STELLAR PROJECT

LaserCube Optical Communication Terminals for NanoSatellites

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STELLAR PROJECT

Stellar Project

Stellar Project is a **space deep tech small enterprise** of the New Space Economy created as a spin-off of the University of Padova, Italy, offering **game-changing solutions for light satellites** with a high degree of care to space environmental sustainability.

The Company provides original and proprietary technology in the fields of **optical communication** and **on-orbit servicing**

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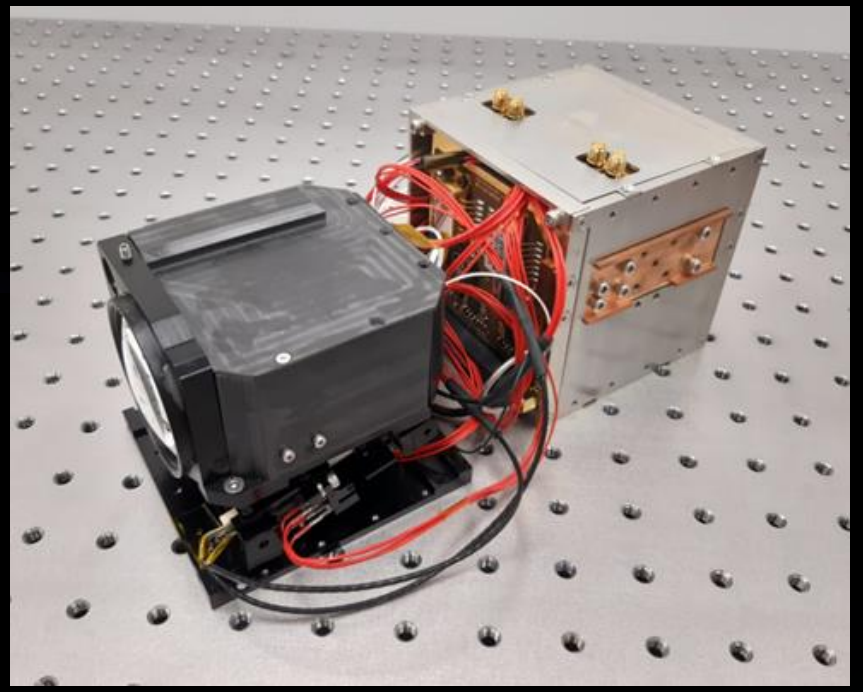
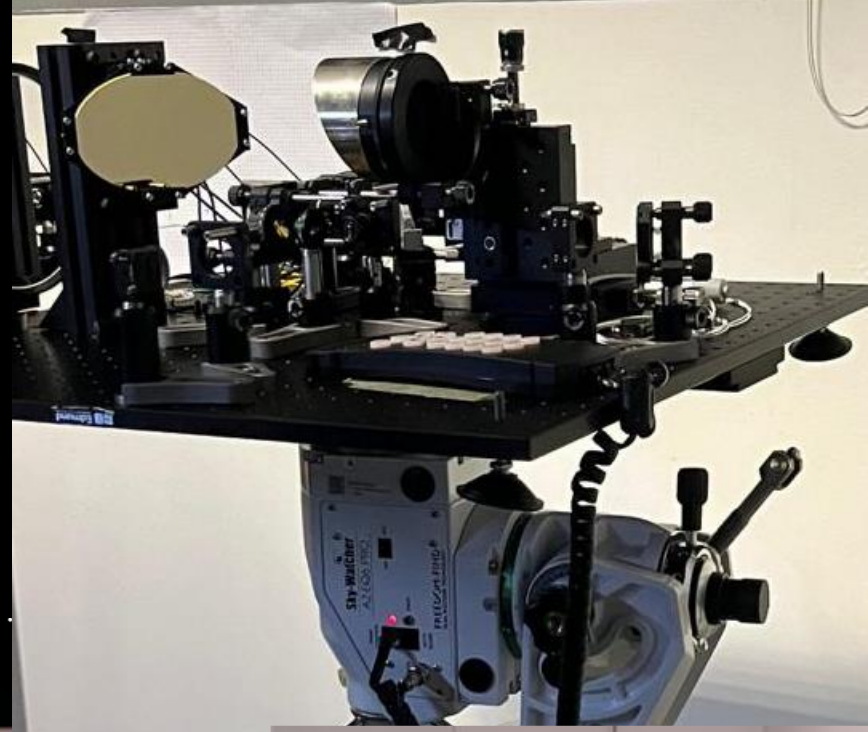
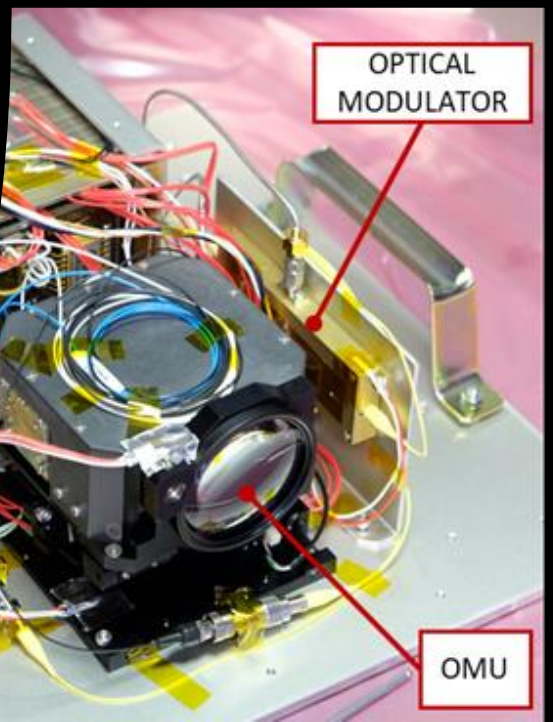
CAPABILITIES

