

Setting up a Large-Scale Research Facility in SEE

South East European International Institute for Sustainable Technologies (SEEIIST)

<http://seeiist.eu>



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The Mission of the SEEIIST Project



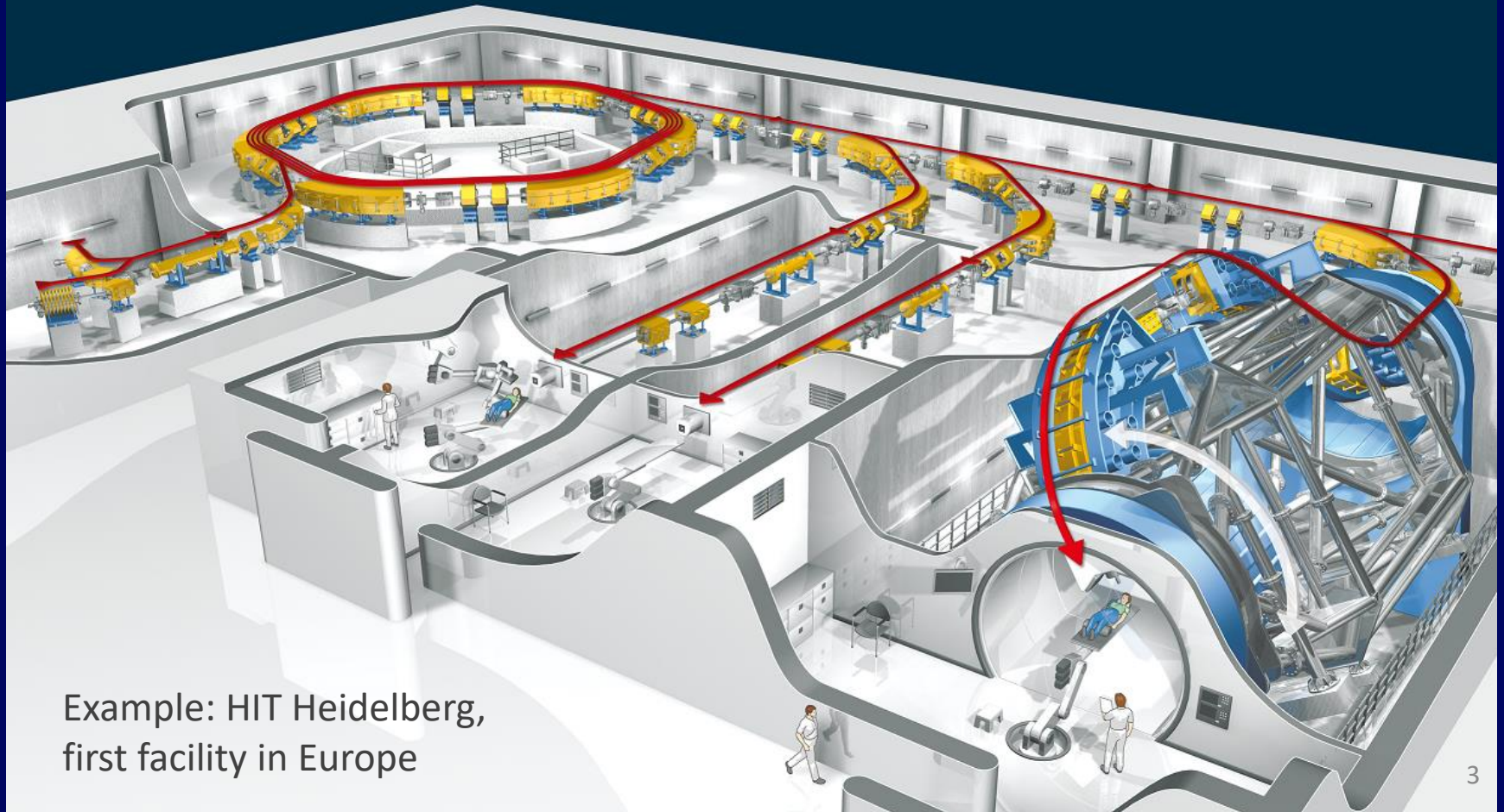
Create Regional Center of Scientific Excellence with 'first class research'

