ELEVATE

STRATOSPHERIC TRANSPORTATION SERVICE

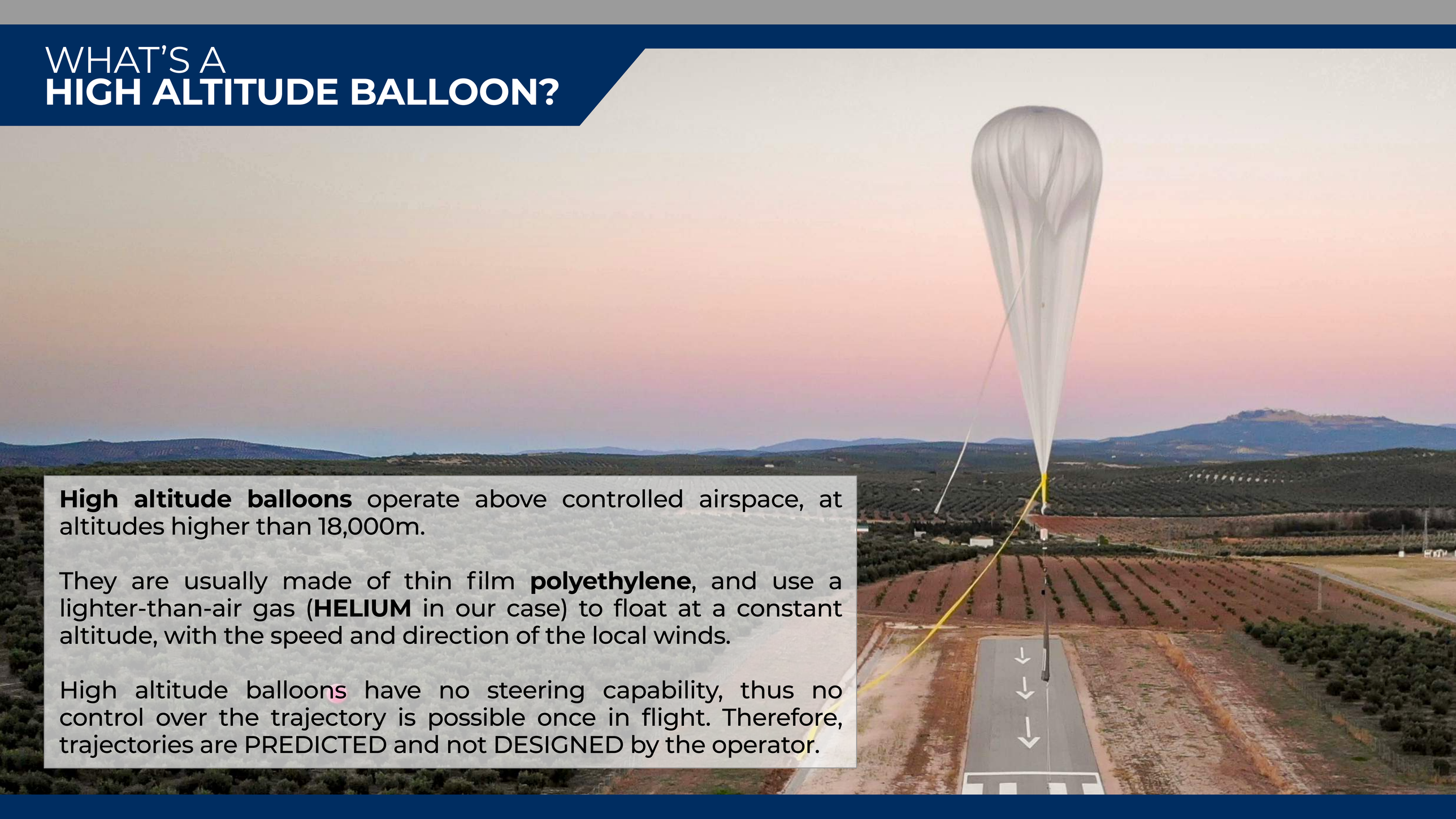
Zero 2 Infinity

View from our first flight campaign at 25km · 2009

WHAT'S **ELEVATE?**

ELEVATE is a stratospheric transportation service, offered by **Zero 2 Infinity**. By leveraging high altitude balloons, ELEVATE covers from launch to recovery to bring your equipment above 90% of the atmosphere.

