



Innovative solutions for Home Care by strengthening quadruple-helix cooperation in regional innovation chains

(BUSINESS AGENCY ASSOCIATION - BG) REGIONAL REPORT

Elaborated in the framework of the additional activities' implementation
(IE 5th Call)

Date: 2 September 2022

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A) BACKGROUND

Interreg Europe HoCare project aimed at boosting the delivery of innovative home-care solutions. In line with the smart specialization strategies of the partner regions, the project contributed to the optimization of Structural Funds investments to strengthen regional innovation systems in the health care sector by fostering quadruple-helix cooperation in regional innovation chains.

The HoCare partnership is constituted by the Nicosia Development Agency (ANEL) - CY, Development Centre of the Heart of Slovenia - SI, Business Agency Association - BG, National Institute for Research and Development in Informatics - RO, Lithuanian Innovation Centre - LT, National Directorate General for Hospitals (former National Healthcare Service Center) - HU, IDERAM Business Development Institute of the Autonomous Region of Madeira - PT and DEX Innovation Centre - CZ.

The four-year project (01/04/2016-31/03/2020) was evenly divided into 2 phases. Phase 1 focused on capacity building through interregional exchange of experience. Core of the learning journey was sharing of 33 good practices (available at: <https://www.interregeurope.eu/hocare/>) with replication potential in other regional settings to improve the innovation delivery policies in the e-health sector. The HoCare project's main outcomes were specifically: 8 Regional Situation Analyses, 59 policy learning events (incl. 3 International Thematic Seminars and Workshops), 3 Joint Thematic Studies, 3 Policy Transfer Reports and regional Action Plans transforming the project learnings into implementation-oriented actions to improve the regional ecosystem by empowering citizens and contributing to a healthier society. Phase 2 concerned the monitoring of the Action Plans' implementation by the European Structural and Investment Funds (ESIF) Managing Authorities targeting the improvement of their regional Policy Instruments (ESIF OPs). Aim was to improve the strategic focus, management, or implementation of new projects of 8 ESIF Policy Instruments (PIs) to positively impact the regional utilization of a total of €22,500,000 for the benefit of the socio-economic sector (citizens & SMEs).

The extension of HoCare project was requested in the framework of IE's 5th Call for proposals to map the response of regional/national policies to the impact of COVID-19 crisis in the subject of the project (delivery of Innovative solutions for Home Care by strengthening quadruple-helix cooperation in regional innovation chains). As a result, the objectives set for this new initiative are:

- to further exchange experiences on the way the crisis impacts the issue addressed and on possible measures to face and recover from the crisis,
- to further improve regional development policies for better facing and faster recovering from this unprecedented situation.

Exchange of experience continues based on the flow of the HoCare project 1st Phase's activities to address the impact of the crisis on the topic of the project. To achieve this, a specific set of activities is planned to be implemented that (among others) includes the preparation of 1 regional report per PP to map the impact of the COVID-19 crisis on the project's subject.

B) OBJECTIVE

Through the present Regional Report information is collected from the region about a) the status of Home Care R&I and b) the status of quadruple-helix cooperation in R&I. The information included in Partners' Regional Reports as well as the identified Regional Good Practices will be the basis of the new exchange of experience process on the way the crisis impacts the issue addressed and on possible measures to face and recover from the crisis. Once again, the objective is to further improve regional development policies for better facing and faster recovering from this unprecedented situation.

C) METHODS / RESOURCES TO COLLECT INFORMATION FOR THE REPORT

- Meetings / Workshops with stakeholders
- Desk research
- Meetings / Workshops with the Managing Authority of your Policy Instrument
- Participation in regional events relevant to the subject
- Relevant recent reports, articles, strategies, or any other relevant document

1) POLICY INSTRUMENT¹

Name of the Policy Instrument addressed (in English)	INNOVATION STRATEGY FOR INTELIGENT SPECIALISATION (RIS3)
Name of the Policy Instrument addressed (in regional language)	ИНОВАЦИОННА СТРАТЕГИЯ ЗА ИНТЕЛИГЕНТНА СПЕЦИАЛИЗАЦИЯ 2021-2027
Name of the relevant thematic Priority Axis (supporting R&I activities)	Strategic aim 1 To develop and position Bulgaria as a center of medium- and high-tech innovations in strategic areas in which the country has an established capacity and recognized competences to compete on the world market.
Specific objectives of the given Priority Axis	Operational objective No. 1: Improvement of the scientific research system and innovation performance of enterprises. Thematic area "Informatics and ICT"
Geographical Coverage (National, Regional, if other please explain)	National (Bulgaria)
Managing Authority	Ministry of Innovation and growth
Is this the same Policy Instrument (PI) your organization addressed during the implementation of the initial HoCare project? (Yes / No)	No
If 'No', please explain why you have chosen to change your PI? (max. 1000 characters)	The funding instruments relevant to the further improvement of home care and the more intensive penetration of innovation in home care are closely linked with and are dependable on the RIS3 thematic areas, their pre-formulated priority directions. The possible focus of relevant priorities of the programmes under ERDF towards more effective support for home care sector R&I is achievable mainly through amendment and supplementation of the priority directions in the RIS3 thematic areas related to the support of R&I activities. No amendments of the funding programmes are achievable without an enlargement of the coverage of the sub-thematic areas. The prioritization of the thematic areas serves as a base towards supporting projects oriented to products and services in the areas

¹ **Policy instrument:** a means for public intervention. It refers to any policy, strategy, or law developed by public authorities and applied on the ground in order to improve a specific territorial situation. In most cases, financial resources are associated with a policy instrument. However, an instrument can also sometimes refer to a legislative framework with no specific funding. In the context of Interreg Europe, operational programmes for Investment for Growth and Jobs as well as Cooperation Programmes from European Territorial Cooperation are considered to be policy instruments. Beyond EU cohesion policy, local, regional or national public authorities also develop their own policy instruments. <https://www.interregeurope.eu/help/glossary/#index-P>

	that are relevant to home care – 3 out of 4 areas (Informatics and ICT, Mechatronics and Clean Technologies, Health life and Bio-technology industries). This is the reason for selecting the RIS3 as a policy instrument to be amended within the extension of HOCARE project.
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2) OTHER RELEVANT POLICY INSTRUMENTS

