaged goods (iBS) and a process without storage
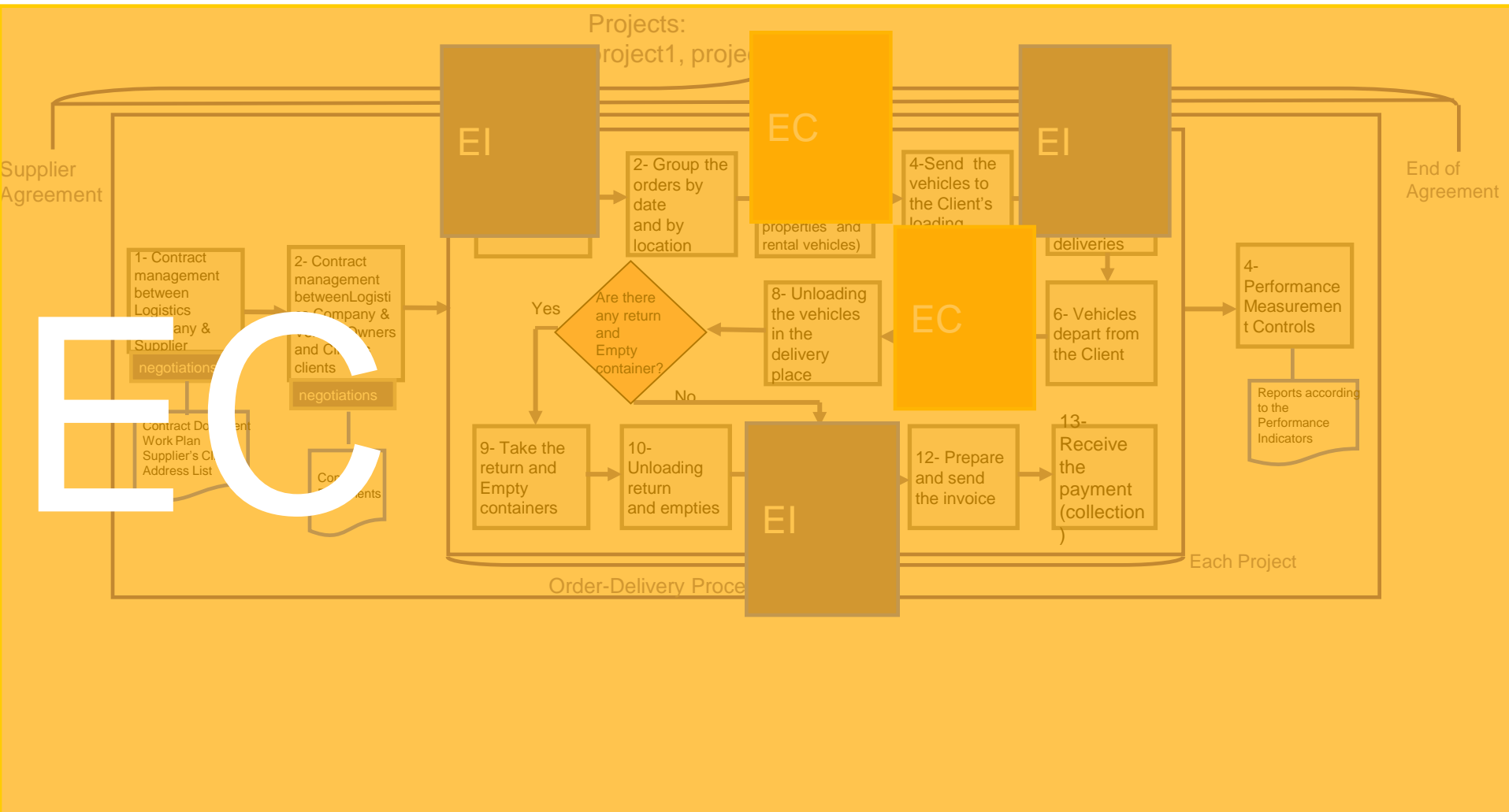
Business Processes
(6 Use Cases Selected)

