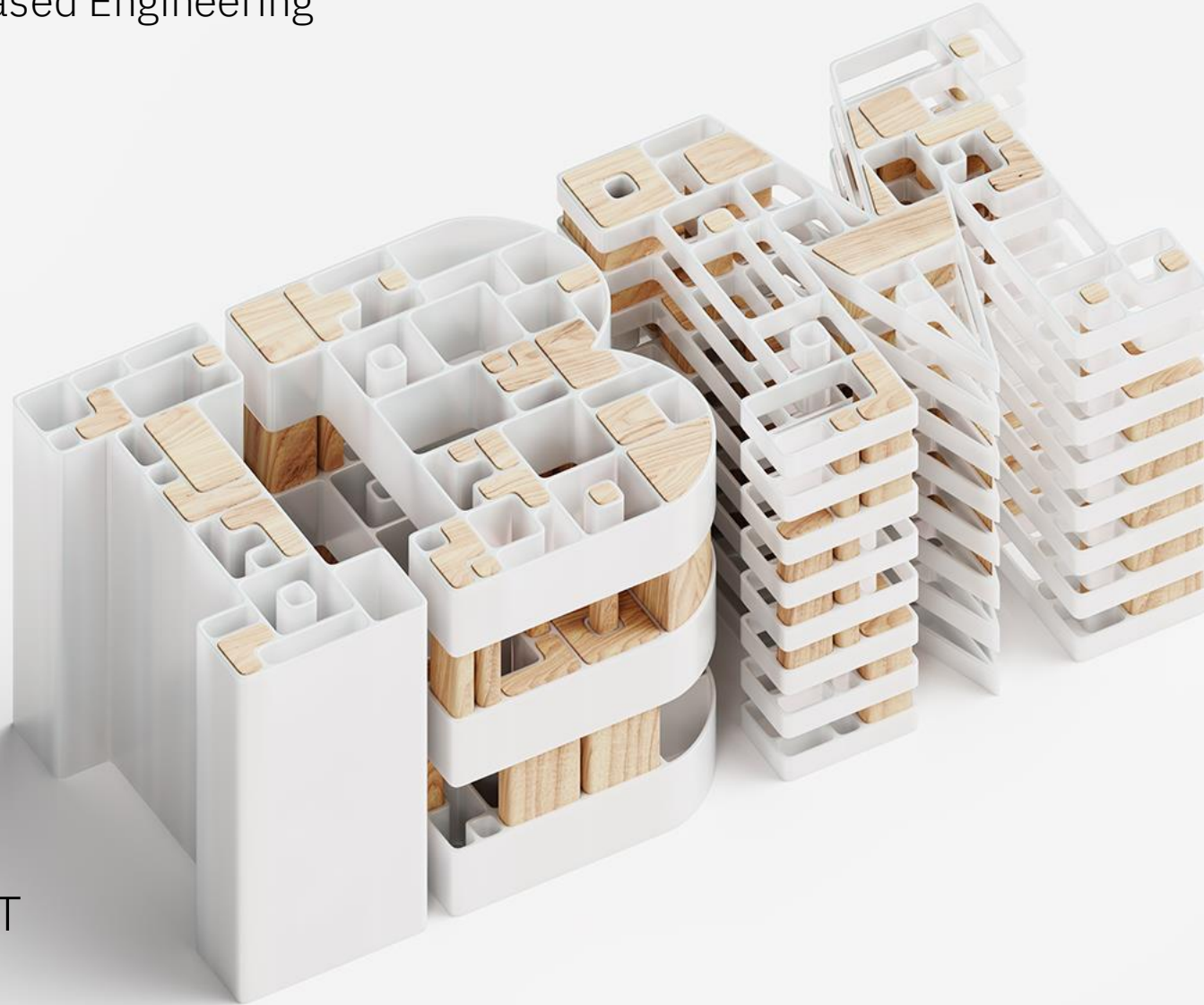


# IBM Rhapsody Family

Innovating with Model-Based Engineering



Steve Rooks CEng MIET



# Model Based Engineering

## Agenda

### Rhapsody 10

- 10.0.2 what's new
- 10.0.3 what's planned
- Rhapsody AI

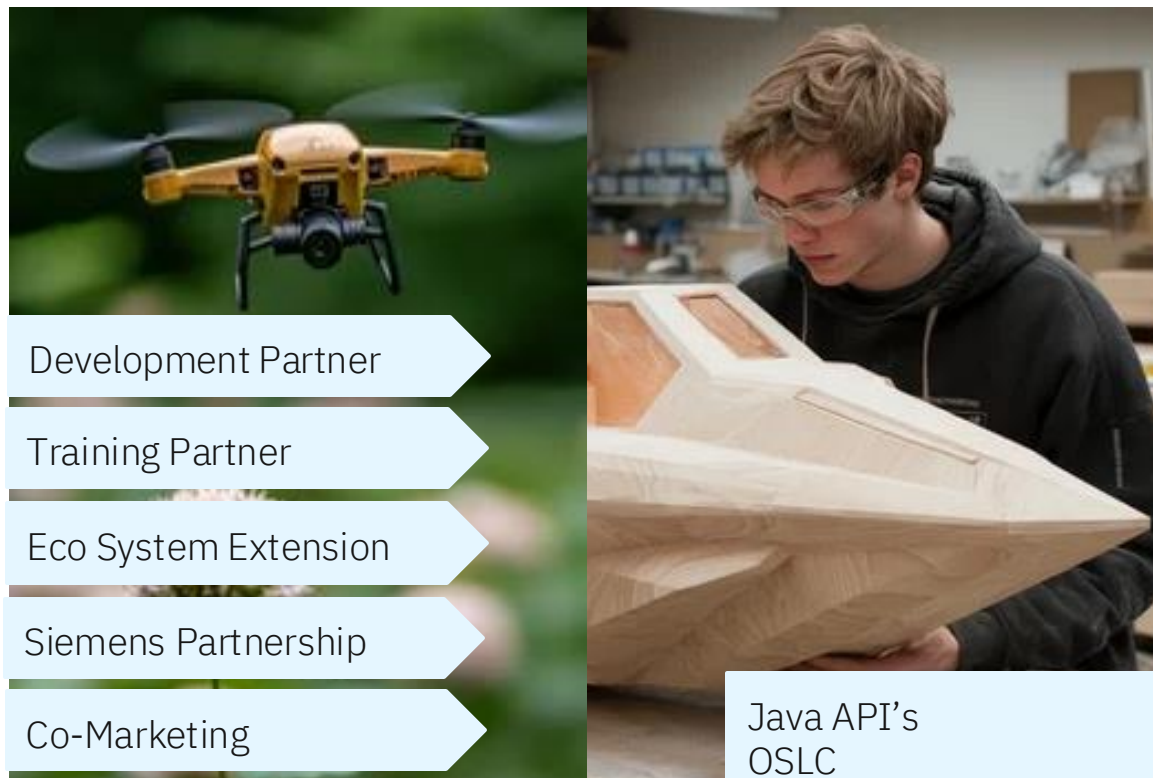
### Rhapsody SE

- SysML v2 status
- 1.4 what's new
- Demonstration
  - CIC model build
  - OSLC linking
  - CIC complete model

# Rhapsody 10

*Systems, Software, Tests Engineers, Reference Models, Cross-domain model reference, Embedded Development, Digital Makeup of Design to verify and Validate.*

*Architects, Systems Designers, Developers, Testers, etc*



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## ↳ 2023

Conveying the message that **we remain committed to Rhapsody 9.0.2 and new development**, aligned with ELM 7.0.2 release

## ↳ 2024 H1

*Transformation journey  
UX Modernization*

**HarmonyMBE** – Layered Architecture support

*Digital Thread with downstream integration with Siemens tools chain*

**AUTOSAR workflow** spanning all the way from inception to deployment.

**Single installer** to host all the supporting profiles.

## ↳ 2024 H2

*Replacement for Gateway with ReqXChanger*

*Enrich JRS Reporting using RMM*

The **Sidebar Explorer** allows users to navigate the model and facilitates linking between the model and RM, CM, TM, and other applications.

## ↳ 2024 H2 cont.

Backported Architecture Modeling (AM) linking to enable connectivity between Architecture Modeling elements..

## ↳ 2025 H1

### Performance Improvement

Floating windows editing

**Simplified linking** between embedded browser and Rhapsody V10 client. Improve user experience.

**Siemens is committed** to supporting Teamcenter(TC) integration by streamlining the support for newly added APIs.

Progress bar inclusion.

Welcome Page – Modernization effort

### Test Reutilization

Industry Package

etc..



Delivering Incredible  
Sound for Sennheiser



Custom Code Generation for  
Body Controls and AUTOSAR



UML Code Generation  
for Daimler's Marquardt  
Keyless Entry



Passive Start and Entry  
systems (PASE) at  
Continental  
Automotive

# Where Complex Systems Take Shape



Galileo Satellite  
Navigation



A400M Flight Controller



MICA Missile



Mission Systems  
Software

# IBM Engineering Rhapsody 10.0.2

## ReqXChanger

- Control logging in Rhapsody Console
- Control the save of the Rhapsody model
- Videos to learn how to use ReqXChanger

## Testing Solution

- General information: Documentation, tutorials, samples
- Location of log files
