



European Intelligent Information Management research supporting business intelligence

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Márta Nagy-Rothengass

European Commission, DG Information Society and Media

http://cordis.europa.eu/fp7/ict/content-knowledge/home_en.html

OUTLINE

1. European ICT Research Policy
2. Information Management and Data Value Chain in FP7
3. Business processes and business intelligence
4. Best practise examples
5. Trends and future plans



EUROPEAN COMMISSION

The Information Society and Media Directorate General

**Directorate Digital Content & Cognitive
Systems (based in Luxembourg)**

E1: Language Technologies, Machine Translation

**E2: Technologies for Information
Management**

E3: Cultural Heritage & Technology Enhanced Learning

E4: Access to Information

E5: Cognitive Systems & Robotics

E6: eContent and Safer Internet

E7: Administration and Finance



EUROPEAN COMMISSION

**The Communication Networks, Content & Technology
Directorate General**

Directorate Media and Data

G1: Converging Media and Content
G2: Creativity

G3: Data Value Chain

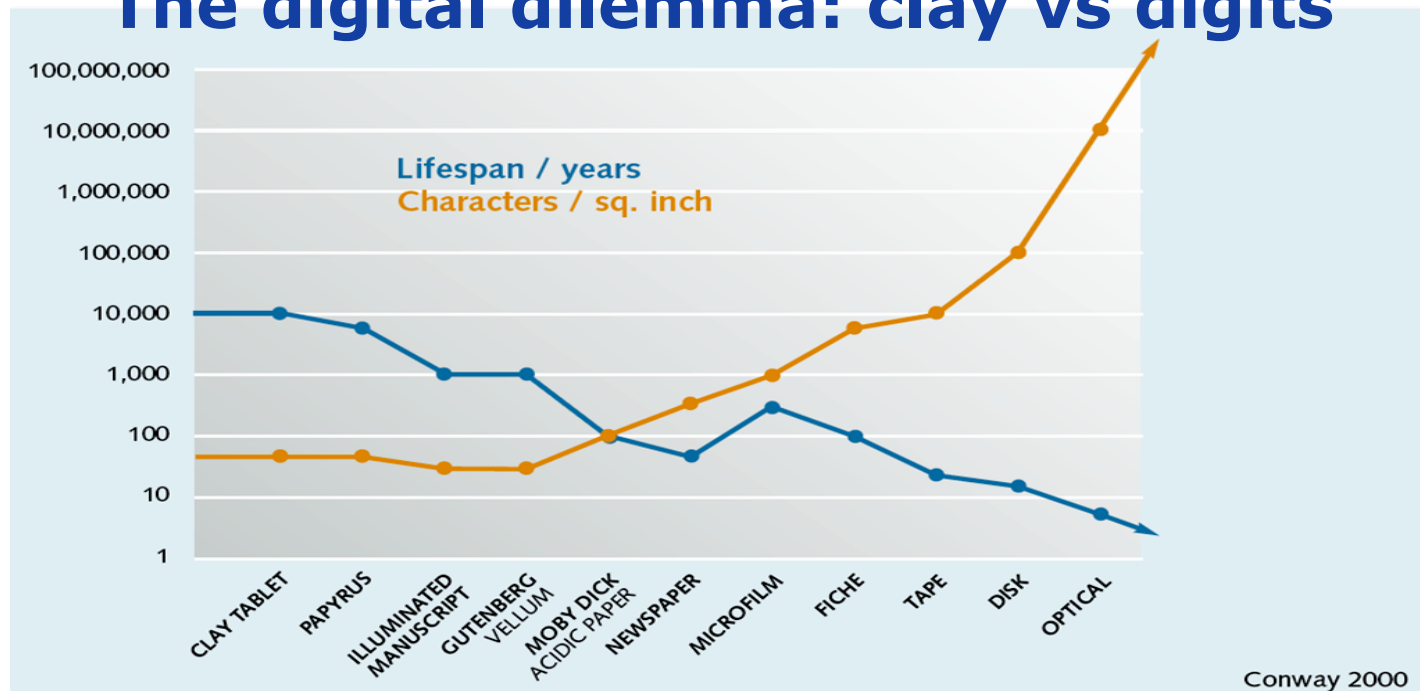
G4: Inclusion, Skills and Youth
G5: Administration and Finance

As from July 1st 2012



European
Commission

The digital dilemma: clay vs digits



Google CEO Eric Schmidt warns: "There was 5 exabytes (5,000,000,000,000,000,000) of **information created** between the dawn of civilization through 2003, but that much information is now created every 2 days, and the pace is increasing."

Manufacturing Product lifecycle (5-20 years) **vs. technology lifecycle** (2-5 years): software support lacking for obsolete products; cost to reconstruct lost data: \$1,250 / MB p a



European ICT Research Policy

Key community instruments

AN OVERALL STRATEGIC FRAMEWORK FOR COMMUNITY ACTION

Digital Agenda

1001100101011101110000100 2010-2020

for Europe

*First pillar of "Europe 2020" to devise
and implement adequate European
policies*

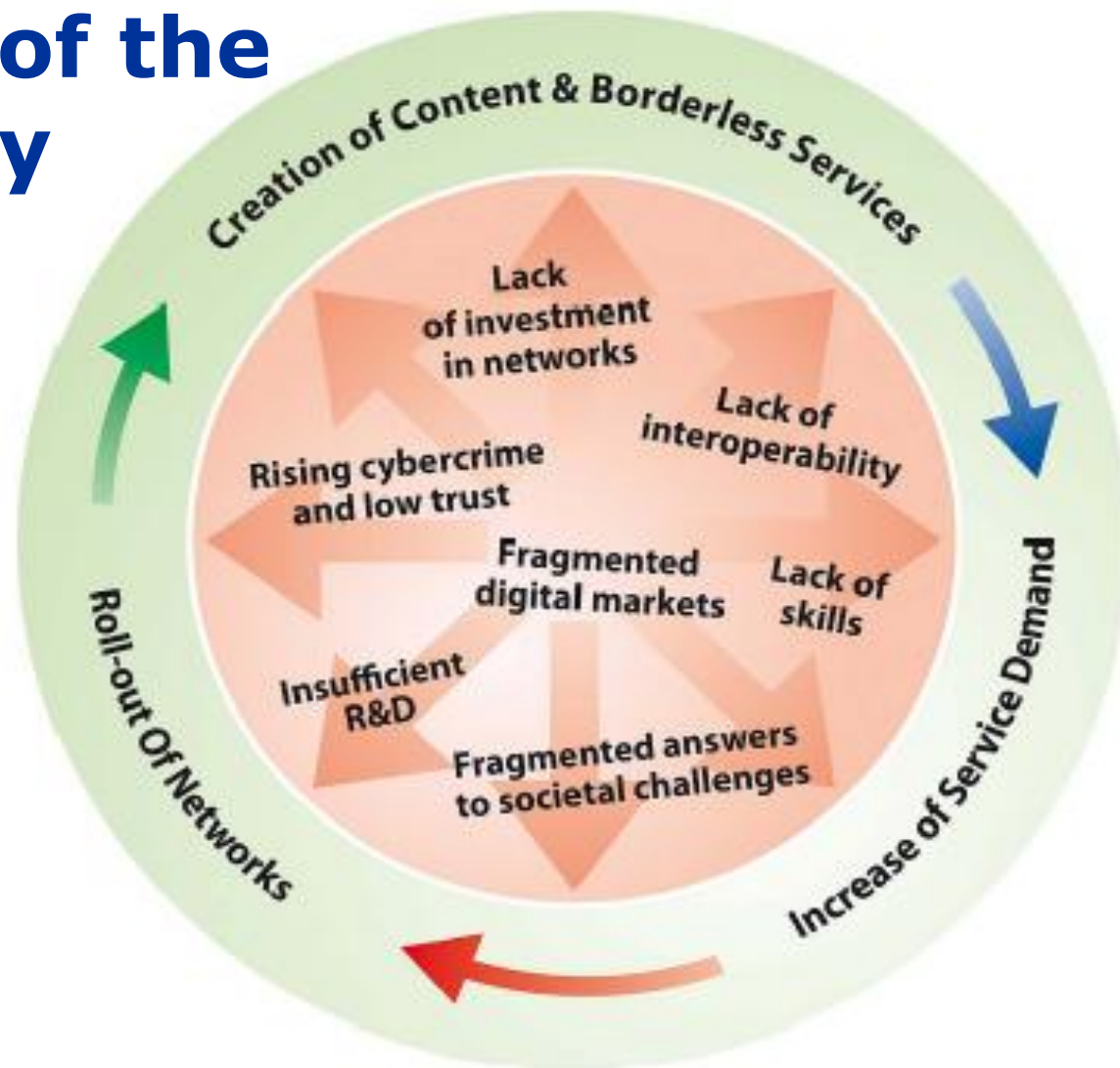
*To support RTD on next generation of
ICTs*





