

APPENDIX

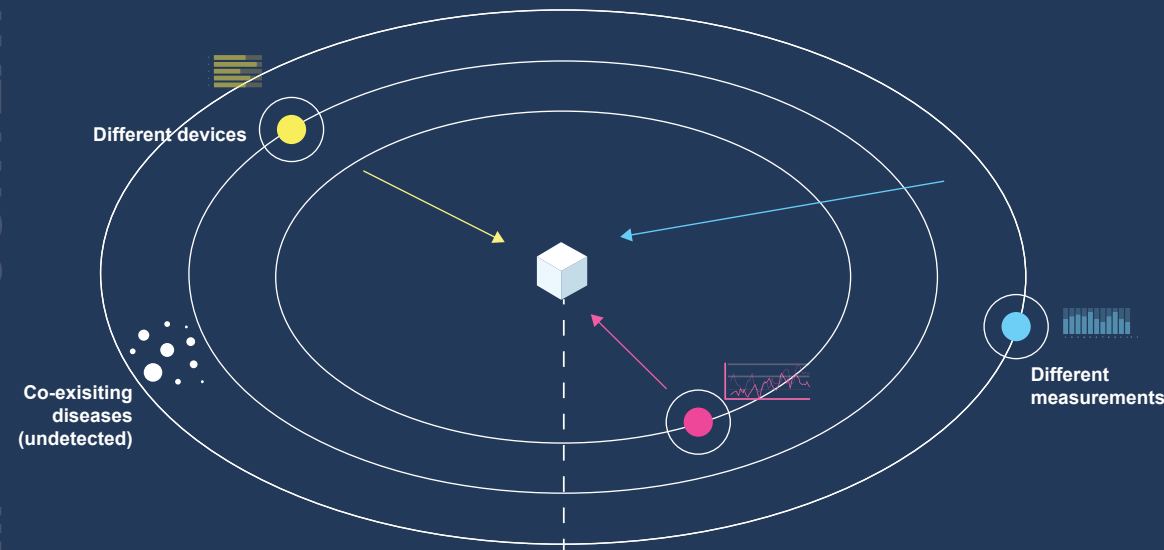
APPENDIX A

FIRST DESCRIPTION INFOGRAPHIC

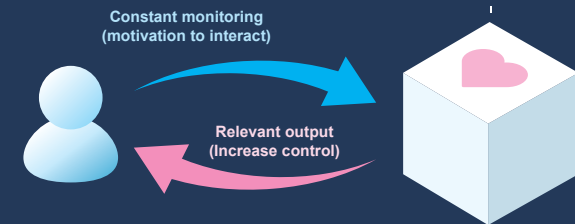
Behavioral cardiology + eHealth

An user centered approach for cardiovascular disease monitoring and treatment

CONTEXT



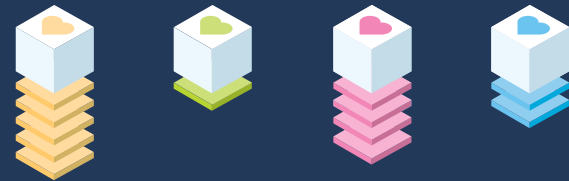
PRODUCT / SYSTEM



Self-management
Active involvement of the patient

Centralized information device / system

- Node for different devices
- Normalized and correlated data (consistency)
- Identify patterns

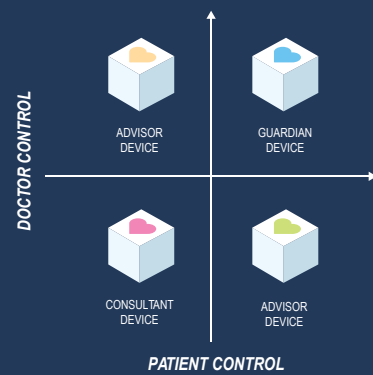


Tailored information output

(Based on patient typology)

- Reduce emotional burden & stress.
- Customization
- Increase treatment adherence.
- Spot situational risk factors (caregivers).

INTERACTION



Patient type based involvement & control

- Map specific needs / goals / emotions.
- Determine changes by mapping types of interaction.



Highlight features depending on patient typology

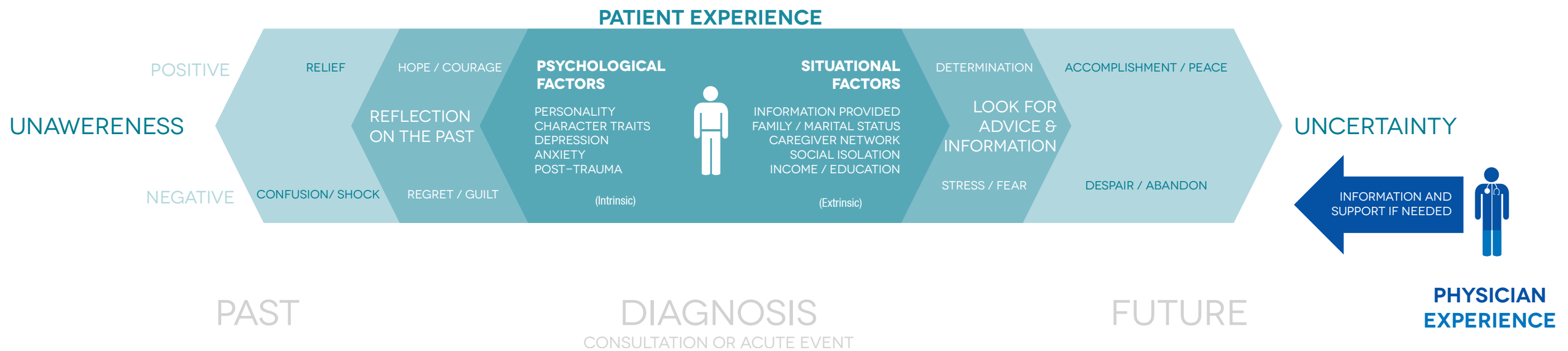
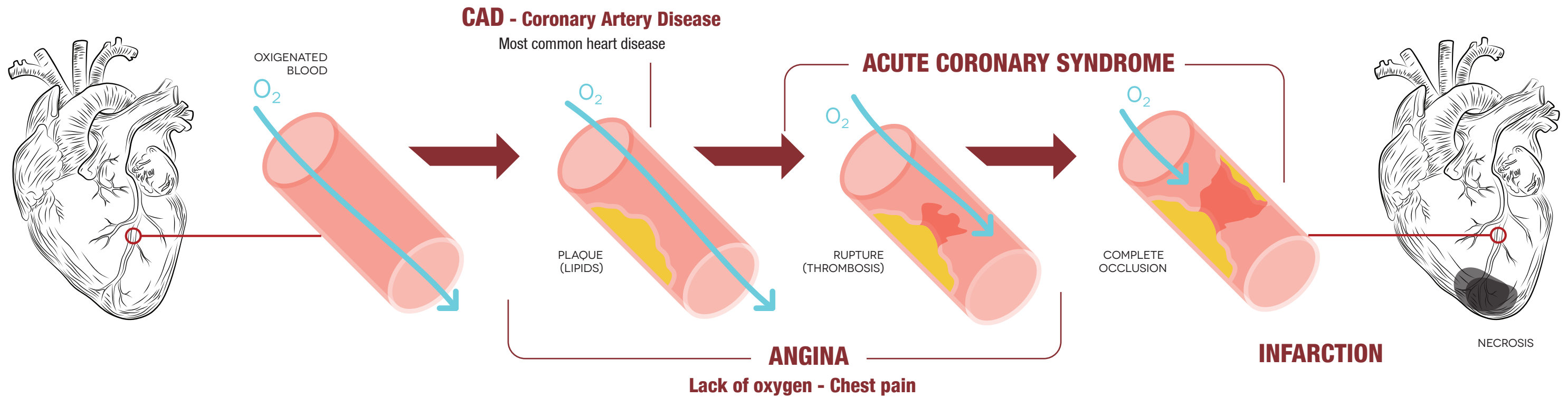
- Adequate emotional feedback
- Adequate information
- Promote active involvement (Input)

APPENDIX B

USER JOURNEY & CARE OVERVIEW

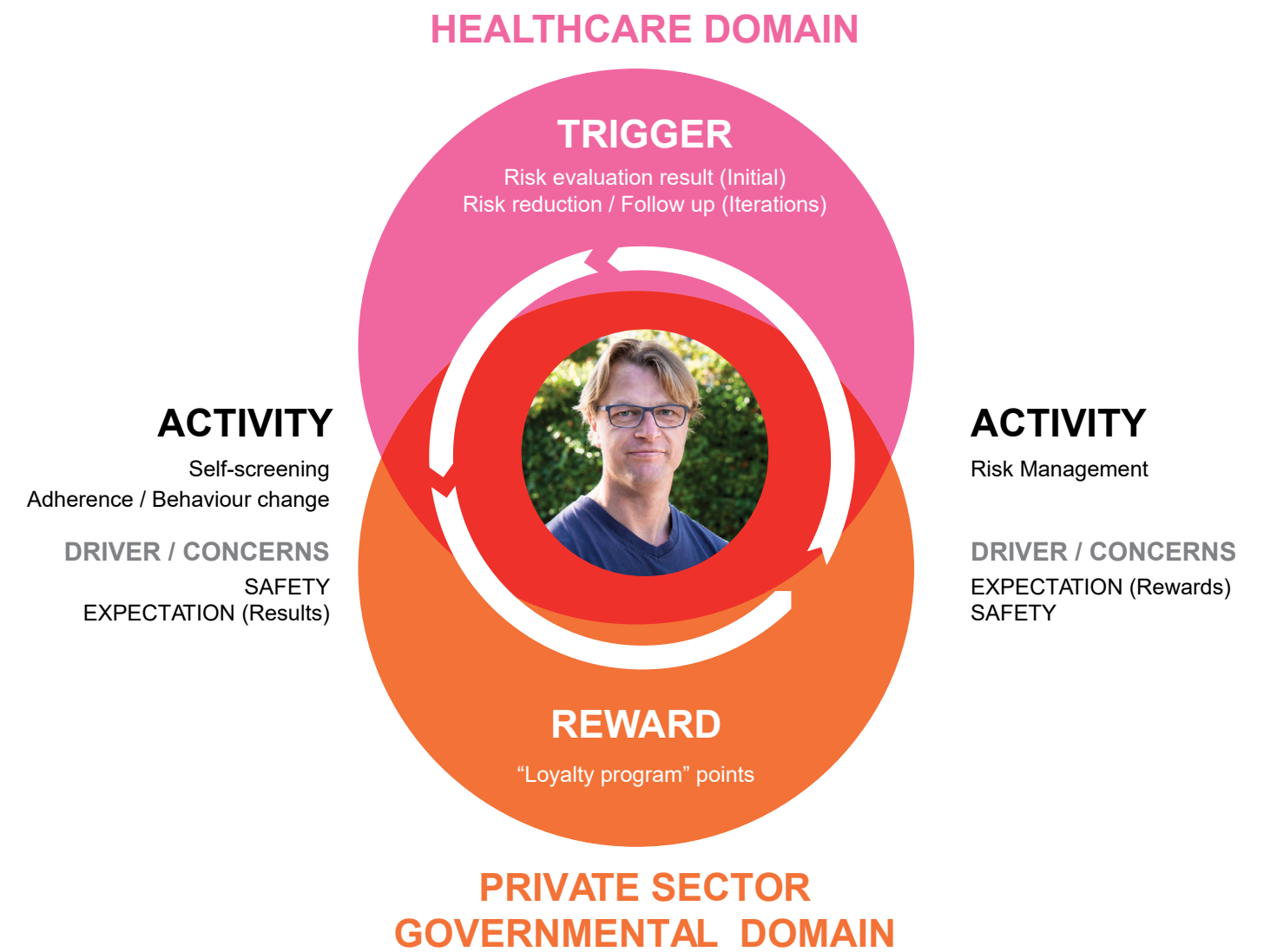
APPENDIX C

ATHEROSCLEROSIS INFOGRAPHIC



APPENDIX D

MOTIVATION CYCLE



(INITIAL)

TRIGGER

EXTERNAL FACTORS

Doctor recommendation
Family / friend pressure
CVD event from acquaintance
External trigger (advertising / news / etc).



DRIVER / CONCERNS

INTERNAL FACTORS

Fear: Death, decay, finding limits.
Need to be prepared.
Social perception / pressure.
Fear of "missing out" (future).

NUDGE / MOTIVATION

NO SYMPTOMS
NO EXTERNAL PRESSURE

REWARD

BECOMING HEALTHIER.
FUTURE BASED
(UNCLEAR)

NUDGE / MOTIVATION

Appointment follow-up
Family / friend pressure

HARD TO INITIATE
FURTHER CYCLES

ACTIVITY

Visit GP Office.
Perform screening.

NEW ACTIVITY WITH
THE SAME TRIGGER

ACTIVITY

SELF-SCREENING
IN ORDER TO >
LOWER RISK FACTORS
(BEHAVIOURAL CHANGE)

REWARD

Knowledge:
Doing the "right thing".
Following rules.
Having control / being prepared.

DRIVER / CONCERNS

NO SYMPTOMS
Being prepared.
Fear.

INITIAL TRIGGER FADES OUT

APPENDIX E

PERSONAS AND TYPOLOGY TOOL

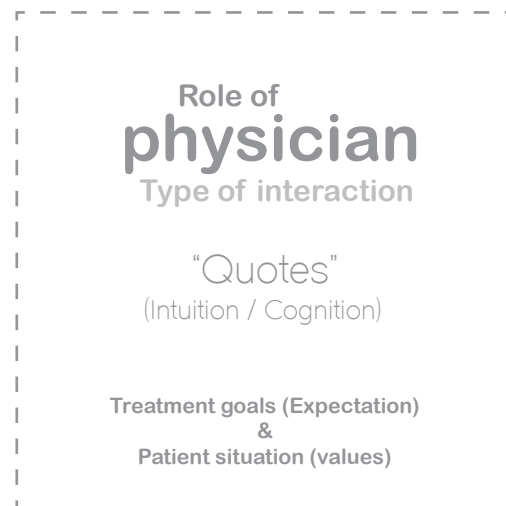
PATIENT TYPOLOGY BASED ON INTERACTION

A tool to determine possible features on self-monitoring devices for individuals in the healthcare system.

Mapping:

- Patient journey (stages)
- Emotions involved
- Information (abstraction and amount)
- Motivation / nudging (Triggers and rewards)

How to read the sections:



Based on the research of Roter & Hall (1992;1996)

EXTERNAL LOCUS OF CONTROL

PRESENT DRIVEN
(SYMPTOMS)
EMOTIONAL TENDENCY

FUTURE DRIVEN
(TREATMENT)
RATIONAL TENDENCY

INTERNAL LOCUS OF CONTROL

I want a
guardian
Paternalism

EMOTIONAL RESPONSE:
"This is too **complex**"

COGNITIVE RESPONSE
"A professional will **know** what to do"

Physician determines action

I want an
oracle
Consumerism

EMOTIONAL RESPONSE:
"Someone has it **worse/better** than me"

COGNITIVE RESPONSE:
"I get **knowledge** from experiences"

Goals based on non-technical references

I want a
trainer
Confrontation

EMOTIONAL RESPONSE:
"I can **manage** the situation"

COGNITIVE RESPONSE
"There's low/high incidence **probability**"

Goals based on technical information

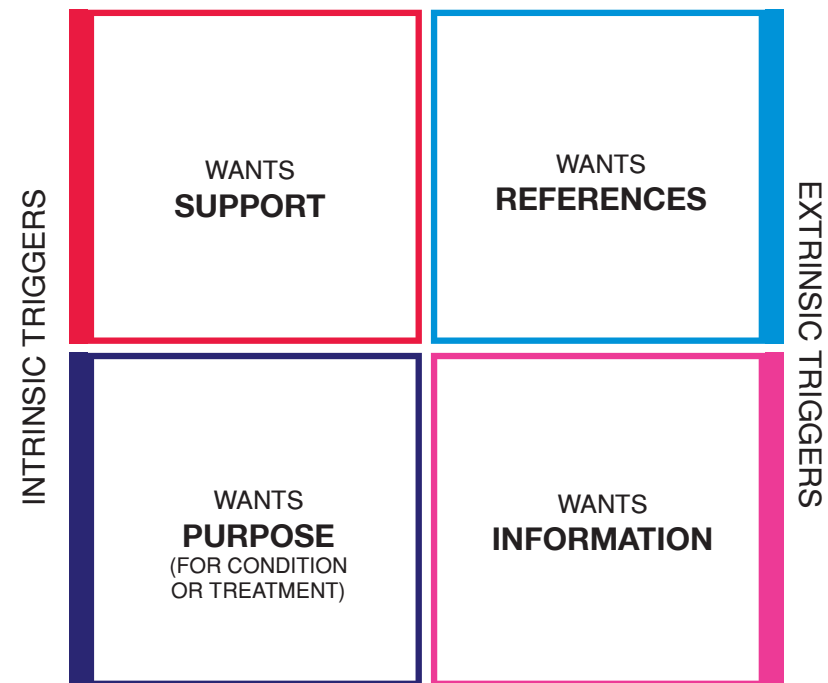
I want an
advisor
Mutuality

EMOTIONAL RESPONSE:
"I **trust** my health network"

COGNITIVE RESPONSE
"Information makes me **prepared**"