- More details in model coverage results
- No test execution results for TestPackages
- Merging of test execution results
- Easier selection of ETM project area
- Create Test Project helper
- Test Reutilization

## Industry Package

- Certification-ready workflows for regulated industries
- Power Pack tools for model navigation, editing and reporting
- Model-to-Model Transformations:
  - SysML → UML, UAF, AUTOSAR
- Embedded UML RXF™ support and modern C++ (11–20)

## UX Modernization

- Welcome Screen Re-design
- Grid Visibility in Graphical Editor
- Toolbox View Modification
- Toolbar and Window Orientation Changes

## User Experience

- Editable Floating window
- Progress Bar (Status Line)
- Progress Bar (Plugin)
- In-App model element navigation
- Rhapsody Performance Optimization

## Serviceability

- Disabled excel report generation. EDG reporting.
- Browser flickering removed when requirements are loading.
- Port contract configuration for reversed ports.
- DiffMerge shows more information for graphical merge in terms of differences.
- Load on Demand changes external units to local units and will create local copies while saving.

## Digital Thread continuity

- Architecture Modeling(AM) to AM linking.
- Simplified linking, dropping of element from web browser to Rhapsody model element in browser tree.

## Feature Enhancement

- Passive Model Loading

## Extensibility

- Added API for windows layout management.
- Enable/Disable menu, toolbar and context menu.

Innovating  
with  
Model-Based Engineering  
Tue, May 20, 2025  
3:00 PM CET  
9:00 AM EDT





# IBM Engineering Rhapsody 10.0.3

Next-Gen MBSE: AI-Augmented Design, Scalable Diffing, and Intelligent Workflow Orchestration

## Performance

- Significant model load and interaction speed-ups, ensuring smooth handling of large and complex systems.
- Dedicated window to handle Remote Artifact(RA)
  - Improved search on RA

## AI workflow to support software persona

- WCA - AI-powered code generation and completion support embedded in modeling workflows for faster authoring.

## Enhanced Browser Tree View Management

- Customize, organize, and navigate model elements more efficiently with advanced filtering and personalized view configurations.

## Streamlined MSVC Build Flow with Copilot

- Seamlessly integrate Rhapsody's model-driven development workflow with Microsoft Visual Studio (MSVC), enhanced by GitHub Copilot.

## Scalable Diff-Merge Enhancements

- Improved performance and usability for model differencing and merging in large-scale, multi-user projects.

