



Context adaptive modeling tool in service design


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Why do we need modelling?

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- To understand the problem?
 - To find possible solution?
 - To cover the situation?
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- We model, because we need to use tools and methods from one domain to solve the problem in other domain.
 - From the provider perspective we need to know how we can help the customer.
 - From customer perspective we want to be sure we are not wasting time and money



How do we model?

- ▶ We have a lot of different tools
- ▶ Some of them are well known and used in different domains, like
 - ▶ UML
 - ▶ BPMN
 - ▶ CASE tools
 - ▶ And many others




Current limitations



- ▶ Current modeling tools are describing one situation in one particular context
- ▶ That can be used in very simple situations
- ▶ The development goes in opposite direction
 - ▶ Problems are more complex
 - ▶ Services become more complex
 - ▶ Modeling tools are more complicated
 - ▶ Stakeholders are not able to understand the models




Example – street lighting

- ▶ Intelligent LED lamps
 - ▶ They dim the light if there is no pedestrian to save the energy
 - ▶ For this purpose the lamp must be equipped by camera and/or the sensor monitoring the situation on the street
 - ▶ This device can be used for other different purposes
 - ▶ To help with parking
 - ▶ To monitor suspicious behaviour
 - ▶ To announce the police or emergency services
 - ▶ It means the device can be used in many different contexts
 - ▶ The question is if there is some relation among those contexts?
- 




Decomposing services

- ▶ For modeling such a complex services we need a new generation of modelling tool with following features:
 - ▶ Enable to decompose any situation into a set of elements
 - ▶ Build any related model by a specific use of those elements in any context
 - ▶ Recognize the differences among the contexts and describe them
 - ▶ Moreover, this modeling tools must be understandable to the stakeholders from more than one discipline
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4 – diamonds model

- Based on theoretical concept published by Staníček, 2008
 - Practically it tries to find a universal way how to describe the proces of thinking in our brains
 - The main issue is there are too many unique brains with specific way of thinking
 - Therefore it is never possible to be fully certain if all involved stakeholders are really understand the context
- 



How do we model reality in our heads?

We identify...



Object -s

...we find interesting





Then, we find...

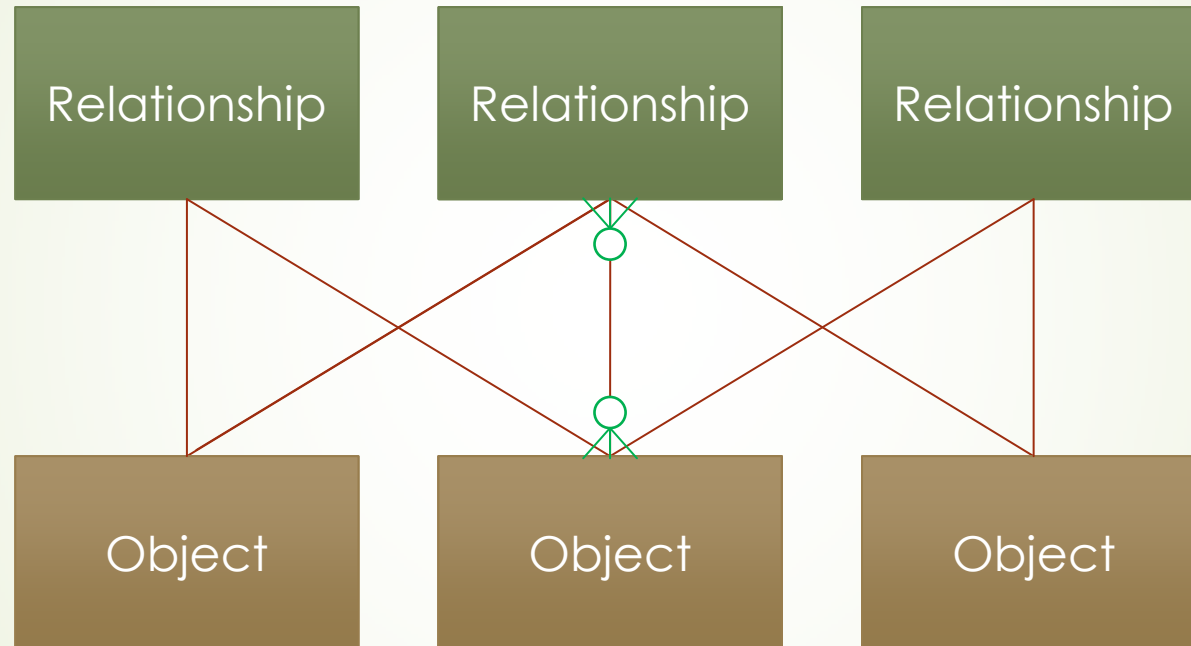
Relationship -s

...between our...

Object -s

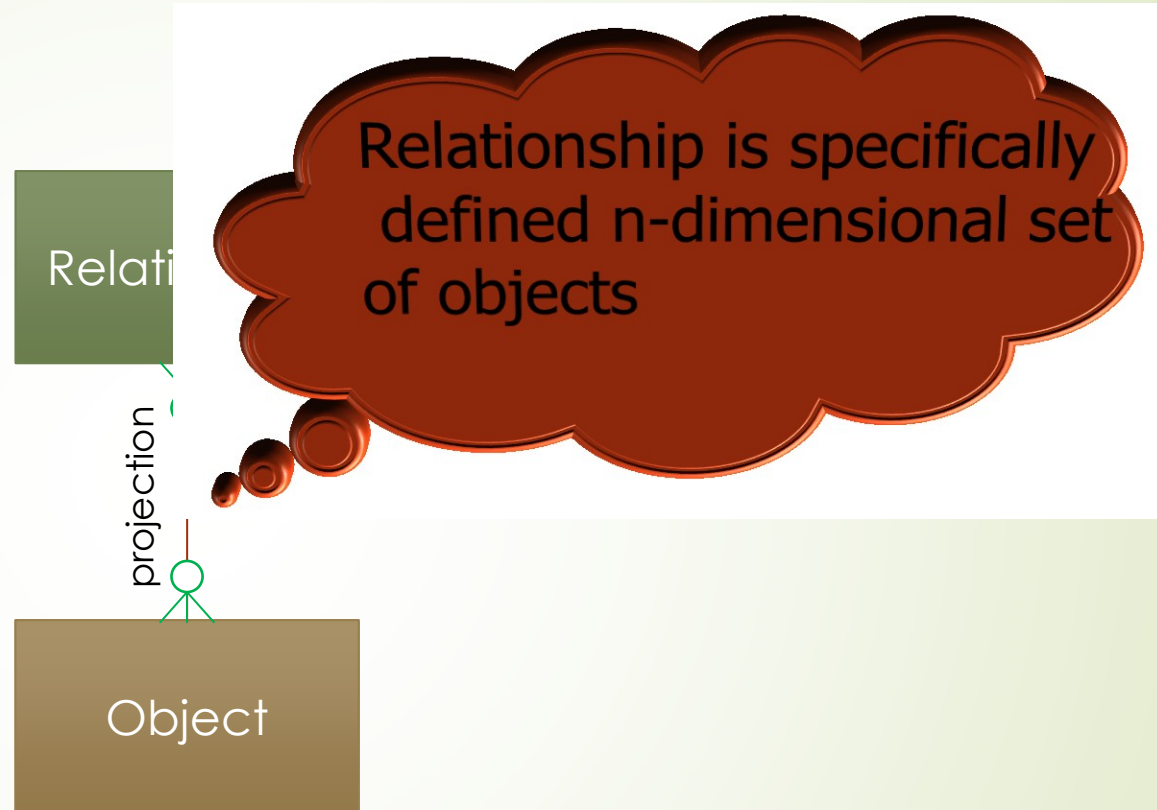


Each **relationship** can connect multiple objects...



...and each object can be present in multiple connections.