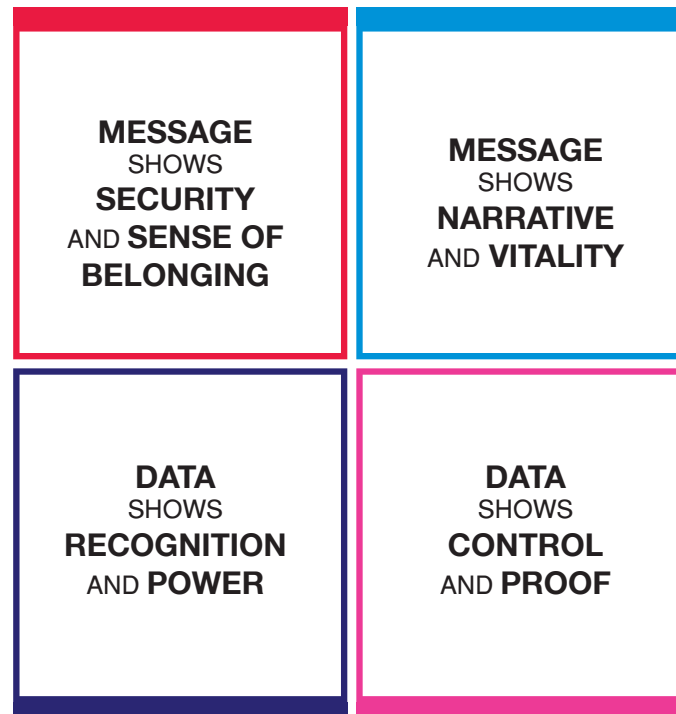
Goals are negotiated

MAIN TRIGGER FOR CARE APPROACH



TONE OF MESSAGE

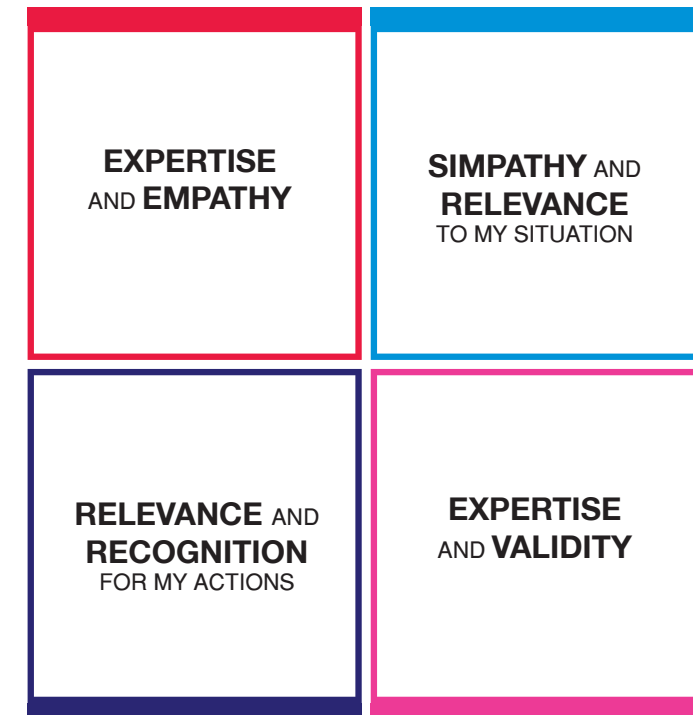
INFORMAL APPROACH



FORMAL APPROACH

TYPE OF PROVIDER

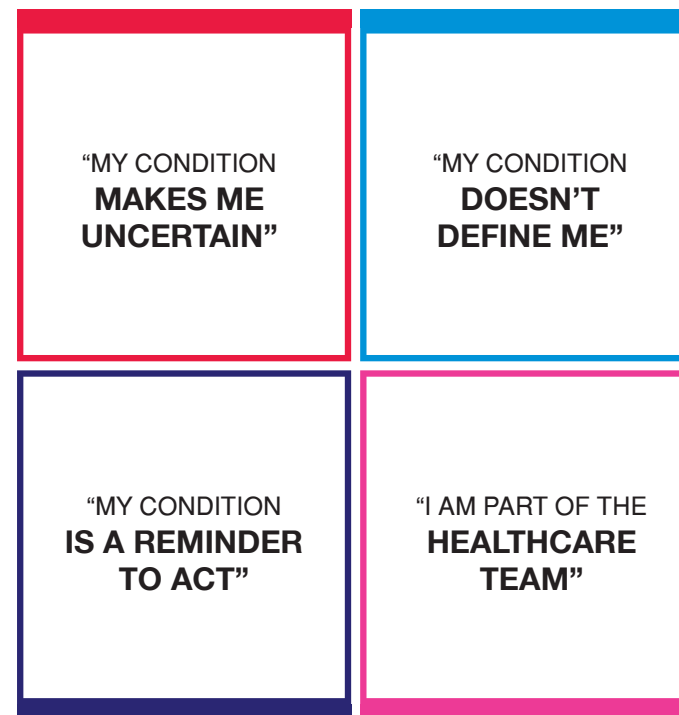
FRIENDLY



PROFESSIONAL

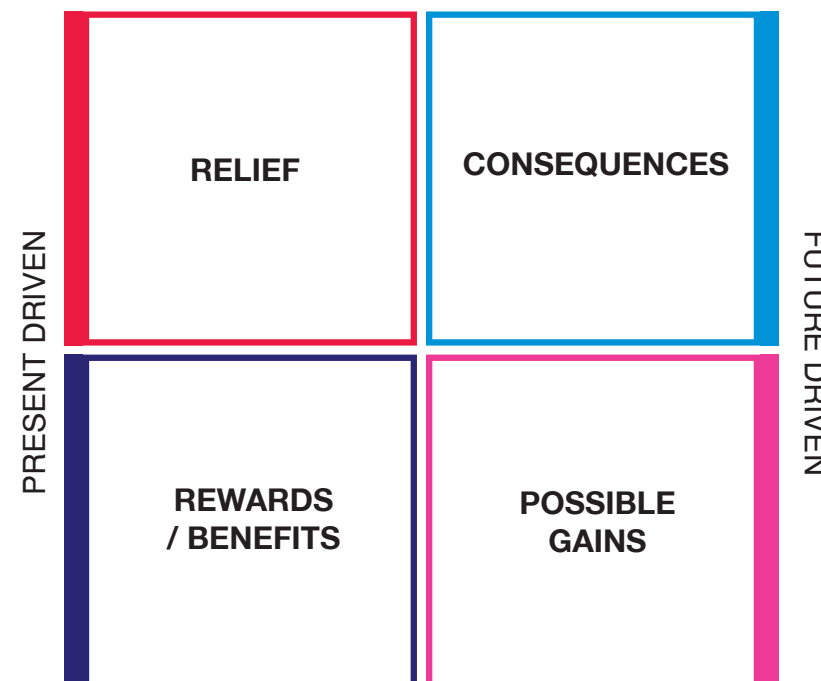
DESIRED SCENARIO

AVOID CONDITION



REINFORCE CONDITION

OUTCOME MOTIVATION



PRESENT DRIVEN

FUTURE DRIVEN

POSSIBLE PITFALLS



NO MEANINGFUL EFFECT

OVERCONFIDENCE

APPENDIX F

FIRST CONCEPTS AND ITERATION

Storyboard - Concept



After having a CVD risk evaluation the GP offers the system to the user and sets the profile (if agreed upon).

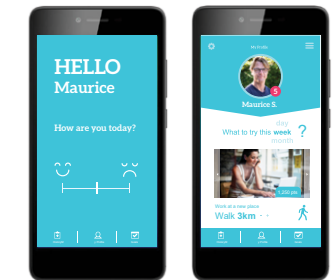
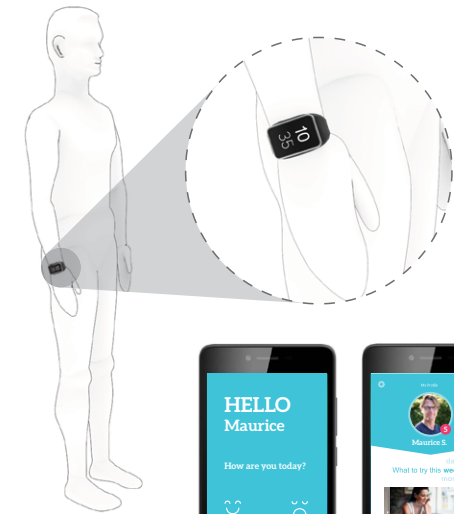


For the GP:
The platform provides information and guidance to communicate risk factors and possible treatments.
For the user:
The information is tailored for the risk factors that affect the patient.

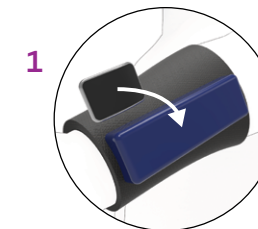


The user syncs his/her phone to the system using a QR code.

The tracking device works as a wearable that syncs location and heart rate.
The app is the main interface between the user and the system. It shows results of biomarkers and tracks the mood of the user to pair the type of feedback.

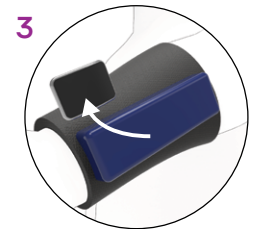


The wearable "pebble" stores and sends the data to the system. The user becomes the owner of this data and decides what to do with it.



1
Users will find screening devices at public locations (stores / banks / etc) where they will be able to screen themselves by attaching their tracking device.

2
More invasive screening such as cholesterol reading will be available within the health network.



3
If there is a reduction of blood pressure or cholesterol (part of the risk assessment) the user will earn points of the loyalty program (less insurance premium / monetary reward).



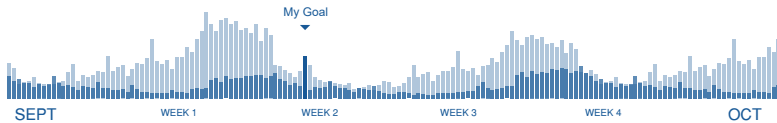
Communication tool

Co-planning treatment

Selecting activity at the GP office



Screening biomarkers over time



Using a communication app, people will be guided during the screening at the GP office. Within the app there will be exercises and treatment plans the user can select depending on his/her perspective.

By selecting and discussing actions the user will perceive more control over the future

Insights:

- Social pressure is a strong (unaware) motivator for some people.
- Elevated risk is not a disease therefore there are no symptoms
- At the moment CVD risk guidance depends on the physician.
- What is currently shared in the consultation depends on the communication skills of patients and doctors.





Personalized characters (User typology)

Story-driven system

Crossplatform motivation (game)

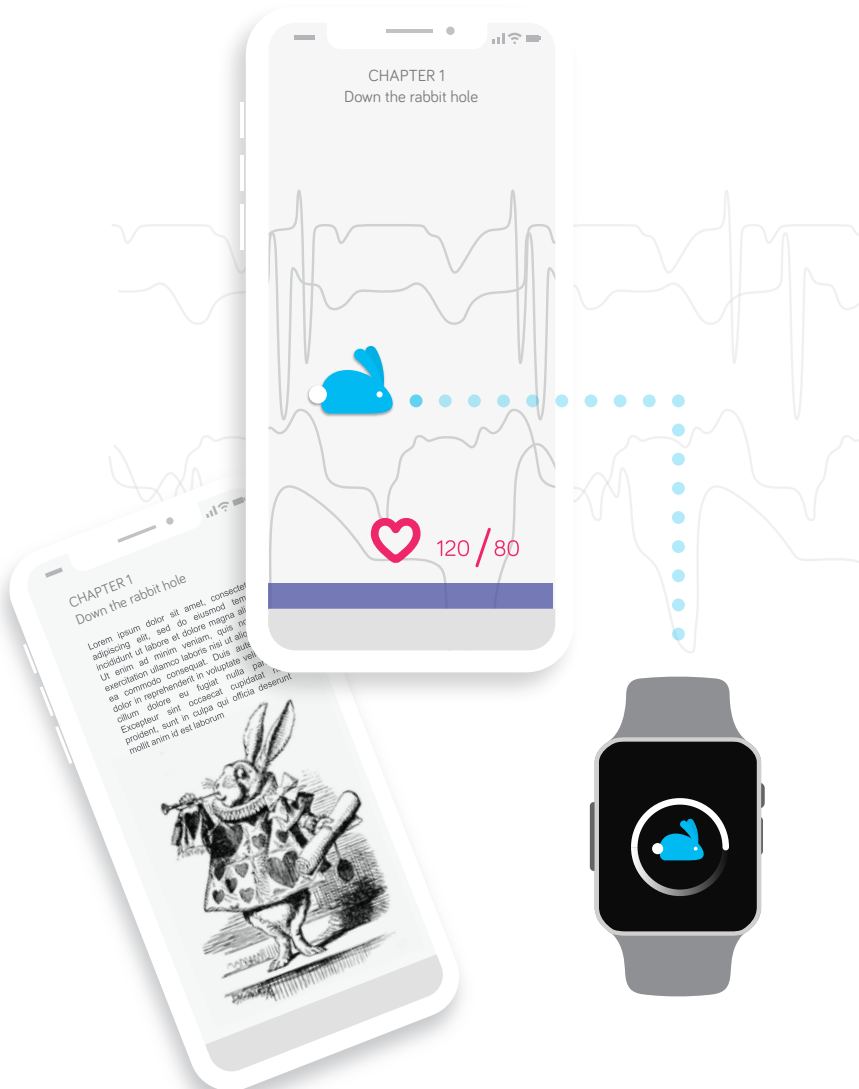
The concept uses a pay-to-win model but instead of making a money transaction the platform asks to manage and check risk factors. Through different actions the user will be able to explore characteristics of the game such as levels and hidden plots.

Although anybody could use the app, checking biomarkers and exercising users can get to higher levels more quickly and enhance the experience. Triggers in the app would be both intrinsic and extrinsic.

The story must convey interest through interaction and different plot directions.

Insights:

- Behavioral changes should be gradually implemented.
- People need different levels of information and control.
- Excitement fades over time (Hedonic adaptation).
- An app on a mobile phone is easy to avoid (perception).
- Risk factors change between individuals.



Risk factors analogy

Extension of (negative) trigger

An analogy of a (possible) heart disease as a black stain.
The user starts from an idea of “cleaning” rather than “building up”.

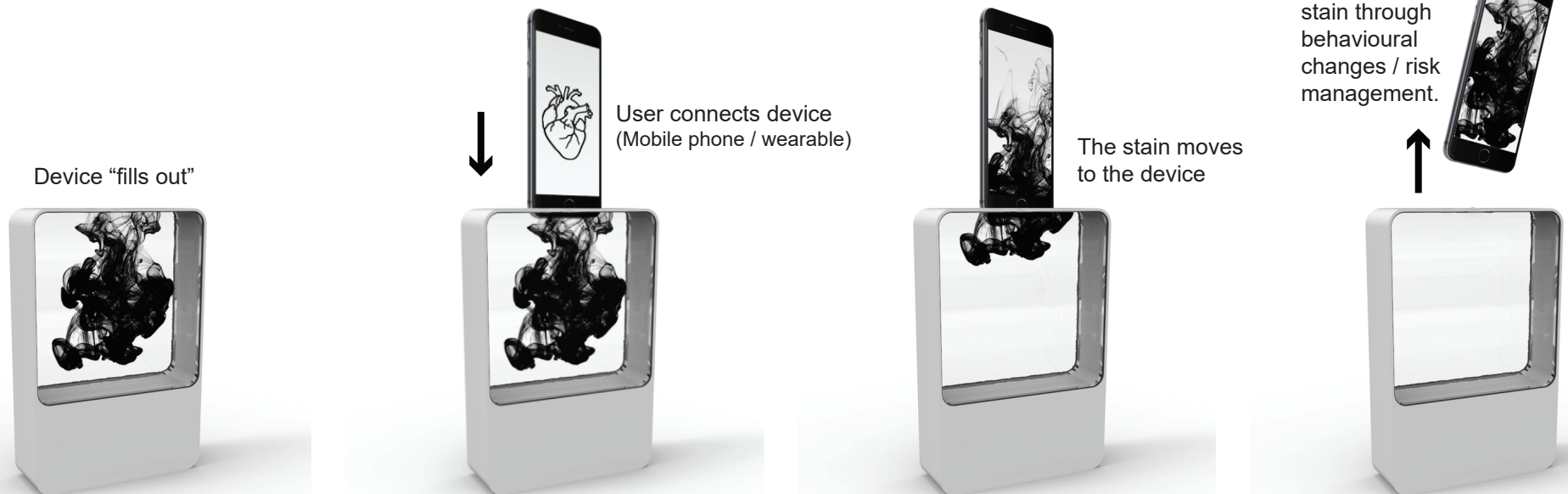
People are motivated to act when they are screened and are told that they are at risk, but over time and since there are no symptoms or sickness (reminders) the motivation fades out.

This concept aims to an abstraction and visualization of the patient’s heart while keeping control over it. There would be an screening app, this element focuses on the initial interaction.

Insights:

- People enjoy “negative” emotions as long as they are secure.
- Perception of health-related terms / graphics can be stressful.
- A constant reminder becomes predictable / boring.
- External devices are perceived more “professional” (over apps).
- Elevated risk has no symptoms (no reminder).

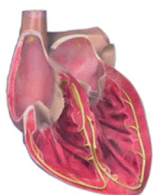
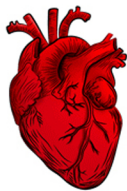
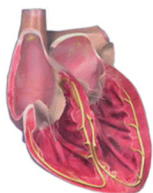
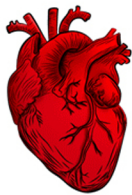
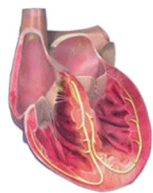
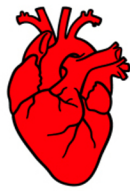
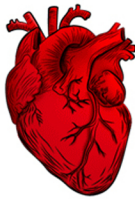
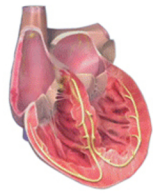
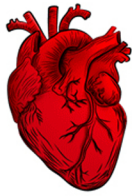
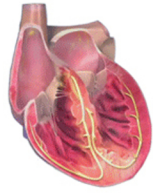
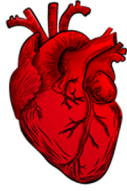
* Levels of abstraction and user interface needs o be explored.



