Large-Scale Research Facilities for South East Europe - SEEIIST

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speaking on behalf of the SEE Intergovernmental Steering Committee

Western Balkans Research and Innovation Meeting, 21-22 March 2018, Skopje
Joint South-East European International Institute for Sustainable Technologies (SEEIIST) will be a creation in the spirit of ‘Science for Peace’

Positive reception by a numerous International Organizations
Initiative proposed by Prof. Herwig Schopper, former Director General of CERN
Trieste, January 2018, Herwig Schopper told us:

As a walk up this morning, Kairos came to me, and whispered to my ear:

“NOW IT IS A RIGHT TIME TO DO THIS PROJECT FOR SEE”
The main objectives of the Project

- Fostering **collaboration in science, technology and industry**.
- Providing **education and training platforms**,
- Promoting mitigation of the **tensions between countries** in the region.
- Establishing a **research nucleus** in the SEE region by bringing scientists, engineers and industry people from different countries to work together.
- Promoting another **‘CERN model’ of ‘Science for Peace’**
- Large Scale Facility will introduce **‘first class research’** and thereby **revert brain drain** and assure high competitiveness in the ERA.
Importance of the Project for the Region

- The project would be unique in the whole region
- International cooperation, bringing people together in the spirit of ‘Science for Peace’ could contribute to
  - develop the regional economy
  - improve the standard of living
  - reduce unemployment (in particular for young people)
  - revert brain drain
  - aim at excellence
  - trigger ‘industrialization’ of the region based on sustainable technologies
  - ‘knowledge-based society and economy’
Summary of the mission of the SEEIIT Project

- Science for Peace
- Scientific Excellence
- International Collaboration
- Sustainable development of society
- Education
- Technology Transfer and boost of Innovation
- Development of powerful digital network
A SUCCESS STORY

SESAME: ‘Synchrotron Light for Experimental Science and Applications in the Middle East’

Jordan

The first President of Council of SESAME - Prof. Herwig Schopper
Success story demonstrated in SESAME project:

9 member states of different political systems and religions in the Middle East: Bahrain, Cyprus, Egypt, Israel, Iran, Jordan, Pakistan, Palestinian Authority, Turkey; all of them to peacefully working together for the good of the humanity.
The first preparatory steps during 2017 towards the realization of a SEE Project

<table>
<thead>
<tr>
<th>2016</th>
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<th>2018</th>
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<td>November</td>
<td>March, April, May, June, July, August, September, October</td>
<td>First joint discussion, Budva, Initiative presented to the IAEA, incl. DG Y. Amano</td>
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<td>WAAS meeting, Dubrovnik, proposal H. Schopper for a joint SEE International Institute</td>
<td>Official support by the Government of Montenegro, Visit of all Science/Corresp. Ministers of the region, Initiative presented to the EC, incl. Commissioner C. Moedas</td>
<td>Ministerial meeting at CERN – Signature of Declaration of Intent</td>
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**Political steps**

- 2016 November: WAAS meeting, Dubrovnik, proposal H. Schopper for a joint SEE International Institute
- 2017 March: Official support by the Government of Montenegro
- 2017 June: Visit of all Science/Corresp. Ministers of the region
- 2017 July: Initiative presented to the EC, incl. Commissioner C. Moedas
- 2018 January: Ministerial meeting at CERN – Signature of Declaration of Intent

**Scientific steps**

- 2017 June: Editor committee meeting at CERN
- 2017 July: Editor committee meeting in Budva
- 2017 September: Editor committee meeting at CERN
- 2017 December: Editor committee meeting at CERN
- 2018 February: Scientific Forum ICTP, Trieste
- 2018 March: 1st Intergovernmental Steering Committee meeting, Sofia

**Executive Summary**

Executive Summary of the results prepared
Candidate Members for the South-East European International Institute for Sustainable Technologies

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.
Declaration of Intent signed at CERN on October 25, 2017

Signed by eight parties:
Albania, Bosnia and Herzegovina, Bulgaria, Kosovo*, The former Yugoslav Republic of Macedonia, Montenegro, Serbia and Slovenia. Croatia agreed ‘ad referendum’, Greece is presently an observer

SEE Ministers of Science/Corresponding Ministers or their representatives at CERN

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.
Proposed are two complementary options, both based on most advanced technologies

1. Synchrotron for hadron radiotherapy and research

2. IV generation Synchrotron for fundamental research and applications
Option 1: Facility for Tumor Therapy and Biomedical Research with protons and heavier ions

50% beam time – cancer treatment for ~500 patients/y (for population of 20M).
50% beam time - biomedical research, ~1000 researchers.
What are the Advantages of the Hadron Cancer Radiation Therapy with protons and heavier ions?
Results of proton therapy:  
**Chordomas of the Skull Base**

