

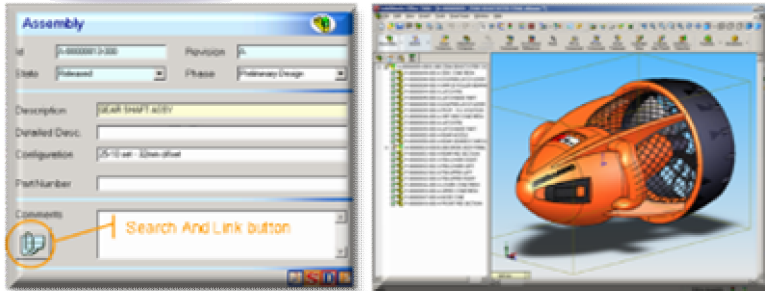
SmarTeam Design Express for Multi-CAD: SolidWorks

The fastest, simplest way to build your PLM on a solid foundation



SmarTeam Design Express for Multi-CAD

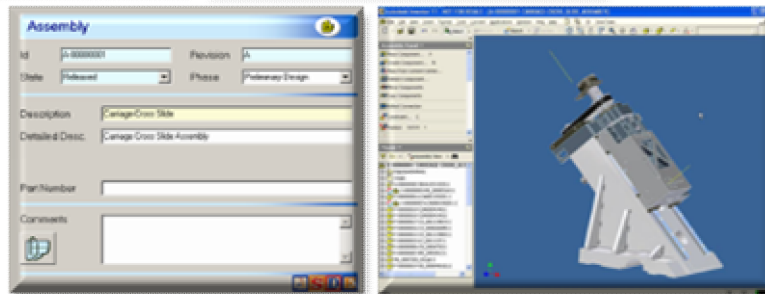
SolidWorks



Rich & flexible data model

Implemented in 10 days

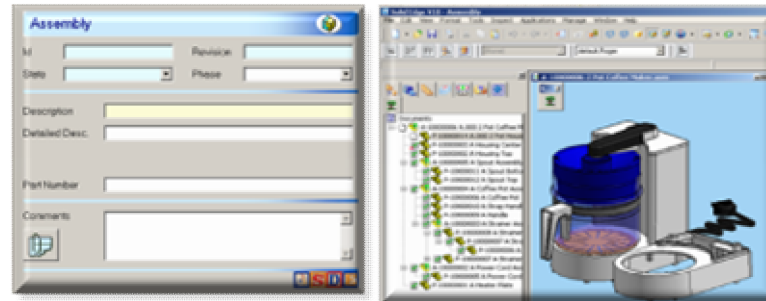
Inventor



Proven Methodology

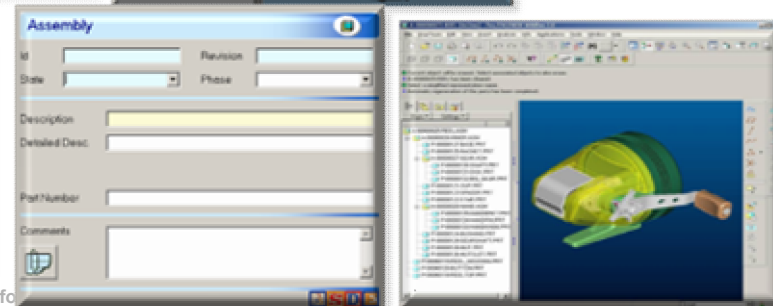
Robust Integration

SolidEdge



Scalable

Pro/E



Agenda

- 1 **What is SDE for Multi-CAD: SolidWorks?**
- 2 **How SDE Resolves your PDM Challenges**
- 3 **Customers**
- 4 **Key Differentiators**
- 5 **Typical Project Plan**
- 6 **Next Steps: Beyond SmarTeam Design Express**



1.1

The Power-Complexity Paradox



- ***SolidWorks®***, dubbed by *CAD Digest* “the arguable technology leader in the mid-range MCAD market” claims to offer speed, flexibility and unparalleled performance for designing large assemblies with tens of thousands of parts.
- According to *www.Solidworks.com*, “3D CAD provides tremendous power to the design engineer. Along with that power comes complexity and users are forced to become experts to leverage this power.”
- The power of parametric solid modelling, its ability to capture design intent, creates the “power-complexity paradox” (www.mcadonline.com)
- To collaboratively leverage the wealth of knowledge captured in each SolidWorks assembly and its inter-related sub-assemblies, parts and configurations, SolidWorks designers need sophisticated PDM tools.

1.2

What is SDE for Multi-CAD: SolidWorks?

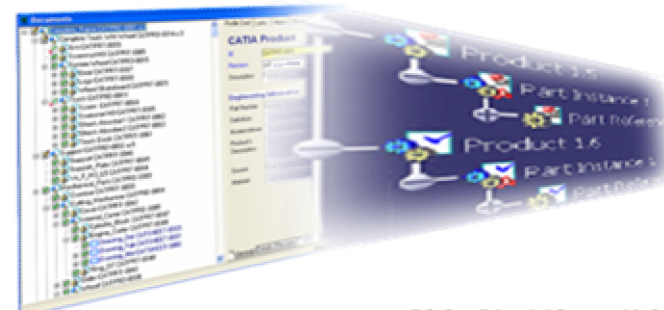
- ENOVIA SmarTeam is a Windows-based PLM system that at its core secures product data of all kinds in a robust database and enables your extended design team to easily control and manipulate that data
- SmarTeam Design Express is a **quick-start package** combining:
 - ✚ SmarTeam Editor and the powerful, immersive SmarTeam-SolidWorks Integration (SWI)
 - ✚ a pre-configured database
 - ✚ a methodology guide that sets out the Collaborative Design practices you need
 - ✚ a dedicated training pack
 - ✚ An implementation program that allows **install within ten days**
- SmarTeam Design Express is designed to help you get more benefit from your SolidWorks data, **fast**



1.3

What is SDE for Multi-CAD: SolidWorks?

- **Optimized collaborative CAD design and data management**
 - 🔑 **Secure, structured repository for product data (CAD data and associated documents) in the engineering department.**
 - 🔑 **Full product document history, with traceability, full revision and version control**
 - 🔑 **Advanced search and query capabilities for documents, links and references**
 - 🔑 **Controlled document sharing**
 - 🔑 **Use of standard designs, promoting design reuse**
 - 🔑 **Embedded viewing of over 450 data formats without native application**

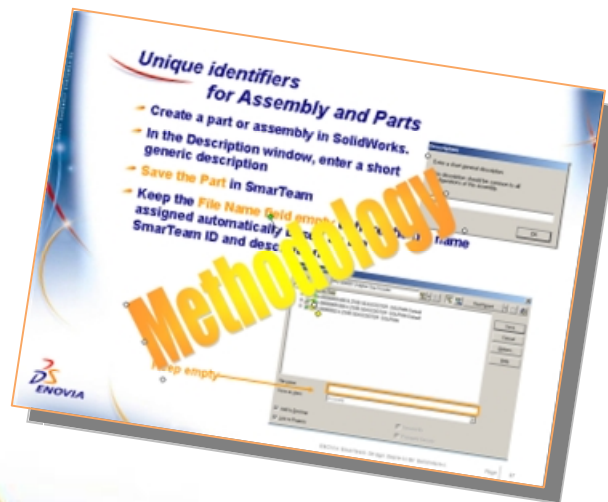


1.4

What is SDE for Multi-CAD: SolidWorks?

Proven methodologies for design teams to optimally and efficiently create, organize, change and share data:

- ✚ Straightforward User Scenarios
- ✚ Optimized settings for executing these user scenarios
- ✚ Methodology support for managing standards
- ✚ Business methods for using the 3D CAD system
- ✚ Tools for drafting and BOM management
- ✚ Dedicated training program



1.6

SDE for Multi-CAD - Meeting Mid-range Market Needs

- **Out-of-the-box solutions are best fit for mainstream MCAD users**
- Analysts forecast strong growth in PLM sales to the mid-market for vendors that adapt solutions to their key needs:
 - 👤 **A simple, focused project scope:** by starting with basic PDM
 - 👤 **Low implementation costs:** via templates and pre-packaged solutions combining software, services and training
 - 👤 **Take out the guesswork:** via recommending best practices
- **Start small, aim high:** Mid-market companies can better adopt PLM through a phased approach. **SDE is the solid foundation for this PLM.**

PDM will remain the **foundation** for any PLM implementation... this segment (will) continue to capture the bulk of non-CAD PLM investment, **16% CAGR**.

AMR Research Market Analytix Report: Market Sizing Series - PLM Applications Report, 2004–2009, Michael Burkett

SMEs face some unique challenges with PLM arising from their size, including the cost of implementation, the need to change business processes, and a lack of internal resources... leading SMEs are adopting PLM with tools including **templates**, industry-specific solutions, and **best practice processes**...

From Aberdeen report: The PLM for Small to Medium-Size Manufacturers Benchmark Report, March 2006

Tier 2 and Tier 3 will grow significantly over the forecast period due to PLM providers being able to offer both software and service solution sets more **tailored to the requirements and budgets of the SMB market**.

