



# Investor Presentation

*London, January 2019*

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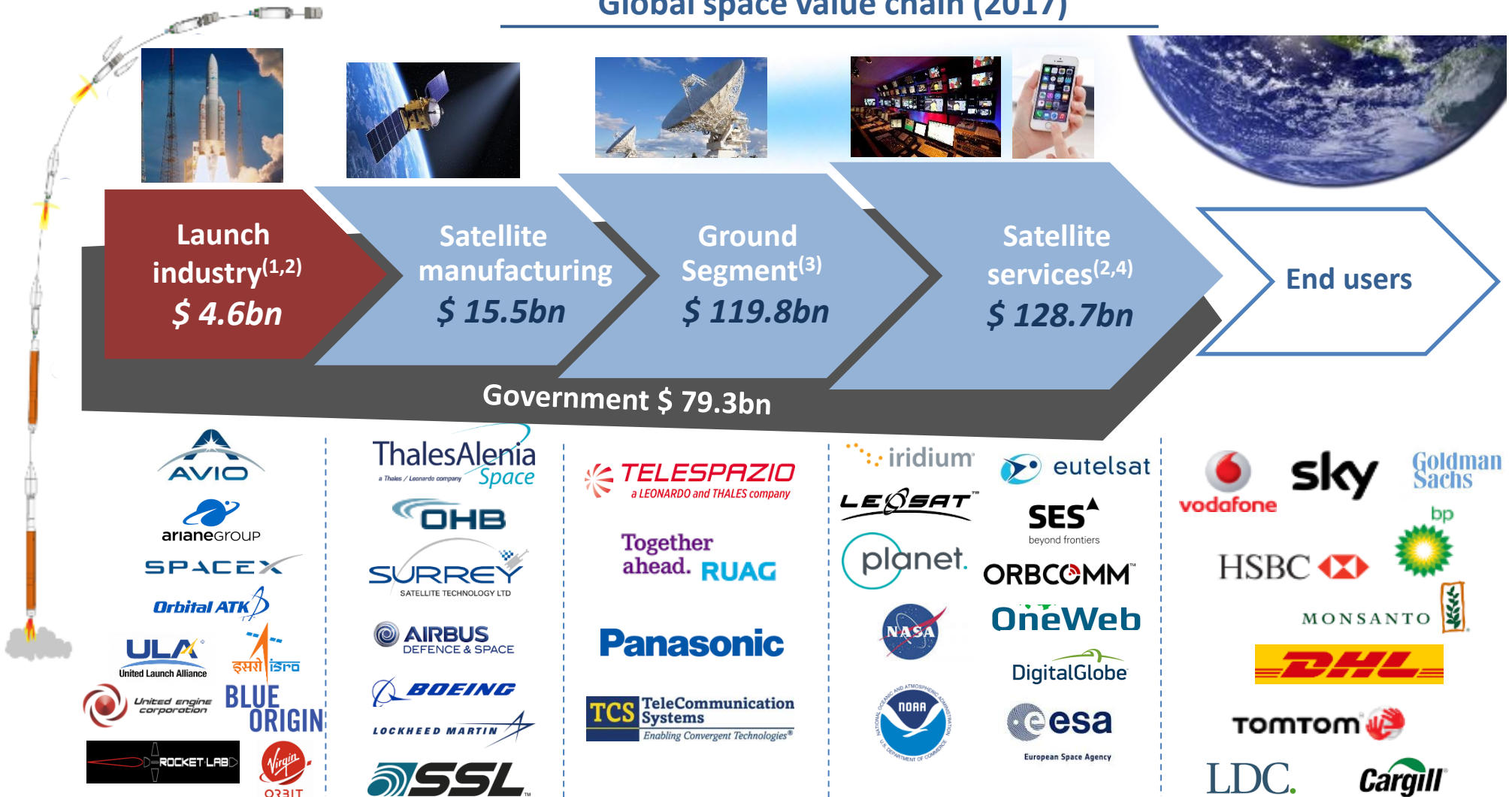
# Avio: a European leader in Space Launch



- 50 years in Space Launchers
- *Vega* (light launcher) Prime Contractor
- *Ariane* (heavy launcher) Partner/Supplier
- 900 employees, 340 M€ revenues
- 300M€ Market Cap (AVIO.MI)
- >65% free float, no controlling shareholder
- 4% Management share

# Launch is the upstream part of the Space industry

## Global space value chain (2017)



Source: Satellite Industry Association (2018)

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- (1): Includes launcher manufacturing and launch service activities  
 (2): Commercial services revenues only  
 (3): Includes GNSS chipsets and Related  
 (4): Includes commercial humanflight

# Space launch has three main sub-segments by type of orbit



## GEO - Geostationary Earth Orbit

Altitude 36,000km



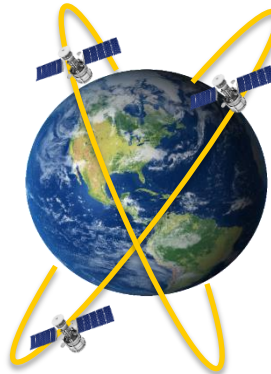
Annual avg volume :  
30 launches, 160 tons



Mature market

## MEO - Medium Earth Orbit

Altitude 3,000-22,000km



Annual avg volume :  
12 launches, 19 tons



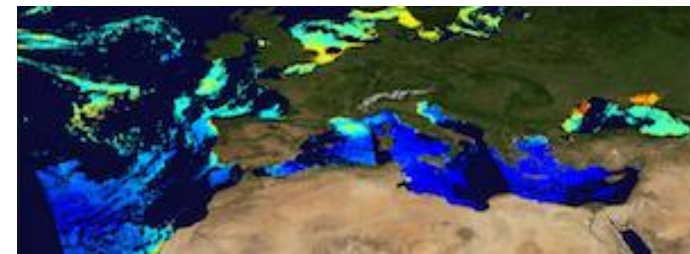
Niche market

## LEO - Low Earth Orbit

Altitude 500-2,000km



Annual avg volume :  
55 launches, 60 tons



Booming demand

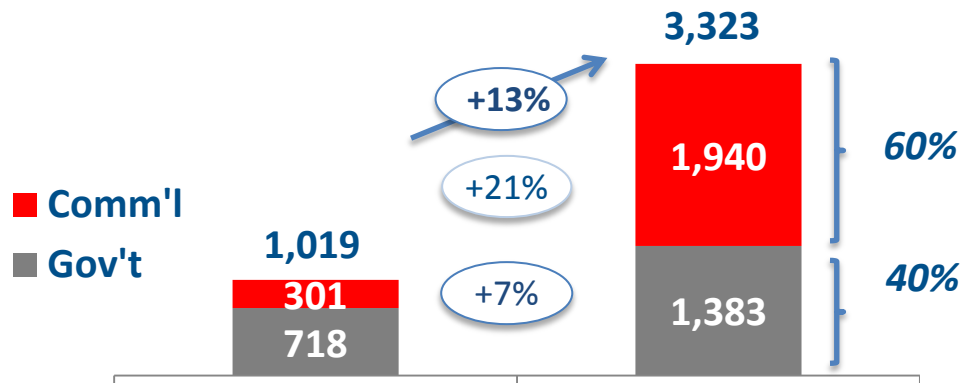
# The number of satellites to be launched grows double digit



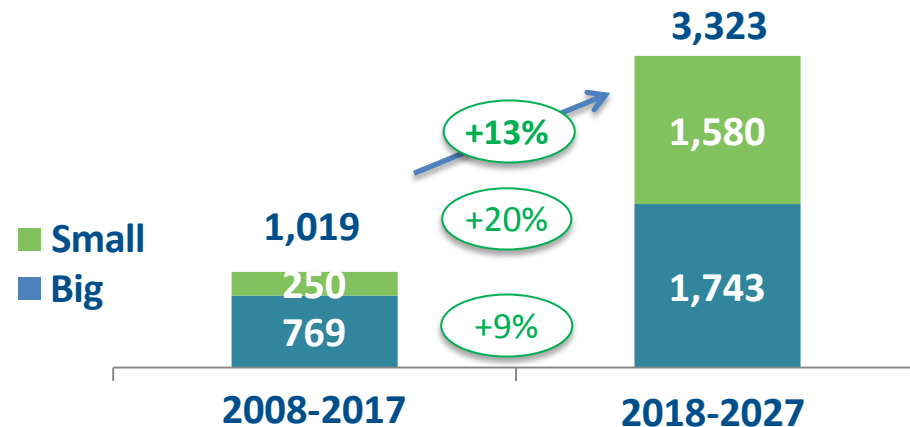
# of Satellites to Space

+x% = CAGR

Growth drivers



- Commercial**
- Rise of constellations
  - New services
  - Challenging business cases
- Government**
- Large economies strengthening space programs
  - Emerging economies seeking space access



- SmallSats**
- Miniaturization technologies
  - Series production/volume
- BigSats**
- Downward cost pressure
  - Electric propulsion

