

SAP Research: An Industry Perspective on Semantic Technologies

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Agenda I

Introduction to SAP & SAP Research

The Semantic Challenge (recap)

SAP Semantic Strategy

Semantic Technologies in Emergency Management Software

- Introduction to Emergency Management & Research Project SoKNOS
- Ontologies for supporting software products in the emergency management domain

Product-driven Use Cases and Ontology-based Improvements

- Use Case 1: System Extensibility
- Use Case 2: Improved Discovery of External Sensor Observation Services
- Use Case 3: Flexible Information Exchange (between well established systems)
- Use Case 4: Improved Search
- Use Case 5: Plausibility Checks
- Use Case 6: Improved Information Visualization

Agenda II

Lessons Learned

Semantic Technologies in SAP Prototypes & Products

- Active Information Store
- FindGrid

Future Application Areas: “The Business Web”



SAP & SAP Research

Agenda

1 SAP Overview

2 SAP Research Overview

SAP Today

53,800+

SAP employees worldwide

120

countries

25

industries

37

languages

75

country offices

1,200+

services partners worldwide



New Demands of Business Software

Instant use and instant value everywhere



Lower total IT cost

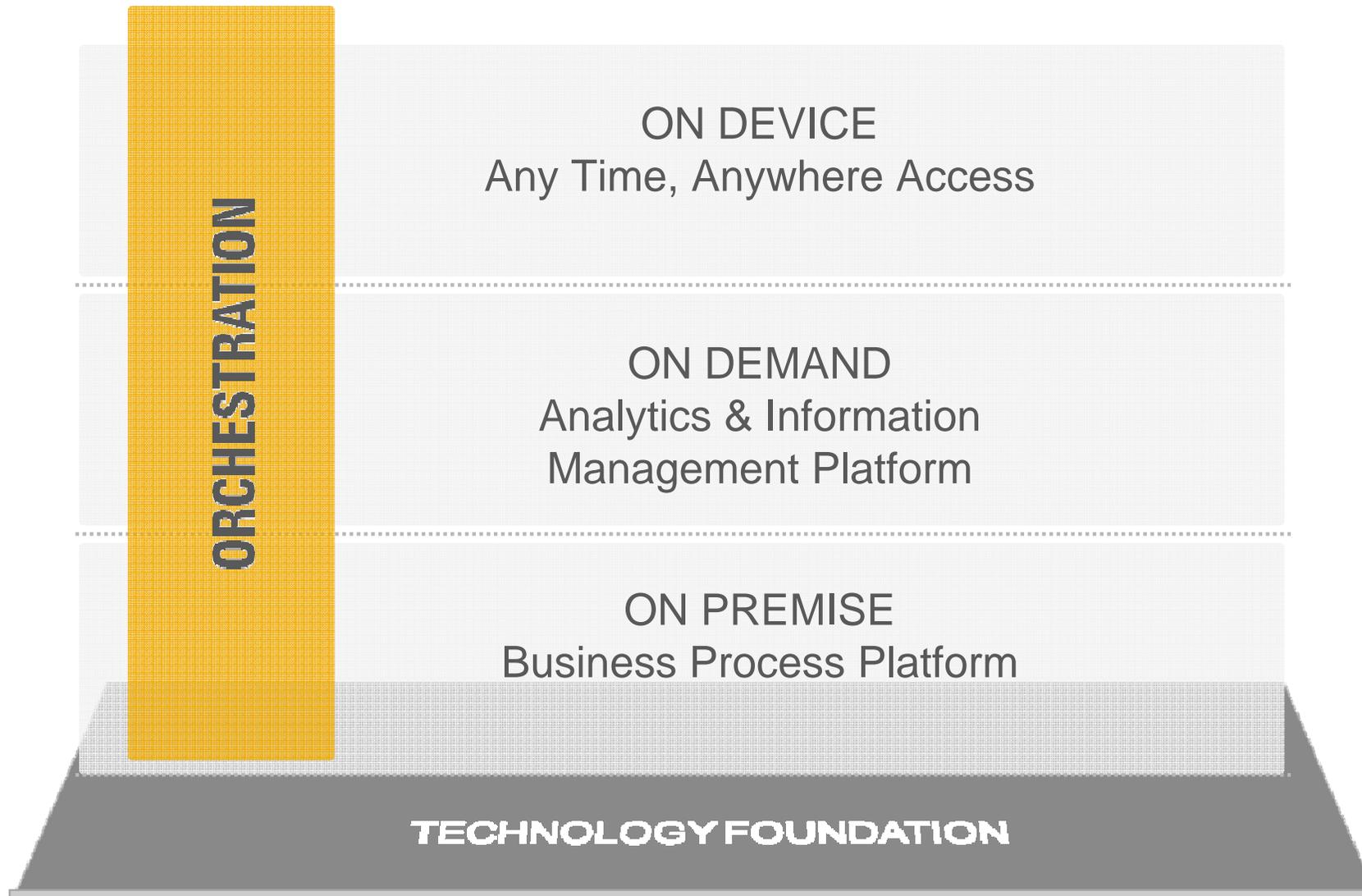


Enable sustainable growth

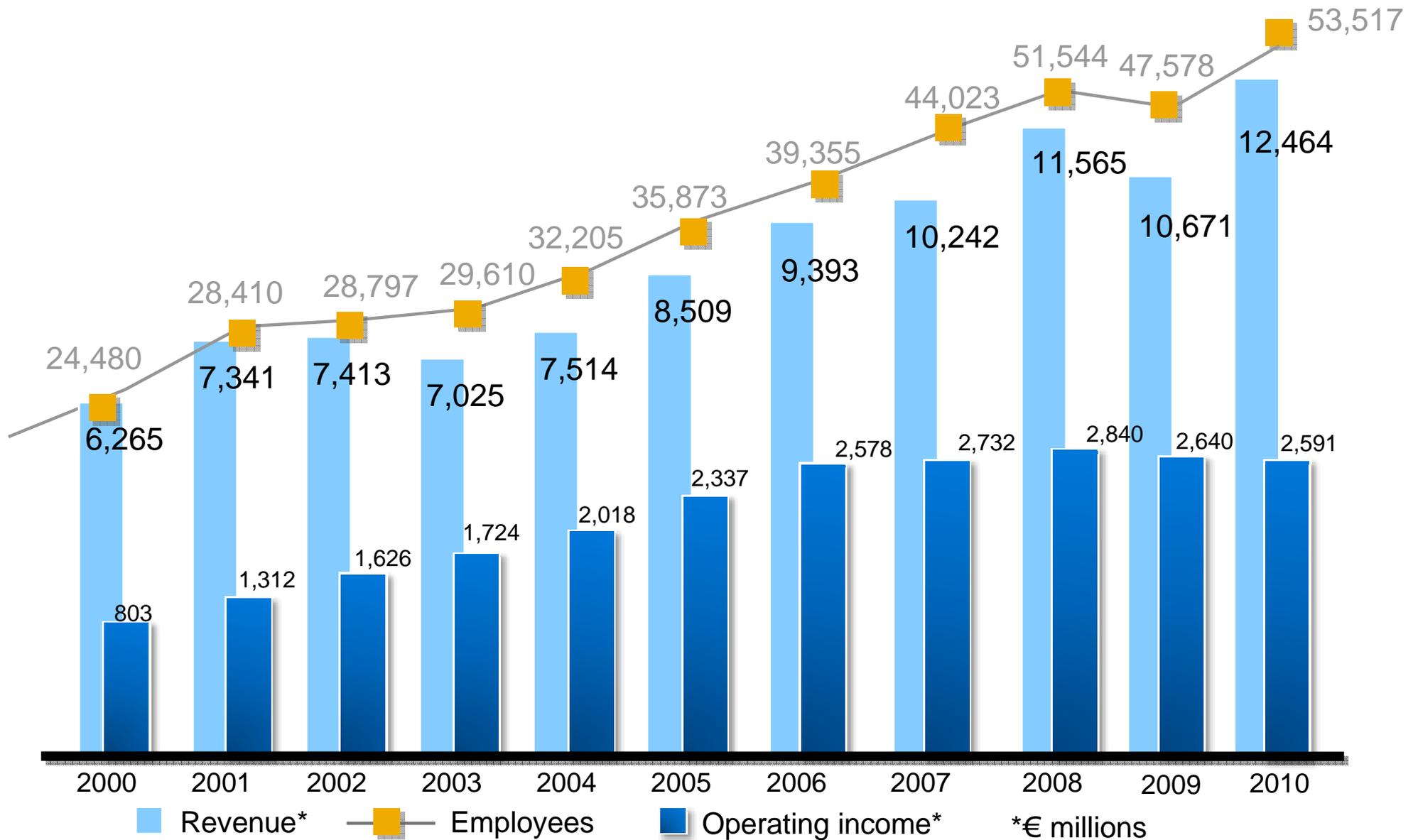


“The ultimate customer is the business consumer.”

SAP Product Strategy



SAP's Performance in the Last 10 Years



Agenda

1 SAP Overview

2 SAP Research Overview

About SAP Research

SAP Research is the **global technology research unit** of SAP, with a network of **19 research locations** worldwide covering a portfolio of **seven research practices**.

SAP Research's own network consists of **500 employees** (including PhD candidates) across five continents.

SAP Research has established a worldwide collaborative network with more than **800 partners from industry and academia**.

Strategic Objectives

Drive **business impact** by exploring and materializing emerging IT trends

Act as a **thought leader** to SAP and SAP's customers as well as partners

Conduct **collaborative** internal and external **research projects**

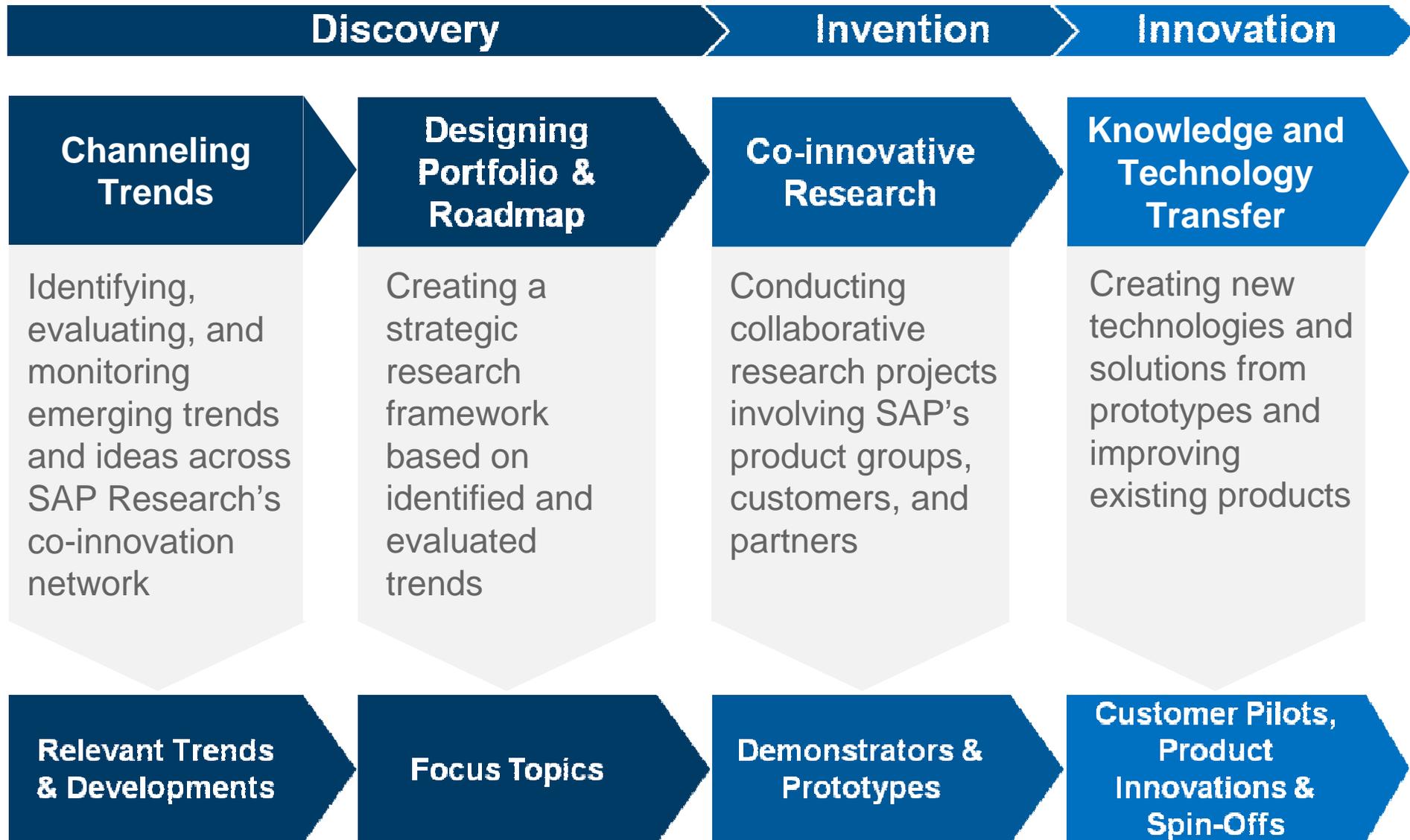
Co-innovate with customers, industry, and academic partners leveraging the concept of **living labs** as platforms for open innovation

Acquire and develop **top talents** for SAP

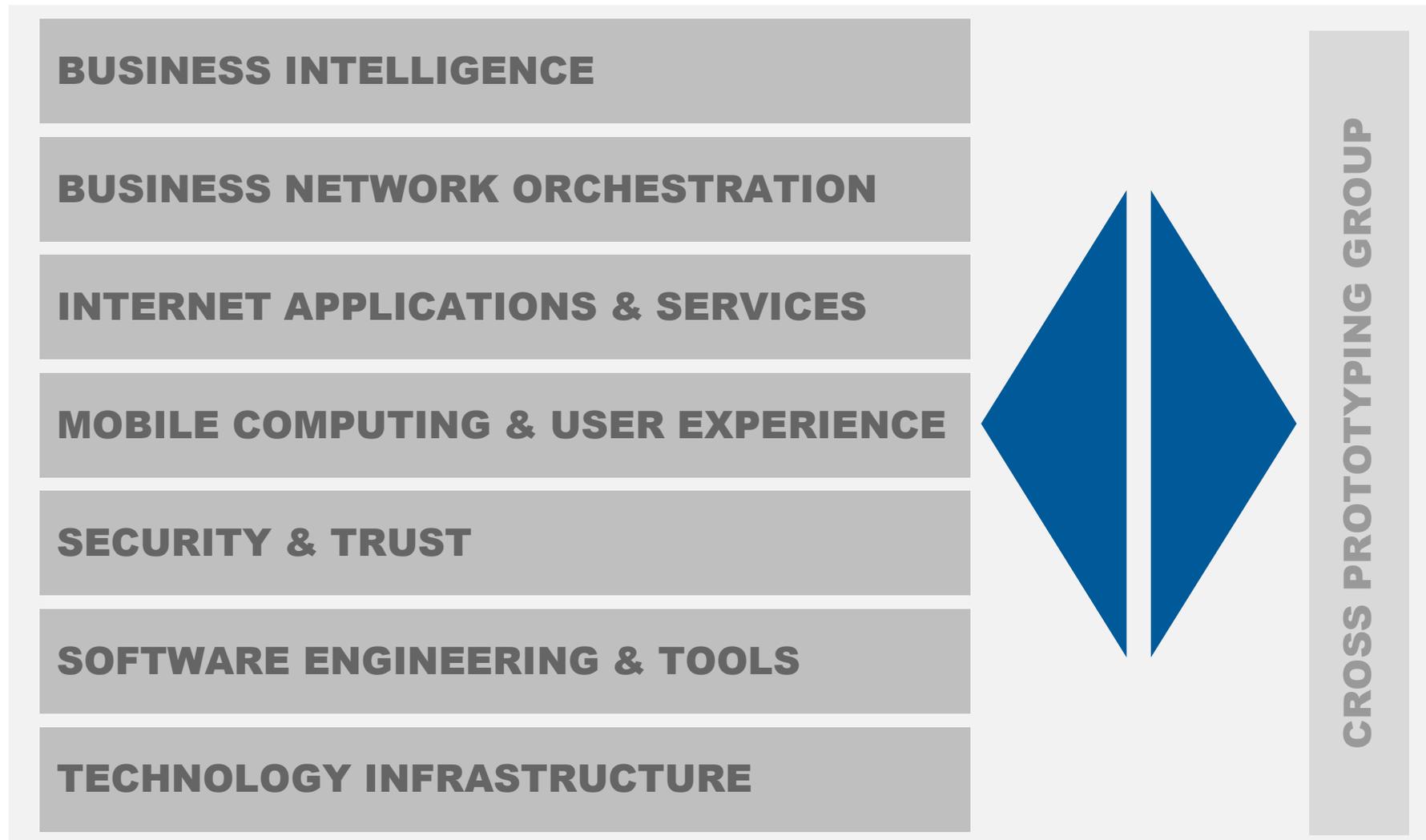
A Global Team



SAP Research Process



SAP Research Practices



SAP Research's Living Labs



Future Factory Initiative Dresden, Germany

Fostering research and development for the manufacturing industry



Future Retail Center Regensdorf, Switzerland

Streamlining retail, warehousing, and supply chain processes using various technologies



Future Public Security Center Darmstadt, Germany

Strengthening emergency response and simulation of control center operations



Technologies for Emerging Economies Pretoria, South Africa

Addressing the challenges of small, midsize, and micro-enterprises in developing countries

SAP Research's Living Lab Future Public Security Center

Location: SAP Research Darmstadt

Focus:

- Drawing on existing SAP Research expertise in the field of public security
- Strengthening emergency response and simulation of control center operations

Details:

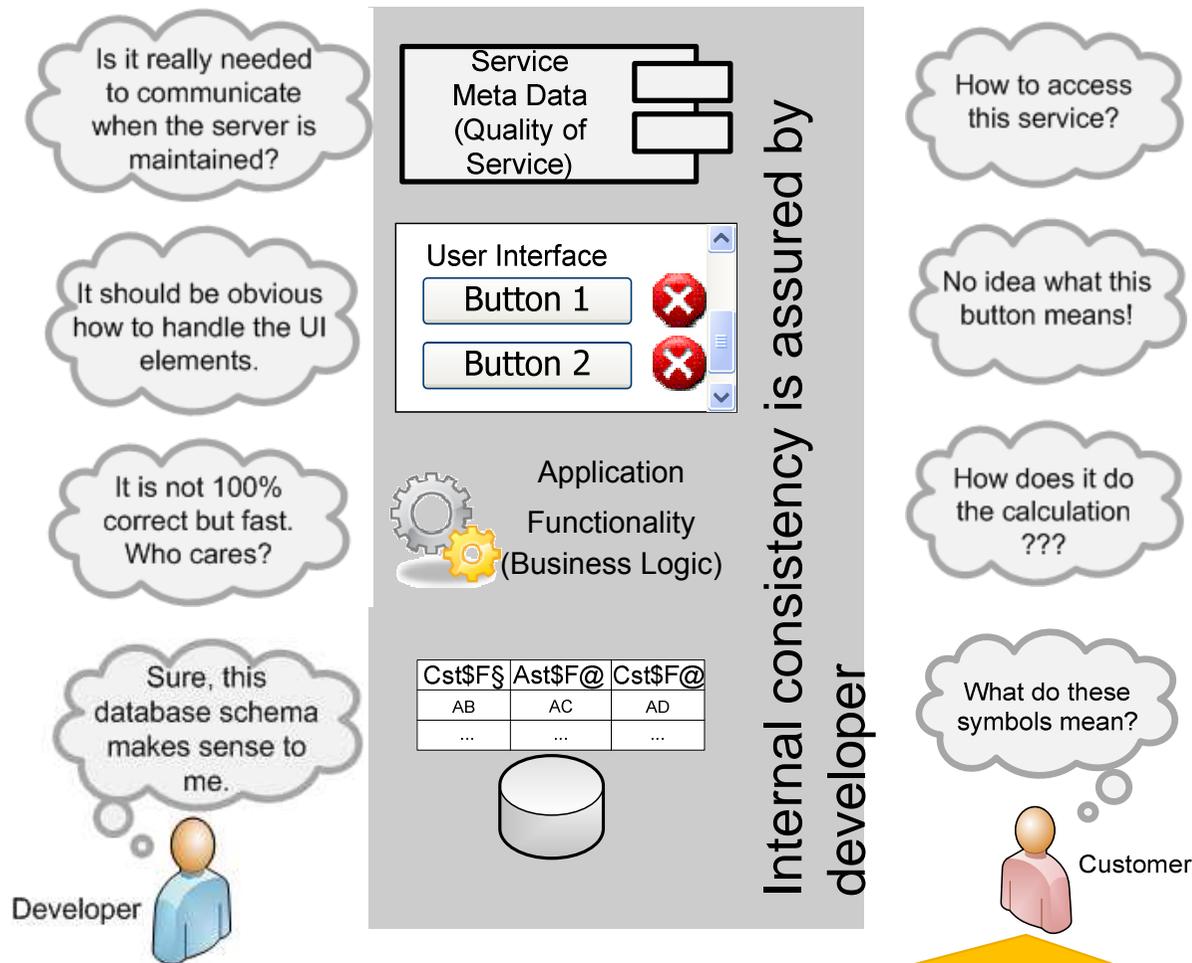
- User-oriented prototype solutions for civil protection and emergency response
- Disaster management command staff can use a multi touch screen to maintain a fast and comprehensive overview of the situation





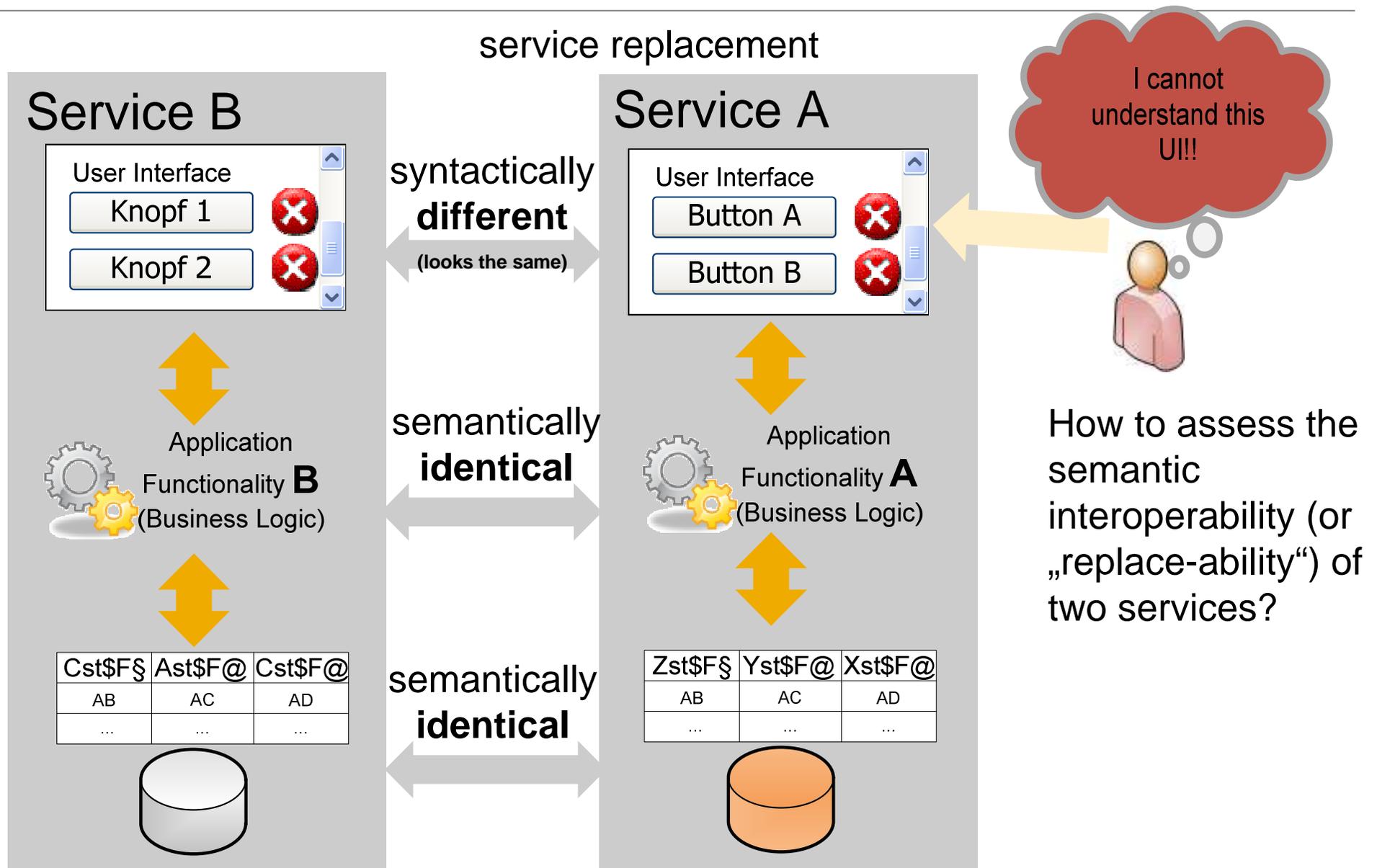
The Semantic Challenge (recap)

Meanings are not a big problem in a monolithic system



Explanation of the implicit meaning is delivered by tutorials, consultants, hot-lines and documentation

Implicit Semantics Create a Big Mess in Heterogeneous Distributed and modular Systems (Case II)





SAP Semantic Strategy

The time is now!

