

D-Case Collaboration with Modeling Environment

Demonstration

SysML Model Specification



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Change History

Modification	Modifications						
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1 Scope

This document describes the outline of SysML models for Demonstration of D-Case Collaboration with Modeling Environment.

2 SysML

SysML (Systems Modeling Language) describes requirements for system, and structure or behavior of system for specifying, analyzing, designing, and verifying system. Below URL describes the detail about SysML.

http://www.omgsysml.org/

3 Demonstration

This demonstration has SysML modeling for Cruise Control System of Automotive. Models are focused on Safety Requirements and Reliability Requirements of Functional Safety.

This model includes 5 kinds of diagrams as below.

- 1. Use Case Diagram
- 2. Requirement Diagram
- 3. Block Definition Diagram
- 4. Parametric Diagram
- 5. State Machine Diagram

3.1 Use Case Diagram

Use Case Diagram includes association of System User and Operation. It clearly identifies the border of User and system (Figure 1).



Figure 1 Use Case Diagram



3.2 Requirement Diagram

Requirement Diagram includes structure of requirements for System.

Use Case Diagram mainly includes functional requirements, and Requirement Diagram includes both functional requirements and non-functional requirements (Figure 2).

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Vehicle has cruise control features												
	that support a driver.											
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button when CC stops CC should	button when CC boots CC should	when CC boots, the	button when CC	break when CC runs CC should	pauses, CC should	Cruise button when	received from	a threshold.	monitored.	an	monitored.	
boot.	set the current	decrease.	target speed	pause.	setting as before	CC runs, CC	runs, CC should			emergency.		
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		chould be m	ore									

Figure 2 Requirement Diagram

3.3 Block Definition Diagram

Block Definition Diagram includes static structure of System.

It identifies blocks of system components, association of blocks, and hierarchy of blocks (Figure 3).







3.4 Parametric Diagram

Parametric Diagram includes restrictions, preconditions of System, parameter, and mathematical formula.

It identifies external environment and characteristics of System (Figure 4).



Figure 4 Parametric Diagram

3.5 State Machine Diagram

State Machine Diagram includes behavior of System. It identifies state transition of blocks (Figure 5).





Figure 5 State Machine Diagram