Capacity Building for Digital Health Monitoring and Care Systems in Asia (DigiHealth-Asia)

D4.1 – A strategic plan for diffusion and dissemination

Work package	WP 4
Task	Task 4.1
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Deliverable lead	UGent and CMU
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Executive Summary

The deliverable "D4.1 A strategic plan for diffusion and dissemination" is part of "Work package 4 – Dissemination and Exploitation". This deliverable presents a detailed plan of dissemination and exploitation of the project. For dissemination, a dissemination strategy is developed which comprises of a) dissemination objectives, b) target groups, c) key messages, and d) methods. The goal of dissemination is twofold. First, to disseminate two major project outcomes (i) three pilot cases (cardiovascular monitoring, mobility disorder monitoring, and remote patient consultation) and (ii) specialized and vocational courses. Second, to raise awareness in the public, doctors, paramedical staff, hospital bodies, government bodies, etc. for the use of digital healthcare technology. For exploitation, the project results will be disseminated to relevant stakeholders in the partner countries (Pakistan, Thailand, and Mongolia) so that they can help in a) commercialization of the pilot cases and b) raise awareness in the public, doctors, and paramedical staff for the use of digital healthcare technology. The specialized courses that use the pilot cases will be disseminated in other Asian countries so that students of Asia can get advanced education on digital healthcare in Asia instead of going to the US or EU. With the specialized courses, a new workforce will be produced which will help in further research and development of digital healthcare in the partner countries. With the vocational courses, doctors and paramedical staff will be trained with the pilot cases so that they will start using digital healthcare services in their medical practices which will eventually improve digital healthcare services.

1. Introduction

The current document presents the dissemination and exploitation plan of DigiHealth-Asia. The main goal of dissemination and exploitation is to increase the visibility of the project so that all activities (including three pilot cases a) cardiovascular monitoring, b) mobility disorder monitoring, and c) remote patient consultation, and specialized courses) will be sufficiently visible in the EU and Asia.

For effective dissemination of the project results, a dissemination strategy is developed, and it comprises of the following pillars: objectives, target groups, key messages, and methods. On one hand, the goal of the dissemination strategy is to increase the visibility of the project through promotional material, project website, social media channels, workshops, publications, etc. On the other hand, the goal is to create awareness in the public, doctors, paramedical staff, hospital authorities, government authorities, insurance companies, etc. for the use of digital healthcare services in the Asian countries (Pakistan, Thailand, and Mongolia). The use of digital healthcare services in Asian counties will not only provide effective medical services but can also help in significantly reducing hospital bills due to unnecessary doctor and hospital visits.

For exploitation of the project results, the objective is to valorize the project results so that the impact of the project is sustainable. For this, special attention will be given to the dissemination of the pilot cases to relevant stakeholders so that they can help in a) commercialization of the pilot cases and b) raise awareness in the public, doctors, and other related people. In addition, the specialized and vocational courses (that will be commenced during the project duration) will be disseminated to other Asian countries so that Asian students can get advanced education in digital healthcare in Asia instead of going to the US or EU. In the specialized courses, the pilot cases will be thoroughly taught, and a new workforce will be produced which will help in the further development of digital healthcare services. In the vocational courses, the doctors and paramedical staff will be trained with the pilot cases which will raise awareness in doctors and paramedical staff for using digital healthcare services in their medical practices.

2. Dissemination

Dissemination is one of the core activities of project management and is used to ensure the successful execution of planned activities for project transparency, visibility, and sustainability. The activities related to dissemination will start from the very beginning of DigiHealth-Asia and will continue, even after the project ends, to raise awareness of digital healthcare in the partner countries. The main project outcomes include a) design, development, and implementation of three pilot cases (cardiovascular monitoring, mobility disorder monitoring, and remote patient consultation) and b) commencement of specialized courses at the Higher Educational Institutes (HEIs) in the partner countries that use the pilot cases. The main goal is to formulate a dissemination strategy that will help in disseminating the major project outcomes.

For dissemination, we will use and follow the below definition of dissemination included in the Erasmus+ guide.

"Dissemination is a planned process of providing information on the results of programs and initiatives to key actors. It occurs as and when the result of programs and initiatives become available. In terms of the Erasmus+ Program, this involves spreading the word about the project successes and outcomes as far as possible. Making others aware of the project will impact other organizations in the future and will contribute to raising the profile of the organization carrying out the project. To effectively disseminate results, an appropriate process at the beginning of the project needs to be designed. This

should cover why, what, how, when, to whom and where disseminating results will take place, both during and after the funding period."

