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SEVENTH FRAMEWORK
PROGRAMME

Open Government in Policy Development: From Collaborative Scenario Texts to Formal Policy Models

Invited talk at ICDCIT 2011, 10th February, Bhubaneswar (India)

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Agenda

- Towards open government in policy making
- Challenges to use ICT in policy making
- The OCOPOMO project
- From collaborative scenario texts to formal policy models
- Concluding remarks

Evolution of E-Government

- E-Government: use of ICT in the public sector
- Over the past 10 years, electronic government evolved to a prevalent field of research and practice

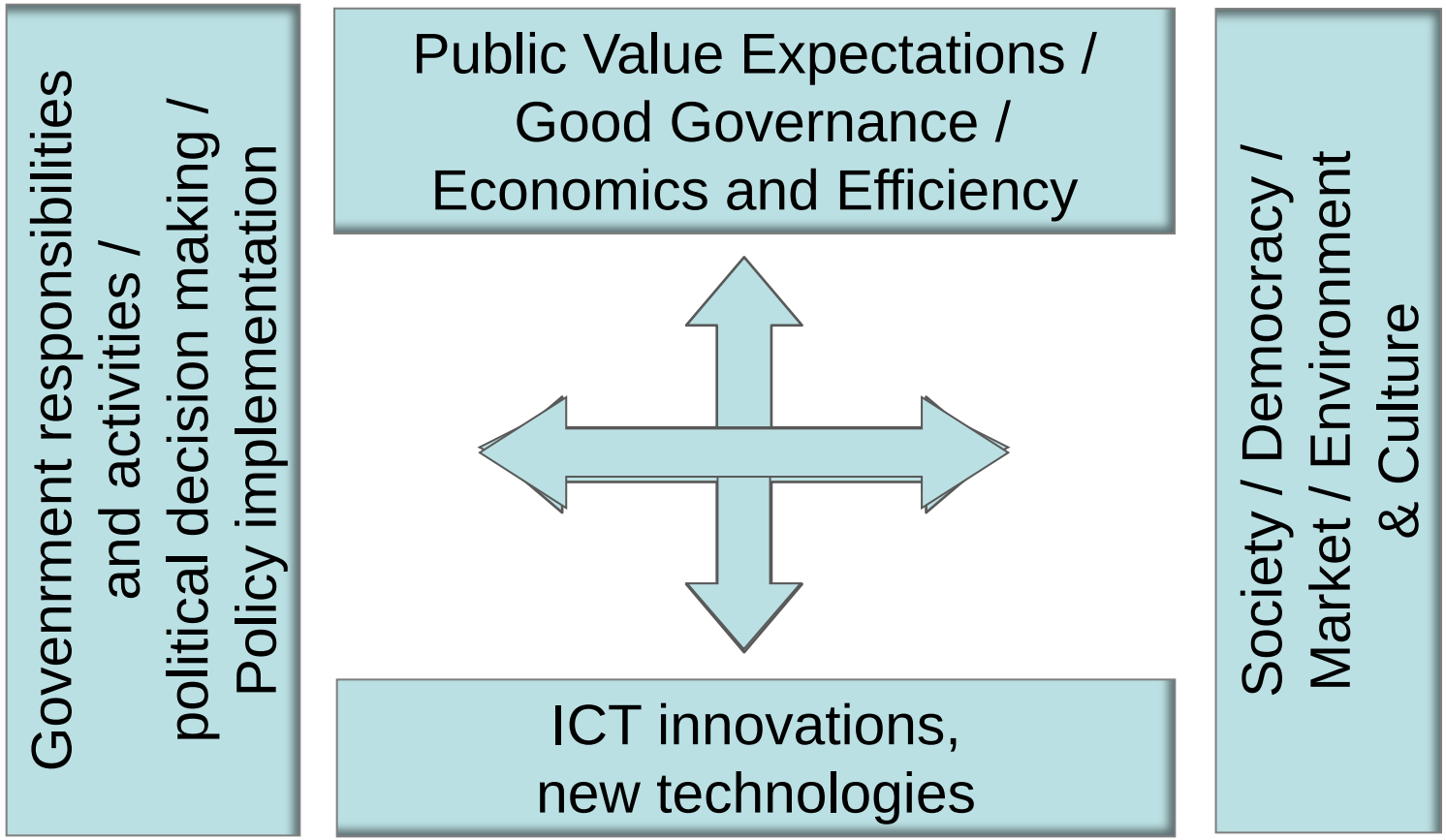
- European Commission (EC) on effective e-government : "*involves rethinking organizations and processes, [..] changing behavior so that public services are delivered more efficiently to the people who need to use them. […] enables all citizens, enterprises and organizations to carry out their business with government more easily, more quickly and at lower cost*".

http://ec.europa.eu/information_society/activities/egovernment/index_en.htm

Drawbacks of Initial Approach to E-Government

- First approaches in e-government were
  - too technology-focused
  - neglecting user perspectives, organisational aspects and the legal and policy dimensions in ICT developments
- High demand to focus more on good governance in e-government emerged around 2005
- Demand for a holistic view on e-government

Holistic View on E-Government



Holistic E-Government Accommodates Manifold Aspects

- Citizen participation / citizen at focus
- Accessible and user-driven e-government
- Openness and transparency
- Trustworthiness
- Efficiency and value-generating public services
- Process chains and ICT support along the process steps
- Organisational change and legal compliance
- Open government including citizen involvement in policy making