WHAT'S A **HIGH ALTITUDE BALLOON?**

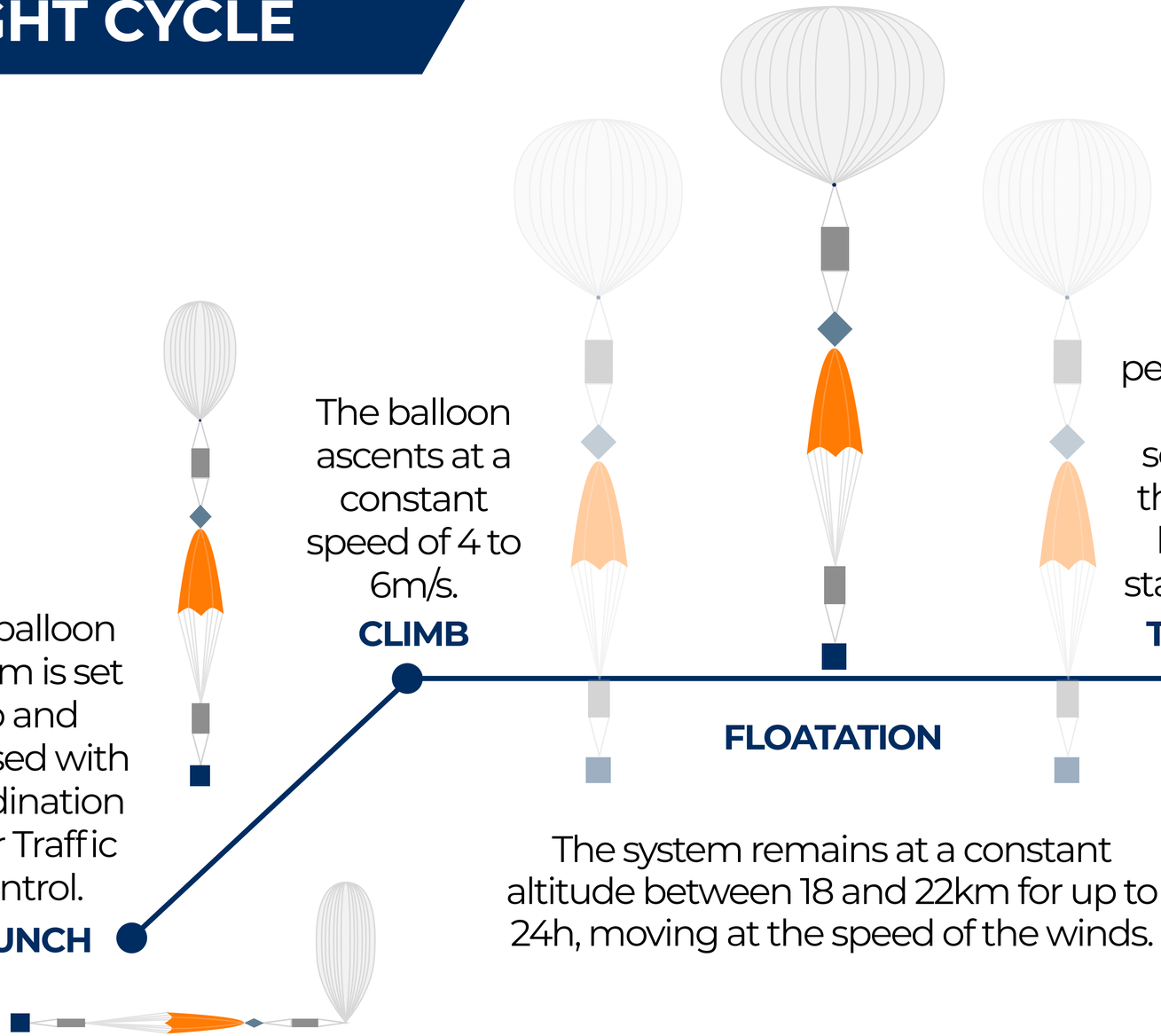


High altitude balloons operate above controlled airspace, at altitudes higher than 18,000m.

They are usually made of thin film **polyethylene**, and use a lighter-than-air gas (**HELIUM** in our case) to float at a constant altitude, with the speed and direction of the local winds.

