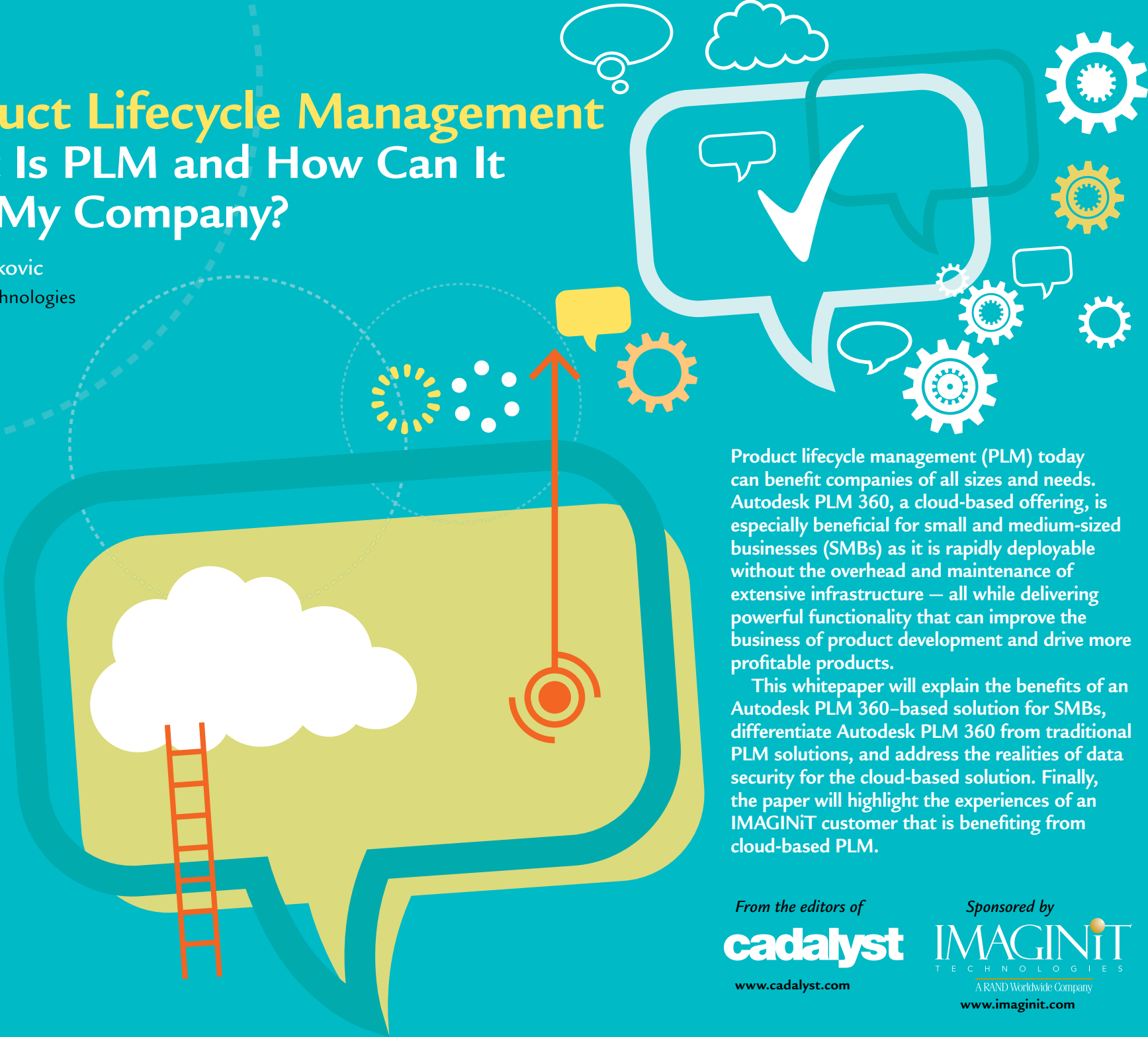# Product Lifecycle Management
What Is PLM and How Can It Help My Company?

By Pete Markovic
IMAGINiT Technologies

Product lifecycle management (PLM) today can benefit companies of all sizes and needs. Autodesk PLM 360, a cloud-based offering, is especially beneficial for small and medium-sized businesses (SMBs) as it is rapidly deployable without the overhead and maintenance of extensive infrastructure — all while delivering powerful functionality that can improve the business of product development and drive more profitable products.

