ICT- Infrastructure for CNO's

(…which Infrastructure is needed to connect and collaborate in CNO's)

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Presentation Outline

- State and Requirements of ICT-I for CNOs
- ICT-I for CNOs – the Ecolead solution
  - Reference Framework
  - Examples of Basic and Horizontal Services
  - Examples of Vertical Services
- Conclusions

Actual State of ICT-I

Enterprises do have:

- Solutions covering domain/topic specific requirements (i.e. Sales, Bookkeeping, MES, etc.). Not designed to go across enterprise boundaries and rather legacy, closed, transaction based,…
- “Connectors” i.e. EDI, EAI, ETL

Market offers:

- Single Solutions covering parts of collaboration needs (simultaneous engineering, community solutions, VoIP systems, Chat, …)
- Domain specific “collaboration” platforms (ELEMICA, COVISINT,..)

Options for an ICT-I

- **Technology Options**: P2P (Legal, Security), Grid (complex deployment), Pervasive Computing (performance, interoperability), Multi-Agent Systems (complexity), SOA
- **Service Oriented Architectures & web-services** have been seen as the next pace towards the future business environment.
- **ALL** big ICT vendors have been developing web-services solutions for B2B.
- **Relevant Institutes** (e.g. Gartner, McKinsey) have pointed out that the use of ws technology will have a truly boom next year onwards. Many important international standardization initiatives around ws are deeply working on its evolution and on some of its limitations.
- This means that successful and emerging ICTs should work around and be **compliant with web-based technologies**.

CNO Requirements to ICT-I

1. Accommodate flexible width (networks of independent SME/BEs) and depth (different own ICT to connect to) i.e. a comprehensive but scalable collaboration service suite covering different Types and Modes of CNOs (PVC, VBE, VO,…)

2. To be held into account:
   - Own internal systems still work
   - minimum common information “denominator” (i.e. an information set is collected and distributed for the CNO to work)
   - Enterprises can adopt CNO services as “own” internal service in case not available internally (micro/small enterprises)
   - User hidden, i.e. only business process oriented interaction visible (like 1985 apple-talk) or understood as commodity in biz-context

Attributes of (physical) services

- Well defined, easy-to-use, somewhat standardized interface
- Self-contained with no visible dependencies to other services
- (almost) Always available but idle until requests come “Provision-able”

- Easily accessible and readily usable, no “integration” required
- Independent of consumer context, but a service can have a context
- Services are non-proprietary (“somewhat” equal interfaces but usage of standards (SOAP, WDSL, XML, ….)

- Services are most often designed independent from the context in which they are used (-> “loosely coupled” services can be reused in contexts not known at design time)
- New services can be offered by combining existing services
- Value can be created by combining, i.e. “composing” services
  (Book a trip versus book a flight, car, hotel, …)

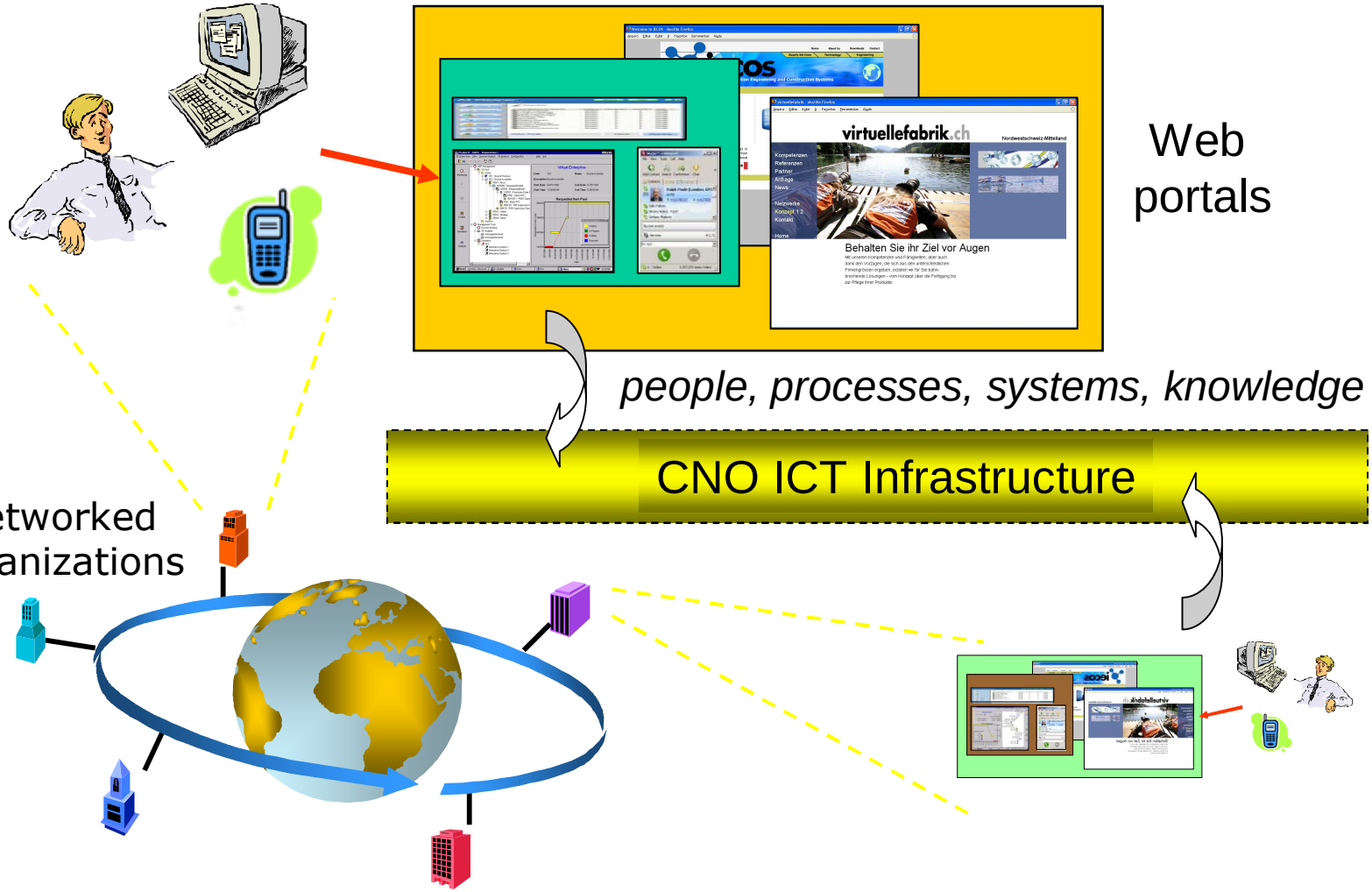
ICT-I: What is it?

