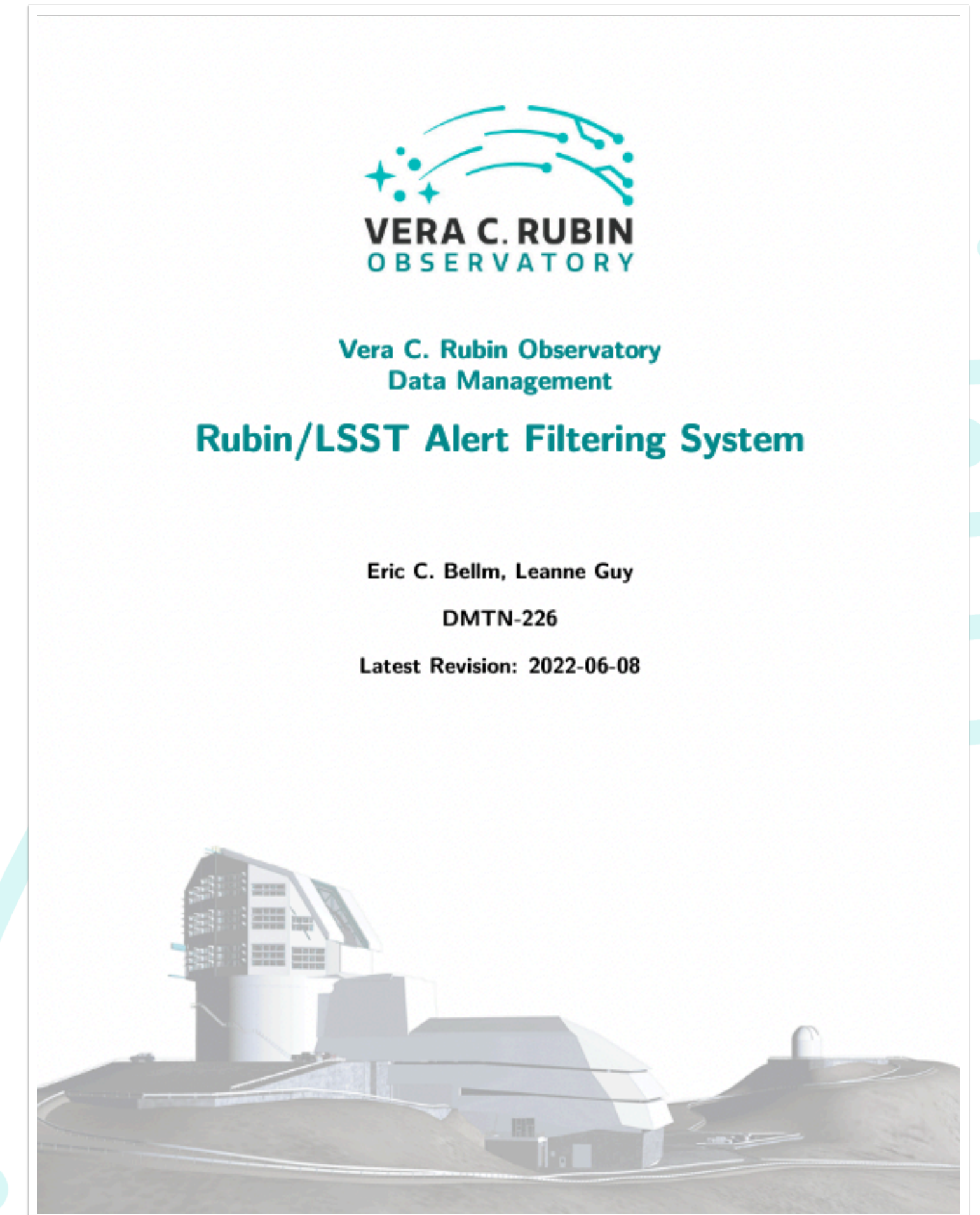# We are planning to partner with ANTARES on the functionality planned for the Alert Filtering Service.

The SRD recognized the need for user and pre-defined alert filters. The Rubin Alert Filtering System (AFS) was a stopgap if no community brokers became available--with nine operational brokers that concern is reduced. But brokers determine their services independently.

The ANTARES broker has a user filtering service which appears to meet Rubin requirements and operates within NOIRLab along with Rubin operations.