This whitepaper will explain the benefits of an Autodesk PLM 360–based solution for SMBs, differentiate Autodesk PLM 360 from traditional PLM solutions, and address the realities of data security for the cloud-based solution. Finally, the paper will highlight the experiences of an IMAGINiT customer that is benefiting from cloud-based PLM.

Product lifecycle management
solutions can boost productivity for manufacturers, and Autodesk PLM 360 brings those benefits within reach of SMBs.

Turn to PLM for help with:

- product items and BOMs
- quality control
- engineering change management
- program/project management
- supplier management
- procurement support
- field service management

I'm here to help you understand PLM. This article will explain what PLM is (and what it isn't), how it works, how it can be scaled to accommodate businesses of all sizes from small to medium to large, and some tips for a successful implementation. Small companies face many of the same process challenges that large companies face, and PLM can address these challenges if the solution can be tailored to meet the unique needs of SMBs.

I'll discuss how you can improve your business processes using Autodesk's cloud-based solution for product lifecycle management, PLM 360, a system that is flexible and affordable enough that it can help you become more efficient and profitable no matter what the size of your company.

WHAT PLM *IS*
At IMAGINiT Technologies, we define PLM as follows:

Product lifecycle management is an information-driven business strategy that integrates people, processes, data, and technology to manage the entire life of a product from concept to disposal.

A complete PLM solution collects product information and guides its flow from early requirements gathering through development, production, delivery, maintenance, and retirement. I'll dive further into the details of a PLM solution later in this article.

I like to point out to customers that, more than likely, they're already practicing PLM — they're just not aware that they're doing it, or they're not doing it efficiently. For example, you might have processes and tools in place, such as spreadsheets and forms that you distribute via e-mail for approval by specified people. That is a simple form of PLM. Or maybe you already have a quality management system (QMS), but it is standalone software and its information isn't shared across the business and readily available. A properly configured PLM solution serves as a bridge that captures all of your key product business information and integrates your tools and processes to benefit all stages of product development and manufacturing. Properly implemented PLM guides business-critical decisions throughout the business and captures those key decisions and documents. It's a powerful business tool.

WHAT PLM *IS NOT*
One thing that I can't repeat too many times is that PLM *is not* just a software product. There is so much more to PLM than just installing a software product labeled *PLM*. Yes, software is part of PLM — in fact, a PLM solution can incorporate multiple pieces of software — but it's really more about the process of managing information efficiently than it is about the software. Software is the enabler.

PLM *is not* just for large companies. The belief that PLM is a solution that can benefit only large companies is perhaps the biggest misconception about it. However, there was a time when this might have been true: Traditional PLM solutions tended to be too expensive to implement and too complex and inflexible to benefit small to medium-sized businesses (SMBs). Smaller companies that tried to implement these PLM solutions often failed because the solution forced them to act like large companies, making their processes more complex than necessary. Ultimately, they would have to choose between sacrificing their business agility or abandoning the system. The expense of modifying the tool to fit the needs

of small businesses often scared many SMBs away from a PLM solution.

Fortunately for SMBs, all that has changed. In the case of Autodesk PLM 360, you have a cloud-based offering, or software as a service, so there's nothing to install and you're ready to start configuration on day one. You're basically renting the software and infrastructure, so you don't have

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the up-front costs of buying complex software or putting in an infrastructure to support it. Ramp-up time and expense are greatly reduced compared with a traditional PLM implementation. Although you can use the preconfigured apps as-is, I wouldn't oversimplify it and say that they will meet all of your business needs. Every customer will have to do some configuration to adapt the software to their processes. The built-in apps are there as a starting point to demonstrate capability and get you off the starting block. Also, you don't have to try and

Autodesk PLM 360 from the User's Perspective

Users will find the Autodesk PLM 360 interface modern, easy to navigate, and intuitive. The company's PLM administrator can configure some of the look and feel of the PLM 360 site, but each user will have his or her own home page to collect information specific to their PLM needs.

The home page opens with a dashboard of reports/charts, which update in real time, that the user may be interested in following. Each user can configure the reports/charts that display, and those reports/charts can be private or shared with other users.

