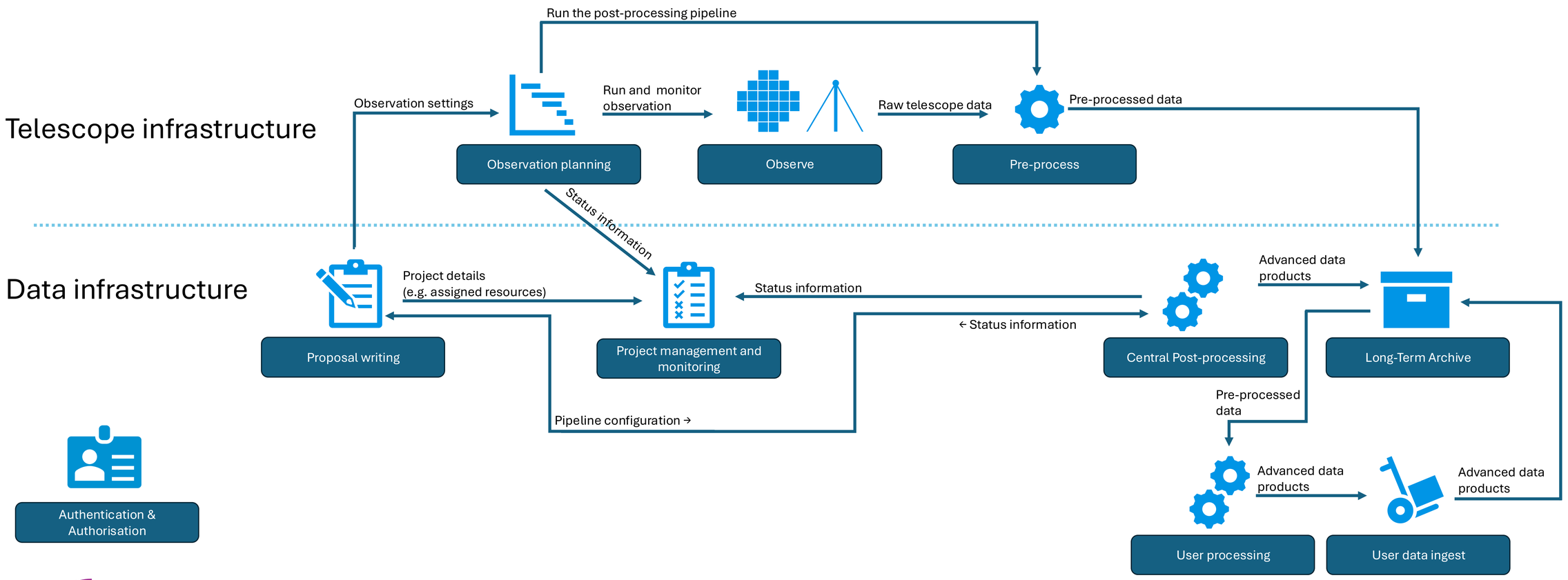
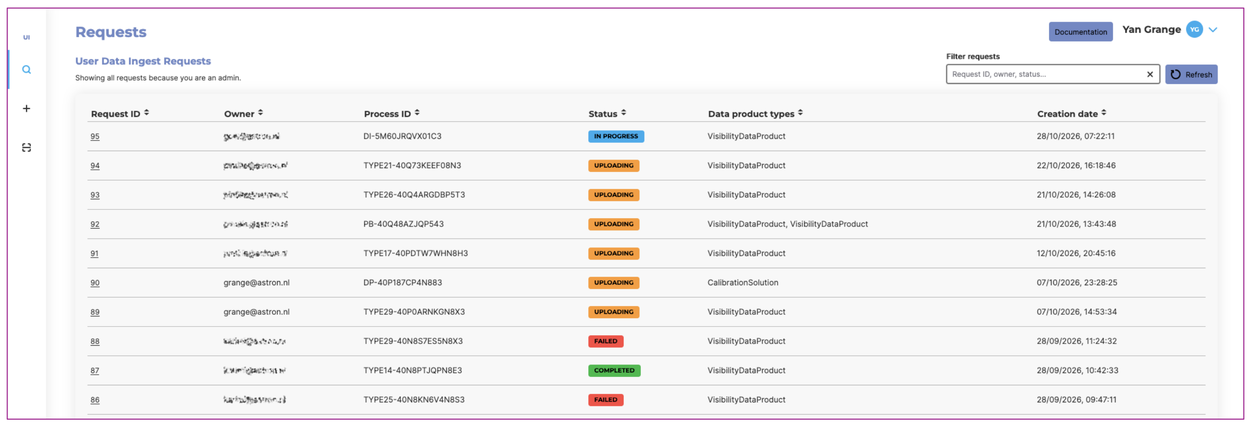
Towards a unified data infrastructure for LOFAR 2.0

