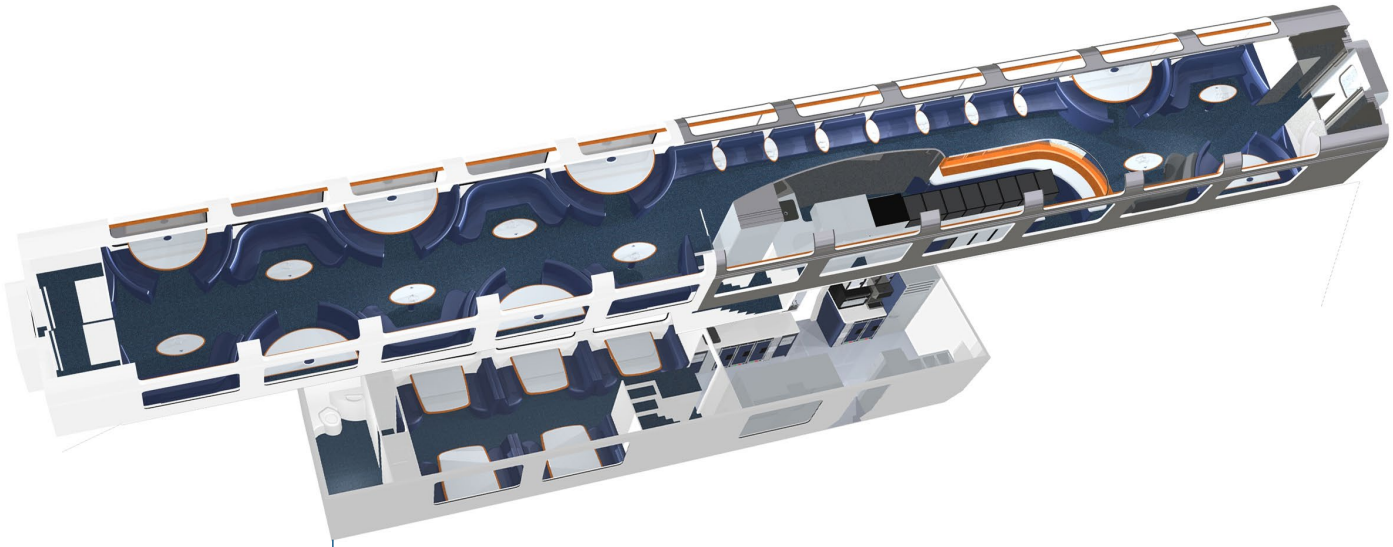
DASSAULT SYSTEMES

SOLIDWORKS

AMTRAK (NATIONAL RAILROAD PASSENGER CORPORATION)

ALL ABOARD! KEEPING THE TRAINS MODERN, RUNNING ON TIME WITH SOLIDWORKS



AMTRAK uses SOLIDWORKS design, SOLIDWORKS Simulation analysis, and SOLIDWORKS Enterprise PDM software to maintain, refurbish, and modernize its fleet of passenger railcars.

AMTRAK

Challenge:
Maintain, reverse engineer, and modernize passenger railroad cars utilized for the nation's intercity passenger rail provider and only high-speed rail operator, while preserving the ability to work with 2D legacy design data.

Solution:
Implement SOLIDWORKS integrated 3D solutions, including SOLIDWORKS CAD, SOLIDWORKS Simulation, and SOLIDWORKS Enterprise PDM software.

Results:
- Increased design productivity by 60 percent
- Realized time savings of 40 percent
- Improved management of 500,000 design files
- Reduced design errors and quality issues

As America's intercity passenger rail provider and only high-speed rail operator, AMTRAK is experiencing a resurgence with ridership at an all-time high. To support a record number of riders, more than 28.7 million in FY 2010, the nation's rail company must maintain, refurbish, and modernize its fleet of passenger railcars, which operate over more than 21,000 route miles across 46 states, the District of Columbia, and three Canadian provinces.

AMTRAK operates more than 300 trains a day—traveling to over 500 destinations—and successfully competes with the airline industry by providing affordable travel throughout the country. To support ridership growth and maintain its competitive position, the company must continually update and modernize its railcars, which now average 26 years old.

