



Using Ontology and Modelling Concepts to Develop Smart Applications: Example Dutch Railway

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Abstract

Innovating one's organizations alongside the digital transformation that the industry 4.0 and with it the internet of things enables, is a complex undertaking. This case story covers the passage and stages that the Dutch railway transportation industry went through in applying standards from bodies like ISO, OMG and LEADING Practice to developing smart applications and solutions to fit customer needs. They used these the standards together with the Business Ontology, specific the role oriented modelling concepts and managed it all in the process and application lifecycle. The case story covers the aspects of smart application development with smart cards. Like the internet has revolutionised the world, smart cards have revolutionised the traveler's world. Smart cards are secure portable storage devices enabling millions of users around the world for advanced and easy transport flow. This case story elaborates on the Dutch Railway process of cutting edge smart

application development within advanced customer process handling through the role oriented processes and services. It elaborates on the Trans Link Systems, which was established by the various Dutch public transport companies to implement a single payment system for public transport, that together with the smart card system OV-chipkaart is made available to the people using public transport in the Netherlands. The case story was chosen not only for their leading practices applied in developing the Railway customer system of the future, but specific they way they did it. Their advanced role oriented processes and services modelling and role oriented architecture thinking in developing cutting edge smart applications. Interlinking the role oriented process lifecycle with the application lifecycle to support the 5 large transport organizations business model, service model, revenue model as well as the performance model.

Article Preview

Introduction

Dutch Railways

Train transport finds its roots in 1765 when a steam engine on wheels was invented. The first Dutch railway was built and opened in 1839 and today the Nederlandse Spoorwegen (English: Dutch Railways) or NS is the principal passenger railway operator in the Netherlands. Where they have one of the densest networks in the world—much denser than Germany and France (Road Density, 2014). About 13% of all distance is travelled by public transport, the majority of which by train (Ward et al., 2012). The network is mostly focused on passenger rail services and connects virtually all major towns and cities. Trains are frequent, with one or two trains per hour on lesser lines, two to four trains per hour on average, and up to eight trains an hour on the busiest lines.

Learn More

NS runs 4,800 scheduled domestic trains a day, serving 1.1 million passengers. In addition, NS provides international rail services from the Netherlands to other European destinations and carries out concessions on a number of foreign rail markets through its subsidiary Abellio.

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