

DanuBalt:

**Novel Approaches in Tackling the Health Innovation and Research Divide in the
Danube and Baltic Sea Region**

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Author(s):	Madalin Ionita, Andreea Constantin - FM Management Consultancy (FMMC) – Romania, Peter Frank (ScanBalt) - Denmark, Jonathan Watson (HCN)- United Kingdom, Hicham Abghay (SEZ)- Germany, Frank Graage (SFZ)- Germany



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Abbreviations and Acronyms

Acronym	Description
DR	Danube Region
D.3.1	Deliverable 3.1. (of Danubalt Project)
EC	European Commission
EU	European Union
EU2020	European Union 2020
EUSDR	European Union Strategy for Danube Region
H2020	Horizon 2020
MS	Member State
PPP	Public Private Partnership
R&I	Research & Innovation
RDI	Research, Development and Innovation
SMEs	Small and Medium sized Enterprises
WP3	Work Package 3 (of Danubalt Project)

Executive Summary

DanuBalt has been funded to analyse the mechanisms hindering the efficient exploitation of EU and regional instruments in the Baltic Sea and Danube macro regions as well as provide remedies that can help improve investment in regional health systems by efficiently using Structural Funds in combination with Horizon 2020. Currently, the divide in research and innovation potential has regressed to 2009 performance levels with specific differences in scientific excellence, internationalisation and business innovation cooperation.

The scope of WP3 (tasks 3.1 – 3.3) was to formulate *recommendations* for measures to widen participation and use synergies between European Funds (Structural Funds, H2020, PPP, etc.) and *propose action plans* for the Danube Region for setting up a tool for bridging innovation and providing a framework to plan and coordinate development. The recommendations present how these funds (programmes and investments) contribute to close the gap between “innovation leaders” and “modest innovators” and the roadmap shows how to explore synergies as well as existing and novel approaches and instruments in addition to the Structural Funds and H2020.

Based upon the consensus framework, four priorities critical for sustainable remedial actions have been identified with their relative enablers. The latter have been prioritised around *innovative public procurement*, *technology transfer* and *scaling up markets*.

This Roadmap was developed starting from the process described above, based on our previous results, a ***catalogue of tailor – made recommendations*** and an ***action plan*** including suggestions to remedial actions at EU/ regional level as how to alleviate the divide in R&I in Health domain. The action plan composed of seven actions at the regional level and further 4 measures to be taken at the EU level has been drafted.

The approach for the Roadmap development is based on the following content:

- Focus area (described at the beginning of this section)
- Goal of the Roadmap
- Specific objectives for each focus area
- Recommendation at regional and EU level
- Actions for each recommendation
- Action lines for each action
- Time frame (months), estimated costs or funding sources and target for each action line

Based on results of remedy/validation phases new approaches tackling the divide will be implemented and the roadmap will be further updated / improved during 2nd implementation year (month 20) of DanuBalt.

Introduction

“The divide between the research and innovation potential of the EU members states persists to be serious”¹. If we look at the level of **Health R&I performance** of the Member States even a more fragmented overall picture is discovered. Currently, the divide in research and innovation potential has regressed to 2009 performance levels with specific differences in scientific excellence, internationalisation and business innovation cooperation.

DanuBalt proposed to “offer approaches specific to health research and innovation in the Danube and Baltic Sea Regions. [...] Analysing the 2 regions is not only interesting in terms of the huge regional coverage but also in relation of the potential of synergies as well as learning effect in avoiding past mistakes, discovering new venues and exploiting them”².

The main objective of DanuBalt is to explore novel pathways and integrate already proven approaches in addressing the divide between less performing RDI regions and lead innovating regions between and within the Danube and the Baltic Sea region.

In respect to above mentioned, the main focus of DanuBalt is to:

- analyse the mechanisms hindering the efficient exploitation of European as well as Regional funding instruments in the Baltic sea and Danube macro- regions and
- offer remedies in order to improve investment in regional health systems by efficiently using Structural Funds in synergy with Horizon 2020.

The main objectives of WP3 were to:

- formulate recommendations for measures to widen participation and use synergies between funds, and
- develop Roadmaps for the Baltic Sea Region and the Danube Region for setting up a mechanism for bridging innovation and providing a framework to plan and coordinate development

The stakeholders from Health research and innovation participating at the activities of DanuBalt represented health authorities, insurances entities, academia, laboratories, university clinics, research centres, SMEs, etc.

All DanuBalt partners participated at the implementation of WP3 and elaboration of deliverable D 3.2.

¹ DanuBalt Technical Annex, section 1.1.1. Section “Background”, page 2

² DanuBalt Technical Annex, section 1.3.3. Section “ Overall Approach”, page 12

Methodology

After the identification of the essential conditions and critical requirements (facilitators) for Danube macro-region, a catalogue of tailor-made recommendations was formulated (using the findings of WP1 and validation of these findings in WP 2). The recommendations include suggestions to remedial actions at both EU and regional levels as to how to alleviate the divide in research and innovation in health sector.

The critical requirement scrutiny for each of the analyzed region (in this case the Danube Region) was used to provide the overall framework for the roadmaps. The roadmap report describes the overall framework, the critical factors and gives implementation recommendations at regional and EU level for the region.

The following methodology has been implemented within WP3 (see figure 1):