High altitude balloons have no steering capability, thus no control over the trajectory is possible once in flight. Therefore, trajectories are PREDICTED and not DESIGNED by the operator.

BALLOON
FLIGHT CYCLE



The balloon system is set up and released with coordination of Air Traffic Control.

LAUNCH

The balloon ascents at a constant speed of 4 to 6m/s.

CLIMB

FLOATATION

The system remains at a constant altitude between 18 and 22km for up to 24h, moving at the speed of the winds.

The floating period is finalized, the payload separates from the balloon and both systems start descending.

TERMINATION

DESCENT

The balloon and the payload land on a secure area and are recovered.

RECOVERY

LAUNCH **LOCATIONS**

INTRODUCING **STRATOS**

STRATOS is a **fully functional vehicle** based on a high altitude balloon. It has been developed for the **High Altitude Platforms (HAPS) marke**t, with a special focus on enabling new technology demonstrations and the validation of hardware in stratospheric conditions.

CONFIGURATION

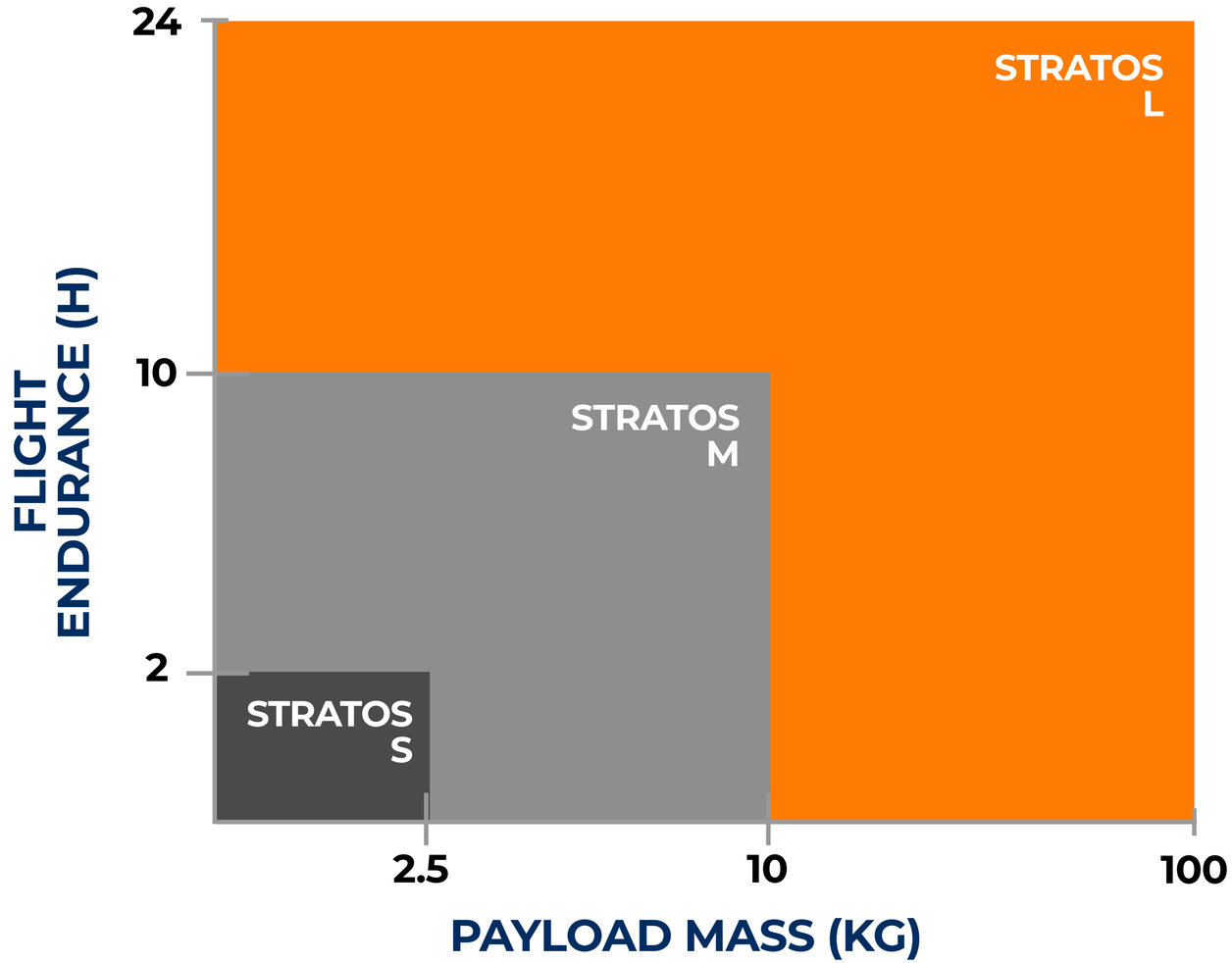
STRATOS has a maximum capacity of **100kg of payload mass,** at altitudes between **18 - 22km.**

