

# Automating the Design Validation Process with NX Check-Mate

> Today's CAD and PLM software tools help ensure product design quality with accuracy and efficiency.

BY TAYLOR ANDERSON

As CAD modeling techniques become more and more advanced, with both parametric feature-based modeling and breakthroughs such as synchronous technology becoming more widely used, senior management is starting to realize that product modeling and design changes can be completed much faster than ever before. However, these efficiently created designs still need to be checked and re-checked to ensure they meet the drawing and model design standards set by the organization, its customers, and the industry at large. The trick is to manage and automate the design validation process to make sure neither time to market nor product quality are adversely affected.

## VALIDATION ISSUES

The problems associated with drawing and CAD model validation can be broken into three broad areas—productivity, quality (product and CAD model), and process management. First, designers can spend a significant amount of time continually checking their models for problems or mistakes, and then re-checking them after design changes have been made. As design productivity continues to increase, the checking process can become a bottleneck in the product-development process.

Second, CAD users must meet an ever-increasing variety of design criteria and targets. If a mistake goes undetected due to human error or because the designer is unaware of a particular industry standard,

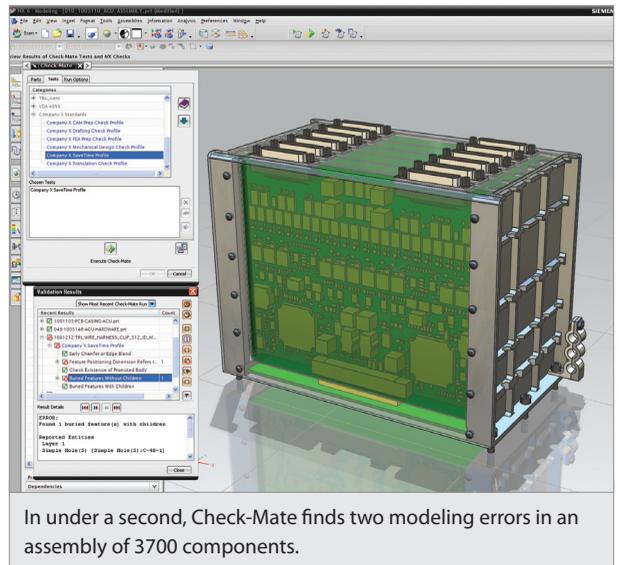
errors can propagate from the CAD model into analysis and to manufacturing, hurting product quality and, ultimately, product delivery.

Finally, the quantity and diversity of CAD drawing and model standards as well as design-specific criteria can be overwhelming, whether you are a large OEM or a small supplier working with several different clients. Companies need a way to effectively manage these standards so no problems fall through the cracks and efficient product design is maintained.

Given these challenges, it starts to become clear that it is important to not only automate the validation process, but also to automate the initiation of the checking function to ensure that validation takes place when it can be most effective (e.g., providing immediate feedback when a modeling mistake or design spec violation occurs). In addition, it is necessary to automate the tracking of design requirements and integrate the requirements management process with the design process.

## VALIDATION PRODUCTIVITY & QUALITY

When considering how to increase productivity in design checking and validation,



there are two areas that need addressing—standards validation and design-specific validation.

Standards validation refers to checking all aspects of a design to ensure it adheres to company standards for model creation (use of layers, colors, etc.), drafting standards (tolerance callouts, font size, etc.), and discipline-specific best practices (e.g., minimum bend radius on pipe runs or corner reliefs on sheet metal components). The checks performed in this particular context are not part specific.

The second class of validations is the checking of individual design targets or critical measurements. These checks are much more design specific and are focused

