IndustryWeek

EXECUTIVE SUMMARY

What Can Manufacturers Learn from the Gaming Industry

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SEPTEMBER 23, 2021

KEY TAKEAWAYS

- The current global situation presents manufacturing companies with challenges and opportunities.
- Gaming methodologies, concepts, and technologies demonstrate how far computers can go.
- The similarity of needs between the gaming and manufacturing industries offers potential for connection.
- The gaming approach can resolve challenges and present opportunities.
- The manufacturing industry must prepare its people.
- Adapting the gaming industry's philosophy and approach is beneficial to small and mid-size manufacturers.
- Adopting Industry 4.0 technologies is a journey.

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What Can Manufacturers Learn from the Gaming Industry

OVERVIEW

The manufacturing sector is facing increasing competition and uncertainty, prompting manufacturers to seek an edge by identifying digital opportunities, innovative technologies, and creative techniques. Recognizing the clear alignment and cutting-edge approaches conceived and employed by the gaming industry, manufacturers are looking to incorporate gaming techniques into manufacturing operations. Lessons from gaming that can be applied in manufacturing include using technology to enable greater collaboration, along with visualization, AI, data analytics, augmented reality (AR) and virtual reality (VR) for training, and use of prototypes, simulation, and testing.

CONTEXT

A panel of manufacturing, gaming, and digital transformation experts discussed lessons to be learned from the gaming sector that can boost digital transformation efforts in the manufacturing industry.

KEY TAKEAWAYS

The current global situation presents manufacturing companies with a number of challenges and opportunities related to digital opportunities and innovations that offer a competitive edge.

In a business environment that is changing much faster than it was 10 years ago, manufacturers have been forced to consider more effective and efficient ways to react quickly to the many and varied needs of the market. The pandemic added an additional wrinkle by posing collaboration challenges for a global business operating in a virtual world. As a result, manufacturers have begun looking outside their industries to find novel approaches.

Demonstrated by the success of multi-player games like "Fortnite," the gaming industry's powerful collaboration technologies, simulation and augmented reality systems, universal data synthesis, and artificial intelligence are a league above in the implementation of systems that are critical for the manufacturing sector as well. Smart manufacturing and digital transformation have become must-haves for global business.

Gaming methodologies, technologies, and concepts demonstrate how far computers can go, serving as a driving factor for visual quality and capabilities.

With war games, training games, mobile games, and triple A games, the gaming industry is segmented and nuanced; a challenge is to identify and isolate key systems that will work well in specific manufacturing sectors. The gaming industry has found ways to help players interact and collaborate to be successful in the game, including clear and thorough tutorials that bring players into the environment with ease and teach them how to move and behave within the game. Technology such as augmented reality (AR) and virtual reality (VR) creates a user experience that mirrors the real world.

> Fortnite is a massive virtual world with 400 million players. These big games in which users are constantly creating and contributing have become social experiences.
>
> *Heiko Wenczel, Epic Games*

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The similarity of needs between the gaming and manufacturing industries offers potential for connecting these otherwise disparate sectors.

There are a number of technologies that enable the gaming and manufacturing sectors to learn from each other. For example, these days when a new game is launched online, there is not a fleet of servers in a basement somewhere. Instead, it is something running on a cloud environment like Amazon Web Services (AWS) with auto-scaling capabilities. This means that, if there are suddenly a million users, there is no need to order more servers. The back end automatically populates and provides more storage and horsepower, so the game continues to feel smooth and seamless, rather than block new entrants into the game.

That same concept is relevant for the manufacturing industry. Historically, many manufacturers have been designing on a homegrown, on-premise system that often only allows a limited number of users at one time. Learning from gaming could result in movement away from on-premise systems into a fully scalable cloud-based environment that allows more users and a more seamless experience. Other relevant ideas from gaming that can be applied in manufacturing include multi-party collaboration and navigation toward a collective goal. In manufacturing, technologies can be adapted to train the workforce of the future and to improve how workers interact with each other.

It is also important to consider other nuances and distinctions between gaming and manufacturing that can enhance user experience. Building continuity from product design to the customer experience and back again is a new way to look at the market.

> I would love to be able to hop into the seat of a BMW from home and understand how the vehicle will affect me and how I drive it—offering me a user experience without having to go to the dealership to get the real-life experience.
>
> *Douglas Bellin, AWS*

The gaming approach can resolve challenges for manufacturers and presents opportunities to increase quality, uptime, and efficiency.

As is the case in gaming, the ability to prototype tests for proof of concepts in a safe, virtual environment that you can build is a key opportunity for manufacturers.

> Your avatar can just die in a game, and then you try again. We didn't have a virtual representation in building before. Now, you can create test scenarios that don't cost lives or money.
>
> *Melanie Schoebel, NavVis*

Creating virtual environments allows manufacturers to develop products efficiently and work out quality issues without having to develop real-world models, saving time and money. Virtual environments are also perfect for training employees to perform dangerous jobs or work with dangerous equipment.

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> If you create an AR or VR experience for forklift drivers that teaches them to work on a machine in a simulated environment, they're not driving around and won't hurt themselves or destroy expensive equipment.
>
> *Heiko Wenczel, Epic Games*

Simulations are also helpful in addressing potential scenarios that would take significantly more time to encounter in the real world. For example, dealing with the many issues that could arise for an autonomous vehicle would require millions of miles of travel to experience the infinite scenarios that could occur. Simulation allows manufacturers to artificially create a multitude of scenarios and adjust vehicle design accordingly.