Projects:
project1, project2, project3

Supplier Agreement

End of Agreement

| 1- Contract management between Logistics Company & Supplier |
| negotiations |

Contract Document Work Plan Supplier's Clients Address List

| 2- Contract management betweenLogistics Company & Vehicle Owners and Client's clients |
| negotiations |

Contract Documents

| 1- Receive the order of the client | → | 2- Group the orders by date and by location | → | 3-Plan the freight & routing (own properties and rental vehicles) | → | 4-Send the vehicles to the Client's loading place | → | 5- Load the vehicles and receive the deliveries |

Yes

Are there any return and Empty container?

| 8- Unloading the vehicles in the delivery place | | 7- Track and trace the vehicle | | 6- Vehicles depart from the Client |

No

| 9- Take the return and Empty containers | → | 10- Unloading return and empties | → | 11- Reporting to the client | → | 12- Prepare and send the invoice | → | 13- Receive the payment (collection) |

| 4- Performance Measurement Controls |

Reports according to the Performance Indicators

Each Project

Order-Delivery Process

Business Processes
(6 Use Cases Selected)

Projects:
project1, proje...

EI

EC

EI

Supplier
Agreement

End of
Agreement

2- Group the orders by date and by location

properties and rental vehicles)

4-Send the vehicles to the Client's loading

deliveries

1- Contract management between Logistics Company & Supplier

negotiations

2- Contract management betweenLogistics Company & Vehicle Owners and Client's clients

negotiations

Yes

Are there any return and Empty container?

8- Unloading the vehicles in the delivery place

EC

6- Vehicles depart from the Client

4- Performance Measurement Controls

Contract Document
Work Plan
Supplier's Clients Address List

Contract Documents

No

Reports according to the Performance Indicators

9- Take the return and Empty containers

10- Unloading return and empties

EI

12- Prepare and send the invoice

13- Receive the payment (collection)

Each Project

Order-Delivery Proce...

Business Processes
(6 Use Cases Selected)

Projects:
project1, proje...

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Contract Document Work Plan Supplier's Client Address List

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EC

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EI

Order-Delivery Proce...

Each Project

COIN Eastern Europe
Lithuanian Business Use Case
Production and Manufacturing Domain

University of Kaunas

JSC "VAE Legetecha"

* VAE Legetecha was founded in 1995 as turnout producer

* VAE Legetecha supplies "Lithuanian railways" with fully assembled turnouts, switch blades, frogs, insulated rail joints and all enterprises of VAE Group with baseplates

* Today Enterprise is exporting its products to more than 10 countries: Latvia, Estonia, Austria, Spain, Italy, USA, Australia, Holland

