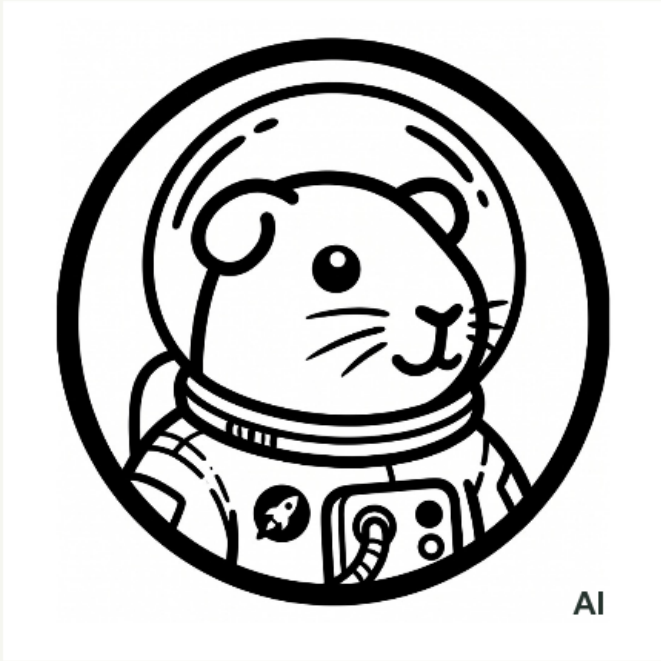
SPACE MISSION DESIGN GAME

ORBITA

Every Watt Counts

A game for designing and operating a CubeSat mission

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AI-generated / AI-edited team logo

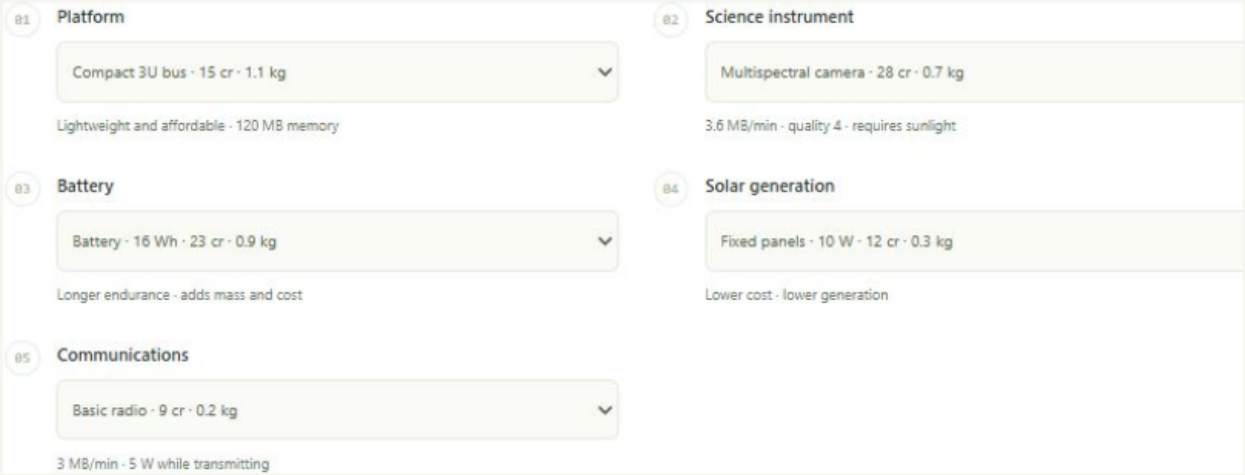
Trujillo, Peru

Engineering choices affect the whole mission

A stronger instrument can increase both science output and demand on the spacecraft.

