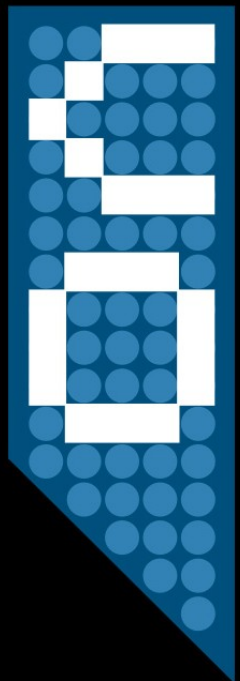


VOTC  
Science Service  
Update 11/2006 - 6/2007

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18 June 2007



# Key VOTC Development Activities

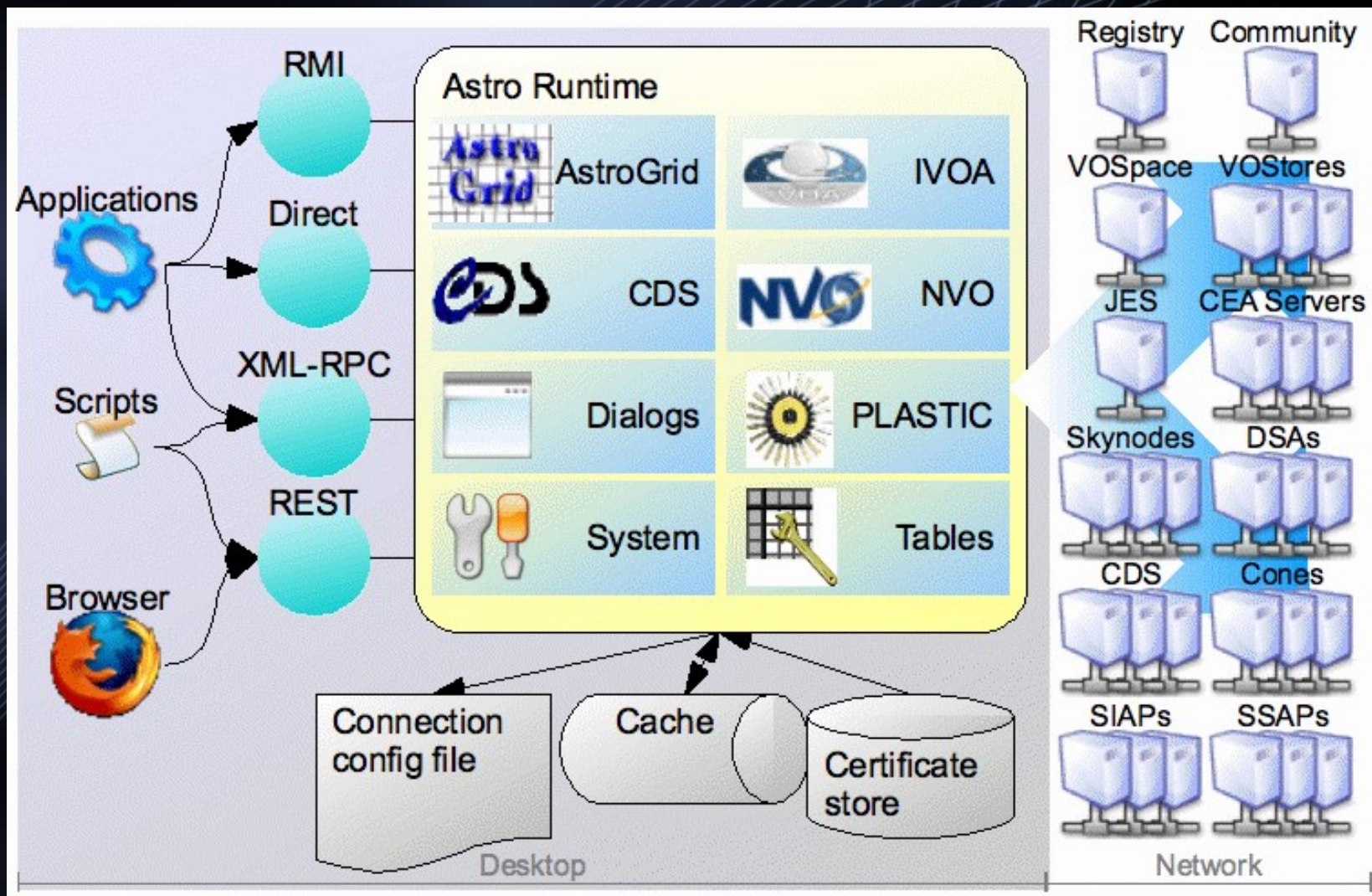
## VOTECH Project

- Oct 2006 – Mar 2007: Stage 4
