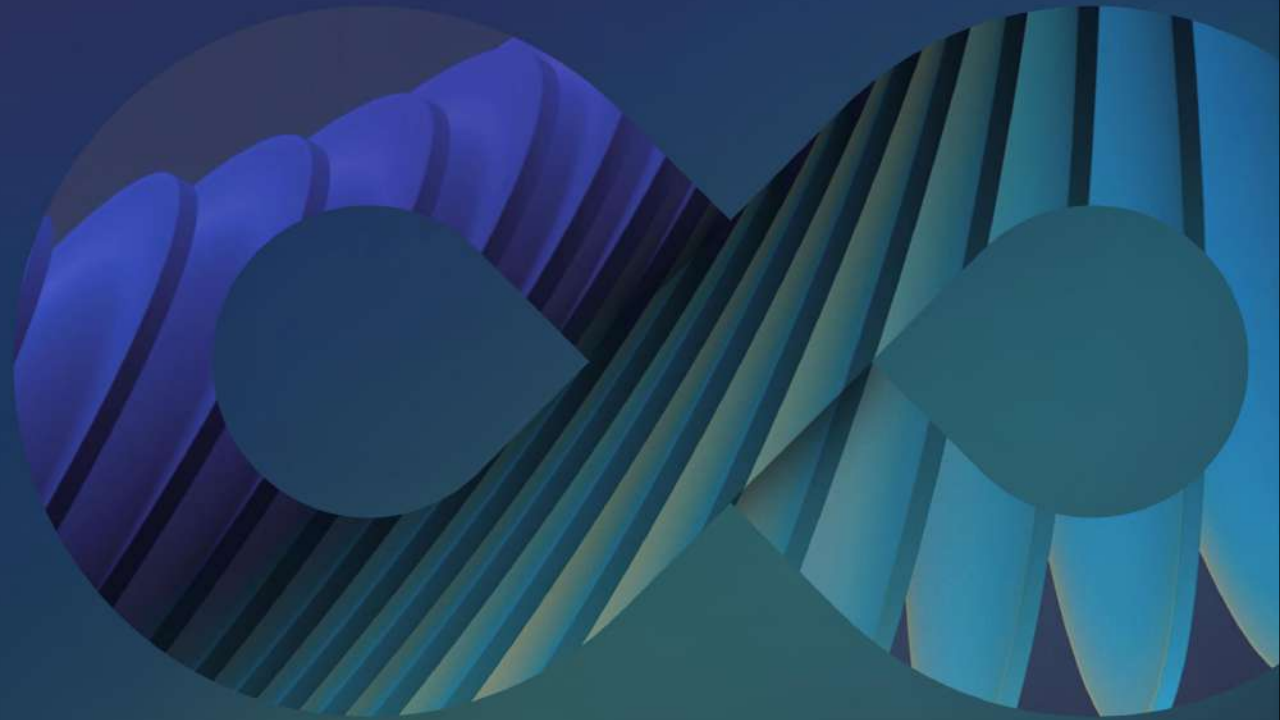


Polarion for Automotive



Agenda

Key Features That Drive Innovation

Core features of **Polarion**

Polarion Insight

Software Development Lifecycle Teamcenter & Polarion,
Differentiators Openness – Interoperability

Polarion for Automotive Industry Solutions

Polarion Extended Applications Integrations

Automotive HW & SW Evolution

Teamcenter – Polarion Intergration

Traceability – Best Homologation Process ever Happen..

Polarion Extensions Portal

Key Features That Drive Innovation

Application Lifecycle Management



Ship faster, more often
and with higher quality

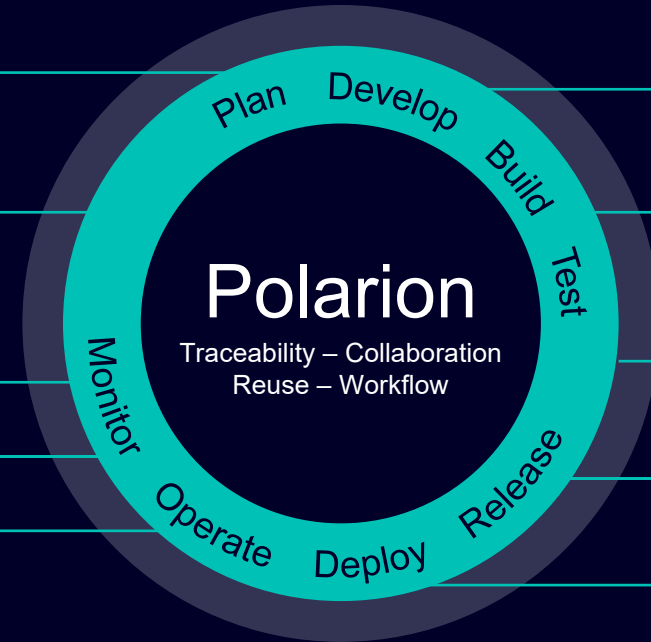
Agile
Requirements
Management

Change
& Configuration
Management

Cyber Threat
Detection¹

Reuse & Branch
Management

Risk & Issue
Management



Agile/SAFe/
Hybrid Project
Management

Planning
& Resource
Management

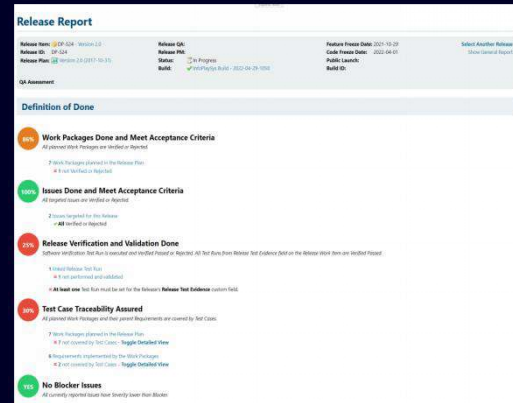
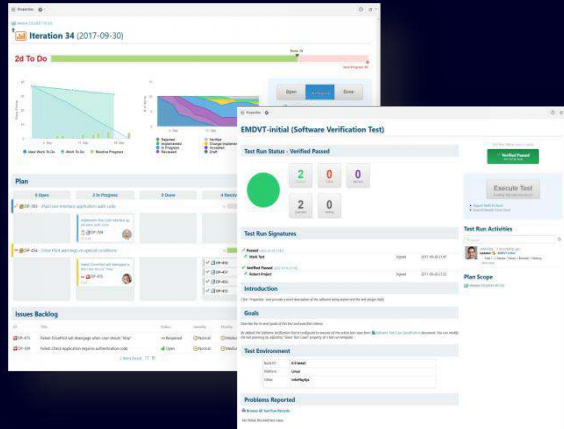
Industry
Compliance,
Audits & Metrics
Reports

