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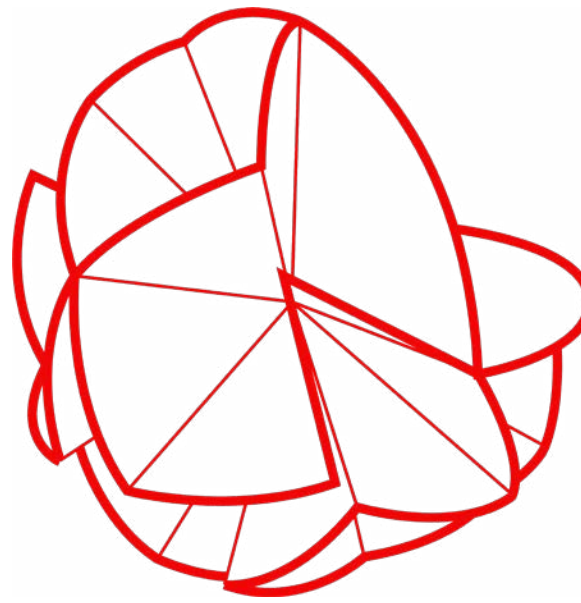
1

# Disrupting Geographies in the Design World

## Proceedings of the 8th International Forum of Design as a Process

Alma Mater Studiorum — Università di Bologna



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# Pathos: A digital service to improve women's hospital experience

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**Abstract**
In the healthcare systems mostly oriented towards clinical performance the risk to dehumanize patients subsists, perceiving them as people to fix just biologically. The relationship patient-caregiver and the need to probe patients' emotions is still a plus, not an integrated component of care. This research starts analysing the experience of female patients during the pre- and post-operative care in public hospitals within gynaecological departments, considering a sample from 16 to 60 years old. The main goal is to develop a digital healthcare service to improve the hospital stay before and after surgery, enhancing care quality, patients' experience and co-create value with the patients. The research spur to develop a project based on Service design methodology, with a Human Centred Design approach. The intention is to raise awareness about the importance of a different healthcare approach like Patient Centred, where women are the fulcrum in which the whole process revolves.

**Keywords**
Patient centered care
Women healthcare
Empathy
Gynecology hospitalization
Service design

## Introduction

Medicine has always aimed to guarantee an effective path that prioritizes technical progress, evidence, targets and efficiency, reducing the patient as an object of intellectual interest. Healthcare professionals separate themselves from the patient to avoid emotions, focusing more on biomedical facts (Jeffrey, 2016). The main problem is that the mechanistic organizational healthcare system creates dehumanization that can alienate clinicians from patients. This phenomenon produces the rejection of another person's dignity that can strongly affect the hospitalization, even if the cure was successful. The consequences of empathy reduction and moral disengagement are that patients are perceived as non-human beings (Haque & Waytz, 2012). Moreover, the fatigue, the overwork, the lack of continuity with the patient can exacerbate the environment. The effect could be a punitive climate, lack of compassion and tolerance. The absence of communication and empathy from the hospital team can hugely invalidate a patient's experience before and after receiving surgery. According to Ambady et al. (2002), doctors who were perceived as more dominant and less worried in their tone of voice were more likely to be sued than surgeons who were perceived as less authoritative and more involved in the presence of their patients. That is why it is important to consider a new approach of healthcare patient centred, switching from the traditional paternalistic relationship doctor-patient, to a new participative one (Perino, 2002). Physician consultations in which patients were allowed to express their emotions, concerns, ideas, and questions were observed to yield better outcomes and boost patient satisfaction (Zandbelt et al., 2007).

It is crucial the role that communication plays. M.A. Stewart (1995) demonstrated that an effective and positive communication affects the patients' emotional health and brings to symptom resolution, a more functional status and pain control. C. Rogers (1951) identified three necessary conditions for a helpful inter personal relationship between physicians and patient: congruence and transparency, unconditional positive regard and empathic understanding.

In addition to physicians another important component is the nurse. Nurses work as translators between patients and doctors. They have many interactions with patients and families involving general discussion topics, sharing details about themselves and offering non-verbal communication (Slatore et al., 2012). They should represent a tender presence, manifesting care along communication, approaching the patient as a person, having the skills to be able to diverge from established norms if required. Through this path, the nurse can provide an effective care that reduces the underestimation of patient identity and expands the explanatory perspective of illness. Nurses who use Patient Centred Care have the power to reduce adverse outcomes from patients. D. Wolf et al. (2008) illustrates that nurses who used PCC influenced pre-surgery preparations positively and helped patients fill discharge prescriptions.

