

Acquisition Directorate

Research & Development Center

Augmented Reality for CG Mission Support

Distribution Statement A: Approved for public release: distribution unlimited.



UNCLAS | USCG SAS | Holly Wendelin | May 2019



Outline



- What is Augmented Reality (AR)?
- Project Genesis
- Technologies Assessed
- Market State
- USCG Mission Support Use Case
- RDC's Augmented Reality Development
- Field Testing and User Evaluation
- RDC Augmented Reality Project Path





DIGITAL REALITY

https://imgur.com/gallerv/bZAnD



PHYSICAL REALITY

Real World

Augmented Reality

Augmented Virtuality









DIGITAL REALITY

https://imgur.com/gallery/bZAnD

Real World

Augmented Reality

Augmented Virtuality







DIGITAL REALITY



PHYSICAL REALITY

Real World

Augmented Reality

Augmented Virtuality







DIGITAL REALITY

https://imgur.com/gallery/bZAnD



PHYSICAL REALITY

Real World

Augmented Reality

Augmented Virtuality





Project Genesis



THE ISSUE

The Coast Guard decided to research Augmented Reality (AR) as maintenance and training aids for air, surface, and shore maintenance programs. Project goals were to reduce labor burden on technicians by providing technical information via AR technology and to increase the availability of assets by improving maintenance efficiency. No AR research or testing had been conducted previously at the Research and Development Center (RDC).





Technologies Assessed 2017







UNCLAS | Augmented Reality for CG Mission Support | USCG SAS | Ms. Holly Wendelin | May 2019

Technologies Assessed 2017





2017 DoD Maintenance Symposium, Salt Lake City, UT Microsoft HoloLens



RDC showcases and explores AR solutions | CG-4 demonstrates Boeing AR solution



UNCLAS | Augmented Reality for CG Mission Support | USCG SAS | Ms. Holly Wendelin | May 2019

Market State 2018



Intelligent Automation Incorporated presents their H-60 T-700 Augmented Reality engine-troubleshooting prototype at Naval Aviation Technical Training (CNATT)



Cockpit engine instruments, airflow, fuel flow, and recorded engine sounds are superimposed with a ruggedized tablet computer over hand sized, 3D-printed H60 T-700 engine model to train mechanics in engine startup procedures and fault identification



Acquisition Directorate Research & Development Center

Market State 2018



Microsoft's HoloLens Deal With the Army Is a Big AR Win

Augmented reality has been slow to catch on with consumers, but the U.S. Army is ready to explore its potential as a combat technology.



Chris Neiger (TMFNewsie) Dec 4, 2018 at 6:06AM

Microsoft (<u>NASDAQ:MSFT</u>) has been plugging away at its HoloLens headset, and while the augmented-reality tech has won over a few clients -- mostly companies using it in industrial settings -- <u>it has been pretty slow going</u>.

However, in a significant milestone for the AR tech, Microsoft just won a \$480 million contract with the U.S. Army, according to a <u>recent report</u> from Bloomberg. The Army had already been using HoloLenses in some training scenarios, but this deal will see the devices enhanced for combat use as well.

According to a document released by the Army, the government was looking for AR headsets that are capable of providing night vision and thermal sensing, as well as monitoring the wearer's vital signs, protecting their hearing, and even recognizing when they might have received a concussion.

https://www.fool.com/investing/2018/12/04/microsofts-hololens-deal-army-is-big-ar-win.aspx

AUTHOR



Chris has covered Tech and Telecom companies for The Motley Fool since 2012. Follow him on Twitter for the latest tech stock coverage.

Follow @tmfnewsie

ARTICLE INFO

- Dec 4, 2018 at 6:06AM
- Technology and Telecom

"The \$480 million contract could triple the number of headsets in the market."

https://www.engadget.com/201 8/11/29/us-army-480-millionmicrosoft-hololens-contract/



https://spectrum.ieee.org/techtalk/consumer-electronics/portabledevices/how-will-the-military-usethe-hololens-on-the-front-line



Acquisition Directorate Research & Development Center

USCG Mission Support Use Case







LABORATORY

USCG Mission Support Use Case







USCG Mission Support Use Case



Surface Forces Logistics Center ASSIST Trip Report



USCGC AMBERJACK; Jonesport, ME April 23 – April 25, 2018

SFLC ASSIST POC: EMC Thomlinson



Maintenance Action:

Replace Communication Circuit Board (COM3) in the Engine Control System (ECS) Universal for Motor Turbine Union (MTU)



RDC's AR Development





RADM Haycock simulates replacing a Communication Circuit Board in the Engine Control System on an 87' WPM Motor Turbine Union while wearing a Microsoft HoloLens Augmented Reality headset





RDC's AR Development







UNCLAS | Augmented Reality for CG Mission Support | USCG SAS | Ms. Holly Wendelin | May 2019

Field Testing and User Evaluation





Limited User Evaluation: USCGC ALBACORE: Oct 2019 – Jan 2020



RDC Augmented Reality Project Path





Harvard Business Review

A Manager's Guide to Augmented Reality

Project 8107: Key Milestone/Deliverable Schedule

Project Start	Nov 17 ✓
Augmented Reality Capabilities Market Research	5 Feb 18 🗸
USCG Mission Support Use Case Selection	Mar 18 🗸
Market Research/Technology Assessment Brief19	Dec 18 ✓
First Augmented Reality Agile Development Sprint and Demo	May 19
Augmented Reality Use Case Roadmap	. Jun 19
Final Augmented Reality Agile Development Sprint and Demo	. Oct 19
Limited User Evaluation	. Jan 20
Augmented Reality Capabilities to Improve CG Mission Support Final Report and Brief	May 20
Project End	May 20

