

LIGHTWEIGHT ENGINEERING



CATIA Lightweight Engineering provides designers with the expert capabilities to minimize part weight, maximize stiffness, reduce cost and optimize material usage

This solution seamlessly integrates design, simulation and analysis, through to manufacturing across all disciplines within the **3DEXPERIENCE** platform. This allows parts to be refined, validated and completed collaboratively and in-context.

- Optimize product weight and stiffness with lightweight engineering
- Reduce time and cost by evaluating concepts faster
- Evaluate more concepts while maintaining design specifications
- Leverage real editable geometry for both conventional or additive manufacturing
- Easily generate and simulate optimized concept shapes
- Manage collaboration between Design, Simulation and Manufacturing Engineers seamlessly

CATIA LIGHTWEIGHT ENGINEERING

To meet modern environmental needs and sustainability targets, engineers and designers must reduce the mass of their components whilst still meeting the requirements of strength, stiffness and any potential manufacturing constraints. They must innovate, through the adoption of new tools to come up with multiple design proposals; all within a shorter design cycle to meet commercial pressures.

Simulation Driven Design

Simulation driven design optimizes structures to find the best shape possible by using simulation technology earlier in the design cycle.

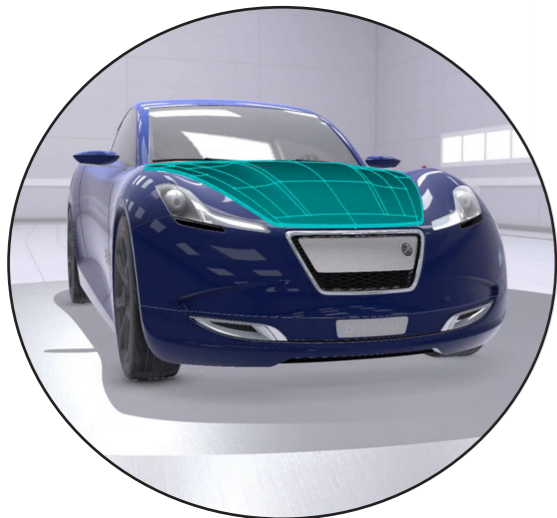
This empowers the design, with powerful knowledge and understanding of their ideas to apply earlier modifications and improvements.



Reverse Engineering

Reverse Engineering connects digital and physical worlds by digitalising existing legacy products.

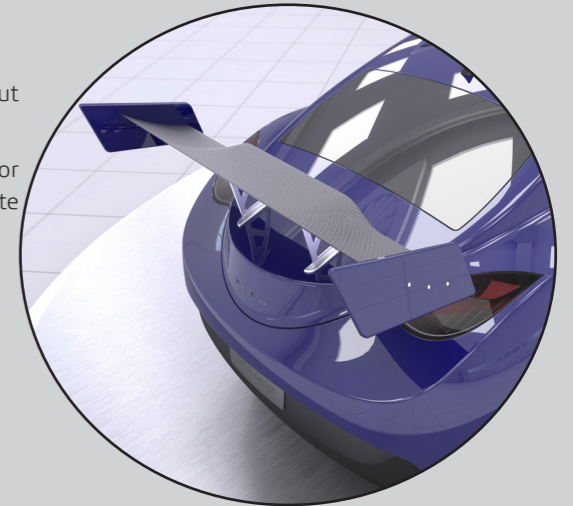
A physical scan reconstructs the model at the right scale. The part can then be optimized and reworked to produce a lighter alternative.



Composite Materials

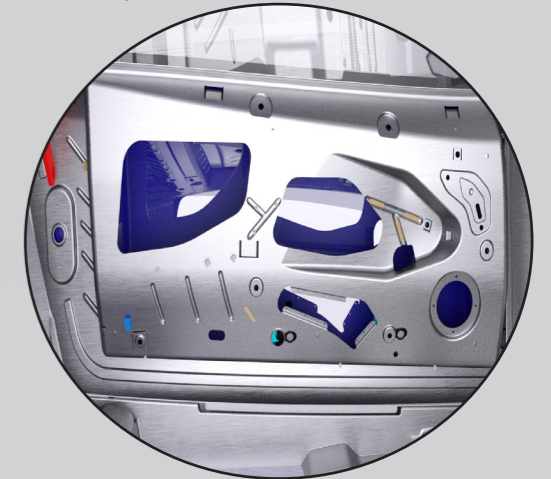
Composite Materials are supported by this all-in-one solution, throughout the engineering and manufacturing process.

