

Quintiq was acquired by
Dassault Systemes in 2014 and is now
DELMIA Quintiq

Case study

Comprehensive, accurate and flexible passenger rail planning

NUOVO TRASPORTO VIAGGIATORI (NTV)



The customer

NTV is the first private operator on the Italian high speed rail network and the first operator in the world to use the new Alstom AGV train, derived from the prototype train that holds the world record for speed.

The company's fleet of 25 trains offers comfortable travel, rich entertainment experiences and complete, customized services – all at competitive prices and in a timely manner.

In 2009, Nuovo Trasporto Viaggiatori S.p.A. (NTV), Italy's first private operator on the country's high-speed rail network, selected Quintiq to provide integrated fleet and workforce planning software.

Today, NTV employs Quintiq supply chain planning and optimization (SCP&O) software to optimize the utilization of all operational resources from long-term strategic planning to real-time rescheduling and disruption management.

NTV Fast facts

Coverage:	Northern and southern Italy
Fleet:	25 Alstom AGV575 trains 300-360 kph (186-224 mph)
Ridership:	More than 4 million passengers (May 2012-April 2013)
Daily services:	50
Workforce:	~ 1,000 ground staff and crew
On-time rate:	94.4%



The challenge

“We were looking for an integrated system that would be capable of efficiently balancing our resources and our employees’ quality of life.

This would ensure the quality of our long-term planning and improve productivity in the long run.”

– Paolo Ripa,
Passenger Director, NTV

Typically, the biggest challenge of rail fleet and workforce planning involves having the right amount of resources to meet the forecast demand. Adding to the complexity, plans must also take into account all employment regulations and agreements, maintenance requirements and capacity constraints. As a consequence, planners spend the majority of their time simply trying to create any plan that meets these complex requirements rather than the optimal plan.

NTV was searching for a solution to create optimal plans, taking into account both constraints and business rules as well as the needs and preferences of its employees.

“We were looking for an integrated system that would be capable of efficiently balancing our resources and our employees’ quality of life,” said Paolo Ripa, Passenger Director at NTV. “This would ensure the quality of our long-term planning and improve productivity in the long run.”

The choice

“We were primarily looking for three things: a flexible approach, excellent methodology, and the capacity to support a project in the start-up phase,” says Ripa. “Quintiq was the one that responded to our unique needs.”

Proving that a 100% fit was possible, Quintiq’s rail planning and scheduling solution stood alone as the “only complete solution delivering comprehensive, accurate and flexible passenger rail planning”.

Quintiq was also the only company to provide a solution that was able to achieve NTV’s specific business goals and key performance indicators, including:

- Improving customer service and meeting service level agreements by maximizing on-time train arrivals
- Ensuring safety by scheduling drivers with the correct route and traction knowledge
- Complying with safety regulations regarding rest periods, work hours and maximum continuous driving time
- Advancing employee satisfaction to decrease absenteeism and staff turnover by factoring employee preferences into crew shift schedules and planning for route diversity through link generation and crew bidding
- Increasing NTV’s profitability by balancing schedules, reducing the number of empty trains and ensuring employees end shifts at their home depots
- Reducing costs by optimizing NTV’s workforce to perform the same schedule with fewer employees by precisely matching employee skills with demand.



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Implementation

The first phase of the project involved modeling NTV's operations. This included defining rules such as the number and type of crew and station staff that would eventually be required for operations in 2012.

Quintiq's inherent flexibility ensured a fully accurate model. NTV and Quintiq then worked together to implement the solution throughout the company to assist NTV in every aspect of planning from long-term scenario planning to disruption handling.

"Quintiq proposed solutions and offered more ideas for optimization," says Ripa. "The Quintiq team proved to be very professional, specialized and competent in the implementation phase."

The solution went live in October 2012.





“A few months after the project went live, we began to see the results of automated planning. We were able to keep the work and service planning promises we made our staff at the start of our employment relationship.

The Quintiq team proved to be professional, specialized and competent in the implementation phase. They were able to propose solutions to the situations we were facing.”

– Paolo Ripa, Passenger Director at NTV

The result

Today, Quintiq's integrated fleet and workforce planning software supports NTV with:

Interactive optimization

Quintiq rapidly generates optimized plans and schedules – even in real time in response to disruptions. Planners then select and refine the best plan according to their intimate knowledge of the business.

Decision support

Every planning decision has an impact on the business. Through the use of Quintiq's key performance indicator visualizations, planners have the ability to evaluate the quality of multiple planning scenarios. This has the benefit of reducing the amount of time planners spend analyzing different scenarios thus allowing more time to identify optimal plans.

Disruption management

The ability to rapidly resolve any disruption as it occurs is critical. Quintiq gives NTV planners the ability to handle disruptions as quickly and efficiently as possible by rapidly re-optimizing plans and proposing alternative planning solutions.



Offices: www.quintiq.com/locations

Email: info@quintiq.com | Web: www.quintiq.com