SESAR Lab
Computer Science Department

UNIVERSITÀ
DEGLI STUDI
DI MILANO

Service Oriented Architectures Course

Crema — December 18, 2013 — h. 14:00

Collecting and analyzing data for valuable decision making in a service oriented business scenario

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Engineering Group

40 branches in Italy and abroad.

USA Brazil Argentina Belgium Italy

The first Italian IT player.

7,000 PEOPLE

7% of the Italian market

more than **1,000** **large accounts in all markets**

System Integration & Application Maintenance

OUTSOURCING

Software Consulting

34.2% PUBLIC ADMINISTRATION & HEALTHCARE

26.4% TELCO & UTILITIES

21.2% INDUSTRY, SERVICES & INFRASTRUCTURE

18.2% FINANCE

Operating revenues

2012	12% revenues overseas	**770.0**
2011	10% revenues overseas	**775.7**
2010	7% revenues overseas	**758.6**

Ebitda adjusted

2012	**96.1**
2011	**92.2**
2010	**92.0**

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Everyone needs services

But … what is a service ?

- The **Core concept** in a Service Oriented model is the concept of *Service* which is subject to interpretations that make its meaning quite ambiguous

- Different points of view are possible:
  - The ***Business Analyst*** point of view: a service is a functionality, part of a Business Process
  - The ***Designer*** point of view: a service is a software module with a precise functional identity that can be invoked through a well defined and documented public interface

- We prefer to talk in terms of **processes** and **components**
  - The ***Business Analyst*** analyzes the processes so as to detect the functional components he needs to build the process
  - The ***Designer*** translates the identified components into “services”

What methodology to use ?

Bottom-up

Leverage the existing applications and start building services as an assembly of existing components

benefits: time reduction
risks: the developed services have a shorter lifecycle and demand frequent maintenance and refactoring

Top-down

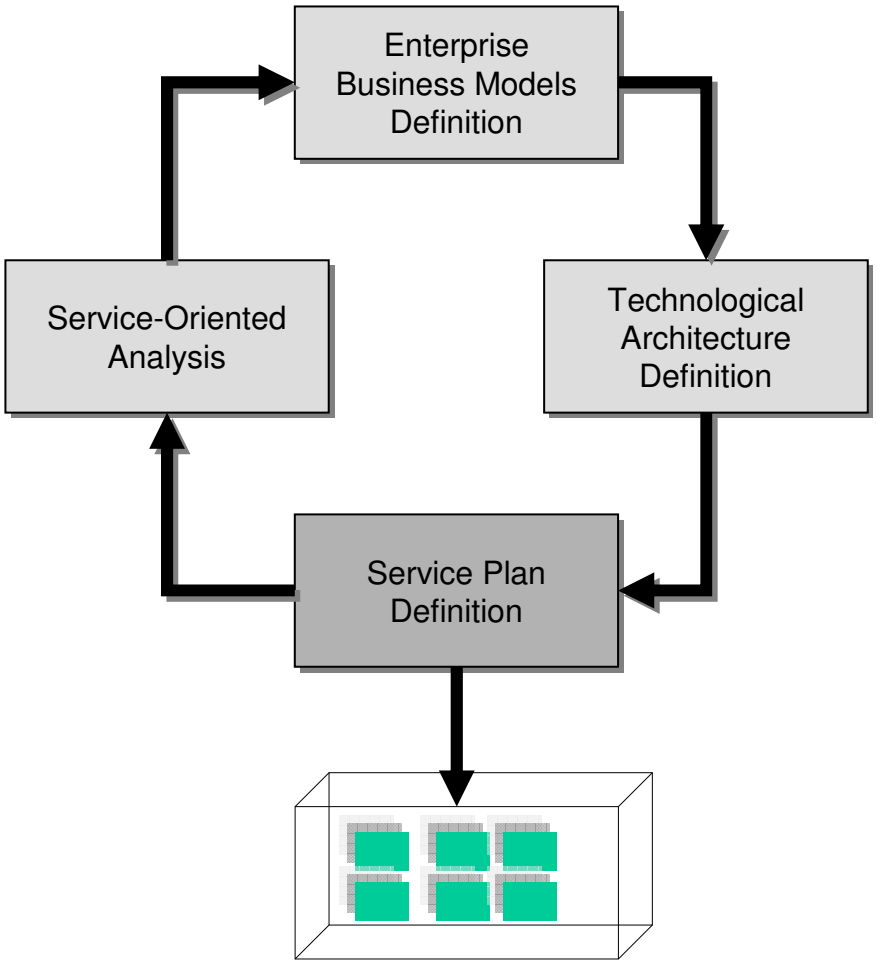
Start from business models to identify a complete plan of the services to be built, then iterate on their design and implementation

benefits: tidy and complete architecture
risks: huge initial investment for analysis an identification of the services plan

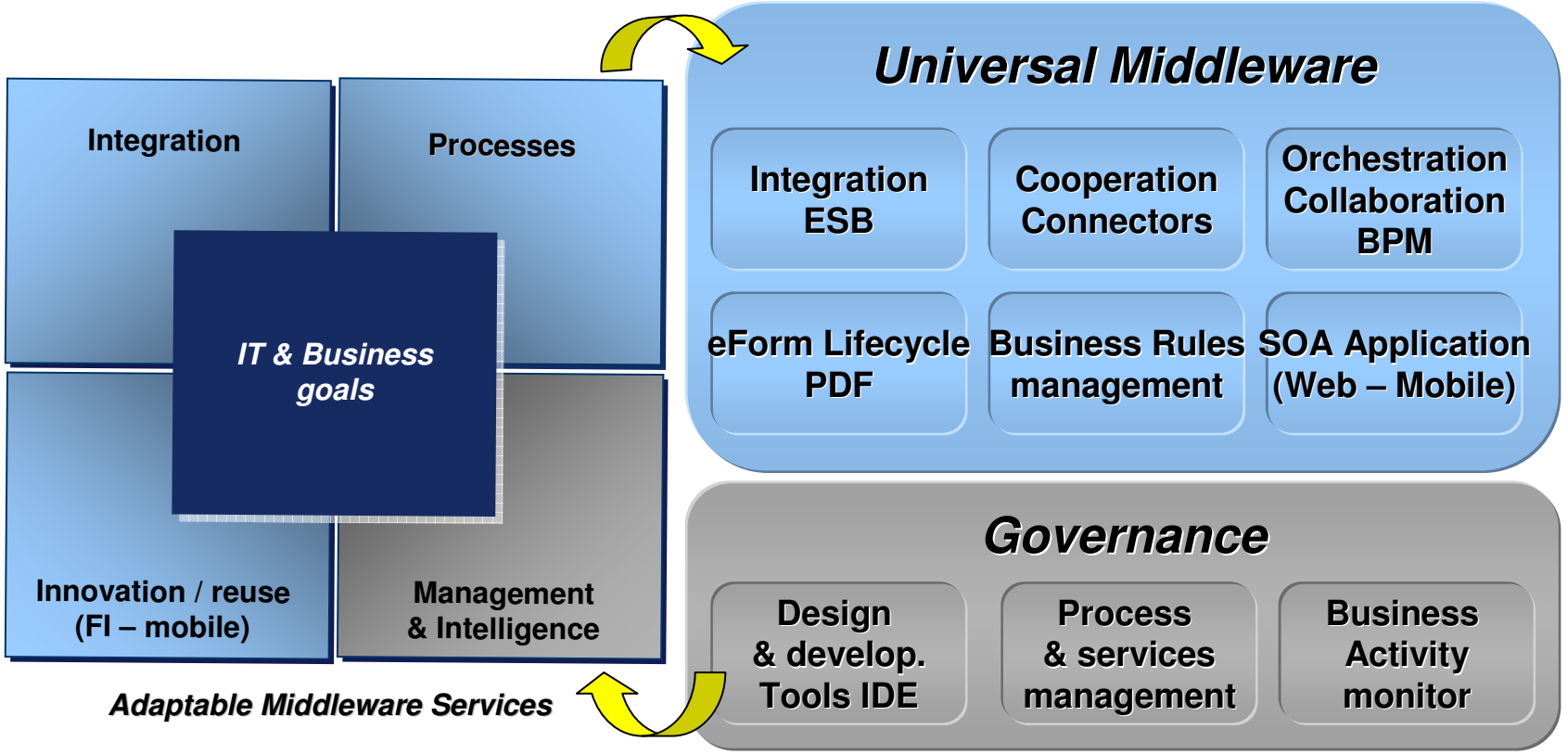
Meet-in-the-Middle (Agile Delivery**):**

Gradual definition of the services plan and parallel implementation of highest priority services. When the service plan has sufficiently progressed, services can be revised to make them compliant with the plan.
The goal: to balance the need for a tidy design with the demands of a rapid development and time to market.

