Visual Comparison of Graphical Models

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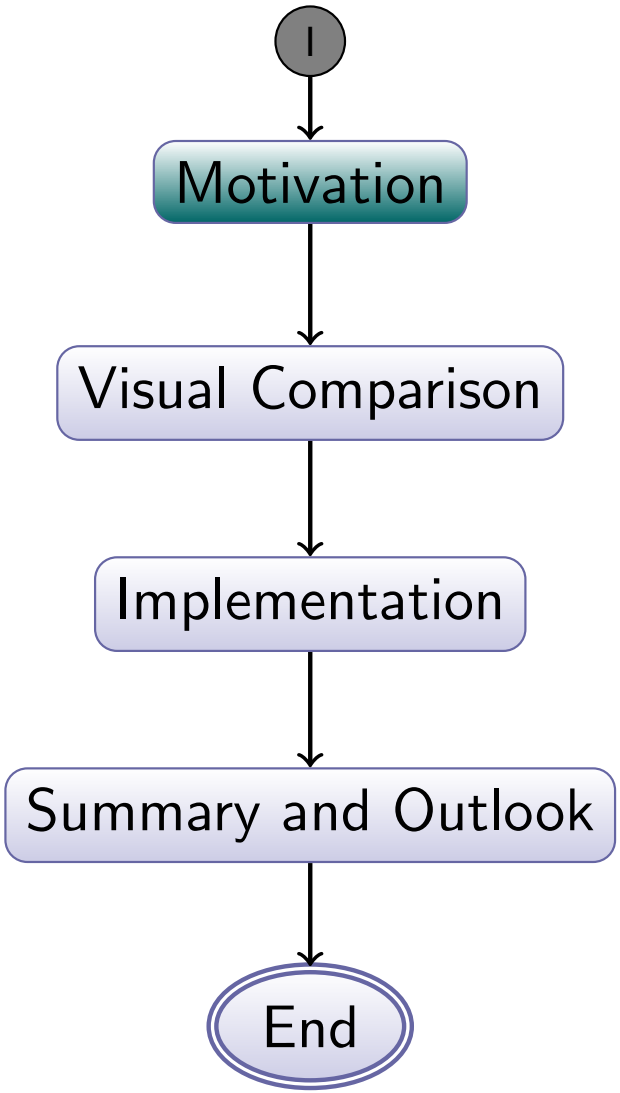
UML&AADL'09

Outline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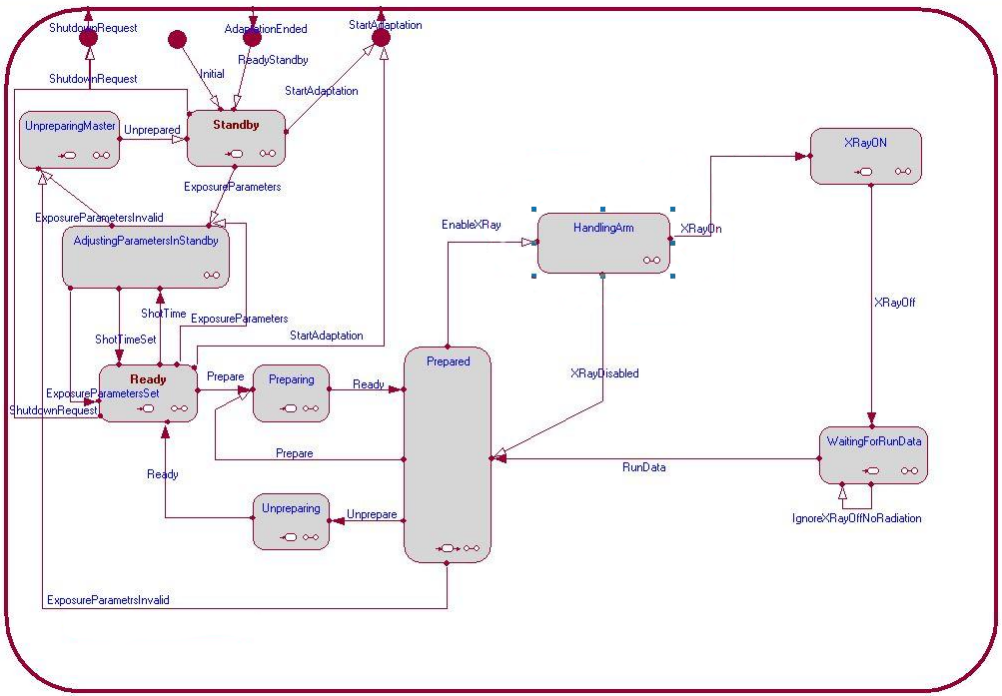