Constraints are taken into account early in the design process for producibility checks, making it possible to define and export a complete and accurate process to the shop floor.



Hydroforming

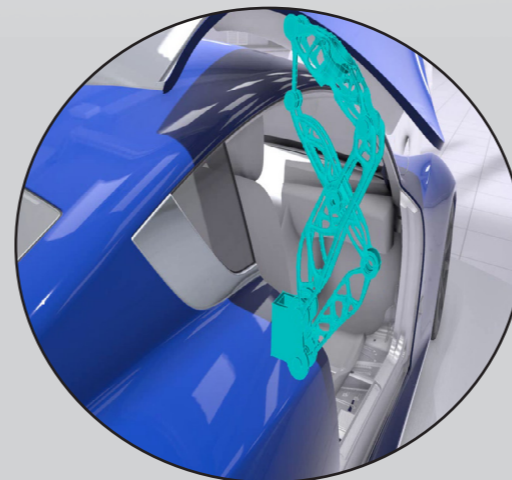
Hydroforming is a low cost technology that shapes ductile metals such as aluminium and steel. CATIA provides feature-based modeling making it possible to design sheet metal representations in concurrent engineering.



Cognitive Augmented Design

Cognitive Augmented Design is a revolutionary approach to generate and explore lightweight shapes.

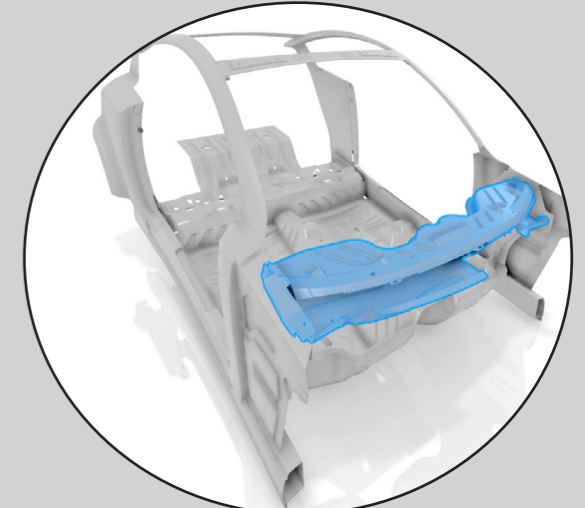
Designers begin with functional specifications such as geometrical context, targeted performance and constraints. Next, concept shapes are automatically generated using the functional specifications that can easily be structurally validated. Easily validate the structural behavior of multiple concepts and perform trade-off studies to select the best concept.

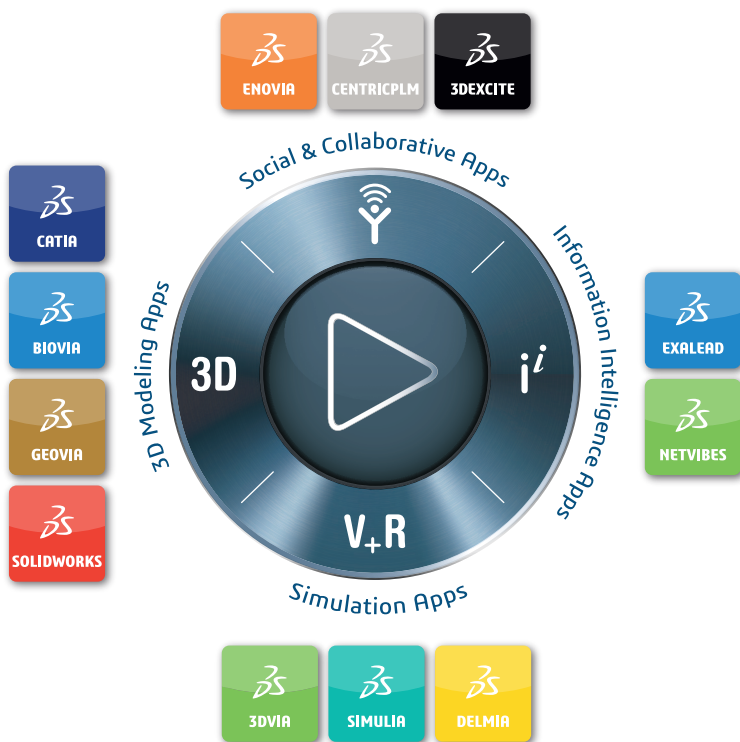


Stamping Die

The design of stamping die tools can be achieved using formability analysis, operations planning and geometric analysis.

This results in high quality surfaces that are directly used for the Mold and Die manufacturing process.





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