The i^* Framework: The Way Ahead

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UNIVERSITAT POLITÈCNICA DE CATALUNYA

Outline

- Motivation
- Open Issues
- Community Actions

Motivation: why strategic modeling?

Commitment

Intentions

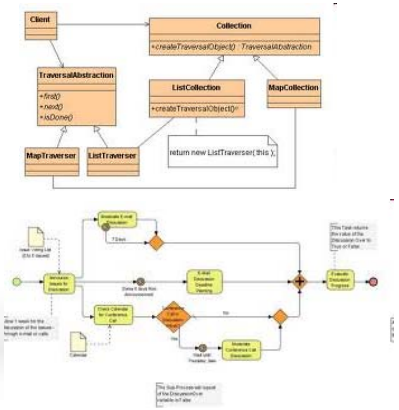
Abilities

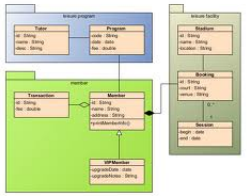
Strategic modeling

Desires

What-if

Rationale

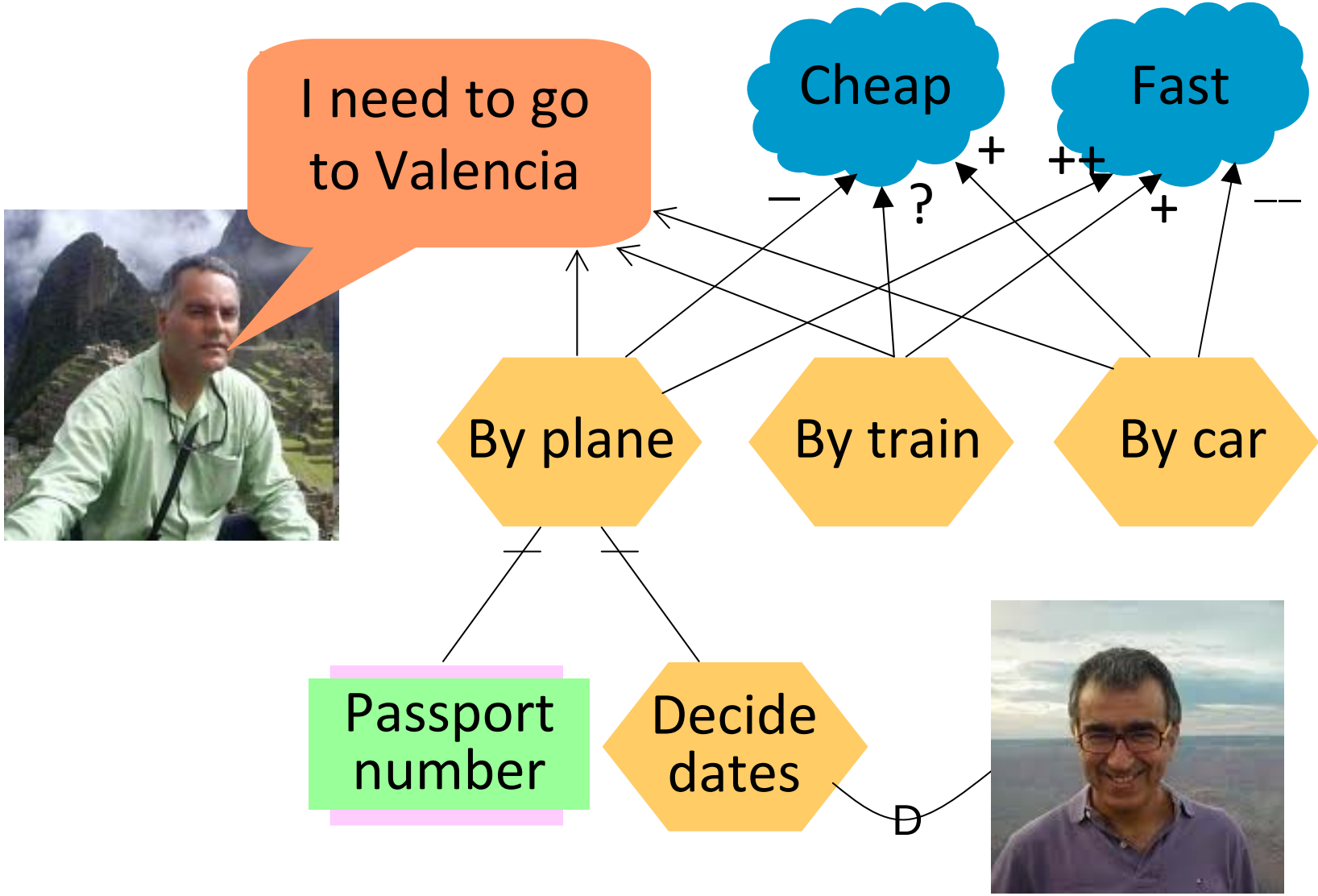




Approaches to intentional modeling

*i**

Why *i**?


I need to go to Valencia
Cheap
Fast
–
?
+
++
+
––
By plane
By train
By car
Passport number
Decide dates
D

*i** used in several disciplines

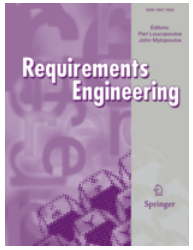
Requirements Engineering

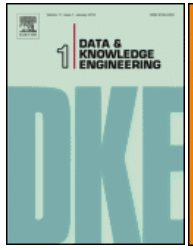
Business Modeling

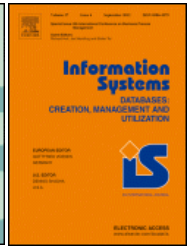
Business Intelligence

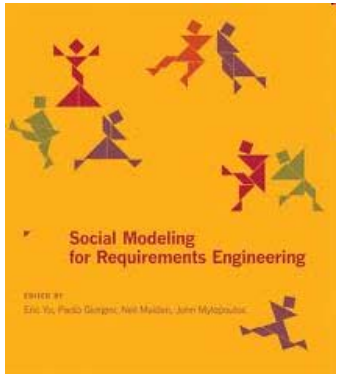
Architectural Design

i* current use









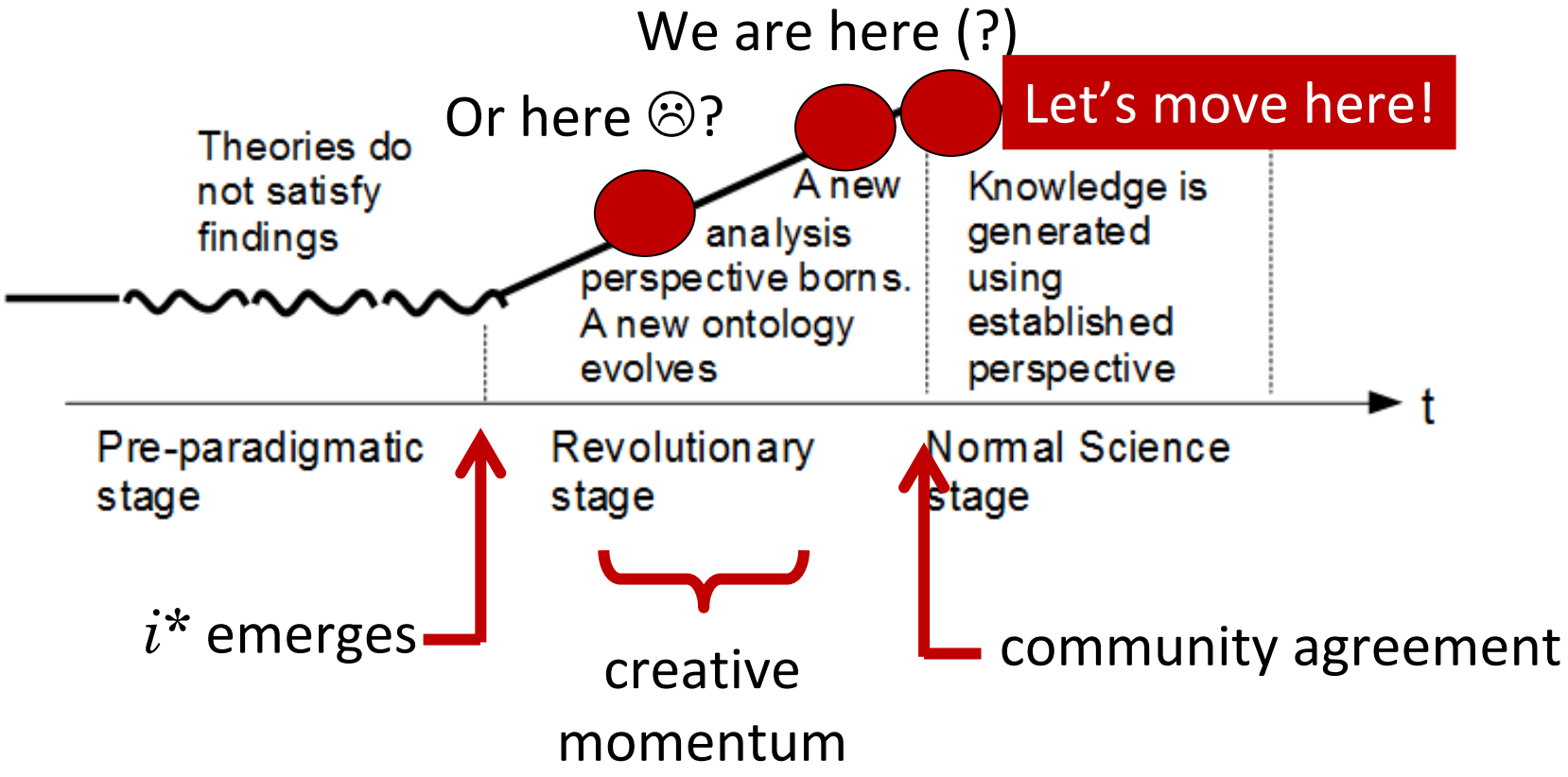
*i** current use

*i** community

outside world

Is that strange?

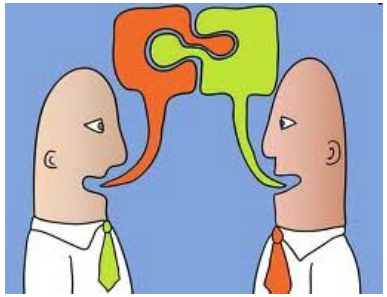
- Kuhn's concept of "scientific revolution"



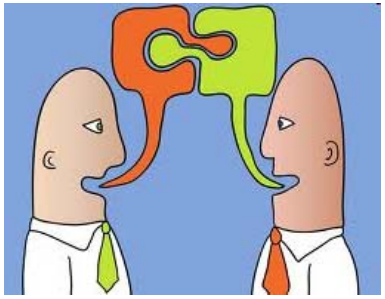
The Way Ahead

Which are the open issues to face during this journey?