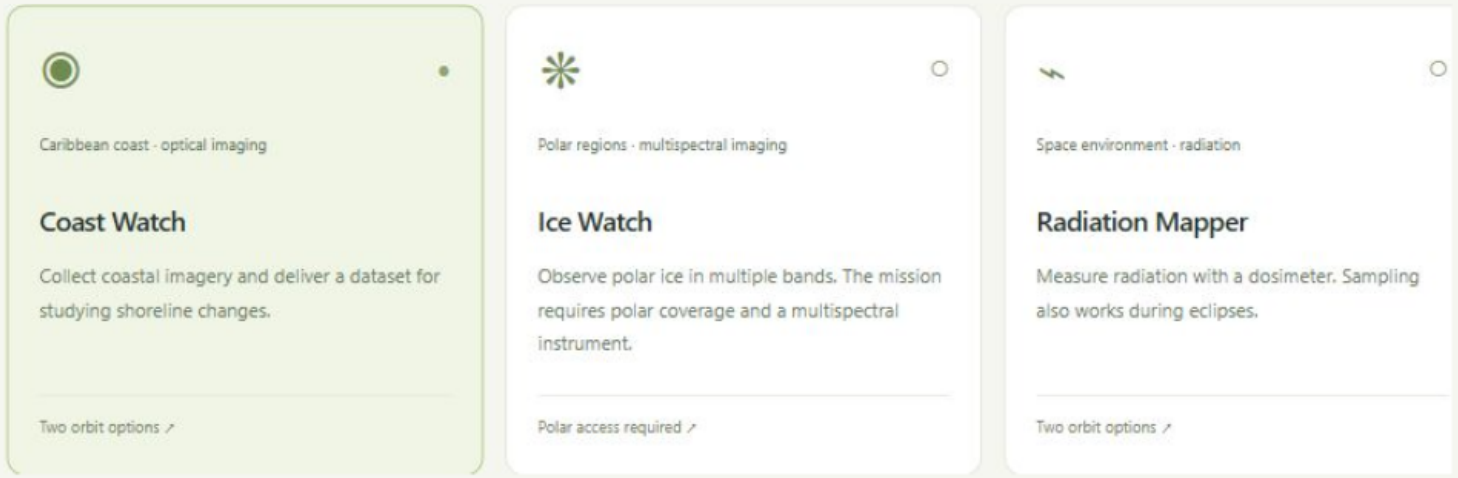
In this example, capture draws 14 W while fixed panels generate 10 W in sunlight.

The player must balance ambition with the resources available.



Actual English prototype. Numerical values are illustrative.

