

**1st. Asia Automobile Institute Summit**

**26-27 November 2012, Tokyo**

# **Functional Safety (ISO26262) activities in Japan**

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# What is the ISO26262 ?

# What is the ISO26262 ?

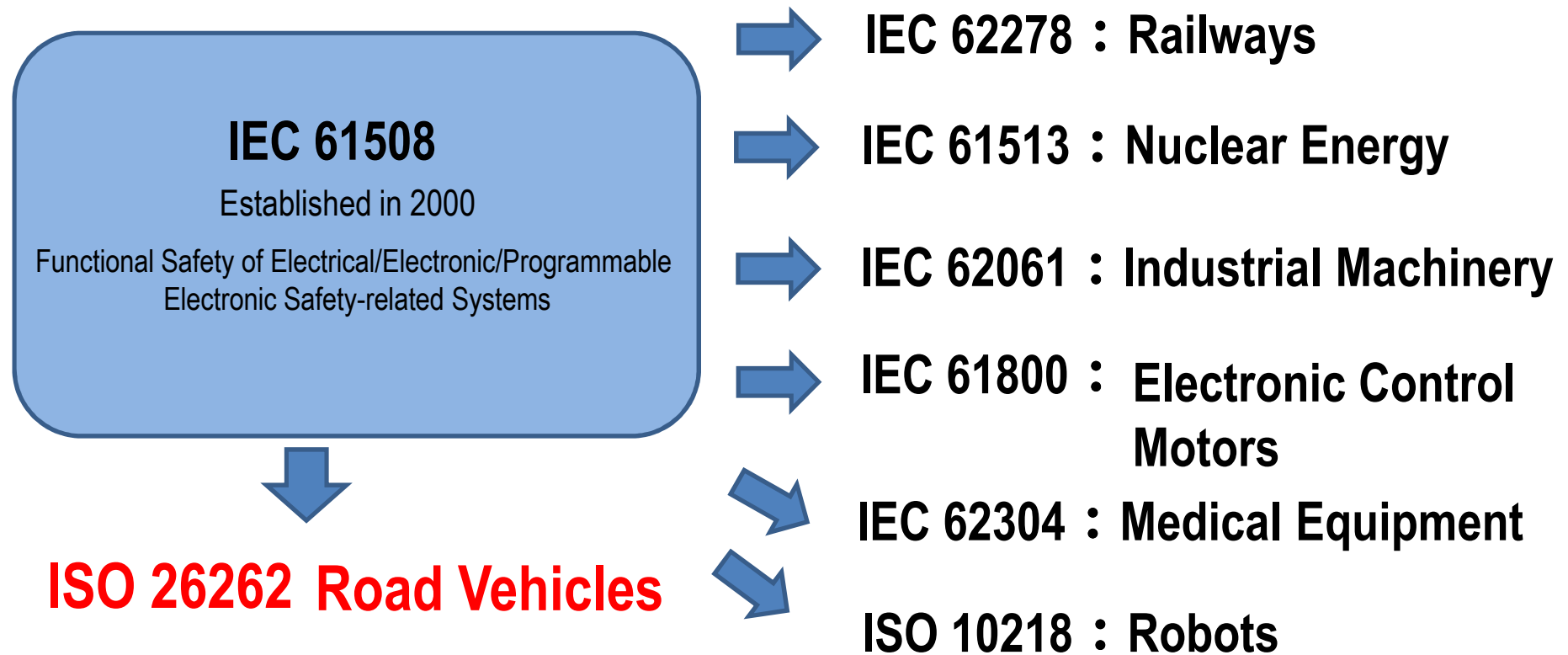


**ISO26262:**  
**Functional safety for road vehicles**

**A functional safety standard  
specifically for safety-related  
electronic systems**

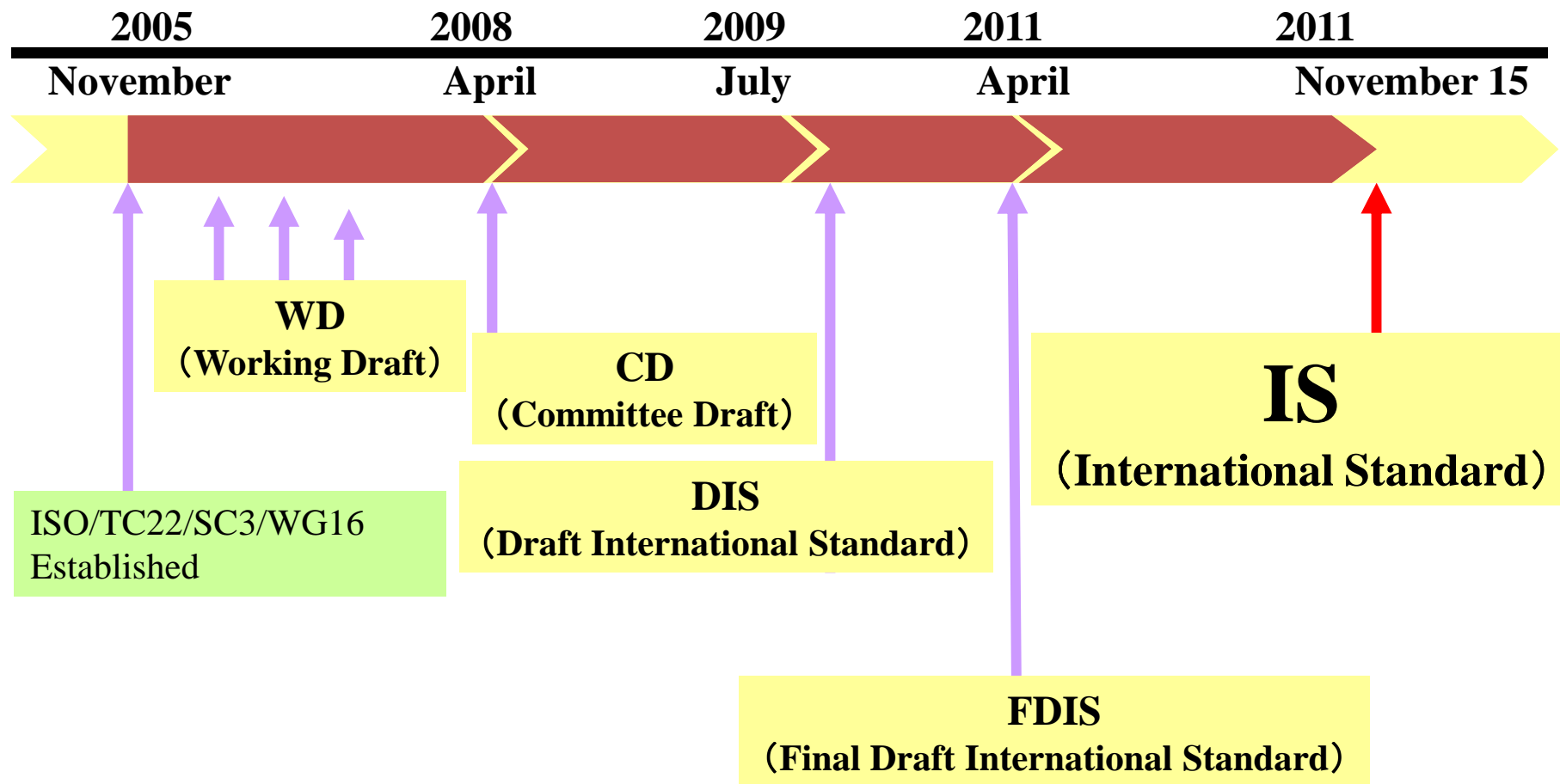
# What is the ISO26262 ?