## Populate Flowchart for Operations

- Automatically generate and visualize operational flowcharts from models, supporting reverse modeling needs.

## SVG API Support

- Enhanced visualization and export flexibility through Scalable Vector Graphics (SVG) API compatibility.

## API's Support

- API to support export Model-checker content.

## Smartcard Authentication in WebView.

- Secure access via smartcard login for web-based visualization and interaction, aligning with enterprise security policies.

## JRE 21 Support

- Updated Java Runtime support to the latest long-term version (JRE 21) for enhanced security and compatibility.

## Progress Bar Improvements

- Dedicated progress window to support nonblocking progress bars for long running tasks/processes.

## Code Editor modernization

**Disclaimer:** The roadmap is dynamic, and this feature may evolve or be rescheduled based on future assessments.

# UX Modernization 10.0

## Visual Studio-like

UX look & feel  
UX behavior

## Consistent

Docking/floating feature dialogs  
Docking/floating frames  
Docking/floating diagrams  
Docking/floating browsers

## Flexible & Customizable

Menus, toolbars,  
perspectives, etc.

## Layout Management

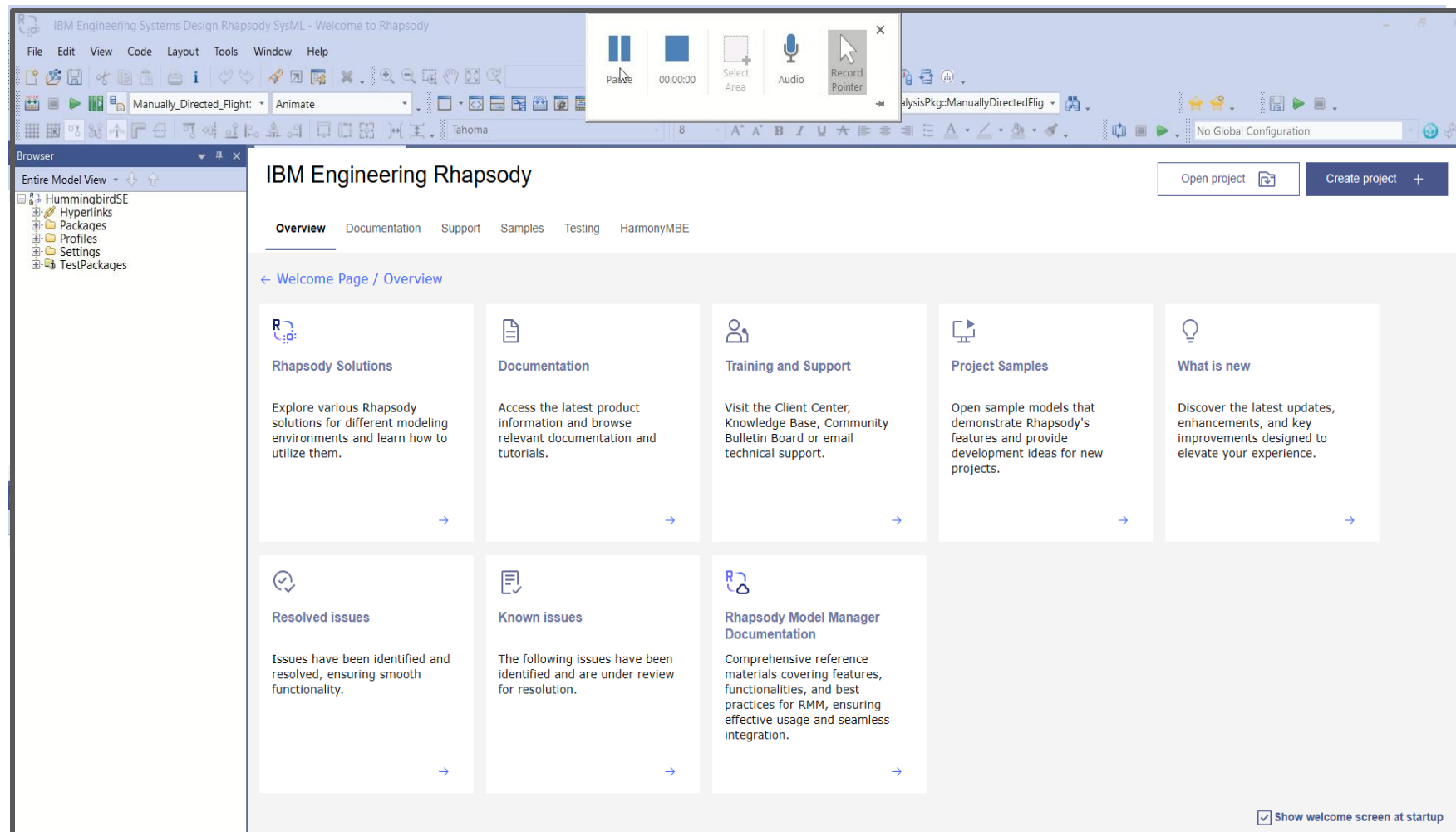
Manage multiple layouts  
Import/Export layout  
Rename and Delete

## Multi-Screen support

Expanding/beyond the working area  
Design reviews  
Model execution

## Search improvements

Rerun, query



# Welcome Screen Re-Design



A Centralized Gateway to Rhapsody Resources and Documentation

- Redesigned Welcome Screen UI for a modern and user-friendly experience
- Introduced plugin-specific welcome sections (e.g., HarmonyMBE via [WelcomeScreen\_HarmonyMBE] in INI)
- Enhanced Product Information panel with: What's New, Resolved Issues, Known Issues, Rhapsody Model Manager(RMM) Documentation
- RMM Tutorial repositioned from Support to Samples for improved accessibility

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## Systems Engineering - Systems Design and Specification

Apply SysML effectively to analyze and architect the best design solution by following best practices from IBM Harmony for Systems Engineering. Use executable models and the systems engineering toolkit to validate designs early and automate development.

