Background – what’s the issue with processes and projects?

When it comes to the topic of efficient process management, the monitoring of the consistency of work products, the automation of development steps and the assurance of safety and quality are key requirements of OEMs and suppliers. In addition, producers of safety critical software based functions have to be compliant with international standards such as ISO CD 26262. Process management for the development of electronic control units and on-board networks for automotive applications should also cover the adoption of precise analysis & design methods and practices for safety critical software. Such safety standards require vendors to carry out their development projects according to pre-defined development processes, and to improve the processes themselves continuously based on experiences from projects.

But what is the current practice? Project management documents like schedules, required artifacts, responsibilities etc. are once created manually from the process definition must be adapted manually and subsequently copied for new projects. Our customer did want to introduce more traceability and automation between the definition of processes and the creation of project management document for a concrete process. Additionally, the “kaizen” philosophy to continuously improve processes should be enforced by adapting and enhancing processes definitions based on experiences of previous projects.

Analysis – how to achieve integration between process definition and project management?

During an ‘as-is-to-be’-analysis, we identified the main point for our action proposal – the traceability between the elements of the process definition and the elements of the project management documentation has to be guaranteed by an automatic mapping between those elements. Based on this idea, we started to identify fundamental relationships. Here are two simple examples for such relations:

- A phase of the project execution is described by an activity in the project management document, and is defined by an activity in the process definition,
- A work product with a specified deadline and responsibility during the project execution is defined by a required output from an activity in the process definition.

To formalize and automate such relations, first meta models for the process definitions as well as a for the project management documents have been defined by us. The relationships as described above have been formalized as transformation rules based on those two models.

we automate system creation – with medini™ solutions

we automate your processes with medini™

we analyze your development process activities and procedures jointly with your process experts.

we identify candidate activities which would profit from introducing automation.

we configure available components from our medini tool box and create automated tool chains, customized to your process.

you benefit from automation, consistency and artifact validation.
Solution Architecture – how can we get the approach into action?

After completing the meta modeling work and verifying it with the customer, we specified and developed the tool environment basing on those results. Using the medini™ cockpit environment, we created a workbench to enable process engineers to graphically create process definitions according to the company’s standards. Further, a similar environment was built to support the visualization and manipulation of project management schedules and documents, as and to register work products as results of the project execution. Using the model transformation rules, the generation of project management documents from process definitions was implemented with the medini™ QVT engine. The last issue was the propagation of changes to the project management documents back into the original process definition. For this purpose we simply utilized the capability of our medini™ QVT engine to execute transformations bi-directionally: a model transformation rule is defined as relation between two models, and the engine simply can apply the rule in both directions. Therefore the same set of rules, that created the project management documents, can also update the original process definition in case of changes to the project management document which are relevant to the process definition.

The core storage structure of the solution is a medini™ model repository. This repository maintains the version & variation history for process definitions and for project management documentations. It also allows the partial extraction of process definitions for to re-use them in other processes.

Customer advantages

The main advantages of the delivered process and project management environment have turned out to be the following:

- the customer achieved consistency between process definition and project execution; for each development project, it is possible to trace consistently, which process version or variation has been used,

- the evolution of processes is done in a well-managed way, i.e. best practices from single projects can be identified integrated in the global process definition,

- to bootstrap the environment, it turned out to be highly effective to create the initial process definitions from mature project management documents by applying the “backward” execution of the model transformation as described above.

**do you need more information?**
**do you have questions?**
**how can we automate your process?**

contact us at
www.ikv.de
tel +49 (30) 3480 770
e-mail information@ikv.de