Rocketry Team Payload

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Introduction

Design

A planetary landing system.

Launch

The system will be launched in a rocket.

Landing

The system must land in an upright configuration.

Function

It will take a 360 degree panoramic photo.

Transmission

It will transmit this photo wirelessly.

Name

Landon Planette

Problem Description

Problem 1 - Descent

The system must land safely on the ground.

Problem 2 - Orientation

The photo must be upright and steady.

Problem 3 - Panorama

The photo must be 360 degrees.

Problem 4 - Communication

The transmission must be wireless.

Problem 5 - (Outer) Space

The electrical equipment must be compact.

Proposed Solution

Solution 1 - Descent
The system will fall with a parachute.

Solution 2 - Orientation
The system will be designed to land upright.

Solution 3 - Panorama
The system will have multiple cameras.

Solution 4 - Communication
A Pi Zero will be used for transmission.

Solution 5 - (Outer) Space
The Pi Zero is a very small processor.

Demonstrated Features

Presentation

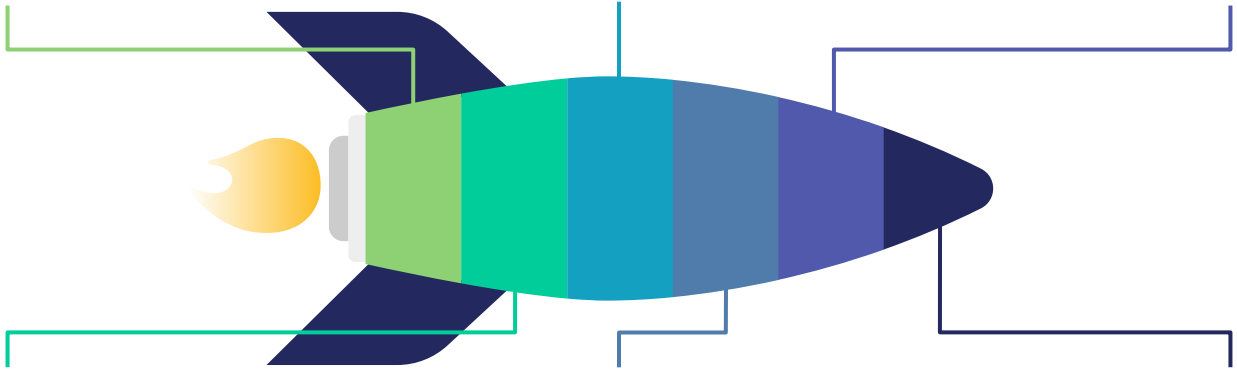
In May, the lander will be launched in a rocket.

Configuration

The lander will land in an upright configuration.

Photo

The system will take a panoramic photo.



Transmission

The system will transmit the photo wirelessly.

Success

Landing upright, taking, and transmitting the photo indicate success.

Launch

The launch will be overlooked by NASA.

Available Technologies

Microcontroller

The Raspberry Pi Zero has been selected as the microcontroller.

Wireless Interface

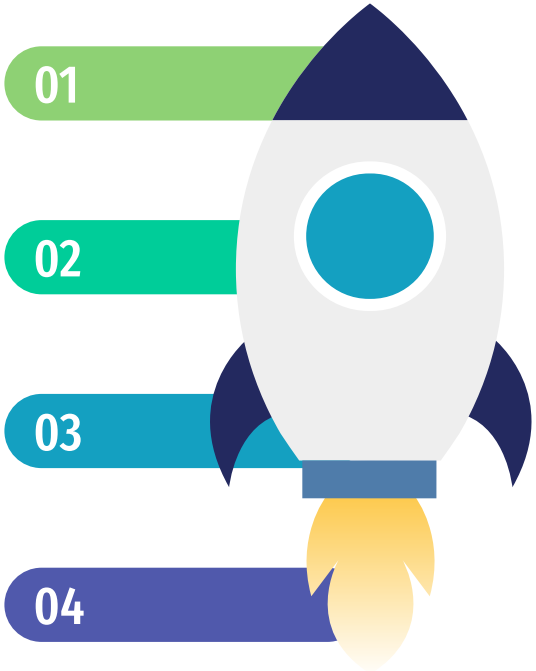
An RF transceiver will be necessary to transmit the photo.