[Model-Based Systems Engineering Deskbook](#) →

Describes how to use Engineering Rhapsody and the Systems Engineering Toolkit to analyze and design complex multi-disciplinary systems. It covers Requirements Analysis, System Functional Analysis, Design Synthesis, and hand-off for subsystem development. The deskbook also includes a detailed case study as an example.

Close

Guide Me



IBM Engineering Systems Design Rhapsody - Developer for C++ - Class Diagram: HeadOfficeCD in Default

File Edit View Code Layout Tools Window Help

DefaultComponent DefaultConfig

Browser

Entire Model View

Project

Components

Object Model Diagrams

Packages

Default

Class Diagrams

HeadOfficeCD

Classes

HeadOffice

ExtPackage

PredefinedTypes (REF)

PredefinedTypesCpp (RM)

Profiles

Remote Artifact Packages

CCM Project: GC 15112

CCM Project: GC 26102

DWA Database: DOOR

DWA Project: Test\_Pro

QM Project: GC 26102

RM Project: GC 26102

Diagram Tools

Common

Free Shapes

HeadOffice

«Requirement»

362: Dividend Contribution - Mobile

ID = 362

«satisfy»

«Requirement»

428: Service for locating a local organization

ID = 428

Service for locating a local organization

As part of the mobile app for allocating a percentage of dividends to a chosen organization, a service is required that takes hte users current locations and provides the nearby participating organizations.

Component: SGC Agile - Requirements Management (RM)

GC 26102023 1827 (Requirements Management) | SGC Agile

Project Dashboard Artifacts Reviews Reports

Search Artifacts

Artifacts

All Modules Collections

Create

Folder Features

Type to filter artifacts by text or by ID

Folders	Views	ID	Name	Artifact Type	Modified By	Modified On
SGC Agile		519	Support dividend processing via mobile devices	Feature	test	Oct 26, 2023, 6:00
0. README		464	Mobile app must be cross platform	Feature	test	Oct 26, 2023, 6:00

428: Service for locating a local organization

Service for locating a local organization

As part of the mobile app for allocating a percentage of dividends to a chosen organization, a service is required that takes hte users current locations and...

Location

GC 26102023 1827 (Requirements Management) | SGC Agile

Component - Mobile / Features

Extended Functionality, Mobile

Attributes

Type: Feature

Business Priority:

Difficulty:

Stability: Medium

Team Ownership: GC 26102023 1827 (Requirements Management)

Format: Text

Description:

Origin:

Status: Approved

In Modules

Software Requirement Specification: 365

Links

Satisfied By (1): 434: Donor Chooses Local Organization

Satisfy Architecture Element (1): HeadOffice

Showing 3 of 3 Artifacts

IBM.

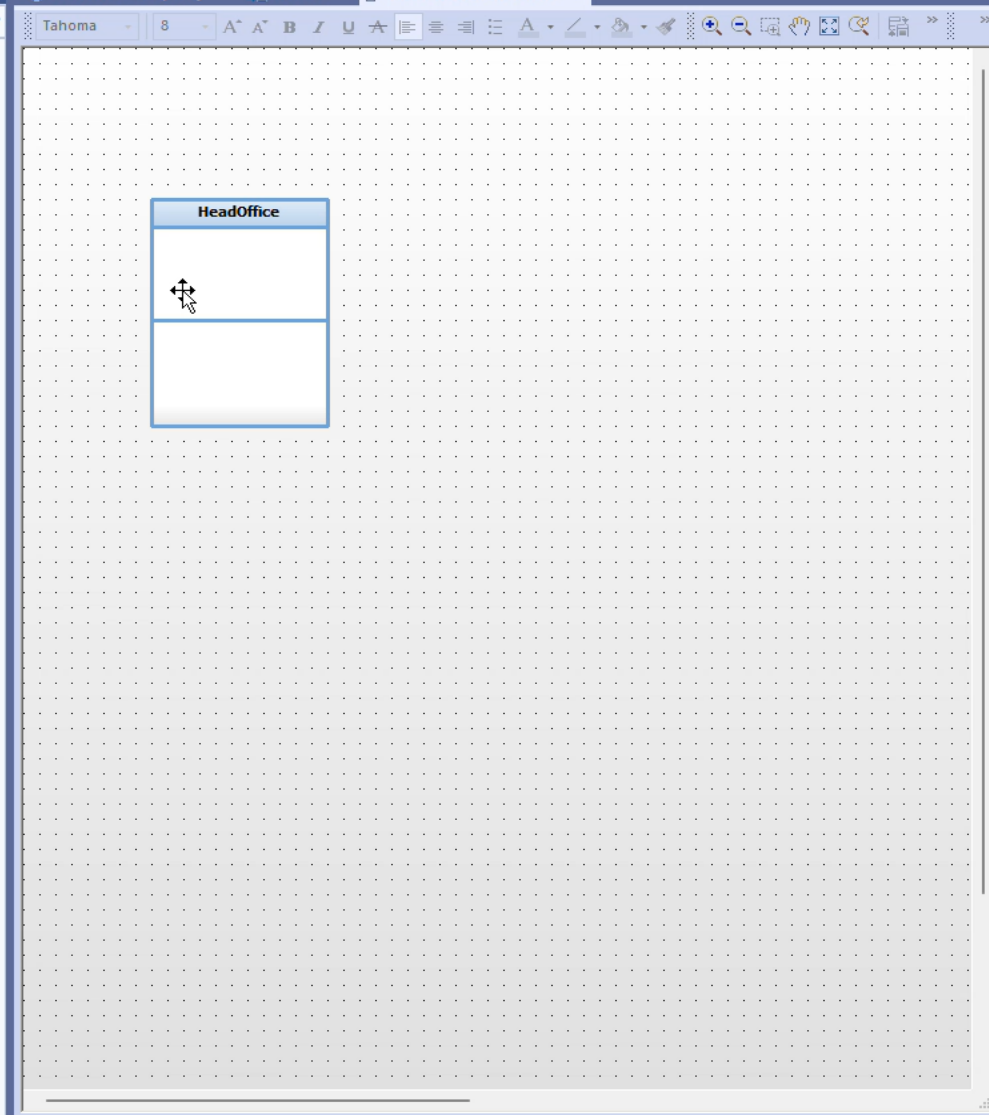
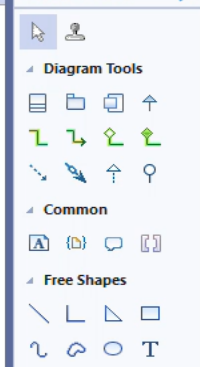
For Help, press F1





