

FP6 INCO contract No. 026343

CX-CMCS

Centre of Excellence for Computational Modelling of Complex Systems



Deliverable D03

CX-CMCS International Advisor Board

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Status –Version: Final – a

Date: October 3, 2006

Distribution - Type: Public

Code: CX-CMCS-Deliverable-D03

Abstract: Deliverable D03 – “CX-CMCS International Advisory Board” is a public document. The deliverable presents information regarding the roles, composition and setting up of the CX-CMCS International Advisory Board.

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Document Revision History

| Date | Issue | Editor | Summary of main changes |
|-----------------|-------|------------------|-------------------------|
| October 3, 2006 | - | Aleksandar Belic | |
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Preface

The basic strategic objective of the CX-CMCS proposal is to transform the Scientific Computing Laboratory (SCL) into a centre of excellence, i.e. to decisively increase the quality of research conducted at SCL, and make it a preferred WB research partner for EU institutions working in the fields of simulation of complex systems and of GRID technology.

SCL is a unit of the Institute of Physics in Belgrade. The Institute contributes more than 10% of the total scientific output of Serbia and constantly ranks among the best R&D institutions in the region. SCL has 14 staff members, and participates in several international and national projects, including FP6 project SEE-GRID and Cost action P10. SCL defines the current state of the art in high performance computing in WBC with its PARADOX cluster (64+2 processors with aggregate speed $R_{max}=0.21$ Tflops).

The proposed CX-CMCS SSA aims to reinforce research capacity at SCL by: hiring young researchers, providing of training and mobility for the research staff, and upgrading the computing infrastructure. The success of this endeavour will be measured through a benchmarking exercise to be performed in the project's last year. Our networking partners (4 from EU and 3 from Serbia) have been carefully selected to provide the skills and expertise necessary to reinforce the research potential of SCL through training and joint research. The proposed equipment upgrade (storage element, high throughput switch, and upgrade of RAM) will make it possible to tackle even the most complex GRID applications allowing SCL to become a key regional player in deployment and use of emerging GRID technology. CX-CMCS plans to set up an International Advisory Board whose expertise will help SCL develop a long term strategy and facilitate integration into ERA.

CX-CMCS aims to be a living example that it is possible to bridge the "digital divide" between countries and regions having high tech ICT technologies and those that do not.

Strategic objectives

The basic strategic objective of the CX-CMCS proposal is to transform SCL into a centre of excellence, i.e. to decisively increase the quality of research conducted at SCL, and make it a preferred WB research partner for EU institutions working in the fields of simulation of complex systems and of GRID technology.

Centres of excellence do not exist in a vacuum, however. In order for SCL to achieve and maintain a status of excellence, the proposed SSA aims to positively effect the research environment in Serbia at several levels: SCL's immediate R&D environment (the national partners in this proposal), the high performance computing segment, and the national R&D system as a whole.

Specific objectives

The specific objectives for the current SSA proposal have been formulated through an analysis of the following key points:

- Wider developmental objectives of Serbia and Montenegro and the West Balkan region pertaining to research and development (as presented in the Action Plan adopted at the Ministerial conference in Thessaloniki in June 2003);
- Existing strengths and weaknesses at SCL in the high performance computing sector in Serbia including: professional resources, material resources, financial and organizational resources, principle impediments;
- Assessment of availability of graduate students and young researchers that could be newly employed at SCL.
- Assessment of indirect social impacts of the process of strengthening of SCL and its efficient integration into a wider European R&D effort.

The outlined analysis has resulted in the following specific objectives, each of which directly leads to a set of measurable and directly verifiable sub-objectives.

Objective 1 – Enhance quality of R&D at SCL

- **Sub-objective 1.1:** Set up an International Advisory Board for the new centre of excellence;
- **Sub-objective 1.2:** Establish a framework for more efficient management of research at SCL by developing a flexible, problem oriented R&D plan that will successfully integrate that research into a wider European effort.
- **Sub-objective 1.3:** Develop a specific set of benchmarks for tracking the quality of R&D at SCL, and perform a benchmarking exercise.
- **Sub-objective 1.4:** Devise and implement a long term strategy for achieving and maintaining research excellence.
- **Sub-objective 1.5:** Insure viability of SCL as a centre of excellence beyond the project lifetime by finding other sources of funding.

Objective 2 – Expand and mobilize human resources

- **Sub-objective 2.1:** Recruit and employ young researchers; develop explicit career plans for the newly employed researchers.
- **Sub-objective 2.2:** Enhance working conditions for young researchers by setting up an R&D environment at SCL that is integrated into ERA, providing challenging research problems, state of the art equipment, and enhanced mobility.

