



# Vega In Orbit Services and Solutions Focus on Space Debris

*UNOOSA - World Space Forum  
Wien, November 18<sup>th</sup> – 22<sup>nd</sup>, 2019*

*Angelo FONTANA  
VP, Marketing & Business Development*



€390M

Revenues  
2018

1000

Employees

€330M

Mkt Cap  
65% free float



Prime  
Contractor



Partner  
Supplier

# Avio on Earth



**Colleferro, Rome**  
**(GMT +1) N41.727 E13.003**

The company's headquarters and production plants of solid and liquid propellant motors for launch vehicles. In Colleferro, Avio also carries out the development of the new launchers, Vega C and other evolutions.

**Paris**  
**(GMT +2) N48.856 E2.351**

Headquarters of Europropulsion (50% Avio and 50% AG), main contractor of the solid-propellant motors for Ariane 5 and Ariane 6.

**Turin**  
**(GMT +1) N45.067 E7.682**

Avio designs and produces the liquid oxygen turbopump for the Vulcain and Vinci engines for Ariane 5 and Ariane 6.



**French Guiana**  
**(GMT -3) N4.003 E52.999**

Avio runs three facilities at the European Spaceport located in Kourou, French Guiana : (i) REGULUS for Ariane 5 segments, Vega P80 and P120C propellant manufacturing and cast, (ii) EUROPROPULSION for Ariane 5 boosters final integration and (iii) the Vega Launch Zone, where the Vega stages' integration takes place before launch.



**Airola**  
**(GMT +1) N41.061 E14.558**

Carbon fiber impregnation facility.