The dashboard also displays the user's Outstanding Work. In this section, the user can quickly see which tasks or assignments are currently waiting for input, each marked with a color-coded flag that indicates whether the task is on time, has a deadline coming soon, or is late. The user simply selects a task to provide the necessary input.

The remaining sections of the home page are what you would expect to find in any PLM solution, such as:

- saved bookmarks/links to items of interest,
- recently accessed/viewed items, and
- attachments/files that are currently checked out by the user.

Working with the rest of the PLM 360 application is like navigating a typical website. Hyperlinks throughout the records connect to information and make it easy to traverse through the system of related information. Users also can search for data instead of navigating through workspaces, making it simple and fast to find the exact information you need.

The PLM 360 site can be securely configured so that users only see the information they need or have access to. PLM 360 administrators can hide tabs, menus, records, and even sections of information to help users focus on relevant information.

Even though it is relatively easy to navigate through PLM 360 to determine what you need to work on, when you need to work on it, and to just simply review information, users can be notified via e-mail when they are assigned to a task. The e-mail workflow notification includes information about the task and a hyperlink to the item and workflow in the PLM 360 site.
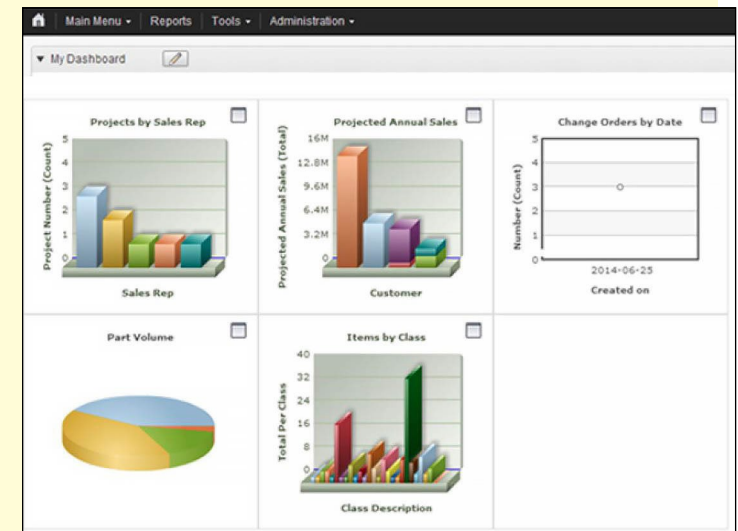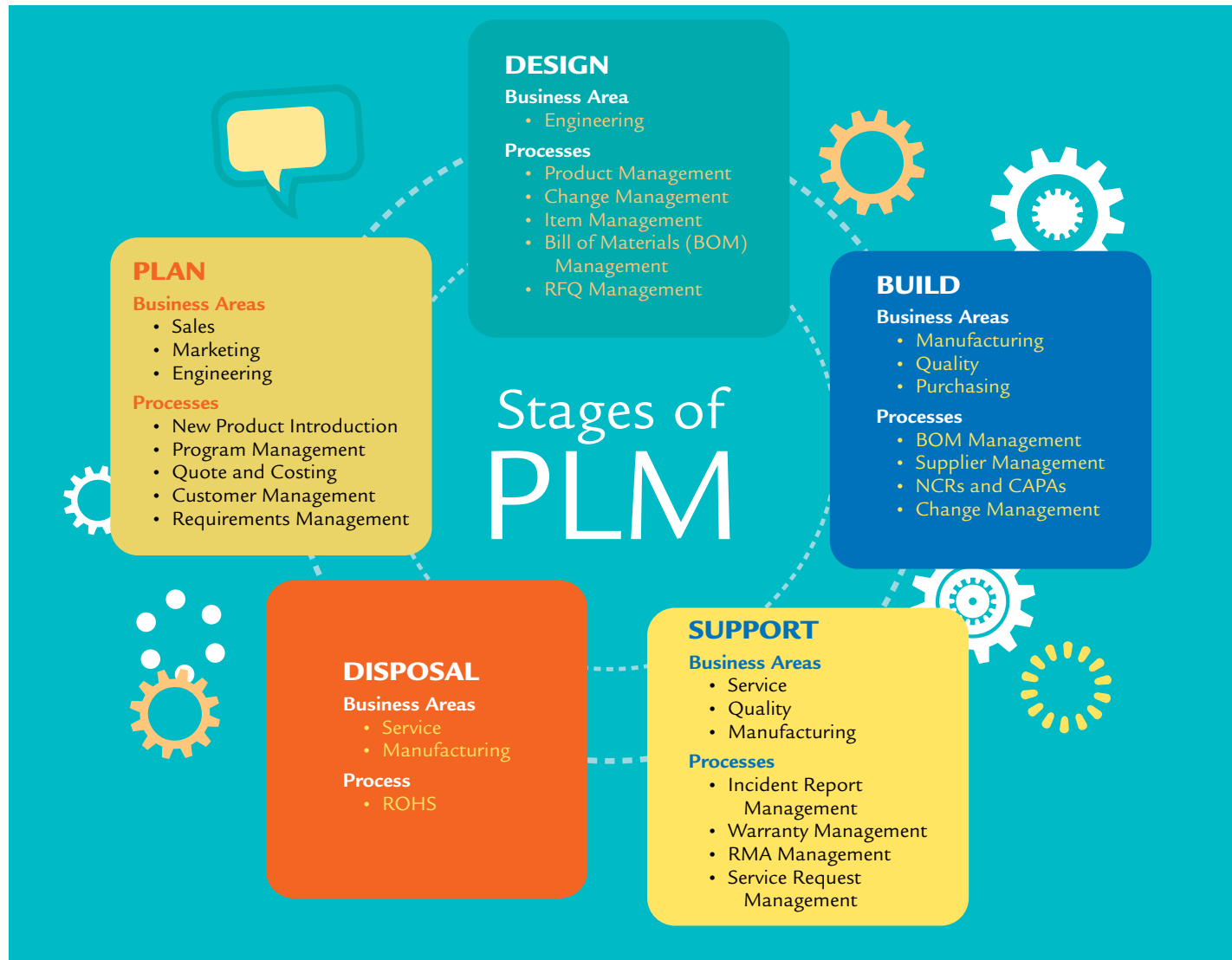

