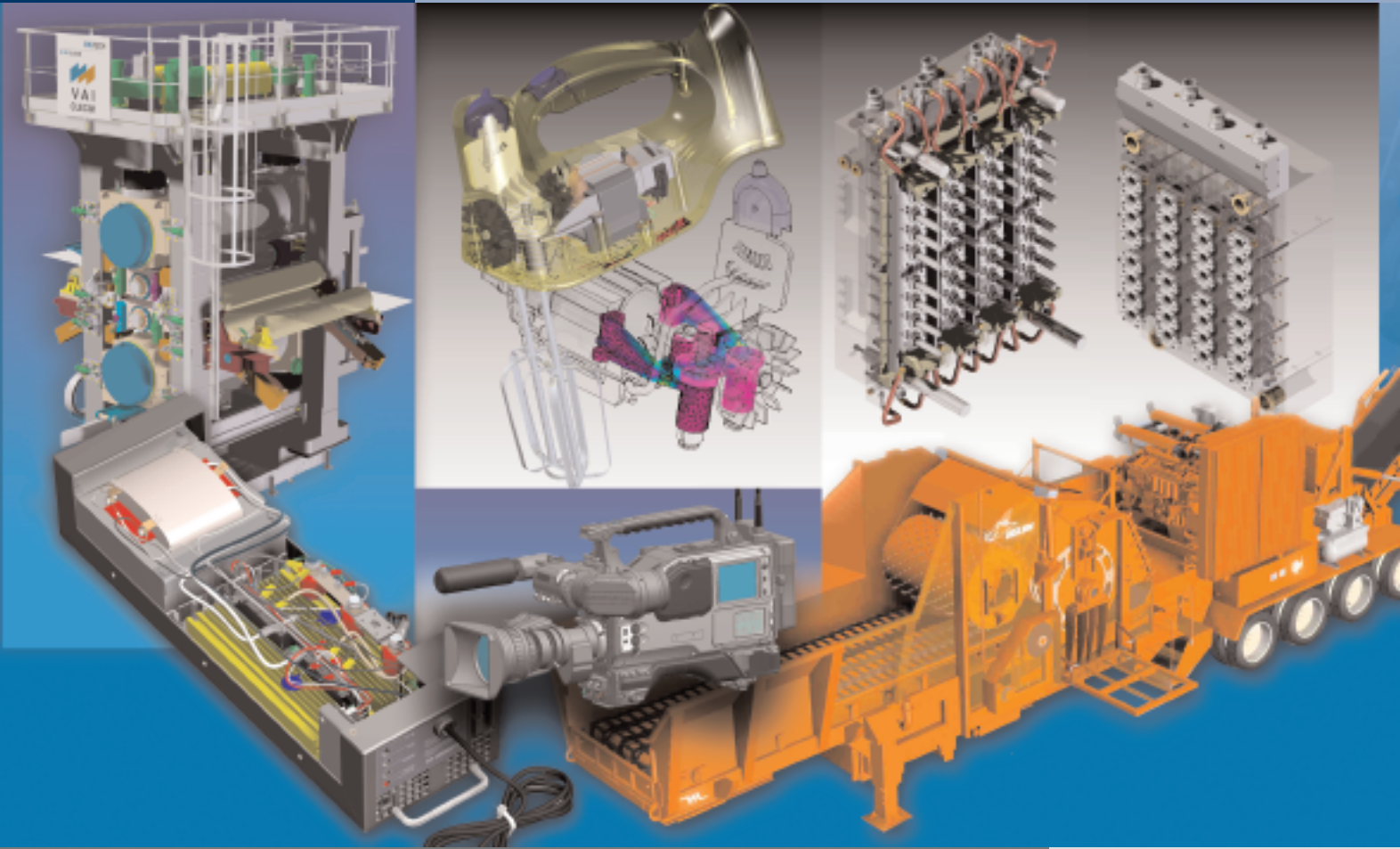




## Solid Edge

UGS


[www.solidedge.com](http://www.solidedge.com)



Solid Edge® from UGS is powerful 3D CAD software that allows manufacturing companies to transform their process of innovation and achieve competitive advantage through cost reduction, while increasing top line revenues. Embedded and scalable design management capabilities complement Solid Edge's superior core modeling, design validation and process workflows to greatly ease the growing complexity of product design.

# SOLID EDGE





Solid Edge is an industry-leading mechanical design system with exceptional tools for creating and managing 3D digital prototypes. With superior core modeling and process workflows, a unique focus on the needs of specific industries, and fully integrated design management, Solid Edge guides projects toward an error-free, accurate design solution.