Source : Avio estimate on Euroconsult data

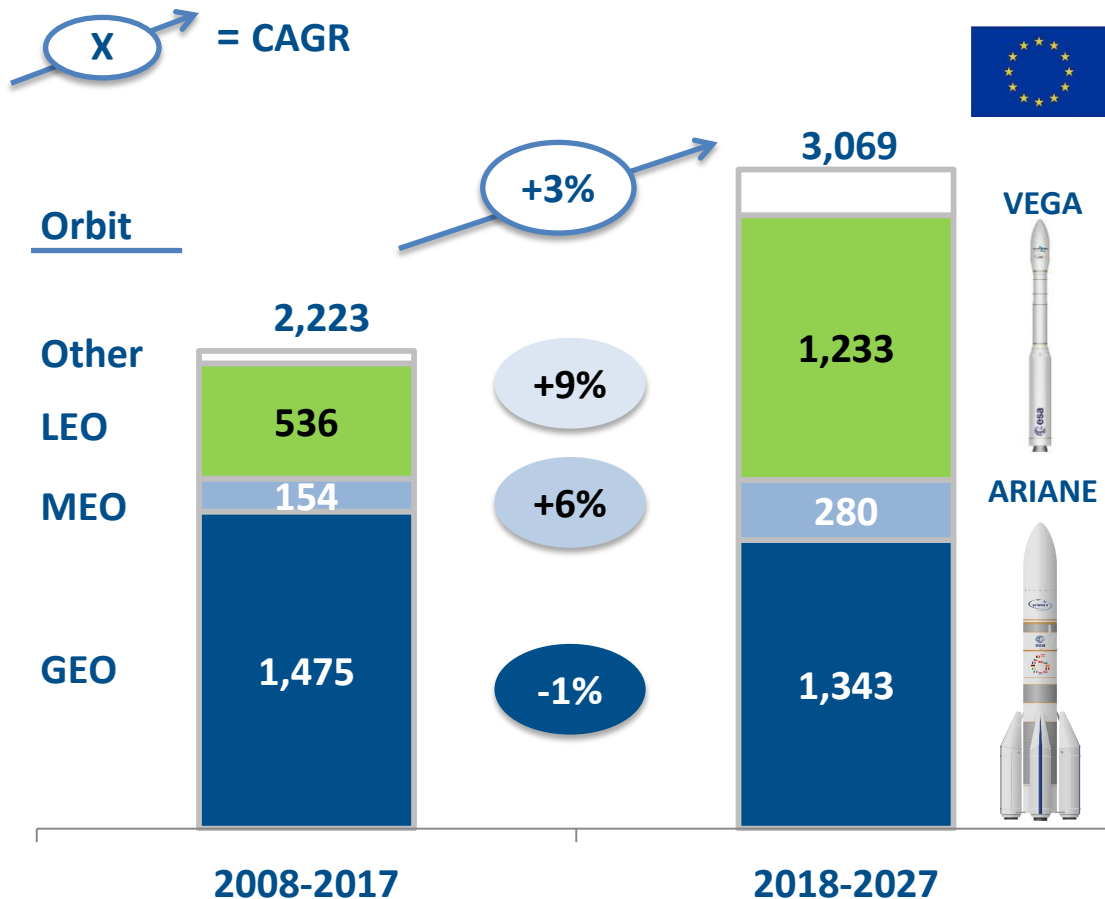
Note: Commercial demand excludes OneWeb and Starlink constellations, amounting to over 5,500 sats. Sats < 50 kg also excluded.

Small Sats < 500 kg; Big Sats > 500 kg

# Demand requirements and product offer sides both evolving



## Total mass at launch (Tons) - World market



## Launch service offering – World Market



Source : Avio estimate on Euroconsult data

# Avio works across the full spectrum of the European offer side



## Avio activity by main product lines

**Ariane 5 - Heavy launcher**  
(Avio Industrial partner)  
40% of Revenues



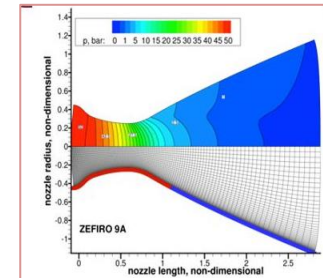
**Vega - Light launcher**  
(Avio Prime Contractor)  
55% of Revenues



## Avio activity by type of business

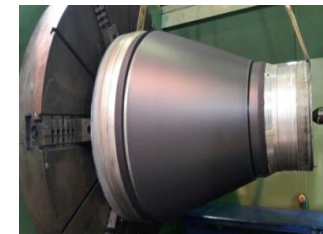
**Research & Product Development**

30% of Revenues



**Propulsion and Launcher Production**

70% of Revenues



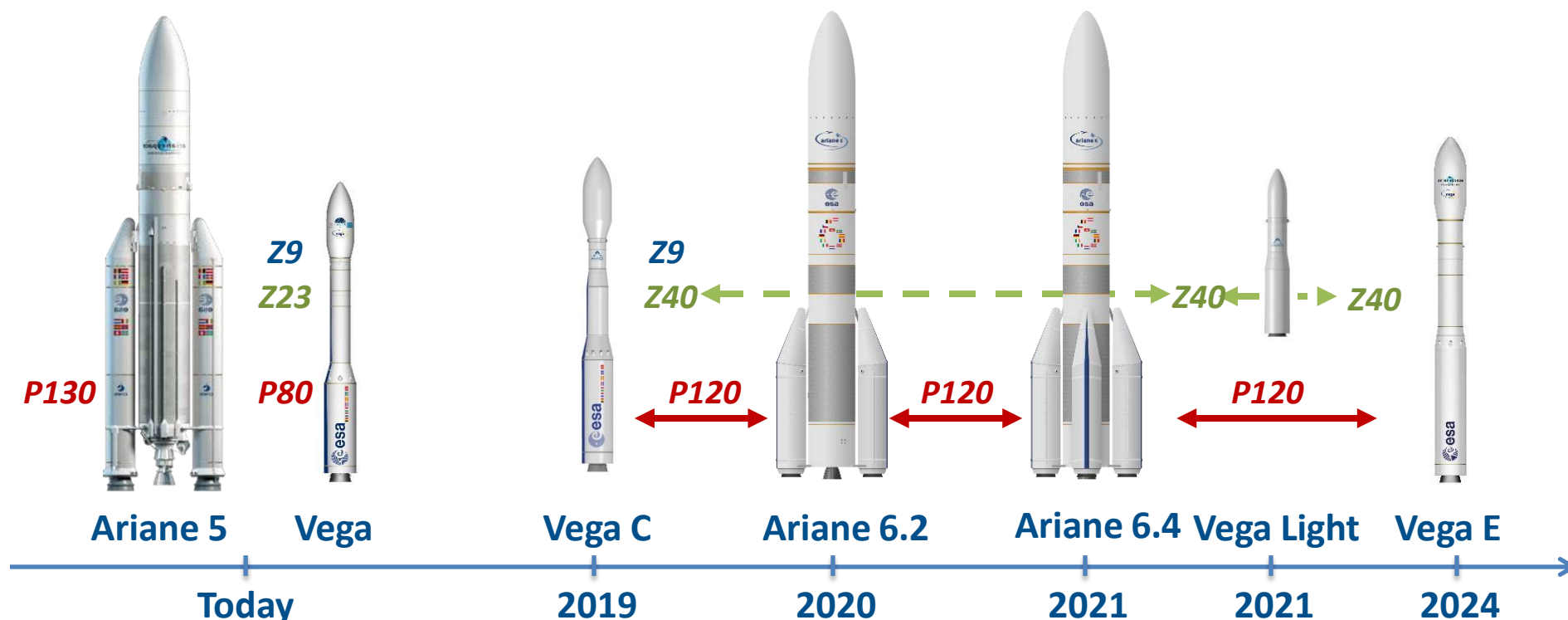
 **esa** European launchers

# European Launcher offering evolving to meet market demand



Key  
Perf  
Data

10.5 tons in GTO	1.5 tons in LEO	2.3 tons in LEO	>5 tons in MEO/LEO/GEO	11 tons in GTO	TBD in LEO	2.8 tons in LEO
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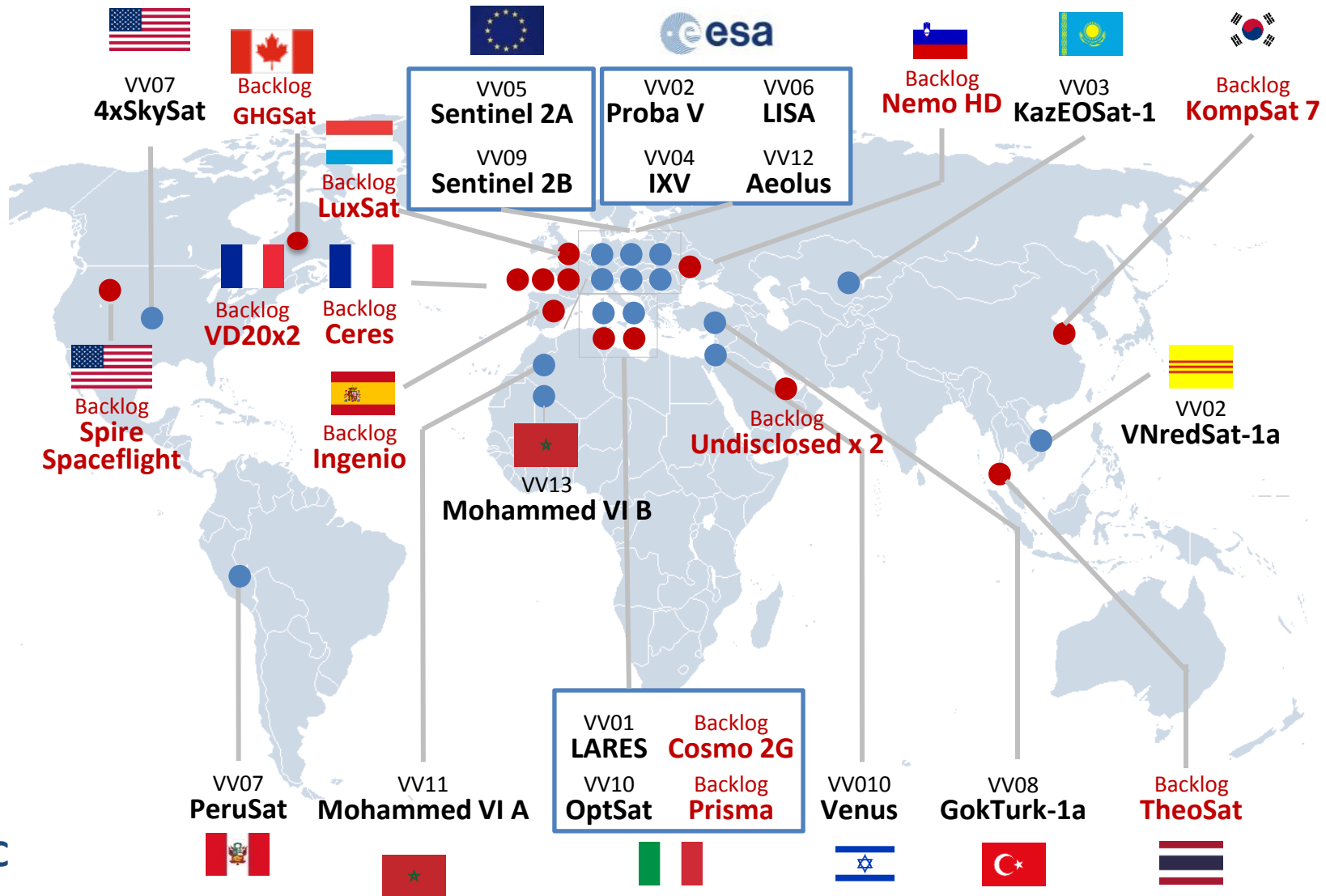
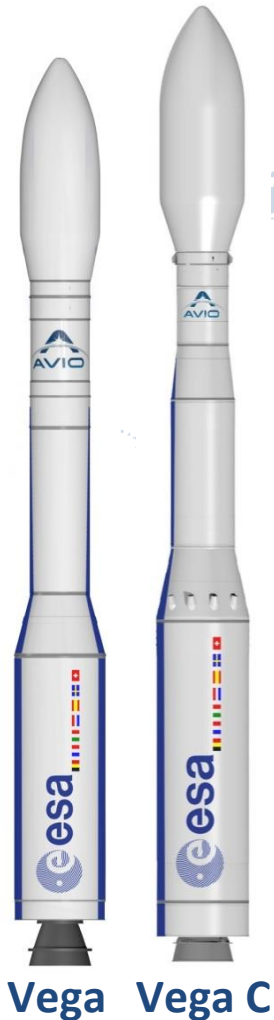


From 4 main stage  
motor types...

