



Tallinn University of Technology

Rauno Gordon

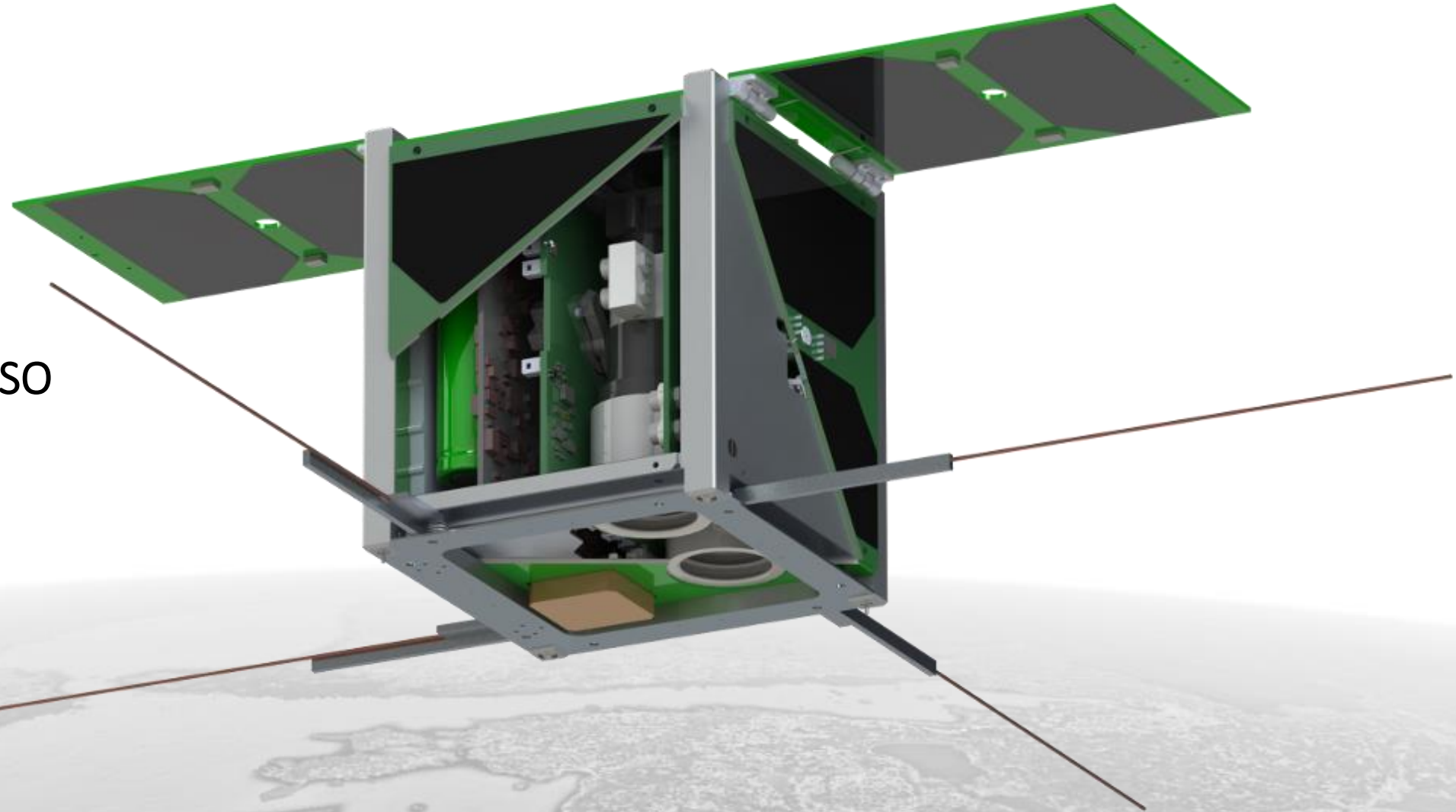
rauno.gordon@ttu.ee



1U 1.4 kg

Orbit: 500 km polar SSO

Launch: Q1 2019
ESA Vega p-o-c flight
or ISRO

