



# Project „Flexible Assembly Processes for the Car of the Third Millennium (MyCar)“

## **Problem Description (High Level)**

Virtual Assembly Plant Platform (VAPP) & Database for Virtual Commissioning

CASP

DAIMLER

SIEMENS

EDAG

## Methodology Description (High Level)

How can we **improve collaborative work** during assembly production planning phase and especially **virtual commissioning**?

...a **workflow management system** for collaborative computer-aided production engineering (virtual commissioning) with **AutomationML support ...**

## Available results

Two **results** which can improve **collaborative work during assembly virtual commissioning** are:

- 1 A **workflow management** system based on Business process Execution Language (BPEL)
- 2 A Web-Services based server for storing, updating and visualizing and retrieving data in **AutomationML** format

## Result 1: Workflow management-Overview

- **VAPP** is a software that facilitates and coordinates the Virtual Commissioning by providing seamless integration of the software that participate in the Virtual Commissioning fulfilment.
- In details the platform accepts as input the product model (provided by OEM) and then following a predefined workflow coordinates relevant actors (Process Planner, Tool Designer, Electrical Planer etc.) by providing them with needed data in order to accomplish the virtual commissioning.
- Issues like different data formats, different software tools will be handled by the use of “AutomationML”.
- **VAPP** also provides a central endpoint for monitoring the Virtual Commissioning process and as central data storage.

# Result 1: Workflow management- Project(s)

A Project List shows the user with the running instances of the workflow that he participates.




 Flexible Assembly Processes  
 for the Car of the 3<sup>rd</sup> Millennium

[Home](#)
[Projects](#)
[Configurations](#)
[Administration](#)
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C A X I n t e g r a t i o n P l a t f o r m

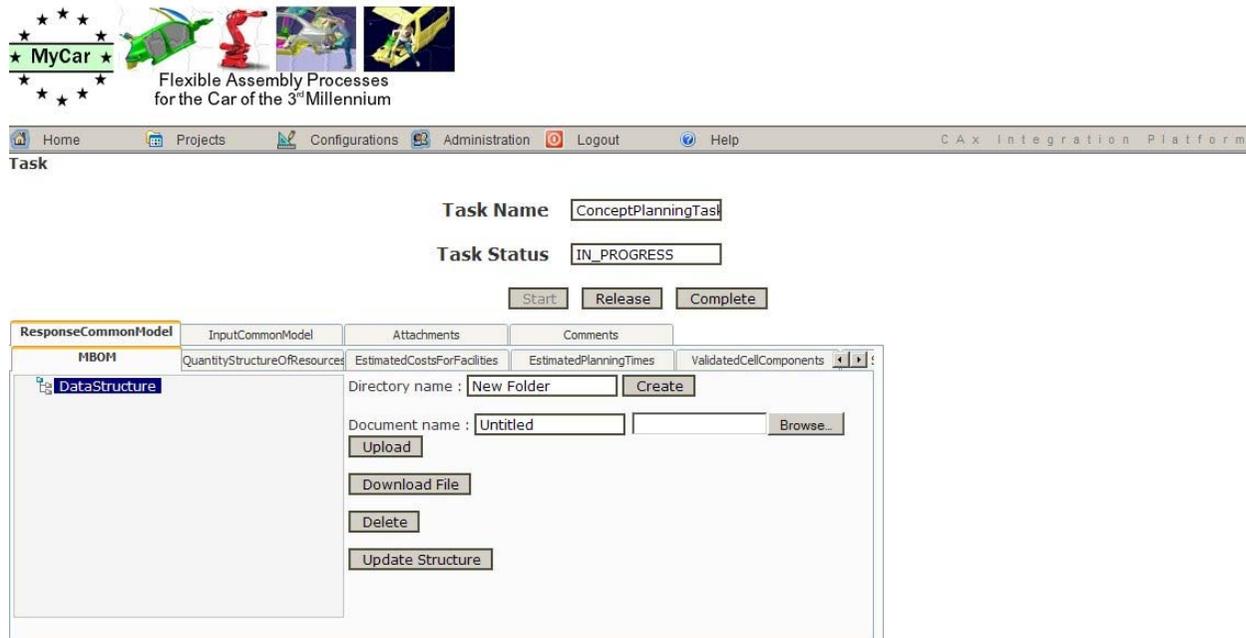
**Projects**

ID	Name	Started	Ended	State	
1202	Virtual Commissioning	Fri May 02 16:46:17 EEST 2008		Running	<a href="#">Delete</a>