Virtuous cycle of the digital economy

- 7 pillars
- 101 actions



Community Framework Programmes

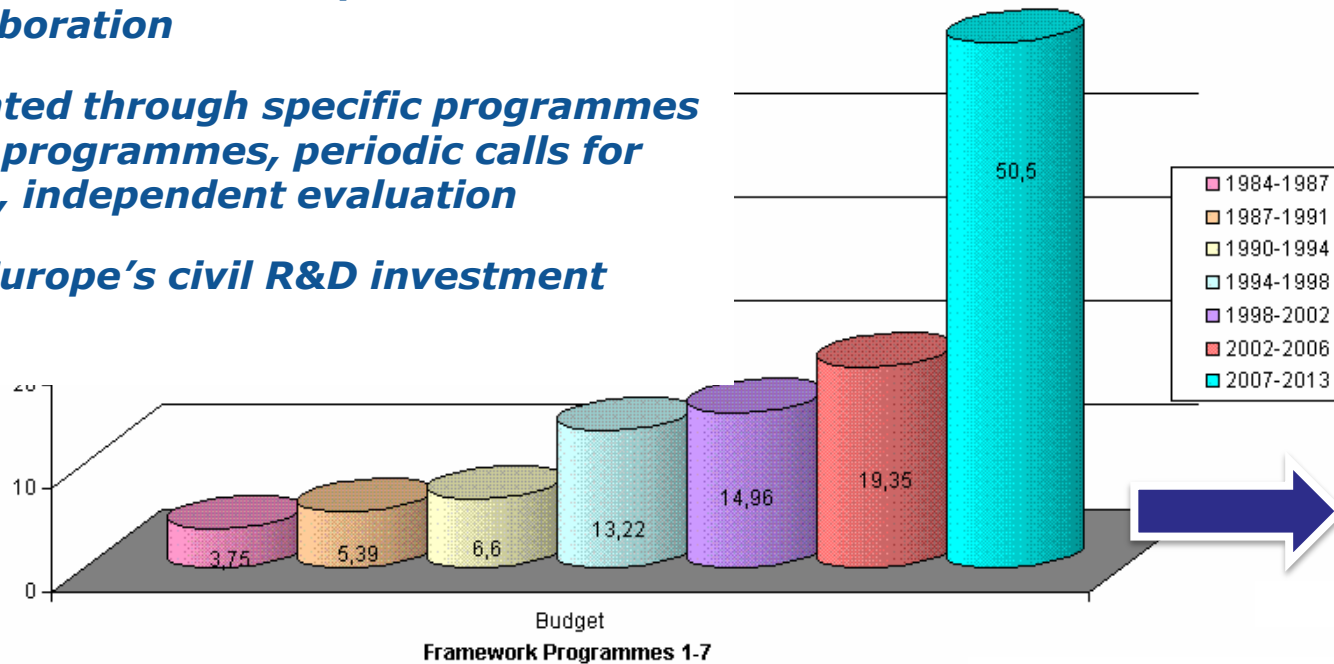
Main EU instrument to fund Community research

Growing FP Budget

Over 20 years of Pan-European R&D collaboration

Implemented through specific programmes and work programmes, periodic calls for proposals, independent evaluation

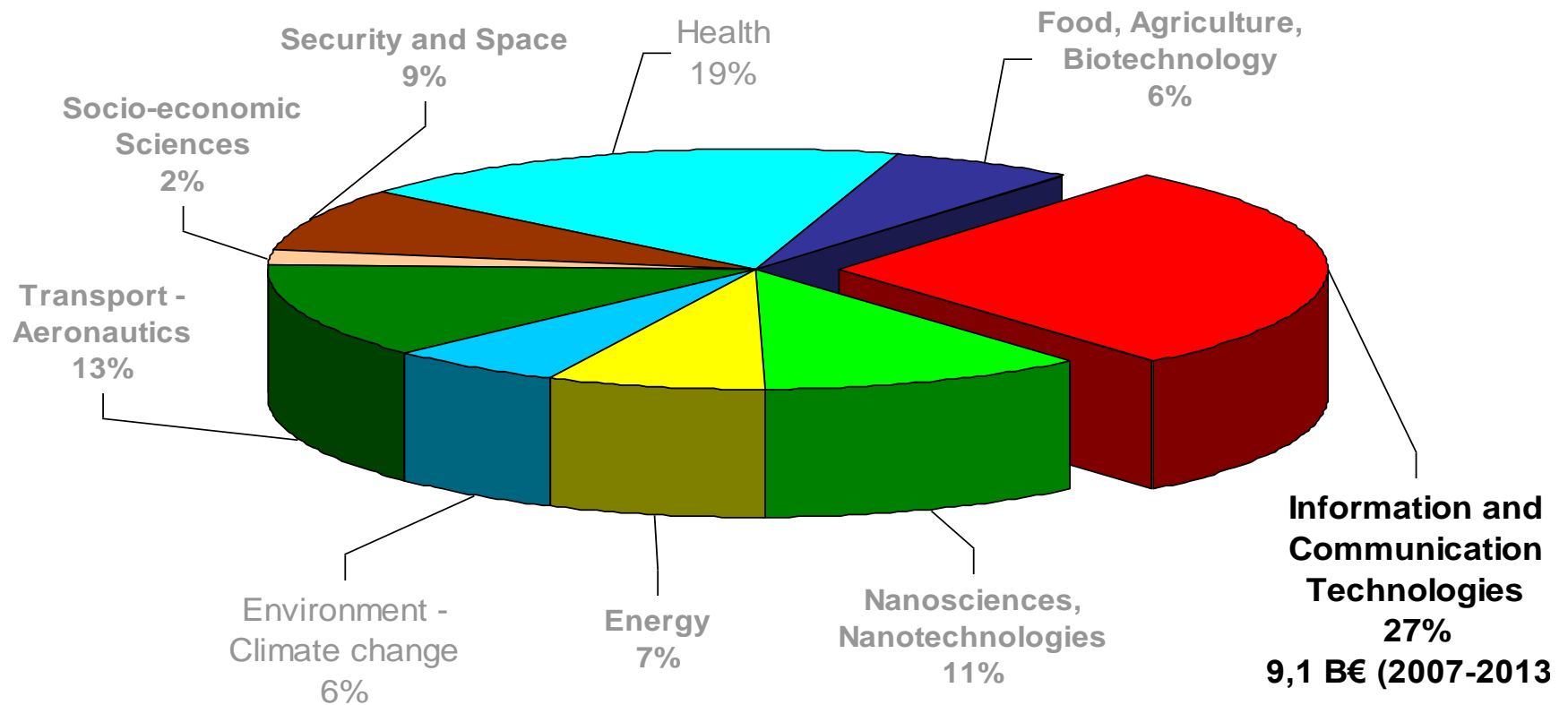
~ 6% of Europe's civil R&D investment



***Proposal of the EC for 2014-2020**

FP7 Cooperation Programme

(Total budget: 32.365 M€)





