One Small Step for Man, One Giant Leap for Autodesk PLM 360 Implementation: Sprint to the Finish

Avi Robbins - Porex

BO2858

This class demystifies the PLM implementation process and shows through a case study that Autodesk PLM 360 cloud-based software enables you to be up and running in a matter of months. We focus on giving attendees an overview of the steps involved in a PLM 360 implementation and the steps that are necessary to plan for integration with other software including Autodesk® Vault Professional data management software, CRM, ERP, and MES. This class also explores the use of PLM 360 to improve cross-functional teamwork and global collaboration, as well as process and data optimization with innovative implementation use cases. If you are considering implementing Autodesk PLM 360 or are just about to begin, this class helps you prepare for your experience and gives you the knowledge to prepare ahead and accelerate the process

Learning Objectives

At the end of this class, you will be able to:

- Describe the PLM 360 Implementation process, including the capability of and planning for integration with other software

- Adopt key techniques to accelerate implementation and facilitate the process within your organization

- Improve workflows, cross functional and global collaboration, and overall efficiency with innovative use cases for PLM 360

- Use PLM 260 to optimize the development process, data collection, project management, and customer interactions

About the Speaker

Avi received his bachelor's and master's degree in Mechanical Engineering from the Georgia Institute of Technology and his master's degree in Business Administration from Emory University. He is now the Director of Global Product Development for Porex, a porous plastics manufacturer, with headquarters in Atlanta, GA, and product development and manufacturing facilities in the US, Germany, Scotland, and Malaysia. Avi's combined experiences give him over 10 years of involvement in the medical, industrial, and consumer markets in roles from product development and program management to operations and sales. Now at Porex, Avi is spearheading the implementation of Autodesk® PLM360 and Vault Professional and has been responsible for vendor selection, implementation, and administration. As a member of the Product Development and Management Association, Avi enjoys sharing his experiences with the broader product development and manufacturing community.

avi.robbins@porex.com

Case Study Overview

Porex Overview

Porex has a diverse and global customer base with over 1,250 accounts across 60 countries. We produce more than 30 million porous polymer components each day across our 4 manufacturing facilities. Porex employs over 750 people worldwide in these manufacturing facilities and our 7 sales offices. We are in the business of providing custom solutions for our customers where we can help them do something new, better, or at a lower cost. Our expertise in product develop, manufacturing, and material science allow us to offer our customers innovative solutions at a very fast pace. We provide porous material solutions, functional components, that filter, vent, wick, diffuse, or provide media support.
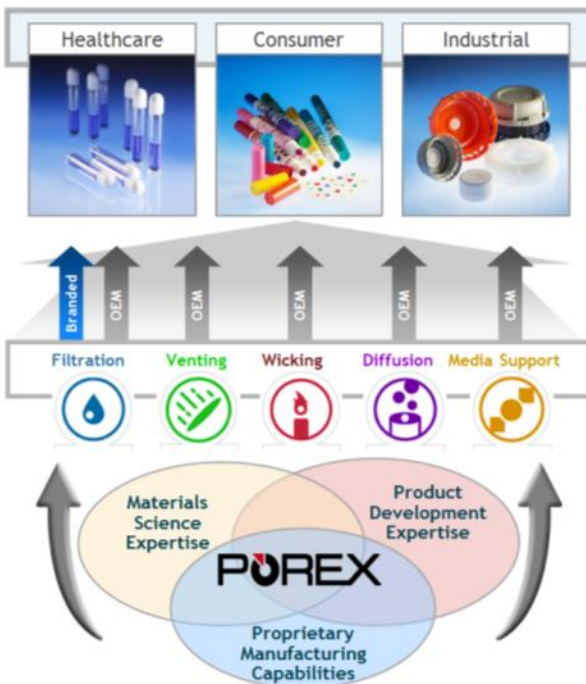
Business Challenge

We provide custom components to our customers so our growth is driven by new product development. We have focused recently on lead generation to increase the size of our development pipeline and now are focusing on product development throughput to bring these projects to market.

