

# TOWARDS DECARBONISATION OF SMR & LONG RANGE AIRCRAFTS – APPLICATION TO BIZJETS

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*Context*

*Technology*

*Certification*



**CLEAN AVIATION**



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## GAMA / IBAC communication at 2021 NBAA

### 2021 Updated Business Aviation Commitment on Climate Change

The updated Business Aviation Commitment on Climate Change builds on the industry's commitment to reducing carbon emissions through three primary objectives:

- Achieve net-zero carbon emissions by 2050.
- Continue to improve fuel efficiency 2% per year from 2020 to 2030.
- Carbon neutral growth beyond 2020.

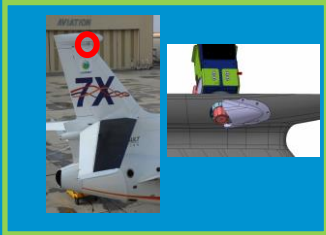
**Commitment to aviation's 2050 goal**  
SPECIFIC COMBINATION OF ALTERNATIVE FUELS,  
OPERATIONS, TECHNOLOGY, MARKET BASED  
MEASURES

**Dynamic Falcon aircraft development  
integrating new technologies**

**2030/35 EIS Target for implementation  
of Clean Aviation innovations**



## Laminarity



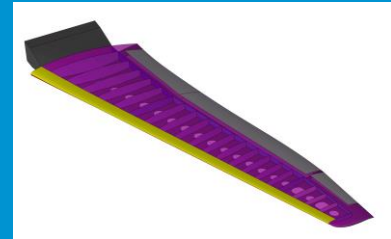
## Advanced composite wing



## Active control



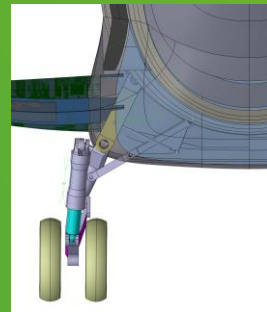
## Digital designs



### • Wing technologies:

- MAJOR BLOCKS HAVE BEEN DEMONSTRATED COMBINING SIMULATIONS, GROUND TEST, INTEGRATED FLIGHT TEST
- THEIR STEP IMPLEMENTATION (FALCON 6X, FALCON 10X) WILL BRING OPERATIONAL MATURITY
- THEY HAVE FAR MORE POTENTIAL IF REMAINING HARD POINTS CAN BE OVERCOME

- The integration and certification of a very high aspect ratio active & laminar wing is key to - a significantly more efficient cruise - and to SAF & H2 integration



- **Set up and implement an approach to prepare draft regulatory material applicable to major breakthrough innovations**
- **Address (at least) three emblematic and representative technological disruptions (“Proof of Concepts”) with major certifiability challenges**

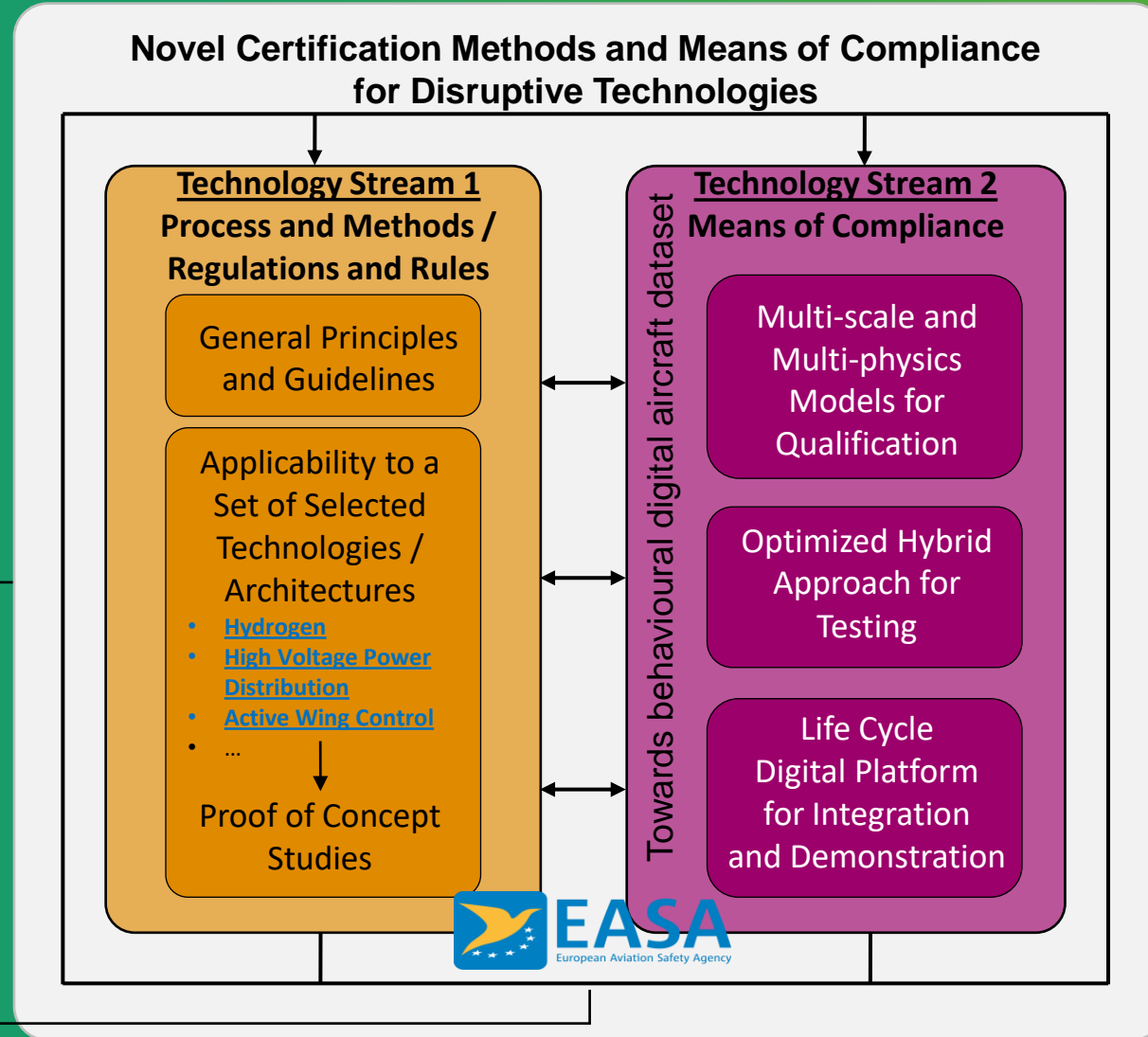
Overall objective: to develop technical data / MOC which will constitute draft regulatory material for future breakthrough innovations:

- Comprehensive set of regulatory inputs/dispositions on certification together with preliminary description of methods of compliance applicable to the three main thrusts
- First status of comprehensive digital framework of formalized collaborative tooling and model/simulation-based processes for certification

Standardized approach towards certification of A/C embedding disruptive technologies by 2035

New qualification and certification processes for an early integration of technologies and disruptive innovations are key enablers for a smooth entry in service of a new generation of sustainable aircraft, and therefore for a timely arrival of expected impacts on climate.

# CERTIFICATION (TRANSVERSE TRA-02 TOPIC)



Aerostructures and materials  
Aerodynamics and aeroacoustics  
Weather hazard protection  
Thermal management  
Systems  
Security  
MRO

Full-scale tests partially supplemented by sub-scale and model-based certification approaches

Agile and collaborative environment to assemble and structure the pyramid of process, models and behavioural digital aircraft dataset  
Networking all stakeholders towards a common objective