Information Management and Data Value Chain in FP7



Main research challenges in

(Calls 1+3+5+SME+8; 81 projects)



- Content creation & processing (including multimedia and games)
- Development of media post-production tools
- Integration of social software & semantics
- Personalisation & summarisation
- Semantic foundations
- **Reasoning (temporal, dimensional and uncertainty, approximate & incomplete reasoning)**
- **Knowledge management in business & public-interest domains**
- **Copying with data explosion** ("big data" + real-time)

Closed FP7 Calls in figures

Inputs:	Call 1	Call 3	Call 5	Call SME-DCL	Call 8
<i>Proposals</i>	148	252	169	343**	139
<i>Participants</i>	210	2017	1387	1748	1128
<i>Request M€</i>	473	817	611	536	470
<i>Available M€</i>	51	50	70	35	50
Outputs:	Call 1	Call 3	Call 5	Call SME-DCL	Call 8
<i>Projects</i>	15	13	17*	20**	16***
<i>Participants</i>	128	106	148	119	118
<i>Countries</i>	21	21	22	24	20

Total: 81 projects, 619 contractors, 256 M€

* additional 3 enlargements of existing projects (10p)

** joint call with INFSO E1 organised in two stages

*** proposals retained for negotiation

FP7 Call1 focus: Intelligent Content and Semantics

Key work programme themes :

Make digital resources that embody creativity and semantics ("intelligence") easier and more cost effective to produce, organize, search, personalise, distribute and use across the **value chain**.

Key dimensions:

semantics/ intelligence, knowledge management

FP7 Call3 focus: Intelligent Content and Semantics

Key work programme themes :

- 3 axes:
 - boost creativity, enhance experience (« better »)
 - master content (richer & « easier »)
 - **dig out « hidden » information (find & correlate)**
- 3 forms of content:
 - (social) media content
 - scientific data (e.g. biomedicine)
 - **enterprise information**

Key dimensions:

knowledge management and multimedia & networked media

FP7 Call5 focus: Intelligent Information Management

Key work programme themes :

- **Capturing tractable Information**
- **Delivering pertinent information**
- **Collaboration and decision support**
- Personal sphere
- Impact and S&T leadership

Key dimensions:

large and complex data sets + real time dimension

FP7 Call SME-DCL focus: Intelligent Information Management

Key work programme themes :

- **Bootstrapping a data economy**
- Community building and best practices
- Sharing language resources
- Building consensus and common services

Key dimensions:

data pooling for new service + focus on SME participation

FP7 Call8 focus:

Intelligent Information Management

Key work programme themes :

- **Methodologies for scaling data intensive techniques**
- **Intelligent systems for decision making and situation awareness**
- Benchmarking and information management diversity
- Speeding up towards large scale information management systems (SA)
- Community building (CA)

Key dimensions:

"big data"

In a nut shell:

Application domains:

Business sector

- Marketing
- Logistics
- Product dev.
- Financial dev.
- ...

Personal and social sphere

- Entertainment
- Personal applications
- Social networks
- ...

Public services

- Health
- Education
- Culture
- Emergency management
- ...

Societal challenges

- Science
- Transport
- Environment
- Smart cities
- GIS
- ...

Technology challenges:

- Big data
- Semantics and reasoning
- Collaboration tools
- Multimedia and multimodal content



Business process and business intelligence



European Commission

Businesses rely on countless heterogeneous complex ICT systems ...

Industry



Stock markets



Accounting

Taxes

GL

Cash-flow

ABC / ABM

Risk analysis

Human resources

MTM

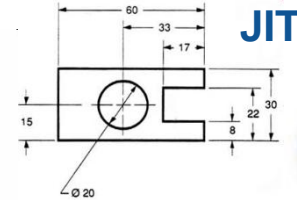
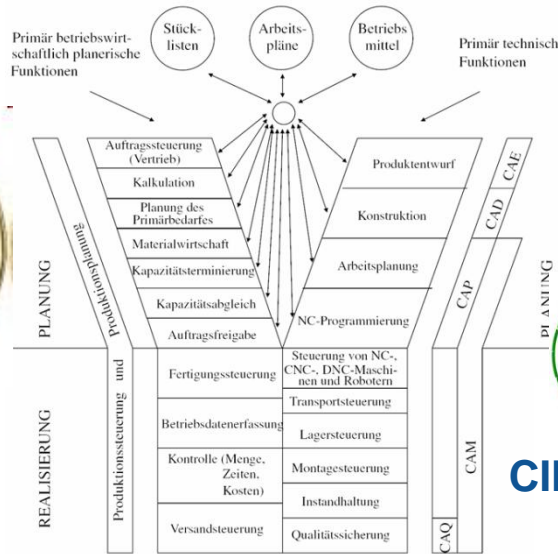
Assets management

CRM

DRM

Services

Bank accounts



MPS

MRP

BOM

ERP

SPC

TQM

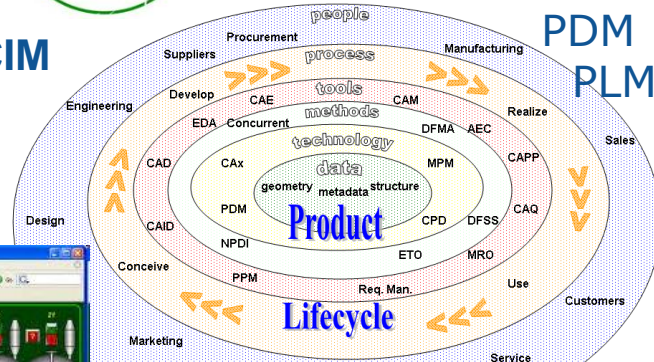


CIM

PDP

PDM

PLM



PERT-CPM

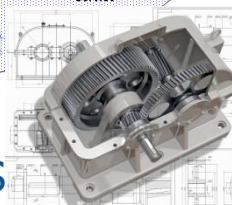
SCADA



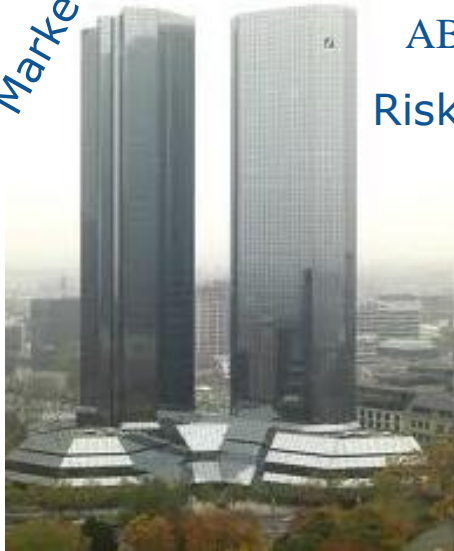
Management

STEP XPLD

OEE CMMS



Marketing





European
Commission

... but structured information represents only a small fraction of the whole picture



More than 85% of all business valuable information exists in the form of e-mails, memos, notes from call-centres, news, user groups, chats, reports, web-pages, presentations, image-files, video-files, marketing material and news.