Development Focus

Our Product Development team is focused on Speed, Collaboration, Global Transparency, and Prioritization of projects.

Manufacturing Focus

Our Manufacturing and Operations team is focused on Global Operational Excellence (leveraging best practices across the regions) and eliminating waste.

Solution

Product Lifecycle Management and Product Data Management are the solution to bring our global teams together for increased speed and reduced errors.

Systems Environment – Today

The chart below shows a snapshot of our multiple disparate systems both within and across regions. Our focus in the PLM implementation is to reduce the dotted lines (manual exchange of data – opportunities for error) and to eliminate paper and custom built software.
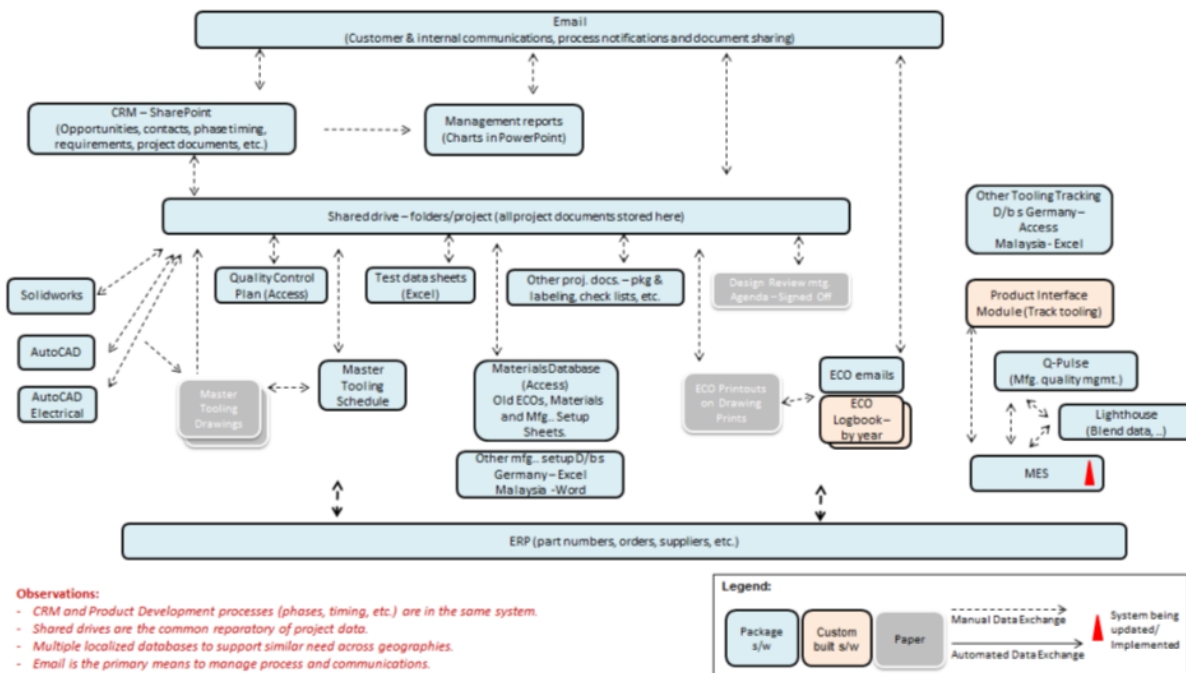
PLM Solution

Product Lifecycle Management software provides for a single source of truth for product information. In our case, all project data will be accessible from one location (not disparate systems). We will also use the system for automatic revision control to provide the latest information and version of every document to every user, every time.

Project information will be available to all users (as allowed by security settings) all of the time, to allow for transparency to project prioritization, development support, and global collaboration.

Project management features will allow for template based work flows to keep all project steps available to their owner when action is required.

All workflow steps will be tracked, to allow for data based decisions (uncover bottlenecks) and provide more accurate baselines for improvement.

