# RENFE, Madrid, Spain

## A sharp, global overview on Spain's high-speed rail tracks

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*Mr. Novillo*
*AVE – Long Distance Rail department*

Spain opened its first high-speed route in 1992, between Madrid and Seville. By the end of 2010, the number of AVE – Alta Velocidad Española - trains will have grown to 400, 51.5 % up on 2007. More than investing in modern trains and railway infrastructure, RENFE also attaches great importance to high-tech management systems. The recently refurbished control center for AVE and long-haul trains in Madrid's Atocha station perfectly illustrates its mission to "employ the most innovative technologies, thus ensuring the safe and reliable transport of Spanish travelers."

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In 2007, RENFE realized it had to dramatically upgrade its existing control systems to support the rapidly growing network of AVE and long-haul trains. "We are currently transporting 65,000 to 90,000 travelers per day, and that number is growing substantially," said Mr. Novillo, Director* of programmation and production coordination of the AVE – Long Distance Rail department. "If we want to get every customer to their destinations safely and on time, we have to closely monitor the train traffic, make sure we spot incidents immediately and respond to them promptly." RENFE therefore decided to bundle all control services for Spain's high-speed and long-haul rail in one control center, where operators would have a real-time overview of the network.

## High-quality Barco solution

Barco won the tendering process for a visualization solution, thanks to the excellent references in high-quality solutions and services. By early 2008, they had fitted the new control room with 22 Barco Overview D-2 rear-projection modules (50") and their accompanying controllers. The displays, which integrate cutting-edge DLP technology, are specifically designed for use in a 24/7 mission-critical environment. To ensure a clear overview, they offer outstanding picture quality with high contrast, large viewing angles and vibrant colors. Their reliability and ease-of-use ensure zero downtime, which is crucial for monitoring the railway lines adequately.

## Real-time status of the fleet

"The control room is divided into five zones, each managing a different geographical area and having its own video wall," Novillo explained. "In the middle is a large 6x2 50" wall that visualizes the peninsula's AVE and long-distance train traffic. A link to each train via GSM-R technology ensures a real-time status of the fleet, from departure through to arrival of every train."

## Prompt decision-making

Besides the trains' geographical positions, the video walls display a lot of other crucial information to manage the day-to-day transport, such as the number of passengers per train, the punctuality of the stops in the various train stations, live video feeds from CCTV cameras in stations, etc. A complex network of track sensors, signaling technology, radio transmitters and computer systems integrates every possible bit of that information. Barco's graphical controller ensures that all data and video sources are projected on screen. For RENFE, this global and uniform view is key to working closely together and taking prompt decisions whenever a delay or other incident occurs that could have an effect on the train traffic. The system even allows operators to record images and watch incidents over for post-incident analysis.

## Ensuring safety

Mr. Novillo illustrated the use of a video wall in traffic management with a few examples: "If our sensors detect an intrusion on the rail tracks, this triggers an alarm to stop the trains. With the previous system, we had accumulating delays in our time schedule for days. The new overview display allows us to have a global overview in order to solve these delay issues faster. And in wintertime we can visualize parts of the tracks where snow is heaping up, so that we can warn train drivers to reduce speed there."

## Investment back in five years

RENFE estimates to have its investment back within the first five years. "It is difficult to put a number on what this system means for RENFE. While using it, we did notice that the quality of our services and punctuality of the trains has significantly improved. Barco's high-quality visualization solution helps us to achieve that aim, bringing us closer to our ambition of converting Spanish railways into the ideal mode of transport."

* Interview took place in February 2010

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