Source: Merrill Lynch

Main ICT challenges for businesses

- Growth of organisational information
- Large and growing data quantity
- Multimodal information
- Unstructured data
- Heterogeneity of data and data sources
- Complexity
- Interoperability
- External shocks, e.g. financial crisis

Main application targets

**Management of
business processes**



**Business intelligence
and analytics**



BI and analytics a \$10.5 Bln/year market
Source: Gartner Group

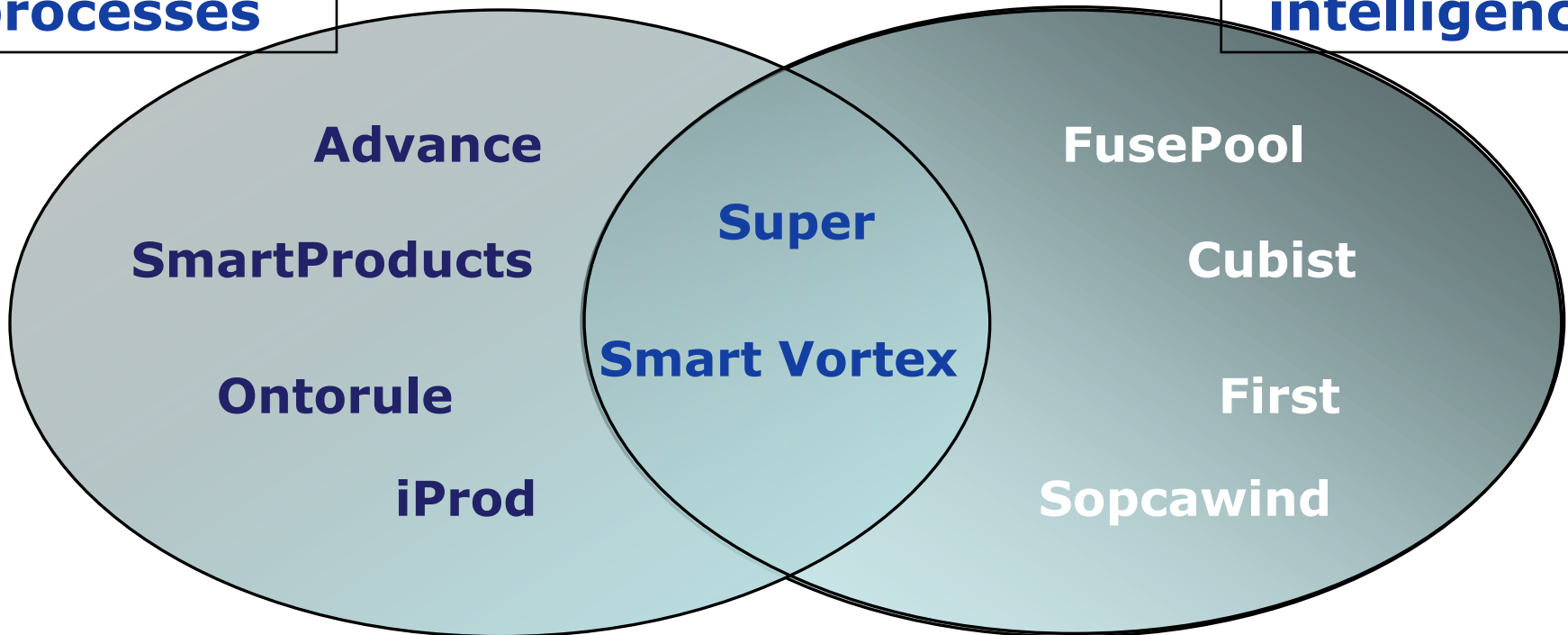


Best practice examples

Best practice examples of FP7 project portfolio

**Business
processes**

**Business
intelligence**



Projects related with product lifecycle

Idea and
strategic
analysis

Development

Market

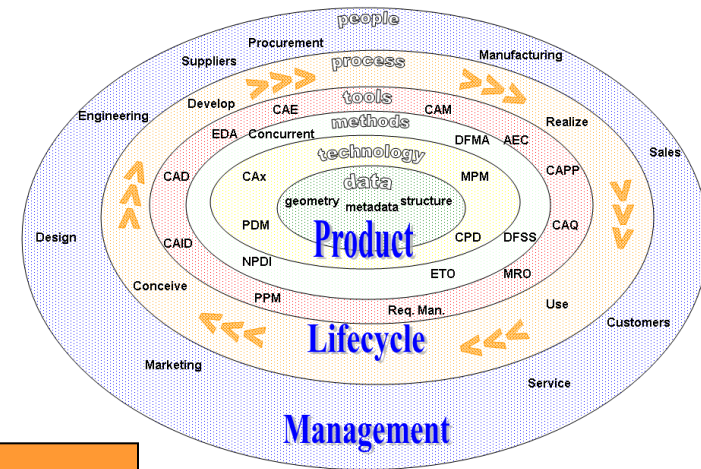
End of
product
life cycle

Fusepool

iProd

SmartProducts

Smart Vortex





European Commission

Fusepool

connecting knowledge

STREP – 24 months – 1.9 M€ – 6 partners
Coordinator: Berner Fachhochschule (CH)
Call SME – To be started in July 2012

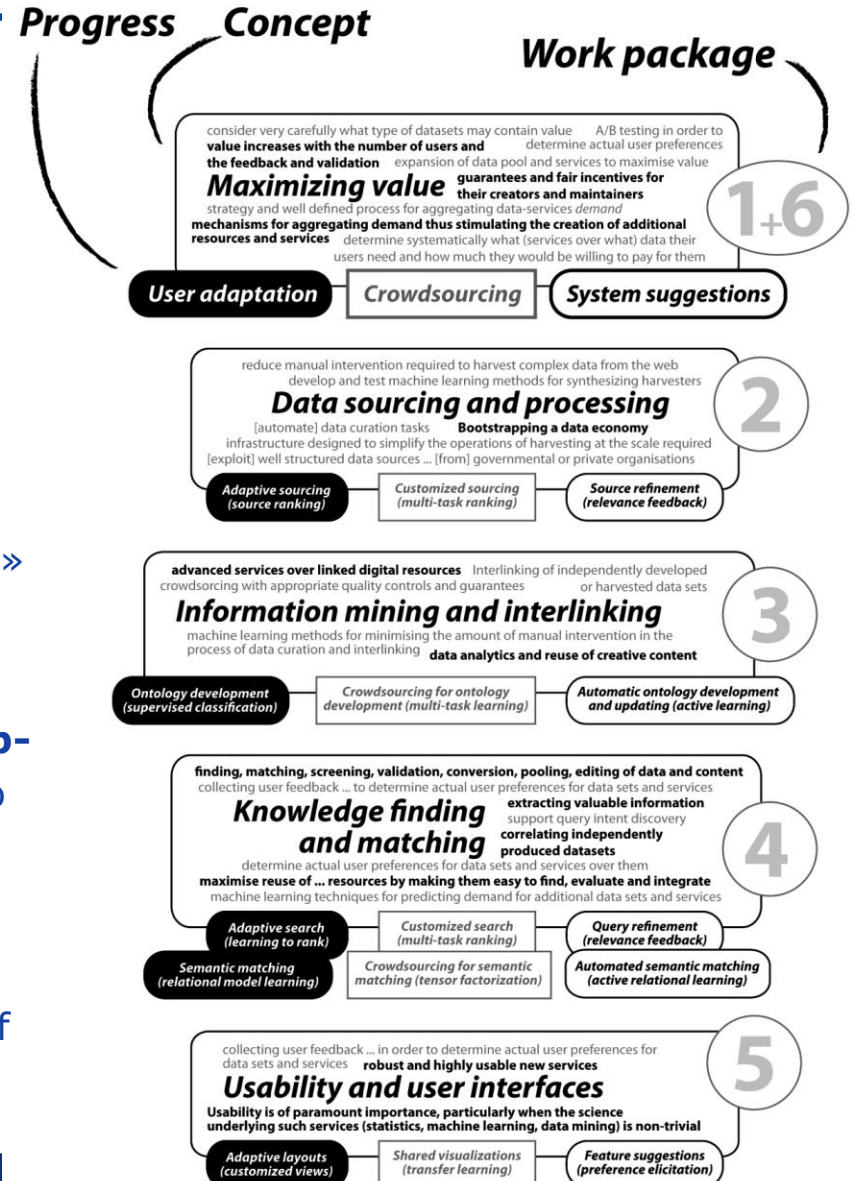
Fusing and pooling information for product/service development and research

