

DESIGN OF THE PILOT ACTION IN OLOMOUC

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Contents

1. Introduction.....	2
2. General description of the tool	2
3. Location and geographical information	3
4. Demographic information of the testing location	4
5. Alignment with strategic and policy visions (national, regional, local level)	5
6. Needs of the target population	5
7. Current services addressing target population needs - gaps and limitations	6
8. Partners involved and role in pilot	7
9. Technologies and technical solution	7
10. Use Cases and target users	9
11. Objectives of the experiment.....	9
12. Evaluation	11
13. Procedures	14
13.1. Legal and ethical assessment.....	14
13.2. User recruitment and consent procedures.....	14
13.3. Procurement	14
13.4. Installation procedures	14
13.5. User training and support	14
14. Workflow diagram summarising the procedure	16
.....	Chyba! Záložka není definována.
Conclusion	Chyba! Záložka není definována.



Name of the digital tool	Care for frail (elderly discharged from hospital)
Testing location	Olomouc
Lead partner	UHO
Involved partner	Bratislava, Austria

1. Introduction

The present document presents the design of the pilot action in Olomouc - The Czech Republic (CZ). After the theoretical basis what has been worked out in WP T1, the application developed in WP T2 is now to be tested. The pilot action will take place in Olomouc, the tool will be tested also in Bratislava - The Slovak Republic (SK).

We represent also basic demographic situation, the alignment with strategic and policy visions, needs of the target population so you will be introduced why we chose this kind of solution originally inspired by the practise of Bologna. The description starts with definition of the main objectives. After that the concrete steps and the timeframe will be presented. Finally, the technical requirements and procedural options are discussed. The final point is the conclusion.

2. General description of the tool

The aim is to test functionality of a model and methods of care of frail or social care needing patients discharged from hospital (focus on hospital in CZ and facility in SK). SK was included due to similar situation in health and social care, so we presume there will be same benefit for CZ and SK from the digital solution. A new digital tool will enable better coordination and support of health and social care of frailty and chronically ill patients and digital communication of all actors involved in the processes of care with them. The possibility of using Monitoring Grid (tool developed in Austria based on Bologna practice) will be also tested in this pilot in CZ.

This should enable time save for organization taking care of elderly. This should make data transfer (information about patient) fast, easier and even safer than it is now in physical form. The solution can also save time for elderly who wouldn't have to attend doctor physically and they can use our platform what offer secured video call. This is even more important now in covid 19 pandemic situation. The entire solution for documentation sharing will be verified regarding the requirements for the secure data transmission, identification and authentication of employees and users, as well as regarding the valid legal regulations as part of the testing. Testing will take place in the following phases:

- A) Design of organizational, economic and medical conditions for, the new service/practice:
- UHO (social department).
 - Nursing service providers.
 - General practitioners.
 - Social care providers.



B) Definition of platform from technological point of view.

- IT department of UHO (using source code also from VUT Brno when considering Monitoring Grid)

C) Platform development and interoperability.

- VUT Brno + IT UHO.

D) Platform verification + UX.

E) Pilot testing with health (nursing services) or social providers, this involves also training for stuff, client, etc., manual sharing.

F) Action plans preparing.

G) Finalization of whole platform.

The proposal solution has 2 main functions:

1. Speed up communication.
2. Save transfer of documents.

3. Location and geographical information

The pilot testing will take place in Olomouc, CZ.

