

P&G: Leveraging software assets to increase the bottom line

John Clisham, Systems Manager, Global Business Services, Procter & Gamble

Automating, integrating and streamlining applications can lead to substantial productivity gains and a greatly increased ROI from existing software tools – from spreadsheets and legacy codes, to databases and computer-aided engineering (CAE) applications.

When considering CAE (the application of IT to a problem in engineering and manufacturing), one typically thinks of the auto or aerospace industry, not a consumer products company. However, Procter & Gamble is on the leading edge of this trend, applying a wide variety of tools that range all the way from high-end engineering analysis software to Excel spreadsheets, databases and in-house tools. From package or product design through process manufacturing and plant productivity, modeling and simulation plays a key role in many of P&G's initiatives.

The problem

CAE at P&G has been delivering tens of millions in savings per fiscal year, yet traditionally it has only been applied to 20 percent of initiatives. Broadening accessibility to this capability provided an obvious opportunity to realize exceptional savings. The biggest barrier was the prohibitively steep learning curve for many of the tools used. For example, it required a unique blend of engineering and IT skills to work on the P&G Grid, which uses environments such as Linux, and there are few people with these attributes. What's more, it was frequently necessary to execute multiple steps using multiple complex software packages in order to complete a single analysis or case study. Design engineers would develop concepts and pass these to analysts to develop models and simulations to evaluate them. Going back and forth between the design engineers and the analysts could take months.

Despite the value created by using these modeling and simulation techniques, the delays were impeding the innovation process. Considering the length of time to complete a single analysis, it is easy to see why CAE wasn't applied to more initiatives. The goal was clear; to deliver sustainable and supportable systems architecture and associated work process

changes, in order to simplify and streamline access to automated modeling and simulation analysis. The preference was to have this functionality web-enabled. This would allow users to avoid the need to install unfamiliar tools on their workstations and avoid the need to learn UNIX to interact with P&G's Grid. As a result, a project was formed to deliver a common toolset and technology platform to simplify, deploy and automate complex work processes via the P&G intranet.

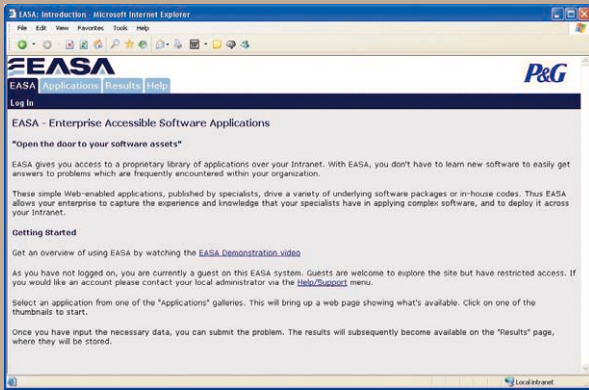
The solution

EASA was chosen as a key component in this initiative. EASA enables P&G to rapidly create graphically rich, web-enabled applications that automate and simplify access to the company's high performance computing software and hardware. Because it provides a layer of abstraction to multiple computing software packages, from commercial engineering analysis codes to complex Excel spreadsheets and data-

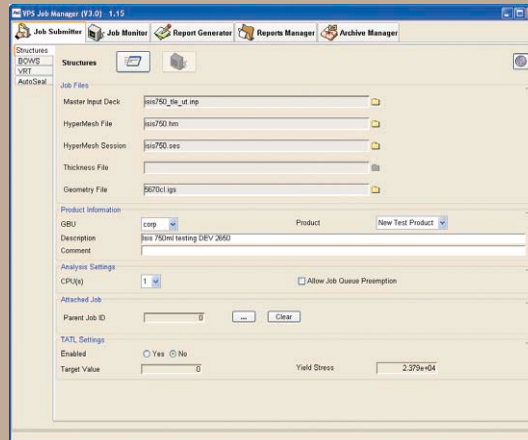
bases, it has cross-function and cross-business unit applicability. It facilitates simulation at multiple points from the beginning to the end of commercial initiatives. EASA has excellent database connectivity capability allowing for data-fed applications, as well as integration with corporate repositories for storing and archiving results. EASA has cross-platform capability, meaning Linux, UNIX, and Windows applications can be accessed seamlessly in a work process. In addition, EASA has simple, secure, easy to maintain infrastructure resulting in high availability and reliability.

