Solid Edge for I-deas NX Series customers

The choice for I-deas® users seeking a value-based solution
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Interoperability between all PLM (product lifecycle management) products is a UGS core vision. We are strongly committed to moving our customers forward with the best available technologies, while preserving existing investments in both software and data.

The “Evolution of Excellence” program is designed to provide you with greatly expanded capabilities by blending I-deas® and NX™ to evolve a next generation product.

Through the ‘Evolution of Excellence’ program, I-deas customers are able to transition to NX as and when the time is right. Solid Edge is developed in parallel proving a cost effective easy to adopt system, which augments both high end products and addresses a market profile in its own right.

To further extend the options available to our customers and help you make the right choice for your business, UGS provides the distinct advantages of two CAD product lines: NX as a “high end” solution and Solid Edge as a “value-based” mid market solution. Section 2 of this document highlights the key differences between these brands.

Maintaining two separate brands ensures complete market coverage, while allowing UGS to more easily respond to the needs of our customers and the market. The result is a visible and continual advance in innovation throughout the two products, further strengthening your investment and giving you the confidence of knowing that, whichever UGS product you use, you will always have access to the best technology for your business.

The key to the “Evolution of Excellence” program is the UGS Open strategy, which provides an open PLM platform to deliver associative interoperability between UGS products: NX, I-deas, Imageware, Solid Edge and their associated CAM/CAE applications.

Solid Edge, UGS’ value-based, design solution, is a fundamental part of the UGS Open strategy. Functionality has been enabled in the latest versions to allow Solid Edge and I-deas to share data. The I-deas evolution program provides a safe and desirable path for our customers that will continue to need and use a high-end product. However, UGS accepts that some former I-deas customers may feel they could be better served with a value-based solution. If you are already evaluating a value-based solution, for cost or other reasons, then Solid Edge is a safe, robust and proven choice. Solid Edge allows you to leverage your existing I-deas intellectual capital and, if relevant, migrate to Solid Edge at your own pace – a unique, industry leading solution that only UGS can provide.

Using I-deas 9m2 (or later) and Solid Edge version 12 (or later), customers can exchange part geometry and assembly information between I-deas and Solid Edge. Direct access to parts and assemblies in the Team Data Manager (TDM) is enabled from ‘File/Open’ dialogs, avoiding the need to create separate export files as you would using other third party software products. Solid Edge customers also have access to a powerful translation wizard for automated migration of I-deas assemblies, parts, and their associated drawing files, and attributes, from TDM into Solid Edge.

This document will introduce you, the I-deas customer, to Solid Edge and the powerful options available for complementing your existing I-deas installation with Solid Edge and using the two systems together or migrating from I-deas to Solid Edge as you may require.
Solid Edge

Solid Edge is UGS’ premier value-based solution and has been an industry leader since its introduction in 1996. Designed “by engineers for engineers”, Solid Edge is the leading mainstream product for “managed design collaboration” – the combination of powerful solid modeling and practical built-in design management is simply unmatched by any other mainstream CAD product.

Rather than the geometry based “toolbox” approach of other mid market CAD products, Solid Edge offers powerful solid modeling through specialized toolsets that capture best practices and provide highly productive workflows that fit existing processes such as sheet metal, weldments, mold tooling, cabling and tubing.

Solid Edge Stream XP defines the basis for CAD productivity. A standardized, process oriented, user interface utilizes industry standard MS Windows standards that benefit our customers. Stream XP makes Solid Edge approachable and useable by “occasional” and expert user alike. Solid Edge is easy to implement and learn, meaning users very quickly become more productive with minimal disruption to existing projects. And, with the lowest cost of ownership of any mainstream 3D CAD system, Solid Edge is remarkably affordable and helps you realize the business benefits of 3D mechanical design and get the best return on your investment in CAD.

The following table highlights the key differences between the Solid Edge and NX brands, and clearly shows the advantages of UGS maintaining both a high-end and value-based solution.

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Solid Edge for I-deas customers
Solid Edge at a glance
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 helps guide your 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 of parts by designing, verifying and modifying them within the assembly model. With Solid Edge, your products come together right first time, every time.

