Concepts for single/multiwavelength astronomical data accessibility and reduction via relational database: a powerful resource for old and new projects

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ABSTRACT: Relational databases (DBs) are ideal tools to manage bulky and structured data archives. In particular for Astronomy they can be used to fulfill all the requirements of a complex project, i.e. the management of: documents, s/w packages and logs, observation schedules, objects catalogues, simulated data, quick-look, raw and processed data, etc. All the information gathered in a relational DB is easily and simultaneously accessible either from an interactive process or a batch program. The user does not need to deal with traditional files I/O or editing, but has only to build the appropriate (SQL) query which will return the desired information/data, eventually producing the aforementioned files or even plots, tables, etc. in a variety of formats. What is then important for a generic user is to have the tools to develop easily and quickly in any desired programming language the custom s/w which can import/export the information into/from the DB. An example could be a Web interface which presents the available data and allow the user to select/retrieve (or even process) the data subset of interest. In the last years we have been implementing a package called **MCS** (see dedicated poster) which allows the users to interact with MySQL based DBs through any programming language. MCS has a multi-thread (socket) architecture which means that several clients can submit queries to a server which in turn manages the communication with the MySQL server and other MCS servers. We'll present the real-world case of the robotic IR–optical telescope REM (placed at La Silla, Chile) which performs real time images acquisition, processing and archiving by using some of the MCS capabilities. We'll also discuss the potentials of MCS and the DB approach in the context of multi-wavelength archives and the Astronomical Virtual Observatories. Interested people can visit *ross.iasfbo.inaf.it* to have a hint of the potential of DB-based data management.