Reaching New Levels in PLM

Eduard Marfà
Director EMEA Marketing, Teamcenter

SIEMENS

Four Sectors cover the global trends –
Leveraging the strength of Siemens

SIEMENS

Industry	Industry Automation	Drive Technologies	Customer Services	Metals Technologies [1]

Infra-structure & Cities	Rail Systems	Mobility and Logistics	Low and Medium Voltage	Smart Grid	Building Technologies	Osram [2]

Energy	Fossil Power Generation	Wind Power	Solar & Hydro	Power Transmission	Oil & Gas	Energy Service

| Health-care	Imaging & Therapy	Clinical Products	Diagnostics	Customer Solutions

Siemens PLM Software

A Complex Engineering Challenge…

Landing on Mars is one of the hardest jobs on Earth.

On August 5, the Mars rover Curiosity landed successfully on the surface of Mars. There was only one chance to get it right. For this unprecedented challenge, NASA employed Siemens PLM software solutions. The development team at NASA's Jet Propulsion Laboratory digitally designed, tested, assembled, and simulated the entire Mars rover before a single physical prototype was created.
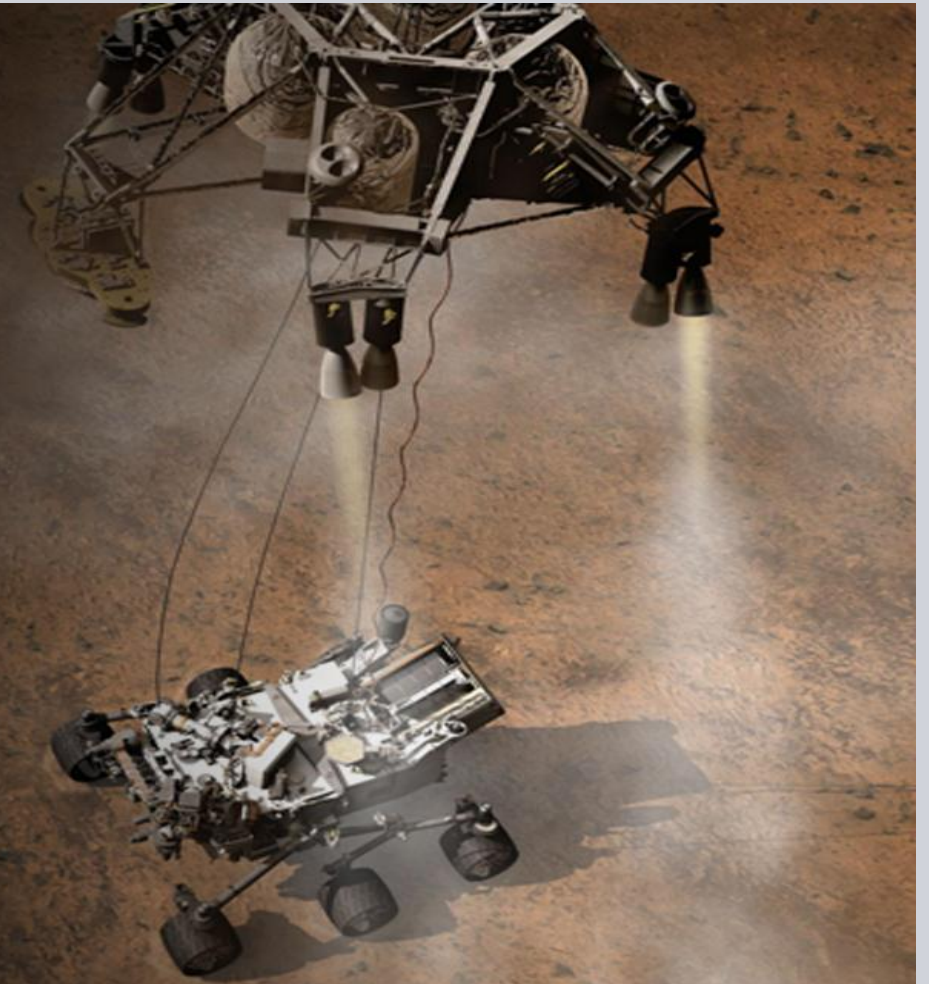
Industry Automation
Strong business performance

Industry Automation

We offer a unique combination of automation technologies and Industry Software spanning the entire value chain   from product design to service.

Our portfolio enables our customers to slash time-to-market by up to 50 percent.

Key Figures FY 2010 / FY 2011[1]

in millions of Euro	**2010**	**2011**	Δ Actual	Adjusted [2]
New Orders:	6,421	7,490	**+ 17%**	**+ 15%**
Revenue:	6,226	7,461	**+ 20%**	**+ 18%**
Profit:	1,004	1,415	**+ 41%**	

Siemens Industry Automation optimizes the industrial process of manufacturing companies.

[1] Figures as of September 30, 2011 for FY 2011.
[2] Excluding currency translation and portfolio effects.

Siemens PLM Software

Siemens Research and Development
Innovation is our lifeblood

Key R&D figures

- R&D spending: $5.4 billion in fiscal 2011, or 5.3% of revenue
- 27,800 R&D employees worldwide
- ~17,000 software engineers
- 160 R&D locations in roughly 30 countries around the world
- 8,600 inventions in fiscal 2011
- 53,300 patents granted
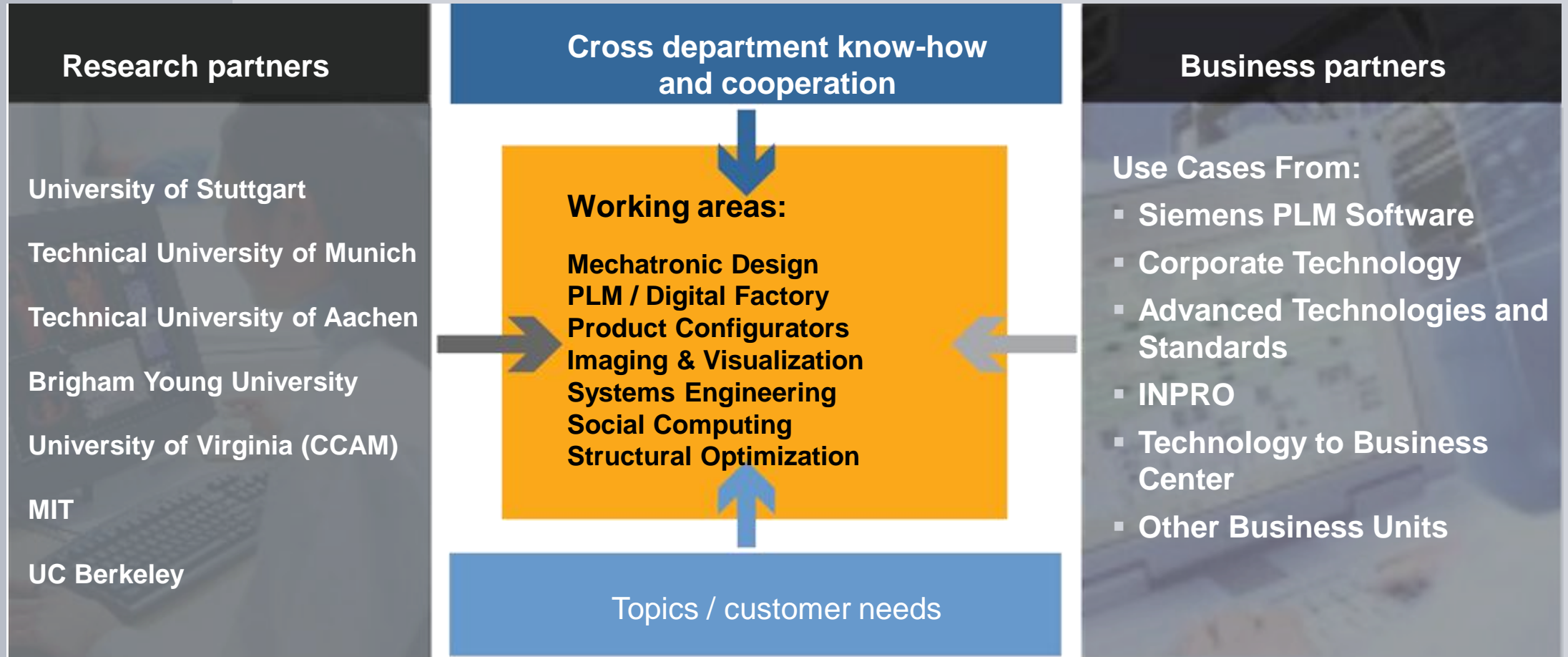
R&D spending in percent of revenue

2009	2010	2011
5.1%	5.2%	5.3%
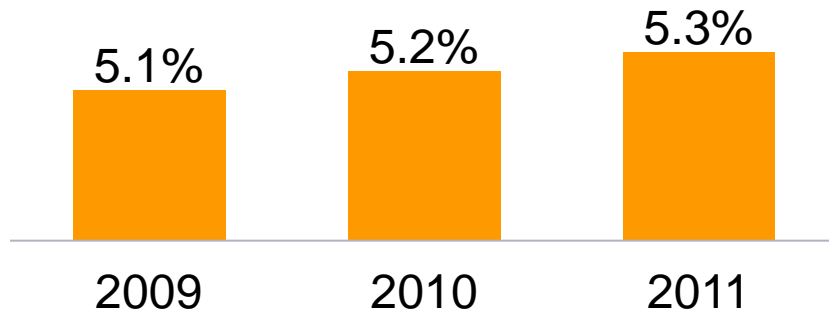
Ranking, recent highlights

- Our patent position in fiscal 2011:
  - → Germany: No. 3
  - → Europe: No. 1
  - → USA: No. 9
- Recent innovations:
  - → **Active Workspace** is a intuitive and highly visual environment where data from anywhere in a company's PLM ecosystem can be found to help you more quickly make sound decisions
  - → **TIA Portal** software platform enables design of all automation processes from a single computer screen

Siemens PLM Software

Siemens Corporate Technology
PLM Related Research

Research partners

University of Stuttgart

Technical University of Munich

Technical University of Aachen

Brigham Young University

University of Virginia (CCAM)

