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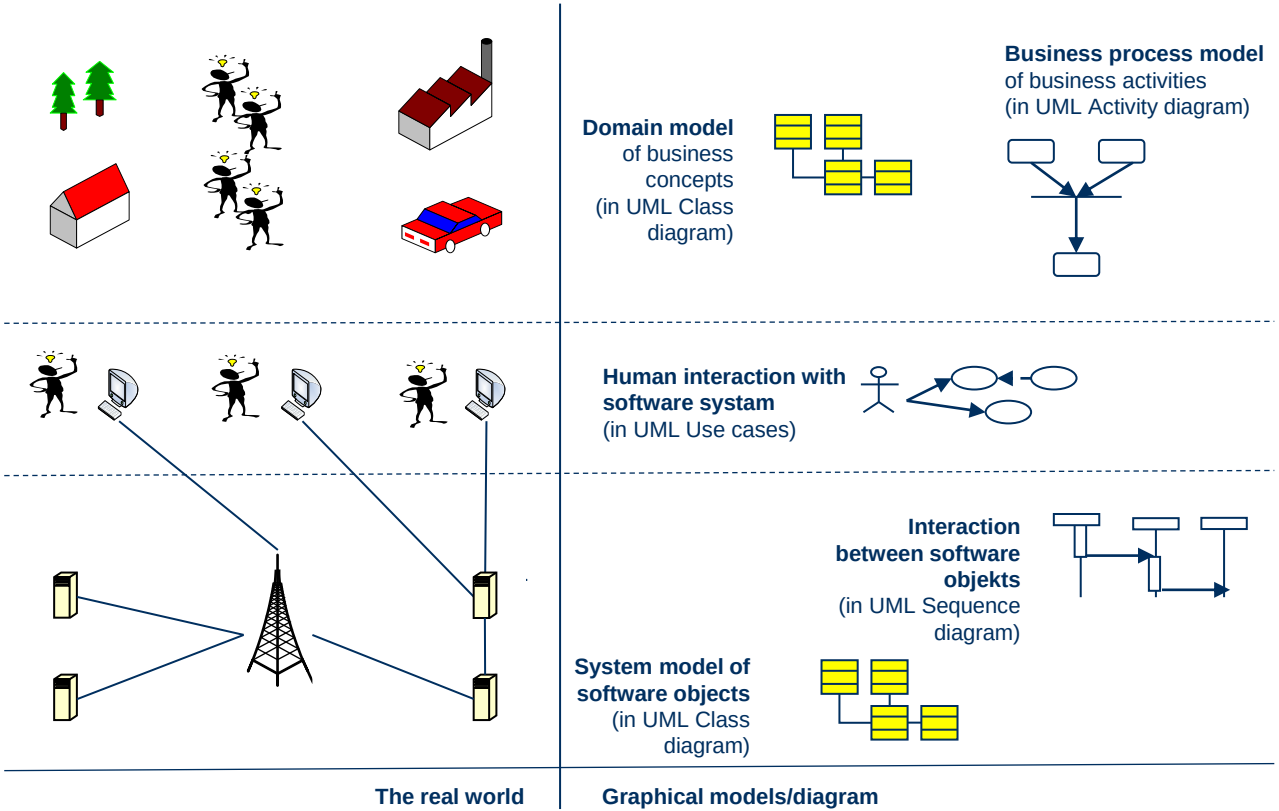
Enterprise and System Modelling

Erik Perjons

Questions to answer

- What is a model?
- What types of models exist?
- What is a graphical model?
- Is a graphical model and a diagram the same thing?
- What is an enterprise model and why do we need it?
- What is a system model and why do we need it?
- Why do we use graphical models?
- How do we use graphical models?