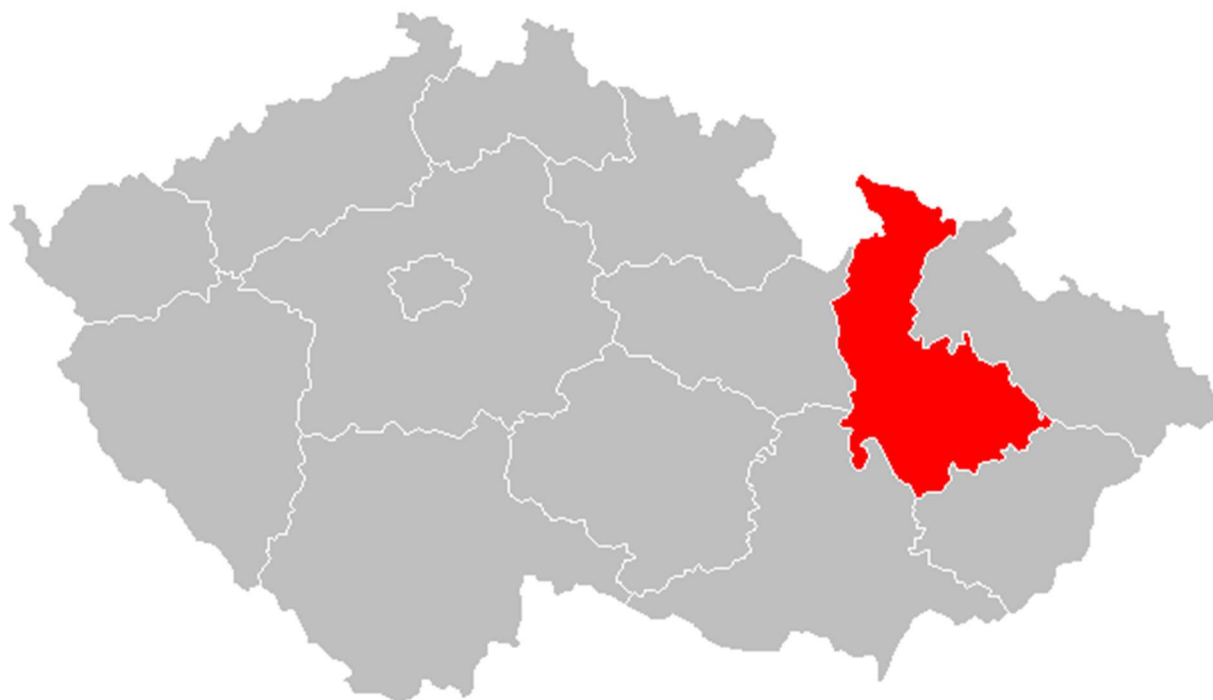


Figure 1: Olomouc is county city of 1 of the 14 district (province) in CZ¹

¹ https://cs.wikipedia.org/wiki/Olomouck%C3%BD_kraj



Figure 2: Olomouc is county city of 1 of the 14 district (province) in CZ²

4. Demographic information of the testing location

OLOMOUC:

Olomouc is county city of 1 of the 14 district in CZ. Whole district has about 632,000 inhabitants. About 100,000 is in Olomouc and another 64,000 inhabitants live in administrative district of the city. The number of inhabitants in administrative district of Olomouc had a growing trend between 1991 and 1995, after which a trend occurred the opposite and until 2004 the population was declining. The last 15 years of the population again continuously slightly is increasing and as of 1 January 2019 the population was 164,535.

According to the prognoses, a further decline is expected to reach the value of 99,314 inhabitants in 2030. As of 1 January 2018, the largest age group in the administrative district of Olomouc consists of inhabitants aged 35-44. In 2030, these numerically strong age groups will fall into the category of population between 50-59 years. A decline is expected in the population categories between 25-34 years in 2030. The population will increase slightly between 15 and 24 years. City predictions and its background show a significant increase in the number of seniors over 75, there will also be a significant increase in the number of people over the age of 80, who need increased care. The share of seniors aged 65 and more is 20% and this number will grow.

² https://cs.wikipedia.org/wiki/Kraje_v_%C4%8Cesku



5. Alignment with strategic and policy visions (national, regional, local level)

OLOMOUC:

The use of the tool is in accordance with two strategic documents approved by the regional and municipal authorities.

Regional plan: The use of assistive technologies is mentioned in the “Medium-term plan for the development of social services in the Olomouc district.”³ Specifically, it is the application of assistive and other technologies as a part of social services. Sharing information related to the use of information and assistive technologies leading to the improvement of the provided social services.

Municipality of Olomouc - The use of assistive technologies is planned in “Community plan of social services in Olomouc for the period 2020-2022.”⁴ Among other things, pilot support of assistive technologies is directly mentioned in the document.

6. Needs of the target population

A new digital tool will enable better coordination and support of health and social care of frailty and chronically ill patients via digital communication of all actors involved in the processes of care with them.

