Ignacio Bueno

Personal and Final Project

University of Northumbria
BA (Hons) Interactive Media Design
Tutor: Ben Salem

Introduction

Thoughts before starting

I like to think of myself as a person who enjoys learning new things to expand his knowledge but also to challenge himself to improve and change the establishment. That's the main reason why I chose to work on health care in a foreign country when I was given the chance. That chance was given to me in an amazing country, which already has great developments in the subject, some of them I've never seen before in my country. Even so, I wanted to contribute to the subject by applying what I have learnt so far about service and interface design.

Regarding my tutor, when I was briefed that Ben would be the one in charge of tutoring me for those projects, I was enthusiastic about the idea of working with someone with a background based on UX and Research. One of my career interests is the UX, therefore, working with a tutor like Ben might help me to clarify my interests towards my degree but also my career.

For the reasons above expressed, I started to work on this Personal and Final Project, and was glad to be given those opportunities.

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Structure of contents

"If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions."

- Albert Einstein

01 Brief & Method

Analysis of the brief and of the methodology followed

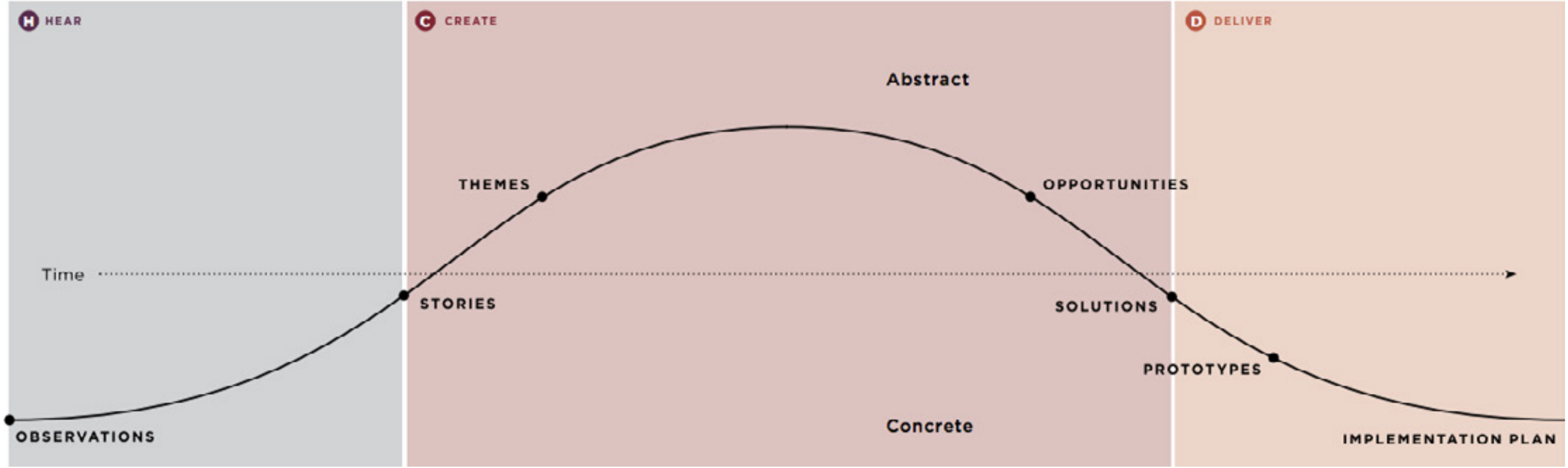
We were called to research on cutting edge technologies to solve current problems by applying the knowledge we have learnt from our degree.

Therefore, I have chosen to work in a subject such as healthcare, one of the most important areas in our lives but also a cutting-edge subject nowadays. The more developed technology, the more solutions for health care comes up to meet patients but also health providers needs.

Since healthcare is a broad subject of study, I have set myself the aim to follow an exploratory research process taking as a starting point the investigation conducted by Ben Salem at the Royal Victoria Infirmary in order to discover a proper Design Challenge to finally come up with a solution for specific problems I may found during the process.

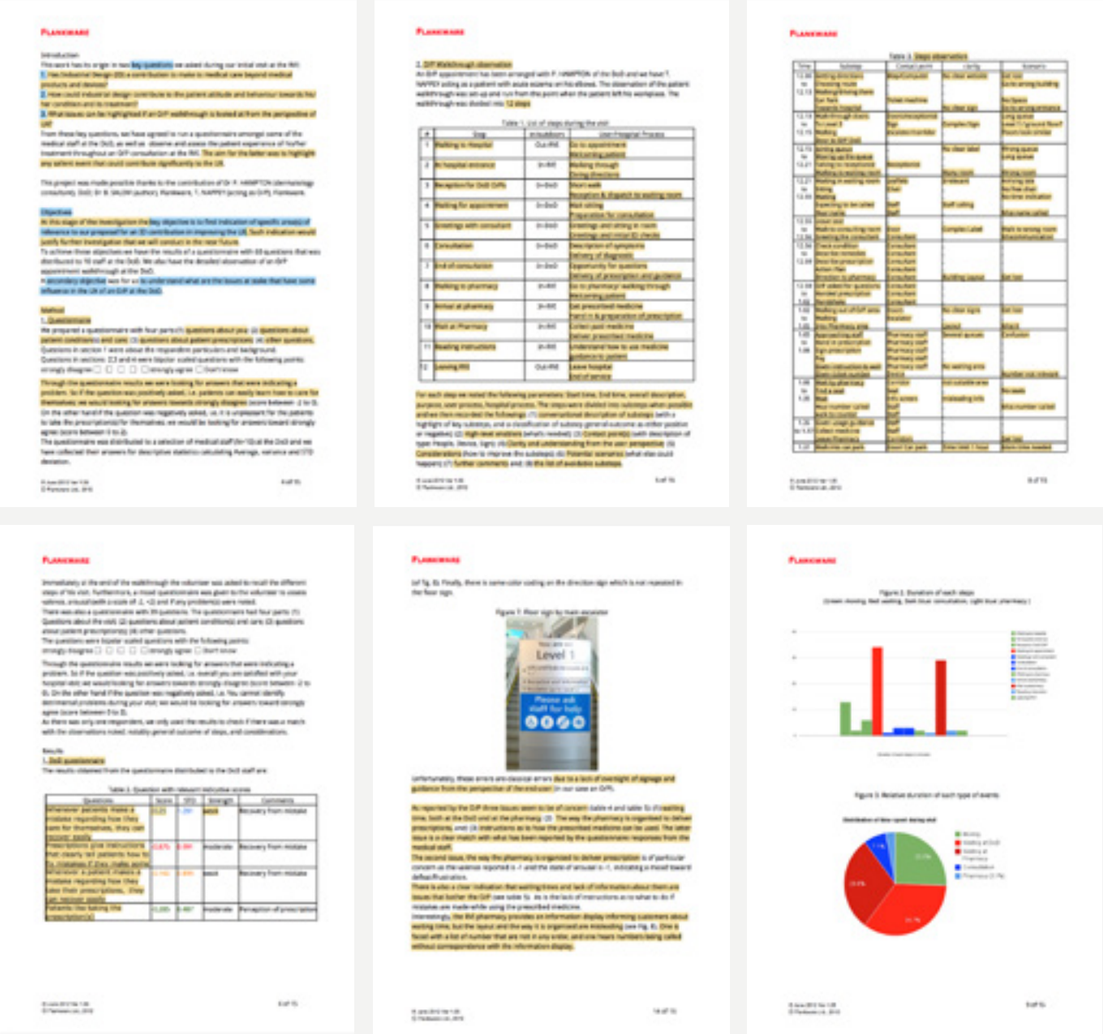
Due the nature of the project, I have considered the adoption of some research methods, as well as project methodologies such as the Iterative Process or the Agile Manifesto or the Boyd Loop. However, I will be finally working below the basis of the IDEO's Project Development process which consists of: Understanding of the market, the client, the technology and perceived constraints. Observe real people in real-life situation Visualize new-to-the-world concepts. Evaluate and refine the prototypes. Implement the new concept for commercialization

*"The process of **Human-Centered Design** starts with a Design Challenge and goes through three main phases: Hear, Create, and Deliver. The process will move your team from concrete observations about people, to abstract thinking as you uncover insights and themes, then back to the concrete with tangible solutions."*



"During the hear phase, your Design Team will collect stories and inspiration. You will prepare for and conduct a field research"

HEAR



02 Ben’s Report

Investigation of Outpatient Experience at the RVI

Ben Salem conducted an investigation of outpatient experience at the department of dermatology at the Royal Victoria Infirmary in Newcastle Upon Tyne which was given to me to be analysed and understood as a starting point for my project. Through this investigation, which was focused on a single department of just one Hospital in Newcastle, Ben Salem, discovered findings which, in fact, happens in most of the hospitals and departments of the country. To achieve that, he used methods such as walkthrough observation and questionnaires to patients.

His detailed investigation, indentifies problems in the organizational structure of the hospital but also in the patient journey. Besides, it details how the patient journey through hospital as well as patient’s feelings in each stage.

Those are the key questions established by Ben to conduct the investigation:

1. Has Industrial Design (ID) a contribution to make to medical care beyond medical products and devices?

2. How could industrial design contribute to the patient attitude and behaviour towards his/ her condition and its treatment?

3. What issues can be highlighted if an O/P walkthrough is looked at from the perspective of UX?

The investigation answers the initial questions by dividing its findings in 3 groups: Issues that need addressing, points where difficulties arise and the points when patients were visibly unhappy.

Issues that need addressing:

Instructions and support for patients that make mistakes in taking/applying their prescription(s). Ease of recovery from a mistake in taking/applying their prescriptions. Dislike taking prescriptions.

Points where difficulties arise:

Initial finding of the hospital. Parking spaces. Finding the dermatology O/P reception area. Waiting time for consultation is not clearly indicated. Finding the pharmacy. Waiting time indications at the pharmacy are misleading. Waiting area for pharmacy is no suitable.

Patients visibly unhappy:

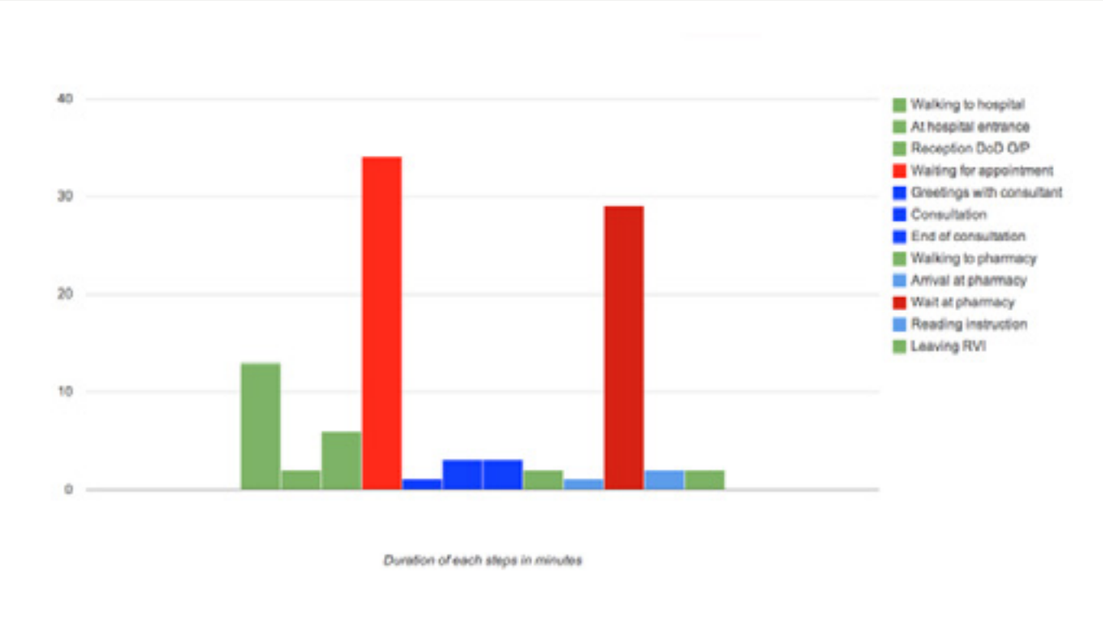
Waiting for the consultation. Waiting at the pharmacy.

From among those findings, I classified 4 main areas on problems were significants: **Waiting times, medications, pharmacy and wayfinding**. Those areas were used as starting point.

Regarding **waiting times**, several indicators have shown how patients spend more time waiting than in consultancy. For instance, the figure on the right shows the duration of each step of the outpatient walkthrough, in which it can be appreciated the waste of a greater amount of time waiting in the pharmacy and for the appointments.

Waiting times in pharmacy hold a direct relation to "**problems in pharmacy**" that are caused because of the process in which medicines are prepared and delivered. Besides, there is a screen which is supposed to show the status of the prescription, however, instead of helping users, it makes of the situation a mess.

The problem identified in relation to **medications**, the investigation that patients have the ability to easily recover from their mistakes in taking their medications. From my point of view, it is a problem which needs addressing because sometimes patients don't know what to do with their prescriptions and also the fact of the patients making mistakes is because they don't have clear how to take them.



02 Ben's Report / Hear

The point addressed to wayfinding identifies several issues when patients were asked to get directions through the hospital. Users made mistakes because there is not a clear organisation of departments, rooms and locations. Those sections are listed alphabetically but should be by user needs. Further to this confusing organisational system, the naming of floors was not conventional, in fact, the Ground Floor is called Level 1.

In addition to these four main areas, I obtained from the report **the patient journey.** From this source, I was able to make a storyboardto illustrate each step that a user has to do during his journey through the hospital.

I used the storyboard as starting point to set **my design challenge.**

Story Board 01. Patient Journey at RVI


1. Walking to hospital


2. Getting directions

3. Following directions. Unclear


4. Gets lost


5. First step of check-in


6. Walking to waiting room

7. Calling patient. Call lost


8. Second step of check-in


9. Waiting room. No sense of time

10. Calling patient to appointment


11. Patient with doctor


12. Explaining diagnostic


13. Nurse handing prescription


14. Walking to pharmacy. Lost again


15. Waiting for pharmacy


16. Hand-in prescription


17. Pharmacy System. Confiusion


18. Called to collect his medicines


19. Collecting prescription


20. Way out

Elapsed time: 1h 30min

"Design is not art. It is about crafting solutions to real issues"

- Mark Boulton

03 User Story

My story as patient at the Royal Victoria Infirmary

The book "Design for Care: Innovating Healthcare Experience, by Peter Jones, Rosenfeld" says that Healthcare is one of the fields in which our own experiences as patients can be used as input for the research.This affirmation from this important consultancy in UX and HCI, in my opinion, makes me believe that **my experience as patient,** is an important point to include as input for the research.

Due to this fact, I will using my own experience thanks to the "opportunity" I have had being a patient during the time that this project was developed.

Patient Experience

I had my first contact with the RVI due to a vision issue. I was checked by an optician who once saw me, head me to emergencies. The experience I passed through was exactly the same as the one decrypted by my tutor in his investigation. When I read Ben's report I felt myself really identified with sitiuations described by him.

At the begining, I had trouble finding the main entrance of the hospital, but also finding the location of the service I was addressed to: Newcastle Eye's Center. The image on the nex page, which the investigation already highlighted, that the services are sorted alphabetically instead of by patients needs.

Where do you want to go?

If you are looking for		Follow the signs to		
	Department	Wing	Level	Area
A	Accident & Emergency	New Victoria	3	Emergency Department
	Assessment Suite	Leazes	3	Assessment Suite
	Allergy Clinic	Leazes	3	Immunology
	Ante Natal Clinic	Leazes	4	Maternity
B	Bereavement Office	Leazes	3	Reception
	BMT	New Victoria	4	Ward 3
	Breast Clinic	New Victoria	1	Breast Screening & Assessment Unit
	Breast Screening & Assessment Unit	New Victoria	1	Breast Screening & Assessment Unit
	Bridges School	New Victoria	3	The Bridges School
	Burns Unit	Leazes	5	Ward 37
C	Cafe	New Victoria	1 & 2	Reception
	Cafe	Leazes	3	Reception
	Cardiology	New Victoria	1	Outpatient Department
	Cashiers	New Victoria	1	Cashiers Department
	Casualty	New Victoria	3	Emergency Department
	Cellular Pathology	New Victoria	3	Cellular Pathology
	Chaplaincy Quiet Room	Leazes	3	Reception
	Chaplaincy Quiet Room	New Victoria	2	Chaplaincy Quiet Room
	Chest Clinic	New Victoria	1	Outpatient Department, Clinic C
	Chest Pain Assessment Unit	New Victoria	3	Emergency Department
	Child Development Centre	New Victoria	1	Children's Outpatient Department
	Children's Burns and Plastics Unit	New Victoria	4	Ward 11
	Children's Emergency Assessment Unit	New Victoria	3	Minors
	Children's Eye Outpatient Department	Claremont	2	Claremont Wing & Eye Outpatients
	Children's Intensive Care & High Dependency Unit	New Victoria	4	Wards 12
	Children's Oncology Day Unit	New Victoria	4	Ward 14
	Children's Orthopaedic Ward	New Victoria	4	Ward 10
	Children's Outpatient Department	New Victoria	1	Children's Outpatient Department
	Children's Surgical Day Unit	New Victoria	4	Ward 8
	Children & Young People's Clinic	New Victoria	3	Children & Young People's Clinic
	Clinical Research Centre	Leazes	6	Clinical Research Centre
	Colposcopy Clinic	New Victoria	2	Women's Health Unit
	Coronary Care Unit	Leazes	6	Ward 50
	Critical Care Leazes wing	Leazes	5	Ward 36
	Critical Care Victoria	New Victoria	5	Ward 18
	Cystic Fibrosis Unit	Leazes	6	Ward 52
D	Delivery Suite	Leazes	4	Maternity
	Dermatology Outpatient Department & Treatment Unit	New Victoria	2	Dermatology Outpatient Department & Treatment Unit
	Dietetic Outpatient Clinic	Leazes	3	Ward 30
	Dietician	Leazes	3	Ward 30, Dietetic Outpatient Clinic
	Dispensary	New Victoria	1	Pharmacy
E	Early Pregnancy Assessment Unit	Leazes	4	Ward 40
	Emergency Assessment Unit - EAU	Leazes	3	Assessment Suite
	ECG	New Victoria	1	Cardiology, Outpatient Department
	EEG	New Victoria	2	Neurophysiology
	Emergency Department	New Victoria	3	Emergency Department
	Endoscopy	Leazes	3	Endoscopy
	Exit to Queen Victoria Road	New Victoria	1	Way Out
	Exit to Richardson Road	Leazes	3	Way Out
	Eye casualty	Claremont	2	Claremont Wing & Eye Outpatients
	Eye Day case	Claremont	3	Ward 21
	Eye Outpatient Department	Claremont	2	Claremont Wing & Eye Outpatients
F	Faint & Syncope Unit	Leazes	3	Faint & Syncope Unit
	Fetal Medicine	Leazes	4	Maternity
	Fracture Clinic	New Victoria	1	Fracture Clinic
G	Great North Children's Hospital	New Victoria	1	Reception
	Gynaecology Day Unit	New Victoria	1	Women's Health Unit
H	Haematology Unit	Leazes	3	Haematology
	Haemophilia Centre	Leazes	3	Haematology
	Hairdressers	Leazes	3	Leazes Reception
	Hand Unit	Leazes	3	Ward 39
	Health Psychology	New Victoria	2	Rehabilitation
	High Dependency Unit - Leazes	Leazes	5	Ward 38
	Buses/Metro	New Victoria	1	Exit onto Queen Victoria Road

If you are looking for		Follow the signs to		
	Department	Wing	Level	Area
	High Dependency Unit - Victoria	New Victoria	5	Ward 18
	Home Ventilation Office	Leazes	5	Ward 38
	Hydrotherapy	New Victoria	2	Rehabilitation
I	Immunology	Leazes	3	Immunology
	Infection & Tropical Medicine Outpatient Department	New Victoria	6	Infection & Tropical Medicine Outpatient Department
	Infectious Diseases Outpatients	New Victoria	6	Infection & Tropical Medicine Outpatient Department
	IVR Clinic	New Victoria	1	Outpatient Department Clinics A-G
	Intensive Care - Leazes	Leazes	5	Ward 36
	Intensive Care - Victoria	New Victoria	5	Ward 18
L	Laser Suite	New Victoria	2	Laser Suite
M	Main Outpatient Department	New Victoria	1	Outpatient Department Clinic D&G
	Main X-ray	New Victoria	3	X-Ray
	Maternity Admissions	Leazes	4	Maternity
	Maternity Assessment Unit	Leazes	4	Maternity
	Maternity Reception	Leazes	4	Maternity
	Maternity Ultrasound	Leazes	4	Maternity
	Maxillo Facial Surgery	Leazes	3	Maxillo Facial Surgery
	Medical Photography	Leazes	5	Ward 47
	Medical Physics	Leazes	2	Medical Physics
	Minor Injuries	New Victoria	3	Minor Injuries
	MRI (Main X-Ray)	New Victoria	3	X-Ray
	MRI (Neuro)	New Victoria	5	Neuroradiology
	Multi Storey Car Park	New Victoria	2	Multi Storey Car Park
N	Neurology Day Unit	Leazes	3	Neurology Day Unit
	Neurology Ward	Leazes	4	Ward 43
	Neurophysiology	New Victoria	2	Neurophysiology
	Neuroradiology	New Victoria	5	Neuroradiology
	Neuro X-ray	New Victoria	5	Neuroradiology
	Neurosurgery	New Victoria	5	Wards 15 - 18
	Neuro Surgery Day Unit	New Victoria	5	Ward 17
	Northern Oesophago-Gastric Unit	Leazes	5	Ward 36
	Northern Region Adult Burns Centre	Leazes	5	Ward 37
O	Occupational Therapy	New Victoria	2	Rehabilitation
	Oesophageal Laboratory	Leazes	3	Endoscopy
	Ophthalmology Outpatient Department	Claremont	2	Claremont Wing & Eye Outpatients
	Ophthalmic Photography Department	Claremont	2	Claremont Wing & Eye Outpatients
	Orthopaedic Wards	Claremont	4	Wards 22 & 23
	Orthopaedic, Trauma and Spinal Surgery	Claremont	4	Wards 22 & 23
	Outpatient Departments Clinics A-G	New Victoria	1	Outpatient Department Clinics A-G
P	Paediatric Orthopaedic Outpatient Clinics	New Victoria	1	Children's Outpatient Department
	Paediatric Orthopaedic Ward	New Victoria	4	Ward 10
	Paediatric Surgical Day Unit	New Victoria	4	Ward 8
	Pain Clinic	New Victoria	1	Outpatient Department Clinic A/B/G
	Park Suite	Leazes	5	The Park Suite (Ward 47)
	Patient Advice Liaison Service (PALS)	New Victoria	1	Patient Advice Liaison Service (PALS)
	Pharmacy	New Victoria	1	Pharmacy
	Physiotherapy	New Victoria	2	Rehabilitation
	Plastic Surgery & Hand Unit Outpatient Department	New Victoria	1	Plastic Surgery & Hand Unit
	Plastics Ward	Leazes	5	Ward 47
	Private Patients Inpatients	Leazes	5	The Park Suite (Ward 47)
	Private Patients Outpatient Department	The Lodge	1	Queen Victoria Road Entrance
	Programmed Investigation Unit (PIU)	Leazes	6	Ward 51
	Psychology	New Victoria	2	Rehabilitation
	PUVA	New Victoria	2	Dermatology Treatment Unit
R	Radiology	New Victoria	3	X-Ray
	Radio Lollipop	New Victoria	3	Radio Lollipop
	Reception - Leazes Wing	Leazes	3	Reception - Leazes Wing
	Reception - New Victoria Wing	New Victoria	1	Reception - New Victoria Wing
	Rehabilitation	New Victoria	2	Rehabilitation
	Regional Immunology & Allergy Unit	Leazes	3	Immunology
	Regional Neurosciences Centre	New Victoria	5	Regional Neurosciences Centre
	Richardson Unit	Leazes	3	Ward 31A
	Ambulances and 'Drop Off' only	New Victoria	1	Main Entrance

If you are looking for		Follow the signs to		
	Department	Wing	Level	Area
S	SCIOS	New Victoria	4	Ward 3
	Shops	Leazes	3	Reception
	Shops	New Victoria	1	Reception
	Skin Department	New Victoria	2	Dermatology Outpatient Department & Treatment Unit
	Skin Outpatients	New Victoria	2	Dermatology Outpatient Department & Treatment Unit
	Skin Ward	New Victoria	2	Ward 5
	Special Care Baby Unit	Leazes	4	Maternity, Ward 35
	Speech Therapy	New Victoria	2	Rehabilitation
	Stroke Unit	Leazes	4	Ward 41
T	Teenage Cancer Unit	New Victoria	4	Ward 14
	The Bridges School	New Victoria	3	The Bridges School
	The Park Suite - Private Patients Ward	Leazes	5	The Park Suite (Ward 47)
	Trauma Clinic	New Victoria	1	Plastic Surgery & Hand Clinic
W	Ward 1	New Victoria	2	Ward 1
	Ward 2	New Victoria	3	Ward 2
	Wards 3 & 4	New Victoria	4	Wards 3 & 4
	Ward 5	New Victoria	2	Ward 5
	Wards 6 & 7	New Victoria	3	Wards 6 & 7
	Wards 8 - 14	New Victoria	4	Wards 8 - 14
	Wards 15 - 18	New Victoria	5	Wards 15 - 18
	Ward 19	New Victoria	5	Ward 19
	Wards 20 & 21	Claremont	3	Wards 20 & 21
	Wards 22 & 23	Claremont	4	Wards 22 & 23
	Wards 30, 31 & 31A	Leazes	3	Wards 30, 31 & 31A
	Wards 32 - 35	Leazes	4	Wards 32 - 35
	Wards 36 - 38	Leazes	5	Wards 36 - 38
	Ward 39 Day Unit	Leazes	3	Ward 39 Day Unit
	Wards 40 - 43	Leazes	4	Wards 40 - 43
	Wards 44- 47	Leazes	5	Wards 44- 47
	Wards 48 - 52	Leazes	6	Wards 48 - 52
	Warfarin Clinic	New Victoria	1	Outpatient Department Clinics D&G
	Way Out Queen Victoria Road	New Victoria	1	Way Out
	Way Out Richardson Road	Leazes	3	Way Out
	Women's Health Unit	New Victoria	2	Women's Health Unit
X	X-Ray	New Victoria	3	X-Ray
	X-Ray Department - Neuro	New Victoria	5	Neuroradiology
	Taxis and Ambulance Cars	New Victoria	1	Steer Abroad exit onto Queen Victoria Road

03 User Story / Hear

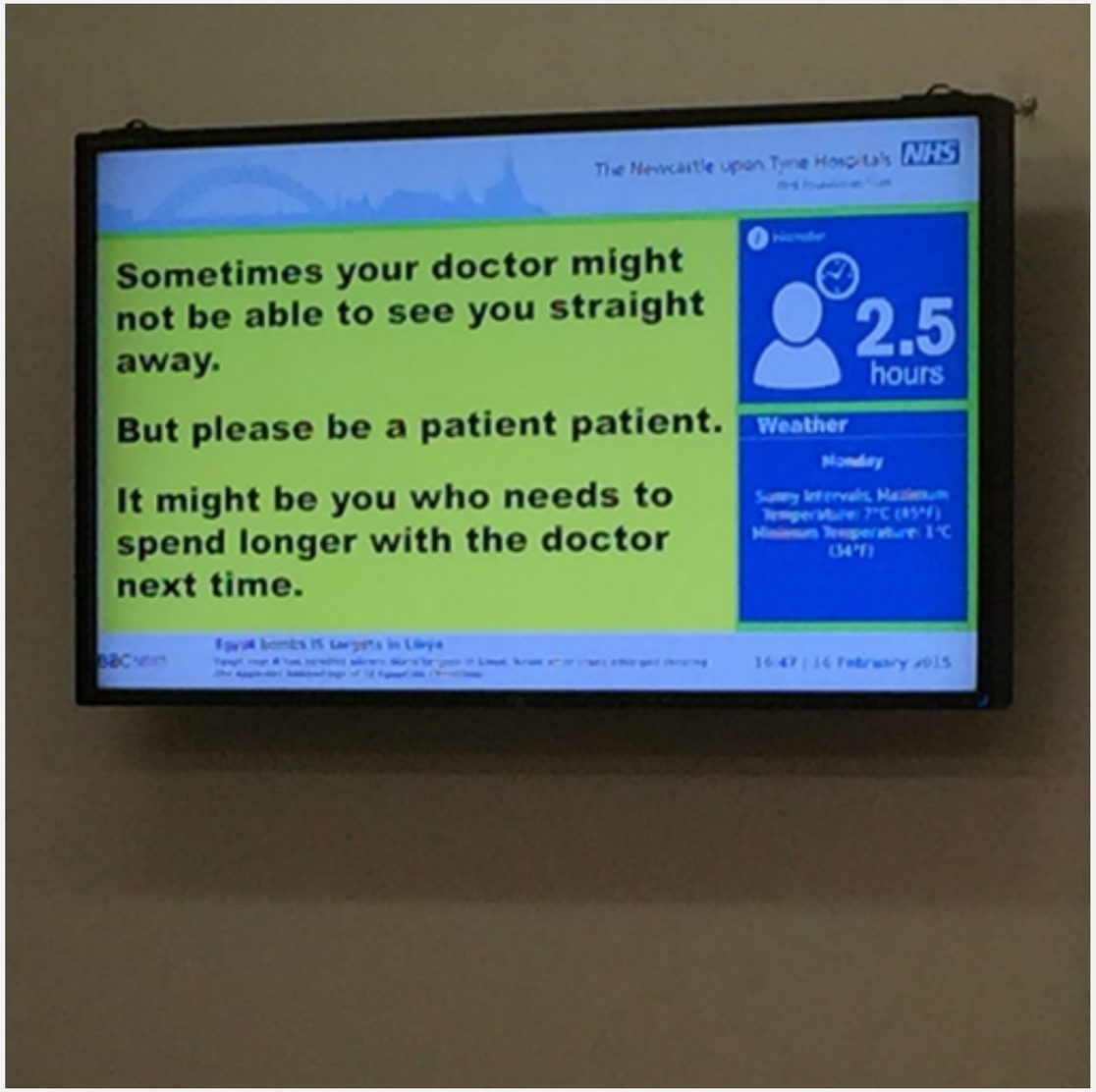
From my point of view as a user, the lack of organization by user needs but also of consistency among signs, were as already said, confusing to me. First of all, I was addressed to go to the Newcastle Eye Centre, but there was no Newcastle Eye Centre in the main sign; only on the secondaries. Secondly, the naming of the levels was not that confusing, however, it was shocking at first. Though, I am sure it would be extremely confusing if I had to use an elevator.

When I (finally) arrived at the Eye Centre, I was asked about the purpose of my visit and then I was given a list number to wait due to the nature of my issue which was an emergency appointment. After 15 min time of waiting, I was called to check-in and wait again. While I was waiting, I saw how other patients arrived at the service and joined me. That made me realise that the problem was in relation to the check-in system which, nowadays is a list to cross out names instead of an informatic process.

The hospital's staff ask users data before giving them a number to wait and then, they ask them again the same information, which is something that slows down the check-in process. During my waiting time I saw a tv screen which should show the patient order in order to make our wait bearable, however it doesn't show anything but information about the hospital and sometimes, a screen which says that your doctor is not able to see you straight away.

When the nurse called me to come in, I met my doctor who spent more than 20 minutes with me trying to find out what was happening to my eye. The doctor came up with the disease I am suffering from and a prescription for the pharmacy. However, she didn't give me any printed or digital proof about my condition. Therefore, the only thing that I was given was a prescription for a problem I didn't have much information about.

That made me think about the real meaning of medical appointments. What do we want to achieve from medical appointments? Information or solutions? I would say both. However, we don't achieve them in the same way. The information we get about conditions on our appointments could be summarised in a sentence or two.



Regarding solutions, sometimes we get a solution (medicine or treatment) but we don't know what it is for. For the appointment, the doctor explains to us briefly the treatment/medicine and why to take it, however, as the investigation showed, we still make mistakes in taking or following it. That is, in my opinion, because we are not being assisted by anyone but ourselves and our families, therefore, we often forget to take our medicine.

Coming back to my story as a patient, I went to the pharmacy to hand in the prescription I was given. In the pharmacy I saw the screen that sets the order in which the prescriptions should have been delivered to the patients. I must say that this screen didn't help me much because of its interface (in which colours weren't correctly choosen) and its disarray of information. However, I finally was able to hand in my prescription, therefore, my medicine was delivered to me.

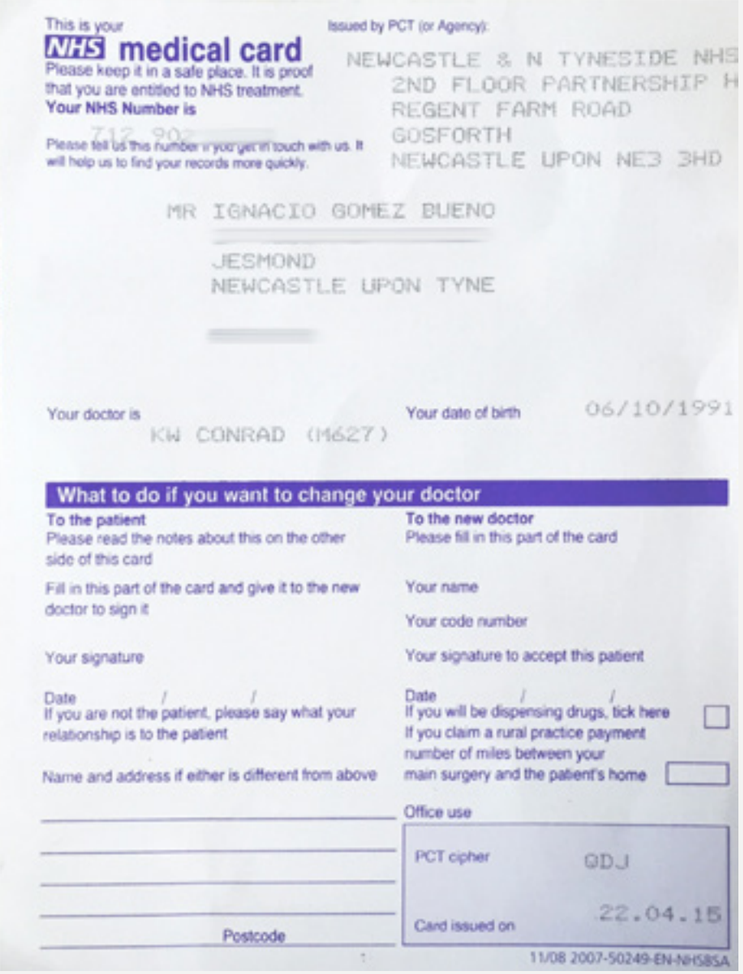
As a summary of my appointment, I may say that the outcome achieved was as I expected because, at the end of the day, I received a solution to my disease. However, the process can be highly improved.

