

Network Automation:

A world of misunderstandings ...

... and how you could avoid them

Henry Ölsner

Technical Consultant, NTT Germany AG & Co. KG



“ There are only two hard things in Computer Science: cache invalidation and naming things.

- Phil Karlton

Why are we here?

- What challenges are we facing when developing Network Automation Solutions?
- Use User-Story-Mapping (USM) to capture the end-user's perspective
- Integrate Domain-Driven-Design (DDD) to establishes a common language inside and outside of your team
- How you can apply these principles

Who am I?



Henry Ölsner

- Guide our clients along their network automation journey
- Ideate, prototype and implement solutions for (network) automation

Technical Consultant @ NTT

16+ years in the network infrastructure industry

7+ years in network automation/software development



[LinkedIn](#)

Challenges that we face when developing Network Automation Solutions

Challenges that we face when developing Network Automation Solutions



Scalability



Cross-functional
teams

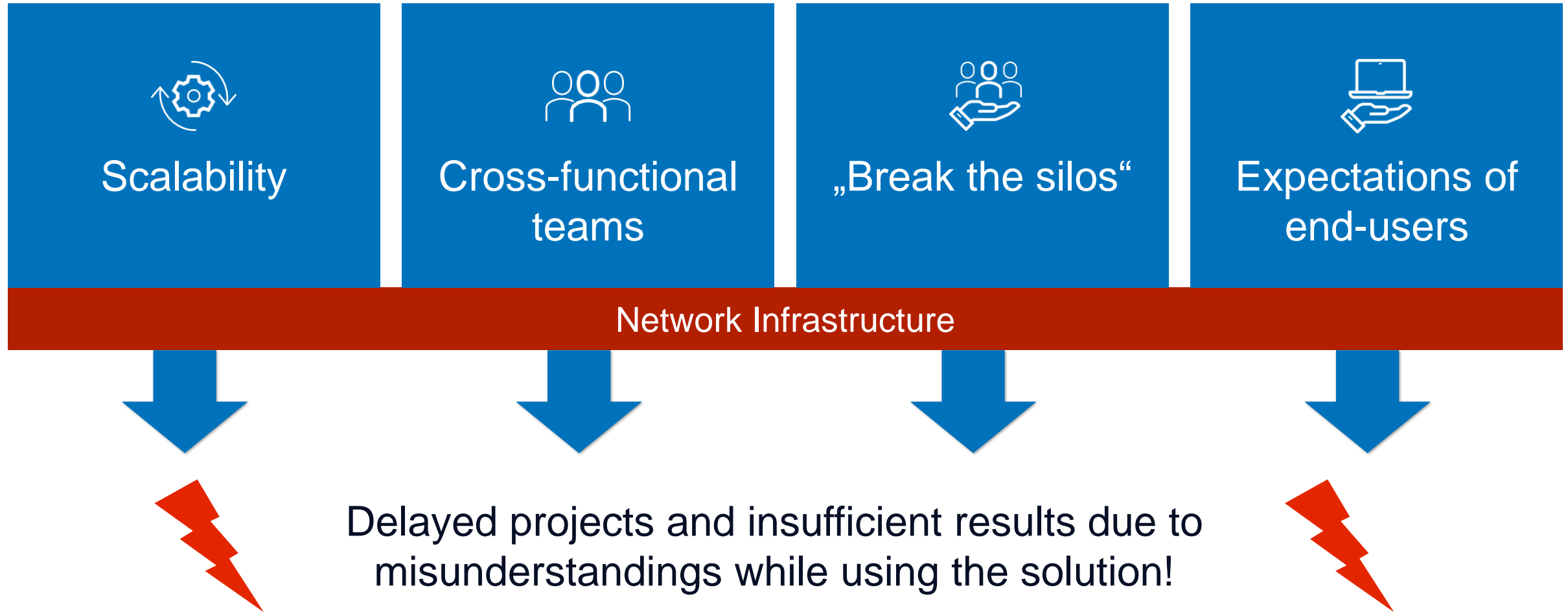


„Break the silos“

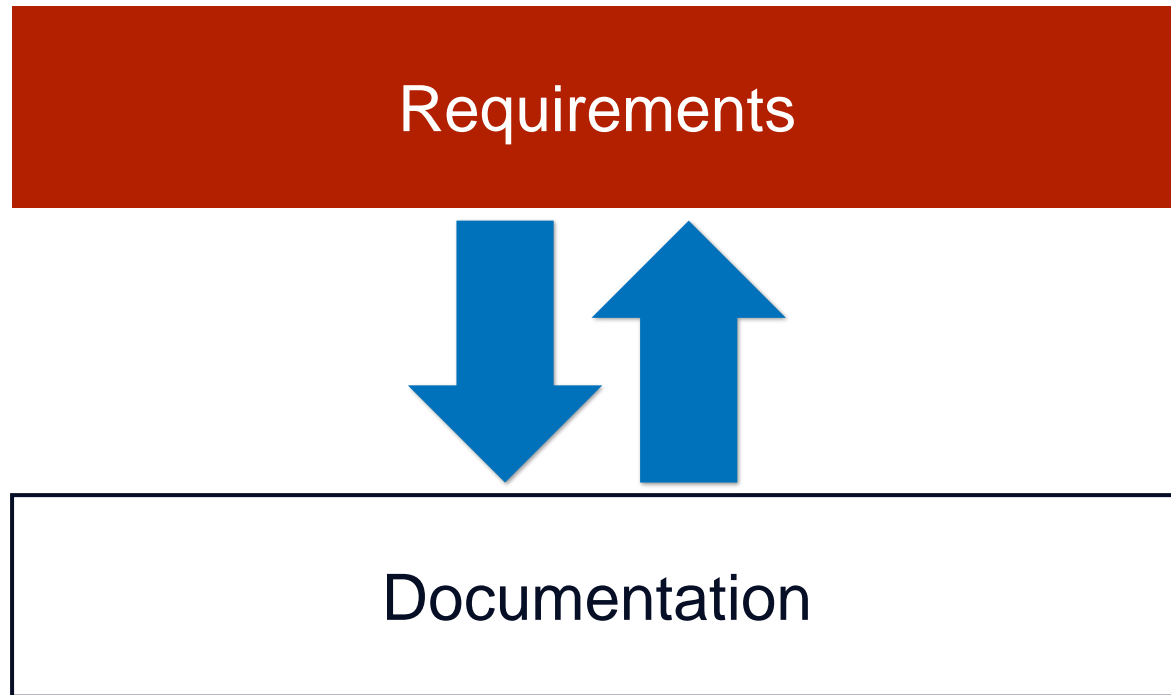


Expectations of
end-users

Challenges that we face when developing Network Automation Solutions



Classic approach to avoid misunderstandings...



Classic approach to avoid misunderstandings...

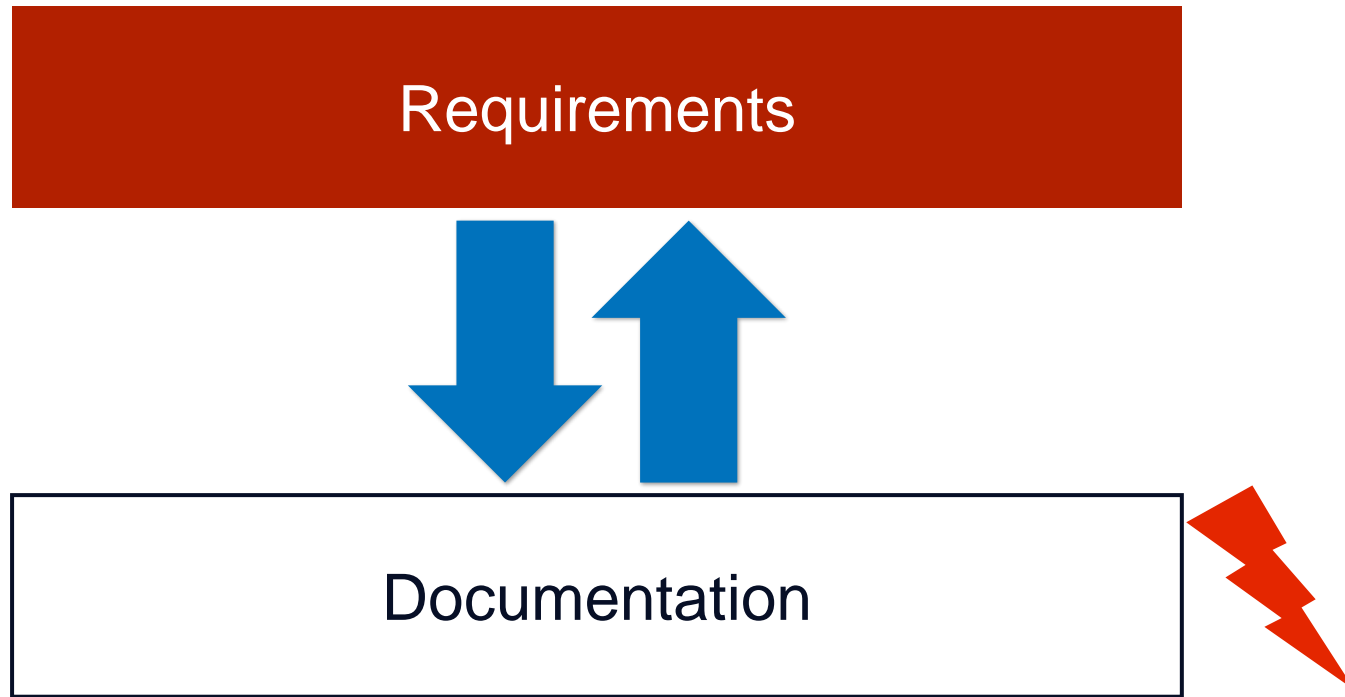


Image source: [USM]

Chris and Marc's Automated EoL Reporting Solution



Who are Marc and Chris?



Marc

- Technical Manager for a Network Infrastructure Team
- Goals
 - Improve the productivity of his team
 - Improve the quality of the results



Chris

- Network Engineer
- Citizen Developer

Request from the procurement department to create an End-of-Life Dashboard for the entire network infrastructure

Marc's challenges

- How should the solution look like?
- How to establish a common understanding with the end-users to create a tailored solution?



Marc's challenges



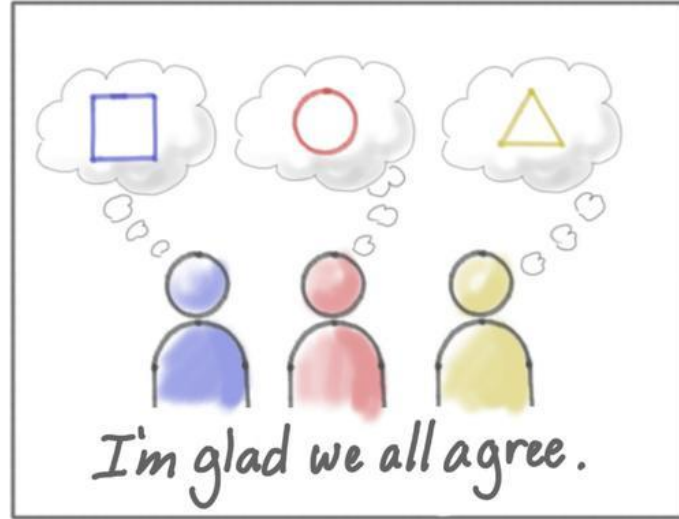
- How should the solution look like?
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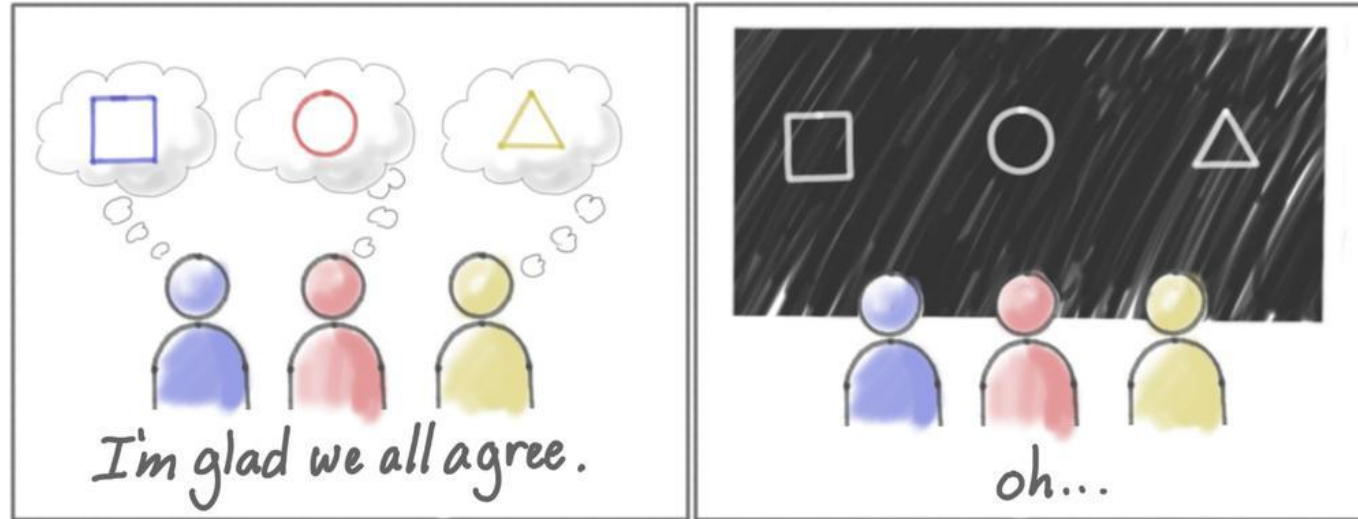
Apply User-Story-Mapping (USM)!

Why User-Story-Mapping?

Why User-Story-Mapping?



Why User-Story-Mapping?



Why User-Story-Mapping?



Why User-Story-Mapping?

