

The logo for AlbertaSat features a stylized satellite or orbital path. It consists of two white elliptical orbits that intersect at two points, forming a figure-eight shape. A green line, representing a satellite or a specific orbital path, is overlaid on the white orbits, starting from the bottom left and curving upwards and to the right.

# AlbertaSat



A photograph showing three red CubeSat satellites in orbit above the Earth. The satellites are small, rectangular, and feature various instruments and antennas. They are positioned in a line, with the largest one in the foreground and two smaller ones behind it. The Earth's surface, including a large body of water and a coastline, is visible below. A thin blue line of the atmosphere separates the Earth from the blackness of space. A small, distant satellite is visible in the upper left.

# Drafting a CubeSat

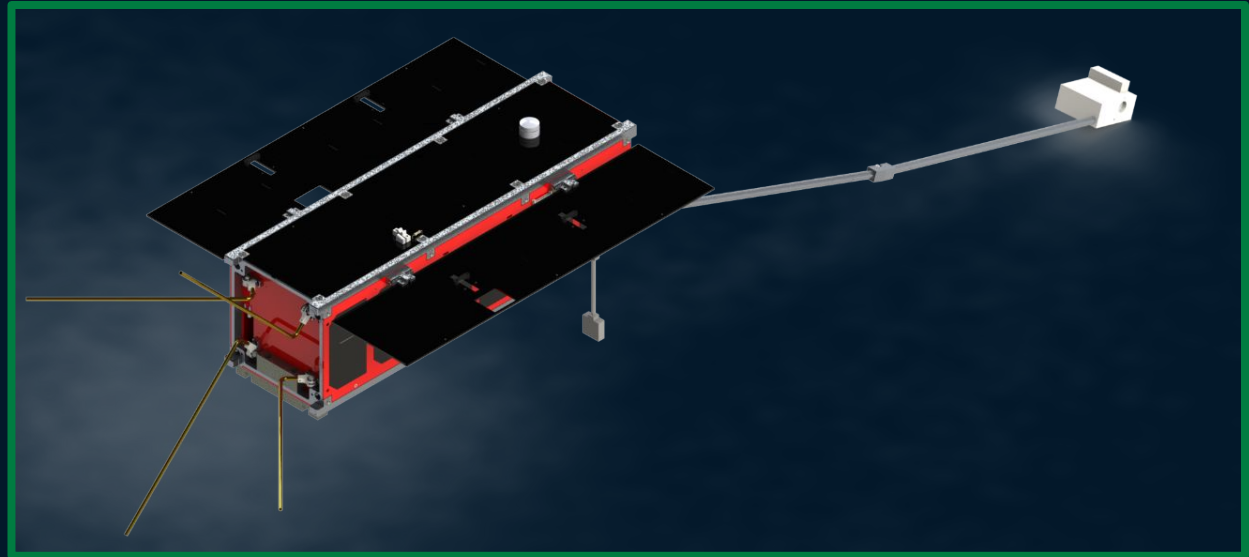
# We are a student group who builds satellites