Enterprise adoption of Semantic Technology is at the intersection of three major trends:

Explosion of Data/Information Overload

- Large volumes of data can be turned into machine-processable semantics when related data is linked together and enriched with metadata.

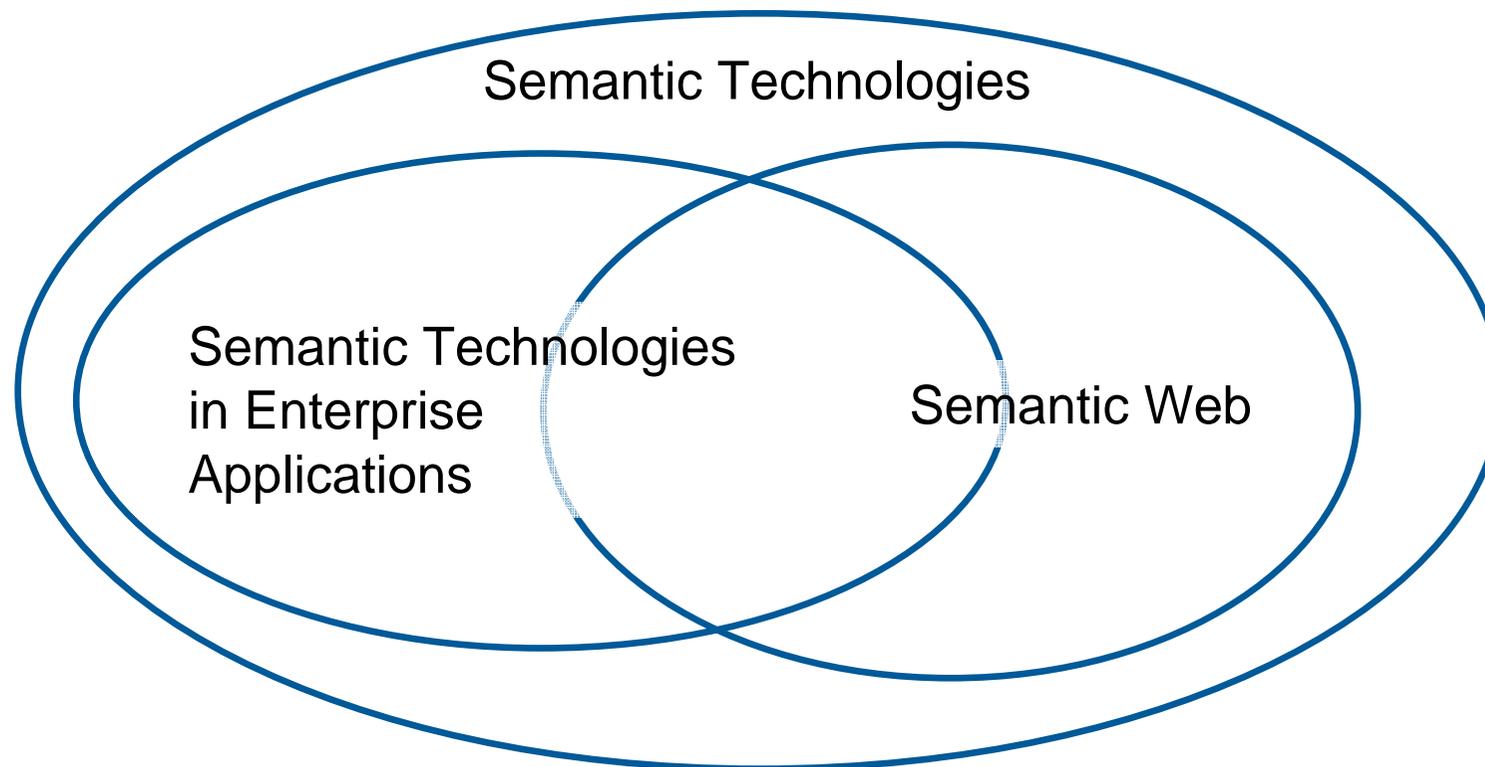
High-performance computing

- In-memory computing can make semantic processing of high volume of linked data feasible for enterprise applications

Semantic algorithms

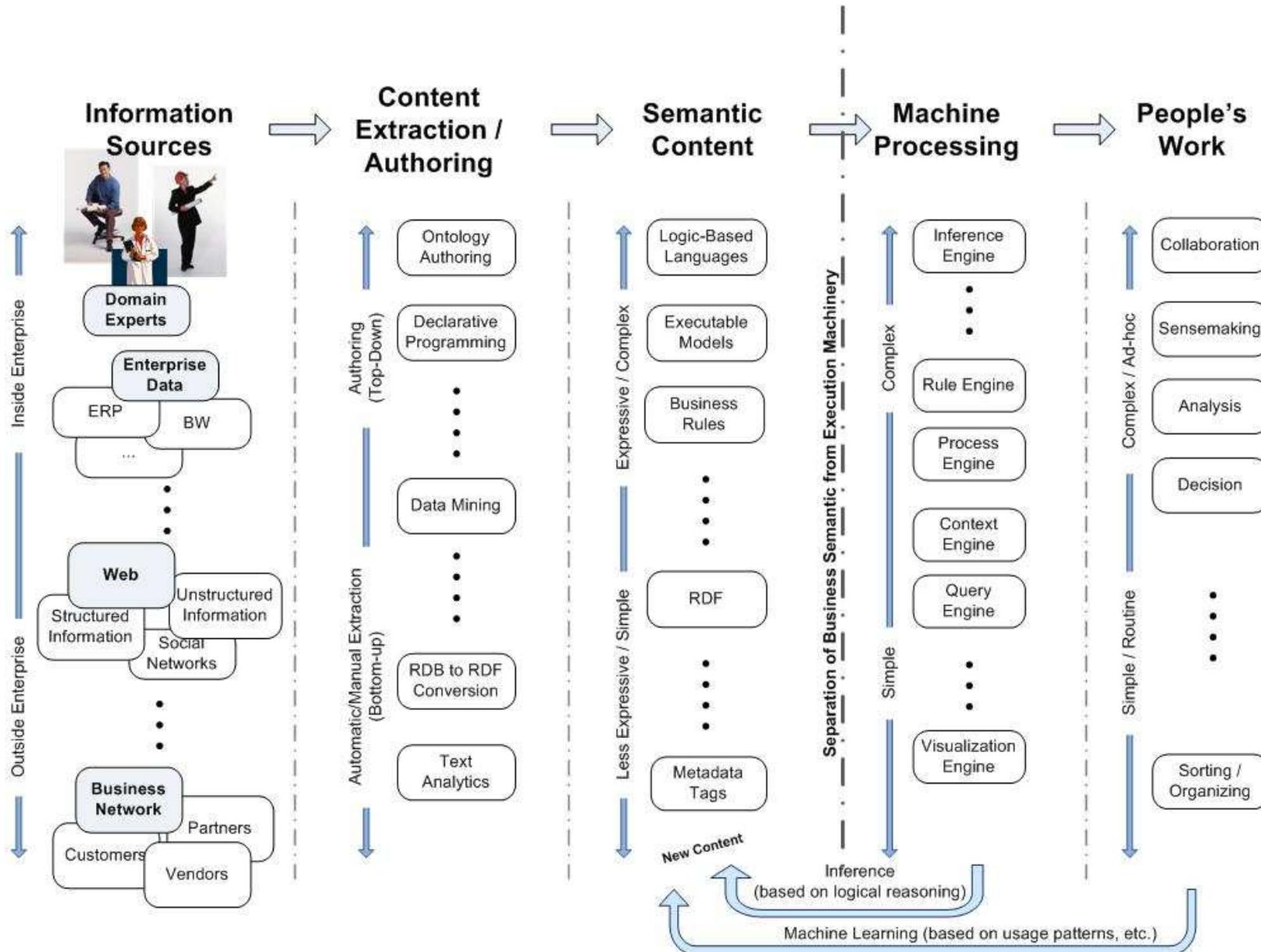
- Semantic processing of data via machine reasoning, natural language processing, etc., can deliver more intelligent and adaptable solutions for business

Semantics in Enterprise Applications

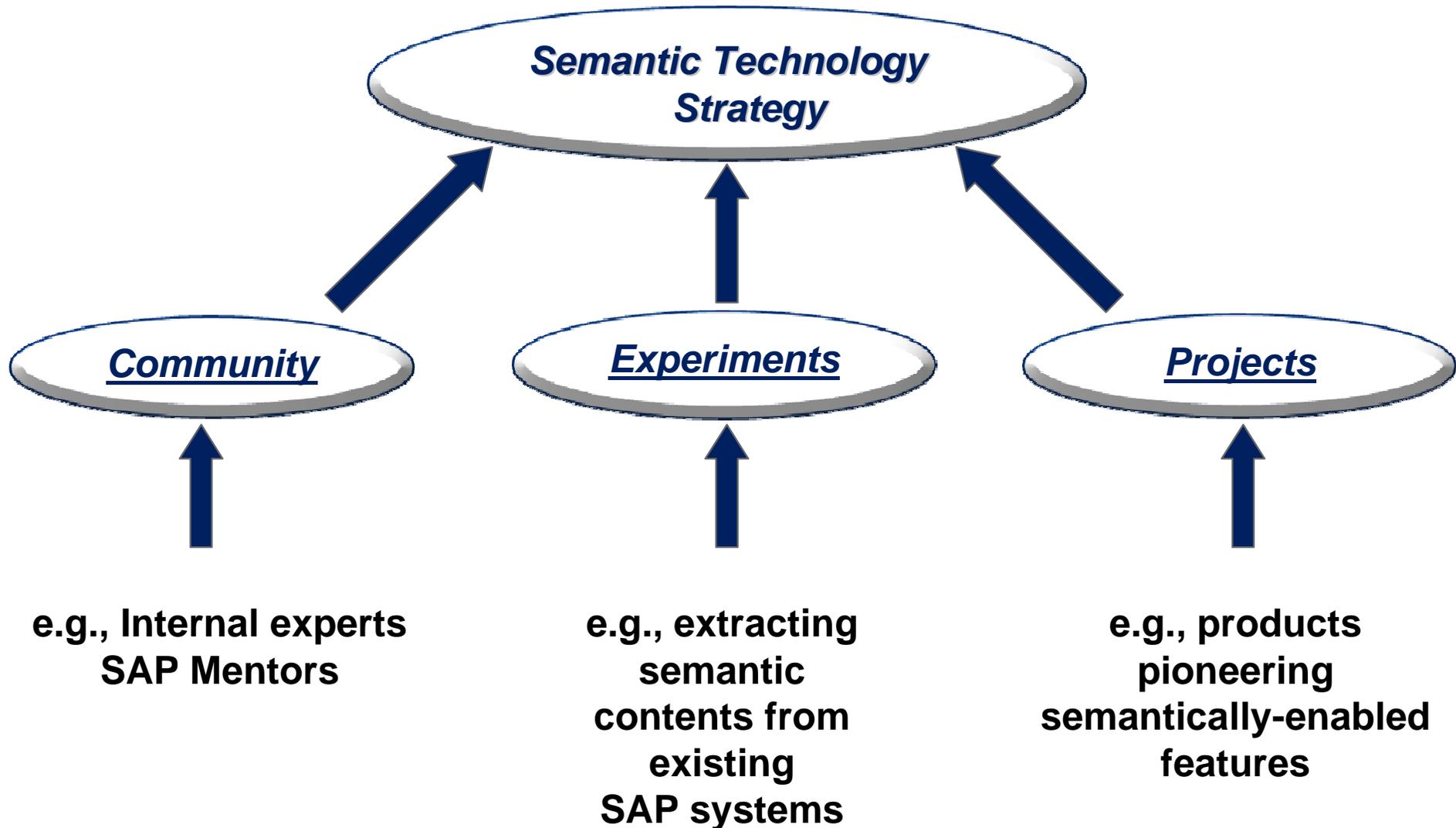


Semantic Technologies include – but are not limited to – the W3C Semantic Web

Semantic Technologies Landscape Map



Our Approach



Vision

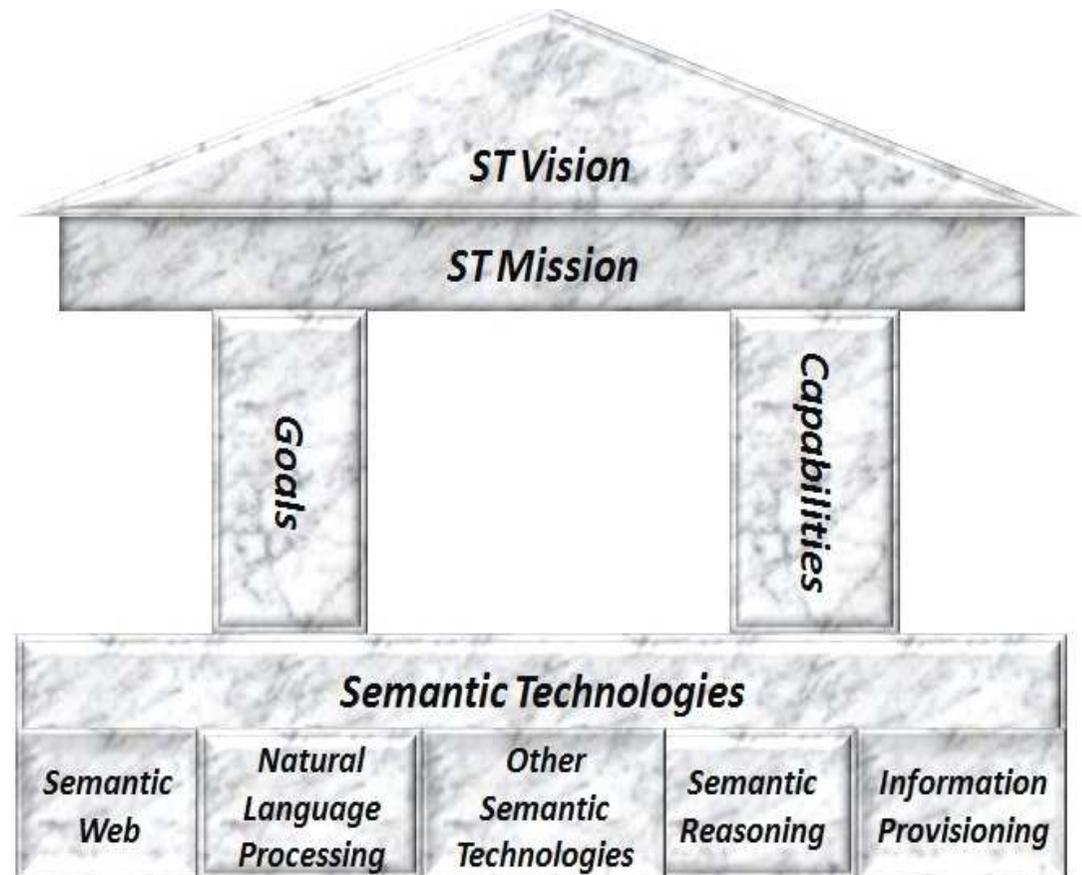
Semantic technologies make information clear in SAP enabled business and people networks

Enhanced value of information to our customers

Information semantically clear in SAP enabled business and people networks

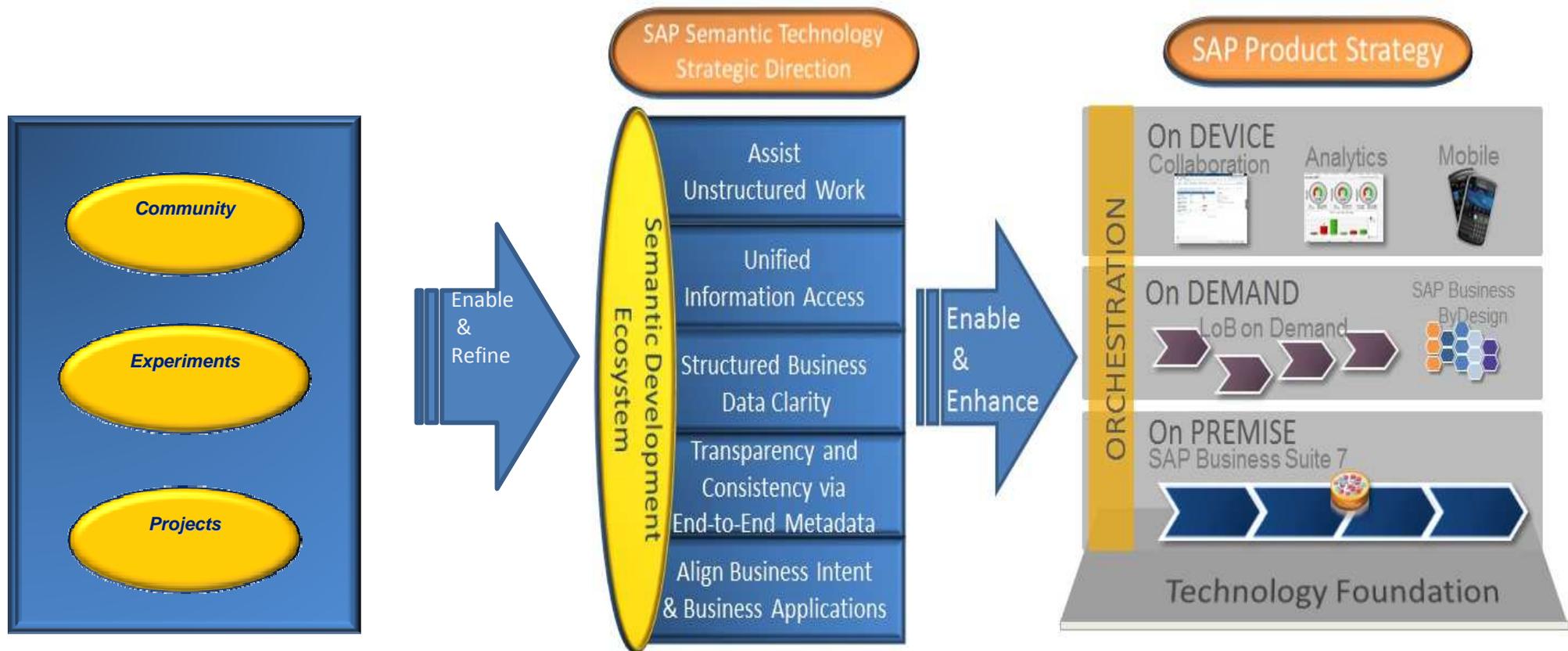
Machines help humans achieve their goals