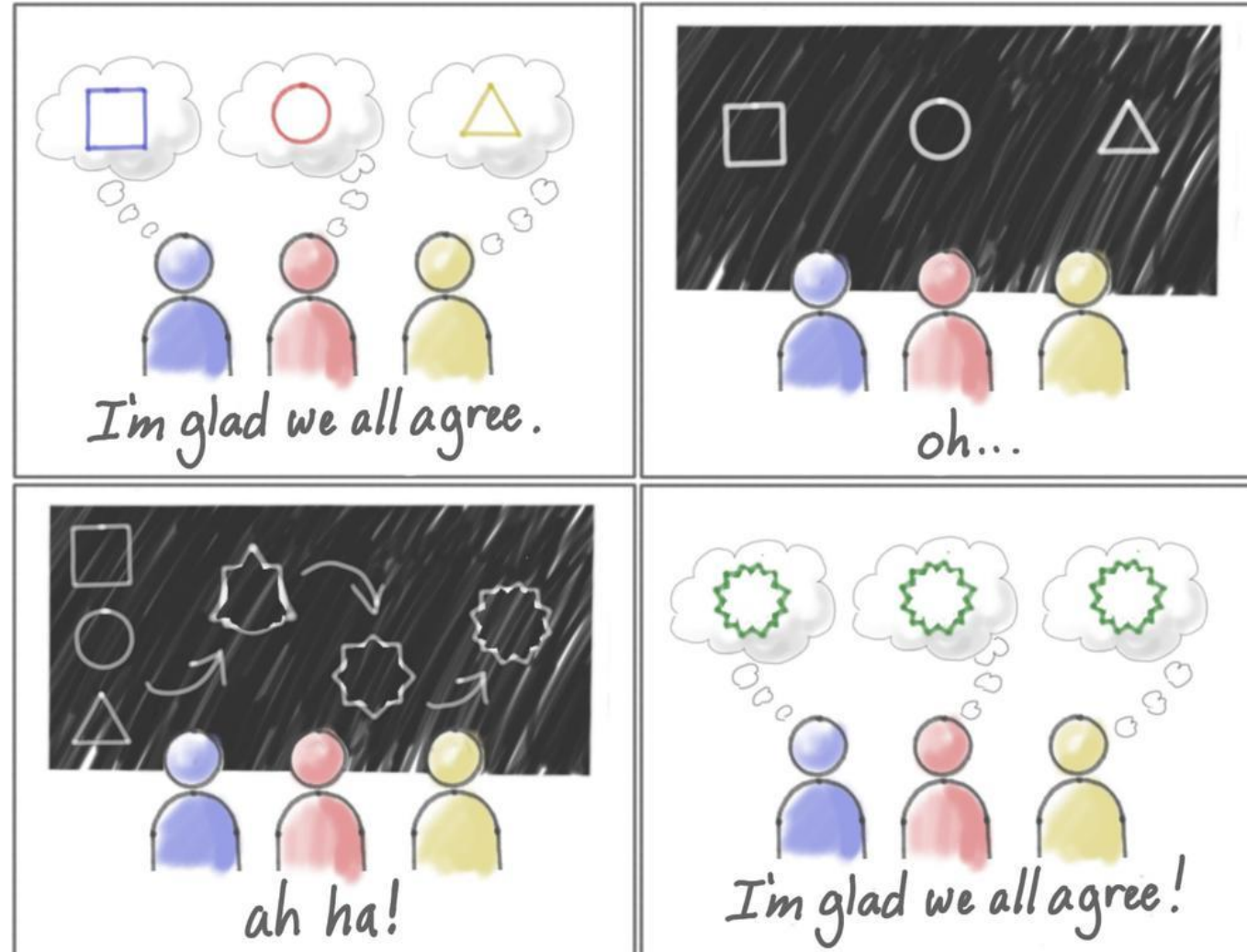
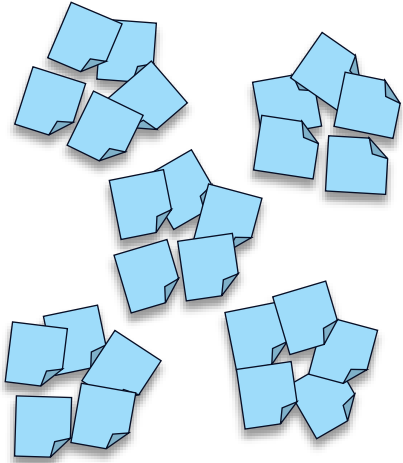


Image source: [USM]

How to create a first User-Story-Map?

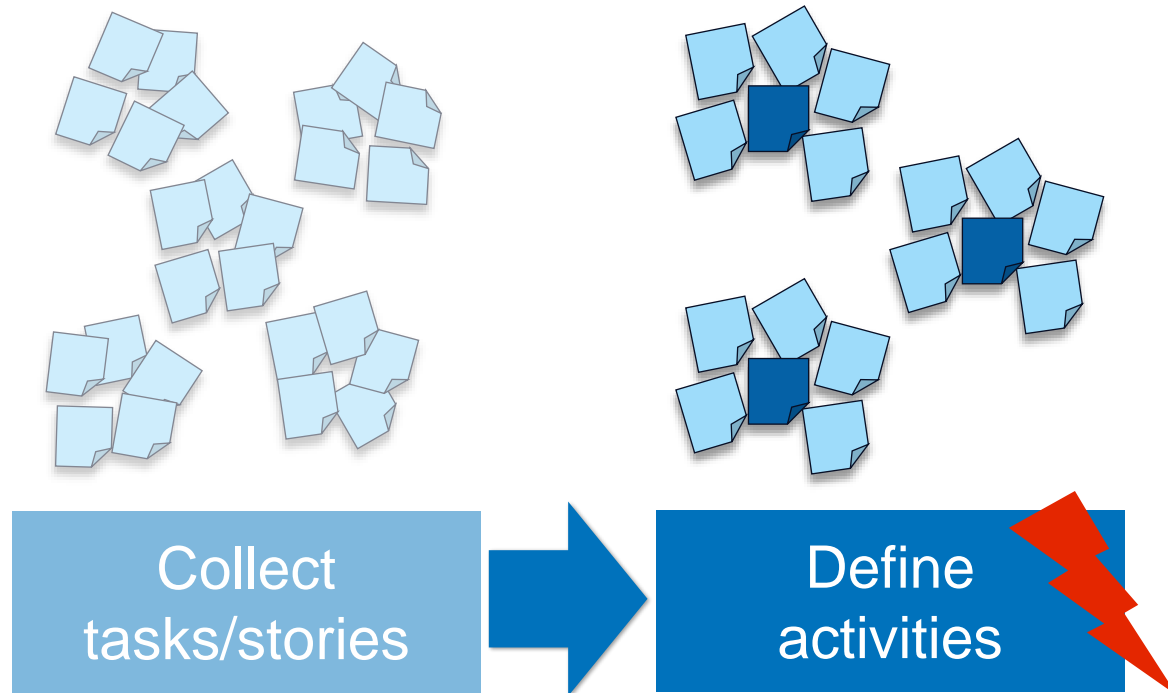


How to create a first User-Story-Map?

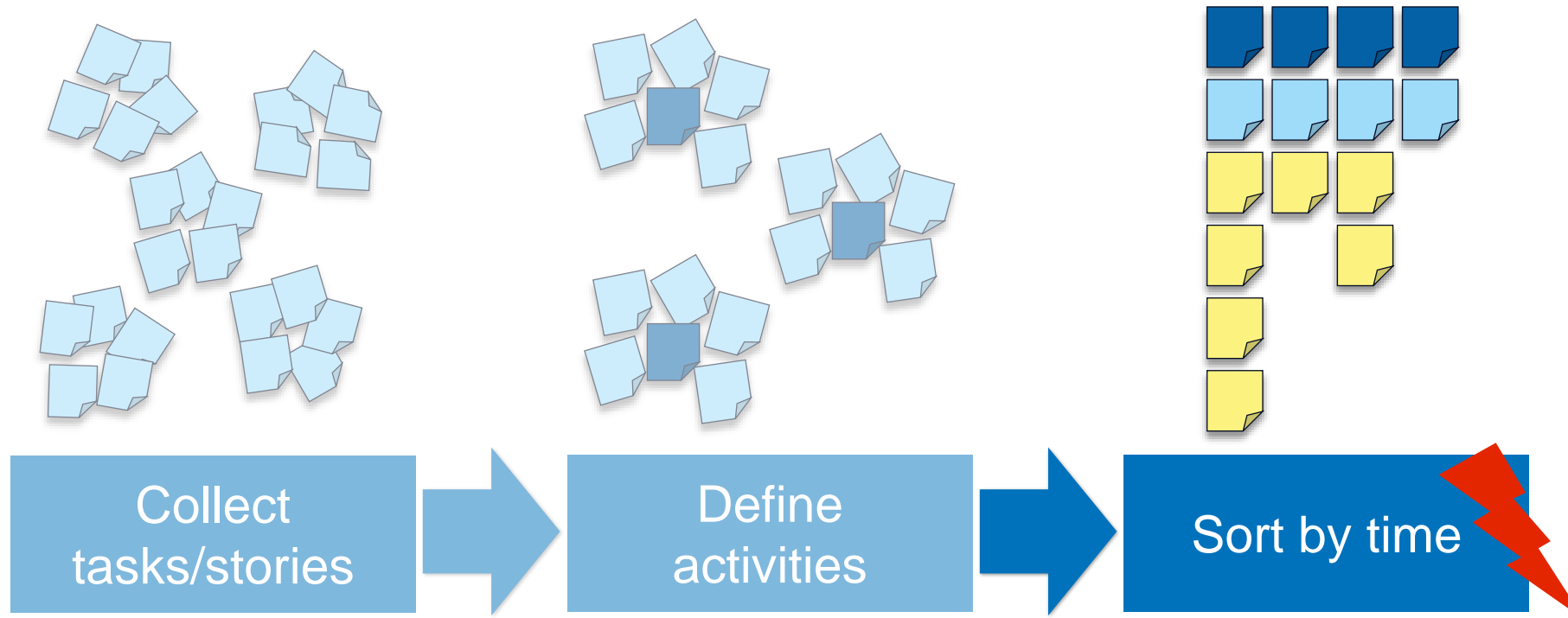


Collect
tasks/stories

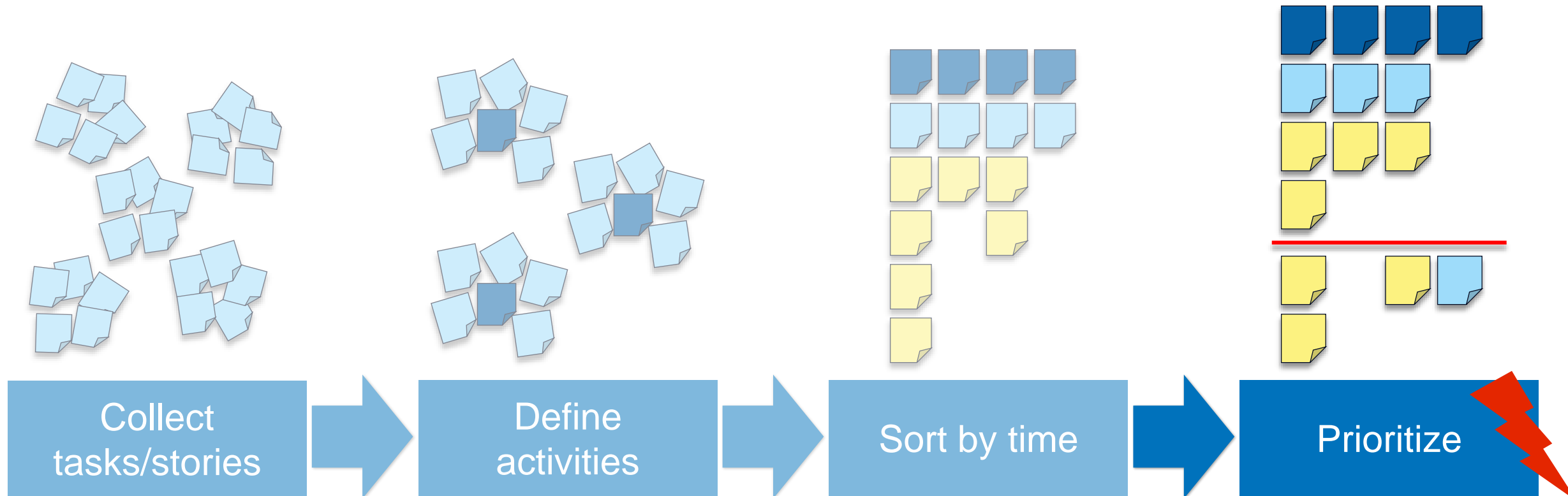
How to create a first User-Story-Map?



How to create a first User-Story-Map?



How to create a first User-Story-Map?



User-Story-Map for the Automated EoL Reporting Solution



Onboarding

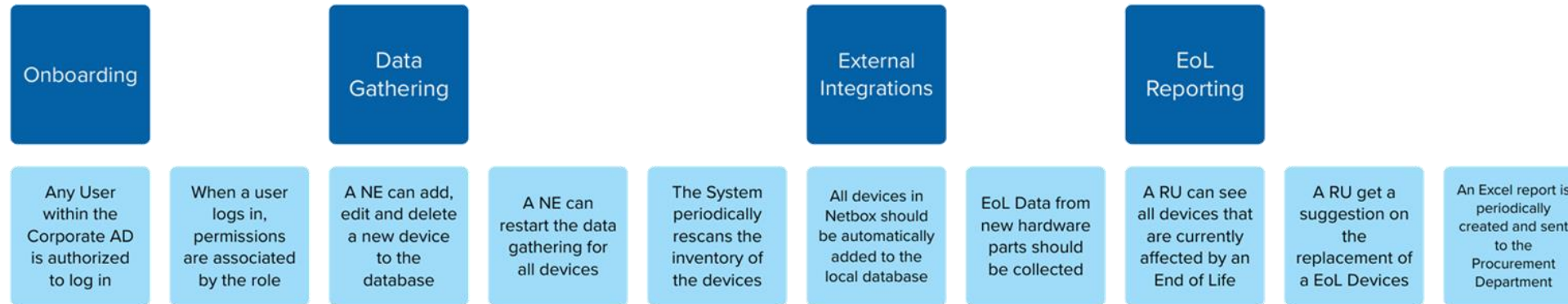
Data
Gathering

External
Integrations

EoL
Reporting

Activities

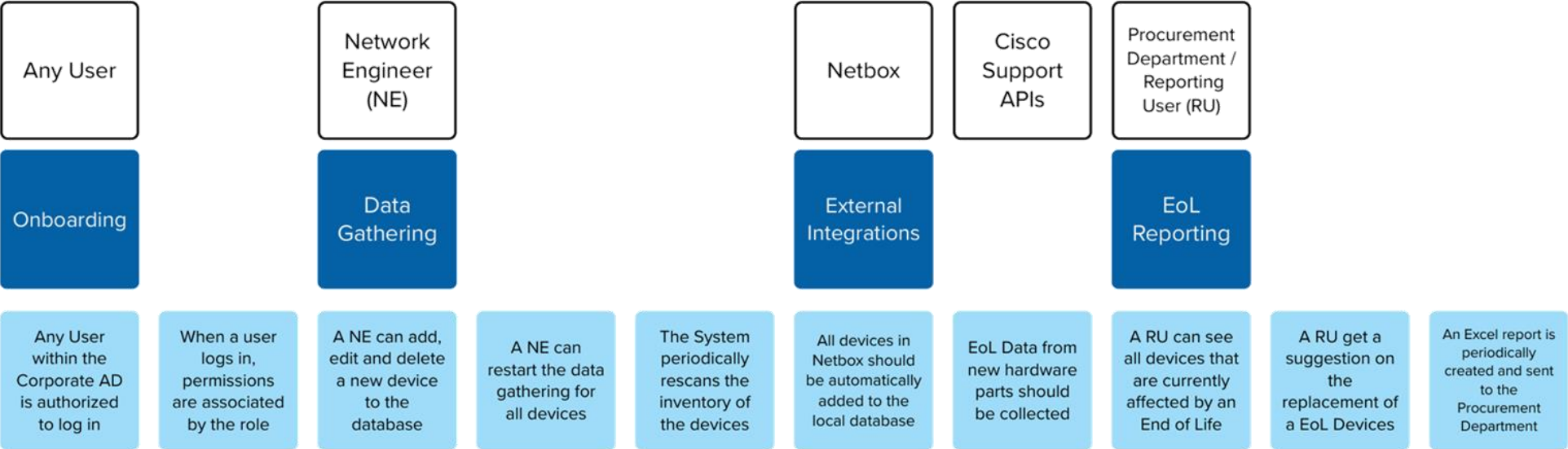
User-Story-Map for the Automated EoL Reporting Solution