We offer different system configurations:

LARGE 10kg < **PAYLOAD MASS** ≤ 100kg
Flight Endurance: ≤ 24h

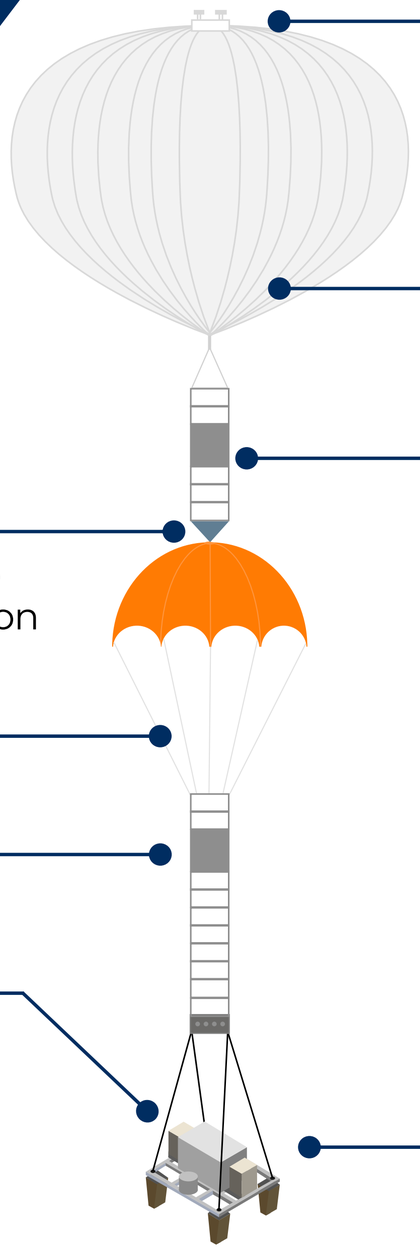
MEDIUM 2.5kg < **PAYLOAD MASS** ≤ 10kg
Flight Endurance: ≤ 10h

SMALL **PAYLOAD MASS** ≤ 2.5kg
Flight Endurance: ≤ 2h



STRATOS
SYSTEM ARCHITECTURE

The STRATOS configuration is composed of multiple elements to ensure the safety of the operation and enable clients perform end to end payload tests.



VALVE
Controls the altitude while the balloon is floating in the stratosphere

20 - 30 m

BALLOON ENVELOPE
High altitude balloon filled with helium

BALLOON AVIONICS

SEPARATION SYSTEM
Separates the balloon from the payload at the end of the mission

