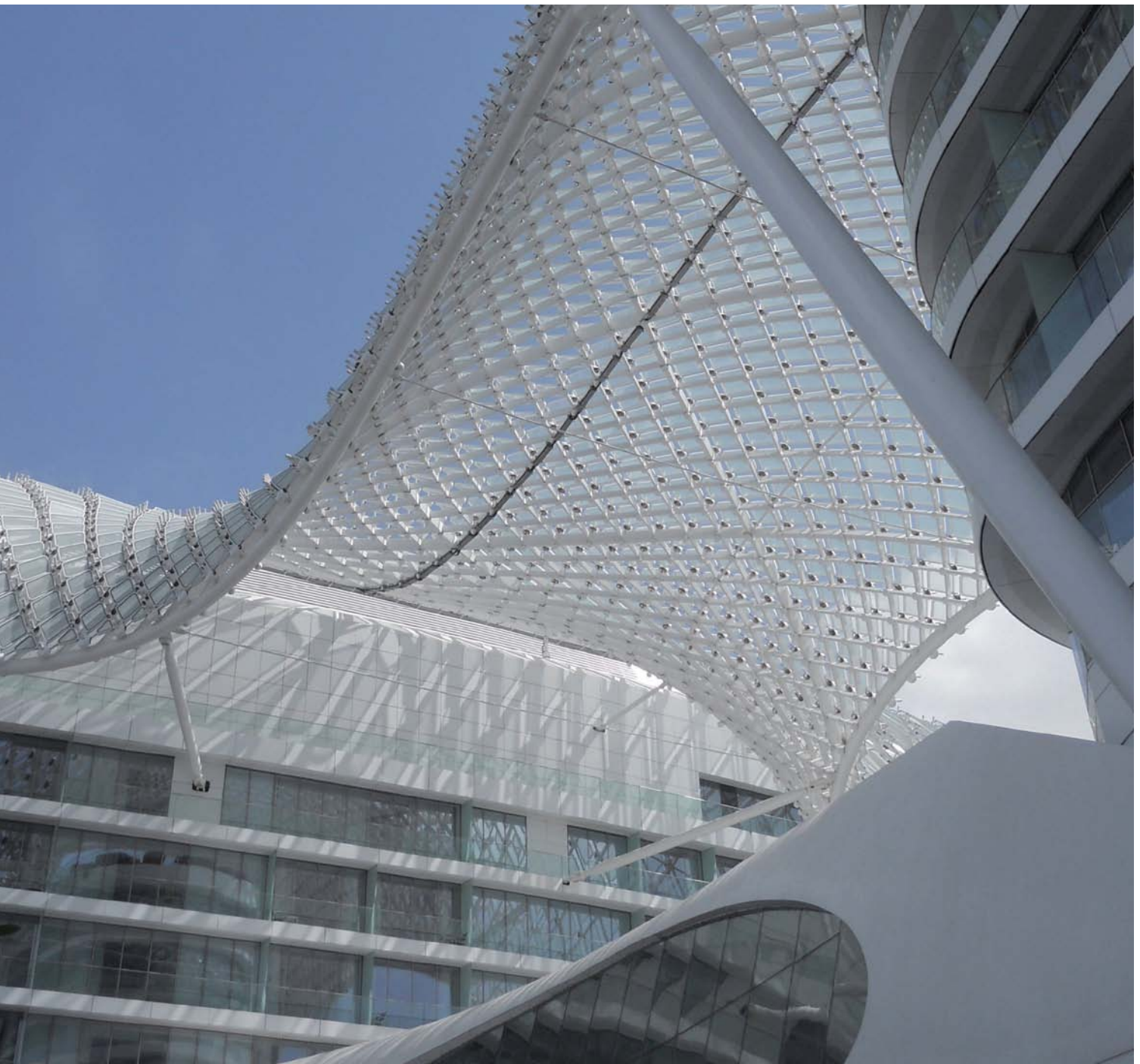


# GT DIGITAL PROJECT

Powered by CATIA V5



## OVERVIEW

GT (Gehry Technologies) Digital Project is a suite of powerful 3D Building Information Modeling (BIM) applications created by Gehry Technologies using Dassault Systèmes' CATIA V5 as a core modeling engine. GT Digital Project features design, engineering and project management in a comprehensive 3D environment specifically tailored for the Architecture, Engineering and Construction Industry. Since its inception in 2004, GT Digital Project has been used for some of the world's emblematic structures, from commercial and institutional building projects to large scale infrastructure works. Gehry Technologies has successfully used GT Digital Project to address challenging design and project management issues on such landmark projects as the World Trade Center site, Beijing National Olympic Stadium - "the Bird's Nest", the Lincoln Center redevelopment, and the Burj Kalifa Tower: the world's tallest building, to name a few.

