



VIRTUAL ASTRONOMICAL OBSERVATORY

# SEAP

Matthew J. Graham, Caltech



The VAO is operated by the VAO, LLC.



# Background

- Presented initial version IVOA Baltimore
- Released SEAP v0.4 (Int. WD) 27 Feb 2009
- Discussion at HTU II in May 2009
- New version Oct/Nov 2009
- Implementations 2010



# Users want to query on

- spatial position with search box/radius
  - all events with 0.2 deg of RA =120, Dec = -34
- temporal range
  - all events within the last 24 hours
- IVORN
  - the event `ivo://nvo.caltech/voeventnet/catot#12345678912346789`
- origin
  - all events from Rob Seaman
- citation
  - all events that cite/are cited by a particular IVORN
- what was measured
  - all events with `v_mag < 16`
- how it was measured
  - all events using the Dark Energy Camera
- concepts
  - all events identified as WZ Sge dwarf novae



# Keywords

- Response format:
  - **response.content** (string)
    - Values: ivorn, full, custom, kml, csv (default: ivorn)
- Spatial position:
  - **pos** (pos range)
  - **size** (pos range)
- Temporal:
  - **time** (time range)
- IVORN:
  - **ivorn** (IVORN)
  - **stream** (IVORN)
- Origin:
  - **authorivorn** (IVORN)
  - **contactname** (string)
- Citation:
  - **citation.cited** (boolean)
  - **citation.role** (string)
    - Values: followup, supersedes, citation, test
- What:
  - **param** (param range)
- How:
  - **how** (string)
- Concept:
  - **concept** (string)



# Specifying constraints and ranges

- Follow IVOA PQL syntax
- Positional range:
  - `seap:pos = minval1/maxval1,minval2/maxval2;coordsys`
    - `seap:pos=240/250,50/60;GALACTIC`
- Temporal range:
  - `seap:time = minval/maxval;keyword`
    - `seap:time=/"2009-10-15T00:00:00Z";"pubtime"`
- Parametric range:
  - `seap:param = "name",minval/maxval;"unit"`
    - `seap:param="Src1.flux",18/20;"mJy"`
    - Note: data types
- Constraint negation:
  - `seap:pos=!120/140,`
- Multiple constraints applied in conjunction



# Registering SEAP services

- SimpleEventAccess resource extension
  - SEAPCapRestriction
    - sets standardID to ivo://ivoa.net/std/VOEventSEAP
  - SimpleEventAccess
    - defines capability
  - RegionSize
    - specifies maximum extents along spatial and temporal axes
  - Query
    - details test query to a SEAP service



# Example registry entry

```
<Resource xsi:type="voe:VOEventServer" ... >
...
<capability xsi:type="voe:SimpleEventAccess" standardID="ivo://ivoa.net/std/
  VOEventSEAP">
  <interface xsi:type="vs:ParamHTTP" role="std">
    <accessURL use="base">http://nvo.caltech.edu/voeventnet/seap</accessURL>
  </interface>
  <maxQueryRegionSize>
    <long>360.0</long>
    <lat>180.0</lat>
    <time>86400</time>
  </maxQueryRegionSize>
  <maxRecords>100</maxRecords>
  <testQuery>
    <seap:pos>120/130,15/20</seap:pos>
    <seap:param>"mag1",18/20</seap:param>
  </testQuery>
</capability>
...
</Resource>
```