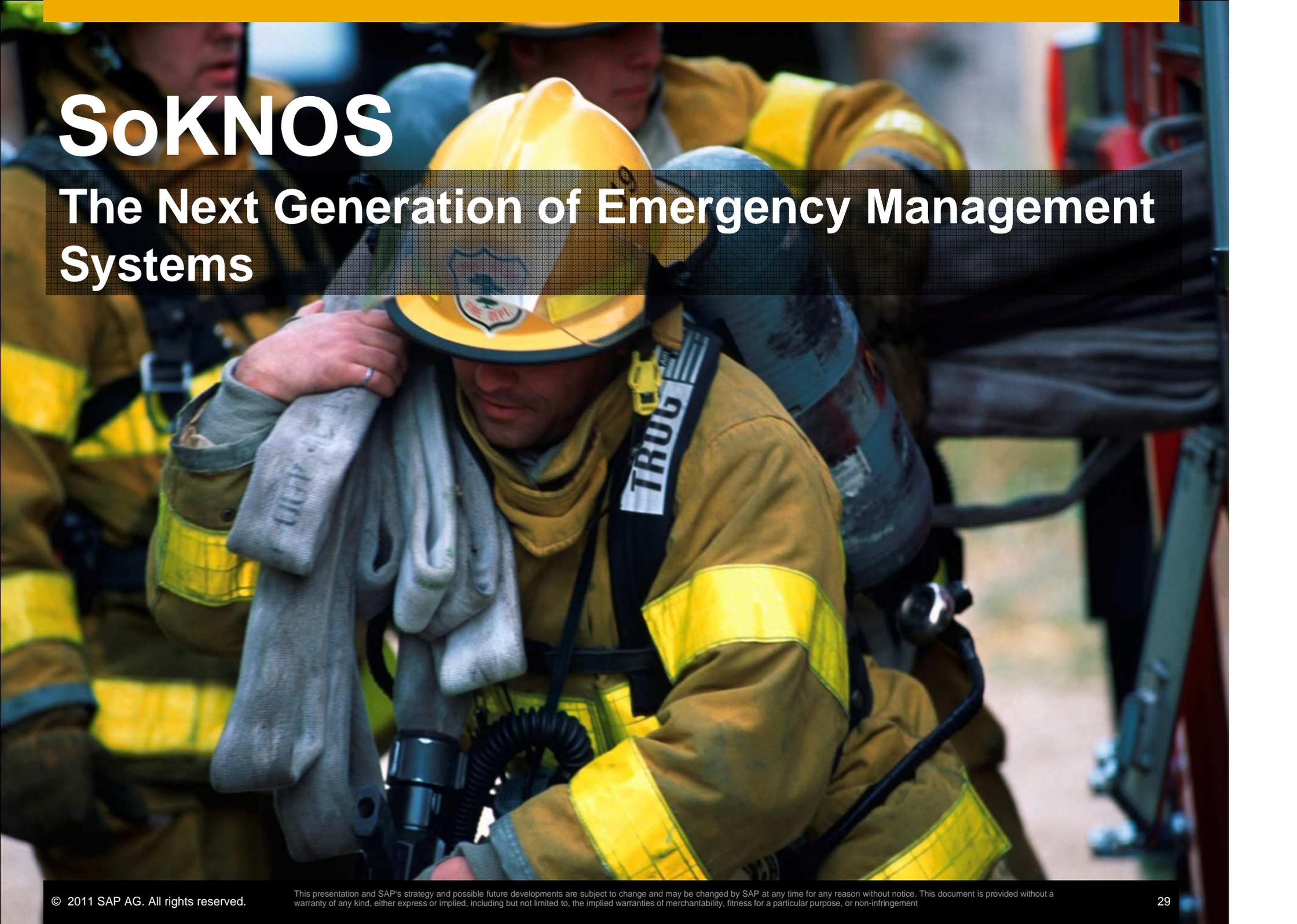
Bridge the gap between Business Applications and Business Intent on any platform across any network through any device



Strategic Vision

Semantic technologies make information clear in SAP enabled business and people networks

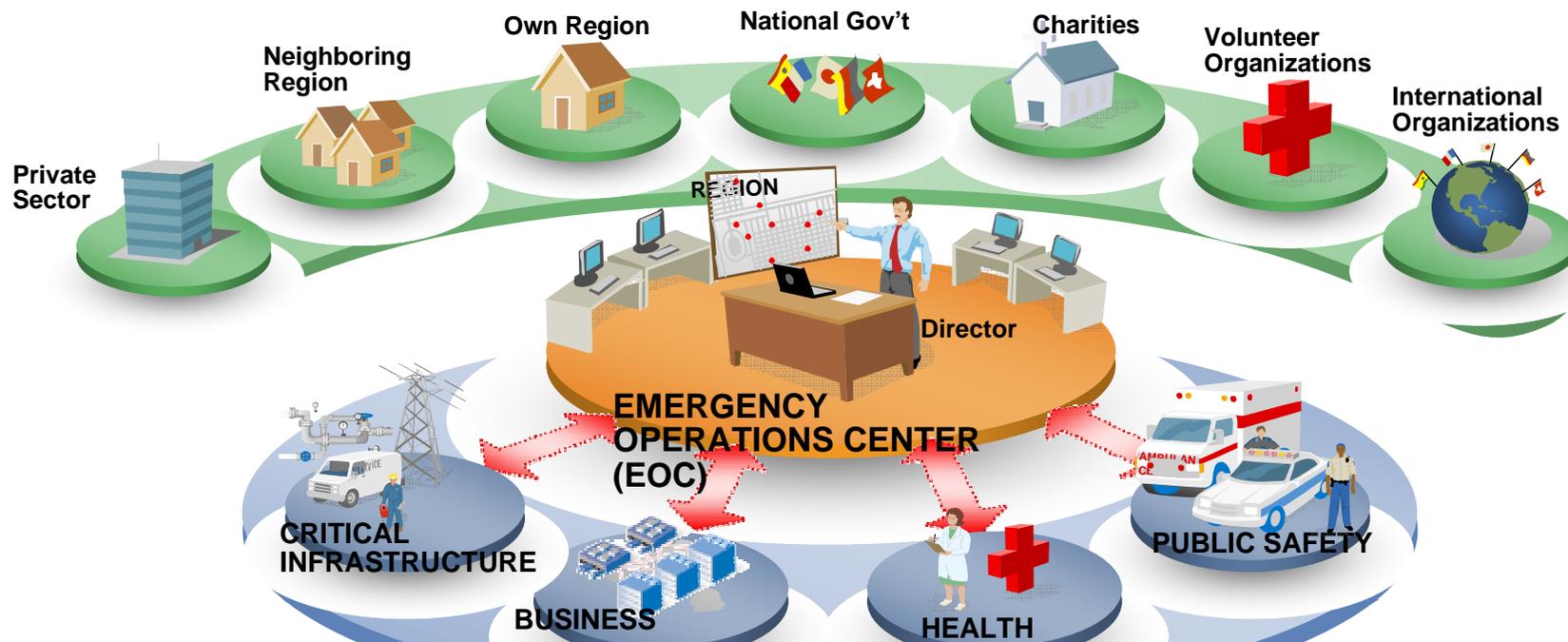




SoKNOS

The Next Generation of Emergency Management Systems

Current Situation in Managing Large Incidents



■ Incomplete Emergency & Disaster Picture



■ Disjointed coordination and capabilities of stakeholders



**INCIDENT
COMMAND and
EMERGENCY &
DISASTER
RESOURCES**

■ Ineffective resource/asset management

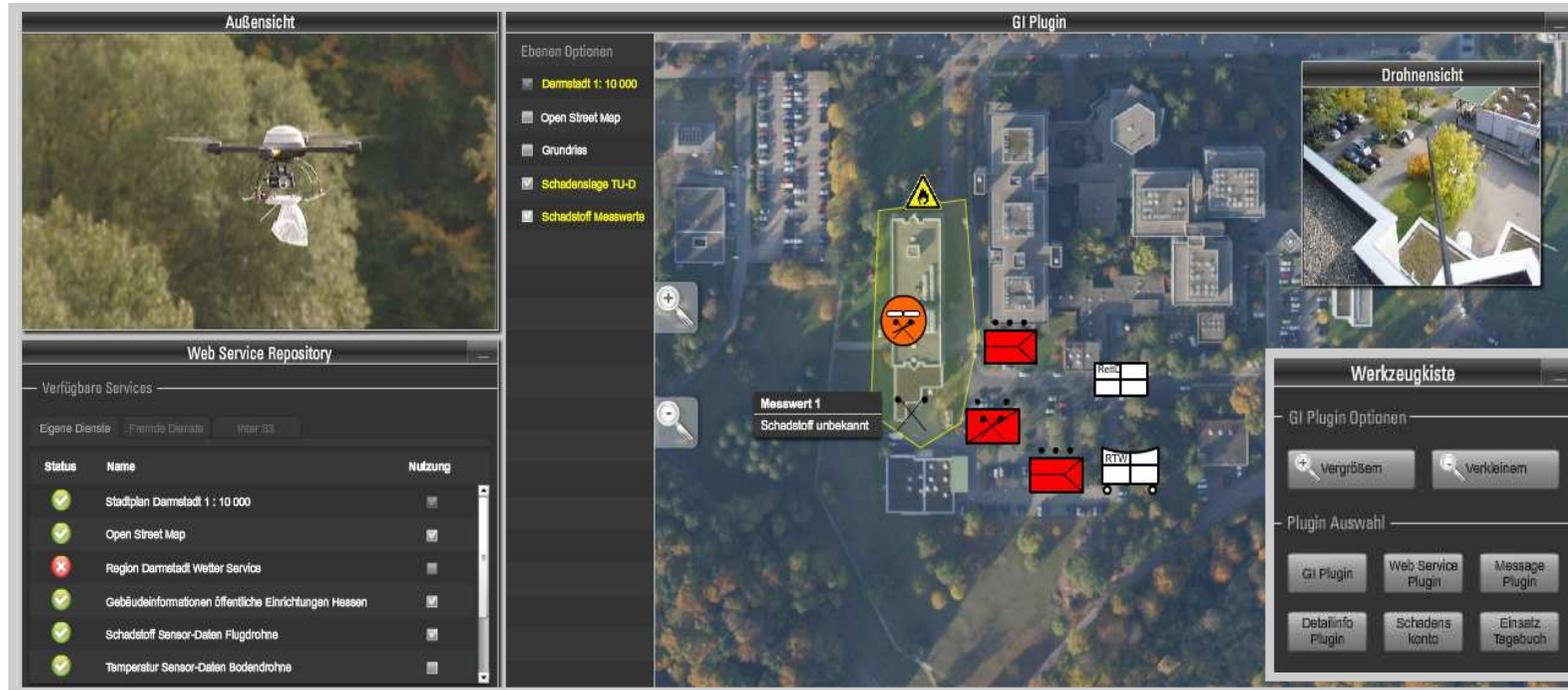


■ Recovery and reconstruction delays



EMERGENCIES & DISASTERS

SoKNOS Partner



GEFÖRDERT VOM



Berliner Feuerwehr



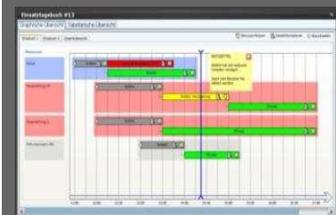
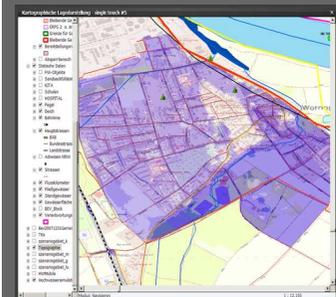
Berufsfeuerwehr Köln



Deutsche Hochschule der Polizei



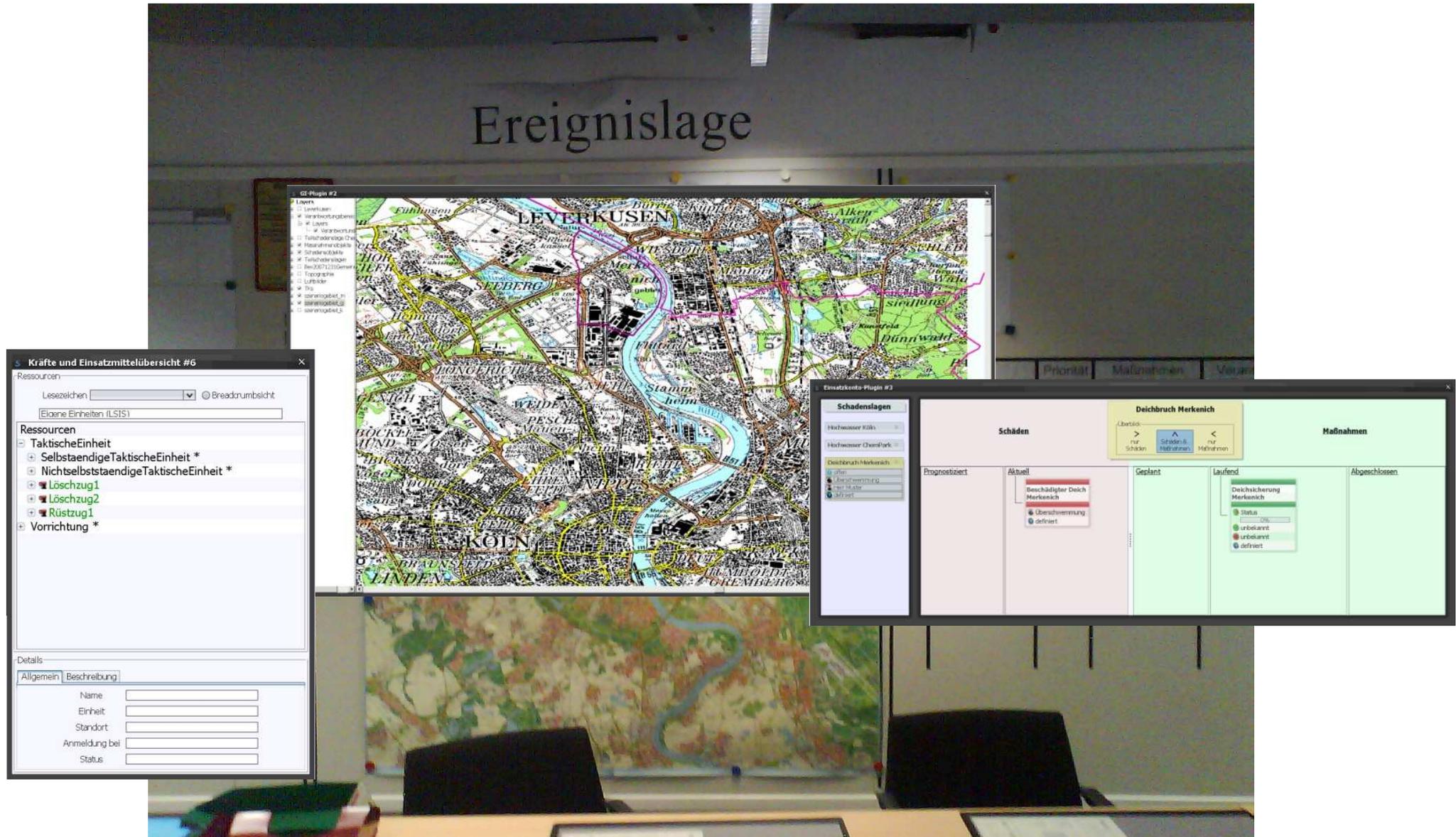
Vision & Ziele für das Katastrophenmanagement der Zukunft



Vision: Schnelle, informierte Entscheidungen reduzieren Reaktionszeiten. Hilfe kommt schneller und effektiver.

- **Gemeinsam die Lage erfassen**
- **Vernetzt Handeln**
- **Bürger und externe Experten besser einbeziehen**

SoKNOS – User-centric Approach



Highly Flexible, Service-based System. Adjustable to the Needs of the Current Situation

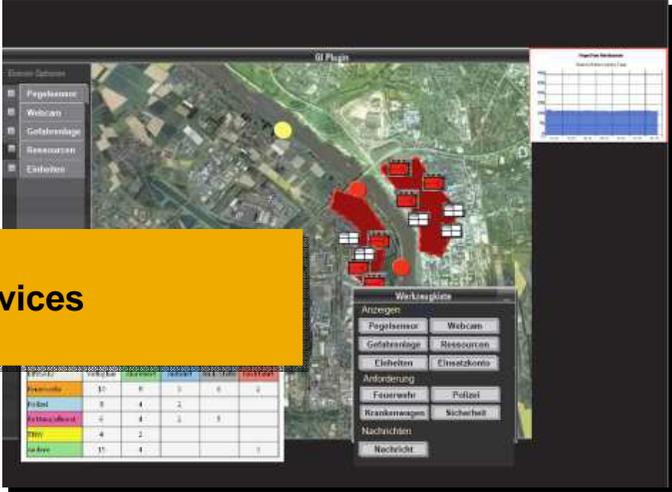
The screenshot displays the S³-Portal interface with several key components:

- Mission Account:** A dashboard showing incident details for 'Hochwasser Köln' and 'Hochwasser Worringen', including responsible personnel like Dr. Schmidt and Herr Mustermann.
- Tool Box:** A 'Werkzeugkiste #2' containing various standard and plugin tools for task execution.
- Situational Map:** A 'Kartographische Lagerdarstellung - single touch #5' showing a map of Worringen with various layers like 'Bleibende Ge', 'ERPG 2 o. 8r', and 'Grenze für G'. It includes a legend for different types of infrastructure and hazards.
- Web Service Repository:** A 'Web Service Verzeichnis Plugin #10' listing various services such as 'Mobiles Sensornetzwerk Merkenich' and 'SensorDataService - Rheinpegel'.
- Mission Diary:** An 'Einsatztagebuch #4' for 'Hochwasser Köln' showing a timeline of events from 04:00 to 23:00 on 09.02.2010, with a table listing incidents like 'Brand in Silo' and 'Hochwasser Köln'.
- Planning Tool:** A 'Deichsicherung' planning tool showing a flowchart of activities: 'Deichueberpru...' leading to 'Ueberprüfung...', which then branches into 'Bevoelkerung ...' and 'Evakuierung', both leading to a final state.

Focus: Service - Integration



Messages



Web Services



Multimedia-information



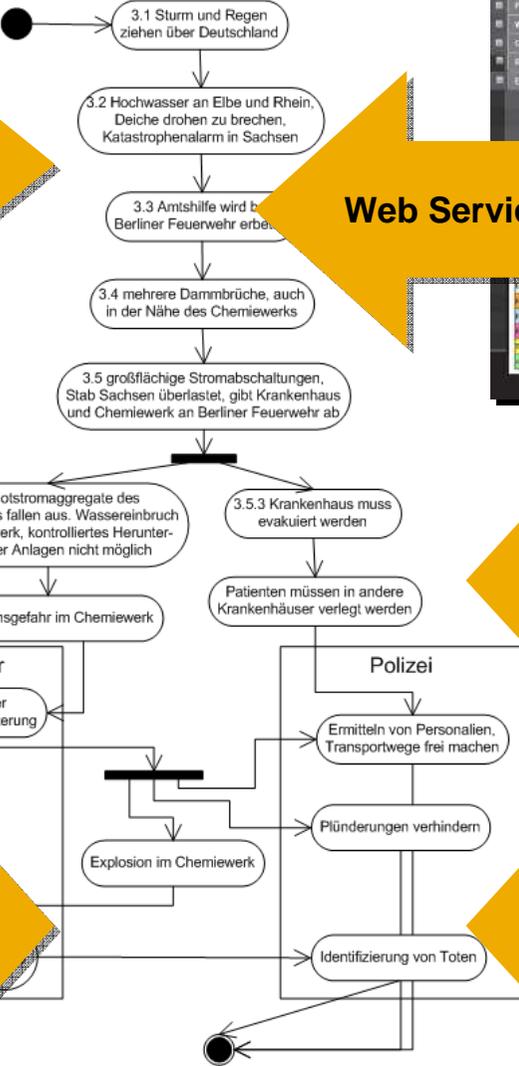
Sensor Information



Repositories



Mission Plans



New Generation of Emergency Management Systems: SoKNOS Prototype



Kanzlerin Dr. A. Merkel und Gouverneur A. Schwarzenegger



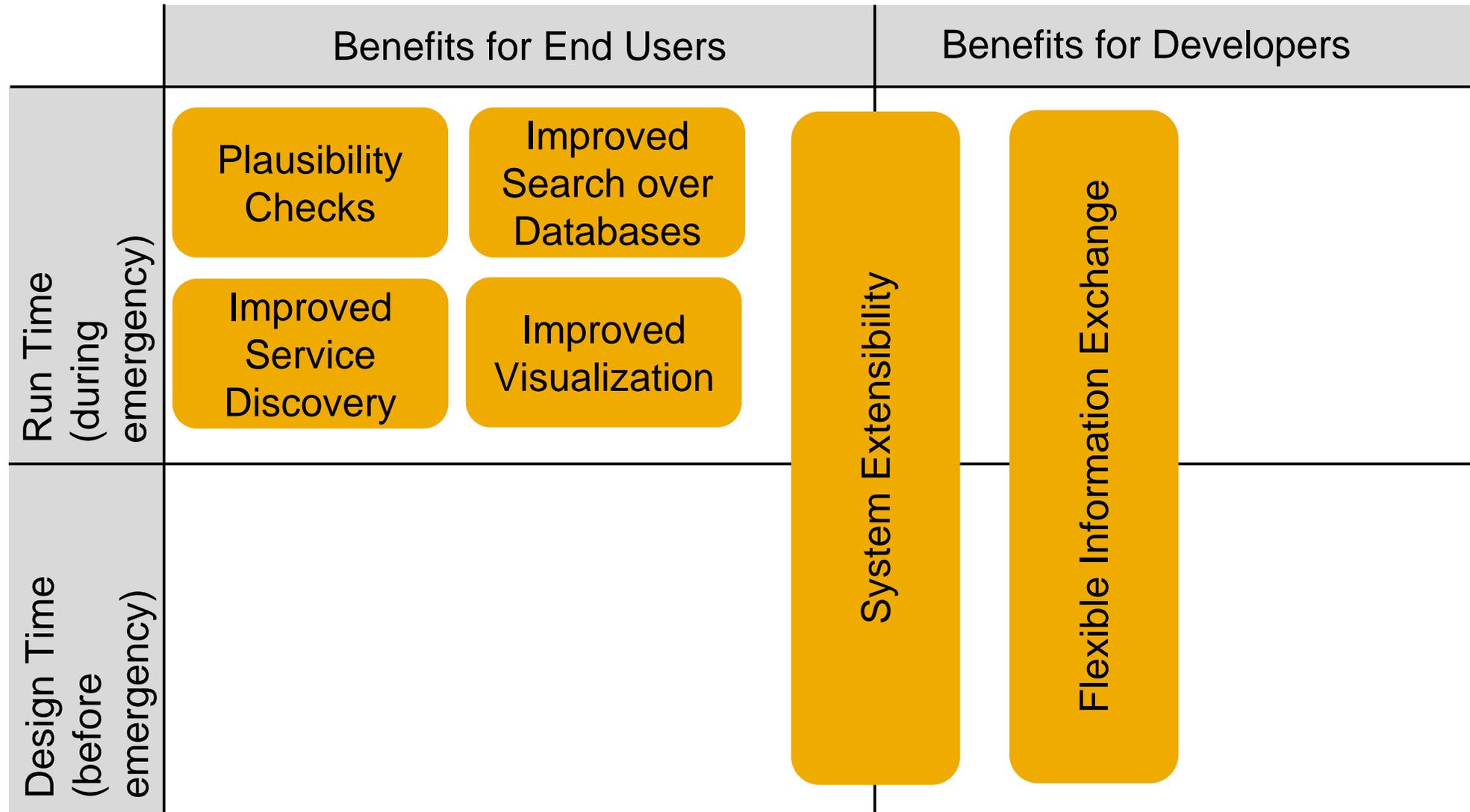
David Skellern, CEO NICTA



Overview Use Cases

How can semantic technologies support modularized and distributed IT Systems?