## POWERFUL 3D BIM TOOL

GT Digital Project is a powerful 3D BIM tool, handling projects of any size and shape. The feature based modeling technology is an integral part of the design process and all GT Digital Project operations. Geometry is built using persistent relationships that can be updated to address project changes, drive geometry with flexible parameters and dimensions. These relationships are used to create intelligent building components which can be reused in alternative design iterations. Thanks to its CATIA core modeling engine, GT Digital Project can be used for projects of any size and shape.

## COORDINATION

GT Digital Project can integrate 3D models from different sources (Architect, Structural Engineer, MEP Engineer) and perform automated "clash and clearance detection" to allow spatial conflicts between systems to be automatically detected and reported. In addition, GT Digital Project provides powerful tools for integrating and organizing project data into hierarchically sorted project views. Geometry is managed in the 3D environment and in the nested specification tree. Models can be assembled into multiple project organizations that incorporate third party formats directly in the modeling environment. Finally, the Viewer extends the scope of GT Digital Project by providing project managers with a comprehensive tool to visualize, review, and annotate the 3D model.

## CONSTRUCTION

Project geometry can be linked directly to project schedules developed in Primavera, or Microsoft Project to create "4D Models" that integrate design and schedule information. Project schedules can be reviewed in conjunction with relevant spatial information to detect logistical conflicts or inefficiencies, and support site management and planning activities. Project modeling and construction simulation can be also used for simulating and demonstrating proper working methods to on-site staff, and geometry can be re-used for day to day construction tasks. The 3D project model also removes the ambiguity and potential disagreements about project quantities. Quantities can be derived directly from the master model and linked directly to published or internal cost data. This information can be used for project cost planning and provided as the basis for subcontract bidding.

# GT Digital Project - VIEWER

**Light, easy-to-use review and information management interface for project managers, estimators and construction personnel.**

## Overview

Perform collaborative GT Digital Project reviews using powerful visualization, navigation, measurements, building information management, 4D simulation and collaboration tools. GT Digital Project - Viewer provides a light, easy-to-use review and information management interface for project managers, estimators and construction personnel. Viewer supports full project attribute editing, provides essential tools for accessing a project database and performing quality control checks. Viewer is also appropriate for onsite activities, providing the interfaces necessary for extracting critical information from a project database while working out in the field.

## Benefits

- Offering more than other modeling solutions, Viewer provides critical tools for building project managers responsible for the quality of project data and important financial decisions based on this data. With Viewer, project managers can directly access accurate and comprehensive project information in a secure, easy to use digital environment.