At the end the user docks the device again and checks the progress...

APPENDIX G

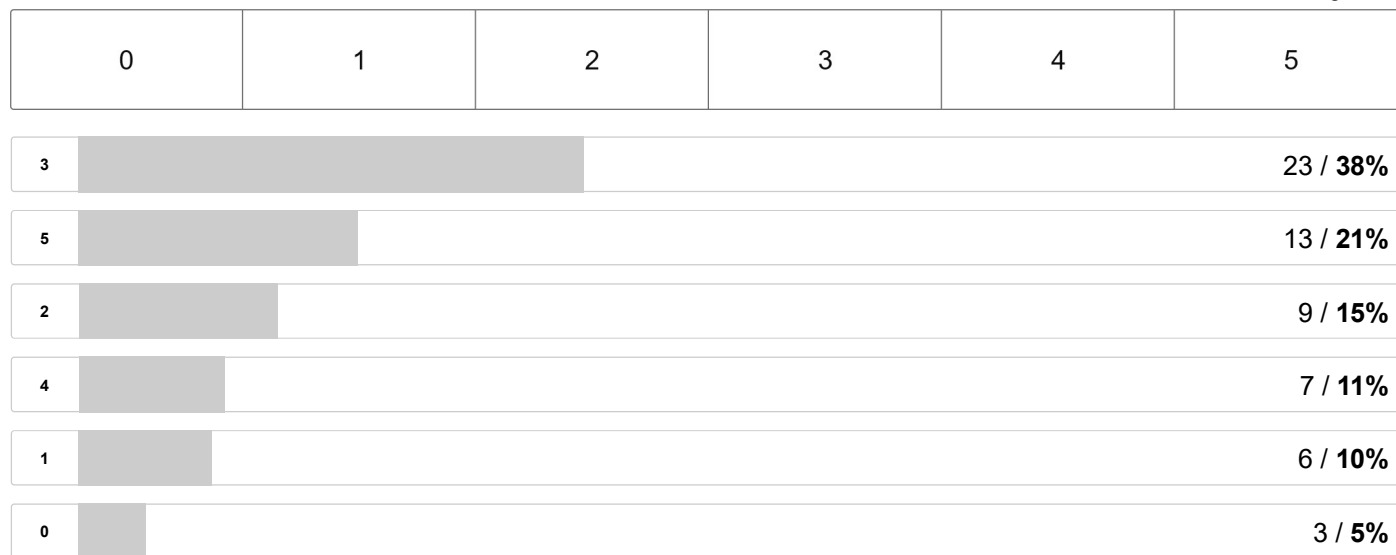
FIRST QUESTIONNAIRE RESULTS



An icon to show progress in your health

61 out of 61 people answered this question

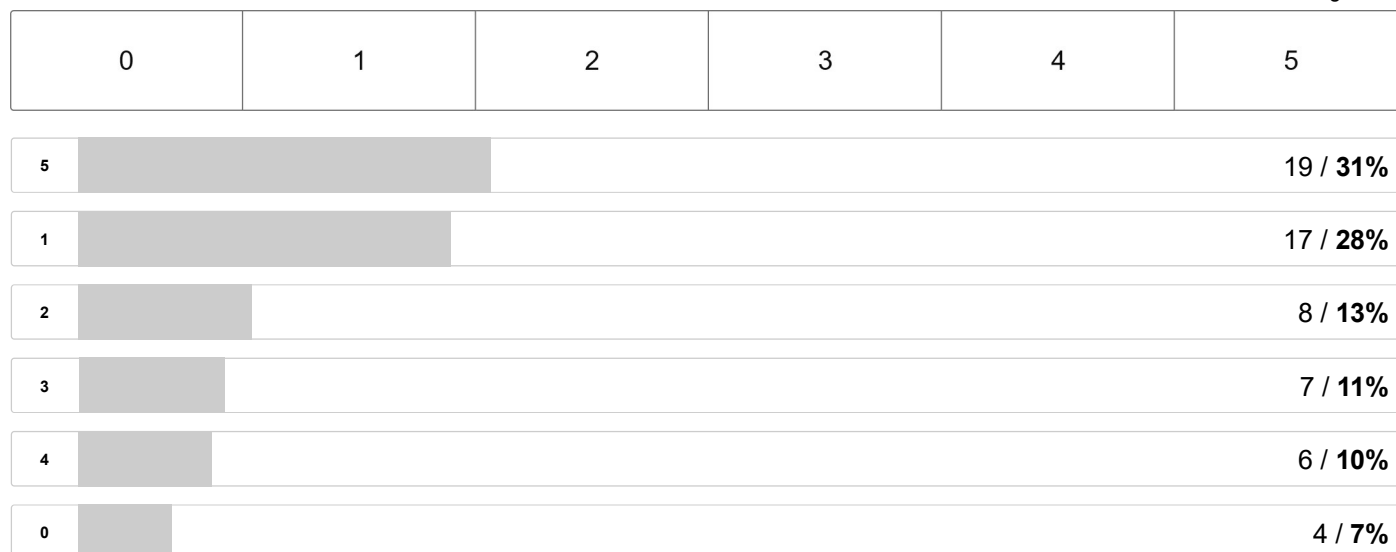
Average: 3.05



An icon to show constant (heart) monitoring

61 out of 61 people answered this question

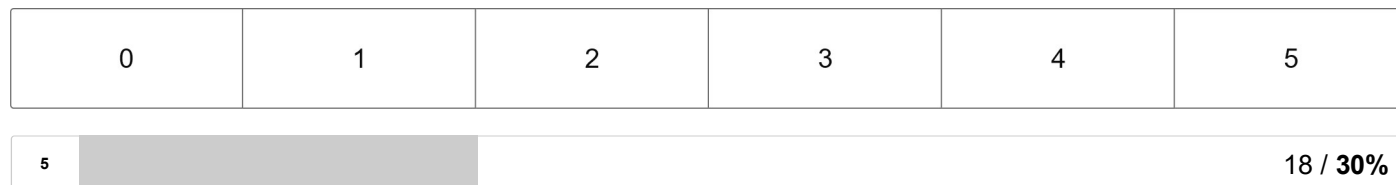
Average: 2.84



An icon to motivate you to take action? (do more exercise / eat healthier)

61 out of 61 people answered this question

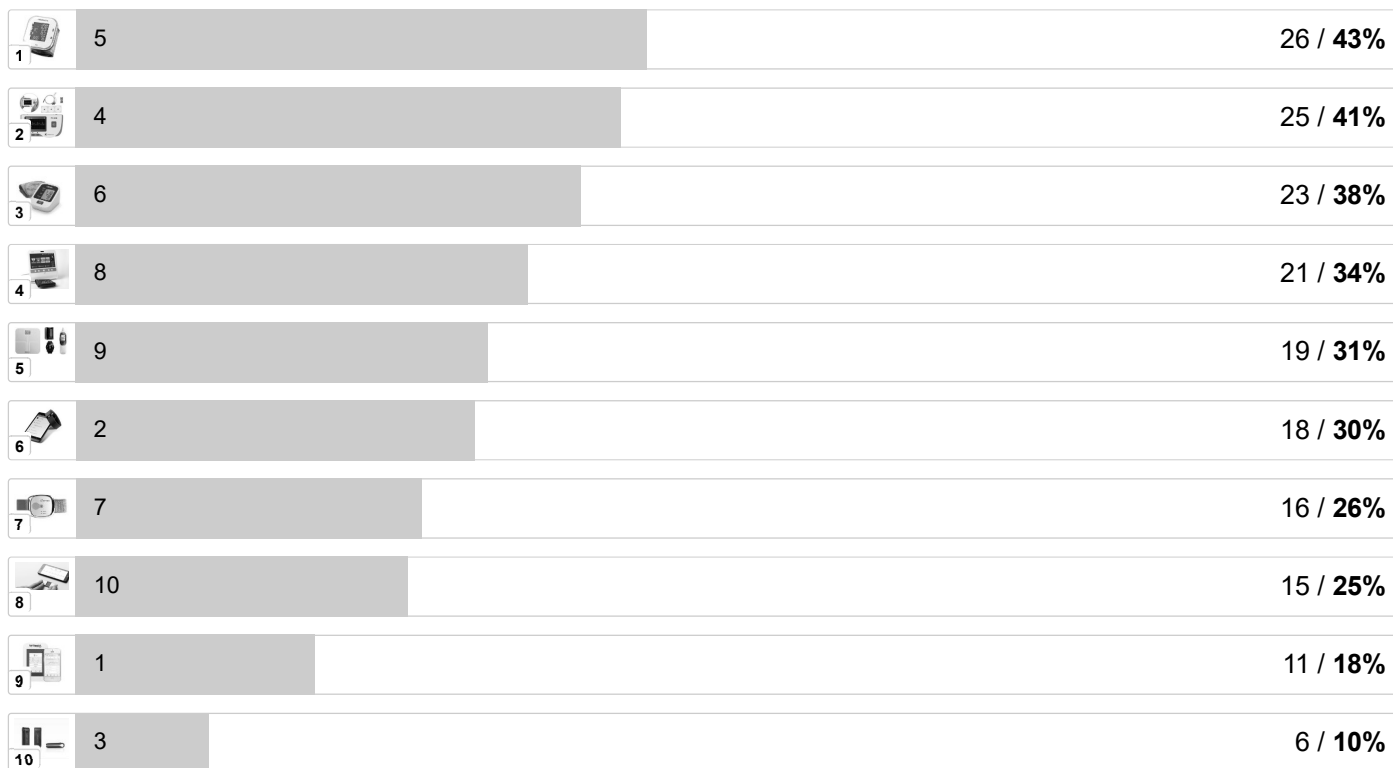
Average: 3.02





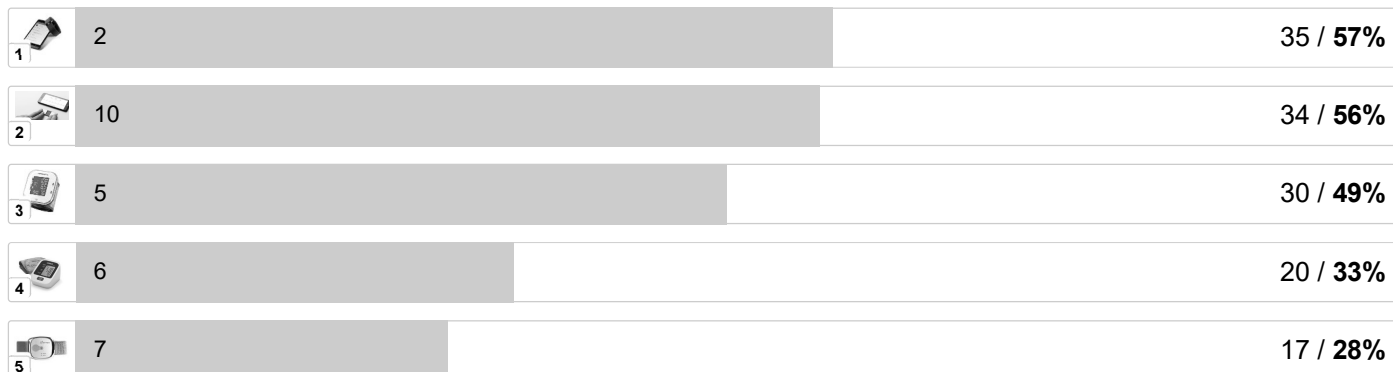
Looks reliable

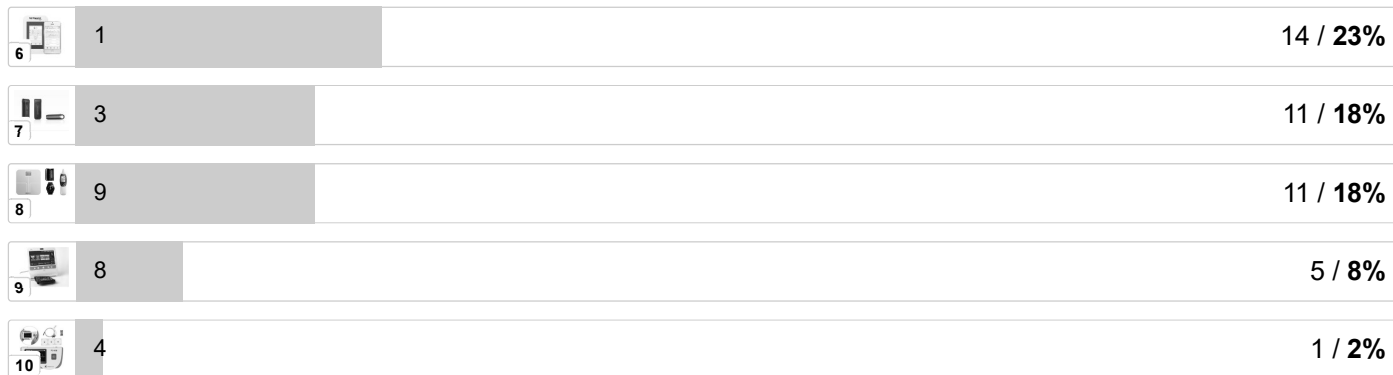
61 out of 61 people answered this question



Looks easy to use

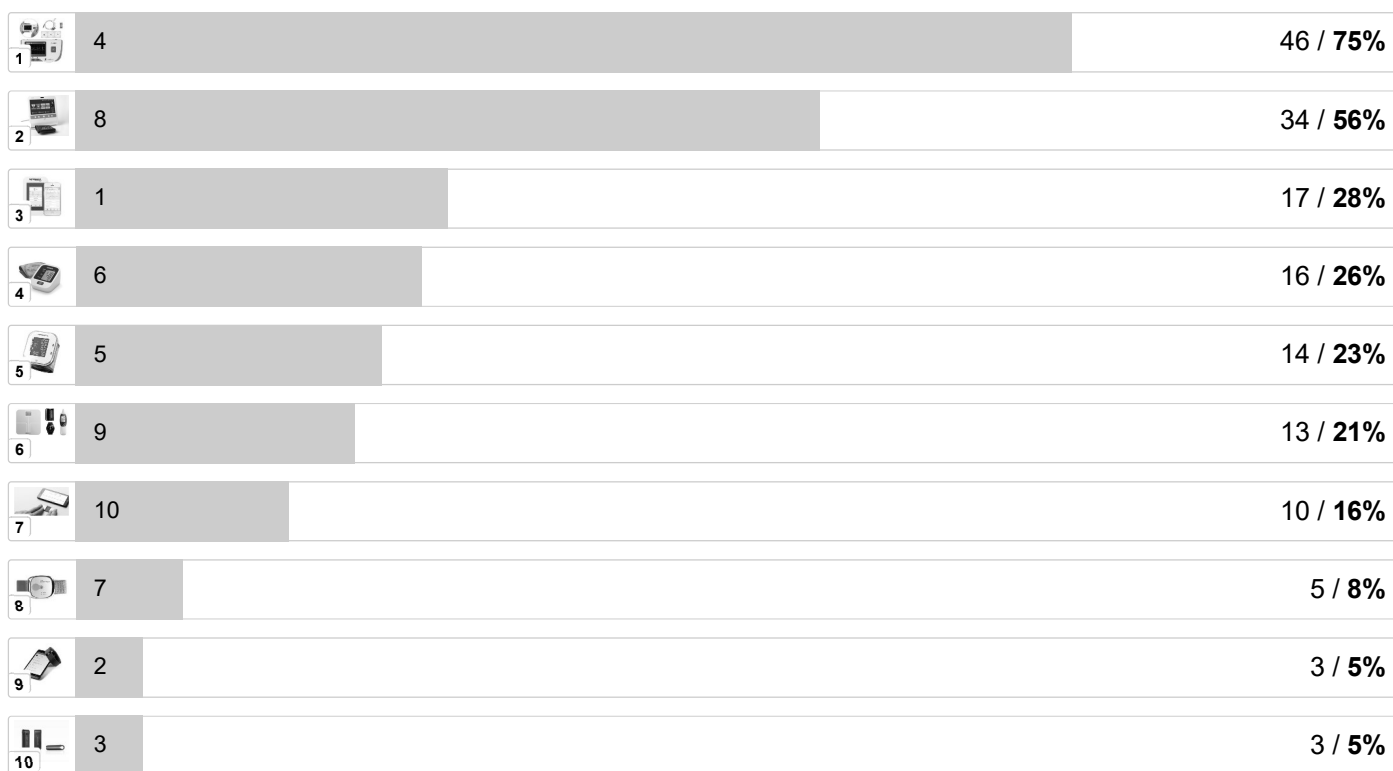
61 out of 61 people answered this question





