PTC® Live Global

PTC300: Moving from PDM to PLM: The Value of Associative BOM

Matt Sheridan
Director, PLM Product Marketing

THINGS are Changing

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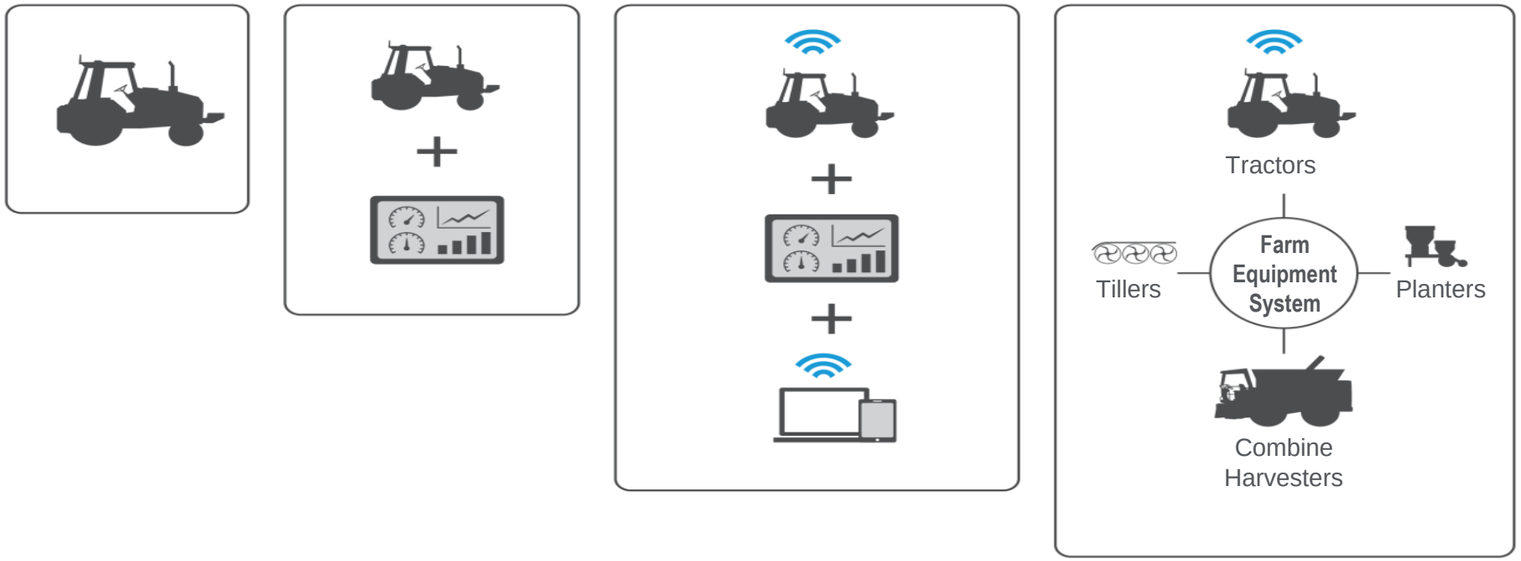
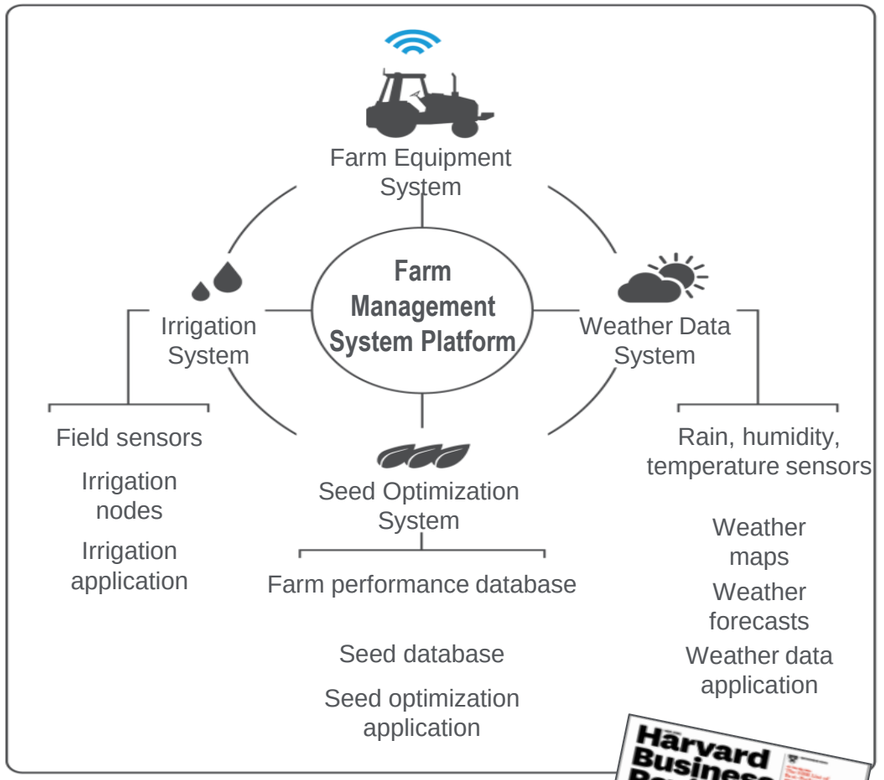
Product → **Smart Product** → **Smart, Connected Product** → **Product System** → **System Of Systems**





What happens to the eBOM?

Trends Affecting Product Development

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Trends	Impact on your Engineering Bill of Materials
Product Complexity	Smarter, connected products require cross discipline communication
Product Variations	More configurations / offerings to develop, share and maintain
Data Explosion	More product information to understand, align and analyze
Product Reuse	Requires traceability across internal and partners / suppliers.

Real ROI

http://nucleusresearch.com/research/single/ptc-windchill-roi-case-study-sram/

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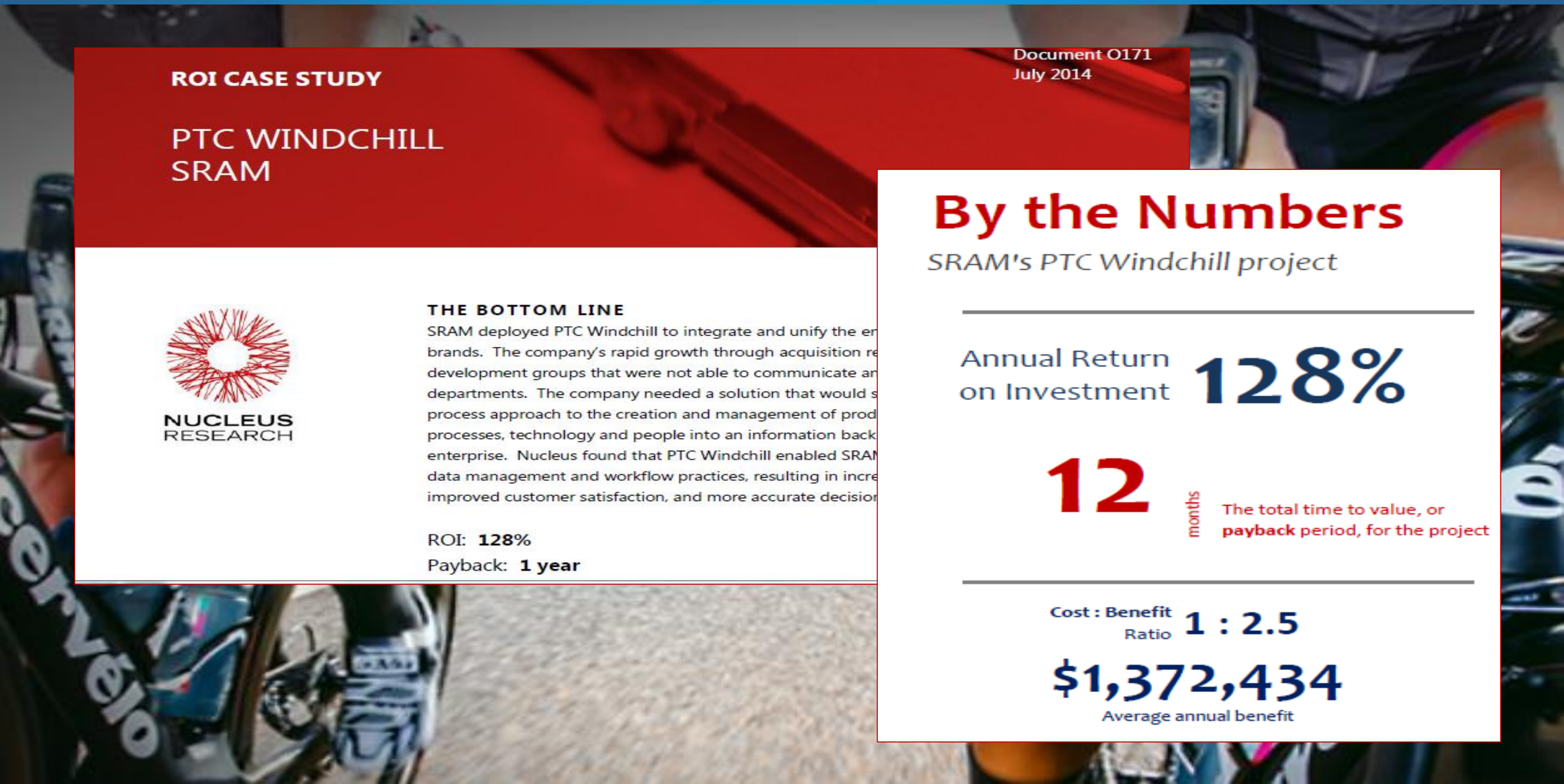