MIT

UC Berkeley

Cross department know-how and cooperation

Working areas:

Mechatronic Design
PLM / Digital Factory
Product Configurators
Imaging & Visualization
Systems Engineering
Social Computing
Structural Optimization

Topics / customer needs

Business partners

Use Cases From:
- **Siemens PLM Software**
- **Corporate Technology**
- **Advanced Technologies and Standards**
- **INPRO**
- **Technology to Business Center**
- **Other Business Units**

Goal: Leverage global expertise to innovate new products

Siemens Industry Software Strategy
Integrate product and production lifecycles

SIEMENS

Create intelligent product and production lifecycle

- Merge virtual with physical worlds
- Establish a digital platform for the integrated lifecycles
- Share knowledge between integrated lifecycles

DIGITAL ENTERPRISE PLATFORM

PRODUCT

PRODUCTION

PLM

MES

Plant Engineering

Automation Engineering

Siemens PLM Software

Siemens Industry Software
Customer deployment

Process Industry

Discrete Industry

Product Development

Teamcenter – Simatic IT (R&D Suite)

Bayernland (prod.) Green Mountain, JTI (impl.)
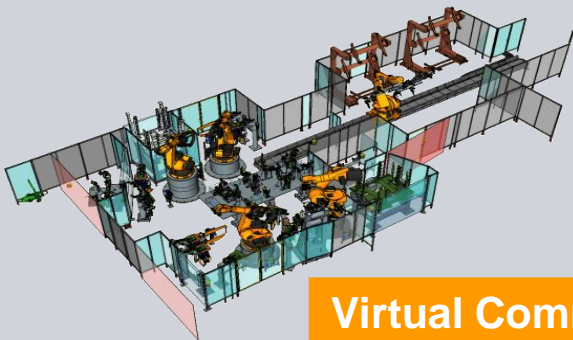
Virtual Commissioning

Process Simulate, Plant Simulation - Simit

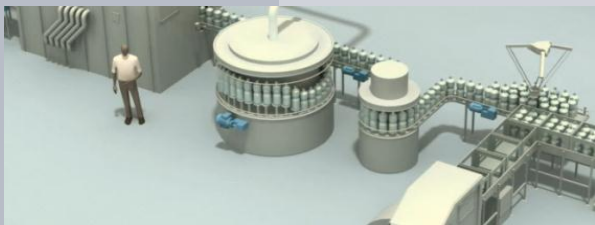Integration released First pilots in Automotive
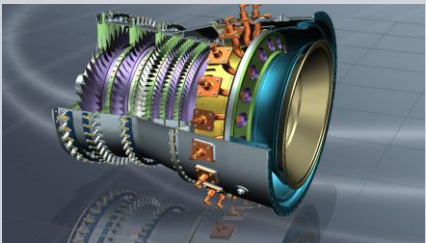
PLM – MES Integration

Teamcenter – Simatic IT (Prod. Suite)

Rolls Royce international roll-out (prod.) ITP (impl.)

PLAN | **DEVELOP** | **BUILD** | **SUPPORT**

Product Planning → Product Development → Production Planning → Production Engineering → Production Execution → Service and Support

Siemens PLM Software

Engineering and Manufacturing Culture
Siemens has more than 291 factories globally

Germany
116,000 | 32% | 10.8 | 15% | 76

Americas
81,000 | 23% | 20.5 | 28% | 77

Europe, CIS, Africa, Middle East (excl. Germany)
102,000 | 28% | 27.9 | 38% | 67

Asia, Australia
60,000 | 17% | 14.4 | 19% | 71

Legend: Employees | Revenue (billions of €) | Major production facilities
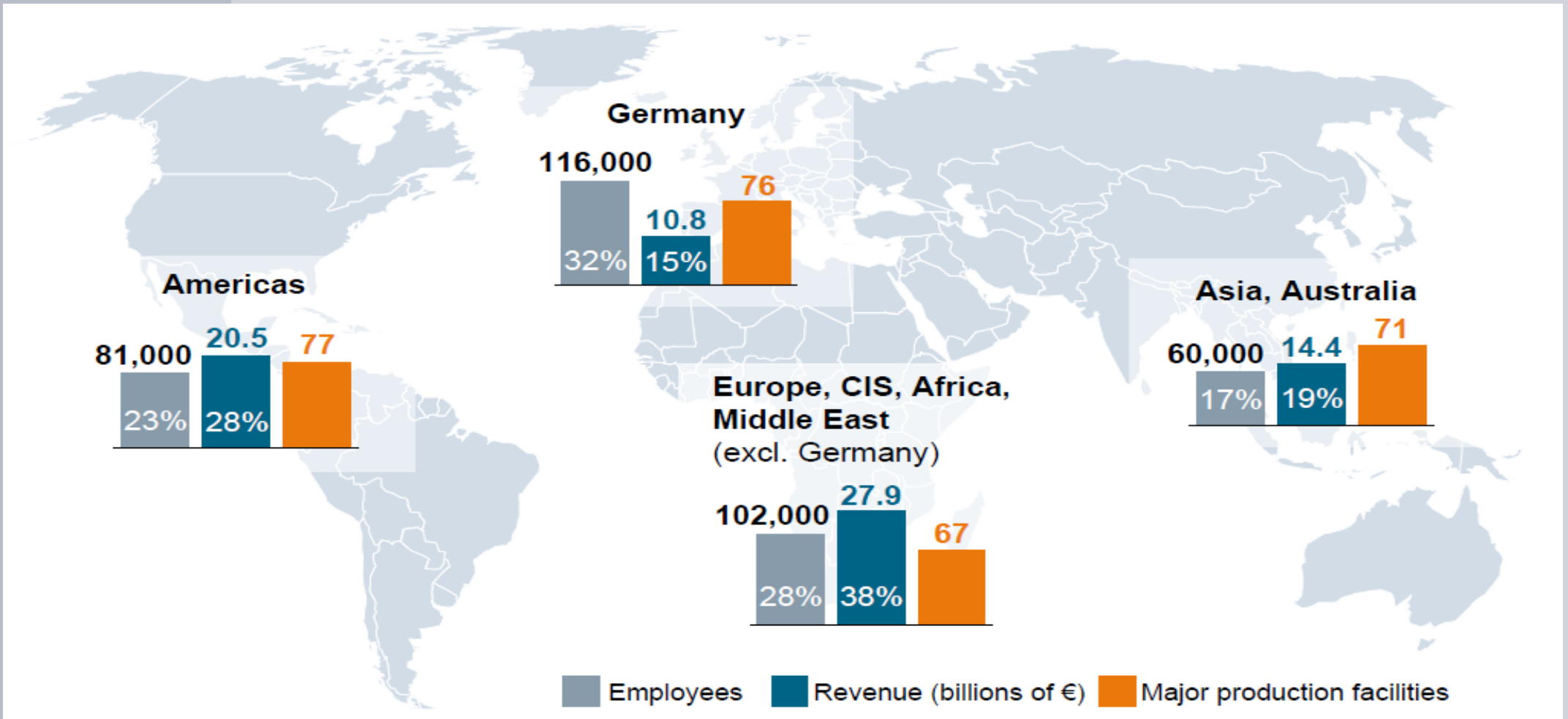
PLM: The New Enterprise Software Player

SIEMENS

" Product lifecycle management is an integrated, information-driven approach to all aspects of a product's life -- from its design inception through its manufacture, deployment and maintenance, culminating in its removal from service and final disposal."

University of Michigan PLM Development Consortium

Siemens PLM Software

PLM is Product Lifecycle Management

Enabling the Next Generation of Lean Thinking

PLM supports process standardization according to lean principles across the critical product lifecycle workstreams from Engineering and Product Development thru Manufacturing and Supply Chain while specifically enabling:

o *Collaborative* creation, management, dissemination, and use of product definition information globally

o *Optimized* key process flows according to lean principles across the extended enterprise (customers, joint ventures, supply partners, …)

o *Integrated* people, processes, business systems, and information

o *Scalability* to span the entire lifecycle from concept to end of life of a product

PLM Value to the Business

What is PLM

Value of PLM

Business Opportunity

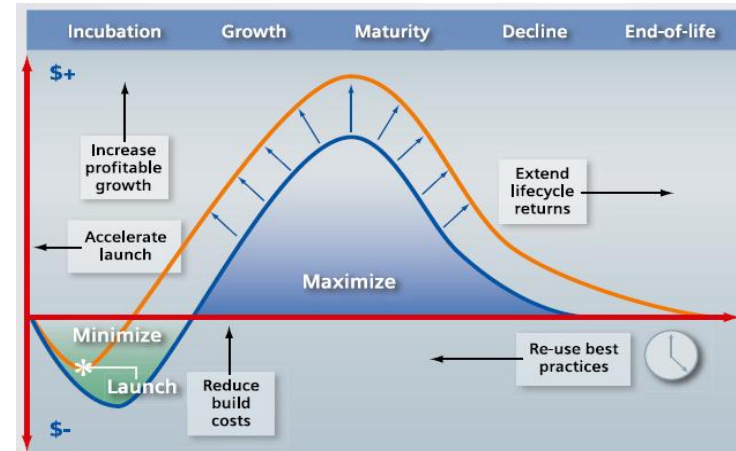PLM in Industries

Analysts Perspective

Case Studies

PLM Principles

PLM Capabilities

Implementing PLM

PLM helps companies deliver faster with improved quality brining more business at a reduced cost.