Open Issues

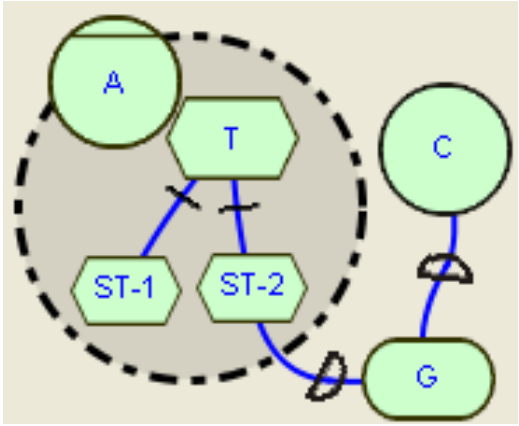


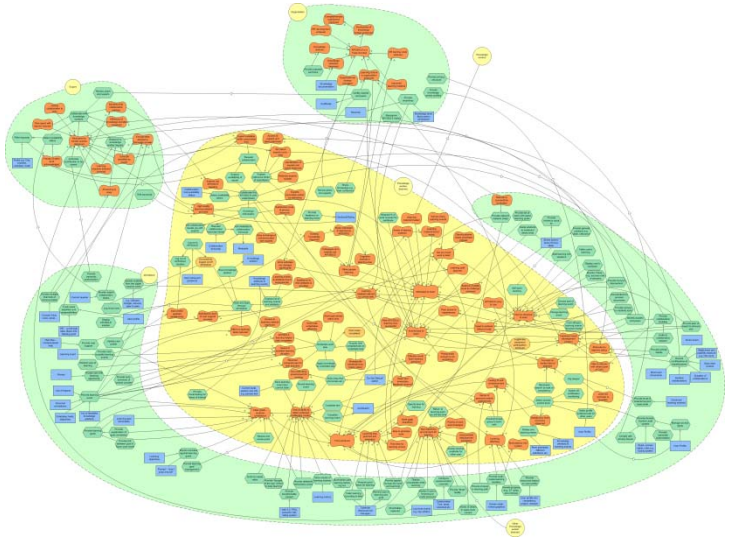
Open Issue 1. The Language



Open Issue 1. The Language

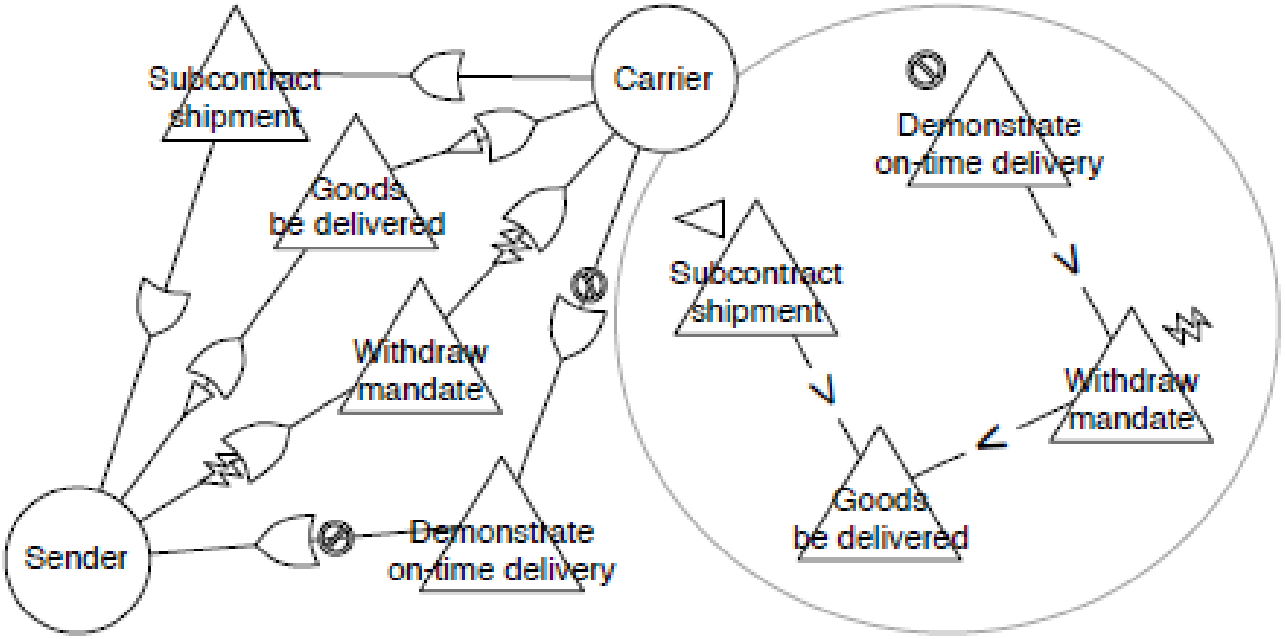
- How is the i^* framework used by modellers?





Open Issue 1. The Language

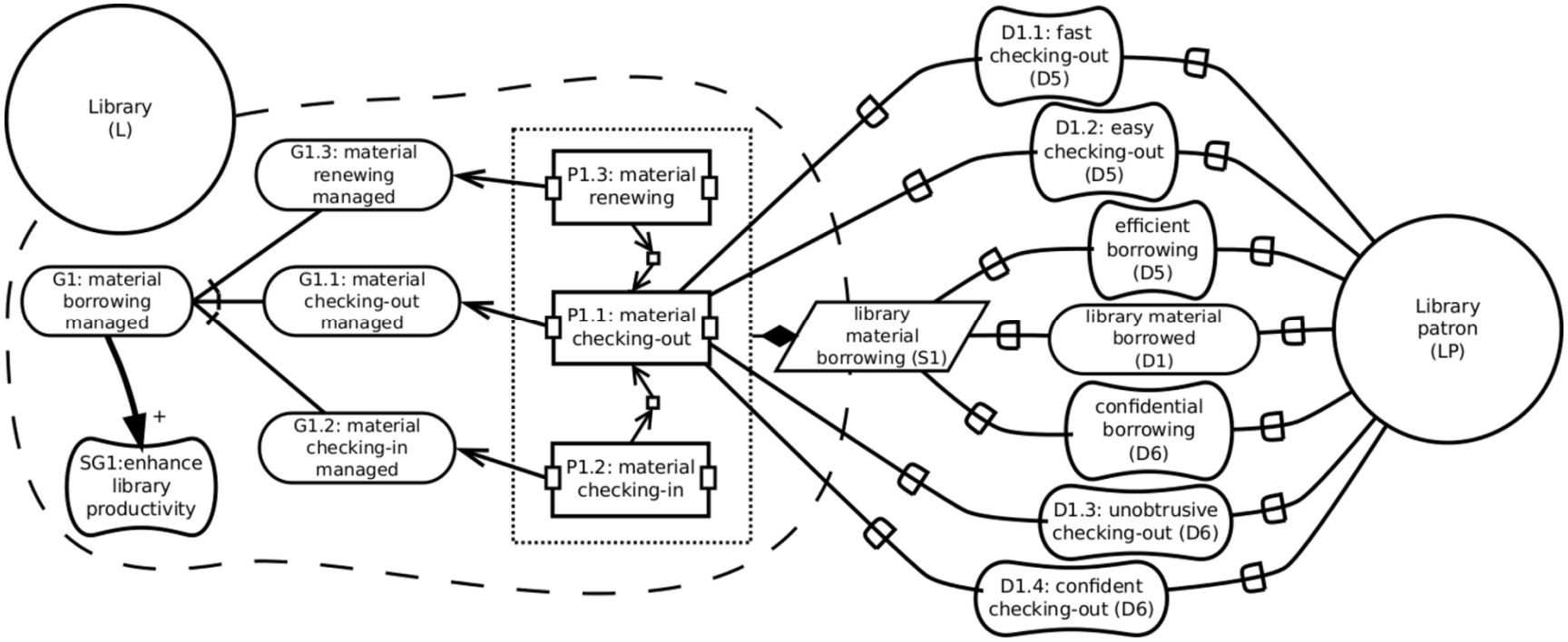
- Which are the usual variations?



Extensions

Open Issue 1. The Language

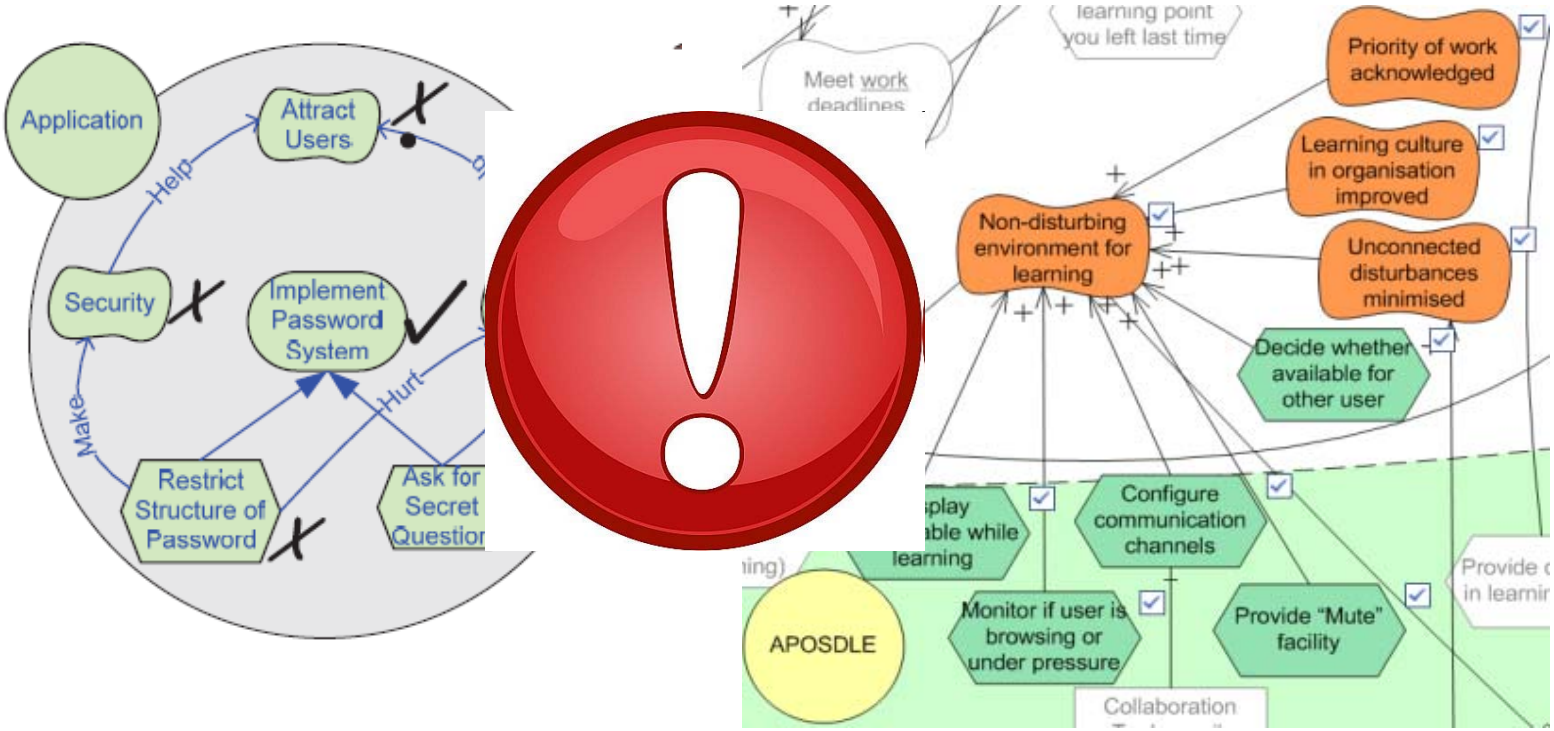
- Which are the usual variations?



