Lesson 2

Objectives

- Introduce the payload manage app, payload simulator app, and payload simulator library.
- Use the lib/app as examples for using the cFS App Exchange

Library and Application Summary

PL_SIM_LIB

- Simulate payload power states, detector states, and detector science data
- Provides an interface to set and clear a detector fault. Science data is corrupted when the fault is present
- JSON initialization table defines number of 1Hz cycles for power initialization and detector reset

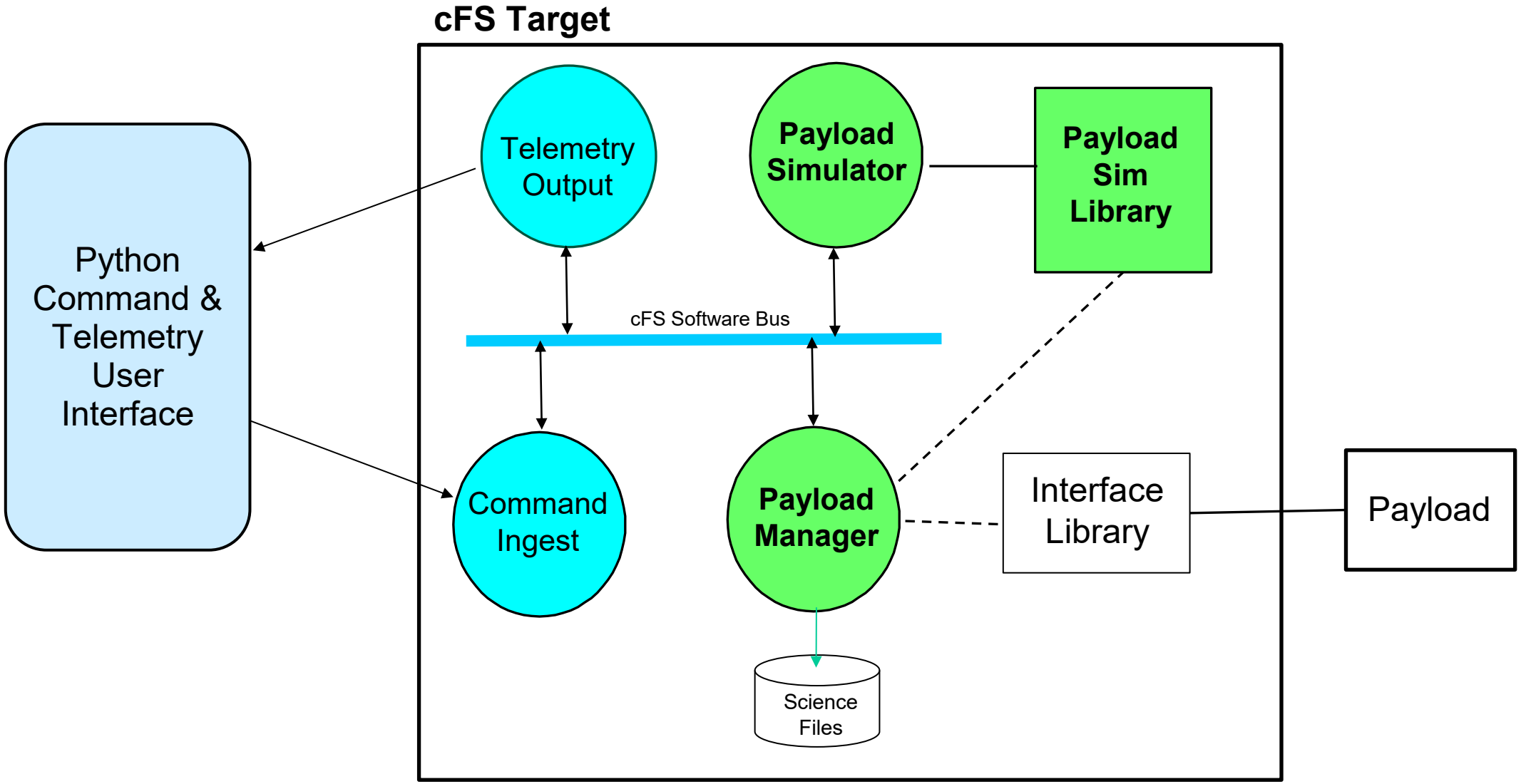
PL_SIM App

- Provides a ground command and telemetry interface to PL_SIM_LIB
- Command include: power on, power off, set fault, and clear fault

