



D6.9

S-EHR mobile app - V1

ABSTRACT

This deliverable consists of the first version of the software for the prototype of the secure mobile app for citizens (referred to as the “S-EHR”), built following the design described in the D6.1 [\[1\]](#) and D6.4 [\[2\]](#) deliverables. The prototype includes the integration of other components the S-EHR app depends on, such as the first versions of the libraries for D2D protocol and R2D protocol. The S-EHR is to store on a smart device the health data about a citizen and produced by the citizen itself or by HCPs.

The following report is intended as a supporting documentation for the actual deliverable, which is the software itself. It includes the building and installation guides, as well as a user guide.

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LOGTABLE

Version	Date	Change	Author	Partner
0.1	04-12-2019	First draft of document	Martin Marot	A7
0.2	11-12-2019	Added abstract, some acronyms and reviewed the overview section as well as the user guide	Lucie Keunen	A7
0.3	12-12-2019	Review comments	Martin Marot	A7
0.4	16-12-2019	List of figures + SW Description	Martin Marot	A7
0.5	17-12-2019	Fixed formatting and reviewed new content	Lucie Keunen	A7
1.0	20-12-2019	Quality Check	Argyro Mavrogiorgou	UPRC
Vfinal	08-01-2020	Final version for submission	Laura Pucci	ENG

ACRONYMS

Acronym	Term and definition
A7	Andaman7
EHR	Electronic Health Record
D2D	Device-to-Device
R2D	Remote-to-Device
S-EHR	Smart EHR
PHR	Personal Health Record
HCP	Health Care Professional
SW	Software

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Table 1 – SW DESCRIPTION

1. INTRODUCTION

1.1.Scope of the document

This document is a SW accompany report that will help you to install and use the demonstration application.

The demonstration application is available at this address :

https://drive.google.com/drive/folders/17QBvImSct1csMOWFI8FGO_1uoPbynbcP

The installation guide is available at the section 3.1 of this document.

1.2.Intended audience

The document is intended to all people interested to have an overview of what was developed during the first year of the InteropEHRate project. This document focuses on the reference implementation of the S-EHR application made on Android.

1.3.Structure of the document

This current document is organized in the following sections:

- Overview : overview of the content of the current release of the S-EHR application.
- Installation guide: step by step explanation on how to retrieve the application in order to test it.
- User guide: step by step explanation on how to test all features available for the current version of the S-EHR application

1.4. Updates with respect to previous version (if any).

Not Applicable.

2. SW DESCRIPTION

SW TITLE	S-EHR App
SW VERSION	0.1.0
LICENCES AND PATENTS	N.A
PROGRAMMING LANGUAGES	Java SE 8.0 & kotlin 1.3
SUPPORTED PLATFORM(s)	Android 4.1 - Current version
SOURCE CODE	http://iehrgitlab.ds.unipi.gr/interopehrate/s-ehr-mobile-app/s-ehr-app
EXECUTABLE	https://drive.google.com/open?id=1HRKmvllqfysu2UviLGhmvWPqVJQ1NZ6w

Table 1 – SW DESCRIPTION

3. OVERVIEW

The current release (V1 of the S-EHR app, released at the end of December 2019) contains an example for the implementation of the two libraries developed as part of the InteropEHRate framework, developed during the first year of the project, mainly related to the use case scenario of the edge-to-edge sharing of health data.

Those two libraries are :

- Remote to device (R2D): The citizen retrieves a sample of an EHR (at this stage of the project, it is not his own EHR but a “fake” EHR serving as an example). This EHR sample is stored in the current database of the Android S-EHR application.
- Device to device (D2D): The personal health data of the EHR example retrieved with the R2D protocol will be shared to the HCP application (the reference implementation of the HCP app of the project) through a short range wireless connection, Bluetooth.

These two libraries are integrated into an existing S-EHR application, the Android version of Andaman7. This constitutes the first version of the prototype of the citizen secure mobile app, serving as the reference implementation of the S-EHR app.

3.1.Installation guide

Here are the instructions to download and install the S-EHR App. This guide needs to be executed directly from your android mobile. If you do it from a computer, you will have an extra step :

- Go to this drive repository:
https://drive.google.com/drive/folders/17QBvImSct1csMOWFI8FGO_1uoPbynbcP
- Download the apk file of the application “andaman7-iehr-release-3.1-iehr.0.apk”. The apk file is the executable type file of the android application.
- Once the file is downloaded, open it to install the application.
- Launch the application.

If you are executing these steps from a computer, you’ll need to transfer the file downloaded from your computer to the mobile device.

3.2.User guide

This user guide will describe step by step the actions a user will have to perform in order to use the S-EHR app and test specifically the functionalities related to the edge-to-edge data sharing scenario that have been implemented so far.

Installation of the app

Firstly, install the S-EHR app on an Android device. To have access specifically to the V1 of the S-EHR mobile app, follow the instructions of the installation guide in the section 3.2.

NB : To have access to the latest version of Andaman7, you can download the official app. To do so, open the Play Store from your mobile device and search for “Andaman7”. Click on “install”.

Registration to the app

The first step to be able to use the application will be the registration step.

NB : if you already have an account on [Andaman7 test] application, directly jump to the next step.

1. First, enter a valid address mail in the email field of the login screen and click on “NEXT”.

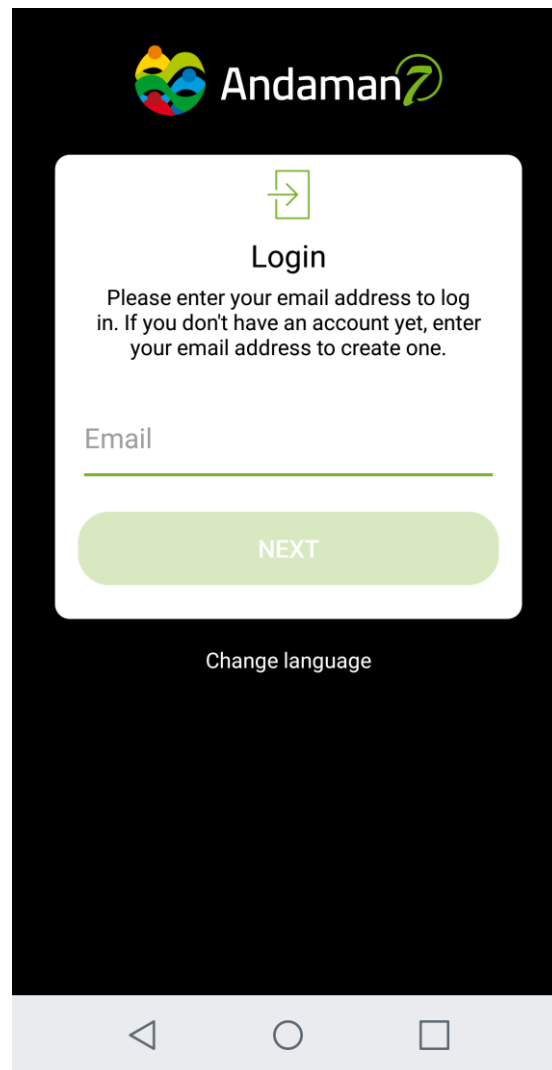


Figure 1 - sign up / login screen

2. If the email address doesn't correspond to an Andaman7 account yet, you will be invited to register to the app by creating an account with that address. To do so, you have to choose a personal password, at least 6 characters long. Click the “Display” checkbox if you want to verify it. Click on “NEXT” to validate your password and move to the next step.