Post Patient Experience

Since I left the consultation, I was supposed to follow the prescription for an entire month. However, my condition was gradually improving until one day I had to reduce the treatment to adapt it to the needs I had at that moment. The medicine was getting me worse instead of improving my vision.

That was dangerous, but the next medical appointment I had wouldn't be until a month from that time. The funny thing about that was how I was notify about my next appointment; that I received a letter requiring my assistance to an appointment on a day couldn't attend. Should I have called to my general practitioner? Probably, but the truth is I was being treated in the Royal Victoria Infirmary. Should I have gone to emergencies? From my point of view, it wasn't an emergency.

Regarding my appointment, I tried to reschedule it, but I was given a date for a month after the existing appointment. Therefore, I dismissed it. I wanted my issue addressed as soon as possible, therefore, I kept the original appointment. Finally, I unavoibably had to miss the appointment.



This is your
NHS medical card
Please keep it in a safe place. It is proof that you are entitled to NHS treatment.
Your NHS Number is
Please tell us this number if you get in touch with us. It will help us to find your records more quickly.

Issued by PCT (or Agency):
NEWCASTLE & N TYNESIDE NHS
2ND FLOOR PARTNERSHIP H
REGENT FARM ROAD
GOSFORTH
NEWCASTLE UPON NE3 3HD

MR IGNACIO GOMEZ BUENO

JESMOND
NEWCASTLE UPON TYNE

Your doctor is KW CONRAD (M627)
Your date of birth 06/10/1991

What to do if you want to change your doctor

To the patient
Please read the notes about this on the other side of this card

Fill in this part of the card and give it to the new doctor to sign it

Your signature

Date / /
If you are not the patient, please say what your relationship is to the patient

Name and address if either is different from above

Postcode

To the new doctor
Please fill in this part of the card

Your name

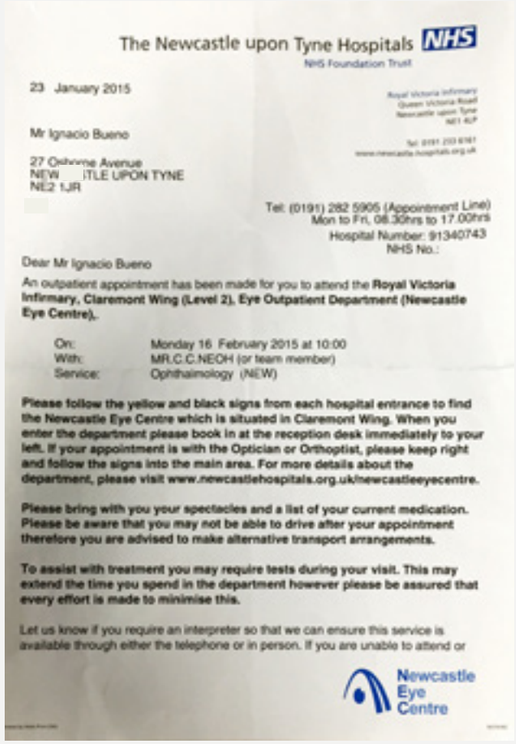
Your code number

Your signature to accept this patient

Date / /
If you will be dispensing drugs, tick here
If you claim a rural practice payment number of miles between your main surgery and the patient's home

Office use
PCT cipher QDJ
Card issued on 22.04.15

11/08 2007-50249-EN-NHSBSA



The Newcastle upon Tyne Hospitals NHS
NHS Foundation Trust

23 January 2015

Mr Ignacio Bueno

27 Osborne Avenue
NEW ITLE UPON TYNE
NE2 1JR

Tel: (0191) 282 5905 (Appointment Line)
Mon to Fri, 08.30hrs to 17.00hrs
Hospital Number: 91340743
NHS No.:

Dear Mr Ignacio Bueno

An outpatient appointment has been made for you to attend the **Royal Victoria Infirmary, Claremont Wing (Level 2), Eye Outpatient Department (Newcastle Eye Centre),.**

On: Monday 16 February 2015 at 10:00
With: MR.C.C.NEOH (or team member)
Service: Ophthalmology (NEW)

Please follow the yellow and black signs from each hospital entrance to find the Newcastle Eye Centre which is situated in Claremont Wing. When you enter the department please book in at the reception desk immediately to your left. If your appointment is with the Optician or Orthoptist, please keep right and follow the signs into the main area. For more details about the department, please visit www.newcastlehospitals.org.uk/newcastleeyecentre.

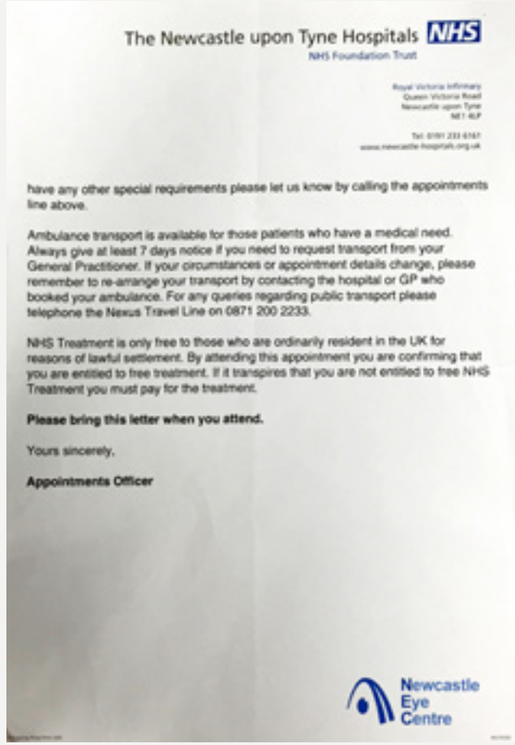
Please bring with you your spectacles and a list of your current medication. Please be aware that you may not be able to drive after your appointment therefore you are advised to make alternative transport arrangements.

To assist with treatment you may require tests during your visit. This may extend the time you spend in the department however please be assured that every effort is made to minimise this.

Let us know if you require an interpreter so that we can ensure this service is available through either the telephone or in person. If you are unable to attend or

Newcastle Eye Centre

These are the notifications I received asking me to attend a consultation on dates I wasn't able to attend. The first one was created for the same day of the mid-term presentation.



The Newcastle upon Tyne Hospitals NHS
NHS Foundation Trust

have any other special requirements please let us know by calling the appointments line above.

Ambulance transport is available for those patients who have a medical need. Always give at least 7 days notice if you need to request transport from your General Practitioner. If your circumstances or appointment details change, please remember to re-arrange your transport by contacting the hospital or GP who booked your ambulance. For any queries regarding public transport please telephone the Nexus Travel Line on 0871 200 2233.

NHS Treatment is only free to those who are ordinarily resident in the UK for reasons of lawful settlement. By attending this appointment you are confirming that you are entitled to free treatment. If it transpires that you are not entitled to free NHS Treatment you must pay for the treatment.

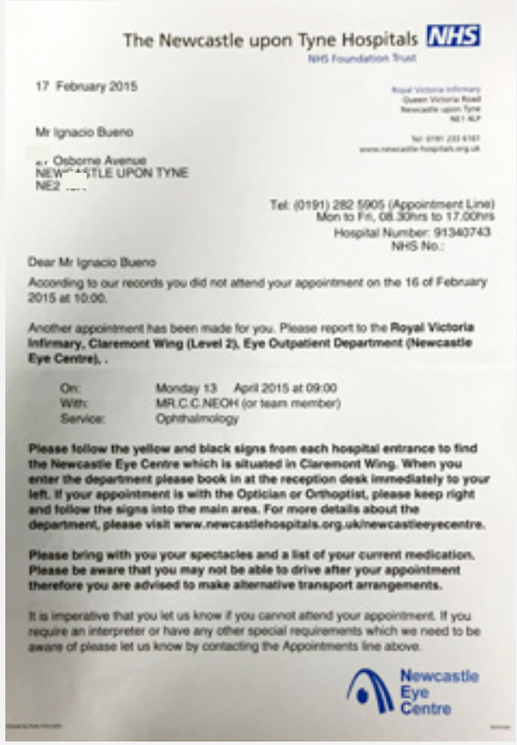
Please bring this letter when you attend.

Yours sincerely,

Appointments Officer

Newcastle Eye Centre

The letter gives instructions to find the service and further information about how to reschedule my appointment. It denotes that the staff of the hospital already know that there is a problem with the wayfinding.



The Newcastle upon Tyne Hospitals NHS
NHS Foundation Trust

17 February 2015

Mr Ignacio Bueno

Osborne Avenue
NEW ITLE UPON TYNE
NE2

Tel: (0191) 282 5905 (Appointment Line)
Mon to Fri, 08.30hrs to 17.00hrs
Hospital Number: 91340743
NHS No.:

Dear Mr Ignacio Bueno

According to our records you did not attend your appointment on the 16 of February 2015 at 10:00.

Another appointment has been made for you. Please report to the **Royal Victoria Infirmary, Claremont Wing (Level 2), Eye Outpatient Department (Newcastle Eye Centre),.**

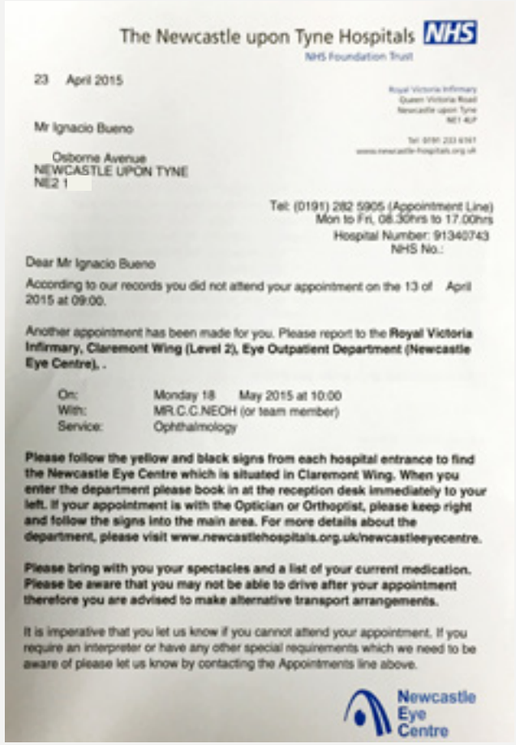
On: Monday 13 April 2015 at 09:00
With: MR.C.C.NEOH (or team member)
Service: Ophthalmology

Please follow the yellow and black signs from each hospital entrance to find the Newcastle Eye Centre which is situated in Claremont Wing. When you enter the department please book in at the reception desk immediately to your left. If your appointment is with the Optician or Orthoptist, please keep right and follow the signs into the main area. For more details about the department, please visit www.newcastlehospitals.org.uk/newcastleeyecentre.

Please bring with you your spectacles and a list of your current medication. Please be aware that you may not be able to drive after your appointment therefore you are advised to make alternative transport arrangements.

It is imperative that you let us know if you cannot attend your appointment. If you require an interpreter or have any other special requirements which we need to be aware of please let us know by contacting the Appointments line above.

Newcastle Eye Centre



The Newcastle upon Tyne Hospitals NHS
NHS Foundation Trust

23 April 2015

Mr Ignacio Bueno

Osborne Avenue
NEWCASTLE UPON TYNE
NE2 1

Tel: (0191) 282 5905 (Appointment Line)
Mon to Fri, 08.30hrs to 17.00hrs
Hospital Number: 91340743
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Another appointment has been made for you. Please report to the **Royal Victoria Infirmary, Claremont Wing (Level 2), Eye Outpatient Department (Newcastle Eye Centre),.**

On: Monday 18 May 2015 at 10:00
With: MR.C.C.NEOH (or team member)
Service: Ophthalmology

Please follow the yellow and black signs from each hospital entrance to find the Newcastle Eye Centre which is situated in Claremont Wing. When you enter the department please book in at the reception desk immediately to your left. If your appointment is with the Optician or Orthoptist, please keep right and follow the signs into the main area. For more details about the department, please visit www.newcastlehospitals.org.uk/newcastleeyecentre.

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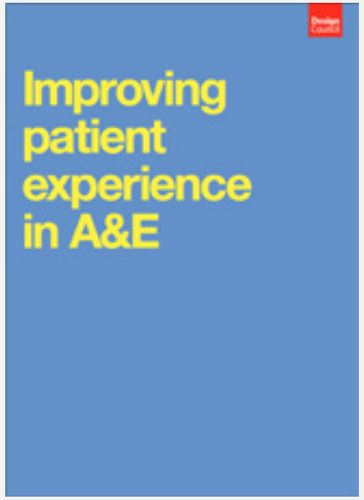
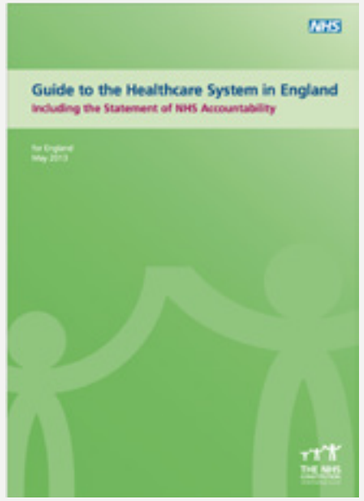
Newcastle Eye Centre

From my point of view, this method of delivering instrucctions is effective when the thing delivered is a monthly bill, but for something as important as a medical appointment, it is out-dated and inaccurate.





04 Literary Research

Literary research stage to understand the health care system

I wanted to keep my personal experience in the background, thinking that my situation was relevant but not the only thing to keep in mind. That's why I started my literary research stage by looking at the healthcare system in order to get a proper idea about how it works and how health services are delivered in this country.

Besides, I wanted to research more in what Ben Salem had found in his investigation and I have summarised afterwards.

In order to achieve this, I got information from the following sources:

(1) "Guide to the Healthcare System in England" by NHS, Department of Health. 2013

(2) "Transparency, transaction, participation - Anual Report 12/13" by NHS Choices. 2013

(3) "Newcaslte Upon Tyne Hospitals - Review of the year 2013/14" by NHS Foundation Trust. 2014

(4) "Anual Reports and Accounts 2012/13" by NHS Foundation Trust. 2013

(5) "Improving Patient Experience in A&E" by Design Council.

(6) "Design For Care - Inovating Healthcare Experience" by Peter Jhones. Rosenfeld. 2013

From this stage, I learnt exciting things about the healthcare system but also about how to manage a project based on this subject.

Report 1. Findings

From this report I learnt the structure of the healthcare system in the United Kingdom. I didn't know how It was organished until I read this report. These are my main findings:

The report states that **providers of primary care are the first point of contact for physical and medical health and wellbeing concerns in non-urgent cases.** For urgent cases, patients can visit a provider of urgent care, such as an accident and emergency department.

Regading non-urgent, which is my case of study, healthcare professionals within **GP practices aim to resolve problems locally, including through services provided by the practice. If a condition requires more specialised treatment, or further investigation, patients may be referred to another healthcare provider**. These could be based in a hospital, or in the community. Patients are entitled to choose between different types of care and providers of their care. However this is someting which currently doesn't happen very often and it generates complaints.

Community-based care is increasingly the preferred means of providing care for the majority of longer term. **This enables people to keep their normal routine,** staying close to family and friends. **Hospital services remain a key part of the NHS, such as for specialised, surgical or emergency care.**

The NHS is funded by taxation with a fixed budget available to spend on services for the whole population. The challenge faced by the NHS is how to spend that budget in a way that results in the best possible outcomes for individual patients and delivers value for money for the public.

Commissioning happens on an individual level every day in a GP practice. For example, **when a GP refers a patient to a particular hospital for further investigation** or treatment, the GP is effectively buying care for that patient from the hospital through that referral. This 'secondary' provider is paid to treat the patient.

Thoughts

The situation described above points to **GPs and professionals of primary care being in a relevant position in the health care system.** They are in charge of analysing the state of the patients and directing them to go to the right services regarding their symptoms. If the patient has to be treated by a commissionary, this situation involves money investment. This investment is not known by everyone, therefore, civilians don't give the proper value to the health service they are paying for with their taxes.

Do primary care professionals have proper tools to track users' health in order to direct them to other services? That would be a good question to get answered.

Reports 2, 3, 4. Findings

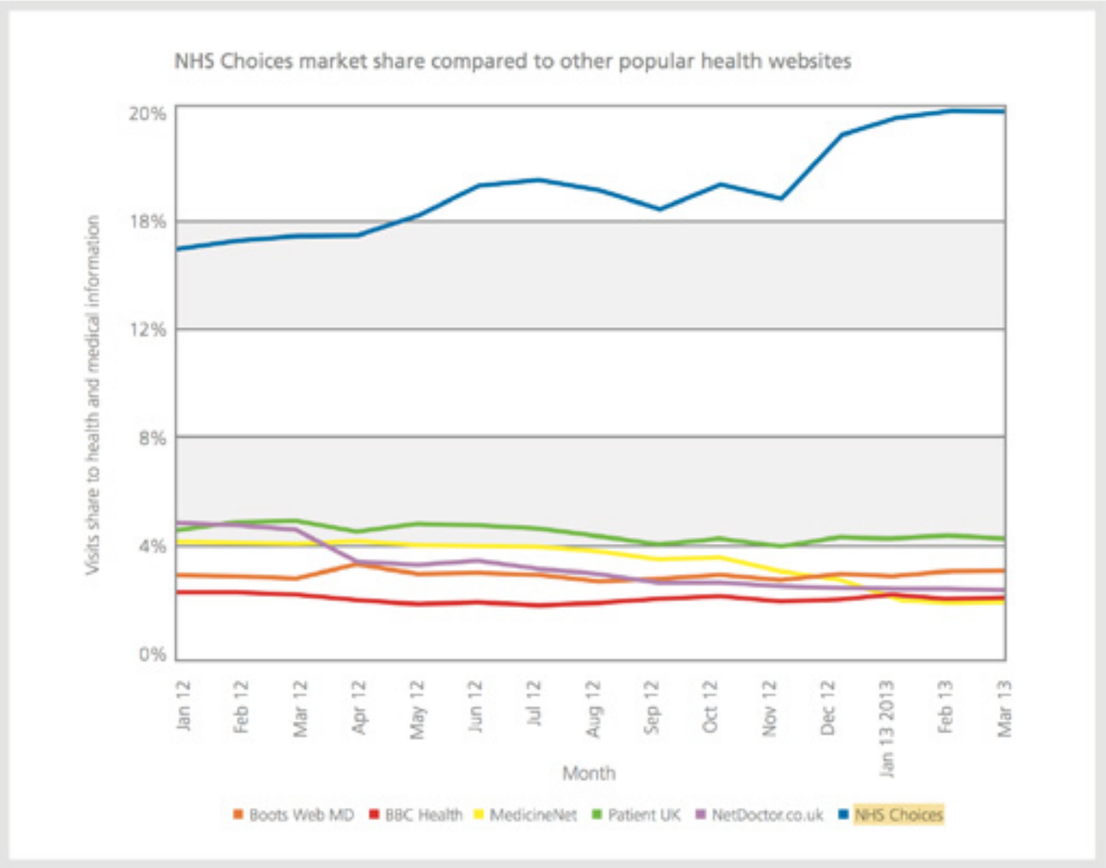
From those reports but also from the website www.nhs.uk and www.newcastle-hospitals.org.uk, I learnt more about NHS Choices and the Royal Victoria Infirmary. Mainly about their services and values. These are my main findings:

NHS Choices allows people, **patients or not**, to get information about health services, care and several types of support. **This platform intends users to understand their bodies and conditions in a better way**.

The report 2 points out NHS Choices as "the Europe's most popular health website and the UK's third biggest government website with more than 27 million 27 million visits a month". Behind that statment I can see that **people want to get medical advice from trusted websites instead of from other websites**.

The report goes further about usage information of the platform. As it explained on the report, **NHS Choices users are most likely to visit the site for medical information (39%) and to check their symptoms (26%)**. Besides, a survey shows an increase of users who have used the NHS Choices site to reduce health risks and improve lifestyle (36%).

The most used sections by the users are: Health A-Z and Live Well. On the one hand, **Health A-Z provides information about conditions and treatments** to help patients to understand their diseases. Each disease is explained with causes, symptoms, diagnosis and step-by-step medical advice.



On the other, **Live Well is based on easy-to-read lifestyle advice in more than 100 topics** including ideas on choosing healthier snacks or meals. **This helps users to better take care of their themselves.**

In addition, the report explains how the services named **EPS (Electronic Prescription Service) and Syndication** work. EPS enables prescribers - such as GPs and practice nurses - to send prescriptions electronically to a dispenser of the patient's choice. This makes the prescribing and dispensing process more efficient. Syndication, allows organisations to take content from NHS Choices and embed it into their own website or app. This would be a good system to develop our new app and sync it with the NHS system.

Newcastle Hospitals, show in their reports that they are trying to solve the problem about waiting time. There's been an improvement from last year but, they still need more work on the subject. Besides, the report shows that **the 70% of patients are people older than 65 years.**

Thoughts

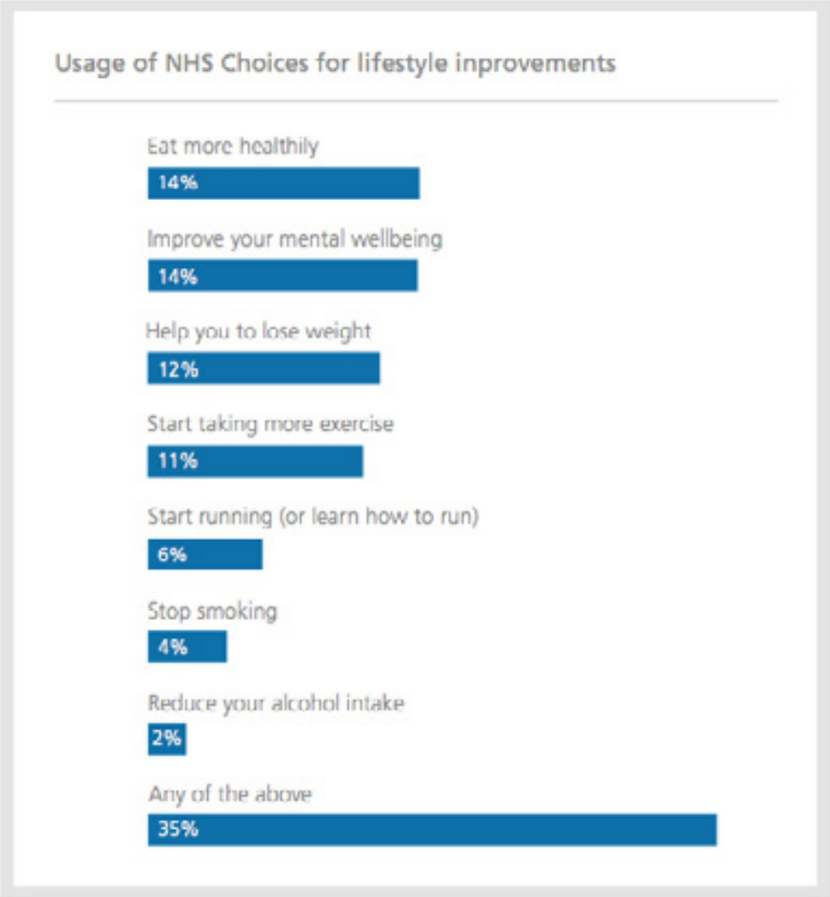
People are more and more worried about the prevention of health issues in order to avoid going through hospital experiences. That's a fact shown by the analysis of the usage data on NHS Choices services. Therefore, **a successful service** design in healthcare **will be that one in which users would be helped to prevent their diseases**.

The great thing is that we already have a technological basis to develop a service to encourage prevention but also to give stunning services to patients.

Report 5. Findings

This report from Design Council analyses the patient experience on the A&E and gives some valuable solutions. Although A&E is not same as the Outpatient Experience, most of **their findings matches the ones from Ben's investigation**.

Their findings are divided for each step of the experience: Pre-arrival, Outside the hospital, Entrance Area, Recepion Space, Waiting Room, Triage, Patient Bays…For each of them, Design Council recommends some applications of design. These are the interesting ones:



Regarding the **parking**, the solution suggested was a **better Information Design with "clear and bold signage"** or structural changes.

In relation to the **entrance and wayfinding**, there was a suggestion about the redesign of spaces attending to users' cognitive maps to allow a better wayfinding. Besides, Design Council recommends the application of environmental and lighting design to better-welcoming patients.

"Buildings with design features that help build a robust cognitive map for individuals can be highly important to wayfinding, particularly as it applies to remembering a space if the wayfinder revisits it."

The **first reference to digital design** was made in relation to the check-in of patients where the suggestion was: **"Self-check-in using a simple touch screen computer system is now a commonly encountered in our day to day lives.** Self-check-in booths allow extra capacity to be built into the system so that those visitors who are physically and mentally able, can check in and relieve pressure on reception staff."

About **Waiting Rooms**, the suggestions of the research points to **enviromental, lightning and sound design** to improve the experience. Besides, Design Council states that it would be useful to show the progress of the queue to inform patients.

There is an example with Southampton General Hospital A&E department where software that ties in with the check-in system allows estimated waiting times to be delivered in real-time.

Thoughts

A highly respected organisation as Design Council points to structural changes as the best ones to improve the experience in hospitals, even though there is a chance to go further and completely re-design the patient experience.

I agree with the points in reference to the wayfinding and the bold signs; that solution would help users to find their way. On the other hand, I certainly agree with that said about the improvement of the experience in waiting rooms. In fact, **it gave me the idea to design a self-check-in for patients to improve the problem of the waiting times**.

Environmental design

People produce a cognitive map of any space they enter into, and "The more we know about how humans … can navigate, wayfind, sense, record and use spatial information, the more effective will be the building of future guidance systems, and the more natural it will be for human beings to understand and control those systems."[3] Cognitive maps assist people needing to find their way in new, never visited spaces too, because they can apply previously learned information from a similar environment to the new context. Wayfinding and cognitive mapping are inseparable and most humans carry many cognitive maps in their head at any one time and by providing signs or environmental cues to help people find their way, and access useful information, hospitals can make it easier for people to access their service. This will mean they do not get frustrated at the start of their A&E experience.

Robust cognitive maps are important to people with intellectual and cognitive disabilities as well as to persons with poor memories or those who become easily confused. In addition, building a robust cognitive map is critical to building evacuation in emergencies. When people are distraught, which is particularly true in emergency evacuations, they tend to remember distinct features in the built environment that can help them exit and provide excellent reference points for communicating with emergency first responders.

A&E departments have many different entry points. For example, entrances for ambulance arrivals and walk-in arrivals, as well as access from other areas within the hospital. To enable security to be enforced, it is recommended that there are as few entry points as possible.[5]

Report 6. Findings

I especially enjoyed what I learnt from this book because there was really worthy advice for a project like this. These are some of my main findings:

The book explained that in healthcare, "**a system only used by users who must use it is not a basis for a massive adoption**". Therefore, an app to solve a tiny problem, may not be a worthwhile solution, and there is a risk of transforming the tiny problem into a big one.

Regarding users I found really interesting insights: "People are worried about privacy. They want to keep their health data safe". Moreover, "**Early adopters of health technology are people motivated to use tools for daily needs.** Patients living with significant health conditions, find it difficult to learn. **There is a significant learning curve to new applications to manage healthcare**."

Besides, the book explained that **"patient" is a temporary state**. We won't be patients forever, but we will always be people, therefore, healthcare developments should be focused on people as people not only on their patient state.

About **issues** on the healthcare experience, Rosenfled made allusion to "**small text size on a prescription label, a long wait in an examination room, the frustration of poor information organization, frustrations with wayfinding**". One of the most valuable piece of advice I got from the book was: " **If your intention is to apply design thinking** and skills to make a difference in healthcare, **start with your own history and perspectives**"

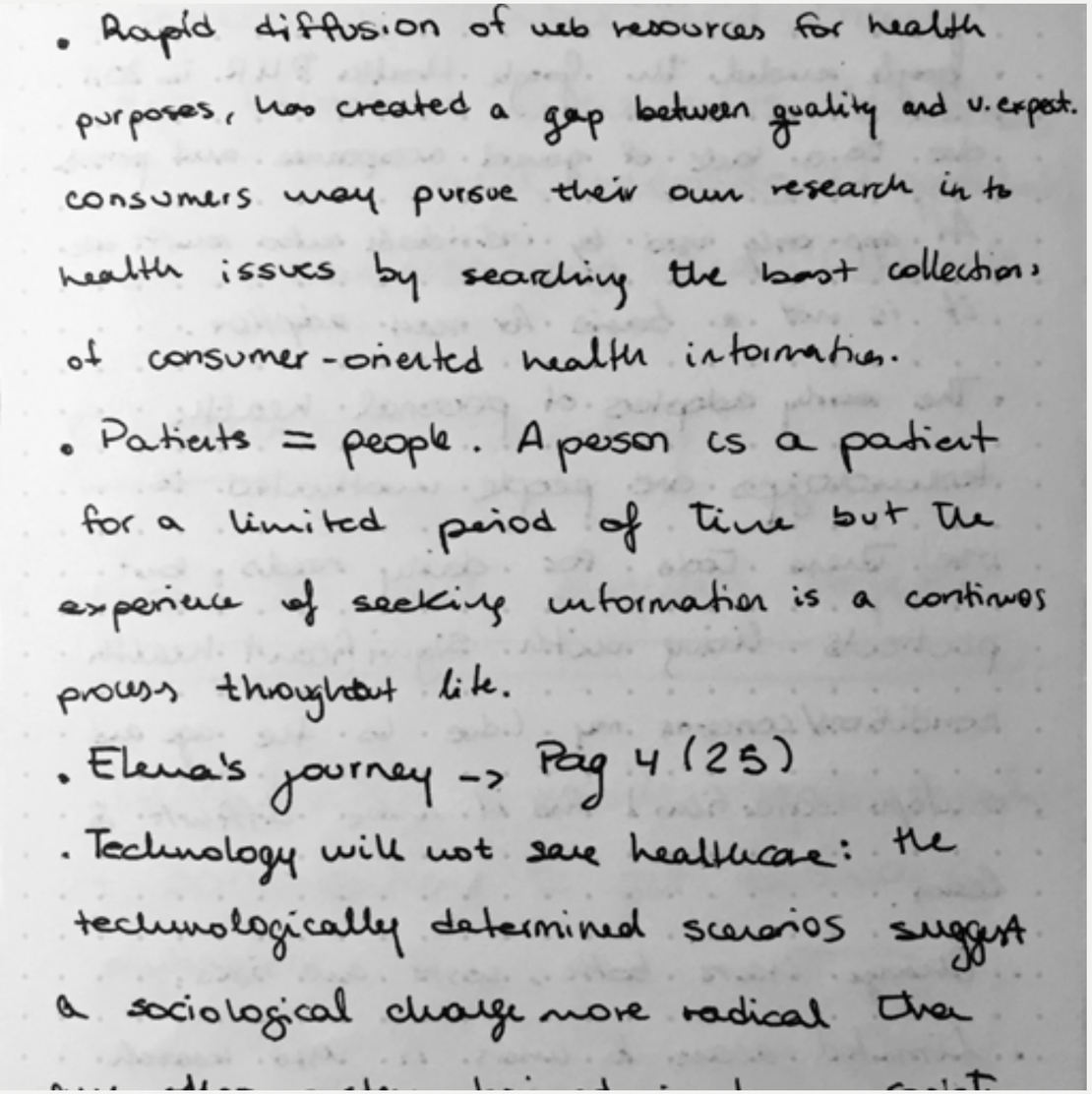
Thoughts

This book opened my eyes to better design for care. The findings I got from it, made me understand the context in which healthcare developments should be focused. Besides, it gave me a new perspective about the users. I hadn't thought before either about the fact that being a patient is a transitory state, nor about the motivation of people to use new care systems.

Besides it gave me excellent advice to focus my project on my own experience, due to both the immensity and complexity of the subject. The bottom line of the book is that its findings match on most of Ben's investigation and Design Concil's.

Consider the many new products, interfaces, and tools for individual healthcare that may be innovative but have no accepted mandate. For example, personal health records (PHR), such as Microsoft HealthVault, have been available since 2007, but adoption has been hampered by the lack of basic usability, limited utility, and "understandability." Most people do not yet understand the PHR and its possible value. Google ended the Google Health PHR in 2011 due to a lack of general acceptance and process (not just interface) usability. An application only used by individuals who *must* use it is not a basis for mass adoption.

Issues such as information privacy, caregiver accessibility, and care team collaboration are also significant design factors. Technical and usability concerns are also daunting impediments to acceptance and adoption. The early adopters of personal health technologies are people motivated to use these tools for daily needs, but patients living with significant health concerns may—due to age and multiple conditions—find it more difficult to learn and use these tools than people with less need for them.