Real World and Models



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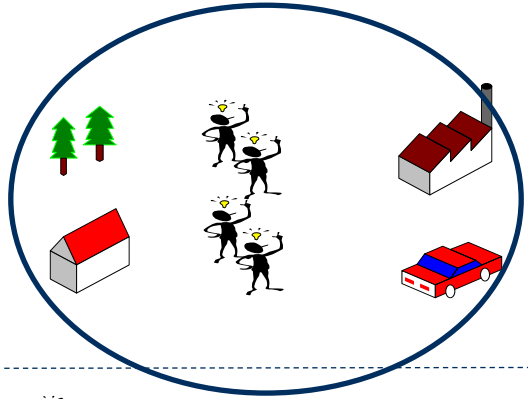
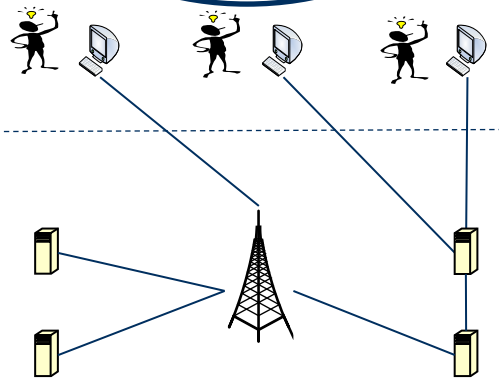
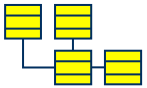
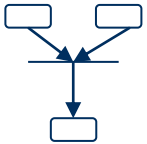




Domain model
of business concepts
(in UML Class diagram)



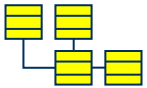
Business process model
of business activities
(in UML Activity diagram)



Human interaction with software sysatm
(in UML Use cases)

Interaction between software objekts
(in UML Sequence diagram)

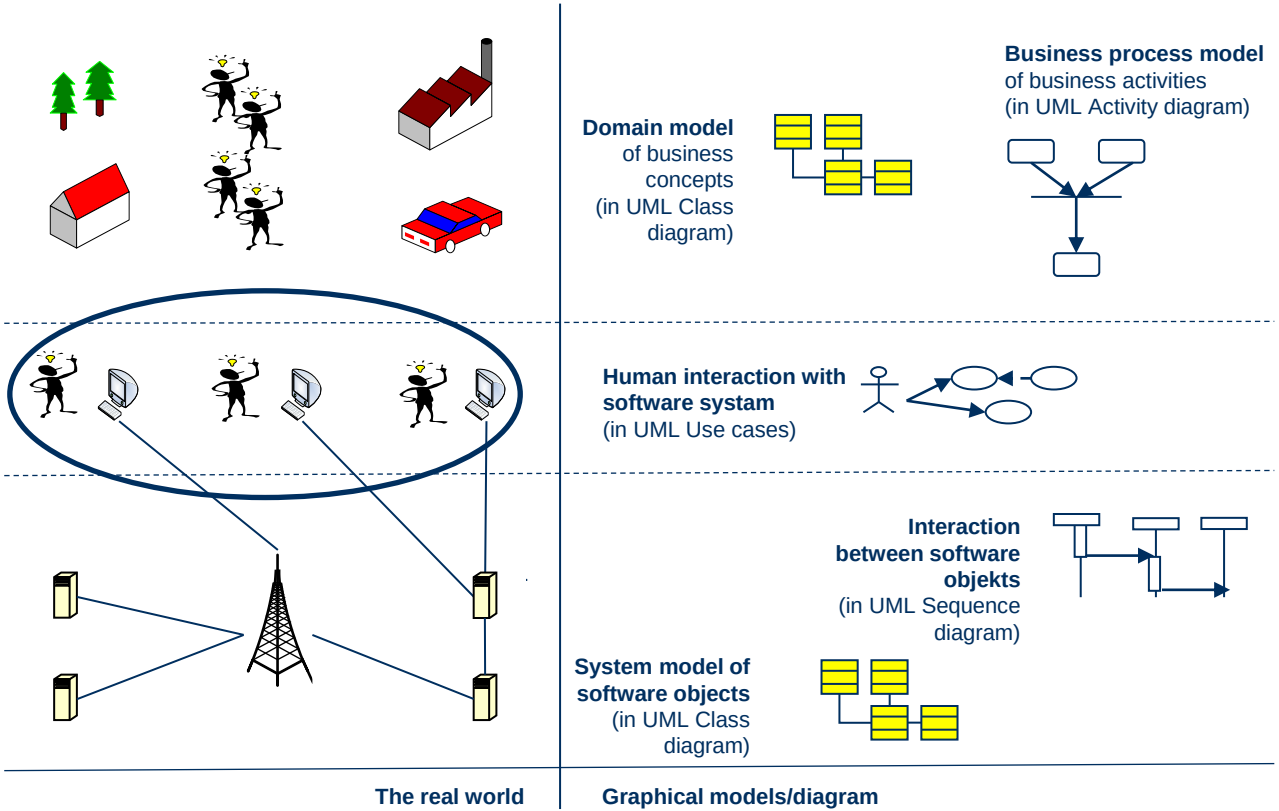
System model of software objects
(in UML Class diagram)