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...and each object can be present in multiple connections.

Which objects do we find interesting for modelling?



Category

Relationship

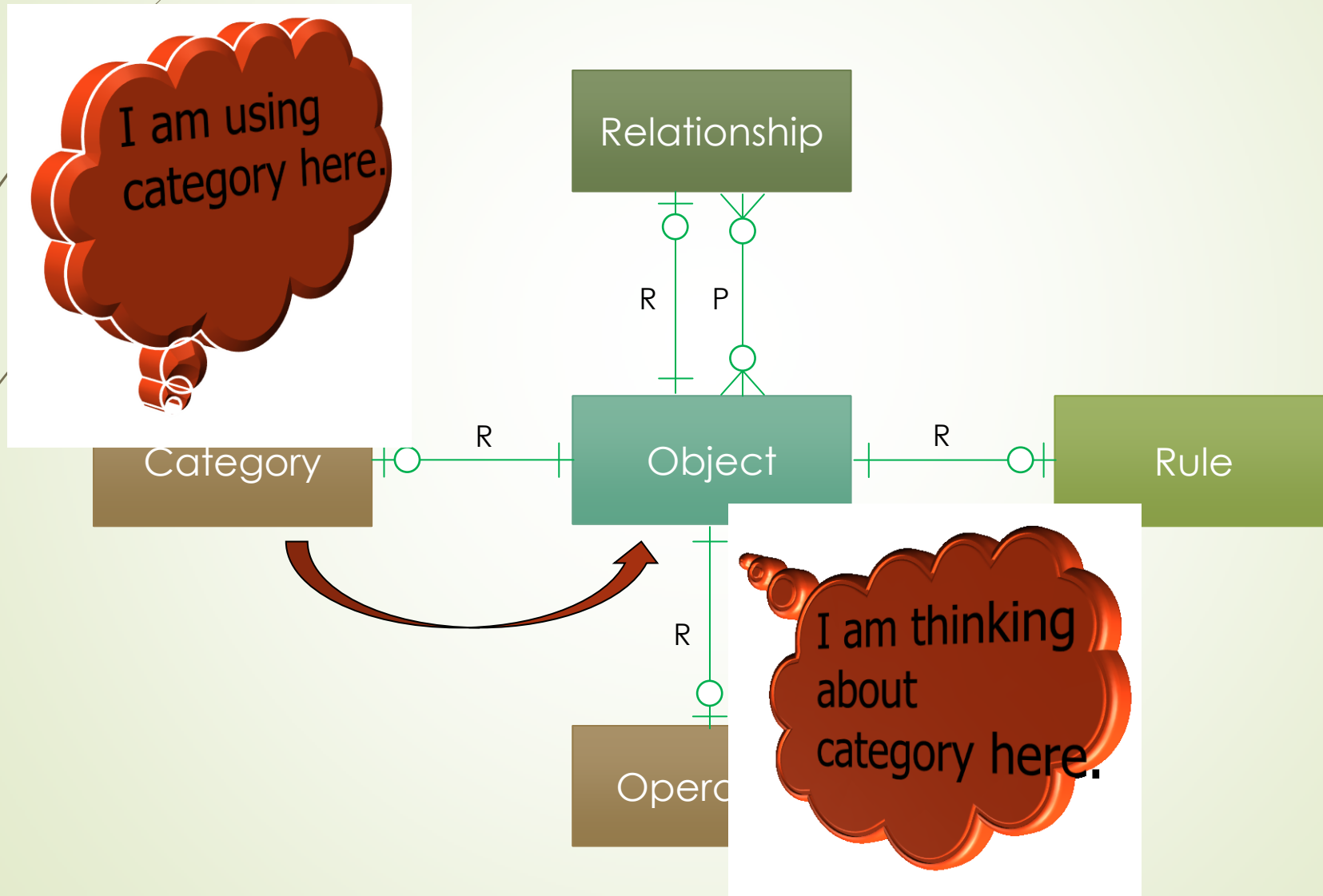


Rule



Operation

MENTION – USE duality



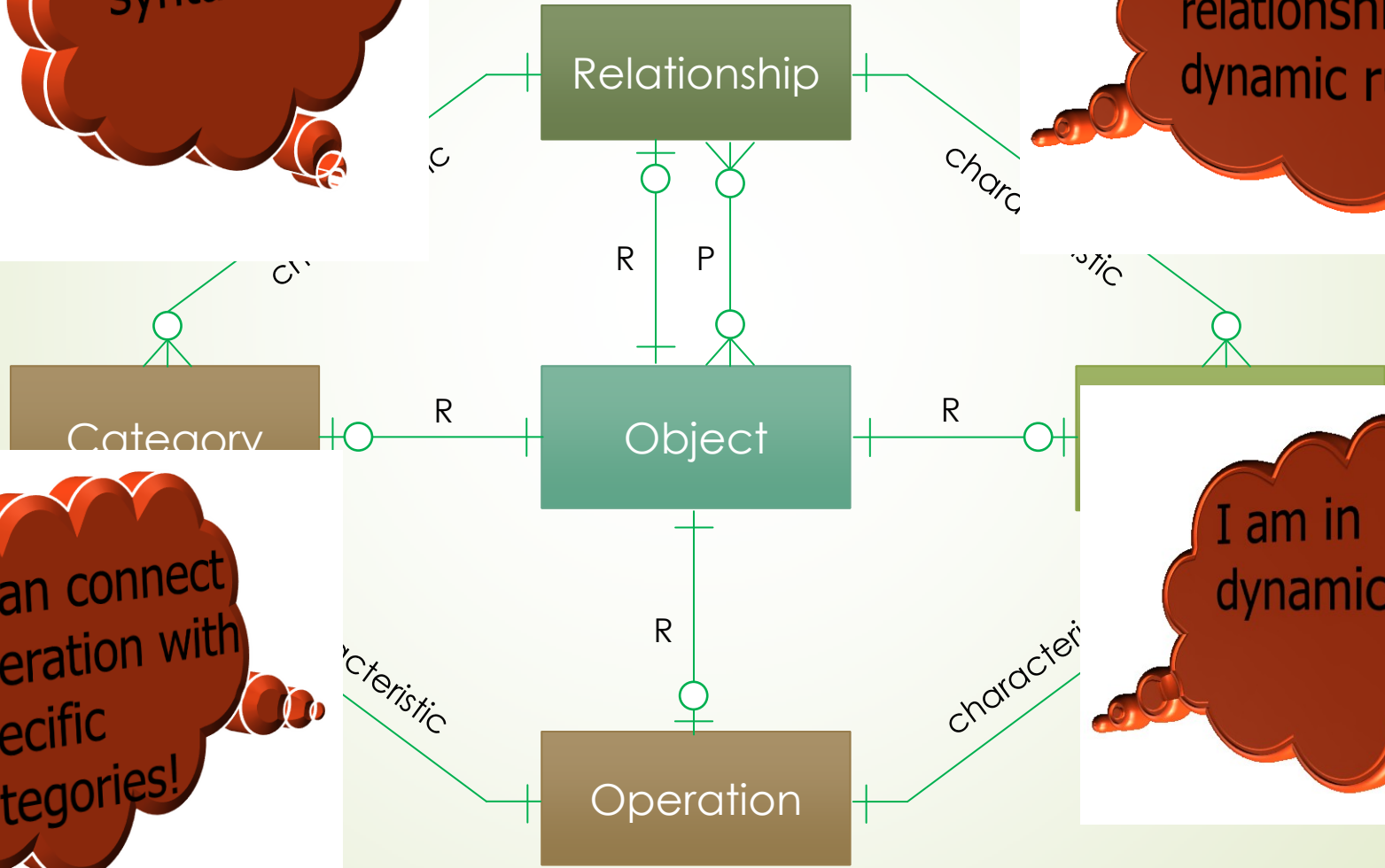
Model of Attention F

I am in syntactic part

I can connect relationship with dynamic rule!

