

Expression of Interest HealthChain Leading SME Western Slovenia (Slovenia)

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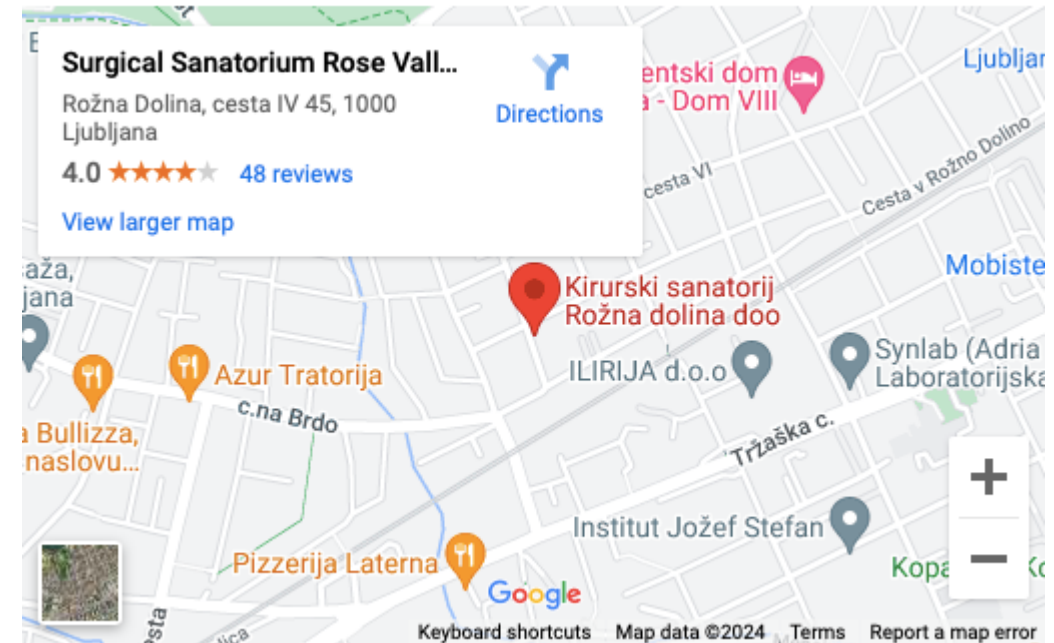
**KSRD-Surgical
hospital Rožna dolina,
Ljubljana,
Slovenia**

01



About us

- We are small surgical hospital in Ljubljana, Slovenia, with 77 employees
- Majority of our work is in the field of orthopaedic and abdominal surgery
- About 7000 surgical procedures is performed per year...



THE CHALLENGES

02



Challenges at a glance

HIPRO

Improving patients' safety and empowerment after fast-track hip surgery.

- User-friendly application based on pictograms which improves safety of patients after fast-track hip surgery and facilitates empowerment of patients and their communication with surgeon.

MEPRO

Improving patient safety by assessing mental distress after surgery.

- Mobile phone application for self-assessment of mental distress to alert family, relatives or physicians that patient may have a medical condition and needs to start conversation or seek medical help. Many patients are not willing to discuss their well-being with relatives.

HIPRO

Improving patients' safety and empowerment after fast-track hip surgery.

- User-friendly application based on pictograms which improves safety of patients after fast-track hip surgery and facilitates empowerment of patients and their communication with surgeon.

Hip surgery
patient reported
outcome

Improving patient safety after
fast-track surgery

Challenge description & main objectives

- Patients are after hip surgery discharged from hospital as soon as two days
- After discharge first visit to surgeon is subscribed after 14 days
- Inbetween they are without proper follow up
- There is well known and validated self assessment questionnaire (Harris hip score) - paper form
- Harris hip score is PRO (patient reported outcome)
- Harris hip score in paper form is sometimes difficult to fill - patient has to send it to surgeon or he has to visit the surgeon
- The main objective is to develop mobile device application which will be user friendly and which will send data to patients physician

Harris hip score paper form

Clinician's Name: _____ Patient's Name: _____

Please answer the following questions.