*broader and more specific product offering*  
→  
*fewer industrial platforms*

From 2 main stage  
motor types...

# Global customer base for Vega since its 2012 maiden flight



# Main production facilities in Colleferro, Italy



**Booster Case Facilities**



**Interstage manufacturing**



**Nozzle Production**



**P120 filament winding**



**Upper stage integration**



**Avio prepreg tow (patent)**

# Main Plants at the spaceport in Kourou, French Guiana



**EUP – Stage Integration**



**Mobile Gantry  
Launcher Integration**



**Regulus – Propellant casting**

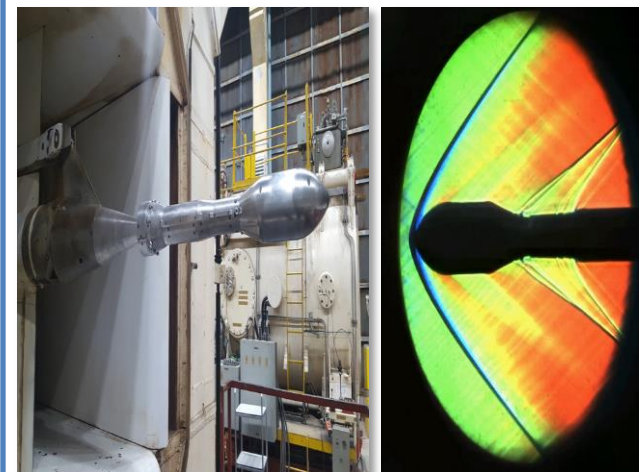
# Development and Testing activities



**P120 Static Firing Test (July 2018, Kourou)**



**New SPTF facility**



**Wind Test Tunnel for Vega C**



**Z40 Static Firing Test (March 2018, Sardinia)**



**Firing test of Vega E M10 prototype engine**

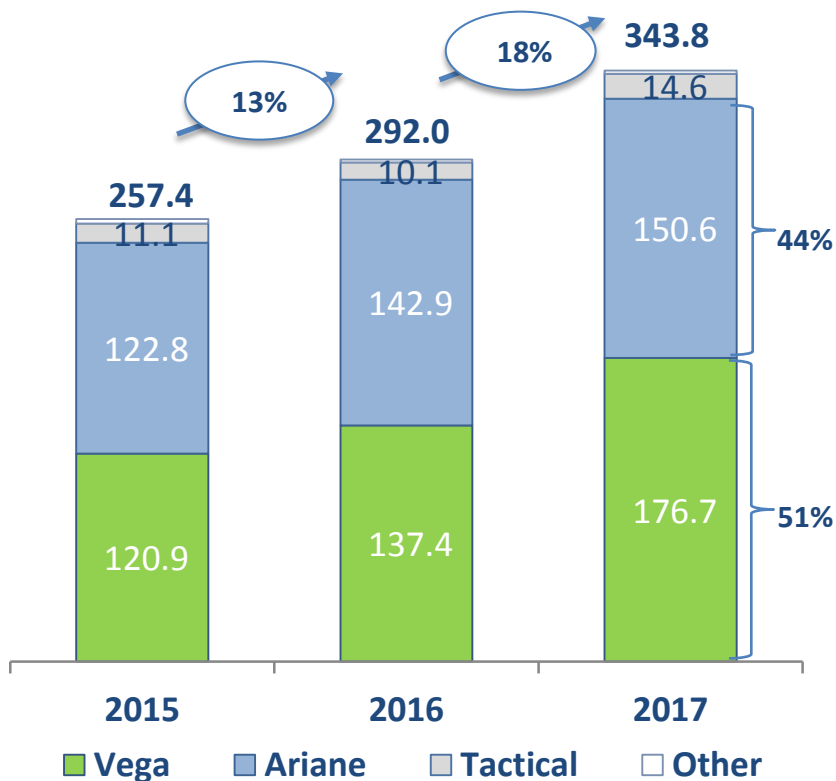


**Vega C systems vibration test**

# Net Revenues FYs 2015-2017

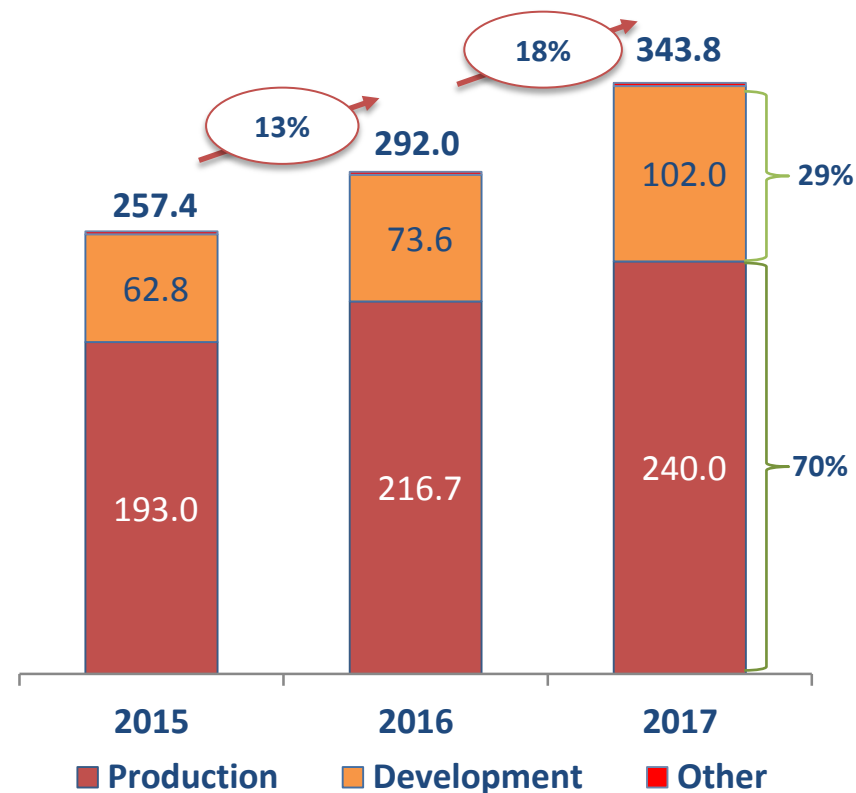


by Line of Business (€ - M)



Vega production increasing

by Activity (€ - M)



Development activity increasing

# Economic Highlights FYs 2015-2017



MAIN ECONOMICS	FY 2015	FY 2016	FY 2017*	CAGR	
€ - M	€ - M	€ - M	€ - M	%	Comments
BACKLOG	905.4	775.1	952.1		Cyclical order backlog ~3yrs visibility
NET REVENUES	257.4	292.0	343.8	16%	Increase in both production volumes and development activities
EBITDA	27.9	26.9	39.2	19%	Non-recurring costs in 2016 to support listing process
<i>% on net revenues</i>	<i>10.8%</i>	<i>9.2%</i>	<i>11.4%</i>		
EBIT	10.5	13.2	25.0	54%	EBIT structural improvement in 2016 after completion of Vega development depreciation
<i>% on net revenues</i>	<i>4.1%</i>	<i>4.5%</i>	<i>7.3%</i>		
NET INCOME	5.4	3.1	21.8	101%	Tax and debt structure changes in 2015 and in 2017
<i>% on net revenues</i>	<i>2.1%</i>	<i>1.1%</i>	<i>6.3%</i>		

\* Pro-Forma figures to compare on a “like-for-like” basis the 2017 with previous years financials, following the business combination which led to the listing of the Company in April 2017

# Sources and Uses FYs 2015-2017



MAIN SOURCES AND USES	31 DEC 2015 € - M	31 DEC 2016 € - M	31 DEC 2017 € - M	Comments
WORKING CAPITAL	(50.0)	(78.2)	(75.9)	Working capital structurally negative
TANGIBLE ASSETS	122.4	137.8	156.2	
INTANGIBLE ASSETS	245.5	241.4	103.5	New goodwill and CRA defined post business combination
DEFERRED TAX & FIN. ASSETS	63.3	63.5	83.9	
EMPLOYEES' BENEFITS AND PROVISIONS	(38.3)	(35.8)	(27.2)	Liquidation of one-off incentive plan upon listing
NET INVESTED CAPITAL	342.9	328.7	240.5	
NET FINANCIAL POSITION	(34.1)	(18.6)	41.7	Improvement in NFP following the business combination
EQUITY	(308.8)	(310.1)	(282.2)	
TOTAL SOURCES	(342.9)	(328.7)	(240.5)	

# 9M 2018 economic and financial highlights



9M 2017 ACTUAL <sup>(1)</sup> € - M	MAIN ECONOMICS/ FINANCIALS	9M 2018 ACTUAL € - M	Delta € - M	Delta %	Comments
228.4	NET REVENUES	261.5	33.1	15%	<ul style="list-style-type: none"> <li>• Growth mainly for Vega C development activities</li> <li>• R&amp;D tax credit 2018 to be assessed at year end on the basis of actual progress achieved on development activities</li> <li>• Non-recurring costs reduced by 60%</li> </ul>
17.8 7.8%	EBITDA <i>% on net revenues</i>	22.5 8.6%	4.7	27%	
7.0 3.1%	EBIT <i>% on net revenues</i>	12.3 4.7%	5.2	75%	
31 DEC 2017 ACTUAL € - M		30 SEP 2018 ACTUAL € - M	Delta € - M	Delta %	
41.7	NET FINANCIAL POSITION	48.7	7.0	17%	<ul style="list-style-type: none"> <li>• Improved on 2017 Year End thanks to operating cash flow</li> </ul>

