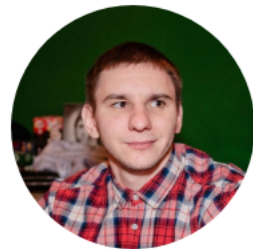# Cloud Service for Scientific Computations on MICC resources

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54th meeting of the PAC for Condensed Matter Physics

# Project Overview

- **Major time-eaters when entering a typical research project:**
  - Learning the MICC usage
  - Setting up the software environment

- **Some categories of users have tight time limits, e.g. summer students**

**The goal of the service is to give simple access to the MICC resources and software**

- **Provide a single entry point via web-access**

- **Hide complexity of MICC structure**

**Benefits**

- **Reduce time spent on technical issues**

- **Prevent malicious usage of resources**

- **Free up time to spend on the actual research**

# Main System Components

**1. JINR SSO(Single Sign-On) as the authetication system**

**2. Web-interface**

- Fixed number of applications available
- Individual application parameter sets
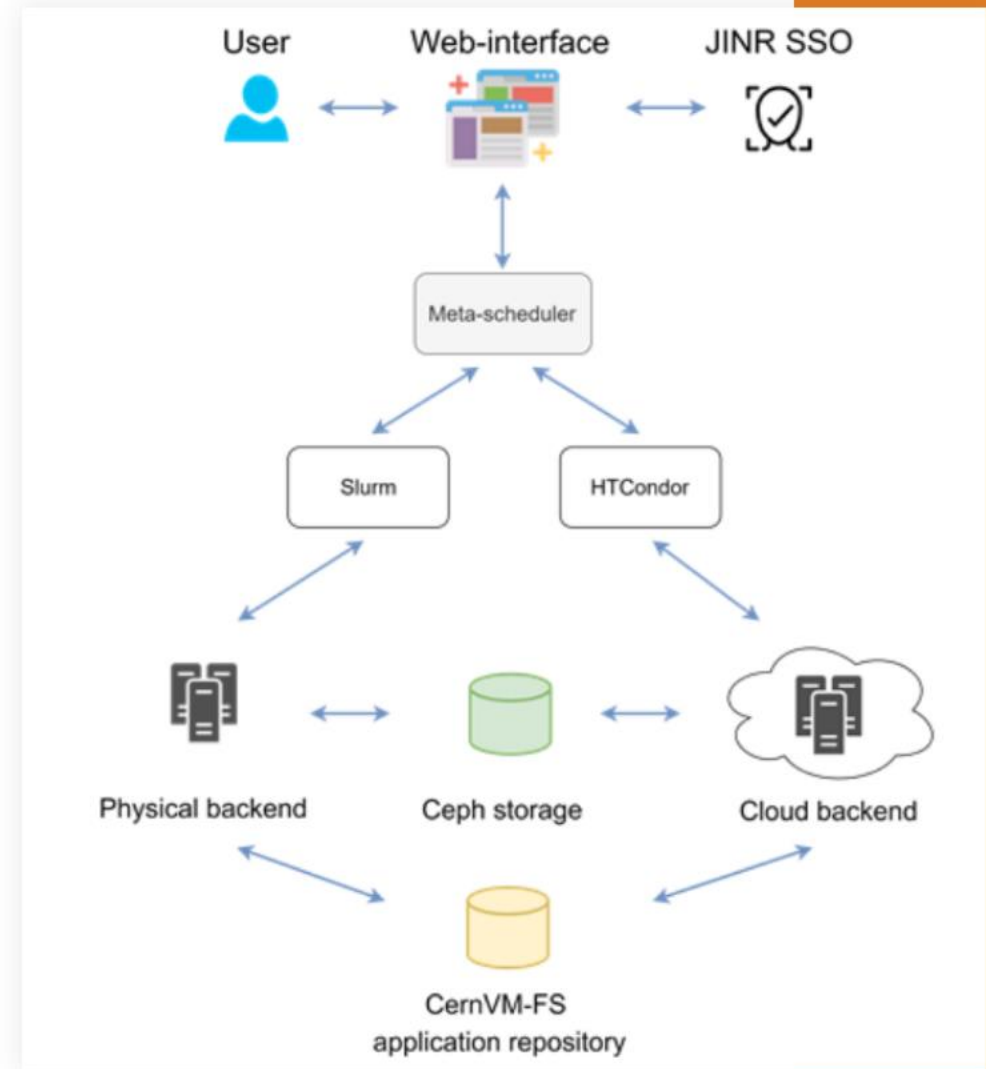- Common compute resource parameters

**3. Meta-scheduler**

- Handles job submission
- Currently supports the following resources
  - JINR Cloud via HTCondor
  - HybriLIT via Slurm

**4. Data storage**

- CephFS pool of the Cloud storage
- Simple web-access

**5. CernVM-FS as application storage**

# Web-interface

**The demonstration of the service will take place during the poster session**

Available at saas.jinr.ru

# Available applications

- Hello test

- Long Josephson junctions stack simulation

- Short Josephson junctions stack simulation

- Superconductor-Ferromagnetic-Superconductor Josephson junction simulation

# Future Development

- Implement application developer interface

- Add groups and roles in the service

- Improve the user interface

- Finish web-portal re-engineering

- Add new applications

## Publications

- N. Balashov, M. Bashashin, R. Kuchumov, N. Kutovskiy, I. Sokolov  JINR Cloud service for scientific and engineering computations, Modern Information Technology and IT-education, Vol. 14, no. 1. 2018 ISSN2411-1473

- R. Kuchumov , V. Petrunin, V. Korkhov, N. Balashov, M. Bashashin,, N. Kutovskiy, I. Sokolov, Design and Implementation of a Service for Cloud HPC Computations,  Computational Science and Its Applications – ICCSA 2018, Part IV, pp 103-112 (2018)

- N. Balashov, N. Kutovskiy, D. Proakhina, I. Sokolov Evolution and Perspectives of the Service for Parallel Applications Running at JINR Multifunctional Information and Computing Complex, EPJ Web Conf, Volume 226, 2020, Mathematical Modeling and Computational Physics 2019

- Balashov N., Kutovskiy N., Sokolov I. Data Visualization in Cloud Service for Scientific Computations, Modern Information Technology and IT-education, №1, 2021(publishing)