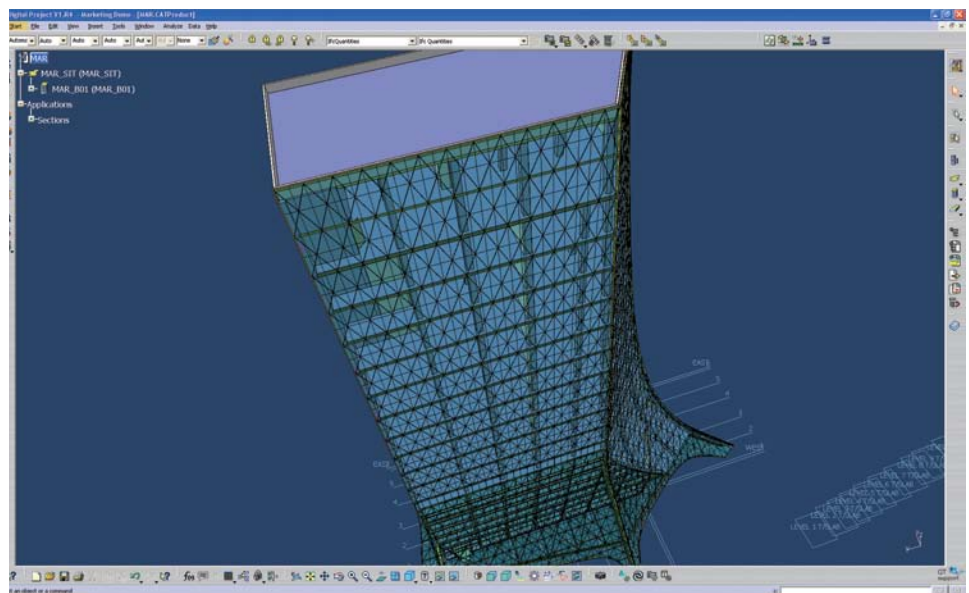
## Features

### Viewing, Measurement and Collaboration

- Provides highly scalable viewing capabilities in the GT Digital Project immersive 3D environment, including real-time sectioning.
- Allows users to measure object dimensions, relative dimensions and quantity takeoffs. Provides volume, area, length and coordinate measurements.
- Allows users to collaborate through 2D and 3D annotations, hyperlinks and animation and publishing to HTML. Supports a large number of 2D and 3D formats.
- Collaborate by assimilating and documenting in the 3D master model construction coordination and issue management processes, such as RFIs.

### Building Information Management

- Select and place pre-defined standard or customer-defined attribute schemas on project geometry. Examples of schemas include IFC (Industry Foundation Classes), Uniformat, Master Format, estimating formats, quality control review and scheduling.
- Develop filtered project views for quality control and quick reviews of attribute data. In these views, objects are organized and/or colored based on the values of their attributes.
- Extract object quantities and queries to spreadsheets and/or other estimating applications.



# GT Digital Project –DESIGNER

## Full functionality geometry and knowledge modeling capabilities for advanced architects, engineers, and contractors.

### Overview

Advanced solids, features, surfacing and wireframe geometry. Component instantiation capabilities and architectural object libraries.

GT Digital Project - Designer provides full functionality geometry and knowledge modeling capabilities for advanced architects, engineers, and contractors who want to conduct their work using the industry's highest performance 3D modeling tools. Designer provides an extensive set of tools for creating and managing knowledge enabled building information-- from schematic design through construction documentation.

### Benefits

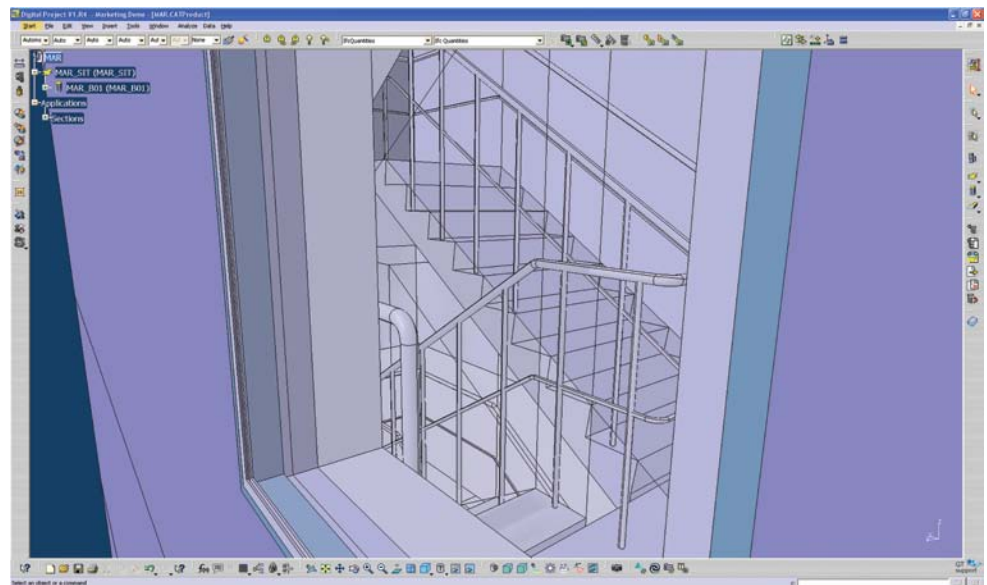
- Full 3D environment
- High quality geometric modeling
- Integrated with construction scheduling information
- Data interoperability with other commercial applications

### Features

- Project organization and coordination
- Parametric 3D surfaces and solids modeling
- BIM modeling with the Architecture and Structures workbench
- Knowledge capture and reuse
- Data-driven design
- Flexible attribute modeling
- Generation of 2D drawings, quantity take-offs and cost estimations
- Support of Industry standard formats (dxf-dwg, Iges, IFC, SDNF, etc...)