Test & Quality
Management

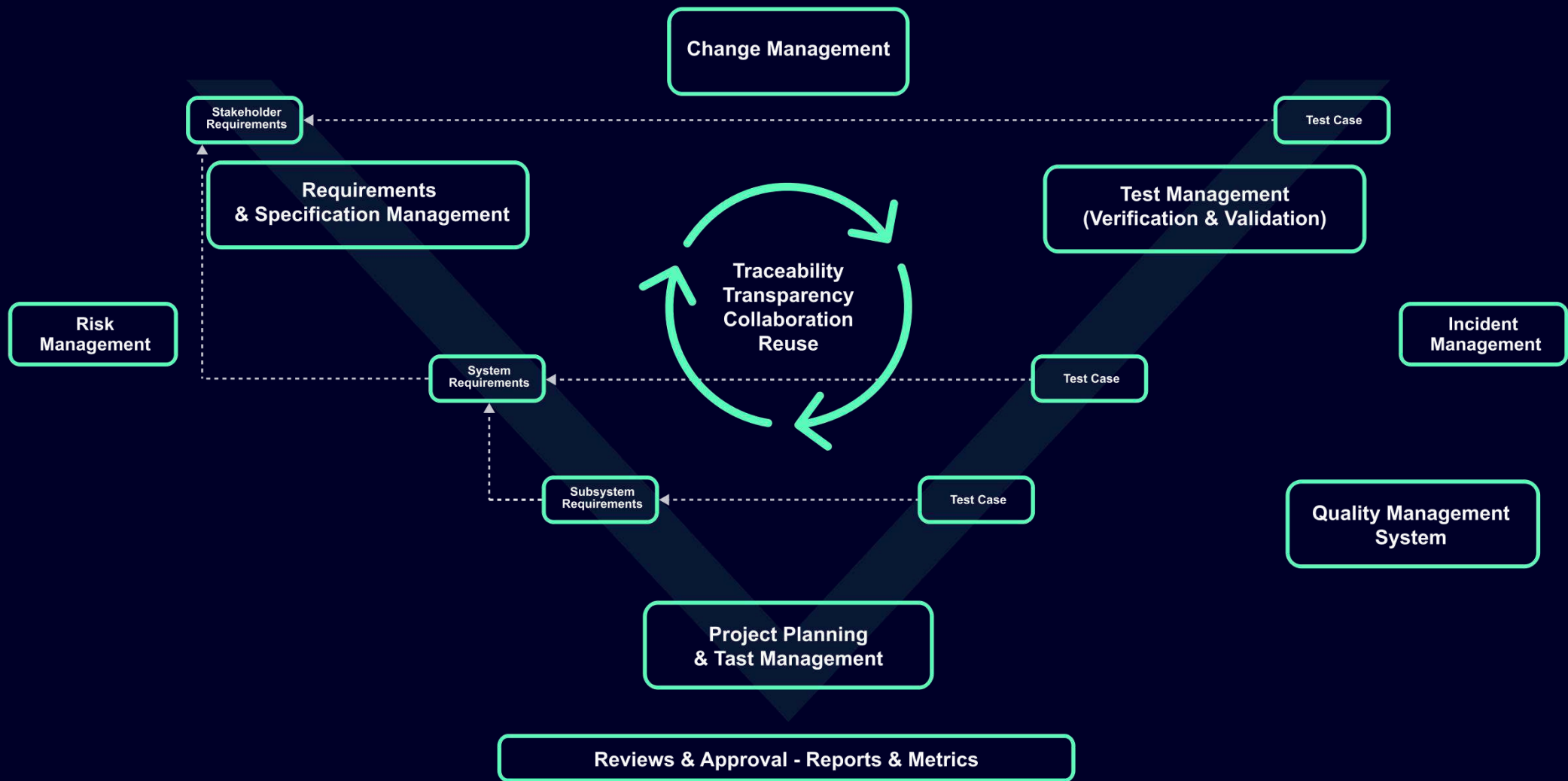
Build & Release
Management

Core features of Polarion

- Requirement Management
- Test Management
- Change and Configuration Management
- Workitem Tracking
- Traceability
- Live Document and Report
- Audit and Compliance
- Collaboration and Review



- Import & Export – Compatible with commonly used formats (Word, Excel, PDF, ReqIF)
- Live Doc – Word-like documents with workflows and advanced functionality
- Hierarchy, Classification & Custom Attributes – Structure tailored for documents and requirements
- Workflow Automation – Review, approval, signing or data entry processes



