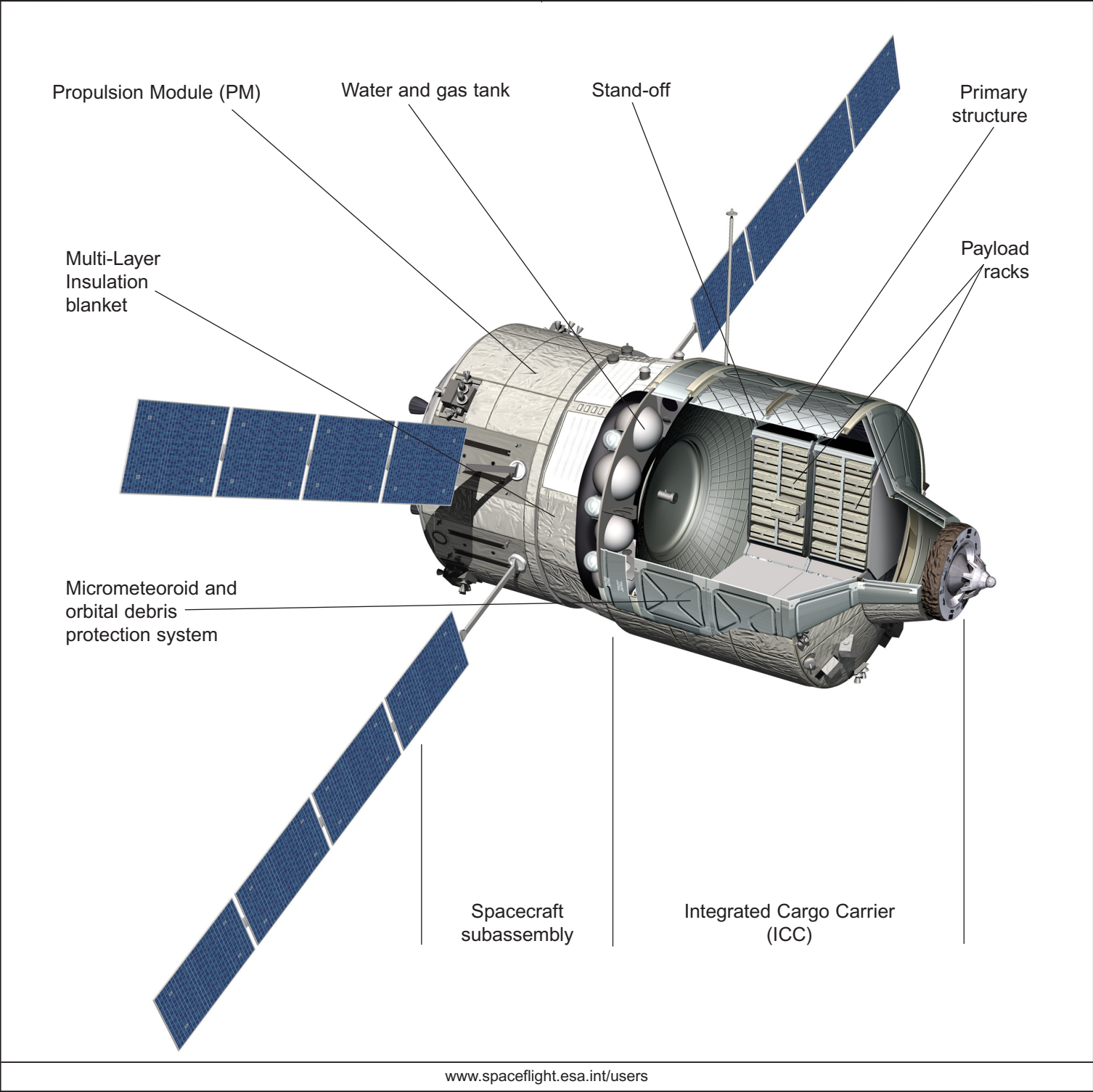


Utilisation Relevant Data

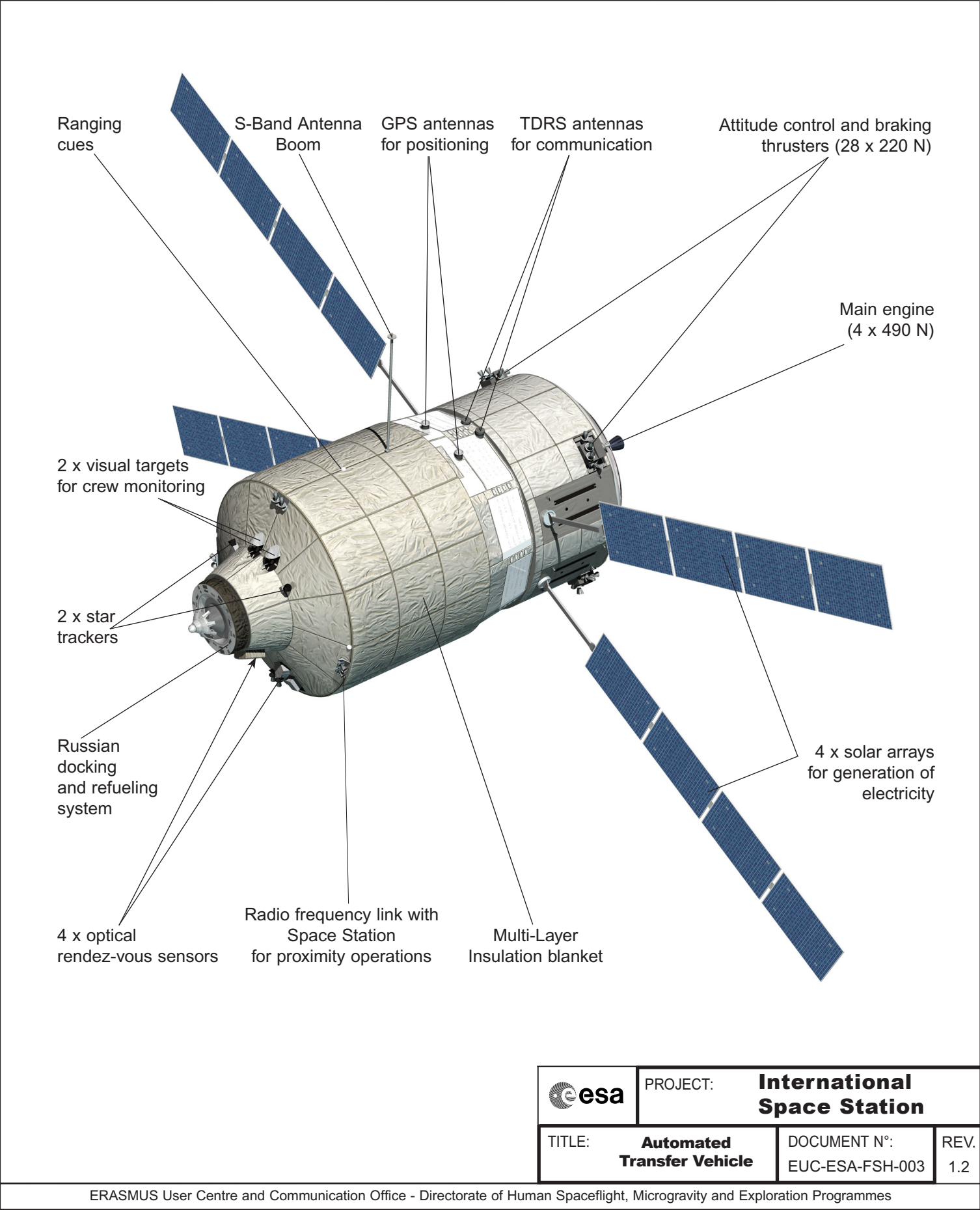
Launch Configuration		Launch site: Kourou, French Guiana.
Payload envelope:	8 racks with 2 x 0.314 m <sup>3</sup> and 2 x 0.414 m <sup>3</sup> each 1.146 m <sup>3</sup> in front of 4 of these 8 racks	First flight: second half 2005
Cargo mass:	Dry cargo: 1,500 - 5,500 kg	Flight rate: Mean: 1/year
	Water: 0 - 840 kg	
	Gas (Nitrogen, Oxygen, air, 2 gases/flight): 0 - 100 kg	
	ISS Refueling propellant: 0 - 860 kg (306 kg of fuel, 554 kg of oxidizer)	
	ISS re-boost and attitude control propellant: 0 - 4,700kg	
Total cargo upload capacity: 7,667 kg		
Launch vehicle: Ariane 5 (300 x 300 km, 51.6° transfer orbit)		
ATV will be launched with its solar panels folded to the body of the spacecraft. Electrical power will be supplied by non rechargeable batteries.		
On Orbit Configuration		Deployed solar arrays, with a total span of 22.3 m, that provide electrical power to rechargeable batteries for eclipse periods. Automated flight towards the International Space Station.
Flight Hardware		Propulsion and re-boost system Avionics equipment Guidance navigation and control system Communications system Power generation and storage system Thermal control system Russian docking and refueling system



