

# Intelligent Application-oriented Scheduling for HPC Grids with IANOS

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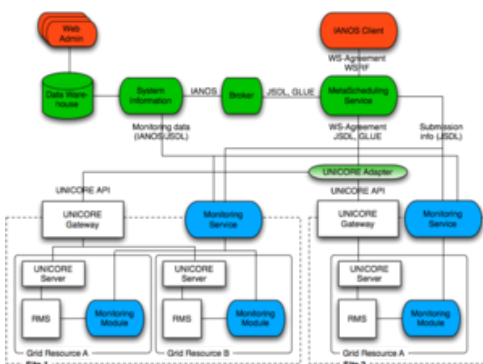
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## Developed by:

- [Centro Svizzero di Calcolo Scientifico](#)  
Switzerland
- [Dortmund University of Technology](#)  
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- [Ecole Polytechnique Fédérale de Lausanne](#)  
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IANOS, the Intelligent Application-Oriented Scheduling framework is a Grid scheduling system, which provides a generic job submission framework for optimal positioning and scheduling of HPC applications. IANOS's inherent negotiation framework uses for that purpose standard Service Level Agreements.

Furthermore, IANOS provides:

- An intuitive job specification and submission interface
- Brokerage and resource selection capabilities
- WS-Agreement-based negotiation using the MetaScheduling Service
- Standards-based service-oriented Grid software

## More details:

IANOS solves the non-trivial problem of scheduling applications within a Grid of HPC machines through a novel approach of combined cost and execution time evaluation based on job requirements, application and resource characteristics, as well as historical data. These algorithms are the backbone of a service-based framework that automatically finds best-suited resources for a certain application request and negotiates the specific QoS demands with the respective resource providers. Two models are used: the Cost Function model and the Execution Time Evaluation model. They are based on a parameterisation of the applications and the resources. The Cost Function model calculates the cost value for each candidate resource. The Execution Time Evaluation model forecasts the execution time of a given application on a given resource, a prediction based on the knowledge about the CPU node performance of the applications.

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## Meeting IANOS

École Polytechnique Fédérale de Lausanne, Switzerland

July 21st and 22nd, 2008

Room: ME B 10 (<http://plan.epfl.ch/index.html?room=meb10>)

Hotel Information: [www.lausanne-tourisme.ch](http://www.lausanne-tourisme.ch)

Download Agenda: [Agenda21-22-July-2008-2-1.doc](#) (DOC, 125 KB)

## Agenda

### Monday, 21st July 2008

Current IANOS version Demo & Internals

- |               |  |
|---------------|--|
| 13:00 – 13:15 | Welcome (R. Gruber, EPFL)                      |
| 13:15 – 13:45 | IANOS internals (V. Keller, EPFL)              |
| 13:45 – 14:15 | a title (O. Wäldrich, FhG)                     |
| 14:15 – 14:45 | IANOS demo (H. Rasheed, FhG – CoreGRID fellow) |
| 14:45 – 15:00 | Coffee Break                                   |

Towards future: current partners (FhG, EIA-Fr, CSCS, and TU Dortmund)

- |               |  |
|---------------|--|
| 15:30 – 16:00 | a title (W. Ziegler, FhG)  |
| 16:00 – 16:30 | a title (R. Yahyapour, TU Dortmund)  |
| 16:30 – 17:00 | Quo vadis IANOS? - The future from a research perspective (P. Wieder, TU Dortmund) |
| 17:00 – 17:30 | CSCS contribution (P. Kunszt, CSCS)  |
| 17:00 – 18:00 | Discussion   |

Evening: Social Event

### Tuesday, 22nd July 2008

Invited speakers (20 minutes each) : INRIA, PSNC, FZJ, Uni Zürich, SWITCH, ORNL

- |               |   |
|---------------|---|
| 08:30 – 08:50 | DIET: Scalable Scheduling for GridRPC applications (F. Desprez) |
| 08:50 – 09:10 | What PSNC could bring in the Project (A. Oleksiak)              |

## Participants

- |              |   |
|--------------|---|
| EPFL:        | <a href="#">Vincent Keller</a><br><a href="#">Ralf Gruber</a>   |
| HES-SO:      | <a href="#">Pierre Kuonen</a>   |
| FhG – SCAI:  | <a href="#">Wolfgang Ziegler</a><br><a href="#">Oliver Wäldrich</a><br><a href="#">Hassan Rasheed</a> |
| TU Dortmund: | <a href="#">Philipp Wieder</a>  |
| ENS Lyon:    | <a href="#">Frédéric Desprez</a>  |
| PSNC:        | <a href="#">Ariel Oleksiak</a>  |
| SWITCH:      | <a href="#">Wibke Sudholt</a>   |
| FZJ:         | <a href="#">Thomas Eickermann</a>   |
| Invitation : |   |
| FZJ:         | <a href="#">Thomas Lippert</a>  |
| Uni Zürich:  | <a href="#">Christian Bolliger</a><br><a href="#">Jürg Hutter</a>                                     |
| EPCC:        | <a href="#">Kenton D'Mellow</a>   |
| ORNL:        | <a href="#">Jack Dongarra</a>   |

09:10 – 09:30	a title (T. Lippert, Fz)
09:30 – 09:50	a title (W. Sudholt, Uni Zürich)
09:00 – 09:30	a title if needed
09:30 – 09:50	a title (K. D'Mellow, EPCC-DEISA)
09:50 – 10:10	Coffee Break

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Towards a new European Project with more partners

10:10 – 11:10	Discussion / Collaboration
11:10 – 12:10	Discussion : IANOS : Future within new European Project. Who?
12:30	End

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## Publishing Notes

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VAT Identification Number in accordance with §27 a VAT Tax Act: DE 129515865

### Court of jurisdiction

Amtsgericht Mÿnchen (district court)  
Registered nonprofit association  
Registration no. VR 4461

### Responsible editor:

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