



Keeping Development 'On Track' with Use-Case Slices at Dutch Railways

Creating **winning** teams.

With 16.8 million inhabitants living within an area of 41,543 square kilometres (equivalent to approximately the size of the State of Maryland), the Netherlands is one of the most densely populated countries in Western Europe.

It's no wonder that travel by rail, because of proximity and ease of use, has become a preferred mode of transportation. Nederlandse Spoorwegen / Dutch Railways (NS) is the principal passenger railway operator in the Netherlands. It operates over 4,800 scheduled domestic trains a day, and serves 1.1 million passengers.

Business to employee technology plays an important part in ensuring a good customer experience. At NS, over 10,000 front-line staff access a device called the rail-pocket to help staff deliver services, such as ticket validation and trip or station updates. However, in 2014, after assessing the device's technical limitations and an out-of-date operating system, NS launched an initiative to replace the rail-pocket with customized applications that run on company smartphones operating the Android mobile operating system. Their goal is to terminate the rail pocket device by summer 2016.



NS piloted the initiative in the first half of 2014 and implemented the first project in the second half of that same year. At the end of 2014, MyContacts, a NS contacts tool, was released to employees. Currently, the second app, MyShift, is in trial phase with 50 ambassadors.

Like many passenger railway services around the globe, NS is continuously and actively engaged in improving its passenger-related performance.

It has a punctuality rating of nearly 95%, and three quarters of its customers award a mark 7 or better (out of 10) for general customer satisfaction.¹

The MyTrip App, pictured above, is one of the apps currently in development.

1. THE NETWORK DASHBOARD: INCREASING THE OPERATING MARGIN AND CUSTOMER SATISFACTION BY INTEGRAL MANAGEMENT OF PRODUCTION COSTS AND TRAFFIC REVENUES
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Understanding Requirements

NS chose fifty ambassadors to represent the needs of the 10,000 rail employees for their business-to-employee mobile application project. Gathering their input and needs proved to be a challenge as the ambassadors represented a diverse group of stakeholders with varying needs and priorities. For example, the information that a conductor may need to know varies from that of a customer service representative or a quality assurance agent – and yet, they are all front-line employees who require timely access to accurate information.

NS organized a diverse team made up of an external Scrum development team of three developers, two testers and a part-time architect, a Scrum master, and a NS product owner and analyst to prepare requirements and specifications. Since the development team is outsourced to a supplier, it functions as a Development App Factory where, based on business priority, work orders are placed. NS had to reassess how they worked because the outsourced team was Scrum based; it used Team Foundation Server with user stories – NS had their own way of working, mainly based on RUP and PRINCE 2, using JIRA.

“The established way of working within our company was focused on the traditional way of development, which is mainly based on the RUP and PRINCE 2 way of working,” noted Jordi Reineman, Manager Analyse & Ontwerp (Analysis and Design) at NS. “The Development App Factory is Scrum based. Our processes and practices were not well connected to the desired way of working.”

Railway companies, like postal services and power networks, support capital-intensive public infrastructures. Within these environments, a large portion of IT budget is usually allocated to maintain mission-critical systems rather than developing new software. To ensure that new software will have a shelf life of 10 or more years, good documentation is not only necessary, but critical.

