



# Training Enhanced by Mixed-Reality 3rd Crew Member Helicopter Full Flight Simulator

# Round Table 4 – Helicopter Simulator + MR 3rd Crew Member

Training – Principle and Opportunities

Reality – Virtual, Augmented and Mixed

Third Crew Member – On board Full Flight Simulator (FFS) as Flying Doctor

Scenario – Injured hiker in the mountains

Third Crew Member & Roles

Maintenance – AR Helicopter Engine

# Flight Safety

Aircraft  
Manufacture  
&  
Maintenance

Airspace  
Organisation

Aircraft  
Operation

Flight Crew  
Training



**Train as you fight,  
fight as you train.**

Qualification  
standards  
applicable?

**Initial Training**

**Recurrent  
Training**

**Proficiency  
Training**

**Mission Training**

**Training  
Need**

New technologies?

# Reality – Virtual, Augmented and Mixed

**Virtual Reality (VR)** – purely simulated environment  
i.e. VR-goggles show nothing from the real world

**Augmented Reality (AR)** – real-world environment enhanced by computer-generated perceptual information

**Mixed Reality (MR)** – merging of real and simulated world to generate new environments to the point that the operator cannot distinguish anymore

# EXAMPLE: Flying Doctor - Training Need Analysis & Solution

## Challenge: Multiple flying doctors

- Lack of integration in flight operation
- Crew Ressource Management – better distribution of workload among crew

## Crew coordination with Flying Doctor

- Communication to medical control center: radio and laptop operation
- Tail clearance for landing in confined area
- Night-time torch-light operation avoiding blending pilots' night vision