Within the context of DigiHealth-Asia, the aim would be to spread the knowledge, guidance, and information related to digital healthcare in the partner countries.

To disseminate the project results efficiently and raise awareness in public, medical doctors, governmental bodies, hospitals, etc., a dissemination strategy is defined and is shown in Figure 1. The dissemination strategy defines clear guidelines in terms of a) target groups, b) key messages, and c) methods. The dissemination strategy comprises of four main pillars:

- Objectives: identify the main dissemination objectives
- Target groups: identify relevant target groups
- Key messages: identify which key messages to be shared with the target groups
- Methods: identify dissemination tools and methods
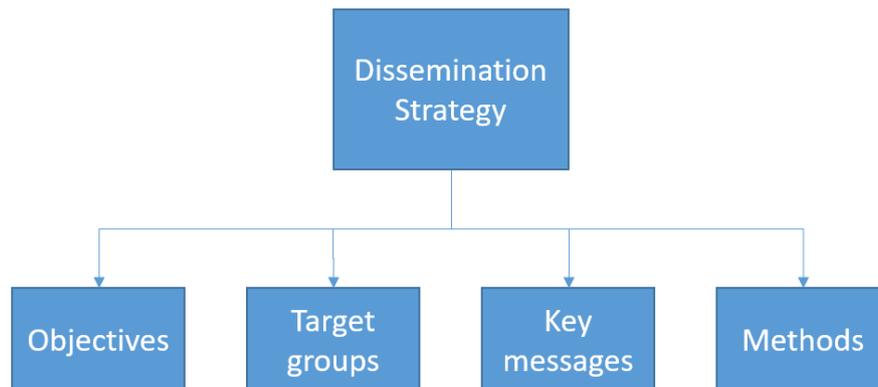
Figure 1: Dissemination strategy.

2.1. Dissemination objectives

Within the context of DigiHealth-Asia, the main objective of the dissemination strategy is to share the knowledge and stress the importance of digital healthcare among the partners as well as to the relevant stakeholders in the field of healthcare in the partner countries. To meet the dissemination objectives, a dissemination and publicity team (DPT) has been formed (shown below) in the project Kick-off meeting and is comprised of one member from each partner.

- Adnan Shahid (UGent) (Lead Institution)
- Nauman Aslam (UNN)
- Maryam Hafeez (UoH)
- Giacomo Kahn (ULL)
- Punnarumol Temdee (MFU)
- Hamza Bin Waheed (CUST)
- Battur Gompil (NUM)
- Ariuntuul Garidkhuu (MNUMS)
- Umair Hashmi (NUST)
- Nopasit Chakpitak (CMU)

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The DPT aims at producing an efficient and organized dissemination plan for the project to reach the widest possible audience in the partner countries as well as international potentially relevant parties. The DPT leads the following three activities: a) traditional media, website, social media, etc., b) workshop organization, and c) scientific dissemination.

2.2. Target groups

To get the best results during the project realization and its dissemination, it is very important to identify relevant target groups. The primary goal of DigiHealth-Asia is to increase awareness in the public, medical doctors, governmental bodies, hospitals, etc. for using digital healthcare technology in the partner countries. This will not only provide efficient medical services but can also significantly reduce medical bills by unnecessary visits to doctors and hospitals.

In DigiHealth-Asia, the following target groups are defined and will be reached out with the latest project results.

- General public,
- Students,
- Doctors,
- Nurses,
- Paramedical staff,
- ICT specialists,
- Embedded engineers,
- Hospital bodies,
- Public and private insurance companies,
- Governmental institutes

At the local level, the target groups will be reached out through various disseminating tools such as project promotional material, leaflets, flyers, social media, project website, etc. This dissemination will increase awareness in the public, medical doctors, hospitals, insurance companies, governmental institutes, etc. of using digital healthcare services.

At the institutional level, the students will be taught specialized courses and paramedical staff will be trained by vocational type of courses. Both the courses (specialized and vocational) use the DigiHealth-Asia pilot cases. This will create awareness in the new generation and a new workforce will be formed with the vision of using digital healthcare in their medical practices.

2.3. Key messages

After defining the objectives and the target audience, it is important to define the key messages that will be shared with the audience. The key messages will be drafted in DigiHealth-Asia in the form of project promotional material, flyers, leaflets, website, etc. in such a way that they give a clear message in a simple and non-technical way so that it is easily understandable by public and non-technical people.