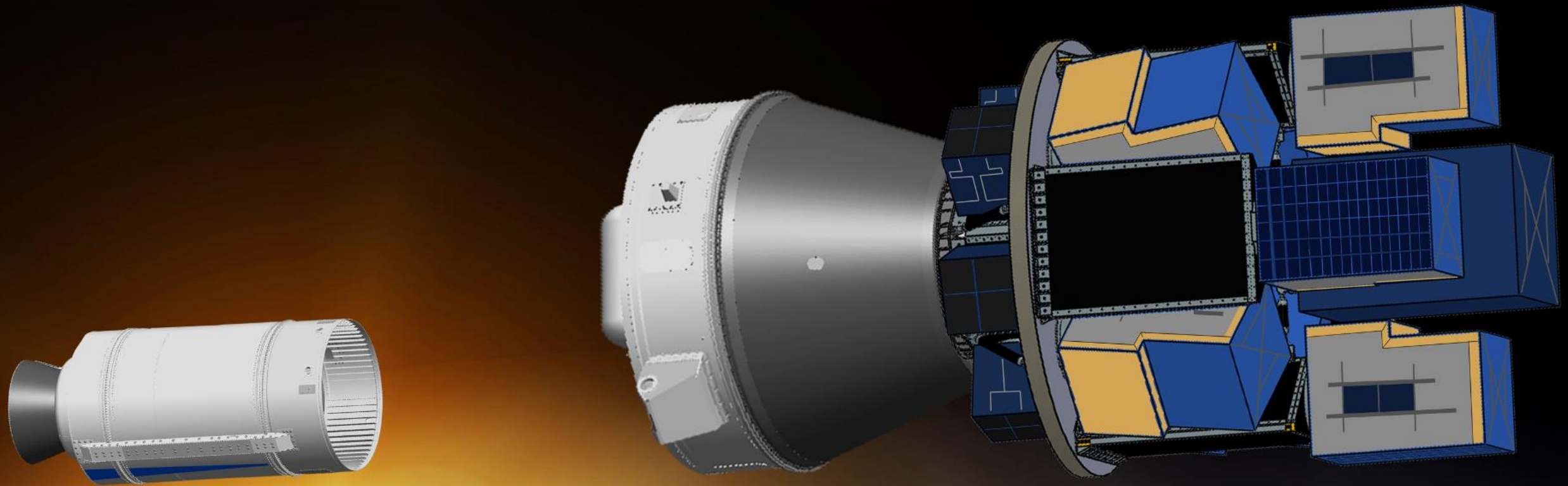


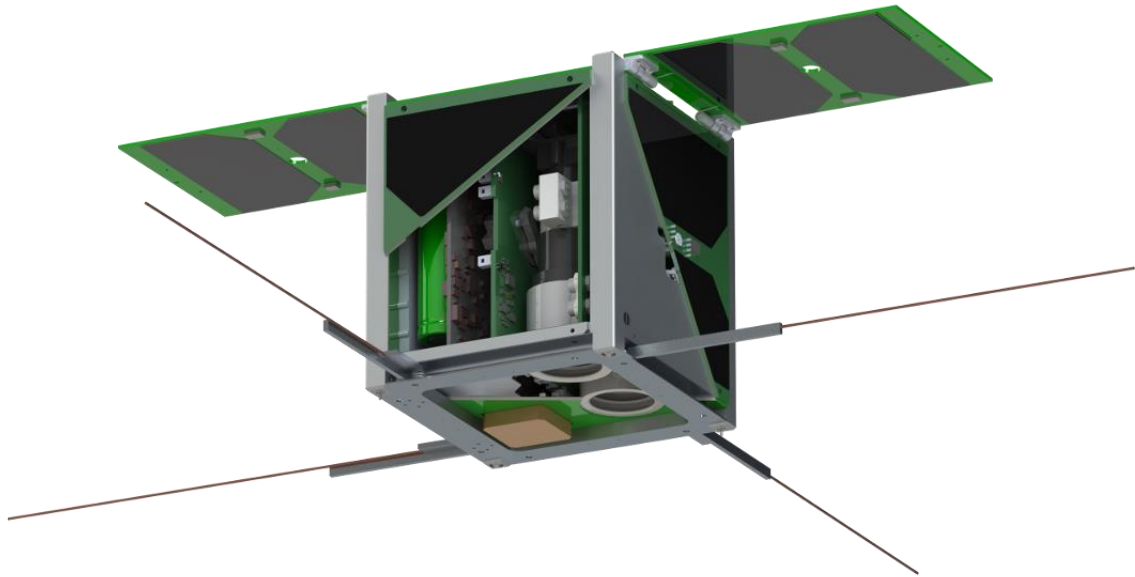
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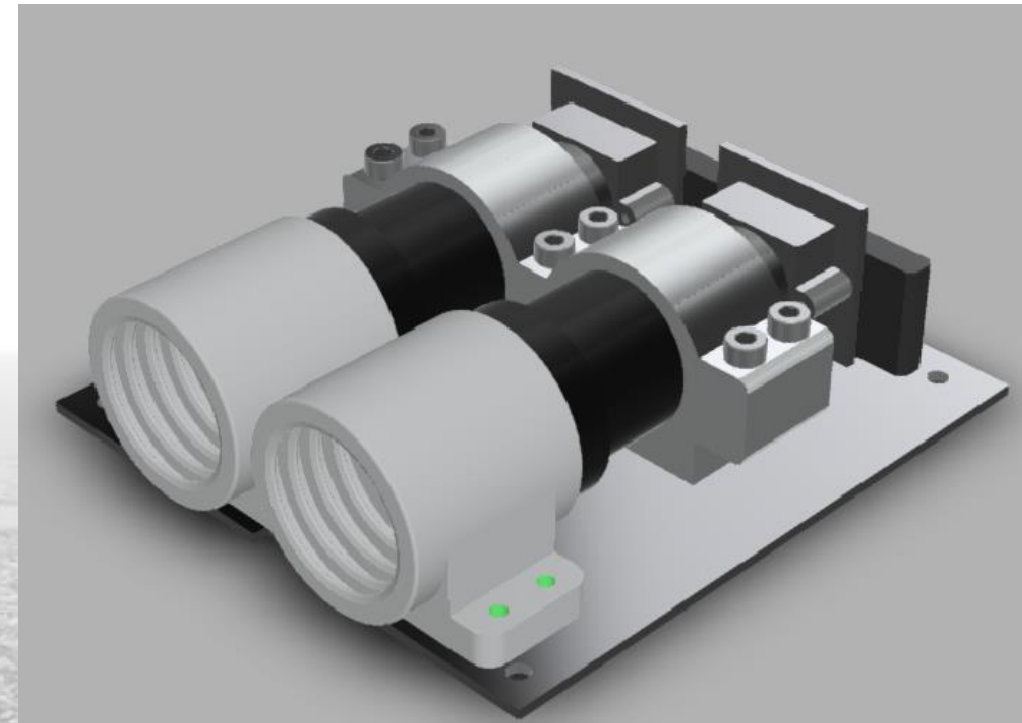
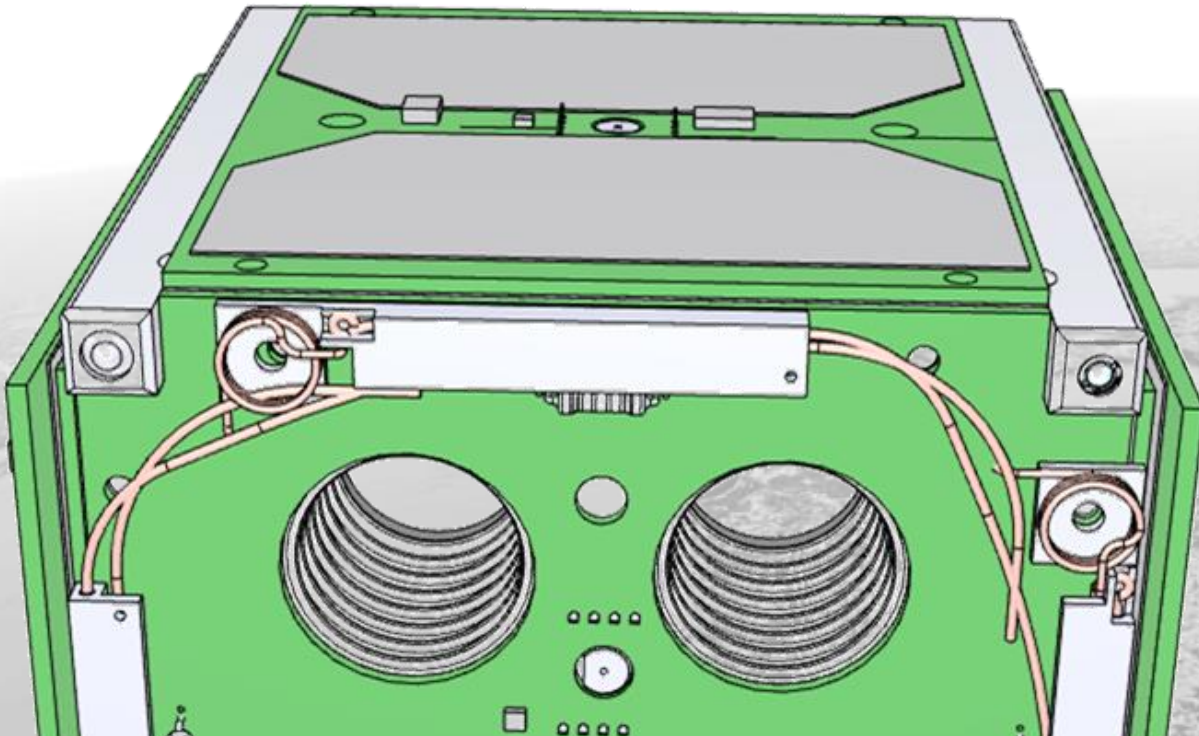