### Plus state of the art capabilities in:

- generative surfaces design
- advanced solids modeling
- free style surface modeling (NURBS)
- design to fabrication – surfaces develop
- dynamic sectioning
- revision tracking – part comparison



# GT Digital Project (TM) –Systems Routing

## Overview

A conceptual design application which allows system planners to optimize designs for mechanical, electrical and plumbing systems in environmental context to avoid design conflicts.

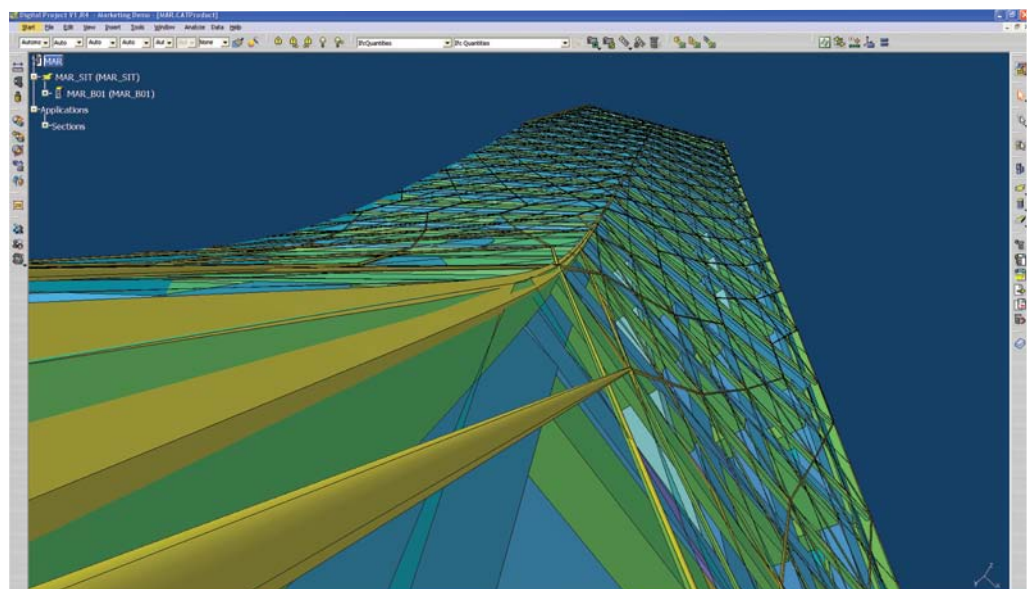
GT Digital Project – Systems Routing is the dedicated application for mechanical, electrical and plumbing systems in the Gehry Technologies' Digital Project suite of applications. As such, it is a conceptual design application which provides system planners the ability to reserve the space needed for eventual functional and detail layouts of HVAC, raceways, and plumbing. By designing within the context of a project, integrity of the systems with the surrounding environment are analyzed, interferences are avoided and different disciplines are free to optimize their designs knowing that their spatial needs and installation sequences have been taken into account.

## Benefits

- Easy-to-use interface optimized for route definition.
- Advanced 3D design environment
- Bill of Materials generation and tracking
- Parametric parts catalogs
- Spatial allocation capabilities

## Features

- A fully detailed, integrated solution allowing for an advanced design of equipment systems in environmental context.
- Offers intuitive 3D layout and sizing of duct, wire and plumbing pipe via advanced parametric and standard catalog based features.
- Reduce time and errors with the production of synchronized 2D drawings via automatic extraction from a 3D master model.
- Provides advanced collaboration analysis tools allowing interference detection within systems design and between systems, layout and structures to detect and eliminate all design and construction conflicts within a 3D virtual model.
- Advanced analysis tools for code requirement verification such as ensuring minimal clearances.
- Shorten design cycles with the ability to seamlessly iterate and enhance designs.
- Support of industry standard translation formats, including DWG/DXF, IGES.



