Title: Meeting of the Task 3.8 community of WP3

Wednesday 27.01.2021 at 12:00-14:00 CET via videoconference

Chair: Jürgen Neuhaus, TUM// WP3 PIK

Participants:

PNPI speakers and attendees:

Sergey Grigoriev, NRC KI PNPI // WP3 PIK
Kirill Pshenichnyi, NRC KI PNPI
Elena Likholetova, NRC KI PNPI

Other speakers and attendees:

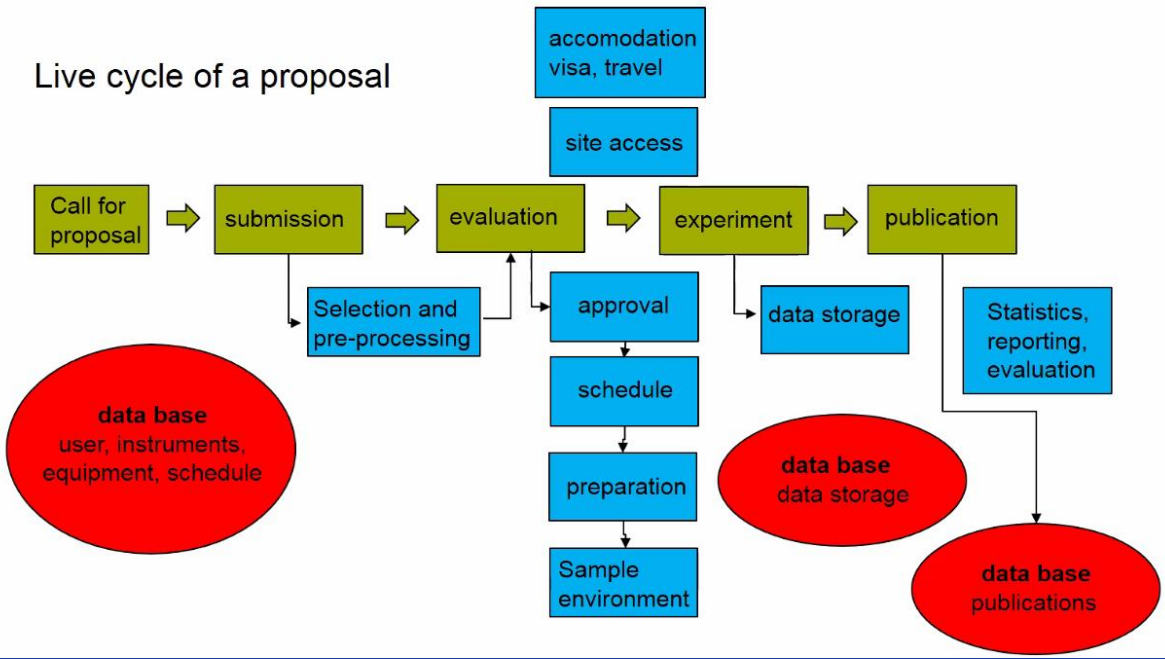
Jürgen Neuhaus, TUM
Otilia Culicov, JINR
Ina Lommatzsch, MLZ

Jürgen Neuhaus opened the meeting.

Work plan task 3.8

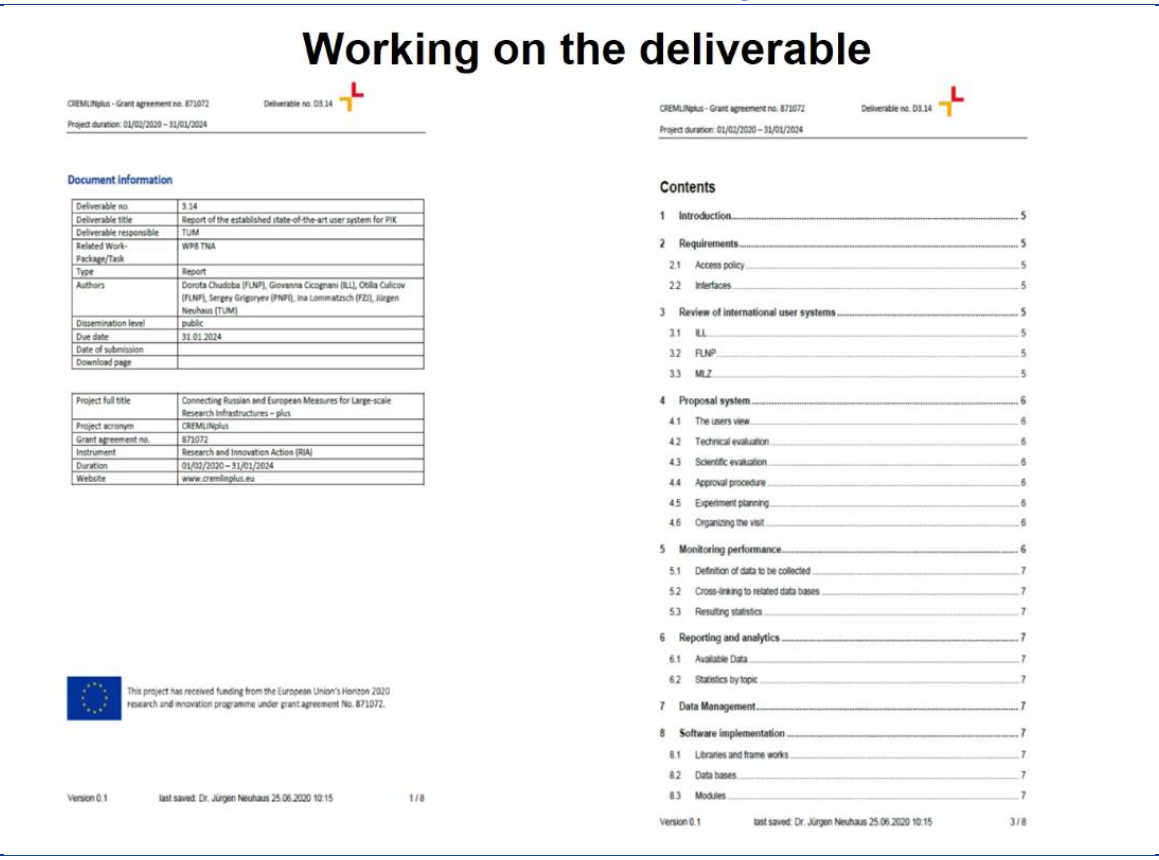
- Identification of the needs of PIK including local interfaces
- Generation of a detailed work plan and time line, including resources
- Review of existing user office systems (JINR, MLZ, ILL)
- Decision on software solution (existing software or new development) **MS**
- Software layout (adaption or new concept)
- Implementation and testing
- Installation (MS3.8; M46) and reporting (D3.14; M48)

