

OCTOBER 22, 2024

# **Avio presentation**

## *Satellite Innovation 2024*



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# Avio: propulsion for Space and Defense

## Ariane

*Strap-on boosters  
and LOX turbopumps*

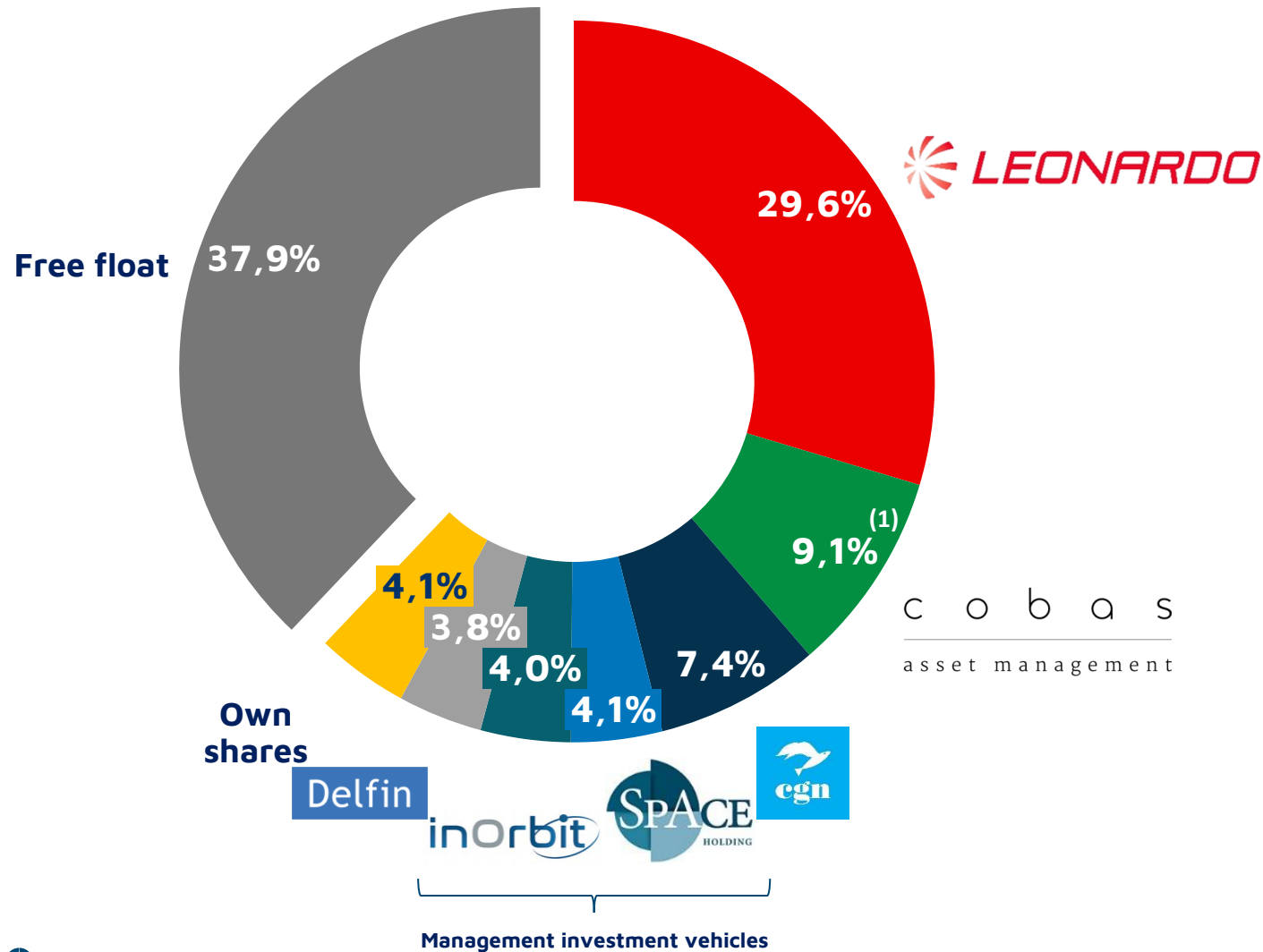
## Vega Launcher System

*Launcher system integration  
SRM manufacturing  
Ground operations*

## Defense

*SRM for air defense  
missiles*

# A public company managed by a team of investors



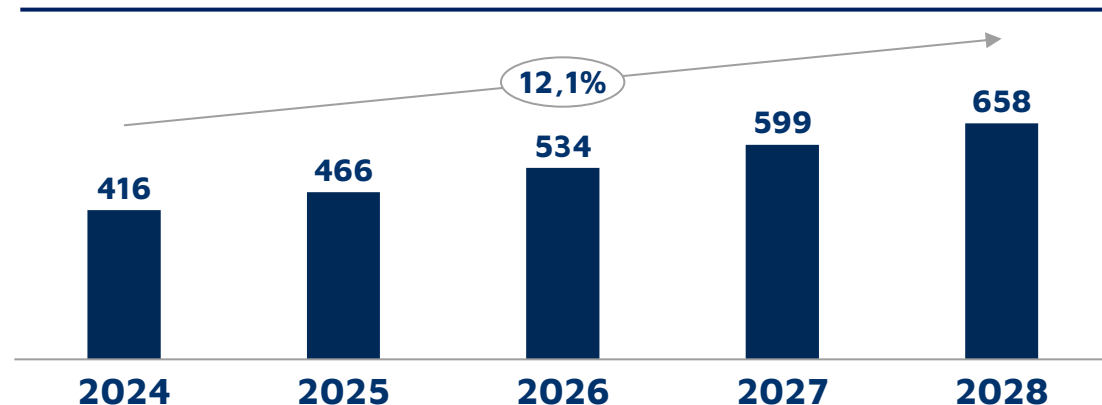
- **Public Company** listed on Euronext STAR Milan
- Approx. ~\$350m **market capitalization**
- ~8% Management share
- ~40% Free Float
- No Controlling Shareholder
- **Key 2024E figures** <sup>(2)</sup>:
  - **Employees:** ~1,300
  - **Order backlog:** \$1.7bn
  - **Revenues:** \$414m
  - **EBITDA Adj.:** \$33m
  - **Positive cash position**

(1) Through different funds  
Data as of September 2024

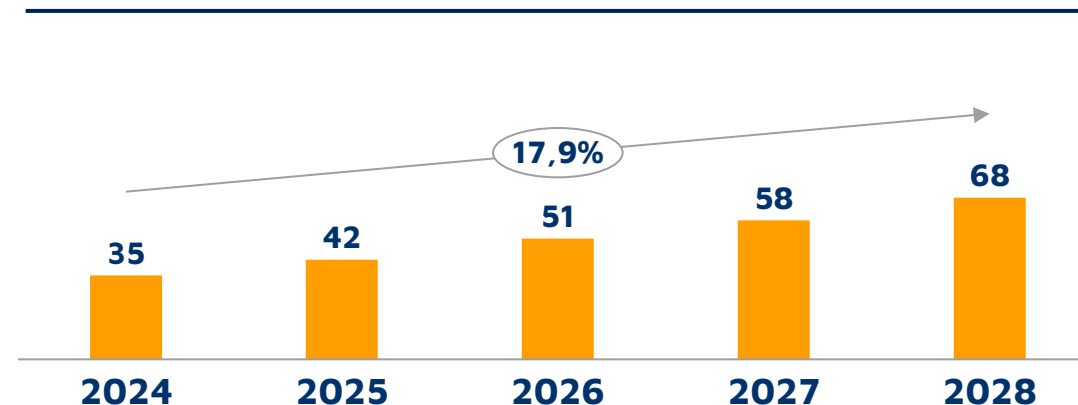
(2) Mid-point of 2024 guidance  
€/ \$ FX: 1.09

# Consensus estimates 2024 – 2028 and share price performance

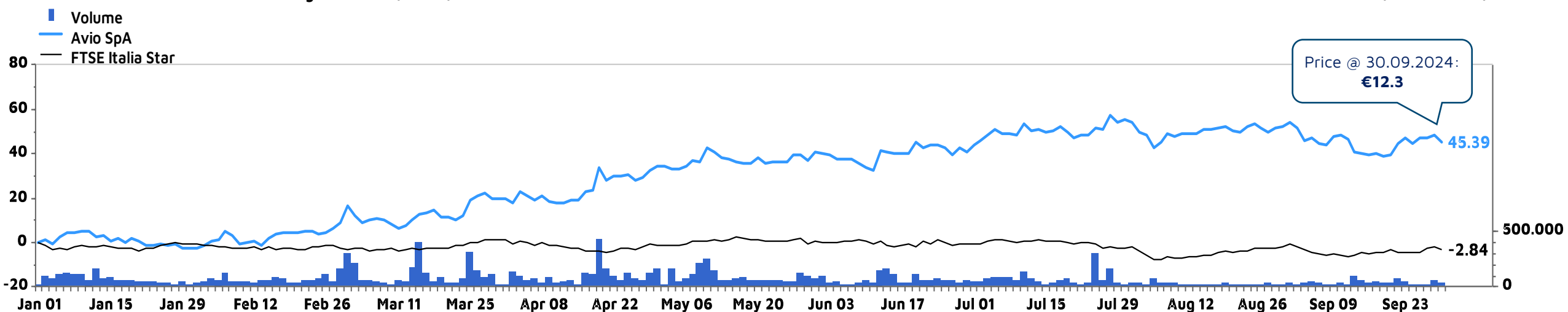
Consensus estimates | Net Revenues (\$m)<sup>(1)</sup>