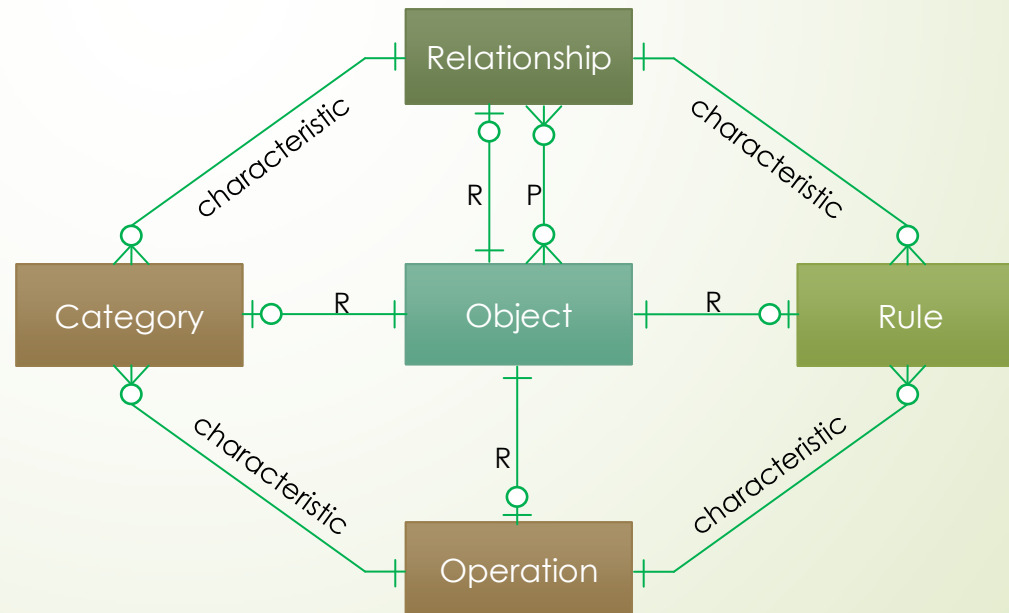
I can connect operation with specific categories!