- Rapid diffusion of web resources for health purposes, has created a gap between quality and v. expect. consumers may pursue their own research in to health issues by searching the best collections of consumer-oriented health information.
- Patients = people. A person is a patient for a limited period of time but the experience of seeking information is a continuos process throughout life.
- Elena's journey -> Pag 4 (25)
- Technology will not save healthcare: the technologically determined scenarios suggest a sociological change more radical than

05 Audience Research

Research on the audience involved in Healthcare

As I had imagined, healthcare is a broad field of study which involves several audiences to design for. Therefore, given the budget I had access to (nothing) but also the time (brief), the best way to get a proper investigation about the audience was to base my investigation on other ones conducted by professionals of the field. The aim then, was to gather enough information to find out key information about the audience involved in healthcare in order to find out their concerns and then come up with a design challenge.

This stage is based on the information from some of the sources named above, however, to get first-hand knowledge about other people's issues dealing with healthcare, I informally interviewed my English teacher about his experience. My findings on this stage are divided by where they came from. Sources:

(1) "Investigation of outpatient experience at the department of dermatology, RVI", by Benjamin Salem, 2012.

(3) "Newcaslte Upon Tyne Hospitals - Review of the year 2013/14" by NHS Foundation Trust.

(2 "Transparency, transaction, participation - Anual Report 12/13" by NHS Choices.

(4) "Design For Care - Inovating Healthcare Experience" by Peter Jhones. Rosenfeld.

(5) Interview - Kevin

Source 1. Findings

From this source I got several findings thanks to the questionnaries conducted by the author in the Royal Victoria. The task given to the staff and patients was to rate some statements with scores between **-2 to 2** (strongly disagree to strongly agree).

Staff

(-0.8) Prescriptions give instructions that clearly tell patients how to fix mistakes if they make some

(-0.2) Whenever **a patient makes a mistake regarding how they take their prescriptions,** they can recover easily

Patients

(-1) The support and explanations about care fulfil all your expectations

(-1) Overall, you are satisfied with how easy it is to follow **instructions given to you about how to take your prescriptions**

(-1) Overall, you are satisfied with the **support and explanations** you got regarding your prescriptions(s)

(0) **Didn't know when to leave**, or whether I had to do something

(-1) No indication of expected **waiting time, no real-time information, nothing to read**

Source 2. Findings

This source, as a business review, reveals a worthy survey conducted to check the trustworthyness of the Foundation. A standard postal survey was sent to a random sample of 850 patients discharged from the Trust in July 2012. A response rate of 58.5% was achieved (465 responses)

The Q&A I found interesting were the following:

65% Planned admission: **not given choice of admission date**

21% Discharge: **not fully told purpose of medications**

76% Discharge: **delayed by 1 hour** or more

46% Discharge: family **not given enough information to help**

Source 3. Findings

The NHS studied the behaviour of their web users and as I introduced before, several interesting trends were found. The interesting ones are the following:

Table 2. Question with relevant indicative scores

Questions	Score	STD	Strength	Comments
Whenever patients make a mistake regarding how they care for themselves, they can recover easily	-0.25	1.281	weak	Recovery from mistake
Prescriptions give instructions that clearly tell patients how to fix mistakes if they make some	-0.875	0.991	moderate	Recovery from mistake
Whenever a patient makes a mistake regarding how they take their prescriptions, they can recover easily	-0.142	0.899	weak	Recovery from mistake
Patients like taking the prescription(s)	-0.285	0.487	moderate	Perception of prescription

Table 5. Question with relevant indicative scores

Questions	Score	Strength	Comments
You cannot identify minor problems during your visit	-2	strong	Listed the following steps: 3,4 and 10 as problematic
You are given instructions that clearly tell/ instruct you how to fix mistakes if you make some while caring for yourself	don't know	Strong	
The organisation of the information provided is clear	-1	indicative	
The support and explanations about care fulfil all your expectations	-1	indicative	
Overall, you are satisfied with how easy it is to follow instructions given to you about how to take your prescriptions	-1	indicative	
The information provided to you about your prescription is clear	-1	indicative	
The organisation of the information provided is clear	-1	indicative	
The support and explanations provided about your prescriptions fulfil all your expectations	-1	indicative	

(39%) Users are most **likely to visit the site for medical information** and (26%) **to check symptoms**

(35%) Have used the site to **reduce health risks and improve lifestyle**

68% Users of the website are **females**, whereas that 32% are males

The audiences more engaged with the site are those within **24 and 44 years**.

Source 4. Findings

This book gives a worldwide perspective of healthcare. Even though it has a closer approach to the American situation, we must keep in mind that healthcare issues are generally universal, therefore, I took some information from it in order complete my audience research. I am providing my findings on this book by quoting the book.

"A person's health seeking is a **continuous process** of taking steps **toward better health**"

"A person's progress in **health seeking is measured by points of feedback** sensed from their everyday lives and **received from professionals**"

"Western **healthcare has treated people as patients**"

"**Health services can** be designed to **facilitate a whole-person approach to health**."

Source 5. Findings

When I talke to my English teacher, Kevin Mcbriarty, about his perspective about healthcare:

"Lack of choice making GP Appointments"

"Lack of responsen when calling to his GP Consultancy to make an appointment or ask for records"

"Sel-check-in available in the consultation throught a touch screen"

"His calls are filtered by a automated system system "

Health seeking is not just a "journey to normal" because there is no final state of health. People live with multiple conditions of relative health in a balancing system. Measures and indicators of "healthy" are not optimized; they are better or worse compared to an individual's own baselines. People may lose weight by dieting but not improve cholesterol levels; they may recover from a viral infection but have a cough for weeks. No health measures are static, and the numbers of good measures are not as "objectively healthy" as people might think.

Health journeys are *self-educating*—people evolve as they learn in stages of struggle, understanding, acceptance, and self-management. Health seeking is an evolutionary act of self-discovery, of sustainable improvements of behavior and experience that claim a personal stake in one's present satisfaction and future thriving.

"Research is to see what everybody else has seen, and to think what nobody else has thought"

- Albert Szent-Gyorgyi

06 Research Insights

Research Insights & Design Challenge

Research Insights

During my research process I realised that healthcare is the broadest subject to design for. This field involves several stakeholders, audiences with hundreds of factors to take into account.

The invistigation conducted by Ben Salem provided me with really useful data but also a starting point to gain an idea about the situation of healthcare on a single hospital. As it happens, I experimented with my own patient experience which let me feel some of the issues found in his investigation but also the typical paint points of a patient experience.

Besides, as my research moved forward I found out that this sitation also happens in other hospitals across UK.

By puting all my research together, I realised that people are extremely concerned about misinformation on health state or medicine. Also they are concerned about the seeking process on healthcare in order to improve their health and prevent diseases. The management of appointments (waiting times and options given when scheduling), feedback from doctors and the contact with doctors after the consultation is another concern.

Thanks to my research, I learnt that the 80% of medical apps are abandoned within two weeks. Besides, I learnt that medical developments have to tend to major needs. As a matter of fact, those apps can't be compulsory, but as an option which adds value to people's lives. This is why I decided

to design something in order to help people and add value their lives.

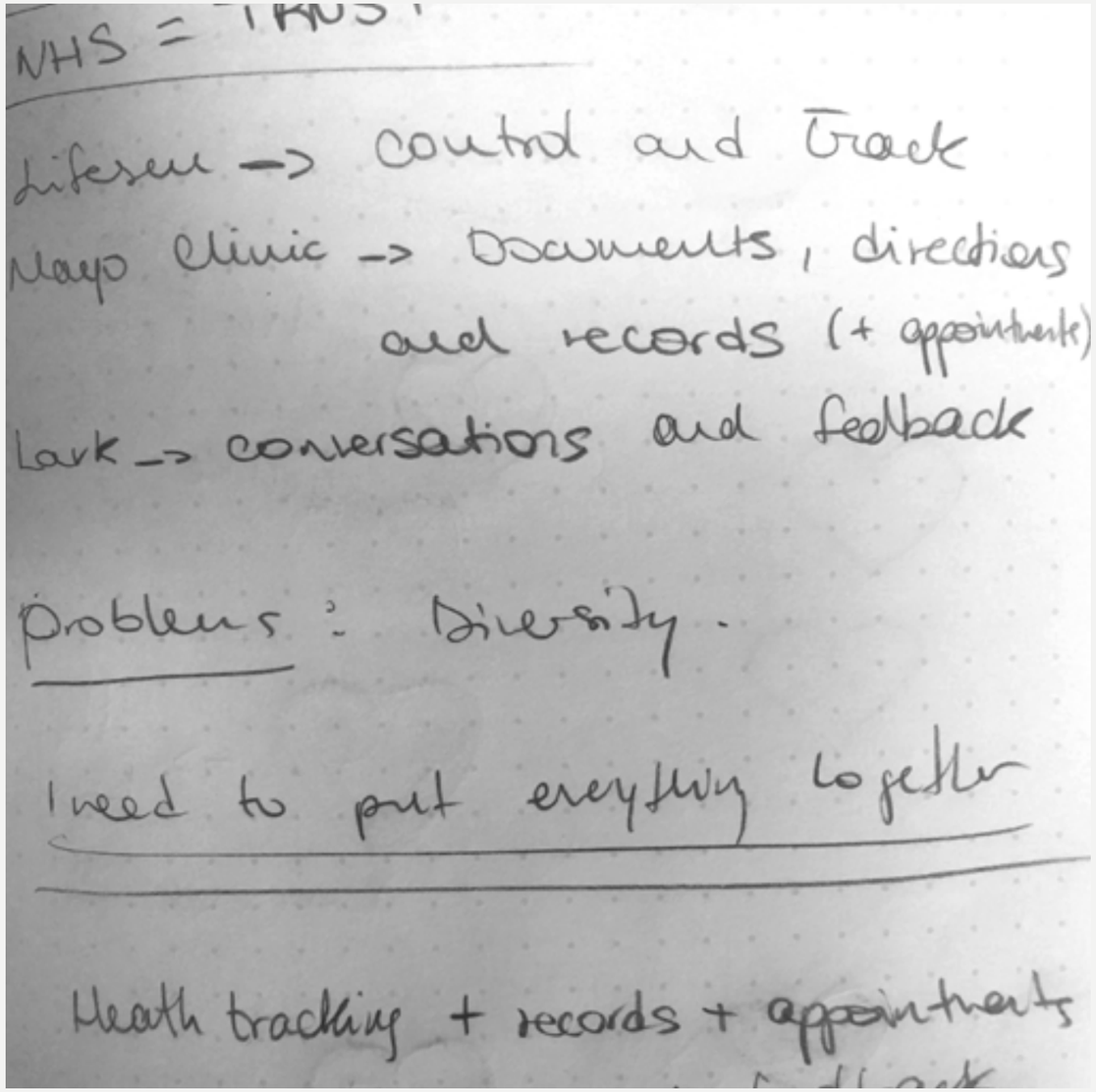
Design Challenge

After my a broad research stage I was able to know about the field I was working on, and therefore, to come up with a proper design challenge to my final project.

Therefore, in this final project I will design a mobile app to help people (patients or not) to keep the contact with healthcare providers in order to get the proper advice about their health state to avoid the misinformation. Besides, I will make a solution to let users manage their medical appointments, measurements and medications. Finally, I will come up with a solution to solve the problem with the delays and waiting times on appointments.

"During this phase you will move together from concrete to more abstract thinking in identifying themes and opportunities, and back then to the concrete with solutions and prototypes"

CREATE



07 Concept Generation

Process followed to map the service and generate a concept

In order to go from the concrete to the abstract and then back to the concrete as the IDEO's method taught me, I used some concept generation techniques such as the SWOT analysis, the "What if…" technique, and the storyboarding technique.

SWOT Analysis
This SWOT analysis is based on the insights I gathered from my research stage. This technique was useful enough to generate a concept. Moreover, it let me keep my mind focused on what really matters and affects to the service.

Conclusion
This exercise let me see that the unclear information about prescriptions, diagnostics and instructions - together with the lack of feedback, communications unproperly delivered and the lack of contact with doctors - makes patients look for medical information on their own.

On the other hand, the lack of choice with making appointments and access to medical records ought to be solved in order to create a tailored service.

By puting all of that together, I see a good opportunity to create a new channel to get and deliver information, notifications to patients but also let them have more control about their healthcare.

Unclear prescriptions, instructions and indications

Patients can't access to their medical records

Gp practitioners are the core of the primary care

Lack of choice making and rescheduling appointments

Patients don't know about the cost of healthcare (Taxation)

Excellent coordination within the NHS System

NHS is recognised brand

Patients don't have a proper source of feedback from doctors

People make appointments for bad reasons

Appointments can be made online

Huge work to manage budgets properly (Commissioning)

Waiting times in consultation (Delays + lack of sense of time)

People make mistakes in following their prescriptions

Early adopters of health technology are people motivated to use tools for daily needs.

Check-in in appointment process is divided in too many steps

Communications aren't properly delivered

70% of patients are people older than 65 years.

Information seeking is a messy process

Awful mobile experience

The NHS Number is unique to each of us,

Being a patient it's felt as an impersonal and unpleasant exp.

Patient is only a temporary state

Survey shows that 36% of users who have used the NHS choices wants to reduce health risks

Abuse of medical jargon when talking to the patients

39% of visits to NHS choices are from people looking for medical information

NHS website: "The europe's most popular health website"
27 millions of visits a month

Strengths

Weaknesses

Opportunities

Threats

What if?...

This technique is well-known and it is used to break the boundaries within our minds to generate abstract ideas and reframe concepts. By applying this technique to my project I achieved a bigger picture of the problem which afterwards let me come up with a concrete concept.

Clichés

1. Healthcare is massive and untailored.
2. We don't understand medical jardon.
3. Doctors work hard managing budgets.
4. Lack of feedback from doctors.
5. Lack of information and instructions.
6. Our contact with doctors is limitied to our disease state.

Goal

I want to make a difference in healthcare to help people in contacting their doctors, get better information about their health state in an improved way. My goal is to make something that my users might want to use.

What if...

1. People were in the centre of the process?
2. Healthcare was about staying healthy as well as treatment?
3. People felt in control of their situation and choices?
4. Contact between patients and healthcare providers was more efficient?
5. Doctors could track patients' daily progress?
6. Making appointments was easier?
7. People got continuous, direct and easy-to-read feedback from their doctors?
8. Records were available anytime?
9. NHS were handy and cool?

Opportunity

There is an opportunity to create a new way for patients of establishing contact with healthcare providers to self-manage their healthcare. This opportunity would be based on doctors taking care of people as people instead of people as patients. Doctors would give tailored feedback to patients and take care of their needs and progress in a better way.

This opportunity would be based on collaboration and trust, therefore, patients will have access to their records but also to doctors' schedules in order to make and reschedule appointments. All of this, framed in a sub-brand within the NHS to give a sense of innovation but also trust.

Storyboard

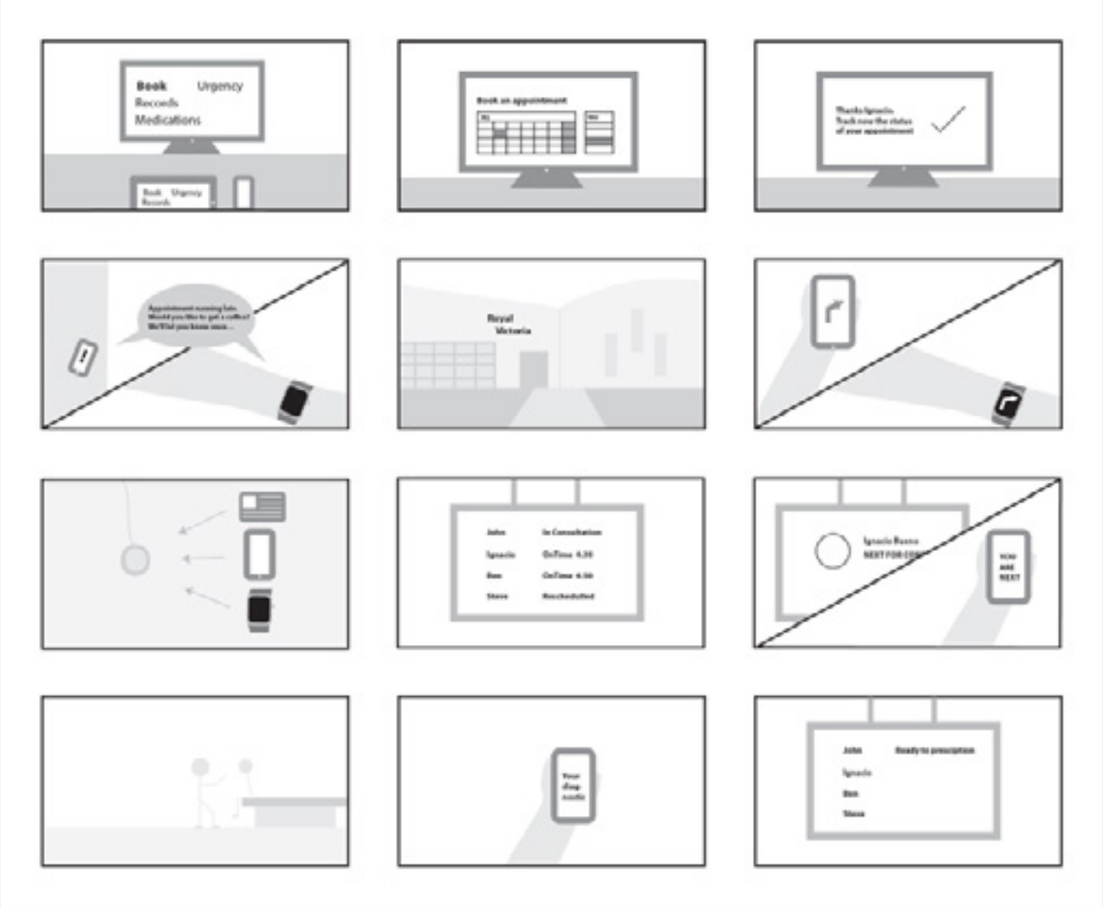
I used this technique to let my mind go back to the concrete and paint the landscape of a possible solution to my design challenge.

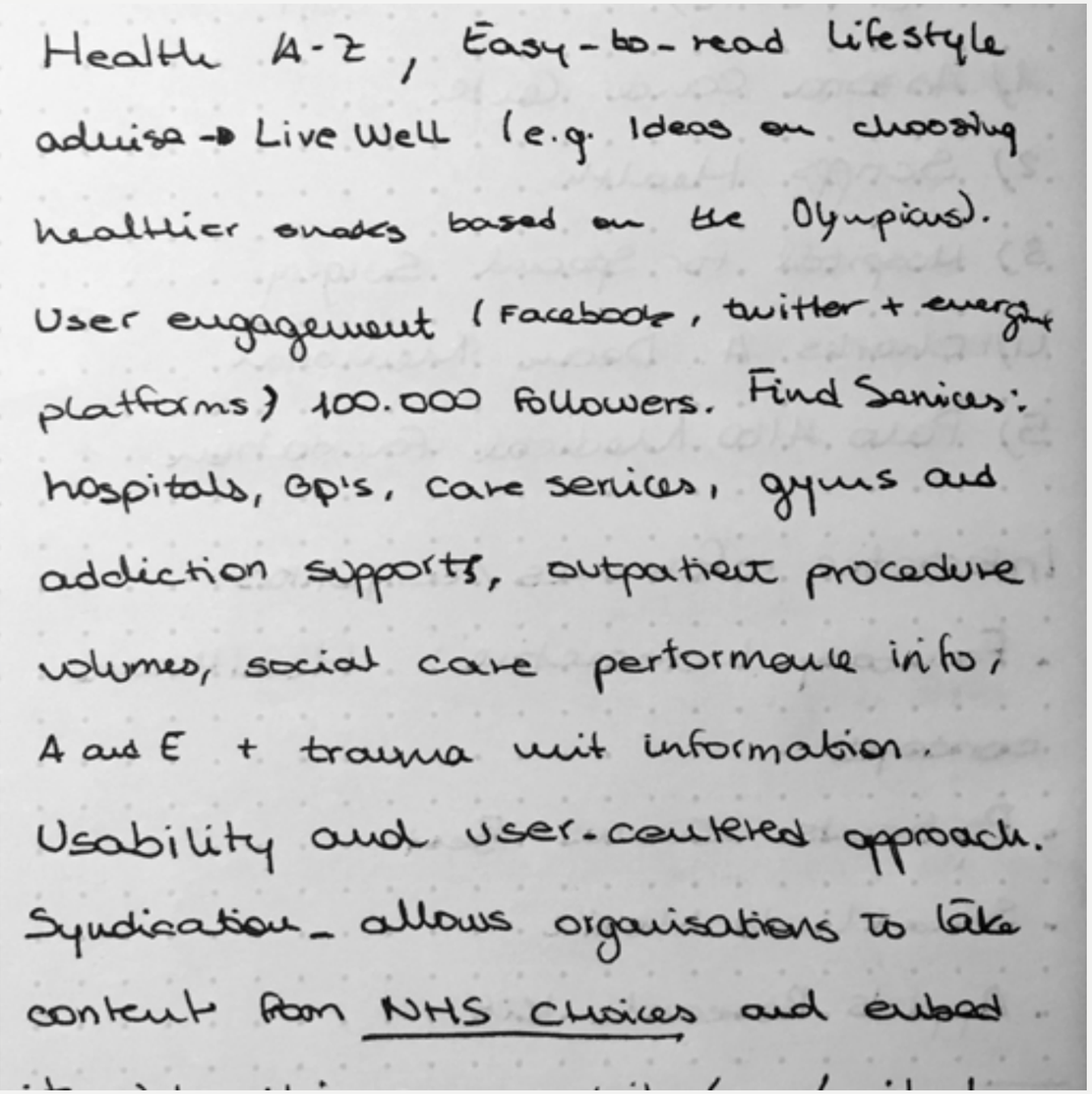
This new storyboard shows the Royal Victoria Infirmary experience being modified with regard to some of the insights. It shows how a patient can book a medical appointment from the website, tablet or mobile app. Besides, it shows how the slot desired for the appointment is chosen and the way in which the status notifications are delivered to the mobile and the watch.

On the other hand, there is shown a new way to check-in for the appointment which is based on an NFC technology. It lets doctors know whether the patient is at the consultation on time or not, giving them the possibility to estimate waiting times for other patients. Finally, after consultation the user gets a summary of the appointment but also his/her prescription.

Regarding the smartwatch, I thought that the use of wearable technology would be really useful for this project because it is both, innovative and a technology that is making a difference in terms of keeping measurements and setting daily goals.

That was just a first approach based on the concept generation techniques, however, thanks to it I was able to generate a better concept.





Health A-Z, Easy-to-read lifestyle advise → Live Well (e.g. Ideas on choosing healthier snacks based on the Olympians).
User engagement (Facebook, twitter + energy platforms) 100.000 followers. Find Services: hospitals, GP's, care services, gyms and addiction supports, outpatient procedure volumes, social care performance info, A and E + trauma unit information.
Usability and user-centered approach.
Syndication - allows organisations to take content from NHS Choices and embed

08 Concept

Description & Fishbone

As an outcome of the exercises I had carried out I got clear areas to focus my concept on:

Appointments: Information, state, costs, self-check-in, waiting times, management, feedback.

Medicines: Information, management and reminders.

Records and Measurements: Information, access, management and your own measurements.

Live Well: Articles, tips and advice tailored to users health state to improve their health and fulfil the health seeking process.

Brand: New sub-brand within the NHS.

General: Platform, technologies…

In order to come up with features for the concept and solve the issues I had found on the research stage, I used a technique I had used before on the DigitasLBI brief. This technique is called "The fishbone". It consists on breaking down the service for both solving problems or creating solutions for the service.

In my case, I needed to create solutions for the sections of my service, therefore, I started by asking myself: "How do I transform healthcare in a collaborative service?". I added the quote said by Marco Della Torre: "80% of health apps are

abandoned within two weeks" to keep in mind that my concept should be useful and interesting enough not to be abandoned.

Finally, I created the fishbone with the 6 sections to address in my service and then I came up with main features to achieve my purpose. In summary, and thanks to all the previous research and concept generation exercises, I was able to generate **my concept:**

The concept would be framed as an NHS initiative to help people to have more contact with doctors in a better way. This new service, delivered through an iphone app, would let users schedule and reschedule GP appointments or emergency services. Why only those two options? On the one hand, GP appointments are the core of primary care who decide where to direct a patient. On the other, if there were an emergency, the second choide would let patients contact with 999.

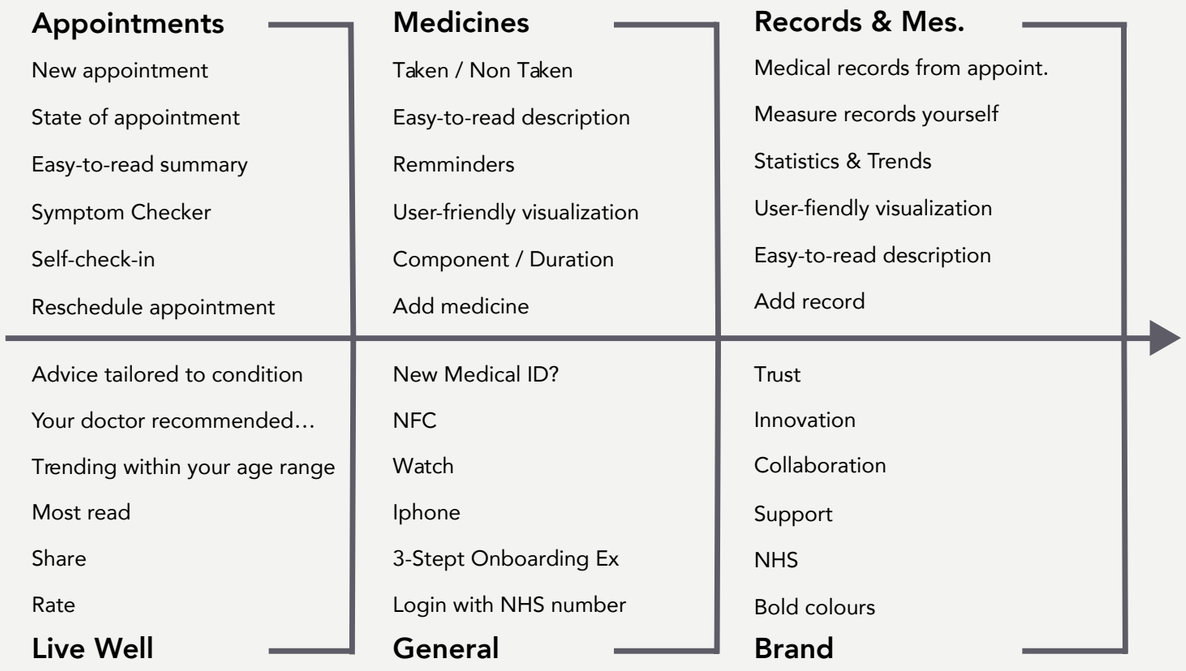
After an appointment, the users would recieve easy-to-read summaries and instructions to follow, written by the doctors who attended them. Also, in a section named Live Well, users would be able to check futher information tailored to their conditions, advice and others stories of patients.

There would be a section in order to control the medicines where users would be able to check they progress following to the treatment, information about them, set reminders and check whether they have taken them or not.

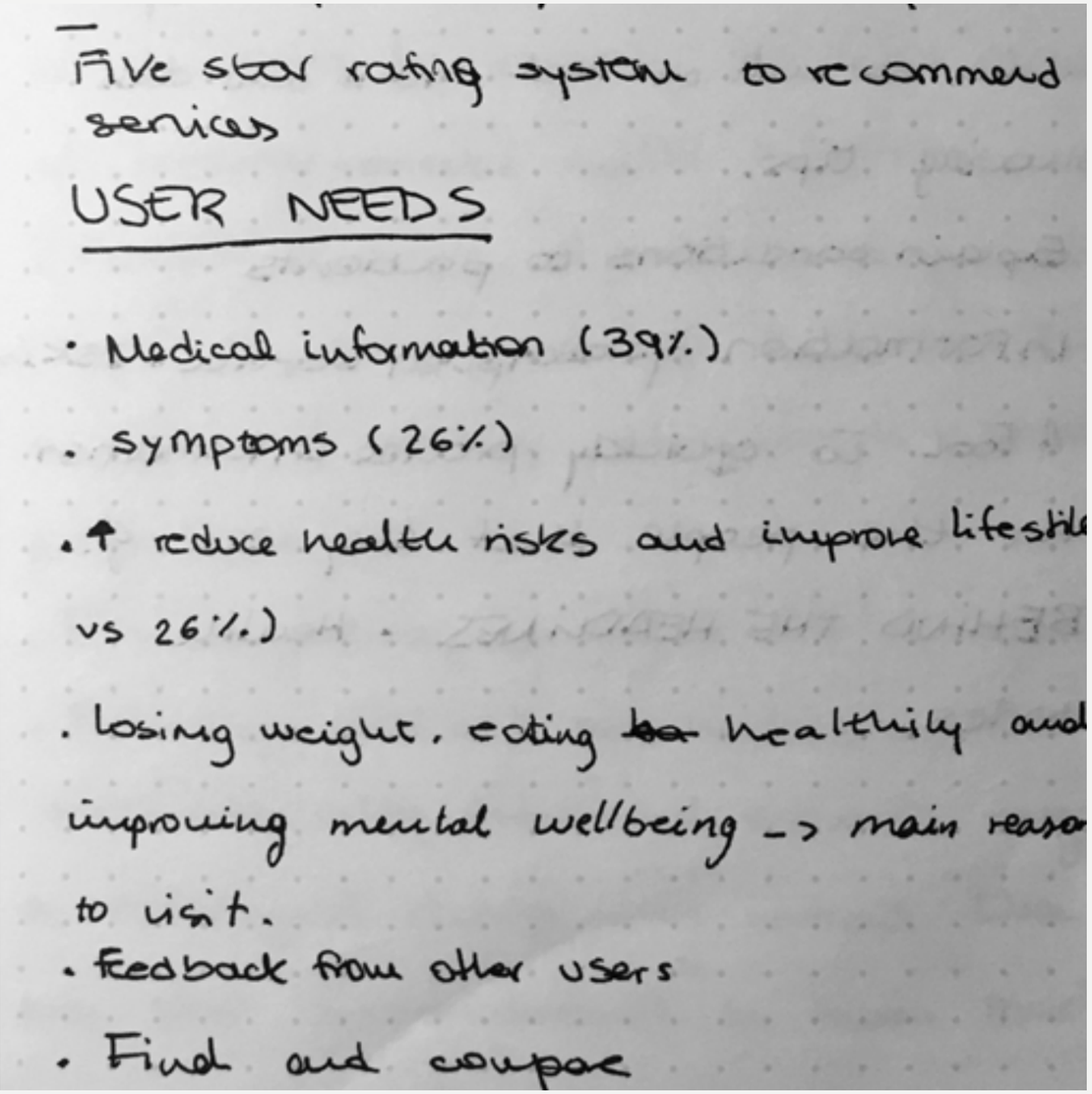
There are two main points to make this into a succesful concept: Brand and Platforms. The brand will have to be new, bold and friendly with the support of a trustworthy organisation as the NHS is. The platforms used will have to be cutting edge to convey what the brand would try to convey. The use of NFC to check in appointments or even the smartwatch to deliver notifications are points I considered.

Finally, this is the point where I started to consider the creation of a new medical ID, due to the limitations of the current one.

How do I transform healthcare in a colaborative service?



"80% of health apps abandonend within two weeks of use"



Five star rating system to recommend services

USER NEEDS

- Medical information (39%)
- symptoms (26%)
- ↑ reduce health risks and improve lifestyle vs 26%)
- losing weight, eating healthily and improving mental wellbeing -> main reason to visit.
- Feedback from other users
- Find and compare

09 Audience

Personas, Scenarios & Audience Chosen

Personas & Scenarios

Once I had my concept clear, I set an audience to design for based on all the facts of the Audience Research stage.

As I have explained before, the people more engaged with NHS Choices were males and females within an age range from 24 to 44 years. There was a better engagement with the females than with males, which is reflected in the personas too. Due to this fact, I made 3 personas, 1 male and 2 females.

The male (24) will play the role of a healthy guy who is a keen sports player. This guy represents the audience who doesn't like going through hospital experiences and wants to keep himself healthy to prevent it. In order to achieve it, this audience (in this case the guy) will look carefully for a healthy lifestyle. Additionally, this persona shows the issues and concerns that the lack of choice in making and rescheduling appointments represents on a daily basis of a user.

The first female (30) is the advice seeker. She also represents the type of audience who takes care of another person and needs feedback to be sure that everything is alright.

In addition, this first-time mother feels herself misinformed about a medicine that has to be taken by her daughter and this situation makes her anxious and needing to look for information on the internet. As a result of the information search, she

finds wrong information and advice which makes her feel more anxious and puts her daugther treatment in danger.

The second female (38) and last persona, represents the type of chronic audience who needs special attention due to a chronic condition. This type of audience is especially linked to healthcare providers due to their conditions. In fact, she suffers from diabetes, one of the diseases which has been increasing the number of patients in the UK from 2001 to now in a worrying way.

Due to her condition, this character has to track daily measurements of her sugar level. One day she feels herself extremely weak and sick, therefore, she calls her doctor looking for advice. They both check all the measurements to find out what's happening before her conditions gets worse.

Audience chosen

To chose my main audience and decide which of them would be the most suitable to design for I asked to my tutor about it, from whom I got worthy advice. He told me that due to the immensity of my intentions towards this project I should focus the development on just one audience, otherwise, the design process to meet users' needs would be a nightmare to me. That was wise advise, thanks to it the development process has been simpler.

From that conversation, I kept myself focused on the third persona but keeping in mind the major needs of the other ones in order to design a complete service.

