Software tools to enhance alert-based science

The TOM Toolkit

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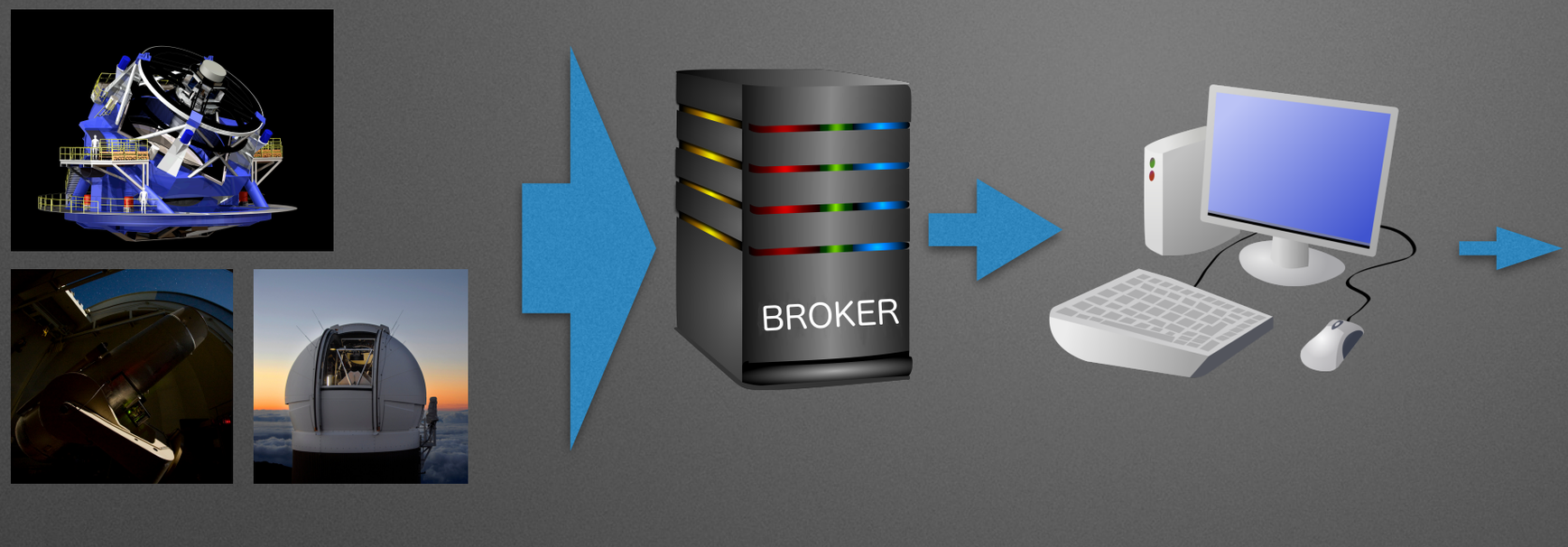
Deriving Science from Survey Streams



- Extremely large target lists
- May or may not be known in advance
- Rapid alerts open up new science
- Rapidly changing priorities
- Large-scale follow-up for confirmation/characterization
- Large datasets
- Rapid feedback & re-evaluation