Consensus estimates | EBITDA Adj. (\$m)<sup>(1)</sup>



Indexed Price Performance with target volume (Actual)



Source: FactSet



(1) €/ \$ FX: 1.09. Average of analysts' estimates (Intesa Sanpaolo, Banca Akros, Equita, Intermonte)



# Avio's 60 years track record in space and defense

~250 Ariane launches

24 Vega Launches

**Ariane 1-3**  
Separation motors



**Ariane 4**  
210 tons boosters



**Ariane 5**  
240 tons boosters



**Vega Launch system**



**Vega C improved performance**



**Ariane 6**  
280/560 tons boosters



~150k Defense SRM produced in 60 years  
Zero failures during operations throughout Avio's entire history

**HAWK** 



**MLRS**  **MILAN**   
100,000+ SRMs 23,000+ SRMs



**ASPIDE**   
4,000+ SRMs



**ASTER 30**   
2,200+ Boosters



**MARTE**   
300 SRMs



**CAMM-ER**   
Series Production in 2024



1960's

1980's

1990's

2000's

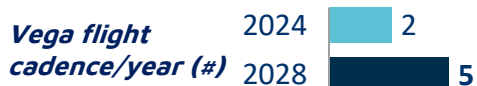
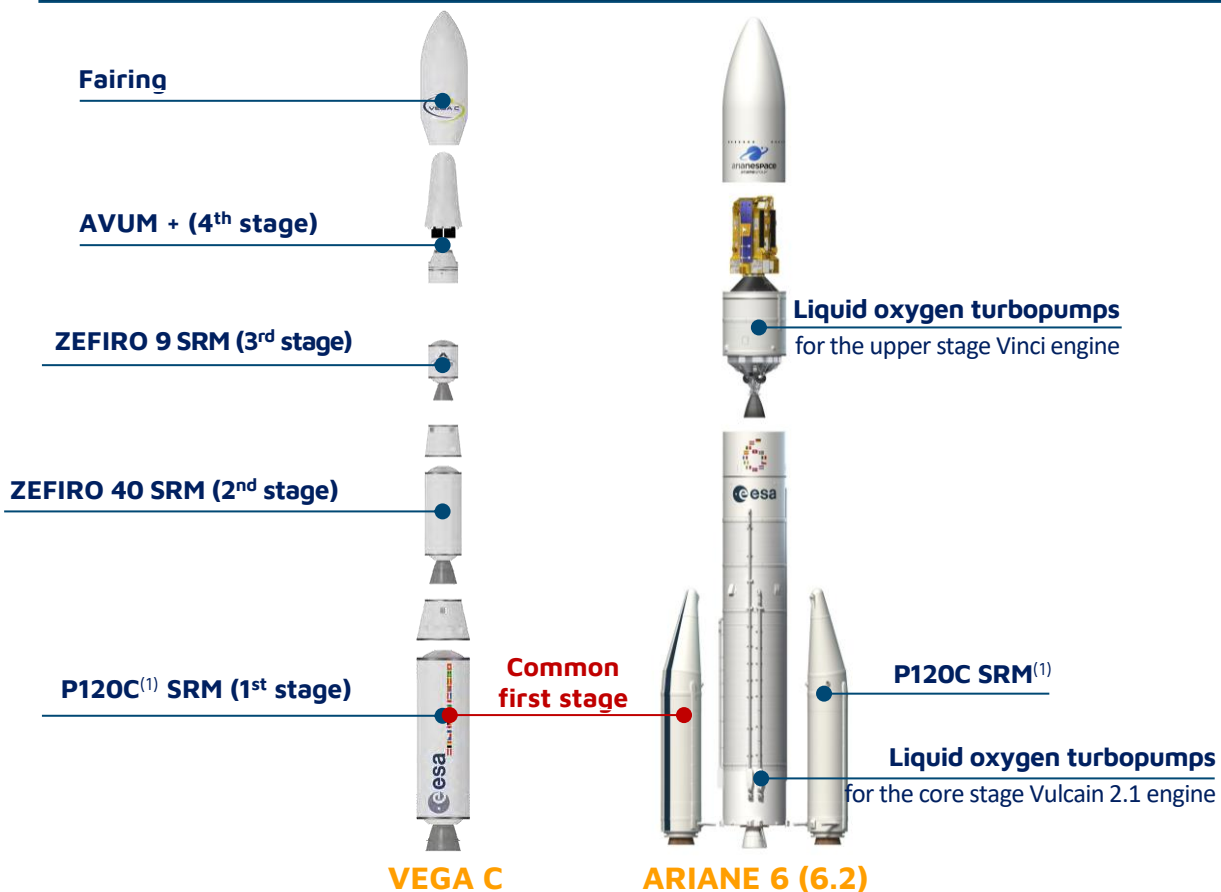
2010's

2024

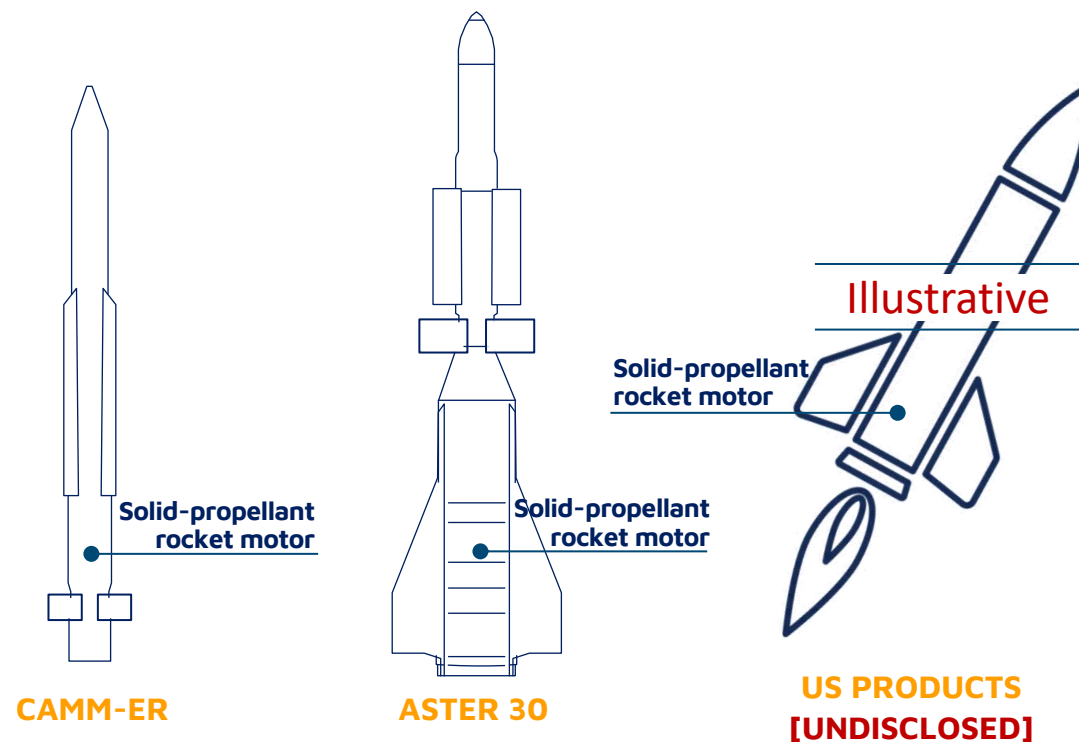
Legacy Current

# Overview of Avio main products

## Space



## Defense



# Current industrial footprint

**Avio France – Paris**  
(100% Avio)



**Europropulsion**  
(50% Avio and 50% AG)



Solid propulsion stage integration



**Avio USA - Arlington, VA**



**Regulus**  
**Kourou, French Guiana**

(60% Avio and 40% AG)