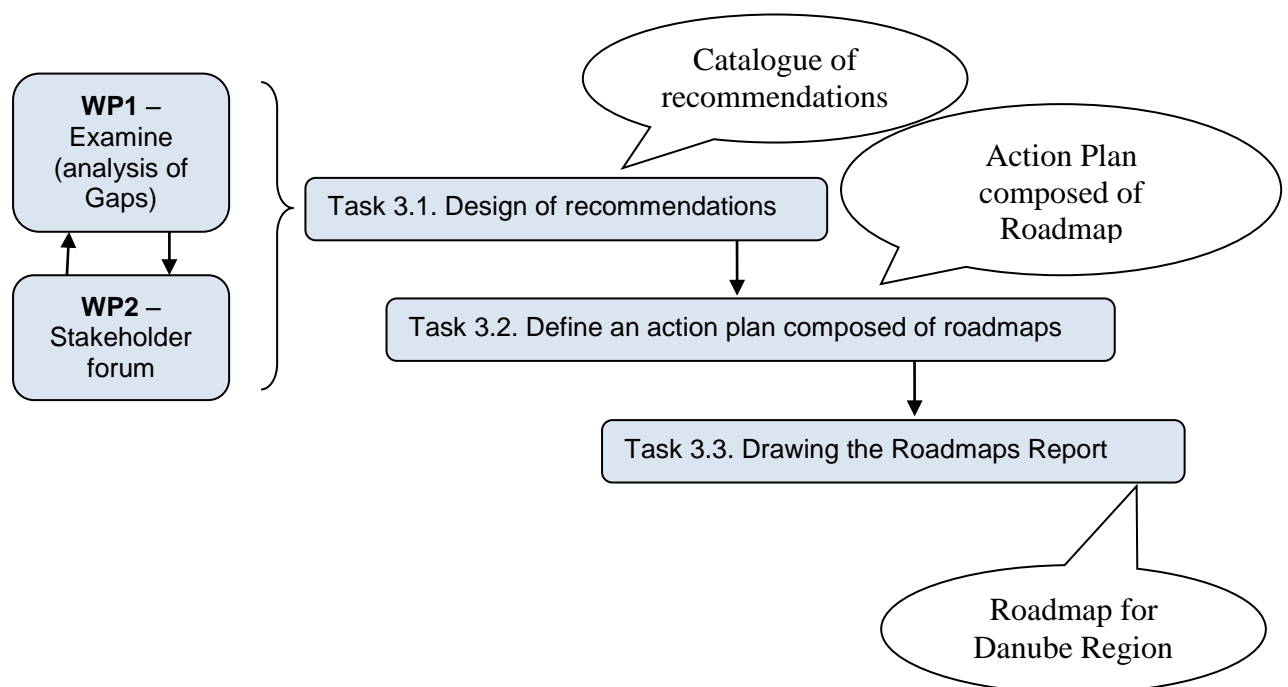


Figure 1 – The methodology supporting WP3 implementation

At the beginning, two types of **remedial actions** (denominated as **4 focus areas** in this report and presented in red below) were identified:

- a) **holistic improvements** focused on *redefining parameters for health care* among end-user health care providers and funders (this should be based on a whole systems approach);

b) 3 more specific **individual (but interrelated) actions** at regional and EU levels, acting as catalysts for improving performance in “modest” and “moderate” innovator regions, grouped in three categories:

- **HEALTH SERVICES**
- **TRANSLATIONAL RESEARCH AND INNOVATION**
- **SCALING UP MARKETS³**

For each of these three categories **one critical remedial action** has been identified, namely:

- Improving capacity and capability for more **transparent and informed procurement** of health innovation products by health care systems and providers (**innovative public procurement**);
- support for more coherent and effective **translational research** along intraregional and cross-border value chains (**technology transfer**);
- **health innovation markets** need expanding in smaller EU member states scaling up markets (**scaling-up markets**).

Specific actions at Regional and EU level were identified in order to show how the European, national and/or regional funds (programmes and investments) can contribute to close the gap between “innovation leaders” and “modest innovators” within the region.

³ See figure 2 of this report, page 11

1 Recommendations and Focus Areas

1.1 Critical remedial priorities and recommendations

After identification of essential conditions and critical requirements on Health R&I for the Danube Sea Region, a catalogue providing **tailor-made recommendations** was prepared, based on the a) findings generated by **WP1** and b) validation of these findings (using *online survey* and the 3 *stakeholder fora* in **WP2**). Implementing these recommendations at the Danube Sea regional level will be supported by use of the *consensus framework* for health innovation **enablers**⁴ (produced in WP1).

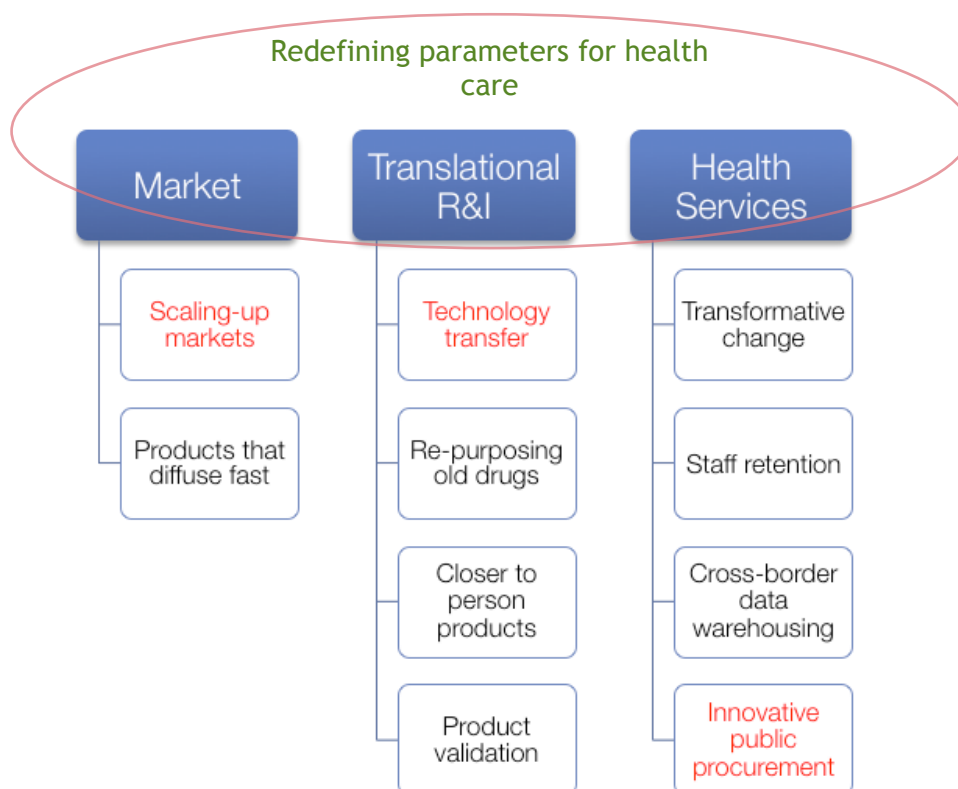


Figure 2 – Overview of critical remedial priorities

Two types of **remedial actions** are needed: a) **holistic improvements** focused on *redefining parameters for health care* among end-user health care providers and funders (this should be based on a whole systems approach) combined with b) more specific **individual (but interrelated) actions** at regional and EU levels.

