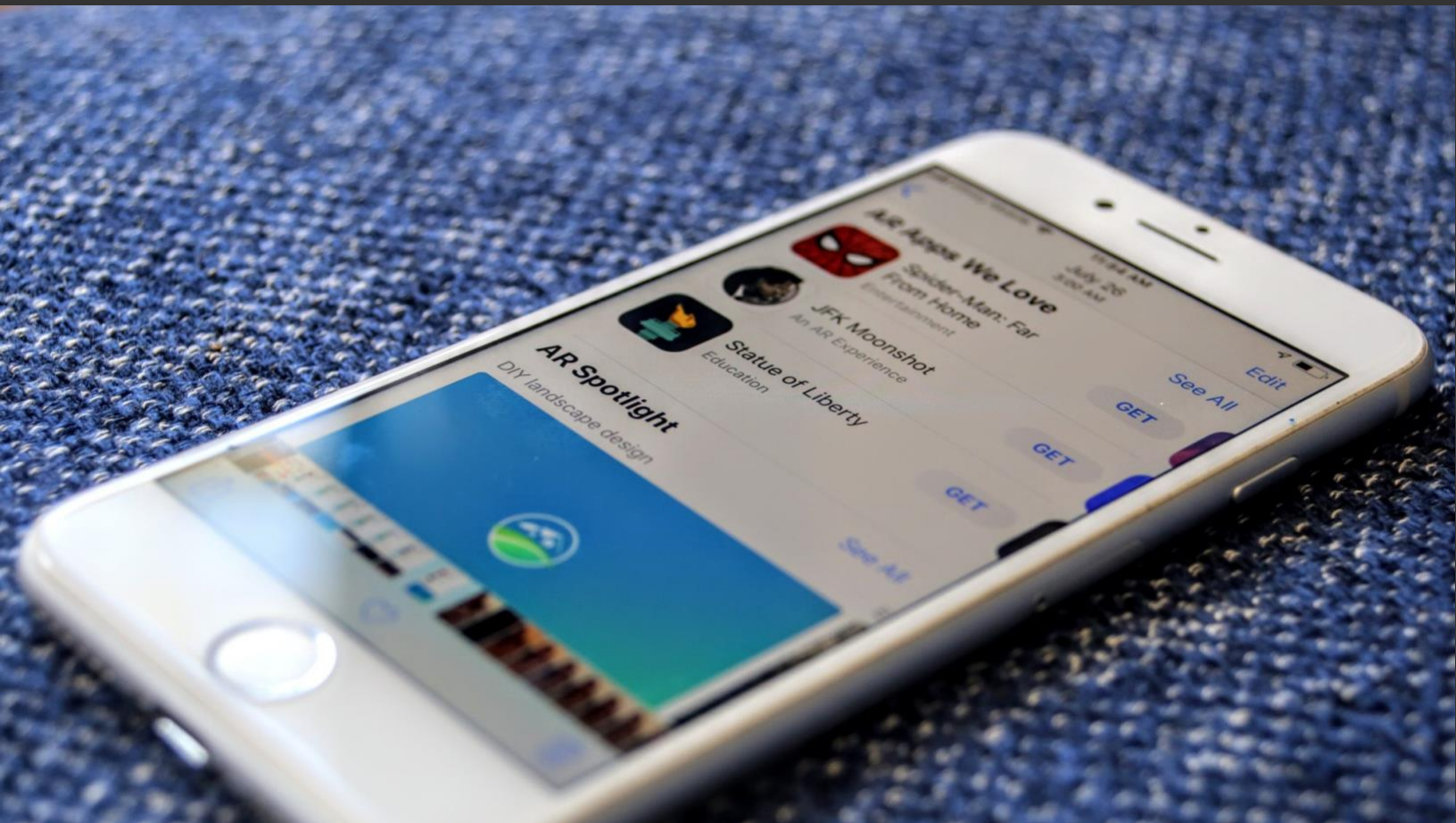


ARtillery Intelligence



ARtillery Data Brief

U.S. Air Force Eliminates Maintenance Errors with AR
11/11/19

Spatial computing's benefits in industrial settings continue to be demonstrated. This is a critical step in the technology's early lifespan as ROI signals are required by enterprise buyers. We've seen plenty of proof points so far, but ongoing evidence is needed to reinforce that ROI story.

With that backdrop, the latest examples are rolled up in a new report from Unity. "The Incredible Impact of Enterprise AR and VR*," examines case studies of AR's impact in automotive and other industries. This includes functions that range from the assembly line to the showroom.



Among the biggest takeaways, Lockheed Martin achieved a 10x ROI by prototyping aviation parts virtually in VR. This replaces the traditional and more costly approach of physically building and testing equipment. This also involved more than \$10 million in savings in 2018.

Moving from product modeling and prototyping to training (prototyping on human levels), Volkswagen reduced training time by 50 percent for maintenance operators on its T6 Multivan. This time savings translated to dollar savings of 66 percent over traditional training methods.