Please provide information about any other relevant existing Policy Instrument(s) in your region (that support Home Care R&I and/or quadruple-helix cooperation)

Name of the Policy Instrument addressed (in English)	COMPETITIVENESS AND INNOVATION IN ENTERPRISES
Name of the Policy Instrument addressed (in regional language)	КОНКУРЕНТОСПОСОБНОСТ И ИНОВАЦИИ В ПРЕДПРИЯТИЯТА
Name of the relevant thematic Priority Axis (supporting R&I activities)	Priority 1 "Innovation and growth" of the PCIP 2021-2027
Specific objectives of the given Priority Axis	Specific Objective 1 "Development and strengthening of capacity for scientific research and innovation and the introduction of modern technologies" Support is needed to develop the innovation capacity at the level of enterprises in the priority thematic areas of intelligent specialization - the implementation of digital solutions in support of R&D and innovation, building research teams, providing access to information and knowledge relevant to the innovation process, stimulating the implementation of R&D and innovation internal to enterprises, increasing the share of developed and implemented product and process innovations in enterprises, support for claiming and protecting industrial property, including patents, utility models, trademarks, design. etc.
Geographical Coverage (National, Regional, if other please explain)	National (Bulgaria)
Managing Authority	Ministry of Innovation and Growth, Directorate General „European funds for competitiveness “
Please explain why this Policy Instrument is relevant to Home Care R&I and/or quadruple-helix cooperation? (max. 1500 characters)	Within PCIE several intervention programmes fit both home care and quadruple-helix initiatives, i.e. support home care innovations´ financing through partnerships of more types of organizations working together - either through direct beneficiaries´ involvement or via involvement as external service providers. The programme but can support home care innovations in general through a cooperation of health institutions and home care providers and SME’s focused at ICT and digital innovations.

	<p>The PCIE support schemes promote innovation activities in enterprises in the thematic areas of RIS3. The support schemes are linked with the thematic areas of the RIS3 within which the services and products related to ensuring high quality and innovative home care. RIS3 priority areas allow the development of innovations in appropriate services (mobile inclusive) services at home under the National Strategy for Long Term Care ("services must go to the client (in the neighborhood, home, hospital, etc.)" that inform, assist and support the inclusion of persons belonging to vulnerable groups.</p>
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3) THE HOME CARE RESEARCH & INNOVATION ECOSYSTEM

Briefly describe the ecosystem in Home Care R&I in your region including the most significant main actors, infrastructure, resources, available public / private supporting services, networks, platforms and events) (max. 5000 characters)

After the closure of the HoCare project at 2019 Bulgarian Home Care Research & Innovation Ecosystem has been greatly boosted mainly by private initiatives and partly by EU funding. Many new digital solutions and innovations in healthcare and home care have been created, as well as new mergers and clusters that support innovative approaches. Many new companies were launched and established, focused precisely on innovation in the field of home care. In the area of digital healthcare solutions, efforts were intensified to build a digital healthcare ecosystem and establish a sustainable and efficient healthcare environment for patients, medical professionals, society, and institutions.

Bulgaria has re-started building its regional innovation ecosystem in the health sector within the outbreak of COVID-19. Here is an overview of how it looks in Bulgaria.

The creation and use of a holistic patient model supports the digital transformation of healthcare, where technology plays an increasingly important role in understanding the unique preferences of customers and in understanding their individual context. This precise understanding provides the opportunity not only to improve care for immediate medical needs, but also to predict future ones.

The vision for the innovation ecosystem in Bulgaria related to home care is:

Patient-centric – the healthcare ecosystem starts from here. In Bulgaria the patient is still not into the center of the system. There are few organisations that represent the rights of patients, mainly based on their illnesses (diabetes, cancer, etc.). The most popular one in Bulgaria in terms of influence is the National patients' organisation, that has regional structures across the country (www.npo.bg).

Market-oriented – all interested parties from private business are part of the ecosystem, but in Bulgaria they are not an active player yet. Basic services such as insurance and technology are still not developing in competitive conditions that create prerequisites for the creation of innovations and the improvement of the quality of medical care. Leading players related to the marker element of the ecosystem are mostly the representatives of pharmaceutical businesses, united in The Association of Research-based Pharmaceutical Manufacturers in Bulgaria (ARPharM) - <https://arpharm.org/>. They make serious efforts to create an official mechanism for continuous collaboration between the Association and the respective institutions in Bulgaria.

Digitally enhanced – up-to-date and innovative technologies are still not used as a tool to solve medical challenges, nor to improve services before and after the clinical phase of the patient experience. There are only a few IT companies that are designing and implementing digital solutions related to digitally enhancing the home care, amongst them the most influential are Scalefocus, <https://www.scalefocus.com/>, SiteGround, Mnemonica, Lab08, Experian Bulgaria, Temeo, HTA Accenture Bulgaria, Documaster Bulgaria, Mentormate Bulgaria, Software Group BG, Dreamix и В EYE. There are also more than 10 start-ups with digital solutions related to home care innovations but none of them has received financial support from public funds.

Information-intelligent – Bulgaria strategic thinkers understand that structured and unstructured medical data form the foundation of the ecosystem. But this element of the ecosystem is seriously underdeveloped in Bulgaria. For only few months Bulgaria had a ministry for digitalisation that started to work in this perspective.

Integrated – the ecosystem is not an independent island, but part of a national digital governance, that is still in process of development in Bulgaria. The aim of the new Bulgaria policy is to ensure that It is bidirectionally integrated to the other verticals of social service, providing information needed for national decision-making and receiving information for its own purposes. The new strategic instruments in Bulgaria that are under development treat Integration as not limited to national borders but is a prerequisite for data exchange with partners from all over European Union. Unfortunately, the political turbulences in Bulgaria – 4 elections in 2 years – make the political grounds for sustainable strategic changes impossible, as Bulgaria is ruled half of the time in the last 2 years by a care-taker government and with no parliament which is the law-making body in the country.