## Ex-Alta 1

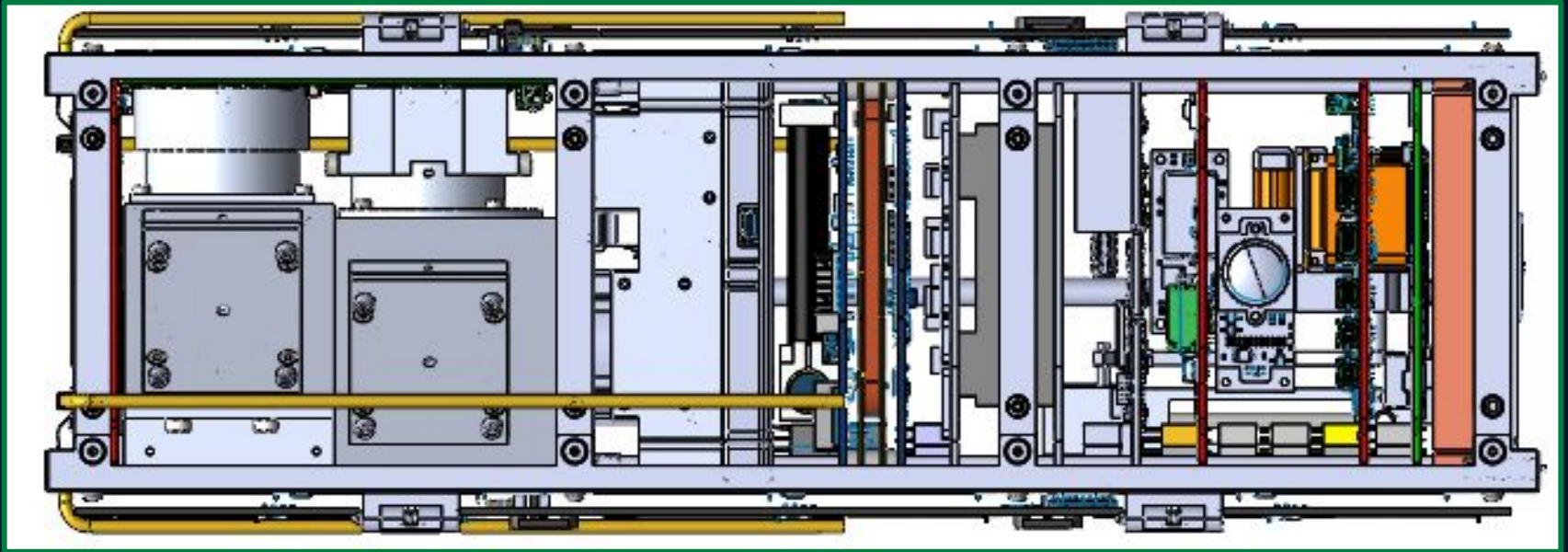


# Ex-Altas 2: The wildfire camera

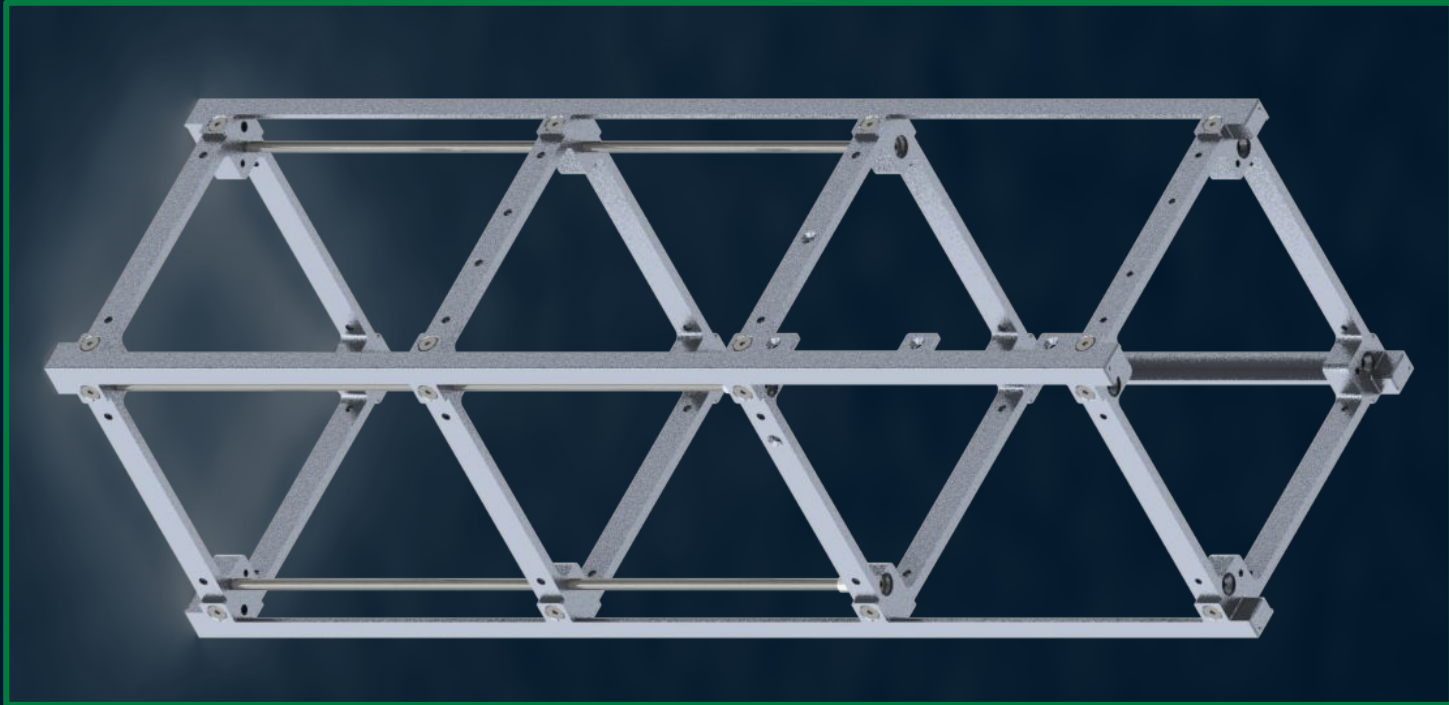
The scientific purpose of Ex-Altas 2 is to track and assess wildfires, and to predict the behaviour of future wildfires.



