

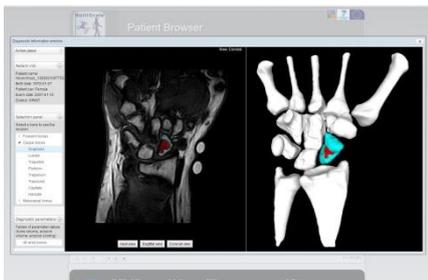
# Softeco Sismat

*Softeco Sismat, formed in 1979, is one of the leading companies in the Information and Communications Technology market of Italy.*

## About Softeco

[Softeco Sismat](#) has been a leading company in the Italian Information and Communications Technology (ICT) market since 1979, providing specific application and technological competences to enable customers to exploit the potential offered by ICT, with a particular focus on business development and innovation. Ten percent of our resources and yearly turnover are invested in [Research & Innovation](#) with an experience of over 20 years of activity, proudly gained working with over 600 European partners in over 70 national and international research projects.

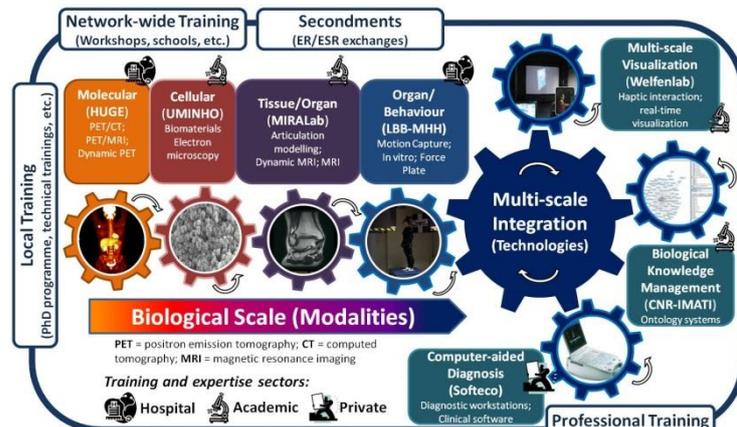
*With ZK we get amazing results very quickly, which is extremely convenient for rapid prototyping. It's definitely worth the time spent to get to know it better."*



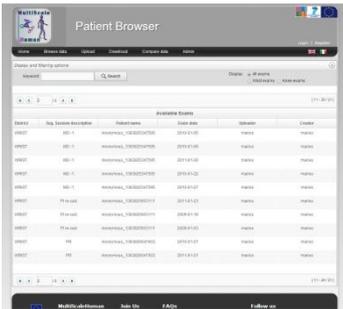
## ZK X MultiScaleHuman

ZK has been adopted so far in several research projects including the [GLIMS](#) project, [SmartGen](#) project, [Illuminate](#) project and the [Arion](#) project. Among other projects, ZK is also adopted in the [MultiScaleHuman](#) project. [MultiScaleHuman](#) is a 4-year EU funded Marie Curie Research training network (started Oct. 2011) and its goal is to create a prototype for a multi-scale biological data visualization and knowledge management system for improved understanding, diagnosis and treatment of physiological human articulation.

MultiScaleHuman focuses on musculoskeletal diseases (MSD) and aims at producing a predictive **3D simulating model** by exploiting advances in multi-scale biological modalities and their integration by addressing various levels: **molecular, cellular, organic, metabolic and behavioral**. This is what we call multi-scale visualization.



As a proof of concept, we developed a web-based application for storing, searching and visualizing medical data, in order to assist and support our test users (medical professionals) in the diagnosis, therapy and follow up of MSD and related disorders.