  - details at <http://wiki.eurovotech.org/twiki/bin/view/VOTech/StageFour>
- Apr 2007 – Sep 2007: Stage 5
  - details at <http://wiki.eurovotech.org/twiki/bin/view/VOTech/StageFive>
  - Planning meeting March 2007

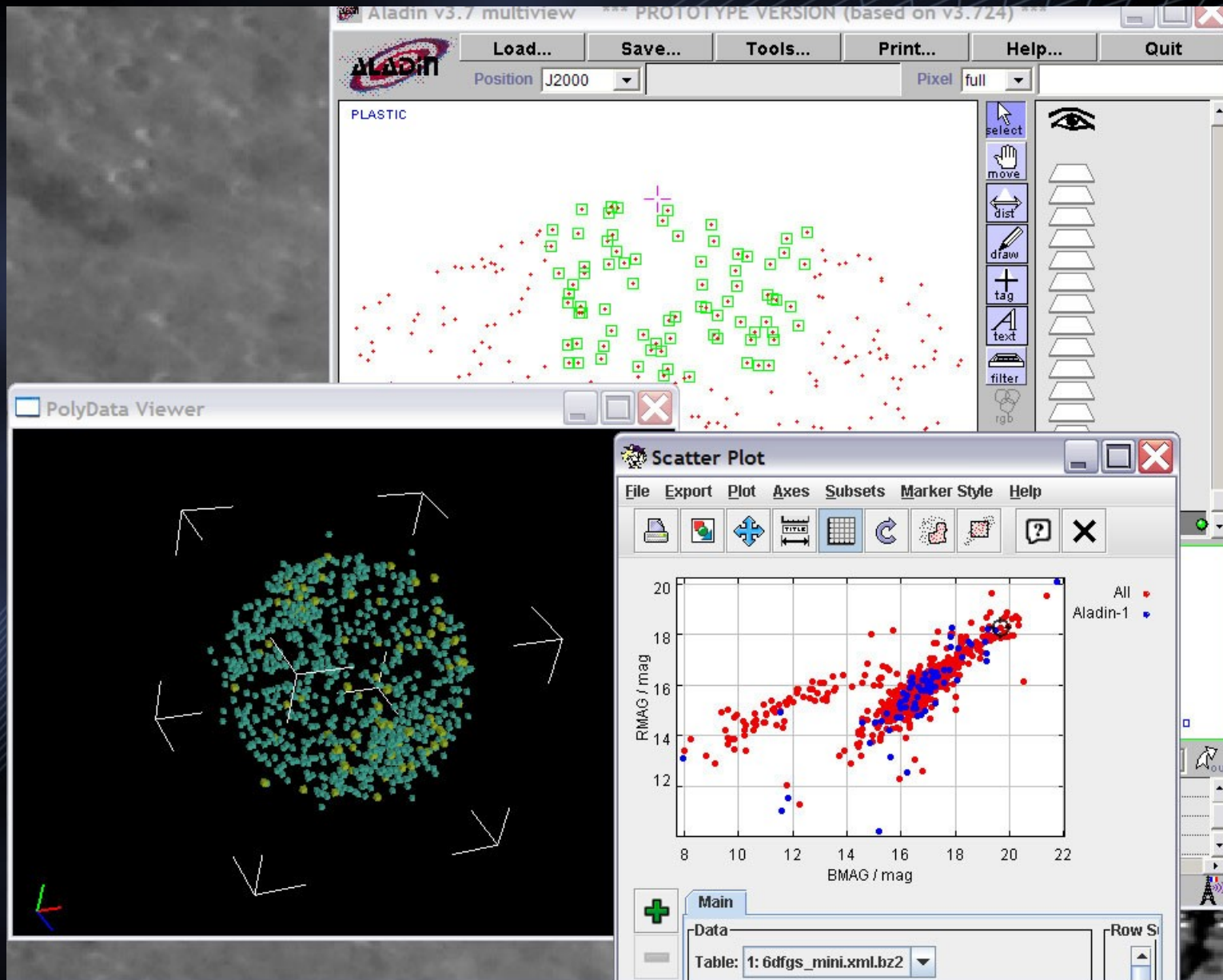
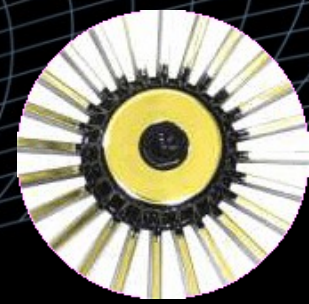
# Stage 4 VOTECH Developments