ISO 26262 is the adaptation of IEC 61508 to comply with needs specific to the application sector of electrical and/or electronic (E/E) systems within road vehicles.



- ISO 26262 for Road Vehicles was developed based on IEC 61508
- Published in November 2011

# History of ISO26262



# Scope of ISO26262



- **Hardware/Software such as electric/electronic devices**

- Parts or systems that may significantly impact on human lives in case of malfunction/failure are considered.
- Equipment that consists only of machinery is out of its scope

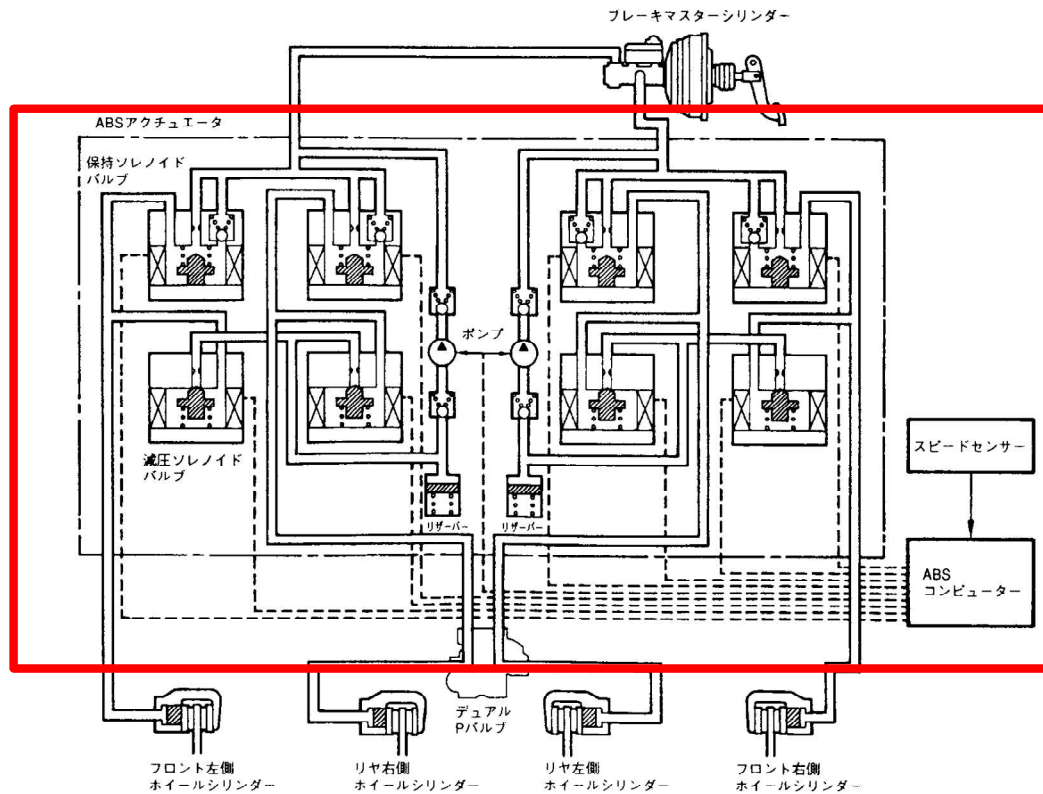
- **The entire Life-Cycle of automotive products**