Bulgaria nowadays has a boosting regional innovation ecosystem in the home care sector that still lacks a commonly driven planning and management to interpret and match the multi-domain interests under one unified management structure. The nationally responsible entities are deploying and implementing strategies and programmes focused on health services and on social inclusion but not specifically focused on home care. But the processes of aligning the collaborative processes, network relationships, and gradually developing common practices for effective innovation creation, accumulating the required experience, know-how, and connections into one core entity for efficient ecosystem-level coordination is going on fast. There are several new players, clusters and associations, that are leading these processes.

The most significant main actors are enlisted below.

What are the main changes/improvements in relation to what was described in the Regional Situation Analysis prepared in the framework of the initial HoCare project's implementation? (max. 3000 characters)

In Bulgaria, the digitization of health care, not only home care, as an important driver of the implementation of innovations, still lags behind compared to other European countries. Unfortunately, the Ministry of Health project for a National Health Information System, which was prepared over the years, did not take place. Individual elements such as e-prescription and e-referral were introduced at the end of 2020 and their effects on the system as innovations are yet to be seen. The Bulgarian Medical Union (BLS) has announced a large-scale project for the digital transformation of the professional organization, which we expect will also affect innovations in services and products related to home care. At the heart of this project is the digitization of the BLS register and the creation of a work ecosystem for doctors to improve and optimize their daily work, to allow the inclusion of various digital health solutions used by them, including telemedicine solutions as an

essential element for improving access to innovations for home care. This register has been technologically developed in a way that allows its integration with the future unified national health information system. the tendency in Bulgaria for organizations in the sector to provide a digital channel for communication and connection both between doctors and patients and between those working in the field stands out. In addition, in the last two years, numerous portals, applications and chatbots have been developed with the aim of facilitating remote communication.

The need to bring health care into the virtual and digital space is also seen in the projects implemented after COVID-19. From platforms for remote therapy and examinations, through training portals, to the implementation of solutions based on 3D printing and holograms - these are just some of the impressive initiatives implemented by Bulgarian organizations. However, improving home care requires more than implementing innovative solutions, and it is a profound shift in long-term care management policies. The digital transformation of healthcare takes place in a complex legal framework of various interrelated legal acts. Practice shows that the necessary legislative changes can take between two and five years, which delays the implementation of serious innovations in home care but stimulates the creation of companies for innovative services in these conditions.

But there is a better awareness amongst society and institutions that the home care sector is requiring additional focus and specific support. The main stakeholders in this sector started communicating more intensively, unifying their efforts for developing policies and projects together, including common science and research and technological development projects.

In relation to the new policy instrument tackled – the RIS3 for 2021-2027, a new approach has been accepted by the former policy owner – the Ministry of Economy, and a new Task group for the elaboration of RISE new version has been formed together with setting up of a new managing authority – the Ministry of Innovation and growth. The new Task group was formed by experts from the relevant institutions and from the civil society amongst which expert from BAA. Thus, the new RIS3 was amended taking into account the findings from the HoCare project, giving more support to specific digital innovations especially for home care sectors and areas.

On the other side, many new start-ups companies and associations are emerging with a focus on telecare, telemedicine and specific home care solutions. As a whole, the digital innovations in health and home care ecosystem begins to flourish and is now generating new economic results and new innovative solutions.

Which of these changes/improvements can be identified as an impact of the COVID-19 crisis or as measures the region applied to face and recover from the crisis? (max. 3000 characters)

COVID-19 confronted Bulgaria with a crisis that went beyond a specific health problem and led to significant economic, social, political, and public upheavals that showed the main weaknesses of the Bulgarian healthcare system. We lost a lot of lives, leading amongst European countries in losses. It became clear that we were looking at the problem too narrowly, mainly in the light of the infectious disease itself. COVID-19 has shown that there cannot be a successful economy without good healthcare. The only way to successfully combat such threats is by improving the long-term sustainability and efficiency of our healthcare system, which has proven to be most rapid primarily through the application of digital innovation. The need for the introduction of new health technologies and the development of innovations to ensure the collection and use of data for informed decision-making was seen. The crisis has incredibly accelerated the processes of digital transformation in the health sector in Bulgaria with its characteristic over-regulation and conservatism.

An electronic medical record was also launched, which stores electronic health records and medical data for each patient - from general health information and data from examinations, therapies, interventions, through outpatient sheets, prescription forms, laboratory tests, to referrals and a certificate of vaccination against COVID -19. This dossier also improved conditions for home care.

These efforts are far from true digitalization and can rather be said to replace paper media with digital ones. Successful transformation implies a change in processes, work and above all in the way of thinking. In this sense, the answer cannot be found in partial solutions, but must be sought in integrated proposals that cover the overall health needs of citizens and the path of patients in the health system. However, the pandemic has undoubtedly given impetus to the introduction of innovations in the sector, including in home care, and e-health is included as the fourth priority in the National Health Strategy 2021 - 2030 of the Ministry of Health.

Innovators in Bulgaria have realized that it is time to look at innovations in health care and especially in home care in conditions of isolation and restrictions as a leading priority. As in Europe, in Bulgaria Covid-19 crisis boosted and accelerated digital transition processes along the many economic and social sectors. This has helped the Home Care Innovation Ecosystem to develop new projects and solutions to answer some of the pandemic challenges. In some sense, Covid19 had a positive impact on the definition and execution of new projects related with the home care and the initiation of digital innovation projects. The pandemic outbreak also influenced the elaboration of some of the new strategies and policies that were deployed during these times, putting more focus at the innovations and the digital transformation support.

But despite the better cooperation and collaboration between stakeholders in the digital innovation ecosystem in health and homecare the involvement of the main institutions is still not very proactive and the processes are lead mainly by large international companies rather than by the relevant policy making institutions.

