

12th IAEA Technical Meeting on Control, Data Acquisition and Remote Participation for Fusion Research

Contribution ID: 483

Type: **Oral (Plenary Session)**

RUSSIAN PROTOTYPE OF ITER REMOTE PARTICIPATION CENTER

Thursday, 16 May 2019 11:25 (20 minutes)

Russian Domestic Agency has nine plasma diagnostics Procurement Arrangements with ITER Organization (IO). Before integrated commissioning at IO Site, it is necessary to test these diagnostics with most of the interfacing systems connected. As the process can be long-lasting, remote means of access should be implemented. In addition, it will be useful to develop and test remote participation functions of the subsystems in scope of ITER Operations Network (ION) program. For this reason, Project Center ITER (RF DA) designed and deployed the Model of Remote Participation Centre (RPC) to communicate with supplied diagnostics and participate in ITER Main Control Room (MCR) activities.

Main RPC tasks are: Test of Remote Participation Functions; Test of ITER remote participation interfaces (Unified Data Access, Data Visualization and Analysis tool, etc.); Investigation of the long distance high-speed data transfer via existing public networks (reliability, speed, accuracy, latency); Implementation of Local Large-capacity data storage system (Using CERN and JINR experience, taking into account ITER services requirements (storage capacity 10 TB and disk I/O speed 300 MB/s)); Access to ITER S3 zone IT infrastructure (S3 – XPOZ (External to Plant Operation Zone) in accordance with the requirements of information security and IEC 62645 standard.

The RPC has to participate in ITER Main Control Room (MCR) activities using audio and video links for direct communications, remote copy of MCR screens and plasma diagnostics HMIs, access to experimental data and data processing. While ITER MCR is under construction, the RPC has to participate in ITER Temporary MCR activities using above-mentioned features.

Dedicated data link (IEEE 802.1Q) between ITER XPOZ and RPC private network with some limitation on outside communication was created for communication purposes. Trusted hardware, virtual machines, zero clients etc. are used in this subnet. Personnel role-based access is possible to these machines under control of ITER Organization.

Video conferencing and person-to-person communication is allowed outside ITER S3 zone, Polycom and MS Skype for Business solutions are used.

RPC infrastructure can perform data processing or connect to Kurchatov Institute Supercomputer Cluster.

Work done under contract H.4a.241.19.18.1027 with ROSATOM and Task Agreement C45TD15FR with ITER Organization.

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Session Classification: Plenary Oral

Track Classification: Remote Participation and Virtual Laboratory