Concept phase→Specification development  
→Design→Test→Feasibility check  
→Production→Maintenance/repair→Disposal

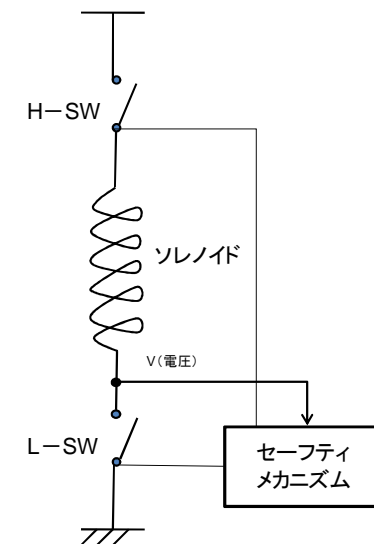
- **Motor vehicles up to 3500kg**

only passenger cars, not including MC & HDV for the time being.

# Example of functional safety



**Structure of ABS**



**Safety mechanism of actuator**

# Structure of ISO26262



- **ISO26262 is comprised of 10 parts.**
- **It provides a safety lifecycle (management, development, production, operation, service, decommissioning)**



# Structure of ISO26262

Part 1	Vocabulary
Part 2	Management of functional safety
Part 3	Concept phase
Part 4	Product development at the system level
Part 5	Product development at the hardware level
Part 6	Product development at the software level
Part 7	Production and operation
Part 8	Supporting processes
Part 9	Automotive safety integrity level (ASIL) oriented and safety-oriented analysis
Part 10	Guideline

