ptc

DIGITAL TRANSFORMS PHYSICAL

OSLC Enabled Digital Thread Use Cases

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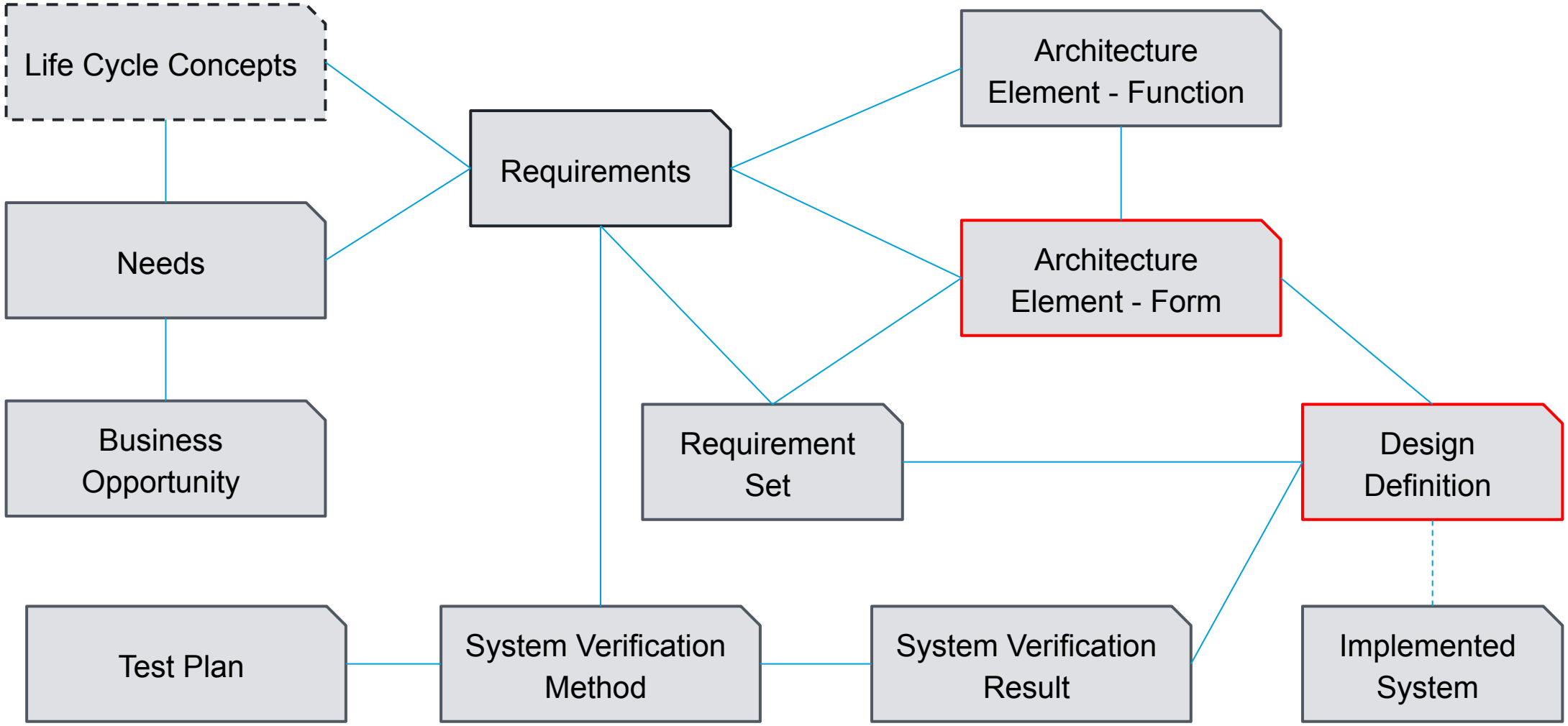
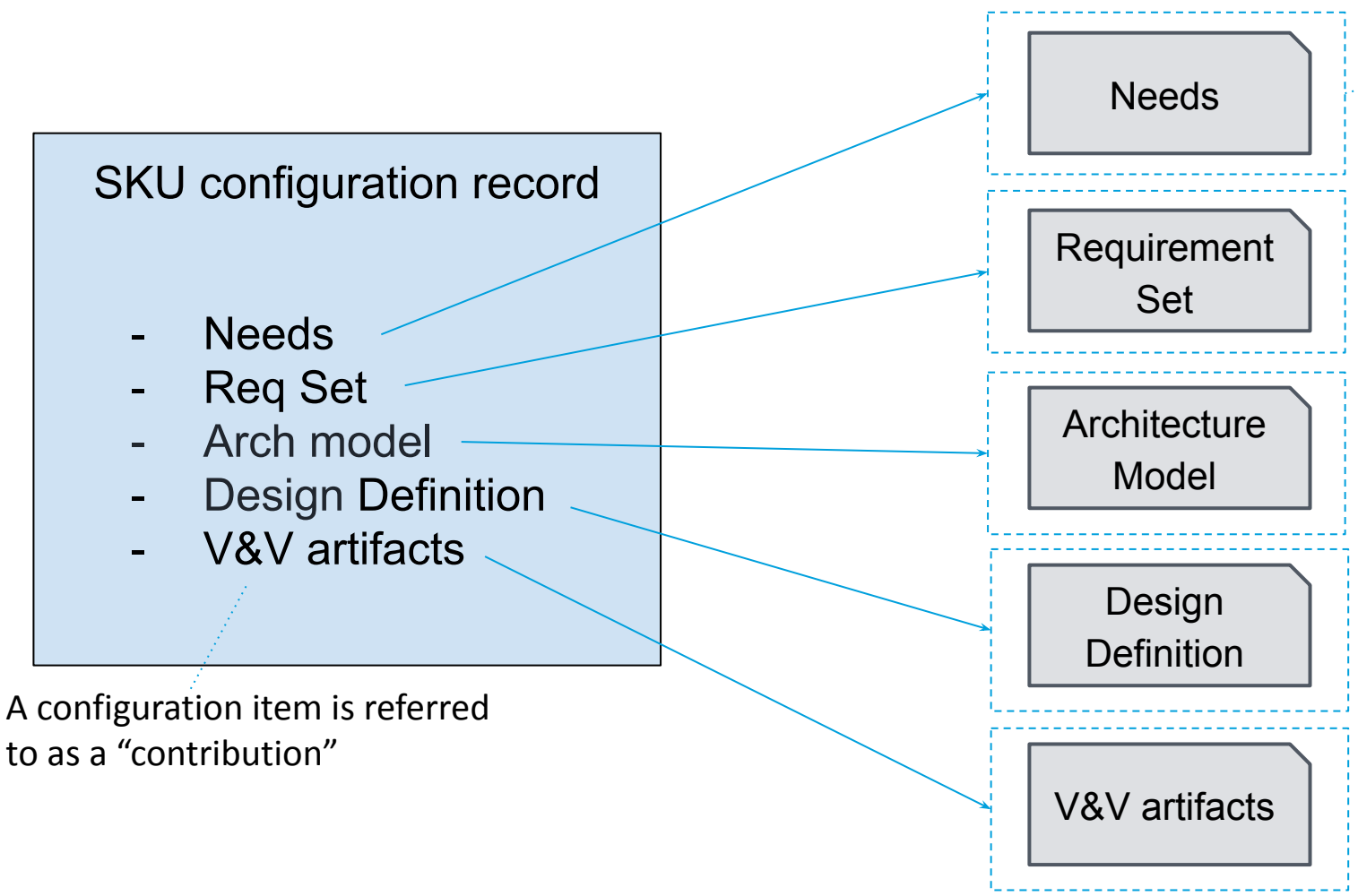
System Meta Model at Whirlpool