Defining the user office system



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Working on the deliverable



CREMLINplus - Grant agreement no. 871072 Deliverable no. D3.14
Project duration: 01/02/2020 – 31/01/2024

Document information

Deliverable no.	3.14
Deliverable title	Report of the established state-of-the-art user system for PIK
Deliverable responsible	TUM
Related Work-Package/Task	WP8 TNA
Type	Report
Authors	Dorota Chudoba (FLNP), Giovanna Cicognani (ILL), Otilia Culicov (FLNP), Sergey Grigoryev (PNPI), Ina Lommatzsch (FZJ), Jürgen Neuhaus (TUM)
Dissemination level	public
Due date	31.01.2024
Date of submission	
Download page	

Project full title	Connecting Russian and European Measures for Large-scale Research Infrastructures – plus
Project acronym	CREMLINplus
Grant agreement no.	871072
Instrument	Research and Innovation Action (RIA)
Duration	01/02/2020 – 31/01/2024
Website	www.cremlinplus.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Version 0.1 last saved: Dr. Jürgen Neuhaus 25.06.2020 10:15 1 / 8

CREMLINplus - Grant agreement no. 871072 Deliverable no. D3.14
Project duration: 01/02/2020 – 31/01/2024

Contents

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Otilia Culicov. Talk "FLNP User program @ IBR-2 reactor"

FLNP USER PROGRAM @ IBR-2 reactor

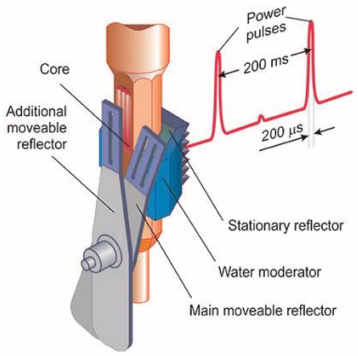
Otilia CULICOV

IBR-2 @ FLNP JINR

Work schedule of the IBR-2 reactor in 2021

I cycle:	January 25, 18^{00} – February 6, 18^{00}
II cycle:	February 15, 20^{00} – February 26, 20^{00}
III cycle:	March 15, 20^{00} – March 26, 20^{00}
IV cycle:	April 12, 18^{00} – April 24, 18^{00}
V cycle:	May 14, 18^{00} – May 26, 18^{00}
27.05. ÷ 30.08.2021 – Scheduled preventive maintenance-2021	
VI cycle:	September 20, 18^{00} – October 2, 18^{00}
VII cycle:	October 18, 18^{00} – October 30, 18^{00}
VIII cycle:	November 15, 20^{00} – November 26, 18^{00}
IX cycle:	December 06, 18^{00} – December 17, 18^{00}

Reactor operation for physics experiments, h/year ~2500



Average/in burst power, MW	2/1850
Fuel	PuO_2
Number of fuel assemblies	69
Maximum burnup, %	9
Pulse repetition rate, Hz	5; 10
Pulse half-width, μs:	
fast neutrons	200
thermal neutrons	340
Rotation rate, rev/min:	
main reflector	600
auxiliary reflector	300
MMR and AMR material	nickel + steel
MR service life, hours	55000
Background, %	7.5
Thermal neutron flux density from the surface of the moderator:	
- time average	~ 10^{13} n/cm²·s
- burst maximum	**~ 10^{16} n/cm²·s**