# GT Digital Project–Knowledge Templates

## OVERVIEW

Provides utilities to develop libraries of intelligent design templates for reuse across multiple projects. Knowledge Templates can be instantiated with the Designer products.

GT Digital Project – Knowledge Template provides utilities for developing ‘intelligent design templates’ for reuse across multiple projects. Knowledge Template builds on GT Digital Project’s V5 foundation, capturing design operations into libraries of reusable, reconfigurable, intelligent design components. When instantiated in project models, Knowledge Templates will self configure to address the unique geometric contexts. They can be stored and organized into catalog sets which can be shared. The functionality allows specific designs to be captured as operation sets, complete with parametric dimensional variables, geometric and functional constraints and feedback information. The instantiation of multiple knowledge templates can be automated to support generative design and rationalization practices.

## Benefits

- Capture the design intent
- Guarantees the run-time adaptability
- For CAD managers
- For Advanced users
- Only GT Digital Project: Designer needed for the run-time

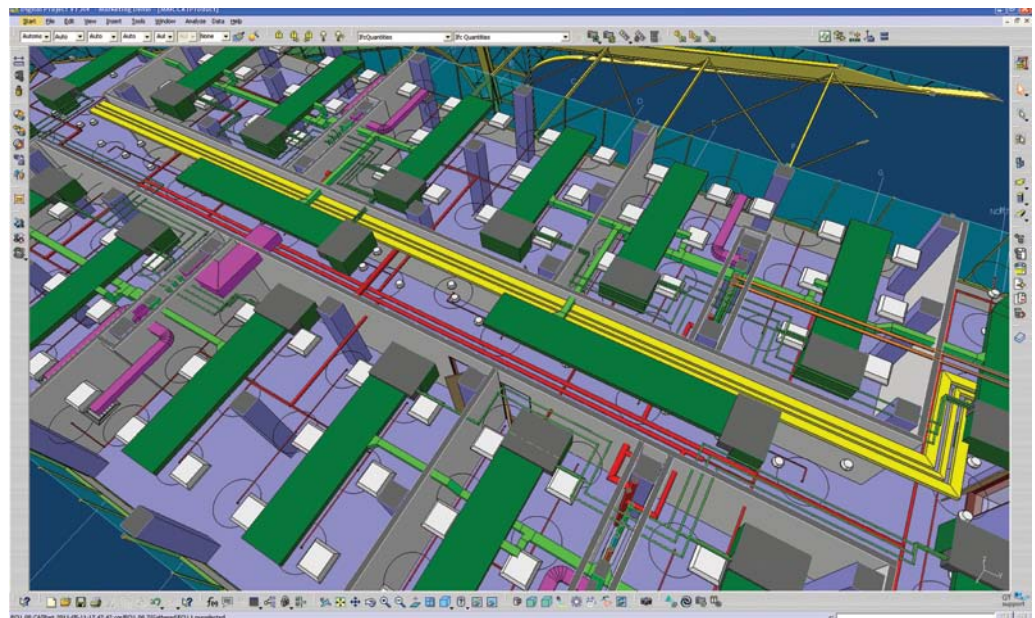
## Features

### Knowledge Templates

- Supports user development of intelligent building components
- Provides encapsulation of component objects’ internally and operator exposed behaviors
- Allows repurposing of developed geometry for different users and projects
- Provides utilities for developing project accessible object libraries

### Knowledge Patterns

- Automate the generation of repetitive design structures, while enabling differences between each instance of the structure



# GT Digital Project–Knowledge Adviser

## Overview

Provides real-time checks and rules that can be built into intelligent component libraries developed with Knowledge Template. Rule sets can be automatically applied in the Designer product.