From Technology-focused E-Government to Good Governance

- Two terms coined the development towards good governance in e-government
  - E-Participation, concentrated on citizen participation in democratic decision making and policy formulation therewith using modern ICT
  - E-Governance and public governance, focusing on organizational and efficiency aspects and including citizen participation

Good Governance Principles Influence E-Government Designs

- Good governance principles
  - refer to approaches and guidelines for good governance and public administration to promote interaction and formation of political will with regard to societal and technological changes
- Five principles for good governance set by the EC
  - Openness
  - Participation
  - Accountability
  - Effectiveness
  - Coherence

http://eur-lex.europa.eu/LexUriServ/site/en/com/2001/com2001_0428en01.pdf

Open Government principles of OECD

- Accountability
  - it is possible to identify and hold public officials to account for their actions
- Transparency
  - reliable, relevant and timely information about the activities of government is available to the public
- Openness
  - governments listen to citizens and businesses and take their suggestions into account when designing and implementing public policies

Open Government: Fostering Dialogue with Civil Society. OECD Study, 2003

Towards Open and Inclusive Policy Making

- Demand for integration of e-government, e-participation and e-governance
- OECD study states:

  "*open and inclusive policy making offers one way to improve policy performance and meet citizens rising expectations. Public engagement in the design and delivery of public policy and services can help governments better understand people's needs, leverage a wider pool of information and resources, improve compliance, constrain costs and reduce the risk of conflict and delays downstream*"

  "Focus on Citizens: Public Engagement for Better Policy and Services"
  OECD Studies on Public Engagement, OECD Publishing, 2009

Open and Inclusive Policy Making

- Means of improving democratic performance
- Enhances transparency and accountability, public participation and builds civic capacity
- Offers a way for governments to improve their policy performance
  - by working with citizens, civil society organisations, businesses and other stakeholders
  - to deliver concrete improvements in policy outcomes and quality of public services

"Focus on Citizens: Public Engagement for Better Policy and Services"
OECD Studies on Public Engagement, OECD Publishing, 2009

Public engagement a condition for effective public governance

- The government stake
  - Cannot alone deal with complex global and domestic challenges, such as climate change
  - Face hard trade-offs, such as responding to rising demands for better quality of public services despite tight budgets
  - Need to work with their citizens and other stakeholders to find solutions
- The citizen stake
  - More educated, well-informed and less deferential citizens judge their governments on “democratic performance” and “policy performance”

Research Programme of the EC …

- EC introduced a research objective in its running Framework Program (FP 7) dedicated to “ICT for governance and policy modelling”
  - Focus on involving the general public in policy making and strategic decision making thereby exploiting advanced ICT
- Two calls launched
  - Call 4: funding 6 projects (among them OCOPOMO) and a roadmap action
  - Call 7: just closed on 18th January 2011

http://ec.europa.eu/information_society/activities/egovernment/research/fp7/index_en.htm

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Current challenges in policy making (1/2)

- Appropriate ICT support in policy planning not deployed widely
- Management of complexity in strategy and policy formation
- Introduction of open collaboration and therewith transparency in identifying the crucial features of complex social environments to inform policy models
- Online participation means not yet deployed widely in strategic decision making

Current challenges in policy making (2/2)

- Development, visualisation and simulation of appropriate policy models usually done by experts
  - black-box approach
- Comprehensive IT solutions needed to support
  - policy modelling and simulation
  - collaboration among
    - policy analysts and policy operators
    - wider interest groups
    - general public
  - along the whole policy development and stakeholder participation process