To embrace the patient care approach, it is needed a holistic way of thinking, that involves both clinicians and patients. Arise the need of a new model of healthcare worker-patient relationship, whose objective is to diagnose and treat like a disease centred approach but considering also the emotional impact that the disease has on patients.


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## Patient satisfaction in obstetrics and gynaecology

Patient satisfaction in women's health and other specializations is poorly known. According to the 2006 American College of Obstetricians and Gynaecologist survey on professional liability, a professional can be sued for malpractice with a risk of 89.2% during his or her working life (Williams, 2008). The higher percentage of malpractice cases filed in the field of obstetrics and gynaecology shows that there are differences in patient satisfaction across medical specialties. Interpersonal components of care may have a significant impact on a patient's decision to sue their doctor, as malpractice suits have been linked not only to physician's errors and carelessness, but with the communication's quality too (Yeh & Nagel, 2010).

Physician-patient communication may need to be improved to an even higher degree in the department of obstetrics and gynaecology in order to improve patient satisfaction, because these patients sometimes differ substantially from general ones, in terms of their moods and emotions (Chang et al., 2006). The health issues that gynaecologists deal with are frequently intimate and can have a significant emotional impact. First-time pregnant mothers are an excellent example of patients that require clinicians to be more aware of their communication style because they can feel a high level of anxiety and an incapacity to manage their own body.

In maternity care, communication variables like "adequate time spent discussing difficulties," "using words I could understand," and "tried to understand how I felt" were statistically significant in predicting patient satisfaction with prenatal care (Sullivan & Beeman, 1982). Furthermore, it has been observed that in an emergency department women tend to trust more female doctors rather than male, because of a better communication that generates adherence to therapy. They have a comprehension of patients' problems from a biopsychosocial perspective, with more verbal exchange in consultations, open ended questions, and emotional talk (Beck et al., 2002). Even early pregnancy loss can be processed using a patient centred care approach. Patient preferences play an important role in clinical decisions on early pregnancy loss treatment and they are influenced by individual circumstances, expectations, knowledge of the benefits and drawbacks of various management options. EPL management decisions are frequently made in the presence of complicated emotions such as shock, disappointment, grief and relief. Patients have expressed dissatisfaction with clinicians who handled their miscarriage as routine and lacked empathy or urgency in dealing with their situation (Shorter et al., 2019).

The first national research carried out in 2017 by Doxa-OVO Italia, claims that In Italy there is an estimation of 1 million mothers, 21% of the total, who affirm to have been victims of physical or psychological obstetric violence at their first experience of motherhood. The survey "*Women and childbirth*", was conducted on a representative sample of 5 million Italian women, aged between 18-54, with at least one child of 0-14 years. It analysed different aspects lived by mothers during the stages of childbirth in hospitals: the relationship with health workers, the clinical treatment, the communication used by medical staff, the informed consent, the role of pregnant woman in delivery decisions and the respect for human dignity. 41% declare that

childbirth assistance was hurtful for their dignity and psychophysical integrity. Moreover 27% of the interviewees have felt poorly assisted by the medical team, expecting to be more involved in what was happening during childbirth. 6% of new mothers claim to have lived the entire birth alone, without adequate assistance and 1 woman out of 3 felt cut off from the fundamental decisions and choices affecting her birth and hospitalization. 27% of mothers complain of a lack of support, 19% lack of intimacy during their hospital stay.

Recognizing and respecting a woman's preference for management could help her regain her sense of dignity and power. There may be misunderstandings and misconceptions between the physician and the patient, which can be remedied by helpful and therapeutic communication. This can lead to Shared Decision Making, using PCC communication techniques as a tool, creating a partnership and balance of power during such an intimate and personal experience that can leave women shocked and emotionally confused.

## Patient Centred Care in Italy

In the Italian context, the patient-centeredness of care is still understudied, and to date there has been a lack of research in this field (Coluccia, 2014).

During the 2019 *Patient Value Summit* in Brussels, the Economist Intelligence Unit presented a Patient Centred Care report on nine countries, Italy included, that highlights the key factors that should be considered in order to achieve patient-centred healthcare. To understand how worldwide healthcare systems have been built around patients' values and needs, the Economist Intelligence Unit developed a benchmarking tool, with different qualitative indicators to evaluate the adoption of patient centred principles and national policies into healthcare protocols. They also conducted surveys targeting five organizations for each country where patients' groups, stakeholders and healthcare professionals were interviewed, investigating how patient values are considered in policy propositions and care instruction.

The findings about Italy were that a legislation relating to patients' rights exists, although there is no national policy for patient-centred care. Italy struggles to translate national policies into clinical recommendations, and also lacks policy on personalized care and shared decision-making, although some initiatives exist. The Italian weak points regard patient involvement in shared decision making, a personalized care according to patients' values, the use of measuring tools for patient-reported outcomes and a low strategy on national quality standards to monitor the implementation of patient centred care. The most problematic points on patient experience are the lack of interest from care professionals in what patients have to say and the lack of courtesy and respect at all stages of the admission process. About shared decision making the lowest grade regards the quality of information offered to patients. For inclusiveness and support, Italy has a very poor score within respect for cultural differences and there is still a huge bias in healthcare treatment not only for cultures but also for genders. The worst outcome


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for Italian patients refers to patients' feelings: their emotional needs are not being addressed. It is the lowest score compared with other countries. Assistance for emotional and social care appears to be lacking or insufficiently prioritized by Italian healthcare (Economist Intelligence Unit, 2019).

Surely there are limitations in this report, such as the inability to cover all therapy areas and, in some cases, the survey responses may reflect the perspectives of healthcare professionals rather than patients. Nonetheless, this research raises numerous discussion points that align with the qualitative and quantitative data gathered during the study.

## Methodology

The best way to enhance a good hospitalization experience is re-imagining a new healthcare service. To redesign a better system of care the main query is how is it possible to transform empathy as an important part of the process. How can it be measurable? How can be promoted to clinicians not only the biological parameters, but also the emotional ones? Designing a patient support system that is not burdening on clinicians, can be a way to improve the involvement of patient-doctors.

The methodology used for this research taps into the Service design and a Human Centred Design approach. The discovery phase started with a previous desk research.

The search strategy used heading terms like *patient centred care*, *patient needs*, *gynaecology and obstetrics*, *patient satisfaction*, *healthcare biases*, *malpractice*, *patient centred communication* on Medline, ResearchGate, The Open Health Services and Policy Journal, Harvard articles, Elsevier. After collecting secondary research data, the primary research started with online questionnaires and in-depth interviews about the pain points and needs of patients and healthcare professionals, creating a step-by-step documentation of their service experience. The online survey helped to create a baseline for data. It was a useful tool for gathering basic quantitative data from women that experienced surgery with a short hospital stay in a gynaecological-obstetric department in Italy. The women targeted age was between 16 and over 60. The respondents have been 32 women. The survey consists of 23 questions studied to avoid influencing the respondents. It emerged that the biggest difficulty during the hospital stay was the lack of empathy from the medical staff; before the surgery the biggest issue was poor quality of information and after surgery was the lack of assistance.

The survey was paired with 7 in-depth interviews, that were audio recorded, transcribed and verified for accuracy: 4 patients and 3 professionals. The interviews helped to identify major themes regarding patient's roles, emotions, preferences, negative experiences and hospital working issues. Comparisons were made between observed dialogue and behaviour. The interviews had been visualized and synthetized, using empathy maps, personas (3 patients, 1 nurse) and journey maps to understand the user needs. The issues revealed in the primary research matched with the desk research: the main user needs are clear information (communication,

clarity, participation), empathy (consideration, reassurance, sharing) and assistance (hygiene, painkillers).

The ideation process came up with a digital service, Pathos, that redesign the organizing procedure during the pre-hospitalization and hospitalization phase. Patient's emotions and moods are considered a consistent part of the data, creating alongside the PMR (Patient Medical Record) the PER (Patient Emotional Record) during the patient's journey. With the help of a Cloud emotional data management system, a mobile App and a smart necklace device, the emotions, expectations and concerns of patients are registered and stored online to be consulted on computers and portable mini tablets. This way, nurses and obstetrics can be aware of patient's emotions, changing approach and communication to a more patient-centred one. A previous professional training on patient-centred care communications will be imparted to doctors and nurses, helping to adapt communication based on patient's emotions. It is crucial that this training will guarantee to healthcare workers a consistent number of credits on the Professional Association of Doctors and Nurses. The results will be a more active participation of patients through the App's usage, a holistic consideration of patients from physicians, a better patient-doctor communication, a record of the emotions and issues experienced before and after surgery that will be open-access for patients, a better awareness about what happened during the patients journey and the usage of empathy as part of the process. The service is designed for public or private hospitals, starting from gynaecological-obstetric departments.