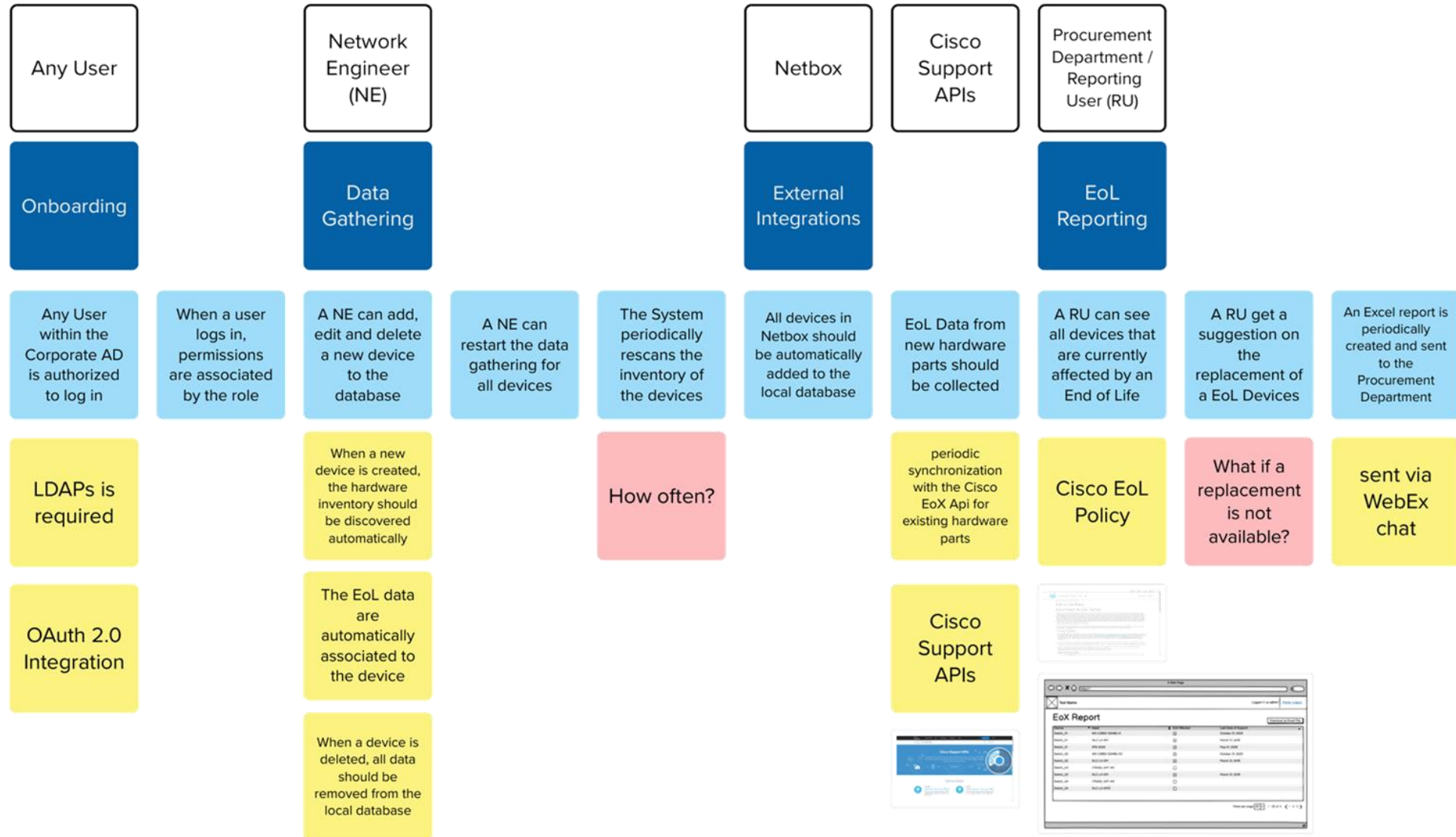
Activities

Tasks/Stories

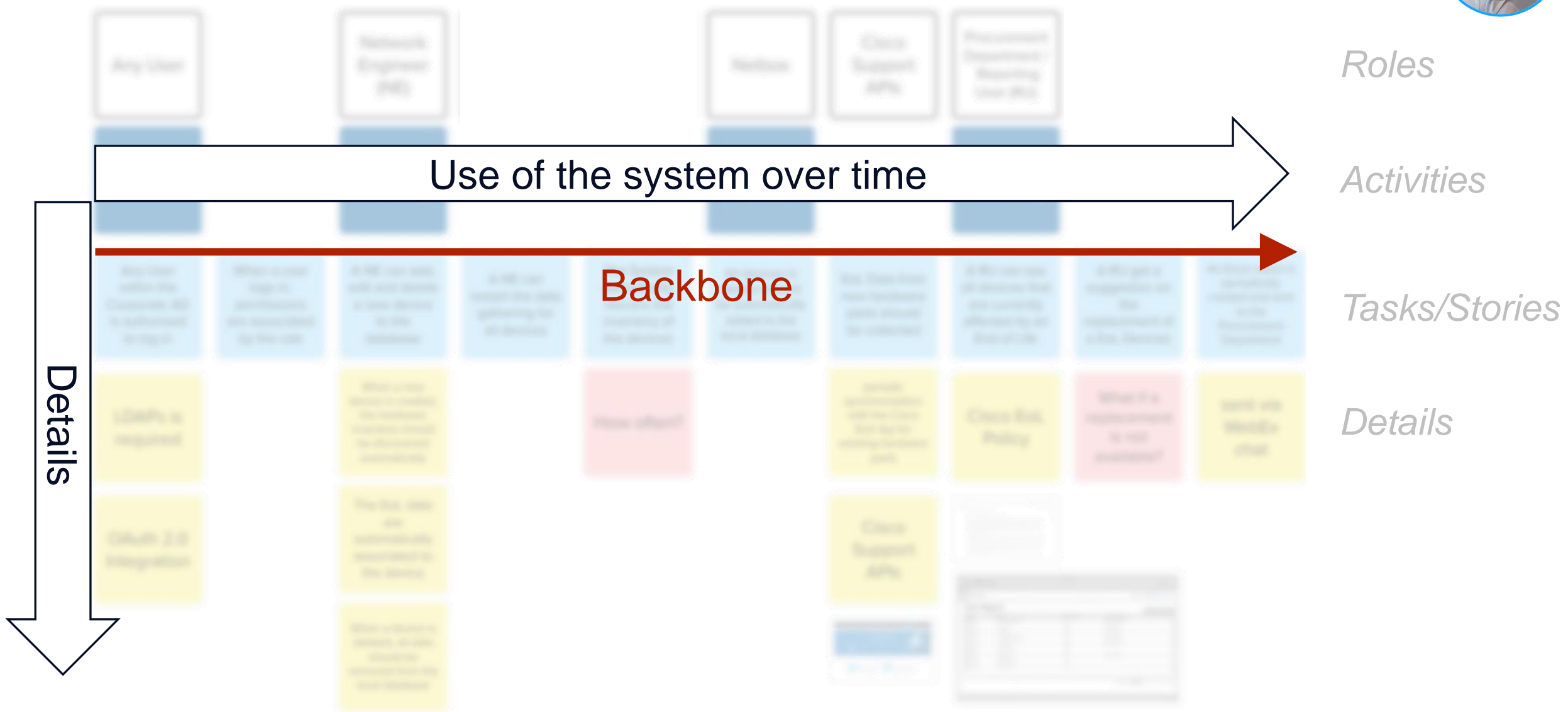
User-Story-Map for the Automated EoL Reporting Solution



User-Story-Map for the Automated EoL Reporting Solution



Resulting structure of the User-Story-Map



Benefits of User-Story-Mapping

Create a common perspective to avoid misunderstandings

Capture the end-user's expectation

Identify problems and solution options

Define a first version

Collect additional topics for later releases

“ There’s always more to build than you have people, time or money for. Always.

- Jeff Patton



Chris perspective

A Web Page

https://

Tool Name

Logged in as admin | [Home](#) | [Logout](#)

EoX Report

[Download as Excel File](#)

Network Device	Hardware Component	EoX Affected	Last Date of Support
Switch_01	WS-C3850-12X48U-S	<input checked="" type="checkbox"/>	October 31, 2025
Switch_01	GLC-LH-SM	<input checked="" type="checkbox"/>	March 31, 2018
Switch_01	XPS-2200	<input checked="" type="checkbox"/>	May 31, 2028
Switch_02	WS-C3850-12X48U-SJ	<input checked="" type="checkbox"/>	October 31, 2025
Switch_02	GLC-LH-SM	<input checked="" type="checkbox"/>	March 31, 2018
Switch_03	C9300L-24T-4G	<input type="checkbox"/>	
Switch_03	GLC-LH-SM	<input checked="" type="checkbox"/>	March 31, 2018
Switch_04	C9300L-24T-4G	<input type="checkbox"/>	
Switch_04	GLC-LH-SMD	<input type="checkbox"/>	

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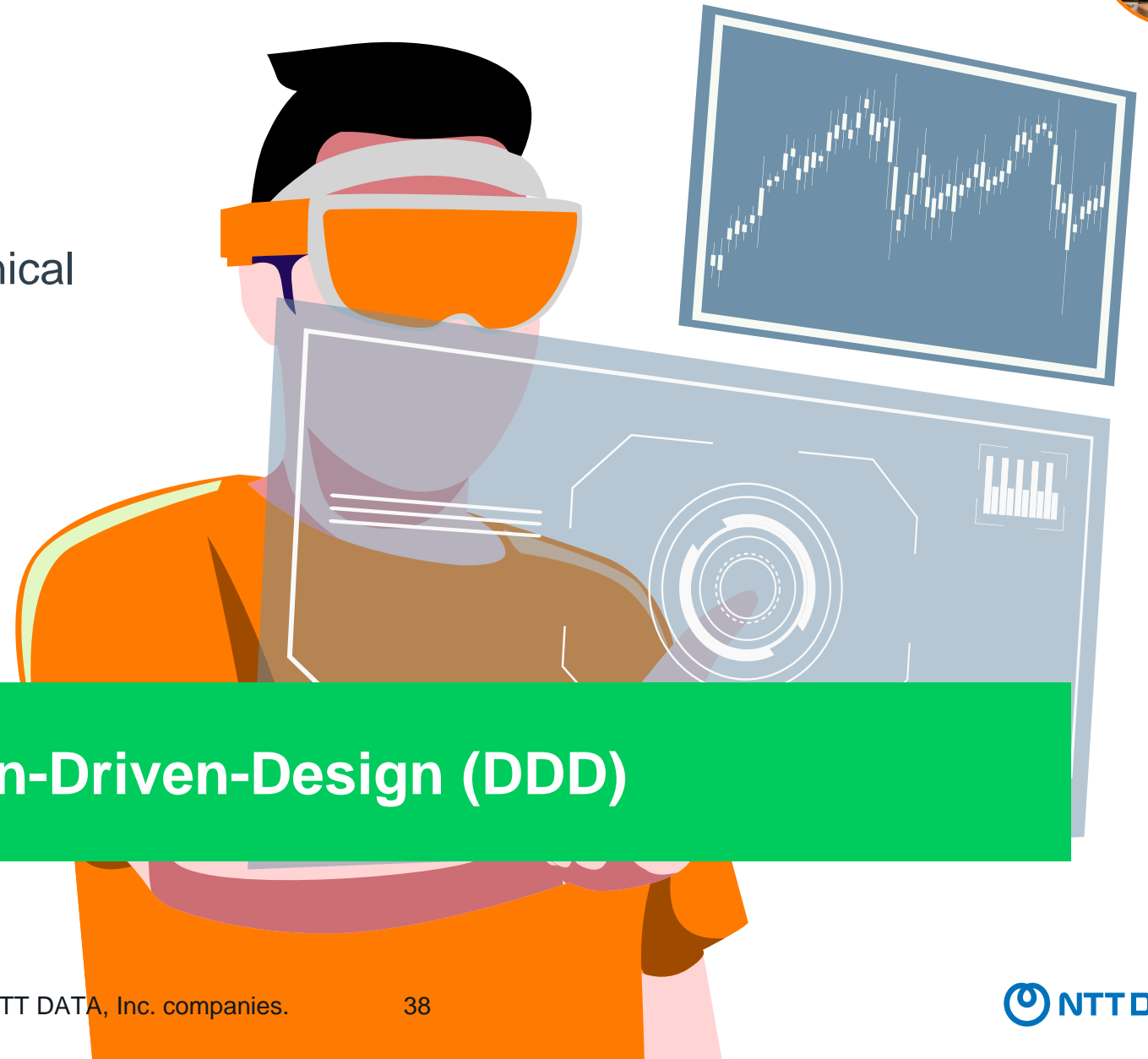
Chris challenges

- Handle external data sources
- Ensure that the results are consistent
- Work with different technical/non-technical stakeholders and a growing team



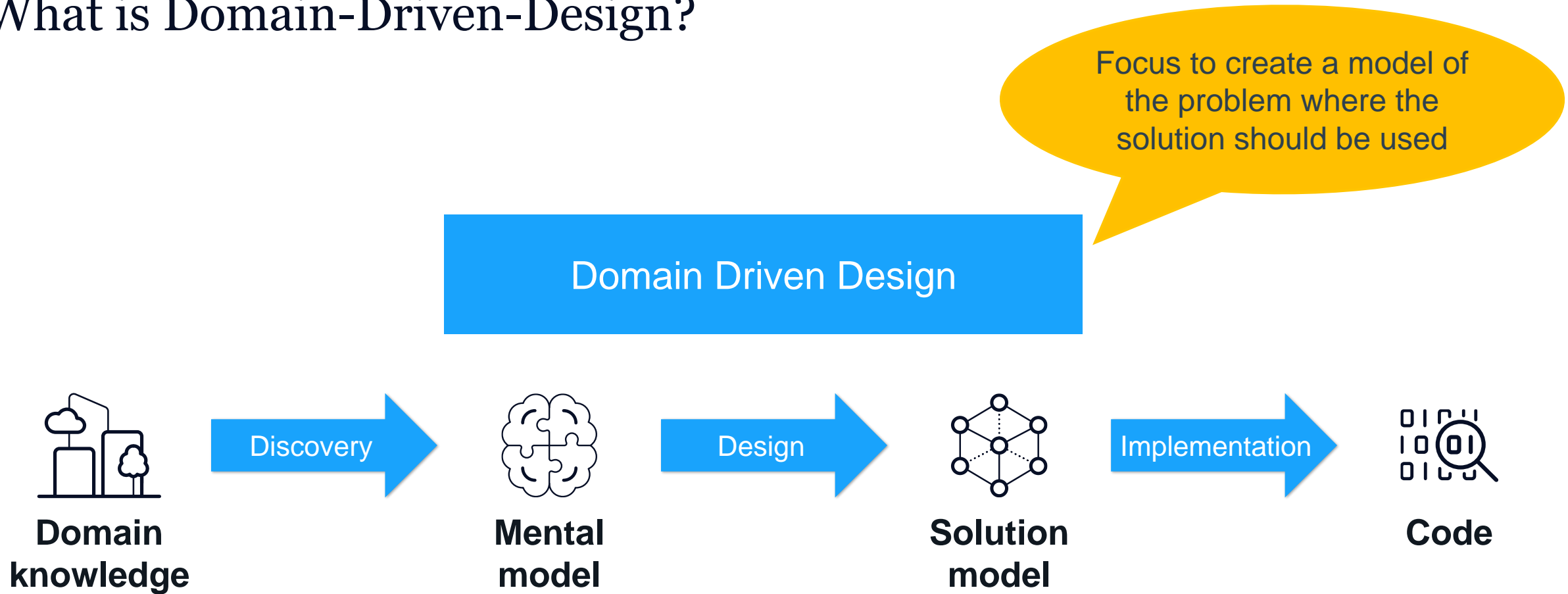
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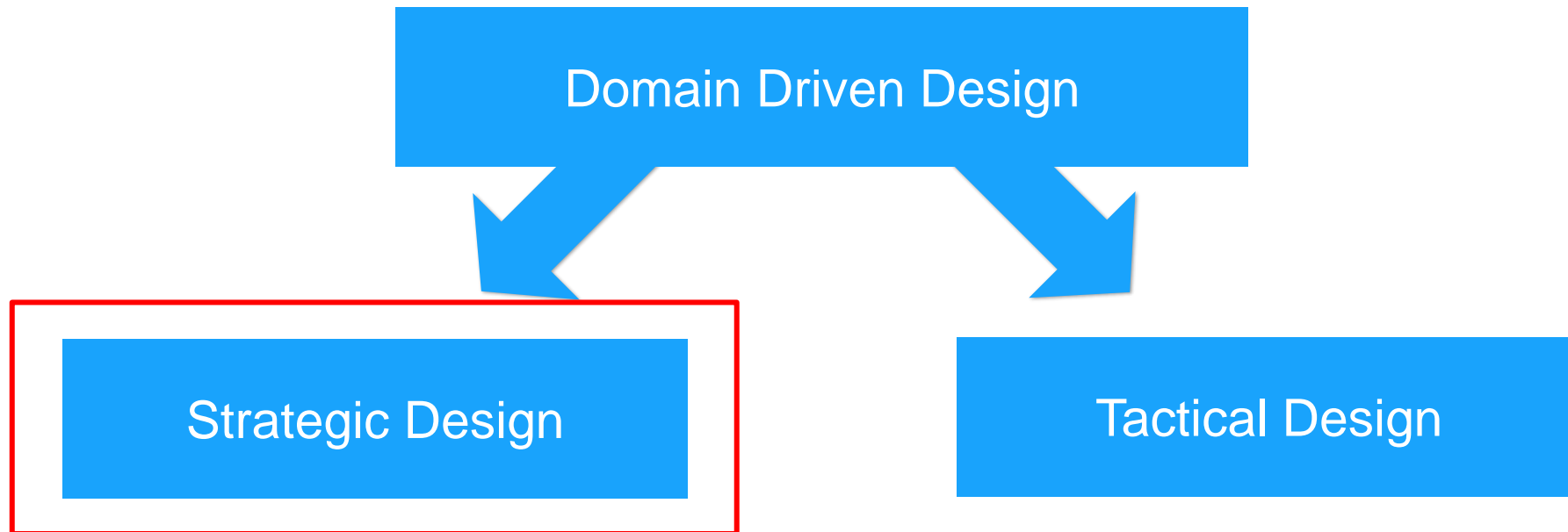


Apply (parts of) **Domain-Driven-Design (DDD)**

What is Domain-Driven-Design?