2.4. Methods

Different methods are used for disseminating the project results to the target audience and are briefly explained in this section.

2.4.1. DigiHealth-Asia logo

Figure 2 shows the DigiHealth-Asia logo and was designed by the coordinator (UGent) in consultation with all the partners before the project kick-off meeting. The logo sets the stage for the three pilot

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cases a) cardiovascular monitoring, b) mobility disorder monitoring and c) remote consultation that will be designed and implemented during the project. In addition to the three pilot case symbols, the brain in the logo corresponds to the use of Machine Learning (ML) and Artificial Intelligence (AI) in the pilot cases. The use of ML/AI in the pilot cases will further assist doctors and nurses in the diagnosis and treatment of patients and thus, improving digital healthcare services.
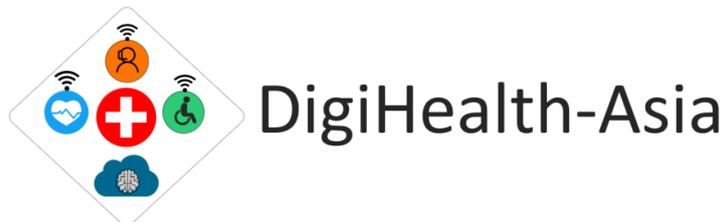
Figure 2: DigiHealth-Asia logo.

2.4.2. DigiHealth-Asia website

DigiHealth-Asia website is shown in Figure 3. The project website is an important dissemination tool as it contains a) brief information on the project activities (pilot cases, courses, workshops, etc.) and b) deliverables. Currently, the structure of the website is as follows: home, news and events, consortium, deliverables, and pilot cases. As the project proceeds more information on the project meetings, workshops, status of pilot cases, commencement of specialization courses, publications, etc. will be made available on the website.

Figure 3: DigiHealth-Asia website.

2.4.3. Social media accounts

The project is active on Facebook, LinkedIn, Twitter, and YouTube. The DigiHealth-Asia Facebook [1], LinkedIn [2], Twitter [3], and YouTube [4] pages are shown in Figure 4, Figure 5, Figure 6, and Figure 7, respectively. Whenever there is an activity like project plenary meeting, workshop, scientific publication, update on the pilot cases, update on the specialized courses at the HEI, etc., the DPT team disseminates that on the social media channels. We have already tried to disseminate the social media channels to the target audience so that whenever there is an announcement, the target audience will be notified accordingly.

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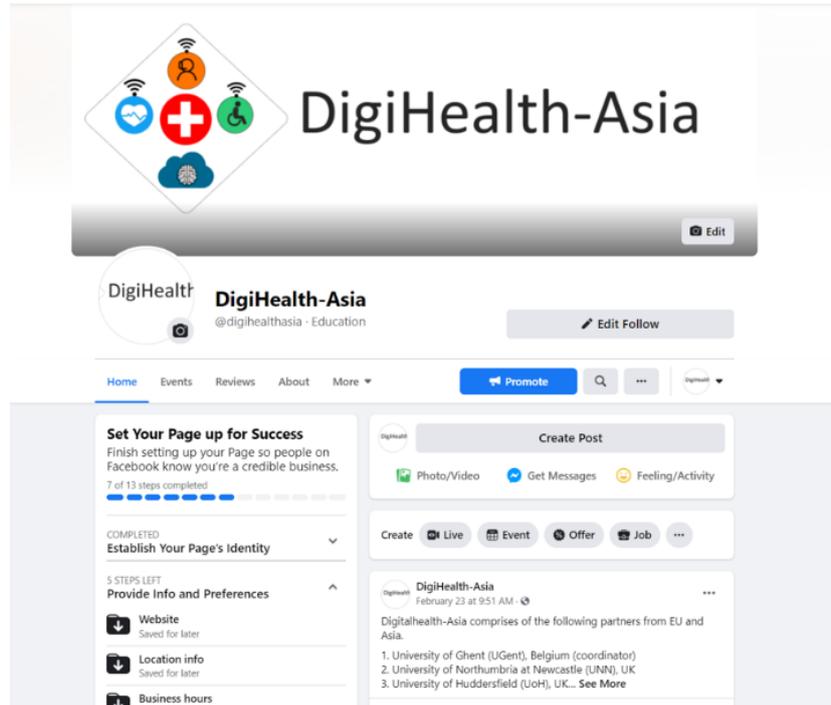
Figure 4: DigiHealth-Asia - Facebook page.
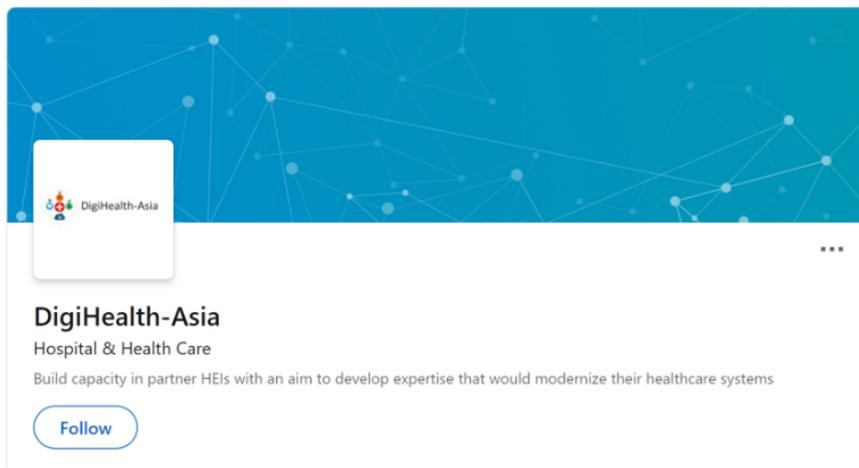
About us

