MBD Platform

Documentation of the Software Development Environment

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The MathWorks, Inc.  
1 Apple Hill Drive  
Natick, MA 01760-2098

Documentation of the Software Development Environment

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Document Title: **Documentation of the Software Development Environment for** *<Project>*

**Document Number:** *<Doc No>*

Revision: *<Revision>*

Project: *<Project>*

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| Approvals: |  |  |
|  |  |  |
|  |  |  |
| *<Name>*, Author |  | Date |
|  |  |  |
| *<Name>*, Project Management |  | Date |
|  |  |  |
| *<Name>*, Engineering |  | Date |
|  |  |  |
| *<Name>*, Quality Engineering |  | Date |

| Change History | | | | |
| --- | --- | --- | --- | --- |
| Revision | Modification/Description | Date | Author | Checked |
|  |  |  |  |  |
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# Introduction

## Purpose and Scope

The purpose of this document is to provide the Documentation of the Software Development Environment for the project *<Project>*. This document provides the planning data outlined in ISO 26262-6:2018, Clause 5. The certification authority uses the plan as a description of the software development processes adopted to fulfill the requirements and recommendations for product development at the software level per ISO 26262:2018.

Therefore, this document explains the software development practices and methodologies of the project *<Project>*, including:

* Description of the software development processes.
* Description of the software development methods/languages, principles, and tools.
* Design and coding guidelines for modeling and programming languages.
* Description of the software verification methods and tools.
* Description of hardware platforms and environments for the tools.
* Considerations for external software components.

Within the project *<Project>*, this document provides a blueprint of the overall software development environment and its integral processes.

You can use this template as a resource when creating a Documentation of the Software Development Environment. If you are updating an existing Documentation of the Software Development Environment to support Model-Based Design (MBD), you can use this template as a reference.

## Applicable Documents

Table 1. Regulations and Standards

| **ID** | **Document Title** |
| --- | --- |
| ISO 26262-6 | Road Vehicles – Functional Safety – Part 6: Product Development at the Software Level. ISO, 2018 |
| ISO 26262-8 | Road Vehicles – Functional Safety – Part 8: Supporting Processes. ISO, 2018 |
| ISO 26262-9 | Road Vehicles – Functional Safety – Part 9: Automotive Safety Integrity Level (ASIL)-Oriented and Safety-Oriented Analyses. ISO, 2018 |
|  | *<List additional documents here, e.g. Advisory Circulars, EASA Certification Memos, etc.>* |

Table 2. Organizational & Project Plans, Standards, and Documents

| ID | Document Title |
| --- | --- |
| SDE | **Documentation of the Software Development Environment for** *<Project>* |
| SVP | **Software Verification Plan for** *<Project>* |
| SCMP | **Software Configuration Management Plan for** *<Project>* |
| SCCP | **Software Change Management (Control) Plan for** *<Project>* |
| SMG | **Software Modeling Guidelines for** *<Project>* |
| SCG | **Software Coding Guidelines for** *<Project>* |
|  | *<List additional documents here.>* |

This initial release will identify the versions of completed documents, versions of the tools used, and the initial software configuration.

If any of the plans are revised during the project, the reasons for the changes must be captured and documented.

## Referenced Documents

Table 3. Reference Materials

| ID | Document Title |
| --- | --- |
|  |  |
|  | *<List additional documents here.>* |

# Software Development Environment

## Software Safety Requirements Development Processes

*<Describe your software safety requirements specification (including hardware-software interface specification) and verification processes here, based on ISO 26262-6:2018, Clause 6 and ISO 26262-8:2018, Clause 6.>*

### Software Safety Requirements Specification Methods and Tools

*<Describe your software safety requirements specification methods, notations, and tools here. Provide reference to the available requirement authoring guidelines if applicable. Explain how Table 1 of ISO 26262-8:2018 is applied.>*

### Software Safety Requirements Verification Methods and Tools

*<Describe your software safety requirements verification methods and tools here. Identify the applicable review checklists if necessary. Explain how Table 2 of ISO 26262-8:2018 is applied. If the information is documented using a separate Software Verification Plan, provide the reference instead.>*

