

# Resource planning for the railway

How DSDM helped a large team in two countries meet tight deadlines

## Deutsche Bahn (DB)

*One of the world's largest transport organisations, Deutsche Bahn operates passenger and freight services within Germany and across European borders.*

## Carmen Systems

*Based in Sweden, Carmen Systems AB is a world leader in integrated planning and decision-support solution for airlines and railways. The company develops solutions for optimal use of crews, vehicles and payloads. Clients include British Airways, Lufthansa and Air France. Carmen has the largest R&D section in the industry.*

## Background

Deutsche Bahn needed to reduce its crew planning cycles, cut operating costs, create positive cashflow and increase business flexibility.

The development was organised as a programme of three projects, each with aggressive timescales. To further complicate things, developers were based in Sweden and Denmark while users were from across Germany.

This case study deals with the first of these projects to deliver. It was focused on creating rosters (personal working schedules) for long haul on-train staff. The project team consisted of eight developers, two users and a project manager.

Carmen had already come across DSDM when working with British Airways. They chose a programme manager from Open World Management who is a DSDM Practitioner, Trainer and Examiner as they felt this would be a useful way of delivering the projects. A DSDM accredited Practitioner and Certified Facilitator was also brought in from Xansa to act as facilitator and mentor.

## The Result?

The project delivered, not without pain and problems, but it got there on time.

Considering the aggressive timescales and the fact that several members of the team were new to Carmen and the core product, both companies judged the project to be a clear overall success. Key to this success was the planning of the last timebox in which the client agreed to drop a number of much-wanted requirements that, up until then, they had been hoping might still make it into the first delivery.

## Process details

### Workshops

Workshops were used to gather and prioritise requirements, map processes, plan, and put together a system architecture definition and configuration management strategy.

Planning workshops were run at both project and timebox level. They provided a set of tools and processes that enabled mixed business and technical teams to break down the problem and jointly decide on an approach to tackling it as well as a standard way of working that could be re-used later on all projects. Workshops were also useful for sharing understanding.

## International issues

Much joint work was performed in English, although the Swedes were encouraged to learn German and developers with good German were placed in each project team. Developers and users would spend much time in each others' country, with the emphasis on users moving to Sweden in the early parts of timeboxes. Once communication architecture was in place, the developers based themselves in Frankfurt. Travel was planned when the timebox was planned so that air tickets could be purchased as cheaply as possible. Social events such as sports and meals out were organised especially after major workshops or to mark the end of timeboxes. This undoubtedly helped the project by building team spirit and facilitating communication.

## Active user involvement

From the start, the project was assigned a full-time former crew planner. His role was to manage involvement of other users, define requirements, prioritise, review, test and accept deliverables. From the second timebox, a second full time user was assigned to the project. Having these knowledgeable and dedicated users were one of the keys to project success.

## Empowered teams

Team members were responsible for their deliverables. Each deliverable had an acceptor who was usually the Ambassador User, but could also have been someone from another team in Carmen. Regular team meetings, especially at iteration and timebox reviews, were vital in tracking project progress. As the project team was big it was a risk that meetings would consume too much time, so the whole team did not always participate in the whole meeting. On the other hand, it was sometimes most efficient to have the whole team present. Many short meetings were preferred to a few long ones.

## Frequent delivery

Timeboxes were usually four or five weeks long, with intermediate deliverables. There was a general feeling within the team that, without the focus timeboxes gave them; they would not have succeeded in delivering the project on time.

## Fitness for purpose

Where the objectives of a requirement as originally documented were not considered sufficient, test cases were created by the Ambassador User during the first iteration of a requirement prototype. Prioritisation maintained an awareness of objectives.

## Iterative and incremental

The iterative prototyping approach worked very well. To ensure mutual understanding of requirements, frequent and tight communication and co-operation between the Ambassador User and Developers was required.

## Development changes are reversible

A configuration management system was set up with a team member responsible for tagging releases. To keep up the frequent delivery principle, with related testing etc, it was necessary to spend considerable amount of time on configuration management.

## Requirements baselined

At an early stage, a list of approximately 50 high level requirements were produced, with objectives and background. These were taken forward into timeboxes where the details were worked out. The team was encouraged to break down each requirement into sub-requirements in the Prioritised Requirements List (PRL) so that delivery could be focused on the most important elements. When requirements had to be de-scoped from the project, they were dropped at this level, rather than the higher one. The PRL became the project manager's main tool for tracking the status of requirements.

## Testing integrated

Testing was absolutely vital and was indeed conducted throughout the lifecycle. Because of the nature of the system, integration and regression testing took up a great deal of time. This was planned at increasing levels in later timeboxes, with one developer concentrating solely on this task.

## Cooperative and collaborative

In the beginning of the project, the frequent testing and the empowerment of the team had a tendency to emphasise the customer-supplier roles. But then the tight communication and many meetings enforced by the DSDM method started a process of team building between Carmen and Deutsche Bahn. This was considered an important positive side effect of the method.

## How working on the project was seen by the project team

This is a summary of views from the project review.

## Benefits

- The framework was a great help to deliver on time.
- There was good control of project progress.
- It was possible to manage customer expectations and system restrictions effectively.
- Regular tight communication led to a team feel that transcended organisational lines.

## Concerns

A number of concerns were raised on the project. Some of these were a result of the nature of the project, while others came about because of the implementation of DSDM. Team members became weary of being away from home. This happened to both user and developer staff and was likely when working closely with people in other countries.

The team had also felt stressed by the frequent deadlines. This was related to a difficulty in understanding when it was possible to close requirements. As the project went on and in later projects, more effort was put into clearer acceptance criteria and test cases up front. There was also a constant focus on prioritisation and decomposition of requirements to identify their most important. It was also a result of a functionally rich solution being required within ambitious timescales.

However, directly related to this was that it was felt by the team that DSDM had made it possible to work within these constraints and that it had helped them to deliver on time while providing good control of the project's progress. It also made it possible to manage customer expectations and system restrictions more effectively. Use of DSDM's tight communication led to a team experience that transcended organisational lines.

## Further information

For questions on this case study, please contact any one on the list below. It has been written, commented on and approved by all of us.

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