# CHECKPOINTCARDIO – REAL TIME PATIENT HEALTH MANAGEMENT AND EMERGENCY REACTION SYSTEM AND SERVICE CENTRE

GOOD PRACTICE - PROJECT

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# Contents

# 1. Relevancy of the GP project

The “Relevancy of the GP project” section provides quick check and definition of its relevancy in regards to HoCare project objectives.

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| **Good practice of quadruple-helix cooperation in R&I?** | Yes, this GP project includes good practices of quadruple-helix cooperation in R&I |
| **Good practice of delivery of Home Care R&I?** | Yes, this GP project include good practices of Home care R&I |
| **If not in Home Care R&I, description and proof of its potential for transferability to delivery of Home Care R&I** | |
| **Generation of innovation in home care through answering unmet needs identified by formal or informal healthcare providers?** | Yes, this project includes good practices of innovation through answering unmet needs. |
| **Generation of innovation in home care through public driven innovation?** | Yes, this project includes good practices of public driven innovation |
| **Generation of innovation in home care via quadruple-helix cooperation for quicker delivery to the market?** | Yes, this GP project does include good practices of innovation via collaboration for quicker delivery to the market |

## 2. Quick overview of the GP project

The “Quick overview of the GP project” section provides initial overview of the good practice project (GP project) and enables readers to see if this GP project idea is relevant for possible transfer to their organization potential innovation activities.

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| **Name of the GP project** | Checkpojntcardio - real time patient health management system and service |
| **Region of origin** of GP project | BULGARIA |
| **5 keywords that best describe the content of the GP project** | real time health monitoring, 24/7 medical service, medical dingosis, medication plan management, emergency reaction in life threatening conditions |
| Relevant **Operational Programme name through which the GP project has been funded** | This project has been privately funded to the date. |
| Relevant **support programme / intervention area name** of the GP project **through which it was funded** | None |
| **Single or multiple recipients** of the GP project? | Multiple |

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| **Type of lead recipient** (SME, LME, research centre, innovation centre, network/association, university/school, municipality, other public body, other (specify) | SME.<br>The project has been fully developed from Checkpointcardio ltd. |
| **Types of participating partners** (list all participating partner types. E.g.: hospital, social house, senior house, patient association, networks, SMEs, LMEs, research actors, business supporting organizations, public institutions/regulators, other (specify) | 1. The Red Cross Bulgaria - participated in joint clinical trial for patients in remote areas.<br>2. Animus Rehabilitation Hospital Greece - participated in multi centric clinical trial.<br>3. City clinic Cardiology Hospital Sofia - participated in clinical evaluation of the system.<br>4. St. Ekaterina University Hospital Sofia - participated in clinical evaluation of the system. |
| **Summary of the good practice** | Checkpointcardio System is developed for real time patient vital signs observation, regardless of location of the patient. It consists from smart wearable physiological monitor, communication device with application and cloud service for storing and displaying the data with medical staff service command centre for evaluation, diagnostics and emergency reaction. This system is developed in order to allow the medical professionals and the patient to supply and receive professional healthcare service not only in designated time and office, but anywhere and at any time. The solution is applied in different hospital cares, rehabilitation institutions, GP's, and private patients, home based care givers.<br>It has been used for evaluation of chronic patients conditions in joint program with Bulgarian Red Cross and proved its clinical potential to detect clinical conditions to the patients which are missed in the usual medical checks. It proved also it's efficiency to detect and evaluate the medication plan of the patients and to react on urgent medical conditions of the patients. |

# 3. Transferability

The “Transferability” section provides more detailed review of strengths and weaknesses of this GP project including description of necessary basic conditions for region and leading organization to potentially transfer it. At the end of the section, the key threats in the successful transfer open up possibility to focus on specific relevant issues important for the successful transfer.