V.N. Shvetsov
Quantum Beam Sci. 2017, 1(1), 6;
doi:10.3390/qubs1010006

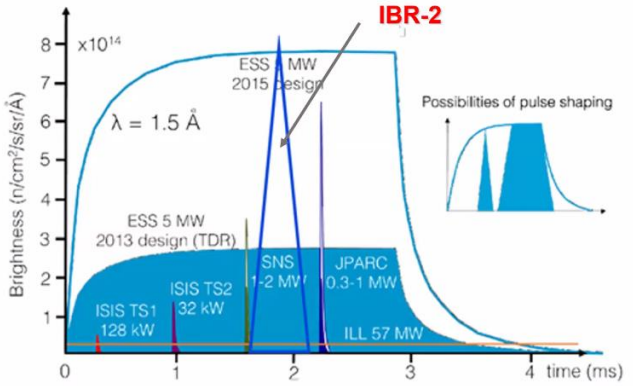
High flux
pulsed fast neutron source
~ 10^{16} n/cm²·s in burst
from the surface of moderator

High single pulse brightness

Longest pulse in the world until ESS will start operation!

Pulse half-width, μs:
fast neutrons 200
thermal neutrons 340

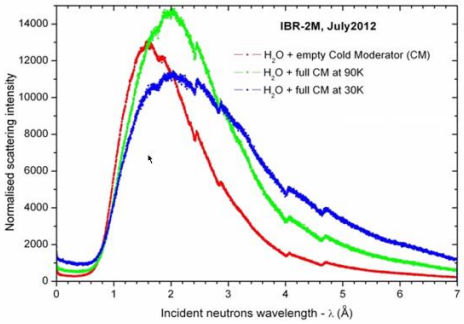
Low pulse frequency allows to avoid neutron bunches overlapping at long base stations

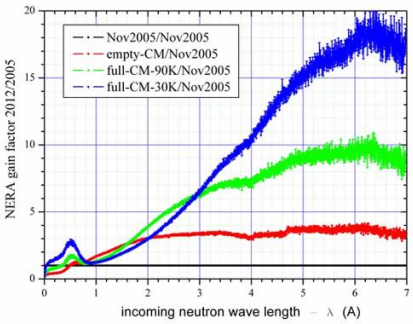


Single-pulse source brightness as a function of time at a wavelength of 1.5 Å at ESS, ILL, SNS, J-PARC and ISIS Target Stations 1 and 2. In each case, the thermal moderator with the highest peak brightness is shown.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Since 2012 two bi-spectral neutron moderators were installed and are now operational for 9 of 15 spectrometers



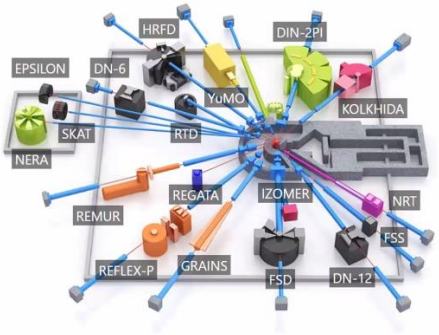


Natkaniec I. et al., 2014
DOI: 10.1088/1742-6596/554/1/012002

A total of 19 facilities on 14 horizontal beams

- 17 for condensed matter investigation by:
  - neutron scattering 15
  - radiation hardness tests 1
  - Instrumental Neutron Activation Analysis 1
- 2 for nuclear neutron physics investigations

Since 1995
International open access program
on Condensed Matter only is available
In the program today
12 facilities + 1 introduced in October 2020
(+ DN-6 under development but accepts applications)



Diffraction: HRFD, RTD, DN-6, SKAT, Epsilon, FSD, DN-12, FSS
Small-angle scattering: YuMO
Reflectometry: REMUR, REFLEX, GRAINS
Inelastic scattering: DIN-2PI, NERA
Neutron imaging: NRT
Nuclear Physics: ISOMER, KOLKHIDA
Neutron Activation Analysis: REGATA
Irradiation Facility

Direct access is organized

- The user chooses if he wants to directly participate in the experiment or prefers to send samples for measurement.
- This is of course only possible if the samples should not be prepared just before experiment.
- If the user chooses to send his samples and not participate in the experiment, he has the opportunity to arrange with the local responsible to organize remote monitoring of the experiment. *The remote access is not regulated by the access rules yet, so that it remains to be considered by the person responsible for the installation.*

The access grants to machine time, computing resources, software, data obtained from personal samples, sample preparation limited by the FLNP JINR laboratory infrastructure, the set-up, execution and dismantling of experiment, expert support and raw data analyses.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

FLNP JINR practices an open access policy, with no restriction on the nationality of its users or the institution from which they come.

Excluding condition: As mentioned in the JINR Charter (http://www.jinr.ru/docs-en/) "The research results obtained at the Institute can be used only for peacefu purposes for the benefit of the whole mankind".

All Users visit JINR campus and work on IBR-2 beamlines, together with the JINR beamline scientists and staff, to perform their experiments.

There are mainly 2 types of Users: **External** Users and **Internal** Users

1. De jure, Principles of FLNP JINR user policy do not define different categories of **External Users**, but de facto three categories of Users exists: General Users, Participatory teams and Industrial Users.

