# Coordination of open data development in Croatia – case study of Environmental Pollution Registry

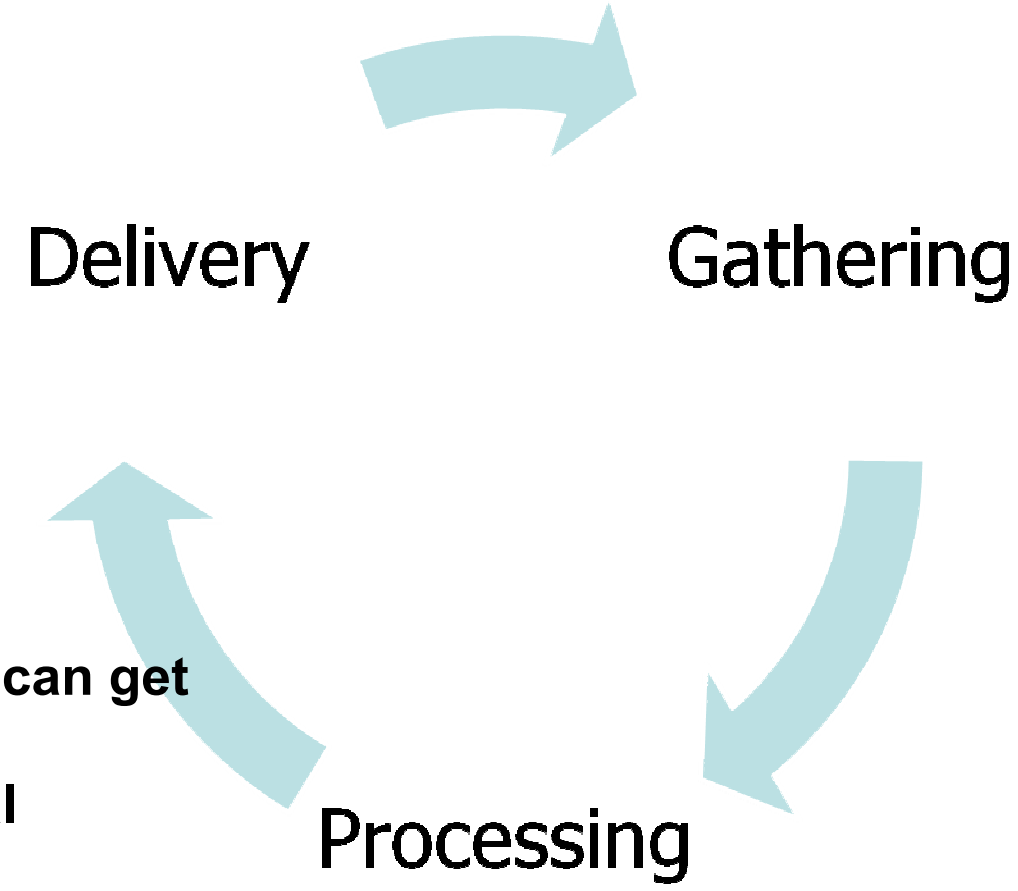
**Neven Vrček, Katarina Tomičić-Pupek**

University of Zagreb, Faculty of Organization and Informatics,

Pavlinska 2, Varaždin, Croatia

neven.vrcek@foi.hr; ktomicic@foi.hr

# Open data lifecycle (I)




**Internaly lifecycle can get quite complex.**
**It can span several organizations (interoperabilty).**
**How about insight? Can we open lifecycle and build open data by design?**

# Open data lifecycle (II)

- Data collections can consist of **large amount of information** and there can be a need of tracking data changes or lifecycle procedures through a long period of time (in order to **track historical changes**).

- Also, the case study shows that the (pollution) data can be **very sensitive**, so collection and processing should be verified and there should be **a clear data handling methodology** to ensure important quality issues.

- Important quality issues regarding open data systems (disclaimers are not good for development of open data market):
  - **quality of the data** itself, like reliability, consistency and usefulness and
  - **quality of the data handling procedures**.