From Product Lifecycle Management Worldwide Outlook, Dick Slansky, ARC Advisory Group, 2006



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- 3 Customers
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- 5 Typical Project Plan
- 6 Next Steps: Beyond SmarTeam Design Express

2.1

SmarTeam Design Express resolves the most basic PDM challenges facing the design team

1

You need to store, structure and secure your product data

2

You need to keep track of changes to documents through revisions and maturity

3

You need to efficiently search for and quickly find the right data within its context

4

You need to enable the design team to share documents in a controlled manner

5

You need your designers to reuse standard parts and designs

6

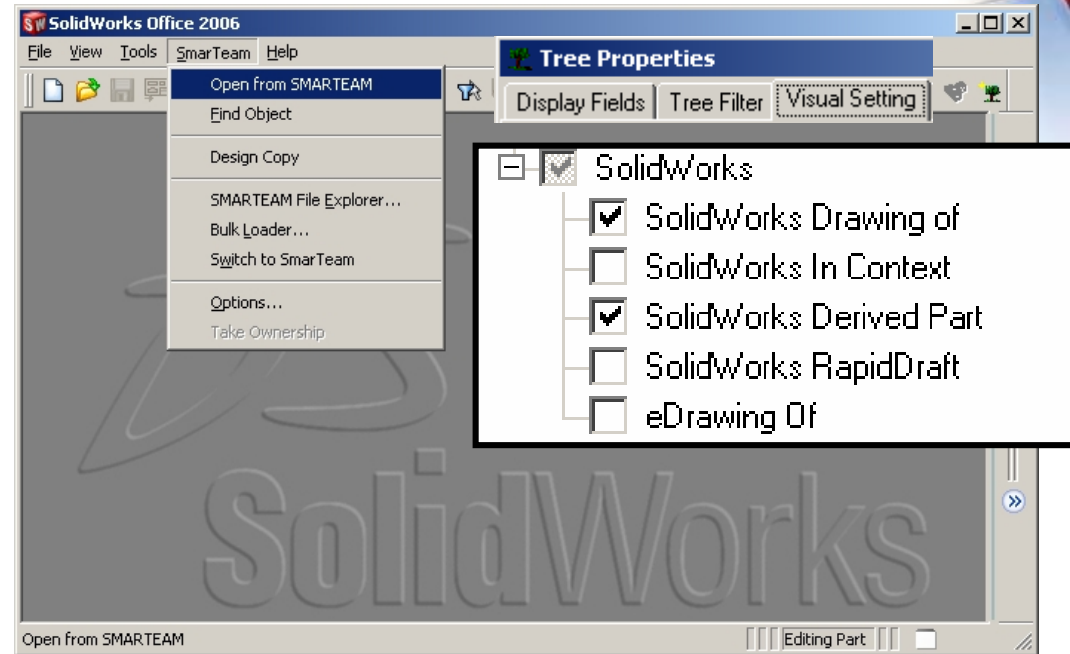
You need to view various data formats without their native applications

2.1

Store, structure and secure your data

Store: Collect and store all product-related data on a single, secure server.

Structure: Organise the documents in standardized way, using categories such as projects, customers, users, etc. to create one homogeneous filing system for everyone, replacing the standard Windows directory structure.



Secure: Data is only accessed via a login ID and password-protected connection, stored on a server with security functions and with an automated tape back-up process.

2.1

Securing and structuring valuable product knowledge

Challenge: As the volume of unwieldy CAD data, complete with assemblies, parts, dependencies, references, links, etc. grows, the data becomes very unmanageable

Solution: SDE offers a pre-configured data model that structures the access to your CAD data, replacing the standard Windows file directory with a product tree, profile cards, queries and wizards that guide users to find any CAD object they need, any time

“We needed a tool to manage a wide range of information concerning product structures and relationships between parts ... because of the huge amount of data involved in our 500 product lines, some of the most complex of which contain up to 2,000 components.... there’s an incalculable gain in efficiency when data is entered once and reused many times.” **Alec Gil, Engineering Manager, S&C Electric, USA**

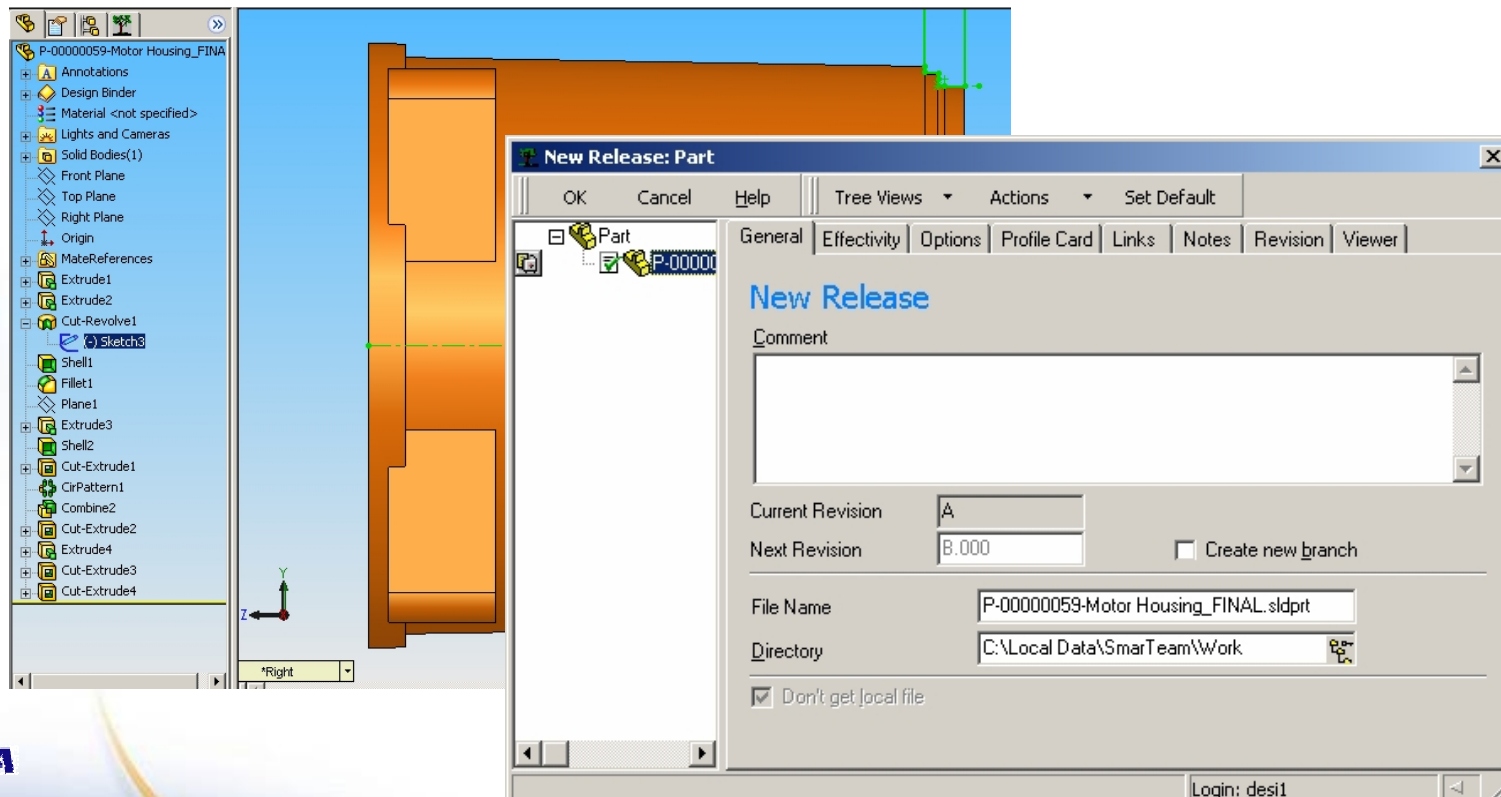
Benefits:

- 👤 Speeds access to product knowledge, spurring innovation
- 👤 reduces file administration headaches, lowering cost of maintenance
- 👤 reduces file loss and duplication, saving IT resources and reducing errors

2.2

Tracking changes to documents

- Keep track of the changes made to each document as it matures, without ever renaming the document or copying it to another directory.
- Maintain each revision of the document, enabling access to and reuse of each revision, as well as comparison to previous versions






2.2 Tracking revisions, versions and product history

Challenge: Reuse of parts in different products and projects usually requires modifications. The more complex the assembly, the more difficult to trace modifications. When multiple designers access the same files, tracing becomes even more problematic.

Functionality: Checking each revision of a document into the vault enables designers to easily retrace steps to find the exact version needed.

