



CALCULEMUS

(A brief Overview)

The CALCULEMUS Interest Group
The CALCULEMUS Research Training Network

Christoph Benz Müller

Saarland University, Saarbrücken, Germany

CALCULEMUS



■ Interest Group

since mid 90s

www.calculamus.org

CALCULEMUS



- Interest Group since mid 90s
www.calculemus.org
- EU Research Training Network Sep. 2000 – Sep. 2004
www.eurice.de/calculemus/

CALCULEMUS



- Interest Group since mid 90s
www.calculumus.org
- EU Research Training Network Sep. 2000 – Sep. 2004
www.eurice.de/calculumus/

Aim: early stage training of european researchers

Measures:

- **The CALCULEMUS Autumn School 2002**
- **Training at an Individual Level at the Network Nodes**
- **Local Courses, Workshops, Talks, and Seminars**
- **Exchange of YVRs between Network Nodes**
- **Participation in Network Meetings**
- **Industry Internships**

CALCULEMUS Motivation



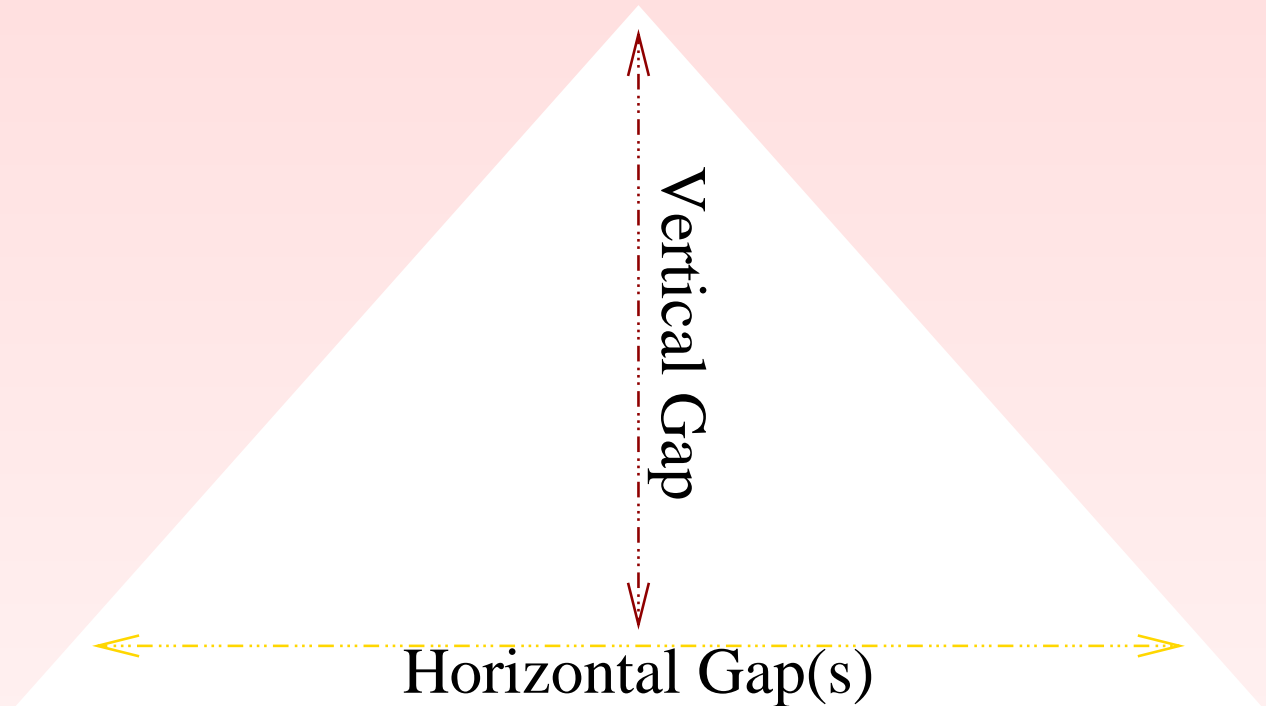
Vision: Powerful Mathematical Assistant System(s)

CALCULEMUS Motivation



Vision:

Powerful Mathematical Assistant System(s)



Reality:

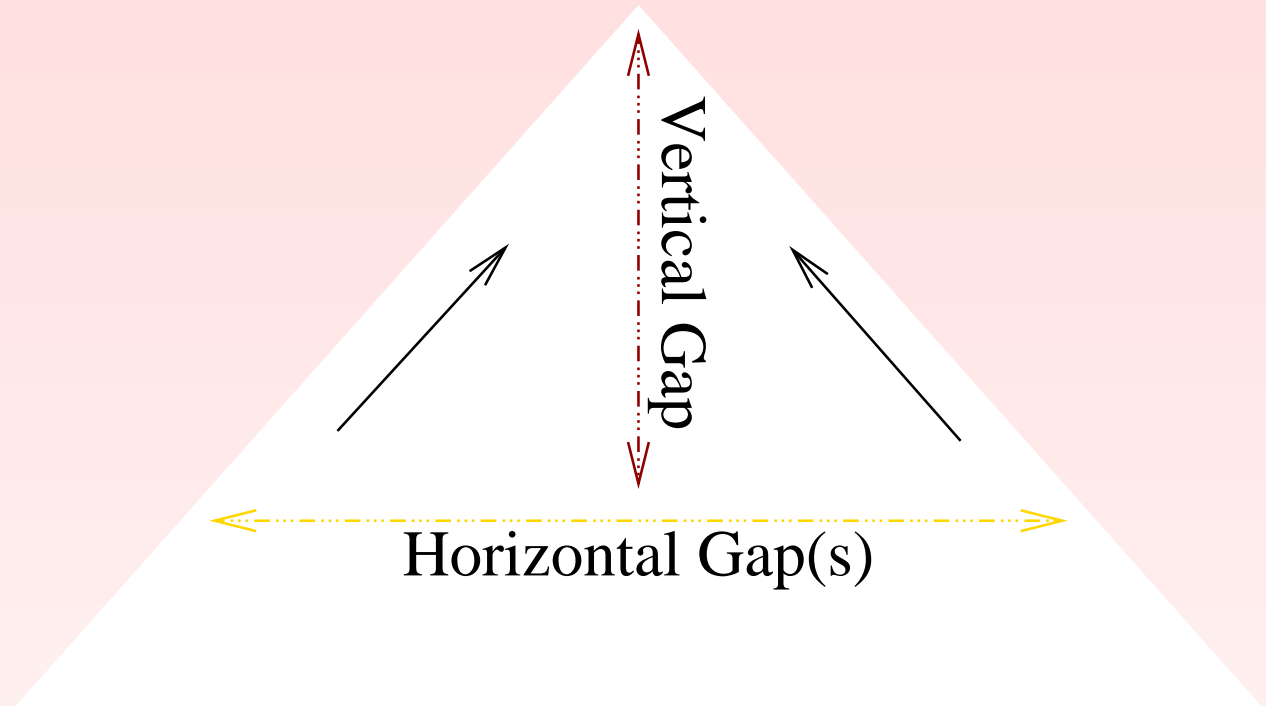
- different frameworks and approaches
- heterogeneous systems and tools

CALCULEMUS Motivation



Vision:

Powerful Mathematical Assistant System(s)



Bottom-up from:

CAS

DS

Math-KBs

...

CAS & DS: The Map



DS \subseteq CAS:

- - THEOREMA \subseteq *Mathematica*
- - HR uses OTTER for MAPLE

CAS \subseteq DS:

- tight coupling:
 - T-unification, constraint resolution, T-resolution
- loose coupling:
 - reflection approach as used in Coq
 - proof planning ($\lambda Clam$, Ω MEGA)

CAS \equiv DS:

- protocol, e.g. á la Calmet
- common interface:
 - top down: OMRS, MathWeb-SB, LBA, MathBroker
 - bottom up: CCR, MathSat