Solid Edge modeling and assembly tools enable your engineering team to easily develop a full range of products, from single parts to assemblies containing thousands of components. Tailored commands and structured workflows accelerate the design of features common in specific industries and you ensure accurate fit and function of parts by designing, analyzing and modifying them within the assembly model. With Solid Edge, your products come together right first time, every time.

Solid Edge is the only mainstream mechanical system that merges design management capabilities with the CAD tools that designers use every day. Solid Edge customers have a choice of scalable product data management solutions that manage designs as quickly as they are created. Practical tools for managed collaboration help to better coordinate design team activities and remove the errors that result from miscommunication.

Product and process complexity is a growing concern for manufacturing organizations. Thousands of companies around the world have come to rely on Solid Edge to battle this increasing complexity head-on. Taking advantage of Solid Edge's family of modular and integrated solutions, they are first to benefit from the CAD industry's most functional innovations, first to complete their designs, first to market with an error-free product.

## Fast, flexible component modeling

### Superior modeling

Solid Edge is built on a foundation of superior core modeling and process workflows that help engineers design more rapidly by modeling parts more efficiently than other CAD systems. Solid Edge harnesses the power of Parasolid® – the modeling kernel owned and developed by UGS and, at more than a million licensed seats, the de-facto standard for 3D mechanical CAD. Highly innovative parametric modeling tools allow designers to quickly create basic shapes and easily add common mechanical features like holes, rounds and chamfers, as well as more complex geometry such as draft angles, lofts and helical features. And, for designers of more “stylistic” shapes such as those prevalent in consumer products and many other industries, Solid Edge’s revolutionary Rapid Blue technology provides shape design tools that have enormous power and flexibility, while remaining easy to implement and use.

### Rapid Blue: A new paradigm for shape design

Solid Edge boosts design productivity for complex geometry with exclusive Rapid Blue technology. With Rapid Blue, you get the shape *you* want, not the one the CAD system wants to give you. Shape preserving curves retain your original shape even through complex edits. Blue Dot editing introduces an industry first by addressing order dependency and providing significantly more freedom and control for evaluating and manipulating shapes in real time. Complemented by a variety of new process-



oriented tools for shape design and dynamic editing, Rapid Blue shatters the barriers of traditional “history based” surface modeling. With significantly fewer steps to create and edit complex shapes, you can evaluate more alternatives in real time and get the design you want.

### Process specific features

Solid Edge boosts design productivity of complex geometry with tailored commands and structured workflows that help you design much more quickly than general-purpose modeling tools. Process specific features are model features that represent forms and functions common in specific industries, such as web networks for plastic parts. Process specific features have refined capabilities, streamlined to perform with minimal user interaction.

Solid Edge’s “super features” take this concept to a new level. Features such as cooling vents typically require the creation of multiple profiles and features and are traditionally cumbersome or impossible to model. With Solid Edge, they are created with a single command.

### Industry-leading sheet metal

Sheet metal is a core design capability of Solid Edge, with support for the entire design-through-fabrication process. From streamlined modeling commands that are tailored to the unique needs of sheet metal design through flat pattern development and the creation of engineering drawings, Solid Edge delivers the most advanced sheet metal CAD package available.



# Comprehensive digital prototyping

Solid Edge helps battle design complexity by creating functional 3D virtual prototypes that help you optimize and differentiate your designs without having to produce expensive physical prototypes. Developed from the ground up with a core value of assembly centric design, Solid Edge supports both top-down and bottom up techniques, with unique tools to ensure original design intent is captured, stored and maintained throughout the complete design process.

## Unsurpassed productivity for large assemblies

Solid Edge easily tackles large assembly models that are fundamental to mechanical design. Solid Edge customers are regularly creating massive assemblies, topping more than 100,000 parts. Lightweight and simplified part representations and powerful display and selection tools, make it easy and practical to work with assemblies comprising thousands of parts. Solid Edge enables you to divide design tasks among team members, while Insight manages updates and changes to ensure the final product can be manufactured on time and right the first time.

## Systems design: capturing and maintaining design intent

With Solid Edge's unique Systems design capabilities, you can focus not only on how parts fit together, but also how components function and interact. You create intelligent, functionally realistic models that emulate real-world situations. Systems Libraries allow users to define and store sets of parts, features and constraints for re-use as a fully functional system in future projects. Critical relationships are captured and re-used, material is automatically added or removed from related components to ensure correct placement, moving parts maintain their pre-defined paths and loads, while sensors monitor critical distances and other variables that will affect the desired performance of the system. Also unique to Solid Edge is the concept of alternate components. By defining a component as having alternate choices, you can easily replace or swap components within the assembly to test variations. This same technology gives you the ability to dynamically configure Family of Assembly members during placement. An enormous time saver, you can choose a discreet combination of component choices "on the fly," without having to predefine every possible variation in advance.