These specific individual (but interrelated) actions at regional and EU level (highlighted in red in figure 3) are grouped in three categories: Health services, Translational Research

⁴ Figure 2 presents the innovation enablers of the main importance validated by stakeholders participating at (3) fora;

and Innovation and Markets and have been selected in task 3.1 because analysis of the interview transcripts combined with conclusions from the 3 stakeholder fora (already organized during the 1st year of DanuBalt implementation) showed these three actions act as catalysts for improving performance in modest and moderate innovator regions:

- improving capacity and capability for more **transparent and informed procurement** of health innovation products by health care systems and providers (**innovative public procurement**);
- ensuring support for more coherent and effective **translational research** along intraregional and cross-border value chains (**translational R&I**);
- **scaling up markets** for health innovation products generated in modest and moderate innovator regions (**scaling-up markets**).

All recommendations, both at EU as well as Regional level, are presented within the full report (internal deliverable of task 3.1) entitled “**Catalogue of tailor-made recommendations**”; the report comprises specific *key messages* for each remedial action and general recommendations.

1.2 Action plan composed of roadmap

The headlines of the **actions plans** (proposed in task 3.2) correspond to the **remedial actions** identified in “**Catalogue of recommendations**” (task 3.1.) and are in this report denominated as **focus areas**, those being:

1. Redefining parameters for health care

As models of care evolve and needs change, there is a need to bridge existing cross-sectoral gaps by involving key regional actors in the value chain of health care innovations.

The main objective is to support the creation of sustainable, cost-effective, citizen centric healthcare systems promoting new jobs and businesses.

2. Innovative public procurement (IPP)

PPP, CPC and related initiatives for leveraging better public procurement (e.g. the EIP Smart Cities and Communities) need to be made better known among decision makers and public buyers. Good examples of transparent methods of procurement should be disseminated and valorized.

The main objective is to support the access of innovative services and product into the health care system.

3. Technology transfer (TT)

National and regional health authorities and policy makers need to get to know and eventually use existing good examples of supporting translational research processes and dedicating a part of available financial support to business creation along the translational research pathway.

The main objective is to bridge the gap between academia and industry in health system and identifying what and how underused research infrastructure can be better used by local and cross-border value chains before investing in new infrastructure.

4. Scaling up markets

Health innovation markets need expanding in smaller EU member states possibly in the form of geographic clusters (A = Latvia, Lithuania, Estonia), (B = Slovenia, Slovakia, Croatia with Hungary). One means for doing this is to support cross-border value chains that engage all stakeholders in the translational research continuum in parallel to using a compatible 'Living Labs' approach to facilitate local understanding and adoption.

The main objective is to ensure support for overcoming barriers to market penetration

In addition, is included a basic pre-condition “**Knowing the region**” where recommended actions are mainly based on and correlated with the **Action Plan of The “EU Strategy for the Danube Region”**⁵. However, because the EUSDR does not present Health sector as a priority, the correlation of the proposed actions with already existing **Action Plan of EUSDR** and **Danube Region Research and Innovation Fund Programme**⁶ (DRRIF) was mainly focused on research and innovation actions addressing Health sector.

⁵ ACTION PLAN, Accompanying document to the COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, “European Union Strategy for the Danube Region”, {COM(2010) 715}, Brussels, 2010

⁶ Danube Region Research and Innovation Fund Programme Document / Feasibility Study, This project is co-financed by the European Union, June 2015

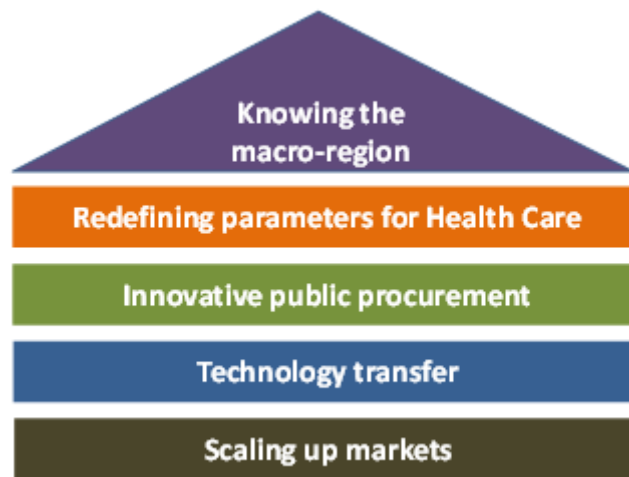


Fig 3: Overview remedial actions

To each focus area is proposed a set of **recommended concrete actions** (for respectively the Danube Region) thereby bringing “*Catalogue of recommendations*” to the operative level. The operative level is to some extent additionally inspired by the actions proposed in Action Plan for EU Strategy for Danube Region. The use of Focus Areas and Actions aligns with the terminology applied in the macro-regional strategy “**European Union Strategy for Danube Region**”⁷.

The whole report (internal deliverable of task 3.2.) entitled “**Action Plan for bridging the divide in the Health Innovation and Research in the Danube and Baltic Sea region**”, comprise specific actions per each of 4 focus areas, action lines, time frame and costs and monitoring aspects..

⁷ Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions “ **European Union Strategy for the Danube Region**”, COM(2010) 715, Brussels, 2010

2 Roadmap for the Danube Regions in relation to the health sector

Based on,

- a) *inputs obtained from stakeholders during WP1 and WP2 activities,*
- b) *other (existing and/or planned) related agreements/plans/strategies in Danube Region concerning development of RDI (including Health sector),*
- c) *previous experience of DanuBalt partners regarding development of action plans, as well as*
- d) *specific results of task 3.1 - Design of recommendations and*
- e) *task 3.2 – Define Action Plan composed of Roadmaps,*

a *Roadmap for Danube Region in relation to the health sector* has been drawn.

2.1 The goal

The goal of the *roadmap for the Danube Region in relation to the health sector* is to offer remedies/actions in order to improve the investment in Danube regional health systems by efficient using Structural Funds in combination with H2020⁸.

