
7th Annual International Conference on
Computer Science and Information Systems

13-16 June 2011, Athens, Greece

Data Structures for Collaborative Policy Modelling

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- Collaborative policy modelling
 - Motivation, goals, challenges
 - Related research
- OCOPOMO R&D project
 - Basic facts, objectives, pilot applications
 - Approach, methodological concept
- Architecture of the proposed solution
 - Information resources and data objects
 - Technology infrastructure
 - Functional components, information flow
 - Meta-model ontology for transforming scenarios to simulations
- Conclusions & Future work

- Innovative solutions in eGovernment:
 - knowledge economy (Lisbon strategy, 2000)
 - ICT facilitating efficiency and quality of services
 - interoperability of services
- Current challenge: **from services to strategies / policies**, which includes:
 - Collaboration - involvement of general public and relevant stakeholders in the process of policy development
 - Increasing the level of understanding of strategies / policies by service consumers (e.g. by means of policy models, visualisations, narrative scenarios, etc.)
 - Provision of proper ICT support for collaborative policy creation

Projects:

- PADGETS,
<http://www.padgets.eu>
- COCKPIT,
<http://www.cockpit-project.eu>
- +SPACES,
<http://www.positivespaces.eu>
- CROSSROAD,
<http://crossroad-eu.net>,
a support action project
- etc...
- ... and OCOPOMO,
<http://www.ocopomo.eu>

Technologies / frameworks:

- Policy modelling & simulation:
 - agent-based, multi-agent systems
 - frameworks: JADE, Repast, ...
- Visualisation of public services
- Opinion mining, policy scenarios
- CMS (+ semantic technologies)
- Collaboration platforms (groupware):
 - sharing of artefacts, active communication between participants
 - frameworks: Hipergate, Open-Xchange, eGroupWare, ...
- eParticipation platforms:
 - Web 2.0 based
 - social networks - discussions, wikis, blogs, chats, podcasts
 - frameworks: LEX-IS, VoicE, LexiPation, ...

OCOPOMO Project - Basic facts



- Full title: **Open Collaboration for Policy Modelling**
- STReP EU project, FP7 ICT,
Objective ICT-2009.7.3 “*ICT for Governance and Policy Modelling*”,
Contract no.: 248128
- Duration: 01/2010 – 12/2012 (36 months)
- Planned effort: 425 person-months
- Project consortium: 10 partners (universities, private companies,
government institutions) from 5 countries (GE,UK,PL,IT,SK)
- Coordinator: University of Koblenz-Landau, Germany
– 2 pilot applications - Italy and Slovakia



Open
COLlaboration for
POLICY MOdelling



UNIVERSITÄT
KOBLENZ · LANDAU

- To enable a collaborative policy formation in public organisations, integrating scenario generation, policy modelling, and open collaboration, supported by a suite of ICT tools for:
 - Ø Iterative development of policies in a form of **narrative scenarios**
 - Ø **Policy modelling**, creation of agent-based formal policy models
 - Ø Open and transparent **collaboration** in the process of policy development
 - Ø Seamless, **goal-oriented information exchange** between all the stakeholders (policy analysts, operators, decision makers, wider interest groups, general public, etc.)
 - Ø **Simulation and visualisation** of policy alternatives and their consequences

Pilot applications



- Pilot Campania

- Location: Campania Region (<http://www.regione.campania.it>), Italy.
- Target: support in policy decisions in respect to an optimal allocation of EU Structural funds in the region.



- Pilot KSR

- Location: Kosice Self-governing Region (KSR, <http://www.vucke.sk>), Slovakia.
- Target: development of a sustainable long-term strategy for exploitation of renewable energy resources.