Develops an user-adaptive «Living Knowledge Pool» for **product development and research**.

Provides two core benefits:

- automated transformation of content **from web-harvesting** and participating organizations into structured **Linked Open Data**
- automated group-specific optimization of **knowledge finding and matching**

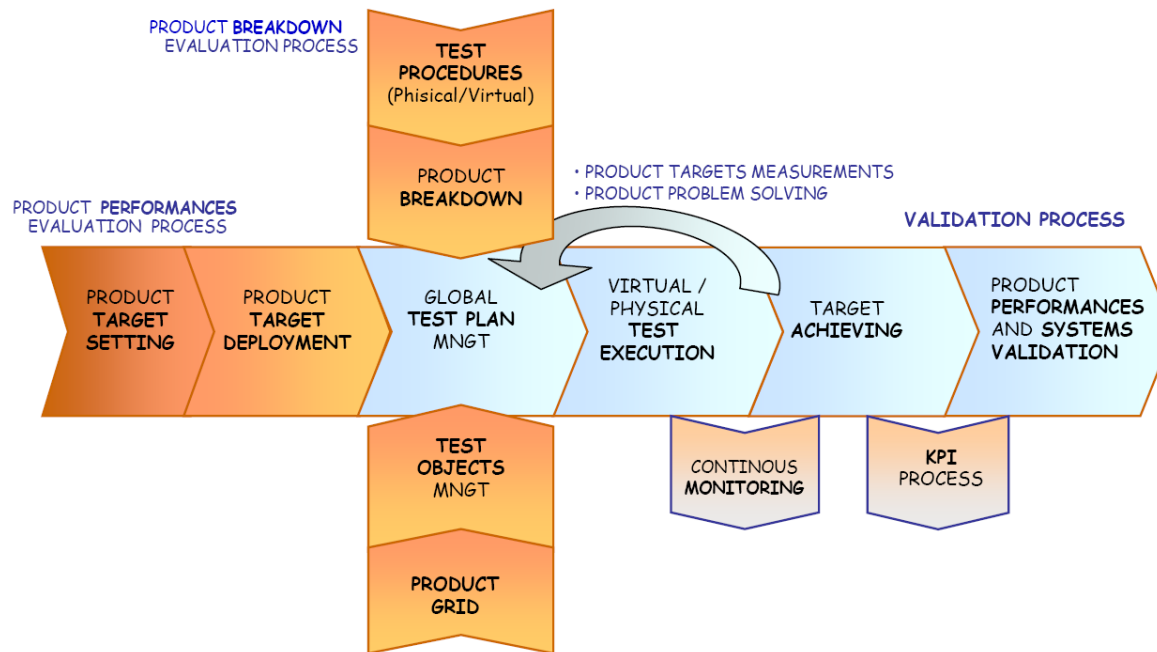
(In collaboration with the European Organisation of Living Labs)



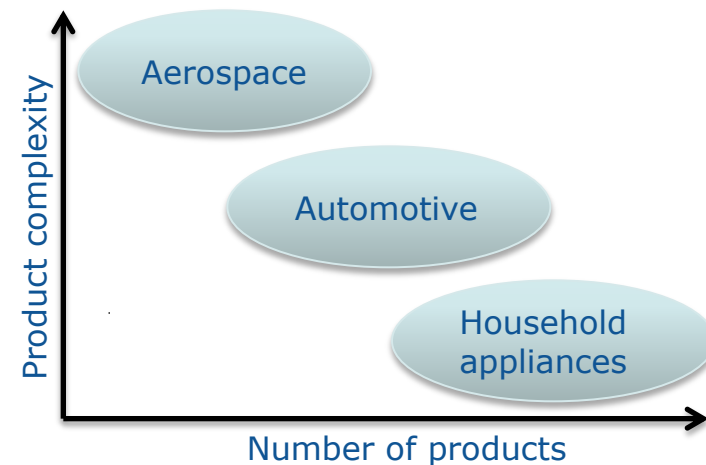
iProd

Integrated management of product heterogeneous data

- iProd aims to improve the efficiency and quality of **Product Development Process**.
- To achieve these goals, iProd relies on **knowledge management (KM)**, **knowledge based engineering (KBE)**, **process integration** and **automation technologies**.



TEST USE CASES:





IP – 36 months – 7.0 M€ – 10 partners
 Coordinator: SAP A.G. (D)
 Call 3 – Finished in January 2012
<http://www.smartproducts-project.eu/>

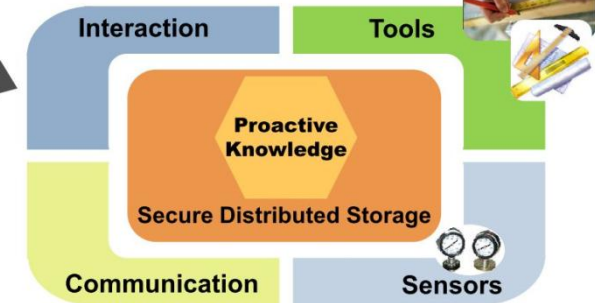
Proactive Knowledge for Smart Products

- Developed the scientific and technological basis for building **"smart products" with embedded "proactive knowledge"**.
- Help customers, designers and workers to deal with the ever **increasing complexity and variety of modern products**.
- Leverage "proactive knowledge" to communicate and **co-operate with humans, other products and the environment**.