- DS3
  - Single Sign On, VoSpace, Astroruntime, Apps (UWS), Apps (CEA), Registry, Table Access (DSA, TAP), DCA Grid activities
- DS4
  - Automating SED building, Theory VO interfaces, Fitting tools, Registry browsing (Voexplorer), Aladin enhancements (3-D cubes, IDL link, footprints)
- DS5
  - Ontologies, MEx (keyword mapping), SED construction, VOEvent
- DS6
  - VisIVO, AstroNeural, AstroWeka, client/ server side optimisation

# Astro-Run Time: VO accessibility

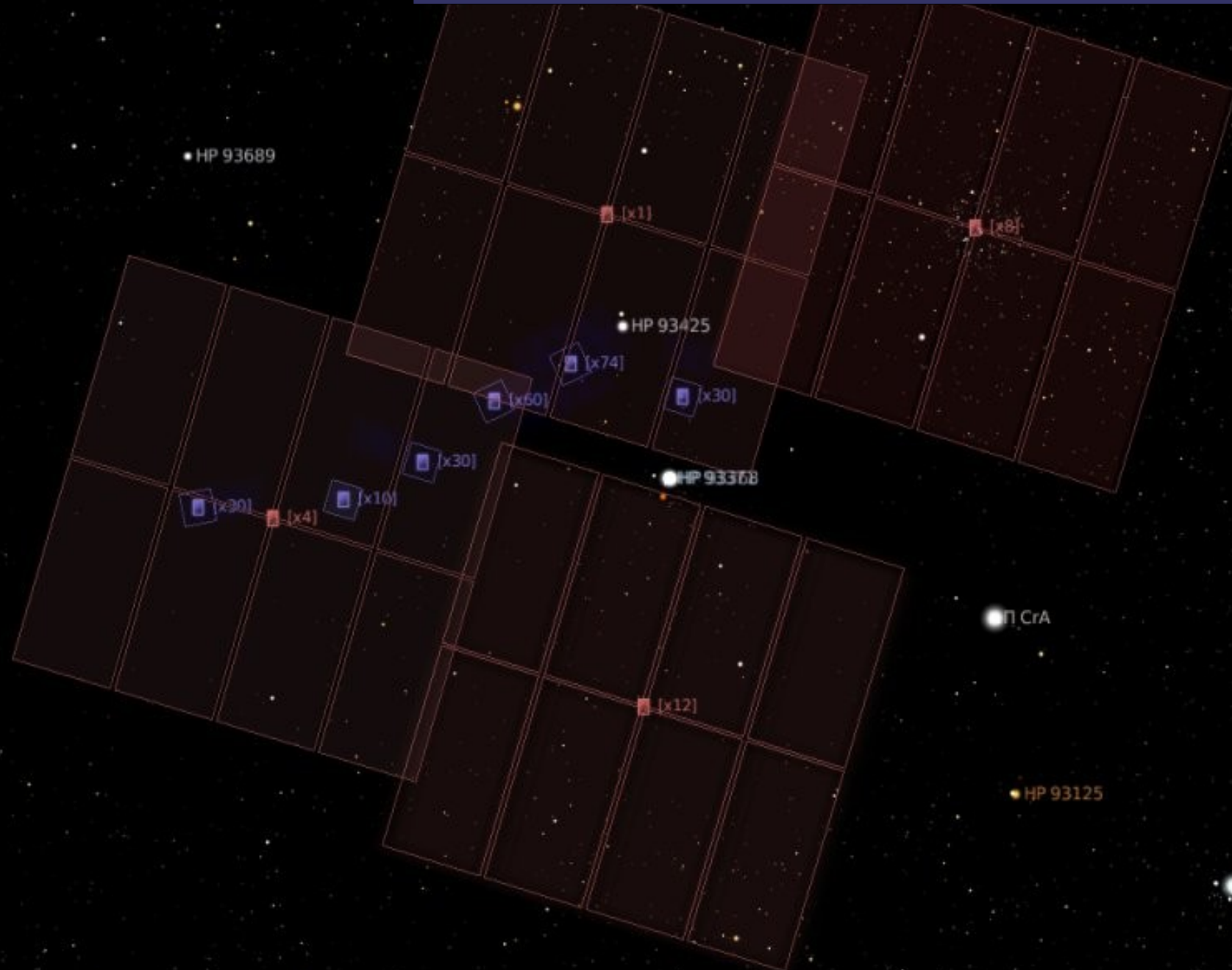


# Plastic – VO tools on the desktop





# The Footprint service @ ESO



# Stage 5 VOTECH Activities

- DS3 – Infrastructure
  - Standards – VOspace, CEA, UWS, WS Basic Profile, VOStandard
  - Infrastructure components
    - UWS-PA: applications on the server
    - SSO: single sign on
    - VOspace: storage
    - Registry: find things
    - VOEvent: find things fast
    - DSA: database access
    - STILTS: corss matching on the server
    - ADQL Parser: one query language
    - WS Basic profiling tool:

# Stage 5 VOTECH Activities

- DS4 – Tools and Applications
  - Taverna and Reflex
  - Topcat enhancements (errors and visualisations)
  - AstroRuntime
  - Fitting Tool
  - Plastic – tools interoperability
  - Cross match service
  - Aladin adds (footprints, scripting, plugins, Qbox sky indexing)
  - SED construction
  - VisIVO integration

# Stage 5 VOTECH Activities

- DS5 – Semantics
  - VOEventscope