EASA's authoring tools allow our expert application users to easily design, build and deploy custom tools that are accessible to users who have limited understanding of the underlying software, whether it is a math-based analysis tool or a complex spreadsheet. The authoring interface has a simple tree structure that allows authors to drag and drop predefined objects such as text input fields, sliders or radio buttons needed on each input page. Creating and customizing these objects does not require any computer programming experience, so the experts themselves can quickly define the inputs, processes, and outputs desired in each model. The output can be tables,





P&G employees use a browser to access EASA and use the custom applications that have been published



P&G's Virtual Packaging Simulation (VPS), built with EASA, replaces a custom-built .Net application and is significantly more cost-effective to deploy and maintain

charts, graphs, images or whatever the expert building the application deems appropriate for the user-audience.

The end-user accesses each model through the corporate intranet. EASA's web interface has been customized to match the rest of P&G's intranet site, giving a seamless user experience. Users see a list of EASA applications that can be categorized so they are easily found. When opening an application, users are presented with clean, simple input screens through which they define the case or cases to be investigated. With a click of a button, the underlying process is executed on P&G's high performance technical computing grid. Behind the scenes, the input is processed using one or more of a variety of tools such as Fluent, Acusolve (thermal and fluids analysis codes), Harpoon, ICEM (meshing codes), Fieldview or Ensignt (post-processing tools), as well as more common tools such as Excel and Access. The user simply waits and lets EASA control the flow of data, periodically checking the status of the run via the web. When the simulation is complete, the results are again accessed via the web. All the engineers' runs are stored in a searchable format in order to preserve history, which reduces the chances of wasting time solving the same problem more than once.

One highly valued tool developed by P&G is the virtual packaging simulation (VPS). The VPS simulations mimic standard test methods for bottles and caps. VPS is a compilation of several underlying tools. These include structural simulation of containers subjected to various loads (which occur during stacking by retailers or squeezing by con-

sumers). In addition, this tool allows simulations of packages on a conveyor, and also extrusion blow molding processes.

All of these models are driven by a tool called VPS Job Manager, which was originally a custom built .Net client-based application. This required each user to have their own individual installation, which created a number of logistical challenges when releasing new versions or minor revisions.

The centralized deployment of a web-based version of Job Manager using EASA obviates all of these problems. It makes change management of the application much simpler because all updates are made to a single, central program. This eliminates client installation and allows users to focus on their work instead of software upgrades. It also makes any changes available to everyone as soon as they are published. This provides central, world wide access along with all other modeling applications without requiring a special software installation.

Other areas of application – facilitating the use of Excel and databases

Of particular interest is the application of EASA to Excel. By creating and publishing an EASA application that is connected to a central Excel spreadsheet, several benefits have been obtained. First, version control is assured – everyone is using the same version of the spreadsheet. Furthermore, any intellectual property contained in the underlying spreadsheet is protected. Finally, an improved user interface is provided (without any programming) that makes the use of even the most complex spreadsheets completely foolproof.

Another use for EASA is to create database interfaces that are tailored to specific applications, not necessarily related to engineering and manufacturing. There are potential opportunities to leverage EASA to allow fast and easy analysis of marketing information, such as understanding or predicting the impact of a targeted promotion.

The value

Expanding usage of our existing software tools across more initiatives could deliver hundreds of millions of dollars per fiscal year, and EASA is an enabling component. EASA helps bridge the gap between the experienced practitioners' knowledge, the IT skills needed to expose and host these tools, and users' ability to leverage these models. The potential value is clearly strong and P&G believes it will bear out as it begins to increase the number and usage of models and processes it automates and deploys using the EASA software package.

As Tom Lange, Director of Modeling and Simulation at Procter & Gamble, puts it: "In 1906, the only way to fly was to be a pilot. In 2006, all you need to know is where the airport is. For the last 50 years, modeling and simulation has required a 'pilot's license'. Now, with the aid of tools like EASA, we have developed the first 'modeling airport' for pilots and passengers." ■

Three billion times a day, P&G brands touch the lives of people around the world. The company has one of the largest and strongest portfolios of trusted, quality brands, including Pampers, Tide, Ariel, Always, Whisper, Pantene, Mach3, Bounty, Dawn, Pringles, Folgers, Charmin, Downy, Lenor, Iams, Crest, Oral-B, Actonel, Duracell, Olay, Head and Shoulders, Wella, Gillette and Braun. The P&G community consists of almost 140,000 employees working in over 80 countries worldwide. Please visit www.pg.com for the latest news and in-depth information about P&G and its brands.