

# PANORAMICA NUOVI LANCIATORI E BASI DI LANCIO: ANALISI REQUISITI DI SAFETY

AGNESE FIOCCHI  
ADELE FULCO



# TABLE OF CONTENTS

- 1 Small/Micro Launcher & New Launch Sites Overview
- 2 Spacecraft Safety & Analysis of current regulations
- 3 Impacts of regulatory fragmentation

# Small/Micro Launcher & New Launch Sites Overview

/// 3  
Date: 24/03/2026

Ref: Not referenced

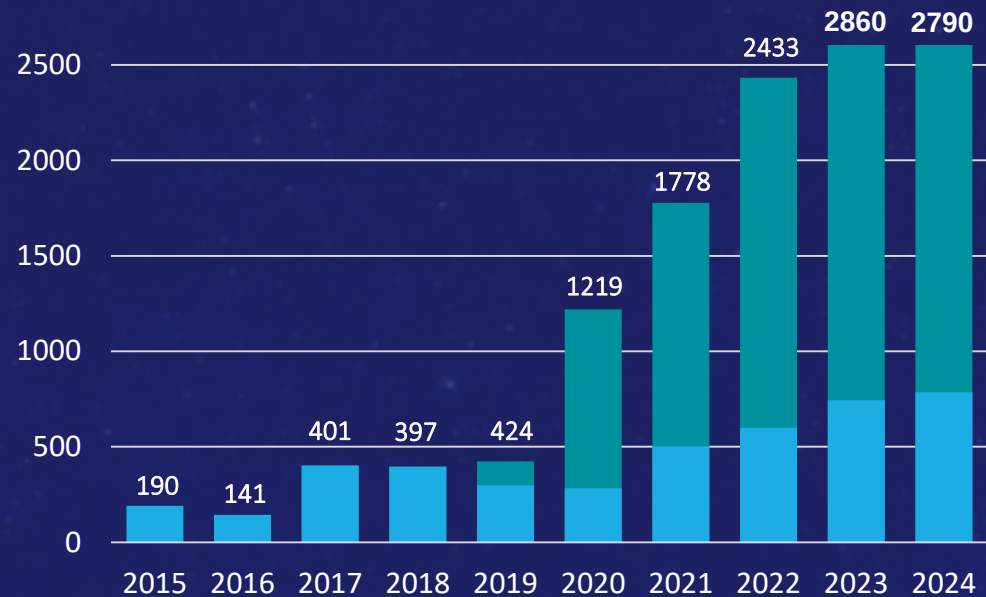
Template: 83230347-COM-TAS-EN-012

## PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

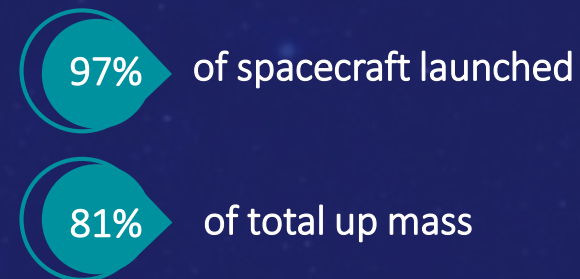
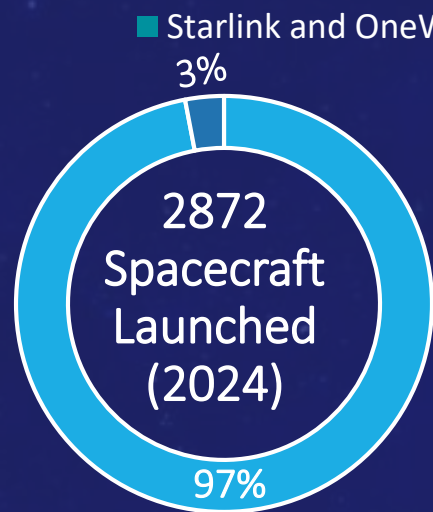
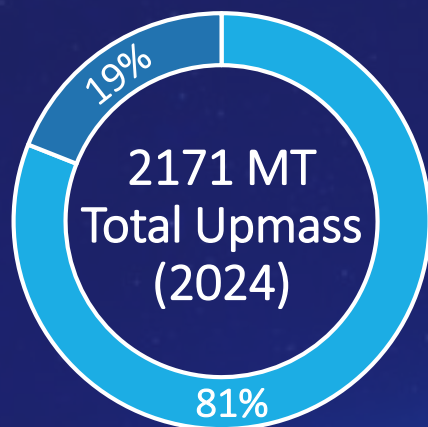
© 2025 Thales Alenia Space All rights reserved

