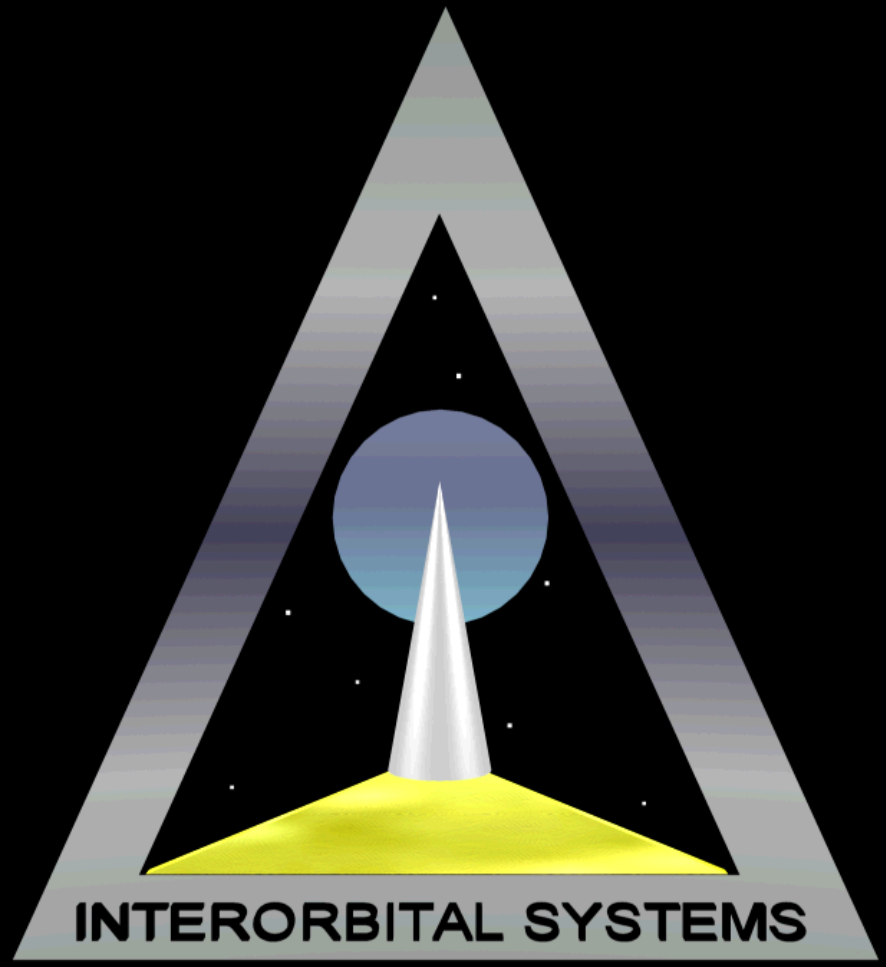
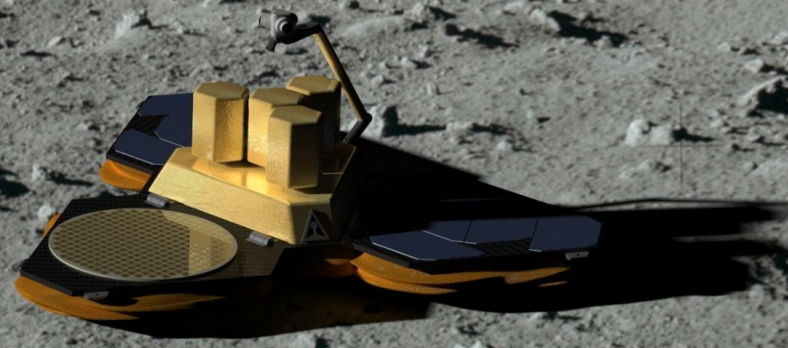

INTERORBITAL SYSTEMS

INTERORBITAL SYSTEMS

Technology and Mission Update

Presenter, Randa Relich Milliron, CEO/CoFounder

Interplanetary Small Satellite Conference
California Polytechnic University, SLO
May 2, 2022



LunarStation: Interorbital is developing a Commercial Lunar Payload Soft–Landing System

