

Optimising Flight Training by Using XR



Markus Heinonen - Varjo Technologies

VARJO



Full Dome Simulator
\$20-40M typical price



Level D Flight Trainer
\$10-20M typical price



XR-Based Trainer
\$10K-\$1M typical price



Monitor-Based Trainer
\$100K-\$500K typical price



Flight Training Device Visual
\$5-10M typical price

Recent developments in Virtual Reality

Loft Dynamics Airbus H125 and Robinson R22 simulators
qualified by EASA

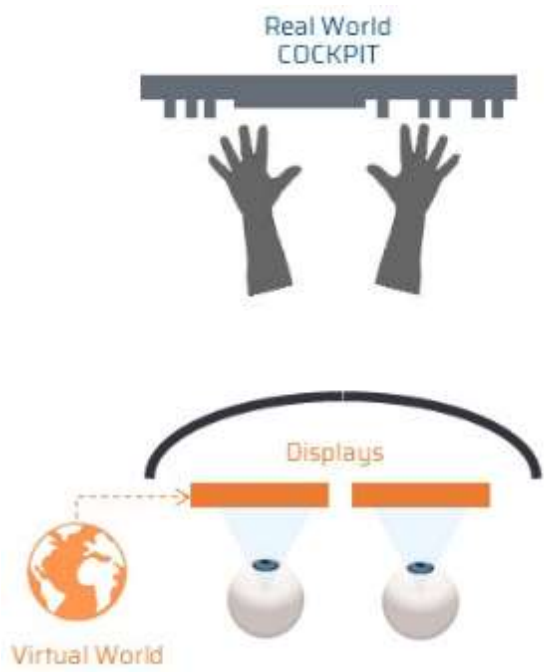
Loft undergoing U.S. evaluation by the FAA for the first
time for VR

FSTD Special Conditions development and assessment
process for the use of Virtual Reality published by EASA

