CREMLIN Closing Workshop

Completing CREMLIN; Spelling out Recommendations

Cremlin Connecting Russian and European Measures for Large-scale Research Infrastructures

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Completing CREMLIN; Spelling out Recommendations
www.cremlin.eu

CREMLIN Closing Workshop
DESY Hamburg, 06.06.2018

HELMHOLTZ ASSOCIATION

DESY

Completing CREMLIN:
To be done during next weeks: examples

- WP3 NICA: prepare Milestone 3 „*Production readiness review for common silicon detector platform*“
- WP4 PIK: 14-15/05/2018: WS "*Engineering for advanced neutron instrumentation and sample environment*“ (TUM, PNPI, Juelich organising) – prepare respective Deliverable
- WP4: „*Recommendations on the state of the art user system for PIK*: pending; Deliverable D4.5 TUM
- WP4: dedicated experts´ meeting recommended by SPAB to clarify legal aspects of setting up an ICNR for PIK facility

To be done during next weeks: examples

- WP5 SSRS-4: *Recommendations on common data standard policy; Analysis report of the existing and potential user communities:* prepare Deliverable D5.4
- WP5: Deliverable D5.1 „Analysis report of the existing and potential user communities“
- WP5 Deliverable D5.5 „Report on internationalisation, access, user policy and governance with respect to SSRS-4

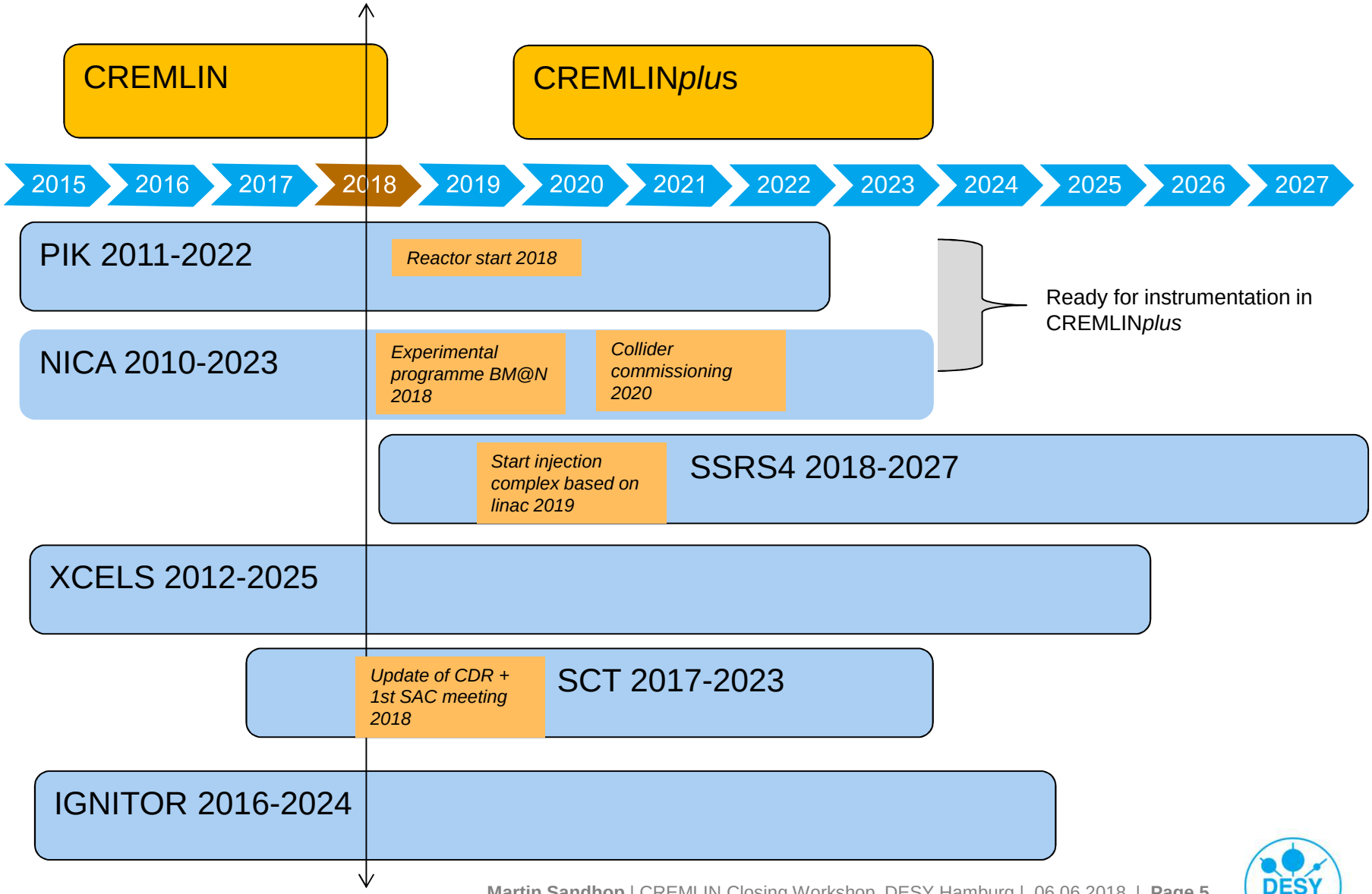
- WP6 XCELS: „Expert round table on **policy**, legal, practical and financial issues towards a future operation of XCELS as a pan-European RI“ as Deliverable D6.5 (06-06-2018)
- WP7 „Workshop focussing on internationalisation and joint research for SCT“ (May 2018): back to back with CHARM2018 25-26/05/2018 at BINP, along with first IAC meeting for SCT; Deliverable D7.4

