Best Practice Academy: Helping You Make the Most of PTC Creo®

The PTC University Best Practice Academy is designed to take experienced PTC Creo users to the next level with Learning Principals that offer extensive PTC Creo expertise.

Working with our customers’ advanced PTC Creo users, the PTC University Best Practice Academy develops and drives adoption of standardized practices that address specific goals of the organization—whether that’s improving CAD performance, for example by increasing design transparency, collaboration, productivity, or enhancing product quality.

This white paper describes how engaging with the PTC University Best Practice Academy helps organizations develop and standardize on an optimal PTC Creo design methodology. We also present three common customer trouble spots and how the PTC University Best Practice Academy helps customers address these challenges.

Develop best practices

In the crunch of day-to-day operations, many organizations don’t set aside time to develop and standardize on methods for designing projects using PTC Creo. PTC University’s Best Practice Academy was introduced specifically to help, and facilitates the process of developing design methods that optimize the functionality, quality, and performance of customers’ product development processes.

Unlike a standard training class where the instructor teaches general concepts, core features, and functionality, PTC University Best Practice Academy assumes that participants are intimately familiar with PTC Creo and want to learn the most effective design methods to achieve their organization’s goals.

To this end, PTC University Best Practice Academy enlists the customers’ subject matter experts (SMEs) to work side by side with a PTC University Learning Principal. These Learning Principals are highly experienced and certified in the processes and methods they teach, and they have a long history of helping a wide range of customers optimize their use of PTC Creo.

A PTC University Best Practice Academy program begins with the Learning Principal and the customer’s SMEs working together to outline the customer’s objectives and identify potential gaps. Based on this analysis and the desired outcome, we recommend one of the following three types of workshops:

- **Pre-configured workshops at the customer site**: Customer SMEs are taught general product development best practices
- **Configured onsite workshops**: Content from various existing workshops is tailored and combined to meet the organization’s objectives
- **Custom learning programs**: These are created specifically for the customer using our Precision Learning Methodology—a proven, proprietary
approach to developing and delivering learning solutions that have the right combination of content, technology, and services. These engagements include a training needs analysis, education plan, content customization, and delivery.

Our eLearning courses are also available for use as a refresher for students who have gone through our training, or as a way to broadly disseminate best practices developed during workshops with the customer’s subject matter experts.

All PTC University Best Practice Academy workshops present an opportunity to bring all of the customer’s key experts together in the same room for a discussion facilitated by our Learning Principals. We start by using PTC University’s Expert Model Analysis tool to analyze existing designs, determining where these designs excel and where they have potential for improvement. We then introduce the customer’s PTC Creo experts to multiple different methods available to perform the task at hand, and work with the team to evaluate each method, taking into account organizational objectives and desired outcome. Customers can designate the selected methods as standards and roll them out to the entire organization. The ultimate goal is to optimize use of the product with best practices to bring the organization to a much higher level of use.

PTC University Best Practice Academy in action: Three scenarios

From the many engagements we have with customers, the PTC University Best Practice Academy leaders see certain scenarios again and again. The most common trouble spots are a lack of CAD standards, as well as challenges with managing large assemblies and performing robust modeling. The PTC University Best Practice Academy enables organizations to improve their performance in each of these areas.

PTC University Learning Principals

PTC University’s Best Practice Academy Learning Principals are high level consultants who are extremely experienced and certified in the processes they teach. Unlike standard trainers that teach general concepts as well as core features and functions, these Learning Principals have a long history of enhancing the use of PTC Creo within a wide range of customers.

Analyzing existing models with the Expert Model Analysis tool

PTC University’s Best Practice Academy instructors begin most engagements by analyzing a customer’s existing models using the PTC University Expert Model Analysis (XMA) tool.

XMA enables a comprehensive, data driven approach to determining a customer’s current use of best practices and which areas can benefit from improved design approaches. XMA takes hundreds or thousands of existing models and runs them against more than 50 different quality indicators. This analysis determines whether the customer employs best practices, and if they do, whether these practices are sound or have gaps that require improvement.

For example, one way to accelerate performance of large assemblies is to use simplified representations. The XMA tool can spot if and how often a customer’s models take advantage of simplified representations.

With the XMA tool, PTC University Learning Principals can effectively pinpoint which processes need improvement, and thus, recommend the most beneficial course of action for a particular organization.

For a free trial of XMA, click here.
Developing CAD standards

The biggest issue we come across is a lack of CAD design standards. Many companies don’t determine and/or document best practices for their environment. Instead, each engineer is left to his or her own devices as they create parts or assemblies. Because everyone designs differently, it becomes tedious and time-consuming for engineers to understand one another’s designs. This reduces productivity when engineers attempt to modify or reuse existing models, makes it difficult to divide large projects, slows time to market, reduces quality of engineering deliverables, and increases design costs.