Section 1

Pain

<input type="checkbox"/>	None, or ignores it
<input type="checkbox"/>	Slight, occasional, no compromise in activity
<input type="checkbox"/>	Mild pain, no effect on average activities, rarely moderate pain with unusual activity, may take aspirin
<input type="checkbox"/>	Moderate pain, tolerable but makes concessions to pain. Some limitations of ordinary activity or work. May require occasional pain medication stronger than aspirin
<input type="checkbox"/>	Marked pain, serious limitation of activities
<input type="checkbox"/>	Totally disabled, crippled, pain in bed, bedridden

Support

<input type="checkbox"/>	None
<input type="checkbox"/>	Cane/Walking stick for long walks
<input type="checkbox"/>	Cane/Walking stick most of the time
<input type="checkbox"/>	One crutch
<input type="checkbox"/>	Two Canes/Walking sticks
<input type="checkbox"/>	Two crutches or not able to walk

Distance walked

<input type="checkbox"/>	Unlimited
<input type="checkbox"/>	Six blocks (30 minutes)
<input type="checkbox"/>	Two or three blocks (10 - 15 minutes)
<input type="checkbox"/>	Indoors only
<input type="checkbox"/>	Bed and chair only

Limp

<input type="checkbox"/>	None
<input type="checkbox"/>	Slight
<input type="checkbox"/>	Moderate
<input type="checkbox"/>	Severe or unable to walk

Activities - shoes, socks

<input type="checkbox"/>	With ease
<input type="checkbox"/>	With difficulty
<input type="checkbox"/>	Unable to fit or tie

Stairs

<input type="checkbox"/>	Normally without using a railing
<input type="checkbox"/>	Normally using a railing
<input type="checkbox"/>	In any manner
<input type="checkbox"/>	Unable to do stairs

Public transportation

<input type="checkbox"/>	Able to use transportation (bus)
<input type="checkbox"/>	Unable to use public transportation (bus)

Sitting

<input type="checkbox"/>	Comfortably, ordinary chair for one hour
<input type="checkbox"/>	On a high chair for 30 minutes
<input type="checkbox"/>	Unable to sit comfortably on any chair

To score this section all four must be 'yes', then get 4 points. Nb. Not 1 point for each four or nothing.

Section 2 - Answer ALL 4 yes/no questions

Does your patient have: -

<input type="checkbox"/>	yes	Less than 30degrees of fixed flexion	<input type="checkbox"/>	yes	Less than 10 degrees of fixed int rotation in extension
<input type="checkbox"/>	no		<input type="checkbox"/>	no	
<input type="checkbox"/>	yes	Less than 10 degrees of fixed adduction	<input type="checkbox"/>	yes	Limb length discrepancy less than 3.2 cm (1.5 inches)
<input type="checkbox"/>	no		<input type="checkbox"/>	no	
<input type="checkbox"/>	The answer to all four questions is yes (click only if true)				

Solution functional requirements

- Solution shall be user friendly and adapted to digital literacy levels of targeted patients (elderly)
- The solution shall allow information exchange between patients and surgeon
- Patients would choose from several templates to create the message, depending on message type
- Health care professionals should be able to send the same message to patient
- Calendar management: so patients and physicians can easily add or review patients' medical condition
- Alert surgeon or family about possible critical condition through channels of communication
- Usable and intuitive for patients
- Solution should be based on pictograms
- Optimised for multi-device access
- The solver application will be available for Android and iOS