ROI CASE STUDY

Document Q171
July 2014

PTC WINDCHILL SRAM

NUCLEUS RESEARCH

THE BOTTOM LINE

SRAM deployed PTC Windchill to integrate and unify the er
brands. The company's rapid growth through acquisition re
development groups that were not able to communicate ar
departments. The company needed a solution that would s
process approach to the creation and management of prod
processes, technology and people into an information back
enterprise. Nucleus found that PTC Windchill enabled SRA
data management and workflow practices, resulting in incre
improved customer satisfaction, and more accurate decisio

ROI: **128%**

Payback: **1 year**

By the Numbers

SRAM's PTC Windchill project

Annual Return on Investment **128%**

12 months — The total time to value, or **payback** period, for the project

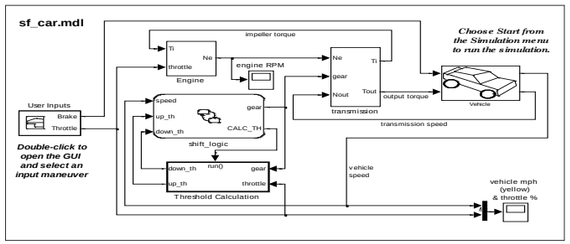
Cost : Benefit Ratio **1 : 2.5**

$1,372,434

Average annual benefit

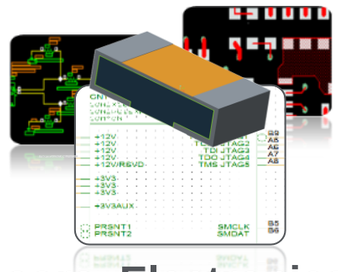
What defines your product?

Product definitions include many data types, sources and configurations

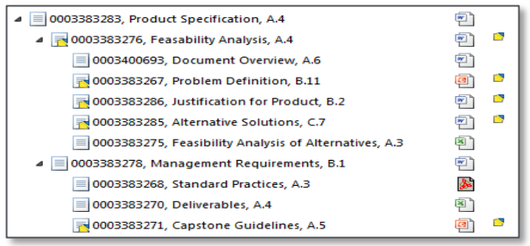


Functions

3D Geometry



Sensors, Electronics & Software



Specifications, Parts, and Product Characteristics

Teams, Partners & Suppliers

Production Information

Multiple Configurations On-Time Projects

Who interacts with Product?

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Many roles across the organization require access to product information not just designers

Engineering
- Product Architect
- System engineer
- Mechanical Engineer
- Electrical Engineer
- Software Engineer
- Sourcing Engineer
- Engineering Manager
- Quality engineer
- Packaging Engineer
- Materials & Packaging Engineer
- Change & Release Management
- Design Partners

Manufacturing
- Process Planner
- MFG Engineer

MFG Quality Engineer
Tooling & Layout Planner
Contract Manufacturers
- Partners
- Cost Control Planni

Management
- Plant GM
- General Manager
- VP Engineering
- Operations

Marketing
- Product Manager
- Product Packaging

Sales
- Product Specialists
- Application Engineers
- Order Administration

IT
- Number System
- Training

Sourcing
- Sourcing Specialists
- Purchasing Support

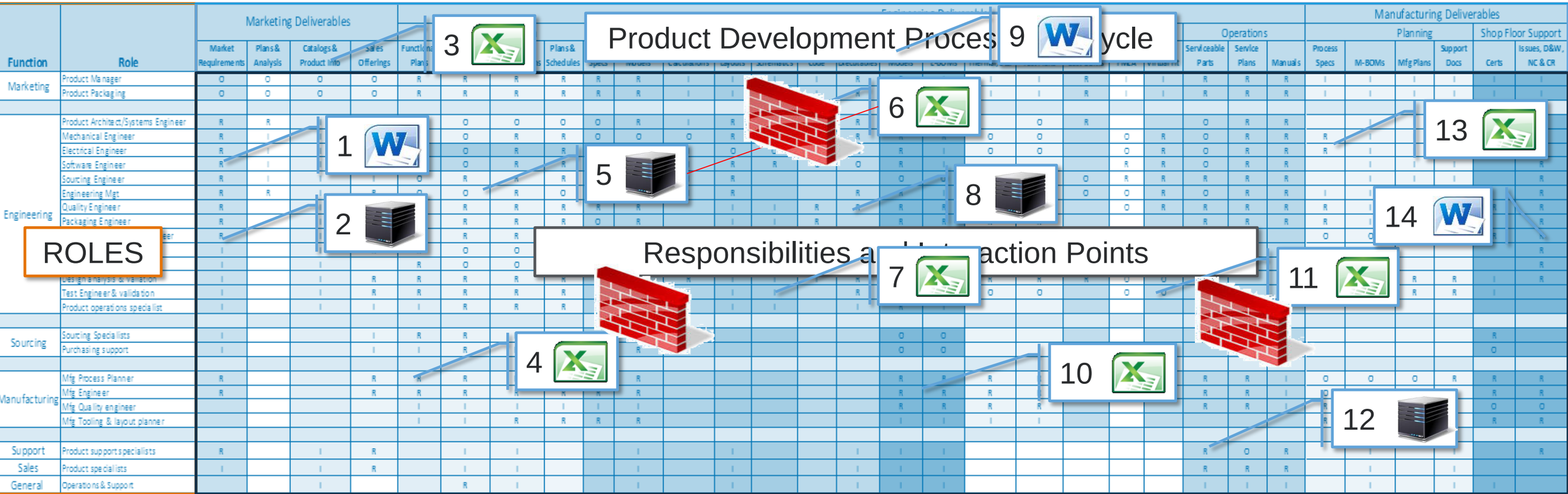
Support
- Service Specialist
- Service Planning
- Inventory Control

Across development stages

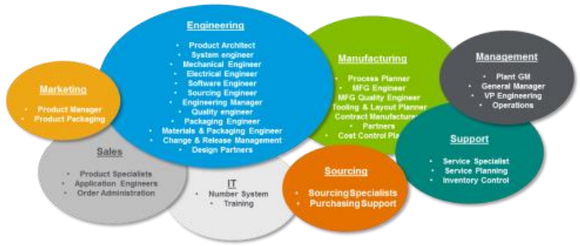
With a PDM only approach there are….

