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# CATIA for Yacht



### About Dassault Systèmes

As a world leader in 3D and Product Lifecycle Management (PLM) solutions, Dassault Systèmes brings value to more than 100,000 customers in 80 countries. A pioneer in the 3D software market since 1981, Dassault Systèmes develops and markets PLM application software and services that support industrial processes and provide a 3D vision of the entire lifecycle of products from conception to maintenance. The Dassault Systèmes portfolio consists of CATIA for designing the virtual product - SolidWorks for 3D mechanical design - DELMIA for virtual production - SIMULIA for virtual testing - ENOVIA for global collaborative lifecycle management, and 3DVIA for online 3D lifelike experiences. Dassault Systèmes is listed on the Nasdaq (DASTY) and Euronext Paris (#13065, DSY.PA) stock exchanges. For more information, visit <http://www.3ds.com>

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Image courtesy of: CMN Yachts, Jeanneau Shipyard, H2X Yachts, Linea Concept, Heesen Yachts, Elan Marine, Berret-Racoupeau Yacht Design, Seaway, Sistre International.



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# The challenges

The yachting industry is caught in a fierce crosswind: while the Small Boat market is facing increasingly stiff competition on price and renewal, strong demand in the Super Yacht market requires faster time to market with uncompromised quality. The entire industry – from designers and architects to shipyards and suppliers – is struggling to find its footing.

# Catching the wave of yachting industrial transformation

CATIA for Yacht helps yacht builders transform their processes for everything from 5m pleasure boats to 100m mega yachts, streamlining the way they design and manufacture products.

The simple transformation from working with a drafting board to a 3D model gives yacht builders a near-immediate return on investment. By designing entirely in a multi-disciplinary, 3D digital mock-up that includes hull structure, fluid and electrical systems and mechanical equipment, engineers ensure up front that the yachts they can be built right the first time, with proven assembly plans and no-surprise manufacturing. Thanks to an integrated digital mock-up throughout the project

spiral and the collaborative chain, project data are unique, reliable, and never rebuilt, streamlining final assembly. Automatic extraction of drawings, reports, and bills of material from the digital mock-up helps to suppress error and guarantee version coherence. When combined with advanced engineering analysis and digital manufacturing solutions, operating conditions and construction sequences can be studied in advance to ensure the resulting product is built better,

faster and more profitably. Built on an open architecture, CATIA for Yacht enables seamless flow of information across all actors in the yacht building value chain, from naval architects and engineering consultants to equipment suppliers and the shipyard itself. In this collaborative environment, stakeholders work concurrently, empowering improved responsiveness to changing customer preferences and market drivers.



Increasing wealth, world travel and early retirement have made recreational boating and nautical sports more popular than ever. Double-digit growth rates make this a lucrative time for both builders and renters – if they can successfully navigate the market's crosscurrents. Facing tough, global competition on price and style, yacht builders must be able to deliver more innovative products in a shorter amount of time. Boat design and construction is complex at best, however, and manufacturers must quickly react

to customer demand, while keeping costs low. The ability to simultaneously balance aesthetically-pleasing style with a wide range of on-board features, and top performance is essential to setting an offering apart from the competition. To keep pace with orders and gain a competitive edge, naval architects, designers, construction shipyards and suppliers are beginning to adapt to new work methods. Progressively, 2D sketches are giving way to 3D digital models, allowing small yacht producers to release

entire series of products, similar to those developed within the automotive industry. Leveraging digital 3D, large or super yacht manufacturers are able to unblock their long waiting lists, and the boat refitting market is growing. CATIA for Yacht offers a solution specifically designed to help you resolve your design and manufacturing challenges and reduces cycle times up to four-fold on some parts of the process.

## CATIA for Yacht enables organizations to:

- **Benefit from an integrated product development platform** that facilitates concurrent work and collaboration among heterogeneous product development stakeholders.
- **Design and analyze multi-disciplinary 3D data** - from structure to fluid system – within a single digital mock-up to ensure the yacht is built right the first time.
- **Perform the majority of design work as early as possible** - ideally before bidding on a project – to ensure the yacht can be built profitably and within budget.
- **Provide all stakeholders, including customers, insight into product design and behavior** - throughout the development process, ensuring that the yacht is built according to agreed specifications and quality level.
- **Maximize re-use of design elements, knowledge and best practices** from one project to another to increase productivity and quality and reduce product development cycle.
- **Manage the complexity and interdependent work** of multiple consultants, subcontractors and the shipyard's own workers.
- **Deliver innovative products faster** than the competition.