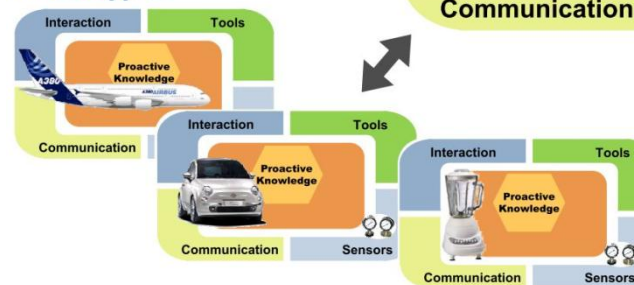
User Acceptance



SmartProducts Software Platform



SmartProducts Prototypes

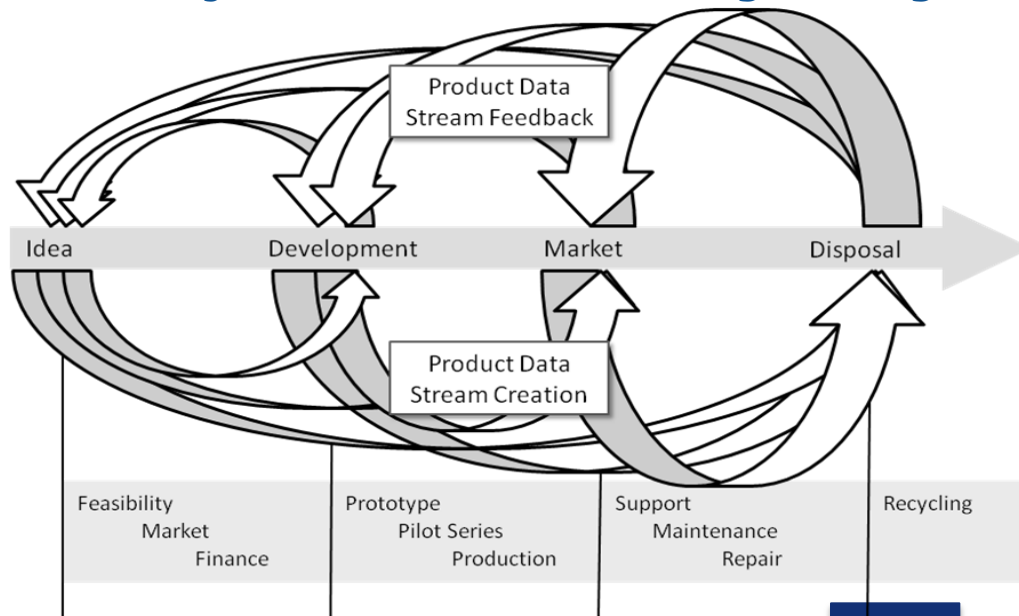


- *Aircraft Manufacturing*
- *Smart Car*
- *Smart Kitchen*

Scalable Semantic Product Data Stream Management for Collaboration and Decision Making in Engineering

Provides a **technological infrastructure** for:

- intelligent management and analysis of **massive data streams**
- to achieve better collaboration and decision making in **large-scale collaborative projects**
- concerning **industrial innovation engineering**.



TEST USE CASES:

- Machine tools
- Hydraulic drives
- Heavy duty machinery
- Consumer electronics

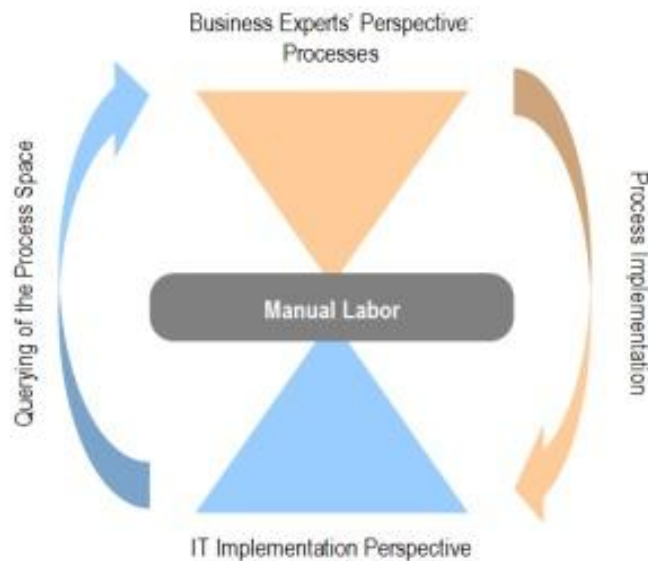




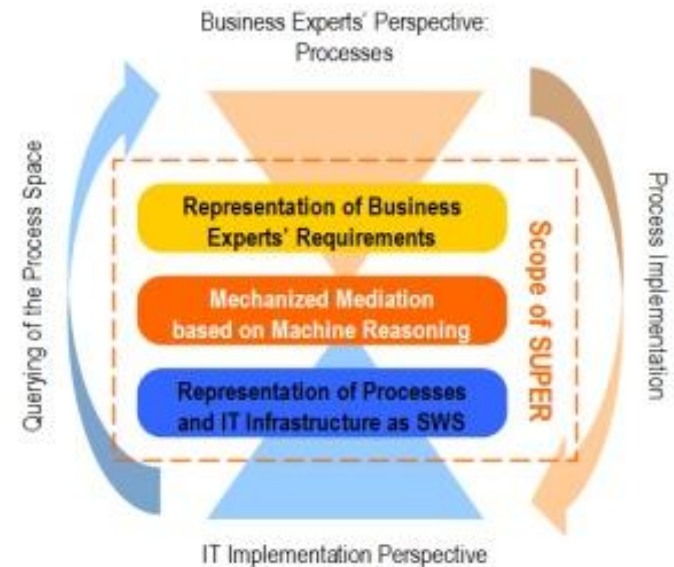
Semantics Utilised for Process Management
within and between Enterprises

IP – 36 months – 11.0 M€ – 19 partners
Coordinator: SAP A.G. (D)
FP6 - Call 4 – Finished in March 2009
<http://www.ip-super.org/>

The major objective of SUPER was to **raise Business Process Management to the business level from the IT level**. This resulted in development of tools enabling deployment of **Semantic Business Process Management**.



Critical IT / Process Divide



Semantic Business Process Management

ADVANCE

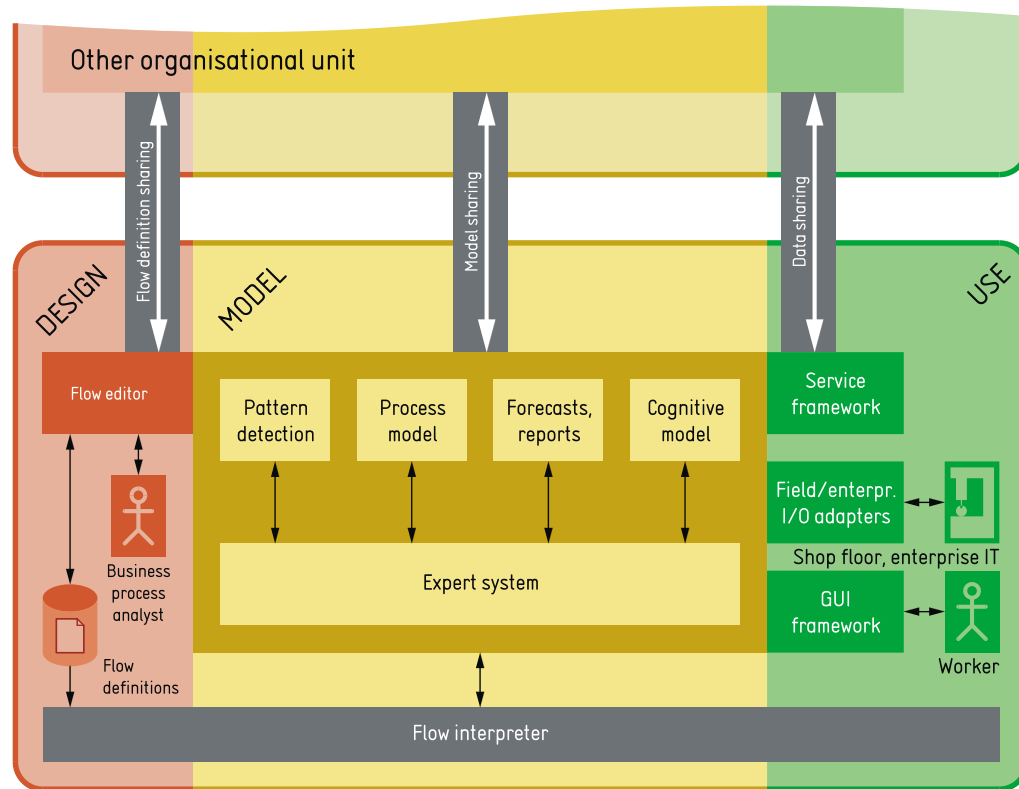
Advanced predictive-analysis-based decision-support engine for logistics