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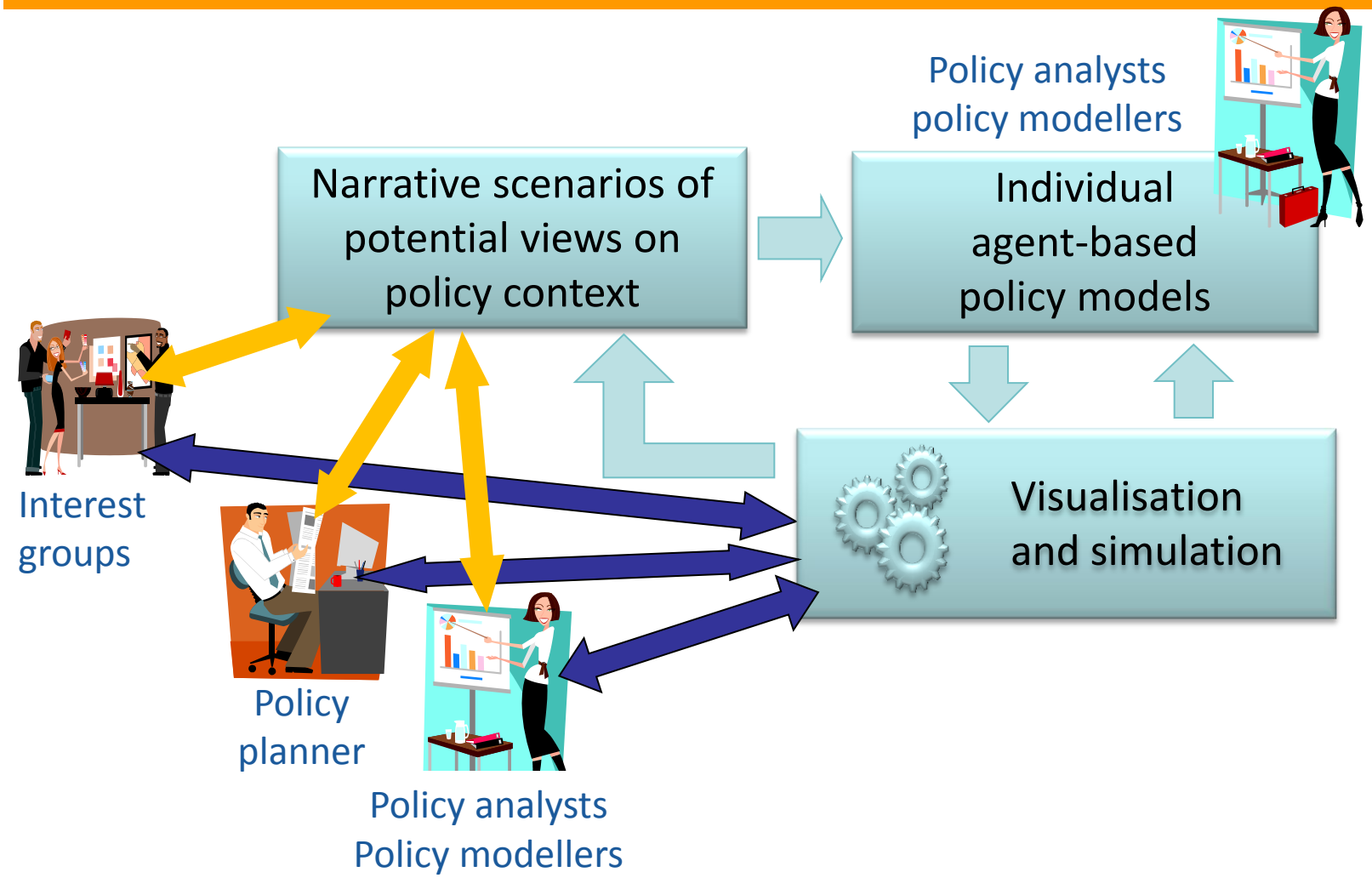
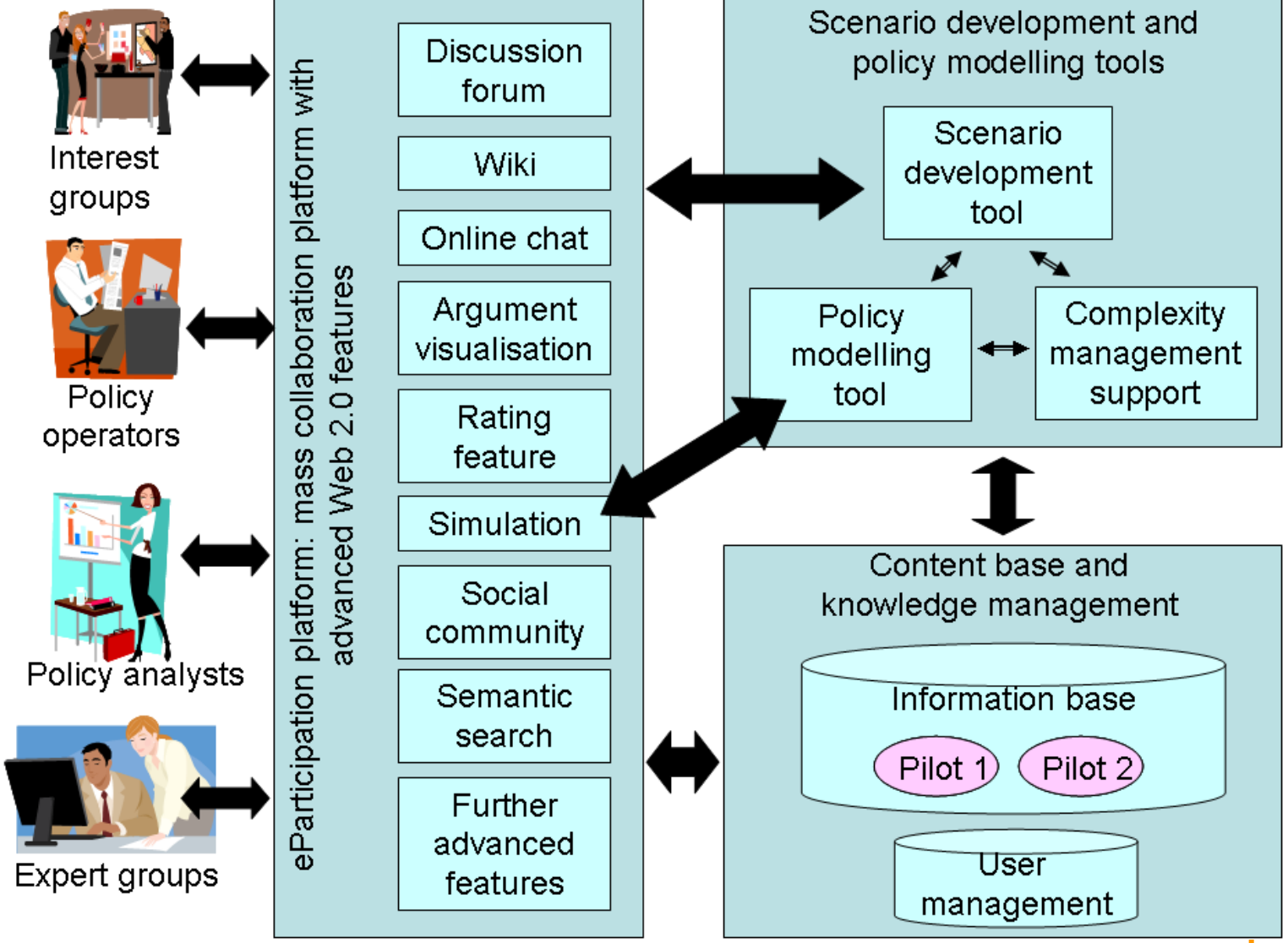
Aims of project

