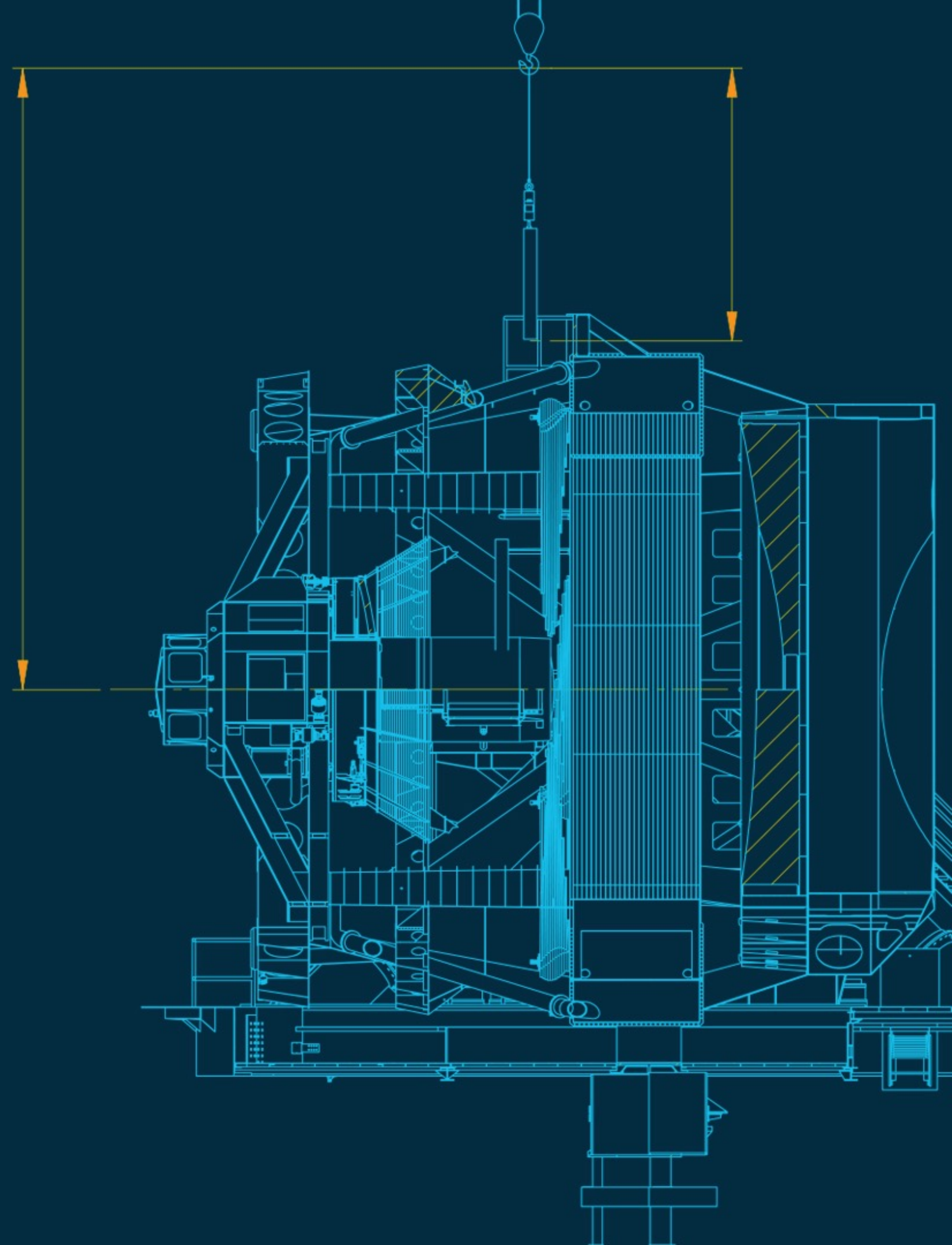


Alert Production S20 status

Rubin Observatory



Legacy Survey of Space and Time



Review of last 4 months

- **Gen 3 porting**
 - Have made substantial progress on this; most algorithmic code is ported (or very close).
 - Slow point has been getting the DECam data that we use for testing available in Gen3 repositories. Extensive collaboration with the middleware team on this (thanks); I think we're $\rightarrow\leftarrow$ this close now.
 - Also produced PipelineTask unit test framework as part of this effort.
- **DIAObject summary statistics**
 - Enhanced infrastructure and faster plugins deployed.