# Result 1: Workflow management- Task

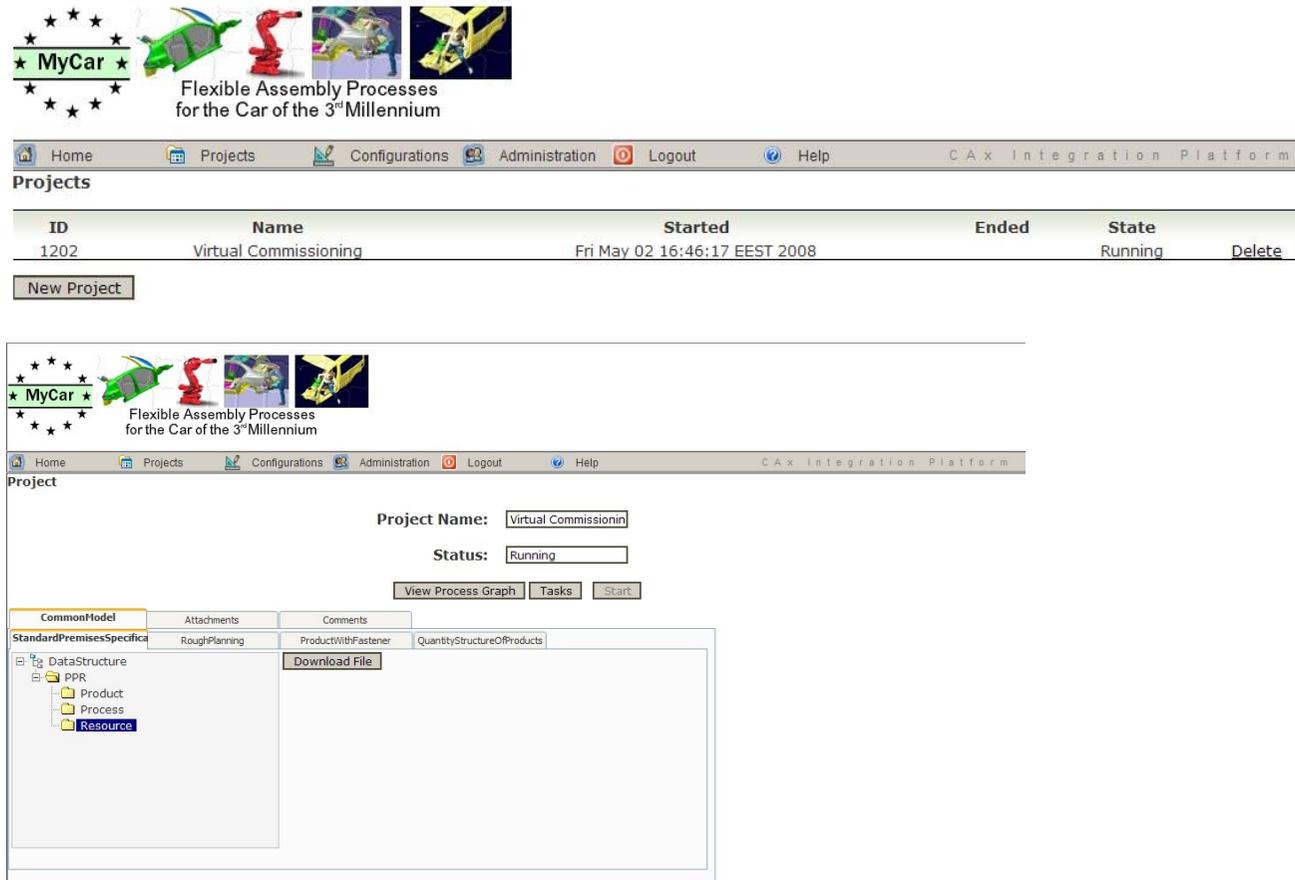
By selecting a Task the user can perform three actions

- **Start** the task if the start is not started
- **Release** the task after performing some work in order for someone else to work on this task or
- **Complete** the task providing data to next tasks allowing the workflow to advance.



# Result 1: Workflow management- Task

A Project list shows the user with the running instances of the workflow that he participates.



The screenshot displays the MyCar web application interface. At the top, there is a navigation bar with links for Home, Projects, Configurations, Administration, Logout, and Help. Below this, a 'Projects' table lists active projects. A 'New Project' button is visible below the table. The second part of the screenshot shows a detailed view of a project, including its name, status, and a tree view of its components.

ID	Name	Started	Ended	State	
1202	Virtual Commissioning	Fri May 02 16:46:17 EEST 2008		Running	Delete

Project Name:

Status:

Buttons: View Process Graph, Tasks, Start

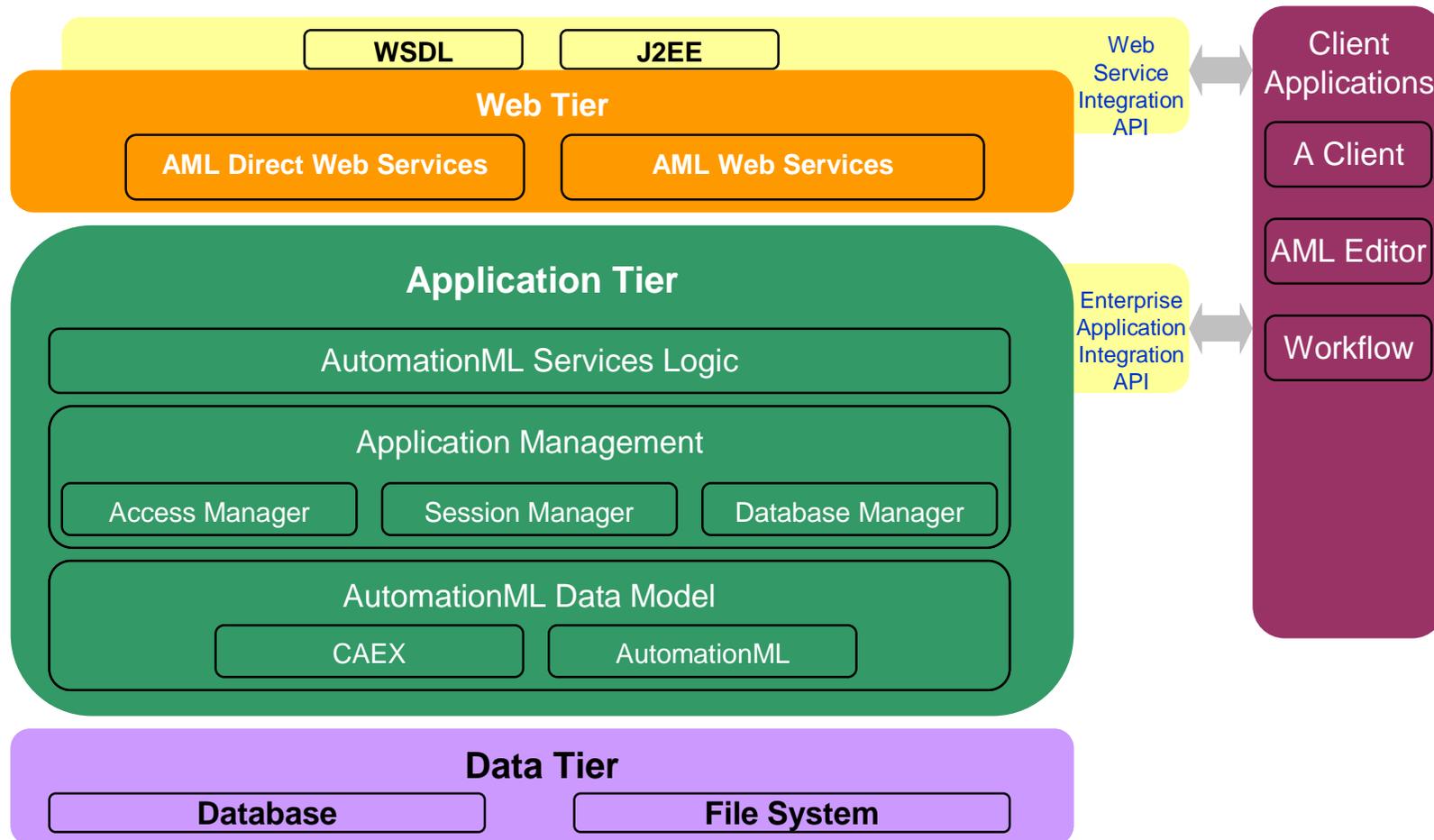
Tree View:

- CommonModel
  - StandardPremisesSpecifica
    - RoughPlanning
    - ProductWithFastener
    - QuantityStructureOfProducts
  - DataStructure
    - PPR
      - Product
      - Process
      - Resource

## Result 2: AutomationML Server-Overview

- *AutomationML Server is a **back-end server solution** that supports cost effective management of AutomationML™, both across the production engineering lifecycle and across system and company borders*
- ***AutomationML Server provides a set of services that support operations upon AutomationML™ data.***
- *A set of **Web Services** for accessing AutomationML information have been defined.*
- *AutomationML Server **is based on AutomationML™** an evolving industry standard for automation engineering data exchange.*
- *AutomationML Server can be used continuously for **managing company's automation engineering data, or used in collaborative engineering projects.***

# Result 2: AutomationML server



## Result 2: AutomationML Server Functional Overview

- The AutomationML Web Services API contains separate modules, each targeting a specific information scope
- General purpose modules
  - *AccessManagement*
  - *ProjectManagement*
  - *QueryManagement*
- Business targeted modules
  - *AMLDocumentManagement*
  - *AMLElementManagement*
  - *AMLDocumentExternalFilesManagement*
  - *AMLSchemeMaintenanceManagement*
  - *CAEXElementManagement*
  - *AMLEngineProxy*

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## Results 2: AutomationML Server – Rapid implementation/integration

- Depending on the systems from which data is sourced, setup and implementation of AutomationML Server, can be completed in a few weeks.
- A comprehensive set of web services allows rapid development of additional clients.
- Unlike many PDM and PLM systems, AutomationML Server does not need to be configured to match current business processes. Effort is needed to interface to legacy systems but this can be achieved in a significantly shorter time.
- AutomationML Server is therefore a very **cost efficient solution** for realizing the potential in information integration of a company's automation engineering data.

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## Result 2: AutomationML Server - Flexibility and stability

- AutomationML Server is based on leading edge internet technology and global standards like **XML** and **Web Services**.
- AutomationML Server makes possible the efficient exchange and sharing of AutomationML™ information between IT systems, departments and companies in a controlled and secure way. Therefore, it is ideally suited for **extended enterprise collaboration**.