ZERO 2 INFINITY

Whitepaper

Simplifiying access to space

Mission of the company

As the first commercial Near Space balloon company in Europe, Zero 2 Infinity is developing the technology and the infrastructure needed to:

-Offer a dedicated balloon-assisted launcher for microsatellites that will place payloads in precise orbits. This efficient solution will lower the entry barrier cost of placing a satellite, or a constellation of them, in Low Earth Orbit (LEO) and will empower Space technology with the benefits of micro and nanotechnology (Bloostar).

-Fly pilots, scientists and passengers to Near Space in a pressurized pod. Such a platform will improve scientific excellence for observation and experimentation outside most of the atmosphere. It will also be used as an Astronaut training facility by Space agencies. Finally, it will serve to raise people's awareness of the beauty and fragility of our planet and inspire them to protect it (Bloon). Since its creation in 2009, Zero 2 Infinity is flying large and small payloads to Near Space for testing purposes. In 2013 Zero 2 Infinity started its Near Space balloon commercial operations started for a host of customers from educational institutions to technology companies from several countries.

Background

Zero 2 Infinity has been collaborating with the European Commission to develop future solutions in the Space market for years. Within the FP7 framework programme, as part of an international consortium, the company developed an advanced guided descent system by parachute for aerial vehicles, including Light Sport Aircraft (LSA) and Near-Space Capsules (NSC), weighting up to 600 kg. This project, known as Paraplane, produced a system for controlled steerable descent and recovery which will be used both for the HELIUM (High-Altitude European Laboratory for Institutes, Universities and Markets) laboratory and later Bloon

About Us

The Zero 2 Infinity is structured on three branches. Each of them fulfills certain objectives

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 you equipment above 99% of the atmosphere

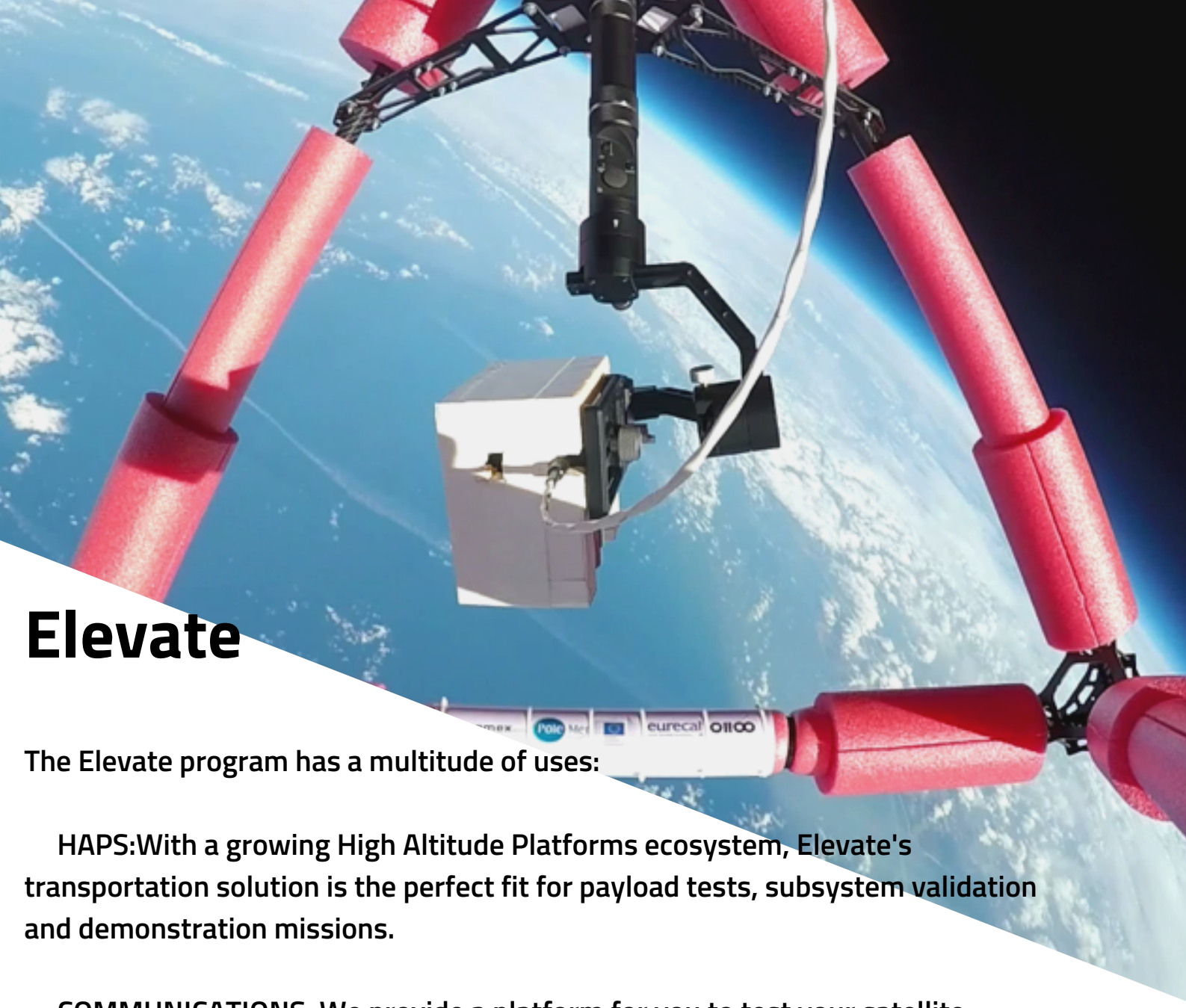
BLOON

Zero 2 Infinity was the first organisation to propose a balloon flight to Near Space as a commercial enterprise. In a 2002 paper, Jose, the founder of Z2I, outlined the feasibility of such a project which has resulted in the development of Bloon.