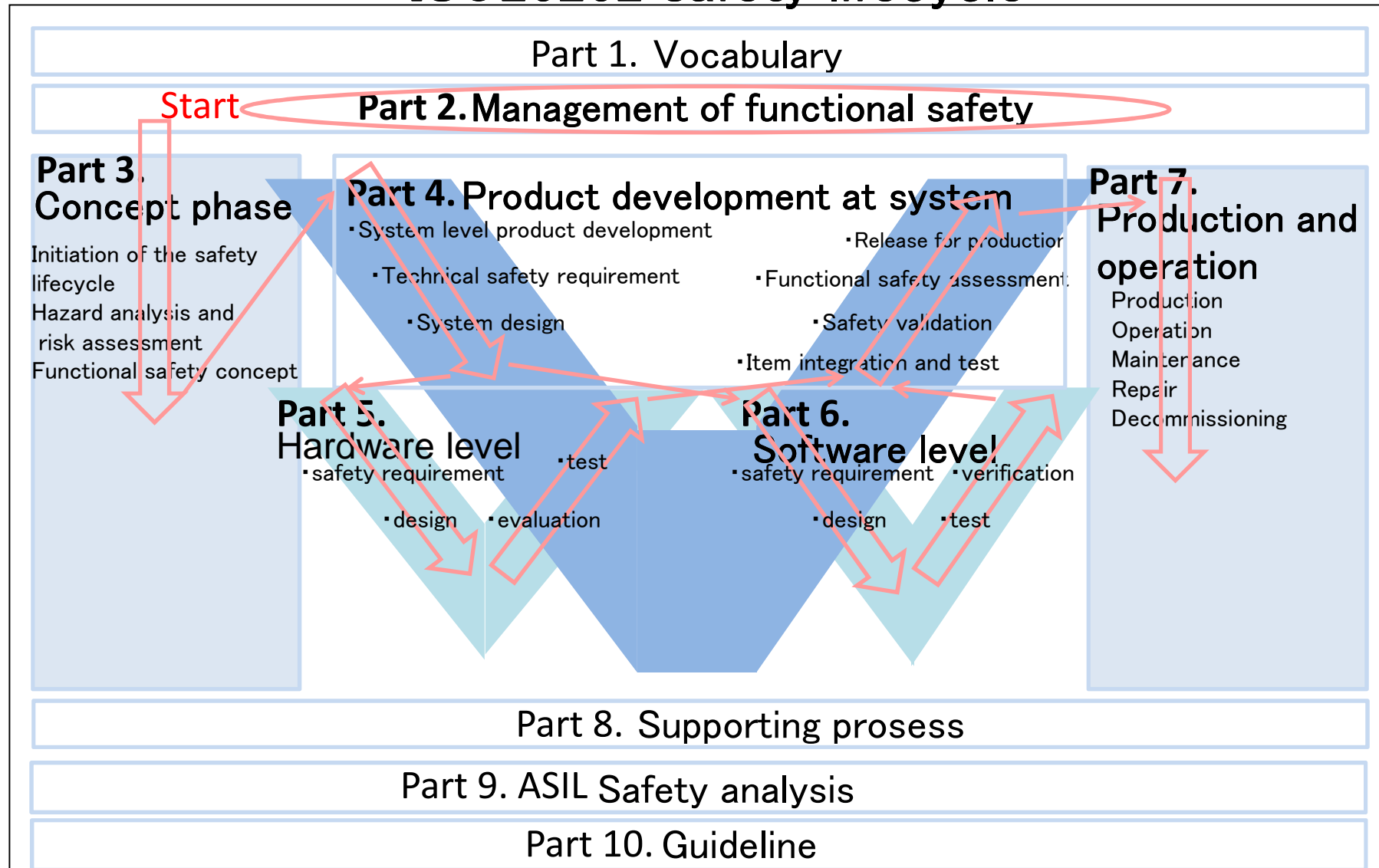
# Structure of ISO26262



- **It provides an automotive specific risk-based approach for determining integrity levels [Automotive Safety Integrity Levels (ASIL) ].**
- **It provides requirements for validation and confirmation measures.**
- **It provides requirements for relations with suppliers.**

# Structure of ISO26262

## ISO26262 safety lifecycle



# Why does the Auto Industry need ISO26262 ?

**Until ISO26262 was published:**

**Manufacturers had responsibility for product liability and users' quality satisfaction.  
They had a quality management system.**

**After ISO26262 was published:**

**ISO26262 is a "State of the Art"**

**"State of the Art" means the latest technology.  
Manufacturers should make an effort to use the latest technology.**

## **Current situation in Europe, the USA and Japan**

**Manufactures and suppliers have applied ISO26262.**

**OEM requests suppliers to add the ISO26262 procedure for development processes and products.**

**However, this is very difficult as they need some guidance, consultation, and common understanding.**

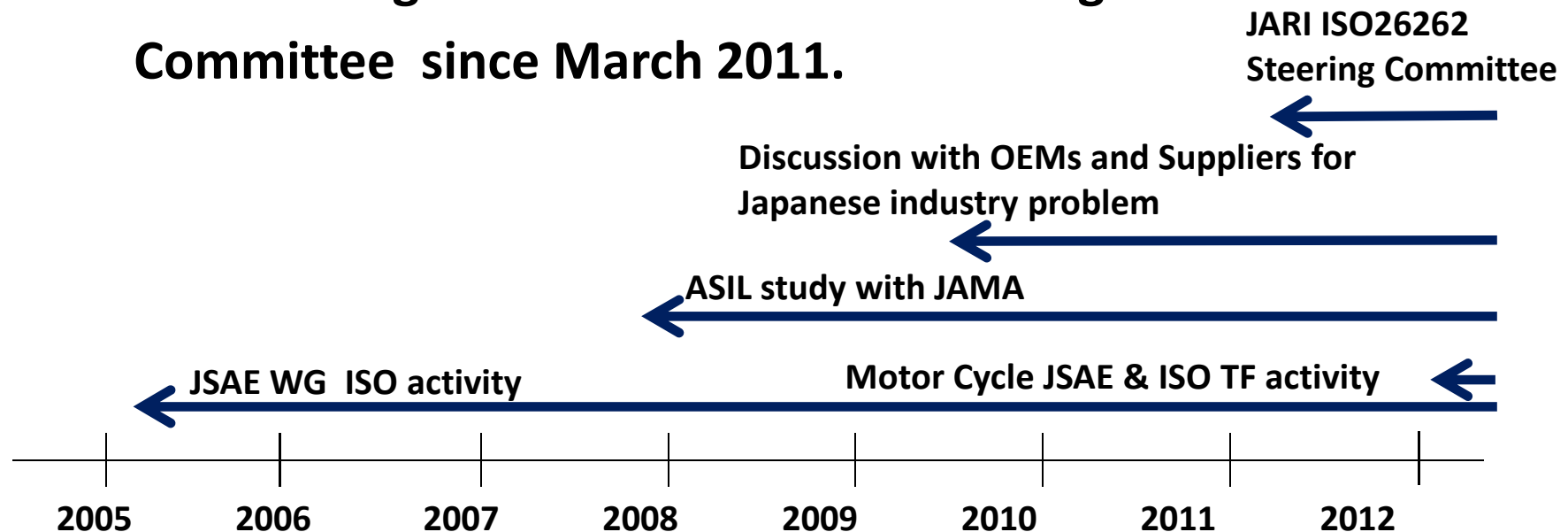
**Note: Third party certification is not required.**

# **JARI activity for ISO26262**

# JARI activity for ISO26262



- JARI joined JSAE WG for ISO26262 in 2005.
- JARI has studied with JAMA since 2008.
- JARI has asked many OEMs and suppliers regarding the problems they had when introducing ISO26262 into their work processes, from 2009.
- JARI has organized the ISO26262 Steering Committee since March 2011.



# Issues when introducing ISO26262



- Differences in the decision process for setting up ASIL between each company.
- Interpretation of overall ISO26262 and common use of the handbook.
- Level of safety management skill.
- Training service for safety managers.
- Etc.