- Some important quality issues of data handling procedures are **transparency** and the ability to **verify** that the data is processed from its source to the end-user in a way that maintains reliabilty and correctness.

# Open data lifecycle (III)

- In order to achieve **transparency** and establish the ability to **verify** the handling of the data from its source to the end-user in an appropriate way, we suggest the use of **the Business Process paradigm** to represent the lifecycle of the open data.

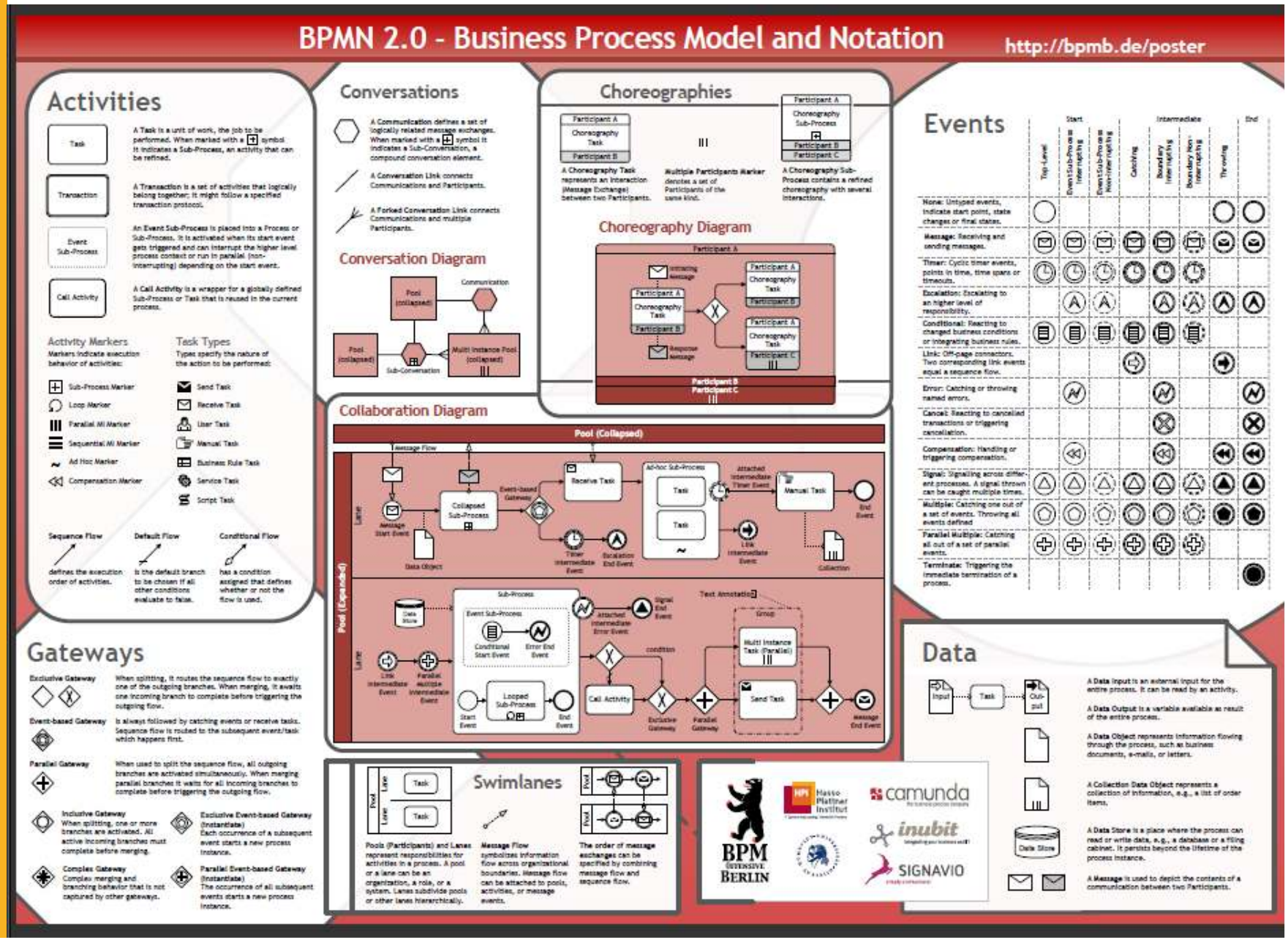
- The openness and transparency of the consistent process model of handling open data (the lifecycle of open data) enables re-user's trust in data quality and persistence.