I am in dynamic part

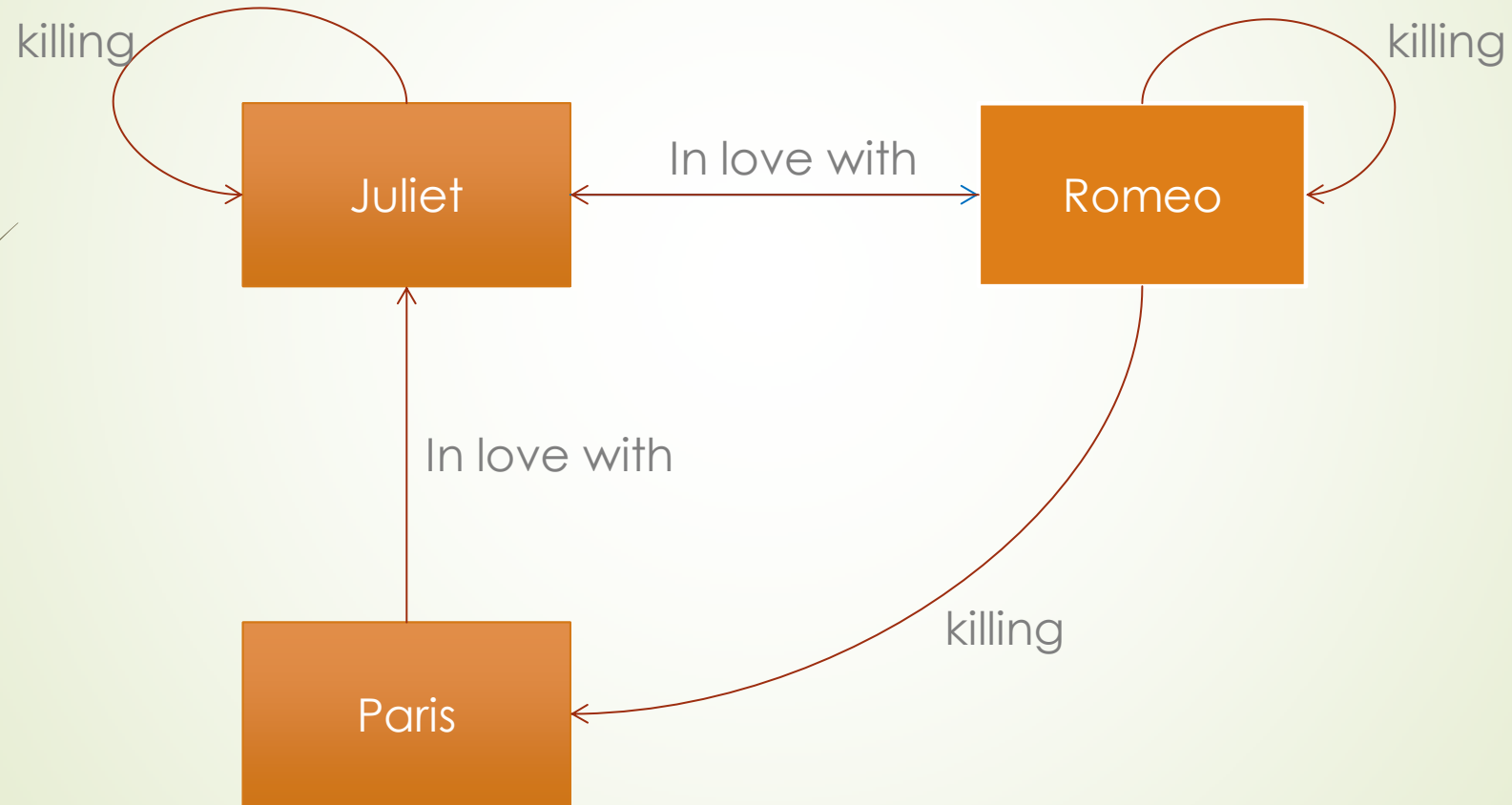


Diamond of Attention Focussing

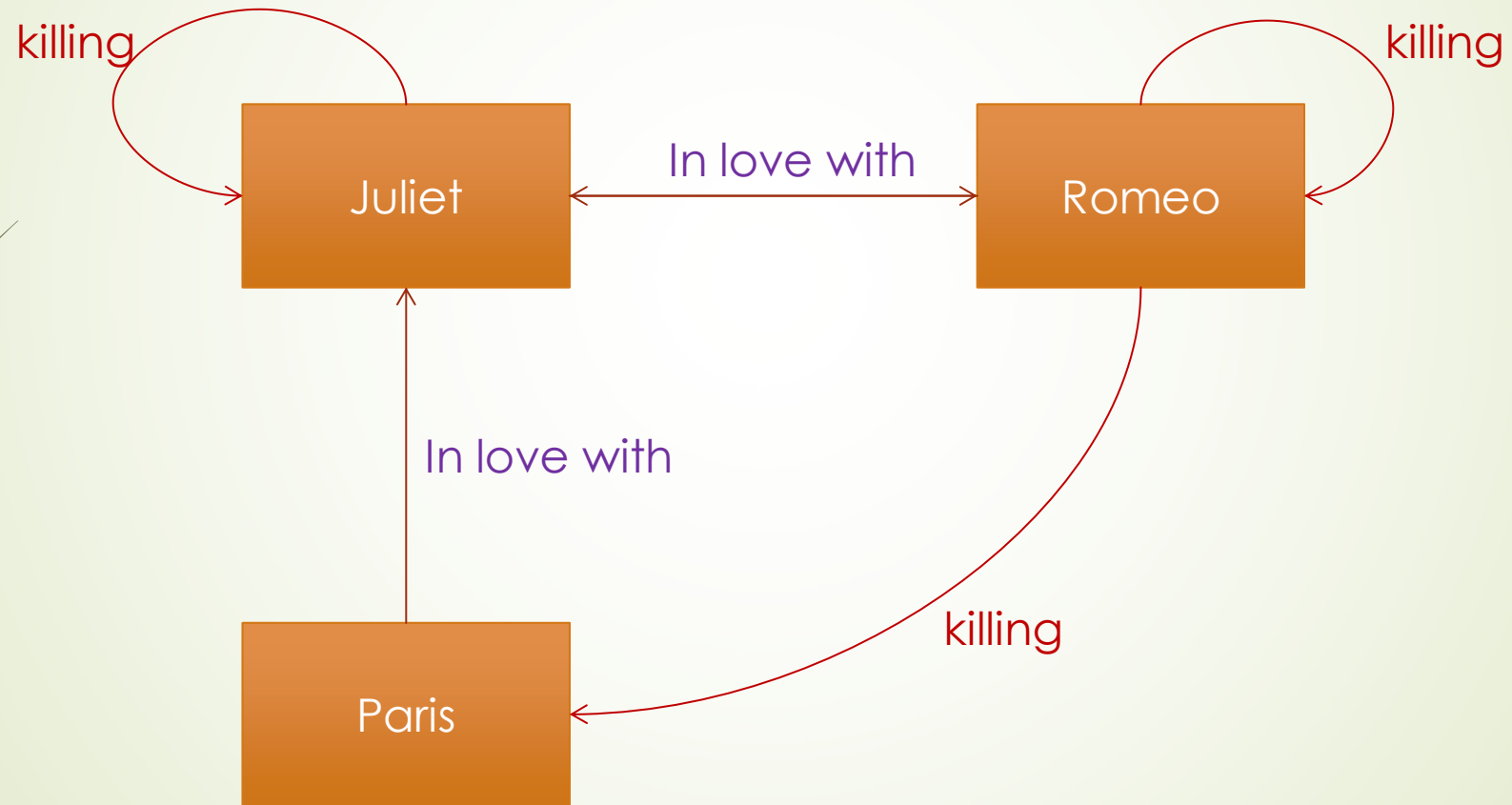
- Objects and relationships between them
- Mention-use duality
 - Modelling a modelling tool
 - Referring to itself



