



**World's first qualified  
Virtual Reality Flight  
Training Device**



**Co-Creation for Safety**



Swiss Made

# WHO WE ARE

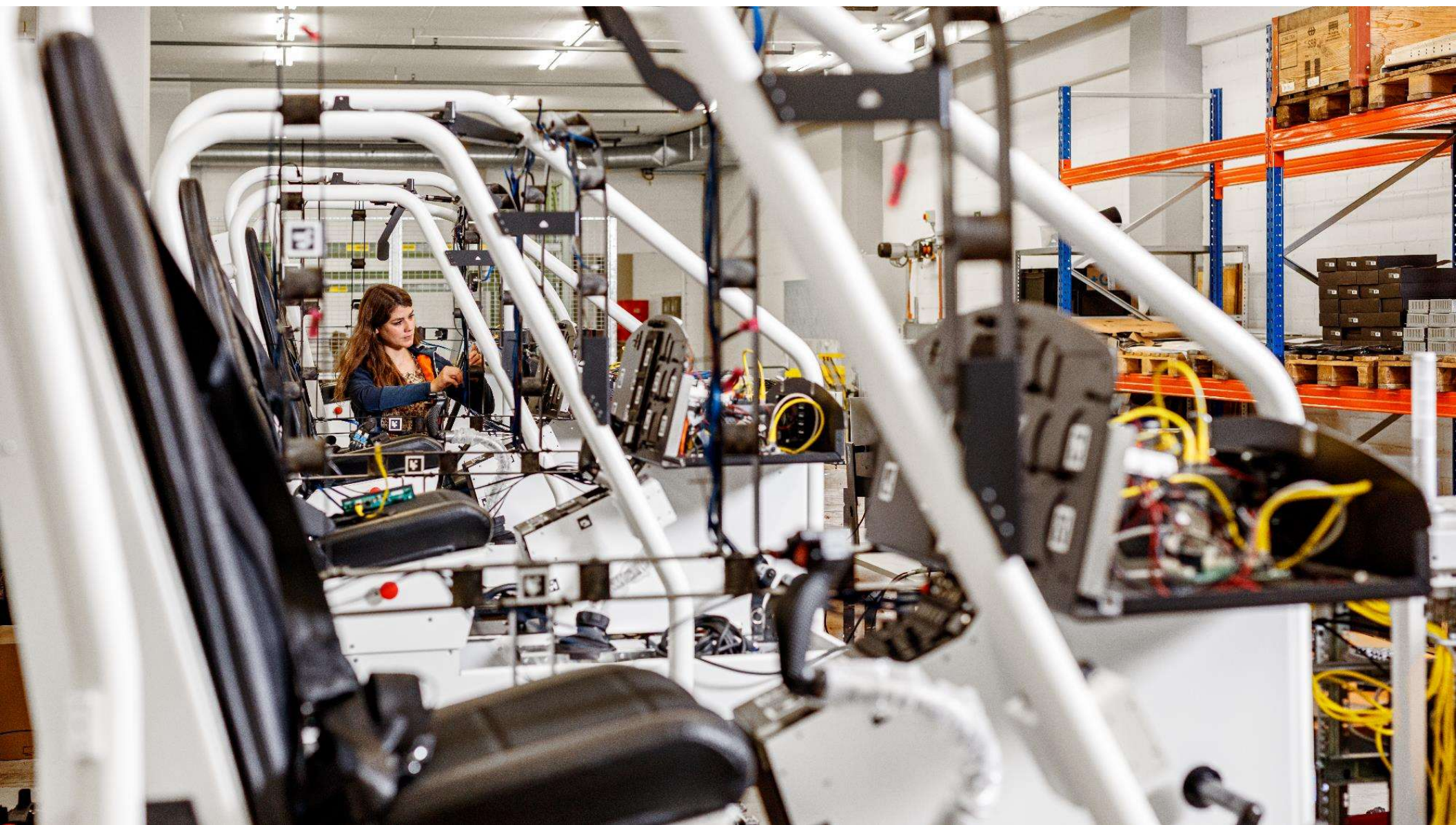
---



# About us VRM Team











# Mobile FSTD





# How it looks like



# Why VIRTUAL REALITY

---

A totally immersive environment.

Field of View, Projection issues



# VR vs. Projection



**Correct Perspective** – Parallax, close objects, stereoscopic view

**Mirrors** – 100% realistic mirror renderings

**Full Immerse3D** – Every head movements are like in the real cockpit

# Affordable and more realistic





# Visual system technologies



Source: [www.aero.varjo.com](http://www.aero.varjo.com)

VR



Source: [www.varjo.com](http://www.varjo.com)