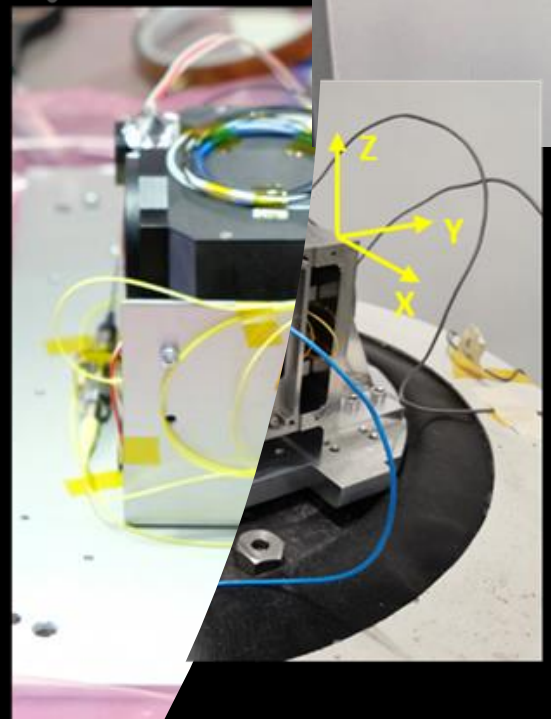
Stellar Project competences cover a wide range of AeroSpace Engineering areas.

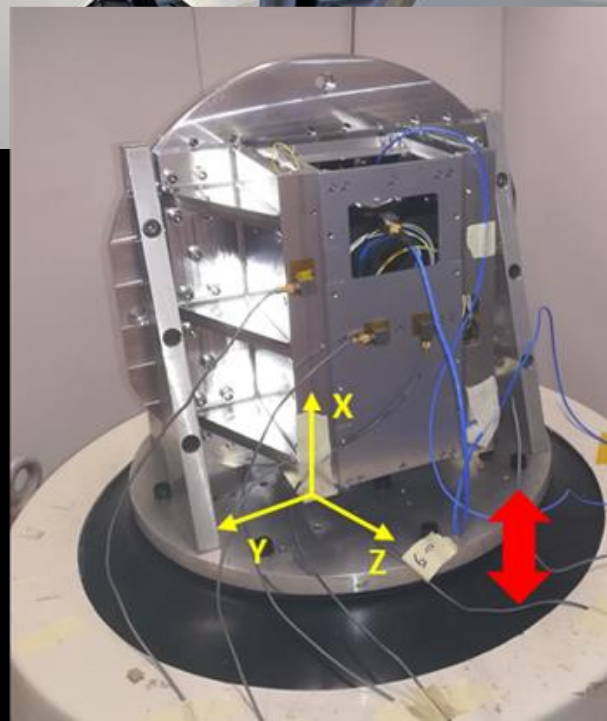
- Design and qualification of opto-mechanical assemblies
- Design of Pointing, Acquisition and Tracking platforms
- Software Development