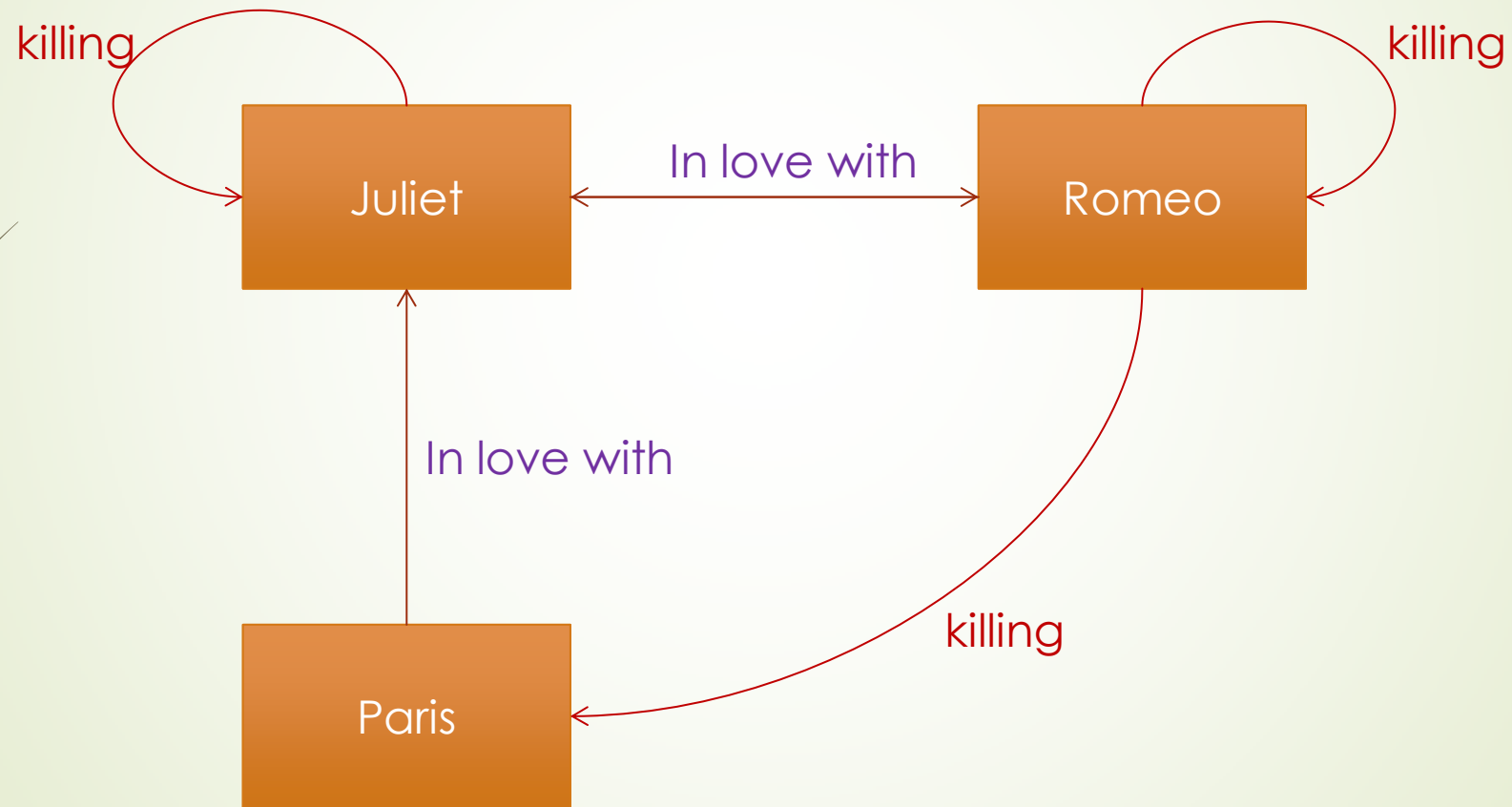
Classification example



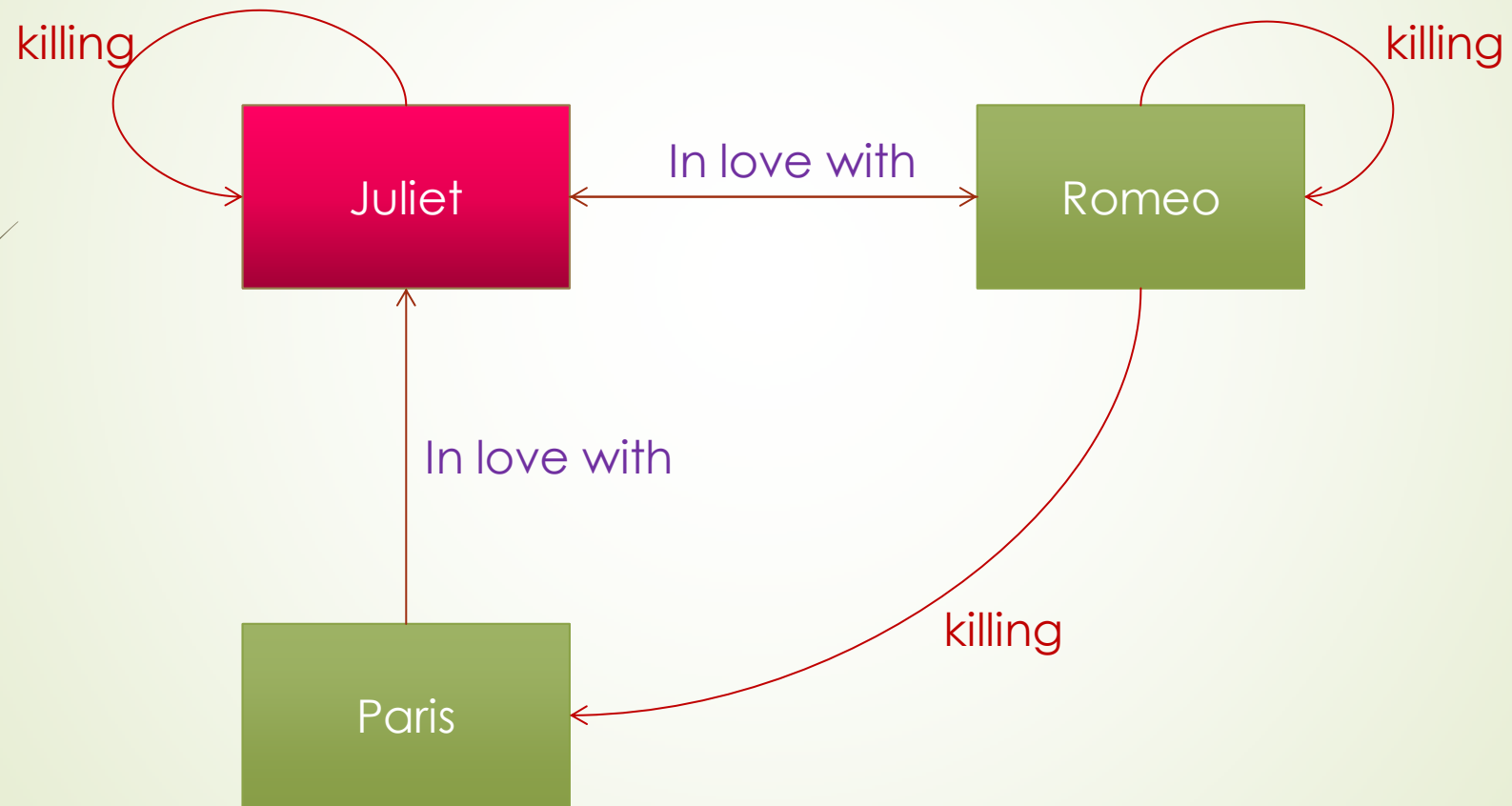
We can see that some connections are somehow similar – they belong to the same **category**:



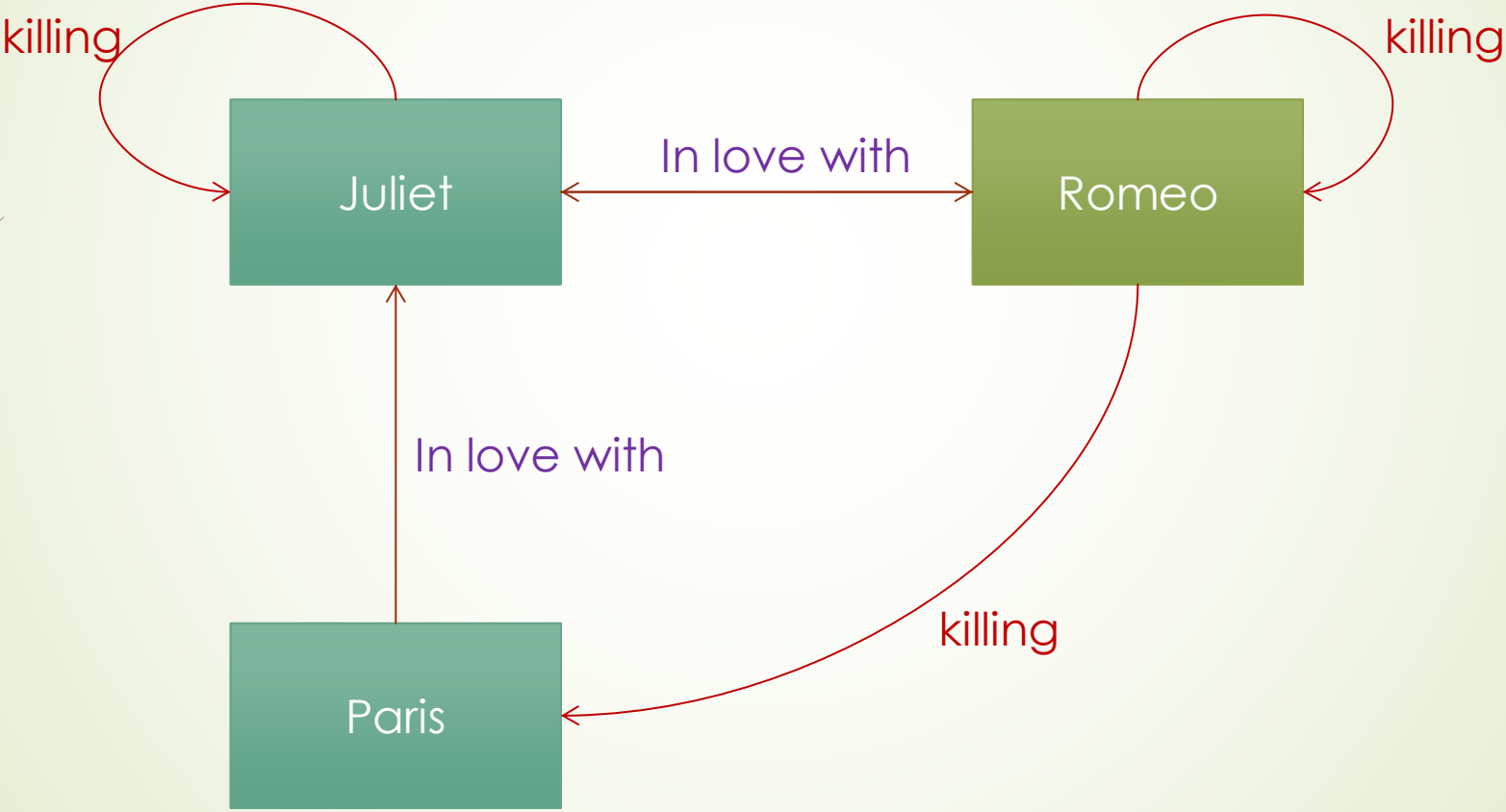
It's possible to classify everything we see in the diagram. But how to classify our objects?