… many systems and data sources…

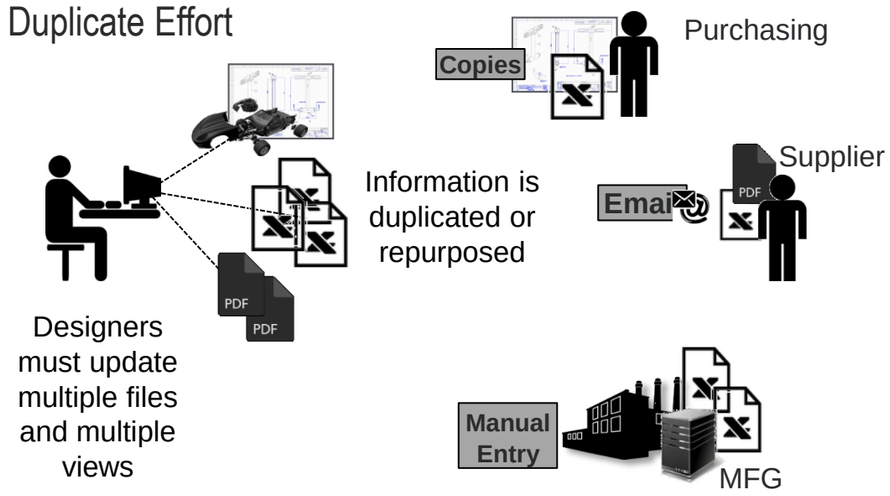
…causing project delays, poor quality, increased risk, poor re-use



PLM Value to Engineering

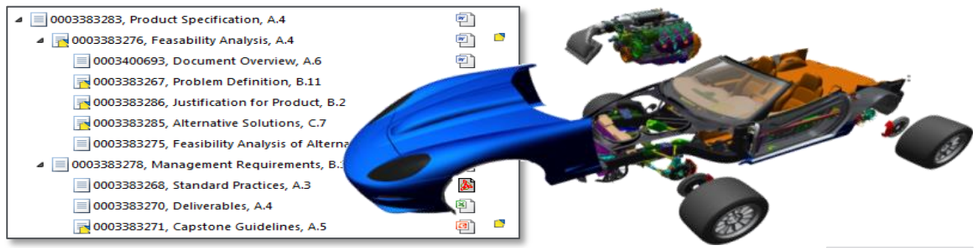


Engineering



Challenge

Understanding status and communicating information



Issues

- Electrical engineer needs a board design or keep out locations
- Quality needs critical characteristics
- Program Manager needs to know product status
- Procurement needs to find what products a bolt is used in
- Manufacturing needs help determining cost
- Cost team needs to understand alternate and substitutes

PTCLive 2014 - Example from Last Year's Conference

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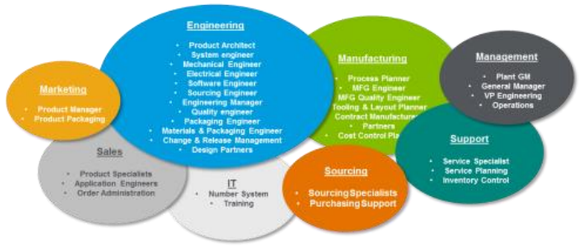
7,115,299 PARTS
3,281,221 CHANGES
8,099,362 MODELS
5,716,242 DOCUMENTS
39 GEOGRAPHICAL LOCATIONS
29,907 USERS
654 ACTIVE PROGRAMS

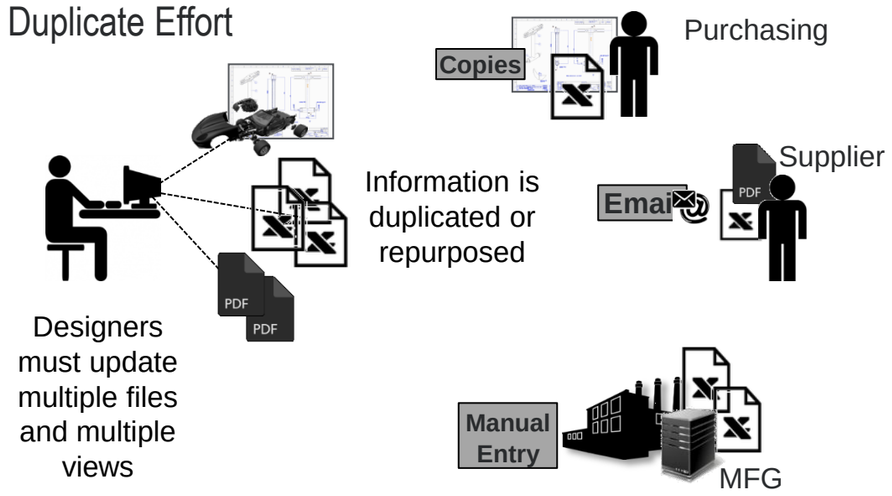
Raytheon

7,115,299 PARTS
3,281,221 CHANGES
8,099,362 MODELS
5,716,242 DOCUMENTS



Engineering

Understand product development status and reduce support of others



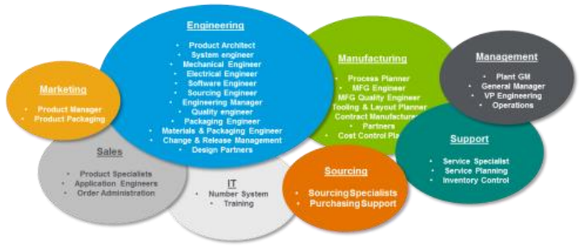
Value

- **Engineer FTE ($80K/yr)**
- **Time spent answering request from others ~25%[1]**
- **30 Full Time Engineers**

→Savings eliminating non-value requests = $600K*

*** Does not include savings or improvements from reduction in cost for multiples systems, more product offerings, more projects complete, reduce customer churn**

PLM Value to Manufacturing



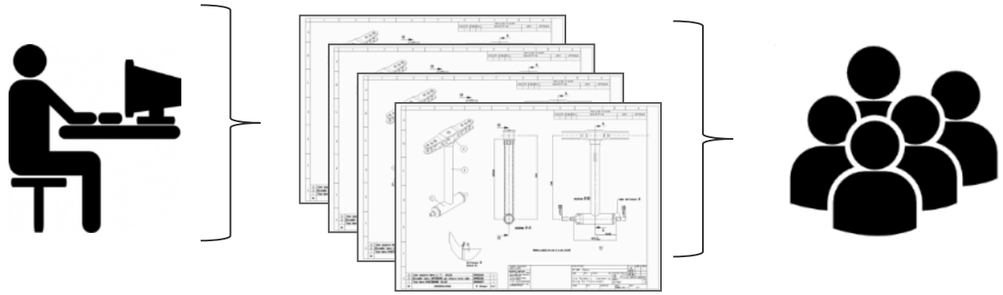
Manufacturing

Drawing Centric

Updates to any product information requires updates to drawings

Other functions are required to use drawings for decisions

Designers communicate all information on drawings



Challenge

Access to Product Information

Issues

- Manufacturing unable to view product status
- Manufacturing operates in serial - not parallel delaying time to production
- Manufacturing cannot access drawings without engineering help
- Manufacturing unable to see 3D designs in work instructions
- Manufacturing unable to determine substitute or replacement parts
- Manufacturing unable to see effectivity (cut in dates)