The real world

Graphical models/diagram

Real World and Models



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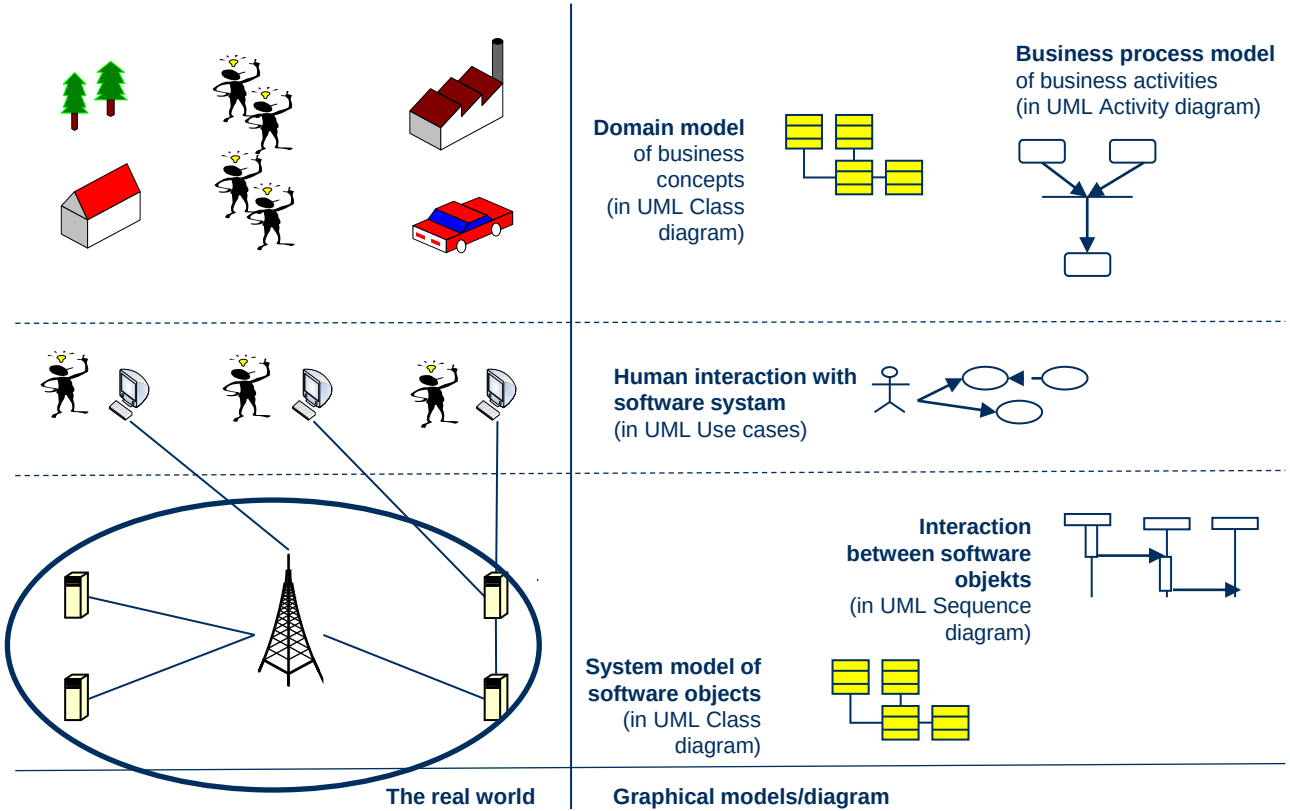

