



Innovative Future Air Transport System

The IFATS project description, at a glance

Consortium IFATS – November 2004 – Web Site : <http://www.ifats-project.org>



Outline

What is the IFATS project ?

What could be the future Air Transport System ?

- Present studies

The IFATS project process:

- First, define what would be an extreme solution: a fully automated ATS
- Then, identify challenges, outcomes and implementation risks
- Finally, conclude on what could be the ATS evolution

The IFATS project programme of work and milestones



What is the IFATS Project ?

IFATS is a EC funded FP6 STREP Project:

- Started on July 2004, planned to finish on December 2006
- Thematic priority 1.4 “Aeronautics and Space”, Key action 1.3.1.3: “Improving aircraft safety and security”

A multinational consortium is working on it:

- **ONERA - France**
- EADS, France
- IAI, Israel
- Thales, France
- Alenia, Italy
- Erdyn, France
- DLR, Germany
- DSNA/DTI/SDER, France
- CIRA, Italy
- University of Patras, Greece
- Technion, Israel Institute of Technology



Future Air Transport System : Present studies 1/2

Four types of provided services are foreseen as possible options*:

- “Airborne Traffic Situational Awareness”: better crew knowledge of the environment, responsibilities remain with the air traffic controller
- “Airborne Spacing”, overall responsibility for separation remains with the air traffic controller, with the pilot having limited delegated responsibility for maintaining spacing with other aircraft
- “Airborne Separation”, overall responsibility for separation remains with the air traffic controller, with the pilot having delegated responsibility for separation with other aircraft
- “Airborne Self-Separation”, full delegation of responsibilities to the pilot

** Safety and ASAS Applications, Action plan 1 – Version 4.1, February 2004*



Future Air Transport System: Present studies 2/2

Common characteristic to all the provided services options:

- Smooth evolution of the present Air Transport System (ATS) situation
- Man still has a central role, under the supervision of automatic safety nets
- Lack of a clear view of what could be the “long term” solution (2040)



The IFATS project methodology?

Background :

1. We do not know what could be a long term ATS concept before studying potential solutions
2. Solutions based on the evolution of current systems may be valid only for the short term

The IFATS project methodology:

- 1. Studying a “revolutionary solution” taking full benefits from automation capabilities*
- 2. Assessing feasibility (technical, social, legal...)*
- 3. Analysing advantages and drawbacks*
- 4. Concluding on possible ATS evolutions*



*A revolutionary concept
of ATS: no pilots, no
controllers, both replaced
by ground operators*





IFATS challenges

IFATS concept is based on a wide introduction of automation

Proving the concept is facing two major difficulties

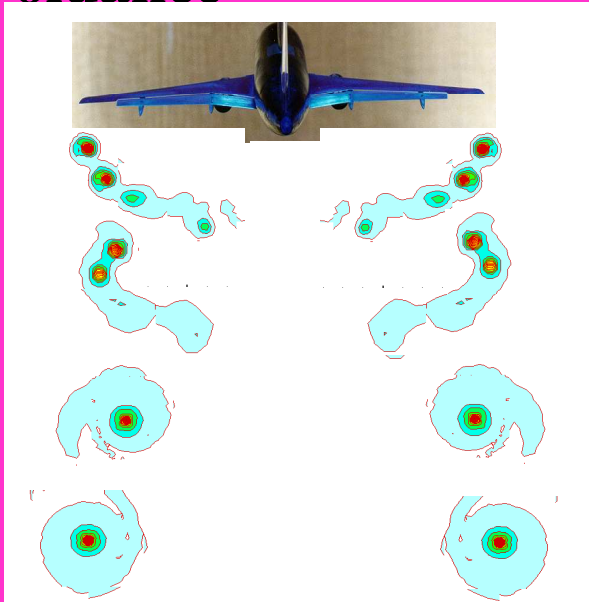
- *Difficulty n°1: Human performance measurement in the present ATS*
- *Difficulty n°2: Safety and security of the automated system used in both air and ground segments*



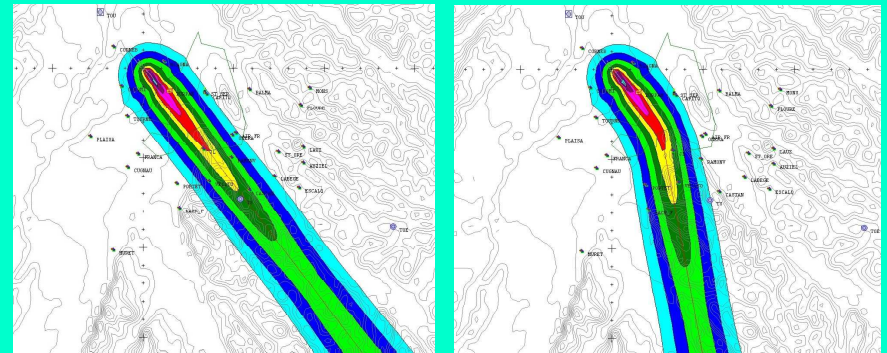
The IFATS expected positive outcomes

Environment friendly: Automatic taxiing

Easier wake turbulence avoidance



Allowing variations of the Airport approach flight path



Improvement of security/safety of ATS:

- Hijacking actions of the aircraft made impossible
- Automated collision avoidance



Identified risks for IFATS implementation

- **Unforeseen barriers**
- **Cultural problems**
- **Social impact**
- **Uncertainty of being able to sense and monitor comprehensively the system situation**



What can be the ATS evolution ?

