



# Newsletter

Issue 3 | February 2014

## Project-based Collaborative Engineering

On basis of the Know4Care use-cases, we learned that projects for collaborative engineering are complex, and that IT support for such projects is wanting. Companies involved in such processes mentioned the following major pain-points:

- a) Lack of process support. Multiple partners are involved in such a process, and it is often difficult to see what the status of the process is. Who needs to do what and when?
- b) Lack of support for data exchange processes. Although, in principle, formats and translations for data exchange may exist, the process of data exchange between partners is often laborious, both for the customer as well as for the supplier. The customer must manually upload or release data to be shared. This includes providing the right version(s) of data and files and managing the access rights. The supplier must retrieve the data, probably for each customer a different portal is used, with different data formats.
- c) Deficient link between project management and engineering. The project manager defines a project at a high-level of abstraction, but the daily work is done at a much lower level of abstraction in terms of action items, resolution of issues etc. Often, these two aspects are not coupled. Therefore, the project manager does not have a real-time view of the status of the project, nor can measures be directly mapped to the engineers' daily work.

## Prototype

In the Know4Car project SAP is working on a prototypical platform for on-demand project-based collaborative engineering. It consists of the following three major aspects:

1. Agile project execution. Figure 1 shows a snapshot of the (browser-based) UI providing a user with an overview of the status of the project. The normal project structure of project, sub-project and task is enriched with detailed "action-items". Through this enriched model the project structure is made "executable" in terms of action-items that are automatically scheduled. Figure 2 shows how the user sees the set of action-items that (s)he is supposed to do.
2. Collaborative project execution. Figure 3 shows the so-called dashboard of a user. Each user has its own dashboard, by logging on to the portal, the user gets access to his/ her view of the projects, action-items and contacts. Users from different organizations can participate. A security concept exists where access is provided to both data and action items on basis of role in the project. Other collaboration concepts will not be discussed in the limited scope of this text.
3. Engineering support. Figure 4 shows an example of a simple engineering operation that starts when the user opens the action item "calculation of cycle time". In general, the platform will allow linking action items to both (engineering) tooling and engineering data and deliverables.

## News

### Know4Car General Assembly

When: 21-22 May, 2014  
Where: AB Volvo, Göteborg, Sweden  
Contact Name: Dr. Thomas Lezama

### World Manufacturing Forum 2014

When: 1-2 July, 2014  
Where: Milano, Italy

## Recent Publications

**Managing product and production variety - a language workbench approach**, Amir Hossein Ebrahimi, Pierre E.C. Johansson, Kristofer Bengtsson, Knut Åkesson, Procedia CIRP

**Multi-Criteria Assembly Line Design under Demand Uncertainty**, Nikolaos Papakostas, George Pintzos, Christos Giannoulis, Nikolaos Nikolakis, George Chryssolouris. Proceedings of the 8th International Conference on Digital Enterprise Technology - DET 2014

**Novel Approach for the Combined Use of AR Goggles and Mobile Devices as Communication Tools on the Shopfloor**. George Pintzos, Loukas Rentzos, Nikolaos Papakostas, George Chryssolouris. Proceedings of the 8th International Conference on Digital Enterprise Technology - DET 2014

**Knowledge-enabled design of co-operating robots assembly cells**. N. Papakostas, G. Pintzos, M. Matsas, G. Chryssolouris. Procedia CIRP

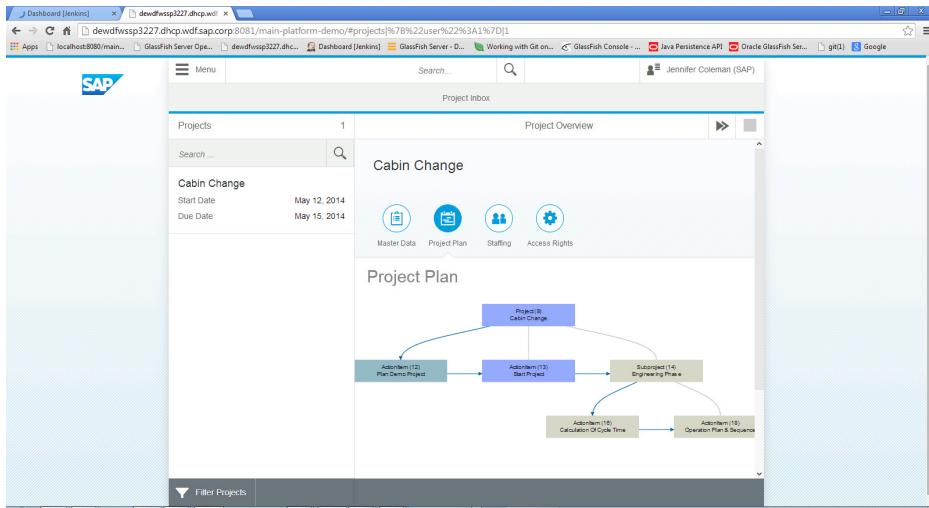


Figure 1. Overview of the status of a project, including the action items.