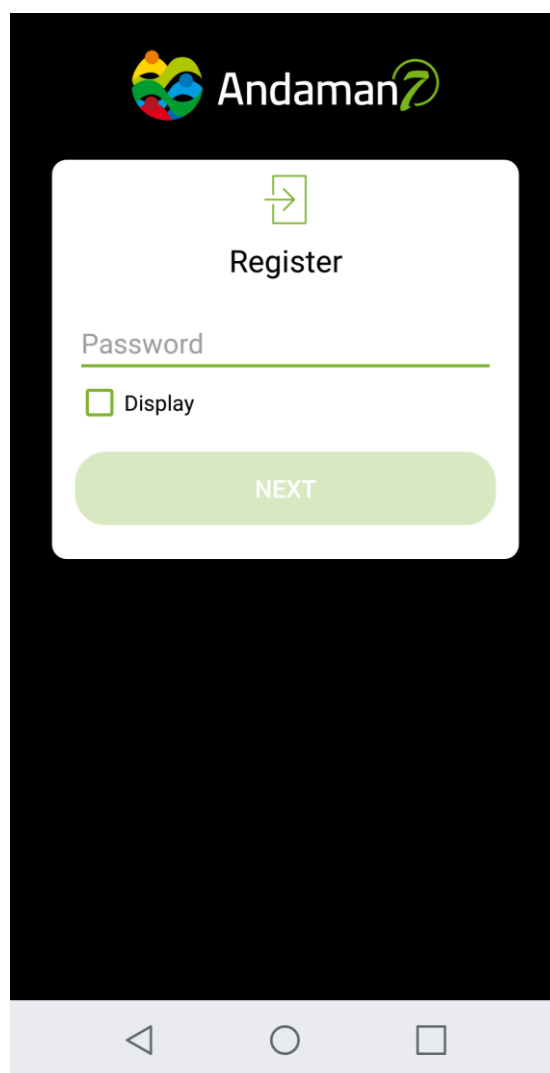
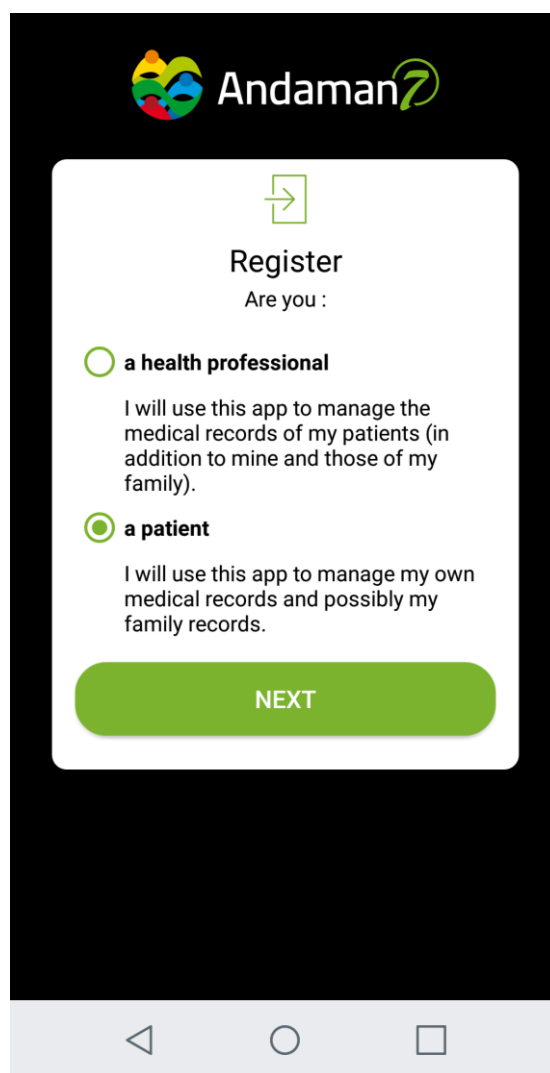




Figure 2 - password initialization screen

3. Select if you're a doctor, or a patient.

NB : This option will only change a few details of the display but the app and its features are the same for every user. If you are a doctor, you can of course register as a doctor but fill in your own PHR like a patient.



 **Andaman7**



Register

Are you :

☐ **a health professional**

I will use this app to manage the medical records of my patients (in addition to mine and those of my family).

☒ **a patient**

I will use this app to manage my own medical records and possibly my family records.

NEXT

Figure 3 - screen for selection of citizen type during registration

4. Fill in your personal information. First and last names are mandatory fields. Read the privacy policy and approve it by ticking the checkbox in order to be able to continue.

