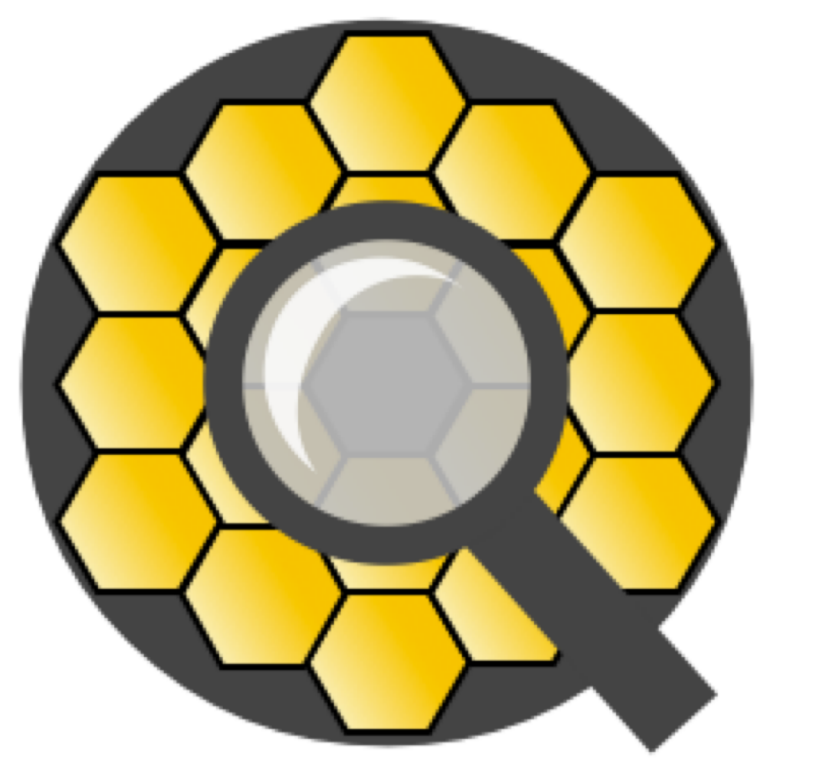# The James Webb Space Telescope Quicklook Application (JWQL)

Matthew Bourque[1], Lauren Chambers*[2], Misty Cracraft[1], Joe Filippazzo[1], Bryan Hilbert[1], Graham Kanarek[1], Catherine Martlin[1], Sara Ogaz*[3], Johannes Sahlmann[1], Ben Sunnquist[1], Francesca Boffi[1]