Deriving Science from Survey Streams

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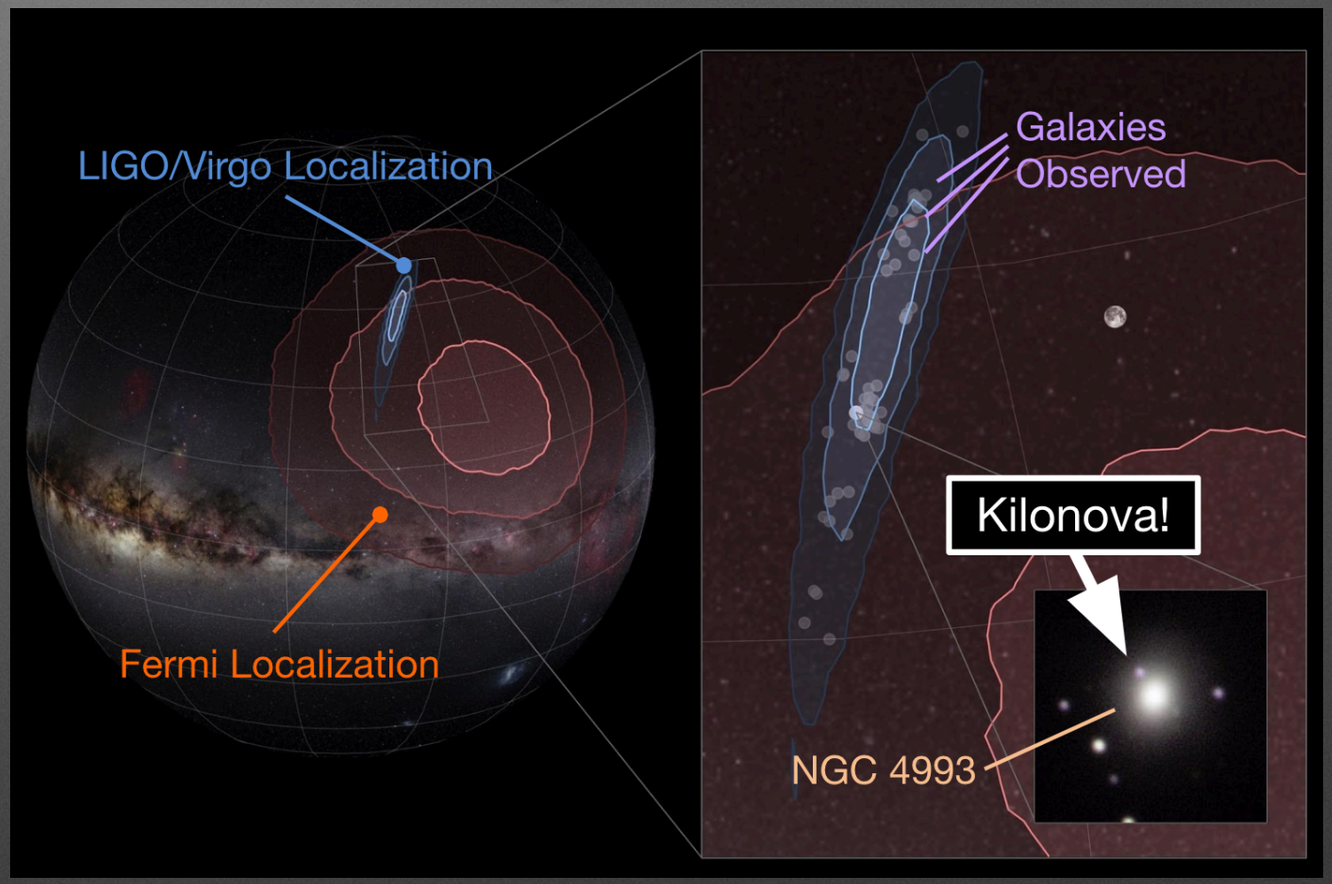
GW170817, Abbott et al. 2017



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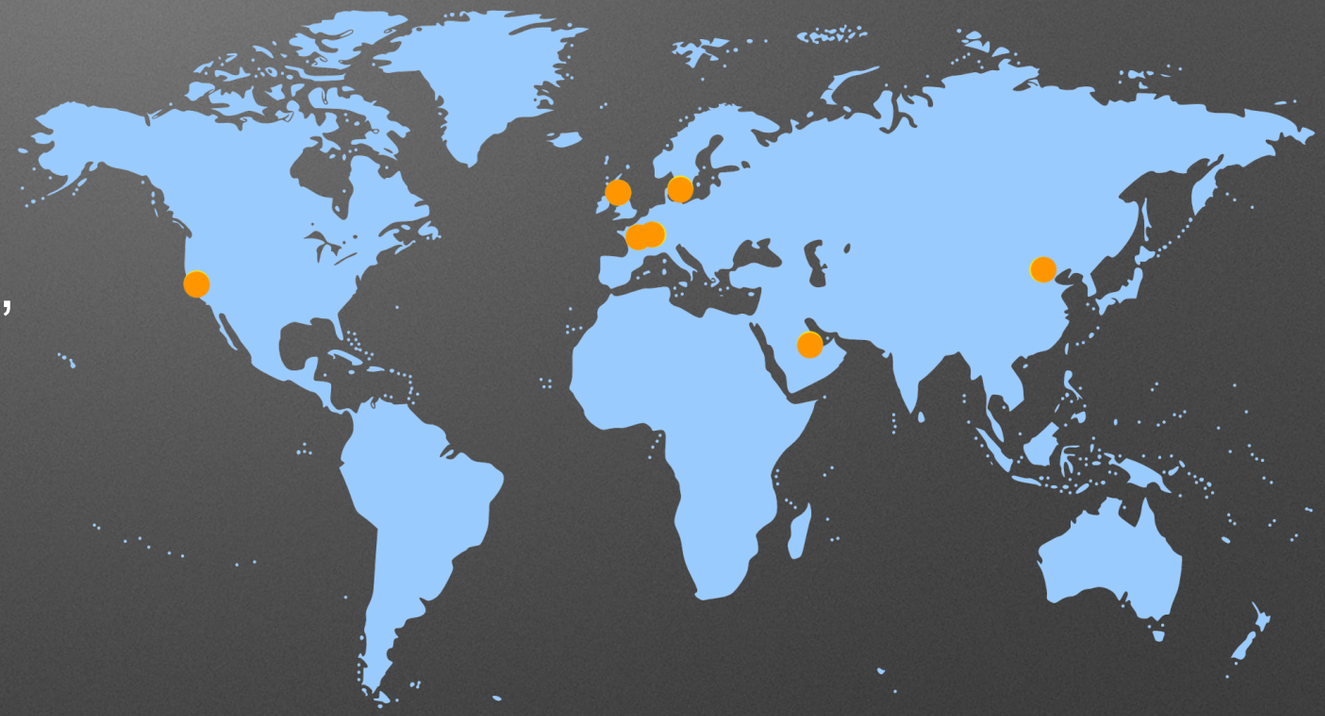
- Accessible to project members worldwide