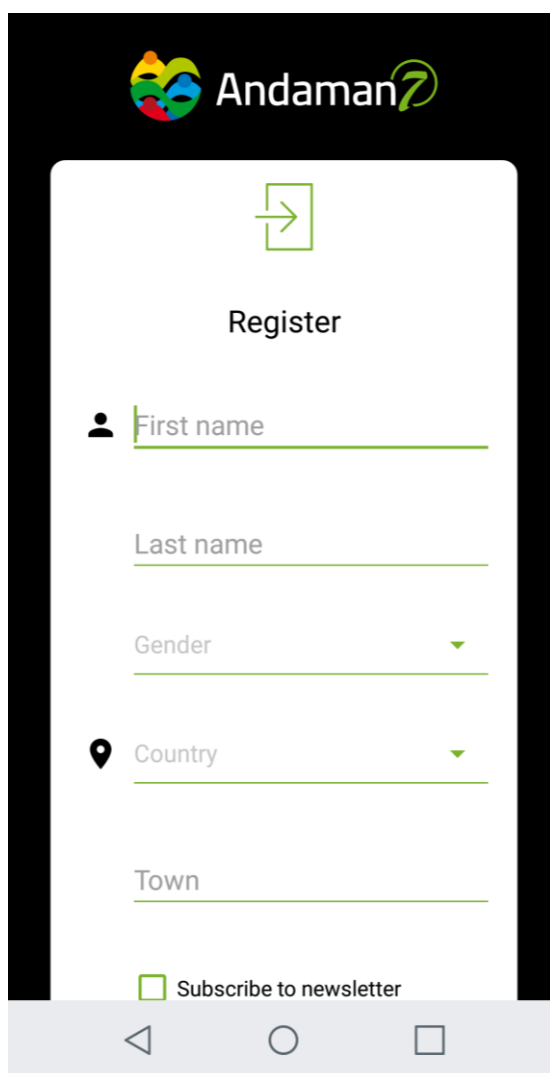


Figure 4 - personal information registration screen

5. The registration is almost complete. For this demonstration version, you're email is automatically validated, you just need to press the next button.

You're now connected to the application. Here is the first screen of the application. This screen lists all the records of your account. The only record in the list for now is your personal EHR, that was automatically created for you when you registered to the app.

NB : You can create new records for other people such as your patients or your children, for example, by clicking on the add button in the bottom right of the screen. But this is out of the scope of interopEHRate.

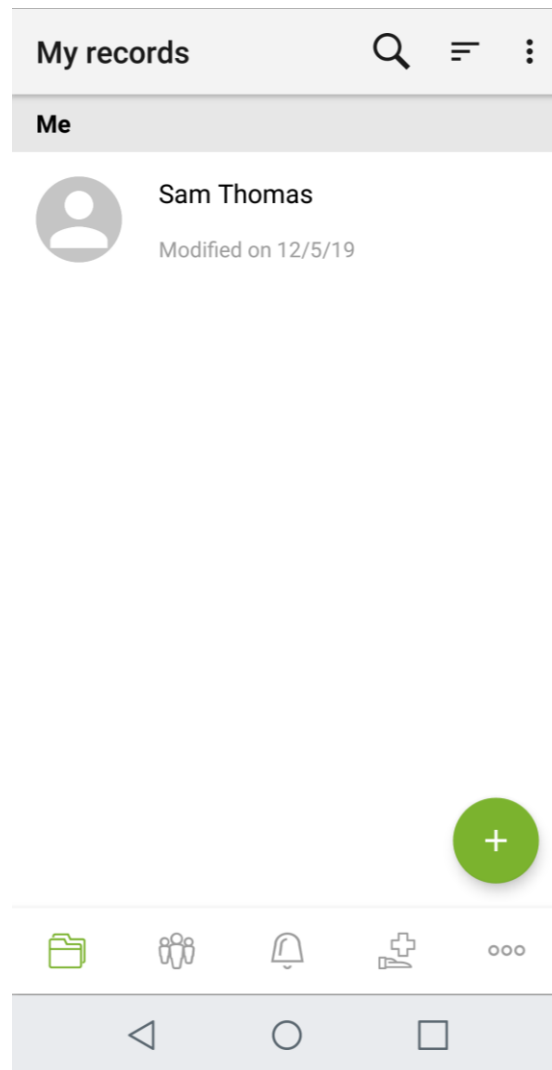


Figure 5 - list of records screen

6. Click on your name to access your PHR, you will arrive in the sections' screen. All the data types that you can record in the app are sorted by categories, in order to quickly find what you want. Start exploring the app, and maybe try to fill in a few informations already.

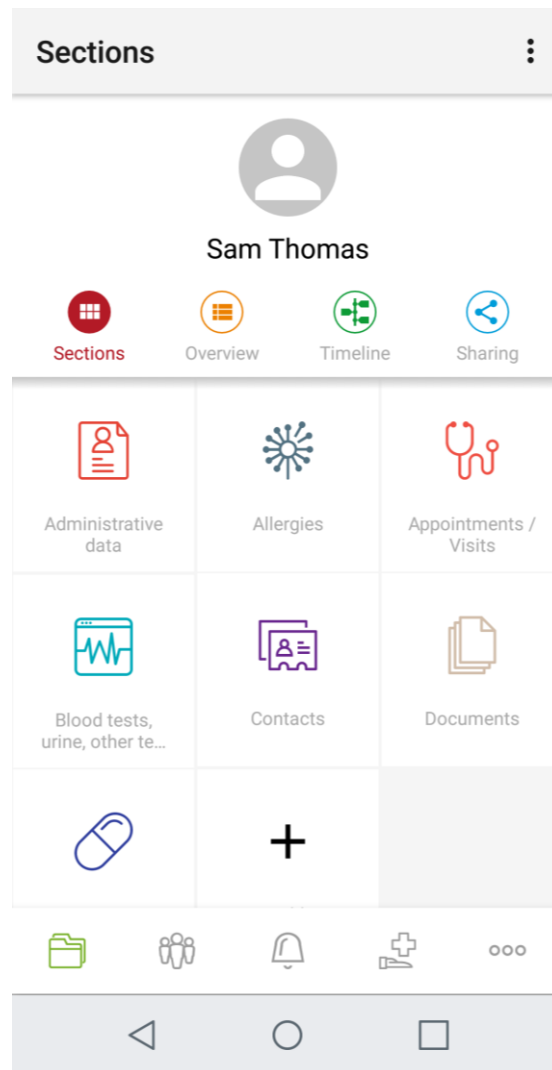


Figure 6 - sections screen

Import a sample of an EHR (using the remote to device protocol features)

The following steps require an Internet connection. Make sure you are connected to the Internet before continuing.

1. Go into the service screen (represented by a cross above a hand icon, in the bottom menu) and look into the self-service section after the service called “InteropEHRate Demo”. You can scroll down the screen or use the search feature at the top right of the screen (represented by the magnifying glass icon).

