The EuroTools Working Group

*Software Tools for Computational and Data Intensive Applications*

WG 27141

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EuroTools in short

- EuroTools WG 27141
  - Created on April 15, 1998
  - funded for 2 years by the EC
  - members
    - 5 commercial companies, 4 supercomputing centers,
    - 8 research labs.
- Original goal:
  - increase use of European Tools for HPCN
- EuroTools WEB Site
Objectives

• help end-users and tool developers to communicate and exchange ideas
• establish collaborations among designers, developers, vendors and users of European software tools for HPCN
• increase the use of European HPCN software, both inside and outside Europe.

• identify emerging trends in HPCN technology

emerging trends in HPCN technology

• New trends in HPCN
  – Larger problems and new simulations
    • 3D problems, multi-physics, code coupling
    • 3D scientific visualization
  – Broader access to HPCN technology
    • lower price machines (Clusters & SMPs)
    • increasing number of companies could use HPCN
  – Emerging domains
    • data mining, image synthesis, virtual reality,...

  – HPCN appears to be a new core technology
    • mature programming techniques and tools
    • well trained students
• Is this a major crisis?
  – HPCN has now to take an ordinary place in companies as a **one of** the core technologies
    • less companies needed?
    • less engineers needed?
    • less researchers needed?
  – No, there is even more work to do!
    • HPCN is not at the level of other core technologies
      – Integration of HPCN software? hardware?
      – Cost effective development methods and tools?
    • New domains can benefit from HPCN technology

• Low cost HPCN is a new domain
  – Access to [super]computers for new users
    *GRID computing, Grande Applications*
  – Clusters as low cost supercomputers
    *The poor man’s supercomputers*
  • There is a need for
    – management tools
    – resource management (memory, processors, network)
    – run-time systems
    – efficient programming environments
    – standard applications
    – interoperability with the rest of the network
• Some research issues
  – Integration of parallel and distributed computing
    • different research communities
    • mixed techniques are successful
  – High Performance middleware
    • CORBA is easy to use but not efficient enough
      – integration with MPI
      – High performance brokers
  – High Performance Object Oriented Languages
    • Java is fine but was not design for performance
    • High Performance RMI, Parallel JVM, Compilers

• A new mission for EuroTools:
  Find ways to identify
  – HPCN technology
  – New customers & new applications domains
    • needs for high performance
    • use of existing HPCN software
    • develop HPCN in new domains
  – New research challenges
    • impact on society
    • long term perspective
Structure of the Working Group

- Full members + associated members
- Steering Committee
- Advisory board

MEMBERS

- **Commercial Companies**
  - ACE, The Netherlands
  - GENIAS Software, Germany
  - N.A. Software Ltd.. (NASL), United Kingdom
  - PALLAS, Germany
  - SIMULOG, France
MEMBERS

• High Performance Computing Centers
  – CNUCE-CNR, Italy
  – CSCS/SCSC (ETH Zurich), Switzerland
  – ONERA High Performance Computing Dept., France
  – VCPC (European Centre for Parallel Computing at Vienna), Austria

MEMBERS

• Research Laboratories
  • INRIA, France
  • GMD, Germany
  • Lund University, Sweden
  • Queen’s University Belfast, United Kingdom
  • Research Center Jülich (FZJ), Germany
  • TU Dresden, Germany
  • TU München, Germany
  • University of Southampton, United Kingdom
Associated MEMBERS

– Commercial companies
  • FECIT France
    (Fujitsu European Center for Information Technology)
– Research Laboratories
  • MTA SZTAKI Research Institute, Hungary
  • Dept. of Computer Science, Univ Nova de Lisboa, Portugal
  • Dept. of Computer Science, University of Warwick, UK
  • Dept. of Computer Science, University of Portsmouth, UK
  • Dept. of Computer Science, University of Wales Cardiff, UK

MEANS

• active information gathering and feedback from end-users and tool developers
• EuroTools focused technical meetings and training activities
• WEB site http://www.irisa.fr/EuroTools/
Special Interest Groups

- gather information
- disseminate results to HPC users
- support dialogue among vendors, and between vendors and users
- act as a contact point in specific areas of HPCN Technologies.

Special Interest Groups

- OpenMP / HPF
  - Barbara Chapman, University of Southampton

- MPI / PVM
  - Roland Wismüller, TU Munich

- Object Oriented Technologies
  - Jean-Louis Pazat, INRIA

- Metacomputing
  - Wolfgang Gentzsch, GENIAS
New Special Interest Groups

• Metacomputing
  – Wolfgang Gentzsch, GENIAS
• Problem Solving Environments
  – José Cunha, Univ. Of Lisboa
  • EU JavaGrande
    – Karsten Decker
    – Mark Baker
    CSCS
    Univ. of Portsmouth

Technical Meetings

• Focused technical meetings
  • transfer of information and technologies between developers and users.
  • to help developers to exchange ideas on a specific technical subject and give a better evaluation of user needs and requirements.
WEB Server & Documentation

- Web server
  - structured information about HPCN software tools development, availability and use.
  - EuroTools events, workshops and meetings
- Documentation
  - standard description for tools listed in our database

http://www.irisa.fr/EuroTools

Achievements

help end-users and tools developers to communicate
  - HPF users’ group, PVM/MPI user’s group, ...

Cooperation with other projects and organizations
  - HPCNet, EuroPVM/MPI, Ptools, JavaGrande...

increase the visibility of European Industry and Research
  - WEB site
  - Participation to conferences
  - Workshops organisations and sponsoring

get end-users informed
Achievements

create awareness
- inside Europe
- Outside Europe
  - contact with Ptools, HPF users group. … Booth at SC’99

encourage the establishment of collaborations
- design, development, commercialization, and use

enlarge the field of application of HPCN technology
- new users are not in this community
- object oriented programming needs high performance
- high performance computing needs object oriented programming

Achievements

• EuroTools workshops :
  - at HPCN’98, EuroPar’98, ECOOP’98
  - at HPCN’99, EuroPar’99
  - at ECOOP’ 2000,EuroMicro PDP 2000

• EuroTools sponsored workshops
  - UK Java at EuroPar’98, Java Workshop at HPCN’99
  - EuroPVM/MPI, HUG, Stuttgart MetaComputing Workshop
  - Advanced Environments and Tools for High Performance Computing Workshop, …

• “Spin off”
  - APART Working Group
Call for contributions

• Register your tool in our database
  – we want to create the largest tools catalogue
  – get your tool listed in our database for free
    • submit a tool description for registration

• Contact EuroTools members
  – to contribute to the activities of the EuroTools working group
  – to suggest new activities, collaborations, ...