Objective

To build up a National legal and regulatory framework to allow suborbital flights in Italy

ENAC Policy on Commercial Space Transportation

presented at 1st ICAO/UNOOSA Space Symposium

Montreal, March 2015
Initiatives

Suborbital Flight
- ICAO/UNOOSA Space LG
- ENAC Sub. Flight WG
- CESMA Hyp. Flight WG
- ENAC-FAA MoC
- ENAC-ItAF LoI
- European Authorities WG
- ASI

International Cooperation

MoC ENAC–FAA on the Development of Commercial Space Transportation
- 2014
  - FAA-ENAC-ItAF WG starts
  - ENAC visit to Mojave Spaceport
  - ENAC Spaceflight Safety Training
International Cooperation

2015
- ENAC Suborbital Flight WG starts
- ENAC-FAA workshop on Reusable Launch Vehicle
- 1st ICAO/UNOOSA Space Symposium – Montreal
- ICAO/UNOOSA Space Learning Group starts

2016
- New MoC ENAC-ASI-FAA
- ENAC attends the annual FAA CSTConference – Washington
- 2nd ICAO/UNOOSA Space Symposium – Abu Dhabi
What/Who is expected to be protected?

Hypersonic Suborbital Flight

- Third parties on ground
- Critical infrastructures
- Airspace’s users
- Occupants

What/Who can be currently protected?

Hypersonic Suborbital Flight

- Third parties on ground
- Critical infrastructures
- Airspace users
- Occupants

RECOMMENDATIONS
Traditional certification approach

Safety of occupants
  - Regulation
  - Standard
  - Oversight

Regulatory path

Phase I (near term) Experimental
Phase II (mid term) Participants onboard
Phase III (long term) Routine transport
Regulatory path

Phase I – Experimental

ICAO definition of aircraft

"Any machine that can derive support in the atmosphere from the reaction of the air"

spaceplane = aircraft

EU basic aviation rules
(Reg. EC 216/2008)

National Experimental Permit to Flight

Recognition of FAA-AST license/permit of potential US operators (wet lease)
Phase I – Experimental

ICAO definition of aircraft

“Any machine that can derive support in the atmosphere from the reaction of the air”

EU basic aviation rules (Reg. EC 216/2008)

“Aircraft specifically designed or modified for research, experimental or scientific purposes, and likely to be produced in very limited numbers” (Annex II)

National Experimental Permit to Flight

national responsibility

Phase I – Experimental

ICAO definition of aircraft

“Any machine that can derive support in the atmosphere from the reaction of the air”

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National Experimental Permit to Flight

Safe operations within a specific conditions and limitations
Initial Regulatory Framework

SUBORBITAL OPERATION AUTHORIZATION

VEHICLE/OPERATOR
FAA Permit / License Validation

SPACEPORT
ENAC Authorization based on FAR Part 420

Additional National Requirements & Limitations

Frame of bilateral agreement

>> Operation Centric Approach

Risk = Probability * Consequences

INTEGRITY LEVEL
event/hazard

SAFETY BARRIERS

Total Hazard and Risk Assessment
>> Operation Centric Approach

\[ R = P \times Ac \times D \]

Total Hazard and Risk Assessment

Flight Safety Analysis

Flight Safety Analysis

Collective safety objective

\[ Ec = 3 \times 10^{-5} \]

casualties per mission

Airspace scenario

100 km (Karan’s Line)

Segregation (near term) < FL600

ATM contingency plans in case of excursion or explosion (debris fallout)

Trajectory Real time monitoring

ITAF support for analysis and simulation

Airspace scenario

US FAR Analysis & Issues

- FAR 401 ORGANIZATION AND DEFINITIONS
- FAR 404 REGULATIONS AND LICENSING REQUIREMENTS
- FAR 405 INVESTIGATIONS AND ENFORCEMENT
- FAR 406 INVESTIGATIONS, ENFORCEMENT AND ADMINISTRATIVE REVIEW
- FAR 413 LICENSE APPLICATION PROCEDURES
- FAR 420 LICENSE TO OPERATE A LAUNCH SITE
- FAR 437 EXPERIMENTAL PERMITS
- FAR 460 HUMAN SPACE FLIGHT REQUIREMENTS

Not applicable for Phase I
To be resolved after the reds
Priority Issues

# Issues

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Tot 93 Issues

- 16
- 37
- 40
Priority issues

Bilateral Agreement for recognition/validation of FAA License/Permit and jurisdiction

Type of Spaceport Authorization for Exp. Ops.

Spaceplane Configuration Management and impact on Risk Assessment

Priority issues

Selection of national spaceport(s)

Sustainable business case for a wet lease arrangement

Oversight, Occurrence Reporting & investigation
Next steps

- Centres of Excellence for supporting regulation
- Spaceflight participants legal status & informed consent
- Insurance issues
- Medical requirements for crew and participants
- Airspace Management, Tracking & Contingency plans in non segregated airspace below FL600
- Coordination among territorial bodies and operator(s)

.... new EU Basic Regulation ?

I learnt that regulation is one of the most difficult things to balance. It cannot be too late. cannot be too early. cannot be overprotective. cannot be too vague. cannot be too prescriptive. cannot be too complicated ...

(Yuri Fattha, ICAO Space Learning Group)

Thank you for your attention.

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