Danube Region specifics (& challenges)

*“Given the polarization within the Danube Region concerning **innovation** and ICT indicators, diffusion mechanisms as well as targeted support for research infrastructure should be promoted.*

To stimulate excellence in research and development, cooperation between knowledge providers, companies and the public sector should be enhanced and incentives for stronger cooperation developed.

A better coordination of national and regional funds is needed to stimulate research and development in the Region and to benefit fully from the European Research Area.

Existing bilateral agreements should be used and improved through multilateral coordination. Such cooperation could either be driven by geographic proximity or by fields of excellence. Cooperation should build on already existing structures, such as the Danube Rectors conference⁹ and should draw on experiences developed for sub-regions, such as the SEE-ERA net plus¹⁰ research programme”¹¹.

⁸ This goal is in line with the “EU Strategy for the Danube Region”, which seek to create synergies and coordination between existing policies and initiatives taking place across The Danube Region (including research, innovation, education, business environment) -

⁹ The Danube Rectors Conference (comprises 51 member institutions from 13 countries, which however lacks common resources, both financially and institutionally).

¹⁰ SEE-ERA-Net plus is a networking project aimed at integrating EU member states and Southeast European countries in the European Research Area by linking research activities within existing national, bilateral and regional RTD programmes. (<http://plus.see-era.net/start.html>)

2.2 Objectives

In order to reach the goal of the roadmap, the following specific objectives have been established:

- ✓ to support the creation of sustainable, cost-effective, citizen centric healthcare systems promoting new jobs and businesses;
- ✓ to support the access of innovative services and product into the health care system;
- ✓ to foster cooperation and exchange of knowledge between SMEs, academia and public authorities in the Health area;
- ✓ to better identify what and how underused research infrastructure can be better used by local and cross-border value chains before investing in new infrastructure;
- ✓ to ensure support for overcoming barriers to market penetration;
- ✓ to enhance regional cooperation and avoid overlaps of policy efforts and mainly financial resources;
- ✓ to upgrade regional innovation systems throughout the Danube Region, to reinforce the capacity of research infrastructure and link better existing health foundations/bodies in order to improve innovation conditions in Danube Region.

2.3 Actions

Starting from the results of the previous WPs of DanuBalt combined with the above mentioned challenges¹² of the Danube Region (regarding the 3rd pillar “Building prosperity in the Danube region / action 7 “To develop the knowledge society through Research, Education and information Technologies”), the following **6 actions** have been proposed in order to present how these funds (programmes and investments) contribute to close the gap between “innovation leaders” and “modest innovators” and explore synergies as well as existing and novel approaches and instruments in addition to the Structural Funds and H2020.

Focus area	Actions	Action lines
Redefining parameters for health care	A better coordination at the policy level by creation of a Central Unit/body informing about the importance of the Health Economy and connect various policy areas such as health, economy, finance, regional development, etc. for creation of sustainable	<u>Establishment of “Board of Trustees for Health Economy”</u> <u>Cross - Sectoral and Transnational Projects for Innovation in Health</u>

¹¹ Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions “ **European Union Strategy for the Danube Region**”, COM(2010) 715, page 59

¹² which should be transformed into opportunities

	and citizen centric healthcare systems in Danube Region	<u>Economy</u>
Innovative public procurement	Enable health service providers to improve the quality of care provisions by unlocking the potential of innovation development and diffusion	<u>Increase the cooperation of healthcare representatives with health service providers (mainly industrial partners)</u>
	Improve capacity and capability for more transparent and informed procurement of health innovation products by health care systems and providers	<u>Improve the access of innovative services and products within the health care systems</u>
Technology transfer	Better use the existing resources and people skills in generating, adopting and diffusing innovation services and products	<u>Bridging the Gap between Academia and SMEs within health</u>
	Create tools and mechanisms for cooperation and better exploit the RDI results	<u>Establish a platform supporting the offer and request as well as identification of suitable partners for cooperation</u>
Scaling up markets	Overcoming barriers to market penetration	<u>eLearning platform development</u>

These **6 (six) proposed actions** addresses the 4 (four) focus areas defined in 3.2 above. Each action is addressed by one or more action lines, accompanied by stakeholders to be involved, a timeframe and estimated budget/sources of funding.

Additional 4 actions were also identified to be proposed at recommendations EU level, namely:

Focus area	Actions	Action lines
Redefining parameters for health care	Better coordination of the national, regional and EU funds to stimulate excellence in Health RDI for the Danube Region	<u>Development of a Danube Health Research Unit through coordination of funds</u>
Innovative public procurement	Invest in and pilot a European version of the Small Business Innovation Research (SBIR) program in the Danube Macro-Regions.	<u>In particular, create incentives for SMEs to work with public health care service providers in generating innovation products that can be scaled-up, adopted and diffused through public procurement i.e. aligned with the PPI and PCP initiatives.</u>

Technology transfer	Foster cooperation and exchange of knowledge between SMEs, academia and public authorities in the Health area in the Danube Region	<u>Develop a Danube Region programme for clusters and SMEs - networks</u>
Scaling up markets	Enhance cooperation in RDI in Health to bring new and innovative services and products to the Single Market in the benefit of citizen and addressing the main challenges in health	<u>Create mechanisms for promotion of regional clusters development in Health, supporting smart specialization</u>

The actions were proposed as recommendations at Regional (chapter 4.4) as well as EU level (chapter 4.5.)

2.4 Recommendations at Regional level

REMEDIAL ACTION 1: Redefining parameters for health care	
Key message	As models of care evolve and needs change, there is a need to bridge existing cross-sectoral gaps by involving key regional actors in the value chain of health care innovations. The main objective is to support the creation of sustainable, cost-effective, citizen centric healthcare systems promoting new jobs and businesses.
Action 1	<i>A better coordination at the policy level by creation of a Central Unit/body informing about the importance of the Health Economy and connect various policy areas such as health, economy, finance, regional development, etc. for creation of sustainable and citizen centric healthcare systems in Danube Region</i>
Action line 1	<p><u>Establishment of “Board of Trustees for Health Economy”</u></p> <p>The board comprises of representatives from politics, business, and research pursuing common goals, such as:</p> <ul style="list-style-type: none"> (1) shaping the profile of the Danube area as a health region, recognized nationally as well as internationally; (2) promoting health economy as a sector of crucial importance for competitiveness and solving societal challenges; (3) promoting modernization of health care systems and the uptake of new approaches. <p>A significant instrument for reaching these goals would be a ‘Master Plan Health Economy Danube Area’. In order to efficiently implement the strategies to be described in the master plan, strategy groups should be formed in respect to the master plan's main development areas. The <i>Board of Trustees for Health Economy</i> would have as an important role to promote coordinated investments between ESIF 2014-2020, H2020, other EU funds, national and regional public-private financing.</p>