Each Autodesk PLM 360 user has his or her own dashboard that provides a window into project status, notifications about tasks waiting for action, and access to key project information in the form of private or shared reports, charts, and graphs.

Users will have a hard time using the "I didn't know I had work to do" excuse anymore because of how PLM 360 keeps every worker informed of project status and who is responsible for a particular piece of the puzzle.

do every business process in PLM all at one time. PLM 360 is flexible; you can adopt parts of the system as needed — for example, engineering or quality control — and then expand use over a timeframe that's acceptable to your business.

PLM *is not* just for engineering. Although it's probably true that the engineering department is where PLM most often gets its start within a

DESIGN

Business Area
- Engineering

Processes
- Product Management
- Change Management
- Item Management
- Bill of Materials (BOM) Management
- RFQ Management

PLAN

Business Areas
- Sales
- Marketing
- Engineering

Processes
- New Product Introduction
- Program Management
- Quote and Costing
- Customer Management
- Requirements Management

Stages of PLM

BUILD

Business Areas
- Manufacturing
- Quality
- Purchasing

Processes
- BOM Management
- Supplier Management
- NCRs and CAPAs
- Change Management

DISPOSAL

Business Areas
- Service
- Manufacturing

Process
- ROHS

SUPPORT

Business Areas
- Service
- Quality
- Manufacturing

Processes
- Incident Report Management
- Warranty Management
- RMA Management
- Service Request Management

This chart shows the five primary stages of the product development process along with examples of personnel and business processes involved at each stage.

company — typically in an effort to improve bills of materials and change management — it isn't solely an engineering solution. PLM manages processes well before the engineering stage of product development, such

as market analysis and requirements gathering, and then extends throughout product development encompassing all the processes and projects that are necessary to bring a product to market, all the way through product

retirement and disposal. The end of a product's lifecycle is just as important as the other phases and is often overlooked in SMBs for efficiency gains and process improvements. By establishing a sound PLM strategy within your business, attention will be brought to processes such as Warranty and Product delivery, for example.

HOW IT WORKS

The product development lifecycle involves numerous processes, tools, and personnel that must be managed. PLM extends across the entire business to connect and manage all these components. PLM provides information access to the appropriate personnel at the appropriate stages. It can automate certain steps — such as information flow and visibility, process triggers, and electronic sign-off — and improve efficiency by automatically notifying users when input or review is needed.

