Good communication using SCDL
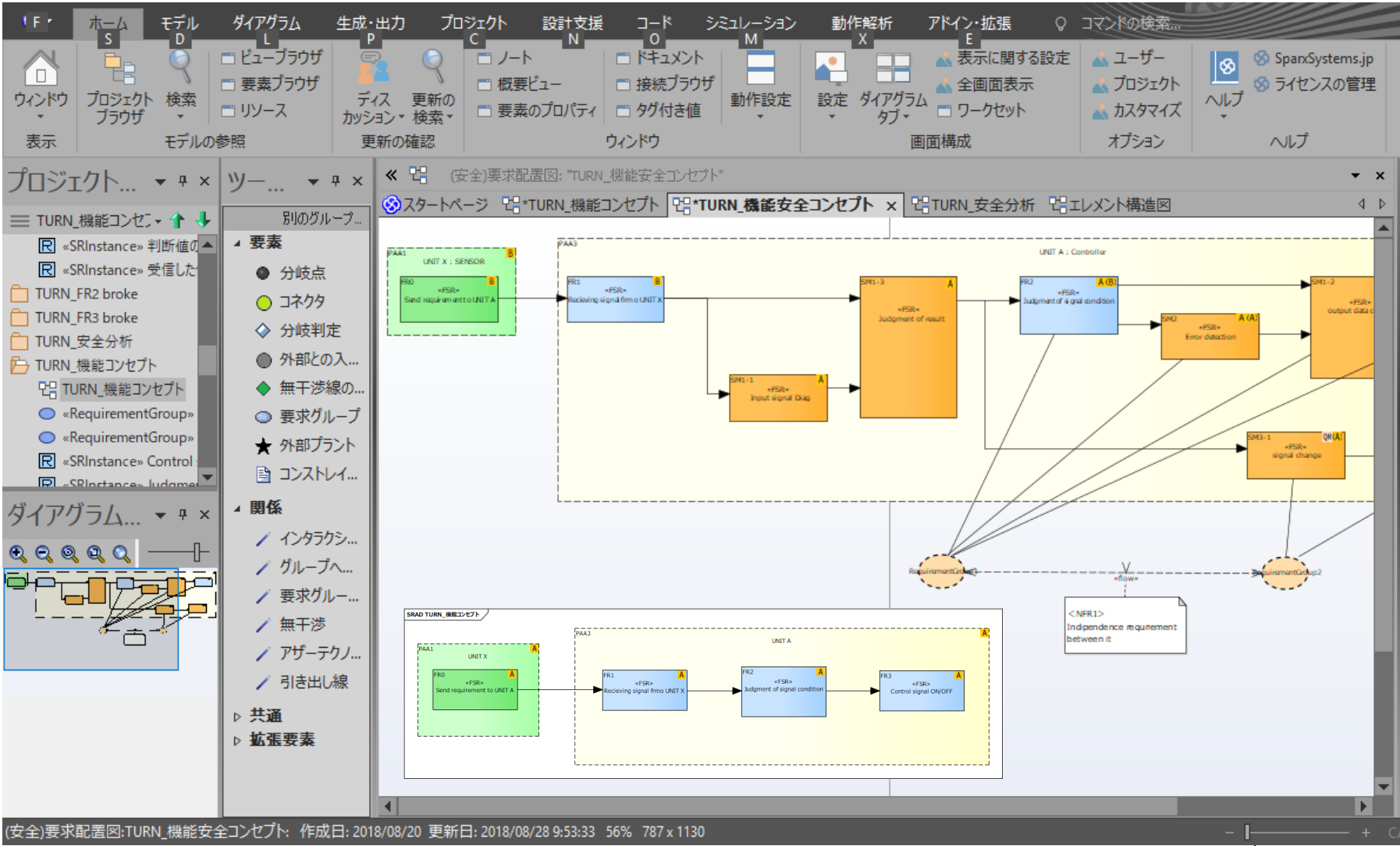
@ASAM Technical Seminar 2019
March 27th 2019

SCN-SG
Kiyoshi SASAKI
(Calsonic Kansei Corp. Japan)