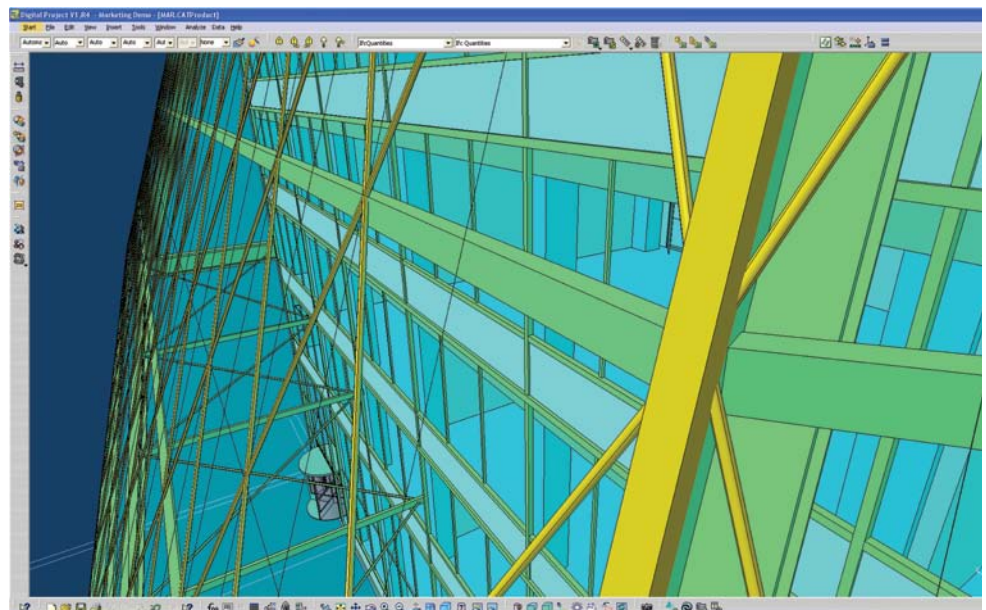
Knowledgware is one of the main core V5 technologies used by GT Digital Project, controlling all aspects of parametric functionality including the creation of parameters, formulas and measurements. GT Digital Project - Knowledge Adviser builds on this functional core to allow the advanced control and manipulation of parametric components and features. Knowledge Adviser functionality gives access to the Knowledgware engine beyond the basics-- including the ability for a parametric-associative design to check for the validity of a geometric configuration or parametric value against a user-defined set of rules and even the ability to make decisions depending on certain design-dependent conditions. The ability to control designs as rule-based systems allows users to define their designs as self-controlling schemas which are able to adapt and validate themselves against existing or varying geometric or parametric conditions.

## Benefits

- Reduces risk of errors and improves productivity
- Monitors model changes and keeps designs consistent

## Features

- Feature-Level Parameters and Parameter Sets
- Artificial Intelligence
- Checks
- Rules
- Reactions
- Scripting Features
- Knowledgware Language®
- Visual Basic (Embedded)®



# GT Digital Project – Product Engineering Optimizer

## OVERVIEW

GT Digital Project – Product Engineering Optimizer allows users to explore design alternatives and accurately optimize designs utilizing complementary tools: Design of Experiments and Design by Goal. A natural and efficient way to optimize designs driven by performance goals and explore multiple options, which helps to dramatically reduce the number of design iterations..

## Benefits

- Accelerates Exploration of Design Alternatives through the use of Design of Experiments with numerous combinations of design parameters, such as lengths, orientations and deformations, it can be difficult to quickly assess and determine the best design configuration for multiple performance and aesthetic goals. Product Engineering Optimizer makes assessing design configurations easier by enabling users to perform virtual experiments, testing as many parameters as required.
- Design of Experiments allows users to evaluate interactions between parameters, make parameter predictions and identify which parameter is the most influential Design of Experiments allows users to estimate an optimal design with a few computations and also perform better, faster optimizations. Design of Experiments dramatically reduces the number of design iterations, avoiding costly redesign and increasing productivity.
- Optimize designs for multiple disciplines and goals. Product Engineering Optimizer helps define optimization targets and means for multidisciplinary specifications. Objectives, captured interactively, drive the system to determine an optimal solution for designs with many variables and criteria. Objectives are embedded into V5 documents and leveraged through sharable, integrated and automated goal-driven specifications. Real-time feedback and outputs allow for immediate assessment or analysis.
- Fully integrated in the V5 architecture as part of the native capacity of V5 products and architecture to dynamically capture design specifications, Product Engineering Optimizer delivers a unique means to specify objective-driven specifications. As an integrated product, Product Engineering Optimizer can be used in conjunction with all other V5 products to increase design performance.