MR

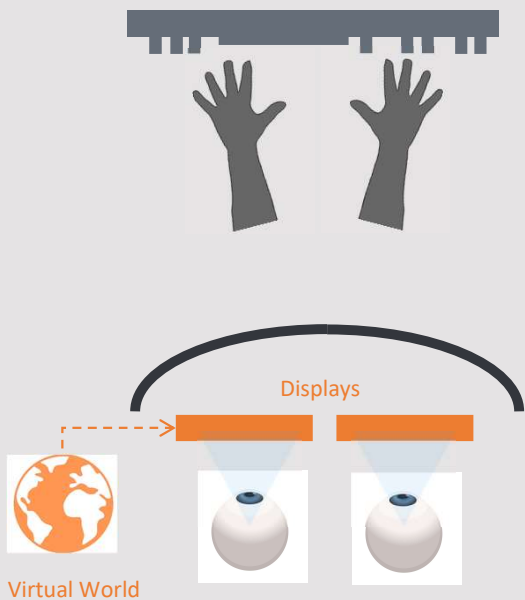


Source: [www.theverge.com](http://www.theverge.com)

AR

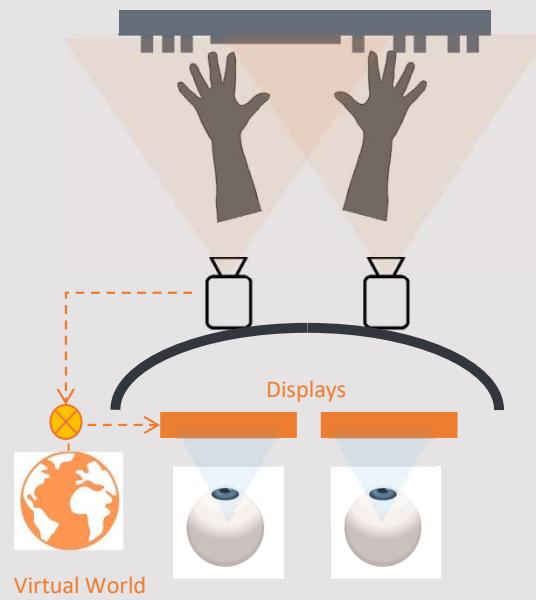
# Visual system technologies

Real World COCKPIT



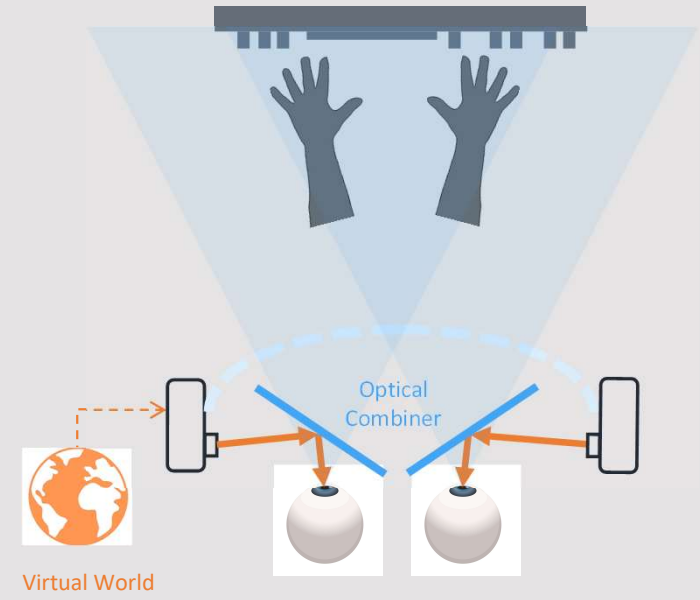
- ++ Immersion
- + Resolution
- + Graphics quality and effects
- + Technically manageable
- Where are my hands!

Real World COCKPIT



- + Immersion
- 0 Resolution, see through cams
- 0 Graphics quality and effects
- Technically hard to manage
- I look like I see my hands from somewhere else.