An ICT-I for CNO can be seen as a set of connectivity and collaboration services which need to address:

People	:	enabling collaboration and negotiation
Systems	:	enabling interoperability and adaptation
Knowledge & Ressources	:	enabling discovery and sharing
Processes	:	enabling (inter-)connectivity and synchronization

ICT-I for CNOs should act as a collaborative bus allowing different and distributed organizations to interact with each other.

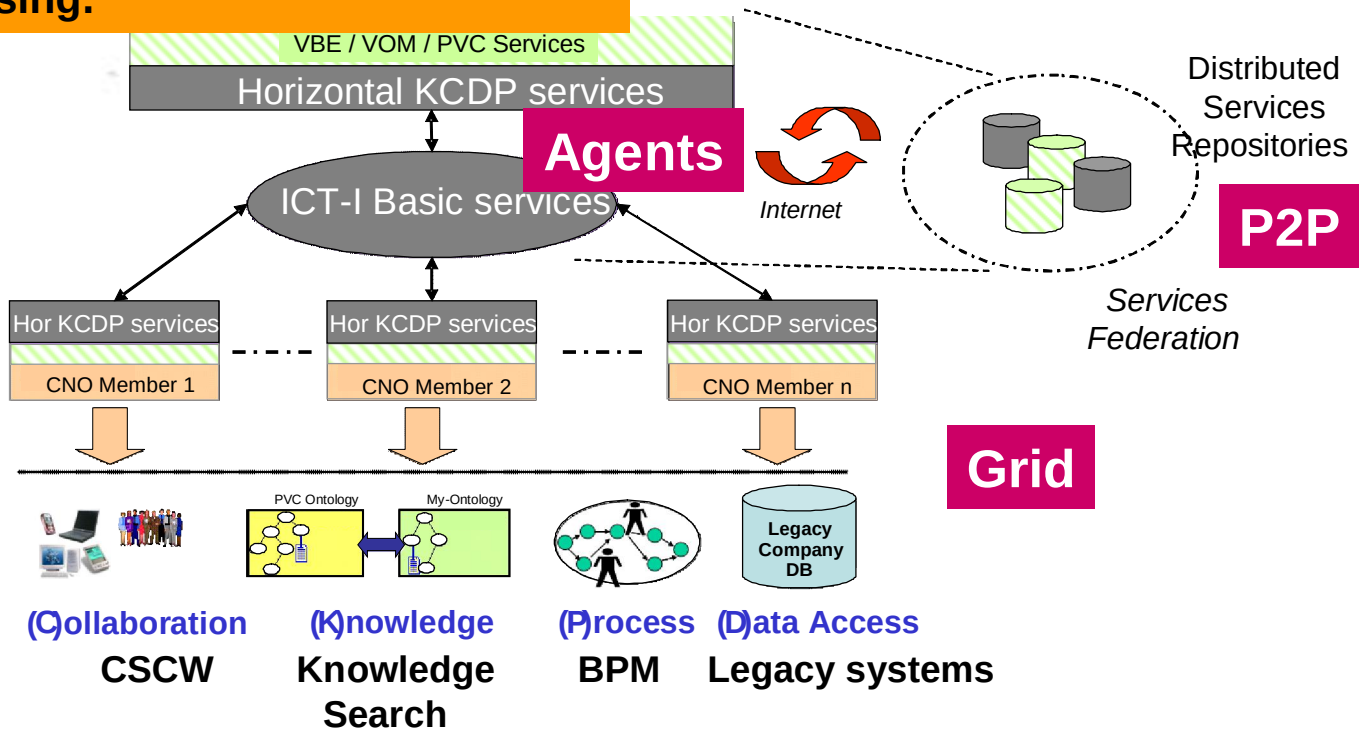
ICT-I as a mean to link CNO-members



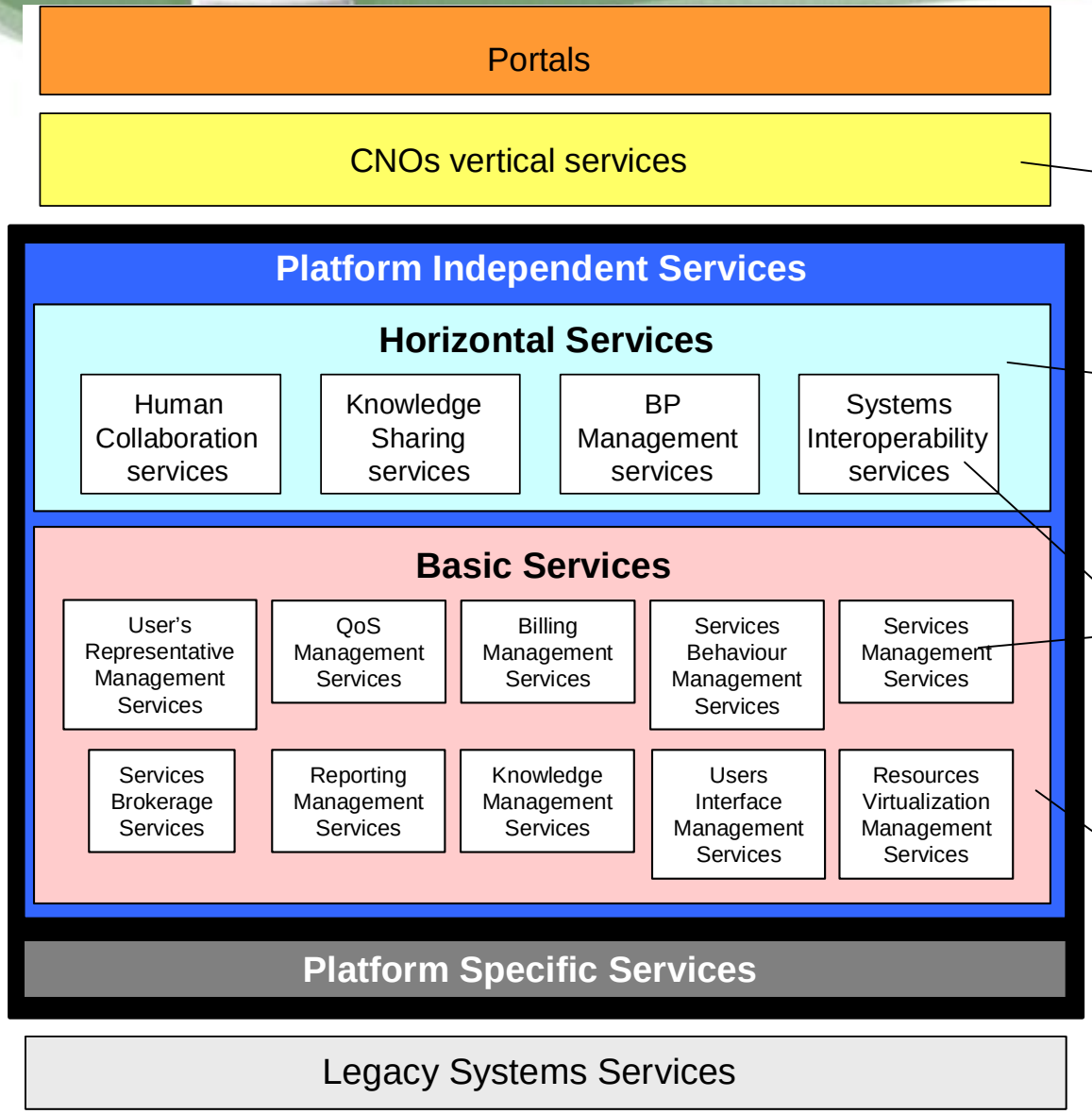