A simple low-cost Lunar-Lander design

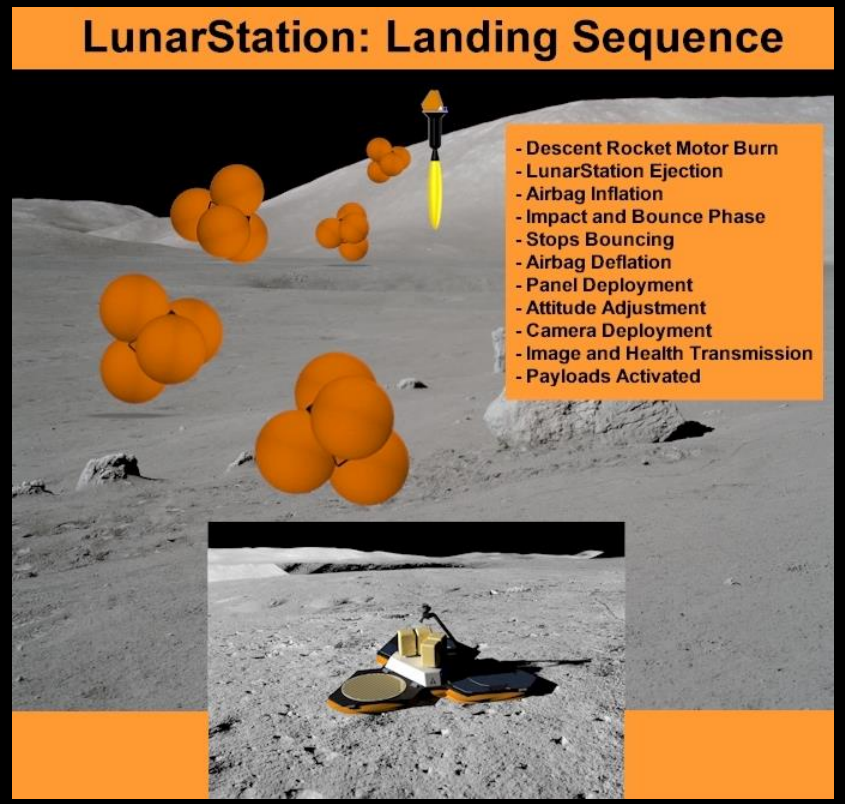
Utilizes a well-tested airbag landing system

Mass small enough to launched to the Lunar surface by Interorbital's SCEPTRE launch vehicle

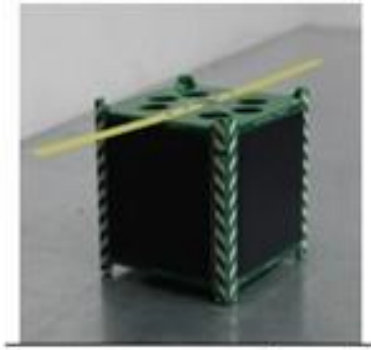
40-kg (88.2-lbs) payload to Lunar surface

A single dedicated payload (all 40-kg) to the Lunar Surface will cost $6 million or $150,000 per kilogram

For multiple payloads from multiple customers, a power and transmitter distribution bus will support up to four payloads



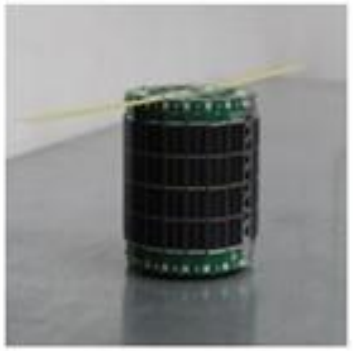
IOS Standard Satellite Kit Prices include a FREE LAUNCH!