Systems Environment – with Autodesk® PLM 360

The majority of data is now transferred through automzted/linked methods across functional groups and processes (see chart below of "to be" systems layout after complete implementation of PLM 360). "Home Grown" systems are replacement with PLM 360 and can now be built out within PLM 360. Access to and visibility of information is greatly improved, and the flexible architecture allows for implementation in phases instead of a big bang approach.
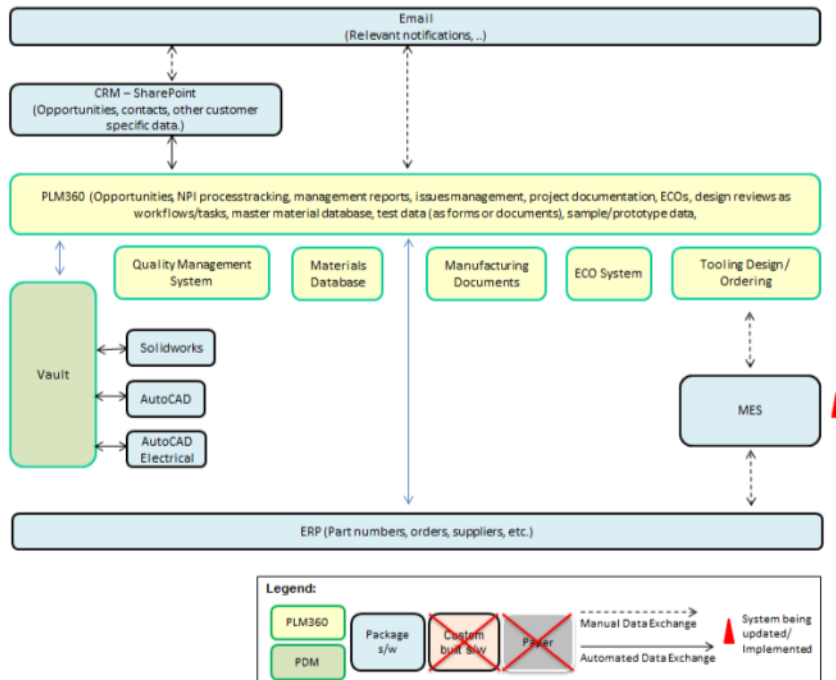
Scope of Implementation

We scoped our project into 3 phases. We initially took on too much and decided to break Phase 1 into 2 smaller pieces (Phase 1A and Phase 1B).

Phase 1A (Complete)
- Project Management (NPI)
- Product Records
- Customers / Contacts
- CRM Integration
- Reporting Integration

Phase 1B (In Progress)
- Material Management (Formulations)
- Sample Order Management
- Document Control – ECO

Phase 2 (Future)
- Tooling Design / Orders
- Quality System (CAPA)
- Costing Records
- CAD / PDM – Autodesk® Vault Professional Integration

Phase 3 (Future)
- ERP Integration
- Customer Data Master
- Manufacturing Document Meta Data