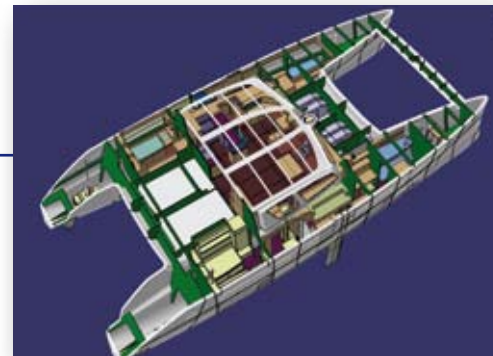
## Your key challenges

### Naval Architects and Designers

- Design and rapidly propose styles with renderings, drawings and interactive 3D
- Collaborate and exchange project data in real time with shipyards and owners
- Modify designs and automatically update all data (drawings, calculations, Microsoft Excel tables, ...)
- Compute hydrostatics, stability and weight distribution

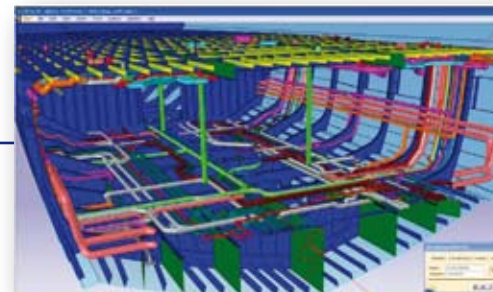
### Small Yacht Shipyards (production in series)

- Perform complete 3D detailing with a number of designers
- Suppress rework and final manual adjustments during production
- Standardize components on several models for standardization across entire lines
- Transform manufacturing processes and subcontracting
- Reinforce market leadership position



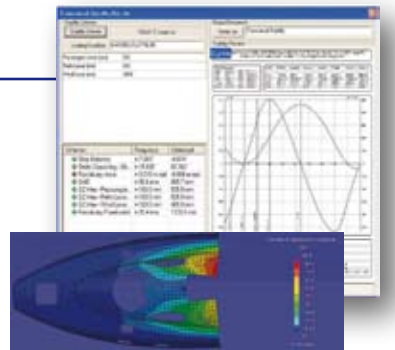
### Large Yacht Shipyards (custom or semi-custom production)

- Efficiently manage project costs and planning
- Anticipate and coordinate space reservation for all disciplines at an early stage
- Manage digital manufacturing process while respecting the shipyard knowledge
- Reduce delivery time and build more projects with increased margin



## CATIA for Yacht highlights

- Integrate the naval architecture process from Microsoft Excel, hull form modeling, hydrostatics and stability
- Integrate Preliminary Structure Design and FEA calculations for composite or metallic projects
- Rapid product conceptualization by re-using design principles and knowledge from other projects
- Easy modification and flexibility: associate the objects and geometry to easily perform design modifications, working within a flexible infrastructure
- Enlarge scope of creativity: propose various designs and innovative concepts
- Easily share 3D projects within a collaborative environment



- Eliminate physical prototyping with a complete 3D product definition
- Capture and re-use design components and know-how for standardization
- Reduce product development cycle through detailed automation for joinery
- Optimize assembly operations and automatically generate workshop documents
- Provide reliable manufacturing documents and automatically generate the bill of materials
- Create associative and integrated CNC milling/cutting instructions

- Design and analyze multi-disciplinary 3D data - hull structure, equipments, fluid and electrical systems - within a single digital mockup to ensure the yacht is built fast and right
- Anticipate and drive the production using complete and reliable engineering data extracted from the digital mock-up
- Provide reliable manufacturing documents and automatically generate the bill of materials



CATIA for Yacht integrates all elements of the process from initial to detailed design, while manufacturing within a unique collaborative platform.