## Strengths and weaknesses of the project

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| **What are the GP project strengths? Why it was funded?** | The project is privately funded and independent from any external financing sources. The main strength of it that for first time the professional medical care is delivered to the patient 24/7 for very affordable fee and thus the patients become more empowered about their own health. This project delivers health service to anyone everywhere at any time. Instantly. |
| **What are the key weaknesses of the GP project?** | The major weakness of the project is that it’s long term success is strongly dependent from the healthcare system regulation and reimbursement policies for the telemedicine and remote care, which are not available in our region. |

## Basic conditions for successful transfer

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| **Why is this GP project transferable?** – innovation, impact, financial, legal, and timeframe aspects | The project is fully transferable, as it is operated fully online and even the medical service is independent from the location of the medical specialists. The main core is the wearable devices and the software platform which is in cloud. |
| **What are the basic conditions the region needs to have to be successful in transferring this good practice?** | A healthcare provider (private or public), who has interest to implement the telemedical services to their patients. |

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| **What are the basic conditions the leading recipient from the region needs to have to be successful in transferring this good practice?** | The leading recipient needs to have a formal request from the interested region/entity, containing the scope of the interest, also the healthcare professionals, to whom to be transferred the system in order local patients to be able to receive the full scope of the service. |

### Key threats in GP project transfer

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| What are the **key potential threats for the GP project transfer?** | The only threat will be if the local healthcare partner is not interested or motivated enough to implement the tele-medical solution in their routine. |

## 4. Description of the GP project

The "Description of the GP project" section provides more detailed information on the Good Practice project (GP project) and enables readers to get further detailed inspiration and easy ready-to-use information for possible innovation transfer to other project applications. This includes: tackled problem, time length of the GP project, objectives, phases, activities and deliverables of the GP project, its main innovation and target group.

### Description of the tackled problem

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| **What was the problem / challenge tackled by the project**? | The main problem is stated from the World Health Organization, that the cardiovascular diseases are the WORLD"s NUMBER ONE KILLER. CVDs are the number 1 cause of death globally - more people die annually from CVDs than from any other cause.<br>Average percentage of all premature deaths yearly is 50 percent from cardiovascular diseases. |
| **What were the reasons for the problem?** | Not enough prevention and the lack of the adequate tools to track the patient condition outside the hospital and at home. |

## Time length of the GP project

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| What was the **time length** of the GP project in months? | 60 months |

## Objectives of the GP project

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| **Describe the overall and specific objectives of the GP project** | The final objective of the project is to provide on the market a system and service through which every family (and home care givers) will be able to purchase a health monitoring system, subscribe for a professional medical service, so everyone of us to be able to get 24/7 and instant medical evaluation and help. |

## Phases, activities and deliverables

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| List all main phases of the GP project including their time length | 1. Research and design<br>2. Development and prototyping<br>3. Testing and implementation |
| **List and describe all main activities that were implemented by the GP project** | 1. Research and test of different wearable solutions<br>2. Development and design several prototypes<br>3. Prototypes and tests<br>4.Software development and testing of different algorithms<br>5. Android application development for transferring the data and patient emergency<br>6.Establishing a tele medical centre and creating a tele medical workflow procedures.<br>7. Clinical trials in the tele medical centre and with other medical partners.<br>8. Marketing and sales activities.<br>9. Establishing a partner network in the country<br>10. Starting international deployment activities. |

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| List all main deliverables of the GP project | 1. Two smart wearable patient monitors 3-6 and 12 lead.<br>2. One mobile app android for transfer the data to the cloud<br>3. Cloud based patient health management platform<br>4. Automatic analysis of patient data with alert system<br>5. The first tele medical service centre in Europe |

## Main innovation of the GP project

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| **What was the main innovation of the GP project?** | 1.The first operating tele-medical centre in Europe with more than 26 000 patients observed.<br>2.The smallest medical physiological monitor on the market with (pending patent ) system of data collection<br>3. The first AI based research on real patients based on live raw physiological data which is not performed nowhere. From here will come a huge diagnostic and prediction potential of the system which the project sponsor is going to present in 2018. |

## Target group of the project

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| **Who was the main target group of the GP project? (SME, LME, research organization, university, public institution, healthcare provider, business supporting organization, other** | Healthcare providers, home care givers, elderly people, people with chronic conditions, and end consumers. |
| **Describe the main target group** | The main target are the people that need home care..<br>The company initiator of the project wants to bring the pre-hospital care in people homes through affordable device and service.<br>The project aim is to replace the blood pressure machines at people homes with connected professional medical device and services available anytime and everywhere. |

# 5. Impact

The “Impact” section provides more detailed information on the effect of the GP project implementation and dissemination of major outputs.