Bloon exists to unlock the huge potential of space tourism in a safe, affordable and clean way.

BLOOSTAR

Bloostar places your satellite in the orbit you want. We ensure you are ready to launch by testing your satellite in Near Space.



Elevate

The Elevate program has a multitude of uses:

HAPS:With a growing High Altitude Platforms ecosystem, Elevate's transportation solution is the perfect fit for payload tests, subsystem validation and demonstration missions.

COMMUNICATIONS: We provide a platform for you to test your satellite communication subsystems and/or full self-containing ground segment communication systems.

NEAR SPACE MARKETING: Fly to Space! Get the most magnificent views for your marketing campaign: blue water, the curvature of the Earth, the blackness of Space!

DROPTEST: What better proving ground for your prototypes than a drop test?

WEATHER: From our daily choices, to long term planning for economies, our lives are completely dependent on Weather and Climate. Z2i platforms provide unprecedent capabilities to monitor and better understand our Planet.

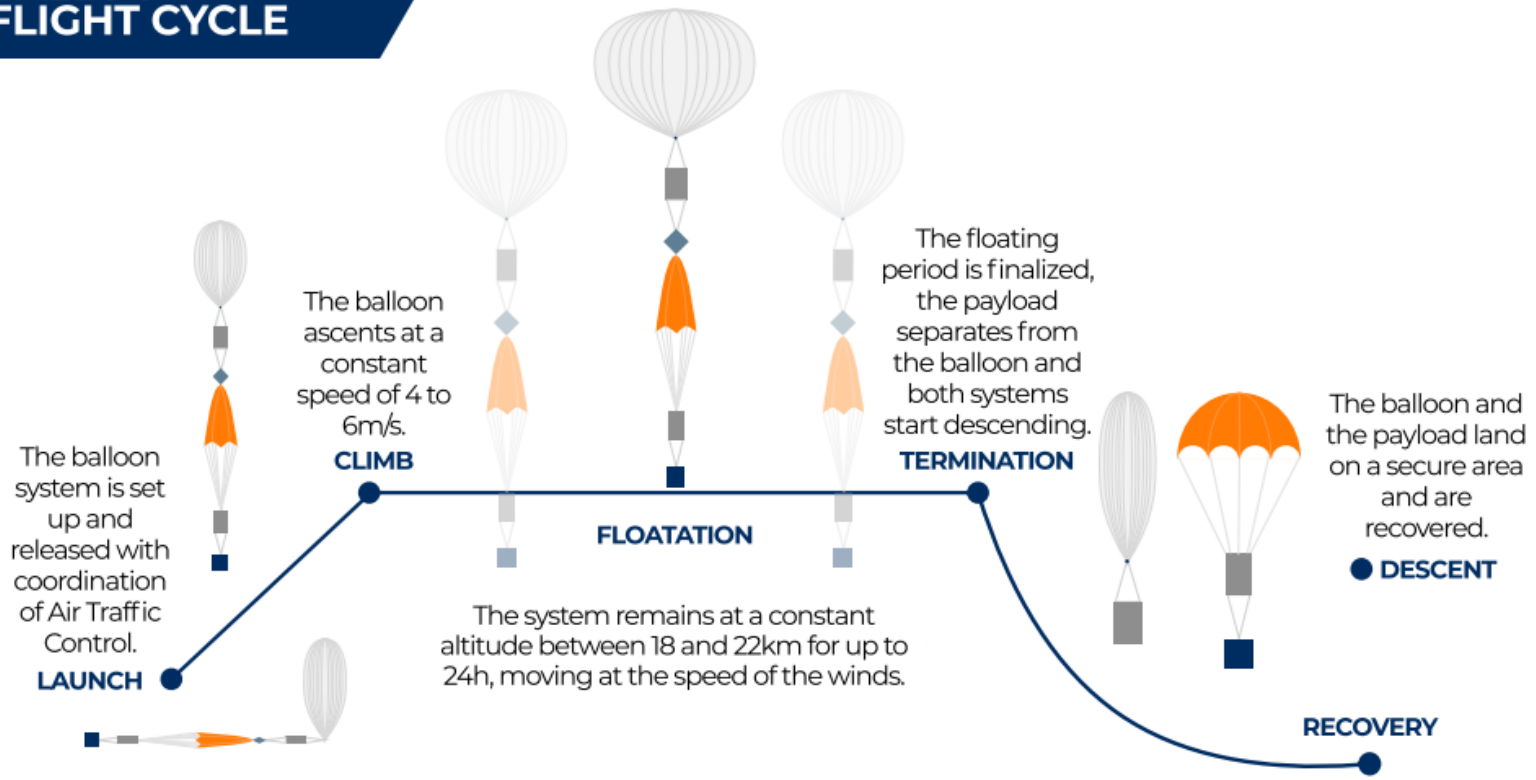
What's a high altitude balloon?

