

Strategic design of a medical consumable

From product to circular service

1. Project context & objective

To examine the circular economy approach in a medical domain, a case study is done at Philips Design. Specifically, the project looks at the Healthdot, a medical sensor for at home, currently not envisioned to become circular, being developed by a venture team within the company.

The objective in the case is:

How can we engage patients to send back the device after wearing it at home in order to enable a circular offer for the Healthdot?

2. Circular offer and Behavior Change

To find opportunities that make a circular offer for the Healthdot the product and its ecosystem is analyzed. When a device with the current product design can be recovered, the PCBA can be reused. To increase circularity, it needs a redesign. A feasible redesign allows every component except for the adhesive part to be reused. Since the latter opportunity requires a redesign, it is a long-term opportunity.

Both scenarios require the Healthdot to be retrieved from the patients wearing it at home. The hospitals role is limited in this recovery. They are pressured to move the care they provide more outside of the hospital and extra handlings with a device means a less attractive value proposition towards them.

By interviewing ex-patients it became clear that the experience they have after surgery, is not pleasant in any way. Specific pain points throughout this recovery show potential to improve patient experience and motivate them to send back the device. Patients receive scattered and non-personal information, are physically and mentally burdened, are uncertain about their progress. Next to that, family and friends are heavily involved during this period.

Picking the device up at patients homes is an expensive undertaking and needs an additional pick-up service to be realized. The most promising opportunity is to have the device sent back by the patients.

Three preconditions need to be present simultaneously for an action to happen. These elements are addressed in a first concept, which aimed to provide motivation through pleasure in the means of a package with insight in patients data. The concept increases their ability to

perform the behavior by providing all the materials needed for send-back, together with clear instructions. The concept aimed to trigger them through several text messages.

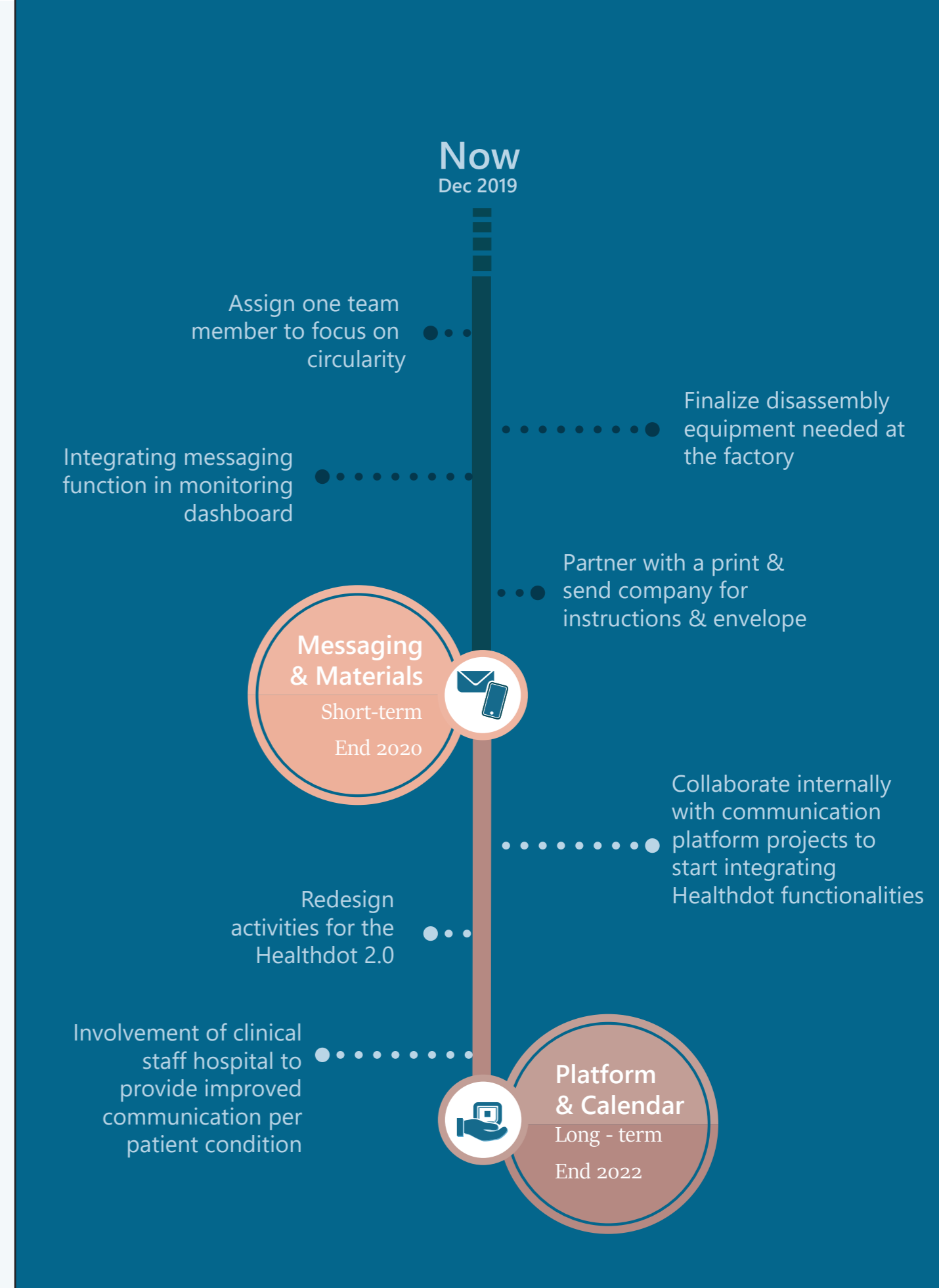
After testing this with 6 other ex-patients and their partners at their dinner table, 4 main insights led to an improvement and final design.

