

Aviation Medicine - research activities

Unmanned aircraft systems

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Your safety is our mission

An Agency of the European Union

Presentation Overview

Pilot and ATCO fitness

Cardiovascular issues

Diabetes Mellitus

Mental health research activities

Unmanned aircraft systems

Tempora mutantur, et nos mutamur in illis
The times change, and we change with them



Research- ongoing

- EASA is a key part of the European Union's strategy to establish and maintain a uniform level of safety in civil aviation at European level.
- A priority list of research topics in the fields of safety, security, environment and **health** has been proposed, which will serve to update the EASA research program.
- Participation in this updating procedure is by means of a **tendering procedure**.
- Financed under European research funds delegated to EASA as the researched actions to be listed in the European Plan for Aviation Safety

Pilot and ATCO fitness



ATCO and Pilot Fitness research (I)

- ➔ New developments in medicine may have an impact on the assessment of the fitness of pilots and ATCOs. The study looks at 2 areas that have been requested by our stakeholders, namely diabetes mellitus and cardiovascular conditions
- ➔ Call for tenders published on 20th December 2021
- ➔ Deadline to submit the offers: 30th March 2022
- ➔ Contracts signed in Q4 2022
- ➔ Duration: 36 months
- ➔ Expected final deliverables Q4 2025



ATCO and Pilot Fitness research (II)

- Medical science is evolving continuously. Medical requirements for pilots and ATCOs are expected to evolve with the science and become evidence based.
- For certain conditions the side effects of the treatment may be more dangerous for safety relevant positions than the condition itself.
- The study looks at 2 areas that have been requested by our stakeholders namely:
 - Diabetes mellitus – with focus on insulin treated diabetes
 - Cardiovascular medical conditions – the diagnostic and treatment guidelines of the European Society of Cardiology have been recently updated which will have a significant impact on treatments and diagnostic measures available and acceptable for aviation.

ATCO and Pilot Fitness research(III)

- The scope of the lots includes:
 - Assessment of the existing requirements relevant for the topics
 - Identifying new medical diagnostic tools and treatments suitable for use in the aviation environment
 - Provide recommendation on implementation of these diagnostic tools and treatment measures
 - Provide training materials for AMEs and aviation personnel



PILOT
and ATCO
fitness

ATCO and Pilot Fitness research(IV)

→ The contractor is required to produce the following:

- a synopsis of the state-of-the-art in each of the domains that is perceived by the tenderer as relevant to the conduct of the current study, i.e., recent (2015 to date) scientific literature, analytical methods, as well as to assess and compare an outline of the research approach that is proposed to tackle each individual task with a succinct rationale justifying its adoption;
- a list of perceived risks and assumptions that may undermine the fulfilment of all or some of the objectives set forward by this tender;
- deliverables that describe in detail the results of each task;
- any other additional element considered relevant that may bear on the duly completion of the work, e.g. relevant information, required input from third parties.

→ Potential challenges:

- Continuous evolution of medical field
- Relatively large scope for each of the lots
- Extensive needs including recommendations for rulemaking and training material

Mental health research- MESAFAE

- **Mind is the most difficult system to assess** for a pilot or an ATCO when assessing their abilities to discharge their tasks safely.
- In most mental health pathologies, including addictions, constant symptoms are **denial and dissimulation** making them **very difficult to identify**, especially when subjects have above average IQ.
- Currently there are **no specific validated mental health assessment methods for aviation** use, designed to address the identified issues.
- Research is needed to further detail the specific needs and to develop and validate assessment methods or to assess the applicability of existing methods for the use in aviation.



Mental health research- MESAFE

- Mental health assessment may have more than one goal:
 - some are intended to evaluate the overall fitness to perform,
 - others are intended to evaluate the synergy between the pilot and ATCO profile in a specific type of operations,
 - others are intended to identify certain sequelae after special circumstances (involvement in an accident/serious incident, loss of a family member, etc.) which may affect their performance.



The poster features a dark blue background with a light blue geometric pattern on the right side. At the top left is the EASA logo. Below it is the MESAFE logo, which consists of a stylized human figure in blue and green, followed by the text 'MESAFE' in large blue letters and 'MEntal health for aviation SAFETy' in smaller white letters. Below the logos, the text reads: 'MEntal health for aviation SAFETy', '1st technical meeting 2022/06/22', 'EASA – Köln', and 'Paola Tomasello, Francois Brambati, Ries Simons, Anthony Wagstaff, Diederik De Rooy'. On the right side, there is a small white airplane icon and a stylized eye icon.

