2015 ASTRONOMICAL DATA ANALYSIS SYSTEMS

AND SOFTWARE CONFERENCE

25th – 29th October 2015

Rydges World Square, Pitt Street, Sydney, NSW, Australia

DEMO BOOTH ABSTRACT BOOKLET

Demo 1: **David Aikema**
University of Calgary

CyberSKA

The CyberSKA platform offers astronomers an online portal / gateway for data intensive research. Integrating a social network environment with e-science applications and data management systems, CyberSKA provides a platform for collaboration by distributed teams of researchers, for use of integrated applications, and for sharing and remote visual analytics of potentially-large multi-dimensional data sets. The portal is used by over 500 astronomers distributed around the world working on SKA science pathfinder projects. Recent changes to the platform have focused on improving the user experience and also enabling the platform to function in a globally distributed and scalable manner. These changes, and experimentation with a global testbed separate from the production system, enable CyberSKA to serve as a platform to test ideas for global distribution of SKA data and services. We also demonstrate our next-generation remote visualization tool called CARTA, which is extensible through a plugin-based architecture while retaining an HTML5-based interface built using PureWeb.

Demo 2: **Mark Allen**
Centre de Données astronomiques de Strasbourg

The Strasbourg Astronomical Data Centre (CDS)

The CDS is an astronomy reference data centre that provides the SIMBAD, Vizier and Aladin sky atlas services. This booth will provide live demonstrations of these services. We will also highlight and give

practical advice on the use of Hierarchical Progressive Surveys (HiPS), a HEALPix based scheme for images, catalogues and 3-dimensional data cubes.

Demo 3: **Pascal Ballester**
ESO

Data Flow Tools at the Very Large Telescope
Authors: P.Ballester, T.Bierwirth, S.Castro, V.Forchi, Y.Jung, L.Lundin, S.Zampieri
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We present a suite of tools demonstrating the main phases of the Data Flow System at the ESO Very Large Telescope, which are used during observation preparation, observation execution, and for data processing. The selection of tools shows the recent developments of the VLT Data Flow System in view of unifying the operational support of the instrumentation set of the VLT.

The unified GUideCam Tool (GUCT) is a Java-based observation preparation tool currently offered for VISIR, HAWK-I and VIMOS. The tool makes use of the Aladin desktop application and allows the user to visualize the instrument Field-of-View on a sky image, define the central pointing of the telescope, plan observations that involve a sequence of telescope offsets, select telescope guide stars, and create ESO compliant finding charts. Furthermore, GUCT can directly interact with the ESO Phase 2 Proposal Preparation in order to attach finding charts or to propagate acquisition template parameters, such as guide star coordinates, to the Observing Block.

The Night Log Tool (NLT) is a web application to automatically generate detailed reports on the observatory operational activities during night observation. These reports are automatically generated, collecting information from various sources, and completed by the operator, reducing human intervention to the minimum. The NLT has been developed within the Grails framework, using javascript and jQuery in order to provide a modern and dynamic look and feel. Since 2013, all Paranal telescopes are equipped with the NLT. La Silla telescopes have been upgraded in 2015.

ESO-Reflex is an environment that provides an easy and flexible way to reduce VLT/VLTI science data using the ESO pipelines. ESO-Reflex is based on the concept of a scientific workflow, built upon the Kepler workflow system, and is used for the development of data reduction workflows based on the ESO Common Pipeline Library for all new VLT instruments. The data reduction cascade is rendered graphically and data seamlessly flow from one processing step to the next. The data organization necessary to reduce the data is built into the system and is fully automatic. It is distributed with a number of complete test datasets so that users can immediately start experimenting and familiarize themselves with the system.

Demo 4: **Guido De Marchi**
European Space Agency

The ESA Science Data Centre Astronomy Archives

The ESAC Science Data Centre provides services and tools to access and retrieve observations and data from all ESA space science missions (astronomy, planetary, and solar-heliospheric). We have recently developed a new suite of user-friendly web-based applications that are easy to use and allow the seamless exploitation of the scientific data from current and past ESA astrophysics missions. We will offer interactive demonstrations of some of these new services, including the European HST Archive, the Planck Legacy Archive, the Gaia Archive Core System, and the Astronomy Multi Mission Interface, which provide full access to the entire sky as observed with ESA missions.

Demo 5: **Tom Donaldson**
Space Telescope Science Institute

MAST Discovery Portal

The MAST Discovery Portal is a web application for exploring astronomical data from the Mikulski Archive for Space Telescopes (MAST) and the Virtual Observatory (VO) community. The demos will highlight new developments including spectral plots, integration with the Hubble Source Catalog (HSC), support for HiPS (Hierarchical Progressive Surveys) background images, and an interface for minting DOIs for referencing MAST data sets in publications.

Demo 6: **Yeshe Fenner**
Astronomy Australia Ltd

All Sky Virtual Observatory

The All-Sky Virtual Observatory (ASVO) is a coordinated Australian effort to build data infrastructure, web access portals, and International Virtual Observatory Alliance services to link significant astronomy datasets to the global astronomical data fabric.