The ECOLEAD ICT-I

- **ICT-I services to be accessed remotely, transparently to users & applications, under the pay-per-use paradigm.**
- **No local deployments.**
- **Scalar services federation.**
- **Services providers can coexist in the Federation, allowing the selection of the most suita ecuting a given business matter where users are g environment they have vices they are currently using.**

Semantic Context Awareness



ICT-I Reference Framework



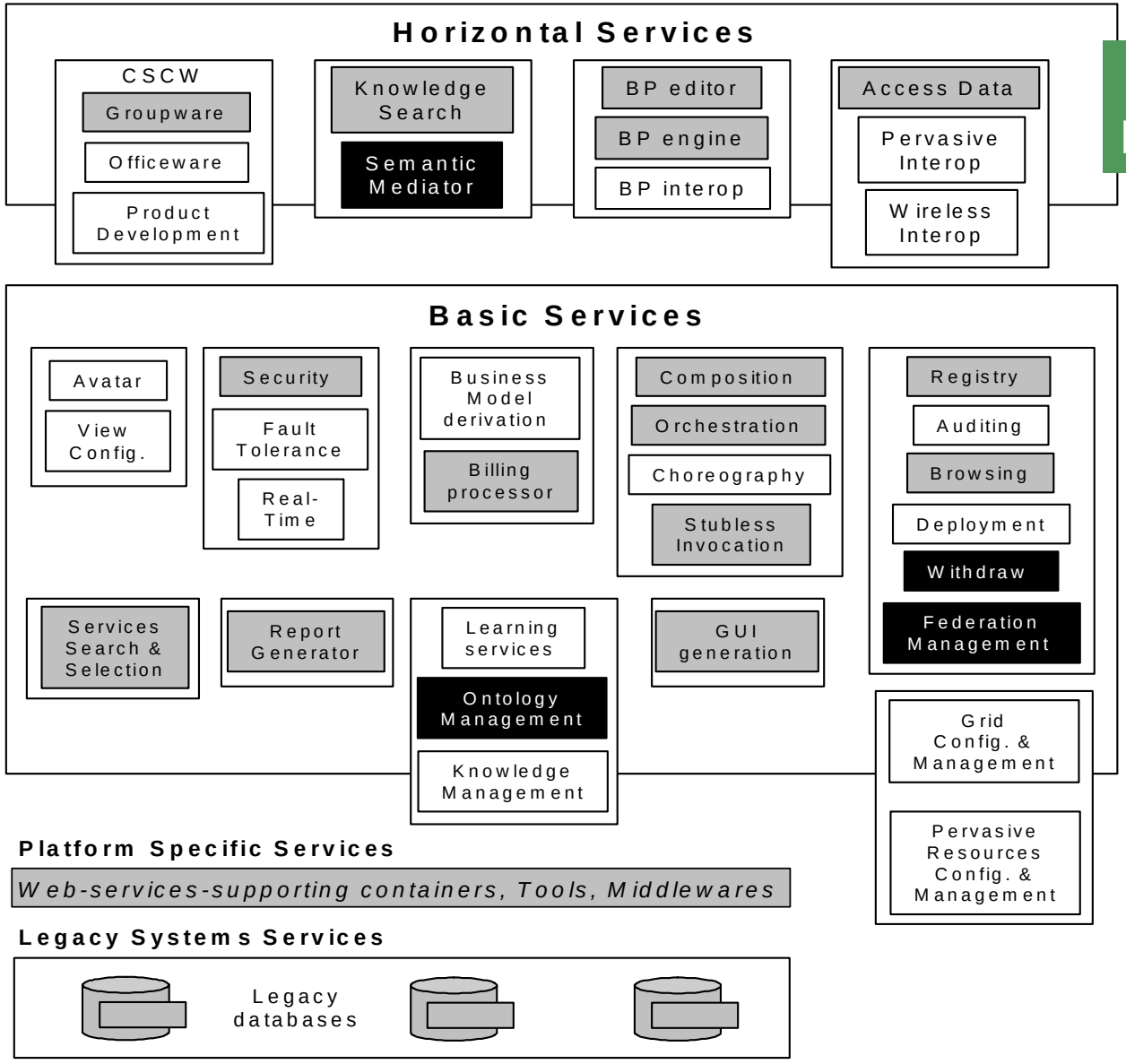
Domain specific but configurable "higher" level services