- ❖ To promote collaboration between science, technology and industry (technology transfer)
- ❖ To provide platform for improved education of young scientists and engineers (knowledge transfer)
- ❖ To slow down brain drain or even to revert it
- ❖ Recover the great tradition in technology which SEE had in the past
- ❖ Foster cooperation between countries in the Region

The goals can only be achieved with a Large Scale Facility based on the latest technologies

SEEIIST: Facility for Tumour Therapy and Biomedical Research with protons and heavier ions

About 500 patients per year to be treated as needed for a population of 20M. In parallel, 50% of the beam time dedicated to biomedical research with **multi-ion sources** from H to Ne, making the **SEEIIST project unique in the world**. Capacity for about 1000 researchers, including a major number from Western Europe



Example: HIT Heidelberg,
first facility in Europe

Political steps taken so far (I)

Declaration of Intent signed at CERN on October 25, 2017



First official support of such an initiative by the Government of Montenegro in March 2017



Signature of Declaration of Intent by SEE Ministers of Science/corresponding Ministers or their representatives at CERN

SEEIIST Initiative transformed into a Regional Project

Candidate Members for the South-East European International Institute for Sustainable Technologies

Republic of Albania

Bosnia and Herzegovina

Republic of Bulgaria

Republic of Croatia

Hellenic Republic

Kosovo*

North Macedonia

Montenegro

Republic of Serbia

Republic of Slovenia

Signed a Declaration of Intent

Agreed 'ad referendum'

Observer



* This designation is without prejudice to positions on status and is in line with UNSC 1244/1999 and the ICJ option on the Kosovo Declaration of Independence

Political steps taken so far (II)

Formation of an Intergovernmental Steering Committee

1st Meeting 30 January 2018, Sofia

- Election of Chairperson: S. Damjanovic

2nd Meeting 30 March 2018, Tirana

- Project selection: Facility for Tumour Therapy and Biomedical Research with Protons and Heavier Ions; Draft Memorandum of Cooperation approved

3rd Meeting 13 July 2018, Skopje

- Distribution of tasks for the next Preparatory Phase of the Project

4th Meeting 27 November 2018, IAEA, Vienna

- Coordinator of the Preparatory Group elected



Political steps taken so far (III)

- ❖ Working Meeting: Harmonization of the Memorandum of Cooperation Framework for establishment of the SEEIIST, 05 March 2019, Podgorica
 - Representatives of the 5 SEEIIST Parties presented, while 2 Parties provided comments electronically in writing
 - Harmonized Draft MoC sent to the SEEIIST SC for further suggestions and then via diplomatic channels



Political steps taken so far (IV)

❖ European Commission – Directorate General for Research and Innovation (EC DG-RTD)

- Strong recognition of the Project by the Commissioner Moedas
- **First direct financial support of 1 MEUR for the Design Study Phase**



❖ CERN – European Organization for Nuclear Research

- To host the Working Group 1 – Accelerator Design – part of the SEEIIST Design Study Phase
- Great benefit from long experience in the design of medical accelerators



❖ GSI-FAIR – Facility for Antiproton and Ion Research

- To host the Working Group 2 – R&D and Scientific Aspects of the SEEIIST Design Study Phase
- Great benefit from long experience in Bio- and Medical Physics



❖ IAEA – International Atomic Energy Agency

- Support by the IAEA for the Capacity building program



Concept Study of the SEEIST worked out over the year 2017

FORUM on New International Research Facilities in South East Europe

develop a research excellence nucleus in SEE
benefit for science and technology, training, investment in young people,
job creation, reverse of brain drain, knowledge based economy

Two options for the Institute:

- 4th Generation Synchrotron Light Source
- Facility for Tumour Therapy and Biomedical Research with protons and heavier ions

SCIENCE FOR SOCIETY

Organizing Committee:

Herwig Schopper (Chairman, former DG of CERN)
Fernando Ferroni (President of INFN)
Christoph Quitmann (Director of MAXIV, Sweden)
Nicholas Sammut (Deputy Dean, University of Malta)
Hans J. Specht (Heidelberg Univ., former DG of GSI)
Ruediger Voss (President of EPS)

Local Organizers:

Nadia Binggeli (ICTP)
Saša Ivanović (MNA)

ICTP and Ministry of Science Montenegro



25 & 26 January 2018,
ICTP, Trieste, Italy



Registration to the Forum is free. For a restricted number of participants from the region travel subsistence would be possible. Please register at <http://indico.ictp.it/event/8408/>

Forum held at the ICTP/Trieste
on 25-26 January 2018

Scientific Concept Studies
presented for the first time
to the public

More that 100 participants
including 40 Users from the Region

Representatives from the EC,
ESFRI, IAEA, EPS, RCC, CERN, FAIR-
GSI, HIT, CNAO, DESY, SESAME....

