VOEvent

Diamonds and firehose

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LSST - the fire hose

LSST's own slides describe it as drinking from the firehose.

Estimates vary, but everyone agrees it will be a lot bigger than anything we have seen before.

Asking the server to replay the last 10 minutes because you might have missed one is not an option.

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Obligatory drinking from firehose images.

LSST - the fire hose

Acknowledging every individual event is probably not an option.

Event sources will need to be 'robust' with slow or unresponsive clients.

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LIGO – the diamonds

Estimates vary, but they seem to be fairly rare.

Each one has the potential for a major discovery.

A replay facility would be extremely useful.

Missing **the one** event because your broker was offline for a few minutes could ruin your whole week.

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LIGO – the diamonds

Guaranteed delivery means every event needs acknowledging.

Event sources will need to be tolerant of slow or unresponsive clients.

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Is this one protocol ?

LSST and LIGO represent the extremes.

What about the cases in between.

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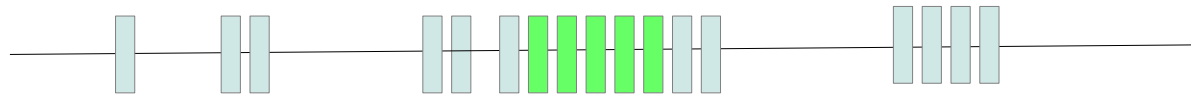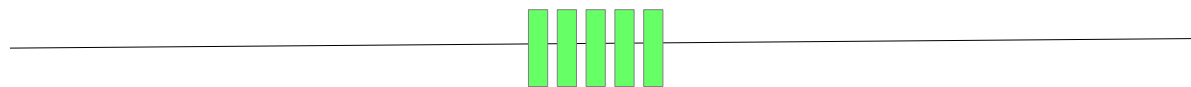## LSST filter

A LSST broker that filters out 80% of the events, and only passes the interesting ones.

LSST events themselves are likely to be unevenly distributed across the sky. With busy and quiet periods for the even stream.

If the interesting events occur during a busy period, then the filtered stream is likely to amplify the non-uniformity.

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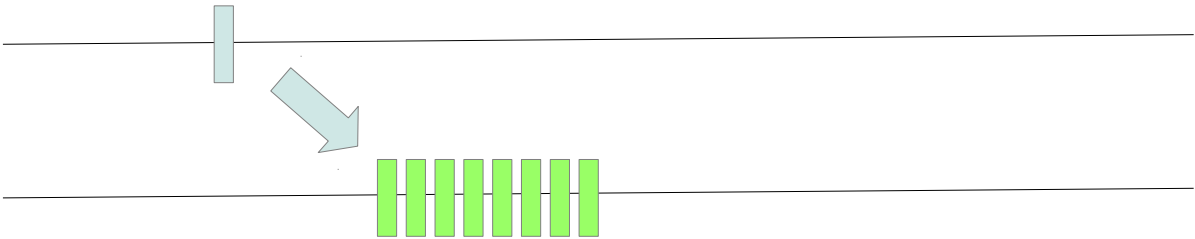Edinburgh University
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LIGO follow up

A broker that listens to the LIGO stream and generates a burst of 10,000 alerts for follow up observations for each LIGO event.
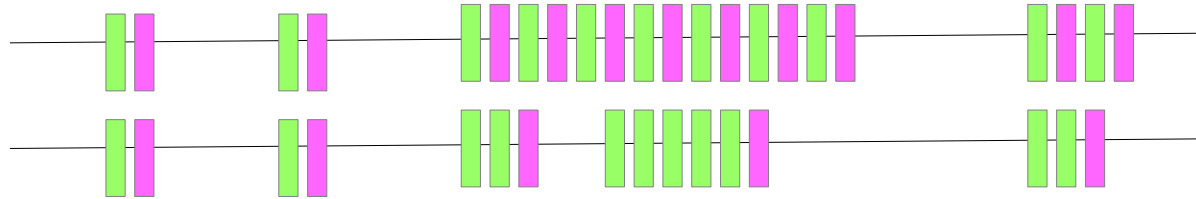
The result is a bursty stream, with long periods of quiet followed by short periods of very intense activity.

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Sending blocks of events

Allow events to be sent and acknowledged
in blocks.

During busy periods, the block size grows, reducing the
overhead of acknowledging every event individually.

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Limiting the replay facility

Limit the replay facility during busy periods.

Allowing the server to respond to replay requests with a 'busy' response during busy periods.

If the event rate rises, the server may only offer a limited replay facility, only replaying a small number of very recent events.

If the event rate drops, the server may provide a more extensive replay facility providing access to a larger number of historical events.

BUSY
TRY AGAIN
LATER

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Adding elasticity

elasticity

noun

1. the ability of an object or material to resume its normal shape after being stretched or compressed;

synonyms: stretchiness, flexibility, pliancy, suppleness, rubberiness, plasticity, resilience, springiness;

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