Paradigm shifts

Open Issue 1. The Language

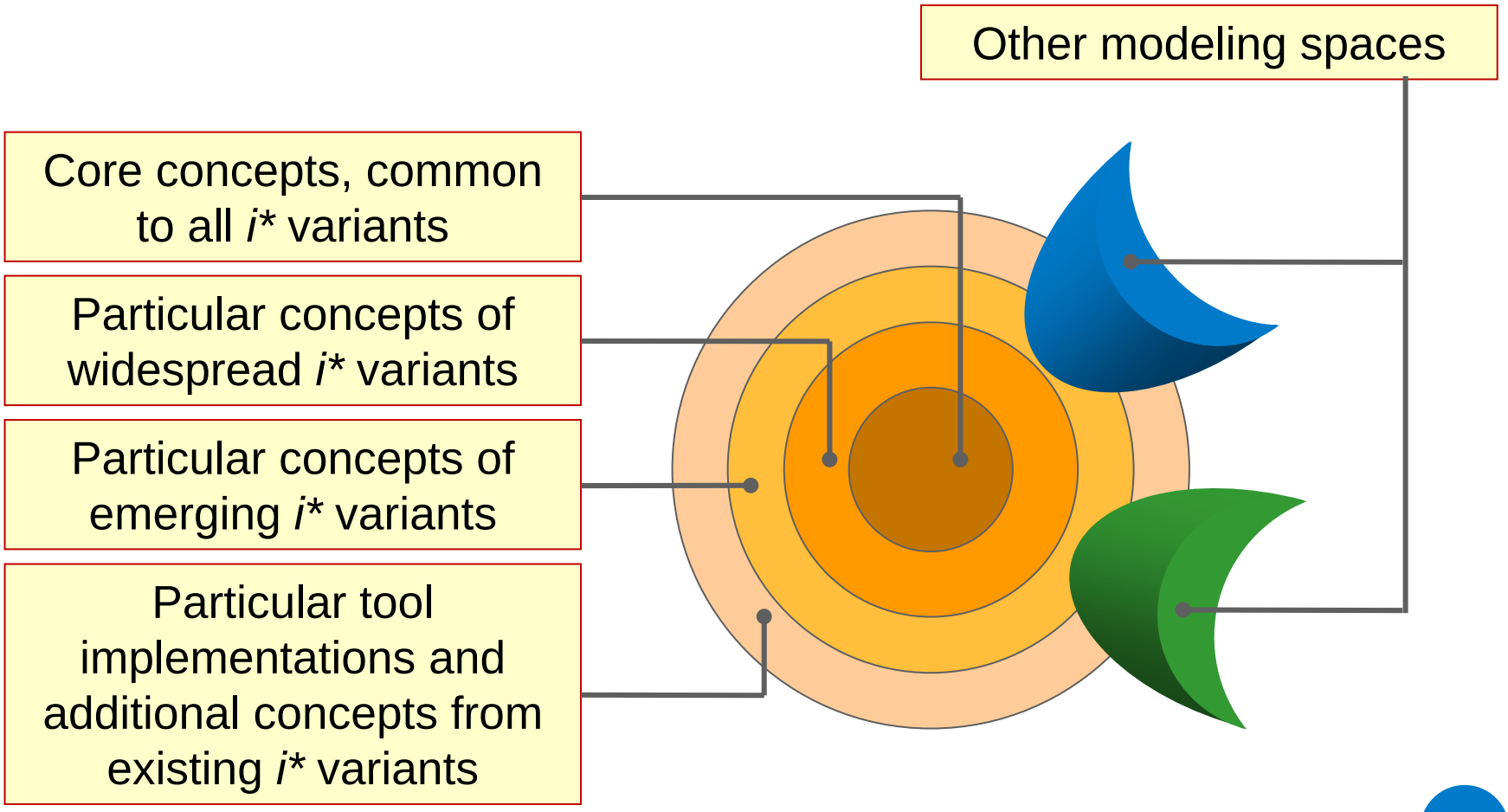
- Which are the usual variations?