Labels Off

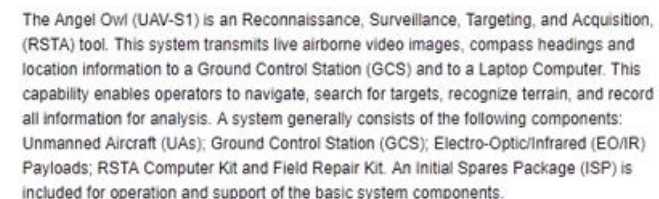
CAF NUM SCR

9

1. **Left-Aligned Toolbar & Expanded Workspace:** The toolbar is now positioned on the left with icons displayed by default, maximizing the model design area for improved usability.
2. **Streamlined toolbar layout** to reduce visual clutter and improve usability.
3. **Integrated a formatting toolbar** directly within the model design area for quicker access and improved workflow efficiency.
4. **Side-by-Side View:** Display Rhapsody models and ELM applications simultaneously using the embedded web browser for seamless interaction.
5. **Introduced drag-and-drop functionality** from the embedded web browser to model elements, enabling the creation of bi-directional links with ease.



<p>As part of the mobile app for allocating a percentage of dividends to a chosen organization, a service is required that takes the users current locations and provides the nearby participating organizations</p>	<div> <div>Overview</div> <div>  4633: Service for locating a local organization           </div> <div>  No Tags Defined           </div> <div>Description:</div> <div>Component: SGC Agile</div> <div>Team Ownership: SGC Requirements</div> <div>Created On: May 19, 2025, 5:19:50 PM</div> <div>Created By: IBM</div> <div>Modified On: May 19, 2025, 5:19:50 PM</div> <div>Modified By: IBM</div> </div> <hr/> <div> <div>Type:  Feature</div> <div>Format:  Text</div> <div>Business Priority:</div> <div>Status: Draft</div> <div>Difficulty:</div> <div>Stability: Medium</div> <div>Origin:</div> </div>	<div>Comments</div> <div>Links</div> <div>Where Used</div>
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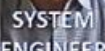
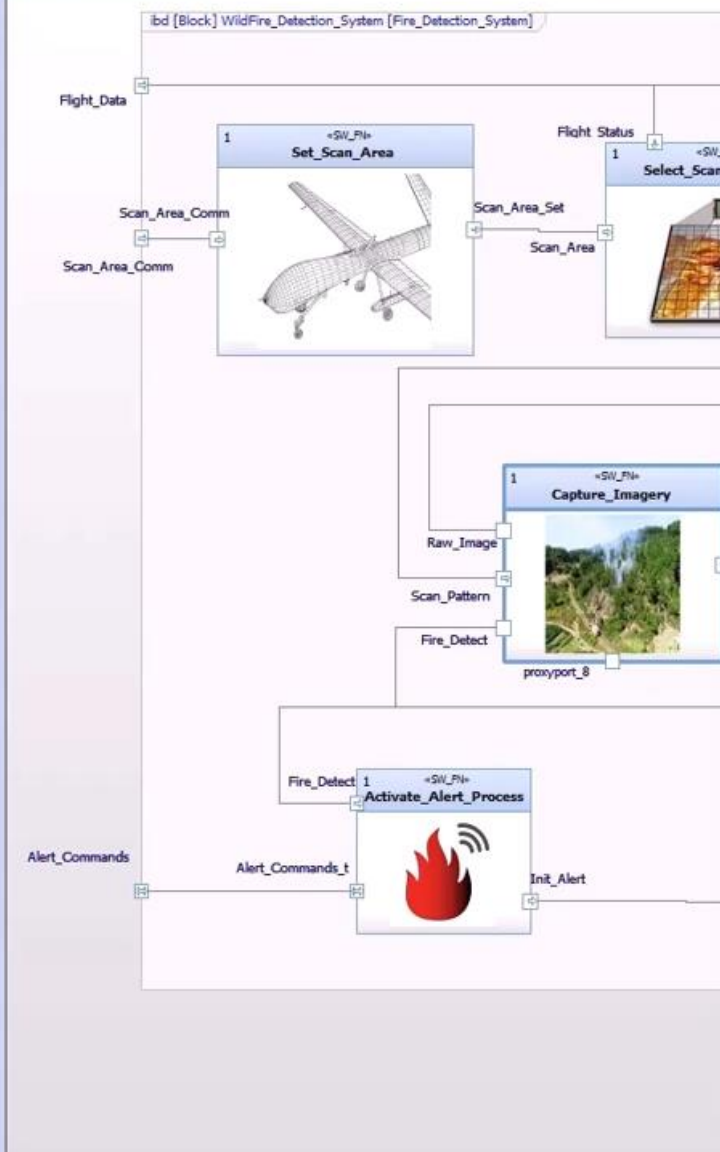


Angel Owl is equipped with three electro-optical cameras and a drone aircraft that provide ISR (Intelligence, Surveillance & Reconnaissance)\* capability, including both day and night ISR capability. The PRS components include: two day sensors, one night sensor, controller (Base Station (PDB), Control Joystick (PDC), and Display Unit (PDD))

### 1.1 REQ-000467-ISR - Intelligence, Surveillance Reconnaissance

Selection Mode Select All Set Usage Paste Delete Remove Revise and... Map Replace Revision Edit Manage Values and... Quick Add Add ...