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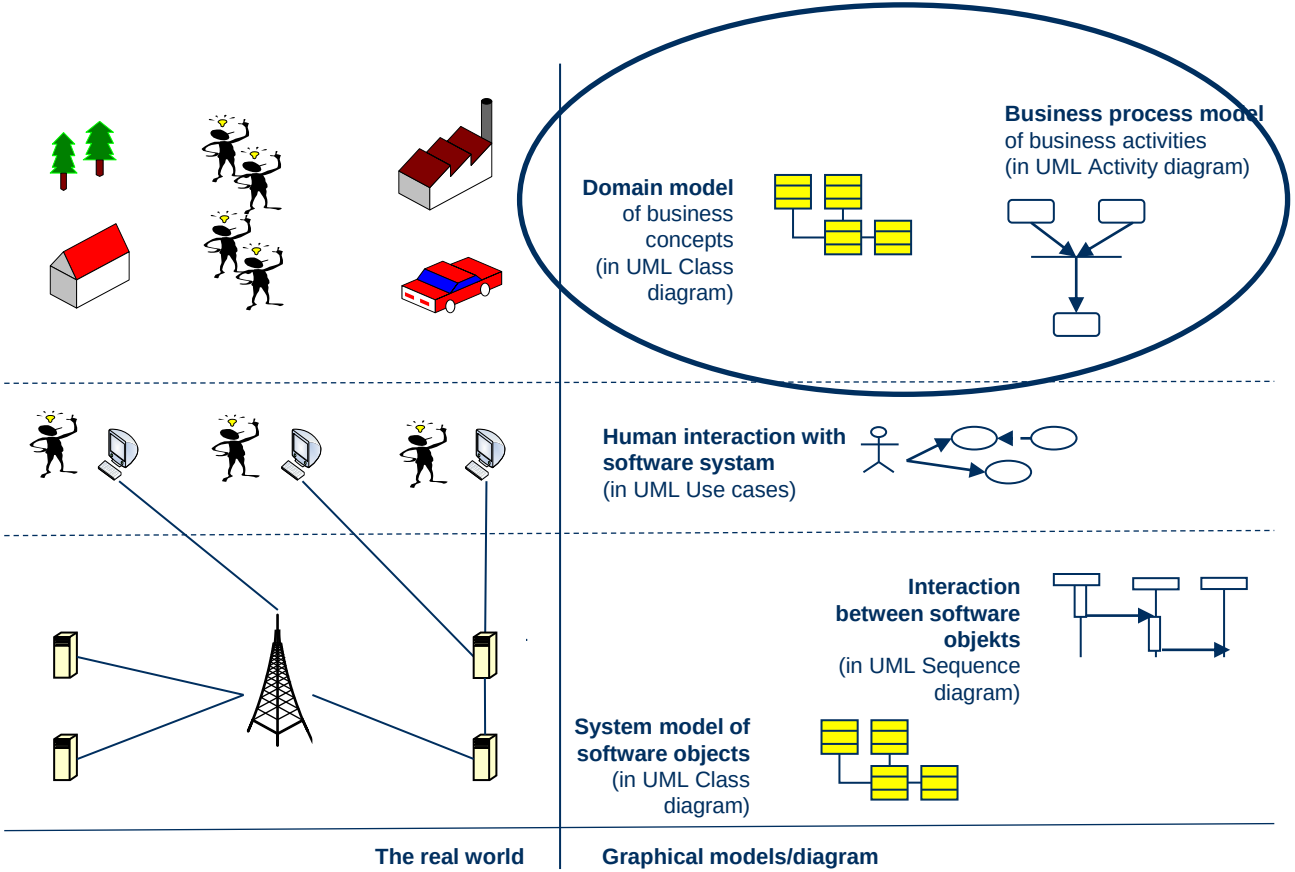