Small variations on core constructs

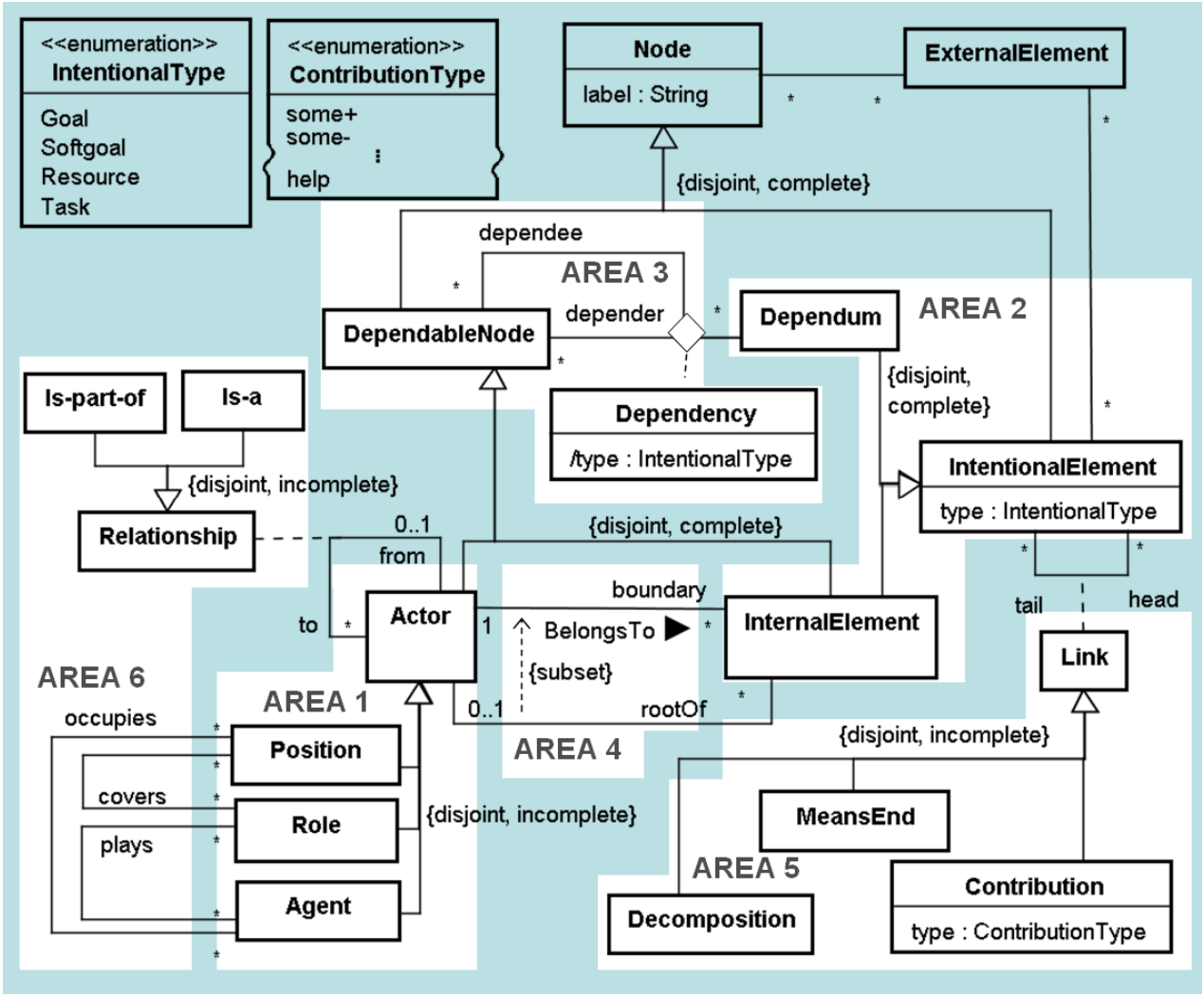
The Way Ahead

- Identification of a language core



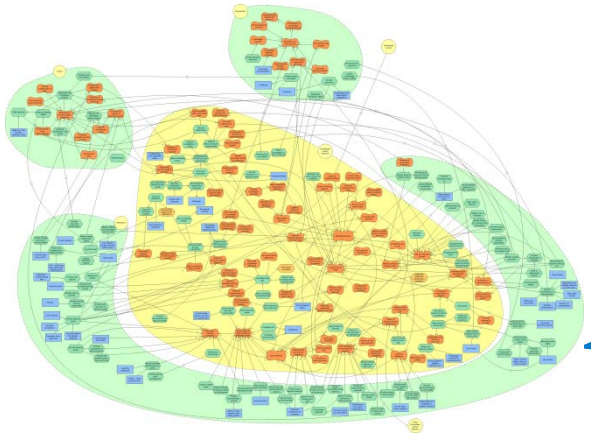
The Way Ahead

- Specifying the language core: syntax

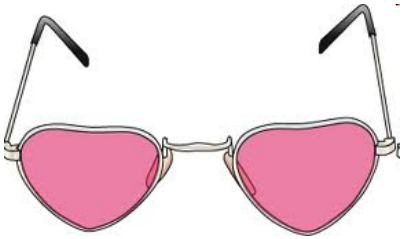


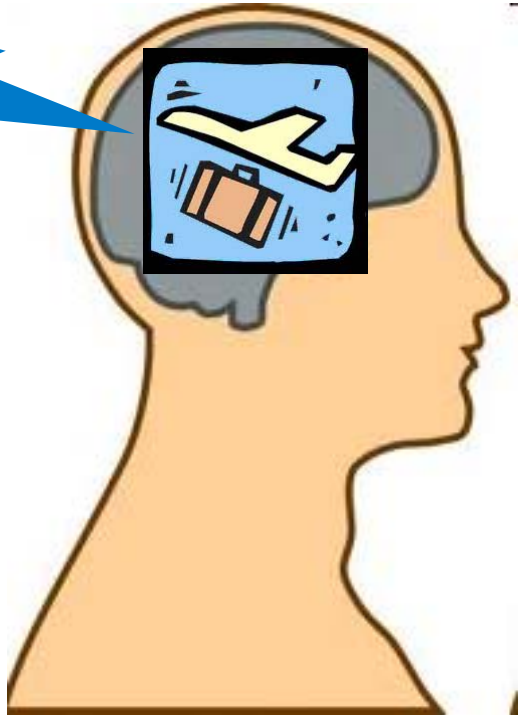
The Way Ahead

- Specifying the language core: semantics



Foundational ontologies

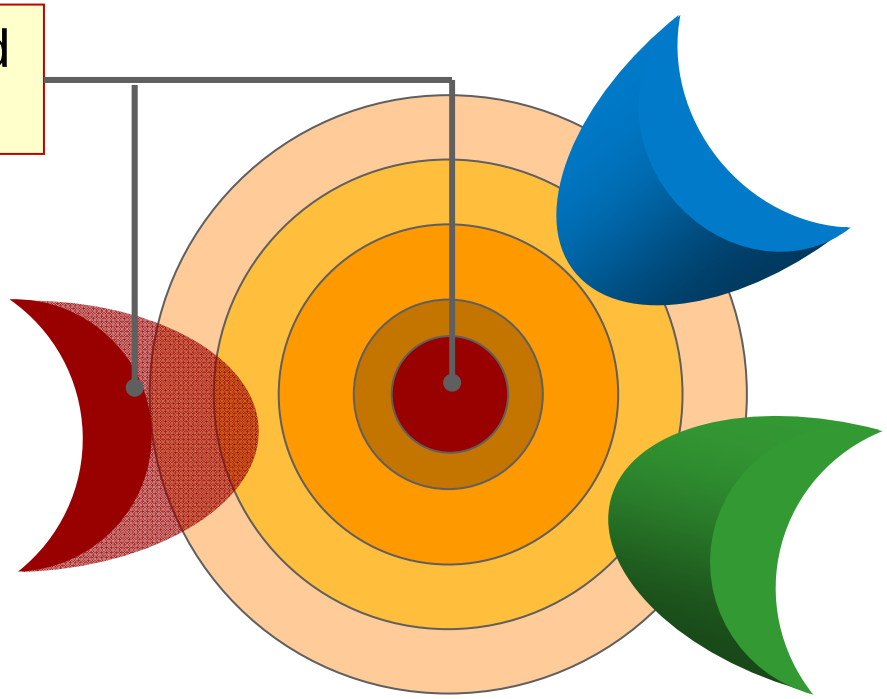




The Way Ahead

- *i** for practitioners?

Meaningful, value-oriented concepts for practitioners



Open Issue 2. The Method

Open Issue 2. The Method

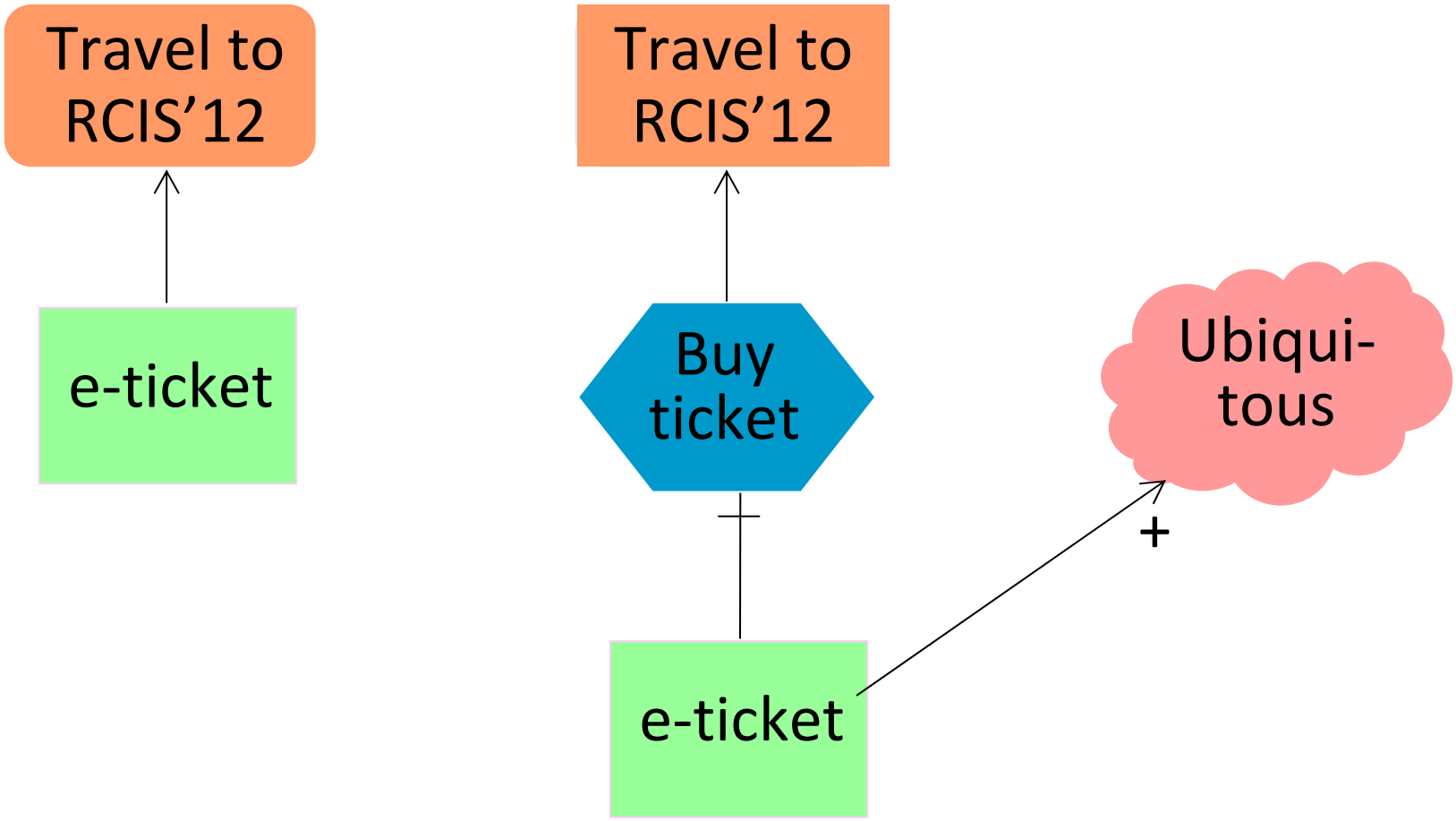
- How are i^* models built?

≅

What about lower level?

Open Issue 2. The Method

- How are *i** models built?

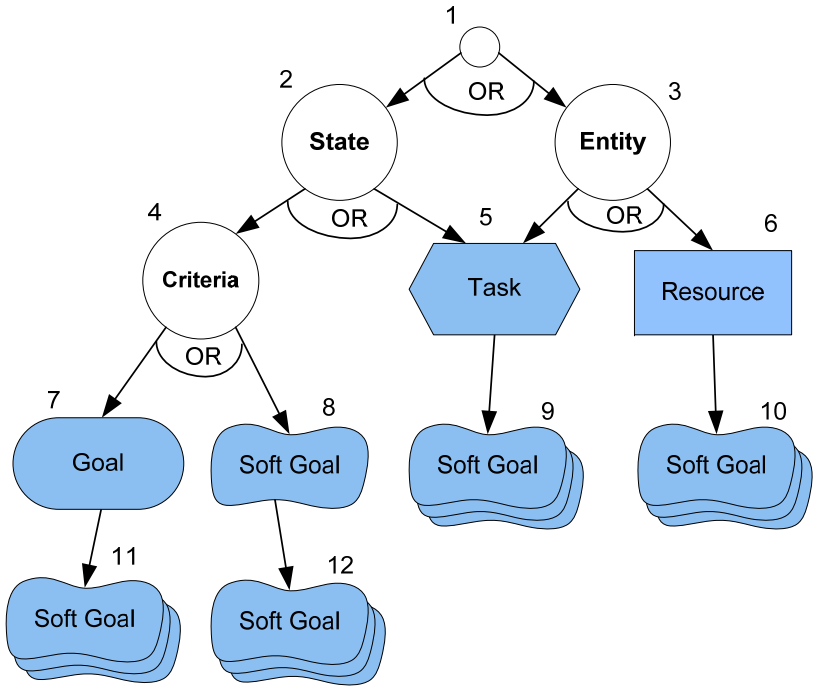


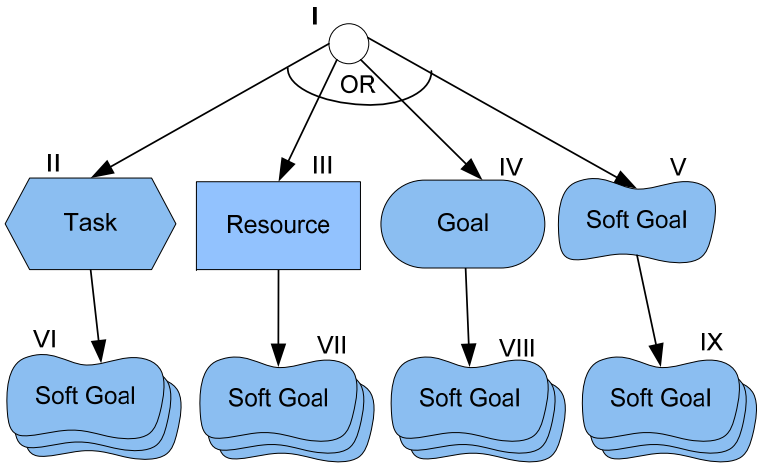
The Way Ahead

- Promoting some prescriptive rules for model building
  - Steps
  - Refinement rationale: type of element; stop condition
  - Correctness checks
  - Patterns
  - Lexical conditions

The Way Ahead

- Special emphasis on element decision

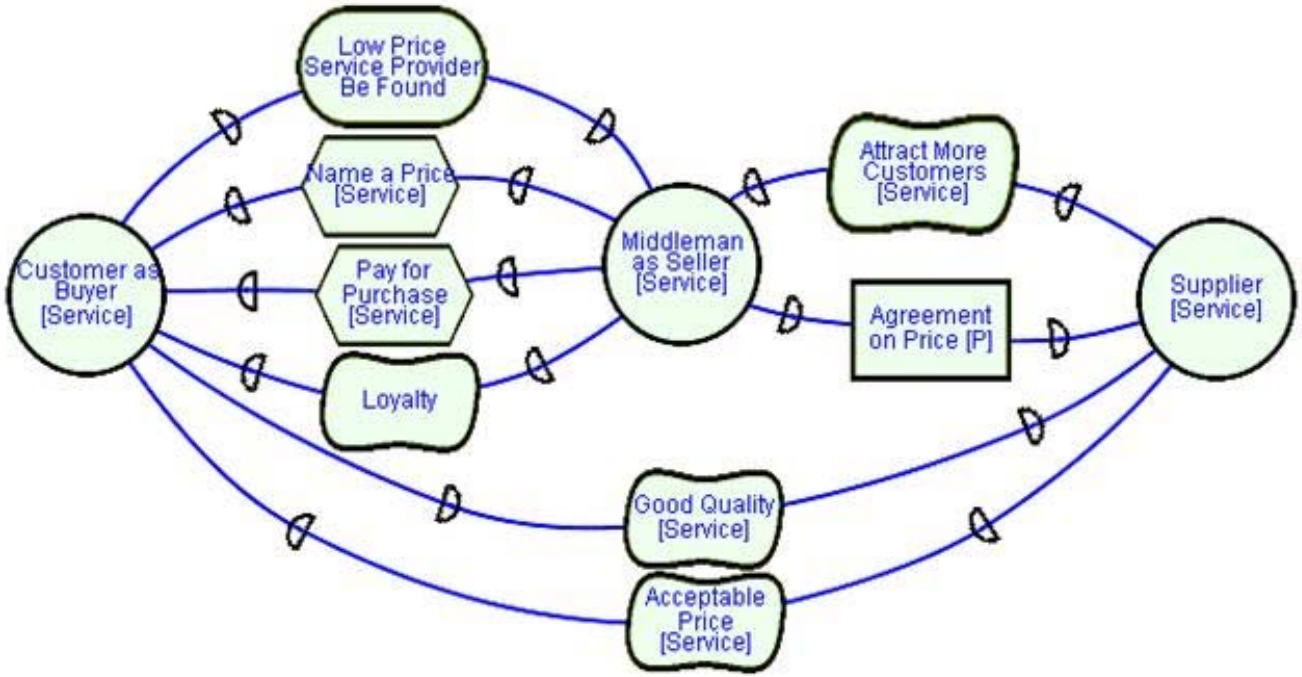




Open Issue 3. Model Analysis

Open Issue 3. Model Analysis

- "You can't control what you can't measure"



How good is this diagram?