(1) \* Pro-Forma figures to compare on a “like-for-like” basis the 9M 2017 with 9M 2018, following the business combination which led to the listing of the Company in April 2017

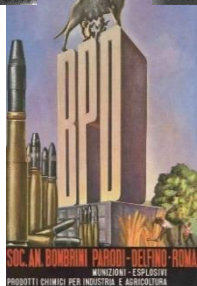
# Appendix



# An important heritage of corporate evolution



1912 – 1967



2 entrepreneurs  
(and Senators)  
Defense focus

1968 – 1990



Industrial  
group  
(listed)  
Chemicals  
focus

1994 – 2003



Industrial  
group  
(listed)  
Aerospace  
focus

2003 – 2015



THE CARLYLE GROUP

**Cinven**

Private Equity  
Financial focus

2017



Public  
Company  
Space  
Launchers

# 50 years in Space Launchers



**1965 – Europa**  
**7 launches**



**1976 Alfa Missile**  
**3 launches**



**1979 - Ariane 1**  
**11 launches**



**1984 - Ariane 2**  
**6 launches**



**1986 Ariane 3**  
**11 launches**



**1988 - Ariane 4**  
**104 launches**  
**(16/year)**



**1996 - Ariane 5**  
**100 launches**  
**(6/year)**



**2012 - Vega**  
**13 launches (2-3/year)**



**2019 – Vega C**  
**(4-5/year)**



**2020 – Ariane**  
**6**  
**(11/year)**

# Avio is part of the EU critical space infrastructures also through partnership with Ariane Group



## Kourou European Spaceport (CSG)

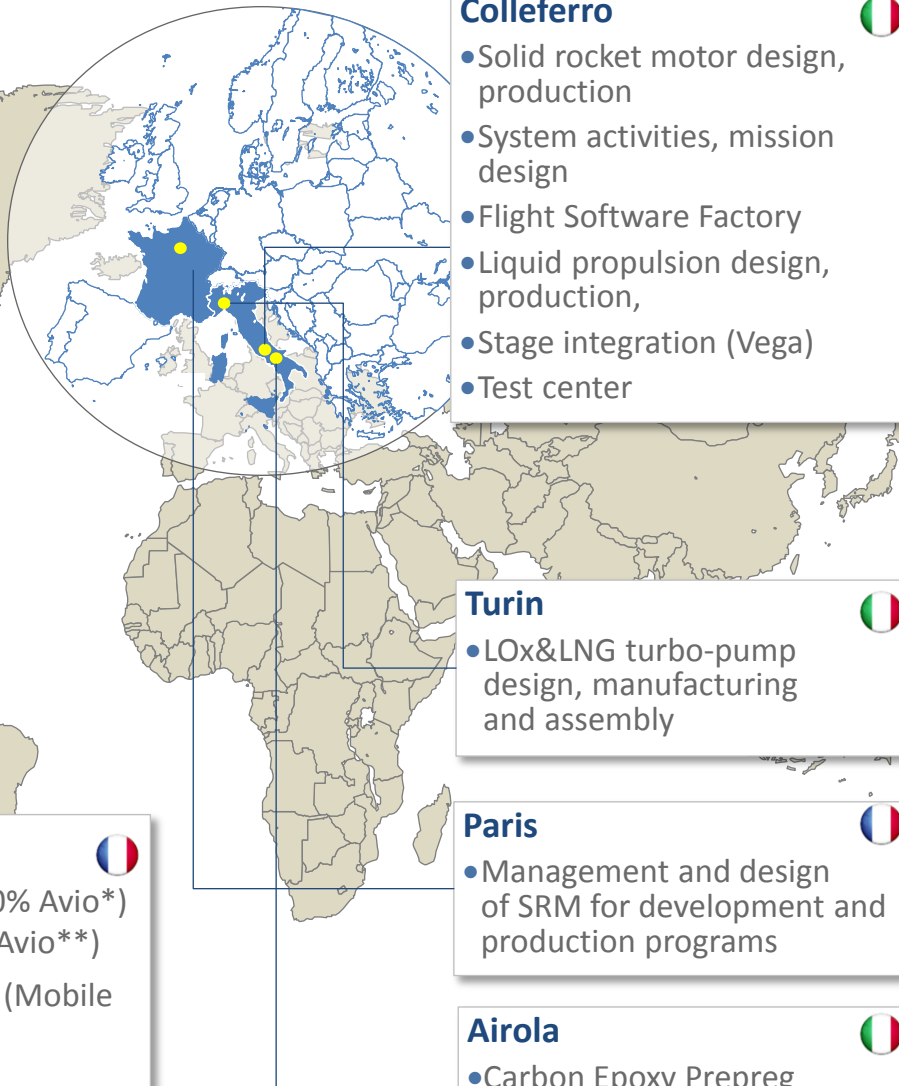


- Solid rocket motor casting (Regulus – 60% Avio\*) and integration (Europropulsion – 50% Avio\*\*)
- Vega integration and launch operations (Mobile Gantry)



\* 40% Ariane Group, \*\* 50% Ariane Group

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## Colleferro



- Solid rocket motor design, production
- System activities, mission design
- Flight Software Factory
- Liquid propulsion design, production,
- Stage integration (Vega)
- Test center

## Turin



- LOx&LNG turbo-pump design, manufacturing and assembly

## Paris



- Management and design of SRM for development and production programs

## Airola



- Carbon Epoxy Prepreg manufacturing and testing

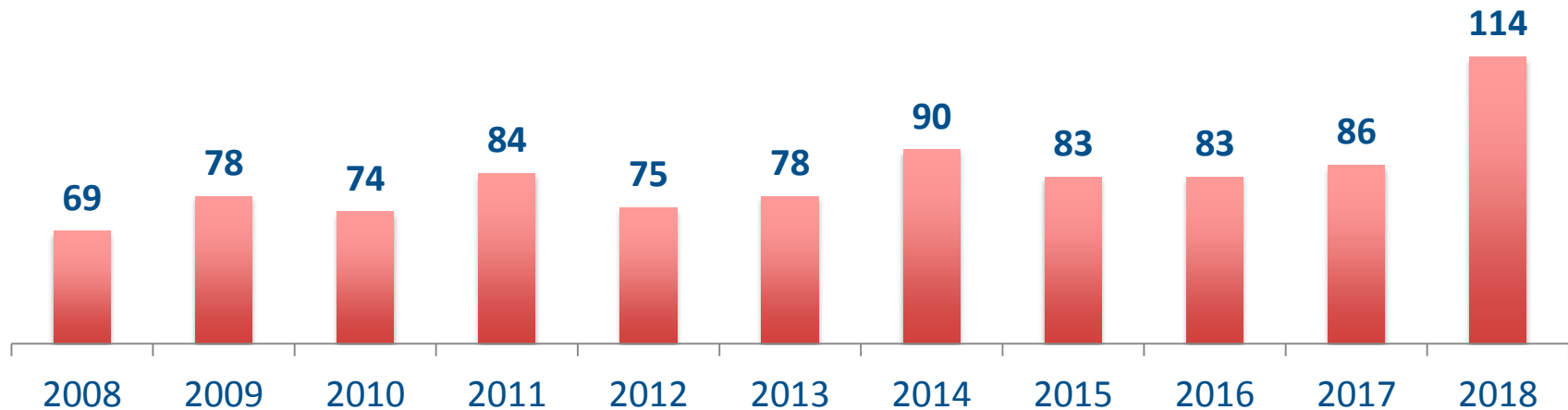


Source: Company information

# Space launches grow at 5% CAGR, with few countries having launch technology

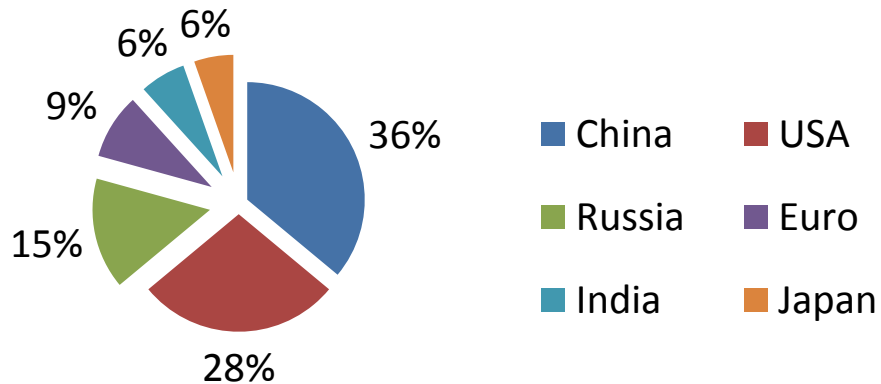


## 2008-2018 Total # of Space Launches Worldwide - CAGR 5%



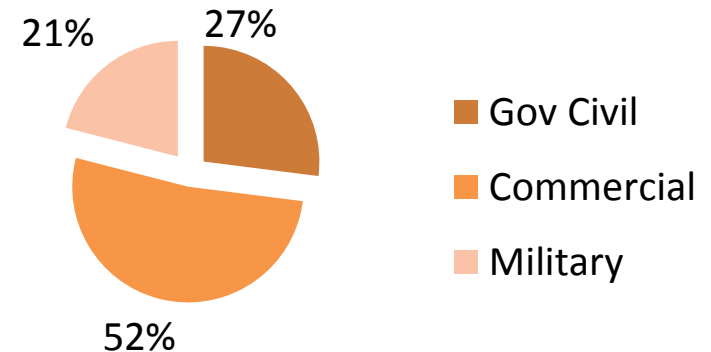
## Space Launches by launch country

2018



## Space Launches by customer type

2017-18



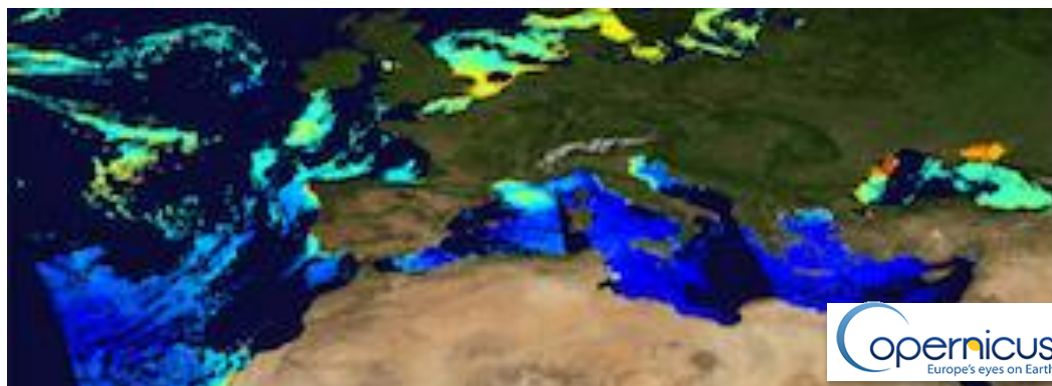
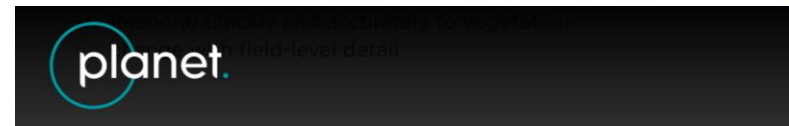
1 Dedicated flights to supply the International Space Station