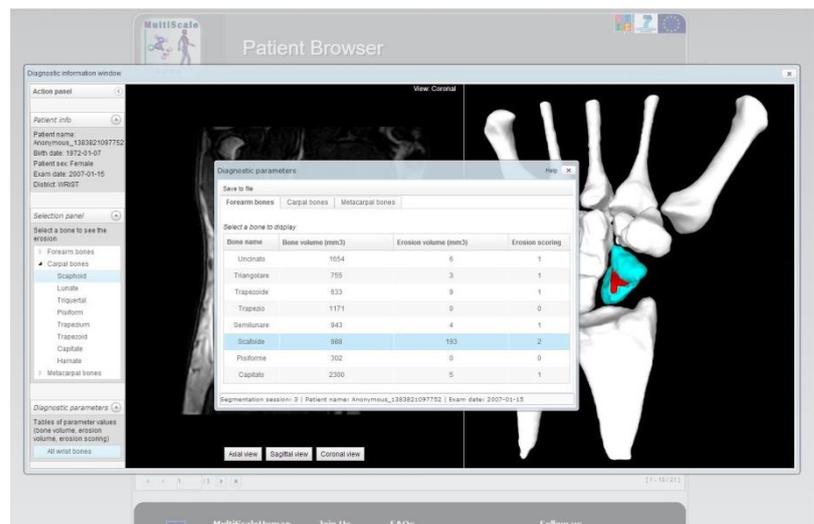
*After a short initial period of experimentation and getting acquainted with the framework, ZK proved to be very efficient and easy to use.”*

## Architecture

We used ZK's MVC model combined with Maven and Hibernate for the database (PostgreSQL) access and persistence. For the visualization of medical data e.g. 3D models and 2D images from MRI exams, we integrated the [XTK WebGL Javascript framework](#), specifically designed for these purposes. Tomcat 7 was used for the deployment of our web application.

## Challenge

The main challenge is to organize and manage a potentially large amount of medical information and eventually to be able to share, retrieve and visualize these scientific data. In addition, due to the highly sensitive nature of medical data, the users' interaction with the system may differ depending on the user profile and access rights. A seamless integration of WebGL Javascript libraries is necessary as well to visualize 3D models in an interactive way.



## Why ZK

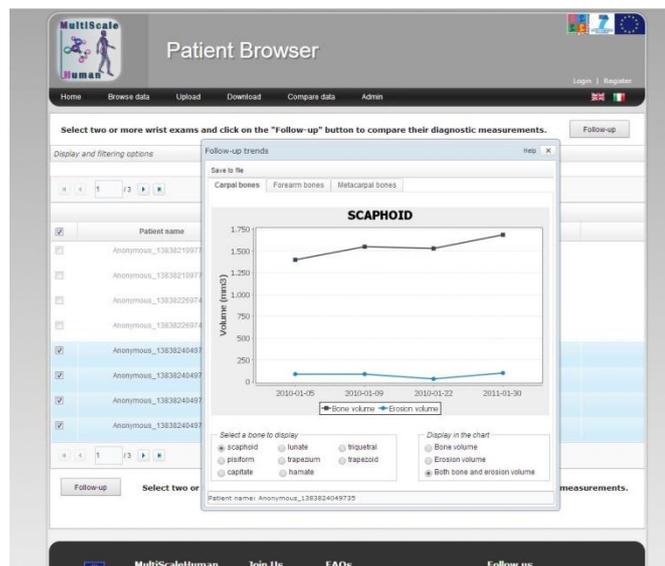
We were looking for a framework that could combine flexibility, scalability and ease of customization, in other words the "complete package". We had developed in the past several JEE applications with a JSP/servlet approach that included different sets of Javascript libraries and frameworks. ZK is the most effective and well organized Ajax/RIA framework we have evaluated so far. As we were dealing with database CRUD operations and rendering of items, ZK provided powerful interactions like menus, popups, item

editing, form validation etc. which quickly resolved most of our problems. The multilingual support was also a big plus for us since we are working on an international project.