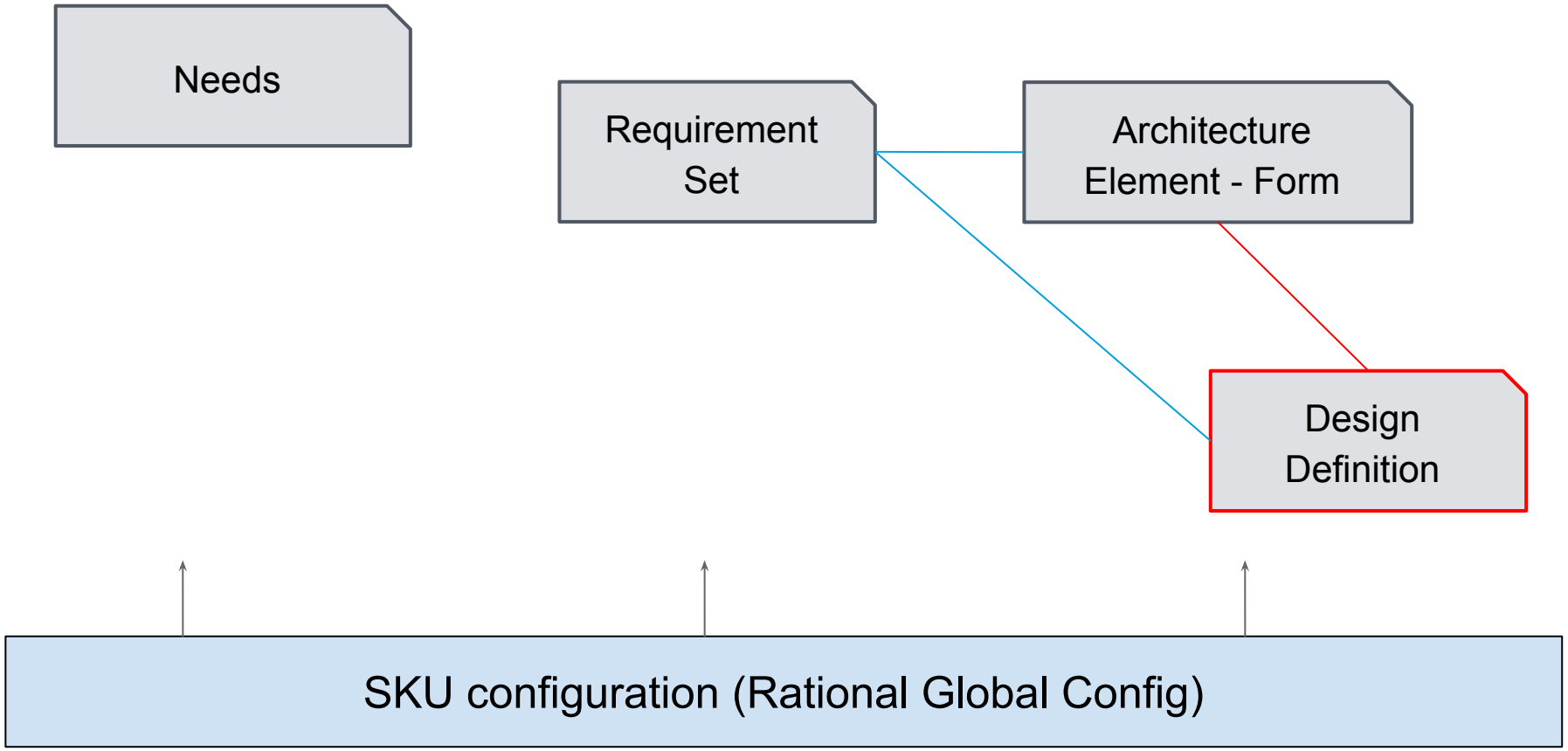
Configuration Management Across The Lifecycle