- what does "good" mean?
- how do we know "how"?

Open Issue 3. Model Analysis

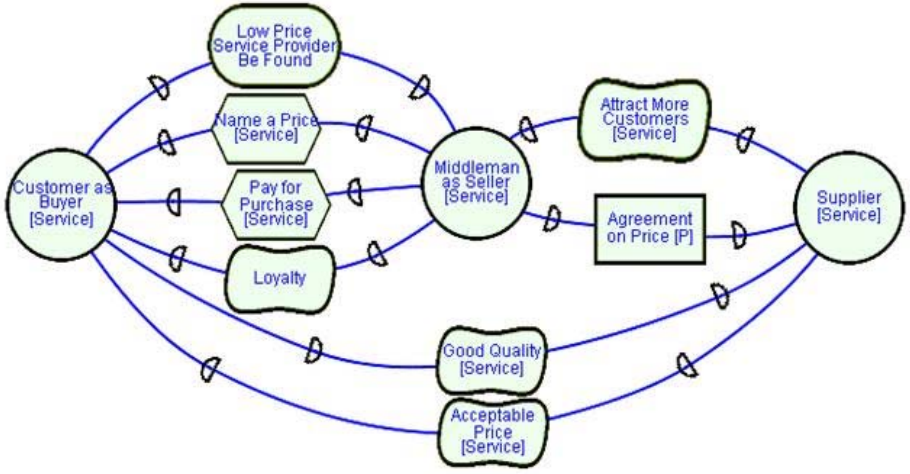
- Quantitative measures

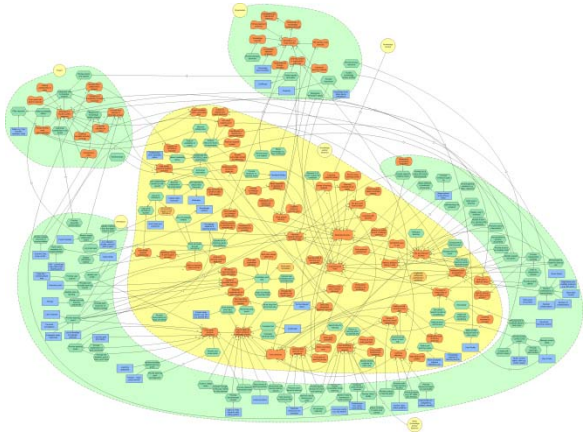
Diagrams	Measure	Property
E-R	Nb. of Entities	Simplicity
	Nb. of Entities and Relationships	Simplicity
Class	Depth of Inheritance Trees	Complexity
	Nb. of children	Reusability
	Nb. of associations	Maintainability
Business Process	Activity Automation Factor	Performance
	Branch Automation Factor	Performance
	Coupling	Maintainability
Statechart	Nb. of activities	Maintainability
	Nb. of Transitions	Maintainability
*i**	???	???

Open Issue 3. The Way Ahead

- Define a suite of *i** measures

Diagrams	Measure	Property
*i**	Nb. of Elements	Simplicity
*i**	Nb. of Goals with 1 Means	Workability
*i**	Actor Centrality	Performance
*i**	Nb. of Automated Tasks	Performance





Open Issue 4. Scalability et al.

Open Issue 4. Scalability et al.

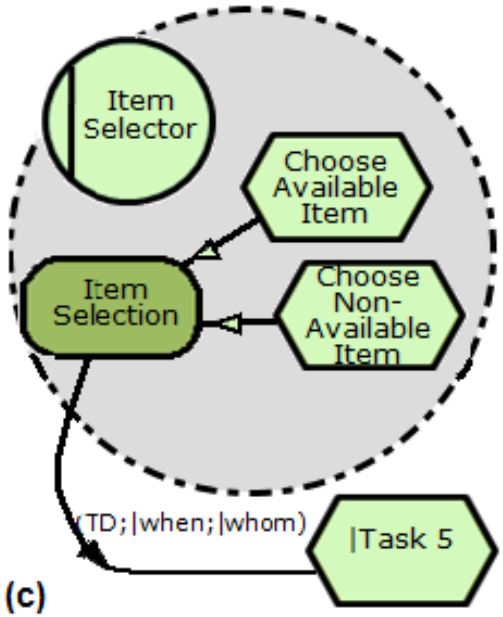
- *i** models do not scale well

Evaluation Criteria	Evaluated issue	Evaluation
Modelling Language	Refinement	Not Well Supported
	Modularity	Not Supported
	Repeatibility	Not Well Supported
	Complexity mgmt.	Not Well Supported
	Expressiveness	Well Supported
	Traceability	Not Well Supported
	Reusability	Not Supported
Pragmatics	Scalability	Not Supported
	Domain applicability	Well Supported