Revenue

- **Right Product to Market**

- **New Product Intro**

- **Product Margins**

- **Product Service & Delivery**

SPACEX

- Reduce cost of space access by 10x
- 50% productivity improvement

Esmaltec ELETRODOMÉSTICOS

- Reduce rework by 80%
- 90% fewer deviations in project and technical documentation

AIR PRODUCTS

- Faster quotes and more accurate cost estimates
- Plant design costs reduced by 2/3

Hendrick MOTORSPORTS www.HendrickMotorsports.com

- Find information immediately on-line
- Better informed engineering decisions

(BSI) Burner Systems

- 50% reduction in development cycle times
- 20% cycle time savings thanks to cPDM

if IGGESUND TOOLS
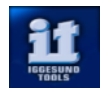
- Tasks completed in 2-3 days vs. 2-3 weeks
- Faster cycle times helps win new business

Siemens PLM Software

PLM is a Strategic Business System

What is PLM

Value of PLM

Business Opportunity

PLM in Industries

Analysts Perspective

Case Studies

PLM Principles

PLM Capabilities

Implementing PLM

Develop Capability Map

Support Capability Map

PLM Capabilities Map - Plan

APQC (American Productivity and Quality Center)			Planning		
Process Category	Process Group	Process Relationships Ratings :(9 - Strong ; 3 - Moderate ; 1 - Weak ; 0 - None)	Requirements & Planning	Product Portfolio	Program/Project Management
1.0. Develop Vision and Strategy (10002)			High Impact	High Impact	Medium Impact
2.0. Develop and Manage Products and Services (10003)			High Impact	High Impact	High Impact
3.0. Market and Sell Products and Services (10004)			Medium Impact	High Impact	Low Impact
4.0. Deliver Products and Services (10005)			Medium Impact	Low Impact	Medium Impact
5.0. Manage Customer Service (10006)			Low Impact	Low Impact	Low Impact
6.0. Develop and Manage Human Capital (10007)			No Capabilities	No Capabilities	No Capabilities
7.0. Manage Information Technology (10008)			No Capabilities	No Capabilities	No Capabilities
8.0. Manage Financial Resources (10009)			Medium Impact	Medium Impact	Medium Impact
9.0. Acquire, Construct, and Manage Property (10010)			Low Impact	Low Impact	No Capabilities
10.0. Manage Environmental Health and Safety (11179)			Medium Impact	Low Impact	Medium Impact
11.0. Manage External Relationships (10012)			Low Impact	Low Impact	Low Impact
12.0. Manage Knowledge, Improvement, and Change (10013)			High Impact	High Impact	High Impact

Key: High Impact | Medium Impact | Low Impact | No Capabilities

PLM Alignment to APQC Processes

Siemens PLM support for industries

SIEMENS

Currently 68,700 customers and 6,600,000 seats deployed

- **24 of the top 25 Automotive OEM's use Siemens PLM solutions**
- **21 of the top 25 Automotive Suppliers use Siemens PLM solutions**
- **18 of the top 20 Aerospace companies use Teamcenter for PLM**
- **Top Shipbuilding companies have switched to Siemens PLM**

"Product Lifecycle Management (PLM) is the newest wave in productivity. This revolutionary approach is an outcome of lean thinking; however, PLM eliminates waste and improves efficiency across *all* aspects of a product's life--from design to deployment--not just in its manufacture. By using people, product information, processes, and technology to reduce wasted time, energy, and material across an organization and into the supply chain, PLM *drives the next generation of lean thinking.*" – Michael Grieves: Product Lifecycle Management

Aerospace and Defense | Machinery | Retail and Apparel | Energy | Shipbuilding
Automotive | Life Sciences | High Technology | Consumer Products

How companies benefit from Siemens PLM

Index

Change Management
- FMC Technologies
- Mercury Marine
- Pratt & Whitney
- Teradyne
- Xerox

Collaboration
- Babcock International
- BAE Systems
- Perkins Engines
- Zhejiang

Design Release
- Hewlett Packard
- Spacex

Design Review
- Fiat
- Hyundai
- Siemens Energy

Manufacturing Planning
- NPO Iskra

Program Management
- Teradyne

Simulation
- Ford
- Maya

PLM Case Studies

Confidence in Information and Processes

Find it fast

…a single source of data

Trust it

…revision and security control

Comprehend it

…intuitive 2D/3D visualization

Understand context

…rich information relationships

Know when & what to do

…schedule and workflow automation

Make it visible to others

…automatic notification and reporting

Siemens PLM Software
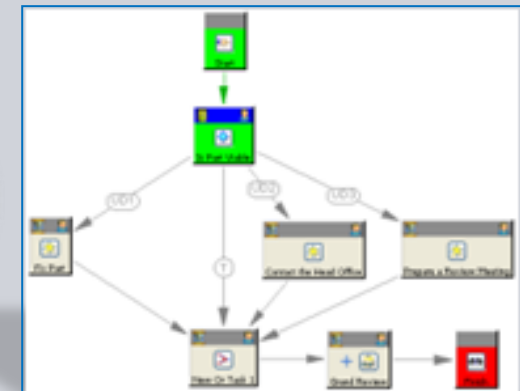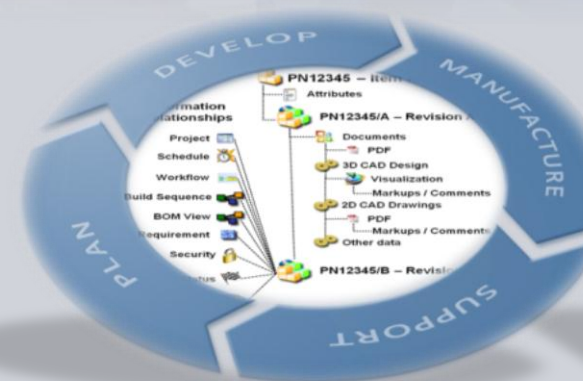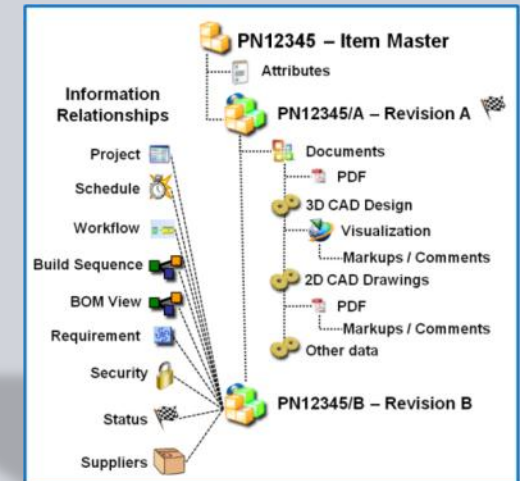
Core concepts for PLM

- What is PLM
- PLM Principles
  - Manage-Find-Share
  - PLM is a Platform
  - Fundamentals of PLM
- PLM Capabilities
- Implementing PLM

Manage information

- Manage the data
- Manage the process
- Single Virtual Source

Find information

- Simple and detailed search
- Where used/referenced
- Process status

Share information

- Real-time collaboration
- Attached to workflow
- Visualization

That's what I need!

It is almost complete!

Everyone sees it!

PN12345 – Item Master
- Attributes
- PN12345/A – Revision A
  - Documents
    - PDF
  - 3D CAD Design
    - Visualization
  - 2D CAD Drawings
    - PDF
    - Markups / Comments
  - Other data
- PN12345/B – Revision B

Information Relationships
- Project
- Schedule
- Workflow
- Build Sequence
- BOM View
- Requirement
- Security
- Status
- Suppliers

DEVELOP · MANUFACTURE · SUPPORT · PLAN

A PLM Platform ties applications together

What is PLM

PLM Principles

Manage-Find-Share

PLM is a Platform

Fundamentals of PLM

PLM Capabilities

Implementing PLM

Combine information, process and communication to capture how your business really works providing…
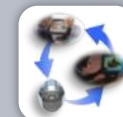
Single Source of Information
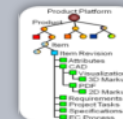
Process Automation

Embedded Collaboration

Comprehensive
…more from a single solution partner

Modular
…align investment with requirements over time

Out-of-the-box
…use best practices -vs- build from scratch

Configurable
…faster deployment lowers TCO

Scalable
…high performance for any number of users

OPEN
…industry standard technologies

PLM Platform

TEAMCENTER

Applications

ERP
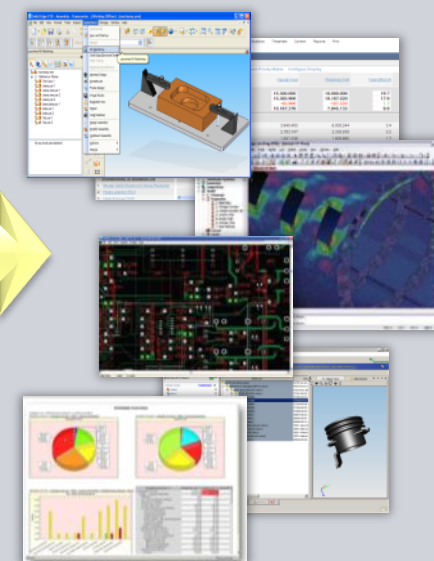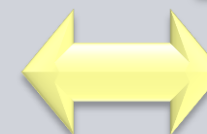
PLM provides a single source of the truth

What is PLM
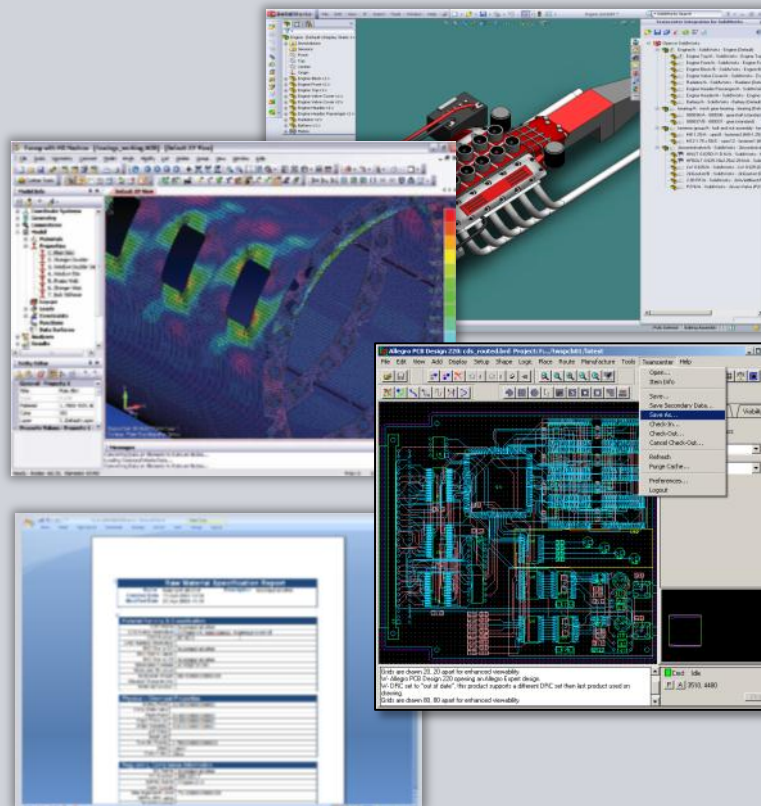
PLM Principles

Manage-Find-Share

PLM is a Platform

Fundamentals of PLM

PLM Capabilities

Implementing PLM

If it's available in electronic form, PLM can manage it.