OSLC Configuration Participant
capable repository

OSLC links are used for relationships that crosses repository boundaries

Day-in-a-life “Developing a new SKU from an existing architecture”



We are tasked with creating a new SKU off of an existing architecture. The needs are available and the requirement Set for the SKU is under review. In parallel the design work has started. A preliminary new EBOM has been created in Windchill PDMLink and need to be linked to the architecture model and the requirement set.

USE CASE 1 – Updating The SKUs Configuration Record

Problem Statement

Before linking items in an SKUs design definition (EBOM) to other artifacts in the digital thread we want to contribute the repository hosting the design definition for the SKU to the product configuration record. This formalizes which Design Definition that describes the SKU. *The problem today is that we can not create repositories in PDMLink with small enough scope so that they contains only the artifacts in scope for the specific SKU.*

Use Case

Topic	Description
Intent	As a Systems Engineer I want to manage the configuration of the product so that I have a single source of truth for which information items that applies to the system throughout the life cycle of the system
Scope	Allow repositories hosting artifacts that are part of the digital thread to be added to an OSLC Configuration Participant record
Primary Actor	The Systems Engineer, System Architect, Requirements Engineer
Secondary Actors	V&V engineer, Design Engineer

USE CASE 1 - Updating An SKUs Configuration Record

Use Case

Topic	Description
Assumptions	When a local configuration or baseline have been created it can be added to the product configuration without taking any additional steps
Preconditions	A local configuration exists that contains the design definition of the SKU(s) and a product configuration has been created
Trigger	When a repository containing configuration items need to be added to the product configuration
Success Conditions	Able to add both In Work version of the repository as well as baselines when desired
Failure Conditions	The user may not have access to the repository
Alternate Flows	

Ranking

No of Users	Frequency of use	Difficulty in Not having this (Out 10, 1 – Low, 10 – High)
100	daily	8

Justification

-There is a clear benefit with having a record of which information items that belongs to a specific configuration of the system, to humans and even more so for machines.
-Traceability maintenance becomes an order of magnitude easier when the configuration record can be used for validating version compatibility instead of manage that on each link, it is not feasible at scale.