Ease of adoption
Designed “by engineers for engineers,” Solid Edge is developed through advanced usability studies and direct user feedback, combined with real world experience. Apprentice mode with dynamic learning tools and live tutorials and Stream XP which uses a dynamic situational interface and clear process orientated workflows and Windows based ergonomics users quickly learn Solid Edge and delivers unparalleled performance and rapid return on investment to our customers.

Comprehensive digital mockup
Solid Edge helps battle design complexity by creating functional 3D virtual prototypes, also known as digital mockups, 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.

Massive assembly size
Structured storage techniques for memory management enables Solid Edge to activate parts only as required, to allow creation of massive assemblies (and their associated drawings) of unprecedented size for mainstream modelers. Auto simplification of large assemblies, paired with fast drawing view performance, enables design and documentation of digital mockups.

Systems design
The creation of digital mockups is at the center of almost all 3D design processes. However, where traditional assembly design focuses primarily on how parts fit together. Systems Design places additional emphasis on the function of a product and how components interact, thereby giving designers the power to advance beyond fit, to create intelligent, functionally (as well as physically) realistic models that emulate real-world situations. In virtual systems design, a group of interacting parts and sub-assemblies is modeled as a “whole,” with sufficient information to describe how components relate to each other and how they need to perform to meet design criteria. Critical relationships are captured and re-used, material is automatically added or removed from related components to ensure correct placement, and moving parts maintain their pre-defined paths and loads, while sensors monitor critical distances and other variables that affect desired performance.

System design – capturing and maintaining design intent
Part and subassembly fit and function automatically captured and re-used
Correct motion and physical contact captured and automatically maintained
Correct fastener stack selected from standard database
Subassemblies and parts dynamically configured to suit the task at hand
Define, store and re-use cohesive sets of parts, feature and constraints
Sensors monitor crucial distances and variables

A system is a group of interacting parts and subassemblies, each containing sufficient knowledge to describe how it needs to perform in order to meet the design intent of the product.
• **Systems libraries** are a group of parts and fasteners, details such as how they are positioned and location holes are captured and stored. When a system library is re-used, placement is simplified and holes are placed in adjacent parts.

• **Fastener systems.** Fastener system allows users to choose, for instance, two parts that need bolting together. By selecting the hole and the plate thickness for reference, the correct fasteners (nut, bolt, washers) are selected and placed into the assembly. If the holes or plate thickness changes, so do all the associated fasteners.

• **Standard parts and piping libraries** are an integrated add-on package for Solid Edge that provides online reference and automatic mechanical part modeling. Libraries are fully integrated with fastener systems.

• **Capture fit.** Allows parts to be taught how they are positioned, and stored with the part, speeding up subsequent re-use.

• **Design rule sensors.** Analogous to physical sensing devices, design rule sensors provide continuing feedback as a design develops; meaning live feedback of critical design criteria, reducing costly design flaws.

• **Motion analysis.** Solid Edge includes a built-in motion analysis that automatically builds analysis models so that designers can quickly and accurately simulate complex movement, detect interferences and animate assembly motion to identify and correct problems.

• **Adjustable assemblies.** Allow assemblies to be placed in multiple positional configurations, and automatically adjust to fit assembly conditions on placement.

• **Family of assemblies.** Provides the capability to create two or more unique assemblies where some parts and subassemblies differ between the individual assemblies.

**Speeding up digital mockups 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 mockups much more quickly than general purpose CAD modeling tools:

- Frame design
- Standard parts
- Weldments
- Photorealistic and artistic rendering
- Piping and tubing
- Mold design
- Wiring and cabling
Hybrid 2D/3D design
Not all design concepts totally lend themselves to be solved entirely in 3D. Solid Edge provides the flexibility to create a product structure before creating files or deciding their position. The unique hybrid 2D/3D design approach means engineers create virtual product structures using Zero D to mix and match real and virtual components with 2D sketches and 3D parts to design more efficiently.

Top down and bottom up design
Building components in isolation and then building an assembly from them is known as bottom up. Engineers commonly use this approach when re-using a lot of data from existing designs or start a new project. Top down allows designs to be continued using components already in position for reference.

Fast flexible component 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.