The same approach allows manufacturers to offer a virtual journey that helps customers experience products prior to purchase, potentially reducing post-purchase complaints, returns, and disappointments.

In incorporating these innovative approaches and technologies, the manufacturing industry must prepare its people.

Adapting the gaming approach to manufacturing requires a significant amount of change for workers on the floor and in labs. Factory workers and industrial designers must be prepared for virtually supported production processes and augmented reality solutions. Bringing these issues to planners, developers, and workers is a useful start.

Helping employees understand how it makes their lives easier is another way to bring them on board with the new technology. For example, new technologies can allow for greater creativity by not prematurely confining employee ideas to available budget. There is less concern about investing in fleshing out new products when the models are built virtually. This unleashes innovation and allows companies to test out innovative ideas without worrying about expensive failures and significant upfront costs.

> We had an ambitious pilot in Munich, where we had set up the whole environment of the assembly in 3D. We had a discussion directly with workers and sought their opinion and any changes they wanted. It brings people together, and with the high-performance validation from the gaming industry, it's definitely an opportunity.
>
> *Christine Baumer, BMW Group*

Adapting the gaming industry's philosophy and approach is also beneficial to small and mid-size manufacturers.

In many ways, small and mid-market businesses have an even greater immediate benefit from gaming technology. One benefit is that when small suppliers present and pitch to large manufacturers, they can present information in a virtual environment that mirrors the kind of factory floor to which large manufacturers are most accustomed. Smaller businesses can use AR and VR technology to enhance their RFP scenarios, placing them in a more positive light and using virtual representation to increase the perception of suitability and capacity. This helps level the playing field between the smaller and larger players. Small companies can also benefit from the cost effectiveness of training employees in virtual, large factory environments.

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Adopting Industry 4.0 technologies is a journey.

When businesses decide to implement innovative technologies, they must keep in mind the following to ensure a smooth deployment:

- **Communication.** Inspiring and educating make a difference in how the technology is adopted by all concerned.
- **Prioritization.** Categorizing what needs to be done and starting with easy wins and minimal risk is an effective way to get engaged with the process. Advice to keep in mind: crawl and walk before you run.
- **Resources.** Take advantage of and learn from the diverse players in the industry who can provide the right guidance. Think about how best practices can be put in place.
- **Targeting.** Identify the specific issues to be resolved and make sure to see them through to fruition. Otherwise, there is a risk that it will simply be a novelty that does not provide additional value.

Conclusion

An initial reaction of those in manufacturing may be that there is little that can be learned from the gaming industry that is relevant to manufacturing. But this would be as mistake. The gaming industry uses sophisticated, scalable, cloud-based technologies to enable collaboration among multiple users. Data and visualization play a key role. And the AR and VR from gaming can be used in manufacturing for training, testing, and marketing.

Learning about the philosophy and technologies that have enabled the gaming industry to thrive can help manufacturers accelerate their digital transformation journey.

BIOGRAPHIES

Christine Baumer

Head of Virtual Factory, BMW Group

Christine Baumer is currently the Head of Virtual Factory at BMW Group and is responsible for the scanning of all BMW plants, the integration of Game Engine into the planning process, and the integration of new planning tools to support the virtual factory. Throughout her 20-year career, Christine has worked in a variety of departments, such as logistics and assembly planning. She holds a Dipl.-Ing. Degree in mechanical engineering from the Technical University of Dresden.

Douglas Bellin

Business Development Executive - Industrie 4.0 and Smart Factory, AWS

Douglas is the Global Lead of Business Development for Smart Factories and Industrie 4.0 at Amazon Web Services. He leads the strategy and execution of manufacturing and supply chain solution areas across Industrial customers at the intersection between Operational Technologies and Information Technologies. Prior to AWS, he ran the Marketing, Go-to-Market and Business Development teams for the Industrial Markets within Cisco Systems. He has a background in both the RFID and Analytics markets and was instrumental in running a Business Intelligence software company by bringing it to the Asia market. Douglas started his career in the steel and food manufacturing industry. After 12 years in Asia Pacific he is now based in Seattle, WA.

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Melanie Schoebel
Strategic Solution Partner Executive, NavVis

Melanie Schoebel is the Strategic Solution Partner executive for NavVis. She is leading the strategic planning and execution for NavVis' business development in the US market. Melanie brings more than 20 years of experience in building strong partnerships for Software and IP developing companies. Melanie's passion to connect a range of people, industries and technologies helped her to negotiate and design various high level deals between industry leaders in retail, manufacturing, software development, finance and other verticals. Melanie worked globally out of various locations in the past such as Germany, Ireland and the Netherlands. She currently lives with her family in Seattle, WA USA. Melanie's personal interests in art and physics reflect the impact of diversity to the success of her work.

Heiko Wenczel
Head of Detroit Lab, Epic Games

Heiko Wenczel started his career at Mercedes Benz in 2004 with a focus on planning and visualization. Targeting data models and processes, he continued working in the plant simulation space and joined a team focused on building the next-gen visualization and configuration system for Mercedes' passenger cars. Heiko joined Mackevision as president and moved to Detroit in 2008 to establish Mackevision Corporation. After that, he was involved in several creative content pipelines for major automotives. After the acquisition by Accenture Interactive he was focused on building similar workflows for all industry verticals. In a return to innovation and technology, Heiko joined Epic Games to drive development of next-gen data and visualization platforms for enterprise customers.