4) MAIN REGIONAL ACTORS OF THE QUADRUPLE HELIX MODEL IN HOME CARE R&I

Please provide information about the main formal and informal providers, businesses & business supporting actors, research and public institutions acting in the sector of home health care in your region.

a) Citizens / users helix

Main formal + informal providers of healthcare, elderly care recipients / associations in Home Care R&I (Please list at least 6)		
Name (+ in local language in brackets)	Website	Description of objectives and main activities (max. 500 characters per line)
National Alliance for Social Responsibility (Национален алианс за социална отговорност)	http://www.naso.bg/	NASO aims are to unite, motivate and support the opportunities and efforts of business and non-profit legal entities, municipalities, municipal and regional structures and organizations by providing

		national and international partnership and participation in the creation and implementation of socially responsible behaviour, policies and activities in support of various social communities for a better quality of life and accelerated social development of Bulgaria.
Association of Social Service Providers (Сдружение "Асоциация на доставчиците на социални услуги")	http://www.adsu-bg.org/	ADSU aims to create conditions for the qualitative provision of social services in the community aimed at people with disabilities and lonely elderly people, as well as ensuring equal participation of the non-governmental sector in this process, stimulating and supporting NGOs for the professional provision of social services and increasing the Their capacity as suppliers.
The National Network for Older People Support (Национална мрежа за подкрепа на възрастните хора)	www.sociale.bg	The National Network for Older People Support is an informal network of organizations that aims to provide quality social services for older people and people with disabilities by reforming the long- term care sector. Organizations that are part of the network share a common one Concept of reforming the long-term care sector.
Bulgarian Association of Social Workers (Българска асоциация на социалните работници (БАСР))	https://socialaffairsru.weebly.com/	Its mission is to build a developing community of social workers to improve social policies and practices in Bulgaria. The Association is a member of the International Federation of Social Workers (IFSW).
Institute of Community Social Services (Институт за социални услуги в общността)	https://www.icss-bg.org/	Member of the European Association of Service Providers for Persons with Disabilities (EASPD). The foundation's mission is to work actively for the development and provision of home care and long-term social care to children and adults in need, initiating activities to facilitate access to social services in the community and to

		increase their quality, sustainability and diversity.
The National Patient Organization (Национална пациентска организация)	https://npo.bg/	<p>The NPO strives to build and consolidate a strong and united patient movement at the regional and national level, whose voice is fundamental at all levels of health care.</p> <p>Patients to be empowered and accepted as a key factor by all participants in public systems in the creation and development of health policies.</p> <p>Patients and interested parties to be informed about patients' rights and obligations.</p> <p>Achieving clear standards for the representativeness and authority of patient organizations.</p>

b) Business helix

Main businesses and business' supporting actors in Home Care R&I? (Please list at least 6)		
Name (+ in local language in brackets)	Website	Description of innovative solutions provided in the field (max. 500 characters per line)
Bulgarian cluster for digital solutions and innovations in health care (Български клъстер за дигитални решения и иновации в здравеопазването)	https://dhicluster.bg/	Bulgarian cluster for digital solutions and innovations in health care is a non-profit association that supports innovative companies and organizations in the field of digital solutions in health care to build a digital health ecosystem and establish a sustainable and effective health environment for patients, medical professionals, society and the institutions.
Institute for Health Activities and Technologies (Институт за Здравни Активности и Технологии)	https://healthbg.org/	Improving the quality of health and social care. Development of innovative educational materials. Solutions in the field of environmental protection.

<p>Checkpoint cardio (Чекпойнт Кардио)</p>	<p>http://www.checkpointcardio.com/</p>	<p>As the First and most prominent TELEMEDICAL CENTRE who served thousands of patients, Check Point Cardio specializes in a wide range of medical services in telemedicine to get patients feeling healthier than ever before. A new generation high-tech tele-monitoring center, an innovative complex model of medical care, which is implemented by two technology companies.</p>
<p>Мнемоника (Мнемоника)</p>	<p>https://www.mnemonic.bg/</p>	<p>Mnemonic provides comprehensive IT solutions for the healthcare and home care sector. Most of them are related to cyber security and protecting sensitive data under the EU GDPR.</p>
<p>Темео (Темео)</p>	<p>https://www.temeo.bg/</p>	<p>Security Solutions Institute Ltd. is a part of the structure of Professional Information Management Prima JSC, focused on developing a range of new, useful, high value-added, environment-friendly products in field of Telemedicine. The continuity and the collaborative actions of Security Solutions Institute Ltd. and Electron Cardio Ltd. led to the international recognition and affirmation of the only of its kind, produced in Bulgaria, Telemetric system for monitoring and control of the cardiac activity "TEMEO".</p>
<p>HTA</p>	<p>https://hta.bg/</p>	<p>HTA Ltd. is an independent international organization committed to improve healthcare by engaging institutions, academia, experts, business, patients, regulators, payers, NGOs. It shapes healthcare policy and decision-making and empowers business and non-business organizations. HTA Ltd. helps build the road from investment to health technology, to healthcare – in a professional,</p>

		conscious, competent and qualitative way, complying with scientific standards, aiming at making the healthcare systems better and efficient.
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c) Research helix

Main research actors in Home Care R&I? (Please list at least 6)		
Name (+ in local language in brackets)	Website	Description of relevant research activities (max. 500 characters per line)
Medical University – Pleven (Медицински университет – Плевен)	http://mu-pleven.bg/	Medical University Pleven is home to a specialist centre for telecommunication robotic surgery. Operating since 2008, this centre specialises in the use of the Da Vinci S surgical system, focusing on its role in Gynaecological Oncology, and is the only one of its kind in Bulgaria.
"Center of competence for personalized medicine, 3d and telemedicine, robotic and minimally invasive surgery" (“Център за компетентност по персонализирана медицина, 3d и телемедицина, роботизирана и минимално инвазивна хирургия”)	http://competence.mu-pleven.bg	An innovative, high-tech and state-of-the-art competence center in the field of personalized medicine, telemedicine and 3D medicine, robotic and minimally invasive surgery, to achieve excellence in research and specialist training. Based in Pleven.
Technical University of Sofia (Технически университет – София)	http://www.tu-sofia.bg/	The innovative solutions in the Technical University of Sofia cover a broad spectrum of expertise of its researchers. The innovations are in several directions, most of them

		<p>offering opportunities for the home sector services improvements and innovations deployment. Application and adaptation of existing technologies in new fields and branches and specific engineering solutions, Generation, research and testing of new materials, technologies and design solutions in almost all fields of technologies, Optimization of technological processes and reduction of production costs Implementation of existing international high-tech productions and developments in Bulgarian industry Improvement of quality and ecological parameters of production by implementation of modern technologies for evaluation of their functioning, ecology and adequate market survey Implementation of new methods for education, as well as company national and international internship of students to provide contemporary knowledge and skills.</p>
<p>Varna Medical University « Prof. Dr. Paraskev Stoyanov »</p> <p>Медицински университет – Варна „Професор д-р Параскев Стоянов“</p>	<p>http://www.mu-varna.bg/</p>	<p>Some of the priority scientific areas of the Medical University – Varna, which are related to the home care sector:</p> <ul style="list-style-type: none"> - Diseases of the central nervous system <p>In this direction the highlights are:</p> <ul style="list-style-type: none"> • Markers, predictors, genetic and immune aspects of the SC diseases; • Therapy and psychosocial rehabilitation of the patients with diseases of the National Assembly.