Typical Manufacturer eBOM

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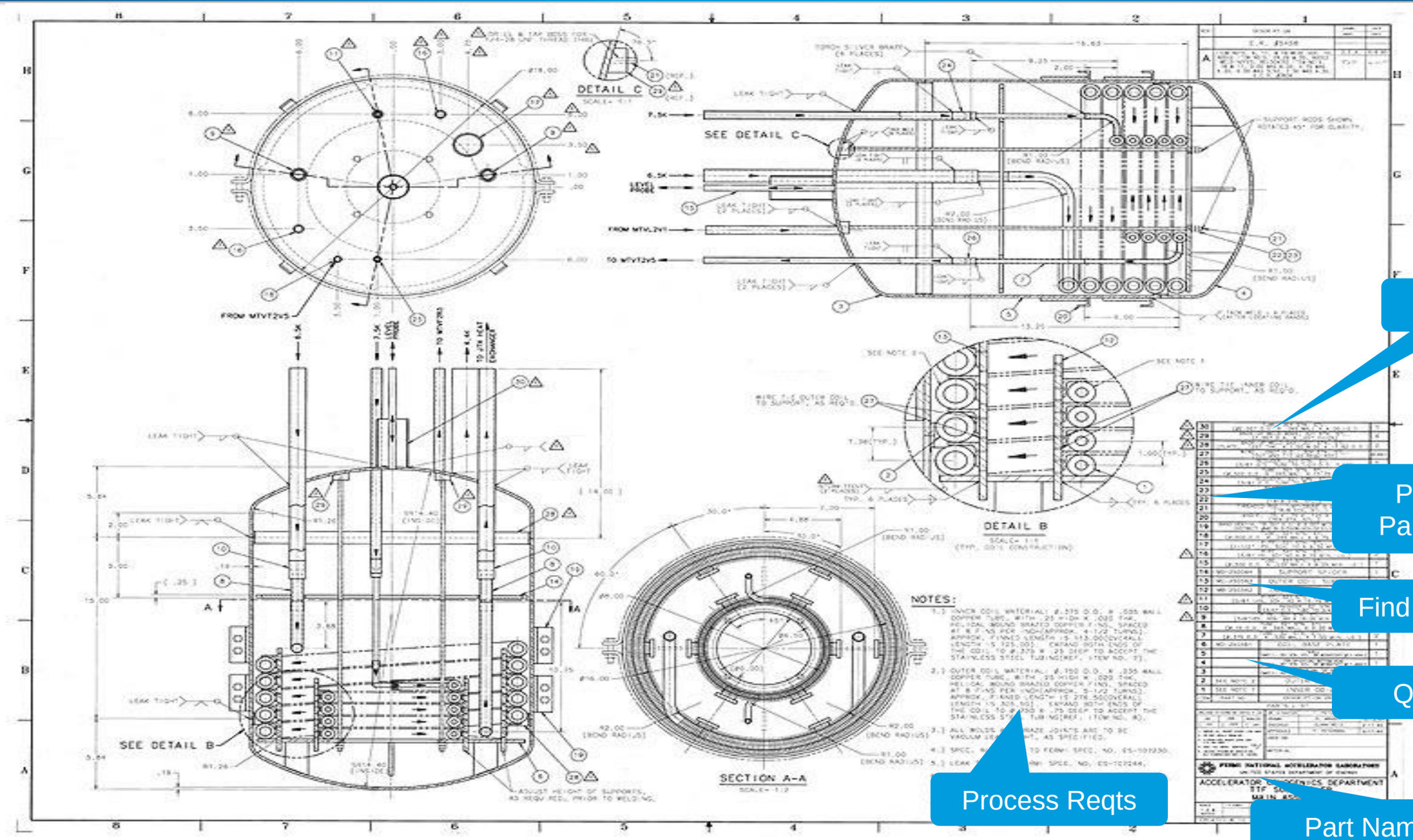
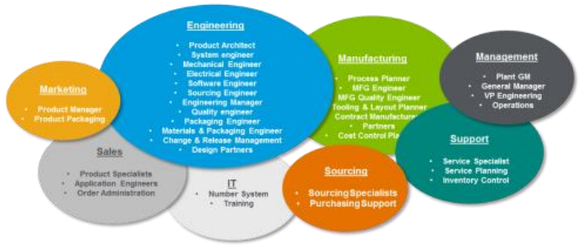




Manufacturing

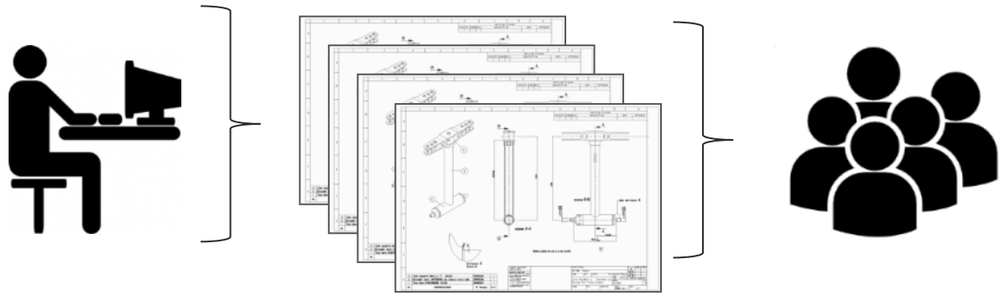
Direct access to information helps improve ramp-time and reduce costly changes

Drawing Centric

Designers communicate all information on drawings

Updates to any product information requires updates to drawings

Other functions are required to use drawings for decisions

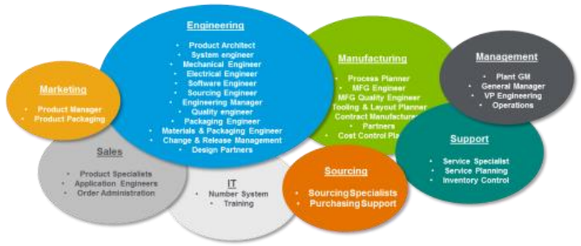


Value

Ricoh Copier reported in one year that the cost of engineering (change) orders is $35 in the design phase, while it is $1,777 prior to prototyping and $590,000 after the product is in production.

Rapid Prototyping and Engineering Applications: A Toolbox for Prototype Development, Frank W. Liou, pg10.

PLM Value to Sourcing



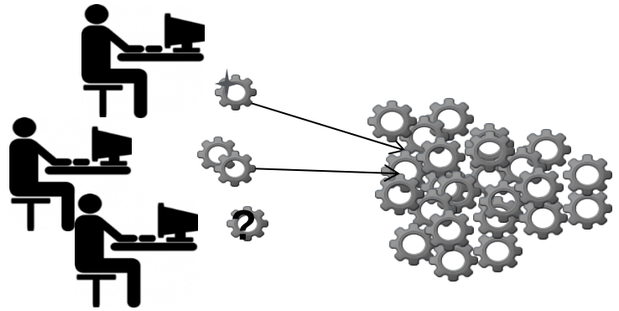
Sourcing

Challenge

Finding and sourcing the correct part

Issues

Part Proliferation



Designers unable to reuse parts & Growing number of products require greater part management

How to support customer and field Requests?

What to keep in inventory?

What to purchase?

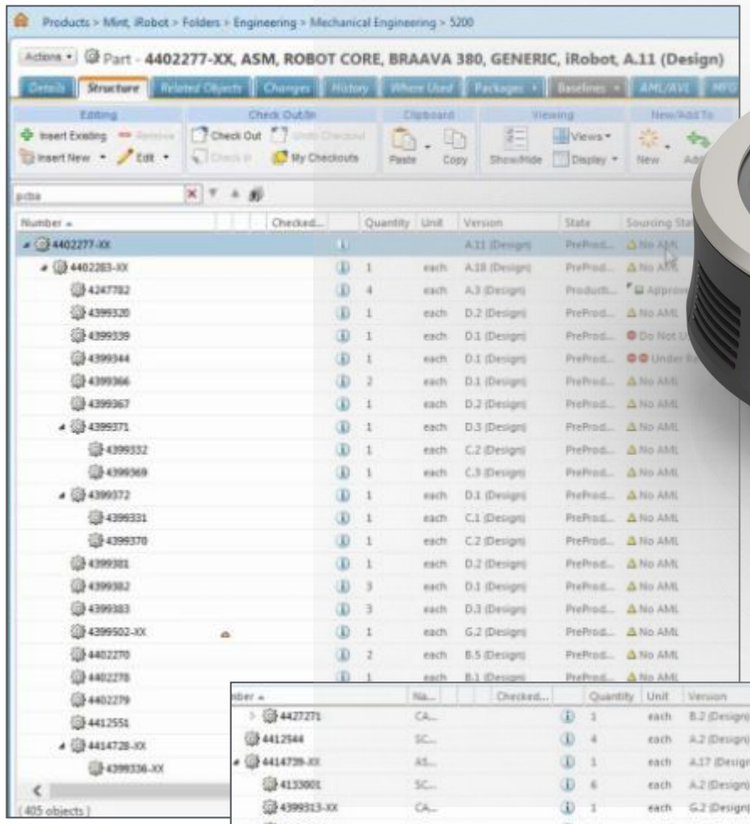
- What parts are released
- What vendor should be used, in what region
- What manufacturer is acceptable
- Where is this part used, on what products
- Where is the drawing for this part
- How does a purchasing agent communicate and becomes aware of change