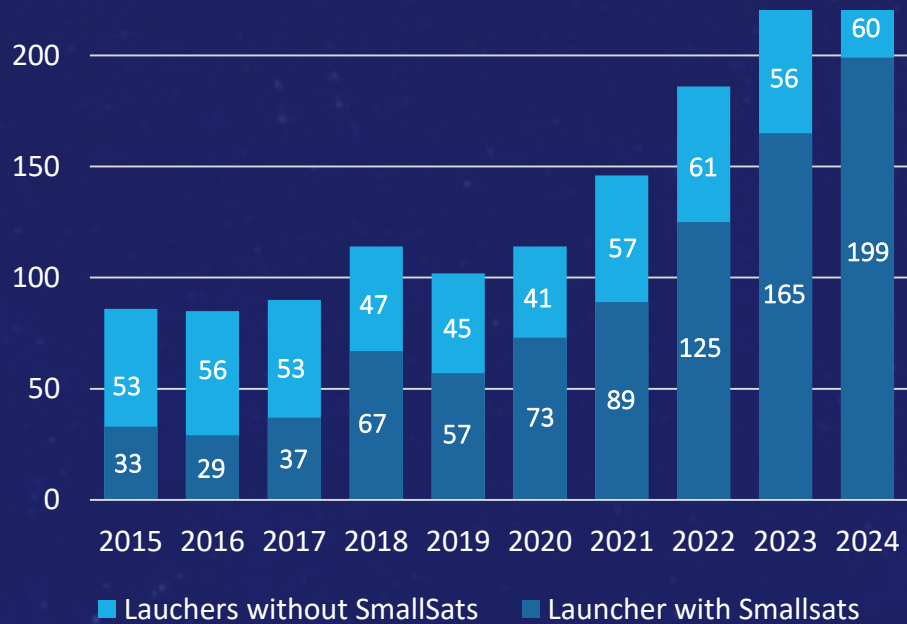
THALES ALENIA SPACE LIMITED DISTRIBUTION



Between 2015 and 2024, the number of SmallSat launched per year increased from 190 to 2790

## Smallsats in 2024 represent

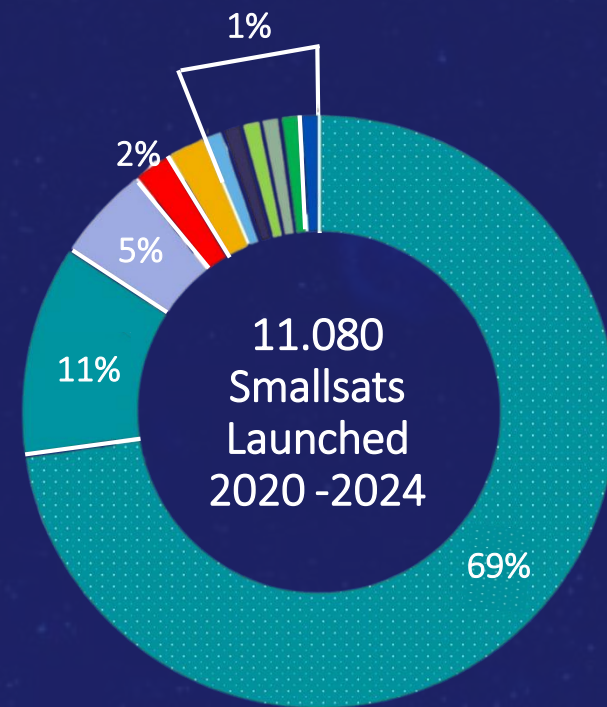




## Medium – Super Heavy Launch Vehicles



As launch activity has increased, so has the number of launches carrying SmallSats.



