

# ***The Mental Incapacitation Risk Assessment Process (**MIRAP**)***

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# MESAFE: an EASA initiative

- The MESAFE research project was **launched by EASA in May 2022**
- Lasting 2 years, MESAFE addressed **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.
- Currently, **there are no specific, validated mental health assessment methods for aviation use**, incorporating the specific operational needs, to address the issues identified.

MESAFE is prioritising the topic of **mental health in aviation medicine** and the topic of **wellbeing** in front-line aviation operations.



# Why MESAFE?

- Mental disorders may lead to deliberate harmful actions, which may be conducted to 'maximise damage'. The second pilot can be physically prevented from taking over.
- Mental disorders are highly prevalent and largely undertreated: in 2019, nearly one billion people worldwide had a mental health disorder; In the first year of the COVID pandemic, depression and anxiety increased by more than 25% (WHO, 2022).



The Germanwings accident: a dramatic wake-up call for the European aviation industry



#MESAFE #Aviation #MentalHealth #HorizonEU

# WE ARE MESAFE

## MEntal health for aviation SAFety

Our mission is to help Aeromedical Examiners and peer support groups detect signs and symptoms of psychological discomfort before they generate mental health issues and **associated safety risks**, and provide early support.

**Committing to mental health is an investment towards a better safety for all.**



This project is funded from the European Union's Horizon Europe research and innovation programme under contract number EASA.2022.C07



[www.easa.europa.eu/en/research-projects/mesafe-mental-health](http://www.easa.europa.eu/en/research-projects/mesafe-mental-health)

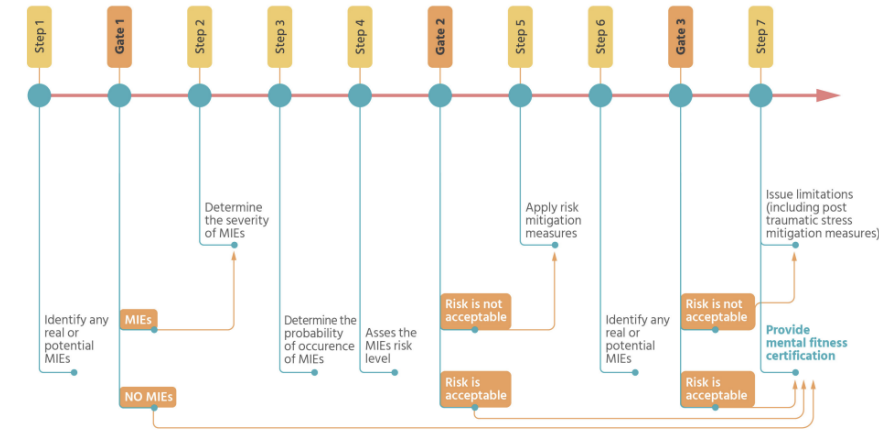


# Result #1

A **Mental Incapacitation Risk Assessment Process (MIRAP)**, for use by Aeromedical Examiners (AMEs) and Medical Assessors (MAs), and related:

- **Training** curricula and materials, targeted to AMEs
- **Guidance material**, targeted to policy makers
- **Information material** targeted to Peer Support Groups

## THE MIRAP STEPS



Legend	Notes
<ul style="list-style-type: none"> <li>Risk unacceptable</li> <li>Risk unacceptable, but may in some cases be acceptable through review and specific mitigation. An Aeromedical Operational Board (AMOB) should in such cases be employed*</li> <li>Risk may be acceptable - may require operational and/or personal risk reduction**</li> <li>Risk acceptable</li> </ul>	<p>*given random onset of event unconnected to flight. If event is connected to flying activity (e.g. Murder suicide or flight anxiety) use career frequency rather than yearly.</p> <p>**Operational risk reduction could be co-pilot, backup crew, time window to land helicopter etc. Personal risk factors could be close follow-up by psychologist, peer-support etc. Formalised risk reduction is documented and required in the certificate.</p>