Objective 3 – Reinforce existing S&T capacities at SCL

- **Sub-objective 3.1:** Maintain and upgrade existing S&T equipment and high-tech infrastructure.
- **Sub-objective 3.2:** Improve the availability and reliability of SCL's computing resources, determine and implement optimal strategies for their use.

Objective 4 – Enhance mobility and integration into ERA

- **Sub-objective 4.1:** Network with EU, regional and national partner institutions through exchange of personnel, research results and joint numerical experiments; participate in joint RTD activities within these networks.
- **Sub-objective 4.2:** Host scientists from EU for training and research.
- **Sub-objective 4.3:** Organize training of graduate students and young researchers through short-term missions at EU institutions.

Objective 5 – Contribute to the reinforcing of ICT capacities at the national level

- **Sub-objective 5.1:** Reinforce the quality of research in SCL's immediate R&D environment, by strengthening their human capacity through stipends, yearly visits, and by conducting joint research activities.
- **Sub-objective 5.2:** Reinforce human capacity in Serbia's high performance computing sector by training young researchers to be employed at national research institutions and hi-tech companies.
- **Sub-objective 5.3:** Contribute to the national R&D system by developing a set of recommendations for policy makers at national and local levels for fostering growth of research excellence in a rapidly changing high-tech environment.

The three year CX-CMCS project kicked-off on July 1, 2006. The project plans to issue the following deliverables:

| Deliverable No | Deliverable title | Delivery date | Nature | Dissemination level |
|-----------------------|---|----------------------|---------------|----------------------------|
| D01 | CX-CMCS Web site | M1 | R | PU |
| D02 | Career development plan for newly employed young researchers | M2 | R | CO |
| D03 | CX-CMCS International Advisory Board | M3 | O | PU |
| D04 | Equipment tendering and procurement report | M3 | R | PU |
| D05 | Inauguration meeting report | M4 | R | PU |
| D06 | Mobility and training plan | M6 | R | PU |
| D07 | CX-CMCS Brochure | M6 | R | PU |
| D08 | 12M Progress reports | M12, M24 | R | PU |
| D09 | CX-CMCS Promotional video material | M15 | O | PU |
| D10 | Benchmark procedures for quality assessment of RTD centres of excellence | M18 | R | PU |
| D11 | SCL research quality assessment | M24 | R | PU |
| D12 | Proceedings of International dissemination workshop | M30 | R | PU |
| D13 | Strategy of long term sustainable growth of research excellence in transition | M30 | R | PU |
| D14 | Scientific computing landscape of Serbia | M33 | R | PU |
| D15 | Presentation of policy papers to decision makers | M34 | R | PU |
| D16 | Final project report | M36 | R | PU |

Legend: R = Report, O = Other, PU = Public, CO = Confidential (only for members of the consortium incl. EC).

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References

- [1] Project CX-CMCS – 026343 – Annex I – Description of Work

Executive summary

What is the focus of this Deliverable?

The focus of this deliverable is to present information regarding the roles, composition and setting up of the CX-CMCS International Advisory Board.

What is next in the process to deliver the CX-CMCS results?

The deliverable and workflow progress is described in the project Annex-I – Description of Work [1]

What are the deliverable contents?

The deliverable presents the roles of the IAB and its composition.

Conclusions

The IAB is key part of the CX-CMCS project. Their advisory role is of crucial help in increasing the quality and impact of the research conducted at SCL and in effectively transforming SCL into a centre of excellence.

1. Introduction

The CX-CMCS project foresees the setting up of an International Advisory Board (IAB) consisting of leading scientists from EU partner institutions. The IAB meets annually at the laboratory. The Project Coordinator will present the IAB with the yearly status report and will take into consideration suggestions and advise relating to the management of the project and build them into the annual project reports presented to the EC.

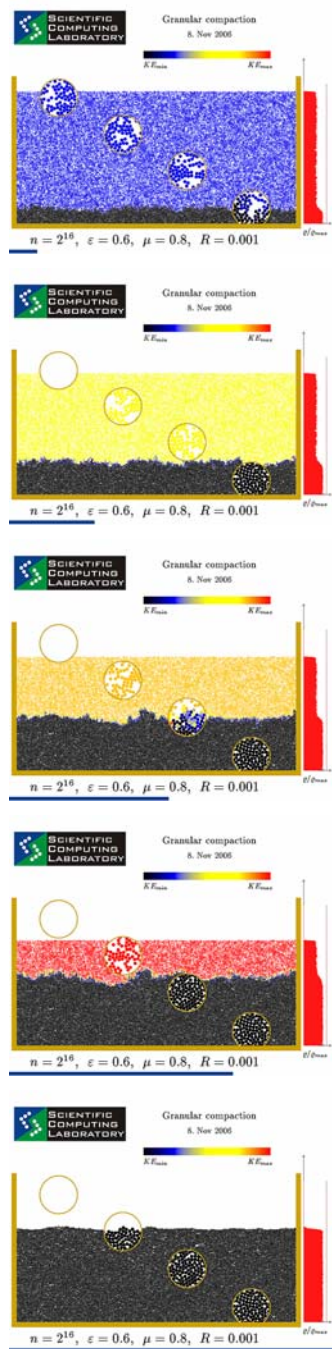


Figure 1 – Screen shots of the granular simulation and visualization package developed at SCL