Survival probability: 5 years after treatment

Deposited dose along the tissue depth
Hadron therapy beyond the cancer applications....
Option 2: 4th Generation Synchrotron Light Source with a new technique used for the first time in Lund, Sweden

* Science community of SEE would be unified
* Over 1000 researchers and
* Various applications from biology up to industrial aspects
Examples of possible research domains which are relevant for the region.
Members of the Editor Committee for Option I – Facility for Tumour Therapy and Biomedical Research with p and heavier ions

Chairman

Prof. Ugo Amaldi, President of TERA, Novara, Italy

Prof. Dr. Jacques Balosso, CHU Grenoble Alpes, FR

Prof. Manjit Dosanjh, Staff at CERN

Dr. Sandro Rossi, Director of CNAO in Pavia, Italy

Prof. Philippe Lambin, Head of Radiation Oncology, University of Maastricht, Maastricht, Netherlands

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Prof. Brita Singers Sorensen, Depar. of Clinical Medicine, Denmark

Prof. Dr. Jacques Balosso, CHU Grenoble Alpes, FR
Members of the Editor Committee for Option II – 4th Generation Synchrotron Light Source

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Dr. Trevor Rayment, University of Birmingham, UK

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Dr. Pedro Fernandez-Tavarez, Machine-Director of MAX IV Lund, Sweden

Dr Amor Nadji, Director of Sources and Accelerator Division of SOLEIL, France

Prof. Riccardo Bartolini, University Oxford and Diamond, UK
Status of the scientific developments
Concept Studies created by the Editor Committees

Executive Summary of the Concept Studies prepared for the Forum

Main elements of a Business Plan:
- technical parameters of the facilities
- time schedule
- investment costs
- operation costs
Culmination of the large effort invested over the year 2017

Forum on New International Research Facilities for South East Europe, held at the ICTP/Trieste on January 25-26, 2018

More than 100 participants, among them representatives from the EC (DG for Research and Innovation - Robert Jan Smits), Chair of the ESFRI (Giorgio Rossi), representatives of the IAEA, Secretary General of the EPS, RCC, ... representatives of the SEE Steering Committee, but also high-level representatives from the scientific community: the Medical and Technical Directors of HIT Heidelberg, the Director of CNAO, Administrative Director of SESAME. From the major European laboratories five representatives from CERN including the Director of Accelerator and Technology, and the deputy Director of DESY and the Research Director of GSI-FAIR.

Thanks to the financial help of the IAEA and some help from the EPS, more than 40 Users from the Region could participate in the Forum.
Forum on New International Research Facilities in South East Europe, ICTP, Trieste 25-26 January 2018
Outcome of the Forum

- The Forum was a great success in confirming the interest both in the science-policy and the scientist communities.

- An important basis for the next steps was provided:
  - Support from the IAEA for Capacity Building declared – 0.5 MEUR offered to start the Training Program – Application to the IAEA has to be submitted by April 2018.
  - EC representatives are looking favourable at the project – potentially providing resources to support the next step, the preparation of the Concept Design Report.

- One of the two options should be selected - decision to be made by the end of March 2018, at the second Intergovernmental Steering Committee meeting in Tirana, Albania.
The next political and scientific-technical steps

- Prepare proposals for funding requests
- Form an Executive (future Directors)
- Start training programs for young people in 2018
  - for technical operation crew
  - for future Users community
- Concept Design Report (CDR)
- Decision on Selection of site(s)
Politically widely accepted that the SEE region needs economic help and further stabilization. Europe needs SEE, and SEE needs Europe. Hence main investment from EU programs (EU members and Non-members)

EUR 150 - 200 million required per project guaranteeing competitive research in the ERA
Few days after the Forum – First SEE Intergovernmental Steering Committee Meeting in Sofia, Bulgaria

Reception by the President of the Republic of Bulgaria, Mr. Rumen Radev

Chairperson elected: Dr. Sanja Damjanovic, Minister of Science of Montenegro

Proposal by the President of Bulgaria: Signature of the Memorandum of Cooperation by the Prime Ministers of the SEE Region at the EU-WB Summit on 17 May 2018 in Sofia
The next political step – Signature of the MoC at the EU-WB Summit on 17 May 2018, in Sofia

MEMORANDUM OF COOPERATION

ESTABLISHMENT OF A SOUTH EAST EUROPEAN INTERNATIONAL INSTITUTE

FOR SUSTAINABLE TECHNOLOGIES

Draft of the Memorandum to be prepared by the Intergovernmental Steering Committee

Fast reaction and help needed to get ready by the EU-WB Summit
This project would trigger a further economical development of the Region for GSI-FAIR and CERN.
Thank You for your attention