

# Common Requirements

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# More complex searches

- “Not just RA/DEC”.
- Searches on “derived quantities” - coordinate transformations, distances between things etc...
- Searches across “science domains” e.g. STP-Solar and EM-GW
- Searches within the data (not just on meta-data)
- Other query languages for other domains

# Virtual Data Analysis Centres

- Really are moving towards “ship the job not the data”  
- SKA, GW, SDO, LSST etc...
- Driven by genuinely huge data rates now anticipated.
- Global Sky Maps, **Data Cubes**
- Ways for “young bright people” to play with the RAW data
- Analysis not data taking is the key activity
- Importance of archival research
- Could enable a UK lead
- Integration within software people really use  
(SolarSoft IDL etc...)

# Common Tools

- **Intelligent**, multi-wavelength cross-matching
- Services for creating simulations, adding artificial sources for multiple datasets etc.
- Quality assessment tests
- Support for the people writing such tools to integrate with VO both in terms of providing general access and getting data into the tools

# Support for Urgent Events & Quicklook Analysis

- Need fast reaction triggers and announcements between high energy, optical, neutrinos, Grav Waves (is VOEvent sufficient?)
- Fast data reduction and distribution
  - Not just positions but light-curves, spectra etc.
  - Refinement and evolution as event progresses
  - Rapid access to “contextual” data from other facilities
- Adaptive data taking

# Other issues

- What can it add for my users (rather than the world at large) if my data is in the VO?
- Authorization/authentication worries
  - Mixes of public and private data in single database
  - Single sign on for authorization
  - Support for groups and collaborations
- Technologies need a future (and to be stable)
- Technologies need to be here now.
- The cost-benefits have to be obvious.