



Greener Air Traffic Operations The GreAT Project



EASN Conference, 20/10/2022

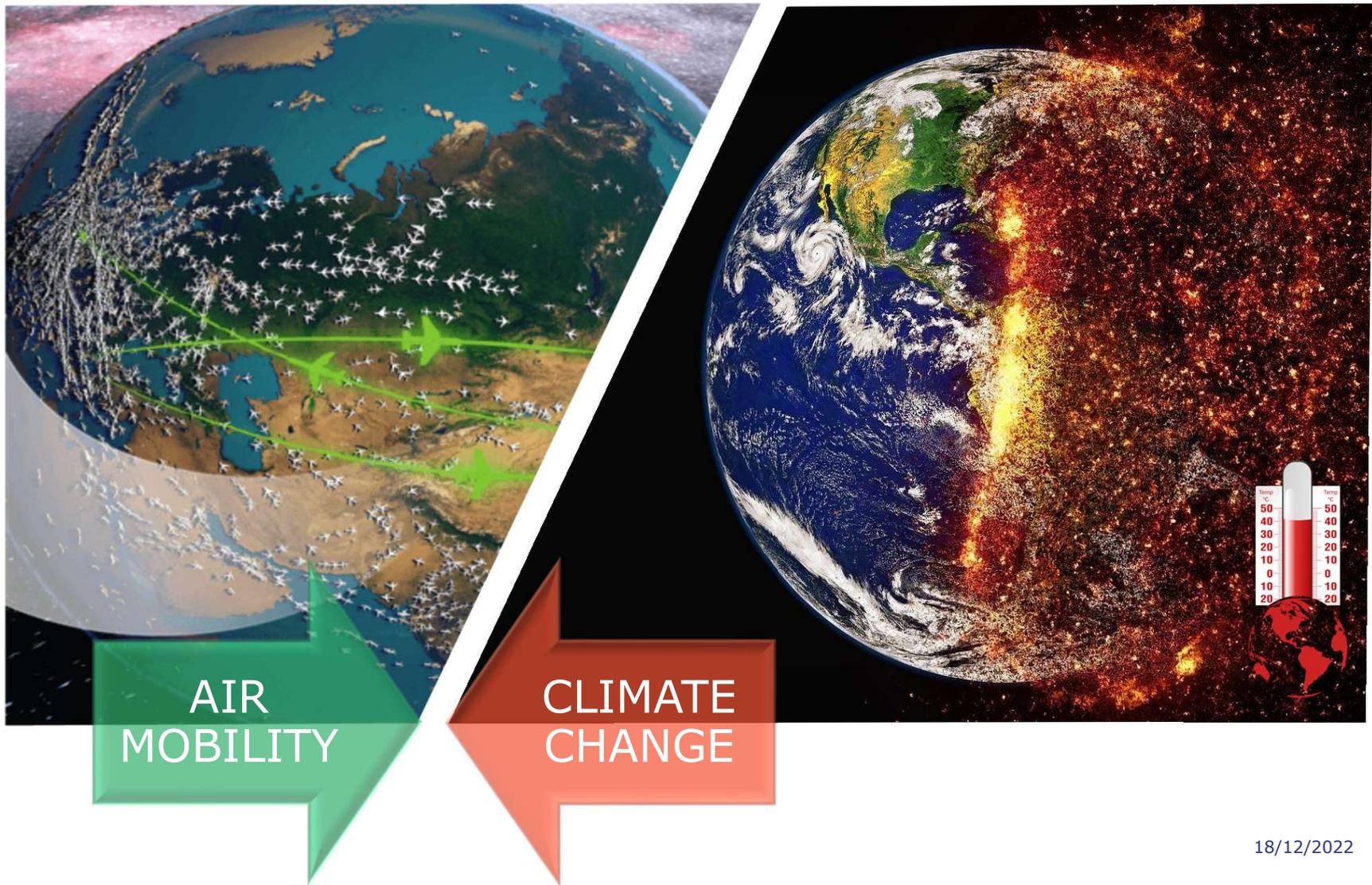
Michael Finke

German Aerospace Center (DLR)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875154