# Inside the cubesat

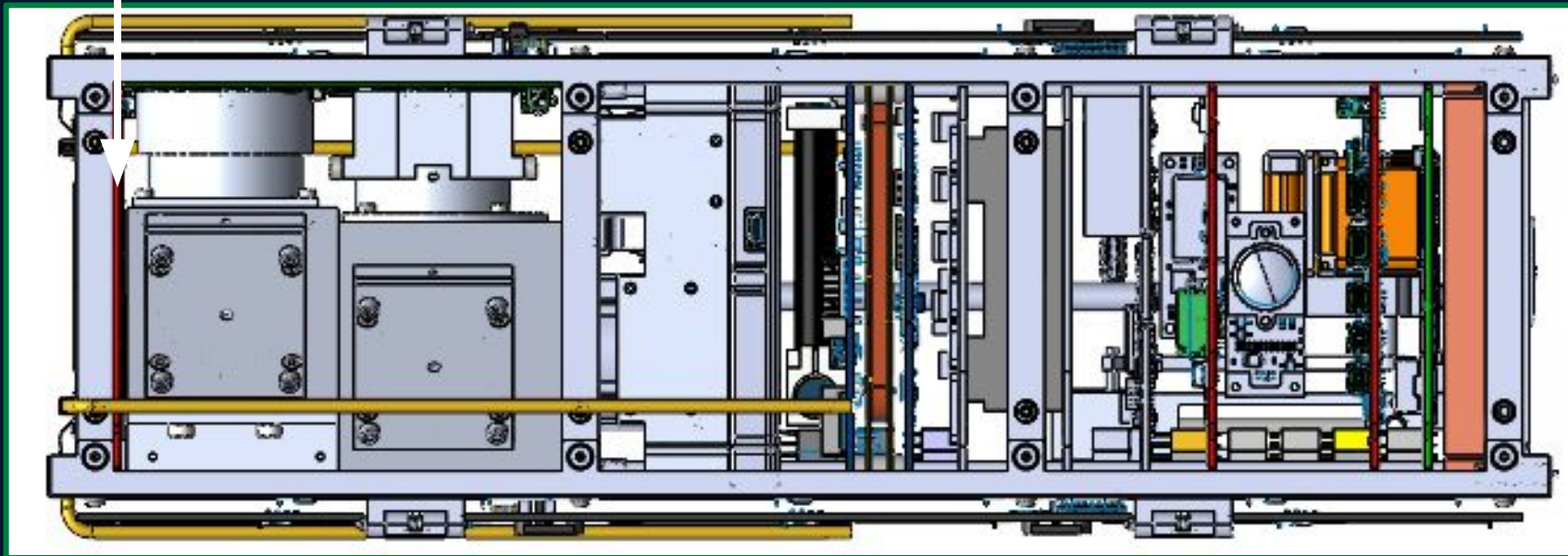


# Icarus: The structure



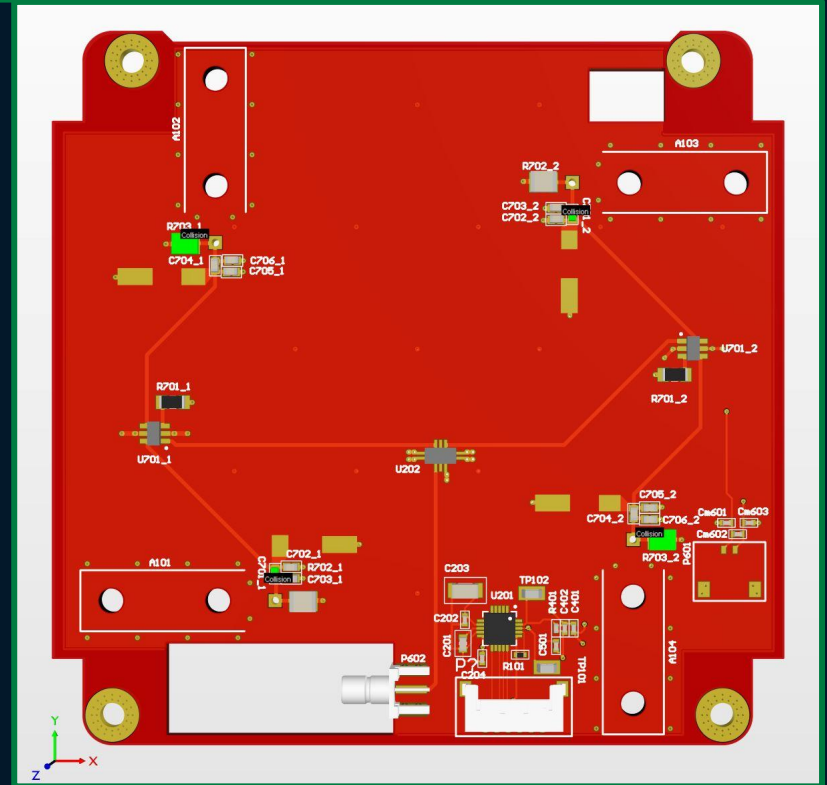
# Arke: The UHF Antenna

Arke



# Arke: The UHF Antenna

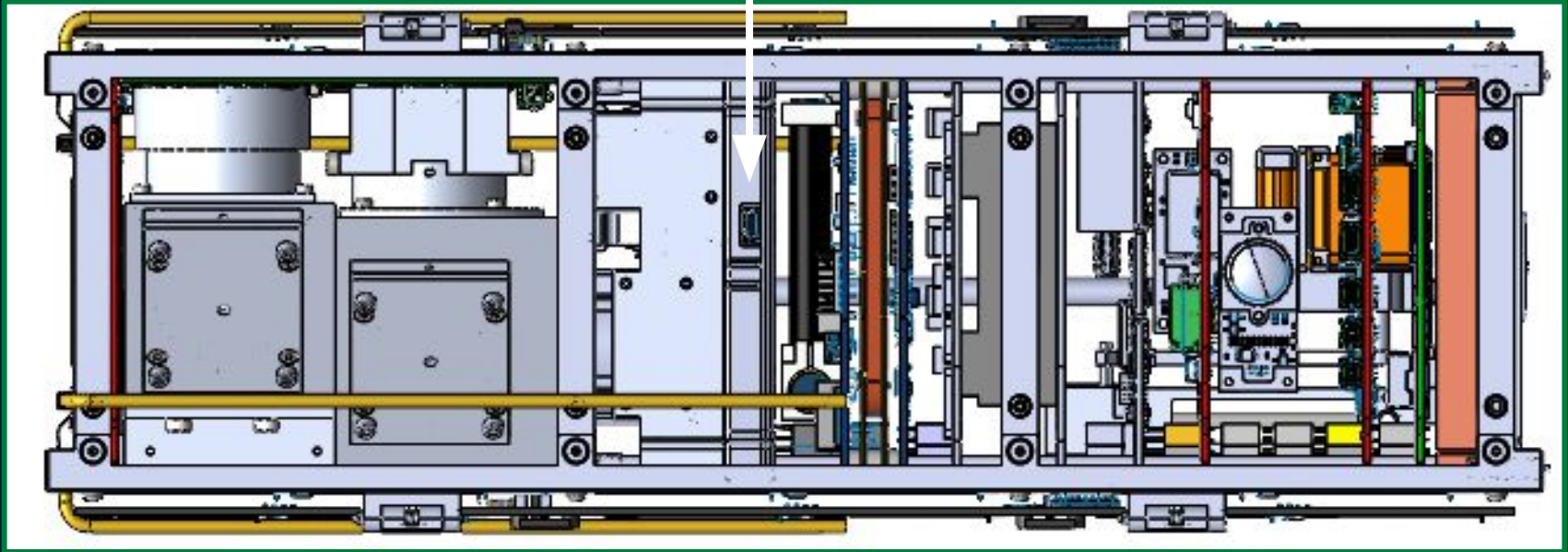
- Communication over the UHF frequencies (435 - 438 MHz)
- Omni-directional
- Sends and receives signals





