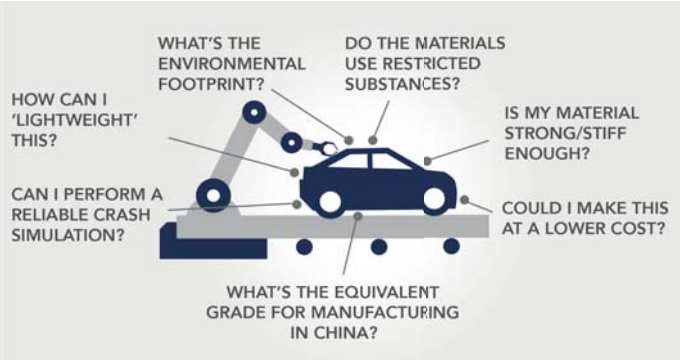
GRANTA
MATERIAL INTELLIGENCE

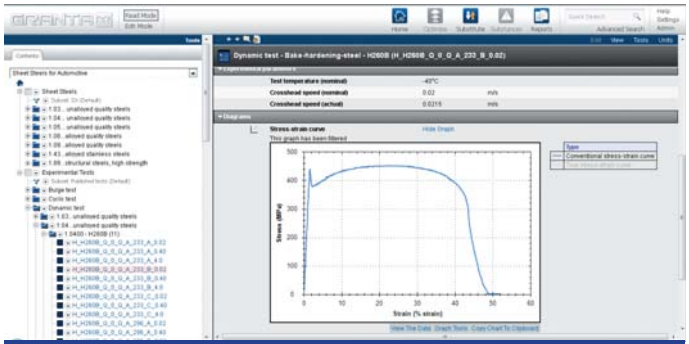
Delivering materials information management and vital simulation inputs for automotive firms

More leading automotive OEMs and suppliers are implementing projects to manage and apply their materials information. Granta Design's package of software and services provides a solution for the materials data management challenges faced by these enterprises. Granta is working with leading carmaker PSA Peugeot Citroën on a project to ensure it has the right data to make vital design engineering and material decisions, to ensure the accuracy of simulations, and to enable a fast, delay-free design and development process in the future.



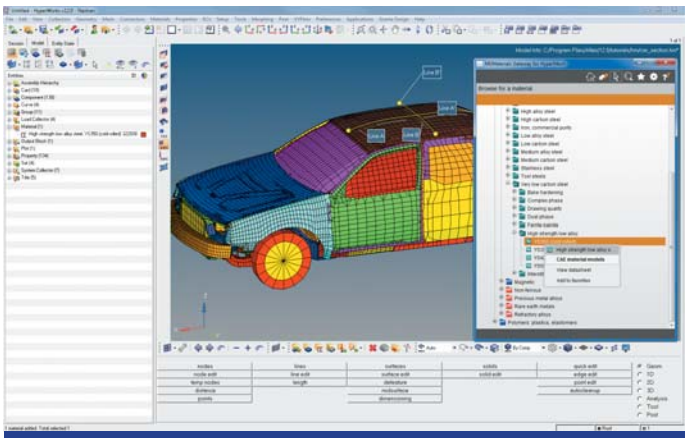
The importance of materials information for Automotive enterprises.

PSA Peugeot Citroën is using **GRANTA MI™**, the leading system for materials information management in engineering enterprises, in a project to replace legacy systems and to extend the benefits of managing this vital engineering data to more groups within the company. Granta works with OEMs and suppliers in the automotive and off-highway vehicle sectors to develop best practice for materials information and its use through the Automotive Material Intelligence Consortium (AutoMatIC), a collaboration launched at the 2014 SAE World Congress. The consortium's response to industry requirements helps to drive development of the GRANTA MI software, which enables enterprises to increase engineering productivity, lower costs, and make the most of investments in simulation and Product Lifecycle Management (PLM). PSA Peugeot Citroën is a founder member of the consortium, and other members include General Motors, Jaguar Land Rover, KSPG, and Honeywell Turbo Tech.



Viewing sheet steels for Automotive applications in GRANTA MI.