MultiCAD in a Single Source:
NX, SolidEdge, SolidWorks, Pro/E, Catia, AutoCAD, Inventor, CATIA, CAM Data

ECAD Integrations: Altium, Cadence, Mentor, Intercept, EDA Gateway

SLM Integrations: NXNastran, Abaqus, Ansys, Fluent, Hypermesh, SLM Toolkit

Basic Data Types: Word, Excel, Text, PDF, ZIP, HTML, etc…

Configurable Datasets to map any application for Teamcenter to manage the information.

1 / 3

Enterprise wide progress visibility

What is PLM

PLM Principles

Manage-Find-Share

PLM is a Platform

Fundamentals of PLM

PLM Capabilities

Implementing PLM

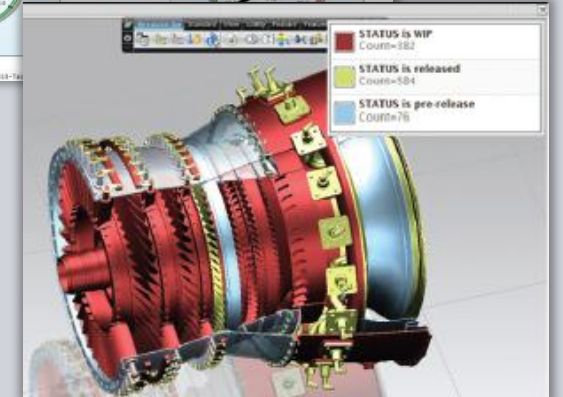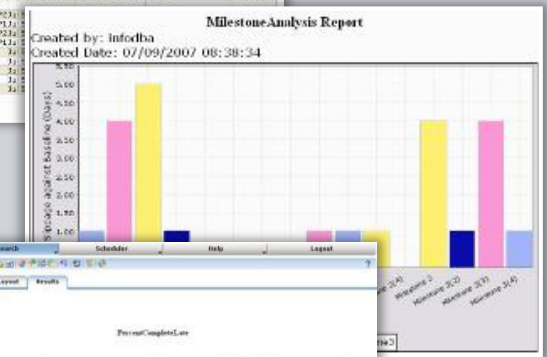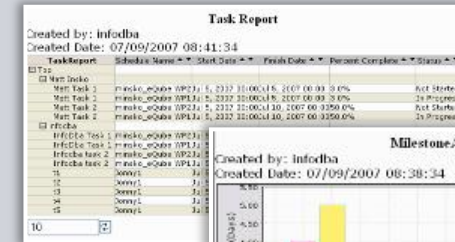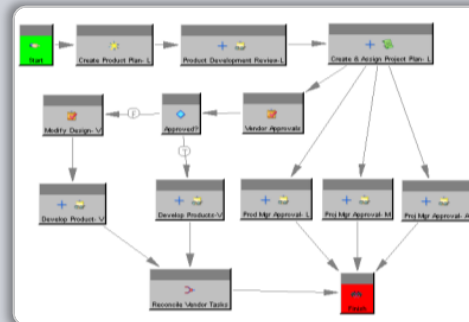## Macro and Micro visibility of status

Where in the Product Lifecycle?

- Release Status
- Product Dev. Phases
- Change Process

Where in a Process Workflow?

- Completion status
- Who's task is due
- Where is it going

2 / 3

Global collaboration from anywhere

What is PLM

PLM Principles

Manage-Find-Share

PLM is a Platform

Fundamentals of PLM

PLM Capabilities

Implementing PLM

Mobile Access

Design Reviews

Travelling managers

Field service maintenance

Shop floor instructions

Supplier Access

Office Access

Phased approach to PLM Initiatives

Adopting End-to-End PLM takes time so a phased strategy is best practice of building a solid foundation in Engineering, expanding the flow of information to Manufacturing, and integrating strategic Business operations.

What is PLM

PLM Principles

PLM Capabilities

Foundation (PDM)

Information & Process

Optimize the Business

Siemens PLM Suite

Implementing PLM

Focus on the Details

Finish the Structure

Build the Foundation
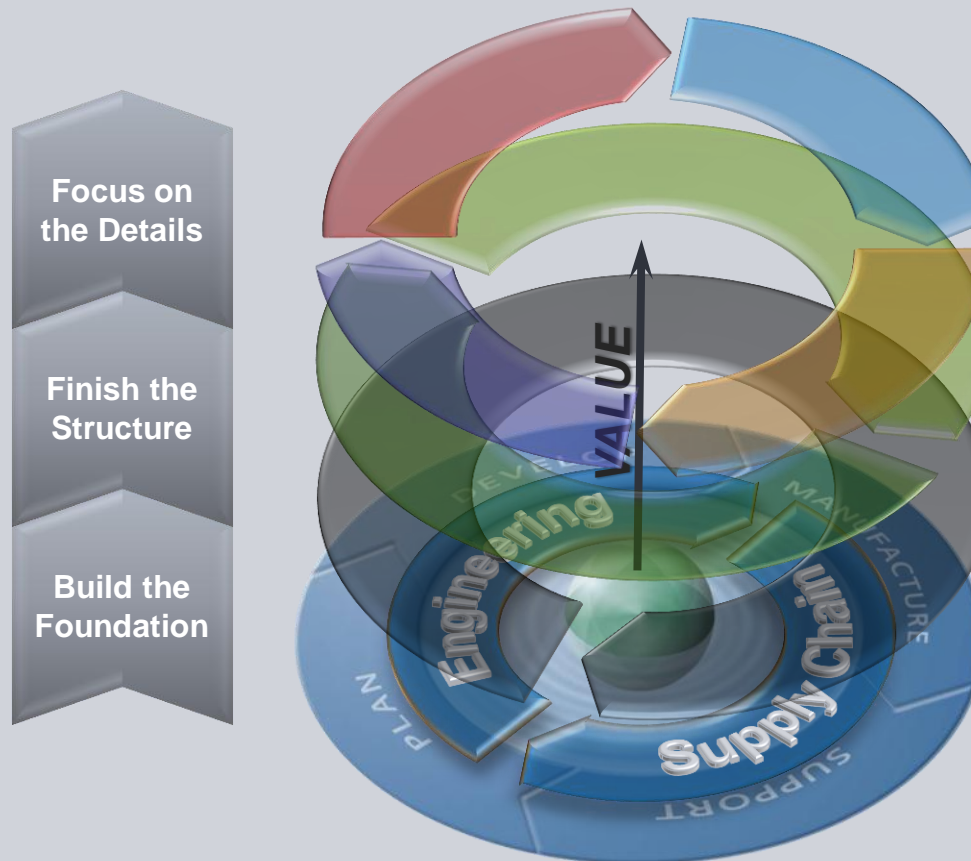
Optimize the Business

Specialized PLM solutions (applications) that provide specific capabilities as needed for different operations thru the product lifecycle.

Product Information & Processes

Expand to the management of any information and processes that *supports* the development, production, and documentation of product.

PLM Foundation (PDM)

Foundational management of product Design and Engineering information including CAD, Document, and Release Status.

Siemens PLM Software

Foundational PLM
(*Product Data Management*)

- What is PLM
- PLM Principles
- **PLM Capabilities**
  - ▶ **Foundation (PDM)**
  - Information & Process
  - Optimize the Business
  - Siemens PLM Suite
- Implementing PLM

Release Management

X

- ▪ **Managed data ensures processing the right data**
- ▪ **An electronic process means a repeatable process**
- ▪ **Different Statuses can be applied throughout the lifecycle to denote which process steps are complete as well as control access to the data**
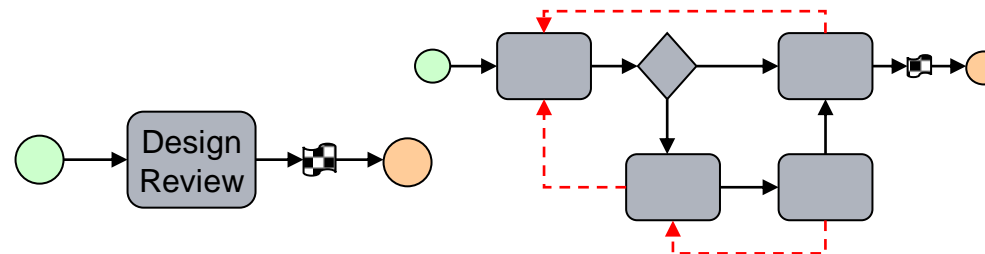
Release to Development 🚩   *Release to Service Only* 🚩

Release to Prototype 🚩   *Release to Obsolete* 🚩

Release to Production 🚩   *Closed* 🚩

Product Information & Processes

What is PLM

PLM Principles

PLM Capabilities

Foundation (PDM)

