Object-Oriented Systems Engineering Method (OOSEM)

Reference Example

To-Be Model

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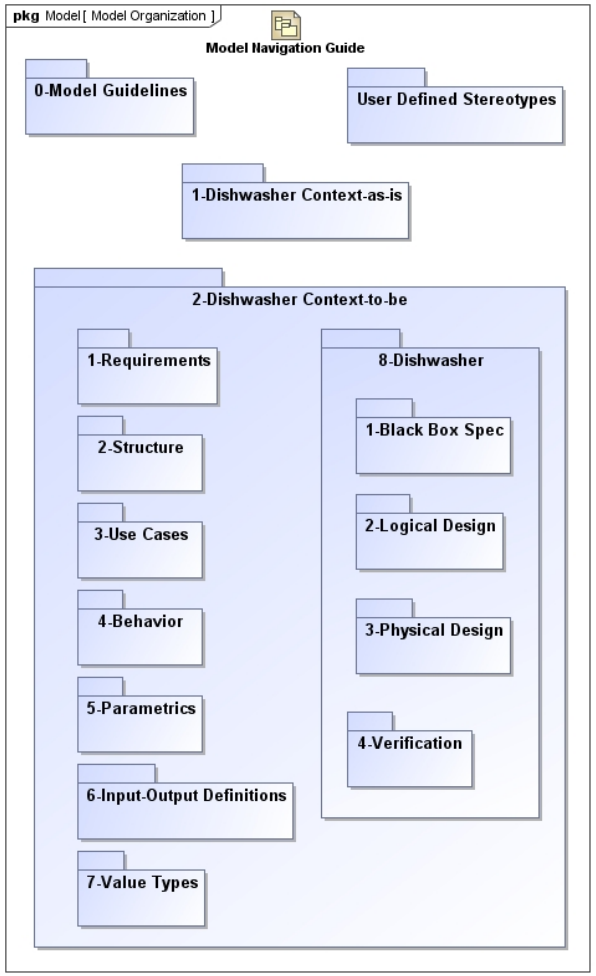
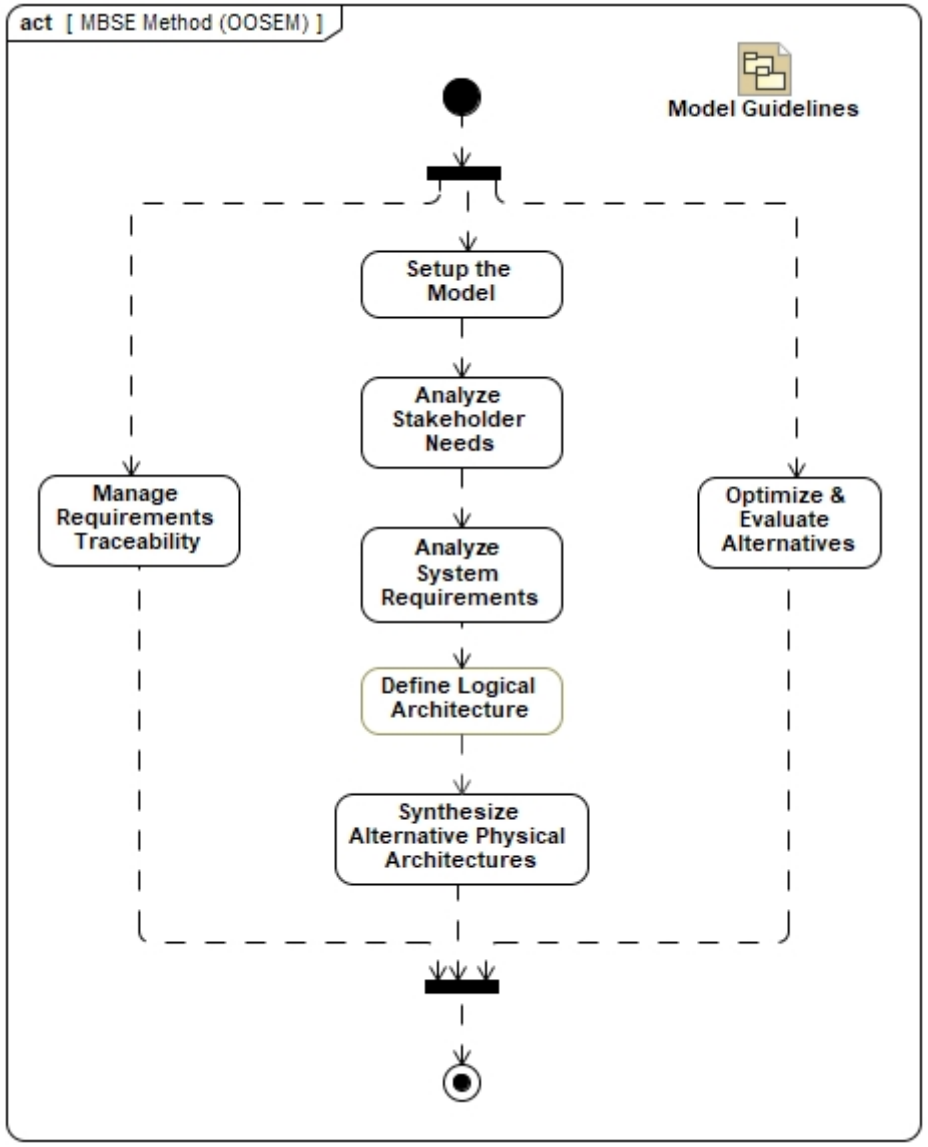
Model Organization

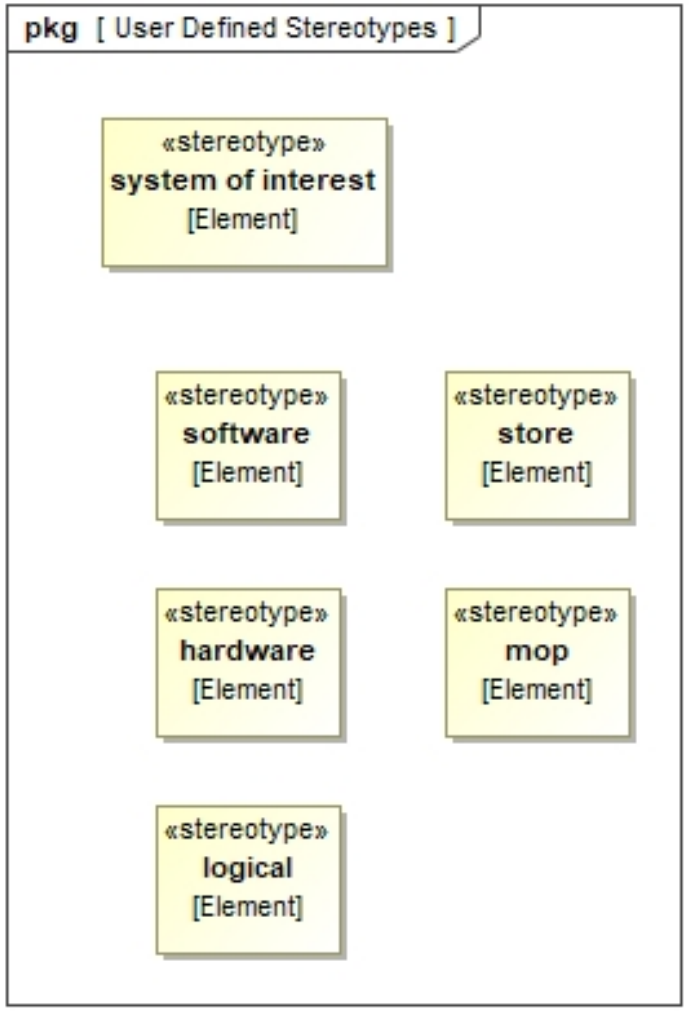


Model Guidelines

- Includes OOSEM Process



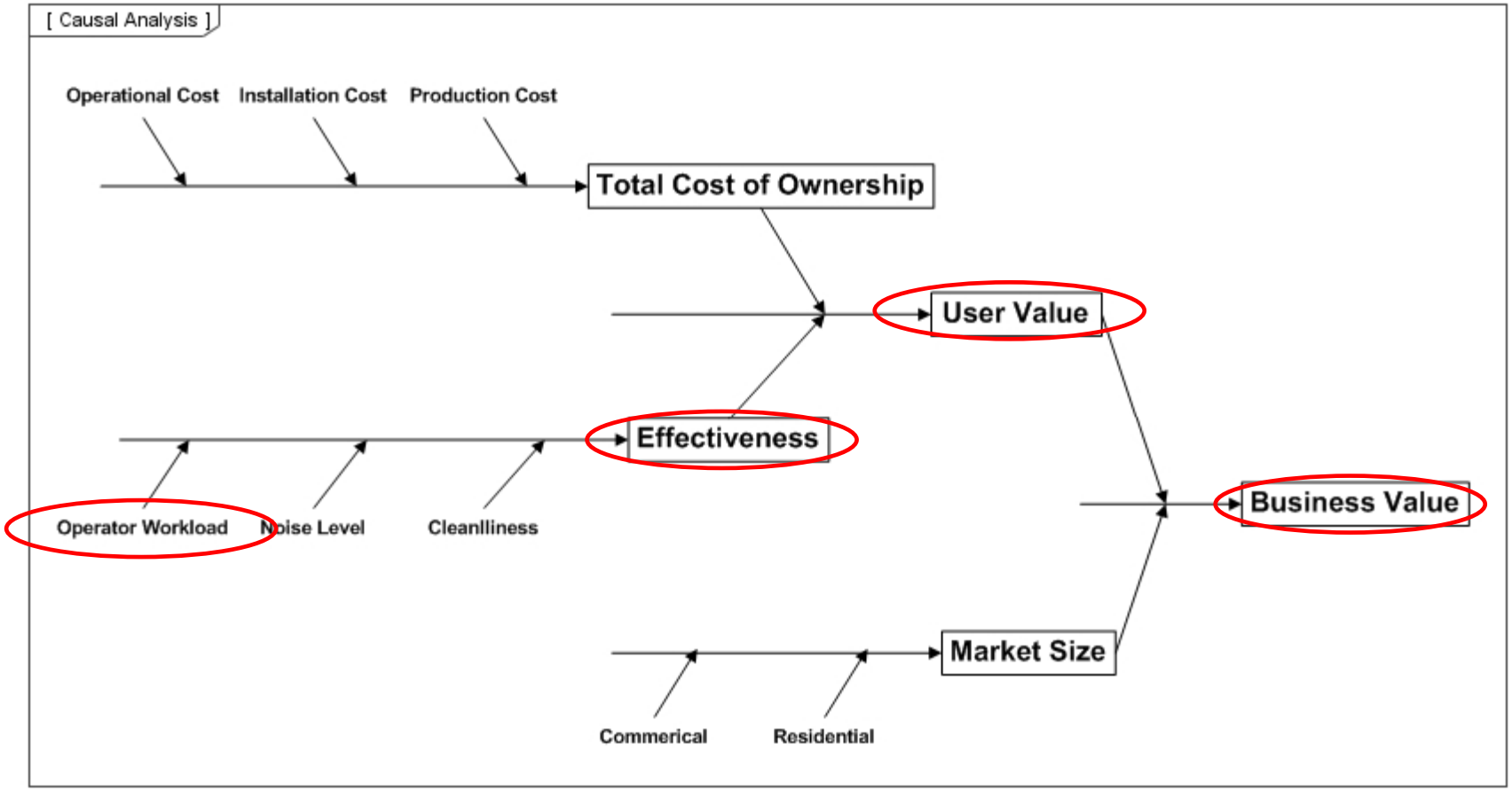
OOSEM Profiles Package
User Defined Stereotypes



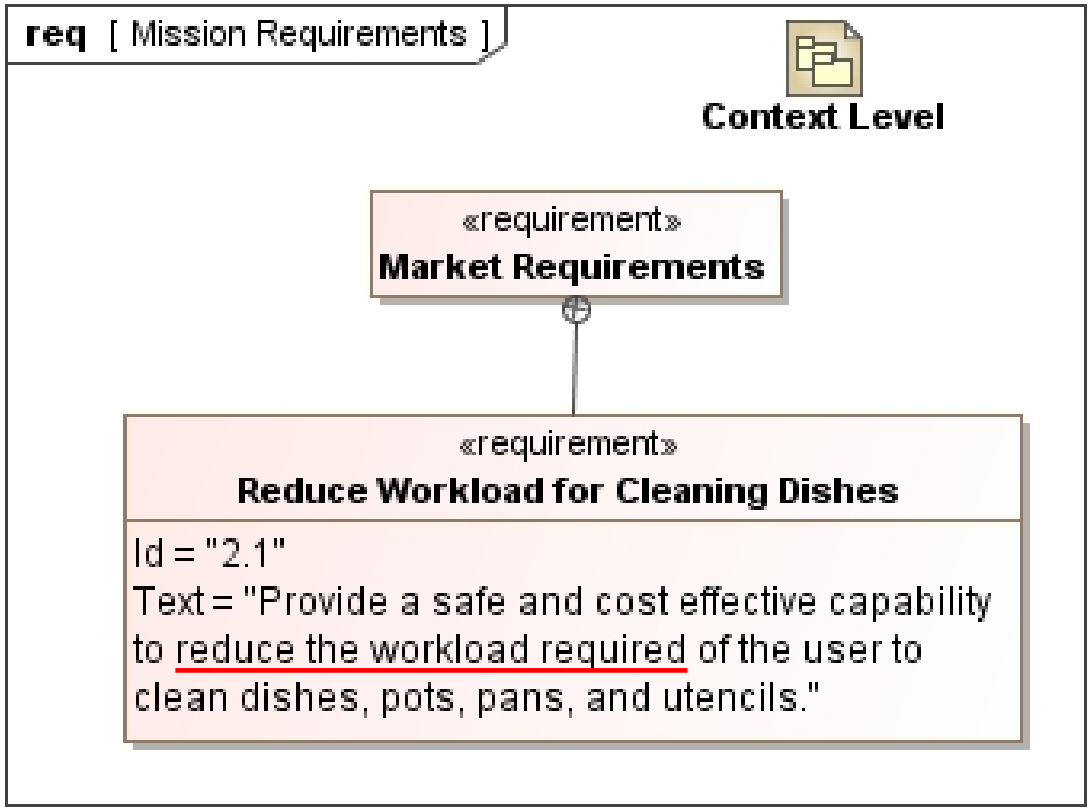
To Be Model

- Start by copying As-Is Model
- Then incrementally update as you proceed through OOSEM process