The aim of this digital tool is to create software supporting processes that take place when patients are discharged from hospital because in CZ and SK the coordination, communication and information flow from one actor to another in the process is currently not digitalized or the systems do not cooperate with each other. So there is need (confirmed in negotiations with the entities concerned) for digital sharing and authenticate (certificate) various forms. This need (process) is fulfilled in an inefficient way when instead of using fast digital sharing of needed information, there is challenging for the human resources in the involved institutions; and everything needs to be physically printed, signed and transferred personally.

The new tool is a SW platform capable potentially to support faster and efficient coordination of demands and available capacities and pertinent administration of health and social care providers in the whole region. As mentioned (see above), the relevant information from various sources typically comes to the person ordering the services in classic form (e.g. paper) instead of entering the data in computer; besides fragmented ability to coordinate, there is a lack of any digital communication channel to general practitioners (GP's) though they have key role in the process of care of such patients. To enhance efficiency of the processes, also other institutions involved in care and its reimbursement/payment will be connected to the platform, with respective rights of access to the data they need. The platform will enable secure and credible management of each case of relevant patients discharged for hospital (frail, comorbidities, injury, older, alone, poor, mental illness) and data exchange between follow-up care providers either in care institutions or homes of the patients (formal or informal home care).

The total estimated number of people involved in pilot agenda is about 10 patients with various requirements depending on the severity of their diagnosis and condition.

For elderly the stress with the delivery of documentation will decrease. If they will be able to use the tool well, they can check documentation on computer and read it any time they want.

³ www.olkraj.cz/strednedoby-plan-rozvoje-socialnich-sluzeb-v-olomouckem-kraji-pro-roky-2021-2023-cl-4766.html

⁴ <https://kpss.olomouc.eu/uploaded/download/5-kpss-Olomoucka-2020-2022.pdf>

For the professionals, time spent on the road will decrease and it can be used for care of elderly instead. Need of data sharing simplification came directly from nursing and care providers, who lose time due to need of physical confirmation of forms between them and GP for health insurance companies.

7. Current services addressing target population needs - gaps and limitations

The current development of a growing and aging population in the Czech Republic (CZE) will continue in the future in aging and as well in decreasing of number of inhabitants. The population of CZE will reduce, in general, but the number of the population 65+ will increase quite rapidly in next 40 years. The age index improves growth in the future. It will culminate on 1 January 2063, when, as expected, there will be 277 seniors per 100 children (today 113 seniors). The situation where seniors will be 2.5 times more than children should last the whole second half of the century.⁵

Our tool brings relief to field social and health care service providers by saving time and reduces need to travel to the doctors to confirm forms for health insurance companies. In Olomouc, we have a fairly set system for elderly. This system is working fine nowadays, it will have problem in future due to aging population. There are some procedures within the set services are not very effective and we are trying to change them. Below we will briefly describe the services that care for the elderly, as already described in the previous documents⁶.

Services that are offered in Olomouc are the following:

- A) Hospital (the University Hospital Olomouc, hereafter referred to as “UHO”, military hospital) and specialised medical institution (hereafter referred to as “OLU”, Paseka and Moravský Beroun) for further treatment. There are social departments in hospitals.
- B) Doctors (GP, specialists).
- C) Nursing service providers:
 - Pomadol, Dobnerova 718,
 - Charita Olomouc, Peškova 1,
 - AURA, Masarykova tř. 970,
 - SDOP OL, Mišákova 41,
 - DOP Pospíšilová Jana, Karolíny Světlé 1186 / 2a,
 - Fyzidop s.r.o., Fischerova 4.
- D) Field social services:
 - Pomadol, Dobnerova 718,
 - Charita Olomouc, Peškova 1,
 - Sociální služby pro seniory, p.o., Zíkova 14.
- E) Residential social services:
 - Sociální služby pro seniory, p.o., Zíkova 14,

⁵ <https://www.czso.cz/csu/czso/ea002b5947>

⁶ see D.T2.6.3 - Design of FNOL platform



SeneCura SeniorCentrum Olomouc, Jižní 32,
Domov senior Pohoda, p.o., Švabinského 3.

F) Ambulatory social services:

Sociální služby pro seniory, p.o., Zíkova 14,
Pamatováček, o.p.s., Karafiátová 5.

