Config & Change Management of Models

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- Requirements Management
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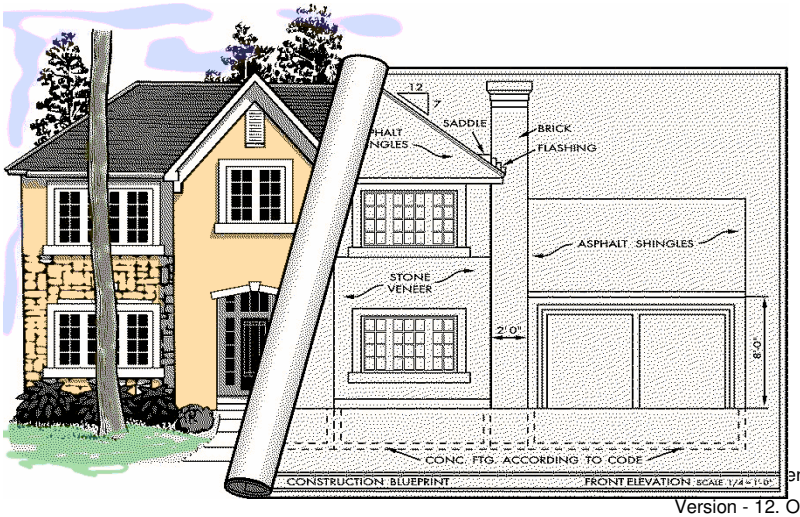
Motivation

System and software development is not trivial!

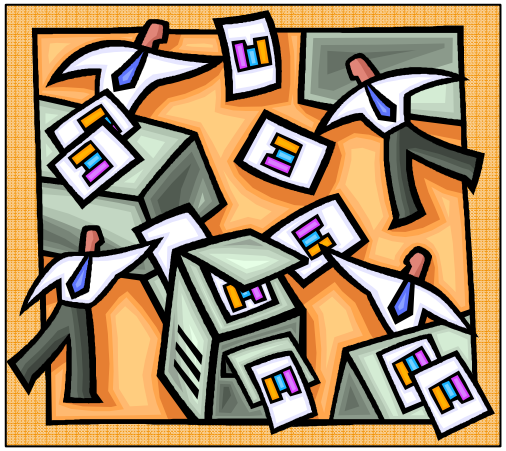
- System are getting more and more complex
- The answer: using abstraction to handle complexity
- The approach: modelling
  - reduces complexiy
  - improves communication
  - simplifies re-use
- Requires suitable modelling techniques
  - Well-tried
  - Commonly accepted
  - Tool supported



(Von Rational Websources)

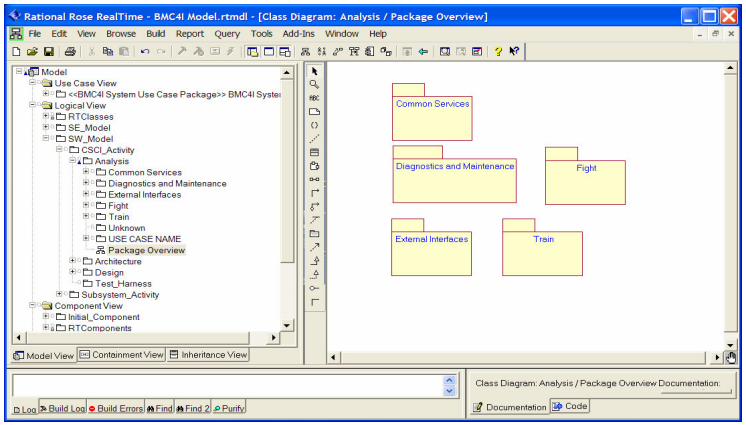
Collaboration

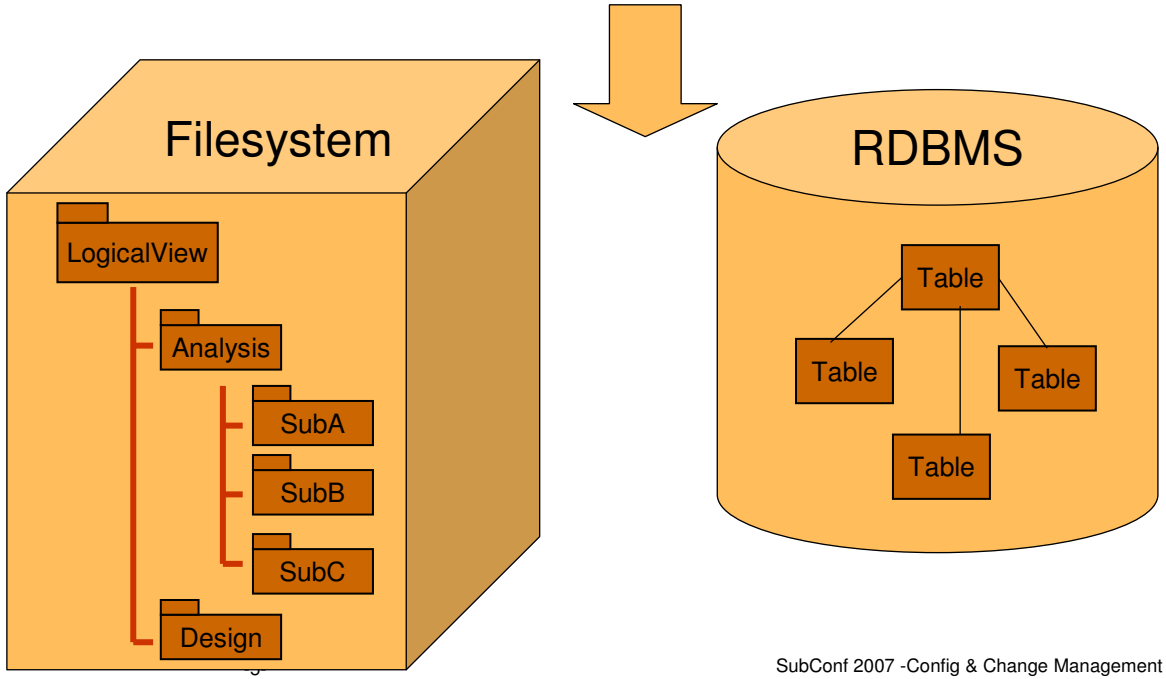
- System are getting more and more complex
  - Teams are growing
  - Analysis gets more important
  - Collaboration is needed
    - Within teams
    - Across sites/locations