DigiHealth-Asia aims to build capacity in Higher Education Institutes (HEIs) of the partner countries (Pakistan, Thailand and Mongolia) to develop project-based courses in digital health and that would begin a new transformation in the operation of Asian healthcare systems. The main objective of the project is to harness the power of ICT in healthcare through the introduction of the digital healthcare specialised courses that would train and assist the healthcare professional in remote monitoring patients. A part of this project involves research and development of a new autonomous framework for pervasive monitoring of medical vital signs of patients using multiple types of affordable sensors connected through a secure and efficient network. The system would integrate a combination of ICT technologies including machine learning algorithm based on multi-view metric learning to learn to the relative importance of different types of sensors dependent on the location of the user, networking and user-friendly application development for collection and analysis of the collected medical data. This project aims at designing and implementing the framework, as well as demonstrating the feasibility of an autonomous in-home monitoring system at partner health-care facilities through pilot use cases.

Figure 5: DigiHealth-Asia - LinkedIn page.

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*Figure 6: DigiHealth-Asia - Twitter channel.*
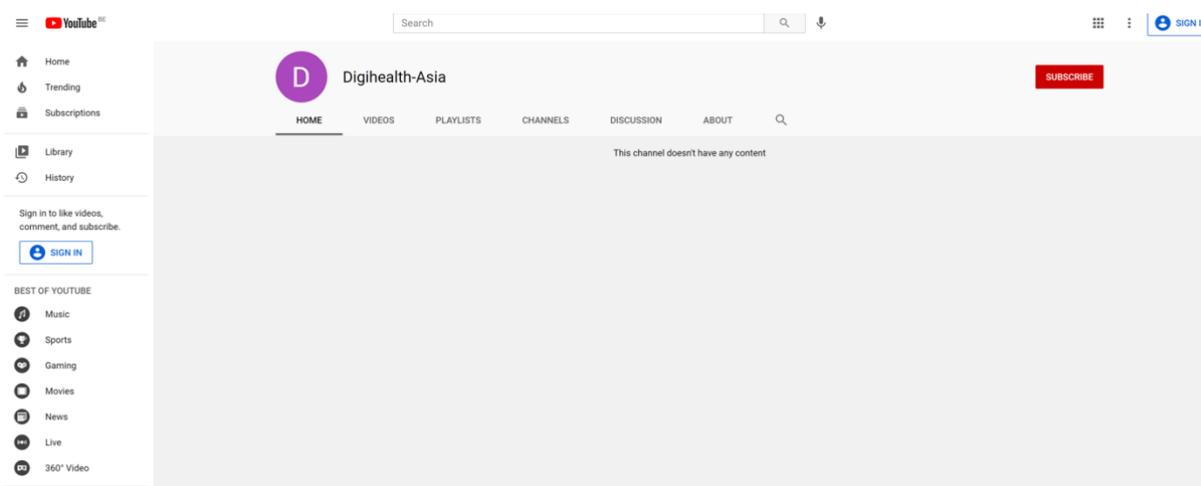
Figure 7: DigiHealth-Asia - YouTube channel.