Methodological concept

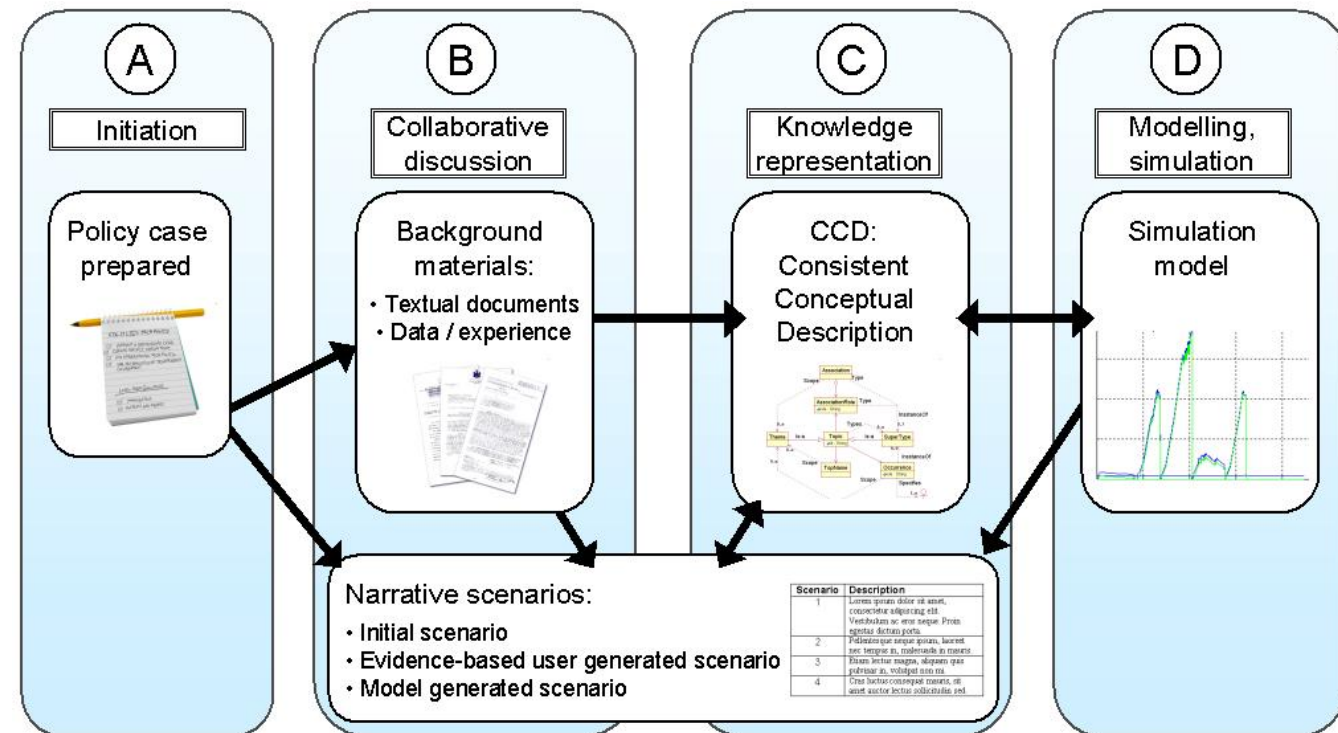


Information artefacts:

- Scenarios:
 - Initial
 - User-generated
 - Model-generated
- Simulation model
- CCD

User roles:

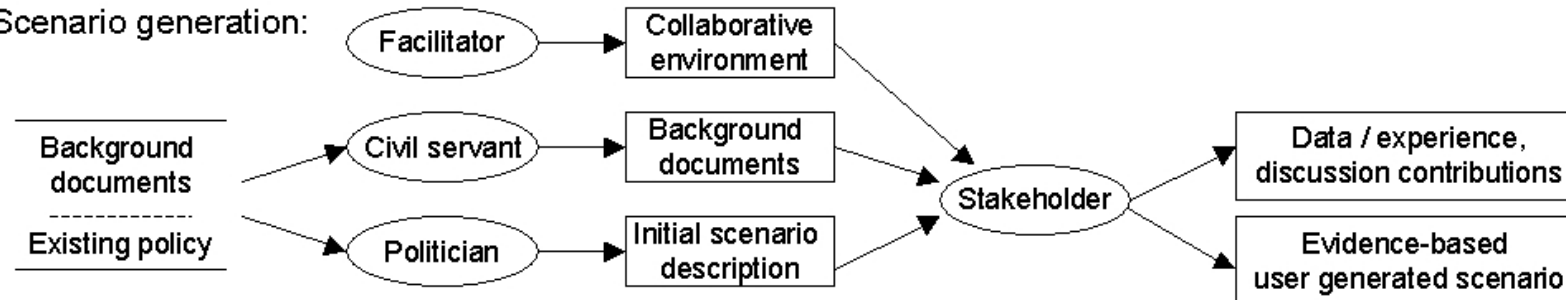
- Direct participants:
 - Politician
 - Civil servant
 - Stakeholder
- Support:
 - Facilitator
 - Analyst
 - Modeller