▸ Information & Process

Optimize the Business

Siemens PLM Suite

Implementing PLM

Define and Develop
the Product

Change

Electrical /
Mechanical

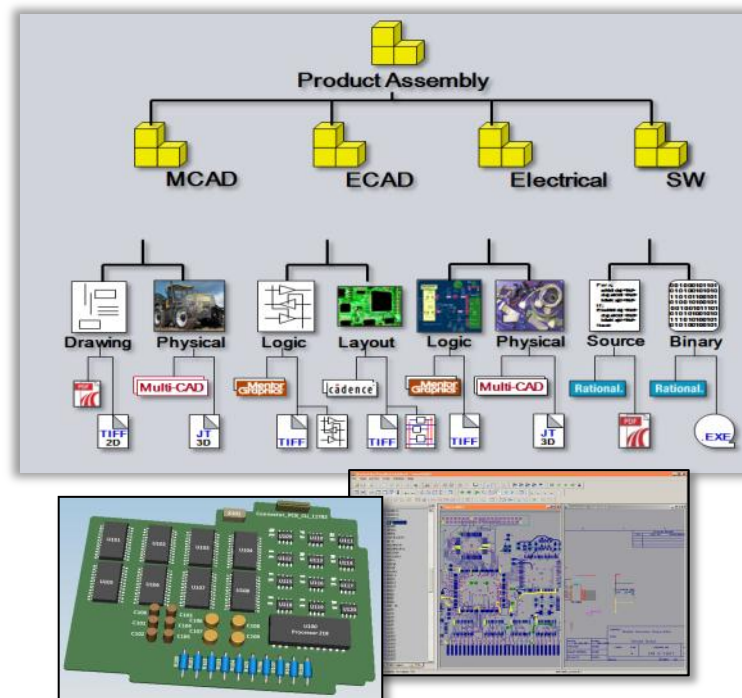## Electrical / Mechanical Integration

X

**Mech/Elect Data Model:
Single Source of Product
Knowledge**

**Requirements and
Mechanical/Electrical
Associativity**

**Best-in-class Tools and
Tool Integrations**

**Cross-domain Design
Collaboration**

Advanced
Visualization

Product
Documentation

Communicate with
the Enterprise

Siemens PLM Software

Optimize the Business

What is PLM

PLM Principles

PLM Capabilities

Foundation (PDM)

Information & Process

Optimize the Business

Siemens PLM Suite

Implementing PLM

Enhance Engineering Performance

Manage People & Money

Simulation

Program Management

X

Tooling Automation

Tooling process expertise
• NX Tooling comes out-of-the-box equipped with embedded process expertise
• Allows less experienced designer to be more productive
• Shortens tool design time and reduces errors

Re-use of company standards
• Shorten their tool design through manufacture cycle by as much as 40%.
• Reuse of proven methods and resources
• Reduction of errors in design and manufacturing

Design validation
• Ensure that parts, tools, and manufacturing processes have been properly defined as to eliminate costly physical rework
• Identification and resolution of issues early in the design cycle
• Eliminate costly design errors

Deliver The Product

RFQ Management
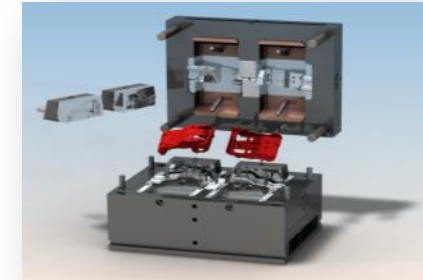
Assembly Planning

Capture the Voice of the Customer

Siemens PLM Software

Siemens PLM product suite

What is PLM
PLM Principles
PLM Capabilities
Foundation (PDM)
Information & Process
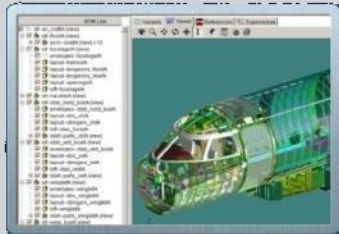### Optimize the Business
Siemens PLM Suite
Implementing PLM

TEAMCENTER
NX
TECNOMATIX

Siemens PLM Technology is categorized into three primary product brands.

DIGITAL LIFECYCLE MANAGEMENT
- Collaborate & innovate more intelligently...

TEAMCENTER

DIGITAL PRODUCT DEVELOPMENT
- Design & engineer better products faster...

NX

DIGITAL MANUFACTURING
- Build & support products more efficiently...

TECNOMATIX

Teamcenter for Digital Lifecycle Management

SIEMENS

Navigation sidebar:
- What is PLM
- PLM Principles
- **PLM Capabilities**
  - Foundation (PDM)
  - Information & Process
  - Optimize the Business
  - Siemens PLM Suite
- Implementing PLM

- TEAMCENTER
- NX
- TECNOMATIX

Capability tiles:
- Systems Engineering & Requirements Management
- Portfolio, Program & Project Management
- Engineering Process Management
- Bill-of-Materials Management
- Compliance Management
- Content & Document Management
- Formula, Package & Brand Management
- Supplier Relationship Management
- Mechatronics Process Management
- Manufacturing Process Management
- Simulation Process Management
- Maintenance, Repair & Overhaul
- Reporting & Analytics
- Community Collaboration

- Lifecycle Visualization
- Platform Extensibility Services
- Enterprise Knowledge Foundation

Select a domain to learn more…

The world's most widely used PLM system, Teamcenter helps you:

- <u>Increase productivity</u> with a single source of product and process knowledge
- <u>Improve teamwork</u> through instant collaboration with anyone, anywhere
- <u>Take control</u> to power end-to-end PLM applications leveraging common data
- Speed ROI by lowering the cost of PLM ownership

Teamcenter Enterprise Knowledge Foundation

TEAMCENTER
NX
TECNOMATIX
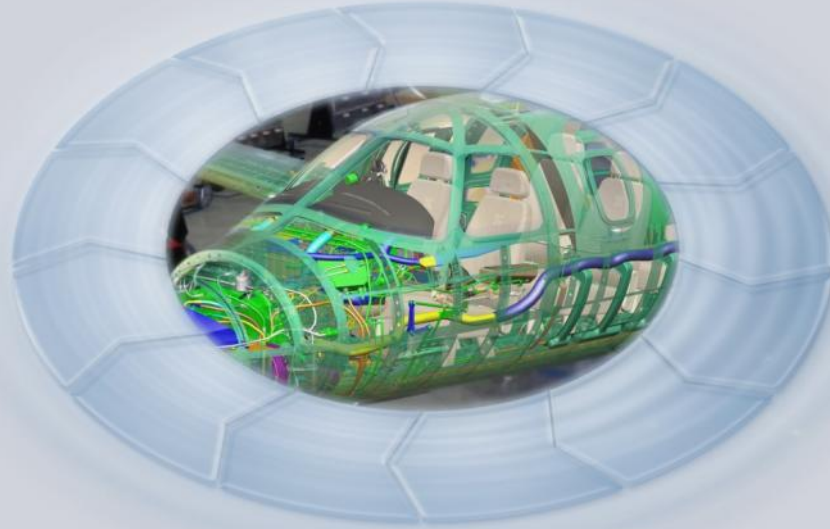
- Single secure environment for all product and process knowledge
- Manage diverse product-related IP
- Process automation across extended enterprise
- Rapid time to value with tailored domain and industry solutions

SIEMENS

USER FOCUS **Air Products**

- Challenge: Reduce plant design costs by building from reusable modules

- Solution: Implement PLM to capture & reuse knowledge across enterprise

- Result: Plant design costs reduced by two-thirds

Teamcenter Platform Extensibility Services

What is PLM

PLM Principles

PLM Capabilities

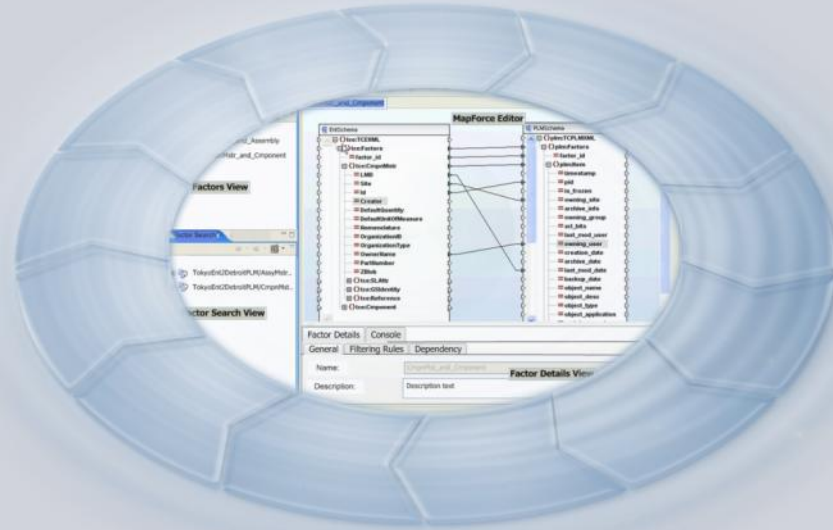Foundation (PDM)

Information & Process

Optimize the Business

Siemens PLM Suite

Implementing PLM

TEAMCENTER

NX

TECNOMATIX

USER FOCUS

B/S/H

- Configure Teamcenter to fit your Business
- Connect Teamcenter and other enterprise applications
- Customize Teamcenter with specialized applications

- <u>Challenge</u>: Enable global innovation to drive regional customer satisfaction
- <u>Solution</u>: Align Teamcenter with global business processes without customization
- <u>Result</u>: Integrated PLM system costs less to implement and maintain

Teamcenter Lifecycle Visualization

- What is PLM
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- **PLM Capabilities**
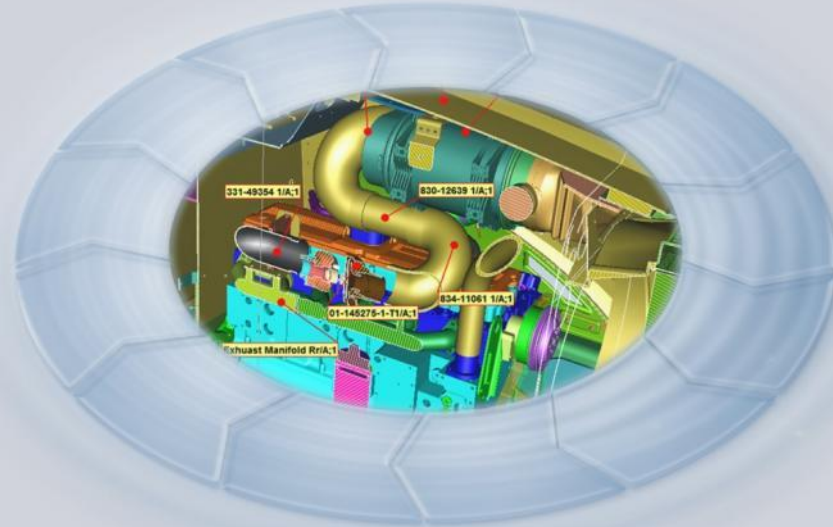 - Foundation (PDM)
  - Information & Process
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TEAMCENTER
NX
TECNOMATIX