STREP – 36 months – 2.0 M€ – 6 partners
 Coordinator: MTA Sztaki (HU)
 Call 5 – Started in October 2010
<http://www.advance-logistics.eu/>

Advanced predictive-analysis-based decision-support engine for logistics

- Enables **strategic planning coupled with instant decision** making to provide vision in a blizzard of data.
- Develops an **innovative predictive-analysis-based decision support platform** for novel competitive strategies in **logistics operations**.
- Provides a dual perspective on **transport requirements and decision making** dependent on the latest snapshot information and the best higher-level intelligence.



ONTORULE Project

*ONTO*logies meet
Business RULES

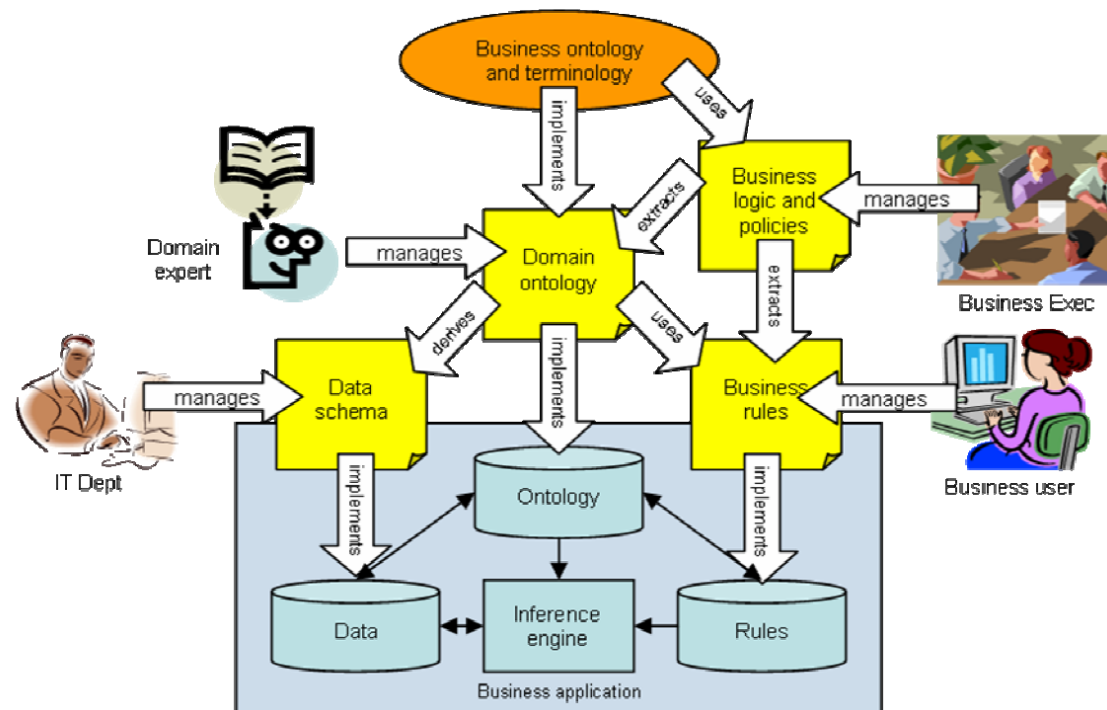


The objective of ONTORULE is to integrate all the required pieces of knowledge and technology to allow the **acquisition of ontologies and business rules from the most appropriate sources**, including natural language documents; their separate management and maintenance; and their transparent operationalisation in IT applications.

IP – 36 months – 5.4 M€ – 9 partners
Coordinator: IBM (FR)
Call 3 – Finished in December 2011
<http://ontorule-project.eu/index.html>

TEST USE CASES:

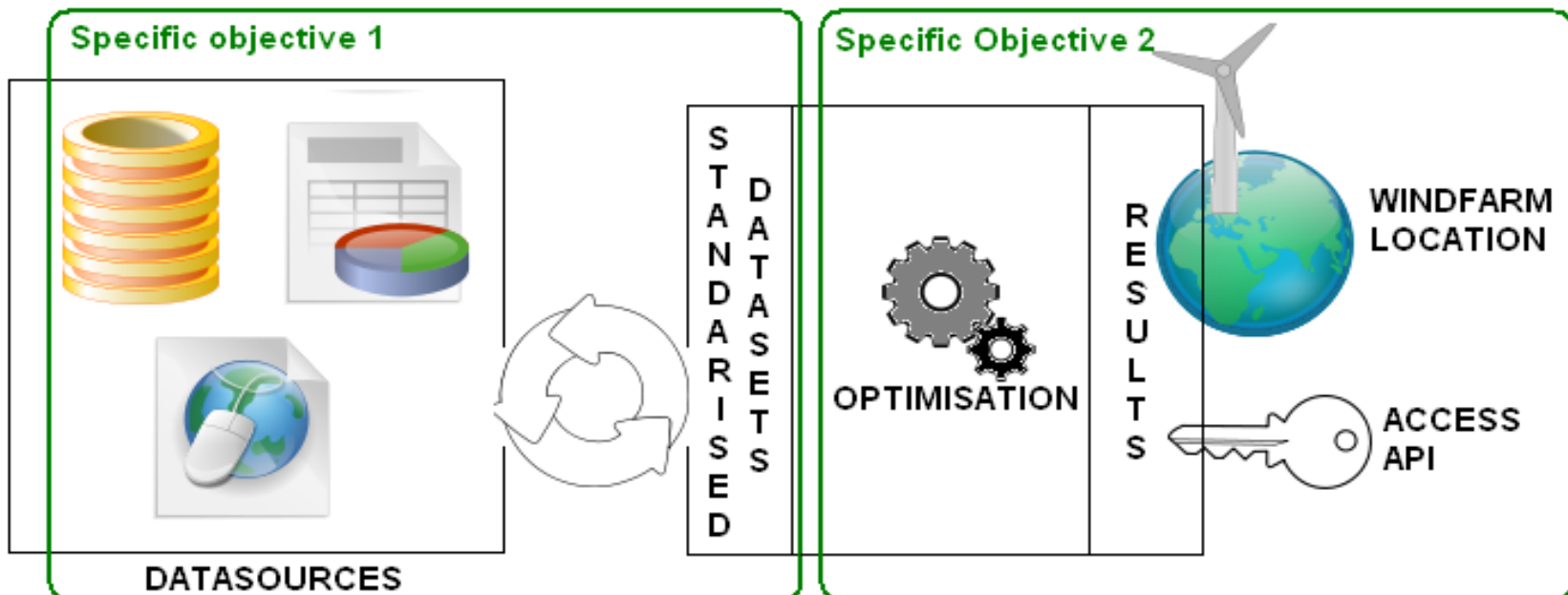
- Automotive industry
- Iron and steel industry



Sopcawind

Software for the Optimal Place Calculation for WIND-farms

- The main objective is to create new services for determining the **optimal wind turbines location**, based on the exploitation of **large and heterogeneous datasets**.
- These datasets will be converted and standardised into a **common data pool**.
- The data pool will be linked then to an **optimisation engine** which results will be the base for wind farms siting optimisation.

