

The Medical Data Manager

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Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

Medical images acquired in radiology centers represent very large amounts of data. The medical image analysis community (physicians, researchers, etc) needs to access such large, distributed and sensitive data sets for various purposes (patient healthcare, epidemiology, etc). The aim of the Medical Data Manager is to provide an interface between medical data repositories inside hospitals (DICOM format) and the grid distributed data management system to respond these needs.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

The Medical Data Manager gives secure and transparent access to patient images stored in DICOM format. It is interfaced to the gLite Data Management System and it includes some necessary additional components such as the SRM-DICOM interface and the AMGA metadata database. Because the search of medical records often involve more than a file search in a catalog, AMGA is used to search for files on their associated metadata. We developed SRM-DICOM interface, which provides read-only access to DICOM servers of hospitals. This interface uses the standard DICOM protocol in hospital and the standard SRM protocol of the grid data storage. It is integrated within gLiteIO and FiReMan, which provides access control. The last component, Hydra, ensures the encryption of data. The low availability of the gLite WMS on EGEE is a limitation to the extension of the MDM.

With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

The metadata and the data security are the two key components to answer user needs.

In the future, medical metadata needs to be distributed over the acquisition sites.

An AMGA server will be installed at each site to ensure a local control. The

hierarchical organization of AMGA must be adapted to this purpose. The GFAL-based

data management system currently deployed on EGEE does not provide today the expected

level of functionality to replace the gLite WMS.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The long term objective is to convince hospitals to use grid for their data

management and exchange needs. The Medical Data Manager enables access to patient

images (DICOM files) and associated metadata (patient records), which are stored in

remote hospitals. The access to large image repositories of data collected over

several countries will be useful for statistical and epidemiological studies. The

grid access policy can be defined at site level and data encryption is used to

protect sensitive data. The scale is potentially very large and the grid

infrastructure could be a solution to provide reliable and secured connections. A

wide scale deployment can only be envisaged once data security is reliable enough and

trusted by end users.

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