## Launcher market in 2024

- 15.5 €B Global space launch services market value
- 18.4 €B Expected value in 2029
- 3.5% Annual growth rate



## Micro – Small Heavy Launch Vehicles

# ELECTRON

Electron is a partially recoverable orbital launch vehicle developed by Rocket Lab, an American aerospace company founded in New Zealand with a wholly-owned New Zealand subsidiary. Electron was developed to service the commercial small satellite launch market. Its Rutherford engines are the first electric-pump-fed engine to power an orbital-class rocket. On some missions, the first stage is recovered using a parachute.

## CATEGORY

Micro Launcher

## MISSIONS

83

## LENGTH

18m

## NOMINAL PAYLOAD

200 Kg to 500 Km SSO

## SUCCESS RATE

95.2%

## STAGES

2 + Kick Stage

## PRICE for KG in LEO

23.100 \$

## SUCCESS STREAK

33



2020



## BOOST!

ESA aims to boost commercial initiatives that offer space transportation services to space, in space, and returning from space

Hylmpulse

Isar Aerospace

Rocket Factory Augsburg

2025



## EUROPEAN LAUNCHER CHALLENGE

ESA initiative focused on expanding European launch service supply and therefore ensuring greater robustness in Europe's access to space.

Component A:  
launch services for ESA and other European institutional customers to be carried out during the period 2026–2030.

Component B:  
demonstration of enhanced launch service capacity, including at least one flight demonstration planned by 2028.