- Also **the cost per unit of data** can be calculated and simulated in advance (utilization of graph theory and colored Petri nets)

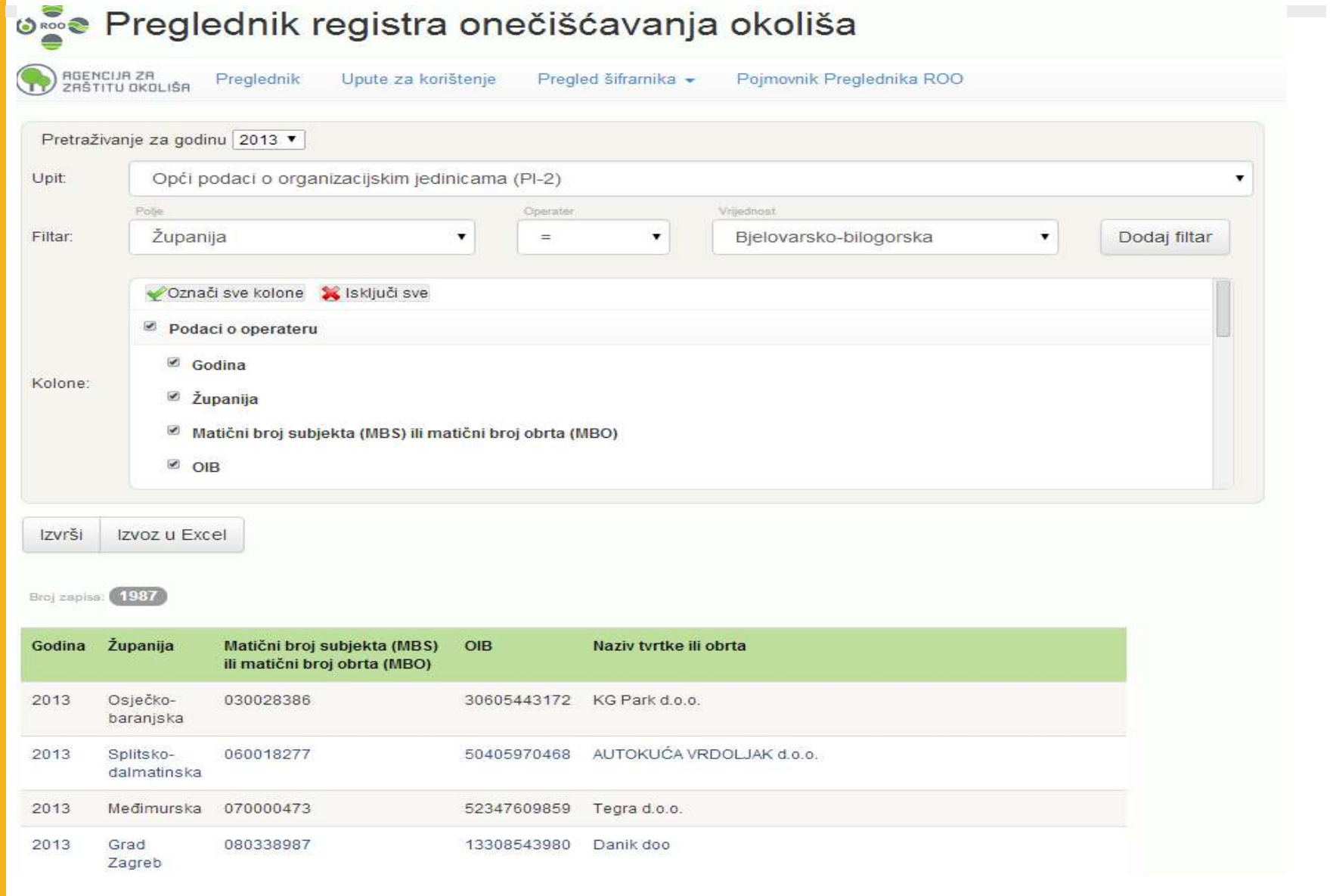
# Process paradigm

- process analysis
- process modelling
- process execution by utilizing information technologies
- important for development, implementation and use of information systems in modern organizations