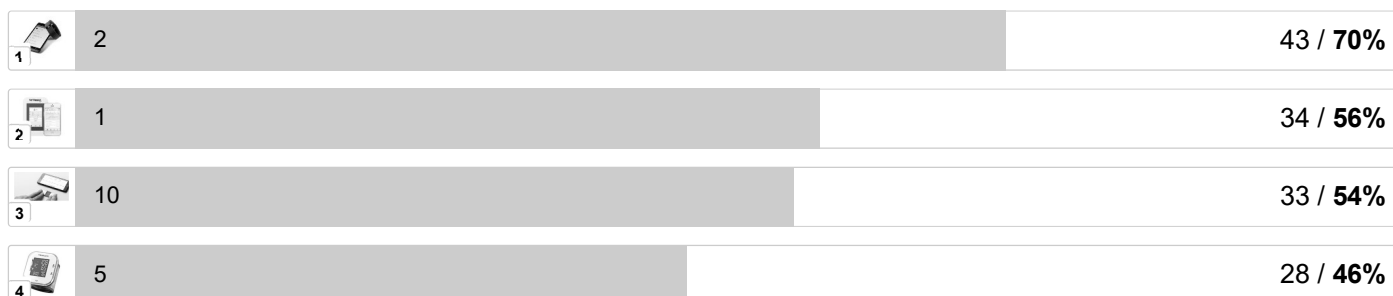
Gives control to the physician/doctor

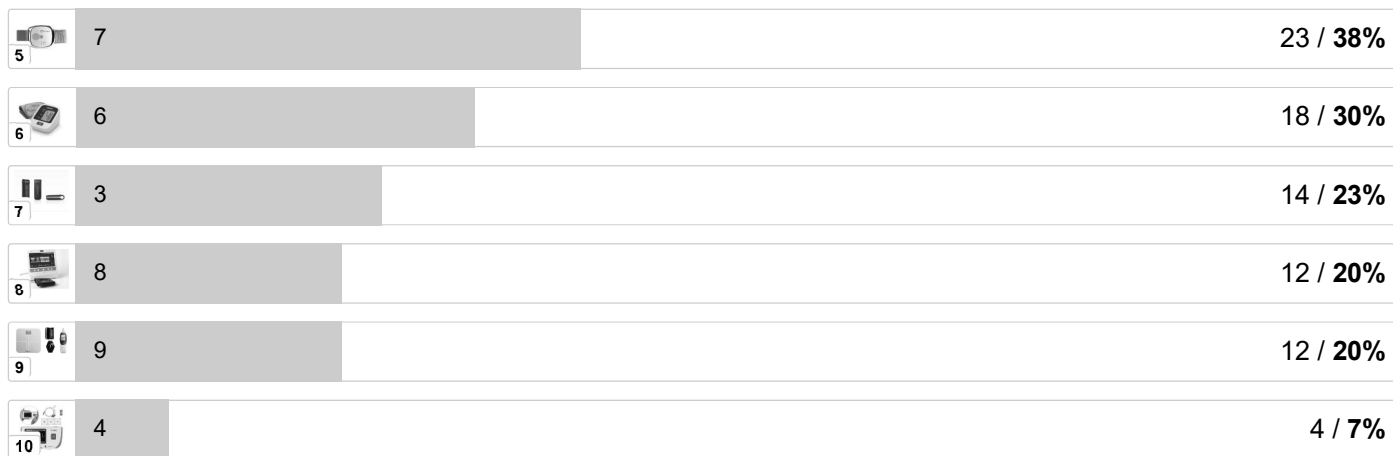
61 out of 61 people answered this question



Gives control to the patient/user

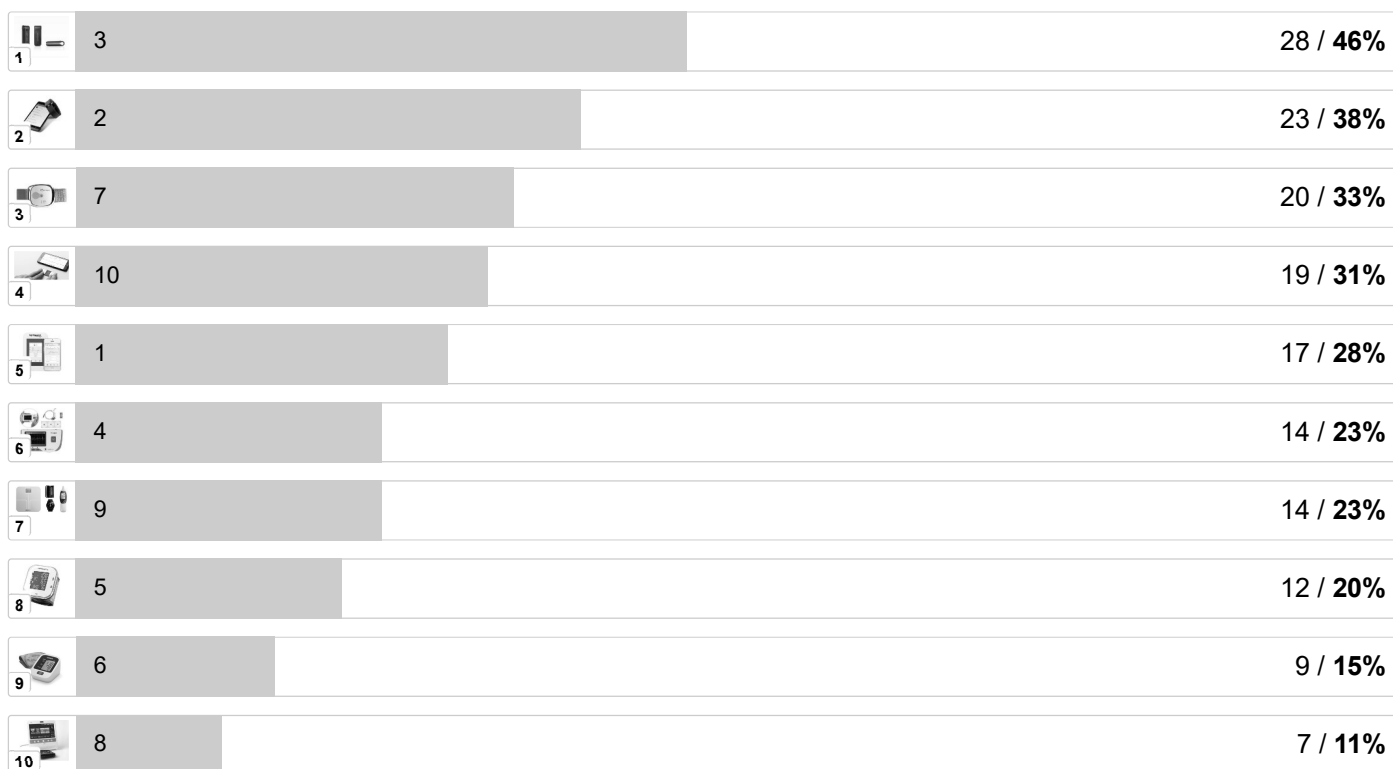
61 out of 61 people answered this question





Would be easier to avoid/forget in a treatment

61 out of 61 people answered this question



APPENDIX H

MARKET ANALYSIS



€ 120

iHeart

Manufacturer: VitalSines International

Reading location: Finger

- ✓ Cordless
- ✓ App
- ✗ FDA approval

No. of users:



(in the app)

Features: Aortic Pulse Wave Velocity and oxygenation measurements. Compares internal age with actual age. Add notes to results ("What were you doing before the measurement?")



€ 34

3 Series Monitor

Manufacturer: OMRON

Reading location: Wrist

- ✓ Cordless
- ✗ App
- ✓ FDA approval

No. of users:



Features: Average from 3 screenings in 10 minutes.



€ 65

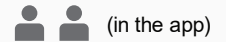
7 Series Monitor

Manufacturer: OMRON

Reading location: Upper Arm

- ✗ Cordless
- ✓ App
- ✓ FDA approval

No. of users:



(in the app)

Features: App is the same for all devices from manufacturer and is not needed to use the device. Tracks hour of screening.



€ 90

Evolv Wireless Monitor

Manufacturer: OMRON

Reading location: Upper Arm

- ✓ Cordless
- ✓ App
- ✓ FDA approval

No. of users:

(Unclear - in app)

Features: App is the same for all devices from manufacturer and is not needed to use the device. Simple use. 2 buttons: start/stop and sync with app.



€ 32

BP2M CardioTech Premium Series

Manufacturer: Ozeri

Reading location: Wrist

- ✓ Cordless
- ✗ App
- ✓ FDA approval

No. of users:



Features: Hypertension "Color Alert" Technology. Changes display color depending on results.



€ 28

EW3109W Portable monitor

Manufacturer: Panasonic

Reading location: Upper Arm

- ✗ Cordless
- ✗ App
- ✗ FDA approval

No. of users:



Features: Portable. Track one user. Over-sized numbers.



€ 24

BP Monitor Cuff Kit - Large display

Manufacturer: Balance

Reading location: Upper Arm

- ✗ Cordless
- ✓ App
- ✓ FDA approval

No. of users:



Features: Oversize numbers and buttons. Usable with charger and batteries.



€ 27

Automatic BP Cuff Monitor

Manufacturer: Care Touch

Reading location: Wrist

- ✗ Cordless
- ✗ App
- ✓ FDA approval

No. of users:



Features: Time and date included (recommended by the company to keep same readings). Oversize numbers.



€ 24

B15P fitness tracker

Manufacturer: Bozlon

Reading location: Wrist

- ✓ Cordless
- ✓ App

No. of users:



Unclear FDA approval

Features: Smartwatch specs: Pedometer / App and call reminder. Track one user constantly Heart rate and pedometer.



€ 105

BPM+

Manufacturer: Withings + Nokia

Reading location: Upper Arm

- ✓ Cordless
- ✓ App
- ✗ FDA approval

No. of users:

(Unclear - in app)

Features: Portable. Track one user. Color coded results. Blood pressure and Heart rate readings



€ 113

DL8760/15 BP Monitor

Manufacturer: Philips

Reading location: Upper Arm

- ✓ Cordless
- ✓ App

No. of users:



Unclear FDA approval

Features: WHO guideline interpretation in device. Rechargeable - no batteries needed. Over-time perview dashboard in app.



€ 65

BP

Manufacturer: Withings + Nokia

Reading location: Upper Arm

- ✓ Cordless
- ✓ App
- ✓ FDA approval

No. of users:

(Unclear - in app)

Features: Connection with doctor (email). Blood pressure and Heart rate readings.



€ 80

QardioArm

Manufacturer: Care Touch

Reading location: Wrist

- ✓ Cordless
- ✓ App
- ✓ FDA approval

No. of users:



(in the app)

Features: Add notes to readings. Data interpretation. Triple measurement averaging. Geolocation. Data is sent to the manufacturer's data base to visualize trends. Email to doctor and sharing possibilities.



AHA Indicator

- Hypertensive Crisis
- High Blood Pressure Stage 2
- High Blood Pressure Stage 1
- Prehypertension
- Normal

Provèn



€ 30

Wrist Monitor with Bluetooth

Manufacturer: Proven

Reading location: Wrist

- ✓ Cordless
- ✓ App
- ✓ FDA approval

No. of users:

(Unclear)

Features: Color coded (American heart Association guidelines).



€ 174

ActiveScan 9

Manufacturer: Braun

Reading location: Upper Arm

- ✗ Cordless
- ✓ App

No. of users:



Unclear FDA approval

Features: Daily, weekly and monthly averages. WHO guideline interpretation in device.



€ 115

iCheck 7

Manufacturer: Braun

Reading location: Wrist

- ✓ Cordless
- ✓ App

No. of users:



Unclear FDA approval

Features: Ball display for correct measurement position. WHO guideline interpretation in device (small).



€ 1,054

MySignals - Developer toolkit

Manufacturer: Libelium

Reading location: Upper Arm

- ✗ Cordless
- ✓ App
- ✗ FDA approval

No. of users:



Features: 17 biometric sensors can be connected to the main device. Developer platform. Price of the full kit is 1647 euros.



€ 80

iHealth Clear BP Monitor

Manufacturer: iHealth Labs

Reading location: Upper Arm

- ✓ Cordless
- ✓ App
- ✓ FDA approval

No. of users:



Features: Export data as CSV, XLS, or PDF. WiFi connectivity. Room temperature.



€ 80

1700 BP Monitor

Manufacturer: Welch Allyn Home

Reading location: Upper Arm

- ✗ Cordless
- ✓ App
- ✗ FDA approval

No. of users:



Features: Motion indicator. One button action.



€ 32

iHealth Ease BP Monitor

Manufacturer: iHealth Labs

Reading location: Upper Arm

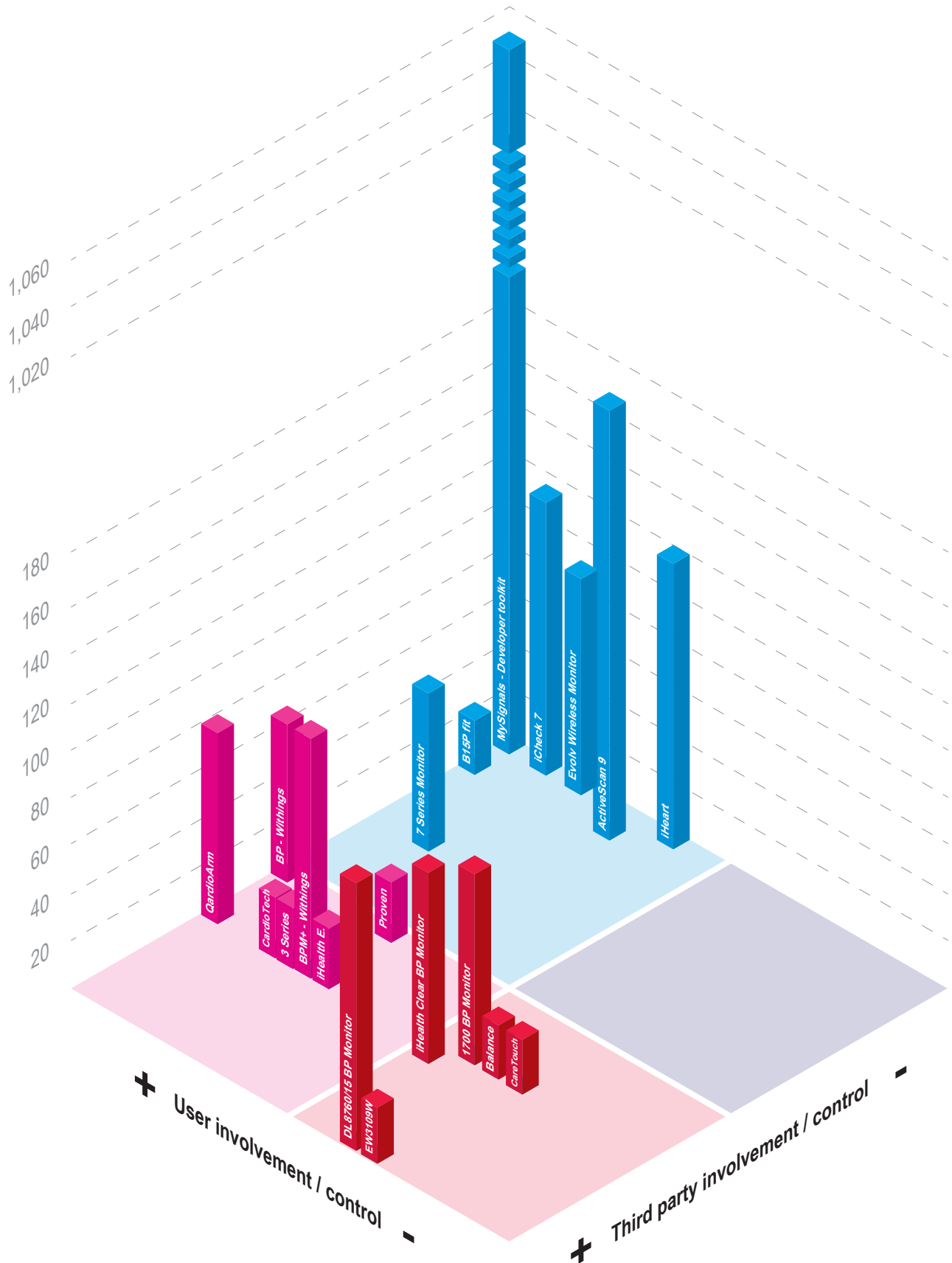
- ✗ Cordless
- ✓ App

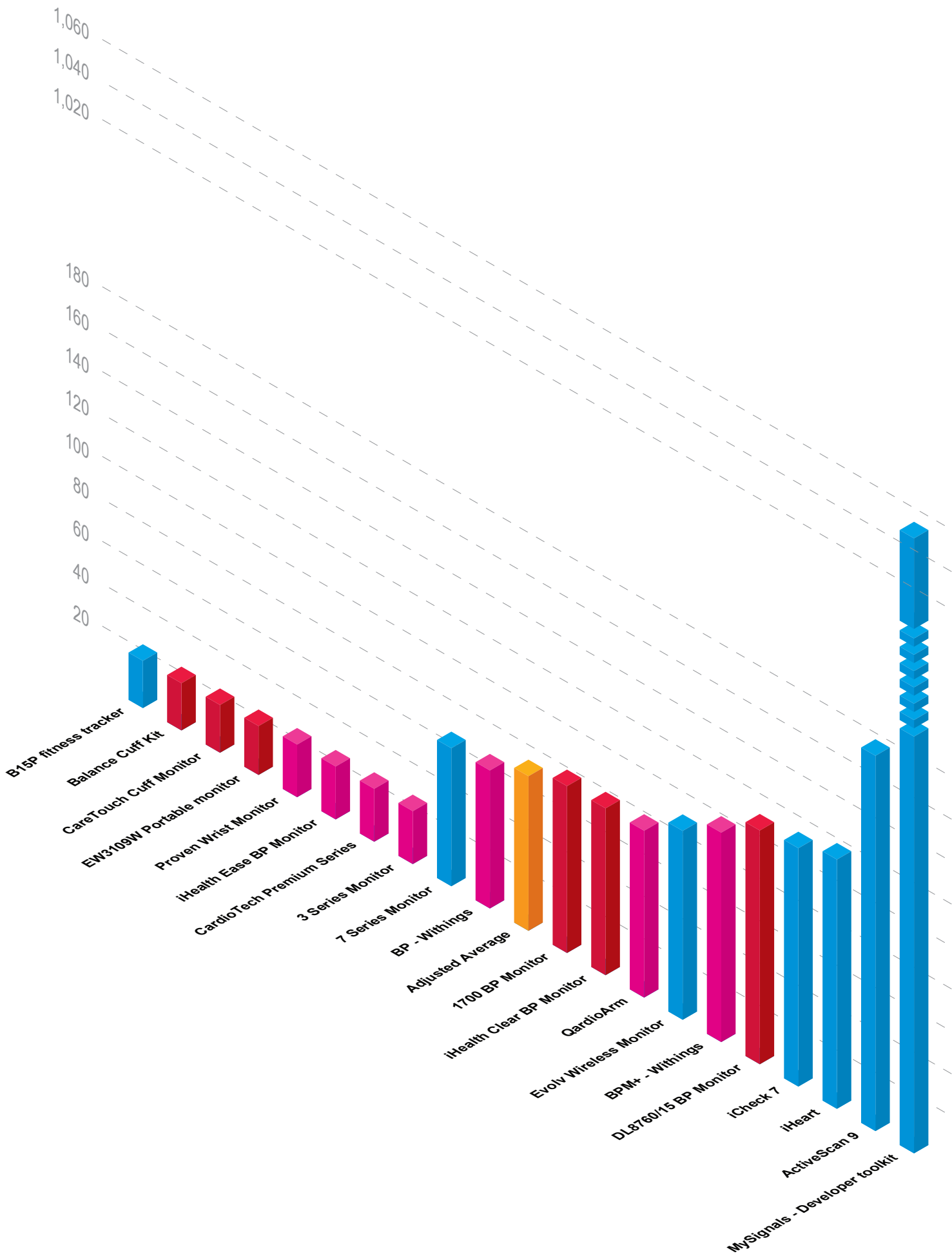
No. of users:

(Unlimited in the app)

Unclear FDA approval

Features: Detects irregular heartbeat. Phone docking station. Shareable data



















APPENDIX I

SECOND QUESTIONNAIRE AND TEST TRANSCRIPTIONS

Mark your result:

17 out of 17 people answered this question

1	 Campaigner	5 / 29%
2	 Advocate	3 / 18%
3	 Architect	2 / 12%
4	 Protagonist	2 / 12%
5	 Adventurer	1 / 6%
6	 Commander	1 / 6%
7	 Debater	1 / 6%
8	 Logistician	1 / 6%
9	 Mediator	1 / 6%
10	 Consul	0 / 0%
11	 Defender	0 / 0%
12	 Entertainer	0 / 0%
13	 Entrepreneur	0 / 0%
14	 Executive	0 / 0%
...	Other	0 / 0%





When do you seek doctor's advice?