Causal Analysis

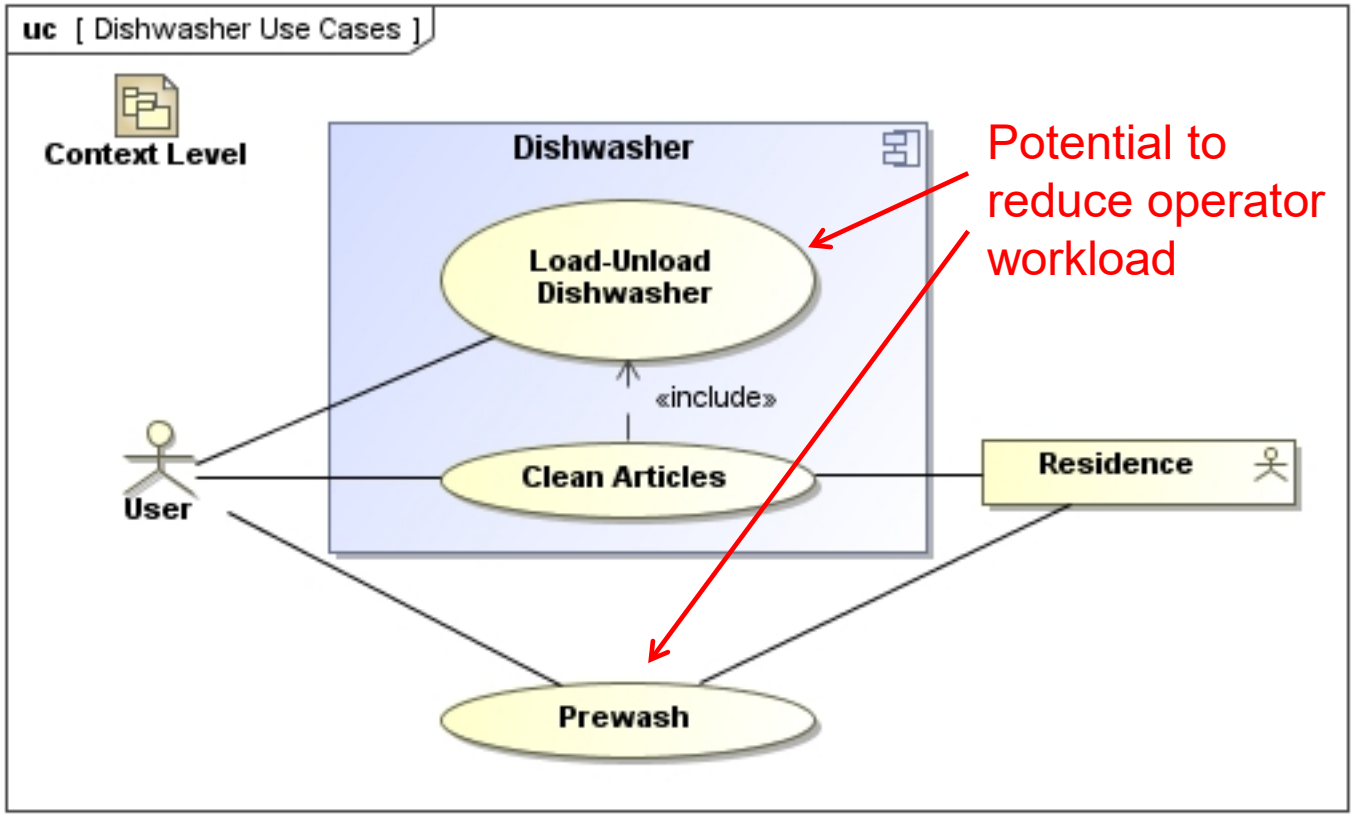


Mission (Market) Requirements

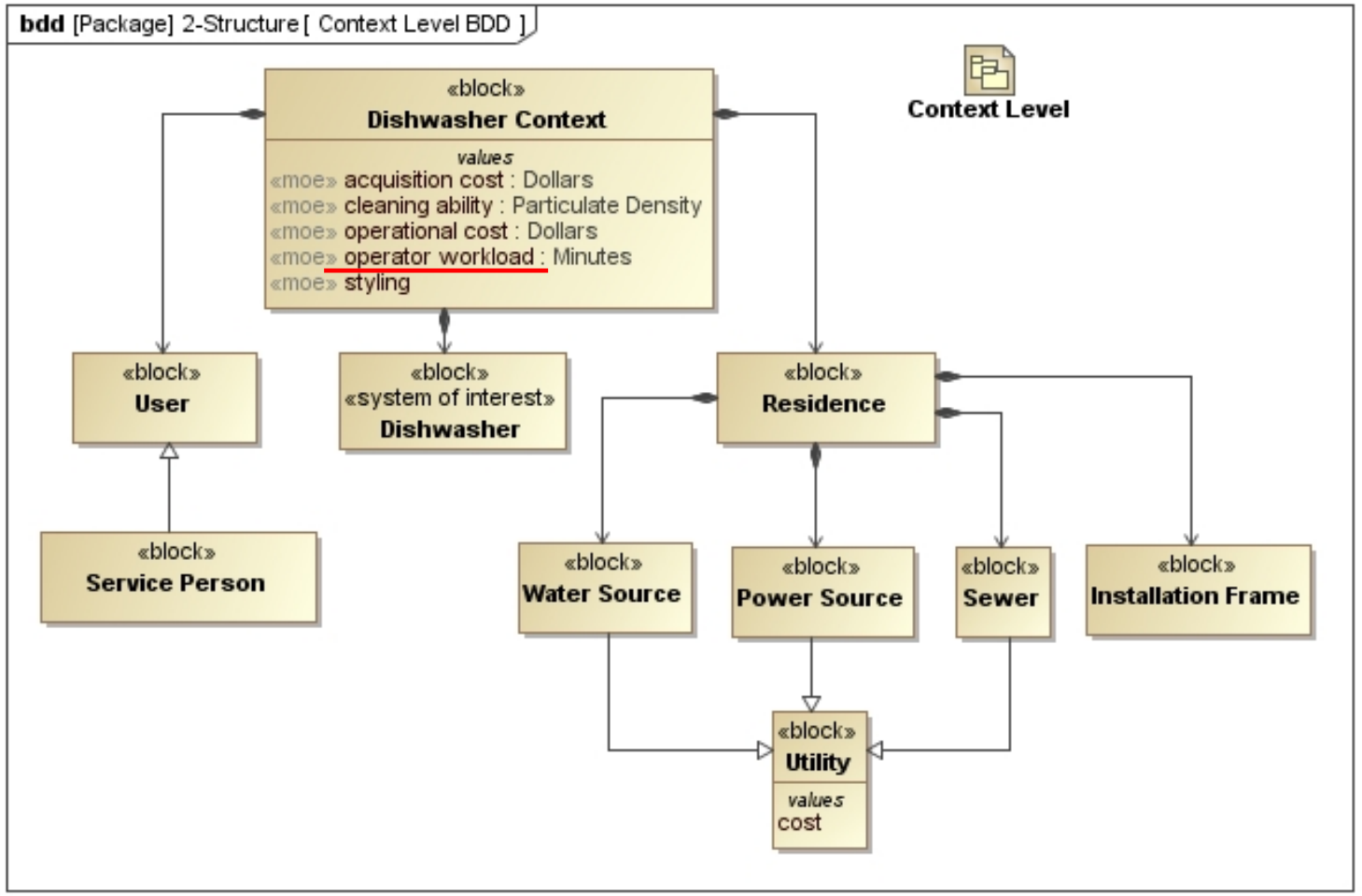


Mission requirements may be referred to as Market requirements for commercial applications

Dishwasher Use Cases



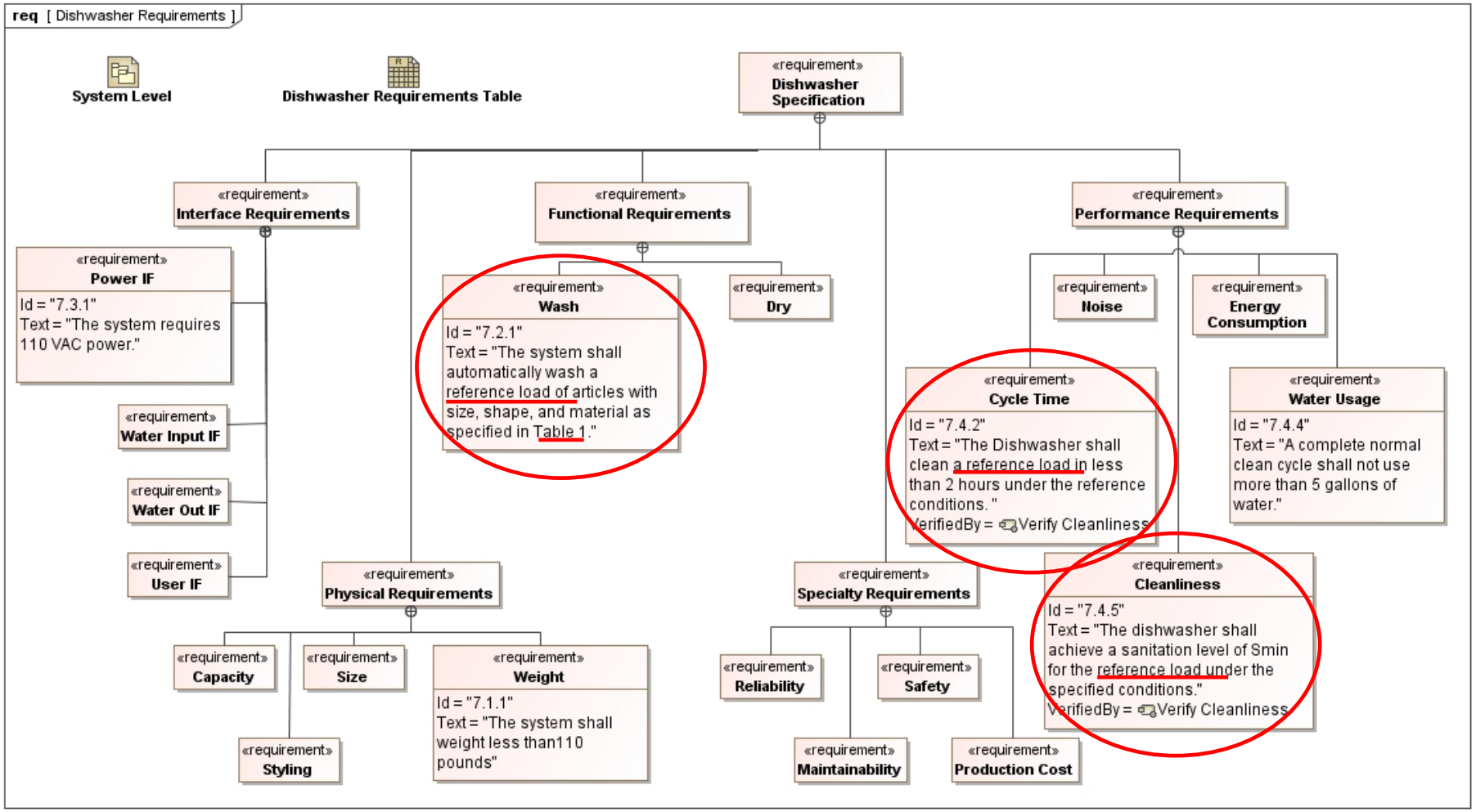
Top Level BDD



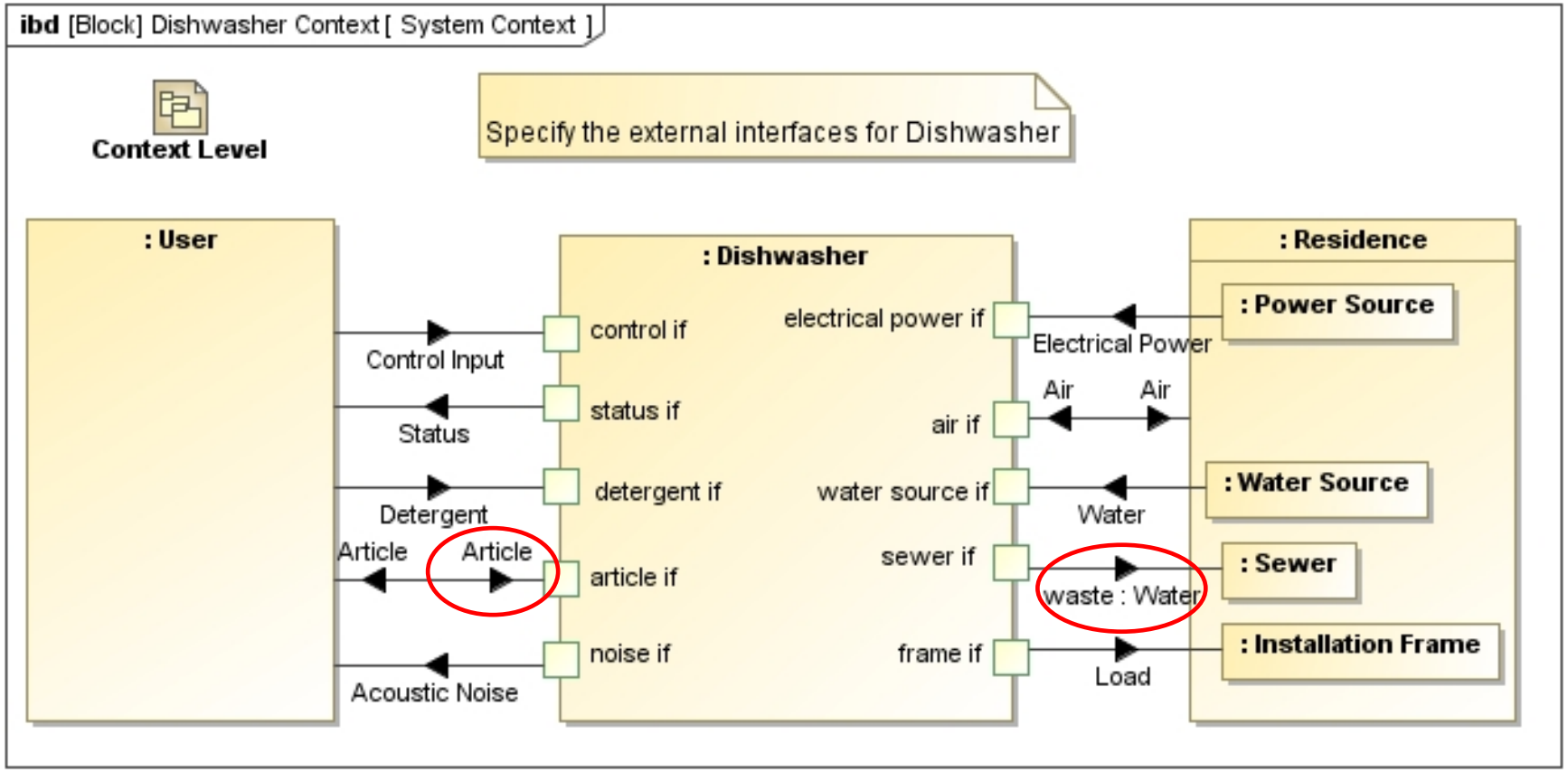
Proposed Approach

- Consider different ways to reduce the operator workload
  - Reduce the effort to add and remove articles (e.g., auto-load)
  - Reduce the effort to add detergent
  - Reduce the effort to prewash the articles
- Initial focus is on item 3)

Dishwasher Requirements
Potential Requirements Impact



Dishwasher IBD
System Context

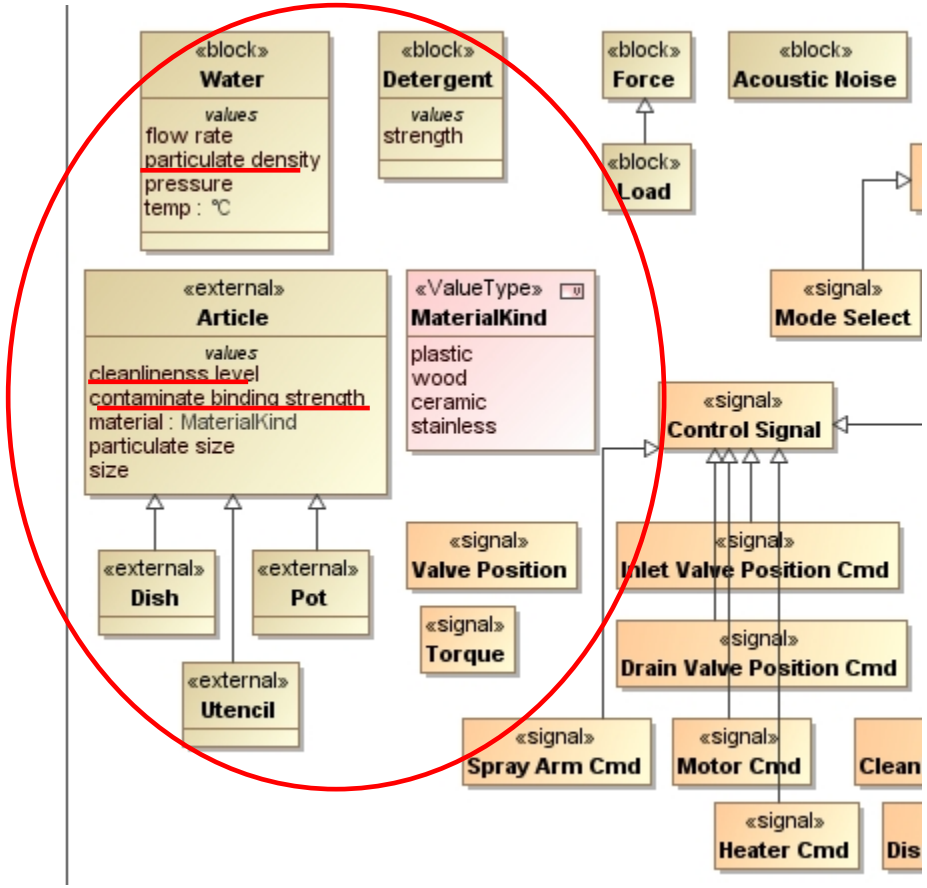


Prewash not required

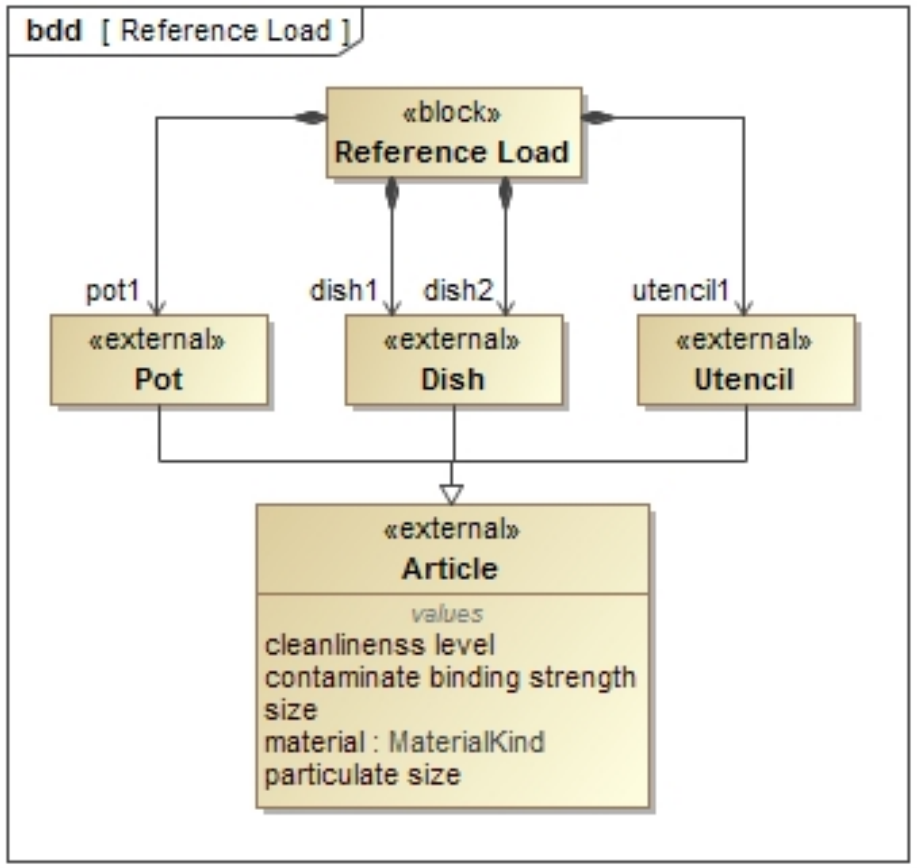
Increased waste

I/O Definitions

- Impact on Reference Load, Water, etc.