Solid propellant



**Avio Guyane**  
**Kourou, French Guiana**  
(100% Avio)  
Launch Complex



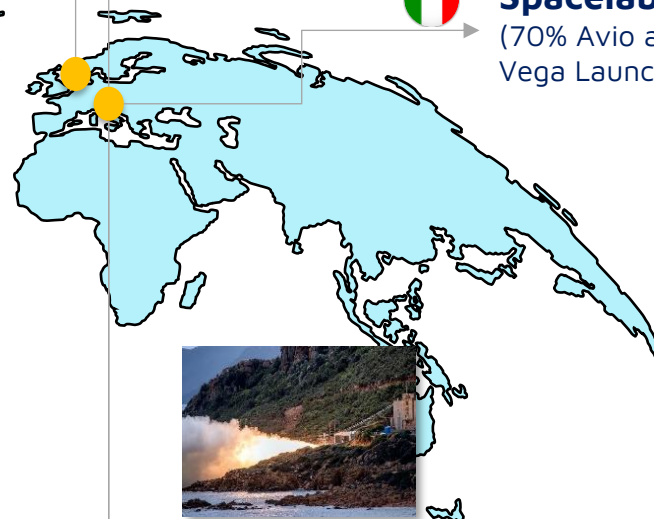
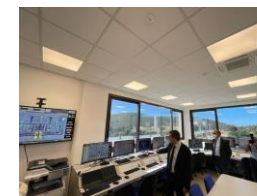
**Avio S.p.A. - Colleferro, Rome**

The company's headquarters and production plants of solid and liquid propellant motors for LVs



**Spacelab - Colleferro, Rome**

(70% Avio and 30% ASI)  
Vega Launcher



**Sardinia**  
SPTF Test Facilities for Liquid Engines

**Airola**  
CFRP Facility





# A great track record with the Vega program – a solid propulsion powered launcher

## Vega program main achievements

**22**  
launches

**120+**  
Satellites  
deployed

**53** Sats  
in a multi-P/L  
mission

**1st**  
EU launch &  
Re-entry  
vehicle

**18**  
tons mass  
launched

**90%**  
Success rate





# Now ready on the pad with Vega C, next launch in December



*P120C arrives at the launch pad*



*Hoisting Zefiro-40 stage*



*Connecting Zefiro-40 stage*



# And also ready to support Ariane 6 to ramp-up flight rate





# What we are ready to do in defense

MBDA



**MBDA**



MBDA has finalised an agreement with Polska Grupa Zbrojeniowa S.A. (PGZ) for MBDA's support for PGZ's delivery of the NAREW air defence programme for the Polish Armed Forces. The agreement enables the PGZ-NAREW Consortium to make **more than 1,000 CAMM-ER air defence missiles** and over 100 launchers for the NAREW programme in Poland (**contract valued in excess of £ 4 billion**).

Raytheon



**Avio** signed a contract with **Raytheon**, an RTX (NYSE: RTX) business, leaders in defense solutions for the U.S. Government and Allied Demand, to initiate and progress the development of **critical solid rocket motors** for defense applications. The contract furthers the systems engineering work required to mature these solid rocket motors into a production-ready state

More info [here](#)

US Army



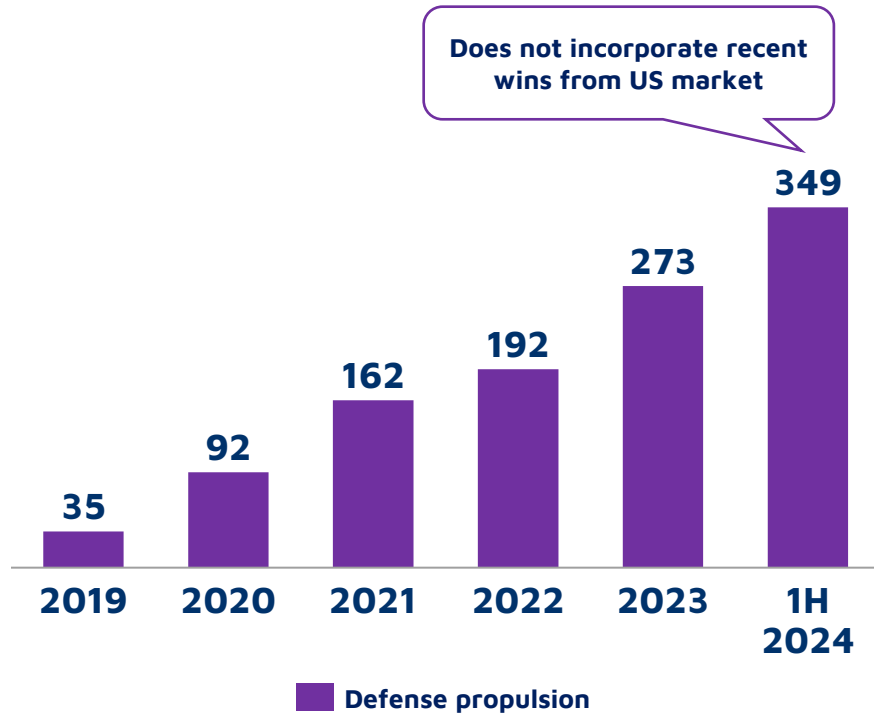
**AVIO S.p.A.** and **U.S. Army Combat Capabilities Development Command Aviation & Missile Center** partner for the development and fast-prototyping of a **solid rocket motor for surface-to-air applications**. The project leverages on both Parties' expertise to qualify the propulsion system in a design-to-manufacturing approach, offering possibility for a future rapid transition to Production

More info [here](#)

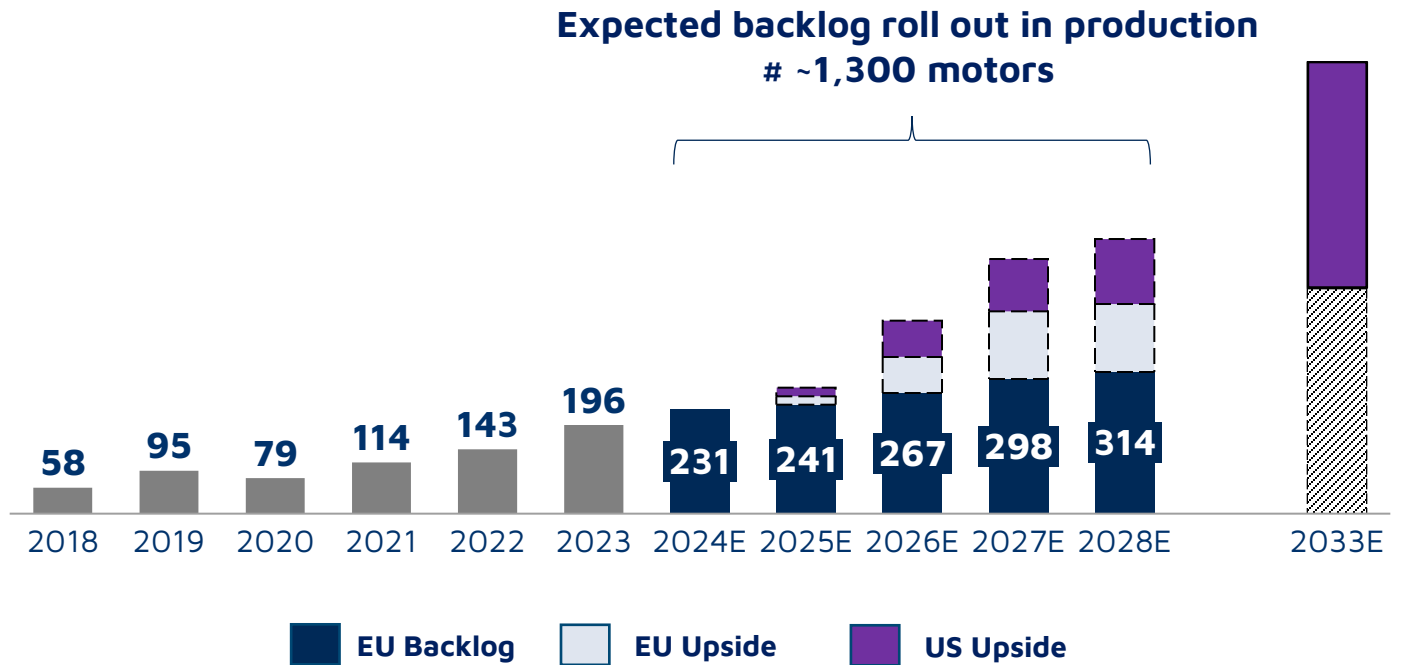
**Avio will supply CAMM-ER solid rocket motors for MBDA**

# Rapid growth of defense backlog anticipates volumes surge in the next decade

Order backlog (\$m) <sup>(1)</sup>



Defense propulsion production (volumes eq.)