PL_MGR

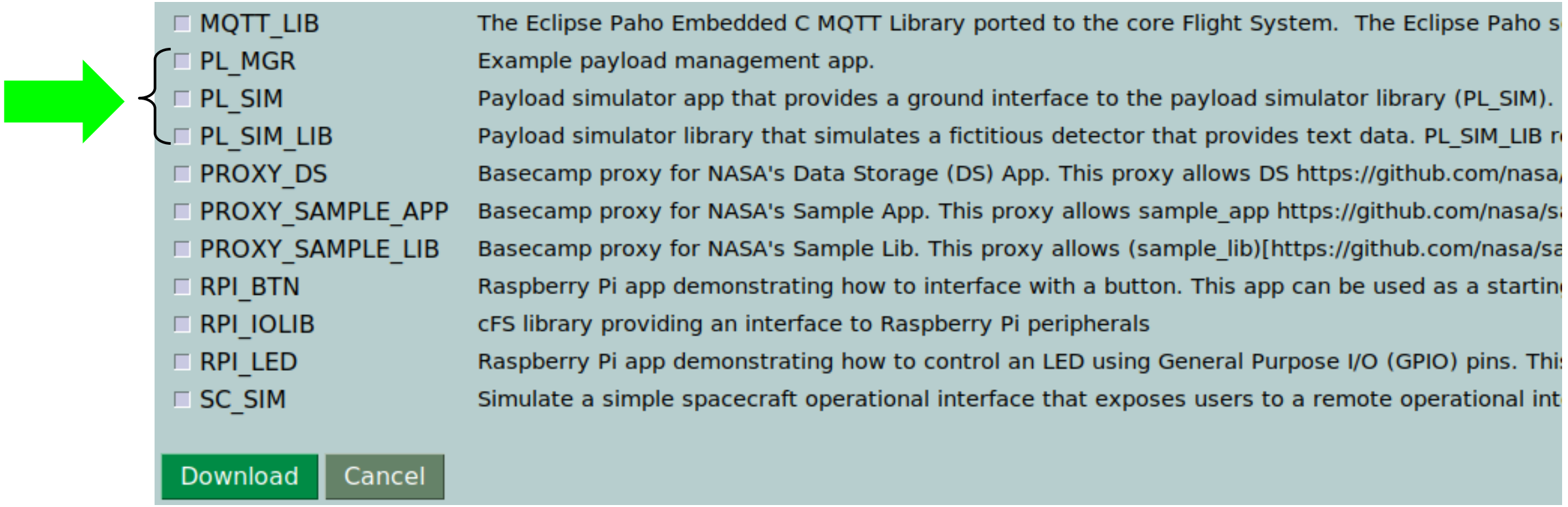
- Manage the data interface to the payload and the creation of science data files
  - Reads detector data and writes images to files
- Commands to start and stop science data that turn on and off the detector, respectively
- JSON initialization table defines the science file path, base science filename and number of images per file

Library and Application Architecture



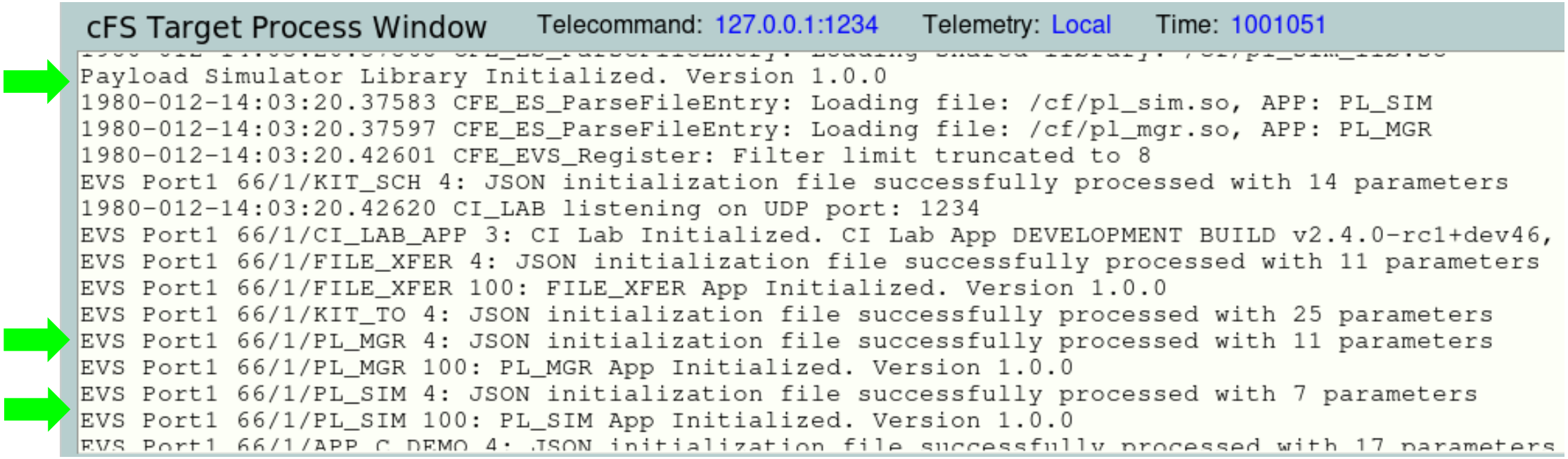
Install Payload Manager

- **Use the steps described in lesson one to download, install and build PL_MGR, PL_SIM and PL_SIM_LIB**
  - PL_SIM_LIB must be added to the cFS target first which causes it to be loaded before the apps when the cFS initializes
  - The PL_MGR and PL_SIM apps require PL_SIM_LIB global symbols to be defined when they are loaded