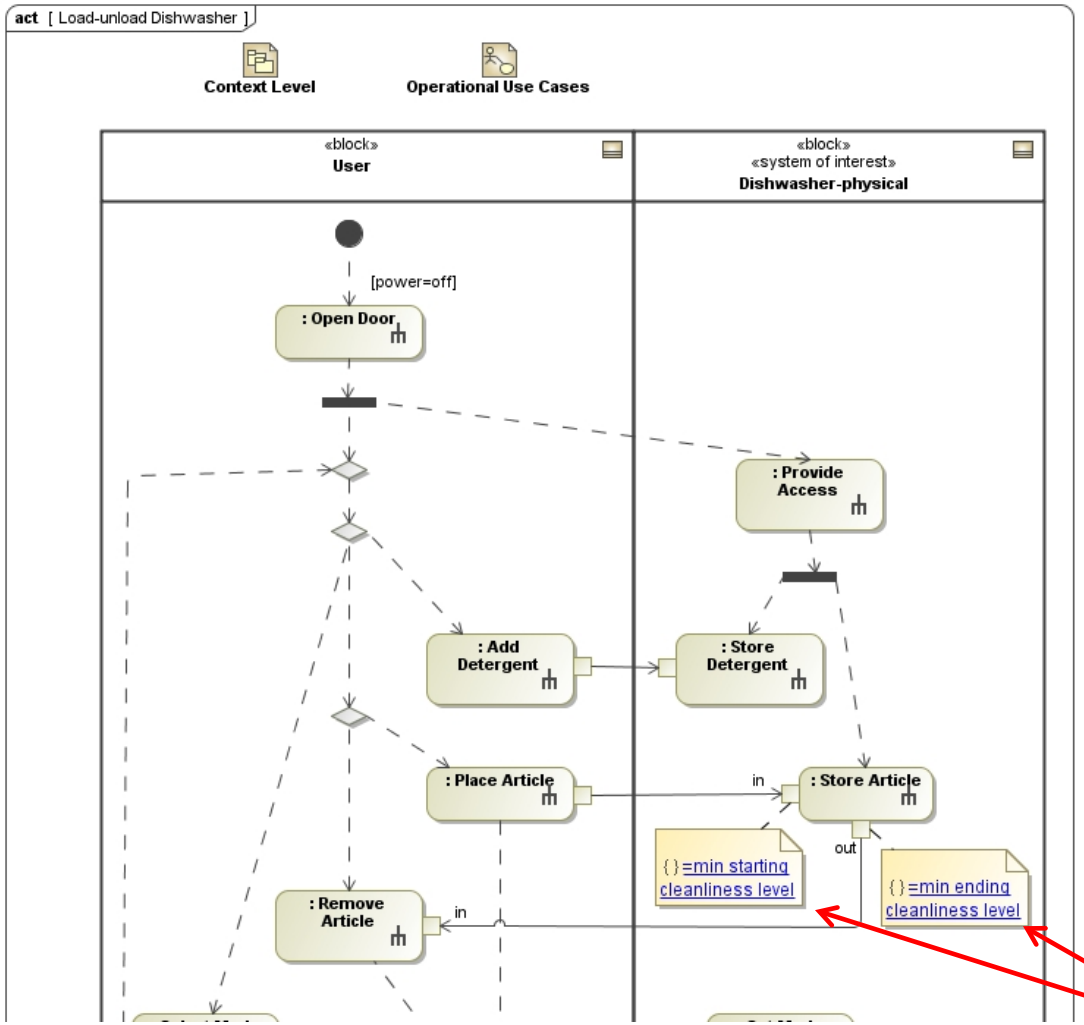


I/O Definitions (cont.)
Defining the Reference Load

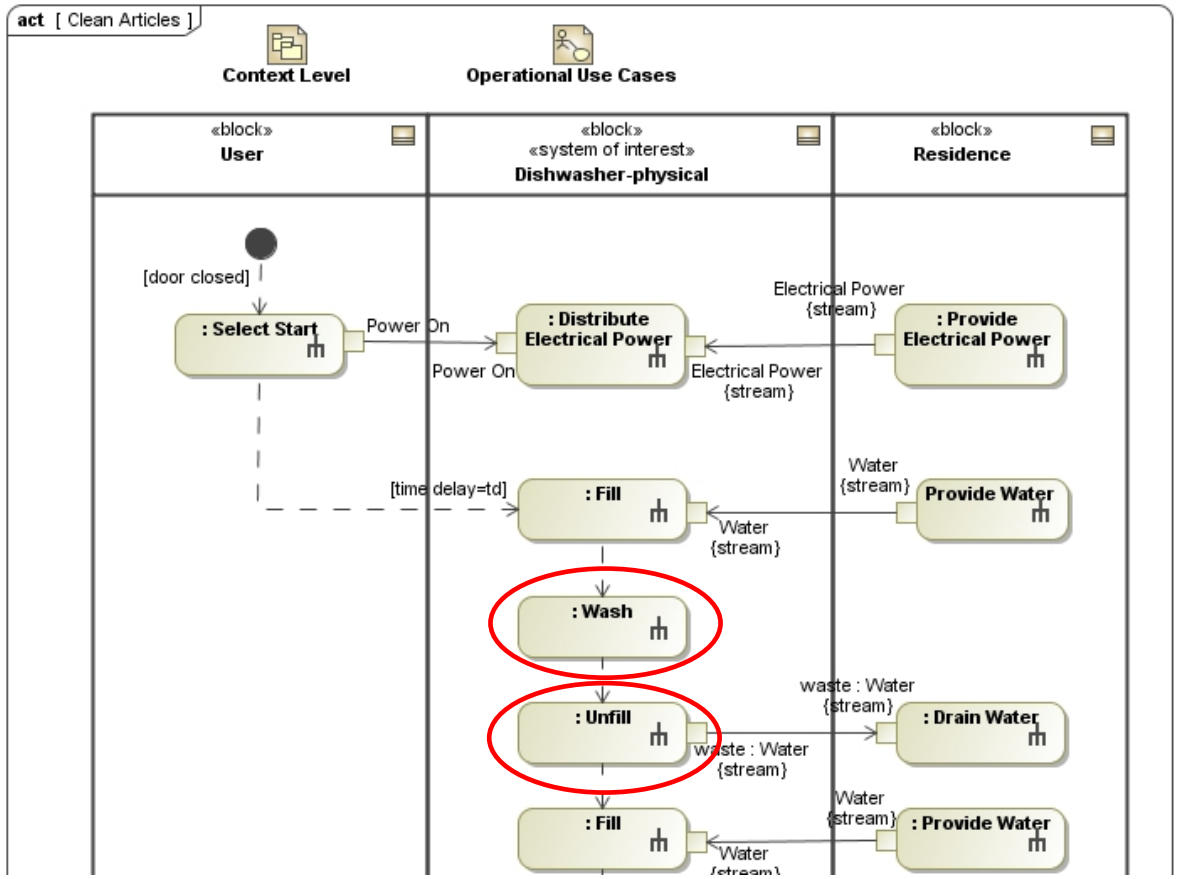


Activity Diagram for Use Case 1 (Load/Unload Dishwasher)

- Update required reference load to reflect articles that are not pre-washed
  - Precondition is changed



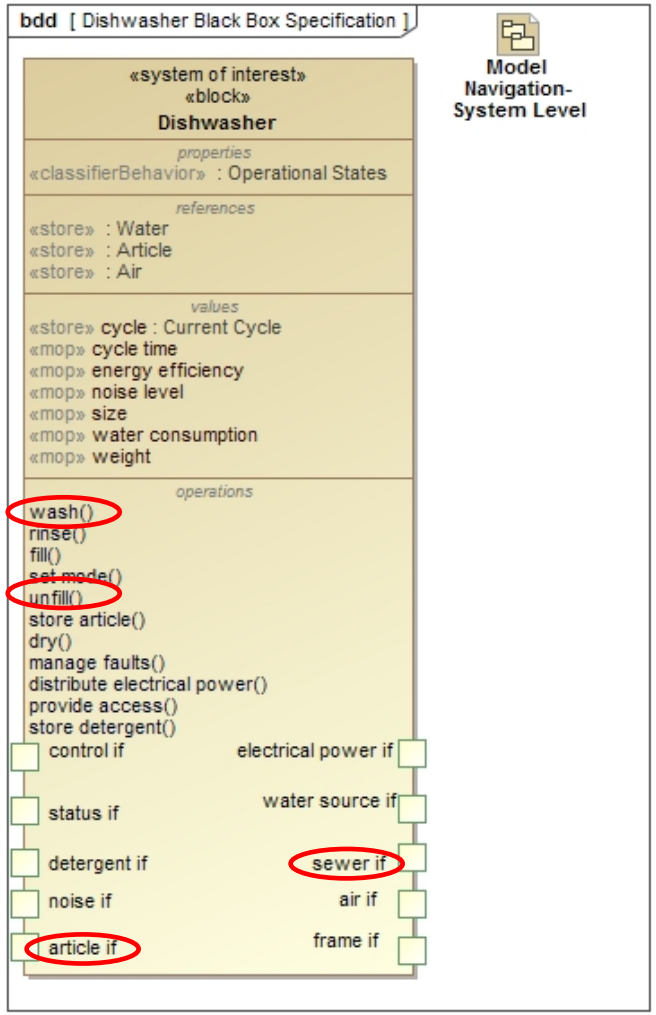
Activity Diagrams for Use Cases 2 (Clean Articles)



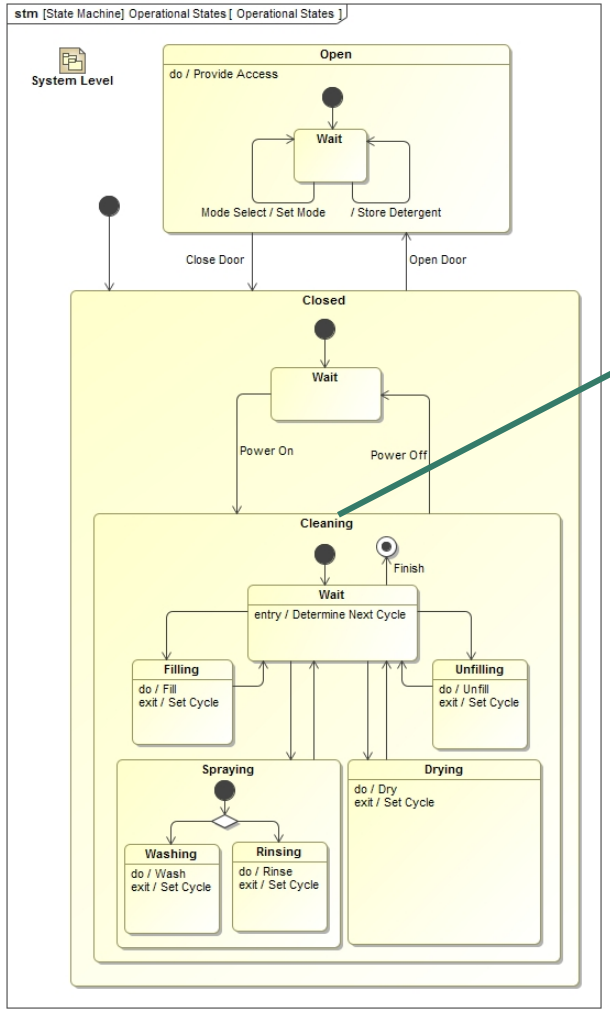
- Potential impact to requirements for wash and unfill