2.4.4. Workshops and questionnaire

There is a task in WP1 – Preparation and is named "T1.2 – Identification of skills and training requirements for ICT and health care practitioners in partner Asian countries". The goal of this task is to identify gaps and skills required in providing digital healthcare services in partner countries. For this, all the three partner countries (Pakistan, Thailand, and Mongolia) organized workshops in March 2021 as shown in Figure 9, and a variety of people participated including medical doctors, medical students, ICT specialists, ML/AI expertise, government representatives, etc.

To consolidate the gaps and skills required, the partners circulated a questionnaire to the participants and is shown in Figure 8. This gave significant visibility to the project and we managed to create awareness in doctors, medical students, paramedical staff, hospital bodies, governmental bodies, etc. of the use of digital healthcare services in the partner countries. When the pilot cases are developed and the specialized courses are commenced, we will again engage the target audience for showing the usefulness of digital healthcare services.

Question 1

Who you are?

- Healthcare application developer
- ICT specialist
- ML/AI expert
- Student
- Other (please specify)

Question 2

Did you attend the workshop?

Question 3

Was attending the workshop beneficial in introducing the aims and objectives of Capacity Building for Digital Health Monitoring and Care systems in Asia (DigiHealth-Asia)? Please answer in the scale from 1 (not beneficial) to 5 (very beneficial)

Question 4

The idea of introducing new courses such as: IoT for healthcare, AI/ML for healthcare, and embedded systems for healthcare will be useful in the (Pakistan, Mongolia and Thailand)? Please give answer for each course.

IoT for healthcare – The course will focus on different kind of IoT sensors for healthcare from physical to application level.
AI/ML for healthcare – This course will focus on learning and developing AI and ML techniques for healthcare scenarios including cardiovascular, mobility disorder and remote patient monitoring, etc.
Embedded systems for healthcare – This course will focus on design and implementation of various proof of concepts for healthcare scenarios including cardiovascular, mobility disorder and remote patient monitoring, etc.

Question 5

What skills sets are deemed to be important for the next few years in digital health. Please rate their importance from low (1) to high (5).

- Artificial Intelligence/Machine Learning
- Hardware and IoT skills
- Software skills
- Any other relevant skill sets [text box]

Question 6

Is the developed pilot study beneficial for the relevant country?
Pilot case 1: Cardiovascular monitoring (for Pakistan)
Pilot case 2: Mobility disorder monitoring (for Thailand)
Pilot case 3: Remote consultation of patients (for Mongolia)

Question 7

Are the new courses beneficial for the pilot case?

Pilot case 1: Cardiovascular monitoring (for Pakistan)
Pilot case 2: Mobility disorder monitoring (for Thailand)
Pilot case 3: Remote consultation of patients (for Mongolia)

Question 7

How you foresee the scope of digital healthcare technologies in next 20 years? Rate the importance of the statements from low (1) to high (5).

1) Digital healthcare is a basic human need and deserves a high priority in educational programs.
2) Digital healthcare should be high on the agenda at the government level
3) There are other human needs that are more important than digital healthcare
4) Digital healthcare should go hand in hand with offering Internet access to all citizens
5) provide input here (textbox)

Question 8

How you foresee the scope of digital healthcare technologies in next 20 years?

Figure 8: Questionnaire for the workshops' attendees.

Figure 9: Workshops in the partner countries.

