Use of e-Participation Tools for Support of Policy Modelling at Regional Level

Karol Furdik - Tomas Sabol

Technical University of Košice
InterSoft, a.s., Košice, Slovakia
Content

- Main concepts, target outcomes, challenges
- OCOPOMO R&D project
- Architecture of the proposed solution
- ICT Toolbox to be developed
- OCOPOMO pilot applications - Campania region (Italy) and Kosice Self-governing Region (Slovakia)
- Gathering requirements on ICT tools
- Conclusions & Future work
Policy Modelling

• The aim of Policy Modelling:
  – To forecast potential outcomes and impacts of proposed policy measures
  – To understand, model, simulate and validate the next generation of public services as complex service systems in the environment of social networking and collaborative society

• One of the objectives of the 7th Framework Programme of the EU, Information and Communication Technologies (ICT) Programme - **Objective ICT-2009.7.3 ICT for Governance and Policy Modelling**
Expected outcomes of Policy Modelling

- Novel IT tools allowing consideration of options based on the simulated behaviour and expectations of individuals, groups and communities (at local, regional, national level)
  → To understand the possible outcomes of government proposals, decisions and legislation, …
- The tools should exploit the vast reserves of Europe's public sector collective data, knowledge resources (developing dynamically), including knowledge / opinions / interests of relevant experts, interest groups, members of non-governmental organisations, citizens, …
  → Collaborative environments supporting electronic participation (e-Participation)
- Underlying functions to be integrated include: forecasting, process modelling, data mining, visualisation, gaming-based simulation, …
- The solutions should take into account the state of the art techniques on analysis and modelling of complex systems (*ubiquitous complexity and related effects - unpredictability, …*), social networks, …
OCOPOMO Project - Basic facts

• Full title of the project: Open Collaboration for Policy Modelling
• Funded within FP7 ICT, Objective “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 (DE, UK, PL, IT, SK)
• Coordinator: University of Koblenz-Landau, Germany
  – 2 pilot applications - Italy and Slovakia
• Main project objective: Integration of specialised ICT tools into a e-Governance toolkit that will enable a collaborative policy modelling for decision support of governmental representatives
Challenges faced by OCOPOMO

- Inappropriate ICT support in foresights, especially in long-term policy planning,
- Lack/inability of managing complexity in strategic planning and policy making in complex socio-economic environments,
- Lack of open collaboration and transparency in identifying the crucial parameters of complex social and macroeconomic models to simulate potential alternative policies,
- Ignorance of the need for e-participation and other forms of ICT-enabled efficient open collaboration of relevant stakeholders → lack of comprehensive IT solutions to support policy modelling & simulation as well as collaboration among all involved stakeholders
- Lack of focus on developing, visualizing and simulating appropriate policy models
OCOPOMO Overall objective:

• 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:
  - Iterative development of policies in a form of narrative scenarios
  - Policy modelling
  - Open and transparent collaboration in the process of policy development
  - Simulation and visualisation of policy alternatives and their consequences
  - Collaborative environment enabling seamless, goal-oriented collaboration of all the stakeholders (policy analysts, operators, decision makers, wider interest groups, the general public etc.) enhanced by e-Participation tools
OCOPOMO Specific objectives:

- Creation of two policy analyses at regional level (IT, SK)
- Development of a general model of macroeconomic relations constrained by data produced at national and European levels
- Conceptual and functional integration of narrative scenario analysis with formal policy modelling
- Integration of the macroeconomic model with regional policy models
- Development of ICT solutions that will support the engagement of “core” stakeholders and will be open for external stakeholders
Policy modelling approach

• Agent-based, bottom-up approach
  ų Bottom-up approach to policy modelling (on the basis of evidence obtained from stakeholders and other domain experts)
  ų Agents are well suited for working in distributed, uncertain environments with incomplete knowledge of the environment
  ų Agents mimic how people think and behave for themselves and when working together
    ų Drawback: Complexity of the resulting control system and the lack of facilities to adequately represent/trace knowledge contained by each agent and the selection of tactics used by the agents
  ų Multi-agent systems (MAS) - composed of distributed heterogeneous agents, where each agent manages its own activities on the basis of its local state and the information/messages received from other agents
  ų MAS (thanks to their heterogeneity, modularity, flexibility, robustness against failures) - appropriate for modelling complex systems
Methodological concept of OCOPOMO

- Involved stakeholders collaborate in the process of scenario development - depict alternative narrative descriptions of a policy area.
- Experts produce common agent-based macroeconomic simulation model.
- Regional pilot models developed from perspectives of local stakeholders.
- The policy models, aligned to the supporting narrative scenarios, are visualized and simulated.
- Iterative modification of alternative scenarios (5a) and/or individual policy models (5b).
Related research areas

- Policy modelling:
  - Agent-based policy modelling tools, built on platforms of multi-agent systems → JADE, Repast, etc.