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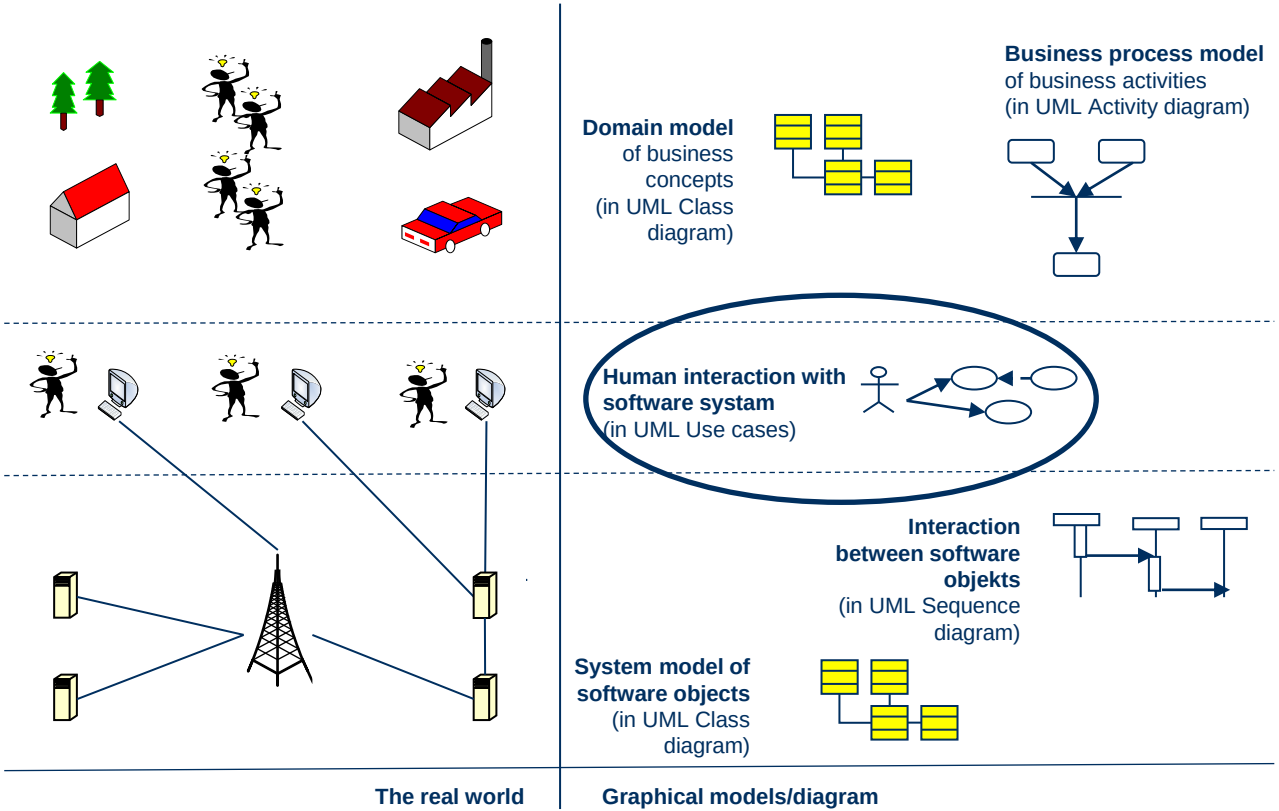