Moving from VR to AR, the U.S. Air Force reduced errors in aircraft maintenance to almost zero, according to the report. This applied Taqtile's Manifest AR assistance software which helped Air Force recruits gain expert-level knowledge through line-of-sight annotations on aircraft parts.

That last example will be particularly valuable in industrial AR, given that it can automate knowledge transfer. This could represent a shift in thinking about how industrial assembly and maintenance is done with "just in time" or "on-demand" knowledge — replacing rote preparation.

“One of the things that’s happening with AR is that we can rethink the training model from ‘in-advance’ and ‘just-in-case’ to ‘in-the-moment’ and ‘just-in-time,’ said PTC CEO Jim Heppelmann at the AWE conference in May.

Without AR

8 / of **12**

M&R tasks required instructor intervention

3

Errors within completed tasks

With AR

0 / of **12**

M&R tasks required instructor intervention

0

Errors within completed tasks

Measureable outcomes

CHIL NET saves time and money, and reduces risk!

10:1

Return on investment:
greater than 10:1

\$10M+

Cost avoidance 2018 due to
issues discovered early

\$500K+

Travel cost savings in 2018
conducting remote ergonomic studies



Significant reduction in
program schedules and risk

These results, again, are important to continue to validate the ROI story. This is especially true considering slower than expected enterprise adoption. Industrial AR, for one, is still far from ubiquity despite strong ROI signals. That disconnect signals the need for continued education.

As we examined in a recent report, that education will extend beyond executive levels to other stakeholders that can make or break AR's success in a given organization. That most notably includes the IT department (risk averse) and front line workers (tech/change-averse).

The lesson plan in this educational campaign should involve financial ROI (per the above) and individual ROI. For front line workers, that's education on how it eliminates job strain, makes them more effective and accurate (per the above) and trains them for the next era of industrial work.

The ROI story is important on white-collar and blue-collar levels, so we'll continue to assemble proof points that inform market sizing. The next steps for industrial AR go beyond the tech: It's all about internal factors like communication, bottom-up implementation and change management.

ARtillery PRO subscribers can access the full Unity report directly [here](#).

Video Companion

(Click Video to Play)



About ARtillery Intelligence



ARtillery Intelligence chronicles the evolution of spatial computing. Through writings and multimedia, it provides deep and analytical views into the industry's biggest players, opportunities and strategies.

Run by analysts and former journalists, coverage is grounded in a disciplined and journalistic approach. It also maintains a business angle: Though there are lots of fun and games in spatial computing, cultural, technological and financial implications are the primary focus.

Products include the [AR Insider](#) publication and the [ARtillery PRO](#) research subscription, which together engender a circular flow of knowledge. Research includes monthly narrative reports, market-sizing forecasts consumer survey data and multi-media, all housed in a robust intelligence vault.

Learn more [here](#).



About Data Briefs

ARtillery [Data Briefs](#) are research deliverables that are assembled weekly by ARtillery Intelligence analysts to document the market trends and events they're tracking.

About the Author

Mike Boland was one of Silicon Valley's first tech reporters of the Internet age, as a staff reporter for *Forbes* (print) starting in 2000. He has been an industry analyst covering mobile and social media since 2005, and is now Chief Analyst of *ARtillery Intelligence* and Editor-in-Chief of *AR Insider*.

Mike is a frequent speaker at industry conferences such as AWE, VRLA and XRDC. He has authored more than 120 reports and market-sizing forecasts on the tech & media landscape. He contributes regularly to news sources such as *TechCrunch*, *Business Insider* and the *Huffington Post*.

A trusted source for tech journalists, his comments have appeared in A-list publications, including *The New Yorker*, *The Wall Street Journal* and *The New York Times*.

Further background, history and credentials can be read [here](#).



Methodology

This brief highlights *ARtillery Intelligence* viewpoints, gathered from its daily in-depth coverage of spatial computing. To support narratives, data are cited throughout the report. These include *ARtillery Intelligence* original data, as well as that of third parties. Data sources are attributed in each case.

For market sizing and forecasting, *ARtillery Intelligence* follows disciplined best practices, developed and reinforced through its principles' 15 years in tech-sector research and intelligence. This includes the past 3 years covering AR & VR exclusively, as seen in research reports and daily reporting.

Furthermore, devising these figures involves the “bottom-up” market-sizing methodology, which involves granular revenue dynamics such as unit penetration, pricing and growth patterns. More on *ARtillery Intelligence* market-sizing research and methodologies can be read [here](#).

Disclosure and Ethics Policy

ARtillery Intelligence has no financial stake in the companies mentioned in this report, nor was it commissioned to produce it. With respect to market sizing, *ARtillery Intelligence* remains independent of players and practitioners in the sectors it covers, thus mitigating bias in industry revenue calculations and projections.

ARtillery Intelligence's disclosure and ethics policy can be seen in full [here](#).

Contact

Questions and requests for deeper analysis can be submitted [here](#).

