Topics

- Data Release Schedule

- ToO response

Supporting the current Early Science DR Release Schedule does not look feasible at this time

- Great progress on SV observations

- DP1 shows we are working end to end and turning photons into full data products. The effort that was needed for this production, however, **is not sustainable going forward.**

- Workflows are taxing people and the USDF more than expected

- Initial alerts will go to Brokers towards the end of SV (Aug-Sept), per RTN-011. We expect to start making other prompt products (images, templates, catalogs) mid Year 1.

- We expect to reach the required data release speed after a year of LSST data-taking, as planned

- We are exploring options on how to best support the community and team from November through the first two years of LSST.

Principles

- Support the Rubin teams with the resources and time they need to produce high accuracy/quality data releases on a realistic schedule. We are not aiming for perfect data, but we need to ensure that Rubin data releases enable efficient science and hence the feedback needed to inform the production of later DRs

- Ensure we enable early discoveries with alerts and prompt products

- Ensure data releases are well understood and documented to support deep static science.

- Communicate openly with the community

This is an active topic of discussion and planning

Best estimate: we can support DP2, but not DR1*

- SV design is updated to support a few thousand square degrees and DDFs. DP2 is an opportunity to capitalize on this early data set, but we have not taken the data yet.

- We expect to be able to start the LSST in November based on current performance and schedule. We have two months of schedule contingency we could use to augment DP2.

- We have considered options for the early data release schedule and discussed with PST, SC Chairs, and the Rubin team.

- We believe the best path forward is to deliver DP2 and then focus on producing a first data release (DR1) based on 1 full year of LSST data. This means the 6-month data release ("DR1" in RTN-011) wouldn't be done. This requires successful completion of the SV design. We won't know the outcome of SV for a few months.

* DR1 defined in rtn-011 as first 6 mo. of LSST

Why focus on DP2 as the step towards Y1?

- A 6-month data release ("DR1") was initially conceived (when the Project requirements were defined over 10 years ago) as a way to help the LSST Science Community prepare for analysis at LSST scale.

- Since then, we developed the data previews as a means to release Rubin commissioning data to the community incrementally increasing the dataset at regular intervals.

- The 6-month data release concept has turned out to be over-ambitious – processing and releasing 10,000 square degrees of data within 6 months is not feasible.

- The priority must be to produce a high quality Y1 dataset within ~1 year of Y1 end, and this would not be possible if we attempt a 6 month dataset before that.

- DP2, built from a pre-survey dataset designed to support science analysis development and released during Y1, will give the community and observatory the time it needs to optimize and capitalize on the Y1 dataset.

Instead of 6-month Data Release, focus on DP2

- Produce full DP2 based on all suitable SV data. This will be a substantial data set and viable for early science.

  - Delays first data release to February 2028. This would be the year 1 dataset.

  - This SV design is specifically made to be "LSST representative" to give the community a rich dataset to prepare for LSST. It is not too big to overwhelm but big enough to do a lot of science and develop analyses.

  - **Depends on successful SV data taking.**

Current SV Design
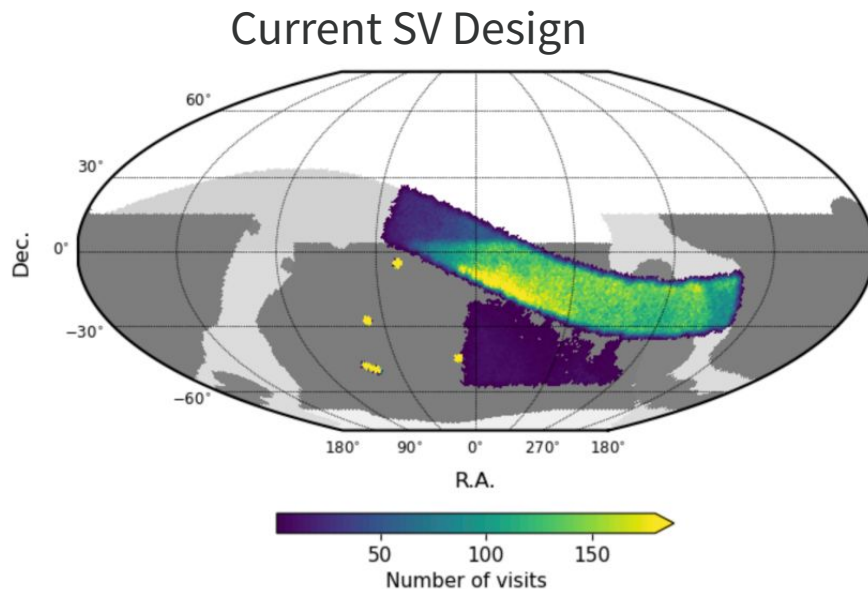
Augmenting DP2

- There is a possibility to augment DP2 by taking more data for 1-2 months before starting the LSST.

