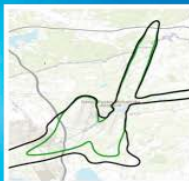
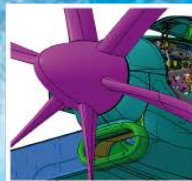
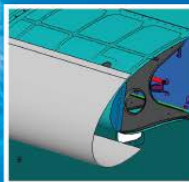


**On-Demand Mobility
Clean Sky
Michel Goulain TE& SAT
Project Officer**





Content

1. Clean Sky
2. SAT: what has been done?
3. SAT in Clean Sky 2
4. Relation with Regulation Authorities

1. Brief Re-Cap on *Clean Sky*

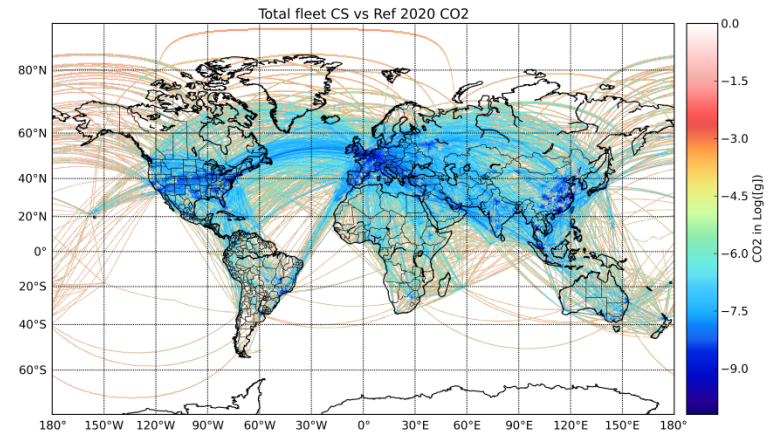
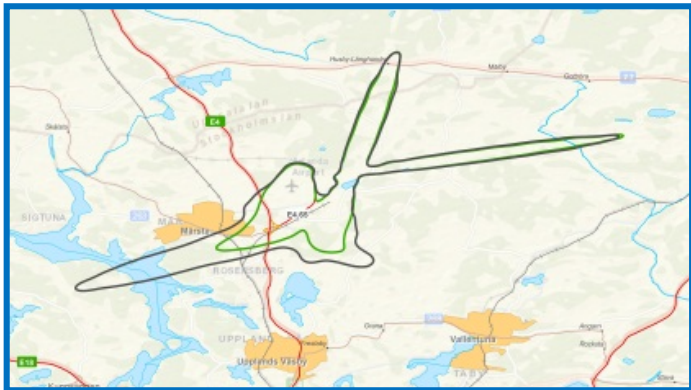
Unique Public-Private-Partnership in Aeronautics

- Integrated, thematic set-up
- Downstream approach
- Large-scale complex demonstrations
- Open Calls for engaging wide set of participants



Good Progress to Date

- On track towards the key environmental objectives



- 75% of the work committed or achieved
- Approx. 600 participants (still growing)
>15% SMEs and >27% Academia/ROs

2020 / 2050 Environmental targets

Reduce perceived external noise by

- 50% by 2020
- 65% by 2050



Vision 2020 and **Flightpath 2050** targets are for new aircraft technology relative to 2000 performance

Not legally binding

Flightpath 2050

Goals to take ACARE* beyond 2020



***Advisory Council for Aviation Research in Europe**

By 2050 compared to year 2000 datum

- **75% reduction in CO₂ per passenger kilometre**
- **90% reduction in NOx emissions**
- **65% reduction in noise**

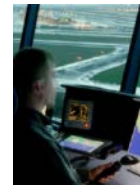
*Requires
Improvement in
all areas*



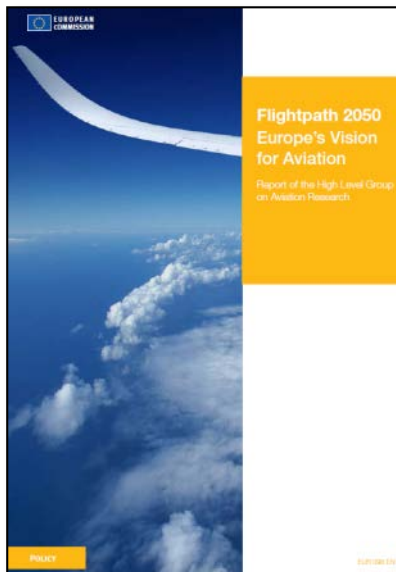
Airframe



Engine



ATM &
Operations



Strategic Research & Innovation Agenda – goals:

Meeting Societal and Market Needs

Maintaining and Extending Industrial Leadership

Protecting the Environment and the Energy Supply

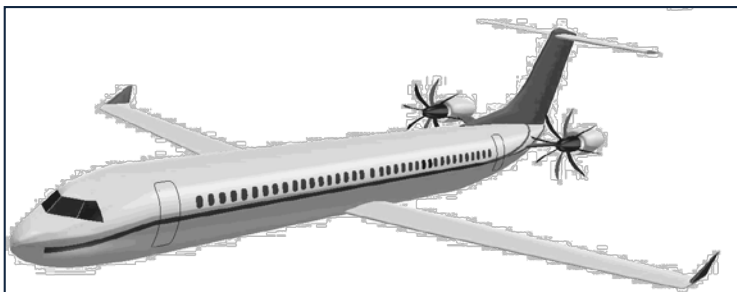
Ensuring Safety and Security

Prioritising Research, Testing Capabilities & Education

Not legally binding



Enabling Seamless Mobility within increasingly Constrained Infrastructure



www.cleansky.eu
Not legally binding



Clean Sky 2 Programme: New features

- **Clean Sky 2: 2014-2020 (end 2024)**
- **€ 4 billion**, of which €1.8 billion is public funding: more than twice that of Clean Sky 1
- **Broader objectives:** still environmental, but also competitiveness and mobility
- **At least 800 participants expected** (estimation)
- **Inclusion of general aviation** (< 20 places)

Clean Sky 2: a wider scope with Horizon 2020



SFWA WP3.1 BLADE
PDR closure review, Toulouse, 2 Feb 2011



1. Complete Clean Sky 1:

- *Carry on with planned Demonstrators to fully meet TRL6*
- *Develop new technologies to meet ACARE goals (40% CO2 reduction)*

2. Strengthen European leadership in aeronautics

3. Contribute to improving intra-European mobility

4. Make the first step towards the 2035/2050 objectives set by the European aviation community

Not legally binding



2. SAT

EU co-funded Research & Innovation.

Several projects launched to develop SAT activities:

Small Air Transport Roadmap (SAT-Rdmp*)

Airframe (FP6 CESAR)

Avionics (SAFAR)

Systems & Propulsion (ESPOSA, HYPSTAIR).

Broader actions, also of relevance for SAT

Forums/studies on Safety, Intn'l cooperation, ...

**Research on flight measurement, morphing,
personal a/c & drones, ...**

* www.epats.eu/SATRdmp



EU initiative

- Outcome
 - Lot of unused airfields, esp. in Eastern Europe
 - Very often, bad roads and trains
 - Possibility to revitalize the SAT but needs of
 - Affordable aircraft
 - All weather capabilities
 - Adapted regulation for aircraft and airports
 - Stronger supply chain

Support Action

- EU initiative
 - A SAT roadmap
 - Workshops organised
 - Needs identified
 - A real business case



Deliverable reference number and title: D1.2 Small air transport aircraft demand

Organization name of lead contractor for this deliverable: **Institute of Aviation**

Date of report preparation: January - June, 2011	Date of report issue: June 30, 2011
Deliverable: D1.2 Small air transport aircraft demand	Version/Status: V1 (draft: a,b,c; final: 0,1,2,3)
Task: T1.2.1 Small Air transport Aircraft	
Characteristics to be used for Demand Calculation	