- Image sensor mono/RGB Aptina MT9P031, 5 Mpixels, pixel size 2,2 μm
- Pix size on ground 26x26 m
- Lens L-M12-1M50020S20 $f = 50 \text{ mm}$. Aperture 2

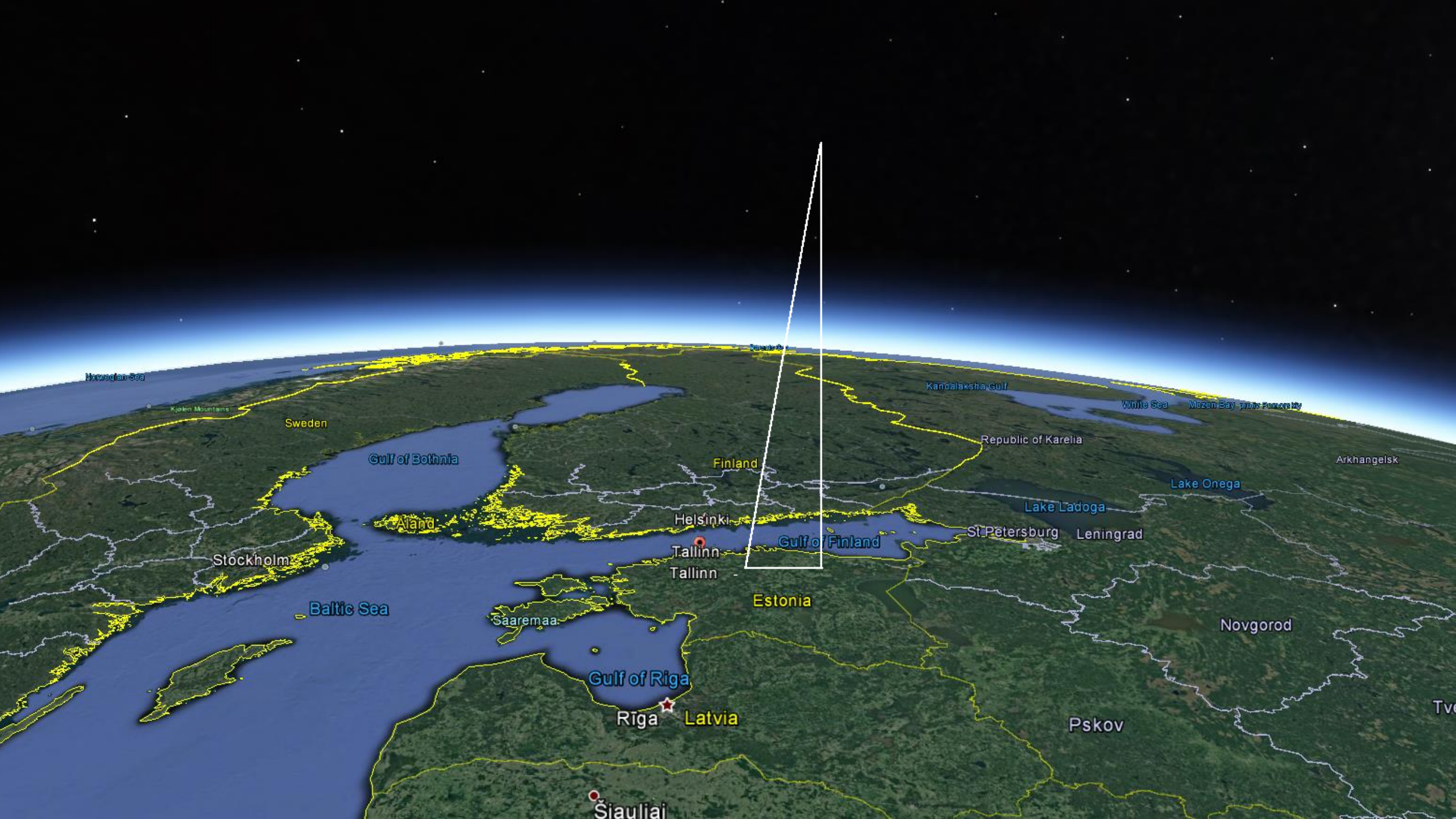
Earth observation:
RGB camera
NIR camera



