SCN-SG Safety Concept Notation Study Group

SCDL
Safety Concept Description Language

Introduction of SCDL v.1.6.0

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Sept. 19th, 2023

ASAM Association for Standardization of Automation and Measuring Systems

Agenda

1	ASAM SCDL v1.6.0 motivation
2	Notation example of SCDL
3	The reason why SCDL is used in the market

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What is SCDL

☐ **S**afety **C**oncept **D**escription **L**anguage

☐ Published in 2016 by SCN-SG* as notation specification to specify safety requirement specification and safety concept (result of safety requirement allocation to physical layer architecture) in the form of semi-formal notation which is ISO 26262 is highly recommended.

*SCN-SG: Safety Concept Notation – Study Group

ASAM SCDL next generation Project

https://ssl.scn-sg.com/main/ja/

SCN-SG

ASAM Task Force

Sub-Working Groups

Security SWG

SOTIF SWG

SCDL-SA SWG
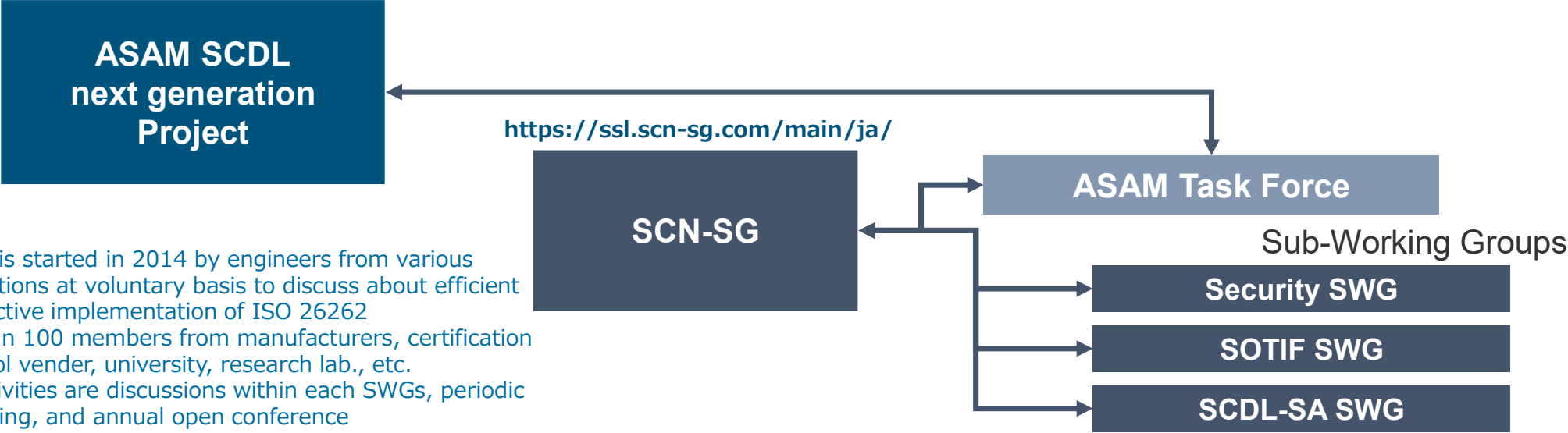
☐ SCN-SG is started in 2014 by engineers from various organizations at voluntary basis to discuss about efficient and effective implementation of ISO 26262
☐ More than 100 members from manufacturers, certification body, tool vender, university, research lab., etc.
☐ Main activities are discussions within each SWGs, periodic SG meeting, and annual open conference

ASAM SCDL v1.6.0

☐ SCDL is widely used within actual projects and trainings in the field and supporting tools are released by various organization accordingly.

☐ In response to this situation, standardization has been pursued based on the views of ensuring the publicness and neutrality of the SCDL language specification that supports notation, as well as maintaining consistency in descriptive rules (grammar) and ensuring data compatibility in tool interoperability.