General purpose services for all CNOs

Classes of services required to support generic CNOs

Independent Services (mainly to be used by Horizontal/Vertical services

ICT-I Reference Framework



ICT-I Reference Architecture showing classes of services required to support generic CNOs

ECOLEAD ICT-I Summary 1/2

- ECOLEAD ICT-I is a Service Oriented Architecture-based (SOA) collaboration and business infrastructure platform. The implementation of all functions is done using web services technology. The software services are distributed in services repositories.
- Web-based platform, i.e. users need only a browser and Internet access. No local deployments.
- Services are accessed on demand (analog *ASP*). Discovery support is smart and follows business process flow.

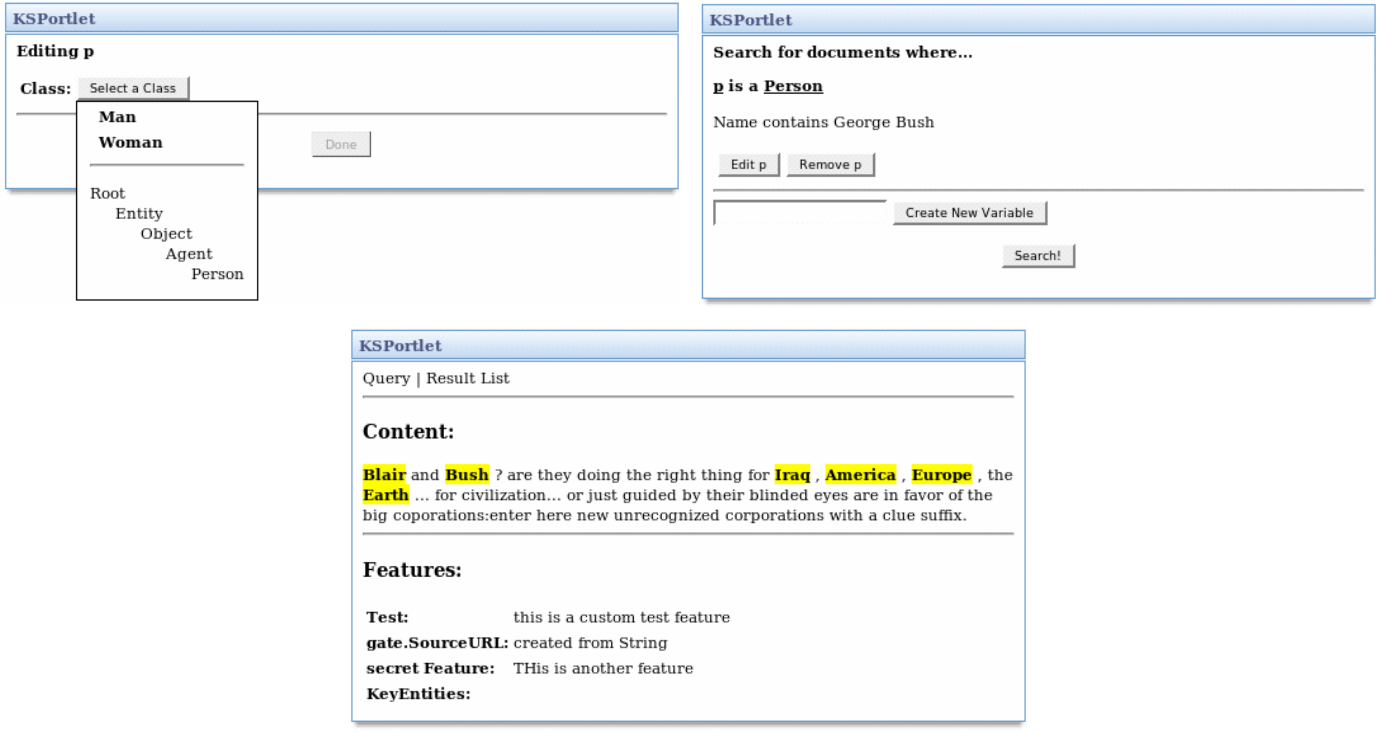
ECOLEAD ICT-I Summary 2/2

- New services can be added without any interference in the use of the infrastructure.
- Set of basic and horizontal services (comprehensive but not exhaustive) -> standard protocol and Interface to allow expansion of via 3rd parties
- Services are paid per use (under several business models).
- Services can also be accessed through mobile devices.
- Services flow and invocation are driven by a context orientation allowing real-time adaptability.
- Services and data access are dynamically controlled by a flexible security system.