The James Webb Space Telescope (JWST) is comprised of five scientific instruments that together will acquire an estimated ~0.6 PB of archived data over the lifetime of the mission. The behavior and health of the JWST instruments are characterized and monitored by instrument teams at the Space Telescope Science Institute (STScI). The JWST Quicklook Application (JWQL) is a database-driven web application and automation framework that will provide the instrument teams a means to (1) visually inspect new and archival JWST data and (2) develop and execute instrument monitoring/characterization software, all through the convenience of a web browser. The JWQL application is comprised of (1) a data backend provided by the Mikulski Archive for Space Telescopes (MAST), (2) a Python-based software package containing tools and libraries for automated instrument monitoring, and (3) a front-end Django web application that allows users to interact with the data and monitoring results. JWQL is currently under development, with the version 1.0 release expected before the start of JWST science operations.
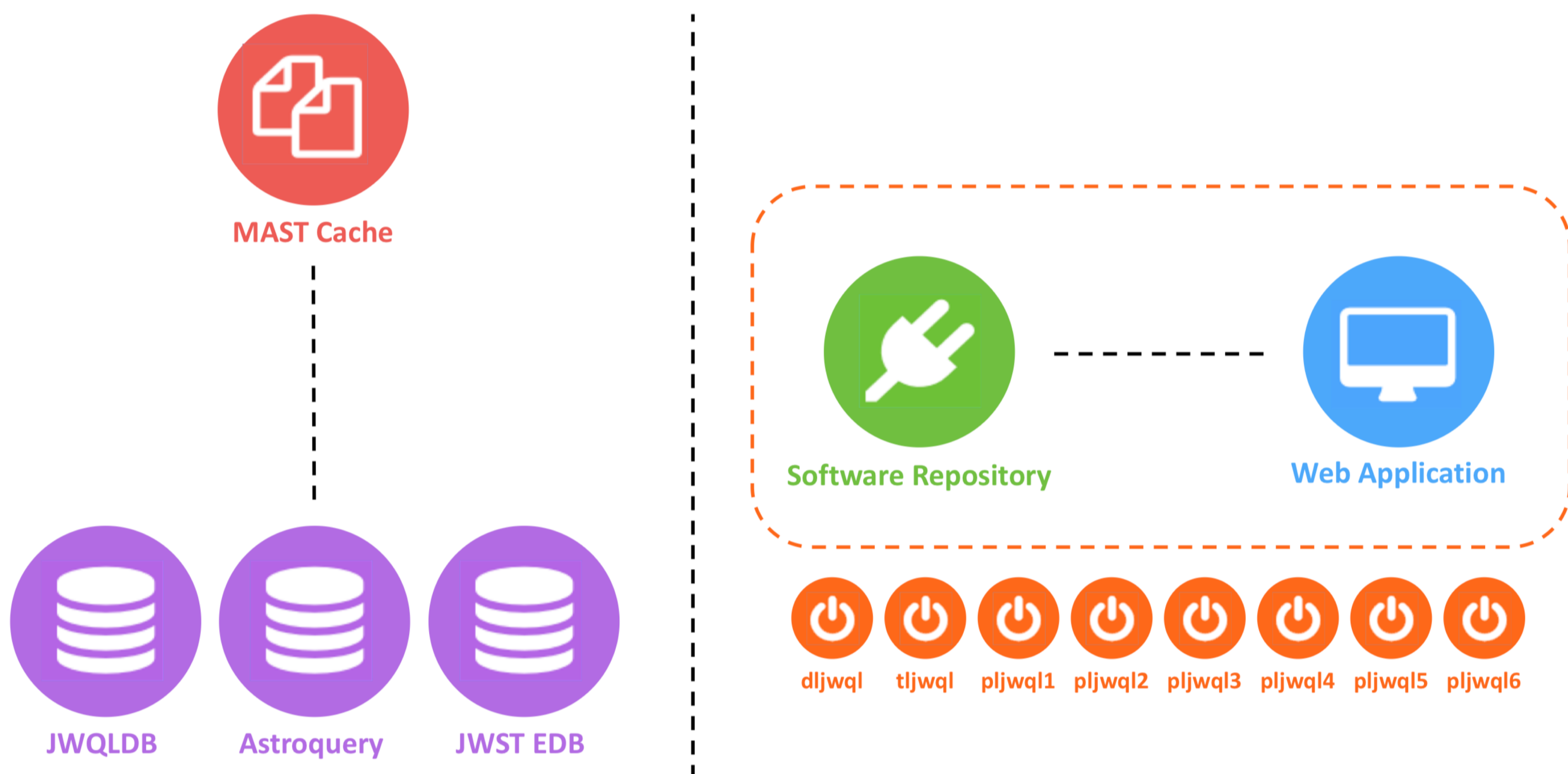
Scope

JWQL is a database-driven web application and automation framework for use by JWST instrument teams to analyze & monitor the JWST instruments and their data.

- Visually inspect new and archived data
- Automated python-based calibration and monitoring software
- Convenience of a web browser
- One solution for all five JWST instruments

JWQL is currently under development with new features added periodically. The version 1.0 release is expected before the start of JWST operations.

