Review of the DES Science Portal

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Fermi National Accelerator Laboratory, Batavia, IL, USA

attendees: Tom Diehl, David Finley, Joshua Frieman, Robert Gruendl, Steve Kent, Richard Kron (coordinator), Marcio Maia, Eric Neilsen, Fabian Lacasa, Don Petravick, Rogerio Rosenfeld, Flavia Sobreira, Marcelle Soares-Santos, Douglas Tucker, William Wester

Presentations were made by L. da Costa and A. Fausti Neto (docDB 8682 and docDB 8681) on the status of the DES Science Portal, progress since the last review, and plans for the future. These presentations were informative and much appreciated. The meeting was very well attended (see list above), indicating a good level of interest within the DES Collaboration. The Fermilab review followed informal one-on-one interactions with scientists at Fermilab, the purpose of which was to inform the Portal developers of the needs of the scientists. The review also followed productive discussions at NCSA concerning the installation of the Portal at NCSA and the operations role of the Portal within DESDM and in the broader DES context.

The overall conclusion is that the Data Server is providing important research facilities to the DES Collaboration, specifically ease of discovery and access to the DESDM data products, in addition to providing useful Quality Assurance information concerning images and catalogs. The use by the Collaboration is growing and will continue to grow as these tools become more familiar. The developers have once again proven themselves to be very responsive to the DES Collaboration by incorporating new features according to user needs, now managed by a streamlined system that records and tracks user requests. There is an extensive and growing set of user-support tools. A good example of where Portal development has met user needs relates to the search for strong gravitational lenses. The Tile Viewer has been enhanced to support this activity with a Cutout tool and other features, enhancements that are important for many other applications as well.

Some of the major changes since the last review include the installation at NCSA which, with the upcoming completion of the integration with the NCSA Oracle database, co-locates the Portal infrastructure with the data files. One of the major needs facing DES is creating data releases quickly so that the DES Collaboration can work competitively on science analysis. An end-to-end (E2E) release includes not just the basic images and catalogues, but many associated files besides (masks, training sets and files for different photo-z algorithms, photometric calibration and depth maps, and systematic maps), all of which needs to be tracked to maintain provenance. The Portal infrastructure provides all of this capability by design. Connections with individual DES scientists who are providing these critical pieces have been fostered and the interactions are working well.

A new feature in E2E, still under development, is the inclusion of a centralized spectroscopic database, critical for photo-z training and useful for many other purposes (supernovae, strong lenses, galaxy evolution, quasars). An upload tool helps users contribute spectroscopic information such that the spectroscopic database is searchable with standardized parameters.

The evolution of the Portal capabilities is leading to a more operations-oriented view (Portal provides a controlled environment for the DESDM data release process). The Portal can and will still serve its other purposes, supporting down-stream science analysis (for example by creating Value-Added Catalogs and incorporating external data), but we are still learning the most effective ways to serve the interests of and engage the individual Science Working Groups.

Besides the completion of the installation at NCSA, plans for the future include the ability to allow convenient access to single-epoch images and catalogs, for example allowing features in the coadd images to be easily traced back to the original data, and separately to provide a way to do time-domain science (identifying transients and sources with periodic variations).

These notes have covered only a small part of the total effort and the range of capabilities and features now available to DES scientists. As intended, the review helped introduce new features to a number of DES scientists actively using the Portal. No issues were uncovered concerning the development plan or other aspects of the ongoing effort, therefore we recommend continuing on the proposed path. We look forward to the new features and performance improvements.