



„Technology Roadmap for Small Aircraft Transport Mode” Workshop,
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Report on Ongoing or Planned Research D3.2

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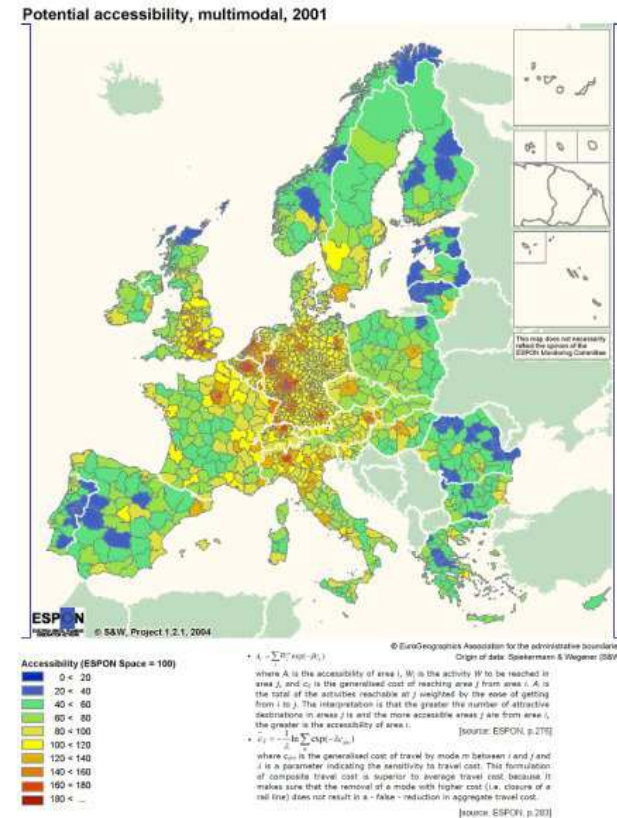
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CONTENT OF THE REPORT:



- KEY FIGURES RELATED TO ROAD AND AIR LONG DISTANCE PASSENGERS TRAVEL IN EU-27
- THE MAIN SHORTCOMINGS OF THE INTRA EU AND REGIONAL AIR TRANSPORT SYSTEM
- POLICY CONTEXT
- SATS GOALS AND CONCEPT
- IDENTIFICATION OF EUROPEAN AND NATIONAL RTD PROJECTS RELATED TO THE SATS CONCEPT
- IMPLICATION FOR FUTURE SATS RESEARCH



MAIN FINDINGS



- 5% over the last 15 years – year-by-year air traffic growth.
- 9.5 million of flights in Europe in 2010.
- Doubling in traffic every 12 years creating capacity problems at airports.
- More than half of long distance travels in Europe are made by car
- Only 25% of airports (528) handles more than 1000 departures a year
- 70% of the EU population is deprived of access to interregional air transport.
- Future air transport should (according to Strategic Transport Technology Plan) Use less energy, Use cleaner energy, Exploit more efficiently the existing infrastructure and move towards low-carbon transport
- The flightpath 2050: completion of journey in Europe within 4 hours for 90% of population

SAT OBJECTIVES



SAT objectives are also:

- Pave the way for the general acceptance of the added value of small-size aircraft, operating on commercial scheduled or non-scheduled flights, as a component of the European (Air) Transport system.
- To revise the current intra EU and regional service network topology and the structure of aircraft fleet in terms of adapting them to the current and forecasted long distance intra EU and interregional O-D traffic. To define the structure of SATS aircraft fleet.
- Identify the RTD needs of the European transport and manufacturing industry in order to create conditions to ensure the development and production of small, economical and ecological commercial aircraft.

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Identification through analysis of conducted and finalised EU projects:

IDENTIFICATION OF PROJECTS



Sub-theme 1: SMALL AIRCRAFT TECHNOLOGY DEVELOPMENT					
Project Acronym	Project title	Program me	Project website	Coordinator	Level of relevance to the Small Air Transport
DATELINE	Design and Application of a Travel Survey for European Long-distance Trips	FP5	www...	IfVul	High
CESAR	Cost-effective Small Aircraft	FP6	www...	VZLU	High
EPATS	European Personal Air Transport System	FP6	www...	IoA	High
SAFAR	Small aircraft future avionics architecture	FP7	www...	Rheinmetall Defence Electronics	High
PPLANE	Personal Plane Project	FP7	www...	ONERA	High
SAT-Rdmp	Small Aircraft Transport – Roadmap	FP7	www...	IoA	High
ESPOSA	Efficient Systems and Propulsion for Small Aircraft	FP7	www...	PBS	High
ACROSS	Advanced Cockpit for Reduction of Stress and Workload	FP7	www...	Thales	Medium



