**Document information**

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<td>Ekaterina Kolesnikova, NRC KI</td>
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<th>Connecting Russian and European Measures for Large-scale Research Infrastructures</th>
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This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 654166.
Recommendations on e-infrastructure initiatives

CREMLIN Deliverable D8.6

WP8: Communication and dissemination; innovation; education & training

Task 8.5: Needs for thematic Summer Schools and organization of special sessions at three subsequent RACIRI Summer Schools.

Lead Partners: NRC KI, DESY

Introduction

Under the Task 8.5, three special sessions were organized at three RACIRI Summer Schools in 2016 (Russia), 2017 (Sweden) and 2018 (Germany) with selected speakers and lecturers. This task is aimed at providing young researchers at master/PhD level and students who are involved in research and studies related to the megascience infrastructure with the information on CREMLIN activities, existing summer schools in Russia and Europe and most prominent dedicated fields of research.

Since 2013 the annual international RACIRI Summer Schools are organized under the auspices of the NRC "Kurchatov Institute" (Russia), the Deutsches Elektronen-Synchrotron DESY (Germany) and the Swedish Research Council (Vetenskapsrådet) in the collaborative framework of the German-Swedish Röntgen-Ångström-Cluster (RÅC) and the Russian-German Ioffe-Röntgen-Institute (IRI). Co-chairmen of the school are Professor Mikhail Kovalchuk (NRC KI), Professor Helmut Dosch (DESY) and Professor Ulf Karlsson (KTH).

The RACIRI Summer School strives for strengthening the scientific knowledge base of young researchers in advanced materials design with a strong connection to the excellent research infrastructures in the Baltic Sea region and to contribute to the necessary interdisciplinary literacy in relevant scientific fields and disciplines. The main audience of the school is postgraduate students and young researchers from universities and scientific organizations of the Baltic region.

The RACIRI Summer School is held every year under a special focus theme. Its venue rotates annually among the three partnering countries. Among lecturers are famous scientists and researchers, professors from leading universities from all over the world. In 2015, for instance, the keynote address was held by the 2009 Nobel Prize winner Ada Yonath, the Israeli structural biologist.

RACIRI Summer School 2016 took place in Repino, Russian Federation from 21 to 28 August with over 90 participants. The main topic of this school was “Time-resolved and In-situ Studies of Materials: Basics and Applications”. During RACIRI 2016, a special CREMLIN plenary session “Optimizing training and education in the context of large-scale research infrastructures” was organized. Among the plenary speakers were: Günter Kaindl (IRI Director), Pavel Kashkarov (NRC KI), Helmut Dosch (DESY), Sergey Grigoriev (PNPI NRC KI), Alexander Blagov (NRC KI), Elena Tereschenko (NRC KI), Frank Lehner (DESY), Jan Grünert (European XFEL), Hartmut Zabel (Uni Mainz/Uni Bochum).
During the session Helmut Dosch outlined the history of CREMLIN project and encouraged students and young scientists to provide a feedback on their needs in terms of training aspects and developing networks. Sergey Grigoriev presented an annual winter school at PNPI NRC KI. The school is quite similar to RACIRI. He invited students and lecturers to participate in this school. J. Grünert presented the current state of the European XFEL project and the opportunities for young researchers. He also described several schools for young scientists: Ultrafast x-ray summer school (UXSS), XFEL summer school, ESRF summer school and ELI summer school ELISS. H. Zabel made a brief presentation on European school Hercules which is organized every year in the field of neutron and synchrotron radiation. Hercules school organizes visits to large-scale facilities such as ESRF, ILL, Soleil, LLB, DESY, European XFEL and others. The main advantage of this school is the opportunity to get multiple connections to other foreign students as the school lasts one month.

The participants of the CREMLIN session confirmed the good organization of the school in Repino, made some suggestions and proposed to compile a list of Russian and European schools in order to be able to offer new formats for participation and expansion of schools, both by Russian participants and by foreign students and lecturers.

RACIRI Summer School 2017 took place in Ronneby, Sweden, from 19 to 26 August with around 90 participants. The main topic of this school was “Grand Challenges and Opportunities with the Best X-ray and Neutron Sources”. The program of this RACIRI Summer School featured a special CREMLIN Session dedicated to the topic of Big Data. As an introduction, Martin Sandhop (DESY) and Mikhail Popov (NRC KI) gave short overview talks on the CREMLIN project and the Russian Megascience projects.

Patrick Fuhrmann (DESY) gave the top talk on “Data Challenges in the European Science Landscape”. He gave a clear and fascinating picture of many topics related to big data in science, for instance “the scientific Data Life Cycle”, “Data Placement in distributed computing”, “Long term data preservation”, and current trends in “Data federations”. Finally, Patrick illustrated the current European Open Science Cloud EOSC and its FAIR principles: scientific data should be Findable, Accessible, Interoperable, Re-Usable.

