

www.ocopomo.eu





248128

# Conceptual Models Supporting Formal Policy Modelling: Metamodel and Approach

Sabrina Scherer, Maria A. Wimmer {scherer,wimmer}@uni-koblenz.de University of Koblenz-Landau

Workshop on Modelling Policy-making (MPM 2011) 14<sup>th</sup> December, 2011





#### OCOPOMO Project and Process

- Integrating collaborative scenario texts with formal policy models: Consistent Conceptual Description (CCD)
- CCD approach, metamodell and supporting ICT
- Conclusions







- Open Collaboration for Policy Modelling
- www.ocopomo.eu
- FP 7 Project
- Duration: 1/1/2010 31/12/2012
- Project Partners:
  - University of Koblenz-Landau, Germany
  - Suor Orsola Benincasa University of Naples, Italy
  - Fechnical University of Kosice, Slovakia
  - Manchester Metropolitan University, UK
  - Volterra Consulting, UK
  - University of Warsaw, Poland
  - Intersoft A.S., Slovakia
  - Scott Moss Associate, UK
  - Kosice Self-governing Region, Slovakia
  - Campania region, Italy



## **Aims of OCOPOMO Project**



Comprehensive IT solution to support the whole policy development process

- > policy analysis, modelling and simulation
- collaboration among
  - policy analysts and policy operators, wider stakeholder groups and general public
- Scenarios as a crucial but simple means
  - For engaging stakeholders in policy development and
  - to enable transparency
- Formal Policy Models combining scenarios and background information to inform decision makers



## Integrating Scenario and Formal Model

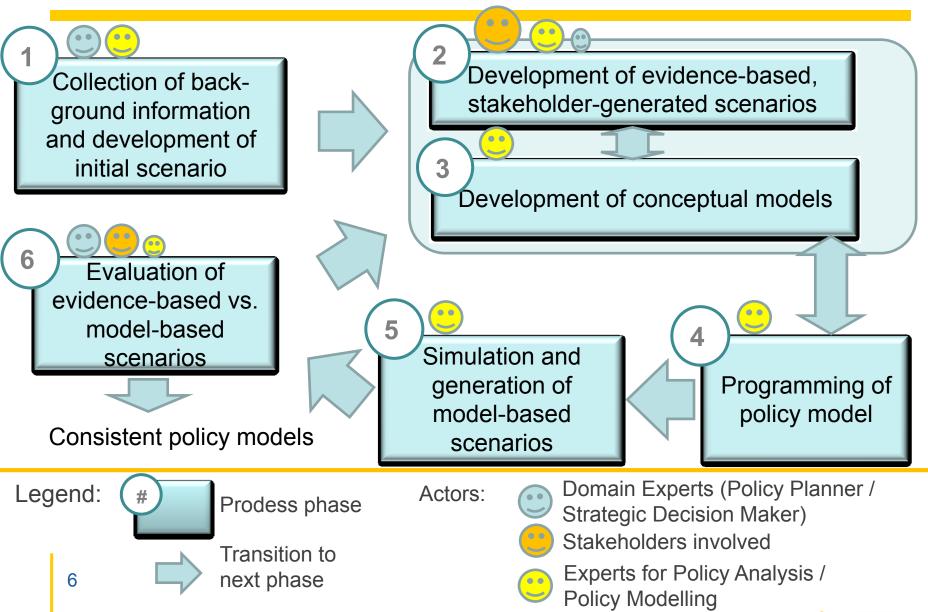


- Stakeholder-generated scenarios inform formal policy model design
  - Goals, scope and social processes specified by participating stakeholders
- Formal policy models produce simulations, which result in model-based scenarios
- Participating stakeholders evaluate model generated scenarios
  - > Surprises involve further investigation of model & scenarios
  - > Iterations in developing formal policy models