## Practical design analysis

Pressure to reduce costs and improve quality are driving the growth in the use of digital simulation throughout the product lifecycle. By moving analysis to an earlier stage in the design cycle, Solid Edge users can be sure designs are optimized, reducing costly prototypes and testing.

Created specifically for design engineers, Femap Express provides preconfigured, best practice, process guidance to the user for fast, accurate finite element analysis (FEA). Using the same process based approach found in other Solid Edge capabilities, finite element technology is presented to the user in an easy-to-follow workflow and detailed analysis tasks are undertaken within a single Solid Edge window.

For more detailed and advanced analysis, Solid Edge models can be associatively passed to Femap. Femap from UGS is the world's leading window's-based engineering simulation tool for FEA. Engineers worldwide use Femap to model and simulate everything from simple solid components to entire spacecraft assemblies throughout a broad range of engineering disciplines. From simple linear static analysis right through to advanced solutions-based computational fluid dynamics, engineers and analysts use Femap to virtually simulate a complete range of product behavior before committing to expensive product development plans.

## Hybrid 2D/3D design: the right tool at the right time

With the ever-increasing complexity of product designs, many remaining 2D users are finding they can no longer do their job with 2D alone, but also recognize that 2D is a useful and efficient way to perform some aspects of the design process. At the same time, experienced 3D users are recognizing the benefits of doing more upfront work, such as machine layout, in 2D, before committing to complete virtual mock-ups. As such, both groups seek a design system that incorporates both technologies effectively, allowing the use of the right tool for the right job at hand while continuing to keep all geometry in sync. With Solid Edge's unique 2D/3D hybrid design capabilities, designers can use the best tool for the job as required.

## Zero D: encapsulating the design process

Many design processes follow a workflow of first establishing a basic product structure, utilizing new and existing 2D layouts to create a concept and moving to 3D only when appropriate. Solid Edge offers unique capabilities to encapsulate this valuable workflow. Solid Edge's "Zero D" approach lets you define the key elements of a product structure, organizing the major components and subsystems before any geometry is committed to paper. From these "virtual components", you can generate preliminary bill of materials (BOMs) and reports, such as cost estimations, without have to wait for the fully modeled 3D assembly. You can easily carry out the next logical step of assigning 2D layout geometry to the virtual components or positioning existing 3D components within the 2D layout. Once the conceptual structure is complete and is ready for more detailed design to begin, a single command populates the structure with real part and subassembly files and you can begin to work with the geometry to develop the detailed 3D mockup.

## Speeding digital prototypes with process applications



Solid Edge further boosts design productivity with specialized environments that embody engineering process knowledge in tailored commands and structured workflows. These process-specific applications take the complexity out of common engineering requirements and help you develop complete digital prototypes much more quickly than general purpose CAD modeling tools.

**Frame design:** Solid Edge speeds the development of rigid frame structures, beginning with intuitive 3D sketching tools that allow you to quickly define the frame skeleton. Standard structural cross-sections can then be selected and Solid Edge automatically creates the 3D model of the frame, using highly intelligent routines to place each structure member in the correct position and orientation. Automated cut lists for BOMs are available for downstream processing.

**Weldments:** A customized command set in Solid Edge accelerates the design of weldments. The weldment environment assists in defining the constituent parts of weldments, as well as weld beads, pre-weld surface treatments and machining operations after the welds are applied. Automated BOMs are available for each weldment and Solid Edge documents the entire weldment manufacturing process, with component drawings as well as pre-weld and post-machining views.

**Piping and tubing:** Solid Edge XpresRoute is an integrated add-on package that eases the design of routed systems. A comprehensive set of design tools help designers quickly route and model piping and tubing in Solid Edge assemblies. Designers can easily create a 3D path for the routed components to follow and the tube or piping system is created along the path segments, using specified attributes such as size, color, extents and end treatments. For piping systems, 3D pipes, fittings and components are automatically positioned and correctly oriented upon population. All components are fully associative and, when the assembly model is modified, automatically adapt to design changes. Accurate cut lists and component BOMs can be created and Solid Edge XpresRoute automatically produces bend tables for use with tube bending machines.

**Wire harness design:** Solid Edge wire harness design allows for collaboration between electrical and mechanical design teams, providing integration between popular electrical wiring design

packages for electrical circuit simulation and Solid Edge, to create a complete digital mock-up. With Solid Edge, design engineers can develop and prove their designs using electrical prototypes and then automatically complete the physical cable and wire paths and routing within Solid Edge using a dedicated process-driven environment. The Wire Harness Design package is equipped with a full suite of tools that allow manual intervention for wire creation, quick editing of the automated process, and convenient harness design to those without access to electrical wiring and design packages. Cable and wire cut length and attributes reports are provided in each workflow.