Source : Gunter Space Page and SpaceFlightNow

# Smallsat growing demand is fueled by the increasing need for advanced telecom and remote sensing services



Satellite telephone communication



Mediterranean Sea temperature monitoring



Crop vitality monitoring

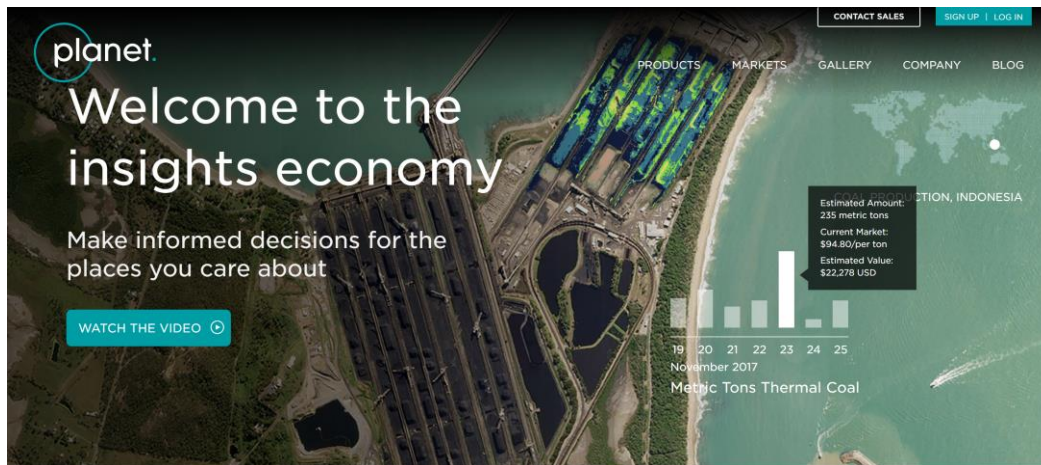
# Satellite imaging is creating a new «insights economy» to support civil, military and commercial needs



**Military Airfield monitoring**



**Damage assessment : Pre-earthquake view**



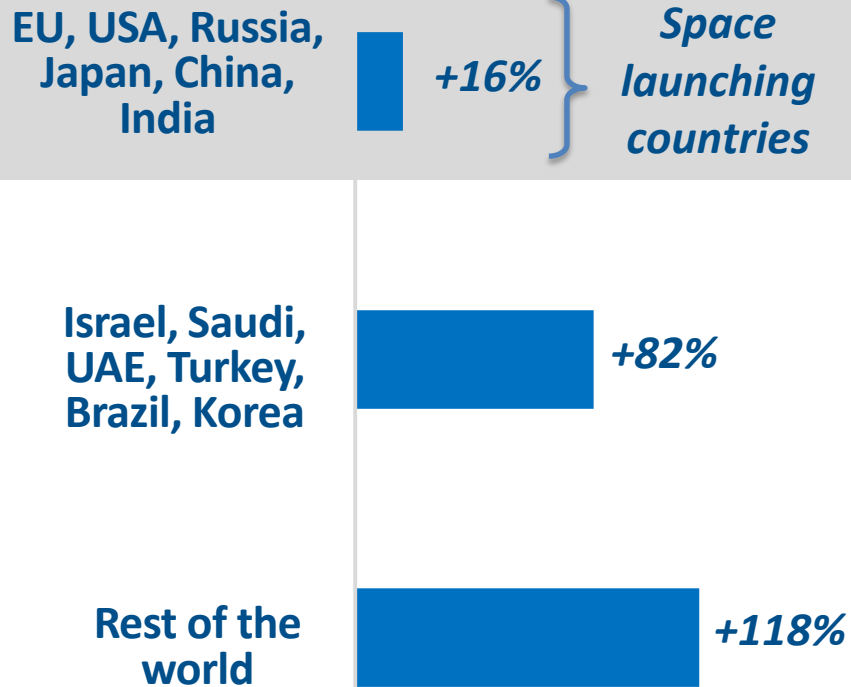
**Coal production monitoring**





**Damage assessment : Post-earthquake view**

# Incremental opportunities from growing domestic government demand in EU

## Government satellite demand growth by geography



## EU Multiannual Financial Framework EC Proposed Space Budget (€Bn)

	2014-2020	2021-2027
<ul style="list-style-type: none"> <li>  </li> </ul>	7.7	9.7
<ul style="list-style-type: none"> <li>  </li> </ul>	4.8	6.0
<ul style="list-style-type: none"> <li>Other programs</li> </ul>	-	1.2
	<b>12.5**</b>	<b>16.9**</b>
	<b>+35%</b>	