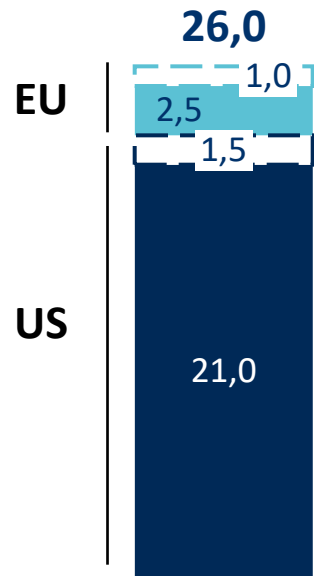


# The US missile propulsion opportunity is $\approx 10\times$ EU

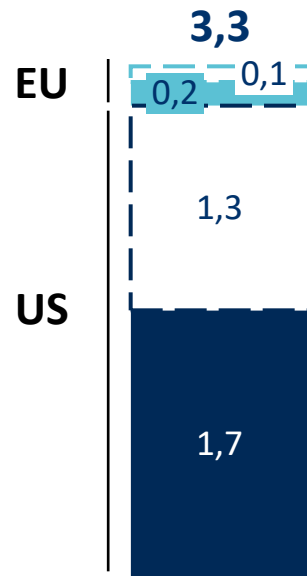


## Market size

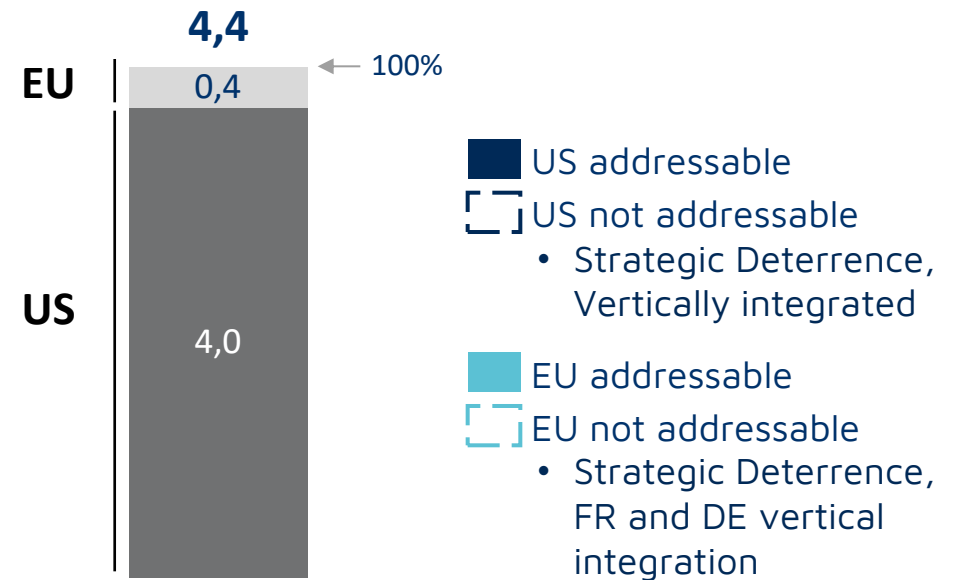
# missiles produced  
2024, *k units*



Missile propulsion value  
2024, *\$B*



SRM propellant mass  
2024, *k tons*



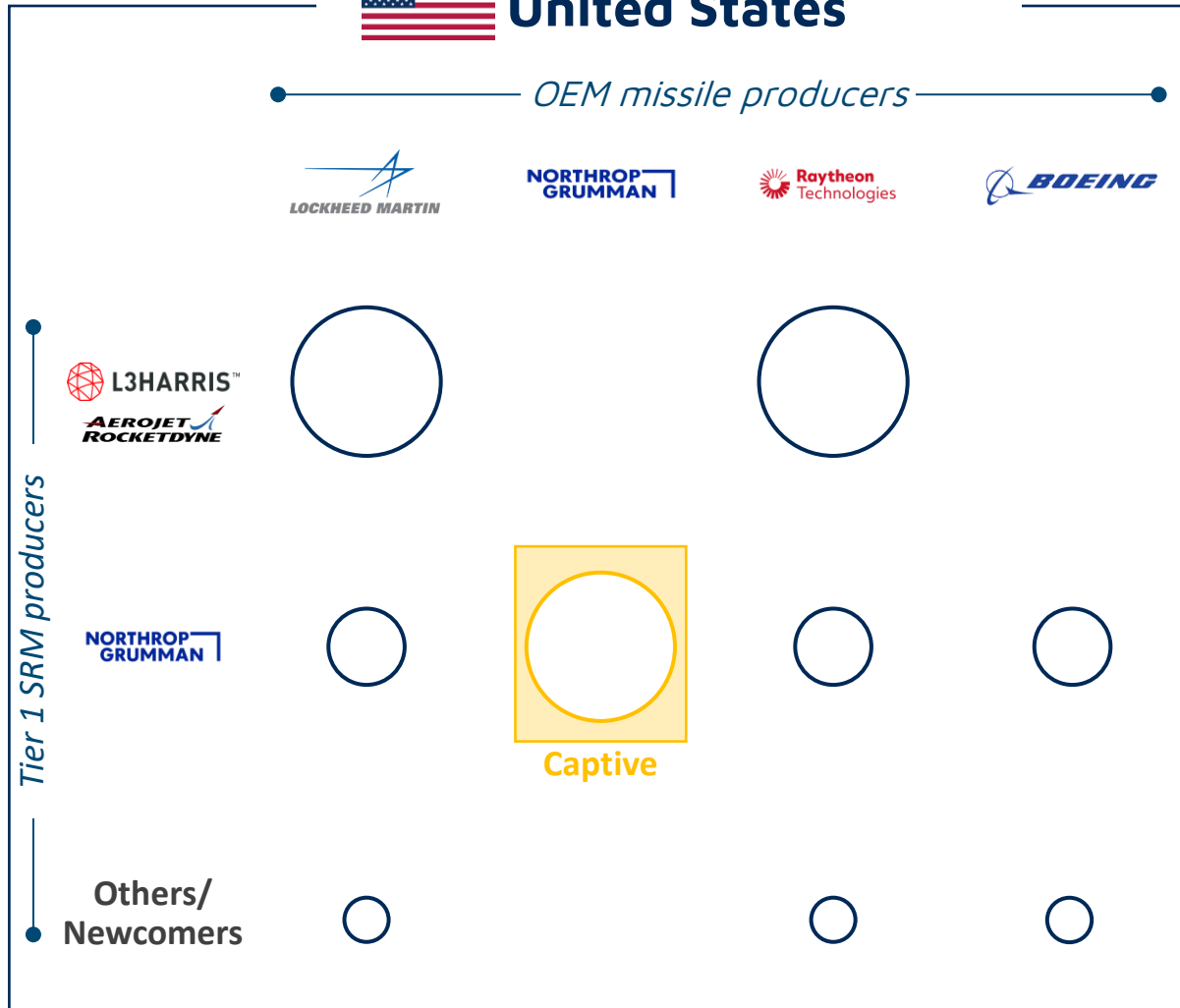


# There are only few merchant suppliers of SRMs

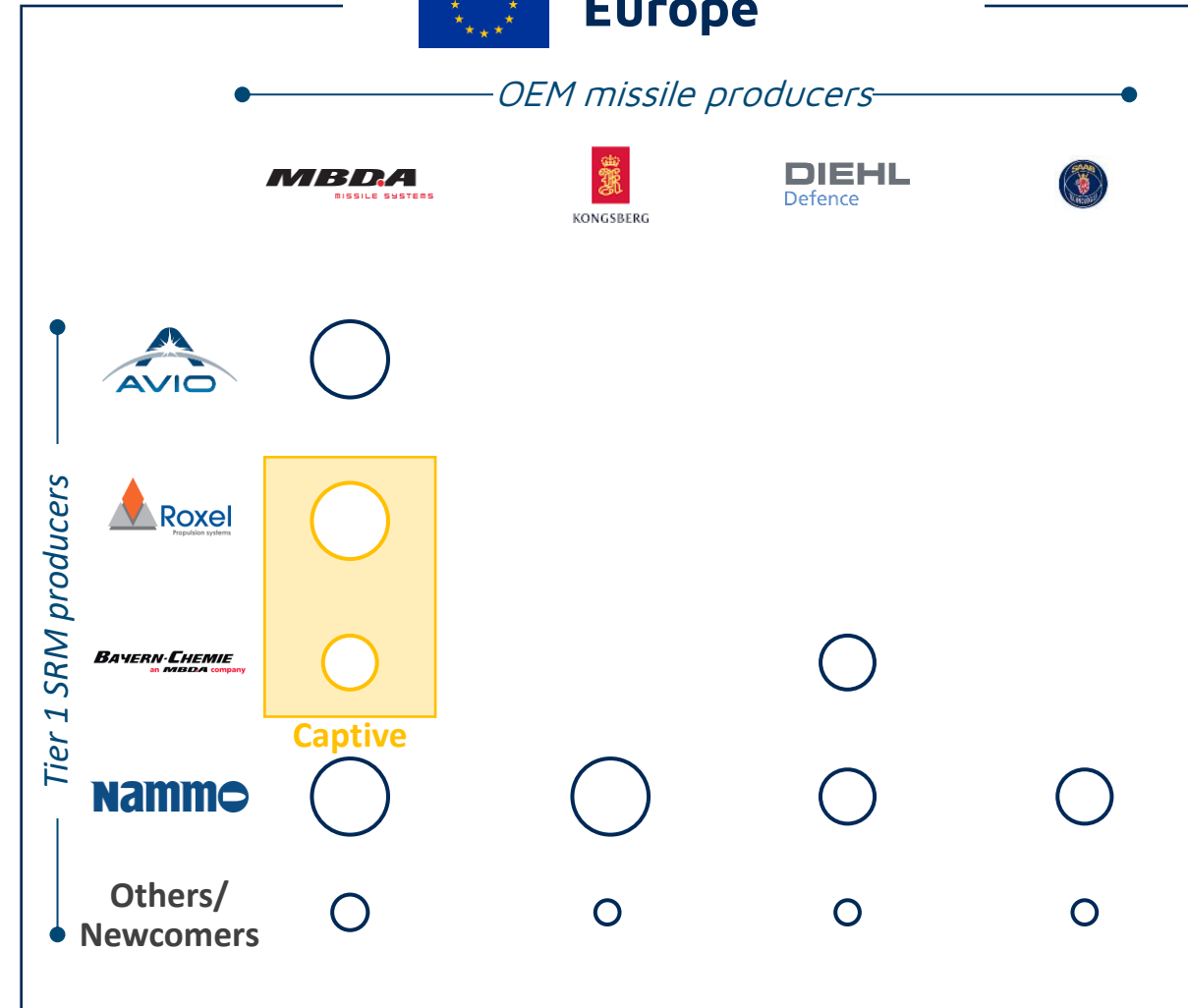
*Illustrative*



## United States



## Europe



SRM propellant mass - *illustrative, not in scale*

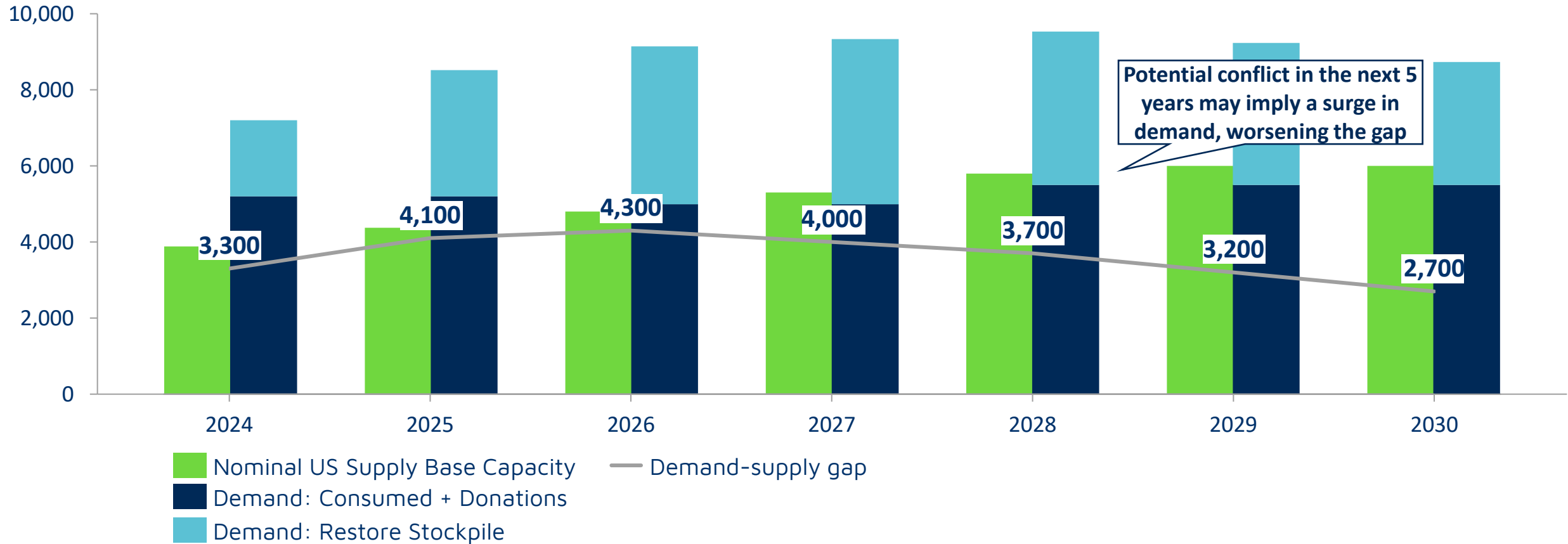
Source: Avio analysis on Janes Database, public information

# The US supply / demand gap is substantial

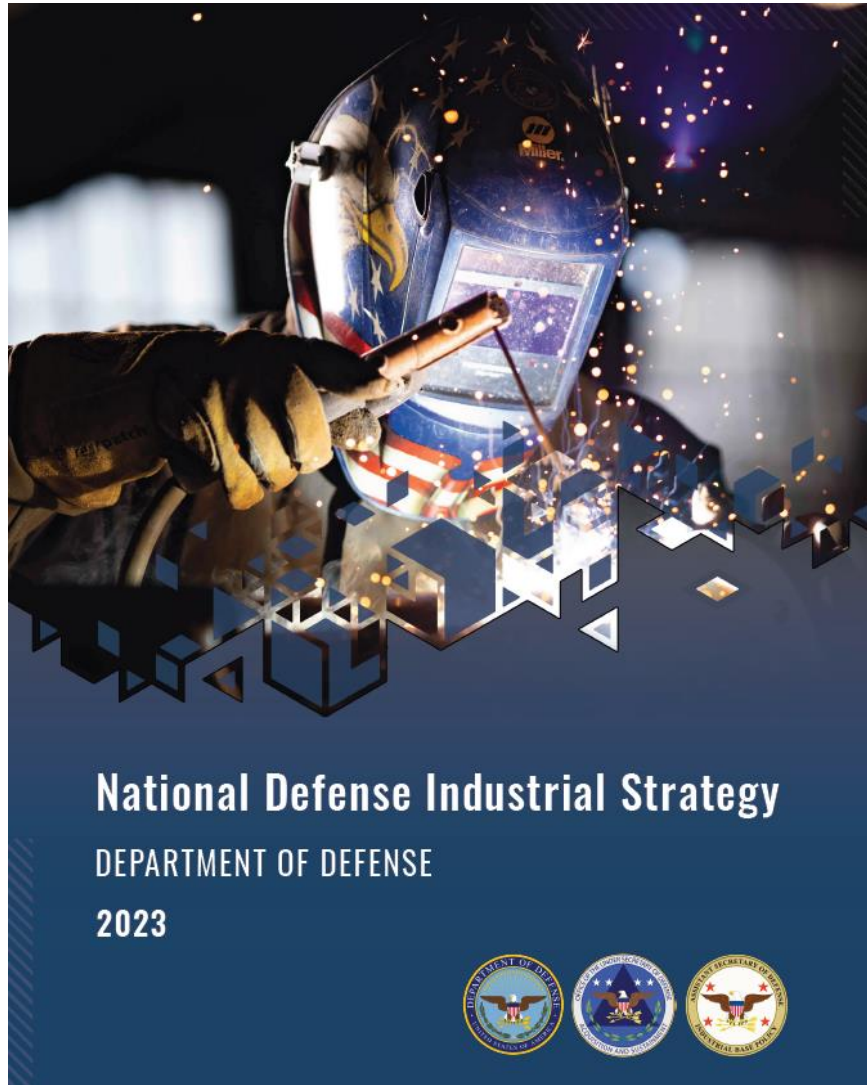
US missiles SRM propellant demand and production 2024-2030, *tons*

*Estimate*

— >25k tons cumulated gap demand vs supply of US missiles SRM propellant 2024-2030 —



# US DoD fosters collaboration with affiliated countries to overcome current US industrial base shortfalls



**“Inadequate Domestic Production: Uncertain DoD funding, [...], and disincentives to modernize manufacturing processes or maintain excess capacity has **resulted in DoD’s overreliance on single or adversarial foreign sources for key materials and production capacity.**”**

**“The DoD seeks to catalyze generational rather than incremental change** in order for our industrial base to meet the strategic moment.