A mission takes five stages



01
Objective and requirements

02
Spacecraft and instruments

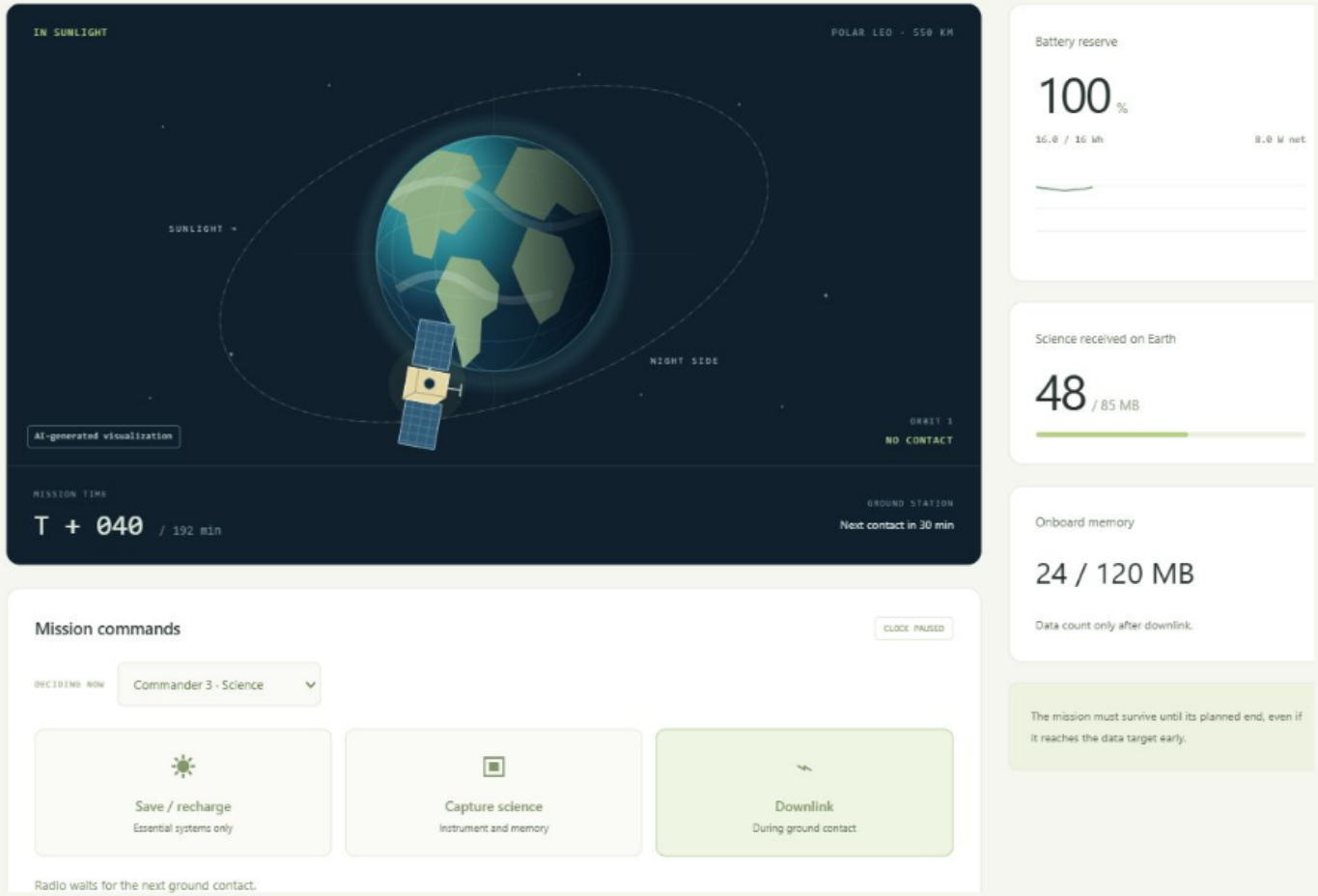
03
Review and launch

04
Mission operations

05
Results and feedback

Three science scenarios let players explore different instrument and orbit requirements.

Operations change the resource balance



AI-generated orbital visualization within the actual prototype

Capture

fills onboard memory and consumes power.

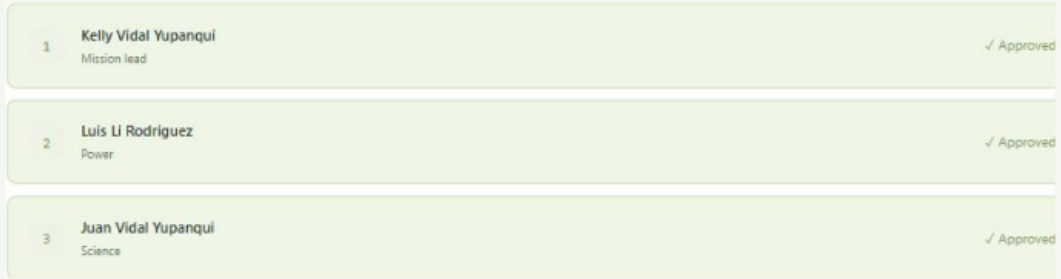
Downlink

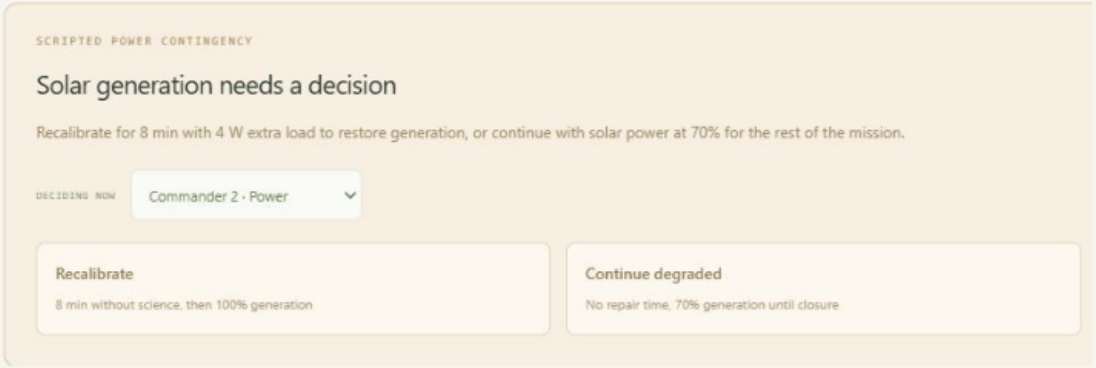
delivers data only during ground contact.