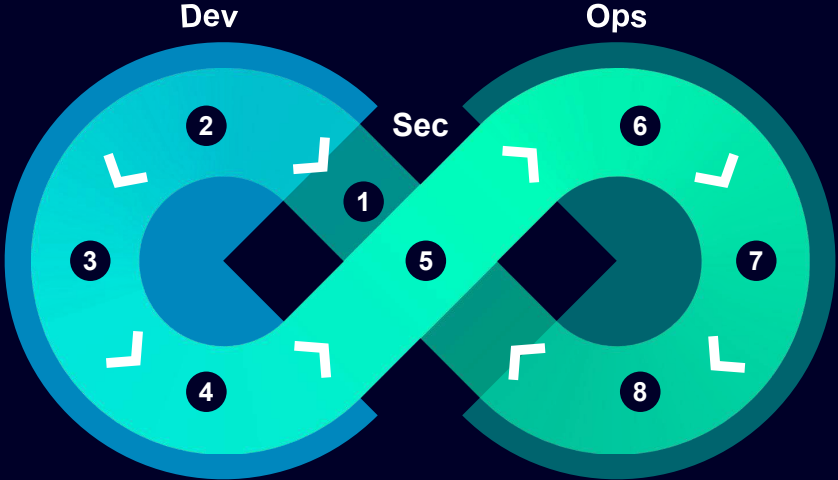
Software Development Lifecycle

Control Complexity

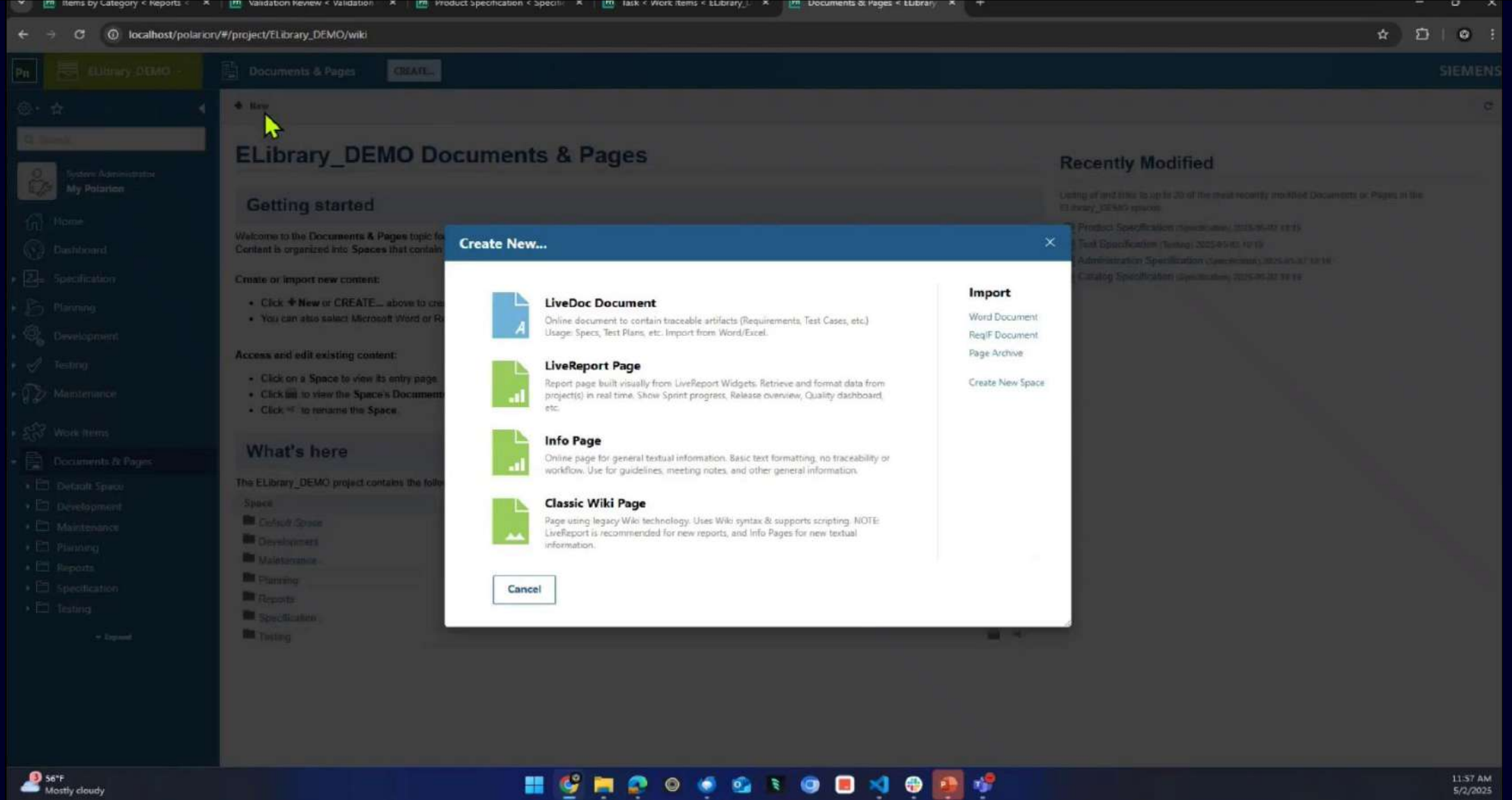
Control Complexity



Complexity as a competitive advantage

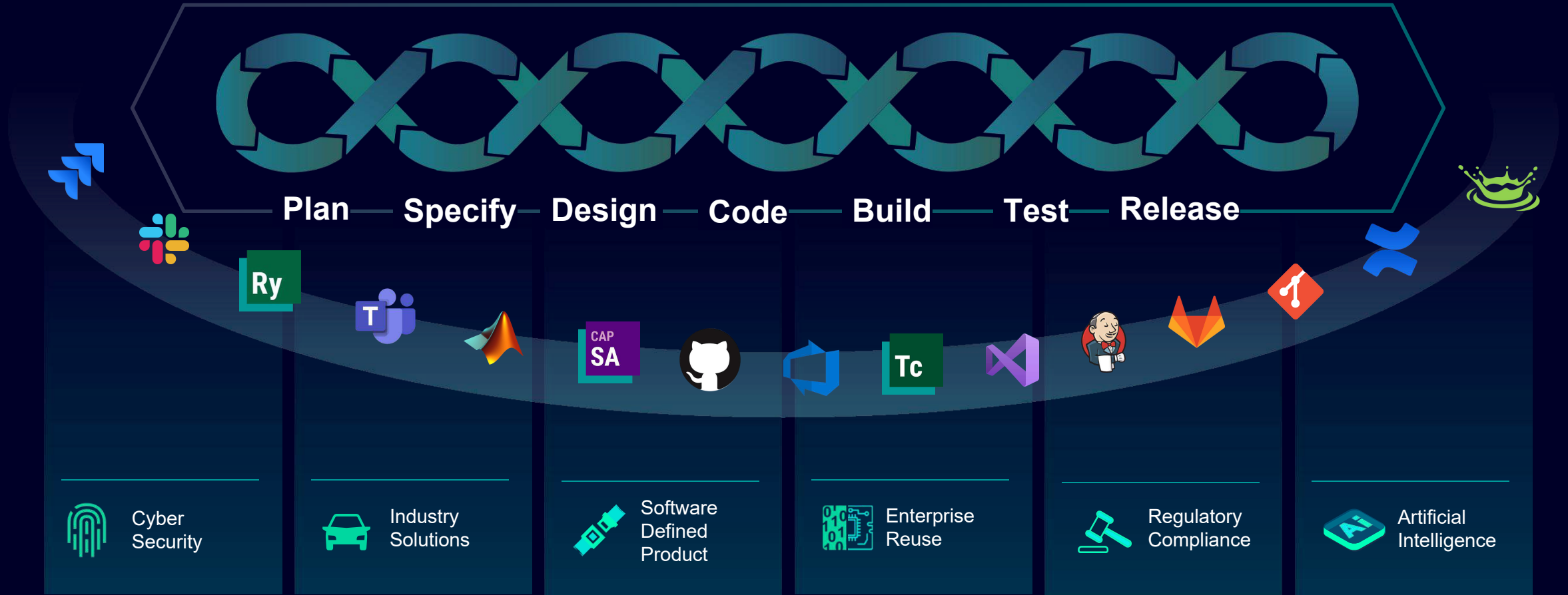


- | | | | |
|---|---|---|---|
| 1 Plan
→ Threat Policies Model | 2 Code
→ Code review | 3 Build
→ SAST
→ SW Composition Analysis | 4 Test
→ DAST
→ Pen Test |
| 5 Release
→ Compliance Validation | 6 Deploy
→ Log and Audit
→ Threat Intelligence | 7 Operate
→ Patch | 8 Monitor
→ Security Monitoring |



Polarion

Orchestrate & Collaborate



REST API
+
Polarion
Extensions

Plan



salesforce

Code



Deploy



Collaborate



BOĞAZİÇİ
YAZILIM

Integrate your tools
keeping **Polarion** as
your **single source of
truth**

Software
Partner
Sell

PLATINUM

SIEMENS

Polarion Extended Applications Integrations

Integration with all other ALM tools

- Polarion enables bidirectional data exchange with tools, JIRA,. EG: If a defect recorded in JIRA, automatically can be linked in Polarion for new Requirement.

Continuous Integration (CI/CD) Systems

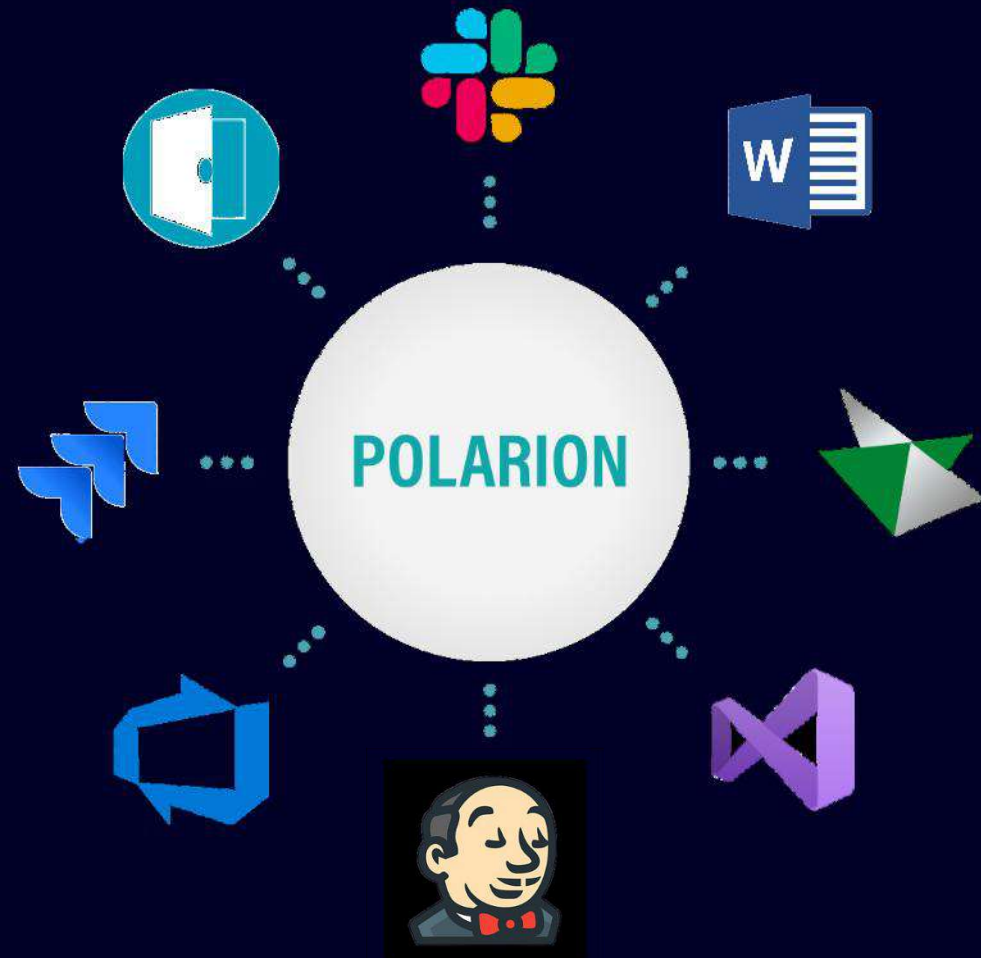
- Integrations with CI tools such as Jenkins or Bamboo allows automated test processes to be monitored directly by Polarion. Build results and test reports are automatically transferred to Polarion.

PLM (Product Lifecycle Management) Systems

- Integration with PLM tools like Teamcenter connects product data management with requirements and engineering processes.

API and Costum Data Flows

- Data from external systems such as ERP or CRM can be transferred to Polarion – bidirectional workflows.



Polarion for Automotive Industry Solutions

Functional Safety

Safety & Compliance



Manage functional safety compliance.
Prevent recalls & cut audit costs
(ISO 26262)

Cybersecurity

Protect & Secure



Manage your product's software risk at
scale, from a single component to a full
product system
(ISO 21434)

A-SPICE

Assess & Improve



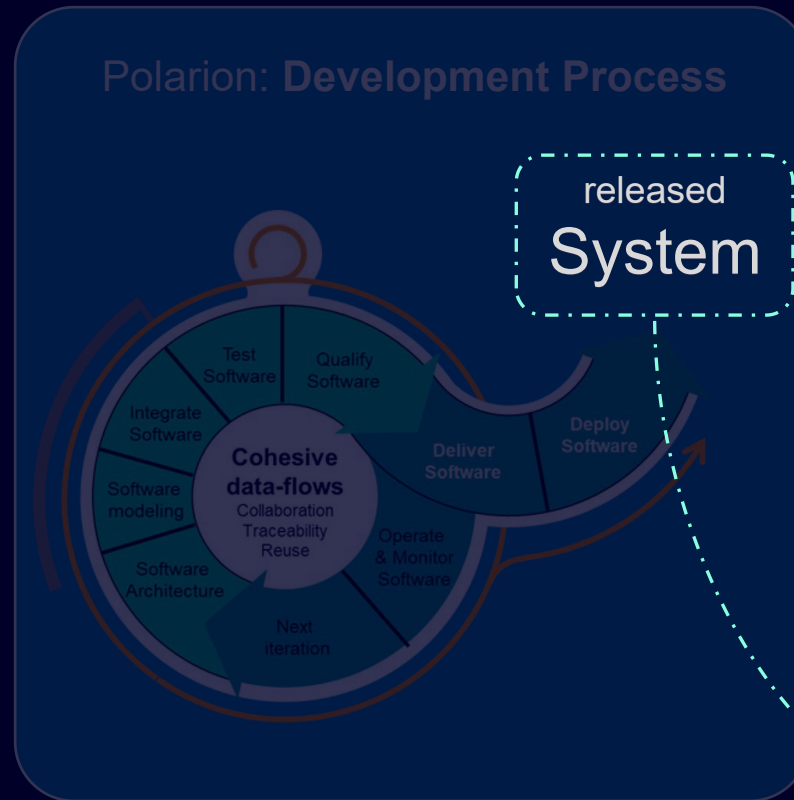
Practises to proactively ensure process
compliance, enhance product quality, and
demostrate engineering excellence through
the development lifecycle
(ASPICE)

