

# TRAIN – Training media allocation – simulator vs. actual flying



## Contractor

NLR - Royal Netherlands Aerospace Centre

## Consortium Members

Harms Aviation GmbH

Rotorsky GmbH

FFL Fachschule für Luftfahrzeugführer GmbH

CAE Aviation training B.V

## Contract period

02/09/2024 – 01/01/2028

## Budget

950.000€

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## Main objectives:

The allocation of training media has been defined for several decades, but the continuous evolution of technology, changes in economic context, and the need for environmental protection in aviation necessitates a reassessment of the distribution and use of various training tools, such as simulators, actual aircraft, and other training aids, to achieve the learning objectives of pilot training.

The use of simulators in pilot training has become increasingly popular due to their safety, cost-effectiveness, and flexibility. Simulators provide a controlled and safe environment for trainees to practice various flight scenarios, including emergency situations, which would be difficult or impossible to replicate in actual flying. Also, simulators can be programmed to simulate various weather conditions and aircraft malfunctions, allowing pilots to gain experience in a variety of situations without exposing them to unnecessary risk.

However, actual flying remains an essential component of pilot training as it allows trainees to develop their flying skills, including take-off, landing, and navigating in different weather conditions.

The allocation of training media to the various objectives and phases of pilot training is continuously evolving to meet the changing needs of the aviation industry. The use of simulators and actual flying in training is not an either-or proposition but rather a balance between the two that is dependent on the specific objectives of the training and the available resources.

The research project shall encompass both aeroplane and helicopters training, focussing on the training path for which currently there is little availability or use of Flight Simulation Training Devices (FSTD). Additionally, the project will explore the potential impact of new flight simulation technologies (e.g., VR/XR/MR) on pilot training and instructor competency.

## Impacts & benefits

The project is expected to provide evidence to support a potential update of the initial pilot training requirements towards a safer, more efficient, and more sustainable regulatory framework, considering the ICAO and EASA regulatory framework.

The research project will also feed future streams of RMT.019635 (Update of flight simulation training devices requirements) on the update of the regulatory provisions for FSTD qualification and their use.

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## Further reading

The project is expected to deliver four main outputs:

- A proposal of which training objectives in initial pilot training, which today are addressed in the aircraft, can be met via the use of FSTD with an equivalent or better training output.
- An assessment of the relevance of training objectives (e.g. confidence, resilience, etc.) beyond, or complementing, the nine pilot competencies identifying which specific training media to be used in each competency.
- A proposal of the specifications and minimum on-aircraft and flight simulation training devices needed to achieve those training objectives.
- an assessment on whether the current regulatory framework on instructor competencies is sufficient to train those objectives using different training media .

Led by NLR, the research project will be carried out in nine tasks:

- In a first phase, the project team will **analyse and identify the initial training elements for aeroplane and helicopter** that can also be learned on FSTD.
- Based on the results from task 1, the research will then assess the **difference in training effectiveness for the identified training elements between the aeroplane and FSTD training for the PPL(A)**.
- Similarly, in task 3 , the difference in **training effectiveness for the identified training elements between the aeroplane and FSTD training for the CPL(A)** will be determined.
- Task 4 will, based on the results from task 1, determine the **difference in training effectiveness for the identified training elements between the helicopter and FSTD training for the PPL(H)**.

- And task 5 will focus on determining the **difference in training effectiveness for the identified training elements between the helicopter and FSTD training for the CPL(H)**
- The objective of task 6 will be to identify, in terms of “attitude” in the sense of Knowledge Skills and Attitude (KSA), what **training objectives could complement the nine ICAO core competencies** and determine if those objectives can be met in FSTD.
- Following the previous tasks, the project team will identify the **technical specification for the FSTD’s** needed to meet the training objectives. More specifically task 7 shall address whether the current framework for FSTD is sufficient to address those training elements and if new flight simulation technologies could meet those standards.
- Task 8 will provide an **assessment** on whether the **current regulatory framework** addresses all competencies to teach the new training objectives and propose new elements or methodologies that should be addressed.
- Lastly, at the end of the research, the team will develop a **comprehensive final report** summarising the research carried out and the main results observed.

Relevant stakeholders will be consulted throughout the project, and project reports will be made available through the EASA website.

*This project is part of the portfolio of EASA managed research projects funded under the European Research Programmes. Projects under this portfolio address research needs of civil aviation authorities and are geared to generate mid-term benefits after the successful completion of the project to enhance safety, security and sustainability.*