17 out of 17 people answered this question

1	When I am not sure of the situation	6 / 35%
2	When symptoms appear	6 / 35%
3	When symptoms stay for long periods	5 / 29%
4	When I am aware of a health risk	0 / 0%
5	When I am uncertain of my health situation (no symptoms)	0 / 0%



Which information would *motivate* you to follow the diet?

17 out of 17 people answered this question

1	 Health progress simulator	9 / 53%
2	 Compare progress with others (Activity / points)	3 / 18%
3	 Review and tips from others	3 / 18%
4	 Physician's approval	1 / 6%
5	Trainer	1 / 6%

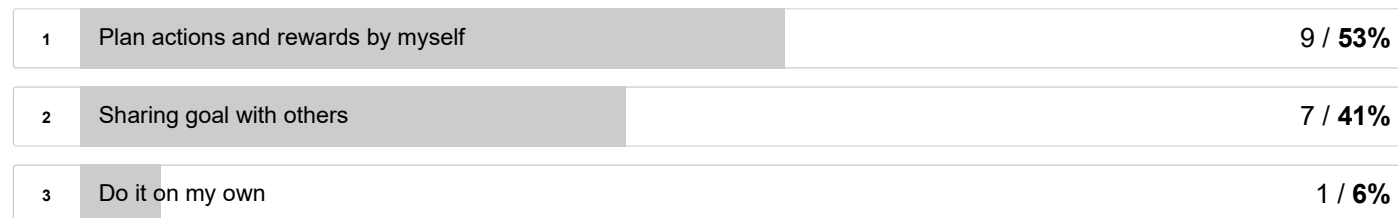
Would you prefer...

17 out of 17 people answered this question

1	 A reward-base system that translates calories into steps.	11 / 65%
2	 A menu that pairs you with similar users to get advice.	6 / 35%

Picture a **habit you want to quit or adopt** (*smoking, exercising, reducing alcohol consumption, eating healthy, etc*).
Which strategy would fit you better?

17 out of 17 people answered this question



Consent Form for CardioLab Study

Please tick the appropriate boxes

Yes No

Taking part in the study

I have read and understood the study information dated [3/7/2018], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves a video-recorded re-enactment of a physician appointment. The conversation will be transcribed, keeping the name of the participant anonymous and the recording will be destroyed afterwards. Pictures and animations might be taken to illustrate interactions where my will be covered.

Medical information associated with participating in the study

I understand that taking part in the study does not involve a real evaluation on my health and that the interviewer is not trained to perform a medical assessment.

Use of the information in the study

I understand that information I provide will be used for presentations and publications maintaining my anonymity.

I understand that personal information collected about me that can identify me, such as [e.g. my name], will not be shared beyond the study.

Future use and reuse of the information by others

I give permission for the transcripts that I provide to be archived in the TU Delft Repository so it can be used for future research and learning. All personal information will be anonymised previously.

Signatures

Maricé Angulo



Signature

3/July/2018

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Guillermo Meza

Signature

3/July/2018

Consent Form for CardioLab Study

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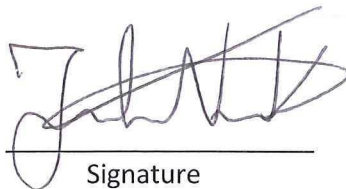
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Signatures

José Libardo Navia



Signature

3/July/2018

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Guillermo Meza

Signature

3/July/2018

Consent Form for CardioLab Study

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Signatures

Manuela Posada H.


Signature

3/July/2018

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Guillermo Meza

Signature

3/July/2018

TRANSCRIPT PARTICIPANT 1

Interviewer: Thank you for joining me in this test. As explained before, we are going to act a physician appointment and make some blood pressure readings. Although the device is medically certified, no measuring information of this test should be considered as medically accurate. And if you have any concerns you should visit your doctor.

The first part of the test is to get to know you a little bit. Specifically, I would like to know how do you see yourself when you are 40.

Participant: When I'm 40... I don't see myself in the Netherlands. I see myself in a warmer place, Spain, California or Colombia. In a place with better weather and food

Interviewer: About your job or family?

Participant: When I'm 40 I should be working. I would like to be in a place that s 40 hours weekly so I have enough time to spend with my family. I would like to have a child, either a boy or a girl. Let's see what happens.

Interviewer: For the test, let's imagine that you are in the context you described. Then, for no particular reason you reach a doctor. It can be that your child got sick or there is a prevention campaign and doctors visit your workplace.

Participant: I would probably go to the doctor if I get a cold or something happens.

Interviewer: Right, because I guess that when you are 40 you will not show any indications of bad health. You don't smoke right?

Participant: Yes, I don't smoke and I am very thin. I hope that when I'm 40 I will stay like this. If not I will exercise.

Interviewer: Correct. So let's say that I am your physician and I notice that you just turned 40 because I have your family history in here. I recommend to you that we make a simple heath check that takes 10min.

Participant: Ok. Is that with that device? (Refers to the blood pressure monitor)

Interviewer: Yes. So, part of the test includes measuring your blood pressure and cholesterol. The way to measure this is with a blood pressure monitor like this one. We won't do the cholesterol test in this case.

Participant: Ok. Is this the kind of device that inflates?

Interviewer: Yes it is. Have you measure your blood pressure before?

Participant: When I was a child I always wanted to use it. I have used it before but I am not sure of the reading.

Interviewer: Ok. We will then start the test. (Puts the device in participant's arm). Please let me know if it's uncomfortable. The device will feel tight as it inflates.

While it starts I can explain to you. (Shows SCORE Risk charts)

By having both cholesterol and blood pressure numbers we can place you in a chart area. Because you are a man and non-smoker you are in this area (points out chart). This chart predicts the probability of having a cardiovascular event, can be a stroke or a heart attack. Technically you are not sick, but the measurement helps us determine your risk.

Right now you have a low number, 108/60.

Participant: I thought it was only one number. Like the one you measure like this (puts finger in wrist)

Interviewer: That is beats per minute. In the screen you can also see the beats per minute as well. It is not the same. Blood pressure is the strength in which the heart pumps blood in and out. You can have a normal beat per minute and high pressure independently.

Participant: Ah. Ok.

Interviewer: So, the important number here is the systolic, the one on the top. Let's say that after doing this test you would have 160. So we compare it with it with an official chart and we see that you have a low risk, however, if you keep your lifestyle in 10 years you will have a very high risk. And the older you get the harder it is to lower the number. Exercise is harder to follow or behavior is more difficult to change when you grow older.

Participant: Ok. Can I remove the strap?

Interviewer: Yes sure. So, after having these results I indicate to you that you are at risk and recommend to you to register into a prevention program. The program integrates different experts and, if you agree, medications to lower down your blood pressure.

Participant: Because it would block the arteries.

Interviewer: Yes. So, imagine that fatty plaques start growing in your circulatory system. Just like a hose, if you start pressing it the water comes out with more pressure. That is why this measurement helps us determine risk.

Participant: Ok.

Interviewer: So if you agree I can register you in the prevention program. The registration has no cost for you and will not increase your insurance premiums.

Participant: So everything would be free in a way.

Interviewer: Well, only the medication and specific lifestyle advisors would not, like nutritionists. But the prevention program is mainly indications and follow-up appointments. Depending if you agree on medication we would schedule an appointment to see how you react to this medication.

Participant: Which kind of medication is it?

Interviewer: That would also depend on your background, but mainly it would be to reduce your blood pressure. I can also give you more information for you to check and then decide.

Participant: Ok. Yes maybe I need more time to decide.

Interviewer: So, I will give you a 6 digit number. With it you can login to a digital system. There is a website with more information on the risks that you have and details on the prevention program. It also has a digital application. If you login with the number these numbers (points to the device) will be already in the system. It also will have my indications for you.

Participant: Ok.

Interviewer: So let's imagine that you went back home, check your risk and decided to register and download the app. Here I have a mock-up with what the app might look like. You can interact with certain screens and buttons but remember that it is just a prototype. (Gives laptop with digital prototype to the participant).

Participant: Ok. Is it touch screen? That's nice.

Interviewer: So, the first screen shows messages from me, your doctor. Below you have the risks that apply to you. Of course smoking would not appear since you don't smoke.

Participant: Yeah I was going to say that.

Interviewer: You can also set goals for the future or manage current activities, like losing weight.

(The participant struggles with some buttons that are inactive)

Interviewer: Remember that this is a mock-up and some of the buttons and text might not be interactive.

Participant: Ok. So the goals are something that I choose or the doctor does it?

Interviewer: The ideal is that you choose your goal depending on your own interests.

Participant: Wow, I need to lose 6 kg in 3 months? That's a lot right?

Interviewer: Maybe, but again, is mainly to show some features.

Participant: Ok.

Interviewer: So do you think the app would be useful?

Participant: I think I would need to have a lot of motivation. Not just the app. I would need to have short-term goals. I have been noticing even now that if my goals are too far in the future I won't follow them. Setting short-terms helps me, also to be more organized and see what I am doing.

Interviewer: So you know what works for you?

Participant: Yes.

Interviewer: Do you think the message of the doctor acts as a motivator?

Participant: Maybe it would at the beginning, but probably not for a long time.

Interviewer: What would you think would be the best motivator?

Participant: I think I need a motivator outside the app. Maybe if I could add my children or wife to the activities. I need someone that says to me "Hey, we said we would go out running and we didn't do it".

Interviewer: So your family would be a strong motivation. Do you think it would work without them being involved in the activities?

Participant: Mmm... Maybe if I decide my own goals and those goals are related to them. But I think it would be difficult.

Interviewer: Yes, I was also thinking that you wouldn't want your family to be involved in something very negative like stop smoking, but it could be a strong motivator to go out for an activity day in the park or something.

Participant: Yes, I wouldn't want my children to be involved in what eat maybe. But it could motivate me mainly to do sports or something like that.

Interviewer: So you would prefer to control those details in the goals.

Participant: Yes.

Interviewer: Do you have any other remark?

Participant: I am not sure if an app would be enough for me to change. I need strong motivators in real life.

Interviewer: Ok. Well, I will like to thank you for your time again.

Participant: No problem.

TRANSCRIPT PARTICIPANT 2

Interviewer: I would like to thank you to participating in this test. As I commented before, in this test we will have a role-played scenario. I will act as a medical staff and provide some information. It is important to remark that this information is just for the test and should not be taken as a real prognosis. If you have specific questions or pain you should always contact your doctor. With that being said I would like to start. Is it ok if we record this?

Participant: Ok

Interviewer: First of all, how old are you?

Participant: 24

Interviewer: Ok. So, where do you see yourself in 16 years? When you are 40.

Participant: Mmm... I am not sure. I would like to travel. Not staying in a single place.

Interviewer: Do you see yourself working somewhere? Having a family?

Participant: I think I should be working in order to pay the travels. I am not sure about having a family. Right now is hard for me to say. But I want to work in a place where I can have enough time to travel or that it is part of the activities.

Interviewer: Ok. Can you think of any particular company? Or in a particular country?

Participant: Maybe I would like to stay in Europe, but I'm not sure of a company.

Interviewer: Ok, let's say that you have that you are working in a place like the one you described. As part of the health coverage of the company you have the chance to perform a routine health check-up.

Participant: Ok.

Interviewer: So there are some doctors that arrive and ask you if you agree to check your blood pressure and cholesterol levels. Would you agree?

Participant: Yes, probably I would.

Interviewer: So we are not going to check your cholesterol in this test, but let's say that we did. The next test would be to check your blood pressure. For that we have this device (points to blood pressure device). I will put this

Participant: Which arm should it be?

Interviewer: It doesn't matter, but please don't lower your arm. This could affect the reading. And let me

Participant: Oh ok.

Interviewer: Please let me know if it is too tight. So as we wait for the reading I can explain a bit more on the assessment. The goal of this reading is to determine the amount of risk you have of developing a CV condition; mainly suffering from a heart attack or stroke. By the way do you smoke?

Participant: No I don't.

Interviewer: Perfect. So, by taking these values we can use the SCORE chart to determine your risk levels. Since you are 40 and a woman you would be in this section (points at printed chart).

Participant: Oh ok. So that's why my age is important.

Interviewer: Yes, the chart is based on demographic data. It also considers your ethnicity, but in this case we are using the one for the Netherlands. Not because you are younger you are not at risk if you would smoke for example, but the study is meant for people over 40. Also

you can see that the risk when you are 40 is mostly low even with high blood pressure. But having a medium risk now and not changing your lifestyle would transform in a very high risk in the future.

So we see that your systolic blood pressure is 119.

Participant: What does all of the number mean?

Interviewer: The first numbers are basically is the strength that your heart pumps blood, in and out. The other one is the beats per minute. It is what the paramedics' measure to know if people are alive, have you seen that?

Participant: Ah right.

Interviewer: So, blood pressure is affected sometimes by different factors including fat that grows inside the blood vessels. Just like in a hose, when you press it, the walls get narrower and water comes out with more pressure. In this case is normal, it shouldn't be above 120. But for this project let's say that your pressure was very high. And that your cholesterol was also very high. So you would be high potential risk of having a heart attack in the future.

As a doctor I can recommend you to register in a prevention program. You can take off the cuff now. So. Being your potential risk as high as it is, I recommend you to enroll to the prevention program. This has no cost for you, and it is part of the insurance. By enrolling we would schedule future appointments and would provide you with a digital system to manage your risk. Would you like to enroll?

Participant: Yes I would.

Interviewer: Ok. So, as a physician I wouldn't have enough time to explain all of the details of the risk. But I will give a number for you to check the digital system. With this number you can log in a website and check the specific risks that affect you. So you don't smoke but maybe you have a low physical activity or bad diet. Base on the doctor's information this would be added to your profile.

Participant: Ok. So this is the app for the doctor?

Interviewer: Yes, so, part of the system includes a digital application to connect with your doctor. The app will send reports for the follow up appointment. You can see that in the main screen there are some notifications of the doctor. The goal is to help you manage the program once you are out of the medical consultation. Depending on the program the time between appointments can be even a year, so it's hard for people to adhere to the changes.

Participant: I can imagine.

Interviewer: So, please remember that this is just a mock-up and some of the features might not work. This is just to have an idea of what the app includes. For example, setting goals or seeing your risk factors.

Participant: I think the weight simulation is very confrontational. But I like it. I have an app to measure my physical activity and sets goals, but maybe this would work better.

Interviewer: So are you used to apps with a health topic?

Participant: Well, is mainly to count my exercise, set goals and things like that. It would be nice if somehow I could integrate that app with this one if I already have the data there. I wouldn't like to have too many apps.

Interviewer: Do you have a long time using it?

Participant: Not really, it came with the phone and I started using it. Helps me motivate me in the morning to go out and run.

(participant keeps clicking different areas of the app).

Interviewer: What do you think about the goals in this app?

Participant: I like that they are thematic. How would the app now about my family and that stuff? Is it part of the reports?

Interviewer: In a first stage of the setup you would select the goals that apply specifically for you. That is not part of the mock-up sadly.

Participant: Oh it's ok. I was just wondering because the titles were specific.

Interviewer: I forgot to mention that by registering in the program I would provide you with a wearable device to track your progress.

Participant: Oh that's even more motivating.

Interviewer: So after seeing some of the features of the app, do you see yourself using it and adhering to the program.