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Norwegian Sea

Kjolen Mountains

Sweden

Gulf of Bothnia

Aland

Stockholm

Baltic Sea

Saaremaa

Gulf of Riga

Riga

Latvia

Šiauliai

Finland

Helsinki

Tallinn

Tallinn

Estonia



Gulf of Finland

Kandalaksha Gulf

Republic of Karelia

St. Petersburg

Leningrad

Pskov

White Sea

Mozen Bay prime Economy

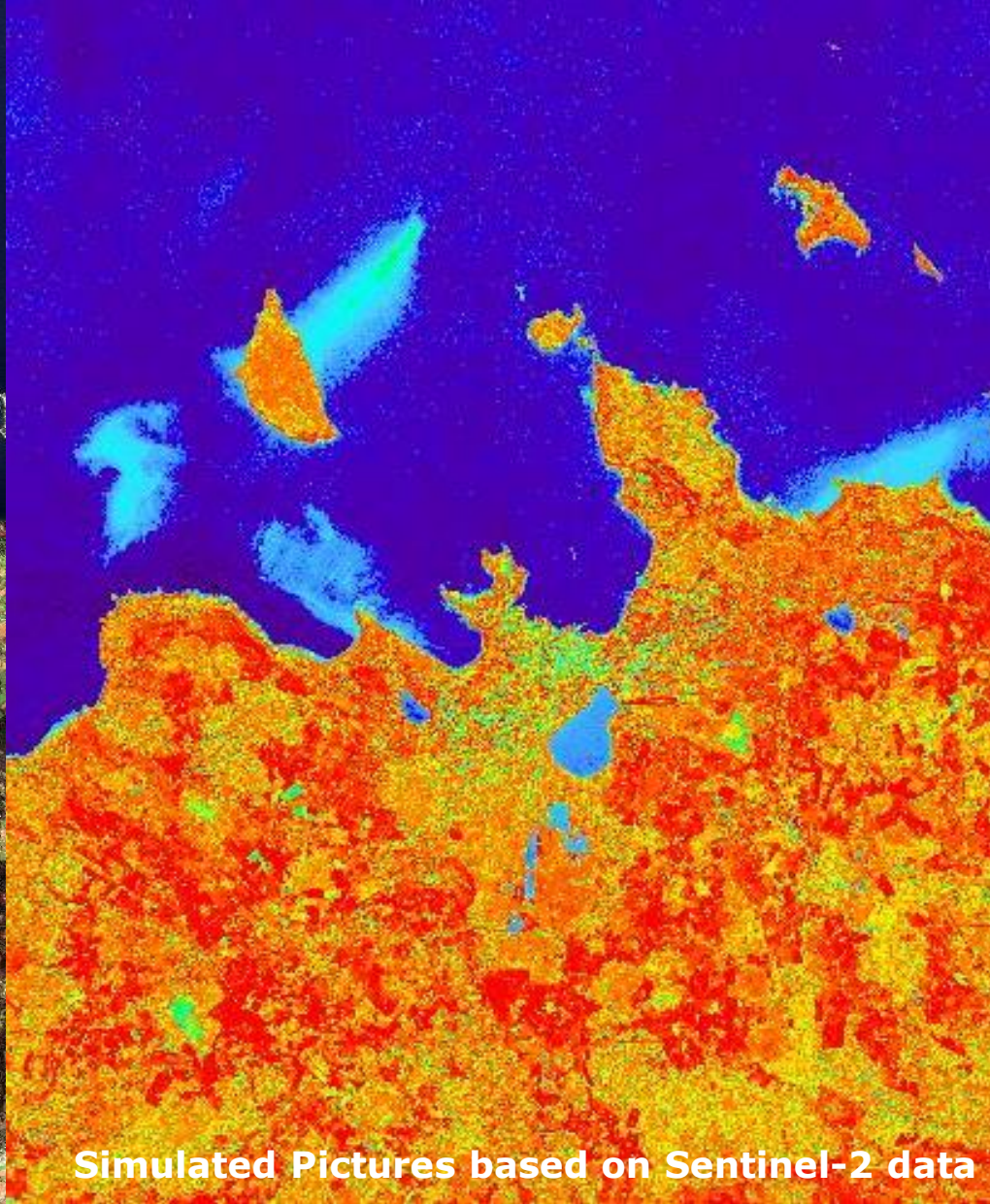
Lake Onega

Lake Ladoga