Synthesis of the methodology



The Universal approach

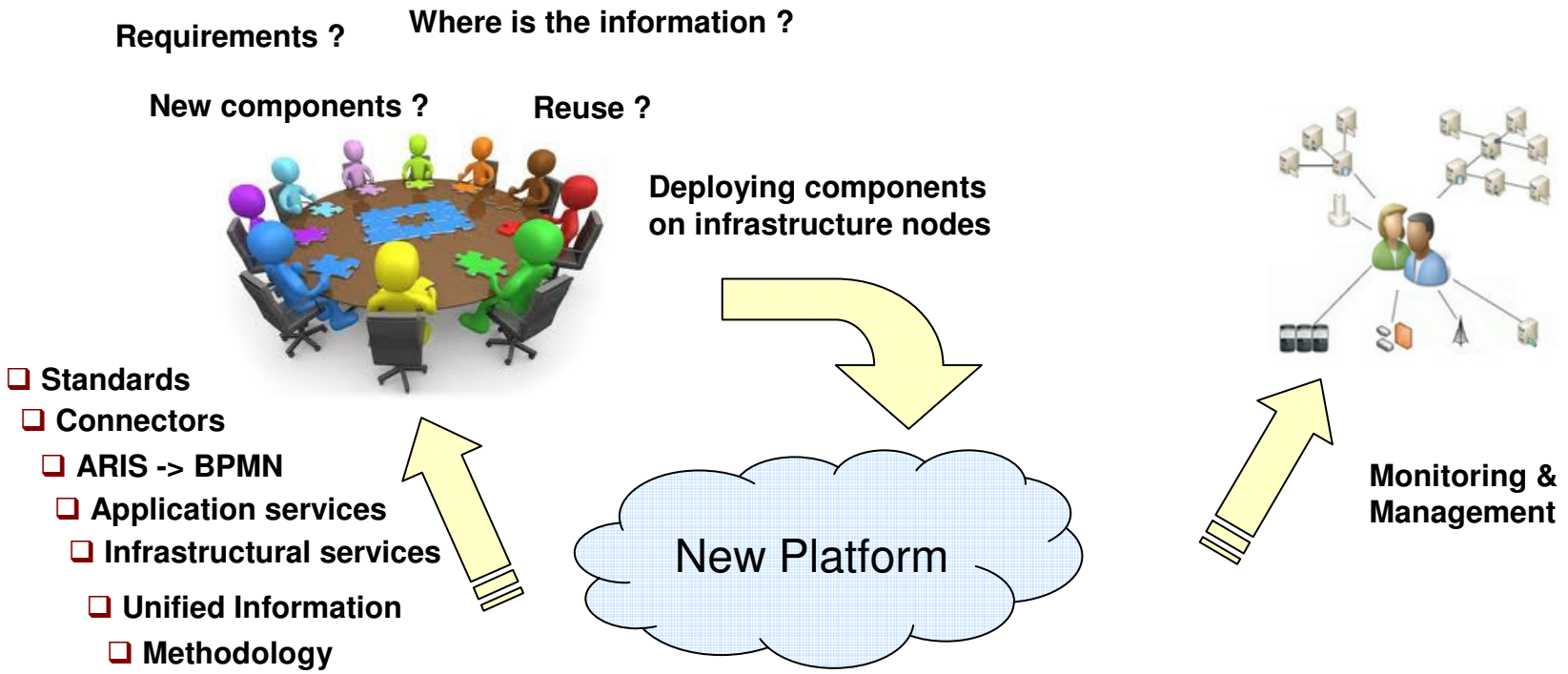


- **Core components** (service bundles) for the integration and management of services; for the definition of business rules and the realization of application modules in SOA architectures.
- By **parameterizing** each component, the solution gains a considerable **modularity**, allowing to meet even the most complex requirements.

Case history: a University

Defining the architectural framework to support new projects following a collaborative development model based on modular software components that interact using consistent, shared and integrated information.

The development of a service is split into phases: initial integration of the existing systems followed by a re-engineering process



Case history: a University

Explicitly expressed

- No application silos
- Interoperability
- Scalability
- Flexibility
- Standardization
- Workflow
- Document Management
- Unified data model
- SSO & Security/Profiling
- Governance

Proposed

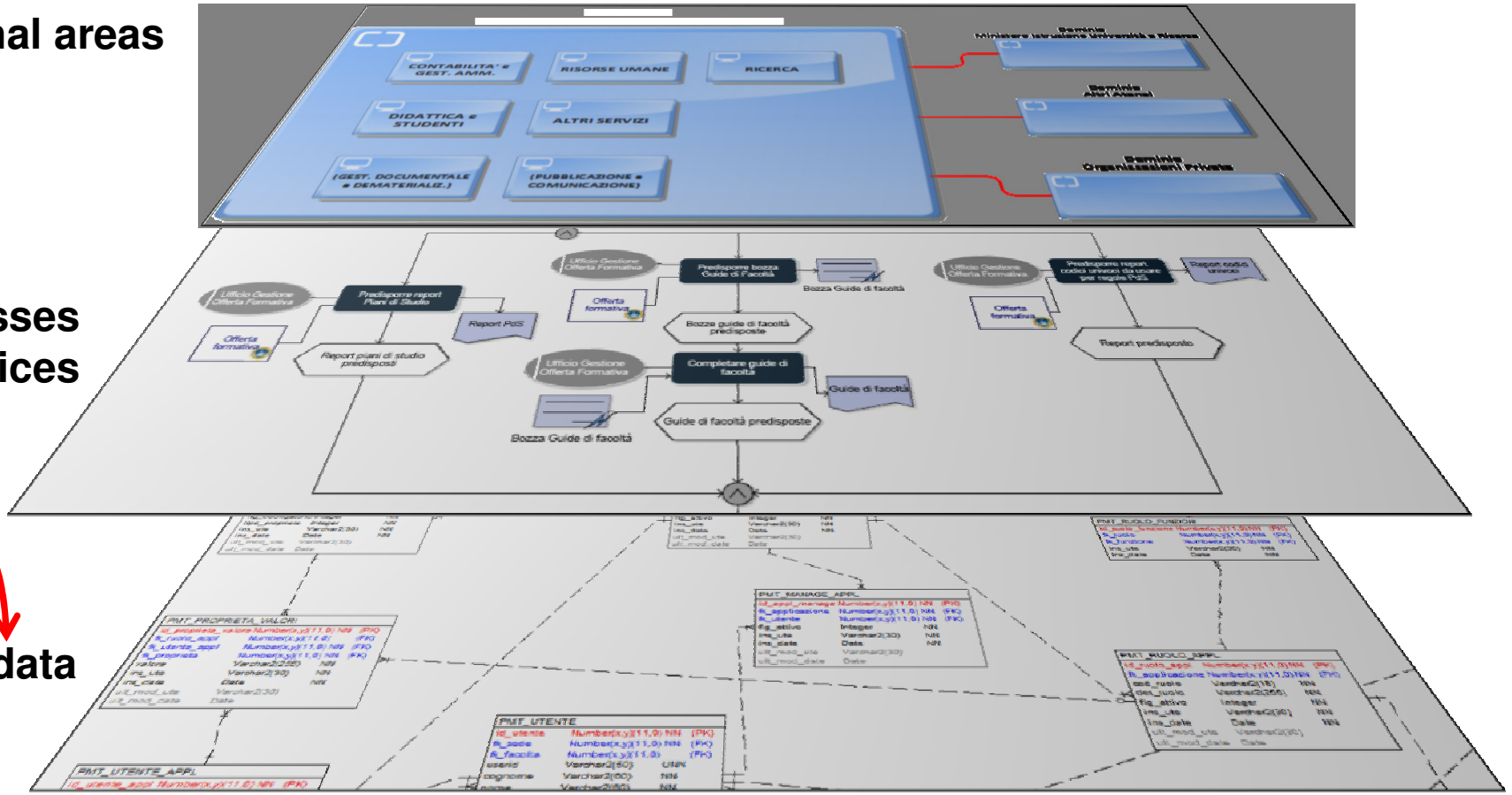
- Iterative development - initial integration of existing applications
- ARIS processes modeled by the Customer
- Low organizational impact
- Performance
- Scalability (SLA)
- Availability
- Knowledge gain

