Physical Internal Exchange Viewpoint

Domain: Physical *Aspect:* Interaction & Collaboration

Example

none

Purpose

The Physical Internal Exchange Viewpoint serves for the identification and definition of interfaces of elements of the SOI. Also, the delegation of SOI element interfaces to SOI boundary interfaces is covered. The Phyiscal Internal Exchange Viewpoint

- identifies SOI element interfaces on a Physical Level
- states to which other SOI elements the interfaces are connected to
- assigns interface specifications to interfaces
- defines the usage of interfaces, e.g. if only a subset of the interfaces is used
- defines the delegation of SOI element interfaces to SOI boundary interfaces

Applicability

The Logical Internal Exchange Viewpoint supports the "Develop Models and Views of Candidate Architecture" activity included in the "Architecture Definition Process" activities of the INCOSE SYSTEMS ENGINEERING HANDBOOK 2015 [§ 4.4] and contributes to the preliminary interface definition and system architecture description.

Stakeholder

- Hardware Developer
- IV&V Engineer
- Regulation Authority
- Safety Expert
- Security Expert
- Software Developer
- System Architect

Concern

- How do internal system elements interact with each other to provide the system function or service?
- What additional information the system or a system element needs to generate to enable testing?
- What are data / information items exchanged?
- What kind of information is exchanged and processed within the system?
- Which HW interfaces are necessary?
- Which SW interfaces are necessary?
- Which interface design items are on an interface of a physical architecture element?
- Which interface partners does a HW item have?
- Which interface partners does a SW item have?

Presentation

One or more IBD featuring the physical element(s) of the SOI, and the SOI boundary, containing connector(s) for each identified SOI interface delegation to SOI element(s), as well as connector(s) between related interface(s) of SOI parts. An interface is a connection resource for hooking on the Physical SOI Element(s) to other Physical SOI Element(s). Item flows are defined for each exchange on the identified interface. Recommendation: Use more than one IBD focused on different areas of interest to keep the view comprehensive. Depending on the Stakeholder concern(s) the physical item exchange information might be suppressed.

Profile Model Reference

- Connector [UML_Standard_Profile]
- FlowProperty [SysML Profile]
- InterfaceBlock [SysML Profile]
- ItemFlow [SysML Profile]
- ProxyPort [SysML Profile]
- SAF_PhysicalElement
- SAF_PhysicalExchangeType
- SAF_PhysicalHardwareElement
- SAF_PhysicalSoftwareElement
- SAF_SPV04b_View

Input from other Viewpoints

Required Viewpoints

- Physical Structure Viewpoint

Recommended Viewpoints

none