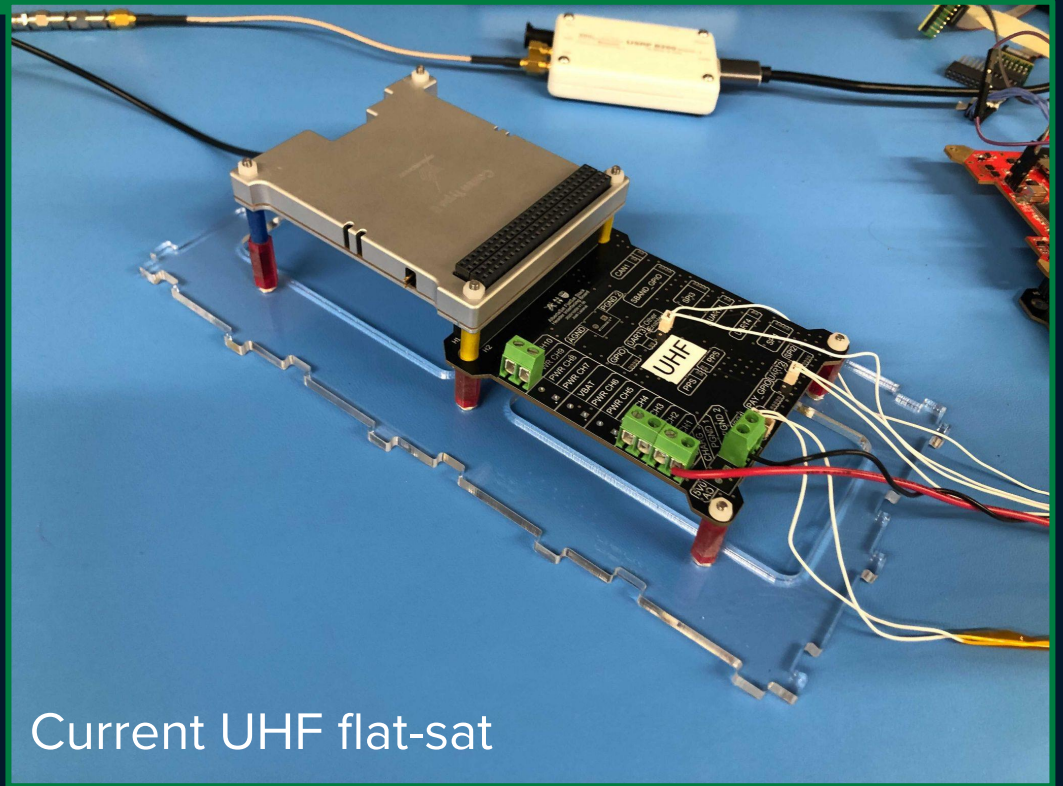
# UHF Transceiver: The radio

UHF Transceiver

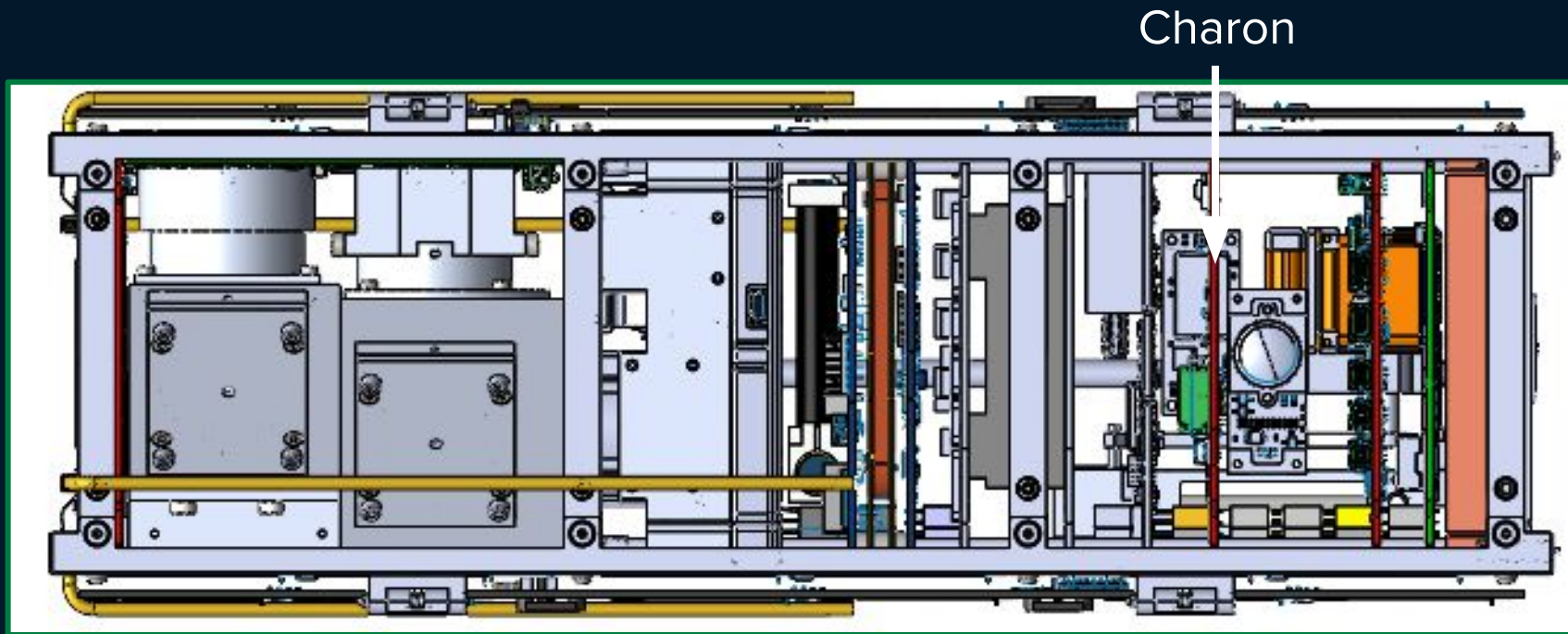


# UHF Transceiver: The radio

- TV Broadcast, cell phones, GPS as well as Wi-Fi, Bluetooth use UHF Bands
- 300 MHz - 3 GHz;
- Is our point of comms with the satellite



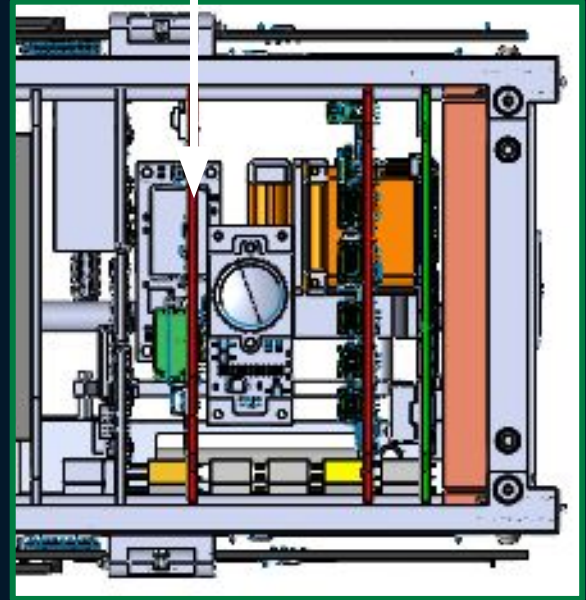
# Charon: The stack interfacing board



# Charon: The stack interfacing board

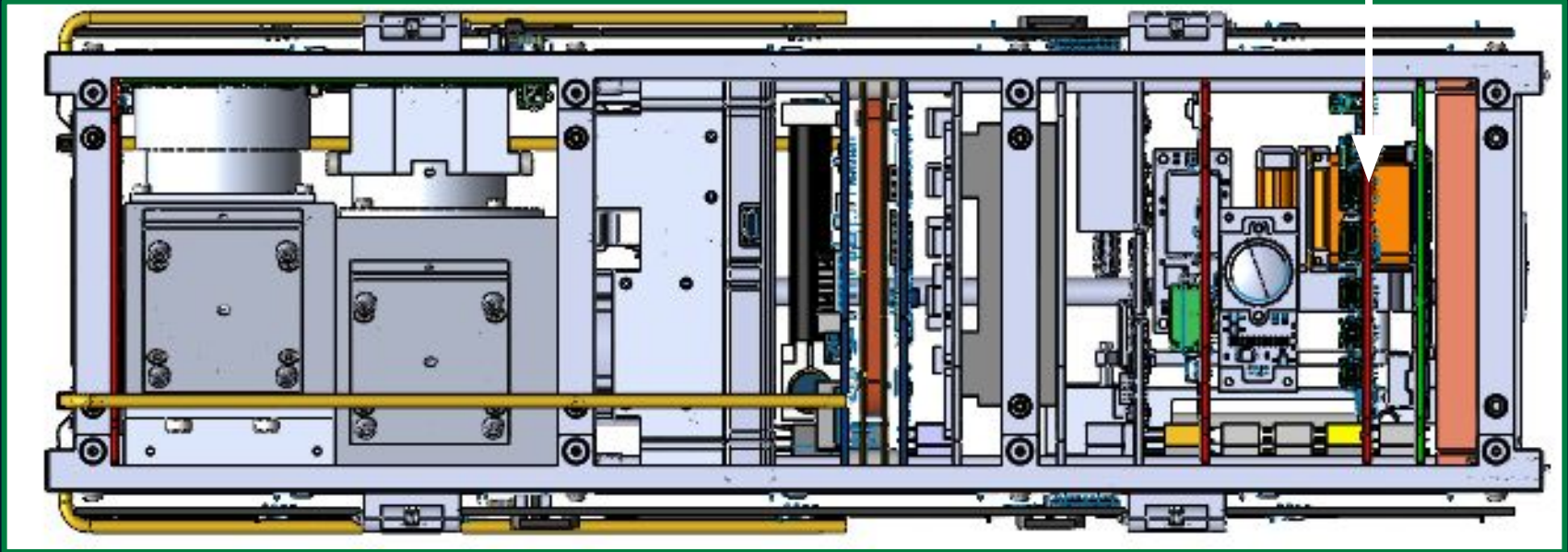
- GPS for location and time
- Check the temperature
- Reset parts of the satellite