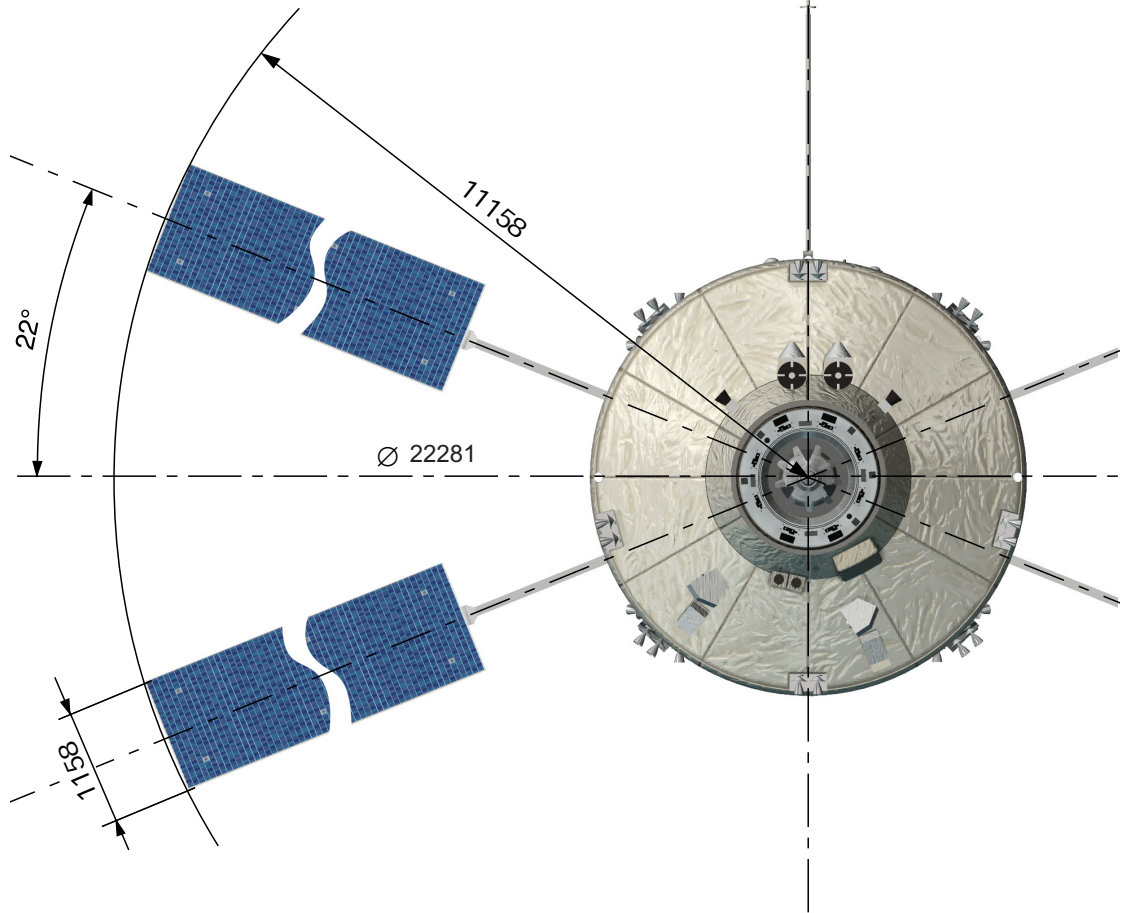
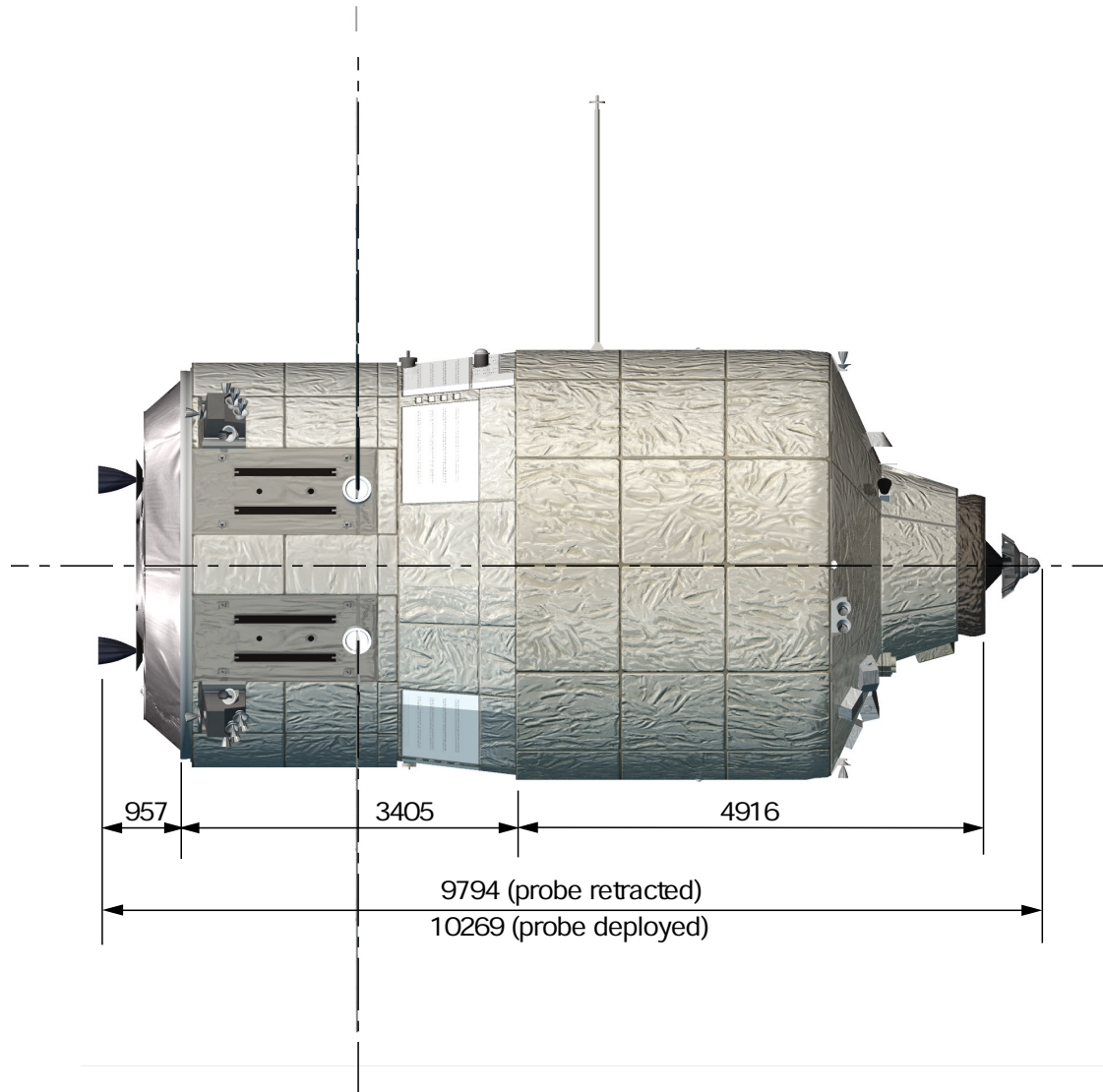