Novgorod

Arkhangelsk

Tve



Simulated Pictures based on Sentinel-2 data

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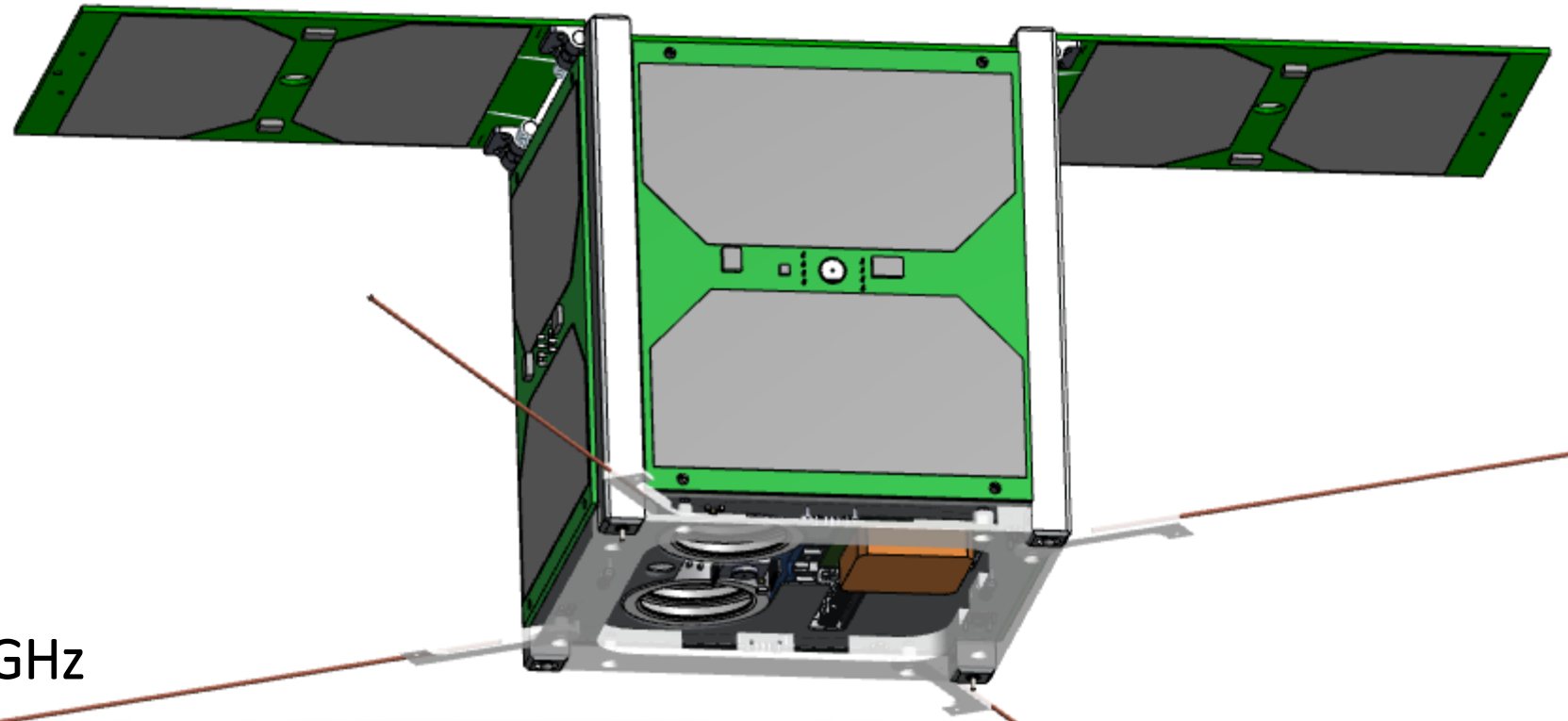


Simulated Pictures based on Sentinel-2 data



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Comm:
Amateur band 430 MHz,
Experimental x-band 10.5 GHz

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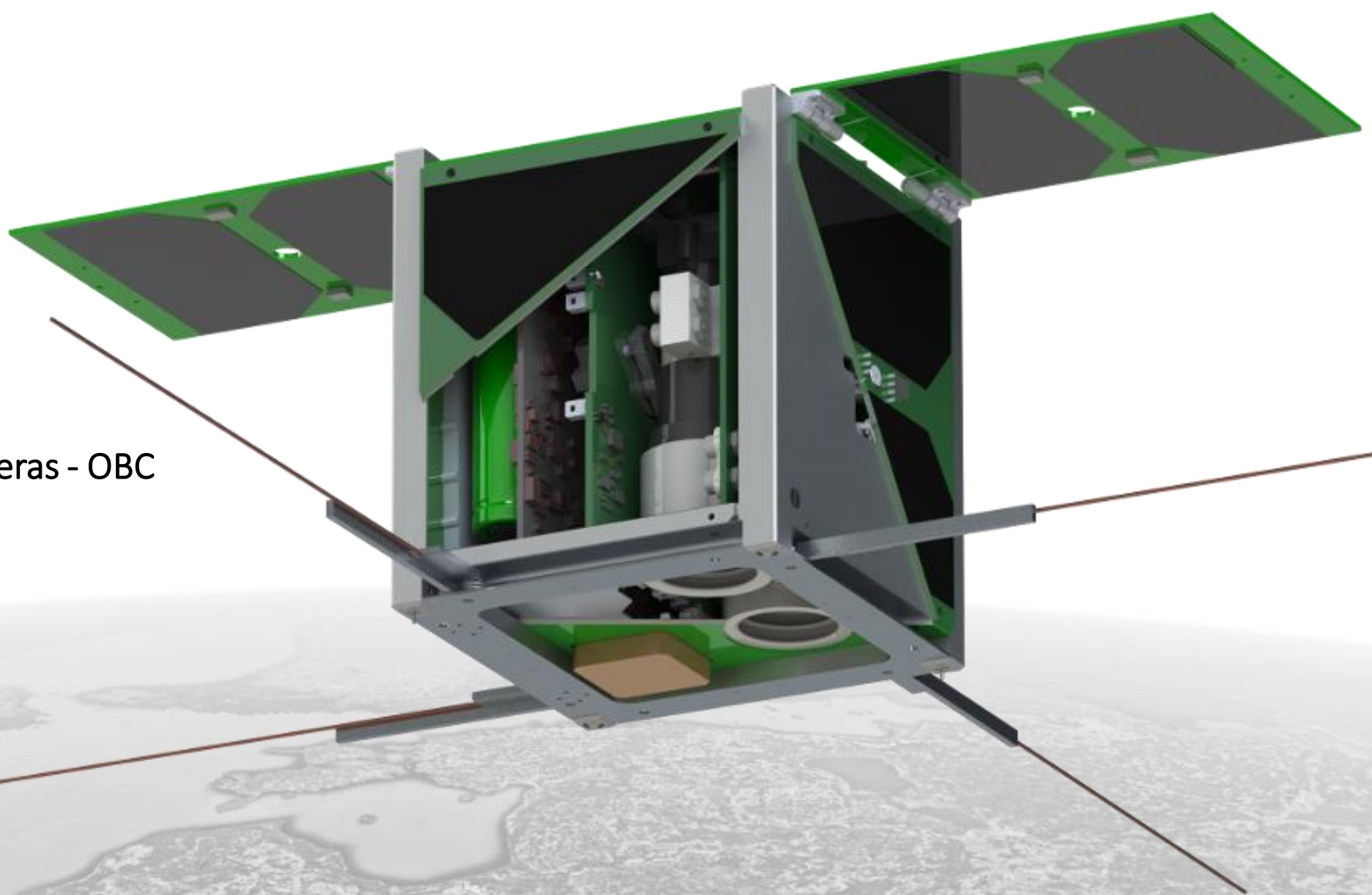