Semantic Technologies: Central Use Cases for IT-Systems

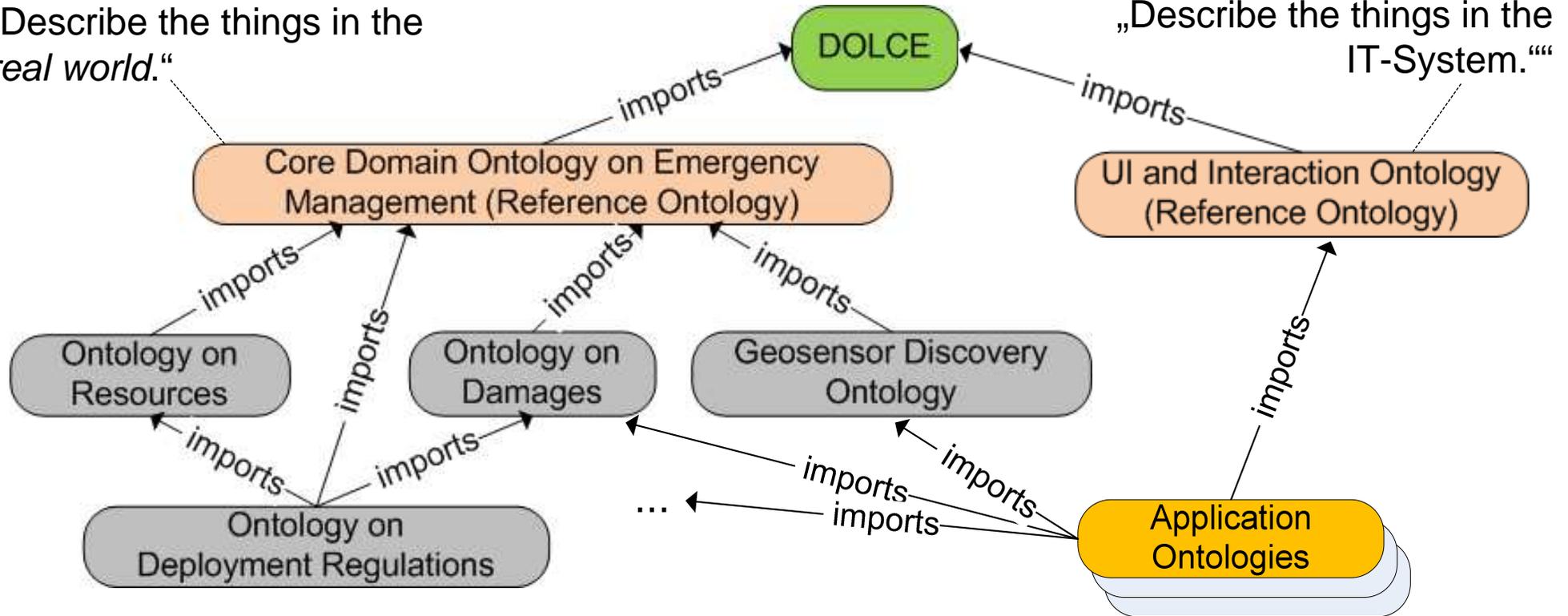




Behind the Scene: Ontologies

Ontology Stack

„Describe the things in the
real world.“

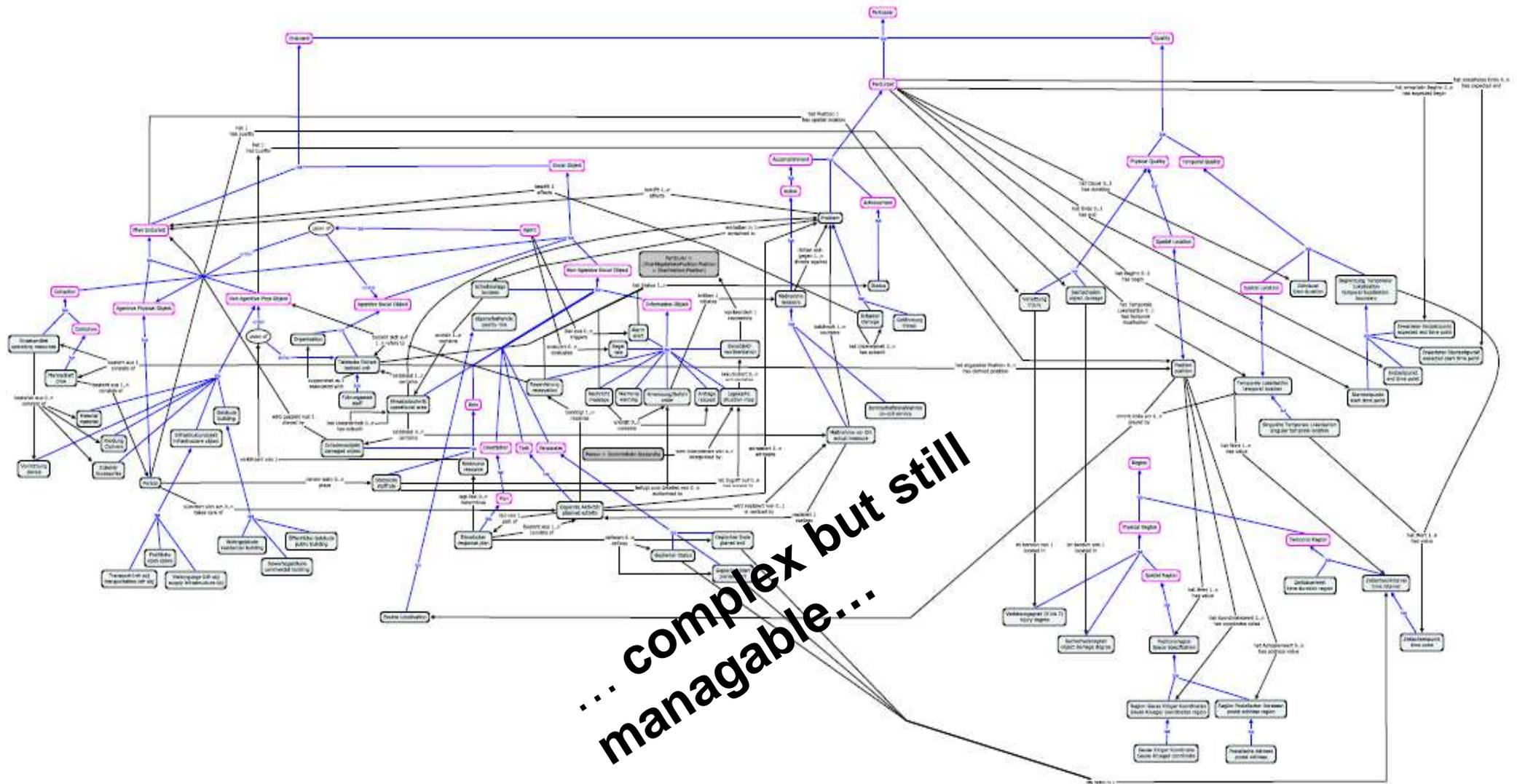


„Describe the things in the
IT-System.“

The top-level ontology DOLCE constrains the domain and application ontologies.

Result: High conceptual flexibility on lower levels while maintaining comparability of concepts via top level.

Reference Ontology for Emergency Management



... complex but still manageable...



Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
Observation Services**

Use Case 3: Flexible Information Exchange

Use Case 4: Improved Search

Use Case 5: Plausibility Checks

Use Case 6: Improved Information Visualization

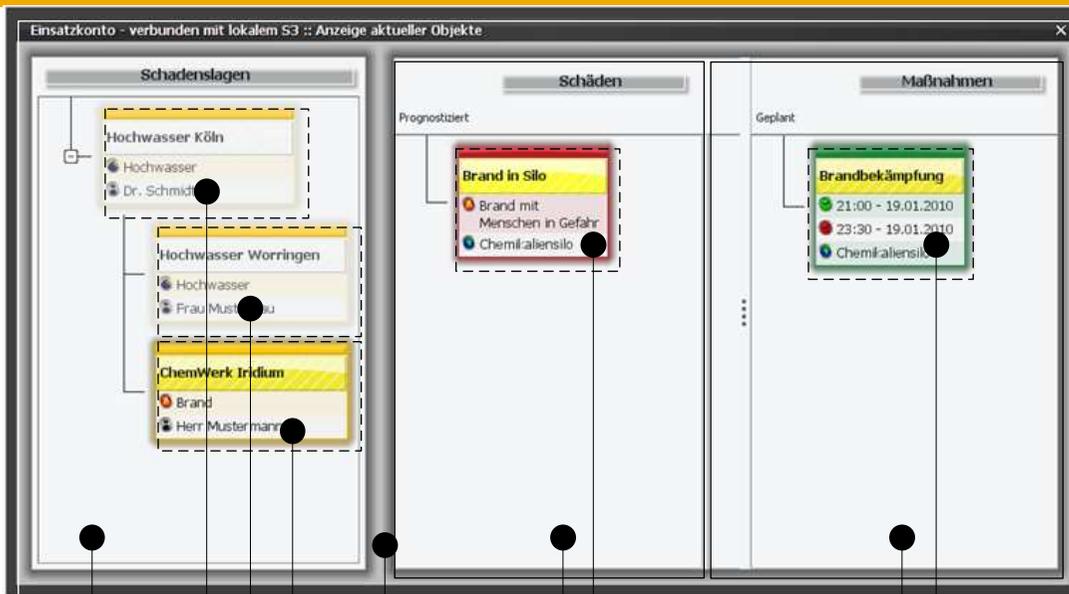
Semantics-based Integration of System Modules in SoKNOS

The screenshot displays the SoKNOS user interface. At the top left, there is a 'SP-Portal' header. The main area is dominated by a map of the Rhine region, showing cities like LEVERKUSEN, SEEBERG, and KOENIGSBERG. A red circle highlights a specific area on the map, and a red arrow points to it from the text 'select & highlight'. Below the map, there is a panel with a form and a graph. The form contains fields for 'Vorgang' and 'Verantwortlich', and a 'Vorschau' button. The graph, titled 'Projektaktivitäten', shows a line chart with a decreasing trend. A red arrow points from the text 'drag & drop' to the map area.

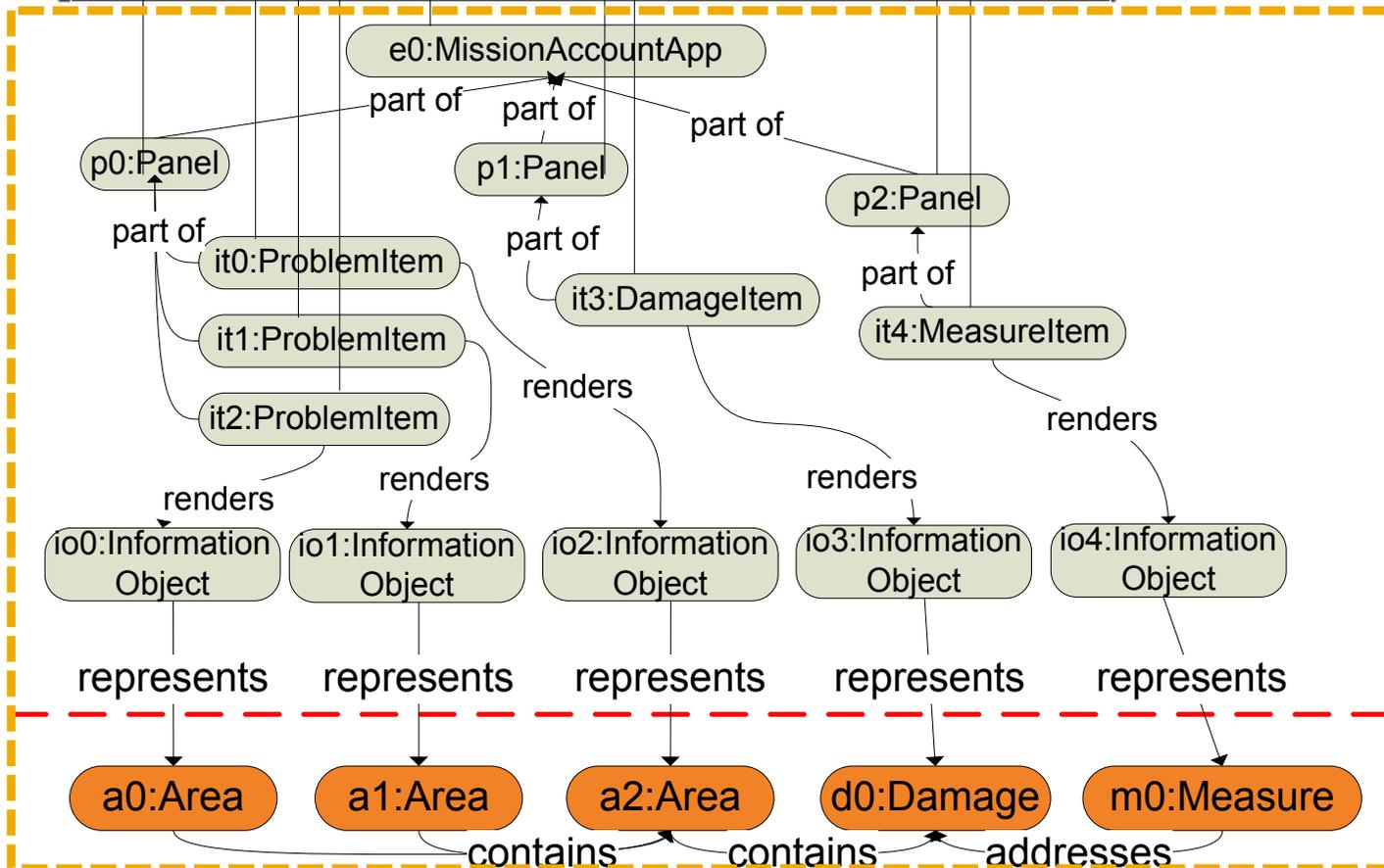
select & highlight

drag & drop

Information exchange between (really!) independent modules
→ Quick configuration of the system. Advantage: high flexibility to adopt to current situation.

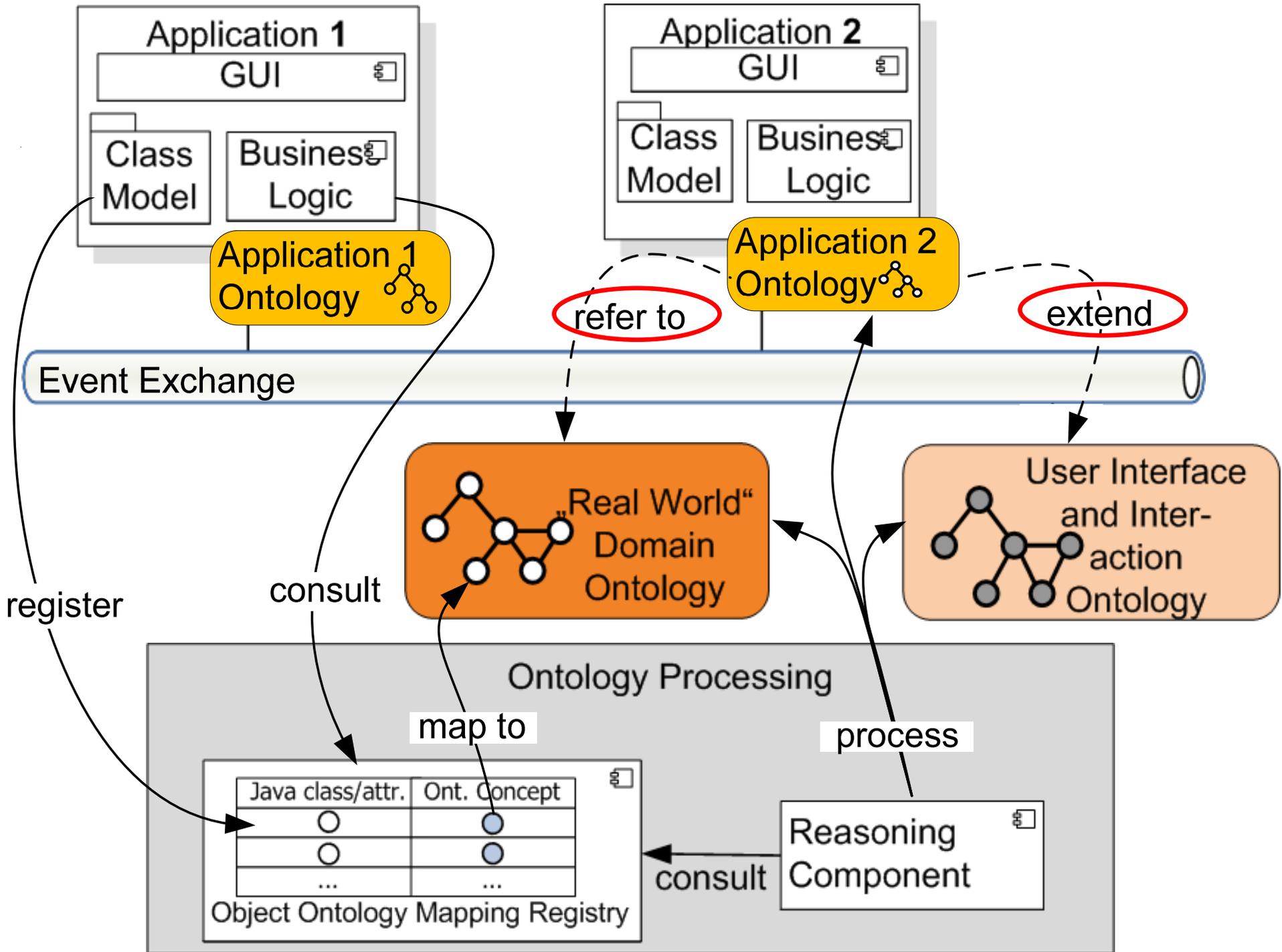


Specialization of the UI Ontology & Snippets from the Domain Ontology
 → **Application Ontology**

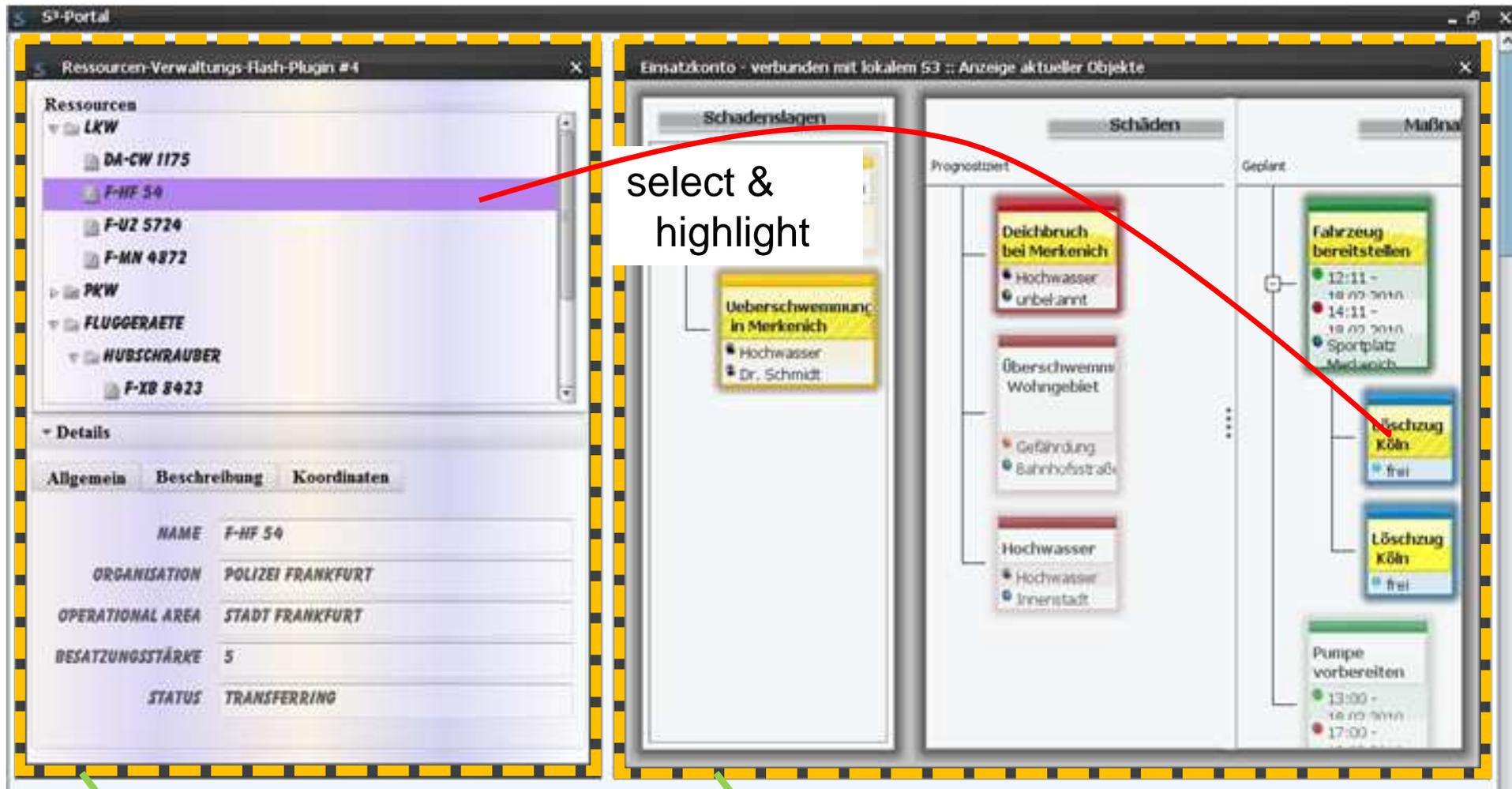


User Interface & Interaction Domain Ontology

Real World Domain Ontology



Integrating Applications developed in Flex resp. Java



Flash Application for
Ressource Management

Java Application
„Mission Management Tool“



Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
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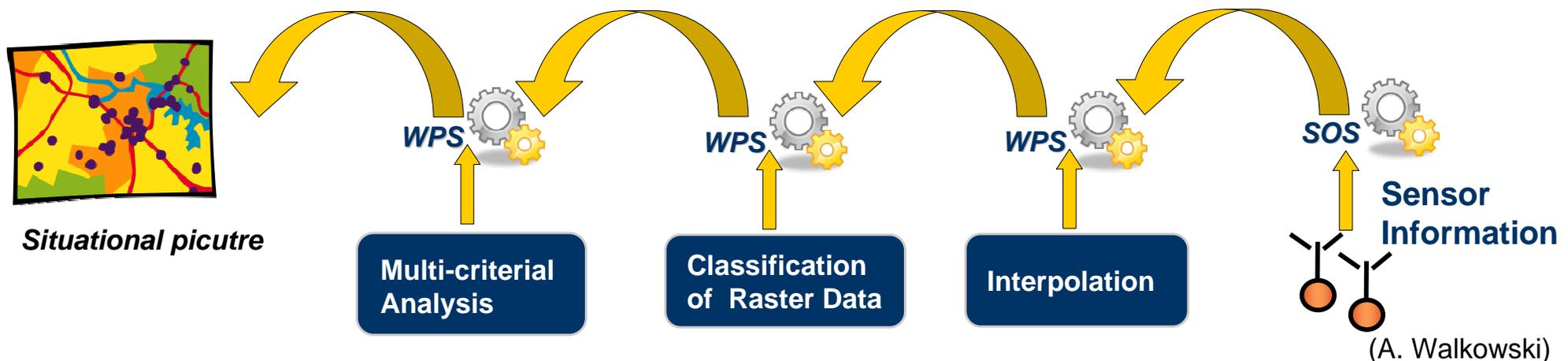
Use Case 2: Improved Discovery of External Sensor Observation Services

