Drafting a CubeSat
We are a student group who builds satellites

Ex-Alta 1
The scientific purpose of Ex-Alta 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: The UHF Antenna

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

Current UHF flat-sat
Charon: The stack interfacing board
Charon: The stack interfacing board

- GPS for location and time
- Check the temperature
- Reset parts of the satellite
Athena: The onboard computer
Athena: The onboard computer

- Completely designed in house
- On board storage for data
- Brain of the satellite
DFGM: The magnetometer
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.
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