



## Describing and finding VOEvent streams

D.Morris

LSST:UK  
University of Edinburgh

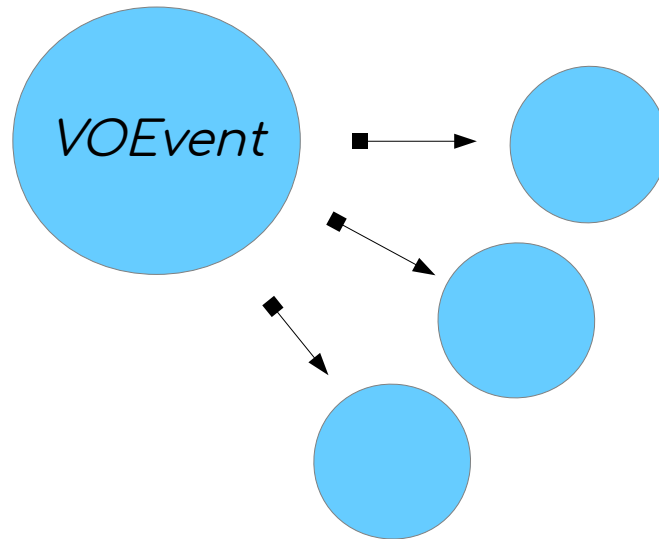
D.Morris  
Institute for Astronomy,  
Edinburgh University  
May 2019