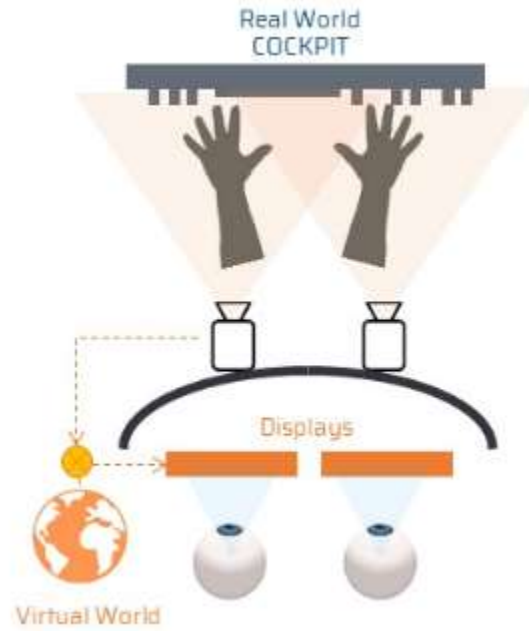


Loft Dynamics simulator

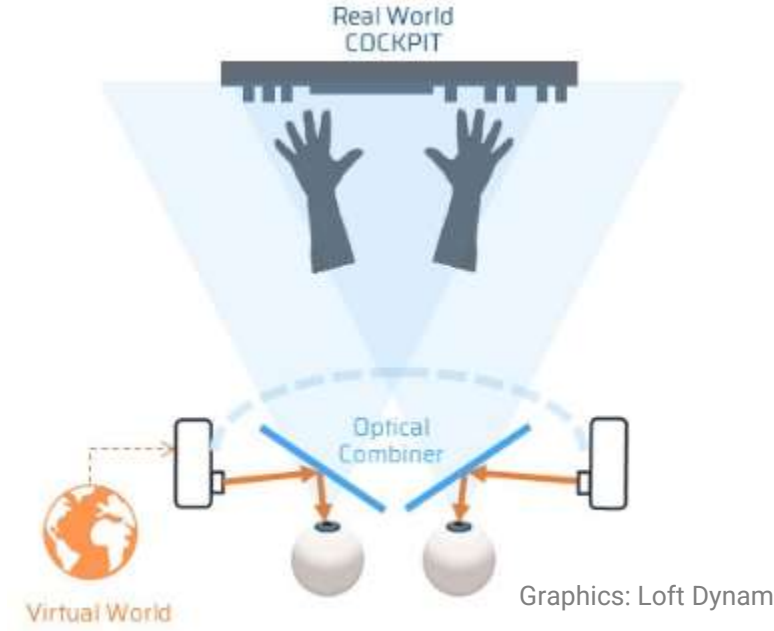




Virtual Reality



Mixed Reality



Augmented Reality

Graphics: Loft Dynam

Recent developments in Mixed Reality

Varjo To Provide (HMD) Technology for U.S. Army's \$500M RVCT Program

\$350M estimated annual savings in USAF Pilot Training Next and Transformation project

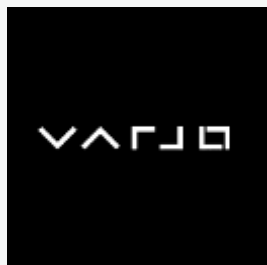


Viper Wing F16 cockpit

USAF Pilot Training Next and Transformation

Low footprint training devices

Working to make this the only accepted simulator for the syllabus



Is immersive training effective?

USAF PTN x Vertex results

\$350M

Estimated annual cost savings resulting from efficiency gains

★ Pilot certification awarded **4-6 months** earlier than previous methods

2-3 months

Pilots trained 2-3 months earlier with no appreciable difference in follow-on aircraft

14/14

Number of categories T-6 student pilots outperformed their non-immersive peers

50%

Reduction in time to solo flight



Varjo To Provide (HMD) Technology for U.S. Army's \$500M RVCT Program

Portable training capability for three different Helicopters: Apache, Chinook & Blackhawk.

Part of the U.S. Army's efforts to create a synthetic training environment (STE) that can be utilized regardless of location.

One of the 70+ immersive defense training programs featuring Varjo's hardware and software solutions worldwide