PLM Value to Sourcing

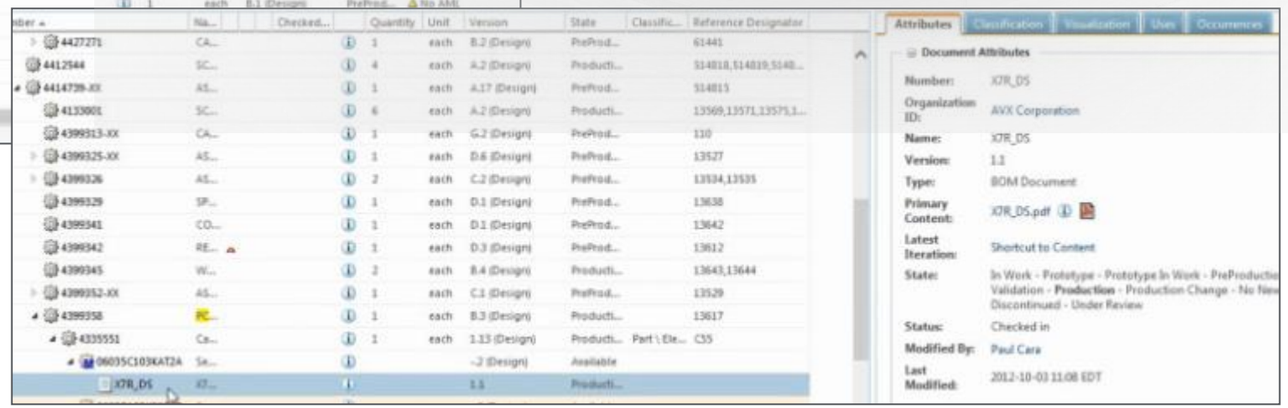
PTC® Live Global

iRobot®

- eBOM
- AVL / AML
- Classification of electronic components
- Change Management



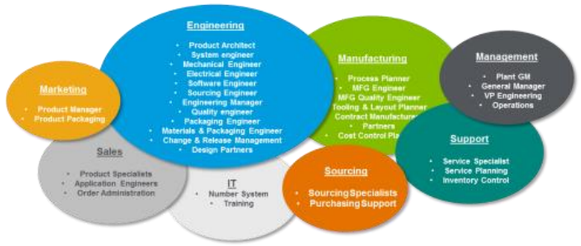
iRobot Roomba®



[CUST307 Unwrapping the PTC Windchill Package]
Wednesday, June 10 9:15 AM - 10:00 AM Washington B
Presenter(s): Kar Dehal, irobot

[CUST237 The One Size Fits All Change Process]
Tuesday, June 9 5:00 PM - 5:45 PM Presidential Ballroom A
Presenter(s): Stephen Drzewiczewski, iRobot
PTC Product Family/Content Theme: PTC Windchill

PLM Value to Sourcing

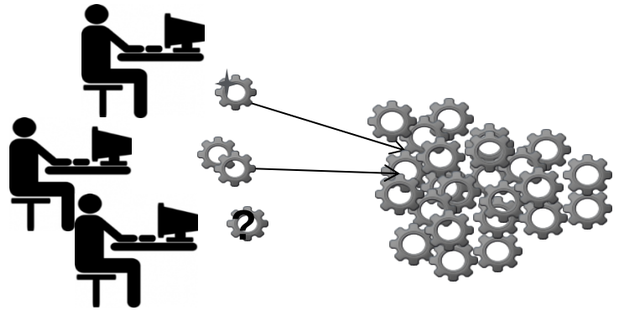


Sourcing

Better information helps with more effective pricing and lower inventory costs

Value

Part Proliferation



Designers unable to reuse parts & Growing number of products require greater part management

How to support customer and field Requests?

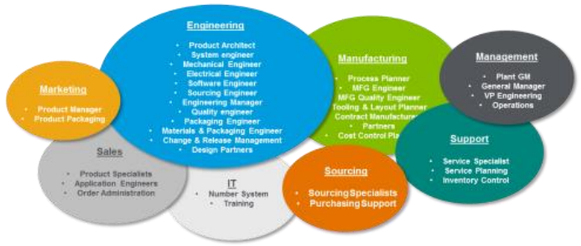
What to keep in inventory?

What to purchase?

- 1Million parts in record
- 3000+ new parts a month
- 2% reduction in new parts
- $5K/yr in carrying costs

→ Saving (3000*12*.02)= $3.6M/yr

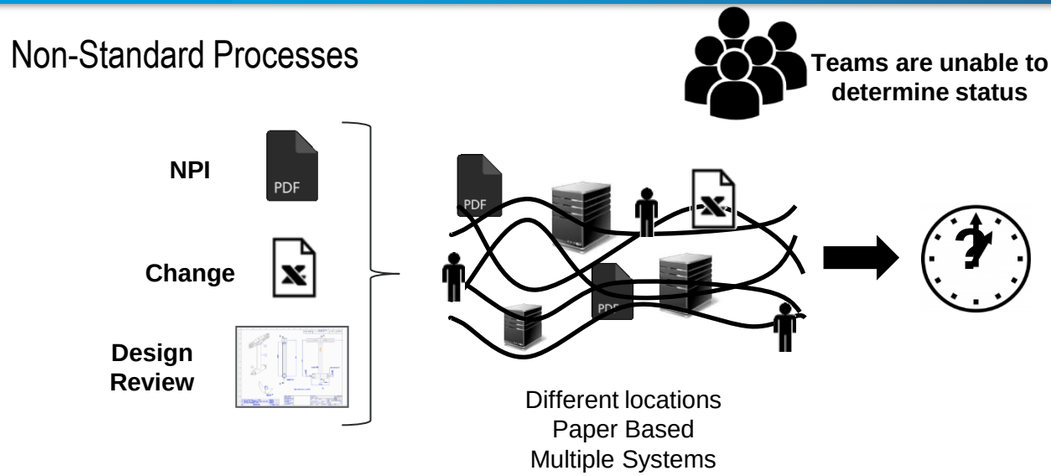
* Does not include savings or improvements from reduction in cost for multiples systems, more product offerings, more projects complete, reduce customer churn



Management

Challenge

On-time and repeatable projects



Issues

- **What is the status of a project? All projects?**
- **What is the status of specific deliverables – documents, CAD models?**
- **Does this project meet customer requirements?**
- **What information can be reused across projects?**
- **How does this change impact current, past products?**
- **What is the projected product cost?**
- **How can I share resources and load-balance development?**

Real ROI

http://nucleusresearch.com/research/single/ptc-windchill-roi-case-study-strattec/