Ground Station
in TTÜ campus





From left:
Radio – EPS – ADCS – cameras - OBC



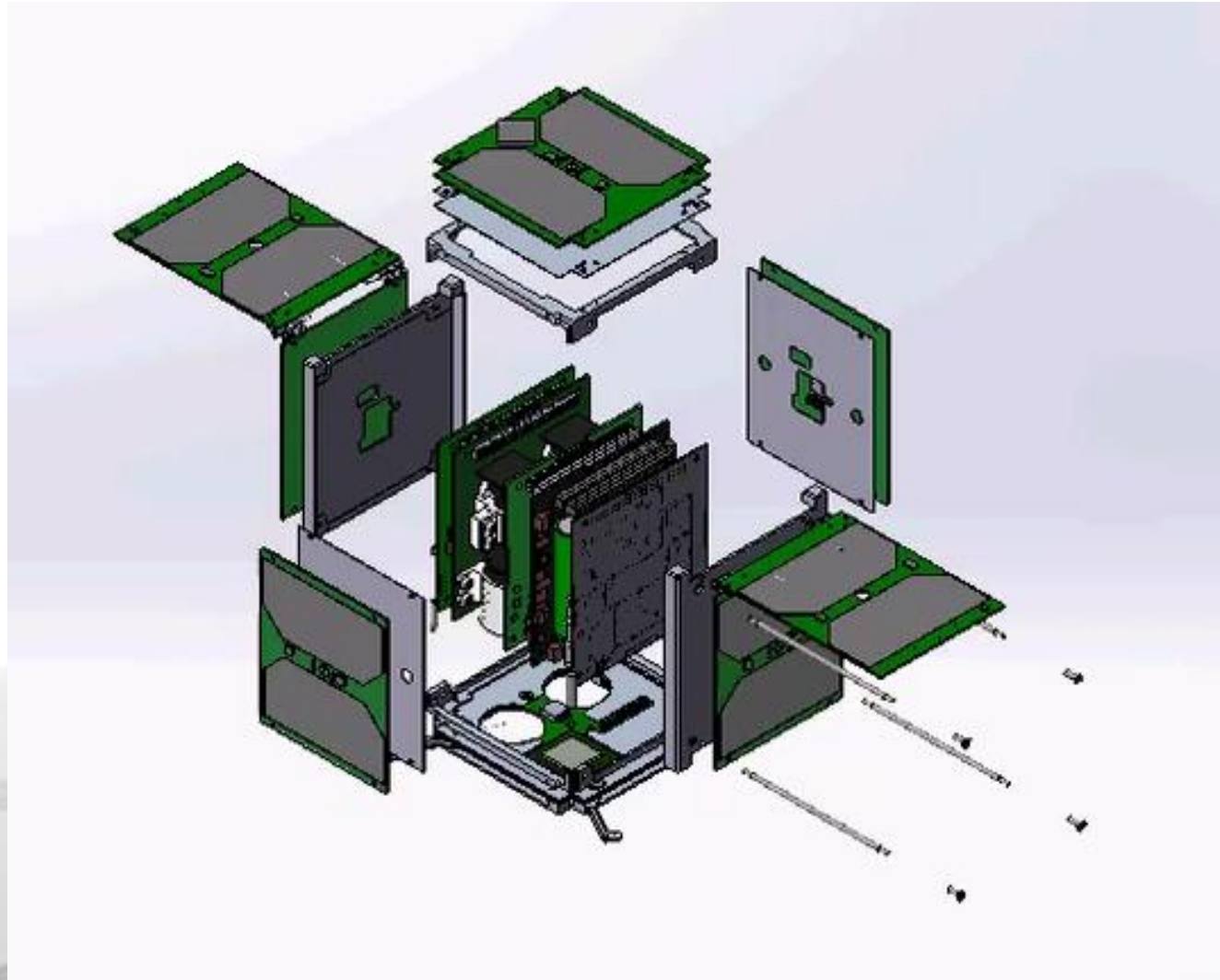
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Assembly



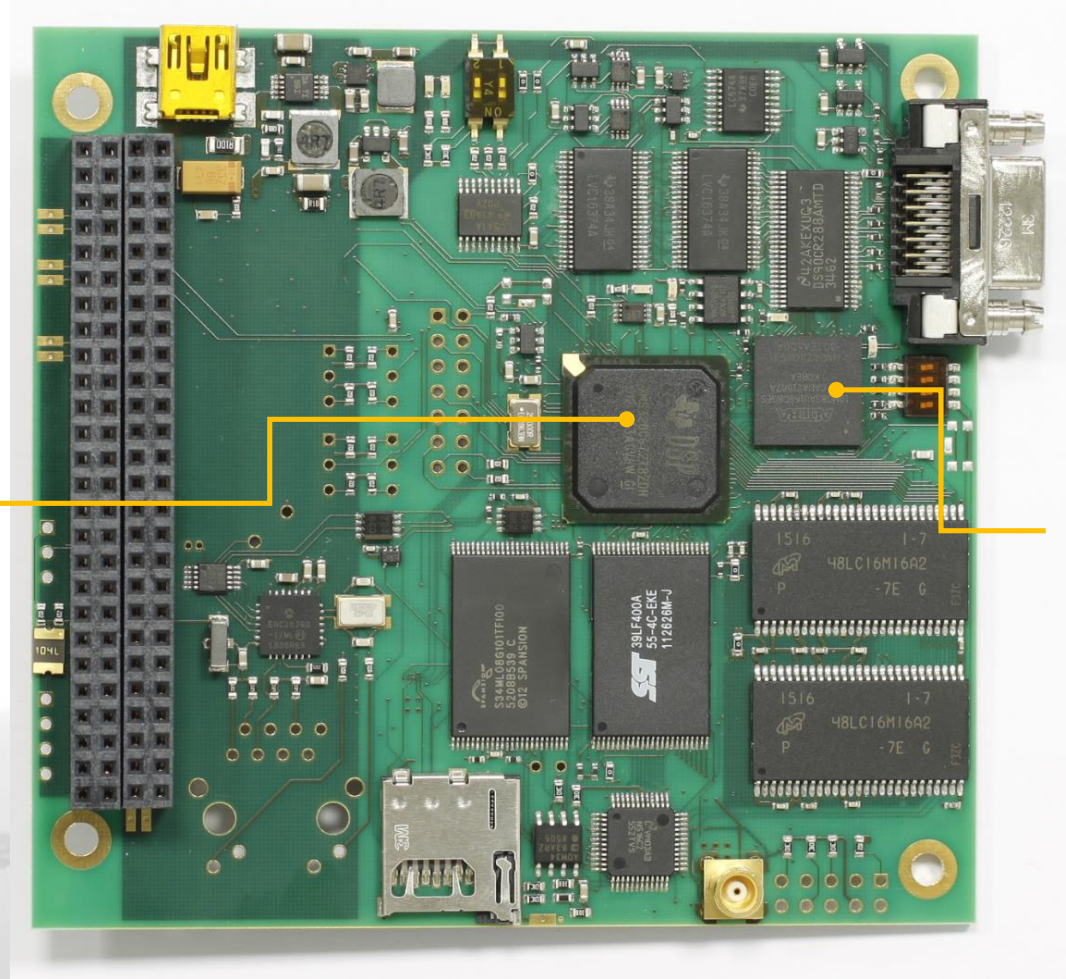
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Texas Instruments 320C6727
64-bit Double-Precision
Floating-Point DSP processor
max 300 MHz, adjustable
Performance: 2400 MIPS/1800 MFLOPS