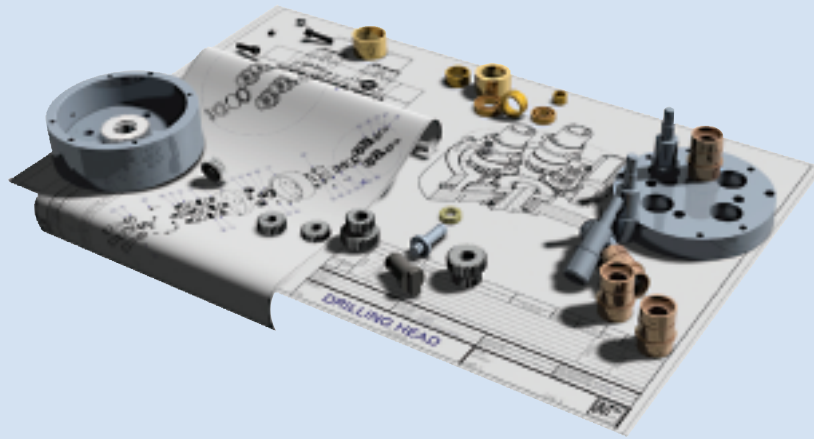
**Standard parts:** Solid Edge Standard Parts is a powerful parts management system that allows designers to define, store, select and position commonly used parts – like fasteners, bearings, pipe fittings and structural steel members – quickly and efficiently, enabling rapid and precise completion of 3D assemblies. With Solid Edge Standard Parts, companies establish and share their own standards, beginning with the parts delivered with Solid Edge or the optional libraries, allowing designers to concentrate on creative design and not on redundant modeling tasks.

**Photorealistic and artistic rendering:** Virtual Studio+ sets a new bar for photorealistic rendering capability and performance. Virtual Studio+ extends the Virtual Studio environment that is delivered with every copy of Solid Edge, adding a huge selection of material libraries, backgrounds and foregrounds, textures, scenery and light sources. Virtual Studio+ also includes unique artistic rendering for creating a pencil drawn, cartoon, or black and white shaded looks, offering Solid Edge customers a full range of rendering options for concept reviews right through to promotional materials.

**Mold design:** The Solid Edge Mold Tooling application provides a powerful automated workflow that makes it fast and easy to design plastic injection molds. Standard component libraries and capabilities support the design of multi-core, multi-cavity plastic injection molds of unlimited size, including complex 3-plate and stripper-plate molds. For mold manufacturers, the Solid Edge Electrode Design application guides users through a logical step-by-step workflow to develop and document single or compound electrodes.



## Production-ready drafting and documentation



Solid Edge contains an unmatched set of capabilities for the 2D documentation process, with excellent drawing layout, detailing, diagramming annotation and dimensioning controls that automatically comply with the mechanical drafting standard you select.

### Streamlined drawing creation

Solid Edge automatically creates and updates drawings from 3D models, quickly creating standard and auxiliary views, including section, detail, broken and isometric views. You can choose from a number of different display options, such as shaded, to ensure your documents communicate their intent as clearly as possible. As changes are made to parts or assemblies, associated drawings update automatically.

Solid Edge's comprehensive dimensioning and annotating tools enable you to create fully detailed drawings remarkably fast. Practical and intelligent dimensioning and annotation tools mean you can create fully dimensioned views in seconds. With Solid Edge, you have full control over every element of your drawings, so you know that they meet the requirements of organizational and international standards.

And, unlike other 3D-only products, Solid Edge lets you create 2D drawings from scratch or continue to make full use of your existing 2D legacy data. Intuitive wizards provide robust translation of existing 2D files such as AutoCAD, while 2D drafting tools not only emulate the workflows you already know but offer additional capabilities as well. Solid Edge also provides a familiar process for generating detail drawings from 2D layouts. Similar in concept to the model and paper space methodology in other 2D products, you develop 2D layouts at 1:1 scale and then create multiple detail views of the layout on separate drawing sheets. Each view can be scaled as required, while still maintaining correct dimensions and annotations. Any changes to the original 2D layout are automatically reflected in the detail views.

### Documenting the largest assemblies

Solid Edge dramatically accelerates the production of assembly drawings by automatically creating exploded views, balloons, parts lists and bills of material for models of any size. Solid Edge customers are routinely creating and documenting massive assemblies, taking advantage of innovative management techniques for drawing view generation. You can place drawing views based on a search query and turn off all the components that are not essential for the purpose of the view. With significantly fewer hidden lines to calculate, drawing views can be placed and updated much faster. It's just one of many tools that will reduce the time you spend creating and updating your assembly drawings.