Steps Involved in Autodesk® PLM 360 Implementation

1. Discovery – Identify Business Needs (Autodesk Consulting Services helped us with this phase by interviewing management and identifying opportunities for PLM 360 to help improve processes).
2. System Architecture – It's important here to "Think Big" but "Start Small". You want to scope out the entire system ("to be") but can only realistically focus on one piece at a time. We found that by creating a layout for the global system (see chart below) we could wrap our heads around how all of the information would be connected. But then we focused on one piece (phase) at a time so we could properly get all of the details into the system and test it bit by bit.
3. Make it Happen – Establish a core team that will actually be administering the system, creating the workspaces, and adding the fields. They will be guided by Subject Matter Experts or Process Experts who will provide input into the "to be" process and act as beta testers when the system is ready for user acceptance testing.
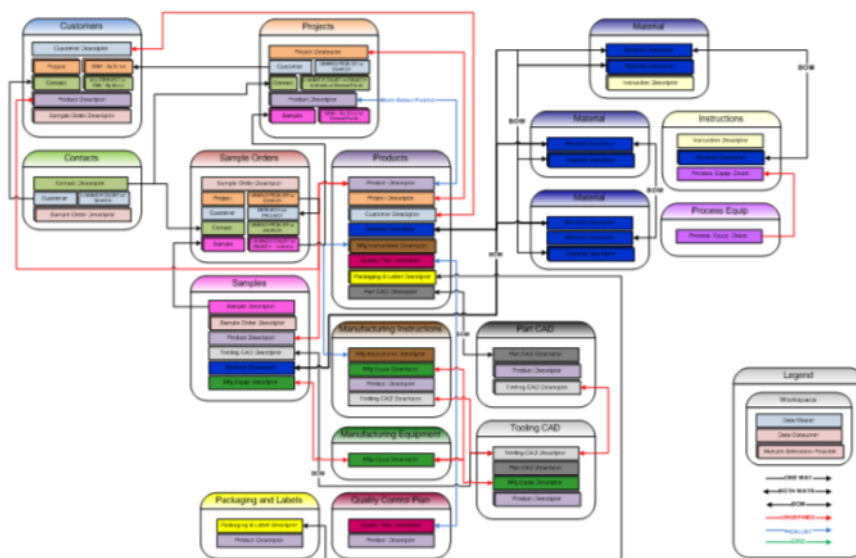
Autodesk® PLM 360 Connect – Integrating PLM 360 to CRM & Autodesk® Vault Professional

When planning for integration it is important to consider:

1. Information Flow – you can only have one master of the data. If you are integrating two systems only one can control the information. For example our PLM is the master of all product data. The product is defined and owned by PLM but information is transferred into ERP to record financial transactions.
2. What's the Deliverable, Who Needs It, and When? – Just because data *can* be transferred from one system to another, doesn't mean it *should* be. It is important to consider the user perspective on what systems they will be using and where the data should reside to make their jobs easy, but to keep the best control of the information. For example, in integrating our CRM to PLM, the commercial information (sales value, target launch date, etc…) will be maintained and controlled by the CRM (sales managers are only using this system) but will be pushed into the PLM as read only so the engineers can prioritize projects in the PLM and not have to access a secondary system. Similarly, the technical status will be pushed from PLM back to CRM so the sales managers can understand the progress of their projects without leaving the CRM.
3. When the information should be synced – with PLM 360 Connect the data can be synced via a "trigger" such as a workflow transition or on a scheduled basis (every night, every hour, etc…)

Key Techniques to Accelerate Implementation and Facilitate Change Management

In order to plan ahead for an upcoming implementation I would recommend considering the following practices or using the following tools:

Executive Sponsorship

- High level owner that can help drive change – Although you will use change management practices to bring everyone on board with any necessary changes, it is important to have someone aligned with the PLM project that can impose rules to ensure everyone follows suit when difficult decisions need to be made.
- Alignment to corporate initiatives – if the PLM project is aligned to business initiatives it cannot fail. If it is a pet project than you will struggle to gain traction when difficult decisions need to be made and changes implemented.

Build a Roadmap

- Define the Problem – as in the above, defining the problem or business initiative will help set the priority on what to implement first.
- Map Process – use the "swim lane" technique where you map out the processes you wish to implement into PLM and break out the cross-functional interactions in "lanes" so