Cameras

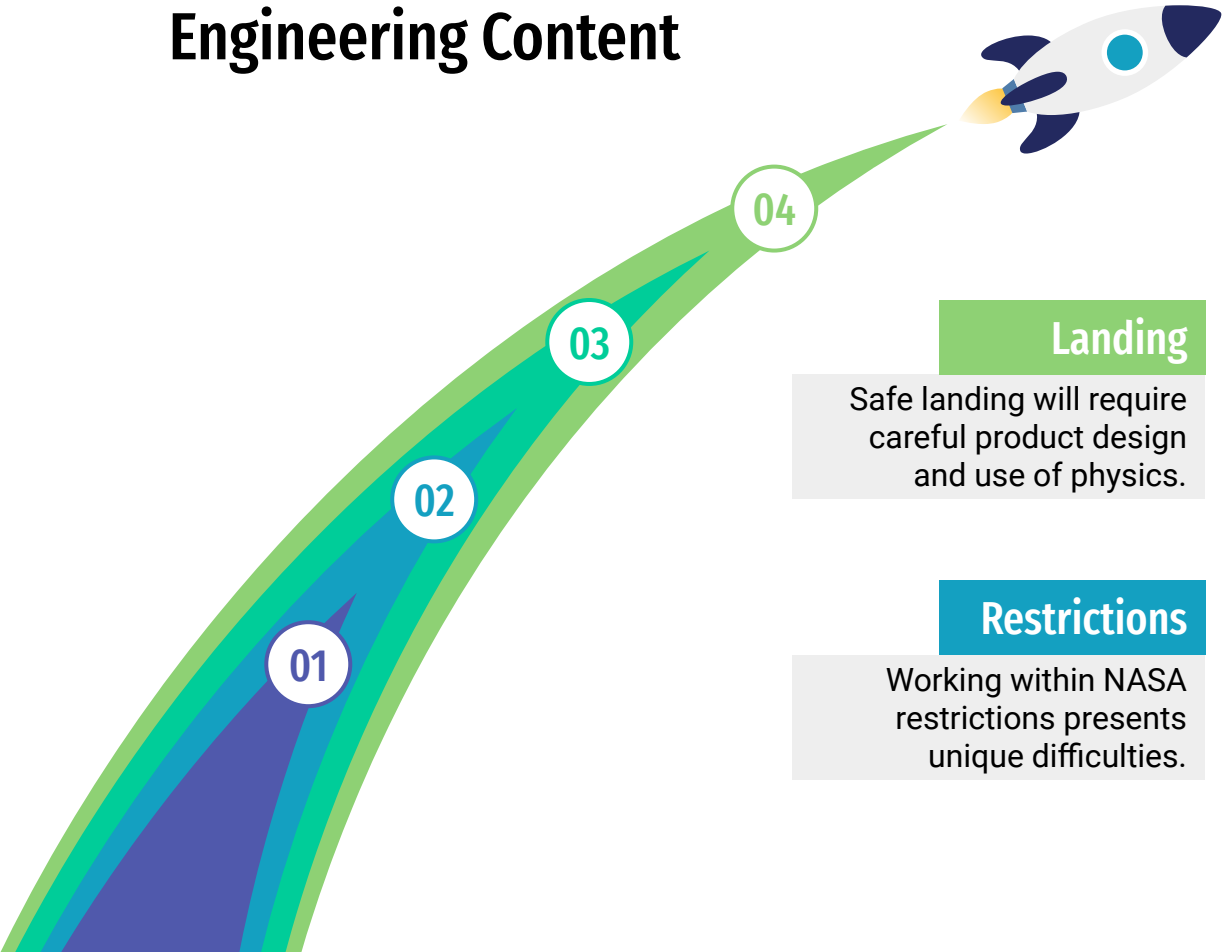
Four cameras and associated hardware will be needed to take the panoramic photo.