The research led to analyse the programmed hospitalization's steps.

After a deep analysis of the front and back-end processes of a programmed hospitalization in an Italian public hospital it was crucial to redesign the front-back operations inserting a digitalized approach that can help patients to express their emotional status, record it, store it, download it, being aware of what is going on. The goal is to make the healthcare team aware of patient's inner state, spurring them to use an empathic communication able to reassure patients and manage them depending on their moods. This way the communication patient-clinicians is improved, patients don't feel lonely and mistreated, patients' outcomes enhance, they start to participate in some parts of the process and feel considered. Even clinicians will be more satisfied by the positive attitude of people they take care.


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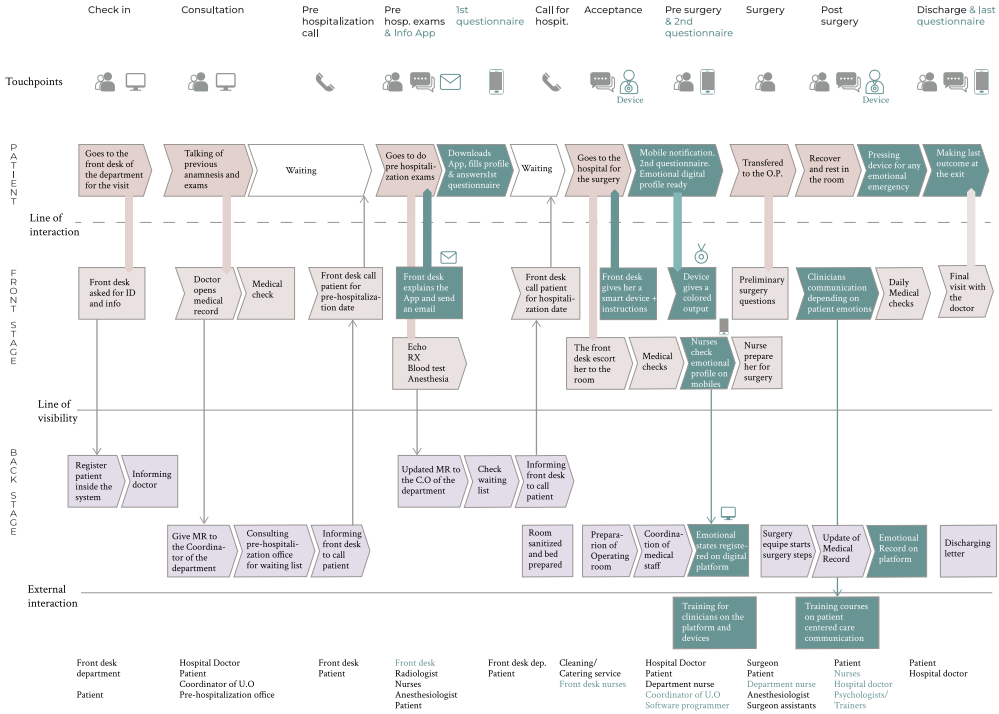


New Hospitalization steps with Pathos

**Fig. 1**
**Pathos Service Blueprint. Map of the hospitalization process; the new service experiences introduced by Pathos are highlighted in light blue. Credits: authors.**

Up till the pre-hospitalization call, every step is the same as the traditional system. The first change will appear after the pre-hospitalization exams. The hospital front desk, or department desk, will explain the existence of a new service on a face-to-face conversation.

The user can download an App that helps patients to monitor and record their emotional profiles during the hospitalization stay. After a short explanation of the App, an email will be sent to the patient with a downloading link. That link will redirect the user to the Apple Store to download the App Pathos. She can register by email or using her tax number. A first questionnaire will appear with four questions related to her expectations and ideas of the future hospitalization. At the end of it, the App let her intend that the next step will occur at the beginning of the hospitalization.

The hospitalization day she will receive from the front office Department a smart transmitter to wear as a necklace, explaining that it is recommended to have it on during the whole stay. This transmitter will interact with the App due to NFC technology.

