

Technological Platform of the “University Cluster”

Victor Ivannikov, ivan@ispras.ru

Director of ISPRAS

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"University Cluster" Program* (1)



Started at the end of **2008**

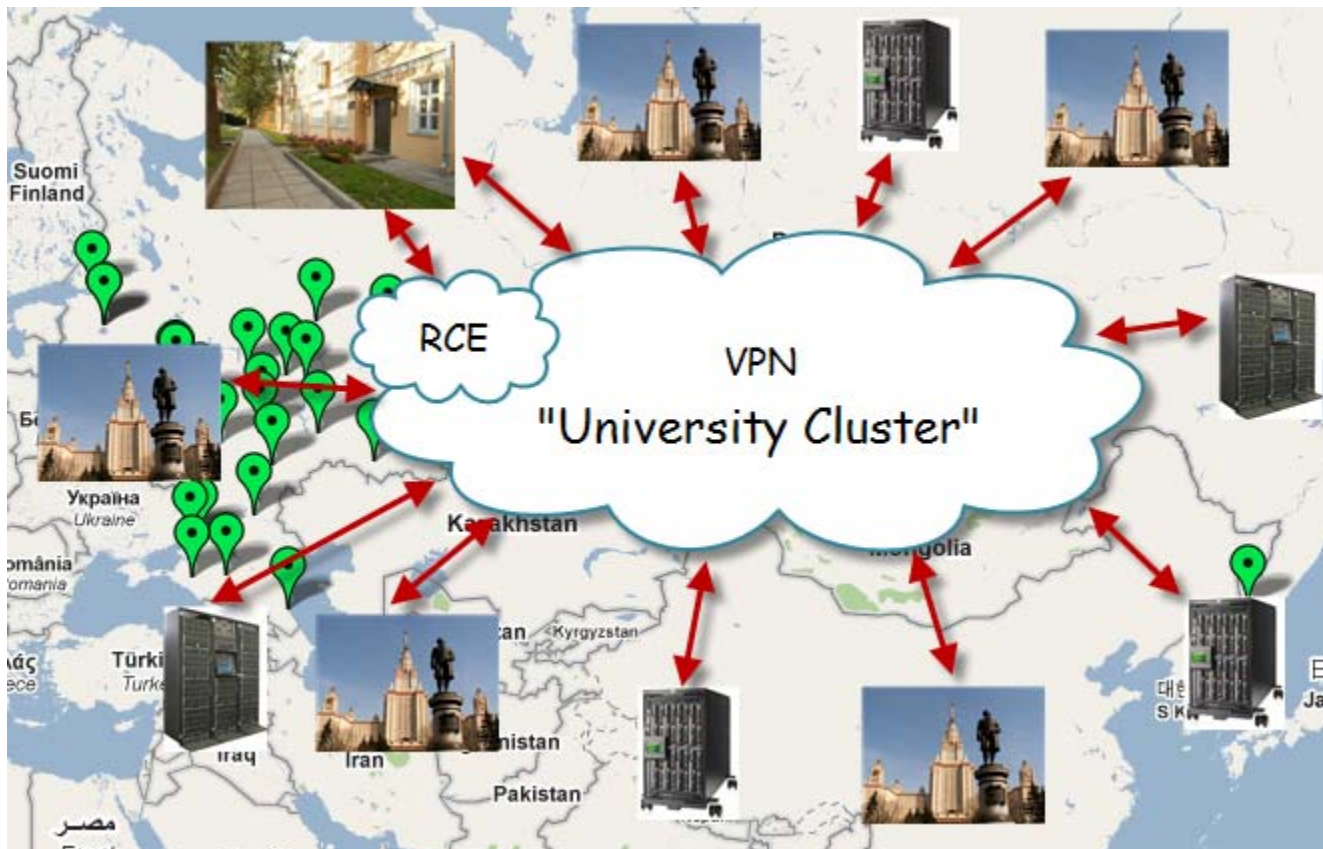
The **goal**:
Transfer of knowledge and technologies of parallel and distributed computing from Centers of Competence to education and industry