Screenshot of a real model from a project, Version 1

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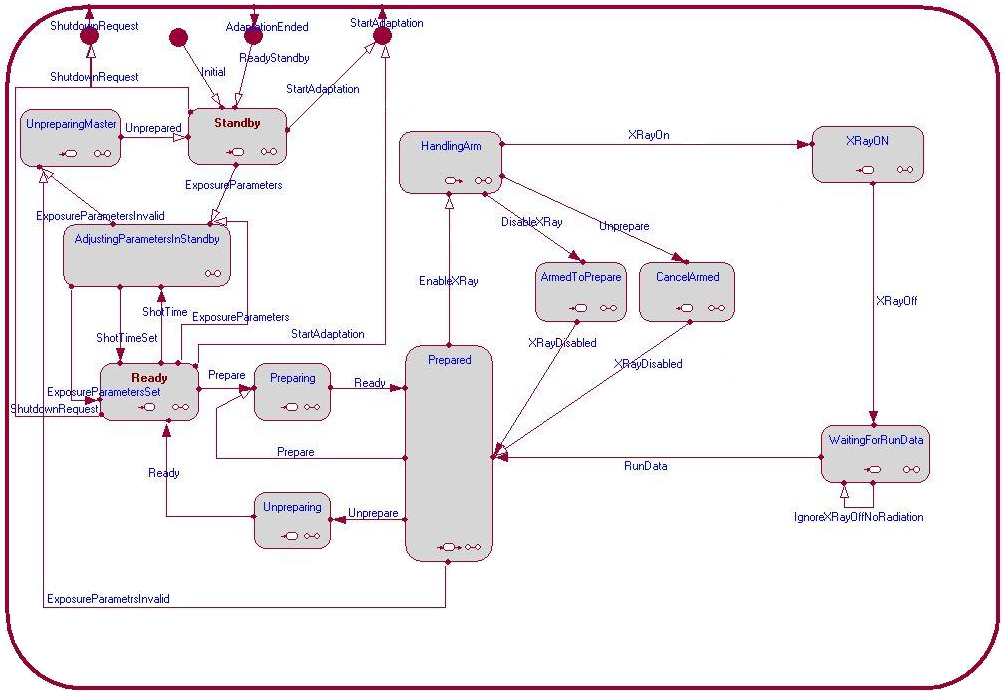

Screenshot of a real model from a project, Version 2

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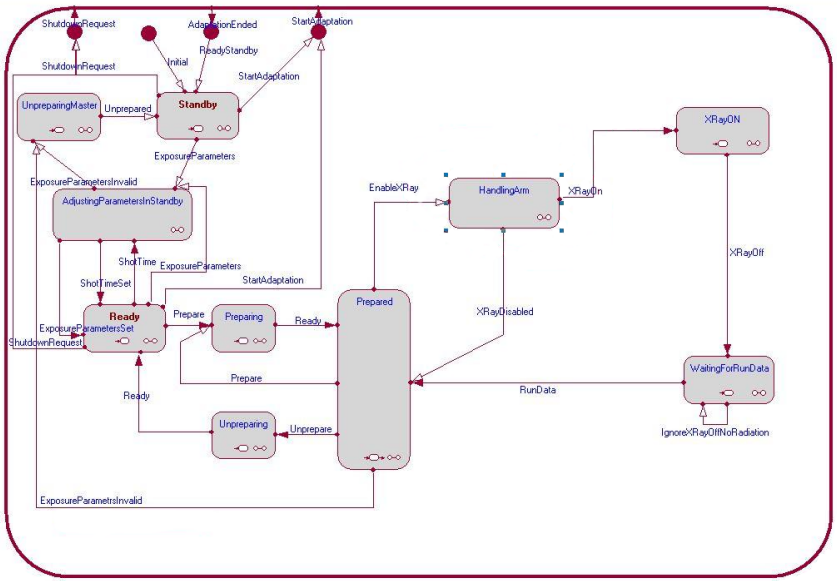

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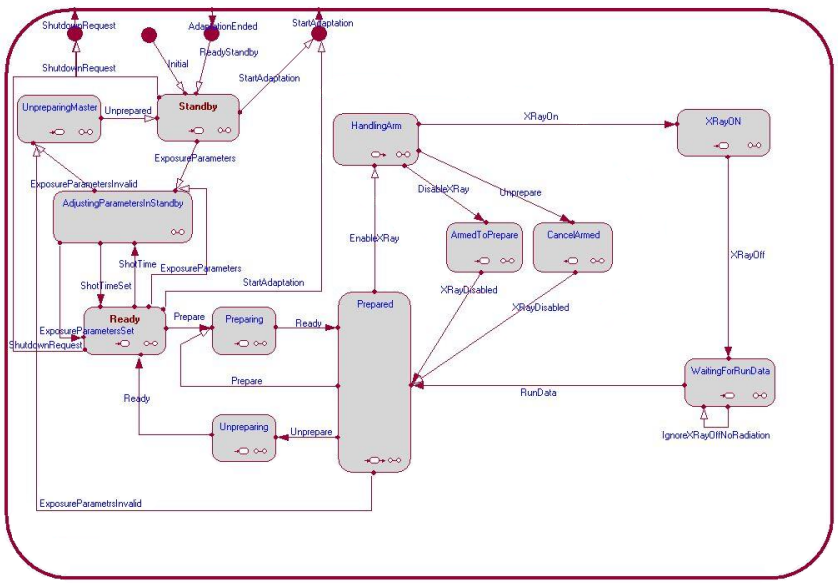

Screenshot of a real model from a project, Version 2

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- Develop means to aid the user in performing a real **visual comparison** of graphical models.
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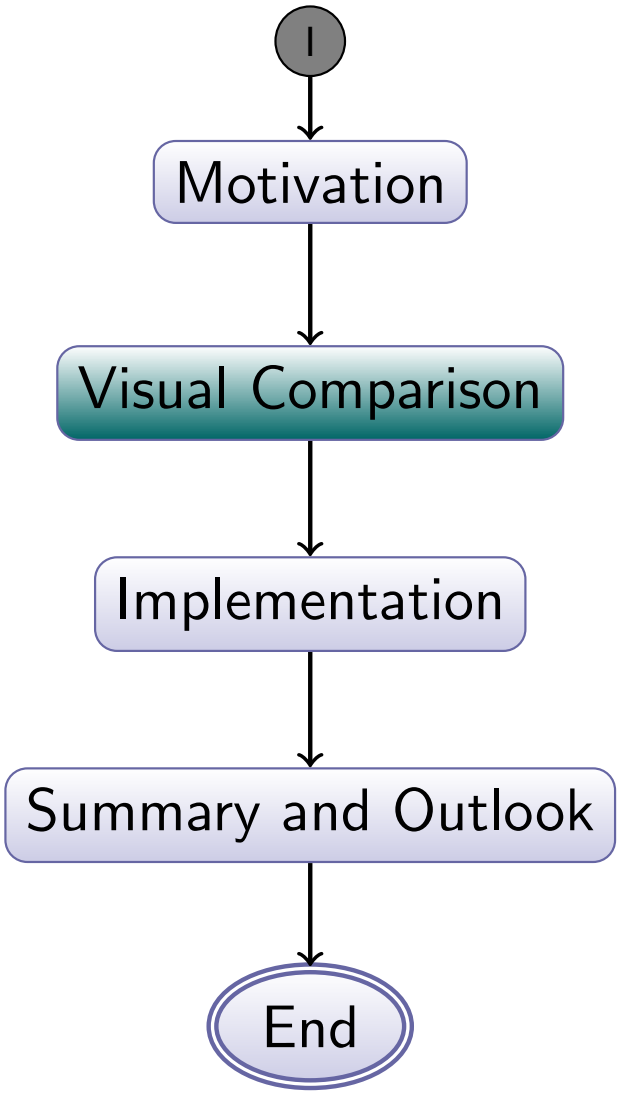
Method:

- Identify and improve those drawbacks.
- Implement as Eclipse plug-in using existing techniques where appropriate.
- Use generic approach to cope with various graphical languages.

Outline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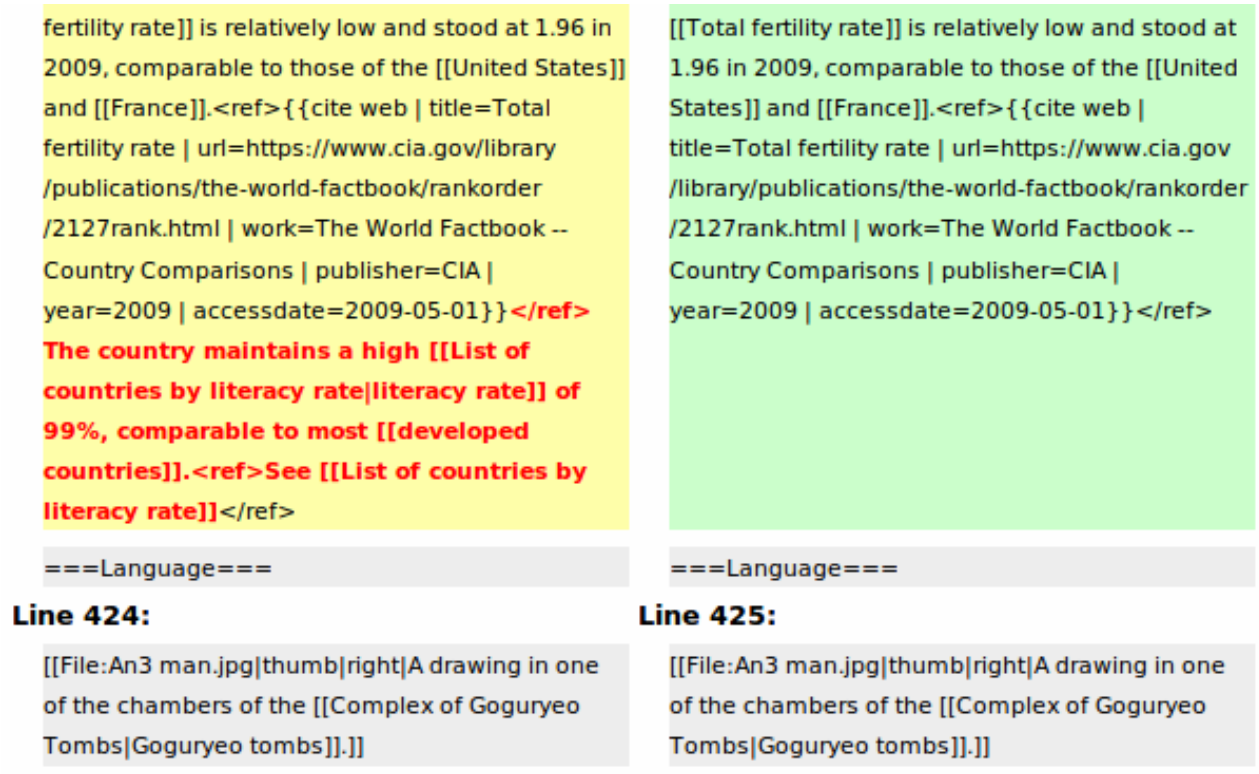

Figure: Two article versions in Wikipedia

Visual Comparison

Common comparison of graphical models:

- Generate a textual description of the changes.
- Is sometimes structured, but ...
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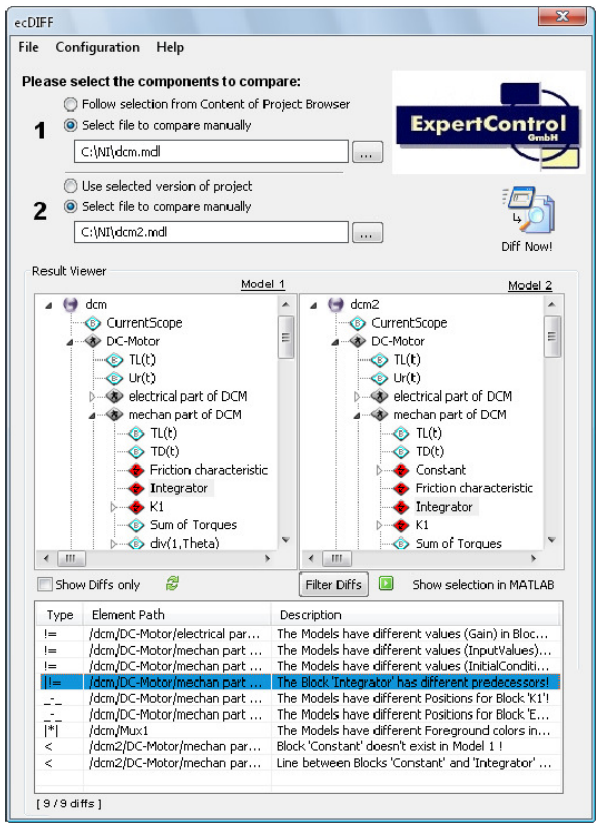

Figure: Model diff of Expert Control

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Visual comparison:

- Show the changes in the graphical model itself.
- Prevents the user from switching between text and graphical model.