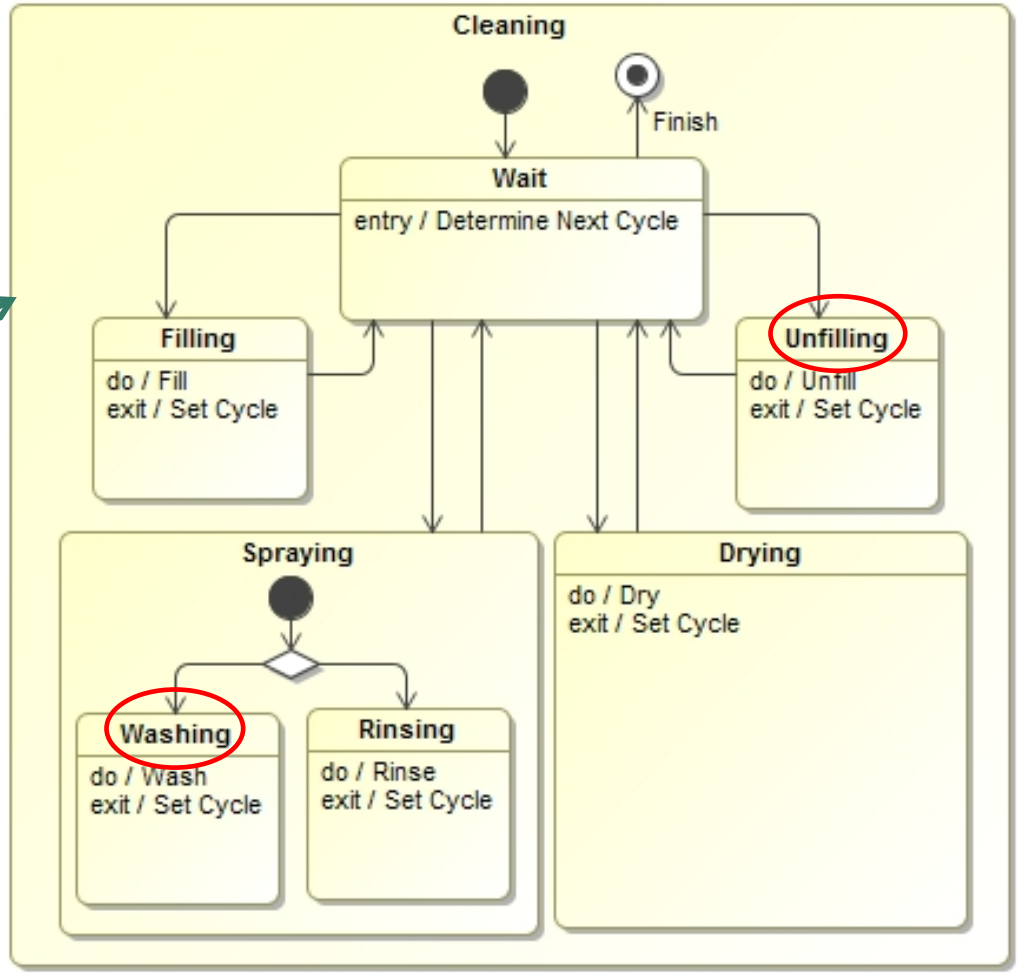
Dishwasher
Black Box Specification

- Potential impacts

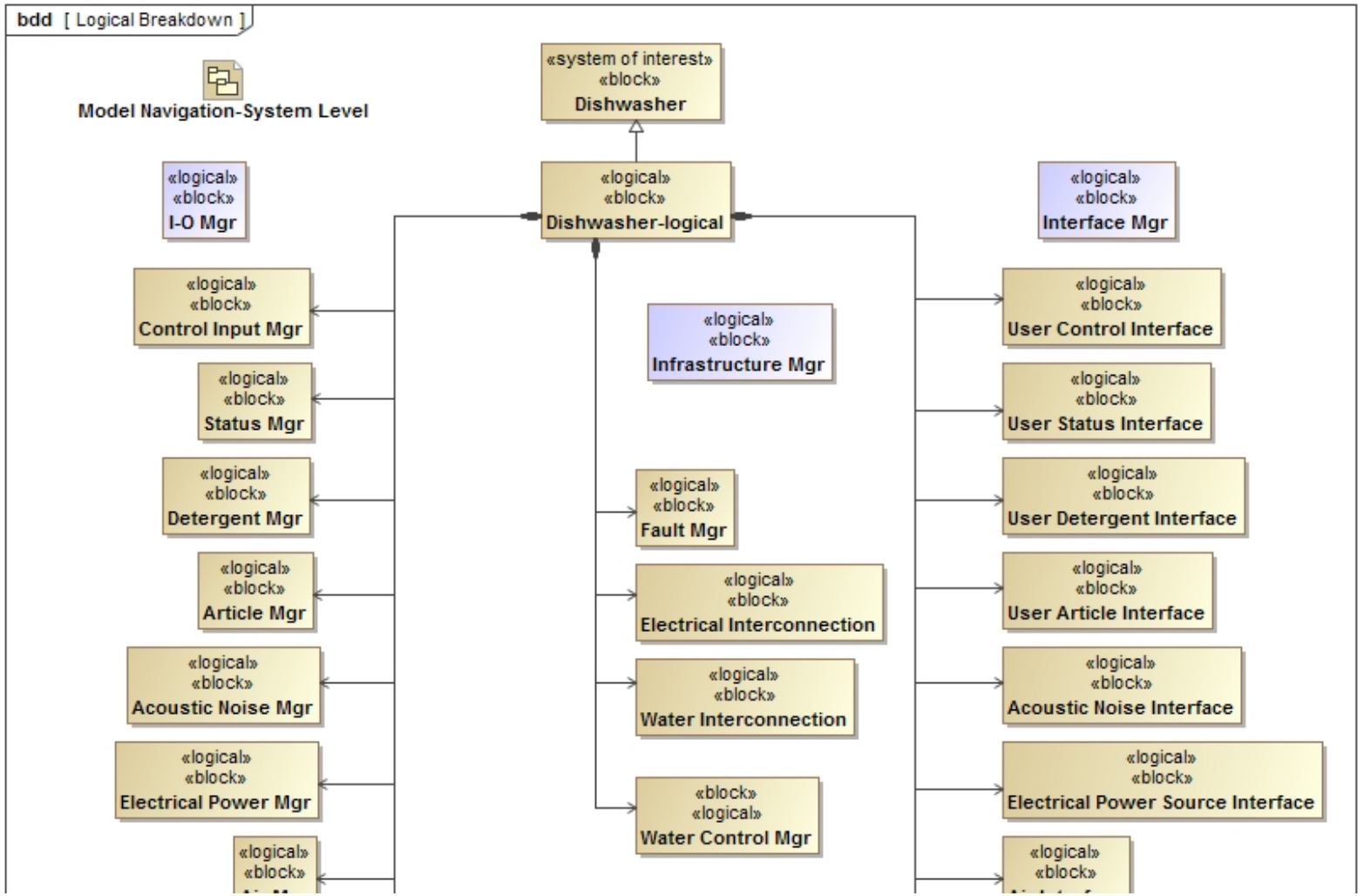


System State Machine

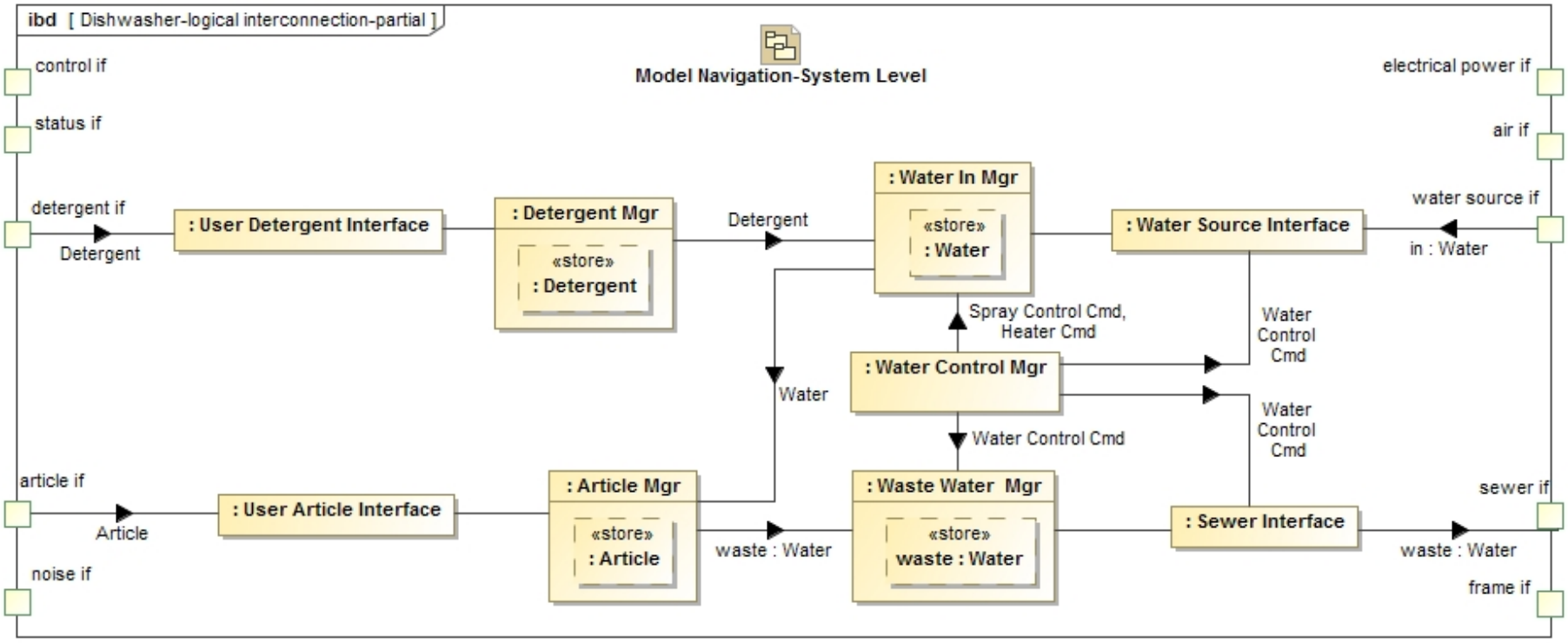




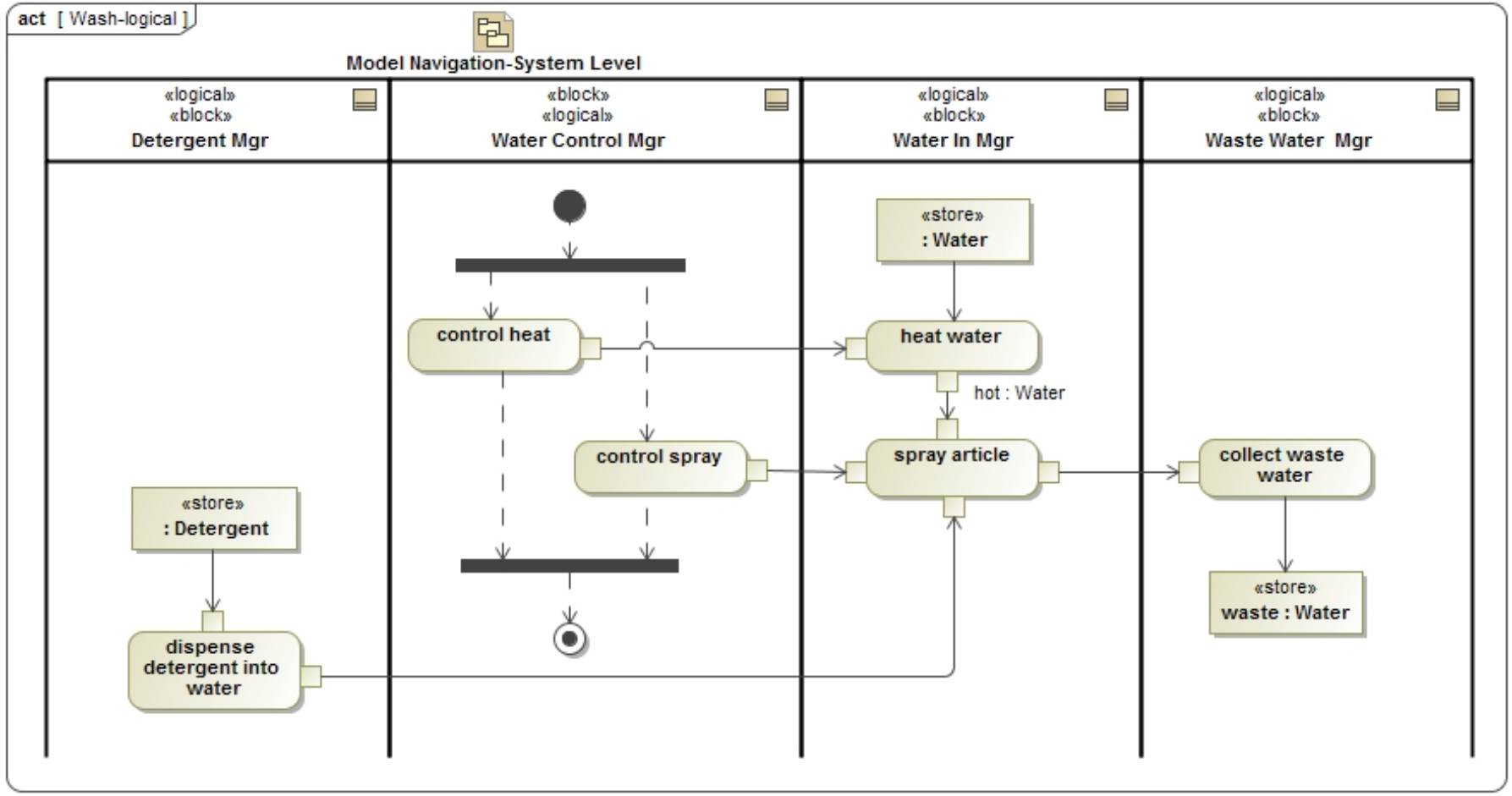
Dishwasher Logical Breakdown Partial



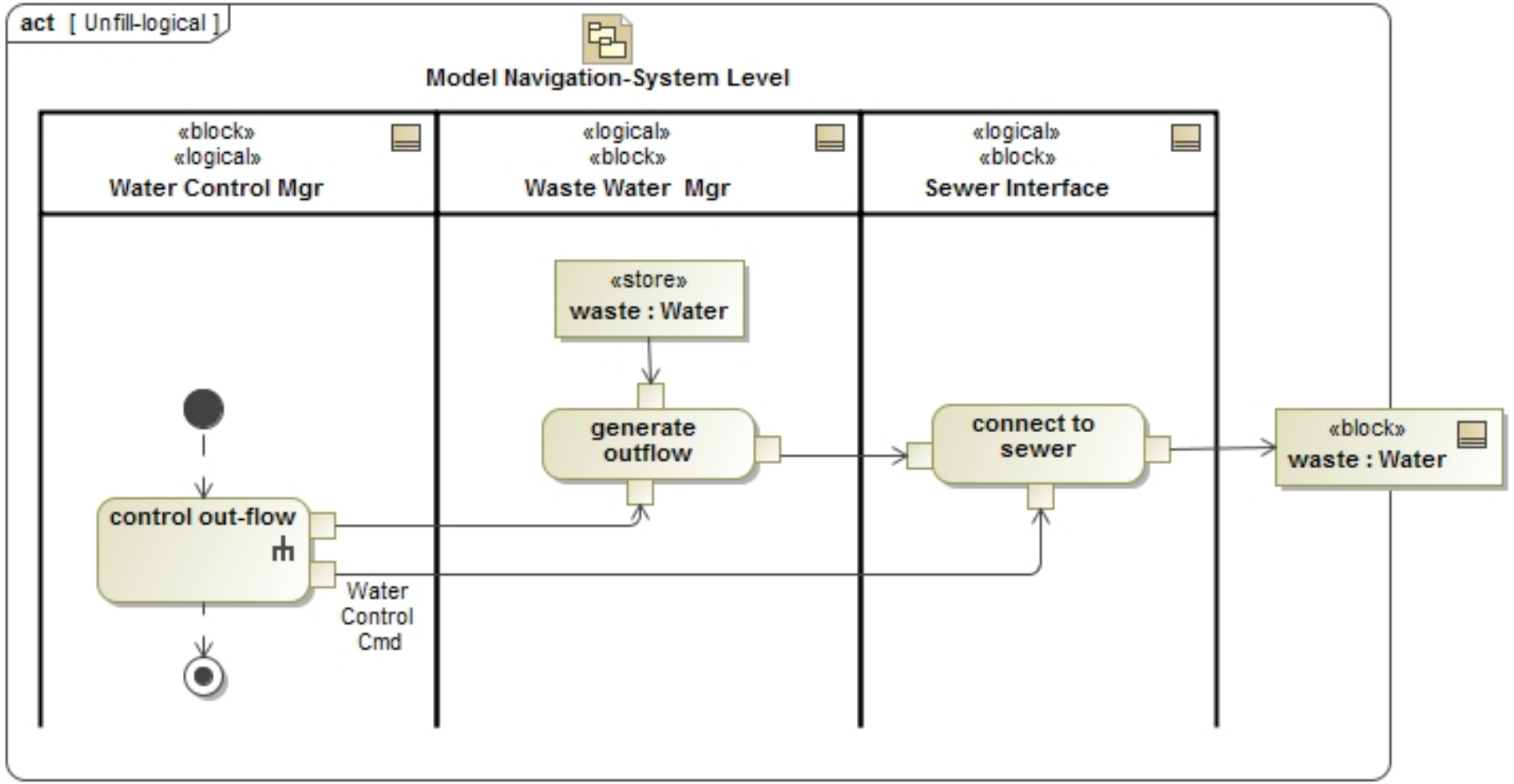
Dishwasher Logical Interconnection Partial