Plot

1. Utilization of SCDL

2. Spread of SCDL

3. Expectations of international standardization

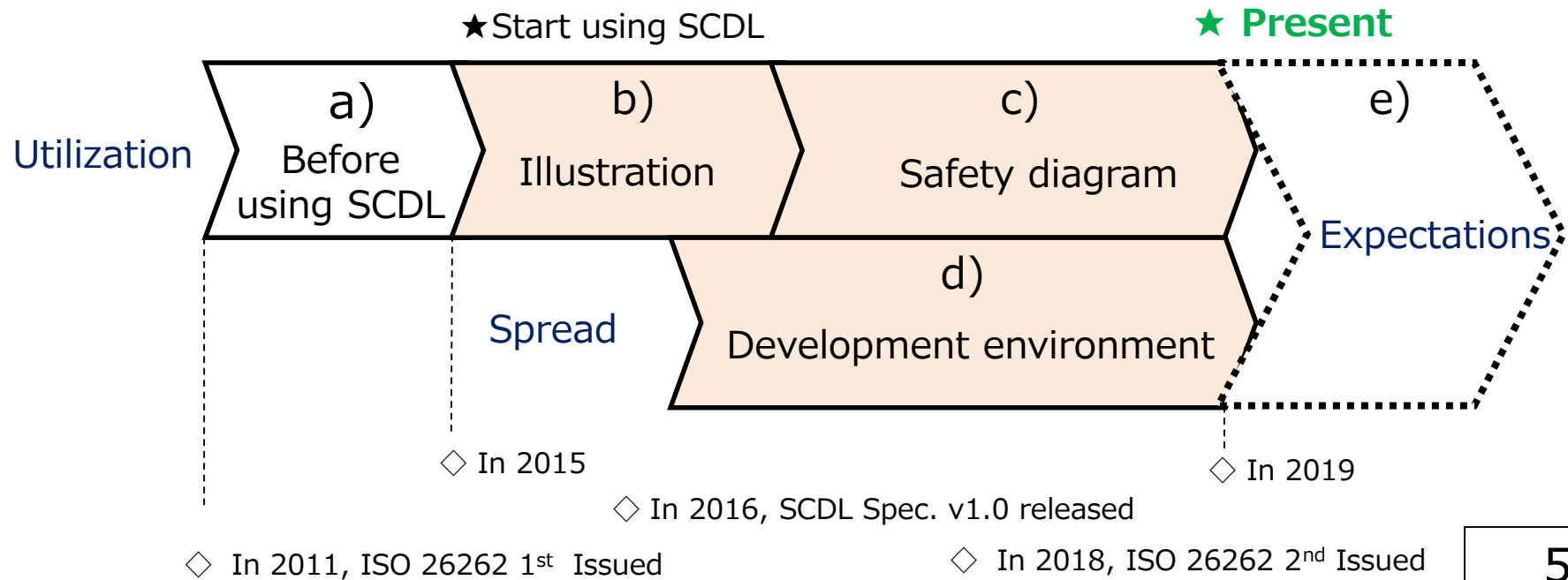# SCDL example of safety architecture in a real project

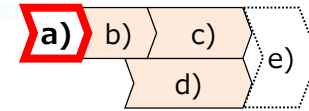# 1. Utilization of SCDL

1. Utilization of SCDL

History of SCDL applying,

- ■ ISO 26262 applied product is target.
  - • Safety concept (= safety architecture) development

