



**Domain: Logical Aspect: Interaction and Collaboration**

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sequenceDiagram
    participant SF as «SAF_Example»  
«SAF_SLV04b_View»
    participant CCS as «SAF_LogicalRole»  
ccs : Central control system [1]
    participant WCU as «SAF_LogicalRole»  
wcu : Weather IF control unit
    participant FSCU as «SAF_LogicalRole»  
fscu : Sensor IF control unit
    participant SCU as «SAF_LogicalRole»  
scu : Satellite IF control unit
    participant RCU as «SAF_LogicalRole»  
rcu : Research IF control unit
    participant OCU as «SAF_LogicalRole»  
ocu : Operator IF control unit
    participant ACU as «SAF_LogicalRole»  
acu : Alert IF control unit
    participant CCU as «SAF_LogicalRole»  
ccu : Central control unit

    SF->>WCU: :SF Weather Forecast data
    WCU->>CCU: Weather Area of Interest
    CCU->>WCU: Weather Forecast data
    SF->>FSCU: :SF Sensor Node data
    FSCU->>CCU: Sensor Node of Interest
    CCU->>FSCU: Sensor Node data
    SF->>SCU: :SF Satellite Image data
    SCU->>CCU: Satellite Image of Interest
    CCU->>SCU: Satellite Image data
    SF->>RCU: :SF Research Analysis data
    RCU->>CCU: 
    CCU->>RCU: 
    SF->>OCU: :HF Operator
    OCU->>CCU: Fire Situation report, Fire Danger report
    CCU->>OCU: 
    SF->>ACU: :SF Fire Department reporting
    ACU->>CCU: Fire Alert report
    CCU->>ACU: 
    
```

The Logical Internal Exchange Viewpoint serves for the identification and definition of interface(s) of element(s) of the SOI. Also, the delegation of SOI element interface(s) to SOI boundary interface(s) is covered. The Logical Internal Exchange Viewpoint

- identifies SOI element interface(s) on a logical level
- states to which other SOI element(s) the interface(s) are connected to
- assigns interface specification(s) to interface(s)
- defines the usage of interface(s), e.g. if only a subset of the interface(s) is used
- defines the delegation of SOI element interface(s) to SOI boundary interface(s)

## Applicability

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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. Note:

## Stakeholder

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- [Hardware Developer](#)
- [IV&V Engineer](#)
- [Safety Expert](#)
- [Security Expert](#)
- [Software Developer](#)
- [Supplier](#)
- [System Architect](#)

## Concern

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- How do internal system elements interact with each other to provide the system function or service?
- How do the logical system elements interact to fulfill the designated system function?
- Which interface partners does a SW item have?
- What are the items exchanged between the logical system elements during the interaction?
- Which interfaces are necessary?
- What are data / information items exchanged?
- Which requirements apply to a logical interface?
- What additional information the system or a system element needs to generate to enable testing?

## Presentation

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One or more IBD featuring the logical 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 logical SOI element(s) to other logical 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 logical item exchange information might be suppressed.

## Profile Model Reference

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- Connector [UML\_Standard\_Profile]
- InterfaceBlock [SysML Profile]
- ItemFlow [SysML Profile]

- [Property \[UML\\_Standard\\_Profile\]](#)
- [ProxyPort \[SysML Profile\]](#)
- [SAF\\_DomainKind](#)
- [SAF\\_LogicalElement](#)
- [SAF\\_SLV04b\\_View](#)

## Input from other Viewpoints

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### Required Viewpoints

- [System Domain Item Kind Viewpoint](#)
- [Logical Structure Viewpoint](#)

### Recommended Viewpoints

- [System Process Viewpoint](#)