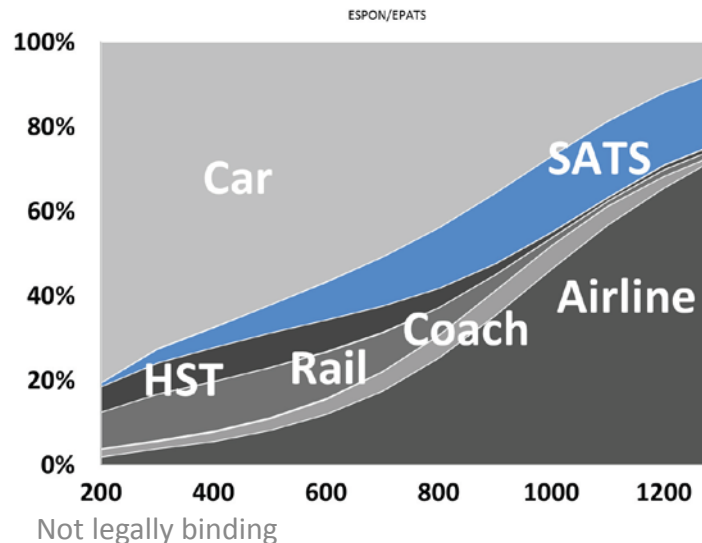
Approval Status (date, signature)		
Author(s)	WP Manager	Project Coordinator
I. Laplace (M3S) S. Ghijss (DUT) D. Rohacs (BUTE)	M. Amato (CIRA) <i>[Signature]</i>	K. Piwek (IoA) <i>[Signature]</i>

Project coordinator name: Krzysztof PIWEK	Start date of project: January 1, 2011
Project coordinator organization name: INSTITUTE of AVIATION	Duration: 18 month