more than 50 participants (Universities)
15 Resource Centers of program

***Cofounders of the Program: ISP RAS, JSCC, HP and Sinterra**

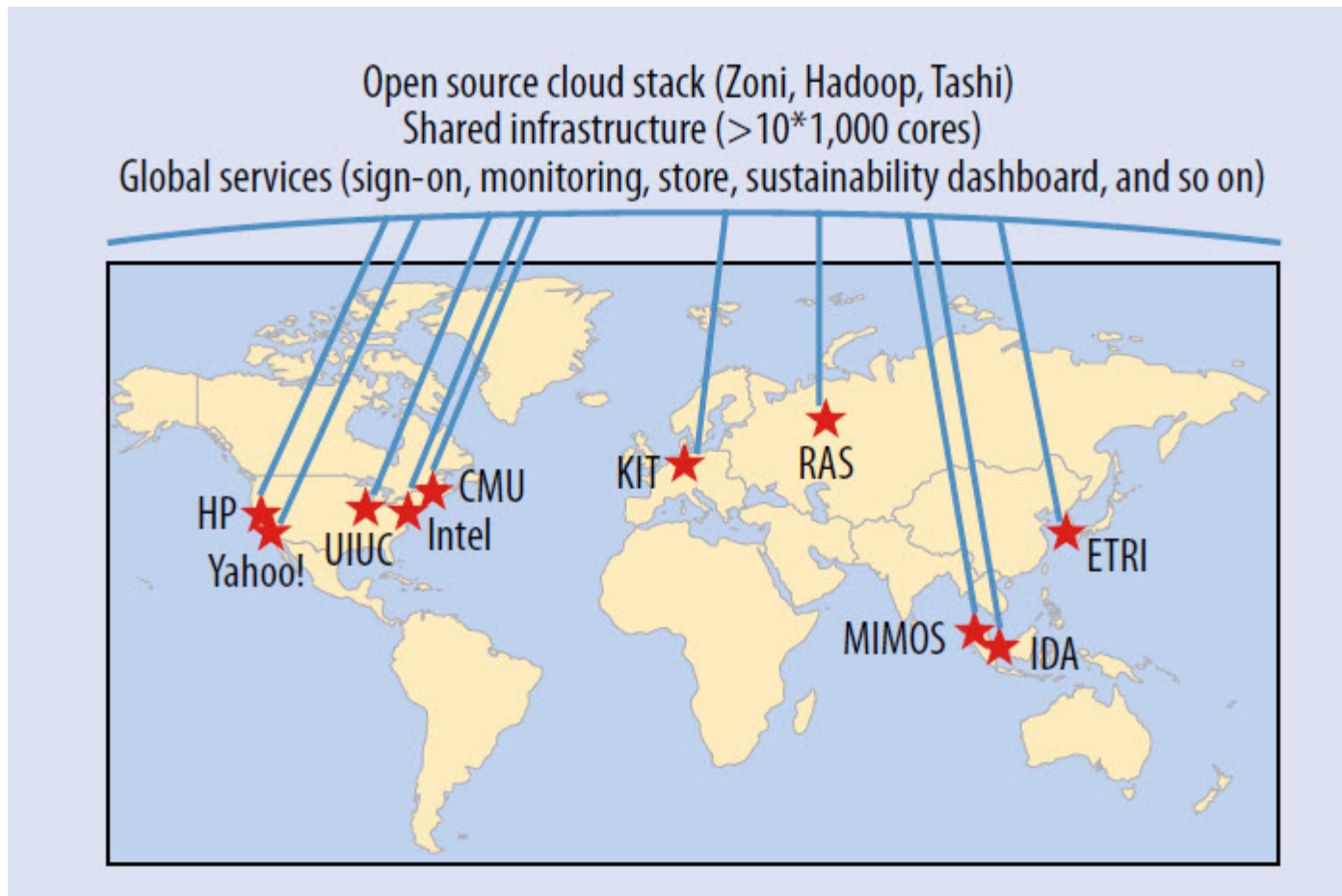
"University Cluster" Program (2)

All participants and Resource Centers of program are connected (for free) by «full mesh» VPN, up to 10Gb/sec.