Case history: a University

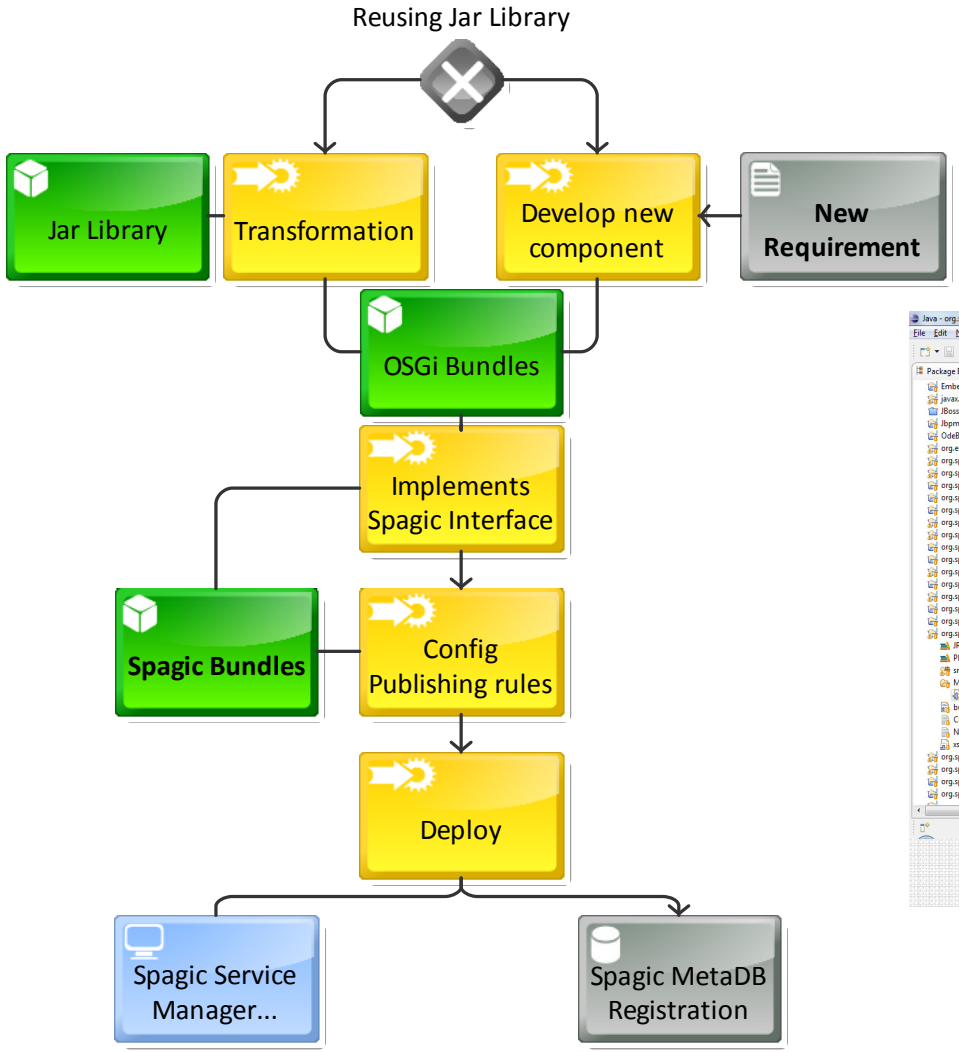
Functional areas

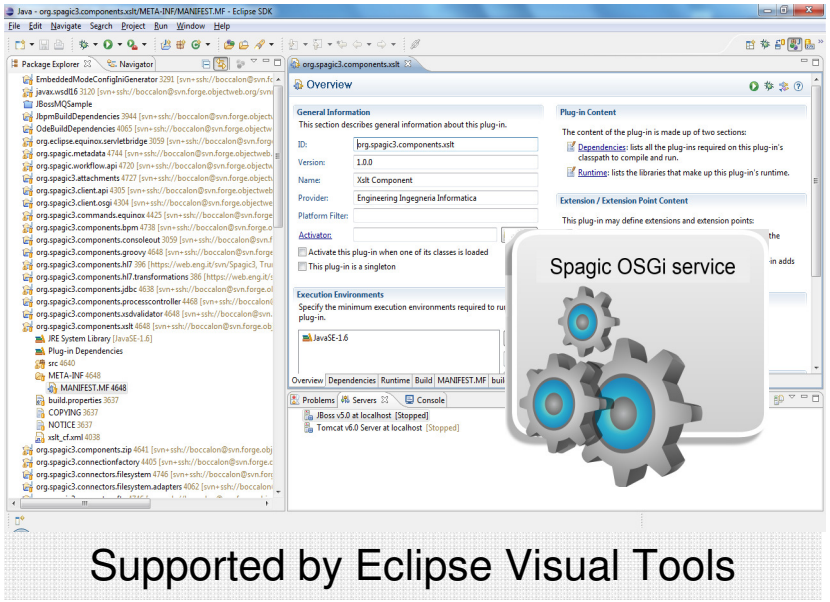
Processes & services

Unified data model



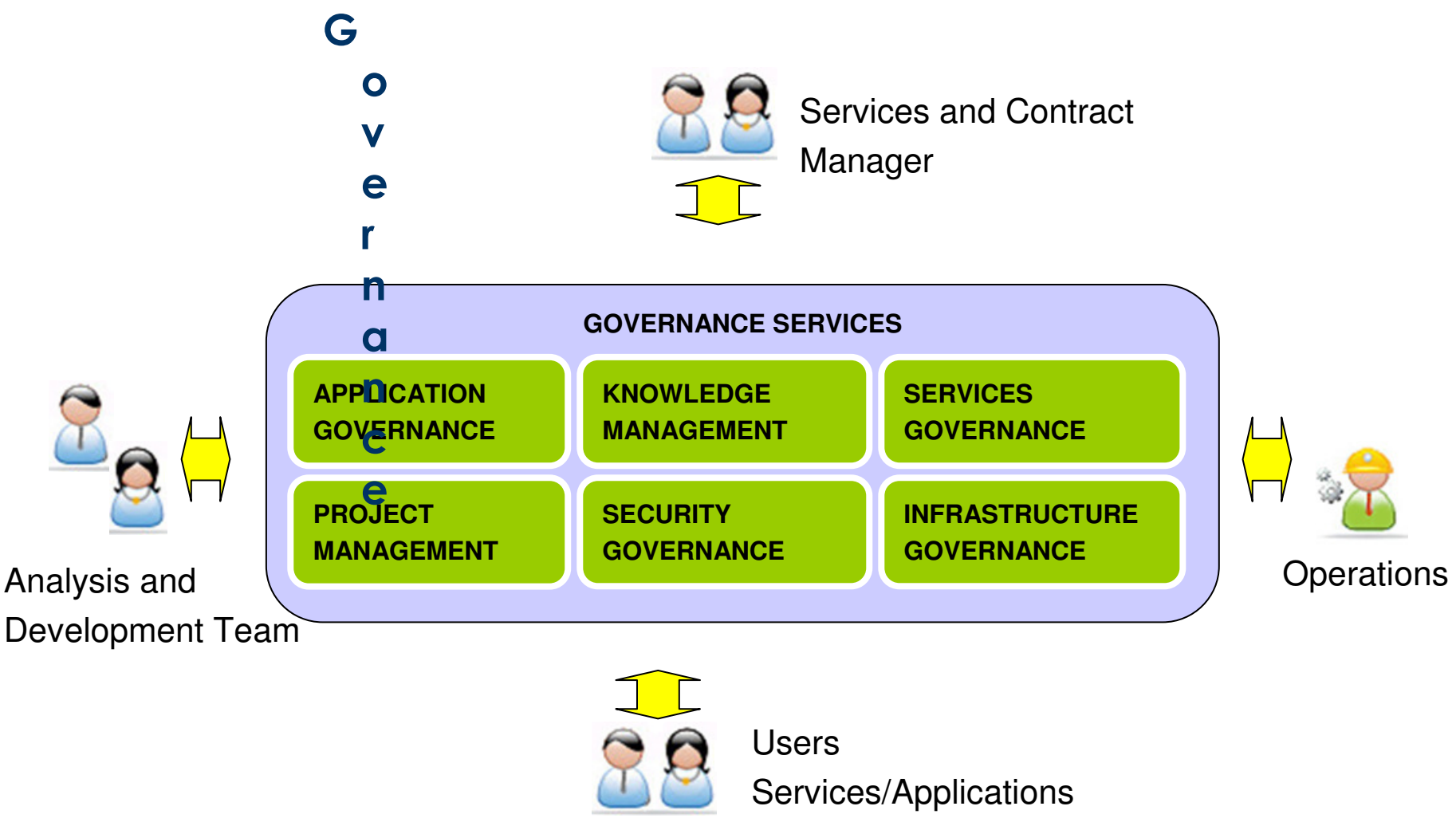
Case history: a University





Supported by Eclipse Visual Tools

Case history: a University



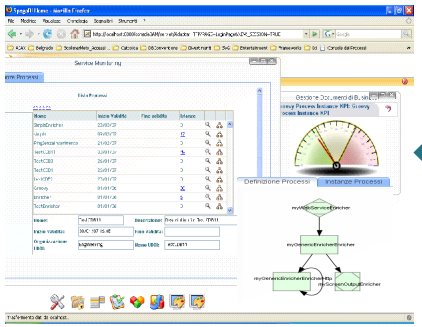
Governance requires BI / BAM

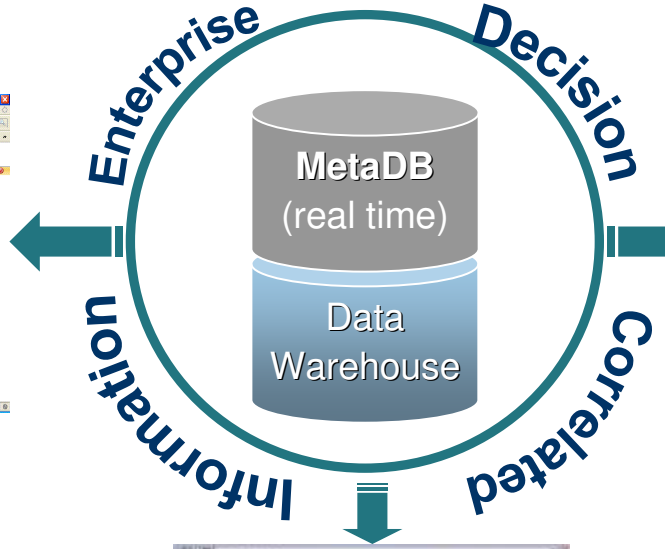
Real time monitor for processes, services and relevant information