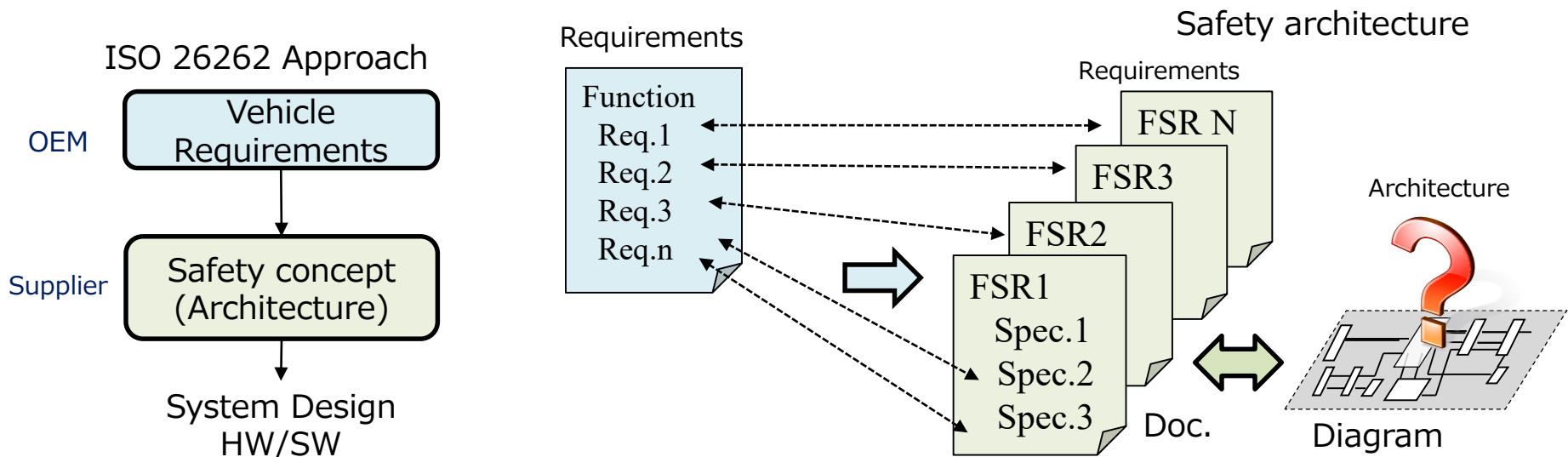- ■ Several steps for using SCDL
  - • Shown below

★Start using SCDL   ★ **Present**

Utilization

| a) Before using SCDL | b) Illustration | c) Safety diagram | e) Expectations |

Spread

| d) Development environment |

◇ In 2015

◇ In 2016, SCDL Spec. v1.0 released

◇ In 2019

◇ In 2011, ISO 26262 1st Issued

◇ In 2018, ISO 26262 2nd Issued

5

1. Utilization of SCDL

a) Before using SCDL

■ We had been developing safety concept based on documents

ISO 26262 Approach

OEM — Vehicle Requirements

Supplier — Safety concept (Architecture)

System Design HW/SW

Requirements — Function Req.1 Req.2 Req.3 Req.n

Safety architecture — Requirements — FSR N, FSR3, FSR2, FSR1 Spec.1 Spec.2 Spec.3 — Doc.
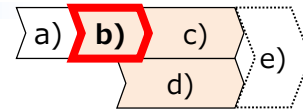
Architecture — Diagram

□ Difficult to understand the relationship between the requirements and safety architecture
□ Difficult common understanding due to language and cultural differences

Documents are important,
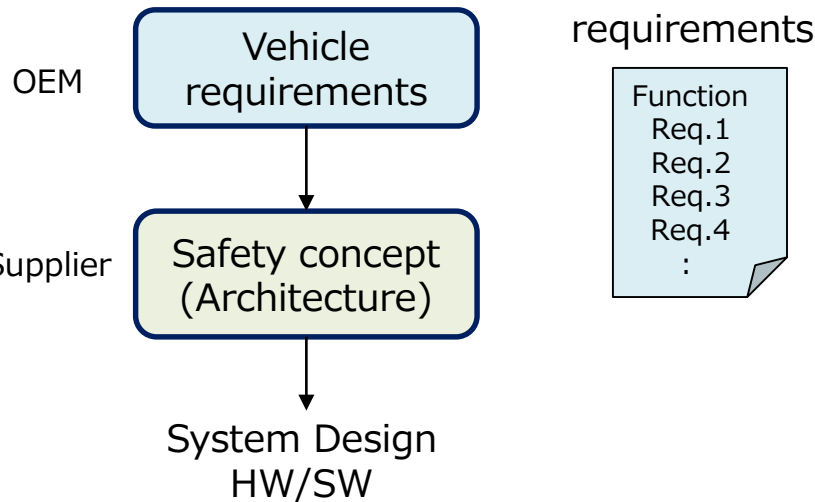But, we want more improvement safety accountability!
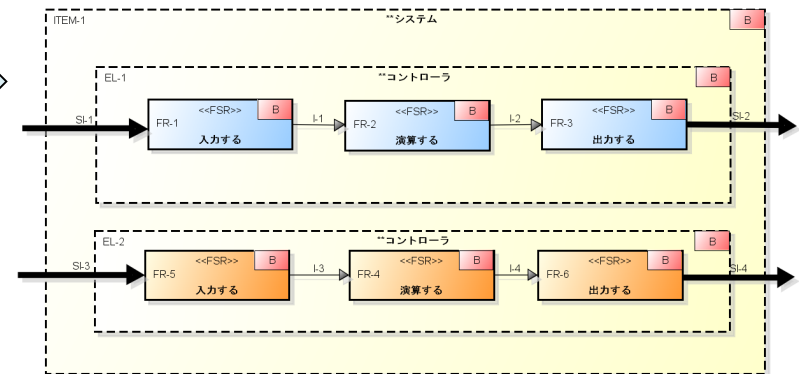
1. Utilization of SCDL