We must **solicit entrants of all types: large and small, domestic, and foreign, and those with no previous relationship to the DoD or defense production.**”

**“Actions to achieve resilient supply chains:**

- **Incentivize industry to improve resilience by investing in extra capacity**
- **[...]**
- **Diversify supplier base and invest in new production**
- **Engage allies and partners to expand global defense production and increase supply chain resilience”**



# Avio fields unparalleled capabilities in SRM product design, manufacturing and testing ...



**Booster cases**



**Structures**



**Thermal protection**



**Nozzle manufacturing**



**SRM testing**



**SRM casting**



**Composite materials**



**Automation**



# ... as well as in plant design, manufacturing and maintenance

## New plant, built in 2018



≈25 acres of buildings

## Dedicated machines manufactured upon Avio design



SRM case manufacturing



1800G mixer



Multi-purpose Skidder



Nozzle integration robot

# Avio USA to play a pivotal role in engaging the US market

- **Avio established Avio USA**, a wholly owned subsidiary headquartered in Arlington, Virginia, which is structured to operate in compliance with US security and export-control regulations and is governed by a US-led board of directors



## **Marty Bollinger – Chairman of Avio USA**


- Ret. Senior Partner at Booz Allen Hamilton
- Extensive consulting experience in US Aerospace & Defense
- Lecturer for Navy Officers



## **James Syring – CEO of Avio USA**

- Ret. US Navy Vice Admiral
- Former Director of the US Missile Defense Agency
- Former President, USAA Insurance Company





**THANK YOU FOR YOUR ATTENTION**



# Appendix

# The launch segment: the gateway to the Space economy worth almost 400 \$ Bn

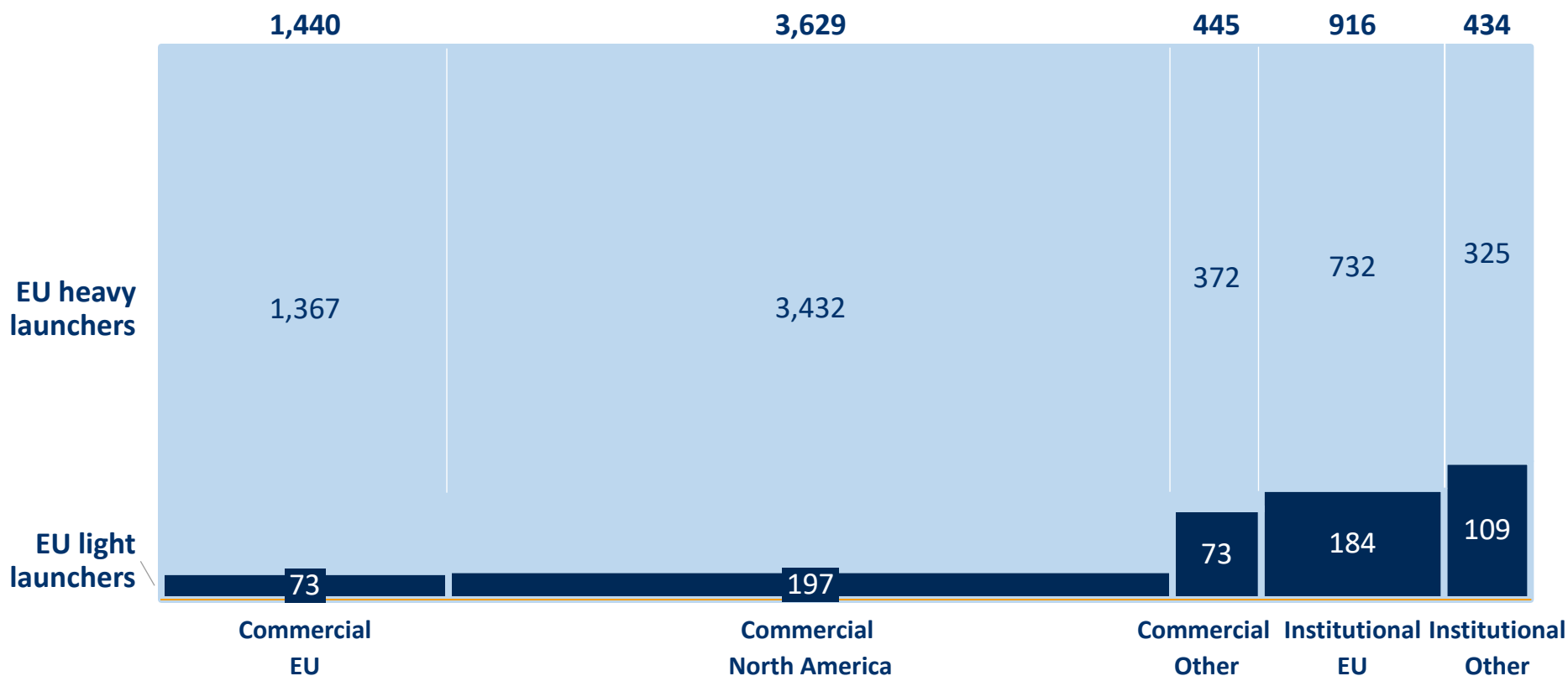
## Global space value chain





# EU launchers addressable markets are large and growing

## Cumulated 2024-2033 EU launchers addressable market mass (tons)



**TOTAL ADDRESSABLE  
MARKET**

**~6,800 TONS**

**CAGR '24 - '33**

**12% (Heavy L.)**

**6% (Light L.)**

Source: Avio Analysis on Gunter's Space Page data; Euroconsult

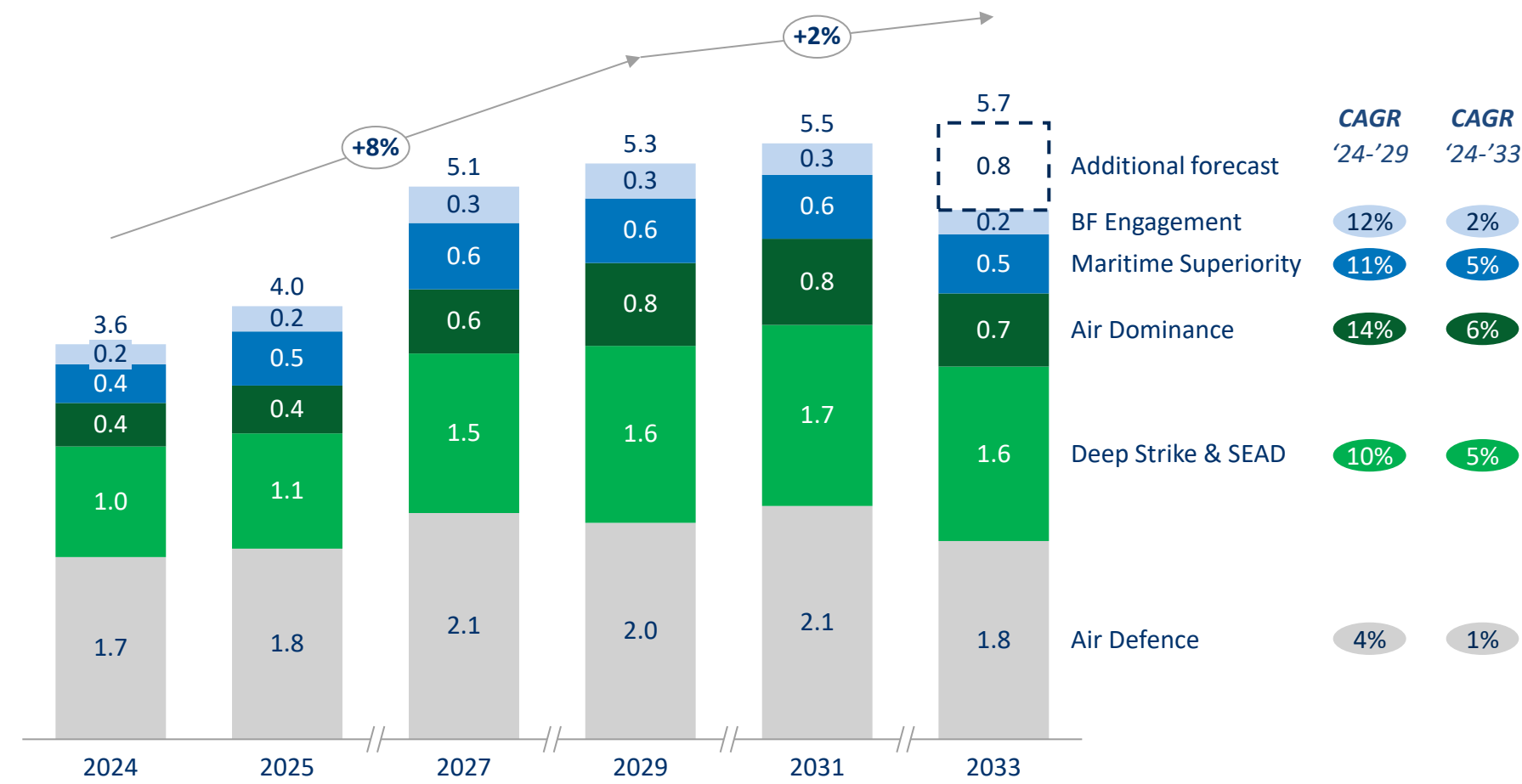
EU heavy launchers addressable market: only payloads to LEO with mass  $\leq 21.65$  tons or to GEO with mass  $\leq 11.5$  tons, excluding Starlink and GuoWang Mega-constellations

EU light launchers addressable market: only payloads to LEO with a mass  $\leq 3$  tons and excluding Mega-constellations

No payloads from captive countries (China, Russia, Japan, North Korea and Iran) and Institutional payloads from North America

# Global missile propulsion market targeting 5% growth from \$3.6B in '24 to \$5.7B in '33: Air Defence largest, Air Dominance fastest growth

