

A woman with dark skin and curly hair is smiling broadly, her hands clasped in front of her. She is wearing a bright yellow high-visibility safety vest over an orange shirt. The background is dark and out of focus, showing some blurred lights. Overlaid on the image is a list of words in a light gray, sans-serif font: 'movement', 'journey', 'connection', 'feel the moment', 'future', 'gratitude', 'emotion', 'impact', 'freedom', and 'excitement'. The word 'moment' is underlined. In the top right corner, the Capgemini logo is visible in blue.

movement
journey
connection
feel the moment
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gratitude
emotion
impact
freedom
excitement

Capgemini

Immersive Experiences
for Manufacturing



ENABLING DIGITAL CONTINUITY AND IMMERSIVE EXPERIENCES

Manufacturers are increasingly using new and emerging technology to optimize product development, engineering, and manufacturing processes, and to re-shape product and field- or customer-service portfolios.

Smart devices, 3D prototyping, and extended reality technology solutions (augmented, mixed, and virtual reality) are changing employee expectations. How? By creating an immersive experience for the modern workforce. **Fifty percent of field-service deployments will include mobile AR collaboration by 2025, according to Gartner's 2020 Magic Quadrant for Field Service Management report.**

However, extended-reality projects are often managed in silos with limited digital continuity. Most immersive content for training, production, or maintenance is created manually from CAD models designed in engineering. Links between this content and the original data source are frequently lost. This limits the potential to scale the output, requiring time-consuming manual tasks that could be avoided.

How can manufacturers ensure digital continuity at each stage of the manufacturing lifecycle? This should extend from product innovation and engineering, through manufacturing and production operations, to field and customer services, employee training, and the consumer experience.

BUILDING DATA-LED IMMERSIVE MANUFACTURING EXPERIENCES

The borders between physical and digital ways of working are blurring. Manufacturing workers increasingly expect seamless, hyper-customized experiences enabled by digital data and immersive technology.

Why does an immersive manufacturing experience matter? With access to complex data sets, it empowers employees to innovate, to ensure traceability, to upskill easily, and operate efficiently, while improving quality and reducing risks. Employees feel confident, supported, and empowered. Further value accrues with reduced training and operations lead times, and enhanced process quality.

Capgemini Immersive Experiences for Manufacturing addresses the challenge of digital continuity across the produce lifecycle, from design to operations.

- **Innovation and product development:** 3D prototyping and simulation decreases development costs and can be used for collaborative development and remote design reviews before moving to production.
- **Training:** Retention rates for VR learning are 75 percent versus 10 percent for reading-based learning, [according to a study by the National Training Laboratory](#). Mixed-reality training solutions enable employees to “handle” components, such as a car dashboard, without physically touching them, avoiding potential damage to a real component.
- **Production and assembly operations:** Production tasks, including hands free, can become more efficient and secure. By relying on digital twins and extended reality in smart factories, immersive technologies provide seamless interactions with complex data and assets, while simplifying processes for technicians.
- **Field service:** The quality of service and collaboration between field technicians and remote assistance can be improved to reduce on-site intervention by experts and speed up incident resolution using audio and video streams, file sharing, AR telestration (the ability to remotely draw on the shared video stream or photo in real-time), and more.
- **Quality control and maintenance:** Workers can complete order inspection [46 percent faster with AR 3D data overlays](#), increasing the productivity of technicians and warehouse personnel during as-built vs. as-designed field-quality control operations. Remote acceptance of factory tests, with virtual inspections and tours, speeds up inspection sessions and avoids unnecessary travel.
- **Customer experience:** From a final-user standpoint, immersive technologies are an opportunity to benefit from simplified natural interfaces, in a world where they must interact with more and more complex and connected products. Immersive experiences represent a new opportunity for organizations to build on this adoption and to reach customers in fresh new ways.

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THE IMMERSIVE MANUFACTURING TOOLKIT

We have helped many global manufacturers successfully realize their immersive manufacturing visions. Our services include strategy, design, execution, and roll-out of experiences independent of devices, data-sources, IS/IT landscape, security rules, number of users, targeted audience, and geographies.