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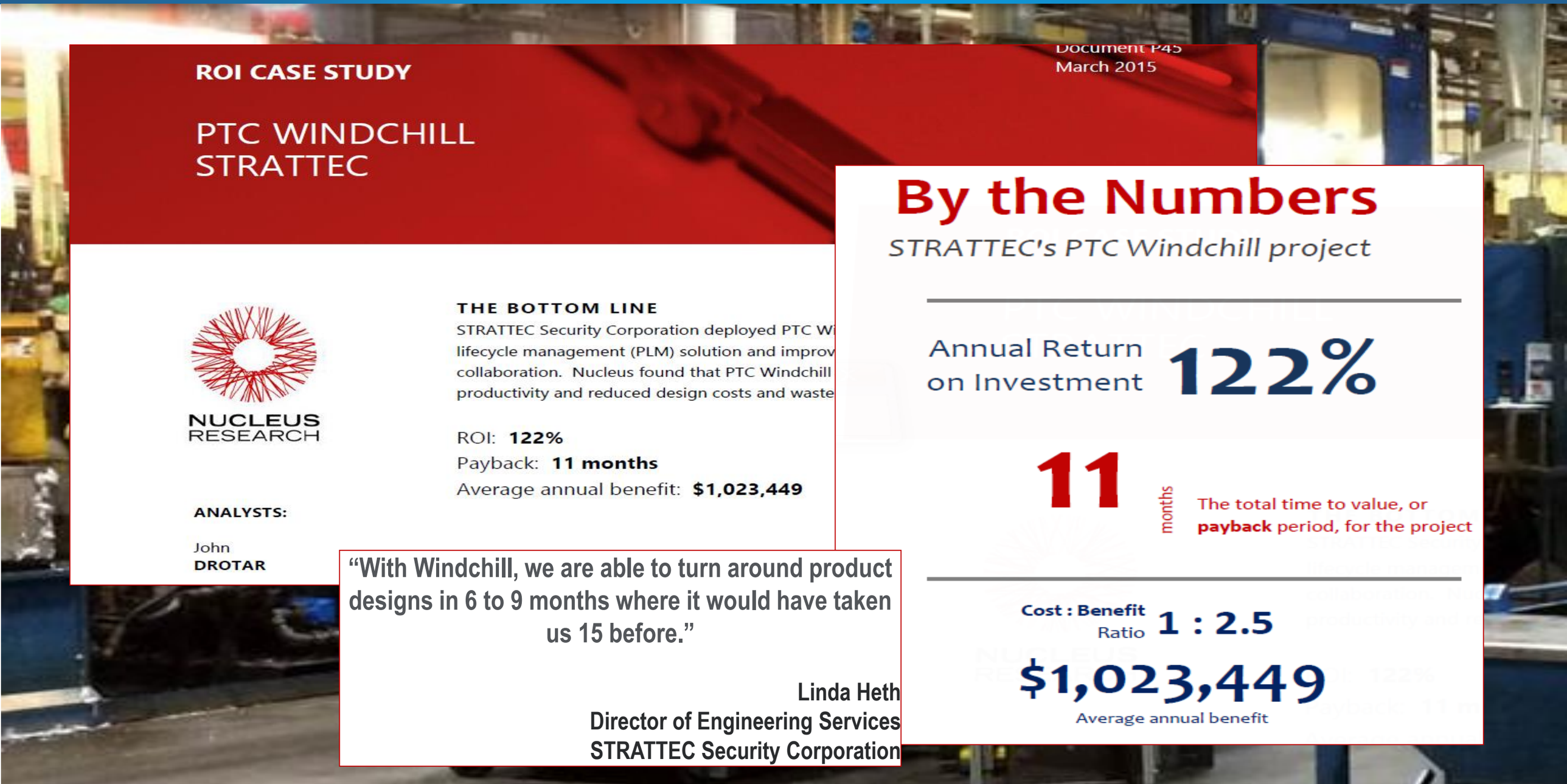


ROI CASE STUDY

Document P45
March 2015

PTC WINDCHILL
STRATTEC

NUCLEUS RESEARCH

ANALYSTS:

John
DROTAR

THE BOTTOM LINE

STRATTEC Security Corporation deployed PTC Wi
lifecycle management (PLM) solution and improv
collaboration. Nucleus found that PTC Windchill
productivity and reduced design costs and waste

ROI: **122%**
Payback: **11 months**
Average annual benefit: **$1,023,449**

By the Numbers

STRATTEC's PTC Windchill project

Annual Return on Investment **122%**

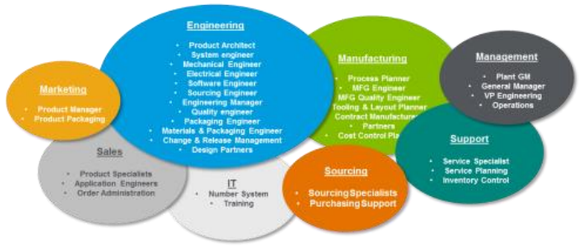
11 months — The total time to value, or **payback** period, for the project

Cost : Benefit Ratio **1 : 2.5**

$1,023,449
Average annual benefit

"With Windchill, we are able to turn around product designs in 6 to 9 months where it would have taken us 15 before."

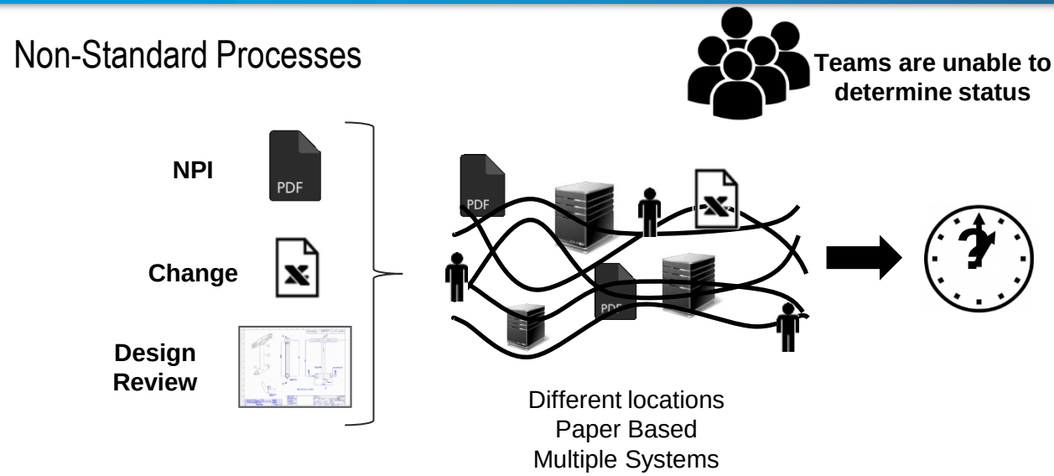
Linda Heth
Director of Engineering Services
STRATTEC Security Corporation



Management

Reliable information makes it easier to manage updates and throughput

Value

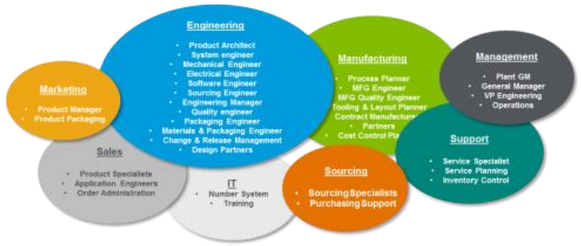


- Reduce production-lead time by 20%[1]
- 20 project a year
- 100K return on project

Increase in revenue = (20 * .20 * 100K) → $400K*

* Does not include savings or improvements from reduction in cost for multiples systems, more product offerings, reduced customer churn, quality, etc…