After being admitted, she will receive a notification on her mobile to start the second questionnaire and other activities. The App will detect which is her actual mood, her feelings, if there is something upsetting, creating a final emotional profile. The App will ask to turn the NFC mood On and put the mobile close to the necklace. The proximity of the mobile will trigger the necklace device to show a coloured output, thanks to the NFC technology. There will be four

emotional statuses: anger, fear, sadness and neutral-positive. The coloured necklace helps give immediate visual emotional feedback to nurses and doctors, to have a visual fast evaluation of her status.

Furthermore, the necklace is equipped with a button. Patients press the button every time they have an emotional spike, like a panic event or a weeping moment.

Nurses must check at least once a day the patient's emotional profile with a Mini Tablet. When they tap the tablet close to the patient's necklace, they are able to read the entire emotional profile of the patient with NFC technology, seeing what caused the emotional spike. This is a way to change physicians' behaviour, directing them to communicate with patients, calming them, reassuring them or giving them explanations if needed.

All the devices are controlled and monitored in a centralized Cloud clinical data Management System in the department office. Thanks to repeaters into the hospital department the information will be transmitted wirelessly between the App, the device and the Cloud software. With this system it is possible to check which devices are on, to whom they have been assigned, the emotional profile of every patient and all the related data. The central system will record every mood spike and a mobile alert notification will be sent to the nurses. The emotional profile can be updated by the patient every moment, because mood changes and its motivations too. The device colour will shift consequently. Every feeling and its evolution will be recorded as a significant data to improve patient care communication.

Doctors will be informed about the emotional conditions and issues of the patient whenever they do the daily visit, to adapt their patient-care communication depending on patient mood. However, they can read the patient emotional profile tapping their mobile/tablet on patient's necklace.

At the end of the path, when the discharge step is close, the App will send the last notification with the final survey to fill, giving overall feedback about the treatment, the empathy received, the positive and negative moments. This way, women can express their opinions and help the service to enhance. Before leaving the hospital, the patient delivers the necklace device to the department office. They will disinfect it, check the data inside and reprogram it through a dock station. This station could recharge both mini tablet and smart devices.