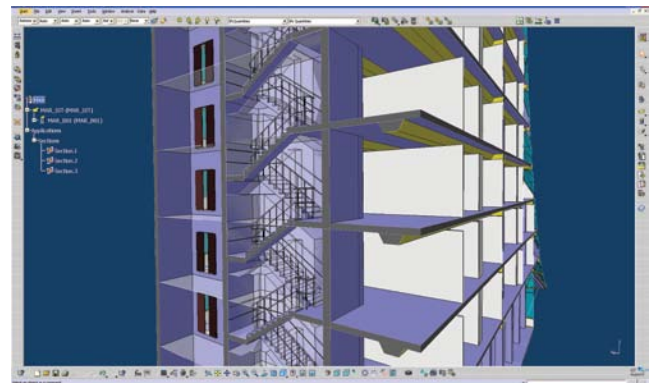
## Features

### Knowledge Templates

- Quickly and easily perform virtual experiments testing a variety of parameters
- Define cause-effect relationships between parameters
- Identify key parameters

### Multi-Discipline and Multi-Goal Design Optimization:

- Capture optimization intent through a variety of interactions
- Multiple optimization options and computation termination criteria
- Optimization progress bar display provides immediate feedback and control
- Real-time feedback and customizable outputs deliver an immediate optimization assessment
- Optimization batch mode capabilities





# GT Digital Project – Knowledge Expert

## OVERVIEW

Infrastructure application for developing expert systems, based on AI technology, enabling automatic verification of building construction codes and triggering of specific project rules.

As part of the native capacity of the V5 products and architecture to dynamically capture design specifications, GT Digital Project – Knowledge Expert (GT-KWE) delivers a unique way to specify practice rules and checks which must be employed throughout projects to ensure compliance with best practices. These rule bases capture and apply knowledge processes such as compliance to standard codes or client requirements. They also allow the automatation of proprietary practices in design validation and correction. Generated reports allow end-users to better identify violations of standards and implement necessary corrections.

## Benefits

- Captures and standardizes architecture and construction knowledge. Knowledge Expert lets users define as many generic rule and check specifications as needed for and between all classes of GT Digital Project objects. These expert rules and checks are not embedded in a unique design and can therefore be used to automatically monitor the actions of any designer throughout the company. As geometry is created or changed, the system assists the designer by using the expert rules and checks to ensure compliance with practice and project standards. When a rule or check is violated, corrective actions can be recommended or automated using VBScript macros, texts or links to URL files.

- Organizes corporate knowledge for wide deployment. Expert rules and checks are stored in GT Digital Project documents. Rules are classified in rule sets that are part of a rule base. This structure allows different sets of rules and checks to be set up for different design or construction processes. Knowledge Expert documents can also be stored in catalogs and applied to models in batch mode.
- Shares corporate standards throughout the enterprise for better quality. Once know-how is captured and stored, Knowledge Expert allows the standard to be spread across the enterprise. Designers are assured of the consistency of their design with corporate standards and best practices. The risk of errors is reduced, improving productivity as the user works toward an optimized design while focusing on the best approach for the company.

## Features

- Captures design rules in Visual Basic or V5 Knowledgeware languages
- Check design rules and codes (Checks)
- HTML or customizable XML reporting
- Automatic design corrections (Rules)
- Integration with third party solutions (Q-Checker and iCHECK)
- Easy management and maintenance of company and project knowledge
- Benefits from full integration with other Digital Project applications

# CATIA Step Translator

## Read and write data in STEP AP214 and STEP AP203 data formats

### Overview

CATIA STEP Core Interface helps users working in a heterogeneous CAD/CAM environment to exchange data through a neutral format. This utility allows users to interactively read and write data in STEP AP214 and STEP AP203 data formats allowing reliable bi-directional data exchange between dissimilar systems. To facilitate access to data, CATIA V5 offers a homogeneous user interface for all supported formats, using Windows-compliant user interface controls and automatic recognition of the STEP file type.

### Benefits

- Supports for Application Protocol
- Access to STEP files
- Supports of geometry and assembly structure
- Transfer quality
- High data transfer performance

### Features

- Supports for AP214 and for AP203 including Edition 2
- Supports geometry and assembly structures
- Ensures the transfer quality and reliability
- High data transfer performance
- Interactive and batch transfers

# CATIA STL Translator

## Helps to generate and repair meshes for rapid prototyping machines marking with STL files as input

### Overview

Companies need to have intuitive tools to quickly transform their 3D virtual models into real physical prototypes, in order to evaluate the quality, the ergonomics or the aesthetics of their design.

