Collaboration with Industry from HPC to Grids

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A Grid since 1995



Public-Private Joint Venture



- Name: High Performance Computing Center for Academia and Industry
- Acronym: hww
- Initial share holders:
 - HLRS/University of Stuttgart (12.5%)
 - T-Systems & T-Systems sfr (40%)
 - Porsche AG (10%)
 - State of Baden-Württemberg (12.5%)
 - Other universities (25%)
- Purpose:
 - Buy and sell CPU-Time
 - Operate Systems
- Directors:
 - Dr. Heib (T-Systems)
 - Prof. Rühle (University of Stuttgart)

Univ. Stuttgart
Other Public
T-Systems
Porsche

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Business Concept



Requirements (1995)

- Access Issues
 - Networks
 - Interoperability
- Security Issues
 - Access control
 - Data integrity
- Reliability
 - Availability of system
 - Escalation strategy
- Business Concept
 - Total cost of ownership
 - Accounting

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Networks



Industrial Usage 2004-2007





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Running Costs

- Running Costs (average over the last 5 years)
 - Staff (University/State of BW/Industry)
 - Electricity/Cooling (University/Industry)
 - Building (University/State/Industry)
 - Maintenance (University/Industry)



Investment Costs

- Investment
 - 50% State of Baden-Württemberg
 - 50% Federal Government
 - Additional funding from industry





Situation 2007

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New Customers

Bertrandt bertrandt BTB • MAHLE DaimlerChrysler • Driven by performance Kärcher Mahle Porsche PORSCHE **KARCHER** RECOM TRANS SOLAR Transsolar RECOM SERVICES DAIMLERCHRYSLER e-IRG Workshop April 20 2007 Michael M. Resch H 12 High Performance Computing Center Stuttgart



DAIMLERCHRYSLER

Mixed Reality - Applications along the Product Development Process



Ralf Lamberti, Director Product Creation & Information Technologies e-IRG Workshop April 20 2007

DAIMLERCHRYSLER

Technological Focuses



Ralf Lamberti, Director Product Creation & Information Technologies

Requirements (2007)

• Access Issues

- Networks
- Interoperability
- Security Issues
 - Access control
 - Data integrity
- Reliability
 - Availability of system
 - Escalation strategy
- Business Concept
 - Total cost of ownership
 - Accounting
- Ease of use
 - Invisible security
 - Automatic process handling
- Integrated solution
 - Hardware, Middleware, ISV-Software
 - Visualization & control

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Tech. & Econ. Environment

- Technology
 - Still rapid hardware development
 - Speed through extreme parallelism
- **Economics**
 - Non-linear reduction of HPC costs
 - Shift of costs from hardware to software (licensing issues)
 - Lack of competitiveness after 12-18 months

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Science <u>or</u> Industry

- Goal
 - Breakthrough or best solution
- Purpose of HPC
 - Object of investigation or tool
- Technical Issues
 - Interesting or irrelevant
- Legal issues
 - Irrelevant or basis of business
- Economic issues
 - Relevant or key to success
- Mode of collaboration
 - Cooperation or competition



Recomm. for HPC – Grids - Industry

- 1. It is necessary to identify mutual interests of HPC@science and HPC@industry
- It is necessary to identify a working business model by addressing the legal issues and economic issues of a mixed usage model
- 3. It is necessary to identify the required technical solutions to deliver the requested high level service and not CPU cycles