Model information storage

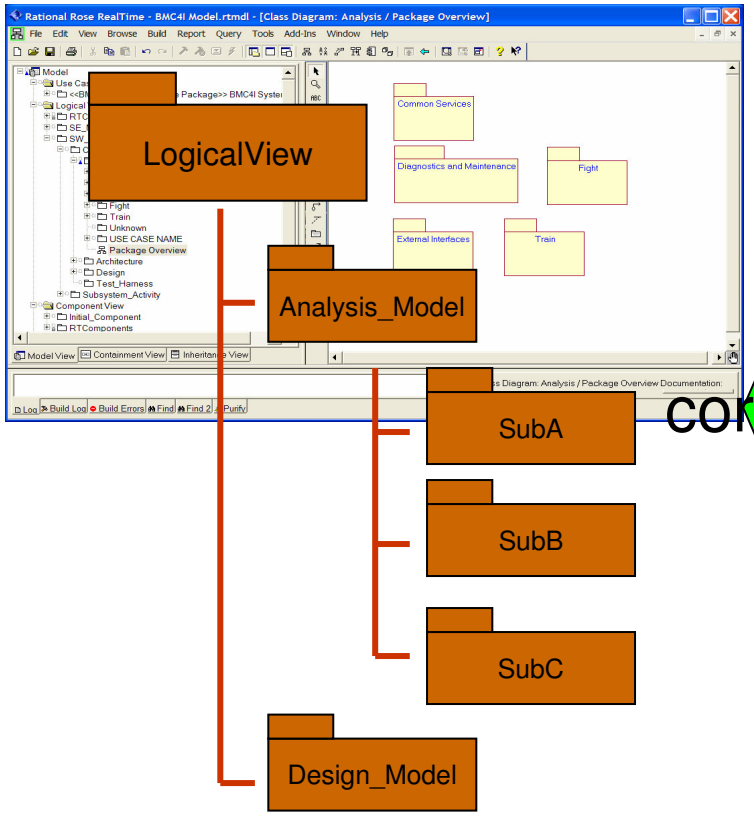
- Typical model element storages
  - File based
    - inherent exclusive access
  - RDBMS based
    - inherent concurrent access



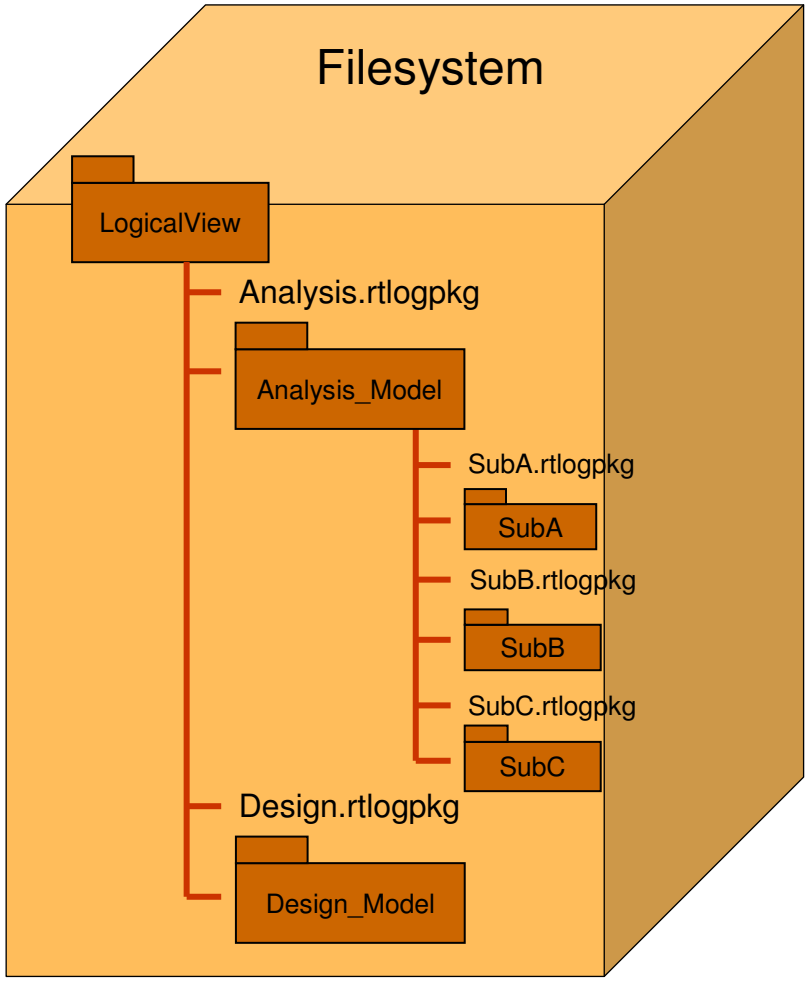


File based models

- Model splitted into finer grained units
- use file system mechanisms for access control:
  - controlled units.
- Depending on size up to thousands