- Develop an integrated IT platform for efficient policy making
  - integrating scenario generation, formal policy modelling, and open collaboration along the policy process
  - supporting engagement of wide stakeholder groups in social and economic policy areas of two pilots
- Using methods and tools of policy modelling and scenario-based policy formation
- Integrating the methods into a platform of open collaboration among key stakeholders
- Key stakeholders: policy analysts, policy operators, wider interest groups of specific policy domains, etc.

Methodical approach



ICT Toolbox


Interest groups
Policy operators
Policy analysts
Expert groups
ePartication 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

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Scenario Analysis

- Foresight processes, IPCC (Intergovernmental Panel on Climate Change) scenarios
  - Usually Top-down: specifying social characteristics and group behaviour
  - Some research projects bottom-up: eGovRTD2020
- OCOPOMO process
  - Bottom-up
  - Issues identified by stakeholders
  - Scenarios generated without constraints by stakeholders
  - Using integrated ICT-based participation platform

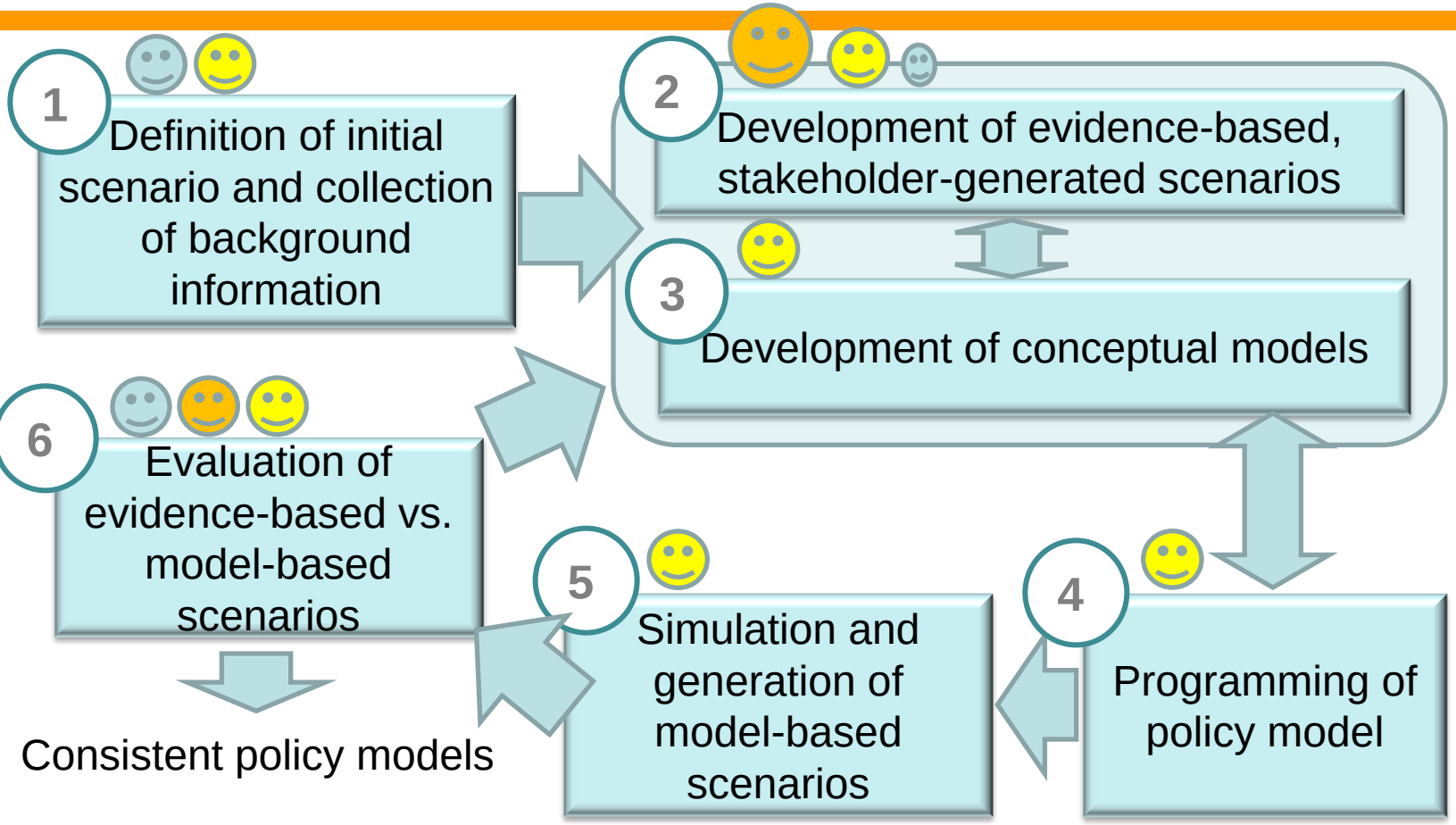
Status Quo of Policy Modeling

- Economic policy models
  - Top-down and theory-driven
  - Statistical usually; Verhagen is “evolutionary”
- Environmental policy models
  - Many models – usually economic
  - Significant proportions of papers about policy modelling in social contexts (Yearley, van Daalen et al.)
  - Found no papers incorporating institutional evidence for a particular place, time or policy
- Evidence-driven – all agent-based and bottom-up
  - Relate to specific institutions and policies