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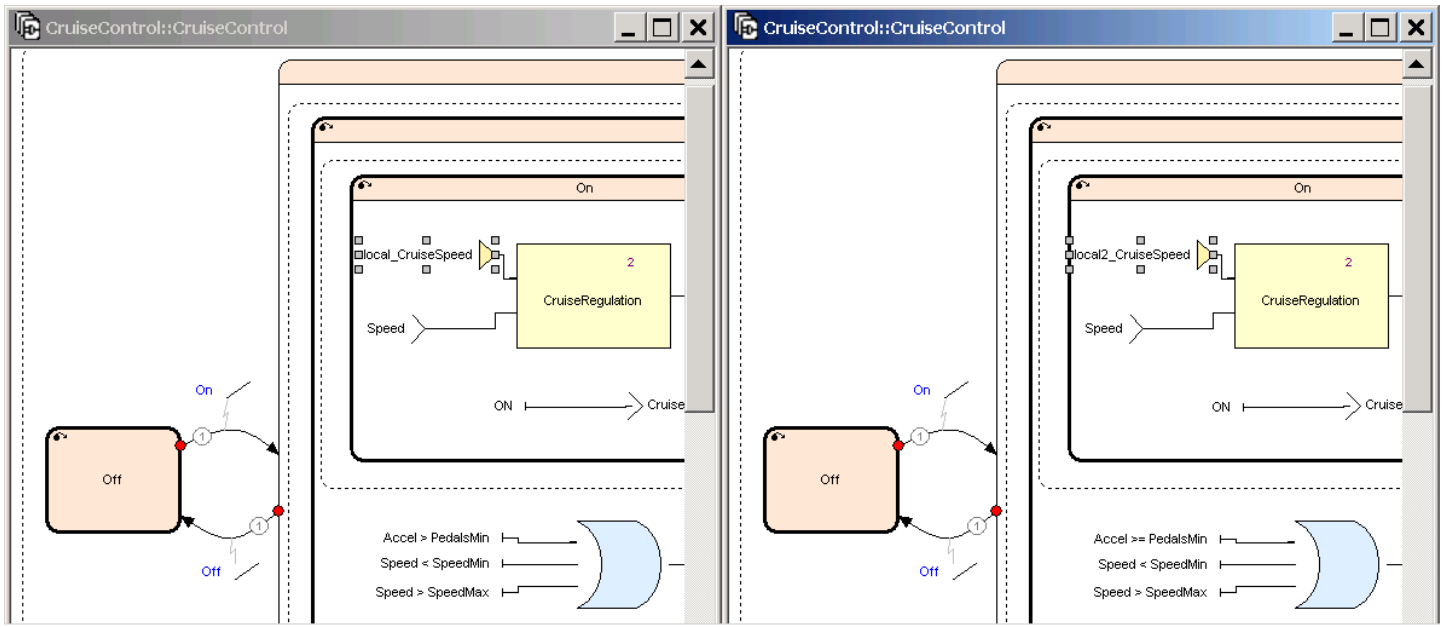

Figure: Scade model diff

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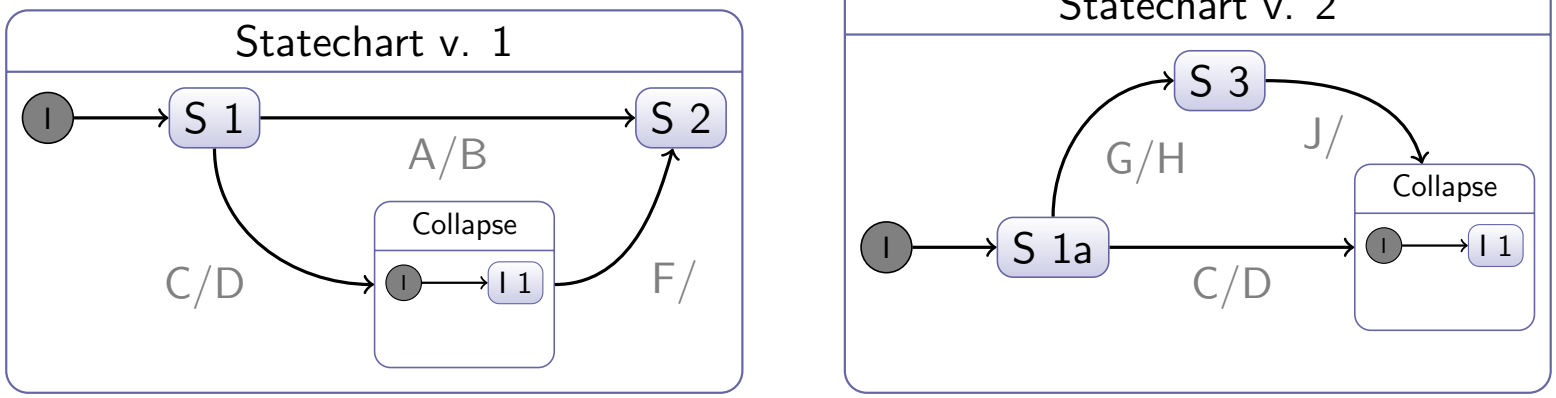
- Alter the layout or leave it intact?
- Does a readable automatic layout help?