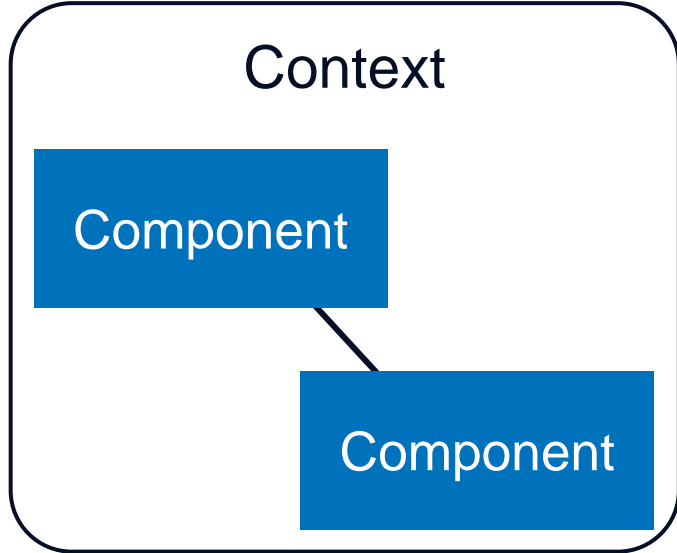


What is Domain-Driven-Design?



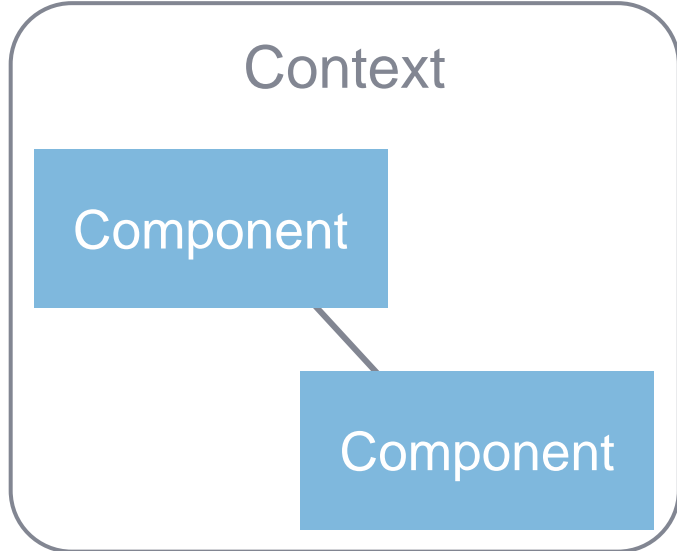
Strategic Design – Core Concepts

Bounded Context



Strategic Design – Core Concepts

Bounded Context



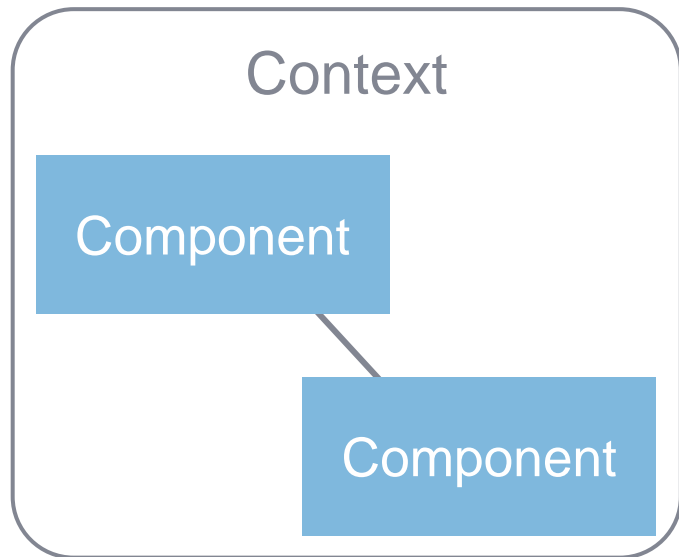
Ubiquitous Language



Team
(Domain Experts,
Developers ...)

Strategic Design – Core Concepts

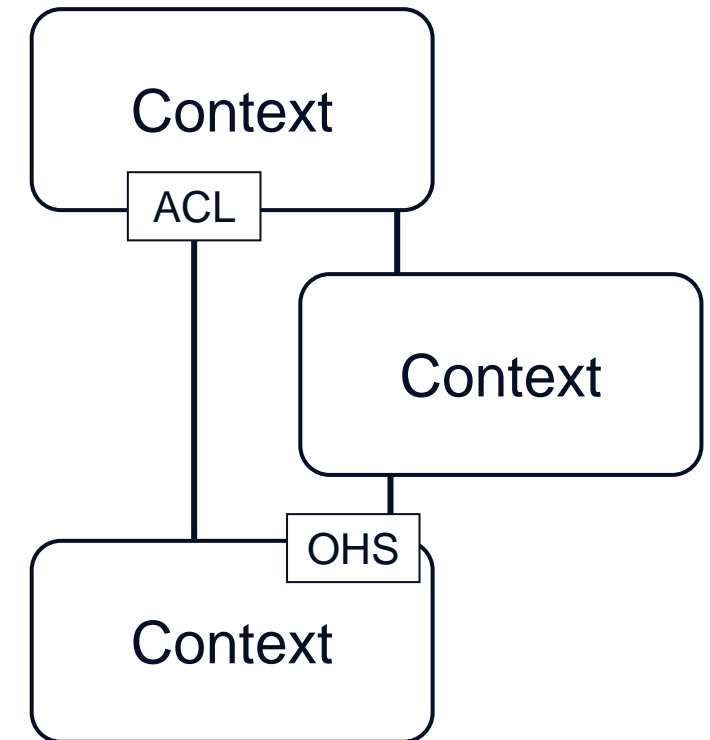
Bounded Context



Ubiquitous Language



Model & Context Mapping



ACL – Anticorruption Layer Context Mapping Strategy
OHS – Open Host Service Context Mapping Strategy

