

DIGITAL EXPLORATION: THE NEW IMPERATIVE

By applying simulation at the earliest stages of product development, leading companies rapidly explore thousands of design options — creating breakthrough innovations and a significant competitive advantage.



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The positive impact of engineering simulation on the product development process has been well documented. By enabling engineers to test and verify their designs digitally, simulation has cut enormous costs and time from the development cycle, while also enabling innovation.

Over the past 40 years, backed up by thousands of customer success stories, simulation has been established as a key part of the product design verification process. Our experience and independent studies show that upwards of 80 percent of total product cost is determined by decisions made in the earliest stages of the product development process. As the design matures, options are increasingly limited, constraints are placed on the product development team's ability to innovate, and the cost of change becomes exponentially higher.

By applying simulation at the beginning of the design cycle, a product development team can quickly and cost-effectively explore thousands of design variations and gain insight into the impact of the choices made. By posing what-if questions, the team can discard some ideas and focus on the most promising ones. And they can explore options that were previously not even considered due to cost and complexity.

An Idea Whose Time Has Come

Digital exploration has never been more vital to long-term business success than it is today. The product design space is exploding, driven by increasingly smarter and connected devices, and advanced materials and manufacturing technologies like 3-D printing and mass customization. At the same time, sustainability and cost concerns put pressure on identifying and eliminating overdesign, while still meeting customer expectations. We have an unprecedented opportunity to innovate, but at the cost of managing

product design processes that are orders of magnitude more complex.

Digital exploration is the only way product development teams can possibly handle the need for innovation and the resulting complexity introduced by current market demands. Simulation was once a scarce and a highly specialized resource that was applied sparingly. Now, the barriers that once limited its usage are rapidly falling, and simulation is becoming more pervasive. This allows for unprecedented insight into product performance and trade-off analyses across interrelated design requirements.

By enabling the analysis of a multitude of design options — and by putting this capability in the hands of more engineers — digital exploration supports the extremely innovative product design required to succeed in today's fast-paced, competitive global marketplace.

Investing in the Future

So that more product developers can benefit from digital exploration, as a key strategic initiative, ANSYS continually

invests in usability, features and capabilities that make simulation easier to adopt for a broader audience.

ANSYS has solutions tailored specifically for the product and design engineer, so every member of the product development team can leverage simulation. No longer is simulation the exclusive domain of specialists: Analysts and non-analysts alike can now work collaboratively using tools that scale to their individual simulation needs and skills. And all are built on the same underlying proven simulation technology that leading companies have relied on for decades.

In addition, ANSYS software is accelerating on desktop, high-performance computing (HPC) and cloud environments — reducing the time involved for complex simulations from weeks to hours. Investments in areas such as reduced-order modeling and custom simulation apps allow specialists to create models that can be utilized by a broader engineering audience and produce results in a fraction of the time, without sacrificing accuracy.

Product complexity, competitive threats, the demand for better products faster — none of these challenges is going away. ANSYS will continue to develop the leading-edge capabilities you need to support digital exploration so that you can take advantage of these opportunities and tame the inherent complexities. Simulation is no longer the sole domain of specialists in large enterprises — it can be leveraged by all engineers in companies of all sizes. As your challenges increase, the capabilities and benefits of ANSYS solutions will grow with you — ensuring that your business remains a leader, no matter what the future brings. ▲