Forum on New International Research Facilities in South East Europe, ICTP, Trieste 25-26 January 2018



SEEIIST Project is entering next Design Study Phase

❖ Preparatory/Design Study Phase consists of:

- Development of the Technical Design Report (TDR)
- Business Plan
- Conditions for the site
 - Can last 3-4 years

❖ Phase 1 of the Design Study Phase:

- Funding: **Direct financial support of 1 MEUR by DG RTD**
- Timeline: 18 months
- Implementation: Preparatory Group for SEEIIST have been set-up

❖ Phase 2 of the Design Study Phase:

- Funding: H2020, European Research Infrastructures, Call “Design Studies” (INFRADEV-01-2019-2020), up to 3 MEUR
- Opening date: 25 July 2019, Deadline: 12 November 2019
- Timeline 2 years

Setting up the Preparatory Group for the SEEIIST Design Study Phase for 18 months (Phase 1)



Working Group 1 – Accelerator Design (Phase 1) hosted by CERN

❖ Objectives:

- Development of the design and key components for a new generation of compact and cost-effective light-ion medical accelerators
- Comparison of different solutions, including the conventional option, to find the most optimal solution in terms of cost, performance and technical risk

❖ Deliverables:

- Intermediate Report containing the basic design for the two novel accelerator options and their comparison with the conventional one

❖ Team Coordinator – Maurizio Vretenar from CERN

Working Group 2 – R&D/Scientific Aspects (Phase 1) hosted by FAIR-GSI

❖ Objectives:

- Clinical and research plans for the SEEIIST facility
- Participation in the design of the facility as far as its use is concerned: imaging, beam delivery, patient rooms, research vault, and related aspects
- Detailed description of biomedical research activities: clinical research (phase II/III clinical trials), pre-clinical radiobiology, medical physics

❖ Deliverables:

- Report containing the clinical and research plans

❖ Team Coordinator – Marco Durante from GSI

Working Group 3 – Legal Aspects + Business Plan (Phase 1)

SEEIIST SC

❖ Objectives:

- Working on Legal aspects of setting-up SEEIIST
- Finding the best model for the Constitution of the Institute
- Conditions for the site
- Preparation of a Business Plan
- Potential of the regional industry
- Creation of an Association as a Legal Entity as a temporary solution
- Creating of a Digital Hub
- Creation of a Network for Capacity Building
- Green Infrastructure, including power supply

❖ Organization responsible:

- Overall responsibility SEEIIST Steering Committee
- Coordinator M. Plesko from CosyLab
- All the Parties involved through the Teamleaders for individual tasks

Time line of the SEEIST Project

2019:

- Start of the Design Study Phase at CERN and GSI
- Set-up of a legal entity

2020:

- Selection of the site
- Application for the ESFRI Road Map

2027:

First patient treatments

2022:

Start construction of the Facility



2017-2018:
Concept Studies

For SEEIST up to 200 MEUR required, guaranteeing competitiveness in Europe. Multiple sources of financing necessary: EU Structural and cohesion funds, IPA funds, some contributions from member-states, other funds
We also hope for the support by the Berlin Process



No matter where SEEIIST will be located – National Benefits across the whole Region –

Treatment of patients: all participating countries will have their share for treatment of patients

Involving the local industry: the construction of the Facility would require more than 200 companies. The production of many different components can preferentially be assigned to our local industry.

Powerful digital networks and big data handling - to reach the clinical and scientific goals two Networks will be set up, a **Clinical Network** and a **Scientific Network**, to be located in different parts of the region.

Training for building human resource capacities in many European renown institutions – all countries involved (funding from IAEA; EU H2020: COST, MC ITN; IPA2019 - financing volume 0.5/0.3/4.5/2 MEUR)



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Thank you for your attention