First Modeling Session



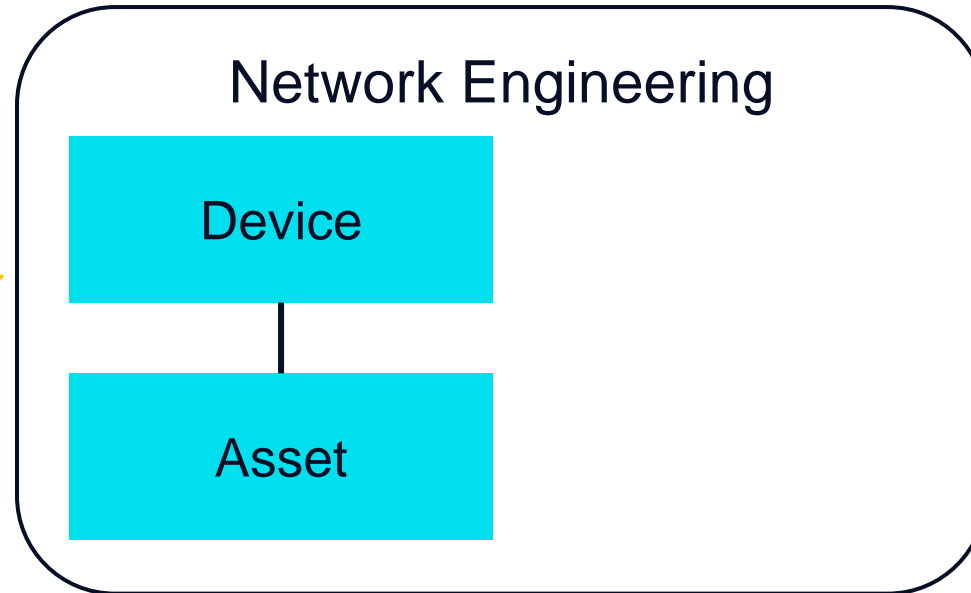
I have already
created a script

First Modeling Session

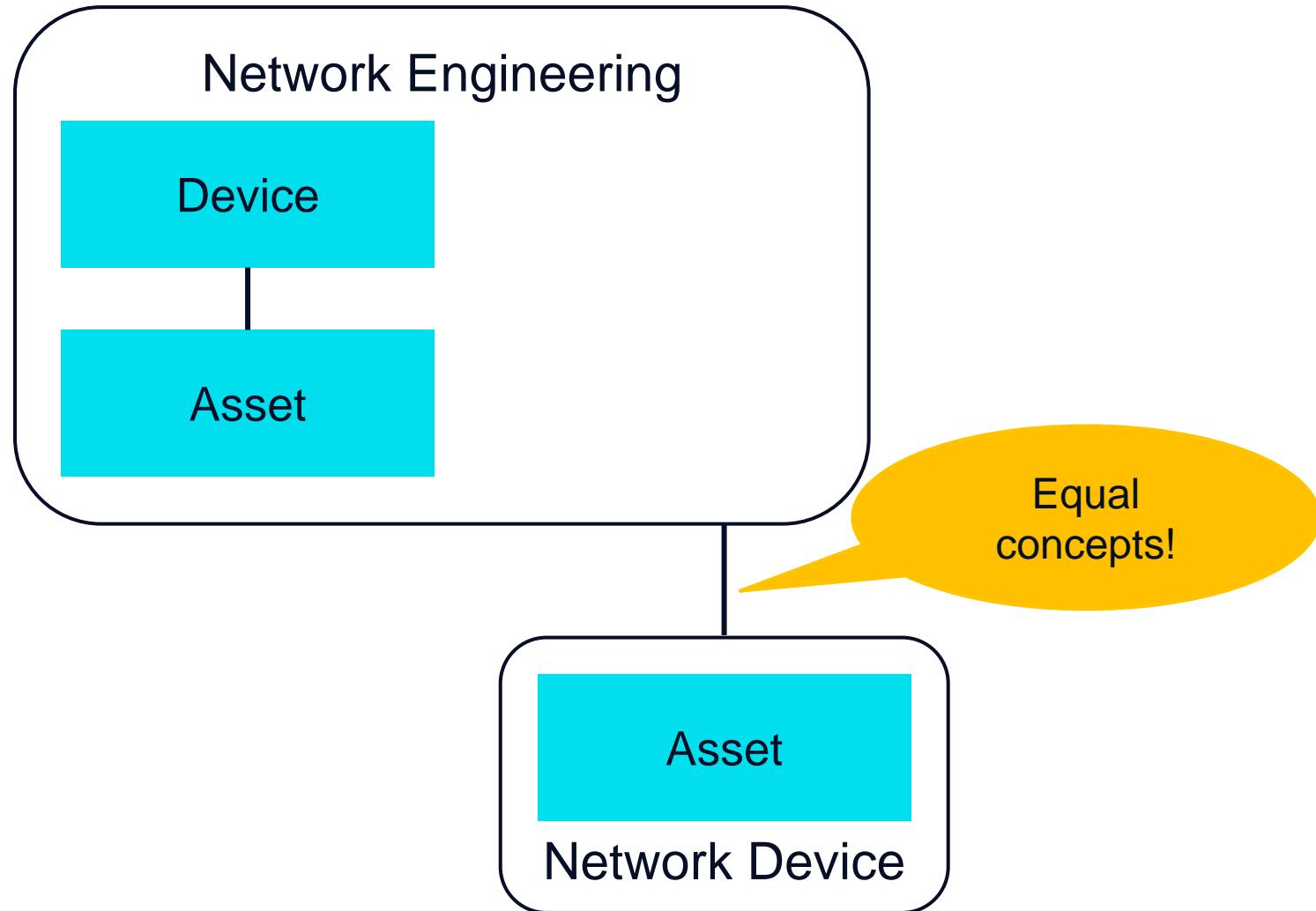


I have already created a script

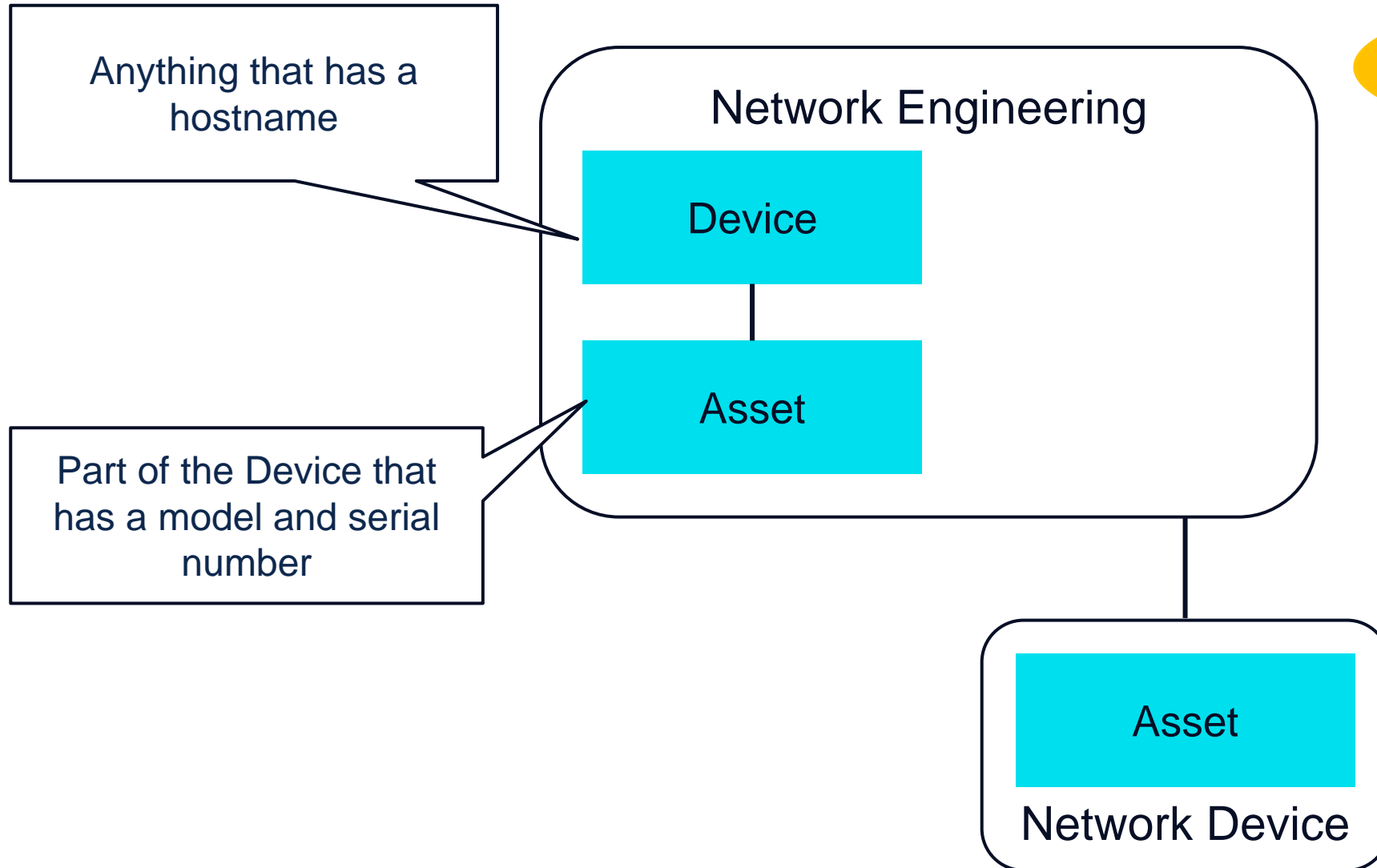
This is the Core Domain



First Modeling Session

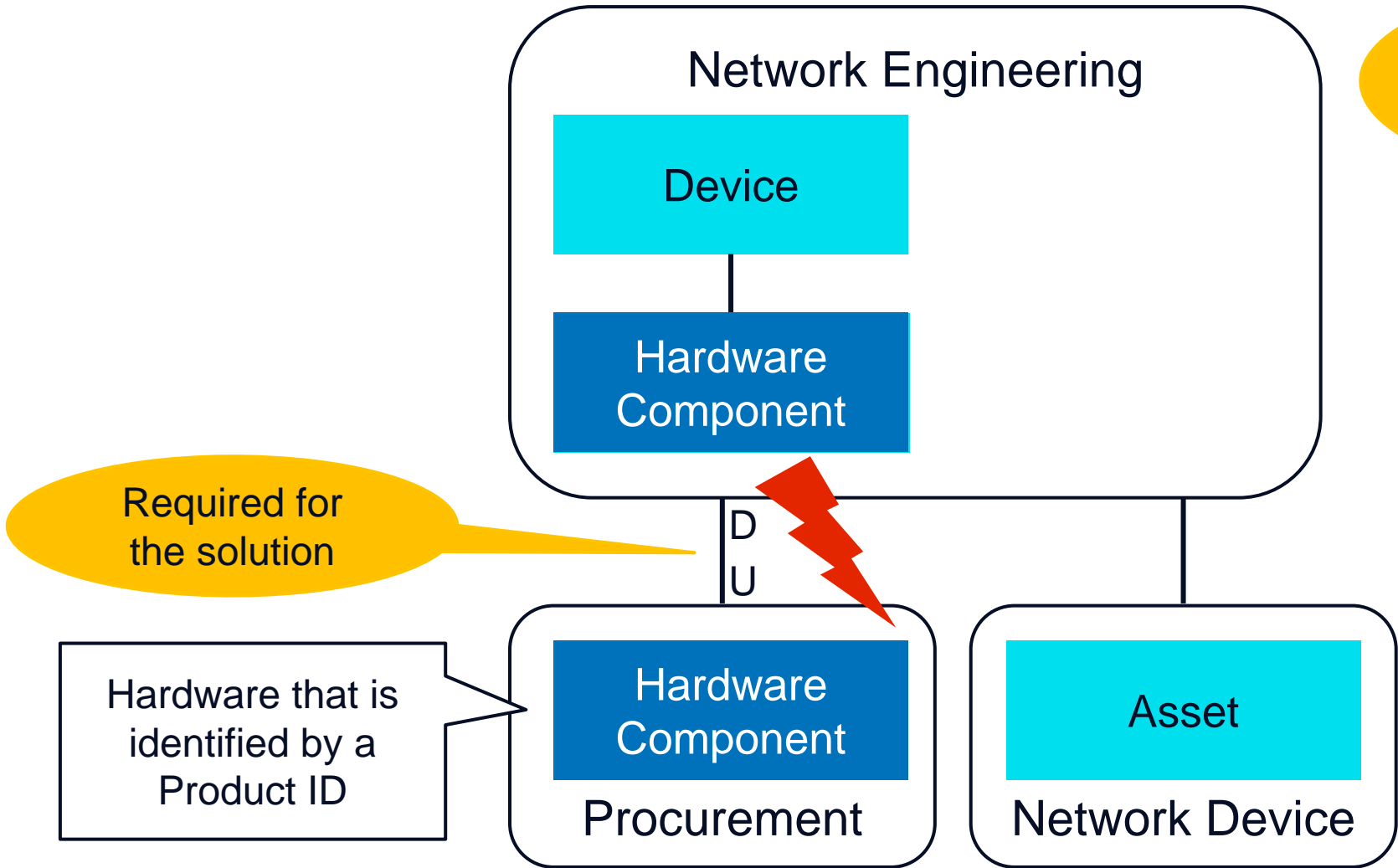


Create a Ubiquitous Language

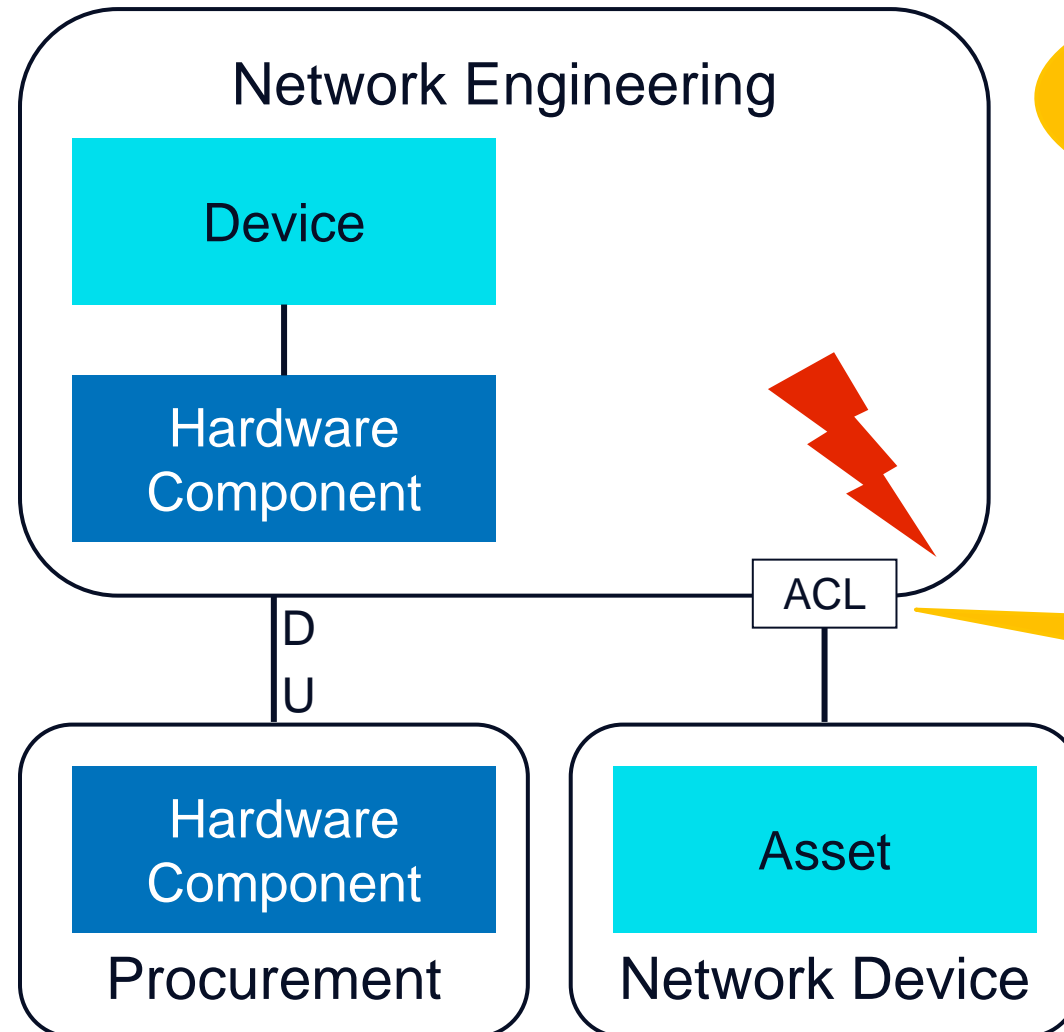


What is a Device?

Ubiquitous Language of end-users



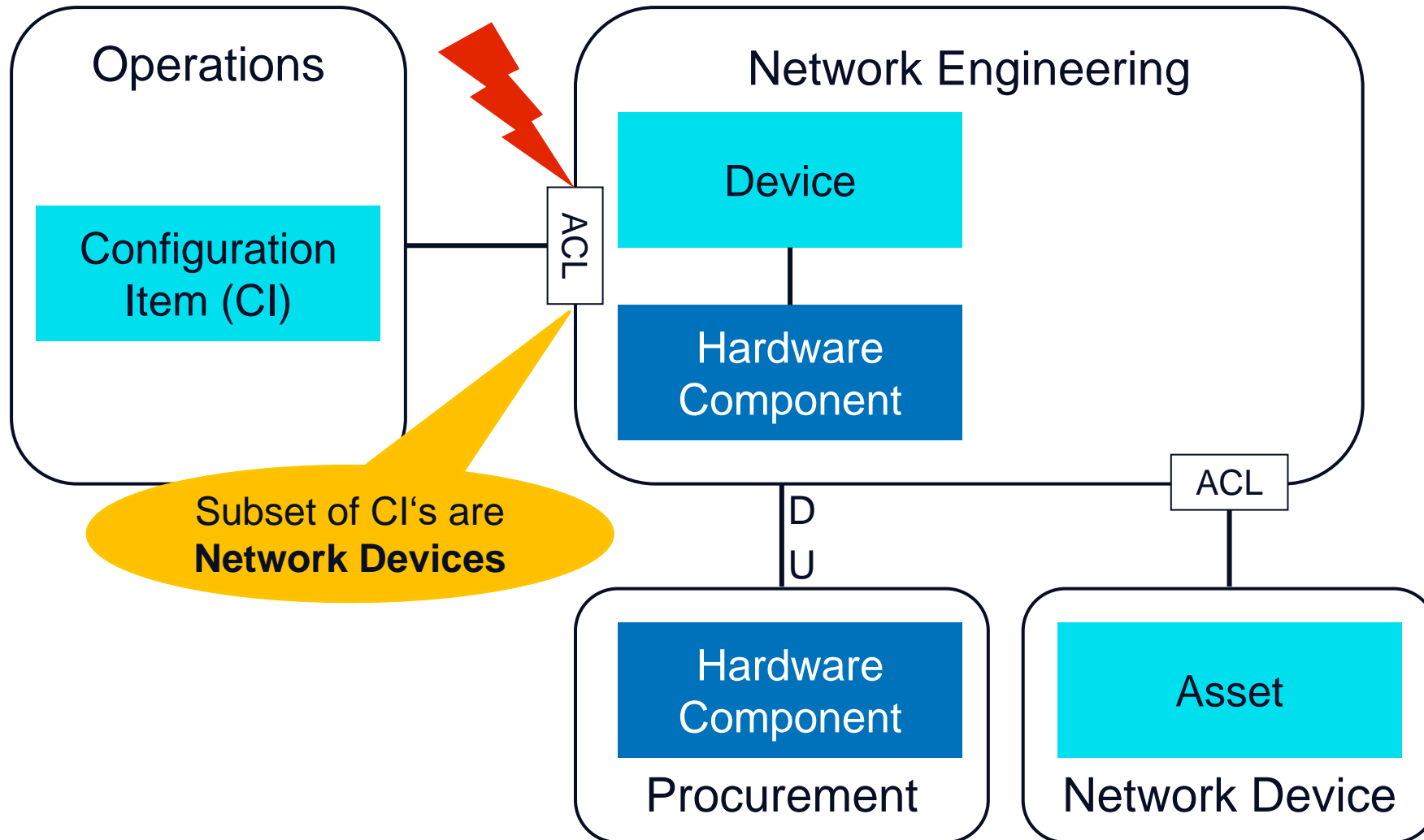
Ubiquitous Language of end-users



What is the language within Procurement?

Mapping required!

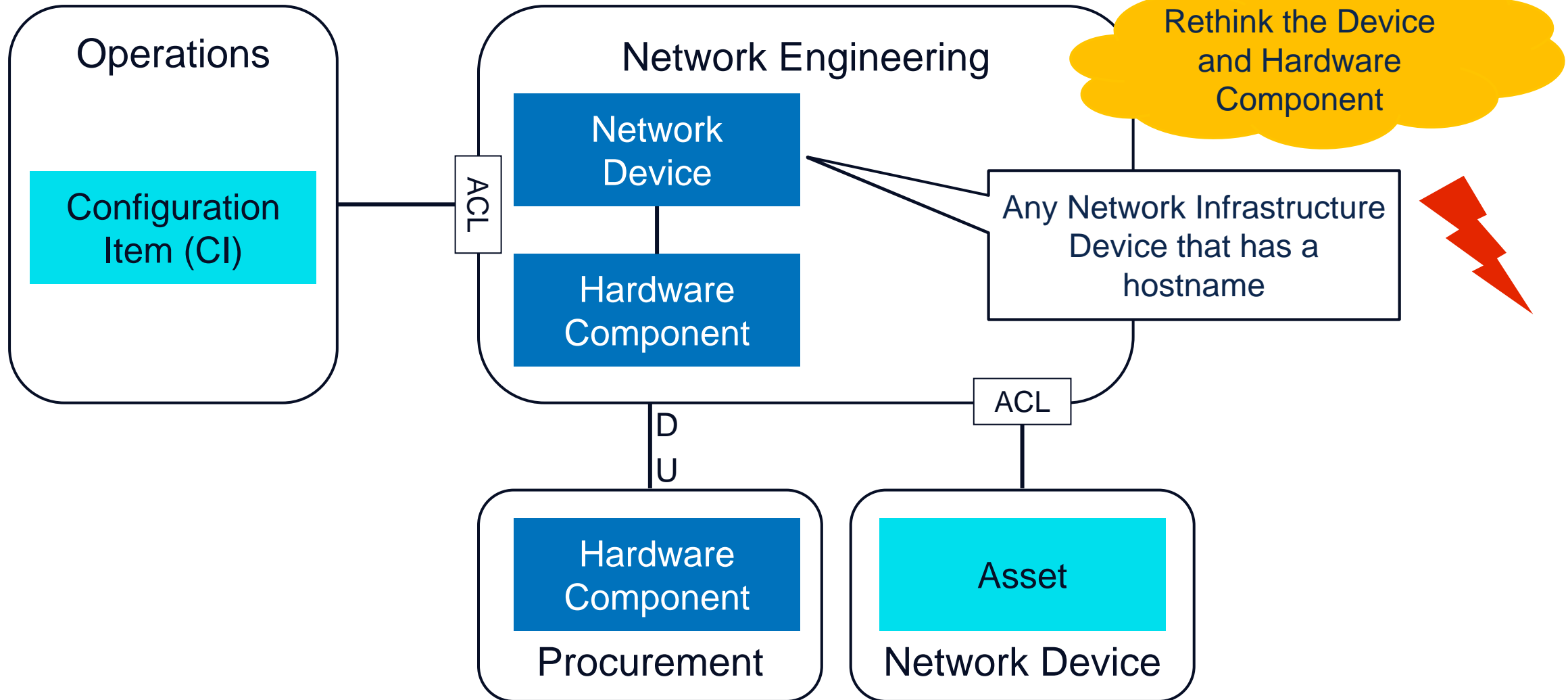
Ubiquitous Language of Operations



Where to get all
Devices from my
Network?