EXAMPLE for ICT-I Services

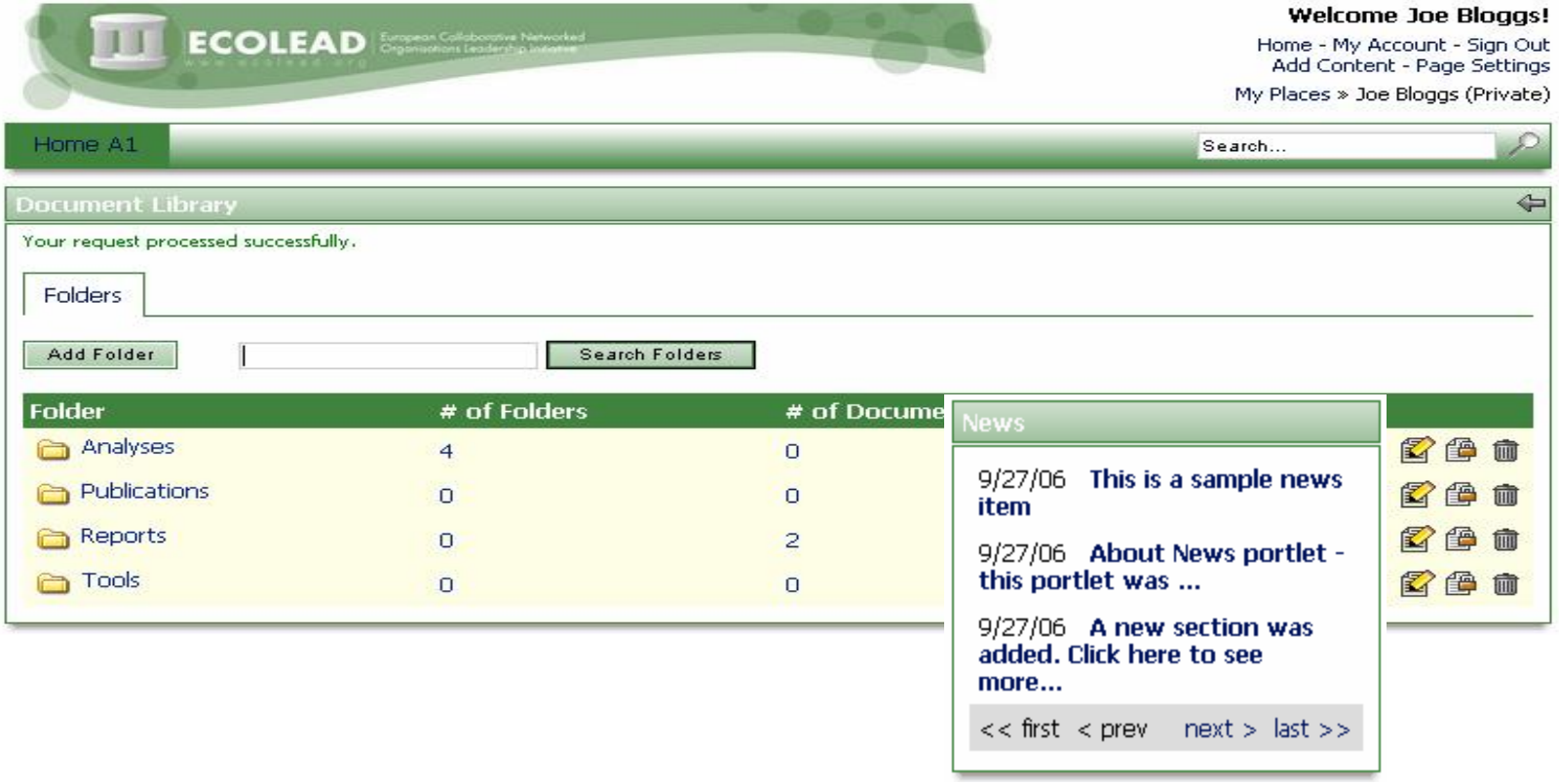
Several services are **transparent** to the users and there are a set of services that offers **means to interact** with end-users.