Interorbital Systems'

CubeSat 2.0

$22,000 with Free Launch
(Academic price)
$44,000 with Free Launch
(Non-Academic price)



Interorbital Systems'

TubeSat 2.0

$12,400 with Free Launch
(Academic price)
$24,800 with Free Launch
(Non-Academic price)

- No metal chassis (all printed circuit-board structure)
- Single board controller, radio, power management & battery
- ATmega2560 microcontroller – 2560kB Flash, 8kB SRAM, 4kB EEPROM – Arduino IDE compatible
- 433MHz radio transceiver with built-in 1.5W amplifier
- 9-degree-of-freedom inertial measurement module
- Temperature monitored battery cells
- Micro-USB programming
- 2x deployment micro-switch

- 3.95" (10-cm) cube
- 1.3kg total mass
- Approx. 3.8"x3.8"x2.3" (9.7x9.7x5.8)-cm payload space
- 700 grams payload
- 4-cell Li-Ion battery – about 47Wh
- 4x 1.37W solar panels
- 2x 4MBits external FRAM memory
- α β γ radiation sensor
- Real-time Clock

- 3.77" (9.58-cm) diameter x 4.72" (12-cm) length icosagon
- 0.75kg total mass
- Approx. 3.6" (9.1-cm) diameter x 3.1" (7.9) long payload space
- 300 grams payload
- 3-cell Li-Ion battery – about 35Wh
- 18x 196mW solar panels
- 4MBits external FRAM memory

Contact: ios@interorbital.com, 661.965.0771

INTERORBITAL SYSTEMS' PERSONAL SATELLITES: NEW FOR 2022!

Special Academic Pricing Courtesy of Trans Lunar Research, a 501(c)(3) Nonprofit Organization

More about Interorbital Systems 2.0 Personal Satellite Kits:

IOS CubeSat and TubeSat kits are currently not open-source but will be offered in various DIY open-source kit versions in the near future

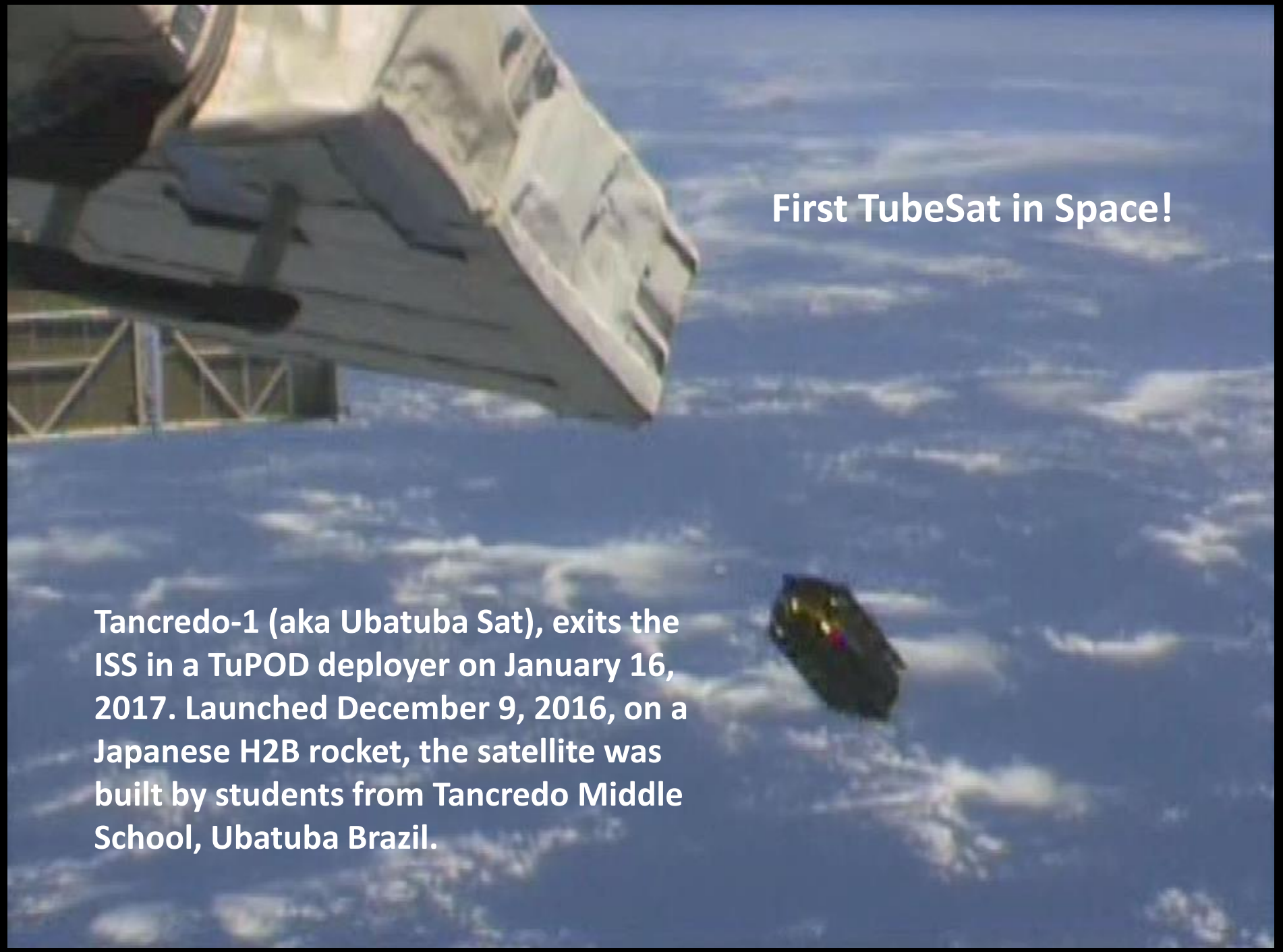
Includes files, schematics, circuits, etc...