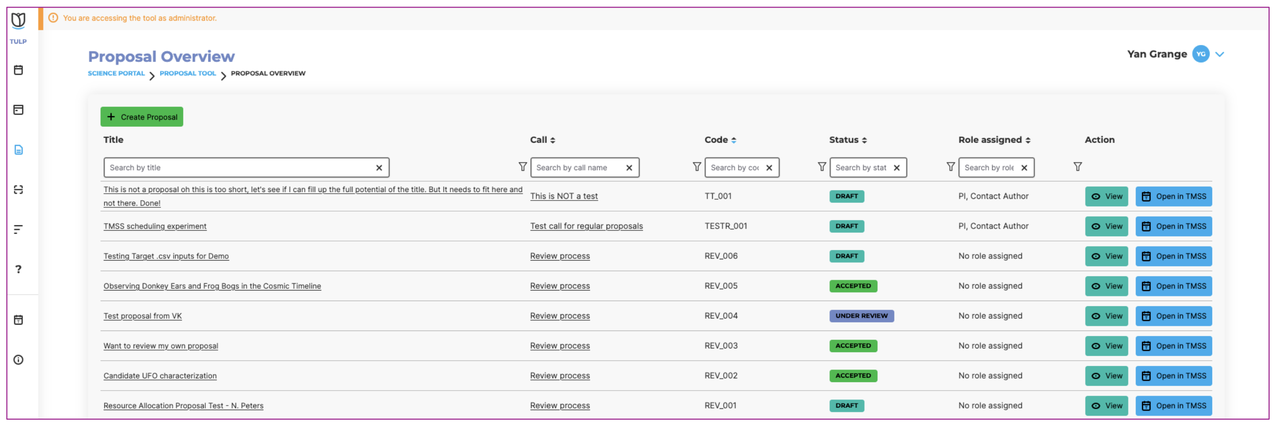
Y.G. Grange (ASTRON)

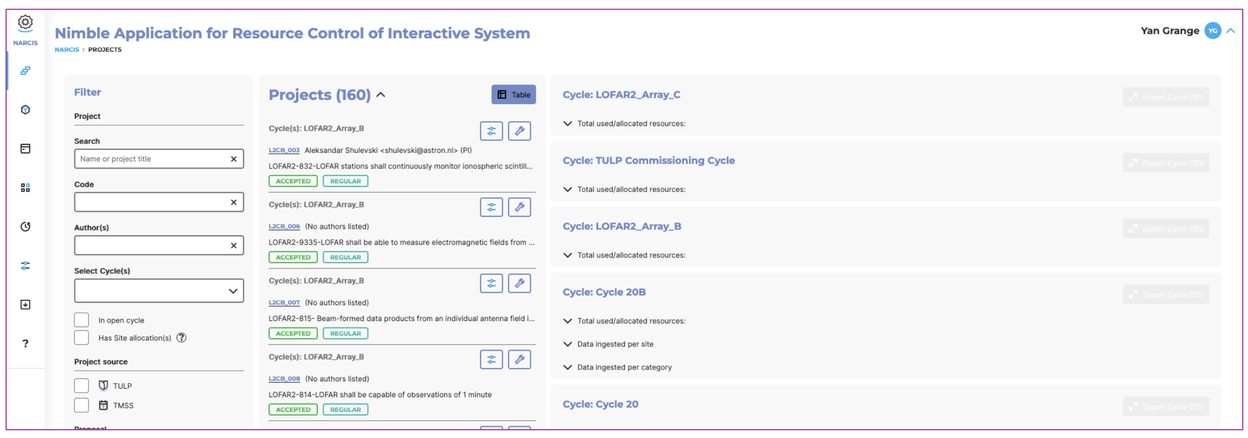


Schematic of the interconnection between the different services facing a LOFAR 2.0 user. Generally, the telescope infrastructure itself if only available to operational staff and system administrators. The data infrastructure offers a way for end users (who have written a proposal) to follow the status of their observations. The timeline, corresponding with the horizontal axis in this figure is as follows:

- A user starts by writing a proposal. When accepted, the proposal tool submits the observation details to the observation planning system of the telescope, which will set up the telescope so it can observe, followed by a pre-processing pipeline to be executed.
- When the pre-processing pipeline is done, the data is ingested into the Long-Term Archive (LTA), where a policy defines how long the data is being stored.
- The pre-processed data is used to generate advanced data products. This generation is generally executed by the central post-processing infrastructure, executing standard pipelines on observatory-managed compute systems. The output data is ingested into the LTA.
- Alternatively, expert user groups can perform processing on their infrastructure they own or using specialistic processing pipelines. Those expert users will then be able to ingest the data into the LTA using the user data ingest system.
- For end users, the data chain can be monitored by using the project management and monitoring tool, which exposes key information on all other components for projects whose proposal has been accepted.
- For access to any application, an external Authentication & Authorisation system (Surf Research Access Management), based on the EduGAIN federation is used, providing users access using their institutional credentials,.







The screenshot in the middle shows the design system, which is an application that gives developers access to each element shown on each page of each of our applications. For illustration we show the entry for badges. An element in the design system can be used in each application, so that wherever in any of our applications a component is shown, it looks and behaves the same. The screen shots surrounding the design system show examples of how the pages look in our applications, illustrating the use of this badge component. The top-left schreen shot shows the user data ingest, top-right is an image of the proposal tool. On the bottom, the project management and monitoring tool is shown.

Summary

We achieve integration between all components in the LOFAR 2.0 data chain by

- Applying common design patterns, using a design system, which gives our users a uniform look and feel
- Integration between applications through APIs provide users with clear acces points for information regarding different points in the system
- Administrators are provided with more in-depth access in every step of the chain

ASTRON
Netherlands Institute for Radio Astronomy