Involved parties	representatives from politics, business, and research communities
Estimated time frame (months)	36 months
Estimated cost (euro)	<p>This comprises dialogue with key stakeholders, appointment of members of the board, preparation of statutes for the Board, 2 annual meetings in year 2 and 3 and preparation of Master Plan for Health Economy.</p> <p>Costs estimate:</p> <p>Secretariat support 6 MM/year/5,000 EUR: 90,000 EUR</p> <p>Meeting/travel of Secretariat: 7,000 EUR</p> <p>Meeting/travels of Board 12 persons/8 meetings: 48,000 EUR</p> <p>Overheard costs: a flat rate of 25% of other direct costs: 36,250 EUR</p> <p>Preparation of Master Plan (sub contract): 50,000 EUR</p> <p>Total: 231,250 EUR</p>
Action line 2	<p><u>Cross - Sectoral and Transnational Projects for Innovation in Health Economy</u></p> <p>The purpose is to</p> <ol style="list-style-type: none"> (1) connect regional competences within health economy (operative level); (2) elaborate, align and integrate smart innovation and development strategies meeting the needs and demands of both metropolitan and rural regions; (3) establish and promote a professional, trans-regional, service based collaboration platform; (4) connect the interests for collaboration and interaction between policy areas in the Danube Action Plan within e.g. health, innovation, SMEs, bio-economy, agro and health tourism; (5) be a tool to support coordinated investments between ESIF, H2020, national and regional public-private funding (6) act as secretariat and support the “Board of Trustees for Health Economy”. <p>Finally it could be a platform for enhancing branding and visibility of the Danube area in order to assist attracting and retaining human, financial and industrial resources. It may if desired be established as a legal entity in order to be direct partner and coordinator in e.g. EU project.</p>
Involved parties	representatives from politics, business, and research communities representing different fields such as health, innovation, SMEs, bio-economy, agro and health tourism;
Estimated time frame (months)	36 months
Estimated cost (euro)	<p>This comprises dialogue with key stakeholders, preparation of a web based platform, project accelerator workshops, secretariat support.</p> <p>Costs estimate*:</p> <p>Secretariat** support (excluded support board) 6 MM/year/5,000 EUR 90,000 EUR</p>

	<p>Meeting/travel of Secretariat: 9,000 EUR</p> <p>Preparation and maintenance of web platform: 5,000 EUR</p> <p>Other materials: 3,000 EUR</p> <p>IT and telephone: 5,000 EUR</p> <p><u>Total: 112,000 EUR</u></p> <p>*Cost do not include basic tasks like project management, auditing, dissemination etc. as they are only estimates in order to prioritize</p> <p>**It is assumed that the secretariat can be hosted for free in the first 36 months at one of the stakeholders.</p>
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REMEDIAL ACTION 2: Innovative public procurement	
Key message	PPI, CPC and related initiatives for leveraging better public procurement (e.g. the EIP Smart Cities and Communities) need to be made better known among decision makers and public buyers. Good examples of transparent methods of procurement should be disseminated and valorized.
Action 1	<i>Enable health service providers to improve the quality of care provisions by unlocking the potential of innovation development and diffusion</i>
Action line 1	<p><u>Increase the cooperation of healthcare representatives with health service providers (mainly industrial partners)</u></p> <p>A better cooperation between healthcare representatives and health service & product providers (especially industrial partners) is needed to solve major challenges of health care systems. That could be solved by training sessions, workshops, brokerage events, identification, promotion and exploitation of best practices. Training could be organized on topics such as public procurement procedures, project management, PPP, etc. Trained people could act afterwards as catalysts inside the organization they are acting and disseminate / distribute the skills gained to other colleagues.</p>
Involved parties	Health care management and staff, representatives of industry, SMEs
Estimated time frame (months)	36 months; this comprises identification of the training needs, identification of lecturers, organization of training events, support for travel of participants at training events
Estimated cost (euro)	<p>Costs estimate*:</p> <p>Organization of events: 18 x 1 day event/25 participants each: 36,000 EUR</p> <p>Travel of lecturers: 2 per event x 18 events: 16,200 EUR</p> <p>Travel of participants**: 225,000 EUR</p> <p><u>Total: 277,200 EUR</u></p> <p>*Cost do not include basic tasks like project management, auditing, dissemination etc as they</p>

	are only estimates in order to prioritize **May be reduced if events are mainly regional and for regional participants
Action 2	<i>Improve capacity and capability for more transparent and informed procurement of health innovation products by health care systems and providers</i>
Action line 1	<u><i>Improve the access of innovative services and products within the health care systems</i></u> Prepare the people responsible for public procurement issues to better understand the innovation need/aspects and its role within the regional development, to better address the cooperation between public (as receptors) and private (as providers) entities, to improve their skills related to supporting innovation through RDI funds. Specific events could be organized (such as training sessions, brokerage events, workshops).
Involved parties	Procurement staff in entities from healthcare system (SMEs, research centers, universities, clinics, hospitals, etc.)
Estimated time frame (months)	36 months; this comprises identification of the training needs, identification of lecturers, organization of training events, support for travel of participants at training events
Estimated cost (euro)	Costs estimate*: Organization of events: 18 x 1 day event/25 participants each: 36,000 EUR Travel of lecturers: 2 per event x 18 events: 16,200 EUR Travel of participants**: 200,000 EUR <u>Total: 252,200 EUR</u> *Cost do not include basic tasks like project management, auditing, dissemination etc. as they are only estimates in order to prioritize **May be reduced if events are mainly regional and for regional participants

REMEDIAL ACTION 3: Technology Transfer	
Key message	National and regional health authorities and policy makers need to get to know and eventually use existing good examples of supporting translational research processes and dedicating a part of available financial support to business creation along the translational research pathway (the Harvard 'T' spectrum)
Action 1	<i>Better use the existing resources and people skills in generating, adopting and diffusing innovation services and products</i>
Action line 1	<u><i>Bridging the Gap between Academia and SMEs within health</i></u> Under-utilization of existing health-research infrastructures and gaps in public-private collaborations hinders the commercialization of innovative ideas by companies, notably SMEs.