b) Illustration

- Using SCDL as a communication tool with customers.
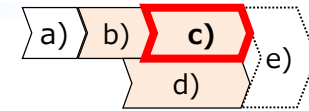
ISO 26262 Approach

Safety architecture by using SCDL

OEM

Vehicle requirements

requirements

Function
Req.1
Req.2
Req.3
Req.4
:

Supplier

Safety concept
(Architecture)

System Design
HW/SW

- □ Easy to understand safety architecture by using graphical expression.
- □ Early detection of safety critical requirements.
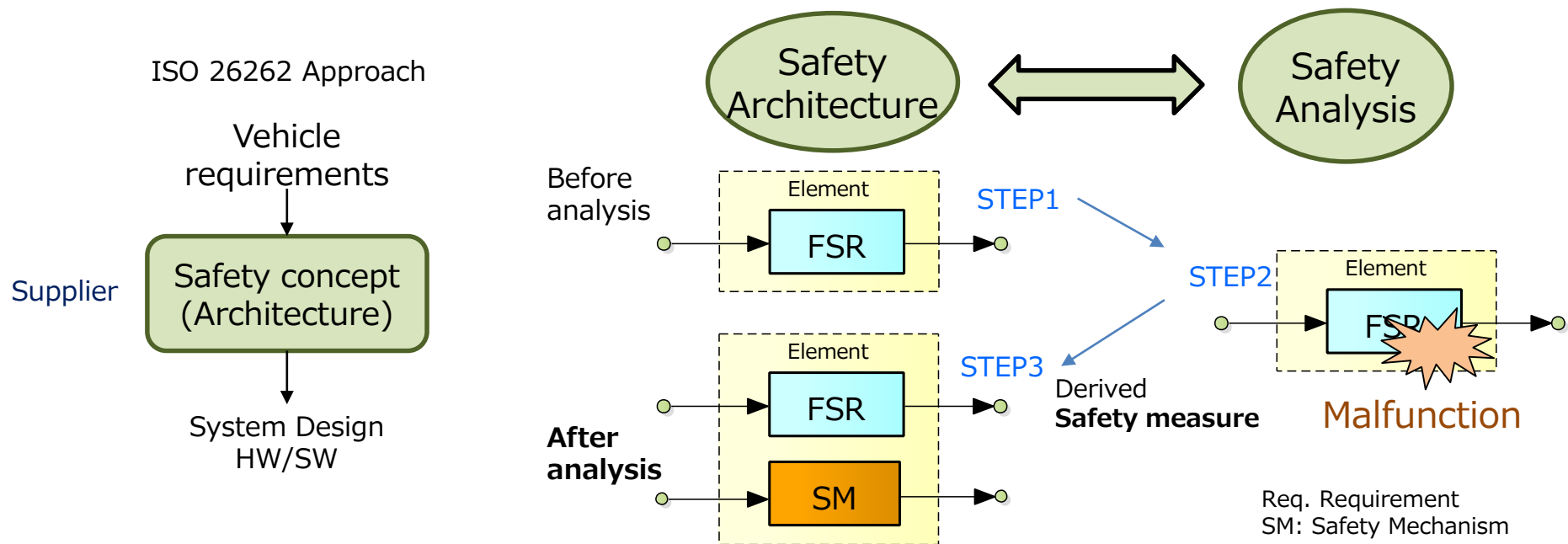- □ Able to check requirements of customers by using SCDL diagrams.

A common understanding with customers has became better.