Solid Edge tracks drawing changes that result from alterations of the 3D model, eliminating the need for manual checking. Prominent visual cues signal when drawing views and annotations are out of date and instructions direct the designer to find and amend potential drawing errors.

### Drawing automation with Quicksheet templates

Many manufacturing companies have standards for creating drawings, or common assemblies that require similar drawings to be made of each unique configuration. Using Quicksheet templates in Solid Edge, you can eliminate repetitive tasks by pre-defining a drawing layout and creating new drawings by simply dragging a different part or assembly into the template. All views then re-compute to create the new drawing, including any derived views such as sections or detail view, as well as parts lists and auto balloons.

### Diagramming

Solid Edge features drag and drop diagramming capabilities using industry-standard symbols (blocks) to automate the creation of 2D diagrams such as those commonly produced for electrical and P&ID layouts – without the need for dedicated schematic software. Blocks can support multiple occurrences of the same component and can represent alternate positions to ensure a correct bill of materials. Solid Edge delivers extensive built-in libraries and customers can use their existing block libraries with no translation necessary.

# Scalable design management

## A new standard in CAD/PDM integration

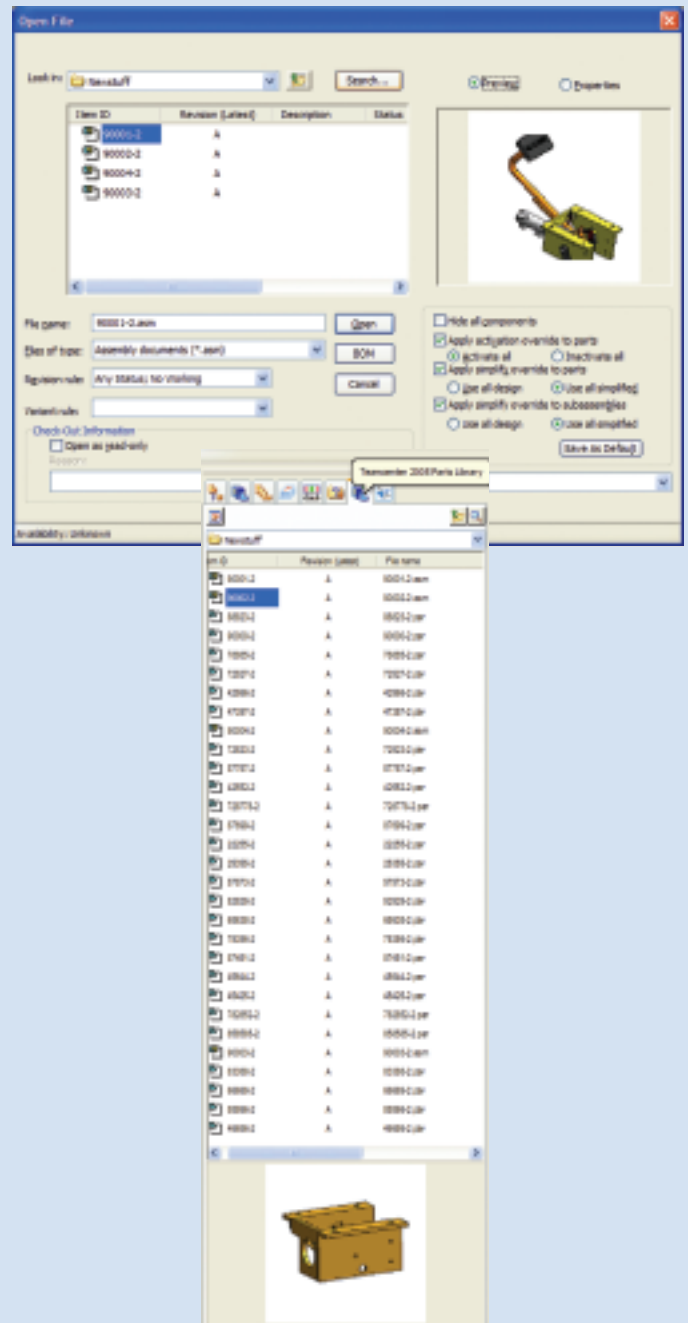
With its groundbreaking Insight technology, Solid Edge became the only mainstream mechanical system to merge design management capabilities with the CAD tools that designers use every day. Setting a new standard in CAD/PDM integration, Solid Edge builds on the success of Insight, letting customers choose from a range of easily scalable cPDM solutions. Solid Edge Insight continues to provide proven management capabilities for departmental teams. Solid Edge's integration with the powerful Teamcenter® platform provides seamless and transparent connectivity between the applications. All essential Solid Edge commands are encapsulated, making sophisticated data management functions easily available to the Solid Edge user. Solid Edge-related data is easily captured for re-use in future projects without placing an additional burden on the CAD user, while full scalability means customers can grow their cPDM solution to meet growing business demands without starting from scratch.