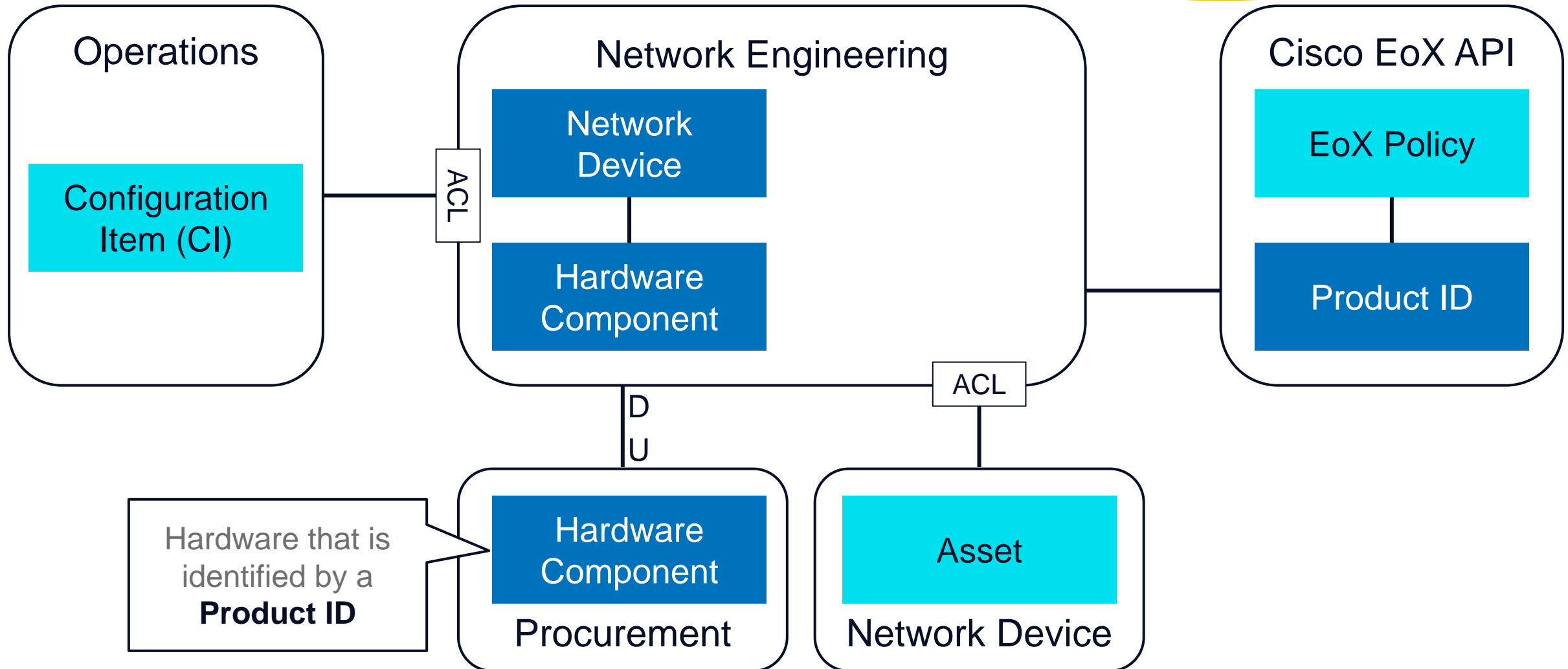
Subset of CI's are
Network Devices

Ubiquitous Language of Operations



Ubiquitous Language of the Cisco EoX API

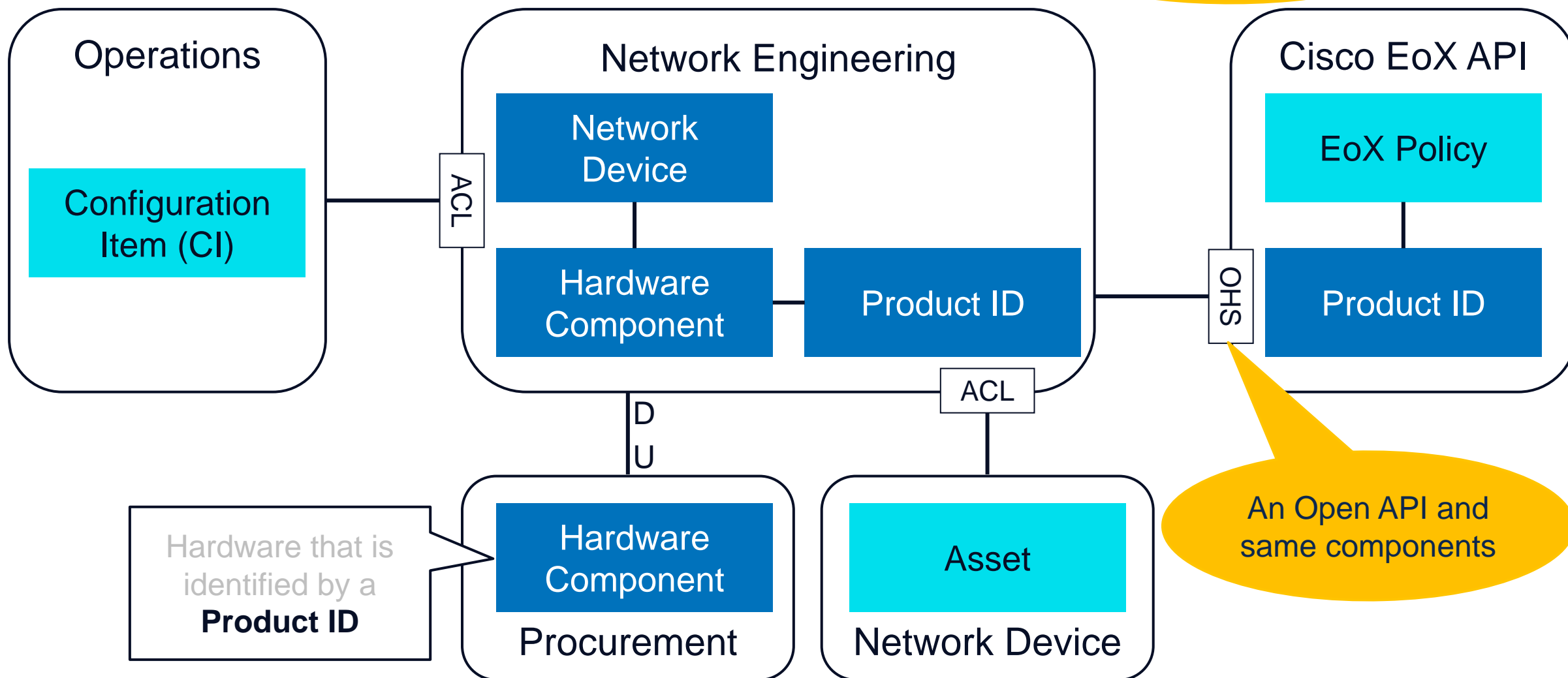
Let's look at the
Cisco EoX API 😊



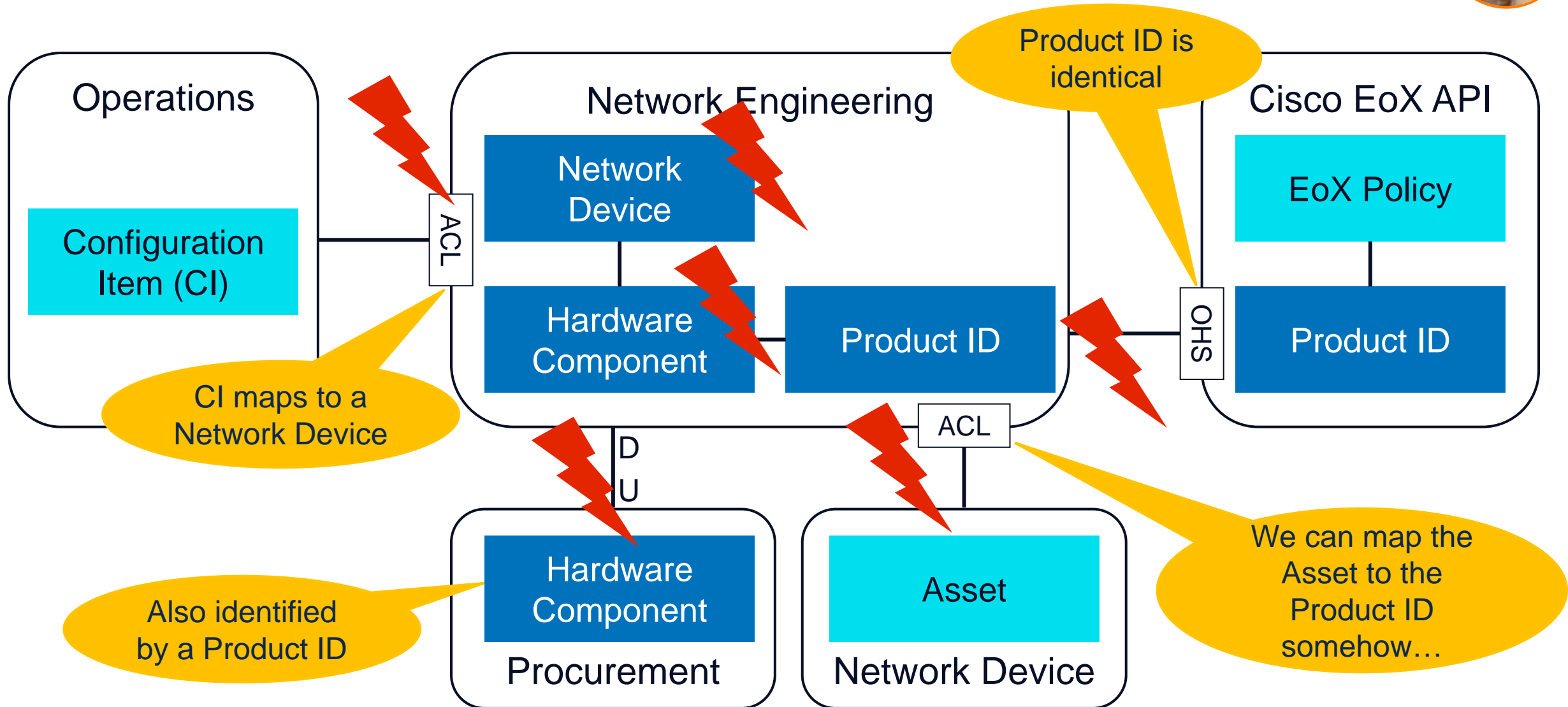
Ubiquitous Language of the Cisco EoX API



Let's look at the
Cisco EoX API 😊



Results of the First Modeling Session



Benefits of Domain-Driven-Design

Create a level playing field for Developers and Domain Experts

Prevents unnecessary abstractions during the implementation

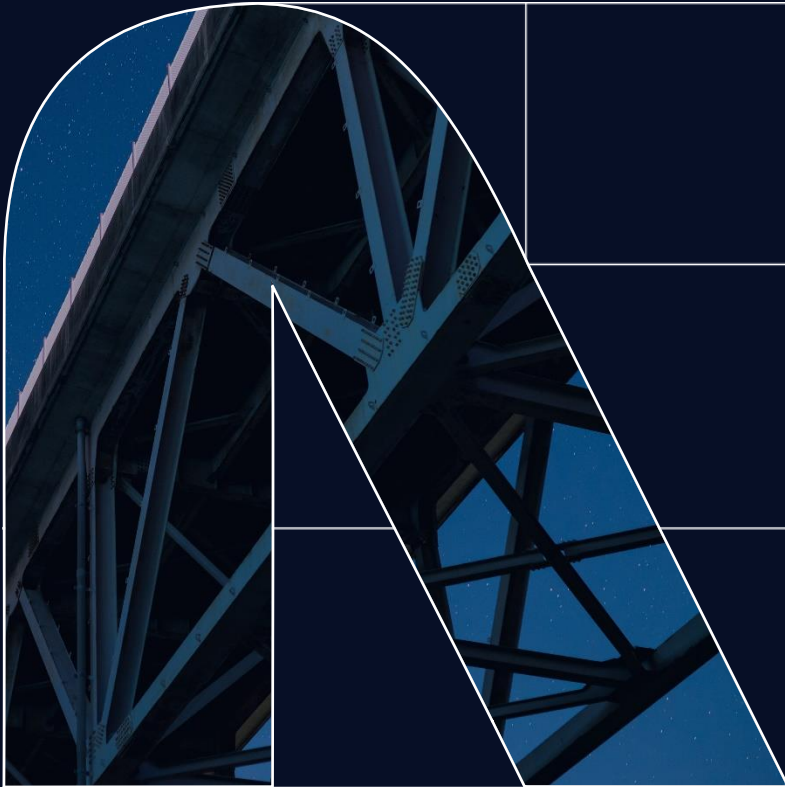
Better UI/UX of the solution

Solid model give Developers a foundation on what to work on
while the team grows

...

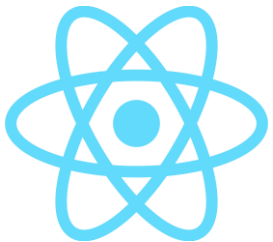
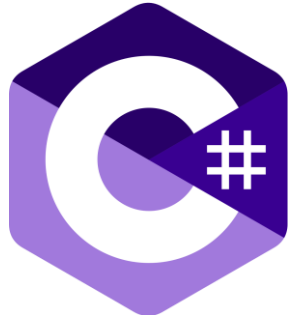
“ All models are wrong,
some are useful.

- George Box

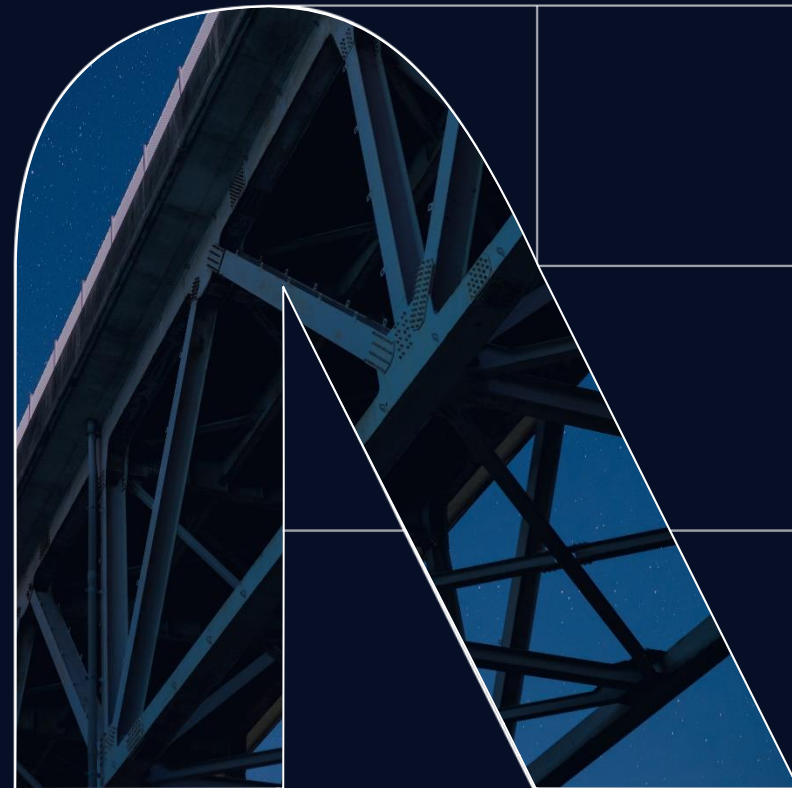


After the common understanding is established...