BOĞAZİÇİ
YAZILIM

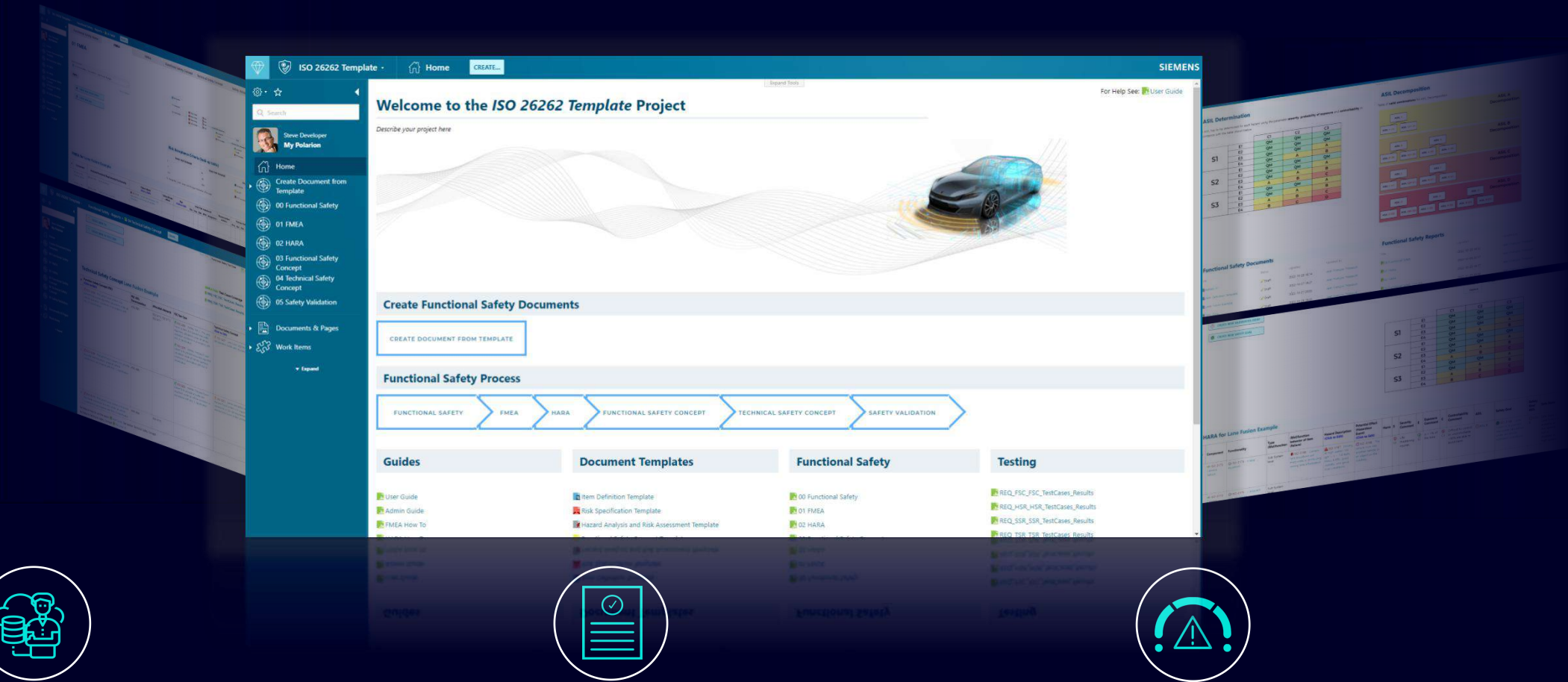
Software
Partner
Sell
PLATINUM

SIEMENS

Functional Safety with Polaron

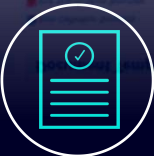


Process compliance



Management of Functional Safety

Safety Management and Development information sharing with a digital thread



Confirmation Measures Reports

Product Assessment, Audits, Verification Reviews, and Safety Validation Reports



Hazard Analysis and Risk Assessment

Overview of identified Hazards & Risks with Identifying safe states and safety concepts

Functional Safety Demo

 Automatic Lane Fusion -

 Home

CREATE...

SIEMENS

For Help See:  User Guide



 Search

 John Doe
My Polarion

 Home

 Create Document from Template

 00 Functional Safety

 01 FMEA

 02 HARA

 03 Functional Safety Concept

 04 Technical Safety Concept

 05 Safety Validation

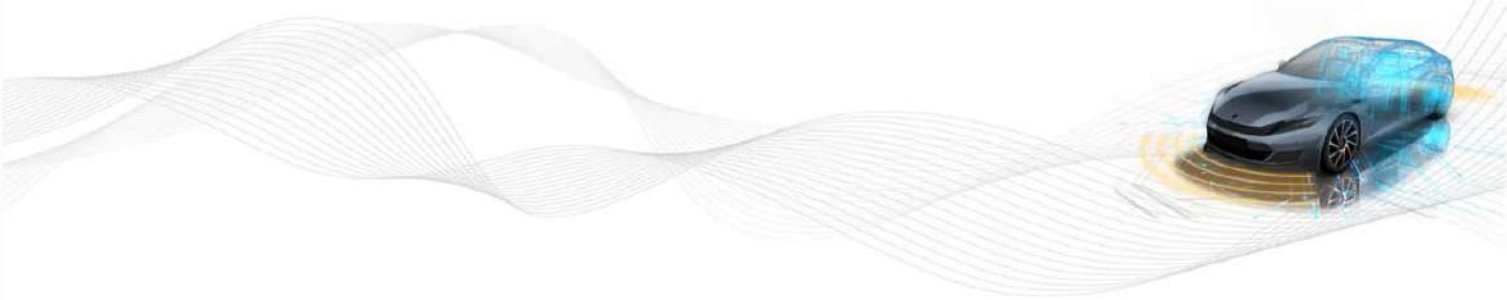
 Documents & Pages

 Work Items

Expand

Welcome to the Automatic Lane Fusion Project

This project contains the functional safety analysis data for our upcoming, next generation **Automatic Lane Fusion System**.



Create Functional Safety Documents

CREATE DOCUMENT FROM TEMPLATE

Functional Safety Process

FUNCTIONAL SAFETY

FMEA

HARA

FUNCTIONAL SAFETY CONCEPT

TECHNICAL SAFETY CONCEPT

SAFETY VALIDATION

Guides

- User Guide
- Administration Guide
- FMEA How To
- HARA How To
- FSC How To
- TSC How To

Document Templates

- Item Definition Template
- Risk Specification Template
- Hazard Analysis and Risk Assessment Template
- Functional Safety Concept Template
- Test Specification Template

Functional Safety

- 00 Functional Safety
- 01 FMEA
- 02 HARA
- 03 Functional Safety Concept
- 04 Technical Safety Concept
- 05 Safety Validation

Testing

- REQ_FSC_FSC_TestCases_Results
- REQ_HSR_HSR_TestCases_Results
- REQ_SSR_SSR_TestCases_Results
- REQ_TSR_TSR_TestCases_Results
- Test Cases by Type Overview
- Test Cases Overview - Show Results
- Safety Validation - Info about Test Cases

