# CERN-RUSSIA Joint Working Group on LHC Computing

## 1st meeting, July 11, 2000, CERN

## Minutes

**CERN**: L. Robertson, J. Knobloch, O. Martin, B. Panzer, J. Shiers, P. Hristov, A. Putzer, M. Pimia, T.Cass
**Russia**: V.A. Ilyin, V. Mitsyn, S.F. Berejnev, M. Tchoumakov, A. Solodkov, E. Tikhonenko, I.Belyaev
**Invited**: H. Freze (DESY), A. Joutchkov (Moscow)

### 1. Introductory Welcome

L. Robertson opened the meeting and stressed its importance in view of the long-term co-operation of Russian institutes and CERN in the development of LHC computing. During first meetings the main problems in establishing this co-operation should be addressed and possible solutions have to be discussed with appropriate recommendations to be presented to the Russia-CERN Joint Working Group.

V. Ilyin introduced the activity started in Russia on the creation of a Regional Center for LHC experiments (RRC-LHC). The RRC-LHC Co-ordinating Board (chairman acad. S.T. Belyaev, http://theory.npi.msu.su/ ilyin/RIVK-BAK/) has been approved in 1999 by the Russia-LHC Working Subcommittee. The working groups have been created. Prototypes of PC/Linux farms are under development, and they have been successfully used in May-June 2000 in first CMS HLT run. The RRC-LHC team participates in the Data Grid project, in WP6 (GRID testbed) and WP8 (HEP applications, through Collaborations) work packages. Main problems at present are identified as follows: 1) establishing high performance telecommunication links between Russian and European research networking; 2) establishiing working contacts between RRC-LHC and CERN IT and Collaborations.

### 2. High performance link Russia-Europe

The problem of high performance links Russia-Europe was discussed as the first point of the agenda.

V. Ilyin reported that Russian HEP Instututes, together with the Russian Institute for Public Networking (RIPN), have signed the Collaboration Agreement on the creation of a high performance telecommunication link Russia-Europe for science and higher education. They have agreed that the existing telecommunication channels between Russia and Europe do not meet the present needs for bandwidth requirements, which presents a potentially serious problem, especially in view of requests from coming LHC experiments and other HEP projects. Furthermore, the participation of Russian institutes in the EU HEP Data-Grid project requires already now connectivity at a level of 100 Mb/s. Russian HEP Institutes and RIPN agreed to initialize the project of a high performance link to the TEN-155 European research networking infrastructure, starting with a capacity of 100-150 Mb/s in 2001, and to suggest to CERN and DESY to co-ordinate the project from the European side. They stressed the importance of involving in the project institutes

and organizations from other fields and of applying for financial support from Russian and European sources.

V. Mitsyn reported on the present status and plans for networking in JINR (Dubna), in particular about links with the Moscow backbone and links to Europe, which are provided by RIPN at present.

S. Berejnev reported on the present status and plans for RUHEP, which provides local networking for most of the Russian high energy and nuclear physics institutes, as well international links to CERN and DESY.

In the discussion H.Frese stressed the importance of sizable financial support from Russian sources if one is to discuss accompanying European support. Then, he proposed to consider several scenarios for the realisation of the project, especially taking into account present development of European research networks. Then the project cost was discussed. O. Martin estimated the cost as 5M US dollars per year. He mentioned that a subsidy at the 40% level of the total cost can be got out of the EC. M. Tchoumakov has confirmed this estimate based on his discussion with ROSTELECOM. However, a large decrease of the cost could happen at the end of this year or the beginning next year because new optic cables between Russia and Europe (mostly ending at Germany) are under the installation, as stressed by S.Berejnev.

V.Ilyin has proposed to prepare a Letter-of-Intent to be signed by CERN, DESY and Russian HEP Institues as a starting point for the project.

The meeting expressed support for the initiative of the Russian HEP Institues and recommended CERN and DESY to be co-ordinators of this project from the European side. It was agreed to prepare the corresponding LoI. It was recommended to Russian initiators to contact D.Williams (CERN, TERENA) and participants of the meeting, O.Martin and H.Frese, for the discussion of possible financial sources in Europe.

### 3. Computing in Colaborations

The second point of the agenda was a discussion of current status of the Russian participation in the computing activity within Collaborations. The representatives of LHC Collaborations presented briefly the corresponding information: M.Tchoumakov and P.Hristov for ALICE, A.Solodkov and A.Putzer for ATLAS, E.Tickhonenko and M.Pimia for CMS, I.Belyaev and T.Cass for LHCb.

Collaborations underlined that participation of Russian groups in the current activity on the computing should correspond to the large Russian contribution to the detectors installation and physics analysis. The creation of prototypes of the Regional Center in Russia is an important task in this intital period. In particular A.Putzer noted that the prototype has to be ready for the testbed of GRID technology in 2002-2003. E.Tikchonenko and M.Pimia informed about successful participation of INP MSU and ITEP groups from Moscow in the HLT run in May-June this year within the global computing experiment for generation of a large sample of events in collaboration with CERN and groups from USA, Italy and Finland. The prototype of RRC-LHC PC/Linux farm, created in INP MSU and ITEP, was used in this run.

### 4. Working groups

B.Panzer gave a review of the current status of PC/Linux farms and mass storage fa-

cilities in IT and directions for their development following the LHC computing requests. In particular he reported on CASTOR software, developed recently in CERN IT for managment of high performance and large scale file systems adequate for the LHC requests. V.Ilyin and V.Mitsyn have given information about the current status of PC/Linux farms and data mass storage in INP MSU, ITEP, JINR and IHEP, which are developing as prototypes of RRC-LHC. A.Putzer remarked that large scale hard disk space is considered in ATLAS as a main direction, rather than robotic systems, for the mass storage model.

I.Belyaev informed the meeting about the current status of the software updating in Moscow HEP institutes, in particular for LHCb and CMS software.

### 5. HEP EU Data Grid

In last point of the agenda the participation of Russian groups in the Data Grid project was discussed. This project was submitted to the EC this May by CERN and LHC participating instututes around Europe.

L.Robertson reported that the project is not approved yet. However, the organization activity has started. In particular a first meeting on organising the testbed has been held on June 30 in Lyon. The next Data Grid meeting will be organized at the beginning of September in France. It was noted that participation of Russian representatives at this meeting would be useful.

A.Jouthkov told about the current status of the Moscow backbone channels (Telecommunication Center "Science and Society") used by Moscow HEP institutes for local networking. Then he informed the meeting about the activity on the creation of a local Grid project in Russia. At this moment in Moscow three subprojects are under realization: 1) for high energy physics (considered as a partner of the Data Grid project); 2) for microbiology; 3) for ecological and environment sciences. A fourth subproject is under discussion with applications in industry. In particular, already in September there will be created a 100 Mb/s specialized link between INP MSU and ITEP, and its capacity will be increased up to 1 Gb/s at the end of this year.

### 6. Concluding

As a conclusion L.Robertson formulated two main tasks for members of JWG on LHC computing at the moment:

1. to start the preparation of the project of the high performance telecommunication link Russia-Europe. The LoI should be prepared for signing by CERN, DESY and Russian HEP institutes. Experts on telecommunications in CERN IT and Russian institutes should study the project framework and possible sources for the financial support;

2. to establish close working links between GRID activities in CERN (Data Grid project) and local Grid initiatives in Russia.

In a short common discussion it was agreed that an application to INTAS should be prepared for the support of the participation of Russian groups in the research on LHC computing.