



by **Frank Perna**, Chairman and CEO, MSC Software

Build, test, review, and improve

It is truly amazing to consider how much product design and development has changed in the last decades. I spent 17 years at **General Motors** in a variety of vehicle engineering, testing, and management positions, and while many things have changed thanks to the pervasiveness of computer technology, the fundamentals have remained the same. To build the best vehicle possible and do so within strict cost, time, and resource constraints, you follow four very basic steps: build, test, review, and improve.

The difference between following those steps today and following those steps when I was testing cars in the 1960s is that today, thanks to computer technology, engineers can perform extremely sophisticated virtual tests in much less time and for much less cost than if they performed the corresponding physical tests. Not only that, the data generated by the virtual test is not limited to the number of sensors put on a vehicle; the data in a single computer model can be sliced and diced to wield an enormous amount of valuable design and performance information.

So how should companies make investments in their future and increase their use of virtual product development (VPD) tools and techniques to take advantage of the benefits of computer simulation? By relying on their inherent knowledge of the build, test, review, and improve cycle and combining that

expertise with the most advanced computer technologies.

Today, most engineering departments rely upon a myriad of tools from multiple vendors to design and test their products. Unfortunately, there is no single software that can solve every kind of engineering problem, which means that engineers spend an extraordinary amount of time correcting errors as they move between programs. In addition, because engineering organizations are often distributed in different offices, there is rarely centralized purchasing of tools, meaning organizations are wasting money by buying different but similar software in different offices to solve the same kinds of problems.

Organizations don't need dozens of software tools across their operations. They need an integrated engineering environment that lets them easily build, test, review, and improve their products and allow them to have more confidence that their computer models are truly reflecting the real-world dynamics of their vehicles.

Today, the world's leading companies are preparing for their future success by building engineering environments in which engineers can build, test, review, and improve integrated virtual prototypes within a single, unified framework. They are implementing technologies that give their product development engineers the tools they need to drive productivity, make better design



Simulation of testing



decisions, increase collaboration with partners, correlate virtual tests with physical tests, and ultimately improve the product development processes.

MSC.Software's contribution to this vision is to provide engineers with the tools they need to accelerate innovation by increasing their access to technology and better using their tremendous knowledge of engineering and vehicle development. We are doing this in four ways.

First, we are helping product development organizations reduce their dependency on disparate software codes, simplify their software usage, and use a unified architecture to save time and money and increase productivity. By working with MSC.Software's SimOffice products, customers can reduce the amount of non-value-added time spent cleaning up models and spend more time making informed engineering decisions.

Second, we are helping design engineers increase their value to an organization by performing simulation within their preferred CAD environment. Our SimDesigner product line empowers design engineers with the industry's best CAD-embedded simulation tools that give product development teams a crucial competitive advantage: more functional information up front in the design process.

Third, we are helping make engineering knowledge and expertise more available and valuable throughout an organization. There is very little inherent value

in a thousand virtual crash tests if you don't have easy access to that data and can't make meaningful engineering decisions to improve your product. MSC. SimManager automates the engineering process and gives engineers the most valuable resource they can have: more time to apply their engineering expertise and less time looking for data and performing repetitive tasks.

Finally, we are supporting the needs of engineers around the world through our professional services team. In addition to process automation and engineering consulting services, the MSC.Software team supports more than 8000 customers 24/7 and, in 2003 alone, taught more than 1100 professional training classes to ensure that our customers have all the knowledge they need to do their job.

The future of vehicle design and development is the increasing combination of technology and engineering expertise to get better products to market faster. MSC.Software was helping companies improve their designs in the 1970s, we're there working side by side with our automotive customers around the world today, and we'll be there decades from now. We feel privileged to have been along for the ride and look forward to continuing to grow our strong partnerships with the thousands of engineers around the world who have chosen MSC. Software as their trusted advisor for virtual product development. **aei**

FE model of wheel



Detailed model of door inner panel