## MESAFE Matrix

			Catastrophic - A	Hazardous - B	Major - C	Minor - D	Negligible - E
			May cause catastrophic event	May cause flight safety critical event	May compromise flight safety	Reduced effectiveness and capacity to adapt to operational requirements	Minimal impact on flight safety
Risk assessment of mental health	Frequency per year	Flight hours between each event (approx)*	Total Incapacitation	Severe Incapacitation	Major decrement on performance	Minor to moderate performance compromise, may continue duties	Minimal impact on performance
Frequent 5	>1/month	100	5A	5B	5C	5D	5E
Occasional 4	1-10 times	1,000	4A	4B	4C	4D	4E
Remote 3	10-99%	10,000	3A	3B	3C	3D	3E
Improbable 2	1-10%	100,000	2A	2B	2C	2D	2E
Extremely Improbable 1	<1%	>1,000,000	1A	1B	1C	1D	1E



# Result #2

**44 evidence-based recommendations**, targeted to policy makers, for updating the mental fitness certification requirements in Part-MED and Part-ATCO.MED in line with the medical developments

- **Impact assessment** of the proposed recommendations

AREAS OF THE RECOMMENDATIONS	RECOMMENDATION NUMBER	RECOMMENDATION
Recommended terminology	Recommendation #1	It is recommended to focus on mental incapacitation events rather than on mental disorders.
	Recommendation #2	It is recommended to implement a risk assessment approach, in which the safety risk caused by mental incapacitation events is assessed by means of an estimation of their severity and the probability if they would occur on-duty.
	Recommendation #3	It is recommended to indicate with Mental Health Specialist the Clinical Aviation Psychologists and Aviation Psychiatrists. These professionals have expertise with mental health and the assessment and treatment of mental disorders. They also have knowledge of the aviation domain.
	Recommendation #4	It is recommended to implement a multidisciplinary collaboration, by means of the so called Aeromedical Operational Board (AMOB).
Recommendations concerning the scope of the aeromedical mental health assessment	Recommendation #5	It is recommended to identify any real or potential mental incapacitation events which the applicant could incur to in the near future. The expected output is a list of possible MIEs or the reasonable confirmation that no MIEs are foreseen in the near future.
	Recommendation	When real or potential MIEs are identified, it is recommended to assess their safety risk by identifying their severity and probability of



# Result #3

A **user-centered toolkit** for mental health self-management, targeted to certificate holders, which we called **MINDSAFE**



## How would you rate your current well-being status?

Take some minutes to give scores to each element of the pillars: scores range from 1 (very low) to 5 (very high). As soon as you are done, identify the ones you would be able to nourish as well as the ones that are challenging to increase.

MY WELL-BEING					
BIOLOGICAL	MY SCORE	PSYCHOLOGICAL	MY SCORE	SOCIAL	MY SCORE
Sleep		Self-acceptance		Increased social support and support network	
Exercise		Environmental mastery		Decreased social pressure	
Diet		Personal growth		Education	
Relaxation techniques		Autonomy and self-confidence		Material and immaterial gratifications	
Self-care		Purpose in life		Social status	



# Result #4

## A **glossary** of mental health for aviation safety

### GLOSSARY OF MENTAL HEALTH FOR AVIATION SAFETY



#### WHAT IS IN THE GLOSSARY?

The glossary consists in 38 cards to raise awareness and promote open discussion about mental health and safety. They reflect main findings from the MESAFE project and support the adoption of a common terminology among the operational experts, the Aeromedical Examiners (AMEs) and Medical Assessors, the pilots and ATCOs, the Peer Support Groups and all those engaged in providing a safe and efficient air transport.