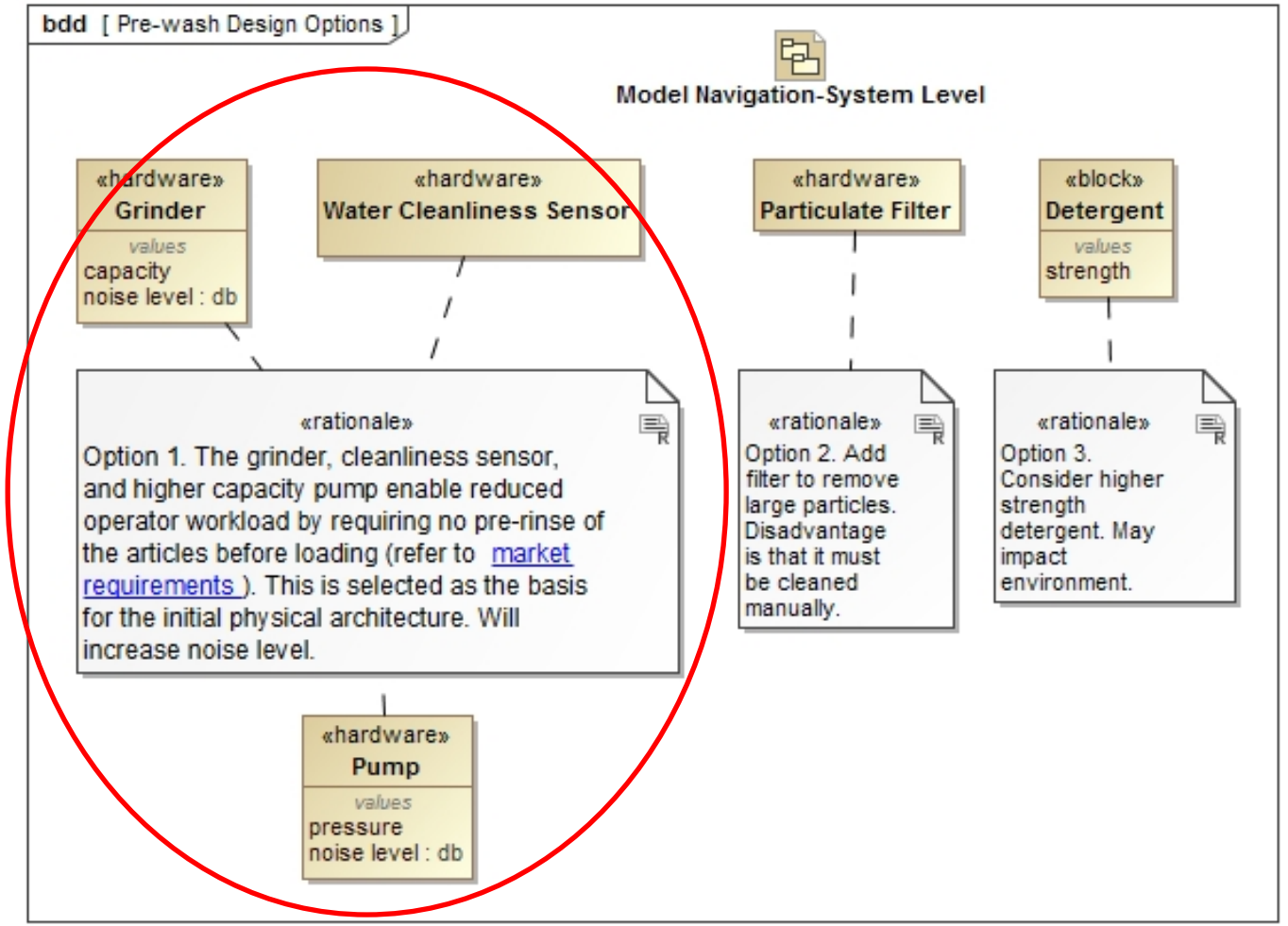
Wash
Logical Activity



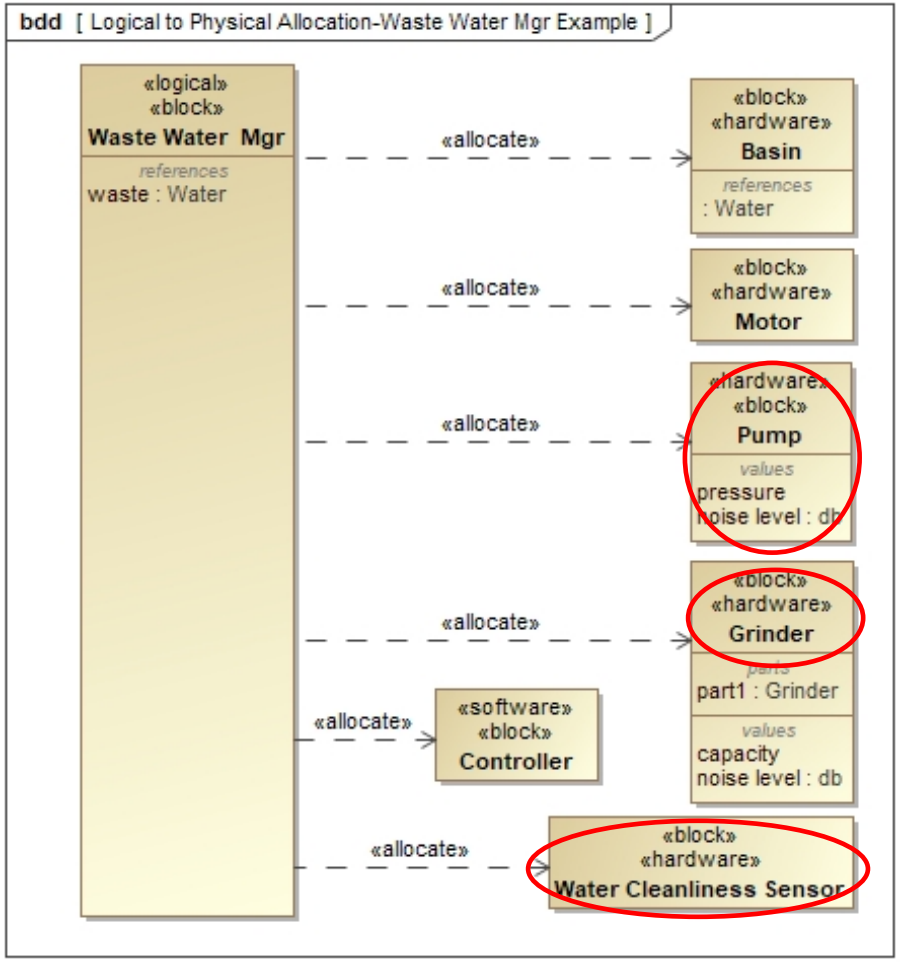
Unfill
Logical Activity



Design Options



Logical to Physical Allocation Waste Water Mgr Example

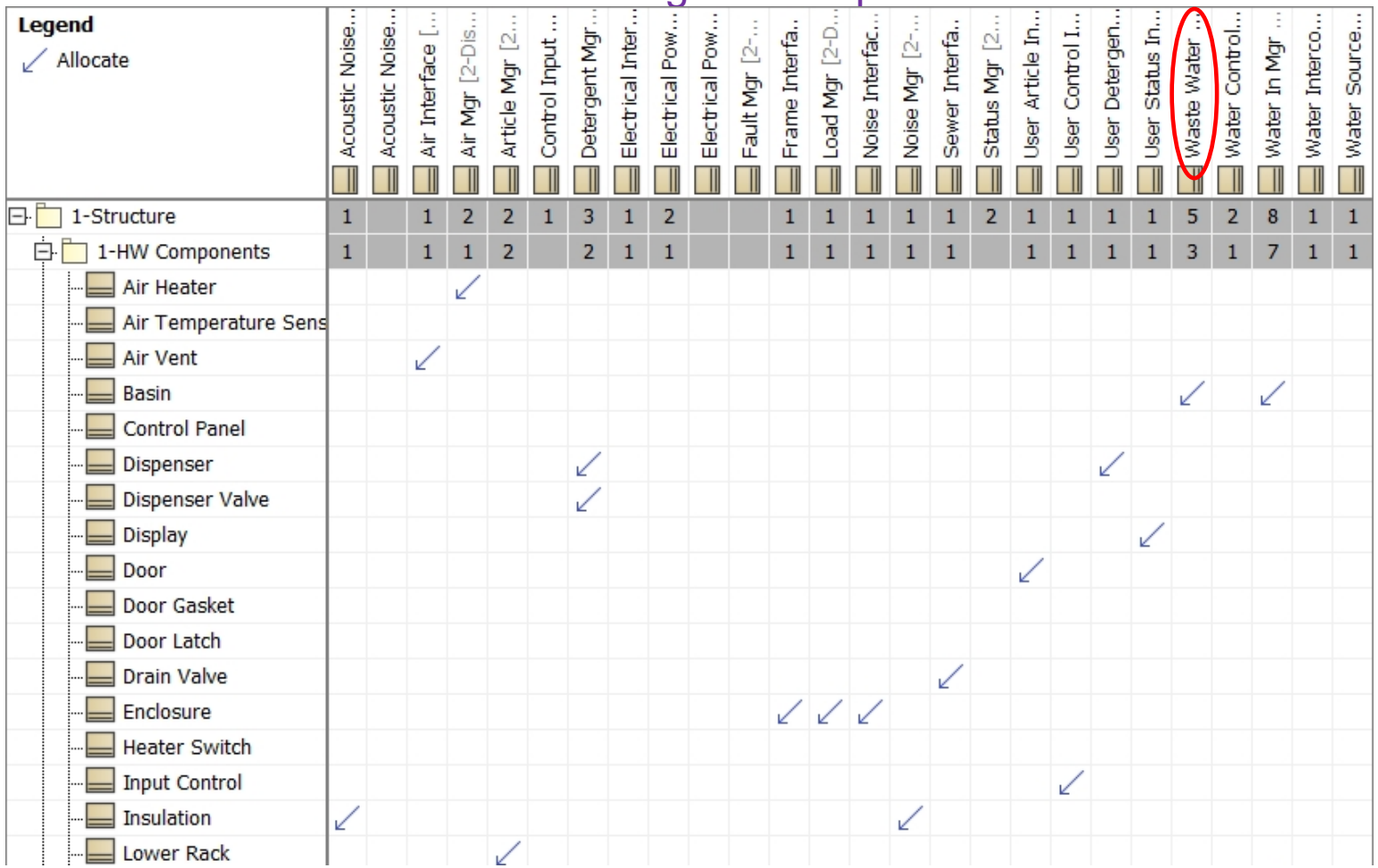


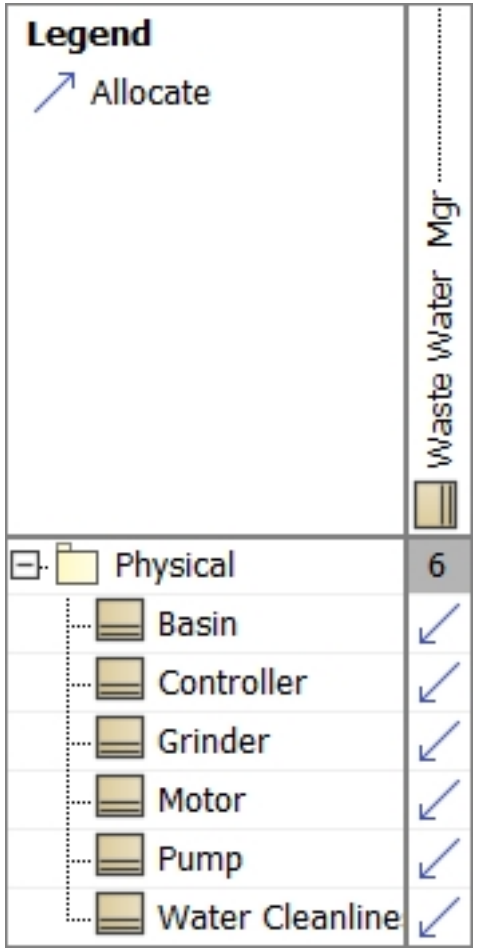
New components that include Grinder, Water Cleanliness Sensor, and higher capacity Pump are the design option under consideration

Logical to Physical Allocation Matrix View

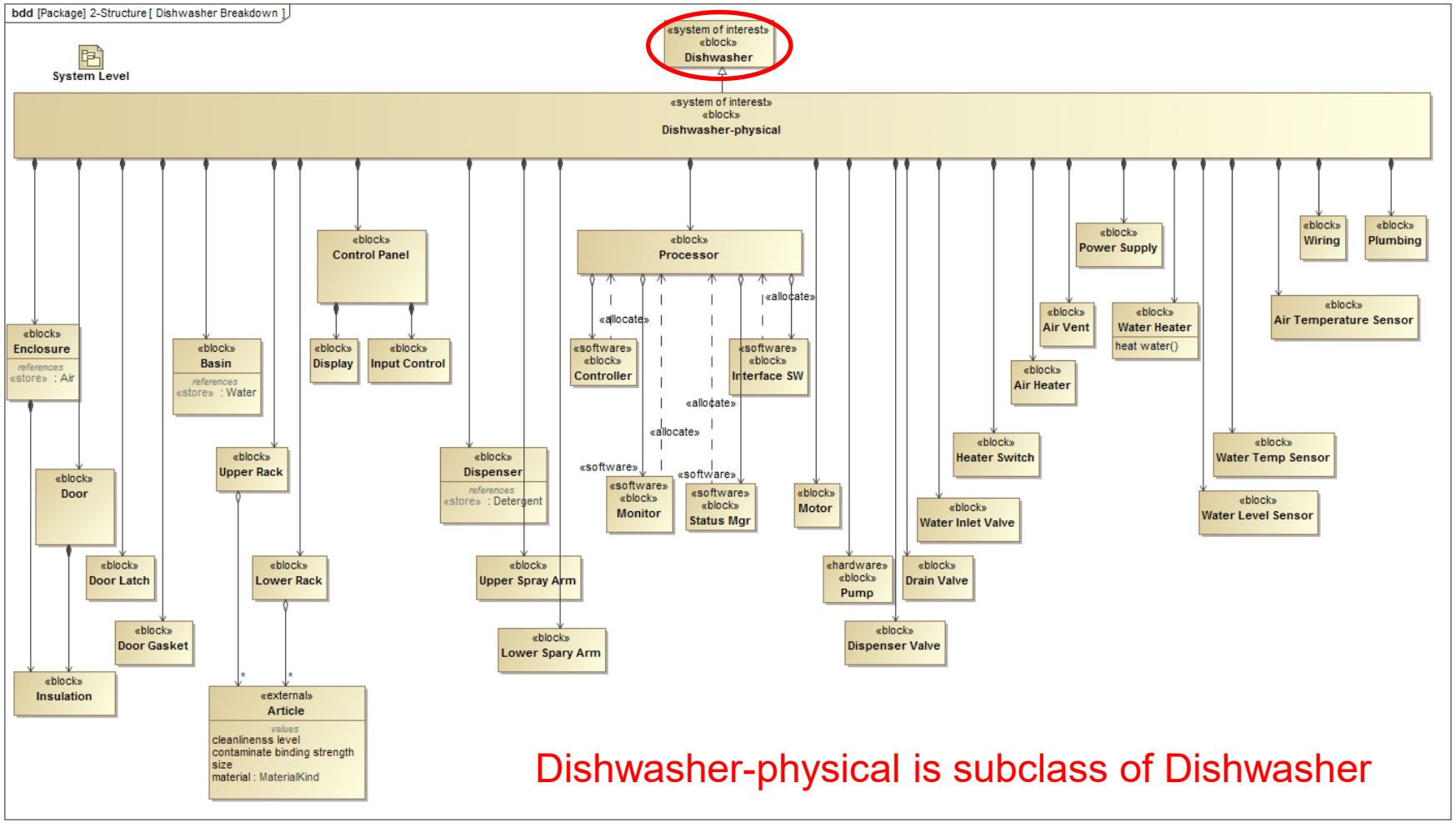
Logical Components

Physical Components

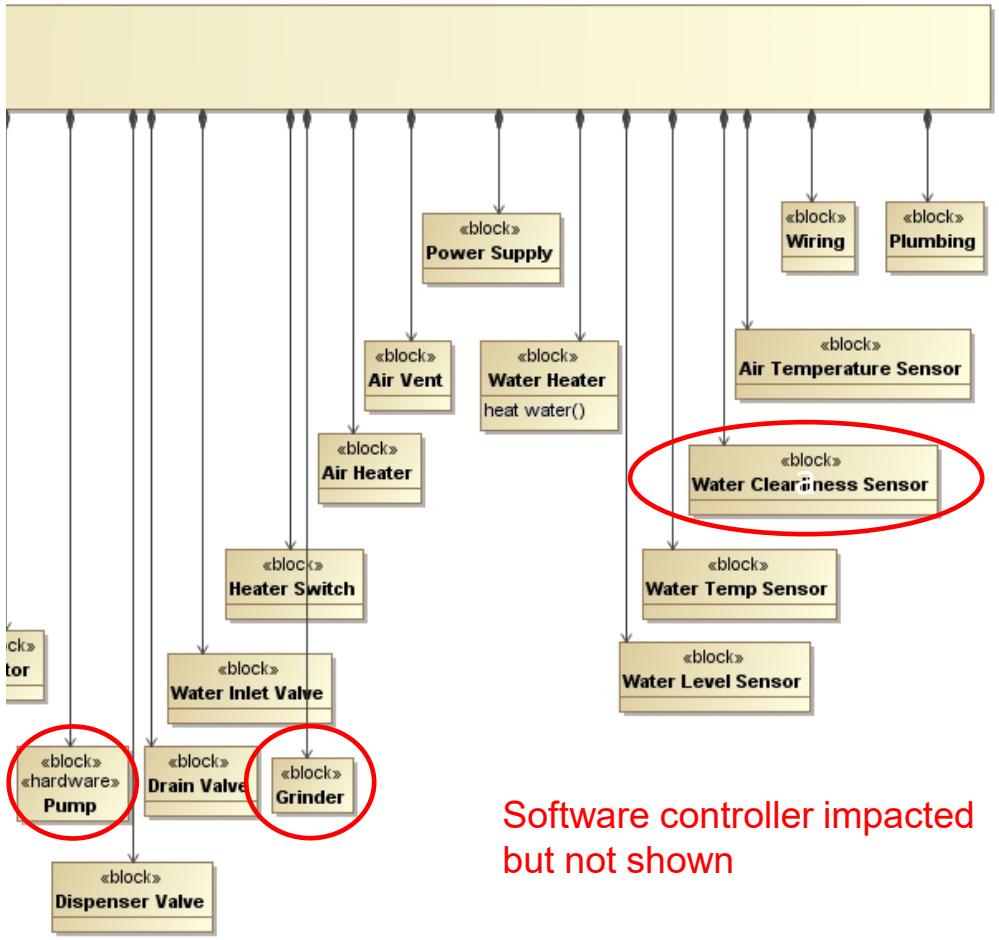




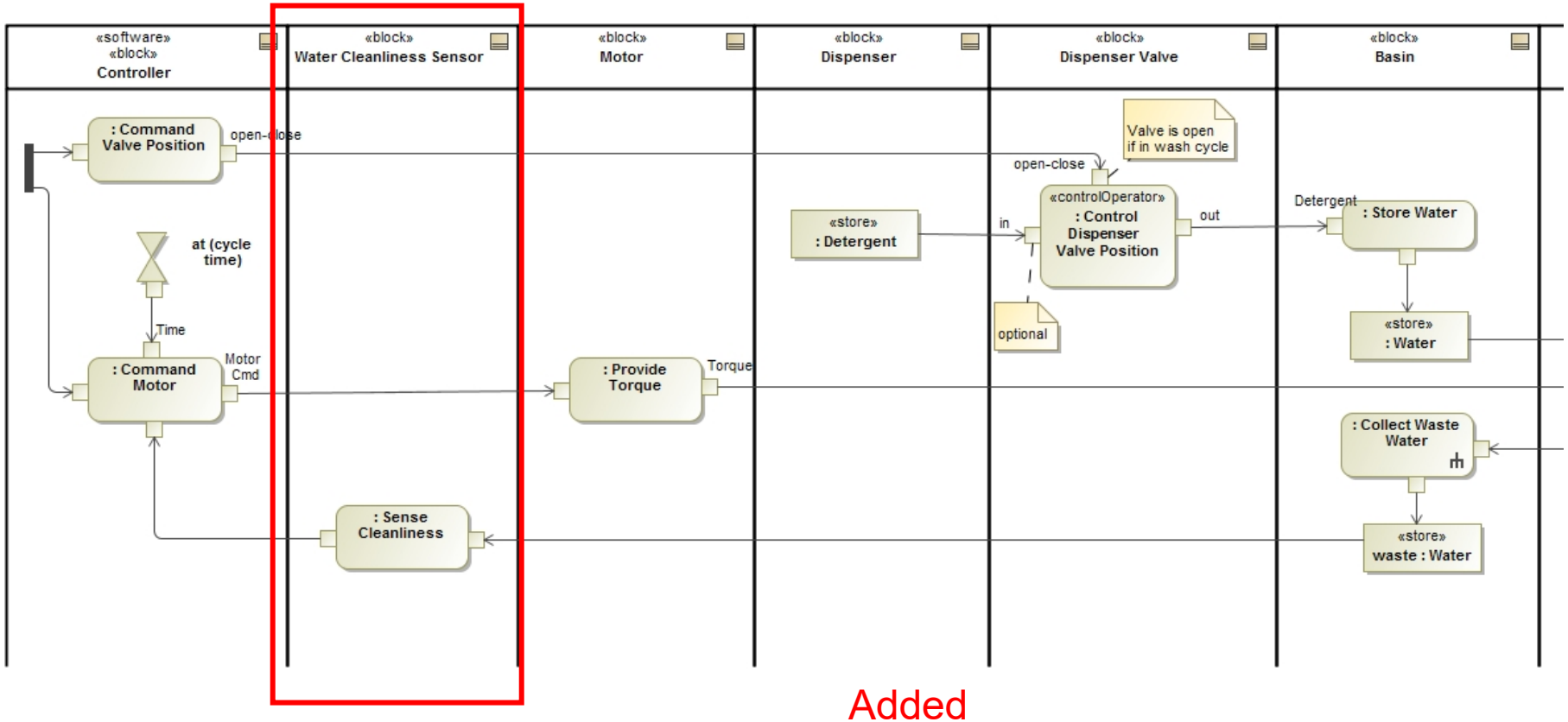
System Physical Breakdown (as-is)