## Software Architectural Design Processes

*<Describe your software architectural design specification and verification processes here, based on ISO 26262-6:2018, Clause 7.>*

### Software Architectural Design Specification Methods and Tools

*<Describe your software architectural design specification methods, notations, and tools here. Provide reference to the available architectural design guidelines if applicable. Explain how Table 2 of ISO 26262-6:2018 is applied.>*

### Software Architectural Design Verification Methods and Tools

*<Describe your software architectural design verification methods and tools here. Identify the applicable review checklists if necessary. Explain how Table 4 of ISO 26262-6:2018 is applied. If the information is documented using a separate Software Verification Plan, provide the reference instead.>*

## Software Unit Design and Implementation Processes

*<Describe your software unit design and implementation processes here, based on ISO 26262-6:2018, Clause 8.>*

### Modeling Methods, Modeling Languages, and Modeling Tools

*<Describe your modeling methods, notations, languages, and tools here. Provide reference to the available modeling guidelines if applicable. Explain how Table 5 of ISO 26262-6:2018 is applied.>*

### Coding Methods, Programming Languages, and Coding Tools

*<Describe your coding methods, notations, languages, and tools here. Provide reference to the available coding guidelines if applicable.>*

## Software Unit Verification Processes

*<Describe your software unit verification processes here, based on ISO 26262-6:2018, Clause 9.>*

### Software Unit Verification Methods and Tools

*<Describe your software unit verification methods and tools here. Identify the applicable review checklists if necessary. Explain how Tables 7, 8, and 9 of ISO 26262-6:2018 are applied. If the information is documented using a separate Software Verification Plan, provide the reference instead.>*

## Software Integration and Verification Processes

*<Describe your software integration and verification processes here, based on ISO 26262-6:2018, Clause 10.>*

### Software Integration Methods and Tools

*<Describe your software integration methods and tools here. List the compilers, linkage editors, and loaders.>*

### Software Component Verification Methods and Tools

*<Describe your software component verification methods and tools here. Identify the applicable review checklists if necessary. Explain how Tables 10, 11, and 12 of ISO 26262-6:2018 are applied. If the information is documented using a separate Software Verification Plan, provide the reference instead.>*

## Embedded Software Testing Processes

*<Describe your embedded software testing processes here, based on ISO 26262-6:2018, Clause 11.>*

### Embedded Software Testing Methods and Tools

*<Describe your embedded software testing methods and tools here. Identify the applicable review checklists if necessary. Explain how Tables 13, 14, and 15 of ISO 26262-6:2018 are applied. If the information is documented using a separate Software Verification Plan, provide the reference instead.>*

## Hardware Platforms for the Tools

*<Describe your hardware platforms and system environments for all the tools here.>*

# Standards

## Requirement Authoring Guidelines

*<Insert your requirement authoring guidelines (including the required attributes and characteristics) or a reference to the applicable standards here, based on ISO 26262-8:2018, Clause 6.>*

## Architectural Design Guidelines

*<Insert your architectural design guidelines (including the characteristics and adopted architectural design principles) or a reference to the applicable standards here, based on ISO 26262-6:2018, Clause 7. Explain how Table 3 of ISO 26262-6:2018 is applied.>*

## Modeling Guidelines

*<Insert your modeling guidelines (including the adopted design principles and rules) or a reference to the applicable standards here, based on ISO 26262-6:2018, Clause 8. Explain how Tables 1 and 6 of ISO 26262-6:2018 are applied.>*

## Coding Guidelines

*<Insert your coding guidelines (including the adopted programming principles and rules) or a reference to the applicable standards here, based on ISO 26262-6:2018, Clause 8. Explain how Tables 1 and 6 of ISO 26262-6:2018 are applied.>*

# Additional Considerations

## Software Configuration Data

*<Describe your configuration data specification and verification processes here, based on ISO 26262-6:2018, Annex C. Explain how Table C.1 of ISO 26262-6:2018 is applied.>*

## Qualification of Reused Software Components

*<Describe the qualification specification and verification processes for the software components you intend to reuse here, based on ISO 26262-8:2018, Clause 12.>*

## Software Partitions

*<Describe your software partition specification and verification processes here.>*