



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



Co-Creation for Safety



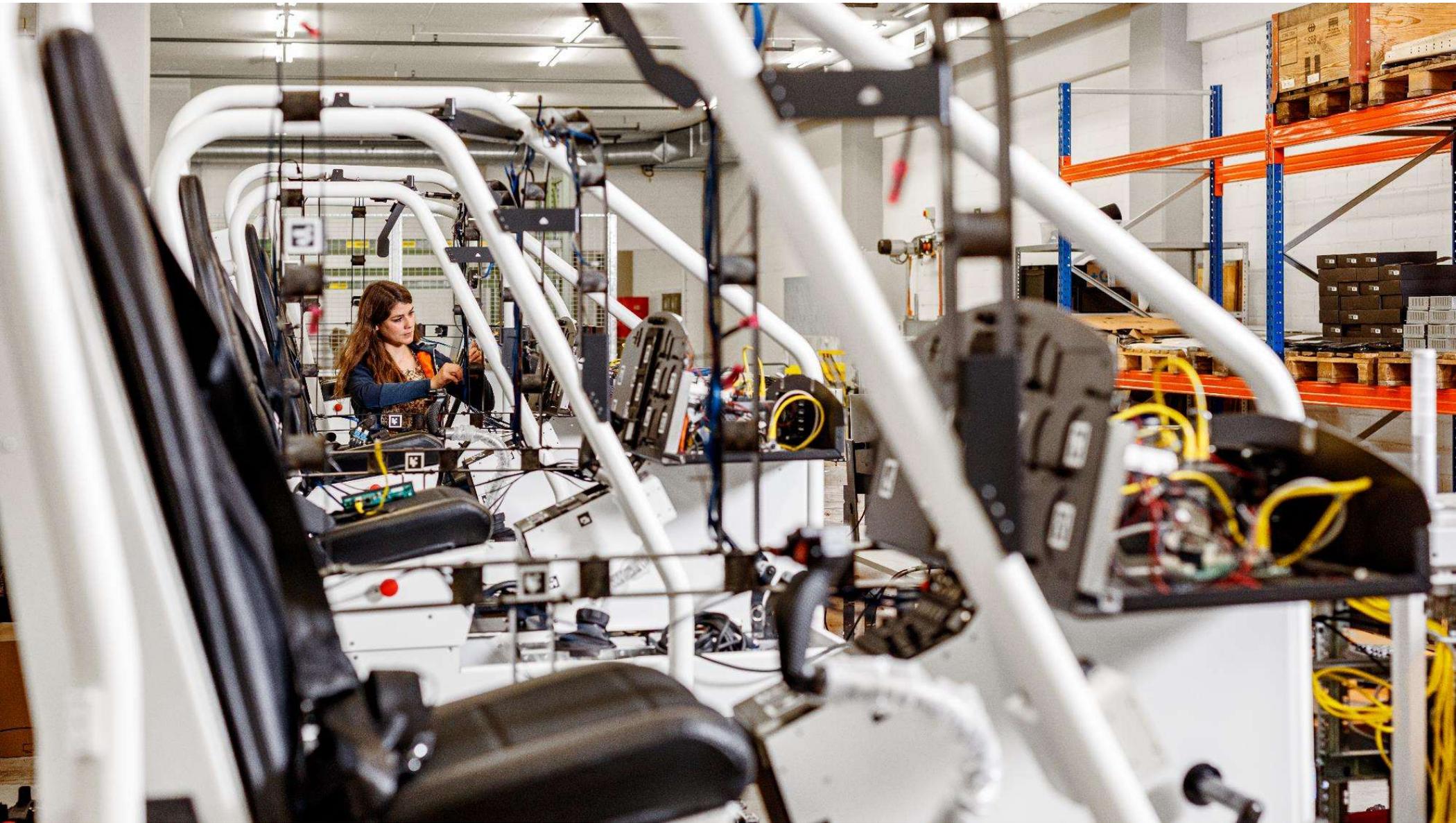
Swiss Made



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

VR



Source: www.varjo.com

MR

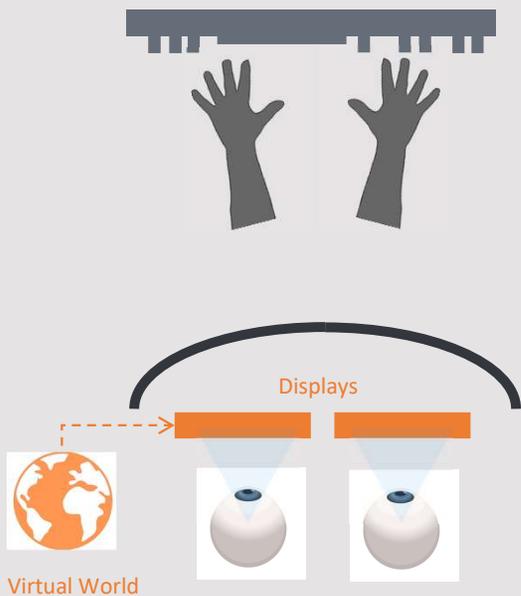


Source: www.theverge.com