The CALCULEMUS RTN



USAAR

Saarbrücken
Siekmann



UED

Edinburgh
Bundy



UKA

Karlsruhe
Calmet



RISC

Linz
Buchberger



TUE

Eindhoven/Nijmegen
Cohen/Barendregt



ITC-IRST

Trento
Giunchiglia



UWB

Białystok
Trybulec



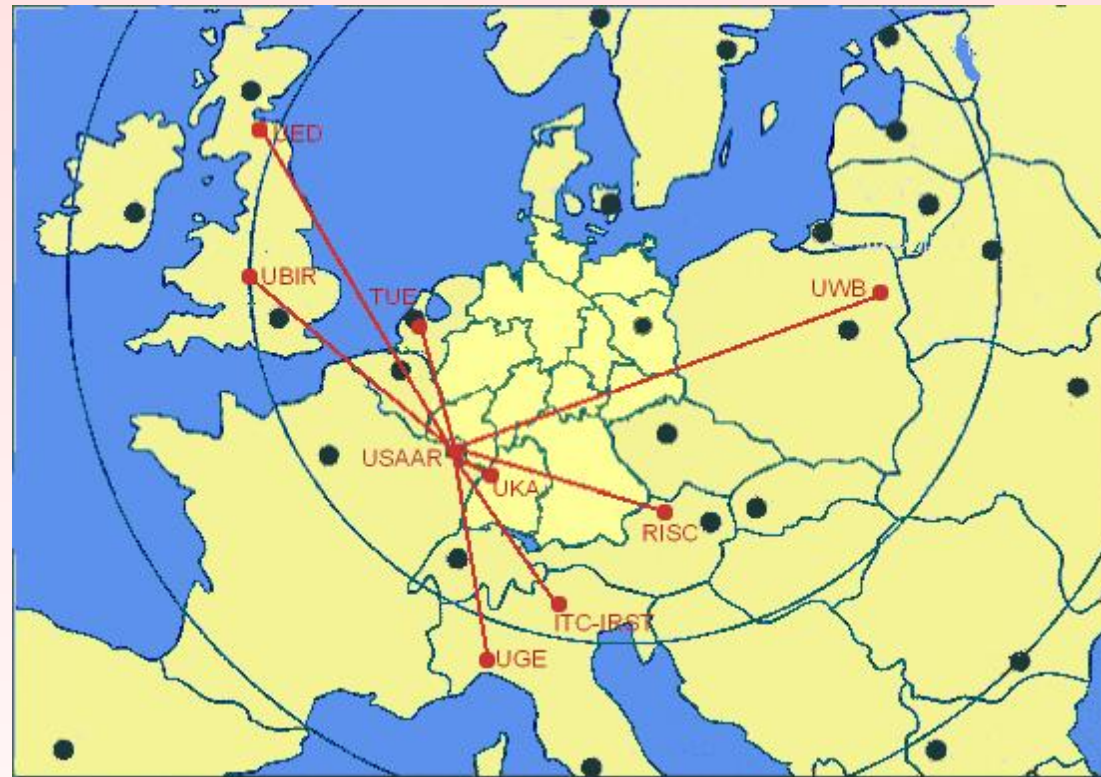
UGE

Genova
Armando



UBIR

Birmingham
Kerber



Major Network Events



- Symposium in St. Andrews, Scotland, August, 2000.
- Symposium in Siena, Italy, June, 2001.
- Network Meeting in Genova, Italy, February, 2002.
- Symposium in Marseilles, France, July, 2002.
- Autumn School, Pisa, Italy, September, 2002.
- MTR Meeting in Saarbrücken, Germany, March, 2003.

Upcoming

- Symposium in Rome, Italy, September, 2003. ⇐ **Submit!**
- IJCAR in Cork, Ireland, August, 2004.

Some Network Statistics



■ Young Visiting Researchers (YVRs): > 35

■ YVRs Funding (in person months) : > 150
will become > 275

■ Publications (since mid 2000)

