

**Brief report on**

**AstroInformatics &  
Astrosemanantics 2012**

***IVOA interoperability meeting  
Sao Paulo 2012 October 25***

# AstroInformatics 2012

- <http://www.astro.caltech.edu/ai12>
- Hosted by MS Research

A horizontal banner with a black background. On the left is a glowing spiral galaxy. The center features the text 'AstroInformatics2012' in a large, yellow, serif font. Below this text is 'Redmond, WA, September 10 - 14, 2012' in a smaller, white, sans-serif font. On the right is a stylized white and blue graphic of a star or nebula. The background of the banner is filled with a pattern of binary code (0s and 1s) in a light blue color.

**AstroInformatics2012**

Redmond, WA, September 10 - 14, 2012

# Big Data

- MS SQL Azure Labs
- MapReduce algorithms
- MS (& Amazon) cloud & datacenters
- Globus Online : moving large data volumes
- SkyTree
- CANFAR at CADC

# Future technologies

- GPUs for floating point operations
- SSD for random I/O access
- Hadoop, NoSQL, sciDB
- Make use of Moore & Kryder's laws

# From VO to AI

- Data discovery in the VO more or less achieved
- Need for scalability
- Astronomers must get involved

# SDSS success story

- SkyServer usage
- 194 million SQL queries in 10 years
- Usage in other domains
  - Pan Starrs
  - JHU Onco Space
- MyDB for data publication

# Immersive multi-dim visu

- **Macroscope**
- **Asymptomia = leap motion + oculus rift**
- **DAME & DAMEWARE**



# WWT

- Visualisation of complex datasets
  - Earthquakes
  - Crimes in communities
- Customized tours
- Application to planetarium
  - Demo in Washington U planetarium with 6 beamers in dome
  - Use of special hardware for control



# Impact and dissemination

- Impact factor for publishing data
- Impact factor for arXiv ?
  - Learn from Gene community «Total Impact »
- Citations of datasets
- Dissemination of AI within community
- Is traditional scientific publishing dead ?

# AstroSemantics

- Matthew Graham
  - Machine-processible knowledge
  - Triple store DN can be fastest knowledge repository
- Norman Gray
  - Pleading for unified astronomy thesaurus
- Sébastien Derriere
  - Smart CDS portal
- Ashish Mahabal
  - Connecting Bayesian networks and semantics