Final Year Project

MBS Benchmark Project:
System for Information Management

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Introduction

- **The aim of the project**

- **Necessity**
  - **Multi Body Systems (MBS) Simulations**

- **Current state of the problem**
 - **No comparison systems**

MBS Benchmark

- **Purpose: a standard set of problems and procedures for performance evaluation**
- **Comprises:**
  - **Problems repository – description, model files, reference solution**
  - **System for information management – results submission and review, comparison**
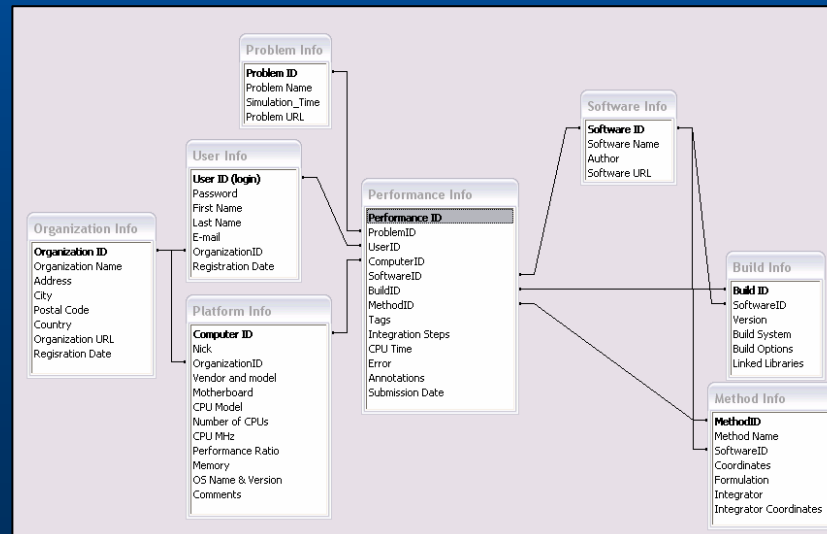
Information Management

- **Information repository database**
- **Application for:**
  - **Information submission**
  - **Review**
  - **Comparison**
  - **Removal**
- **Binding web interface for instant access**
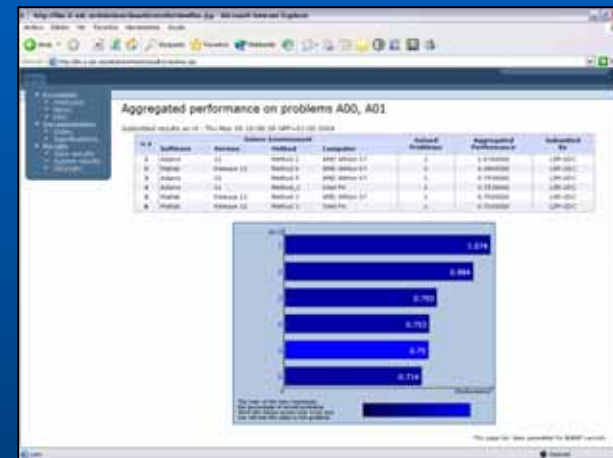
Database

- **Stores all necessary information**
- **In 3rd nominal form**
- **Relational connections**
- **The design closely follows the information**

Application

- **Users management**
- **Information submission**
- **Information review**
- **Deletion of information**

Information Submission Workflow

Four step process

- **Problem, Platform, Software**
  - Adding a new one
- **Build & Method**
  - Adding a new one
- **The actual results**
- *Optional confirmation*
- **Database entry**