Target and Observation Manager Systems

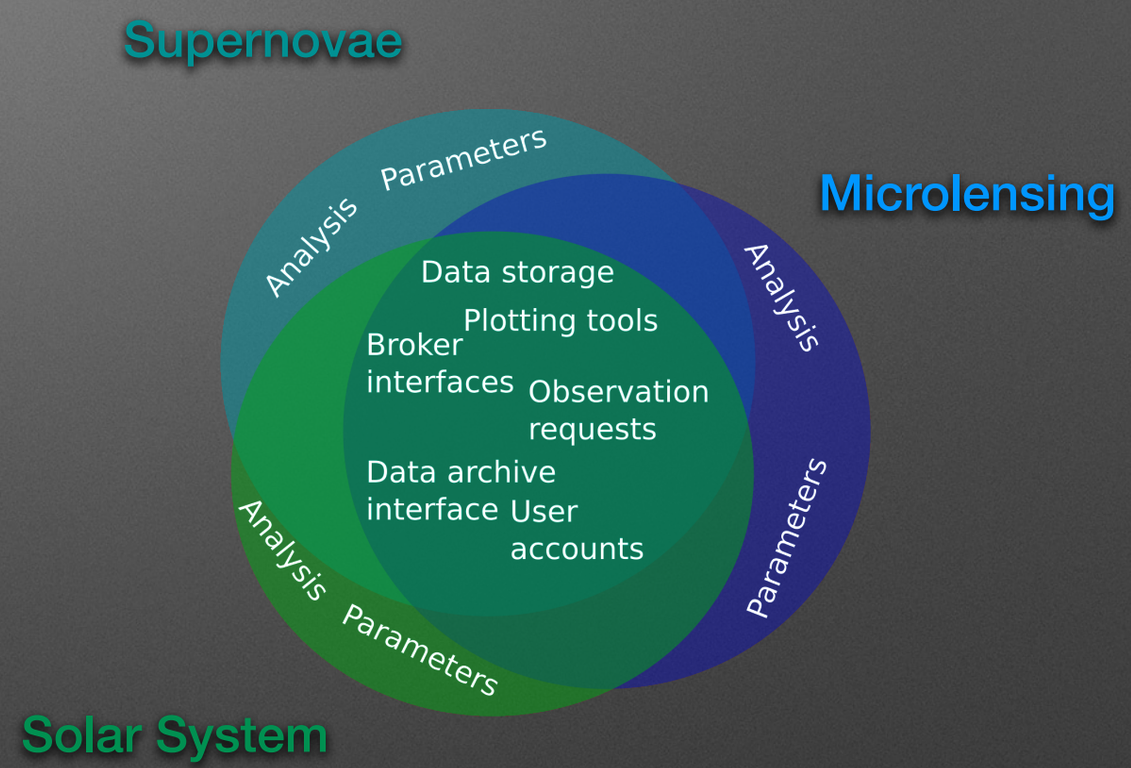
Database-driven software to manage the targets, observations and data products from an astronomical project

TOM

LCO

Challenges of developing a TOM

- Areas of common functionality
- Different science have different requirements
- Even adapting existing code requires extensive investment of time and effort and hence cost
- Advanced database/ software engineering skills not available to most astronomers



TOM Toolkit

https://github.com/TOMToolkit

- Build an open-source, professionally developed, software package that will enable astronomers to build TOM systems easily and customize them for their science goals
  - Python-based
  - Minimal prior knowledge required
- Provide large set of core functions for commonly-used components
- Provide well-defined interfaces to allow science-specific code to interact with the TOM
- Create a community of TOM users who can support each other and develop plugins
- TOM Toolkit public Slack channel - to join, go to: https://tom-toolkit-invite.lco.global/

Street et al., 2018, SPIE, 10707, 11.