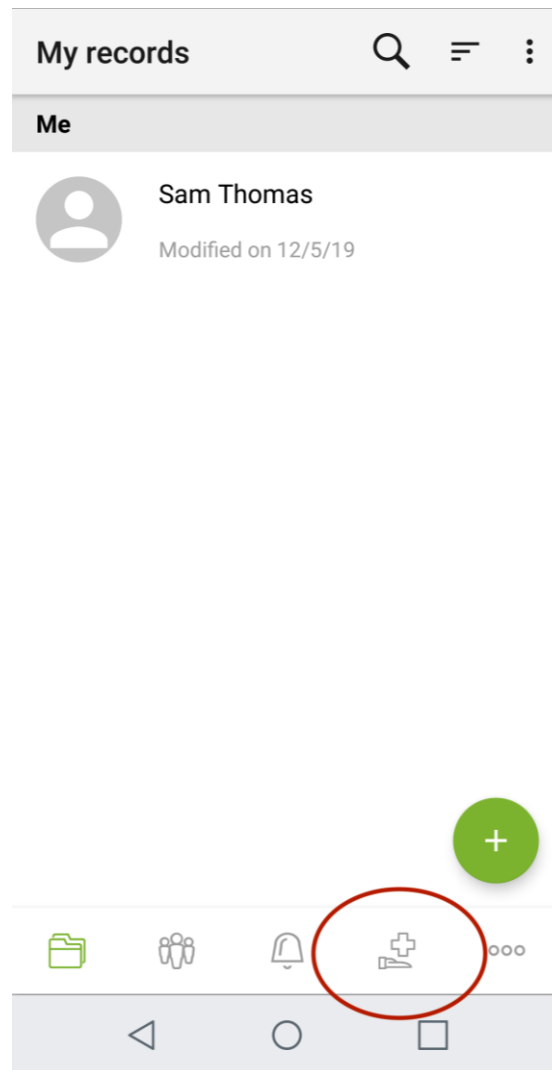


Figure 7 - "services" tab

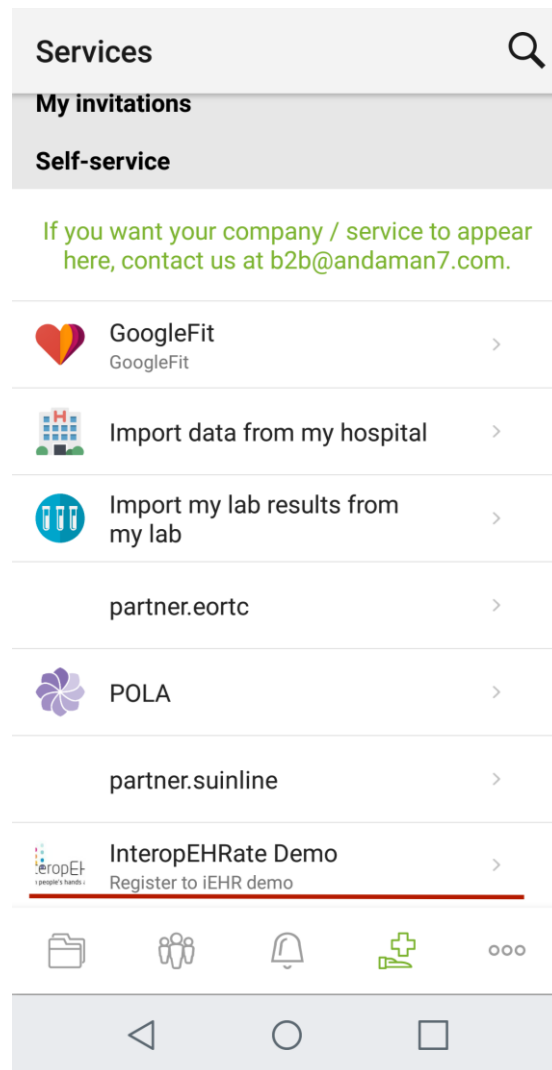


Figure 8 - "services" screen

2. Click on the "InteropEHRate Demo" service to start the process. At this stage of development, the demo can only access a fake demo record so no credentials are actually needed. Simply press the button "next" to continue. The S-EHR app will automatically download the EHR sample into the application database.

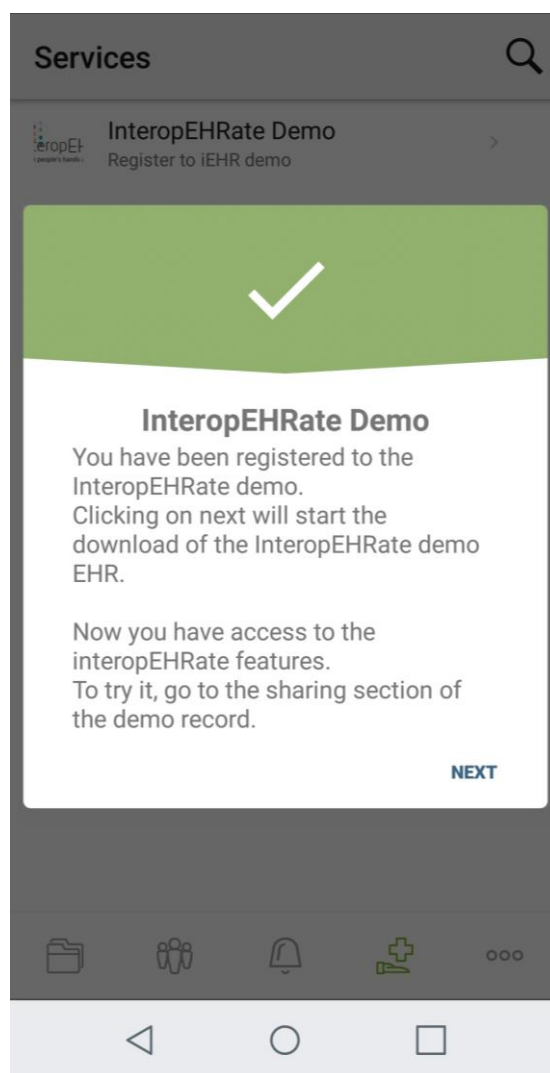


Figure 9 - confirmation of registration to "interopEHRate demo"