# BPMN 2.0


BPMN 2.0 - Business Process Model and Notation
http://bpmb.de/poster
Activities
Conversations
Choreographies
Events
Gateways
Swimlanes
Data
Conversation Diagram
Choreography Diagram
Collaboration Diagram
BPM
BERLIN
camunda
inubit
SIGNAVIO

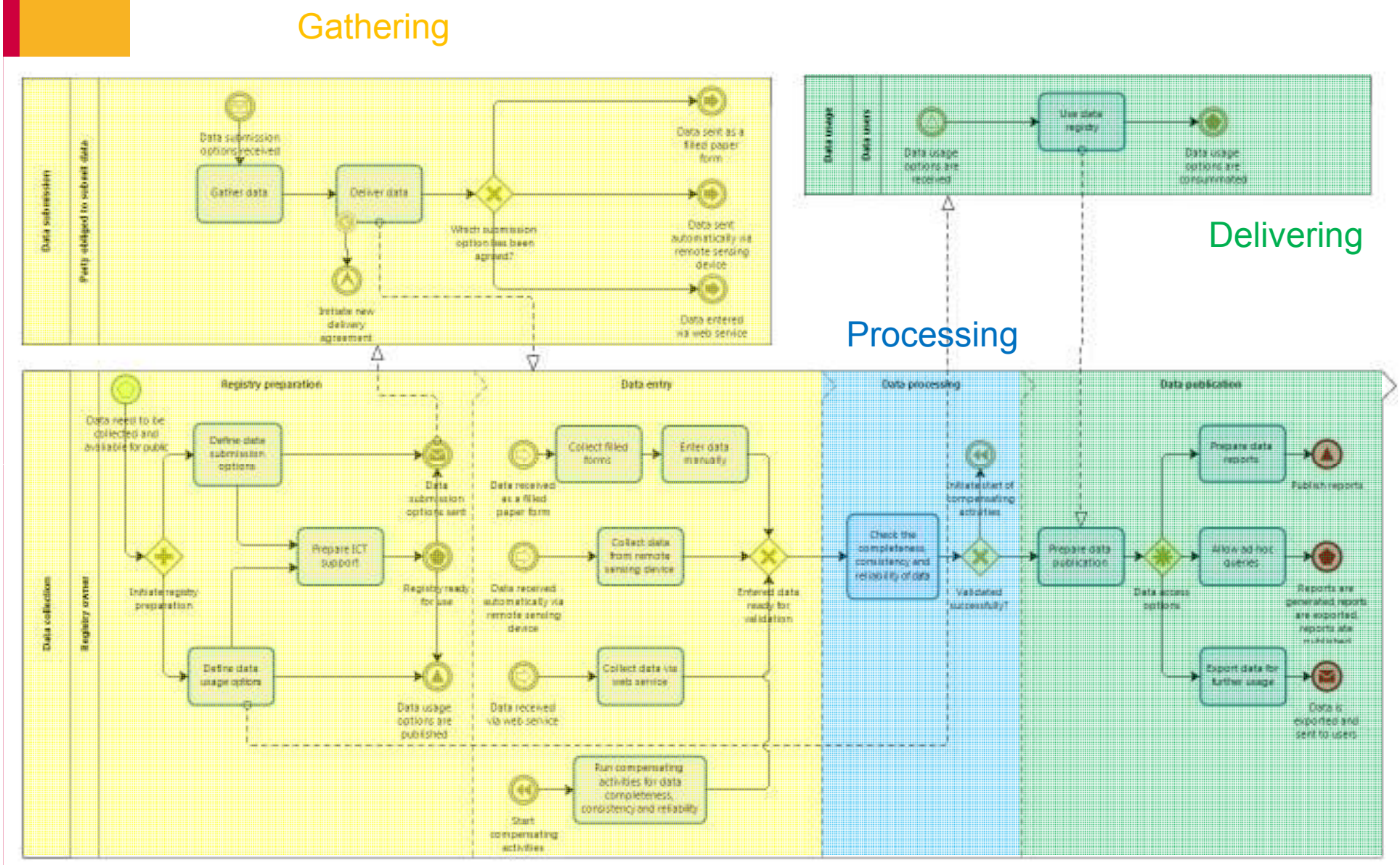