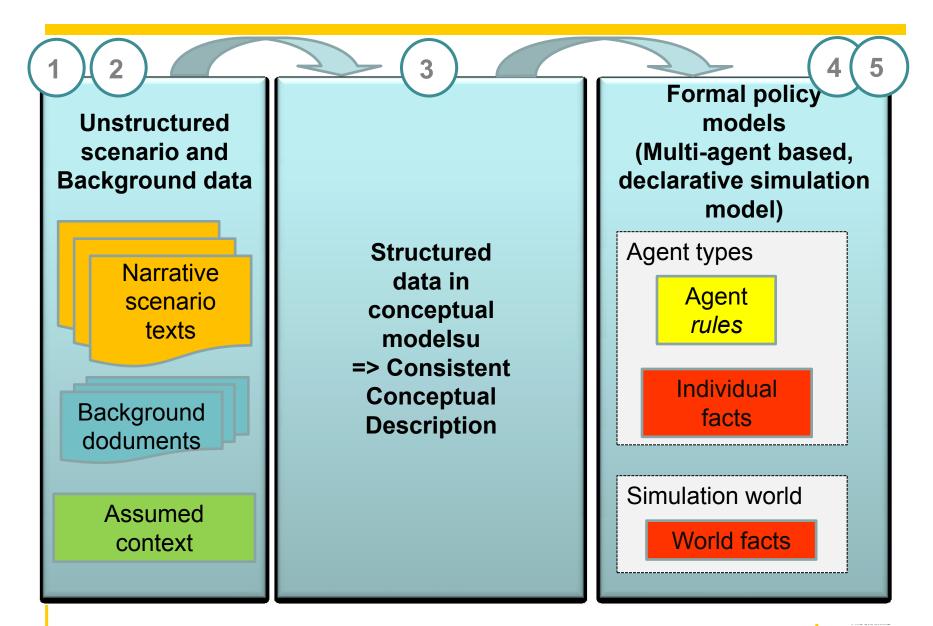
### OCOPOMO's Integrated Policy Process and Involved Actors





#### **Transformation Needs**







#### Consistent

- Make modelling decisions traceable for stakeholders.
- Text phrases from source scenarios and background texts are linked with conceptual descriptions.

#### Conceptual

- Conceptualising actors, policies, believes, aims etc. and their relations
- > Conceptualisations are transferred into programming code

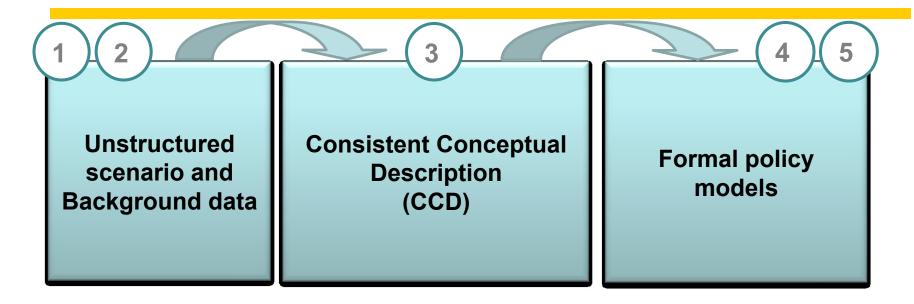
#### Description

- Description and visualisation of a policy case
- Expertise of policy analysts may lead to particular knowledge constructs in the CCD.



#### **Transformation Tools**

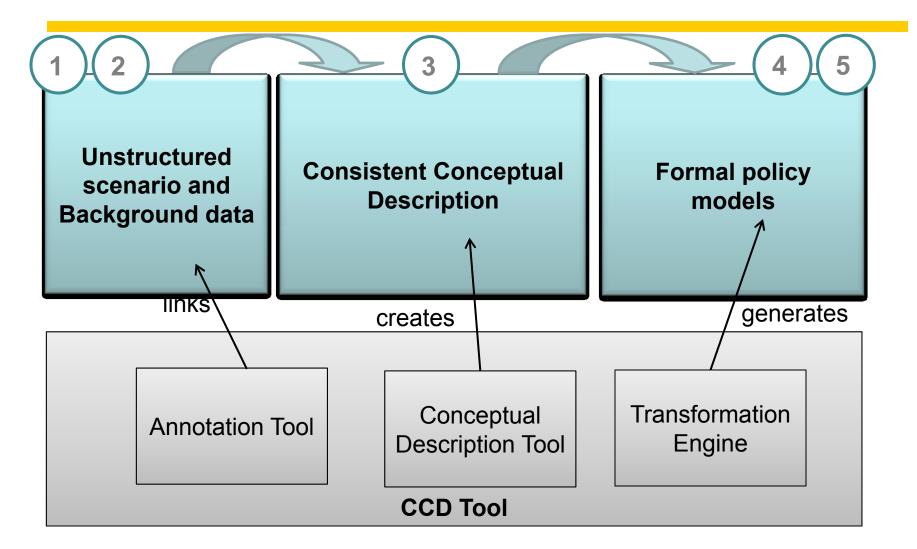




		Simulation Engine e.g. DRAMS (Declarative Rule
<b>CMS</b> e.g. Alfresco	CCD Tool	Based Agend Modelling Systems)