# The European fleet

## Capacity

Reference Orbit

10,5 t

GTO

1,2 t

SSO, 700 km

2,3 t

SSO, 700 km

6 t

GTO

11 t

GTO

2,8 t

SSO, 700 km



Today

2020

2020/21

2024

Ariane 5

Vega

Vega C

Ariane 62

Ariane 64

Vega E

# Avio's Services and Solutions



# The VIS (Vega In-Orbit-Service) for Debris Removal

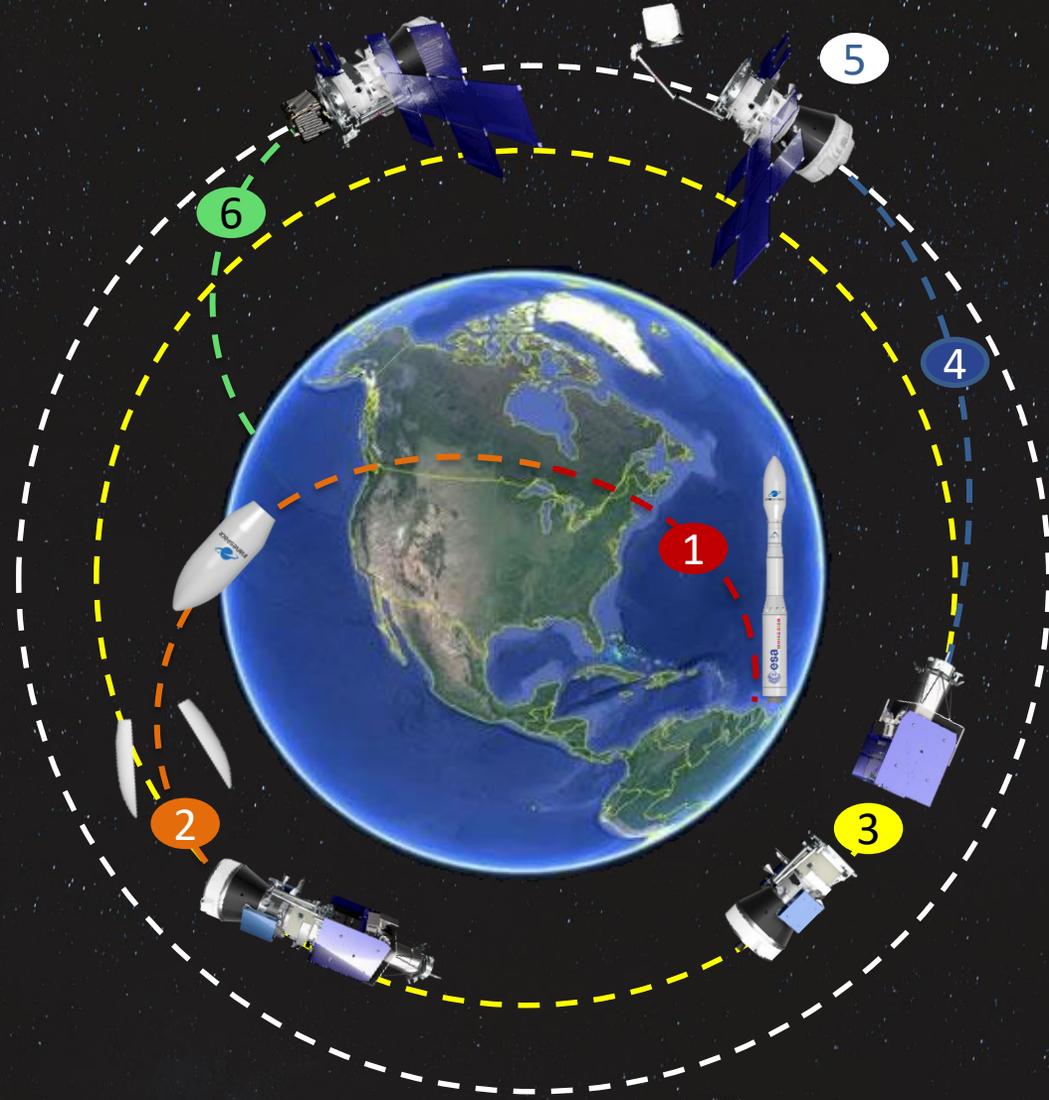


*Let's clean up the space junk  
around the Earth.....*

# The Mission Profile



- 1 VEGA C launch
- 2 VIS orbit insertion
- 3 Payload release
- 4 Rendez-vous with target debris
- 5 Debris capture
- 6 De-orbit maneuver



# How it works

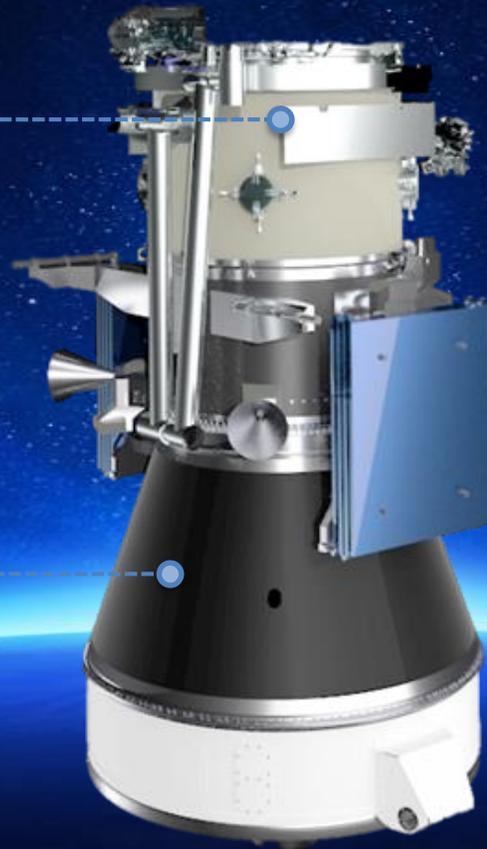


## SM

Equipment for RDV and capture: robotic arm and clamping mechanism, fine thrusters and proximity sensors, GNC

## AOM

Made up of the AVUM providing propulsion, an 1194 Adapter to accommodate the SM and the ALEK providing Power and Avionics



***A Space Tug  
able to clean up the  
space junk in LEO***

# The Industrial Team



## Service Module (SM)



## Ground Operations



*An international  
Project and Team*

## Avum Orbital Module (AOM)





# AVIO IN ORBIT SERVICES

Thank you