

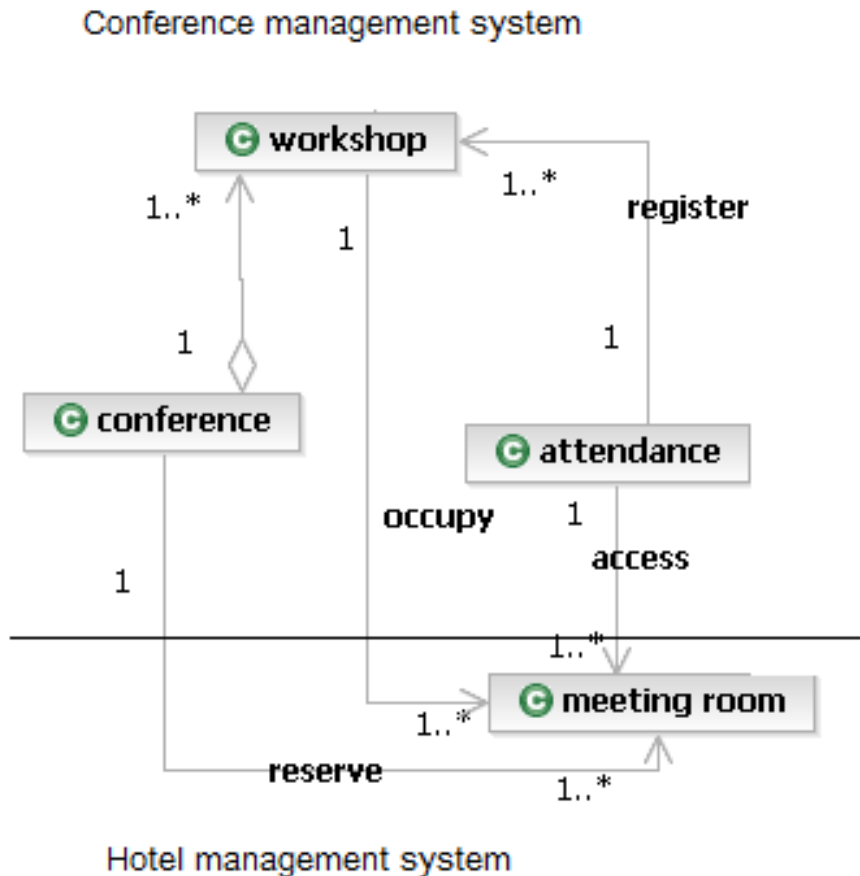
# A Pattern-Based Approach to Manage Model References

Juanjuan Jiang and Tarja Systä  
Tampere University of Technology

# Outline

- Motivation
- A pattern-based approach
- Case study
- Conclusion

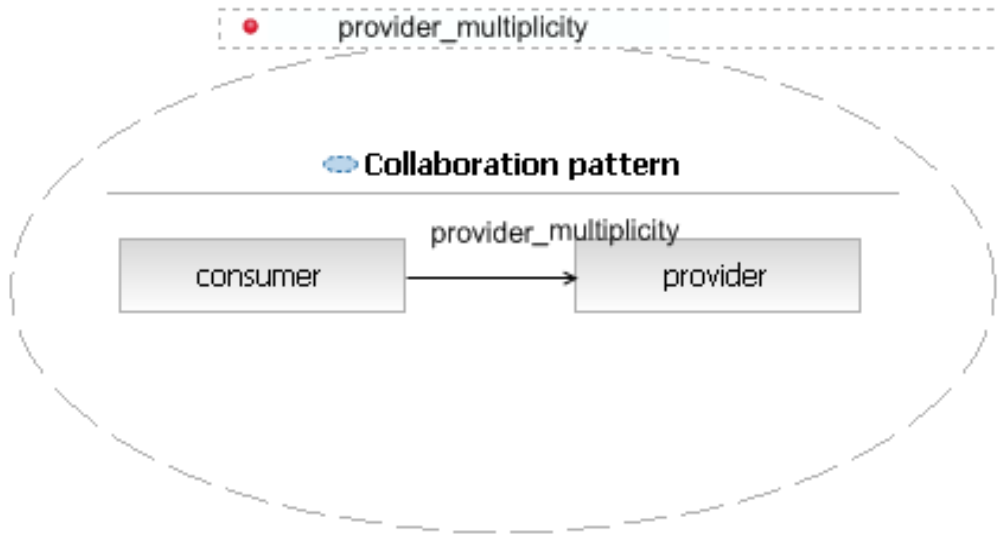
# Motivation



- Model references are needed in model integration, usually visualized by UML associations.
- The instantiation of model references are executed usually based on a certain order or conditions. E.g. Reserve, register->occupy->access
- How to specify the instantiation of model references at metamodel level?
- A certain solution to specify and manage the instantiation of model references are desired