The accompanying chart shows the five primary stages of the product development processes along with the personnel and PLM-based processes involved with each.

Autodesk PLM 360 can build on your company's existing software foundation, integrating with product data management (PDM), change management, ERP, and more. You may already have solutions in these

areas, and a flexible PLM solution such as PLM 360 will integrate well into your existing systems. You don't have to replace what's already working. However, if you don't have a system in place for processes such as project/program management, CRM, QMS, and supplier management, then PLM 360 offers a platform for those business functions.

HOW IT HELPS

Compared with traditional PLM implementations, Autodesk PLM 360 is more affordable and easier to deploy and use — but the potential business benefits are the same, including:

- greater visibility to critical information
- more efficient business processes
- improved supplier collaboration
- faster time to market
- improved standards compliance
- improved product quality
- faster response to market dynamics
- improved program and project visibility
- reduced waste
- greater component reuse

Complete project visibility to everyone in the business is a tremendous benefit of PLM. For example, if a product has to change because of a defect, PLM can provide complete visibility into how the defect was identified and what the corrective action plan is to fix
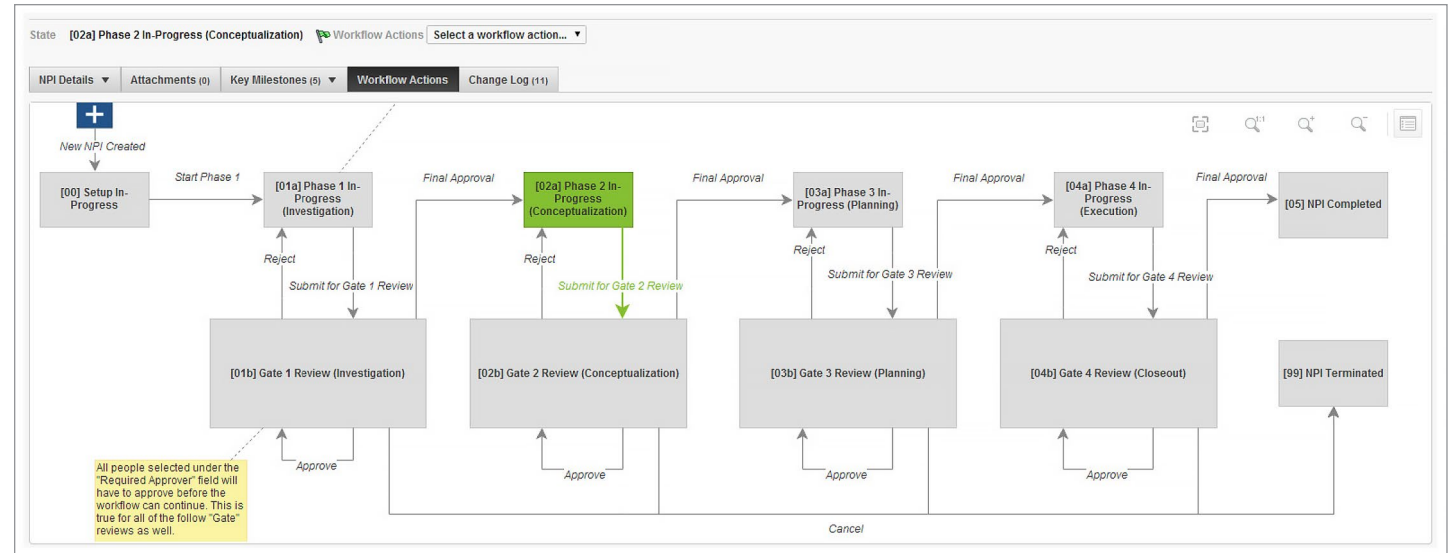
Autodesk PLM 360 facilitates simple process workflow mapping. User can create business processes with easy-to-use tools.

the defect, and it can follow the entire change process from engineering updates to the release of the improved product.

Collectively, these benefits lead to better and more profitable products.