The kits are as easy to program as an Arduino, with the same IDE--- a program that runs on an Arduino Mega will run on the IOS kits

Kits include a detailed Assembly/User's Guide

Programming left to customer as it depends on the application
However, we do provide demo programs to get builders started

The standard kits can be assembled in a few hours-- gives you maximum focus time for your experiment or application development with minimal worry about the spacecraft build


First TubeSat in Space!
Tancredo-1 (aka Ubatuba Sat), exits the ISS in a TuPOD deployer on January 16, 2017. Launched December 9, 2016, on a Japanese H2B rocket, the satellite was built by students from Tancredo Middle School, Ubatuba Brazil.

Ultra-Affordable Launch Services achieved through Radical Simplification of Rocket Systems and use of Private Mobile Spaceports, Land and Sea

NEPTUNE/SCEPTRE: From Ocean to Orbit

Launch within 8-24 Hours after Call-Up

Lowest-cost liability insurance

Rapid-Response Launch on the World's Lowest-Cost Orbital Rocket

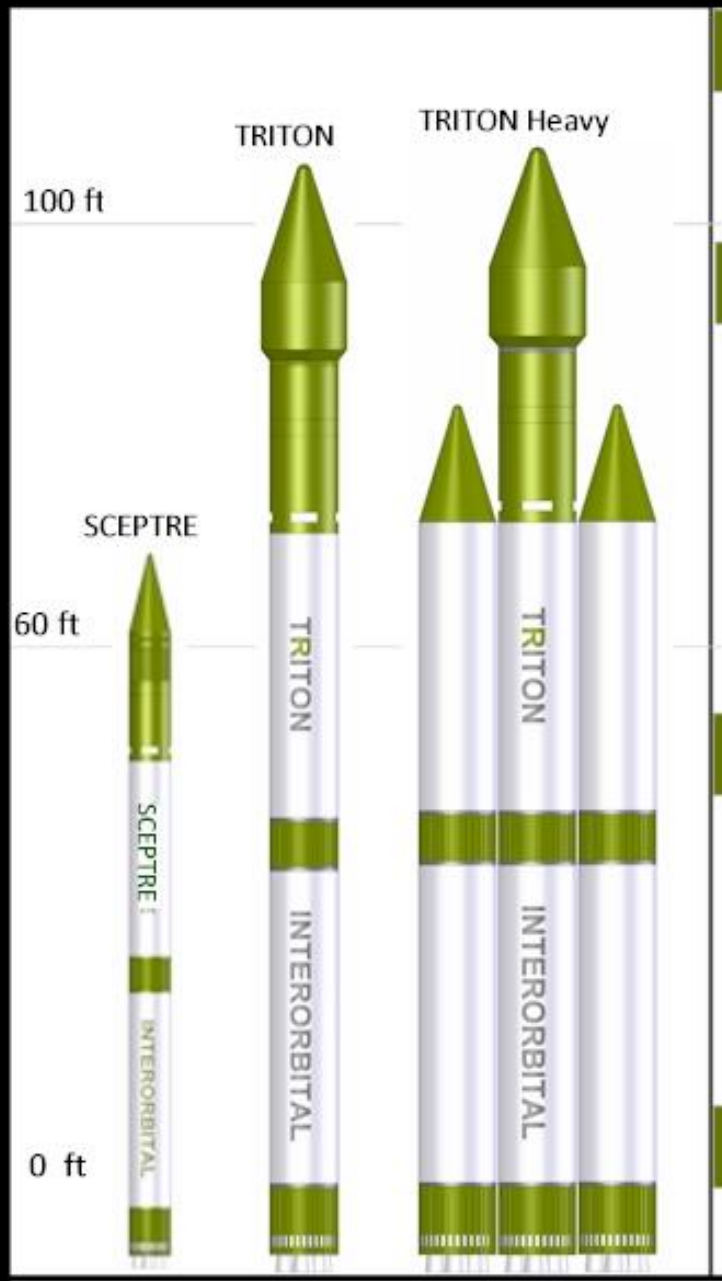
Interorbital's Mobile Spaceport

NEPTUNE Main Engine Oxidizer: White Fuming Nitric Acid

NEPTUNE Main Engine: Flight Test

SCEPTRE Main Engine Oxidizer: Liquid Oxygen

Interorbital has designed and tested rocket engines using both Liquid Oxygen and White Fuming Nitric Acid Oxidizers

