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VisIVO: an interoperable visualisation tool for Virtual Observatory data

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We present VisIVO a software for the visualisation and analysis of astrophysical data which can be retrieved from the Virtual Observatory framework and for cosmological simulations. VisIVO is VO standards compliant and supports the most important astronomical data formats such as FITS, HDF5 and VOTables. Data can be retrieved directly connecting to an available VO service (i.e., VizieR WS), loaded in the local computer memory where they can be further selected, visualised and manipulated.

VisIVO can deal with both observational and simulated data and it is particularly effective in handling multidimensional datasets (e.g. catalogues, computational meshes, etc.). It is open source and a pre-release can be downloaded from `<http://visivo.cineca.it>`. VisIVO is also able to interoperate with the other astronomical VO compliant tools through PLASTIC (PLatform for AStronomical Tool InterConnection). This feature allows VisIVO to share data with many other astronomical softwares in order to obtain further information on the data loaded. VisIVO is an interoperable tool: it can automatically use data in the VO framework by using the VizieR CDS archive, Aladin, Topcat and so on. Moreover important applications can be done with pipelines of dedicated and specific tools in the VO frameworks. These can be designed to obtain a scientific use case that allows users to discover new properties and new features in the dataset that could not be easily recognised. The Institute for Astronomy of Edinburgh is developing the idea of a new tool called PLASTIC (PLatform for AStronomy Tool Inter Connection). PLASTIC is a platform to enable heterogeneous visualisation tools to interoperate on a user's desktop. VisIVO uses PLASTIC to communicate to other astronomical tools, such as Aladin, Topcat, etc., in a standard and extendable way, and share with them the same data. The interoperable tools must be connected with the PLASTIC software hub that allow them to broadcast a VOTable loaded in one of them: all the applications manages the same data. Using VisIVO (or other connected tools) the user can select some data points and can send them, like a new object, to all other tools.

The multiple usage of tools with the same data allow the researcher to enhance properties of some data points that cannot be easily discovered. Many data sets contain data in the form of vectors, such as the velocities of the objects. These vectors can be visualised using the vector viewer in VisIVO. Furthermore these vectors can be scaled and coloured according to the magnitude of the vector, aiding at increasing the knowledge about the data set. At present the software Windows XP release is already ready and the Linux version (Debian Sarge) will be ready at the end of 2006 VisIVO is integrated in the VO framework and it is supported as Italian contribution in the VO-TECH project. The European Virtual Observatory – VO Technology Centre (VO-TECH) is a Design Study implemented as Specific Support Action funded by EU in the FP6 Program.