- Consistent with current Operations schedule contingency.

- This would push the nominal DP2 release, start of LSST, and Y1 release out by approximately the same 1-2 months.

Alerts and Prompt Products

- Both nominal and augmented DP2 options would keep alerts and prompt products on the current RTN-011 schedule.

- Community will have an ever improving alert stream as we produce more templates and by mid 2026 we will have PVIs, template images and associated catalogs made available on the RSP regularly (daily with 80 hr latency).

For discussion

- We will have more time and resource to devote to optimizing production after commissioning is over and we can fully assess DP1 and know what data have come from SV. We need to make a decision by ~Sept-Oct of this year.

- Moving data release production to /repo/main outside embargo (where it belongs) will simplify some workflows and give us a better estimate of our DRP speed, while a retrospective of DP1 will inform our DR preparation time (which is ~independent of data volume)

- Discuss with community/SCs at RCW2025 the possibilities for augmenting DP2.

Option 2: No DR1, Augmented DP2		Date Range	FY25	2025	FY26	2026	FY27	2027	FY28	2028
DP1	ComCam Data	June 2025								
SVY	Start of Survey	November 2025								
DP2	SV plus 2 month Nov/Dec extension	Jul 2026 - Sep 2026								
No DR1										
DR2	LSST Year 1 Data, 2 month delay	Dec 2027 - Jun 2028								
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Targets of Opportunity

- Rubin has established a community established Target of Opportunity program. See "[Rubin ToO 2024: Envisioning the Vera C. Rubin Observatory LSST Target of Opportunity program](#)"
- The program fits within approximately 3% of the total LSST cadence as designed by the Survey Cadence Optimization Committee. [See pstn-056 for details](#).
- The program was the subject of a meeting at UC Berkeley in March 2024 of the same name. The attendees settled on 4 science cases (targets) that naturally require Rubin's unique capabilities.
  - Detecting Gravitational Wave optical counterparts
  - High energy neutrino sources
  - Galactic supernovae
  - Small potentially hazardous asteroid Earth impactors
- Rubin leadership endorsed the program and began working with the transient community to implement it

Targets of Opportunity

- Targets of Opportunity will be vetted by automated criteria.

- A Rubin ToO Observer (RTO) will be available every night to manage ToO interrupts of the LSST ongoing cadence. The RTO will make adjustments to the interrupts as they deem appropriate. A committee of ToO experts will be available to assist the RTO. Assistance could be in advance, during, or after alerts and interrupts.

- No single person can manage the ToO's 24/7/36, so we envisage a small team of trained observers to handle the RTO role.

- The RTOs will be selected by Rubin. The RTO's supporting committee will be proposed by the SAC with final approval from the Rubin Observatory Director.

Initial program

- Established during Rubin system integration and commissioning.
- The alert stream from external experiments is handled by the HopSkotch protocol from SCiMMA (Scalable Cyberinfrastructure to support Multi-Messenger Astrophysics).
- The HopSkotch protocol is responsible for parsing alerts from external experiments and sending them to the Rubin Engineering Facility Database (EFD).
- The software application evaluates the quality of the incoming alerts as defined by the community recommendations (RubinTOO2024), and sends high-quality alerts to the Rubin Rubin Engineering Facilities Database (EFD).

SCiMMA > EFD > scheduler > data taking and alert generation/processing

**Thanks to Sean McBride for the information presented here

Initial program

SCiMMA > EFD > scheduler > data taking and alert generation/processing

- The four science cases have distinct strategies for observing on sky implemented in the scheduler (following RubinTOO2024 with a few tweaks). See rtn-098.

- In regular survey (LSST) operations, the alert pipeline will automatically process the images and send alerts to the community brokers.

- In SV, we respect a 30 day embargo on image data but will/have made data available as appropriate beyond the Rubin team. We expect the embargo to end soon.

- We have some templates and we have a set of DECam templates that can be used in a custom pipeline (Armstrong).

Initial program

Two test alerts have been executed

- New Horizons

  - Observations began 90s after the scheduler received the alert package.

  - The test led to 11 actions which are partially implemented. See rtn-098.

- 3I/Atlas

  - Observations began 64s after the scheduler received the alert package.

  - The test led to two additional actions. See rtn-098.

A real LVK alert

This past week (July 25) we received a BBH alert.

- Weather has kept us off sky (cloud and cold).

- Not obvious this needs Rubin.

- Could be a good technical test with real ToO strategy deployed.