FPGA for:
Image buffering
computational architecture
reliability experiment,
space GPS,
real time video compression

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Optical comm experiment:

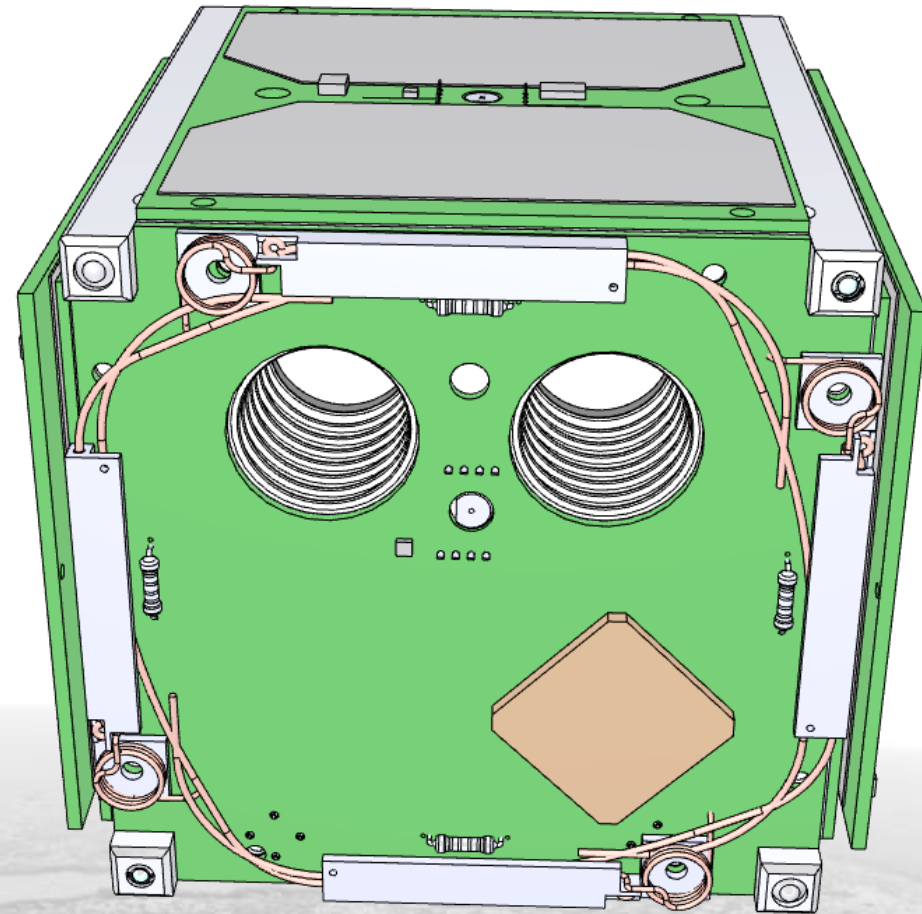
Laser-diodes:

red, 300 mW, spread.

infrared, impulse 400W, spread.

LED's:

red, spread.