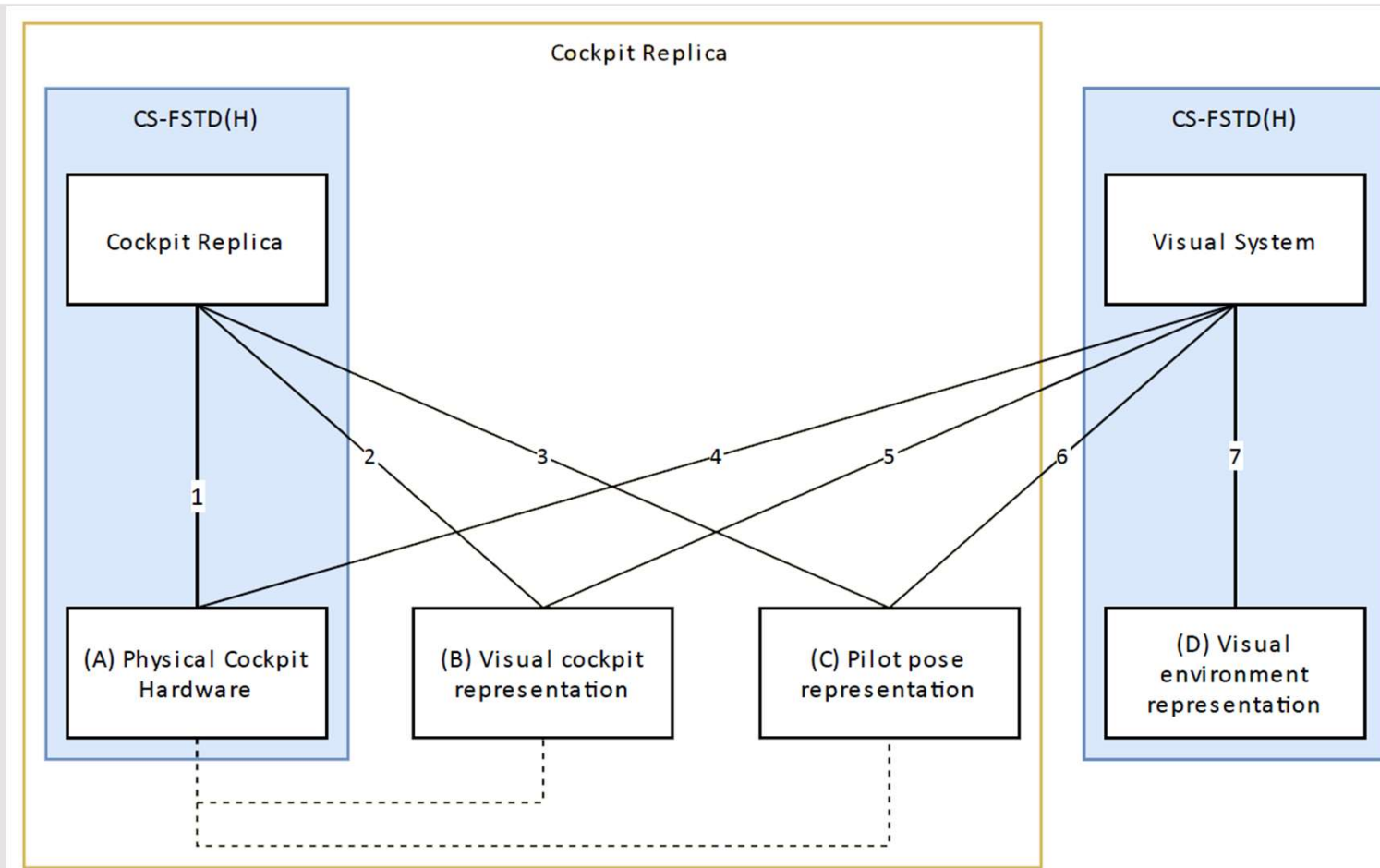
Real World COCKPIT



- + Immersion
- 0 Resolution, see through cams
- 0 Graphics quality and effects
- Technically hard to manage
- Low field of view
- Ambient lighting influence