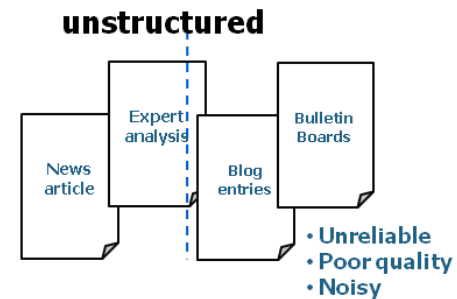
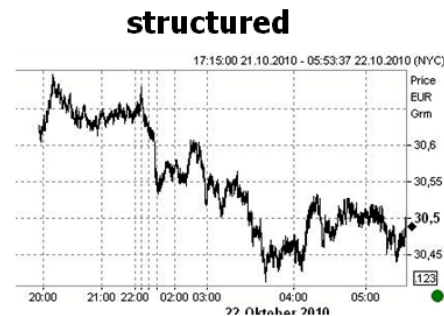




Large scale information extraction and integration infrastructure for supporting financial decision making

FIRST provides an ICT infrastructure that

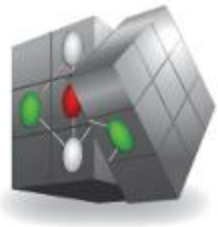
- Collect and process massive amounts of **heterogeneous, structured and unstructured data** from economic data sources
- Integrate this data into **a financial knowledge base** for further analysis
- Exploit this data using **highly scalable online event detection and prediction models, visualization models, and decision-support models** to support decision making.



Manually impossible to collect, filter, and assess these types and amounts of information.
 The solution comes with automation!



Exploits and integrates financial information that is **dynamic, extremely large,** and **heterogeneous** by using methods that will address noise and uncertainty in order to scale the information and support in the financial decision making process



cubist
Your Business Intelligence

STREP – 36 months – 3.0 M€ – 7 partners
Coordinator: SAP A.G. (D)
Call 5 – Started in October 2010
<http://www.cubist-project.eu/>

Combining and Uniting Business Intelligence and Semantic Technologies

CUBIST copes with constantly growing amounts of data, complex economic interactions, and the incorporation of unstructured data into analytics.

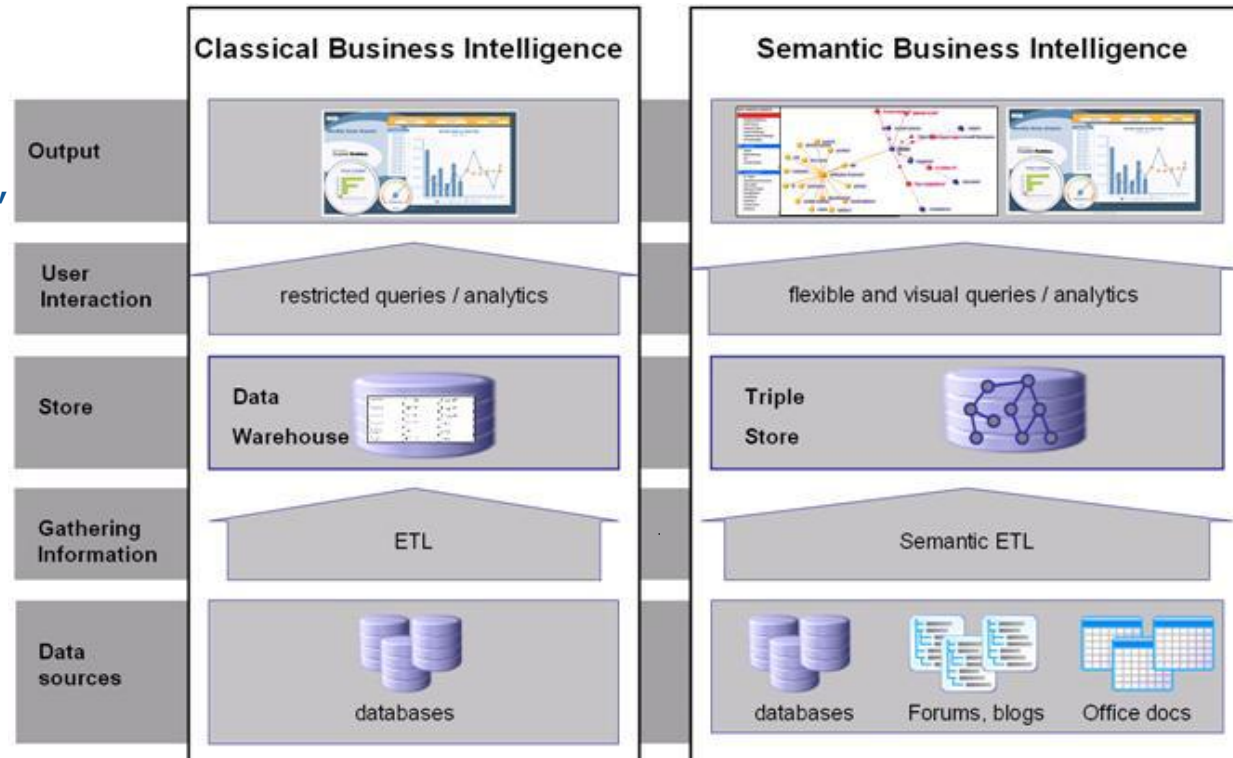
It combines **Semantic Technologies, Business Intelligence and Visual Analytics.**

CUBIST aims to

- support **unstructured and structured data federation,**
- persist the federated data in a **semantic Data Warehouse,**
- provide **novel ways of applying visual analytics.**

TEST USE CASES:

- Market intelligence
- Computational biology
- Control centre operations





Trends and future plans

Trends

- Information overabundance creates fantastic **opportunities** for business but also some **threats**
- The business champions of the future will be the most successful companies in **coping with data flood**
- Yet **technology solutions lags far behind** the complexity of information problems
- The **EC is committed to support** business ICT R&D to improve European competitiveness

***Related ICT calls in 2013**

- **Content analytics and language technologies**
 - *FP7 ICT Call 10 opening July 2012 (tbc)
- **SME initiative on analytics**
 - *Special call targeting SMS opening July 2012 (tbc)
- **Scalable data analytics**
 - *FP7 ICT Call 11 opening end of 2012 (tbc)

(*Call numbers and dates are indicative. They may change following the EC decision.)

Proposers' day

Networking and information
gathering event for all ICT calls
of 2013

http://ec.europa.eu/information_society/events/ictproposersday/2012/index_en.htm



Outlook - Horizon 2020

- Period from 2014 until 2020
- 40% budgetary increase (Commission proposal)
- Administrative simplification: simpler funding rules
Open, light and fast schemes
- Higher integration between R&D and innovation
- Roadmap based research (from projects to programmes)
- ICT for businesses will have even more relevance

Further info

- ***ICT under FP7***

<http://cordis.europa.eu/fp7/ict/>

- ***Experts data base:***

<https://cordis.europa.eu/emmfp7/>

- ***Unit – Technologies for Information Management***

URL: <http://cordis.europa.eu/info-management/>

eMail to: info-e2@ec.europa.eu



Thank you!