We take a modular approach to support our industrial clients, wherever they are on the immersive-experience journey. This includes:

- Digital roadmap and orientation
- Corporate cross-reality (XR) strategy
- Use-cases framing and expected business-value assessment
- UX/UI creative design
- Tangible experiences and tests
- Minimum Viable Product and Proof of Value implementation
- Optimized data authoring strategy relying on digital continuity
- Integration, industrialization, and scaling
- Training, operational deployment, and support
- Change management.

Improving quality and traceability

Our proprietary immersive remote-collaboration solution **Andy3D Remote** enabled one of the world's best-known automotive manufacturers to accelerate seamless remote interactions during the COVID-19 pandemic. Planned to be deployed for more than 2,000 users worldwide, the solution tracks and solves supplier quality issues, for improved quality and traceability at scale.

[We rolled out an immersive multi-lingual training experience for BMW's assembly-line workers.](#) Hologram technology now enables training on parts before they go into production.



BRINGING IMMERSIVE EXPERIENCES TO LIFE

At Capgemini, our core belief is that experience matters. And with immersive technologies, manufacturers can improve the employee experience with more efficient operations, lead-time reduction, heightened quality, enhanced traceability, reduced risks and training time, and improved customer service.

To bring these Immersive Experiences for Manufacturing to life, we work with a comprehensive ecosystem of partners, incorporating our own Capgemini Group IP, accelerators, and platforms. Our partners range from niche software developers, XR headset manufacturers, and digital product configuration specialists, to global cloud, PLM, IoT, and business solutions vendors. As a global integrator of these technologies and platforms in every IS/IT landscape, whether cloud-based or on-premises, we become the end-to-end orchestrator of immersive experiences across industries.

We achieve this by bringing together creative design and the enabling technology needed to provide immersive experiences. These range from natural interfaces, such as touch and body movement, gestures, speech/conversational commands, etc., to the extended reality of AR, MR, and VR, along with IoT sensors, connectivity/5G, and artificial intelligence (AI). Designed to deliver optimum business value, our solutions ensure a tangible ROI, while maximizing user-acceptance in the field.

We successfully rolled out an immersive testing experience incorporating VR that is enabling remote factory acceptance tests for a world-leading energy technologies company. Initially for one plant, this solution is scalable to 30 facilities worldwide and immerses customers in virtual inspections of electrical installations before the final on-site delivery.

WHY CAPGEMINI

We have a unique perspective on superior experience and the tools to successfully deliver it. Our collaborative, agile way of working enables us to continuously deliver business value at scale as we help our clients build confidence in new and immersive technologies.

Our holistic approach is combined with our own key assets, the agnostic selection of solutions and platforms for each use-case, a capacity to adapt to every information system, data source, and IT and security constraint, and a deep knowledge of our clients' business processes. This enables us to deliver, at scale, fully integrated state-of-the-art immersive experiences which best enhance and complement our clients' business model and requirements.

Our Immersive Experiences for Manufacturing services are part of Capgemini's broader Immersive Experiences portfolio. With a reputation for innovation, we deliver true business value for our clients. We bring to life inspirational immersive experiences that enable them to get the future they want for their company, their employees, and their customers.

CONTACTS

Global

Charlton Monsanto

charlton.monsanto@capgemini.com

Global

Alexandre Embry

alexandre.embry@capgemini.com

APAC

Simon Blainey

simon.blainey@capgemini.com

India

Ashish Minocha

ashish.a.minocha@capgemini.com

North America

Charlton Monsanto

charlton.monsanto@capgemini.com

Germany

Christian Schacht

christian.schacht@capgemini.com

UK

Dominic Corrigan

dominic.corrigan@capgemini.com

FS

Jean-Dominique Trouillard

jean-dominique.trouillard@capgemini.com

INVENT

Tim Morey

timothy.morey@capgemini.com

Sogeti

Mike Buob

mike.buob@capgemini.com

Sweden

Per Onnemyr

per.onnemyr@capgemini.com



About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 290,000 team members in nearly 50 countries. With its strong 50 year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2020 global revenues of \$19.3 billion.

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Note: current conversion is €1 to \$1.18 (8/15/20)