The datasets that are, or will be, available through ASVO include:

- The Theoretical Astrophysical Observatory houses a growing ensemble of cosmological simulations and galaxy formation models, with tools such as a telescope simulator, which allow users to build virtual universes to compare with observations.
- Optical imaging data from the SkyMapper telescope, which will produce the most detailed and sensitive map of the southern sky at optical wavelengths.
- Optical data from key Anglo-Australian Telescope surveys, beginning with Sydney-AAO Multiple-Integral-field unit (SAMI) and Galaxy and Mass Assembly (GAMA).

- Radio data from the Murchison Widefield Arrray, an official Sqaure Kilometre Array precursor facility that has already generated ~5 PBs of data

At our booth you can demo the operational ASVO data access services, and test some services under development. This is a great opportunity to provide feedback to help us improve ASVO to better serve your research needs.

Demo 7: **Samuel Hinton**
UQ Physics

Marz: Manual and Automatic Redshifting Software inside your browser

The Australian Dark Energy Survey (OzDES) is a 100-night spectroscopic survey underway on the Anglo-Australian Telescope using the fibre-fed 2-degree-field (2dF) spectrograph. We have developed a new redshifting application Marz with greater usability, flexibility, and the capacity to analyse a wider range of object types than the Runz software package previously used for redshifting spectra from 2dF. Marz is an open-source, client-based, Javascript web-application which provides an intuitive interface and powerful automatic matching capabilities on spectra generated from the AAOmega spectrograph to produce high quality spectroscopic measurements. The software is easily adaptable to other instruments and pipelines if conforming to the current FITs file standard is not possible. Behind the scenes, a cross-correlation algorithm based off Autoz is used to match input spectra against a variety of stellar and galactic templates, and automatic matching performance for high quality spectra has increased from 57% (Runz) to 94% (Marz). Spectra not matched correctly by the automatic algorithm can be easily redshifted manually by cycling automatic results, manual template comparison, or marking spectral features.

Demo 8: **Fabio Pasian**
INAF - Osservatorio Astronomico di Trieste

ADASS XXVI in Trieste

The 2016 conference of the *Astronomical Data Analysis Software and Systems*, ADASS XXVI, will be held *16-20 October at the Stazione Marittima Conference Centre, Trieste, Italy*. The host of ADASS XXVI is the Trieste Astronomical Observatory (OATS) of the Italian National Institute of Astrophysics (INAF), in collaboration with the University of Trieste and the Comune di Trieste.

The Stazione Marittima Conference Centre is located on a pier of the Trieste harbour, in the heart of town and within walking distance from restaurants, shopping areas, and main hotels.

Trieste is a city of about 200,000 with an important touristic and cultural background. It is interesting to notice that Trieste has the highest researchers/citizens ratio in Europe, and over a dozen of major scientific institutions. Among them, there are five in which astrophysical research is actively performed: the Astronomical Observatory of Trieste (INAF-OATs), the University of Trieste (UniTS),

the International School of Advanced Studies (SISSA), the local section of the Italian National Institute for Nuclear Physics (INFN) and the UN International Centre of Theoretical Physics (ICTP).

In particular, for the themes related to the ADASS conferences series, INAF-OATs has been working in the field of computer science and engineering applied to astronomy for about 40 years, with a group pioneering this branch of research and now particularly active in observation control, distributed computing, data processing and archiving, and the Virtual Observatory. .

Demo 9: **Doug Roberts**
Northwestern University

WorldWide Telescope

WorldWide Telescope (WWT), which was created by Microsoft Research, has been released as an open source project hosted in GitHub and managed by the .NET Foundation. Additionally, support for development which used to come from Microsoft will now need to come from the community. But for the astronomy development community, the move to open source allows contributions to the core system as well as extensions toward new functionality required for specific projects. In this demo, we will have WorldWide Telescope running within a development environment. We will also help you set things up on your own laptop (needs fairly recent Windows PC). We will go over the overall WWT ecosystem and how to build the various components (desktop and web) from source. This will involve a Skype session with the principle developer (Jonathan Fay) who will join us at certain times for more detailed developer QnA. We also want to hear from you how you might see using an open source WWT and thoughts on how WWT can connect with the astronomy community. We will also have an Oculus Rift available to show off what WWT can do in contemporary virtual reality.

Demo 10: **Keith Shortridge**
Australian Astronomical Observatory

The Australian Astronomical Observatory

The AAO intends to use a demo booth to show some of the instrumentation and other projects it is involved in. The details are still under discussion.

Demo 11: Michael Young
Indiana University

One-Degree Imager, Pipeline, Portal and Archive (ODI-PPA)

A hands-on demonstration and walkthrough of the publicly available One-Degree Imager - Portal, Pipeline, and Archive (ODI-PPA) science gateway. Includes access to a large archive of public data, powerful search and custom plotting capabilities (via PPA Charts), creation of customized datasets, on-demand data reduction and image stacking (via the QuickReduce calibration pipeline and PPA Stack respectively), and a DS9-style interface for analysis and exploration of large mosaic images through a web browser. We will also demonstrate how larger datasets from the recently upgraded focal plane of the ODI instrument have been seamlessly handled by ODI-PPA. https://portal.odi.iu.edu. Upon request we can also offer demonstrations of the Trident SCA (the ODI-PPA parent project) off-shoot projects including the IU Electron Microscopy Center - Scalable Compute Archive (EMC-SCA), and the underlying code base.