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



LAUNCH LOCATIONS

INTRODUCING STRATOS

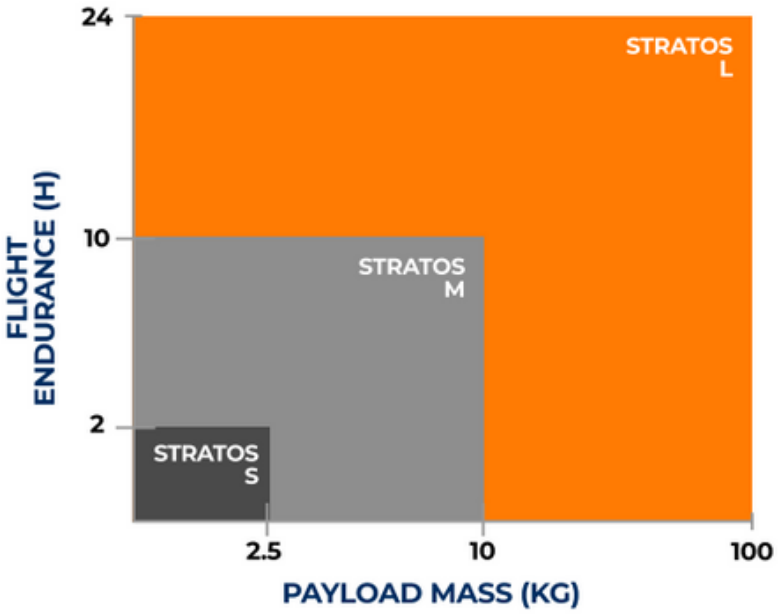
STRATOS is a **fully functional vehicle** based on a high altitude balloon. It has been developed for the **High Altitude Platforms (HAPS) market**, with a special focus on enabling new technology demonstrations and the validation of hardware in stratospheric conditions.

CONFIGURATION

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

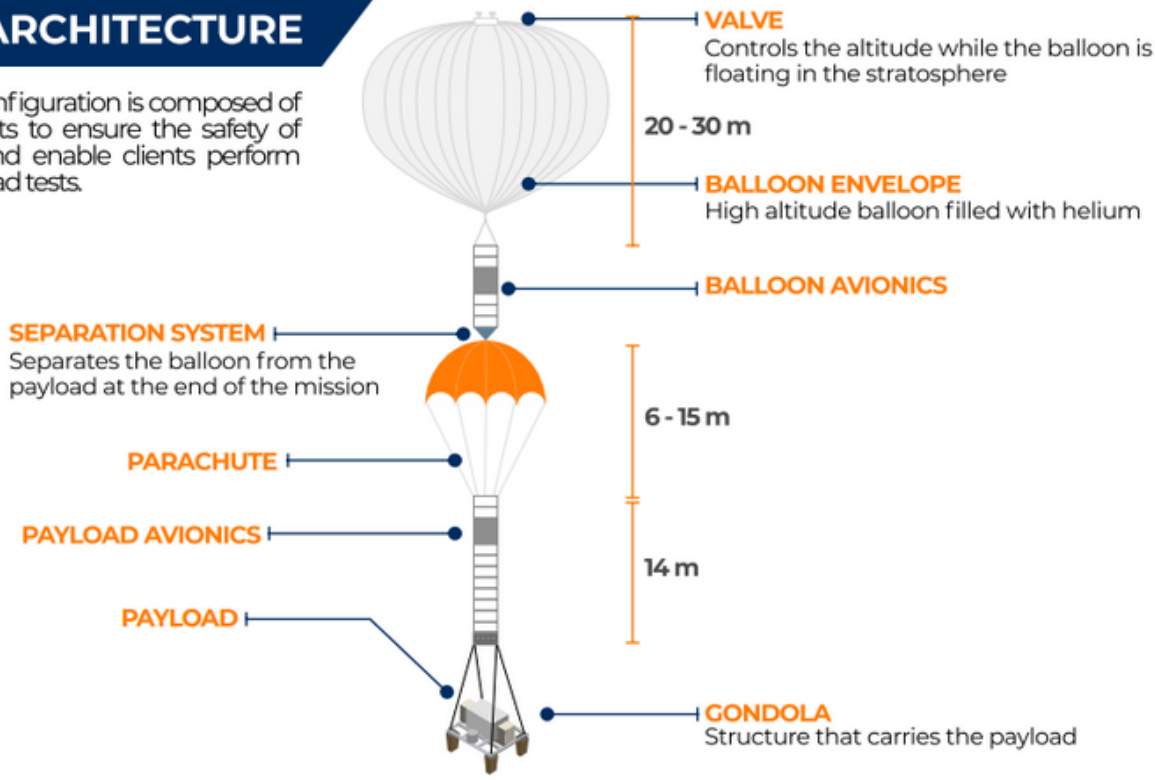
We offer different system configurations:

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.