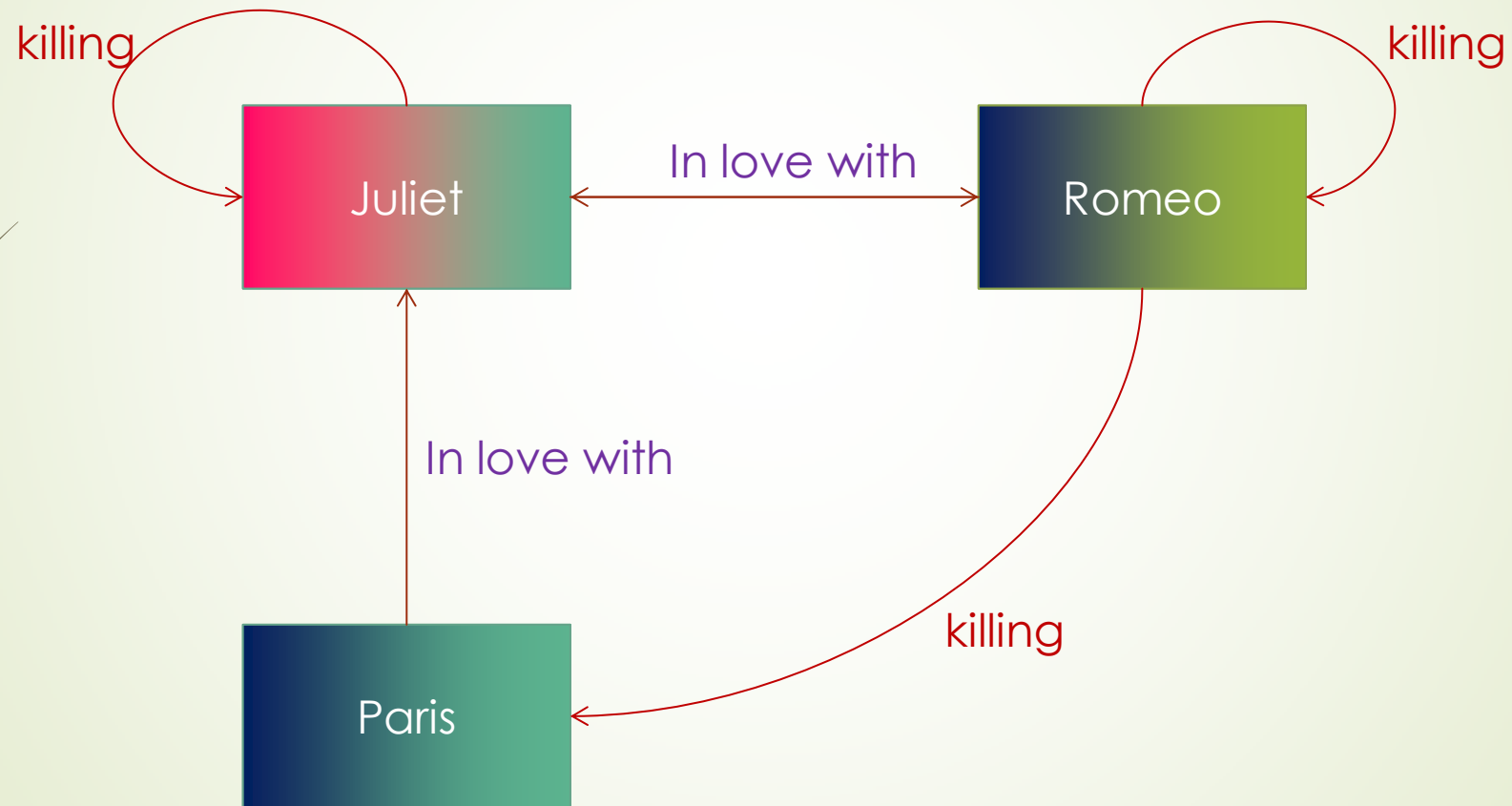
We could certainly divide the objects to men and women:



But won't it be more useful to show, which character belongs to the house of Montague and which one to the house of Capulet?



It probably depends on a context – a mental model we want to build. Sometimes, both categorizations may be useful:



Classifications are blurred

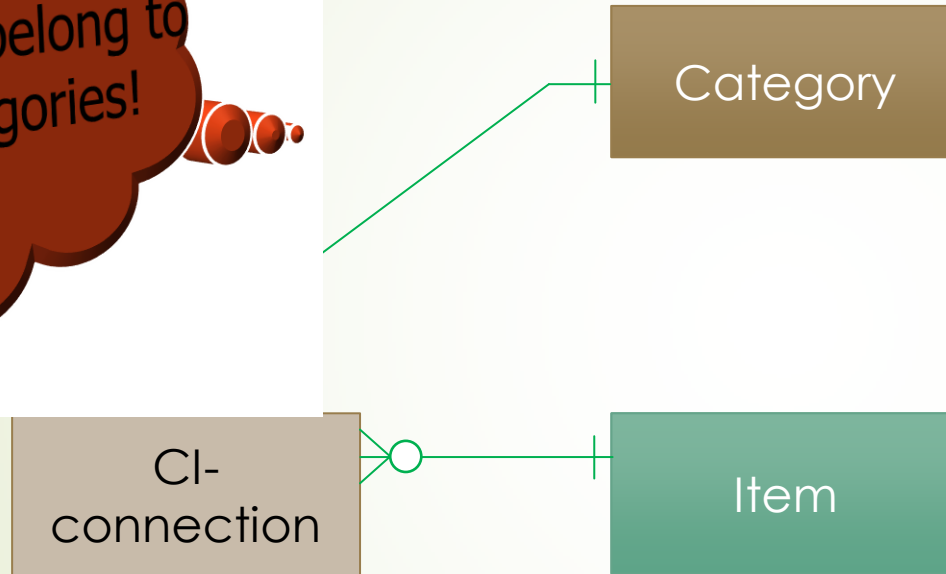
Good or bad?



Certainty

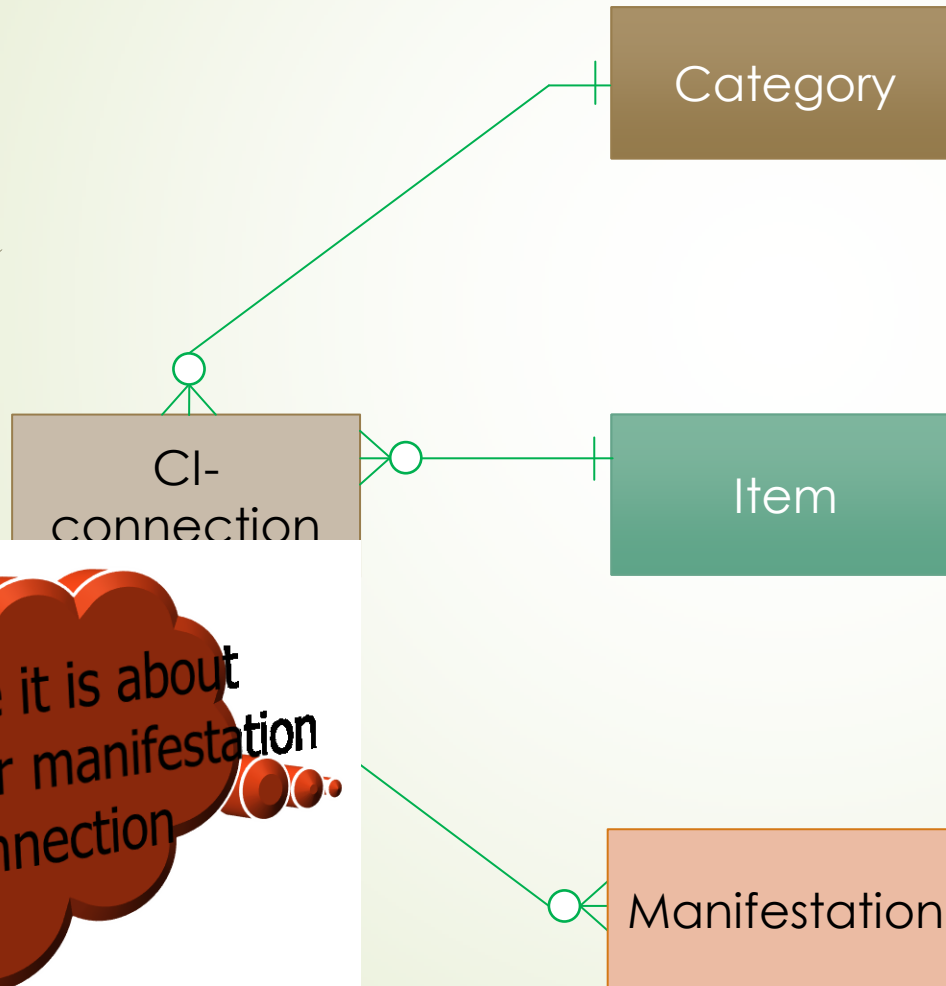
Item can belong to more categories!