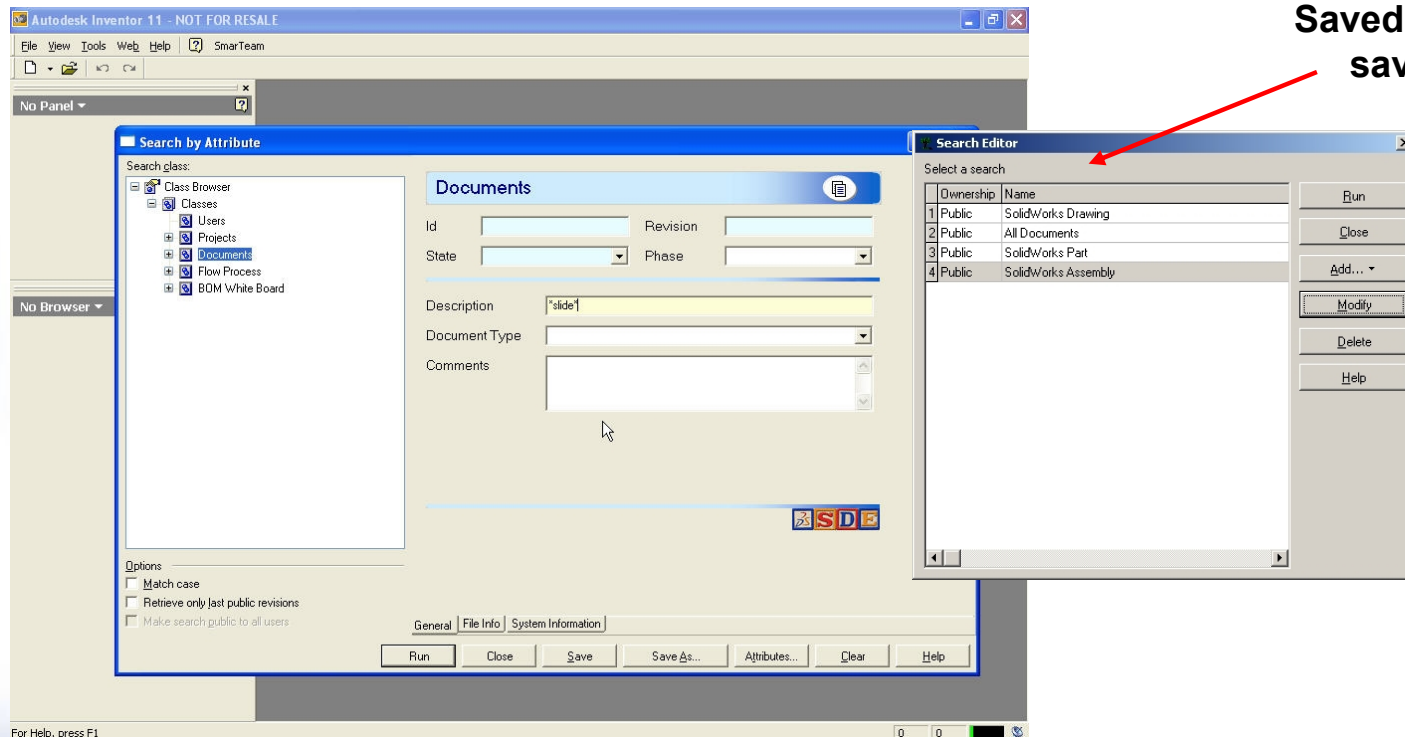
“With SmarTeam production personnel access only the most current design versions, incorrect revisions can no longer get to the shop floor... Departments can collaborate to develop innovative designs and optimize their manufacture.” – Jason Lindgren, Project Manager, Sub-Zero Freezer Co., USA

Benefits:

-  Full visibility into design processes
-  Avoid errors caused by using wrong revision
-  Comply with standards requiring product history

2.3 Efficiently search for the right data within context

- Click once to see in which assemblies a design part has been used
- Find out via a product or part search if a 3D design exists
- Quickly locate all documents associated with any project.
- Search by relations between data, for example, to find a specification document via its relation to a 3D or 2D design, or a new part design via its relation to a price quotation



2.3 Efficient search mechanisms show data in context

Challenge: As data accumulates and file names are similar, it becomes problematic and time-consuming to find any given design by its file name




Functionality: Advanced keyword and text search and query mechanisms allow designers to find exactly what they need, and in full design context, allowing them to better evaluate if the file located is the most relevant to their needs

“Users can search and find parts, configurations, drawings and assemblies by any attribute, such as revision, drawing name, description, drawing number, part number, etc. The software tracks where-used and composed-of relationships automatically, making it easy to determine where a certain part can be found within different assemblies...” Jim Farrell, Lord Corporation, USA – industrial components manufacturer

Benefits:

- Save valuable time consumed in file administration*
- Avoid redundant design through quicker location of existing files*

2.4 Controlled sharing of documents by multiple users

-  **Protect** the work of all members of the team; information is not overwritten, so each modification can be tracked individually.
-  **Audit** the system to see who performed which change at what time
-  **Safely access** the same document concurrently without modifying the original - when one user owns a document for editing, others can only use it in view mode.

...In some cases when you work concurrently and other team members updated the part that you are using in SolidWorks you may use Reload Latest operation to update your SolidWorks session...



2.4 Collaborative Design Management

Challenge: Designers collaborating on a shared data set cannot concentrate on pure design tasks if they need to worry about other users accidentally erasing or changing their work through inadequate mechanisms to control the collaboration


Functionality: Lifecycle mechanisms give designers visibility into each design's status and detailed records of each revision, enabling them to confidently work concurrently on the same files

"We work as a team using a number of linked 3D models and associated design tools to ensure designs adhere to defined rules ... the latest project data is easily available to all engineers employed on the project, thereby ensuring that engineers are not working in isolation; they have full visibility of all design changes as they happen." Darren Caines, Integral Powertrain, automotive engineering firm, UK

Benefits:


- Drive innovation through meeting of minds*
- Raise productivity through efficient allocation of design resources*
- Reduce bottlenecks via better visibility into joint design tasks*

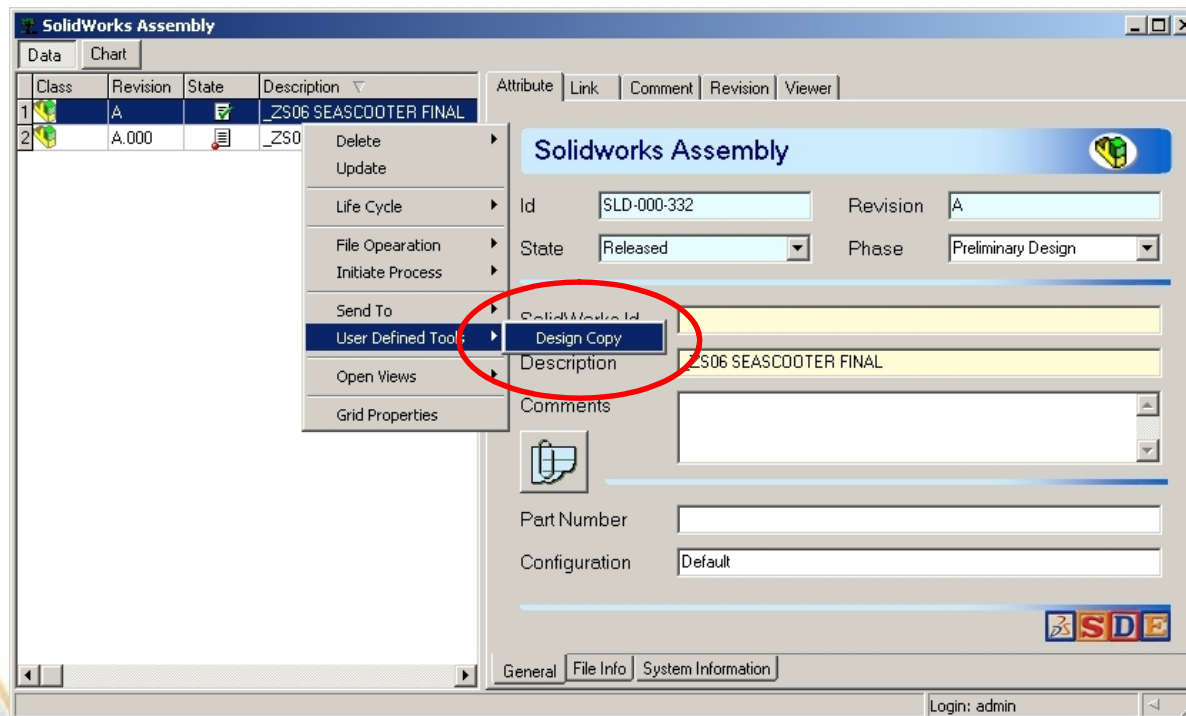
2.5 Promote the reuse of standards and existing data

 **Promote** and support the mandatory use of standard documents (purchased parts or designs) and ensure their correct use with no duplications or non-traceable changes in design



 **Reduce** the number of duplications of similar parts to minimize stocks and enforce sourcing policies

 **Encourage** the use of copies of existing product as starting points for new designs, eliminating duplication of designs in multiple projects.



2.5 Promoting Part Standardization and Design Reuse

Challenge: If designers are free to select any parts or components, especially purchased components, the company will stock low volume of wide range of parts, causing inventory and pricing problems; starting new design projects from scratch expends valuable design resources on redundant work

Functionality: Designation of standard or “master” parts for common components; use of “design copy” to jump-start new projects with proven, existing designs that can be innovatively modified to meet new requirements

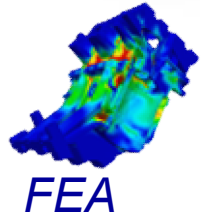
“Using (SmarTeam) to archive files also can reduce part counts and associated costs by facilitating design standardization procedures that uncover slight variations in multiple components where a single configuration would suffice. (It) greatly improves our ability to manage part configurations.” Swagelok, USA – industrial components manufacturer (valves)

Benefits:

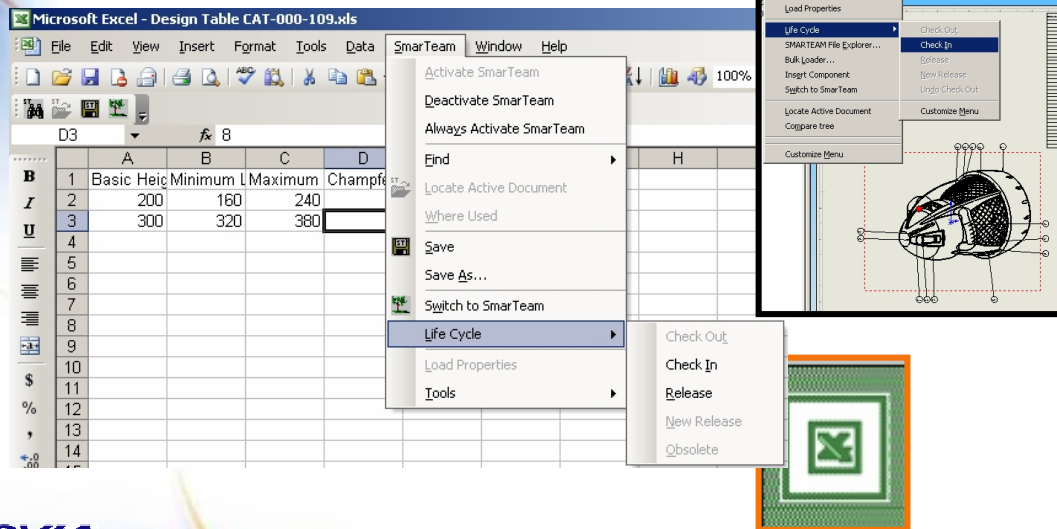
- ✚ Reduce inventory overhead and delays due to inefficient sourcing
- ✚ Speed time to market and drive innovation by reusing existing designs