Others

Absolute orientation sensor, battery, boost converter, antenna.



Engineering Content



Landing

Safe landing will require careful product design and use of physics.

Transmission

Working with the Pi Zero will require EE and coding knowledge.

Restrictions

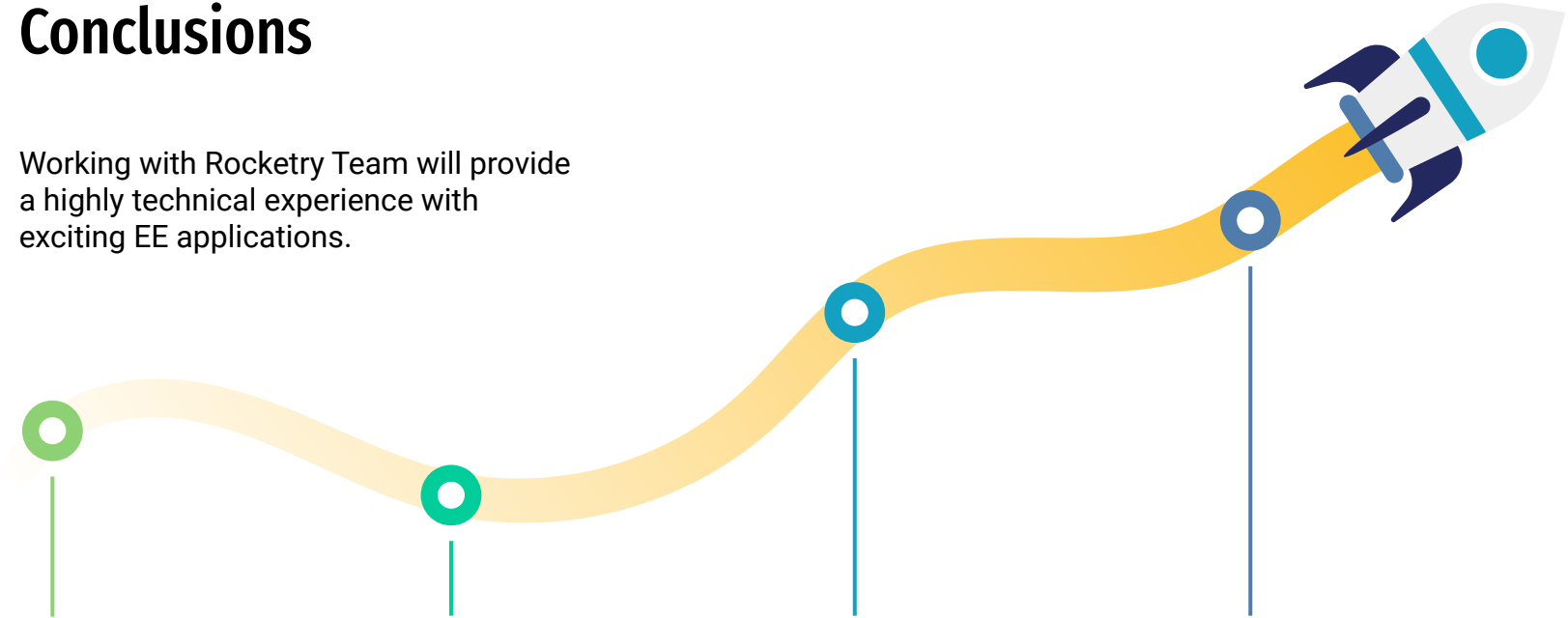
Working within NASA restrictions presents unique difficulties.

Teamwork

Work closely with other subsystems and keep the project compact.

Conclusions

Working with Rocketry Team will provide a highly technical experience with exciting EE applications.



Challenges

The team must tackle several unique obstacles.

Teamwork

Working well in a smaller system team and larger rocket team is crucial to success.

Result

The project must succeed in landing, photographing, and transmitting.

Limitations

Working within the confines of budget and space will provide realistic project experience.