Evolve to 3D
Even if you are using I-deas primarily for 2D work, Solid Edge removes the roadblocks of moving to 3D by making the migration significantly less expensive and less difficult. Your 2D I-deas drawings can be directly translated to Solid Edge draft files and you can continue to work with them in Solid Edge. And, when you are ready to begin working in 3D, an intuitive ‘create 3D’ Wizard, will help you quickly turn your 2D geometry into 3D parts. The unique hybrid 2D/3D design tools, uses 2D drawings to drive for 3D layouts. Zero-D allows for virtual product structures to be created before committing to 3D. Engineers are able to get their job done today and transition to 3D at their own pace.

Production ready drafting and documentation
Solid Edge contains an unmatched set of capabilities for the 2D documentation process, with excellent drawing layout, detailing, annotation and dimensioning controls that automatically comply with the mechanical drafting standard you select. 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 or hidden line, to ensure your documents communicate their intent as clearly as possible. As changes are made to parts or assemblies, associated drawings update automatically, notification of revisions changes are displayed by the drawing view tracker.
Integrated design management

Effective design management is essential to ease the growing complexity of product designs. Solid Edge Insight 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 manages your valuable design data in secure vaults. Document check-in and check-out processes are seamlessly embedded inside standard Solid Edge file commands and Solid Edge provides continual and instant feedback on the status of files, their availability and who is working on them. These secure, SQL Server-based, vaulting features prevent unauthorized or conflicting changes and allow individual team members to confidently work on the same project, knowing that the components they are referencing are always up-to-date.

With Insight, design management is built directly into Solid Edge. It is not a bolt-on application. With designers working in parallel in a properly managed environment, changes are enacted efficiently and accurately in accordance with original design intent.

Insight provides secure vaulting of distributed product data – CAD models and drawings, related documents, and information about them – to help your design team quickly and easily find, manage, and re-use engineering information. Insight provides automated revision and engineering change management, and also manages the relationships between files and the product structure.

Using standard Windows information sharing technology, Insight’s built-in data management tools give you transparent controls for file check-in and check-out, and easy-to-use tools for managing engineering changes, tracking files, and maintaining links across the company’s network.

Insight’s patent-pending Smart Sync cache system provides a significant boost in system performance when you open or close large assembly files across the network.

As a result of designing with Insight, companies can expect to reduce engineering change orders (ECO’s) and their related rework by 50 percent or more, reducing cost, improving quality and decreasing time to market.

Solid Edge is also the only mainstream design product to leverage the collaboration and communication advantages of Microsoft’s .NET strategy. Insight.Net extends the power of Insight beyond traditional PDM, providing a unique solution for viewing parts, assemblies, drawings and product structure anywhere at any time.

Unlike complex proprietary offerings, Insight.Net leverages Microsoft’s .Net technology and is simple, cost effective and unobtrusive. With .Net connected software, information exchange with the growing number of players in your design process becomes effortless, keeping projects on track and below budget. The web components of Insight.net provide the tools for effective collaboration and communication at any point in the development cycle, allowing for early input from the complete team including customers, suppliers and internal manufacturing departments.

Customers who use both I-deas with TDM and Solid Edge with Insight find that the capabilities and processes map nicely between the two. And, recognizing that manufacturing organizations have diverse and ever-increasing requirements for leveraging design information, Solid Edge Insight is fully compatible and scalable with UGS’ market-leading Teamcenter portfolio.
Solid Edge and I-deas

UGS has built a leadership position in the area of interoperability between cad products, achieving a number of industry firsts with functionality that allows different products to co-exist. Direct access to parts, assemblies and drawings in the TDM is enabled from ‘File/Open’ dialogs, avoiding the need to create separate export files as you would using other third party software products. Solid Edge customers also have access to a powerful translation wizard for automated migration of I-deas assemblies, parts, AND their associated drawing files, and attributes, from TDM into Solid Edge. Our associative embedding technology is already production proven with many customers using both NX and Solid Edge. I-deas is known for its world-class analysis capabilities. Interoperability allows Solid Edge parts to be passed to I-deas for analysis, with full confidence that the data being analyzed is accurate and up to date. Some of the worlds most complex assembly models are designed and managed in NX, but even those models have component parts that, individually, may not require the capabilities of such a high-end system.

The philosophy is simple – to ensure the products work together, to allow our customers to maintain their investment in design data, and to develop complimentary solutions sets.

