CCRCC 2019 Conference

Status and future development on CCS Testing
Agency monitoring role regarding testing

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Agenda :

1) *ETCS and Radio System compatibility checks*

2) *ETCS on-board specifications*

3) *Harmonization of laboratory test environment*

4) *Game changers – impacts on testing*

Definitions :

ETCS System Compatibility (ESC) shall be the recording of technical compatibility between ETCS onboard and the trackside ETCS part of the CCS subsystems within an area of use.

Radio System Compatibility (RSC) shall be the recording of technical compatibility between voice or data radio on-board and the trackside Radio parts of the CCS subsystems.

➢ Checks to be submitted to the Agency
- To ensure transparency : which checks to be performed are now in the public domain
- To allow the possibility to make a report on ESC/RSC

Methodology and way forward, 2 steps approach

Role of the Agency :

1)   To collect the checks and assign "ESC/RSC type" values

-> Based on existing scenarios provided by the IMs for existing lines.

2) To coordinate with the sector the activities to analyze and optimize "ESC/RSC type"

-> Apportionment between System checks and Products checks

3) To issue a report on ESC/RSC implementation

The objective is not a catalogue of ESC/RSC types for each (new) sections of the European network but rather to find synergies to reduce the number of checks

- More and more requirements for on-board ETCS part...

  - ➢ Maintenance of ETCS on-board test specifications (also known as subset-076) need to be arranged :
    - ➢ Harmonization process to be defined in order to cover the modifications introduced in test sequences during test campaign execution to ensure compatibility with global test sequence objective and coverage
    - ➢ To allow definition of test cases just after following the resolution of a change requests

  - ➢ Objective is to issue On-board test specifications in the same time as the SRS

  - ➢ Role of the Agency :
    - ➢ to coordinate this activity with relevant stakeholders
    - ➢ To support the accreditation of ERTMS laboratories

Different Actors :

- *Product manufacturer laboratory*

- *Infrastructure manager or RU laboratory*

- *System integrator laboratory*

- *Accredited laboratory*

- *Independent laboratory*

And different needs …:

- *Product / software verification and validation*

- *Product certification*

- *System integration*

Objectives :

➢ To setup a global framework and standard for the test environment applicable for different applications (product or system) and considering the use of real or simulated interfaces.

   ➢ To define a common language for the edition of ERTMS test scripts and description of data
   ➢ To define a set of properties for the use of an emulated interface
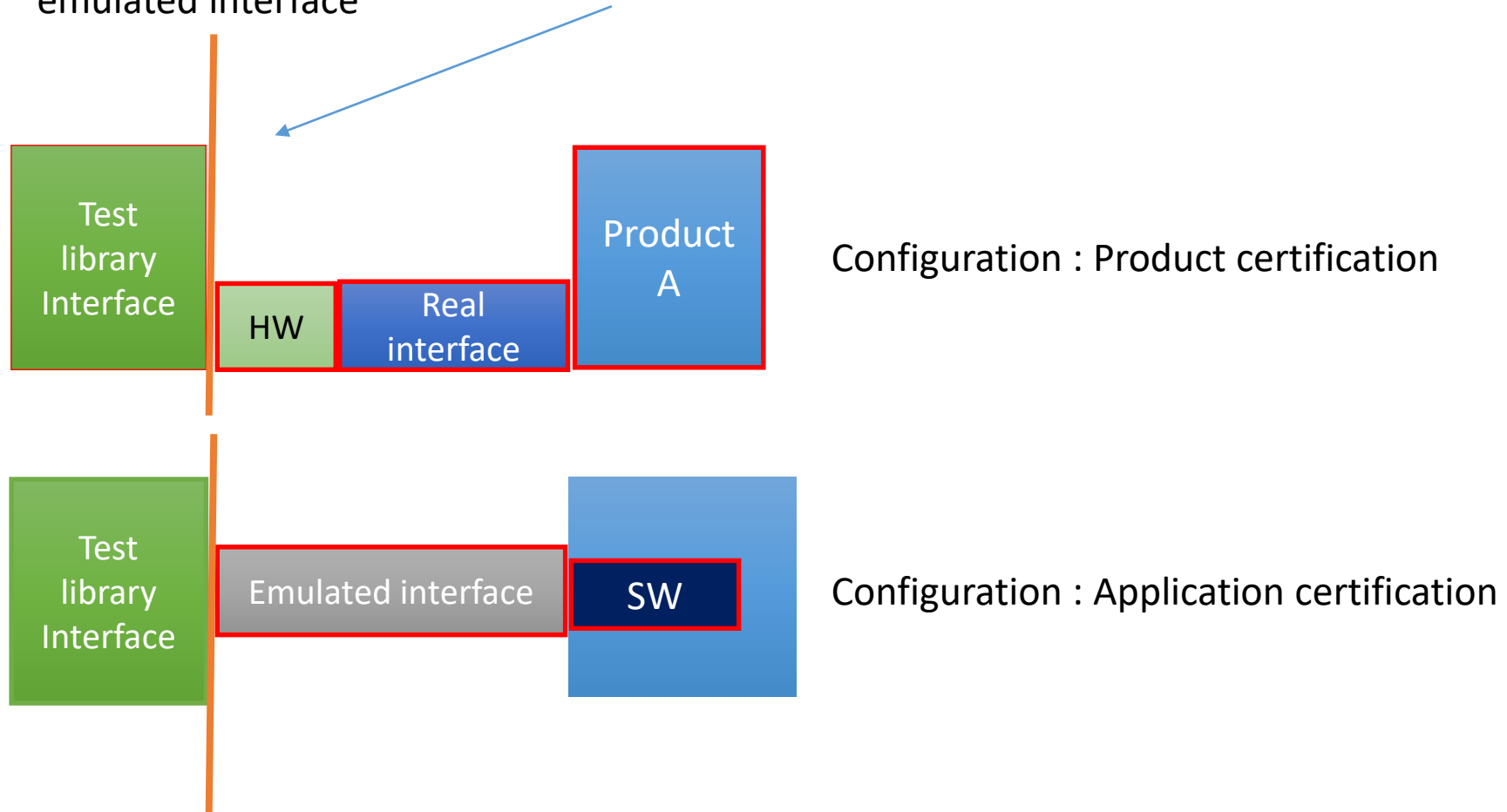   ➢ To consider the inputs of research programs or initiatives