### Yacht Initial Design

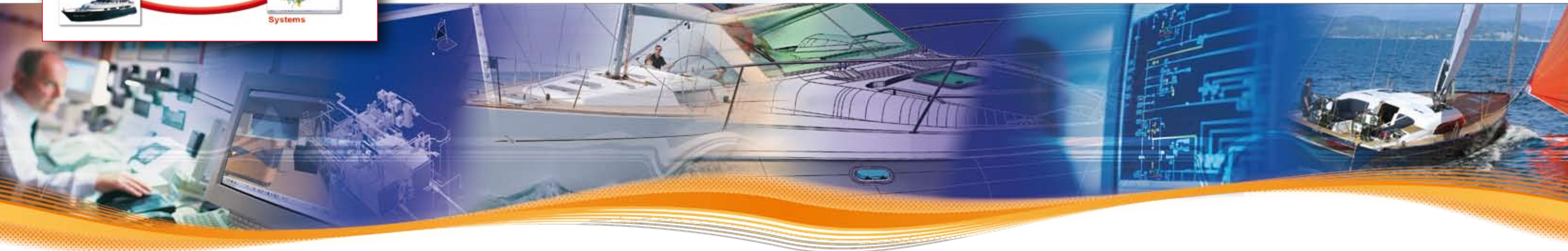
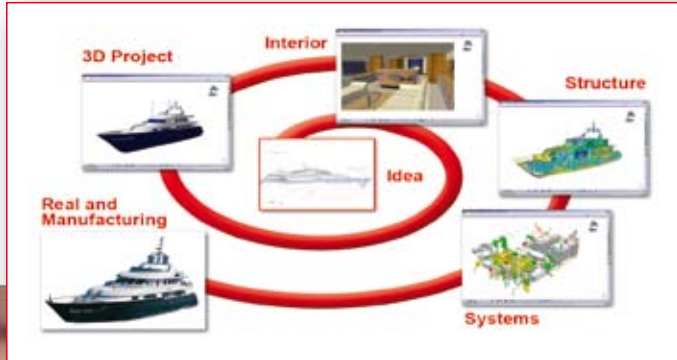
- ▄ Styling Design and Hull Form Modeling
- ▄ Hydrostatics and Stability
- ▄ Layout and Catalogs
- ▄ Accommodation Space Reservation
- ▄ Drawings and Renderings
- ▄ Interactive Virtual Yacht Experience
- ▄ Integrated CFD calculations

### Yacht General Design

- ▄ Metallic Structure Functional Design
- ▄ Metallic Structure Detailed Design
- ▄ Composite Parts (GRP) Modeling
- ▄ Multidiscipline Systems Routing
- ▄ Digital Mock -up Validation
- ▄ Finite Elements Analysis (including orthotropic)
- ▄ Human Simulation and Validation
- ▄ Project Data Management (PDM)

### Yacht Detailed Design & Manufacturing

- ▄ Metallic Structure Manufacturing Preparation
- ▄ Composite Parts Manufacturing
- ▄ Piping Detailing and Extractions
- ▄ Wood Furniture Detailing and Manufacturing
- ▄ Electrical Installation and Manufacturing
- ▄ CNC Programming and Simulation
- ▄ Assembly Documentation and Simulation
- ▄ Bill of Materials Extraction



NAVAL ARCHITECT

Arthur M. Barbeito & Associates, Inc.

*“We were wasting a lot of time going to one application for conceptual surface design, then another for the steel detailing, and another for the piping and equipment. [...] The different systems also multiplied the time it took to modify a design because a change in one system had to be manually repeated in the others. With CATIA, we have all of our essential functionality in one system”.*

Arthur Barbeito  
Company Founder and President

LARGE YACHT SHIPYARD

Heesen Yachts

*“A 3D integrated model allows us to have more information faster and at an earlier stage than before. This makes it possible to circumvent errors prior to production. We now have more insight into the product earlier than before and this inspires creativity. Plus, we can deliver drawings faster and of better quality and are able to perform feasibility studies in a matter of hours thanks to the power of 3D.”*

Mr Boerakker  
Managing Director

SMALL YACHT SHIPYARD

Elan Marine

*“The first pilot project was accomplished faster using CATIA V5 and accuracy was improved by 20%. Thanks to CATIA V5, we have reduced development time by 20 – 25%, allowing us to roll out three projects per year - two sailing yachts and one power boat [...] Our efficiency has increased and we have reduced errors by 60%”.*

Matej Meglic  
R&D Project Manager