General Users: (groups of) scientists who are allocated beam time to conduct experiments at IBR-2 beamlines based on proposals that have been passing through a scientific merit evaluation;

Participatory Users: these are research teams that have contributed to the funding, building and/or operation of IBR-2 beamlines. There are divided in two categories:

a. the users of SKAT and EPSILON facilities and their access falls under the Agreement of JINR and BMBF Germany. The technical details of the collaboration are described in the Agreement between the FLNP and Karlsruhe Institute of Technology (KIT). The measuring time allocated for the non-German and non-JINR users has not to exceed 30% of the total available annual time. The requested beam time will be ranked according to scientific excellence and allocated under the rules of the FLNP JINR user policy after consultation of KIT project leader. The FLNP JINR-KIT agreement is under review.

b. Russian teams granted by the Russian Science Foundation (RSF). They appeared in 2019 therefore the Principles of FLNP user policy are under review now;

Industrial Users are associated with General Users if the results of research will be published.

65% of the beamtime is dedicated to External Users. 55% of the beamtime is dedicated to external regular applications and 10% to External fast applications.

2. **Internal Users**: up to 35% of the beam time will normally be available for the in-house use of IBR-2. The applications also pass through the scientific merit evaluation.

- **What are the procedures for Access? Are they different depending on the type of User?**
- *All Users have to reply to a Call for proposals (generally launched online twice per year)*
- *For Industrial Users: the proposals are directly evaluated by the FLNP JINR directorate.*

- **Is the Access to your Research facility defined in terms of Access Units? How is the unit defined?**
- *No Access Units are defined.*

- **Is the access to the facility for free or upon payment?**
- *The use of the facility for all users is for free if the results of the experiments are subject of publication in scientific journals. For Industrial Users which refuse publication the access is upon payment and the fee to be charged for any single experiment will be determined by the FLNP JINR Directorate based on a market analysis.*

The selection process is the same for all Users besides those Industrial Users which don't plan to publish the results.

•The evaluation procedure consists in a preliminary Technical feasibility, Safety check and Availability of the resources required and in a Peer-review scientific assessment conducted by three external and independent Expert Committees (Atomic and magnetic structure, Lattice and molecular dynamics, Nanosystems and Soft Matter). A fourth Committee is going to be established in order to cover the topics using NAA.

In evaluating proposals and determining their priority, the ECs will use the following criteria:
a. scientific merit (interpreted as: relevance, impact, innovation);
b. capability of the proponent(s);
c. the degree to which neutrons are needed.
While a General User and a Participatory user are getting the same grade, the Participatory user has priority.

- For Industrial Users which do not publish the proposals are evaluated by the FLNP JINR Directorate.

After the evaluation process the beamtime is scheduled by User Office Management and scientific staff.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

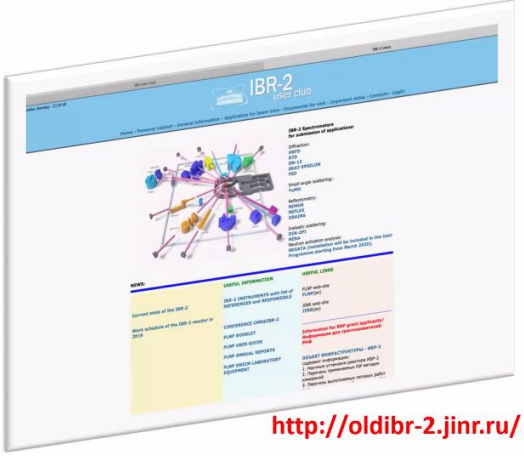
There are **two kinds of applications**:

Fast access applications	Regular access applications
NO DEADLINE	SUBMISSION DEADLINE
Submission – via facility responsible	Internet submission via the web site: **http://ibr-2.jinr.ru/**
QUICK REVIEW BY THE RESPONSIBLE OF FACILITY and HEAD OF DEPARTMENT OF NEUTRON INVESTIGATIONS OF CONDENSED MATTER	2-STEP REVIEW PROCEDURE

Regular access applications

DEADLINES

	First round	Second round
Period for proposal submission	September 1 - October 15	March 1 - April 15
End of technical expertise	November 1	May 1
End of scientific expertise	December 1	June 1
Schedule	December 15	June 15
Information for Users	December 25	June 25



http://oldibr-2.jinr.ru/

OLD LOGIN
OLD PASSWORD

NEW WEBSITE

https://ibr-2.jinr.ru

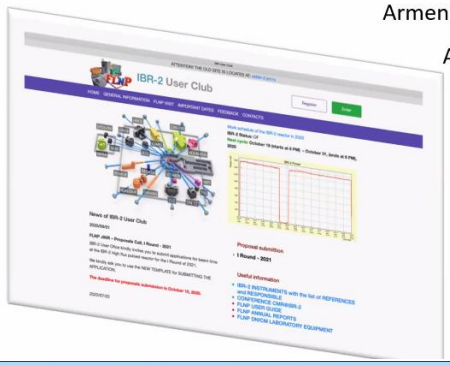
NEW REGISTRATION
EMAIL AS LOGIN
NEW PASSWORD