2.6 View variety of data formats

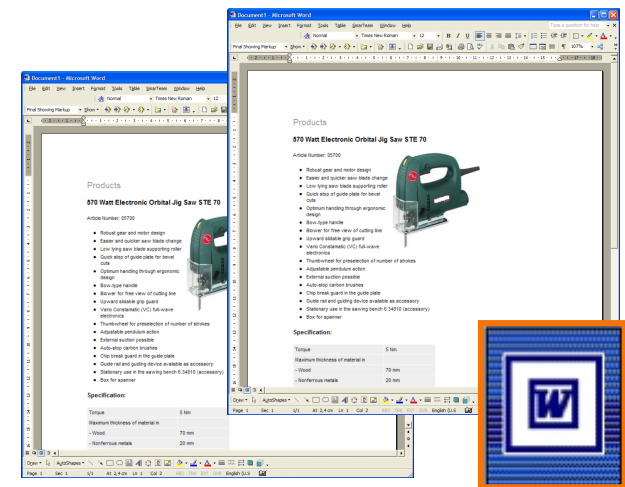
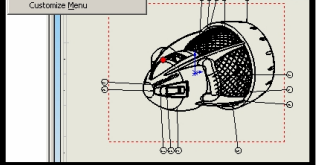
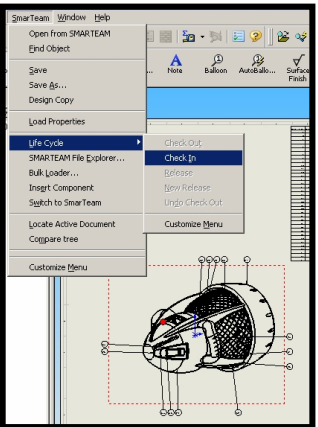
- Manage and map information inside documents through the SmarTeam integrations to various CADs, MS Word, MS Excel, etc.
- Visualize via SmarTeam digital documents in any of more than 450 formats (sldprt, iam, par, prt, dwg, tif, pdf, etc. ...) that are stored in any location.
- Display integrated MS Word and Excel files within SmarTeam without opening the applications



2D Models



	A	B	C	D
1	Basic Height	Minimum	Maximum	Chamfer
2	200	160	240	
3	300	320	380	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				



Products

570 Watt Electronic Orbital Jig Saw 57E 70

- Adjustable gear and motor design
- Excess and custom saw blade change
- Locking blade holder assembly
- Quick stop of guide plate for lower RPM
- Custom handling through ergonomic design
- Blow Gun handle
- Blow Gun for free view of cutting line
- Overload release jig guard
- Lock Engagement (LCE) Lockdown mechanism
- Thrustwasher for protection of number of screws
- Adjustable penetration action
- Rotational motion available
- Adjustable carbon brushes
- Quick stop guard in the guide plate
- Quick start and parking device available as necessary
- Chattering plate in the spring guard (SAGS) necessary
- Box for spares

Specifications:

- Material: Steel
- Maximum thickness of material: 5 mm
- Width: 70 mm
- Rotational media: 20 mm

Specifications and Documentation



2.6

View Various Data Formats without Native Applications

Challenge: Designers prefer to stay inside the design workspace and to avoid devoting time and memory resources to view documents related to design that require them to open additional applications

Functionality: SmarTeam enables designers, as well as other users, to view files in more than 450 different formats without needing the native application. This functionality enables designers to properly classify and link various kinds of documents to projects and to designs to ensure that all the data can be easily viewed in context.

“It is important for us to give access to our clients in order for them to visualize their projects in real time, and observe the progress, while securing the data and maintaining confidentiality,” **Jean-Pierre Bregeon, ABMI, project engineering firm, France**

Benefits:

- ✚ Save time and resources otherwise spent to purchase, install, train on and maintain other software applications
- ✚ Save designers' time and memory needed to run additional applications

2.7

SmarTeam Design Express Resolves Basic PDM Challenges

1

Secure, structured storage of valuable product knowledge

2

Revision tracking, version control and product history

3

Efficient searching that shows data in context

4

Collaborative Design Management

5

Part Standardization and Design Reuse

6

Viewing of Data without its Native Application

Agenda

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- 5 Typical Project Plan
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3.1

SmarTeam and SolidWorks: the Secure Path to PLM Success



“Designing with a **SolidWorks®** parametric solid modeling system produces orders of magnitude more information and greater numbers of files that are linked. These files absolutely must be kept in sync...to collaborate effectively... We selected SmarTeam for its effective integration with SolidWorks, ease of use and quick learning curve. It saves time in getting projects completed and improves our ability to have several departments collaborate on developing innovative designs and optimally manufacturing these products.”

Paul Sikir, Director of Design Engineering, Sub-Zero Freezer Co., USA

*Rapid implementation and user ramp-up – SmarTeam was deployed at Sub-Zero subsidiary Wolf in only **12 weeks***

Upon standardizing on **SolidWorks®** 3D CAD, Borg-Warner Cooling implemented SmarTeam as its enterprise PDM system, both for its tight integration with SolidWorks (and other CADs) and to optimize the management of its product design data. “We’re using SmarTeam to manage more than just CAD data. The ability to transfer information and have multi-disciplinary signoffs from sales, engineering, and manufacturing groups located all over the world makes us much more efficient as a global organization.”

Randy Schwan, CAD/PDM Systems Manager, BorgWarner Emissions/Thermal Systems, USA



**BorgWarner
Emissions/Thermal Systems**



3.2

Phased Implementation to PLM: Swagelok



Company Profile:

- ✚ US-based Swagelok is a global leader in the manufacture of a broad product range of fluid system components

Business Challenges:

- ✚ Initiate uniform processes across CADs, use product CAD templates
- ✚ Introduce design collaboration with customers, define and track customer requirements
- ✚ Meet and exceed international standards
- ✚ Bring innovative solutions to market quickly

Solution:

- ✚ SmarTeam Editor, Workflow and SolidWorks Integration
- ✚ New Product Development, 2D to 3D Conversion, Workflow for Specifications and Change Management

Benefits:

- ✚ Have processed about **300% more engineering changes** with reduced effort
- ✚ Development time of Make-to-Order products has been reduced by **70%**, which translates to a 5 – 10 day reduction in lead-time for customers



3.2

Phased Implementation to PLM: Swagelok

Swagelok

Eliminated other CAD

Implemented Workflow and SmarTeam for specifications

Converted 2D to 3D, & SmarTeam for existing products

Implemented SmarTeam for NPD

Chose SolidWorks, implemented for new products (NPD)

1998

1999

2000

2001

2002

2003

2004 & beyond



3.3

BorgWarner Emissions/ Thermal Systems: Global Product Design



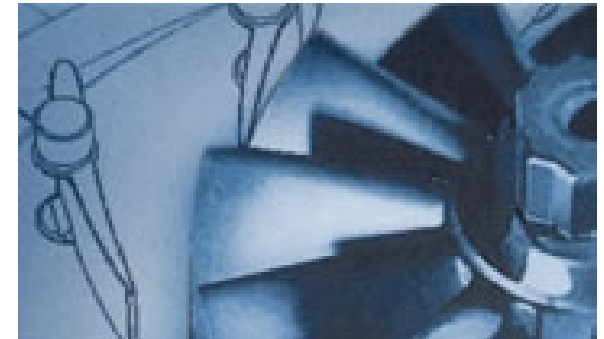
**BorgWarner
Emissions/Thermal Systems**

Company Profile:

- ✦ BorgWarner Emissions/Thermal Systems is a Tier One supplier of cooling solutions for the SUV, light truck, and commercial vehicle markets, employs 1382 at 14 facilities across 8 countries

Business Challenges:

- ✦ Multiple databases at different locations
- ✦ Different part number schemes at each location
- ✦ No Common workflow (ECN, PCR, EWO..)
- ✦ No common viewer for multiple file types
- ✦ No common way to re-use designs



Solution:

- ✦ SmarTeam Editor, Web Editor, BOM, Community Workspace, Workflow, Multi-Site and **SolidWorks Integration**
- ✦ SmarTeam manages **primary SolidWorks** data, AutoCAD and Pro/E
- ✦ Eight sites to be connected (six already implemented)
- ✦ ECO and other workflows cross sites
- ✦ Sales force, manufacturing and other communities access data and processes over SmarTeam collaboration platform



3.3

BorgWarner Emissions/ Thermal Systems: Global Product Design

ES-PR2

SmarTeam - (New Process)