EASA
European Union Aviation Safety Agency

MESAFE
MEntal health for aviation SAFETy

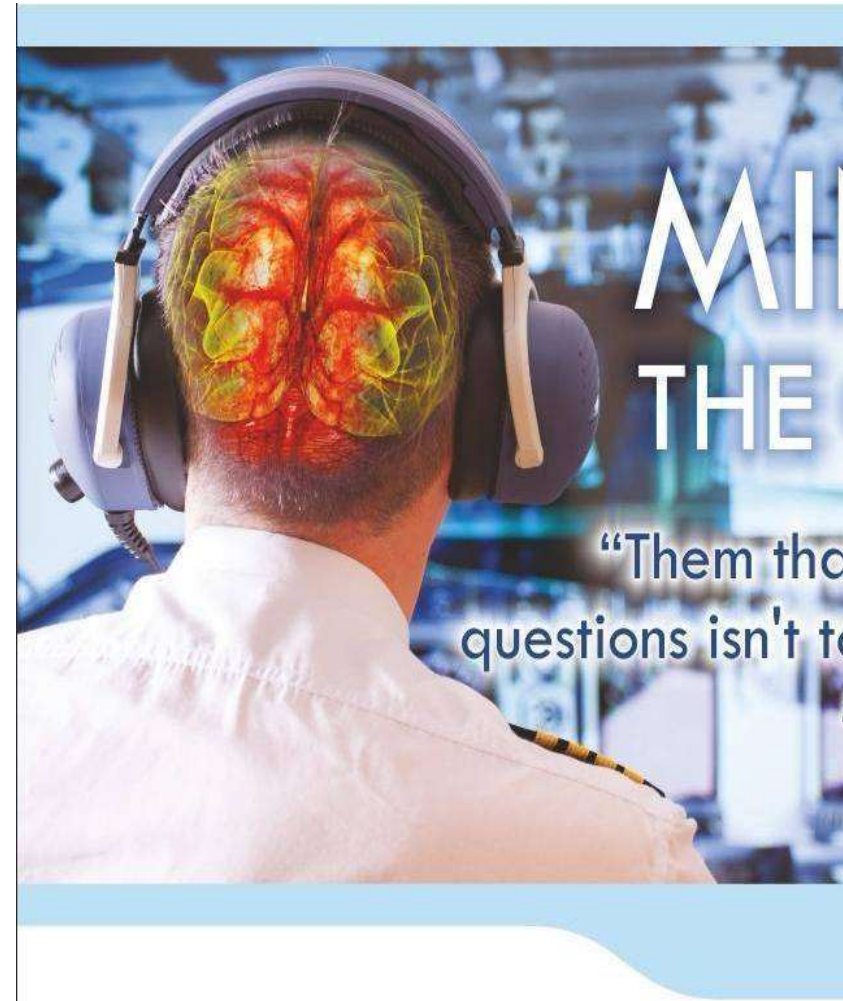
MEntal health for aviation **SAFETy**

1st technical meeting 2022/06/22
EASA – Köln

Paola Tomasello, Francois Brambati
Ries Simons, Anthony Wagstaff, Diederik De Rooy

Mental health- Background information

- Work started from research needs identified by EASA following Germanwings accident
- Following the Germanwings accident and the accident investigation report, there is a lot of focus on mental health issues
 - Applicant with above average IQ
 - First symptoms always include denial
 - Lack of standardised customised diagnostic tools.
- COVID-19 pandemic highlighted again the importance of mental health
- The need to identify suitable diagnostic tools for mental health



Mental health- Project Overview & Status

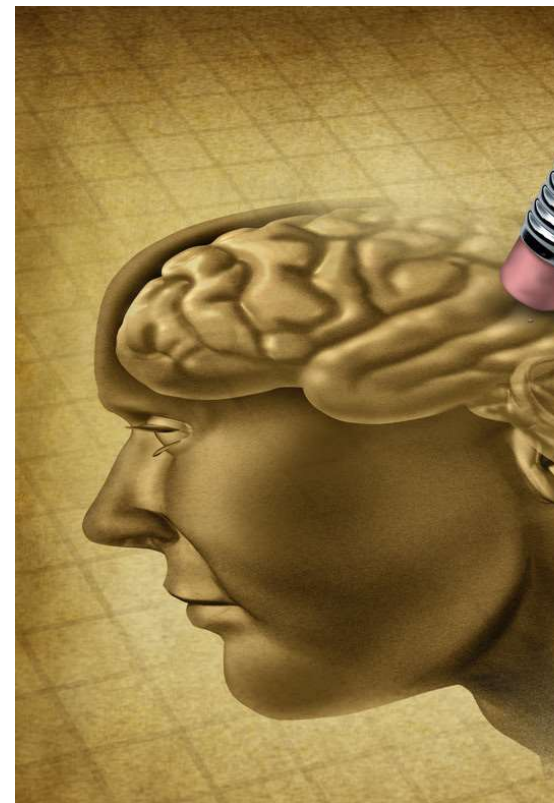
- The MESAFE research project assesses new medical developments for the early diagnosis as well as treatment of mental health conditions which could pose a safety risk for aviation and would consequently lead to pilot and ATCO unfitness or the limitation of their medical certificate for safety purposes.
- Duration: 24 months
- Research cost: 500K€
- Timeline:
 - Kick-off Meeting – May 2022
 - Final report – May 2024