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

CREMLIN PLUS

https://ibr-2.jinr.ru

320 registered users
(more then 900 users on old website)

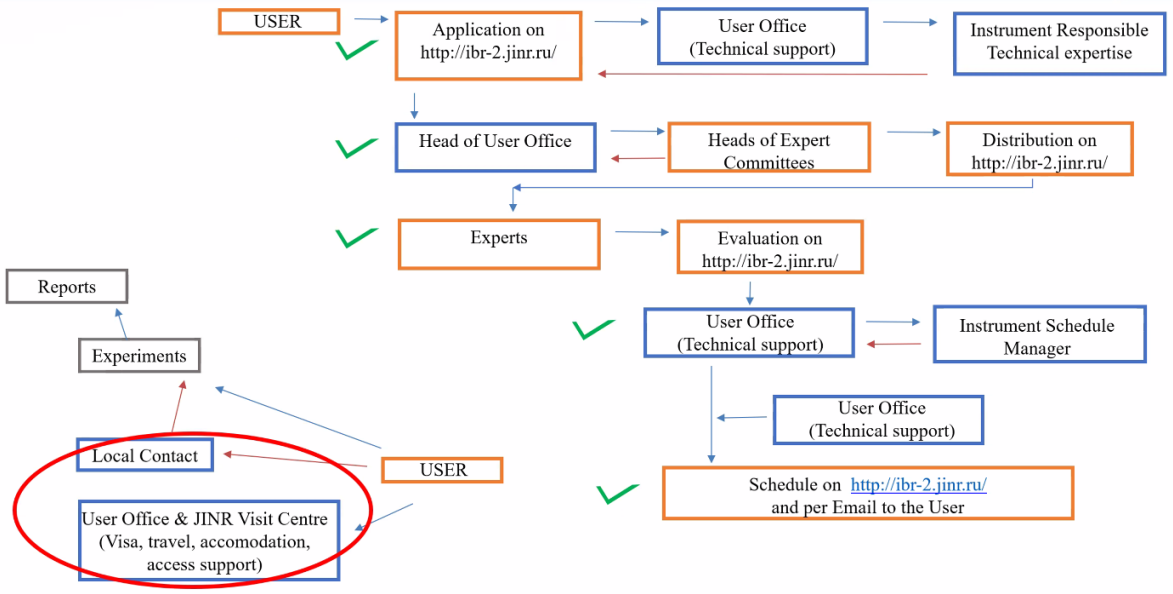


Armenia, Australia, Belarus, Brazil, Bulgaria, Canada, China, Czech Republic, Egypt, France, Germany, Hungary, Italy, Jordan, Kazakhstan, Latvia, Macedonia, Moldova, Mongolia, Poland, Romania, Russian Federation, Serbia, Slovakia, South Africa, Spain, Sweden, Ukraine, United Kingdom, United States, Vietnam

CREMLIN PLUS

- Nanosystems and Soft Matter (YuMO, GRAINS, REFLEX, REMUR) – 13 Experts
- Atomic and Magnetic Structure (RTD, DN-6, DN-12, SKAT, EPSILON, FSD, HRFD) – 8 Experts
- Lattice and Molecular Dynamics (NERA, DIN-2 PI) – 3 Experts
- Neutron Activation Analysis (REGATA) – 3 Experts

CREMLIN PLUS



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

If a scientists wants to use the services available in your Research facility, what should he/she do? Is there an application scheme? Should his/her affiliation Institute establish an agreement with your facility beforehand or the access is open to any Institute?

All Users need to reply to a Call for proposals (generally launched online twice per year and published on IBR-2 User Club (ibr-2.jinr.ru) website).
The interested scientists should first register with the IBR-2 User Club and then submit their proposal for experiment following the instructions given therein.
Everything must be done online.
The information about the call for proposals opening and the deadlines are published on IBR-2 User Club Website and are sent to all users that are registered on the IBR-2 User Club portal (mailing lists).
The interested scientist may contact the Users Office and the beamline scientists at any time of the year to receive more detailed information about the techniques and tools available and about the selection process and dates.
The Industrial Users ready to publish results are invited to apply on regular rules. The others need to contact directly the FLNP JINR User Office.

FLNP JINR is open to all scientist and to all Institutes, no preliminary agreement or partnership is needed.

What are the services available for Users? (e.g. do you offer support for Visa preparation? Do you offer accommodation?...)

The FLNP JINR Users Office is coordinating the Users Activities and is the focal point for the organization of the visit of the Users.
There is local funding available to cover the local expenses that Users from JINR member states need to face (transport from Moscow airport to Dubna and back with JINR cars, local accommodation at JINR hotel including breakfast, per diem).
One person from one institution is supported (maximum 2 persons per experiment).
If an additional person is willing to attend the experiment on his one costs, JINR is providing all necessary technical support.
Accommodation is available at JINR hotel.
The Users from non-JINR member states can profit from a lower rate accommodation if the booking is performed by the User Office.
The User Office prepares the first necessary documents for organizing the visit.
The JINR Visit Centre provides the comunication with the Users concerning visa procedure, booking accomodation, transport from Moscow airports to Dubna and back, access on site permition.