	<p>In order to tackle the gaps there is a need for analysis aiming of:</p> <ol style="list-style-type: none"> 1) identification of regional research infrastructures suitable for shared use; 2) regional cluster innovation strategies for bridging academia and SME's; 3) regional SME financing bottlenecks and mapping of investors. This should be coupled with entrepreneurship training of researchers and specific training in test bed collaborations with industry in finally training on IP issues in order to protect the intellectual assets; 4) connect the academic sector with the business sector through joint projects and events or even include them in its administrative bodies.
Involved parties	National and regional health authorities and policy makers
Estimated time frame (months)	24 months; This comprises the analysis, entrepreneurship training and specific training in test bed collaborations.
Estimated cost (euro)	<p>Cost estimate*:</p> <p>Analysis of regional research infra structures 2 MM: 10,000 EUR Analysis of regional cluster innovation strategies 2 MM: 10,000 EUR Analysis of regional SME financing bottlenecks and investors 2 MM: 10,000 EUR</p> <p>Entrepreneurship training:</p> <p>Room and catering for 12 x 1 day workshops/25 participants each: 25,000 EUR Travel of participants**: 150,000 EUR Travel of speakers 3 per workshop x 12 workshops: 18,000 EUR</p> <p>Specific training in test bed collaborations:</p> <p>Room and catering for 12 x 1 day workshops/25 participants each: 25,000 EUR Travel of participants**: 150,000 EUR Travel of speakers 3 per workshop x 12 workshops: 18,000 EUR</p> <p><u>Total: 416,000 EUR</u></p> <p>*Cost do not include basic tasks like project management, auditing, dissemination etc as they are only estimates in order to prioritize</p> <p>** May be reduced if workshops are mainly regional and for regional participants</p>
Action 2	<i>Create tools and mechanisms for cooperation and better exploit the RDI results</i>
Action line 1	<p><i>Establish a platform supporting the offer and request as well as identification of suitable partners for cooperation</i></p> <p>The platform will collect information about needs (request) and will offer possibilities for commercialization of the existing innovative offers, as well as identify potential partnerships between healthcare representatives and providers of healthcare services and products</p>

Involved parties	research centres, universities, SMEs, developers
Estimated time frame (months)	36 months
Estimated cost (euro)	<p>e-learning platform development: 100,000 EUR</p> <p>Secretariat support: 18 MM: 90,000 EUR</p> <p><u>TOTAL: 190,000 EUR</u></p> <p>*Cost do not include basic tasks like project management, auditing, dissemination etc. as they are only estimates in order to prioritize</p> <p>** May be reduced if workshops are mainly regional and for regional participants</p>

REMEDIAL ACTION 4: Scaling up markets	
Key message	Health innovation markets need expanding in smaller EU member states possibly in the form of geographic clusters (Latvia, Lithuania, Estonia), (Slovenia, Slovakia, Croatia, Hungary). One means for doing this is to support cross-border value chains that engage all stakeholders in the translational research continuum in parallel to using a compatible 'Living Labs' approach to facilitate local understanding and adoption.
Action 1	<p><i>Overcoming barriers to market penetration</i></p> <p><i>Personnel of research and development centers, universities lack abilities for promoting their RDI results to market; the cooperation of academia with private sector must be improved in order to ensure the transposal of results of fundamental and demonstrative research to applied research and innovative services and products A solution could be to improve the skills of personnel on marketing, project management, business development.</i></p>
Action line 1	<p><i>eLearning platform development</i></p> <p>A platform promoting e-learning modules could be developed, comprising various training modules such as project management, marketing, business development, strategic management, public procurement, etc. The platform can be exploited by various actors from healthcare system after free registration.</p>
Involved parties	Information technology centers, research centers & infrastructures, authorities
Estimated time frame (months)	36 months
Estimated cost (euro)	<p>Training modules development: 5 modules - 25,000 EUR</p> <p>e-learning platform development: 75,000 EUR</p> <p>Secretariat support: 12 MM: 60,000 EUR</p> <p><u>TOTAL: 160,000 EUR</u></p> <p>*Cost do not include basic tasks like project management, auditing, dissemination etc. as they</p>

	are only estimates in order to prioritize ** May be reduced if workshops are mainly regional and for regional participants
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2.5

Recommendations at EU level

REMEDIAL ACTION: Redefining parameters for health care	
Key message	As models of care evolve and needs change, there is a need to bridge existing cross-sectorial gaps by involving key regional actors in the value chain of health care innovations. The main objective is to support the creation of sustainable, cost-effective, citizen centric healthcare systems promoting new jobs and businesses
Action 1	<u><i>A better coordination of the national, regional and EU funds to stimulate excellence in Health RDI for the Danube Region</i></u> Specific tools (instruments and funding programs, innovation policies) should foster excellence and smart specialization and develop key research strengths in Health sector and support the development of Danube Region. A better coordination of the existing national programs, regional and/or EU programs (H2020, Structural Funds, Rural Development Funds, CIP, etc.) is needed. Coordination of EU initiatives with initiatives in candidate countries and potential candidates is also needed
Action line 1	<u><i>Development of a Danube Health Research Unit through coordination of funds</i></u> <ul style="list-style-type: none"> - Identification of research areas of particular relevance and interest on Health within the Danube Region; - Development and launching of calls for proposals; - Identification of health centers of excellence
Involved parties	Policy – makers from Danube region countries as well as researchers
Estimated time frame (months)	Medium to long term
Estimated cost (euro)	Financial source: from existing national and regional research funds

REMEDIAL ACTION: Innovative public procurement	
Key message	PPP, CPC and related initiatives for leveraging better public procurement (e.g. the EIP Smart Cities and Communities) need to be made better known among decision makers and public buyers. Good examples of transparent methods of procurement should be disseminated and valorized.
Action 1	<u><i>Invest in and pilot a European version of the Small Business Innovation Research (SBIR)</i></u>