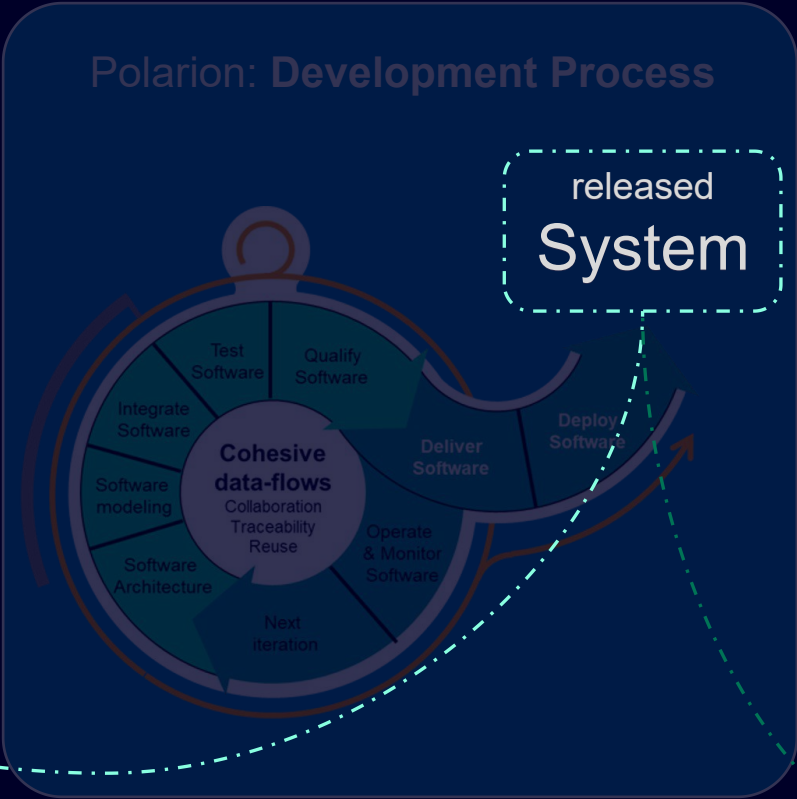
SIEMENS

Cybersecurity with Polarion



Polarion: **Cybersecurity Project**
(ISO 21434)

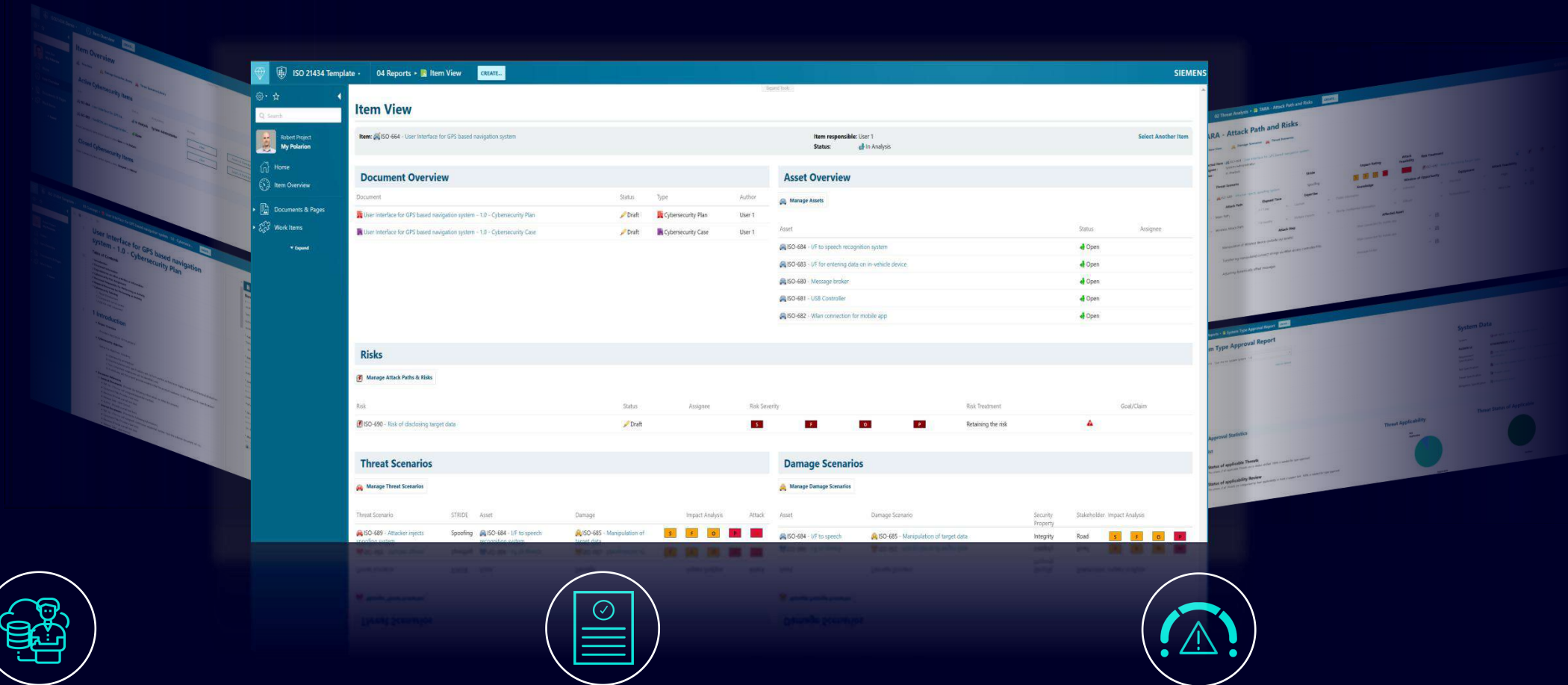
Cybersecurity related planning
Damage, Threat & Attack Path Analysis
Reporting & Dashboarding



Polarion: **Functional Safety Project**
(ISO 26262)

Safety Management planning
Hazard/Risk Identification
Safety Analysis & Implementation
Safety Validation
Confirmation Reporting

Process compliance



Cybersecurity Management System

End-to-end cybersecurity information sharing alongside digital thread



Threat and Damage Libraries

Apply your best practices in a managed way across your portfolio



Threat and Risk Assessment

Instant overview of identified threats and implications for actionable mitigations

Cybersecurity Demo

 User Interface

 Home

CREATE...

SIEMENS



 John Doe
My Polaron

 Home

 Item Overview

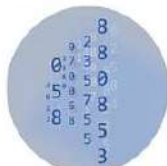
 Documents & Pages

 Work Items

Expand

Cyber Security Control

based on UN R155 & ISO/SAE 21434



ISO 21434 based Risk Assessment

- Item Definition
- Asset & Threat Identification
- Attack path analysis
- Risk determination



UN R155 Threat Management

- Manage Cyber Security Threats
- Define Mitigations & Security Controls



Cybersecurity Management

- Define governance information elements
- Manage and plan activities
- Continuous monitoring

In a nutshell

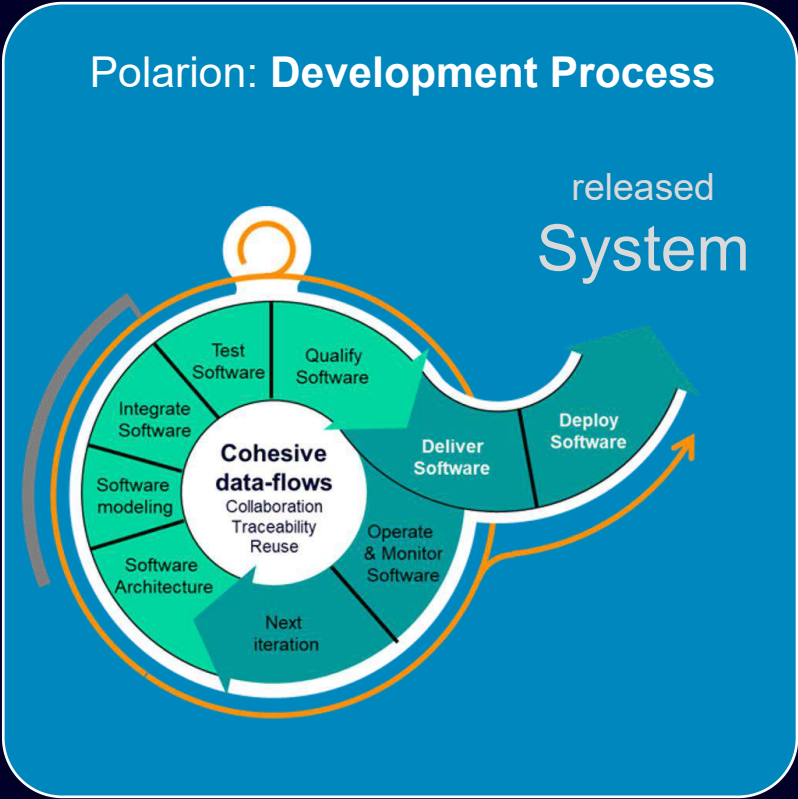
Cybersecurity objects according to ISO 21434

- The ISO standard requires mainly two activities:
 - ensure the project/organization implements a Cybersecurity Culture
 - perform continuous Cybersecurity activities throughout the lifecycle of the product
- For the latter, this template provides means to handle 🚗 Items together with the definition of 🚗 Assets, their 🚗 Damages Scenarios and 🚗 Threat Scenarios leading to a threat and risk analysis (TARA).