The focus of all is on health promotion and prevention of elderly. But some procedures are not that effective how they can be thanks to the available technologies. By this we mean also other solutions intended in partners regions. Our tool mainly addresses the simplification of communication among partners caring for elderly see above letter A) to D). Tool is will allow also communication among E) and F), if needed.

8. Partners involved and role in pilot

1. University Hospital Olomouc (UHO) - in particular the dismissal report from hospital, which serves the needs of a general practitioner (GP) and a provider of field or residential social or nursing services. From UHO social department, nurses and hospital doctor are involved.
 - Dismissal report from hospital will be send via our tool for other involved subjects.
 - It will help UHO social department to provide documentation right away.
 - It will help elderly, they don't need to go to their GP to pass the documentation physically.
2. GP - cooperates with the nursing service, prescribes operations of nursing service, confirms forms for insurance companies.
3. Nursing services providers - they need a report from UHO for setting up patient care and also for the needs of communication with health insurance companies for reimbursement, they also communicate with GP and together they set up aftercare.
 - They can communicate via our tool with GP, and with health insurance company in the future. Confirmation needed by health insurance company can be made digitally.
4. Social care providers - they provide social services and often follow up on nursing services, like: first hygiene by social provider (care service), then nursing service (administration of drugs, bandage). Some providers offer both types of services.
 - They will have information about client and they can set up services with regard to the current state of health. This is necessary, for example, when doing general hygiene and finding out from the medical health documentation that it is not possible to make, for example, body rotation with the client.

9. Technologies and technical solution

The solution is well described in **D.T2.6.3 - Design of FNOL platform**.

Shortly described:



The whole solution is based on the defined needs mainly of providers of health and social services. The solution offers the patient more possibilities of interaction, through a web interface that serves as a portal for the patient, where all his documents, including discharge reports, are stored. The storage of discharge reports is linked to the guaranteed archive of the hospital and is provided with an electronic signature. Everything is solved with regard to Decree No. 137/2018 Coll. on medical documentation, as amended by Act No. 372/2011 Coll., on health services and conditions for their provision (the Health Services Act) and also in connection with Act No. 181/2014 Coll. Act on Cyber Security and on Amendments to Related Acts (Act on Cyber Security) - where the solution of compliance of personal data protection measures with operational measures and measures to ensure cyber security according to the ISO / IEC 27701 standard. Health care providers are thus subject to higher requirements for creating a secure information environment and data management.

As mentioned above, eHealth means the provision and use of services and information systems of the integrated health data interface (hereinafter referred to as the "Integrated Data Interface"), services connected to the Integrated Data Interface and information systems of health or social service providers for the management or transmission of health care. documentation in electronic form, including systems enabling remote access for the patient pursuant to this Act. "

The technological solution of the platform for video consultations is divided into server and client part.

Server part:

- Webserver.
- Database.
- Framework.

Client part:

- jQuery.
- Bootstrap.

Videoconsultation platform use Jitsi platform. Jitsi is a collection of free and open-source multiplatform voice (VoIP), video conferencing and instant messaging applications for the web platform, Windows, Linux, macOS, iOS and Android. Jitsi also operates meet.jit.si, a version of Jitsi Meet hosted by Jitsi for free community use. Jitsi solution runs on our server for higher security and it is possible to make a videoconsultation through mee.fnol.cz. Every session is encrypted by end user and for every session is generated new link specific for patient and doctor.

Whole jitsi platform also includes:

- Attended and blind call transfer
- Auto away
- Auto re-connect
- Auto answer and Auto Forward
- Call recording
- Call encryption with SRTP and ZRTP
- Conference calls
- Direct media connection establishment with the ICE protocol
- Desktop Streaming
- Encrypted password storage using a master password
- File transfer for XMPP, AIM/ICQ, Windows Live Messenger, YIM
- Instant messaging encryption with OTR (end-to-end encrypted)
- IPv6 support for SIP and XMPP
- Media relaying with the TURN protocol
- Message Waiting Indication (RFC 3842)
- Voice and video calls for SIP and XMPP using H.264 and H.263 or VP8[45] for video encoding
- Wideband audio with SILK, G.722, Speex and Opus[45]
- DTMF support with SIP INFO, RTP (RFC 2833/RFC 4733), In-band
- Zeroconf via mDNS/DNS-SD (à la Apple's Bonjour)
- DNSSEC
- Group video support (Jitsi Videobridge)[46]
- Packet loss concealment with the SILK and Opus codecs