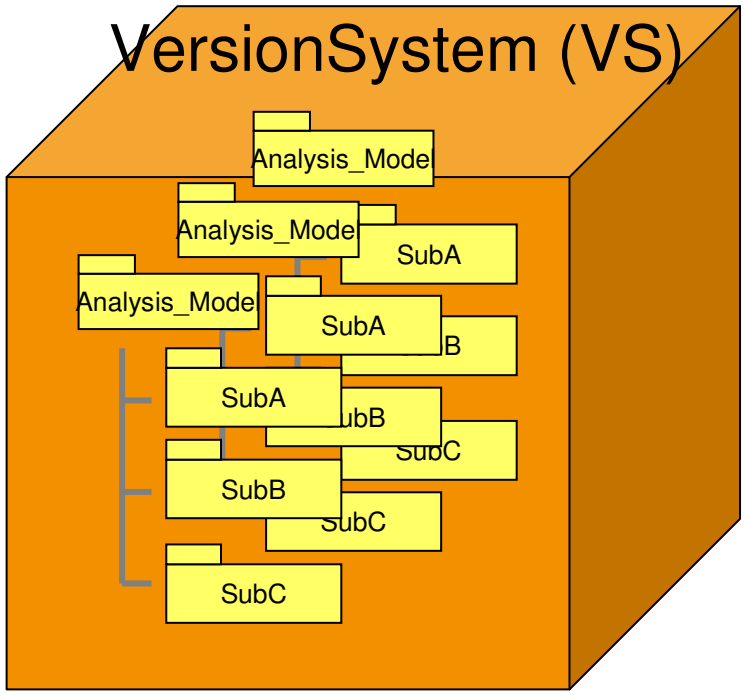


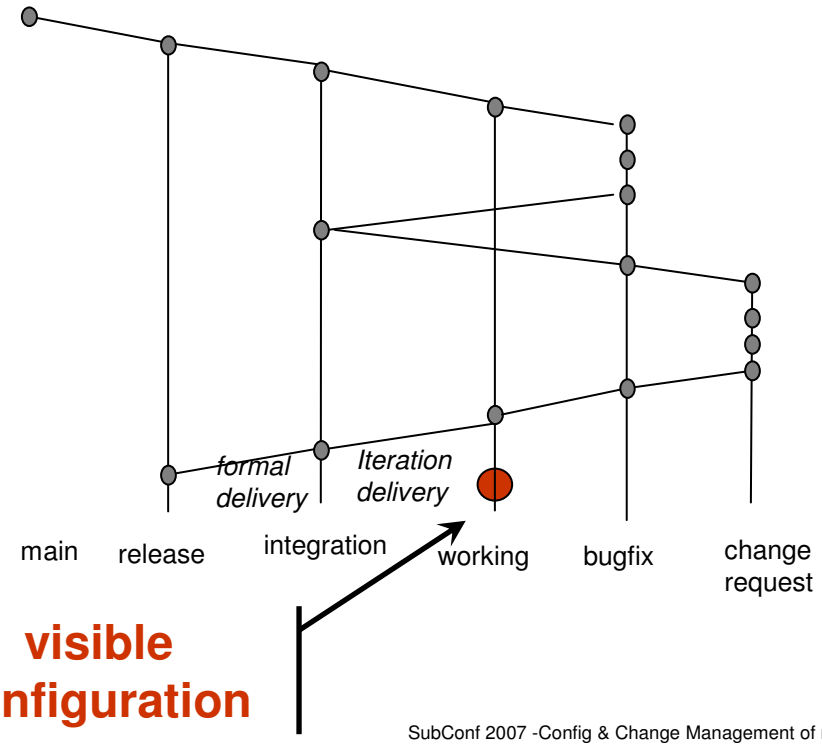
corresponds



Branches and visibility

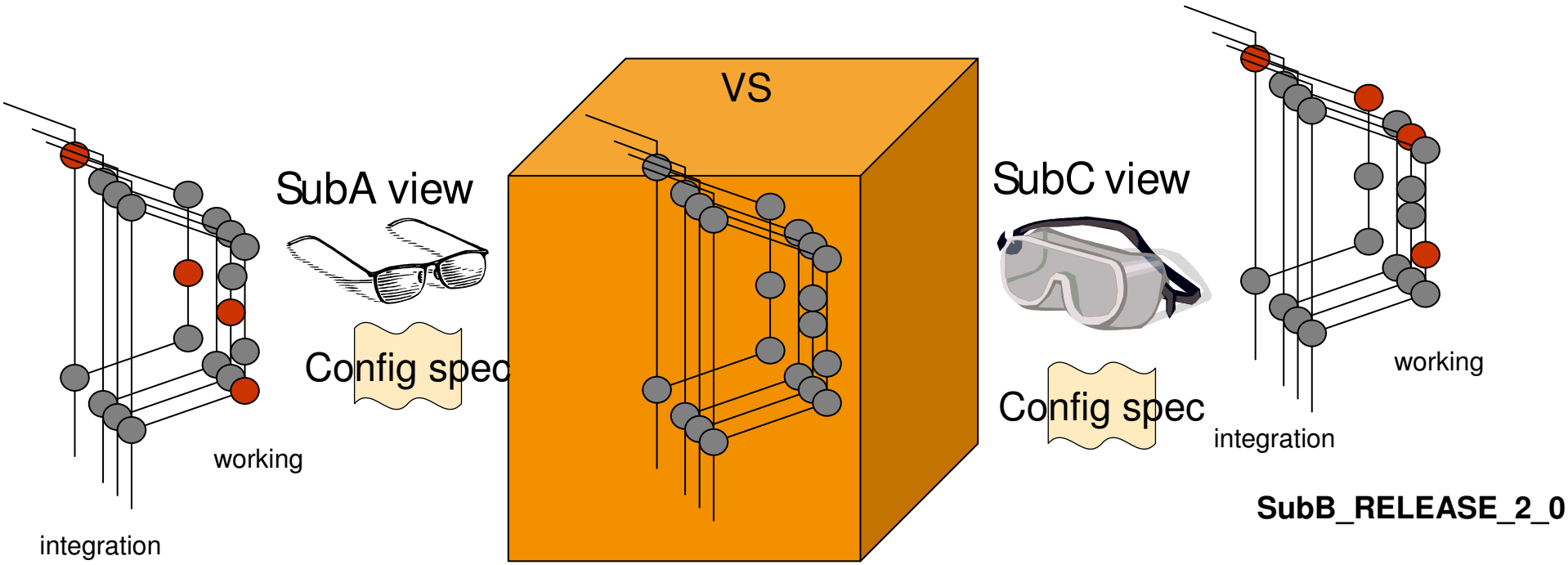
- Different teams work on different tasks.
- using iterative processes, there are multiple version of one model element
- Different branches can handle these issues.