Navigation

Use the shortcuts in the navigation bar for quick access to the main pages. Find the **User & Administration Guide** by following [this link](#).

Example Development Process



Example Development Process

Utilizing Traceability and Collaboration

Specify

Current Document version 2.0 for net been approved

Approved Version:

1.04 (2017-09-10)

Document Signatures:

Reviewed: (2017-09-10)

Mark Approved: (Once Change Pending)

Robert Project Manager

System Administrator (Owner)

1 Introduction

1.1 Purpose

The System Requirement Specification (SRS) describes what the system's owner expects the system to do, the system's required environment, the system's usage profile, its performance parameters, and its required quality and effectiveness. The SRS is a structured collection of information that embodies the requirements of the system. The SRS completely describes all known, relevant, and resolved relationships between inputs and outputs.

1.2 Scope

Infotrip is an Auto Pilot application for autonomous vehicles of all types. There will be an ADAS application as well as a higher-level application for testing popular automotive manufacturers after 2020.

1.3 References

2 General Overview

Infotrip is the new generation of auto pilot systems for vehicles, using complex internal and external sensing technology. Infotrip allows the driver to input a destination into the infotrip computer, set speed and driving conditions, and it tracks and stays on the infotrip path regardless of the driving route. It is not for other autonomous processes, road and weather conditions, and make route corrections to avoid traffic.

3 Requirements

3.1 General Operations

DP-213: Infotrip shall only engage operations while the vehicle is at rest.

Infotrip shall only engage operations while the vehicle is at rest.

DP-214: Infotrip may not be engaged while the vehicle is under manual control. "provide" - provide value authentication.

DP-215: Infotrip shall be able to operate without external testing.

Infotrip shall be able to operate without external testing.

DP-216: Before any user may engage Infotrip on public roads, that user must successfully complete a road and test Infotrip scenario.

Before any user may engage Infotrip on public roads, that user must successfully complete a road and test Infotrip scenario.

Implement

Iteration 34 (2017-09-30)

2d To Do

Open Execute Done

Add Work Items to the Plan

Preview Planned Items

Plan

0 Open 2 In Progress 0 Done 4 Rejected

DP-213: Infotrip shall only engage operations while the vehicle is at rest.

DP-214: Infotrip may not be engaged while the vehicle is under manual control. "provide" - provide value authentication.

DP-215: Infotrip shall be able to operate without external testing.

DP-216: Before any user may engage Infotrip on public roads, that user must successfully complete a road and test Infotrip scenario.

Issues Backlog

ID Title Status Severity Priority

DP-213 Failed: Infotrip will disengage when user checks "Stop" Rejected Normal Medium (2017)

DP-214 Failed: Check Application requires authentication code Open Normal Medium (2017)

2 Items Done 15

Verify

EMDVT-initial (Software Verification Test)

Test Run Status - Verified Passed

Test Run Signatures

Test Run Activities

Plan Scope

Introduction

Click "Properties" and provide a short description of the software being tested and the test design itself.

Goals

Describe the hi-level goals of this test and possible criteria.

Test Environment

Build ID: 6.9 beta2

Platform: Linux

Other: Infotrip

Problems Reported

No Issues, Elapsed Test Cases

Build & Release Binary

Release Report

Release Item: DP-224 - Version 2.0

Release ID: DP-224

Release Plan: Version 2.0 (2017-10-30)

Release QA: DP-224

Release Plan: Version 2.0 (2017-10-30)

Feature Freeze Date: 2017-10-29

Code Freeze Date: 2017-04-01

Public Launch: 2017-04-01

Build ID: 2017-04-29-1000

QA Assessment

Definition of Done

100% Work Packages Done and Meet Acceptance Criteria

All planned work Packages are Verified or Rejected.

7 Work Packages planned in the Release Plan.

1 Not Verified or Rejected.

100% Issues Done and Meet Acceptance Criteria

All reported Issues are Verified or Rejected.

2 Issues to be tested for this Release.

1 All Verified or Rejected.

100% Release Verification and Validation Done

Software Verification Test Results associated and Verified Passed or Rejected. All Test Runs from Release Test Evidence field on the Release Work Item are Verified Passed.

1 Linked Release Test Run.

1 Not linked and not validated.

At least one Test Run must be set for the Release's Release Test Evidence custom field.

50% Test Case Traceability Assured

All planned Work Packages and their parent Requirements are covered by Test Cases.

7 Work Packages planned in the Release Plan.

1 Not covered by Test Cases - Toggle Detailed View

8 Requirements implemented by the Work Packages.

2 Not covered by Test Cases - Toggle Detailed View

YES No Blocker Issues

All currently reported issues have severity lower than Blocker.

Collaborate

One Step ahead

Automated safety & security lifecycle working together

Functional Safety & Cybersecurity with Polarion



Polarion: **Cybersecurity Project**
(ISO 21434)

Cybersecurity related planning
Damage, Threat & Attack Path Analysis
Reporting & Dashboarding



Polarion: **Functional Safety Project**
(ISO 26262)

Safety Management planning
Hazard/Risk Identification
Safety Analysis & Implementation
Safety Validation
Confirmation Reporting

SIEMENS

SIEMENS

Automotive HW & SW Evolution

2025 to Future

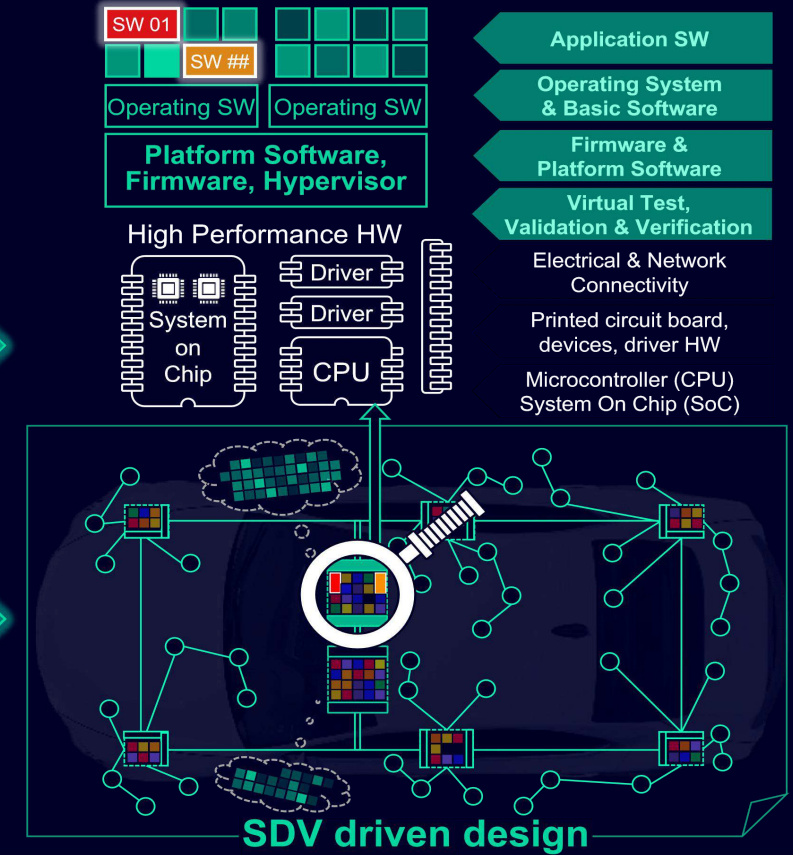
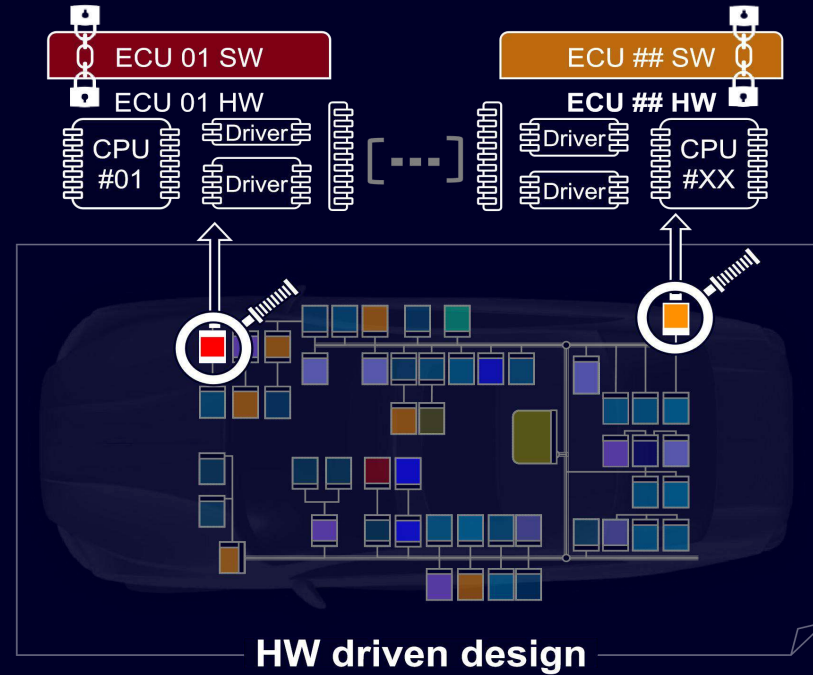
+100M Line of Code
HW to SDV design
Firmware OTA
Centralized Management

2025 to Future (More
Flexibility but more Risks!)