	<u>program in the Danube Macro-Regions.</u>
Action line 1	In particular, <u>create incentives for SMEs to work with public health care service providers in generating innovation products</u> that can be scaled-up, adopted and diffused through public procurement i.e. aligned with the PPP and PCP initiatives. Also, promotes the innovative activities of SMEs and supports their establishment. (e.g., via cooperation within the EUREKA Program)
Involved parties	Public authorities, SMEs, health care providers
Estimated time frame (months)	Medium to long term
Estimated cost (euro)	Financial source: N/A

REMEDIAL ACTION: Technology Transfer

Key message	National and regional health authorities and policy makers need to get to know and eventually use existing good examples of supporting translational research processes and dedicating a part of available financial support to business creation along the translational research pathway (the Harvard 'T' spectrum)
Action 1	<u>Foster cooperation and exchange of knowledge between SMEs, academia and public authorities in the Health area in the Danube Region</u> Cooperation should be fostered in areas where there is a particular knowledge on Health in the Danube Region.
Action line 1	<u>Develop a Danube Region program for clusters and SMEs - networks</u> <ul style="list-style-type: none"> - Phase 1: Clusters development (support, training schemes for clusters organizations; - Phase 2: Transnational clusters collaboration (organization of a platform of clusters, joint cluster branding in Danube Region)
Involved parties	EC, regional authorities
Estimated time frame (months)	Medium to long term
Estimated cost (euro)	Sources: national for RDI and EU/Structural Funds

REMEDIAL ACTION: Scaling up markets

Key message	Health innovation markets need expanding in smaller EU member states possibly in the form of geographic clusters (Latvia, Lithuania, Estonia), (Slovenia, Slovakia, Croatia, Hungary). One
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	means for doing this is to support cross-border value chains that engage all stakeholders in the translational research continuum in parallel to using a compatible 'Living Labs' approach to facilitate local understanding and adoption.
Action 1	<i>Enhance cooperation in RDI in Health to bring new and innovative services and products to the Single Market in the benefit of citizen and addressing the main challenges in health</i>
Action line 1	Create mechanisms for promotion of regional clusters development in Health, supporting smart specialization
Involved parties	EC, Member states
Estimated time frame (months)	Medium to long term
Estimated cost (euro)	H2020 and Structural Funds

2.6 Time frame and costs (summary)

The proposed action lines may be packed together in concrete projects in many ways so a proposed action line is not equal to a project proposal (it may for example just be a work package within a project covering more than one remedial action).

The time frames are estimates based on various previous, ongoing or planned comparable project activities and previous experience of the members of DanuBalt consortium.

Costs for the various action lines do not include basic tasks like project management, auditing, dissemination or any other basic project costs. They only try to reflect costs of essential core activities and are only estimates. Costs for travels may in some cases be reduced if workshops are mainly regional or national.

✓ Proposed actions at regional level

Remedial action / Action lines	Time Frame (Months)	Cost estimate (EUR)
Redefining parameters for Health Care		
<i>Establishment of Board of Trustees for Health Economy</i>	36	231,250
<i>Cross-Sectoral and Transnational Projects for Innovation in Health Economy</i>	36	112,000
Innovative public procurement		
<i>Increase the cooperation of healthcare representatives</i>	36	274,200

<i>with health service providers (mainly industrial partners)</i>		
<i>Improve the access of innovative services and products within the health care systems</i>	36	252,200
Technology transfer		
<i>Bridging Gap between Academia and SMEs</i>	24	416,000
<i>Establish a platform supporting the offer and request as well as identification of suitable partners for cooperation</i>	36	190,000
Scaling up markets		
<i>eLearning platform development</i>	36	160,000

✓ **Proposed actions at EU level**

Remedial action / Action lines	Time Frame	Source of funding
1. Redefining parameters for Health Care		
<i><u>Development of a Danube Health Research Unit through coordination of funds</u></i>	Medium to long term	EC (H2020), Structural Funds, national funds for research
2. Innovative public procurement		
<i><u>Create incentives for SMEs to work with public health care service providers in generating innovation products</u></i>	Long term	EC, Structural Funds, national funds for research
3. Technology transfer		
<i><u>Develop a Danube Region programme for clusters and SMEs - networks</u></i>	Medium to long term	EC (H2020, CIP), Structural Funds, national funds for research
4. Scaling up markets		
<i><u>Create mechanisms for promotion of regional clusters development in Health, supporting smart specialization</u></i>	Medium to long term	EC (H2020, CIP), Structural Funds, national funds for research

2.7 Monitoring

Accordingly to DanuBalt project's activities, throughout WP5, *Task 5.3 Sustainability of DanuBalt networking platform*, in order to ensure implementation of the project results and the continuation of the vision and ideas, a sustainable networking platform is needed to facilitate the process after the project has been finalized. While the existing ScanBalt organisation is

likely the responsible partner for the Baltic Sea region corresponding partner(s) for the Danube area has to be identified. The discussions shall result in a business plan for a sustainable DanuBalt networking platform supported by letters of intents for potential partners. Overall initial tasks for the platform would for example be to (1) further promote and implement shared tools and services between regions and clusters; (2) constantly update and identify needs, obstacles, best practices and (investment) opportunities; (3) further promote and execute coordinated investments between EU funds and national and regional public-private investments; (4) further promote and support the organisational development of in particular the Danube area and the inter-macro regional set-up.

Implementation of the Action Plan is overseen and monitored by the partner elected to ensure the sustainability of the Danube Networking Platform.

The monitoring framework has the following objectives:

- ✓ To promote and disseminate the Roadmap's objectives to all stakeholders in order to reach their commitment and involvement
- ✓ To provide a framework to track progress of the SAP – to ensure doing the right things and doing them in the right way
 - To ensure alignment between RIS3 strategies and flagships
 - To highlight where there are barriers/where do not make progress on given priorities
 - To track transnational dynamics (in terms of, for example, levels of participation or investment from different MS and actor groups)
- ✓ To enable efficient and effective communication

3 Conclusions

This report summarizes the process that led to the elaboration of a first version of the **“Roadmap for the Danube Region in relation to the Health sector”** (comprising recommendations, actions, action lines, time frame and stakeholder’s involvement).

The adopted systematic methodology has enabled well-focused discussions, both at the consortium level and during the first year interactions with stakeholders.

