



PTC Augmented Reality Use Cases

The concept of AR has been around for decades, but the technology to deploy AR across the enterprise and at scale is now emerging, as is a wealth of digital content.

The wealth of new digital content has provided a transformative potential for impacting internal company operations. More recently, smart, connected products are generating an enormous stream of new, real-time content about product operations and the complex systems they comprise.

While the proliferation of vast amounts of real-time data from smart, connected products creates a tremendous potential for untapped value, it also creates a fundamental problem with the means in which human currently consume data. There remains a critical disconnect between the way humans interact & experience the physical world and how they consume digital insights from the digital world.



The solution for the growing divide between digital and physical? Augmented Reality (AR). AR enables humans to superimposes digital information onto their view of the physical world. AR brings the digital and physical worlds together and allows humans to interact with both simultaneously.

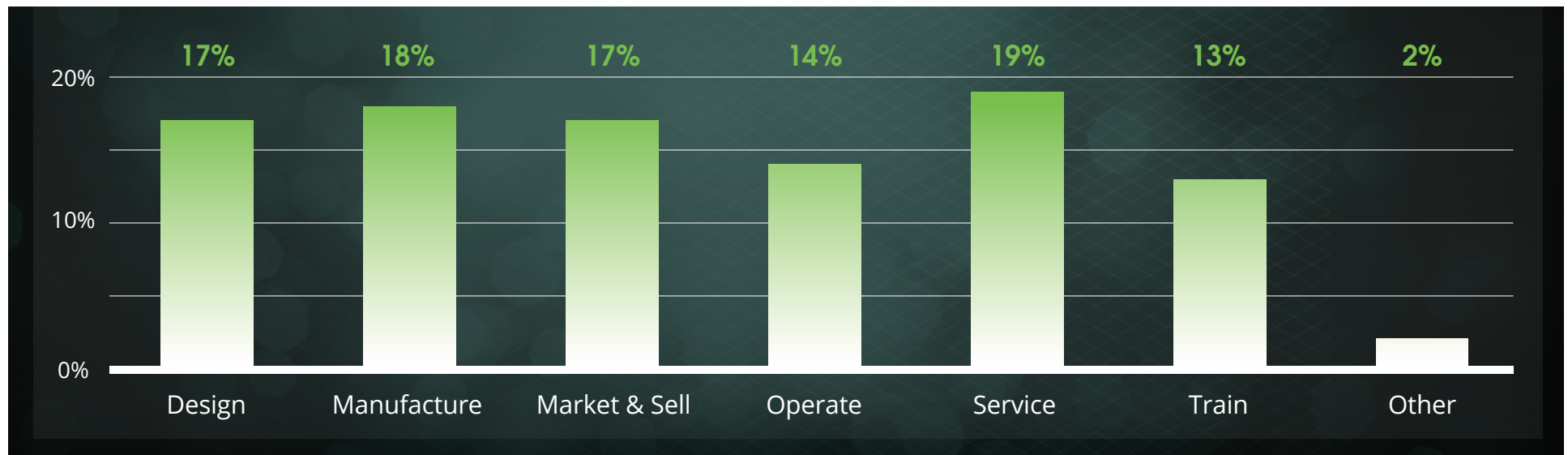
At PTC, we recognize the transformative potential AR has for impacting the way we interact with our surroundings and have uniquely positioned ourselves, with investment in AR and IoT, to truly unlock the value of the Physical - Digital Convergence.

In order to create real business value from an emerging space like AR, it is important to focus on identifying specific AR use cases an organization can engage in across their value chain.

The State of Industrial Augmented Reality eBook and corresponding report explore the rapidly evolving opportunities in the Augmented Reality Market.

Enterprises are exploring the broad applicability of AR to drive value across a number of value chain activities

Augmented Reality Use Case Categories









Average ~2.1 categories chosen per respondent

In order to provide data-driven visibility into the rapidly evolving Augmented Reality space, PTC began surveying the ThingWorx Studio customer base to understand how customer are using AR to create business value today.

Today, there is almost equal adoption of AR across Service (19%), Manufacturing (18%), Sales & Marketing (17%), and Design (17%) with companies on average exploring two use case areas.

The findings, highlighted in the State of Industrial Augmented Reality Report, show which industries are leading AR deployments, the functions within a company using this technology, and types of business value generated.

Augmented Reality Use Cases

					
DESIGN	MANUFACTURE	MARKET & SELL	OPERATE	SERVICE	TRAIN
Collaborative Design Review	Maintenance Work Instructions	Virtual Product Companion	Augmented Operator Manual	Service Manual Instructions	Job-Specific Training
Digital Design Review	Operator & Assembly Work Instructions	Augmented Brand Experience	Head-up Display	Service Inspection & Verification	Safety & Security Training
	Performance Dashboards	Retail Space Optimization	Augmented Interface	Remote Expertise	Expert Coaching

DESIGN

USE CASES

AR provides the opportunity for engineers to collaborate and review 3D models and prototypes in new dynamic ways.

