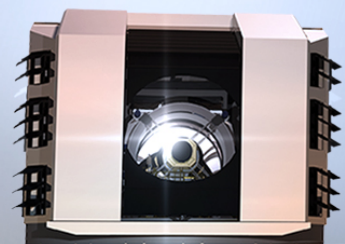


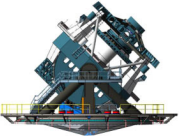


LSP Review: Next Steps

DMLT Meeting @ NCSA
June 4, 2019



LSP Review: Next Steps – DMLT NCSA June 4–6, 2019



LSP “Final” Design Review



April 10-12, 2019 at LSST-Tucson

<https://project.lsst.org/reviews/lsp-fdr>

Collection-7597 (<http://ls.st/col-7597>)

Report available at:

Document-32655 (<http://ls.st/doc-32655>)

LSST Science Collaborations:

Rachel Street (Chair)

Transients and Variable Stars Science Collaboration (TVS) co-chair,

David Kirkby

Science Advisory Committee, Dark Energy Science Collaboration (DESC)

Michael Mommert

Solar System Science Collaboration (SSSC), expert on moving objects

Christian Johnson

Stars, Milky Way and Local Volume Science Collaboration (SMWLVS)

Lee Steven Kelvin

Galaxies Science Collaboration (GSC)

Tina Peters

Active Galactic Nuclei Science Collaboration (AGNSC), DESC

LSST Project:

Keith Bechtol

LSST Commissioning, Science Verification, DESC

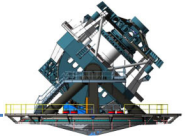
Richard Dubois

LSST Camera. DESC

External:

Ani Thakar

SciServer

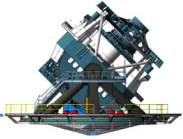


LSP Review Closeout



– Final remarks:

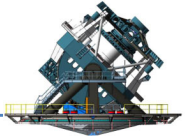
The LSP represents the next major evolution in astronomical data analysis, providing a set of powerful tools which can convincingly meet the needs of the Project and commissioning teams and make “next-to-the-data analysis” a credible reality for the wider science community. Without platforms such as the LSP, much of the science from LSST would not be viable owing to the sheer size of the dataset, and its user-base would be restricted to a privileged few. The committee congratulates the team on its development of a set of innovative tools which will not only enable the project to fulfill its enormous scientific potential, but also set a new standard for all future astronomical data services.



Charge questions



1. Is the traceability of requirements from higher design documents, e.g., from [LPM-17](#): The LSST Science Requirements Document, to [LDM-554](#): The LSST Science Platform Requirements, complete and will it ensure coverage of the four key LSST science themes? **2.5/5**
2. Are the stakeholders clearly identified and understood? Have the requirements been prioritized and communicated to a representative set of the stakeholders? **3.5**
3. Does the design presented in [LDM-542](#): LSST Science Platform Design capture the requirements for the LSP as detailed in [LDM-554](#): The LSST Science Platform Requirements? **4**
4. Are the verification, validation and software quality assurance plans adequate? **3.7**
5. Does the performance of the current system and its development status inspire confidence that both the interim and operations-era functionality can be delivered? **3.5**
6. How does the design of the LSP compare with that of other contemporary astronomical data archives and interfaces, or, more generally, other scientific data analysis environments? How well does the design and current implementation reflect trends in software engineering? Do the current design and technology choices give confidence that the LSP can evolve over time with the needs of 21st century astronomy? **3.5**
7. Are there items of significance in the design that would unnecessarily limit the science harvest of LSST? **3.5**
8. Are the risks associated with the design of the LSST Science Platform understood and adequately captured? Are there any overlooked areas of risk? **3**
9. Are there appropriate scope options accompanying the plan? If cuts had to be made, are there areas of the plan that could be descoped with minimal impact on LSST science? What is the scope for use of third party-tooling in place of in-house development? **4.5**



1) Requirements

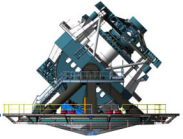


Is the traceability of requirements from higher design documents, e.g., from LPM-17 : The LSST Science Requirements Document, to LDM-554: The LSST Science Platform Requirements, complete and will it ensure coverage of the four key LSST science themes?

