

Swiss Vision of Supercomputing

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Outline

- Methodologies and tools for Global Computing
- Large Scale HPC applications
- Conclusions

Impact on Swiss economy and society

- *Commodity computing*
- *Meta computing*
- *Cluster computing*
- *Web-based supercomputing*
- distributed tools: work at home

Global Computing

Multi-level Parallelism

Distributed OO Technology

Web Operating System

Distant Collaborative Visualization

Programming Model

Performance Issues

Data Structure

Applications

- CFD: high-order methods, micro-macro approach, Lattice Boltzmann
- Biomechanics: blood flow, air, tissues, etc.
- DNA modelling and Molecular dynamics
- Optimization
- Mathematical modeling, algorithms for numerical and non numerical methods
- Multi-physics simulation: fluid, solid, heat transfer, chemistry, etc.
- Tools for Scientific visualization and interactive HPC

Conclusions

- Multidisciplinary approach
- Tools for heterogeneous distributed computing
- Tools for interactive HPC through Web interfaces
- Better algorithms and numerical methods
- Applications aimed at fundamental physics to bring more understanding
- Teaching
- Transfer technology