Global missile propulsion<sup>1</sup> market evolution by application, \$B

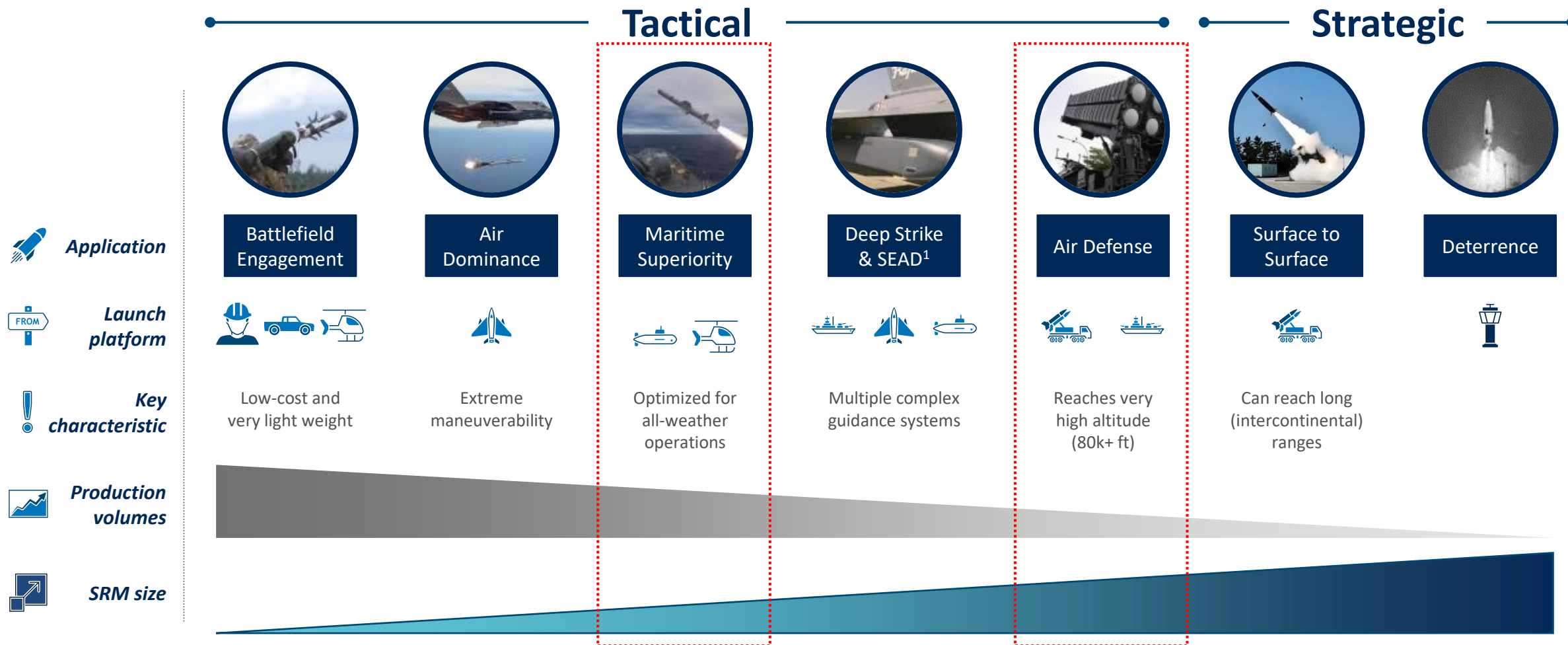


- **Air Defence is the main segment**, accounting for ~40% of the total propulsion market, followed by Deep Strike (30%) and Air Dominance (13%)
- **Air Dominance expected to have the fastest growth in the decade**, Air Defence below market growth
- Year-over-year market view may be misleading due to potential misinterpretation/ lack of information on multi-year (multi-billion) defence programs – more **meaningful to consider the cumulative spend 2024-2033**



1. Global market excluding Russia, China, Iraq and Rogue states; propulsion market considered about 10% of Missile market  
 Note: SEAD=Suppression of Enemy Air Defences; Source: Avio analysis on Janes database