- The hospital contacting patients created the feeling of reciprocation, this was perceived as the most motivating factor to send back the device.
- When patients are being monitored they have expectations for meaningful insight in the data. They expect to hear something from the hospital related to their monitoring and recovery.
- Perceived as easiest to send back was taking it to a regular mailbox, when the materials such as a return envelope were provided and sending was free of charge. This allowed patients to be in control of when and where exactly to return the healthdot.
- Physically moving the device out of the house while sending back resembled closure of a recovery phase for patients.

3. Final Solution

These insights led to a final solution of an advent calendar, communication platform and a redesigned device. To reach this solution in 2022, the first step that can be made towards the end of 2020 is a concept that entails a messaging service and send-back materials for the patients.

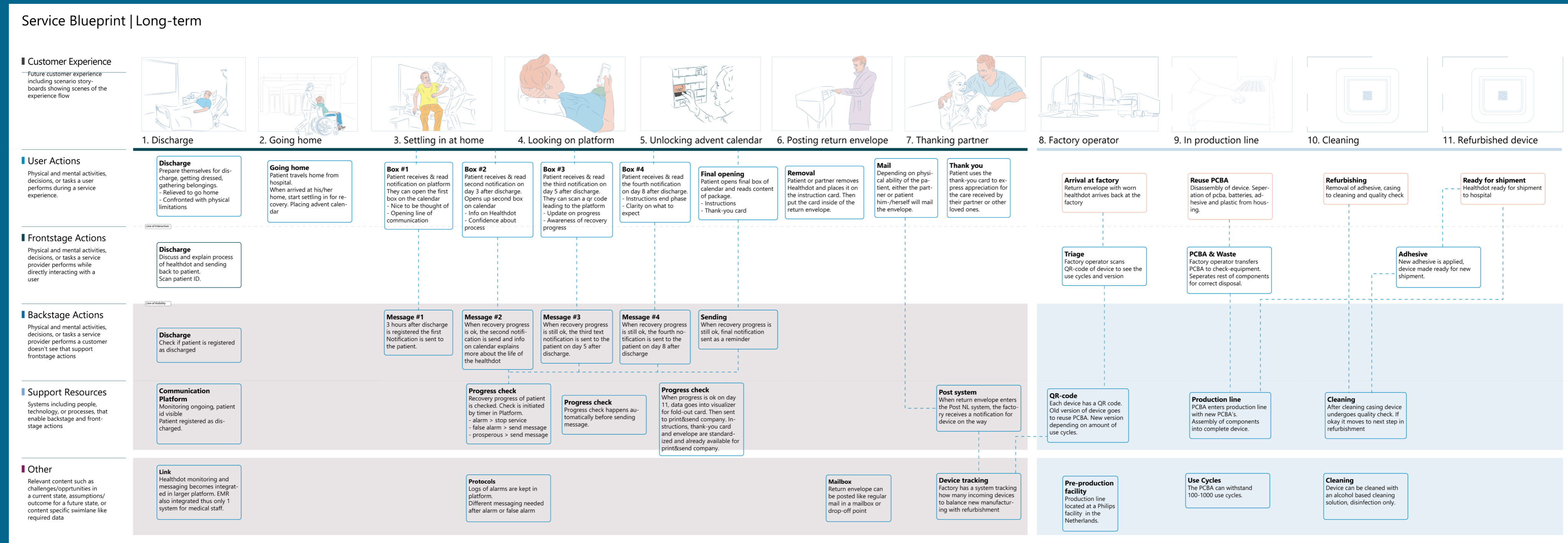
One component of the final solution is an advent calendar that patients receive when they are discharged. It is to be placed at their homes, and includes several boxes to be opened during the recovery phase at home. The final box includes all material needed for sending back the Healthdot.



4. Conclusion

The Healthdot needs a redesign to increase value retention and go from a parts recovery strategy on the short-term, to refurbishment for the final solution. This redesign would enable reuse of all components except the adhesive part of the device.

The Healthdot becoming circular results in a triple win. Philips is able to save money, improve their value proposition towards hospitals and can add yet another proof point of sustainability to their repertoire. The patients will go through an improved recovery experience compared to the current experience. Thirdly, the environmental impact decreases through the reuse of components and less intensive use of the full manufacturing processes. This thesis led to the Healthdot venture team pursuing circularity already on the short-term, instead of a future possibility on the longer-term.



Mike van Hamersveld
Strategic design of a medical consumable: From product to circular service
18-12-2019
MSc course Strategic Product Design

Committee Prof. dr. ir. R. Mugge
MSc. Brian Baldassarre
Michael Heesemans
Kevin Shahbazi
Company Royal Philips