- •Problem
- •Platform
- •Software → •Add
- → •Add

- •Build → •Add
- •Method → •Add

- •Results

- *Confirmation*

- Database entry
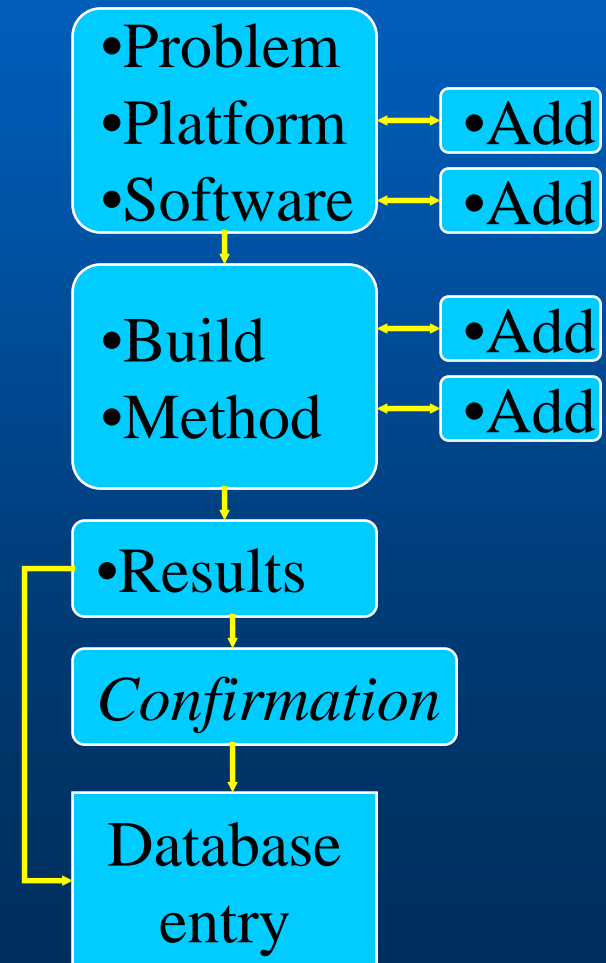
Result Review

- **Three comparison techinques:**
  - **Basic Query**
  - **Aggregated performance on many problems**
  - **Two simulators**
- **Detailed information**
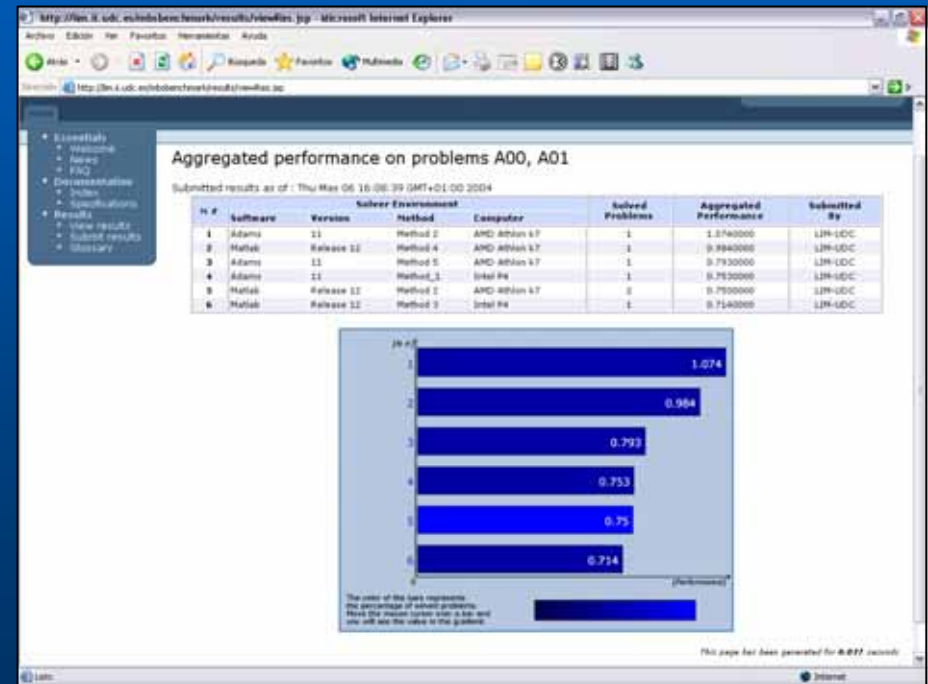- **Auxiliary functions**
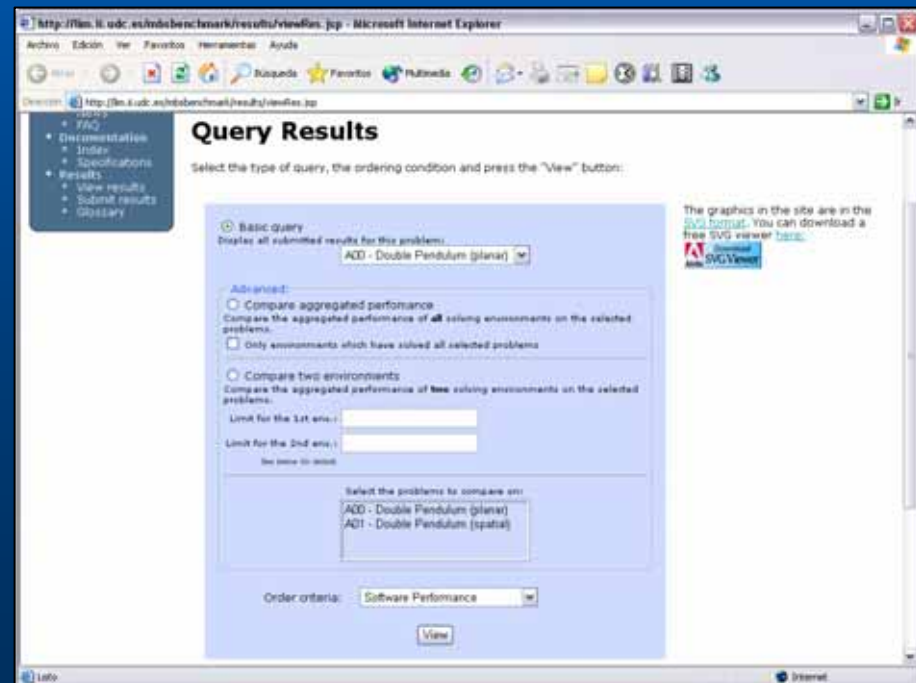
Basic Query

- **All results for a problem**
- **Ordered**
- **Textual information**
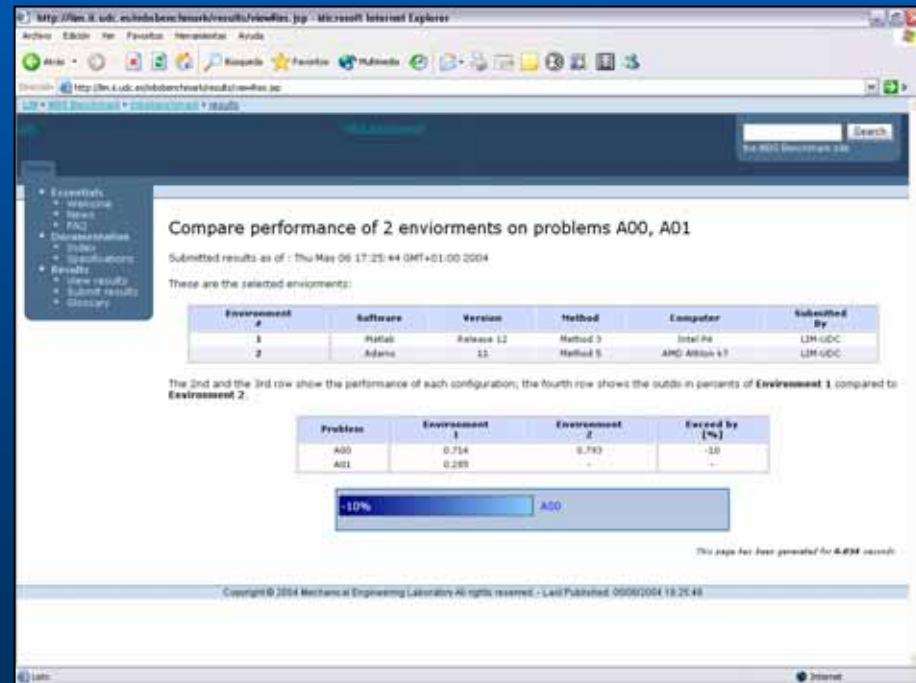- **Graphical Comparison**
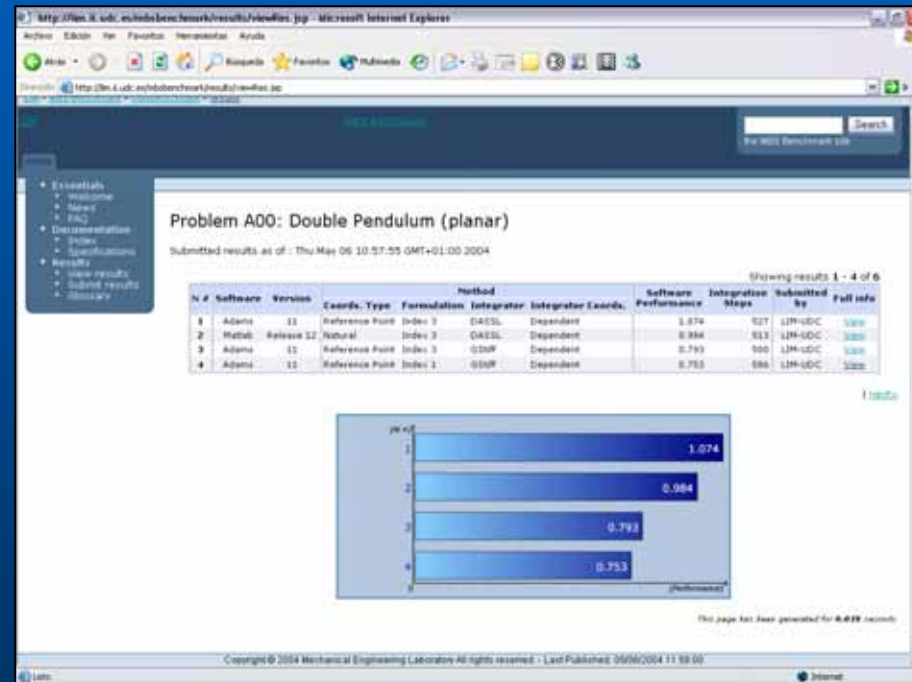
Aggregated Performance