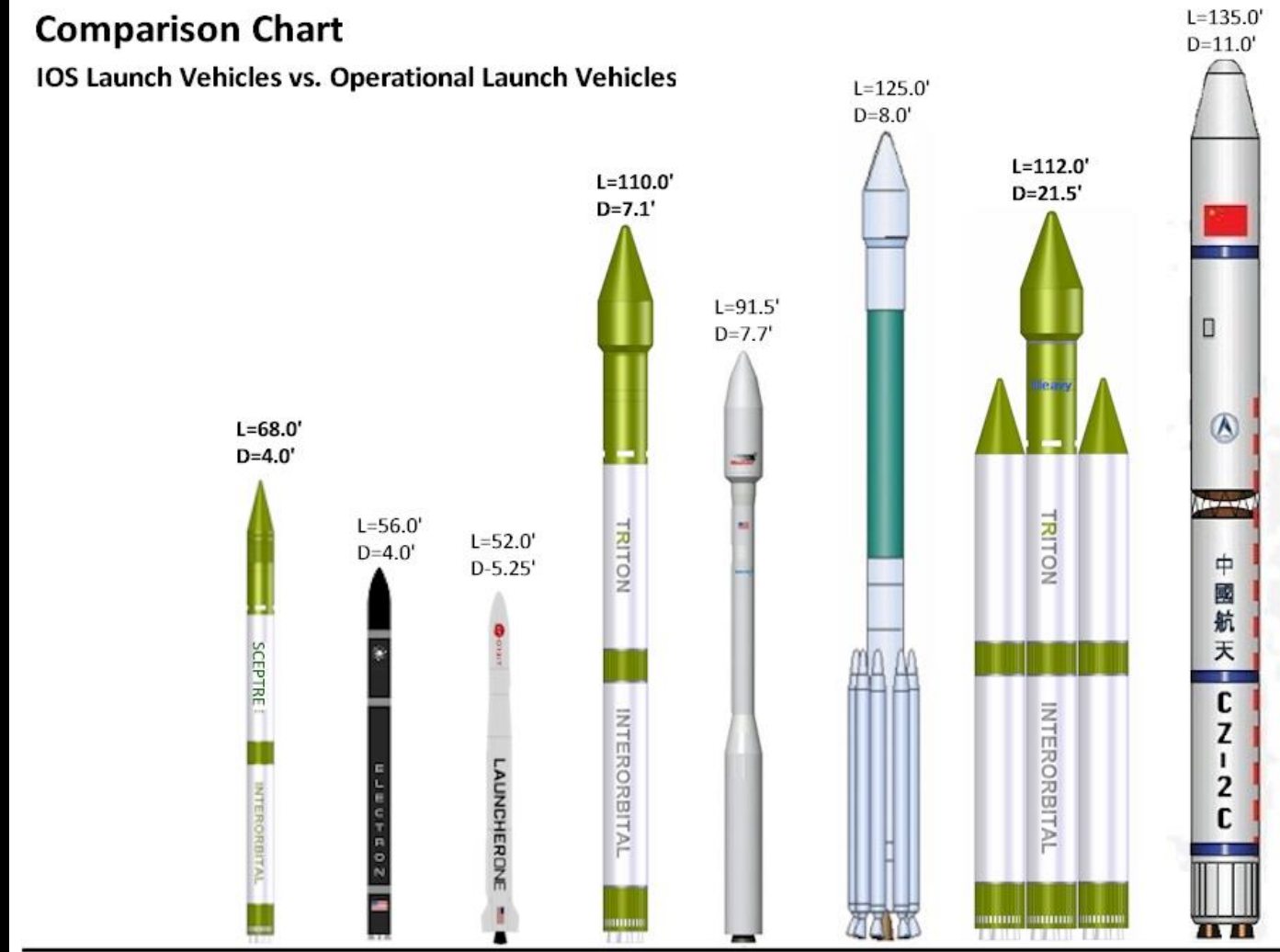


PERFORMANCE	SCEPTRE	TRITON	TRITON Heavy
Payload (Polar, 500 km)	196 kg	2,100 kg	6,100 kg
Payload (LEO, 200 km)	300 kg	3,333 kg	9,683 kg
PARAMETERS			
GLOW (lbf)	29,000	255,000	765,000
Number of Stages	2	2	2.5
Max Length (ft)	68	110	112
Max Diameter (ft)	4.0	7.1	21.5
Structure	alu/comp	alu/comp	alu/comp
ROCKET ENGINES			
Oxidizer	LOx	LOx	LOx
Fuel	Propane	Propane	Propane
Thrust (Stage 1) (lbf)	60,000	340,000	1,020,000
Thrust (Stage 2) (lbf)	4,100	40,000	40,000
LAUNCH COST			
Polar (500 km) ($)	2,500,000	12,000,000	18,000,000

LEO = Low Earth Orbit LOx = Liquid Oxygen km = kilometer alu = aluminum Comp = Composite GLOW = Gross Liftoff Weight

Comparison Chart

IOS Launch Vehicles vs. Operational Launch Vehicles



Company	Interorbital	RocketLab	Virgin Orbit	Interorbital	Orbital	ULA	Interorbital	China
Launch Vehicle	SCEPTRE	Electron	LauncherOne	TRITON	Minotaur C	Delta II	TRITON Heavy	CZ-2C
Payload LEO (Kg)	225	200	450	2,100	1,320	3,000	6,100	3,500
Launch Cost	$2.5M	$6M	$12M	$12M	$50.0M	$51.0M	$18M	$30.0M
Cost/Kg	$11.11K	$30K	$27K	$5.7K	$37.8K	$17.0K	$3.0K	$8.6K
Status	ID	O	O	ID	O	O	ID	O

D = Diameter (ft) L = Length (ft) LEO Altitude = 500 Km LEO Inclination = Polar Orbit ID = In-Development O = Operational

Why do Interorbital Systems' launch vehicles cost less to build and launch?

