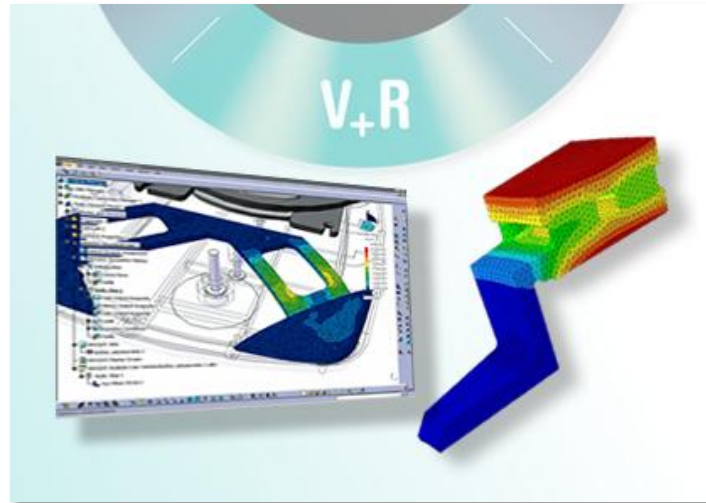


SIMULIA V5-6R2013 FACT SHEET



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INTRODUCTION

SIMULIA provides complete design-integrated simulation capabilities within the CATIA V5 design environment. Designers can use the familiar CATIA user interface to perform analysis directly on their master reference model in CATIA. Data integrity issues are avoided since there is no transfer and translation of geometry.

SIMULIA V5-6R2013 enables users to perform nonlinear and thermal analysis directly on their CATIA geometry by leveraging robust Abaqus FEA technology. This release includes enhancements to the traditional CATIA Analysis product, Generative Part Structural Analysis (GPS), as well as to the SIMULIA Extended Analysis products Nonlinear Structural Analysis (ATH) and Thermal Analysis (ANL).

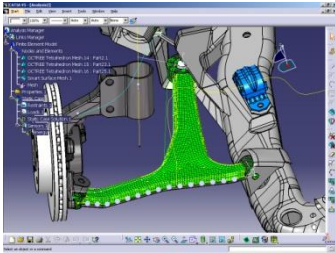
The combined CATIA Analysis and SIMULIA Extended Analysis product suites have been developed for designers and engineers who need to accurately size their designs and quickly evaluate their real world performance during the design phase. To access the basic nonlinear and thermal analysis capabilities included in ANL and ATH, users must first be working with Generative Part Structural Analysis (GPS), the backbone product to the CATIA V5 Analysis offering.

AT A GLANCE

- **Delivers the power of Abaqus FEA technology for nonlinear and thermal analyses on CATIA V5 models.**
- **Particularly suitable for designers and engineers looking to deliver structurally robust designs in less time.**
- **Natural extension of the CATIA user experience into the Finite Element Analysis domain.**

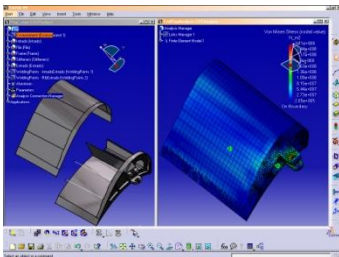
V5-V6R2013 PRODUCT OVERVIEW

CATIA Analysis Product Portfolio:



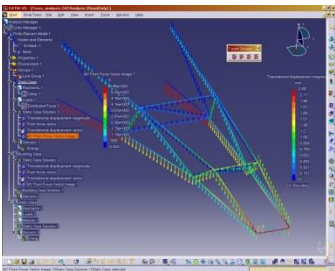
Generative Part Structural Analysis

Generative Part Structural Analysis (GPS) allows designers to understand how their designs behave and to accurately calculate the displacements and stresses within the part under a variety of loading conditions. It also allows the vibration characteristics of parts to be assessed by calculating the natural frequencies and the associated mode shapes. Analyses can be performed on volume parts, surface parts and wireframe geometries.



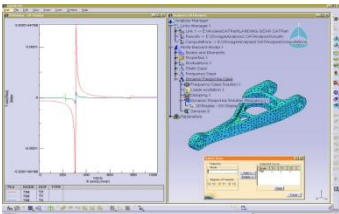
Generative Assembly Structural Analysis

Generative Assembly Structural Analysis (GAS) extends the capability of GPS, allowing designers to analyze assemblies as well as individual parts. The analysis of assemblies, including an accurate representation of the way the parts interact and are connected, allows for more realistic and accurate simulation.



