

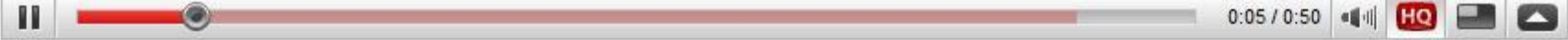
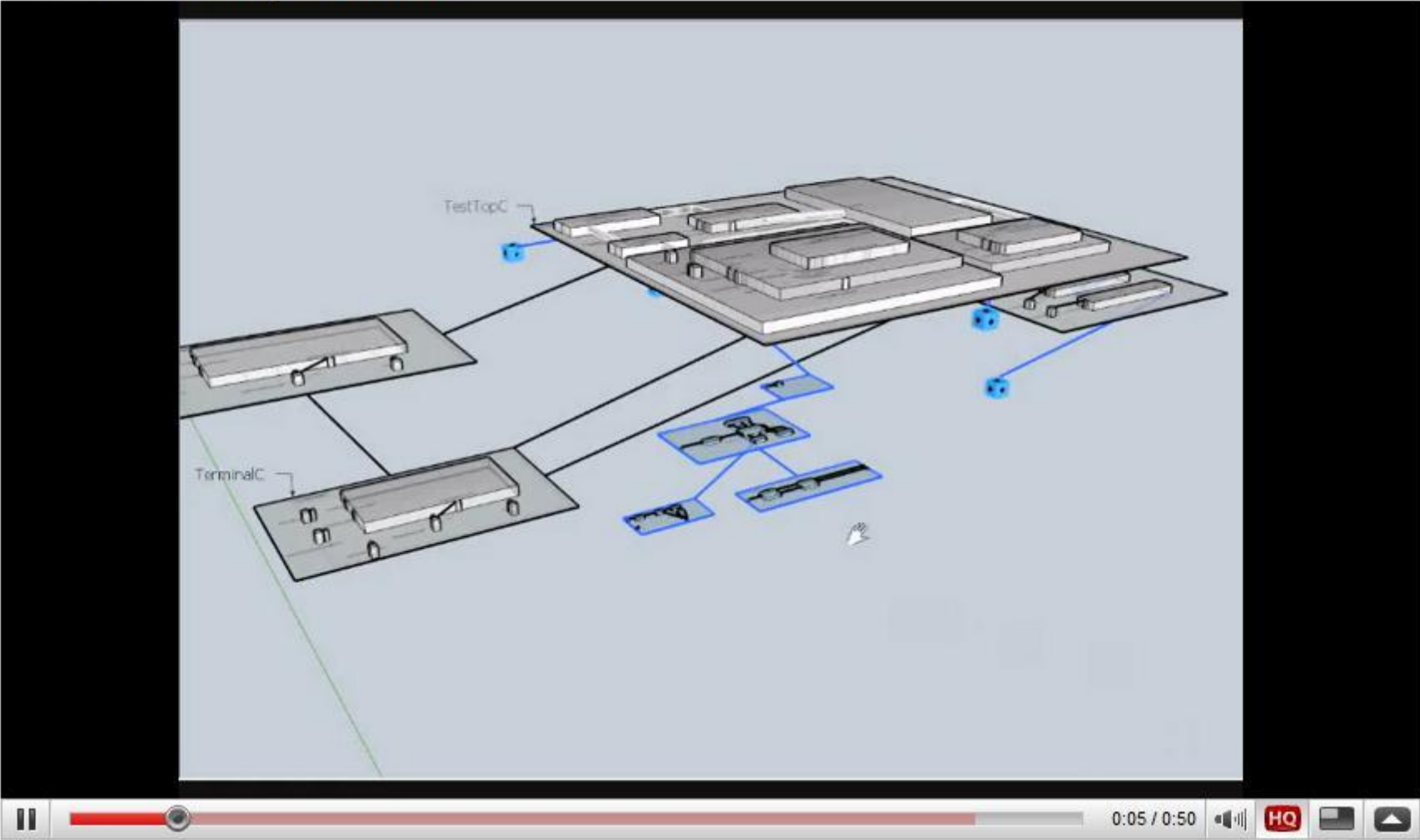
3D Visualization for Model Comprehension

A Case Study Conducted at Ericsson AB

Anne–Katrín Krolovitsch & Linda Nilsson*
anne-katrin@spray.se & tuss@linux.se

*) Joint work with K. Bergh, S. Ehnebom, L. Pareto, M. Standar

3D UML for Model Comprehension




Background

ERICSSON 

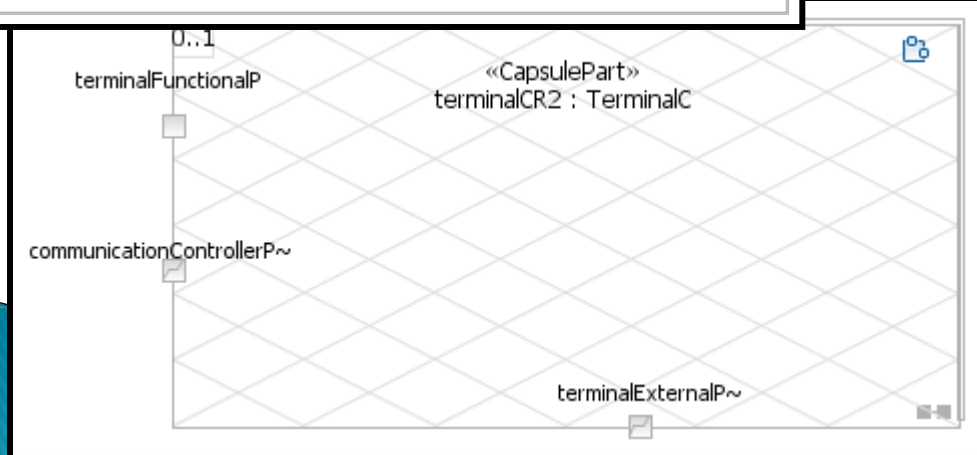
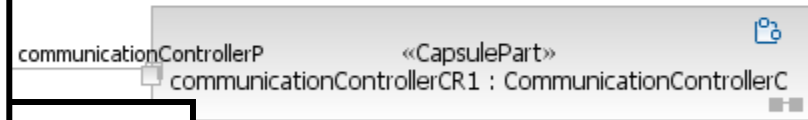
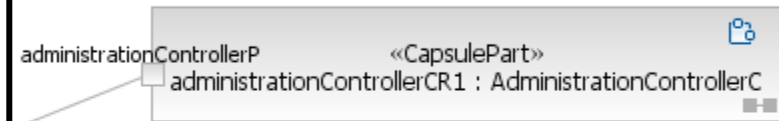
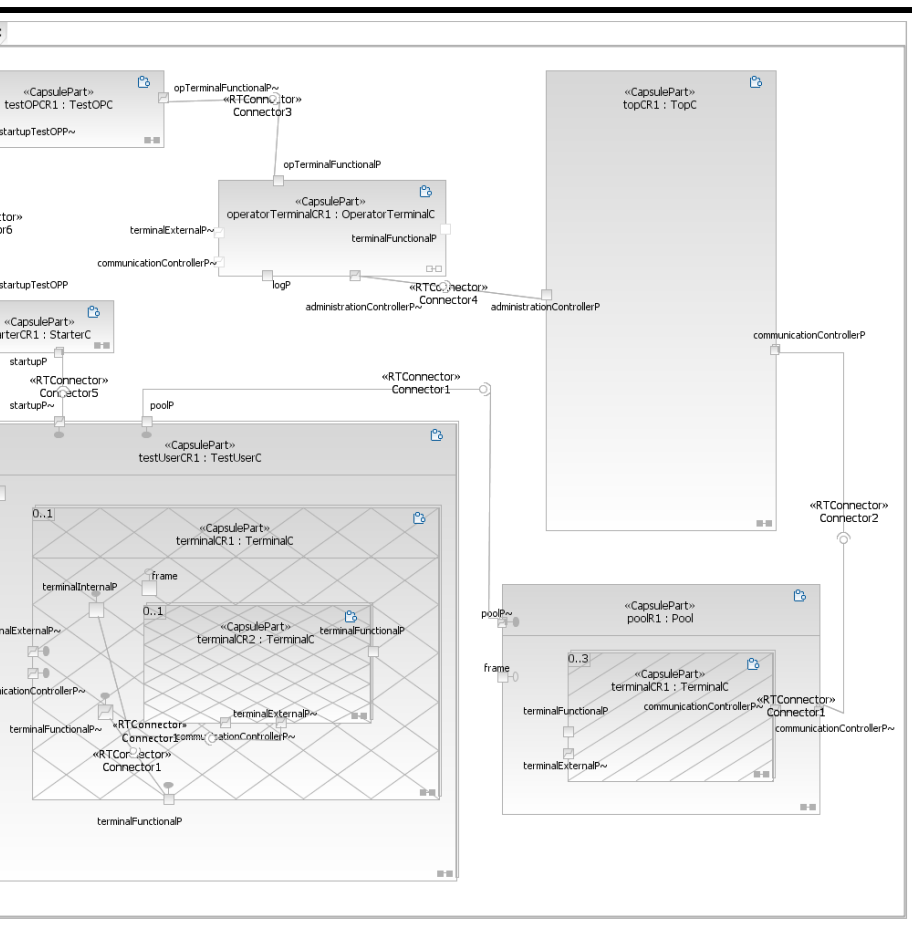
Lindholmen, Göteborg
Sweden

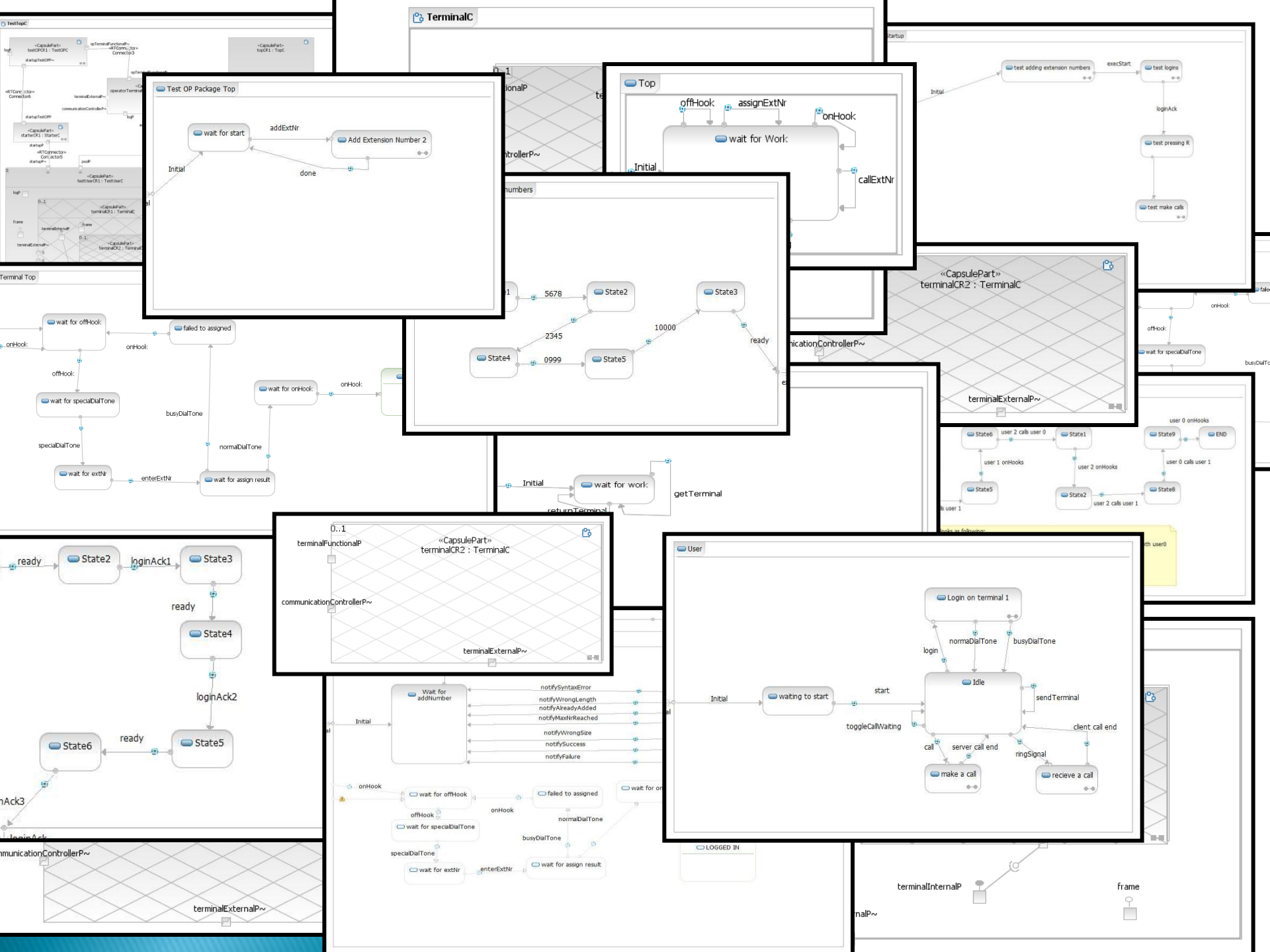


Problems addressed

- Complex 2D models not comprehensible
 - Model hierarchy not visible in diagram view
 - Information overload
- 