Running Payload Manager (1 of 2)

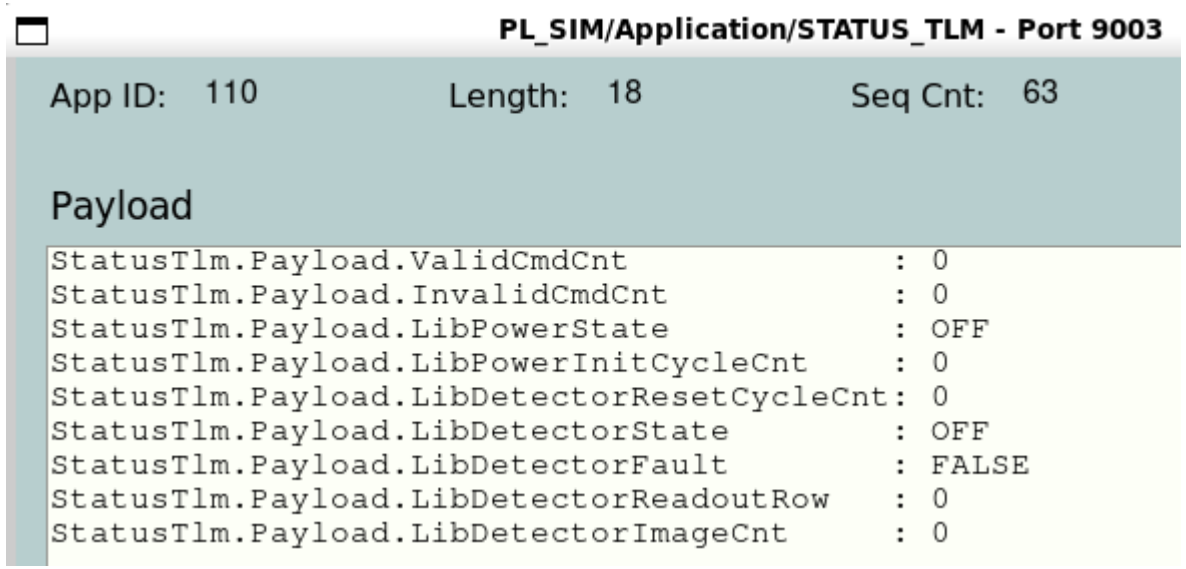
- **After you start the new cFS target scroll through the start messages and verify that PL_SIM_LIB, PL_SIM and PL_MGR were loaded and initialized without any errors**



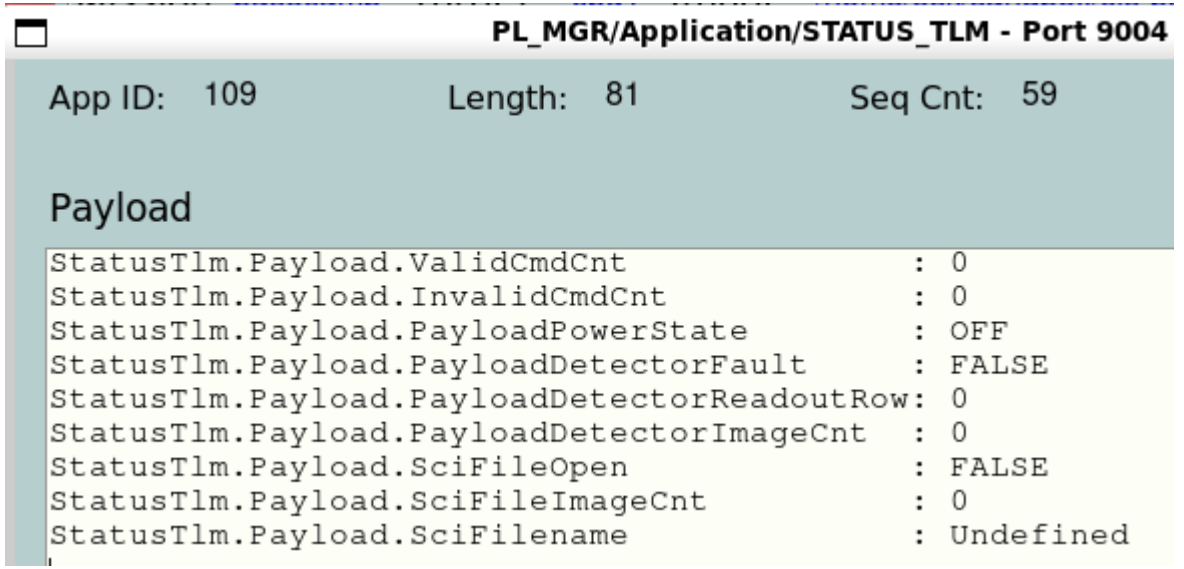
Running Payload Manager (2 of 2)

These telemetry screens represent the default states

PL_MGR App Status Telemetry



PL_MGR App Status Telemetry



For more information on payload manager refer to the Basecamp Payload Manager project:
https://spacesteps.com/2024/10/12/cfs-payload-manager-app/