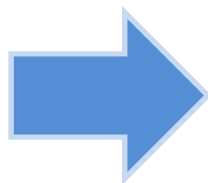


# How to solve these issues in Japan

- Which organization or committee is the suitable venue to discuss ISO26262

JAMA	▪ JAMA members are only OEMs
JSAE	▪ Responsibility: Development work of ISO26262, make hand book, interpretation of book.
JASPAR	▪ Main task: Automobile software
JAPIA	▪ JAPIA members are only suppliers

## Request from industry:



- set up discussion floor
- members are OEMs, suppliers, organizations
- third party certification body in the future

# How to solve these issues in Japan

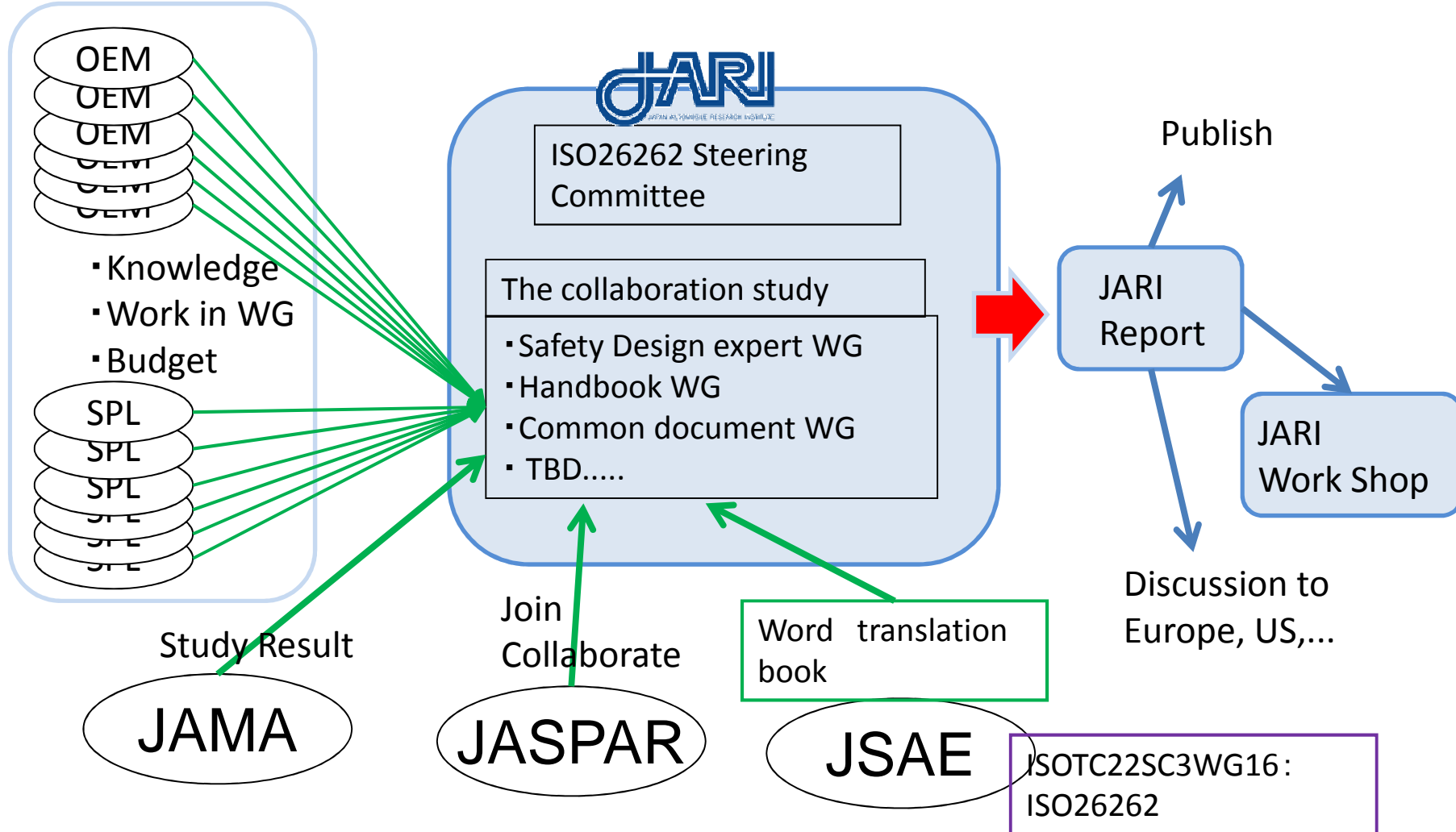


- **JARI has organized the ISO26262 Steering Committee in JARI since March 2011.**
- **Committee members are OEMs suppliers and JARI.**
- **JAMA, JSAE and JASPAR join the committee as observers.**

