



SHIFTING UP TO A BETTER AUTOMOTIVE PARADIGM

The fast lane is getting faster and more complex. Automakers that fall short of innovating within a shorter design cycle will lose the product race.

By Sin Min Yap, Vice President of Marketing, ANSYS

When I joined the Ford Motor Company back in 1997, simulation was far from pervasive in the product development (PD) process: It was used primarily for verification and validation much later in the design cycle. Today, there's practically no system or component that can't be improved via simulation. Even so, PD teams apply simulation only a fraction as much as they could. Automotive companies have reduced or eliminated physical testing significantly, which helps to shorten the cycle, but there is so much more that can be done to support the design trade-offs that engineers must make in creating world-class vehicles.

One of my early development projects at Ford was the F-150 truck. It took about four years from conceptual to design to production phases. Today, car makers have reduced that time by up to 50 percent; some even push for less time. They made these gains by consolidating vehicle platforms, re-using common parts, and deploying product lifecycle management (PLM) and CAD software for efficiency. Yet there's one similarity between my Ford days and today: The industry still performs design trade-offs in manual, suboptimal silo-like conditions, working in a serial manner instead of in parallel.

The silos cordon off the different physics/disciplines (mechanical, fluids, electronics and embedded software) as well as work related to the vehicle's many attributes (such as NVH, durability, safety, aerodynamics and electromagnetic compliance). Adding to the complexity, vehicle attributes compete with each other for performance and dollars. Leveraging

the power of simulation throughout the PD process breaks down these barriers and clarifies the consequences of trade-offs. It enables more efficient and effective decision making, compressing the design cycle, reducing costs, and producing a more-robust and optimal product — but most important is that it puts dynamic tools within reach of engineers who have not traditionally used simulation in product development processes, like requirements management, concept development, systems design, change management and quality/reliability management.

So will any simulation software help automakers innovate as fast as they need to? Yes, but only if the simulation provider offers a comprehensive approach to systems engineering and the ability to simulate complete virtual prototypes. As a result, PD teams can focus on engineering — not on running software — and engineers can collaborate and efficiently evaluate trade-offs.

ANSYS has spent decades building the technology and engaging the right people to achieve this. In fact, it is the only simulation company that offers such a solution. The company's products help automakers (and others) realize their product promise.

Eighteen years after starting my job at Ford Motor Company, technology and the ways we use it surely have evolved. But the silos remain and act as barriers on the road to real innovation. Today's complex systems and products require solutions that span all physics and disciplines. So let's embrace a paradigm shift and let the ANSYS simulation platform lead the way. ▲

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