6 - 15 m

PARACHUTE

PAYLOAD AVIONICS

14 m

PAYLOAD

GONDOLA
Structure that carries the payload

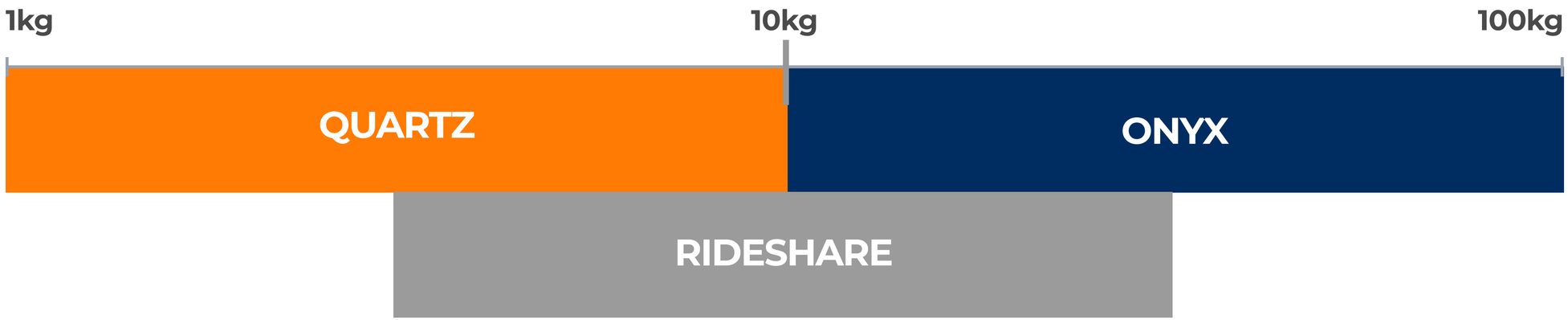
THE **GONDOLA**

A **GONDOLA** is the subsystem from STRATOS that carries the payload.

Its architecture is designed to host several payload configurations:

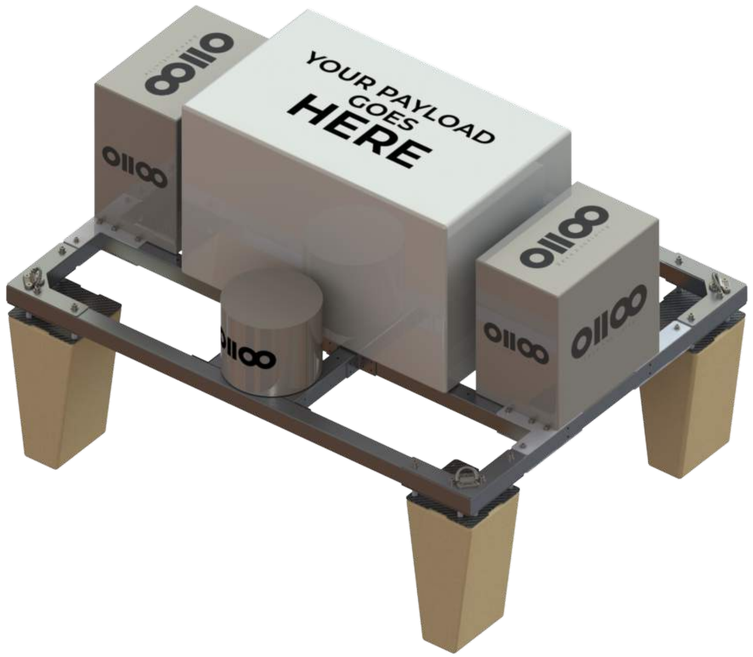
- **Telecommunications** (Nodes, Filters, Antennas...)
- **Earth Observation** (Optical and Infrared Sensors, Radar...)
- **HAPS vehicle developers** test their subsystems (Solar panels, Batteries, Avionics...).

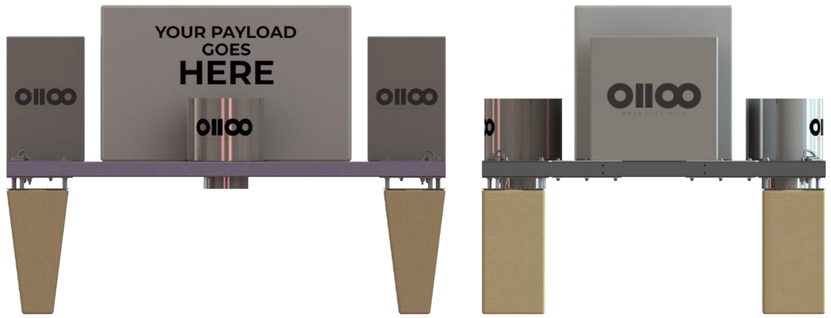
Depending on the payload mass, different gondolas can be used:

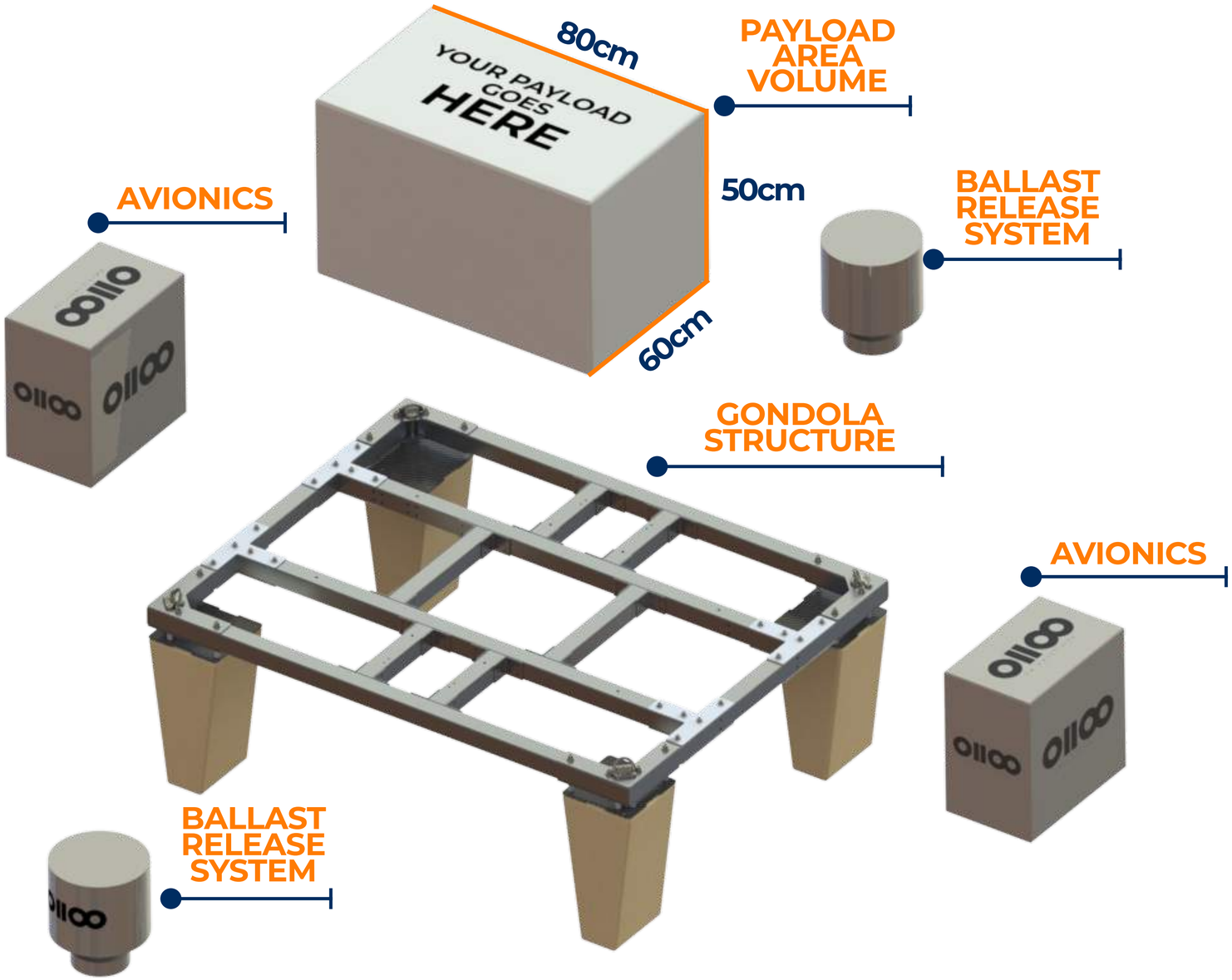


ONYX Payload Mass: 10 - 100kg
QUARTZ Payload Mass: 1 - 10kg

ONYX
STRATOS L GONDOLA

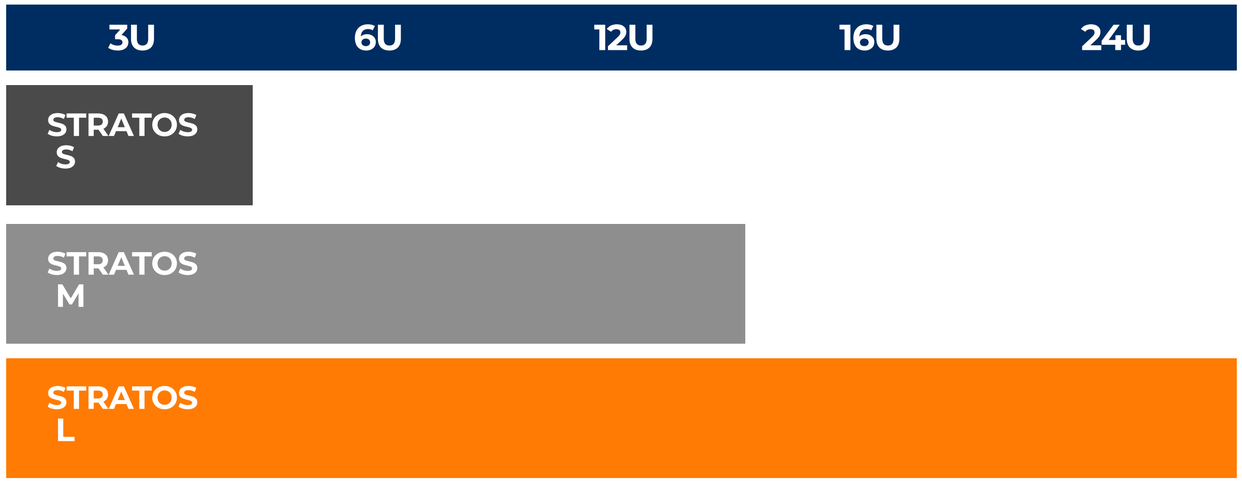






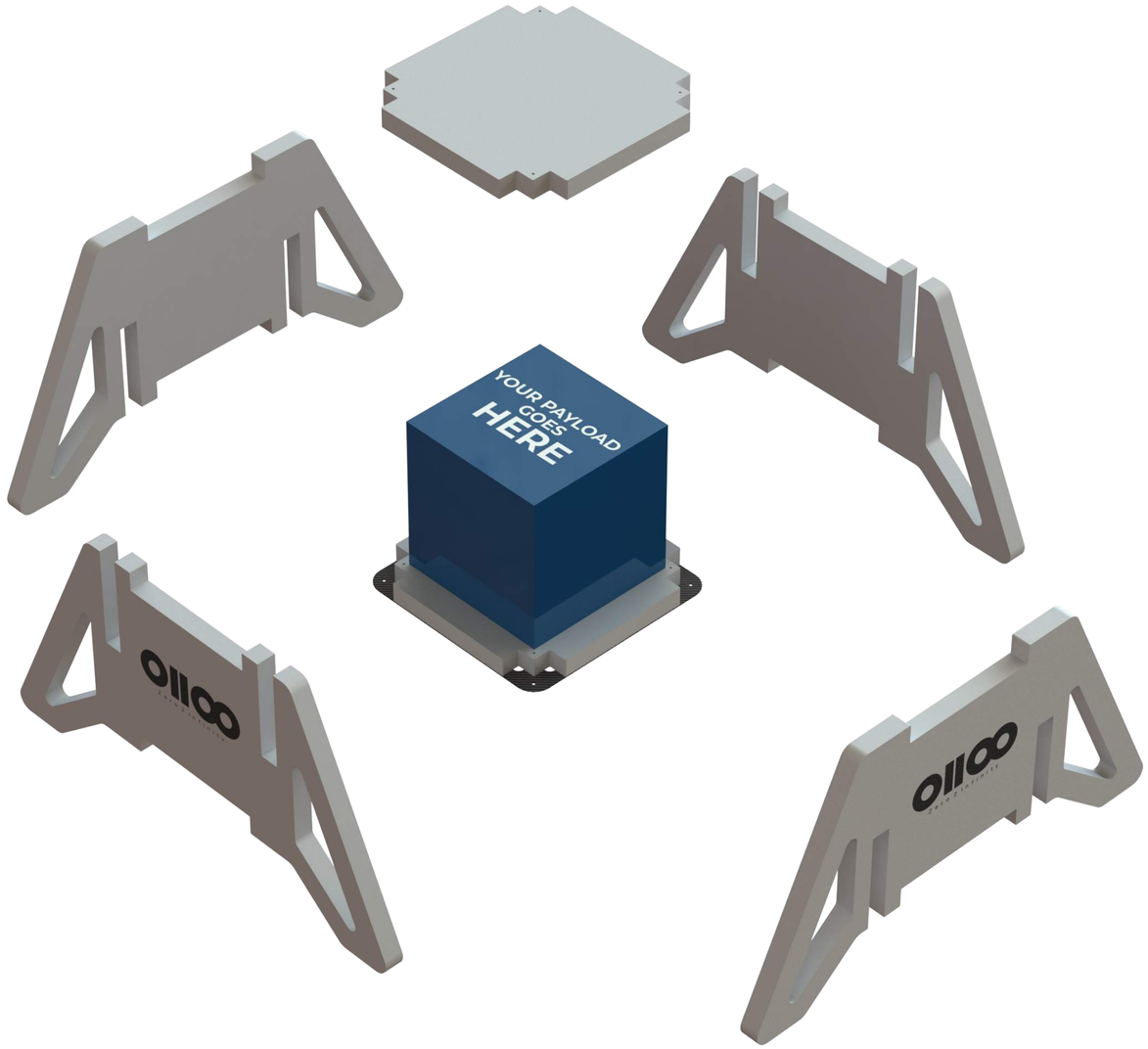
RIDSHARE **OPTIONS**

If your payload mass is moderate and you don’t need to occupy the entire payload volume, you can share a gondola with other clients, which translates into shorter lead times and lower cost.



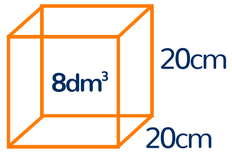
P/L SIZE	3U	6U	12U	16U	24U
VOLUME (dm³)	3	6	12	16	24
MASS (kg)	4	8	16	21	32

QUARTZ
STRATOS S&M GONDOLA

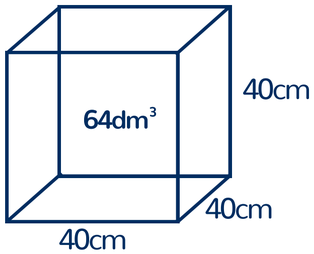


PAYLOAD VOLUME

SMALL



MEDIUM



GONDOLA
ADDITIONAL FEATURES

ALTITUDE CONTROL (only for STRATOS Large)
This optional system is composed of the Balloon Apex Valve and the Ballast Release System. By releasing lifting gas and/or system mass, the floatation altitude can be adapted. This system is compulsory for long duration flights, which need to go over a day-night cycle.

PAYLOAD POWER SUPPLY