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- Optical Communications for nanosats
- LaserCube OCTs

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Free Space Optical Communication for NanoSats

- Use of NanoSats for EO and science applications is continuously growing, with **increasing data volumes** generated by new-generation high-resolution payloads
- This calls for **enhanced performance and security** for NanoSats telecom subsystems
- Free Space Optical Communications makes possible to implement **Gbps-level links** for NanoSats, in both **downlink** and **inter-satellite link** scenarios

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Free Space Optical Communication for NanoSats

- **Data Rate >10X** compared to RF systems with same SWAP
- **Minimum Data Latency** thanks to Inter-Satellite Links for LEO constellations
- **Integrity and security**: laser point to point connection is interference-free and is compatible with QKD protocols
- **High-performance, seamless Connection between Satellites and Ground Networks**

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LaserCube Free Space Optical Communication Terminals

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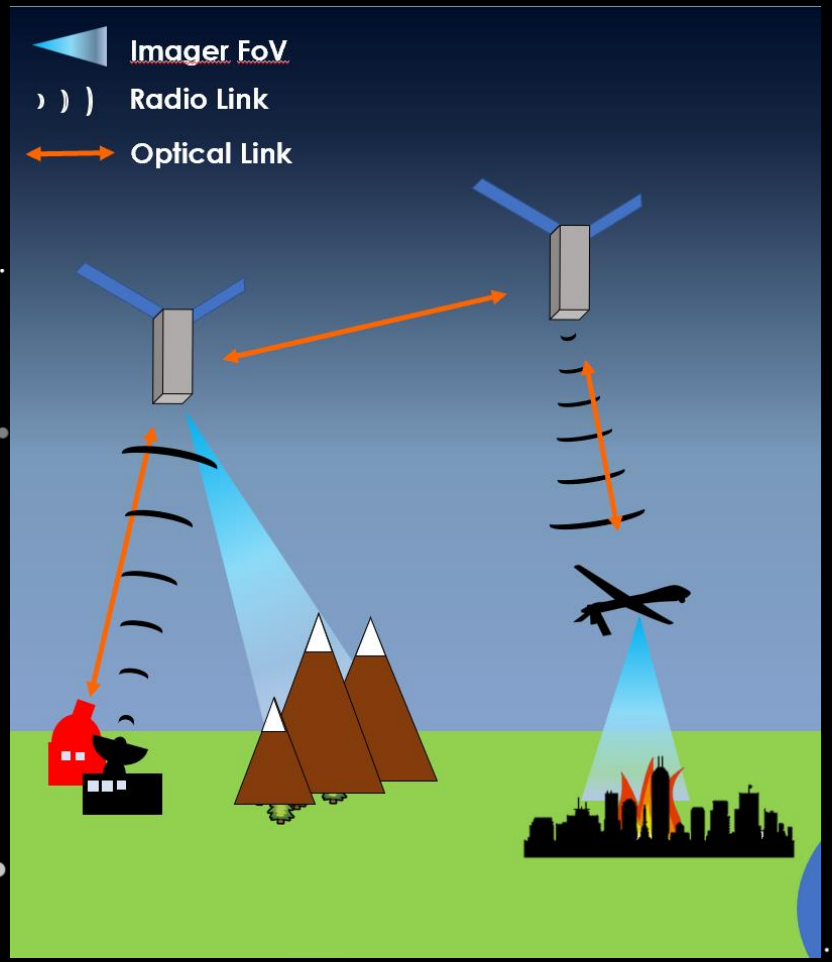
LaserCube is a family of OCTs, which aims to:

- Open the **optical communication highway** to the NanoSats world
- Seamlessly **connect satellites with ground networks** to provide **secure, low-latency data** and **connectivity worldwide**



Key features:

- Proprietary **patented pointing system** to relief platform from fine pointing tasks
- **DownLink** and **Inter-Satellite Link** configurations
- **Scalable SWaP** and **Performance**

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LaserCube OCTs for NanoSatellites