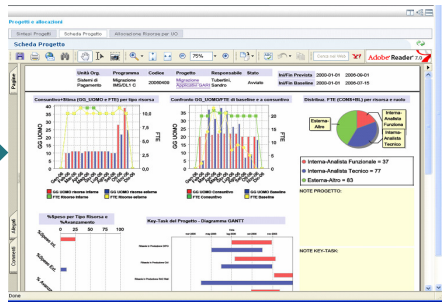
Error management and process restart

Events generated by systems monitor

Support to decision making



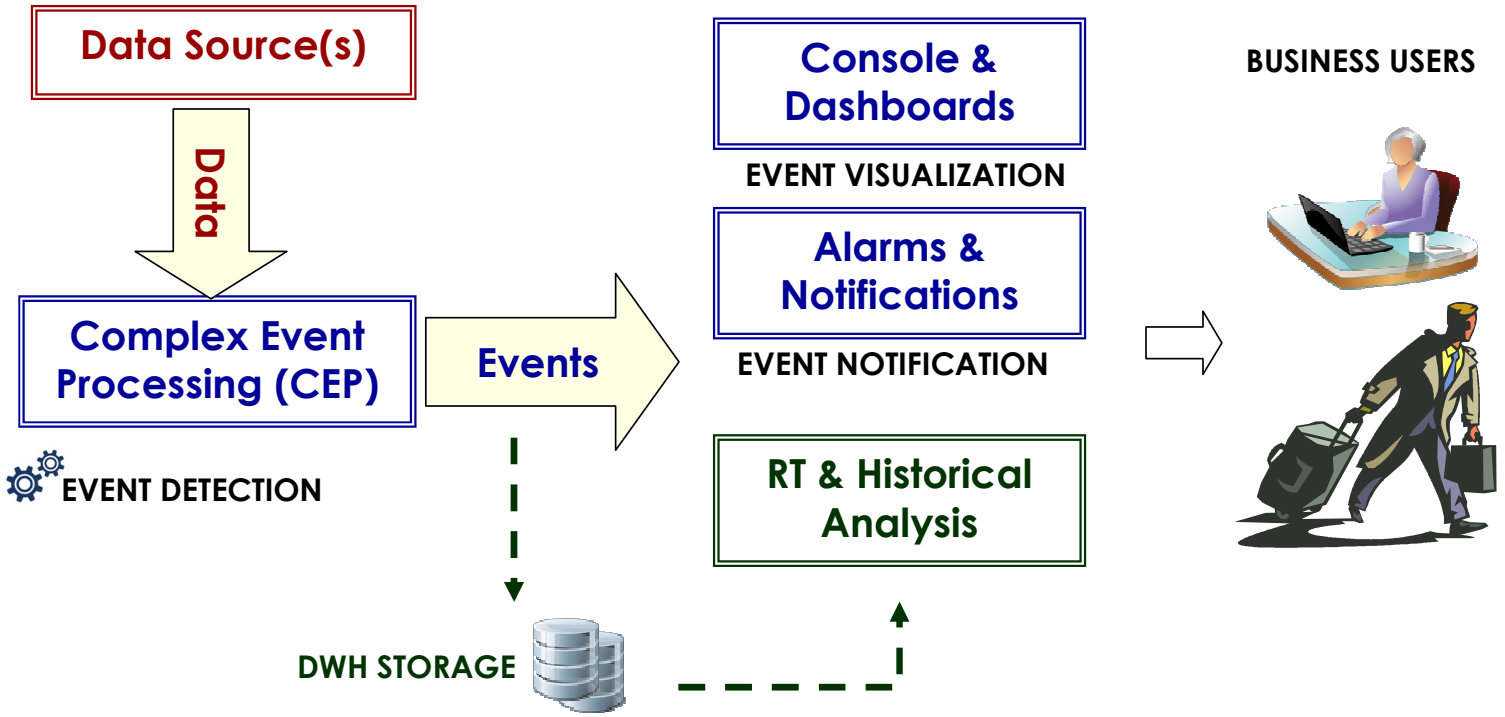




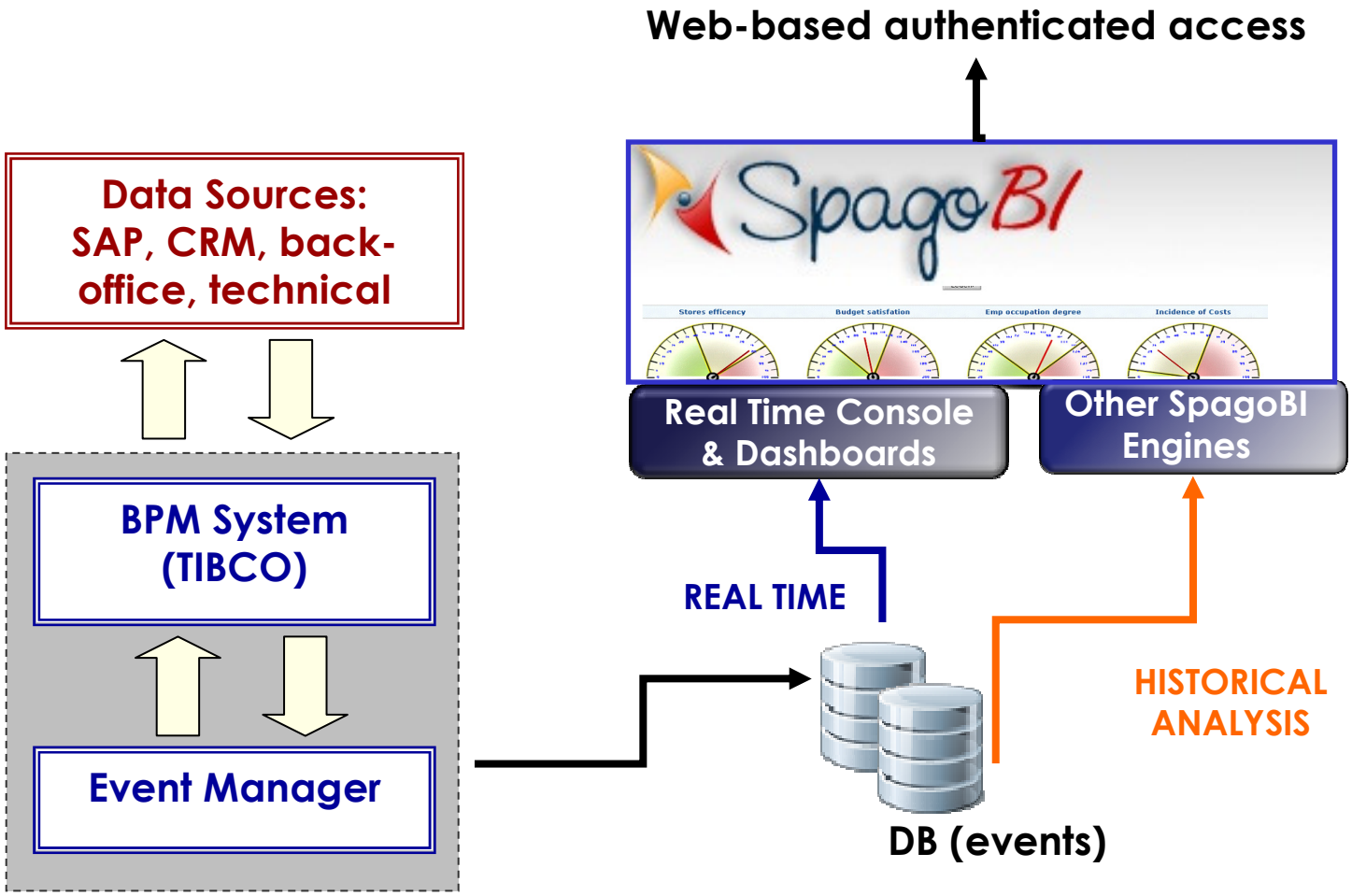
spagobi

Business Activity Monitoring

BAM systems detect events and make them meaningful to business users



Case History: BAM



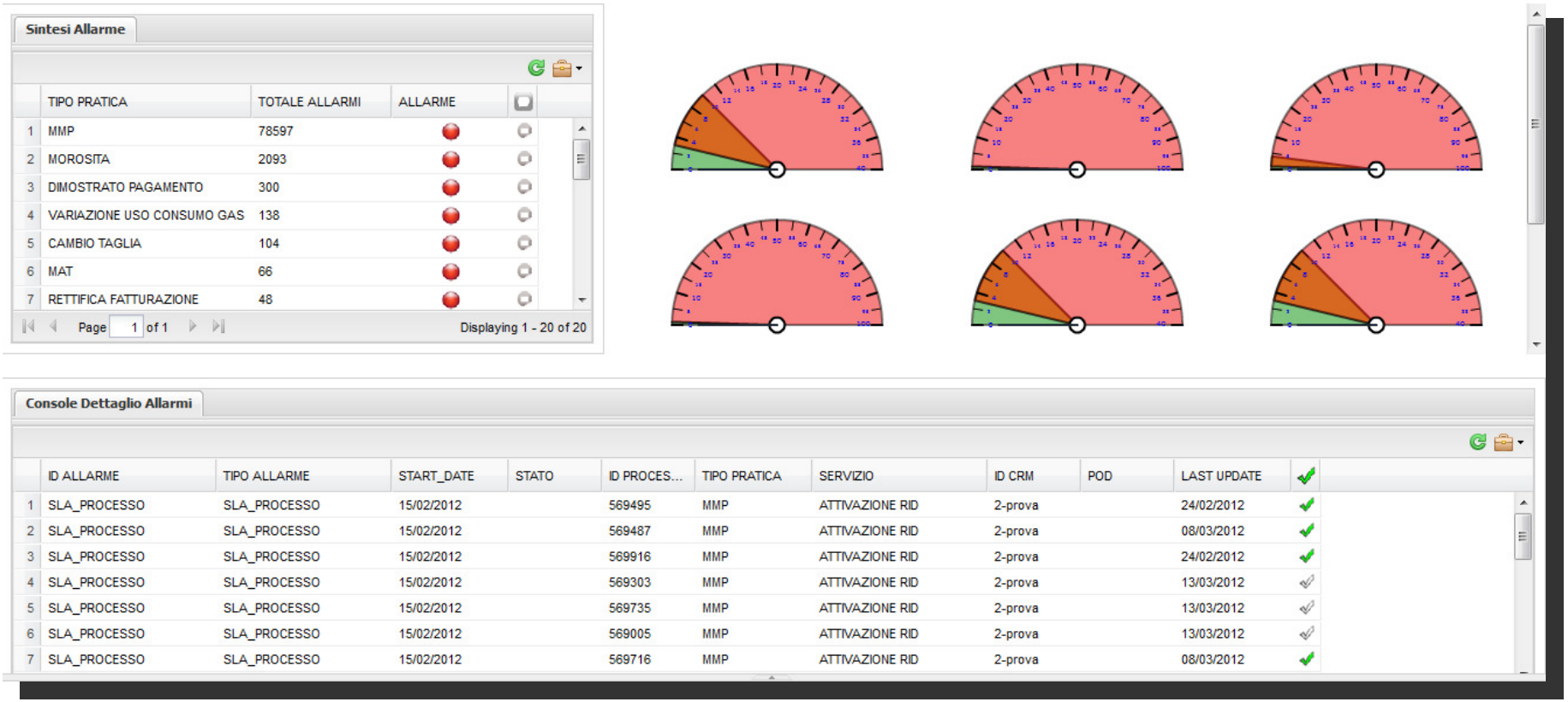
Case History: BAM

Training & Interaction

Monitoring of business processes	• Process monitoring dashboard • RT process monitoring console