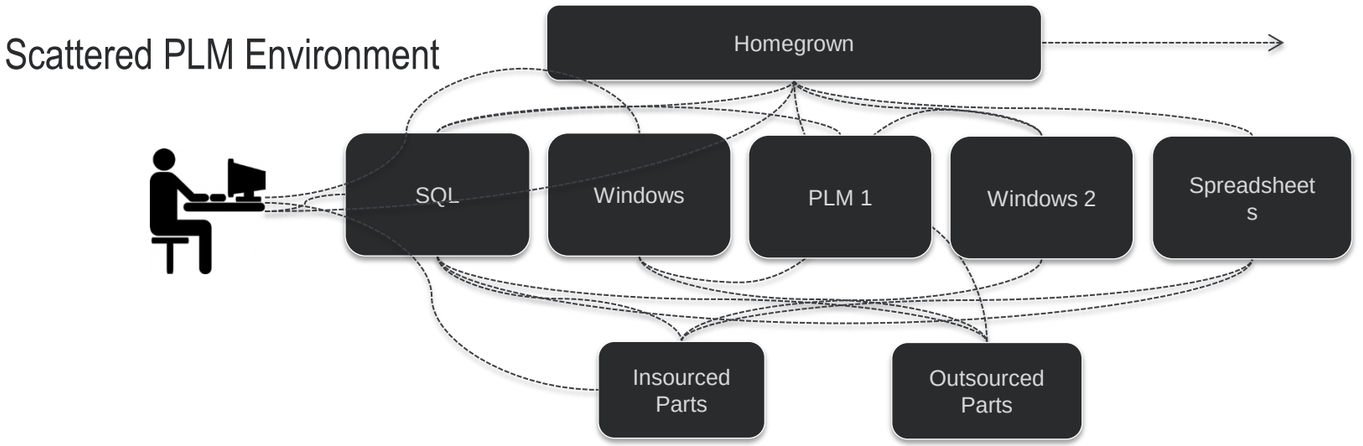
PLM Value to IT



IT

Challenge

Supporting, maintaining and budgeting for multiple systems for BOM



Issues

- **What systems need to be upgraded?**
- **What systems need integrations?**
- **What is the yearly cost of maintenance on each system?**
- **What is the FTE needed to maintain each system?**
- **What is the cost for training on each system?**
- **How do we ensure IP protection across all systems?**

IT Value Consolidating Systems

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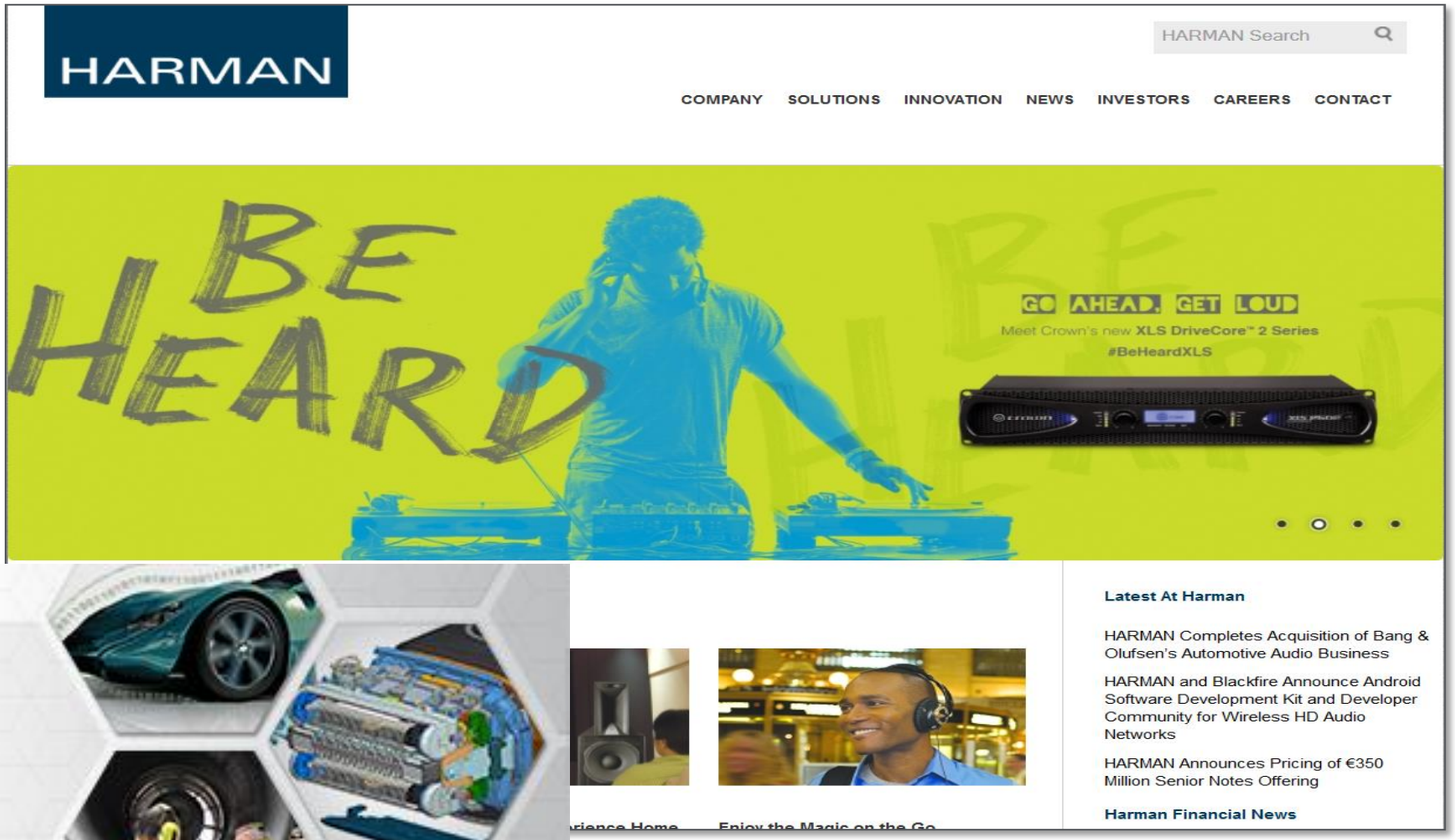
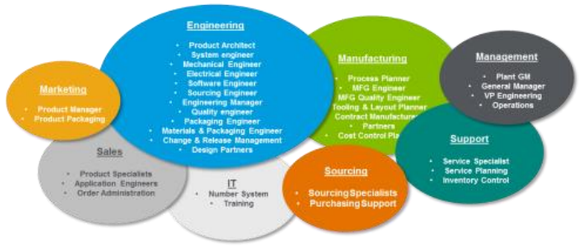
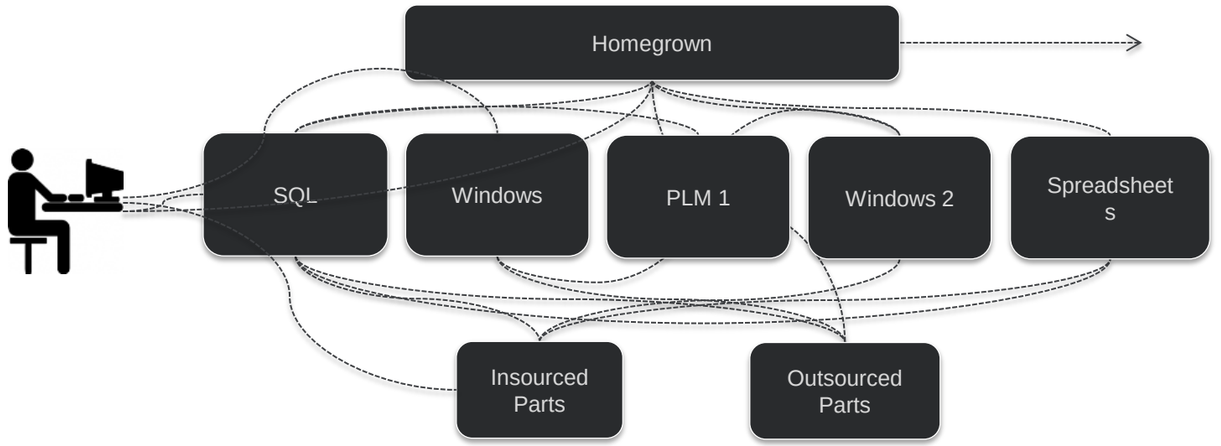
Harman had 5 divisions at the start of their PLM improvement. With each division having their own systems and processes