that you can visually see where information is being sent and where there are opportunities for improvement.
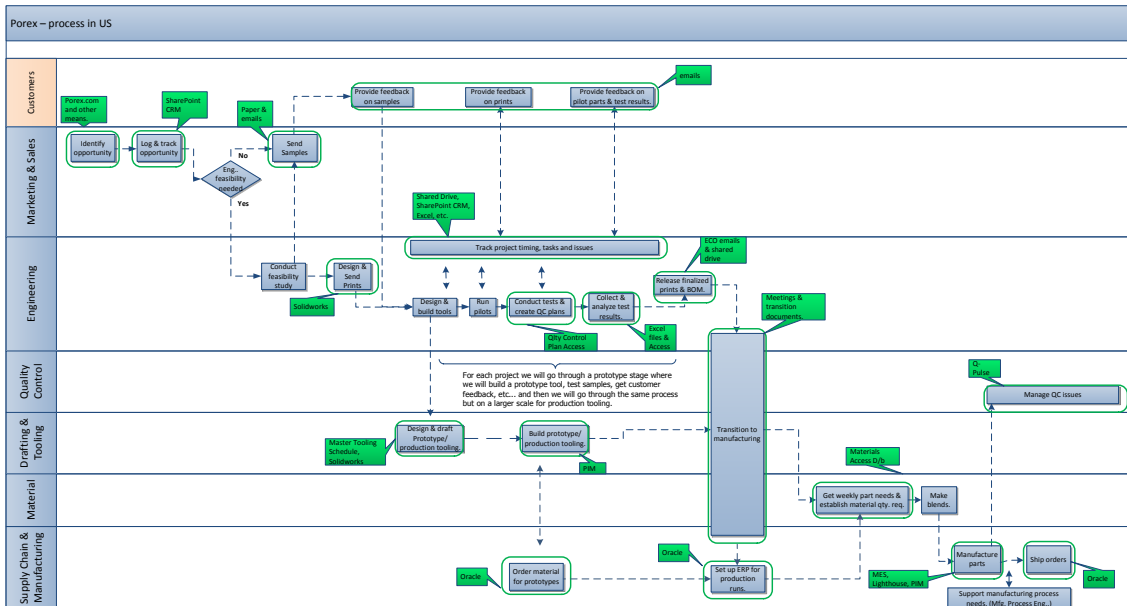
- Prioritize Opportunities – using a simple chart, sort the opportunities for improvement by business value and complexity. This will help identify easy wins for the first phase of implementation.
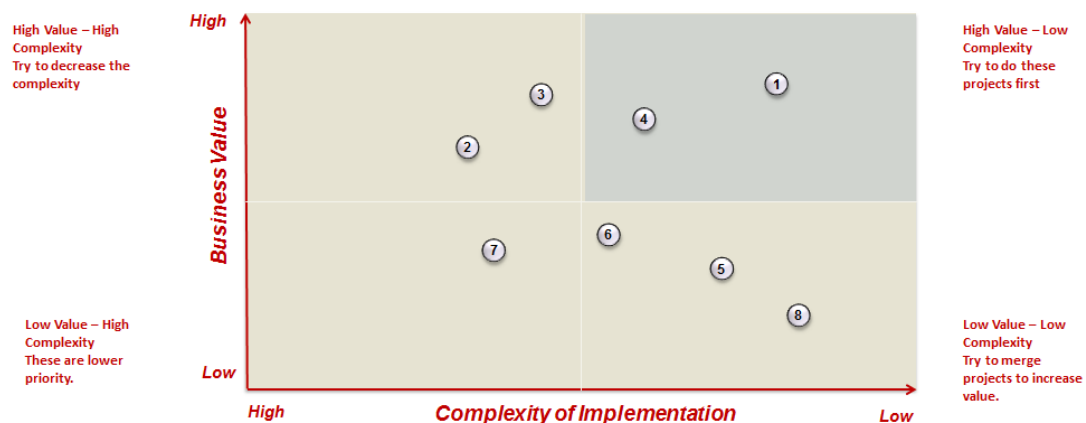
- Develop Roadmap – now sort the opportunities into manageable pieces called phases and set a business goal/objective for each phase. This will help align everyone in the organization with what needs to be accomplished and why they should change their practices during each phase. It also helps to identify who will be affected by each phase and what the benefits will be to them.