Charon

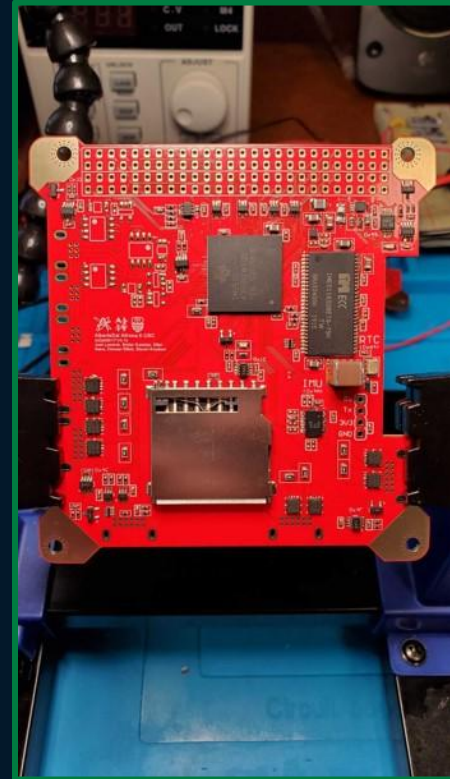
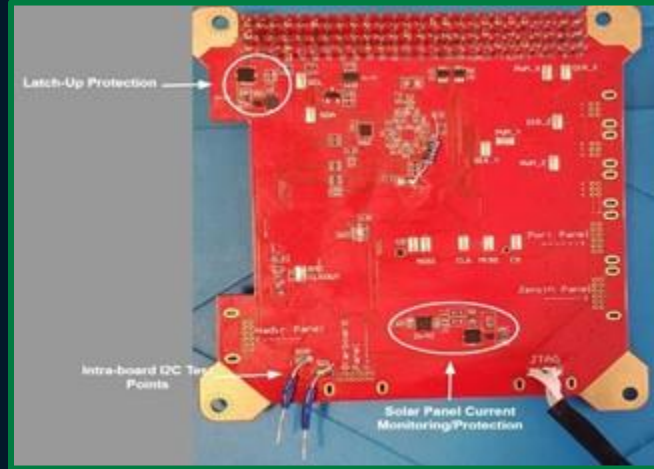
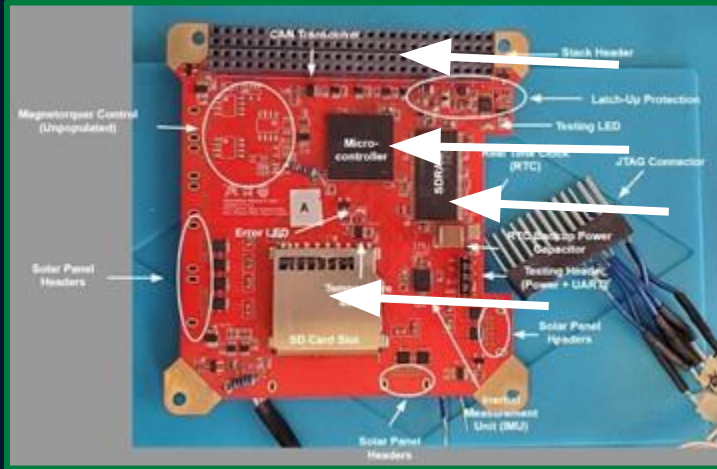


# Athena: The onboard computer

Athena



# Athena: The onboard computer

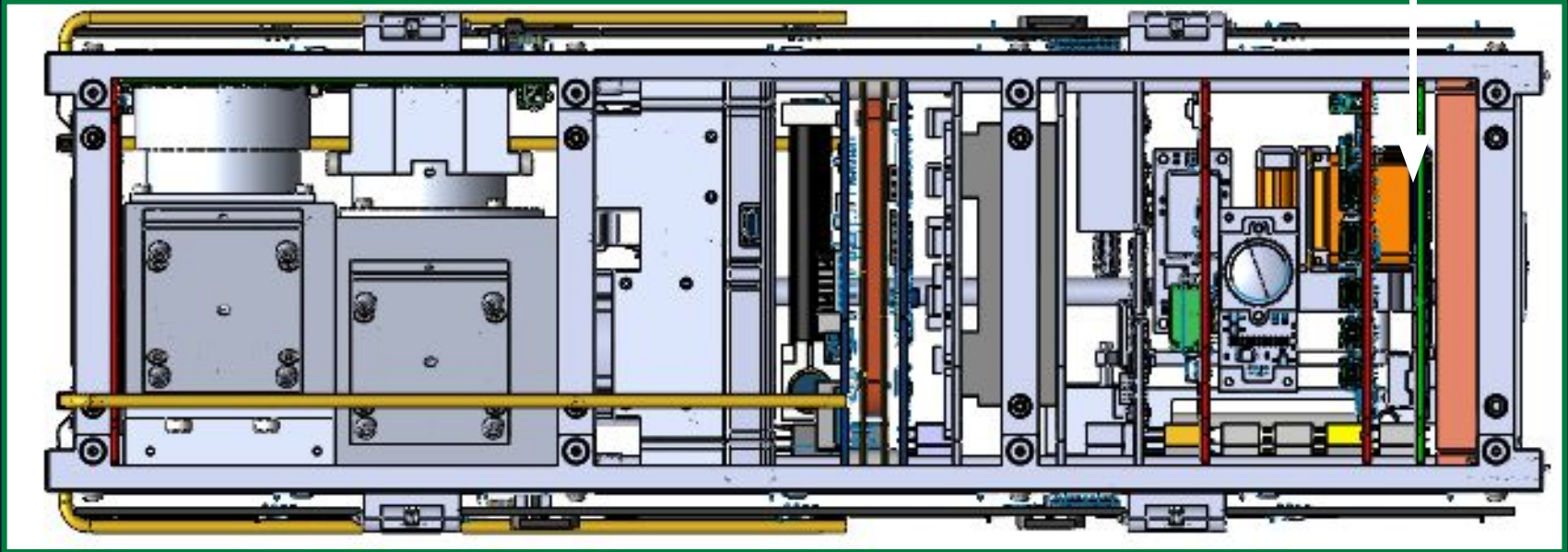


- Completely designed in house
- On board storage for data
- Brain of the satellite