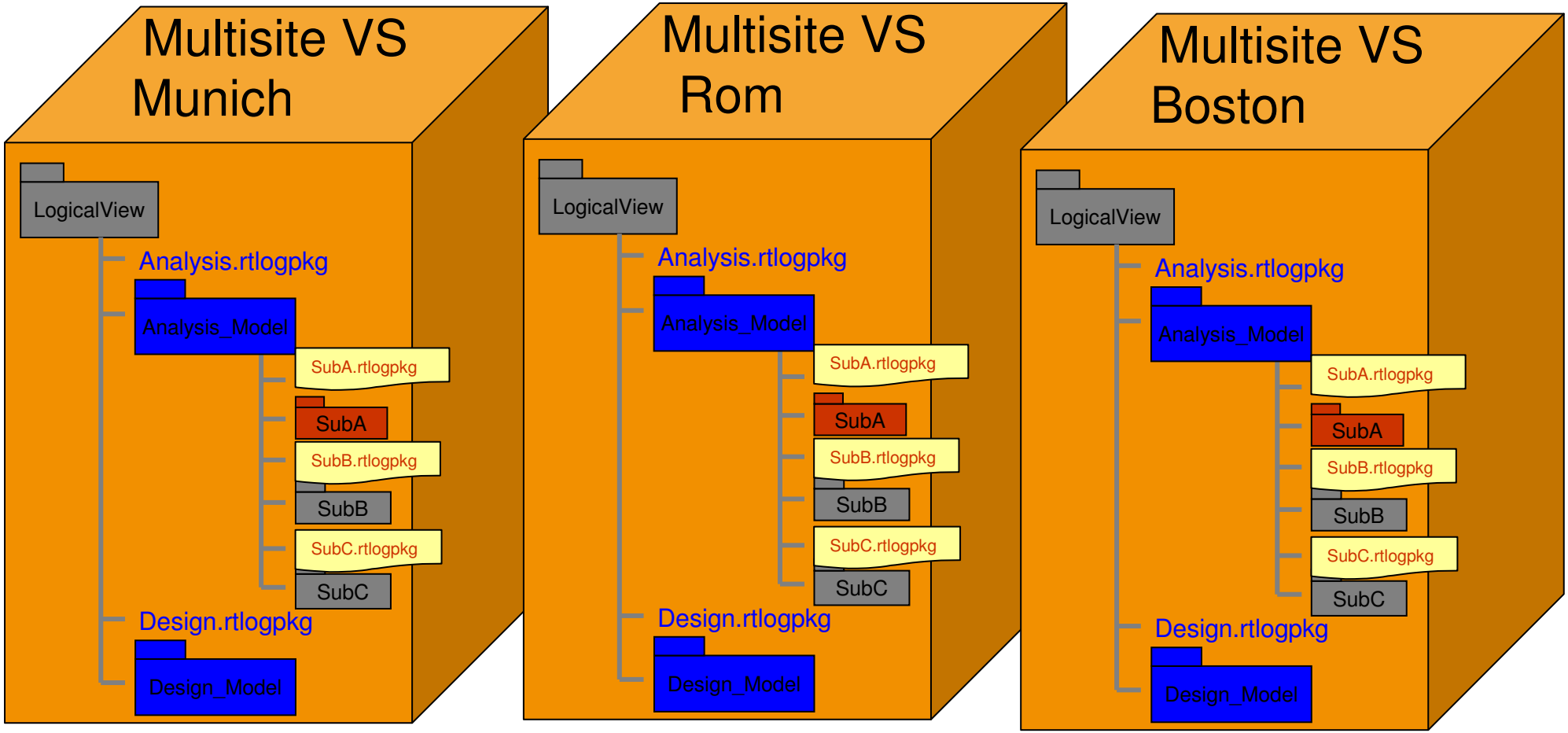
Configurations and Views

- Different version of one model element exists in parallel
- Visible configurations of the model must be specified
- Configurations can be identified by label names