		<p>Expected results – development of a model for diagnostics, diagnosis of disease and outcome and neurodegeneration and its use as a therapy of the last choice.</p> <ul style="list-style-type: none"> - Oncology and rare diseases <p>In this direction the highlights are:</p> <ul style="list-style-type: none"> • Therapeutic options for the treatment of oncological diseases; • Genetic analysis of oncological diseases and rare diseases; • Social rehabilitation of cancer patients. <ul style="list-style-type: none"> - Disease Management • eHealth; • Prevention programs. <p>Expected results – development and model of electronic dossiers and models for the storage and transfer of medical information</p>
<p>Varna Technical University (Технически университет – Варна)</p>	<p>http://www.tu-varna.bg/</p>	<p>The interdisciplinary Center for Applied Technologies related to Health, which is built at the Faculty of Electronics, Technical University – Varna, is an intellectual center in northeastern Bulgaria for young people with a keen interest in modern technologies. The center integrates innovative healthcare, telemedicine and information and computer technology technologies. Of interest are teachers and trainees from various specialties such as Communication Technology and Technologies, Medical Equipment, Computer Systems and Technologies, Software Engineering.</p>
<p>Bulgarian cardiac institute</p>	<p>https://cardiacinstitute.bg/</p>	<p>Conduction of randomized scientific trials based on innovative technologies for the prevention</p>

(Български кардиологичен институт)		and treatment of diseases like coronary artery disease, acute coronary syndrome, atrial fibrillation, heterozygous familial hypercholesterolemia, electrical cardioversion in non-valvular atrial fibrillation, myocardial infarction, pulmonary embolism, chronic heart failure, triglyceridemia in diabetes. Liaison with personalized solutions for home care.
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d) Public institutions / government helix

Main public actors in Home Care R&I (Please list at least 6)		
Name (+ in local language in brackets)	Website	Description of relevant activities (max. 500 characters per line)
Ministry of Innovation and Growth (Министерство на иновациите и растежа)	https://www.mig.government.bg/	The top-level authority of the INNOVATION STRATEGY FOR INTELLIGENT SPECIALISATION (RIS3) 2021-2027 of Bulgaria and the managing authority of the Program COMPETITIVENESS AND INNOVATION IN ENTERPRISES 2021-2027 for the private sector.
Ministry of Health (Министерство на здравеопазването)	https://www.mh.government.bg/	The main governmental institution and public authority that elaborates and approves strategies, measures and approaches for home care and provides support and coordinates all policies regarding formal and informal home care in Bulgaria. Supports R&I in health, coordinates the implementation of relevant strategic documents as the National Health Strategy 2020-2030. The Ministry implements the plan for implementation of the e-health strategy as well, which is related to the telemedicine and telecare services.

<p>Agency for Social Assistance at Ministry of Labour and Social policy</p>	<p>http://www.asp.government.bg/</p>	<p>Amongst other activities this agency is related to the home care sector because it coordinates and controls the activities of planning and development of social services and provide methodological</p>
<p>National Health Insurance Fund (Национална здравноосигурителна каса)</p>	<p>https://www.nhif.bg</p>	<p>The main goal of the NHIF is to ensure and guarantee free and equal access to health care for the insured persons – through a set of types, scope and volume of healthcare activities, as well as the free choice of an executor who has a contract with a regional health insurance fund.</p> <p>Through its activities National Health Insurance Fund aims to improve the quality of life of Bulgarian citizens by regulating and increasing the social, health and economic efficiency of health care expenditures; improving the quality of services provided and the equality of their use; implementation of decent pay mechanisms for healthcare professionals, as well as a positive change in the doctor-patient relationship.</p>
<p>Ministry of Labour and Social Policy (Министерство на труда и социалната политика)</p>	<p>https://www.mlsp.government.bg/</p>	<p>Coordinates and implements the most relevant national strategies, related to the home care sector - National long-term care strategy, National Strategy to Reduce Poverty and Promote Social Inclusion 2020, National Concept for Promoting Active Aging (2012-2030) and other strategic documents. Managing authority for ESF programmes.</p>

Briefly describe the main changes to the main actors' synthesis in relation to what was described in the Regional Situation Analysis prepared in the framework of the initial HoCare project's implementation and their relevance to the COVID-19 crisis impact (max. 2000 characters)

The restrictions for free movement, the problems and limitations with the access to hospital care have refocused the attention of innovators from the innovations within the hospitals more to innovations related to home care. The need for home support, distance services and teleassistance solutions has massively increased the efforts towards ensuring better products and infrastructure through ICT applications. Bulgarian innovators have increasingly focused on developing integrated proposals that cover the overall health needs of citizens and the entire patient journey in the health system: health promotion - disease prevention - precision diagnostics - outpatient care - hospital care - rehabilitation - long-term care. The healthcare paradigm in Bulgaria is changing at a very fast pace, putting more and more emphasis on the effective protection of public health, prolonging and maintaining a high quality of life for patients, which is directly related to home care. These natural processes are supported by the various digital solutions that add value to the medical service, enable cost and time optimization, create prerequisites for better control and traceability of all health processes and results. Thus, the regional health care imbalance is beginning to find its solution through the remote monitoring and mobile communication offerings that are developing at an extremely rapid pace in the context of COVID-19. Own home is becoming increasingly important for long-term health care, becoming an alternative for effective medical mentoring, diagnosis and treatment. This is also why we are focusing efforts on improving RIS3's readiness to support innovation in home care.