In addition to lower start-up costs, the cloud-based nature of Autodesk PLM 360 equates to reduced or no cost for long-term ownership, including the following:

- infrastructure upgrades (hardware and software)
- implementation of operating system (OS) and application service packs
- project management for software and hardware upgrades
- daily hardware management/ maintenance

- OS and database licensing costs and maintenance
- external access cost (VPN management) and mobile access

This last point is especially important as workers become increasingly mobile and IT personnel grapple with the bring-your-own-device (BYOD) trend. The browser-based nature of PLM 360 means staff can access information at any time from any Internet-connected location, with all the built-in security that Autodesk provides.

WHAT IT COSTS

As I've been saying all along, the efficiency and economies of scale of cloud technology make Autodesk PLM 360

easier and more affordable to implement and operate than traditional PLM systems, bringing PLM 360 within reach of companies of virtually any size. Autodesk has stated that PLM 360 is roughly one-third the cost of traditional PLM systems, while achieving substantially the same benefits.

Complete project visibility **to everyone** in the business is a tremendous benefit of PLM.

Even training costs are lower in my experience, because the browser-based system is so easy to understand and use.

Customers subscribe to individual seats of Autodesk PLM 360 on an annual basis, making it easy to forecast and adjust expenses based on use and current needs. Professional seats allow users to create, edit, and manage data for an unlimited number of business processes. Lower-priced Participant seats are designed for partners, suppliers, and managers or other users who do not need to add or edit PLM content but do need to review and approve data and documents, run reports to better understand the context of information, and perform workflow activities or make comments on submitted work as part of the approval process.

Need further justification for your PLM investment? Here's how we see it: PLM in an SMB is a strategic tool that will help your business grow by enabling key business processes. As one example of many, PLM can realistically help a company to gain 15%–30% efficiency in its new product introduction (NPI) process over a traditional NPI process of documents, e-mails, and paper.

HOW TO SUCCEED

As I've mentioned, Autodesk PLM 360 gives SMBs an edge in the effort to successfully implement a PLM system because of its flexibility, ease of use, and affordability. But success doesn't come automatically. Like most software integrations, success with PLM requires a clear business strategy,

> PLM in an SMB is a **strategic tool** that will help your business grow by enabling key business processes.

good planning, and dedicated support for and execution of that plan.

Plan well. When we at IMAGINiT Technologies implement PLM 360, the first step is to sit down with the client to define the processes that make up that company's product lifecycle — what we call process discovery. It's critical to PLM success that you identify, validate, and define those processes. This doesn't mean that the processes have to be perfect, and it doesn't mean that they can't change

along the way, but it is a recipe for failure if you go into a PLM implementation without having a process baseline documented and agreed upon.

We also identify the points in your product development process where key decisions are made. PLM excels at knowledge capture, documenting the key decisions that take place, and managing the information that supports these decisions. Some companies need just a little assistance with defining these elements of their new system, and others need a lot. The IMAGINiT data management team has decades of experience with customers of all types and sizes in the manufacturing market, as well as extensive knowledge of product development best practices, so we excel at identifying what companies need to do to succeed and provide recommendations on how to do it.

Set realistic goals. Another big key to PLM success is setting attainable goals, not setting the project scope too broadly and trying to do too much at once. We help customers make sure that the project is focusing in the right area. Develop a chronological timeline that details where you want to start, what you want to accomplish, and when — including when you'd like to reach your ultimate goal.

Establish high-level support. Executive sponsorship is critical to PLM success as well. With an undertaking such as PLM that affects people and processes across the business, you have to take a top-down approach. Workers need clear messaging from the executive level that change is coming and that their cooperation is necessary for success. They need to understand the changes that will affect their jobs and how the company is going to benefit from implementing a PLM solution. If you don't have that support at the top, people tend to fight change, and it will be difficult to ever find success.

Know what to expect. It's important to be honest and realistic about what to expect during a PLM implementation. At IMAGINiT, we're up-front with our customers about the ups and downs of the implementation process. We help set realistic expectations and educate our customer as to how dedicated resources — staff and a budget — are important for a successful implementation. This isn't something that people are going to be able to do in their spare time, to put an hour or two of work each week toward the project for the next six weeks. IMAGINiT lays out a project plan with the customer so they understand key milestones in the implementation, how they

Journey to PLM

Behlen Building Systems opts for Autodesk PLM 360 to automate an antiquated process.