Participant: Yeah, I think so. I am not sure exactly which behaviours would be needed but it's nice to have something that guides you. I think is hard to follow good behaviours although we know we shouldn't do certain things.

Interviewer: So the doctor notifications would work for you?

Participant: I think so. Also if it is something that the doctor already recommended me I would trust it more than other apps for example.

Interviewer: That's good to know. Thank you. Do you have any additional comments?

Participant: I am not sure how the app would detect the type of goals.

Interviewer: Well, the ideal would be that you have a lot of different options and that it gives you the ones that are more suitable for you depending on the information the physician provides. Sadly this couldn't be tested. But it is something that is considered for the next prototype.

Participant: Oh ok. Yeah I think it would be nice to have more options

TRANSCRIPT PARTICIPANT 3

Interviewer: Welcome. Thank you for helping me in this test. As mentioned before in the agreement document, in this test we will simulate a medical test that is non-invasive. Mainly we will measure your blood pressure and determine a risk factor. I will explain this in a moment. It is important to note that the recommendations from this test should not be considered as medical accurate. If you have any specific questions or complaints you should contact your doctor. First of all I would like to ask if it is ok for me to record this test.

Participant: Yes, it is fine.

Interviewer: Thank you. So, I would like to begin by asking you how old are you.

Participant: I'm 24.

Interviewer: Ok thank you. As an hypothetical exercise, where do you see yourself when you are 40 years old?

Participant: Mmm... I am not sure. I would like to work on big projects but I am not sure if it would be in a company or by myself.

Interviewer: How about children? Do you see yourself living in here?

Participant: Right now I am not thinking on children but of course that might change in the future. I would like to find a job in the Netherlands once I graduate but I am not sure if I would stay until I am 40.

Interviewer: Ok thanks. So let's picture that you are working in your own company and have a lot of stress. You are asked by a acquaintance to go to the doctor to make a medical check-up that this person just did. I will play the role of the doctor in this case. Since I am your general practitioner I already have information about your age and family. The test consists on measuring your blood pressure and cholesterol levels to determine the risk you have of suffering a cardiac arrest or stroke.

Participant: Yeah, I know that device. My father used it constantly.

Interviewer: Oh, how come?

Participant: He had a heart attack and needed to check his blood pressure and take medication constantly.

Interviewer: Oh I'm sorry.

Participant: He is ok. At the beginning it was very shocking of course. It's been a long time ago. He is ok now. He even started smoking again. He tried to quit but after sometime he started again. My mother and I always tell him to stop. At least he is not smoking as he used to.

Interviewer: Yeah, I have read about a lot of people that find it difficult to adhere to these changes. I mean, it is always hard to quit smoking.

Participant: It is an addiction right?

Interviewer: Right. Maybe for this test it is good that you know already something about cardiovascular diseases.

Participant: Well, I remember making the test and knowing that it was normal.

Interviewer: But you don't remember the exact number?

Participant: No, the doctor told me it was normal.

Interviewer: Ok. So, following this test I would like you to picture yourself in a scenario when you are 40 and are asked to measure this again. Also, that we measure your cholesterol. We will use this device for the blood pressure only.

Participant: Ok.

Interviewer: Let me know if it is too tight. So, with this information we can measure the probability of having a cardiovascular event. The way to see this is by using something called the SCORE risk chart. Is based on a long study and compares your data with others from your same

demographic. It is used to spot people at risk and try to lower it in early stages. In this scenario, that you are 40, you will be in this section of the chart (points section). Do you smoke?

Participant: Occasionally but not much.

Interviewer: Ok. In that case you will be on this side of the chart. Male above 40 and smoker. Right now your level is below a critical point. A number above 120 of systolic blood pressure would lead to high risk. In general is recommended that you stop smoking since it is one of the most dangerous risk factors, but there are other factors such as bad diet or lack of exercise.

Participant: Ok.

Interviewer: For this test let's say that you would have gotten a higher number. 180. That would mean that you have a medium risk of suffering a cardiac attack or stroke. But if you don't change certain behaviours and lower that number, that risk will be higher in the future and probably will be more difficult to lower it down. Therefore, as your doctor I would recommend you to register in a prevention program. This would have no cost for you. Of course, this is for prevention and since you are not sick you have the freedom to choose not to follow the program. Would you like me to register you?

Participant: What does it include or how does it work?

Interviewer: Well, part of the program includes following up your progress, medication to lower your blood pressure, and involving other health professionals without you having to pay extra. In this scenario, I would also provide you with a wearable device to track your activity and progress. I can take the cuff off now by the way.

Participant: Ok. Then I would probably would register. Also because of the experience with my father.

Interviewer: Right. As you can see is hard to explain everything in this short period. Generally doctors have little time for every patient. They sometimes have assistants but it depends on the office. The idea of this project is to have a digital system that helps outside the consultation. If you wouldn't have been sure about registering, I would have given you a personalized link to check online how the risk factors affect to you. Do you think it would be helpful?

Participant: Yeah of course. I think it is hard to take decisions in the doctor's office. You want to have time to decide. I know something but I would still want more information to take a good choice.

Interviewer: Perfect. So, another part of the system includes a digital app that connects with the database of the doctor. The objective of this app is to provide information and notifications when the doctor is not present. I have a prototype of this to test it. But please remember that it is a prototype and some of the buttons and text may not be the final ones or may be inactive.

Participant: Ok. So I would download this app after the consultation.

Interviewer: Yes. You would download the app and login with the same number I gave you before. This way the app would be connected to my computer and your electronic record.

Participant: Is it possible to use the app without connecting to the doctor's computer?

Interviewer: It is meant to be used only in risk prevention programs so the authorization is the main issue. We wouldn't like the app to be used by anyone that hasn't been measured. However, if you prefer it we can remove the connection. But still part of the program includes following up appointments and using the wearable device. This is all included in the app.

Participant: Oh ok. Yeah I didn't thought it was a problem. It was just a question.

Interviewer: Sure. So can you please check the different characteristics of the app? And if you could say out loud what do you think about the features would be great.

Participant: Sure. (Clicks at some buttons).

Interviewer: You can touch the screen as it would be a phone. It is a touch screen.

Participant: A ok. I feel that some indications are confusing.

Interviewer: Yes, I think it is because it is a mock-up. What do you think about having the doctors notifications in the main screen?

Participant: I think it is ok. Is the guy in the screen supposed to be you?

Interviewer: Well, it was just a picture of a doctor. Would it be important for you to have the picture of your doctor?

Participant: No, it was just because it takes too much space and maybe it could be use to have a bigger space for the alerts.

Interviewer: Yes you're right.

Participant: I like that you can have the weight simulator. I think people would be motivated to change diet with it.

Interviewer: Do feel it is useful then? The tone is right?

Participant: Well, maybe it is a strong message. But it is clear that is a rendering and it is not you. Maybe some people find it too strong, but I like it.

Interviewer: What do you think about the risk factors in the main screen?

Participant: I think if I would already know the information I would not see them again. Having a constant reminder wouldn't help me. It's like the images in the cigarettes. You forget about them after a while. Also I think the pictures are maybe to "stock" type.

Interviewer: Would you prefer something else?

Participant: Maybe more iconic. I don't see myself represented with the pictures.

Interviewer: Ok. How about the goals menu?

Participant: It is ok. However I don't have a child. Again, the pictures might be too "commercial". I don't connect to them. But I like that you have different options. Does It mean that I have to follow all of them?

Interviewer: Well, it is meant to be an easier and understandable way to achieve your goals without giving you too much information.

Participant: I think that is ok. But maybe I would want the specific information at some point. Can I check that with this app?

Interviewer: There would be an option to see your record but it is not in the mock-up right now.

Participant: Ok.

Interviewer: So do you think this kind of app would be useful?

Participant: I think I would try to follow the recommendations of the doctor and if the app helps me with that would be nice. I also know that it can be very hard to change certain habits. Like the example of my dad. But because of that I would try harder. I know that it can happen to me.

Interviewer: And do you think you might change those behaviours?

Participant: Well, right now I'm trying to do more exercise. I think I am achieving it but I am not measuring it. I have tried to quit smoking before but there is always something. Maybe by having this type of reminders would help. Changing just with an app would probably not work for me but if I know that the doctor is checking me it could work.

Interviewer: Great. Well, I would like to thank you again for your time.

APPENDIX J

NEW SYSTEM TOUCHPOINTS OVERVIEW

Pathobiological Determinants of Atherosclerosis in Youth (PDAY) research group
Autopsy of 2876 study subjects between 15 and 34. Atherosclerosis determinants increase rapidly in prevalence and extent during youth.

Premature heart disease
Harvard's Men's Health watch
A survey of more than 4,000 healthy individuals with an average age of 30 found that over 65% were unable to identify any of the six major cardiac risk factors.

Proactive CVD screening in lower social economic status (SES) areas: Men and women over 50 years old studied
591 individuals pre-selected
69 already in treatment / 1 deceased
521 contacted to fill questionnaire
95 no response / 72 no interest
354 invited to practice visit.
33 no attendance
321 attended screening.
43 high risk single value (Diabetes / family history)
278 further analysis for CVD risk.

Alternative Incentive Schemes on Completion of Health Risk Assessments (HRA)
1299 participants
All employees were eligible to receive economical incentives.
Lottery condition: Teams (4) entered a lottery for a prize of \$100 and a bonus of an additional \$25 to 80% of members participated.
Gift certificate condition: Incentive of \$25 and \$25 grocery gift certificate after completion.
Control condition: Initial \$25 incentive but no additional one after completion.
Lottery incentives that incorporate regret aversion and social pressure provided higher impact for the same amount of money as simple economic incentives.

Behavioral Economics Framingham Incentive Trial Be Fit study
200 adults comprising 94 families
12-week intervention + 12-week follow up
Control: Team registration / No social incentive / individual participation.
Intervention: Team registration / Social incentive / Team participation.
After 12 weeks physical activity in the gamification arm declined, but remained significantly greater than in the control group.
Lottery incentives that incorporate regret aversion and social pressure provided higher impact for the same amount of money as simple economic incentives.

The Impact of E-Visits on Visit Frequencies and Patient Health Evidence from Primary Care
Data set on nearly 100,000 patients spans from 2008 to 2013.
"E-visits" trigger about 6% more office visits, with mixed results on phone visits and patient health (blood cholesterol and glucose levels).
"E-visit" adoption is linked to about a 15% reduction in the number of new patients each month.

The HeartStrong Randomized Clinical Trial
Effect of Electronic Reminders, Financial Incentives, and Social Support on Outcomes After Myocardial Infarction
1509 participants
12-month intervention
Intervention group with: **Electronic pill bottles, daily lottery incentives, optional peer supporter, social work resources, staff engagement advisor.**
Interventions did not significantly improve medication adherence or vascular readmission outcomes for AMI survivors.

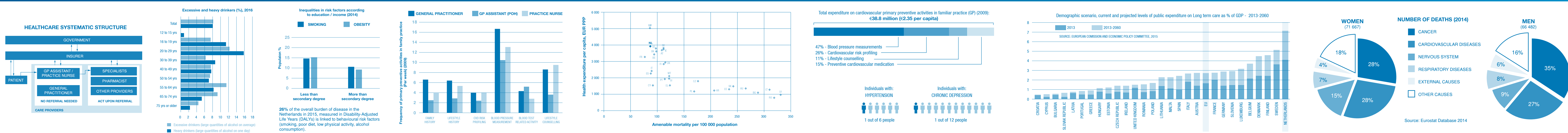
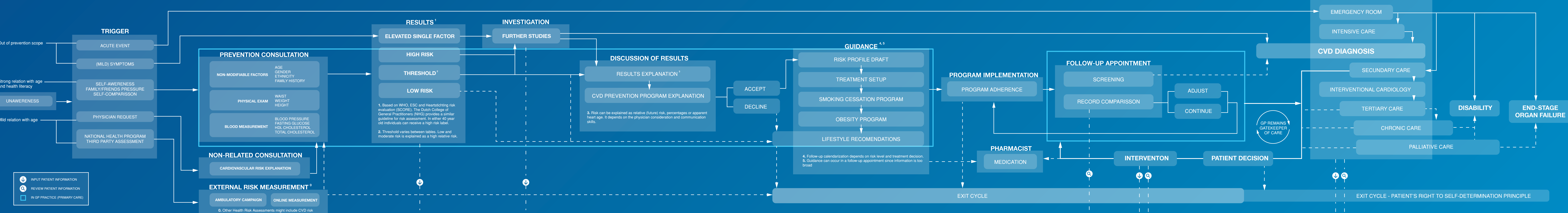
The IDEA Randomized Clinical Trial
Effect of Wearable Technology Combined With a Lifestyle Intervention on Long-term Weight Loss
24-month trial with 6-month intervals.
471 participants in low-calorie diet, prescribed physical activity, and group counseling sessions.
Significant improvements in both groups. No significant difference between groups.
Among young adults between 25 and 40 BMI the addition of a wearable technology device resulted in less weight loss over 24 months.

the @Risk Study
Effects of CVD Risk Communication - Patients With Type 2 Diabetes
Intervention group (n = 131) received a six-step CVD risk communication
Control group (n = 130) received standard managed care
Risk perception improved between the intervention and control group at 2 weeks but disappeared at 12 weeks.
No effects on illness perceptions, attitude and intention to change behavior, or anxiety and worry about CVD risk.
Patients in the intervention group were significantly more satisfied with the communication.

CVD risk management supported by self-monitoring in primary care - 1 year trial:
Compare standard treatment with and without self-monitoring
201 patients
96 control group / 105 intervention group
Most risk factors improved in both groups. (No major difference between them).
Visits **increased and took more time** in the intervention group.

Lifestyle and cvd risk management - 2016
Secondary and Primary Prevention Interventions. Cross-sectional survey in 14 European regions
Medical notes of 6700 patients:
Effectivity:
Lowering blood pressure with medication: 42.8% reached goal (<140/90 mm Hg)
Dyslipidemic patients: 32.7% reached cholesterol target (<2.5 mmol/l)
Type 2 diabetes: 58.5% achieved glycated haemoglobin target (<7.0% HbA1c)

REMINd Randomized Clinical Trial
(Randomized Evaluation to Measure Improvements in Nonadherence from Low-Cost Devices)
3 low-cost reminder devices / 1 control group
83,480 patients
37,832 chronic disease stratum
15,948 antidepressant stratum
Low-cost reminder devices did not improve adherence among non-adherent patients who were taking up to 3 medications to treat common chronic conditions.

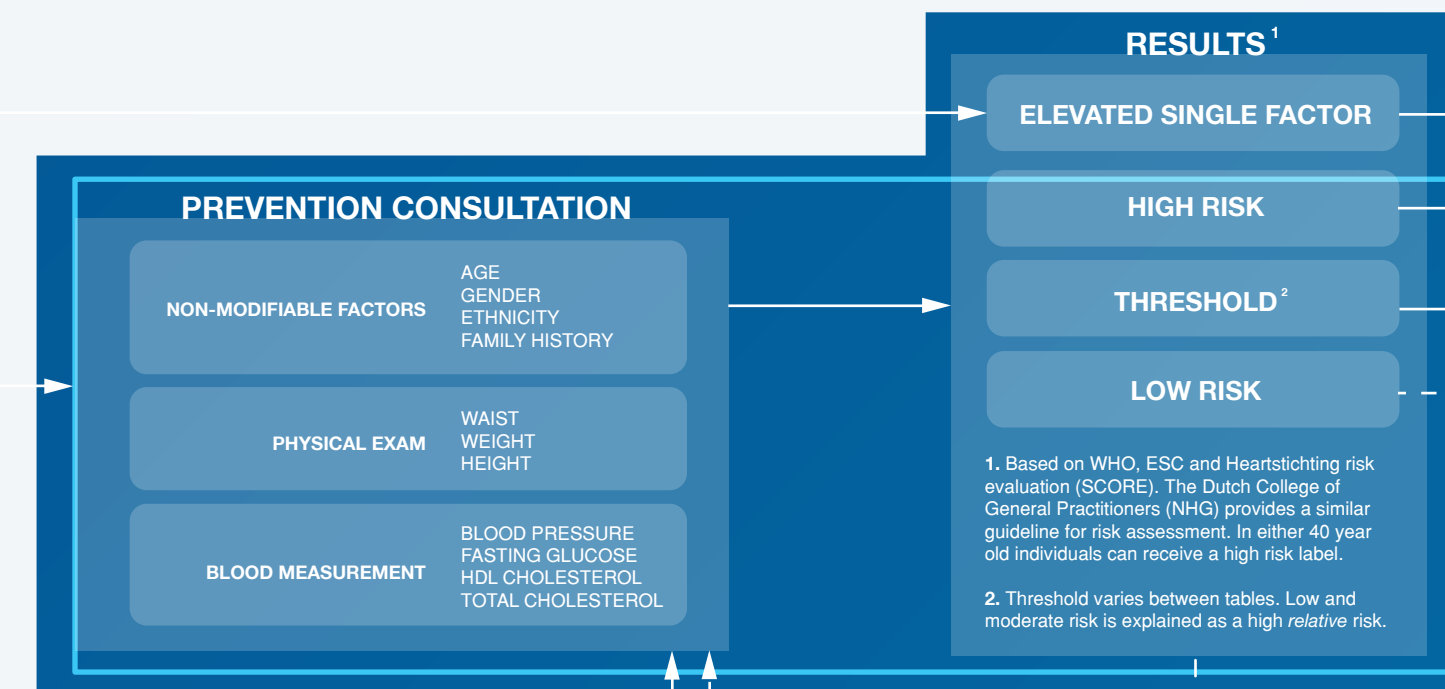


GOAL: TAILOR CVD RISK PREVENTION PROGRAM TO INCREASE ADHERENCE.

