## **VOUnits**

Joint applications / semantics
IVOA meeting
Champaign, Urbana, 2012 May 21



### **Outline**

- Units 1.0 document
- Feedback
- Unity library
- Changes and PR



#### Units 1.0 document

- Working Draft 2011 December 16
- Major rework of previous versions
- Structure of the document :
  - Introduction & Scope
  - Current use of units in astronomy
  - Proposal for VOUnits
  - Use cases and applications



## **VOUnits goals and definitions**

- VOUnits deal with unit labels (not plain text or typography)
- Base symbols (m), prefixes (k), symbols (km), mathematical operators
- Do not reinvent the wheel, ensure maximum compatibility & least surprise
- Do not prescribe mandatory units for quantities



### **Current use**

- IAU 1989 : SI-flavoured typography for publications
- NASA OGIP FITS files
- Standards for astronomical catalogues (used at CDS)
- FITS 2010 specification
- + few others



## **Proposal & applications**

- 8 pages of systematic comparisons of the major specifications
- Make everything explicit
  - charset, case-sensitivity
  - base symbols
  - prefixes
  - math combinations
- tl;dr: use FITS 2010 specification



#### Feedback received

Wiki page opened for dicussing a few points

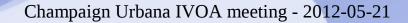
http://www.ivoa.net/cgi-bin/twiki/bin/view/IVOA/DiscussionOnVOUnits

- Only Markus Demleitner & Norman Gray...
- Use FITS 2010 specification with clarifications (grammar) & minor adjustements



# Points discussed and differences with FITS 2010

- Electric resistance
  - ohm (OGIP) and/or Ohm (StdCats&FITS)
  - do we even care? (never used in 300.000 columns)
  - suggestion : use only «Ohm »
  - OGIP StdCats FITS
- Micro-arcseconds
  - mas is a lost cause (IAU recommends nrad 1nrad~0.2mas)
  - Do we use uas, prad, uarcsec?
  - uarcsec : OGIP StdCats FITS



# Points discussed and differences with FITS 2010

- OK to not include deprecated symbols: dyn, cal, bar, atm, Gal, eotvos, gamma, oersted
- More than one solidus ? « km/s/Mpc »
  - IAU forbids it
  - OGIP, StdCats, FITS discourage
  - Grammar: allowed or forbidden
- No unit : empty string (rather than --- or blanks)
- Unknown: ? or empty string



## **Unity library**

- https://bitbucket.org/nxg/unity
- Tokenize, parse, validate unit labels
- Make formal grammar used explicit



## Moving to PR

- New document, with a few modifications and clarifications
- Distribute, 2 weeks discussion and then PR
- Add annex with explicit list of differences for OGIP, cat stds, FITS 2010 wrt VOUnits
  - not normative, but informative for implementation