Motivation:

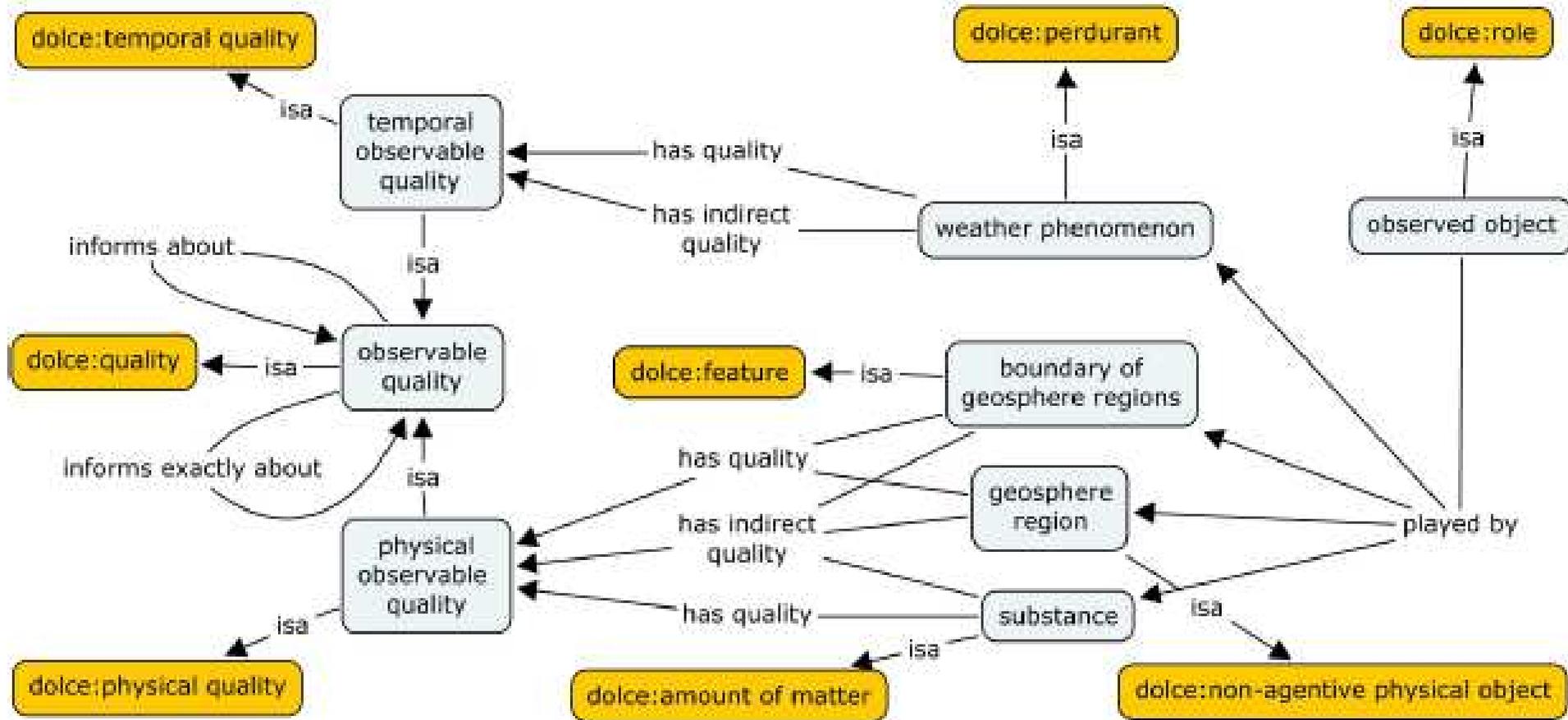
- An accurate picture of the crisis situation is essential.
- Sensor Services can deliver this information, but finding them under time pressure is difficult.
- Enable the crisis management team to find sensor observation data fast and reliable.

Solution:

- Semantic annotation of Web Services designed according to the SOS specification (OGC).



Ontology for Sensor Observation Services



The ontology is based on the OGC specification for sensor observation services.

Ontology-based Search for Sensor Observation Services

User specifies via the ontology:

- Feature (entity) of interest
entity (e.g. wind, water body,)
- Observed quality of that entity
(e.g. speed, direction, depth,
concentration of x)

The approach extends existing
OGC standards.

**Goal: Semantic support for
catalog services**

The image displays two side-by-side screenshots of a web application interface for ontology-based search. Both screenshots show a search bar at the top with the text 'Flu' and 'Wasserstand' respectively. Below the search bar is a tree view of ontology classes. The left screenshot shows a tree view with 'Flu' selected, and the right screenshot shows a tree view with 'Wasserstand' selected. Both screenshots include a search bar, a list of ontology classes, a timeline, and search buttons.



Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
Observation Services**

Use Case 3: Flexible Information Exchange

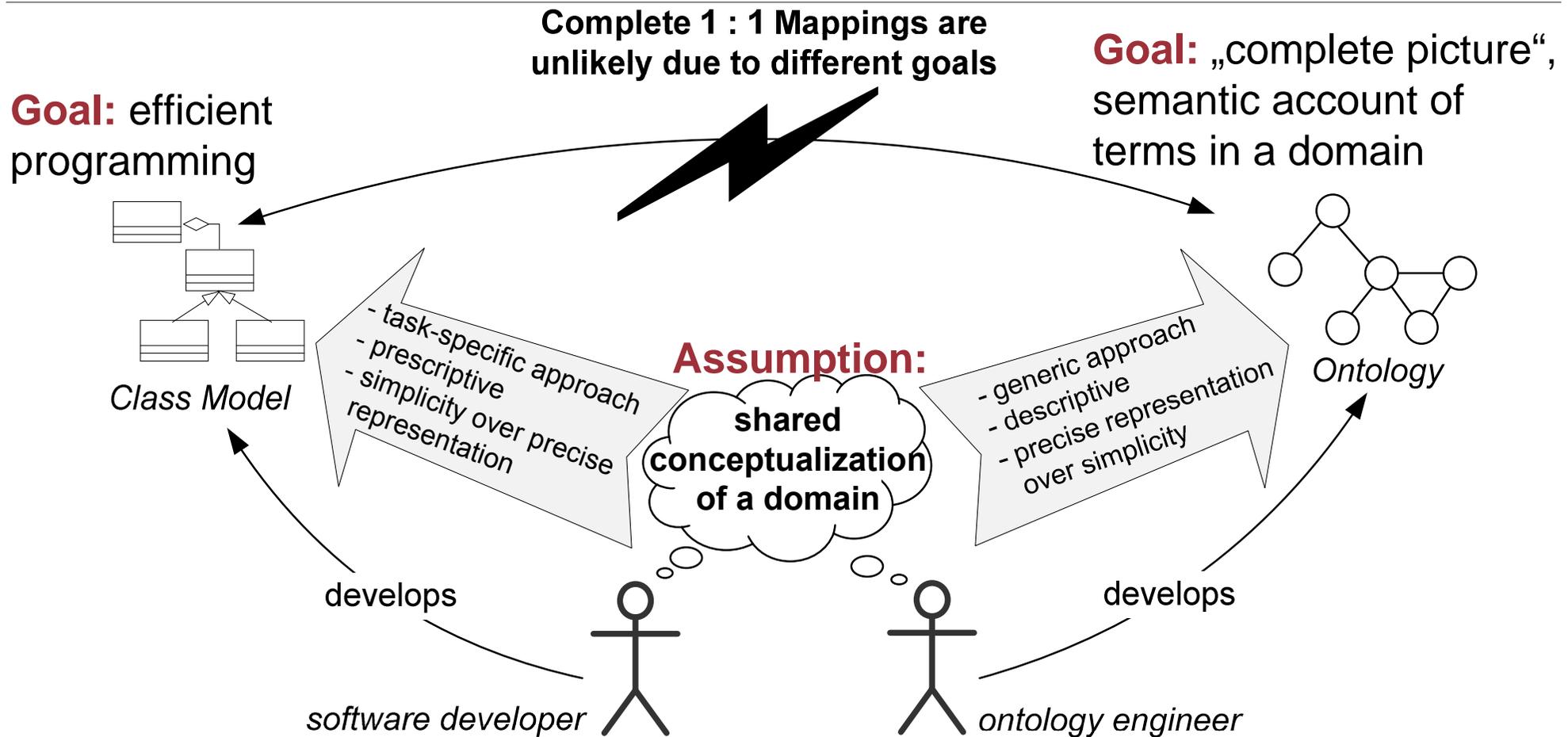
Use Case 4: Improved Search

Use Case 5: Plausibility Checks

Use Case 6: Improved Information Visualization

Data Models and Ontologies Serve Different Purposes

Goal: Flexible Information Exchange → 1:1 Mappings are Not Helpful



Good software requires both:

1. Efficient code (fast, reliable, easy to maintain)
 2. Sound and formal semantics of the exchanged information items
- Both requirements need to be fulfilled without hampering the other.

Example: Oil & Gas - ISO 15926 Reference Ontology and Datamodels in IBM IIF

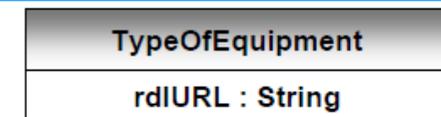
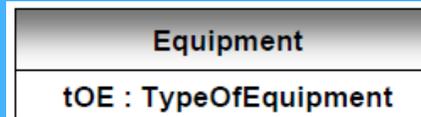
ISO 15926 has 10.000+ equipment types represented as OWL classes.

Representing each such OWL class per equipment type as a UML class would lead to 10.000+ sparsely populated DB tables.

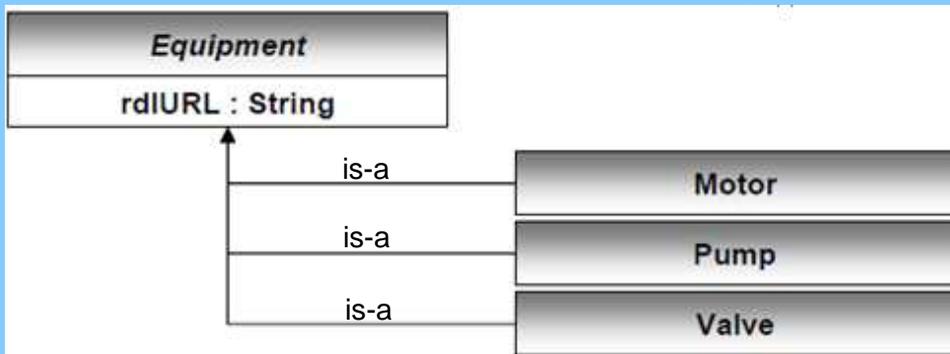
Therefore, IBM's Integrated Information Framework deviates from the standard by introducing a pragmatic class model.

At development time: Terms from the ontology are used to develop efficient class model

Pragmatic Class Model

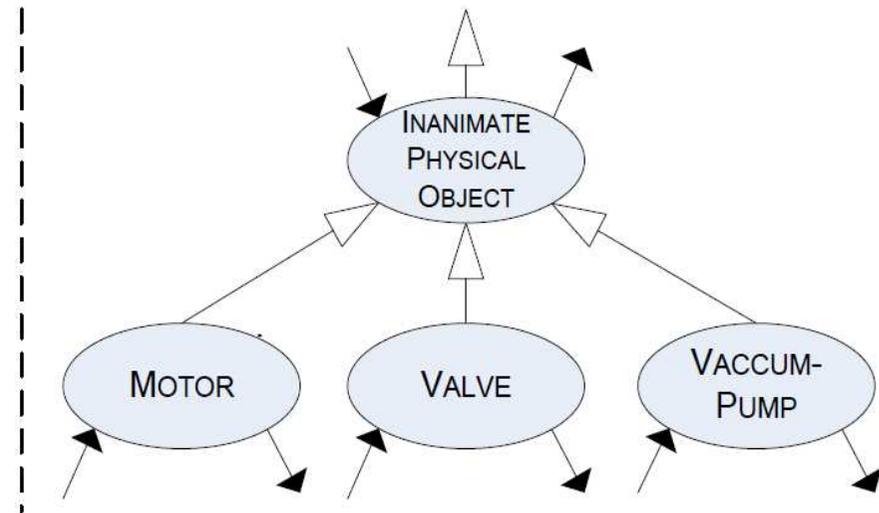
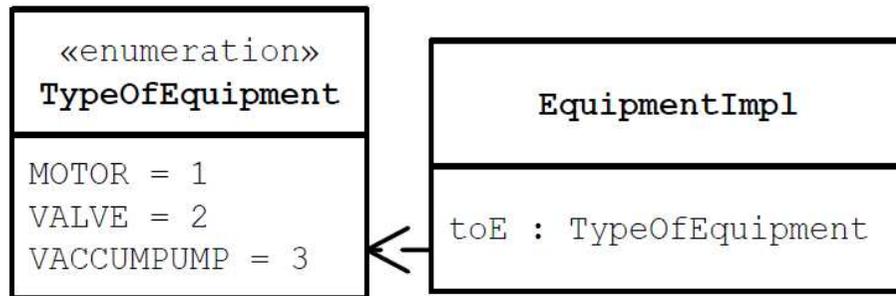


ISO 15926 – Reference Ontology



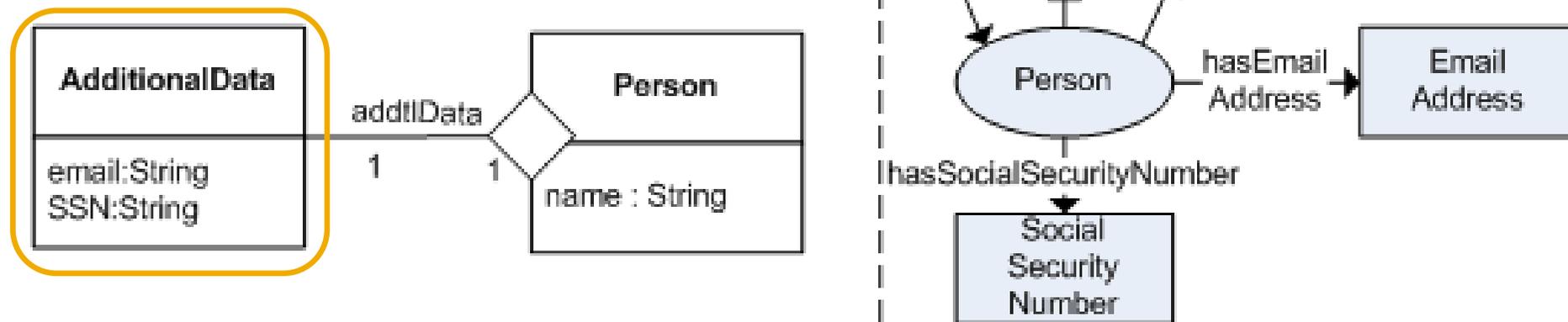
1. Connection to the ontology is lost completely, or
2. Semantic content is reduced drastically.

Mismatches between Data Models and Ontologies: Multi-Purpose Classes



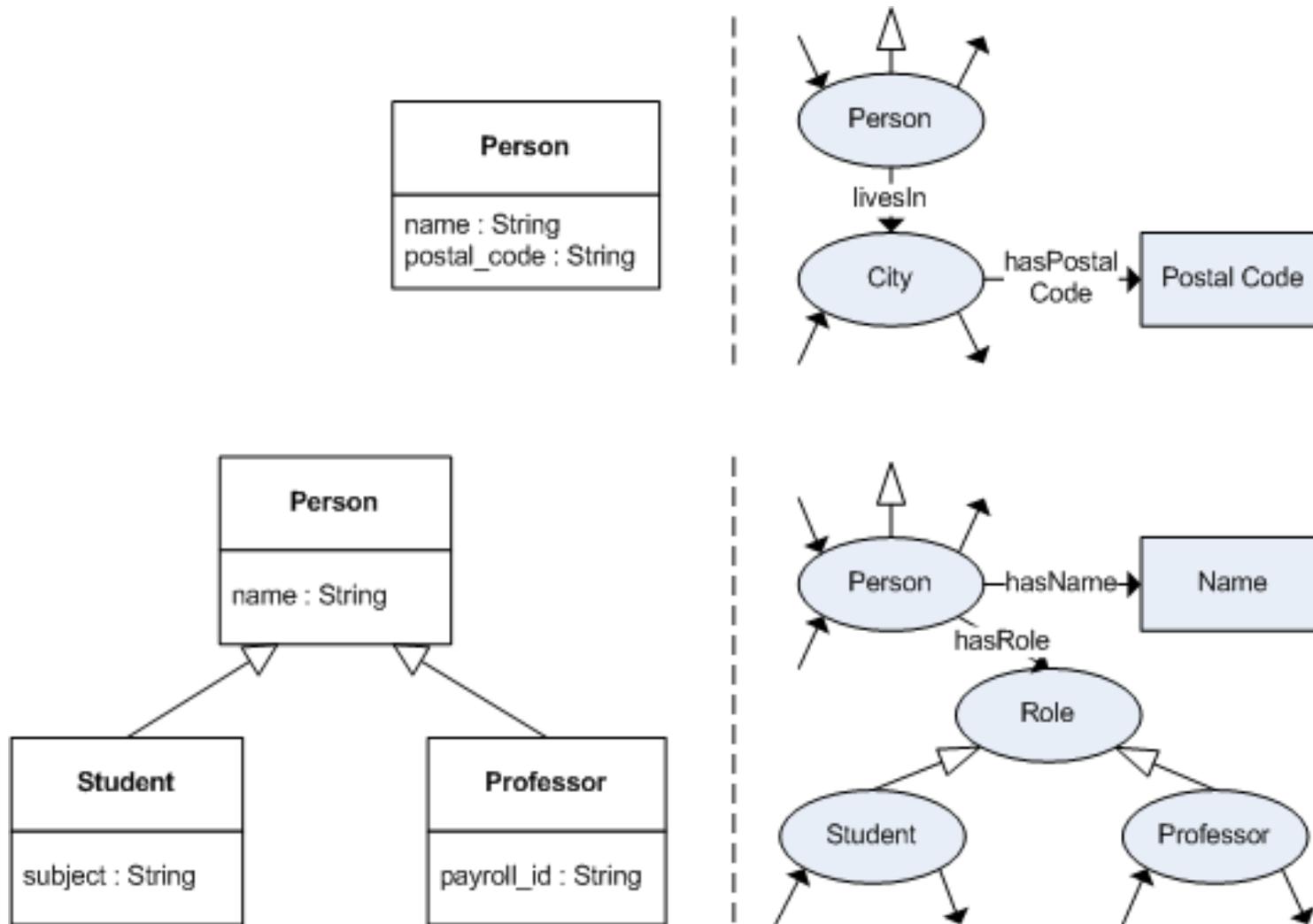
Keeps number of classes low but matching the class to a single category in the ontology is impossible.

Mismatches between Data Models and Ontologies: Artificial Classes

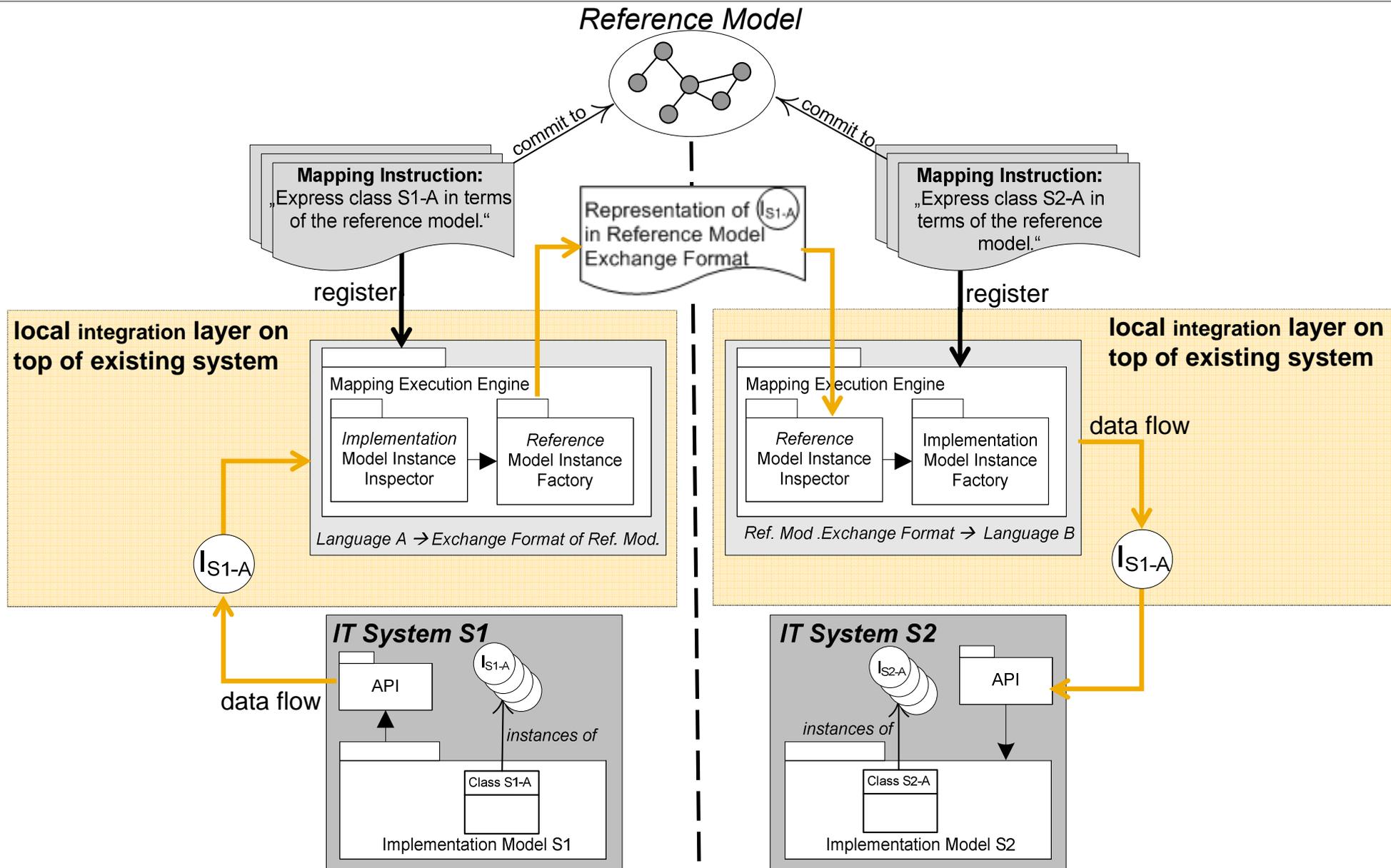


- Artificial classes have no intuitive counterpart in the domain ontology.
- Software developer uses implicit contextual knowledge: If the address contains „@“ then the address is an email-address.