☐ As a result, ASAM SCDL Version 1.6.0 is published in 2021

☐ Available for free download by anyone*
   from ASAM HP

ASAM SCDL

ASAM SCDL (Safety Concept Description Language) is a semi-formal notation to describe ISO 26262 safety architectures, namely safety concepts. This includes safety requirement specifications, element architectures, requirements allocation on elements, ASIL assignments, decompositions for safety mechanisms and others. SCDL as a vendor-independent language targets modeling methods for ISO 26262 by providing intuitive graphical representations and straightforward processes. Tools based on SCDL support the development, design, analysis, and verification of ISO 26262 artefacts. It allows for interoperability and exchangeability of methods and artefacts.

Use cases

- ASAM SCDL is utilized as a standardized representation to support de
  functional / technical safety concepts and requirements.
- ASAM SCDL and its graphical representation are intuitive and are used
  and further develop ISO 26262 related aspects.
- ASAM SCDL is also utilized to specify safety architecture in HW/SW int

Benefits

- ASAM SCDL is a vendor-independent language to apply ISO 26262 req
  architectures.
- ASAM SCDL supports tool-based development of safety concepts and
  26262 artefacts.

DOWNLOADS

ASAM SCDL v 1.6.0
(Free of charge for members)

VIEW ONLINE
(Free of charge)

ASAM SCDL Specification	PDF (1 MB)
ASAM SCDL Specification [JP]	PDF (3 MB)
ASAM SCDL Practical Examples	PDF (1 MB)
ASAM SCDL Practical Examples [JP]	PDF (883 KB)
ASAM SCDL Release Presentation	PDF (774 KB)

ASAM SCDL
Safety Concept Description Language

Part 1 of 3
Notation Specification
Version 1.6.0
Date: 2021-xx-xx

Base Standard

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*XML data exchange specification is available for ASAM members only
  Ref: https://www.asam.net/standards/detail/scdl/
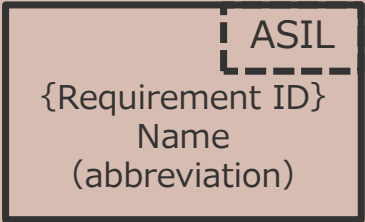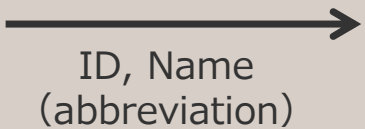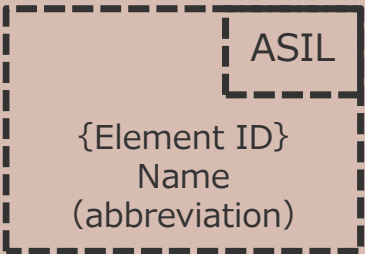
Merits from ASAM standardization

☐ Choices for unified specification description language when discussing safety architecture for complex system based on collaborative control of multiple sub-systems will expand due to the stabilization of the language specification.

☐ Handover effort and human errors due to specification misinterpretation can be reduced through the commonization of safety architecture notation in internal and external documents.

☐ Contribution towards lowering the barriers between domains as a common language for handling safety architecture in the era of rapid growth in connectivity between mobility and external environment of autonomous driving vehicles.

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ASAM SCDL v1.6.0 symbols

☐ Major symbols are follows

Symbol	Meaning	Note
 ASIL {Requirement ID} Name (abbreviation)	Requirement ASIL in upper right place holder	• Straight line with any thickness and color. • Both or either of ID and Name (abbreviation) is specified.
ID, Name (abbreviation)	Interaction line	• Express exchange of information between requirements. • Both or either of ID and Name (abbreviation) is specified.
 ASIL {Element ID} Name (abbreviation)	Element ASIL in upper right place holder	• Dashed line with any thickness and color. (distinguish from line for requirement) • Both or either of ID and Name (abbreviation) is specified.