OTA
Incorrect Version

More and more Safety and
Security..

Software Defined Vehicles
.. enabling the industry *revolution*



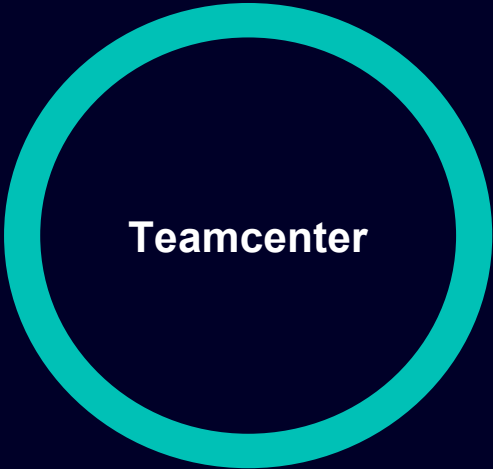
Teamcenter – Polarion Integration

Purpose

Teamcenter Polarion Integration facilitates a data exchange from Polarion Live Documents and requirements to Teamcenter specifications and requirements in order to allocate requirements to downstream consumers.

Use Cases

- Publish from Polarion to Teamcenter Requirements
- Milestone based updates from Polarion to Teamcenter



to Teamcenter



- Live Documents
- Rich requirement content
- Requirement properties
- Traceability between items



to Polarion



- Teamcenter relations



Patterns

- Author

Capabilities

- Connector
- Connector Framework
- Direct Mapping

Characteristics

- Synchronous/Asynchronous
- Cloud Capable
- High Scalability
- Hybrid

James Voller

My Polarion

Home

Dashboard

System Requirement Statistics

System Requirement System Test Case Coverage

System Requirement Specification Approval Status

Requirement Driven Verification

Linked Polarion & Teamcenter Items with Details

Work Items

Documents & Pages

- Default Space
- Design
- Development
- Maintenance
- Planning
- Reports
- Requirements
 - Index
 - Coffee Machine Requirements
 - CoffeeWorld - Home Connect Software Requirement Specification
 - Embedded Software Requirement Specification
 - Feasibility Study
 - Fuel Nozzle Requirements Specification for Gas Turbine
 - Marketing Requirement Statistics
 - Polarion Shorts - CoffeeWorld - Home Connect Software Requirement Specification
 - Project Scope
 - Requirements Specification for Ship Radar System
 - Supplier Coffee Machine Requirements
 - System Requirement Specification
 - System Requirement Specification Approval Status
 - System Requirement Statistics
 - System Requirement System Test Case Coverage
 - System Test Case Specification

Polarion Shorts - CoffeeWorld - Home Connect Software Requirement Specification

NOTE TO AUTHOR: Highlighted, italicized text throughout this template is provided solely as background information to assist you in creating this document. Please delete all such text, as well as the instructions in each section, prior to submitting this document. **ONLY YOUR PROJECT-SPECIFIC INFORMATION SHOULD APPEAR IN THE FINAL VERSION OF THIS DOCUMENT.**

1 Introduction

1.1 Purpose

The CoffeeWorld Home Connect App will be a smart phone application that connects the physical coffee machine to the smartphone user. Within the App the user will be able to create their perfect coffee, order products directly to their door and set up smart re-ordering to never have the pain of being without coffee.

1.2 Scope

This Software Requirements specification is directly related to the CoffeeWorld Home Connect App.

1.3 References

TO DO: List any other documents or Web addresses to which this document refers. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.

2 Component Design

Document Properties

Polarion Shorts - CoffeeWorld - Home Connect Software

Specification | [Rename](#)

Location: [Requirements](#) > [Polarion Shorts - CoffeeWorld - Home Connect Software](#)

Type: [Software Requirement Specification](#) ([Change](#))

Author: James Voller

Updated: 44 minutes ago by James Voller on 2024-09-04 14:38 ([View History](#))

* Fields

Status: [Perform action Set](#)

Version: 1.0

* Linked Teamcenter Items

No Teamcenter Export Mapping Found

* Remote Links

[Edit Links](#)

* Auto-Suspect

When enabled, the Suspect attribute will be applied automatically to child Work Item if modified (?). The setting takes effect when you Save the Document.

Auto-Suspect is disabled

* Outline Numbering

Outline number is applied to both normal text headings, and headings that are part of item (?).

Outline Numbering is enabled

Prefix:

* On-demand Work Item Loading

When enabled, the Work Items in Document will be loaded on demand, when they are accessed (?). This setting is applied per User and Document.

On-demand loading is disabled

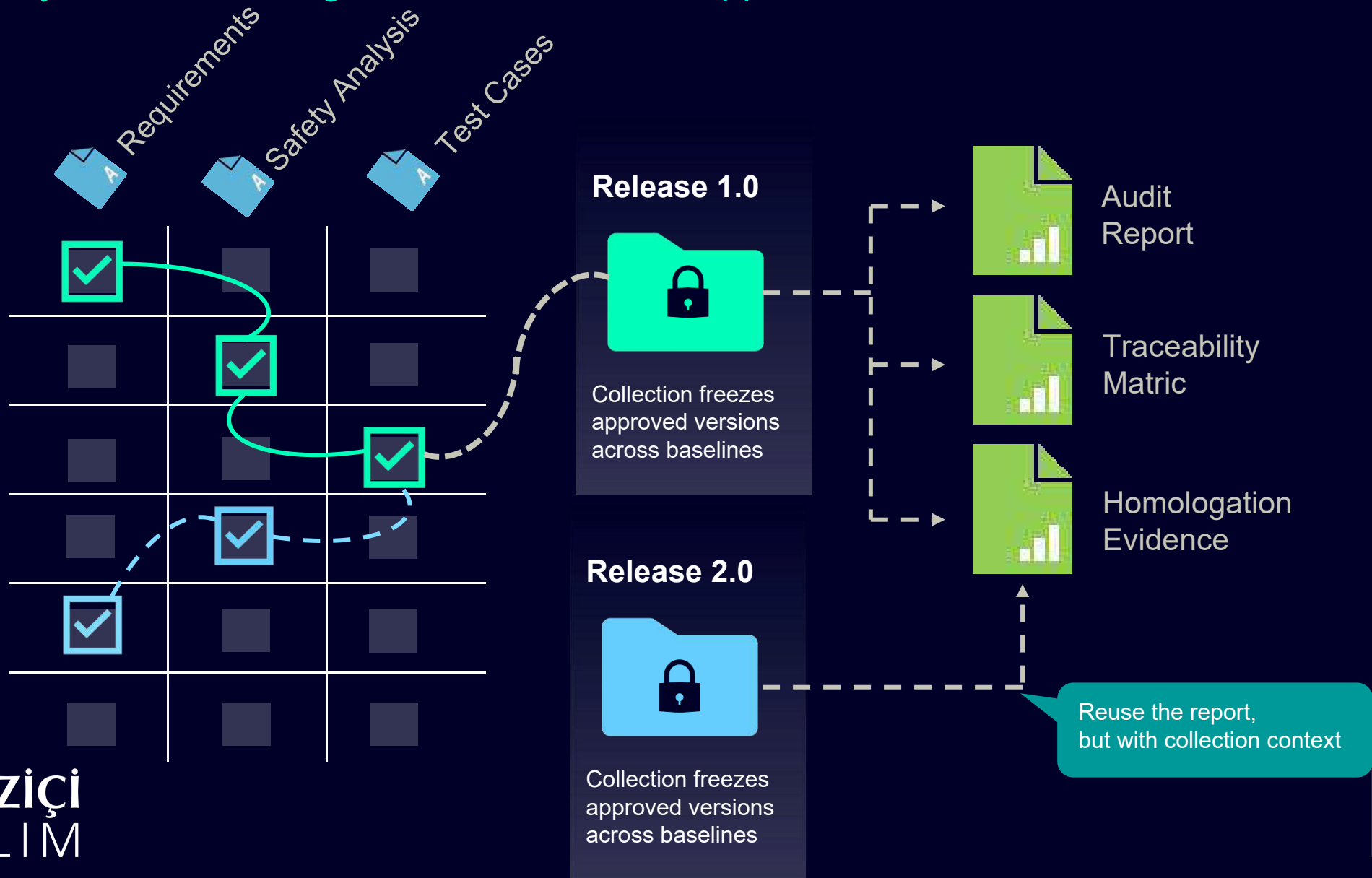
* Word Round-trip Template

You can download or upload a template for Word Round-trip (?).