# The VRM Helicopter Cockpit

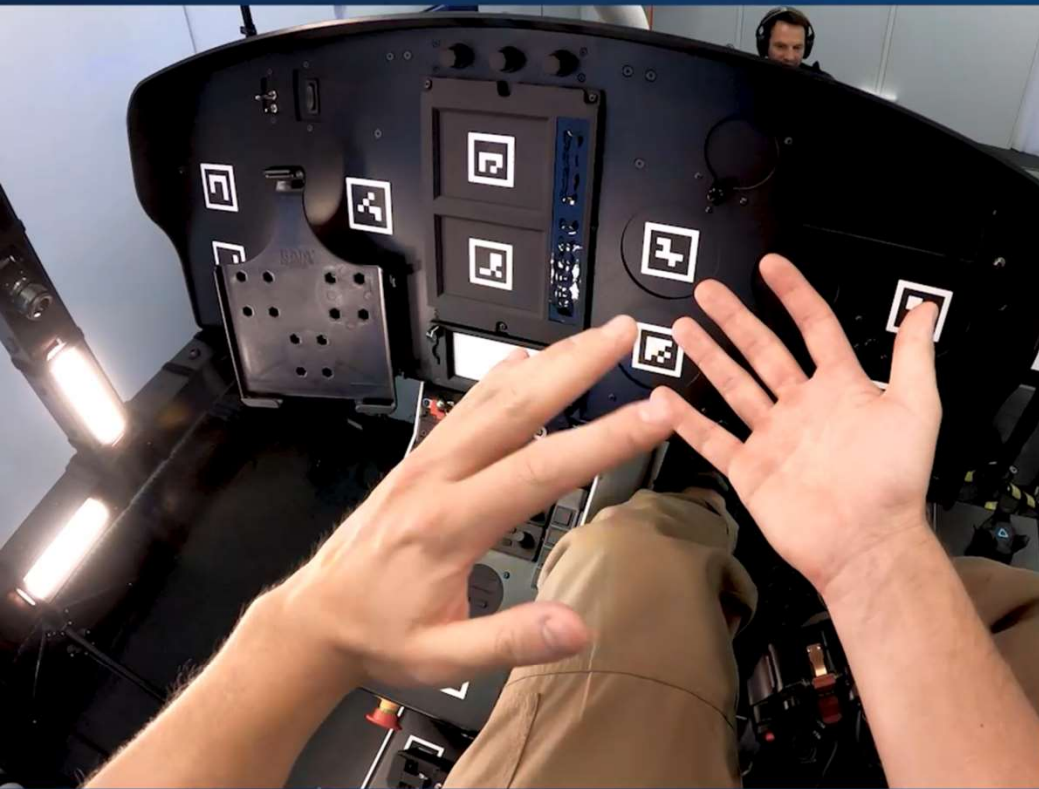


## VRM Pose Tracking





# VRM Pose Tracking



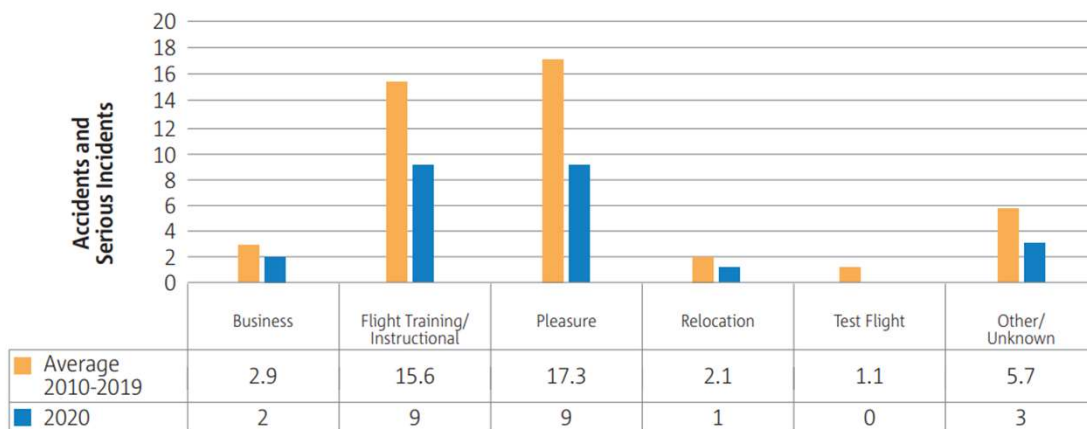
# Why FSTD Training?

---



# Safety issue

■ **“The vast majority (80 %) of all accidents and serious incidents involved rotorcraft performing non-commercial operations or specialised operations.” (Chapter 3.1.2.2, p. 56, EPAS)**



- High number of accidents in training
- High number of licensed private pilots with limited experience
- Training on aircraft involves many risks
- Not enough means for FSTD training – until now

# Advantages of fstd training

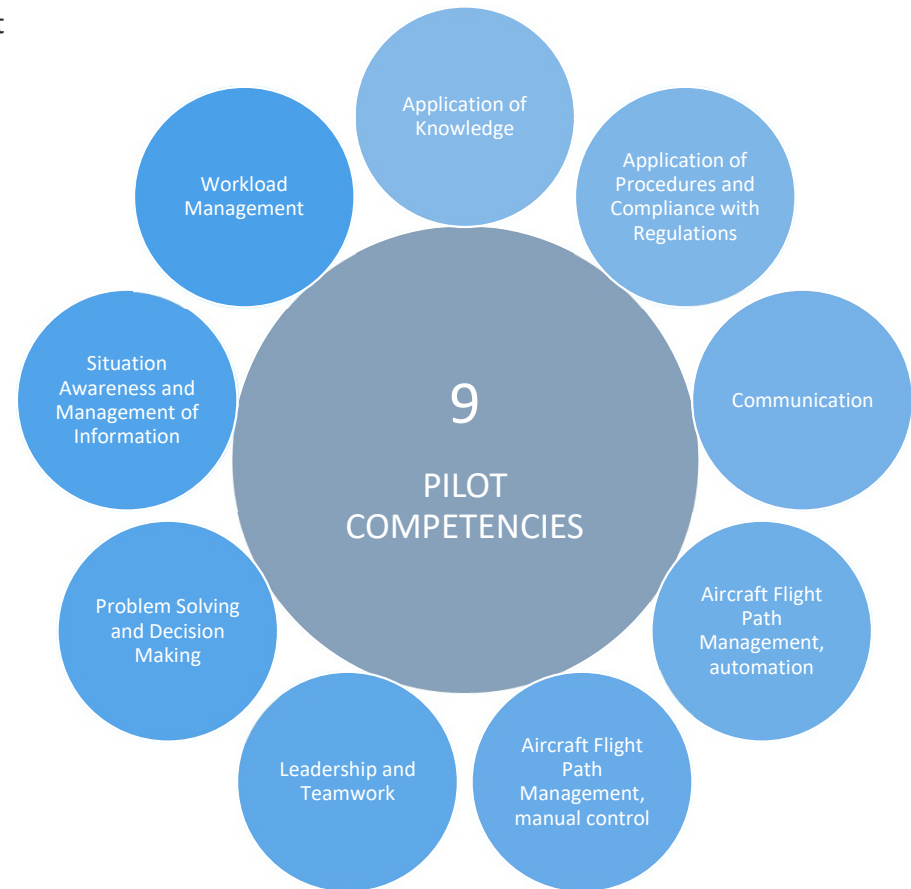
Training with realistic FSTDs offer an increased training effect for pilots with 24/7 weather independent availability, whereas training in the aircraft can often not target all relevant competencies. Especially the use of scenario-based training significantly increases the training effect of:

- Situation Awareness and Management of Information
- Application of Knowledge
- Application of Procedures and Compliance with Regulations
- Aircraft Flight Path Management, manual control
- Problem Solving and Decision Making
- Workload Management

Furthermore, many risks can be mitigated. A summary is shown below:

Risks/Hazards	Mitigation with FSTD
Low skill level of the student. Unexpected inputs and reactions.	Basic skills fully trained on the FSTD
Often limited experience of the FI. Hazard in case of critical situations.	Student starts training with higher skill level and better understanding of the aircraft.
Near ground/obstacles manoeuvres.	Extensive training opportunities with the FSTD.
Student not used to various mass/CG. Hazard for first solo.	Training with different configuration.
Many emergency procedures not trained, or alternate methods. Risk of negative training, incorrect routine.	Training with scenarios <ul style="list-style-type: none"><li>- Situation Awareness</li><li>- Decision Making</li><li>- Training correct routine (Procedures, Aircraft Management)</li></ul>

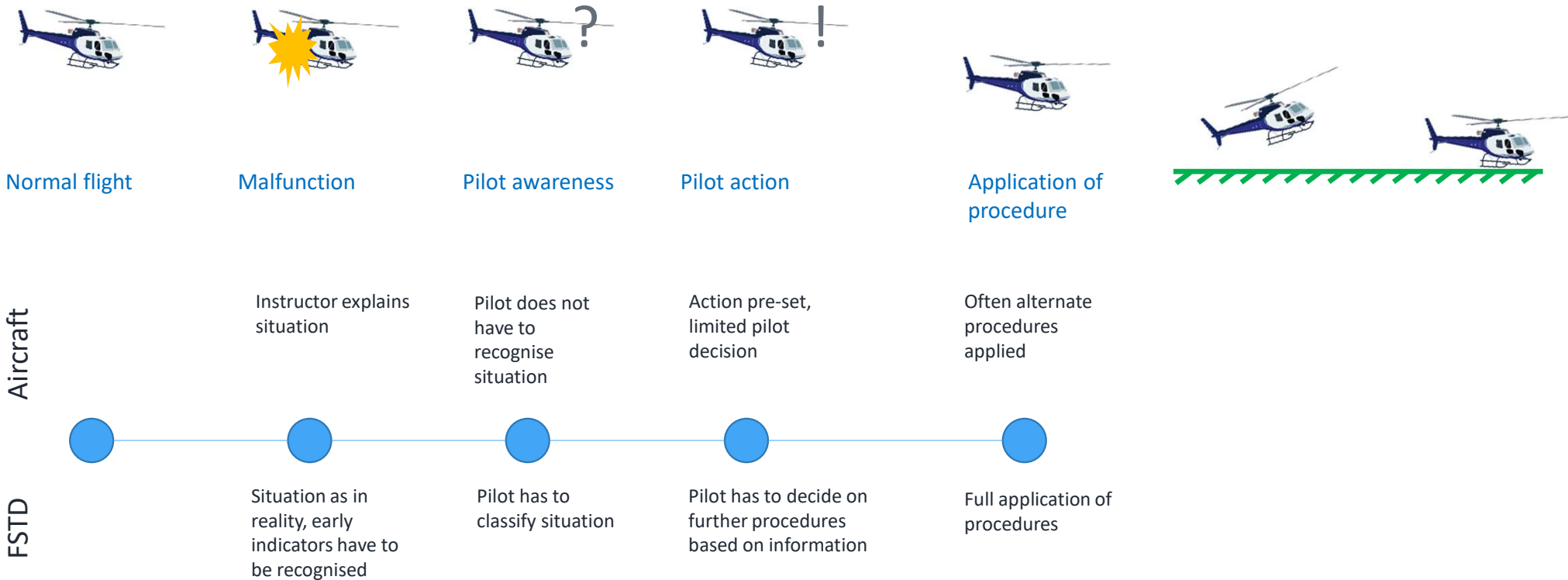
For more information: [Use of simulators – a priority of the EASA Rotorcraft Safety Roadmap](#)