## Impact

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| What was the level of **geographical impact** of the GP project? (village, city, county, country, international, other | So far the project is deployed mostly in Bulgarian hospitals, medical centres and private homes. Since several months the company-initiator of the project presented it internationally. They have pending orders for Austria, Russia, Greece, Netherlands and they are invited to participate in joint projects between German, UK, Netherlands, Sweden and Belgium top research medical university hospitals. |
| What were the final **impact indicators including their quantification**? | The final impact indicator will be the decrease of cardiac premature mortality rate, decreasing the healthcare cost, hospitals readmissions and improved health access to medical services for all. |
| **Describe the changes resulted from the project activities** | So far the project owner managed to discover non registered clinical conditions in very large quantity of patients observed, which brought, or to urgent hospitalization, or to therapy change. They perform an emergency reaction to patients on daily bases. The system is helping to the people every day. |

## Dissemination of outputs

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| **Describe dissemination activities of the project outputs carried out during the GP project** | The project is attracting a large interest from medical research organisations, there were press publications, the project was rewarded on two main innovation forums and currently the company is accepted to be accelerated from EIT, which in 2018 will result in very storing European tour of presentations and meetings in front of the leading healthcare providers. |

# 6. Risks

The “Risks” section provides more detailed review of potential risks of this GP project implementation including their defined mitigation strategies to eliminate them.

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| **Describe risks involved in implementing this GP project including their mitigation strategies** | The main risk is the rigidness of the healthcare systems and the policy makers. However the patients themselves are welcoming the service and the company is creating a retail service strategy which will bring the service direct to the patients and they will not need to wait for someone to decide when and where are their healthcare access options. |

# 7. Budget

The "Budget" section provides more detailed review of costs regarding the project implementation as well as operational sustainability after its end. In addition, if relevant, public tenders within the project and additional generated incomes by the project are showed and explained.

## Budget

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| **What was the overall budget of the project in EUR?** | The budget for this project came from private investments and a lot of volunteer work of many people which was not calculated so the project sponsor can provide an approximate evaluation of the whole amount in Euro upon request. |
| **List** relevant **budget lines of the project including their % share** from total budget | For a deployed service centre with included smart wearable devices with capacity of a 100 patients per day the relevant budget is:<br>1. Equipment and hardware infrastructure (server +control room deployment and installation) - 228 000 euro (one time cost)<br>2. Smart wearable devices - 1000 - 1500 euro per piece depending from the model (per device).<br>3. Medical support service fee per patient 50 euro per 24 hours (observation , emergency reaction and medical conclusion.). It depends on the medical personnel cost.<br>3. Installation and hardware maintenance - 2000 euro per month (100 devices, cloud service and maintenance)<br>4. Yearly device maintenance subscription fee 20 euro per device. |

## Additional income generated by the project

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| **Did the project create any additional income?** | yes |

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| **If yes, specify which type of income and what amount in EUR?** | After deployment of the system the project now generates income from the sale of the wearable devices and the service fees as follows:<br>90 000 Euro 2016<br>180 000 Euro 2017 |

## Public tender

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| **Did the project include any public tender?** | No, the project did not include a public tender. |
| If yes, specify **what kind of contract** (specific contract, general contract, other) | |
| If yes, specify in **what amount** in EUR | |
| Describe the **public tender subject** | |

## Financial sustainability after GP project end

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| **Was there an operational financial sustainability plan in the project after its end?** | Yes, there is an operational financial sustainability in the project. |
| **If yes, specify where the operational funds after project end came from?** | From private funding and operations |
| **If yes, specify the amount of operational funds in EUR** | The operations income for 2018 is projected on 3 Mln Euro.<br>The funding for it will be provided from the company operational money and customer payments. |

# 8. Other information

In this section, specific additional information about the GP project could be revealed.

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| Please describe **any other relevant information about this GP project** | Checkpointcardio Ltd.<br>Boris Dimitrov – contact person<br>boris69bg@yahoo.com |

# 9. Information gathered by …

The information about this good practise (GP) project has been gathered for the purpose of the HoCare project (Interreg Europe Programme) by the following organization:

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| **Region** | Bulgaria |
| **Organization name(s)** (+ in local language in brackets) | Business Agency Association (Сдружение Бизнес Агенция) |
| Name of the **contact person(s)** | Silvia Stumpf |
| **Contact email(s)** | vba@vba.bg |

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