One key materials information focus for PSA Peugeot Citroën is simulation, since simulation accuracy depends on the quality of the input data, particularly the models used to describe the physical properties of materials. The new **GRANTA MI:Simulation™** package ensures accurate, fully-traceable, derivation of these models, helps analysts to find and use the right data, and enables organizations to maximize returns from investment in simulation. MI:Simulation adds new tools to analyze data and prepare the resulting models for Computer-Aided Engineering (CAE). Apps support key tasks, such as curve smoothing and model fitting, and are tailored to a company's specific needs. Engineers can derive exactly the simulation input data required, quickly, traceably, and consistently – and data is made available from directly within CAE environments through the **GRANTA MI:Materials Gateway™** software.



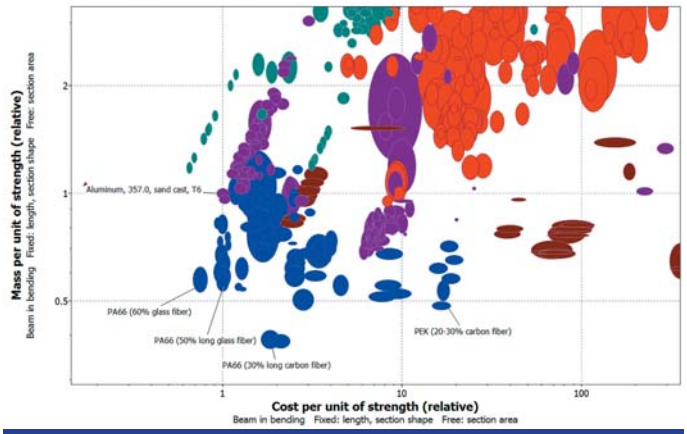
Accessing materials data within the Hypermesh simulation software.

PSA Peugeot Citroën selected GRANTA MI to manage its engineering data, with a focus on delivering reliable, traceable materials data for input to simulation and analysis. Louis David, the company's Materials Chief Expert, said: *"With a proven solution, plus the track-record and services to support a fast deployment, Granta was able to meet our short-term needs, especially for the data required for modelling. Granta also offers technology, tools, and an open approach that can support future extension of the project."*

The company's plans include exploring lightweighting design options, using green materials and plastics, and extending the integration of materials data to enterprise Computer-Aided Design (CAD) and PLM systems.

Granta's Automotive solution includes comprehensive services to help enterprises to address these and other challenges, such as design with composite materials, and minimizing legislative and supply chain risk. Granta's **CES Selector™** is specialist software that supports materials decision-making in product design and development – for example, finding new applications for plastic materials, identifying replacement candidates for existing materials in lightweighting projects, or meeting other environmen-

tal objectives. Granta has developed case studies which explore typical challenges for the automotive sector – these include identifying a potential weight saving of 70% by replacing steel with continuous fiber-reinforced composites in a high-performance drive shaft; and for an automotive transmission cross-beam, a glass-fiber-filled polymer would be 40% lighter and 20% cheaper than a cast aluminium alloy.



Using CES Selector to chart candidate lightweight materials for an automotive transmission cross-beam.

Integration of accurate materials information for product design, analysis, and simulation is enabled by MI:Materials Gateway, allowing users to access this information from within their familiar CAD, CAE, or PLM systems. The data can then be applied within that system—for example, assigning materials properties to parts in a CAD model to enable accurate mass roll-ups, or importing validated materials models for use in CAE.

Manufacturing enterprises face restricted substance challenges to de-risk their materials and processes, to design for compliance with restricted substance regulations (e.g., the European Union's REACH), and to analyze products and report on compliance risk for existing products. The **GRANTA MI:Restricted Substances™** software enables enterprises to access comprehensive reference data to fill gaps in in-house information, enhanced tools to manage proprietary knowledge, and fast apps to answer business-critical questions such as "*which of my specifications contain at-risk substances?*" This allows them to quickly identify risk in legacy products and provides guidance in design, avoiding compliance problems, delays, and cost.

"*We're delighted that PSA Peugeot Citroën has joined the community of Granta user organizations,*" says Dr David Cebon, Managing Director at Granta Design. "*Working with PSA Peugeot Citroën experts to meet their needs will help us to further refine our solution for automotive manufacturers. We would welcome the opportunity to work with others in the supply chain in a similar way.*"

For more information on how Granta supports Automotive enterprises, see http://www.grantadesign.com/solutions/automotive/index.htm. Membership of the AutoMatIC Consortium is open to OEM or supplier organizations interested in implementing materials information technology in the Automotive and Off-Highway Vehicle sectors. For more details, see http://www.grantadesign.com/automotive/consortium.htm