### **Technical tool to support the process**



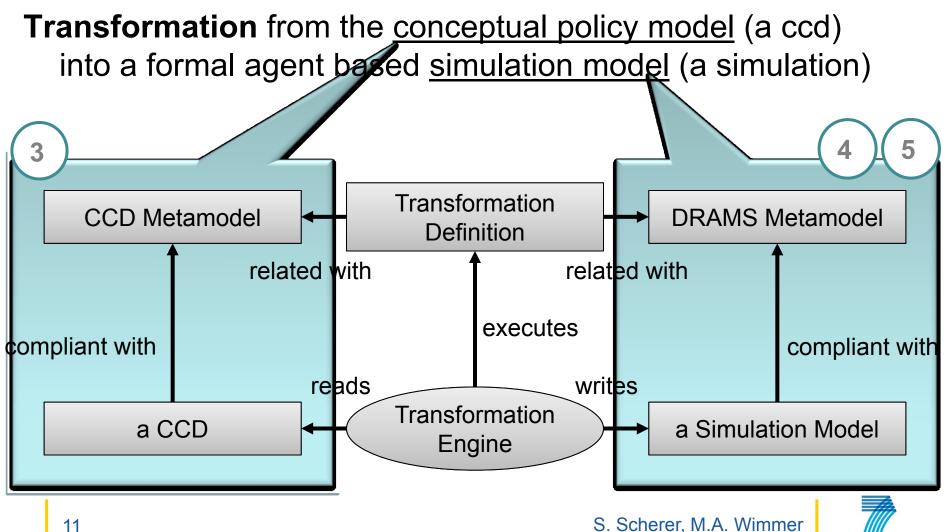




## **Model Driven Development of Simulation Models**



SEVENTH FRAMEWORK

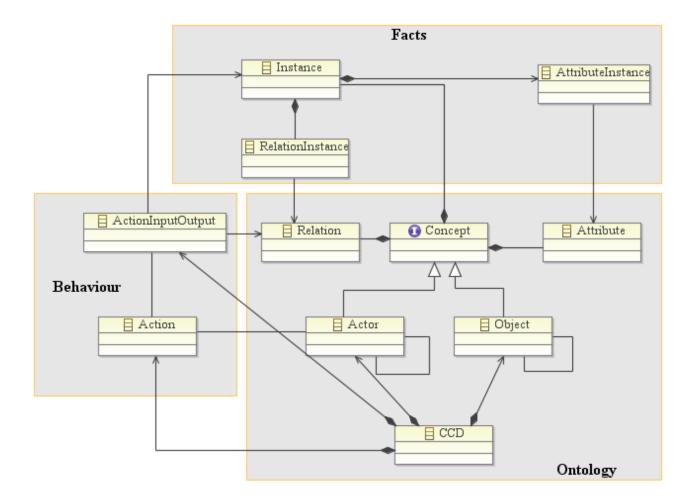


MPM 2011, 14<sup>th</sup> December, 2011

11

## **CCD Metamodel (Vocabulary)**



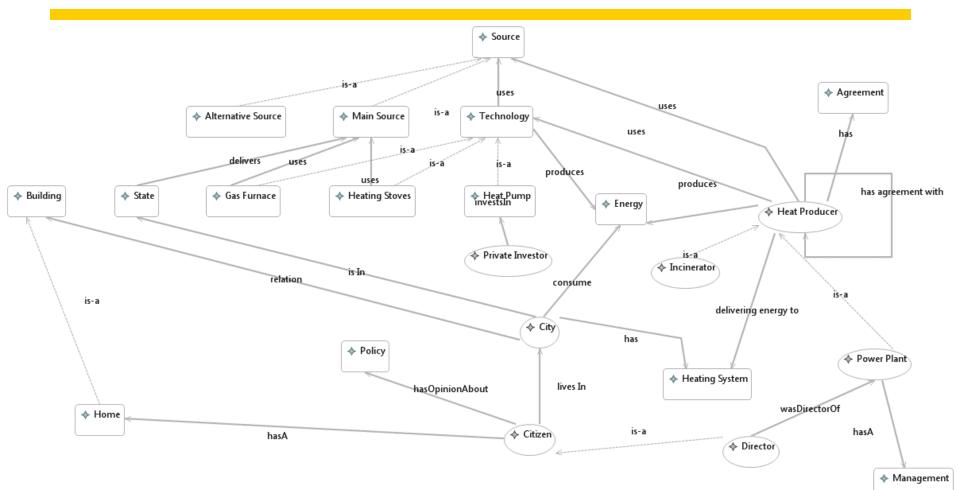




S. Scherer, M.A. Wimmer MPM 2011, 14<sup>th</sup> December, 2011

### CCD Tool – Visualisation of Actor Network Diagram





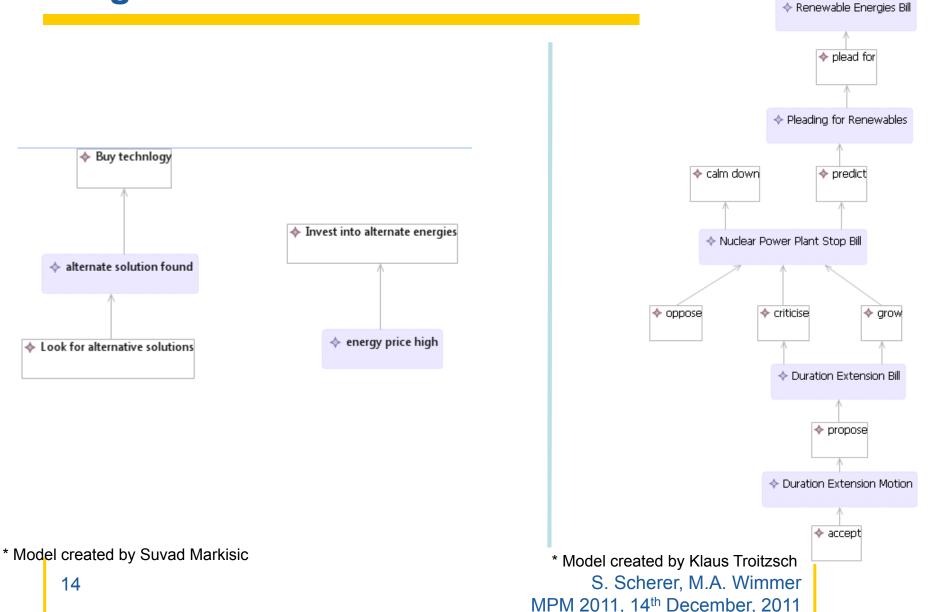
\* Model created by Suvad Markisic

13

S. Scherer, M.A. Wimmer MPM 2011, 14<sup>th</sup> December, 2011



### CCD Tool – Visualisation of Actions Diagram



#### **CCD Tool – Annotation of Scenarios**



SEVENTH FRAMEWORK PROGRAMME

				-		
_ac 🛛 🚺 Atomausstieg.ccd_dia 🔹 🚺 Atomausstieg	.ccd_act 🛛 🚺 Atomausstieg.ccd_ins	Kosice.ccd_actions	Kosice.ccd_diagram	Sosice.ccd 🛛 👋		CCD Annotation View 🛛 🔚 Outline 🍸 🗖 🗖
citizen and I am retired director how good energy policy could look li sumption in Kosice city in recent ye as 4Ê400Ê000 GJ[m2]. We can say that have in Kosice one very strong and sources is ga. 1:1 coal and gas. T incerõs economic point of view. The cooperation with other heat producer 5% for the competition. betitor in Kosice is the garbage inc ice electricity). The incinerator ut rapabilities due to an agreement wit to the agreement, it is allowed to to the pipe system, a CO2 coefficien be burned anyway. For comparison, C ighted CO2 coefficient for TEKO that by, the cooperation between heat pr to deliver energy and heat beyond th is interest, the main heat producer he heating prices, this is not a goo 'GJ. If the incinerator was allowed 24 eur/GJ only because the main powe not happy about the energy costs, sources exist around Kosice, which is though on a small scale. Also on th have is that heat transfer is associ 11 them at home. They utilize fossil at there is a possibility in Kosice example if Kosice city introduces g example if Kosice city introduces g tource was bought by a company with of other interests to sell gas from icular problem is that in order to u	of a power plant in Kosice. ke. ars decreased substantially this is thanks to new tech