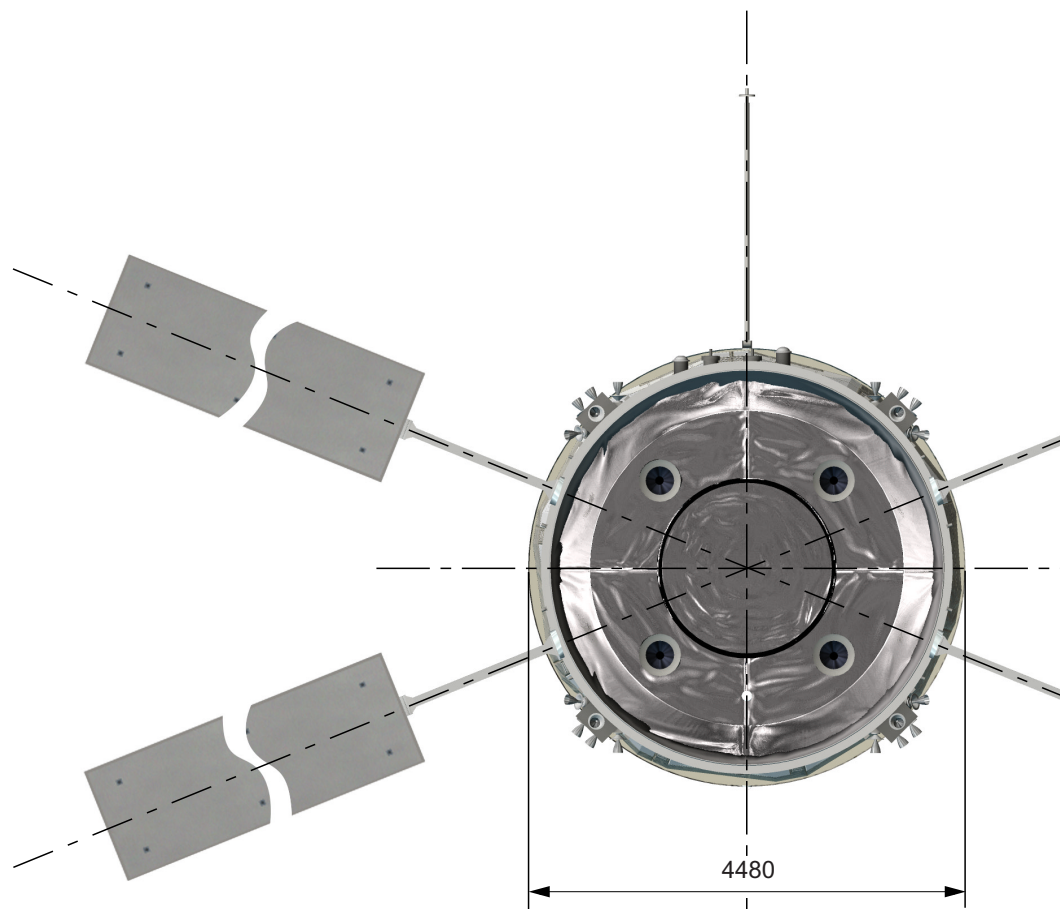