Example of relations with Legetecha's suppliers and customers
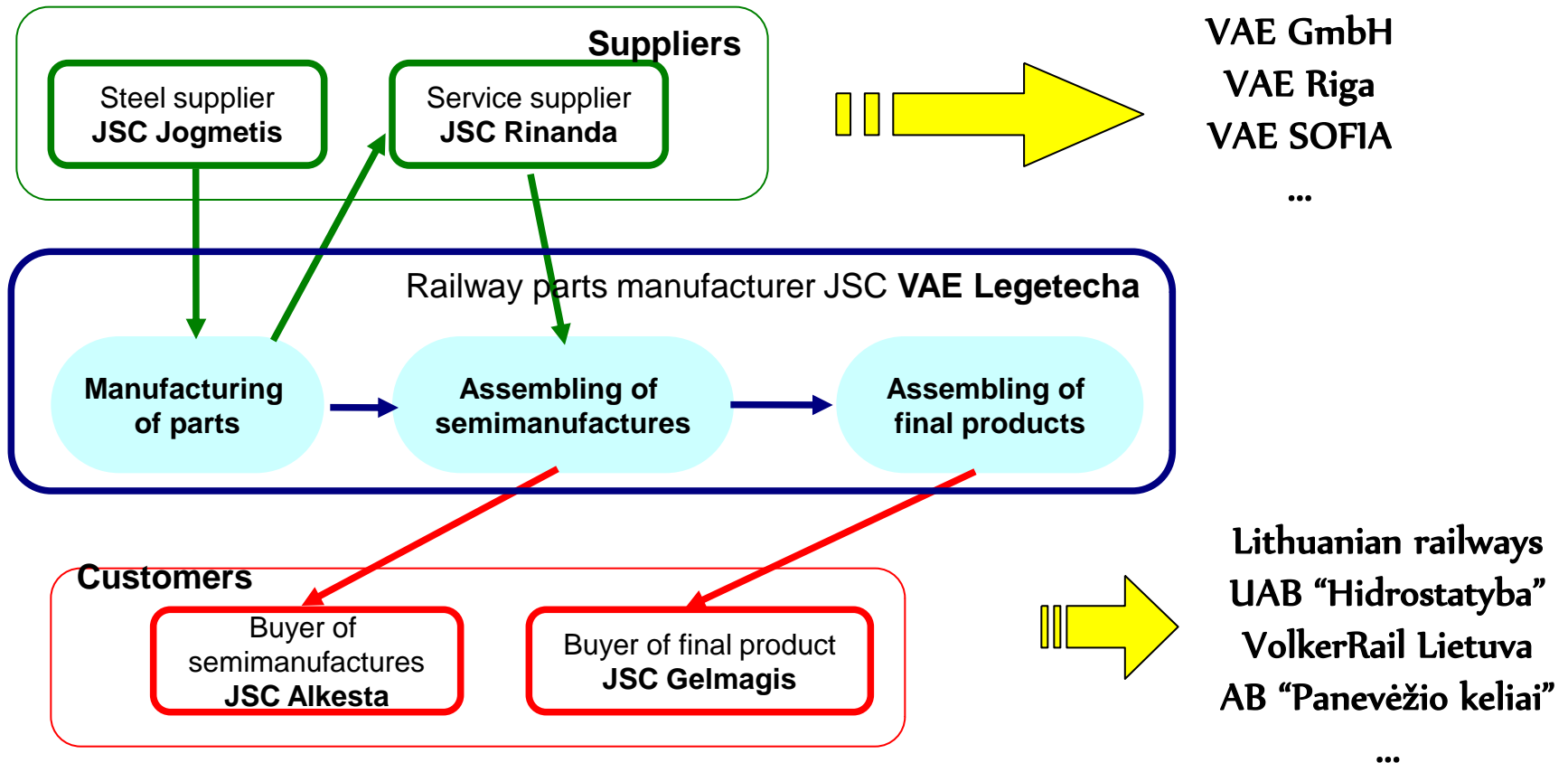
Bottlenecks