AR

Visual system technologies

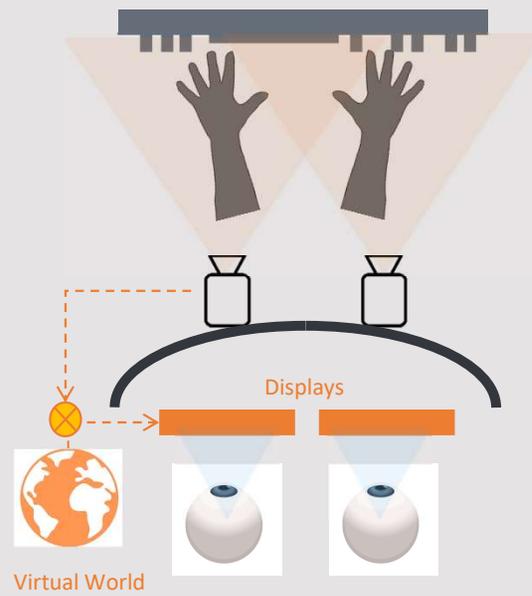
Real World COCKPIT



Virtual World

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

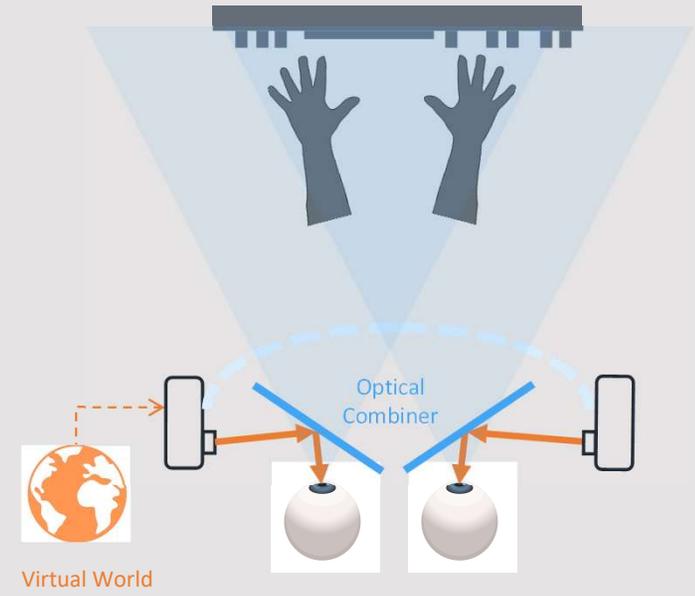
Real World COCKPIT



Virtual World

- + 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.