- Common "visualization pipeline" across lifecycle
- Powered by JT, world's 3D standard, Ensures CAD system independence
- Pervasive managed visualization
- Digital mockup

USER FOCUS **Lockheed Martin**

- Challenge: Lead coalition of 5 partners & 1000 suppliers from 30 countries in building F-35 JSF

- Solution: Provide one environment for visualization, collaboration, knowledge reuse, & process automation

- Result: 35% cycle time reduction saves $ billions

Teamcenter Systems Engineering and Requirements Management

What is PLM

PLM Principles

PLM Capabilities

Foundation (PDM)

Information & Process

Optimize the Business

Siemens PLM Suite

Implementing PLM
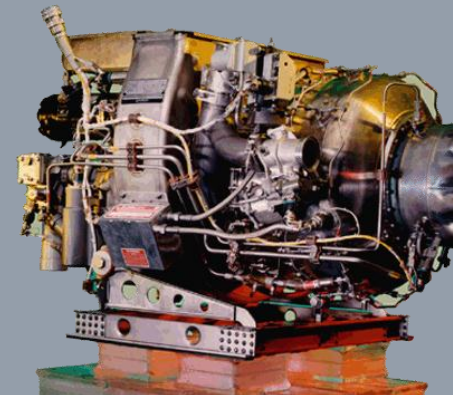
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TECNOMATIX

- Fully Integrated requirements management
- Lifecycle requirements traceability
- Familiar Microsoft Office Live user interface
- Cross-domain systems definition

USER FOCUS **Honeywell**

- Challenge: Reduce cost of defense electronics products while increasing quality

- Solution: Automate process of managing customer requirements

- Result: Lower cost products attuned more to customer needs

Siemens PLM Software

Teamcenter Portfolio Program and Project Management

- What is PLM
- PLM Principles
- **PLM Capabilities**
  - Foundation (PDM)
  - Information & Process
  - Optimize the Business
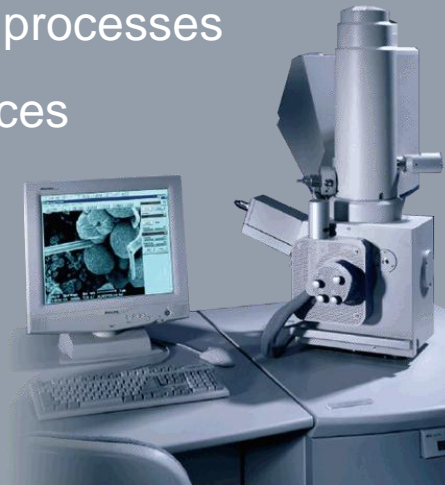 - Siemens PLM Suite
- Implementing PLM

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TECNOMATIX

- Optimize your product portfolio
- Connect program and project execution with portfolio decisions
- Capacity and resource planning to meet time-to-market demands
- Management dashboards for quick decision making

USER FOCUS — Katun

- Challenge: Be first to market with new printer products—while keeping edge in extensive testing

- Solution: Manage design projects from a single source of product and process knowledge

- Result: Development time reduced, costly delays prevented

Teamcenter Engineering Process Management

- What is PLM
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FEI
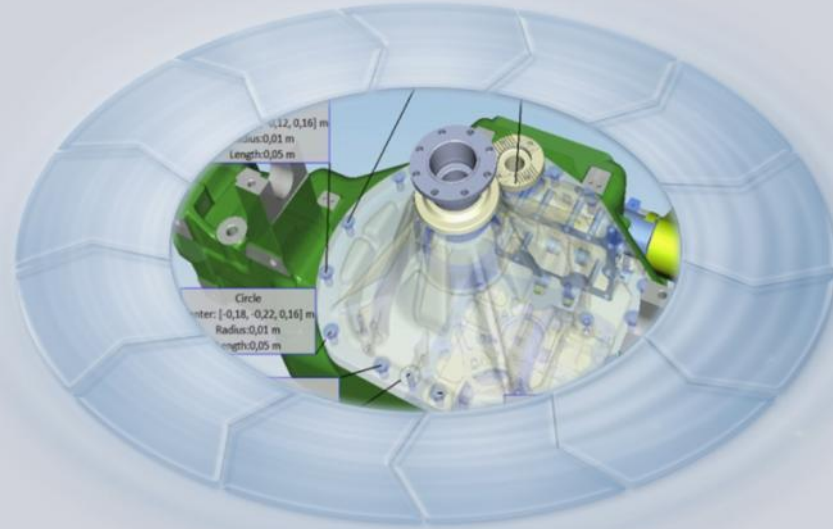
- Multi-CAD design management
- Design and process reuse reduce cost and time
- Digital design validation to catch issues before they cost money
- Best practice engineering change management

- Challenge: Integrate four business units for multi-site engineering

- Solution: Introduce single development environment, establish common processes

- Result: Best practices shared, time to market reduced by months

Teamcenter Bill-of-Materials Management

What is PLM

PLM Principles

PLM Capabilities

Foundation (PDM)

Information & Process

Optimize the Business

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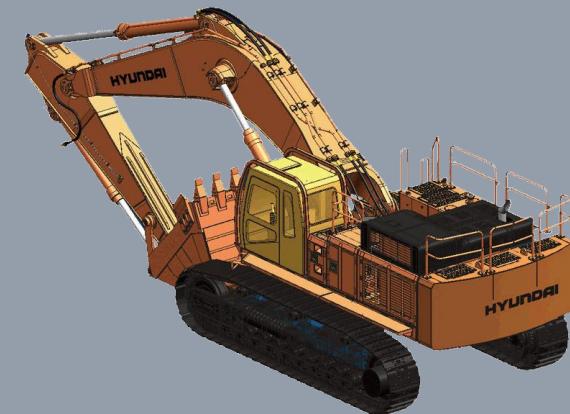**Implementing PLM**

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TECNOMATIX
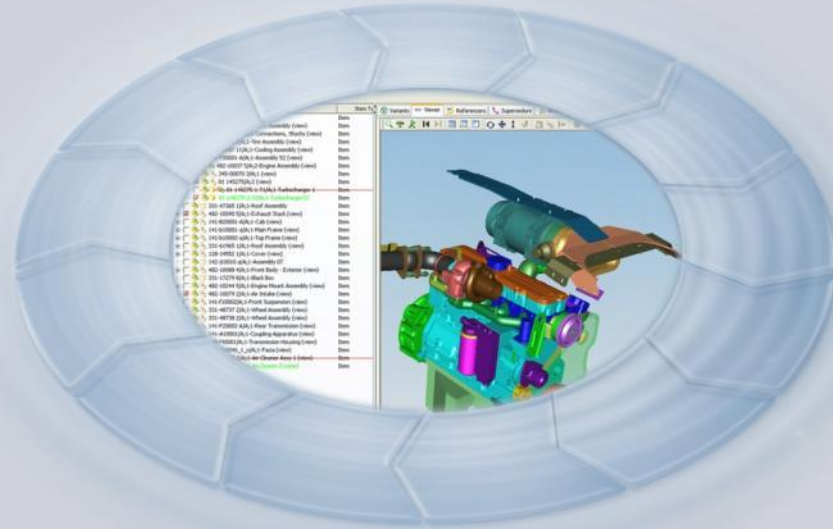
- Product configuration and enterprise BOM management
- Process-specific data structure and data management
- Lifecycle representation management

USER FOCUS

Hyundai Heavy Industries

- Challenge: Become "top-five" construction equipment producer

- Solution: Accelerate development with automatic BOM extraction from 3D assemblies

- Result: Increased data re-use and design productivity

Teamcenter Compliance Management
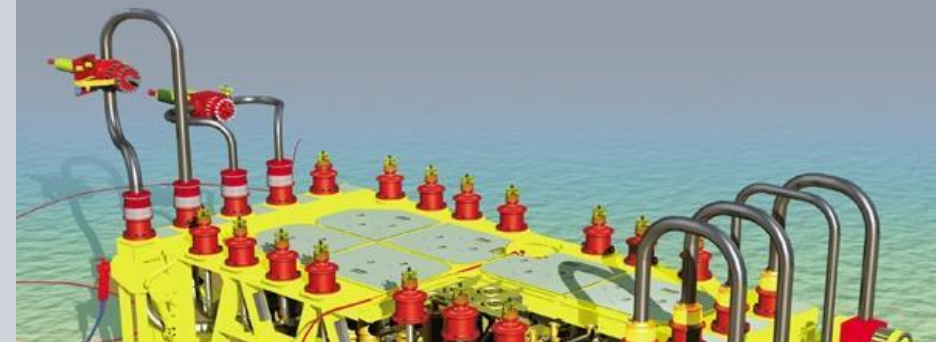
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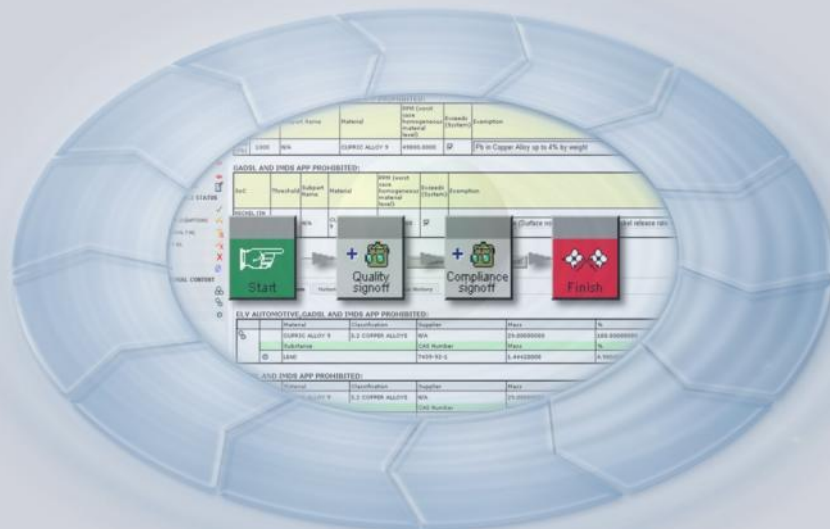
- Securely manage compliance data
- Link compliance requirements to business processes
- Enterprise-wide visibility and validation
- Industry-specific solutions
- Support sustainability strategies