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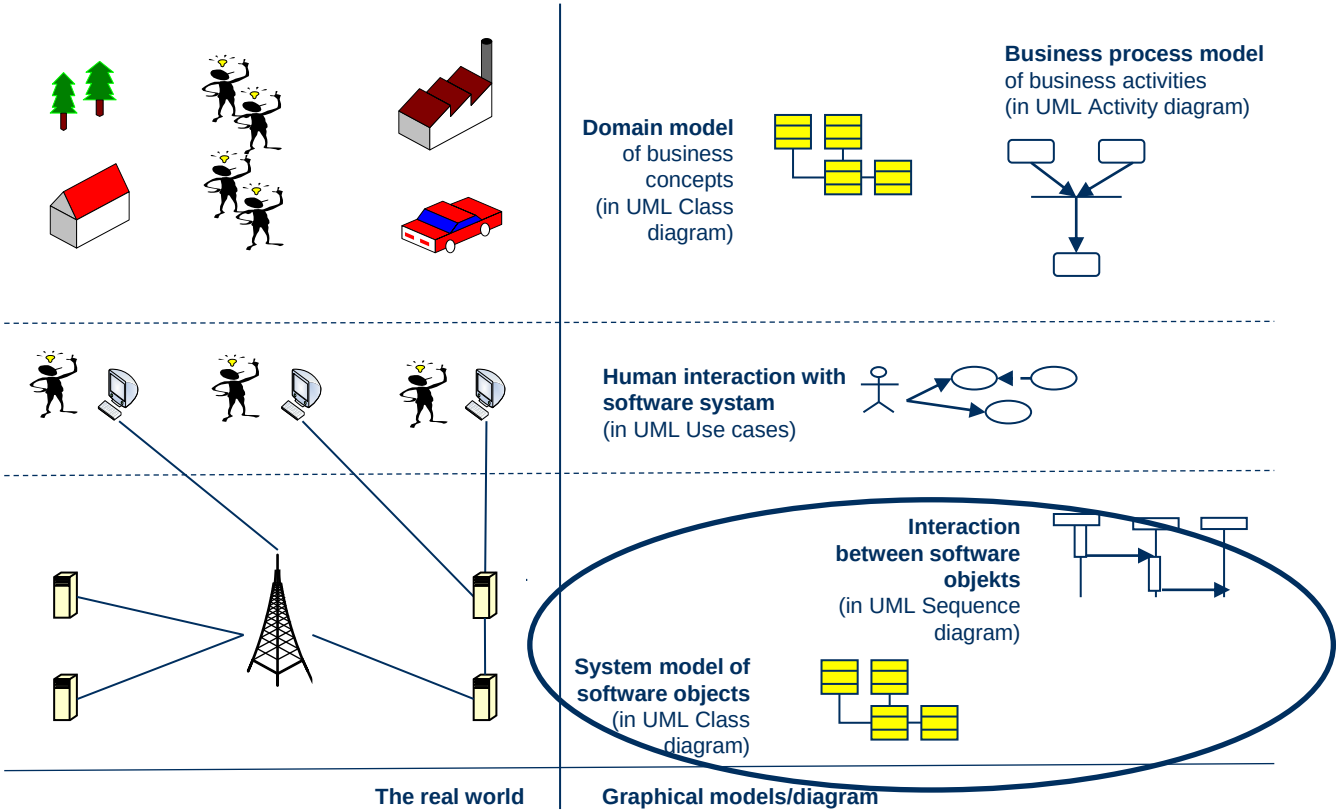
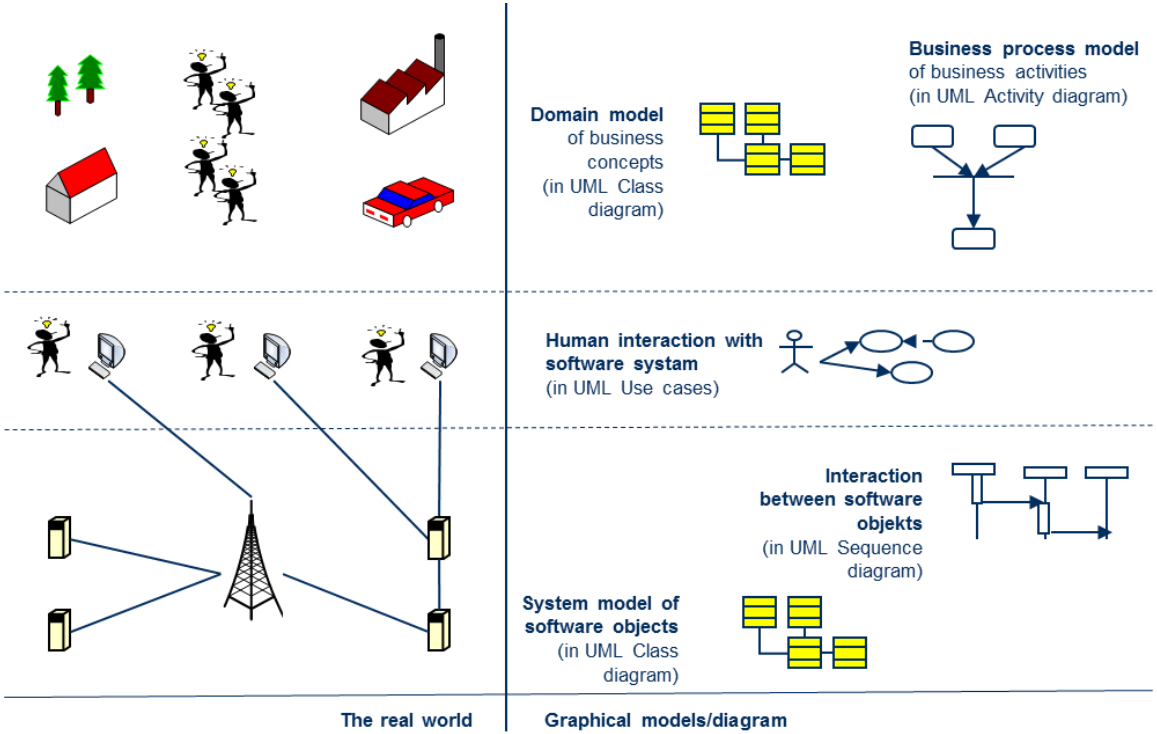


Enterprise and System Models



Enterprise models

System models

Enterprise model - definition

- An enterprise model is a representation of the structure, activities, processes, information, resources, people, IT systems, and goals of an enterprise, such as a business or a public organization (definition elaborated based on Fox&Gruninger, 1998)

Enterprise model – why useful?

- Enterprise models are useful for:
  - analysing organisations and their context, and, thereby,
  - designing better solutions in form of organizational change and in form of software system/IT systems/information systems

System model - definition

- A system model is a representation of an IT system, often showing the architecture, the components or modules that exist, and how they are related to each other. It can also describes the functions, activities, and behaviors within the system

System model – why useful?

- Systems models are useful tools for:
  - analysing software system/IT systems/information systems
  - designing software system/IT systems/information systems (often used in phases of the system development process)

What is a model?

- A model is a structure that represents a system or a specific aspect of the real world.

How can a model be expressed?

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- A model can be expressed in different forms.
- A model can, for example, be textual, numerical or graphical.
- We focus on **graphical models** in this course, that is, models that visualizing objects, relationships, processes, actions, etc, using graphical elements, such as named boxes, arrows, etc

Two types of models

- There are two main types of models: **static (or structural) models** and **dynamic (or behavioral) models**.

Static and Dynamic Models

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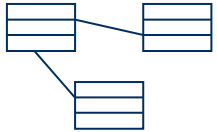
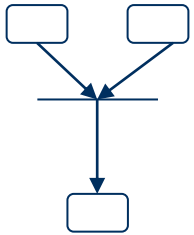
Static/Structural models



- specify static aspects of the real world/system
- more precisely: which objects exists and their relationships
- answer the question: “What things exist?

Dynamic/Behavioural models



- specify dynamic aspects of the real world/system
- more precisely: how does objects and their relationships change
- answer the questions: “How does the things change”

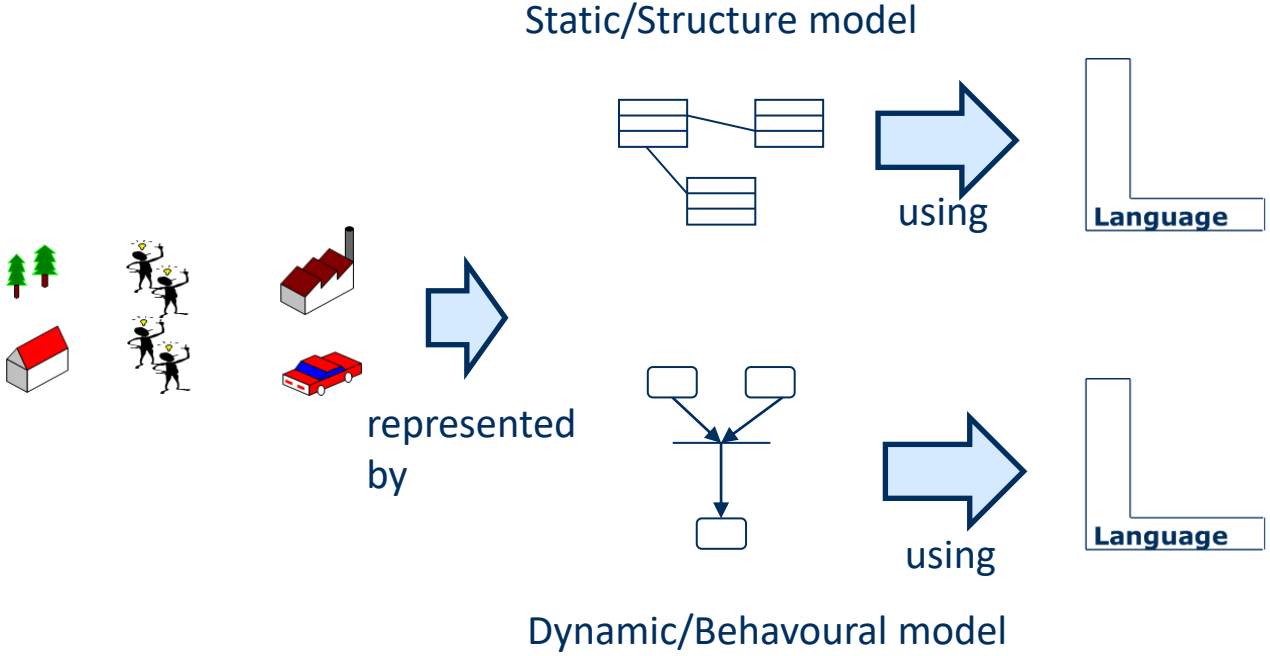
As-Is and To-Be Models

- **An as-is model** is a model that describes a certain aspect of the real world/system as it is just now
- **A to-be model** is a model that describes a future state of a certain aspect of the real world/system

Why Models?

- A means for analyzing part of the real world to identify problems
- A means for gathering requirement on a system
- A means for designing a system - for example, using models for design of to-be business process or a new software system
- A means for communication (for example, between several stakeholders)

Why Modelling Language?



UML

- **Unified Modelling Language (UML)** is a general-purpose modelling language/technique which is designed to provide a standard way to visualize the design of a software system - but the language can also be used for enterprise modelling.
- UML consists of a number of diagrams that aims to be used for modelling the real world or a system from different perspectives

UML: Model vs Diagrams

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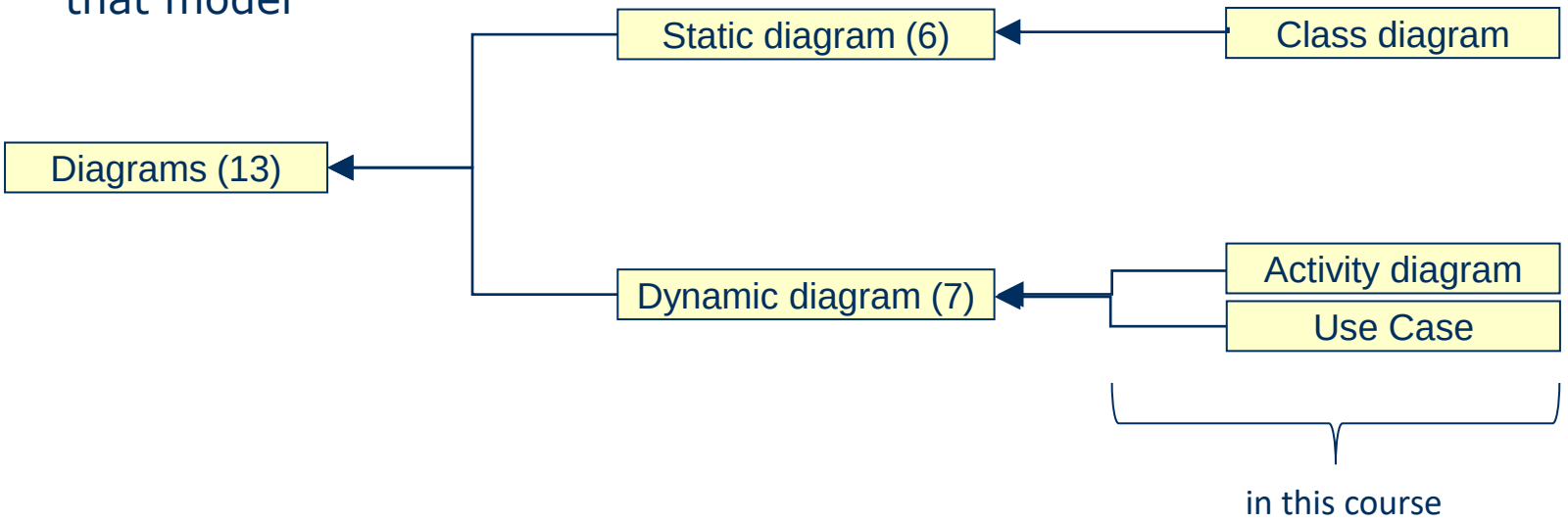
- UML assumes that there is **one model of a system in focus**
- **The model can be represented using different types of diagrams**, for example, an UML activity diagram and a UML class diagram
- **According to UML, a model is not the same as a diagram**
- In this course, we will still see a graphical model and a diagram as synonyms for simplicity

UML and OMG

- Today, UML is maintained by Object Management Group (OMG), which is a non-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications

UML diagrams

- UML 2.0 has 13 diagram types, which each provide a certain focus/perspective on a model. According to UML there is one model of a system, and the different diagrams provide different perspectives of that model



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