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THE BUSINESS OF INFOTECH

40
YEARS
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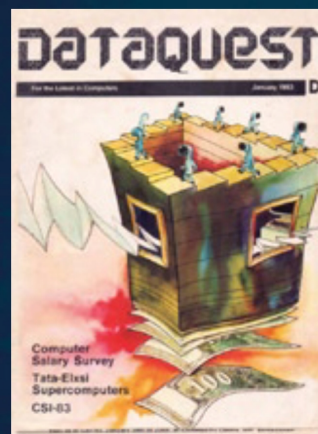
THE POWER CIO

The CIO's role continues to evolve and become more relevant with each passing year. Will he or she emerge as the most powerful CXO for business transformation in the future?

#DQ40YEARS

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We take a trip down a memory lane of 40 years and simultaneously try to make sense of the next 25 years in the run up to India2047.



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RADHA KRISHNAN
President and Founder,
Detroit Engineered Products

Have GPUs started changing the design and simulation space? How important, and achievable, is sustainability (environment-impact) for product design as a process in manufacturing?

GPUs make it possible for academics, scientists, and engineers working in a variety of scientific fields to run simulations quickly and make discoveries faster. Research has shown that almost all types of simulation can be accelerated by the GPU, and it is proving to be a real time saver. As a thinking entity on this planet, being sustainable is part of being socially responsible. Companies have the capability to make an impact on scale, and it is extremely important. The reality is that in product development, sustainability and environmental-friendly solutions sometimes contradict parameters like long life or durability. Companies need to invest more in R&D to find a long-term solution and be more sustainable.

Can you tell us about your plans and progress on an EV foray?

In terms of providing simulation for EV technologies, DEP is a pioneer, and the EV landscape is an exciting one for us. We have just showcased at the Auto Expo our latest module in MeshWorks, designed specifically for the needs of the



SUSTAINABILITY IN PRODUCT DEVELOPMENT CAN, SOMETIMES, CONTRADICT DURABILITY

Radha Krishnan, President and Founder, Detroit Engineered Products (DEP) gives a blueprint of how morphing, GPUs, parametric modelling, meshing for EVs, Powertrain CAE and advanced simulation are sharpening the finer strokes of product design. He also sheds some light on the value and hassles of filing patents

HAVING YOUR HARD WORK PATENTED IS DEFINITELY CRUCIAL FOR EVERY INVENTOR. BUT FILING THE PATENT IS A NERVE-RACKING ONE.

EV industry, called eMoD. The module can be used for component analysis for EVs as well as system analysis. We are enabling a full suite of services and software to aid in the creation of EV products. Our Electrification module is a set of meshing and assembly tools for modeling battery, drive unit, and inverter structures, as well as CFD and body structures. These meshing tools produce component-level models, which are then used to analyze solvers in the future. This module contains couplers, which are specialized connectors that help send the output of one analysis as the input of another. All of these characteristics, combined with a specialized workflow, make it possible to develop electric vehicles to their full potential.

What is the importance of patents for Indian innovators and enterprises—how easy is this part? Can you share something about the patent on ‘ConceptWorks’, ‘automated process on parametric modelling’?

Having your hard work patented is definitely crucial for every inventor, as it safeguards it in some instances. Filing the patent is a nerve-racking one, as it is such a competitive industry out there. Even when a provisional patent is awarded, until you have the final one in your hand, you are never really secure, there are always loopholes. I suppose the real way to be secure is to keep inventing. With our automated modelling tool, ConceptWorks, our goal was to help CAE engineers to bridge the gap between modeling design and analysis. Typically, a lot of back and forth happens between these two teams, and ConceptWorks aims at reducing this, and helping in optimising the model for faster turnaround time. We achieved this successfully, and ConceptWorks allows users to redefine the concept modeling phase by allowing engineers to efficiently produce concept members for design and optimization studies. It is so simple that engineers at any level can start creating concept parts after 3-4 hours of training.

Can you speak about the impact and future scope of Powertrain CAE.

As electrification advances and electric drive power and capabilities rise, conventional vehicles with 100 per cent combustion engine drive systems are transitioning from a

micro, mild, and macro hybrids to full electric vehicles in order to complete the electrification transition in the future. Demands for powertrain electrification are growing along with the ever-shorter time-to-market, high availability rates, coupled with increased cost pressure while keeping at least the same level of quality. In order to provide the most effective powertrain solution, engineers must not only choose the right powertrain concept but also consider the application-specific requirements and cross-component issues such as noise and vibration (NVH), electromagnetic compatibility (EMC), and functional safety at a very early stage in the product development process. Along with the ever-shorter time-to-market, high availability rates coupled with increasing cost pressure while maintaining at least the same level of quality, the demands on powertrain electrification products are increasing, thus accelerating the pace of change in the industry.

Tell us something about DEP MESHWorks- how has it evolved, what have you learnt-and-improved? Also how have you used technology for morphing?

Since its introduction in 2001, DEP MeshWorks has streamlined laborious, time-consuming procedures related to design revisions and assisted in shortening the product development cycle in a number of worldwide businesses. When we started, MeshWorks only a Morphing tool, and the first version was actually called DEP Morpher. It has now evolved into a full-fledged CAE-driven integrated platform for pre- and post-processing, enabling rapid concept CAE and CAD model production, parameterization and optimization, sophisticated meshing, process automation, concept modelling, and CAD morphing.

So, what kind of customers are using it now?

Leading businesses throughout the world have been able to revolutionise the product development cycle, saving them a significant amount of time and money and accelerating their time to market. Being based in Detroit, our initial customers were automotive, but now MeshWorks is used by several industries across aerospace, biomed, energy, oil and gas, consumer products, electronics and heavy equipment. 