My take: 2.5/5

Work required:

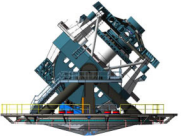
- Document the flowdown from DMSR (gpdf is working on this already)
- Fill in missing requirements
- Document science use cases / “20 Questions” against which to test LSP



Missing requirements



- The committee identified the following areas with missing requirements:
 - LSP interface to alert subscription
 - Documentation (particularly for the API Aspect)
 - Performance (user load, computing resource loads, query loads)
 - Portal Aspect:
 - Identity/security
 - API Aspect:
 - Performance
 - Control and management
 - Resource management



Performance and Capacity



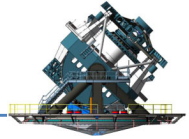
- Some of the committee’s most strongly and repeatedly expressed concerns were that performance **requirements** and planned capacity **are under-defined** and that user **load will probably greatly exceed existing planned** or even reasonably achievable Project-funded levels
- Recommendations:
 - Re-evaluate planned loads and queries in the light of Gaia and other recent experience
 - Evaluate and plan for the use of cloud resources to provide scalability
 - Facilitate the development of additional (off-Project) DACs
 - **This is very compatible with the new data rights framework!**



2) Communication with stakeholders



- Strong recommendation for early outreach to Science Collaborations
 - Explaining the design and its constraints
 - Providing early access to the LSP
- Recommendation to use the Stack Club as a vehicle for providing LSP experience to SC members
 - Does this need some clarification of “Stack” Club goals vs. goals relating to the LSP?
 - Essential to provide catalog data in the LSP in order to support this SC outreach – looking forward to HSC public data in the LSP



Uneasiness with the Portal plans



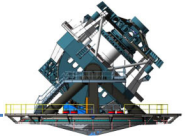
- The committee expressed unease about the Portal “freeze” under several of the charge questions, as well as in this recommendation:
 - 3) The Portal aspect is likely to remain an important mechanism for many users to discover, explore and exploit LSST data. Its descoping is likely to be seriously detrimental to a number of science cases (notably Solar System and time-domain science) and significantly hamper the ability of users who might prefer to use a language other than python to access and analyse LSST data. Regardless of language, some tasks benefit from GUI-like visualization tools.
 - a) The committee recommends that the Project explore the feasibility of up-scoping the Portal aspect, ideally including time-series plotting functions, or at a minimum, a commitment to launch and maintain it at the current level of functionality. Time-series plotting functionality should be provided within the notebook aspect, even if it has to be descoped from the Portal.



Uneasiness with the Portal plans



- The committee expressed unease about the Portal “freeze” under several of the charge questions. Some foci:
 - Comparison to current community standards for data access portals
 - Accommodating users who are not at home in a Python environment
 - Providing specific time-domain-related functionality
 - Providing a UI for bulk cutout requests
 - Solar System functionality
- It is not entirely clear how to respond
 - There are Notebook-ish ways in which these things could be done, but development would still be needed there, too
 - We could try to draw up, and cost, a narrow list of tools that could still be completed within the existing Portal framework
 - E.g., reconnection of the existing time-series viewer to the IVOA interfaces, and a bulk cutout request interface



Recommendations



- Extracted 28 specific recommendations from the report
 - LIT tickets will be filed (I'll request this after today's discussion)
 - They cover a range of actions from ones that are related to planning and communication and can be satisfied in a short time, to specific recommendations for design features that would need to be evaluated, costed, and scheduled.
 - Frossie and I will shortly review the list and classify the actions, assessing a position for each vis-à-vis the JSR, e.g.:
 - Do some real work by then and present a substantive response
 - Accept the recommendation and present a schedule for digesting it post-JSR
 - Reject the recommendation and present a rationale
 - We'll discuss the result with Leanne and expose it to the DMLT for comment