At Behlen Building Systems, a business unit of Behlen Manufacturing Company, the inside team was getting bogged down by an antiquated product-development workflow based on paper file folders and manual checklists that ultimately constrained the unit's capacity. The team knew automation was the answer and considered repro-gramming several systems developed in house that did not work with Windows XP or find an off-the-shelf solution to replace as many of those in-house systems as possible.

Shane Wemhoff, a member of the Process Improvement Team, discussed the group's journey to — and results of — implementing Autodesk PLM 360.

Which automation solutions did you consider?
Wemhoff: We engaged IMAGINiT to review our process, what systems were connected, and get our feedback as to what direction we wanted to take the business. The solution they suggested was PLM 360. Discussions with IMAGINiT and Autodesk involved a couple of competitors which we inves-tigated as well as both freeware solutions and the option of reprogramming ourselves.

Why did you choose Autodesk PLM 360?
The functionality of PLM 360, our existing rela-tionship, as well as the personalized demos, and on-site interactions [with IMAGINiT and Autodesk] led us to choose PLM 360. The big benefit we see is knowing where a project is in the process without having to track down a paper folder. By having an electronic process, we can also elimi-nate several checklists. Using states and actions in the flow allows us to document those tasks being completed. Currently, in Phase 2, we are working on feeding PLM 360 from our design software, MBS [Metal Building Software]. In a future phase, we plan on feeding our ERP software [Oracle JD Edwards World] from PLM. Both processes will use Jitterbit [for cloud integration] as middleware.

How was the implementation process?
Planning, implementation, and training steps are well defined and thought out. Autodesk has a good methodology for addressing these and IMAGINiT works well with it. The Autodesk/IMAGINiT team steps through each process that is going into PLM 360 and maps out the process and which func-tional team is responsible. This creates a nice visual for defining process states and actions. Towards the end of the initial phase, these duties are turned over to our technical team so that we could con-tinue the process and build on the methodology; we basically turned our daily tasks into an elec-tronic process. Our technical team took 3.5 days of training, and the initial mapping phase took about two weeks. Our Phase 1 took about 3.5 months, with significant consulting from both IMAGINiT and Autodesk. Phase 1 rolled out to approximately 75 team members contributing to the flow on a daily basis.

What's your assessment of the new system at this point?
We went live with Phase 1 on June 16, 2014. All those involved are adapting to doing things a little

differently, although there is apprehension about giving up paper. Benefits include the removal of paper, which has led to improved customer service with information being integrated into the PLM workspaces or electronically filed in a central location for each project.

> "Benefits [of the new system] include **the removal of paper,** which has led to improved customer service with information being integrated into the PLM workspaces or electronically filed in a central location for each project."
>
> — **SHANE WEMHOFF,**
> Behlen Building Systems

as a customer need to be involved, and exactly where IMAGINiT will be involved. In addition, our experience has told us that successful implementations don't just involve getting the solution up and running; they involve the end users. Our approach is to train and support these individuals on any new processes and how the new software tool will integrate with their PLM processes.

Get the experts involved. Last but not least, implementing a formal PLM system is an uncharted territory for most SMBs. Most companies will find the implementation process to be much quicker, more cost-effective, met with fewer frustrations and set-backs, and ultimately more successful if they have experienced personnel working with them from start to finish. PLM expertise enables better informed and faster decision-making during project planning and throughout the implementation process. Even something that sounds as simple as user acceptance testing and training can take weeks longer than necessary if your company doesn't have established procedures or experience in this area.

I hope this whitepaper has helped you understand the basics of product lifecycle management and Autodesk PLM 360. If you have questions, we're here to help. ◆
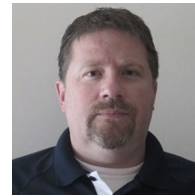
PETE MARKOVIC is a Solutions Consultant with IMAGINiT Technologies specializing in PLM/PDM products and 3D CAD tools. He has more than 20 years of experience working in many industries, including construction equipment, automotive, aerospace, consumer products, high tech electronics, and medical device manufacturing. Throughout his career he has been involved with and has managed many PLM/PDM implementations of various systems, including Autodesk PLM 360, Autodesk Vault, Teamcenter, Metaphase, Windchill PDMLink, and PTC Intralink.

Pete specializes in working across multiple business areas to streamline business processes and adapt them to a PLM/PDS environment. Pete especially enjoys the challenges of working in multi-CAD environments and working through the problems faced by engineering departments trying to streamline their processes

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