# Case study



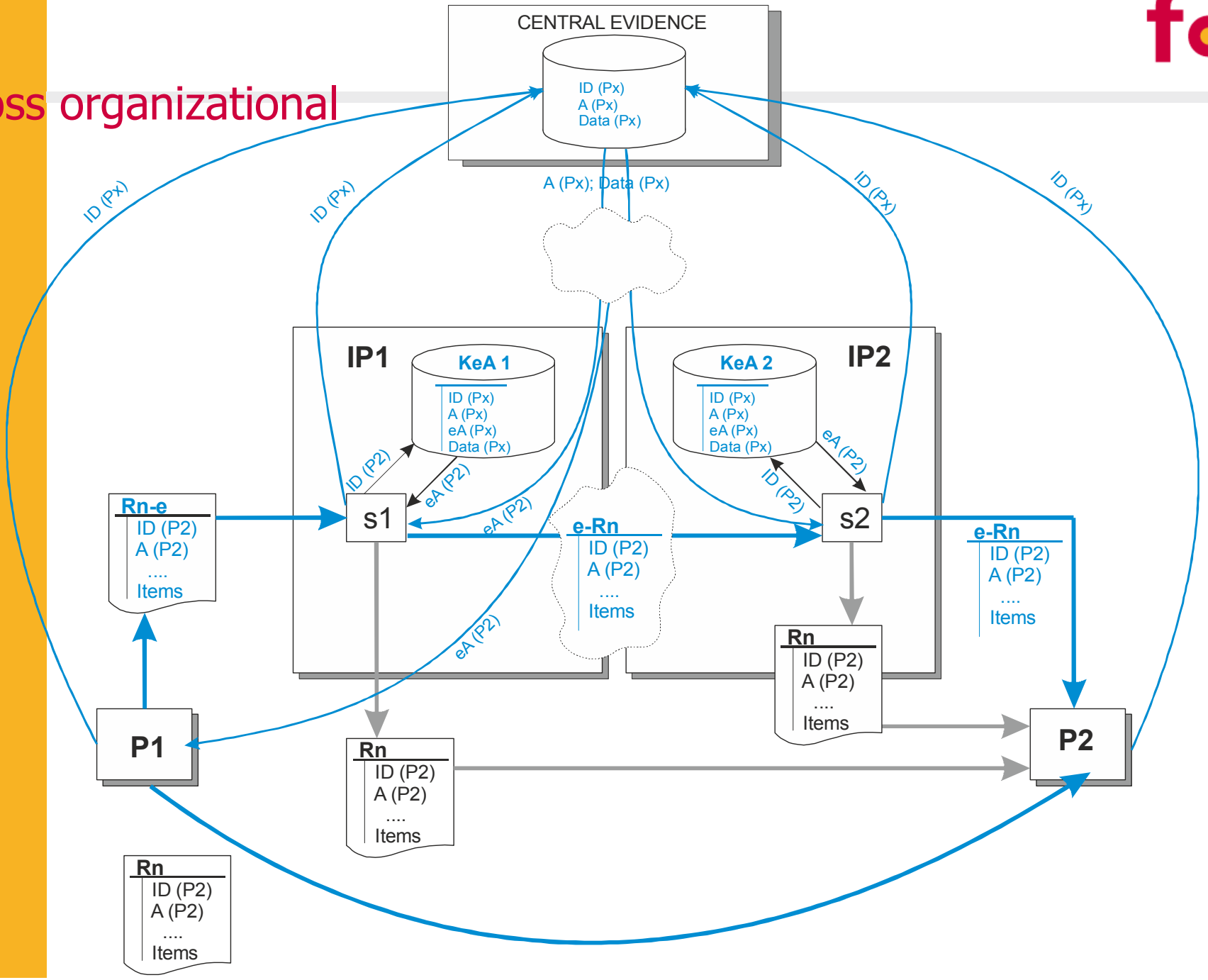

| Godina | Županija | Matični broj subjekta (MBS) ili matični broj obrta (MBO) | OIB | Naziv tvrtke ili obrta |
|---|---|---|---|---|
| 2013 | Osječko-baranjska | 030028386 | 30605443172 | KG Park d.o.o. |
| 2013 | Splitsko-dalmatinska | 060018277 | 50405970468 | AUTOKUĆA VRDOLJAK d.o.o. |