Policy Modelling in OCOPOMO

- Approach
  - Scenarios generated by stakeholders
    - Using integrated ICT-based participation platform
  - Model designs driven by information from scenarios
    - Stakeholder concerns and expectations
  - Interactive, parallel development of models and scenarios
- Type of model
  - Evidence-driven
  - Agent-based
- Role of modelling
  - Precision
  - Exploitation
  - Exploration

OCOPOMO's Integrated Policy Process and Involved Actors



Legend:

Prodess phase

Transition to next phase

Actors:

Domain Experts (Policy Planner / Strategic Decision Maker)

Stakeholders involved

Experts for Policy Analysis / Policy Modelling

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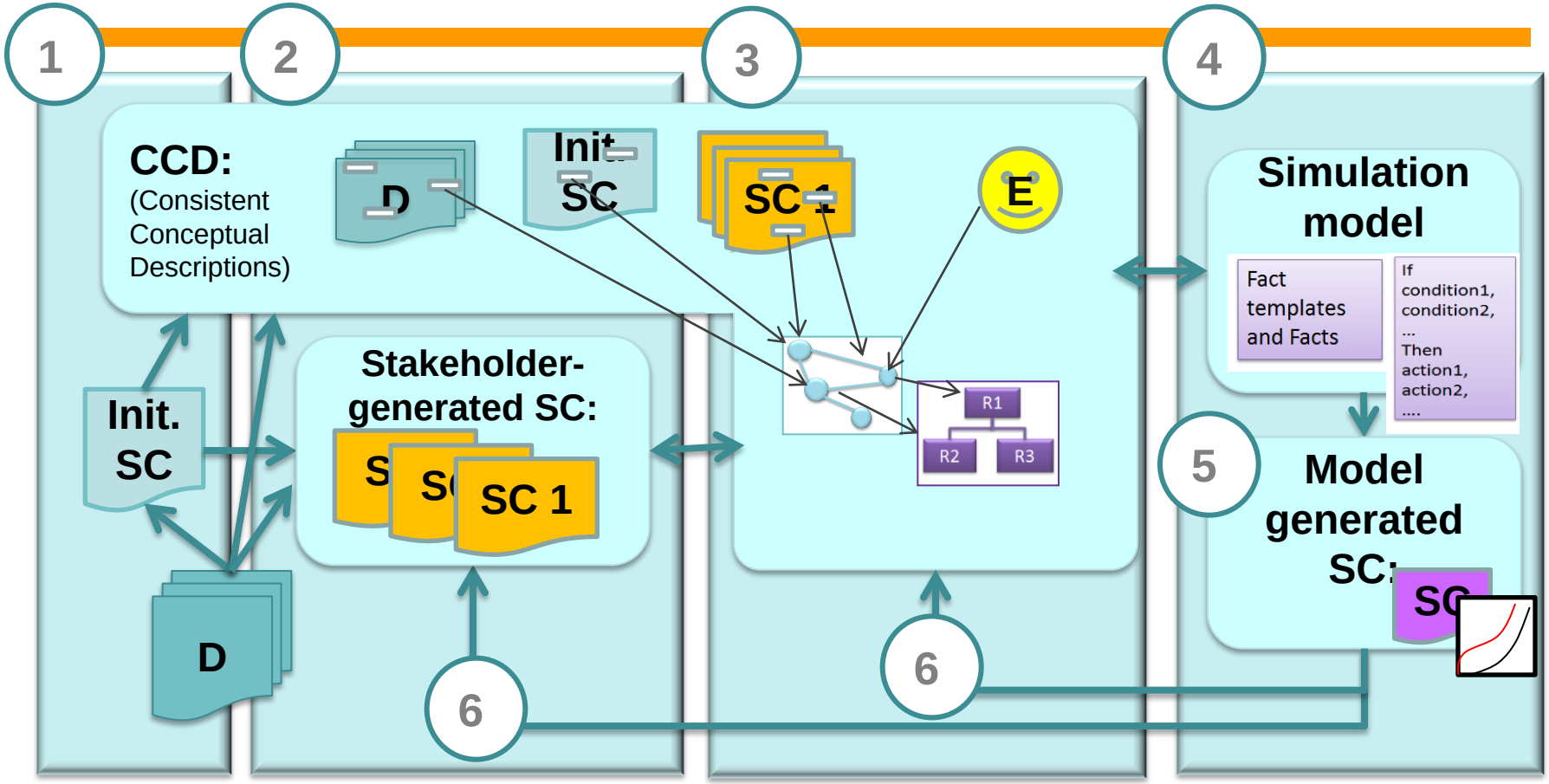
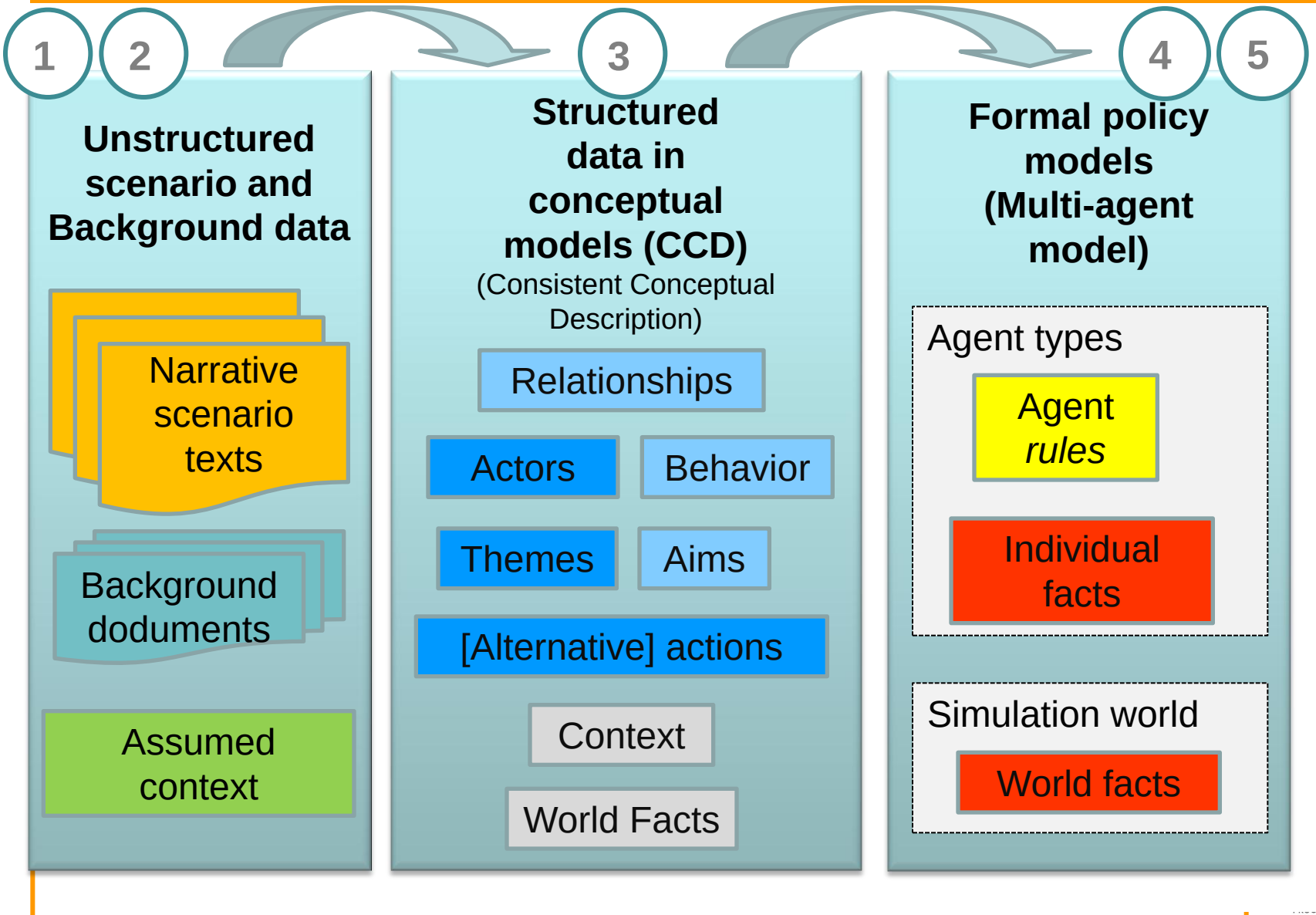
Artefacts along the Process Phases