Mismatches between Data Models and Ontologies: Shortcuts



Information Exchange based on Reference Models



Solution

- Establish a common Reference Model (Reference Ontology + Domain Ontology).
 - DOLCE & core ontology for emergency management
- Perform **non-intrusive** semantic annotations of instances-
 - Data Models of existing system are not changed
- Perform mappings on **instance level**, not on class level-
 - Due to strong disparities between implementation model and Reference Ontologies, mappings on class level are not suitable
- Use rules for performing the mapping at **run-time-**



Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
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Use Case 3: Improved Search

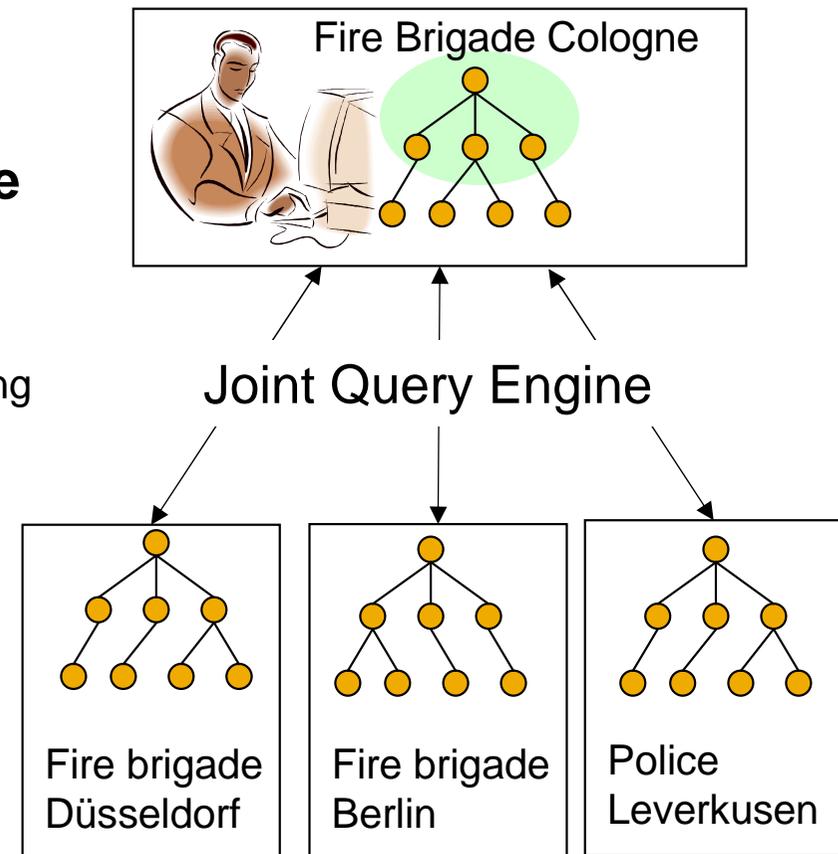
Motivation: In a large incident, numerous cooperating organizations require the integration of heterogeneous, distributed databases for conducting efficient operational resource management.

Solution:
Joint-Query Engine & SAP AutoMappingCore

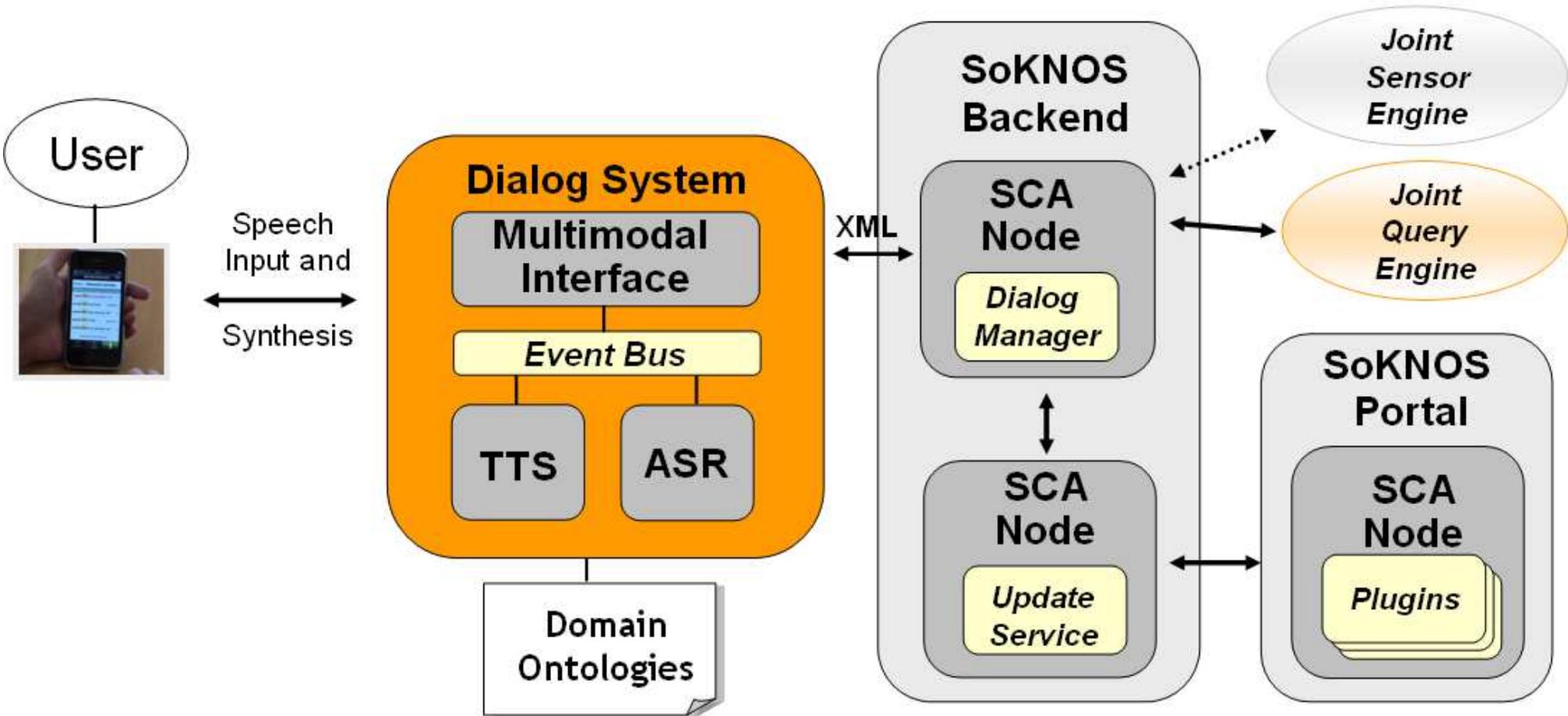
The **JQE** processes the query by unifying different names of input-concepts like, e.g. "helicopter", defined in the SoKNOS resources ontology, which is mapped to the different underlying databases' data models.

The **SAP AutoMappingCore** makes suggestions for possible mappings based on different ontology and schema matching metrics.

The approach is based on F-Logic and OntoBroker.



Use Case 4: Improved Search





Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
Observation Services**

Use Case 3: Flexible Information Exchange

Use Case 4: Improved Search

Use Case 5: Plausibility Checks

Use Case 6: Improved Information Visualization

Use Case 5: Plausibility Checks

Motivation: Time pressure and unknown situations pose a high stress level on the incident command team. Decisions need to be taken quickly. Wrong decision can have severe consequences. **It is important to double check the user's actions for adequacy and consistency.**

Solution:

The German “deployment regulations for incidents” was transformed into an ontology.

Based on this body of knowledge, it is possible to check if the assigned forces to a particular task are adequate.



Use Case 1: System Extensibility

**Use Case 2: Improved Discovery of External Sensor
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Use Case 4: Improved Search

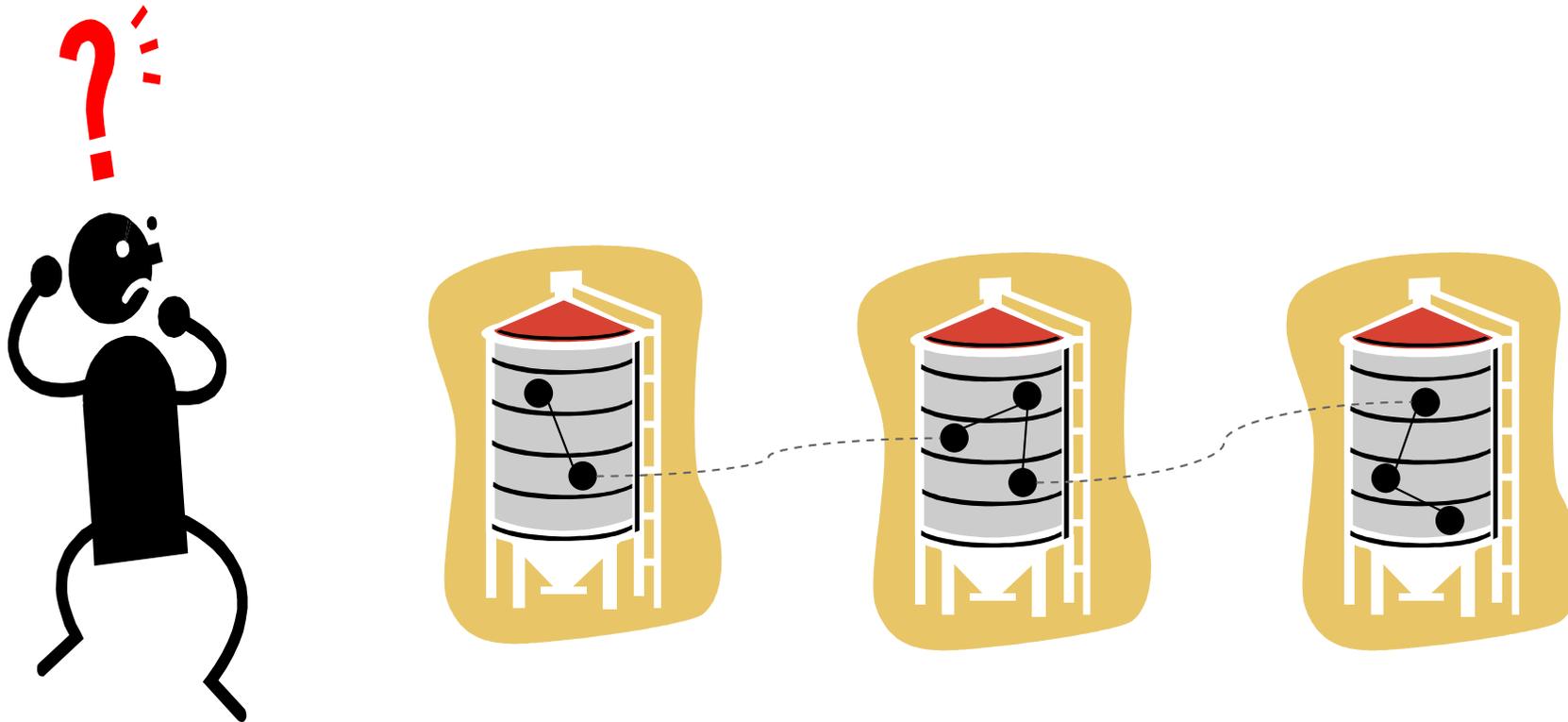
Use Case 5: Plausibility Checks

Use Case 6: Improved Information Visualization

Use Case 6: Improved Information Visualization

Motivation

- Information contained in “silos” (aka IT systems)
 - hard to grasp interrelations (especially for end users across organization boundaries)
 - deriving information from data is a hard task

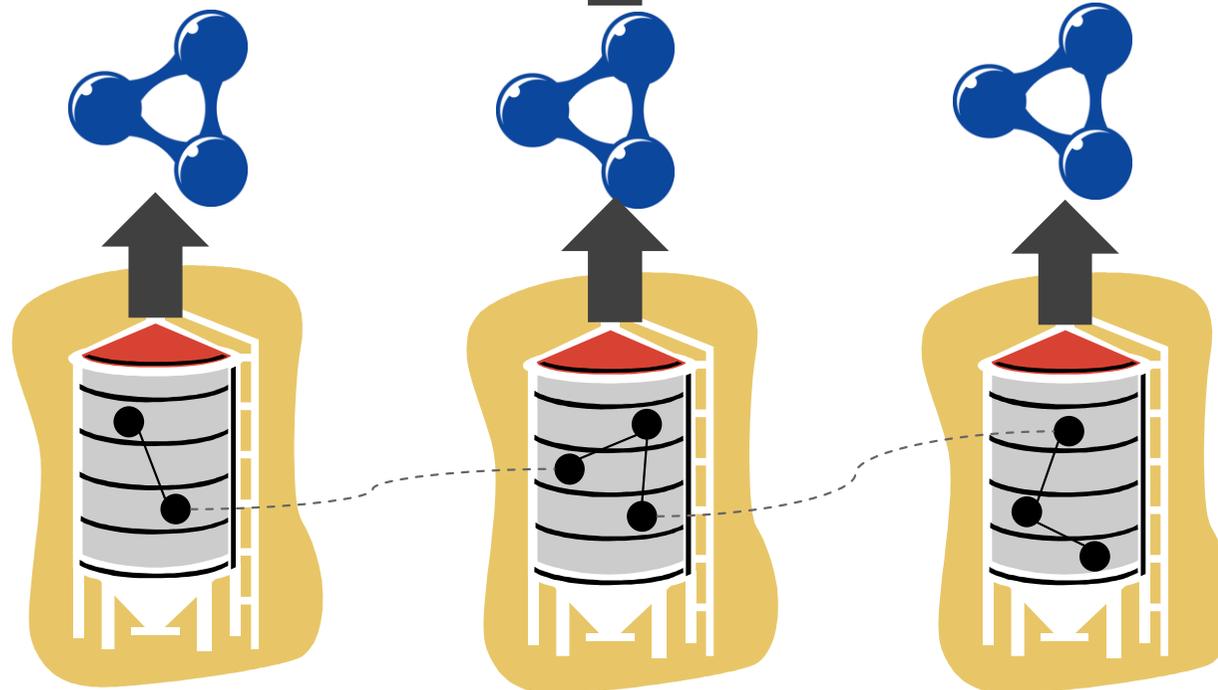
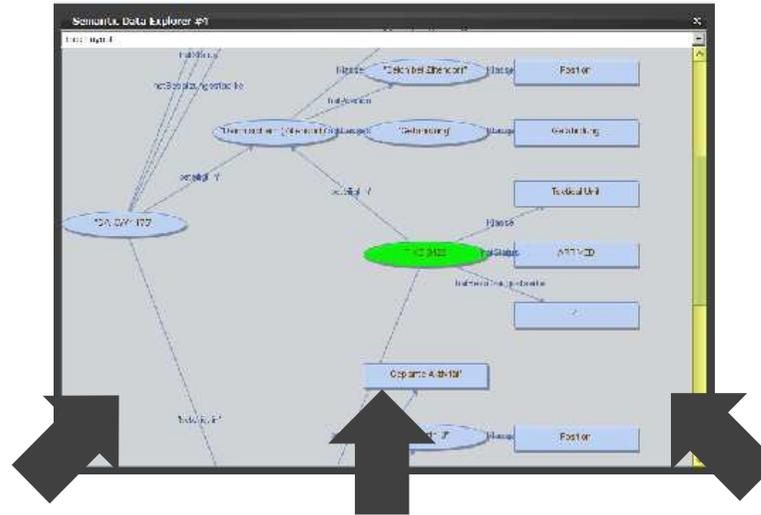


Heiko Paulheim, Lars Meyer (2011) *Ontology-based Information Visualization in Integrated UIs (IUI)*

Use Case 6: Improved Information Visualization (cont.)

Idea

- Create a unified visualization
...based on ontologies
- Reasoning for discovering
implicit relations



User Interaction

- Visualizing objects
 - by dragging and dropping them onto the canvas
- Navigating
 - by opening nodes (double clicking)
- Hybrid visualization
 - selected objects in the graph are highlighted in original application
 - and vice versa

Setup

The screenshot displays the SAP Mission account interface. The main window is titled "Mission account :: Showing laufende Objekte". It is divided into three main sections: "Schadenslagen" (Damage Types), "Schäden" (Damages), and "Maßnahmen" (Measures). The "Schadenslagen" section lists four types of damage: "Feuer in Chempark", "Überschwemmung in Merkenich", "Feuer in Industriepark", and "Überschwemmung in Frankfurt (Oder)". The "Schäden" section is further divided into "Prognostiziert" (Forecasted), "Aktuell" (Actual), "Geplant" (Planned), and "Laufend" (Ongoing). The "Maßnahmen" section shows a list of measures, including "Kasselberg evakuieren", "F-LK 5845", "Deich sichern (Rheindorf)", and "F-VI 243". A red arrow points from the "F-LK 5845" measure to a "select & explore" callout box. Below the main window, a "Resource Management (Flex) #3" window is open, showing a list of resources under "Ressourcen". The "F-LK 5845" resource is selected, and its details are shown in the "Details" section. A red arrow points from the "F-LK 5845" resource in the "Ressourcen" list to the "select & explore" callout box. Another red arrow points from the "select & explore" callout box to a larger callout box containing the text "Understand the intended meaning of an information object.".

Mission account :: Showing laufende Objekte

Schadenslagen

- Feuer in Chempark
 - Brand
 - Dr. Schmidt
- Überschwemmung in Merkenich
 - Hochwasser
 - Dr. Schmidt
- Feuer in Industriepark
 - Brand
 - Dr. Meyer
- Überschwemmung in Frankfurt (Oder)
 - Hochwasser
 - Dr. Meyer

Schäden

Prognostiziert

- Deichbruch bei Merkenich
 - Hochwasser
 - unbekannt
- Deichbruch bei Wiesdorf
 - Hochwasser
 - unbekannt
- Deichbruch bei Kasselberg
 - Hochwasser
 - unbekannt
- Deichbruch bei Rheindorf
 - Hochwasser
 - unbekannt

Aktuell

Geplant

Laufend

Maßnahmen

- Kasselberg evakuieren
 - 13:55 - 16.09.2010
 - unbekannt
 - Kasselberg
- F-LK 5845
 - unbekannt
- Deich sichern (Rheindorf)
 - 13:55 - 16.09.2010
 - unbekannt
 - Deich bei Rheindorf
- F-VI 243
 - unbekannt

Resource Management (Flex) #3

Ressourcen

- F-XB 8423
- Flugzeuge
 - F-HH 4823
 - F-LK 5845
 - F-XZ 5845

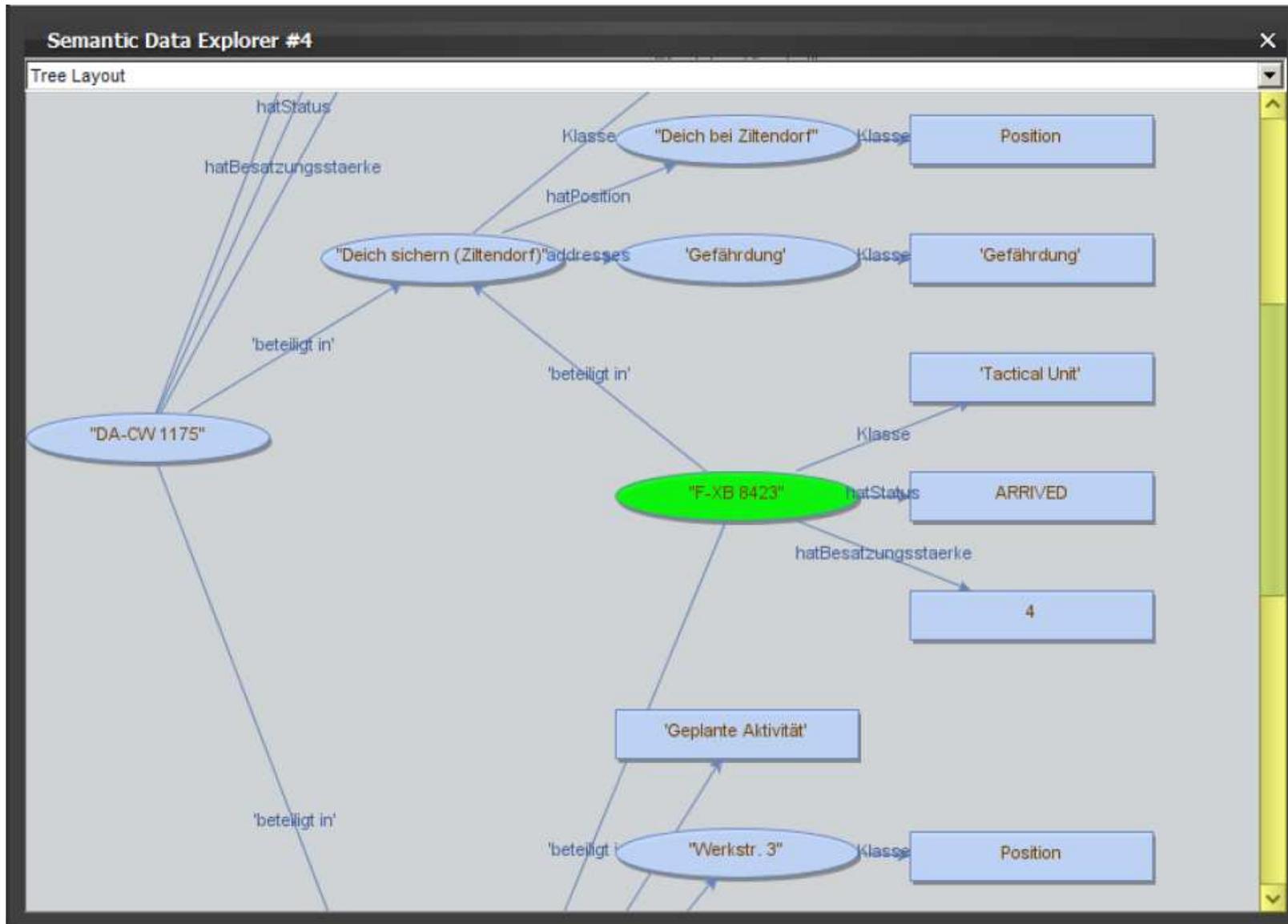
Details

Allgemein	Beschreibung	Koordinaten
Name	F-LK 5845	
Organisation	Flugbereitschaft Rhein-Main	
Einsatzgebiet	Südhessen	
Besatzungsstärke	7	
Status	IDLE	

select & explore

Understand the intended meaning of an information object.