1. VAE Legetecha's actions to find suitable suppliers
2. VAE Legetecha's and potential customer working groups' actions to prepare initial manufacturing specification and high level work plan
3. VAE Legetecha's and potential customer's consideration to make business agreement
4. VAE Legetecha's actions to negotiate with suppliers
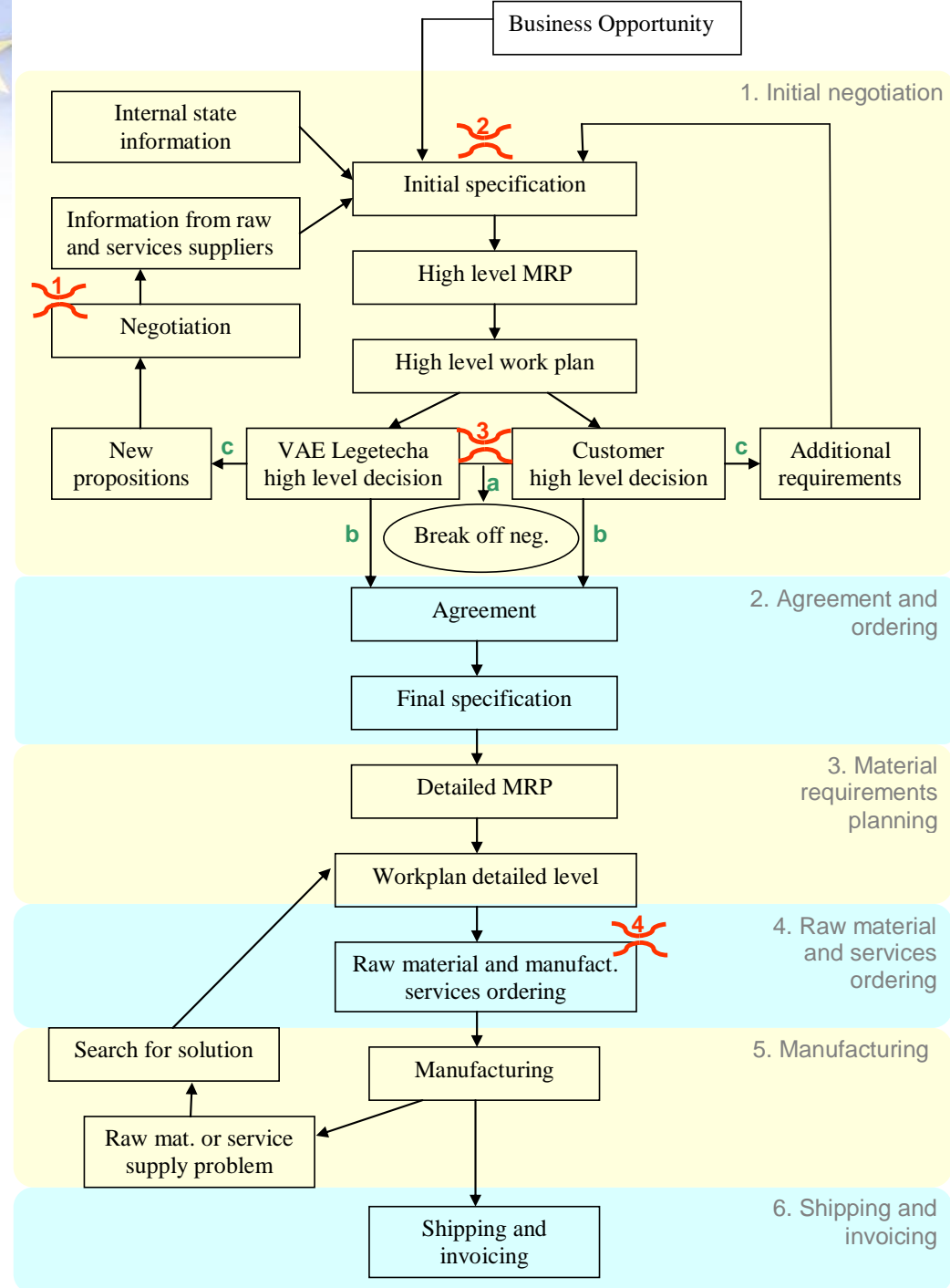
Business use case overview
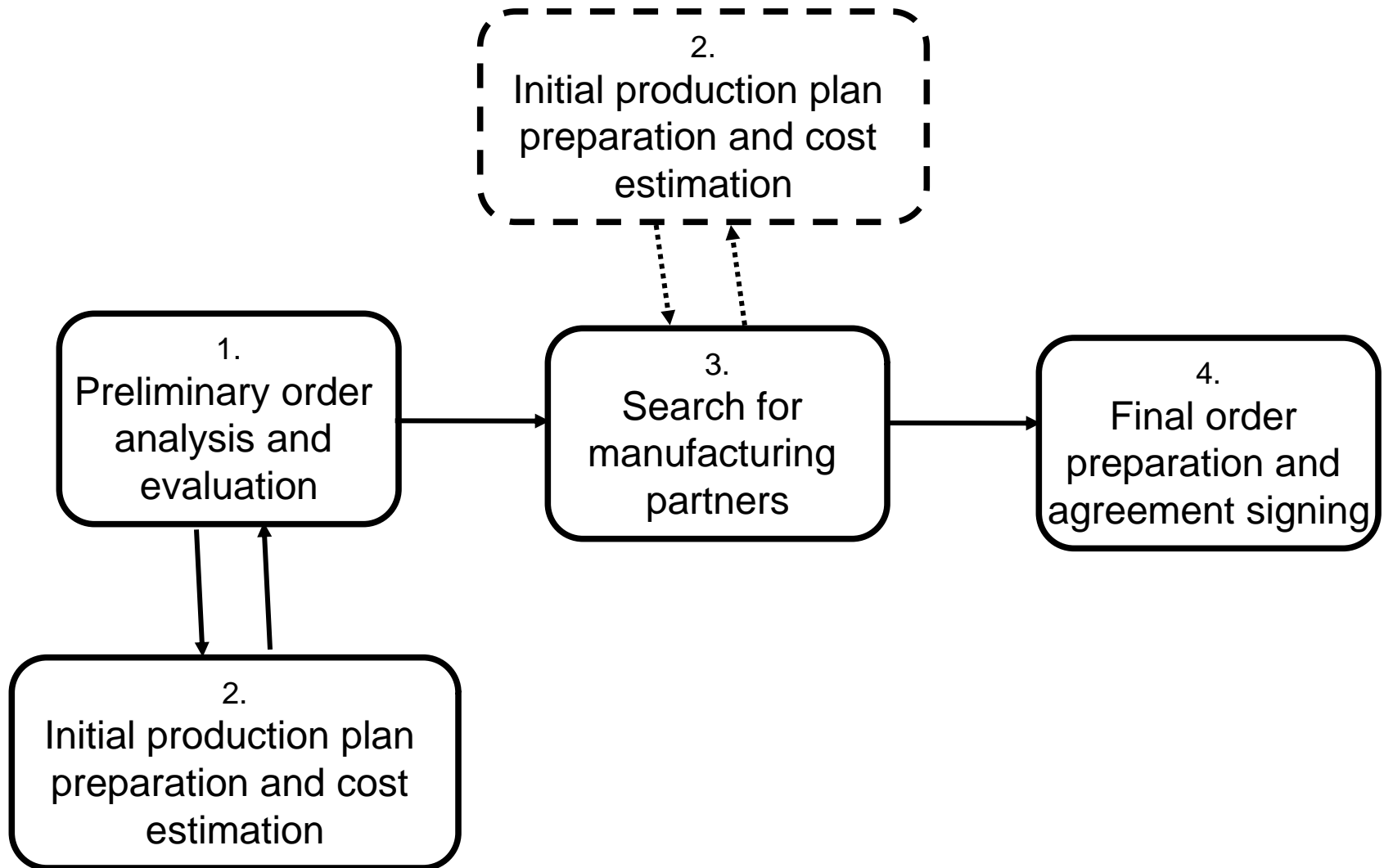
ERP system "IMI2005"