Is there any condition to be respected by User for the use of the facility services?

The Users must comply with the Russian, local administrative and the JINR safety regulations.
A copy of medical certificate confirming that the User's health status allows him to work under radiation conditions. R
ussian Users have to present with their passport a Tax identification number and an Individual insurance account number.
All Users of IBR-2 instruments are required to publish their results in a timely and responsible manner and to notify the beamline scientist of publications resulting from work conducted there.
As well as the beamline scientist accompanies all the time the User at facility and he has a vital role in performing the experiment and raw data processing, the co-authorship of the beamline scientist is also required.
IBR-2 infrastructures are to be duly acknowledged in all publications resulting from use of IBR-2 facilities.

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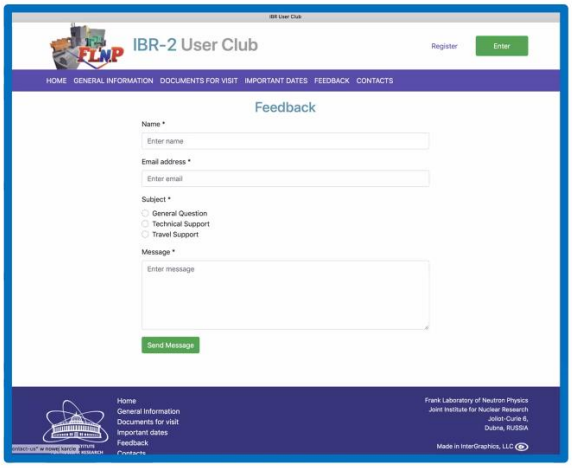
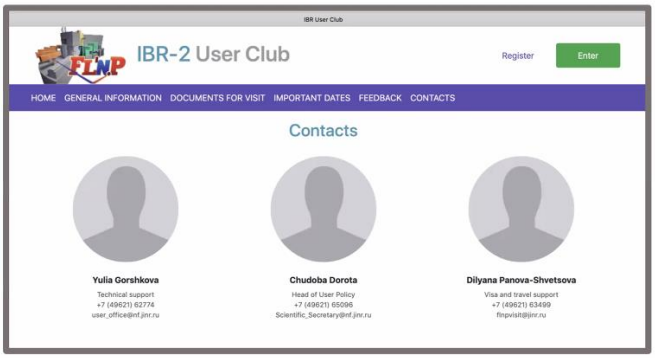




IBR-2 User Association and User Committee

Idea about user association around IBR-2 reactor was discussed during *CMR@IBR-2 Conference* in October 2020 and *IBR-2 User Committee* was established to increase the user activity related to the interactions with FLNP, giving support to both specific and general user questions in December 2020.

Temporal members of IBR-2 user committee: https://ibr-2.jinr.ru/general-information

- **Assoc. prof. Peter A. Georgiev**. University of Sofia. Bulgaria.
- **Dr. José María Porro Azpiazu**. BCMaterials and IKERBASQUE, Basque Foundation for Science. Spain.
- **Dr. Laszlo Almasy**. Centre for Energy Research. Hungary.
- **Prof. Vachagan Harutyunyan**. A.Alikhanyan National Science Laboratory. Armenia.
- **Dr. Viktor Petrenko.** BCMaterials & IKERBASQUE. Spain.
- **Prof. Ewa Juszyńska-Gałązka.** Institute of Nuclear Physics. Poland.

Representative of Polish Neutron scattering association:
Prof. Wojciech Zając. INP, Krakow, Poland.

The IBR-2 User Committee represents the IBR-2 users in official FLNP/JINR meetings, offers a discussion forum within the IBR-2 users' community, and reports to the FLNP directorate on new strategic ideas and procedures for a continuous improvement of the IBR-2 users' community satisfaction and work conditions at the IBR-2 reactor.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Ina Lommatzsch. Talk "User Office & User System @ MLZ"

Overview

Some numbers – *what the system has to deal with*

The "old" User System – *why we needed a new one*

The new User System GhOST

Spotlights – *a few core details of GhOST*

Current status

The User Office: Some numbers

- 27 instruments running
  - four cycles
  - 60 days each
- 1,000 experiments
  - 1,400 user visits
  - 4,000 nights at hotels
  - 3,300 mails to respond
- 1,000 proposals
  - two external rounds
  - four Rapid Access rounds
  - four internal JCNS rounds
  - other internal, educational, industry

The „old" User System

- developped 2004-2005
- in operation 2005-2019
- written bei J. Neuhaus and some students
- code: PHP (PHP-Nuke)
- lines of code: 100,000
- database: mySQL
- documentation: no

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

The new User System: GhOST

- developped since 2014
- Go-Live 2019
- company dedicated up to three programmers
- since Aug 2019: + in-house
- code: PHP (CodeIgniter)
- lines of code: 500,000
- database: PostgreSQL
- documentation: no