Can IFATS vision be considered as straying into science fantasy ?

*“This is not because things are **difficult** that we do not **dare**,
this is because we do not **dare** that things are **difficult**”*

(Seneca)

- **Today’s technology is not far from what is required to design IFATS**
- **Industry and airlines are used to focus on the near term**

IFATS consortium has to set a long term vision



***How to answer the question: what can be the
ATS evolution?
A project methodology***

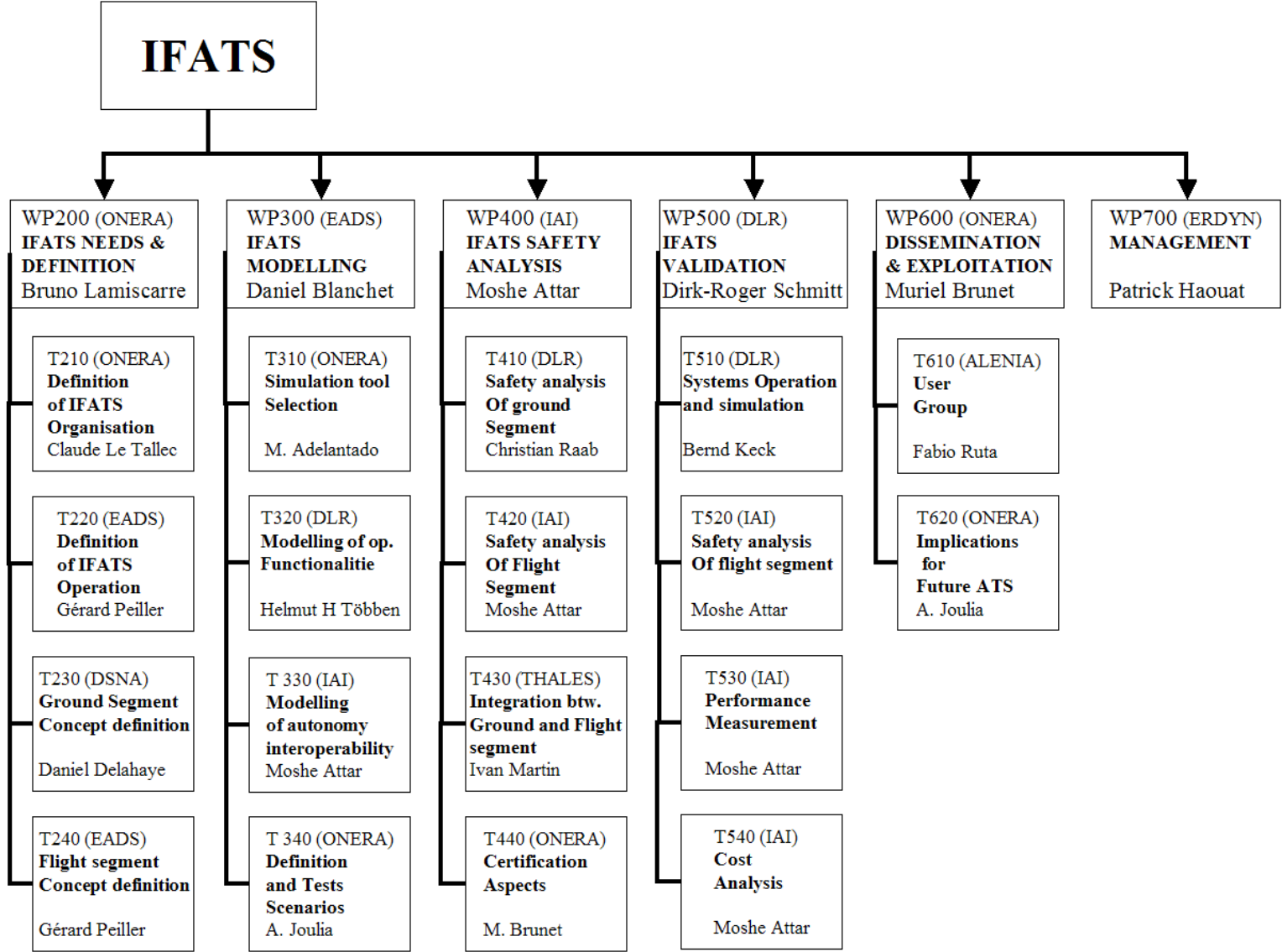
Carrying out an analysis of what a fully automated air transport system would be, to state clearly the weakness and strength of such an innovative concept

THIS IS THE IFATS PROJECT

Its results could be used to shape needed improvements of the current systems for the mid term, setting long term objectives



IFATS work breakdown structure





IFATS project schedule (started 2004/07/06)

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