Class	Name	State	Creation Date	Created by	Modified
1	07ER00007	0	03/18/2002 09:40:10	Ricardo	spinto_Ric
2	07ER00008	0	03/18/2002 12:45:10	Ricardo	hgbarbosa
3	07ER00010	0	03/18/2002 15:45:10	Ricardo	spinto_Ric
4	07ER00011	0	03/18/2002 15:45:10	Ricardo	spinto_Ric
5	07ER00017	0	05/28/2002 10:45:10	Ricardo	cschoewe
6	07ER00024	0	07/16/2002 08:45:10	Ricardo	hgbarbosa
7	07ER00026	0	07/22/2002 15:45:10	Ricardo	spinto_Ric
8	07ER00027	0	07/22/2002 16:45:10	Ricardo	cschoewe
9	07ER00031	0	08/30/2002 12:45:10	Ricardo	cschoewe
10	07ER00032	0	09/23/2002 09:45:10	Ricardo	spinto_Ric
11	07ER00033	0	11/25/2002 11:45:10	Ricardo	juhler_Ja
12	07ER00034	0	11/26/2002 07:45:10

Product Engineering Request

ER number: 07ER00027
REA number: []
State: New
Request Summary: Create new prod. drawing for 4225-42622-77

Process Info

Process status: Process is Pending
End time: []
Importance: Normal importance

ECN OPTIONAL DISTRIBUTION

Quality Purchasing Warranty

REASON

Customer Request Vendor Request Improvement Correction
 Mtg. Request Reduce Cost Standardization Other

Please select ONE Design Center

DESIGN CENTER

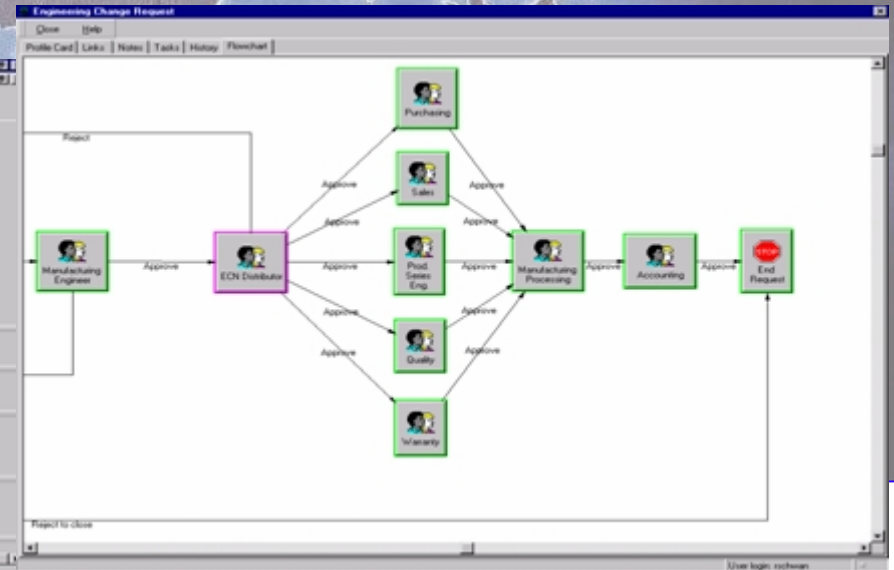
Detroit Marshall Cadillac
 Brea Markdale China

Please select ONE Manufacturing Plant

MANUFACTURING PLANT

Detroit Fletcher Markdale Cadillac
 Brea Greenville China

[Update] [OK] [Cancel] [Help]



Confidential and Internal only

ENOVIA SmarTeam Design Express and Express Packages

3.4

Sub-Zero Freezer Co. Inc. & Wolf Appliance Co.: Rapid Time to Exchange of Engineering Data



Company Profile:

- Based in the U.S., Sub-Zero is a Market Leader in High-End Home Refrigeration and Professional-Grade Cooking Appliances

Business Challenges:

- Slow manual processes, lack of access and sharing of product data
- Need to access and integrate data after acquisition of Wolf Appliances

Solution:

- SmarTeam Editor, **SmarTeam – SolidWorks Integration**

Solution Benefits:

- Physical prototypes built with minimal rework
- Information captured and reused throughout the product lifecycle reduces design costs
- Improved change management - ECOs take days, not weeks
- New-product development cycles compressed by as much as **50%**
- Time to exchange of engineering data improved by **75%**
- Collaboration improved between engineering, procurement, manufacturing, quality assurance, and service departments
- Rapid implementation and user ramp-up – SmarTeam was deployed at Wolf **in only 12 weeks**



3.5

Vermeer Manufacturing: Efficient large assembly management in collaborative design environment



Company Profile:

- Vermeer, a global leader in the manufacture of agricultural, tree-clearing and excavating equipment, employs over 1,400 at 7 plants

Business Challenges:

- Need to manage SolidWorks assemblies with 500 to 4,000 parts efficiently in a collaborative design environment.

Solution:

- SmarTeam Editor, **SolidWorks** and AutoCAD Integrations
- Vermeer selected SmarTeam for its **tight integration with SolidWorks** and ease-of-use for non-engineering personnel.

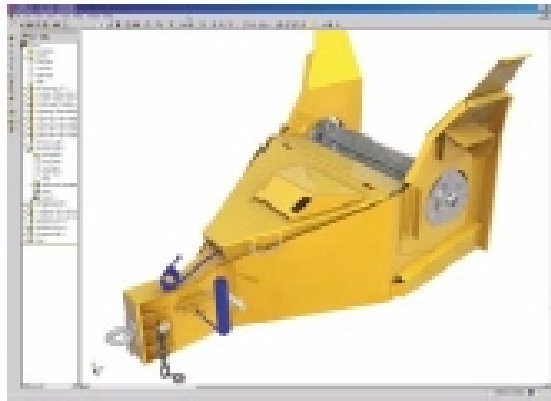
Benefits of Integrated SolidWorks and SmarTeam Solution:

- Increased collaboration and efficiency across multiple groups
- Increased product design complexity
- Eliminated design and manufacturing steps
- Shortened prototyping and analysis time
- Reduced scrap and rework
- Improved style of its products



3.5

Vermeer Manufacturing: Efficient large assembly management in collaborative design environment



The combination of SolidWorks mechanical design software and the SMARTEAM PDM system enables Vermeer to leverage design data for other functions, including purchasing, documentation, field service, and manufacturing.

“In addition to implementing a SmarTeam seat for every SolidWorks seat, we have added 65 SmarTeam seats for use on the shop floor, by our service technicians in the field, and by our Purchasing Group. People outside of Engineering can now access the data directly, which they can use during production and on service calls.”

Karl Maasdam, Vermeer Applications Specialist



3.6

AMC Centurion AB: "Ant Step" Approach to PDM



Company Profile:

- AMC Centurion AB, a subsidiary of U.S. based Centurion Wireless Technologies (CWT), is a leading developer and manufacturer of mobile terminal antennas. Employing 1,300 worldwide, AMC & Centurion's main Customers include Panasonic, Nokia, Sony and Ericsson

Business Challenges:

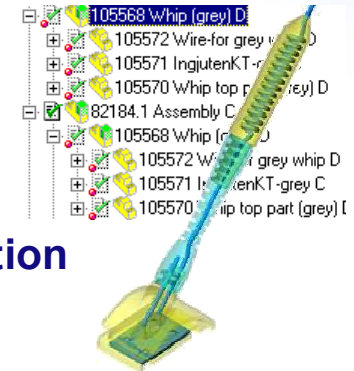
- Inefficient document preparation, tracking, and management
- Shift from 2D to 3D design
- Need to improve time to market and revision control and duration

Solution:

- SmarTeam Editor, **SolidWorks** and AutoCAD Integrations
- Multi-CAD data management from single repository, allowing fast, powerful searches, web-based access to documents and real-time collaboration with suppliers, collaborative workflows and smooth transfer from 2D to 3D data types
- Document control from customer request to fulfillment

Benefits Realized:

- Greater access to legacy documents (some => 3 years old)
- More effective collaboration with suppliers and customers
- Decreased Time to Market by 30%



3.7

Fontini: Improved collaboration and project management with simple deployment and quick ROI

Fontini

Customer Profile:

- Fontini, based in Spain, designs and manufactures innovative and highly stylized fixtures for the European decorative lighting market since 1955.

Business Challenges

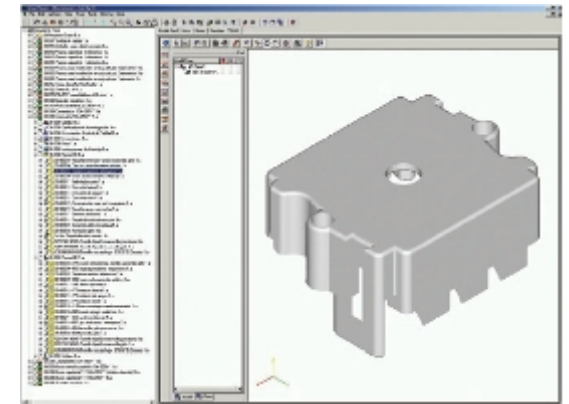
- Growing volume of documents, including 3D computer aided design (CAD) models, 2D draft files, EDI files, paper documents and e-mails, generated in support of product development.
- Varied technical requirements for different localities
- Strict documentation requirements to comply with ISO audits

Solution

- SmarTeam Editor, Navigator and **SolidWorks Integration**
- Technical document management, web-based collaboration across departments; audit control system

Benefits

- Improved collaboration and project management facilitates faster time-to-market and better production readiness.
- Quick deployment and easy intuitive ramp-up contribute to quick ROI



DS
ENOVIA

ABGAM
GRUPO SEGULA TECHNOLOGIES



Company Profile:

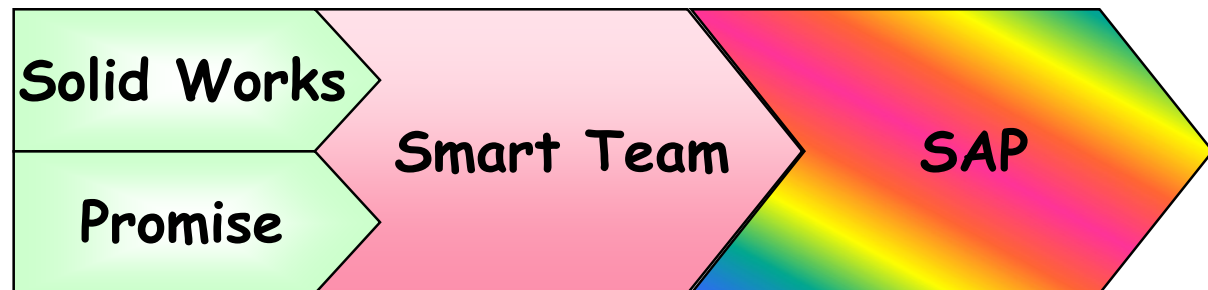
- ✦ The first ABB JV in China, ABB Xiamen Switchgear Co. Ltd, employing 6500 in China alone, specializes in the production, sales and service of medium voltage switchgear, vacuum circuit breakers and related apparatus

Business Challenges:

- ✦ Separate MCAD and ECAD databases caused development delays and negatively impacted quality
- ✦ Errors and delays due to manual transfer data between engineering and manufacturing and slow, error-prone ECO cycle

Solution:

- ✦ SmarTeam - Editor, Workflow, Web Editor, Gateway, **SolidWorks Integration**





Results

- ✈ Bilingual operation in Chinese and English
- ✈ Short implementation and training time
- ✈ Single, unified design database of both mechanical and electronic files
- ✈ Integration to ERP system enables enterprise-wide access
- ✈ Collaboration now possible, due to replacement of serialization with concurrent engineering

Benefits

- ✈ Product development time shortened by 30% (48 to 35 days)
- ✈ BOM error rate lowered from 28% to 17%
- ✈ Mechanical design quality improved by 70%
- ✈ Electronic design errors reduced



3.9

Korea Nuclear Fuel Corporation (KNFC): Secure Access to Full Product Design History



Company Profile:

- ✦ The only nuclear fuel company in Korea and a subsidiary of KEPCO (Korea Electric Power Corporation)

Business Challenges:

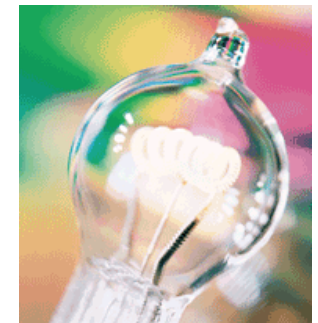
- ✦ Need to manage large volume of engineering and technical data
- ✦ Need full access to data and comprehensive product data history for compliance with regulatory requirements
- ✦ Need on-line, remote access to facilities designs and drawings for maintenance throughout long lifecycle

Solution:

- ✦ SmarTeam Editor, BOM, Workflow, Gateway, SolidWorks and AutoCAD Integrations
- ✦ Key Functionalities included drawing and document, Part/ BOM, Workflow, SolidWorks and AutoCAD design interface and ERP integration management

Benefits:

- ✦ Share all the drawings and documents related to engineering throughout the enterprise;
- ✦ Build a uniform database protecting engineering knowledge which can be accessed in real-time;
- ✦ Share engineering change history and accumulated design know-how



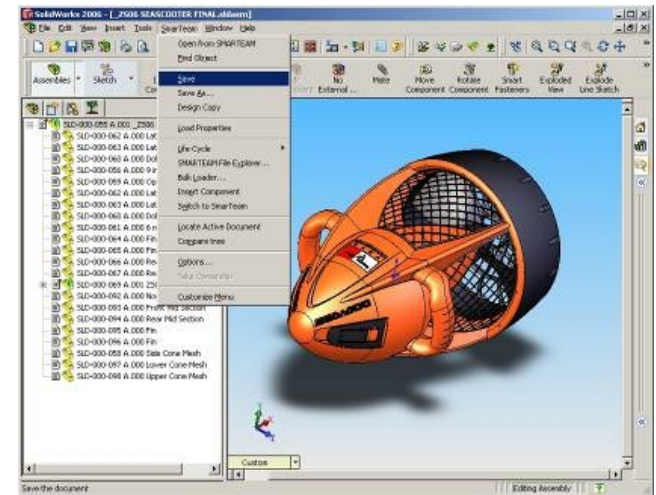
Agenda

- 1 What is SDE for Multi-CAD: SolidWorks?
- 2 How SDE Resolves your PDM Challenges
- 3 Customers
- 4 Key Differentiators
- 5 Typical Project Plan
- 6 Next Steps: Beyond SmarTeam Design Express

4.1

SDE for Multi-CAD: SolidWorks – Key Values

- **SmarTeam Design Express for Multi-CAD: SolidWorks lets a design department working with SolidWorks collaborate efficiently using a predefined data structure to achieve:**
- **Optimal Management of Projects and Documents, including:**
 - ✚ **SolidWorks documents:**
 - ✚ Assembly, Part, Drawing
 - ✚ eDrawing
 - ✚ **Common documents:**
 - ✚ Microsoft Office documents: MS Word, MS Excel, MS PowerPoint
 - ✚ Images, movies: JPG, TIFF, BMP, AVI
 - ✚ All other digital documents
 - ✚ **Full visibility of SolidWorks Configurations as key element of your design scenario**
- **Streamlined 2D drawing Management with SolidWorks Drawings and AutoCAD 2D**
- **Automated management of Engineering BOM (with Excel)**



4.2

ENOVIA SmarTeam and SolidWorks: Partners in PLM

- A SolidWorks certified gold product partner, ENOVIA SmarTeam works closely with SolidWorks to provide PLM solutions tailored to the needs of SolidWorks users
- ENOVIA SmarTeam's relationship with SolidWorks as a sister company in the DS group enables strong technical and commercial synergy
- SolidWorks Corp. supports SmarTeam as a recommended full PLM solution

1-800-693-9000 (US)
+1-978-371-5011 (Outside the US)

Partners

SMARTEAM/Dassault Systemes: SMARTEAM

SolidWorks

PRODUCTS SERVICES CUSTOMER SUCCESSES NEWS AND EVENTS

Model Gallery | Case Studies and Videos | Industry Solutions

Customer Successes

- Case Studies and Videos
 - Aerospace and Defense
 - Automotive and Transportation
 - Consumer
 - Education
 - Design and Engineering Services
 - Electronic
 - Furniture, Fixtures, and Office Equipment
 - Heavy Equipment
 - Industrial Components
 - Machinery
 - Medical
 - Micro-Electro-Mechanical

Success Stories: Integrated Add-on Applications - SMARTEAM

1 | 2 ▶

BorgWarner Electronics
Automotive
Location: United States
Integrated Applications
Video Available

SolidWorks WORLD 2007
February 4-7

Learn More About The 3 for 2 Offer

Design with VISION

Visit ENOVIA SmarTeam booth at SWW 2007!

• New SmarTeam Major Release

- Will certify one latest available CAD release
- Major CAD feature support will be treated as SmarTeam highlights

• New CAD Major Release

- Will be added to the following available SmarTeam Service Pack
- Will be certified by SmarTeam up to 5 months in most cases (according to SP dates and policy)

• Service Pack Certification

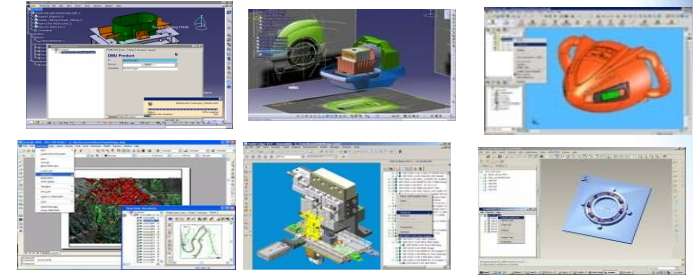
- SmarTeam will certify CAD SPs based on customer needs
- Supported CAD SPs will be included in the subsequent SmarTeam SPs

4.4

ENOVIA SmarTeam – Robust Multi-CAD Integrations

Robust Multi-CAD Integrations:

- 👤 Single collaborative platform among diverse engineering teams, working on different CADs
- 👤 Full part and assembly management, incl. their component parts, while maintaining dependencies and integrity during lifecycle operations
- 👤 Embedded functionality in the CAD Application: manage, view, edit, and annotate
- 👤 Latest CAD Version Certification
- 👤 Native CATIA Integration



"We needed multi-CAD PDM software which could interface not only with CATIA but also with all the other software applications, since we have over 250 CAD stations equipped with the major software applications on the market."

