



Requirements Engineering with Viewpoints



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Viewpoints

- ▶ problem: inconsistent specification
- ▶ solution:
 - **partitioning** of software development knowledge into multiple views (viewpoints)
 - **inconsistency management** with viewpoints: explicit definition of relationships between viewpoints, delay of inconsistency resolution

Viewpoints ctd.

- ▶ “Viewpoints are loosely coupled, locally managed, distributable objects which encapsulate partial knowledge about a system and its domain, specified in a particular, suitable representation scheme, and partial knowledge of the process of development” (Easterbrook 33)
- ▶ a viewpoint has the following slots
 - representation style
 - domain
 - specification
 - work plan
 - work record

Methods

Different methods exist, focus on Sabetzadeh

A framework to merge viewpoints contains:

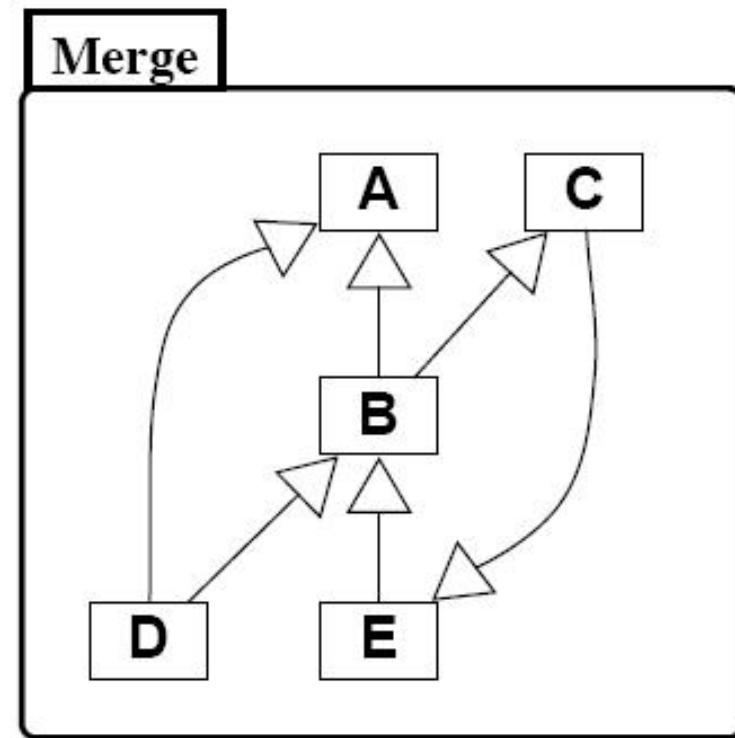
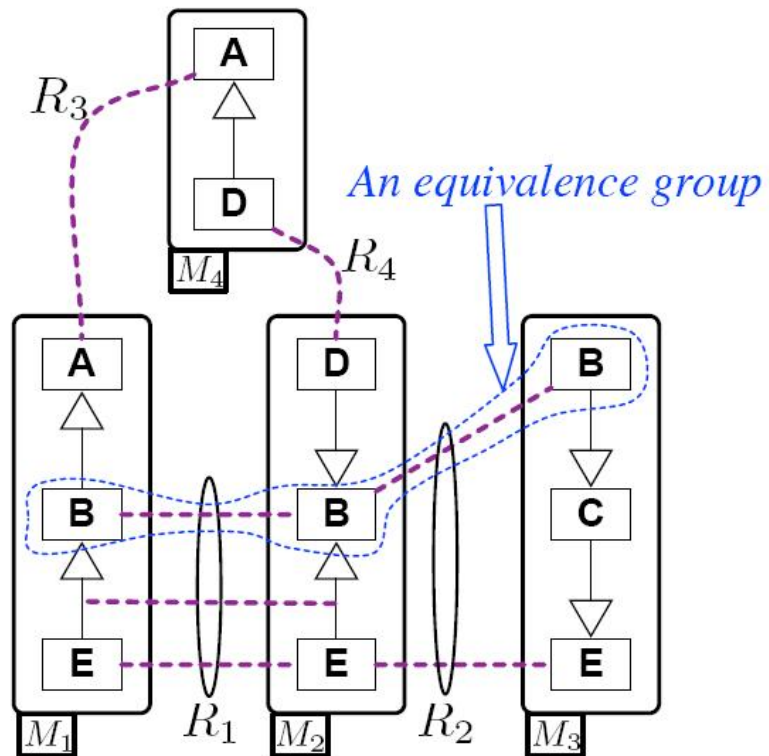
- ▶ Notation to express requirements formally
- ▶ Prerequisite rules to enforce semantic consistency
- ▶ Set of rules to create merge of viewpoints
- ▶ Directions on application of the method
- ▶ Approach to keep track of changes

Example application of viewpoints

1. Identify name correspondences
2. Create source models of different viewpoints
3. Connect models and map elements to each other
4. Merge models by unifying elements in same equivalence group
5. Identify inconsistencies in merged model
6. Re-examine source models to eliminate inconsistencies

Steps 4 to 6 are performed iteratively

Example application of viewpoints (2)



Benefits of consistency checking with viewpoints

- ▶ Very quick to identify global inconsistencies
- ▶ Overview of all proposed alternatives
- ▶ Allows to easily compare alternatives and create consensus
- ▶ Inconsistencies can be traced back all the way to source
- ▶ Widely applicable, independent from type of model
- ▶ Can be solved algorithmically and thus be automated

Conflict management with viewpoints in the RE-I case study?

- ▶ Viewpoints not suitable to manage conflicts between Wilhelm and Hans Wurst