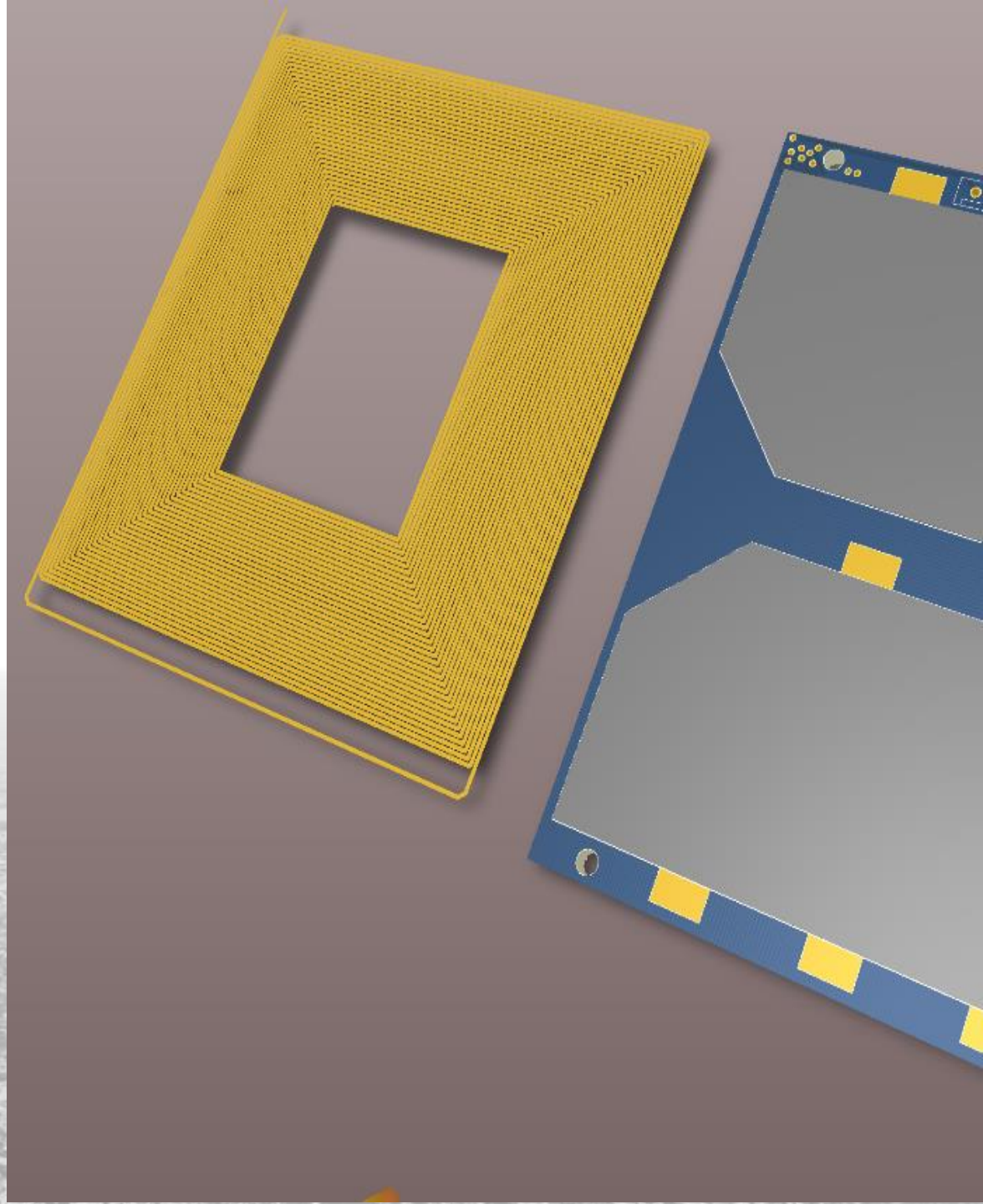
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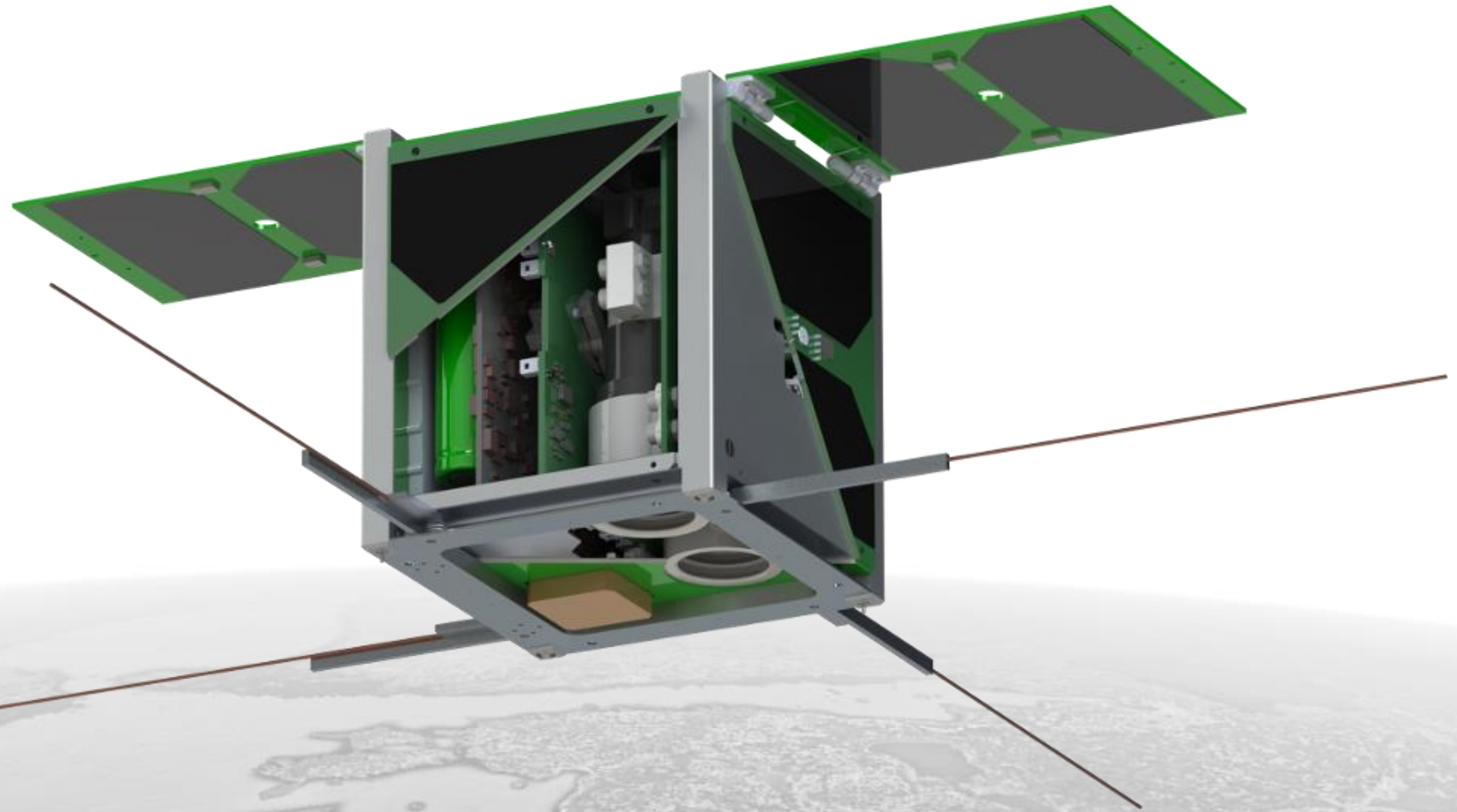
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ULF experiment
Ultra Low Frequency comm





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