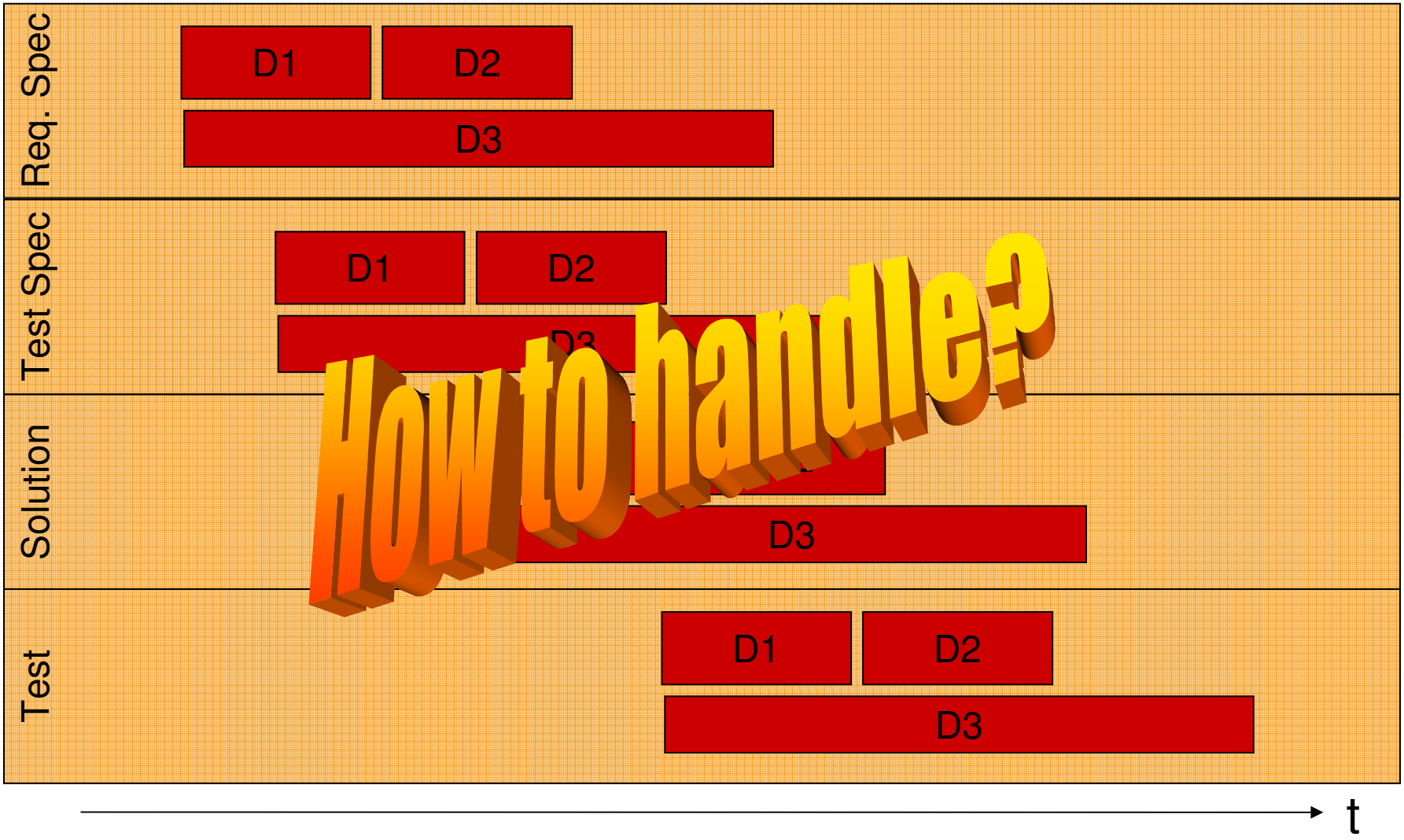


Multisite structure

- Synchronization of multiple sites can be handled by file system multi-site solutions