At the current stage there is already a good level of consensus inside the DanuBalt consortium regarding the proposed actions. The feedback from stakeholders on proposed actions will be obtained during the 2nd year of project activities (mainly through the pilot actions).

The methodology being followed, which was explained during the 3 fora to participants, also got a very good level of appreciation. Also, all the consortium members accepted the methodology.

One important aspect reflected in the actions is to **overcome fragmentation at the policy level by connecting various policy areas at regional level** (such as health, education, economy and finance as well as agriculture, environment and/or regional development).

Another relevant aspect is to **enhance the cooperation between personnel from academia and representatives of business environment / industry** in creation of sustainable, cost-effective, citizen centers healthcare systems.

Relevant is also to **develop proper tools and mechanisms for supporting the access of innovative services and product into the health care system** as well as to ensure support for overcoming barriers to **market penetration**.

However, the diversity of the Danube Region countries is significant in the area of innovation. This diversity has to be taken into account when developing strategies, further mechanisms and tools for cooperation in R&I. Issues like regional development and cross-border cooperation, cluster formation, network building, brain drain, education, capacity building needs may prove relevant in this context and should be considered as a basis for development of Danube Region R&I funding scenarios (or action plans).

Once the ongoing consultation and validation process ends, this first version will be refined and subject to fine detailing.

As mentioned above, the Roadmap results will be tested in the 2 Pilot projects (WP4) concentrating around possible topics areas dealing with talent attraction, SME and Business services, education and entrepreneurship, idea competition and acceleration for transnational health projects. WP4 will elaborate and start implementing new approaches towards joined research and innovation activities in the two macro regions BSR and Danube. Moreover it will

investigate on new joined activities of the two region. This will be based on the validated analyses and defined roadmaps of previous WPs.

Once the ongoing consultation and validation process ends (during the 2nd year of DanuBalt implementation, month 20), this first version of the roadmap will be refined and subject to fine detailing (mainly through Wp4 activities – pilot actions).

Roadmap for the Danube Regions in relation to Health sector

Focus Areas	Redefining parameters for health care	Innovative public procurement (IPP)	Technology transfer (TT)	Scaling up markets	
Goal	The goal of this roadmap is to offer mechanisms and tools in order to improve the investment in Danube regional health systems by efficient using Structural Funds in combination with H2020 ¹³				
Specific objectives	to support the creation of sustainable, cost-effective, citizen centric healthcare systems promoting new jobs and businesses;	to support the access of innovative services and product into the health care system.	to foster cooperation and exchange of knowledge between SMEs, academia and public authorities in the Health area	to ensure support for overcoming barriers to market penetration	
Recommendations at REGIONAL level					
Actions	A better coordination at the policy level by creation of a Central Unit/ body informing about the importance of the Health Economy and connect various policy areas such as health, economy, finance, regional development, etc. for creation of sustainable and citizen centric healthcare systems in Danube Region	Enable health service providers to improve the quality of care provisions by unlocking the potential of innovation development and diffusion	Improve capacity and capability for more transparent and informed procurement of health innovation products by health care systems and providers	Better use the existing resources and people skills in generating, adopting and diffusing innovation services and products	Create tools and mechanisms for cooperation and better exploit the RDI results
	Establishment of Board of Trustees for Health Economy	Increase the cooperation of	Improve the access of innovative	Bridging the Gap between Academia	Establish a platform supporting the offer
					Overcoming barriers to market penetration
					eLearning platform development

¹³ This goal is in line with the “EU Strategy for the Danube Region”, which seek to create synergies and coordination between existing policies and initiatives taking place across The Danube Region (including research, innovation, education, business environment)

Action lines	Cross-Sectoral and Transnational Projects for Innovation in Health Economy	healthcare representatives with health service providers (mainly industrial partners)	services and products within the health care systems	and SMEs within health	and request as well as identification of suitable partners for cooperation	
Timeframe (months)	36	36	36	24	36	36
	36					
Estimated costs (euro)	231,250	277,200	240,200	416,000	190,000	160,000
	112,000					
Targets / deliverables	Dialogue with key stakeholders, appointment of members of the board, preparation of statutes for the Board, 2 annual meetings in year 2 and 3 and preparation of Master Plan for Health Economy	Identification of key staff to be trained, organisation of 18 training events for 25 participants (one day event)	Identification of key staff to be trained, organisation of 18 training events for 25 participants (one day event)	Organisation of 12 entrepreneurship trainings for 25 participants (one day event) Organisatin of 12 „in test bed collaboration” trainings for 25 participants (one day event)	Development of an e-learning platform	Development of 5 training modules Development of an e-learning platform
	Dialogue with key stakeholders, preparation of a web based platform, project accelerator workshops, secretariat support.					

Recommendations at EU level				
Focus Areas	Redefining parameters for health care	Innovative public procurement (IPP)	Technology transfer (TT)	Scaling up markets
Actions	A better coordination of the national, regional and EU funds to stimulate excellence in Health RDI for the Danube Region	Invest in and pilot a European version of the Small Business Innovation Research (SBIR) program in the Danube Macro-Region.	Foster cooperation and exchange of knowledge between SMEs, academia and public authorities in the Health area in the Danube Region	Enhance cooperation in RDI in Health to bring new and innovative services and products to the Single Market in the benefit of citizen and addressing the main challenges in health
Action lines	Development of a Danube Health Research Unit through coordination of funds	In particular, create incentives for SMEs to work with public health care service providers in generating innovation products that can be scaled-up, adopted and diffused through public procurement i.e. aligned with the PPI and PCP initiatives.	Develop a Danube Region programme for clusters and SMEs - networks	Create mechanisms for promotion of regional clusters development in Health, supporting smart specialization
Timeframe (months)	Medium to long term	Medium to long term	Medium to long term	Medium to long term
Funding sources	EC (H2020), Structural Funds, national funds for research	EC, Structural Funds, national funds for research	EC, Structural Funds, national funds for research	EC, Structural Funds, national funds for research
Targets / deliverables	1 Danube health research unit	1 Small Business Innovation Research (SBIR) program in the Danube Macro-Region	1 Danube Region programme for clusters and SME - networks	At least 5 transnational projects/ creation of 1 cluster
Targets and Roadmap Actions				