Knowledge Search and Sharing



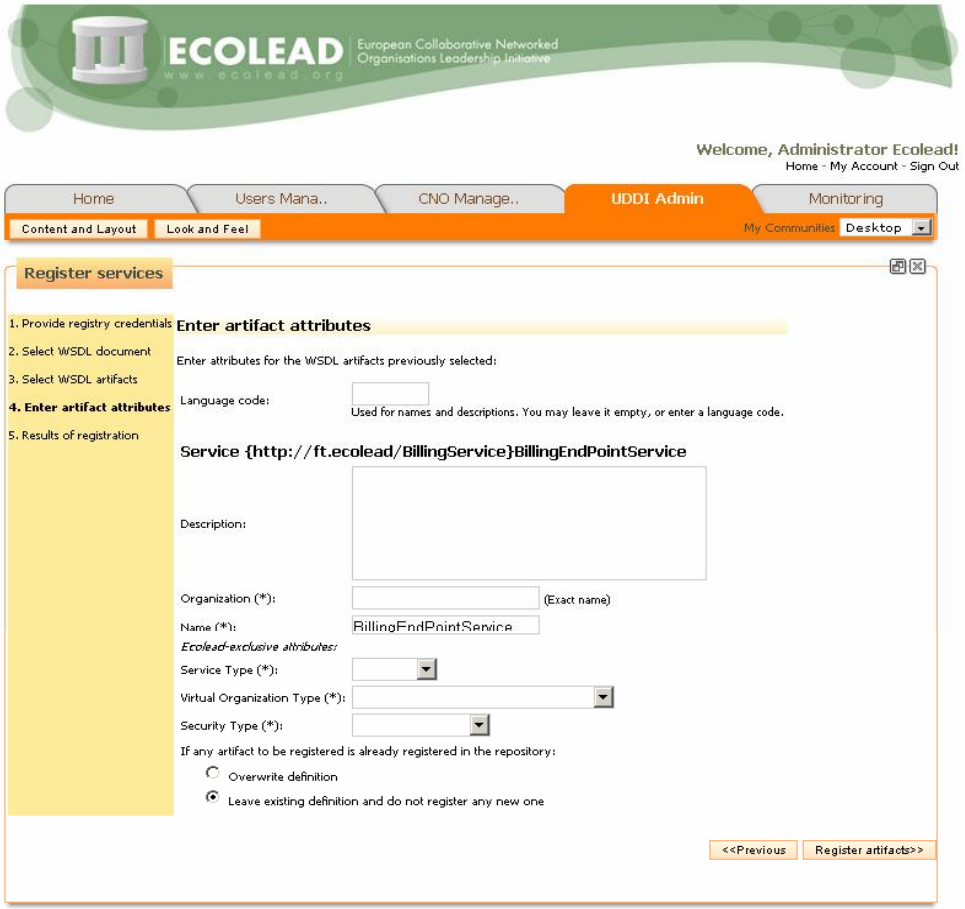
EXAMPLE for ICT-I Services

Documents Management & News Announcements



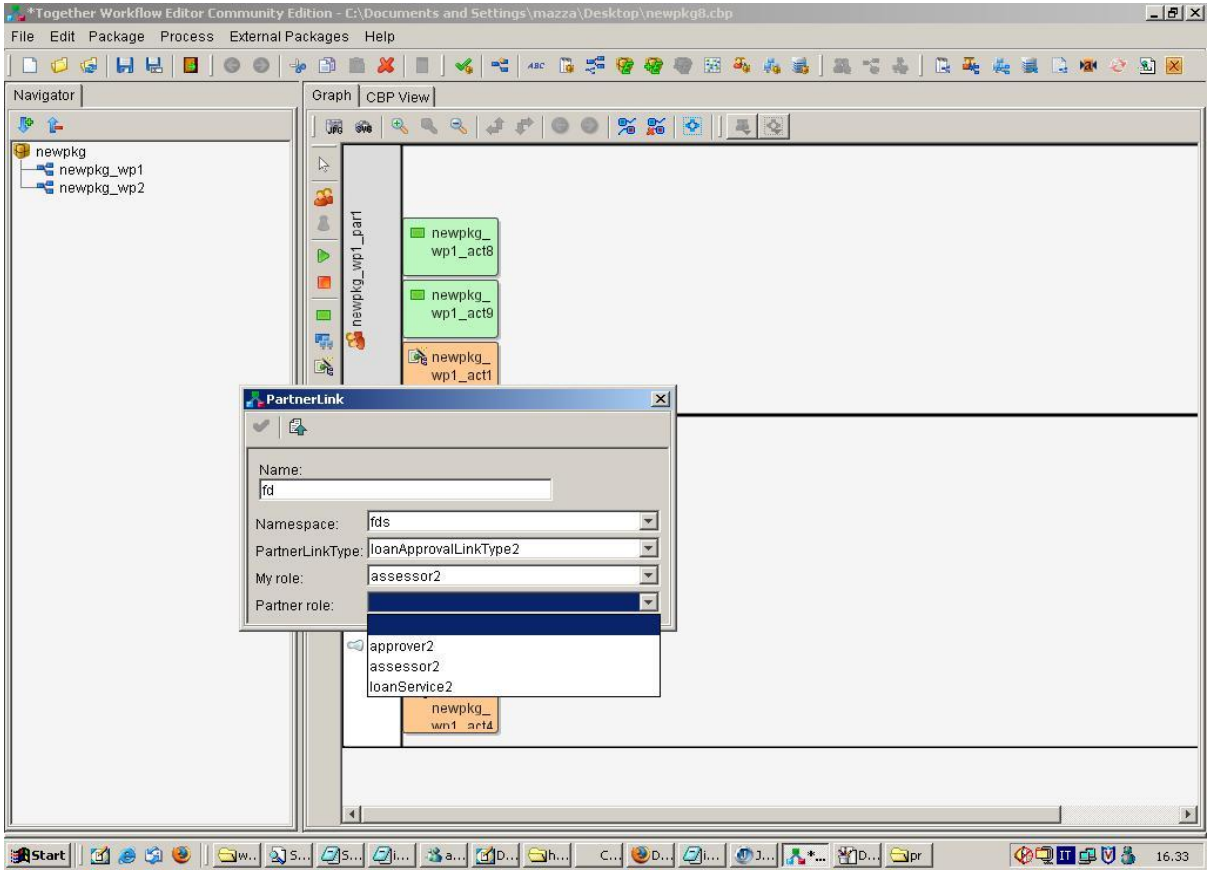
EXAMPLE for ICT-I Services

(Web) Services Publishing



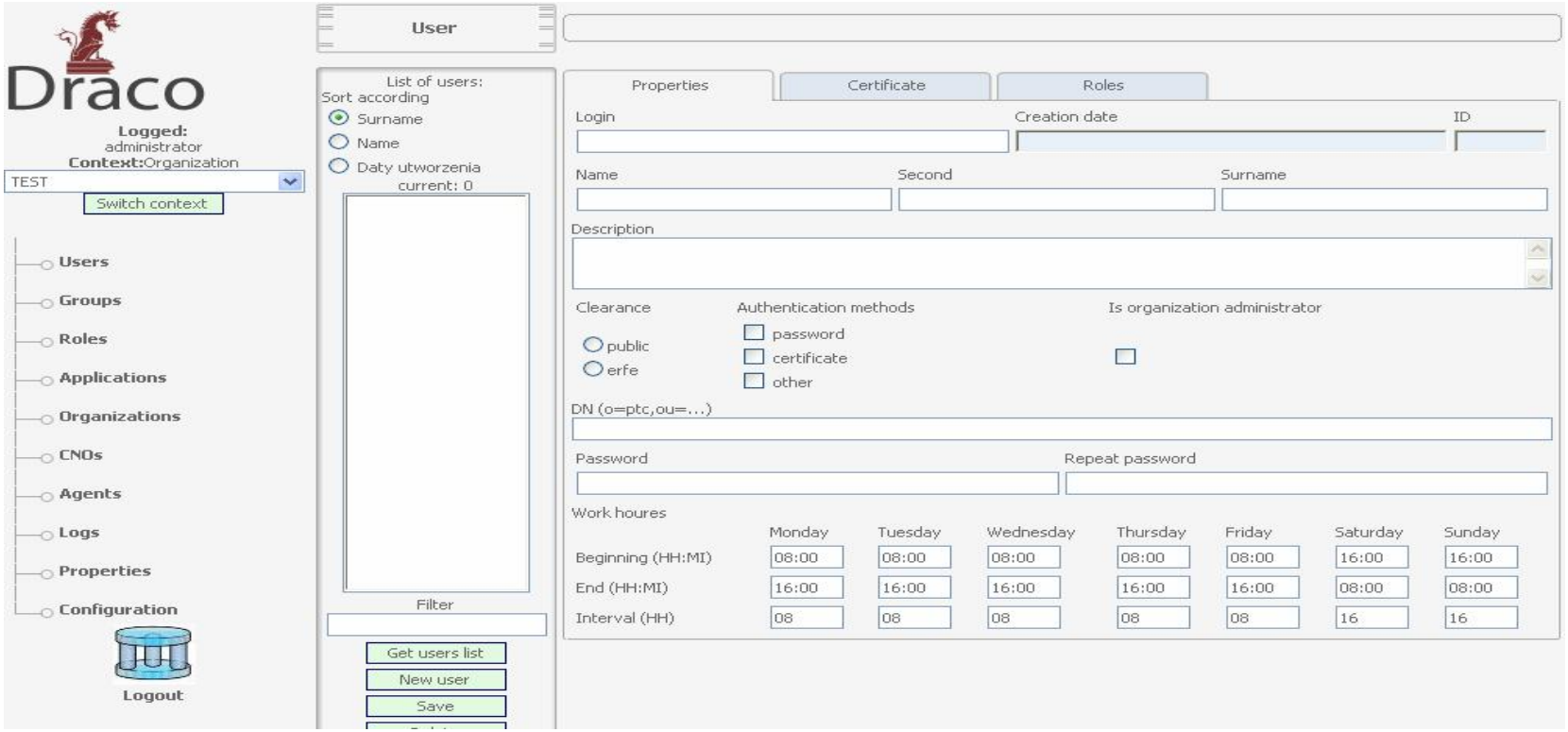
EXAMPLE for ICT-I Services

Business Processes Editor and Execution

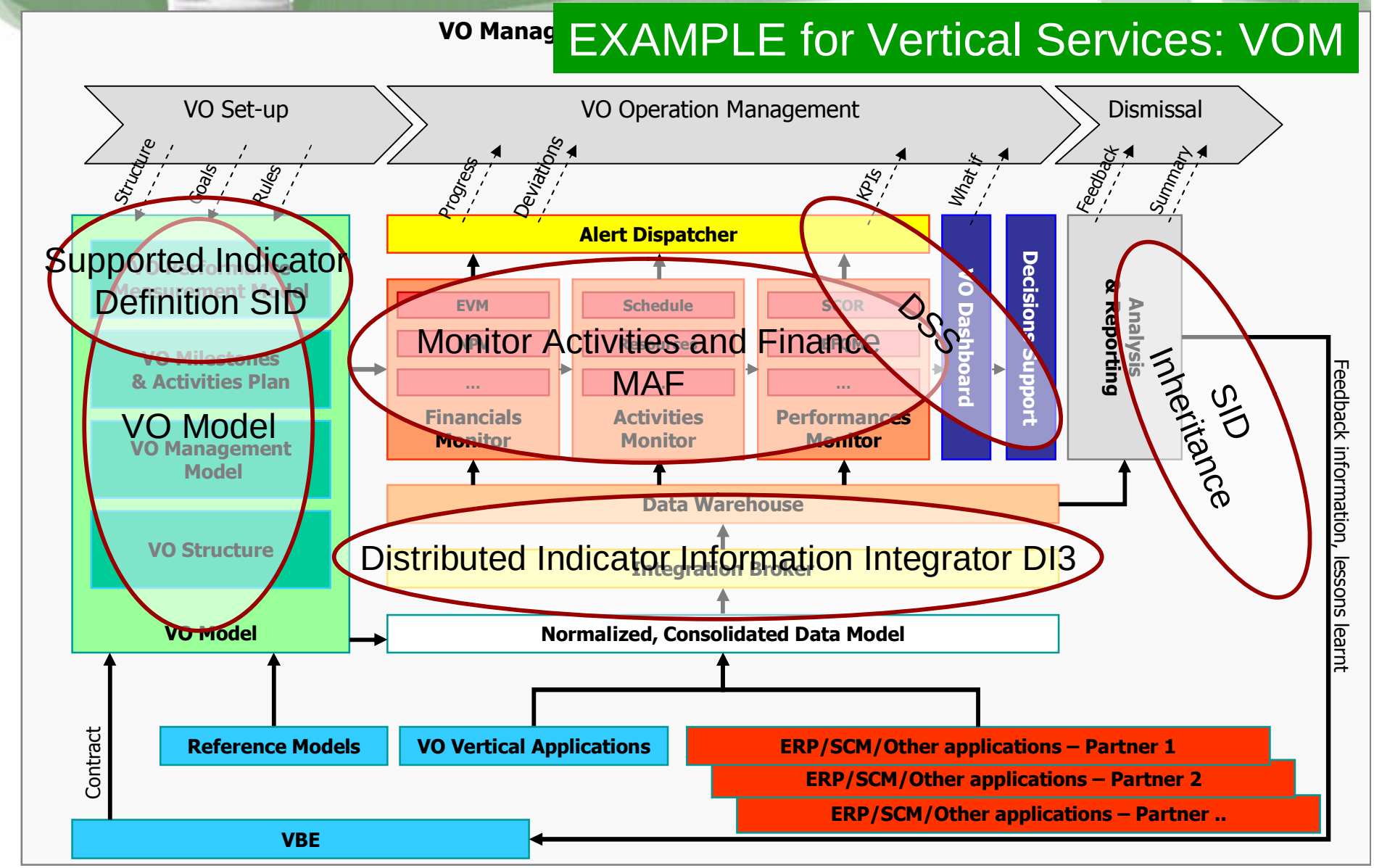


EXAMPLE for ICT-I Services

Security Configuration



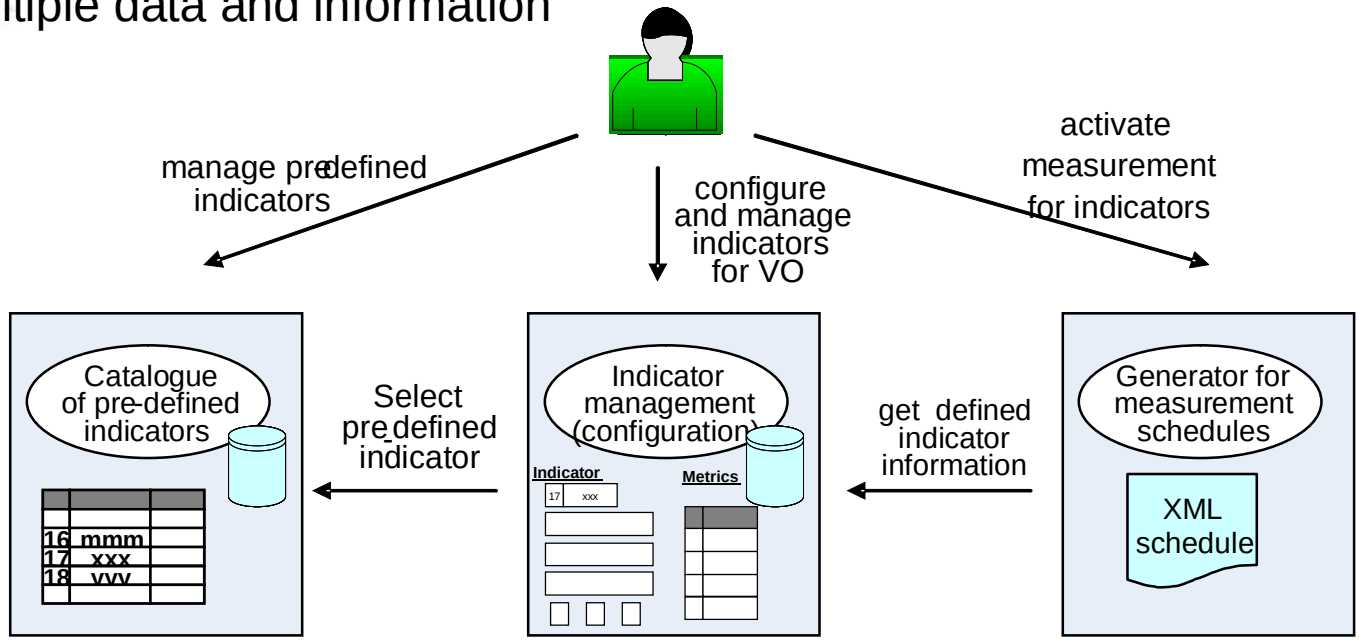
EXAMPLE for Vertical Services: VOM



EXAMPLE for Vertical Services: SID

The Supporting Indicator Definition serves as:

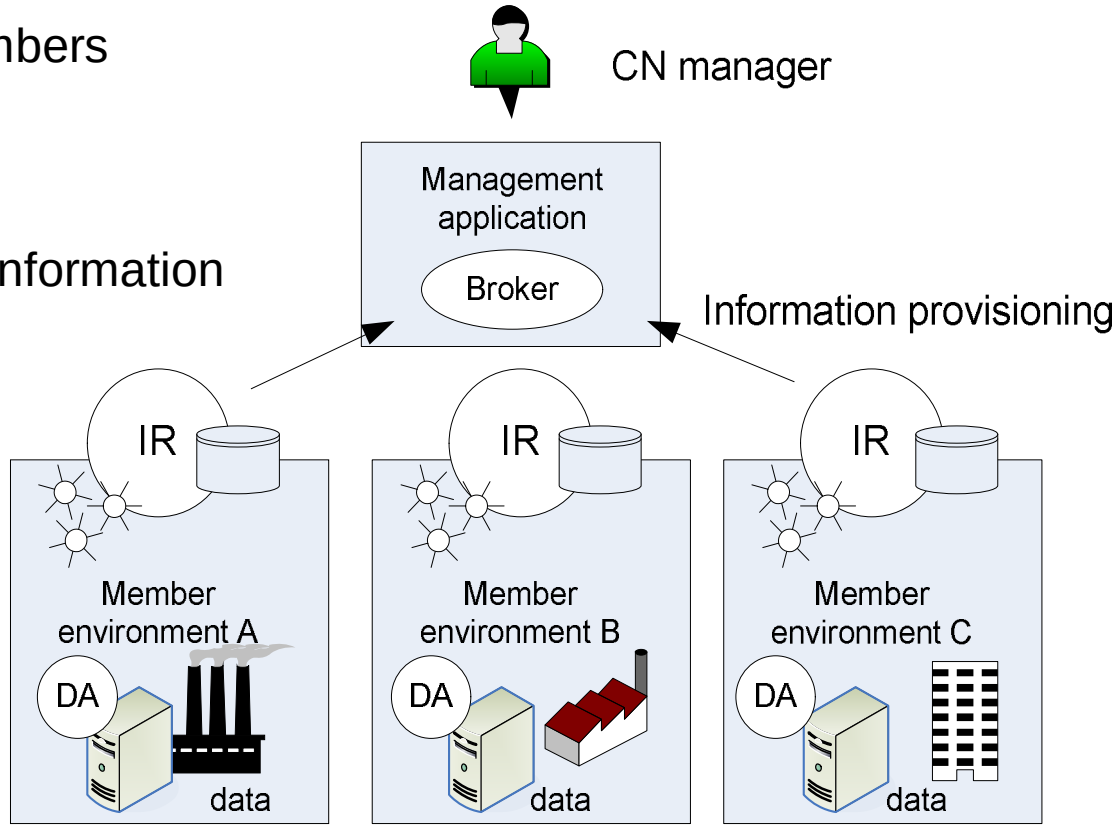
- Propose and Define relevant Key Performance Indicators
- Allow measurement based management
- Supports operational CNO monitoring
- Aggregates multiple data and information



EXAMPLE for Vertical Services: DI3

The Distributed Integrated Information Integrator serves as:

- Connector to VO Performance Measurement
- Measures data from CNO Members
- Configurable and autonomous information retrieval
- Aggregates multiple data and information



EXAMPLE for Vertical Services: DI3

DI3 main components (webservices)

Broker

- Intermediates with other services
- knows the information retrievers

Information Retriever

For each VO-member

- **Local scope and control**
- Autonomous behaviour
- **Rule based**
- Communicate with
  - Each other
  - Brokers
  - Environment
- **Adaptive behaviour**

Data Adapter

- Intermediates with local systems (queries, emails, sms)

Conclusions

- ICT-I is partly finished, several services are under development
- Its design and implementation model represent a feasible and low cost approach for SMEs.
- It is platform independent.
- ICT-I services complements traditional B2B functionalities.
- It is a security-embedded ICT-I and users/companies can use and pay by only the services that are indeed required for their processes.
- There is no local deployment as the ICT-I is placed outside the companies and accessed through the Internet.

Thank you for your attention

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