10. Use Cases and target users

There will several subjects involved, namely:

- Case management is responsible for coordination and implementation of the planned actions:
 - Contacting, engagement and information of participants (including the preparation of written consents).
 - Preparation, implementation and evaluation of the questionnaires.
 - Training and support of the participants (elderly and care providers).
 - Takes over the administration activities in the context of the application. Care of the system in terms of controlling its functionality, security, management, etc. so that the interviewers can focus on conducting the interviews and analysing the data.
- Elderly discharged from hospital (UHO)
 - Seniors who are discharged from UHO and who need ongoing care.
 - Have an own account in the application, where they can postpone reports (medical documents), they can edit and evaluate the data of their assigned persons.
 - Report to the project or case management.
 - Some ICT skills will be needed or at least family assistance,
- Providers (especially nursing care)
 - They will use application as information system (obtain dismiss report from UHO).
 - They will communicate with GP via digital tool for confirmation documents for Health insurance company.
- GPs
 - Confirming reports from providers so their care can continue. This is needed and controlled by Health insurance company.

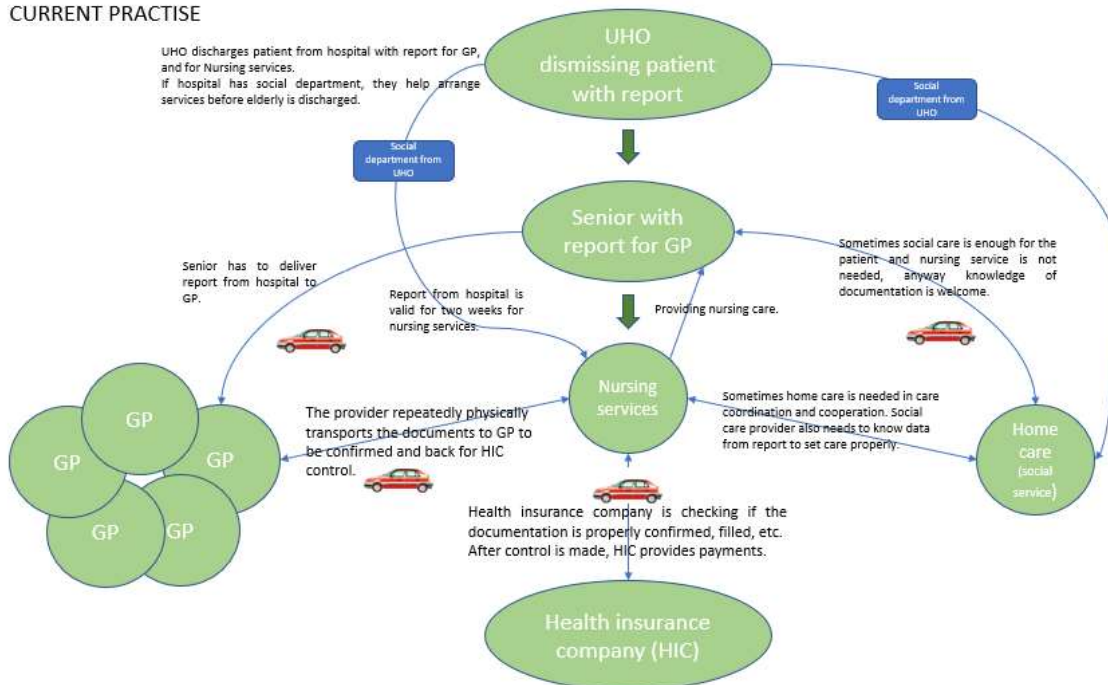
11. Objectives of the experiment

In the frame of this implementation plan, we pursue the following main goals:

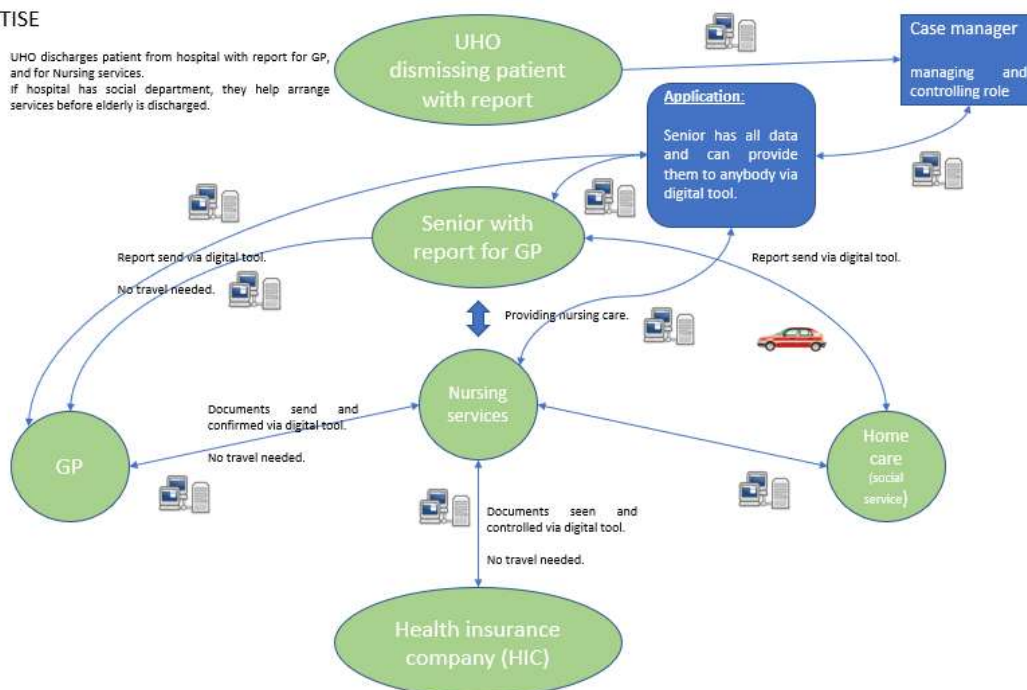
1. Information about elderly dismissed from UHO will be easily and quickly transferred targeted providers and to GP.
2. Nursing provider can send documents via digital tool instead riding a car and transfer them physically, this will save time for riding around town and waiting in the doctors' waiting room.
3. Digital tool is easy to use.
4. Digital tool offers save video consultation with doctor if needed.
5. If the volunteer allows, data can be shared with other affected services.
6. The system will be approved by an ethics committee.
7. Verify the system and complete the changes.



CURRENT PRACTISE



DESIRED PRACTISE





12. Evaluation

Based on the objectives we have set 5 key indicators (summarised in Table 1) that will be used to evaluate the success of the pilot testing phase. The target values will be reviewed during the last month of the phase.

Name	Involved regions	Involved volunteers	Involved nursing home cares	Feedback from volunteers	Feedback from nursing home cares
ID	KP1	KP2	KP3	KP4	KP5
Measure	Number of involved regions	Number of involved volunteers	Number of involved nursing home cares	Percentage of positive feedback	Percentage of nursing home care workers claiming the system improves their work
Target value	2	10	3	50	9

The KPI4 and 5 will be evaluated based on a couple of questionnaires:

- 1) KPI4 - questionnaire for volunteers/patients who will use platform
- 2) KPI5- a questionnaire focused on nursing home care workers

Testing and evaluating by volunteers:

Satisfaction of volunteers with technical solution will be tested via The Service User Technology Acceptability Questionnaire. The Service User Technology Acceptability Questionnaire (SUTAQ) has 22 items, measured on a Likert-scale from 1 to 6 (respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item), reflecting more or less agreement with the item statements, respectively. The questionnaire has 5 subscales, where each contains between 3 and 9 items.

Subscales are:

Perceived benefit

Privacy and discomfort

Care personel concerns

Kit as a substitution

Satisfaction

Service User Technology Acceptability Questionnaire:

The kit I received has saved me time in that I did not have to visit my GP clinic or other health/social care professional as often.

The kit I received has interfered with my everyday routine.



The kit I received has increased my access to care (health and/or social care professionals).

The kit I received has helped me to improve my health.

The kit I received has invaded my privacy.

The kit has been explained to me sufficiently.

The kit can be trusted to work appropriately.