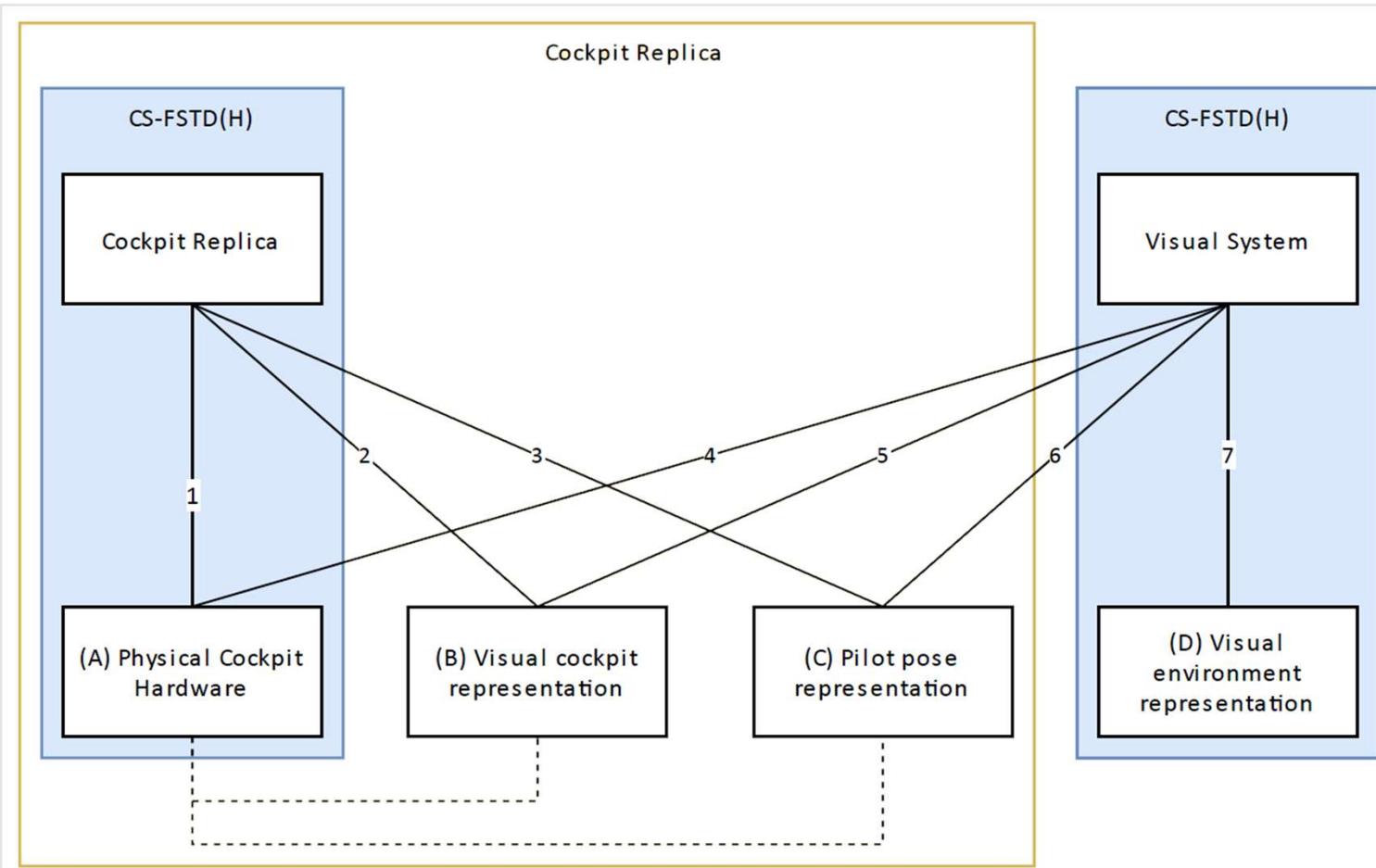
Real World COCKPIT



Virtual World

- + 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

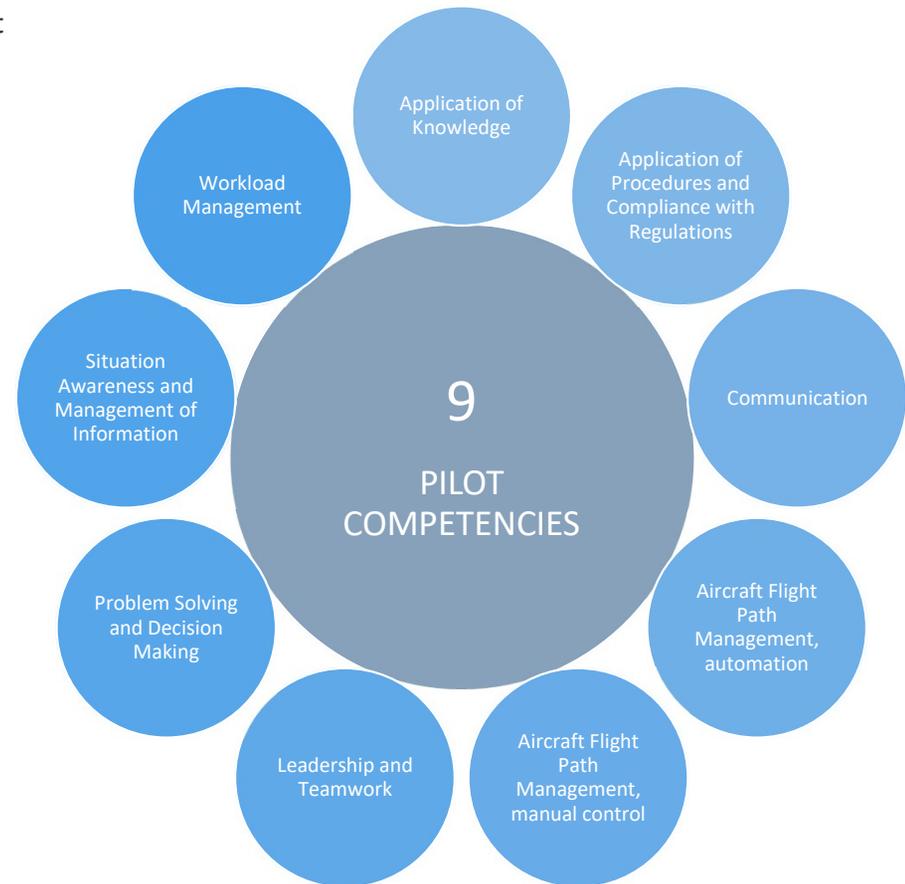
Training with realistic FSTDs offer an increased training effect for pilots with 24/7 weather independent availability, whereas training in the aircraft can often not target all relevant competencies. Especially the use of scenario-based training significantly increases the training effect of:

- 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:

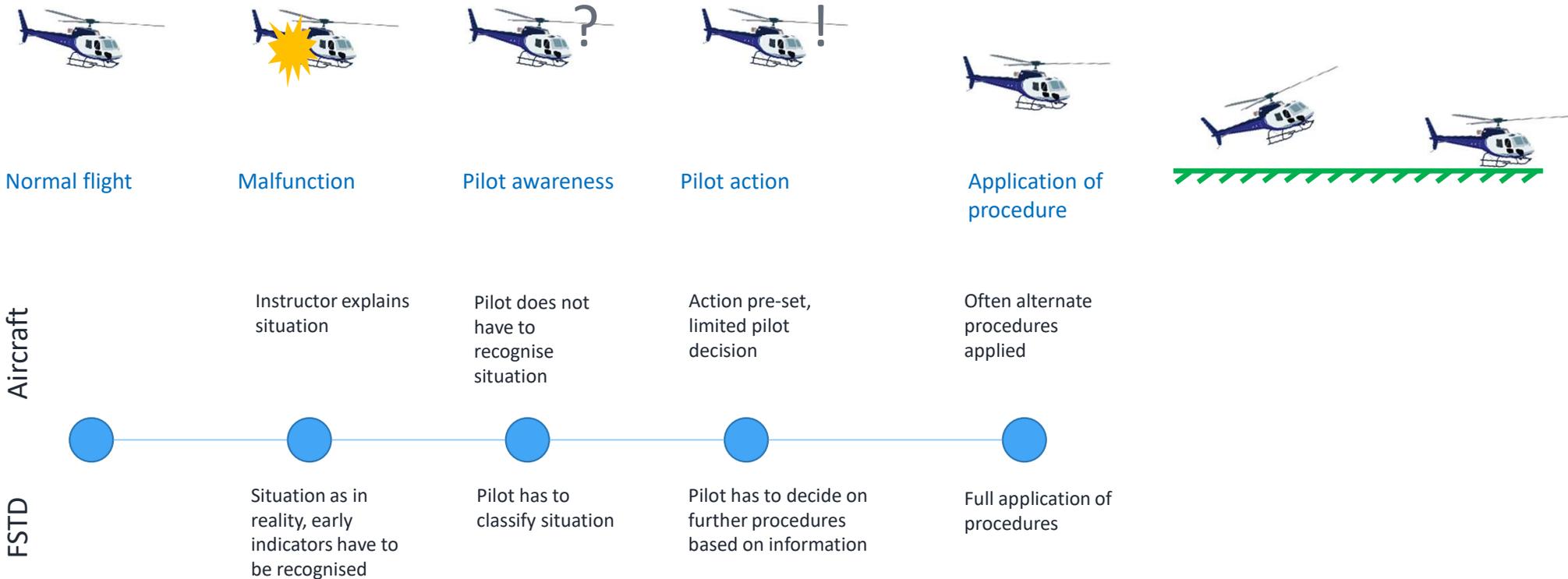
Risks/Hazards	Mitigation with FSTD
Low skill level of the student. Unexpected inputs and reactions.	Basic skills fully trained on the FSTD
Often limited experience of the FI. Hazard in case of critical situations.	Student starts training with higher skill level and better understanding of the aircraft.
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 - Situation Awareness - Decision Making - Training correct routine (Procedures, Aircraft Management)