2.4.5. Project Management Platform

For effective project management and communication among the DigiHealth-Asia partners, we use a) SharePoint for document and files management (Figure 10), b) MS Teams for direct communication among the partners (Figure 11), c) KANBAN approach for checking the status of different tasks (Figure 12), and d) mailing list.
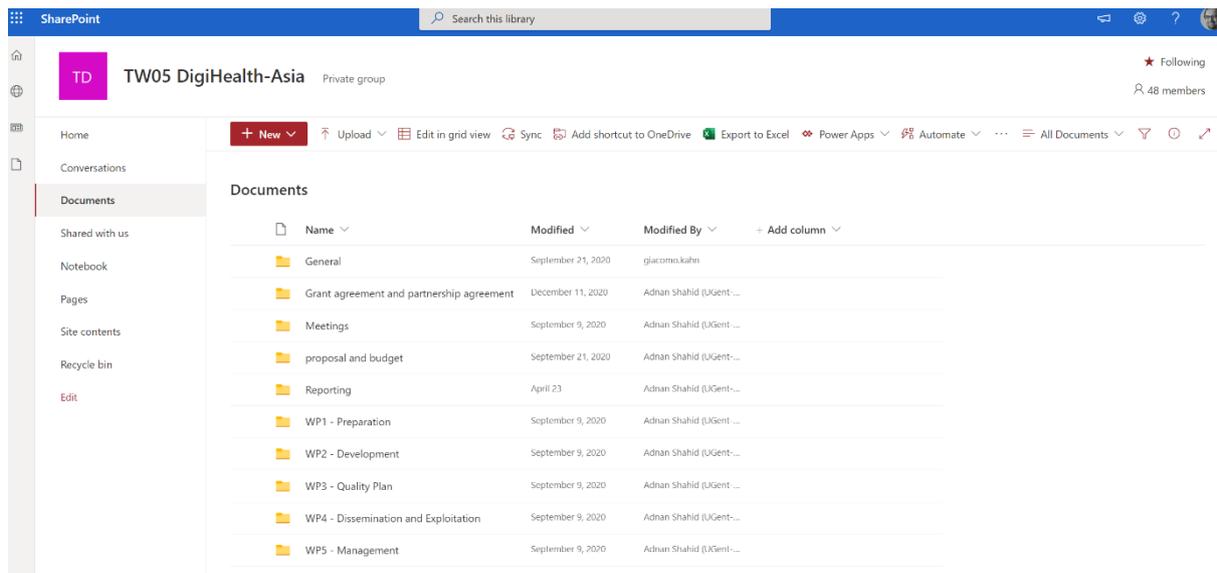
Figure 10: DigiHealth-Asia - SharePoint space.
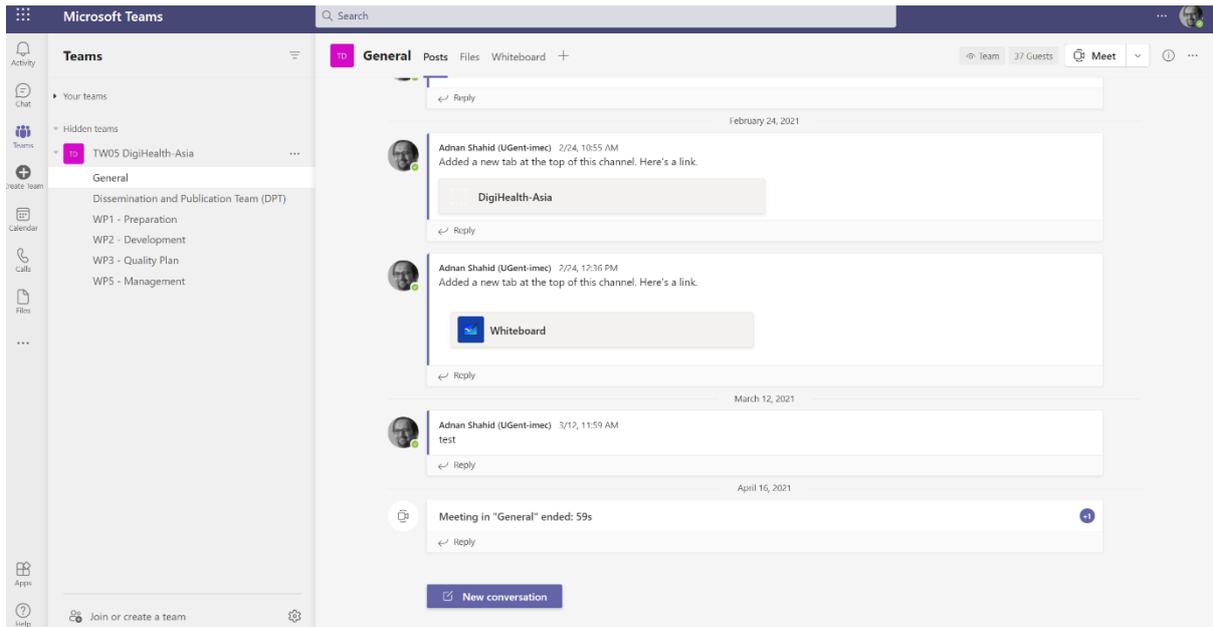
Figure 11: DigiHealth-Asia - MS Teams channel.
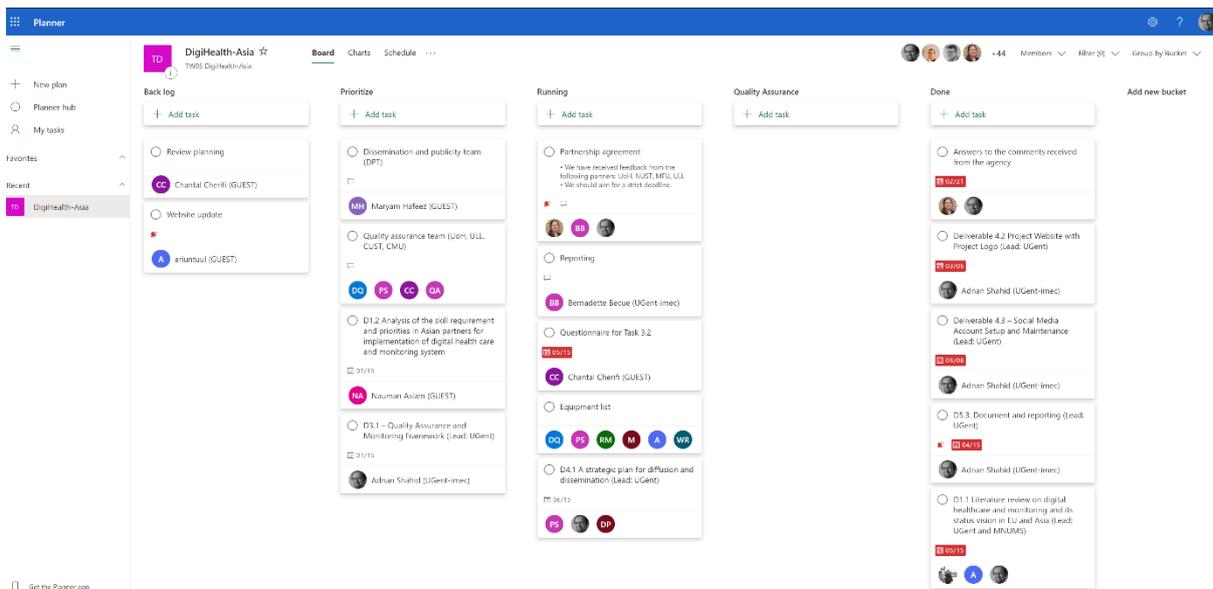
Figure 12: DigiHealth-Asia - KANBAN board.