V A R J O

Multiuser training with
chroma key



Masking i.e., border between real and virtual

Unified lighting conditions

Video see-through resolution





LIGHTS

ON OFF INSTRUMENT FLOOD LANDING TAXI POSITION STROBE EMERGENCY



COM BARO RANGE FAN

NAV HDG

ALT

ALT

START LEFT START RIGHT MASTER ON OFF

START LEFT START RIGHT MASTER ON OFF

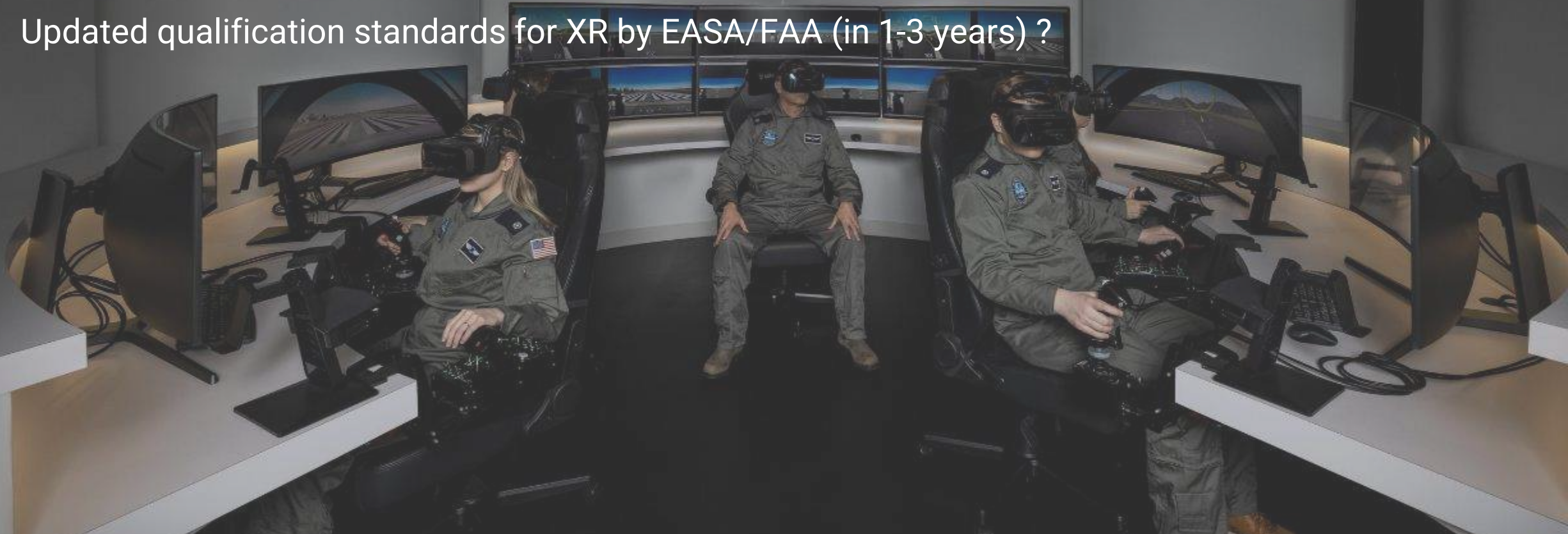
EMERGENCY

What's next?

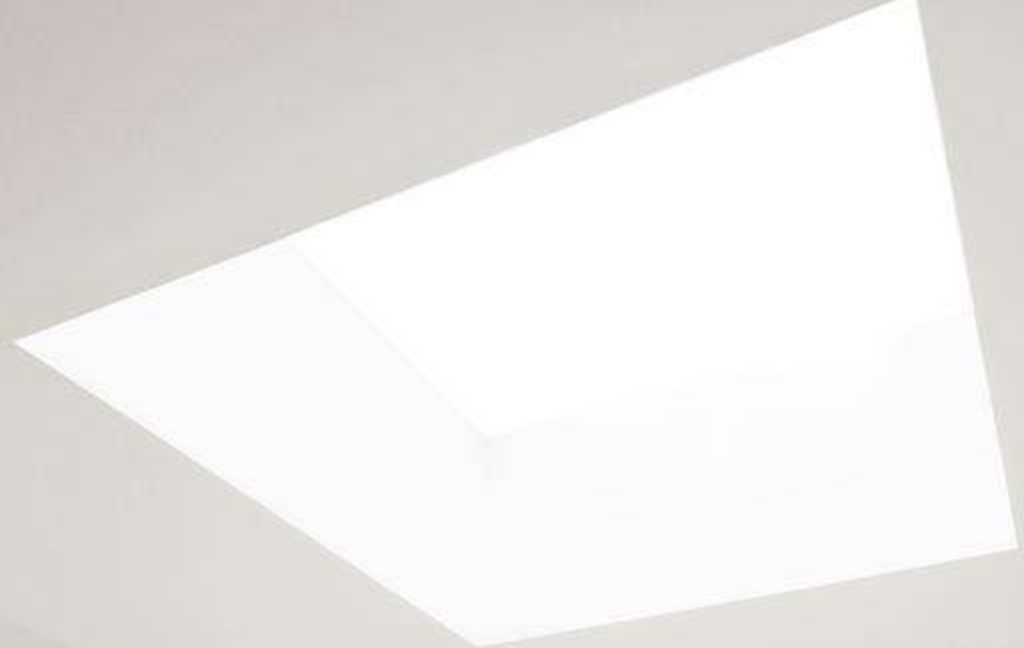
First FAA qualified VR simulator (soon)?

Mixed reality simulator qualified by EASA and/or FAA (next)?

Updated qualification standards for XR by EASA/FAA (in 1-3 years) ?



Thank you!



Please connect for more!



Markus Heinonen
Mixed Reality | Virtual Reality | Simulation & Training | Varjo
Talks about #vr, #metaverse, #mixedreality, #virtualreality, and #augmentedreality

Post

Is this now the end of traditional projection simulators?...



1,691 · 138 comments

Post

Here's three ways to create Mixed Reality simulators...



552 · 44 comments

Post

Goodbye IKE...



1,735

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