Demographics
Newcastle upon Tyne, 18 years old

Background
Jack is not used to visit hospitals when feels himself sick, he is of that type of person who hates hospitals, consequently, he prefers prevent diseases by taking care of his wellbeing. He'd been avoiding the fact of visiting a hospital due to a bad experience with a doctor, but this month he has to assist to an outpatient visit because of a hereditary tension problem

Goals
Maintain his mind and body healthy and equilibrated

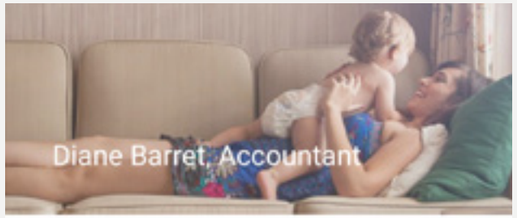
Frustrations
Not to follow his diet or his gym schedule without reason may cause on him an state of frustation

Devices
Smarthphone, Tablet, Laptop

User Profile
Advanced

Behaviours
Works out
Doesn't drive
Doesn't like wasting time
Suffers a lack of carbohydrates because of his diet
Prefers not to take pills
Tends to be absentminded

Outpatient Consultation
Feels that something goes wrong on him therefore looks for a nearby doctor on the internet. Finds a hospital. Calls and sets an O/P appointment in 3 week from now. Writes down the address on a sticky-note and set a remminder on his mobile. Loses the stiky-note The day of the O/P consultation, arise a problem at the University which needs to be addressed and he cannot go to the consultation. Tries calling to the Hospital for rescheduling but anyone answers. Appoinment missed. After the Uni, goes to the Hospital and explain his problem. Gets an Urgent appointment. Waits 10'. Is given a number and after asked about his personal details. Waits 25'. Once at the consultancy, explains his problems. The doctor checks his levels and tells him it's not an urgency and recommends him to get a new appointment. Jack leaves the hospital.



Diane Barret, Accountant

Demographics
Newcastle Upon Tyne, 30 years old

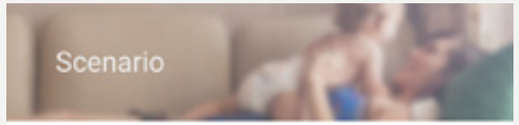
Background
Diane is a first-time mother worried about her daughter's health and growth. During her pregnancy stage, she looked for advice about pregnancy on the internet and asking other mothers but she only got herself scared. Being assisted by her doctor, she had a successful delivery. After that, she only trusts in his professional advice and criteria so she is likely to ask him any doubt she may have about her the care of hers daughter

Goals
Know about the type of medical process, its risks and progress, are her daughter or she following

Frustrations
The lack of contact with his doctor could frustrate her if there were something to report about her baby

Devices
Smarthphone, Laptop

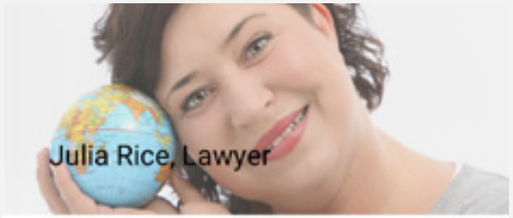
User Profile
Intermediate



Scenario

Behaviours
Drives
Tends to be strict
Usted to smoke & loves white wine
Defines herself as a concerned mother
Hates listening to her daughter crying in public
Doesn't take care of herself as much as of her daughter

Outpatient Consultation
Diane leaves the O/P consultancy with a prescription for her baby. She goes towards the pharmacy trying to remember everything what the doctor told her. Her baby is suffering a severe fever a Diane's mind is not clear right now. Once Diane gets to the pharmacy, she waits for he prescription and asks unsuccessfully the nurse about more details of that medications that her daughter has to take. Diane is worried. Her daughter is 3 and has never been sick before. Once she gets to home looks at the internet as she usually does about the medication in question and finds adverse effects. She is worried and tries calling the doctor who told her in case of doubts she wouldn't have to doubt to call him, but there's no answer on the phone so she doesn't give the baby the first pill of the prescription. The next day, she decides stopping by the Hospital to see the doctor and ask him about the adverse effect she read on the internet.



Julia Rice, Lawyer

Demographics
Newcastle Upon Tyne, 38 years old

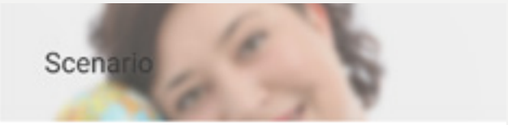
Background
Diane is a retired woman who after a unhealthy, has been diagnosed diabetes. At first she was scared about her diagnosis and cholesterol. Thanks hers husband support, she is passing through her disease fine. Daily in the early morning, she measures her sugar levels and take notes in a notepad which Diane shows to the doctor each consultation. In addition, Diane is not in her weight because of her eating habits, but now, she has to take care of her diet.

Goals
Keep her sugar and cholesterol measurements in line

Frustrations
Get a measurement out of her line. Her live may be in be in danger

Devices
Smarthphone

User Profile
Beginner



Scenario

Behaviours
Doesn't drive
Forgets measure her sugar levels
Tends to eat sweets thought her diets doesn't allow it
Trusts on her doctor
Binges on chocolates and sweets

Outpatient Consultation
Julia is a chronic patient who is especially linked to healthcare providers due to their conditions. Due to her condition, she needs to get daily measuraments in order to keep her sugar level in control. Besides, since she was a child, she is being having weight problems. One day she feels herself extremely weak and sick, therefore, she calls her doctor looking for advice. They both check all the measurements to find out what's happening before her conditions gets worse. However, Julia is absent-minded and she did not remembered to take the measurements today. The doctor don't have enough information to deliver a diagnostic and therfore requires Julia to go for an emergency appointment.

"Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things."

- Steve Jobs

10 Competitors

Competitors Analysis and Inspiration from other concepts

When looking at competitors I kept a wide range of platforms in sight in order to gain different approaches to healthcare developments. From my point of view, one of the best ways to design a new service is by looking at the past developments of the company you are designing for to learn about their strengths and weaknesses.

Given that fact, I looked at all the mobile and web developments launched by the NHS in order to gain a better idea about how my client's digital strategy is. Before I start to analyse them I have to say that I found the use of aesthetics and design patterns disappointing. Therefore, to counteract the lack of beauty and aesthetics sense of NHS developments, but also, to gain a wide perspective about developments, I looked at the most recomended iOS apps in the healthcare category of iTunes. Thanks to that I learned about new features, trends, usage of colour and new interaction patterns.

Finally, I discovered a concept designed by the digital agency Fantasy Interactive which analysed the landscape of healthcare in USA and then designed a glossy solution.

From all of them I got several ideas to apply to my concept, especially from the stunning concept developed by Fantasy Interactive.

Microsoft HealthVault (+ NHS Choices)
Microsoft HealthVault is an initiative that lets users gather, store, use, and share health information for them and their family, putting them in control of their health information. Thanks to that platform, users can share any part of their health record with anyone they choose. This service is provided through a website, mobile, and tablet app. I think this service aims to let users share information with several doctors and care providers which are focused on the American healthcare system, very different of the established in the UK. (www.healthvault.com)

However, there is another Microsoft HealthVault that delivers the worst mobile experience I have ever seen. This one is linked to NHS Choices through Syndication. Therefore, it gets information from NHS Choices. In terms of esthetics and usage, the app is outdated (iOS 6 and iPhone 4 resolution) and buggy. The app is mainly informative letting users access to some parts of NHS Choices as Live A-Z. The main issue arises when you try to find services around you, there's no way to do it. I cannot understand why the NHS doesn't keep any control of the services synced to their database.

NHS BMI Tracker
This app made me think about the book Design For Care's pieces of advice on why health development shouldn't be focused on minor problems. Is the BMI a reason enough to develop an app? In my opinion, it isn't! It might be something significant enough to be taken into account when developing something bigger, but it can't be the main reason to interact with an app, otherwise it may be abandoned soon.

And that's what happened with this one, NHS developed a BMI Meter back in 2011 and the last update was on the 14 August 2012. Once again, the aesthetics are typical of iOS 6 and the screen resolution isn't higher than the iPhone 4. Finally, I think that the last screenshot with the summary of the weight shows a clear information architecture and a good usage of colours.

I can say that this app is a forerunner of what nowadays we know as modern weight trackers that can be linked to wearable devices, however, this one is still available and appearing at the top of the list when typing "NHS" on the search bar of iTunes.

Miscrosft HealthVault (NHS Choices)

NHS BMI Tracker

NHS Health & Symptom Checker

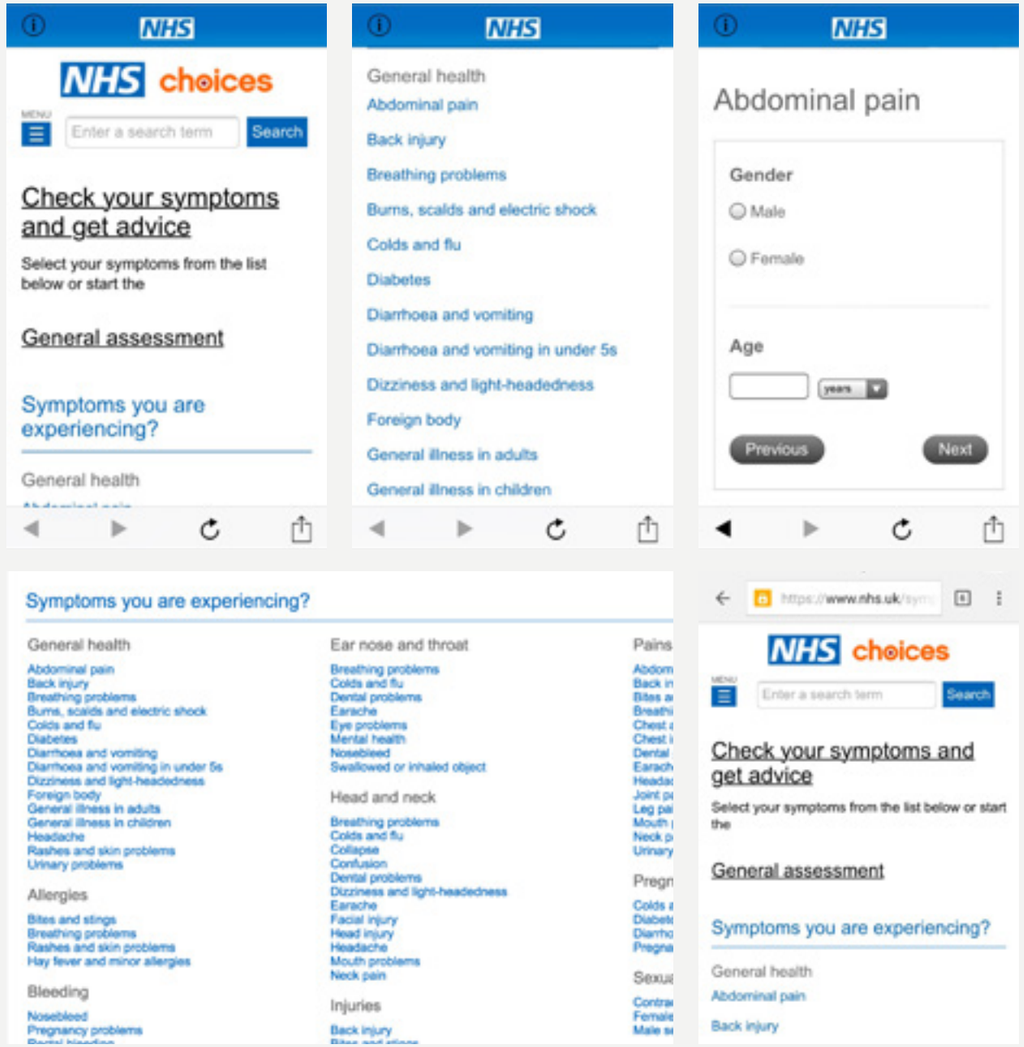
The best app that the NHS currently offers is not an app itself, it's a browser within an app. This is the way in which the NHS delivers its famous Symptom Checker for mobile devices.

To make it clearer, Symptom Checker is the tool developed by the NHS to allow users check their symptoms to get medical advice tailored to the diagnostic obtained on by the checker. The NHS has developed an app in order to make this experience more accessible for their users. The problem is the way in which this app has been developed. Although the app fulfills with the users' needs, the user experience is limited due to the fact that the NHS has needlessly built a browser. This browser provides access to the NHS Choices website which is already responsive and can be reached from conventional browsers like Safari or Chrome. In fact, by accessing NHS Choices Symptom Checker through Chrome you'll experience the same as it were the NHS app.

From my point of view, there is no point but also it's an unnecessary investment, to develop a shortcut to access a website that already can be accessed.

However, this tool is really useful and it might be worth considering its redesign and implemantation for the scheduling appointment process.

NHS Health & Symptom Checker (iOS + Web)



NHS Trust Nottingham

The NHS Trust of Nottingham has its own app to inform users about the services they deliver and where to find them which is something good. However, using the app is an easy job but then the user will realise that the app is a bit limited.

The information provided about diseases is quite general, therefore, if you are not suffering from one of them it's not useful at all. Unfortunately, the app doesn't provide any service beyond a brief description about the services, their location and some of common transtorns.

When analysing the aesthetics used to deliver the experience, the colour palette is not any different to the other services of the NHS so far analysed. In fact, the use of greens and blue in health is something quite common. However, I do not feel myself engaged with this way of combining them.

NHS Choices App Library

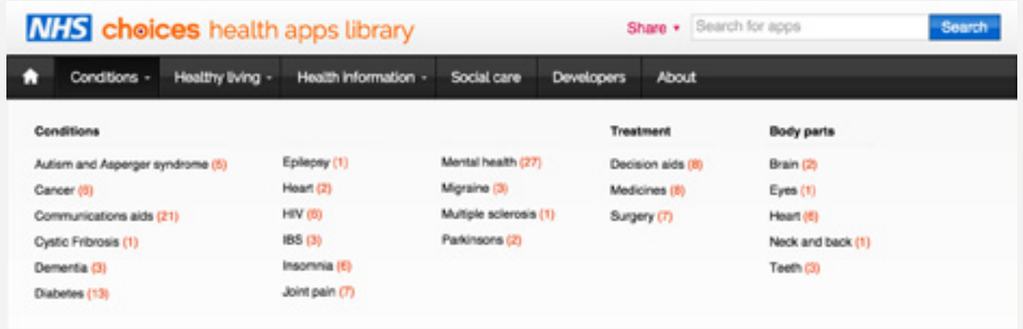
After analysing the mobile apps developed by the NHS itself, I found out a library where third-party ones are recommended and categorised by use. This library, is presented as a guide on third-party applications approved by the NHS as secure and trustworthy. This is a good point due to the fact that the NHS mobile experience is a bit lame.

The categories in which the developments are divided let me understand that the NHS has focused their digital experiences on the division of the content by diseases or issues that patients might suffer. Which is understandable at first, but this is an approach of treating the patients as patients instead of people. Besides, this approach is only useful when the person is affected by the disease. For this reason and when I saw this, I believed more in the idea of focusing my concept on addressing major needs.

Furthermore, among the categories I missed the one "management" to manage your healthcare. That made me consider my app as a medical ID and as a centre of the healthcare services for the new era.

NHS Nottigham Trust iOS

NHS Choices App Library (Website)



Patients Know Best

After the analysing the NHS mobile strategy it is time to introduce my main competitor which is the world's first platform designed to empower patients to manage their care and help clinicians share information and engage patients in new and powerful ways.

Patients Know Best is an integrated patient portal and information exchange system, deployed in over 200 sites across 8 countries and translated into 14 languages.

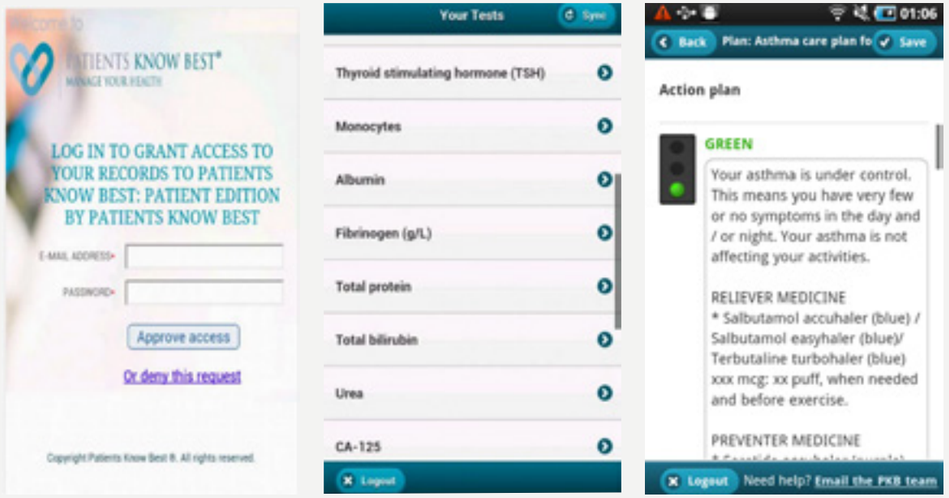
The patients own the copy of their medical information and choose who to share this record with. This platform allows them to communicate through messaging or video consultations; recieve lab results and letters; actively self-manage through care plans and device integration, and; invite other professionals to collaborate. This platform is integrated with over 100 devices and apps including blood pressure cuffs, fitness and activity trackers.

From my point of view, this platform is a stunning initiative but due to its oversize it might cause a nightmare to doctors and patients to learn how to use it. Doctors giving consultation via webcam? I do think it's a great idea but the learning curve for doctors and patients to get used to a system like this may be challenging.

This competitor gives me some good insights to apply to my concept. One of them is the way in which the doctor delivers diagnostics or the way in which patients are able to make appointments by choosing the availables dates and times based on the actual doctor's agenda. However, most of these features are some that I have though before even having discovered Patients Know Best.

A plus is that my concept is about letting patients manage their health and have more contact with doctors, but within the NHS framework as a new service offered by them.

Patients Know Best



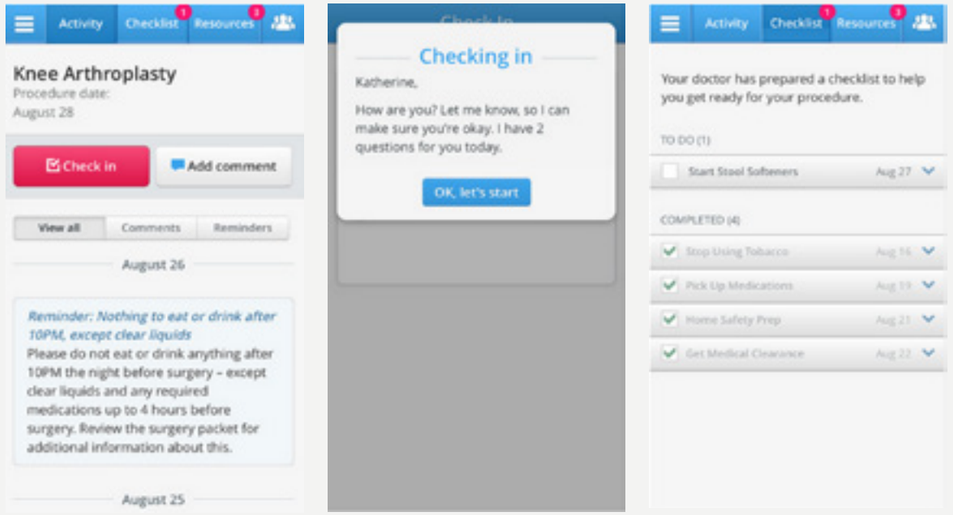
HealthLoop
HealthLoop aims to keep doctors, patients and care-givers better connected between visits by offering clinical information and peer-reviewed follow-up plans that aim to automate "the routine aspects of care, while tracking patient progress and monitoring clinical areas of concern."

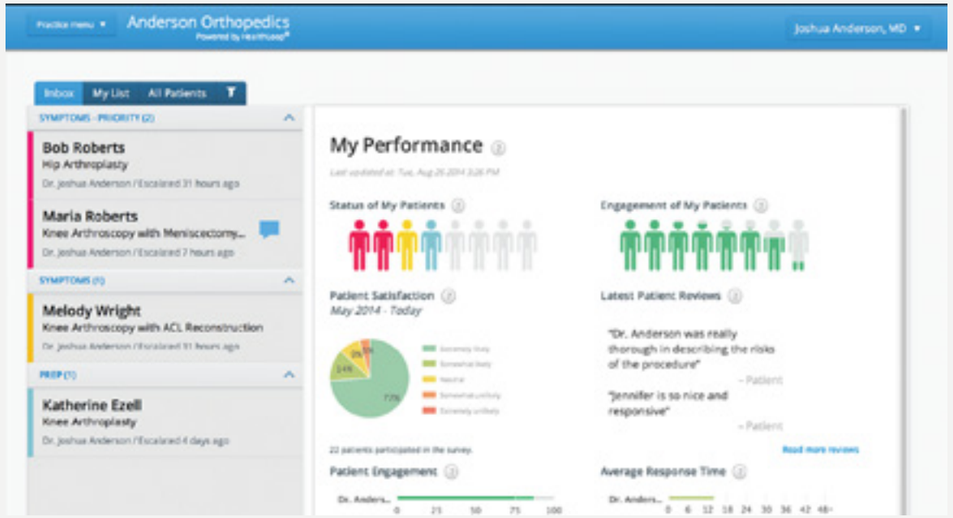
The idea is to both save doctors time and improve the quality of outcomes for patients by helping to extend the doctor-patient relationship outside the examining room and by keeping all parties involved connected between visits.

Through its automated follow-up patient engagement and communication tools, HealthLoop aims to improve patient care, track outcomes across care venues and increase loyalty for doctors and practices while reducing costs inherent to unnecessary documentation and follow-up, in-office visits.

Some of its features deserved to be hightlighted. For instance, the way in which doctors are able to recommend easy-to-follow exercises and recommendations is something which needs to be considered for implementing in my concept. Besides, the self-check-in with reminders is a good solution that can solve the issue found on the research.

HealthLoop (Demo)





Apple Health

With iOS 7 Apple introduced Health app that gives you an easy-to-read dashboard of your health and fitness data. The Health app puts that data in one place, accessible giving users a clear and current overview of their health. They can also create an emergency card with important health information.

Apple is playing with a clear advantage on this due to the fact that the platform of development is their own platform and other applications don't have their own platform to develop on. Therefore, third-party apps feed this Health app wih data.

However, I do like the idea of having a centre of "Health" to put all you health information in one place. This is something that may works for the NHS to let patients have their own health-related information gathered.

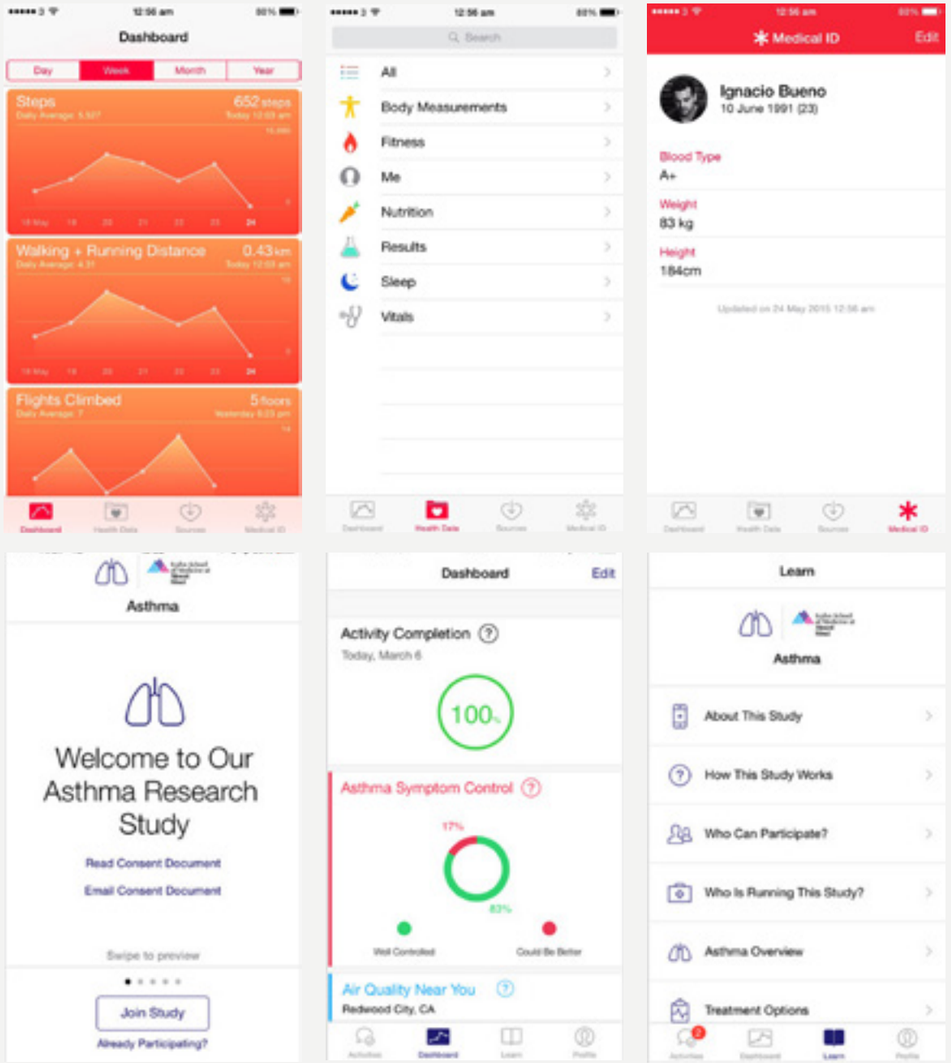
Apple Research Kit

The research kit is something very new, in fact it was presented in March. This kit is an open source software framework that makes it easy for researchers and developers to create apps that could revolutionise medical studies.

Until now, taking part in a medical study has usually required travelling to a hospital or facility to complete tasks and fill out questionnaires. With ResearchKit, you can use an iPhone to perform activities and generate data. You choose what studies you want to join, you are in control of what information you provide to which apps and you can see the data you're sharing. The best thing about it is that the data is securely kept and analysed by the experts who are conducting the research and Apple doesn't have access to it.

When I saw this I came up with the idea of creating a continuous flow of information, measurements and records between patients and doctors.

Apple Health (Website) & Apple Research Kit (Website)



Health Mapper

Health mapper is a stunning and good looking app which lets users keep track of their progress and their long-term conditions.

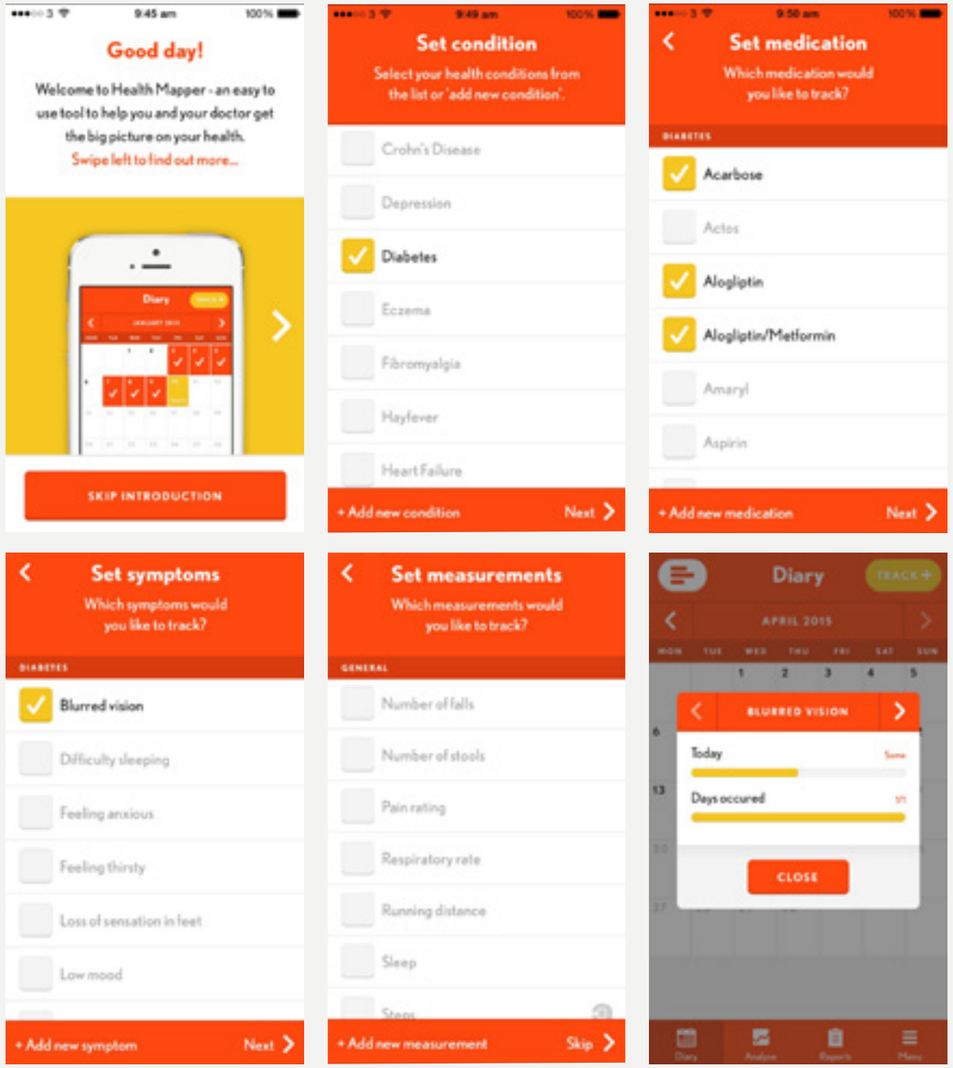
When you log in for the first time the experience is a bit dull due to the process you have to follow. Far from being fast, after the typical email and password screen, the app asks you to specify your conditon, symptoms, medications and measurements that you want to track.

After the process the app encourages you to track of them in order to keep records of your daily status. Besides, it allows you to set reminders not to forget to measure anything. The more you measure, the more data gathered you'll be able to share with your doctor. In fact, the app lets you export reports and send them via email.

This app has recently raised an investment due to its good approach to the self-management of healthcare, which is simply great. However, from an UX point of view, the set-up experience is one of the longest ever, which can be avoided by – applying this concept to my client – syncing the application to the NHS database in order to get all the medical details automatically. Instead of choosing yourself what to track, your doctor, who is the person that is going to read it, would be the one who chooses what he would like you to measure. By doing this, the log in process would be simpler and the information retrieved by the doctor more accurated.

Regarding aesthetics, there is an evident difference between the NHS ones and this one. Health Mapper cares about the use of aesthetics and its impact on the user behaviour. In fact, the usage of the orange and yellow as main colours is a smart decision in order to make an infludence on users' behaviour. I will explain it on the Aesthetics stage.

Health Mapper (Video)



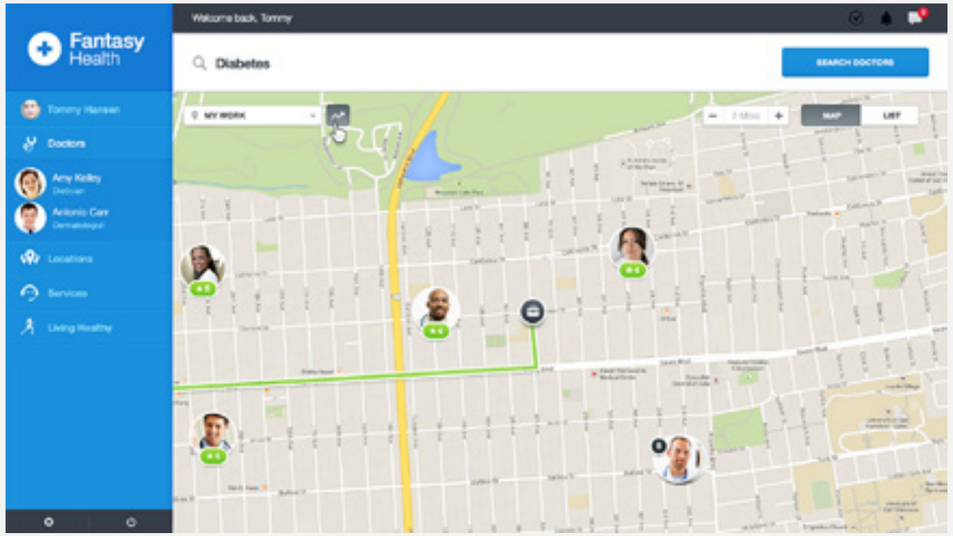
Fantasy Interactive Health (Concept)
Fantasy Interactive, one of the greatest digital agencies in the world, came up with this concept after studying the healthcare landscape in America.

Some of their findings were the following: "Time and again, trying to get access to care felt impersonal and disjointed. The most simple (and most important) of tasks, like finding the right doctor, were daunting. Care felt reactionary, with no connection between treatment and long term health."

As a response to that, FI made this concept which shows a new approach for finding doctors, managing healthcare records and bills. This concept has some lifestyle features like diet and exercise that are useful for people who may be suffering a condition or not. I found that really interesting to achieve a constant use of my concept in order for it not to be abandoned.

Even though this concept is once again based on the American healthcare system, I got even more inspiration to apply on my concept. (The use of the doctor's face, the Apple watch and user-friendly records…)

Fantasy Interactive Health (Video)



"Put a plan into action"

- Unknown

11 NHS Roadmap

A Framework for action

During my Competitors Research I found out an interesting report conducted by HM Government which defines a framework of action based on better use of data and technology to improve health, by transforming the quality and reducing the cost of health and care services. The application of this framework can give patients and citizens more control over their health and wellbeing, reduce the administrative burden for care professionals, and support the development of new medicines and treatments. **(**Report**)**

These are some of the goals that HM Government wants the NHS to achieve by 2020:

- "Build and sustain public trust"

- "Assure best value for taxpayers"

- "Enable all citizens to have a single point of access to all transaction services, including booking appointments and online repeat prescriptions for all care services"

- "NHS England will pilot individual digital 'care' accounts in which patients hold not just their records, as above, but also a personal budget."