## Qualification aspects

- Qualification standards do not cover this kind of training

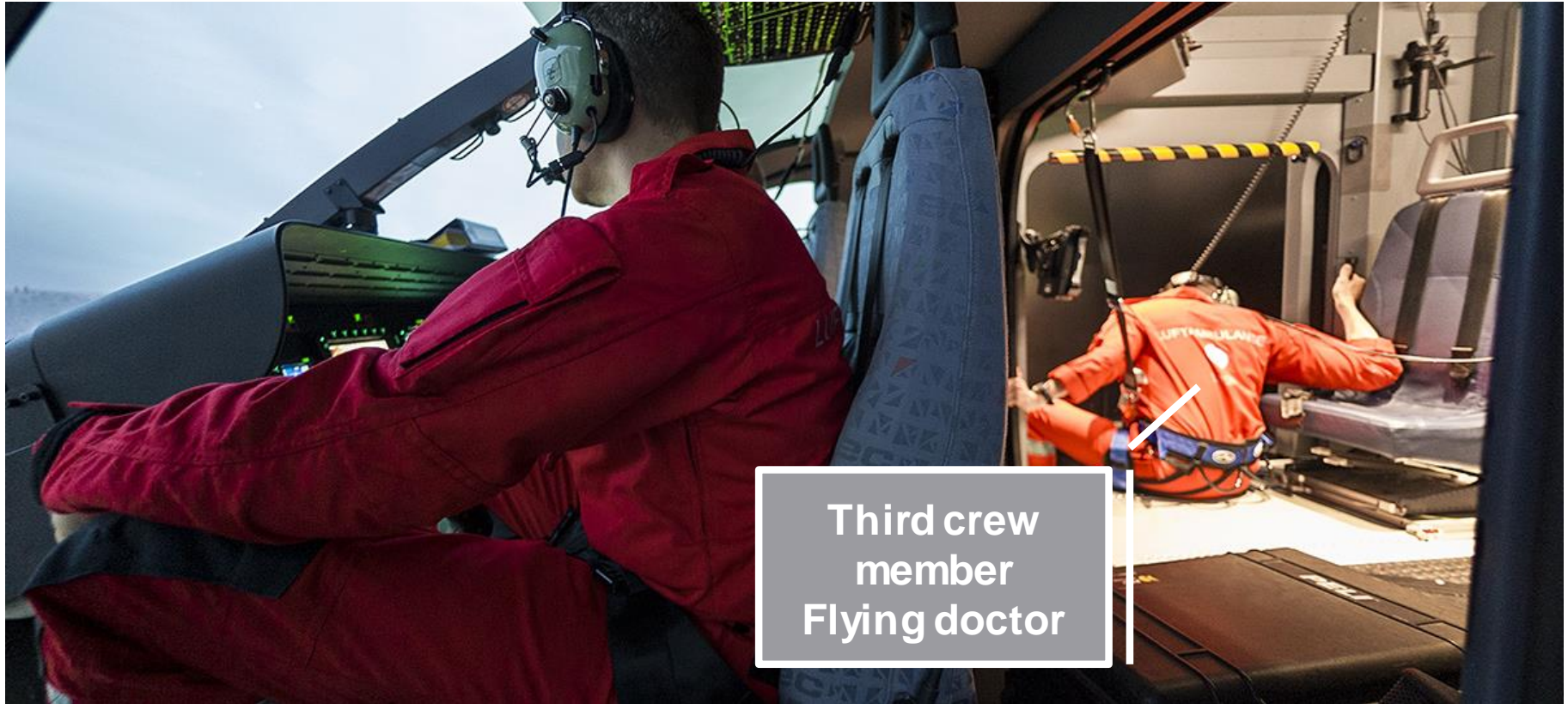
## Solution

- Third crew member station on board of Full Flight Simulator
- Define Flying Doctor Qualification Course