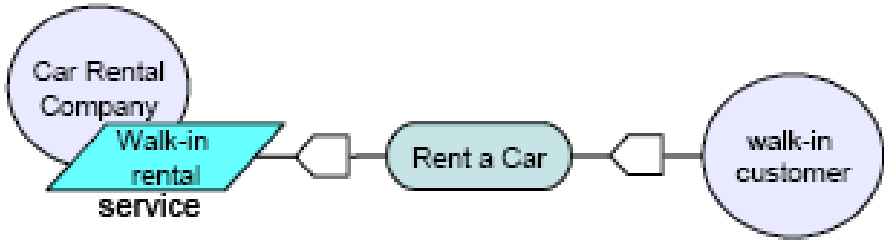
cf. Estrada et al., CAiSE'06

Open Issue 4. The Way Ahead

- Domain-oriented proposals



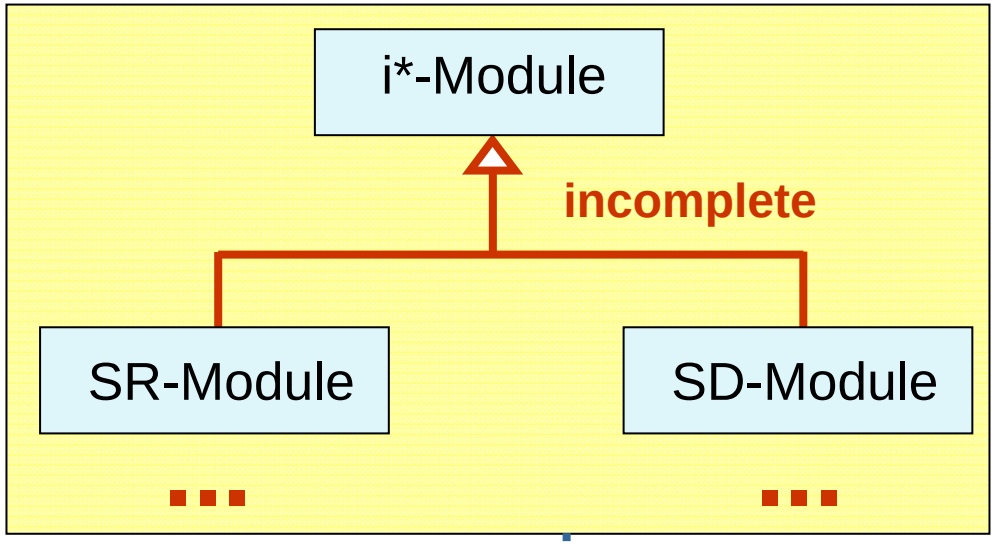
Aspects

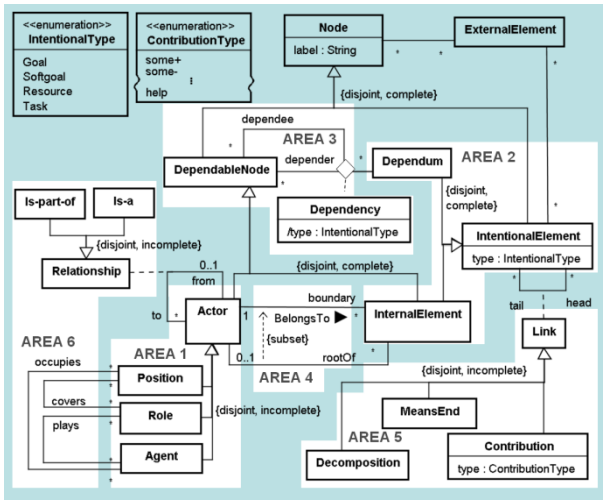


Services

Open Issue 4. The Way Ahead

- Generic proposals

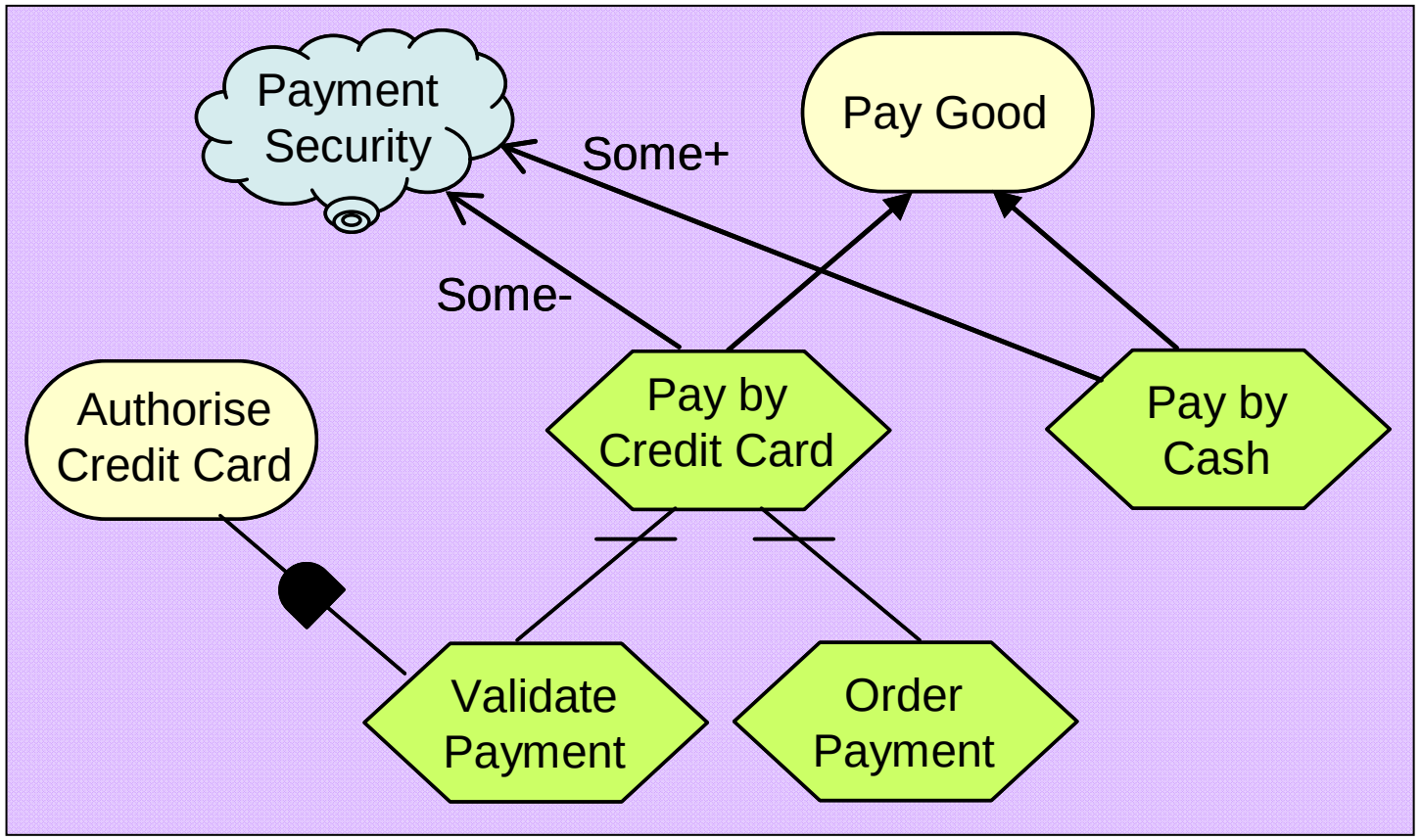




coupling

Open Issue 4. The Way Ahead

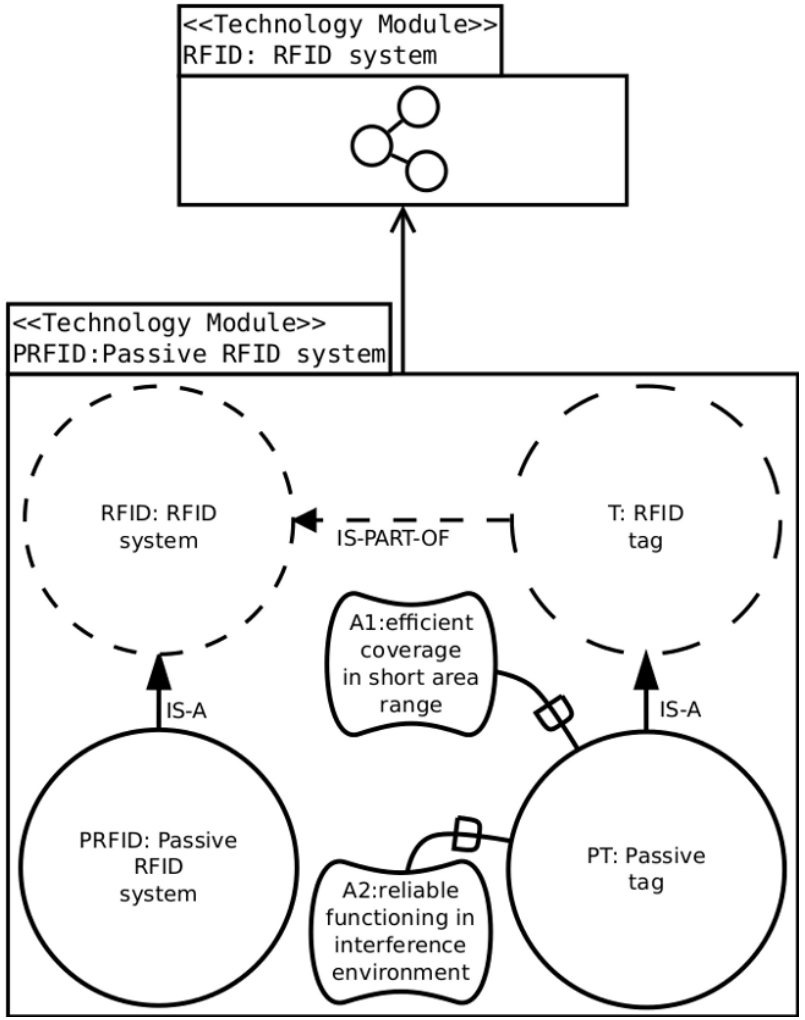
- Generic proposals



Means-end module

Open Issue 4. The Way Ahead

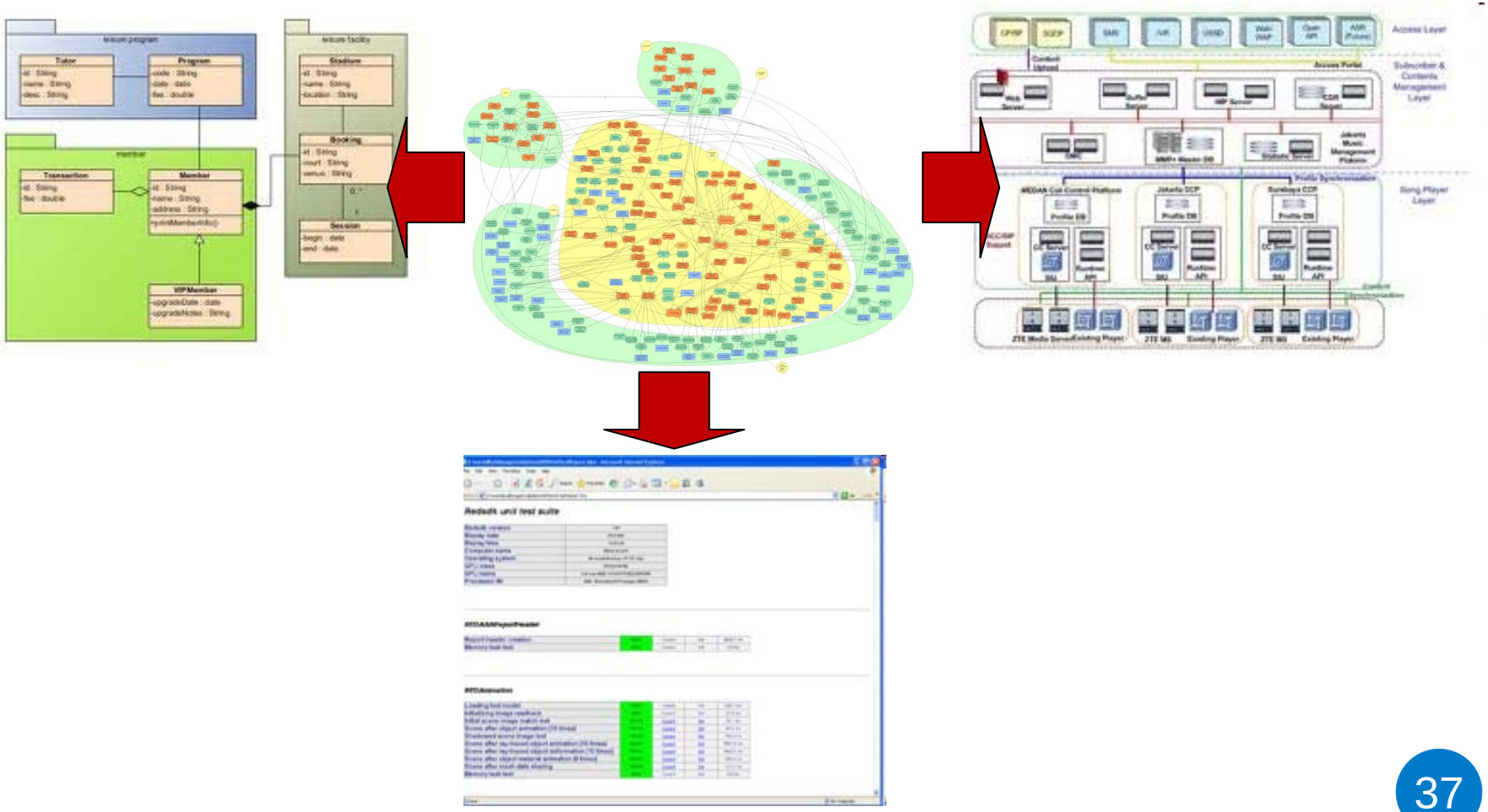
- Generic proposals



Open Issue 5. Integration

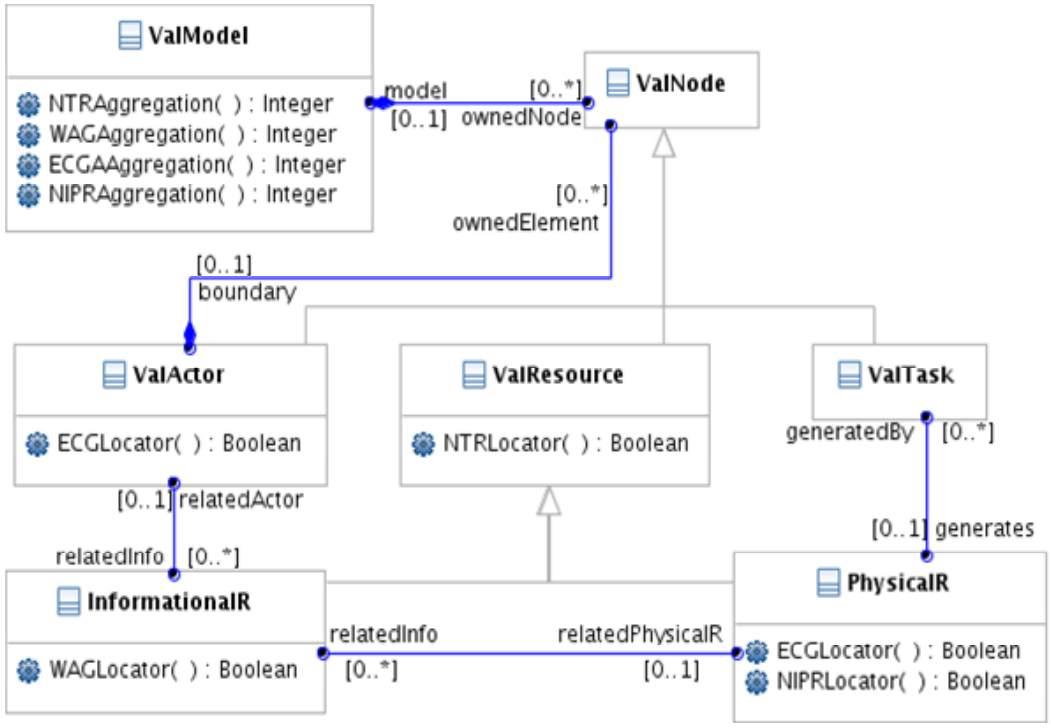
Open Issue 5. Integration of *i**

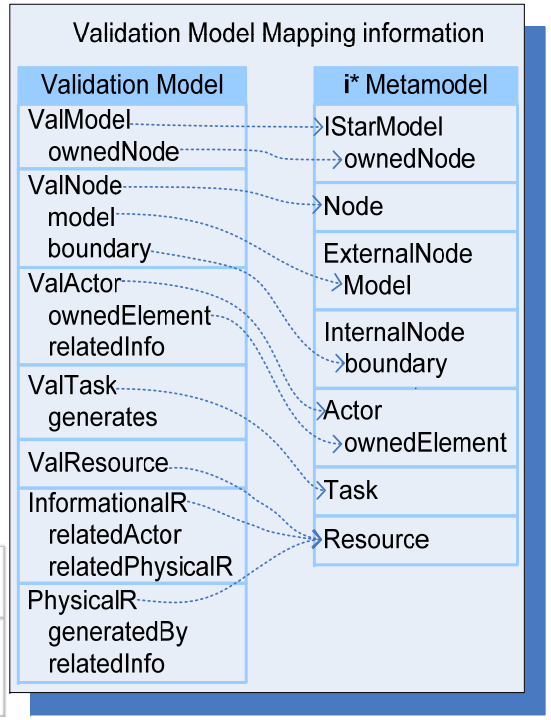
- Effort on *i** modeling: Return on Investment