Jean-Pierre Bregeon, CEO, **Groupe ABMI**, engineering consulting firm, France

VALUE: *Eliminates the need to re-key data and prevent work on outdated designs, dramatically reducing errors and saving valuable time*



4.4

ENOVIA SmarTeam – Robust Multi-CAD Integrations

- **Only ENOVIA SmarTeam supports all the following capabilities for all major CAD tools: (for 3D CADs: CATIA V5, SolidWorks, Pro/Engineer, Autodesk Inventor, Solid Edge; for 2-D CADs: AutoCAD, MicroStation)**

- 👤 View CAD Files in the native format without conversions
- 👤 View Native CAD Geometry
- 👤 Maintain Relationship with Core Files (Part, ASM, Drawing)
- 👤 Check In / Check Out Directly from CAD Application
- 👤 Revision Block and Title Block mapping
- 👤 SmarTeam Data Manager Tree (DMT) in CAD Application
- 👤 Open from SmarTeam CAD documents by browsing in SmarTeam projects
- 👤 Store and Maintain Relationship with Associated files (Family Tables, Design Table, etc...)
- 👤 Design copy – unique design re-use functionality
- 👤 Bi-Directional Attribute Mapping

- **Other vendors may support this level of integration only for their own CAD tools**



4.5

ENOVIA SmarTeam – Robust SolidWorks Integration

Supports SolidWorks features

- Save as type...
- Save assembly as part
- Import to different file types
- Create subassembly

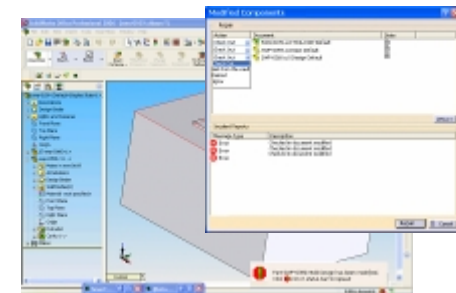
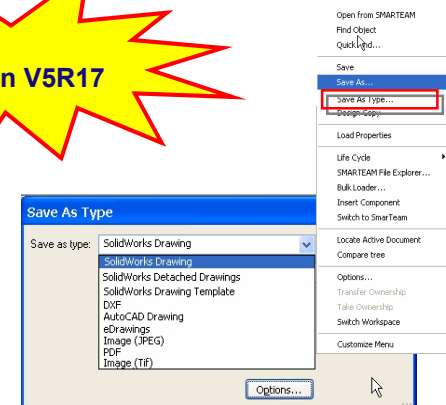
Usability

- Check out on the fly – improved usability
 - Pop-up messages
 - No user interaction
 - Ability to take needed actions from report

Improve performance

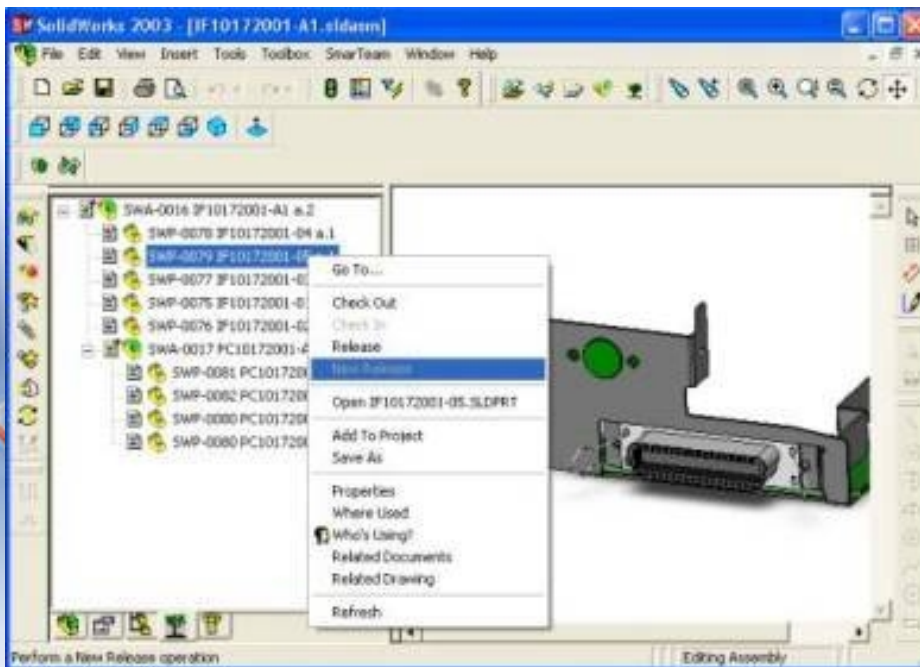
SolidWorks Toolbox feature support

- Ability to save configuration specific properties for Toolbox parts in SmarTeam



4.5

ENOVIA SmarTeam – Robust SolidWorks Integration



Seamless Integration

- 🔗 Data Manager Tree (DMT)
- 🔗 SolidWorks configurations
- 🔗 Reload latest
- 🔗 Check out on the fly

Assembly Management

- 🔗 Automatic Bill of Materials (BOM) integration
- 🔗 Maintains SolidWorks references incl. “Where Used” and “Composed Of” relationships automatically

4.5

ENOVIA SmarTeam – Robust SolidWorks Integration



Standard Parts Management

- ✚ Seamless SolidWorks Toolbox Integration – automatically keeps Standard Parts in the Vault Server
- ✚ Searching for and retrieve Standard Parts by using SmarTeam search tools

Design Copy

- ✚ Copy an existing CAD product structure to create a new design , and redesign selected components

✓ Product capture and knowledge reuse maintains valuable data in new design

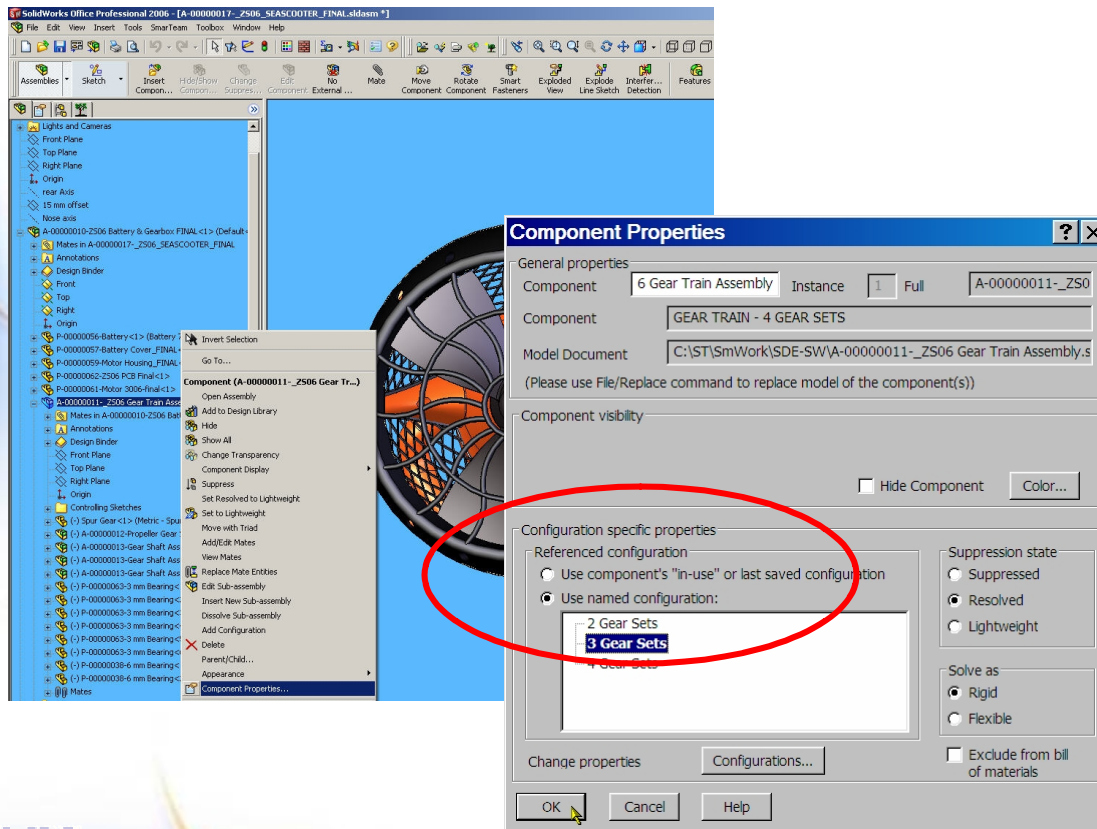
4.5

ENOVIA SmarTeam – Robust SolidWorks Integration

Full visibility into SolidWorks configurations



empowers designers to seamlessly manage their various design configurations

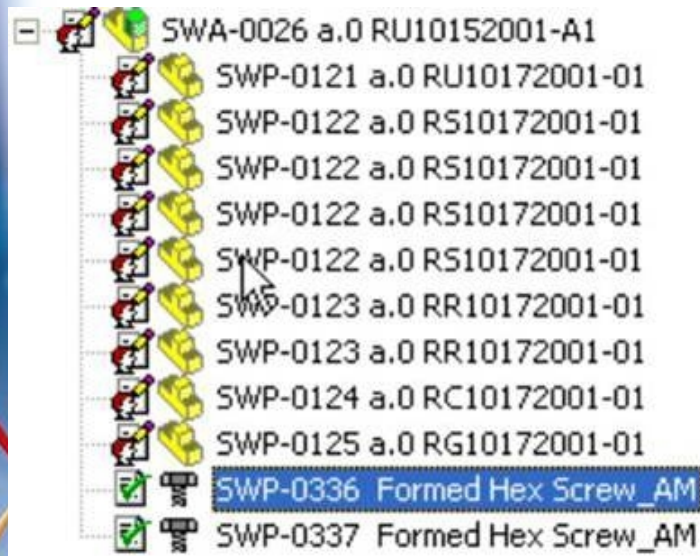


✓ Familiar concepts enable quick, intuitive work methods, encompassing designers' existing practices



4.5

ENOVIA SmarTeam – Robust SolidWorks Integration



Detached Drawing Support

- 👤 Annotate a drawing, take measurements, etc. while detaching it from its model
- 👤 Links between the detached drawing and the model are maintained - enabling the system to attach the model back to the drawing as necessary