There are a number of scenarios in which Solid Edge and I-deas can co-exist, share data or migrate I-deas data to Solid Edge. An overview of each follows. A detailed technical guide is available for users who wish to implement any of these scenarios. Please ask your UGS representative for more information.

Browsing an I-deas database

Solid Edge users who have access to an I-deas TDM database can browse the database and open an I-deas file directly in Solid Edge. Users can select parts and assembly documents. Solid Edge documents are created from the exported TDM documents. The TDM Project/Library tree structure is automatically replicated by creating equivalent local folders.

Standalone Solid Edge users

For Solid Edge users who are not connected to a TDM database, an XPK (a structured storage, packaged migration file) file can be generated in I-deas and opened directly in Solid Edge. The XPK file allows Solid Edge to replicate the geometry, assembly structure, part names and colors from I-deas.
Solid Edge and I-deas interoperability

For applications requiring file interoperability, such as the creation of tooling fixtures for manufacturing I-deas parts, an associative link can be created and maintained in Solid Edge. Using intermediate Parasolid files, I-deas parts can be included in Solid Edge assemblies and the linked files are updated whenever changes are made to the I-deas file. One scenario is for downstream design work to be carried out by other departments, for example tooling jigs and fixtures. I-deas files are used in the Solid Edge assembly, and additional components are modeled around these parts. Geometry can be referenced and if an I-deas part is changed by the I-deas designer, solid edge will respond and update to the changes. Another scenario is where outside tooling specialists are responsible for making press or mold tools for example.

Modifications can be carried out in two main ways, depending on the departmental structure or if outside agencies are involved. Firstly models embedded in to Solid Edge, take advantage of an associative link. When a change is required, the modification is carried out in I-deas and saved, the intermediate files are overwritten. Solid Edge designers are automatically given and out of date notification, with options to update the file. On up date any associative parts are updated.

Direct editing

Another way to make changes to I-deas components within Solid Edge is to use powerful direct editing tools to make fast modifications, like realigning any misaligned holes or cutouts, adjusting draft angle or moving faces. Direct editing allows I-deas models to be changed. For example a tool maker may need to alter a hole size or radius, Direct editing will facilitate these changes quickly and efficiently by directly altering the 3D I-deas model. Although the changes described are some what subtle, more drastic changes can also be made, such as to move bodies or faces of a part, add draft angle by rotating a face, resize holes and rounds and even delete various entities and regions. Sheet metal components can be adjusted by changes to their bend angle and radius. Direct editing:

- Adds parametric relationships as 3D models are adjusted, even maintaining associative links across whole assemblies
- Is an ideal solution where quick design changes are required, outside of the main design pool
- Further enhances interoperability between UGS design products, by allowing changes to be made without access to the feature history or parametric data
- No need to native I-deas to edit I-deas parts
- Quickly modify complex Solid Edge models
- Makes 3D data useable, even when translated from neutral files like Parasolid, ACIS, STEP or IGES
Data protection – migrating to Solid Edge

The I-deas evolution program provides a safe and desirable path for our customers that will continue to need and use a high-end product. However, UGS accepts that some former I-deas customers may feel they could be better served with a value-based solution. If you are already evaluating a value-based solution, for cost or other reasons, then Solid Edge is a safe, robust and proven choice.

Solid Edge provides a powerful translation wizard for migrating I-deas assemblies, parts, drawing files, and attributes, from TDM into Solid Edge. If you have implemented Insight, your data is automatically imported as managed documents in Solid Edge, including automatic population of the relevant attributes from your TDM database.

Any easy to use wizard steps the user through a simple and logical process, to obtain the necessary information to connect to both the TDM database and, if relevant, Insight. Attributes from TDM are extracted and made available to the user so they can “re-map” these attributes to Solid Edge file properties. The user simply selects the TDM project and Solid Edge automatically gets the file properties from TDM, translates each document, and adds the properties to each corresponding Solid Edge document. The resulting Solid Edge files are then added to Insight if required.

This is a powerful and trustworthy approach that will save you a significant amount of time and money when compared to alternative approaches for translating 2D and 3D data. The I-deas migration wizard, along with the interoperability options, preserves your investment in I-deas data and lets you migrate to Solid Edge at your own pace.