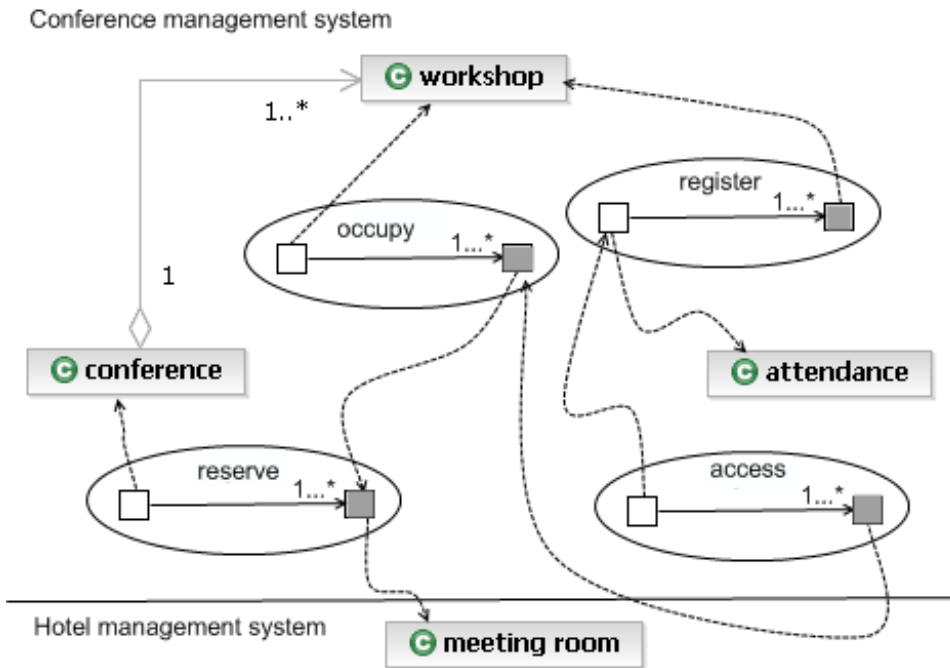
The metamodel of an integrated system

# A Pattern-based approach



- UML collaboration to present the pattern
- Consumer role and provider role
- Parameter: provider\_multiplicity