To be done during next weeks: examples

- WP8: Organise training measure for RI managers as satellite event to Closing Conference June 2018: 7-8 June 2018 at DESY as satellite to CREMLIN Closing; resp. Deliverable: D8.2
- WP8: Organise CREMLIN slot in RACIRI Summer School 2018 on Rügen Island; RACIRI 2018 will be held 25.08.2018-01.09.2018 on Ruegen Island, organised by DESY and including CREMLIN slot; resp. Deliverable D8.4 „Report on RACIRI Summer Schools“

- WP1: Ensure all Deliverables & Milestones fulfilled
- Prepare the **follow up project**, especially „joint development of technology at RI“: identifying a number of European-Russian project proposals that can be implemented in CREMLIN follow up project as dedicated work packages

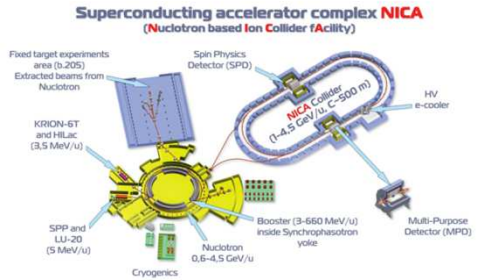
Overview indicated timelines for the RU mega projects



Findings and Recommendations for NICA Collaboration

- For NICA (based on info by J. Eschke, agreed with JINR):
- Recommended: extending of joint R&D collaboration scheme for detector constructing
- Development of software packages for simulations and data analysis for NICA experiments, participation in physics performance studies.
- Prototyping and performance studies of Silicon Trackers for experiments at NICA / Joint developments with CBM@FAIR.
- Quality Assurance, test and assembly of detector stations including cooling and Integration.
- Development and prototyping of Front End Electronics & DAQ for Silicon detectors.
- Development and prototyping of a Zero degree Calorimeter for NICA
- Joint evaluation of emerging CMOS detector technologies for Silicon Trackers for NICA and FAIR
- Coordination of joint activities, and fostering the collaboration between NICA and FAIR
- Include additional European groups from Czech Republic, Poland and Hungary, which are already active members of the CBM collaboration at FAIR.

Pictures: GSI/FAIR.
WP3 WS on STS module assembly, 16-20/03/2015 at GSI (uppermost, left), 23-27/11/2015 at GSI (uppermost, right), 2-4/9/2015 at LTU Ltd. Kharkiv, Ukraine (bottom left and right)



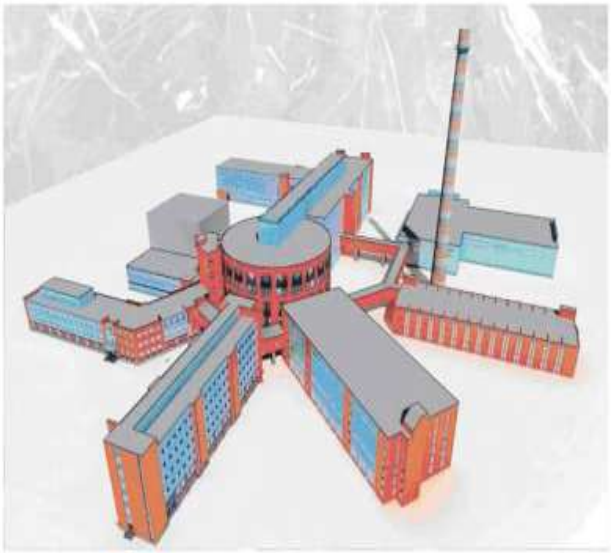
Findings and Recommendations for PIK Collaboration