**Solid Edge Insight**, delivered with every seat of Solid Edge, is an innovative solution that seamlessly integrates CAD, design management and web-based collaboration into a single tool that is easy to implement and easy to manage. Insight removes the perceived barriers to successful PDM implementation, while providing the fundamental capabilities for well-defined workgroups to successfully manage Solid Edge data.

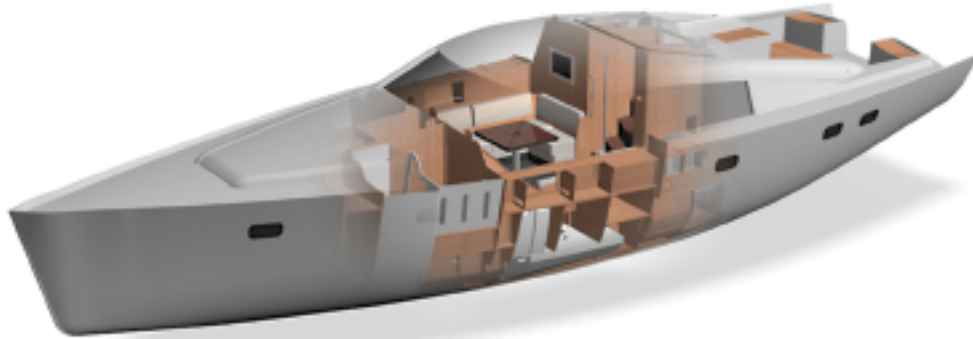
**Teamcenter Express** is a preconfigured, easy-to-deploy and easy-to-use product data management solution and the entry point into the powerful Teamcenter platform. Teamcenter Express is designed for mid-sized manufacturing companies that need to collaborate across multiple departments and across multiple sites, support multiple design systems and require additional work-flow capabilities to manage product release and ECOs. Teamcenter Express helps companies to transform the process of innovation by applying preconfigured best practices to everyday engineering tasks and processes

For companies requiring a complete PLM solution, Solid Edge provides a seamless CAD-centric integration with **Teamcenter Engineering**, the industry standard for cPDM. Teamcenter engineering provides flexible and configurable management solutions addressing the full PLM process in a global environment.

Unlike traditional PDM solutions, the Solid Edge integration with the Teamcenter platform makes sophisticated data management functions completely transparent to the designer. Both Solid Edge and Teamcenter are developed by UGS, ensuring a level of integration that is updated and synchronized with every release.



## Unparalleled returns through ease of adoption



Solid Edge Stream technology defined the model for CAD productivity that the industry copied. Stream/XP takes user interaction to a new level, making Solid Edge the easiest to adopt of all mechanical CAD products. More than just a “look and feel,” the Stream/XP interface removes the need for unnecessary decisions. Logical inference engines recommend next steps, intuitively consider required geometry and make recommendations about dimensioning and other operations based on cursor position and selected features for a given situation.

Enabling these unmatched levels of productivity is Solid Edge’s SmartStep ribbon bar. SmartStep guides you through the feature creation process, presenting design decisions in a logical sequence, filtering decisions that can be taken for granted and letting you easily review and change decisions to optimize your designs.

Through this unparalleled ease of use and adoption, you spend less time fighting the CAD system and more time focusing on your designs.

### Practical evolution from 2D to 3D

Solid Edge removes the roadblocks to the business and productivity benefits of 3D by making the evolution significantly less expensive and easier. Using Solid Edge’s simple four-step program, you can evolve from 2D to 3D design, with its inherently higher levels of productivity and corporate profitability, at a pace that makes most sense for your business. Solid Edge’s four easy steps to 3D are:

Step 1 – Get the job done today, while moving to 3D at your own pace

Step 2 – Quickly turn simple 2D geometry into intelligent, real 3D parts

Step 3 – Apply the power of the new Solid Edge hybrid 2D/3D design workflow

Step 4 – Move to full 3D design when ready

Solid Edge provides a proven set of focused tools and workflows to evolve through each of these steps as and when appropriate, while continuing to maintain the intellectual data, user education and process knowledge captured during the previous step.