Across development stages



IT



Challenge

Supporting, maintaining and budgeting for multiple systems

Value

Hardware
Software (database, application)
On-premise (data-center, electricity)
Training
Back-up / Recovery
User Support
Integration Costs
Administration

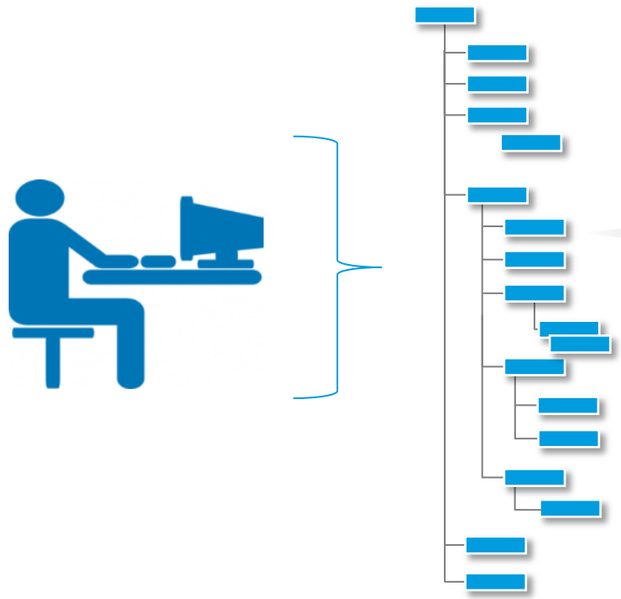
Cost of License * **Number of Users** + **Maintenance**

X Number of Extra Systems

PLM Improvements with PTC's Engineering Bill of Materials

PTC® Live Global

COMPLETE:
Manage a full product definition



ACCURATE:
Single source of information

RELIABLE:
Confidence across the enterprise

Driven by standard, automated processes

Positive Outcome

Find & reuse information

Process efficiency

On-schedule releases

Better decisions

Demonstration Video

PTC® Live Global

DEMONSTRATION VIDEO

PTC’s Engineering Bill-of-Materials

PTC® Live Global

Value for engineering

Value for the enterprise

Value for the business

A complete bill-of-materials associated to all product information improves product development time, cost and quality

Complete, Accurate, Reliable

See Customers in Action with PTC Windchill

PTC® Live Global

PTC® PRODUCT & SERVICE ADVANTAGE

Live Webinar: March 25, 2015 at 11AM (ET)

Learn How an Engineering BOM in PTC® Windchill® can Accelerate Product Development

▶ REGISTER NOW

Watch a Demonstration to learn how iRobot accelerates their product development processes by using engineering BOMs within PTC Windchill.

Learn how to:

- Manage a bill of materials that accurately reflects all the items in a product – mechanical, electrical, artwork, packaging, and documentation
- Easily find information related to specific components and assemblies, such as inspection documents, assembly instructions, datasheets, and analysis files
- Leverage existing PTC Windchill features such as "where used" and "BOM compare"

Join Steve Shaw from PTC and Kar Dehal from iRobot and learn how using an Engineering BOM in PTC Windchill can accelerate product development

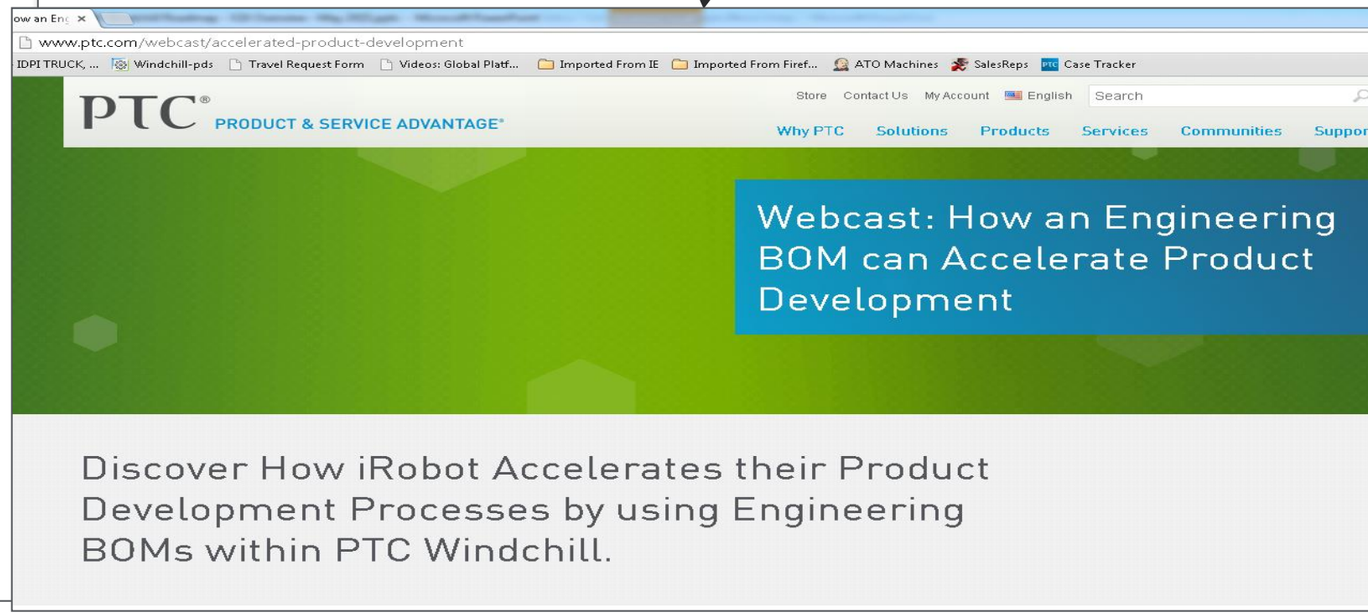
Steve Shaw, Global Product Development Solutions Director, PTC

Steve has over 16 years of industry experience in product design and development and has worked with companies worldwide to help them better manage product data.

Kar Dehal, PTC Windchill Business Lead, iRobot

Kar is a mechanical engineer and a PTC Windchill administrator with over 10 years of experience designing products, implementing PLM systems, and managing engineering data. For the last 3 years, Kar has focused on administering PTC Windchill which has included the integration of ECAD data into PTC Windchill and, overhauling the Change Management Process.

Watch It Today at www.ptc.com



PTC Live 2015 – PLM eBOM & mBOM Sessions

PTC® Live Global

PTC Topic	Date	Time	Room	Customer Session	Date	Time	Room
PTC109: Best Practices for Managing Your Product Configurations	6/8/2015	2:15PM	Lincoln DE	**PTC300: Moving from PDM to PLM: The Value of Associative BOM**	6/10/2015	8:15AM	Hermitage D
PTC114: Part Types in PTC Windchill	6/8/2015	4:00PM	Lincoln DE	**Cust124: Linked Data in Real Life: How "Owner Links" Change Everything, Solar Turbines**	6/8/15	5PM	
PTC201:Managing Configurable Product Platforms	6/9/2015	10:00AM	Presidential Boardroom A	**Part113: Part-Centric PLM in a Drawing-Centric World: How we Manage Complete Part Specs**	6/8/15	1:15PM	
PTC214:Managing the SKU Development Process for Consumer Products	6/9/2015	2:15PM	Lincoln DE	**Cust321: Whether Bottoms Up or Top Down Design: Let PTC Windchill do the Heavy Lifting, TE Connectivity**	6/10/15	11:30AM	
PTC238: Driving Part Re-Use: ROI and Best Practices for Maximize Design Reuse	6/9/2015	5:00PM	Jackson AB	**Part201: Ninja MCAD/ECAD BOM Creation**	6/9/15	1:15PM	
PTC310: Moving to MBOM (Unifying Engineering and MFG Planning) with PTC Windchill MPMLink	6/10/2015	10:30AM	Jackson AB	**Cust238: GE Aviation Systems PLM Journey to Effective Global Concurrent Engineering**	6/9/15	5PM	

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