Spotlight: Finetuned role management

User Officer/ Administrator

- all modules

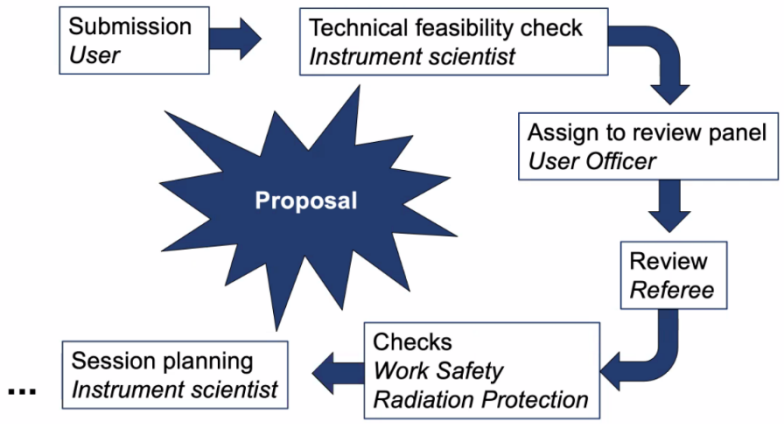
User

- messages
- proposals
- experiments
  - session team
  - preferred dates
  - visit
  - reports
  - publication

Referee

- *messages*
- *proposals*
- *experiments*
  - *session team*
  - *preferred dates*
  - *visit*
  - *reports*
  - *publication*
- Review

Spotlight: Simplify work



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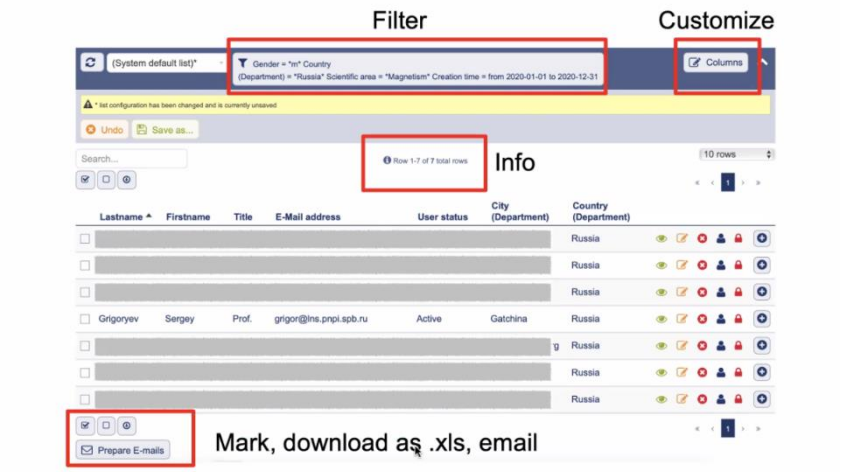
Spotlight: Using all the data



Spotlight: Software interactions in-house

Implemented	In progress/ planned	Not planned
Sample tracker (triggered by *Session ready*)	Remote access (triggered by *Experiment started*)	Access badges
Safety training (triggered by *Visit registration*)	Publication database (triggered by entering a publication)	Check-in radiation protection
		Travel costs reimbursement

GhOST: Current status

- Workflows are completed – BUT:
  - used under real conditions:
    - registration
    - proposal submission
    - review
    - checks
    - session planning
  - not yet
    - invitations
    - user visits
    - submission reports
    - submission publications
- Software is under reconstruction (toolbox, new tables)
- Collecting feedback

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Sergey Grigoriev. Talk "WP3 PIK collaboration: Task 3.8. User system at the INRC at PIK: task and aspects"

NATIONAL RESEARCH CENTRE «KURCHATOV INSTITUTE»
PETERSBURG NUCLEAR PHYSICS INSTITUTE
Russia, 188300, Leningrad District , Gatchina, Orlova Roscha

WG3 PIK collaboration: Task 3.8

User system at the INRC at PIK: task and aspects

- What is a status ICNR at PIK?
- What are possible strategic tasks for User system at PIK?
- What is possible to make in near future in the frame of the project?

CREMLIN PLUS
Connecting Russian and European Measures for Large-scale Research Infrastructures

1

Meeting WP3: Task 3.8 |27 January 2021| Video-conferenc
Russia, 188300, Leningrad District , Gatchina, Orlova Roscha

What is a status ICNR at PIK?

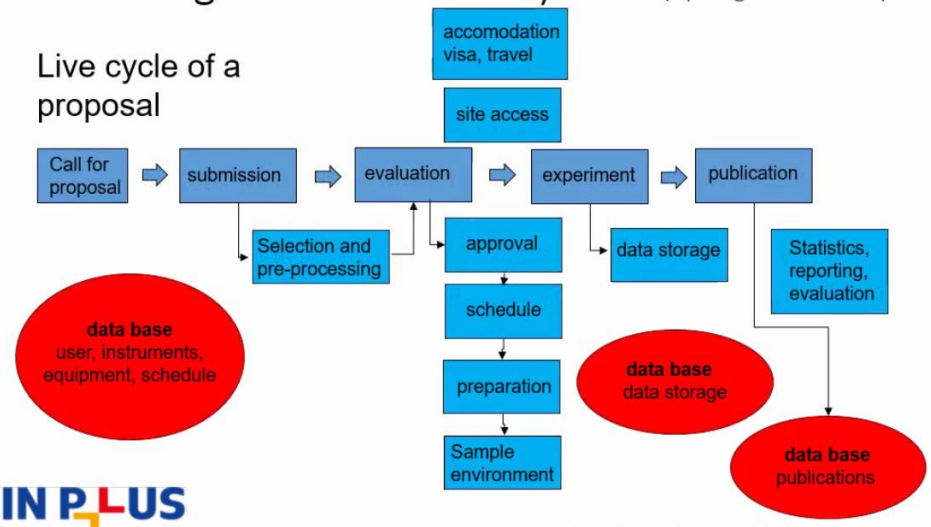
- **Officially.** It is not yet established. No partners.
- **Technically.** It depends completely on the commissioning of the reactor PIK. We expect that reactor will be started at 10 MW in the near future.
- **Technically.** It is based on the Russian instrumental program:
  1) 5 first day instruments has been commissioned at the end 2020.
  2) 20 new instruments in the reactor hall and in the neutron guide hall will be built to the end of 2024.
- **International cooperation** is realized in the frame the CREMLINplus project: establish SAC and subcommittees, LLB-PNPI cooperation (Task 3.5), JCNS-PNPI cooperation (Task 3.1, 3.2).

What are (possible) strategic tasks for User system at PIK?

For the management and administration of international and Russian users while operating PIK a **concept of a user system is to be established**. It covers the entire chain of access provision, from the submission of a proposal, the evaluation and communication up to the experiment planning and statistical analysis of the instrument operation as well as additional user services such as on housing and visa applications.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Defining the user office system (by Jürgen Neuhaus)



CREMLIN PLUS
Connecting Russian and European Measures

4

Meeting WP3: Task 3.8 |27 January 2021| Video-conference

What are (possible) strategic tasks for User system at PIK?

- We expect that a large part of the proposals will come from Russian community and therefore this user community (and their proposals) will be shared between LNP JINR (Dubna) and NRC KI – PNPI (Gatchina). Should we organize the joint submission (proposal) system for two centers?
- We expect that German neutron centers (MLZ consortium) is a partner of NRC KI – PNPI, Germany has a largest neutron community in EU. MLZ user system can be copied for ICNR PIK. Probably the user policy of MLZ and ICNR toward German and Russian users should be symmetric in terms of allowance and financial obligations.

What are (possible) strategic tasks for User system at PIK?

- We recognize ILL as clear successful example of user oriented European center. We follow and adopt some of rules developed at ILL with respect to its User system, although ILL has a status of the International organization located in France.

What is possible to make in near future in the frame of the project?

Decision on software solution (existing software or new development)

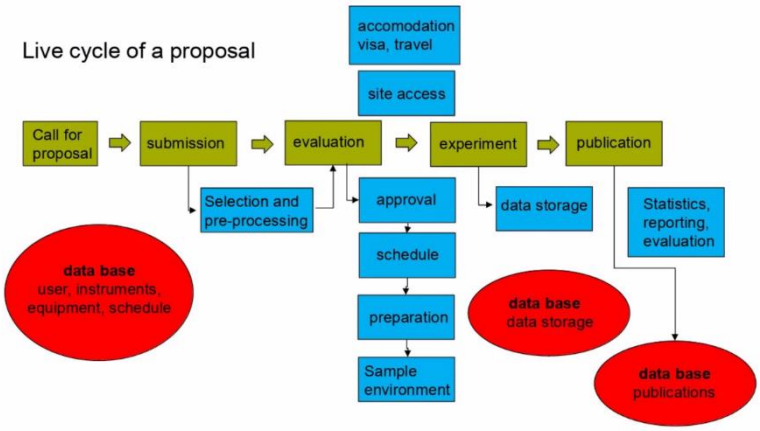
Software layout (adaption or new concept)

Kirill Pshenichnyi will visit TUM (MLZ) in order to learn the system (3 + 3 months in the period 2021-2022 using DAAD call) and later to adopt it at PNPI.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Kirill Pshenichnyi. Talk.

General scheme



Hardware

At this moment

external IP address
91.151.181.158
*@lns.pnpi.spb.ru
oiks.pnpi.spb.ru
nrt.pnpi.spb.ru

5 TB
5 TB
500 GB
500 GB

set alias

user.pnpi.spb.ru ?
$ our_name_of_user_system $.pnpi.sbp.ru
what name do we want?

Internal network of PNPI

Research machines:

T-spectrometr,
TEX-3,
DPN,
etc.

Some machines have their own server
With Tango-CS system

Software

Server operation system: ArchLinux — GNU GPL license

Database managment system: PostgreSQL — free license

Web server: nginx — BSD license

Mail server: exim4 + dovecot

User system: have to do...

or

or or

(designed at Google)

Django — python framefork

What is used on GhOST or JINR user system ?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

People

1. System administrator — server maintenance, updating, etc

2. People with access to the site admin panel — user system (web. App) maintenance, communication with users, technical support

3. Proposal acceptance commission — qualified committee making decisions on the acceptance of proposals

4. Machines responsables — experiment

5. Users

6. Programmers (on development stage)

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