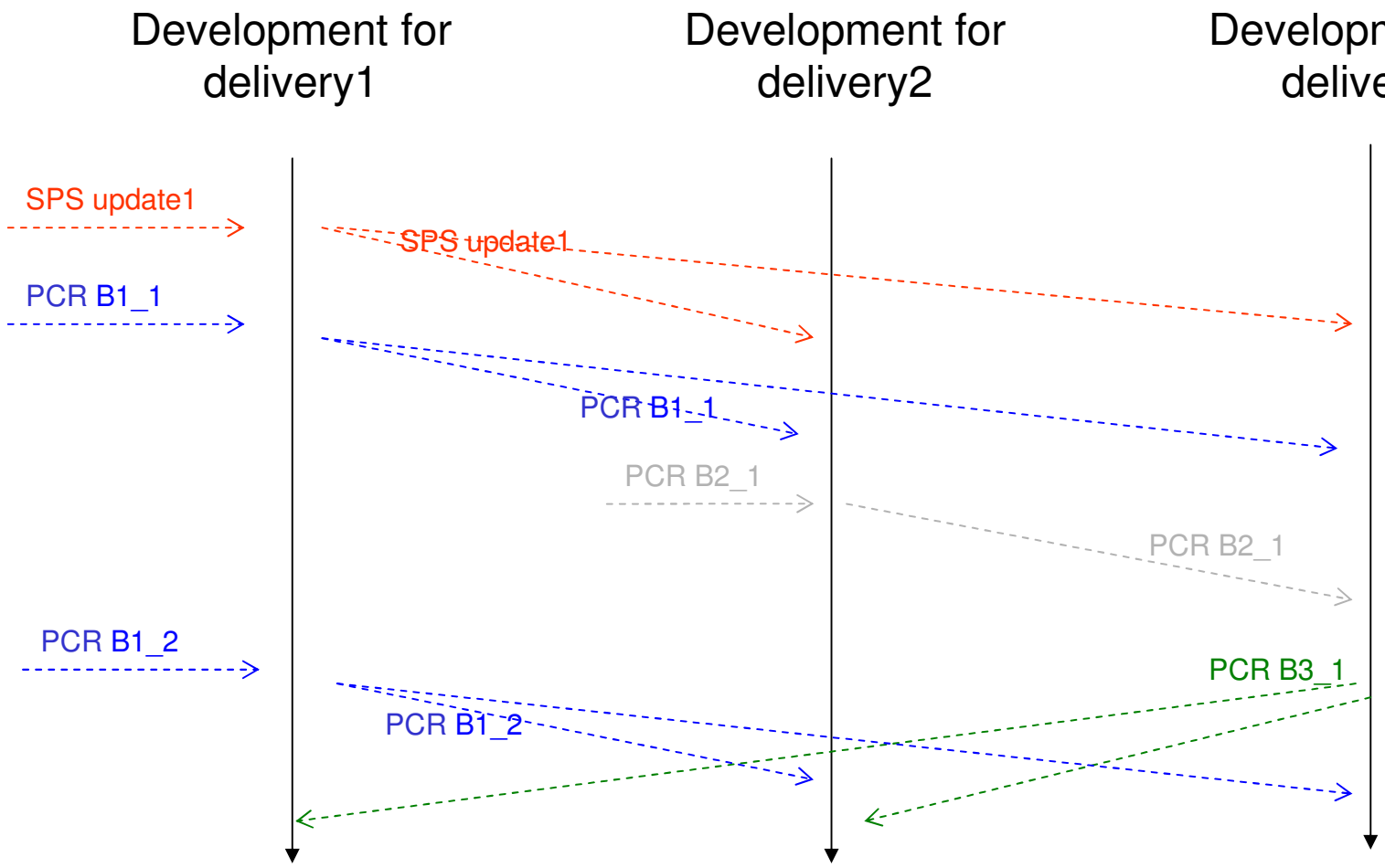


Changes and Concurrent Development



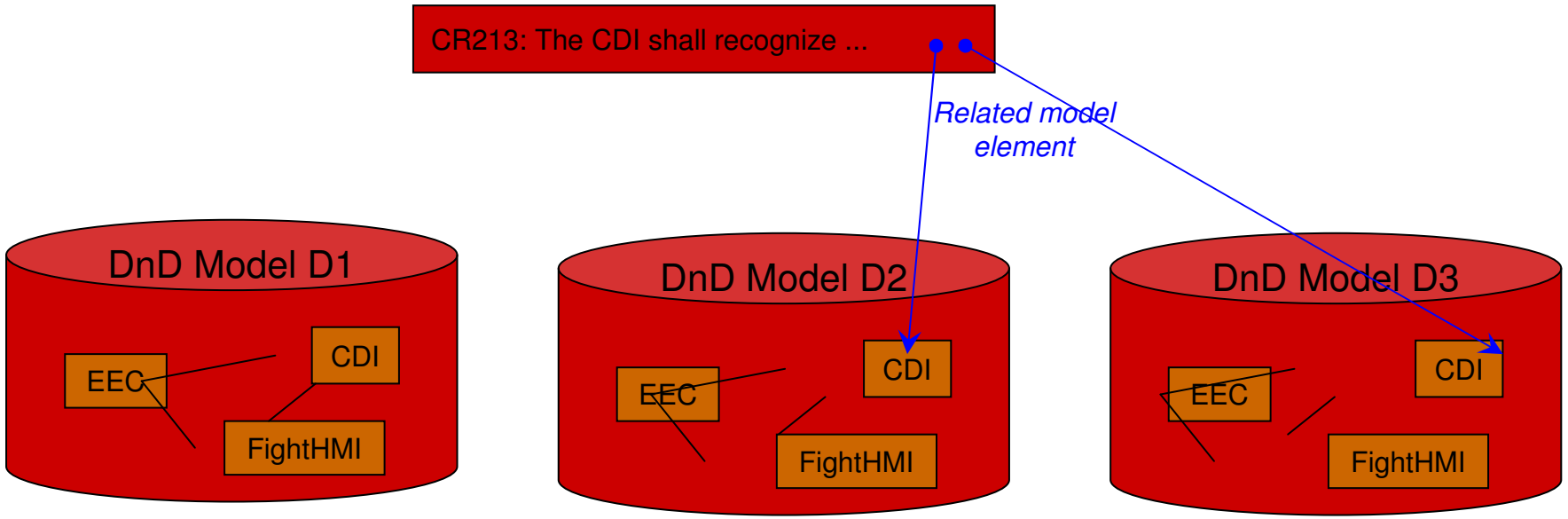
Changes integration

- How to handle changes affecting other deliverys?