### Maximize your investment with Solid Edge maintenance

At UGS, we understand that it is your goal to design great products – not necessarily to become an expert in the software you design with – so we make it easy for you to stay in touch and stay up to date. Solid Edge maintenance allows you to protect and maximize your return on investment, not just in the software, but in your people. An industry leading four-point security program provides you access to qualified technicians, software updates and technical publications, live and online. The Solid Edge maintenance program helps you achieve high levels of productivity with a minimum of inconvenience. Your engineers are always up to date with the latest Solid Edge enhancements, taking advantage of the best tools available to keep your company competitive.



## Unmatched interoperability with the extended enterprise



Interoperability with all PLM products is a UGS core vision. UGS has a clear and consistent development strategy, providing a level of integration unique to the industry. UGS has built a leadership position in allowing different products to co-exist and offering a safe, scalable approach for both design and data management.

If you are already using products from our portfolio, UGS is committed to providing functionality that allows Solid Edge to coexist within your organization and is already delivering unique tools to ensure your current investment in data will be preserved. Solid Edge allows you to leverage your existing intellectual capital without sacrificing your investment and, if relevant, migrate to Solid Edge at your own pace. And if you are new to UGS, rest assured that your selection of Solid Edge is completely scalable and extensible to both NX and Teamcenter when and if your business requirements change. Solid Edge extends your edge in interoperability and scalability.

### **NX and Solid Edge interoperability**

UGS' associative embedding technology is already production proven with many customers using combinations of NX™ and Solid Edge. Each product contains exclusive technology to allow part, assembly and attribute information to be passed between them. Solid Edge parts can be used in NX assemblies, with designers having the ability to update any of the parts from the assembly level in NX. Attributes such as hole information, which have been defined in Solid Edge, can be transferred to NX for use in machining, while NX parts can be opened in Solid Edge for downstream operations such as fixture design. Associative embedding ensures that updates to the original files will be recognized and acted upon in either system, keeping collaborative projects in sync at all times.

### **Migration from other products**

Solid Edge allows you to preserve your investment in data from other 3D systems, such as Pro/Engineer and Mechanical Desktop, with tools that let you update to Solid Edge at your own pace. Migration wizards step you through a simple and logical process for moving part, assembly and drawing information to Solid Edge, automatically checking files into the PDM system where relevant. This powerful and trustworthy approach can save you a significant amount of time and money when compared to alternative approaches for translating 2D and 3D data.

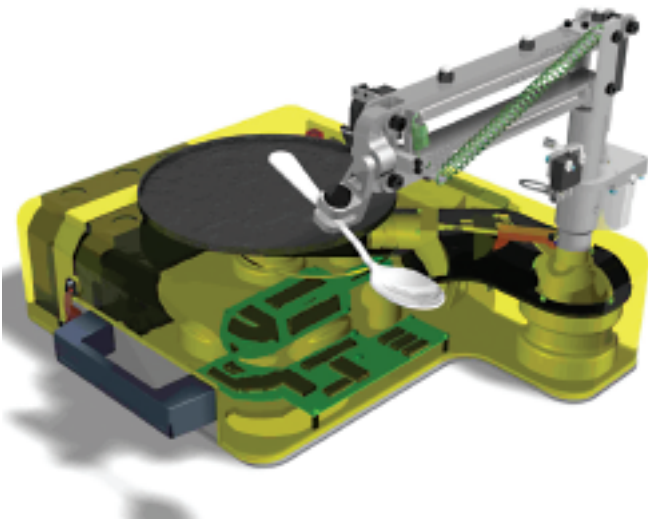
# The Solid Edge Voyager Program

Solid Edge is the cornerstone of a full cycle solution that helps transform mechanical designs into deliverable products faster and at lower cost. Working directly with leading CAE and CAM applications, Solid Edge provides all the design data needed to automate analysis and manufacturing. High-performance solutions are integrated with Solid Edge to eliminate redundant data creation and minimize delays between design, analysis and production.

World-class integration within the over 200-member-strong Solid Edge Voyager program includes:

- Analysis (FEA)
- Animation
- Consulting/customization
- Design tools
- Electromechanical
- Graphics cards
- Hardware
- Kinematics/dynamics
- Manufacturing
- Mold design tools
- PDM/E
- Product collaboration
- Publications
- Rapid prototyping
- Reverse engineering
- Sheetmetal fabrication
- Standard parts
- Surfacing
- Tolerance analysis
- Translators
- Viewing/render/redline

Visit [www.solidedge.com](http://www.solidedge.com) for a current list of Voyager program members.



## The Solid Edge community

With more than 200,000 Solid Edge seats delivered around the world, the Solid Edge community is a growing and valuable resource for staying abreast of latest developments and increasing your personal and company productivity.