IVOA interop meeting  
Observatoire de Paris, May 2019

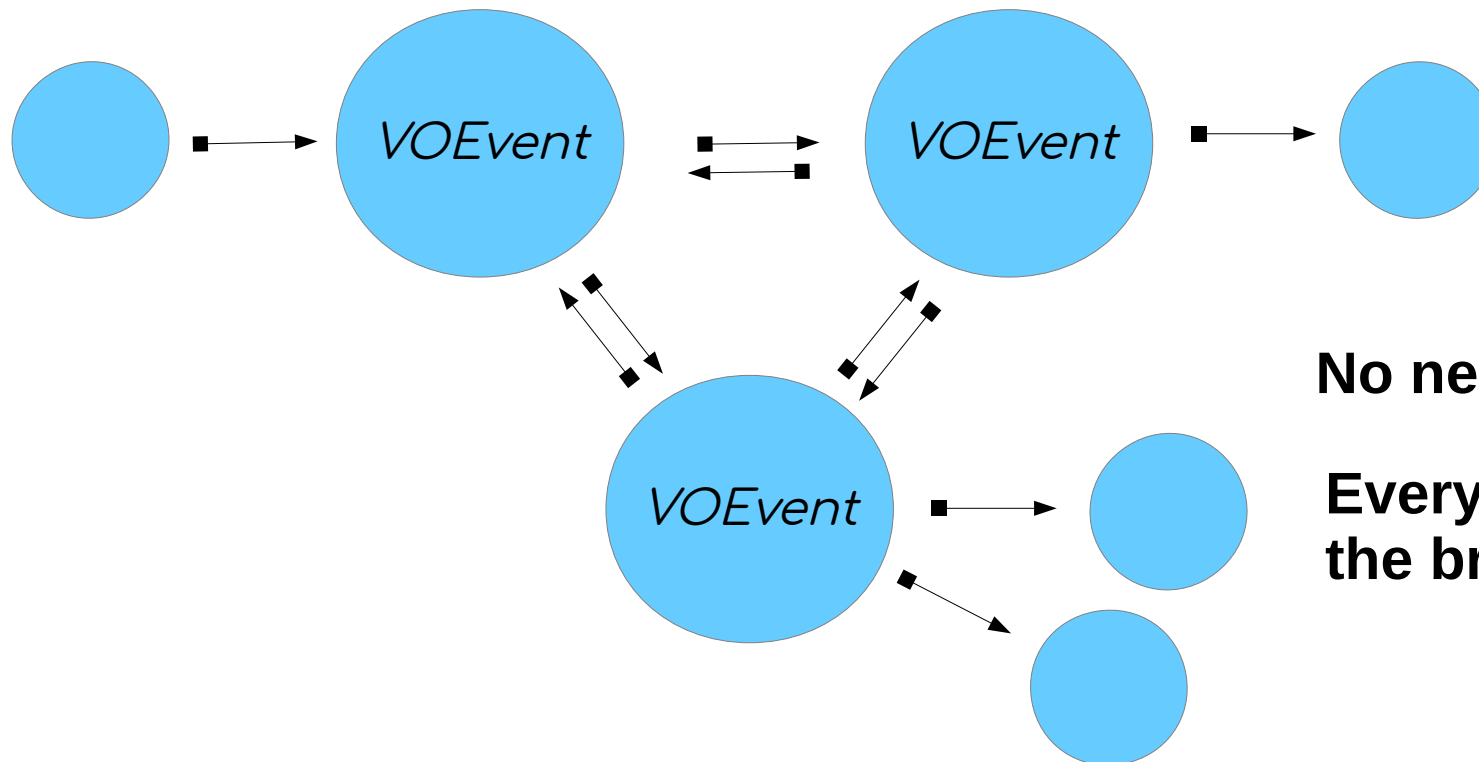
## Project specific event stream

## Project specific event types



**No need for discovery  
Everyone just knows  
the broker endpoint**

## Network of brokers broadcasting events

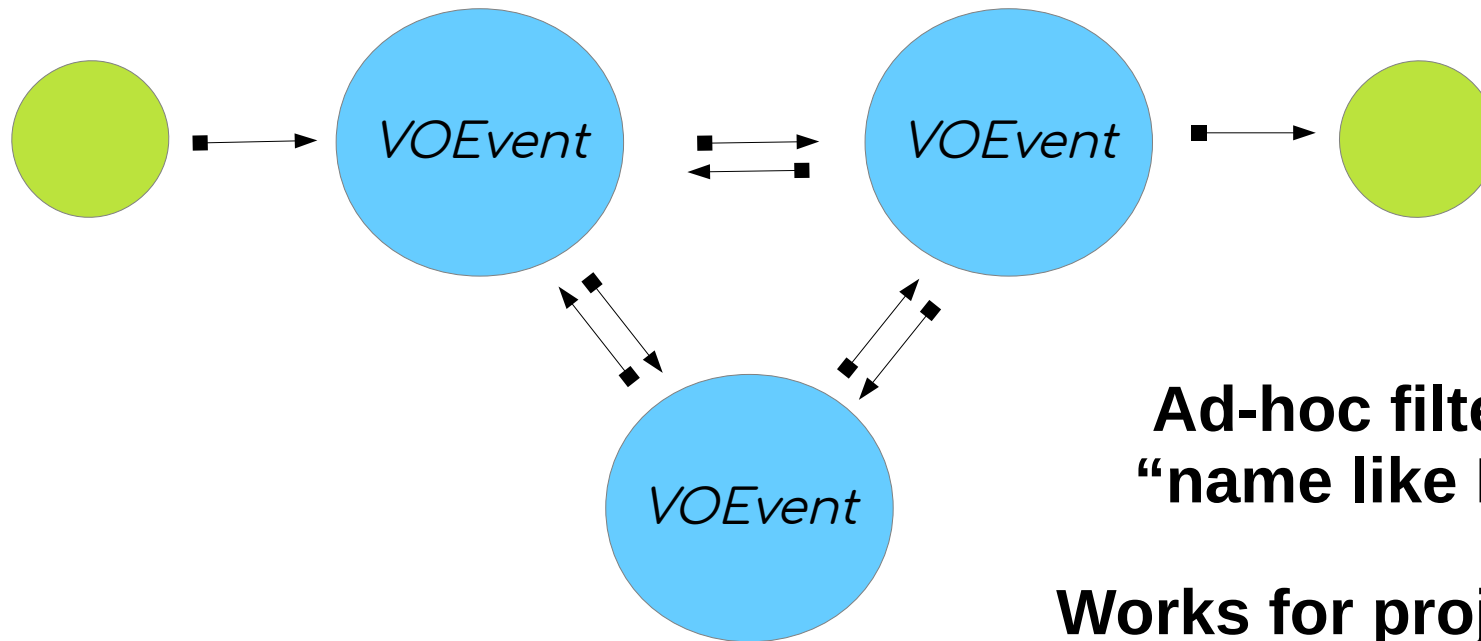


**No need for discovery**

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## Project specific event types

## VOEvent for Fast Radio Bursts arXiv:1710.08155v1 [astro-ph.IM]





## Where we are now



### VOEventRegExt:

## An XML Encoding Schema for Resource Metadata for Collections of Events

Version 1.0

IVOA Working Draft

13 May 2014

Is anyone using this ?