Saving power

protects the battery during eclipse.

Local collaboration and recovery decisions





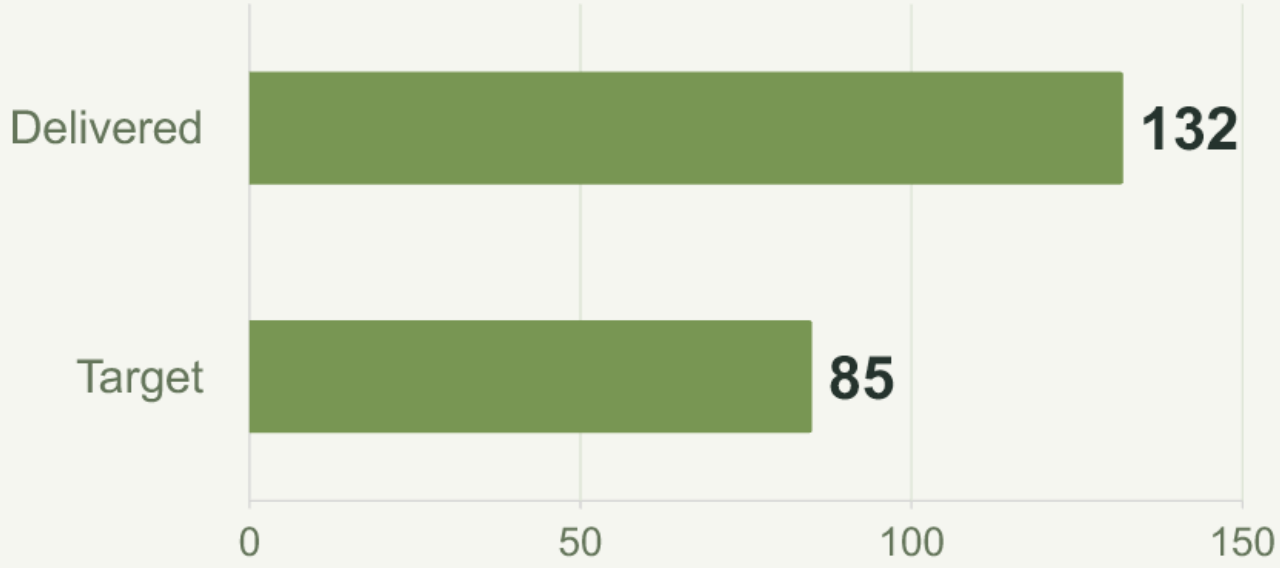
Every player approves launch. The flight log records who issues each command.

Recalibration takes 8 simulated minutes. Continuing instead limits solar generation to 70%.

1–4 participants share one screen. The prototype does not include online multiplayer.

One simulated mission met its objective

Data received on Earth (MB)



192 / 192

simulated minutes completed

10.2 Wh

battery remaining at closure

Polar LEO / Multispectral camera / 119 of 120 credits / 3.2 kg

This run checks the game logic. Classroom learning outcomes have not yet been measured.

NASA resources and scope

NASA resource

CubeSat 101

Concept development, spacecraft design, readiness reviews and ground operations inform the learning workflow.

Read NASA CubeSat 101

Sections 2.1, 2.4, 2.10, 2.12 and 2.16

Scope and transparency

Fictional hardware and game parameters. No real telemetry, RF analysis or trajectory propagation.

Codex assisted the initial idea, code, educational model and visualization. CuyCorp supplied the AI-assisted logo.

Educational prototype. No NASA affiliation or endorsement.