# ISO26262 collaboration system



contracted members



# ISO26262 collaboration members

Total: 26 companies 1 April, 2012

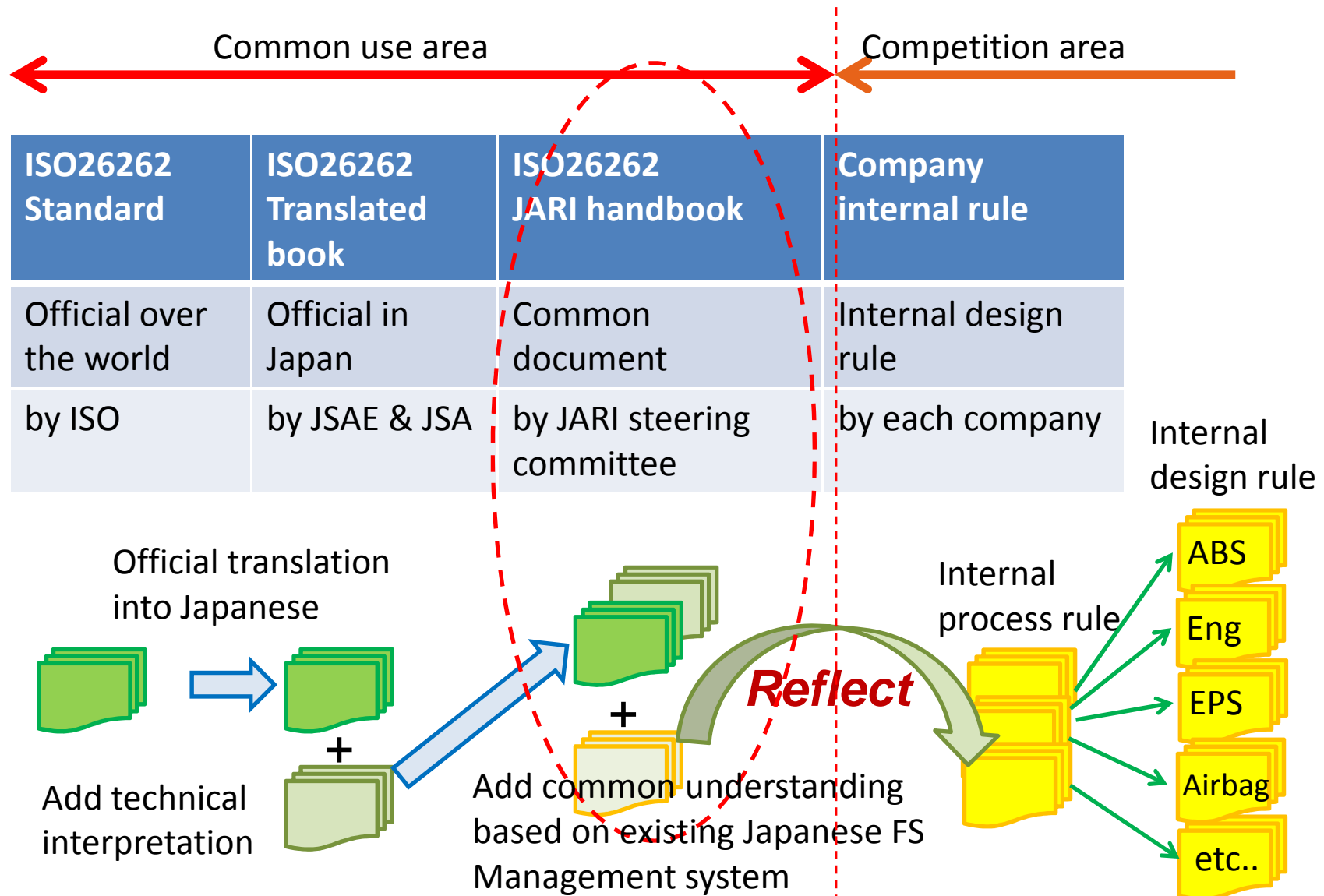
Manufacturer members	Supplier members	
TOYOTA	AISIN	DENSO
NISSAN	ADVICS	NISSIN
HONDA	CALSONIC KANSEI	Hitachi Automotive Systems
SUZUKI	KEIHIN	MITSUBISHI ELECTRIC
SUBARU	JTEKT	AISIN AW
MAZDA	SHOWA	TOSHIBA
MITSUBISHI	SUMITOMO ELECTRIC	Panasonic
DAIHATSU	YAZAKI CORPORATION	KYB
YAMAHA	NSK	