USER FOCUS **FMC Technologies**

- Challenge: Ensure compliance in tightly regulated energy industry

- Solution: Manage documentation to build parts to specification

- Result: Products meet requirements of international regulatory agencies

Teamcenter Content and Document Management

Navigation

- What is PLM
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Main Content
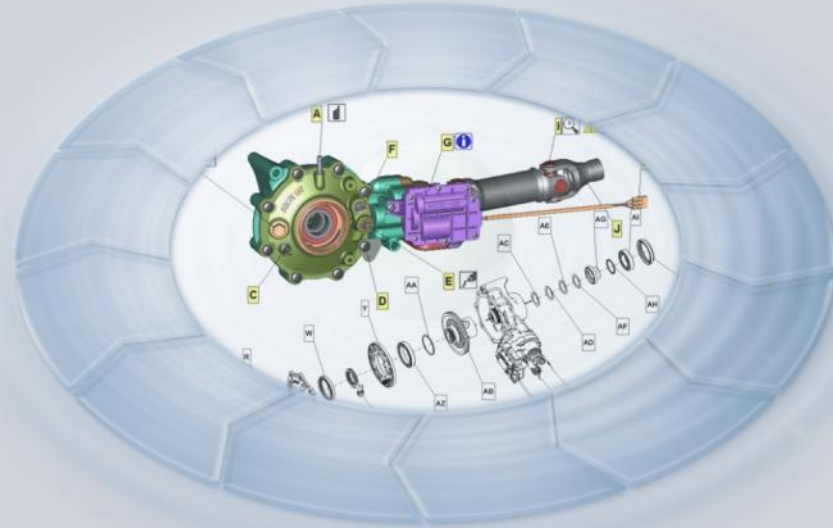
- Standardized authoring and structuring of documents
- Advanced content authoring to support graphic and translated content for reuse
- Multi-channel publishing

USER FOCUS — Major Control Systems Manufacturer

- Challenge: Reduce documentation costs, support global markets
- Solution: Implement content management with PLM environment to support reduced time and effort
- Result: Doubled volume of documentation, 4X number of languages supported, 25-50% reduction in time and costs

Teamcenter Formula Package and Brand Management

What is PLM

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- Brand knowledge management
- Formula management
- Packaging and artwork management
- Global specification management

USER FOCUS **Unilever**

- Challenge: Sustain growth with huge product portfolio and global employees

- Solution: Create a global specification management system

- Result: Better profit margins, top-line growth, and reduction in raw material specifications

Teamcenter Supplier Relationship Management

What is PLM

PLM Principles

PLM Capabilities

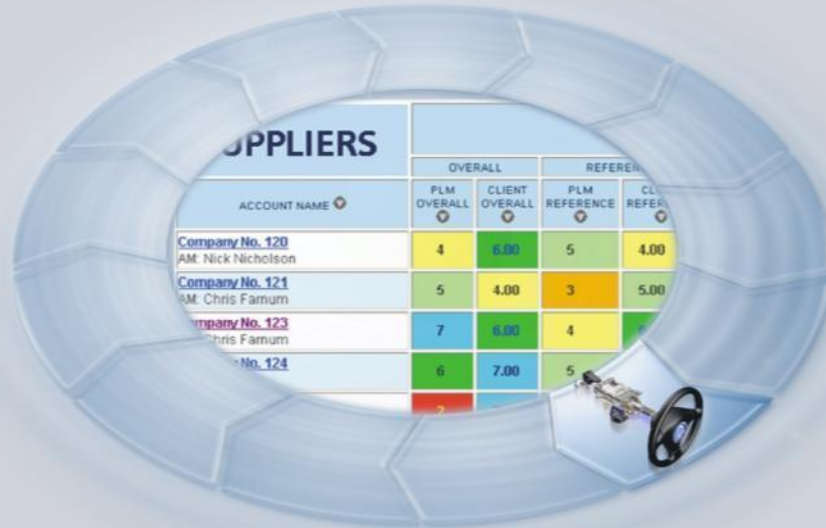Foundation (PDM)

Information & Process

Optimize the Business

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USER FOCUS · **Major Automotive Supplier**

- Synchronization with product development
- Electronic sourcing process
- Supplier management
- Spend management

- <u>Challenge</u>: Improve speed and accuracy of quoting process

- <u>Solution</u>: End-to-end electronic sourcing integrated with product change process

- <u>Result</u>: Shortened sourcing cycles, fewer communications errors, increased compliance with negotiated agreements

Teamcenter Mechatronics Process Management
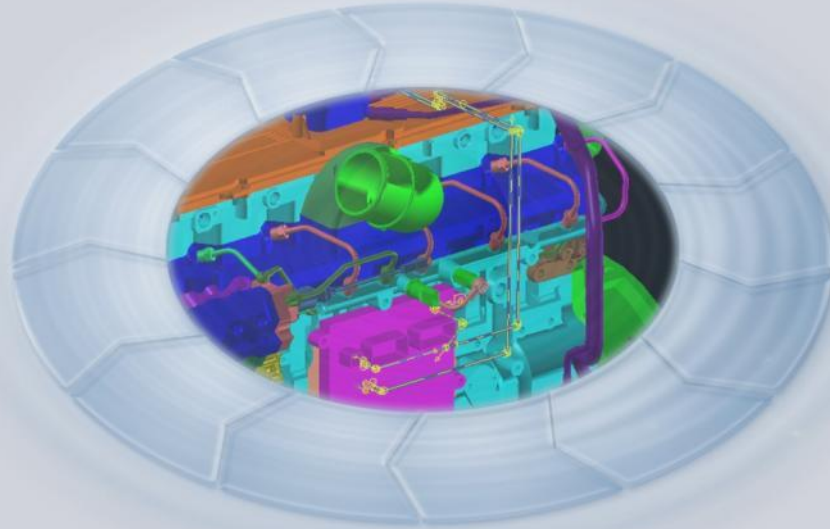
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- Mechatronics data model: single source of product knowledge
- Requirements and mechatronics associativity
- Best-in-class tools and integrations
- Cross-domain design collaboration

USER FOCUS

Northrop Grumman

- Challenge: Manage requirements process for program involving mechanical & electronic systems

- Solution: Implement database to automate requirements process

- Result: Improvements to competitive bid process lower cost, enhanced quality

Teamcenter Manufacturing Process Management

What is PLM

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Optimize the Business

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Implementing PLM

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- Single Source of manufacturing Knowledge
- Lifecycle control
- Proven interoperability
- Manufacturing resource visibility

USER FOCUS   ASCOM

- Challenge: Optimize manufacturing process & improve quality

- Solution: Build knowledge base for continuous improvement & quality reporting

- Result: New product cycles 10x faster; quality correction less costly

Teamcenter Simulation Process Management

What is PLM

PLM Principles

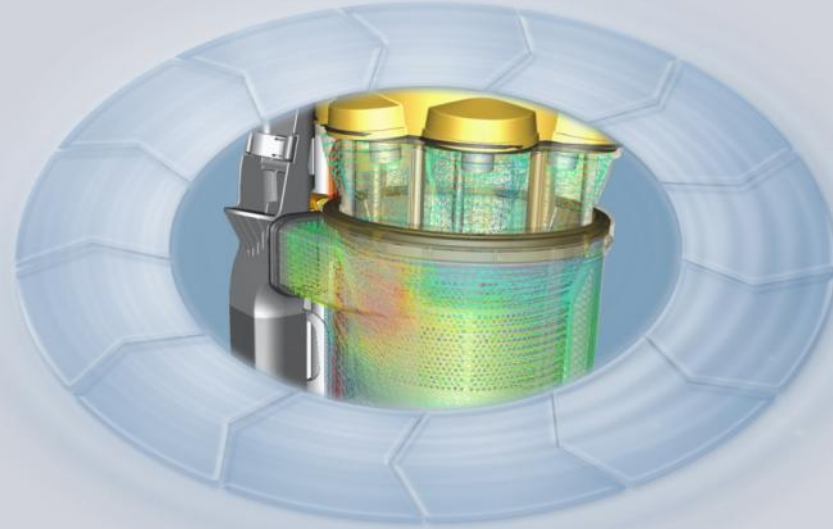**PLM Capabilities**

Foundation (PDM)

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USER FOCUS — **Adam Opel**

- Challenge: Conduct performance analyses earlier in design

- Solution: Change process to enable designers to do up-front simulations

- Result: Designs evaluated in less than a day; quality enhanced for safer cars

- Single PLM environment to manage simulation tools, data and workflows
- Standard, repeatable simulation processes
- CAD and CAE coordinated so "as-analyzed" represents "as-designed"
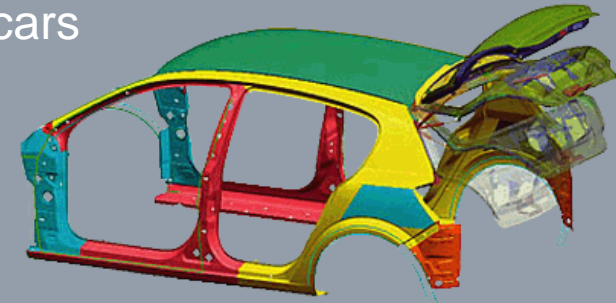
Teamcenter Maintenance Repair and Overhaul (MRO)

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- Configuration management of operational assets
- Maintenance planning and forecasting
- Maintenance execution/compliance
- Materials lifecycle management
- Logistics support analysis records mgt.