Monitoring of BPM waste management	• Waste monitoring dashboard • RT waste monitoring console
Alarms management	• RT alarm console on processes and waste mgmt
Shared performance evaluation	• Profiled KPI model of processes and waste mgmt
Process design sharing	• Office integration of visual process design maps

Case History: BAM

Alarms for critical situations (bottleneck, SLA)
Overview and detail



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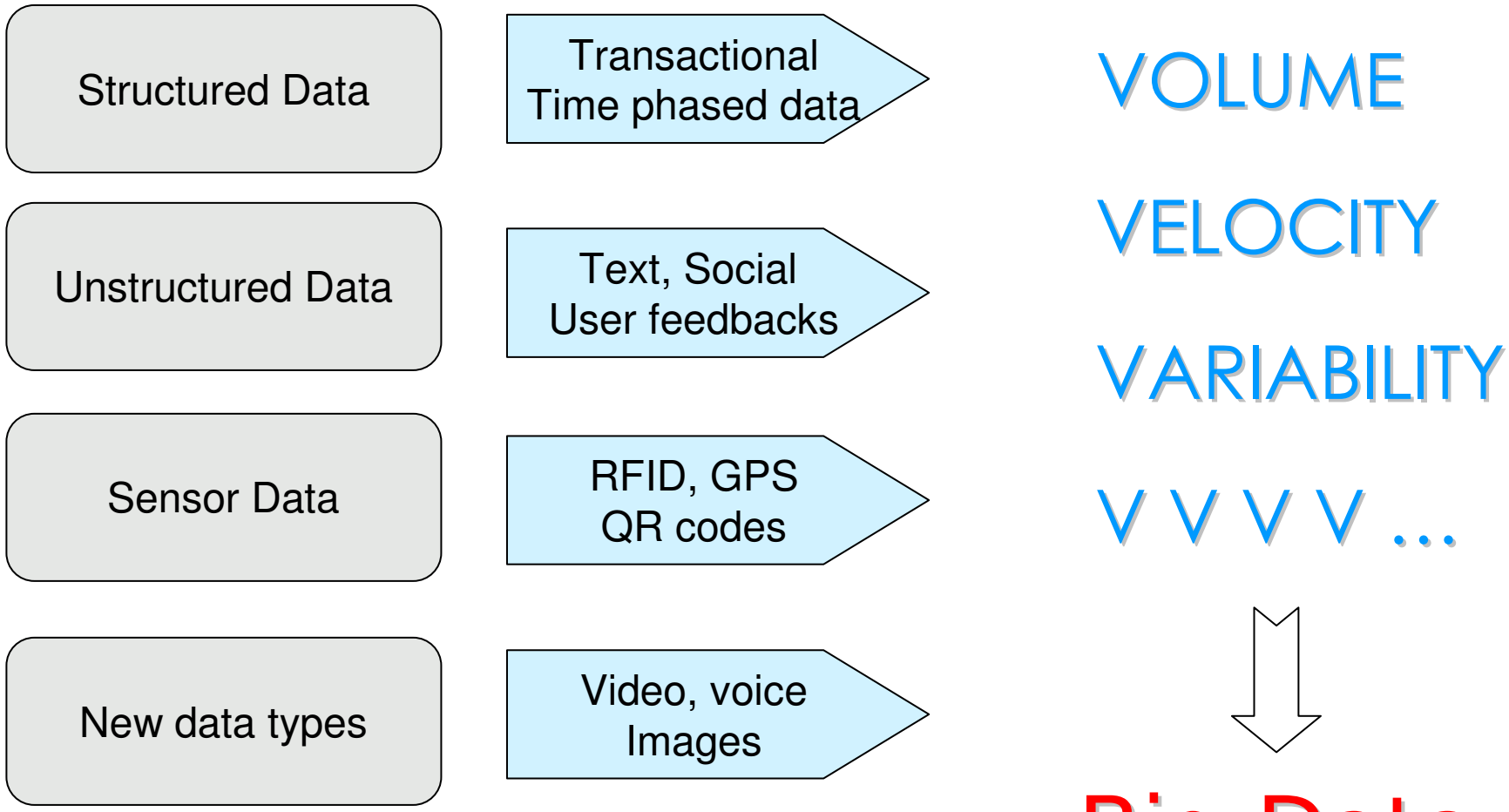
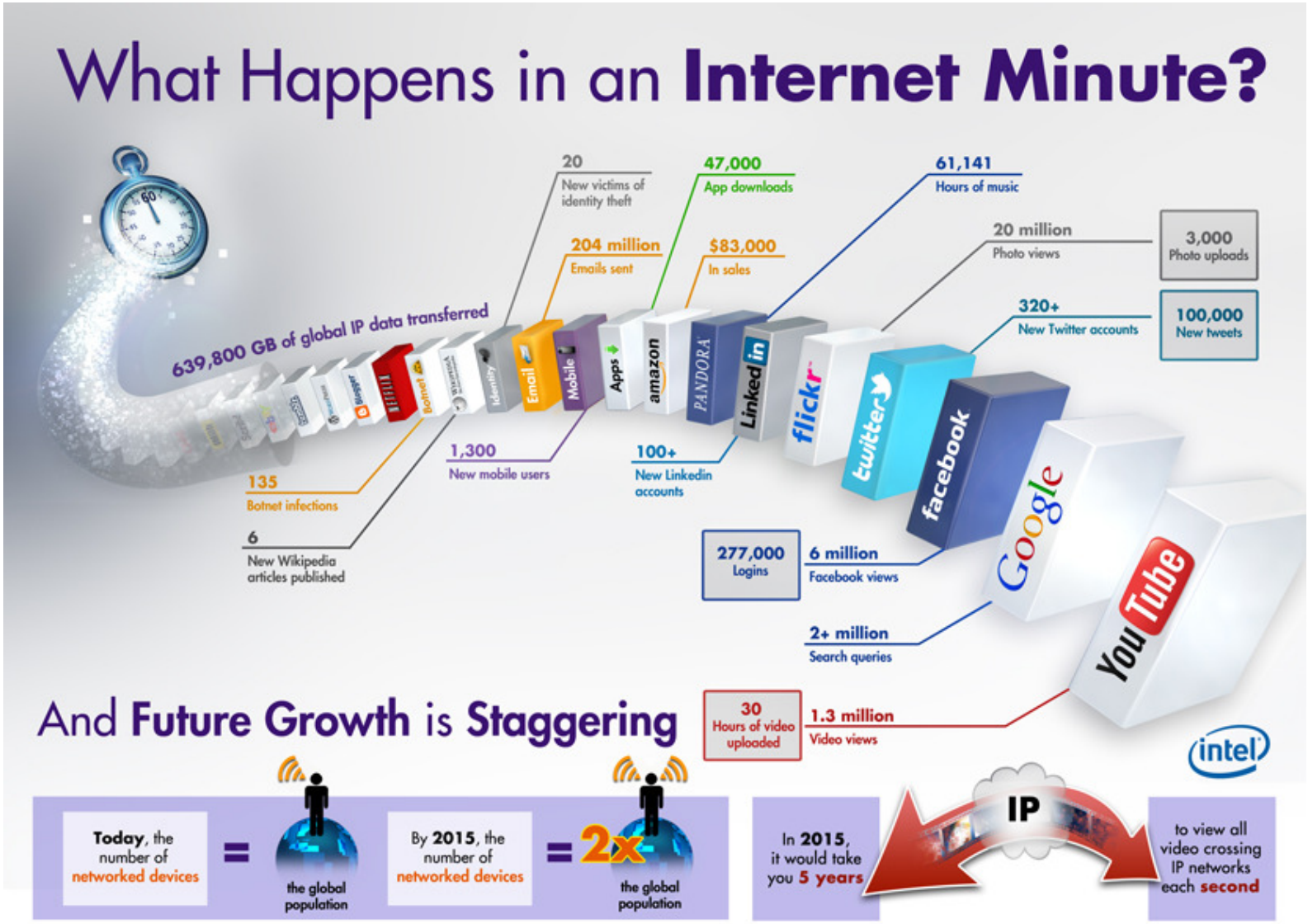
Data as a service



