DASSAULT SYSTEMES

INDUSTRIAL EQUIPMENT
THE 3D INDUSTRIAL TRANSFORMATION

SUMMARY

The connections among engineering, IT and other business units are becoming stronger as the need for real-time collaboration grows. Today's advanced 3D technology helps organizations achieve a range of business goals, including more efficient processes, faster product development and better financial outcomes.

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Pressure: Every manager in every corporation now feels it intensely. In today's hyperconnected, IT system-dependent world, industrial businesses want to deliver products faster, without incurring additional costs. Product lifecycles are shortening, and clients are demanding more customized solutions. Industrial product makers need and expect greater visibility into their supply chains, so they can reduce inventory and shorten turnaround times. As markets continue to evolve rapidly, enterprises need to do more just to keep up.

However, traditional business processes can create technical and managerial roadblocks, hampering even successful, well-established organizations. For instance, information is often widely dispersed within an organization, and many 3D applications in industrial use cases support historical, rather than real-time, data access.

Businesses today require new 3D technology solutions—products that are integrated, provide a central view of data and have the ability to support custom solutions. Only by deploying such systems can organizations position themselves for success, by cutting design and development time, decreasing defective part numbers, improving maintenance and increasing profitability.

TODAY'S BUSINESS LANDSCAPE

All business stakeholders—enterprises, partners and customers—are operating in a hyperconnected world, and expectations are rising. Further, competition is increasing, putting more pressure on organizations to meet financial performance goals and customer demands. Company size used to be a big leverage point in the drive for business success, but today, large enterprises are just as vulnerable as small firms. Speed and agility, rather than size, have become the keys to success.

Simultaneously, product design, materials and the entire tooling ecosystem are more complex. Companies produce hundreds of machines with thousands of parts, and their products come in ever more varieties. An increasing number of manufacturers offer customization both to meet customer demands and provide a strategic differentiator in a world of increasingly similar products.

Another factor driving change is globalization. Most enterprises sell their devices throughout the world: A piece that meets specifications in the U.S. may need to be altered to be sold in Germany. The end result is a hodgepodge of product pieces that are used in different ways throughout the organization.

MANY BUSINESSES ARE NOT ABLE TO KEEP UP WITH NEW DEMANDS

In the past, organizations were not structured for efficiency or tight communications. Departments often worked at arm's length, and collaboration was an afterthought at best.

In addition, engineering systems created inefficiencies: Product data management systems featured static files. When an engineer wanted to share data with manufacturing, the process required uploading a file that would be downloaded by a manufacturing engineer.

Traditional systems also had a mechanical-only focus. The emphasis was on the device itself—say, a tractor or an automobile. Nowadays, these applications need to address not only mechanical specifications, but also hardware, electrical and software requirements. Devices as small as an industrial sensor and as large as a battleship come outfitted with intelligence. That means products have to be designed so that information is generated, tracked, collected and ultimately used to improve system performance.

Traditional 3D systems deliver pieces of the puzzle—incomplete pictures of components and products. The engineering department might have access to component information, but the supply chain might not. Businesses are unable to combine information generated in different systems resulting in:

- Unnecessary duplication.
- People-dependent processes that slow responsiveness.

- Manual price quotes that are inefficient and time consuming.
- A lack of information that hampers accurate price quotes and often requires rework.

WHAT IS NEEDED?

To fix these problems, industrial organizations need to change, and the IT department has to rethink the role of 3D applications. Rather than performing as an autonomous engineering system, such applications have evolved into a business experience platform, one used by marketing and sales along with engineering.

Corporations require a new digital enabler, one like the Dassault Systèmes **3D**Experience platform, which supports engineers' collaboration, provides very specific software to manage 3D products and is highly efficient. An adaptive, integrated IT infrastructure virtualizes the customer experience. Here an integrated product suite features all of the solutions needed to design, manufacture and support devices: 3D software, 3D printing and product lifecycle management. The system tracks components centrally and provides access to information to employees in advanced engineering, operations, IT, product design, product platform, product planning, purchasing, sales and marketing.

Businesses need a computing foundation capable of supporting the transfer of large, complex files in real time. Data needs to be available quickly and easily to every person in every department throughout the product lifecycle, from design to delivery to maintenance. Employees work with a digital, online platform so everyone is always connected. A single, database-driven computer-aided design system no longer relies on autonomous individual files, so whenever a change is made, everyone is immediately aware of them.

With such a system, knowledge is shared and workflow improves. The system captures requirements, allocates them to different entities, defines different configuration features and any options based on technical rules, and creates different product configurations on the fly. Advantages include:

Central management of everything, including configuration rules, with effective engineering change control. Ability to change designs without having to propagate the change to multiple variant assembly files. Ability to validate versions without having to generate a model for each.

WHAT'S COMING NEXT?

One final requirement of today's 3D platforms is that they need to be future-proof and flexible enough to account for quickly emerging capabilities. In fact, many areas are now gaining traction in the industrial manufacturing space. Two, in particular, stand out:

Augmented reality (AR) superimposes a computer-generated image on a user's view of the work, thus creating a composite view. Virtual reality (VR) is computer-generated simulation of a 3D image or environment that can be controlled by a person using special electronic equipment, such as a helmet with a screen or gloves fitted with sensors.

The market for these tools in the industrial market is just now emerging, but their potential is significant and the ramp-up is expected to be quick. IDC expects worldwide revenues from AR and VR to grow from $5.2 billion in 2016 to more than $162 billion in 2020, representing a compound annual growth rate of 181.3%.

For industrial suppliers, use cases include: AR to simulate factory floor production and streamline business processes. VR to provide customers with simulations of how devices are built and run in their organization.

WHY CHANGE?

By deploying a new 3D business experience platform, an enterprise moves faster. A new modeling environment emerges, one supporting not only mechanical products, like a car door, but also intelligent systems, such as an active safety system. Components and modules with updated feature sets are automatically included at order time, which shrinks development and delivery times.

Businesses become more efficient, and processes become less costly. Companies can simulate designs before they prototype, and catch new system requirements and visualize them early in the development process through a configurator and an integrator. The earlier in the development cycle, the less costly the fix.

Increasingly, IT is becoming the foundation for differentiation. Businesses that are gaining market share have solid technology bases. When all elements work together, organizations are transformed by:

- Improving quote accuracy. Most companies are within 13%, but top firms are within 7%, according to Tech-Clarity.

- Reducing inventory by 60%. The reduction of part numbers saved an international industrial equipment supplier approximately 1 million SEK.

- Reducing time to market by 25% to 35%.

- Achieving cost savings. Tech-Clarity estimates early investment in 3D design, visualization and validation can lead to cost savings of 25%.

CONCLUSION

IT technical advances are changing the business world and forcing industrial companies to transform themselves. The traditional ways of doing business—and the 3D systems supporting those processes—no longer mesh with current requirements. They are too cumbersome, complex and costly.

To explore new industrial capabilities, IT departments in such industries as healthcare, mining, tech and others should take a close look at 3D computing infrastructure as a central part of an overall business experience platform. They require a foundation that is fluid, real time and integrated across the organization. Only those businesses that take that step will be able to meet today's rapidly changing market demands.

For more information on how to use new 3D tools and applications to streamline product development and improve collaboration, please visit **www.3ds.com**.

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