✓ Release the network from redundant, heavy models

SmarTeam icons in DMT

- 👤 SmarTeam class icons are displayed in SolidWorks Data Manager Tree (DMT)

✓ Immediate, fast identification of object class



4.6

Why SDE over the Competition? Docs and BOMs

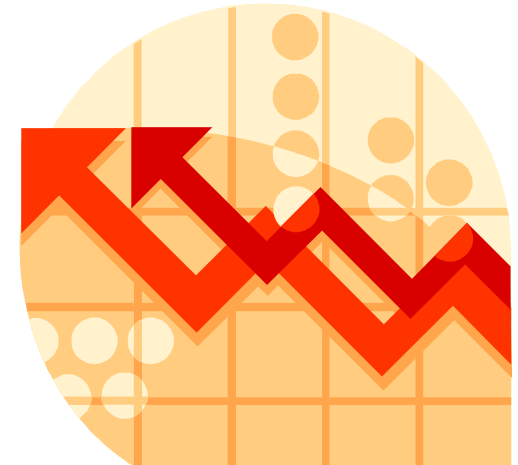
- When you buy SmarTeam Design Express as the first step to PLM, you get the complete SmarTeam foundation. This provides the built-in flexibility that allows you to **start by managing files and documents** and then grow to managing document structures and item/BOM structures
 - Competitors that typically focus on document / file management are not able to provide the full scenario combined with BOM/items, thus limiting the opportunity for future expansion to PLM
 - Competitors that typically focus primarily on BOM/item management generally offer limited CAD and related document management capabilities, thus they don't provide full document integration capabilities for design engineers working within SolidWorks



4.6

Why SDE over the Competition? Flexibility

- **SmarTeam's flexible data model, open API and foundation on Microsoft standard technologies makes the product more **flexible** and **customisable** than that of its competitors. It allows experienced users to adjust the built-in scenarios exactly to their needs.**
 - ✦ **Most competitors offer less flexibility, so users have less ability to tailor their systems to fit their processes.**
 - ✦ **SmarTeam's open API enables integration with multiple CADs, legacy, in-house and enterprise applications.**
 - ✦ **As your company grows, SmarTeam's scalability lets you easily add users, while the built-in upgrade capabilities of SDE let you expand to full PLM functionality using the same platform.**



4.6

Why SDE over the Competition? Low TCO

- SmarTeam has from its inception been geared to the needs of the mid-market, offering out-of-the-box functionality, **low cost of administration and ownership, ease of use and rapid implementation**
 - Some competitors offer you an attractive starting price, but when deploying and trying to extend the scope of the implementation, you will discover high prices for additional functionality and implementation services, or realise that you have reached the ceiling already with your starting product
- Owned by Dassault Systèmes, one of the industry's global leaders, ENOVIA SmarTeam is a component of a comprehensive PLM portfolio, enjoying **financial stability** (CAGR in US\$ of 18% since 1997), **high investment in technology** (26.5% of revenue invested in R&D) and exposure to the broad R&D resources of all the Dassault Systèmes' and ENOVIA brands



Key Differentiators:

- Small, incremental investment to move towards PLM and let your company more fully leverage your SolidWorks-based product knowledge
- Best in class, immersive SolidWorks Integration
- Prepackaged software and services “quick start” kit
- Robust data model tailored for collaborative design
- Proven user methodology and training program
- Complete Implementation within 10 days
- Scalable, customizable system grows with your PLM needs



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- 4 **Key Differentiators**
- 5 **Typical Project Plan**
- 6 **Next Steps: Beyond SmarTeam Design Express**



5.1

Typical Project Plan

- SmarTeam Design Express is packaged as an **out-of-the-box** application:
- The approach was developed through implementing SmarTeam for many existing customers. It includes a **combination of software and services** necessary for a quick and low cost implementation of SolidWorks and SmarTeam.
- SDE has been designed for “plug & play” use within your company, **without any customisation** other than the name of the users and the installation and working directories.
- An SDE for Multi-CAD: SolidWorks project does not include the SolidWorks implementation itself: the installation of SolidWorks workstations and SolidWorks user training are prerequisites.
- The project incorporates:
 - **Training** of users on the Collaborative SolidWorks Design Management methodology
 - **Validation** of methodologies at the customer site
 - **Execution** of methodology



5.2

Using SDE in the SolidWorks Environment

Design Collaboration:

Work concurrently around the same assembly
always accessing accurate information

Project based navigation

Arrange per product, per
customer, per order

Organization:

Built-in structure and rules to
leverage traceability and reuse

Management of SolidWorks relations

View relations between all SolidWorks data
immediately, such as parts, assemblies,
drawings, etc. ...

Change Management

Support the lifecycle and
different revisions of all
documents

Promote Reuse

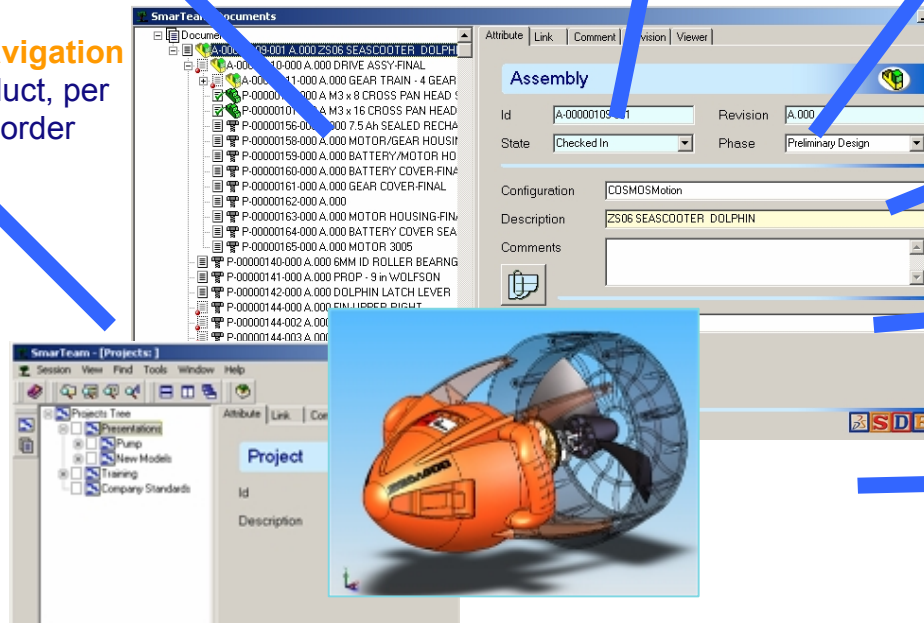
Business standards
management

Extend secure access

Allow non-CAD users to visualize
CAD data

Impact analysis

Be aware of the impact of engineering changes



The “**quick start package**” provides:

- **Pre-configured database** with data model for optimized SolidWorks collaborative design management
- **Methodology Guide** to steer the implementation in your engineering department
- **Delivery Notebook** to track your implementation, from software installation through to completion of the final checklist after training and review of the methodology
- **Technical training materials**, including demonstration
- **Value proposition** explaining how to expand beyond engineering / design department management out to management of the full product lifecycle across your enterprise



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6.1

Beyond SmarTeam Design Express

The initial objective of SmarTeam Design Express is to provide an out-of-the-box solution for the design department which meets all the basic needs.

However the openness of ENOVIA SmarTeam and the 3D CAD system, allow you to extend the implementation beyond these basic needs. There are various ways to expand beyond the first step:

Inside the design department enhancing the basic implementation with company-specific needs

- Title block enhancements
- Batch printing
- Non CAD document management
- Release and change processes
- Etc ...

Across the supply chain to manage design and product data with your OEM's or suppliers

- Exchange data with suppliers
- Bidding and procurement
- Qualification

Foundation for the future

Inter-discipline collaboration around the BOM

- Release and change processes (ECR/ECO)
- Link to ERP

Typical Successful Customer Implementation:

- Phase One: secure design document management
 - Designers get used to managing lifecycles with ENOVIA SmarTeam
 - Database accumulates accurate design data reflecting product structure combining assemblies, master designs and standard parts
- Successive phases (not necessarily in this order)
 - Adding company-specific requirements
 - Extending to management of other engineering processes and data
 - Integrating engineering data with other applications
 - Collaborating on product data with suppliers and customers
- A well-defined, limited project scope is a key factor in the success of the implementation, especially in the first phase. Once users gain experience with Product Data Management, they understand how to best proceed to the next phases, building up step-by-step.

“Building up a Product Lifecycle Management system can only happen in small stages. Employee acceptance is extremely important because staff have to change their procedure.”

- Roland Weidmann, Kässbohrer



6.3

Important to Note: Additional SmarTeam Benefits

- **Easy to implement and very scalable:**
 - ⤴ No need for costly software programming teams
 - ⤴ No need for full-time, expert system administrator
 - ⤴ Easy to implement within the context of an enterprise business system environment (ERP, etc)

- **User Interface easy to tailor for each typical user:**
 - ⤴ Design Engineer / Manufacturing Engineer
 - ⤴ Purchasing Agent
 - ⤴ Sales Representative / Pre-sales or Marketing
 - ⤴ Customer Support / Documentation Writer
 - ⤴ Project Manager

- **Database Structure is easy to customise**
 - ⤴ Add / Change attributes
 - ⤴ New object / document / form add on or edit

- **Easy graphical WORKFLOW Design and Execute process (beyond SDE)**

Thank You!

Questions?

Contact your authorized ENOVIA SmarTeam reseller

For any other unanswered questions, contact
sde@SmarTeam.com