Ease of adoption

Solid Edge Stream XP is a proprietary built-in user interface to increase design productivity. A dynamic situational inference engine, clear process orientated workflows and Windows based ergonomics speed up the execution of daily tasks and capture design intent.

Designed “by engineers for engineers,” Solid Edge is developed through advanced usability studies and direct user feedback, combined with real world experience. By forming a clear understanding of how engineers interact with Solid Edge at each stage of their design process, they accomplish more in less time. The implementation of Stream XP within Solid Edge delivers unparalleled performance and rapid return on investment to our customers.

This complements this highly productive user interface with Apprentice Mode. A collection of tools specifically designed to help new users learn Solid Edge quickly, while ensuring casual users are just as productive as their full time counterparts. Whether learning CAD for the first time or migrating from another system, command finder ensures engineers new to Solid Edge use the correct tools and cross reference familiar commands from other systems. Solid Edge is designed to have you up and running fast.
Solid Edge for I-deas customers

Summary: Why Solid Edge?
UGS is committed to helping you make the best choice for your business. If you believe your needs can be served with a value-based solution, then Solid Edge offers you a powerful and safe option. Using Solid Edge will allow you to leverage your existing I-deas data and migrate to Solid Edge if, and when, appropriate at an affordable price.

- **Low cost of ownership.** Affordably priced without cutting corners, Solid Edge lets you choose a cost effective design package to compliment I-deas where high-end analysis tools are not required.

- **Data management.** Even with its robust design capabilities and integrated design management, Solid Edge is extraordinarily inexpensive when compared to conventional CAD and data management solutions. Insight is included as a integral component of the Solid Edge CAD software.

- **Interoperability with I-deas.** Solid Edge offers two great ways to co-exist and augments any I-deas installation, either stand alone or accessing I-deas data through the TDM database. However, migration tools are in place to help migrate I-deas data into Solid Edge.

- **Data protection.** A powerful translation wizard is provided for migrating your I-deas assemblies, parts, drawing files, and attributes, from TDM into Solid Edge. As owners of the underlying I-deas technology, UGS will provides the industry's most reliable and complete translation options, including the ability to directly access TDM projects, models, assemblies, drawings and attributes.

- **Evolve to 3D.** A unique four step approach ensures engineers can get the job done today, while Engineers are able to get their job done today, and transition to 3D at their own pace. Legacy data is maintained and can be used to create 3D components. Unique hybrid 2D/3D design tools, uses 2D drawings to drive for 3D layouts. Zero D allows for virtual product structures to be created before committing to 3D.

- **Ease of adoption.** Designed by engineers for engineers, Solid Edge is developed through advanced usability studies and direct user feedback, combined with real world experience. Apprentice mode with dynamic learning tools and live tutorials and Stream XP which uses a dynamic situational interface and clear process orientated workflows and Windows based ergonomics users quickly learn Solid Edge and delivers unparalleled performance and rapid return on investment to our customers.

- **A strong focus on our customers.** UGS has always had strong focus on our customers, resulting in a better portfolio strategy to serve their needs. This focus leads us to create innovative solutions like Insight, and process specific features like wiring, that move our customers ahead of their competition. And of course our really strong focus on drafting and bringing 2D customers forward has remained strength of the product since the beginning. This software innovation is coupled with world-class centralized support, with regional accessibility that ensures that you are always within easy reach of the answers you need to remain productive.

Conclusion
Solid Edge is the leading value-based CAD software from UGS that can provide you with the design and data management tools that you need now and for the future, at a cost you can afford. Solid Edge is more than a modeling and drafting package, delivering unique engineering aids that help you reduce error related rework by 50 percent or more, so you can reduce development time and decrease costs.

UGS is committed to providing functionality that allows Solid Edge and I-deas to coexist within your organization, and is already delivering unique tools to ensure your current investment in data will be preserved. This industry leading interoperability is a unique solution that only UGS can provide.

Most importantly, Solid Edge allows you to leverage your existing I-deas intellectual capital without sacrificing your investment and, if relevant, migrate to Solid Edge at your own pace.

For more information on Solid Edge or I-deas interoperability or migration, contact your UGS representative or visit www.solidedge.com.
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.

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.

Solid Edge – www.solidedge.com

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