Visual Comparison

The two versions of the model:



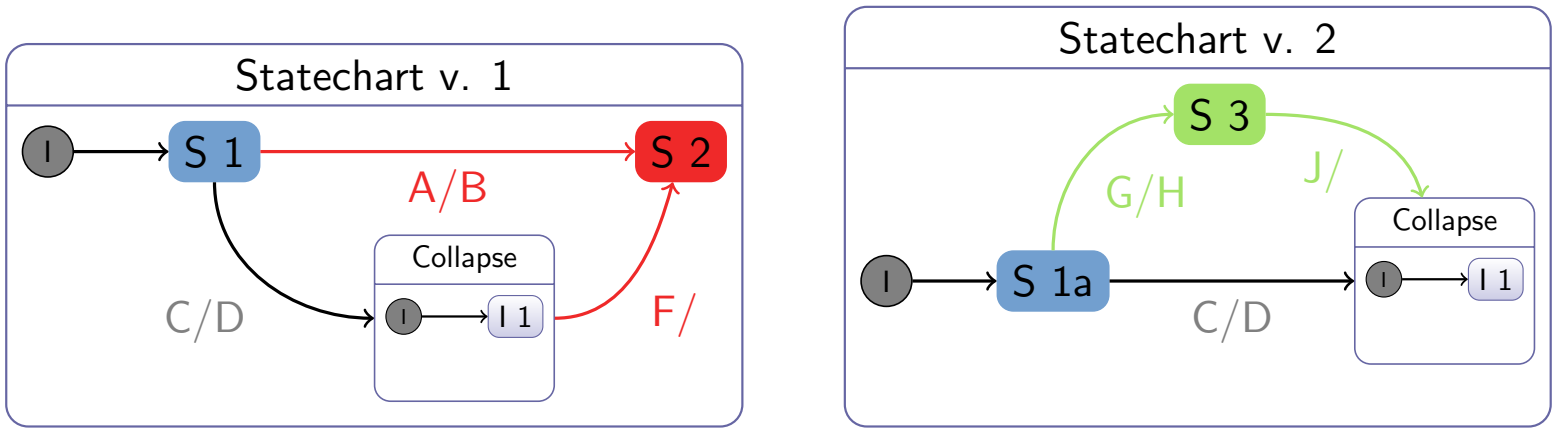
(a) Version 1

(b) Version 2

Figure: The two original versions of the example diagram.

Visual Comparison

Possible representation of the changes 1:



(a) Version 1

(b) Version 2

Figure: Plain visual diff. Color legend: green/additions, red/deletions, blue/changes.

Visual Comparison

Possible representation of the changes 3:

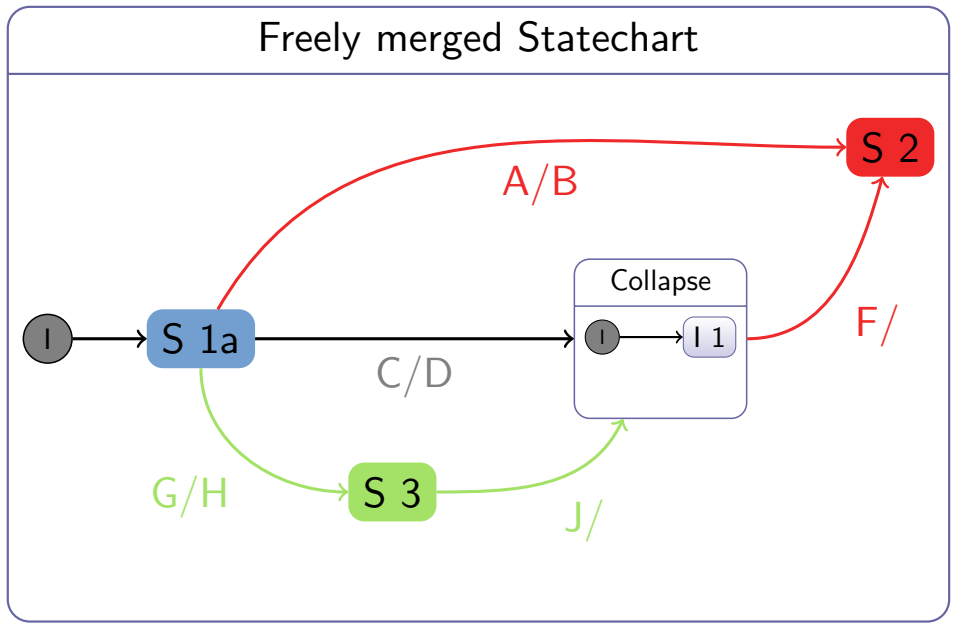


Figure: Freely merged visual diff.