MESAFE
Mental health for aviation SAFETY

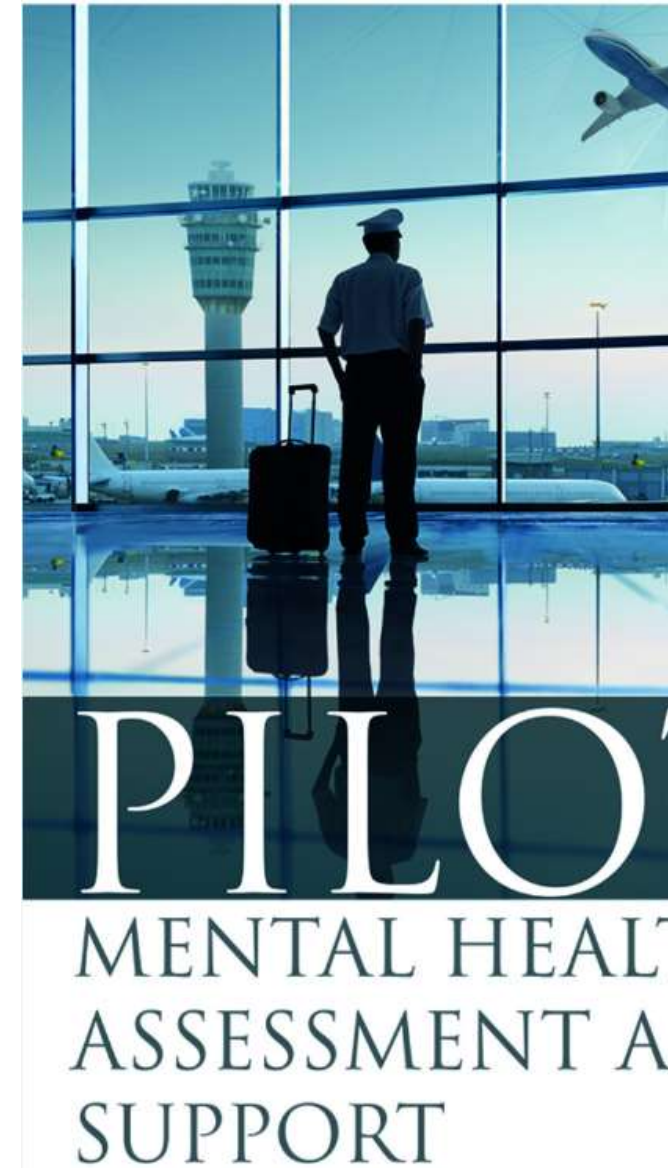
Mental health- Scope

- The scope of the project includes:
 - Assessment of **existing tools** used around Europe
 - Identifying **new medical diagnostic tools** suitable for use in the aviation environment
 - Provide **recommendation** on its implementation
 - Provide **training materials** for AMEs and members of the peer support groups
- The tool should consider both pilots and ATCOs looking at the need to further customize the use for each category of applicants