## VOEventRegExt:

**“... each VOEventStream has a defined set of named ‘parameters’, and each event that is a member of the stream should use only parameters that are selected from the list in the stream definition.”**

**Event type definitions :-)**

**Is anyone using this ?**





## VOEventRegExt:

**If a server supports a subscription capability with filtering, it means that a client can submit a criterion**

**("R magnitude brighter than 17")**

**and events will be delivered by the server in the future which satisfy that criteria.**

**\*\* As far as I know, filtering is not defined in any service standard.**





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**\*\* As far as I know, filtering is not defined in any service standard.**







## Going back to the community :

**Do you want to register and discover streams ?**

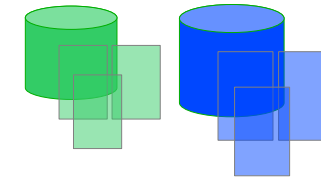
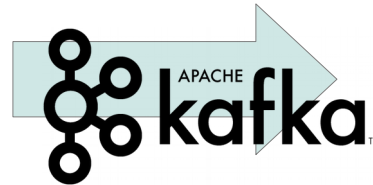
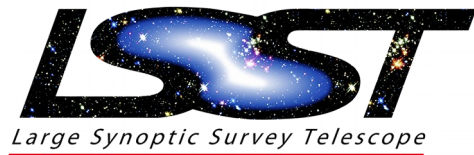
**“Kind of, but running a registry is too heavy for what we need.”**

**What do you use for the IVOID identifiers ?**

**“We just made something ourselves.”**

**\*\* lightweight ‘*registry in a container*’ would go along way to help solve this**





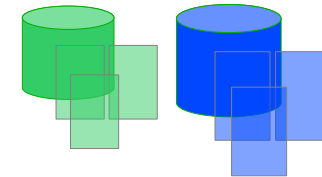
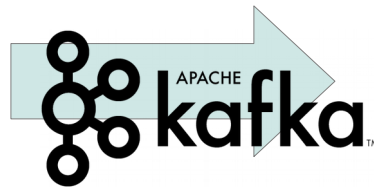
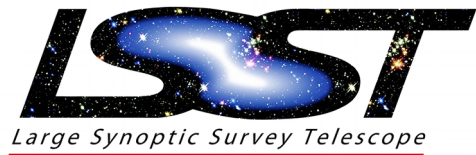
**High data rate ( $> 10^3$  Hz)**

**crossmatch  
characterization  
annotation  
filtering**

**High value, well characterized events  
e.g. 80% probability supernova candidate**

**Low data rate (10 per day ?)**



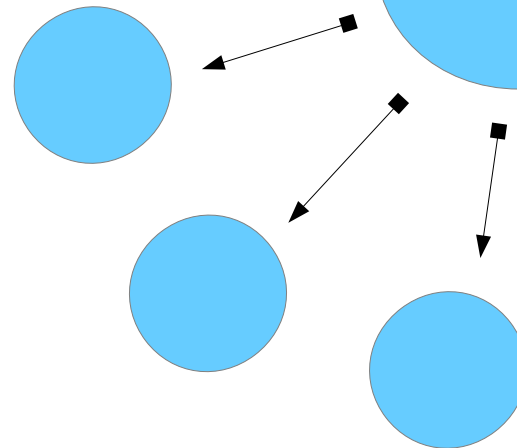


High data rate ( $> 10^3$  Hz)

crossmatch  
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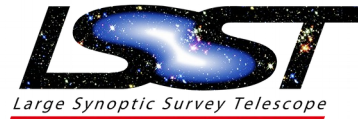