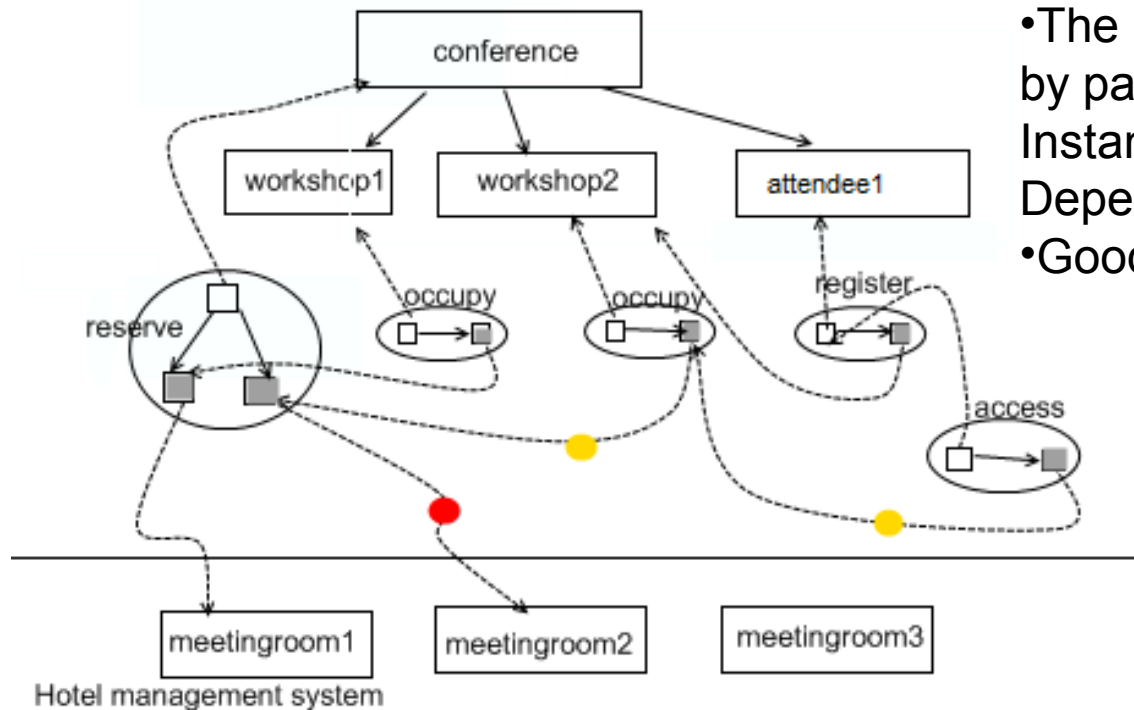
# An application



- UML collaborationUses are used instead of UML associations
- The relationships of collaborationUses present the instantiation order or conditions.

Metamodel of the integrated conference arrangement system

Conference management system



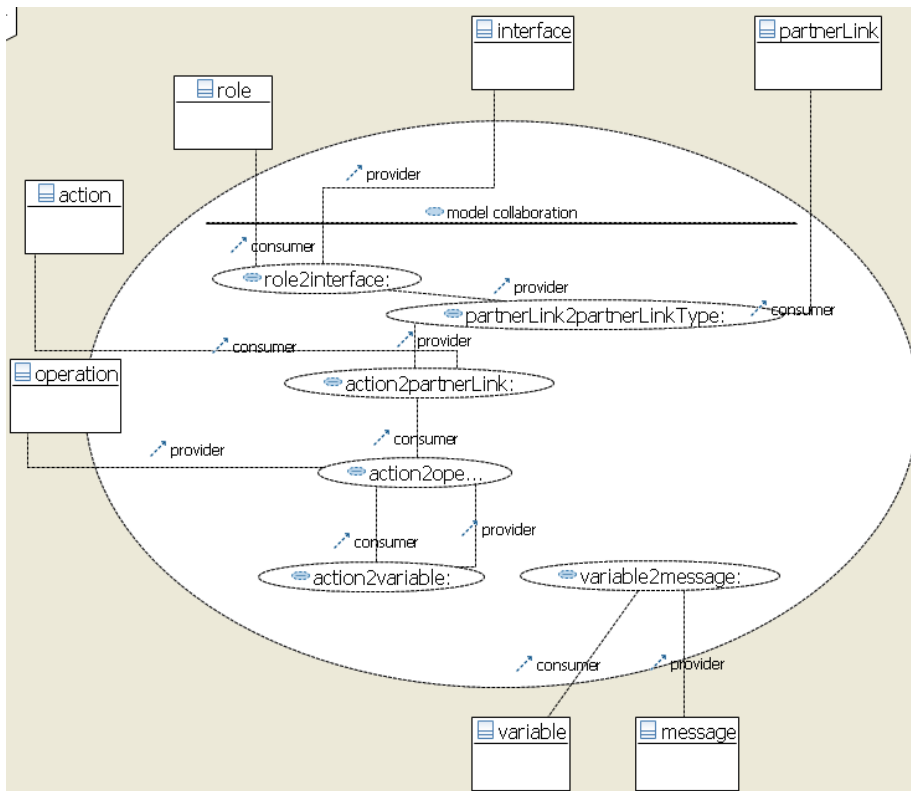
Benefits of using pattern:

- The model references (visualized by pattern instances) can be Instantiated according to Dependencies of patterns instance
- Good mantaince at instance level