CATIA STL Rapid Prototyping creates meshes in a fast and accurate way by tessellation of CAD data. It allows the import of existing STL files, the display of meshes and the analysis of their quality. The product offers advanced tools to improve the quality of meshes by local editing of triangles, by hole filling or by local or global re-meshing. In addition, it allows the creation of thin offsets to obtain a watertight solid and the split and merge of meshes. The meshes can be exported as standard binary STL file for rapid prototyping machines.

### Features

- Accurate Tessellation
- STL Import
- Smart & advanced tools to manipulate meshes
- Thin Offset Creation
- STL Export

### Benefits

- Quickly and easily create quality STL files directly usable for Rapid Prototyping
- Benefit from an integrated workflow
- Optimize the quality of STL data produced
- Save time using CATIA STL Rapid Prototyping
- Take advantage of the complete CATIA Design environment

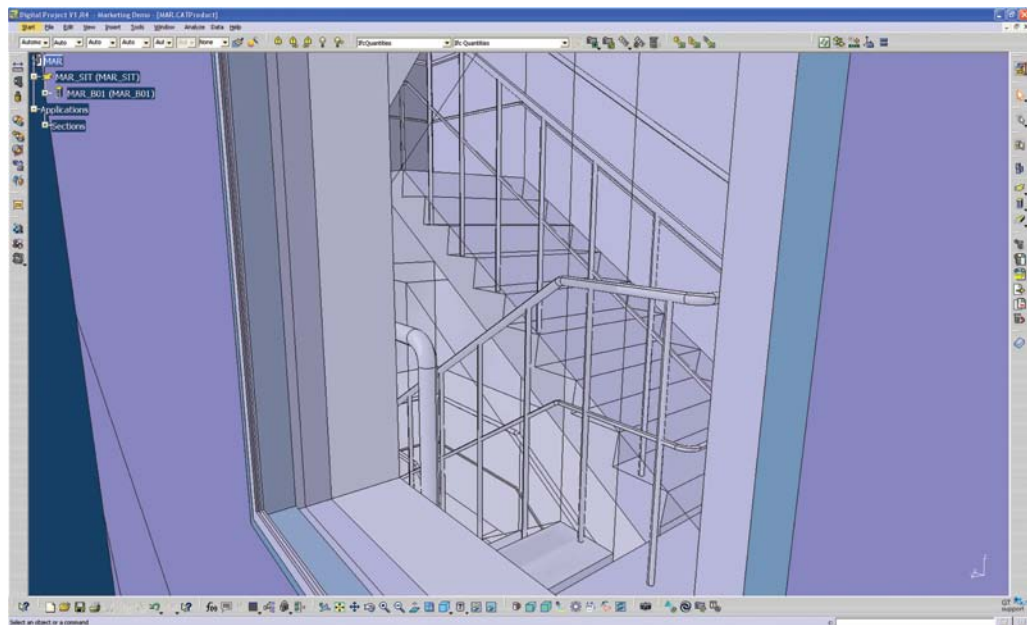




Image Copyright Gehry Technologies



## Delivering Best-in-Class Products



Virtual Product Design



Information Intelligence



3D for Professionals



Dashboard Intelligence



Realistic Simulation



Social Innovation



Virtual Production



Online 3D Lifelike Experiences



Global Collaborative Lifecycle Management

---

Dassault Systèmes, the 3DEXPERIENCE Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 150,000 customers of all sizes, in all industries, in more than 80 countries. For more information, visit [www.3ds.com](http://www.3ds.com).

---

### Europe/Middle East/Africa

Dassault Systèmes  
10, rue Marcel Dassault  
CS 40501  
78946 Vélizy-Villacoublay Cedex  
France

### Asia-Pacific

Dassault Systèmes  
Pier City Shibaura Bldg 10F  
3-18-1 Kaigan, Minato-Ku  
Tokyo 108-002  
Japan

### Americas

Dassault Systèmes  
175 Wyman Street  
Waltham, Massachusetts  
02451-1223  
USA

Visit us at  
**3DS.COM**

---

