SAT - Rdmp
Small Aircraft Transport System Technology Roadmap

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3rd AirTN Forum, Cranfield,
26th-17th September 2013
PROJECTS AND PARTNERS:
EP RESOLUTIONS:

An Agenda for Sustainable Future in General and Business Aviation – Feb 2009

“general and business aviation complements regular air transport performed by commercial airlines”

„Current regulations govern the operation of highly complex commercial aircraft place a disproportionate burden on operators of small aircraft. Therefore, ‘one-size-fits-all regulatory approaches to different aviation sectors have proven inappropriate!’“

On the future of regional airports and air services in the EU – May 2012

„whereas the connectivity offered by aviation to citizens in EU regions, and in particular in inaccessible regions and islands, is extremely important and helps ensure the economic viability of such areas”;

„Takes the view that regional airports, should be considered eligible to apply for financing under EU funds, recommends that the Commission take into consideration the opportunities offered by regional airports as part of the European central transport network“;
SAT in Europarliment

European Innovation Summit 2012, Brussels 10 X 2012

Session: Drivers and Enablers of Innovation – Implementation at Regional Level

Main Outcomes:

- Effective implementation of innovation policy must be enabled, not blocked, by policies in other areas
- Smart specialisation will stimulate regional innovation and, hence, regional development
- The Enterprise Europe Network is a powerful enabler of SME innovation in all regions
- However, innovation and new business creation still face many practical difficulties, especially in less developed regions
- One major difficulty is lack of mobility, of people and of goods
- Air transport and specifically small aircraft policies have great potential to improve mobility as they are more prone to fast implementation and entail lower capital infrastructure costs
- The current policy is hindering the small air transport sector of reaching its full potential
What is the Small Aircraft Transport Mode?

http://epats.eu       http://sat-rdmp.eu

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)
MAIN IDEA

To shift part of long distance trips from cars to small aircrafts

MAIN FINDING

SHORT HAUL NICHE
SAT-RDMP DELIVERABLES:

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<th>Deliverable N°</th>
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Panel (SAT Common Vision Workshop, Bruss, Sept 2011):

- The **SAT system should be part** of the European Integrated Transport System
- **SAT-Rdmp Project is compliant with Flightpath 2050** challenges “90% of travellers within Europe are able to complete their journey, door-to-door within 4 hours”.
- **There is a social need** for mobility specifically for some regions and city-pairs
- The **business model** to be adopted is an essential element for the success of a SAT System. It has to be affordable and reliable.
- A **pilot phase testing** some different business models should be set up in the short term; this would allow building up a success story, to increase trust in the approach, to support public acceptance and political leverage.
- There is an agreement that **SAT System might become a small scale platform to demonstrate** the European Integrated Transport functionality.
- **Currently the enabling conditions are in a poor status.** European manufacturer are suffering from this situation.
SAT ROADMAP:

**High Level Objectives**

- **Product Technologies**
  - Structures
  - Engines
  - On Board Comm. & Systems
  - Avionics
  - Rotorcraft technology

- **Operations Technology**
  - Booking system
  - Insertion in SES
  - SESAR
  - Airports

- **Enabling Conditions**
  - Pilot Training
  - Education
  - R&D Funding
  - Certification Standards & Rules
  - Networking
  - Industrial Master Plan
  - Capabilities

- **Risk Assessment**

- **Expected Benefits**

### Exploratory and Basic Research
- Technology integration
- Technology demonstration

### Year
- 14
- 15
- 16
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### Topic
- RTD Issue

### Configurations
- Standard aircraft configurations
- Novel configurations like BWB

### QVTL
- QVTL
- Container aircraft
- Aircraft flight/morphing
- Folding rotors
- Alternative lifting configurations

### Structures
- Metallic structures
- Composite structures
- Hybrid structures
- Composite repair
- Advanced coatings
- New advanced coatings
- Fully recycling
- Advanced manufacturing/robotic composite repair

### Engines
- Follow on Level 2 ESPSA
- Novel electric engines
- Superconductivity
- Endurance testing bio fuels
- Solar power
- Hydrogen fuel cells
- Alternative power sources

### Aerodynamics
- High lift devices
- Gust alleviation
- Novel propulsion design

### Equipment
- Low cost all weather operations
- Cabin equipment for small aircraft
- Advanced cockpit
- Autonomous flight/ASAS
- Remote control
- Integration VFR/IFR

### MRO
- Self healing/reconfiguration
- HUMS for SATS

### Certification
- Fully modelled certification

### Airspace
- Airspace reorganisation
- Low cost SESAR
- SAFA connection
- Flight planning

### Energy Storage
- New batteries

### Airport Equipment
- Low cost investment
- Virtual tower

### Training
- PC based training
- Virtual reality training

### Crashworthiness
- Structures
- Bird strike prevention

### IT Support Systems
- Booking system
- Smoke system for air taxi
- Multimodal travel system

### Research and Education

### Networking
High level goals defined for small aircraft industry

➢ 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)
Building on Clean Sky, going further into integration at full aircraft level
And developing new technology streams for the next generations of aircraft
CRUCIAL TRANSPORT GOALS IN FP 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
STRATEGIC RESEARCH AND INNOVATION AGENDA

Work Programme 2014-2015 -draft

2020

- Mobility profiles
- Market & social factors known
- Mobility system design
- Intermodal transport supported
- Seamless transport defined
- Legal framework adopted

2035

- Single ticketing available
- Journey disruption management available
- Seamless transport implemented
- Route guidance available
- Robust data links

2050

- 90% of journeys seamless
- Automatic monitoring and disruption management for 90% of journeys

Customer-centric mobility

WP 9.3
WP 9.4
WP 1.2
WP 9.1
WP 7.4
WP 1.7

26-27 IX 2013, Cranfield
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90% D2D WITHIN 4 HOURS IN 2050 = EUROPEAN PERSONALIZED AIR TRANSPORT SYSTEM

What is average travel time by air transport for regions?

- **10** and more hours
- **9** to **10** hours
- **8** to **9** hours
- **7** to **8** hours
- **6** to **7** hours
- **5** to **6** hours
- **4** to **5** hours

1270 airports and 1300 landing fields

= 2570 airfields

70% traffic = top 15 airports
CONCLUSION:

Flight Path 2050 challenges

„90% d2d 4h within Europe”

will not be obtain without implementing Small Aircraft Transport Mode as a component of European Personalized Air Transport System!
THANKS FOR YOUR TIME

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