# Concept of JARI common activity

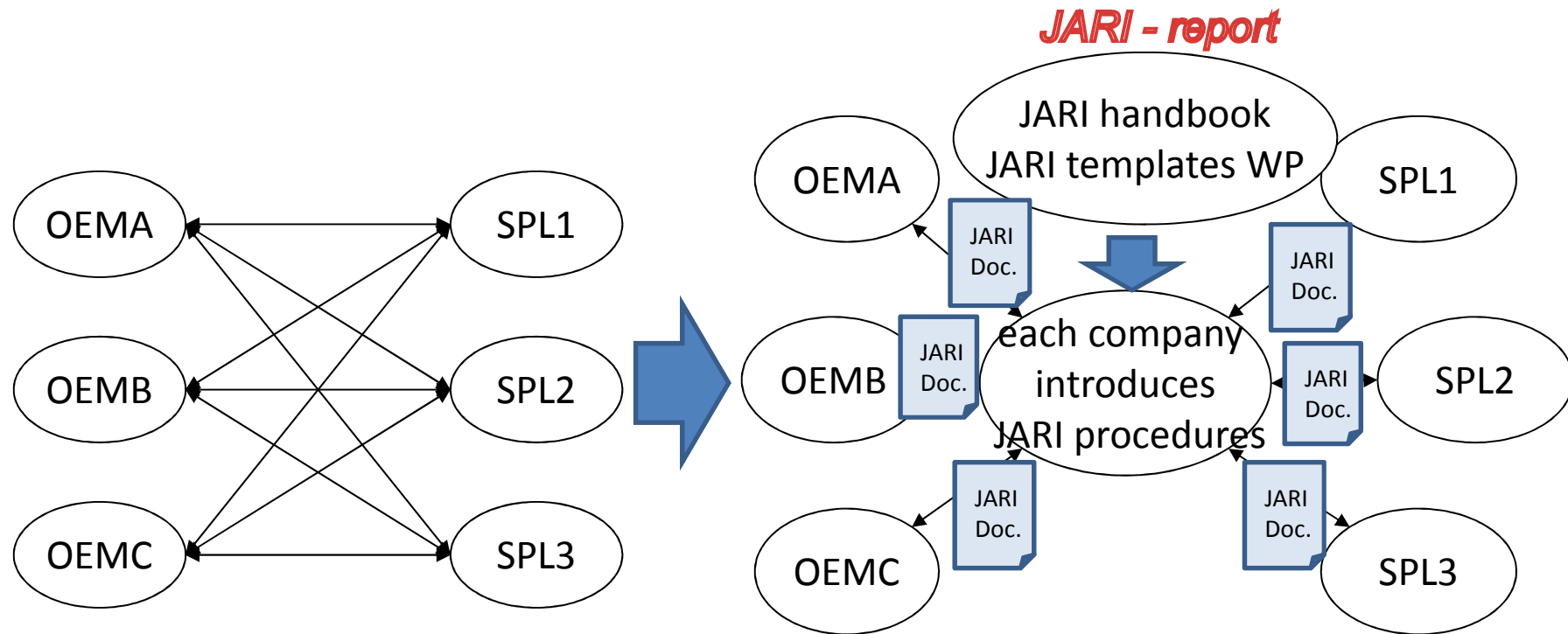
- There are many "work products" (e.g. documents, designs, etc.) but some companies should make new documents
  - Companies should improve their process activity
- ⇒ Work volume increases, it takes much time

But for some items, we can conduct common activities then we can share the results

# What is the JARI handbook?



# What is our target ?

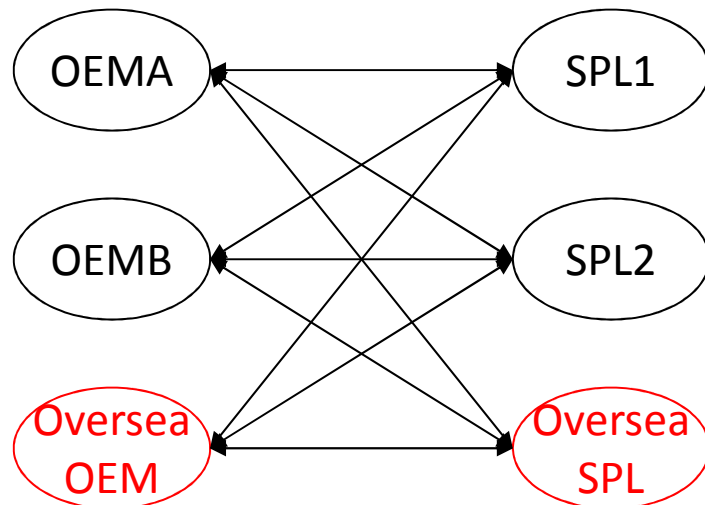


E.g. an OEM orders the same product from SPLs. But SPLs reports are different documents, and the OEM is confused.

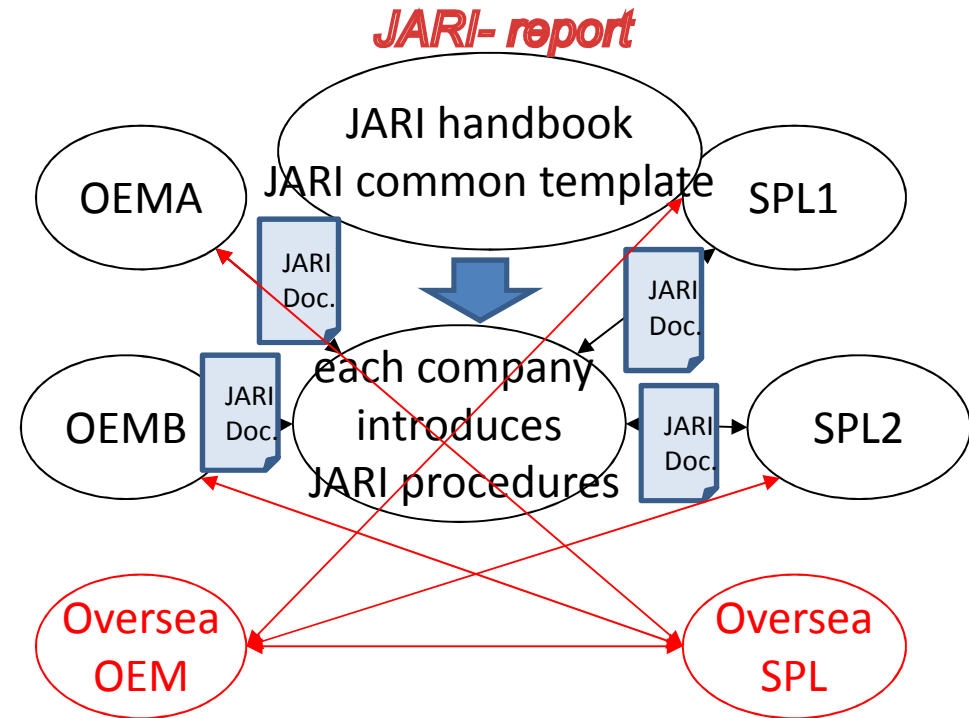
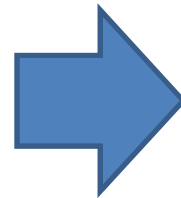
An SPL product is the same. But OEMs request different documents.