Source: the Space Launch Report, FAA annual compendium 2018

\* Ariane 5 has double launch capacity in GTO, unlike most other launchers

\*\* Current prices

# Avio's long-term industrial strategy

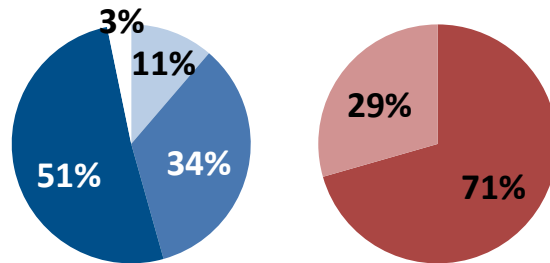


2008-2017

# of satellites = 1,019

Market demand<sup>1</sup>

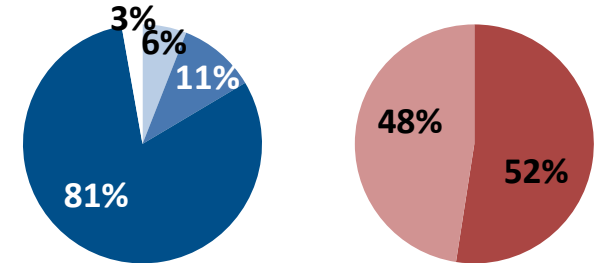
Total Mass  
~2,200MT



2018-2027

# of satellites = 3,323

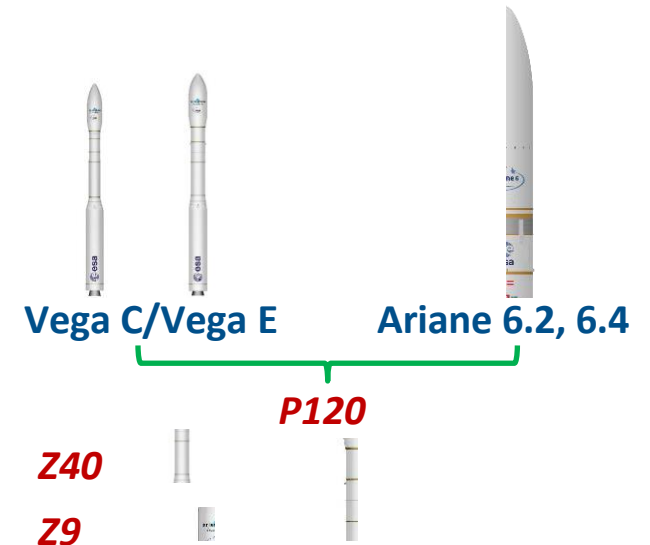
Total Mass  
~3,100MT



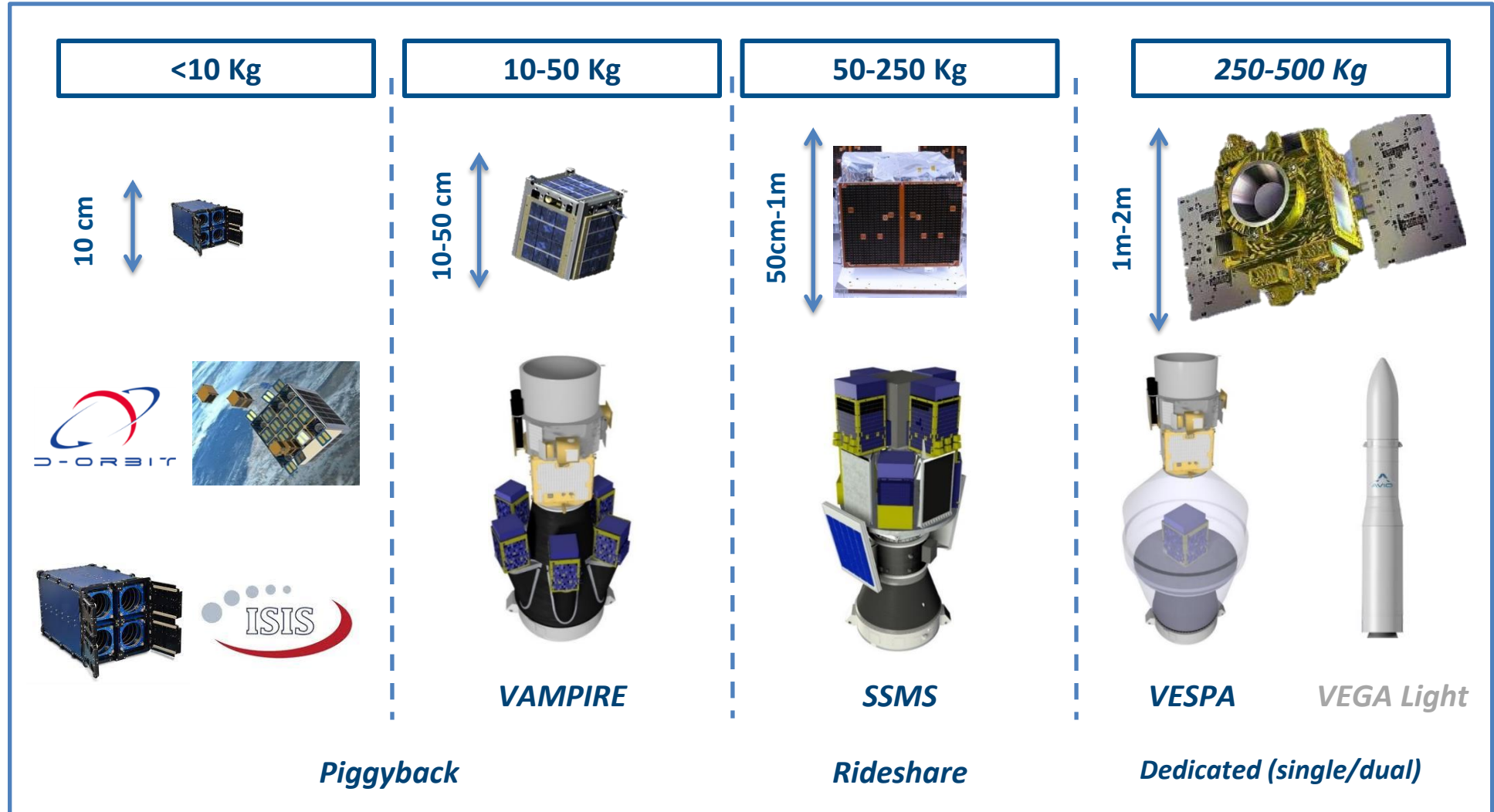
Product offering



Industrial platforms



# Vega now also re-tooled with adapters to meet all sub-segments of demand for piggy back, rideshare or dedicated launch



# Vega C competitiveness generating positive market momentum – recent commercial achievements



## Vega and Vega C future launches

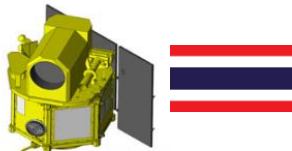


**Pleiades**

- 4 satellites
- 2 Launches in 2020 and 2021



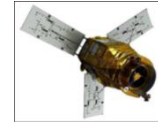
- COSMO SkyMed satellite
- Launch in 2021



- Thailand's THEOS-2
- Launch in 2021



- NAOS satellite for Luxembourg and NATO
- Launch in 2021



- South Korean Space Agency (KARI) satellite KOMPSAT-7
- Launch in 2021



- Spain Ingenio Satellite
- Launch in 2019

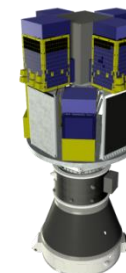


European Space Agency

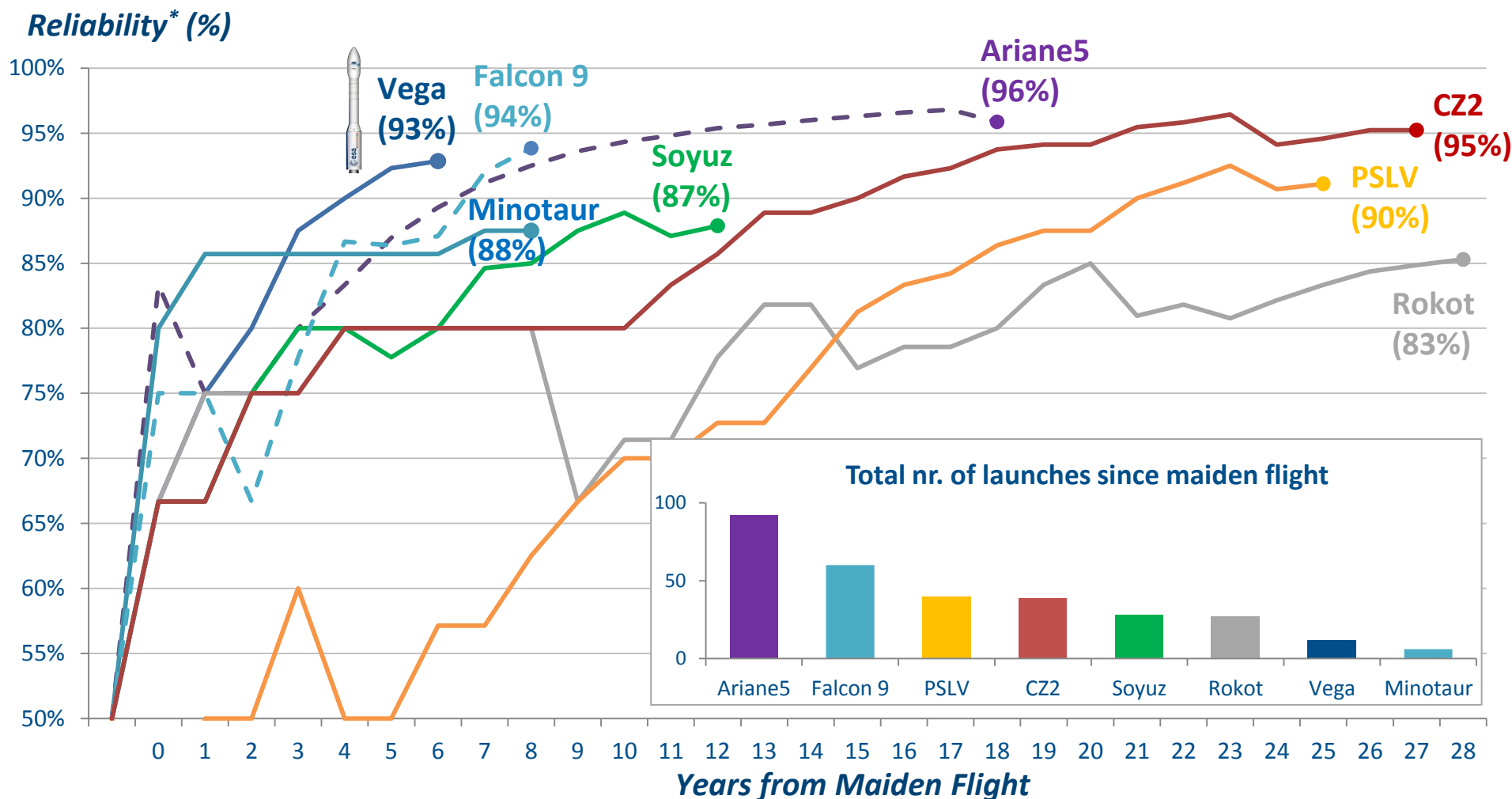
- 25 Oct 2018 : Joint Statement for Institutional Exploitation signed by major EU countries and ESA
- Aggregation of launch demand for EU institutional payloads in the long term
- Robust EU/domestic backlog for Ariane 6 and Vega C



- SSMS maiden flight to fly by mid 2019



# Vega – the fastest track to top-class reliability worldwide



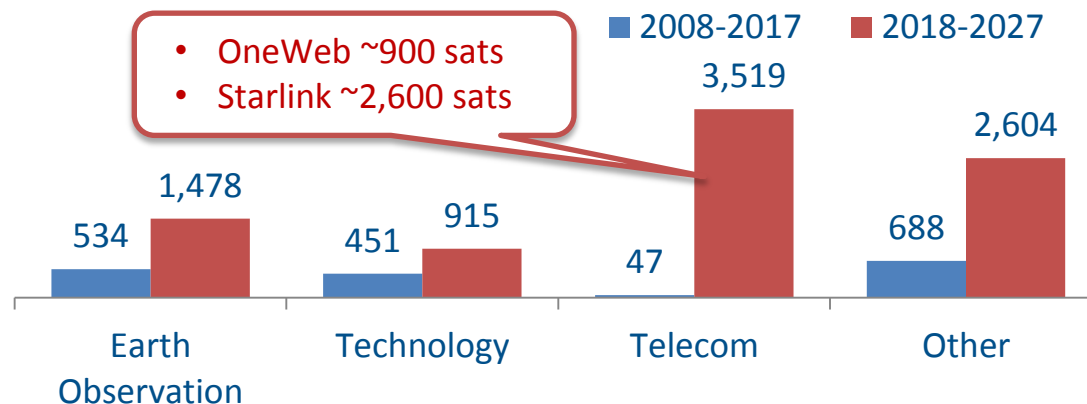
\* First level Bayesian estimate of mean predicted probability of success for next launch attempt  $(k+1)/(n+2)$  where  $k$  is the number of successful events and  $n$  is the number of trials

SOURCE: Avio elaboration on SpaceLaunchReport data

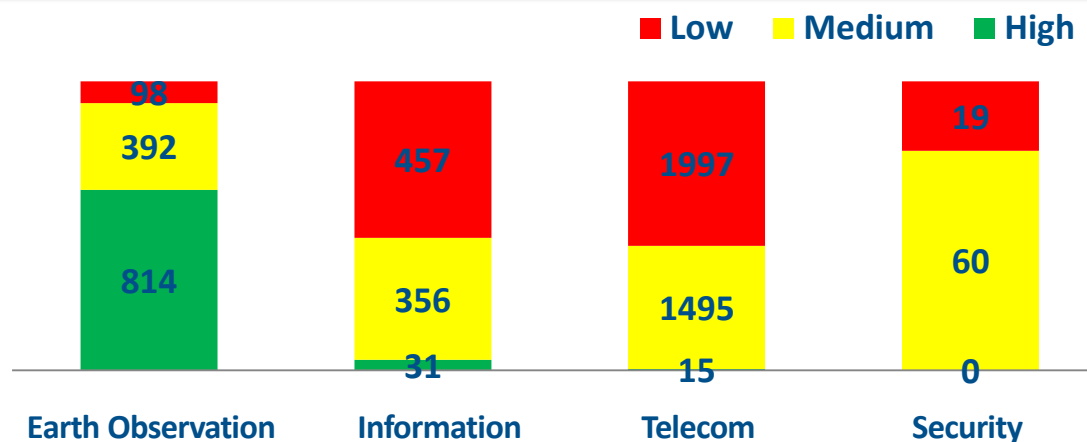
# Within smallsats, more robust growth expectations appear to be for Earth Observation applications