Centralized access (possible through Internet or VPN "University Cluster", rce.ispras.ru is access point in both) to services, management and monitoring are carried out ISPRAS

"University Cluster" – OpenCirrus (3)



We engage the members (researchers) of the "University Cluster" Program in using the testbed in their projects, e.g. in processing of large arrays of biological data, nanotechnology, 3D modeling and other applications and port them to cloud infrastructure

Chandrakant Patel.

HP Senior Fellow and Director Sustainable IT Ecosystem Laboratory,
Hewlett Packard Laboratories, Hewlett-Packard Company, (США)



Kyriakos Baxevanidis.

Deputy Head of Unit GEANT & Infrastructures Unit European
Commission (Брюссель)



Thomas Kwan.

Director, Research Operations Yahoo! Labs, Yahoo! (США)



<http://www.geant.org/conf/2010/report.php>

Conference "Cloud computing. Research, Development and Education." (April 15-16, 2010)



More than 120 participants from 80 institutions (Russian Universities, HP, Yahoo!, Microsoft, Intel, Officials, etc.)



Conference materials:

<http://www.ispras.ru/ru/unicluster/conf/2010/report.php>

Technological Platform of the “University Cluster” Program (I)

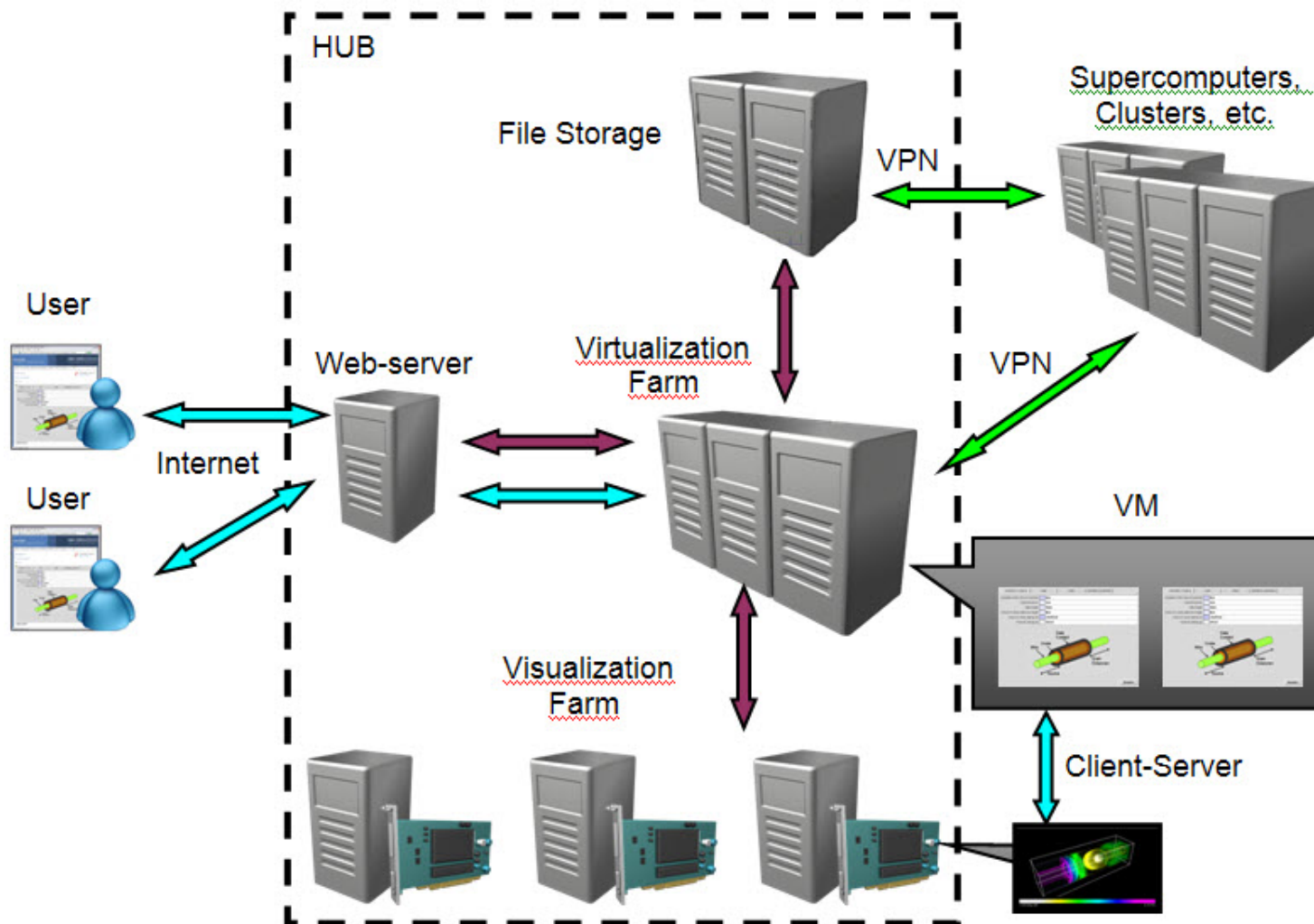
- ◇ Beta-version of the Platform is available from March 2011
- ◇ The Platform provides an opportunity of creating of the wide range of services within a single infrastructure including creating subject-specific web-labs (combining web 2.0 concepts, with access to applied models, support of distributed development, mechanisms to add new resources, webinar support, visualization of the results, etc.)