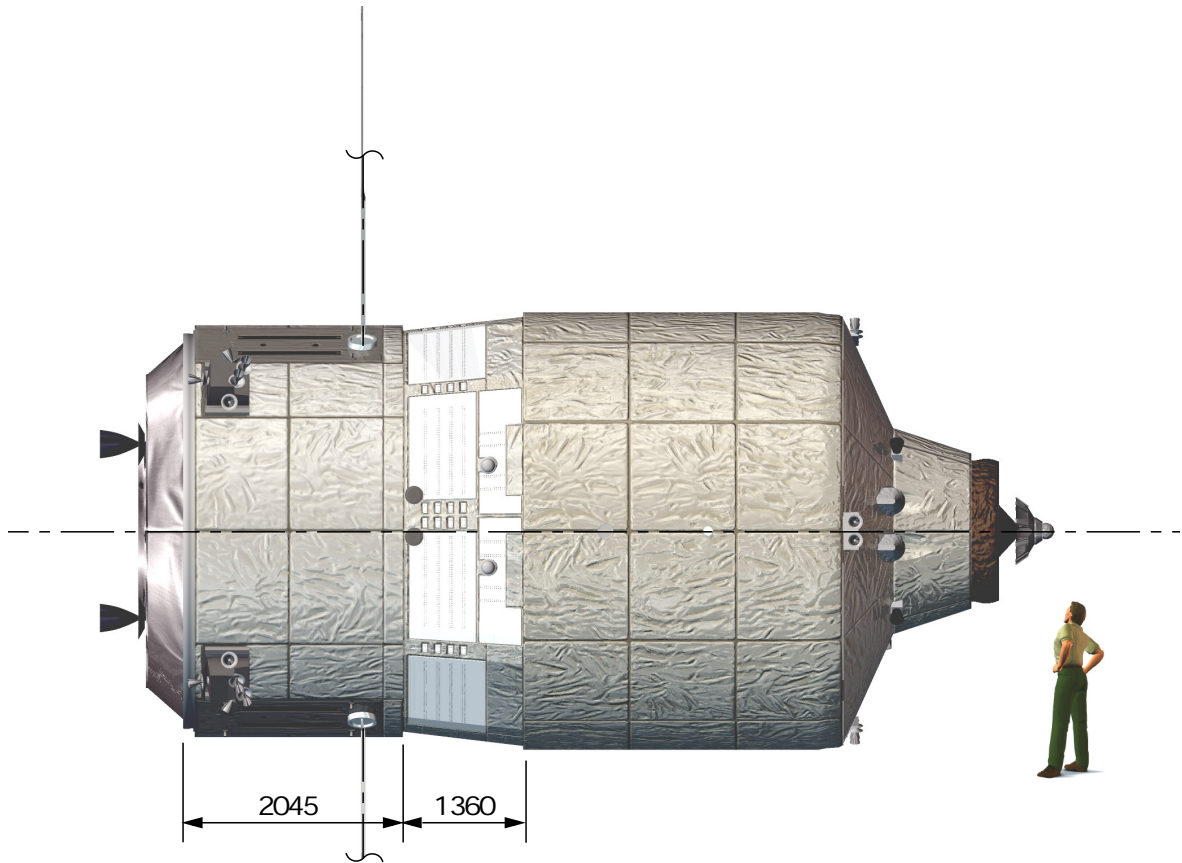
Automated Transfer Vehicle (ATV)