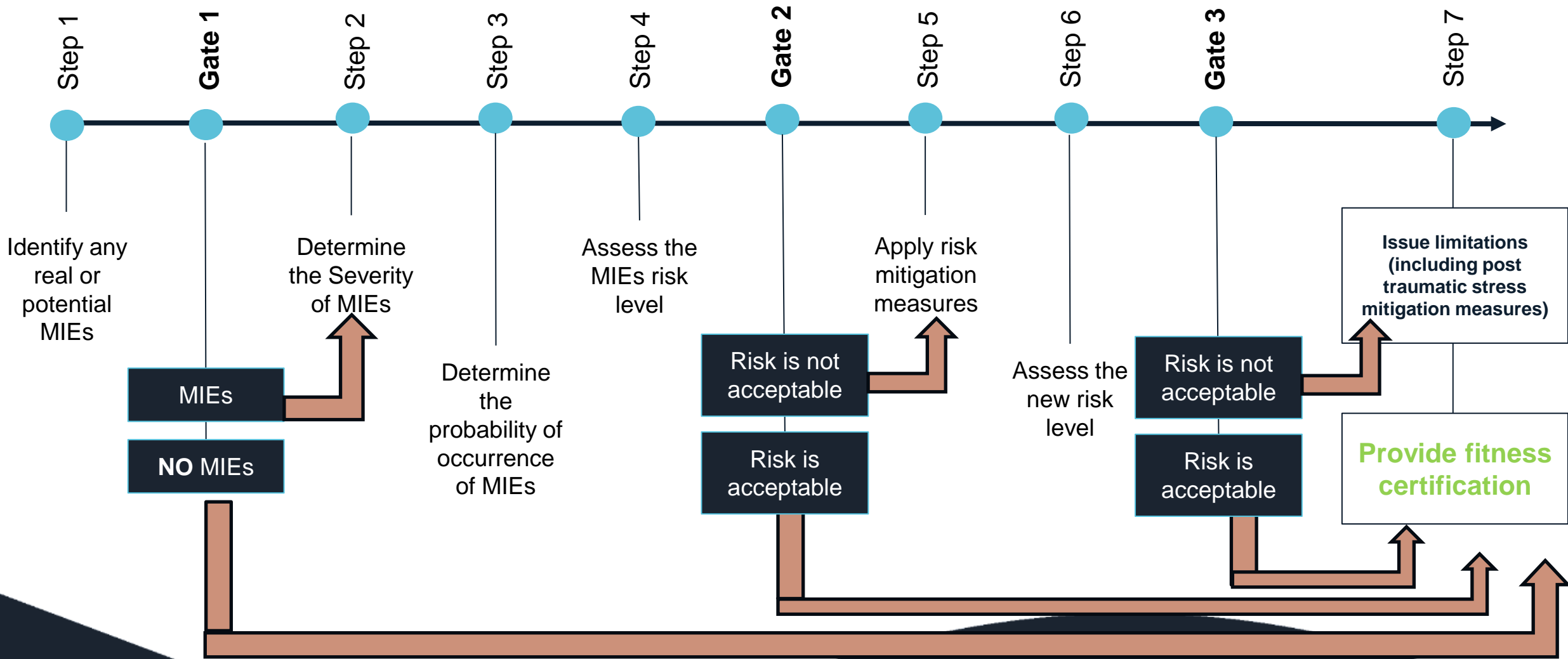
# What is the MIRAP?