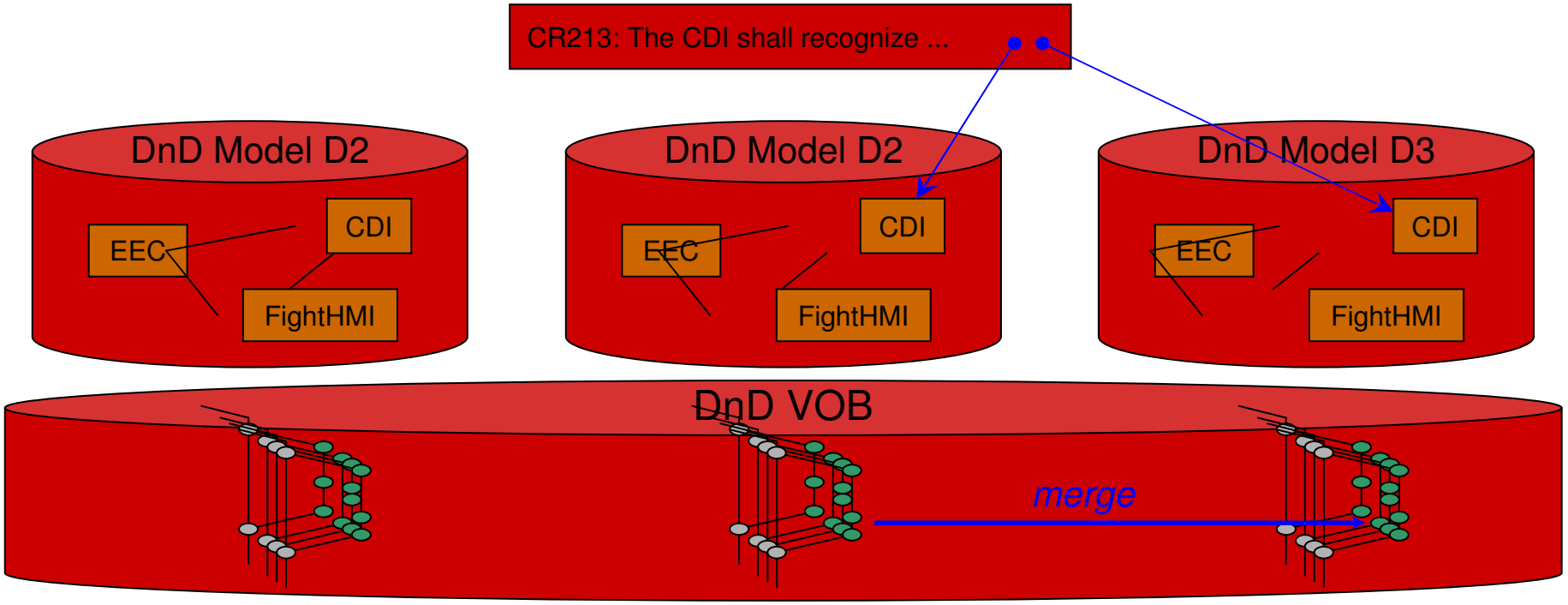
Change Request Impact Analysis

- UML Model
  - During change request analysis, the impact to affected delivery elements (subsystems or whatever) has to be analysed
  - Trace change requests to affected model elements
  - For deeper impact analysis use UML implicit tracing features
    - Tracing to components, collaborations, interfaces, implicitly affected subsystems,...



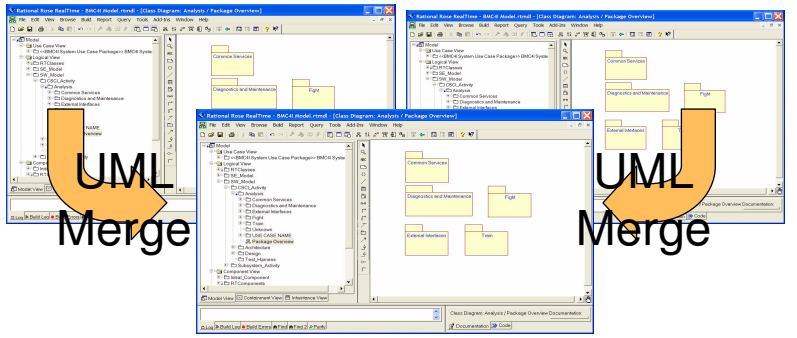
Change Request Resolution

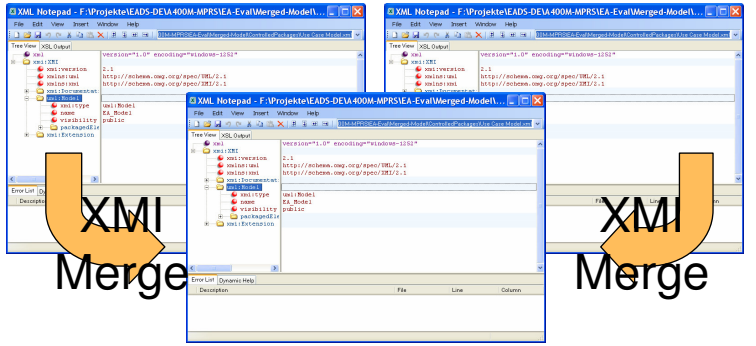
- UML Model
  - Change affected model element as needed
  - You can use the RoseRT Model Integrator to merge the changes across deliveries
  - Therefore all models

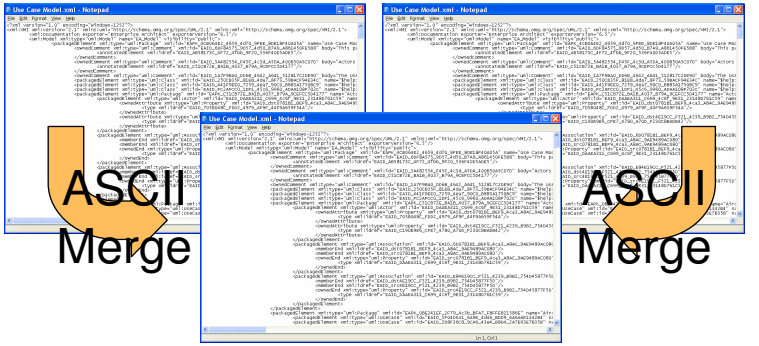


Merge levels

- Merge of model can be done on
  - ASCII,
  - XMI or
  - model level.
- Merging on an inappropriate level makes the merge very hard.
  - Visual merge appropriate for visual language
- Because of model element dependency-network,
  much harder than source code merge.

