



# Governmental cooperation with aerospace stakeholders - French example in the suborbital field

**Patrice DESVALLEES**

Deputy Director (ERS), DGAC

**2<sup>nd</sup> ICAO/UNOOSA Symposium**

Abu Dhabi, 15 - 17 March 2016



Direction Générale de l'Aviation Civile

Ministère de l'Environnement, de l'Énergie et de la Mer



# EMERGING SUBORBITAL FIELD

The commercial suborbital domain is emerging and :



- at crossroads of aviation and space,
- at crossroads of public (government) and private (industry) interests
- It concerns both civil and dual-use / military technologies
- It evolves quite rapidly and now seems to get one step closer to reality



Direction Générale de l'Aviation Civile

DSAC

Ministère de l'Environnement, de l'Énergie et de la Mer

# A PUBLIC-PRIVATE INITIATIVE IN FRANCE

- With the ICAO Space Learning Group (SLG) launched in 2014, work on the suborbital field also restarted in France, and a working group was set up in 2015
- The FR working group investigates all aspects : technical, economic, operational, environmental, legal and regulatory needs of this new domain in order to possibly pave the way for future routine suborbital operations



# GOVERNMENT-STAKEHOLDERS COOPERATION (1/3)

- This working group is co-chaired by DGAC and COSPACE, the French government-industry coordination committee on space,
- It gathers all the relevant interested private and public stakeholders



- ✓ Ministries (x 5), incl. DGAC
- ✓ CNES (FR Space Agency)
- ✓ Industry
- ✓ ONERA (FR Aerospace Lab)
- ✓ Research organisations
- ✓ Academia
- ...

# GOVERNMENT-STAKEHOLDERS COOPERATION (2/3)

Governmental cooperation with aerospace stakeholders is essential in order to :

- Share and exchange experience and visions
- Understand each other's needs
- Create a fruitful exchange environment
- Encourage open communication between the industry, research organisations and authorities
- Identify mutual benefit and win-win situations
- Jointly build workable strategies



Direction Générale de l'Aviation Civile

# GOVERNMENT-STAKEHOLDERS COOPERATION (3/3)

Governmental cooperation with aerospace stakeholders is essential in order to :

- Foster this emerging market
- Create a foreseeable and stable regulatory environment,
  - Tailored to the domain's needs
  - giving industry sufficient visibility to invest with confidence in these nascent activities
- Anticipate the most promising ways forward



# SCOPE OF WORK

Scope and key elements :

- Starting with an assessment of the present state of play
- define commonly-agreed strategic orientations on suborbital aircraft and spaceports operations
- Identify possible future regulatory and legal frameworks, including safety regulation, airworthiness and environmental impact



Direction Générale de l'Aviation Civile

# SUBORBITAL USES & PURPOSES

Suborbital aircraft offer access to 'near space' and various (manned or unmanned) uses, with either suborbital or orbital purposes:

- Science and technology (4 minutes of microgravity at altitudes beyond stratosphere);
- Space flight experience for paying participants;
- Suborbital flights for crew training purposes on future orbital missions (*stepped 'suborbital-orbital' continuous approach*);
- (unmanned and orbital purpose) Launch-to-Orbit (LtO) of small satellites