- "Give patients a personalised, mobile care record which they control and can edit but which is also available in real time to their clinicians "

- "All patient and care records will be digital, real-time and interoperable"

Thoughts
When I found out this source, it made me feel very enthusiastic. During the competitors research my mood towards this project dropped because some of my competitors were doing what I wanted to do. However, I found out this source which states that the NHS wants to transform the way in which healthcare communication and services are delivered (in the same way in which I had planned do it).

From this point, I aligned the concept I came up with to NHS's interests for 2020 in order to address their needs and interests for the future.

Our proposals to enable me to make the right health and care choices

i. From March 2018 all individuals will be enabled to view their care records and to record their own comments and preferences on their record, with access through multiple routes including NHS Choices. Initially, this will focus on data held by NHS providers (primary care, acute, community and mental health), but it will be progressively extended to cover other care settings, taking account of the work that local authorities are progressing in regard to personal records. This will create the opportunity for individuals to create and manage their own personal care record. The NIB will publish a roadmap for implementation by June 2015, which will then be integrated into commissioning and regulatory arrangements, where appropriate.

12 Final Concept

Reframe of the concept. Insights and solutions.

After finding out useful features during the Competitors Research, but also the Framework for action, I modified my concept in order to meet the new insights I discovered. In fact, I consider this reframe as an iteration to improve the concept I came up with from the fishbone. To achieve it, I carried out the exercise "Insight – Solution".

Insight:
The NHS wants us to have a single access point to manage our appointments and records.

Solution:
My app will be that point of access to allow patients make and manage appointments and records.

Insight:
The NHS wants to create invidiual digital care accounts.

Solution:
My app will not just be a point of management, but the new medical ID which will allow users to identify themselves when needed.

Insight:
The NHS wants to built and sustain public trust as well as assure best value for taxpayers. People make appointmes for bad reasons. GPs do huge efforts commissioning healthcare services.

Solution:
My app will show an average of the amount

spent on care services on each patient in order to: build trust and sustain public trust, let taxpayers know where their money is going and finally to make people aware about the costs of healthcare in order for them not to book appointments for unnecessary reasons.

Insight:
As seen on HealthMapper, a set-up process to select diseases, medicines and conditions on a third-party app is tedious.

Solution:
My app will be managed by the doctor. Meaning: the doctor will set up what is needed to be measured or tracked on the system.

From the reports and investigations analysed on the Literary Reserach stage:

Insight:
Users make use of NHS Choice to get health adivice. We are health seekers during our lives.

Solution:
A specific part of the app will be intended to give tailored advice to users about their conditions.

Insight:
Users make mistakes regarding how to take their prescriptions. Information is not clear enough.

Solution:
There will be a section intended to contain information about the current medicines, times of taking them, set reminders and control whether it has been taken or not.

Insight:
Waiting times in appointments. Users don't know what to do.

Solution:
Thanks to the new Medical ID, users will be able to self-check-in in the appointment with the NFC of the iPhone and thanks to that, waiting times will be improved by letting other users know the status of their appointments by live notifications.

Insight:
Lack of communication after appointment.

Solution:
Users will recieve easy-to-read summaries written by doctors straight to their smartphones after the appointment
.

Technical Spefications:
Platform: iOS & Watch OS
Devices: IPhone + Apple Watch

Features for iPhone:
- Log in and sign up with NHS number
- Make and manage appointments
- Manage Records
- Measure new records
- Self-check-in an appointment
- Set reminders
- Manage medicines
- Check out info about prescriptions
- Get notifications
- Share records
- Export records
- Get a summary of appointments
- Check medical adivice

Features for Apple Watch
- Get push notifications
- Dismiss notifications
- Check-In in appointment

Self-check-In & Medical ID: Apple NFC + NFC reader in consultation.

Notes: until now, Apple doesn't allow access to the NFC to developers, however, since I want to show the best solution, I will dismiss this downside for this project.

"The deliver phase will begin to realize your through rapid revenue and cost modeling, capability assesment and implementation planning."

DELIVER

13 Info. Architecture

Information Architecture and Testing

In order to create a consistent navigation matching users' mental models of a service like this with the conceptual model, I challenged myself to divide the service and the interactions by users needs.

To do that I looked at the navigation system used in other apps in order to find the most suitable. It wasn't easy, due to the fact that the medical apps I analysed don't have the structure I was looking for. In the end, this service is supposed to be easy to use and have both long and quick interactions.

Finally, I came up with a division of the interactions to make the navigation clear and consistent but also in order to divide two kinds of interactions: short interactions with significant impact on the app, and long interactions with slight impact. This way of thinking let me focus on what really matters to users when using my app.

To make it clear, I'll give examples for both of them: a short interaction with significant impact on the app is a change of screen through the main menu or the creation of a new appointment, meanwhile, a long interaction with slight impact is an interaction performed within a main screen i.e. checking out your feeds.

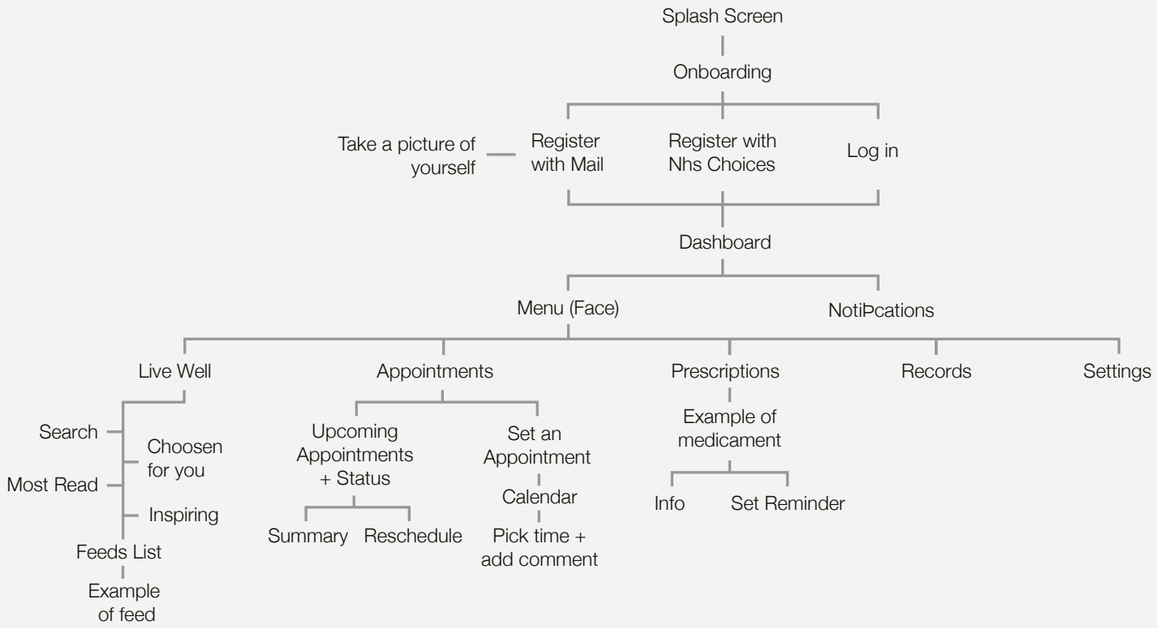
Regarding the division by users needs, I divided the content of the app in: Life Centre (measurements), Medicines, Appointments, Medical ID, Notifications and Settings.

13 Inf. Architecture / Deliver

However, I didn't achieve that structure on my first attempt. In fact I had to fail in order to realise that what I had built was not useful to my users and then rethink the concept to improve it.

This is the first information architecture I came up with, where all the flow tasks are based on the dashboard. I realised that was a failure. I couldn't do that as compulsory. Moreover, by looking carefully at the information architecture, you can see that in this concept, to set an appointment, the user had to go in the Appointment section, which would be a nightmare in terms of interaction.

That was how I came with the idea of short and highly accesible interactions, and long ones.

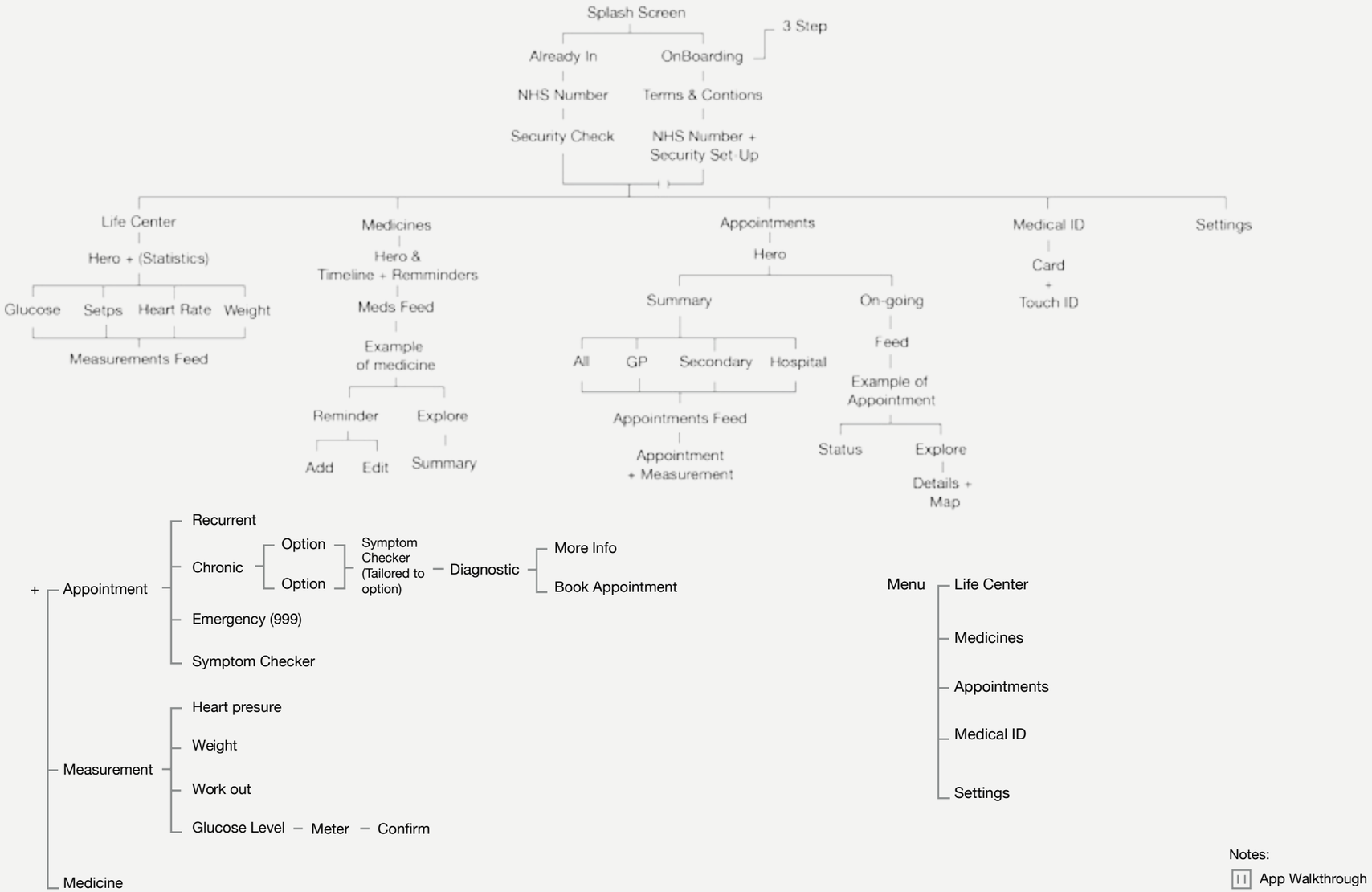


13 Inf. Architecture / Deliver

This is my final information architecture where can be seen the two types of interaction, short interactions with high impact on the behaviour of the app which can be reached anytime (+) and the (menu), and the main interactions which are long and designed to flow.

I came up with the “Hero” feature, which are interactive areas with hightlighted content. For example, in Life Center the “Hero” feature is used to show statistics but aso as a filter for the measurements feed.

Finally, I decided to focus myself on the main features of the app and leave the Live Well section for a second version of the project. This project was becoming wide enough and I had to reframe it if I wanted to get it finished on time.



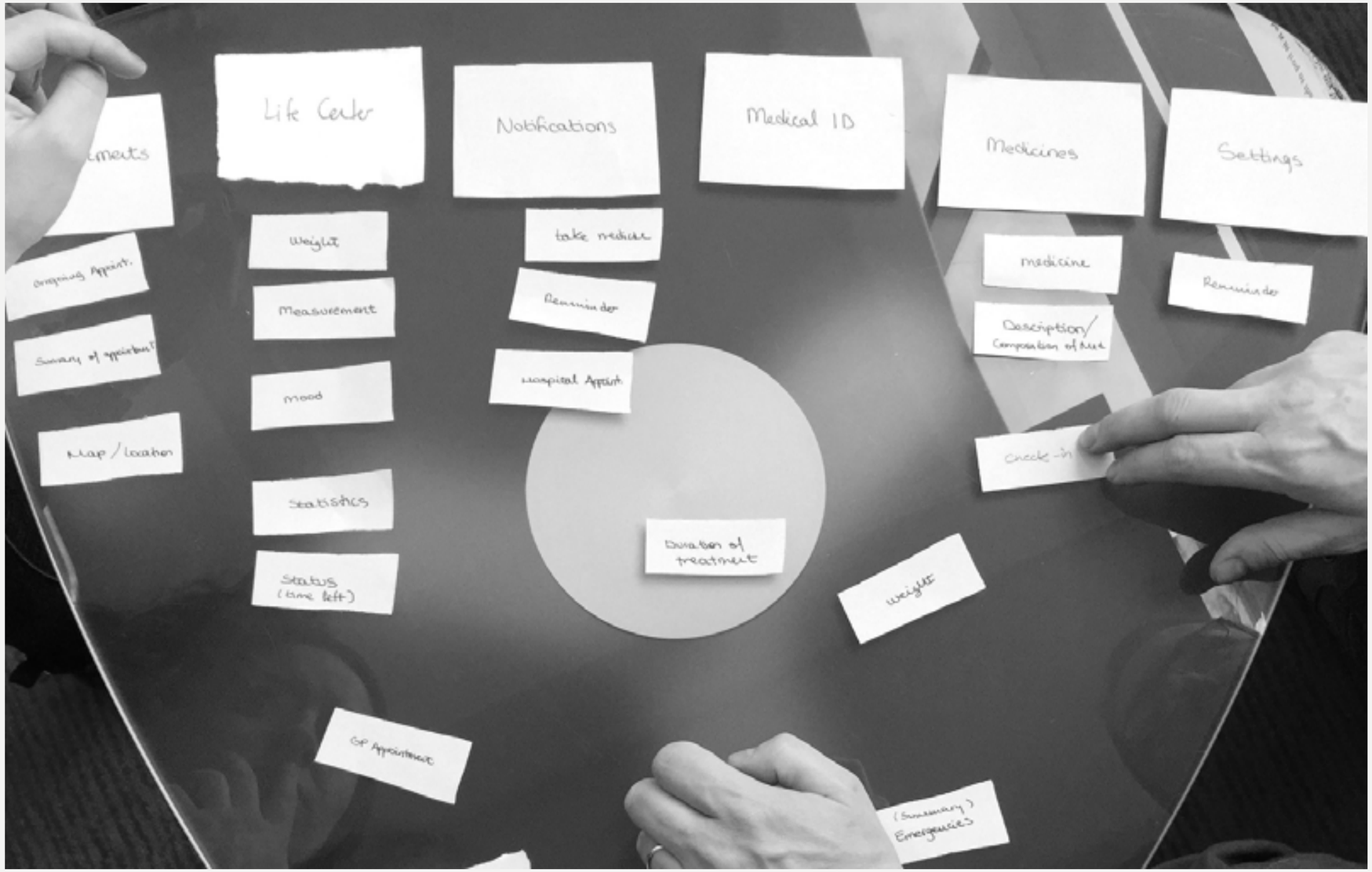
13 Inf. Architecture / Deliver

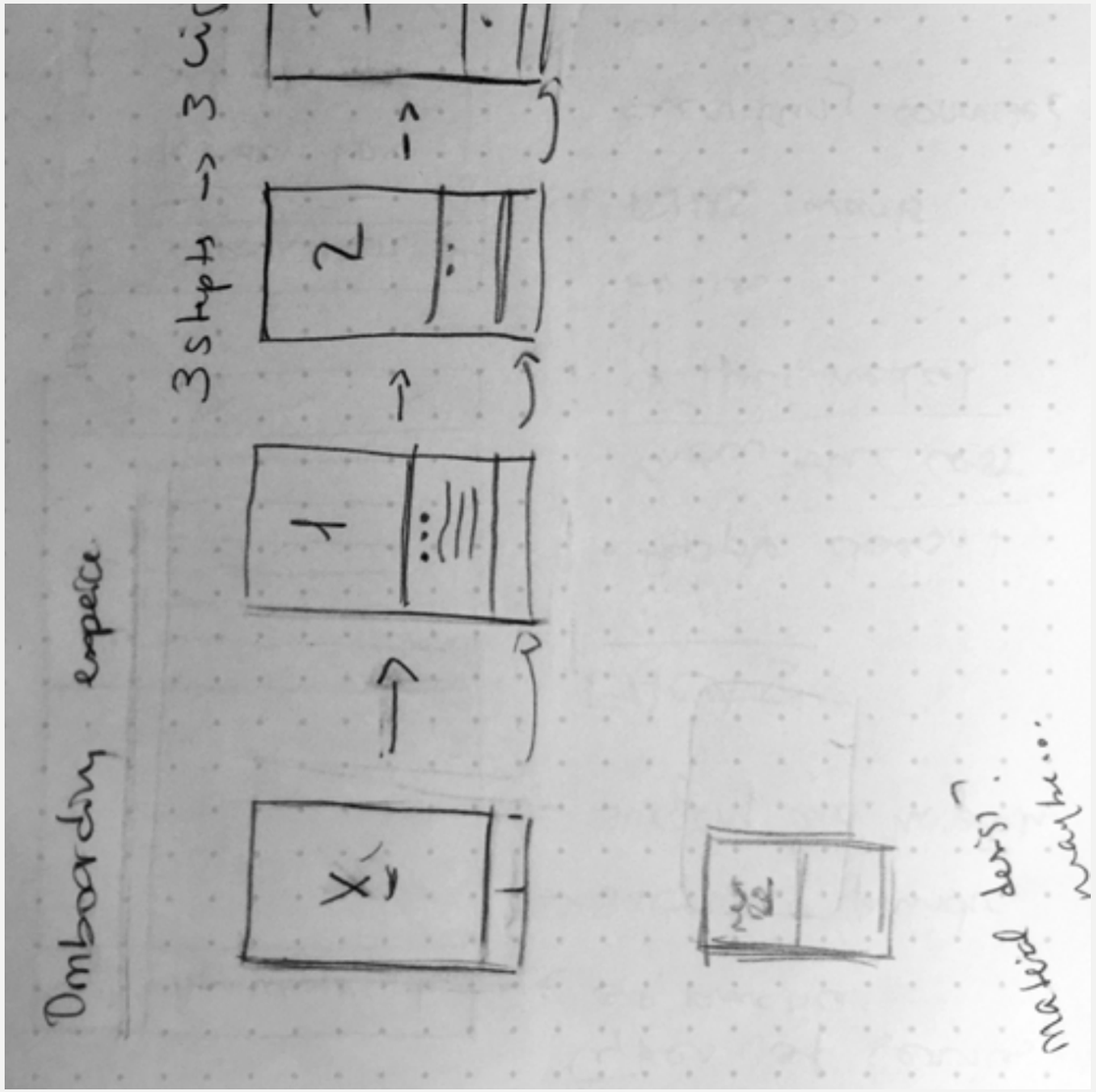
In order to double-check the information architecture I conducted a “Card Sorting” with two users.

The Card Sorting is a method used to evaluate the information architecture of an app or web site. In a card sorting session, participants organize topics into categories that make sense to them.

On this Card Sorting session, my users found parts they didn’t understand at first. However, with my help they were able to finish it fine. Curiously, the part they didn’t understand were in relation to configuration of reminders. They thought that reminders should be set from the settings screen, however, that screen is supposed to gather all the notifications.

Finally, I explained to them my approach to that specific interaction and they agreed to it. I have to say it’s kind of funny to look at people when they are sorting the core of your app.





14 Interaction Design

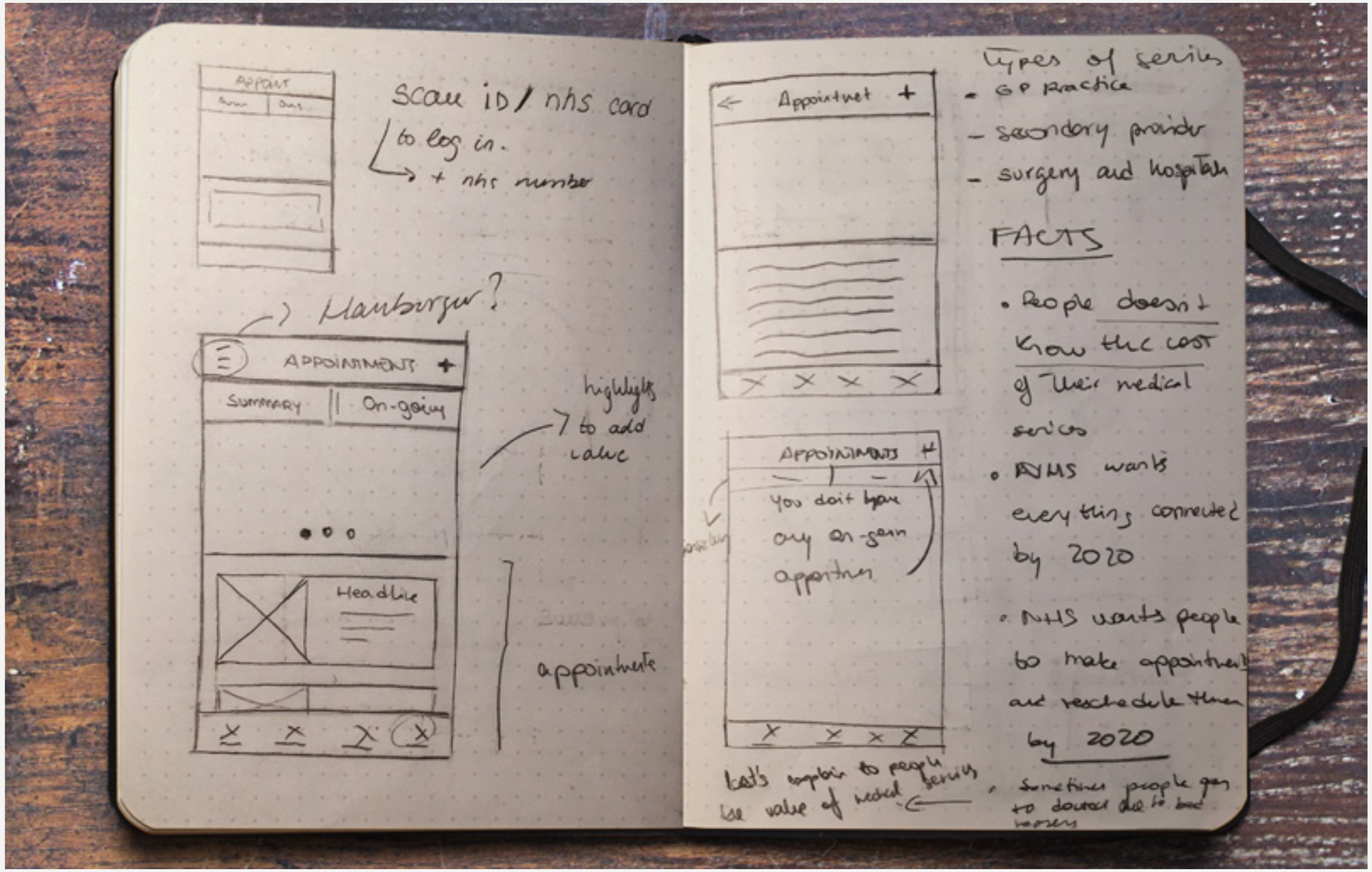
Sketching, Wireframing and User Testing

To generate rapid prototypes and figure out the best way for users to interact with the information architecture I came up with, I went from rough sketches to low-fidelity prototypes. The sketches let me get a global picture of what I was about to design, meanwhile, the low-fidelity prototypes helped me to create and validate the design structure early on in the design process.

Thanks to the low-fidelity prototype technique I was able to reframe and improve my design strategy up to 3 times during the design process without spending an excesive amount of time neither.

14 Interaction Design / Deliver

The first step was sketching some doodles, but before I start sketching, I wrote down some of my research insights in order not to forget them while drawing solutions for the screen related to those insights. This way of sketching let me focus on what really maters but also to think more strategicaly.



14 Interaction Design / Deliver

Once I had a structure on my mind after the sketching phase, I created the first wireframes with Illustrator and Sketch App. This was the first approach to a structure I was happy with. Since I was designing for healthcare, I wanted to create a simple structure yet sophisticated and easy to remember.

This first concept was more focused on giving relevance to images instead of the content itself. It can be appreciated by looking at the squares reserved to place images there, however I finally thought that this app wouldn't make use of such amount of images, but I would do it for text, therefore I realised that this first structure was not useful to my purpose.

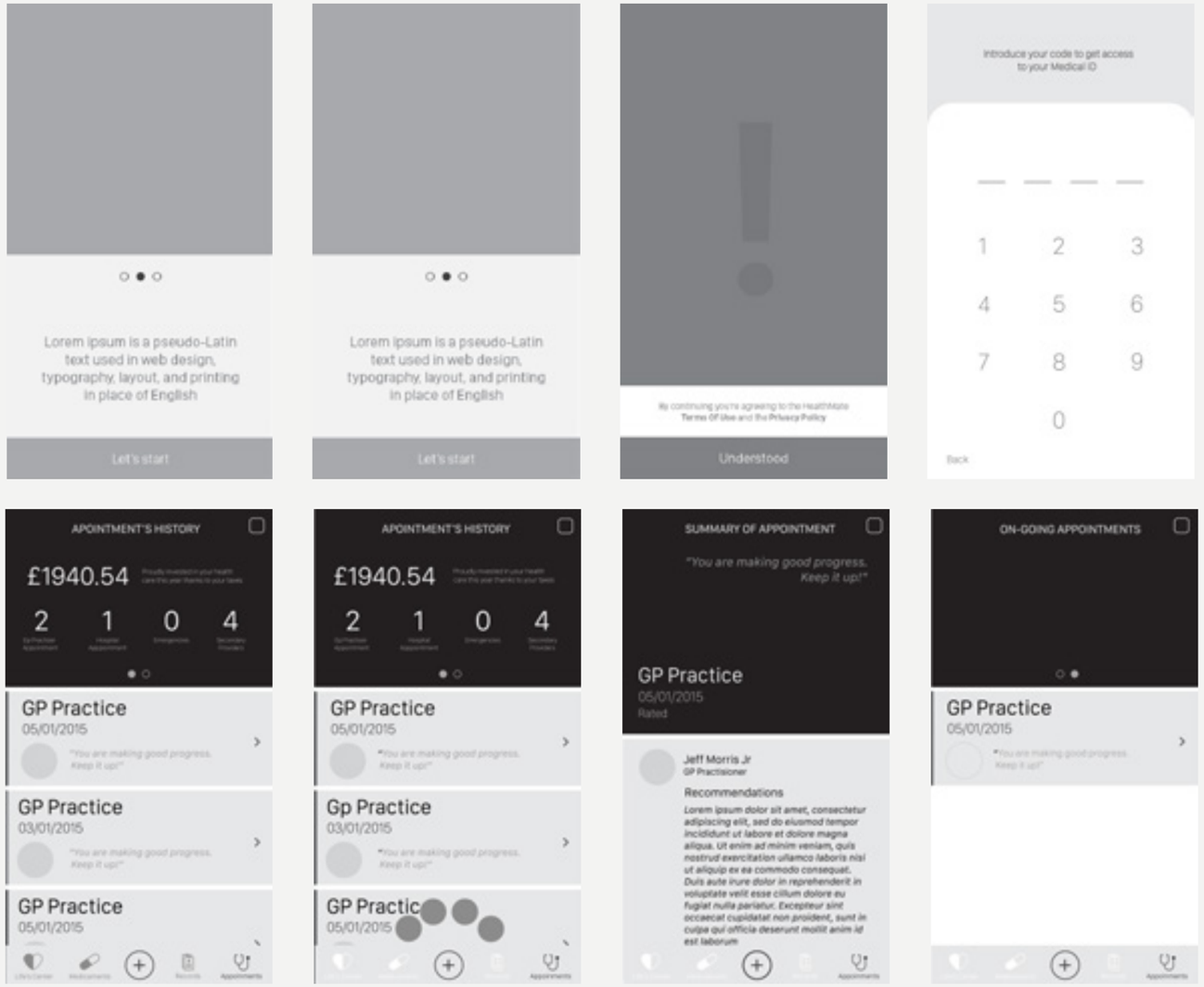
Furthermore, I had an idea in order to avoid the usage of a hamburger menu which was to use the actual user's face, however, on my second iteration I change my mind because I thought that it could create misunderstundings.

14 Interaction Design / Deliver

On my second attempt I changed the organisation in order to give more relevance to the text and data instead of the use of images. This time I reserved just tiny circles in which to place the doctor's face in order to make their comments and diagnostics a bit more personal and friendly. I learnt that from Fantasy Interactive's health concept.

In regarding of the menu, this time I tried something a bit different. I used a tabmenu on the bottom of the screen to let users access to all the screens of the app from the same point. This strategy let them save time when accessing other screen which is significant and worthy enough to try. However, this time I changed my mind because of a matter of aesthetics. I couldn't see it as beautiful. I felt that the shape was stealing worthy space.

Finally, I did my very first attempt to create both, the onboarding experience and the medical ID. I didn't struggle on other sections because I had in mind to repeat a main the structure in order to make it easier for developers to code it and users to remind it.



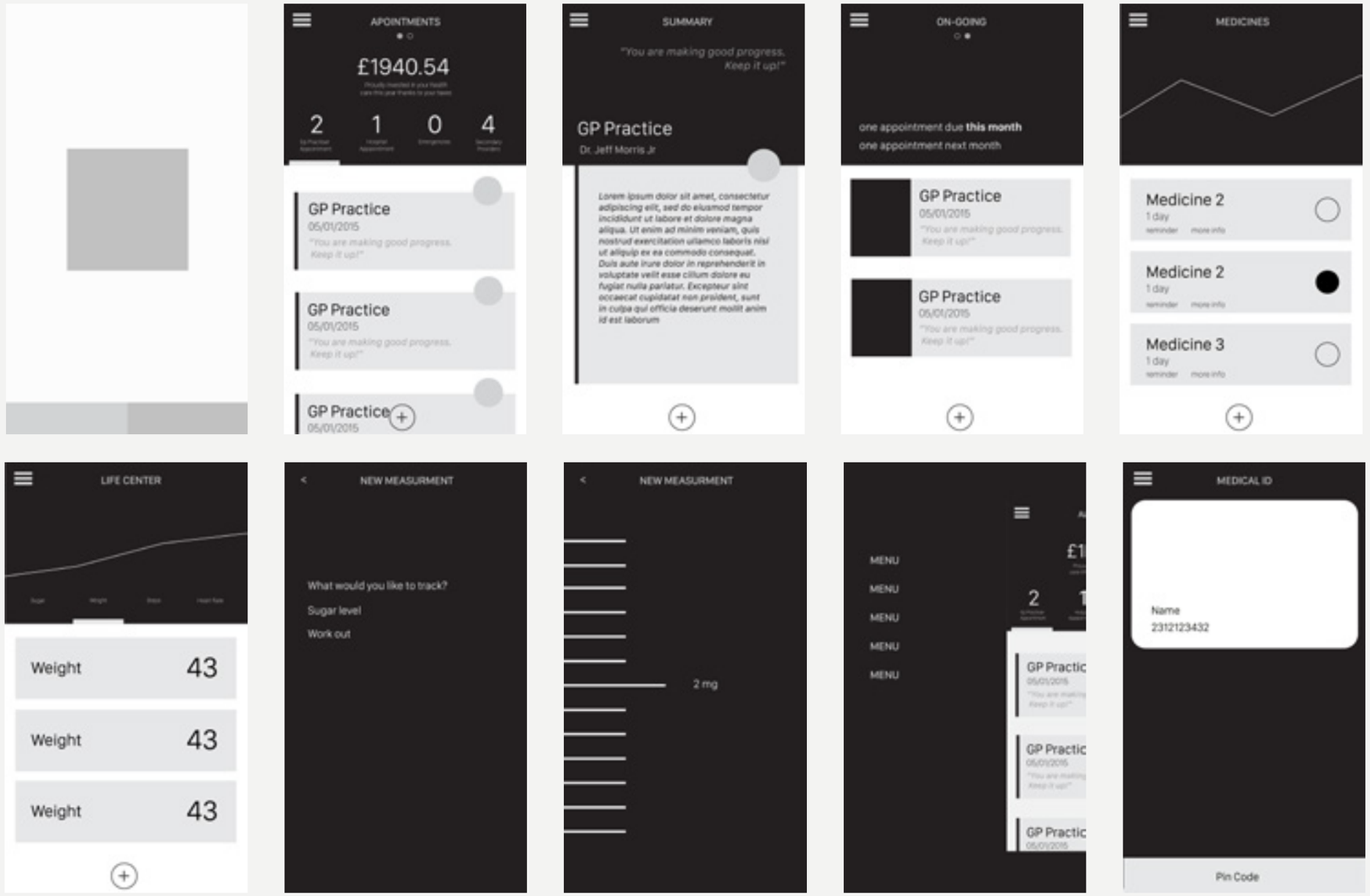
14 Interaction Design / Deliver

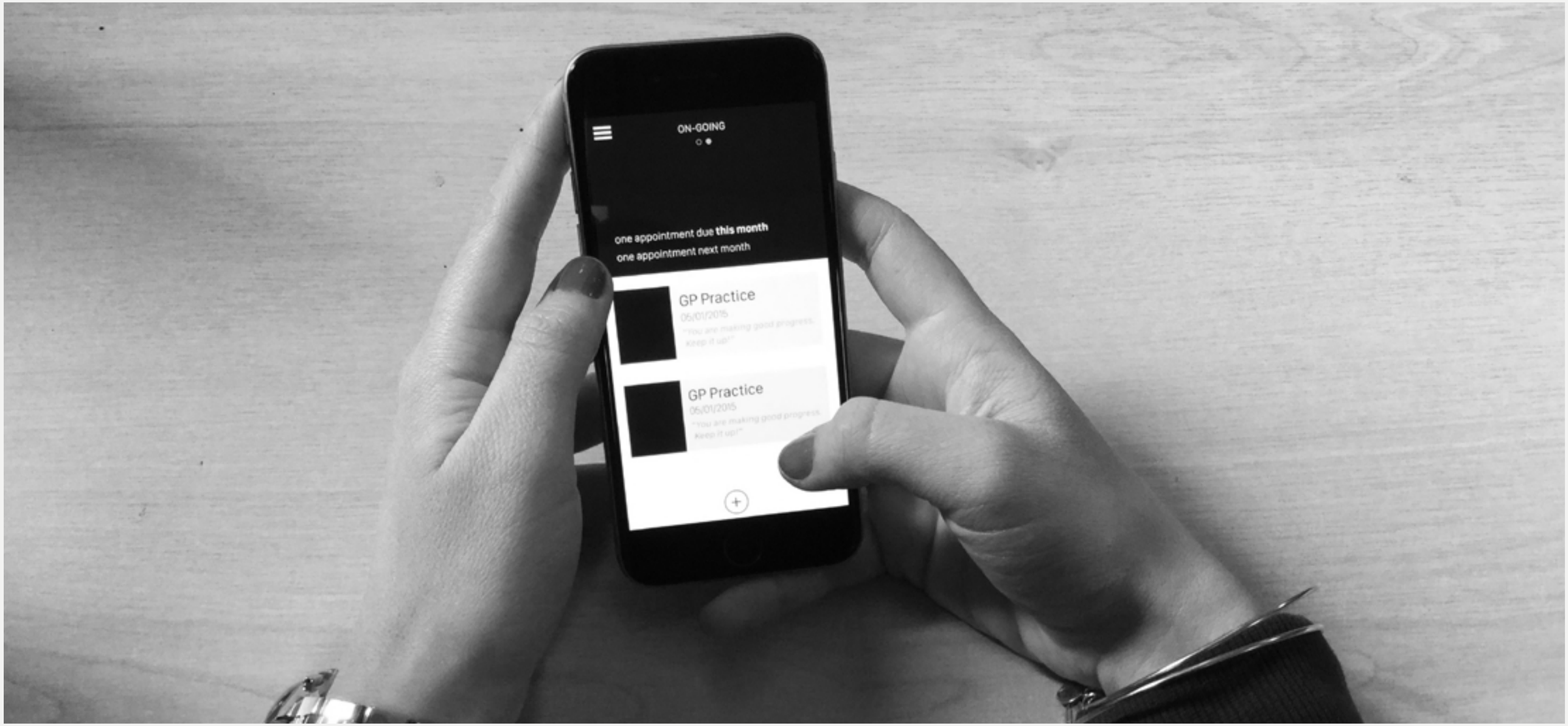
My third iteration to achieve the most suitable design structure for this project was an improvement of the previous one.