Design and Application of a Travel Survey for European Long-distance Trips Based on an International Network of Expertise

FP5,

**Coordinator - SOCIALDATA Institut fuer Verkehrs und
Infrastrukturforschung**

- The influences on the route and mode choices of long-distance travelers on trans-European routes.
- DATELINE is a survey of Europeans about their long-distance travel. It was carried out in the 15 EU countries and Switzerland from October, 2001 through October, 2002. DATELINE yields 55,000 households, 132,000 trips, and 101,000 unique OD pairs.
- The most recent, comprehensive, and coordinated survey of long-distance travel in Europe.



Cost-effective Small Aircraft

**FP6,
Coordinator - VZLU**

- Focuses on small-size commercial aircraft providing manufacturers with an enhanced ability needed to become fully competitive in the world market.
- The objective is to build up a new development concept for this aircraft category and to improve technologies enabling a significant reduction of the time-to-market and lowering the overall development, operation and maintenance costs, while considering safety, passenger comfort and environmental impact.



European Personal Air Transport System

FP6

Coordinator: Institute of Aviation

- **The EPATS** focuses on the future Highly Customer Oriented and Time, and Cost Efficient Air Transport System. It fills niche between Surface and Scheduled Air Transport. Future mobility cannot be satisfied only through investments in hub and spoke, or rail - and highway systems.
- The goal of the EPATS proposal is to demonstrate the needs and potential of small aircraft business development and to propose recommendations for the introduction of this new European Air Transportation System in the context of the European Research Areas.



Small Aircraft Future Avionics Architecture

FP7

Coordinator: Rheinmetall Defence Electronics GmbH

- SAFAR will focus on the development of a future avionics architecture for small aircraft providing easy and safe control of the aircraft.
- SAFAR aims at a significant reduction of pilot workload and an increase of safety during all phases of flight and ground operations incl. take-off and landing. In order to achieve this, SAFAR will provide the aircraft with easy handling characteristics and flight envelope protection at any time.



FP7

Coordinator: ONERA

- The PPlane project is a direct follow up action to the Out-of-the-Box study that aimed at identifying potential new concepts and technologies for future air transport.
- PPlane aims at developing a system based on aircraft in between these two extreme categories, some 4 to 6 or 8 passenger aircraft.
- "The proposed set of mechanisms will result in a structured process approach towards creative and innovative technology development in Europe".



Small Air Transport - Roadmap

FP7

Coordinator: Institute of Aviation

- **The Small Air Transport (SAT)** focuses on the new affordable, accessible, energy effective component of Air Transport System (ATS). It fills niche between Surface Transport and Scheduled Large Aircraft Air Transport.
- **The goal** of the study is to improve the understanding of the commercial role that small-size aircraft operating on scheduled or non-scheduled flights can play as a component of the Air Transport System, in order to satisfy the needs of transportation in regions where transport networks (especially surface transport) are underdeveloped.



Efficient Systems and Propulsion for Small Aircraft

FP7

Coordinator: PBS

- The ESPOSA project plans to deliver better GTE engine affordability and 10-14% reduction of direct operating costs through the development of advanced concepts for key engine components, development of lean manufacture technologies and modern engine systems improving engine overall efficiency and maintainability.
- The goal of the ESPOSA project is to develop new key components for small gas turbine engines up to 1000 k



ACROSS

Efficient Systems and Propulsion for Small Aircraft

FP7

Coordinator: Thales

- ACROSS will develop new applications and HMI in a cockpit concept for all crew duties from gate to gate. Human factors, safety and certification will drive this approach. The new system will balance the crew capacity and the demand on crew resource. ACROSS workload gains will be assessed by pilots and experts.

CONCLUSIONS



- New broadband communications technologies shall be studied and developed in order to increase safety and comfort compared to the communications technology used in aviation today.
- Design related research aimed at improving aerodynamic efficiency, saving weight and optimizing the design process itself by new tools should be conducted.
- There is a need to develop and implement new more accurate methods for testing long distance O-D passenger traffic.
- The Small Aircraft community should improve their coordination and define an industrial development master plan.
- Specific R&TD activities should be dedicated to develop the needed product technologies, the specific operations, systems concepts and related technologies.
- it is necessary to undertake a study to develop SATS networks on which O-D travel time will be fewer 4 hours.

PROJECTS AND PARTNERS