Dishwasher Physical Breakdown Modifications

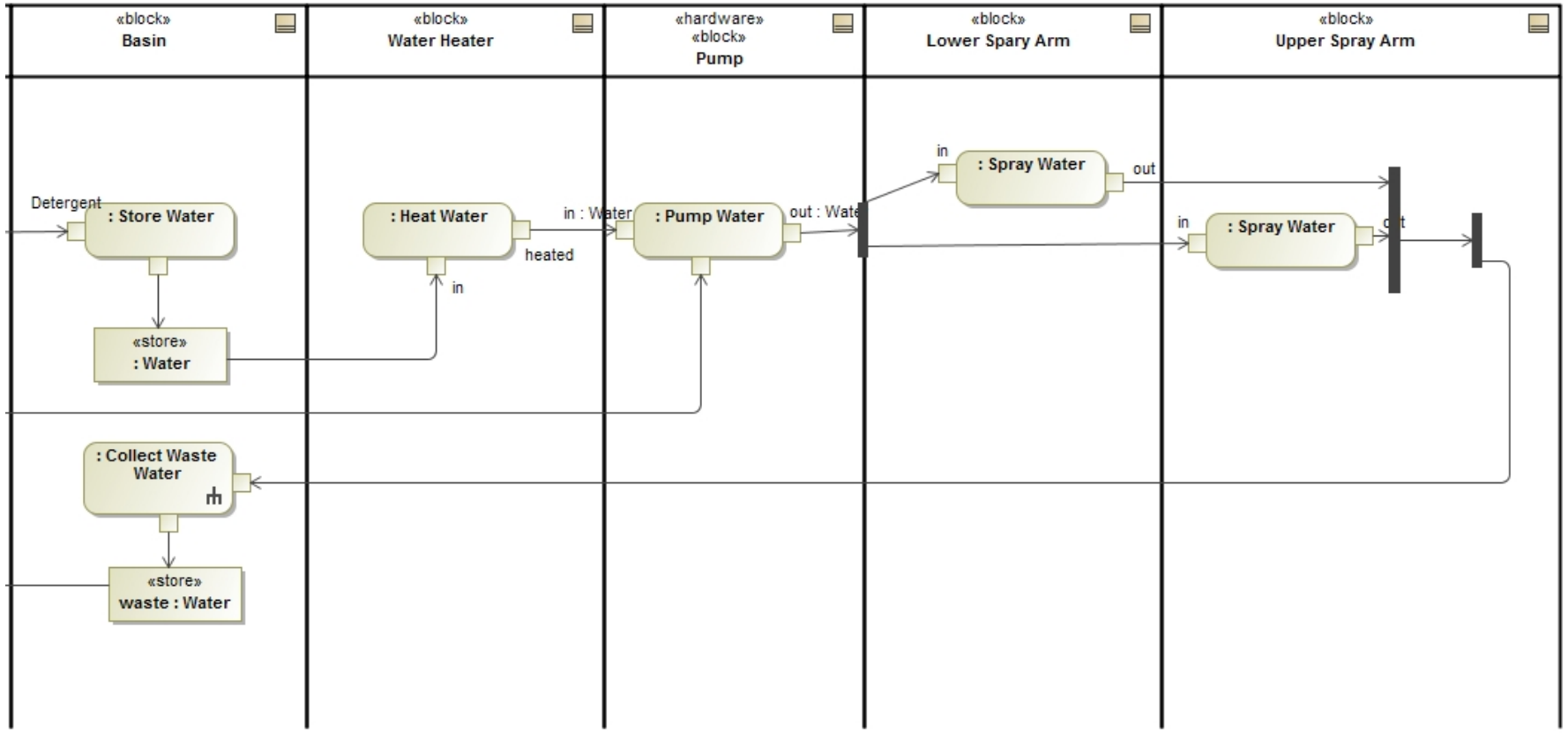


Wash Activity (1 of 2) Modifications

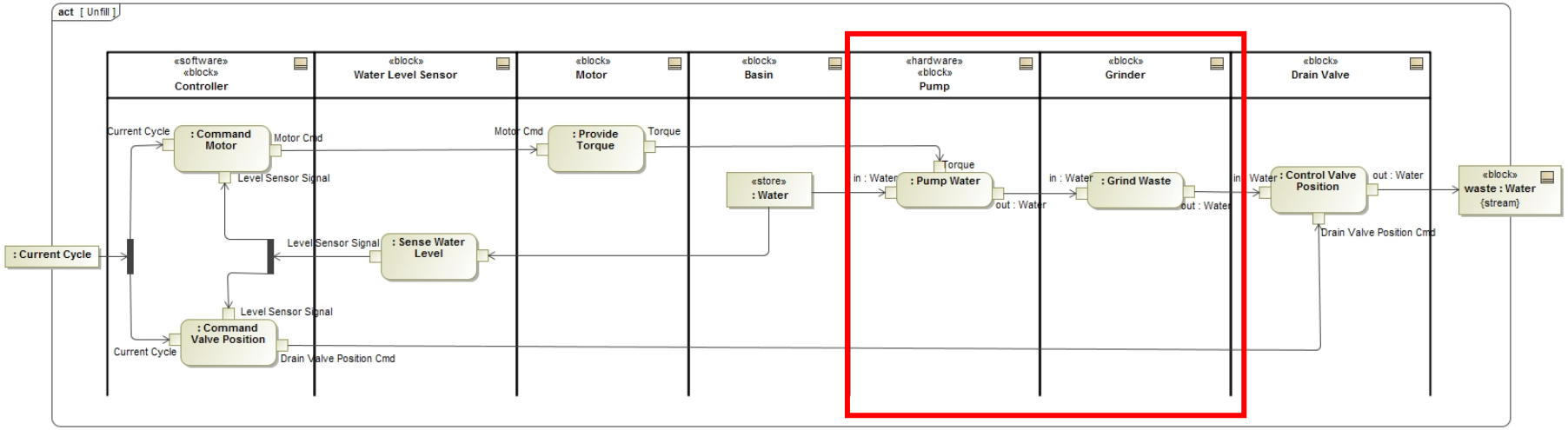


Added
- Water Cleanliness Sensor

Wash Activity (2 of 2) Modifications

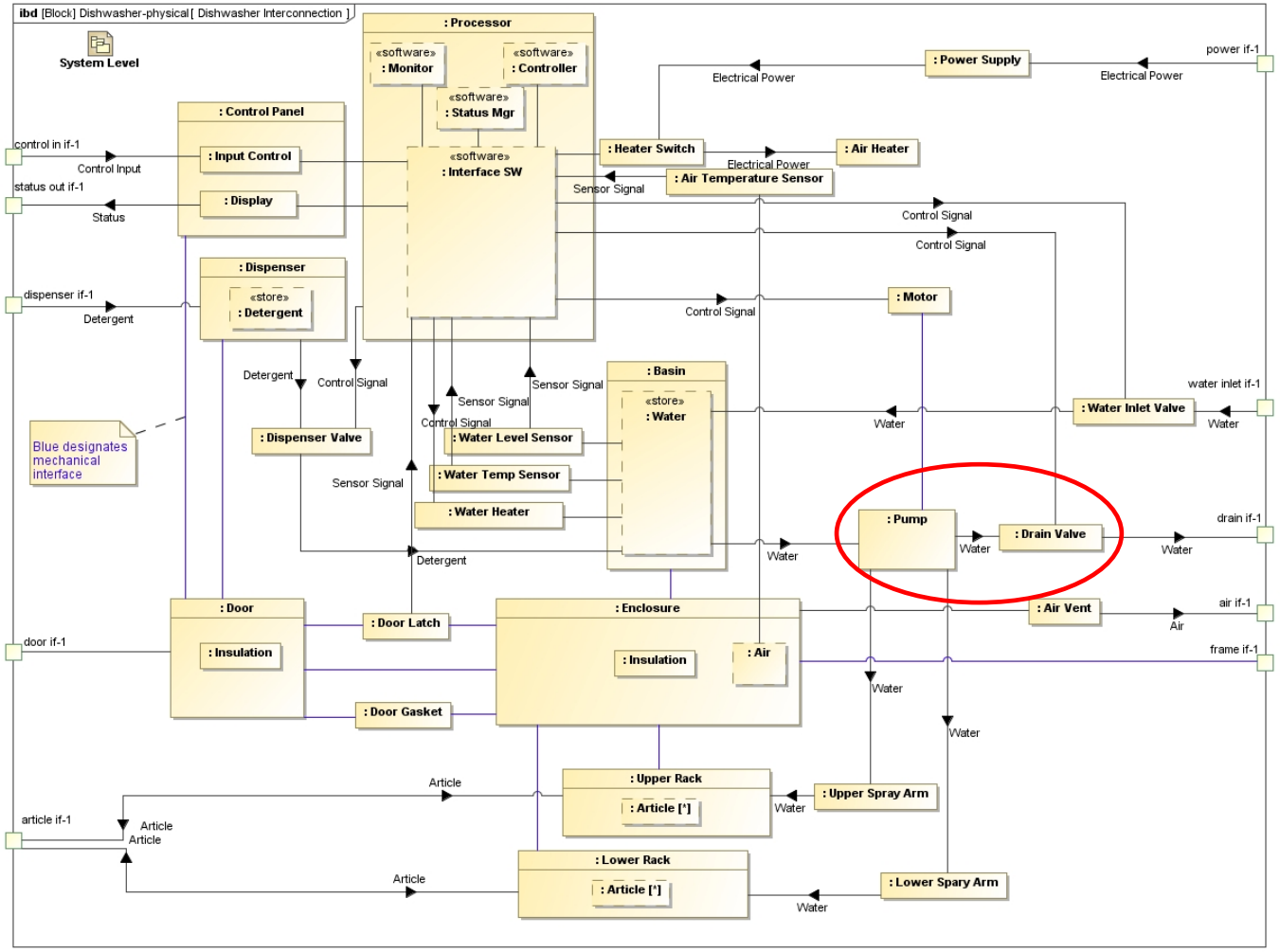


Unfill Activity Modifications

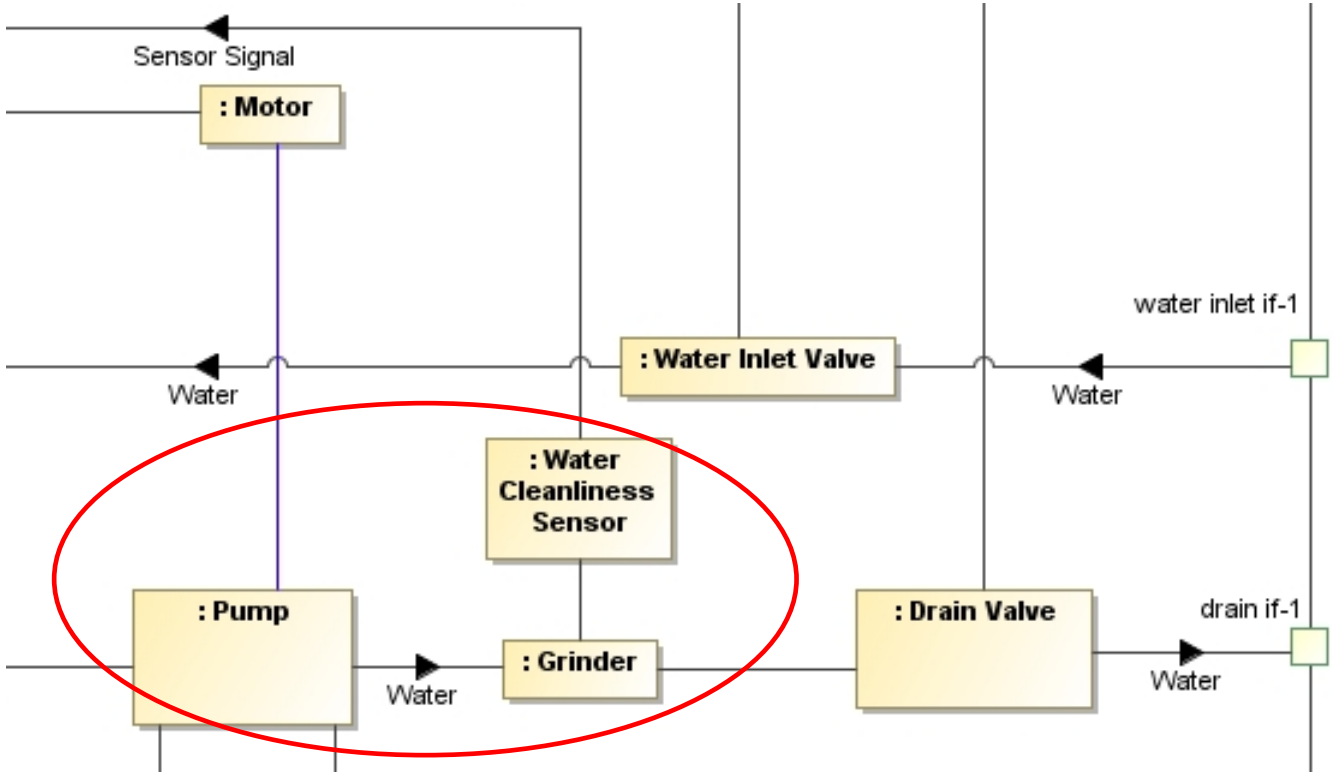


Added
- Larger capacity pump
- Grinder

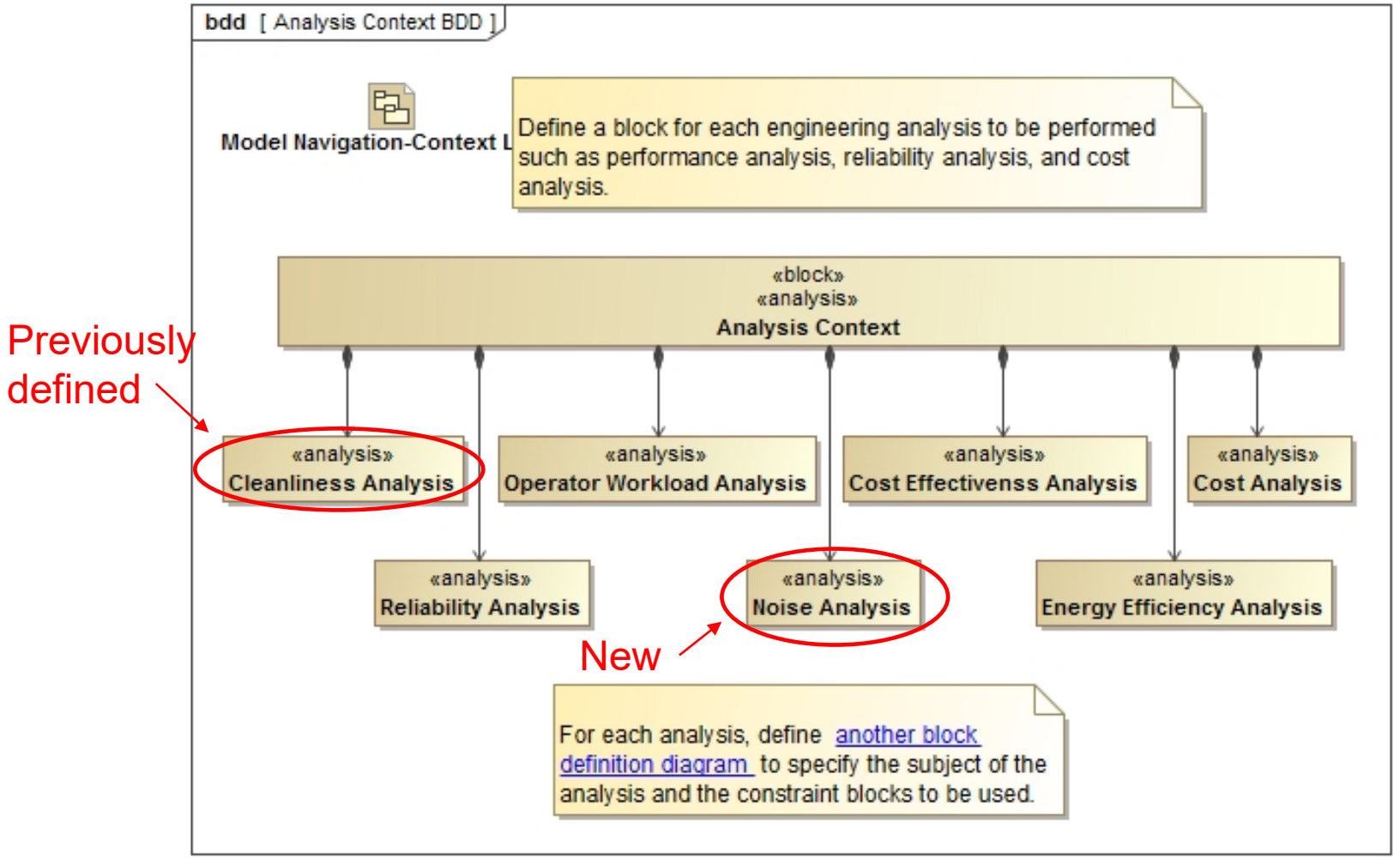
System Interconnection (as-is)



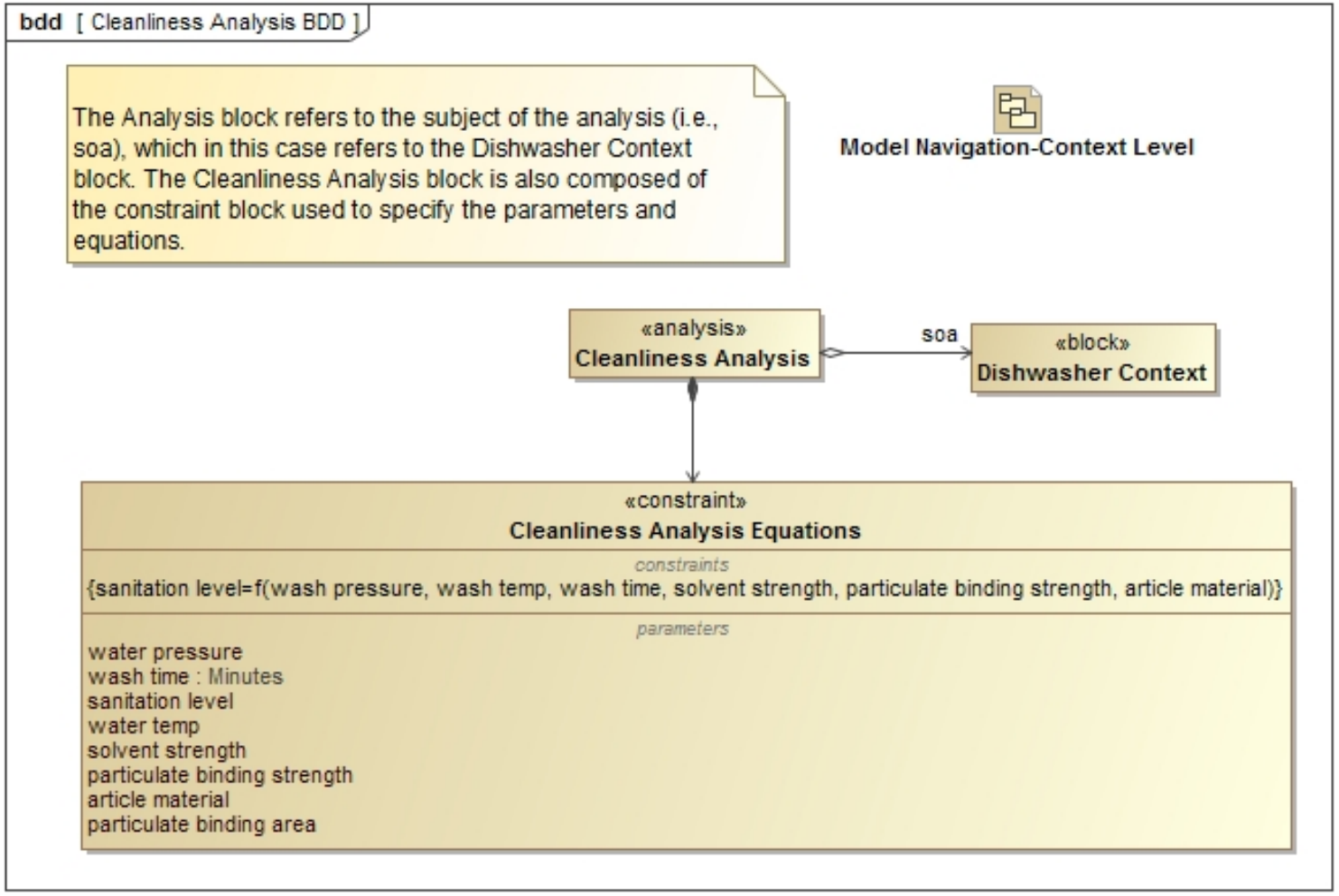
Dishwasher Physical Interconnection Modifications