| 2013 | Međimurska | 070000473 | 52347609859 | Tegra d.o.o. |
| 2013 | Grad Zagreb | 080338987 | 13308543980 | Danik doo |

Koji je optimalni broj modula IS-a (podsustava, aplikacija)?

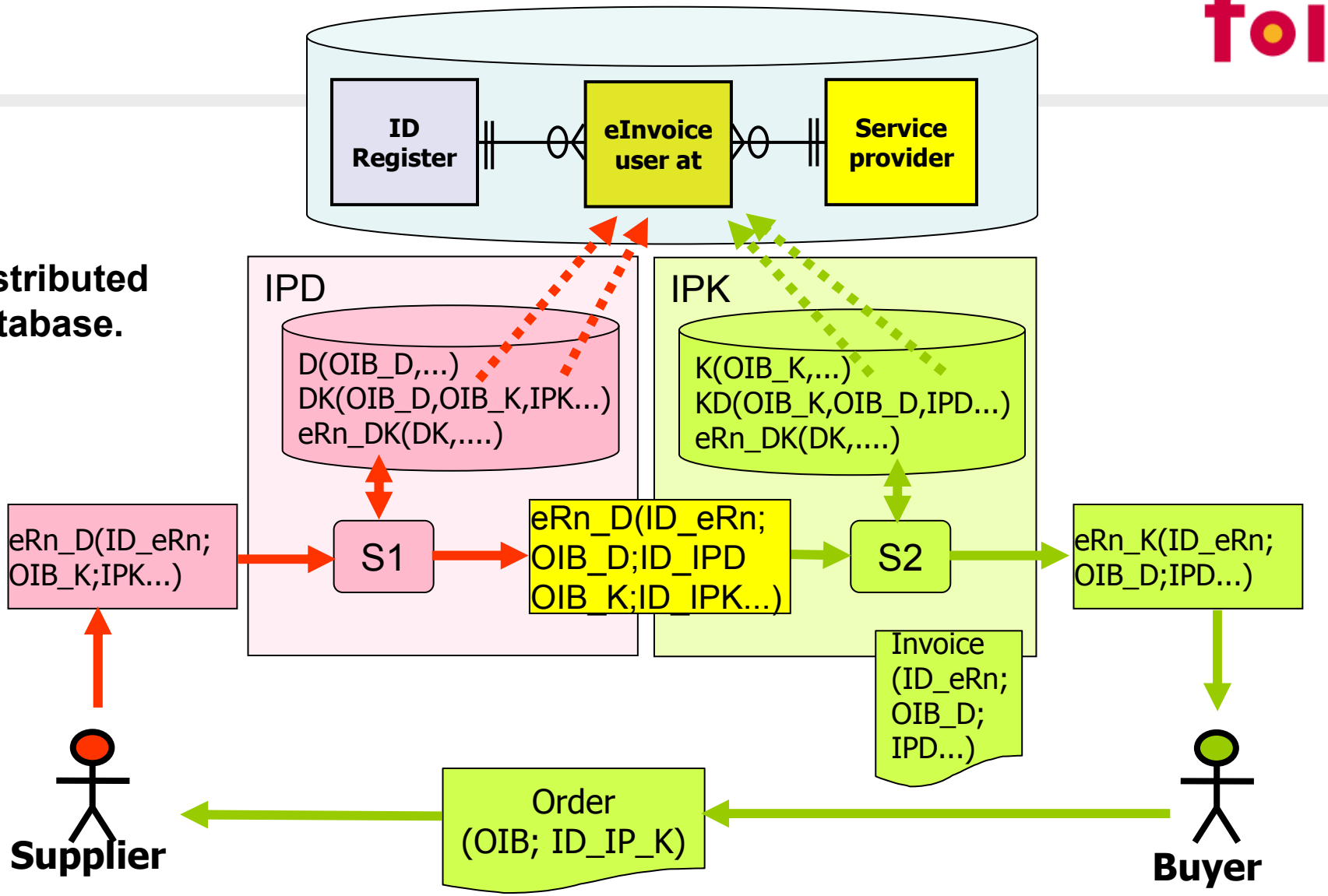
# BPMN model of Environmental Pollution Register