Elfini Structural Analysis

Elfini Structural Analysis (EST) extends the capabilities of the GPS product to include multiple analysis cases for static, frequency, and buckling analysis. This product is more tailored to the needs of specialists, while maintaining a consistent user interface between specialists and design engineers.



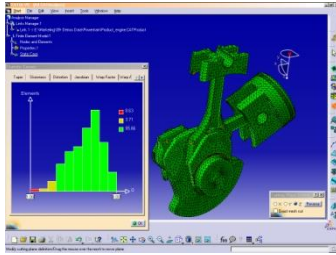
Generative Dynamic Response Analysis

Generative Dynamic Response Analysis (GDY) allows users to study the response of their designs to dynamic loading. This allows designers to ensure early in the design phase that their designs do not suffer from resonance and other dynamic effects. GDY provides both transient and harmonic analysis.



FEM Surface

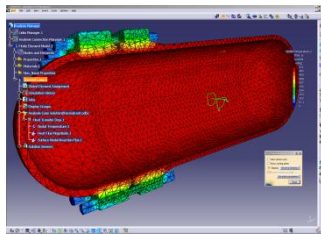
FEM Surface (FMS) provides advanced meshing capability for complex surface and wireframe parts. Meshes generated on geometry are fully associative with the geometry and FMS provides more control and more sophisticated meshing algorithms than the standard surface meshing capability in GPS.



FEM Solid

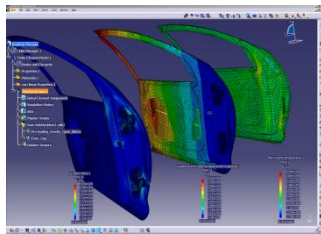
FEM Solid (FMD) is intended for the specialist that wants to mesh complex solid geometry quickly and efficiently while retaining a lot of control over the resulting element quality and the number of elements in the mesh. FMD provides a tetrahedral filler meshing algorithm and also provides tools to create hexahedral meshes. Various pre-defined and customizable criteria for mesh quality can be displayed.

SIMULIA Extended Analysis Product Portfolio:



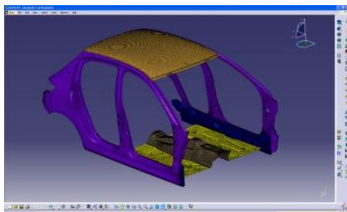
Thermal Analysis

Thermal Analysis (ATH) extends the CATIA V5 Analysis capabilities, allowing designers to understand the thermal behavior of their designs. The steady-state or transient temperature distribution can be calculated in response to the direct heating of a surface, the flow of a fluid past a surface, or the specified temperature of the surface. The thermal material properties can be temperature-dependent. When analyzing assemblies, the conductivity across the interface between contacting parts can be specified.



Nonlinear Structural Analysis

Nonlinear Structural Analysis (ANL) extends the CATIA V5 Analysis capabilities to allow more advanced simulation that includes nonlinear effects, such as large displacements and material nonlinearity. Material plasticity, typical of metals, can be modeled, as can the nonlinear elasticity in hyperelastic materials like rubber. ANL also provides more advanced contact capability including general contact. The automatic creation of contact surfaces pairs based on their geometric proximity is also possible.



Rule Based Meshing

Rule Based Meshing (RBM) extends the capabilities of FMS to enable automated and higher quality surface meshing for all workflows that use CATIA meshing tools. RBM gives the user a means to specify globally the desired meshing treatment of entities such as holes, fillets, and beads. RBM also gives the user a means to specify acceptable element quality criteria, such as minimum edge length, aspect ratio, and skewness.

Users can now import composite properties from the CATIA Composite Design (CPD) workbench or from XML files into an ANL analysis model, using the same import tool that is available in the Generative Structural Analysis workbench. Composite analysis in ANL enables nonlinear – especially large rotation and large deflection and deformable contact – composite analysis in CATIA.

Users have the ability to export the Abaqus input file from ATH and ANL models, enabling more convenient model sharing with Abaqus analysts.