Software Package

All source code and supporting materials for the jwql application are open-source and available on GitHub. API documentation is available on ReadTheDocs.
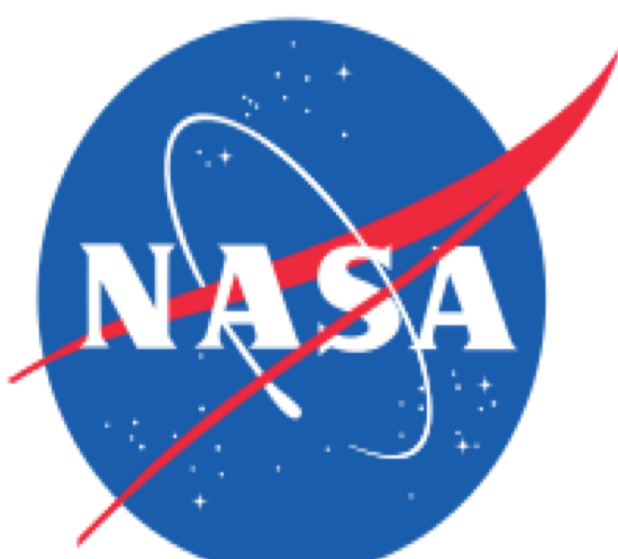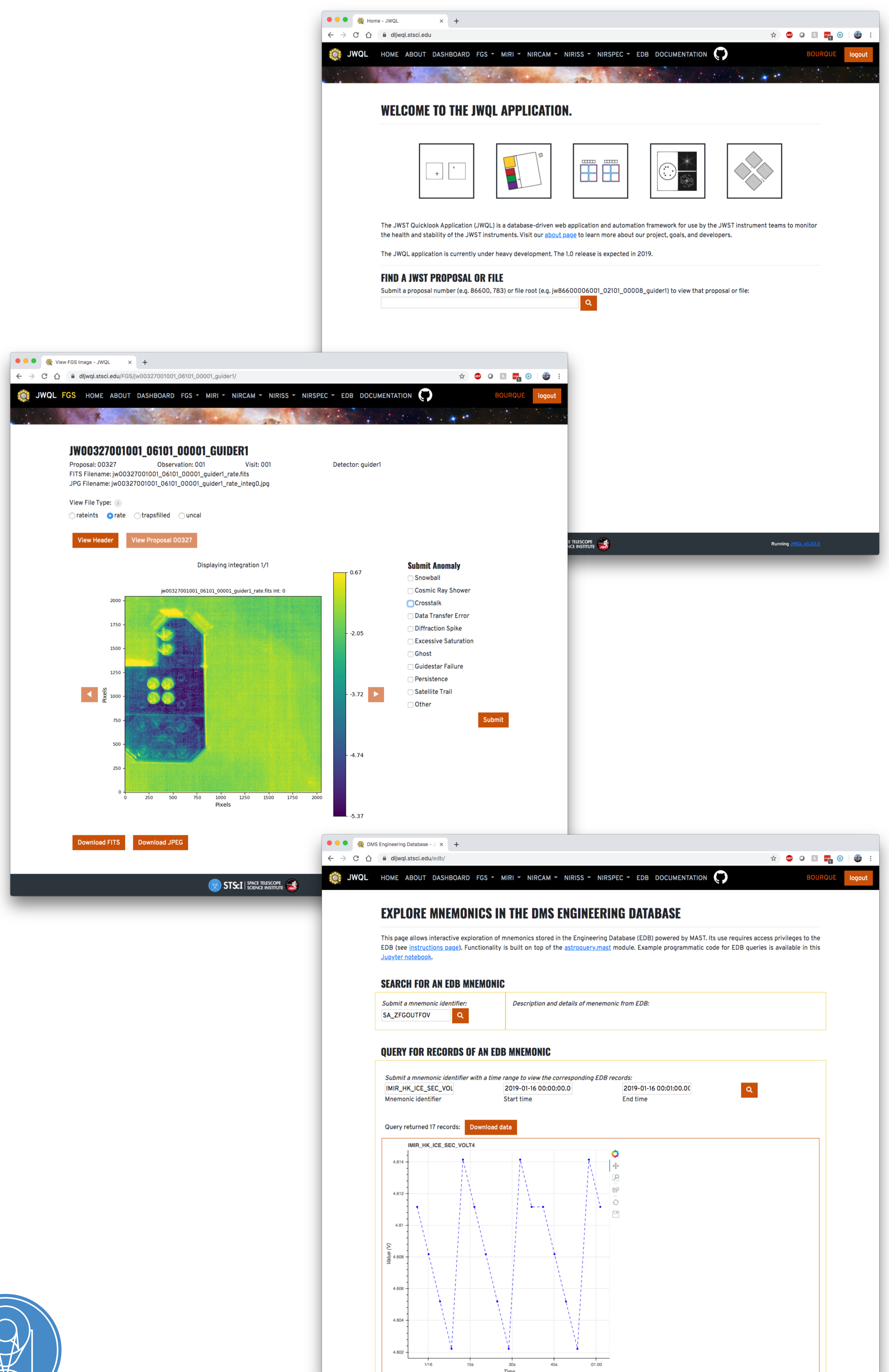

github.com/spacetelescope/jwql

jwql.readthedocs.io

System Design

The data source is the MAST archive, with various supporting metadata stored in (1) the JWQL database (JWQLDB; for storing monitoring results), (2) the JWST Engineering Database (JWST EDB; for storing observatory telemetry), and Astroquery (for access to observational metadata). The front end consists of the JWQL software repository and web application, all deployed on Linux RHEL7 VMs.

Web Application

The jwql web application allows users to view JWST data and instrument monitoring results through a browser interface. Users may view any archival JWST observation, submit image anomalies, inspect instrument trending/monitoring data, query the engineering database, and more.

Technologies