We are partnering with ANTARES to deliver the capabilities envisioned in the Rubin Alert Filtering Service & investigating the programmatic and technical implications.

Need to finalize the details with ANTARES this fall, LCR, and publicize to the community.

VERA C. RUBIN
O B S E R V A T O R Y

**Vera C. Rubin Observatory
Data Management**

Rubin/LSST Alert Filtering System

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DMTN-226
Latest Revision: 2022-06-08

dmtn-226.lsst.io

SRD

The users will have an option of a query-like pre-filtering of this data stream in order to select likely candidates for specific transient type. Users may also query the LSST science database at any time for additional information that may be useful, such as the properties of static objects that are positionally close to the candidate transients. Several pre-defined filters optimized for traditionally popular transients, such as supernovae and microlensed sources, will also be available, as well as the ability to add new pre-defined filters as the survey continues.

goal: no LCR changes needed.

LSR

LSR-REQ-0025 is currently broken--should flow down to DMS-REQ-0342, but current text is unrelated.

LCR should recover original text.

2.5.1.4.3.1.1 Predefined Transient Filters

ID: LSR-REQ-0026

Requirement: Pre-defined filters optimized for traditionally popular transients shall be made available. It shall be possible for the project to add new pre-defined filters as the survey progresses.

Discussion: The list of pre-defined filters, by way of example, should include ones for supernovae and microlensed sources.

no LCR change needed for ANTARES

DMSR

2.2.4 Alert Filtering Service

ID: DMS-REQ-0342 (Priority: 2)

Specification: A basic, limited capacity, alert filtering service shall be provided that can be given user defined filters to reduce the alert stream to manageable levels.

Derived from requirements:

LSR-REQ-0025: Transient Filtering

do these generic requirements need adjustment?
perhaps a question of what the scope of the DMSR is?

2.2.4.1 Pre-defined alert filters

ID: DMS-REQ-0348 (Priority: 2)

Specification: Users of the LSST Alert Filtering Service shall be able to use a predefined set of simple filters.

Discussion: See LSR-REQ-0026

DMSR

2.2.4.2 Performance Requirements for LSST Alert Filtering Service

ID: DMS-REQ-0343 (Priority: 2)

Specification: The LSST alert filtering service shall support **numBrokerUsers** simultaneous users with each user allocated a bandwidth capable of receiving the equivalent of

Discussion: The constraint on number of alerts is specified for the full VOEvent alert content, but could also be satisfied by all alerts being received with minimal alert content.

Description	Value	Unit	Name
Number of full-sized alerts that can be received per visit per user.	20	integer	numBrokerAlerts
Supported number of simultaneous users connected to the LSST alert filtering system.	100	integer	numBrokerUsers

these are quite low but I propose we do not increase them

Portal requirements (LDM-554)

2.9.5.1 Alert Subscription Service

ID: DMS-PRTL-REQ-0119

Specification: The Portal aspect shall provide an interface to the alert subscription service that allows authenticated users with LSST data rights to subscribe to a stream of alert events.

Discussion: This is just a UI for the underlying capability developed under 02C.03.03. Note that users without data rights will have to subscribe to alerts through brokers external to the LSST project.

ANTARES provides:
- query for filtered alerts: could imagine wrapping this in a Portal UI
- Kafka streams. user needs to install ANTARES library on their local machine

Not sure how to proceed here: both technical and strategic questions.

Portal requirements (LDM-554)

2.9.5.2 Pre-defined Alert Filters

ID: DMS-PRTL-REQ-0120

Specification: The Portal aspect shall provide an interface to permit alert subscriptions to be configured with Project-provided alert filters.

2.9.5.3 User-defined Alert Filters

ID: DMS-PRTL-REQ-0121

Specification: The Portal aspect shall provide an interface to permit alert subscriptions to be configured with user-defined alert filters.

2.9.5.4 Alert Subscription Monitoring

ID: DMS-PRTL-REQ-0127

Specification: The Portal aspect shall report feedback about the status and performance of a user's filters in the alert subscription service.

Discussion: This is a front end to information exposed by an API provided by the Simple Filtering Service, and is expected to encompass information such as filter status (enabled/disabled, error), statistics on the number of alerts seen and the number transmitted by the filter, and optional debugging log information.

same questions:
what would be technically required to satisfy them?
is it necessary or desirable?