SCOMA

The SCOMA Centre is a Finnish – and European – initiative to promote and facilitate innovative international multi-disciplinary research and technologies with an immediate impact upon society and industry.

This centre is a gateway between multidisciplinary technologies and the future knowledge society, facilitated by the unique position of the University of Jyvaskylä. It intertwines mathematical information technologies with human behavorial and societal research groups at the university, and through partnerships with small and large industries.

The major aims of SCOMA are

– to launch an International Center for scientific computing and optimization, combining multi- and interdisciplinary applications in industry, economics and finances;
– to link with worldwide scientific computing centres and to collaborate with small and large industries on R&D and societal projects;
– to develop multidisciplinary methods and tools and to transfer and share knowledge with small and large industries;
– to bring together distinguished scientists from academia, executive technologists from small and large industries and strategic vision managers, decision makers from governmental European/Finnish institutions to discuss roadmaps to master multi- and interdisciplinary applications in industry, society, economics and finances;
– to establish a *collaborative networked platform* for engineers and researchers involved in the field of multidisciplinary scientific computing and looking for innovative design solutions.

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AGORA
HUMAN TECHNOLOGY CENTER

TEKES

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Center for
Scientific Computing
and Optimization in
Multidisciplinary Applications

SCOMA

1st International Seminar on

Innovative Scientific Computing for Challenging Multidisciplinary Applications: Methods, Tools and Collaborative Environments

Jyväskylä, Finland
October 3–5, 2005

organized by
University of Jyväskylä
Mathematical Information Technology
in association with
AGORA Human Technology Center

The seminar is realised with TEKES
from the MASI Technology Programme

www.mit.jyu.fi/scoma

SCOMA Seminar on Innovative Scientific Computing for Challenging Multidisciplinary Applications: Methods, Tools and Collaborative Environments

Jyväskylä, Finland, October 3–5, 2005

Scientific computing for design and simulation is one of the most powerful technologies for many industries. So far, most technical designs have been single discipline oriented and based on the expertise of a design engineer or researcher. Nowadays, scientific computing is the daily companion of engineers and scientists in the search for innovative solution(s) to a single discipline problem. However, the use of numerical and optimization methods for coupled multidisciplinary problems remains an open challenge in many areas including, in particular, Telecommunications, Aeronautics, Electronics, Energy, Environment and Life Sciences. Reducing time and cost of the design while maintaining accuracy and robustness of algorithms is still of primary concern for the designers. Considering the decreasing cost of computer hardware and the recent efforts accomplished in collaborative environments to master human factors in multi-disciplinary research and engineering, innovative methods are now being used in multidisciplinary applications.

The goal of SCOMA International Seminar is to promote and transfer the knowledge of scientific computing for multidisciplinary applications in Europe, by fostering the collaboration between research and application groups working on the subject multi-disciplinary design and simulation. One of the SCOMA´s major concerns is to alert and educate young scientists and engineers from universities, research laboratories and industries, that are already using numerical methods for simulation and optimization, how to share knowledge in the numerical multidisciplinary technologies.

This event is intended to support the above objectives. It is not limited to industrial applications but deals also with other societal and economical areas, such as Life Sciences, Environmental problems, Energy, Economics and Finances.

Organization:

the First SCOMA International Seminar is a composite 2,5 days event that will take place in Jyvaskyla, Finland (October 3–5, 2005) and will be jointly organized by the Department of the Mathematical Information Technology in collaboration with the AGORA Human Technology Center and with the support of the MASI TEKES Technology Programme.

Format:

the format of the SCOMA International Seminar will consist of scientific, technological and strategic sessions including
– State-of-the-art lectures;
– Multi-physics case studies;
– A Round Table on "*Impact of multiphysics challenges to research and industrial environments*".

Topics:

the lectures will focus on numerical methods and tools for multiscale modeling, simulation, optimization and their use for multidisciplinary applications and design in collaborative research and industrial environments. The topics include computational mathematics, computational fluid dynamics, computational mechanics, mesh adaption and a posteriori error estimates, multi-objective optimization, multidisciplinary PDE constrained optimization, and other related topics.

Applications:

multidisciplinary applications will be considered in the following areas: Telecommunications, Aeronautics, Paper Machine Industry, Micro electronics, Energy, Material Processes, Life Sciences Applications, Environmental applications, …

A website with the final programme will be soon available on the seminar web site ***http://www.mit.jyu.fi/scoma***.

Committees:

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C. Farhat, Stanford Univ., USA
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