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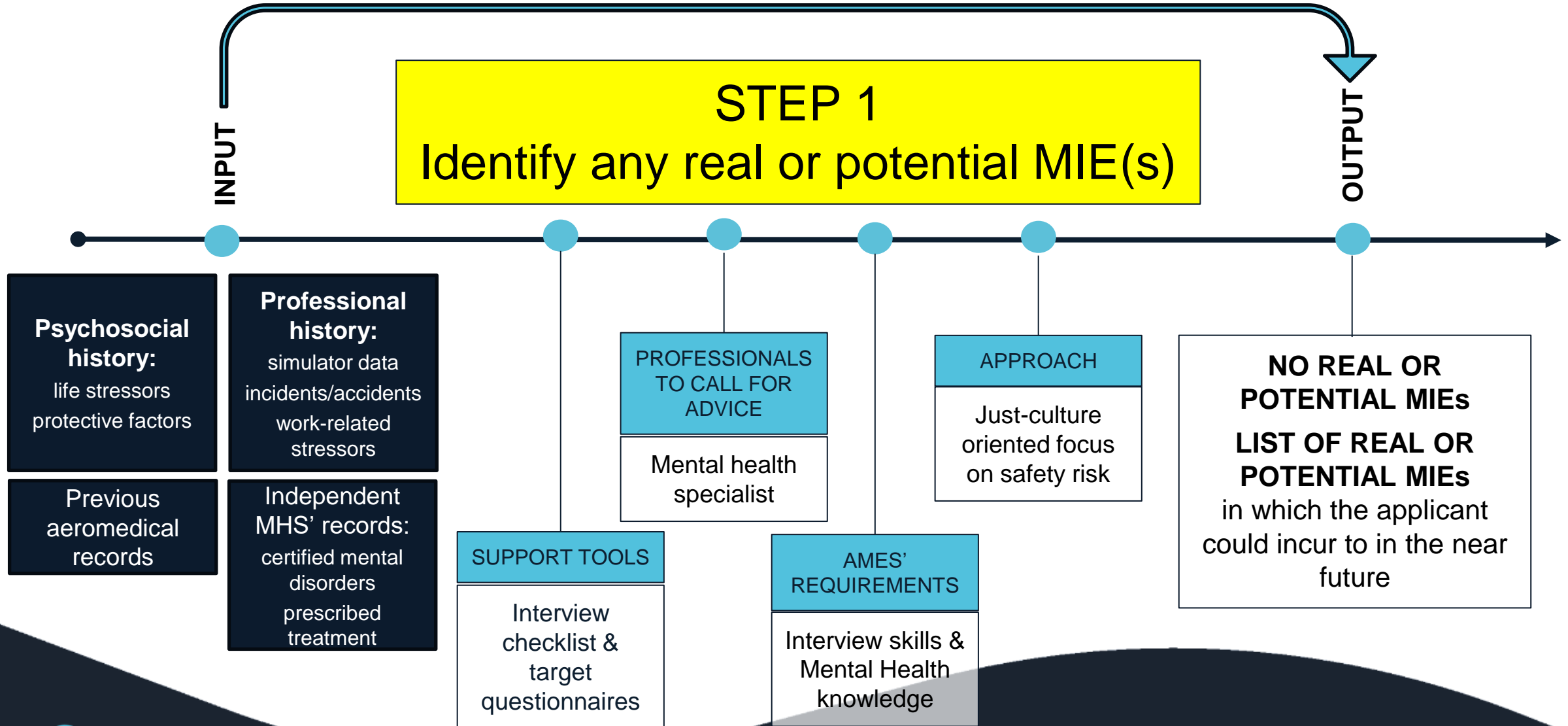
- The MIRAP is a process for the aeromedical assessment of the safety risk that mental incapacitation might pose to pilots and ATCOs. It is intended to support the decision making of AMEs and Assessors.
- To develop the MIRAP, MESAFE has put at the centre of the research not only Aeromedical Examiners and Assessors but also the applicants (pilots and ATCOs), to evaluate how the mental fitness certification process affects them, and how they perceive it, while respecting EU fundamental rights.