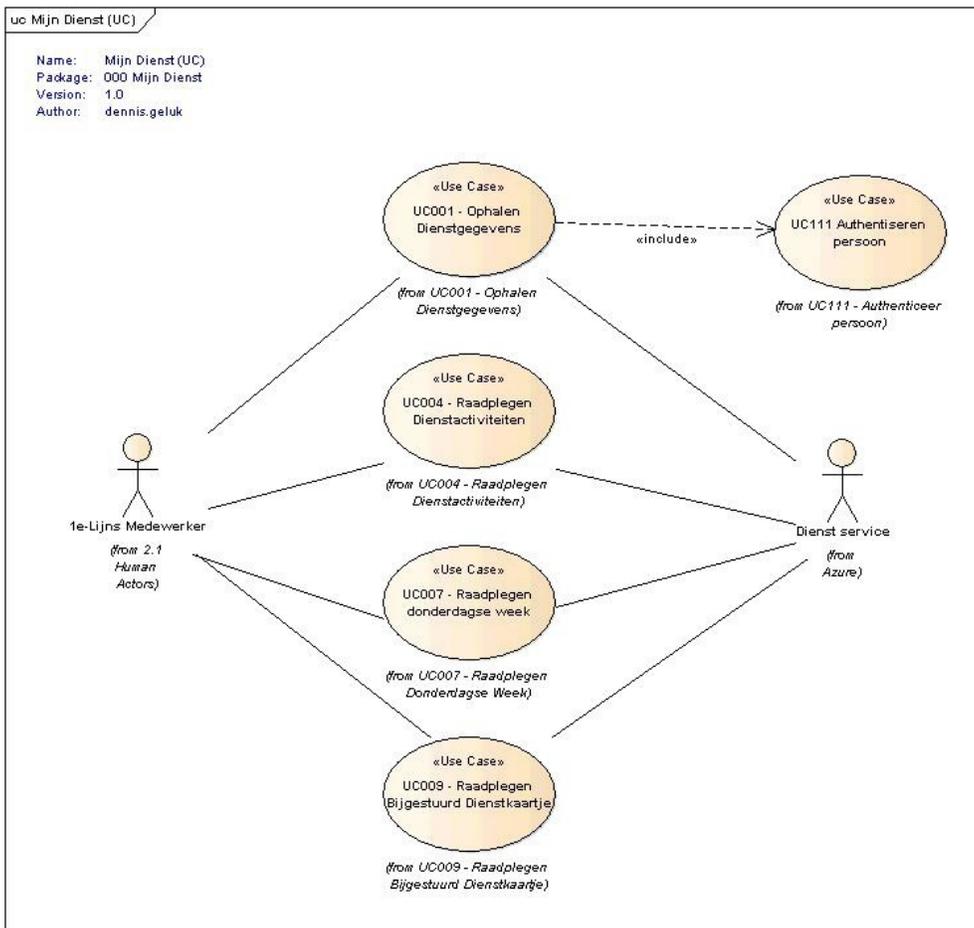
The Development App Factory requested user stories. They wanted just-enough information for agile development; after all, their goal is to deliver good working software in timely sprints. Outsourced agencies are typically not tasked with maintaining new software and ensuring that documentation is available to support the product. User stories were therefore not a viable option for NS as they provided too little information with too little context. However, the way that NS was presenting use cases wasn't working either. They were presenting use cases as a whole, rather than as specific scenarios. A change was needed.

NS made the decision to introduce Scrum. This change was the perfect opportunity to introduce Use-Case 2.0 to drive requirements. Ivar Jacobson International, in conjunction with its in-country partner DiVetro, ran a ½ day workshop at NS to introduce Use-Case 2.0 and to ensure employees were proficient in its application.

Use-Case 2.0 Makes the Connection

A use case is all the ways of using a system to achieve a particular goal for a particular user, Use-Case 2.0 is still a use case, but its description and application has evolved. Ivar Jacobson, Ian Spence and Kurt Bittner introduced Use-Case 2.0 in 2010. It re-focuses on the essentials and offers an efficient, leaner way of working for software teams who seek the benefits of agile development at an enterprise level.

Introducing Use-Case 2.0 enabled NS to be as lightweight as they wanted by focusing on essentials and zooming in for more details when necessary. Use cases are "sliced up" to provide stories or scenarios for agile iterative development.