2.4.6. Project brochure

We will design a project brochure for DigiHealth-Asia and will be disseminated at various venues such as conferences, workshops, local government institutes, hospital bodies, etc. The idea is to reach the target audience with the brochure and give brief information about the project.

2.4.7. Erasmus+ Project Results Platform

The Erasmus+ project results platform (https://ec.europa.eu/programmes/erasmus-plus/projects/) enables the achievement of wider visibility of Erasmus+ project results. The platform also includes products, deliverables, intellectual outputs, etc. of Erasmus+ projects. Brief information about DigiHealth-Asia on the platform can be seen here in Figure 13.

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Capacity Building for Digital Health Monitoring and Care Systems in Asia

6 Participating countries: 🇧🇪 🇫🇷 🇲🇳 🇵🇰 🇹🇭 🇬🇧

VIEW PROJECT MAP   **DOWNLOAD AS PDF**

Start: 15-01-2021 - End: 14-01-2024
Project Reference: 619193-EPP-1-2020-1-BE-EPPKA2-CBHE-JP
EU Grant: 950092 EUR
Website:
https://digihealth-asia.eu/

Programme: **Erasmus+**
Key Action: **Cooperation for innovation and the exchange of good practices**
Action Type: **Capacity Building in higher education**

Coordinator

🇧🇪 **UNIVERSITEIT GENT**

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9000
GENT
Extra-Regio NUTS 2
http://www.ugent.be
Organisation type: Higher education institution (tertiary level)

Partners

🇫🇷 **UNIVERSITE LUMIERE LYON 2**
🇲🇳 **NATIONAL UNIVERSITY OF MONGOLIA**
🇵🇰 **NATIONAL UNIVERSITY OF SCIENCES ANDTECHNOLOGY AT ISLAMABAD**
🇹🇭 **CHIANG MAI UNIVERSITY**
🇹🇭 **MAE FAH LUANG UNIVERSITY**
🇲🇳 **MONGOLIAN NATIONAL UNIVERSITY OF MEDICAL SCIENCES**
🇬🇧 **UNIVERSITY OF HUDDERSFIELD**
🇬🇧 **UNIVERSITY OF NORTHUMBRIA AT NEWCASTLE**
🇵🇰 **CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