Data as a service



(Big) Data as a service

Infrastructure

- On Site
- IaaS

Data Management

- Capture
- Clean
- Load
- Store

} ETL

View and Analyze

- Exploration, navigation, presentation
- Text analysis
- Text mining

} BI

Application

- Cloud
- SaaS

} SERVICES

Big Data Application fields

Brand Reputation

Sentiment analysis

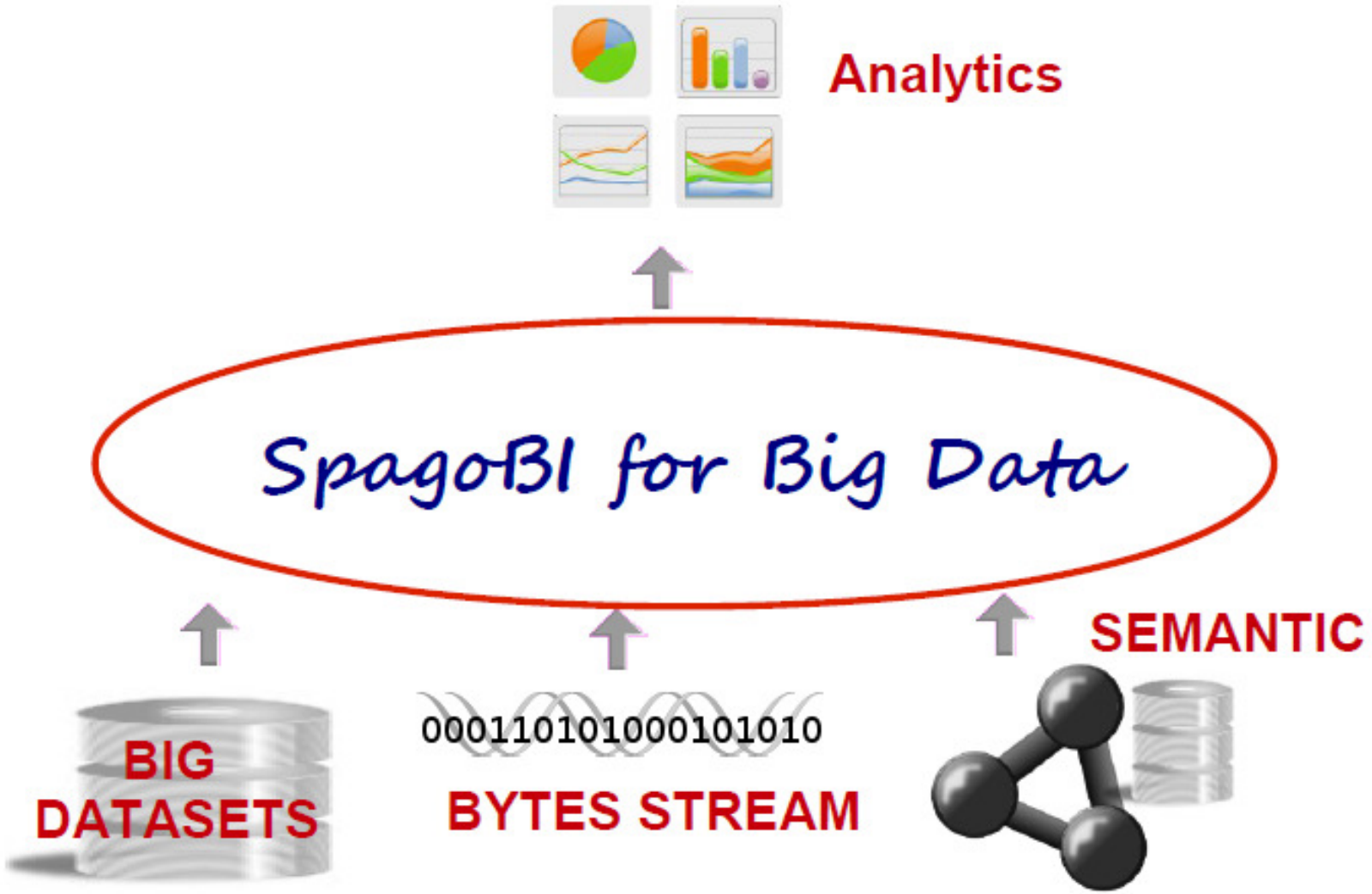
Social listening

Social CRM

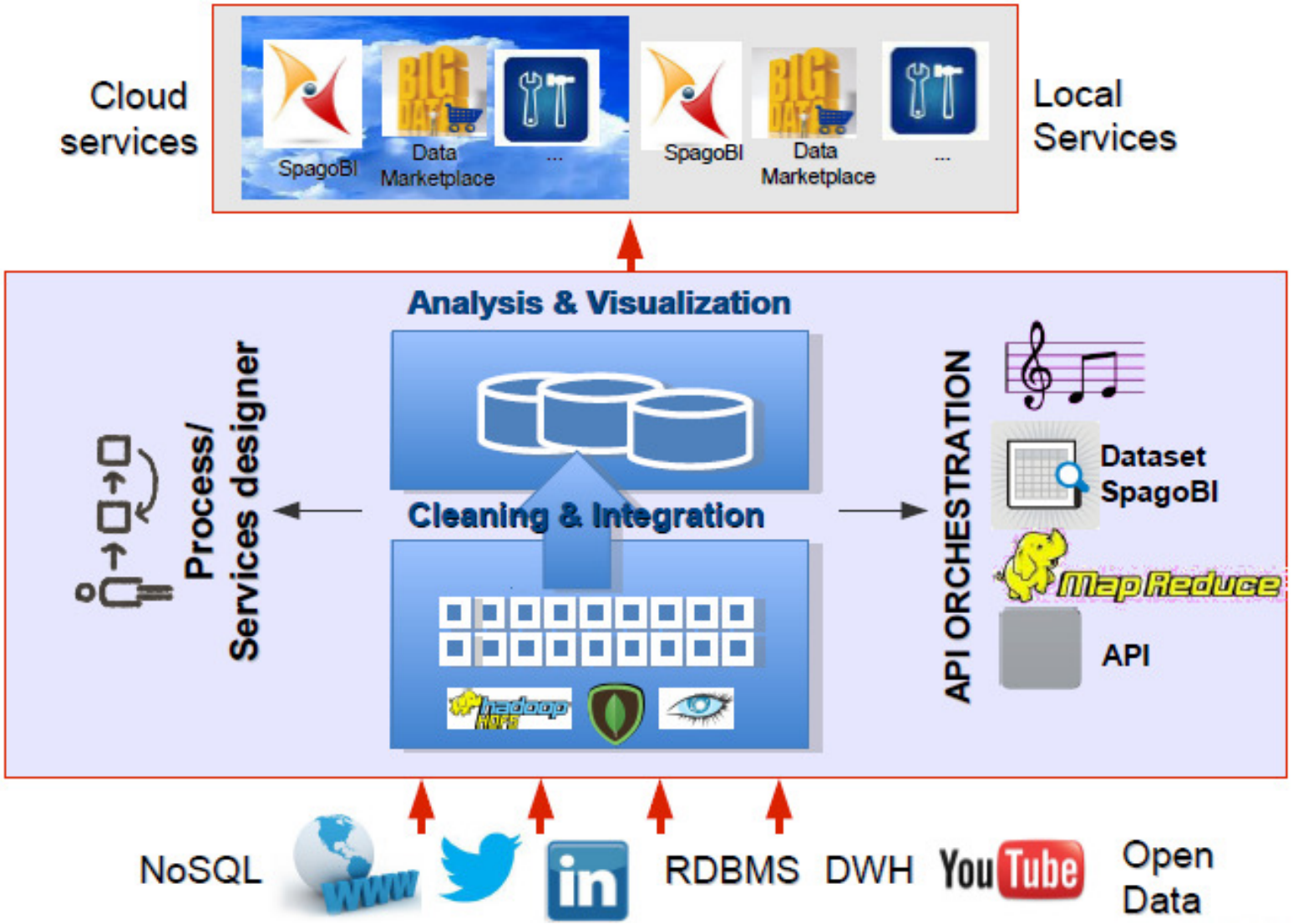
Complaint Analysis

