



CERN Baltic Group

Discussion with Lithuanian stakeholders - oncologists, radiologists and medical physicists, as well as relevant associations and university representatives

“Advanced Particle Therapy center for the Baltic states”

16 November 2022, Kaunas

Summary

CERN Baltic Group¹ (CBG) and CERN NIMMS collaboration² are working on the project “*Advanced Particle Therapy Center for the Baltic States*” - this initiative is to promote the idea of creation of an innovative research and cancer treatment facility in the Baltic region. The initial technical concept has been developed³ and is supported by CERN NIMMS collaboration, CERN Baltic Group and Baltic Assembly.

For the further development of the project, it is critical to engage the medical community (oncologists, radiologists, medical physicists, nuclear medicine specialists) as well as all relevant stakeholders. Support of the Baltic medical community will be decisive.

Objective of the meeting

1. To inform Lithuanian oncology and radiology specialists, medical physicists and universities representatives about technical aspects and latest developments of the project “*Advanced Particle Therapy Center for the Baltic States*”.
2. During discussions to understand position of the above-mentioned stakeholders *vis-a-vis* the project ideas and technical concept.
3. In case of support to identify relevant representatives for the further work within the “*Advanced Particle Therapy Center in the Baltic States*” Working Group of CBG.

Agenda

1. Introduction and goals of the meeting- Prof. Toms Torims (CERN Baltic Group)
2. European Organization for Nuclear Research (CERN) and NIMMS group activities for development of innovative medical technologies – Dr. Maurizio Vretenar (CERN)
3. Current activities of CERN Baltic Group in the development of “*Advanced Particle Therapy Center in the Baltic states*” project - Prof. Toms Torims (CERN Baltic Group)

¹ <https://indico.cern.ch/category/10023/>

² <https://kt.cern/kt-fund/projects/nimms-next-ion-medical-machine-study>

³ https://indico.cern.ch/event/1201786/attachments/2510537/4314949/Concept_paper_of_Advanced_Particle_Therapy_Center_in_Baltic_States.pdf

4. Technical concept for innovative particle therapy center in the Baltic States - Kristaps Paļskis (CERN/NIMMS)
5. Discussion

Relevant documentation and presentations

<https://indico.cern.ch/event/1216261/>

The main topics of discussion. Conclusions

1. The general idea of the flagship initiative to unite Baltic resources *vis-a-vis* CERN was strongly supported by radiation oncologists, medical physicists and academia representatives.
2. Project has a clear benefit for the regional development.
3. It was recommended by all of the participants to continue persuading the project by engaging all relevant stakeholders, and especially to continue the trilateral dialogue with the relevant ministries and government agencies.
4. After conclusions to be made in the future work of the working group a decisive supporting (or opposite) opinion has to be obtained from the medical community – only then such a large scale, joint infrastructure could be built in the Baltics. Involvement of the oncologists, radiologists, medical physicists and nuclear medicine specialists has been identified as the critical aspect for the future continuation of the project.
5. Clear commitment from the top-level management of the CERN Baltic Group institutions is needed – clear indication of partners, who will be talking part in the project. CERN Baltic Group should clearly decide on the roles of each of the partners and stakeholders involved in the project.
6. The proposed project initiative has to be fully joint and by no-means fragmented.
7. An elaborate business plan for addressing the policy makers with eco-system approach has to be created in future development steps of the project.
8. Clear understanding of the technology involved and its long-term perspective is needed, in terms of technological readiness level and necessary R&D associated activities.
9. Engagement of governmental bodies has to be ensured, especially considering long-term operational life-cycle and maintenance needs of such an infrastructure. This should be well established in the overall decisions of the 3 Baltic State governments.
10. Specialised training will be needed for specialists involved in the proposed infrastructure and this aspect should be addressed and encompassed into the project strategy at very early stages.
11. Pragmatic reasoning is needed – clear criteria for the project should be established by the working group, subsequently the responsible governmental bodies and ministries should be consulted.
12. There is an opinion that existing particle therapy centres in Europe are rather expensive and that they are currently facing a lack of patients. From experience, it appears that well-established, evidence based clinical data are in place only for limited types of tumors. However, as the center would be also using quite different and unique treatment techniques in later stages of operation – the previous statement can not be generalised.
13. Furthermore, lack of the clinical data of long-term particle therapy effects and lack of reliable cancer statistics in the Baltic States are clear issues to address. Alternative extrapolation and statistical approaches may be used along with the experience of the other countries which do use such treatment techniques.
14. There is also lack of clinical data on the combined therapeutical approaches – mixing different treatment techniques (e.g. chemo-therapy + proton therapy).

15. One of the core questions still - will the health insurance systems in the 3 Baltic States be able to cover such treatments (proton and in the future – helium ion therapy)?
16. Attention should be also given to the development of the associated logistics concepts and systems necessary for the patient mobility in the region.
17. For the upcoming Working Group meetings the following pertinent questions are identified for further discussion:
 - a. What is the current *technology readiness level* of the technology proposed?
 - b. What will be the costs and benefits at the regional scale?
 - c. What would be the estimated clinical efficiency, taking into account statistics and prognosis of the number of eligible oncological cases in the Baltic region?
 - d. What are the alternative treatment methods in the region?
 - e. What are the main project-associated risks and how they will be addressed and managed?
 - f. What will be the role of the CBG partner universities?
 - g. What will be the potential of the local industry involvement?
 - h. What further clinical trials are needed at the current and future stages of proton and helium ion therapy clinical use?
 - i. What is the link between this initiative and “EU Mission: Cancer”?
18. Project will be beneficial for the membership of 3 Baltic States in CERN, it will create a regional center of excellence.
19. This will require a long-term commitment and direct engagement of the national funding agencies and governments.

Next steps

The following further steps and actions were agreed upon in collaboration with “*Advanced Particle Therapy Center for the Baltic States*” Working Group and CERN NIMMS⁴ experts:

- To nominate representatives from the community of Lithuanian nuclear medicine, oncology, medical physics and radiology experts for the participation in organised exchange visit to one of the European leading particle therapy centres benefiting from the opportunities offered by the HITRIplus project⁵. This is to be organised by the CBG “*Advanced Particle Therapy Center for the Baltic States*” working group.
- To organise, in the first quarter of 2023, a *Workshop on Advanced Particle Therapy Center for the Baltic States* at CERN, Geneva. This dedicated workshop shall bring together a group of selected Latvian, Lithuanian and Estonian oncologists, radiologists, medical physicists, nuclear medicine specialists from relevant professional associations and with the mandate of those associations for an in-depth discussion on project and future development. The aim of the workshop is to foster regional discussion at the expert level in order to identify a clear clinical and scientific case, to build joint understanding and consensus and to bring the required inputs for the further developments of the technical concept.

⁴ <https://nimms.web.cern.ch>

⁵ <https://www.hitriplus.eu/transnational-access-what-is-ta/>

Participants *in-person*:

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10. Erika KOROBENIKOVA (LSMU, Kauno Klinikos)
11. Kristaps PALSKIS (RTU, CERN)
12. Aurelijus RINKEVIČIUS (VU Experimental Nuclear and Particle physics center)
13. Toms TORIMS (CERN Baltic Group)
14. Donatas VAJAUSKAS (LSMU, Kauno Klinikos)
15. Eugenijus VALATKA (KTU)

Participants *on-line*:

1. Adomas JELINSKAS (Lithuanian Innovation Centre)
2. Maurizio VRETENAR (CERN)

CERN Baltic Group

Chairman of *Advanced Particle Therapy Center for the Baltic States* working group

Professor Toms Torims