Isar Aerospace



Maiaspace



Orbital Express Launch

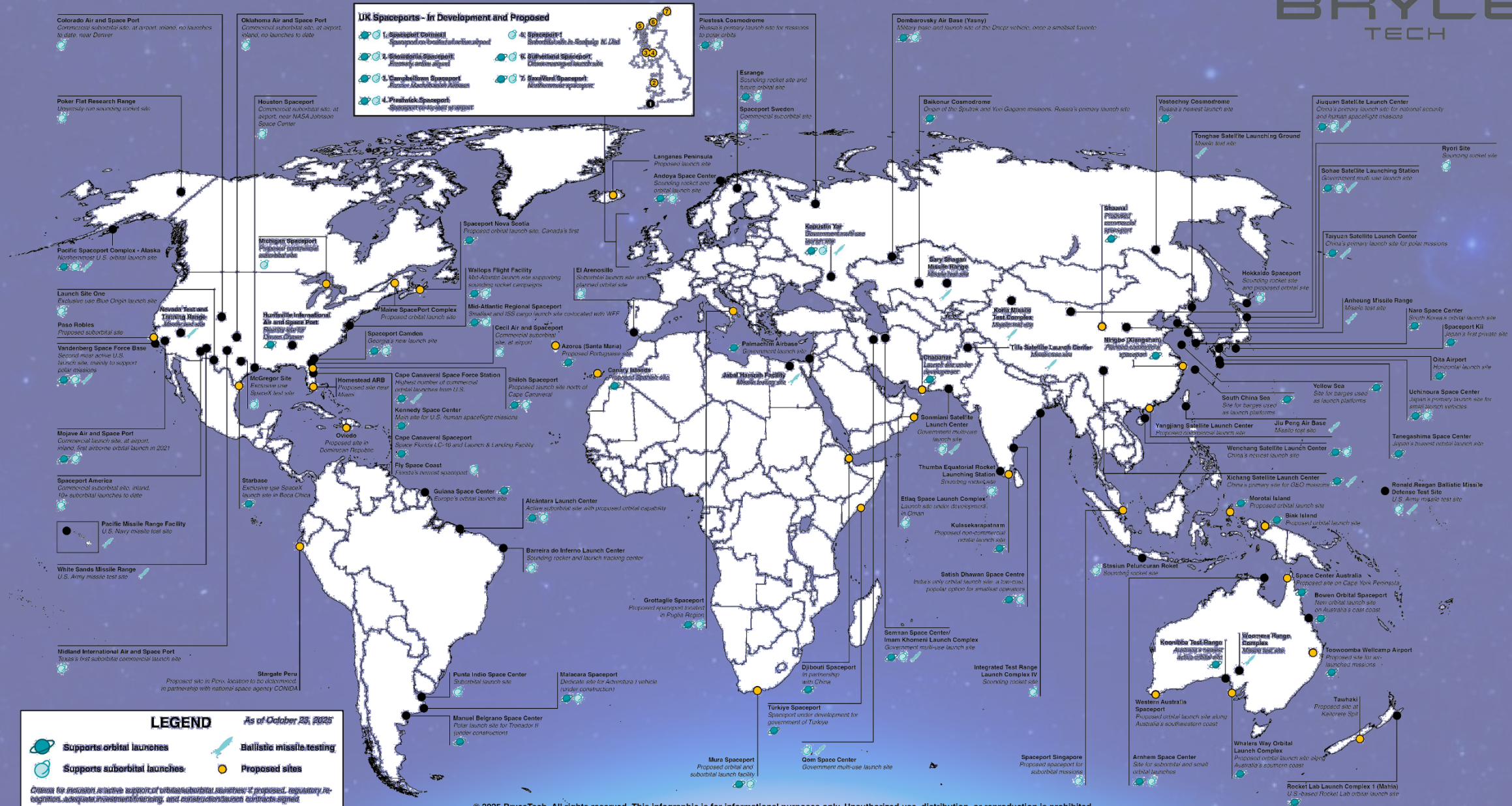


PDL Space



Rocket Factory Augsburg

# Orbital and Suborbital Launch Sites of the World



Date: 24/03/2026

Ref: Not referenced

Template: 83230347-COM-TAS-EN-012

## PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

© 2025 Thales Alenia Space All rights reserved

THALES ALENIA SPACE LIMITED DISTRIBUTION

# European Spaceport



Date: 24/03/2026

Ref: Not referenced

Template: 83230347-COM-TAS-EN-012

## PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

© 2025 Thales Alenia Space All rights reserved

THALES ALENIA SPACE LIMITED DISTRIBUTION

# Key Milestones in the Development of Italian Space Launch Sites



## Centro Luigi Broglio

- historically pioneering role in Europe's access to space
- Last launch from the San Marco platform took place in March 1988
- In October 2024, Minister Urso confirmed that Italy foreseen to resume rocket launches from the Luigi Broglio

## Taranto - Grottaglie

- Selected in 2018 for suborbital operations
- air-launch activities, space tourism, and astronaut training
- Coordinated by ENAC with cooperation agreement with Virgin Galactic

## Salto di Quirra

- feasibility studies for the use of suborbital launchers
- tests of cryogenic and solid-fuel rocket engines
- reentry tests of the European Space Rider spacecraft
- experiments on prototype stratospheric platforms

# Spacecraft Safety & Analysis of current regulations

Date: 24/03/2026

Ref: Not referenced

Template: 83230347-COM-TAS-EN-012

## PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

© 2025 Thales Alenia Space All rights reserved

THALES ALENIA SPACE LIMITED DISTRIBUTION

# Safety in New Space Launch Sites

Increasing number  
of commercial  
launches and new  
market operators

Access to space  
more flexible and  
affordable

New opportunities,  
but also significant  
challenges

Need for common  
regulations is  
essential

Ensuring safety is a  
major priority in  
this context

# Spacecraft Safety

A set of safety processes and measures applied during the spacecraft development till to launch.  
This includes the assessment and management of hazards associated with:

- Spacecraft Hardware design
- Verification and testing
- Ground operations conducted at the Launcher Facilities



# Spacecraft Safety

## FUNCTIONAL SAFETY



Functional safety, focused on engineering systems that are inherently safe by design;

## HAZARDS



an intrinsic property of an item or of an entity, (e.g. radioactive sources)



a functional/physical state of an item or of an entity (e.g. High Pressure in a Vessel).



ELECTRICAL SHOCK



HOT SURFACES



IGNITION SOURCES



RF RADIATION

# Payload Ground Safety

## OPERATIONAL SAFETY



Operational safety, concerning procedures, human interactions, and supporting infrastructure (e.g., launch facilities).