Competitive intelligence

Big Data Scenarios



Big Data approach



Open Data

Out-of-date
Inhomogeneous
Multi-format
Different detail levels
Dispersed

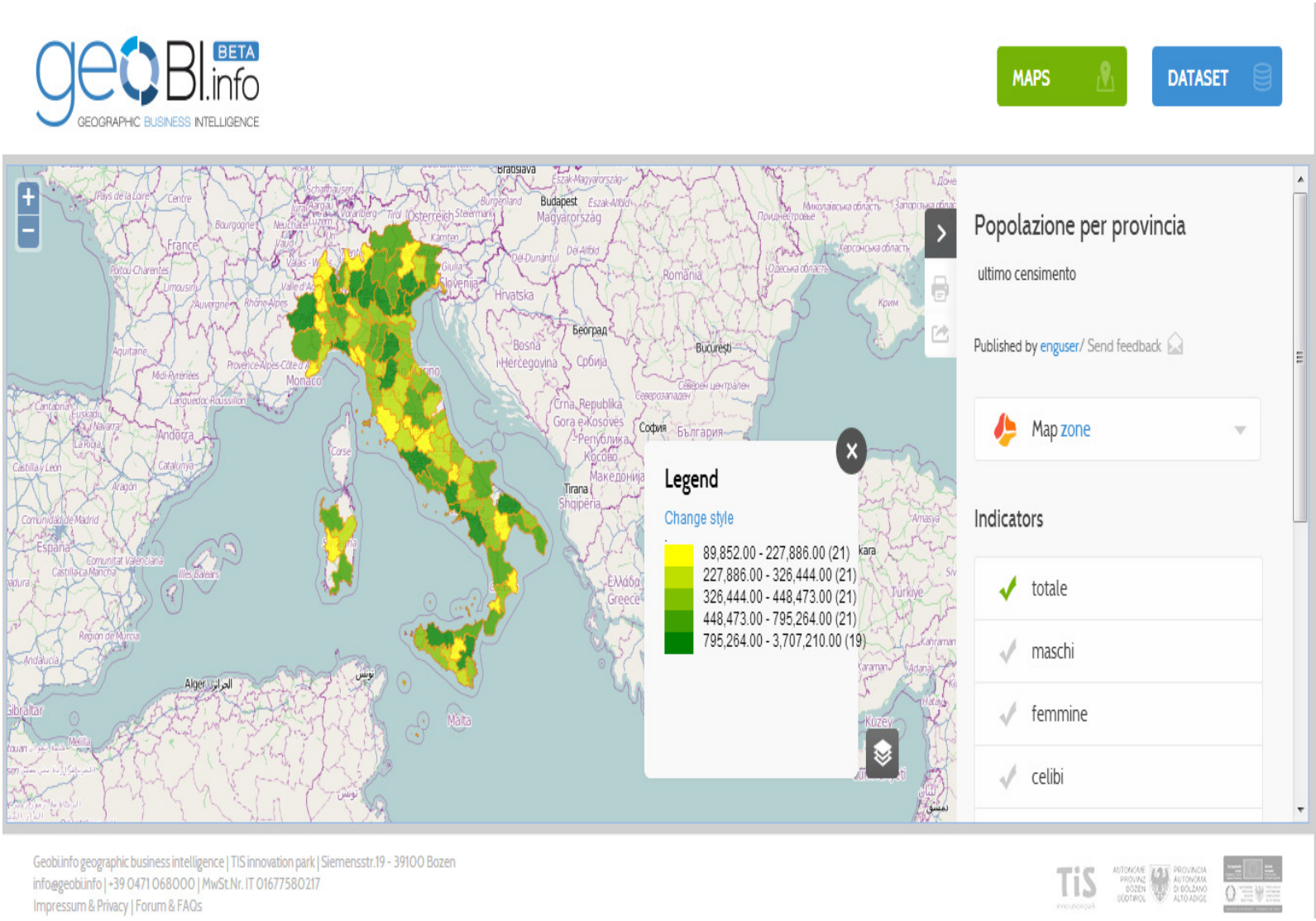
Growing
Public and private sectors
Structured
Measurable quality
It's the momentum …

Open data: case history

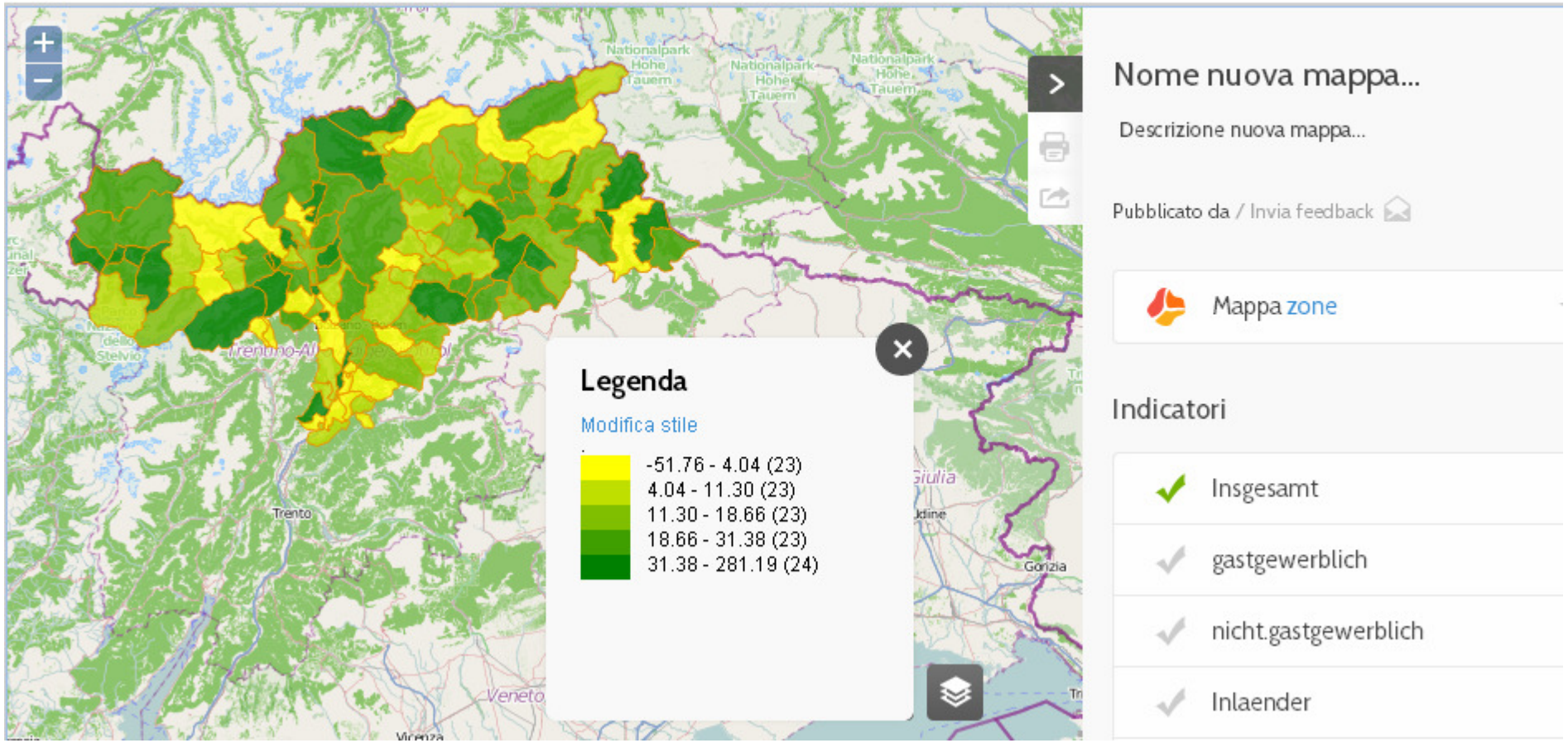
Telecommunication companies: need to extract value from mobile data traffic information to improve services and advance new solutions