# Third Crew Member – On board Full Flight Simulator (FFS)



Third crew  
member  
Flying doctor



Flying doctor  
Transparent AR Goggle



# Scenario – Injured hiker in the mountains



# Scenario – Injured hiker in the mountains



# Scenario – Injured hiker in the mountains





## Torch-light of third crew member

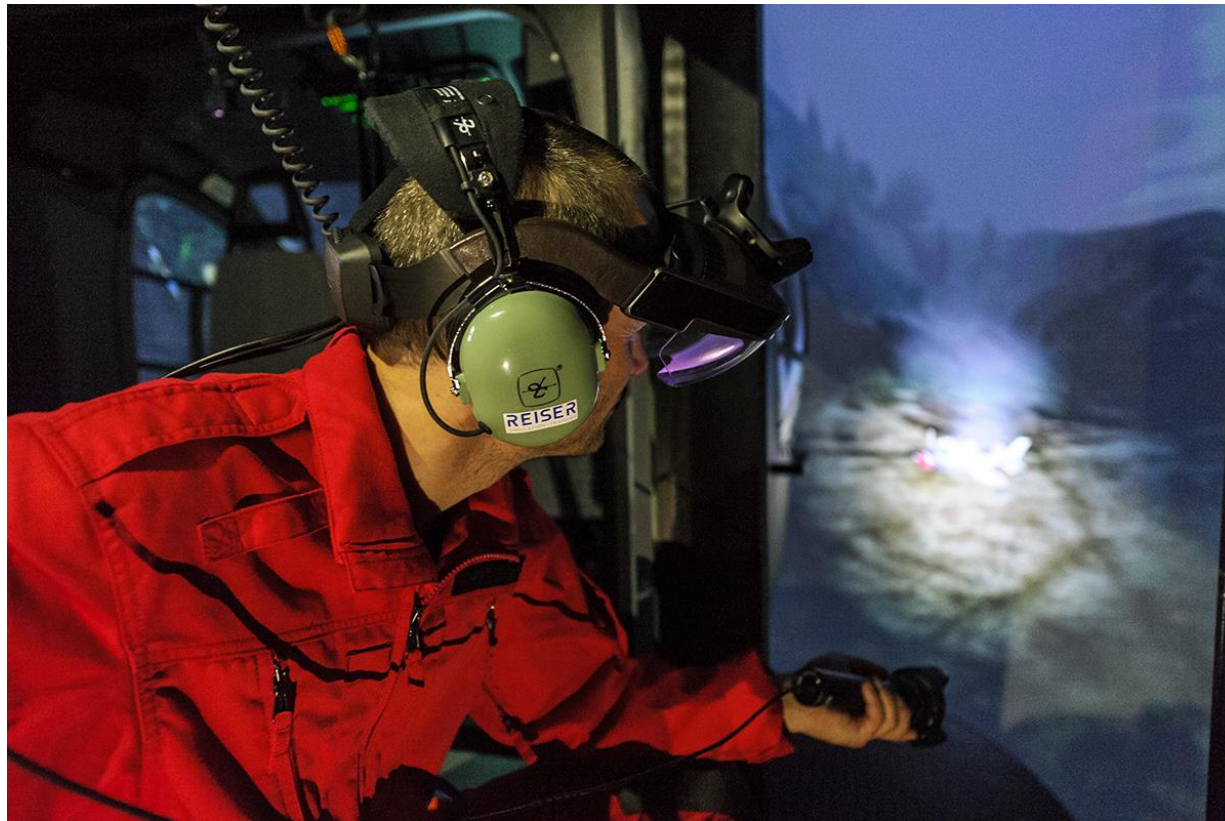


**Torch light**

**light source  
replaced by  
tracker head**

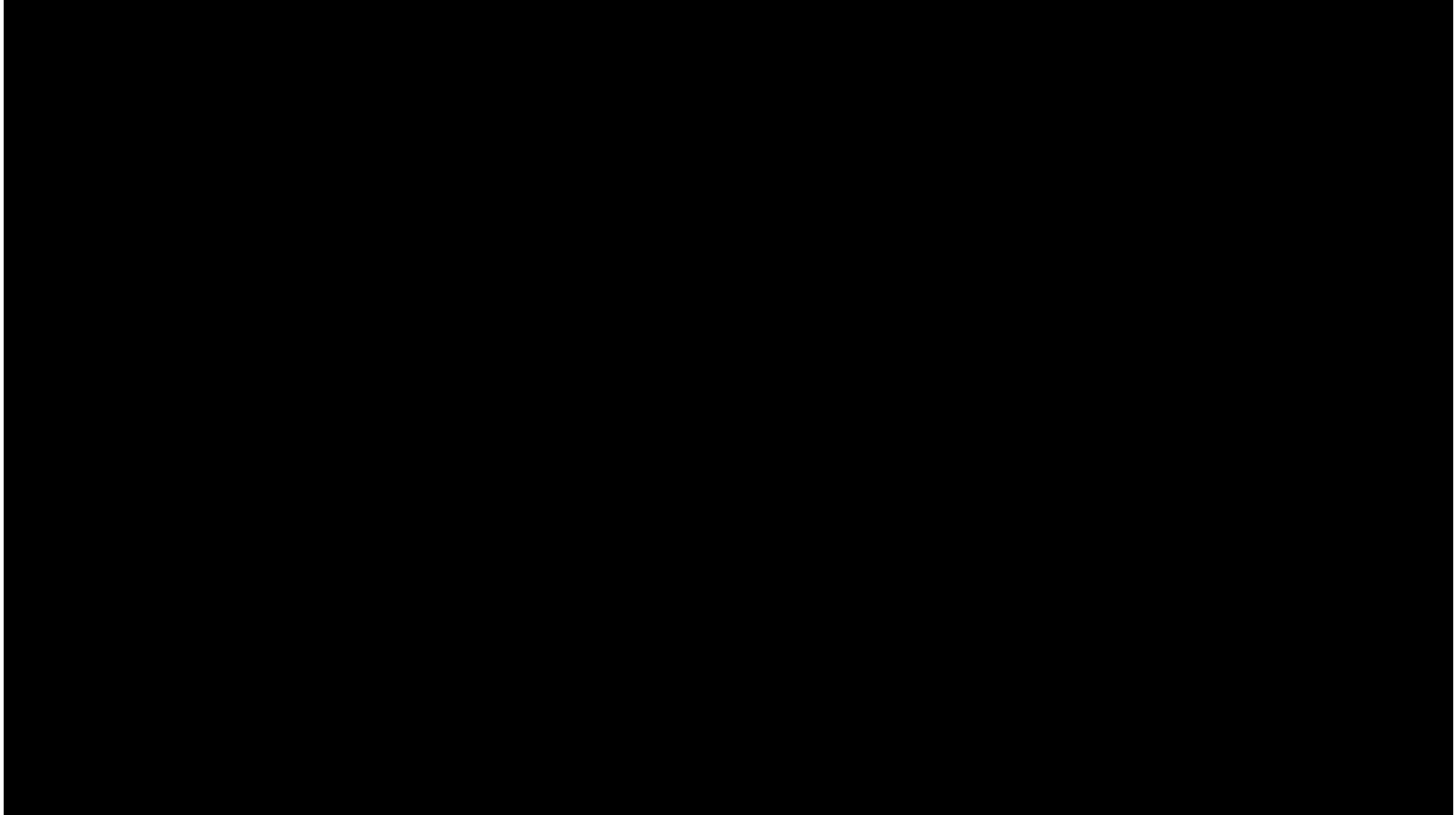


