



# Shipbuilder Uses SmartShape and the Yard **Wins Big**

For over 160 years Chantiers de l'Atlantique has been a world leader in the design and construction of commercial, naval, and passenger ships. When Royal Caribbean Cruises Limited awarded the company a \$1.35B contract to construct Harmony of the Seas, Chantiers de l'Atlantique wanted to fully satisfy its client's expectations.

At 362 meters, this Oasis-class cruise ship would become a floating city, complete with a skating ring and capacity for nearly 7,000 passengers. Even before the first steel plate was cut, Chantiers de l'Atlantique knew it had to manage costs, deadlines, and the quality of construction for this complex superstructure.

With a view to the future, the company was also prepared to make significant investments to develop its use of digital systems to optimize production and assembly management. As part of its Smart Yard strategic plan, Chantiers de l'Atlantique was aiming to position itself as a leading-edge company.

## Panel Assembly Line Analysis

When faced with building this architectural marvel, having an efficient panel assembly line is critical. As construction ramped up, Chantiers de l'Atlantique noticed their welders were spending a significant amount of time assembling the ceiling panel systems for the ship's cabins.

Typically, a two-person team would receive 2D drawings and a container with 40 pieces to assemble. Because this panel assembly required specific pieces to be positioned both over and under adjacent panels, the 2D drawings had

layers that were difficult to interpret. Adding to the complexity, Chantiers de l'Atlantique had multiple welding teams, each working different shifts, assigned to this phase of construction. Management quickly realized any improvements to the ceiling panel assembly would result in compounded cost savings as the process was to be repeated nearly a thousand times.

## Finding a Solution That Works in a Shipyard

Chantiers de l'Atlantique was looking for a solution that would improve the assembly process of this repetitive task and reduce the manhours spent on interpreting 2D drawings. "We wanted to find a way to consistently give the welders access to an accurate 3D CAD model," says Jean-Marc Le Roux, developer of SmartShape and CEO of Aerys.

Yet accessing a monster-sized 3D CAD model in a shipyard is not without its challenges. "We must remember that we are a shipyard and that means that not all people are working in an office, most of them are working on the shopfloor and they need to have access to information while they are moving around the shipyard," says Laurent Castaing, General Manager of Chantiers de l'Atlantique.

## SmartShape Brings the 3D Model to the Shop Floor

To overcome the challenges of large file sizes and improve the ceiling panel assembly line, Chantiers de l'Atlantique adopted SmartShape. SmartShape is a mobile solution that combines 3D CAD models with existing enterprise resource planning (ERP) systems and databases.

Unlike the old work packages with 2D drawings, SmartShape provides a 3D model with current data and instructions. “Our welders are equipped with tablets and the SmartShape app allows them to see the 3D information and interpret the assembly sequence for the ceiling panel,” says Clément de Courcel, Outfitting Production Manager at Chantiers de l’Atlantique.

### Employees Get On Board

The Smartshape app is very intuitive. “While I am on the ship under construction, I see my 3D model and touch the object that I am interested in,” says Christophe Dutrieux, CIO of Chantiers de l’Atlantique. “Because it is connected to the ERP system, I can see in what stage of the build it is by looking at the color code of the piece in the model.”

SmartShape has been readily adopted by Chantiers de l’Atlantique employees and clients, “With it, we improved our overall internal communication, even with our co-directors, and, even more broadly, with our customers,” adds de Courcel.

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- Clément de Courcel, Outfitting Production Manager

### SmartShape Provides Clarity and Saves Time

By using the SmartShape app, Chantiers de l’Atlantique provides its welders with the most accurate and up-to-date 3D model and assembly instructions. Having the ability to view the 3D CAD model of the panel provides clarification and reduces the number of questions the welders have on design details. “We have access to the required

data to make better decisions independently and this saves us time,” says de Courcel. “We saved two-man-months of work on this repetitive and complex welding task.”

SmartShape also works offline so workers can get information on what they are building anywhere in the shipyard, including places without connectivity.



### On To The Next Ship

After delivering Harmony of the Seas in 2016, to much fanfare for its ground-breaking innovations in design and construction, Royal Caribbean Cruises granted Chantiers de l’Atlantique contracts to build two more sister ships. Symphony of the Seas was delivered in 2018, and Wonder of the Seas is due for delivery in 2023. “At her delivery, she will be the twenty-third cruise ship built by our yard for Royal Caribbean Cruises Ltd, and we are especially proud of it,” says Laurent Castaing, General Manager, Chantiers de l’Atlantique.

“When I look at our competitors and colleagues, I can see that we are a few years ahead of them with digitalization,” says Dutrieux, and he adds, “SmartShape acts as an accelerator. It makes digitalization in the world of engineering possible, right now.”

To further realize efficiencies and cost savings, Chantiers de l’Atlantique is now expanding its application of SmartShape to other complex manufacturing, assembly, quality assurance, and supply chain processes. Because SmartShape enables concurrent engineering, the company is positioned to start ship construction early.