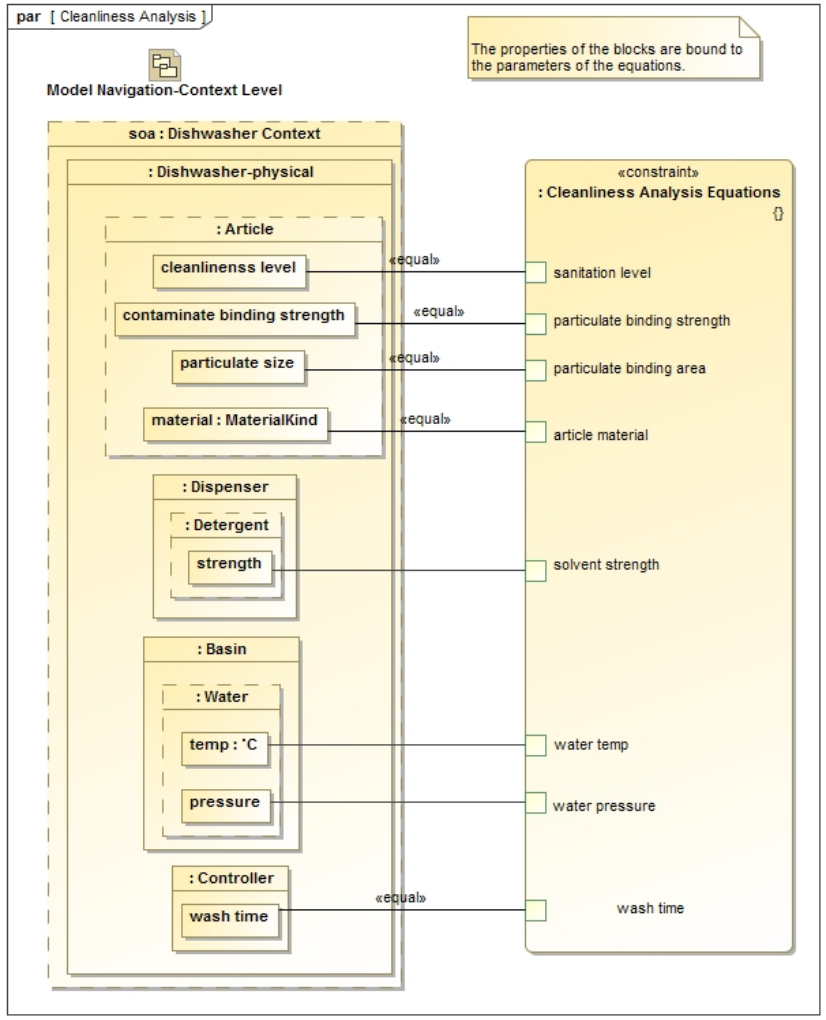
Analysis Context BDD



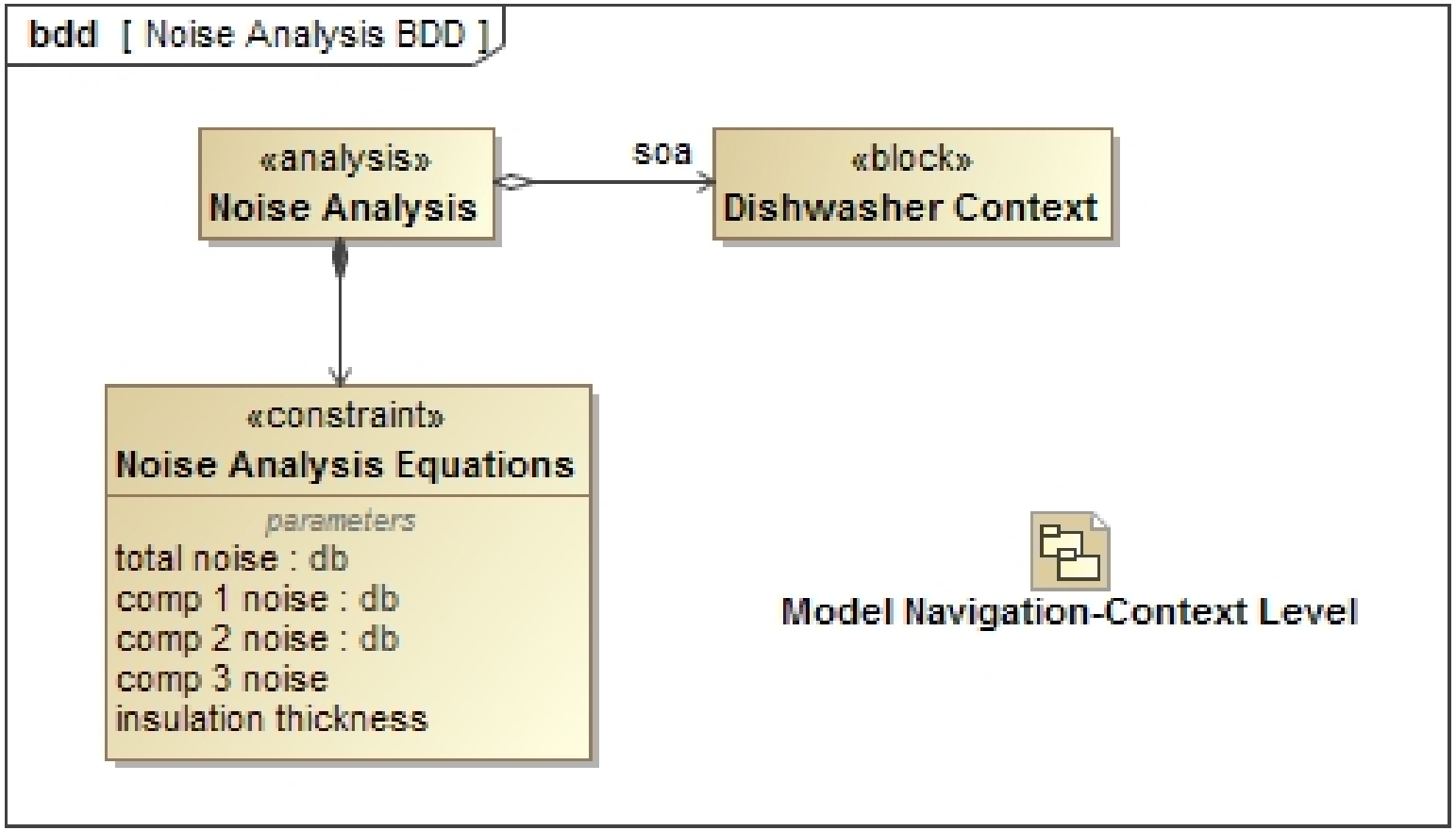
Cleanliness Analysis BDD



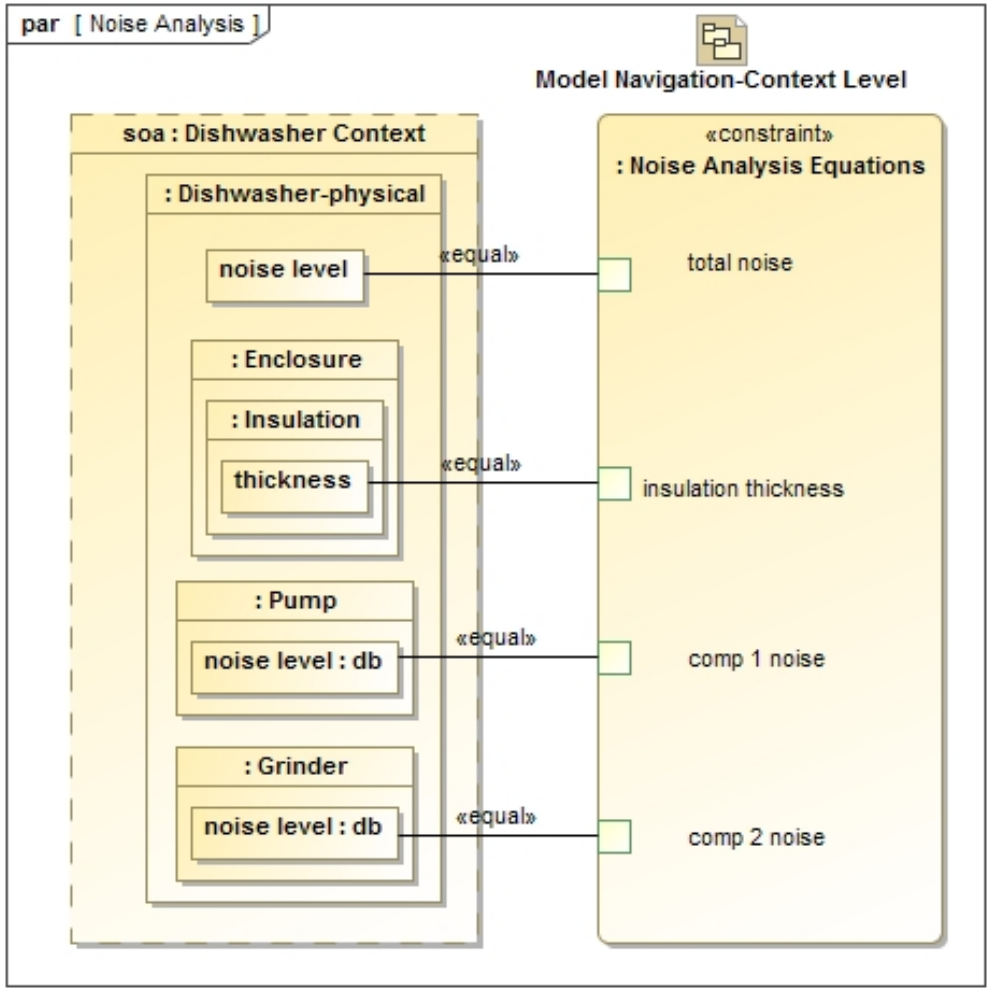
Cleanliness Analysis Parametric Diagram



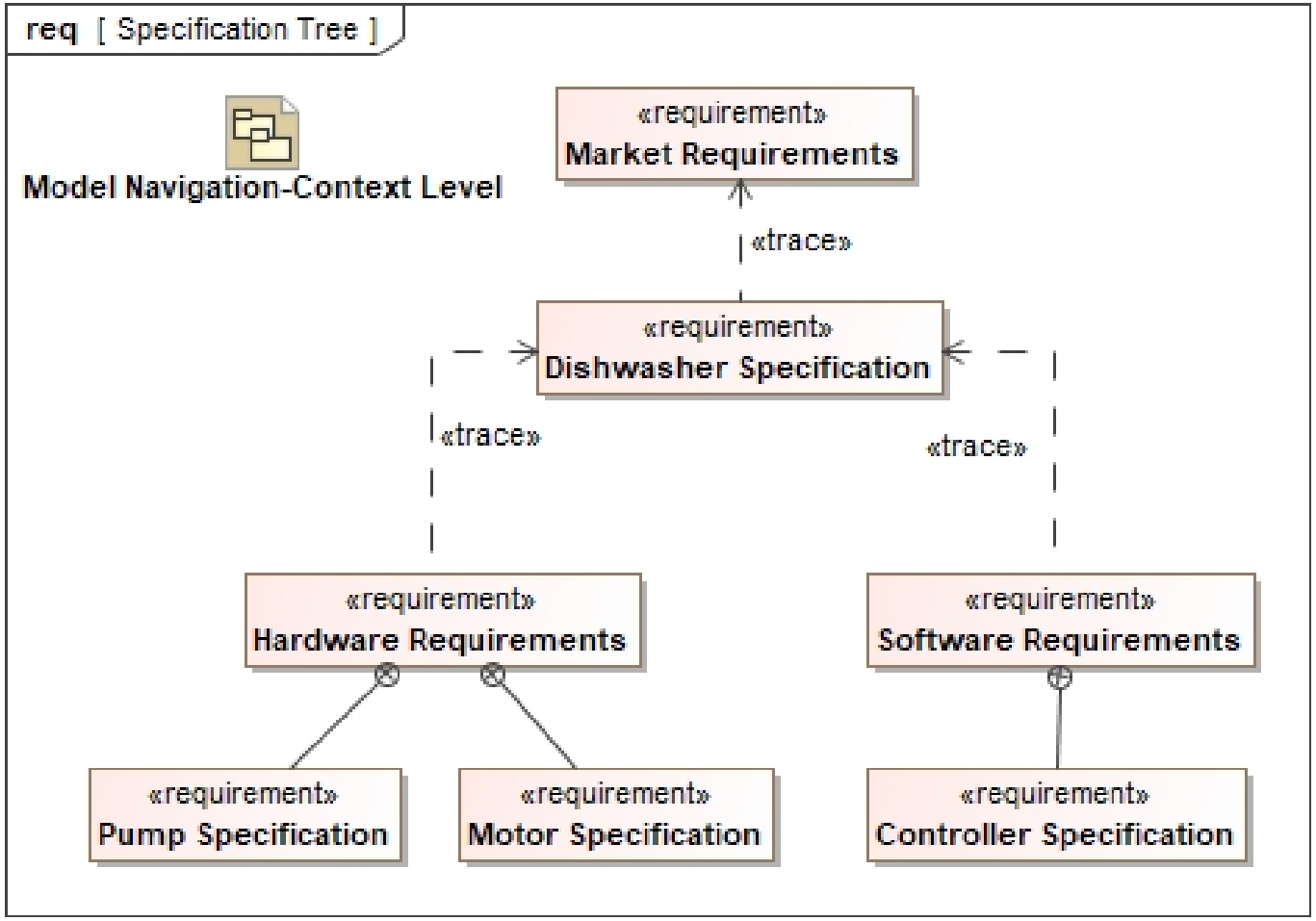
Noise Analysis BDD



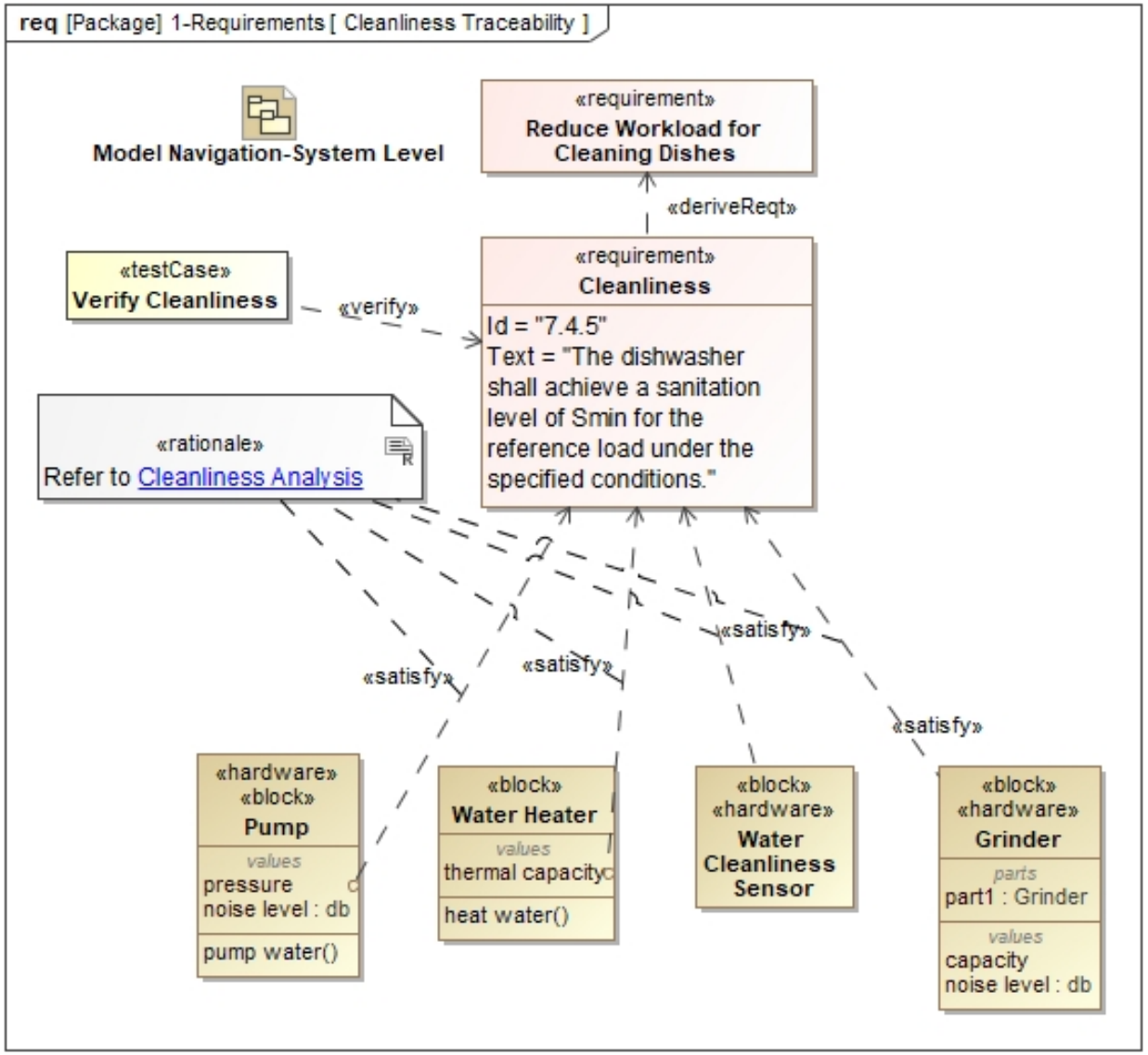
Noise Analysis
Parametric Diagram



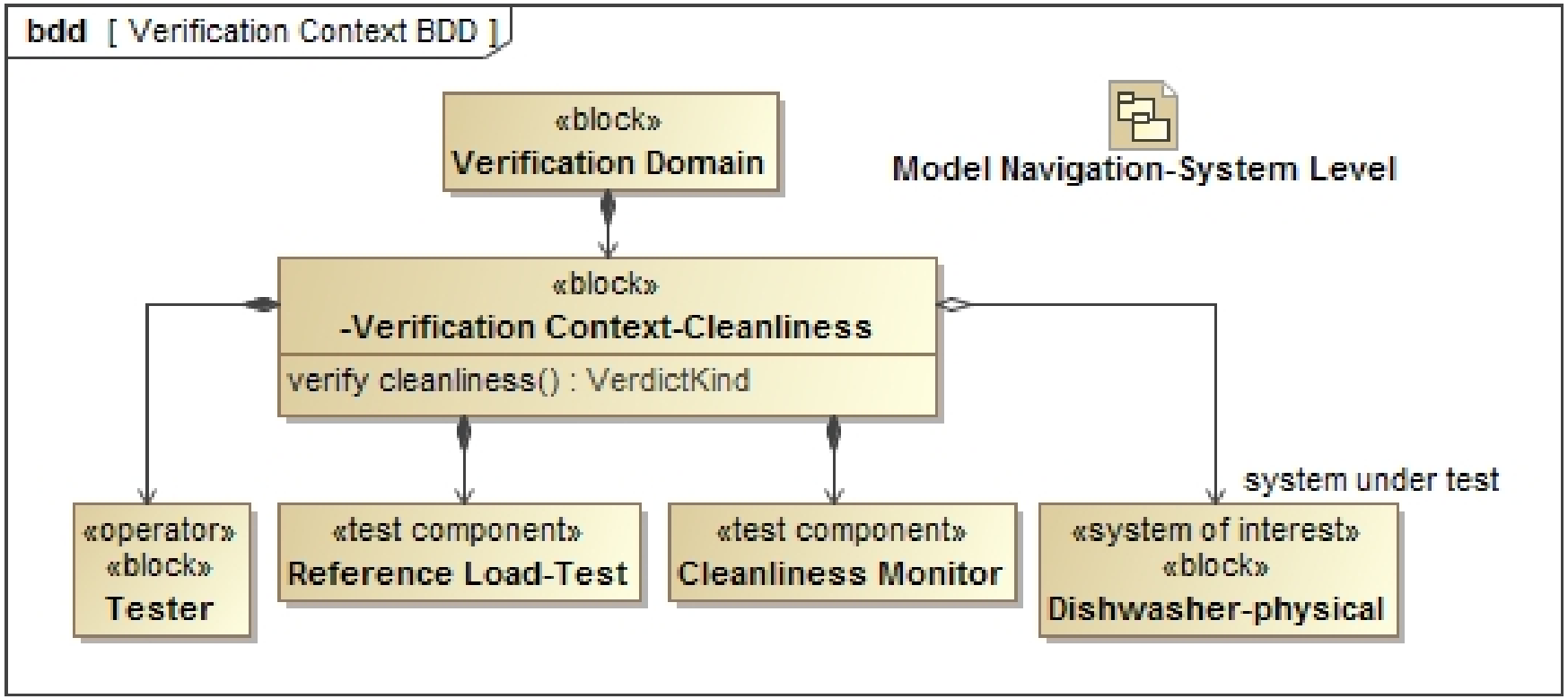
Specification Tree



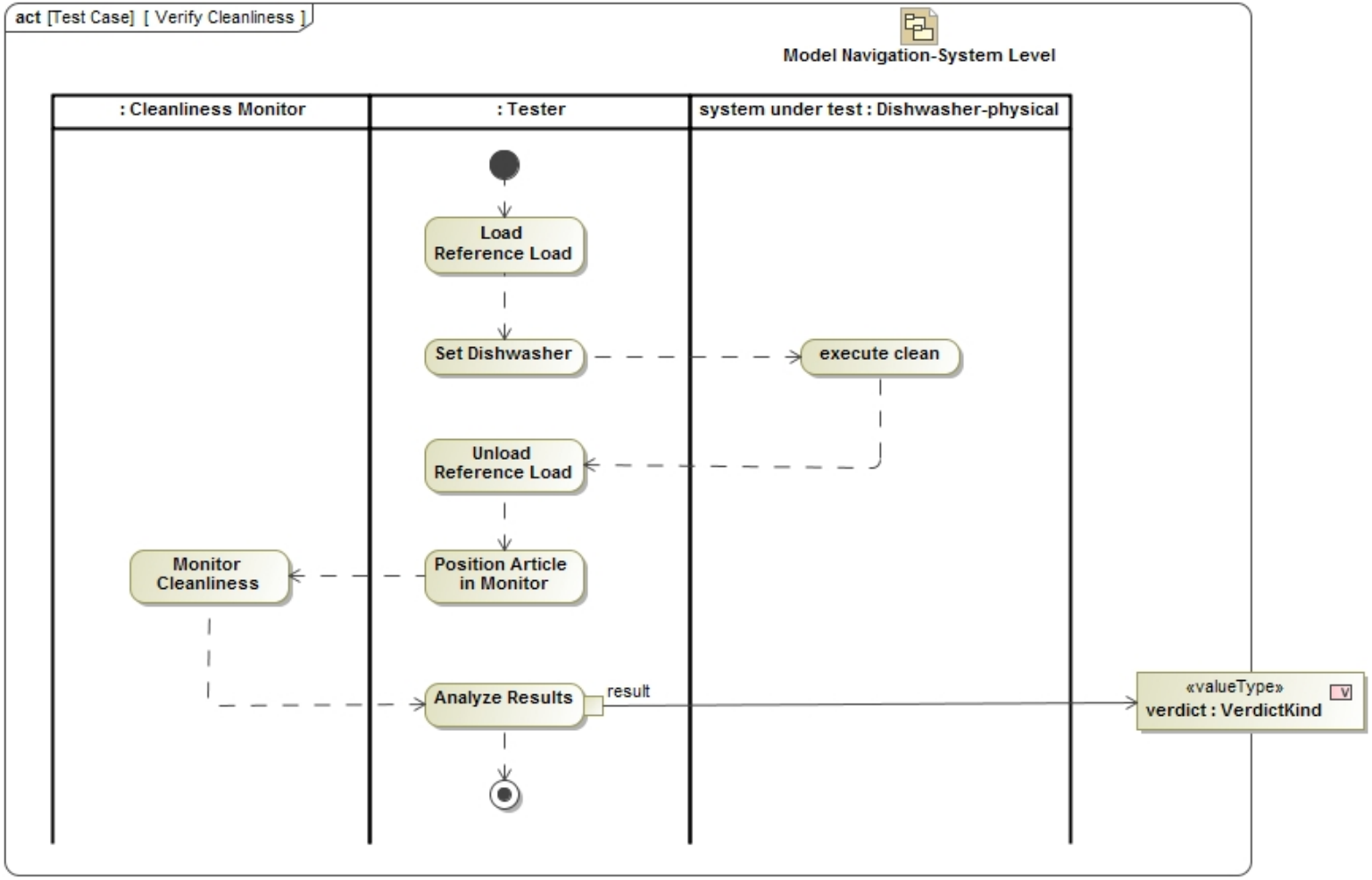
Cleanliness Requirement Traceability



Verification Context

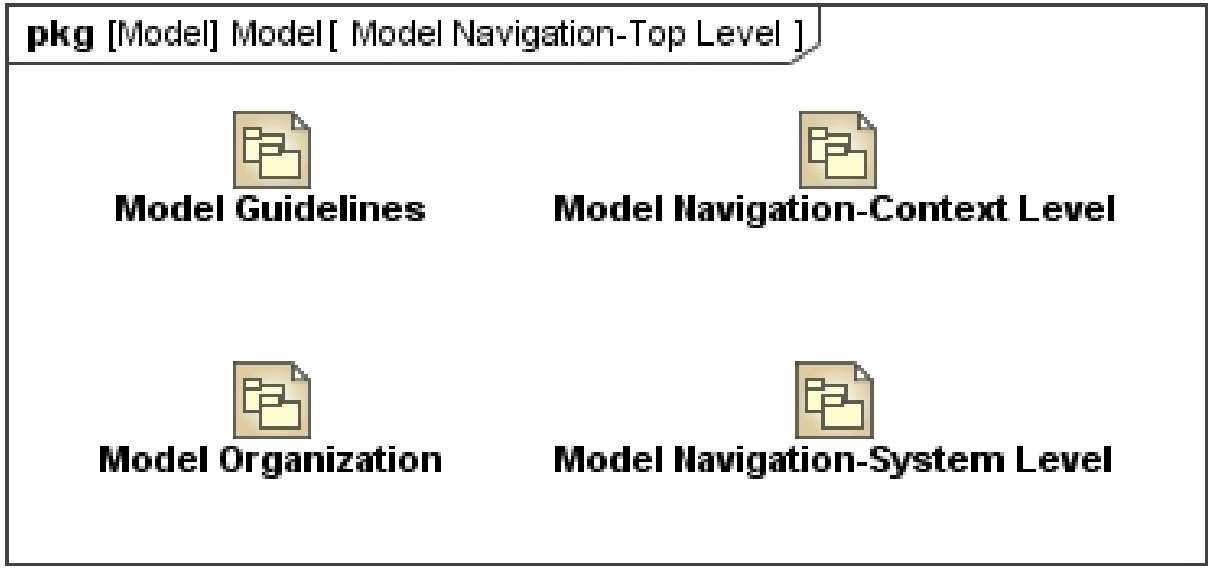


Verify Cleanliness Test Case

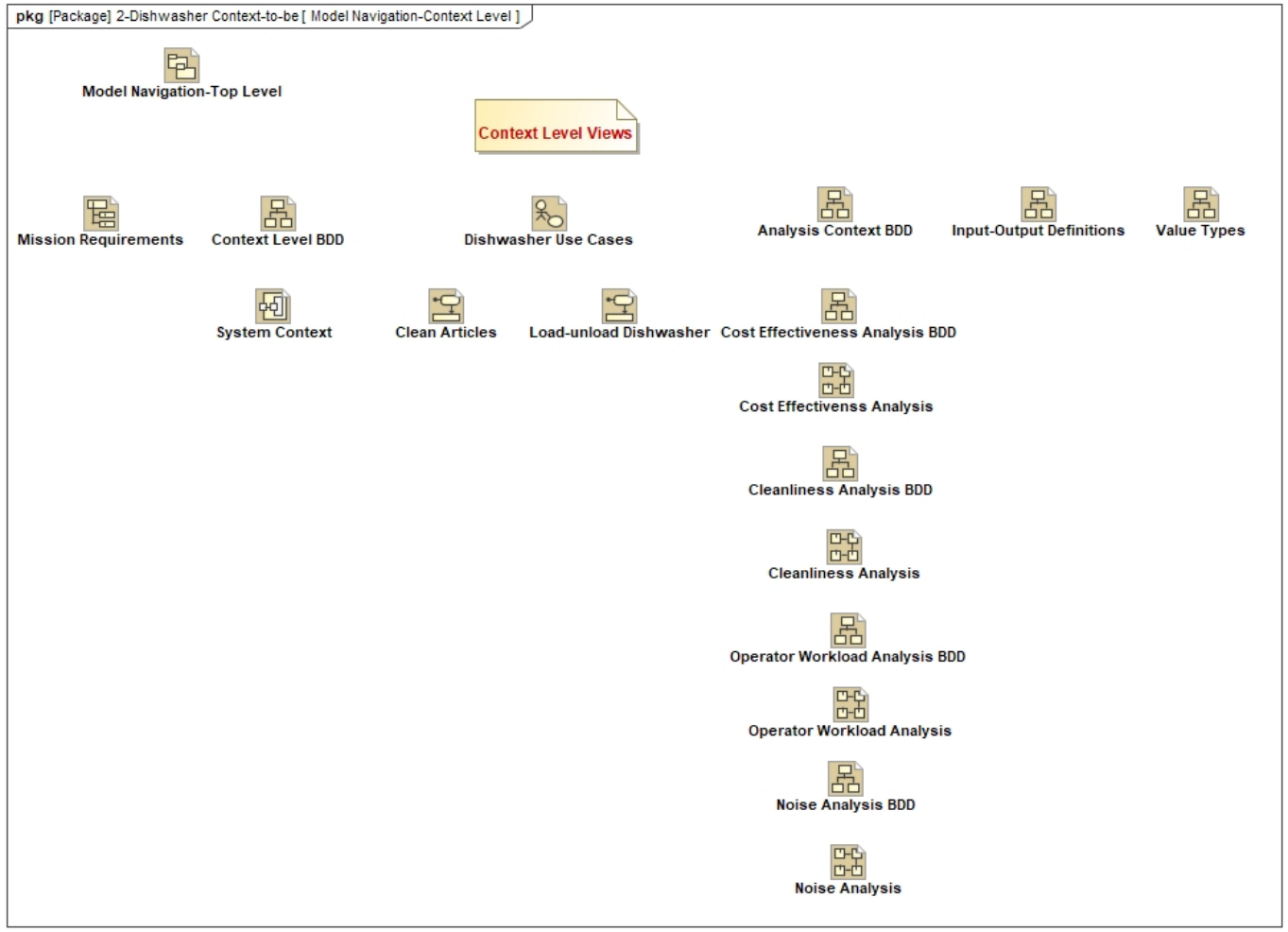


Navigation Diagram