- For PIK (based on Info by A. Ioffe, agreed with S. Grigoriev):
  - Reactor PIK, with its high neutron flux similar to ILL, may compensate for this loss would it be equipped with cold neutron source, beam extraction system and instrumentation, all build on modern neutron technologies. Namely the initiation and support of these activities at PIK is the strategic aim of Neutron Work Package in the CREMLIN+ project
- to equip PIK (design and manufacturing) with the most advanced cold neutron source build upon the latest developments in this field currently implemented at ESS (partners **ESS**, **FZJ**, NRC KI PNPI …).
- Development of the most modern neutron beam extraction system allowing for the maximal use of neutrons from such a source (TUM, **FZJ**, ESS, HZG, **NRC KI PNPI,** ILL).
- Design of the PIK instrumental suite complementing the ESS instrument suite and build upon Russian national and international contributions (**FZJ**, HZG, LLB, ESS, **NRC KI PNPI**)

Participants of Diffraction WS at PNPI 19.02.2016

Findings and Recommendations for PIK Collaboration

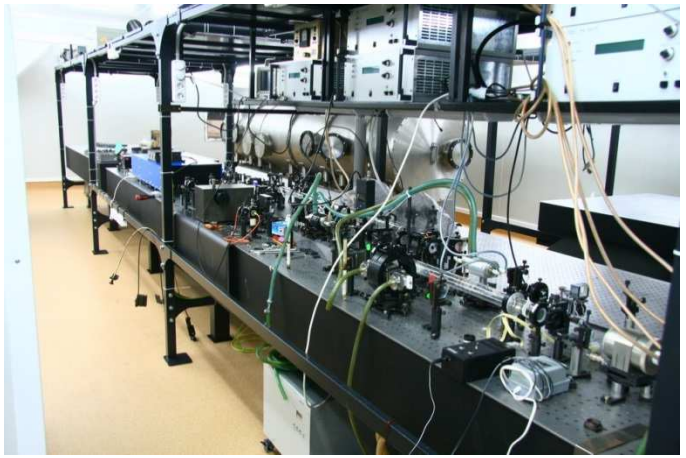
- Education and training of Russian scientists that mostly will design and operate the instrumentation at PIK (**LLB**, FZJ, **TUM**, ILL, NRC KI PNPI, HZG).
- Further common developments of neutron technologies
  - Boron-based high-resolution neutron detectors (**ESS**, NRC KI PNPI, HZG)
  - Neutron choppers (**FZJ,** NRC KI PNPI)
  - Neutron shielding (**FZJ**, ESS, NRC KI PNPI)
  - Sample environment (**ILL**, TUM, HZG, NRC KI PNPI)



Findings and Recommendations for XCELS Collaboration

- For XCELS (based on info by C. Miron, A. Sergeev):
  - Cooperation with EU leaders in laser science and technology and EU RI with expertise in user acces: essential for XCELS
  - Need to build a business plan for XCELS
  - Utlimate goal: become a key partner in high-field physics (including in-kind contributions of EU partners), plus develop XCELS to a facility open for global cooperation and integration into European network
  - In follow up project: advanced R&D activities for the production of the TDR

    CEA ready to contribute to construction of a 2-channel XCELS prototype, including:
    Relativistic plasma mirrors development to reach extreme light intensities
    Custom design of plasma mirrors
    Ultra-high intensity laser beam diagnostics
  - ELI-DC: interested in keeping collaboration ongoing, formal decision after ELI will become ELI-ERIC in 2018