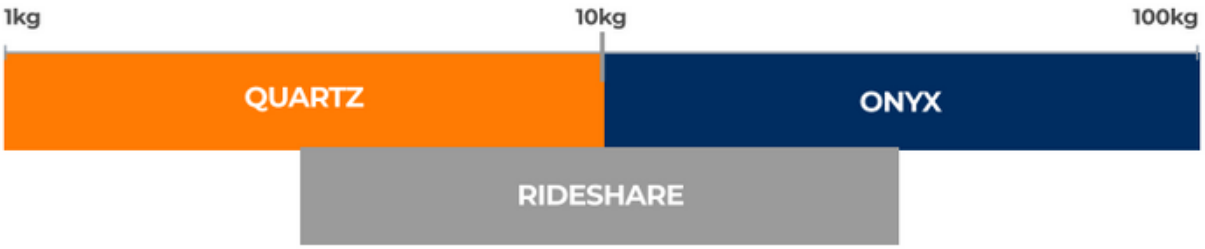
THE GONDOLA

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

Its architecture is designed to host several payload configurations:

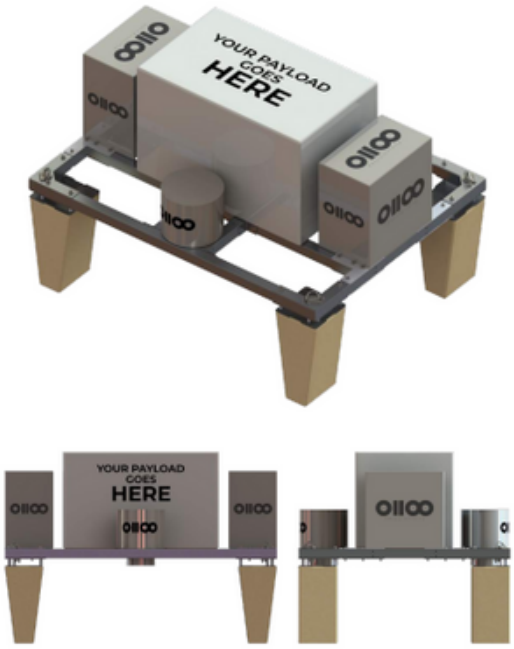
- **Telecommunications** (Nodes, Filters, Antennas...)
- **Earth Observation** (Optical and Infrared Sensors, Radar...)
- **HAPS vehicle developers** test their subsystems (Solar panels, Batteries, Avionics...).

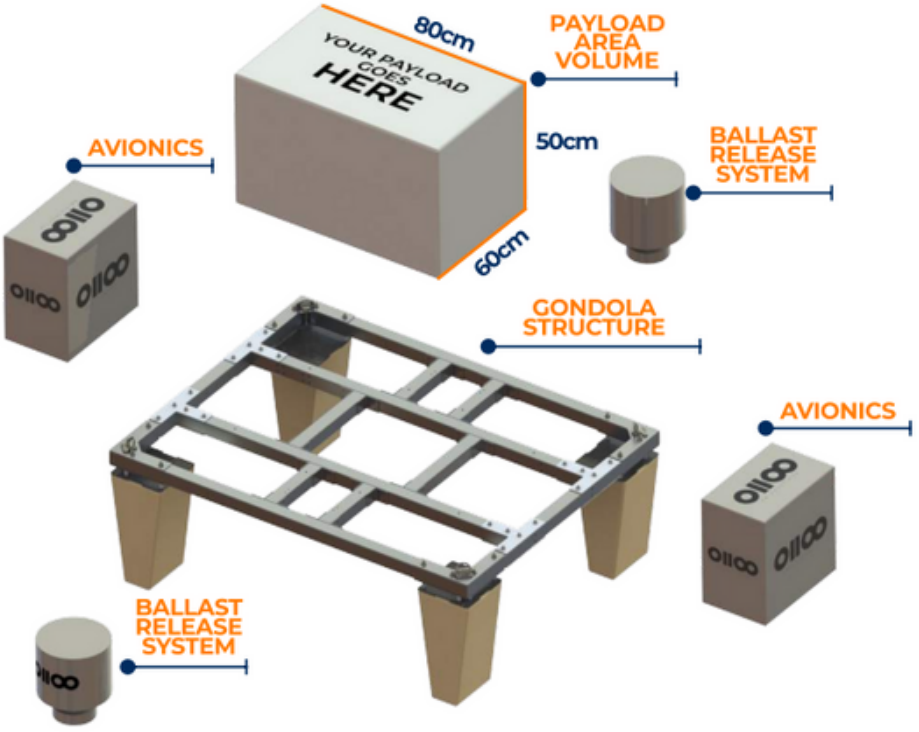
Depending on the payload mass, different gondolas can be used:



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

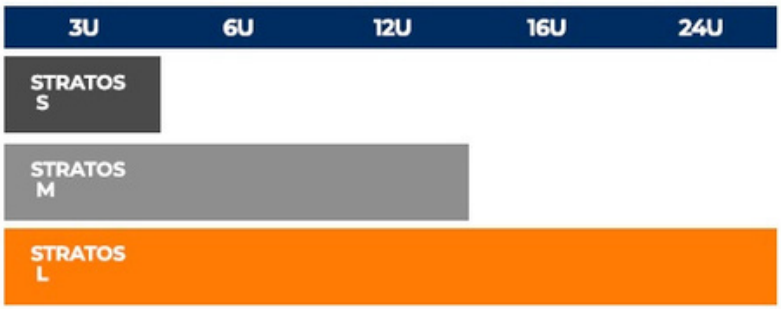
ONYX STRATOS L GONDOLA





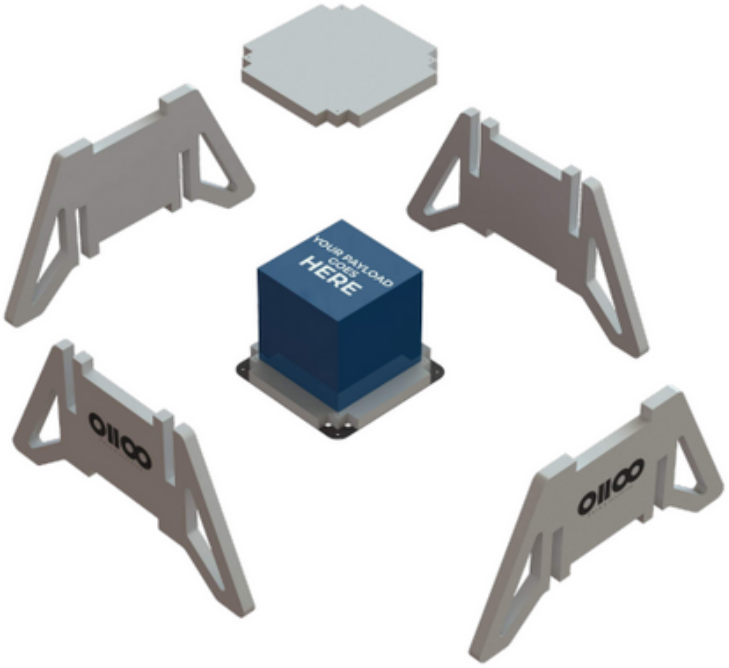
RIDESHARE OPTIONS

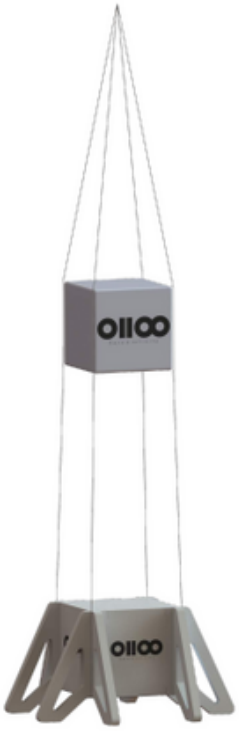
If your payload mass is moderate and you don't need to occupy the entire payload volume, you can share a gondola with other clients, which translates into shorter lead times and lower cost.



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





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 Platforms (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 fulfill 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)

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!

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.

Bloon

Zero 2 Infinity was the first organisation to propose a balloon flight to Near-Space as a commercial enterprise. In a 2002 paper, Jose outlined the feasibility of such a project which has resulted in the development of Bloon.

Bloon exists to unlock the huge potential of Space Tourism in a safe, affordable and clean way.

Market Opportunity

Human desire for exploration has inevitably guaranteed an appetite for space travel. As the reality of commercial space travel becomes feasible, global appetite has boomed. This is reflected in the proliferation of projects in the industry as well as the increase in price of space journeys.

Dennis Tito's space flight cost $20 million. In the immediate aftermath, demand for the same experience multiplied, resulting in one person per year paying on average $25 million for the journey. Being the only viable option for commercial space travel combined with such great demand, Soyuz flights have become increasingly expensive, with tickets now being sold at $80 million to government astronauts.

Several studies have examined potential demand for space travel:

- LeGoff (Astrium), studies by IPSOS and Astrium (now Airbus)
- Tauri Group
- Futron 2006

These studies have given us an estimate of market adoption, showing that any such new product or service follows an S curve of demand adoption: as it becomes better known, the demand grows.