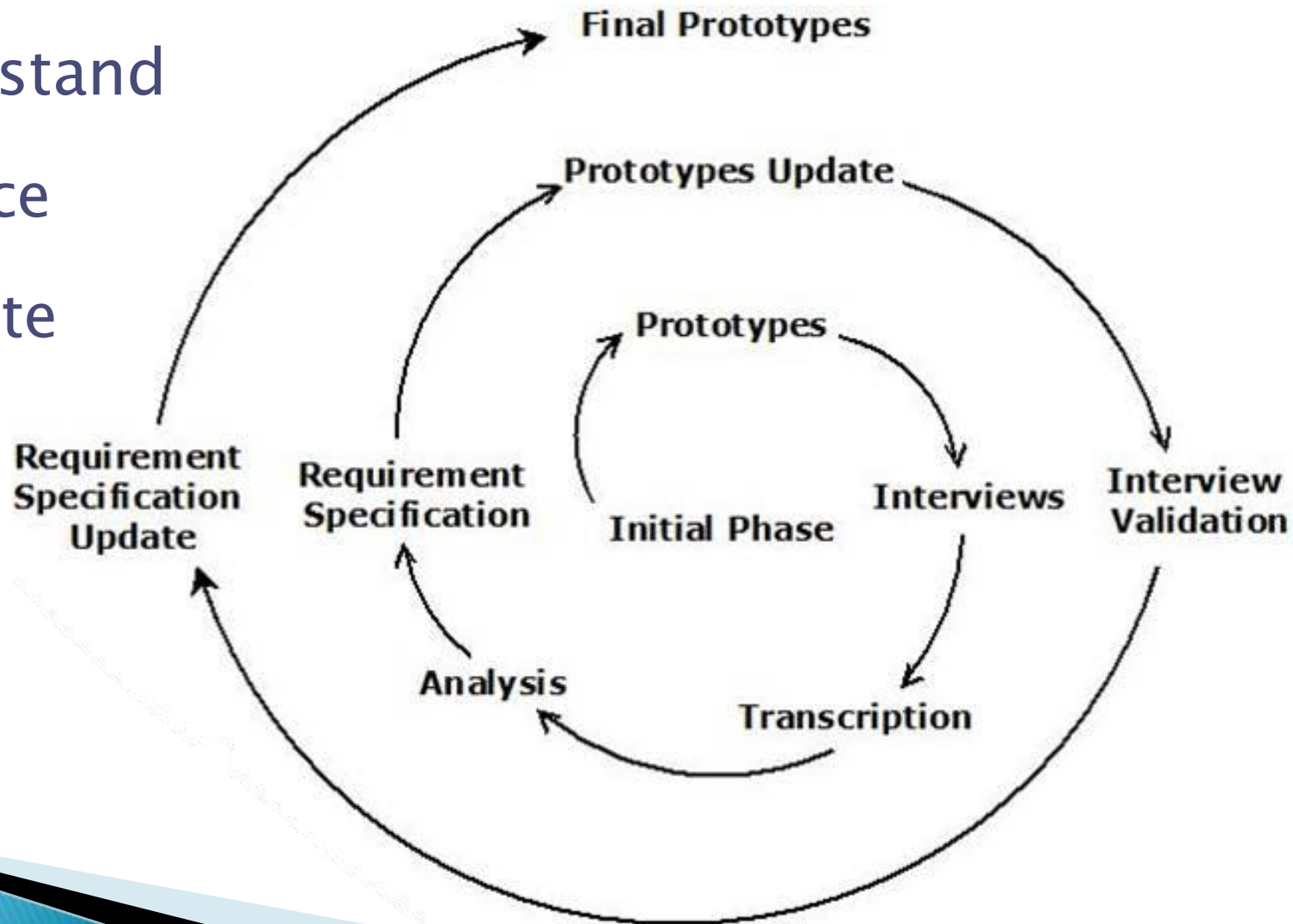
Example Model





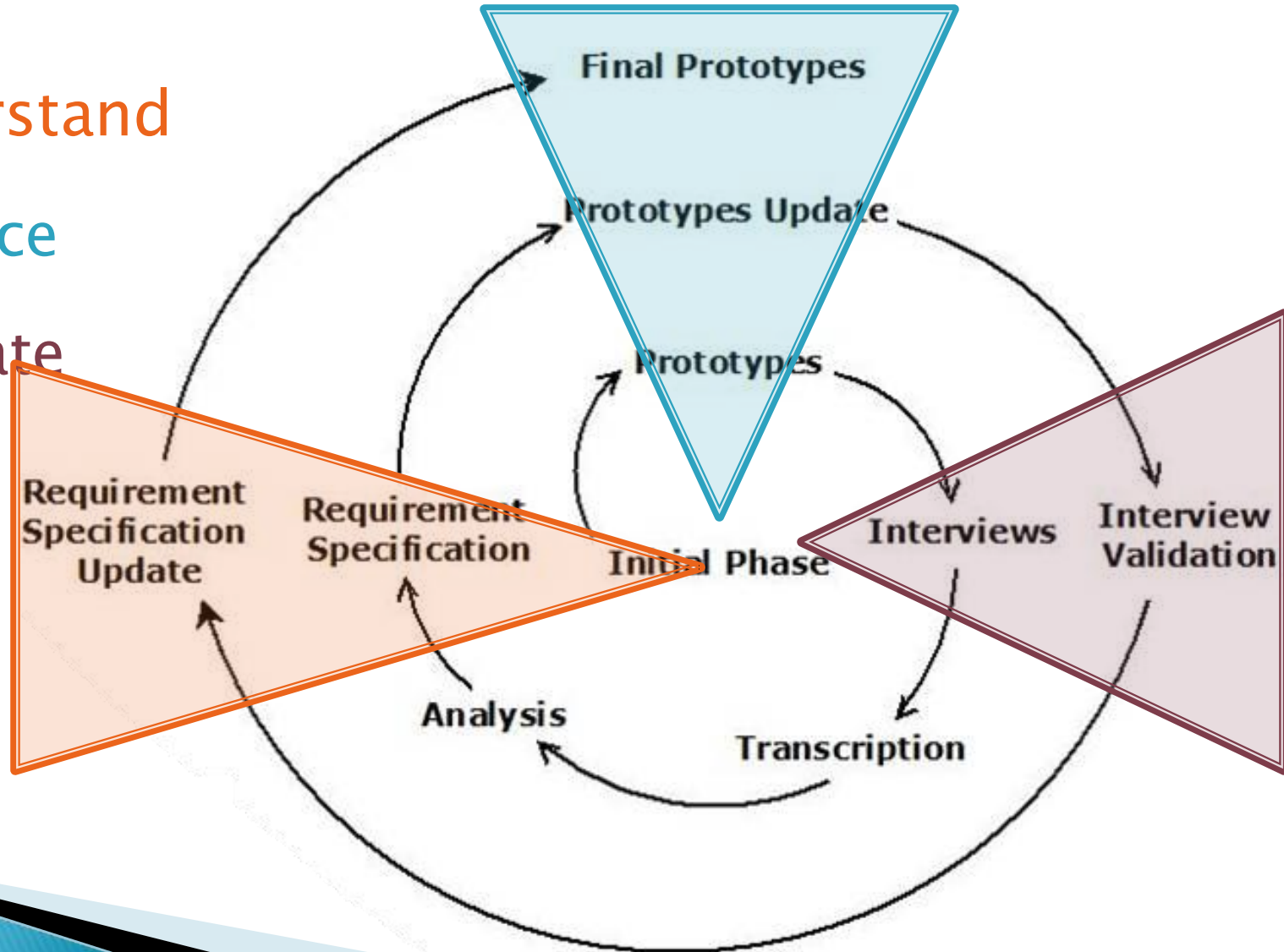
Our Approach: Rapid Prototyping

- Understand
- Produce
- Evaluate



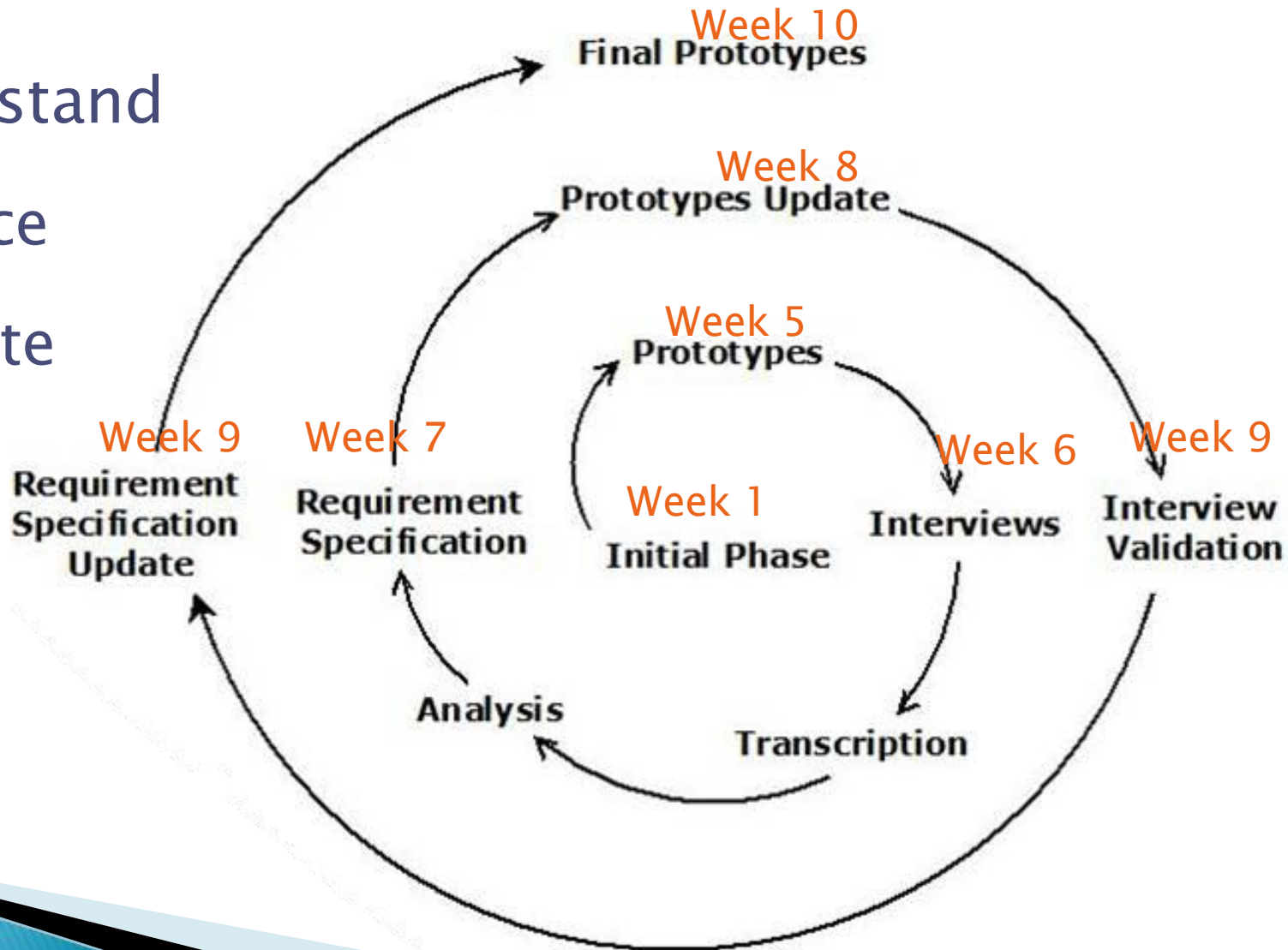
Our Approach: Rapid Prototyping

- Understand
- Produce
- Evaluate



Our Approach: Rapid Prototyping

- Understand
- Produce
- Evaluate



Requirements

Visualization

- R6 The diagram itself shall be visualized in 3D, using the space more efficiently
- R7 Structure diagrams and state diagrams shall be visualized in the same view

Filtering

- R9 The user shall be able to dynamically filter on any terms needed
- R13 Expanding the collapsed hierarchies shall be done by double clicking on the symbol

Navigation

- R20 Via a keyboard combination it shall be possible to switch focus between referenced and referencing diagrams
- R22 One shall be able to rotate the model