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## Current Status

In the current state of the Know4Car project, we target testing the prototype platform with expert users whose daily work is to be involved in such collaborative engineering projects. Still, we already assert that the aspects of our approach targets the pain-points mentioned above: Aspect 1 both targets points a) and c) as we marry a workflow-like approach of scheduling work-items (action-items in our terminology) with project management. Aspect 2 targets the fact that the mentioned pain points a) and c) are especially true for collaborative projects. Aspect 3 targets pain point b) as the link to engineering tooling and data also enables the data exchange between such tooling.

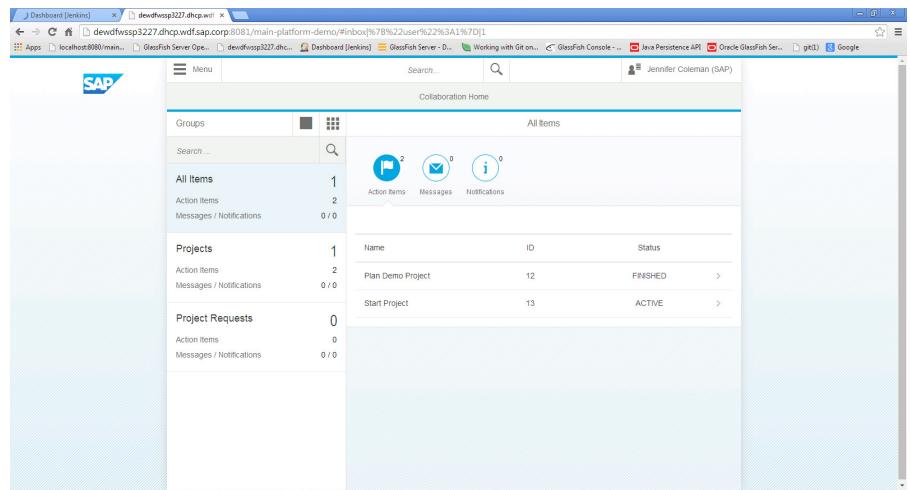


Figure 2. Overview of the user's in-box, where (s)he sees his/her action-items.

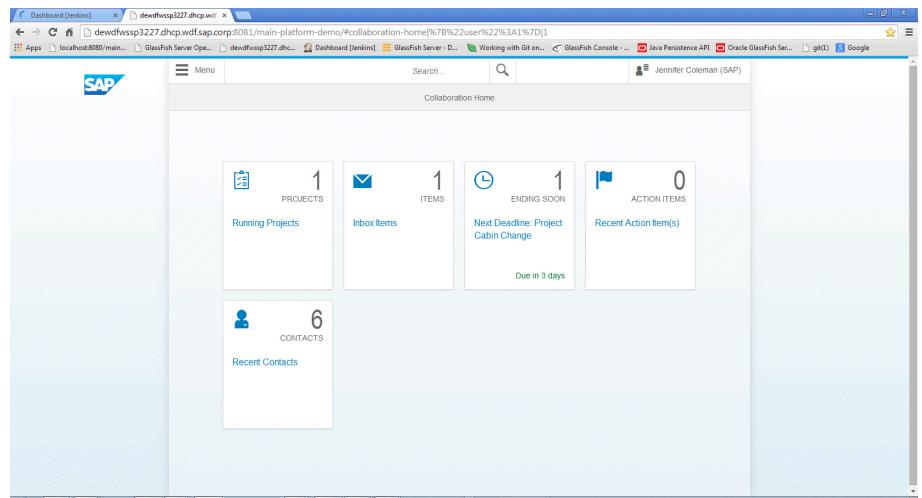


Figure 3. Dashboard of an individual user. Each user has an in-box, an overview of the involved projects, a contact-center.

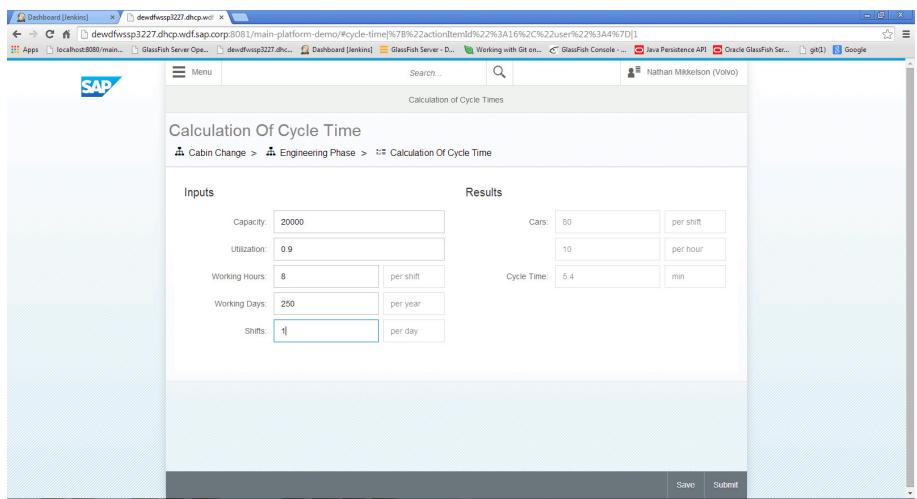


Figure 4. Example of a (simple) engineering operation on-line accessible through PACER.