7

1. Utilization of SCDL

c) Safety diagram

■ Safety analysis of safety architecture based on SCDL diagrams

ISO 26262 Approach

Vehicle requirements

Supplier

Safety concept (Architecture)

System Design HW/SW

Safety Architecture ⟷ Safety Analysis

Before analysis — Element — FSR — STEP1

STEP2 — Element — FSR — Malfunction

After analysis — Element — FSR — STEP3 — Derived **Safety measure**
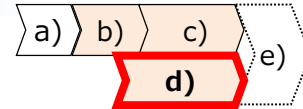
SM

Req. Requirement
SM: Safety Mechanism

□ Safety mechanism is derived from the results of safety analysis
□ Verifying the safety architecture
□ Documenting with SCDL diagrams as work products

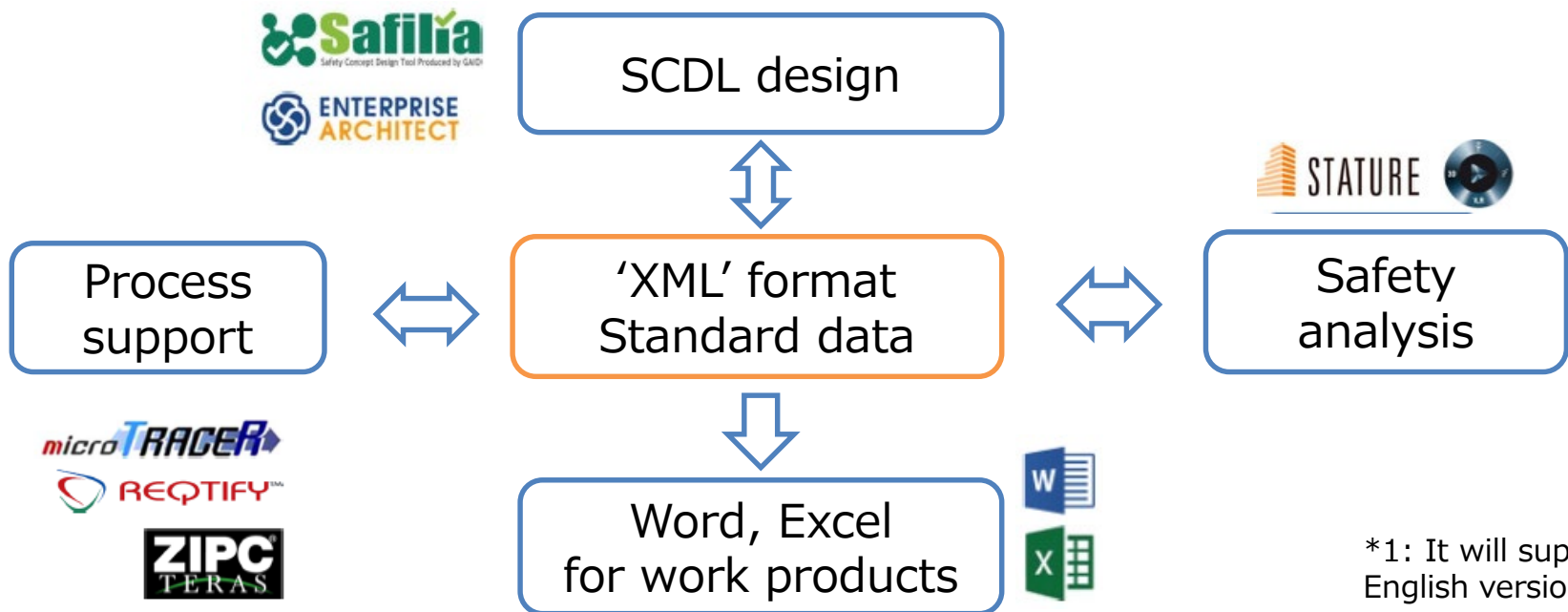Safety explanations became more clear with evidence.

8

2. Spread of SCDL

2. Spread of SCDL

d) Development environment

a) b) c) d) e)

- In case of Japan :
  - ☐ 'XML' Standard data is provided by SCDL specification[1],
  - ☐ SCDL tool-chain is beginning to spread,

Safilia
Safety Concept Design Tool Produced by GAIO!
ENTERPRISE ARCHITECT

SCDL design

⇕

STATURE

Process support

⇔

'XML' format Standard data

⇔

Safety analysis

microTRACER
REQTIFY
ZIPC TERAS

⬇

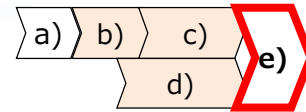Word, Excel for work products

W X

*1: It will support by English version 1.4

Work products can distribute, and can reuse

10

3. Expectations of international standardization

3. Expectations of international standardization

a) b) c)
d) e)

e) **Expectations**

- For a common language

  - ☐ To use the common language with peace of mind beyond language and culture.