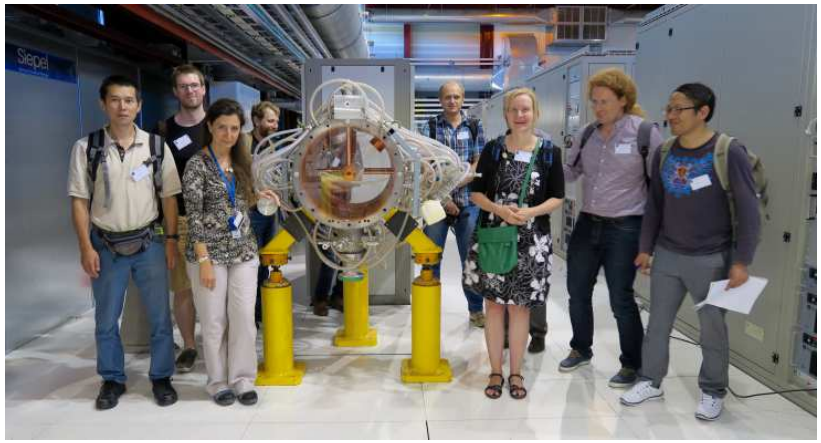


Picture: IAP RAS

Picture: CERN. CERN-BINP WS 08-2016

Findings and Recommendations for SCT Collaboration

- For SCT:
  - [*see document to be provided on 20/02*]
  - Prepare the international SAC for the SCT project
  - Update of the conceptual design for SCT as a joint undertaking
  - Prepare the e-infrastructure necessary to (internationally) utilise the facility
  - Joint R&D detector work



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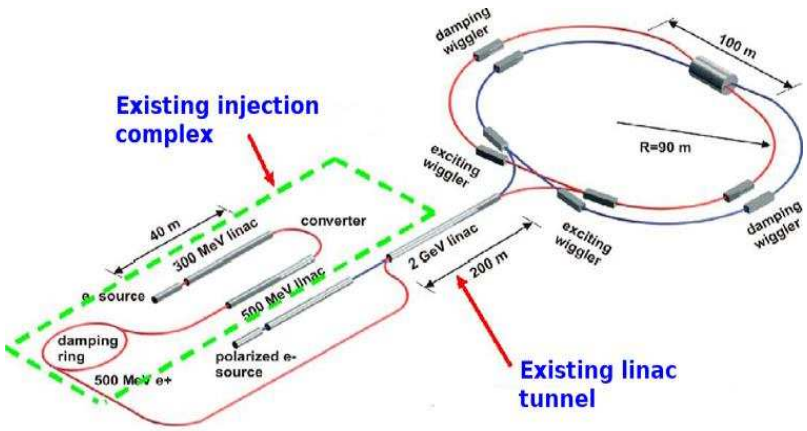


Findings and Recommendations for SSRS-4 Collaboration

- For SSRS-4:
- WP5 Workshop held on 23/01/2018 at DESY:
  - A first conceptual design suggests for the SSRS-4 a high energy storage ring with presently two different injections schemes under consideration - one booster-based and one with a full energy LINAC
  - Several directions for design proposal: SR, or SR + FEL:

    There is no final decision taken yet
    Needs to be clarified by the Russian side
  - Energy range: proposed 6 GeV – more than 3 GeV:

    Based on results of Russian SR Users´ meeting at NRC-KI
    (Russian) Discussion on preferred energy range still ongoing
  - General recommendations:

    Proceed stepwise: first storage ring, then FEL
    Take further steps to build up (Russian) X-ray user community,
    Define more precisely the user community to be served with the future SSRS-4 facility
    SSRS-4 should become member (associate) of LEAPS when appropriate

The SSRS-4. Sketch by NRC KI

Findings and Recommendations for SSRS-4 Collaboration

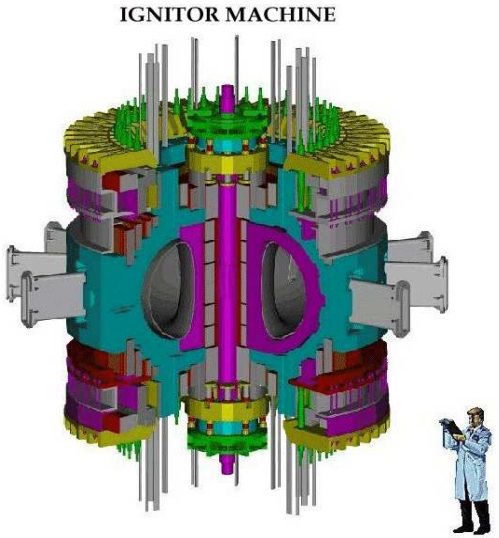
- Recommended to devise a well-structured project management framework including related governance for the conceptual and technical design phases of SSRS-4
- This includes mandates and allocation of tasks and responsibilities for the project and its management in the areas experiments, machine and infrastructure.
- DESY and ESRF can act as key international partners of NRC KI and its national consortium (e.g. Budker Institute) during the conceptual and technical design phases of SSRS-4; further international partners are welcome to join
- CREMLIN follow-up project and a potential SSRS-4-related work package: the next WP should be used for working on and finalizing the CDR for SSRS-4, followed by the TDR
- Facility should be constructed in proximity to a major scientific hub in Russia