Name	Revision	Usage	Units	Measurement	Goal	Min	Max	
color_accuracy	A	Output	E*		6	2	8	1.1
Dynamic_Range	A	Output	ft		12	10	14	1.1
Field_Of_View	A	Output	sq ft		90	30	120	1.1
Frame_Interval	A	Output	fps		16	4	32	1.1
Frame_Rate	A	Output	fps		60	30	90	1.1
Frame_Resolution	A	Output	pixels		8680	4320	17280	1.1
IR_WaveLength	A	Output	m		12	8	14	1.1
Signal_NoiseRatio	A	Output	dB		40	30	60	1.1
Temperature_Range	A	Output	C			-20	50	1.1



# Shaping the Future MBE Meets AI



# AI Infusion

*AI will provide insights to support informed decision-making based on historical designs, while keeping a person in the loop to hold or refine decisions as needed.*

*AI enhances the productivity of architects, system designers, developers, testers, and others by enabling informed decision-making.*



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## AI Use-cases

### *Model Insight*

- Assist the user in understanding the model's functionality not only in the context of the reference design but also at one or two levels higher. This approach ensures a holistic perspective. We can configure the model level based on the user's request, streamlining it to a single data source that aligns with the specific use case or scenario being asked.

### *Translate text to Model*

- The owner relies on the user to make the decision and integrate the model into the project.



### *AI as a Catalyst for Multi-Domain Model-Based Systems Engineering*

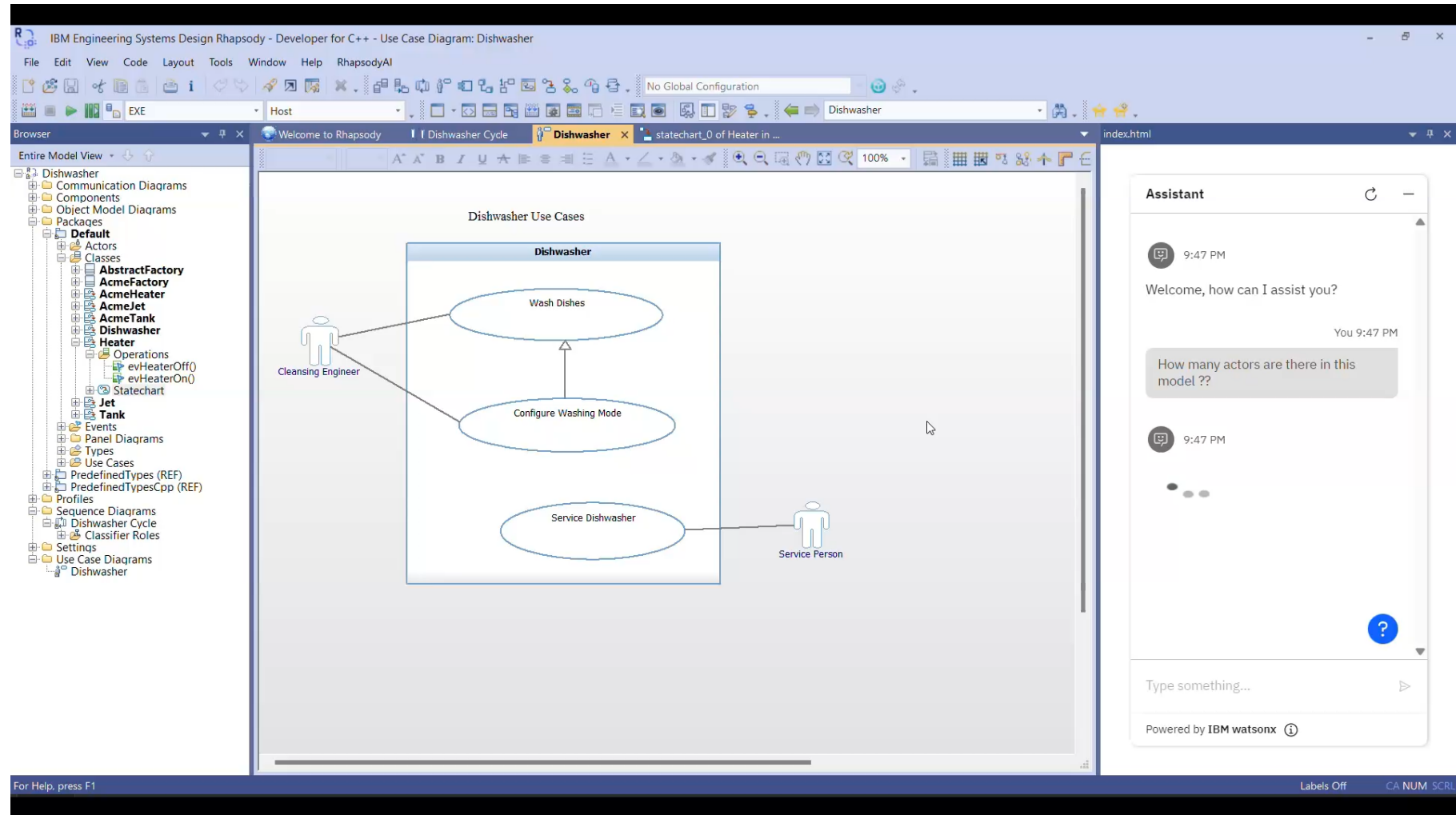
- AI integration into Model-Based Systems Engineering (MBSE) optimizes productivity and decision-making by streamlining transitions between systems engineering models and downstream domains like software and E&E architecture. By automating model validation, ensuring compliance, and enhancing traceability, AI improves system integrity, reduces rework, and empowers engineers to focus on critical interventions, fostering an efficient, data-centric engineering ecosystem.