"The company that manufactured the Amfleet passenger cars went out of business in 1986," explains Bruce F. Hoffman, manager of Document Control in AMTRAK, the Mechanical Department's Rolling Stock Engineering Group. "In order to beat our competition—the airlines and intercity bus companies—we have to do much more than just keep the equipment running. We have to modernize and redesign our interiors so that we offer a level of comfort and a set of amenities that not only match, but also exceed our competitors'."

AMTRAK's engineers had used a combination of 2D tools, including CADKEY® and AutoCAD® software, for its design work until 1999. That's when engineering management determined that 3D tools were necessary for taking the rail company's transportation offerings into the 21st century.

After evaluating available 3D systems, AMTRAK chose SOLIDWORKS® software, implementing 25 licenses, which are used by designers and engineers throughout the Rolling Stock Engineering Group. The company later obtained additional licenses of SOLIDWORKS Simulation and SOLIDWORKS Enterprise PDM software. AMTRAK selected SOLIDWORKS because of its ease of use, compatibility with legacy 2D data, and integrated analysis and PDM (product data management) applications.

MODERNIZING THE PASSENGER RAIL FLEET

With SOLIDWORKS, AMTRAK has transformed its passenger cars of old into bright, inviting, and comfortable modes of travel. The company added new seats and lighting to its completely refurbished car interiors, as well as green elements that include LED lighting and recycling bins. In addition to helping engineers improve its passenger railcars, SOLIDWORKS helped its designers increase productivity by 60 percent and realize time savings of 40 percent.

"Our goal in creating sleek, comfortable car interiors is to make rail the civilized way to travel," notes Industrial Designer John Campbell. "SOLIDWORKS has allowed us to take a railcar that is decades old and make it look like it was made within the last two years."

SIMULATION SAVES TIME AND MONEY

AMTRAK uses SOLIDWORKS Simulation software to analyze structural performance and ensure safety in critical components, such as railcar suspensions. Instead of contracting out much of its analysis work, as AMTRAK had done in the past, the company's designers can now validate performance during design, which saves time, reduces costs, and improves quality.

"The ability to simulate and show how a part will perform is a big plus," Campbell stresses. "It allows us to strengthen parts while simultaneously removing material. This saves time and money, and also reduces the number of prototypes required and we can produce prototypes in hours instead of weeks."

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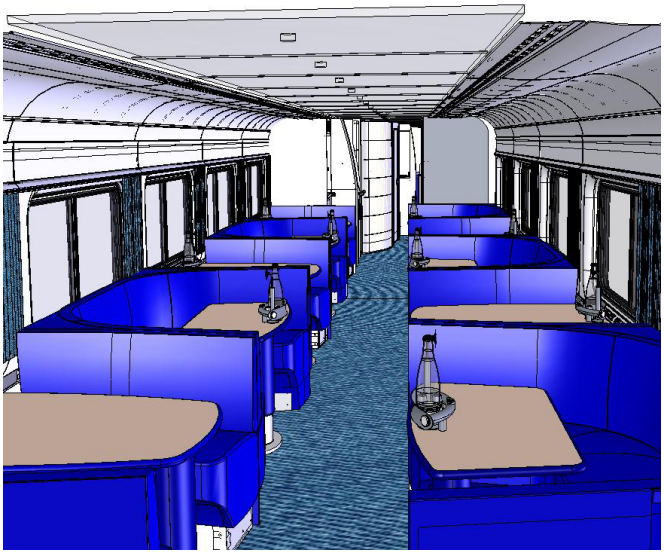
— John Campbell, Industrial Designer

INTEGRATED PDM BOOSTS PRODUCTIVITY

A significant contributor to AMTRAK's productivity improvements was the addition of the integrated SOLIDWORKS Enterprise PDM system. The rail company's diverse project teams use the system to manage more than 500,000 design files, including engineering data, drawings, technical specifications, procedures, and documents. The PDM system enabled AMTRAK to automate document approval processes with electronic workflows and email notifications to streamline its processes.

"We have tightened revision control, removing duplicate documents, and have benefited from fast-search capabilities, eliminating downtime," Hoffman points out. "The system, which is really simple to use and readily accepted by our users, helps us to improve quality and cut errors. It also lets us generate time and cost savings in the versioning and reuse of parts."



SOLIDWORKS integrated design, analysis, and PDM solutions provide the productivity boost that AMTRAK needs to support a record number of passengers.

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