- PROVIDE RELEVANT INFORMATION AND FACILITATE SELF-MANAGE.
- ADAPT TO USER INPUTS TO MANTAIN ADHERENCE.

REQUIREMENTS:

Differentiate individuals with most unhealthy habits and less health literacy.
Adapt motivation (triggers) and control (information).
Facilitate program managing for users and health providers.

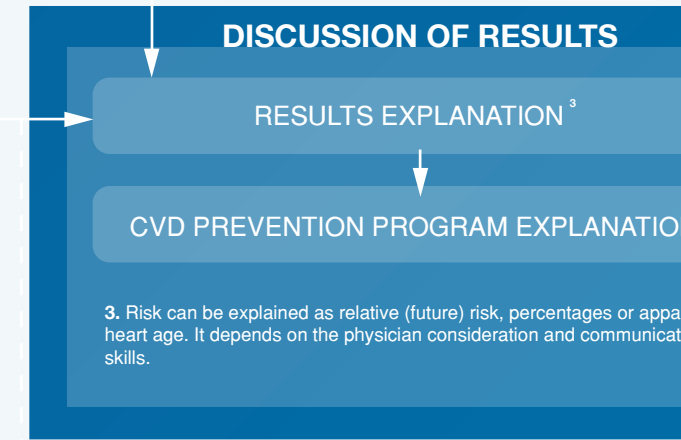


STEP 1 INFORMATION TOOL FOR RISK ASSESSMENT

OBJECTIVE:
FACILITATE DATA INPUT DURING PREVENTION CONSULTATION FOR CAREGIVERS IN PRACTICE

(THE PERSON DOING THE MEASUREMENT MIGHT NOT BE THE SAME GIVING THE RESULTS)

IMPORTANCE FOR THE SYSTEM:
FILTERS RISK FACTORS FOR NEXT STEP.
STARTS SCREENING DIGITAL DATABASE.
UPDATES RISK PROFILE (STEP 3)



STEP 2 RESULTS AND RISK COMMUNICATION

OBJECTIVE:
FACILITATE EXPLANATION OF RESULTS.
GIVES HINTS FOR PROVIDER AND USER.
EXPLAINS THE POSITIVE IMPACT OF THE PREVENTION PROGRAM.

IMPORTANCE FOR THE SYSTEM:
TIME LIMITED CONSULTATIONS.
THE USER CAN REVIEW INFORMATION OUTSIDE THE GP OFFICE.
CONNECTS RESULTS TO RISK PROFILE (NEXT STEP).



STEP 3 (& 5) RISK PROFILE SETUP

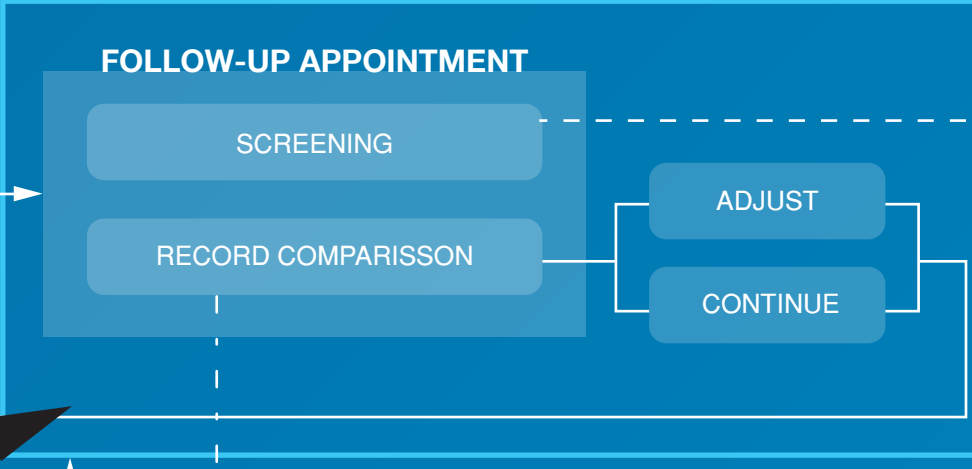
OBJECTIVE:
PROVIDE OVERVIEW OF PROGRAM (SETUP).
GIVE SUMMARY OF READINGS AND ADHERENCE IN FOLLOW UP APPOINTMENTS.

IMPORTANCE FOR THE SYSTEM:
PROCESS SELF-SCREENING DATA.
CONNECTS SELF-MONITORING DEVICE AND APP WITH HEALTHCARE PROVIDER.

CONNECT PROGRAM WITH LIFESTYLE

PROGRAM IMPLEMENTATION
PROGRAM ADHERENCE

CONNECT LIFESTYLE WITH PROGRAM



STEP 4 RISK PROGRAM DEVICE AND APP

OBJECTIVE:
PROMOTE SELF-MANAGEMENT. ADAPTIVE INTERFACE.
REMINDER OF PROGRAM & INDICATIONS.
DETECT IMPROVEMENTS OR DECREASING LEVELS AND ADJUST.

IMPORTANCE FOR THE SYSTEM:
MAIN TOUCHPOINT WITH THE USER OUTSIDE GP OFFICE.
MANTAIN PERSONAL TRIGGER.
CONSTANT MONITORING CAN HELP DETECT DEPRESSION AND STRESS.



Importance of adaptability (PATIENT TYPOLOGY)
Not all users are the same when thinking about health.
Different lifestyles, routines and triggers.

Outside the GP office behaviour and priorities change.

To consider:
Connectivity CAN increase office visits and reduce availability (time) for new registrations.

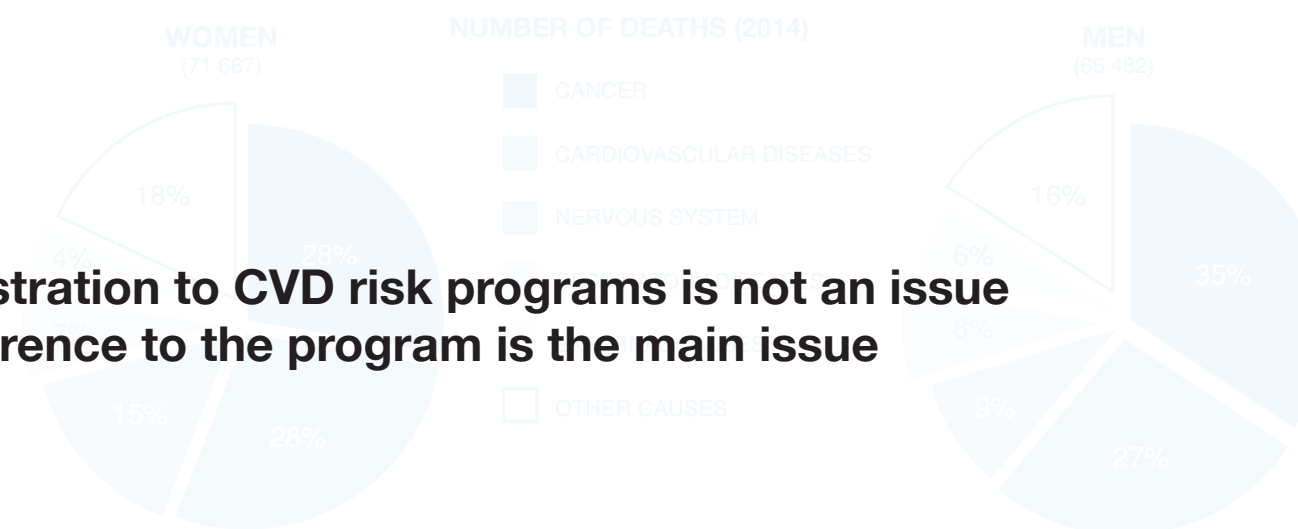
Health literacy: Set of skills needed to function effectively in the health care environment locate and interpret information.
(Use quantitative information for tasks, such as interpreting food labels, measuring blood glucose levels, and adhering to medication regimens; and speak and listen effectively)

CVD risk is highly related to health literacy.

Main costs of prevention are related to time spent (both caregivers and patients)

Registration to CVD risk programs is not an issue
Adherence to the program is the main issue

Registration to CVD risk programs is not an issue
Adherence to the program is the main issue





Prevention National Campaign

Using the citizen database the population between 40 and 50 get an invitation to enter an interactive platform.

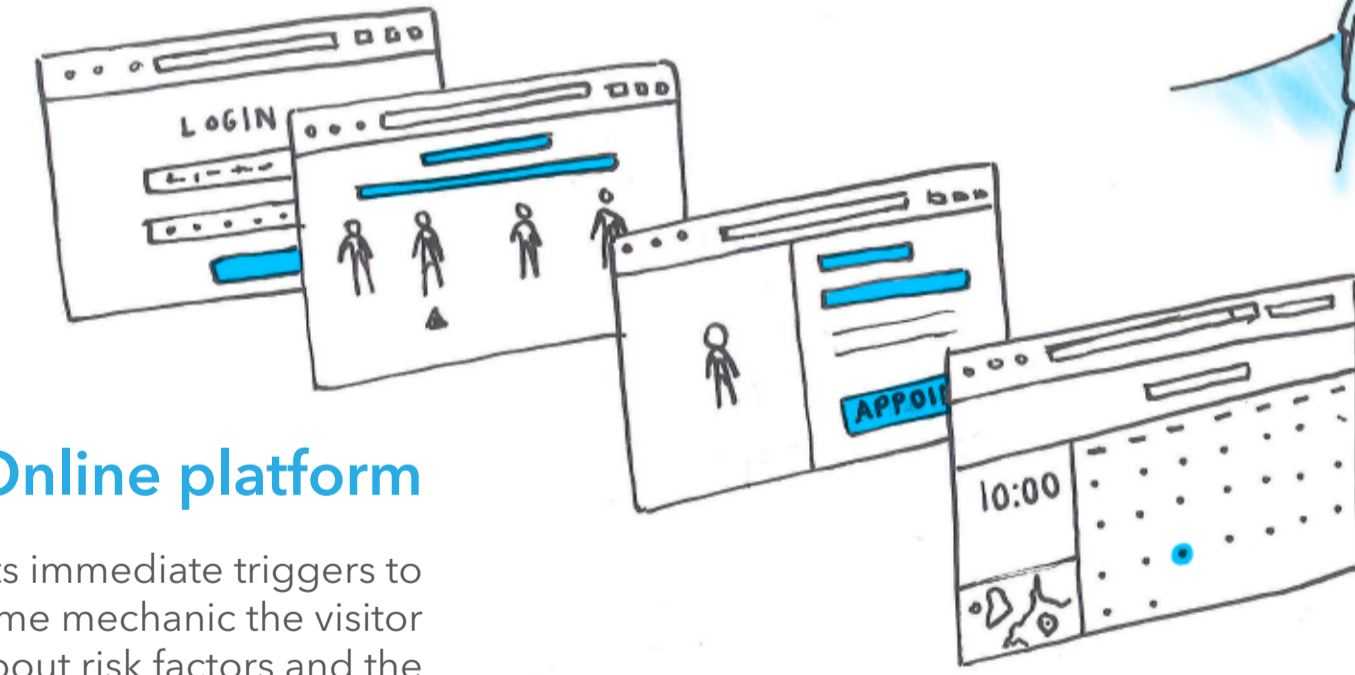
User Notification

Tailored link to platform in either mobile or mail highlighting the importance of screening at their age / the reward they will get after login in.



Online platform

By login in the user gets immediate triggers to explore the website. With game mechanic the visitor is given information about risk factors and the importance of CVD assesment.



Make appointment

The platform explains the possibility to obtain a wearable tracker after performing a CVD screening. The platform facilitates the appointment making.

Arrive with track number

The GP can track the user with the platform database.



Risk assesment

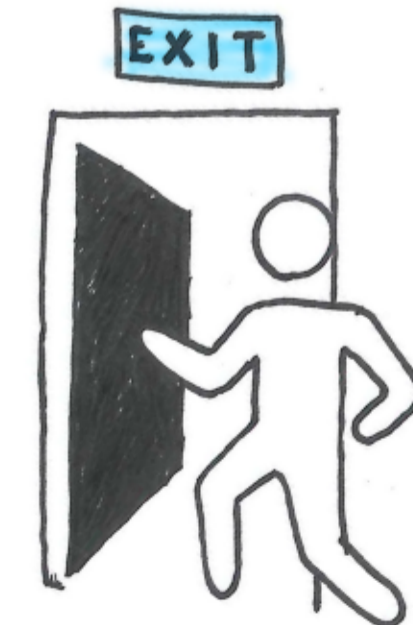
The GP, assistant or nurse or performs the measurements.



Exit cycle

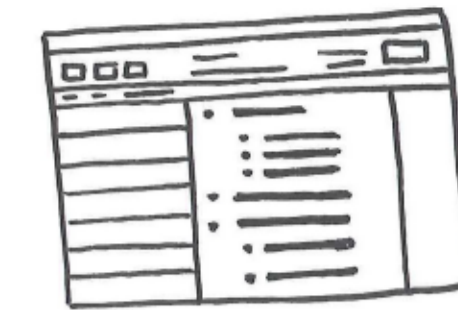
If no risk is found, users leave the GP's office with the advice to avoid risk factors.

For labeled individuals a second appointment can compare data and detect false positives.



Electronic Health Record

Digital record of patients that can be reviewed by different care providers.



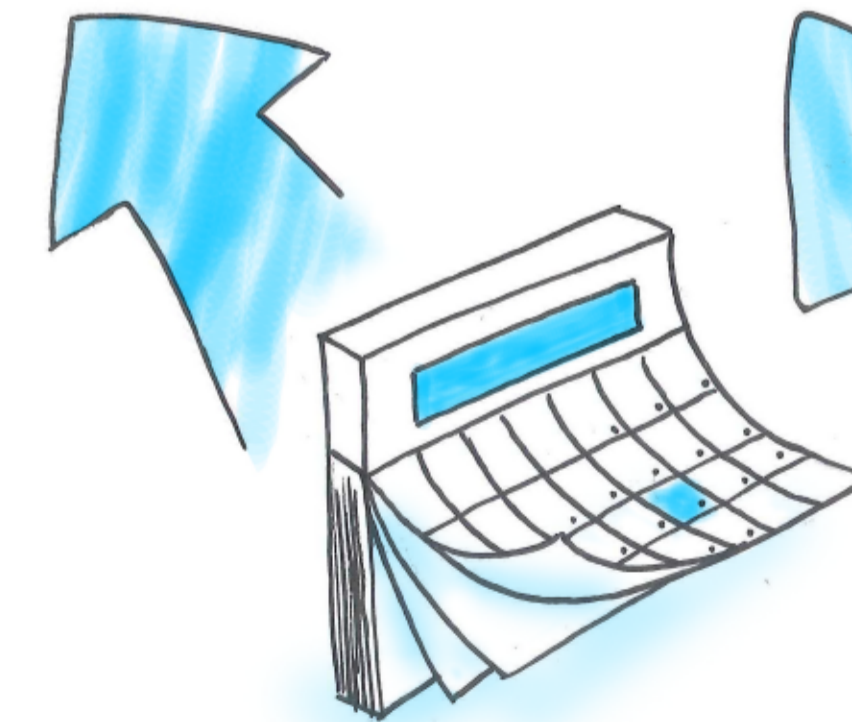
Connected devices

By using connected devices that update the EHR automatically, the health provider avoids uncomfortable silences and can use more time to explain CVD information.



Manage next appointment

The system provides information on the last reading and the next scheduled appointment.



Online platform

GP uses the platform to explain the risk factors relevant to the user. This gives a common ground for the conversation.



Registration

The user is given the option to de-register a recommended prevention program.



Adequate data interpretation

Interface switches from technical data to abstract interpretation depending on user's profile and activity.



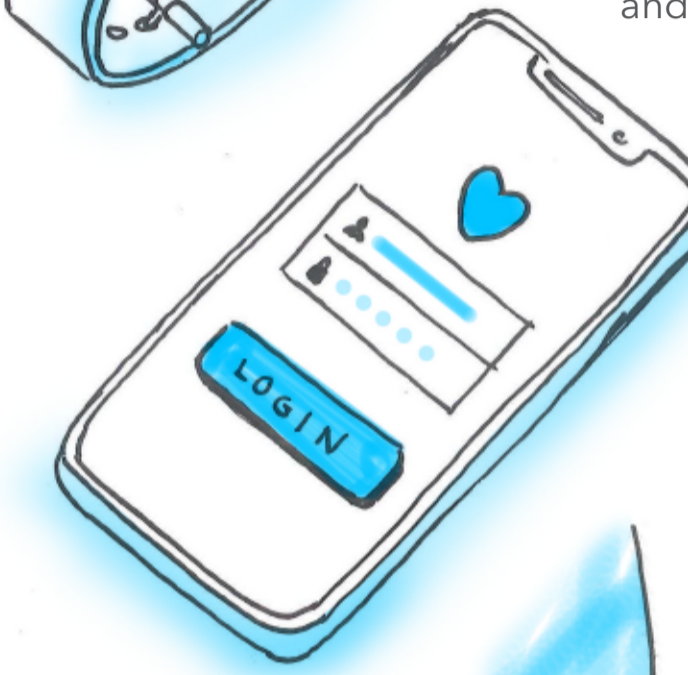
Smartwatch

By registering the user obtains a smart device to track activity. As long as the person follows the program the device will have no cost.



Mobile App

Main interface for the user to monitor data and plan actions.