SmallSats demand by application domain (0-500kg)



Maturity of constellations by application domain 2018-2027

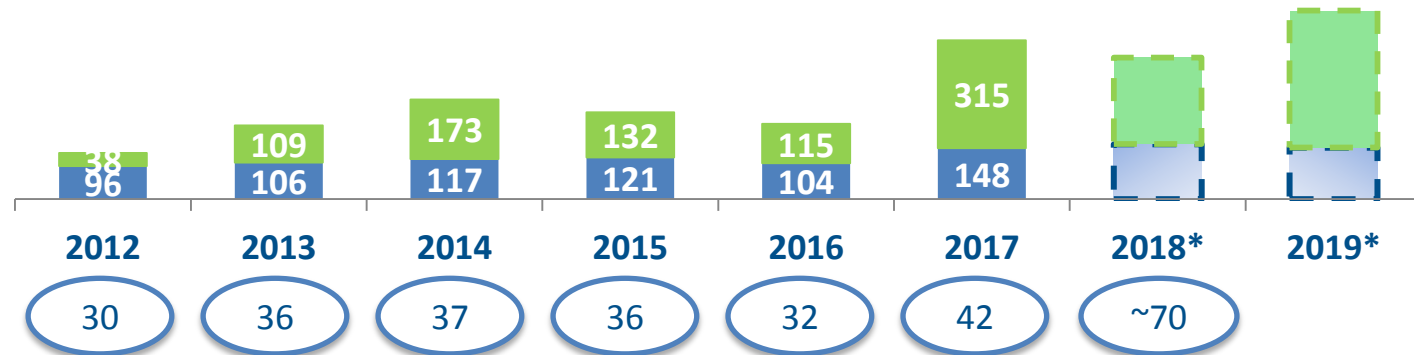
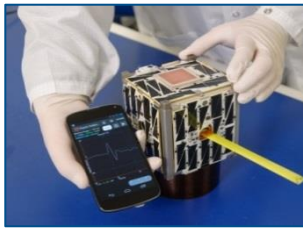


# Vega flight rate increases as demand is shifting towards small sats (<500kg)



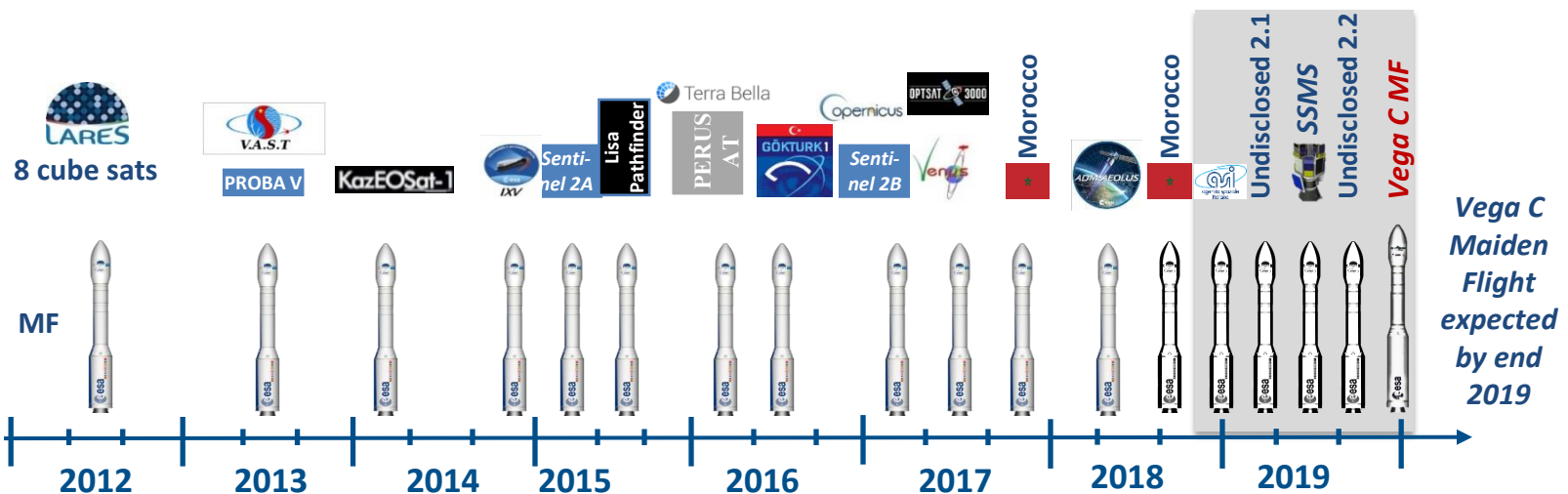
Total nr. of satellites launched into Space worldwide

■ Sats > 500 kg ■ Sats < 500 kg



Nr. of flights in LEO

Vega flight record since 2012 and near term manifest\*\*



• Estimated figures for 2018 year end and 2019 forecast

\*\* Launches already sold and accounted for as the order backlog for 2018- 2019

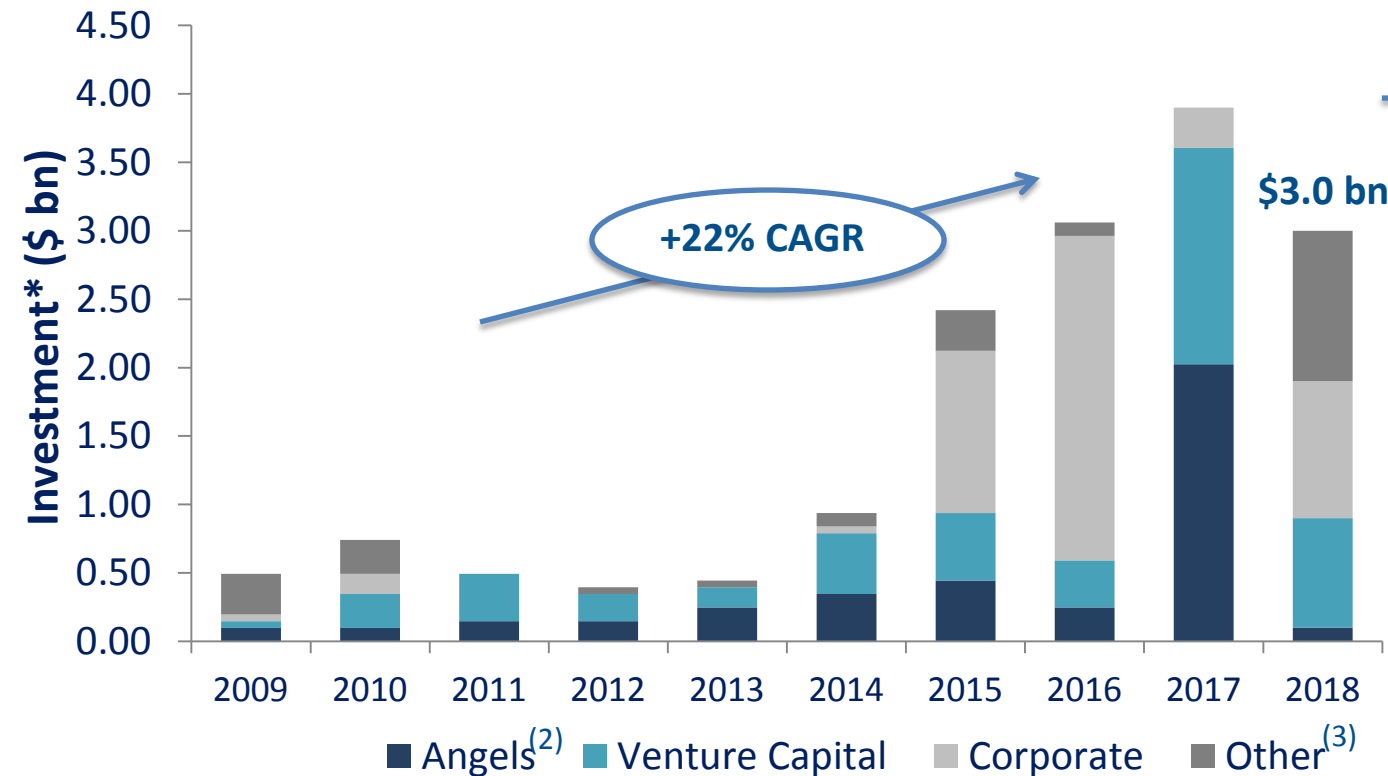
Source: Space Launch Report; Gunter's Space

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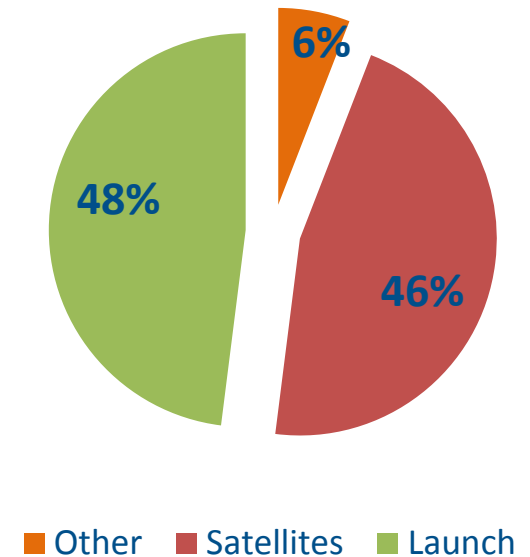
# Investments in the Space sector continues to grow rapidly



## Equity investment in Space Ventures



## Breakdown of cumulated 2009-2018 investments by sector (% of 15.3\$ Bn)



(1) Annual non-governmental equity investment

(2) Angels include investments from Jeff Bezos, Richard Branson, Elon Musk, and Robert Bigelow (total \$>2 bn)

(3) Other includes Foundations, Private Equity, Sovereign Funds, Crowd Platforms, etc.