We will make a JARI-report, including a JARI-handbook and common template WPs. The JARI-handbook will give detailed procedures. Many JARI-SC members may introduce JARI procedures, leading to more effective work.

# What about overseas?



The present condition



How to introduce JARI procedures and JARI common templates overseas.



# JARI's next steps



- JARI has asked the 26 members if there are still any issues:
  - They need a common training program in Japan.
  - They need assessment assessor training and a skill certification system made by JARI.
  - They need a third party certificate.

# Training contents sample

**MIRA**

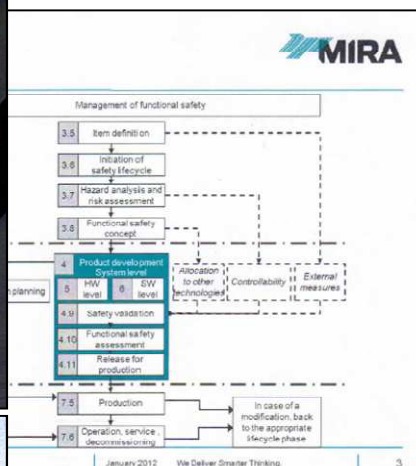
Functional Safety: ISO 26262

Module 4  
Product development  
at the system level  
ISO 26262 Part 4

Dr David Ward  
General Manager  
Functional Safety

January 2012

Smarter Thinking.



**MIRA**

concept (i.e. functional safety requirements plus design) and develop the technical safety concept (i.e. plus system design). This is achieved through requirements into technical safety requirements safety requirements to hardware or software or

ent types of failures and the mechanisms that can em

metrics (although part of Part 5) have to be at the architectural design can fulfil them – since ty goal violation

velopment is covered in Parts 5 and 6 respectively s a subset of Part 4 and synchronization of

January 2012 We Deliver Smarter Thinking. 4

**MIRA**

July 2012 We Deliver Smarter Thinking. 111

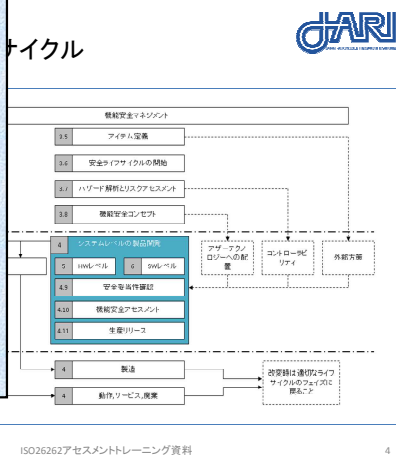
**JARI**

機能安全:ISO 26262

Module 4  
システムレベルでの製品開発  
ISO 26262 Part 4

財団法人日本自動車研究所  
ITS研究部  
機能安全グループ

2012年4月17日(火) ISO26262アセスメントトレーニング資料 2



**JARI**

つち機能安全要求と初期アーキテクチャ設計) プト(すなわち技術安全要求とシステム設計) 達成される。

安全要求をヘリファインすること

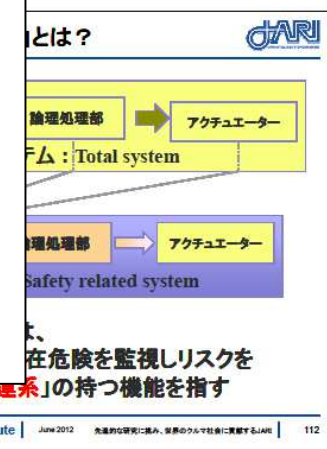
をハードウェア安全要求、ソフトウェア安全要求 置すること

およびそれらを扱うのに適用できる機構を理解

安全目標の侵害に関する目標を満足できるこ 慮されなければならないメトリックスを理解する があるが)。

の設計はPart 5とPart 6で扱われているが、こ として見られなければならない、同期を取った活

2012年4月13日(金) ISO26262アセスメントトレーニング資料 6



# **JARI proposal at the AAI Summit**

# Proposal at the AAI Summit



① They need a common training program in Japan

→ Japanese OEMs and SPLs have many development sites in Asia. Then, they need training at their sites by JARI, conducted by Japanese experts.

② They need assessment assessor training and a skill certification system made by JARI

→ It is better to have a common system for assessor training and skill certification over the world or Asia.

③ They need a third party certificate.

→ We need a certification system in the near future.

# **Thank you for your attention.**

**If you have any comments and questions,  
please feel free to contact me: Ryuji Osuga.**

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