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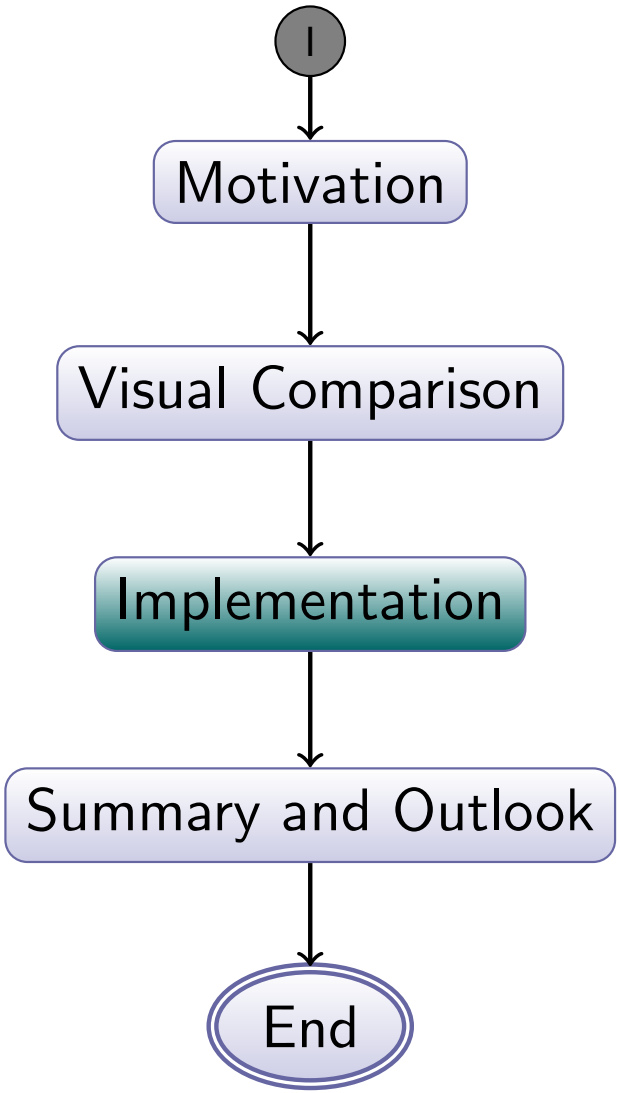
- Non graphical changes (e.g. of properties) are also displayed; blue in the previous slides.

Outline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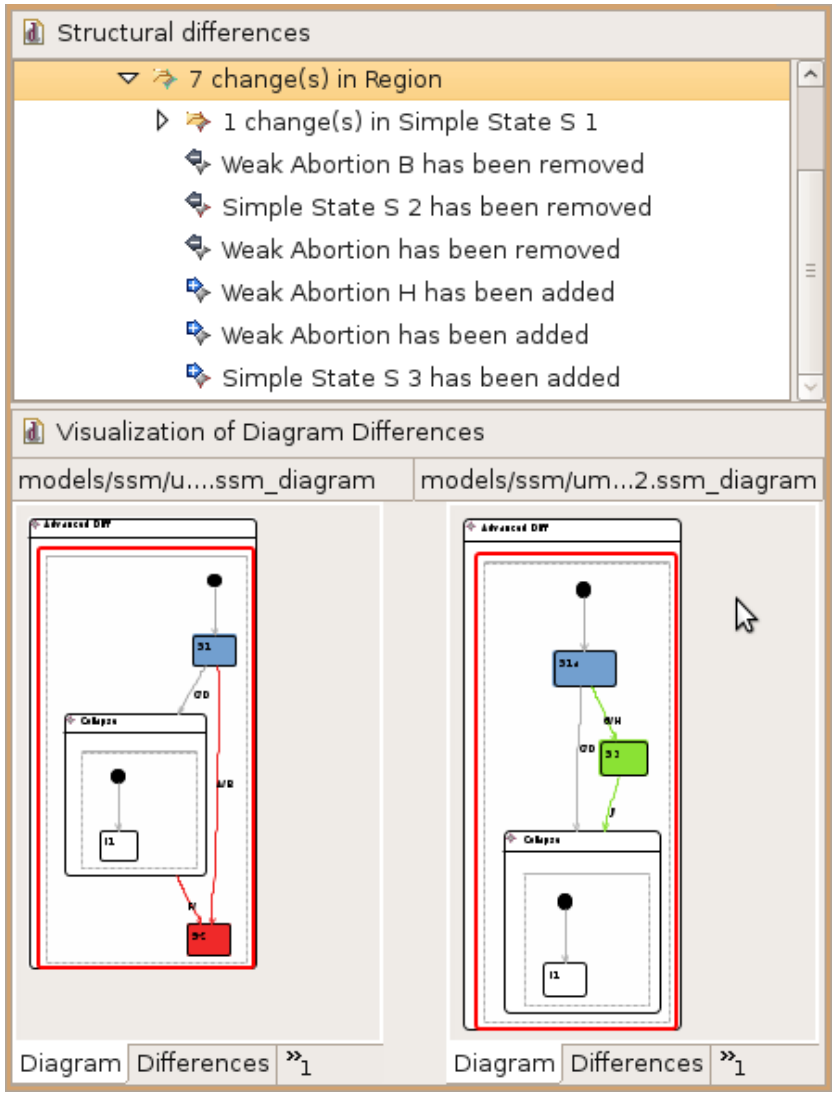
  - Use third panel on top to display just the structural changes textually (like EMF Compare).
  - Equip the comparison view with means to navigate and zoom.
  - Collapse composite items with no changes inside (a layout algorithm is needed then) .