Picture: M. Mayer, DESY

Findings and Recommendations for IGNITOR Collaboration

> For IGNITOR:

- CDR for IGNITOR finalized during May 2015; executive summary to be published
- next step: joint work on the technical design (TDR)
- WP2 Seminar held in July 2017 at DESY with Italian and Russian project participants
- Russian scientific community highly welcomes if IGNITOR will receive a broader European audience and the possibility for scientific exchange
- European-Russian scientific collaboration on physics related to the IGNITOR-project is very welcome, including collaborative projects at a smaller level



Findings & Recommendations WP2

> For Internationalisation:

- Internationalisation of RI at 3 levels: (1) utilisation of the facility; (2) governance level; (3) science policy framework level
- access policies are necessary; EU Charter on Access; Russian charter needed
- point out science case for complementarities of Mega-projects and ESFRI-RIs
- international SACs for Mega-projects needed

Picture ESS Roger Eriksson; WP2 WS Lund 30/06/2016 Lund

> For Innovation:

- Awareness raising, strengthening Industrial Liaison Officers Networks, establishing “innovation portals”
- Improving industrial access to facilities
- Encourage innovation-oriented activities at RI
- Install TT offices
- Introduce RI-Industry oriented training and mobility policies
- Pay attention to relevance of legal and regulatory environments (procurement policies, IPR,..)

Picture: ESS; Innovation WS

Findings & Recommendations WP2

> For Big data:

- joint EU-Russian software development and joint work on meta data; Long term data preservation
- European XFEL upcoming operational phase 2017: connectivity to Russia via high speed data links needs to be enlarged in order to federate compute and storage resources for a seamless analysis environment
- For EU-Russian collaboration along PIK: urgent need for data analysis services in order to provide a consistent ecosystem for EU-Russian users of neutron sources
- Russia invited to participate in the GO FAIR initiative (FAIR: “Findable; Accessible; Interoperable; Reusable”)
- Introduce EOSC to the Russian community

Picture 6: NRC “Kurchatov Institute“. WP2 Workshop on big data management, 15-16/02/2017, at NRC KI

Findings & Recommendations WP2

- For collaboration at research policy level
  - path towards closer collaboration between RU mega projects and EU RIs (ESFRI projects and ESFRI landmarks) goes via ESFRI
  - closer cooperation with the ESFRI forum with regard to the Russian mega projects is needed and intended
  - NICA´s mentioning as a complementary facility to FAIR in the ESFRI Roadmap Update 2016 Landmark: a great success, but can´t be copied 1:1
  - Initiate an interface that will facilitate to set up a dialogue between ESFRI (SWG PSE) and RU megascience stakeholders
  - Position PIK in the ESFRI Roadmap Update

Call INFRASUPP-01-2018–2019

Three dimensions of the call:

i) Cooperation with **Mega Science** projects

ii) Facilitate the **Access** of EU scientists to Russian Research Infrastructures

iii) Develop **staff exchange** programme

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Dimension (i):

Cooperation with **Mega Science** projects:

- **"Joint development and acquisition of specific instrumentation** to be used by the European and Russian Infrastructures. This activity will target the infrastructures that are close to being operational, e.g. **NICA and PIK"**
- **"Joint conceptual and technical design** of Russian Infrastructures of European interest. This activity will particularly target the infrastructures that are at an early conceptual stage, e.g. **SSRS-4, XCELS or SCT**"
- **"Joint development of future technologies** required for Research Infrastructures' instrumentation"

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Dimension (ii):

Facilitate the access of EU scientists to Russian Research Infrastructures:

- "Contribute to **overcoming the barriers** that prevent European scientists from accessing Russian Research Infrastructures of European interest".
- "The project will support Russian Facilities in setting-up the **appropriate access conditions** and cover the travel and subsistence costs that European researchers would sustain in accessing the facilities."
- "take into account: **list of Research Infrastructures** open to International collaboration produced by the Russian Federation in 2016 (update possible) and the European Charter for Access to research infrastructures."

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Dimension (iii):

Develop **staff exchange** programme:

- "EU-Russian staff exchange programme and thematic courses and workshops (e.g. summer schools), aimed at fostering exchanges of best practices on management practices, access procedures and scientific collaboration"

Urgent questions

- Examples of urgent questions:
- Need to know which Russian facilities will be in the focus of the follow up project: When will the reduced „RU 54“ list of facilities be provided?
- Topic of „Big data management“: one of „Joint development of future technologies…“?

Thank you for your attention!

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