Making Space Tourism a Reality

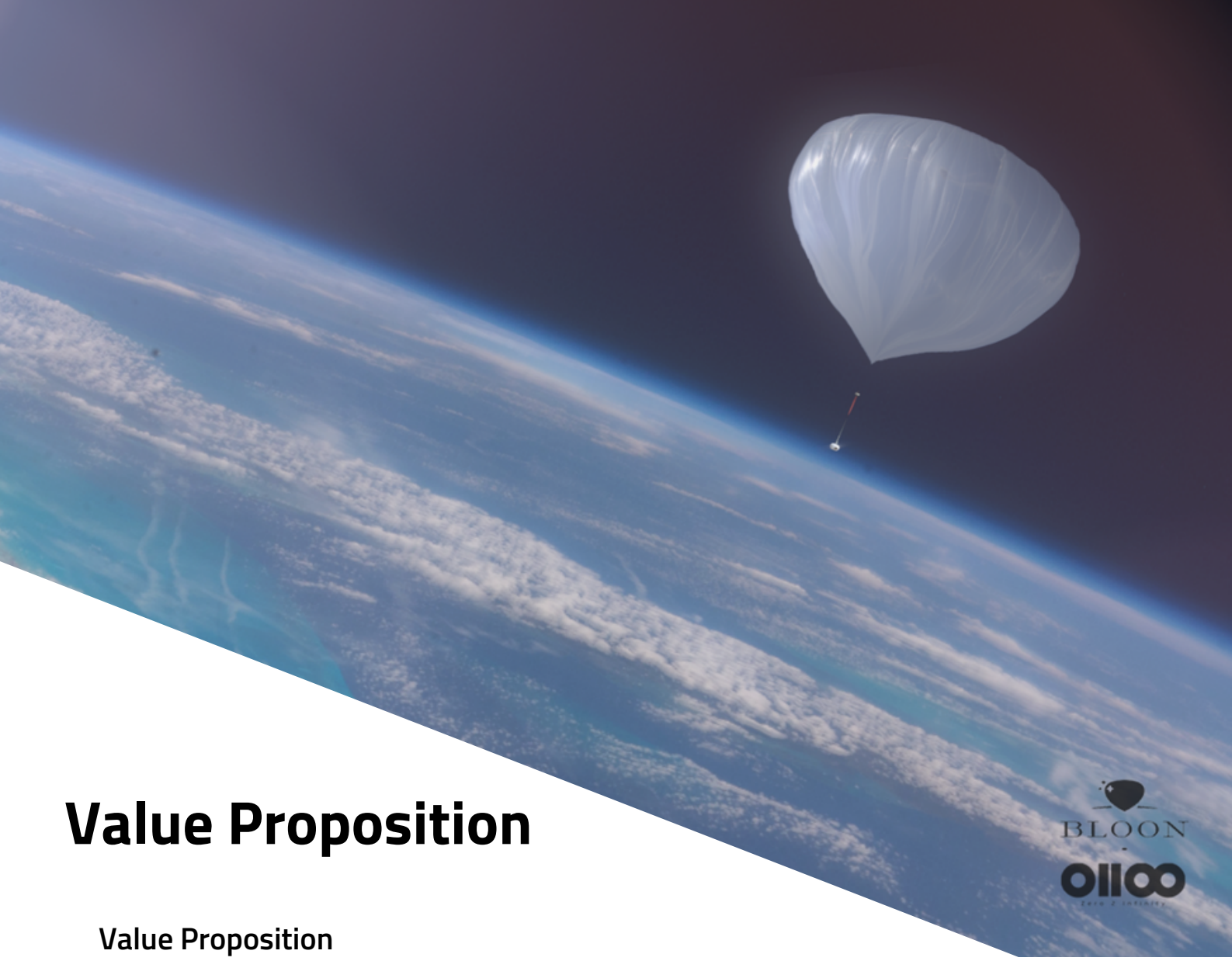
Astronauts often speak about the impact that seeing the Earth from Space has had on their lives and perspectives. Zero 2 Infinity wishes to open up this experience to the general public. Bloon offers a unique journey to the edge of Space, where passengers can enjoy the view of the Earth as a round blue planet, and experience the blackness of Space.

Bloon is made up of three parts: a pod, holding 4 passengers and 2 pilots; a Helium balloon, that elevates the pod; and a descent system. The vehicle travels 36km high, which is 99.5% outside the Earth's atmosphere.

Zero 2 Infinity is the first organisation to have flown a ½ scale prototype of this type of system. This test flight was performed in 2012.

Zero 2 Infinity uses the most sophisticated technology available to ensure absolute safety on commercial flights. Where possible, Z2I makes use of existing technologies from the space or aviation industries. In many cases, from idea phase to the manufacturing and testing of entire human-sized pressurised pods, many components are designed in-house.

The Zero 2 Infinity team have been working on Bloon for 13 years, and have got to such a stage that they estimate the first commercial flight to take place in 2023-24, with subsequent flights occurring in regular succession, at a initial rate of about 25 per year.



Value Proposition

Value Proposition

Safety: Zero 2 Infinity prioritises passenger safety above all. This focus has characterised the development of Bloon since its inception. As a result, Bloon is a safe option:

- No explosives (unlike most rocket-based suborbital solutions for Space Tourism)
- No big accelerations and/or speeds
- Use of proven technology with a long successful background
- Safest method of re-entry into the atmosphere with a parafoil

Time to reflect: Bloon offers passengers significant time in Near Space, a completely different experience to rocket-based space flights.