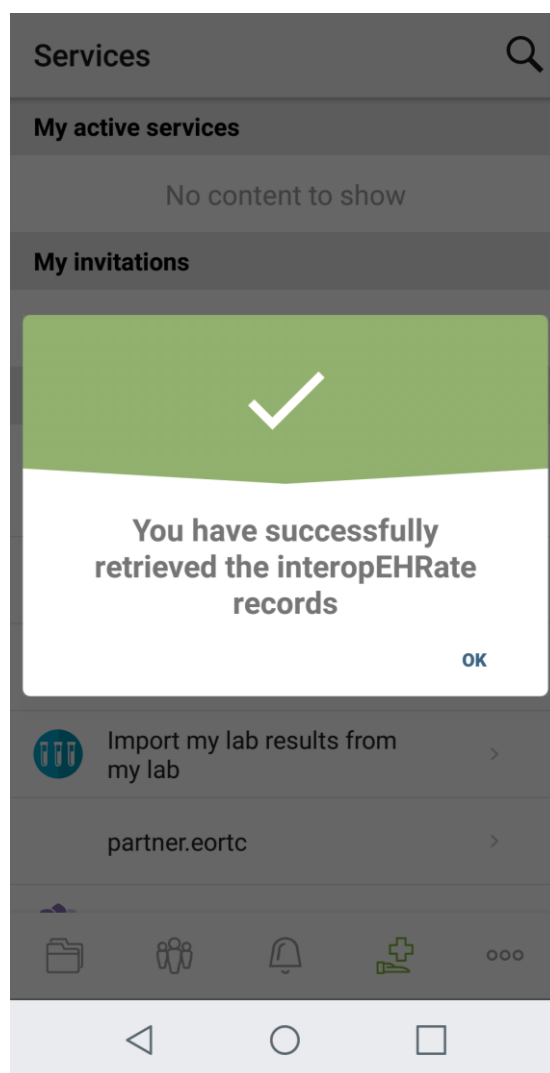


Figure 10 - confirmation of the demo record successful download

Now that the “InteropEHRate Demo” service is activated, a new record to the name of the demo patient called “Mario Rossi” has been added to your list of records. To access the list of records, click the folder icon in the left of the bottom menu.

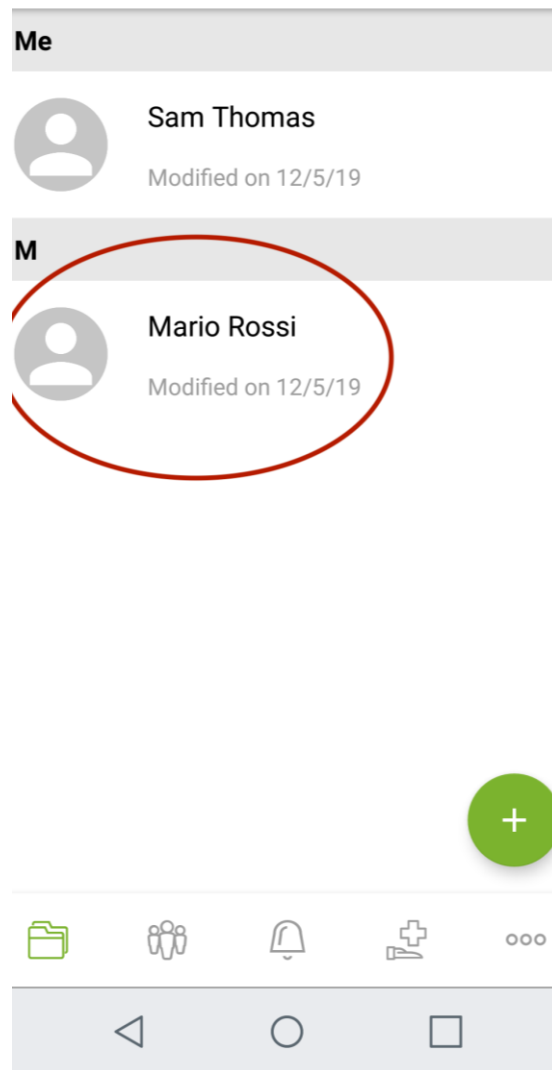


Figure 11 - interopEHRate demo record

This record of “Mario Rossi” contains data retrieved via the R2D protocol.



Figure 12 - allergies section of interopEHRate demo record

3. If you now go back to the services screen, you will see a green check mark next to the “InteropEHRate Demo” service, indicating that you are “registered” to the service (in this case, it means you have downloaded the sample EHR via the R2D protocol).

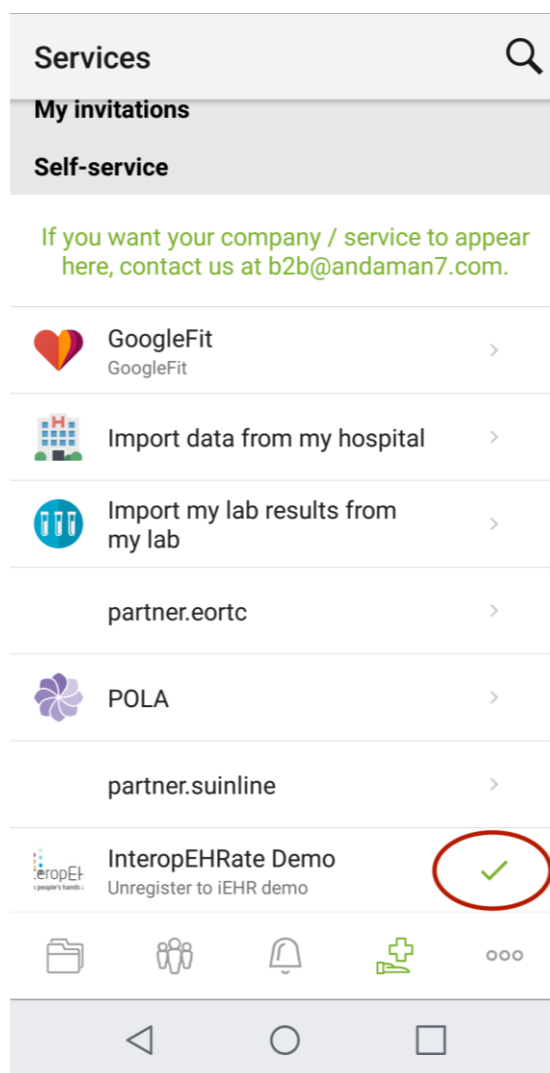


Figure 13 - interopEHRate demo service active

If you click again on the service, the process will be reverted, and the sample EHR will be removed from your application. This part (import of EHR sample) being currently intended as a demo, since it is not the personal EHR of the user that is actually downloaded, the service can be activated/deactivated as much as you want, without limitation.