Screenshot Semantic Data Explorer



Heiko Paulheim, Lars Meyer (2011) *Ontology-based Information Visualization in Integrated UIs (IUI)*



Lessons Learned

Lessons Learned

Ontology Engineering Process

- Involving the end user (rather obvious)
- Establishing the role of an ontology engineer (in analogy to master courses in software engineering).
- “Ontology editors need improvement in their browsing mechanisms, help systems and visualization metaphors.” [Garca-Barriocanal], A statement from 2005 which unfortunately still holds true.
- Ontologies are still too hard to use for software engineers while the benefit is not directly obvious

Lessons Learned

Software Engineering Process and Ontologies

- Developing new mechanisms for semantic annotations.
 - Use Case 1 & 3: Approach for non-intrusive annotation of instances during run-time (executable mapping).
- Addressing performance.

Lessons Learned

Ontology Usage and Suitability

- Finding the right modeling granularity.
- Domain experts were not used to concepts needed to create a formally correct ontology (DOLCE)
- End users were irritated by modeled domain terminology that was not part of their colloquial language.
- Finding the right visualization depth.

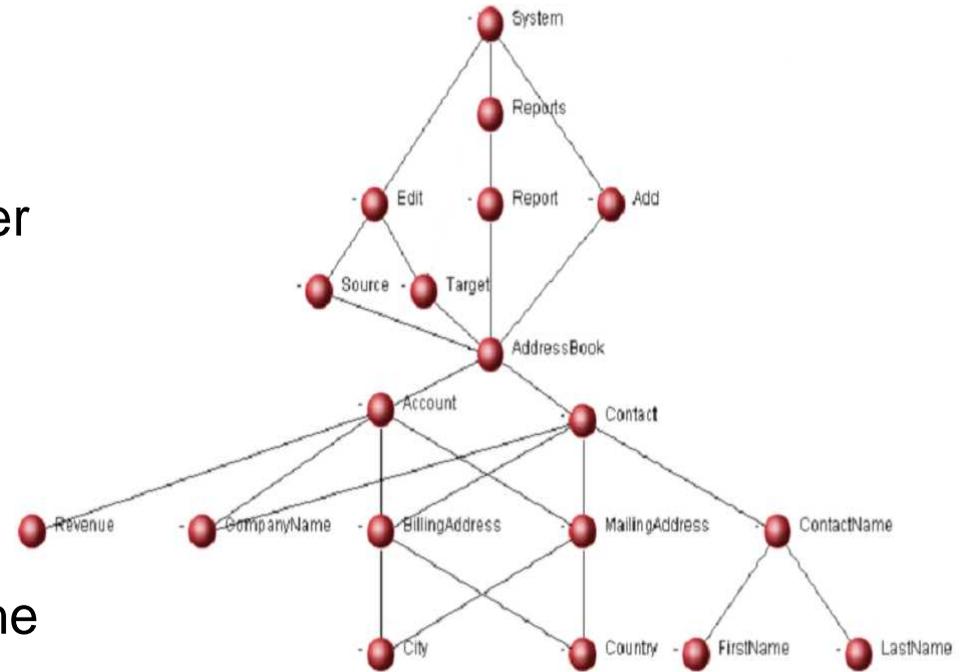


Prototypes & Products

Answers Anywhere Natural Language Platform

Answers Anywhere:

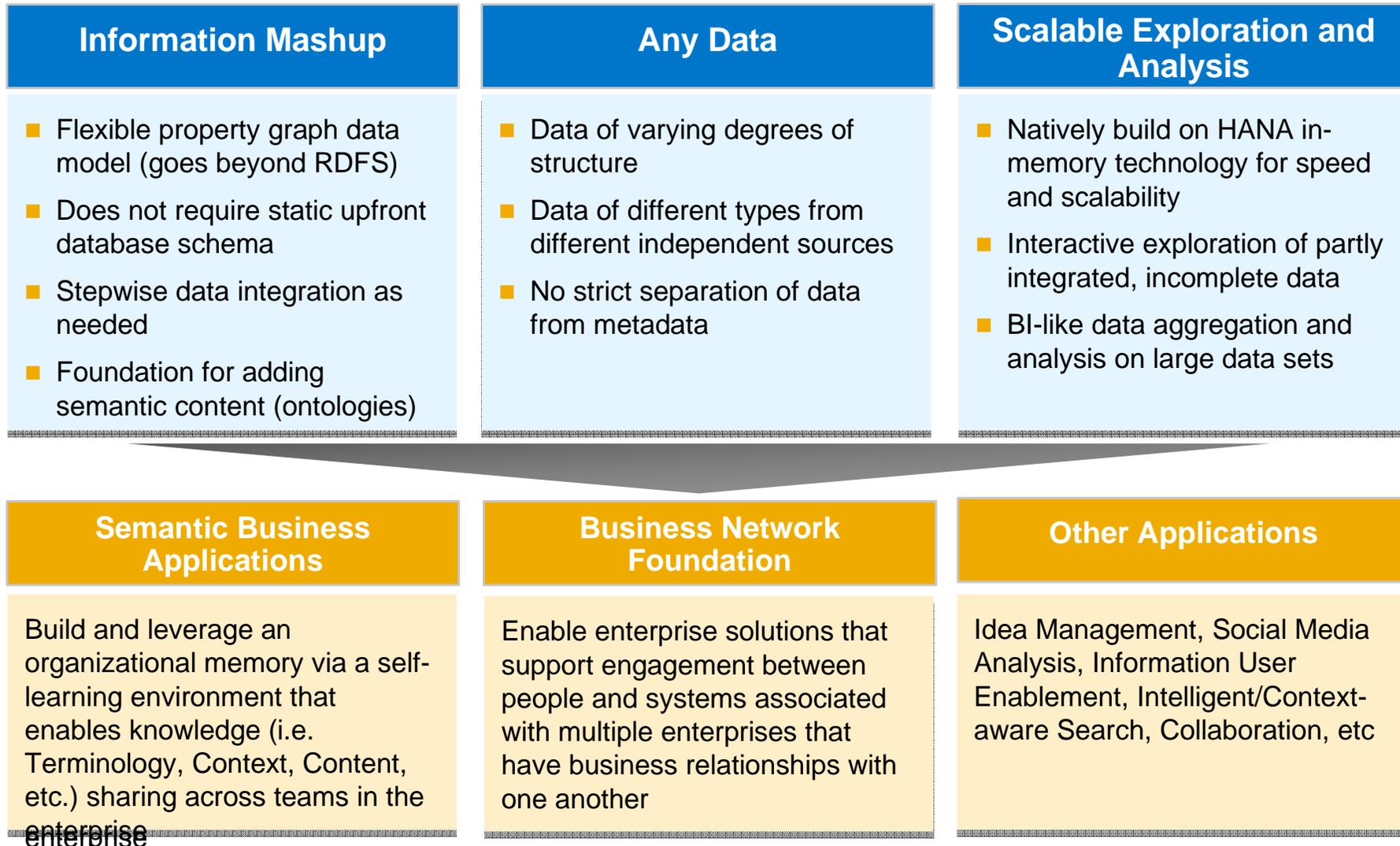
- Is an adaptive, agent-oriented software
 - architecture for building natural language-based user interfaces
- Breaks up complex problems into smaller pieces, which are then acted upon in parallel, by a community of software components called Agents
- Networks of agents, organized to represent a target domain, collaborate and compete to interpret the 'intent' of the user input
- Agents maintain awareness of the 'context' of the interaction, enabling disambiguation ('Did you mean David Sharpe or Thomas David'), and dialoging (or followup queries/actions) ('Enter a date for making the Payment to AT&T')



“Active Information Store” –

Flexible Graph-based Information Management in SAP HANA

A scalable schema-flexible data store as part of SAP HANA that supports the storage, processing, combination, exploration and analysis of irregularly structured data from different sources.



CODE NAME “FindGrid”

Stefan Scheidl, Semantic Business Applications

CODE NAME “FindGrid” – A Semantic Business Application

FindGrid

FindGrid empowers teams to perform knowledge-intensive collaborative work:

Create, consolidate and summarize artifacts such as Cases, Folders, Bookmarks, Tags, Notes & Pictures emerging during the research process.

Enterprise Memory is created, harmonized and sustained automatically as teams work with FindGrid.

SEMANTIC BUSINESS APPS

- Leverage semantic technologies
- Working close with Customer and End-Users (Colgate, Sanofi-Aventis, Kaeser...)
- Started 2008 in SAP Research (Global Business Incubator)
- Now Part of Technology and Innovation Platform (TIP In-Memory)

CODE NAME “FindGrid” – A Semantic Business Application

SOLUTION-IN-EARLY-ADOPTION

SAP solutions in the early-adoption phase are innovative solutions that are still being enhanced through significant collaboration with customers who are early adopters.

- Availability for **selected customers**
- **Product specific support** provided by development team
- Not yet a standard product with unrestricted availability and standard lifecycle support

FindGrid customer base

Customer	Scenario
Colgate	Consumer Insights
Sanofi-Aventis	R&D, Medical Research
Kaeser	Competitive Insights
Nestlé	R&D, Food Research
Fujitsu	Business Solution Sales
Blanco	IT Service
Deutz	Service to Engineering (Quality Loop)
DuPont	tbd
Deloitte	Co-Innovation for Business Expertise Finder

Big Picture

Information Retrieval



Exemplary Use Case



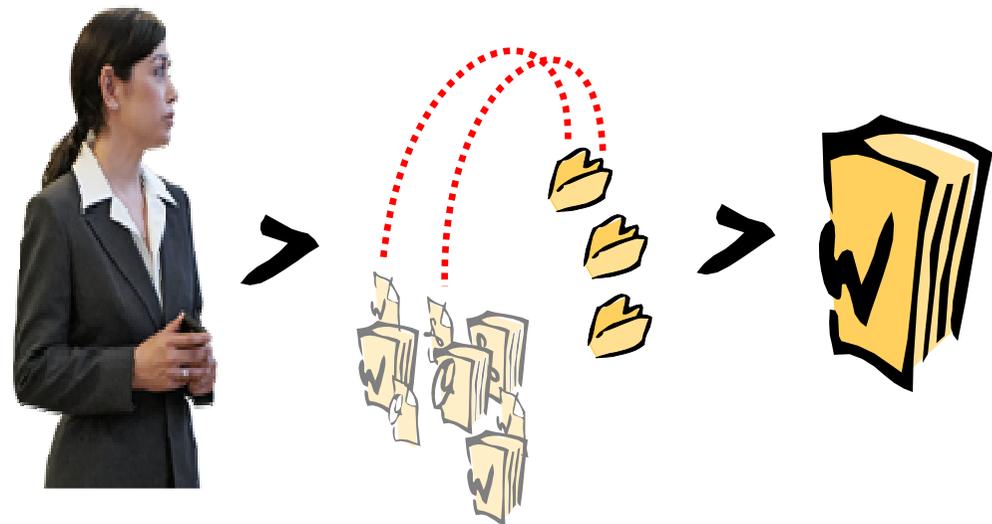
The car manufacturer GreenCars wants to build a long range electric car.

USER

- Development engineer at GreenCars

TASK

- Collect Information on batteries
- Keep/ present insights in a dossier

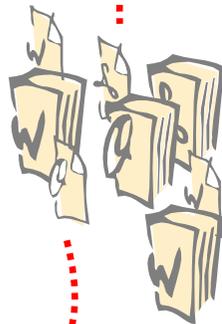


Gathering information takes time

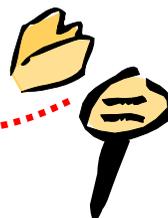
**INFORMATION
STRUCTURED**



discover



organize



extract



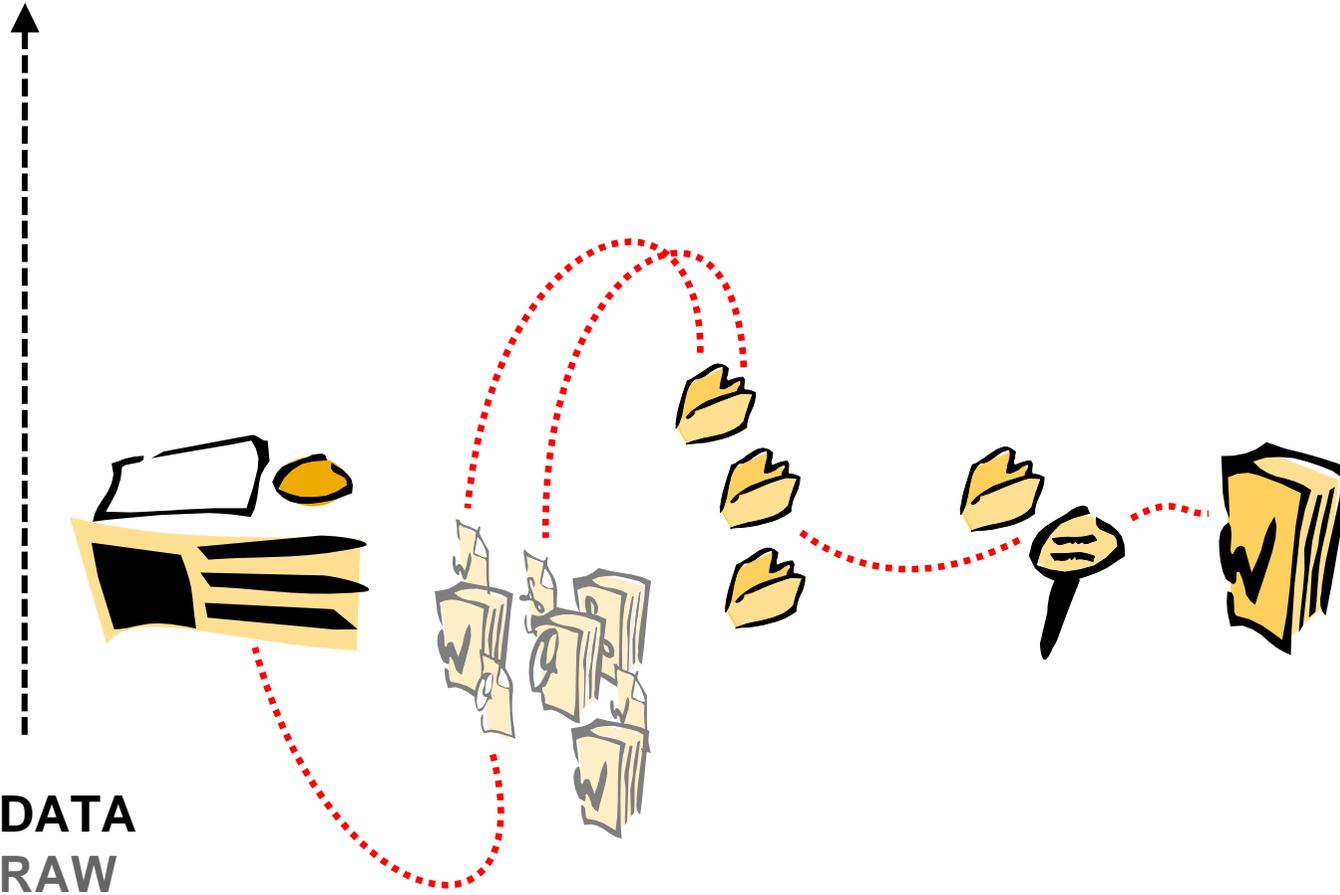
share



**DATA
RAW**

Expert knowledge get lost

**INFORMATION
STRUCTURED**



Expert knowledge get lost

**INFORMATION
STRUCTURED**



For everybody

Enterprise knowledge

Team knowledge

Expert knowledge

**DATA
RAW**



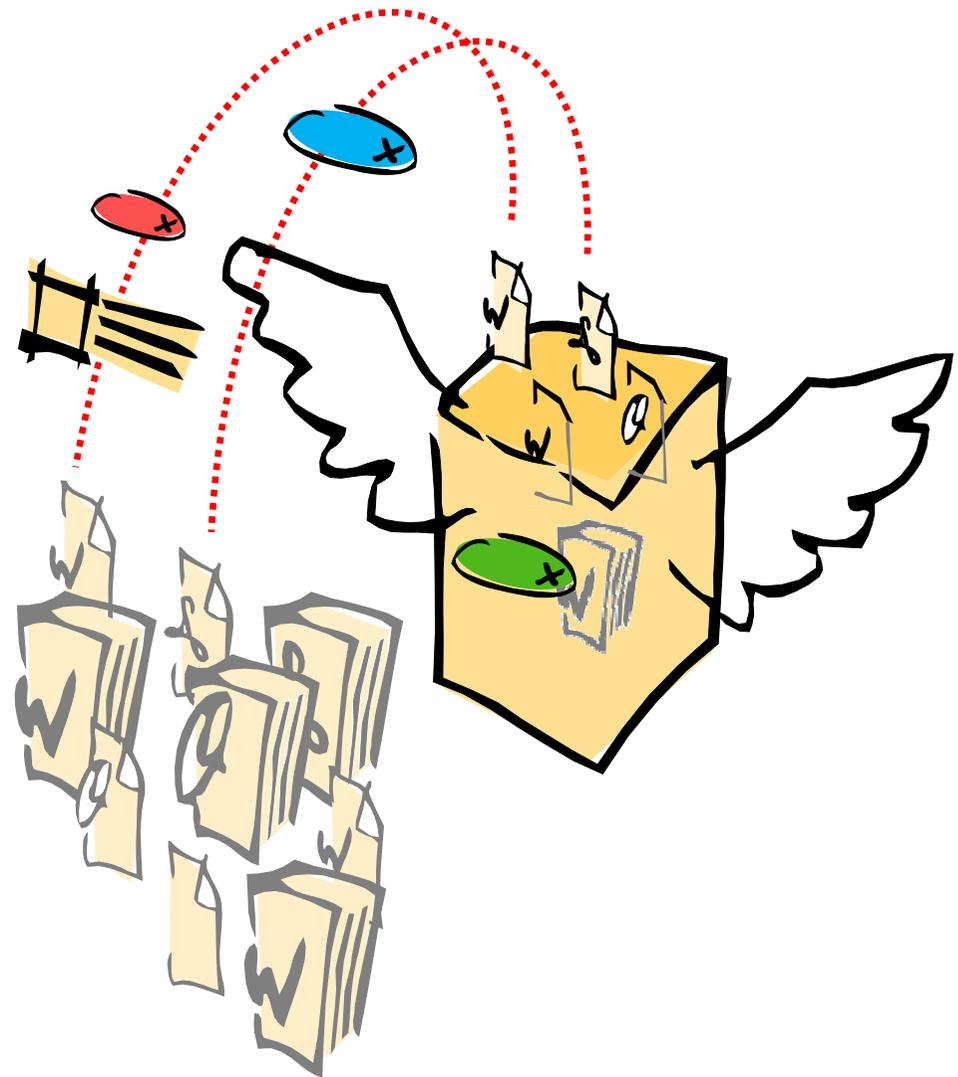
CODENAME “FindGrid”

An application to organize, discover and share knowledge.

Build on top of existing knowledge, based on semantic relations.

TASK

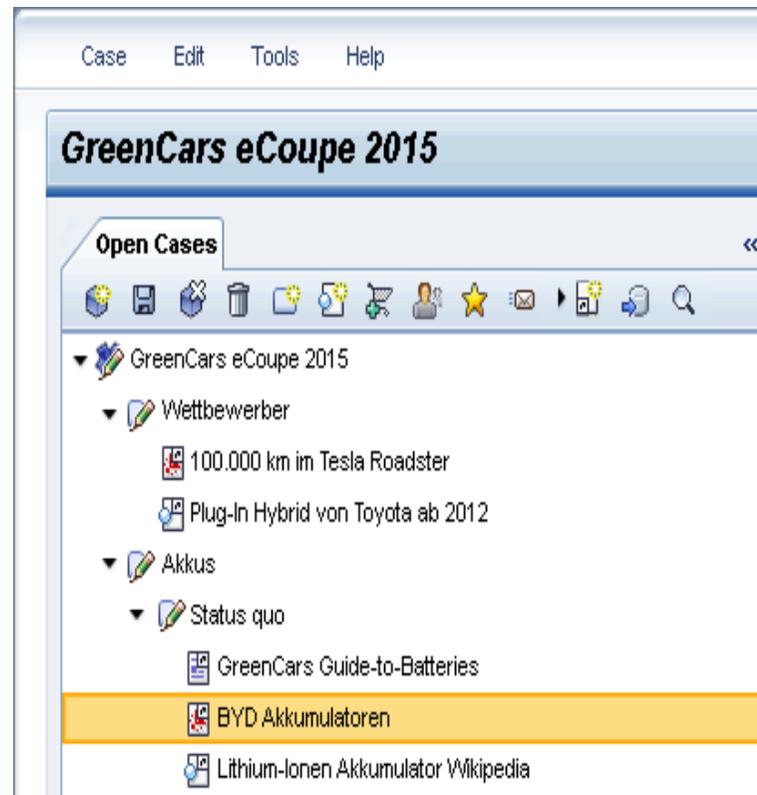
- Collect Information on batteries
- Keep/ present insights in a dossier



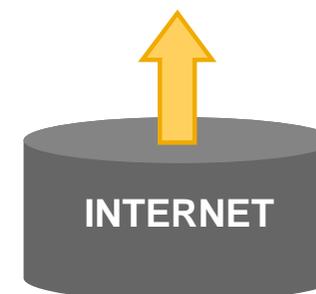
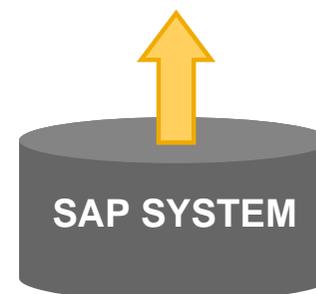
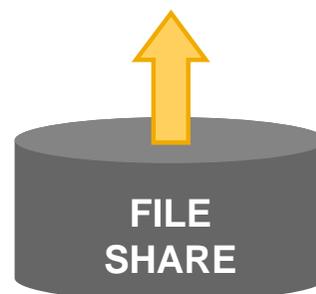
CODE NAME "FindGrid"

Organize. Discover. Share.