## The best of ZK

ZK is extremely efficient as a rapid prototyping framework for web applications. The available components are more than enough for almost any kind of project development, while more complex and/or advanced user interactions can easily be achieved even by less experienced developers. Another impressive aspect of ZK is the amount of available tutorials, documentation and support from the ZK community and forum

ZK helped a lot to design and implement all expected functionalities, UI interactions and layouts. For example, we utilized listboxes and paging to display medical data information from the database, we generated graphs and charts to compare diagnostic measurements applicable to these data or use these data for benchmarking, and discover useful resources, using different criteria, to assist in the patient diagnostic procedure.



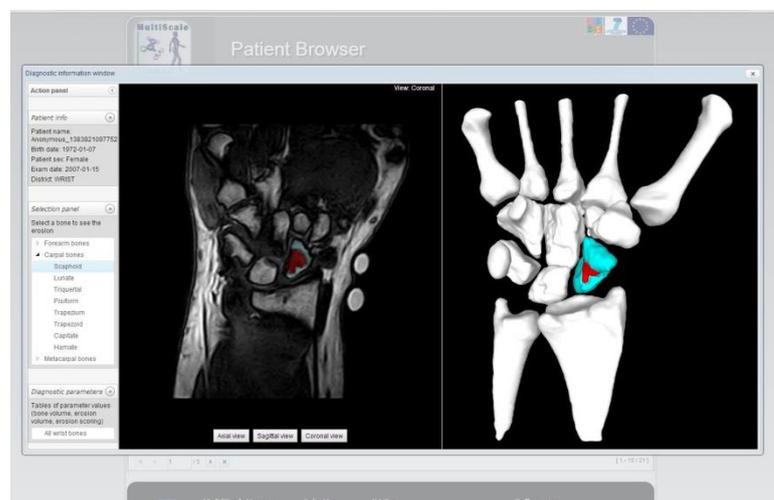
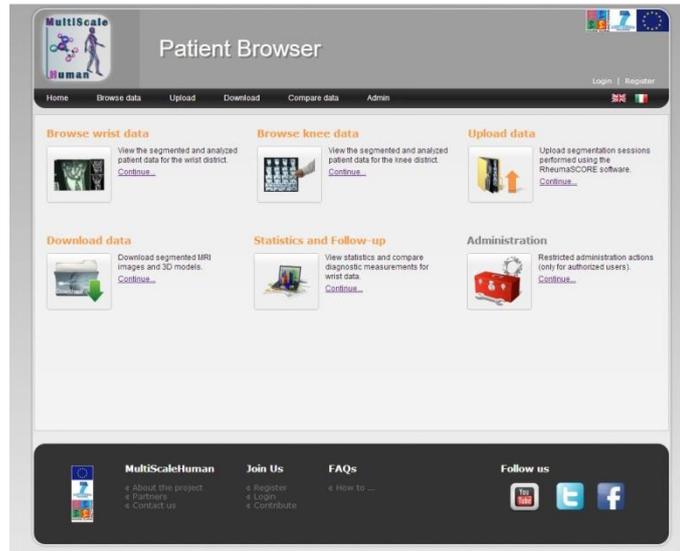
## The Result

The developed application is only a first attempt towards a web-based Computer Aided Diagnosis (CAD) system. It has the following basic functionalities:

- Uploading patient studies (i.e. MRI exams, image segmentations, 3D models etc.) exported from other software like RheumaSCORE (<http://www.research.softeco.it/rheumascore.aspx>).
- browsing and visualizing the results of these patient studies.

- c) displaying diagnostic measurements and comparisons between them
- d) searching and downloading patient studies
- e) system administration and user management

We look forward to turn this into a real project to help increase the efficiency of healthcare development and to ultimately benefit the human society as whole.



## About ZK

ZK is the leading enterprise Java Web framework with more than 1,500,000 downloads. ZK is deployed by a large number of Fortune Global 500 companies, including Barclays, Allianz, Swiss RE, Roche, Deutsche Bank, Sony, Sun Microsystems, and Toyota, providing them with the ability to rapidly create rich Ajax enterprise level applications.

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