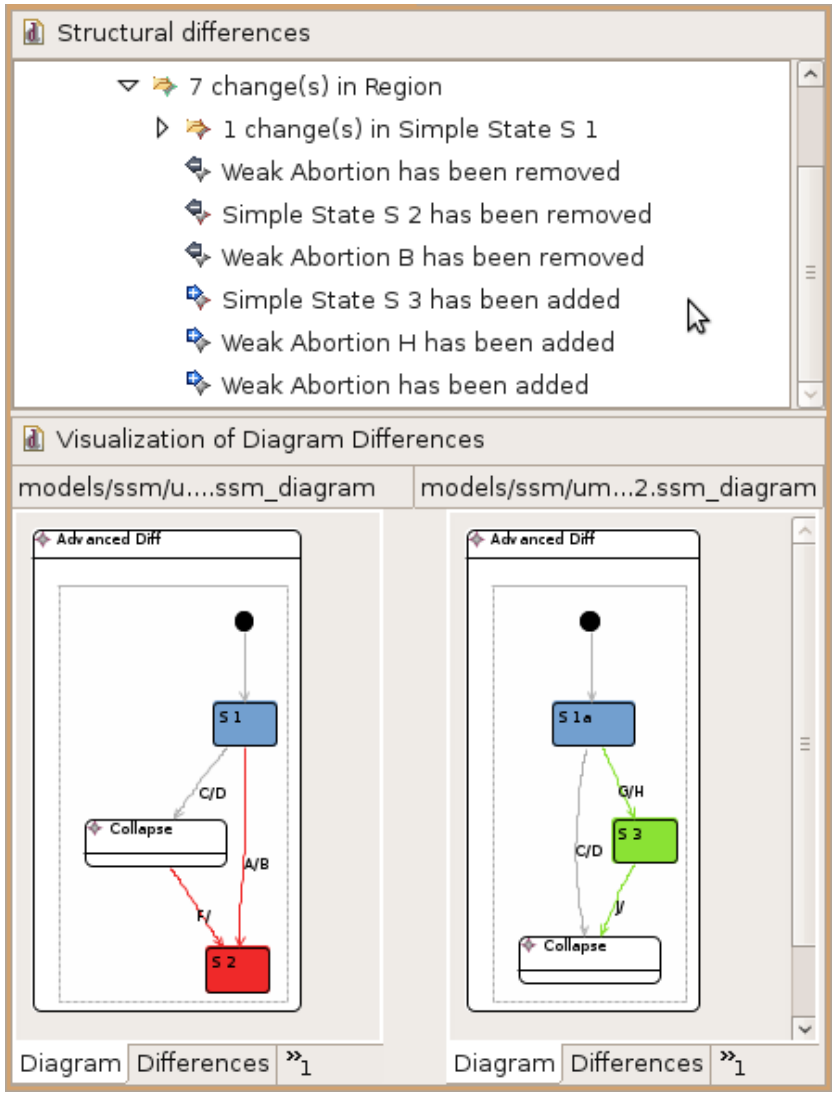
Implementation

General implementation:



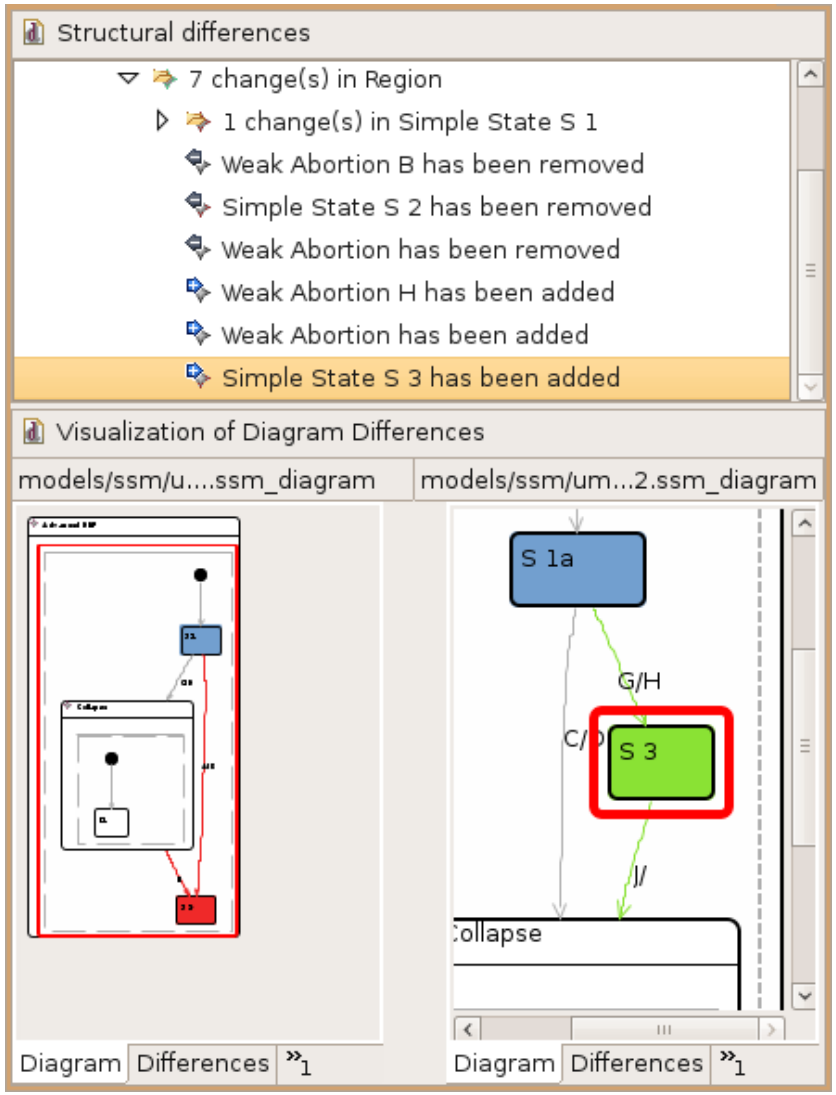
Implementation

Example of collapsing:



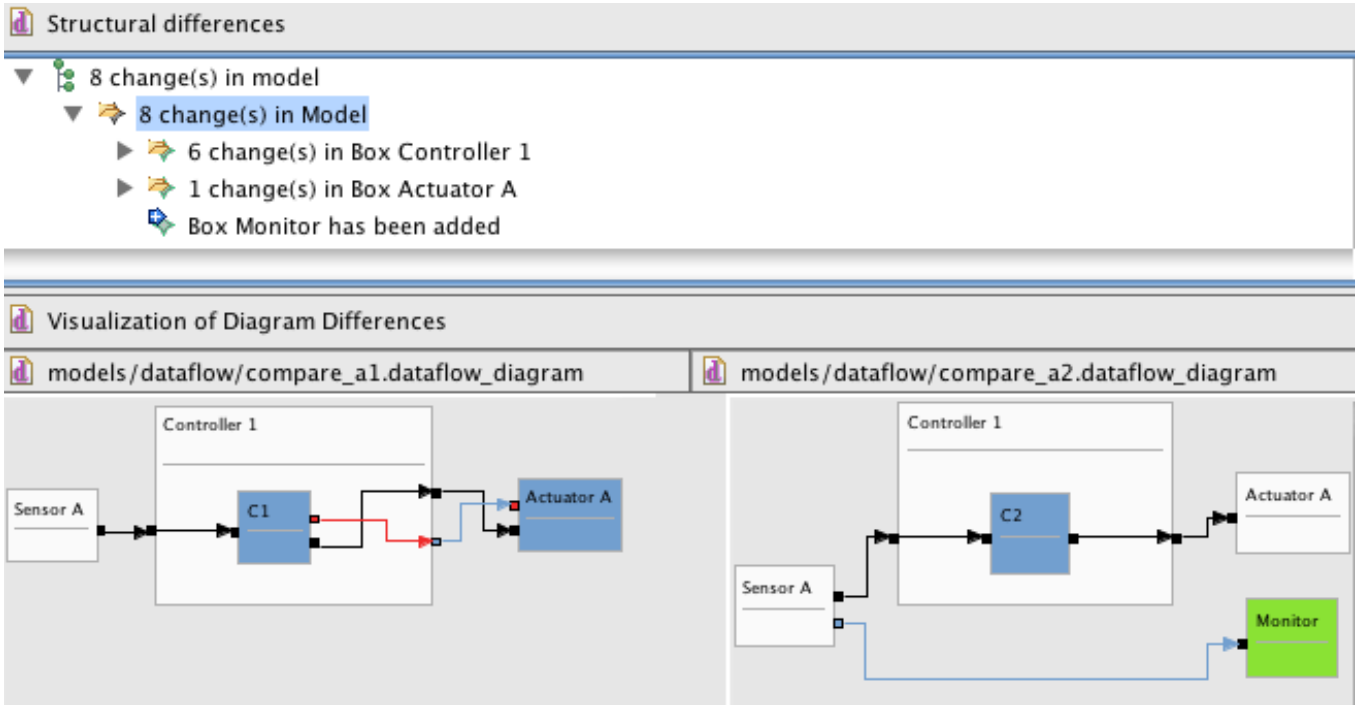
Implementation

Example of automatic zoom:



Implementation

Comparison of Dataflow models:



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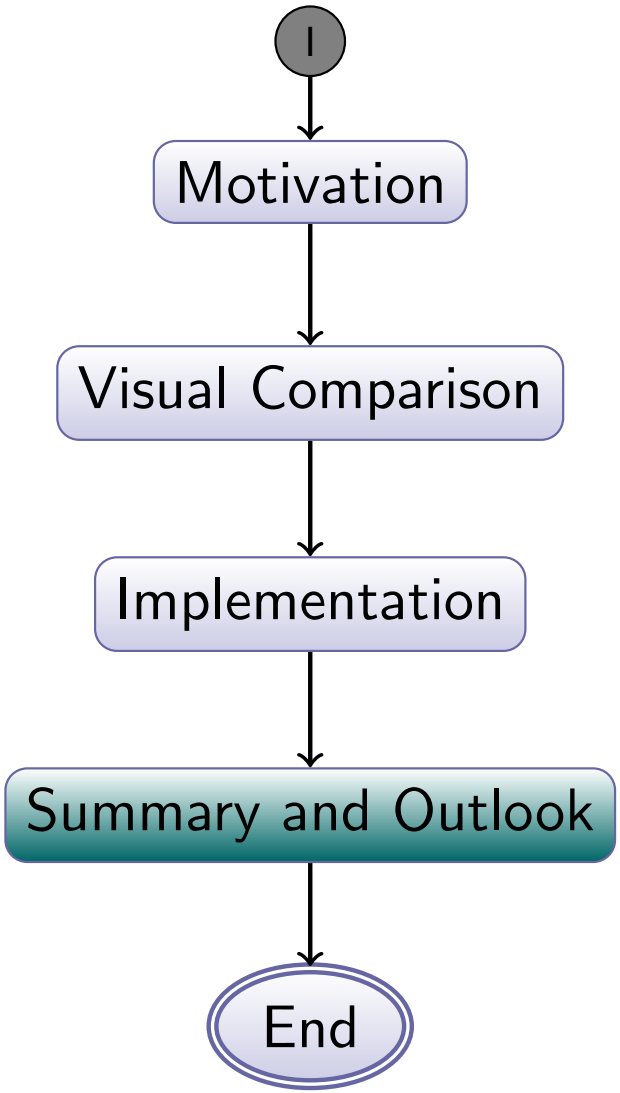
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Summary and Outlook

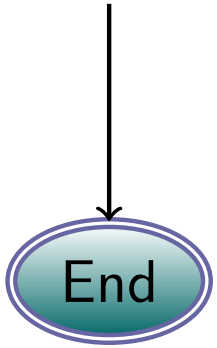
Feedback:

- Students and professionals gave an overall positive feeback for this approach.
- Representation directly in the diagram seen as benefit.
- Visualization of small (or invisible) changes very useful.
- User interface with collapsing, panning and zooming intuitive.
- Generic approach enables support for various diagrams with none or little adaption.

Summary and Outlook

Outlook:

- Large models are still challenging; time for comparison as well as navigation.
- Next step would be to support merging graphically.
- Maybe implement also the other approaches presented to see how they perform.



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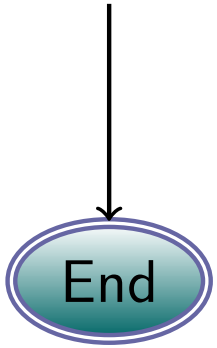

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