    - links to STAP services (time access) – so good for GCN, OGLE, SWIFT etc
  - Ontologies for registries (find me all blue stars in orion)
  - SIMBAD ontologies
  - Query on UCDs
  - Object names recognition

# Stage 5 VOTECH Activities

- DS6 – Tools and Applications – Large Scale
  - Science test case for large data – modelled on selection of Quasars from SDSS data
    - requires redshifts
    - k-d trees
    - bayesian classifier
  - Data Model – add more data into Aladin (CGPS, CFHTLS)
  - Footprints
  - VisIVO – MAC version and use with theory databases
  - AstroNeural – port from MATLab to C

# VOTC Standards Activities

- Key input in to the IVOA in a number of areas
- Applications – Simple Applications Message Passing (SAMP)
  - brings together the best ideas from PLASTIC and the NVO work in this area (mainly VOClient)
- DAL
  - TAP (table Access Protocol), DSA is a (proto) implementation
  - SSAP, SIAP, Cone Search, STAP
- DM
- GWS
  - VOSpace, SSO, UWS-PA

# VOTC in the Community

- VOTC standard components now being deployed more widely
  - DSA in UK, France, Netherlands, Canada, Russia, China
    - planned for deployment in ALMA northern regional archive
    - planned for deployment in VST surveys
  - CEA/ UWS in UK, France, South Africa, China, Russia
  - VOSpace in UK, USA, ESO
  - Plastic in UK and Europe and RoW
- VOFC workshops explaining use and deployment of infrastructure to the resource providers
- VODCA active in showing use of VOTC components