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



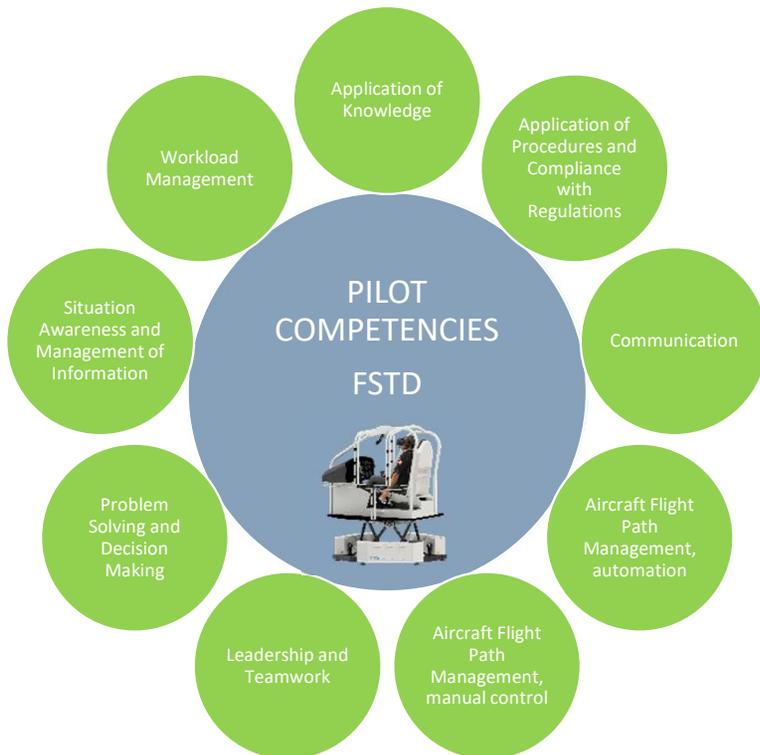
Example

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



APPROVED TRAINING DEVICE

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sit Mountainflyers

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EASA
European Aviation Safety Agency

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:

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Secretary:

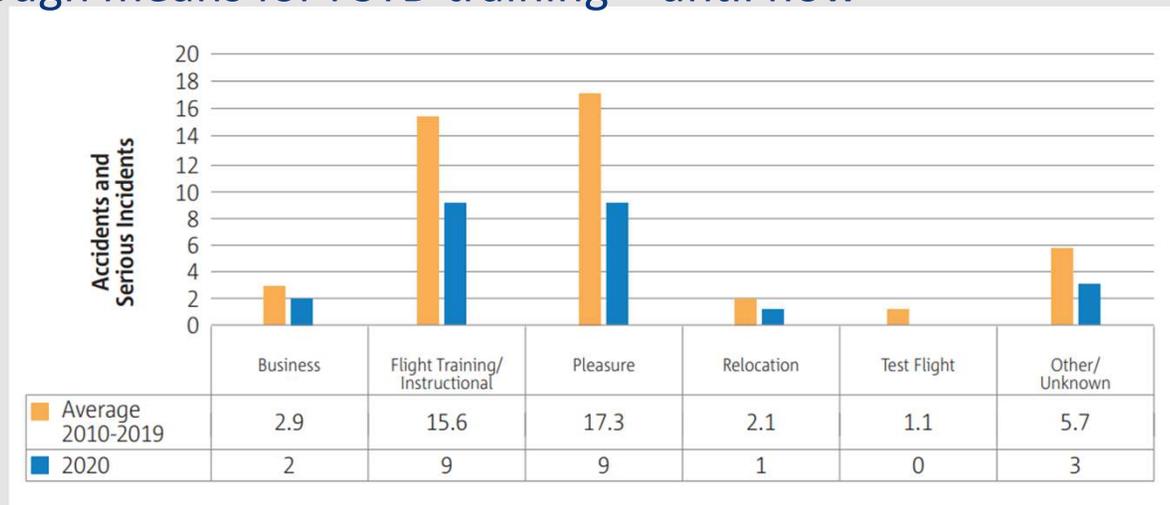
Capt. BATZANOPOULOS, Prokopis EASA

Paradigm Shift?