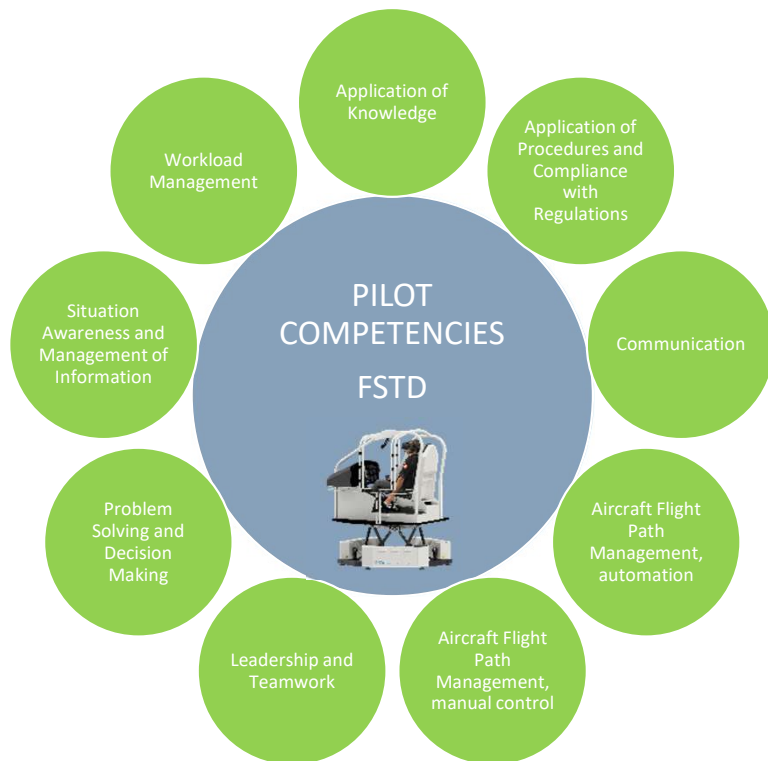
# Example

Example for Malfunctions and Emergency Procedures



# Fstd VS. aIRCRAFT

Training effect on pilot competencies – FSTD vs. Aircraft (example for Malfunctions and Emergency Procedures)




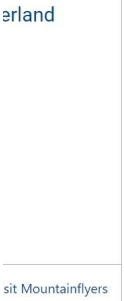


# Co-Creation for Safety




---



# Co-Creation for Safety







**Helitrans, Norway**  
2 Airbus H125 FSTD  
Contact:  
Phone: +47 48 31 30 00  
E-Mail: [info@helitrans.no](mailto:info@helitrans.no)  
Address:  
HELITRANS AS  
Michelets vei 77  
7502 Stjørdal

[Visit Helitrans](#)

**Meravo, Germany**  
1 Airbus H125 FSTD  
Contact:  
Phone: +49 (0)7136 - 6051  
E-Mail: [info@meravo.de](mailto:info@meravo.de)  
Address:  
Meravo - Luftreederei Fluggesellschaft GmbH  
Flugplatz  
74229 Oedheim

[Visit MERAVO](#)



# FSTD ready for the future



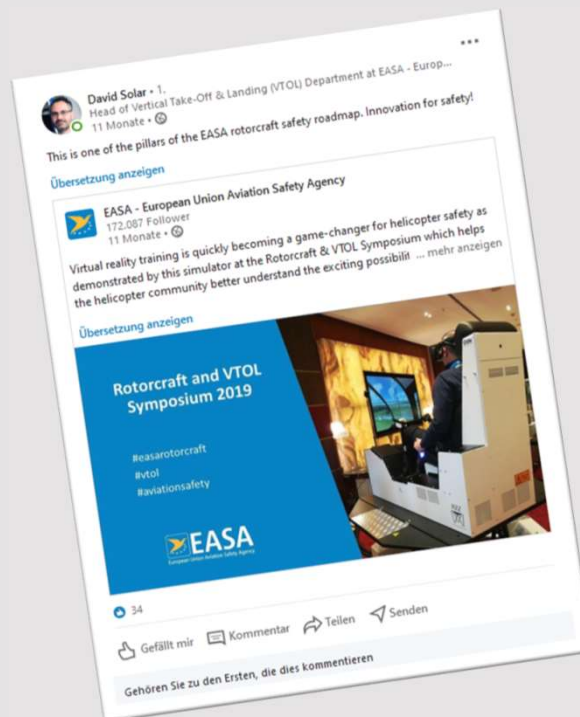
RMT.0196



Update of flight simulation training device requirements

CS-FSTD(H)

VRM Switzerland's FSTDs  
are driving the future  
qualification requirements



European Aviation Safety Agency

Group Composition  
for a rulemaking task

Update of flight simulation training devices requirements

RMT.0196.WP3 — Issue 11 — 11.11.2020

Members:

BERNARD DE DOMPSURE, Maxime	ASD/Airbus Helicopters
BESSE, Philippe	DGAC-France
COCCOLINI, Igino	ENAC Italy
DRANSFIELD, Mark	Independent expert
EMMANUELE, Claudio	Leonardo Helicopters
FIELD, Joris	NLR
FLINOIS, Joel	Thales AVS
FUILLA-WEISSHAUPT, Eric	ASD/Airbus
GAFNER, Andreas	EHA/VRmotion
HÄNNINEN, Olli	Traficom Finland
MAUGIS, Herve	Heli-Union Training Center
MARTY, Christian / RIESEN Fabi	EHA/VRmotion
SAMANI, Itash	GAMA/CAE
SCHOFIELD, Michael	IAAPS/LAT
SCHOLZ, Franziska	LBA Germany

Secretary:

Capt. BATZANOPOULOS, Prokopis EASA

# Paradigm Shift?

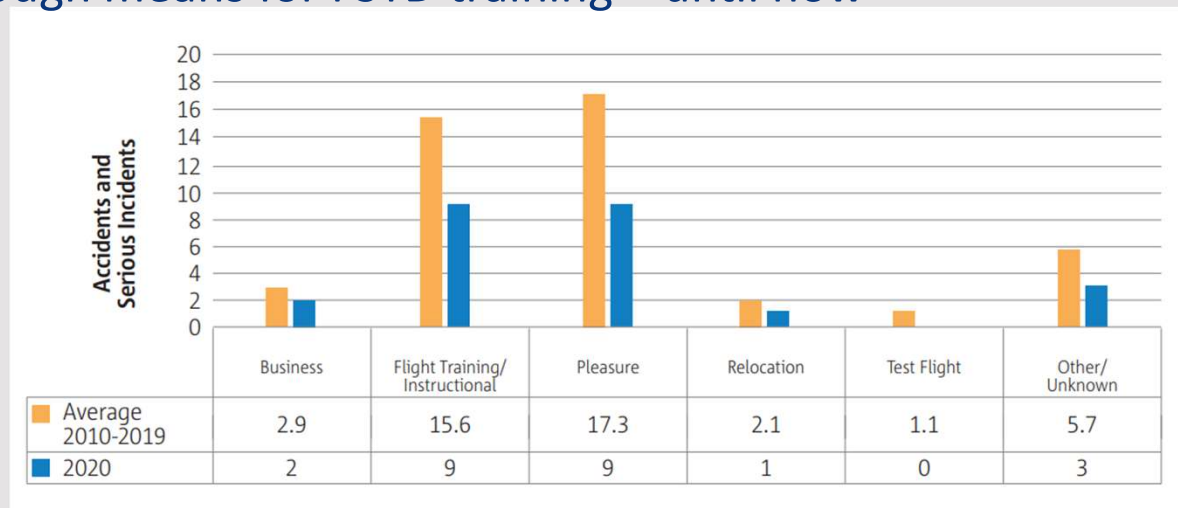
---



# Addressing the Safety Issue

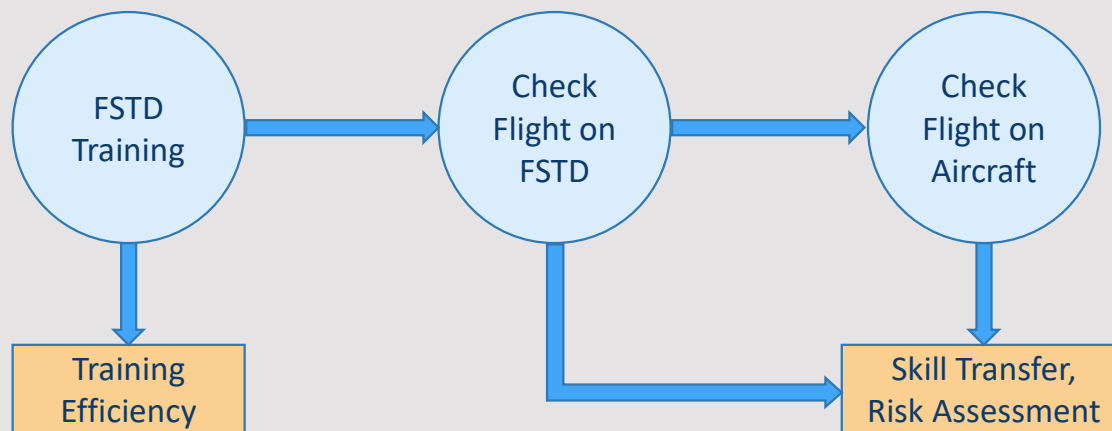
“The vast majority (80 %) of all accidents and serious incidents involved rotorcraft performing non-commercial operations or specialised operations.” (Chapter 3.1.2.2, p. 56, EPAS)

- High number of accidents in training
- High number of licensed private pilots with limited experience
- Training on aircraft involves many risks
- Limitations with training in aircraft
- Not enough means for FSTD training – until now