Role of the Agency :

➢ To coordinate the different initiatives to reach a common standard

- Examples of existing laboratories standards :
  - Subset 094
  - Subset 111/112
  - « VITE » S2R program inputs
  - RailML
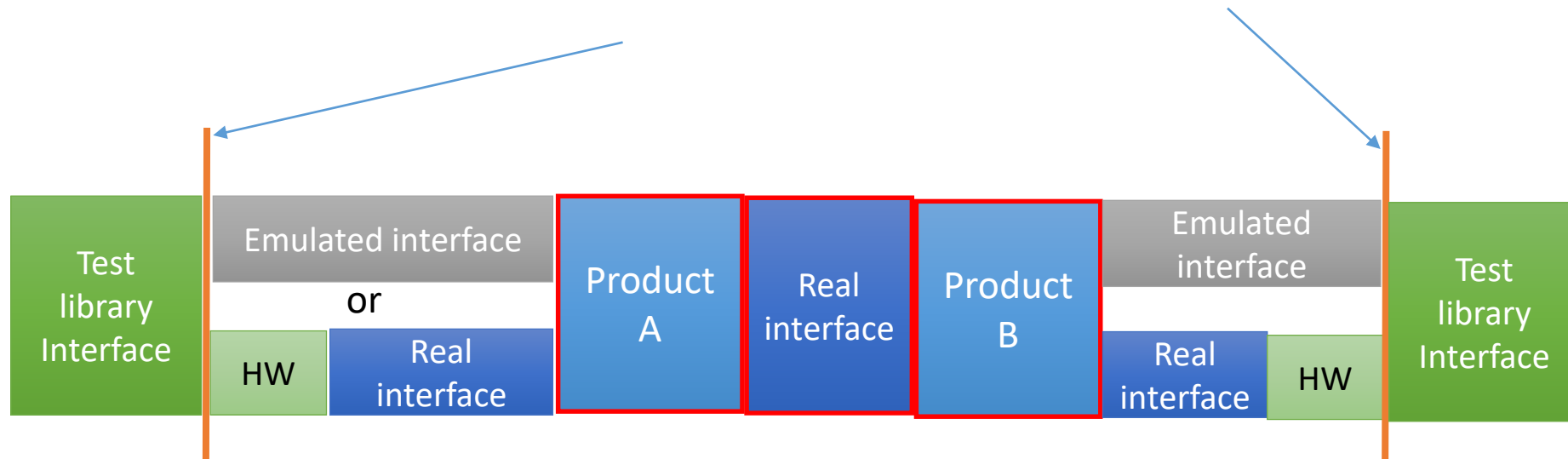
Definition of a common language and set of properties for interaction on an interface : set of commands including degraded situations to stimulate real or emulated interface

Test library Interface | HW | Real interface | Product A

Configuration : Product certification

Test library Interface | Emulated interface | SW

Configuration : Application certification

Definition of a common language and set of properties for interaction on an interface

Test library Interface	Emulated interface	Product A	Real interface	Product B	Emulated interface	Test library Interface
	or					
	HW / Real interface				Real interface / HW	

Configuration : System integration

Definition of standard allowing ETCS scenario scripting and description of data

Conclusion

The definition of the framework for test environment shall also consider the impacts of new functionalities and interfaces :

> ➢ to ensure that the test environment framework is flexible enough to integrate more and more interfaces with minimum costs and investments for laboratories

➢ ATO

➢ CCS bus

➢ FRMCS gateway

➢ Modular CCS architecture

➢ Train integrity device

➢ …

Laboratory architecture shall anticipate these evolutions !