Public administration: need to extract value from information gathered from different sources (consumption, highway traffic, voice traffic) in order to improve the supply of tourist, environmental, social services

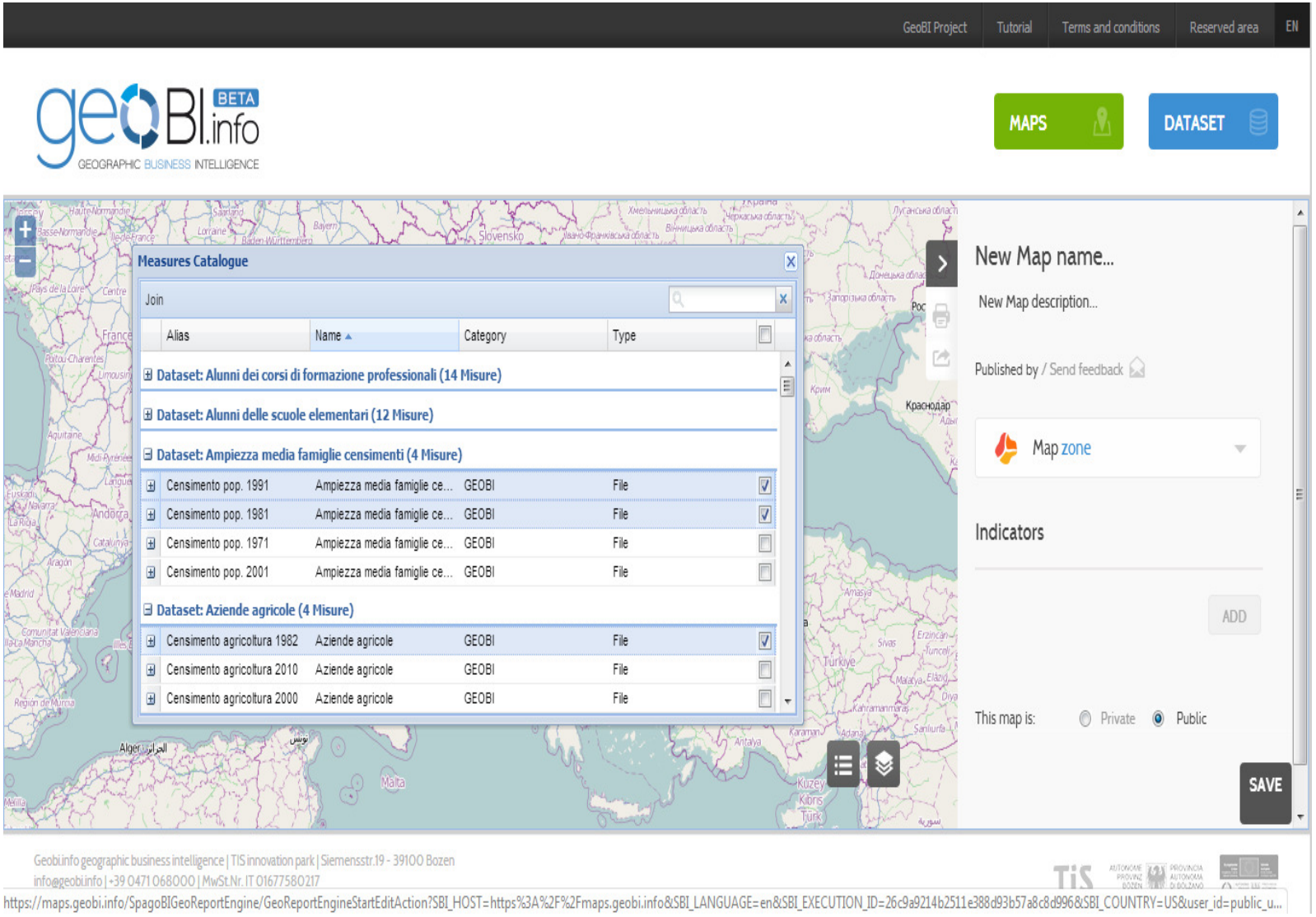
Open data: case history



Open data: case history



Open data: case history



Open data: case history

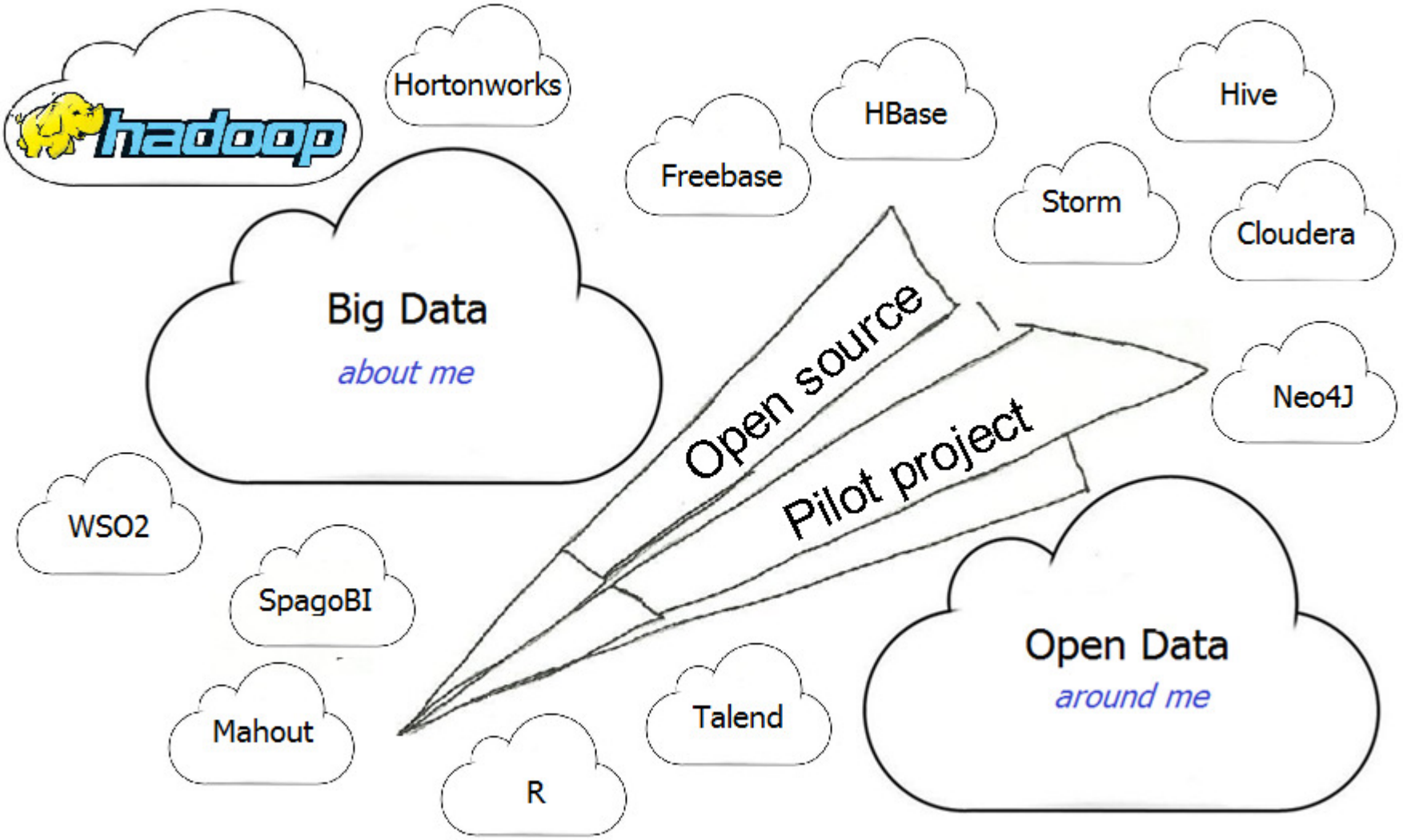
USAGE SCENARIOS

in Services...
...to help companies perform market researches

in Trade...
...to analyse demands and emerging trends

in Turism...
...to compare existing range with available official statistics

How open source helps



New skills requires