Software and information environment tools for users of the HybriLIT platform

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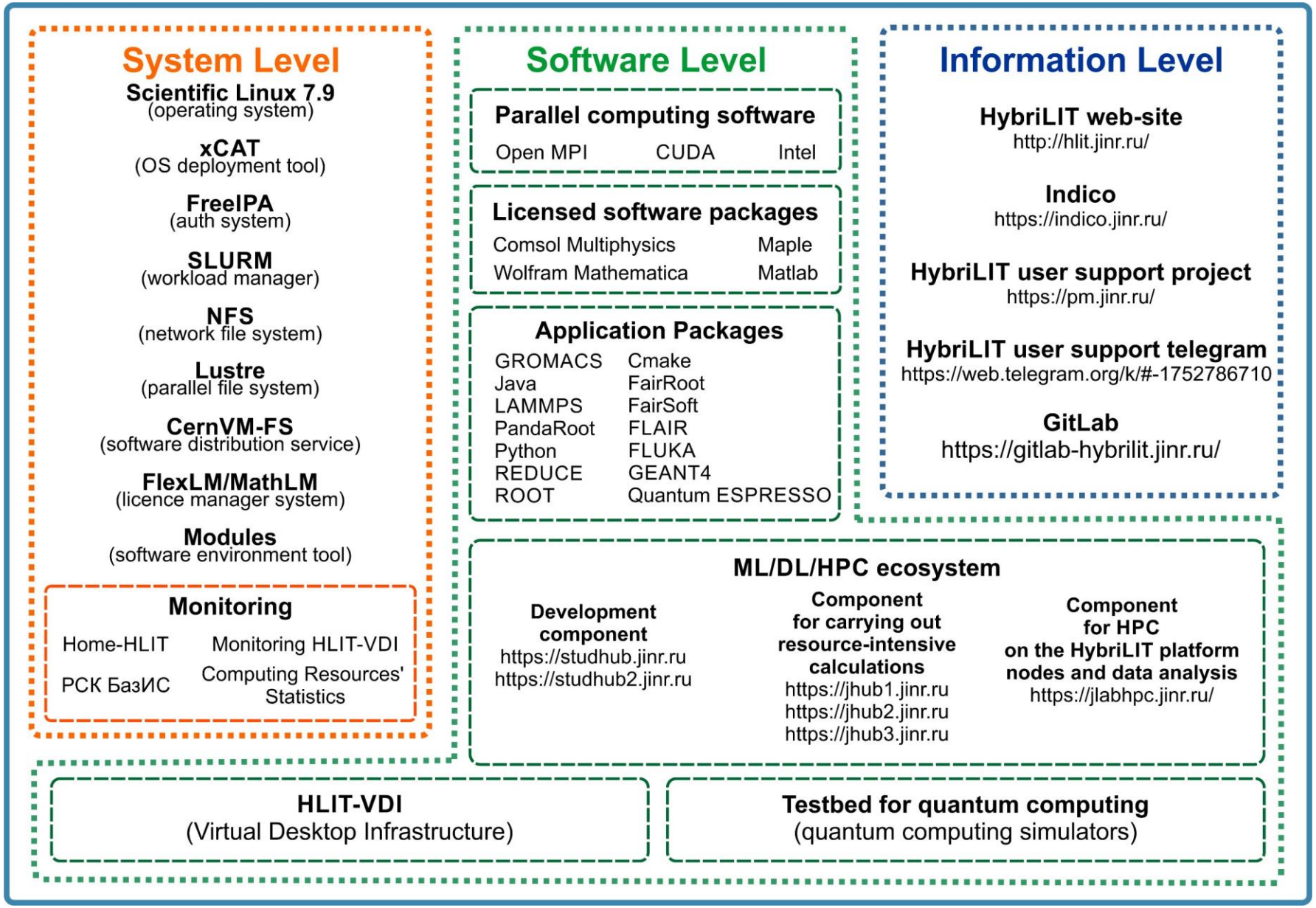
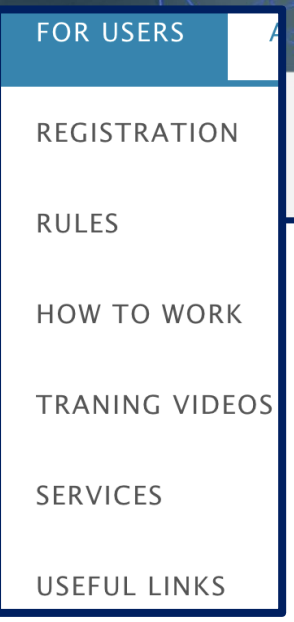
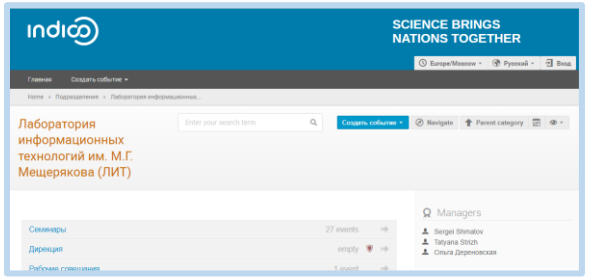
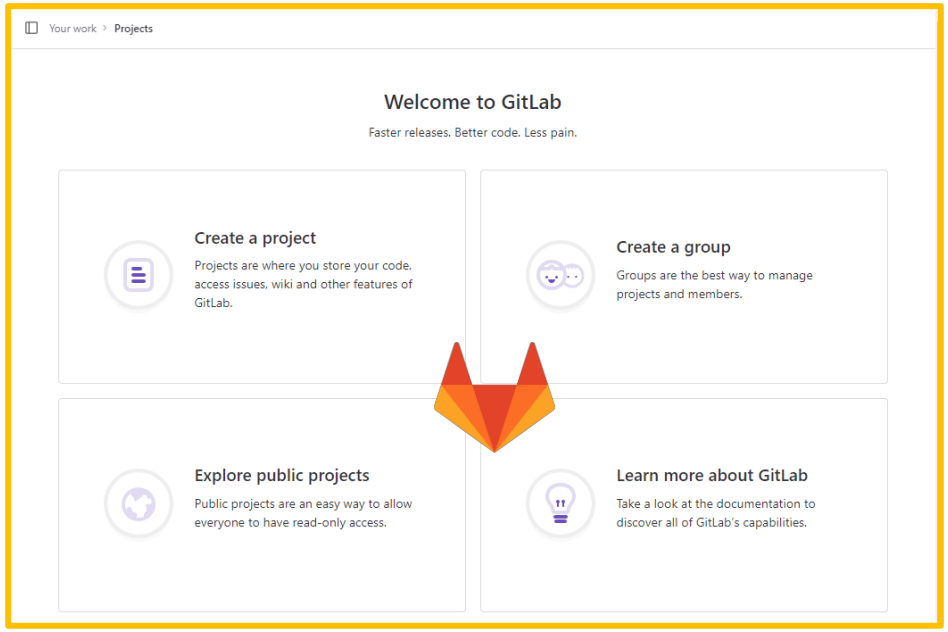
MICC component: HybriLIT platform

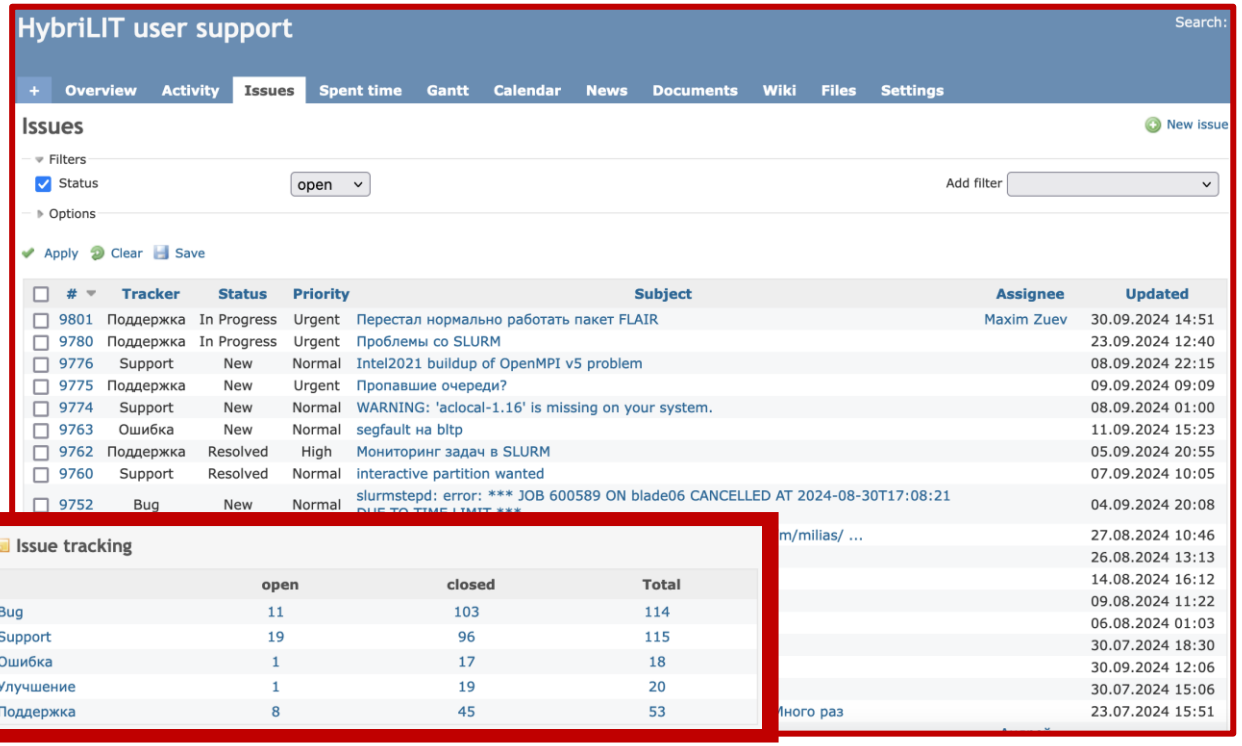


GOVORUN supercomputer: services for users

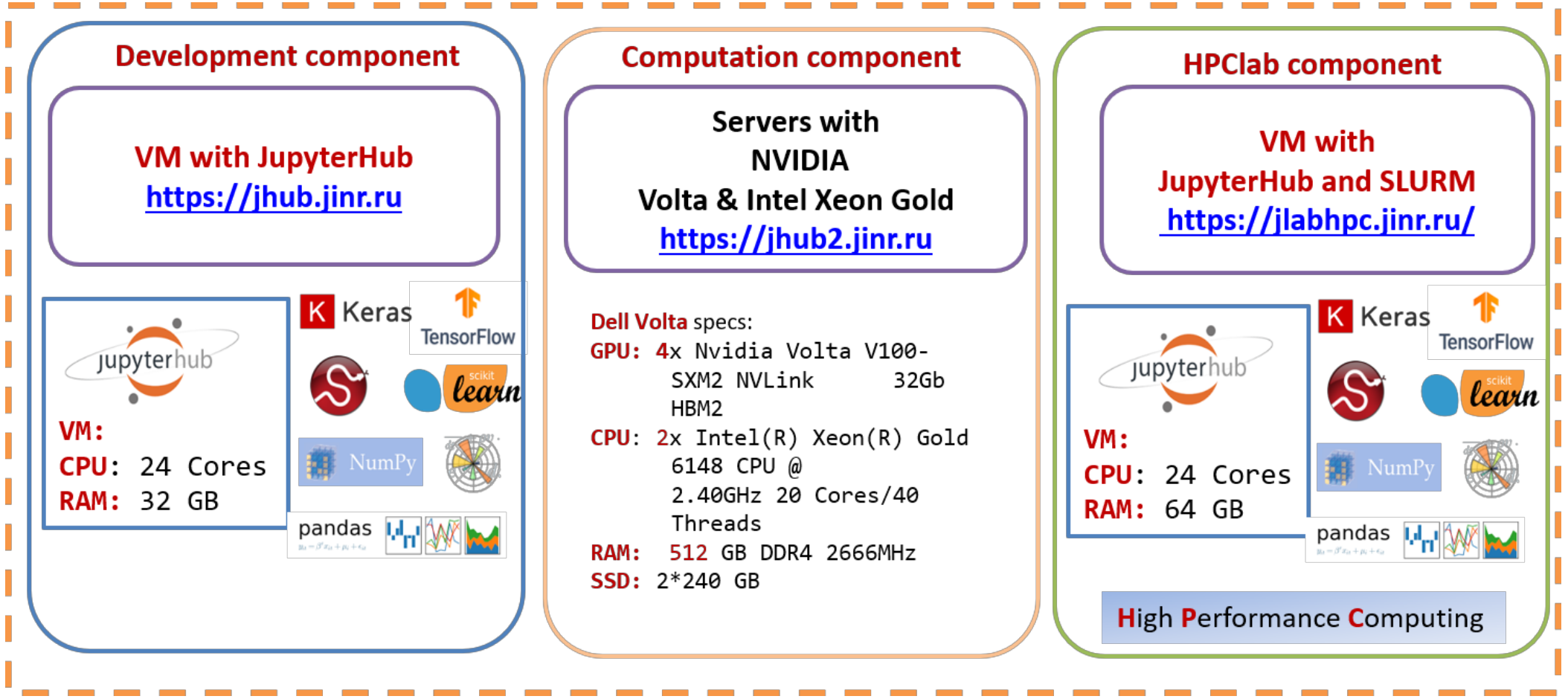








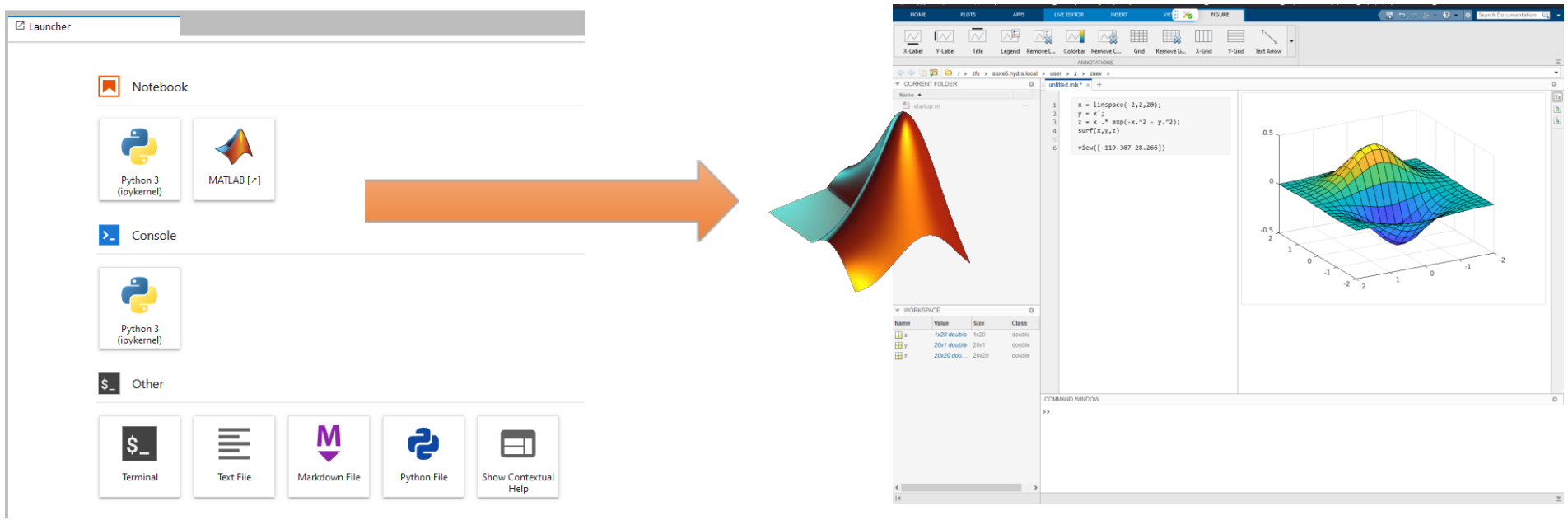
GOVORUN supercomputer: services for users



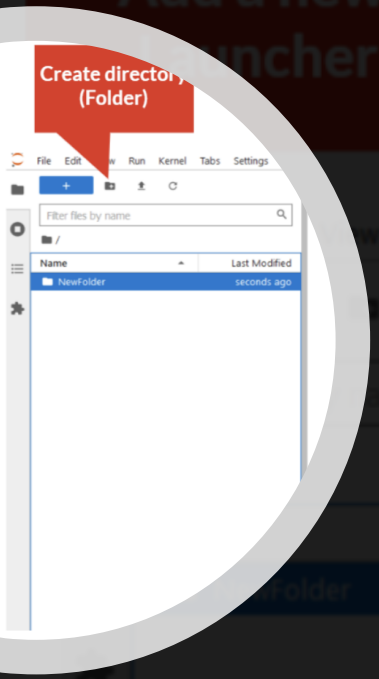
The ML/DL/HPC ecosystem is now actively used for machine and deep learning tasks. At the same time, the accumulated tools and libraries can be more widely used for scientific research, including:

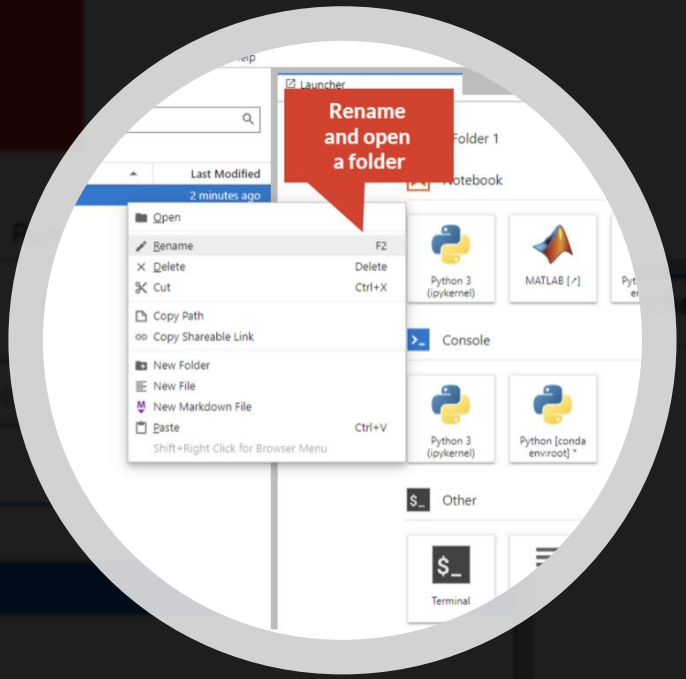
- numerical computations;
- parallel computing on CPUs and GPUs;
- visualization of results;
- accompanying them with the necessary formulas and explanations.

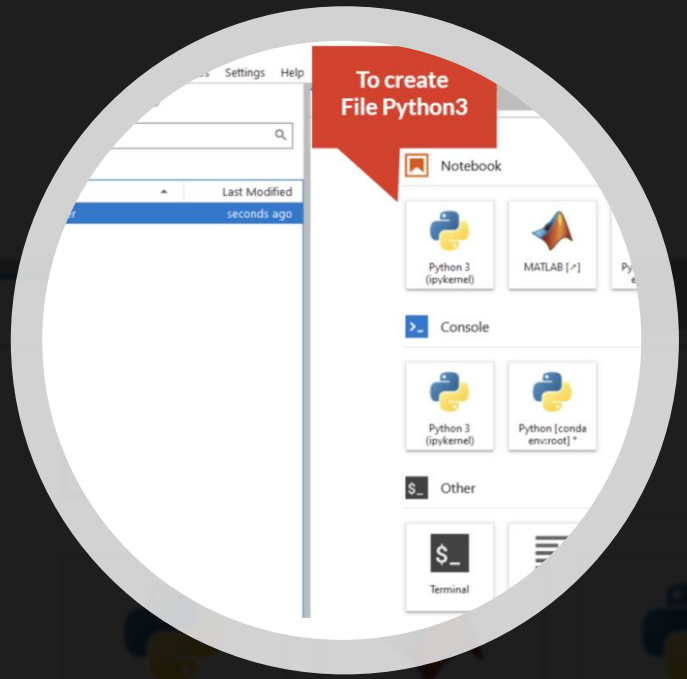
In 2022, on the ML/DL/HPC ecosystem, it became possible to run the MATLAB code in Jupyter Notebook, which allows one to effectively perform applied and scientific computations.

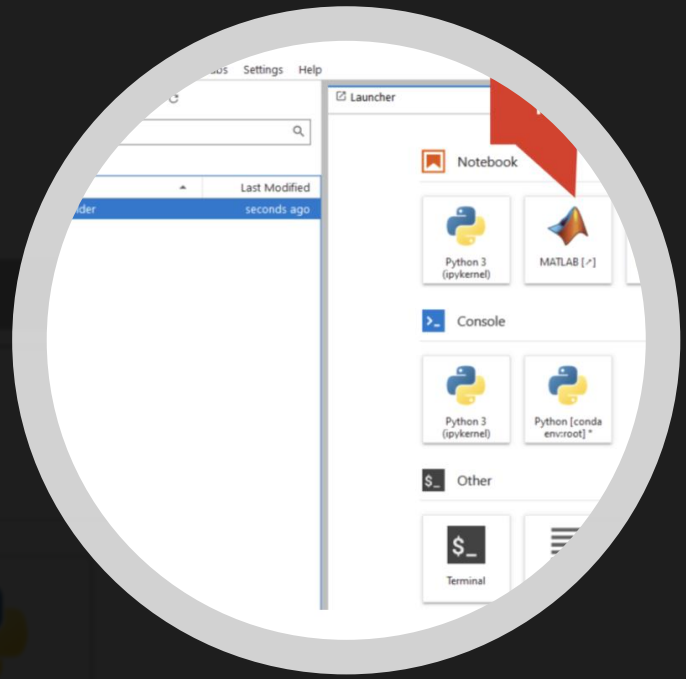


Keras matplotlib jupyter jupyter{book} seaborn pandas Joblib









Getting started with Jupyter Notebook

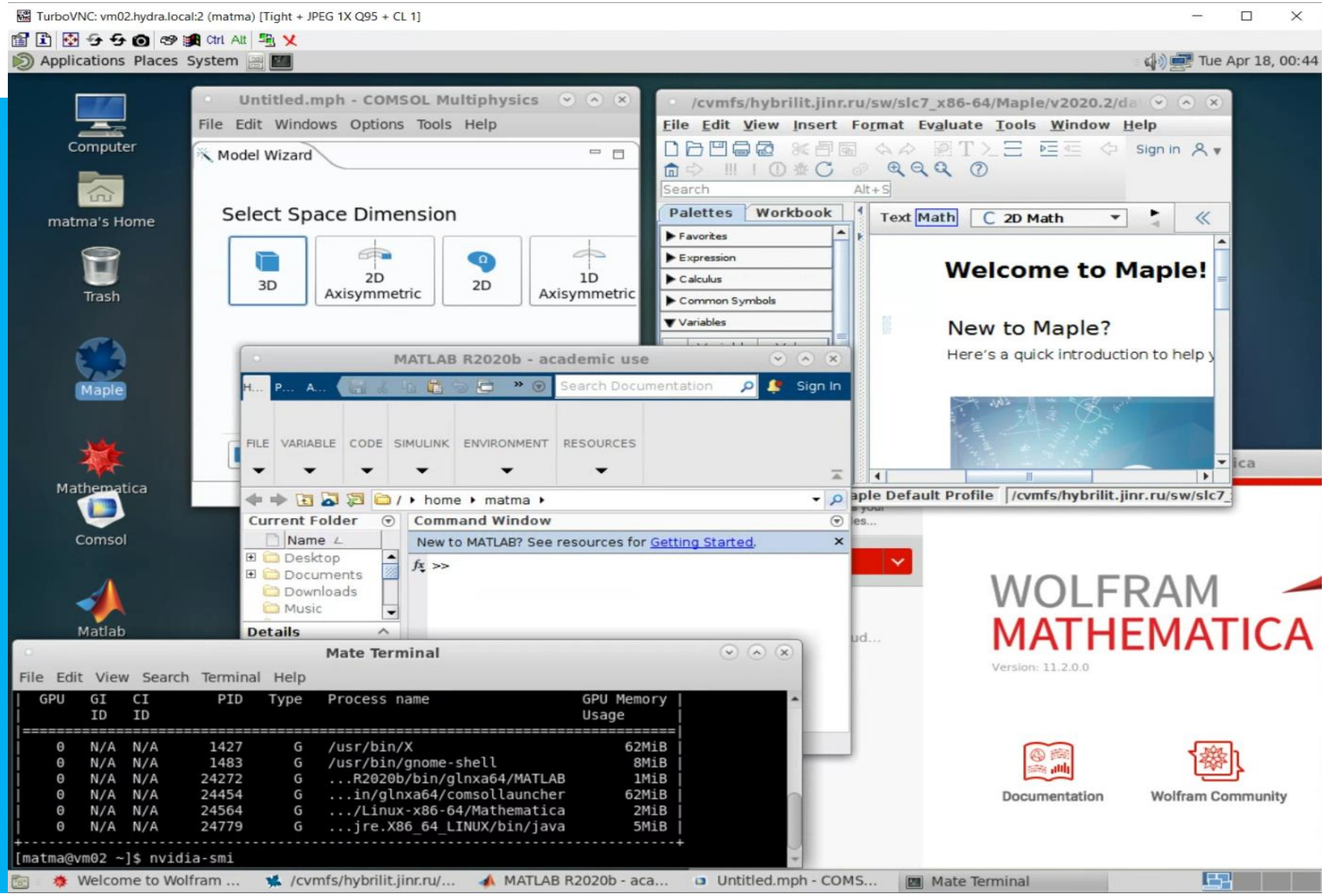
HLIT-VDI Remote Desktop

4 VIRTUAL MACHINES

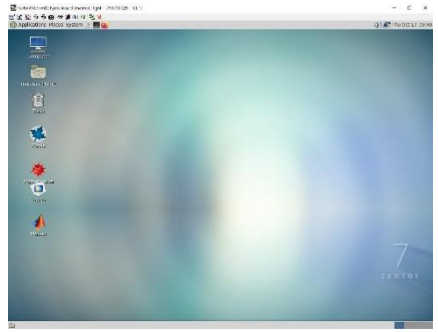
Centos 7.9
RAM 24 Gb
Nvidia Tesla M60, 8 Gb
10 Gbit / sec

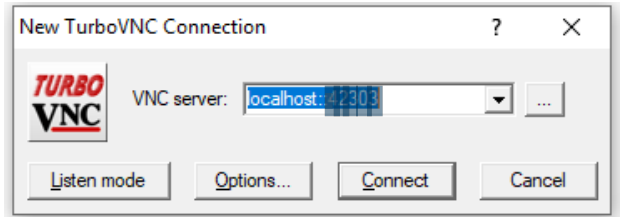
SOFTWARE

Comsol
Maple
Mathematica
Matlab



HLIT-VDI Remote Desktop: the workflow





- **Setup VNC connection using HybriLIT logon credentials**

Educational activities: video tutorials for users

Thank you for attention!

HYBRILIT HETEROGENEOUS PLATFORM at MLIT JINR:

http://hlit.jinr.ru

JINR

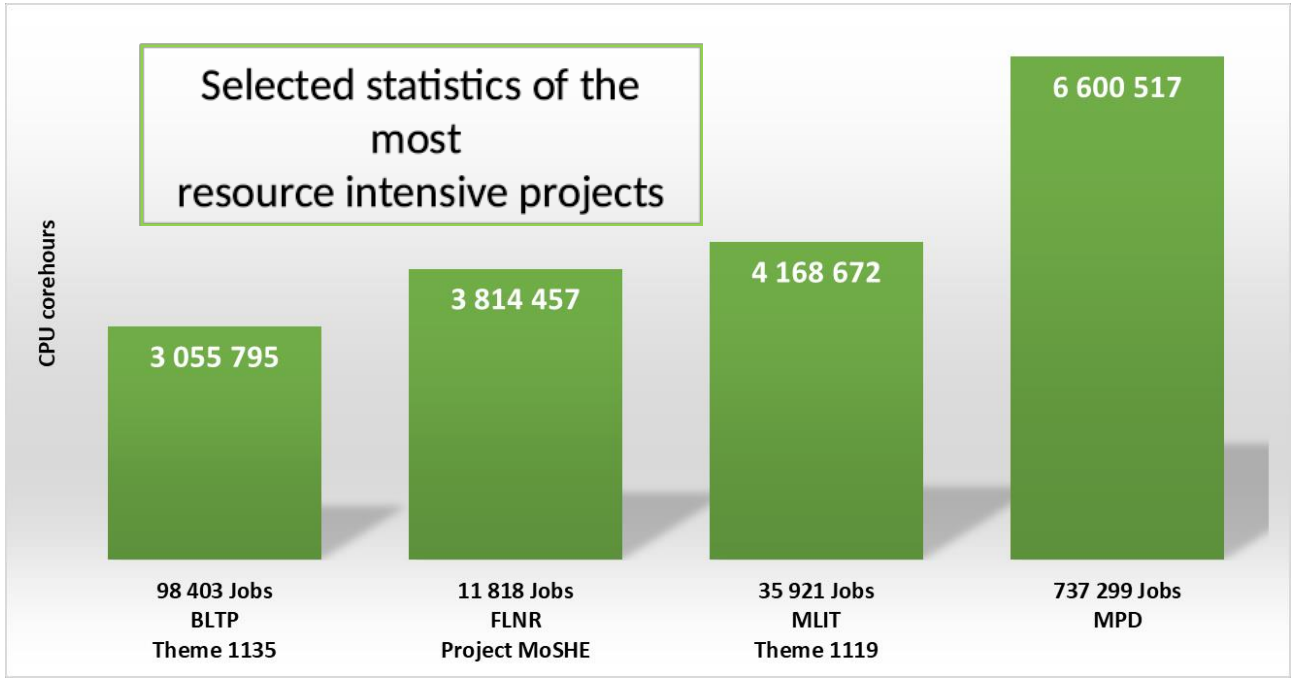
hYBRI

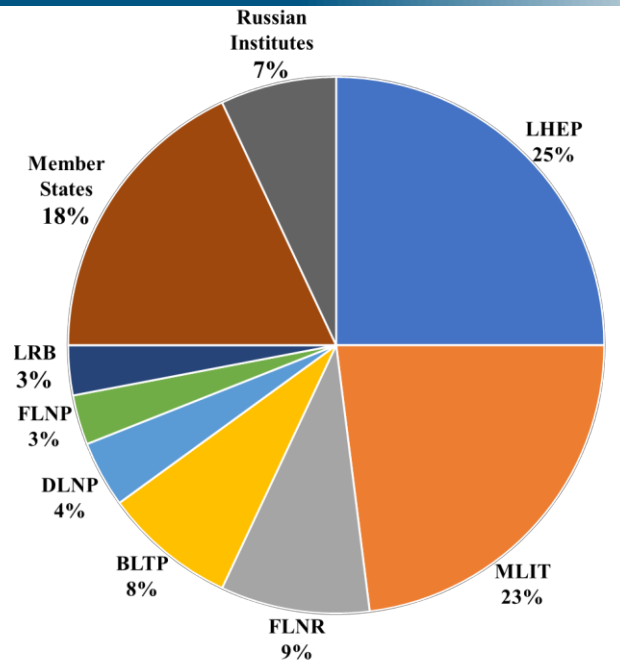
Using the “Govorun” Supercomputer in 2023

The resources of the “Govorun” SC are used by scientific groups from all the Laboratories of the Institute within **25 themes** of the JINR Topical Plan.

The projects that mostly intensive use the CPU resources of the “Govorun” SC:

- NICA megaproject,
- simulation of complex physical systems,
- computations of the properties of atoms of superheavy elements,
- calculations of lattice quantum chromodynamics.





Within 2023, all groups of users completed ~680k jobs on the CPU component, which corresponds to 16 million core hours, and 7k jobs on the GPU component, which corresponds to 45k GPU hours. The average load of CPU component was 96.4%, while the GPU component load was 91.2%.