Project funded by the European Commission within the Seventh Framework Programme (2007-2013)		
Dissemination		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Modal split of trips in Europe. 2020



A **modal split** is the percentage of travellers using a particular type of transportation or number of trips using said type

CRUCIAL TRANSPORT GOALS IN 2050

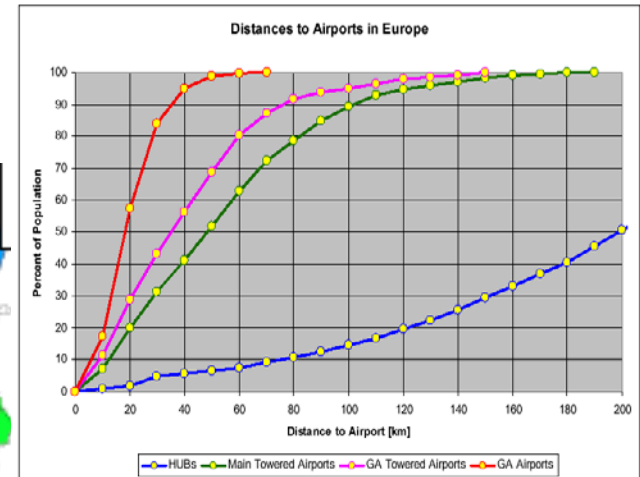
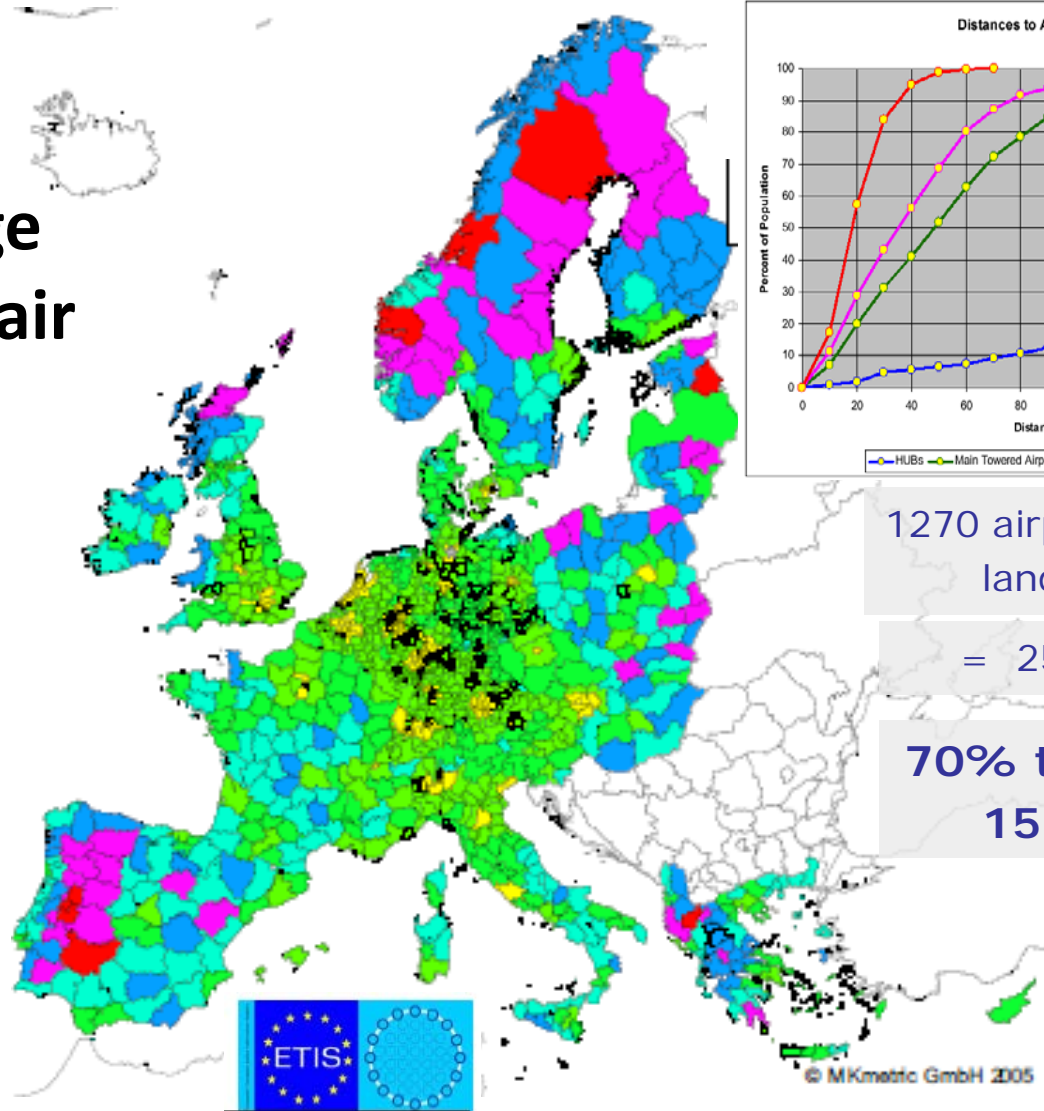
Meeting Societal and Market Needs