The kit has made me feel uncomfortable, eg, physically or emotionally.

I am concerned about the level of expertise of the individuals who monitor my status via the kit.

The kit has allowed me to be less concerned about my health and/or social care.

The kit has made me more actively involved in my health.

The kit makes me worried about the confidentiality of the private information being exchanged through it.

The kit allows the people looking after me, to better monitor me and my condition.

I am satisfied with the kit I received.

The kit can be/should be recommended to people in a similar condition to mine.

The kit can be a replacement for my regular health or social care.

The kit can certainly be a good addition to my regular health or social care.

The kit is not as suitable as regular face to face consultations with the people looking after me.

The kit has made it easier to get in touch with health and social care professionals.

The kit interferes with the continuity of the care I receive (ie, I do not see the same care professional each time).

I am concerned that the person who monitors my status, through the kit, does not know my personal health/social care history.

The kit has allowed me to be less concerned about my health status.

Testing and Evaluation by Nursing home care workers: Satisfaction of NHCW with technical solution will be tested.

Nursing home care workers will be asked to fill in the following questionnaire translated into their native language. First eight questions will be measured on a Likert-scale from 1 to 6, last five questions will be answered in text.

Questions about the acceptability of the technology

Has the system made it easier for you to monitor care about frailty elderly?

To what extent do you think the system is reliable (system stability, access, data analysis)?

How complicated is it for you to use the system?

How complicated was the system for your partners, colleagues?



Would you like to use the system for a longer period?

Is it comfortable to work with the system (is it user friendly)?

Is it comfortable to work with the system (is it user friendly)?

What would you change, enhance, or fix in the system?

Text:

Mention up to 5 positives of the system.

Text:.

Mention up to 5 negatives of the system.

Text:

Finally, please answer these few questions about you

Gender: ☐female ☐male

Age:

13. Procedures

In the following the procedures, which are relevant for the pilot action, will be described.

13.1. Legal and ethical assessment

The development of the project has been approved by ethical committee in UHO and coordinated with the GDPR and data protection manager from Slovak republic.

13.2. User recruitment and consent procedures

Volunteers cannot be selected in advance for Care for Frail testing. Care for Frail is a platform for people released from hospital who need additional care. Thanks to COVID 19 measures, the planned procedures are not performed in the hospital as usual, acute care is provided, so an agreement on future cooperation is not possible. Access to patients in the hospital is also restricted - visits are prohibited. All of this is reflected in the ability to test our tool.

With regard to the current conditions, we adjusted the functioning of the model as follows. The hospital's social department has information on who will be released and what care they will need. If the patient meets the conditions of fragility and cooperation with the care providers involved in model, he/she will be offered to participate in the pilot.

Providers of home care (nursing care) were approached during the workshop. We chose especially those who provides both types of care (social and nursing).

We needed to engage several GP into a testing. This is very difficult task in this situation. GP s are now supposed to be engaging predominantly in vaccination programmes beside their usual work. Because individual GP we will need to approach is based on the patient released from hospital, there is no way to reach GP and prepare cooperation in advance. We will contact GP right after volunteer show interest in pilot.

Every type of participant - volunteer/frail elderly - care provider - GP - will have different contract to sign.

13.3. Procurement

There is no need for procurement, platform is already developed and will be used on participants own devices - smartphones, tablets, notebooks.

13.4. Installation procedures

Care for Frail is platform, that will be installed into participants device. Installation will be performed by participant on his/her own or with help of NTMC worker.

13.5. User training and support

The platform is prepared intuitively, so that it is easy to work with it without training. Nevertheless, it will be easier to acquaint each pilot participant with the platform in person. This introduction will be made by an NTMC employee. Each pilot participant will also receive a manual for working with the platform,



according to their preference in a paper or electronic version. Participants will also receive contacts to the relevant NTMC staff - telephone and email.



14. Workflow diagram summarising the procedure

	2021											
Tasks	1	2	3	4	5	6	7	8	9	10	11	12
Preparing a draft of the pilot												
Design of the pilot in Olomouc												
Coordination of the pilot activities by LP, regular meetings, regular exchange of information												
Training of test persons, home care givers and nurses												
Collection of feedback from test and support persons in Olomouc												
Summary report from the pilot action in Olomouc												