By knowing the mistakes I had had before, this time I designed a concept by putting the content first and establishing a strong hierarchy of type which let me grab users' attention on what really matters on each screen.

Besides, on this third iteration, I included the firsts graphics and visualizations of users' progress through time. Another element I introduced was the Medical ID as a card instead of a piece of paper as I have shown on the User Story. This Medical ID as a card is a metaphor which contains all the medical data and it's shared by NFC. At this stage I was thinking on using a PIN code as security for the Medical ID but finally I change my mind and I used Touch ID (fingerprint).

In order to test whether this structure was understantable or not, I conducted a user testing session by creating a rough prototype with Marvel for IOS.




ON-GOING
one appointment due this month
one appointment next month
GP Practice
05/01/2015
"You are making good progress. Keep it up!"
GP Practice
05/01/2015
"You are making good progress. Keep it up!"

15 Aesthetics

Inspiration on aesthetics

Each design is a challenge but when the subject to design for is healthcare it is even more challenging. The usage of the colour or typography and even way in which an interactive system is organished does affects us and our behaviours in many ways. Finding the right colours and typography was a special challenge in this project.

As can be seen in this design document, I am influenced by the Swiss school of design and it's solemn use of typography and layout. However, for this project I wanted to leave my likes aside and create something special and bold - something special to look at and feel engagement with. That's why I looked at several sources to get inspiration from.

The first souce which I looked into to get inspiration was the book Interaction of Colour, 1963 by **Josef Albers**, an artist and educator whose work about colour is probably the best source I have ever read.

Albers was very interested in the relationship of the colour. In fact, his work was what inspired me to create a consistent yet sophisticated colour palette for the my project. In order to convey that message to my users, but also to achieve a psychological engagement, I did a research on the Psychology of Color in Marketing (Website) too. With this research I discovered a strong psychological relation of colours and context. This relation let me focus on a very few colours from a wide range. I finaly made a decision:

15 Aesthetics / Deliver

My decision was to convey a different psychological message by the usage of colours on each screen.

Appointments: Blue
Intentions: I wanted users to be calm and trust doctors' diagnostics. I wanted to encourage their tranquility when reading about the disease they might be suffering from but also when looking at the costs of their healthcare. My users must feel protected and safe making an appointment.
Meaning of Color: Trust, tranquility, stabilty, calm, wisdom, security and confidence.

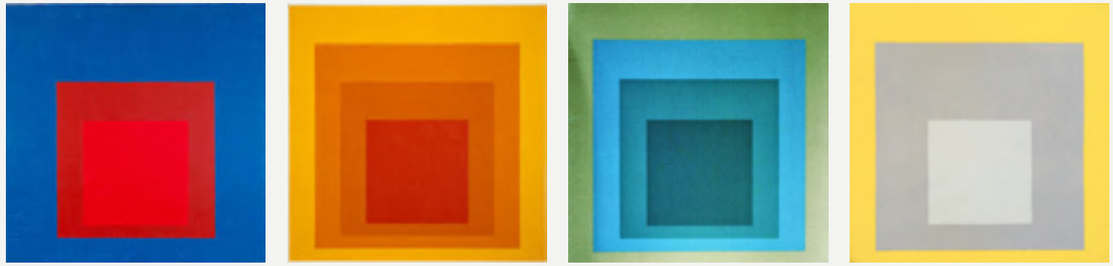
Medicines: Green
Intentions: I wanted users to feel that their medicines are not only chemical components but a path to better health. I needed them to look at their medicines as as a source of hope. I wanted them to see a success against their diseases by following their treatments.
Meaning of Color: Stability, Nature, Fertility, Success, Hope.

Life Center: Red/ Orange
Intentions: On this screen I wanted users to feel optimism whatever measurements they got. I wanted to encourage their enthusiam to carry on measuring no matter if it's a bad result. I needed them to be energetic and feel themselves with enough power not to quit. I wanted them to have the ambiton for achieving their goals.
Meaning of Color: Optimism, enthusiasm, power, energy, ambition.

Medical ID: Navy + Blue (Card)
Intentions: This screen is supposted to be a way to identify the users in medical places. It is what represents them and contains their medical data. I wanted them to feel the authority and confidence to be able to self-check-in but also to trust the new system and be confident about the security of their medical data.
Meaning of Color: Credibility, autority, trustworthnisess, confident, serene.

Call to action + Trends: Yellow/Orange
Intentions: I wanted to add a point of contrast as I learnt from Albers. This actual colour let me deliver call to actions wuth plenty of positive connotations for several situations. Practical yet cheerful.
Meaning of Color: Cheeriness, optimisms, happiness, fun, energy.

The Meaning of Color + Josef Albers Artwork



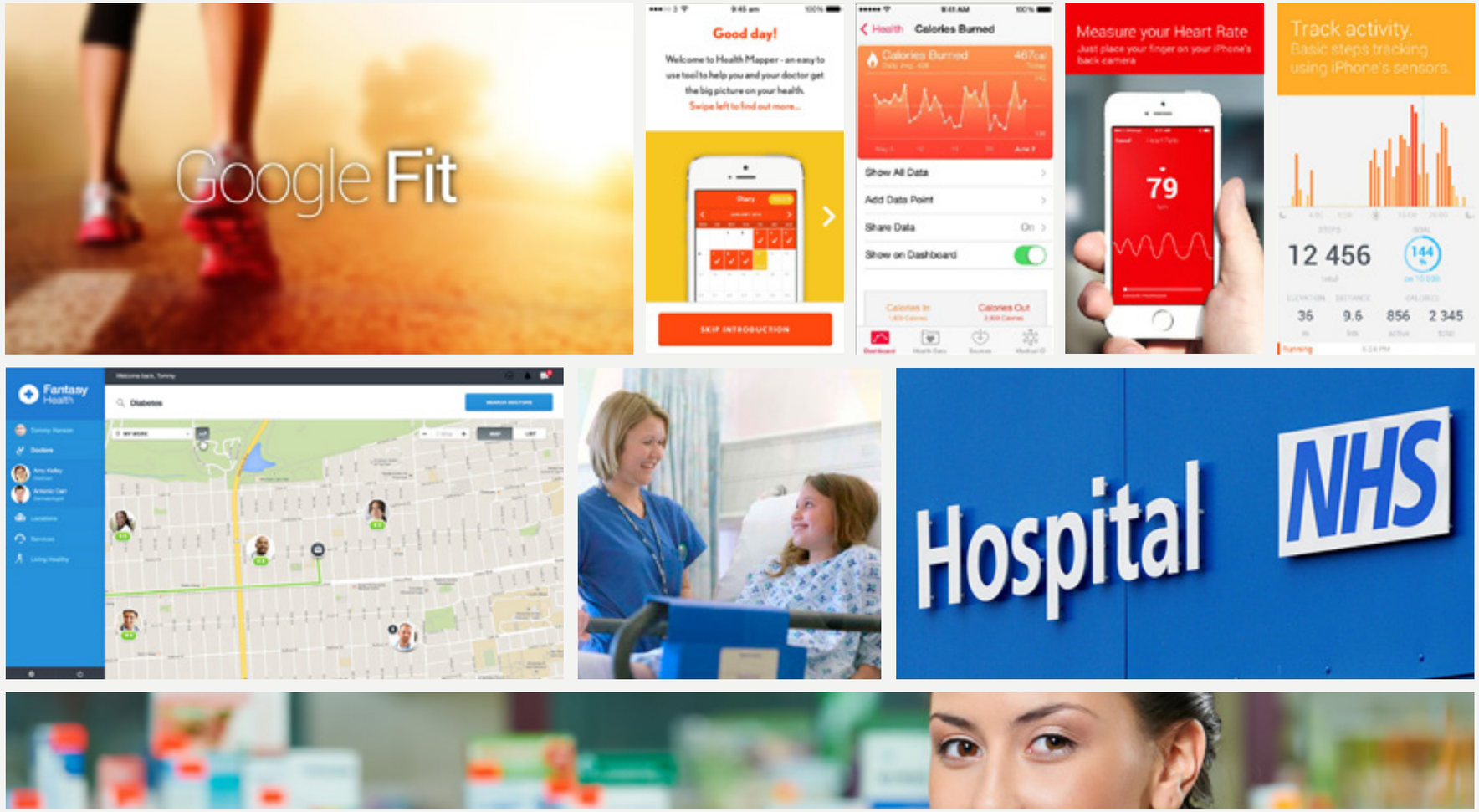
15 Aesthetics / Deliver

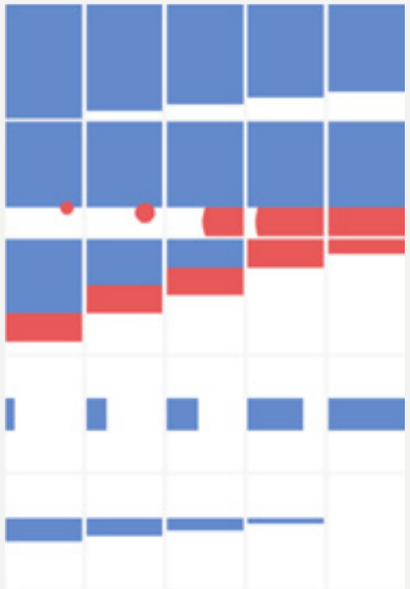
To be sure about the chromatic palette I chose for my app, I made a modboard of medical services, health and lifestyle mobile applications to compare what I had choosen with the usage of colour out there. Thanks to this modboard I was able to check that it was suitable for the service I was designing.

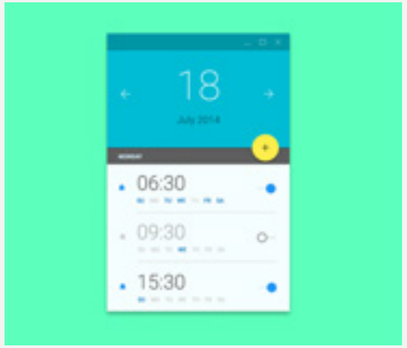
Finally, I looked at User Interface trends and patterns to deliver a controlled experience. The pattern that finally convinced me the most was Material Design created by Google. For many reasons, this design pattern met my expectations in regarding the usage of animation. This design pattern is well-known for relying on animation to transform elements and move them across the viewport in order to grab users attention.

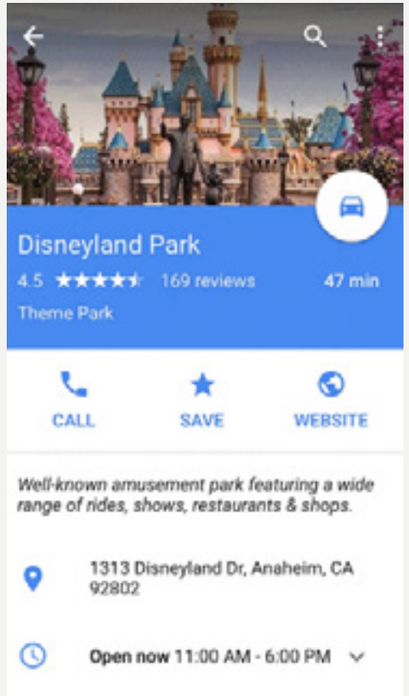
On the next page can be appreciated another modboard with images from the Google's Material Design pattern.

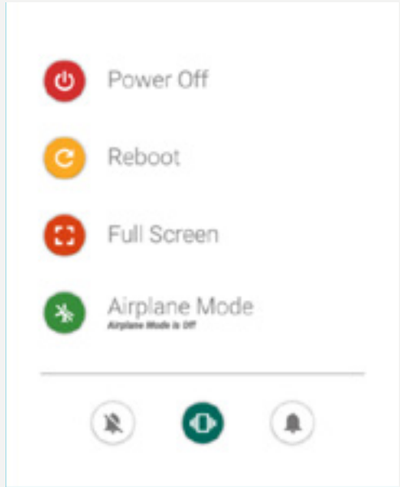
ModBoard - Color in health and lifestyle

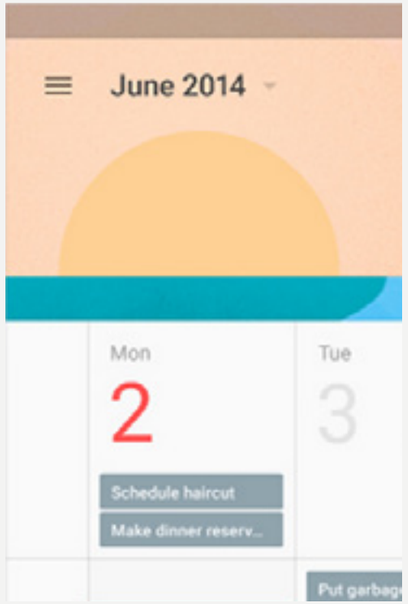


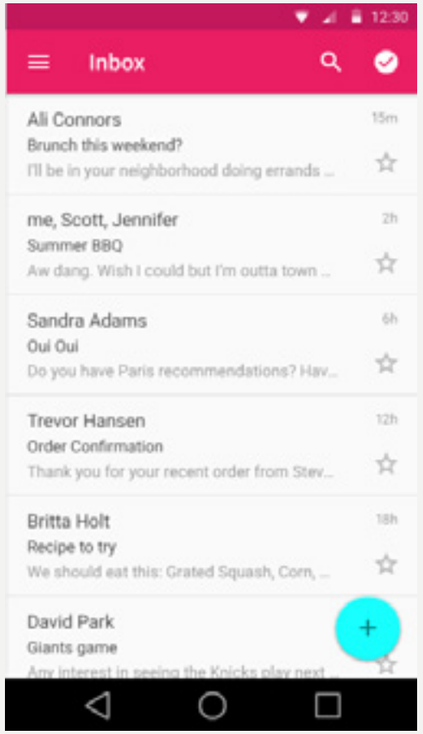


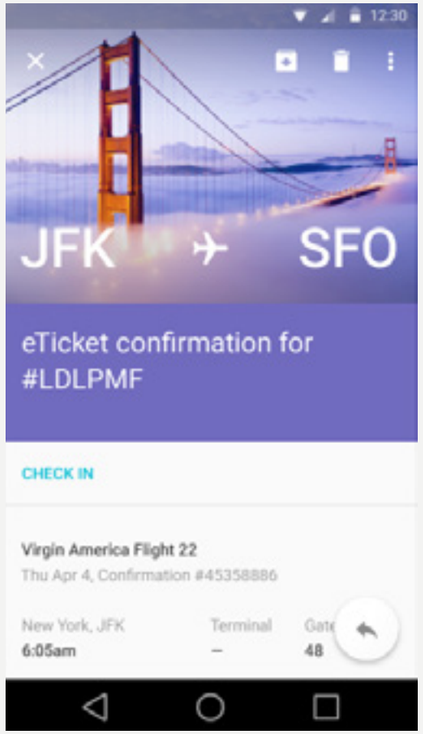

18
06:30
09:30
15:30


Disneyland Park
4.5
169 reviews
47 min
Theme Park
CALL
SAVE
WEBSITE
Well-known amusement park featuring a wide range of rides, shows, restaurants & shops.
1313 Disneyland Dr, Anaheim, CA 92802
Open now 11:00 AM - 6:00 PM


Power Off
Reboot
Full Screen
Airplane Mode


June 2014
Mon
2
Tue
3
Schedule haircut
Make dinner reserv...


12:30
Inbox
Ali Connors
15m
Brunch this weekend?
I'll be in your neighborhood doing errands ...
me, Scott, Jennifer
2h
Summer BBQ
Aw dang. Wish I could but I'm outta town ...
Sandra Adams
6h
Oui Oui
Do you have Paris recommendations? Hav...
Trevor Hansen
12h
Order Confirmation
Thank you for your recent order from Stev...
Britta Holt
18h
Recipe to try
We should eat this: Grated Squash, Corn, ...
David Park
Giants game


12:30
JFK
SFO
eTicket confirmation for #LDLPMF
CHECK IN
Virgin America Flight 22
Thu Apr 4, Confirmation #45358886
New York, JFK
6:05am
Terminal
–
48

16 UI Style & Brand

UI Style Guide & Branding

After looking at aesthetics I decided to create a brief style guide in order to be consistent during the design process. On this style guide I specified two typefaces to use, it's sizes to ensure the perfect readability and finaly the colour palette I have talked about on the aesthetics point.

In regard to the brand, this product was supposed to be a brand-new service to convey innovation. Howerver, it will be launched within the NHS framework to remain a trust sense. I thought that it would be useful to leave the NHS brand slightly in the background to give a better sense of innovation. For that reason, I created a new logo from scratch in order to transmit the message I wanted to convey.

After thinking on the logo for a while, I wanted to simplify it by reflecting on the elemens of this project: NHS and people; and message to enhance: their communication and continued collaboration. By keeping this simplifaction in mind I made use of a visual metaphor in order to create the logo.

Furthermore, I came up with a naming to enhance this metaphor but also the main message of my app. The name I came up with was: Healthmate. I have to say that it was not the first name I thought of, however, it was the one I finally chose.

On the next pages there are both: the style guide and the design process of the logo.

COLORS

#1a90db	#00bfa5
#de4141	#ffb300
#393c48	#8b8b8b
#f2f2f2	#000000
#ffffff	

APP FONTS

SAN FRANCISCO DISPLAY REGULAR

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n i o p r s t u v w x y z

SAN FRANCISCO DISPLAY MEDIUM

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n i o p r s t u v w x y z

PROXIMA NOVA LIGHT

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n i o p r s t u v w x y z

PROXIMA NOVA SEMIBOLD

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n i o p r s t u v w x y z

BASELINE GRID

Healthmate has one body copy style for substantial amount of text which should use Proxima Nova Light 26pt. They key of the readability is having the right amount of your line lenght. The optimal line lenght for your text is considered to be 50-60 characteres including spaces. (“Typographie,” E.Ruder). Some suggest that up to 75 characters is acceptable

FONT SIZE

SAN FRANCISCO DISPLAY MEDIUM 38pt
Usage: CAPITALS. Title of hero and Main title of Hero

San Francisco Display Medium 34pt
Usage: Highlight of Hero

Proxima Nova Light 34pt
Usage: Highlight of feed

San Francisco Display Medium 30pt
Usage: Secondary Title of Hero

Proxima Nova Semibold 30pt
Usage: Feeds title

Proxima Nova Light 30pt
Usage: Feeds Secondary title

Proxima Nova Light 26pt
Usage: Body text

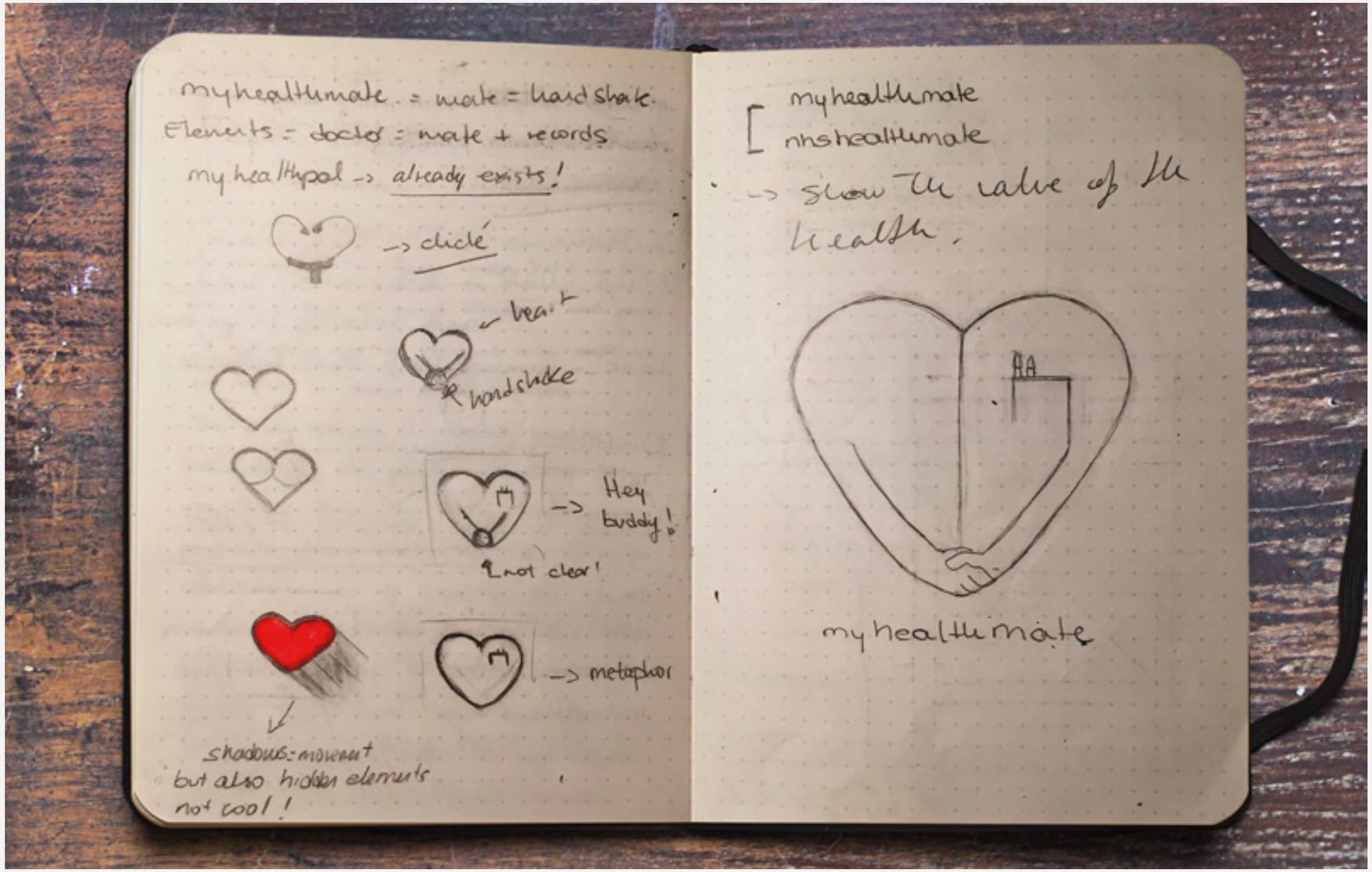
San Francisco Display Regular 22pt
Usage: Filter option on hero

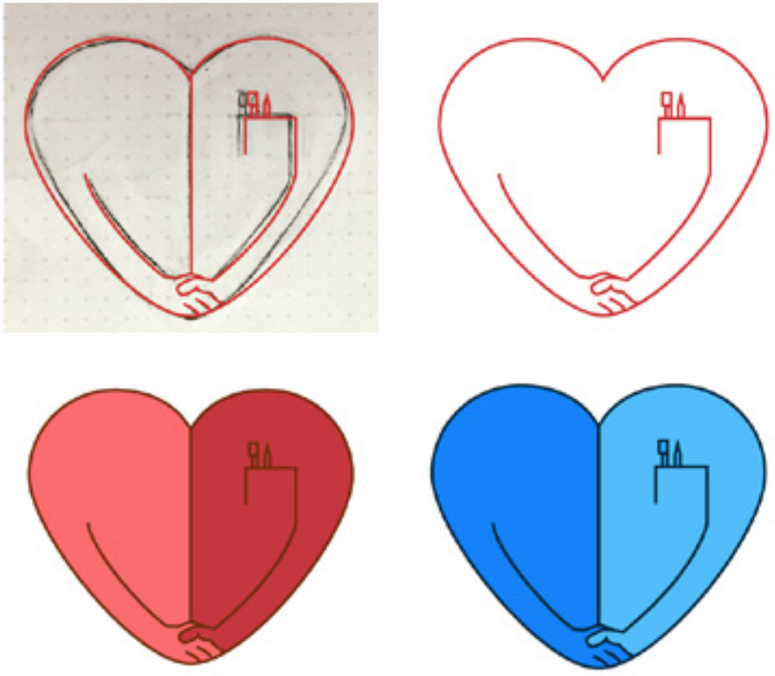
16 UI Style & Brand / Deliver

As said before, I wanted the brand to transmit a sense of communication between the NHS and patients, therefore, with this idea in my mind I tried to unify all these concepts on the same logo: People, Doctors, Health, Communication, Trust. To do it, I sketched some ideas, but finally I had an idea which may be a cliché yet works perfectly.

The idea was to take advantage of the heart shape to transmit health and to enclose all of the concept. In order to add the part of the doctors and the people and their communication, I made use of arms giving a handshake, a universal gesture to represent the relation among people.

Finally, I made a difference among them by adding a pocket with pens to the doctor's arm and then dividing the heart in two sides. Also, I used different colours on each of them to make it clearer. For the doctor's, I used blue which conveys confidence and highlights that it is a doctor, meanwhile, for the patient's side I used red which gives a clear sense of enthusiam and energy but also could be relationed with blood.





healthmate

an NHS initiative

17 Design Development

UI Style Guide & Branding

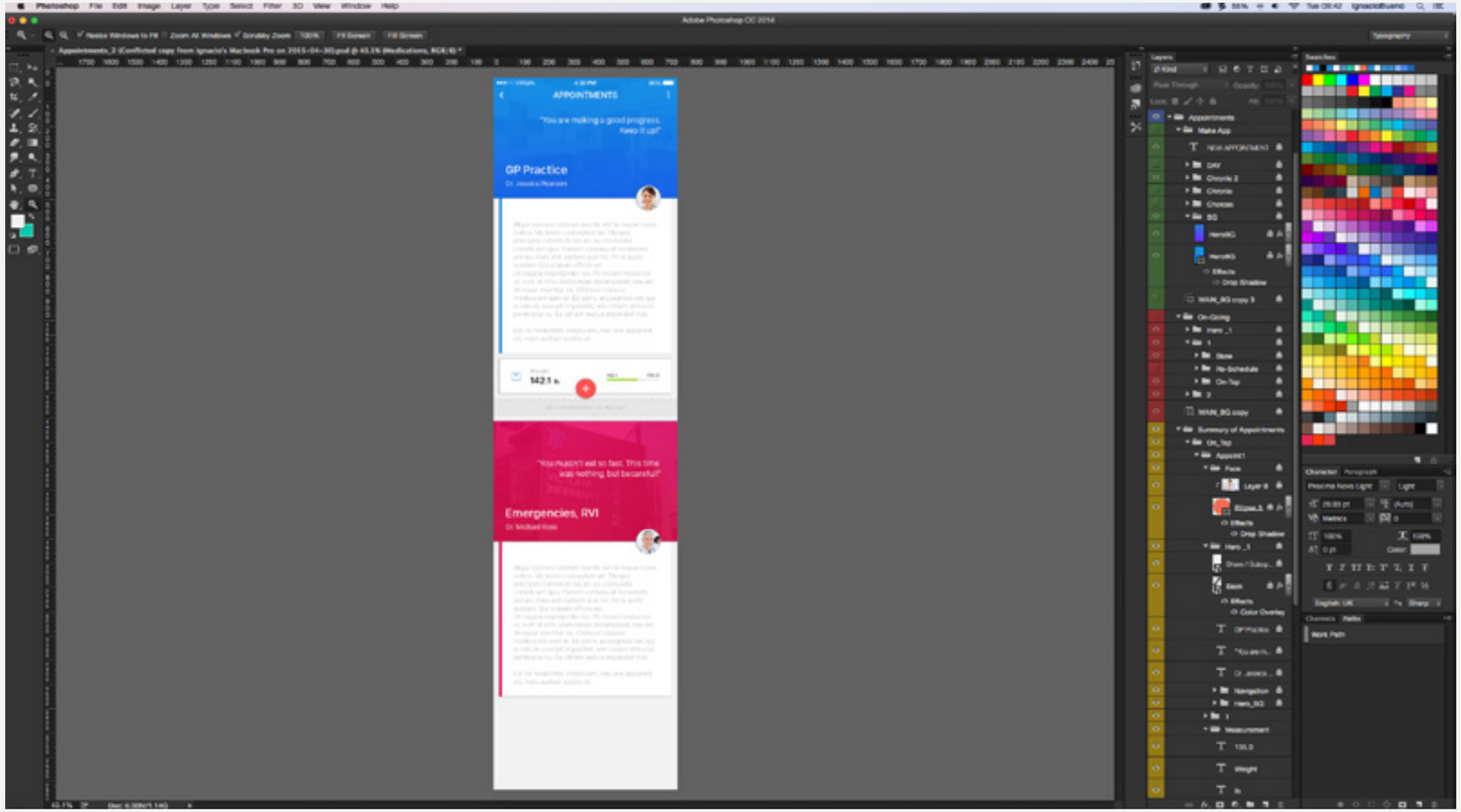
Once I had the structure clear and tested but also a User Interface Guide to be applied to my concept, I started with the Design Development stage. I must recognise that, due to a matter of time, some screens and interactions were designed in this stage, however, I had tested the main structure before. This way of designing reminded me of real companies, because, from my point of view, there is not only one valid method for everything.

As designers, we have to learn to adapt ourselves to the change and I can say I did it.

