

VOEvent and UCDS

Usage of UCDs

- The primary goal of UCDs is to provide the semantic meaning of a quantity, with some **reasonable** level of detail
 - "the ucd attribute supplies a standardized classification of the physical quantity expressed in the column" – VOTable IVOA Rec 2004-08-11
- This allows to build **generic XML schemas**, and to externalize the semantic description definition



UCDs in VOTable

- <http://www.ivoa.net/xml/VOTable/VOTable-1.1.xsd>
- In VOTable 1.1 schema, there is a **ucd** attribute, allowed in:
 - <TABLE>, <PARAM>, <FIELD>, <GROUP>
- These elements get "semantically typed" with UCDs (instead of attempting to predefine every possible measurements (and defining <flux>, <right_ascension>, ... elements))
- Allows both **interoperability**, and **flexibility** (no need to update schema when new words are created)



UCDs for VOEvent

- **<WHAT>**
 - Description of what was measured
 - Use of <GROUP> and <PARAM>, close to VOTable : flexibility (no restrictions)
 - Current UCDs well suited for this (one UCD describes what one PARAM is) : standardized expression of natural language explanation of what the param is
 - Dedicated VOEvent applications could define specific requirements on some expected UCDs without breaking the global view (inclusion into registries, etc...)



<WHAT>

```
- <What>  
  - <Group>  
    <Param name="magnitude" ucd="phot.mag:em.opt.R" value="13.2"/>  
    <Param name="error" ucd="phot.mag:stat.error" value="0.1"/>  
  </Group>  
  <Param name="seeing" ucd="instr.obsty.site.seeing" value="2" units="arcsec"/>  
</What>
```

UCDs for VOEvent

- **<Hypothesis>**

- A bit more tricky !
- The content of this element is structured, and the correspondance between some existing UCDs and these sub-elements can be done:

```
- <Hypothesis>  
- <Classification probability="30" units="percent" type="ot">  
  Fast Orphan Optical Transient  
</Classification>  
<Identification type="associated"> NGC1234 </Identification>  
</Hypothesis>
```

src.class

meta.id.assoc

<Hypothesis>

- What is desired here is an extension to the UCD vocabulary to not only describe quantities, but **standardize the writing of enumerated values of some parameters**:
 - `ucd="src.class" value="Neutron star"`
 - `ucd="src.class" value="Seyfert 2"`
 - `ucd="src.class" value="F3 dwarf star"`
- **Do we distinguish ?**
 - astronomical object types (e.g. above 'values')
 - phenomenon (eclipse, flare...)



Standard vocabulary ?

- ... or enumerated list of possible Events?
- For object types, look at:
 - journal keywords
 - IAU thesaurus
 - SIMBAD object types
- Decide what level of granularity is wanted
- Use ontologies??? (see VOTech DS5)



<Hypothesis>

I want to report a suspected supernova explosion in NGC 1234

```
<Hypothesis>
  <PARAM ucd="src.class"
    value="SN Ia" />
  <PARAM
    ucd="obs.phenomenon"
    value="Explosion" />
  <PARAM ucd="stat.prob"
    value="80" />
  <PARAM
    ucd="src.id.parent"
    value="NGC 1234" />
</Hypothesis>
```

```
<Hypothesis probability="80">
  <Classification>
    <Class>astro.SNIa</Class>
    <Identity>NGC 1234 </Identity>
  </Classification>
</Hypothesis>
```

```
<Hypothesis probability="80">
  <Class
    utype="iau_objtype:star.SN.Ia"/>
  <Identity>NGC 1234 </Identity>
</Hypothesis>
```

Discussion...