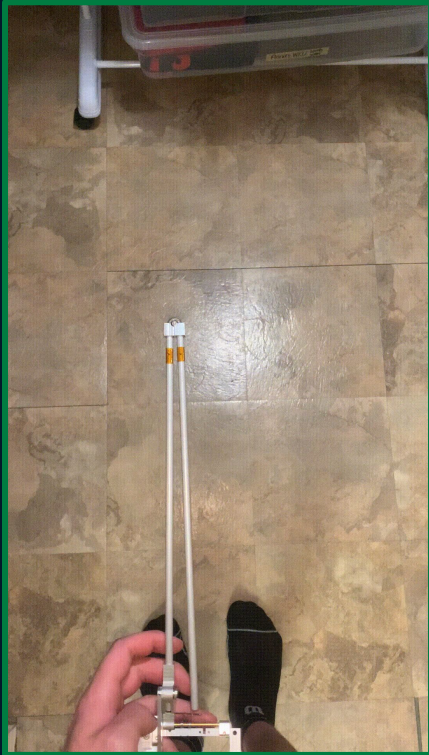


# DFGM: The magnetometer

DFGM



# DFGM: The magnetometer

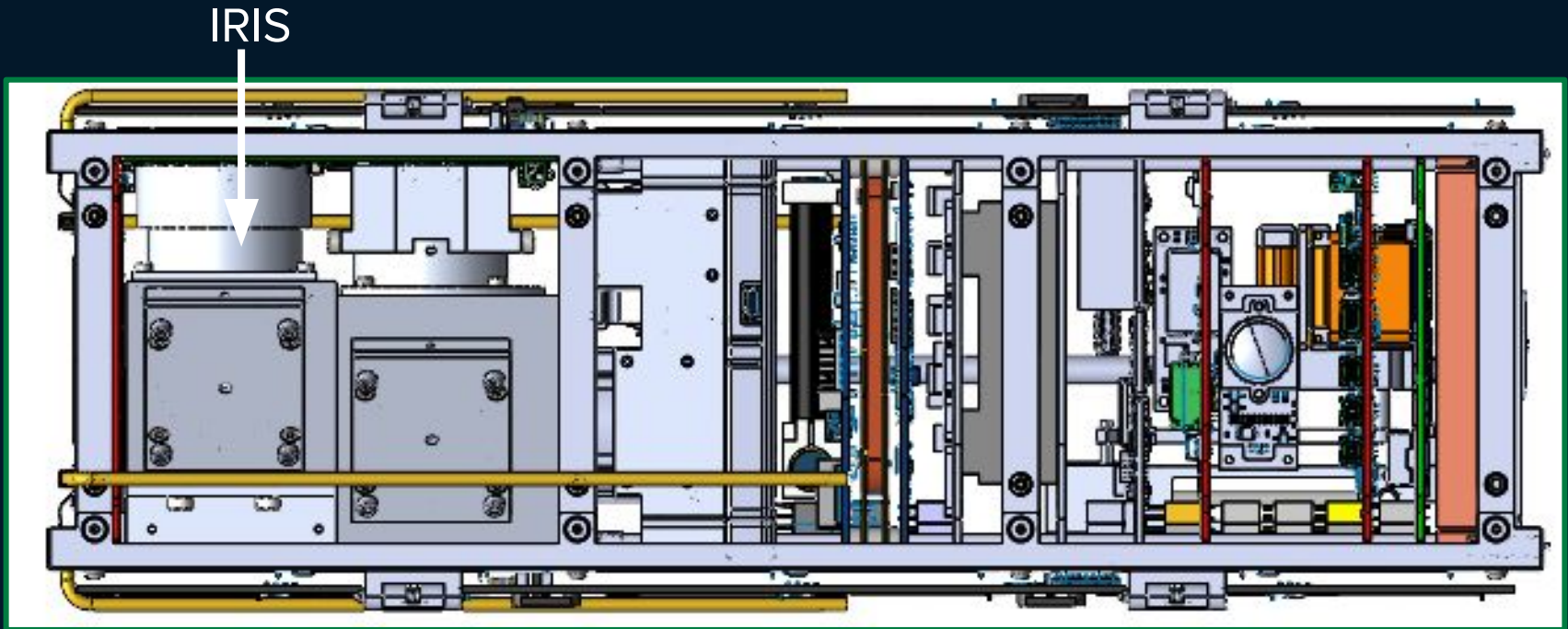


- One of the two scientific payloads
- Measures Earth's magnetic field in the auroral zone in low-earth-orbit
- A boom that deploys at the back of the satellite



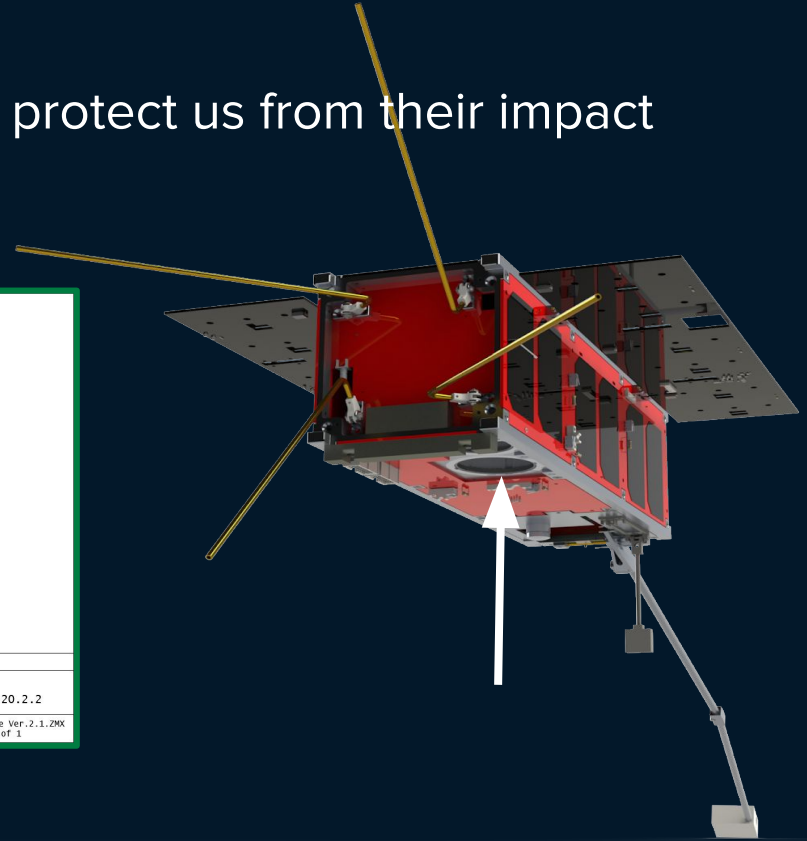
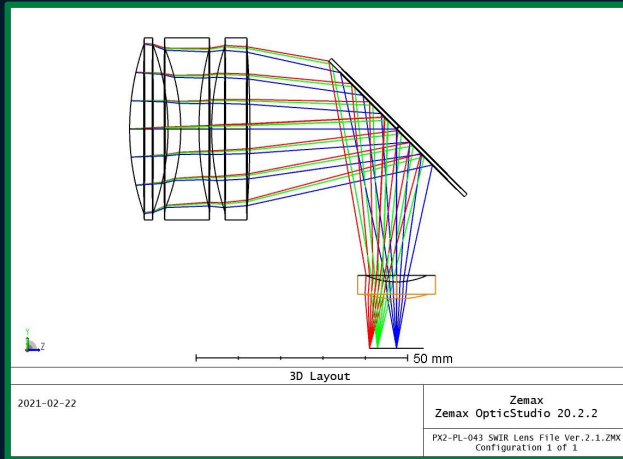
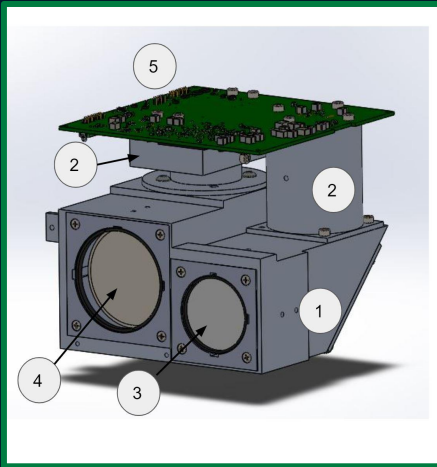