ASAM SCDL v1.6.0 symbols

☐ Example of safety architecture development based on SCDL
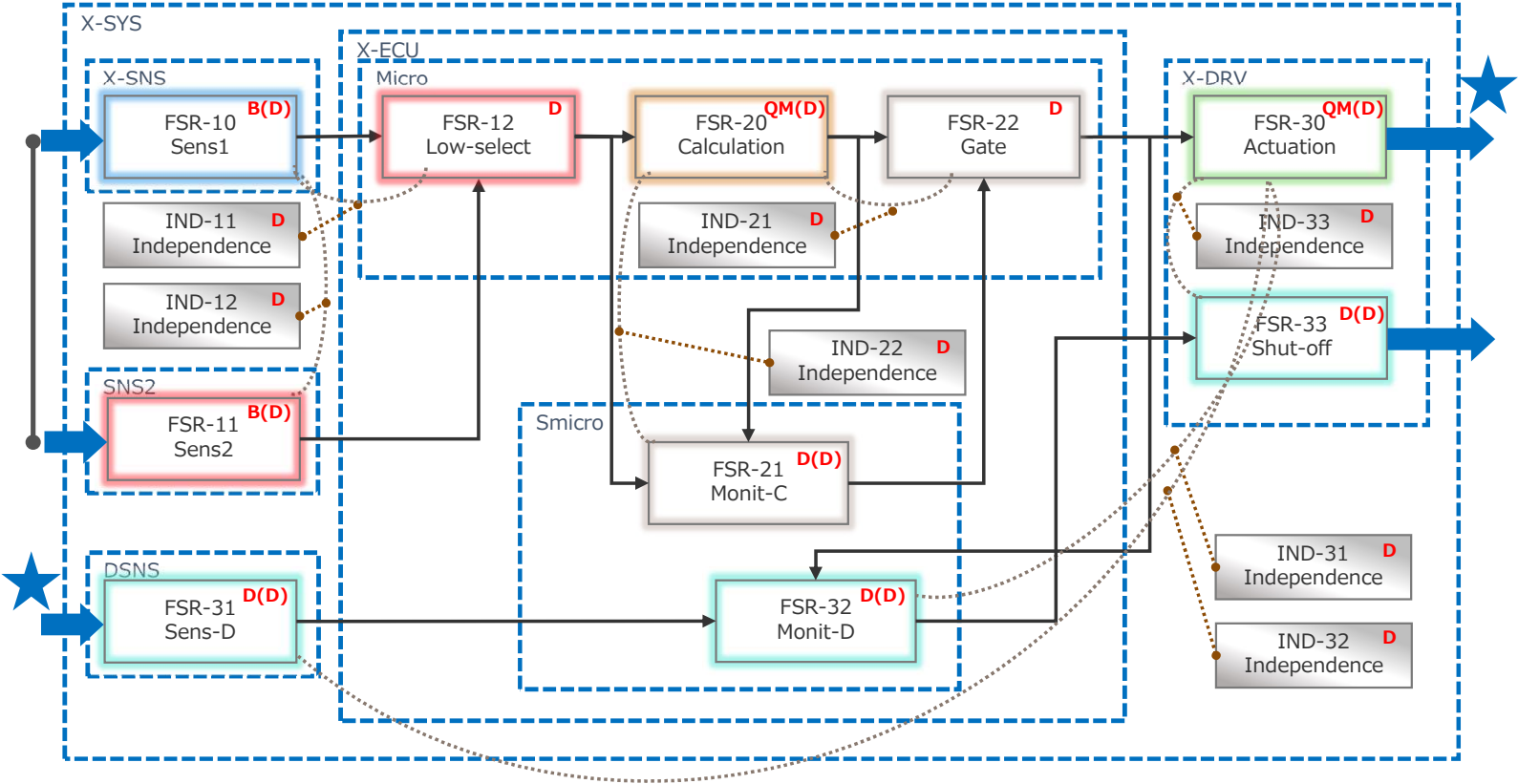
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The reason why ASAM SCDL v1.6.0 is used in the market

As one perspective

- ❑ Supports effective and efficient implementation of ISO 26262:2018 –Functional safety-

- ❑ It allows for the visual and straightforward construction of safety architectures

- ❑ Enables the seamless and rational discussion of safety

- ❑ Serves as a central work product for safety argument/safety cases

- ❑ Can be utilized as a common language between OEMs and suppliers, among others

- ❑ The support provided by tool vendors contributes to the adoption and expansion of ASAM SCDL

安全アーキテクチャ
Safety Architecture

SCDL

安全分析
Safety Analysis

安全要求
Safety Requirements