dominant heat producer, TE his power plant Actor (name: Heat idea for the wh s in Kosice city. But in fa inerator (KOSIT, belonging ilizes communal waste. They h TEKO. In consequence, 2/3 sell the city only 180£000 t of 350 kg/NWh would be re 02 coefficient for burning uses combination of Gas an oducers is based on an agre e 5 % of the total needs. T does not let the incinerato d situation: the price for to provide more energy, the r plant (owner of the heati they start thinking about a may provide 1£200£000 GJ pe e individual level people i ated with losses. Modern ga fuels, but by avoiding the to have a sustainable utili eothermal energy, which is CO2. The investment will c Russian and French owners ( Russia (contradicting inte	I am not a decisi I am not a decisi Not a	on maker any more, nd per year was al r insulation of bu- from Russia and of . The current ted e management of th Kosice energy (hea- mage and the capacit d deliver 500£000 ligh coefficient, b- t, and for Gas it a r 322 kg/NWh[VAC3] and its competitor not represent a r 322 kg/NWh[VAC3] and its competitor m to a greater ext plant is 18 eur/G d decrease to 15 g- not allow the comp ns like heat pumps . Private investor l gas furnaces at effective as larger es, this contribut s with the usage of Kosice agglomerat lion Euro. The pu- lich has stopped an	, so I can express only bout 7Ê000Ê000 GJ[maw1], mildings. coal from Ukraine. The mology is working well ne main power plant would ating) demand by 95%, produces heat (and is at. But it cannot fully by of KOSIT is 500Ê000 G. GJ energy from but it is produced as the accounts for 230 kg/MWh. cors, which does not allow free market competition. cent. Especially when J, while from incinerator gur/GJ. As a citizen I betitor to sell more. s. For example, low cs already introduce this homes or flats. heating stoves, so some ces to some reduction in of renewable energy cion, it will generate coblem is, however, that any investments in this		CCD Annotation View 2 COULINE CCD Actors Actors Actor: Heat Producer Actor: Heat Producer producer Relation: Heat Producer uses Source Relation: Heat Producer uses Techr Relation: Heat Producer uses Techr Relation: Heat Producer covering Relation: Heat Producer has Agreen Relation: Heat Producer covering Relation: Heat Producer covering Actor: Chever Plant Actor: City Actor: City Actor: City Actor: City Actor: City Actoris A