# IRIS: The wildfire camera



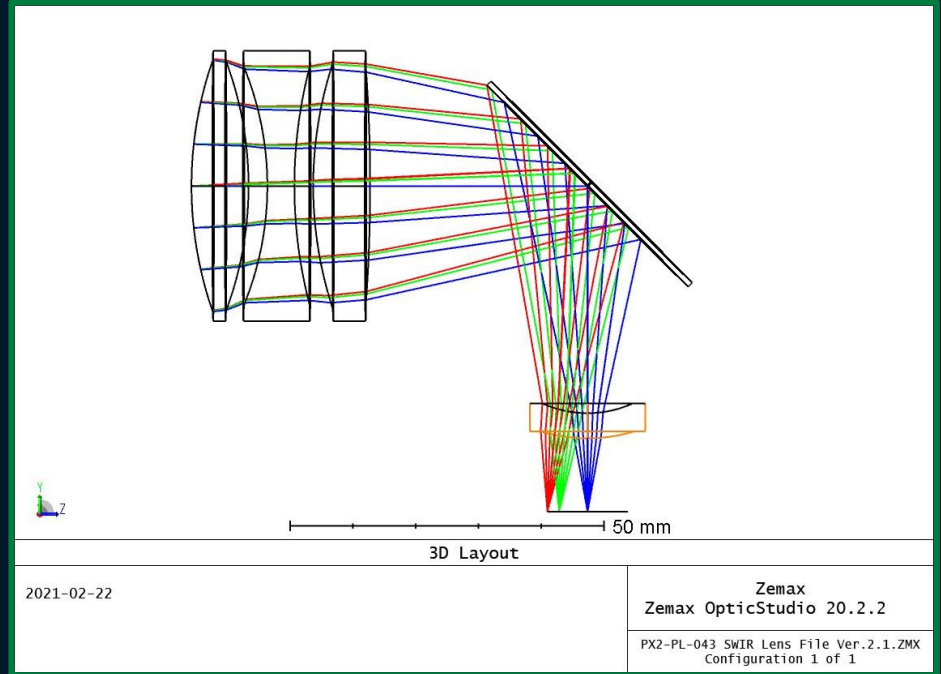
# IRIS: The wildfire camera

- Data used to study wildfires and help protect us from their impact
- The main scientific payload
- Images in infrared and near infrared



# Drafting

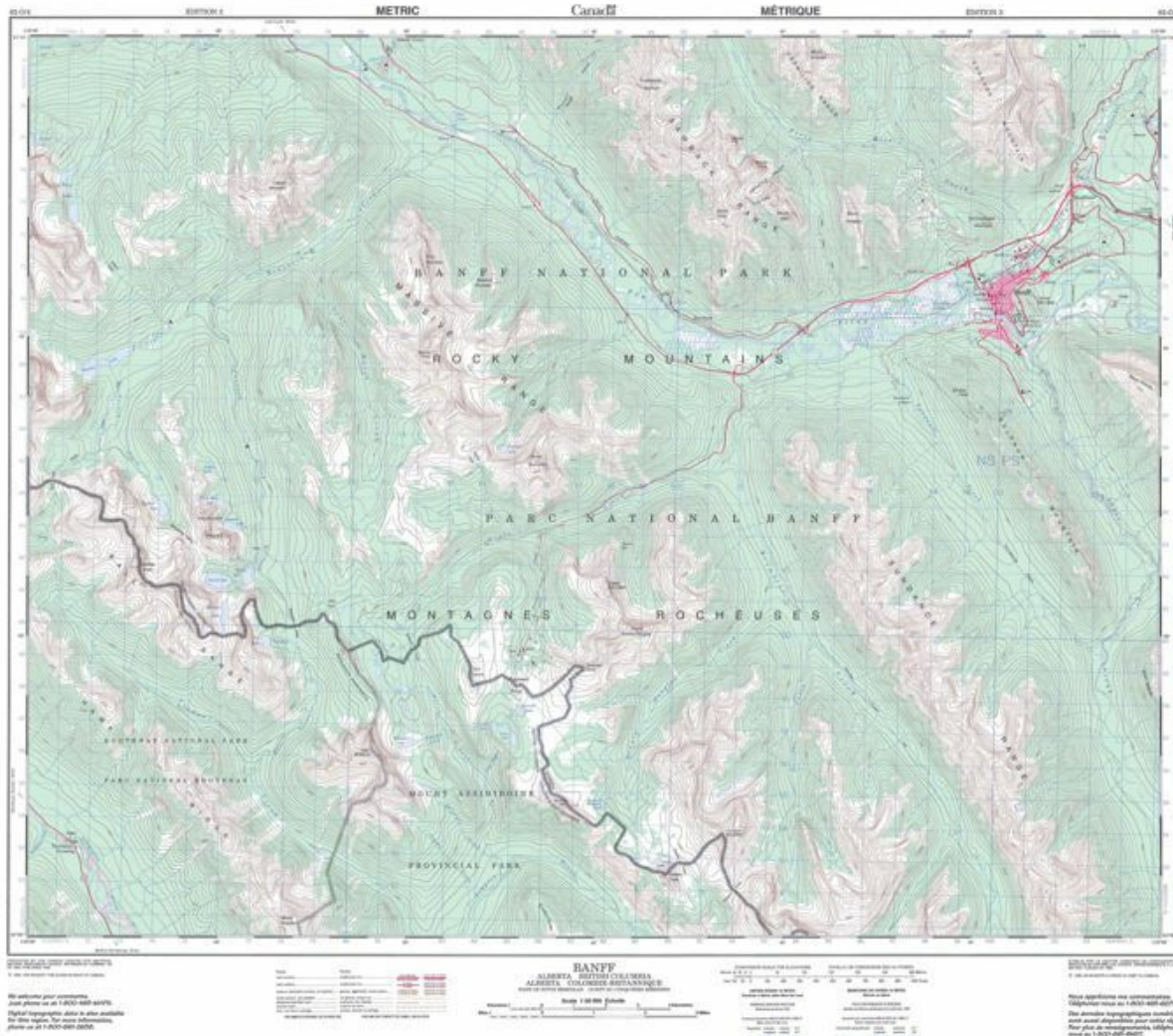
- Technical Drawing
- Comprised of a top view, a main view, a side view, and an inside view
- Drawn to scale



This map of Banff has a scale of 1:50,000

If we measure 10cm on the map, how far is that in real life?