European servicing and logistics vehicle

The Automated Transfer Vehicle is an unmanned automatic vehicle which is put in orbit by the European Ariane 5 launcher. It provides the International Space Station with: pressurized cargo, water, air, nitrogen, oxygen and attitude control propellant. It also removes waste from the station and re-boosts it to a higher altitude to compensate for the atmospheric drag.







## Specifications

Dimensions	
Length:	9,794 mm (probe retracted)
Largest diameter:	4,480 mm
Solar arrays span:	22,281 mm
Mass Budget	
Vehicle dry mass:	10,470 kg
Vehicle consumables:	2,613 kg
Total vehicle mass:	13,083 kg
Total cargo upload capacity:	7,500 kg
Mass at launch (max):	20,750 kg
Waste download capacity:	6,300 kg (420 km altitude, 51.6° inclination)

Propulsion	
Main propulsion system:	4 x 490 N thrusters (Pressurized liquid bi-propellant system)
Attitude control system:	28 x 220 N thrusters (Pressurized liquid bi-propellant system)
Propellant:	Monomethyl hydrazine fuel and Nitrogen tetroxide oxidizer
Pressurization:	Helium pressurant at 31 MPa

Communications Infrastructure	
To ground:	S-band via TDRS satellite
ATV to ISS:	S-band antenna via Proximity link
Navigation:	GPS

Thermal/Environmental Control	
Thermal Control:	Multi Layer Insulation material, active thermal control using Variable & Constant Conductive Heat Pipes and paints
ECLSS:	Fire detection, air circulation, air temperature monitoring

Electrical Power	
Ascent to ISS and de-orbit:	4 Solar panel wings of 4 panels each and 40 Ah rechargeable batteries
Number of arrays:	4
Number of panels/array:	4
Generated power:	3,800 W after 6 months in orbit
Required power:	< 400 W Dormant mode, supplied by ISS
	< 900 W Active mode

Main Construction Material	
Pressure shell:	Al - 2219
Micrometeoroid and Debris Protection System:	
Primary bumper:	Al-6061-T6
Secondary bumper:	Nextel/Kevlar blankets
Internal structure (racks):	Al-6061-T6
Thermal insulation:	Goldised Kapton Multi-layer Insulation blanket & aluminised beta cloth
Solar arrays:	Silicium Solar Cells on 4 Carbon Fibre Reinforced Plastic Sandwich panels

Main Contractor	
EADS-Space Transportation, Leading a consortium of many sub-contractors	

	PROJECT: <b>International Space Station</b>	SCALE : 1:75	
		DIMENSIONS : mm	
TITLE: <b>Automated Transfer Vehicle</b>	DOCUMENT N° : EUC-ESA-FSH-003	REV. 1.2	