- Create structure
- Search sources
- Add bookmarks



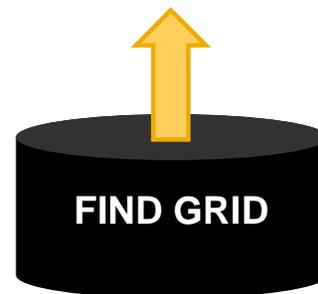
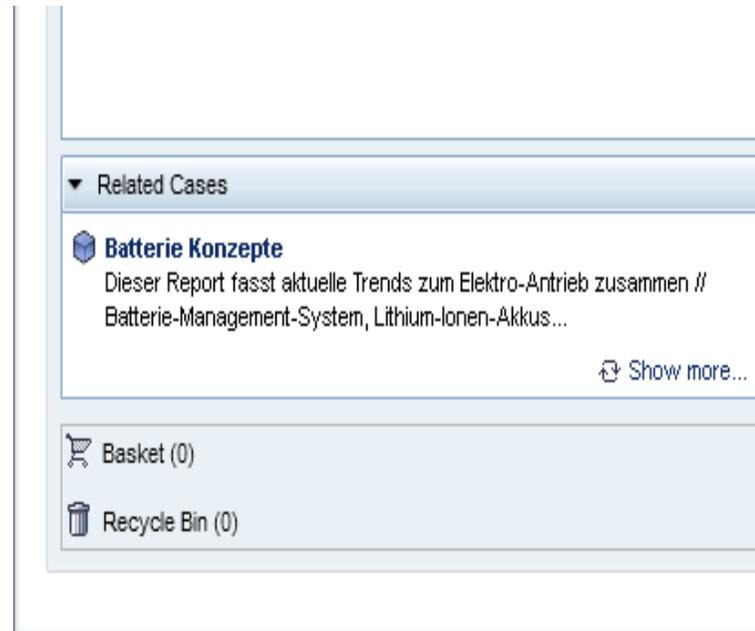
Lithium-Ionen-Akkus x



CODE NAME “FindGrid”

Organize. Discover. Share.

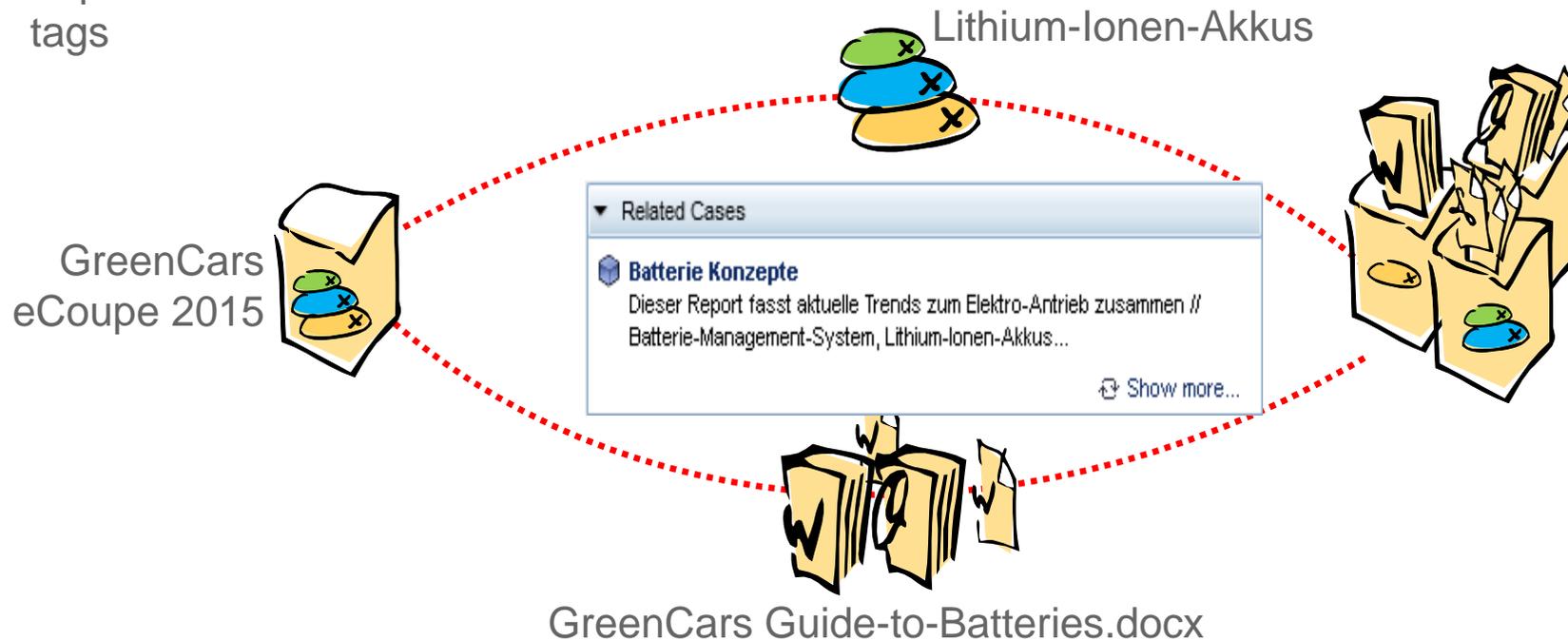
- **Similar Cases** will be suggested



CODE NAME “FindGrid”

Organize. Discover. Share.

- **Similar Cases** will be suggested
- Explore relations via bookmarks and tags



CODE NAME "FindGrid"

Organize. Discover. Share.

- Open suggestion
- Evaluate content
- Extract facts
- **Related Terms** will be suggested
- Keep facts

Case Edit Tools Help

Text Analysis

Report Batteriekonzepte

Enter term

BMS (1) + Ladezyklen (2) +

Lithium-Ionen-Akkus (4) x

Nickel-Metallhydrid-Akkus (1) + Tesla Motors (2) +

Continental – die Lieferanten der **Lithium-Ionen-Akkus** -tur

„Zu **Lithium-Ionen-Akkus** gibt es derzeit keine Alternative“, sagt Martin Winter, Inhaber einer – von VW, Evonik und Chemetal finanzierten – Stiftungsprofessur für Angewandte Materialwissenschaften zur Energiespeicherung und Energieumwandlung an de

„Mit einer **Lithium-Ionen-Batterie** wird es über 300 Kilometer weit kommen.“

Lithium-Ionen-Akkus glänzen mit hoher Leistungsdichte, einer geringen Neigung zur Selbstentladung und sie besitzen ein hohes Entwicklungspotenzial.

Open...

Add to Notes

Analyze Close

Related Cases

Batterie Konzepte

Dieser Report fasst aktuelle Trends zum Elektro-Antrieb zusammen // Batterie-Management-System, Lithium-Ionen-Akkus...

Show more...

All Tags

CODE NAME "FindGrid"

Organize. Discover. Share.

- Collect information
- Present insights

The screenshot shows the SAP Case Manager interface for a case titled "GreenCars eCoupe 2015". The interface includes a menu bar (Case, Edit, Tools, Help) and a sidebar with "Open Cases" and "Related Cases". The "Open Cases" list includes "Wettbewerber", "Akkus", and "Status quo", with "Report Batteriekonzepte" highlighted. The "Related Cases" section shows "Batterie Konzepte" with a description: "Dieser Report fasst aktuelle Trends zum Elektro-Antrieb zusammen // Batterie-Management-System, Lithium-Ionen-Akkus...".

2. Akkus

Owner: Christina Brand * Modified On: November 16, 2011

2.1 Status quo

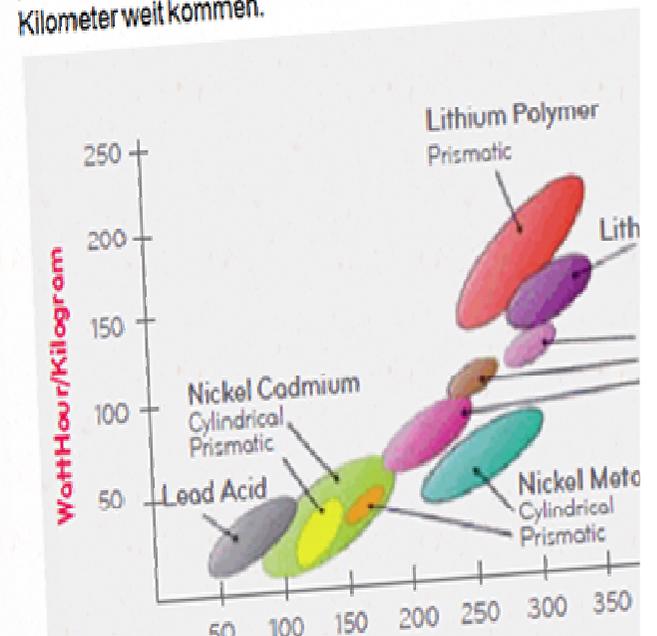
Owner: Christina Brand * Modified On: November 16, 2011

2.1.1 Report Batteriekonzepte

Creator: Christina Brand * Created On: November 16, 2011

[Lithium-Ionen-Akkus]

Derzeit hat ein 1000 kg schweres Auto mit einer 100 kg schw
Reichweite von 70 Kilometer. Mit einer Lithium-Ionen-Batterie
Kilometer weit kommen.



Build on existing knowledge



„I could build my presentation based on your report in a **couple of hours!**“

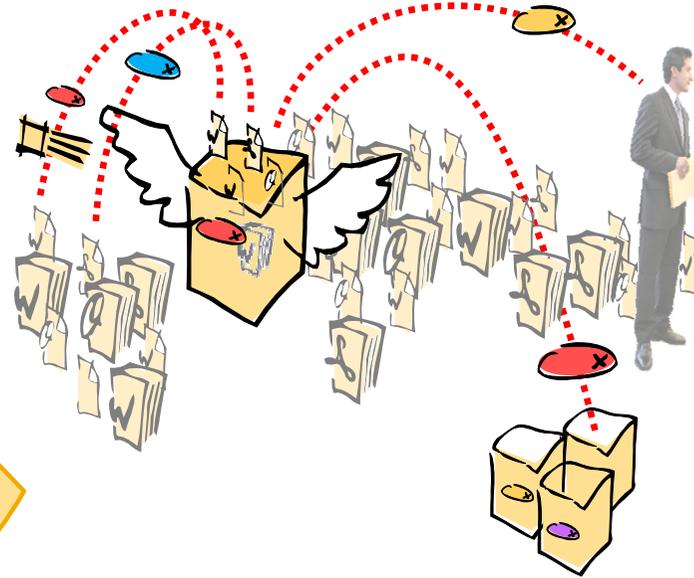
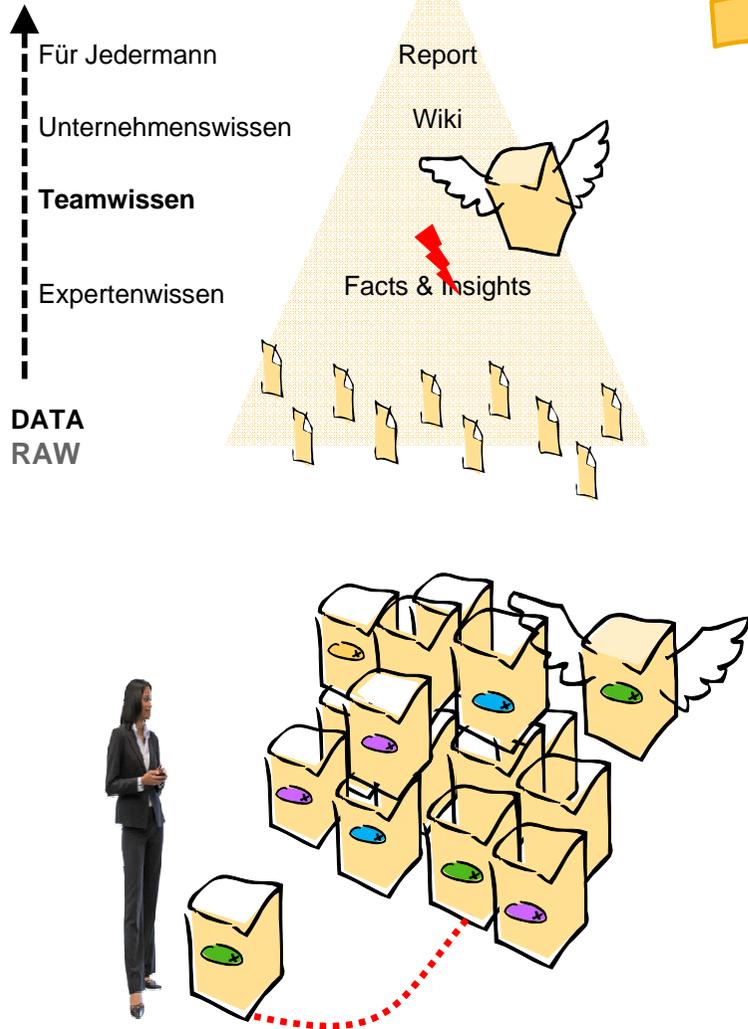
„It took me **some days** to prepare the report.“



CODE NAME "FindGrid"

Build enterprise knowledge

INFORMATION
STRUCTURES



- Collect Information on batteries
- Build on existing knowledge
- Keep insights in a dossier
- **Keep and leverage expert knowledge**



The Business Web



How will the Business Environment of the Future Look?

- Relies on the Internet as a fundamental and critical infrastructure
- Brings consumers, governments and business users together
- Manages real-time all data sources
- Delivers on mobile devices and is easy to use
- Behaves like a social network for enterprises

Business Web Vision:

The Business Web is envisioned as an easy access, real-time trading network that provides the necessary secure infrastructure, technologies, applications and content to deliver end-to-end business services optimized for mobility.

Trends

Collaborative Business

Businesses are moving away from static supply chains towards **adaptive and dynamic value networks formed through collaboration**

Internet of Services

Business activities from mainstream industries need to be presented as **consumable services**

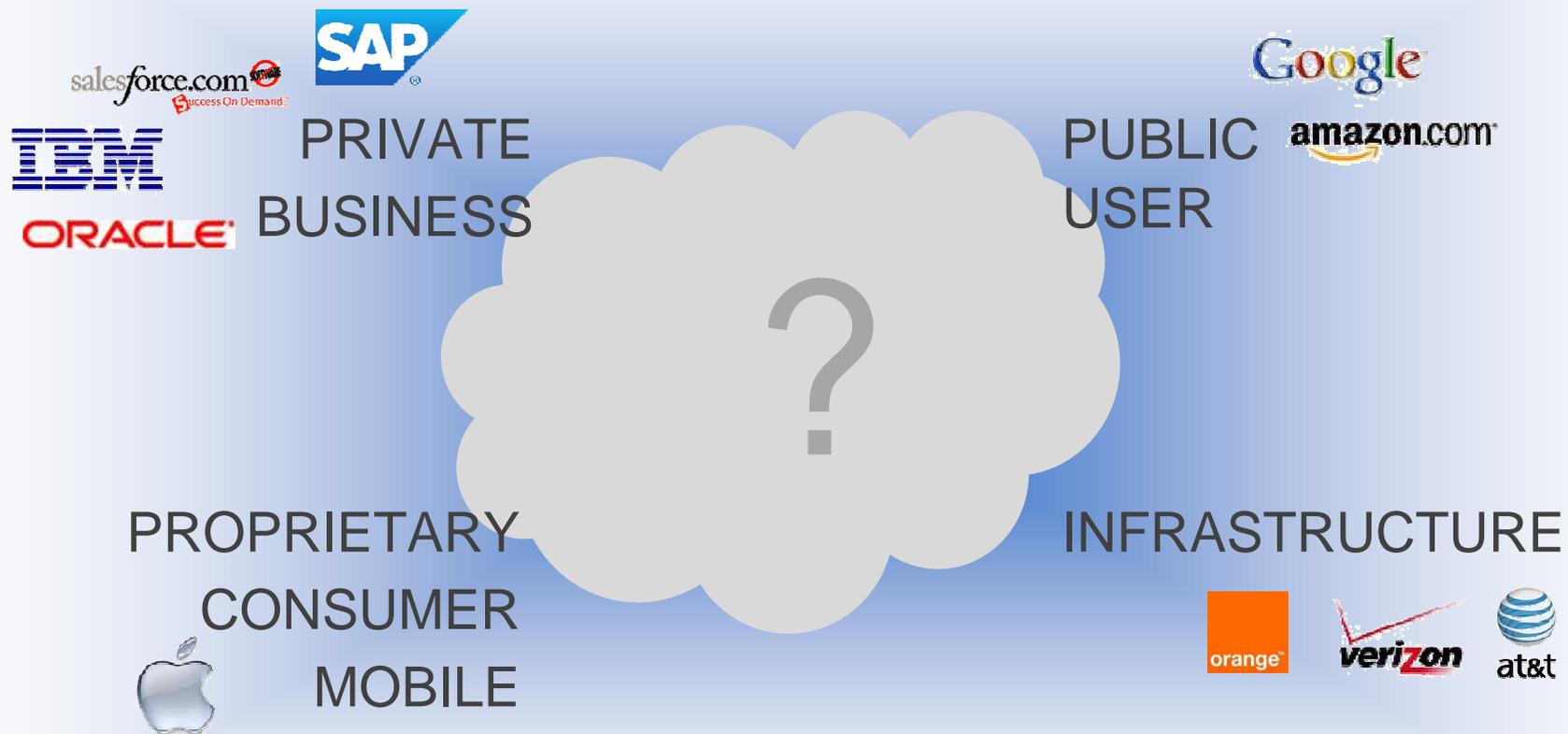
Internet of Things

Massive volumes of information from intelligent and connected things will change the way businesses and consumers interact

Technology Disruption

Traditional business models are being disrupted by technology trends including **enterprise mobility, in-memory capabilities, real-time analytics and cloud computing**

Market Gap



What Do We Want to Demonstrate?

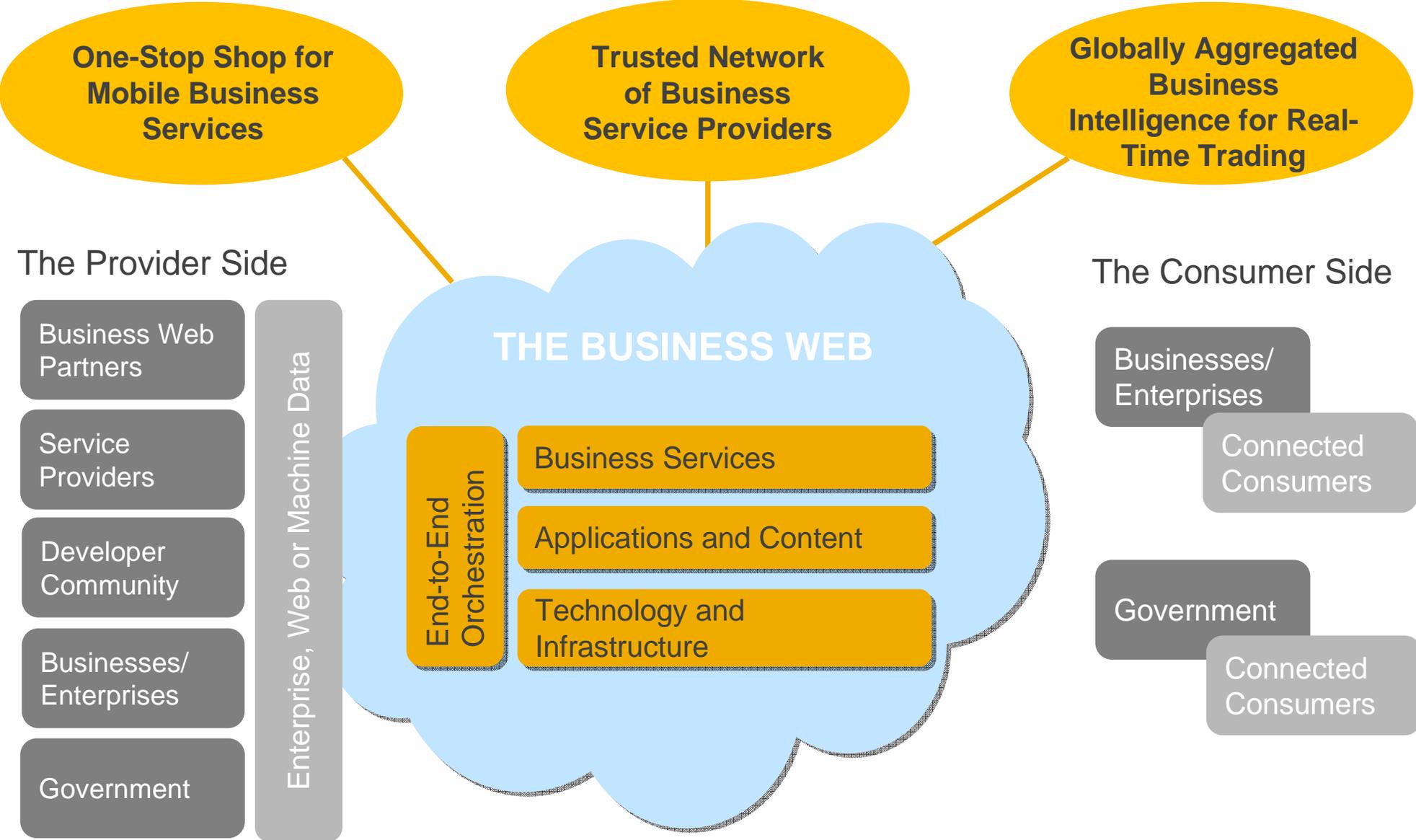
New Business Model

- Define a new value network that is profitable for all players
- Identify compelling opportunities

Innovation Showcase

- Appropriate Security
- Real-time Performance
- Ease of On-Boarding
- Speed of Development
- Ease of Assembly / Orchestration (Data and Processes)
- Exciting Mobile User Experience

How the Business Web Supports Business Networks





Thank You!

Contact information:

Dr. Florian Probst
f.probst@sap.com

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