17 Desig Development / Deliver

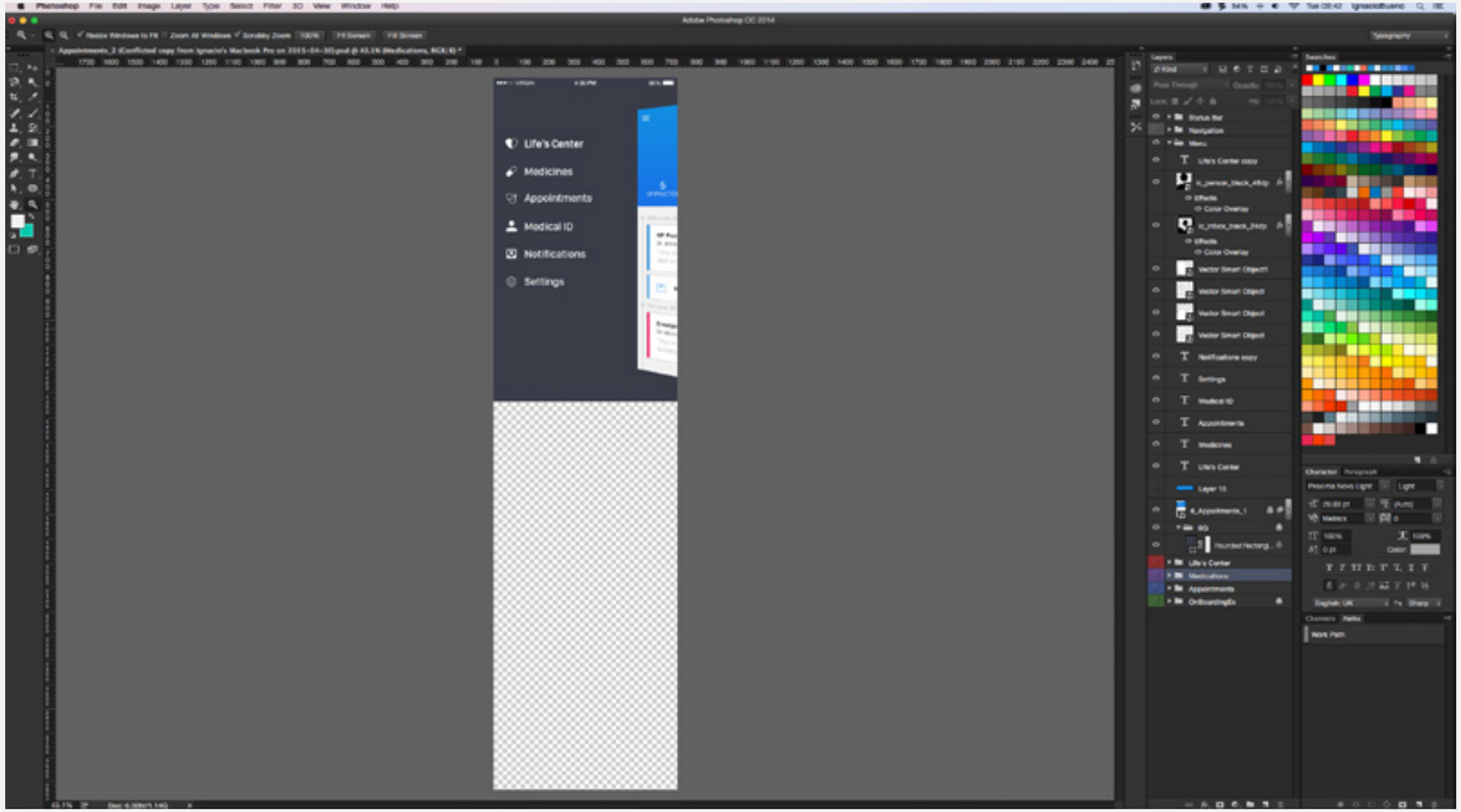
This is an example of the working process on photoshop and nightmare of layers I had to deal with.

Finally, after a long designing process, I was able to design 37 screens for both, the iphone and the Apple watch app.



17 Design Development / Deliver

Another example of the photoshop process.



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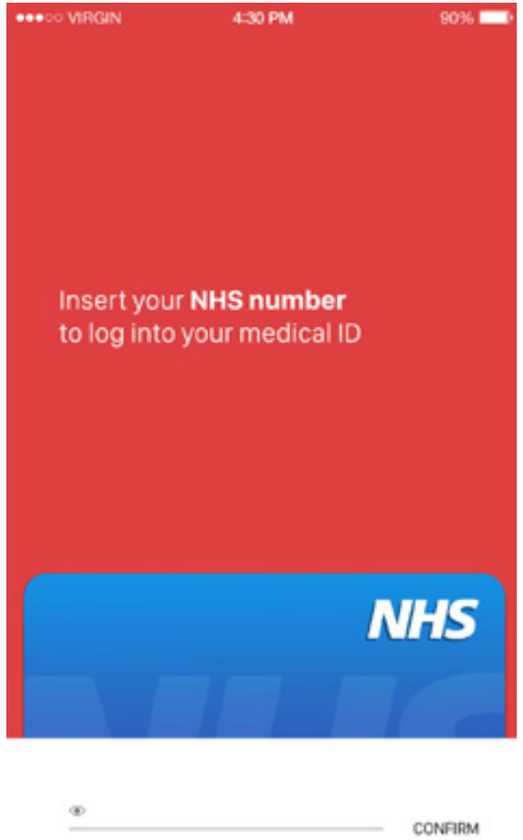
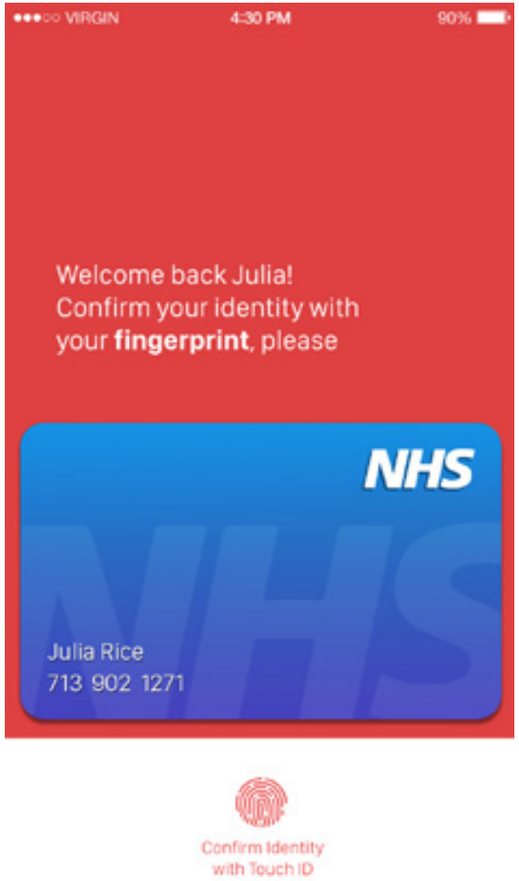
First screen thar appears whe the app is downloaded. Users can take a tour (Let's Start) or Access of they are Already In

To log in and sign in only is needed the NHS number.



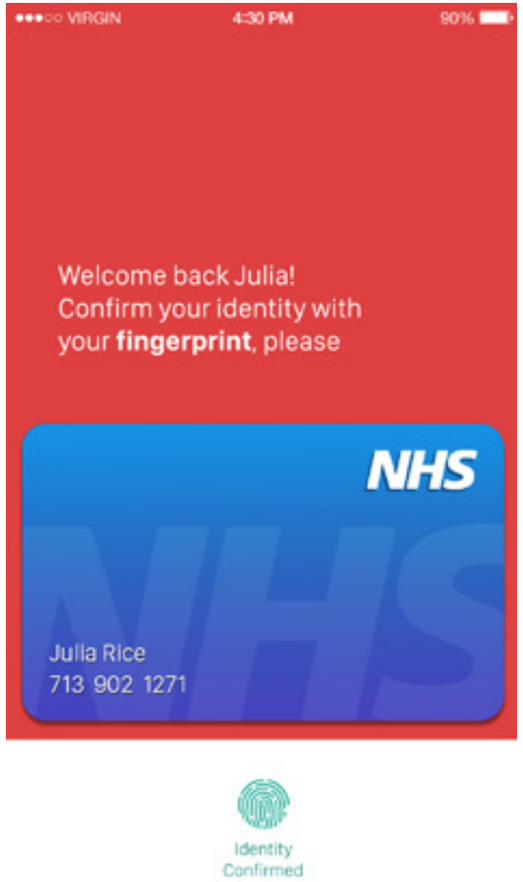
The NHS number is a number private enough no to share it with nobody.

If you're already an user, the app detects it and asks you to confirm your identity with your fingerprint as second level of security.

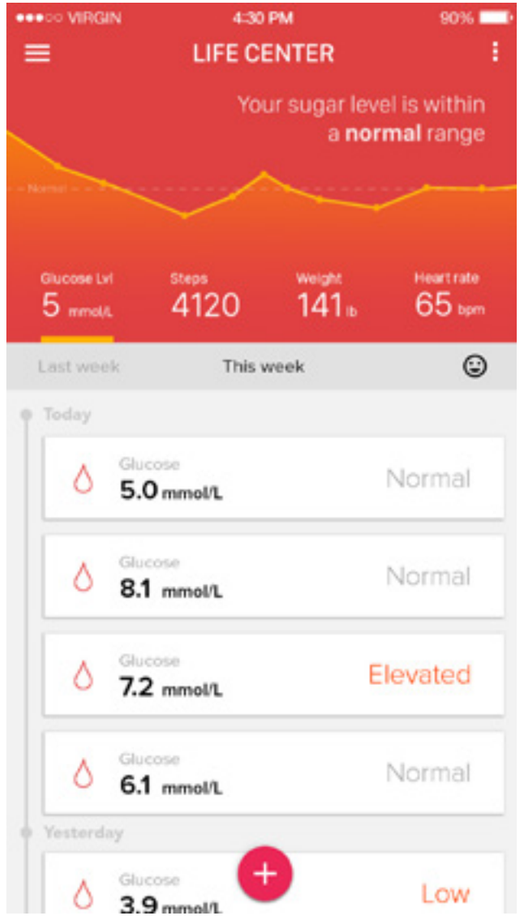


17 Design Development / Deliver

Since Julia is already an user, everything goes fine.



User access straight to the Life Center to encourage him to measure. The order of the measurements can be modify.



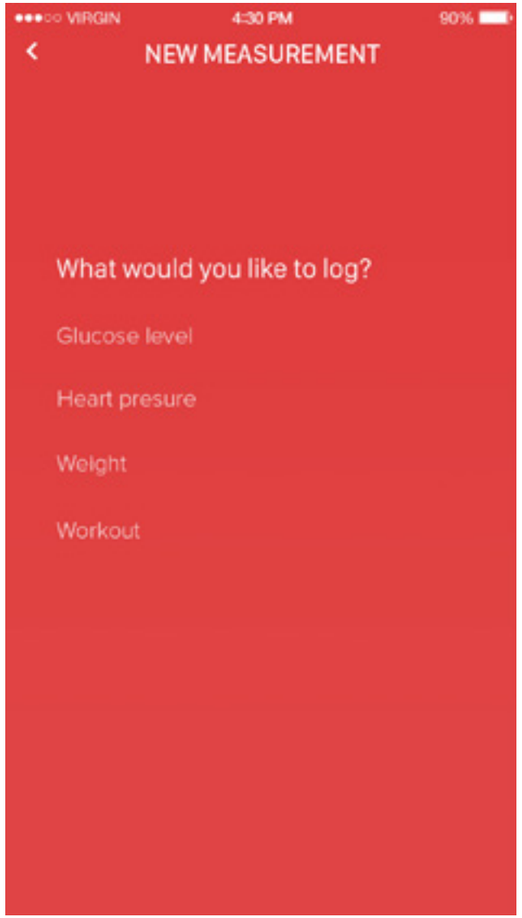
By putting the mobile on landscape mode, the user gets a detailed graphic on his measurements.

17 Design Development / Deliver

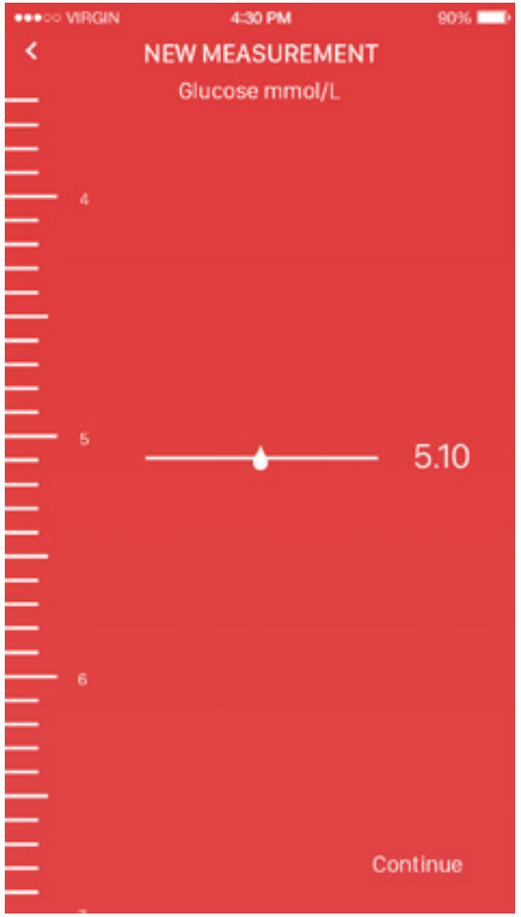
With the mobile on portrait again, and as a result of flicking down, the graphic hides to let space to more measurements.

By pressing (+) can be added new measurements, medications or appointments.

The New Measurement screen shows what your doctor wants you to measure.

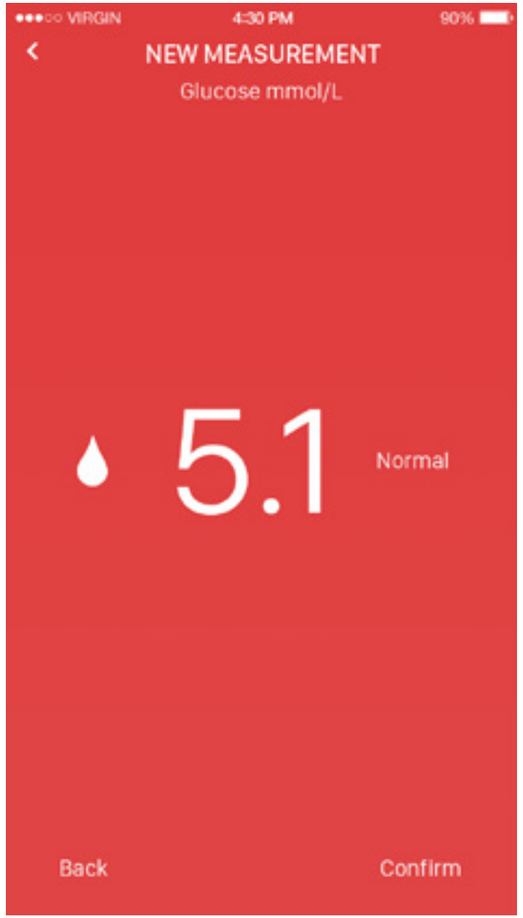


Depending on the type of measurement, there is a different interaction to introduce it.

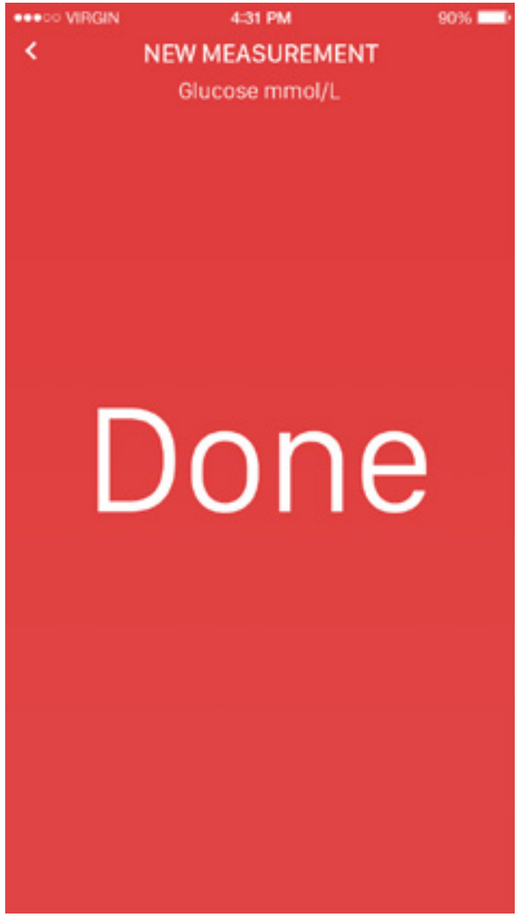


17 Design Development / Deliver

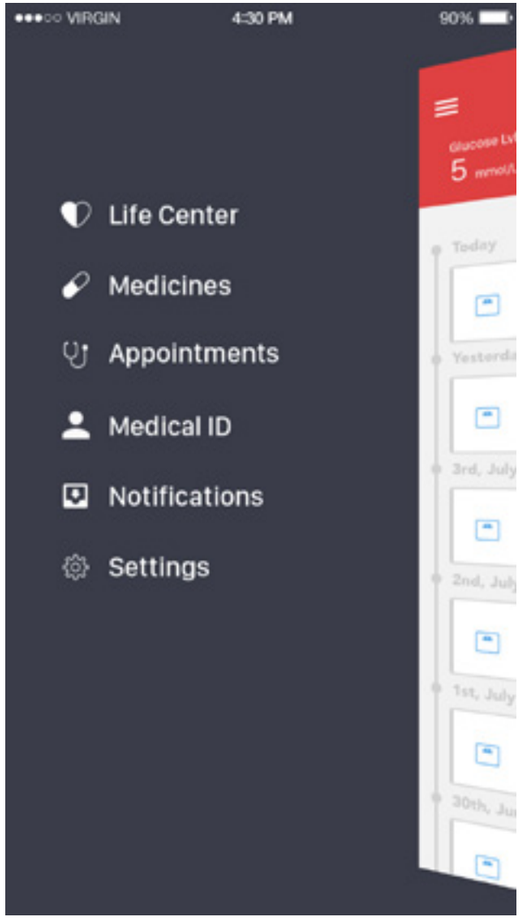
Once logged in, the app evaluates whether it is normal or not and asks you if you are sure that it's right



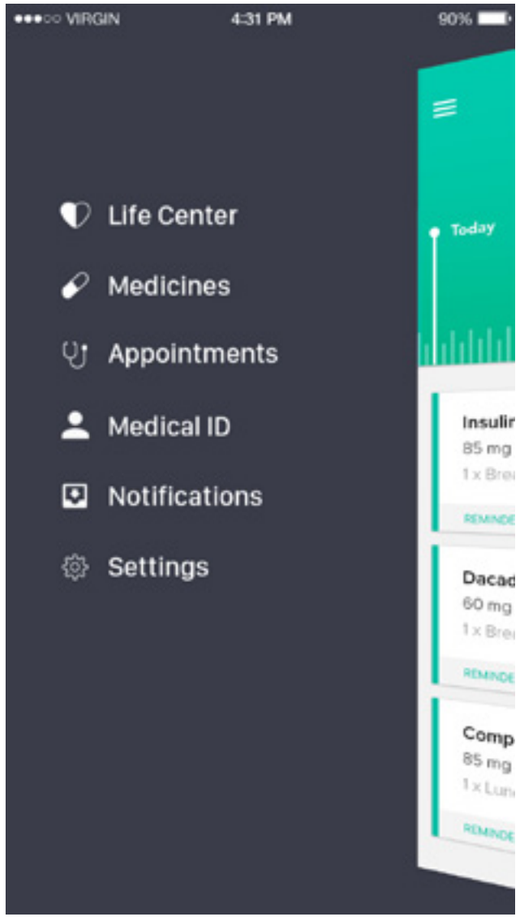
The app gives you feedback and confirms that everything went fine.



To change to another screen only is needed a tap on the hamburger.

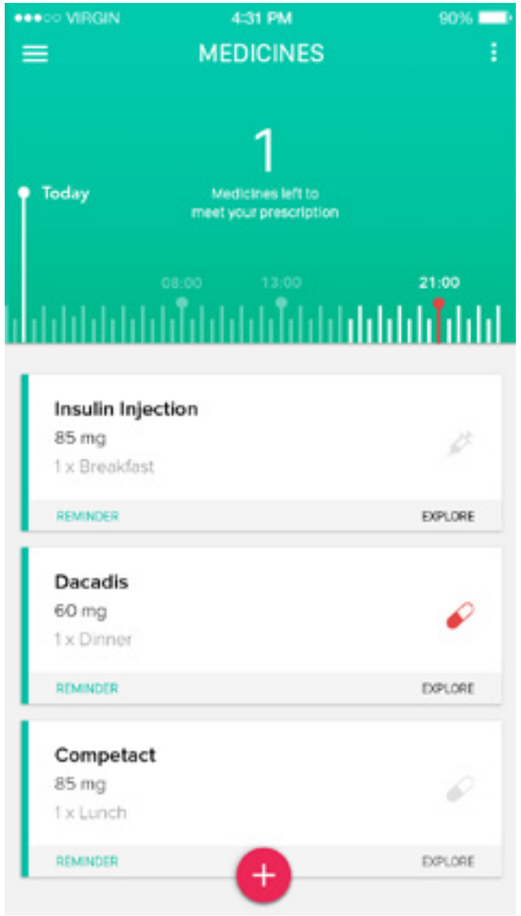


An animation shows the process to let users understand where the menu the screen came from.

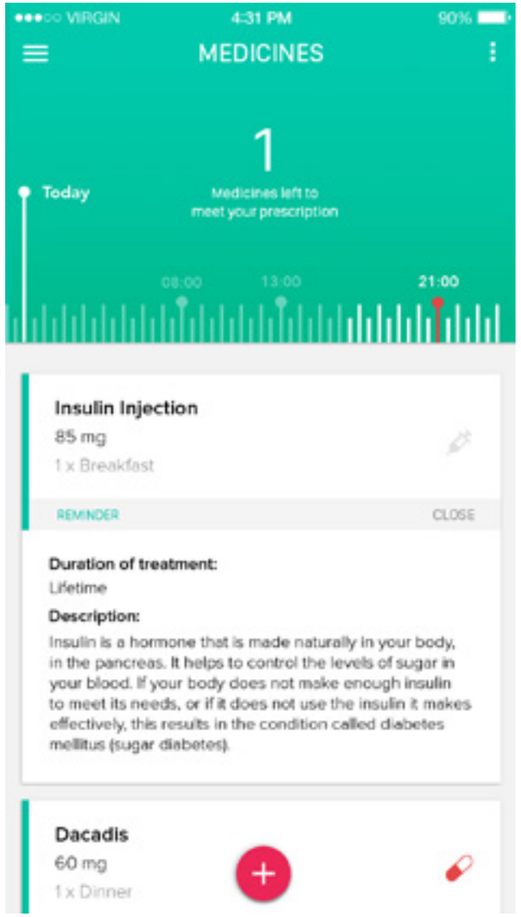


17 Design Development / Deliver

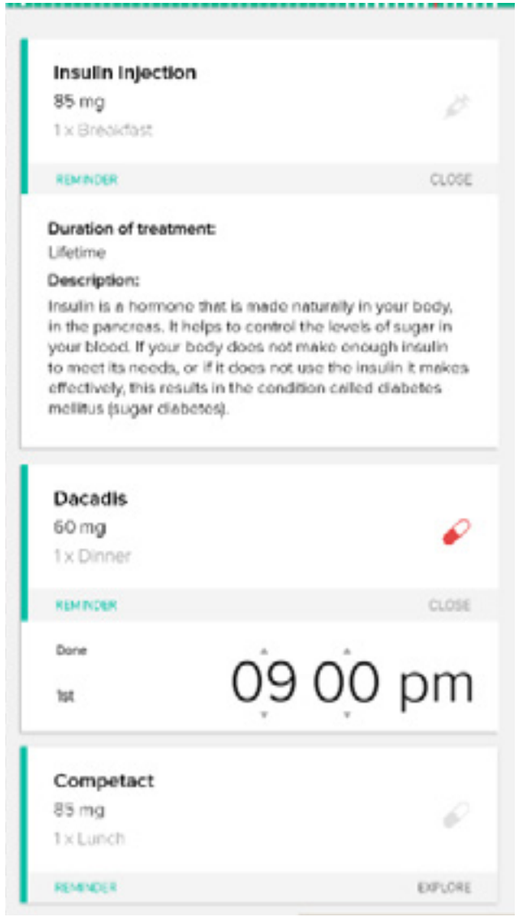
Medicines shows your treatments with an easy-to-read timeline with the time in which you have setted the reminders.



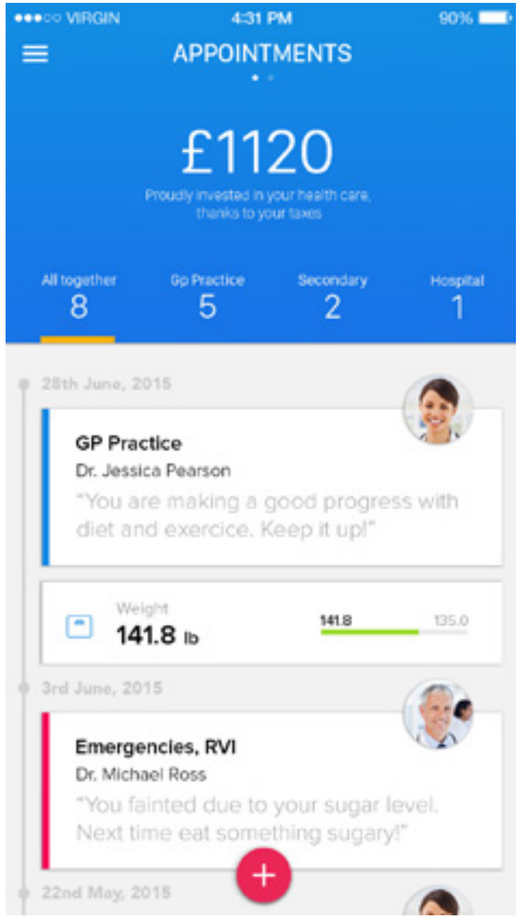
There is additional information for each medicine.



Adding and modifying reminders is easy.

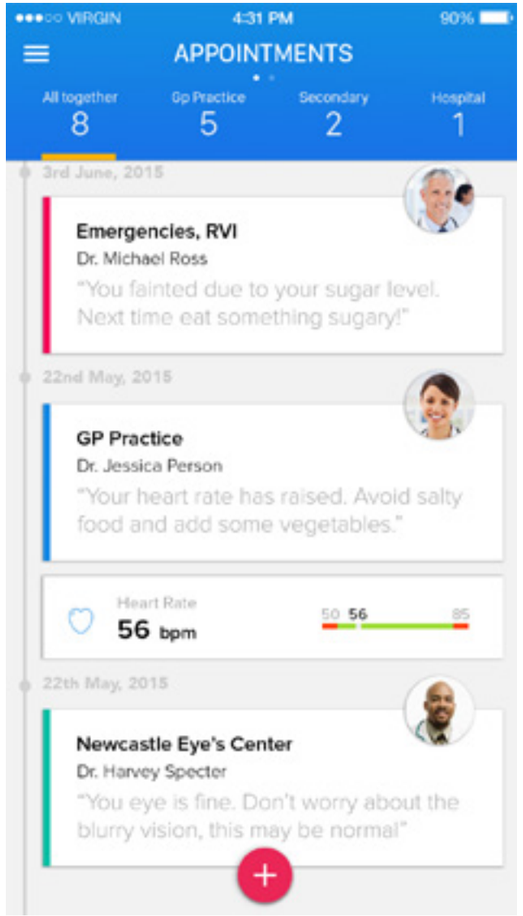


The appointments screen shows your sumaries of your appointments and an average of money invested on them.



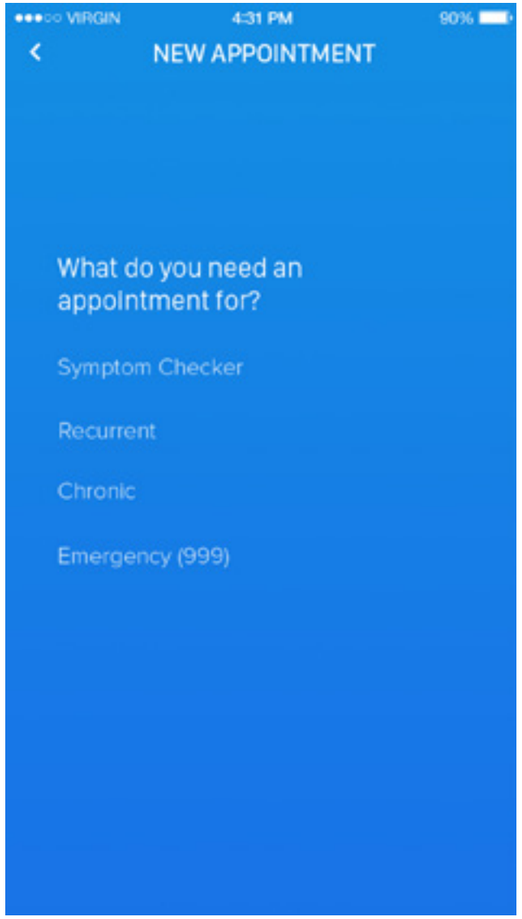
17 Design Development / Deliver

When the user flicks across the feeds, the amount of money hides not to be invasive. Appointments are summarised in a quote.

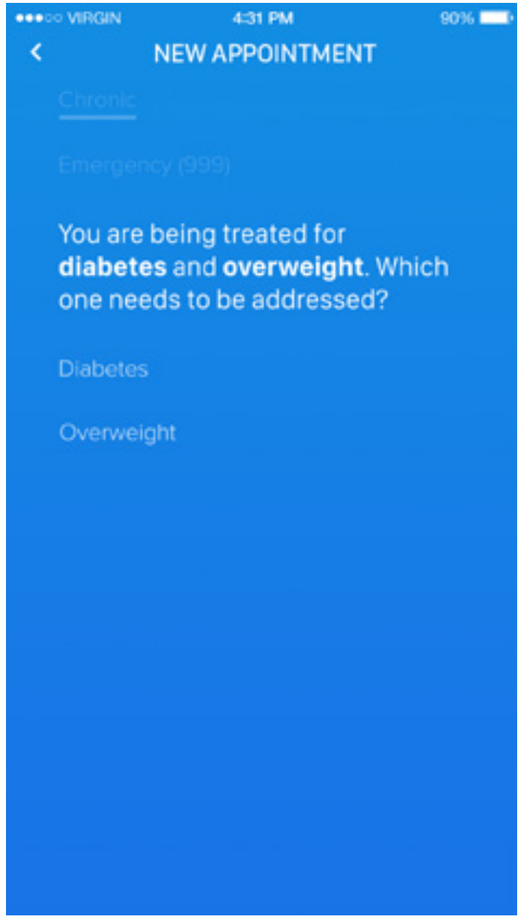


To get more info, users can tap on the appointment and get a full explanation of the sumary with the record obtained.

By tappin (+) appointments can be schedule. The app gives several options to choose from.

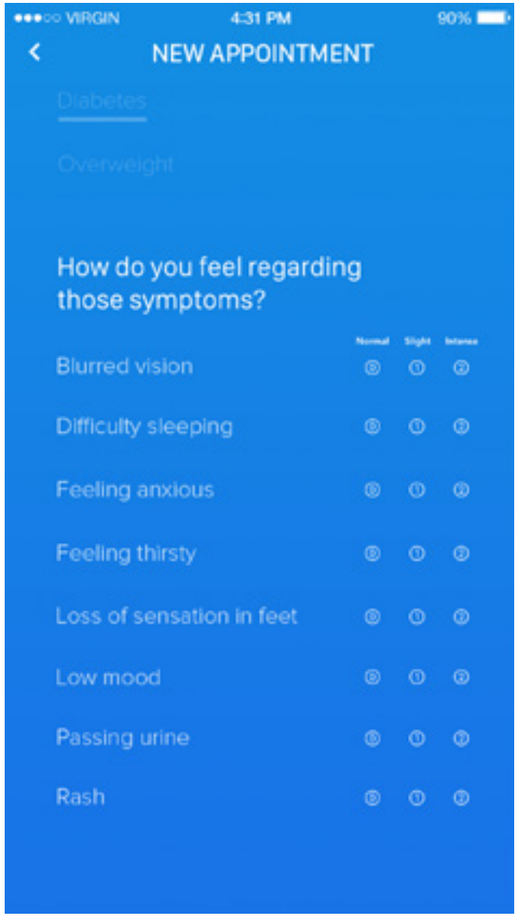


Since the system knows about you, it asks you wether you need the appointment for your current diseases or not.

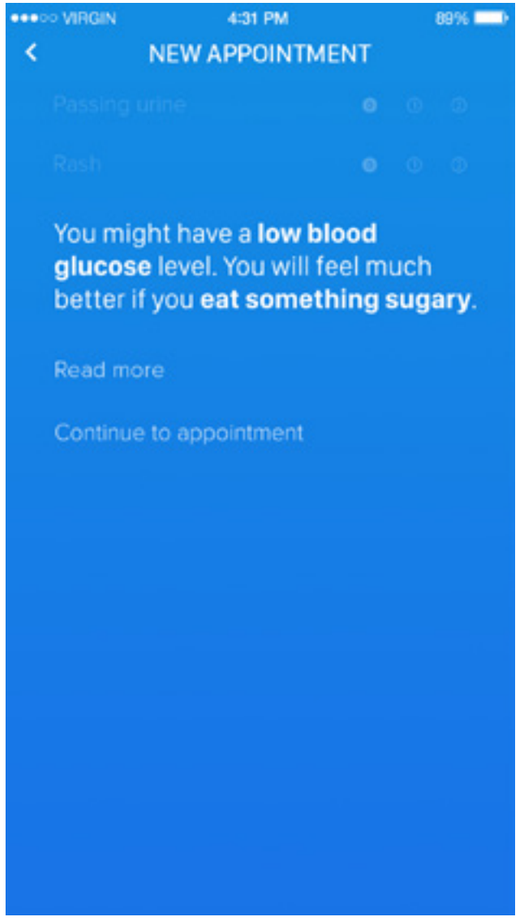


17 Design Development / Deliver

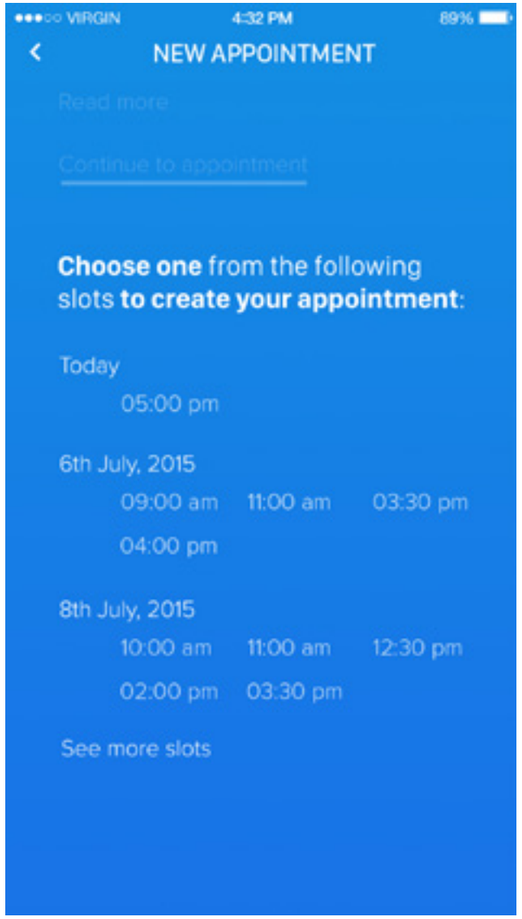
To avoid bad reasons for making appointments, users have to fill a symptom checker tailored to their previous answer.