	Phase 1	Phase 2	Phase 3 & beyond
Time frame	Q1	Q2-Q3	Q4 & beyond
Business objective/ goal	*"Improve cross functional collaboration on projects"*	*"Establish product data foundation"*	*"Connect other processes with product data"*
Opportunities targeted	• Improve customer-sales-engineering collaboration; and global adoption of NPI process. • Enable pre-launch issues management • Improve Engineering-Manufacturing transition, and ECO process - basic • Improve cross functional visibility to project schedule	• Improve product and process knowledge management • Improve Engineering-Manufacturing transition, and ECO process - advanced • Improve drafting & tooling data management to enable easy design reuse • Improve sample and prototype management.	• Improve quality planning and execution; including work instructions management • Other related processes
Functional groups impacted	• Sales, engineering, tooling, supply chain, quality, operations/manufacturing, all people in turn over mtg.	• Sales, engineering, materials, supply chain, manufacturing	• Quality control, engineering, manufacturing
System capabilities built	• PLM 360 – for NPI process management. • Manual interface between CRM and PLM360. • Key tasks tracked in PLM360 • Current ECO process implemented in PLM360.	• Product/material data in PLM • Sample & prototype mechanism in PLM360. • PDM implementation & data migration • PLM 360 – PDM integration • Advanced ECO process in PLM360	• QC processes and data in PLM360. • Work instructions in PLM360. • PLM360 – Oracle integration & PLM-Sage integration. • Migration of legacy product/material data
Legacy systems replaced	• CRM – for engineering & downstream processes • Management reporting methods • Issues management files • Function specific schedules	• Material database • ECO emails and log • Sample repository (excel?) • Shared drives for CAD data mgmt.	• QC database • Test data sheets

Identify the Team

- Core Team and Process Experts – Taking 15 minutes to develop a Core Team / Phase Map will save 10x the time later. This will make it clear who is responsible for each phase of implementation along with which portion of the implementation. Not only will it help with project management, but when employees need to seek out someone for help they will know who are the experts in which area. It will also help to identify what departments are impacted in each phase.

			Groups impacted by targeted scope/process					
	Subject Matter Experts Count	Representation in Core team	NPI process implementation	ECO process - basic	NPI data migration	Pre launch issues management	Product & Mtl. Mgmt. in PLM 360	Vault Implementation
Row Labels	Phase 1	Phase 1						
Customer Care	Monica Hill, Viola Loepelt		▨			▨		
D&I								
Designer		Charles Allison	▨	▨	▨	▨		▨
Filtration	Alan Walton		▨					▨
Finance	Jason Powell				▨			
Management	Nils Gustavvson, Bill Foughty							
Marketing	Gerry DiBattista, Cristina Conessa		▨					
Materials	Gerald Kunth, Michael Bridges	Dan Fullerton	▨	▨	▨	▨	▨	
Materials Tech	Sharon Thomas		▨	▨	▨	▨	▨	
ME	Brandon Hellenbrand		▨	▨	▨	▨	▨	
ME Tech			▨	▨	▨	▨	▨	
Operations	Gleditsch, Andreas Leitner, Katrin Meltzer	Bryan Thompson	▨	▨	▨	▨	▨	
PDE	Mike Arthur, Siang Ching Lim, Maciej Slotwinksi, Anke Tusche	Avi Robbins, Firoz Narsidani	▨	▨	▨	▨	▨	
PDE Tech	Amelia Reese		▨	▨	▨	▨	▨	
PSP	Tim Meredith		▨	▨	▨	▨	▨	
Quality	Vickie Ray, Michaela Kunze, Jaclyn Lim, Lynda Fletcher	Mike Tucker	▨	▨	▨	▨		
Sales	Victor Asselberghs, Huan Shen Chan	Kevin Sporrer	▨	▨	▨	▨	▨	
Scheduling	Wei Shin							
Supply Chain	Susan Harris, Marci Fluellyn, Casey Pustelnick, Debbie Reed							
Tooling	Patrick Shivananada		▨	▨	▨	▨		▨
Total	30	9						

Show the Value

- May Add Steps in One Process but Gain Elsewhere – all along the way it is important to show the value the system will bring to users. In most cases It will help them save time by automating processes but sometimes it will add more steps. It is important to show the benefits of these extra steps. For example, the users may now need to enter data

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into the PLM instead of just attaching a document. This will allow for better searching of the information and save time on the back end of the process.