Open Issue 5. The Way Ahead

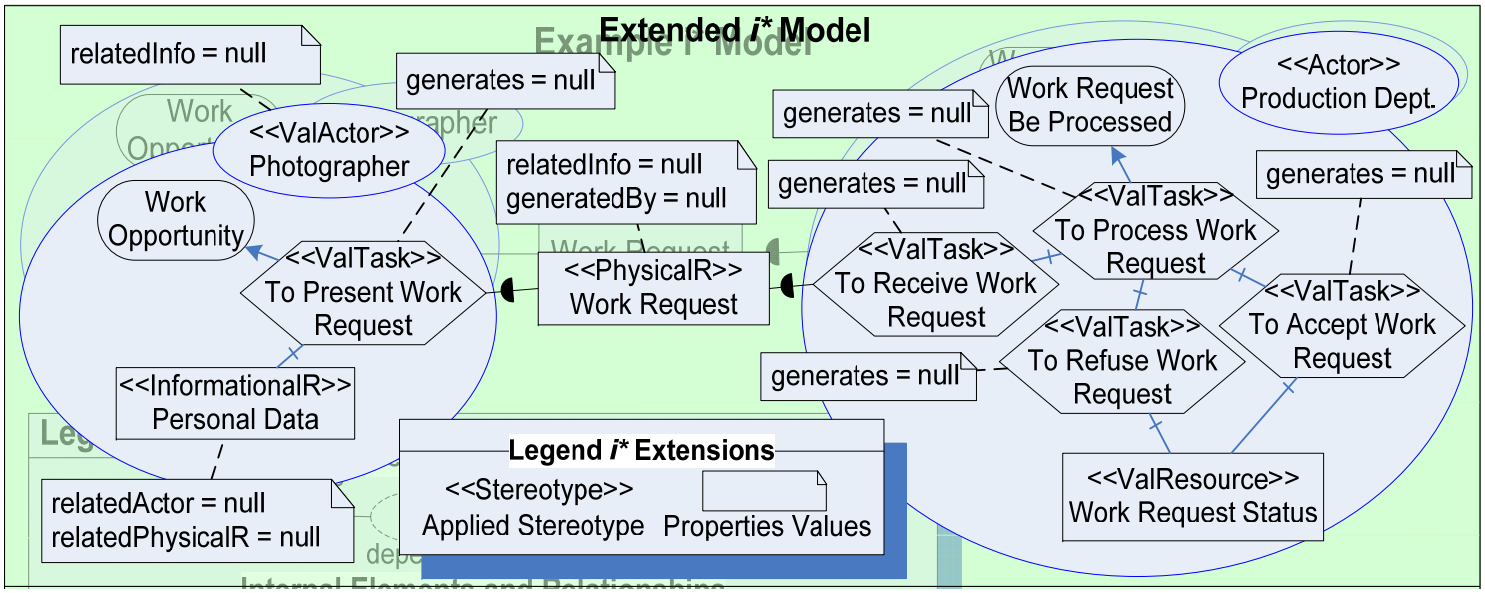
- How adequate are the models for this purpose?





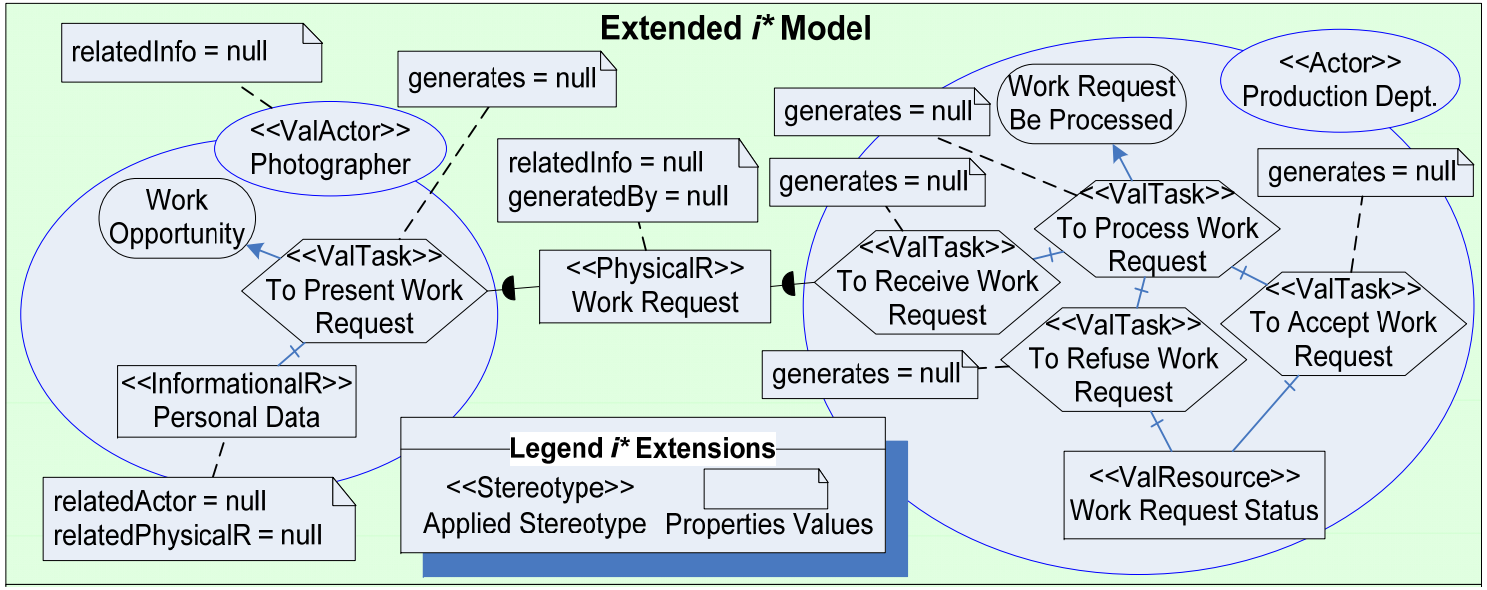
Open Issue 5. The Way Ahead

- What extensions are needed in the i^* language?



Open Issue 5. The Way Ahead

- What changes are needed in an extended i^* model according to the value of these measures?



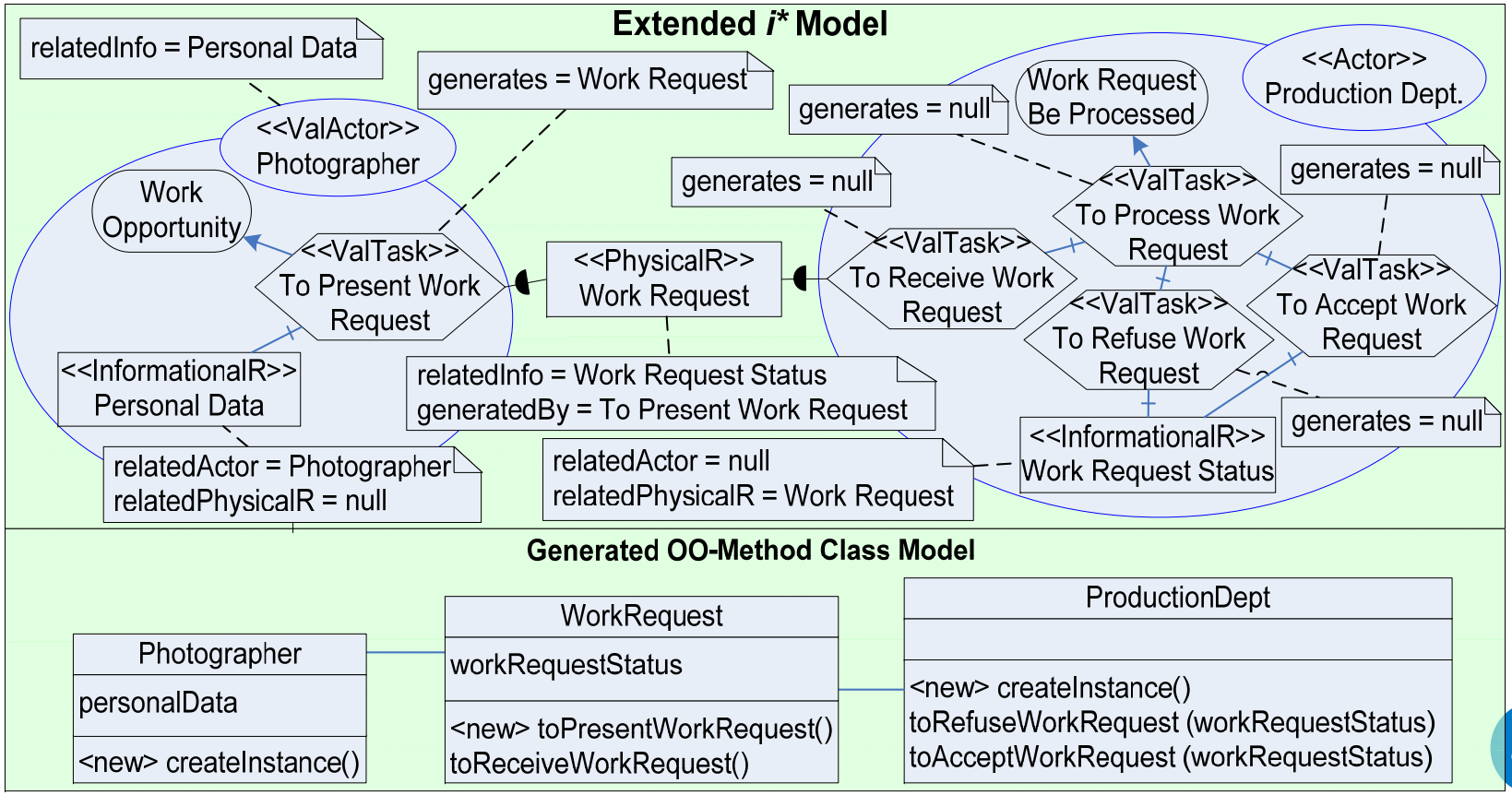
Open Issue 5. The Way Ahead

- What changes are needed in an extended i^* model according to the value of these measures?