USER FOCUS

Royal Australian Navy

- <u>Challenge</u>: Manage MRO process on entire fleet of ships

- <u>Solution</u>: Implement Navy-wide logistics system to guide ships in proper MRO process

- <u>Result</u>: Ships operate in more compliance with regulations

Tecnomatix for Digital Manufacturing

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TECNOMATIX

Tecnomatix optimizes performance by helping you leverage best practices, make the right decisions and respond better to change.

- The #1 Enterprise Digital Manufacturing solution

- Highest quality part & assembly manufacturing from Job 1

- Single associative source for manufacturing information

Part Planning & Validation

Assembly Planning & Validation

Robotics & Automation Planning

Plant Design & Optimization

Quality Management

Production Management

Select a domain to learn more…

Tecnomatix Part Planning & Validation

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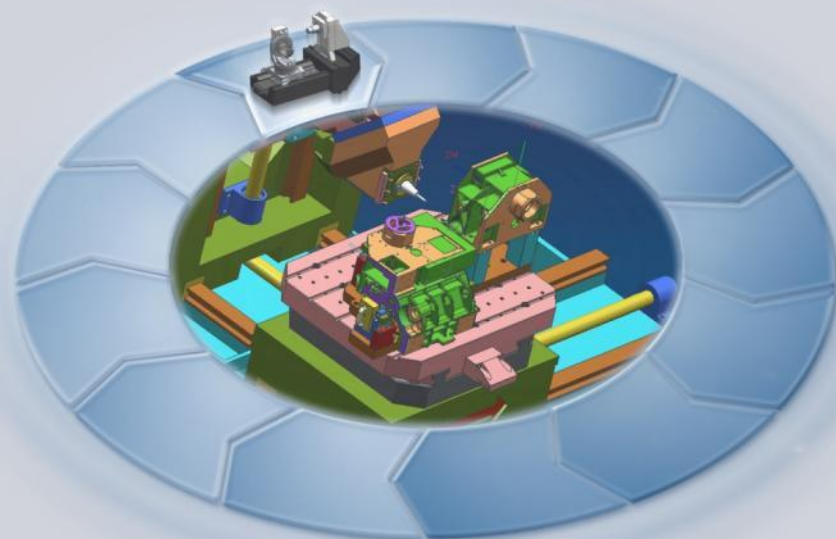
Optimize the Business

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- Process plans for part manufacturing
- Programming & validation for high volume machining
- Machining, programming & analysis
- High-speed transfer line balancing
- Stamping, die & press line validation

USER FOCUS **Pratt & Whitney**

- Challenge: Reduce engine development lead-time & cost

- Solution: Leverage standardized part manufacturing processes & extend system to suppliers

- Result: Engine development time cut in half; costs reduced 75%

Tecnomatix Assembly Planning & Validation

What is PLM

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- Process design
- Assembly validation & optimization
- Ergonomic simulation
- Work-instruction creation
- System balancing

Hella

USER FOCUS

- Challenge: Supply auto OEMs more lighting & electronics variants in shorter innovation cycles

- Solution: Design & simulate processes to optimize production

- Result: Faster production start-ups, greater customer responsiveness

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Tecnomatix Robotics & Automation Planning
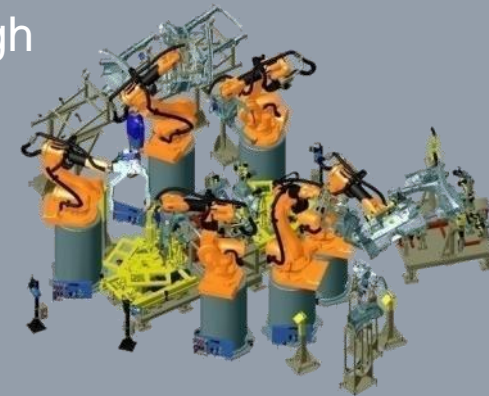
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▶ TECNOMATIX

- Multi-user collaborative 3D environment
- Automation and productivity tools
- Event-based simulation
- Offline programming
- Virtual commissioning

USER FOCUS **Volvo**

- <u>Challenge</u>: Improve all body-in-white planning activities

- <u>Solution</u>: Implement single system for process design & simulation

- <u>Result</u>: Implementation on track with high adoption rate

WWW

Tecnomatix Plant Design & Optimization

What is PLM

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- Unified source of factory knowledge
- Virtual factory design & visualization
- Analysis of facility logistics
- Simulation-based business decisions

USER FOCUS

General Motors

- Challenge: Improve agility to build any product anywhere

- Solution: Link design, manufacturing to optimize plant performance

- Result: Vehicle development time cut 50%: Lansing Plant wins JD Power quality award

Tecnomatix Quality Management

What is PLM

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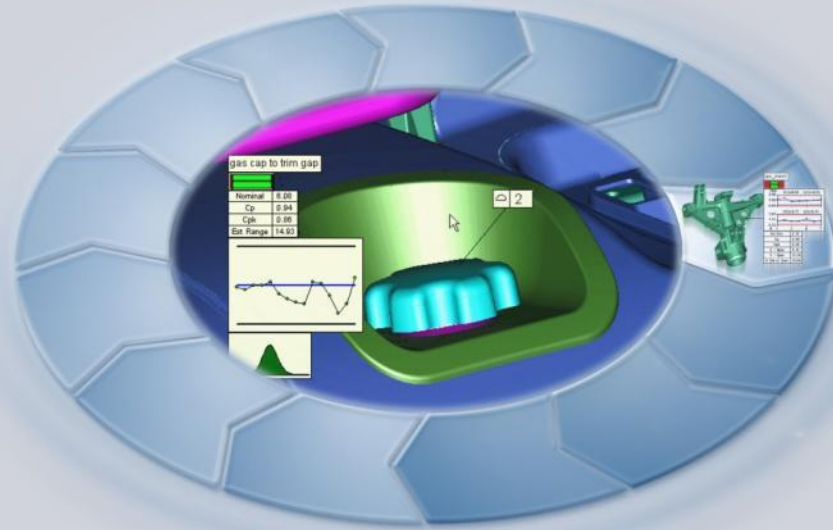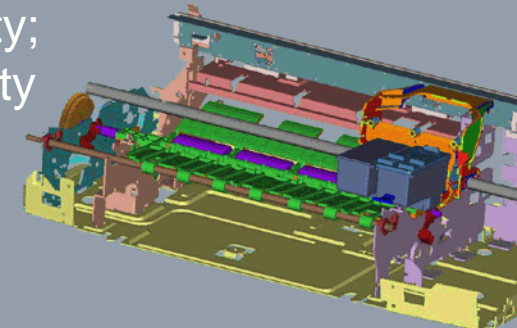**Implementing PLM**

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- Quality data management
- Dimensional & tolerance analysis
- In-process data analysis
- Six Sigma support
- Regulatory compliance

USER FOCUS

Hewlett-Packard

- Challenge: Develop more reliable, lower cost printers through faster design cycles

- Solution: Reduce impact of dimensional variation on quality

- Result: Increased product reliability; reduced warranty support costs

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Tecnomatix Production Management

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Process Instruction
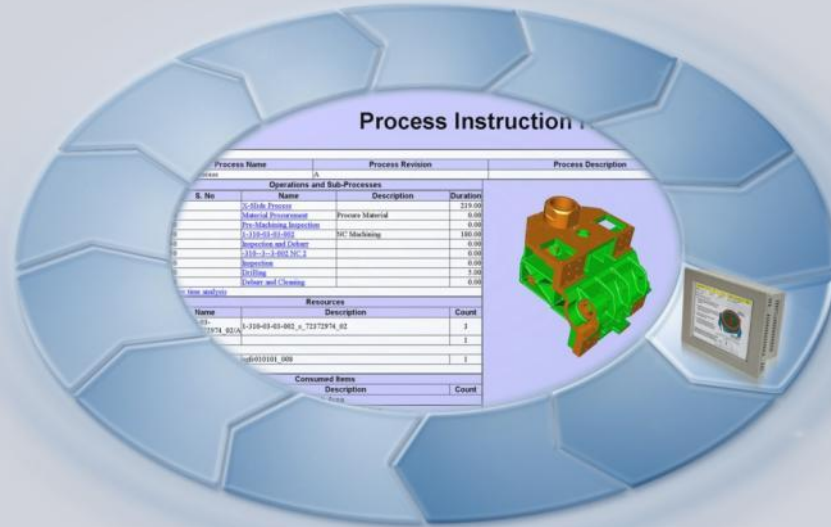
- Production status reports
- Technical work instructions
- As-built data capture
- Teamcenter & Simatic IT interoperability bridge
- Connection to ERP systems

USER FOCUS

Astrium

- Challenge: Provide manufacturing services to thrive in cyclical business
- Solution: Replace paper-based system with MES
- Result: 10% increase in capacity; 50% reduction in cycle times
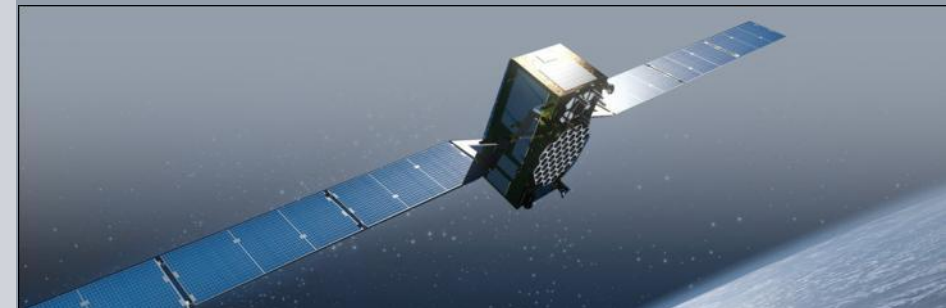
Summary

- **Siemens PLM**

- **What is PLM ?**

- **PLM Principles**

- **PLM Capabilities**

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Gracias !

eduard.marfa@siemens.com

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