5) MAIN INNOVATIVE REGIONAL PROJECTS / RESEARCH INITIATIVES IN THE SECTOR OF HOME HEALTH CARE

Please provide information about significant projects or research initiatives in Home Care R&I implemented in the last two years (2020-2021). Please give emphasis to projects / research actions initiated as an impact of the COVID-19 crisis or as a response to face and recover from the pandemic's unprecedented situation.

Name of the Project / Research Initiative	i-Health – innovative portal as a practice for medical assistance
<p>Short description (main objectives, main actions) (max. 1000 characters)</p>	<p><i>i-Health affirms a modern approach in offering medical services from selected health facilities and laboratories, selected according to clearly formulated criteria such as good medical practice, modern equipment and proven specialists.</i></p> <p><i>The platform is part of the portfolio of SANOMA, a company focused on providing solutions in the healthcare sector based on integrated information systems and services that facilitate interaction and communication between healthcare facilities and patients.</i></p> <p><i>The focus is to provide Bulgarian and foreign patients with access to quality health services and the ease of making faster and informed decisions about their health needs. The social role of the platform is also aimed at building a sustainable development of medical tourism in Bulgaria, with our main priority</i></p>

	<p><i>being the commitment to the quality of the services provided for the benefit of society.</i></p> <p><i>Through the "Personal Health Assistant (PAH)", i-Health provides patient access to high-quality and timely medical services. PZA optimizes the access time to "proven specialists", improving by more than 70% the critical moment - registration of the complaint, consultation, transportation to a health facility, the initial diagnosis, expanding the possibilities for making an informed decision on the part of the patient. PZA improves by more than 60% the communication between doctor and patient, optimizes the use of medical resources, shortens the time for administrative service, building a reliable database, previous diseases, improving the doctor-patient feedback.</i></p>
<p>Participating Organizations</p>	<p>https://www.sbb.bg/</p>
<p>Does the Project / Research Initiative promote the Quadruple-Helix Approach? If yes, please explain how. (max. 1000 characters)</p>	<p>The platform brings together interested parties on the principle of "value-based competition" (VBC) in the health sector. This is a positive concept and model aimed at higher health outcomes for the user (patient), from which everyone benefits - the patient, his family, the employer, the medical institution that provided the assistance, the insurance fund. It applies the following principles:</p> <ul style="list-style-type: none"> Focus on value (value) for the patient, not so much on costs; Competition based on health outcomes; The competition focuses on the medical conditions of the entire cycle of medical care; Access to high-quality care; The value to be created from the experience of medical institutions, the scale of their activity and the study of the level of medical conditions. Competition should be regional and national, not just local. Information on the results of VBC support to be widely disseminated. Innovations that increase value should be well rewarded;
<p>Total budget and source of funding</p>	<p>Approx. 50 000 EUR, private</p>
<p>Main results of the activities (max. 1000 characters)</p>	<p>It is an overall solution - the opportunity to get the whole package of health and logistics services in one place. It is a single point of communication.</p> <p>The platform provides access to various procedures and selection of the most suitable ones from the comfort of home. The most requested procedures are dentistry, dermatology, laser vision correction, cardiology, and urology. Based on the agreed conditions, patient requests are fulfilled with priority. As part of the personalized care, additional logistical assistance, hotel accommodation, a menu according to individual needs and, if necessary, a request for a translator are offered. The platform also provides first aid from the only specialized medical transport in our country.</p> <p>The platform has an overall of 354 qualified staff engaged, 7015 patients served, 254 suppliers registered, 124 machines included in services, 4012 hospital rooms reserved, 201 awards wins.</p>

Website / Link or contact details for more information	https://i-health.bg/
Please explain the relevance of this Project / Research Initiative with the impact of the COVID-19 crisis (max. 1000 characters)	The platform is aimed at patients and their families that gather selected healthcare facilities and laboratories and its focus is to provide Bulgarian and foreign patients with access to quality healthcare services and the ease of making a faster and informed decision related to their health needs. This is especially important during or after the pandemic or within another similar crisis as patients can access the required information at one place and save time and resources when it is crucial.

Name of the Project / Research Initiative	Endourology Sofia
Short description (main objectives, main actions) (max. 1000 characters)	<p><i>Endourology Sofia is a website of an association of doctors specializing in urology, whose mission is to ensure the access of Bulgarian patients to timely medical consultation and remote long-term monitoring of patients.</i></p> <p><i>In the current context, several emerging, acute and chronic diseases are at risk of being left without timely medical assistance due to the limited possibility of conducting planned and emergency consultation in pre-hospital and hospital care.</i></p> <p><i>Through this site, people have the opportunity to connect online with a urology specialist, discuss symptoms and complaints, consult their medical records, get a second opinion and be followed up after a urological intervention in the home care setting.</i></p>
Participating Organizations	The platform is supported by a team of well-established specialists with extensive diagnostic and surgical experience, a leader in the implementation of endourological procedures and operations in our country, which achieves quick recovery, a minimal surgical wound with high efficiency of the treatment activity with the most modern equipment and methods. Doctors at Endourology Sofia are highly qualified in the field of onco-urological, conventional, endoscopic, reconstructive and pediatric urological care.
Does the Project / Research Initiative promote the Quadruple-Helix Approach? If yes, please explain how. (max. 1000 characters)	The platform gathers mainly doctors, but it can serve the needs of care service providers and care givers and can provide also researchers with data. Doctors also work in Cook Medical's first "Center of Excellence in Endourology" for Bulgaria, so the platform also serves as a link to scientific and medical advances.
Total budget and source of funding	Apr. 20 000 EUR, private funds