Interorbital launch vehicle design criteria are the direct result of the application of Subtractive Design and Minimum Cost Design

The best way to reduce cost and the failure of components and subsystems is by their ELIMINATION or SUBTRACTION

NO expensive and failure-prone turbopumps to feed propellants into the combustion chambers
NO expensive and unreliable gas turbines to drive the pumps
NO catastrophic pump explosion at propellant depletion
NO hold-down requirement causing Stage-1 performance loss and expensive launch pad additions
NO excessively high chamber pressures
NO expensive and unreliable regenerative cooling of the combustion chamber: Interorbital employs Ablative and Radiation Cooling using state-of-the-art materials
NO fuel-rich mixture ratio required by regenerative combustion-chamber cooling (fuel rich mixture ratios result in lower specific impulse)
NO unreliable and heavy gimbal hydraulics
NO need for stage-separation ullage rockets (Interorbital uses fire-in-the-hole Stage 2 ignition)
NO environmental damage from propellant spills—Lox and Propane will quickly vaporize (and LOx/Propane propellants have a specific impulse 10 sec higher than LOx/RP1)
NO out-sourcing of propulsion systems; all engines built in-house
NO use of conventional spaceports; NO extortionate use and insurance fees; NO waiting in line (Interorbital will use ocean launch)

Compared to conventional rocket technology, an IOS launch vehicle has increased reliability, reduced cost, and by far, less parts---which translates into a system that is Safer because there are Less Parts to Fail

Interorbital Systems is announcing a **Series A private-placement offering** under SEC Rule 506(c) of Regulation D to allow accredited investors to acquire a financial stake in Interorbital Systems Corporation

INTERORBITAL SYSTEMS

CONTACT:

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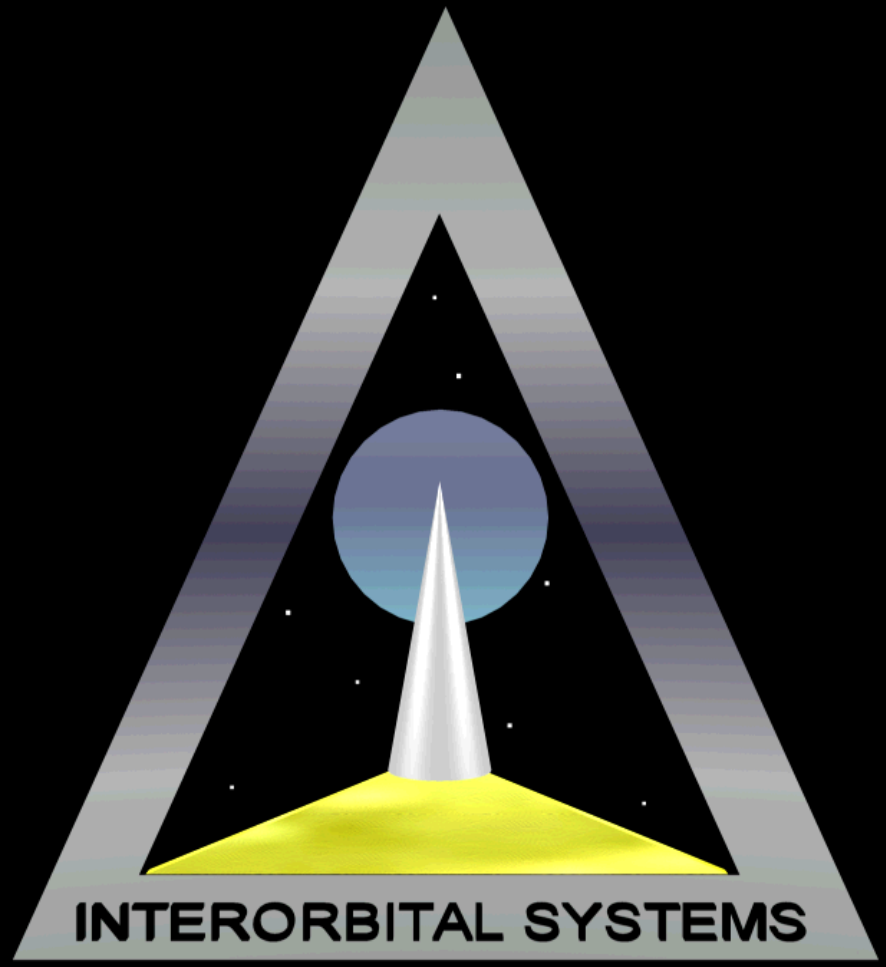
Direct: 661.965.0771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