# VOTC and the SAC

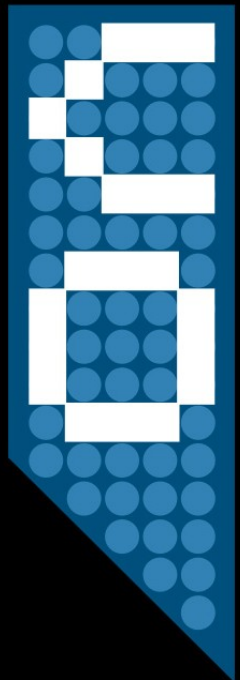
- Requirements from the SAC input to VOTC work
- List of must have data – implications for standards and access requirements – looking at the list from the SAC:
  - Already accessible: ISO, XMM, UKIDSS, DSS, Sloan, HST, Gemini, Chandra, 2MASS, INT WFCAM, GALEX, VLA, IRAS, CFHT MegaPrime, ROSAT, Hipparcos, Tycho, USNO, Spitzer (partly) Subaru, FUSE, IUE, EUVE, JCMT, Integral, Merlin
  - Still to come: ESO telescopes (except GOODS data), TNG, WHT, AAT
- List of must have applications – drive technical requirements
  - see <http://wiki.astrogrid.org/bin/view/Astrogrid/ApplicationWish>

# Infrastructure: Service for Science

- Build on SAC recommendations
  - ensure access to key data + applications
  - ensure a usable system (e.g. documentation, reliability)
  - PRIORITISE THOSE IMPORTANT FOR SCIENCE
- Hide the technical complexity of the system from the scientist
- Allow simple and complex science creation
- Illustrate by examples ...

# Euro-VO: Key Links

- Euro-VO: <http://www.euro-vo.org>
- Euro-VO: VOTECH project: <http://www.eurovotech.org>
- AstroGrid: <http://www.astrogrid.org>
  - AstroGrid workbench: [www.astrogrid.org/launch](http://www.astrogrid.org/launch)
- CDS: <http://cdsweb.u-strasbg.fr>
  - Aladin: <http://aladin.u-strasbg.fr>
- ESA-VO: <http://esavo.esa.int>



# EURO-VO Futures: VOTC and FP7

# Towards an Operational System: an emerging strategy

- Operational System managed at regional (c.f. Tier 1) level
  - compute/ disk
  - applications
- Euro-VO (c.f. LCG) provides leadership and coordination
  - agreement on infrastructural middleware (VOTC) for use by regional implementations
  - first point of support (VOFC) – with support functions delegated to the regions ('close to users')
  - first point of support for data integration (VODC) – lead role to ensure availability of Euro data sets (e.g. ESO, ESA) – delegate to the regions for local data integration
- Euro-VO – inclusive representation
  - see e.g. LCG CB: <http://lcg.web.cern.ch/LCG/Boards/cb.html>

# VOTC Implications

- Complete VOTECH – key enabling activity in the creation of the Euro-VO wide recommended infrastructure
  - Infrastructure Report
  - Science Framework Report
  - Detailed studies in Tools, Resource Discovery and Data Mining
- VOTECH report defines the technical components required to build a functional VO SYSTEM for astronomy (rather than just a simple collection of independent tools)
- AstroGrid for example is currently creating a regional VO operational system in the UK
  - Utilises Euro-VO infrastructure
  - Access key ESO/ ESA + partner data/ applications
  - Operationally: UK and EGEE grid compute
- Similar operational systems in build: F, D, I, NL, E, etc

# Scalable

- The Euro-VO infrastructure will reshape the data and application service landscape
  - uniform access clients will give a standard frontend to underlying resources
  - implication for data centres – more effort available in providing high quality data products and applications as less effort is required on developing user interfaces
- The infrastructure is designed to scale
  - numbers and types of user across Europe
  - need for controlled data access
  - cost of operations

# FP7 Opportunities

- Within the FP7 programme there was seen to be no one call that would provide for Euro-VO funding as a whole
- Two proposals thus submitted to cover Euro-VO activities:
- AIDA into the infrastructures-2007-1 call (science repositories) – the 'official' Euro-VO bid
  - CNRS (CDS) led, Euro 3M requested
  - Networking (FC/DC), Service (DC/FC) and Joint Research (TC)
- AGENA into the infrastructure-2007-1 call (deployment of e-infrastructures) – a Euro-VO 'partner' bid
  - INAF (Trieste) led, Euro 3M requested
  - managing the VO – compute grid interface
  - Networking (FC), Service (DC) and Joint Research (TC)