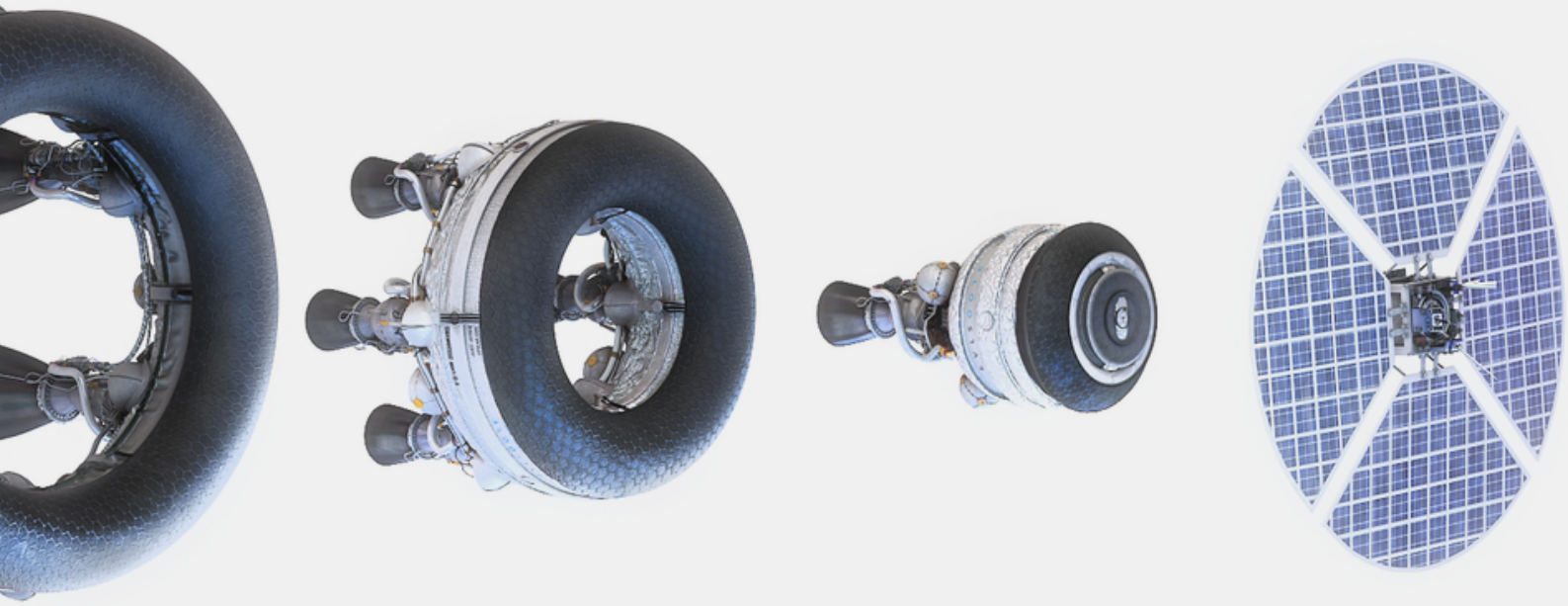
- 5 h total duration
- 2 h coasting at height
- Large windows/shape of pod facilitates best angles to view Space and Earth

Bloostar

Bloostar is a launch vehicle, intended to compete in the small satellite launch market. It is based on the rockoon concept: the first stage of the ascent is conducted by the use of a high-altitude balloon up to 25 km (15,5 mi), where the rocket platform is ignited and detached from the balloon to insert the payload into orbit. The design is intended to be capable of delivering a 75 kg payload to a 600-km sun-synchronous orbit.

Design

The design includes a total of 13 engines split across three stages, all using methalox (liquid methane and liquid oxygen) propellants. The first, outermost stage is a toroid with six Teide 2 engines each producing 20 kN of thrust; the second stage is a smaller toroid with six smaller Teide 1 engines each producing 5 kN of thrust; the third stage is positioned at the centre of the toroids with a single Teide 1 engine. By using propellant crossfeed, all available engines will fire simultaneously but only the fuel tank in the outermost stage will be depleted at a time, increasing performance. As the engines will only ever fire at very high altitude, all 13 will be optimized to produce maximum thrust in vacuum or near-vacuum conditions, similar to the upper-stage engines of conventional rockets.]



Development history

Development of Bloostar began in 2013. The first flight test was successfully conducted in March 2017, in which a less-than-half-scale prototype of the upper two stages was carried to 25 km altitude by balloon, separated, made a short burn using a small solid motor, and then was recovered intact by parachute. Phase 2 of development will follow, which will involve suborbital flights of nanobloostar (a third stage from a production Bloostar) with a 75 kg payload to 180 km altitude.

At that time of the 2017 test flight the first commercial launch was projected for 2019. However, López Urdiales subsequently noted this date could potentially slip as Zero 2 Infinity focused on its revenue-generating Elevate product line.

