

Data Management System for Investigation of Heart Valve Diseases

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The main goal of investigations in the framework of the the EurValve project [1] is to combine a set of complex modeling tools to deliver a workflow which will permit the evaluation of medical prospects and outlook for individual patients presenting with cardiovascular symptoms suggesting valvular heart disease. It should result in providing a decision support system which can be applied in clinical practice and require a dedicated problem solving environment of which a key component is a data management system.

The nature of the tasks performed in the research environment includes both interactive and batch processes, some of which need to be invoked manually, whilst others can and should be automated. The entry point to the EurValve research environment is a portal integrated with external services and infrastructures.

The File Store is a remotely accessible service that provides a user overlay for the secure storage components. It enables users to access, upload and share folders and files pertinent to EurValve. Externally, it mimics a standard WebDAV server and can thus be accessed by any WebDAV-compliant library or standalone clients [2].

In addition to the management of file based data, a requirement for the EurValve project is to manage structured medical data collected from each clinical center. This is achieved by provisioning the data into a web accessible data node developed within the VPH-Share project. Within this node all data is hosted within a MySQL database and a middleware layer exposes the data through a variety of protocols. These include SOAP, via a documented XML query structure, REST using a JSON query document, REST using SPARQL and REST using direct SQL. A final data access mechanism is provided through a graphical web based interface allowing both exploration and query of the data.

All of these channels are secured and allow both read only and read write access to each of the data sets acquired by the project. To achieve this, the data management system is integrated with the EurValve security mechanisms which consist of an Identity Provider capable of validating that users are actually who they claim they are, Security Web Platform, which includes an IdP assertion consumer, a JSON Web Token issuer, a Policy Decision Point and a Policy Retrieval Point.

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