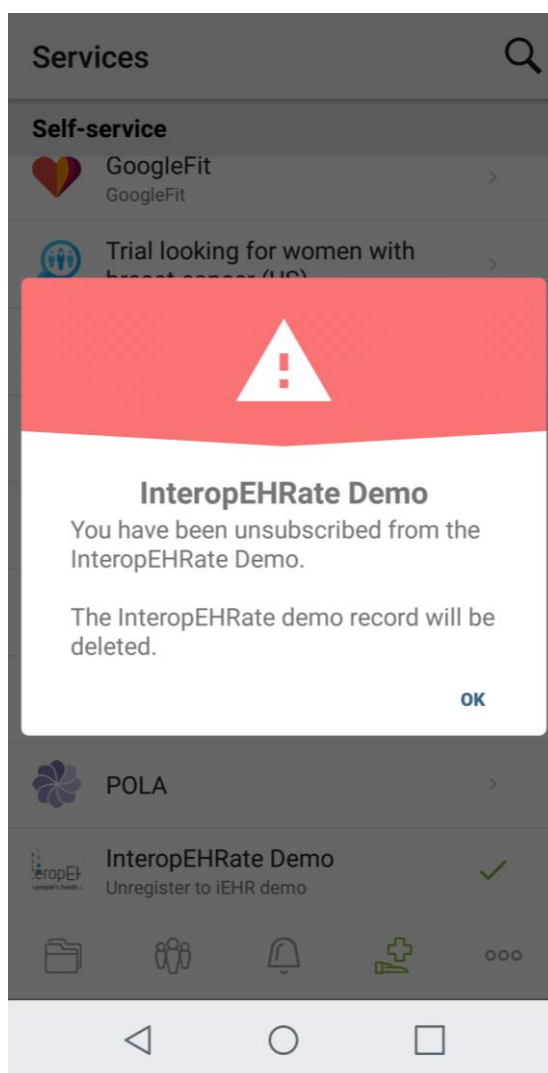


Figure 14 - interopEHRate demo unsubscription

Share data from EHR sample to the HCP app (using the device to device protocol features)

To be able to test the local sharing of data via the device to device protocol related features, you need to be registered to the “InteropEHRate Demo” service (cf instructions in previous point). At this stage of the project, the local sharing feature is only available for the data stored in the demo record “Mario Rossi”.

You will also need to have a running HCP application. Refer to the D5.13 deliverable [\[3\]](#) for information on how to install it.

1. Go into the demo record “Mario Rossi”. In the right of the top menu, click on the “Sharing” icon.

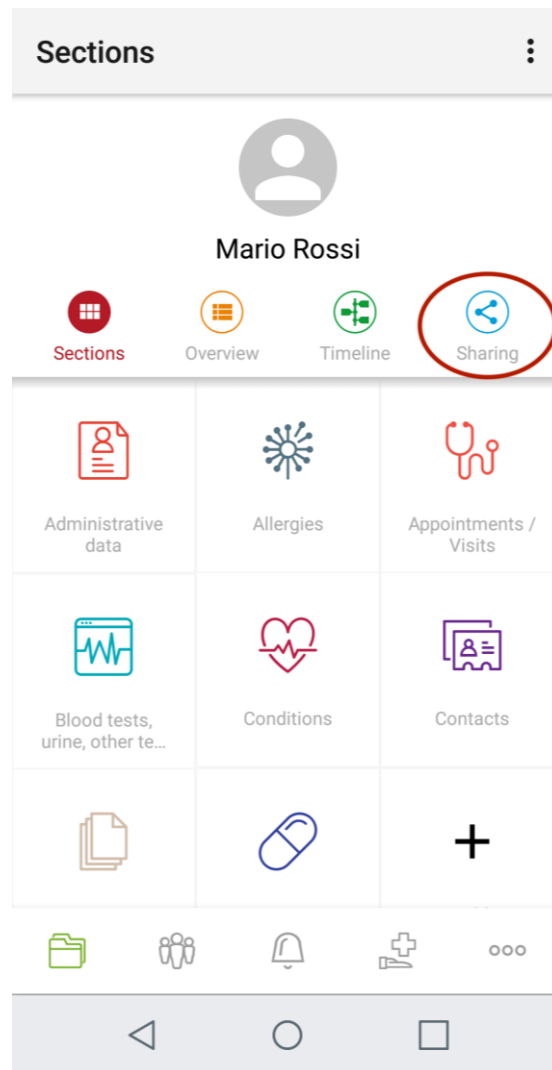


Figure 15 - sharing tab location

In this screen, you can see the information about the bluetooth connexion status as well as the information about the sharing status.

2. To start the sharing workflow, press the button “Start local sharing”. If your bluetooth is not enabled, the application will ask you to turn it on (click on “Allow”).