- European citizens are able to make **informed mobility choices**
- 90% of travellers within Europe are able to complete their journey, **door-to-door within 4 hours.**
- Flights arrive **within 1 minute** of the planned arrival time
- Air traffic management system is capable of handling **25 million flights** a year in Europe
- A coherent **ground infrastructure** is developed



90% D2D WITHIN 4 HOURS IN 2050 = EUROPEAN PERSONALIZED AIR TRANSPORT SYSTEM

What is average
travel time by air
transport for
regions?



1270 airports and 1300
landing fields

= 2570 airfields

70% traffic = top
15 airports



© MKmetec GmbH 2005

Small Aircraft Transport

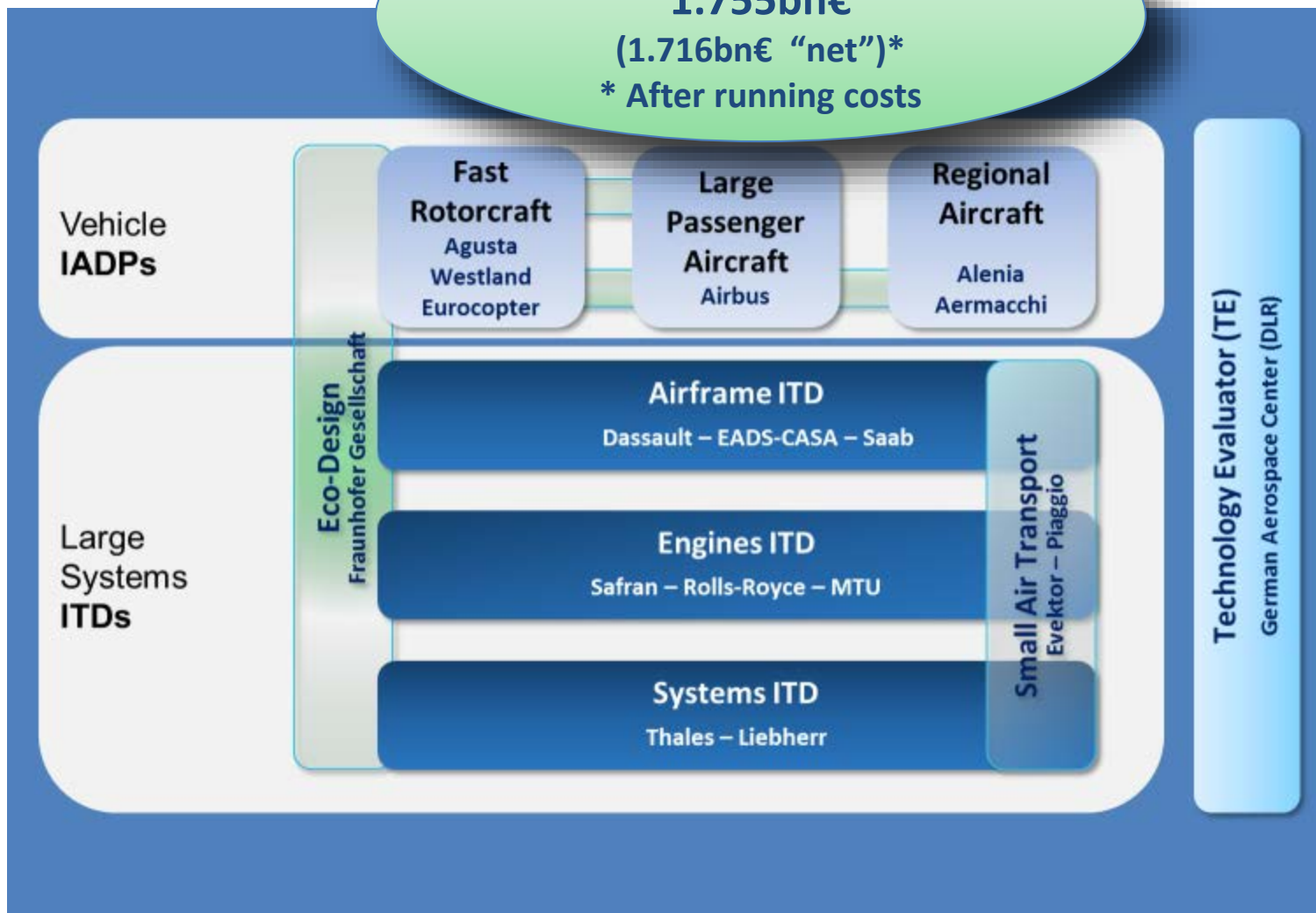
Transverse ITD

EU Funding Decision

1.755bn€

(1.716bn€ "net")*

* After running costs



Innovative Aircraft Demonstration Platforms (IADPs)

Integrated Technology Demonstrators (ITDs)

Not legally binding



The Principles for Participation

- **Up to 40% of EU funding available for CS2 Leaders**
- **At least 60% of EU funding open to competition:**
 - Up to 30% for Core Partners (becoming Members once selected)
 - At least 30% for CfP (i.e. *Partners* as in CS) plus CfTs
- **Meaning >1bn€ of EU funding in play, via open Calls**



Industry, SMEs, Academia, and Research Organizations eligible both for participation as Core Partners or Partners.

Participation may also take place via suitable Clusters / Consortia.

What is the Small Aircraft Transport Mode?

It is a segment of high-speed transport market,
that serves local and regional low traffic connections

Aircraft - small 4 to 19 seats, that are low DOC, green, safe, and secure

Infrastructure on the ground and in the air - Regional Airports + ATM/ATC services integrated in SESAR

Net – Centric Management & Acquisition – ICT based logistic and management system for SATS, integrated within the SESAR's System Wide Information Management (SWIM)





3. SAT in Clean Sky 2

- SAT: a transverse activity
- Budget: 4 % of the total budget (around 68m€)
- 4 strategic topics launched (wave 1 and wave 2)
 - More advanced and efficient small turbine engines for SAT market
 - Affordable SESAR operation, modern cockpit and avionics solutions for small aircraft
 - Optimized composite structures for small aircraft
 - More affordable small aircraft manufacturing

CS2 Coordinators of SAT: Piaggio Aerospace & Evektor

Piaggio Aerospace (IT)

- Aircraft/Engine part manufacturer
- Workforce 1050 people
- Turnover 2014 192 M Euro
- P180 Avanti delivered 230 A/C



Evektor (CZ)

- Aircraft manufacturer, Design office
- Workforce 370 people
- Turnover 20 M Euro
- EV-55 (9 seats A/C) certification on going
- VUT100 Cobra & SuperCobra (4 seater)
- EuroStar, SportStar, Harmony (2 seaters)
1400+ A/C delivered