USE CASE 2 – Linking An EBOM To The Architecture Model

Problem Statement

We want to link the EBOM to the logical element that represents the system that is located in the architecture model. When creating the link we want to start by selecting which configuration we are working with. Next, select the architecture model (the right version is provided based on the configuration) and browse/search the model to find the right logical element, confirm the creation of the link. *Today there is no support for selecting a configuration to help with which version of the architecture model to link to, the user must figure this out themselves.*

Use Case

Topic	Description
Intent	As a Design Engineer I want to link a design definition to the correct version of the architecture model so that I can articulate to witch architecture the design was made.
Scope	Having the product configuration to help in finding the model to link to
Primary Actor	Design Engineer
Secondary Actors	Systems Engineer

USE CASE 2 - Linking An EBOM To The Architecture Model

Use Case

Topic	Description
Assumptions	An established link will point to the architecture model in the web interface. The link is stored on the EBOM, not in the architecture model.
Preconditions	The EBOM exist in PDMLink and the Architecture model is available, both repositories have been contributed to the product configuration
Trigger	When the EBOM is initially created
Success Conditions	The link is visible and active if the artifact it is pointing to is part of the active configuration. The link appears disabled if the artifact it is pointing to is not part of the active configuration.
Failure Conditions	The user may not have access to the architecture model. No architecture model added to the configuration.
Alternate Flows	

Ranking

No of Users	Frequency of use	Difficulty in Not having this (Out 10, 1 – Low, 10 – High)
100	weekly	8

Justification

Easier to find the right architecture model. Traceability maintenance becomes an order of magnitude easier when the configuration record can be used for validating version compatibility instead of manage that on each link, it is just not feasible at scale.

USE CASE 3 – Exploring Arch. Model To EBOM Trace Links

Problem Statement

From the configuration record for the SKU, open the architecture model that applies. We are now exploring the Architecture Model in context of an SKU, select the logical element representing the System, the backlink from the EBOM is visible. We can follow the link over to the EBOM in PDMLink. *We can not do this today in our environment.*

Use Case

Topic	Description
Intent	As a Systems Engineer I want to know, while working in the architecture model, if there is a design definition associated with a specific SKU so that I can navigate to it or take appropriate action if it is absent.
Scope	Inform on if there is or a design definition associated with the SKU
Primary Actor	Systems Engineer, Design Engineer, V&V engineer
Secondary Actors	Architect

USE CASE 3 - Exploring Arch. Model To EBOM Trace Links

Use Case

Topic	Description
Assumptions	
Preconditions	The EBOM exist in PDMLink and a link has been established on the EBOM pointing to the element in the Architecture model. Both the design definition repository and the Architecture model repository have been contributed to the product configuration. The SKU configuration is active in Modeler.
Trigger	Selecting a model element in context of a product configuration
Success Conditions	The back link from the EBOM is visible and active. Clicking the link takes you to the linked object in PDMLink. *There should be only one link to an EBOM, not a set of links to EBOMs unrelated to the SKU in scope.*
Failure Conditions	The user may not have access to the repository in PDMLink where the link is stored. No design definition repository added to the configuration.
Alternate Flows	

Ranking

No of Users	Frequency of use	Difficulty in Not having this (Out 10, 1 – Low, 10 – High)
300	weekly	8

Justification

Easier to find design definitions while working in the architecture model. Backlink query removes the need of editing the model when a design definition is created downstream.