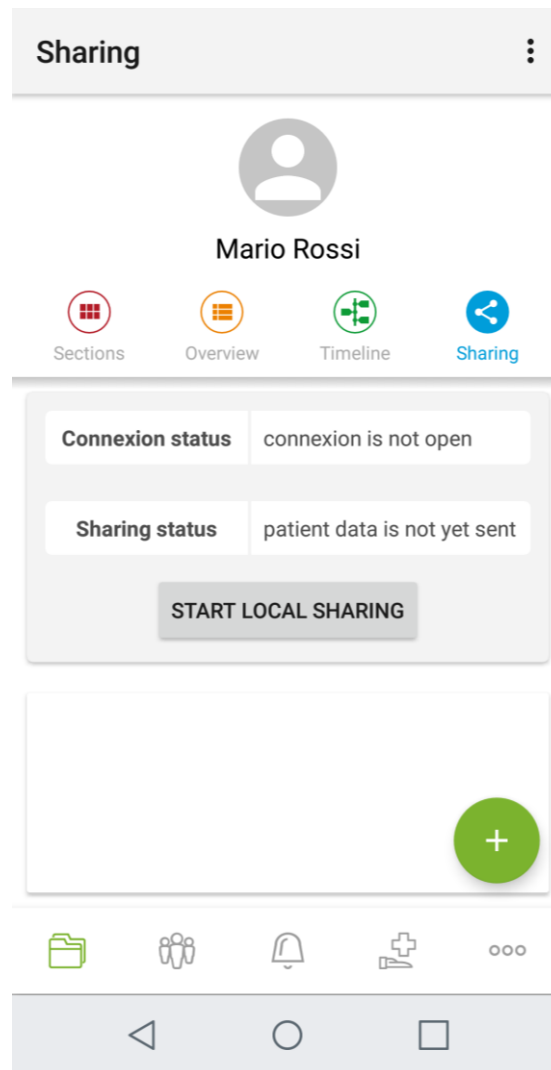


Figure 16 - D2D local sharing screen

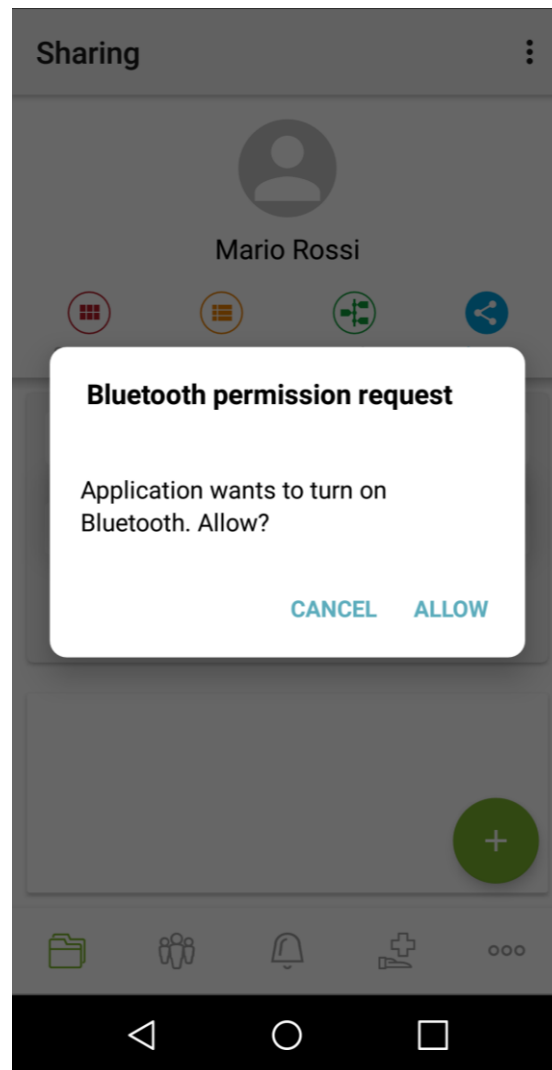


Figure 17 - bluetooth permission request

3. You should now be on the QR code scanning screen. If it's the first time you open it, the application will ask your permission to access the device camera. This screen is used to start the connexion with the HCP application. To start the connexion, scan the QR code provided by the HCP application. The loading phase will end when the HCP application accepts the connexion.

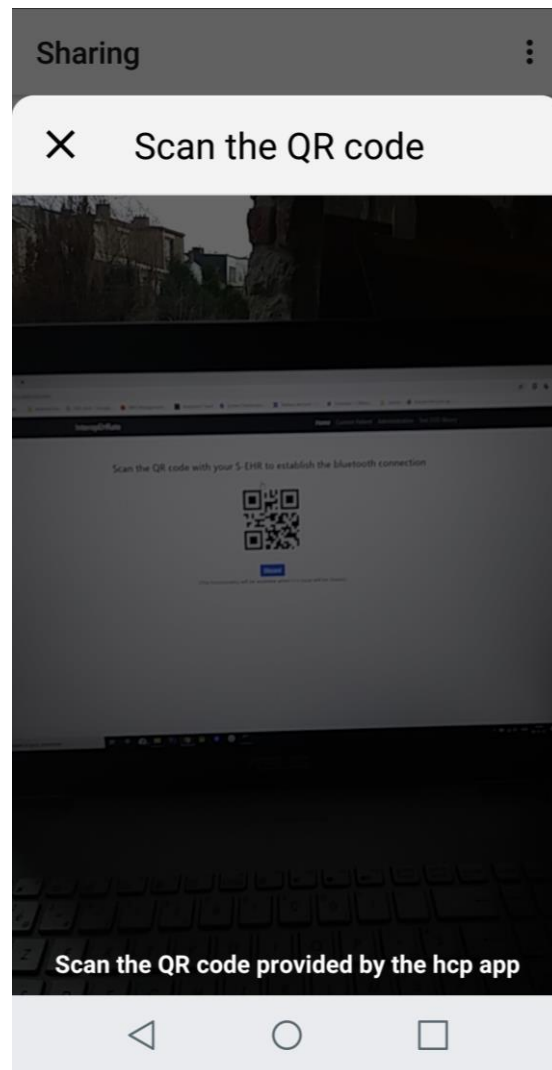


Figure 18 - D2D local sharing scanner

4. Once the connexion is accepted by the 2 parts (the citizen and the HCP), each one will see the personal information about the other one. On the mobile side, you will see the name of the HCP, his specialization and the hospital address. Double check that this information corresponds to the HCP in front of you and if so, click on "Continue".

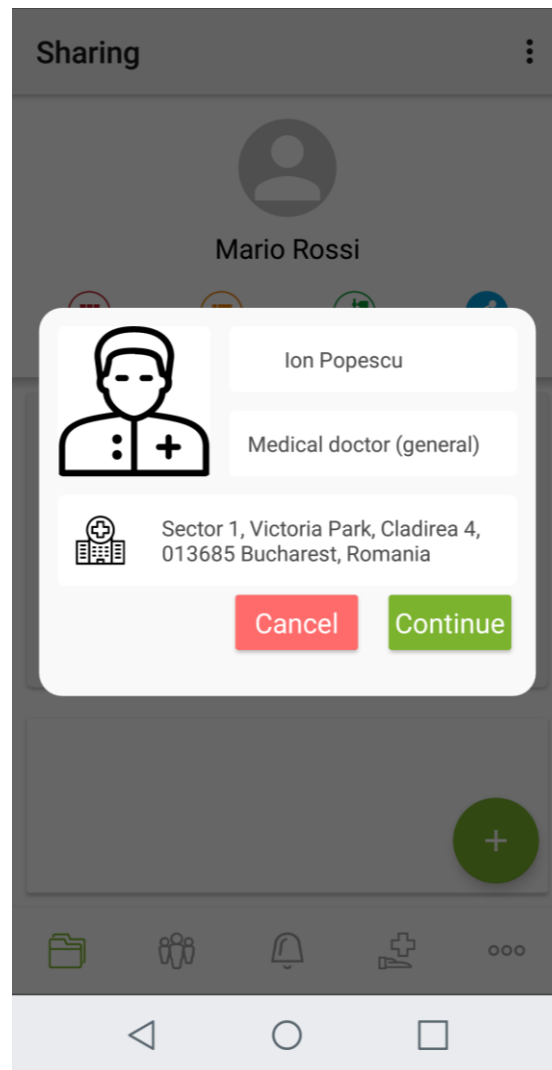


Figure 19 - D2D HCP information display

5. Read the consent.

"I have read and understood InteropEHRate's Privacy Policy.

I hereby give permission to the recipient health care provider to process (view, store, edit etc.) the personal data stored in my Personal Health Record on this application for the purpose of medical diagnosis and/or treatment. I understand that my consent will remain valid for these purposes unless I affirmatively withdraw it. I have the right to withdraw this consent at any time."

If you accept the consent, click "I agree" to continue.