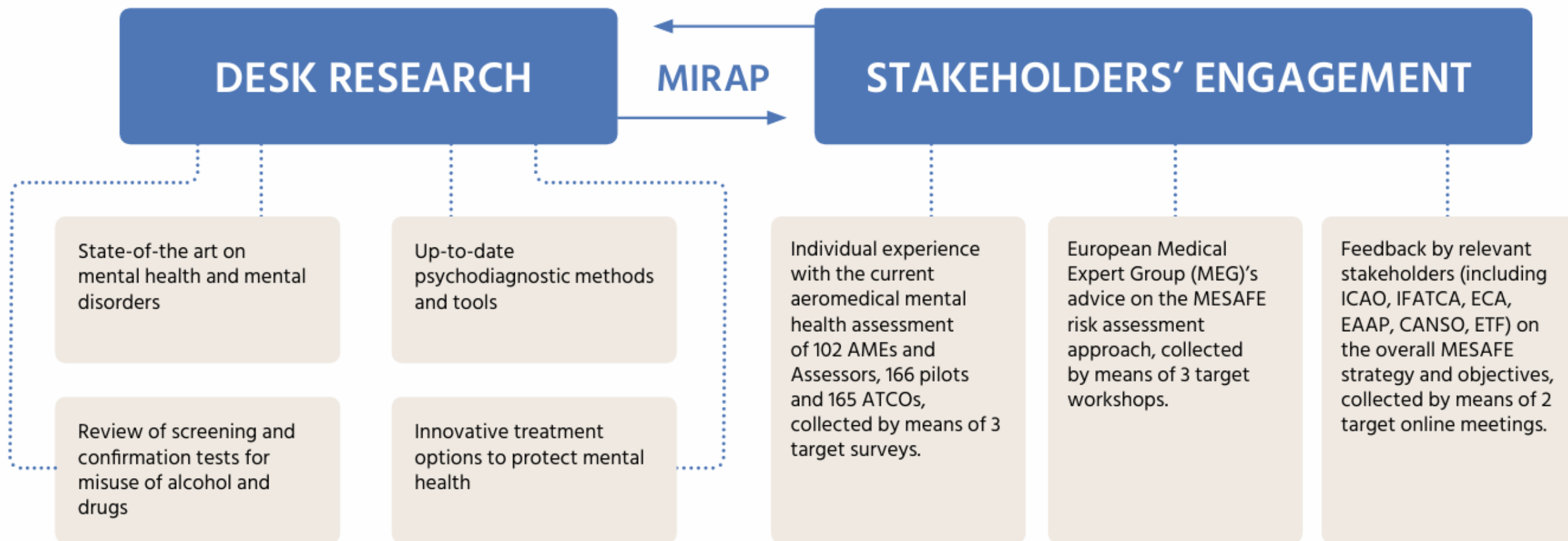
# The MIRAP steps



# STEP 1 – IDENTIFY ANY REAL OR POTENTIAL MIE



# MIRAP Development



# The vulnerabilities of the aeromedical context

## Applicants

- Loss of licence concerns
- Lack of supporting procedures for mental health assistance
- Shortage of mental health specialists (MHS)
- Poor work-related stress management.
- Lack of training modules about mental health management targeted to pilots and ATCOs.
- Sensitive data protection issues.

## RESULTS:

- Self-protective and defensive behaviours
- Weakness of the self-declaration principle

## AMEs and Assessors

- Time pressure combined with high responsibility
- Lack of adequate time for the assessment
- Lack of standardized psychodiagnostic procedures
- Shortage of MHS to support AMEs
- Lack of appropriate training targeted to AMEs about interview management and mental health

## RESULTS:

- Decision making challenges
- Reduced efficiency

## Socio-cultural aspects:

- Opinions about mental disorders
- Attitudes towards individuals who are suffering from mental disorders
- Stigma against the possibility of seeking help for psychological discomfort
- Assumptions about the relationship between gender differences and the presence of mental disorders
- Gender differences in expressing psychological discomfort and seeking help for it.
- Attitudes towards psychological discomfort and mental disorders within professional communities





# The benefits

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## First and foremost the MIRAP supports decisions on difficult cases

For the AME and Medical Assessor:

- Standardised
- Specific and accurate
- Documented
- Easy to update with changes

For the Pilot or ATCO:

- Common language
- Participation
- Transparency
- Easier to understand decision
- Easier to understand what changes would require new assessment



# Related Deep Blue activities

## JAA-TO Training course

### Mental Health Risk Management

#### Two-Days Training course

- Developed in collaboration with the **JAA Training Organisation**
- Currently in the final stages of course development
- First delivery anticipated: **November–December 2025**

#### Course objectives:

- Manage mental health risks to enhance aviation safety.
- Foster early detection and supportive practices.

Check the website Joint Aviation Authorities Training Organisation (<https://jaato.com/> )

## RESPONSE Project

GRANT ID: 101166998

The project focus on pilot cognitive state monitoring and an air-to-ground integration SPO concept of operations.

# RESPONSE



## CONTACTS

### EASA MESAFE Website



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