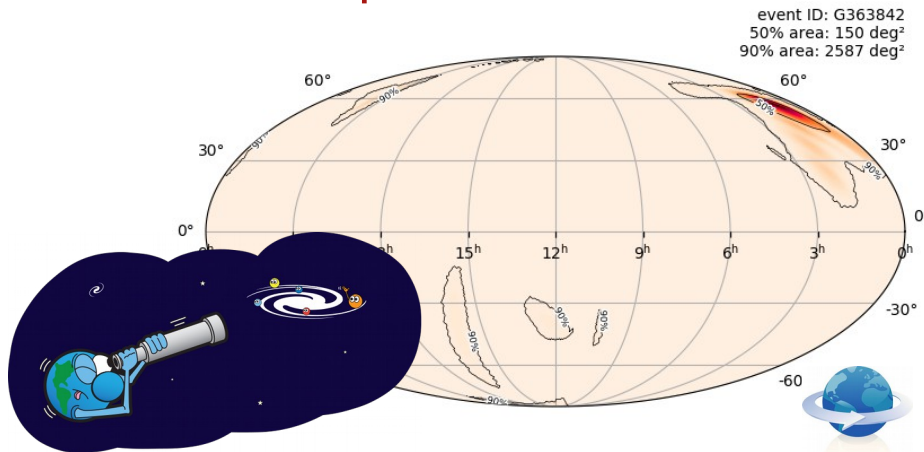


Worldwide service for parametric transient localization using open GW data for multi-messenger community

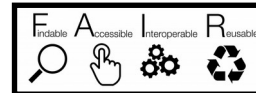
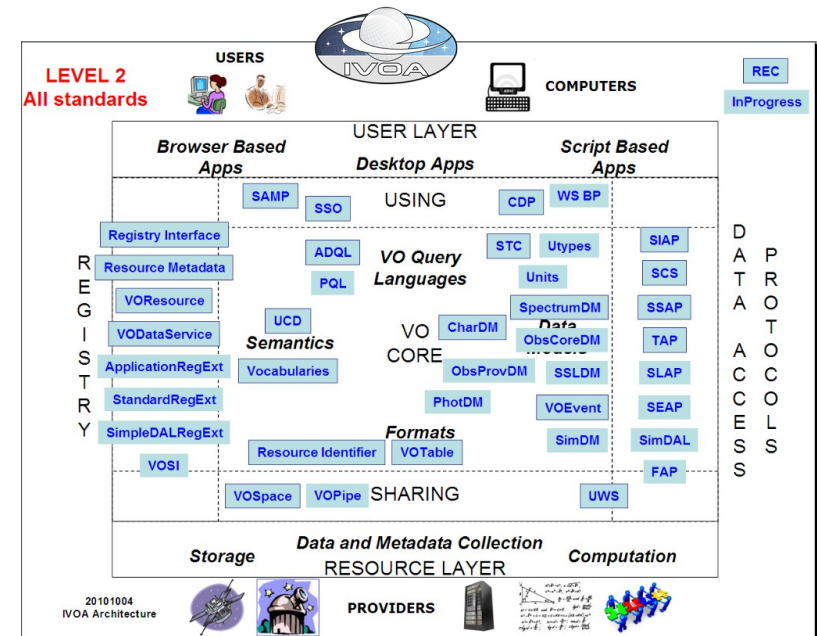
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Service concept



The service provides a parametrised intersection of the skymap with the sky area visible from an observatory of interest as Multi-Order Coverage (MOC) map.

Environment



ET case

- average rate ~1,8 event/min alerts number should rarely exceed 6 events/min
- given the anticipated merger alert, we can assume $\gg 10$ updates per event
- how many updates per event we can expect?

Worse case prediction: 32 updates/min
(assuming 10 updates per event)

Worse case prediction: 250 updates/min
(assuming 100 updates per event)



Public

Clients:

- automatic users/scripts
- higher level services e.g.:
 - customized alert channel
 - RSS feed
 - ET sky monitoring
- website interface

advanced

non expert



~50 active groups performing MM
counterpart search

Server load analysis

MOC generation from HEALPix skymap

- has to be calculated after GCN for each level credibility requested
- average computation time 175ms
- can be stored and reused

Intersection between MOCs

- must be computed for each request
- this computation lasts ~1,6ms

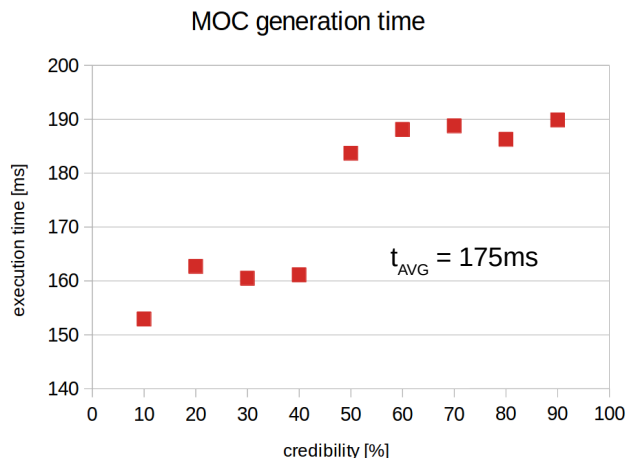
*timing analysis were performed on the same machine

Server throughput

Single core server performance

- HEALPix2MOC conversion 5,7 operations/s
- MOC intersection 625 operations/s
- MOC area calculation 370 operations/s

Web server is not a bottleneck (may handle >100k connections/s)



Implementation sketch