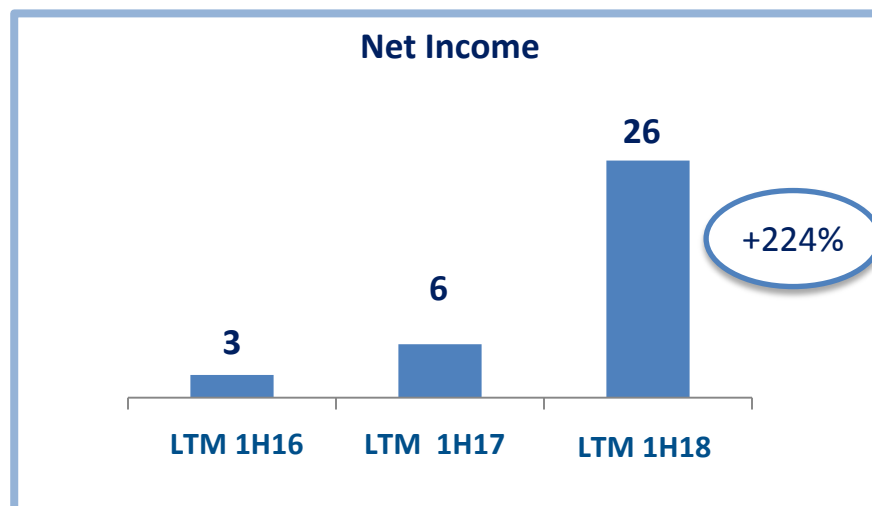
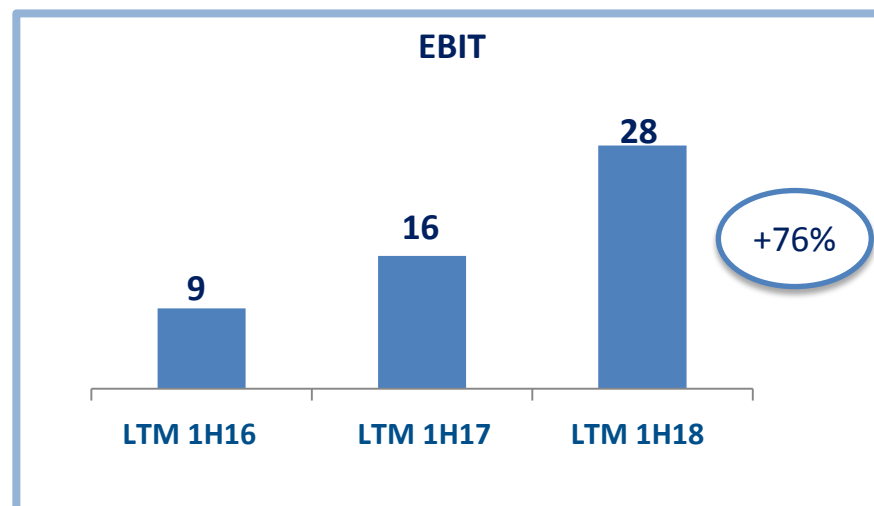
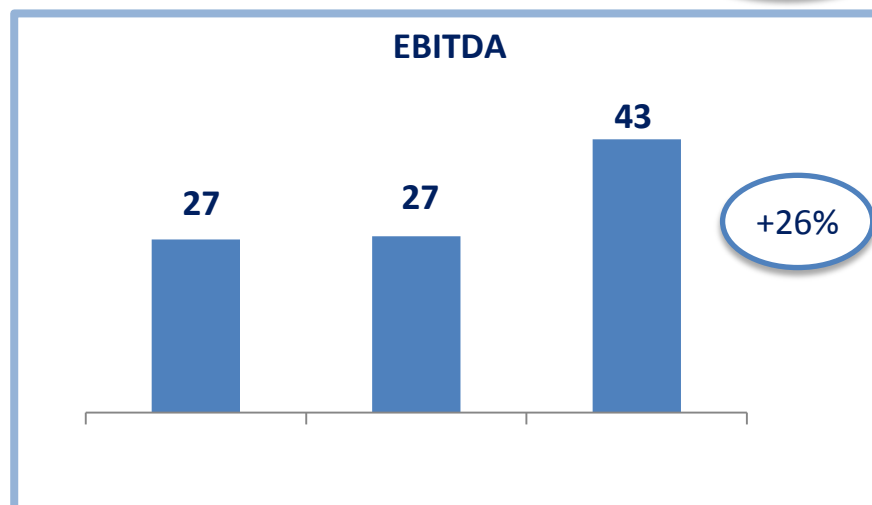
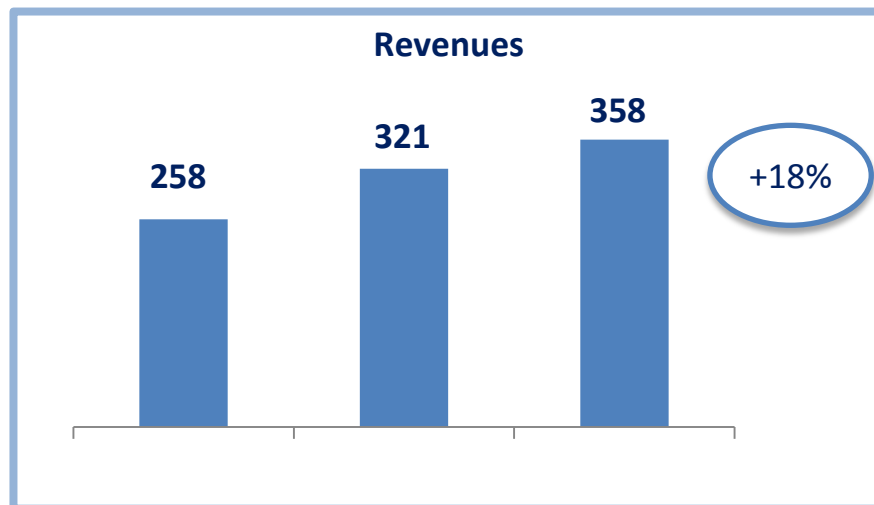
Source: Space Angels Q4 2018 Investment Report

# Evolution of Key Performance Indicators



Trailing 12M, €M

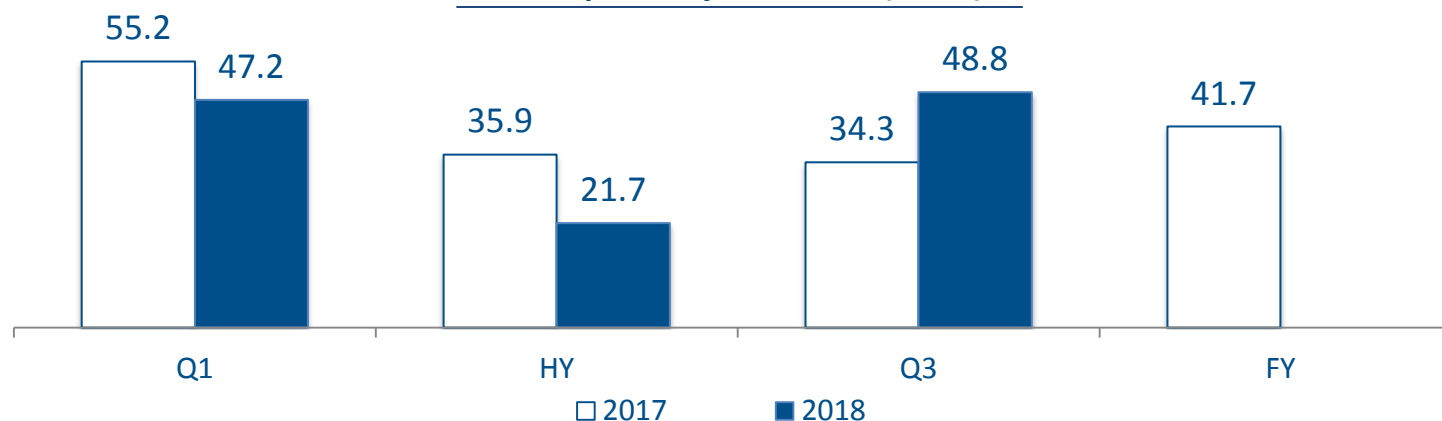
CAGR%\*



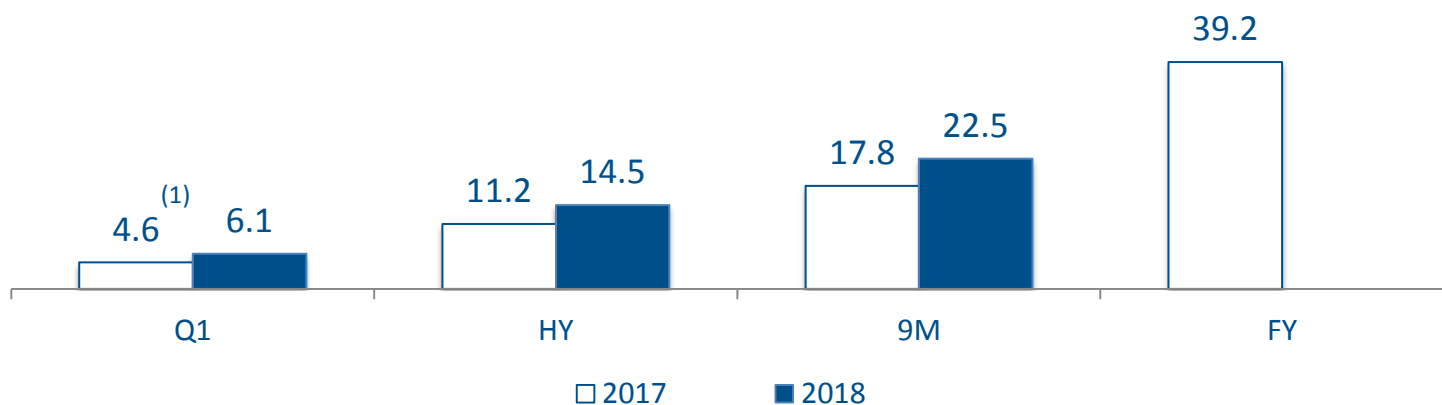
# Net Financial Position and EBITDA quarterly pattern



NFP quarterly evolution (€ - M)



EBITDA reported quarterly evolution (€ - M)





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