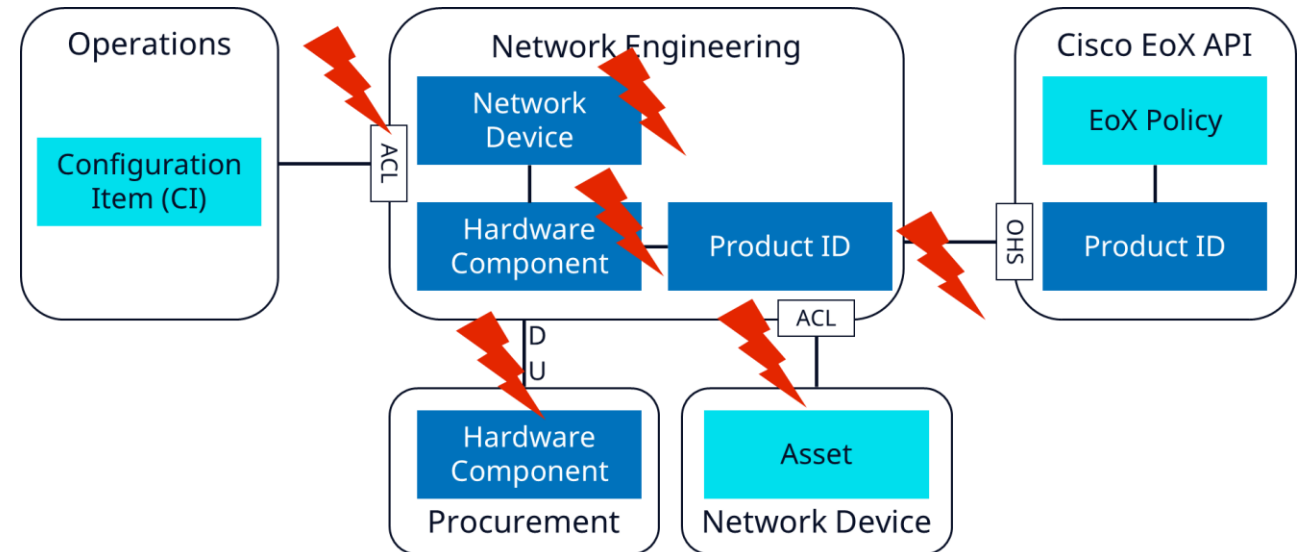
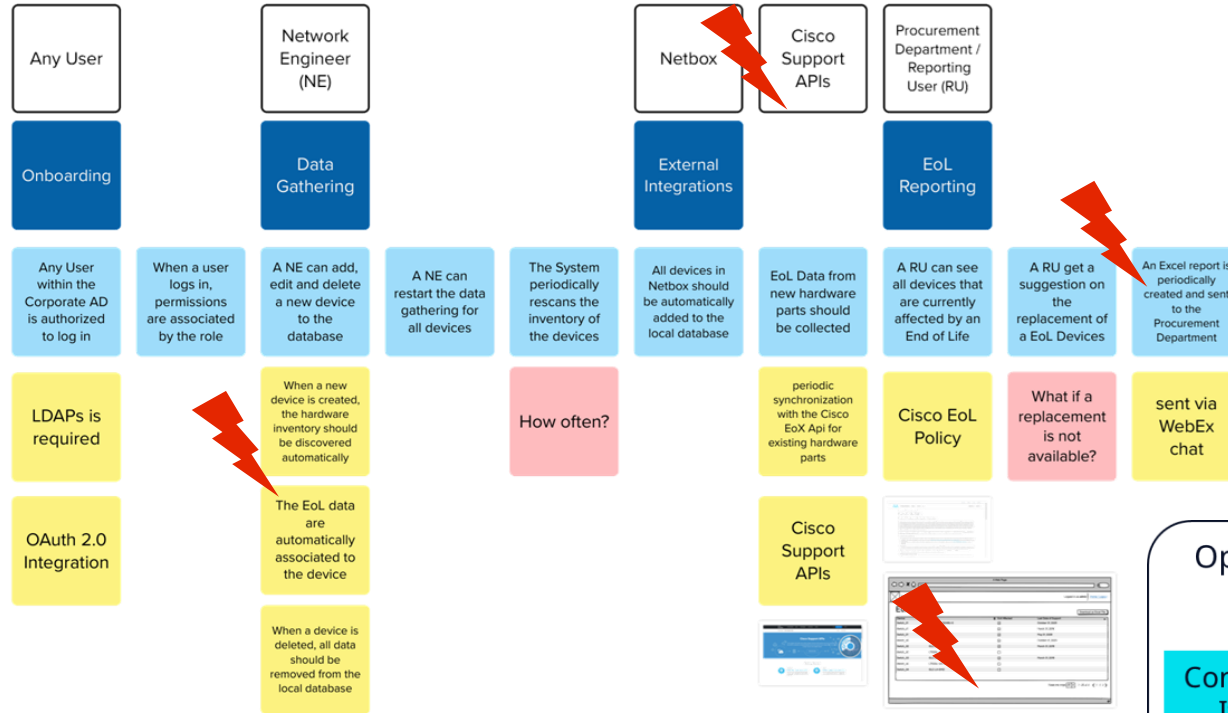
...define an appropriate solution



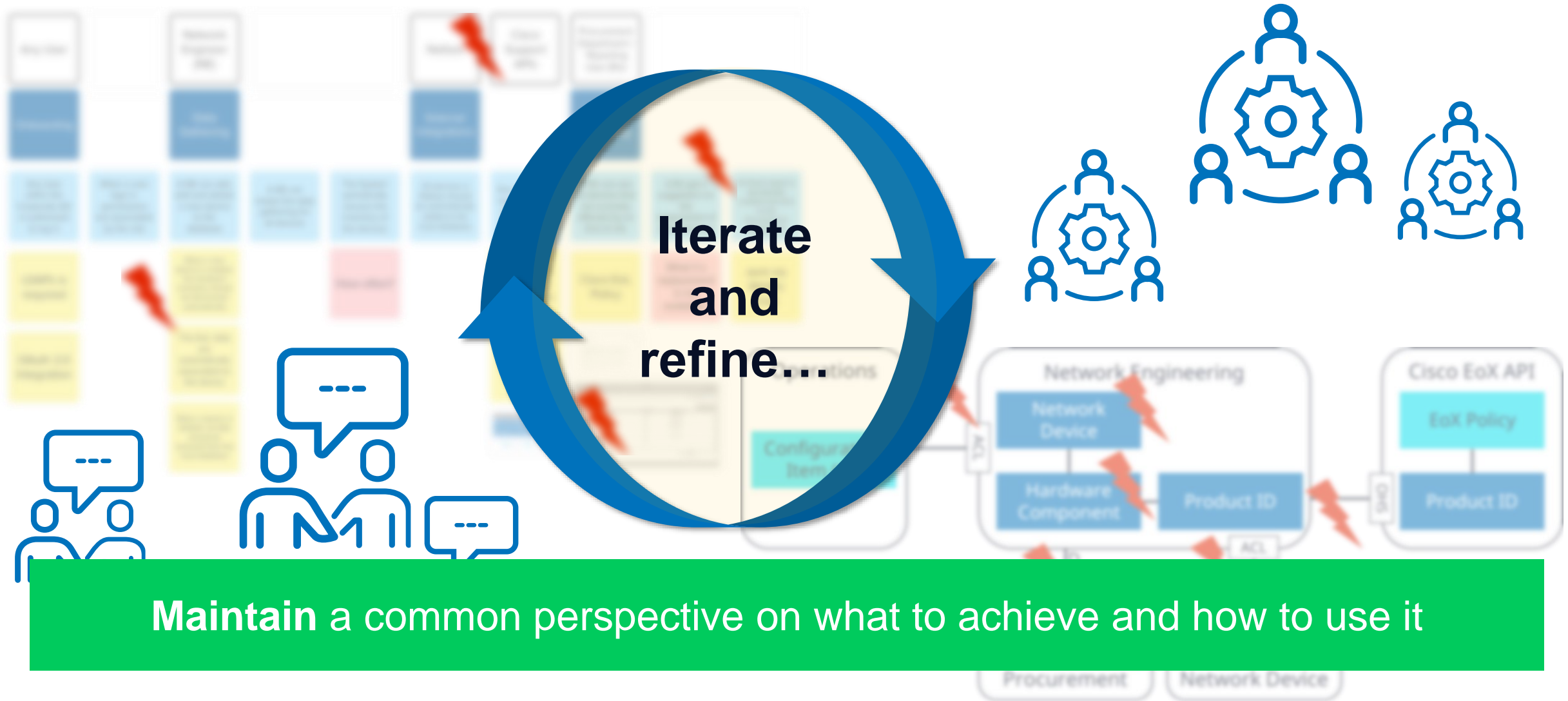
A world of misunderstandings ...



A world of misunderstandings ...

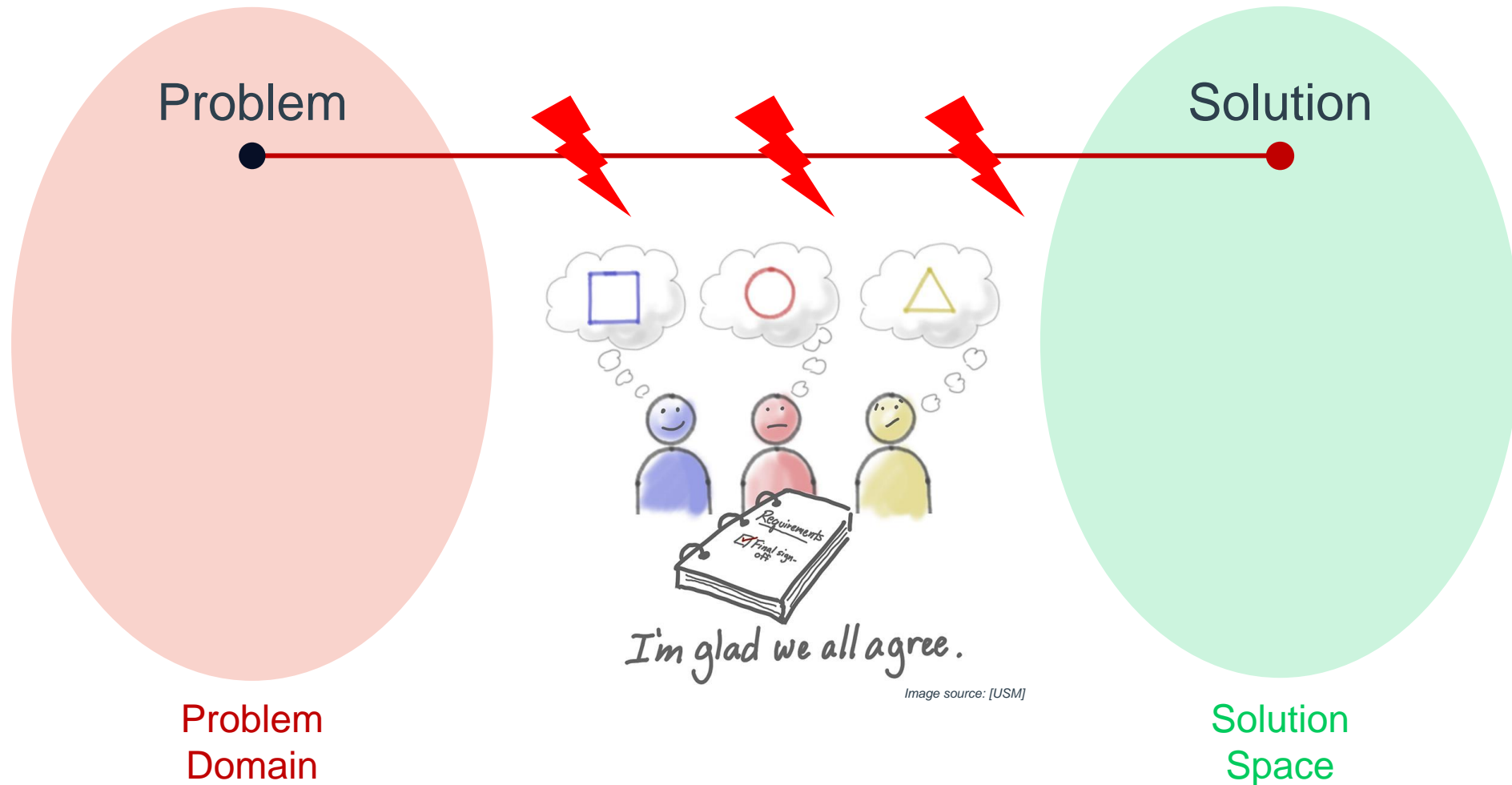


A world of misunderstandings ... and how you could avoid them!

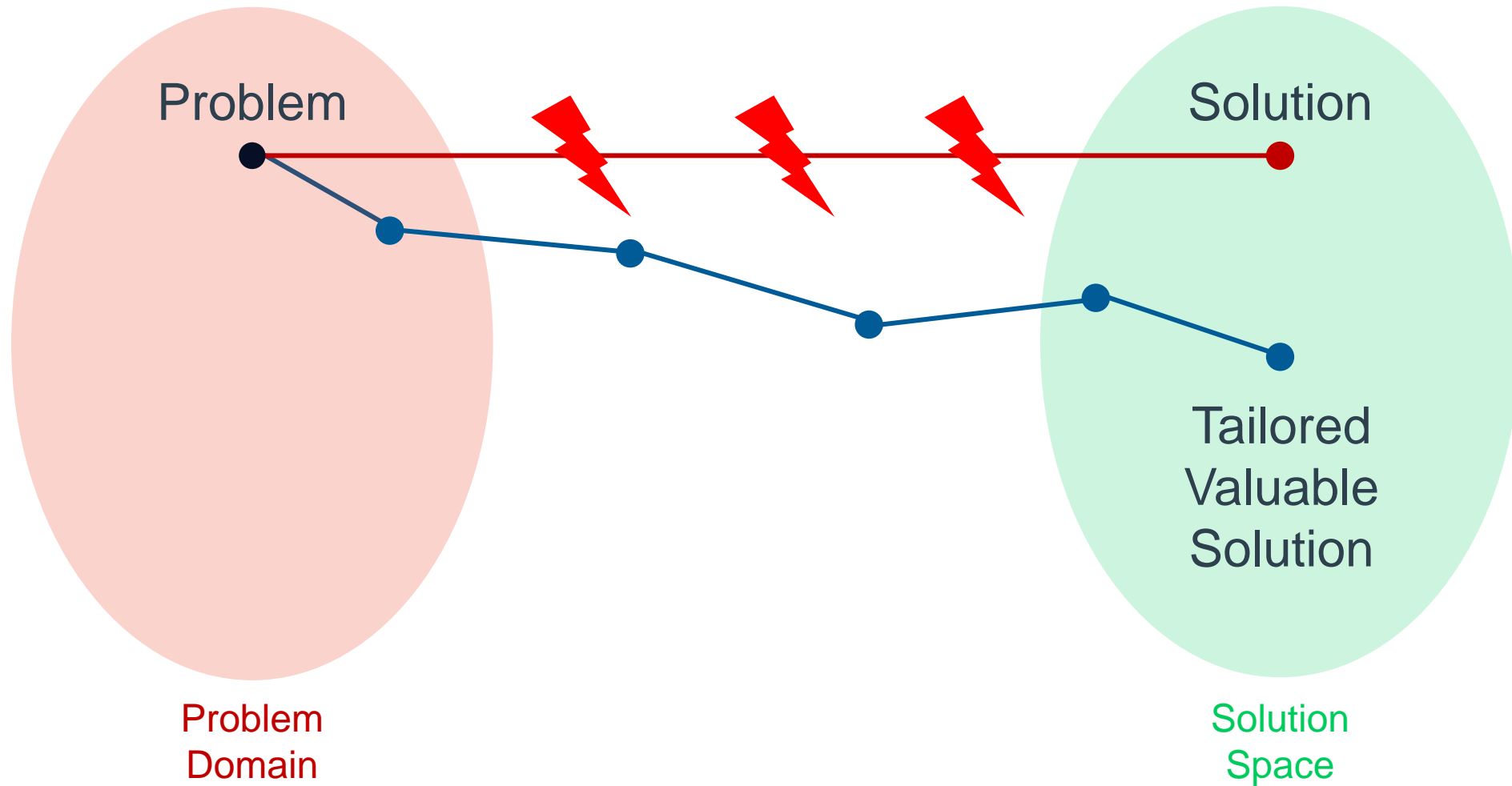


How to apply this in your projects?