<p>Main results of the activities (max. 1000 characters)</p>	<p>This platform provides patients with the ability to easily, quickly and affordably connect with a urology specialist. Thanks to the platform, patients are not left without timely medical assistance due to the limited opportunity due to COVID-19 to conduct regular consultations in pre-hospital and hospital care, and after COVID-19 - also for people who live far from Sofia, as well as for doctors who need consultations with colleagues to provide home inspections.</p> <p>The online consultation form is extremely easy and convenient to use. It is not required to fill in a lot of personal data, for an online consultation it is only necessary to fill in an e-mail, a telephone number for feedback and a diagnosis/symptom/complaint, because of which the patient wishes to contact a specialist and seeks the help of the Endourology Sofia team.</p>
<p>Website / Link or contact details for more information</p>	<p>https://www.endourologysofia.com/</p>
<p>Please explain the relevance of this Project / Research Initiative with the impact of the COVID-19 crisis (max. 1000 characters)</p>	<p>The platform provides remote provision of Bulgarian patients' access to timely medical consultation and monitoring in the field of urological problems during the COVID-19 period and beyond.</p>

<p>Name of the Project / Research Initiative</p>	<p>Virusafe</p>
<p>Short description (main objectives, main actions) (max. 1000 characters)</p>	<p><i>Virusafe is a mobile application, created to assist society and governmental institutions in the fight against COVID-19. The app was approved by the Bulgarian Ministry on April 4th and launched for mass use on the Google Play and Apple Store on April 7th.</i></p> <p><i>Virusafe gives users the ability to track their symptoms and health status daily, which in turn gives Ministry of Health a good overview of the spread of the pandemic. Users can also voluntarily share their location to enable institutions to act accordingly, in case of an emergency.</i></p> <p><i>In times of a global pandemic, people from all around the world are trying to overcome the spread of COVID-19. The Black Swan of 2020 has caused severe damages to society and businesses. Scalefocus, a company from Bulgaria, wanted to become part of the solution and challenged themselves to leverage technology and help people fight the pandemic.</i></p> <p><i>Virusafe is an application, which aims to help in solving the equation of how to overcome COVID-19 successfully.</i></p> <p><i>The application has features, specifically built to support in the fight against COVID-19. The current version of Virusafe has the following:</i></p>

	<ul style="list-style-type: none"> • <i>Daily symptoms and health status tracker</i> • <i>Location tracker, enabled voluntarily by the user, to create a heatmap with potentially infected people</i> • <i>Notifications, which inform users on hot news, related to COVID-19</i> • <i>Information and best practices, connected to the pandemic</i> <p><i>In order to enable the full range of features of the application, users need to enter personal data, such as personal ID, age, any chronic diseases they may have and allow the app to use their location. This in turn will give Ministry of Health and local authorities all necessary information, in case further actions are needed.</i></p> <p><i>Important: All personal data is accessible only by Ministry of Health and authorized governmental institutions.</i></p>
Participating Organizations	Scalefocus
Does the Project / Research Initiative promote the Quadruple-Helix Approach? If yes, please explain how. (max. 1000 characters)	<p>The application is an example of a common urgent response to a major societal crisis (the uptake of COVID-19), that shows how the well concerted common efforts of participants in the quadruple helix system can mobilise professionals for an effective solution in times of turbulence. The application has been conceived by medical professionals together with IT companies and politics from the government. It was agreed that the work will be done free of charge from the IT business and in very short terms. This initiative gathered representatives from the academia, doctors, IT experts, businessmen and representatives from the government and the NGO sector to commonly design a digital solution for fighting against COVID-19. The partnership for the creation and implementation of this application is an example for how the Quadruple-Helix Approach can be applied to answer fast and effectively some specific needs during major societal crisis.</p>
Total budget and source of funding	Approx.. 20 000 EUR
Main results of the activities (max. 1000 characters)	<p>Virusafe Features</p> <p>The application has features, specifically built to support in the fight against COVID-19. The current version of Virusafe has the following:</p> <p>Daily symptoms and health status tracker</p> <p>Location tracker, enabled voluntarily by the user, to create a heatmap with potentially infected people</p> <p>Notifications, which inform users on hot news, related to COVID-19</p> <p>Information and best practices, connected to the pandemic</p> <p>In order to enable the full range of features of the application, users need to enter personal data, such as personal ID, age, any chronic diseases they may have and allow the app to use their location. This in turn will give Ministry of Health and local authorities all necessary information, in case further actions are needed.</p>

Website / Link or contact details for more information	https://virusafe.info/
Please explain the relevance of this Project / Research Initiative with the impact of the COVID-19 crisis (max. 1000 characters)	The application has features, specifically built to support in the fight against COVID-19. All personal data is accessible only by Ministry of Health and authorized governmental institutions.

6) EXPECTED RESULTS FROM THE EXCHANGE OF EXPERIENCE PROCESS WITH THE HOCARE PARTNERSHIP

Please provide information about potential improvements you would suggest for your Policy Instrument. What kind of information (Management of the Policy Instrument methods, Strategic Focus of the Policy Instrument or New Projects to be implemented through financing from the Policy Instrument) would you be interested to learn from the other HoCare participating regions? (max. 5000)

RIS3 identifies national and regional priorities and strategic development niches that are supported by funding from complementary policy instruments. By implementing ISIS, Bulgaria aims to introduce a new model of development and innovation cooperation between key stakeholders and significantly improve its integration into European and global networks. The strategy aims to improve the interaction between the initiatives undertaken at community, national and regional level.

Through the implementation of RIS3, Bulgaria will renew and better focus the mix of policies supporting innovation, which cover both ideas and start-up stages and initiatives, as well as all levels of technological readiness, pilot, demonstration projects and financial instruments for commercialization. ISIS sets the direction for the implementation of a comprehensive and coherent set of measures and instruments for financing innovation and ensures that the responsible state structures will coordinate and agree the relevant policies, both in terms of content and in terms of their timing.

RIS3 acts as a basic program document for determining the entire complex of innovation financing measures in the program period 2021-2027, allowing the country access to the resources under the program "Competitiveness and innovation in enterprises" for the period 2021-2027 (PKIP) and the Program for Scientific Research, Innovation and Digitalization for Smart Transformation for the period 2021-2027 (PNIIDIT).