CONTEXT – Climate change vs. Air mobility



MOTIVATION – Climate change

Big Picture: 



Mitigate the causes

- Use more efficient aircraft
- Use alternative fuels / propulsion
- Use more efficient flight maneuvers along optimized trajectories



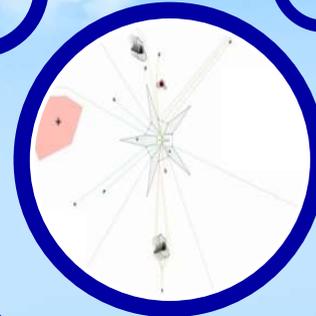
Mitigate the consequences

- Actively remove CO₂ (and other gases) again from the atmosphere
- Influence thermal balance of the earth

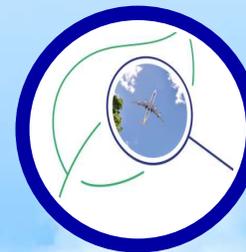


CHALLENGES

Investigation of new possibilities to **reduce gas emissions** of flight trajectories at local and global level



New concept to manage air traffic in a ,greener` way, e.g. by using Trajectory Based Operations (**TBO**) and **adapted airspace design**

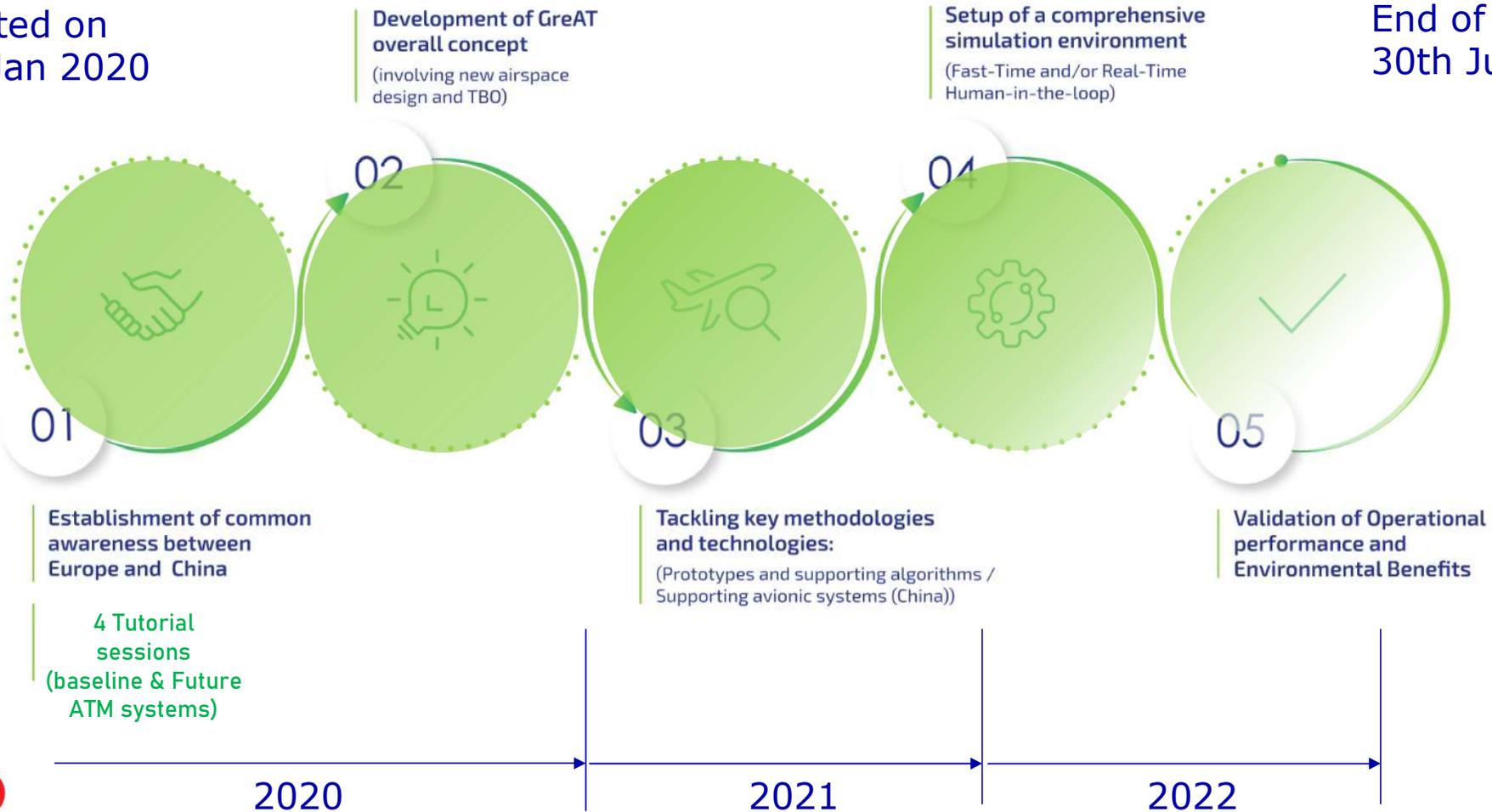


Determination of the potential to save gas emissions with **greener trajectories**

GREAT PROJECT - Progress

Started on
1st Jan 2020

End of Project
30th Jun 2023



GREAT PROJECT– Examples of concept elements (1/2)

Short-haul operations

On Ground:

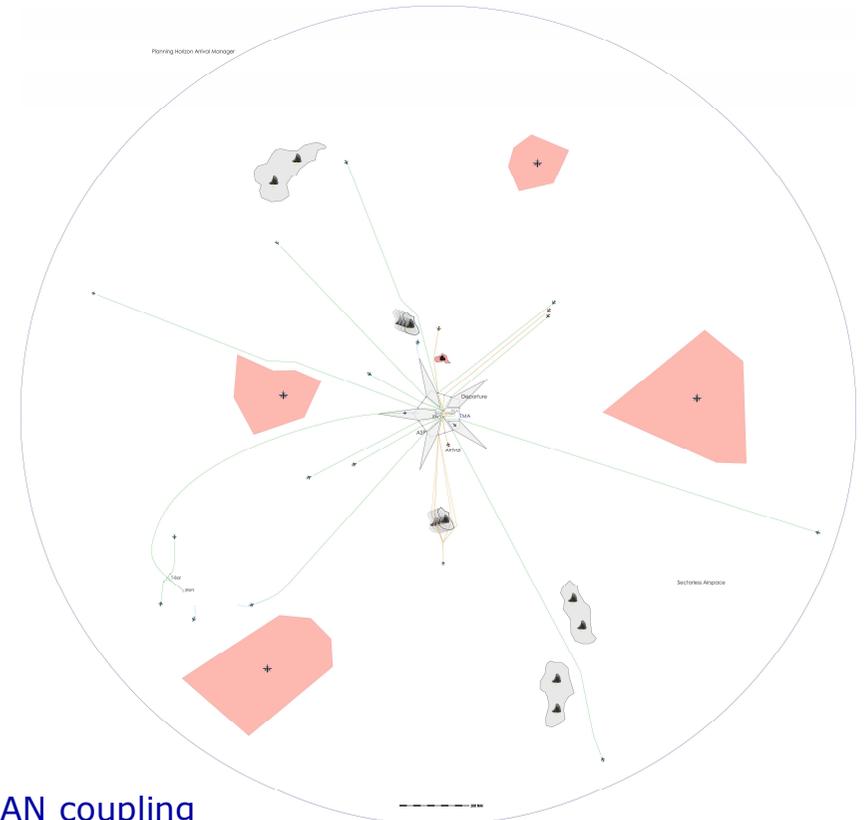
Continuous steady taxiing
Reduced waiting times with engines running

During flight:

Shortening routes (especially those portions with poor fuel efficiency)
Avoid holdings / path stretching in TMA
Use Continuous Descent Approaches as much as possible
Use Continuous Climb Operations as much as possible
Late Merging
Lowest Impact of Deviation

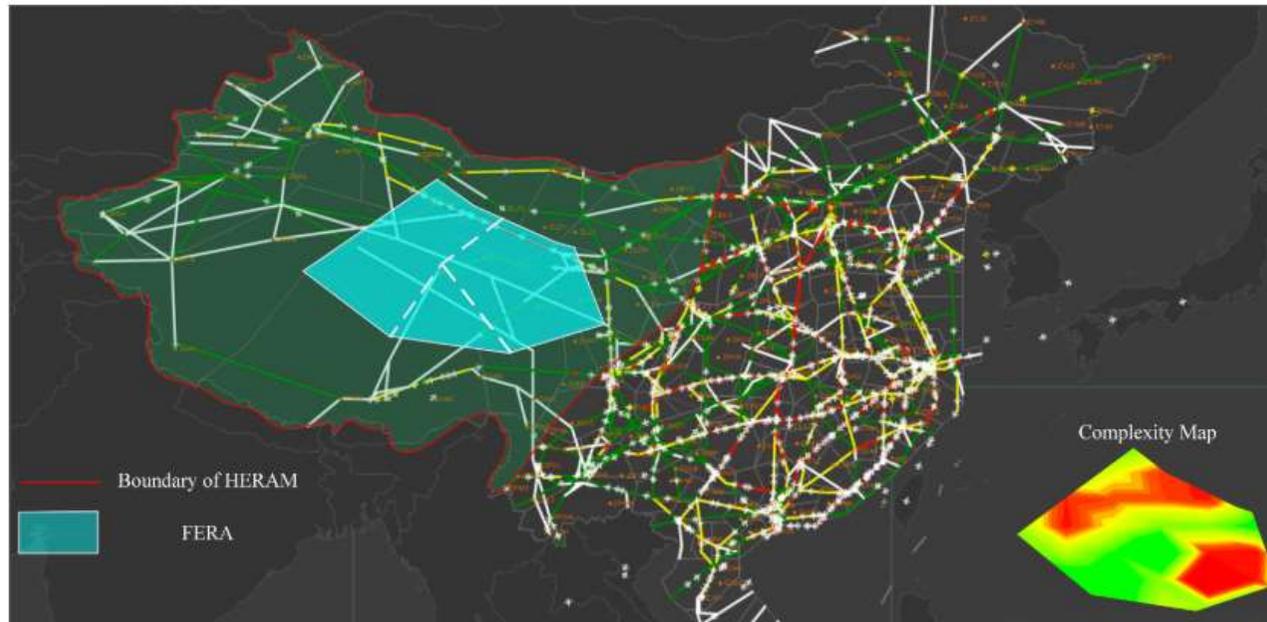
Achieved by:

System integration and data exchange / negotiation, e.g. AMAN-DMAN-SMAN coupling
Advanced controller assistance systems (e.g. Mergestrip developed by Hungarocontrol / Pildo Labs)



Europe: for **hub and medium size airports** with high and medium traffic load

GREAT PROJECT- Examples of concept elements (2/2)



Long-haul operations

Shortening of flight routes flying to / transiting China by adjusting

The airspace structure,
The airspace management,
The air traffic management.

By introducing FERA-WoC / HERAM

GREAT Session @ EASN Conference 2022

Time slot	Title of the presentation	Presenter
10:30-10:50	The GreAT Project – Overview (This presentation)	Michael Finke (DLR)
10:50-11:10	Greener Taxi Trajectories	Lukas Tyburzy (DLR)
11:10-11:30	Enabling green approaches by FMS-AMAN coordination	Nils Ahrenhold (DLR)
11:30-11:50	The environmental impact assessment of greener trajectories	Gustavo Alonso (UPM)
11:50-12:10	Operational assessment by an airspace user	Clim van der Weijden (KLM) Presented by Michael Finke (DLR)

Contact points

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Thank you for listening!



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