producer (TEKO). pssible energy Čeco-sourcesÓ will be	introduced, the TEKO power	plant will need t	o produce only 700	)Ê000 GJ to satisfv the	~	
rios_Expert_v0.1.txt			· · · · · · · · · · · · · · · · · · ·			< · · · · · · · · · · · · · · · · · · ·
* Model created by Suvad M	arkisic					

15

S. Scherer, M.A. Wimmer MPM 2011, 14<sup>th</sup> December, 2011

## OCOPOMO Policy Development Approach



- Integrated approach from narrative scenarios to formal policy models
  - Iterative process of identifying the parameters and features informing formal policy models
- Consistent conceptual description (CCD): Incorporating traceability in the iterative policy development process
- Open collaboration in policy development through integrated web 2.0 based e-participation toolbox
  - Enabling policy analysts, policy operators and wider stakeholder groups to work together collaboratively







- Contribution to transform government and administration to an open, effective and efficient participative governance (good governance principles)
- Provide new opportunities for open discourse among stakeholders of the policy domain and the policy experts
  - in stakeholder-oriented scenario generation
  - $\succ$  in evaluation of formal policy models
- Improve transparency and traceability in strategic decision making by involving different stakeholders in the participative process via the open collaboration platform
- CCD Tool available as prototype, currently tested in three pilot cases





www.ocopomo.eu







# Thank you for your attention!

Any comments, suggestions?

{scherer,wimmer}@uni-koblenz.de



OCOPOMO is co-funded by the EC within FP 7, contract No. 248128.

- The authors acknowledge the contributions of and express their gratitude to the OCOPOMO project partners, especially Scott Moss, Klaus Troitzsch and Ulf Lotzmann.
- The content of this paper represents the view of the authors, respectively. The European Commission cannot be made liable for any content.