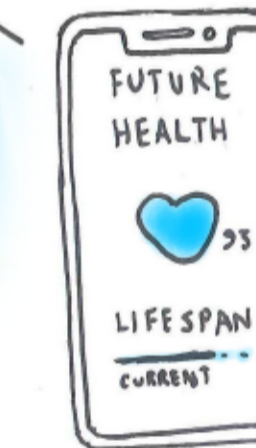
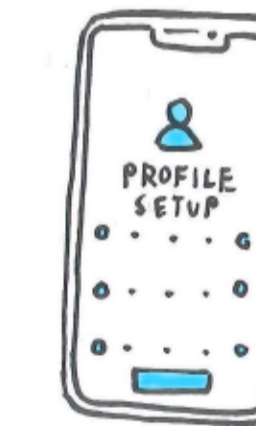
Back Home

The user can obtain more information from the same online platform.



App setup

Outside the appointment the user can setup details such as goals and personal preferences, while the medical readings are uploaded to the database that the GP will see in the next appointment.





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For labeled individuals a second appointment can compare data and detect false positives.

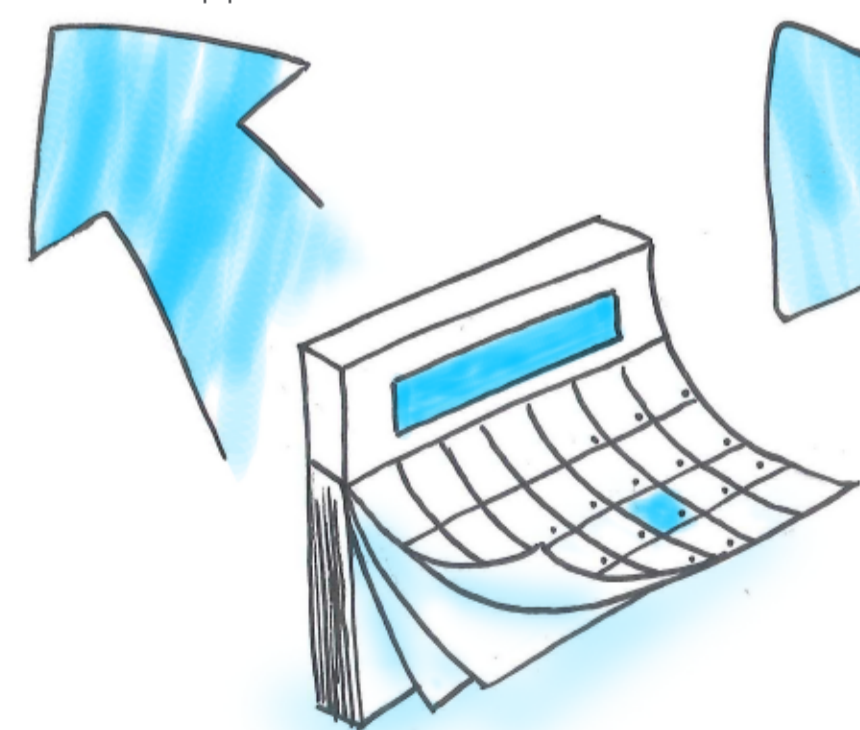
MAIN OBJECTIVES:

Digital record of patients that can be reviewed by different care providers.

- INCREASE HEALTH LITERACY OUTSIDE THE CONSULTATION.
- FACILITATE CONSULTATIONS BY CONNECTING ELECTRONIC HEALTH RECORDS WITH MEASURING DEVICES.
- PROVIDE RELEVANT TRIGGERS AND SUITABLE INFORMATION FOR THE TYPE OF USER.
- REACH (LONGITUDINAL) TREATMENT ADHERENCE AND AVOID (PERSISTANCE OVER ACCURACY)
- GRADUALLY INCREASE CONTROL OVER HEALTH DATA.

Manage next appointment

The system provides information on the last reading and the next scheduled appointment.



Online platform

GP uses the platform to explain the risk factors relevant to the user. This gives a common ground for the conversation.

RISK FACTORS

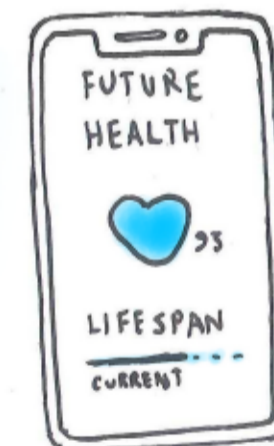
the health provider uncomfortable silences and can use more time to explain CVD information.

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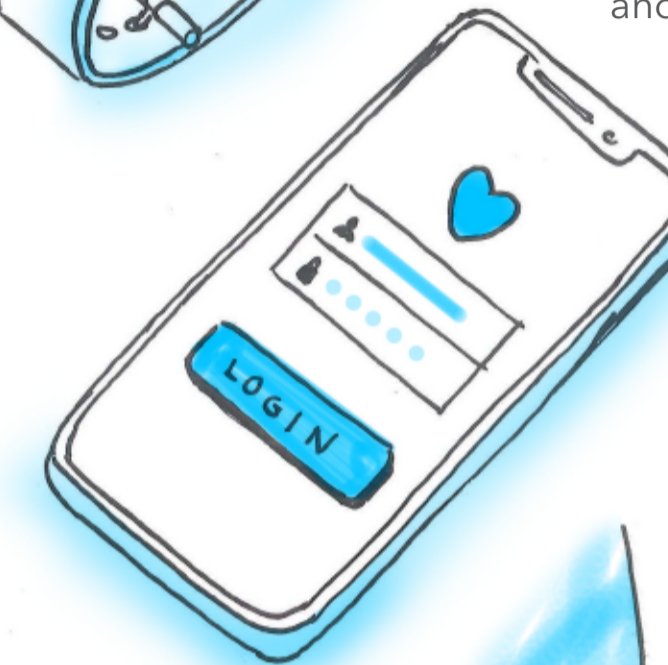
Smartwatch

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Mobile App

Main interface for the user to monitor data and plan actions.



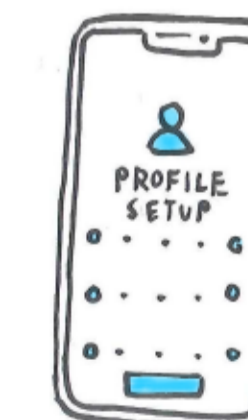
Back Home

The user can obtain more information from the online platform or app.



App setup

Outside the appointment the user can setup details such as goals and personal preferences, while the medical readings are uploaded to the database (seen in the second appointment).



WIREFRAMING

DURING CONSULTATION

Characteristics:

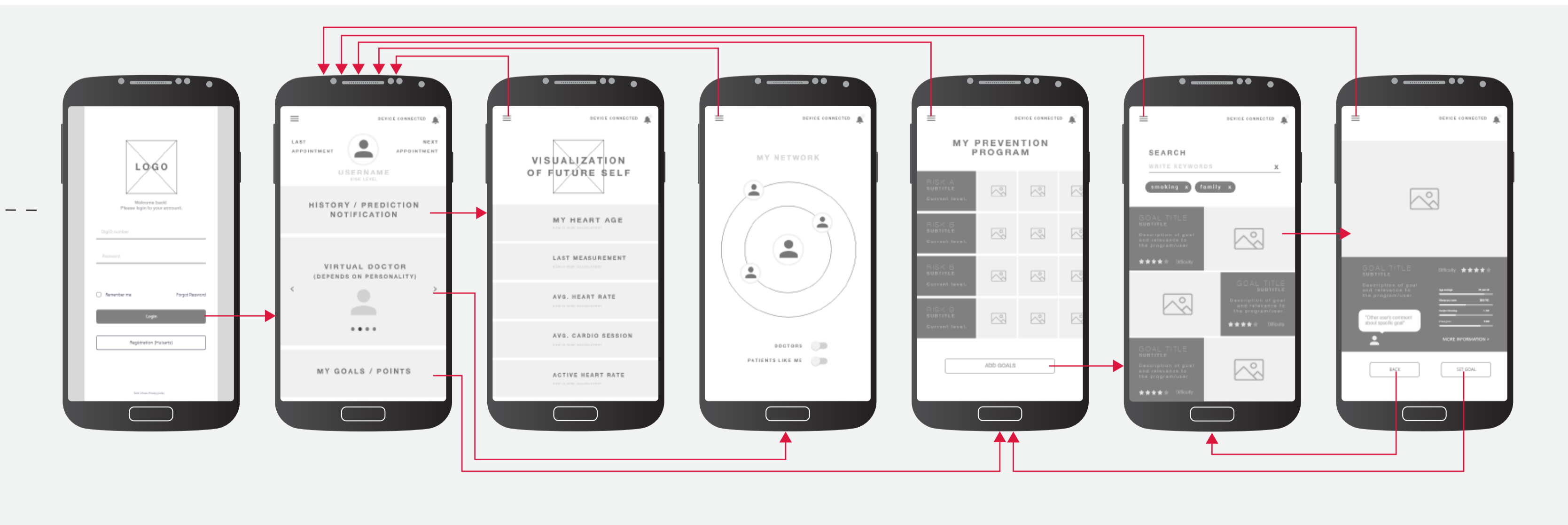
- Program manager login
- Filling profile automatically
- Appointment setup
- Sync wearable device



OUTSIDE CONSULTATION

Characteristics:

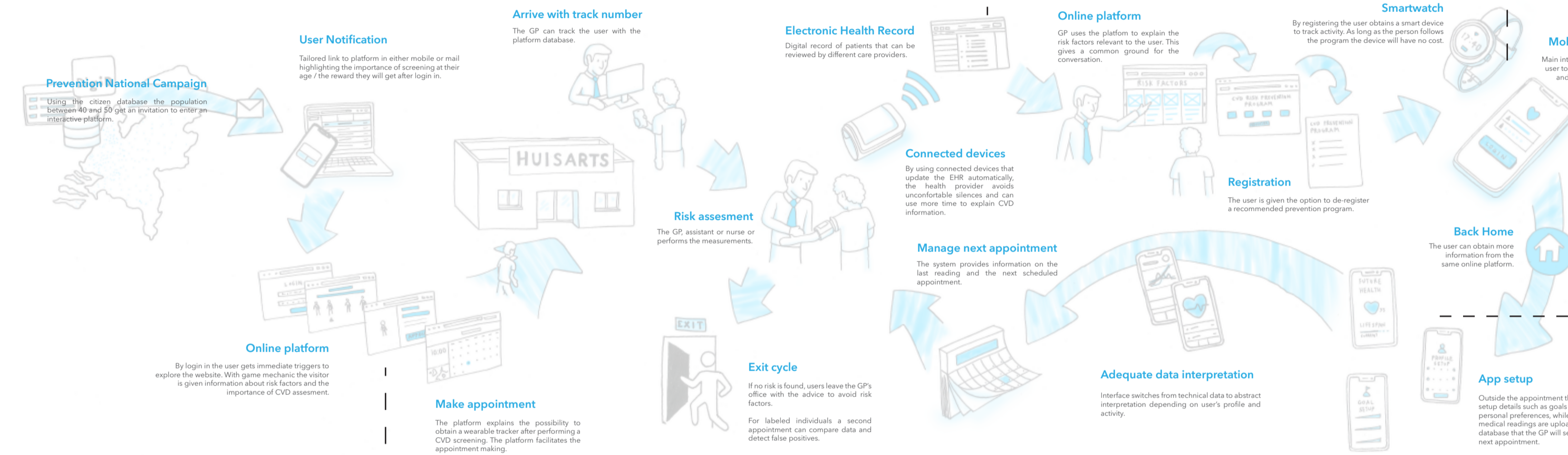
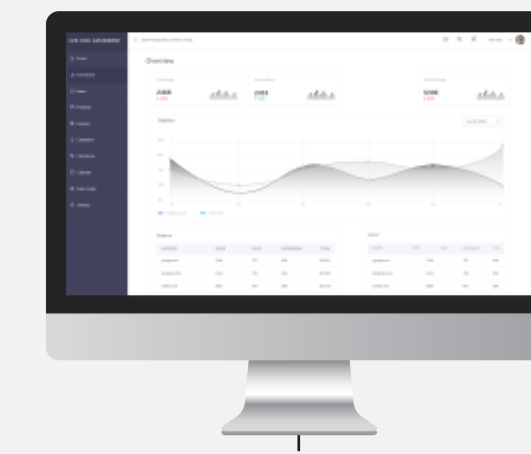
- Different type of elements to differentiate personality of users
- Personalized advice depending on user type
- Manage data and appointments
- Gamified systems
- Sync wearable device to enhance activities (goals)



DURING CONSULTATION

Characteristics:

- Device connected with EHR.



BEFORE CONSULTATION

Characteristics:

- Increase awareness and health literacy

- Facilitate appointment



APPENDIX K

FINAL QUESTIONNAIRE

You are invited to register into a prevention program that will help you lower this risk. The program includes an app and a wearable device that you won't have to pay unless you don't follow recommendations. **Would you participate?**

13 out of 13 people answered this question

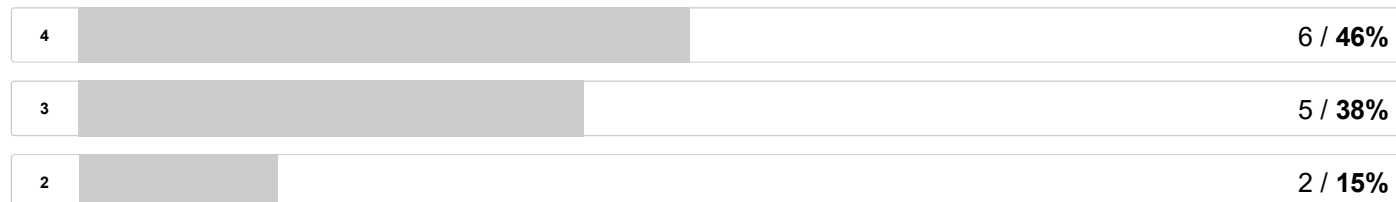
Average: 3.31



Not at all

Unsure

Most definitely



Follow-up appointments can be in a one-year span (if you adhere to the prevention program). **Do you see yourself using the app during this period?**

13 out of 13 people answered this question

Average: 3.00



Not at all

Maybe

Most definitely



Do you think the program and app would help you **change your risk behaviors?**

13 out of 13 people answered this question

Average: 3.00



Not at all

Not sure

Most certainly





Would you prefer the app to be...

13 out of 13 people answered this question

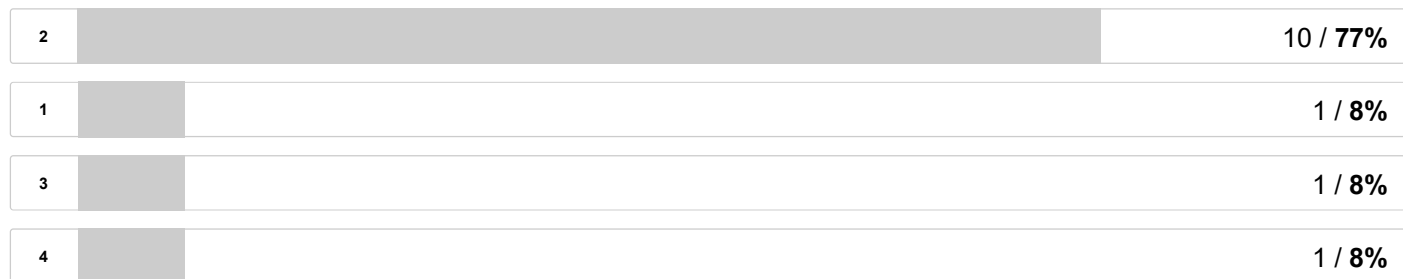
Average: 2.15



Less serious

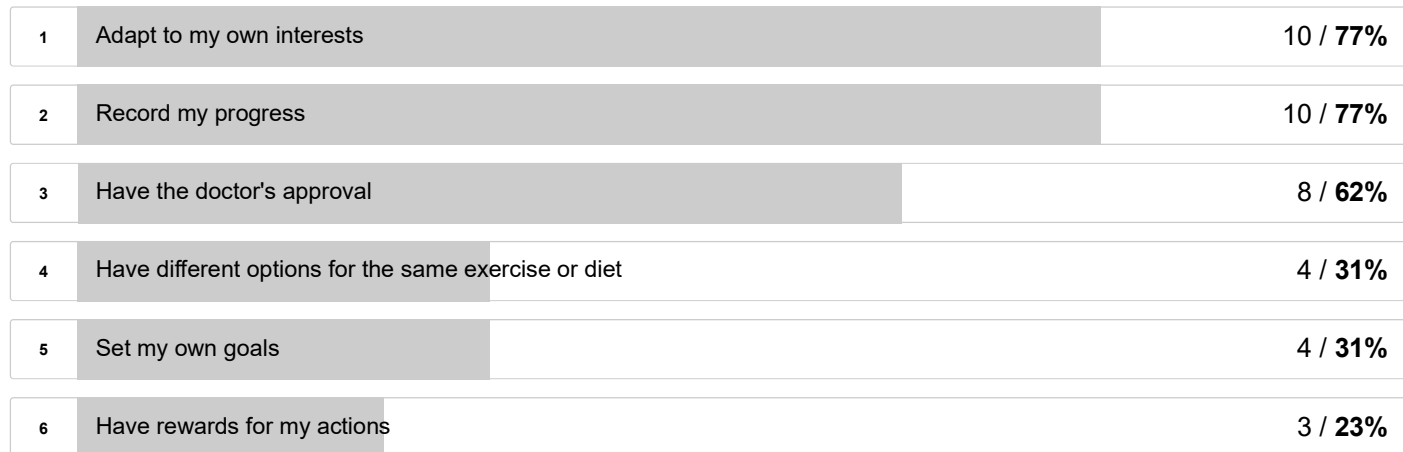
Keep it like it is

More serious



What do you think it's **most important**...(Choose 2)

13 out of 13 people answered this question



Which one would be **least important**...(Choose 2)

13 out of 13 people answered this question



4	Set my own goals	3 / 23%
5	Adapt to my own interests	1 / 8%
6	Record my progress	1 / 8%

APPENDIX L

APP MOCK-UPS