### *WCA Integration*

- This will enhance the software team's understanding of the code generated for production.



Get insights from large system models without wading through the details



# Rhapsody Systems Engineer

## SysML v2



# SysML v2 Objectives

- **Increase adoption and effectiveness of MBSE with SysML by enhancing...**
  - Precision and expressiveness of the language
  - Consistency and integration among language concepts
  - Interoperability with other engineering models and tools
  - Usability by model developers and consumers
  - Extensibility to support domain specific applications
  - Migration path for SysML v1 users and implementors



# SysML v2 to v1

## Terminology Mapping (partial)

SysML v2	SysML v1
part / part def	part property / block
attribute / attribute def	value property / value type
port / port def	proxy port / interface block
action / action def	action / activity
state / state def	state / state machine
constraint / constraint def	constraint property / constraint block
requirement / requirement def	requirement
connection / connection def	connector / association block
view / view def	view

*SysML v2 applies a consistent pattern of definition and usage*

# SysML v2 status

## SysML 2.0

- Specs complete
- Final approval imminent
- OMG is adopting IBM's graphical notation model, as implemented in RSE

## WG

- Simulation
- v1 -> v2

## UAF 2.x

- v2 library



# IBM SysML v2 Key capabilities



## Low barriers to adoption

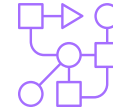
Easy on-boarding, modern UX  
DSL support



**Web based**  
**real-time collaboration**  
for effective systems  
engineering



**Industry standards**  
SysML V2 definition  
SysML V2 APIs  
OSLC



**Enterprise scalability**  
Small to large systems  
Layers of abstractions  
Global Config.



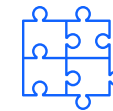
**Reuse of SysML V1**  
**models and IP**  
Extension to SysML V2  
Migration to SysML V2



**Configurable**  
**& Extendable**  
Harmony MBE  
Process accelerators  
Model checkers



**Path to downstream**  
**design domains**  
Software  
E/E  
Mechanical



**Integration with the rest of**  
**the Dev lifecycle**  
**OSLC** Digital Thread,  
Early V&V,  
Reporting, etc.



## Rhap SE V1.4

### Main (new) capabilities

Released 6/30/2025 (<https://www.ibm.com/docs/en/systems-engineering/1.4.0>)

#### Main improvements:

- Table views, resizable, customizable, w/OSLC links, w/hierarchy
- UX Improvements
- OSLC linking to QM and CCM domains (in addition to RM)
- OSLC integration with (consumer) LDX

#### Tech Previews:

- Harmony v2 / HarmonyIQ:
  - Harmony predefined Library
  - Handoff to UML (& Rhapsody 10)
- Client extension SDK:
  - User actions/menus/indicators
  - User defined extension code
  - Application listener & notifications
  - Integrated with Typescript SDK
- Diff&Merge Auto-Merge

#### Customizable table view

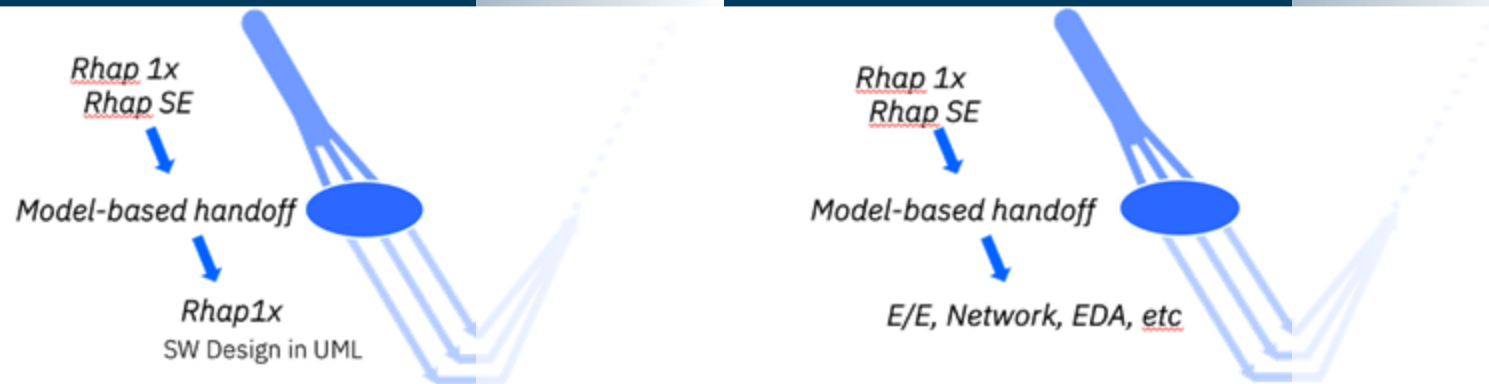
Manage columns				
::	All	Declared name	x	Declared name
::	All	Declared short name	x	Declared short name
::	All	Owner	x	Owner
::	All	Part definition	x	Part definition
::	All	Owned relationship	x	Owned relationship
::	All	Subsetted features	x	Subsetted features

#### UX Improvements in v1.4

- *Recently opened views*
- *Search in model*
- *Find in Views*
- *Visual indicators for invalid graphical elements*
- *Multi-select actions*
- *Cross diagram cut&paste for nodes or edges*
- *Tab based Properties panel*
- *Customizable Browser panel*
- *Creating elements from textual notation*
- *And more...*