IVOA VOEvent  
format



Existing VOEvent  
community

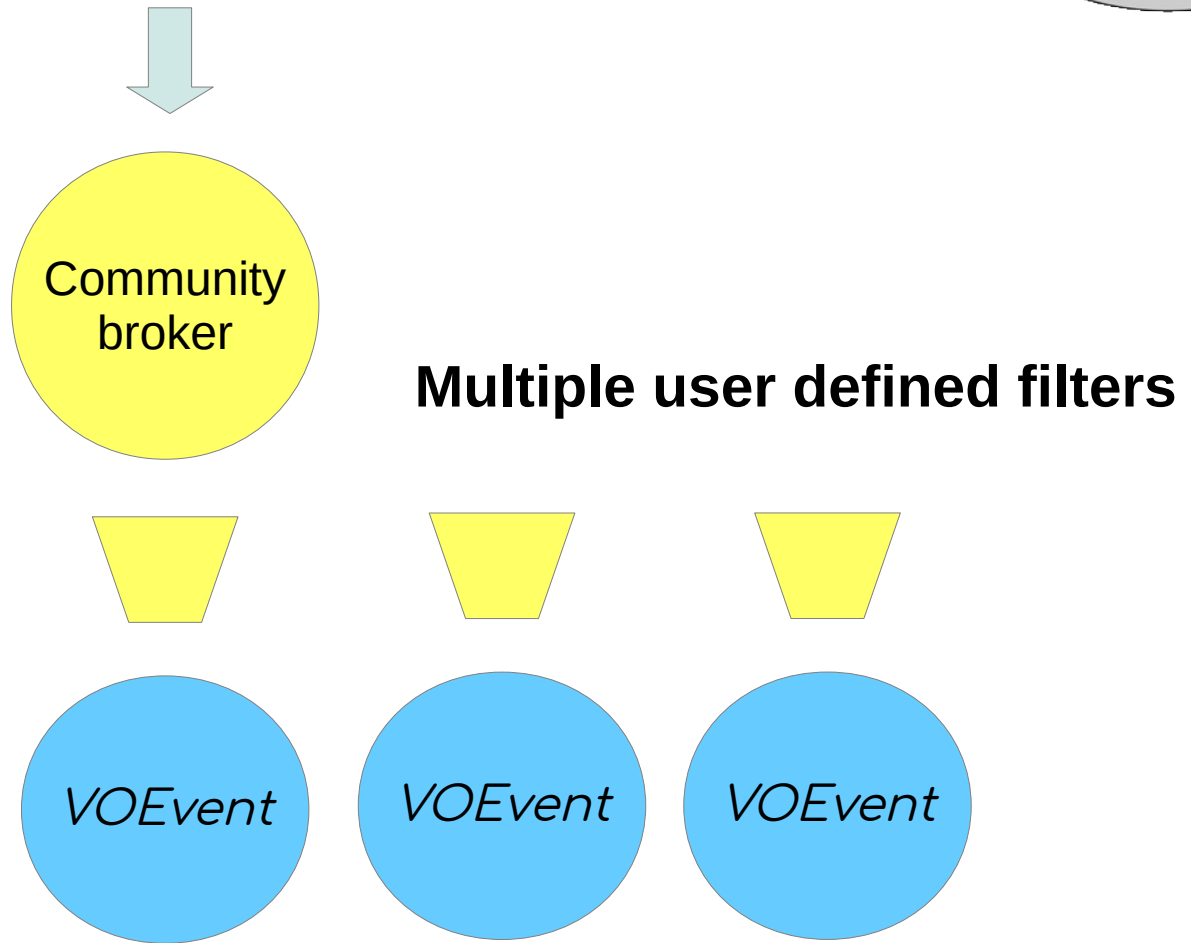




One community broker  
e.g. Lasair at Edinburgh

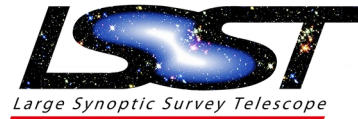
# Lasair

<https://lasair.roe.ac.uk/>

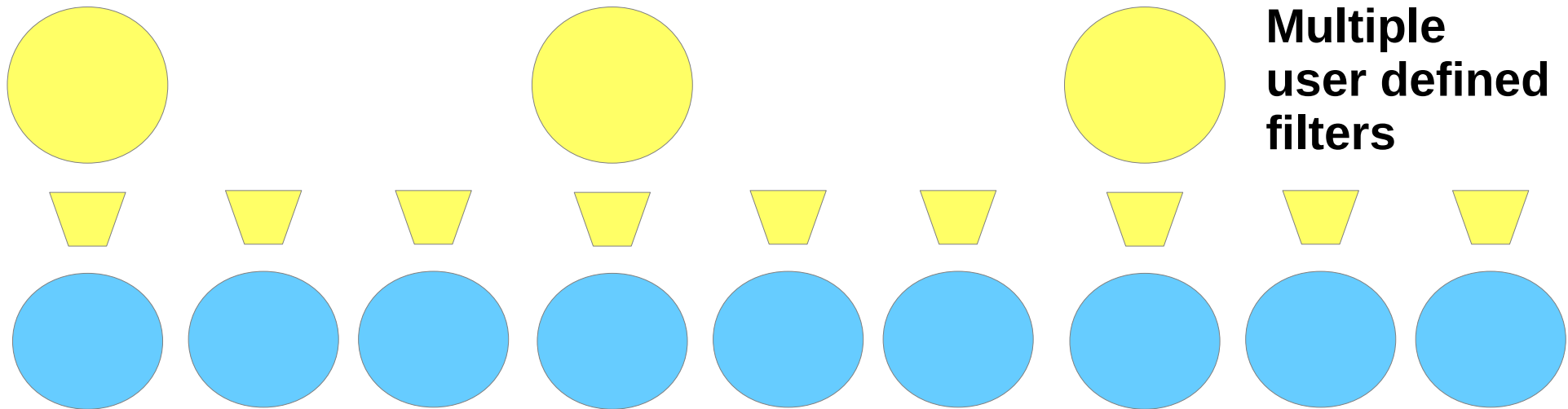


**Multiple streams of filtered data**





**Multiple community brokers (n ~ 5)**



**Multiple streams of filtered data**

**Broad spectrum of quality and accuracy**





**Going back to the community :**

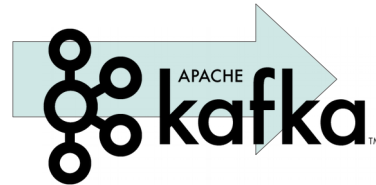
**Do you want to discover streams ?**

**Yes, I want to explore what is available.**

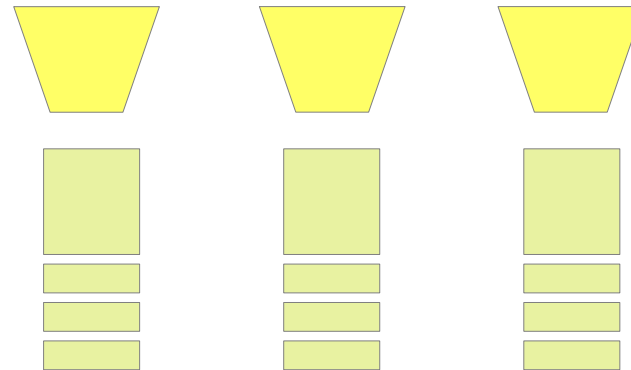
**No, users will learn where the important streams are from published papers.**

(\* we will still need to discover technical details like transport protocol, event type and properties.





## Multiple different filters



Each stream is a table with no end

Describe them the same way we describe tables



## Going back to the community :

How would you want to describe streams ?

Area of sky – footprint, MOC ?

Type of phenomenon – vocabulary (extensible) ?

Primary source (instrument)

Upstream source (another filter)

Processing algorithm

Probability of classification





**Going back to the community :**

**How would you want to describe streams ?**

**Area of sky – footprint, MOC ?**

**\*\* VOEvents use a range of different coordinate systems  
Do we just use ICRS ?**

**\*\* What about solar system objects ?**



**Going back to the community :**

**How would you want to describe streams ?**

**Type of phenomenon – extensible vocabulary ?**

**\*\* According to the arXiv, there are >50 types of FRBs**

[http://multi-messenger.asterics2020.eu/Documents/presentations/Hessels\\_Jason.pdf](http://multi-messenger.asterics2020.eu/Documents/presentations/Hessels_Jason.pdf)

**Can semantics help us with this ?**

**Some event streams are about things with no name (or many names) that we don't quite understand yet.**



**Thanks**

**VOEvent mailing list  
voevent@ivoa.net**

**Dave Morris  
dmr@roe.ac.uk**

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