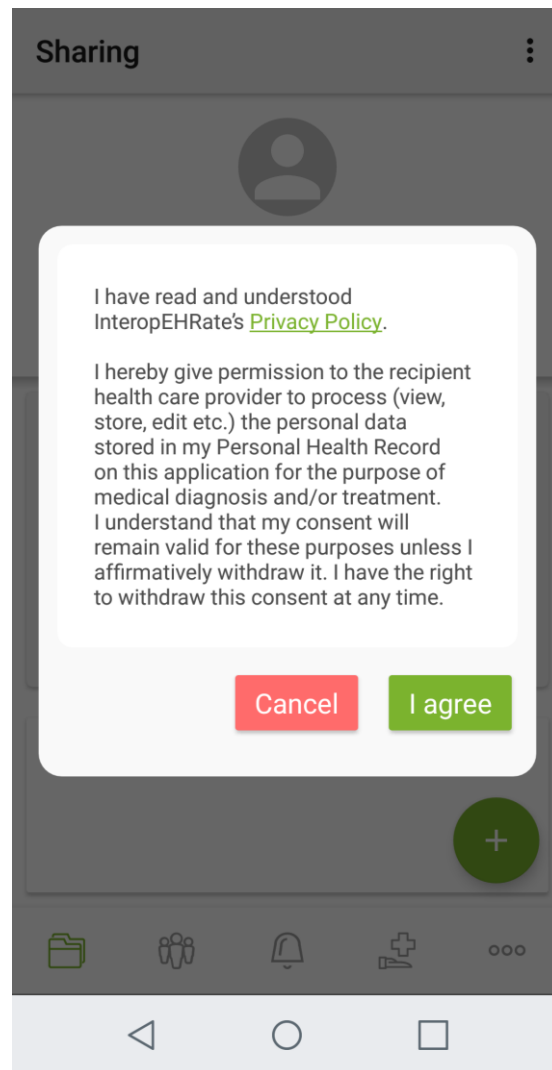


Figure 20 - D2D informed consent

Once you gave your consent, the data of the InteropEHRate demo record of Mario Rossi will be shared to the HCP application. You can see that the connexion status has changed and is now open.

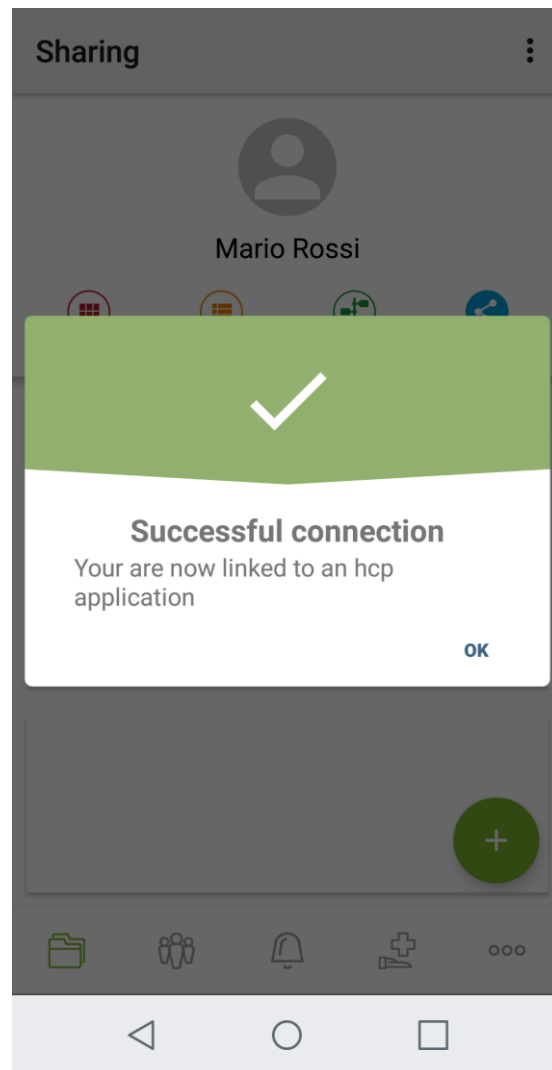


Figure 21 - D2D confirmation of bluetooth connection success

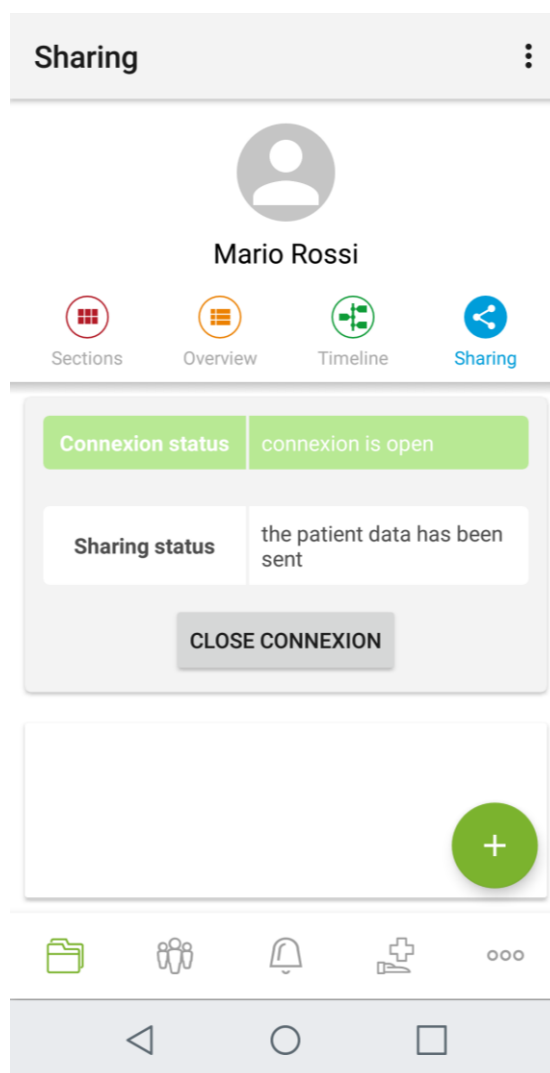


Figure 22 - D2D local sharing status

3.3.Other related documentation

The demonstration of the S-EHR app can only be entirely done with a running HCP application. You will find in the references section a link to the deliverable D5.13 [\[3\]](#), explaining how to install and use the HCP application.

REFERENCES

- [1] **[D6.1]** InteropEHRate Consortium, Software requirements and architecture specification of a S-EHR - V1, 2019. www.interopehrate.eu/resources
- [2] **[D6.4]** InteropEHRate Consortium, Design of a S-EHR mobile app - V1, 2019. www.interopehrate.eu/resources
- [3] **[D5.13]** InteropEHRate Consortium, HCP Web app - V1, 2019. www.interopehrate.eu/resources