# Missiles can be split between tactical and strategic, with different applications, each with specific mission profiles



Avio current focus

Launch platform legend



Mobile missile system



Warship



Jet



Submarine



Helo



Strategic launch silo



Soldier



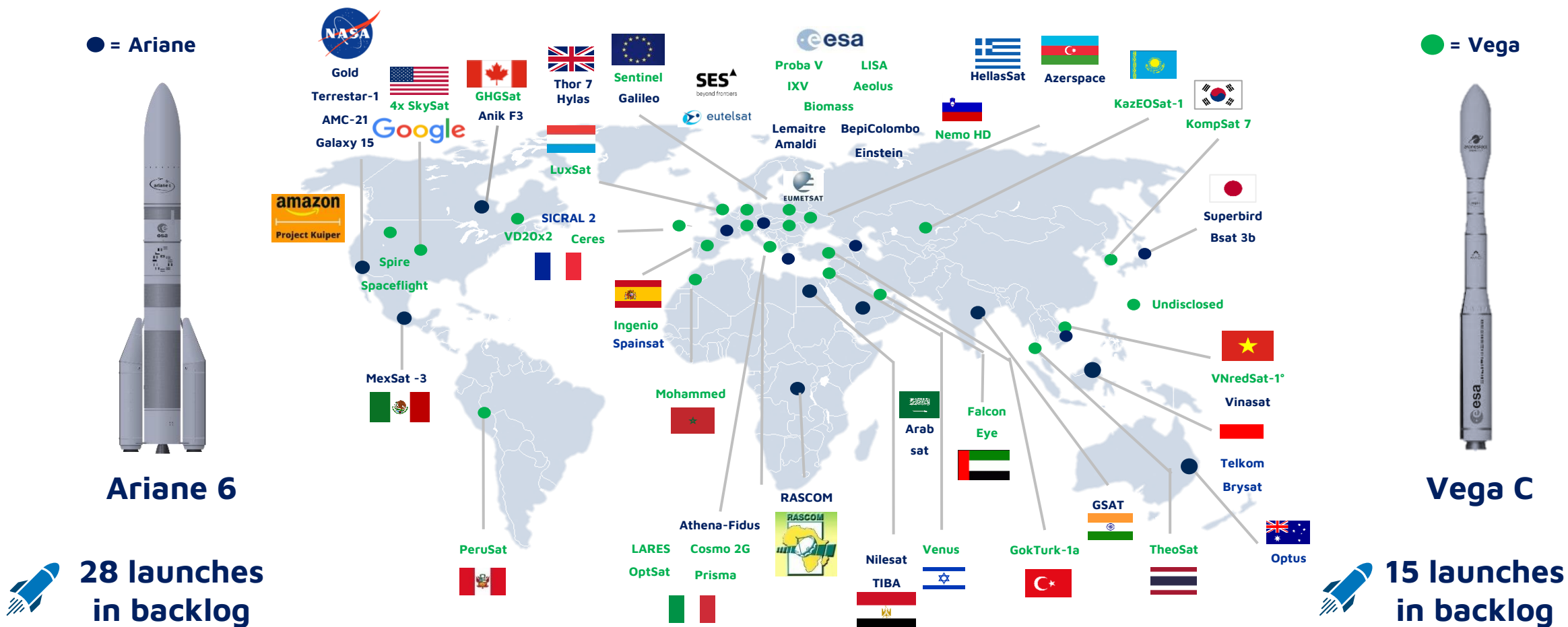
Light vehicle

1. Suppression of Enemy Air Defences; Note: SRM = Solid Rocket Motor



# Global customers base for space launches

NOT EXHAUSTIVE





# VEGA new facilities at CSG for cadence improvement



**Vega E launch pad  
(former A5)**



**Launcher  
integration**

**Satellite  
integration**



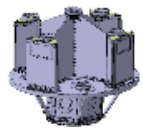
**Vega C  
launch pad**



**Solid Rocket  
Motor storage**

# A robust roadmap for future space launch and services

## Applications and services



**SSMS**  
Payload  
Adapter

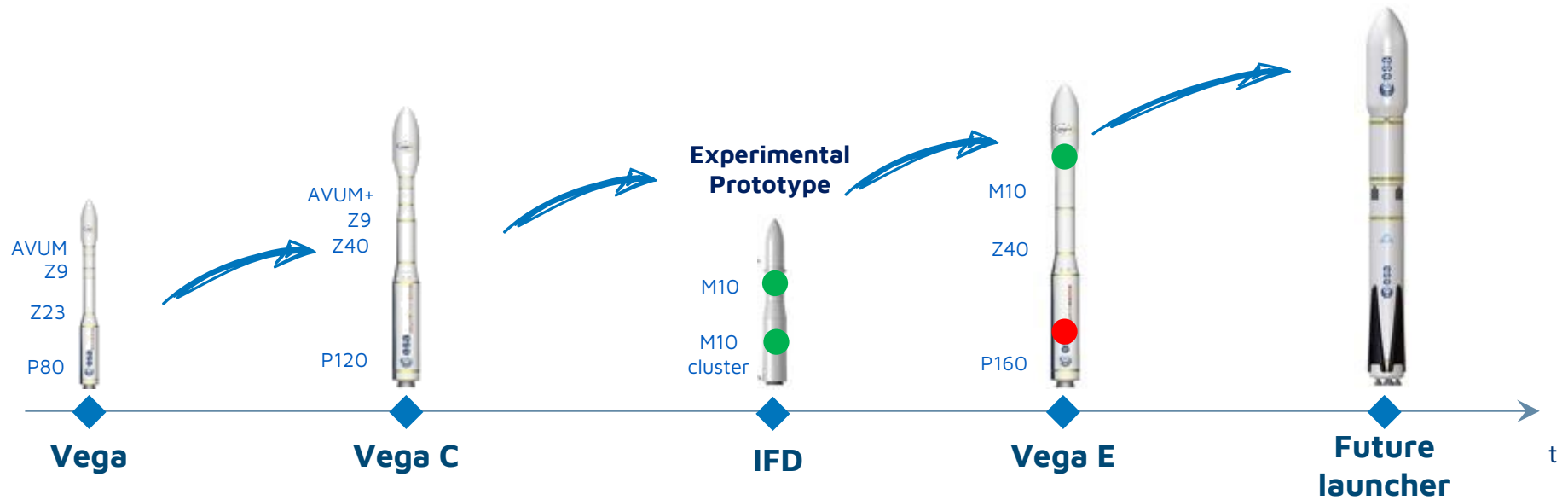


**Space Rider**  
Launch &  
Re-entry



**In-Orbit Service**  
Module

## Launcher Products





# NextGen EU: next-gen launchers and applications progressing as expected



Launcher Products acceleration  
*LOX-CH technology*



Applications and services acceleration  
*Orbital propulsion technology*



## Space Transportation Systems

**Objective:** Accelerate development and know-how with 2 small Flight Demonstrators (design, manufacturing & launch)

*Start of HWIL activities in apr-24*

*M10 firing test planned in October '24*



**M10: manufacturing on going, TCA and Nozzle Printed in house**

## High Trust Engine

**Objective:** Achieve full-scale hot firing demonstration of a 60ton LOX-Methane engine by 2026

*Pre-burner firing test by end of March*

*Assembly line operative by end of '24*



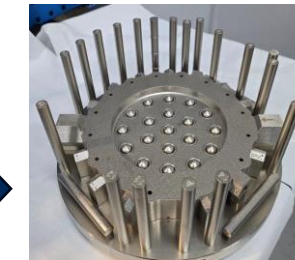
## Multi-Purpose Green Engine

**Objective:** Create a highly versatile "Green" engine for orbital propulsion and in-orbit services and logistics

*Manufacturing and integration of the first two engine models by Oct. 2024*



**Injector section**



## In-Orbit Servicing module

**Objective:** Develop enabling technologies to fulfil in-orbit-servicing mission objectives

*System Req. Review passed*

*Preliminary Design review ongoing*

**ThalesAlenia partnership**  
a Thales / Leonardo company Space



HWIL: Hardware in the Loop  
TCA: Thrust Chamber Assembly

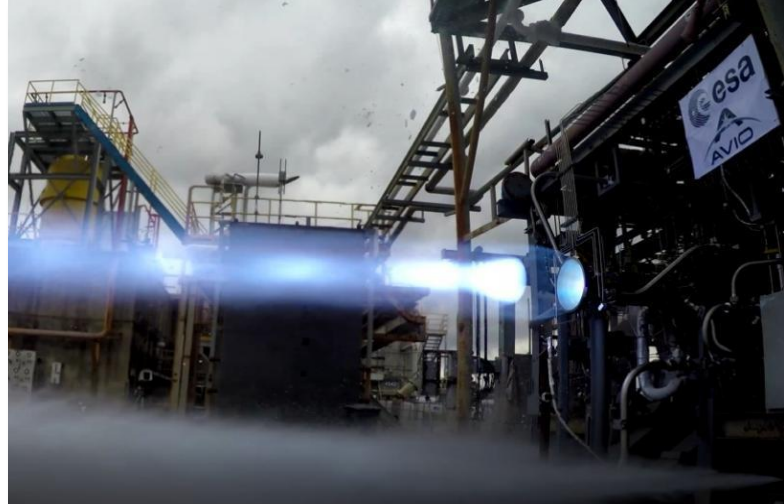


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# Testing and launch operations in Europe



**SRM testing (P120 and Z40)**



**Liquid engines testing (M10)**



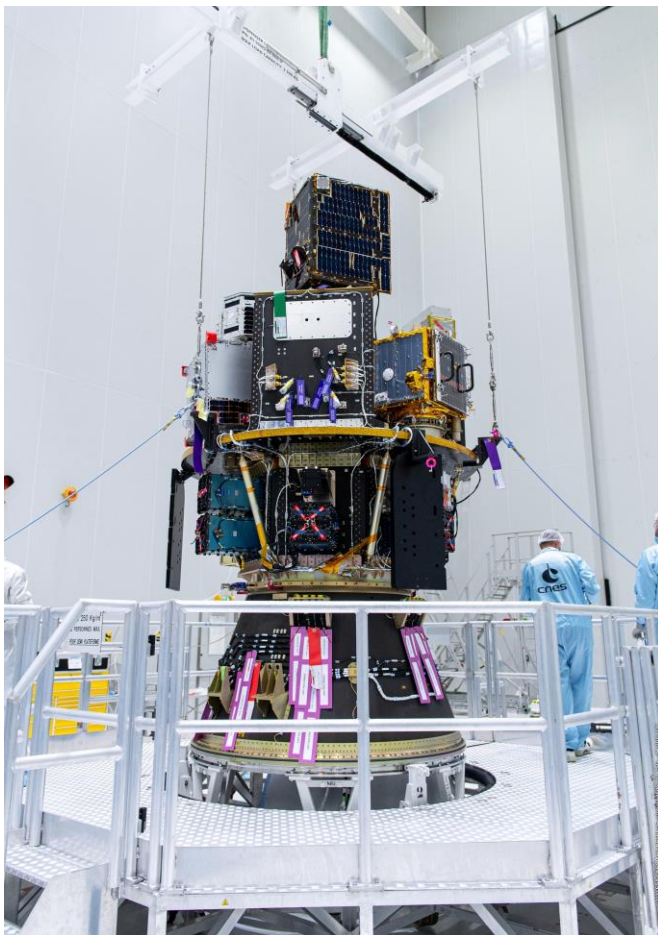
**Vega integration**



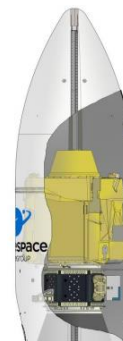


# Space launch capabilities today

**Vega C**  
**2,3ton Payload in LEO**



**Vega C - SSMS**  
**Piggyback/Rideshare**



**Ariane 6**  
**20ton LEO, 11ton GEO**



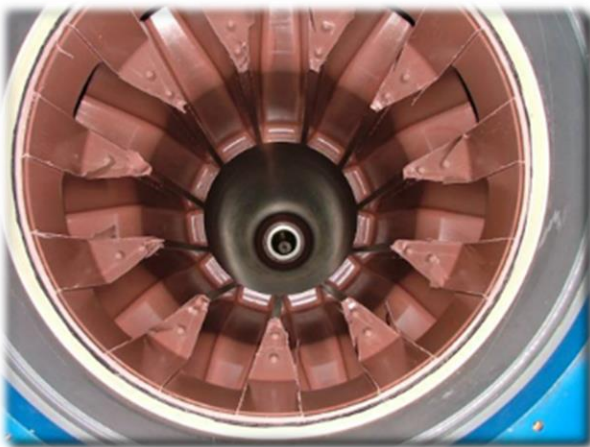


# Avio mastership of solid rocket motors: full vertically integrated capabilities

*Full autonomy for Solid Rocket materials formulation, test and production*



*Propellant Casting*



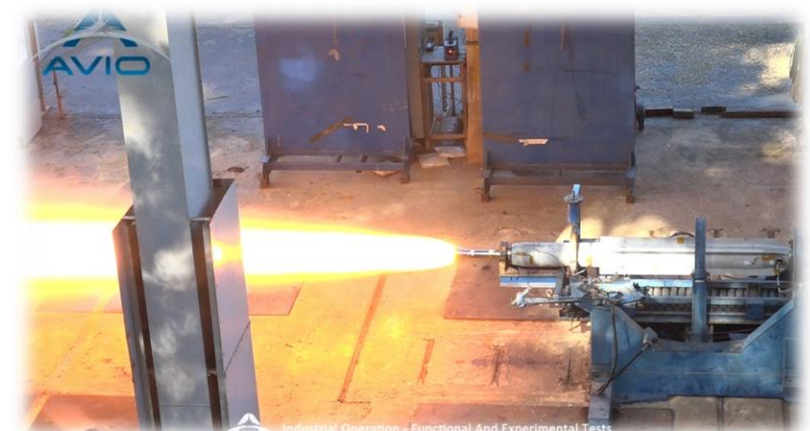
*Filament Winding CFRP Inert Motor Cases Manufacturing*



*Nozzle MAIT*



*Full Spectrum of Testing capabilities (non-destructive, destructive, static firings, ...)*





## CONTACTS

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