Collaborative Design Review

- Engineers and designers use a shared view in AR to collaboratively review and develop products in real-time

Digital Design Review

- Using AR to inspect, test, and review 3D digital prototypes, complimenting traditional, physical prototyping

Ford – Digital Design Review

Ford is using AR to let designers quickly model out changes. This allows designers to see the changes on top of an existing physical vehicle, instead of the traditional clay model approach to car design.

Value Metrics

- Reduces the process of making and reviewing changes from weeks down to days



Manufacture

USE CASES

AR enables rapid insights delivered in context to plant workers and managers as well new means for quality assurance and instructions for assembly and maintenance.

Maintenance Work Instruction

- Overlay in context detailed maintenance instructions on how to repair and perform upkeep on complex machinery

Operator & Assembly Work Instructions

- Overlay detailed manufacturing instructions outlining processes for operating machinery or assembling parts

Performance Dashboards & Alerts

- Leverage AR to enable manufacturing personnel to view real-time, role-based KPIs overlaid in context

Bosch - Performance Dashboard & Alerts

The compact Bosch Rexroth CytroPac hydraulic power unit is AR enabled, allowing operational KPI to be visualized in context

Value Metrics:

- Monitoring the smart, connected product and product systems
- Visualizing those digital insights in the context of the physical environment



Rexroth
Bosch Group

Sell

USE CASES

AR enables new means to sell and market products through advanced means of visualization.

Virtual Product Companions

- AR provides customers new means to experience products through new interactive digital extensions

Retail Space Optimization

- Visualize floor plan layouts, changes and end cap design, in context without the need for physical mockups

Augmented Brand Experience

- AR-enabled advertisements create more engaging & dynamic experiences to companion traditional marketing materials

Azek – Virtual Product Demonstrations

AZEK is using AR to allow contractors and customers to visualize how its decking and paver products look in various colors and arrangements in context.

Value Metrics:

- Shortened sales cycles
- Increased consumer confidence
- Greater opportunities for upsell



OPERATE

USE CASES

AR has the potential to add new value to products, enabling new ways to differentiate, but also by creating an entirely new dimension of value delivery. AR can deliver a digital product extension experience or extend the typical controls of a product through an augmented interface.

Augmented Operator Manual

- Displays product operation information and instructions for product usage and simple repairs overlaid in context of the product

Head-up Display

- Provides real-time access to safety alerts, maps, and other dynamic content overlaid on the user's dashboard or line of sight

Augmented Interface

- Extend a product's ability to be controlled through an AR interface. The augmented interface can enable the removal of physical interfaces (i.e. buttons, gauges)

BMW - Head-up Display

BMW models come equipped with AR, **head-up display** (HUD) that enables the operator to access real-time SCP data, safety alerts, maps, and other dynamic content.

Value Metrics:

- Process information 50% faster
- Safety and risk



Service

USE CASES

AR improves how service processes are executed with augmented service manuals, inspection, remote expertise, and AR training.

Service Manual Instructions

- Augmented service materials enable a faster response, decision making and increased first-time fix rate, as service technicians can rapidly access information hands-free

Service Inspection & Verification

- Service training is more efficient, situational and realistic than traditional training through paper manuals

Remote Expertise

- Remote expertise (i.e. AR collaboration) bridge gap between technical experts and a lesser skilled workforce

Lee Company – Remote Expertise

Lee Company is connecting centralized experts to remote field technicians to deliver work instructions and other job information.

Value Metrics:

- \$20 ROI per \$1 invested
- \$500 saved via telepresence per tech per month
- \$2,500 incremental sales per tech per month



TRAIN

USE CASES

AR drastically improves how training is delivered to new employees. Augmented training can reduce dependency on traditional paper manuals and instructors, and provide a more situational training in context.

Job-Specific Training

- Interactive and situational training that overlays 3D instructions for job tasks and assignments enabling hands-on and traditional training to be simultaneous

Safety & Security Training

- Overlaying of 3D instructions on security and safety procedures to prepare employees to handle potentially life-threatening or dangerous situations

Expert Coaching

- Remote expert collaboration enables employees to access insights in real-time on specific job processes or tasks

Kiewit – Job-Specific Training

Kiewit is using an AR welding system for the recruiting and training of new employees.

Value Metrics:

- Reduce overall training time
- Reduce training material cost
- Improved safety



To Learn More

Explore the Possibilities

Ready to get started? Sign up for a ThingWorx Studio Trial to:

- Gain first mover advantage with early access to tools that are specifically built to make AR authoring fast, simple and scalable
- Develop use cases and pilot studies complete with proof points specific to your organization using the easiest and most powerful AR solution designed specifically for the enterprise
- [Request Access to the Free Thingworx Studio Trial](#)

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