Addressing the Safety Issue

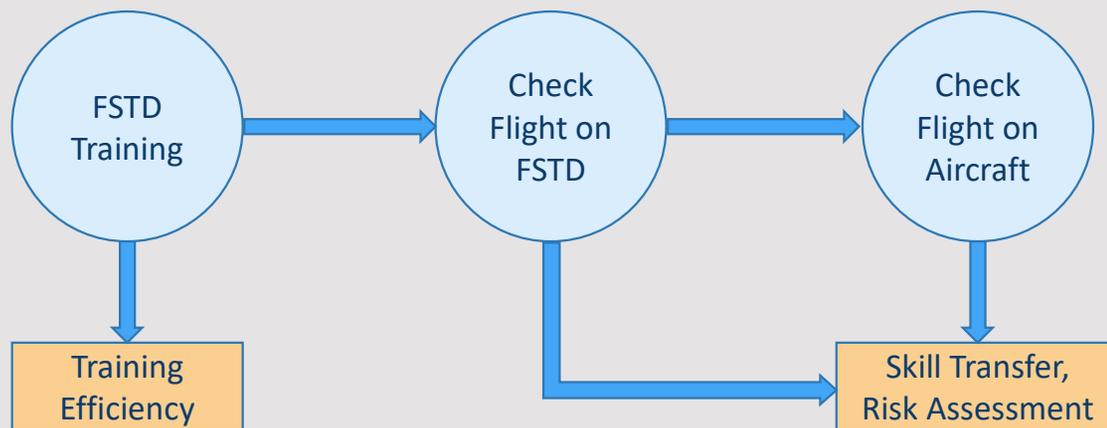
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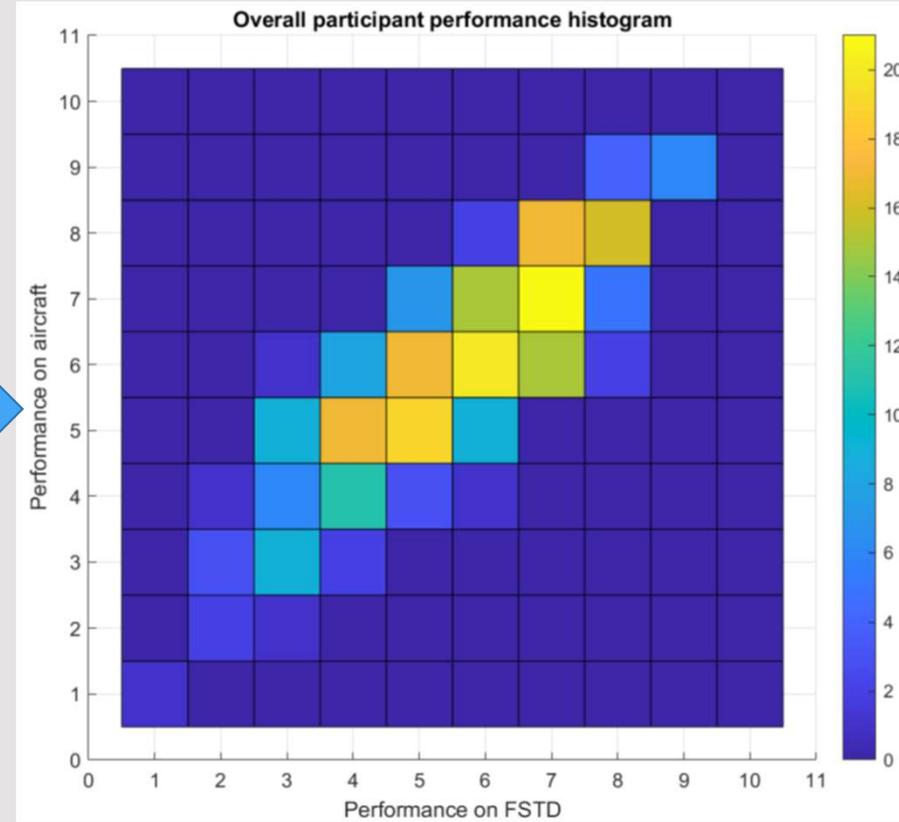
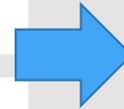
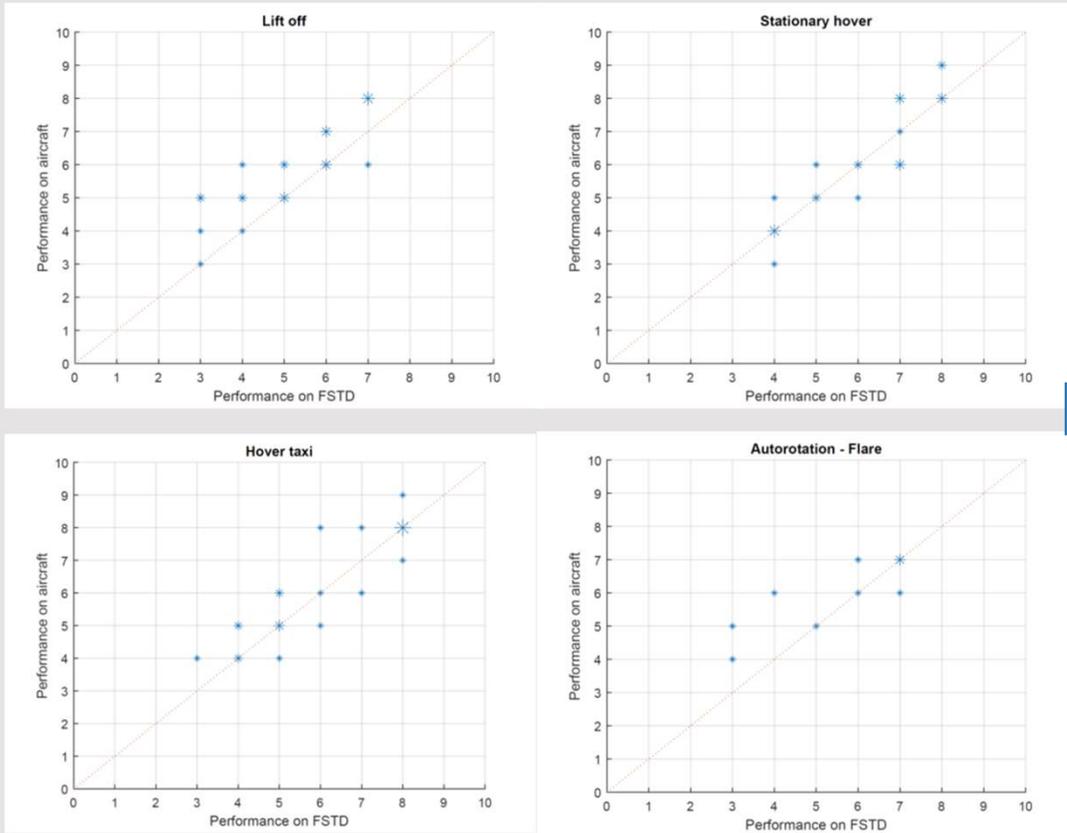


Training Effect – Field study

- 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







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Fly Virtual. Feel Real.