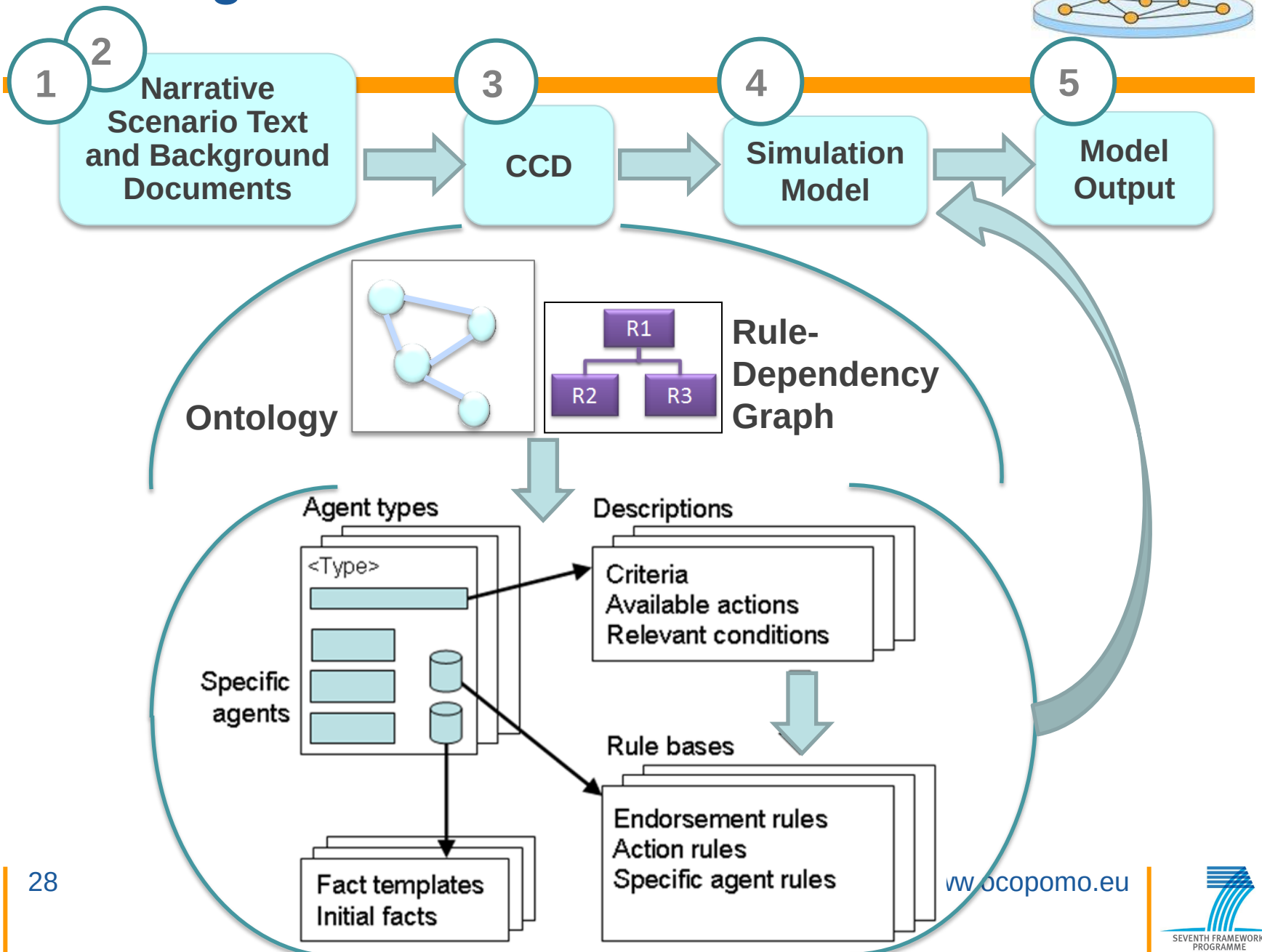
Legend:

- # Process phase
- Information flow
- Information flow detailed steps
- E Expert knowledge
- D Documents
- SC Scenarios
- Relevant aspect
- Network of social relationships
- R1 R2 R3 Rule-Dependency-Graph

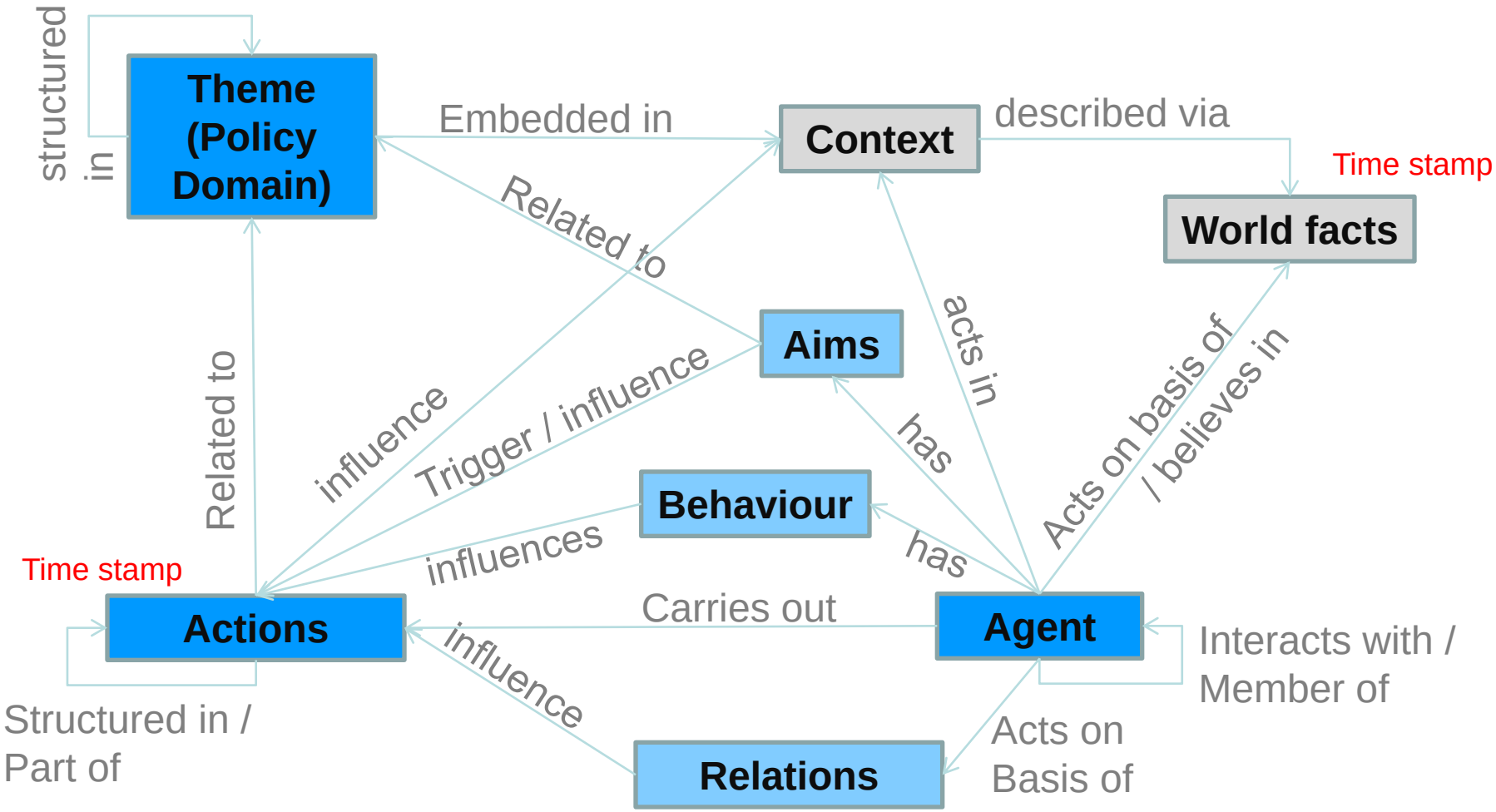
Transformation Needs



Zooming into the CCD



Conceptual Model for Policy Description in CCD and Formal Policy Model
(Approximation)



