

Knowledge transfer between Mathematics and Industry via the Web: the Math&Industry Initiative

Mathematics Inside! This applies to more and more products and technologies in our daily life. Key technologies need mathematics. Mathematical models of real-world problems allow to simulate and control processes, determine optimal solutions for the processes, or develop new products and technologies.

Mathematical research is expensive. However, it is a huge potential for innovative developments in industry and services. Therefore new concepts are necessary to accomplish the knowledge transfer between the mathematical research institutions on the one hand and companies in industry and services on the other hand. The Web could play an important role here.

The Math&Industry project is an attempt to provide comprehensive and high-quality information about applications of mathematics. It arose from the mathematics framework funded by the Federal Ministry of Education and Research (BMBF) in Germany, see <http://www.mathematik-21.de>. Since 1993, the BMBF has been financially supporting nearly 200 compound projects that were jointly carried out by mathematical institutions and companies in industry and services.

Typically, the applied mathematical knowledge is hidden. And it is not easy for prospective clients to decide whether the methods and algorithms developed in a project will be of interest for them. It is the aim of Math&Industry to help the users find relevant results.

Comprehensive and standardized Web presentations for each project are the base of our concept. All project presentations should provide such typical information as the field problem, its modeling and its mathematical treatment, applications and products, contact persons / participants or formal data.

Different vocabularies used by engineers, technicians, and mathematicians are a special problem. Glossaries explaining the central terms that are used to describe the problem and its modeling and the mathematical treatment should allow a fast orientation for each reader.

Hence Math&Industry has started to develop of a concept for the Web presentation of a project.

The result is a proposal for a standardized structure and terminology of the Web presentation of projects, see

<http://soft-pc3.zib.de/MathInd/HelpFiles/konzept.html>

for details. The Web Site Maker is a form-based tool allowing to create a complete Web presentation of a project. It creates visible Web pages and metadata information that are important for an effective access to the information.

In the mean time, each project of the BMBF funding program has its own Web site.

The central portal of Math&Industry, <http://www.mathematik-21.de>, is crawling the information from the Web sites of the projects (especially the metadata), processes it, and makes it accessible for the user. The user can search over the whole information or in special clusters or navigate through topic-specific lists. More enhanced methods for searching and browsing are under development.

The talk will discuss the concept and give an overview about the state of the project.