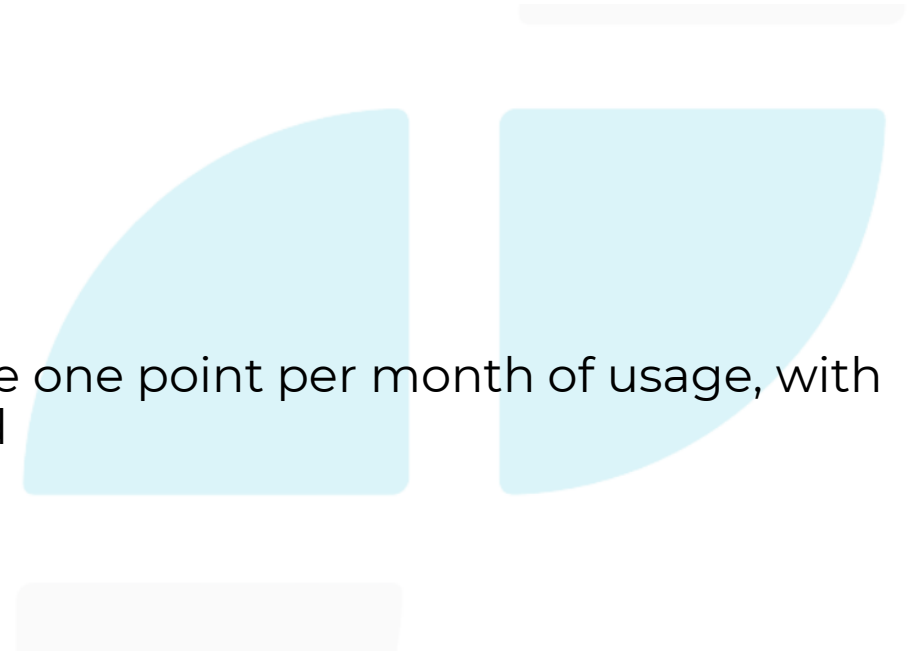
- Pain Assessment:
 - 😞 (Severe pain)
 - 😐 (Moderate pain)
 - 😊 (Mild pain)
 - 😄 (No pain)
- Function Assessment:
 - 🚶 (Walking difficulty)
 - 🏃 (Able to run)
 - 🏋️ (Able to lift weights)
 - 🏊 (Able to perform sports)
- Deformity Assessment:
 - 🦵 (Normal alignment)
 - 🦵 (Mild deformity)
 - 🦵 (Moderate deformity)
 - 🦵 (Severe deformity)
- Range of Motion Assessment:
 - 🔄 (Full range of motion)
 - ⬆️ (Slightly limited motion)
 - ⬅️ (Moderate limitation)
 - ➡️ (Severely limited motion)
- Muscle Strength Assessment:
 - 💪 (Normal strength)
 - 🦵 (Mild weakness)
 - 🦵 (Moderate weakness)

Pilot scope & set-up conditions

- After beta version of application is prepared 30 patients undergoing fast track hip surgery will enrol in the pilot together with two orthopaedic surgeons
- The application must be available in English and Slovene language
- Patient has to be owner of smart mobile device
- Ethical, legal or regulatory: pilot must be previously validated by an Ethical Committee; special attention for patient data protection and informed consent
- Technological: the system and servers needed for running the piloted application will be hosted by the Solver; technological requirements will be established in a technical session at the beginning of the project
- Data access: No initial data will be provided for pre-load. All participants will have to register for free and fill their own data

Expected impact & KPIs

- Reduction in the number of physical visits of patients:
 - a) to the doctors' office at least 10%
 - b) to emergency room at least 20%
- Quality of life indicator VR-12: increase of an average one point per month of usage, with maximum ten points during the total survey period



Adoption plan

- Pilot can be started as soon as beta version of application is prepared and there is positive decision of Ethical Committee.

MEPRO

Improving patient safety by assessing mental distress after surgery.

- Mobile phone application for self-assessment of mental distress to alert family, relatives or physicians that patient may have a medical condition and needs to start conversation or seek medical help. Many patients are not willing to discuss their well-being with relatives.