Journals 22

Proceedings 54

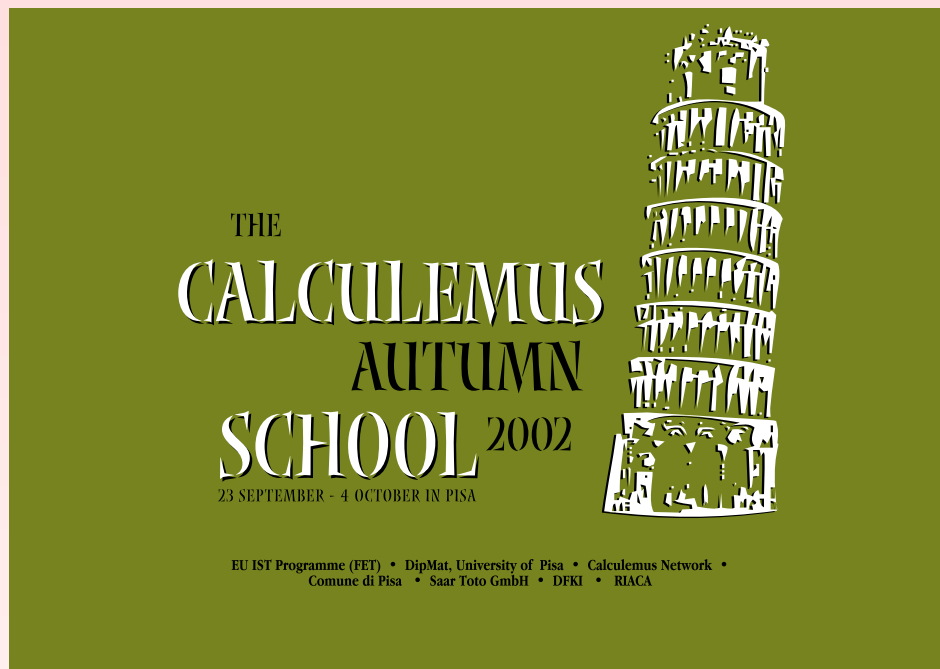
PhD 3

Tech-Reports 13

Others 4

■ Many Collaborations: at systems level
joint case studies

The CALCULEMUS Autumn School



Organising Committee

Christoph Benz Müller, USAAR (Chair)

Regine Endsuleit/Clemens Ballarin, UKA (Chair)

Carlo Traverso, Uni Pisa (Local Organizer)

Jörg Siekmann, USAAR

Jacques Calmet, UKA

Corinna Hahn, EPO/ Eurice GmbH



The CALCULEMUS Autumn School



The first training event with the main experts from the involved fields

- 75 participants (approx. 30 from Network): Undergrads, PreDocs, PostDocs, Researchers, Lecturers
- 26 lecturers



Associated Events:

- OPENMATH workshop
- MKM Network kick off meeting
- CALCULEMUS task force meetings

The CALCULEMUS Autumn School



- Introductory and Overview Courses
- Advanced Topics
- Evening Talks
- Student Sessions
- System Demonstration
- Experimentation with Systems



Evaluation of School showed:

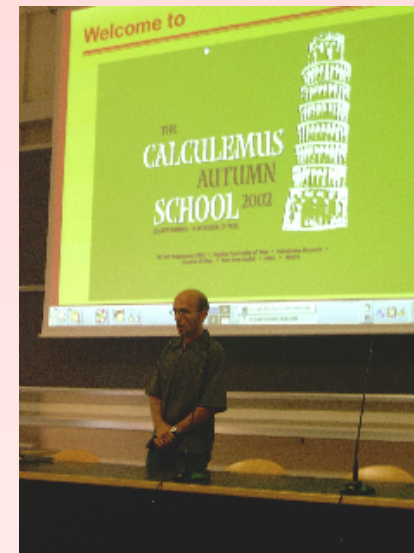
- the concept/format of the school was well chosen
- overall success of the event

The CALCULEMUS Autumn School



Funding

- CALCULEMUS RTN and Uni Pisa
- 20 EU student grants
- 26 EU Comenius teacher grants
- Further Sponsors



Challenge for this community?

- Further Autumn Schools:
 - Yearly or Two-Yearly
 - Organization-Rotation
 - EU Funding
 - Fixed Location
- Industry Days / Workshops / Tutorials

CALCULEMUS WS Presentations



- Arjeh Cohen (Eindhoven) and Volker Sorge (Birmingham)
Groups and Certificates
(40 min)
- Andrzej Trybulec (Bialystok)
The evolution of the MIZAR Mathematical Library
(40 min)
- Jürgen Zimmer (Edinburgh/Saarbrücken/Genua/...)
The MathWeb-SB and Theorem Proving Services
(30 min)