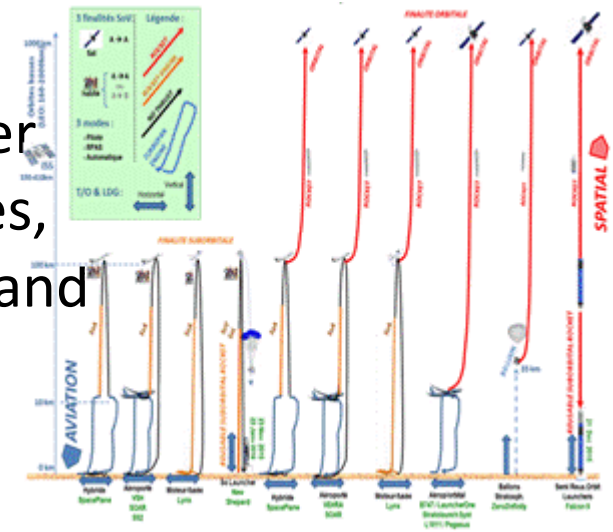


Direction Générale de l'Aviation Civile



# LEGAL UNCERTAINTY

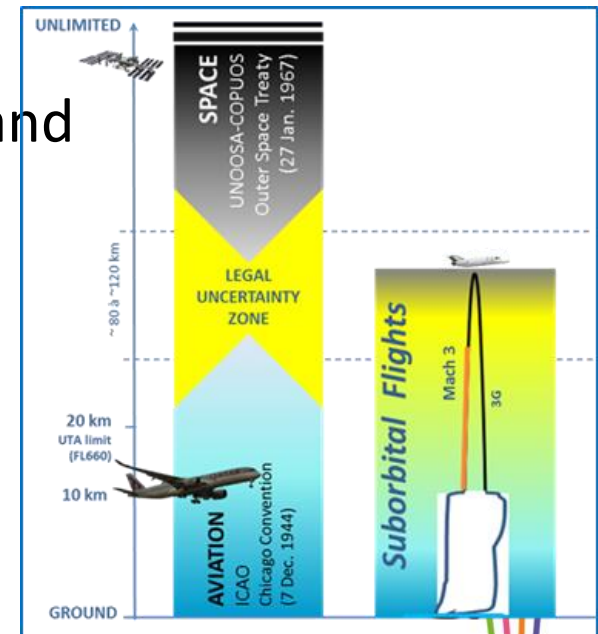
Suborbital ops could be considered either as 'air', 'air and space' or 'space' activities, depending on the system's architecture and final purposes.



Today, there is no clear indication in international law :

- on the delimitation between airspace and outer space
- on the applicability of either air law or space law to suborbital flights.

ICAO and UNOOSA/COPUOS now are working together on the subject.



# FRANCE STRONG HERITAGE

- France has a long pioneering heritage in ultra-high performance aircraft starting in the 1940s and 50s, for example :



**Fig.** SNCASO SO.9000 'Trident'

220 rocket flights  
1953-1958



**Fig.** Dassault 'Mirage III'  
(completed an unrivaled number of  
20 000 rocket flights, with 99%  
observed availability)  
Operated since 1955



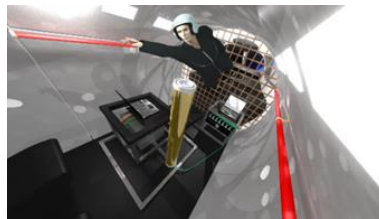
**Fig.** Leduc (dropped by the  
'Languedoc' carrier-aircraft)  
1946-1957

# TODAY'S PROJECTS

- Today, various suborbital projects are developed in France, amongst which Airbus 'SpacePlane', Dassault 'VSH' and 'VEHRA' suborbital aircraft families



- French stakeholders also contribute to various suborbital projects and research activities in Europe or worldwide



# WIDE RANGE OF FIELDS

Suborbital aircraft could benefit, involve or impact a wide range of fields including :

- scientific research and technology innovation, aerospace industry development and manufacturing,
- organisations in charge of spaceports and air traffic management,
- regulation and certification authorities
- as well as academic world, as it will undoubtedly inspire the youth.



# OPPORTUNITIES AND CHALLENGES

The suborbital pioneering field offers great potential opportunities to be tapped, but also raises many new challenges to be faced:

- Still in its nascent phase
- Projects are still in the design, development or testing phase

Further analysis and studies to be undertaken :

- On the environmental impact
- safety regulation, airworthiness
- Liability, insurance, spaceport issues

export control regulations ..



Direction Générale de l'Aviation Civile

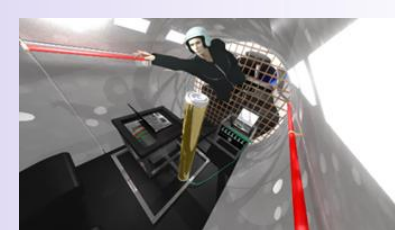
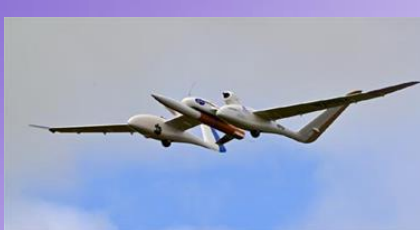
# LEVELS OF SAFETY & ATM

For future routine suborbital operations:

- *Target levels of safety* (TLOS) should be defined in order to minimize any third party damage on the ground, at sea, in air or in space
- In the case of manned suborbital flights, acceptable safety requirements have to be targeted, having in mind the safety levels usually observed in the field of aviation, starting with those of the general aviation

Also, dynamic and flexible use of airspace could possibly help mitigate in the future the economic & environmental costs of air traffic disruptions generated by blocked or segregated airspace.





# Thank you !

