Inspection and Characterization Plan

Science Release and Validation team

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Version 0.1

1 Purpose of the document

This document is aimed at describing the process to execute the test suite necessary to characterize new Rubin data releases, in the context of the DESC.

- The methods, tools and criteria (where applicable) to characterize and validate the Rubin dataset

- The procedure for the execution of tests and inspection

1.1 Definitions, reference documents

- Test run: a single execution of the whole SRV characterization framework. Includes tests using DESCQA, other sources, inspection of data and documentation.

2 Goals of the characterization process

3 Test tool description

Here we include an overall view of the software involved in a single test run of the SRV characterization framework.

3.1 Data sets and formats

An explanation of the characteristics of the model of the data set being tested.
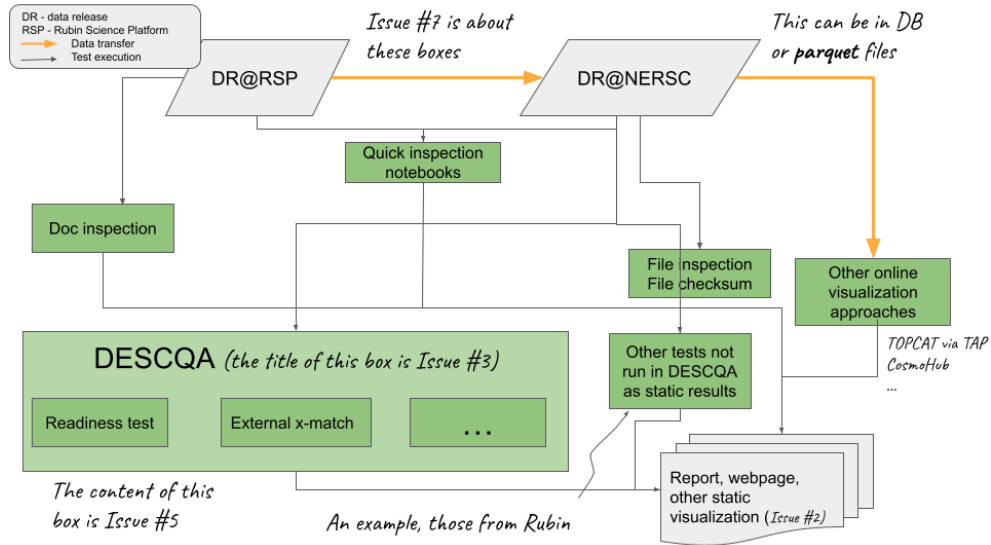
Figure 1: SRV planning diagram

3.1.1 DC2

DC2 coadd catalogs is available as flat parquet files at NERSC.

3.1.2 DP0.2

TBC

4 Characterization cases and procedures

4.1 Characterization of data set

4.1.1 TC1 - Inspection of catalog columns

Purpose: Verify that the catalogs contain the columns we need **Strategy:** Execute an interactive job over the whole data set of the ColumnInspection test from DESCQA.

This can be a simple listing of all columns, and making an automatic check on whether certain columns exist or not. Another part can check for NaNs or crazy values in the relevant columns (similar to what the Readiness test does in DESCQA)

Procedure: Describe how we actually go about running this (./descqarun –t ColumnInspection –c DC2 etc.)

4.1.2 TC2 - Basic recursive characterization

Purpose: Run a general 'readiness' test on coadd catalogs, to verify that there aren't any significant issues in data. **Strategy:** Execute an interactive job over the whole data set of the CoreChecks test from DESCQA.
The test currently comprises the following checks:

- RA,DEC scatter plot

- Differential magnitude histograms in all bands, for PSF, aperture and model magnitudes.

- Magnitude vs magnitude error scatter plots of the above.

- Color-color plots (specifics TBC)

- Magnitude vs size plots fpr PSF-like objects

- PSF ellipticity whisker plot

- Source e1,e2 histogram (TBC, requires some source selection)

Procedure: Describe how we actually go about running this (./descqarun –t CoreChecks –c DC2 etc.)

4.1.3 TC3 - Notebooks

Interactive notebooks to be included here that complement or substitute DESCQA executions, that could be run on NERSC and RSP.

4.2 TC4 - Inspection of external tests on same data set

Add details of other test runs on the same data set that will complement this report: RAIL, faro, other analysis WG results.

4.3 Inspection of available documentation

This requires reporting where the documentation is available.

4.4 Validation tests on small areas or subsamples, replicating previous scientific results

5 Test execution reports and visualization

The reports should include date, DESCQA version (and other SW), data set version, people involved in the testing. Then the results would be a summary of an online resource where the complete collection of plots and numbers would be available.