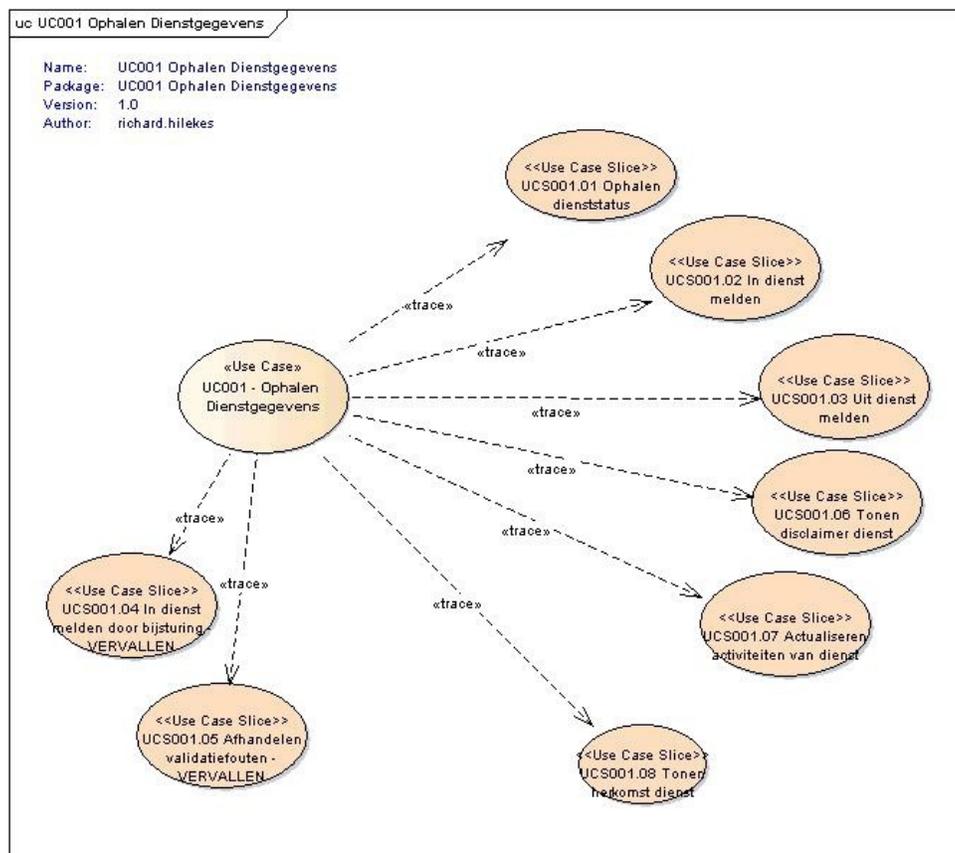


The Use-Case 2.0 Essentials Practice starts by finding actors and use cases, and selecting and prioritizing the parts (slices) of the use cases to be developed.

The use-case diagram on the left depicts the basic functionality of the "My Shift" App. The My Shift app contains information about an upcoming work shift including the signing in or signing out and the receiving and consulting of the planned week.

A use-case slice is one or more scenarios selected from a use case to form a work item that is of clear value to the customer. The slice details their tests and implements software to meet the tests. It concludes by executing the tests, tracking progress in terms of verified, working software and feeding back the results in order to handle change and better support the team.

Use-cases slices helped bridge the gap between NS development and the outsourced developer by providing scenarios that the Development App Factory could use to develop iteratively. The product owner and the analyst at NS used this method to introduce a standard way of working that was easily understood by the Development App Factory while ensuring enough documentation would be available for the NS team at the end of each sprint.



The Use-Case slices diagram to the left demonstrates how the use-case was broken up into different scenarios. This use case was sliced up into scenarios such as retrieving (from back office) and presenting the planned shift, signing in for a shift, signing out for a shift, etc...

“At NS, before the introduction of Use-Case 2.0, they worked with user stories that had no direct relationship with the use case. The disadvantage of this method was that it did not keep the specification (UC narrative) in line with the actual status of the software,” said Dennis Geluk, senior business analyst and partner at DiVetro and Analyst at NS.

“The use case, when I started at NS, was a mixed-up combination of implemented requirements (that were still in progress) along with requirements for a future version.”

When testers were provided with software for testing, it wasn't clear what they were testing. By introducing use-case slices, each use-case slice has a definition of “done”. Test cases can be applied for each slice. Now tester and analyst can work hand-in-hand with development.

“Using Use-Case 2.0 for agile projects seems to be an answer to the most important challenges we had on the specification and development side using the Scrum framework,” said Jordi Reineman from NS. “We were able to offer the right level of specifications to our development team to let them work effectively in sprints, and it allowed our users to participate more directly in the development process, because the functionality is developed and released more shortly after user participation.”

Now 15 months post pilot and 6 months into full production, NS is on track to deliver new employee applications that will assist NS in meeting its customer satisfaction goals.

For a more detailed overview of the work completed at Dutch Railways read the article in InfoQ:
<http://www.infoq.com/articles/use-case-20-slices-Dutch-Railways>



About Ivar Jacobson International

IJI is a global services company providing high quality consulting, coaching and training solutions for customers seeking the benefits of enterprise - scale agile software development.

We are passionate about improving the performance of software development teams, and maximizing the delivery of business value through technology.

Whether you are looking to transform a single project or program or your entire organization with lean and agile practices, we have solutions to suit your needs.

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