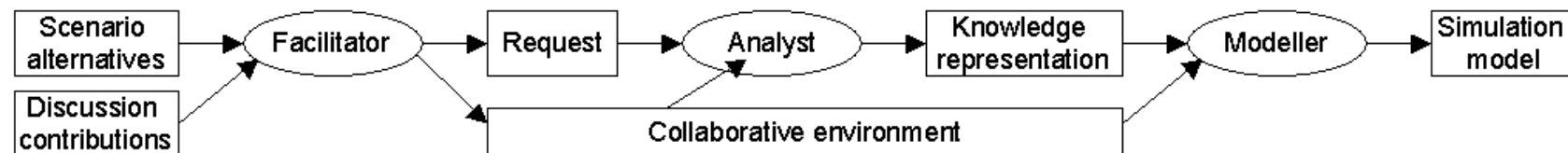
Data flow processes



a) Scenario generation:



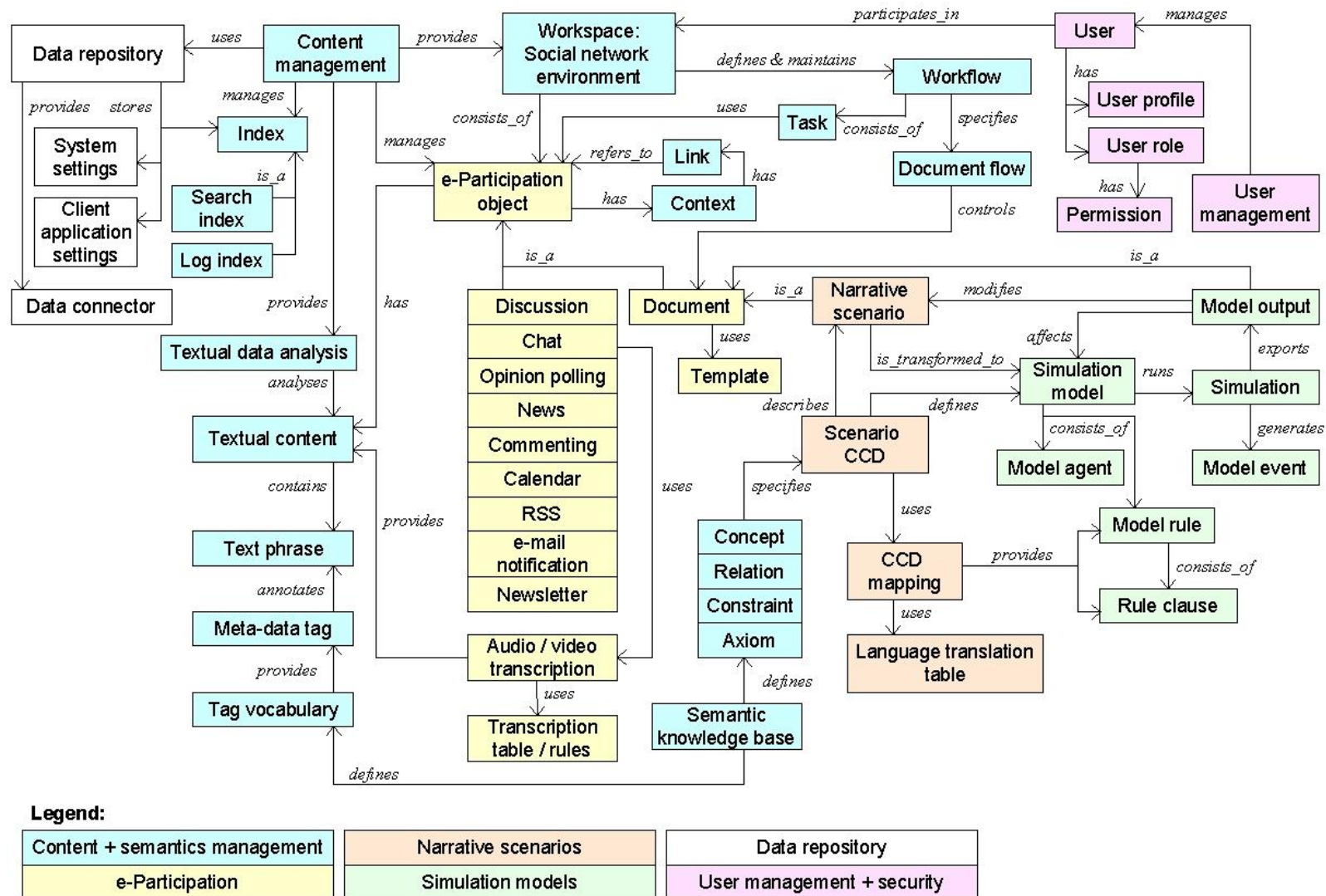
b) Scenario analysis and transformation:



c) Simulation, evaluation, validation:



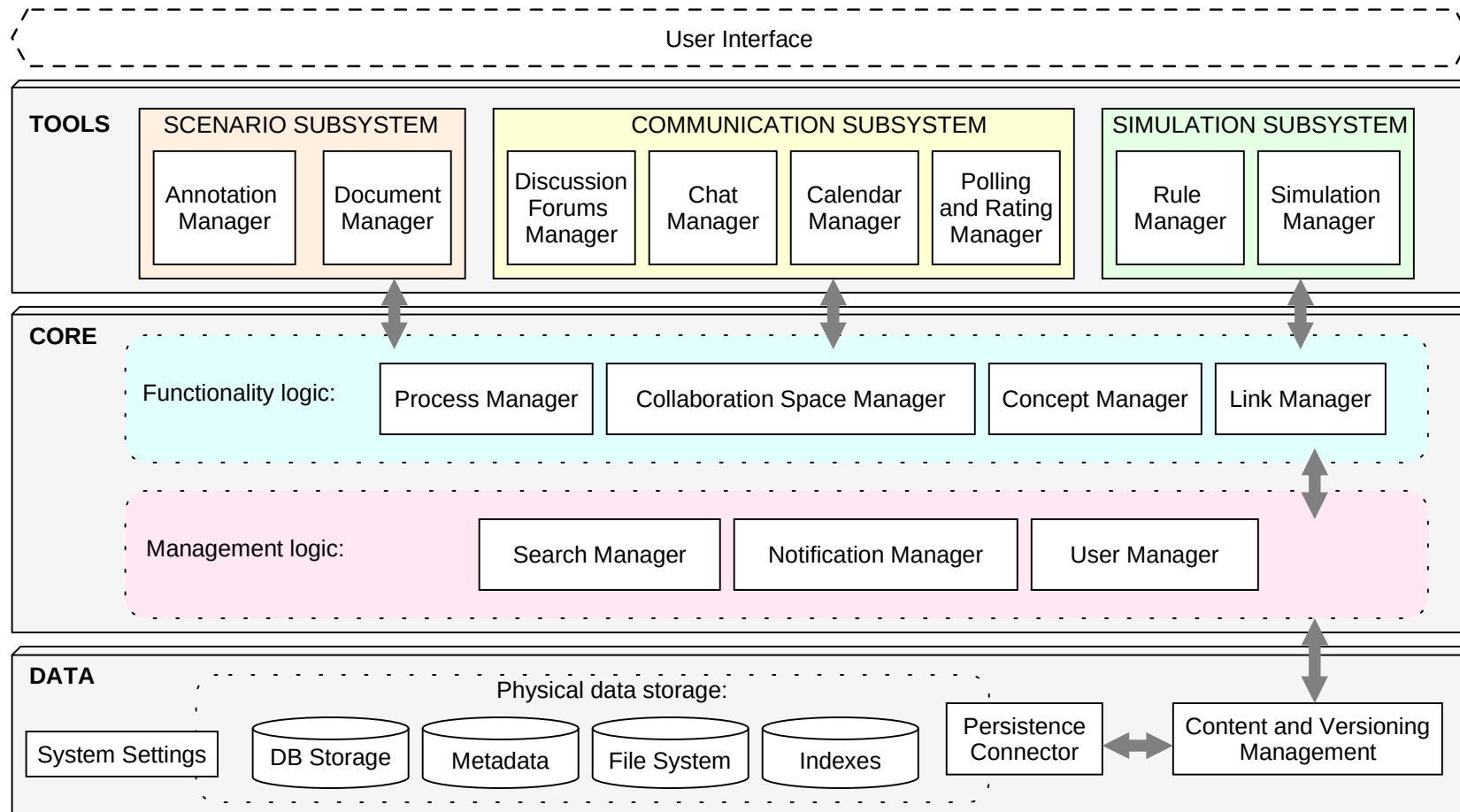
Data objects



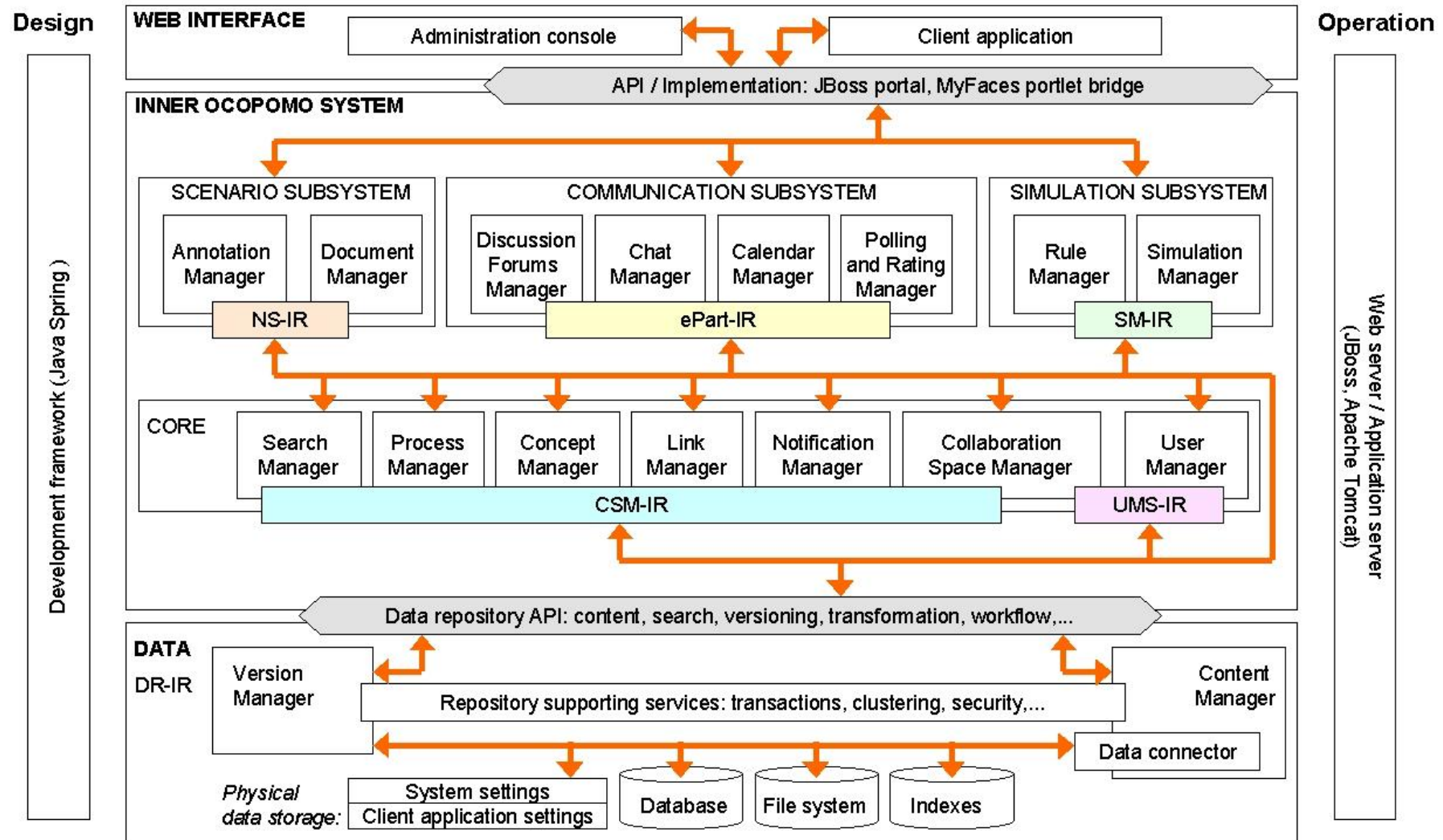
- Web application, open source, Java-based
- Collaboration environment, e-Participation tools:
 - Alfresco/Alfresco Share CMS (www.alfresco.com) - integration infrastructure, open source Enterprise Content Management System, compatible with CMIS (*Content Management Interoperability Services*) OASIS standard
- Agent-based simulation platform:
 - Repast (repast.sourceforge.net), an open source agent-based modelling and simulation toolkit
 - DRAMS, a rule engine (under development by one of project partners)
- Scenario generation and analysis:
 - a new tool will be developed on the CAQDAS (*Computer-Assisted Qualitative Data Analysis Software*) principles

- **Architecture:**
 - 3-tier: presentation, middleware (business logic), data
 - communication: standard API (Web service interfaces as alternative)
 - design method: architecture views vs. perspectives
- **Component groups:**
 - **TOOLS:** client-side tools and middleware objects for:
 - e-Participation - collaborative work, social networks
 - Scenario development and analysis
 - Policy modeling and simulation
 - **CORE:** business logic for functionality and management of whole platform:
 - Functionality Logic: inner software components for client applications
 - Management Logic: data access, communication infrastructure, user management, security
 - **DATA:** repository for persistent data resources - documents, indexes, knowledge structures, metadata

Functional components



Information flow



ОСОБОМО



- a transformation of scenarios to respective simulation models

```

instance EnergyConsumer memberOf AbstractAgent
concept Technology subConceptOf Object
    Cost impliesType _float
    AttitudeLevel impliesType _integer
instance SelectTechnology memberOf Action
    Object hasValue Technology
instance TechnologyCostDifference memberOf Condition
instance ActionRule memberOf Rule
    Agent hasValue EnergyConsumer
    Condition hasValue TechnologyCostDifference
    Action hasValue SelectTechnology

```

- Work done so far:
 - User requirements gathered and analysed
 - Functionality & architecture specified
 - Design and implementation of platform components (*ongoing*)
- Future work:
 - Platform components for first prototype : July 2011
 - First prototype - in autumn 2011
 - Testing on pilots:
 - 1st round of pilot applications: winter 2011
 - 2d pilot applications and evaluation: autumn 2012
- More info at www.ocopomo.eu

Thank you for your attention!

Questions, comments, suggestions?