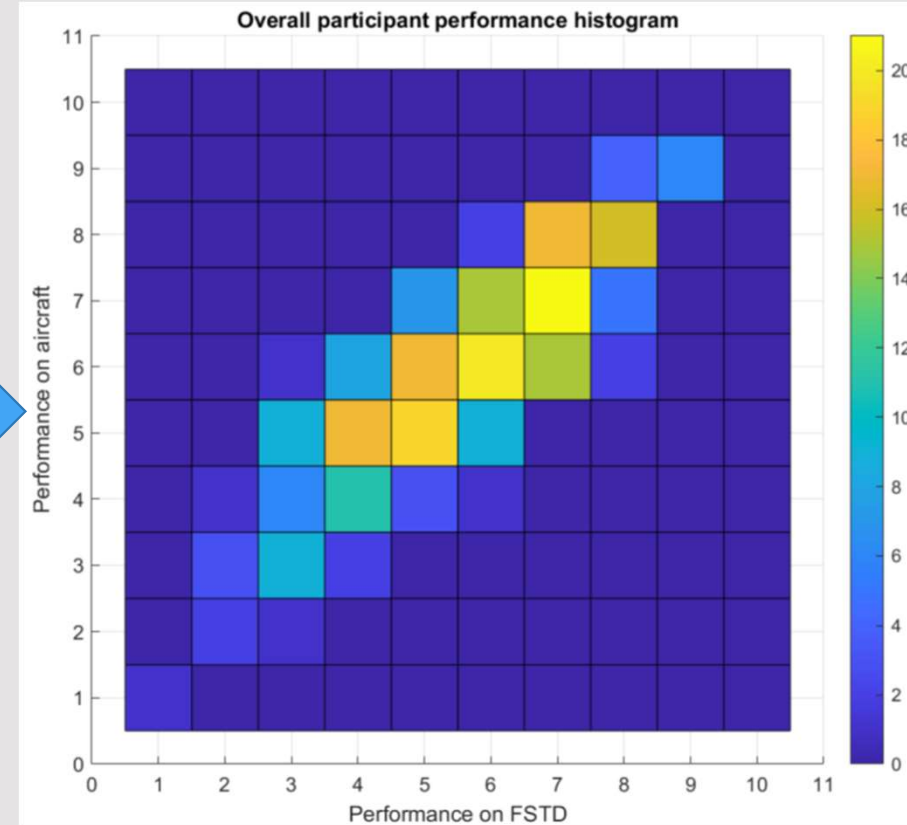
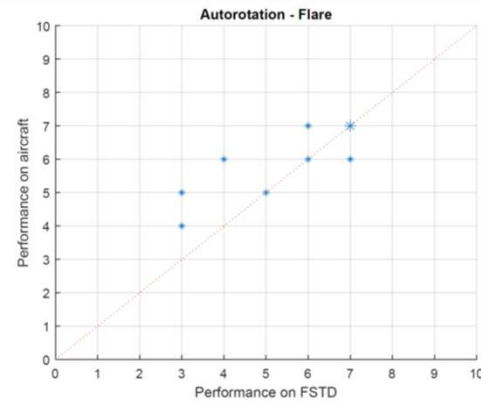
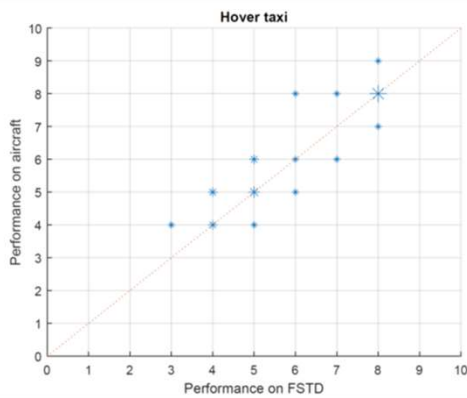
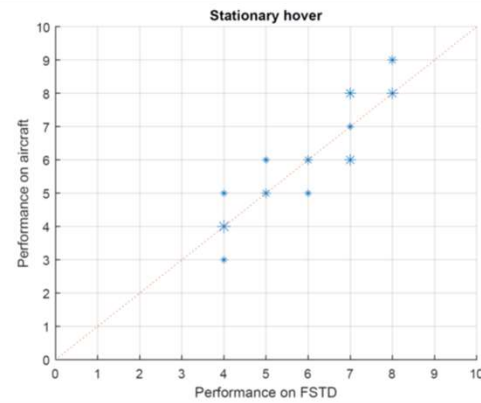
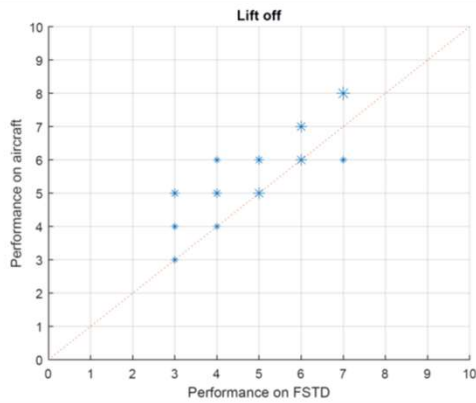


# Training Effect – Field study

- 33 students **without** helicopter experience
- Total 356h FSTD training, overall cost ~300k CHF
- PPL(H) exercises trained on FSTD
- Targets
  - Assessment of FSTD capabilities, limitations and transfer of skills
  - Basis for PPL(H) Syllabus proposal using FSTD with increased credits



# Training Effect – Transfer of skills











# Contact Us



## Zürich Engineering Office

VRMotion AG  
Sonnentalstrasse 8  
8600 Dübendorf  
Switzerland



Phone: +41 44 211 15 15  
E-mail: [info@vrmotion.ch](mailto:info@vrmotion.ch)  
[www.vrm-switzerland.ch](http://www.vrm-switzerland.ch)

Fly Virtual. Feel Real.