

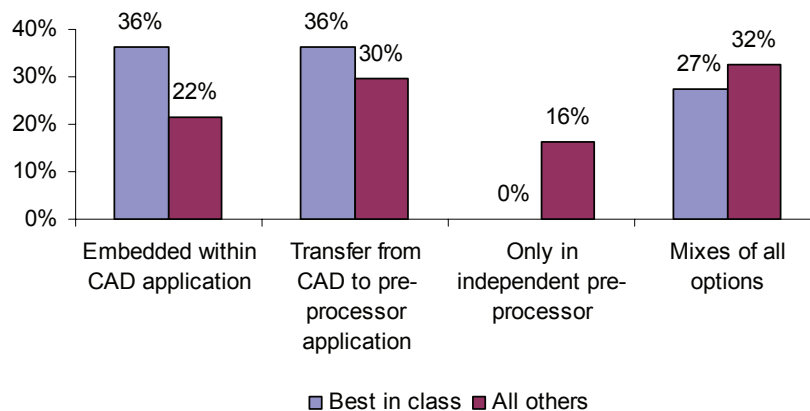
CAD-Embedded Simulation

The idea of using simulation in the product development cycle is not a new one, but it requires easy access to simulation tools that will not require engineers to spend time learning new tools. To streamline the simulation process, engineers in Best in Class companies are simulating designs upfront within the familiar CAD environment, and leveraging wizards and templates to further simplify and automate tasks.

CAD-Driven Designs: Simplifying Simulation

While a number of options for accessing simulations are available to engineers, only few are typically used. As Figure 1 demonstrates, Best in Class companies from [The Simulation-Driven Design Benchmark Report](#) are more likely to leverage the capabilities of providing simulations that are embedded within the CAD application, and also simulations transferred from CAD to preprocessor applications. Embedding simulation capabilities within a CAD application keeps the engineer in a familiar environment and removes the additional step of transferring geometry over to another application, a necessary option for an advanced setup such as finite element mesh adjustment and additional geometric idealizations. Either approach can be an effective means of conducting simulations; however, the important aspect is that the simulation is CAD-driven, meaning the geometry and changes come from the CAD tool. Perhaps even more important is the fact that because the simulation environment stays resident in CAD tools, this allows engineers to operate in familiar territory and prevents the need to learn new tools and skills.

Figure 1: Access to Simulation Capabilities

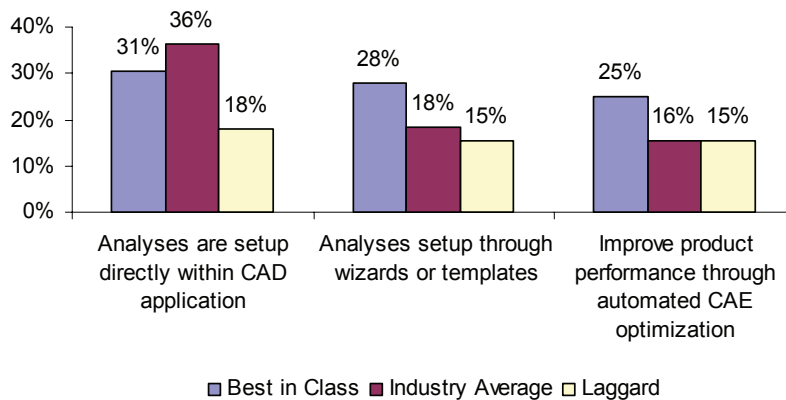


Source: Aberdeen Group, Month 2007

From Simulation to Analysis

To further simplify simulation for engineers, Best in Class companies from the soon to be published *Nimble Product Design: CAD CAM CAE for the Small to Mid-Sized Manufacturer* are deploying wizards and templates to reuse simulation knowledge from expert analysts (Figure 2). Equipped with templates to automate repetitive tasks, engineers can also be ensured that they will be following the best practices of the organization. The end result is medium complexity analysis that can be set up by these “casual users” to provide accurate results. In addition, these practices will allow for engineers to optimize design capabilities to balance sets of product requirements that are often in direct conflict.

Figure 2: Analysis Capabilities



Source: Aberdeen Group, Month 2007

Aberdeen Conclusion

Counteracting shrinking time to market windows requires the elimination of prototypes through digital simulation. To this end, Best in Class companies are providing a familiar environment within CAD to enable engineers in the simulation of designs. Better-performing companies are also more apt to leverage the reuse capabilities inherent in templates and wizards for the automation of simple tasks, and the reuse of expert analysis and organizational best practices.

For more information on this or other research topics, please visit www.aberdeen.com or contact:

Related Research

[*The Simulation-Driven Design Benchmark Report*](#); October 2006

Upcoming Research

[*Nimble Product Design: CAD CAM CAE for the Small to Mid-Sized Manufacturer*](#); June 2007

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