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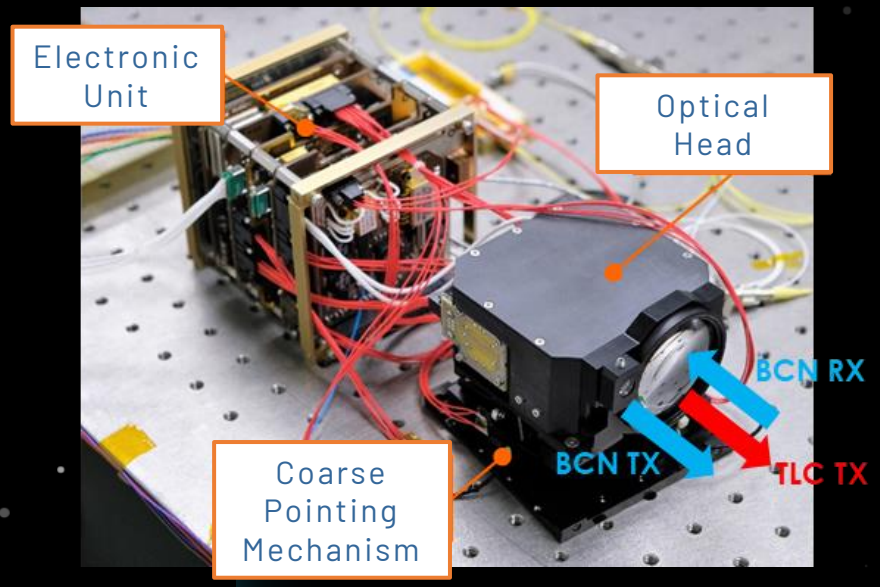
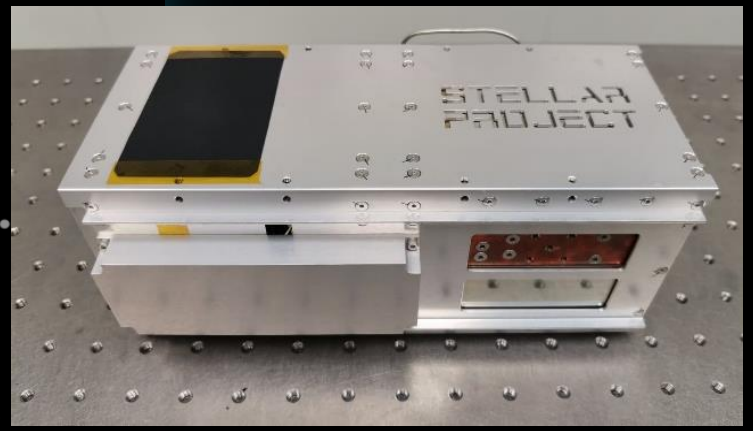
LaserCube is a family of OCT, which aims to open the **optical communication highway** to the small satellites world

- **LaserCube Compact** is the Stellar Project OCT specific for nanosatellites, developed in the frame of the **ESA ARTES Competitiveness & Growth** Programme with the **support of the Italian Space Agency**

- **Compatible with the CubeSat standard** and suitable for integration on ≥6U CubeSats
- Based on a **modular design**, it is available with **Direct To Earth** configuration, or **Two-Ways Inter-Satellite Link** configuration

LaserCube-Compact DTE





LaserCube-C 1WAY

PFM (MY2021-downlink IOV)

LaserCube Compact	One-Way TX DTE	Two Ways TX/RX ISL
Size	2 dm^3	2,5 dm^3
Mass	1,8 kg	2,4 kg
Peak Power	30 W	45 W
Coarse Pointing Range	± 10 deg elevation and azimuth	
Pointing Accuracy	60 μrad (coarse) – 10 μrad (fine)	
Telecom wavelength	C band ~1550 nm TX/RX	
Beacon wavelength	Custom or beaconless	
Data Rate	1,25 Gbps	100 Mbps
Data Interface	CanBus (TT&C) – HSSL (platform/payload mass memory)	
ModCod	CCSDS/SDA	

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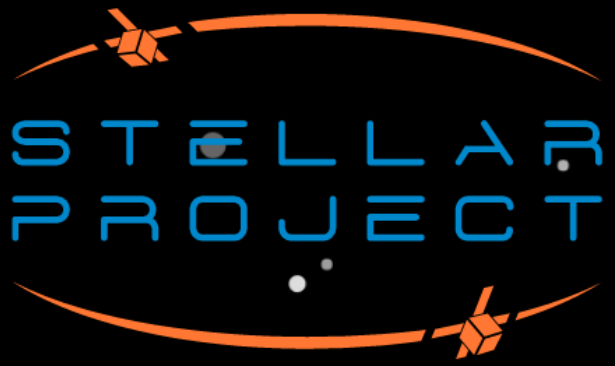
Thank You!



Bright & Light

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