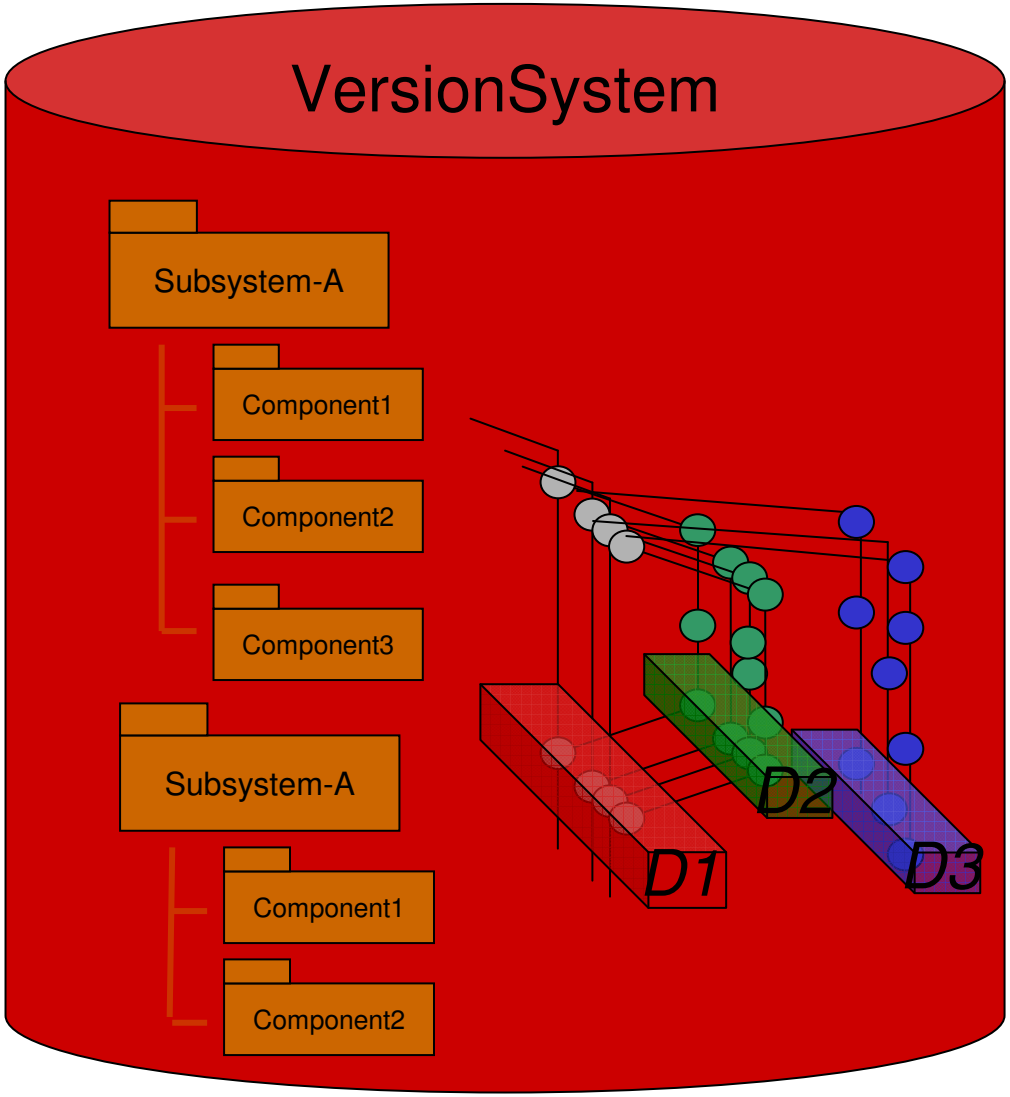






Rebaselining

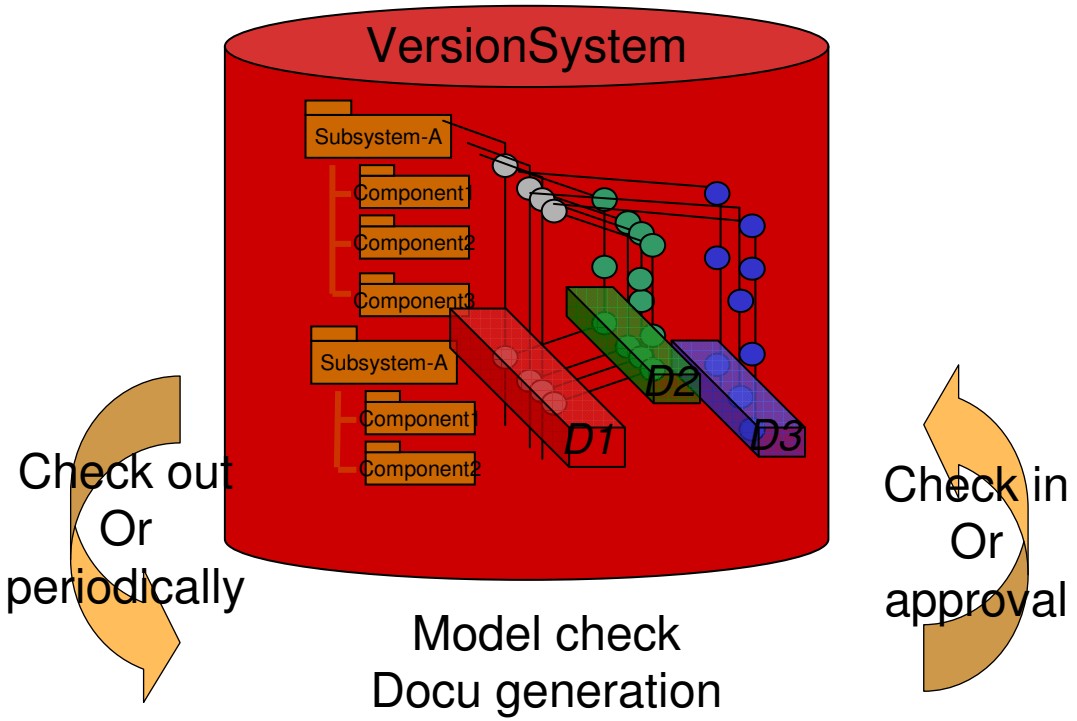
3. One model for all deliveries, but delivery specific branches
   - ✓ Pros
     - ✓ Handling of variants and cross-delivery changes seems to be simpler
   - – Cons
     - – Very complex branching
     - – Very complex config specs
   - ▪ ReqPro RM database: nearly impossible



Integrated QA

- Compare build mechanisms for source code using ANT, MAKE or other mechanisms
  - Integrated tests to ensure the quality of a configuration
  - Integrated doc generation to ensure latest news

- At modelling level
  - Check UML syntax
  - Check modeling guideline conformance
  - Generate documentation



Conclusion

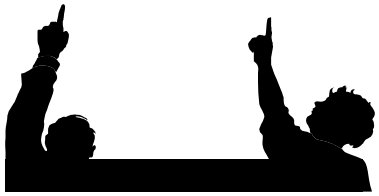
- File based models
  - Source code CCM mechanisms can be lift up to model level for file based models.
  - All mechanisms fit very well.

- RDBMS based models
  - Much harder to handle the above issues. I am not aware of a good CCM strategy.

From Use Cases to Test Cases

Thanks for your patience!

Questions & Disscussion



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