- Content management systems:
  - Apache Lenya, Drupal, Jackrabbit, Plone, … - if needed enhanced by semantic technologies

- Collaboration platforms (groupware):
  - Sharing of artefacts, active communication between participants → Hipergate, Open-Xchange, KPLab, Lucane, eGroupWare, …

- e-Participation platforms:
  - Web 2.0 based ICT support for social networks - discussion fora, wikis, blogs, chats, podcasts, etc. → frameworks LEX-IS, VoicE, LexiPation, …
ICT Toolbox

- Interest groups
- Policy operators
- Policy analysts
- Expert groups

eParticipation platform: mass collaboration platform with advanced Web 2.0 features
- Discussion forum
- Wiki
- Online chat
- Argument visualisation
- Rating feature
- Simulation
- Social community
- Semantic search
- Further advanced features

Scenario development and policy modelling tools
- Scenario development tool
- Policy modelling tool
- Complexity management support

Content base and knowledge management
- Information base
  - Pilot 1
  - Pilot 2
- User management

MCIS‘10, September 12-14, 2010, Tel-Aviv-Yaffo, Izrael
• Component groups:
  – **Tools**: client applications within a portal or as external services:
    • tools for e-Participation, Scenario development and Policy modeling;
    • a system administration console;
  – **Core**: business logic for functionality and management of whole platform:
    • Functionality Logic: inner software components for client applications;
    • Management Logic: data integration, communication infrastructure, user management, security;
  – **Data**: repository for persistent data and metadata resources (i.e. the Content base and knowledge management);
  – **External Services and Resources**: abstract view of external services and resources related to pilot applications (i.e. interaction with stakeholders).
Architecture design (2)

TOOLS (Portal / External Services)

- E-Participation Tools
- Simulation Tool
- Evaluation / Visualisation Tools
- Administration Interface

CORE

Functionality Logic
- Scenario Generation Manager
- Policy Modelling / Simulation Manager
- Evaluation / Visualisation Manager

Management Logic
- User / Workspace Management
- Data Integration / Connection Manager
- Persistence Management

DATA

Resources
- Database Storage
- Metadata
- Persistence Connector

External Services and Resources

System Settings

Resources for Pilot Cases


MCIS’10, September 12-14, 2010, Tel-Aviv-Yaffo, Izrael
Pilot applications

• Campania region, Italy
  – [http://www.regione.campania.it](http://www.regione.campania.it)
  – Target: Support in policy decisions in respect to an optimal allocation of EU Structural funds in the region.

• Kosice Self-governing Region (KSR), Slovakia
  – [http://www.vucke.sk](http://www.vucke.sk)
  – Target: Development of a sustainable long-term strategy for exploitation of renewable energy resources
Project activities

- Identification of stakeholders
  - Target groups
  - Policy operators, decision makers
  - Policy analysts
  - External groups of experts
- Specification of decision-making processes
  - AS-IS vs. TO-BE processes
  - Flowcharts, BPMN models
- Identification of requirements for ICT tools
  - 4 phases: Initialisation, Stakeholder analysis in policy cases, Design of overall process of the pilots, Design of electronic support
- Detailed design of system functionality and architecture
KSR: Stakeholders

- **Target groups:**
  - Energy utility such as VSE (member of RWE Group), SPP (gas producer and distributor), TEKO (local producer of heat), small energy producers (e.g. owners or operators of small hydropower plants);
  - Potential investors, both existing and new potential investors;
  - NGOs and civic associations that are active in the field of energy saving, environment protection, etc. (about 20 organisations identified so far);
  - General public.

- **Policy operators, decision makers:**
  - Members of the regional parliament, working groups in the parliament.

- **Policy analysts:**
  - Department of Regional Development and Land Planning in KSR (DRDLP);
  - OCOPOMO partners specialised on policy modelling and analysis (i.e. Centre for Policy Modelling, Manchester Metropolitan University, [http://cfpm.org](http://cfpm.org)).