  - ☐ To use it as a semi-formal notation.

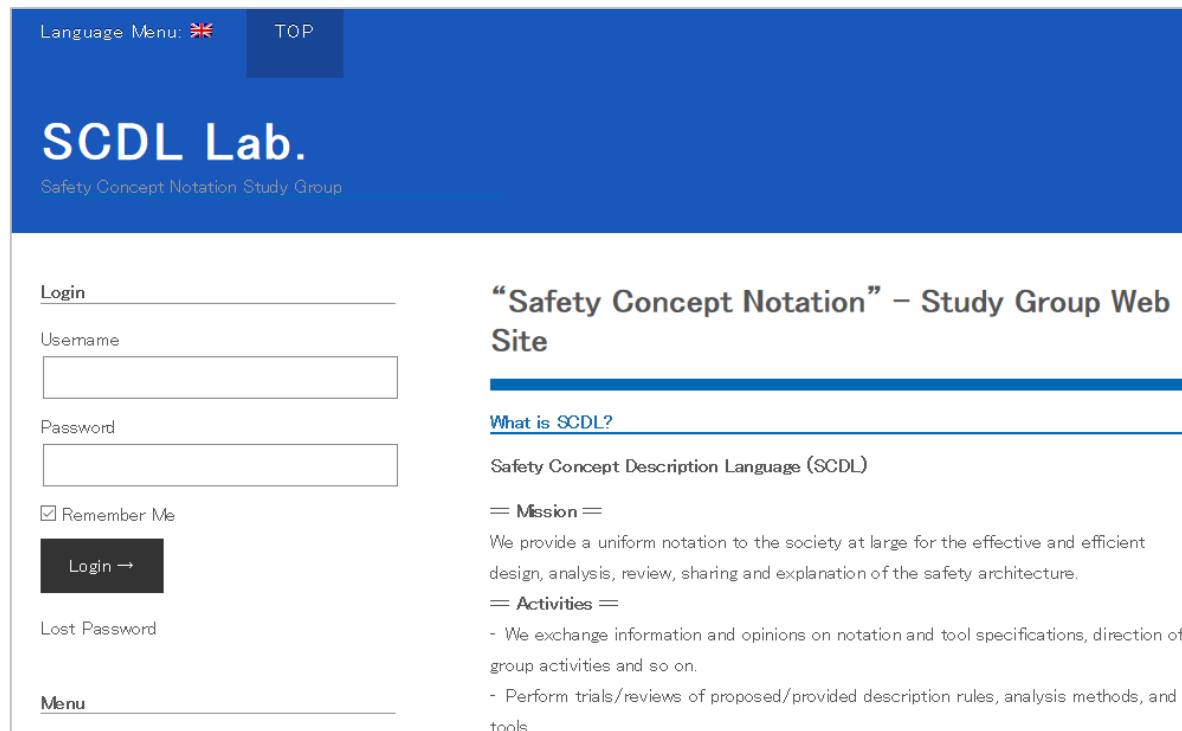- For compatibility of standard data format

  - ☐ Spread of the corresponding tool-chain in global.

  - ☐ To provide good solution for all engineers who is architecture development.

  Reliable SCDL as an internationally recognized language.

More information available

■ Please, access to SCN-SG Web site.

- ☐ SCDL Specification available.(Latest English version 1.3)
- ☐ SCN-SG activity information.
- ☐ Contact to us.

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"Safety Concept Notation" – Study Group Web Site

What is SCDL?

Safety Concept Description Language (SCDL)

═ Mission ═

We provide a uniform notation to the society at large for the effective and efficient design, analysis, review, sharing and explanation of the safety architecture.

═ Activities ═

- We exchange information and opinions on notation and tool specifications, direction of group activities and so on.
- Perform trials/reviews of proposed/provided description rules, analysis methods, and tools.

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Search

13

Q & A