Main efforts in improvement of the RIS3 are focused on the following areas:

- To provide conditions for funding innovation so that access to patient data means we can create something useful with it. In order to reach a direct benefit in purely human terms, the patient record must take a completely different form, one that includes processes of "medical insight" (Medical Insight) that can literally translate the incomprehensible data from biomarkers, procedures, examinations and so on in visual models of what happens or can happen in the human body. So that everyone can draw a conclusion about what to change in their life, or at least seek qualified help that can be provided to some extent in the conditions of home care.

- To support telemedicine - to improve the conditions for creating digital health services that can be consumed in a mobile state and at home, which makes them not only convenient, but in some cases extremely necessary due to the lack of highly qualified personnel everywhere in the country
- To support monitoring and prevention – to improve the conditions for creating solutions aimed at remote monitoring and leading to possible prevention of clinical conditions. It will also enable citizens to provide feedback and data about their health to their treating physicians, improving the quality of health services and ultimately the health and well-being of society.
- To support digital maturity - to provide conditions for improving access to health information and the level of health literacy of citizens, which is of fundamental importance for maintaining health, better prevention and more effective management of diseases
- To ensure common interest for collaboration between R&D entities with the other stakeholders.

Our expectations were to collect and analyse how partners are dealing with the enlisted problems and to get inspired for finding the best solutions to answer the challenges Bulgaria faces.

Based on the experience collected within HOCARE the sub-thematical areas of Bulgarian Innovation strategy for smart specialisation have been enlarged and now includes more selections directly opening possibilities to funding digital solutions for home care and similar services, namely:

In the thematic area "Informatics and ICT":

- ICT approaches in mechanical engineering, medicine, creative industries and leisure industries and circular and bio-based economy (in relation to the other thematic areas), incl. educational games, e-health, telemedicine and telecare and embedded technologies;
- 3D digitization, visualization and prototyping;
- Internet of Things (IoT);
- advanced or high-performance computing, quantum computing;
- big/connected data, geospatial data, data analysis, data processing (Data processing, Small data science), data toolkit, sharing, exchange, use and reuse of data, cloud computing (Big Data, Grid and Cloud Technologies), data-driven predictive models, simulation, modeling and digital twins;
- communication networks, including wireless sensor networks and wireless communication/control;
- cyber-physical systems, cyber security.

Within the thematic area "Industry for a healthy life, bioeconomy and biotechnologies", the following sub-areas are also included, referring to the scope of HOCARE project:

- personal medicine, diagnostics, and individual therapy,
- ICT with application in the thematic area.
- photonics and imaging technologies, screens and display technologies.

7) OTHER INFORMATION

Please provide any further information you consider relevant to this report (max. 5000 characters)

Trends in the technological development of health care in Bulgaria are related to the need for the automated processing of more and more data, with robotics, with genetic engineering and therapies, as well as with personalized medicine and automated follow-up. Innovations in home care are related to the development of each of these elements, therefore the main efforts are to sustainably improve the conditions for the implementation of innovations in health care by all members of the quadruple helix. and this process

starts from improving Bulgaria's Innovation Strategy for Smart Specialization. For that reason BAA put efforts in changing and amending the Bulgarian Innovation Strategy for Smart Specialization, opening territory for more innovations in areas related to health care and specifically home care.

Technology can undoubtedly improve the quality and facilitate access to health care, but only if its introduction is done as part of an overall strategy for the development of the sector, and not piecemeal and only after a problem has arisen. The generation and use of data in the health system is key to its development. Unfortunately, Bulgaria is moving 5-10 years after the processes in the EU. At the same time, because of this backwardness, practices that are already morally outdated in other countries are often introduced. The business believes that the electronic health record, the electronic prescription are of exaggerated value and complicate the work of medical personnel, deteriorate the quality of the service as a whole and have no serious benefit for the patient.

Namely, this also creates difficulties for the development of digital healthcare, because it is beginning to meet resistance on the one hand from medical staff, who until now have only seen how it complicates their work, and on the other, from patients who do not see any real benefit from him. Innovations in home care are directly related to strengthening the digitization of healthcare in Bulgaria. It has been talked about for many years, but only recently has the vision been established in the Ministry of Health that digitization will prove to be a key decision for the implementation of leading priorities in all areas of health care, including home care.

The Ministry of health does not consider digitization separately from the priorities for the development of health care, but as a basis that should address other priorities such as emergency care, pre-hospital care, especially in remote areas, and home care, where telemedicine solutions can be thought of.

Among the goals that the Ministry of Health has set for itself is the adoption of a strategy for geriatric care and healthy aging, which is directly linked to home care services. Along with this, the adoption of a screening plan for socially significant diseases is also discussed, where digital solutions are also of great importance and the HOCARE project provides many examples and good practices to follow.

Only recently in Bulgaria there is already an electronic prescription, which, although it has flaws, works. Outpatient sheets, receipt of protocols have been digitized, and soon this process will finally be completed so that there are no queues for verification of protocols, which is also closely related to the provision of care at home.

In the future, it is set as a goal to change the way of financing by applying the new models and introducing into the systems the so-called advisory systems. On July 1, the new system related to the provision of aids to people with disabilities, which is fully digitized, also enters into force. Based on these innovations, innovations can now be planned to improve the provision of home care services.

In Bulgaria, attempts have been made to implement a public-private partnership in the field of health care, which also affects home care. In the spirit of the quadruple helix, the business is at every step of the chain – from providing technology solutions, through relying on the business to ensure the protection of data in transit and specific means of protecting that data. The implementation of a national image database for diagnostic imaging is pending, although not as urgently as we would like. There, the role of business is very serious – from supplying software and hardware to processing data and coming up with solutions on how to use the maximum of this data. In the field of imaging, innovation is very important to improve the scope and quality of care delivery in the home environment.

It is also important how patients and all participants in the health sector accept digitization, because there is one of the major obstacles that state institutions face.

The main common goal of the interested parties is to launch an initiative for a Bulgarian unicorn in the health sector. An entrepreneur who succeeds in creating hospitalization in the sense of the word treatment of the patient and then care at home, but organized by a single core, that will be the unicorn." as well as for continued treatment at home.

8) AUTHOR

The information included in this report is provided in the framework of the HoCare project's additional activities implemented under the Interreg Europe 5th Call for proposals.

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