PTC University Best Practice Academy leaders work with organizations to develop and document best practices that meet design objectives and helps organizations drive adoption. Results include improved collaboration, greater design productivity, faster time to market, better quality, and lower costs.

For example, one of PTC’s customers makes garbage trucks. This customer works with each of its clients to create customized versions of its trucks to meet the needs of the different cities in which the trucks are used. The company came to PTC University with two primary goals. In the near term, they wanted to improve their design methodology to address performance issues they were having with their CAD software as they designed large assemblies. In the long term, the company had a vision for automating the process of configuring trucks. They hoped to ultimately create a website where their customers could go to enter parameters for the features they needed on the trucks and then the system would automatically build the design according to those requirements.

As the next two sections illustrate, the PTC University Best Practice Academy program enabled the company to optimize its processes for designing large assemblies and modeling parts. The company was able to use those new processes as standards across the organization. This has resulted in improved CAD system performance when using assemblies, and readiness for more automation in the design process.
team approach to engineering. Learning Principals facilitate a discussion among the organization’s best PTC Creo users about which methods are most appropriate to use in their organization.

As a result of this process, PTC helps most customers refine their “start assemblies” or templates. Two areas that a PTC University Best Practice Academy program typically focuses on are the layering scheme and creating simplified representations.

We improve layering schemes by creating rules that automatically place specified design elements in certain categories or layers. These layers eliminate visual clutter, making it easier for engineers to think about their designs and improving the transparency and reusability of the designs. Simplified representations perform a function similar to layering, but additionally allow engineers to remove unnecessary items (e.g., fasteners) from both the display and memory, which improves system performance.

- More reliable and robust assemblies that can be worked on with confidence
- Better multi-user collaboration
- Faster and easier design modification
- Faster ramp up for new hires because they have access to standard best practices
- Better design transparency

For example, the garbage truck company found that its use of overloaded assemblies containing all of the variations offered to customers actually prevented it from easily putting different options on its garbage trucks to meet the needs of different cities, and reduced CAD system performance. PTC University’s Best Practice Academy mentor reviewed various ways to make assemblies more flexible with company engineers so that it would be easier to include or exclude options to create customized design for each customer. The mentor recommended the new PTC Creo Options Modeler™ to address the issue.

In addition, the mentor worked with the customer’s engineers to improve the overall design of the assembly. Garbage trucks require the use of moving subassemblies to lift up the back of the truck and dump out the garbage. They determined that the use of top-down design with a geometry skeleton would allow them to easily simulate the motion of the two subassemblies to eliminate interference and create more accurate and higher quality designs.

Modeling

Another common troublespot for customers is modeling. Models that are not constructed in a consistent manner make it difficult and time consuming for one engineer to understand and work with or reuse another’s model. Moreover, if the models are of poor quality, engineers that attempt to make modifications without understanding the model can cause the model to fail.
Standardizing on best practices for modeling throughout the organization makes models transparent so other designers can easily pick up the model and work with it, minimizing the busy work of figuring out the model and maximizing the time they can spend on actual design to enable better reuse and collaboration.

PTC University Learning Principals work with companies to make models as simple as possible while maintaining their design intent by examining and optimizing:

- **The features** the company’s engineers use to create the models

- **The order in which engineers use these features** (e.g., do they put in screws first or later in the process? Are they rounding the edges early or late?) The idea is not to bury anything the engineer might want to strip off the model later for analysis purposes so deep that it becomes necessary to dismantle the entire model to make a change

- **The way features relate to each other.** Engineers need to carefully consider and document any dependencies in the model to eliminate the risk that a change in one area of the model will break another

With the help of PTC University Best Practices Academy, customers improve their model structure to enable:

- Easier sharing of design data
- Transparent use of existing models
- Improved assembly performance
- Faster ramp up time for new hires who are taught best practices from the start

In our example, the garbage truck company knew that it would need a high quality model if it wished to automate the design process. PTC University’s Best Practice Academy experts examined several of their parts and discussed features to use, order of use, and relationship to make it easier to create and reuse parts. Together, the company and the instructor determined that the organization needed to ensure that relationships between features in the model captured design intent. This allows models to react predictably to automated changes, getting the customer closer towards its goal of creating an automated system for customizing its designs.

**Conclusion**

Many PTC Creo customers are challenged by a lack of CAD standards as well as difficulties managing large assemblies and creating robust models. With PTC University Best Practice Academy, organizations learn...
how to use PTC Creo to its full advantage to address these issues. The best engineers in the organization work together in one place with the help of seasoned CAD experts who have worked on many customers’ PTC Creo implementations to develop best practices for creating designs that meet the organization’s design objectives. And because the process is structured to encourage buy-in, it is much easier for the organization to roll these new techniques out to the entire organization and optimize the use of PTC Creo company wide.

To learn more about how PTC University Best Practice Academy can help your organization, please contact us today.

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