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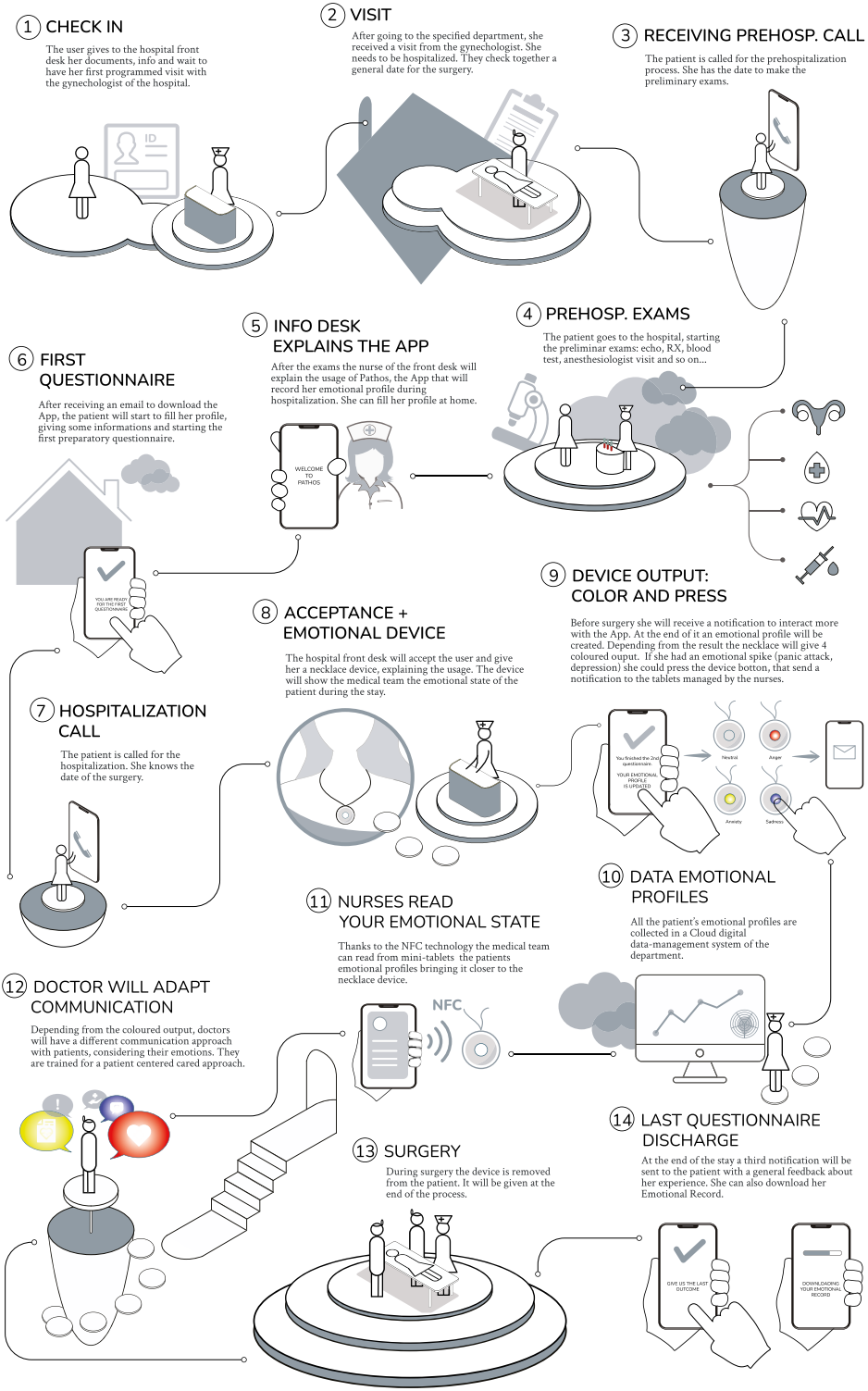
1 CHECK IN
The user gives to the hospital front desk her documents, info and wait to have her first programmed visit with the gynechologist of the hospital.
2 VISIT
After going to the specified department, she received a visit from the gynechologist. She needs to be hospitalized. They check together a general date for the surgery.
3 RECEIVING PREHOSP. CALL
The patient is called for the prehospitalization process. She has the date to make the preliminary exams.
4 PREHOSP. EXAMS
The patient goes to the hospital, starting the preliminar exams: echo, RX, blood test, anesthesiologist visit and so on...
5 INFO DESK EXPLAINS THE APP
After the exams the nurse of the front desk will explain the usage of Pathos, the App that will record her emotional profile during hospitalization. She can fill her profile at home.
6 FIRST QUESTIONNAIRE
After receiving an email to download the App, the patient will start to fill her profile, giving some informations and starting the first preparatory questionnaire.
7 HOSPITALIZATION CALL
The patient is called for the hospitalization. She knows the date of the surgery.
8 ACCEPTANCE + EMOTIONAL DEVICE
The hospital front desk will accept the user and give her a necklace device, explaining the usage. The device will show the medical team the emotional state of the patient during the stay.
9 DEVICE OUTPUT: COLOR AND PRESS
Before surgery she will receive a notification to interact more with the App. At the end of it an emotional profile will be created. Depending from the result the necklace will give 4 coloured ouput. If she had an emotional spike (panic attack, depression) she could press the device bottom, that send a notification to the tablets managed by the nurses.
10 DATA EMOTIONAL PROFILES
All the patient's emotional profiles are collected in a Cloud digital data-management system of the department.
11 NURSES READ YOUR EMOTIONAL STATE
Thanks to the NFC technology the medical team can read from mini-tablets the patients emotional profiles bringing it closer to the necklace device.
12 DOCTOR WILL ADAPT COMMUNICATION
Depending from the coloured output, doctors will have a different communication approach with patients, considering their emotions. They are trained for a patient centered cared approach.
13 SURGERY
During surgery the device is removed from the patient. It will be given at the end of the process.
14 LAST QUESTIONNAIRE DISCHARGE
At the end of the stay a third notification will be sent to the patient with a general feedback about her experience. She can also download her Emotional Record.
NFC