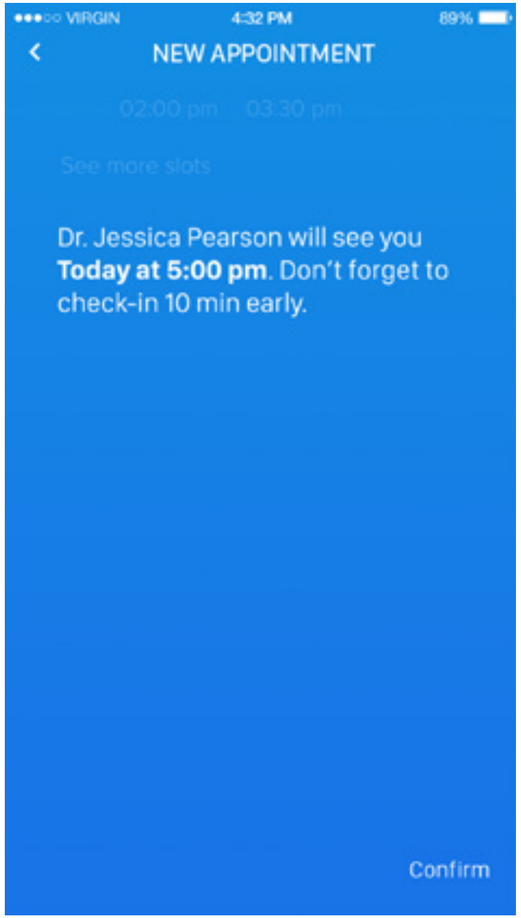
The symptom checker analyses and compares user's answer with his measurements and delivers a diagnostic.



Is up to the user continue with the process. If the appointment is needed, users access to the doctor's agenda to choose a slot.

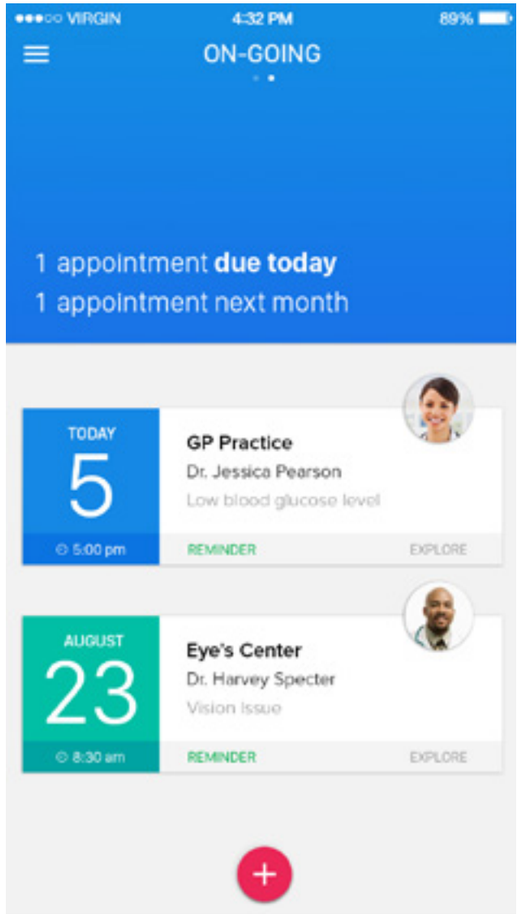


The app asks for a confirmation to create the appointment and reminds the user to self-check-in 10 min early.

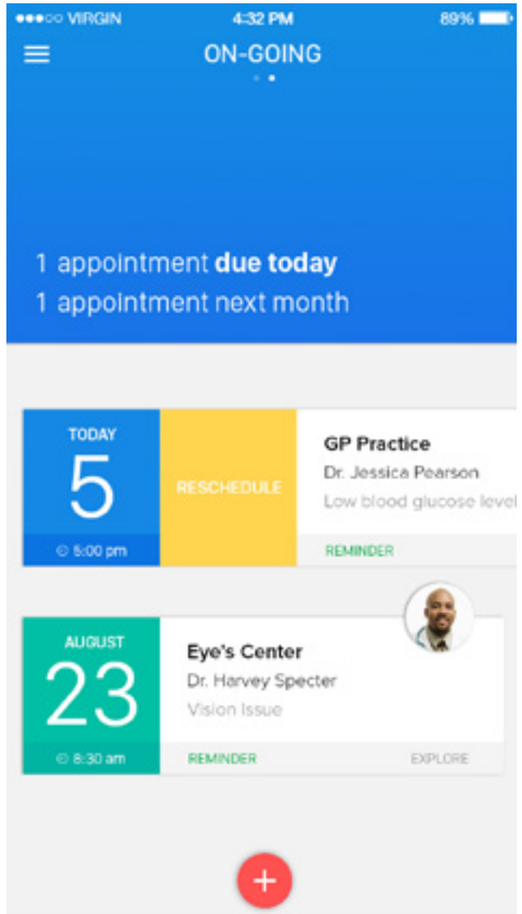


17 Design Development / Deliver

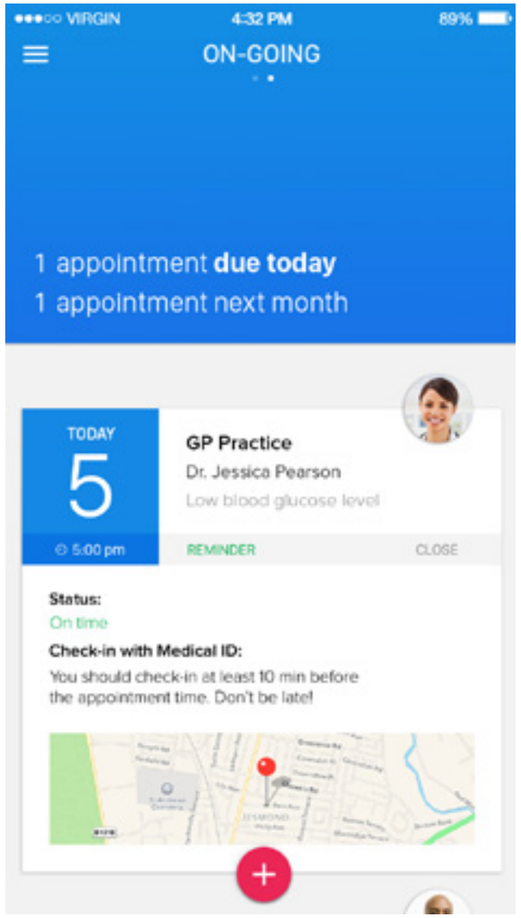
Now the user can check their on-going appointments, get more info about them and reschedule them if needed.



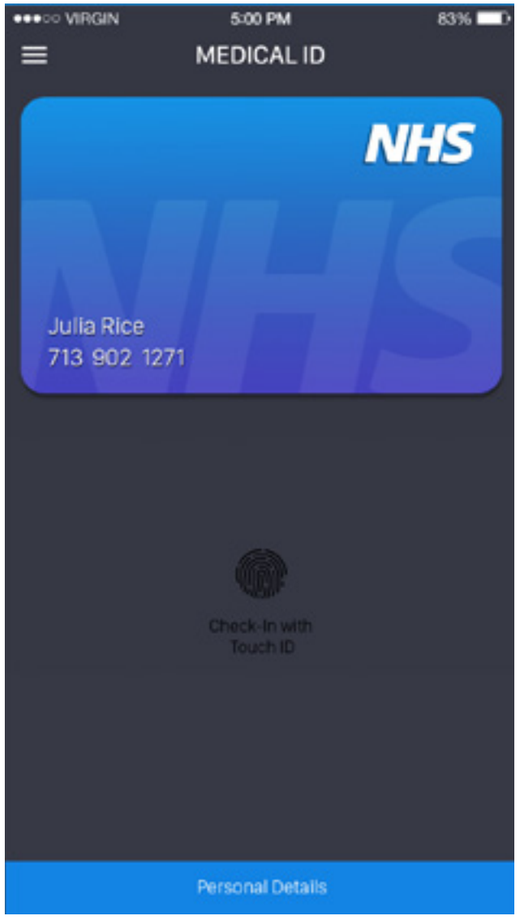
By swiping righ over the appointment, the hidden oppion "Reschedule" will appear.



There is live information available about the staus of the appointment, as well as, the place where you're directed to go.



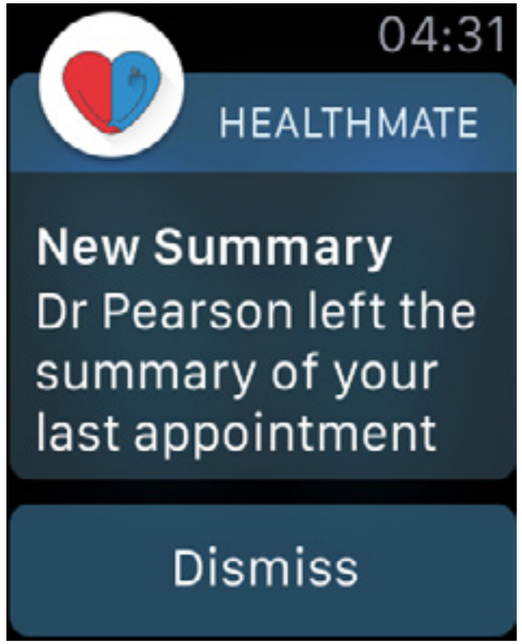
Finaly, in the consultation, check-in is as is as approach your new Medical ID to the new NFC reader which will be there.



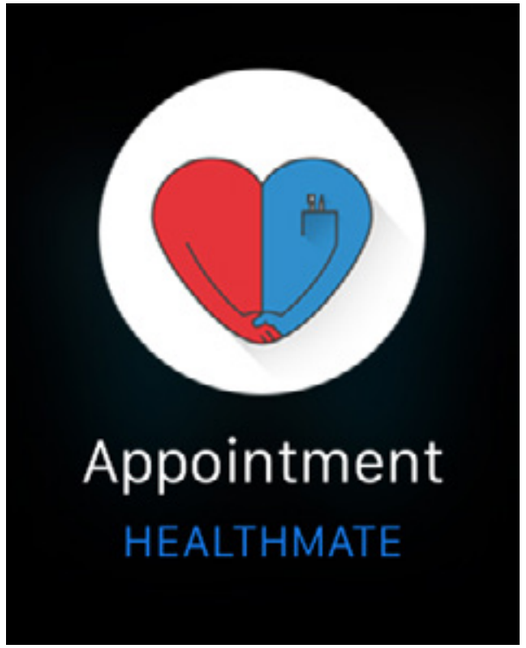
17 Design Development / Deliver

Besides, If the user owns an Apple Watch, he or she can gets notifications on his/her wrist.

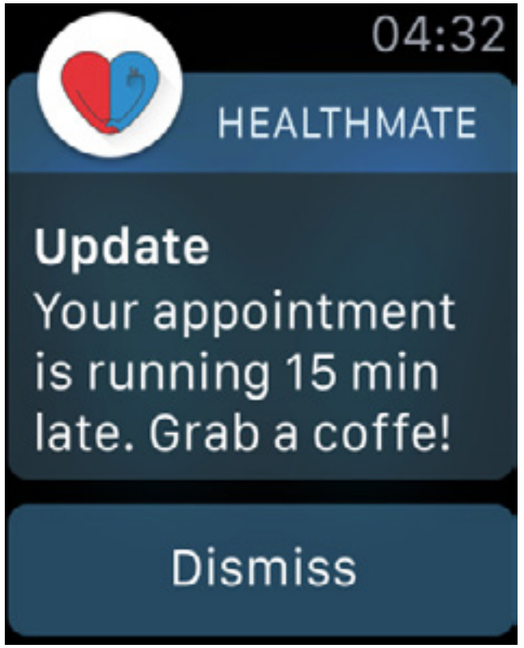
From now, this app is designed just to deliver updates about the appointment and Medical ID side



Notifications keep an standad layout as Apple's Design Guidelines demands.



This is an example of the an appointment running late. Therefore, the users gets a notification.



17 Design Development / Deliver

This is how the icon looks like on the home of the watch.

To self-check-in in appointment, Apple Watch users can use their watch too!

18 Video Prototyping

Lights, camera and action!

I was aware that on the day of the presentation of this project, I wouldn't be able to explain all of it, therefore, I thought that the best way to show what was all my work about, was to create good video prototype.

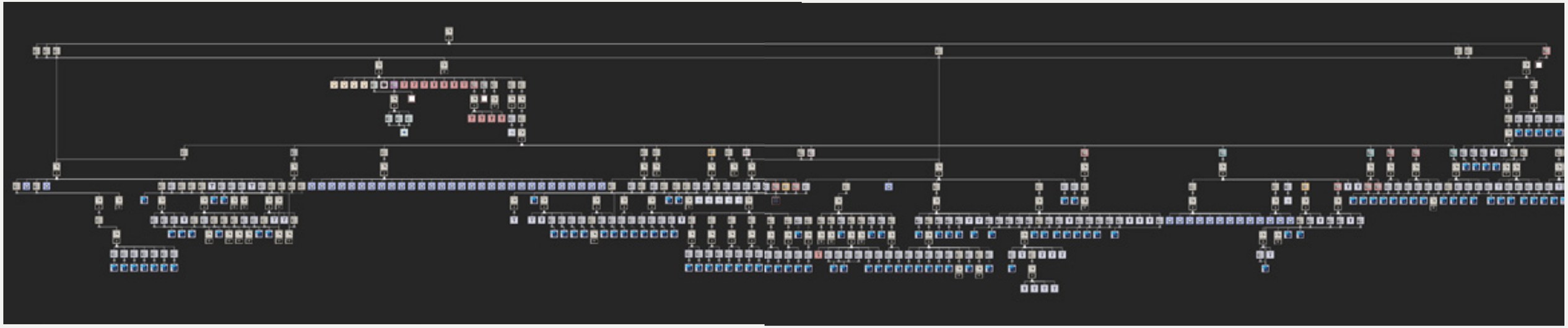
Besides, during the design process, I came up with animations and transitions according to Google's Material Design Guidelines and any prototyping software that I can use (Proto.io, InVision…) is ready to reproduce them yet. For this reason I decided to reproduce the whole app experience in video.

I have to say that it wasn't an easy process at all, this was the longest video prototype I've ever created. I had to managed hunders of 2d and 3d layers, masks, lights, keyframes and animations curves, to set the scene up and make it look professional.

It worked on it for 3 weeks. Non-stop. However I couldn't be happier when I watch at the video. The only thing I can say about the outcome after spending such long time working on the video is that I wasn't able to see it OK, in fact, I was always willing to improve it. That video became a obsession!

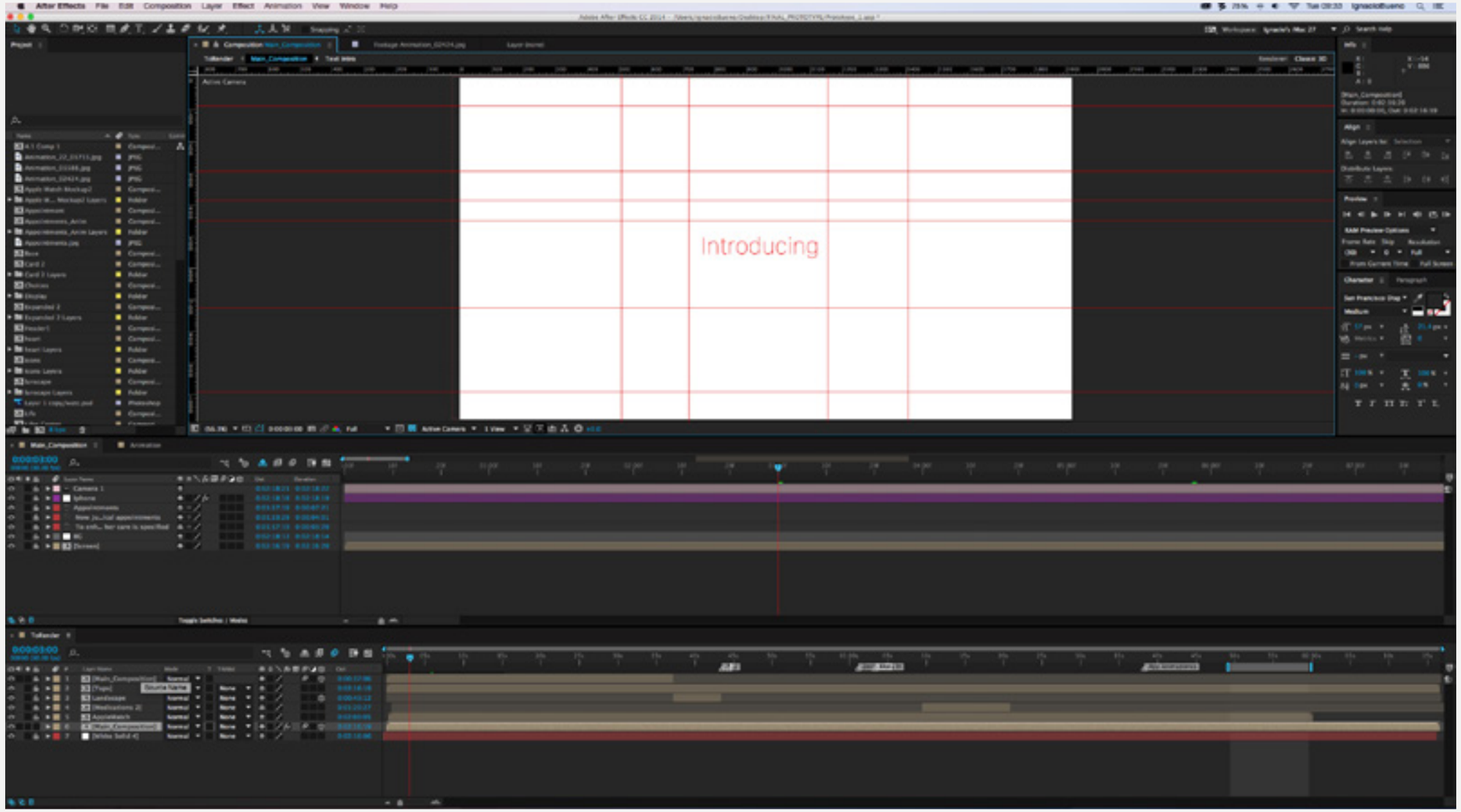
18 Video Prototyping / Deliver

This is the structure of the animation. We have to keep in mind that only the first layer of the top is the viewport to be rendered. The rest are elements to create the animation. That generated me problems! For instance, the value of a keyframe is changed on the bottom of the tree, It will affect to all of them. Not in terms of vale, but to sync them all of them should be modify.



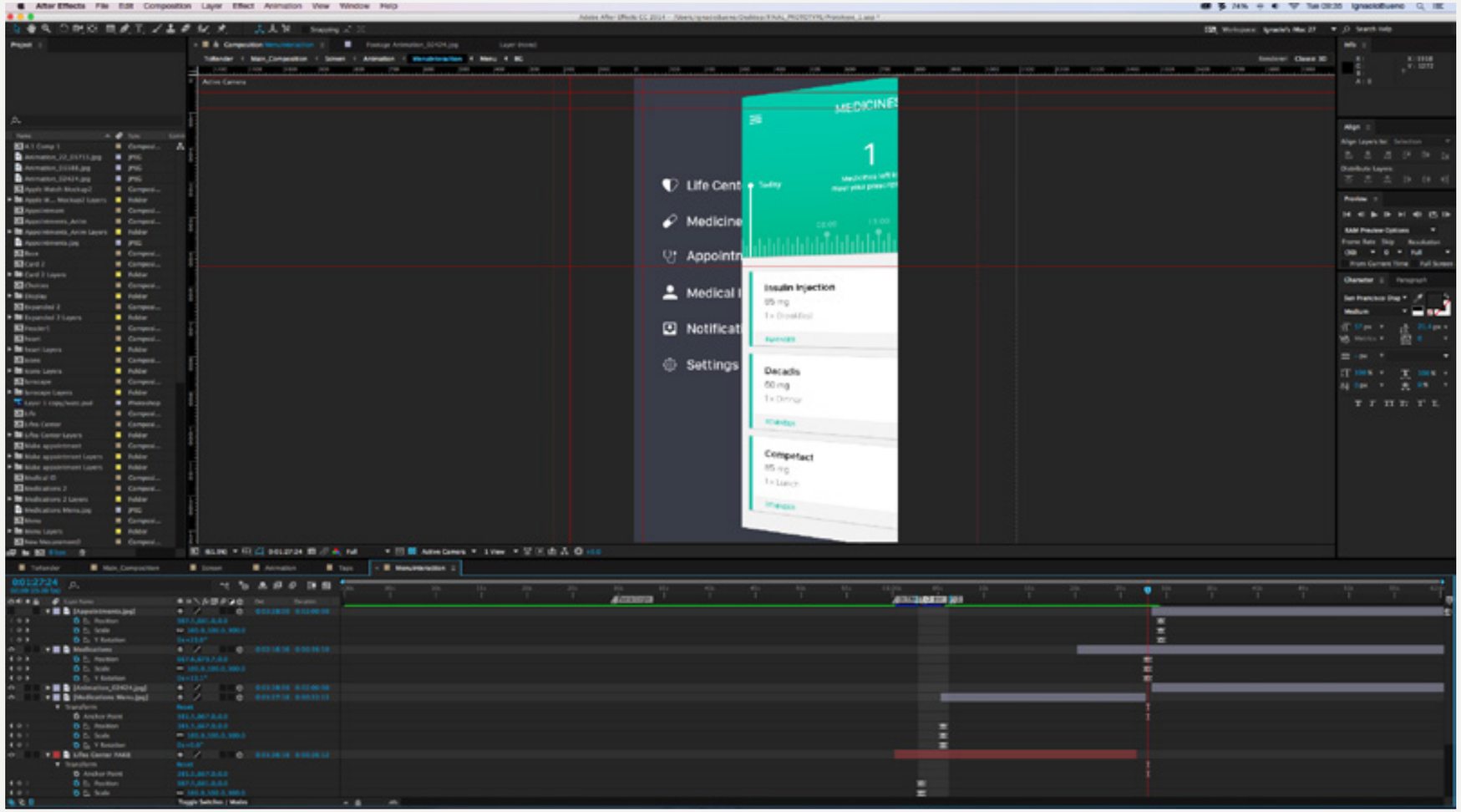
18 Video Prototyping / Deliver

To Render is the “Top Layer” I was talking about. This layer contains precompositions with subanimations that made me possible achieve the results.



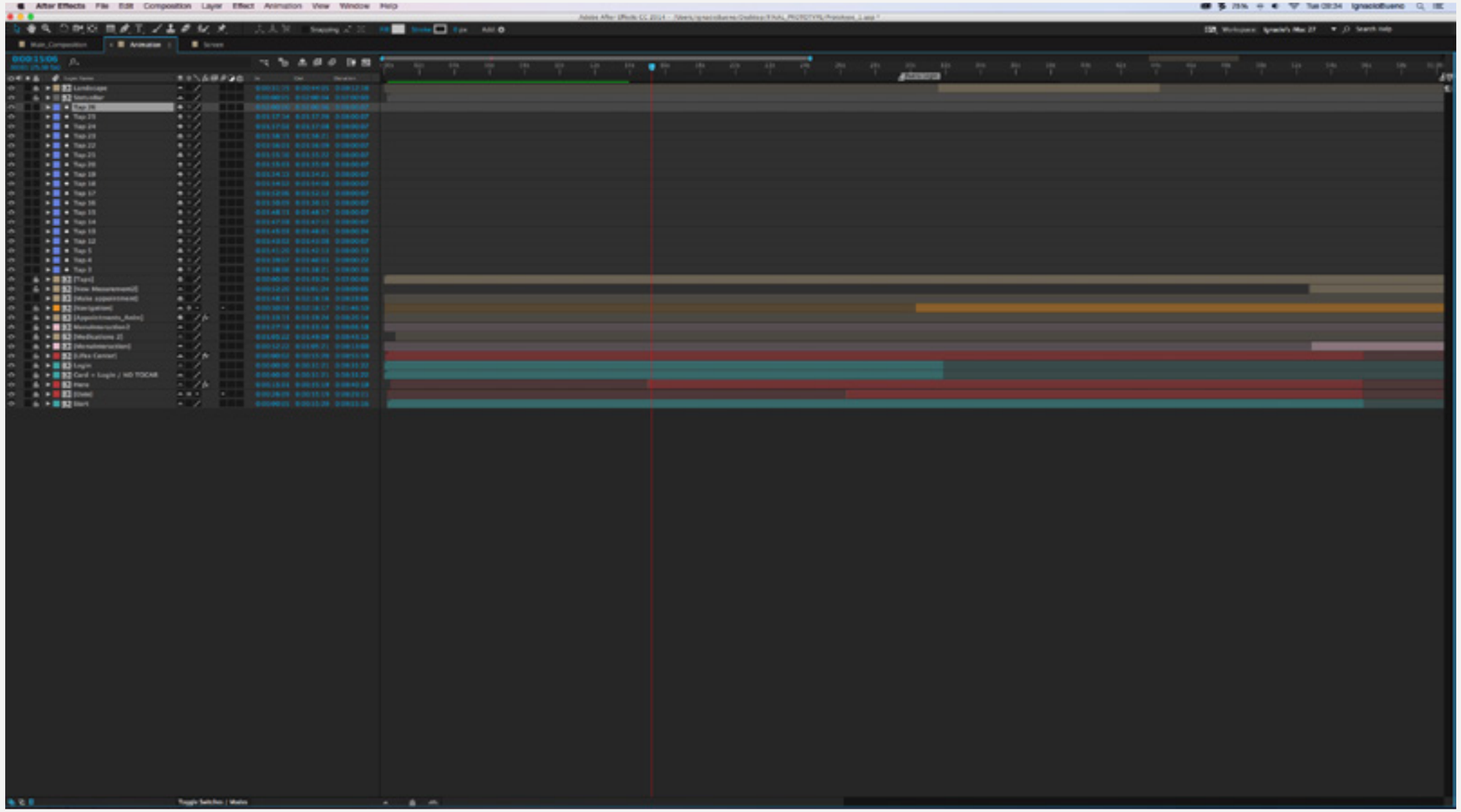
18 Video Prototyping / Deliver

"Animation" is the name of the precompositon where I created the animations for the screens of the iphone.



18 Video Prototyping / Deliver

As can be seen, “Animatiton” is a container of animations. There are a lot more precomopositons that contains the animatios for other screens.



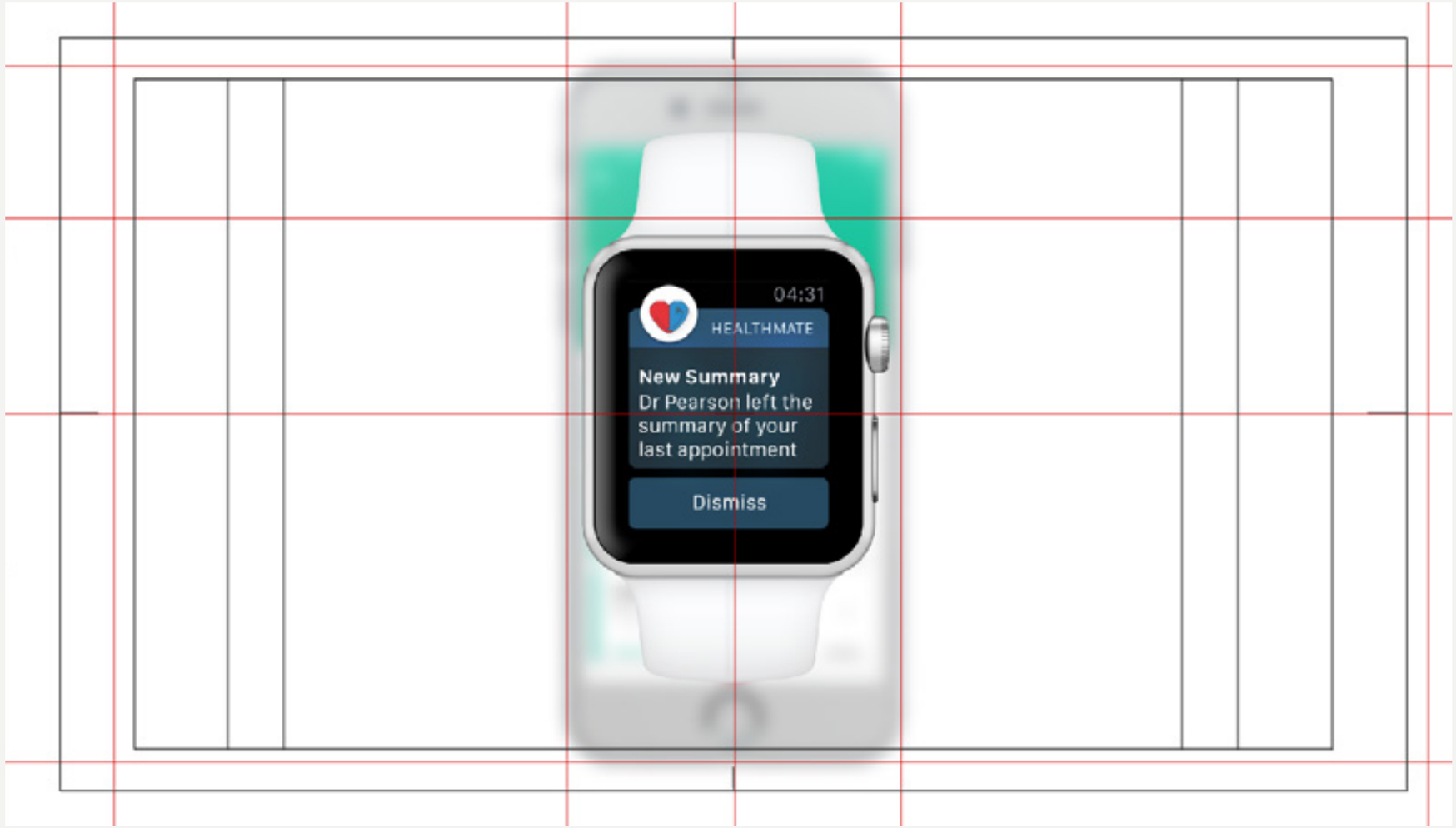
18 Video Prototyping / Deliver

I was pretty severe with myself when was time to keep proportions and follow the grid. Thank to that the video look visualy balanced every time.

To support the message of the video, I tried with several rock songs. In fact, there was one really catchy which I was about to use: “Princess - Datarock”. However, I finally choose something more chill and relaxed: “Stiff Jazz - Dizhan & Kamien”

After hours working on this but also on the project itself, I was able to get the video finished on time for the presentaiton.

Check out my video (Link)



19 Roadmap

Roadmap for Healthmate v.2

I wanted to follow a development process as real as possible, therefore, I came up with a road map for the next version of this product. Besides, although this is a good starting point, it could be better. My purpose for the second version of this project would be to achieve a better experience with Healthmate. How could I do this? There are quite a lot things I still can do in regarding Service and Interaction Design.

Service Design for v.2:
The second version of this project would allow users to leave quick notes to doctors about their feelings and worries as if doctors were their consultants. This would help doctors to understand people's feelings before/during suffering from diseases in order to deliver better diagnostics or even anticipate getting a disease. Another feature that would be worthy to add is a feature for allowing users to check out profiles of people they care about i.e. a mother being able check her daughter's profile. Finally, add the Live Well section I had the take off.

Interaction Design for v.2:
From my point of view, it is necessary to create an engaging onboaring & walkthrough experience to best welcome new users. This is something I tried to do in this version but I haven't had enough time to achieve an outcome good enough to be happy with it. Therefore, I'd like to continue working on it in order to build an engaging welcoming experience for new users.

20 Self-reflection

Self-reflection about my performance and outcomes achieved.

This project's been very challenging for many reasons. From the very beginning to the end of it I have had to deal with difficulties, but it's something I'm glad of becaue it made me grow as a student but also as a professional and as person in the end.

When I started to work on this project, I was given as a starting point an investigation conducted by my tutor, which made me realise about the issues in healthcare. That investatigation, together with my experience as a patient but also with my research gave me a bigger picture to focus my efforts on, which was the one I have actually tried to get solved with this concept.

Sometimes I wasn't proficient enough transmiting my ideas and thoughts to my tutor and that caused misunderstandings about my progress and intentions towards the project. I regret this, because I think I could have given a better picture of my professional side if I were proficient enough to transmit my ideas better. However, and despite this disadvantage, I'm very thankful because I have felt myself supported by my professors during the whole process.

In terms of outcomes, I couldn't be happier about what I have achieved. In regarding the process followed, although it's been difficult and a bit extensive, the process was necessary for what this project required me to understand. Since I had to learn how the Healthcare System works in another

country, I had to struggle with the research stage. Besides, designing for healthcare is not easy. To design good solutions, huge strategic and design teams and amounts of money are needed. However, I managed to perform it well despite my limitations. Thanks to it I gained an understanding of healthcare and its management an also I learnt about project management and new concept generation techniques.

In regard to the design outcomes, I think both the app and the prototype look stunning and the preocess followed accomplish the aim of the module. To my this project was more about understanding a service and coming up with a solution instead of the interaction design process. However, I wish I could have had enough time to create a scenario of use in order to show it in a real context.

At the beginning of this design document I wrote I was interested on UX but the truth is that reading through the document I realised that my main interest is Service Design and the use of the aesthetics to convey what the Service wants to achieve. To be honest I am not sure, but what I do know is that I want to carry on what I am working now.

End of document