- Specialized cost accounting and planning system

- Client server architecture

- Hosted on local server

- Borland Interbase DBMS

- Full version available, realistic data available for testing

- JDBC, BDE, or ODBC interface

ERP system "Centas"

- Commercial ERP system

- GUI + DB

- Hosted on local server

- Database: Paradox DB tables

- Demo version available, realistic data for testing

- BDE or ODBC interface
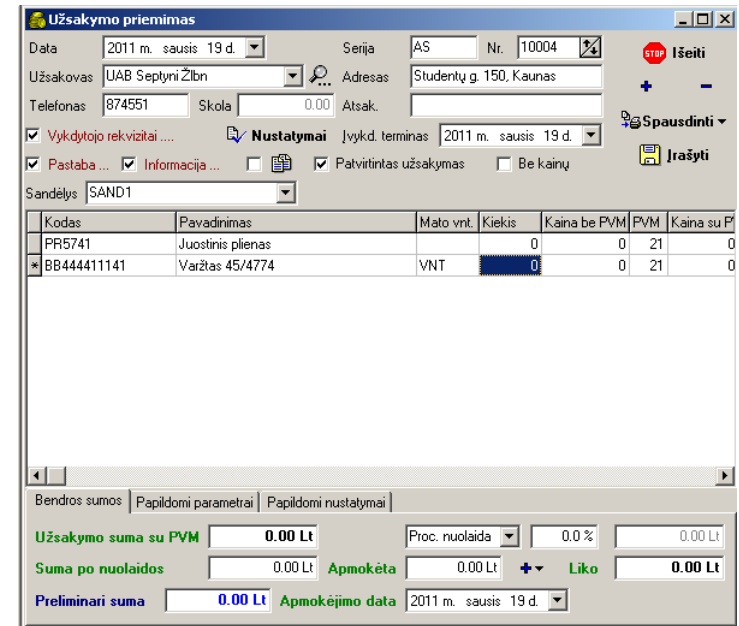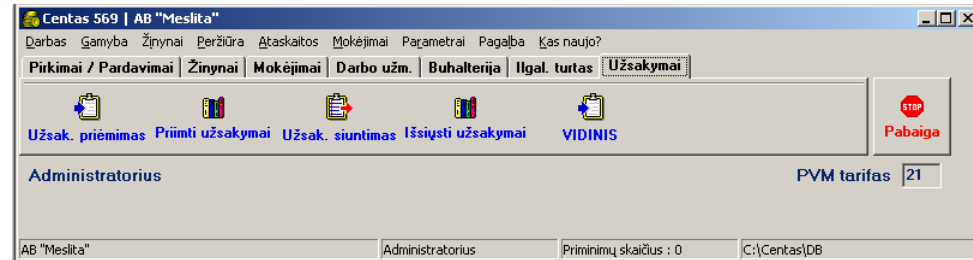
ERP system "Rivilė"