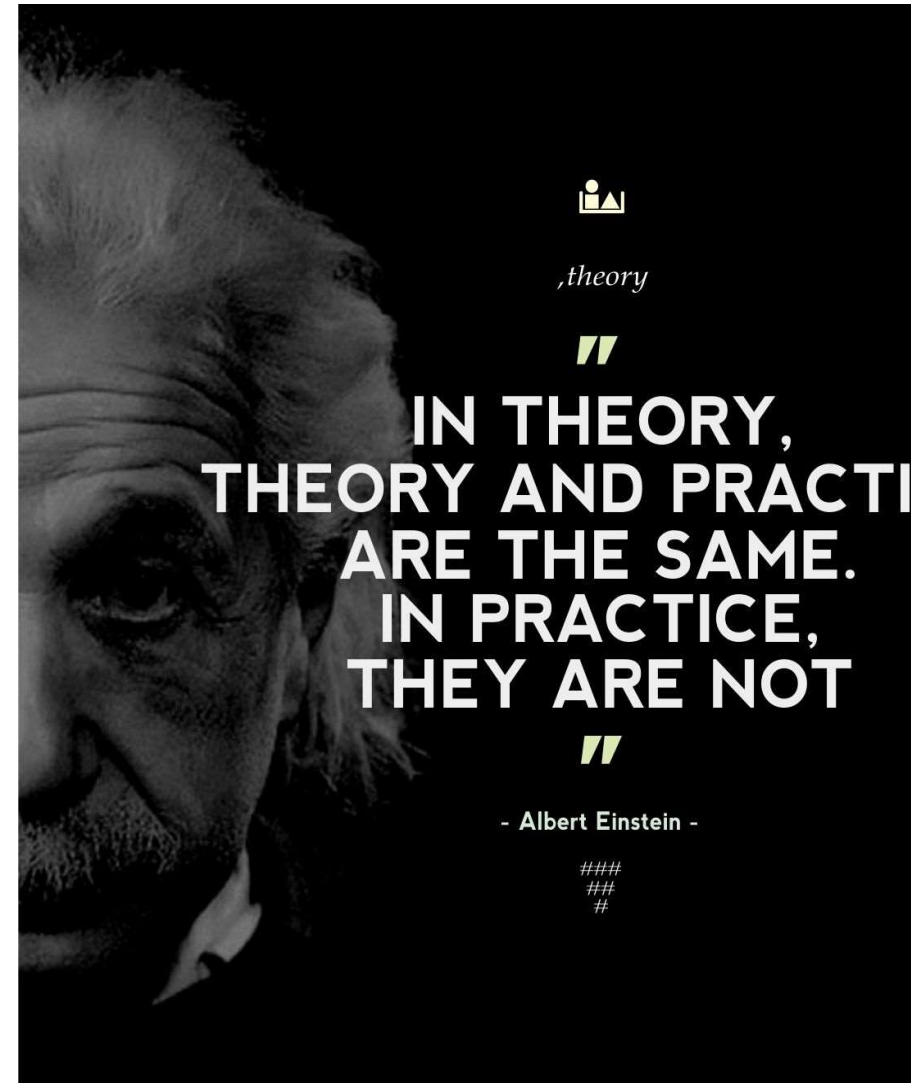
Mental health- Expected Outcome

- evidence-based recommendations for updating the **mental health requirements** in line with the medical developments;
- evidence based recommendation for **mental health assessment methods** suitable for aero-medical fitness assessment;
- an impact assessment of the recommended **changes**;
- guidance material on the **updates to the fitness assessment** of applicants for aero-medical examiners and medical assessors; and
- material to support the **management of the proposed changes** – e.g., presentations of the results carried out under this contract and training material for a professional audience.