TESTING



TRANSPORT



LIFTING



PROPELLANT  
FUELLING



INTEGRATION

# Safety Submission

## SAFETY DTP

Is a stand-alone package that includes and collects the safety analyses, the hazard reports and all the supporting safety documentation



## SAFETY SUBMISSION

consists of multiple phases and is an iterative process aimed to ensure that the product, processes and operations in the development and launch of a satellite are safe



## LAUNCH AUTHORITY

The Launcher Safety Authority reviews the Safety Data Package. The closure of the safety submission is mandatory in order to obtain launch clearance



## WHAT WE DO? SAFETY

The objective of safety assurance is to ensure that all safety risks associated with the design, development, production and operations of space product are adequately identified, assessed, minimized, controlled and finally accepted through the implementation of a safety assurance programme.

FROM **SATELLITE DESIGN** TO **LAUNCH**



## WHY ARE WE INTERESTED IN THIS MARKET?

We interact directly with launchers and launch authorities

## WHAT HAVE WE OBSERVED?

Fragmentation of regulations across different launch sites influences authorization processes, such as safety submissions

### TRADITIONAL LAUNCHERS AND LAUNCH SITES

US and CNES:  
Same safety req. regardless  
of the launcher

### NEW LAUNCHERS IN NEW LAUNCH SITES

Different requirements  
not aligned with ECSS  
standards

# Analysis of current regulations

Safety Requirements

Safety Submission Process

Hazard Classification

Mitigation Measures required



ECSS-Q-ST-40C Standard



SSCMAN 91-710 (USSF)



16687 Payload Safety Handbook  
(CNES)



SCIENCE-60-4208  
Esrangle Safety manual  
Swedish Launch Site (SSC)



DEF STAN 00-056  
Safety Management Requirements  
UK Launch Sites (UK MoD)

# Analysis of current regulations

Safety Requirements

Safety Submission Process

Hazard Classification

Mitigation Measures required

- Minor difference in DTP name or number of Phase
- Major differences in hazard classification as presence of additional category or different number of likelihood categories and consequence classes
- Differences in hazard classification affect the mitigation measures to apply
- Notable differences exist in the mitigation strategies applied and in the criteria governing the transition between categories (for Example between A and B for Esrange Safety Manual)

# Impacts of regulatory fragmentation

Date: 24/03/2026

Ref: Not referenced

Template: 83230347-COM-TAS-EN-012

## PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

© 2025 Thales Alenia Space All rights reserved

THALES ALENIA SPACE LIMITED DISTRIBUTION



Emerging European spaceports such as SaxaVord and Esrange represent a important opportunity to ensure autonomous, flexible, and frequent launch capabilities from Europe. However, to became a strategic space access for all the European countries it would be appropriate for these sites to have safety requirements harmonized with ESA regulations and in particular with the ECSS-Q-ST-40C



The challenge of the responsive space, put on the market lot of small launch vehicles with relevant needs about safety.



In the absence of an internationally harmonized safety framework, the risk of regulatory fragmentation increases, slowing innovation, raising compliance costs, and not promoting cooperation between space agencies and commercial actors.



Launch operators aiming to use multiple European spaceports must currently address distinct safety processes at each location, with consequently delays and administrative complexity. If common safety protocols were adopted, satellite launches could be conducted more responsively and flexibly across the continent.

In conclusion, to establish Europe as a key player in the new global and responsive space economy, it is essential to promote the European Countries cooperation to have a harmonization of launch sites requirements. Regulatory harmonization, together with investments in infrastructure, skills, and international cooperation, is essential for establishing Europe as a key player in the new global space economy.



# Thank You for your Attention

Date: 24/03/2026

Ref: Not referenced

Template: 83230347-COM-TAS-EN-012

#### PROPRIETARY INFORMATION

This document is not to be reproduced, modified, adapted, published, translated in any material form in whole or in part nor disclosed to any third party without the prior written permission of Thales Alenia Space.

© 2025 Thales Alenia Space All rights reserved

THALES ALENIA SPACE LIMITED DISTRIBUTION