- **All simulators on number of problems**
- **The averaged performance**
- **Ordered**
- **Interactive graph**

Comparison of Two Simulators

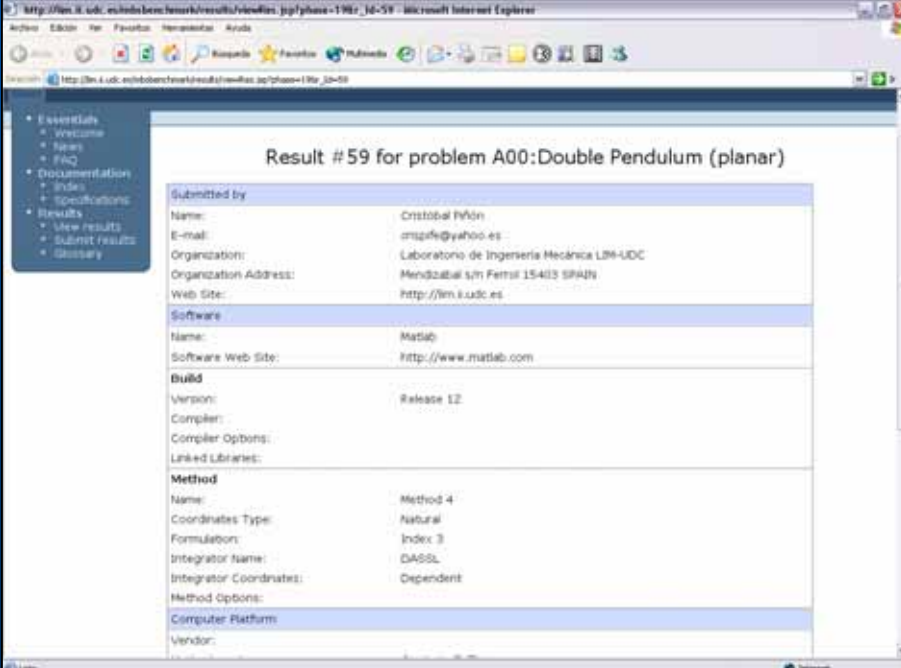**Two step process:**

- **Selection of the simulators**

- **The result:**
  - **Details about each simulator**
  - **The performance of each under every problem**
  - **Relative comparison**

Detailed Result Information

All available information about a result

- **User information**
- **Software**
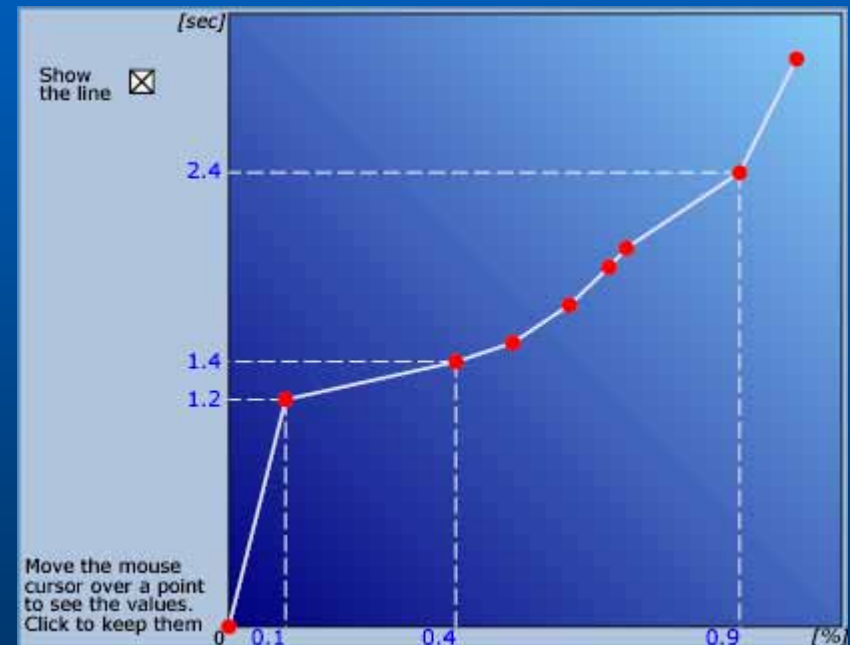- **Hardware**
- **Actual results**
- **Submission date**

Graphics

- **SVG based**
- **Dynamic;**

  produced by XSLT
- **Four types:**
  - **Simple**
  - **Interactive**
  - **Relative Comparison**
  - **Work-precision**

MBS Benchmark Website

- **Content Management System - Apache Forrest**
- **Automatic creation**
- **Final look**

Conclusions - Used Technologies

- **Database – MySQL**
- **Application – Java & JavaServer Pages**
- **Graphics – SVG, XSLT**
- **CMS – Apache Forrest**
- **Server – Apache HTTP Server**

Total Cost: 0.00 €

Conclusions - Comparison

- **Better database design, more information**
- **New features:**
  - **Two new comparison techniques**
  - **Graphical representation**
  - **Information deletion**
  - **Other techniques – limiting factor, windowing, etc.**
- **Performance increase of 300%**
- **Usage of CMS**

Final Conclusions

- **Allows comparison of MBS software products**
- **Helps LIM and University of Sevilla for the development of MBSengine**
- **Minimal Total Cost of Ownership (TCO)**

Thank You for your Attention!