Mobile phone
application-self
assessment of
mental distress

Improving patient safety by
assessing mental distress
after surgery

Challenge description & main objectives

- Mental distress in this context—levels of mental, physical and emotional distress can be high before and after surgery
- In this context common causes of stress include anything that results in pain, including illness and post surgical complications
- Can be alert or sign that patient has medical problems after discharge from hospital
- Elderly from various reasons do not want to speak about medical problems with family, relatives or physicians
- Detecting mental distress in this context may be a sign or indicator of medical condition; may be the first alert that requires detailed medical evaluation
- There are some validated screening systems to detect mental distress (PHQ-9)
- There is no user-friendly mental distress self-assessment mobile phone application

PHQ-9 paper form

Over the last 2 weeks, how often have you been bothered by the following problems?		Not at all	Several days	More than half of the days	Nearly everyday
Depression Screening					
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed, or hopeless	0	1	2	3
PHQ-9 Depression Assessment					
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself - or that you are a failure or have let yourself or your family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed, or the opposite - being so fidgety or restless that you have been moving a lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3
10	If you check off any of these problems how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? 0 - Not difficult 1 - Somewhat difficult 2 - Very difficult 3 - Extremely difficult	0	1	2	3

Scoring the PHQ-9

Solution functional requirements

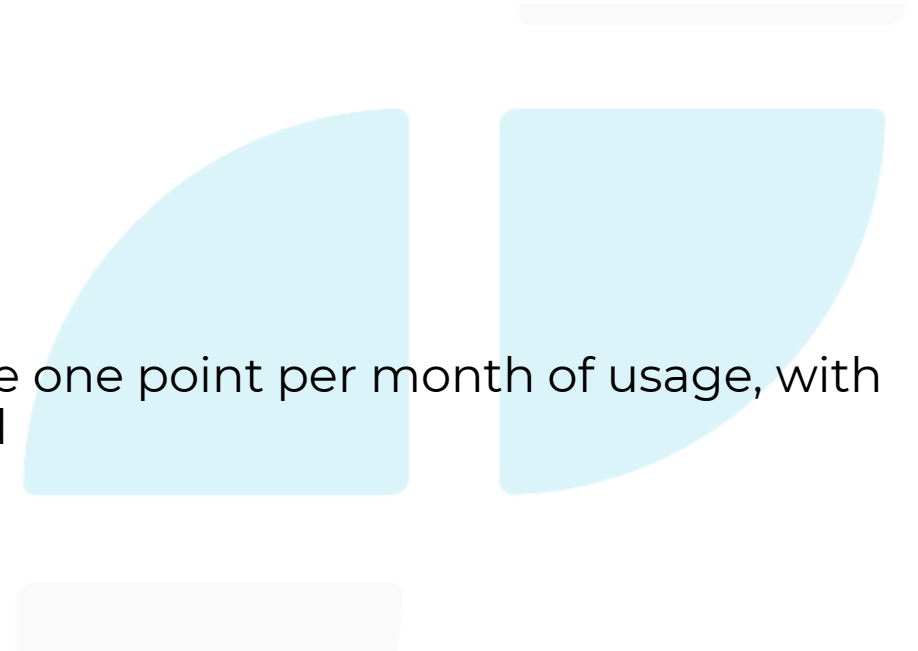
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- Alert surgeon or family about possible critical condition through channels of communication
- Usable and intuitive for patients
- Solution should be based on pictograms
- Optimised for multi-device access
- The solver application will be available for Android and iOS
- Desirable: Use of AI to recognise facial expression
- Desirable: Connection with 3rd party devices to track day activity and sleep patterns