Summary

This proposal aims to build capacity in HEIs of the partner countries (of DigiHealth-Asia project) to develop graduate certificate and diploma in digital health that would begin a new transformation in the operation of Asian Healthcare systems. The main objective of this project is to harness the power of ICT in health care through the introduction of the digital health care specialised course that would train and assist the healthcare professional in remote monitoring patients. A part of this project involves research and development of a new autonomous framework for pervasive monitoring of medical vital signs of patients using multiple types of affordable sensors connected through a secure and efficient network. The system would integrate a combination of ICT technologies including machine learning algorithm based on multi-view metric learning to learn to the relative importance of different types of sensors dependent on the location of the user, networking and user-friendly application development for collection and analysis of the collected medical data. The partner HEIs will play a crucial role in the knowledge transfer, training Healthcare staff to use the developed technology. This project aims at designing and implementing the framework, as well as demonstrating the feasibility of an autonomous in-home monitoring system at partner health-care facilities through pilot use cases.The main objectives are:- To build capacity in partner HEIs with an aim to develop expertise that would modernize healthcare systems by using digital technologies for health care in assisted living- To develop an education and training programs aiming to enhance skills of healthcare practitioners in use of digital and ICT based patient monitoring and assistive technologies.- To create a sustainable network of healthcare practitioners, researchers, academic teaching staff, researchers and industry professionals, focusing on the development of digital technologies for health care

Results

Website
https://digihealth-asia.eu/

Figure 13: DigiHealth-Asia on Erasmus+ platform.

3. Exploitation

To increase the impact and sustainability of the project, the following points will be considered.

Impact and visibility: We intend to broaden the project's impact and visibility by raising awareness through social media platforms, traditional communication channels such as event attendance (e.g., conferences, seminars, workshops, and so on), and project publications (e.g., leaflets, press releases as well as conference papers, articles in professional journals, etc.) Facebook and Twitter are two of the most popular social media platforms. The target group can then provide essential feedback on the project via Instagram, Facebook, Twitter, and Line (A popular social platform, particularly in Thailand.)

Once awareness has been raised, doctors, nurses, and medical students, among others, can learn and apply the knowledge gained from the Digihealth project Asia.

Specialized courses: The cultures of neighboring Asian countries will differ, as will the level of support for the healthcare system. If we provide advanced knowledge to them, they must adapt the care model knowledge from Thailand to their country to use it, and this will be a good point to develop a good care system in collaboration with another Asian country under the DigiHealth project. Asian students interested in this field of study can obtain the same course and knowledge in their home countries without having to spend a fortune studying abroad.

Role in stakeholders in improving digital healthcare services: To begin, we may assess the problem in all stakeholders in the health care system in the government and hospital systems for the problem and what is the solution for their problems, which will be the foundation of our project to adapt our developed framework from our project for them to fix the problems in their respective countries. In our opinion, we will develop a knowledge base system that contains all of the data involved in the care system, for example, current facts and practice, device interpretation, an integrated predictive model, and so on. Particularly the Project's individual data. To ensure its sustainability after the project's completion, we could organize an event to promote Digihealth pilot cases, and we will persuade them by providing them with enough information about why they should commercialize our project, which will essentially provide better and cheaper healthcare to millions of people in Asian countries. Digihealth Asia intends to facilitate collaboration between government and hospitals while also improving employment opportunities. The dissemination plan will specifically target various stakeholders and institutions such as those involved in the partnership, but also more institutions from the socio-economic sector: - Centers for universities, research, and civic society, which include: - Universities and Institutes of Higher Learning.

4. Conclusion

This deliverable presents a detailed plan for dissemination and exploitation of DigiHealth-Asia. For dissemination, a dissemination strategy is developed, and it comprises of a) dissemination objectives, b) target groups, c) key messages, and d) methods. The goal is to disseminate two major project outcomes a) three pilot cases and b) specialized and vocational courses. For increasing the project sustainability, two things are planned: a) commercialization of the pilot cases and b) dissemination of the specialized and vocational courses. For commercialization of the pilot cases, relevant stakeholders will be reached out for informing them of the usefulness and effectiveness of the pilot cases so that they can help in the commercialization of the pilot cases. The specialized courses that use the pilot cases will produce a workforce that will help in further research and development of digital healthcare. The doctors and paramedical staff in the partner countries will be trained with the pilot cases through the vocational courses and this will raise awareness in them, and they will start using digital healthcare technology in their medical practices.

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[4] "DigiHealth-Asia - YouTube channel," [Online]. Available:
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