

Agile Introduction of an End-to-End Core IT Solution at SBB Cargo



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Introduction

SBB Cargo is the largest rail freight operator in Switzerland, which has the most densely used railway network in Europe. To react more quickly to market demands, SBB Cargo decided to streamline and modernize their IT landscape based on a new central end-to-end IT system.

In order to avoid a big bang introduction, the system was introduced iteratively over a period of five years while always maintaining full transport operation. This led to a long phase of coexistence between the legacy IT systems and the new IT world. The poster wants to explain the strategy, how the IT systems were transformed iteratively, which challenges were faced avoiding a big bang introduction and how they were being solved by agile software development.

Migration strategy

The target IT architecture foresees one main end-to-end solution based on DXC's market proven software platform RCMS (Rail Cargo Management Solution) called ORCA in the SBB environment. Six weeks after project start, the first trains were run in the new system manually in parallel to the existing IT systems. Afterwards, interfaces to third party systems were integrated in the new system and one train load traffic was then operated end-to-end in the new IT world. This started the so-called coexistence period of about four years duration, where parts of the operation were planned and supervised in the legacy systems and parts of it in the new IT landscape.

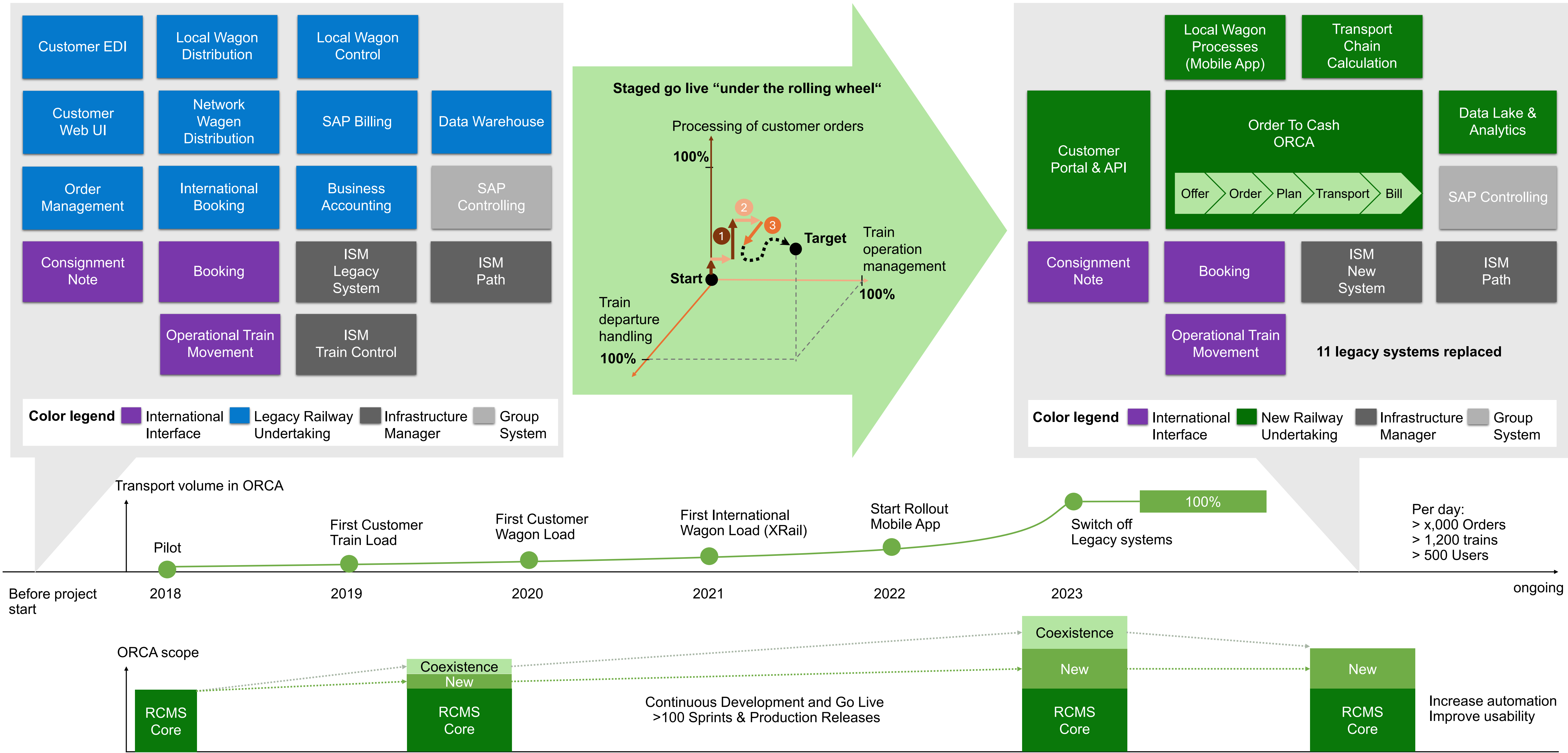
Different facets of coexistence

To determine the go live roadmap, we needed to consider the progress of the software development together with the end customer readiness (to adapt their processes and tools to the new world) and the readiness of the people using the software, in particular out in the field.

The migration into the new world hence took place in stages, whereby a bundle of customer traffic (including orders and trains) were typically migrated at the same time (1 2).

To carry out the actual work on the ground (train consist check after *train preparation* process) the workers were trained per local group 3. In the first project phase, the local processes were executed in the local offices to gain process confidence. Later these processes were implemented in the mobile app and introduced in production per regional crew centre with fallback options in the legacy systems during the coexistence period.

A particular challenge was the migration of the wagon load traffic. Here, trains are used by design by different customers and it was not possible to migrate all customers using the same train at the same time. Therefore we needed to cope with a situation of handling trains with wagons, whose orders were booked in the new system and in the legacy systems without overbooking any train. Therefore we established new ways of communicating the booked orders between legacy and new IT systems. We used the existing communication channel HERMES, introduced special interpretation of data unused fields and had to build specific functionality in new and legacy systems just to handle this coexistence.



Conclusions

At the end of 2023, migration was complete and the last legacy systems could be shut down. This reduced IT system complexity and operating costs by several million dollars annually. The introduction of an IT core solution like ORCA under the rolling wheel has represented a major challenge both to the railway undertaking, its customers and the software supplier. The application of agile software development methods (SCRUM, multiple MVP - Minimum viable product phases) allowed us to reach the deadline – which was considered a big success from all sides.

The agile principles made us focus on the most business-critical tasks in the software. The users trusted us, that usability and automation will be improved in later stages. The capabilities of an end-to-end solution are now starting to give benefits to the business, allow more improvements in operation and enable further digitalization and automation.

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