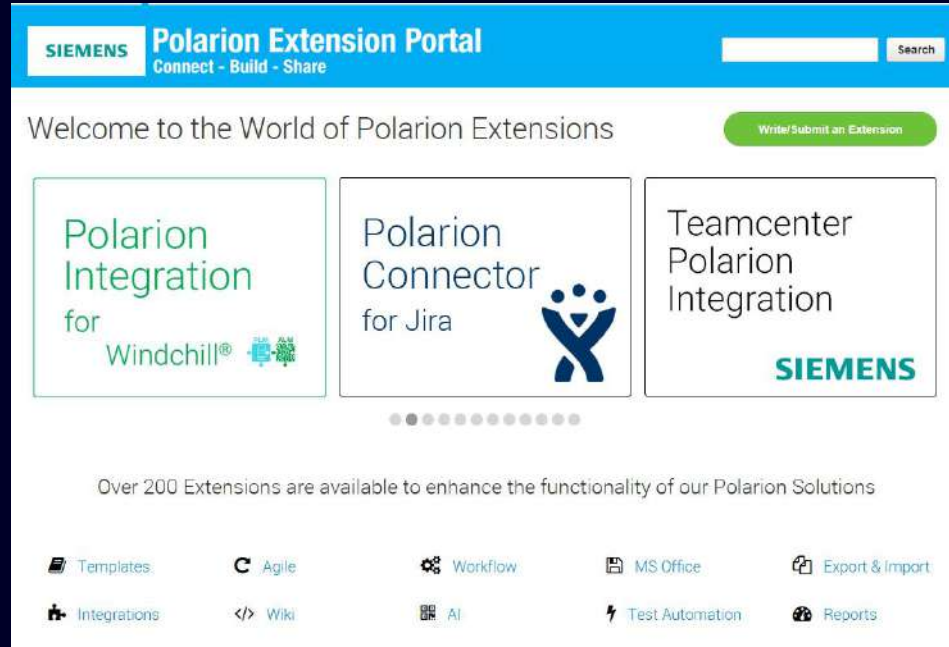
[Download](#) | [Upload](#)

Core Pillars

Traceability – Best Homologation Process ever Happen..

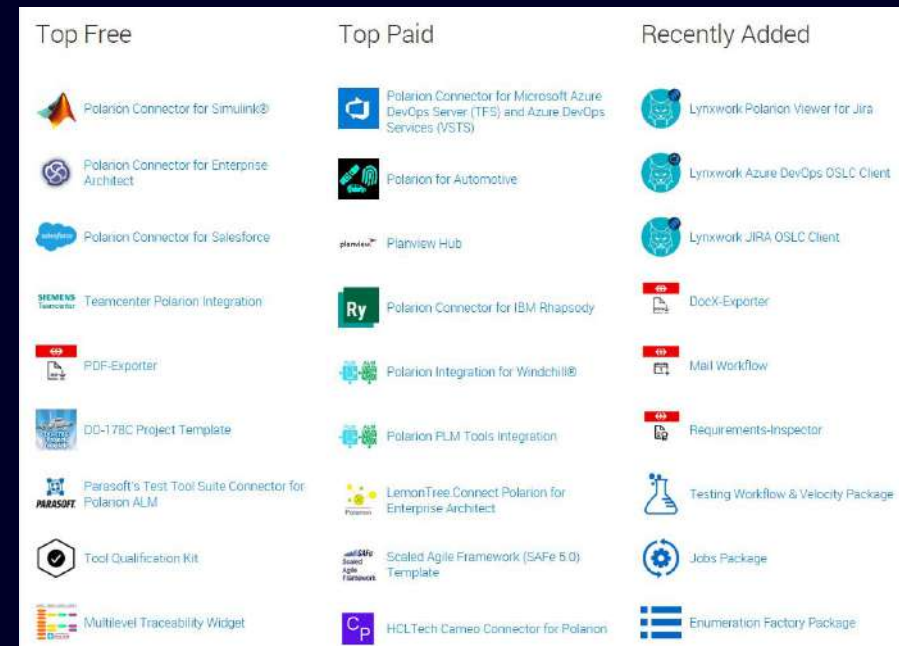


Polarion Extensions Portal



2.5M Polarion users
80 country
1700 partner

+200 extensions
Simulink, Rhapsody, Salesforce, Azure etc.
Ready to use integrations
Risk Management, Task Management etc.
Ready to use widgets
Functional Safety, Cybersecurity templates





BYD Group

As #1 China EV manufacturer, BYD has established over 30 industrial parks worldwide and has played a significant role in industries related to electronics, automobiles, new energy and rail transit.

Challenges

- High demand of new vehicle development to meet their global strategic plan
- Urgent need to reduce new vehicle development cycle
- Continue to improve quality to maintain brand reputation

Solution – Siemens Xcelerator Portfolio, including:

- Teamcenter
- NX
- Simcenter, test, MAD, etc
- Tecnomatix
- ALM platform (Polarion), Capital, AEC
- Mendix

Benefits

- improved design data accuracy by 95%
- Reduced vehicle development cycle time by 25%
- Implemented model-based E/E and software design platform
- Established reliable Performance and NVH test solution system



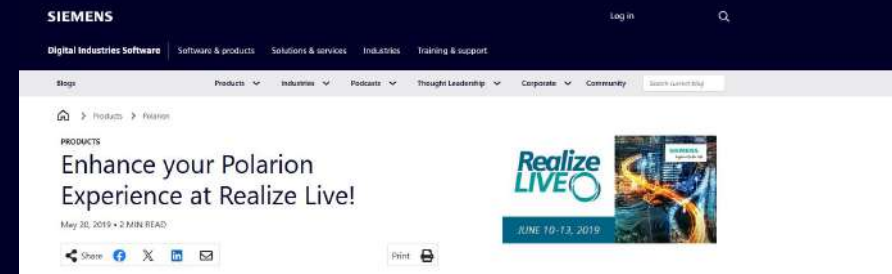
Polarion in Ford USA since 2018..

"Shaping the automotive world since 1903..."

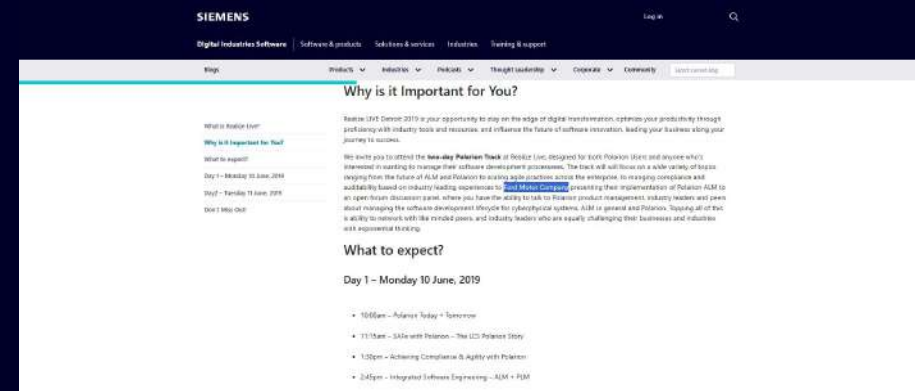


BOĞAZİÇİ
YAZILIM

Ford explained to the community how to use Polarion in 2019...



Ford used Polarion and Matlab Simulink integration especially for ADAS



Software
Partner
Sell
PLATINUM

SIEMENS

Automotive