### ► User groups

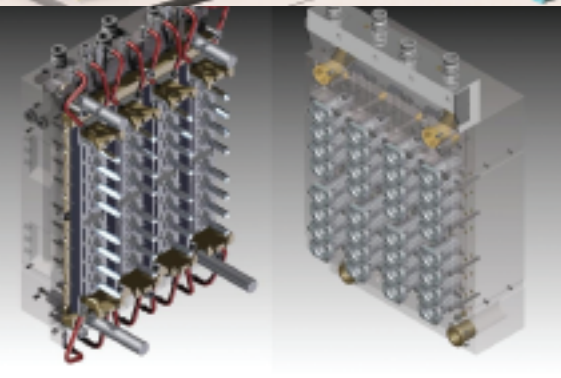
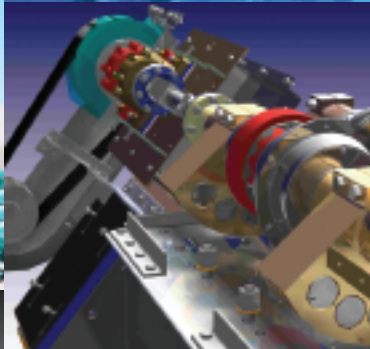
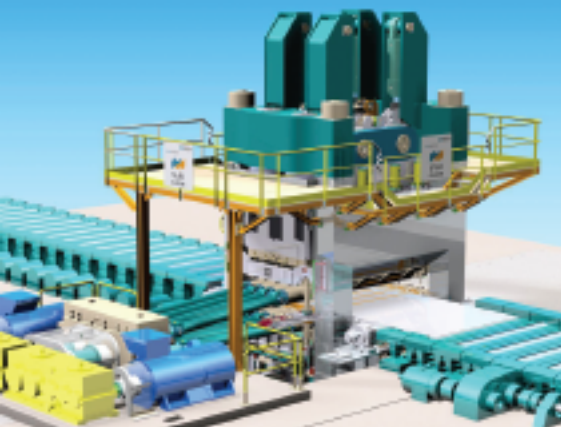
Solid Edge user groups (SEUG) are a great way of sharing ideas and learning from other Solid Edge users. Through collaboration you learn new ways to fully use Solid Edge to its maximum potential. Additionally you'll stay informed on the many educational workshops, hands-on training, new tips and techniques that are available. At your local SEUG meeting you'll find user presentations, Solid Edge roundtables, social events and much more.

### ► User certification

The Solid Edge Professional Certification Program is an opportunity for you to demonstrate your proficiency with Solid Edge and tell the world about it. By testing your skills against a documented UGS knowledge base, you can assure yourself, your company and others that you have the skills to use Solid Edge capably and efficiently. Once you pass the test you enjoy the privilege of proudly displaying a certificate of accomplishment, signed by UGS and the use of the UGS Solid Edge Certified Professional Logo on your resume and business card.

### ► The Voyager B2B supplier program

The B2B Supplier program is an online business-to-business portal linking Solid Edge based suppliers with over 10,000 companies worldwide. The program spans the many vertical industries and varied disciplines that Solid Edge customers compete in daily. The value of this program is simple; direct access to a wide range of qualified Solid Edge users. Suppliers can easily find potential customers, OEMs can quickly identify potential suppliers and both benefit from closer collaboration – maximizing time, reducing costs and better utilization of resources.





## About Solid Edge

Solid Edge from UGS is powerful 3D CAD software that allows manufacturing companies to transform their process of innovation and achieve competitive advantage through cost reduction, while increasing top-line revenues. A fundamental component of the UGS Velocity Series portfolio, Solid Edge delivers an exceptional return on investment for a low total cost of ownership. Embedded and scalable design management capabilities complement Solid Edge's superior core modeling, design validation and process workflows to greatly ease the growing complexity of product design. The extensive Solid Edge user community is comprised of designers at thousands of companies worldwide, including Alcoa, NEC Engineering and Volvo. The Solid Edge Voyager Program includes 200 integrated engineering software applications and computer hardware solutions. For more information on Solid Edge products and services, visit [www.solidedge.com](http://www.solidedge.com).

## About UGS

UGS is a leading global provider of product lifecycle management (PLM) software and services with nearly 4 million licensed seats and 46,000 customers worldwide. Headquartered in Plano, Texas, UGS' vision is to enable a world where organizations and their partners collaborate through global innovation networks to deliver world-class products and services while leveraging UGS' open enterprise solutions, fulfilling the mission of enabling them to transform their process of innovation. For more information on UGS products and services, visit [www.ugs.com](http://www.ugs.com).

### Solid Edge – [www.solidedge.com](http://www.solidedge.com)

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► For more information, contact your local Solid Edge representative: