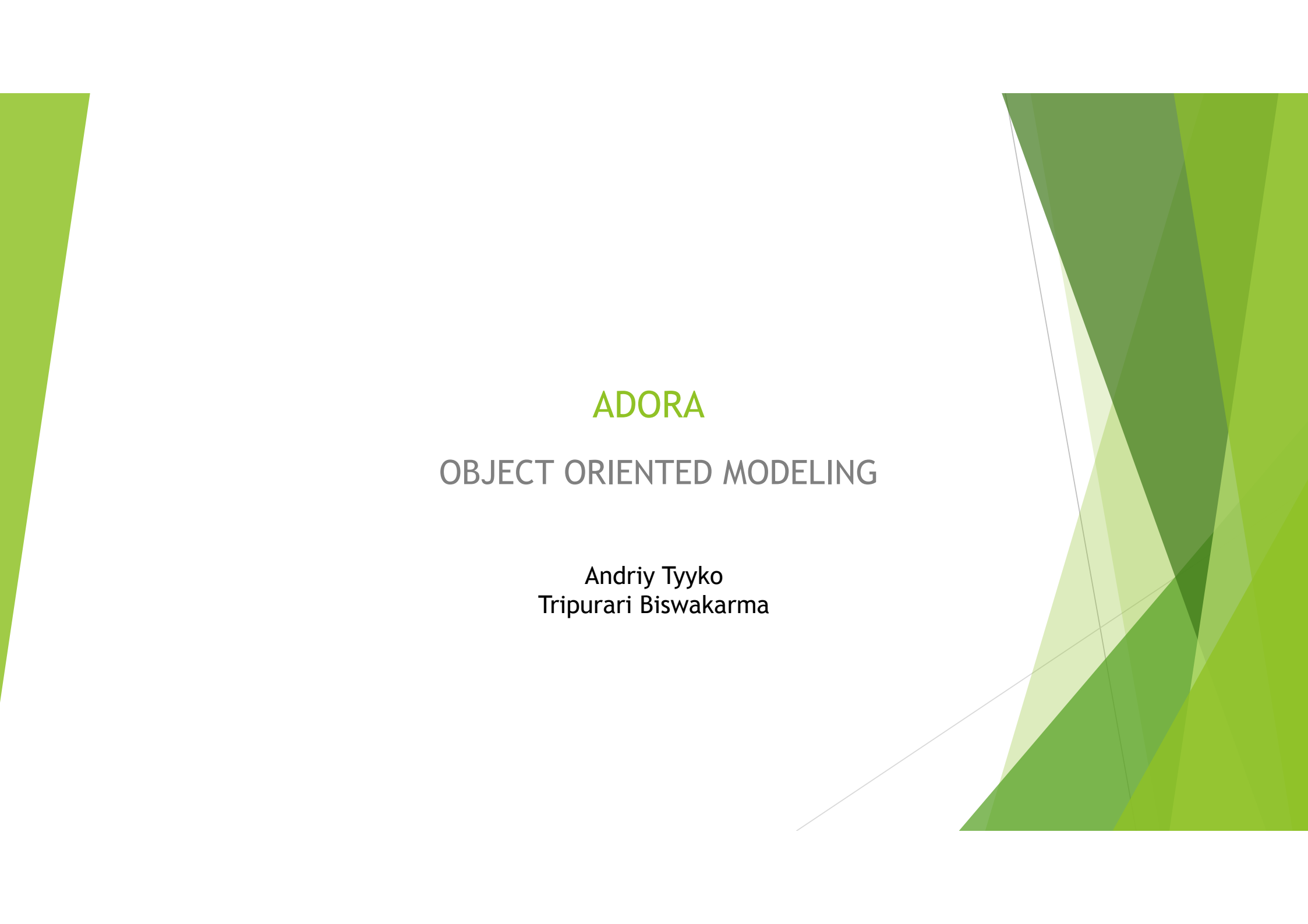




ADORA

OBJECT ORIENTED MODELING

Andriy Tyyko
Tripurari Biswakarma

MODELS

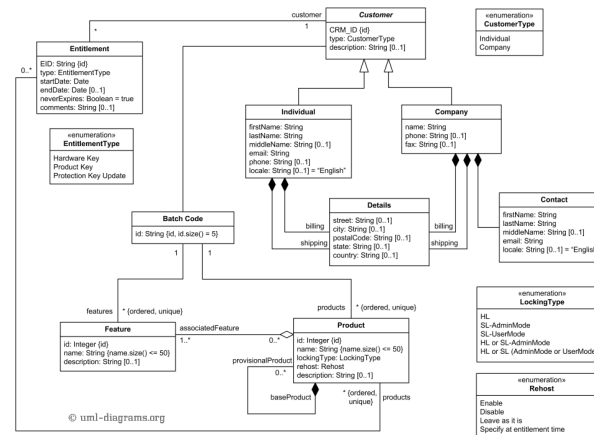
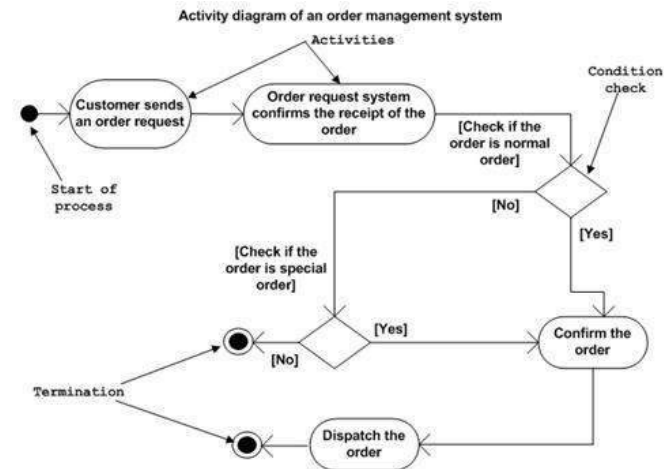
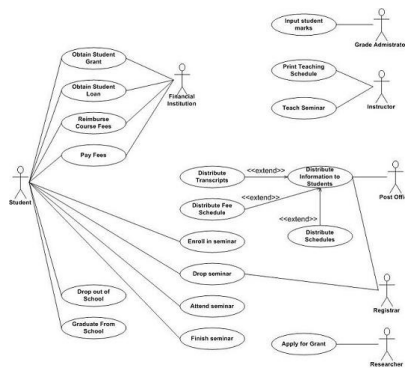
- ▶ Models help in developing artefacts by providing **information about the consequences** of building those artefacts **before they are actually made**
- ▶ We use models
 - ▶ when we think about problems
 - ▶ when we talk to each other
 - ▶ when we construct mechanisms
 - ▶ when we try to understand phenomena
 - ▶ when we teach

UML

- ▶ Unified Modelling Language
 - ▶ combines best features of the existing languages
 - ▶ industrial standard
- ▶ It does not allow
 - ▶ systematic decomposition of models
 - ▶ modelling of dynamic and behavioral aspects of a system.
 - ▶ integration of the aspects of data
- Models of **system context** and of **user-oriented external behavior** are weakly and badly integrated

UML

- Classes
- Collection of models
- Separated views
- Explosive zoom style visualisation
- Flexibility?

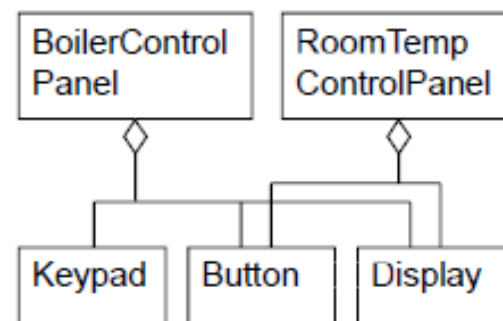
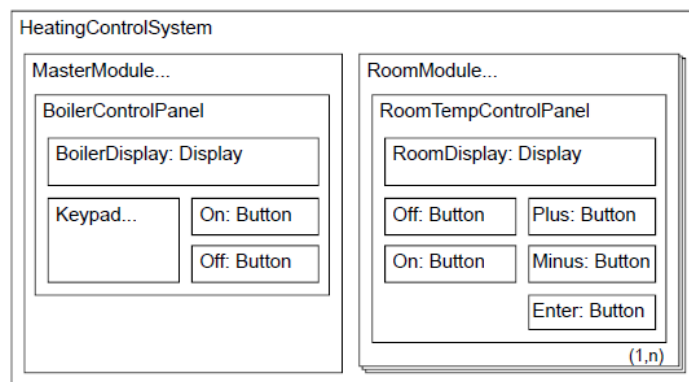


ADORA

- ▶ Analysis and Description of Requirements and Architecture
- ▶ 5 pillars:
 - ▶ Abstract objects
 - ▶ Hierarchical decomposition
 - ▶ Integrated Model
 - ▶ Adaptable degree of formality
 - ▶ Context visualisation

ABSTRACT OBJECTS

- ▶ An object is a placeholder for a concrete object instance
- ▶ In ADORA Objects vs Objects sets
 - ▶ Simple decomposition
 - ▶ Flexibility
 - ▶ Any level of abstraction



HIERARCHICAL DECOMPOSITION

- Recursive decomposition of objects into objects
- Variation of degree of abstractness
 - Small parts in detail
 - Large objects on an abstract level

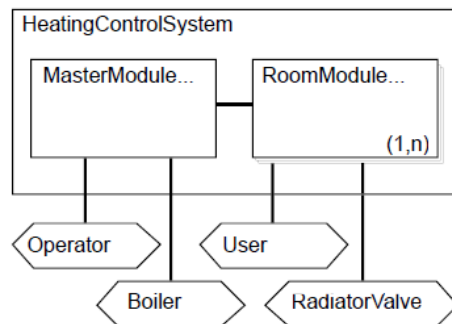


Fig. 9. A context diagram of the heating control system (base view combined with context view and structural view).

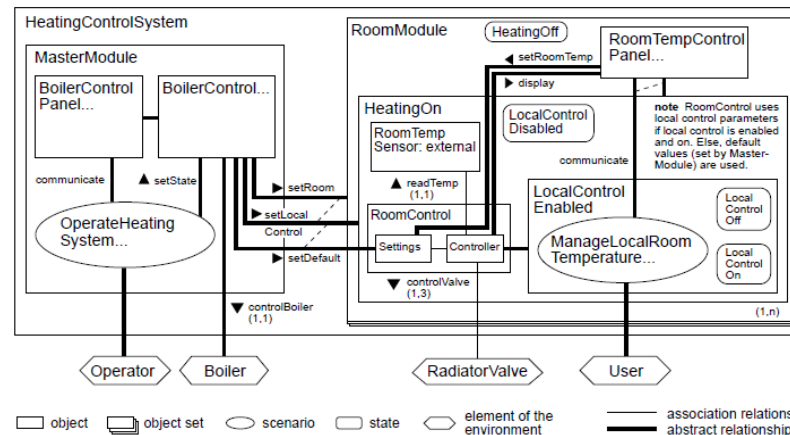


Fig. 2. An ADORA view of the heating system: base view combined with structural view and context view.

INTEGRATED MODEL

- ▶ Integration of all modelling aspects
 - ▶ Structure (Class diagrams)
 - ▶ Data
 - ▶ Behaviour (State diagrams)
 - ▶ User interaction (Use cases)
 - ▶ ...
- ▶ Combination of views
- Single hierarchical structure

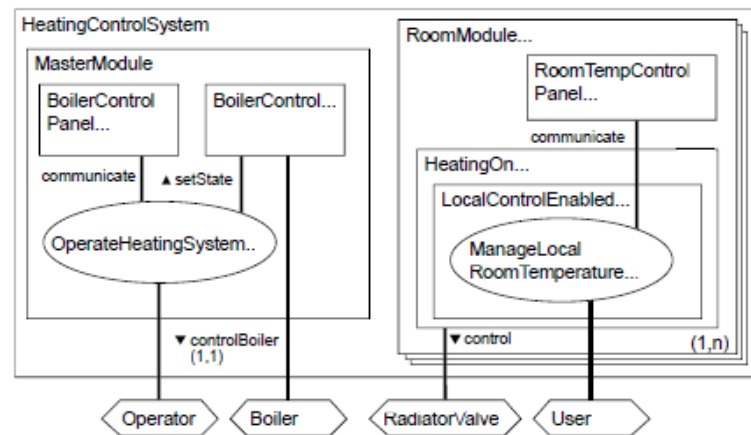


Fig. 7. A combined user and context view of the heating control system.

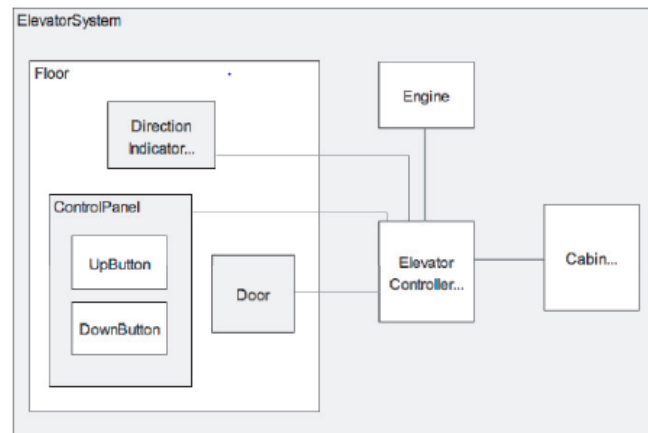
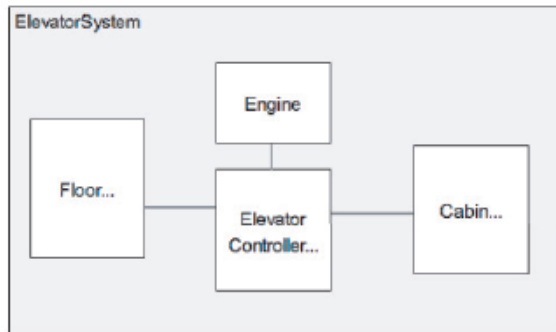
ADAPTABLE DEGREE OF FORMALITY

- ▶ Choice between
 - ▶ Informal specification
 - ▶ Formal specification
 - ▶ Textual specification
 - ▶ Mixture



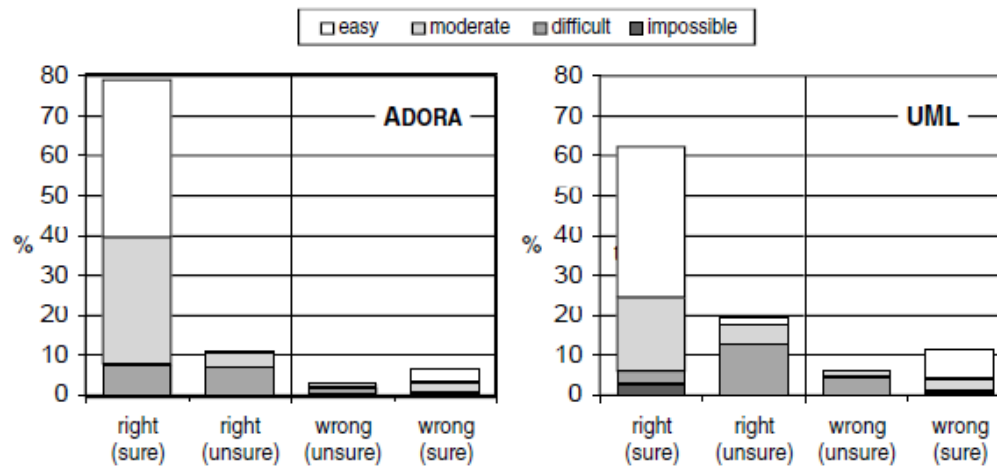
CONTEXTUAL VISUALISATION

- ▶ Fisheye view concept (zoom in and zoom out)
- ▶ Layout adjustments (hierarchy, smart editing, node filtering)
- ▶ Context diagram depending on the selected degree of abstraction
- ▶ External objects (e.g. COTS components) can be also represented
- One coherent model, where size and complexity of diagrams are kept within reasonable limits



CONCLUSION

- ▶ ADORA allows
 - ▶ flexibility
 - ▶ strong support for iterative and incremental development
 - ▶ Implementation of recursive procedures



THANK YOU FOR YOUR ATTENTION!