D3.5.1 Lasair Version 5

Phase C WP3.5 (S4) Lasair: the UK's community broker

Project Acronym	LUSC-C
Project Title	UK Involvement in the LSST: Phase C
Document Number	LUSC-C-01

Submission date	30/JUN/2023
Version	V1.0
Status	Final
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Dissemination level	
Public	

Version History

Version	Date	Comments, Changes, Status	Authors, contributors, reviewers
0.2	28/JUN/23	Content reformatted into LSST:UK technical report standard	T Sloan
1.0	12/SEP/23	Final version following Executive Group approval	T Sloan

Version History

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1 Executive Summary

This document is a cover note to accompany the LSST:UK Phase C deliverable D3.5.1 "Lasair Version 5" from the Phase C Workpackage WP3.5 "Lasair: the UK's community broker". D3.5.1 is a prototype of Lasair [1] but running on LSST simulated alert data supplied by the Vera C. Rubin Observatory. This prototype LSST alert broker is located at https://lasair-lsst-dev.lsst.ac.uk.

2 Introduction

Lasair-LSST will filter the great river of alerts, each user making and sharing their own custom filters for their science. Lasair users build filters from lightcurve features, from watchlists, and from contributed annotations by other users. There is a modern and attractive web interface with capable API, multinode resilient databases, comprehensive documentation, web-based monitoring, and automated cloud deployment. Results of filters can be utilised at the web page, and can be transmitted within minutes of the alert, by machine-friendly kafka or human-friendly email. The software engineering of Lasair is scalable and extensible, resilient to schema changes from Rubin and feature requests from users. We have implemented preliminary versions of the crucial lightcurve features, but real data and real users will inform future evolution.

3 Differences from Lasair-ZTF [1]

The schema of LSST alerts has many more components than the ZTF schema, and has a formal change system through a schema registry. Lasair-LSST has improved and automated handling of schema and schema evolution. The software for computing lightcurve features is much more modular and extensible, with comprehensive testing and debugging facilities.

4 Next steps

Before the flow of real alerts, Lasair's progress depends on several things that will be supplied by Rubin:

- simulated lightcurves accurate in both science and cadence
- near-final LSST schema and alerts that are built with them
- a simulated river of alerts at full flow
- definitions and implementations of the forced photometry and image fetching services
- A thin stream of alerts from commissioning

5 References

[1] Lasair Community Broker: https://lasair-ztf.lsst.ac.uk