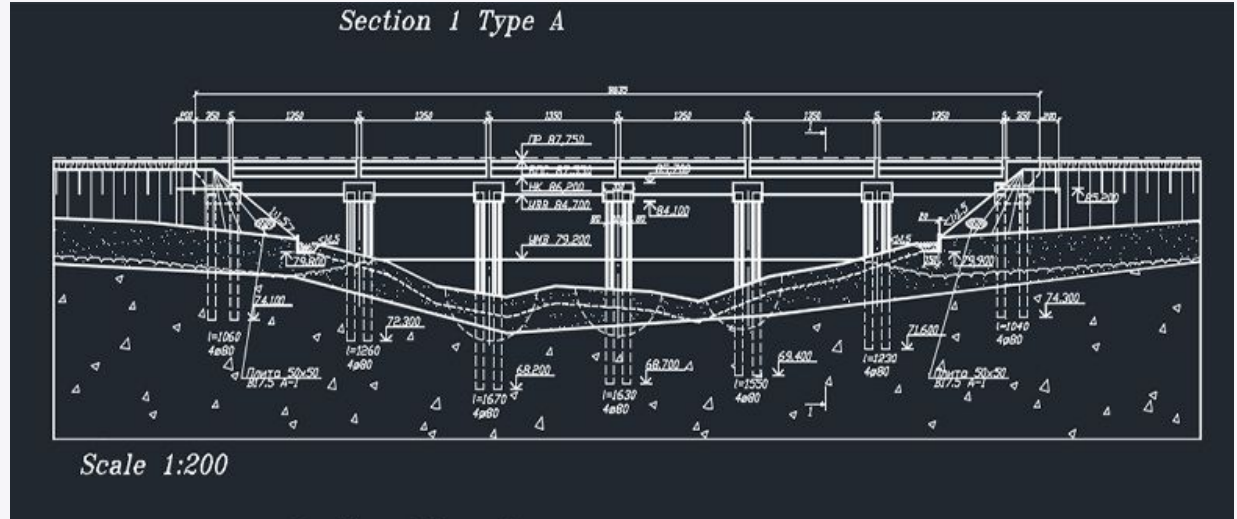
500,000cm or  
5000m or  
**5km**



This technical drawing of a bridge has a scale of 1:200

If we measure 4cm on the map, how far is that in real life?

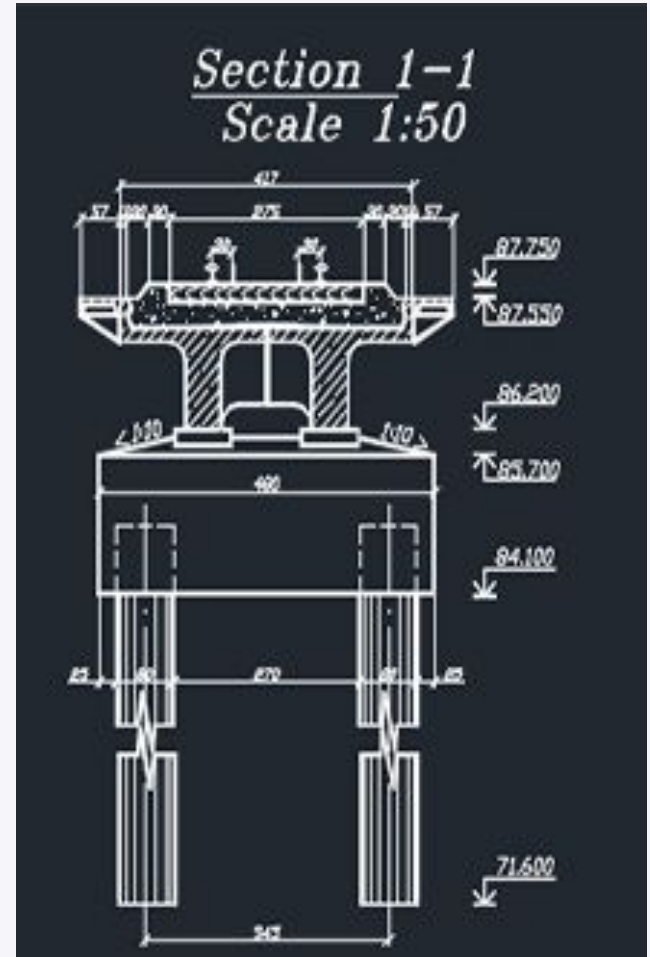
800cm or **8m**



This technical drawing of a bridge has a scale of 1:50

If the bridge is 10m wide, how big is the drawing on the page?

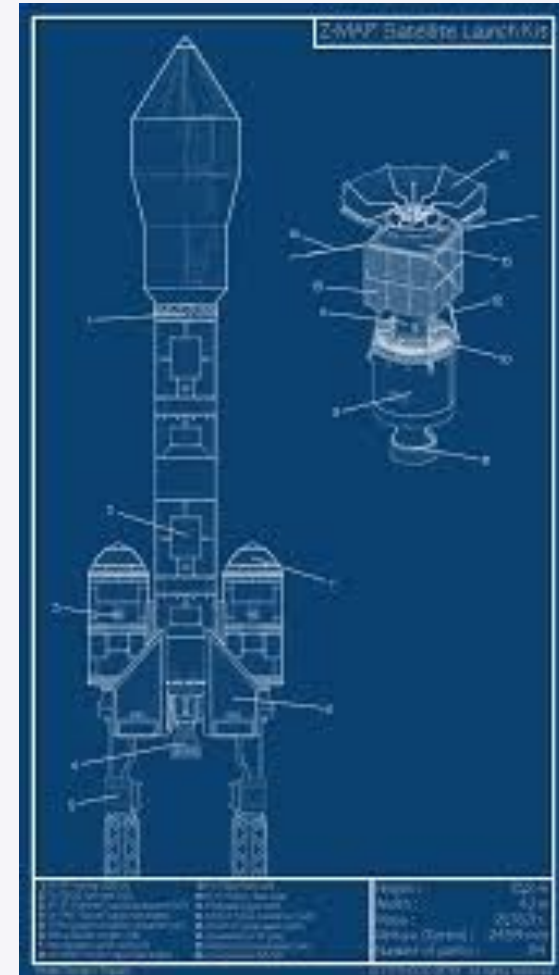
0.2m or **20cm**



This technical drawing of a rocket has a scale of 1:100

If the rocket is 50m tall, how big is the drawing on the page?

0.5m or **50cm**



Imagine that you work for the Canadian Space Agency and you need to **design a satellite payload, create the drafts** (or technical drawings), and **pitch your idea** to your manager

## ACTIVITY





# Step 1: Determine your mission

---

What is your payload? *An imager? A laser? An antenna?*

Why is it important?

*Scientific research? Defense systems? Communication?*

What will it do?

*Tracks wildfires? Attack enemies? Broadcasts news?*

What size will it be?

*1U? 3U? A basketball court?*



## Step 2: Setting up your page

---

Choose a scale (1:4 good for 3U)

Put a title, your name, and the date at the top in each box

Take out a ruler



# Step 3: Draw your payload

---

Keep all lines parallel to the edges of the page

Make sure distances are marked

Labels on pieces