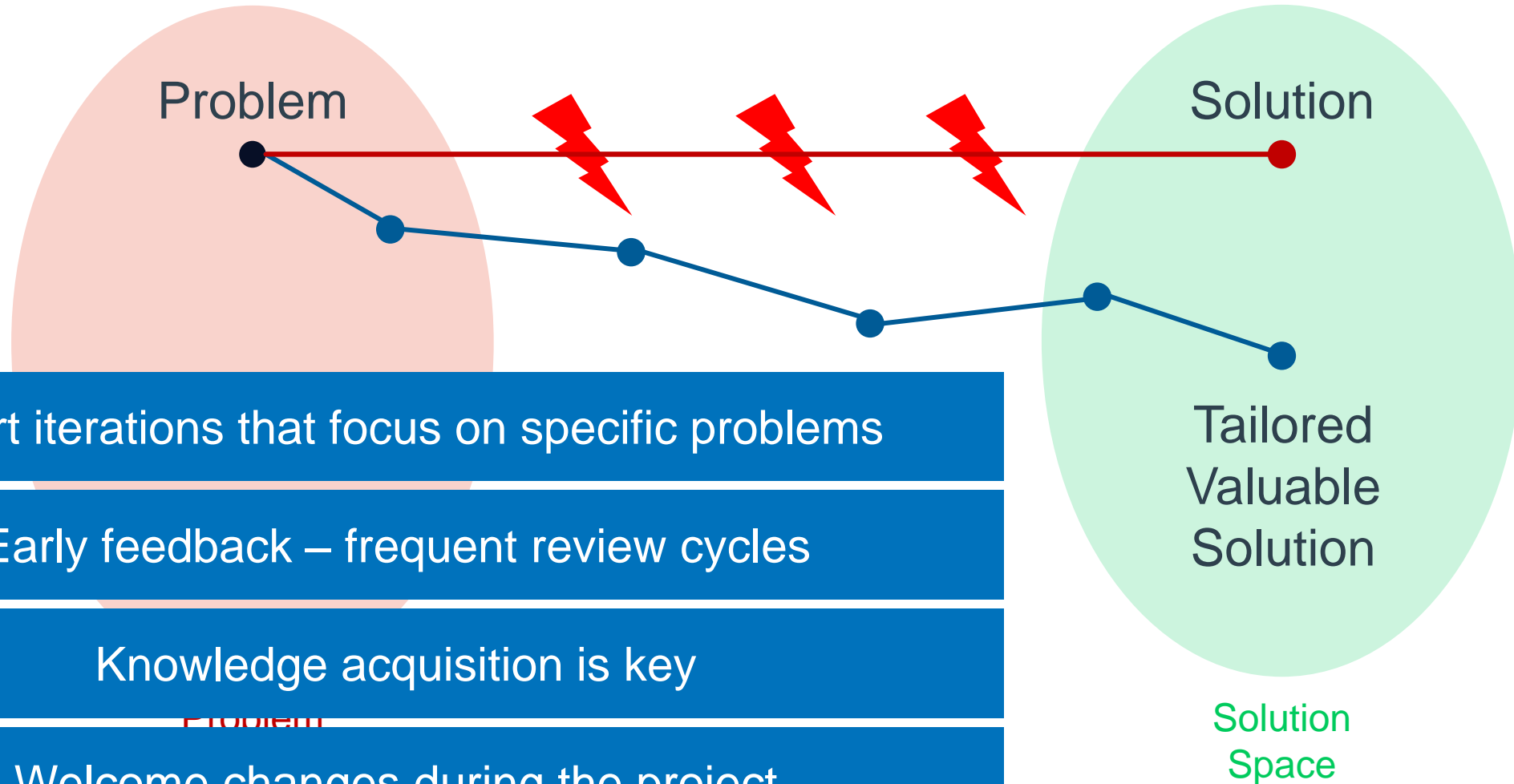
How to apply this in your projects?



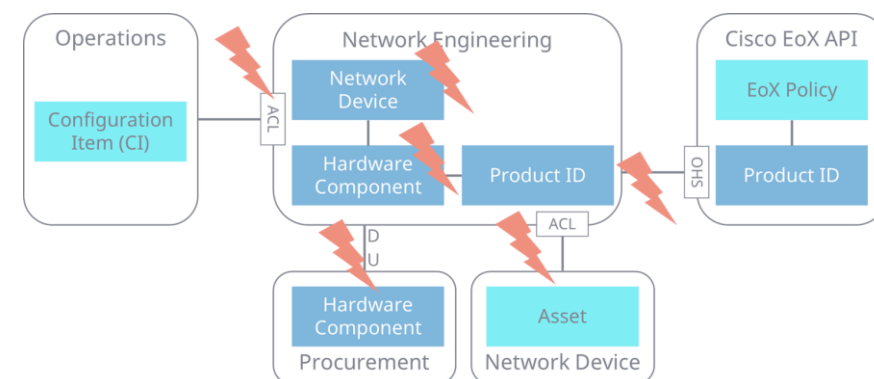
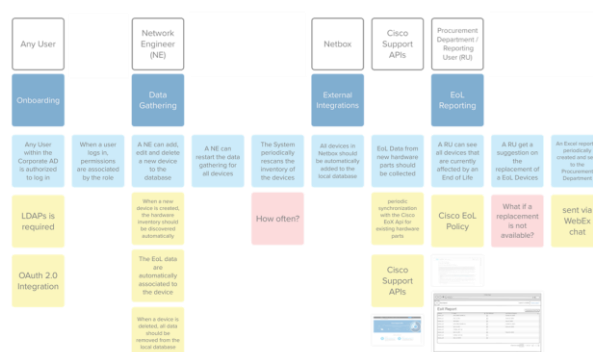
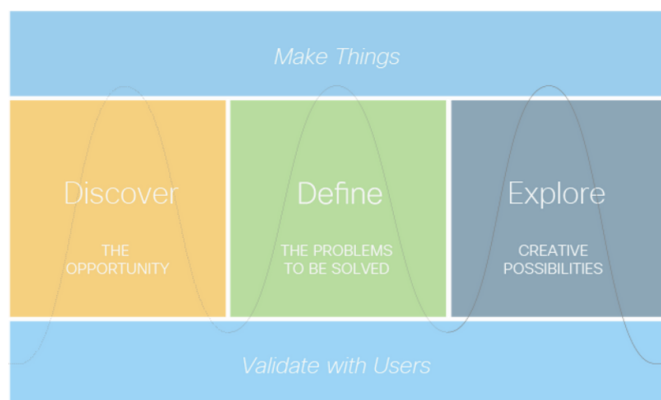
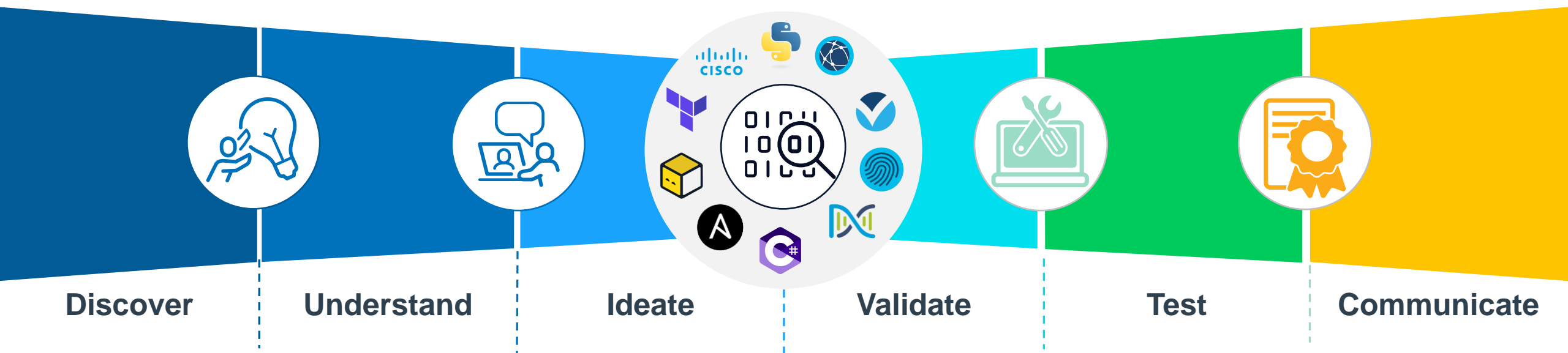
How to apply this in your projects?



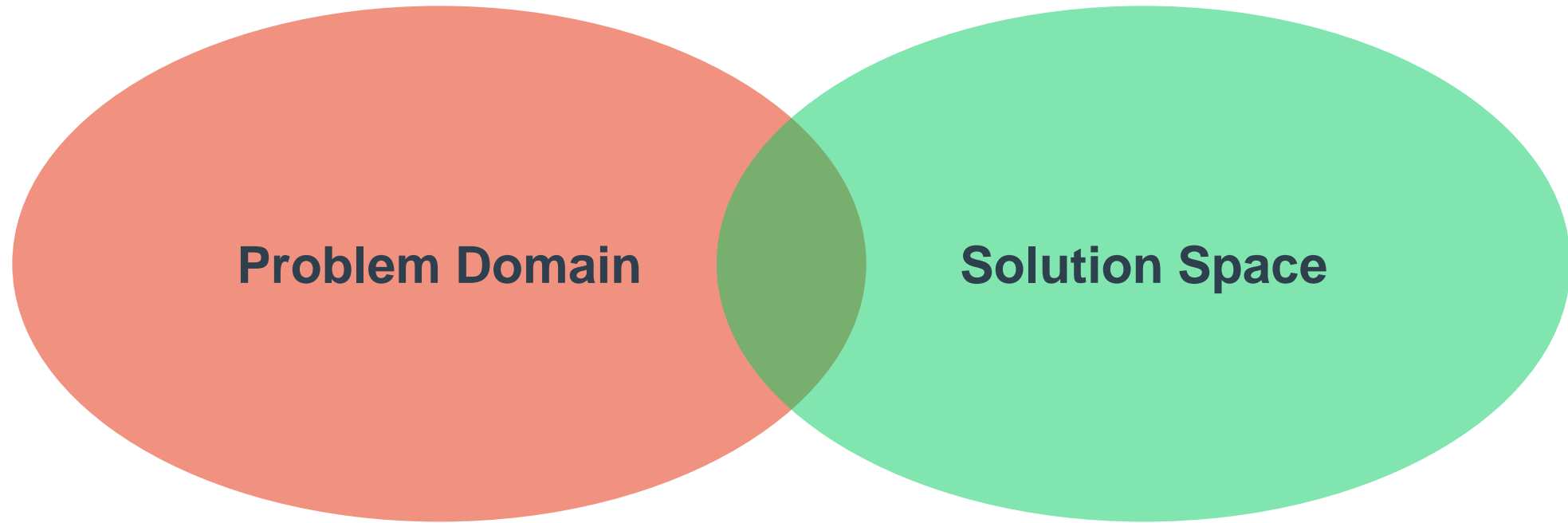
How to apply this in your projects?



Wrap-Up



Key Takeaways



*What DDD and USM
helps you to define*

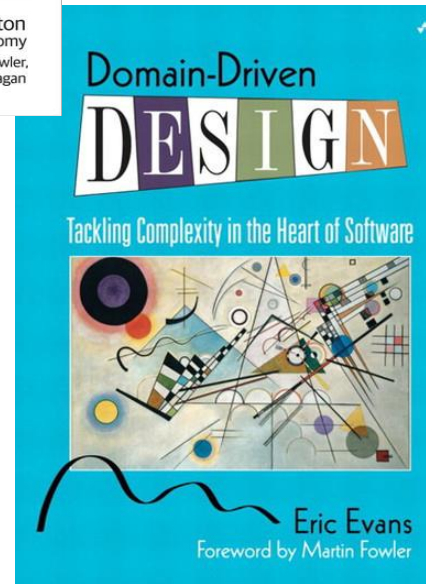
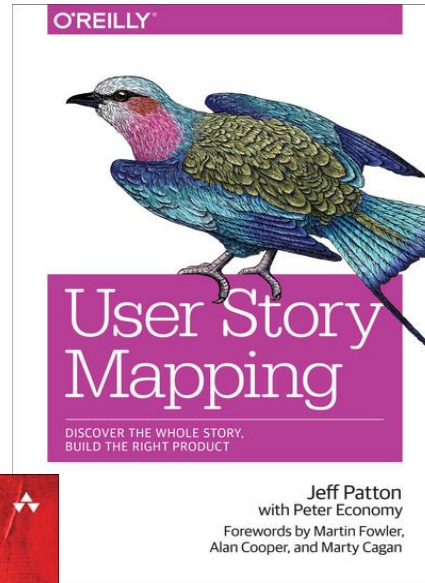
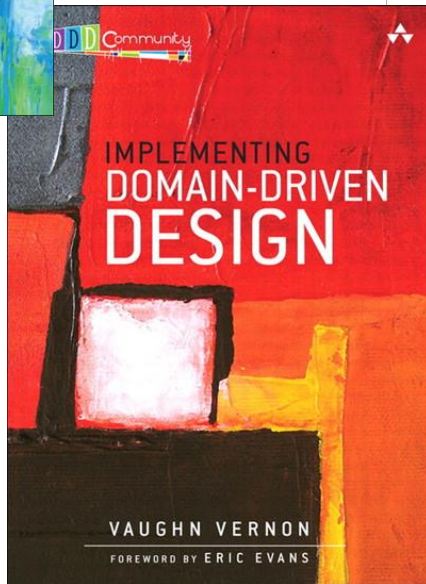
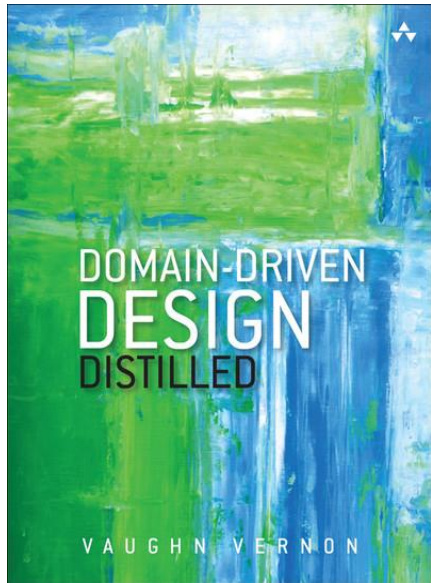
*What Cisco DevNet
can provide to you*



“ There are only two hard things in Computer Science: cache invalidation and naming things.

- Phil Karlton

Continue your education



Cisco Webex App

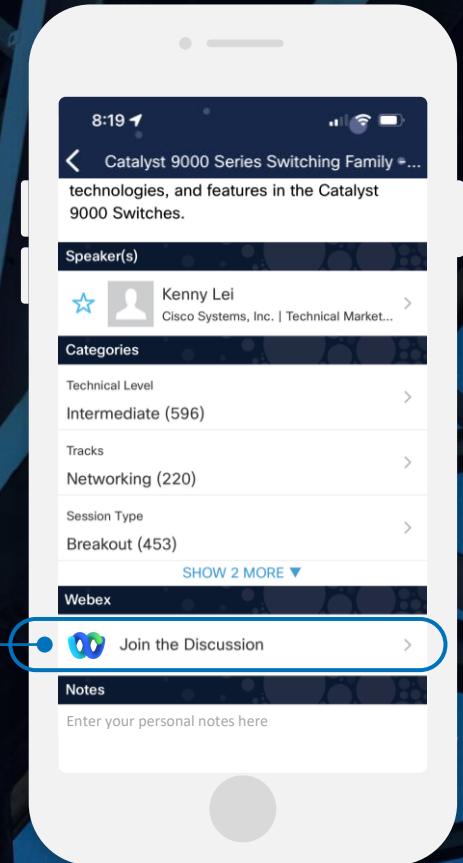
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until February 23, 2024.



<https://ciscolive.ciscoevents.com/ciscolivebot/#DEVNET-2241>



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Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live-branded t-shirt (while supplies last)!

All surveys can be taken in the Cisco Events Mobile App or by logging in to the Session Catalog and clicking the "Attendee Dashboard" at <https://www.ciscolive.com/emea/learn/sessions/session-catalog.html>





Thank you!

Join us for a coffee at the NTT DATA Coffee Lounge in the World of Solutions!

Together, we do it right.



References & further reading

Reference	Resource
[USM]	Patton, Jeff. User story mapping: discover the whole story, build the right product. First edition, O'Reilly, 2014
[DDDDEST]	Vernon, Vaughn. Domain-driven design distilled. Addison-Wesley, 2016.
[IDDD]	Vernon, Vaughn. Implementing domain-driven design. Addison-Wesley, 2013.
[DDD]	Evans, Eric. Domain-driven design: tackling complexity in the heart of software. Addison-Wesley, 2004.