As an additional feature to STRATOS, a power supply system is available for the payload, optimized for its needs and the stratospheric environment.

COMMUNICATION TO THE PAYLOAD
STRATOS baseline configuration contains a basic communication to the payload. Should the payload require real time downlink of onboard generated data, a dedicated communications module can be added sized to the payload needs.

	ALTITUDE CONTROL	P/L POWER SUPPLY	COMMUNICATION TO P/L
ONYX	●	●	●
QUARTZ		●	●

REASONS TO **CHOOSE ELEVATE**

1 DEDICATED MISSION DESIGN

Pick your altitude, duration and payload mass to get a dedicated service!

We are the only company in Europe to offer dedicated missions targeting the High Altitude Platfoms (HAPS) market. After analyzing its viability, we can offer our clients the flexibility to select an altitude range, the duration of the test and the payload mass to fulf ill the objectives of the project.

2 SHORT LEAD TIMES

Get ahead of your competitors.

While other HAPS concepts are under development, its critical to iterate on different technologies that will compose payloads and other subsystems. With our short lead times, you can be flying with us in a matter of months and not years!

Small (4-6 weeks)	Medium (2 months)	Large (4 months)	Other Balloon Operators (2-3 years)

REASONS TO **CHOOSE ELEVATE**

3 SOLID CLIENT BASE

Client portfolio in constant growth.

We have performed flight campaigns for major aerospace companies and academic institutions:

AIRBUS

ThalesAlenia Space
a Thales / Leonardo company

esa

comex

ALTRAN

dhv technology

AISTECH
Access to Intelligent Space Technologies

universidad de león

More than 40 successful flight campaigns completed, and growing!

REASONS TO **CHOOSE ELEVATE**

4 PRIVATE LAUNCH PLATFORM

A dedicated stratoport at your service!

We have different dedicated facilities to perform flight operations. Fly efficiently without worrying about privacy, management, permits or logistics.

5 300 DAYS OF SUNLIGHT

Minimize your mission delays due to the weather!

As our business activity is based in Spain, we have a privileged location that allows for flexible selection of dates for your stratospheric test.

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