Items (= objects as such, not their constructs) belongs to a category with a given certainty



- ▶ The fact is manifested with a certain attention in a given context

Attention

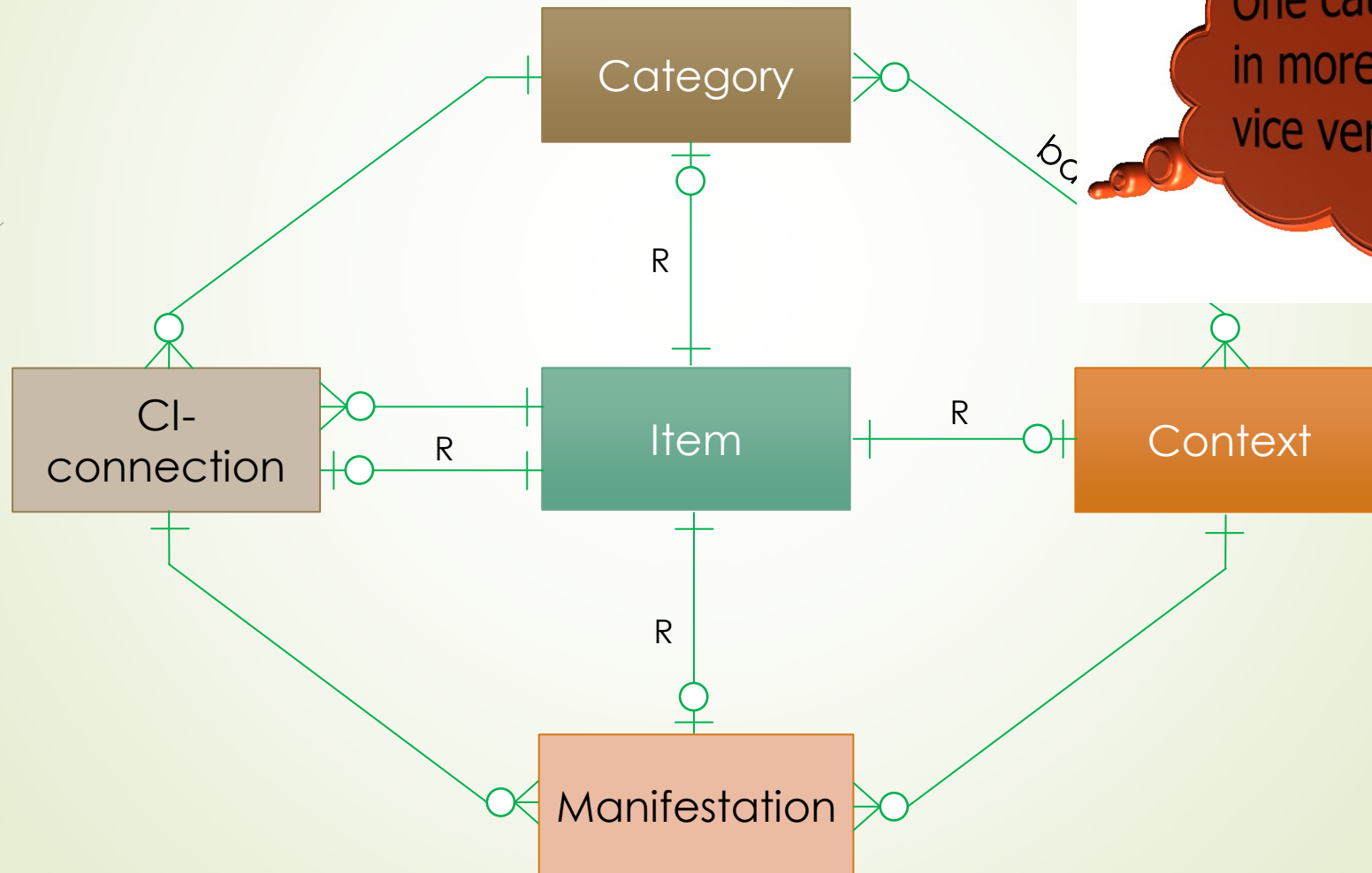


And here it is about particular manifestation of CI connection

And context gives a design to the manifestaion.

Context base

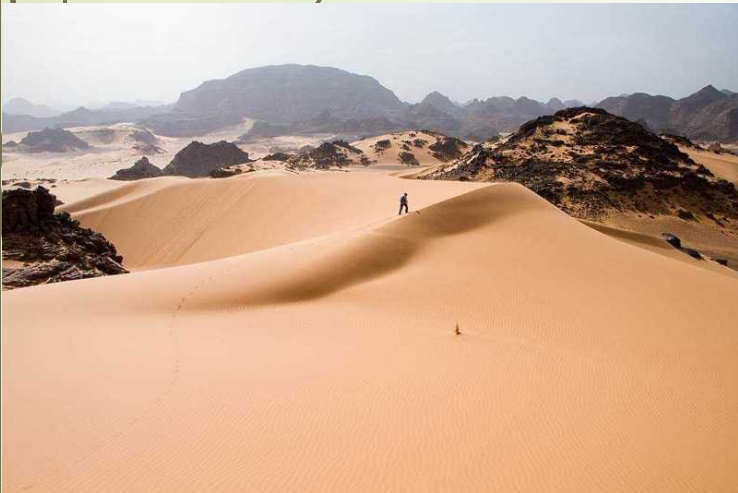
- Context serves as a model. The base edge defines the set of categories to classify its items to



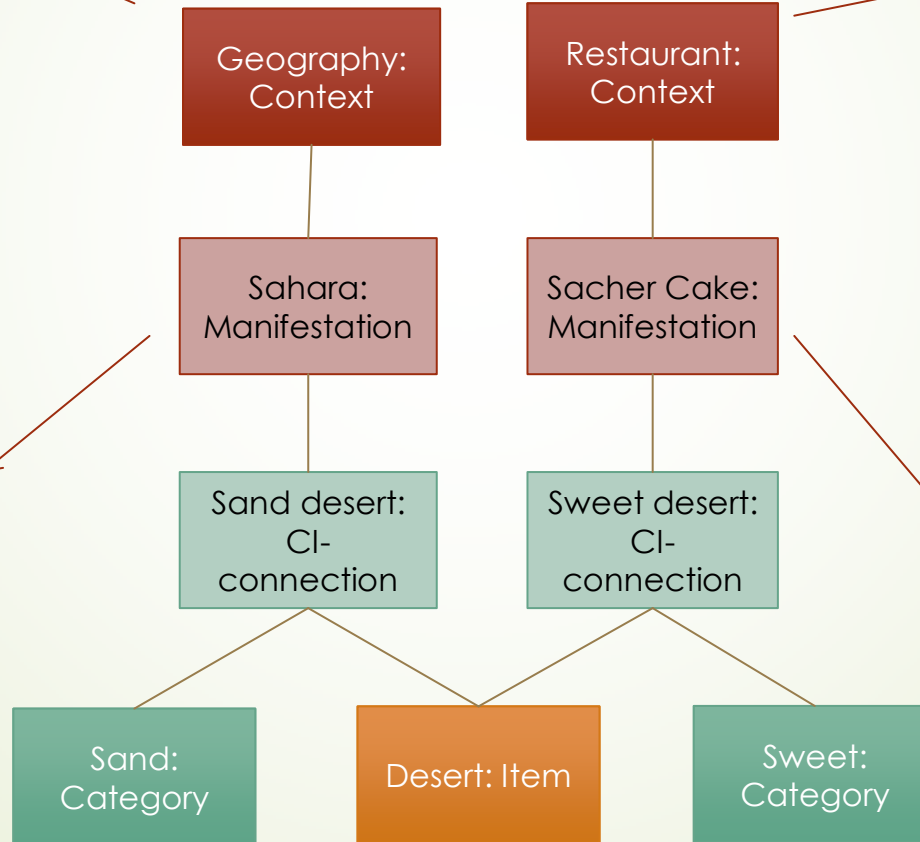
One category can **exist** in more contexts and vice versa.