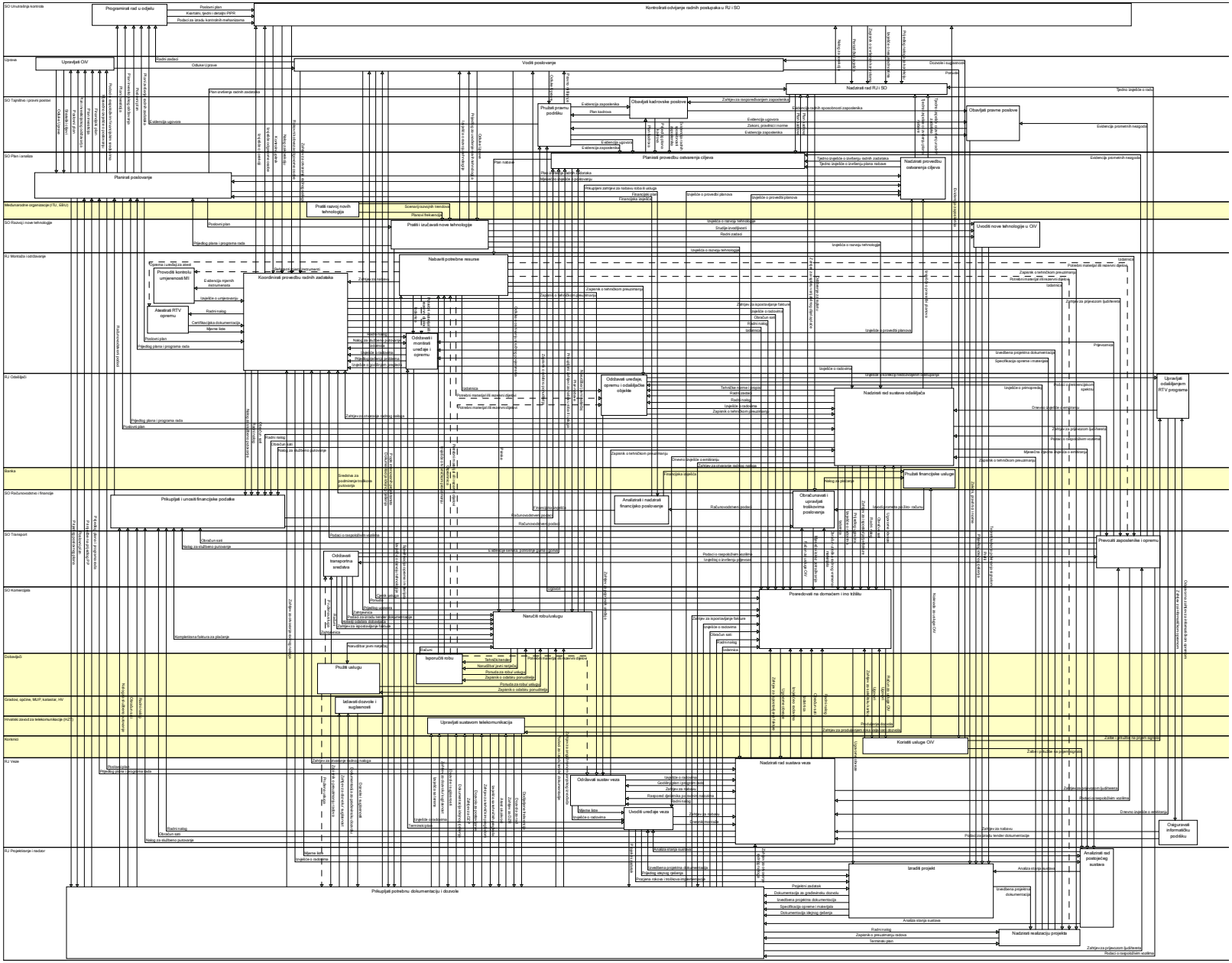
# Cross organizational



**Distributed database.**

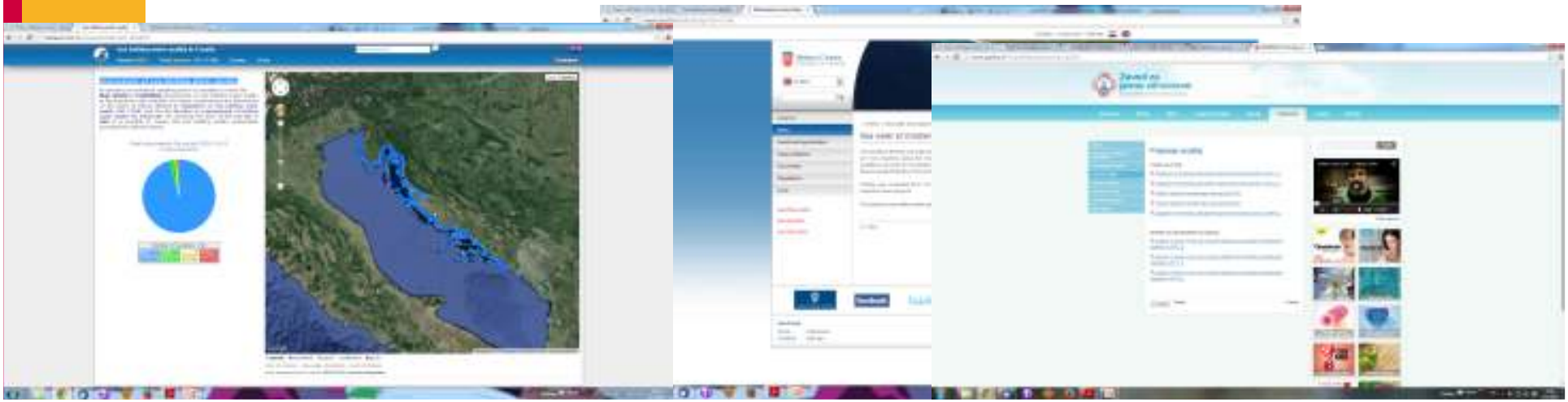


# Complex workflow



# What we achieved?

- Analysys can be extended to desired level of detail
- Deep insight into business processes for all stakeholders
- Consistency of procedures
- Process simulation (what if analysis)
- Cost evaluation and monitoring

# Challenges and benefits regarding data delivering

- It can be useful to mind that users can be external and internal. Internal re-users, like the public bodies themselves, often use the open data only for purposes of redistributing the same information to other external users (e.g. links to web pages)
  - Example of this kind of data consumption by public/governmental bodies themselves - ***Assessment of sea bathing water quality***. Based on this open data collection a National annual report on sea bathing water quality at Croatian beaches is published. Other governmental institutions use this data in their domain (Ministry of tourism, Local departments of public Health,…).