RACIRI Summer School 2018 took place on Rügen island, Germany, from 25 August to 1 September. The main topic of this school was “From Basic Science and Applications to Technologies inspired by Nature”.

The total number of participants of the RACIRI summer school in 2018 is 71, including 27 from Germany, 23 students from Russia and 14 from Sweden. In addition, there were international participants from Denmark (3), Latvia (2) and Estonia (2).

In 2018, a special CREMLIN session was dedicated to the pressing issue “Science diplomacy: examples, lessons learned”.

The session started with the short introduction of the CREMLIN project by Frank Lehner (DESY KIB), where the main parameters and key achievements were presented. Sergey Grigoriev (PNPI NRC KI) gave a presentation on “Mega Science Master Program on neutron and synchrotron physics” at the Saint Petersburg State University. This Bachelor, Master and PhD program is the first and only in Europe focused on teaching and training students in the field of Neutron and Synchrotron Physics. It should be noted that since 2018 this program is in English.
The keynote lecture on the Science diplomacy was given by the Rolf-Dieter Heuer, a German particle physicist and former Director General of CERN. The key message of the lecture was “In today’s challenging period, all regions need to step up support for research and innovation in order to ensure, in a global competitive environment, the sustainable development of science and technology necessary for the upturn and growth of everybody’s economy”. Here, CERN serves as a good example of a peaceful cooperation at the forefront of science.

The CREMLIN sessions organized at three RACIRI summer schools demonstrated the interest of the students and young scientists to the current activities around the Russian and European large-scale infrastructure and the opportunities to conduct research in the various scientific fields.

The next RACIRI Summer School is planned to take place in Kaliningrad oblast, Russia, in 2019.

Appendices:

**RACIRI 2016 – Scientific Committee**

**Russian Federation**
Mikhail Kovalchuk (Chair) NRC "Kurchatov Institute"
Sergey Grigoriev St. Petersburg University, PIK
Alexander Blagov NRC "Kurchatov Institute"
Serguei Molodtsov European XFEL
Pavel Kashkarov Moscow State University

**Sweden**
Jesper Andersen MAX IV Lab, Lund
Martin Mansson KTH Stockholm

**Germany**
Tobias Unruh University Erlangen-Nürnberg
Günter Kaindl (Co-Chair) Ioffe Röntgen Institute

**RACIRI 2017 – Scientific Committee**

**Sweden**
Ulf Karlsson (chair) Linköping University
Marjolein Thunnissen MAX IV Laboratory
Arno Hiess ESS
Kristina Edström Uppsala University
Martin Månsson KTH; Lund University

**Russian Federation**
Pavel Kashkarov Lomonosov Moscow State University
CREMLIN - Grant agreement no. 654166  
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Victor Aksenov  
Vladimir Korchuganov  

PINP NRC Kurchatov Institute  
NRC Kurchatov Institute

Germany  
Tobias Unruh  
Stefan Eisebitt  
Günter Kaindl  

University Erlangen-Nürnberg  
Max-Born-Institute Berlin  
Ioffe-Röntgen Institute

RACIRI 2018 – Scientific Committee

Germany

Bridget Murphy  
Frank Schreiber  
Eckart Rühl  
Günter Kaindl (Chair)

University Kiel  
University Tübingen  
Free University of Berlin  
Ioffe-Röntgen Institute

Sweden

Ulf Karlsson (Co-Chair)  
Daniel Söderberg  
Marianne Liebi

Linköping University  
KTH Stockholm  
Chalmers University

Russian Federation

Pavel Kashkarov (Co-Chair)  
Victor Aksenov  
Alexander Blagov

Lomonosov Moscow State University  
JINR Dubna  
NRC Kurchatov Institute

RACIRI 2016 Summer school program

**CREMLIN - Grant agreement no. 654166**  
**Project duration: 01.09.2015-31.08.2018**

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**RACIRI 2017 Summer school program**

[Program details and schedule]

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RACIRI 2018 Summer school program

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<th>Time</th>
<th>Monday 09.00</th>
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**Program of RACIRI 2018 Summer School, 19-28.08.2018 - Ronnieby, Sweden**

**CREMLIN** - Grant agreement no. 654166

**Deliverable no. D8.6**

**Project duration:** 01.09.2015-31.08.2018

http://www.raciri.org/sites/site_raciri/content/e221740/e291186/e291191/e291224/Program_RACIRI2018_17072017.pdf
RACIRI 2016, Repino, group photo (credits: NRCKI photographer)

CREMLIN Session at the RACIRI 2016 (credits: Roman Senin, NRC KI)
RACIRI 2017 Ronneby, group photo (credits: Martin Månsson (KTH))

Rolf-Dieter Heuer at CREMLIN Session (credits: Claas Abraham)