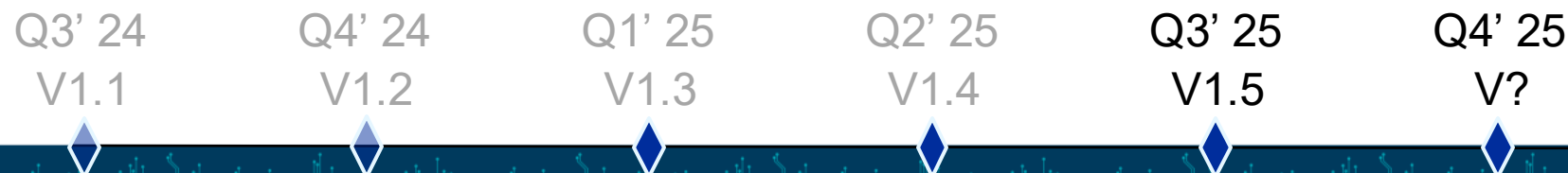
# Supporting Model Based Engineering Workflows



## Focus Areas

1. User Experience & SysML v2 Workflows
2. SysML v1 | SysML v2 | UML | Other domains
3. Openness & Extensibility
4. Model Based Collaboration / Supply chain Collaboration
5. Go-to-Market/Delivery models

## Release timelines:



# CIC model build using Harmony 2.0 template

IBM Rhapsody Systems Engineering

EXAMPLE LOGO

Projects

Create

Active projectsMy projectsArchived projects

View the projects that you have access to. When you make changes, you can find them under the Active projects tab.  
[Learn more.](#)

Q

Search projects by name or description. Wildcard search is not supported.

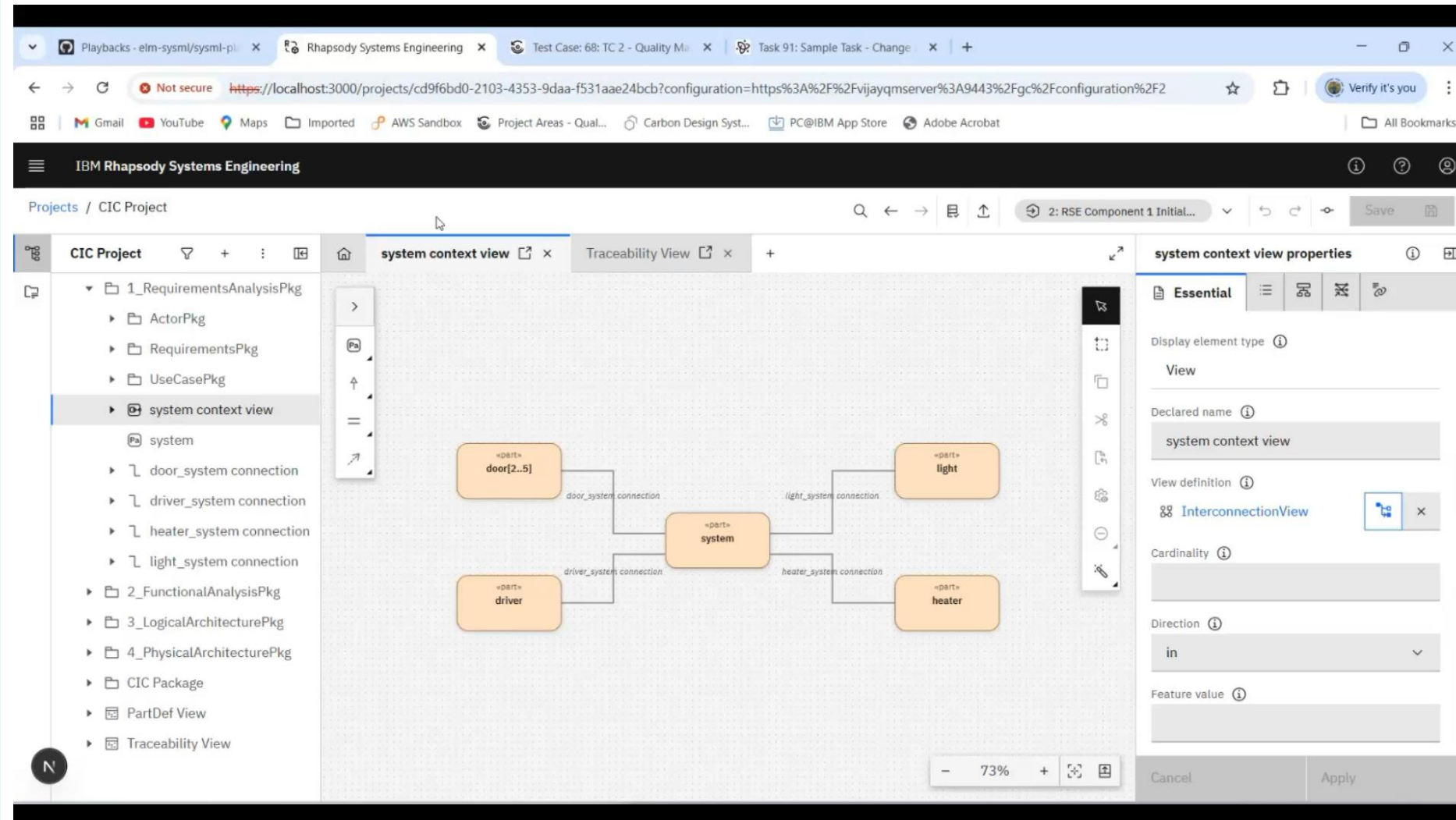
<input type="checkbox"/>	Name	Description	Branch	Last modified	
<input type="checkbox"/>	OMG Rashlight		main	6/2/2025 1:11:16 PM	I
<input type="checkbox"/>	CIC	sample	main	6/2/2025 1:01:59 PM	I
<input type="checkbox"/>	IBMLibrary	standard library	main	6/2/2025 4:39:56 AM	I
<input type="checkbox"/>	SysMLLibrary	standard library	main	5/21/2025 9:32:08 PM	I

Items per page: 100

1-4 of 4 items

1 of 1 pages

# OSLC linking





# Rhapsody Systems Engineer

Full CIC model walkthrough