Technological Platform of the “University Cluster” Program (II)

- ◇ A fundamentally new opportunity to create communities of professionals in specialized areas, standardization of tools, data storage formats, etc
- ◇ Fundamentally new opportunities for education: lectures, seminars, labs etc.

***Integration of science, education and industry
on a new technological level***

High Level design of Platform



unihub - Home

https://unihub.ru/home

My Messages (30)

UniHUB.ru

ISP RAS project

Experimental Modelling of Scientific Problems
in Cloud Computing Environment

Oleg Samovarov (oleg.samovarov)

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- train and be trained with teaching courses, presentation and publications,
- add your own material with upload tool.

UniHUB is a Virtual Computing Laboratory, focused on improving the processes of development, implementation and simulation of computational problems.

Provides an opportunity for the collaboration of representatives from various research communities.

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[UniHUB. Учебные материалы.](#)
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MAY 31 [Conference Cloud Computing. Education. Research. Development. 2011](#)

JUN 30 ["Основы использования свободных пакетов OpenFOAM, SALOME и ParaView при решении задач MCCV"](#)

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“University Cluster”. Current state

- ◇ The technological platform is deployed using recourses of ISP RAS, Partners and Participants
- ◇ All services created during previous stages (*including OpenCirrus activities*) are integrated and available in the framework of new technological platform
- ◇ Users are able to create and deploy their own “cloud” services in the framework of the common platform including creation of subject-specific Web-labs
- ◇ Presently the following Web-labs are deployed:
 - 1) Continuum Mechanics (CM)
 - 2) System Programming

Continuum Mechanics Web-lab



The main goal – creating the community of users and developers

- March 15, 2011. The workshop on using of open source applied packages (OpenFOAM, SALOME, and ParaView). More than 50 participants from 37 institutions

- April 18-19, 2011. Users' training.

- June 3, 2011. The workshop at the Conference "Cloud Computing. Education. Research. Development"

- June 29-30, 2011. Users' training

- November 2011. The workshop on the results of participants

Continuum Mechanics Web-lab. The current state

Provision of the access using “cloud” computing conception to the stack of open source software, which enables to perform a full cycle of solving problems of Continuum Mechanics:



- *SALOME* (meshing)



- *OpenFOAM* (solver)



- *ParaView* (visualization) и др.

A training course «Fundamentals of using of open source software packages *OpenFOAM*, *SALOME* and *ParaView* when solving problems of Continuum Mechanics» (*performance of labs using Internet, communication tools for teachers and students, etc.*)

“University Cluster”. Future work

The transition from the pilot operation of individual services to the full use of the platform with 24/7 access.

Creation of the web-based research and development centers in the following areas:

- Computer-aided design of complex engineering systems
- Biology and genetics
- Meteorology
- Materials science

THANK YOU