Standardize & Secure Early – Implementing PLM is an opportune time to standardize processes and systems across the organization. This is a task that requires a lot of change management, especially when going across departments, divisions, and locations. It is important to review the value of the current systems, processes, and work steps, and then question their need and develop a common practice moving forward that will allow all departments, divisions, locations, etc.. to use one system. Security is another issue that many people are concerned with as we move to the "cloud". PLM 360 does an excellent job at maintaining this for you and through a simple matrix you can keep track of what needs to be done to set this up easily. In the chart below you can see the available workspaces on the left (rows) and the groups and workspace tabs on the top (columns). By just simply marking read (R) or read-write (RW) you can begin to look for common elements and create the necessary "roles" in PLM 360 to govern the security for you.

	Sales						PDE						Materials						Quality					
	Attachments	BOM	Grid	Relationships	Workflow	Workspace	Attachments	BOM	Grid	Relationships	Workflow	Workspace	Attachments	BOM	Grid	Relationships	Workflow	Workspace	Attachments	BOM	Grid	Relationships	Workflow	Workspace
Projects	RW		R	R	R	R	RW		RW	RW	RW	RW	R		R	R	R	R	R		R	R	R	R
Sample Orders	RW		R		RW	RW	RW		RW		RW	RW												
Products	R	R				R	RW	RW				RW	R	R				R	R	R				R
Samples	R	R	R	R		R	RW	RW	RW			RW												
Part CAD																								
Tooling Design																								
Material Overview							R					R	R					R	R					R
Experimental Material						R	RW					RW	RW					RW	R					R
Materials						R	R					R	RW					RW	R					R
Change Orders	R			R		R	RW				RW	RW							RW				RW	RW
Manufacturing Instructions							RW					RW	R					R	R					R
Manufacturing Setup							RW					RW	R					R	R					R
Packaging and Labels	R					R	RW					RW							R					R
Manufacturing Equipment												R												R
Production Departments				R								R						R						R
Quality Control Plan	R					R	RW					RW	R					R	RW					RW
Customers	RW		RW			RW	RW		RW			RW						R						R
Contacts	RW					RW	RW					RW						R						R

User Acceptance Testing (UAT)

- Have user involved in defining process – this is the ultimate step to ensure user acceptance is to have them involved from the beginning. It is critical to have at least one round of user acceptance testing so employees have a chance to review the changes to their routine and provide feedback for further improvements.
- Get the loudest critics involved! – I've found that bringing in the people that tend to make the most noise will help you out in the long run. By showing the value of the system and taking their feedback during the UAT process, you will turn the critics into champions.

Use the System

- Issues Management – there is no better way to get people to learn the system than to have them use it. During UAT we had the users log their issues in the PLM in a workspace with workflow that allowed us to track the progress of addressing their issues and provide them feedback when the issues were resolved.

Use Cases for Improved Processes and Collaboration

Autodesk® PLM 360 has powerful features (workflow, change management, etc…) that will help you to improve cross function and global collaboration, help improve data collection and therefore allow you to make better business decisions and better manage your product portfolio.

NPI Process

In the NPI process we used visual management tools (color indicators) to show the number of days a project has sat still in a certain development phase. This allows the engineers to easily see which projects need the most attention.

Applications Engineering – To Go

We developed a sample order system with report tool that allows engineers and sales managers to search available samples from their tablets, while at the customer site, to find an appropriate sample, show it to their customer, and "order" it from the sample room in a matter of minutes.

Pipeline Management Reporting