- Commercial ERP system

- GUI + DB

- Hosted on local server

- Database: standard FoxPro DBF files

- Demo version available, realistic data for testing

- Custom interface for import/export based on XML

COIN Eastern Europe
Cyprus Business Use Case
Marine Shipping Domain

University of Cyprus

Shipping sector in Cyprus

- Shipping is a hugely important sector in Cyprus and the wider region
  - The Cyprus Registry is classified as the 10th largest merchant fleet globally and the 3rd largest fleet in the European Union,
  - Contribution to the Cyprus economy is as high as 5.5% GDP (Gross Domestic Product),
  - European merchant fleet capacity was significantly increased upon Cyprus accession (++ ~20%).

- ~87% ship-owning/management companies in Cyprus are controlled by EU (including Cypriot) interests.

- ~4,500 persons are employed ashore and ~40,000 seafarers of different nationalities employed onboard vessels controlled/managed from Cyprus.

- Shipping industry hugely successful over last 20 years. Further growth expected with the continued introduction/development of modern infrastructure and ICT
  - A successful pilot of COIN services will contribute to this success

Introduction to use case scenario

- The selected use case scenario describes the process of accomplishing a shipping voyage.

- Donnelly Tanker Management (DTM) is the responsible party for the overall organization of a successful voyage and has to ensure communication between all involved parties are well maintained and correct communications channels are followed.

- The process for voyage establishment includes direct communication between DTM and the other parties and or the monitoring of the communication between the parties in order to receive the acknowledgment and to continue to the next step of the process until the voyage is completed.

- Actors:
  - DTM, United Product Tankers (UPT), charterers, brokers, load port agents, discharge port agents and United Fuel Services (UFS).

Process Maker Screen Shots

Process Maker Screen Shots

- e.g., dynaform for voyage setup step in workflow in process maker

COIN Communities

- **COIN Members**

- **COIN Testimonials**

- **COIN Angels**
    - Prof. Guy Doumeingts (Interop VLab) for ICE 2009
    - Prof. Marc Pallot (Nottingham Univ.) for Esoce 2009
    - Dr. Wolfgang Prinz (FhG FIT) for ICE 2010
    - Dr. Piero De Sabbata (ENEA) for IWEI 2011 Prof. Roberto Zicari (OMG))
    - Prof. Yannis Charalabidis (NTUA) for SAMOS 2011
    - Prof. Xiaofei Xu (HIT) for FIS2011

- **6 new Pilots-Multipliers from COIN-EEU call5 project:**
    - Civil Engineering (Romania)
    - Agriculture & Rural Areas LL (Czech Republic)
    - Supply Chain Management & Logistics (Turkey)
    - Marine shipping (Cyprus)
    - Railways Infrastructure Components (Lithuania)
    - Digital Media Living Lab (Bulgaria)

Seed and multiply the COIN!

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COIN Winter School

The COIN IP Project

Technical and Business Innovation

Ljubjana, Nov 28th 2011
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