The instance model of the integrated conference arrangement system

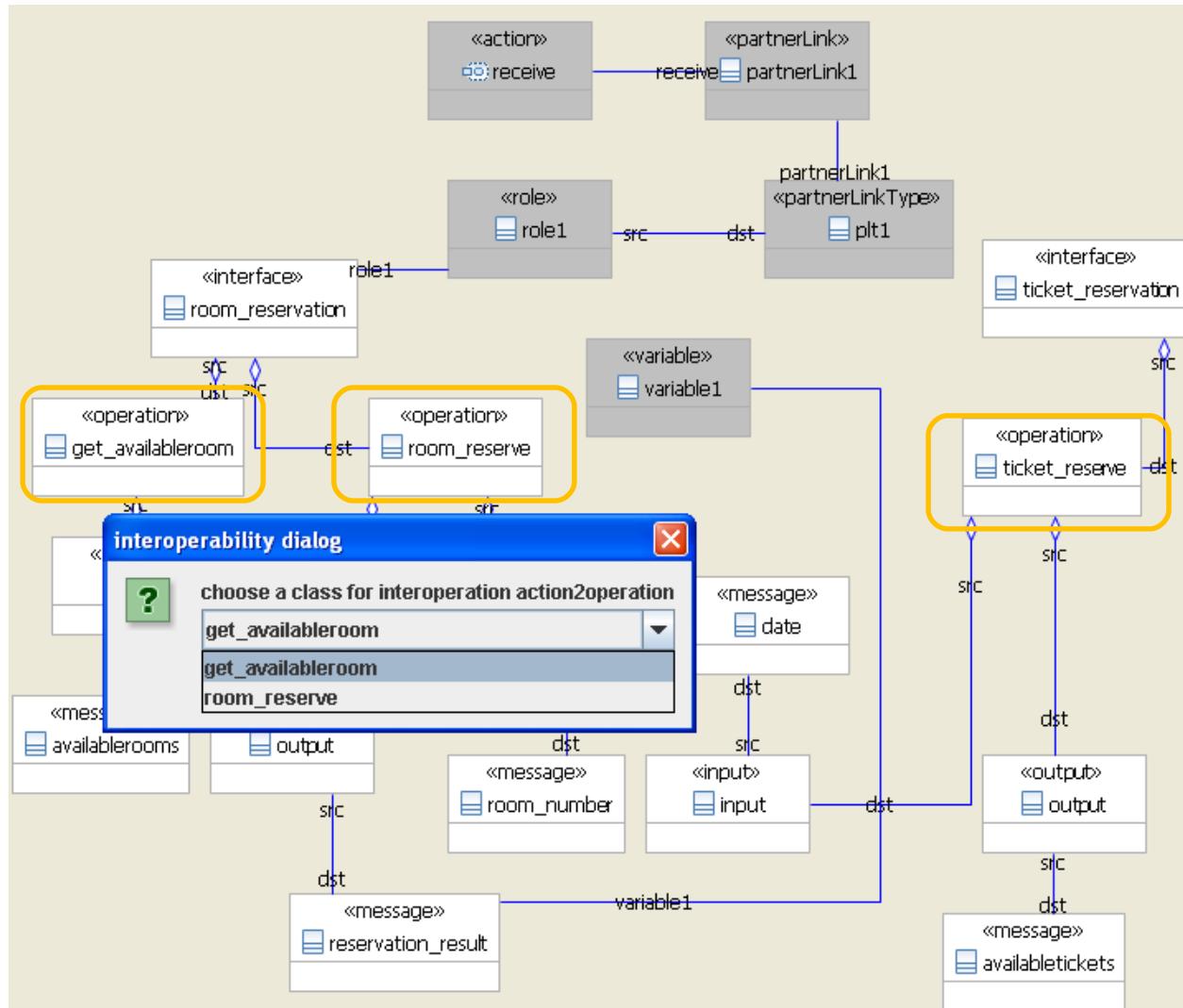
# A case study-collaborations of Web services standards

- references of BPEL and WSDL.
- BPEL refers to the interface definitions in WSDL.
  - an *action* in BPEL needs to use a service interface, so that the *action* can invoke the operations contained in the linked interface. This *action* refers to variables in BPEL, which are required to be typed as the *messages* contained in the linked *operation*. These model references are related.



The references of BPEL and WSDL at metamodel level

# A case study- instance level





# Conclusion

- A pattern-based approach to specify and manage instantiation of model references is proposed.
- Applying the approach to Web services
- pattern-based approach gains good maintenance when the instances of model references are changed.