Not legally binding





Small Aircraft Transport High Level Goals

- **Multimodality and passenger choice** towards Flight path 2050
 - a. To provide accessible and affordable high speed mode of transport on European interregional network connections with low-intensity traffic
 - b. 90% of travelers within Europe are able to complete their journey, door-to-door within 4 hours
- **Revitalization of European small aircraft industry, more competitive EU**
- **More safe and more efficient small aircraft operation**
- **Lower environmental impact (noise abatement, fuel efficiency, energy saving production)**



Small Aircraft Transport OEM* R&TD Priority (2020)

	HLO Priority	Technology focus	Quantitative target
1	Operational Cost Reduction	Airframe manufacturing & maintenance cost reduction Engine acquisition& maintenance cost reduction Systems HM & More Electric	25-30% on total operating cost
2	Safety Improvement	Systems for Pilot work load reduction	10 times fatal accident reduction
3	Cabin Improvement	Noise, Thermal, Entertainment	80 dBA
4	Community Noise	Low noise propulsion	-10 dBA (ICAO Chapter 10)

* OEM: Original Equipment Manufacturer

Not legally binding



Relation with Regulation Authorities

- Clean Sky has relations with EASA, SESAR and Eurocontrol
- Clean Sky is a natural link between leaders (from CS) and the Authorities

Relation with Regulation Authorities : EASA



EASA
European Aviation Safety Agency

GA Road Map: Working
towards... the future



**Simpler, lighter, better rules for
General Aviation**

Boudewijn Deuss

SAT (Small Air Transport) Workshop

4 February 2016



4 February 2016

SAT Workshop Warsaw

34

ss of activity as
and
les

a specific new
order to
assure a sustainable development
of the sector in Europe

strategy

European Roadmap for regulation of GA



Strategic direction - six principles

P1: One size does not fit all (reduce cliff-effect)

P2: Philosophy of minimum necessary rules

P3: Adopt a risk-based approach (risk-hierarchy)

P4: Protect “grandfather rights”

P5: Apply EU “Smart Regulation Principles”

P6: Make best use of available resources/expertise

Relation with Regulation Authorities : Eurocontrol



Small Air Transport development in the European future ATM System

Sylvie GRAND-PERRET
EUROCONTROL ATM strategy
4th of February 2016

Global Regulations and Standardisation: EC, EASA, ICAO and supporting Member States in their implementation

- & collects route charges on behalf of all EUROCONTROL's Member States.

* EC mandate to coordinate the 8.33 kHz implementation below FL195

supporting Member States in their implementation

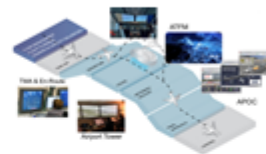
- & collects route charges on behalf of all EUROCONTROL's Member States.

* EC mandate to coordinate the 8.33 kHz implementation below FL195

Not legally binding



1:



maintenance of the

H2020, ACARE

European and



aintenance of the

20, ACARE

European and
ICAO and

Some SESAR improvements – focus on SAT

- No specific Small Aviation Projects in SESAR 1 programme
- 1 project dedicated to Small Air Transport in SESAR 2020 : evaluation of 4G (LTE) technology mainly for FIS- like related B services.
- But many R&D projects (SESAR and beyond) of direct importance for Small Transport Aviation notably:
 - Vision systems (EVS/SVS/CVS)
 - Multiple glide slope /Multiple threshold operations
 - Remote Control Towers
 - Business Trajectories/Mission Trajectories
 - ATM environmental improvements
 - CNS developments
 - RECAT-EU & RECAT 2
 - RPAS projects towards safe integration





Conclusion

- Large potential for Small Air Transport in Europe
- Need to work with all actors
- Helpful to get a more global picture
- Clean Sky willing to look for synergies

Thank You



Disclaimer

- The selection of Partners will be based on Horizon 2020 Rules for Participation, the rules for submission of proposals, evaluation and selection of Partners as adopted by the Governing Board of Clean Sky 2 JU and will apply to the calls for Proposals
- The content of this presentation is not legally binding. This presentation wishes to provide a preliminary overview of these rules.
- The proposed content/approach is based on the consultation with the “National States Representative Group” and the “Task Force” of the Clean Sky 2 Programme

Not legally binding



Thank you for your attention

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