Measure	Alert	Result	Locator
NTR	Critical	1 R non-transform.	Work Request Status
WAG	Critical	1 IR non-transform.	Personal Data
ECG	Warning	3 classes without att.	Photographer Production Dept. Work Request
NIPR	Warning	1 PR without task	Work Request

Open Issue 5. The Way Ahead

- What changes are needed in an extended i^* model according to the value of these measures?

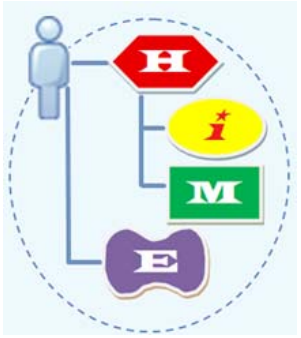


Open Issue 6. Tool support

Open Issue 6. Tool support

OME

jUCMNav



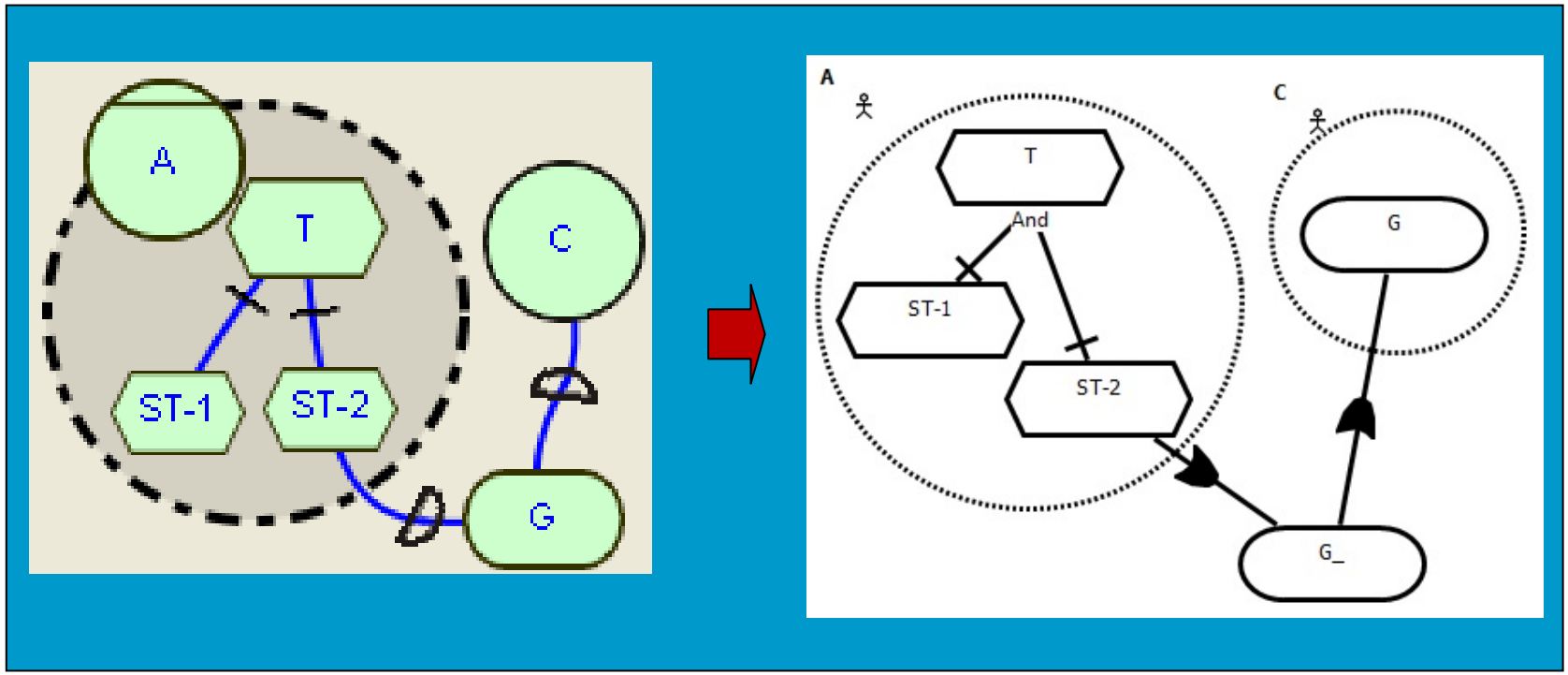
etc…

Gr-Tool

- Repetition of effort
- Waste of opportunities
- No diagram catalogues

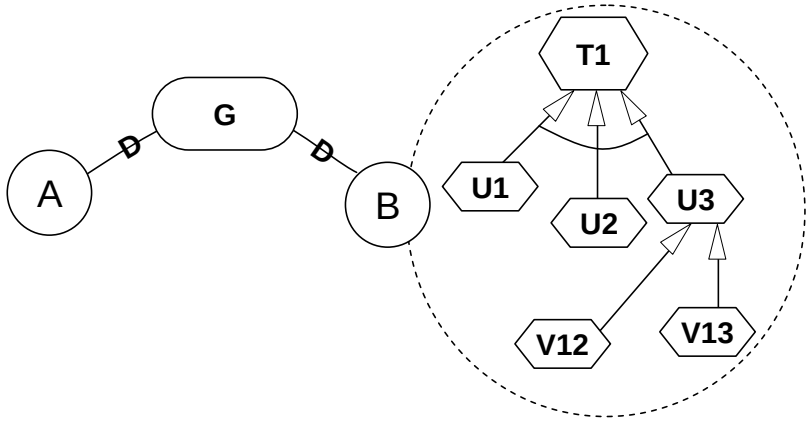
Open Issue 6. The Way Ahead

- Provide means for interoperability



Open Issue 6. The Way Ahead

- Adopt an interchange format

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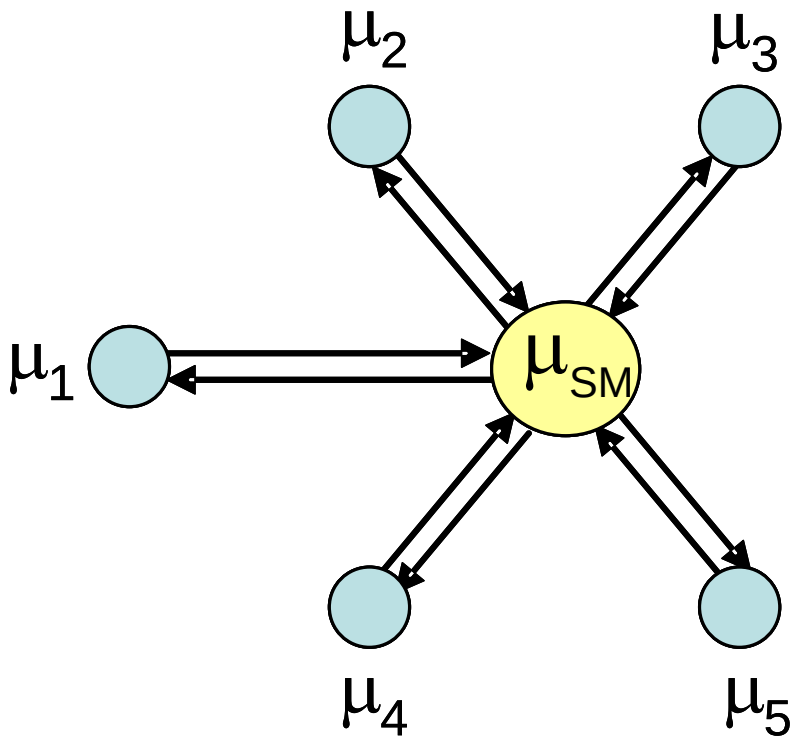
Open Issue 6. The Way Ahead

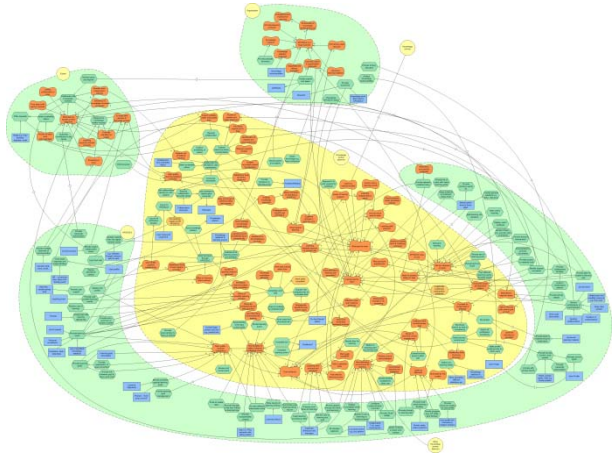
- Use of general metamodeling tools; SOA tools

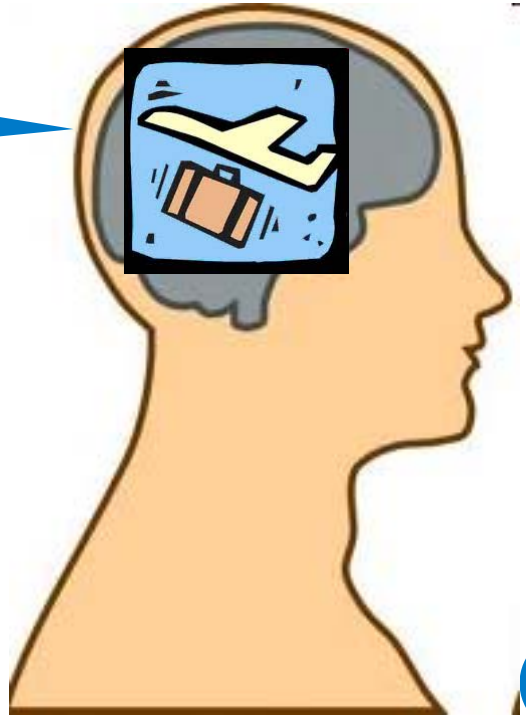


Community actions

Community actions

- Formulation and adoption of a fully agreed language core (metamodel + ontology)





Yes, we agree!!

Community actions

- Facilitate powerful tool support
  - OpenOME? jUCMNav? AdoXX?
  - Import/export format (iStarML?)
  - Service-oriented?
  - Make it commercial!!
    - Usability, …

Community actions

- Run empirical studies
  - About the language
  - About its practical use (case studies)

Community actions

- Facilitate dissemination:
  - Practitioner- / student-oriented textbook
  - Model repositories

The End

Take-away messages

- Research on *i** is in a great moment
- Adequate moment for consolidation
- Some open research issues to be overcome
- Most of them require a community effort

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Comments and Questions?