Independent models

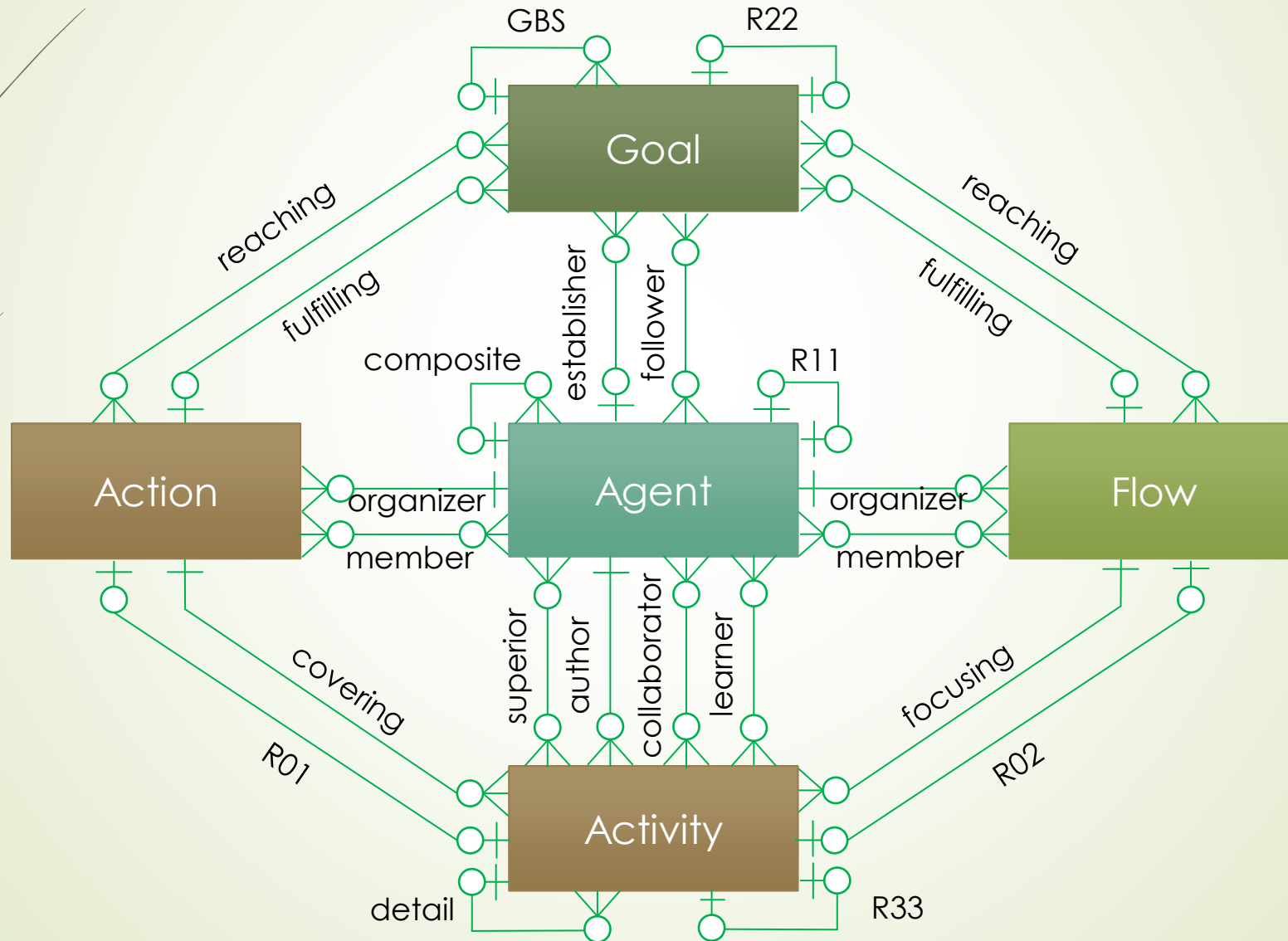
Geography



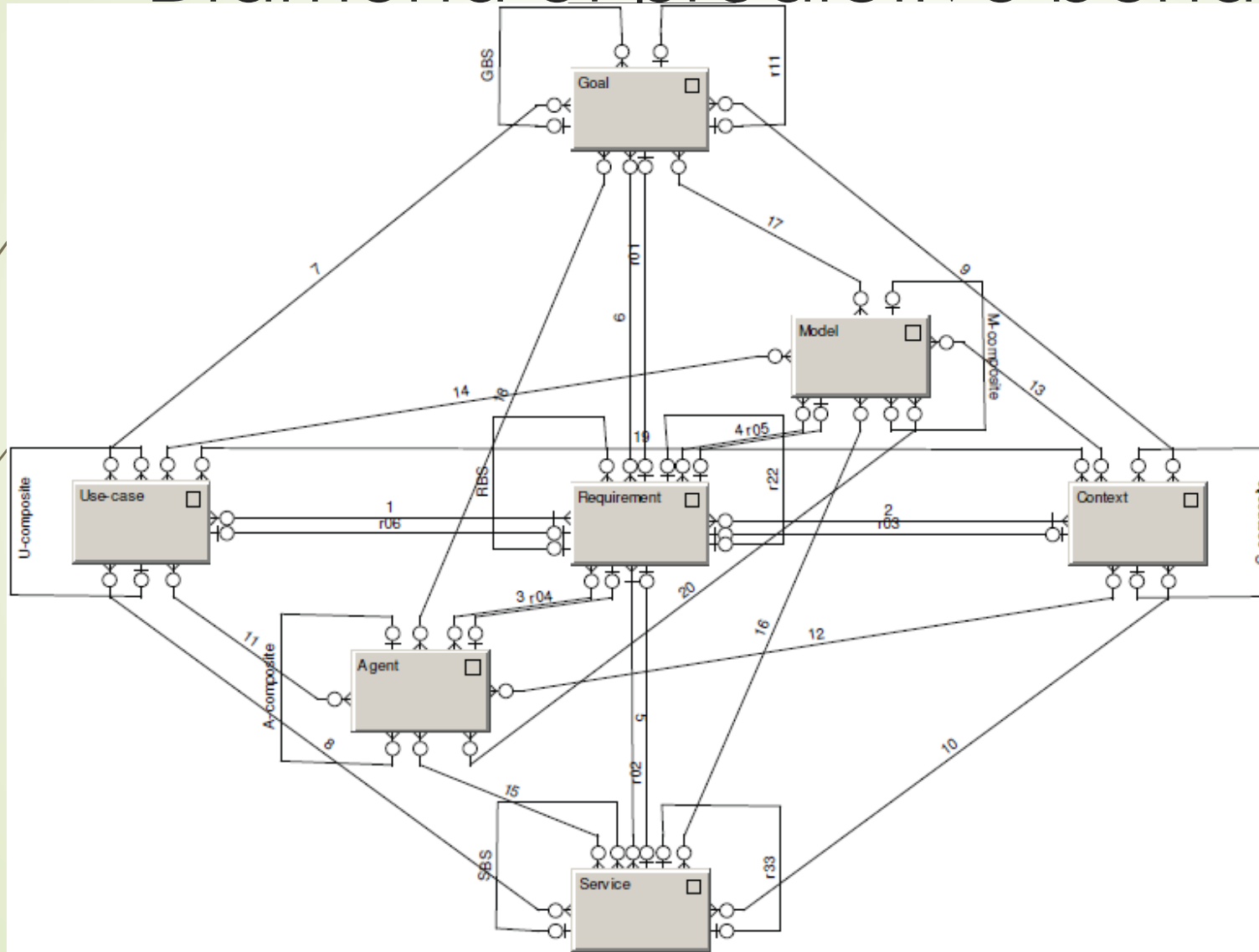
Restaurant



Diamond of Organization



Diamond of predictive behaviour





Conclusion



- ▶ In modelling tools we need to go back into the mind
- ▶ We need to realize we need modelling tools to be more universal
 - ▶ To be used in different domains
- ▶ The modeling tool must cover the increasing complexity of the services
- ▶ Context is the essential part of the service realization and must be included into the models