USE CASE 4 – Baselining The Product Configuration

Problem Statement

The V&V team has just finished system verification and the SKU is about to be released for production. We want to create a baseline of the SKU that records the status of the information items that describes the SKU. A product configuration baseline is created by creating new baselines of the contributions or repurposing existing baselines if nothing changed. *We can do this today but there are too many clicks involved, we want it to be simpler.*

Use Case

Topic	Description
Intent	As a V&V Engineer I want a product release baseline containing Needs, Requirements, Verification results and Design definitions so that the system status that served as base for the release is well documented
Scope	Create a product baseline
Primary Actor	Systems Engineer, V&V engineer
Secondary Actors	Architect, Design engineer, Quality Engineer, Project Manager

USE CASE 4 - Baselining The Product Configuration

Use Case

Topic	Description
Assumptions	The user creating the product baseline has rights to create baselines in the participating repositories or the user has request baselines to be created of the repositories managed by other roles
Preconditions	A product configuration exist
Trigger	An important Gate or event in the project or system lifecycle.
Success Conditions	The baseline is established including all desired information items without spending more than 5 minutes on assembling the baseline
Failure Conditions	The user may not have access to the repositories or to create baselines in the repository
Alternate Flows	Ask a person with access to create baselines of specific repositories

Ranking

No of Users	Frequency of use	Difficulty in Not having this (Out 10, 1 – Low, 10 – High)
50	weekly	9

Justification

Historic baselines of a products configuration can have several advantages, a release baseline is just one. Many post analysis activities can be performed if there are records that can be compared and analyzed. *When product baselines behave identical to an in work version of a product configuration it enables reporting or simply browsing the baselines with the same approach as for the in work version.*

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THANK YOU

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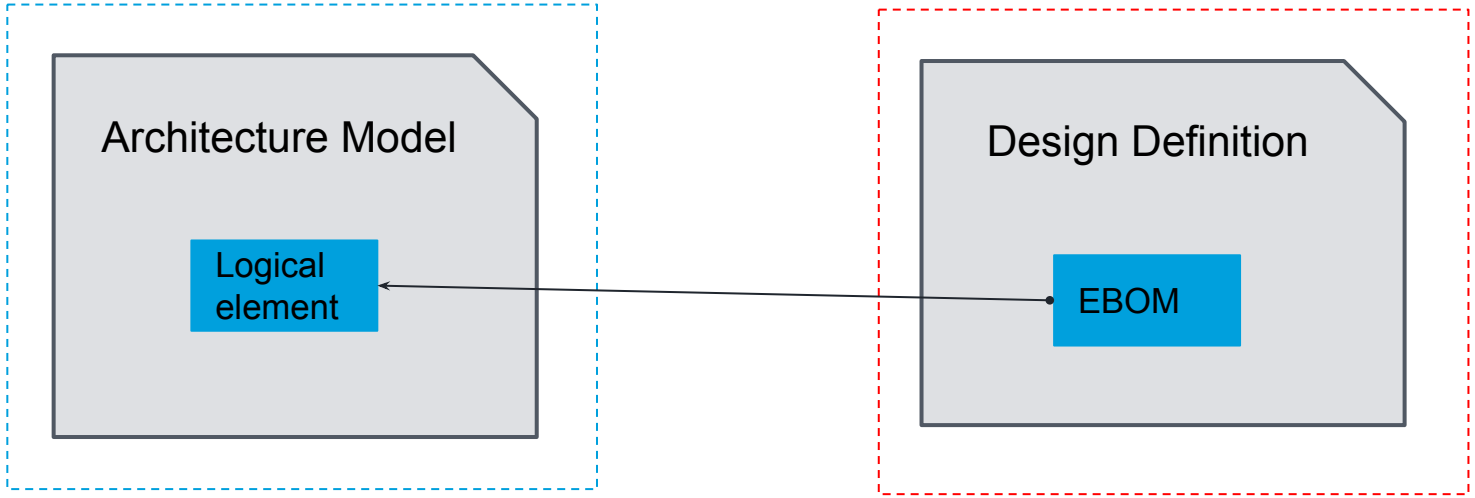
BACKUP SLIDES

UC2 - Linking an EBOM to the Architecture model

We want to link the EBOM to the logical element that represents the system in the applicable version of the architecture model. Since we already specified which version of the model that applies to SKU A in the configuration record we start with selecting which configuration we are working with. Next we select the architecture model and browse/search the model to find the right logical element, next confirm the creation of the link.



To establish the link the user need edit access to the EBOM but not to the Architecture model since the link is stored on the EBOM. In this operation the Architecture Model was not revised (it is a reused baseline).

UC3 - Exploring Architecture model to EBOM trace links

Working in the configuration record for SKU A we open the architecture model that applies. We are now exploring the Architecture Model in context of SKU A, the EBOM backlink is visible on the Logical element. We can follow the link over to the EBOM.