Step 1 of Transformation: Identification of Aspects of Relationships (-> Ontology)

Phrase in scenario description	Aspect (issue)	Category	Characteristics of aspects	Model component
Cheese should be produced by farmers along Hadrian's Wall.	Agricultural products	State: Alternative or multivariate	If alternative: {"dairy", "wool", "cereal", "meat", "beer", "vegetable"} or if multivariate: <dairy x_s per cent, wool x_f per cent, cereal x_n per cent, meat x_w per cent, beer x_b per cent, vegetable x_h per cent>	Condition part of a rule in an agent's rulebase, fact
		Goal (description of desired future state)		Also a fact
	produced	State change (ways and means, measures to be taken)	Action description: *install milking machine and cheese kettle to produce cheese*	Action part of a rule in an agent's rulebase, to be determined by analysing possible ways from current states to goals
	Agricultural enterprises	Actor	Endowed with a rule base, a fact base and goals	Agent class

Step 2 of Transformation: Identification of Rules (Rule-dependency Graph)

Model structure	Model comp.	Name	Natural language description	Formal description (Code)
Agent "farmer along Hadrian's Wall"	Structure	Farmer_Along Hadrian_s_Wall	Agent class	class farmer{...}
	Facts	Current state	Current distribution of agricultural products produced	Class EnvironmentState { double productClass Percentages[]; double soilCapacity; double lengthOfSummer; double priceOfCheese; …}
			Current state of soil and climate	
			Current market price for high quality cheese	
		Desired state	Desired distribution of agr. products produced	PlanningGoal [objective cheese] [objective minimumProfit] [priority high]
			Minimum desired profit	
		Danger	Production cost per kilogram might exceed the price per kilogram in the farm shop	Danger [cheese] [losses]
	Rules		If it is true that dairy is profitable then start milk and cheese production.	If (noDanger){ Purchase(cheeseKettle); Install(milkingMachine); }

Participatory, Agent-based Modelling

- Agents capture descriptions by stakeholders of own and other stakeholders' behaviour and social interaction
- Cross-validation at micro and macro levels
- Descriptive accuracy of agents constitute conditions of application
- Models are not claimed to be predictive – though they might be
- Purpose of models
  - For identification of problems and opportunities
  - For argument in dissent
  - For exploring and perhaps achieving consensus
  - For monitoring and managing policy

Integrating Scenario and Formal Model

- Goals, scope and social processes specified by participating stakeholders
- Stakeholder-generated scenarios inform model design
  - Key in model design is a set of if-then rules
  - Stakeholders see natural-language pseudo code
  - Enforces precision in use of language, expectations, goals
- Models produce simulations which are formal scenarios
- Participating stakeholders evaluate model generated scenarios
  - Surprises involve further investigation of model and scenarios
  - Iterations in developing formal policy models

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Why Scenario-based Policy Modelling?

- Stakeholder participation and collaboration in the development of different views on a policy context
- Bottom-up approach, evidence-based
- Deployment of integrated ICT based participation platform
- Comparison of model-generated scenarios with evidence-based narrative scenarios generated by stakeholders

Complementarity of Scenario and Policy Models

- Chaining in OCOPOMO
  - Scenarios built with goal in mind (backward chaining)
  - Models built from behavioural and contextual evidence – using forward chaining rules
- Richness and precision
  - Scenarios developed using rich, natural language
  - Rulebases in models are precise, formal statements
- Exploitation and exploration
  - Scenario exercises seem naturally to encourage exploration – ideas generation
  - Models facilitate exploitation and understanding of prevailing context

Three levels of scientific and technological innovation (1/2)

- Socio-political
  - Formulation, modelling and evaluation of social and economic strategies for governments, and monitoring over time
  - Open participation in parts of the process via Web 2.0 based e-participation platform
- Methodical
  - Integrated approach of complexity management for ensuring traceability of strategic decisions
  - Integration of stakeholder-generated scenario development and formal, agent-based social simulation by an integrated approach of qualitative data analysis

Three levels of scientific and technological innovation (2/2)

- Technological
  - Comprehensive support of policy development process through open collaboration platform
    - E-participation via web 2.0
    - Collaborative scenario generation
    - Formal policy modelling and simulation
    - Ensuring transparency and traceability through the integrated approach from scenario-generation to formal policy simulation

Up-to-date Relevance

- Contribution to transform government and administration to an open, effective and efficient participative governance
- New opportunities for open discourse among stakeholders of the policy domain and the policy experts
  - in stakeholder-oriented scenario generation
  - in evaluation of formal policy models
- Improving transparency and traceability in strategic decision making through the OCOPOMO approach

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Many thanks for your attention!

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