2. Members of the IAB

The IAB has five members. Four of the members are representatives of SCL's EU networking partners. The fifth member of the IAB will be the Director of the Institute of Physics in Belgrade. Currently the Director is Prof. Dragan S. Popovic. The CX-CMCS coordinator attends all IAB meetings but does not vote. His role is to present the status of various activities undertaken by the project, to present detail about the functioning of CX-CMCS as a project, to present SCL research activities and results.

The four external members of the IAB are:

1. Dr. Jorge-Andres Sanchez-Papaspiliou

Dr. Jorge-Andres Sanchez-Papaspiliou received the Dipl.-Ing. and the Dr.-Ing. degrees both in Electrical and Computer Engineering from the National Technical University of Athens, Greece in 1992 and 1996 respectively and the Master's Certification in Program/Project Management from the Stevens Institute of Technology in 2000. He has held several academic positions, including that of a Scientific Consultant to Bell Laboratories in New Jersey and of a System Architect in Lucent Technologies in the Netherlands, and of a supervisor in the Bell Labs Advanced Technologies EMEA. From 2002-2006 he worked at GRNET where he was responsible for the development of European and Regional Networks. He was the Project Manager in SEEREN and SEEGRID IST projects.

2. Prof. Stefano Baroni

Prof. Stefano Baroni, founding director of DEMOKRITOS, received his PhD in physics in 1978 at University of Pisa, and is a full professor of condensed matter physics at SISSA. Beside various research positions in Italy and Switzerland, he was also director of CECAM in France from 1994 to 1998, and is currently member of the Board of Directors of the INFN. He is working in the fields of numerical simulations and modelling in physics, chemistry and material science.

3. Prof. Morten Hjorth-Jensen

Prof. Morten Hjorth-Jensen is working at the Physics Department and at the Centre of Mathematics for Applications (<http://www.cma.uio.no>) of University of Oslo, one of the newly established "Centres of Excellence" funded by the Research Council of Norway, participating in FP6 projects AIM@SHAPE and CENS-CMA. He is also director of the Physics, Astronomy and Meteorology bachelor program at University of Oslo, leading the "Computers in Science Education" project. His research interests are related to computational nuclear physics.

4. Dr. Bosiljka Tadic

Dr. Bosiljka Tadic is research scientist at the Jozef Stefan Institute in Slovenia. She received her BSc, MSc and PhD diplomas from UoB in 1974, 1977 and 1980 respectively. She has held academic positions at Universite Paris Sud, Eotvos University, Institute of Physics in Belgrade, Universitaet des Saarlandes and Technische Universitaet Muenchen. Her research interests cover several aspects of complex systems including: transport processes on complex graphs, statistical properties of the World-Wide Web, dynamic phase transitions and self-organization in nanostructures;

3. Roles and responsibilities of the IAB

The International Advisory Board represents the keystone of the CX-CMCS project. The IAB will be made out of leading researchers from EU partner institutions and their expertise, insight and recommendations help create the long term development strategy for SCL. The IAB will be of great help as advisors to SCL in the process of the development of a set of specific benchmarks for tracking quality of R&D in the laboratory. The implementation of such a benchmarking exercise is the only way to quantify the quality of research conducted, and prove that an institution may justly be called a centre of excellence.

CX-CMCS has an additional goal of devising and implementing a long term strategy for achieving and maintaining research excellence. Here too, the advice and input from the members of the IAB will be invaluable.

The International Advisory Board's main goals and responsibilities are:

- To advise the Project Coordinator in directing the project and making strategic decisions.
- To advise on and verify the medium to long term strategy for sustainable growth of R&D excellence at SCL.
- To help identify additional partners for SCL to network with.
- To help CX-CMCS design a set of realistic benchmarks for quality assessment of R&D centres of excellence and to check that they conform to best practices in the EU.
- To review and check on the quality of deliverables before submission.

The IAB procedures and rules for attendance, quorum, and voting procedures will be agreed upon at its first meeting.



Figure 2 – Prof. Bosiljka Tadic gives a review of her work on complex networks at the SCL