Top Level

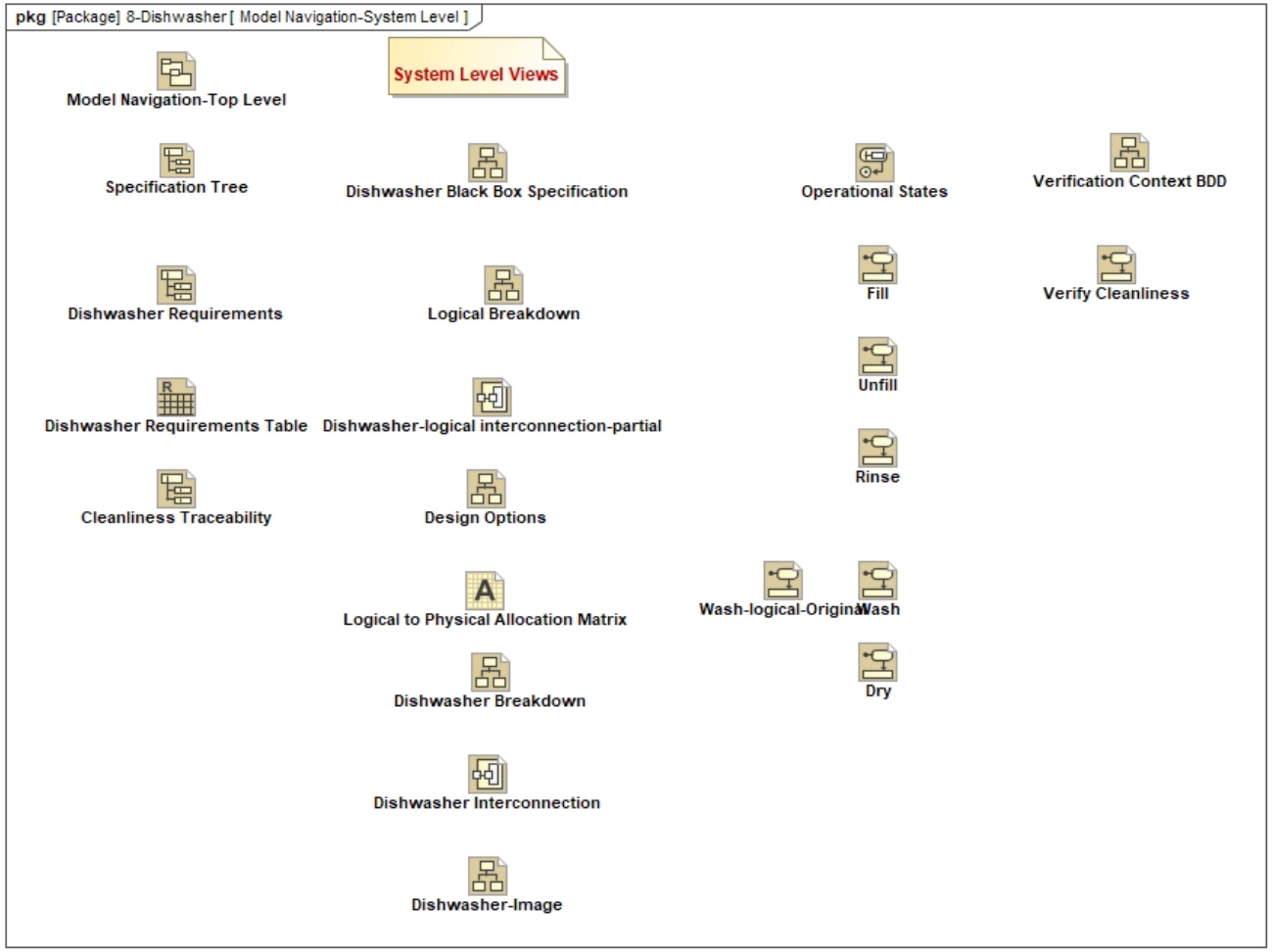
- The first 3 diagrams (including this one) are pkg diagrams called Navigation Diagrams that include links to other diagrams
  - Top Level (this diagram)
  - Context Level
  - System Level



Navigation Diagram Context Level



Navigation Diagram System Level



Project Evaluation

- Review your project against the evaluation criteria provided in the project overview
  - Completeness
  - Correctness of language and method
  - Diagram layout quality
- Update as required to address issues

Observations & Conclusions

- What did you learn?
- Identify key insights regarding the MBSE approach you would like to share