Fig. 2


Fig. 3

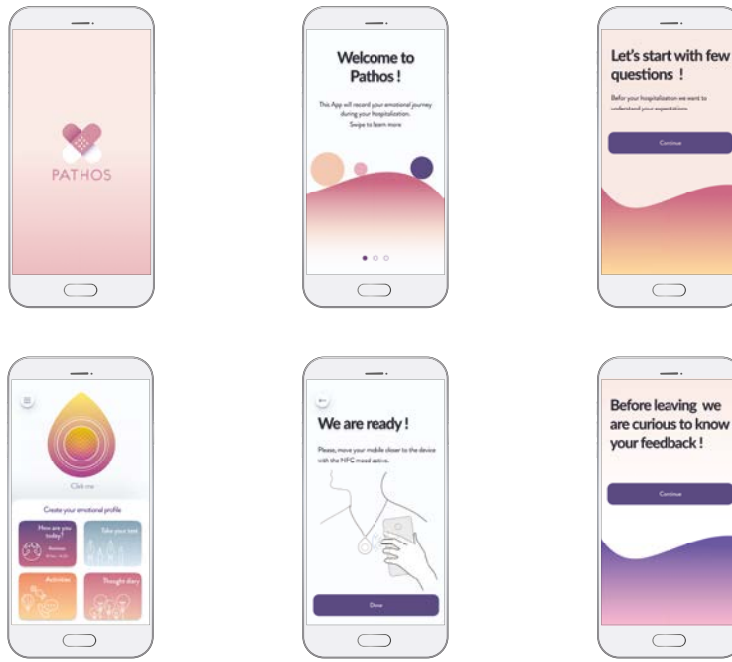


Fig. 4


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## Results

The project testing occurred with automated test and moderated sessions. The automated test was created with an online tool named Maze. With it, it was possible to send the App prototype to different users on remote, asking them to complete specific tasks. With the moderated sessions instead, it was possible to talk with people, allowing to dig deep and understand the "why" behind their behaviour.

The overall results could be divided in three sections: the dimensional outcome of the necklace device, the interactive outcome from the App tester and a medical staff interaction with the service.

The first finding is that 90% of interviewed women liked the drop shape of the neck device, considering the dimension adequate, a positive touching sensation and an easy-to-understand interaction. The most appreciated qualities were the lightweight and the compact size.

The implementation on the App Interface could have been on the colour's palette, exploring different colours, replacing the swipe interaction at the beginning with a simple tap interaction. The overall observations were that the interactions were not frustrating and easy to accomplish.

The third section is still ongoing, aiming to create valid outcomes from a medical team that interacts with the software and the device in a hospital. It could be interesting to examine the integration of this service in the University Hospital of Policlinic Umberto I or the Sant' Andrea Hospital in Rome, to spread in a public hospital a service that highlight the importance of women's emotions.

**Fig. 2**
**User Scenario. Visual narration for the user behaviour using Pathos service from the hospital check in to the discharge. Credits: authors.**

**Fig. 3**
**Clinical data Management Interface. Main Home Page with User Interface flow. Credits: authors.**

**Fig. 4**
**Pathos App. Screenshots of Pathos App used by patients. Credits: authors.**

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# DIGITAL SPECIAL ISSUE 1

The 8th International Forum of Design as a Process, themed "Disrupting Geographies in the Design World" was held in Bologna from 20 to 22 June 2022. The event was organised by the Advanced Design Unit of the Alma Mater Studiorum – Università di Bologna, Department of Architecture, in collaboration with two partner universities: Tecnológico de Monterrey (TEC) and Pontificia Universidad Católica de Chile.

The Forum engaged speakers from the Global Design community, expanding the original vocation of the Latin Network for the Development of Design as a Process to include researchers and designers of the Mediterranean Area, Middle East, IOR (Indian Ocean Region), and Global South regions. The goal was to share new perspectives on imagining design futures in a responsible and just perspective, at the forefront of change, while building strategic partnerships and creating accessible knowledge.

Structured around three pillars — seminars, workshops, and exhibitions — the Forum hosted meetings, reflection opportunities, networking activities. It involved designers, scholars, young researchers, design entrepreneurs, in an experimental format.

Speakers' contributions not only inspired the practices of the designers' community, but also resonated with students and the broad audiences. The presentations explored intersections of materiality and culture, post-coloniality, decoloniality, gender studies, and other areas of human thought and action which seek to analyse, question and challenge the disruptive geographies in the world, today.

The papers submitted to the five tracks proposed are published in the Digital Special Issue 1 of *diid. disegno industriale – industrial design*, celebrating during those days its 20th anniversary and serving as the fourth partner of the event.

**The Editors**
Erik Ciravegna, Elena Formia, Valentina Gianfrate, Andreas Sicklinger, Michele Zannoni

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