2D/3D Mode

- R27 Switching between 2D and 3D mode shall be possible
- R29 One shall be able to edit models in 3D; the changes shall be visible in 2D as well

Search


- R31 When a search is conducted all occurrences related to the model element shall be highlighted
- R33 When search result has only one hit, that one hit shall be put into focus

Final 3D Prototypes

DEMO



Feedback from Ericsson Modelers

- ▶ “3D will benefit everyone who uses model based development and would like to see the structure of things”.
 - ▶ “Intuitive”
 - ▶ “Eases the understanding of model’s hierarchy”
- 

Problems

- Complex 2D models not comprehensible
- Model hierarchy not visible in diagram view
- Information overload

Conclusions

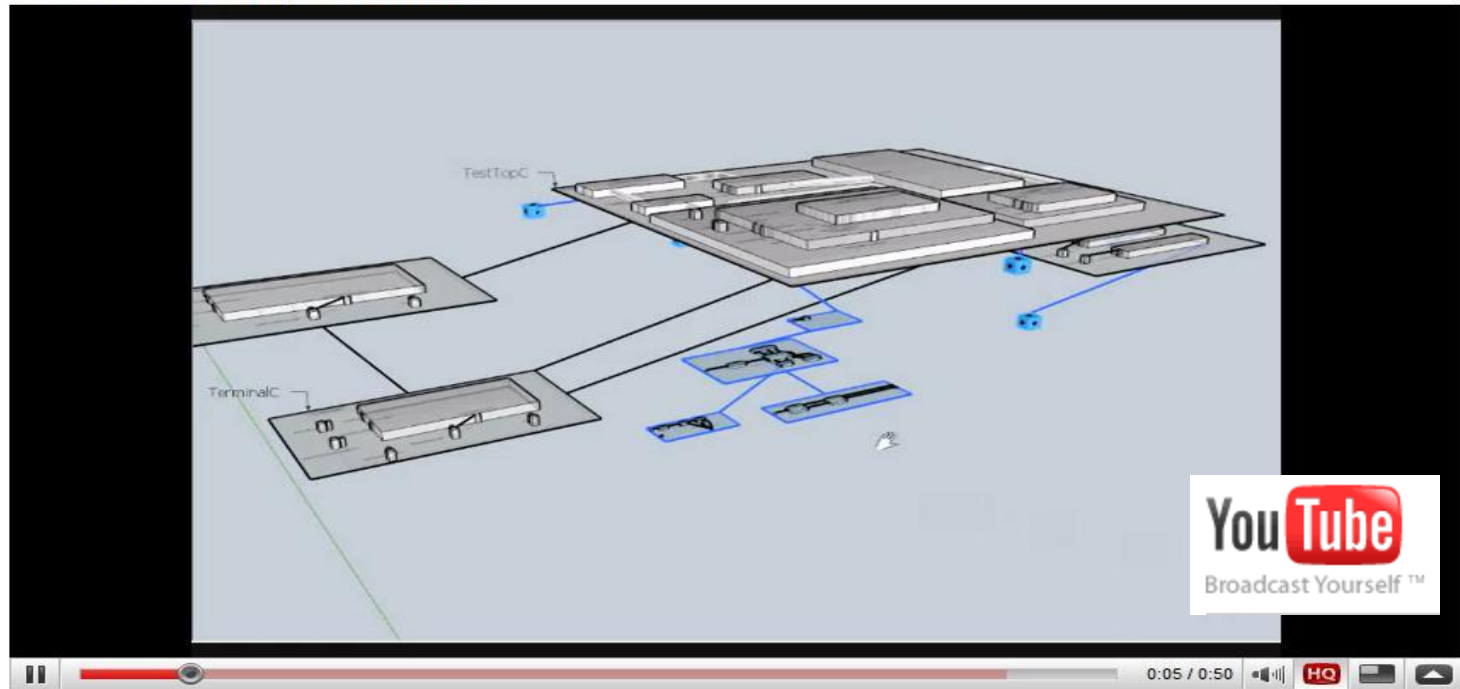
- Moving to 3D gives significant improvement
- 3D can show model hierarchy and diagrams in the same view
- Filtering reduces cognitive load

Further information

Email us at:

anne-katrin@spray.se or tuss@linux.se

3D UML for Model Comprehension



www.youtube.com/watch?v=OslQnLQ3ADk