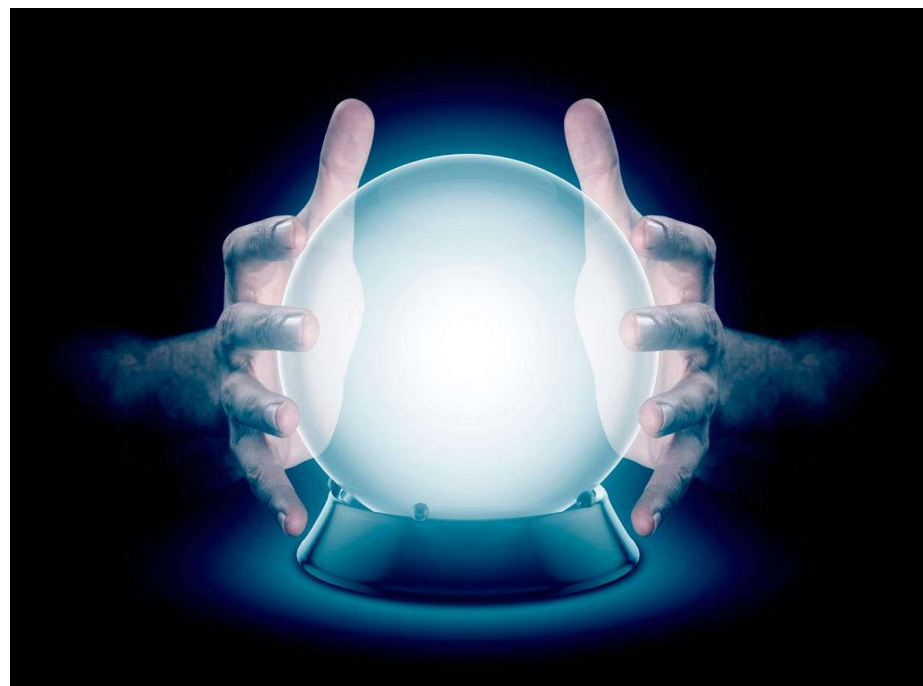
Mental health- Challenges

- ➔ Scope is very large and difficult due to the existing unknowns in the mental health domain
- ➔ EASA needs are extensive – in addition to the study the contractor should also provide
 - ➔ recommendations for rulemaking
 - ➔ training materials for AMEs
- ➔ Challenging project timeline – 24 months



Research – ideas for the future

- Colour vision needs for pilots and ATCOs in new working environments
- Virtual Reality training for pilots – assessing the impact on fitness
- Medication
- Risk assessment matrix
- Multiple Sclerosis



Unmanned aircraft systems

Why we need updated rules?

- The vast majority of UAS that are developed and operated today were not within the scope of the former Basic Regulation and, consequently, were regulated by national rules.
- The level of safety provided for is not harmonised among Member States (MSs)
- No mutual recognition of certificates or authorisations issued by MSs for those
- Rising number of UAS operations in the European airspace.
- Some European companies are carrying out projects on urban air mobility (UAM) including the transport of passengers (air taxis).

Rulemaking Task 0230- objectives

To ensure a **high and uniform level of safety** for UAS, enabling operators to safely operate UAS in the European sky (SES), especially for higher-risk operations

To create the **conditions for manned aircraft and UA** to safely operate in the U-space airspaces

To **promote innovation and development** in the fields of UAS and urban air mobility while creating an efficient, proportionate, and well-designed regulatory framework, free of burdensome rules that hinder the market's development

To **harmonise the regulatory framework across Member States** by enhancing clarity, filling the gaps, and removing the inconsistencies that a fragmented system may have (e.g. cross-border operation)

To foster an operation-centric, proportionate, as well as risk- and performance-based **regulatory framework** considering important aspects, such as privacy, personal data protection, security and safety

Risk- and performance-based categories of UAS operation

Open

UAS operation category that, considering the risks involved, **does not require an authorisation** by the Competent Authority (CA) of the EU Member State before the operation takes place.

Specific

UAS operation category that, considering the risks involved, **requires an authorisation** by the CA before the operation takes place. To issue the authorisation, the CA takes into account the mitigation measures identified in an operational risk assessment made by the UAS operator, except for certain scenarios where a declaration by the UAS operator is sufficient. Depending on the risk involved in the operation, the EASA-issued certification of the UAS may be required; the manufacturer may also require certification of the UAS even if it is not required based on the risk of the operation.

Certified

UAS operation category that, considering the risks involved, **requires the EASA-issued certification** of the UAS, a licensed remote pilot, and an operator approved by the competent authority, to ensure an appropriate level of safety.

U-space and airspace integration

- U-space - Unmanned Traffic Management (UTM) on the European
- U-space - highly automated air traffic control (ATC) area.
- Commission Implementing Regulation (EU) 2021/664 proposes a h regulatory framework for the U-space:
 - to create the conditions for manned and unmanned aircraft to safely op controlled and uncontrolled airspace where U-space services are provid
 - to complement the existing ATM environment of 'traditional' manned a to keep all aircraft safe in the airspace.

Remote pilot – Medical requirements

- **Regulation (EU) No 1178/2011** ('Aircrew'). The first opinion will introduce provisions and criteria to allow holders of commercial pilot licences for aeroplanes and helicopters to be issued with a type rating for VTOL aircraft. The second opinion will propose a new Part (Part-RPL15) to cover the remote-pilot license, an amendment to Annex I (Part-FCL) to include a new license for manned VTOL aircraft, and amendments to Annex VI (Part-MED), Annex VII (Part-ORA), and [Annex IV \(Part-MED\)](#).
- **Regulation (EU) 2015/340** ('Air traffic Controllers') [Annex IV \(Part-ATCO.MED\)](#).

Part – MED
Class 1



Part – ATCO.MED
Class 3

Remote pilot – Medical requirements

- Point of reference - Regulation (EU) 2015/340 ('Air traffic Controllers') [Annex IV \(I ATCO.MED\)](#).
- Class 3 medical requirements for ATCO's to be revised and adapted to the risk and performance-based categories of the UAS operations.

Thank you for your attention!



Your safety is our mission.

easa.europa.eu/connect



Your health is also our mission.

An Agency of the European Union