Review of last 4 months

- **Image differencing**
 - Regular reprocessing and tracking down bugs.
 - Identified likely deep algorithmic errors in decorrelation afterburner; fixing these is still a work in progress (see upcoming work!).
 - Including identifying a number of problems with template construction.
- **Solar system processing**
 - Rubin implementation of HelioLinC linking algorithm.
 - This is the modern alternative to the classic MOPS algorithm, which we intend to deploy in the operational system.
 - Easier to reimplement in our codebase than adopt upstream packaging.
 - Preparing for end-to-end pipeline processing (see upcoming work).

Plans for the S20B cycle

- *S20B runs March, April, May 2020.*
- **Algorithms Workshop**
 - Mid-March.
 - Several AP developers in person; several more remote.
 - Presentations by Eric Bellm & Ian Sullivan.
 - Assorted reprocessing / analysis activities currently underway to support these presentations.

Plans for the S20B cycle

- **Alert Distribution**

- *Spencer Nelson*, formerly of Twitch, joins the team in mid-March.
- Shared appointment between Rubin, ZTF (Bellm) and SCIMMA (Juric).
- Goals for the cycle are to “productise” the alert distribution system prototype...
 - Resolve outstanding schema issues.
 - Revisit packaging / Docker deployment system.
 - Audit for bugs / performance issues.
- ...and to generate Avro-format alerts on disk as a result of AP processing.
- I suspect that over the course of the cycle this will all be AP-internal, but will leave us in a good position to engage with the Data Facility during summer.

Plans for the S20B cycle

- **Relative astrometry**

- *John Parejko.*

- Jim Bosch has proposed a set of near-term goals for Jointcal development.

- We will simultaneously be pursuing these and, in conjunction with Jim and members of the DRP team, considering future tooling choices (can some of the functionality we need come off-the-shelf from tools like GBDES?).

- **Single-visit astrometry**

- *Chris Morrison.*

- This was promised for the last few months but hasn't yet happened: get the new fitter produced last year up and running, and quantify improvements to single visit astrometry.

Plans for the S20B cycle

- **“Fakes” in AP**

- *Chris Morrison.*

- Building on machinery previously developed by Sophie Reed (DRP), inject simulated sources into the AP processing pipeline, and use them to evaluate completeness & purity.

- **Image differencing**

- *Gabor Kovacs, Ian Sullivan.*

- Short term (pre algorithms workshop): resolve known issues with decorrelation afterburner.

- Long term: aim for tight loop with Robert Lupton; algorithmic content TBD in discussion with him.

Plans for the S20B cycle

- **Middleware**

- *Krzysztof Findeisen, & other team members.*
- Complete necessary work to execute AP processing in Gen3.
- Hoping to contribute effort to the Middleware Team under Tim's management (perhaps to work on afwFilter); still negotiating exactly what this means.

- **Testing and QA**

- *Meredith Rawls.*
- Define, and regularly test on, HSC PDR2-derived dataset; address issues arising.
- Hope to work with Data Facility to set up regular AP processing runs (à la HSC-RC2).
- Stack-generated calibration products for DECam.

Plans for the S20B cycle

- **Solar System**

- *Siegfried Eggl, Mario Juric, Joachim Moeyens.*
- Demonstrate end-to-end processing of a ~14 day long realistic test dataset through algorithmic prototypes of the solar system pipeline.
 - That is: linking, initial orbit determination & filtering, analysis of results.
 - Code is currently all prototypes; no integration with DM middleware, development practices, etc, yet.
- Then demonstrate round-tripping the results of the above to the MPC. Includes a hack-week visit to the MPC in ~May to get things working.
- (Finish RFC-620.)