## Torch-light – Perspective of third crew member



# Torch-light – Perspective from outside simulator

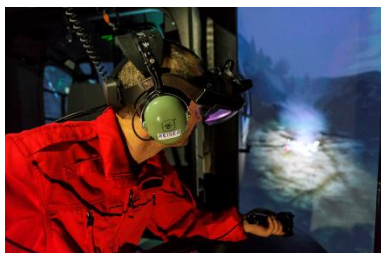




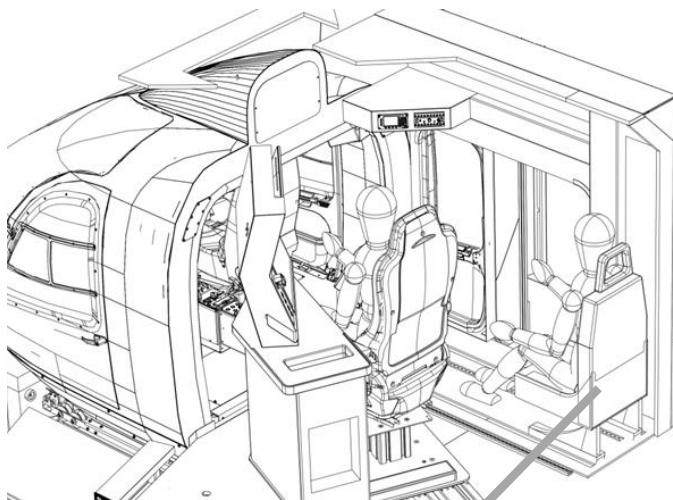
# Third Crew Member & Roles



**Door gunner**



**Flying doctor**



**Third crew member**



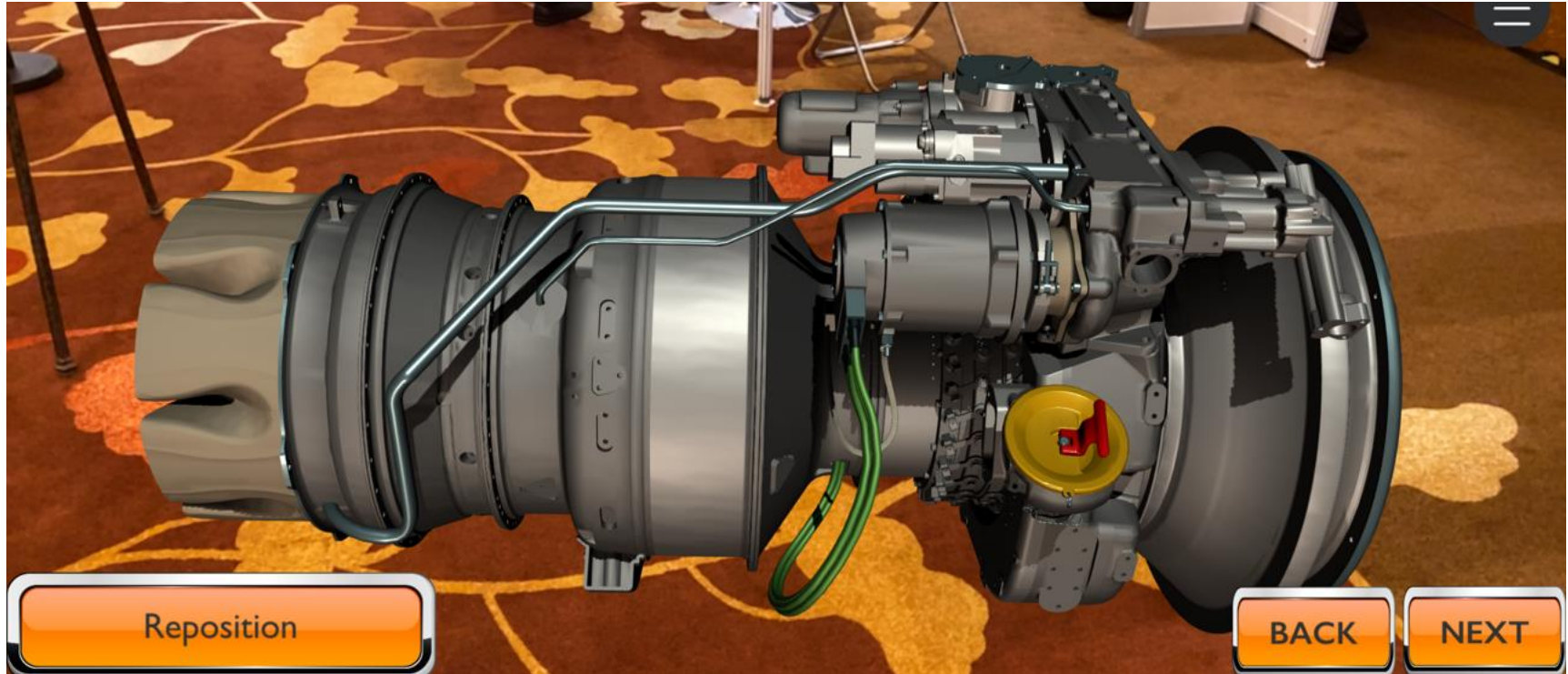
**Winch operator**



**Police-Sniper**



# Maintenance – AR Helicopter Engine





+ 47°57'52N - 11°24'10E

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