Pilot scope & set-up conditions

- After beta version of application is prepared 30 patients underwent orthopaedic or general surgery will enrol in the pilot together with two physicians surgeons
- The application must be available in English and Slovene language
- Patient has to be owner of smart mobile device
- Ethical, legal or regulatory: pilot must be previously validated by an Ethical Committee; special attention for patient data protection and informed consent
- Technological: the system and servers needed for running the piloted application will be hosted by the Solver; technological requirements will be established in a technical session at the beginning of the project
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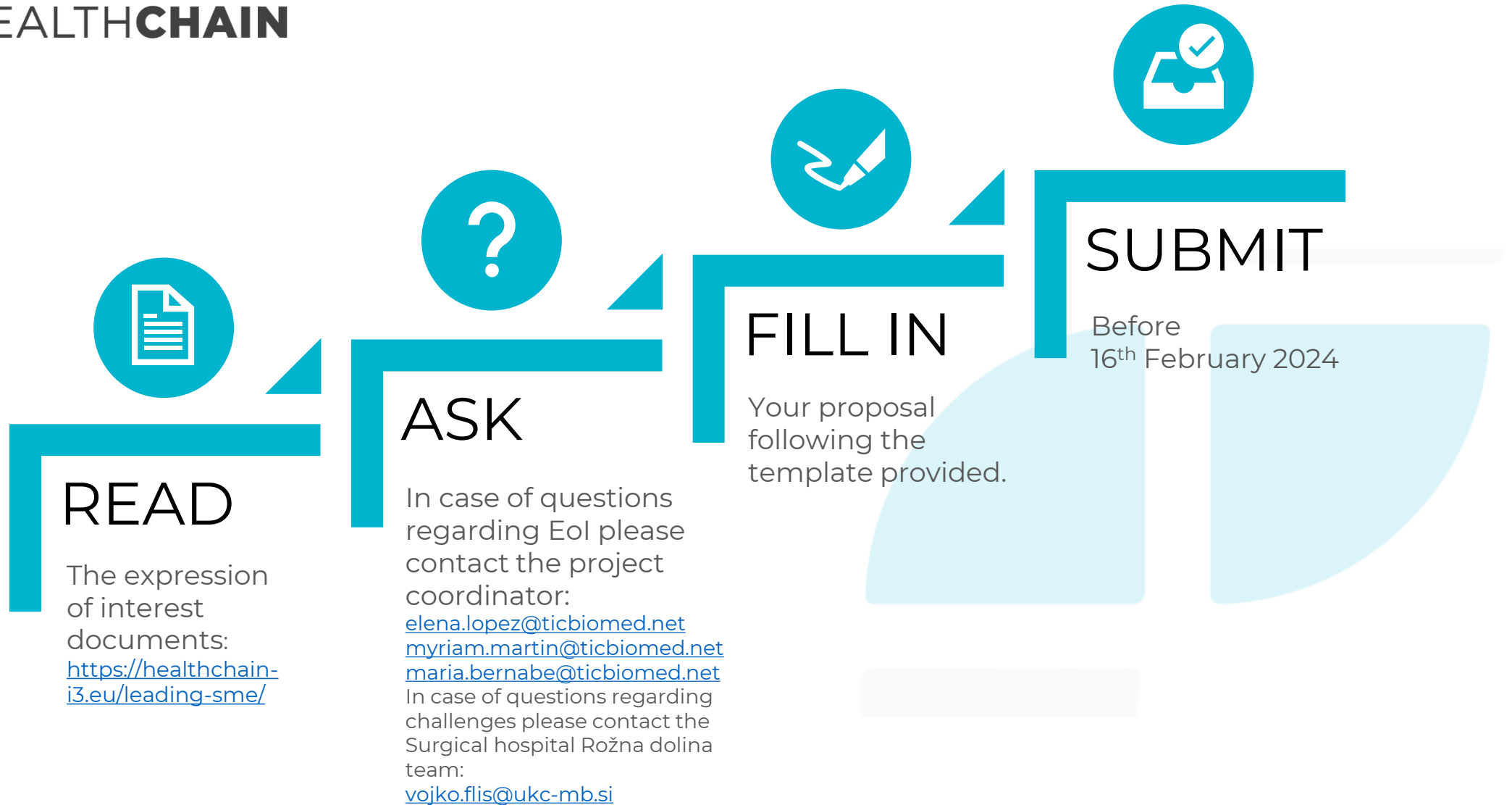
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NEXT STEPS

03





Q&A

04+

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Thank you!

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