SCIEnce:
Symbolic Computation Infrastructure for Europe

http://www.symbolic-computation.org

Consortium

- University of St Andrews (UK)
- CNRS (France)
- Heriot-Watt University (UK)
- IeAT, Timisoara (Romania)
- MapleSoft (Canada)
- RISC-Linz (Austria)
- TU Berlin (Germany)
- TU/Eindhoven (Netherlands)
- Uni Kassel (Germany)

Partner Systems

- Gap
- Kant
- Maple
- MuPad

For more information:

Steve Linton
sal@cs.st-and.ac.uk
(Project Coordinator)

Temur Kutsia
Temur.Kutsia@risc.uni-linz.ac.at
(TransNational Access)

Kevin Hammond
kh@cs.st-and.ac.uk
(Symbolic Grid Research)

Project Objectives

- Eliminate European fragmentation in the field of Symbolic Computation by bringing together the main actors and by facilitating access to their specialist knowledge;
- Develop versions of the GAP, Maple, KANT and MuPAD systems which can inter-communicate via a common *standard* Web services interface;
- Develop common standards and middleware to allow the production of Grid-enabled systems for Symbolic Computation;
- Construct research prototypes supporting appropriate security, scheduling and resource broking mechanisms for complex Symbolic Computing applications on computational Grids;
- Identify common patterns of Grid computation across a range of Symbolic Computing applications, and tailor the Grid-enabled systems to those patterns;
- Promote and ensure uptake of recent developments in programming language technology, including automatic memory management, into Symbolic Computation systems;
- Increase technical cooperation between systems developers, including shared development of components.

TransNational Access

The *Research Institute for Symbolic Computation* (RISC) of Johannes Kepler University of Linz, Austria, offers

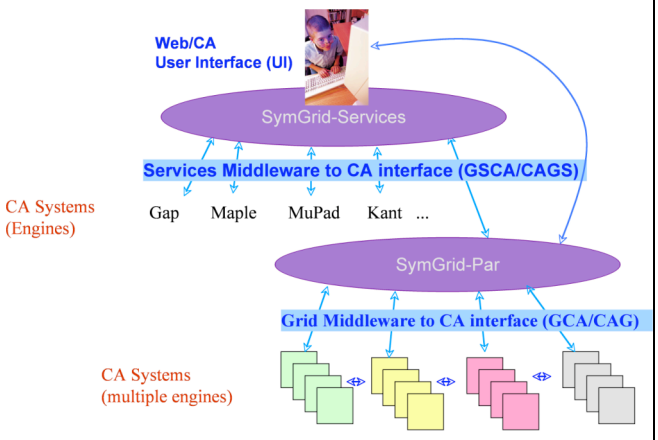
- A series of training schools in Symbolic Computation for students and researchers (mathematicians, physicists, chemists, biologists, engineers, computer scientists, linguists, etc) who would like to use Symbolic Computation in their work (http://www.risc.uni-linz.ac.at/projects/science/school/);
- Free access to the infrastructure, facilities, and expertise of a world-leading centre in Symbolic Computation;
- Travel and subsistence grants to visit RISC (http://www.risc.uni-linz.ac.at/projects/science/access/access.html)

Web Services Infrastructure

Using the *Symbolic Computation Software Composability Protocol* (SCSCP), a computer algebra system (CAS) may offer Web services for the following clients:

- A Web server which passes on the same services as Web services using SOAP/HTTP
- protocols to another clients
- Another instance of the same CAS (in a parallel computing context)
- Another CAS running on the same computer or remotely

A poster on SCSCP won the best poster award at ISSAC 2007.



Grid Research

SymGrid extends the SCSCP to allow the construction of large-scale Grid-enabled symbolic applications, which may include components from multiple systems.

- *SymGrid-Service*s: provides access to Grid services from symbolic applications;
- *SymGrid-Par:* supports the construction of high-performance Grid applications.