Meet the Team & Advisors

José Mariano López Urdiales
CEO & FOUNDER

Iris Silverio Pons
BUSINESS AND FINANCIAL OFFICER

Jose Luís García Bravo
SENIOR CAMPAIGN MANAGER & LEAD ENGINEER

Daniel Romero Cortadellas
AEROSPACE ENGINEER & PRODUCT DEVELOPER

Meet the Team & Advisors

Robert Falcó Genís
ELECTRONICS MANAGER

Marc Anglès Devesa
ELECTRONICS ENGINEER

Fulvia
Buonanno Llanos
COMMUNICATIONS MANAGER

Izan
Peris Martí
AEROSPACE ENGINEER & PRODUCT LEAD - ELEVATE

Meet the Team & Advisors

Ibtissem Zekraoui
ADMINISTRATIVE ASSISTANT

Abel Quiñonero Clariana
MECHANICAL ENGINEER

Marc Falcó
ELECTRONICS INTERN

Quim Forns
MECHANICAL ENGINEERING INTERN

Meet the Team & Advisors

Michael Lopez Alegria
Technical Advisor
ISS Commander

Cesar Llorente Lopez
Business Administration
Universitad de les Illes Balears

Steven Peterzen
Campaign Manager
President of ISTAR;
Stratospheric Ballooning

Josep Maria Llado
Investor
CEO & Founder of Ultramagic

Meet the Team & Advisors

Craig Mascarenhas
Aerospace Research
Business Development

Dr. Eduardo Bendek
Science Missions Lead

Z2I Token

With a total supply of 100 milions, Z2I token will fuel Zero 2 Infinity's ecosystem, connecting partners, investors and space tourists and enabling them to engage in a highly valuable ecosystem.

Z2I Token

The Z2I token is a token created on the Elrond blockchain. The purpose of this token is to create a bridge between real life and blockchain technology.
As the motto of our company Simplifining Access to Space, our team wants to simplify the flights in space at the level of the individual person.
With the help of blockchain technology we can be closer to people who want to travel to the Edge of Space.

The Z2I token aims to offer the possibility to be used in the acquisition of the company's services

We aim to create an entire community around Z2I, through which to offer benefits and advantages to our token holders.

Z2I Token Utility

Z2I's initial functionalities will include:

- Community benefits: buy/sell NFTs and space tickets at a discount from their fiat price
- Stake tokens for rewards
- In the future we plan to create an ecosystem through which Z2I token holders can vote for certain company campaigns
- When the Bloon program is open to the public, we will organize a raffle in which the holders of the token will participate in a space launch.

Why to buy Z2I Token

The Z2I token offers you the opportunity to buy with cryptocurrencies in a physical project. It is a way to get closer to the Zero 2 Infinity company.

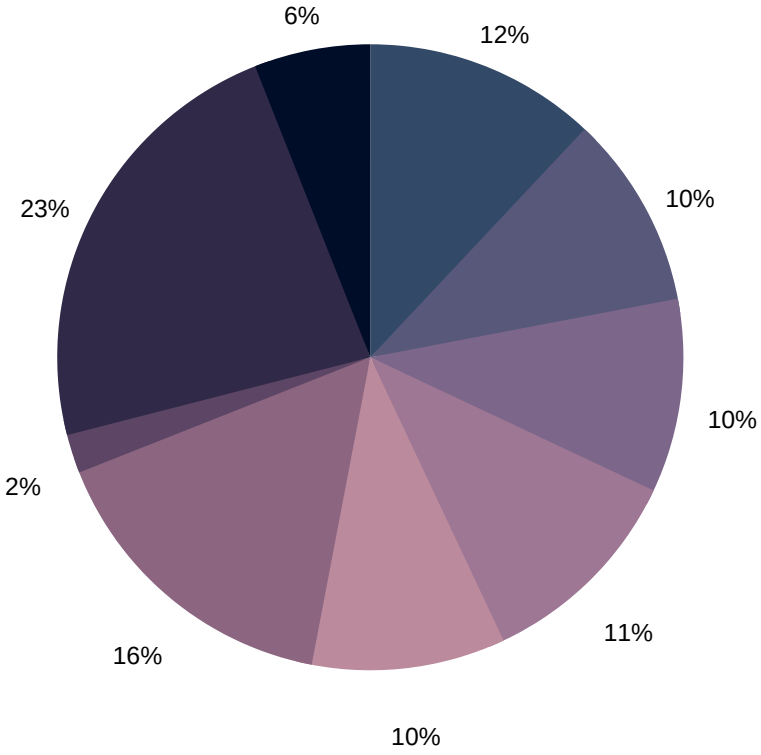
What brings value to the Z2I token?

The Z2I token gets its value, first of all, through its buyers and through the Zero 2 Infinity company. We offer the possibility of crypto projects to develop NFT collections based on space photos, we can send banners and merchandise of projects in space. We will also have a range of collaborations with projects that have NFT collections in their portfolio.

Through the Zero 2 Infinity company, with international exposure, the Z2I token benefits from a large-scale marketing.

Zero 2 Infinity also aims for the token to have other utilities within the company. The project will diversify its utilities depending on the market, which will add value to the cryptocurrency.

Tokenomics



12%

TEAM

10%

PRESALE

10%

MARKETING & DEVELOPMENT

11%

PARTENERSHIPS & ADVISORS

10%

METABONDING REWARDS

16%

LP REWARDS

2%

XSTAKE REWARDS

23%

STAKE REWARDS

6%

CEX & DEX LISTINGS

Roadmap

- Community building
- First round of presale
- Marketing programs
- Second round of presale

Q3
2022

- Stake program
- Crypto projects partnerships

Q4
2022

- NFT's Colection
- CEX & DEX Listings
- Integrating payments via Z2i & EGLD

Q1
2023

- Metabonding program on Maiar

Q2
2023