- **External groups of experts:**
  - Slovak Innovation and Energy Agency, [http://www.sea.gov.sk](http://www.sea.gov.sk);
  - Regulatory Office for Network Industries, [http://www.urso.gov.sk/sk](http://www.urso.gov.sk/sk);
**KSR: Policy development process**

**OCOPOMO enhancements**
- Involvement of stakeholders
  - Discussion
  - Needs formulated by a scenario
  - Decision of KSR representative, supported by public voting / polling
  - Involvement of stakeholders
  - Modelling, simulation
  - Collaborative updates of scenarios
  - Involvement of stakeholders
  - Evaluation of alternative policy models, collaborative reviewing
  - Simulation, evaluation, validation of produced policy model
  - Collaborative reviewing

**Flowchart:**
1. Needs identification
   - New energy policy?
     - Y: 1. Involve partners
     - N: 3. Conduct research
         - Revise?
           - Y: New expert group?
             - Y: 4. Reviewers nomination
             - N: 5. Review & comment
                 - Revise?
                   - Y: 6. Conduct research
                   - N: Approved?
                     - Y: 8. Release
                     - N: End
   - N: 2. Involve partners

**References:**

**Conference Details:**
MCIS’10, September 12-14, 2010, Tel-Aviv-Yaffo, Izrael
KSR: BPMN model (1)
Requirements on tools (1)

- **Initialisation:**
  - SotA of available tools and technologies
- **Stakeholder analysis in policy cases**
  - Analysis of scenario building and policy modelling processes
  - Identification of particular activities in the processes
- **Design of overall process of the pilots**
  - Functional requirements on tools, based on identified activities
  - Technology requirements and constraints (based on SotA)
  - Grouping and prioritisation of the requirements
- **Design of electronic support**
  - Web-based application for voting on alternatives
### User requirements form

**Stakeholder data**

- **Organization**
  - Technical University Kosice
- **Name of your organization**
- **Full name of person**
  - Peter Butka
- **Your name and surname**

**Functional requirements on integrated ICT toolbox**

- **ICT toolbox functionality provided through one portal-based interface**
  - **Must have**
    - The ICT toolbox should be presented as portal-based web application. It means that particular tools like wiki,.blog, forums, surveys, voting, simulation and evaluation/calculations, will be fully available under the one portal (where applicable).

- **Integration of components within e-participation tools for scenario generation – data exchange / annotation**
  - **Should have**
    - Different information in participation tools (i.e., wiki, blog, forum, results, voting results, etc.) should be easily referenced between them (annotation). E.g., there should be possibility to reference some part of wiki (e.g., by highlighting part of text) and use wiki, which automatically create discussion thread within forum related to this page, which user want to do such action (together with copy of information to starting message in discussion). Other possibilities of annotation/data exchange between particular tools should be identified before design of architecture and implementation plans.

- **Connection of context-specific information within Scenario Generation and Policy Modelling process in ICT toolbox**
  - **Must have**
    - All information related to one scenario generation is connected through one portal. It means that everything created within development of one scenario is identified using unique context in order for have possibility for context-specific search, information presentation, participation/group management and access to resources. Also, when policy modeling is connected to its context-specific scenario, user has to know, where the scenario comes from. E.g., that specific policy modeling has some context information related to some context scenario and its rules.

- **Starting the scenario generation process / initial scenario**
  - **Must have**
    - Responsible user for scenario generation (facilitator) is able to publish initial scenario on the wiki within ICT toolbox, where specific context information for current case is created in initial moment. From this moment everything related to the scenario has the context information.

- **Creation of stakeholders group(s) for scenario generation process**
  - **Nice to have**
    - Responsible user (facilitator) is able to create groups of stakeholders for creation of current scenario. Integrated system should have context-specific information about their membership and activity (e.g.).
Plan of the future project activities:

- Detailed specification of functionality and architecture of the OCOPOMO platform
  - Architectural design of IT solution: November 2010
  - Platform components for first prototype: July 2011
  - Integrated ICT toolbox prototype: September 2011

- First prototype of the integrated platform - Autumn 2011

- Implementation and testing:
  - First trials of the pilot applications - Winter 2011
  - Second trials of the pilot applications - Autumn 2012

- More info at [www.ocopomo.org](http://www.ocopomo.org) or [www.ocopomo.eu](http://www.ocopomo.eu)
Thank you for your attention!

Questions, comments, suggestions?