## Project Overview

In the healthcare sector, the generation of waste and the consumption of energy and materials are of serious concern. The transition to a circular economy for such products is crucial for sustainability. A critical step in achieving a product's circular lifecycle is its collection, ensuring that returnable products serve as the basis for subsequent reuse, refurbishment, remanufacturing and recycling. In reality, however, many of these products are not returned.

This study explores nudging strategies to improve user abilities in order to promote the voluntary return of digital health products, with a focus on the smart pillbox. It provides redesign recommendations to the smart pillbox, and generates guidelines to be applied to a wider range of smart health-related products.
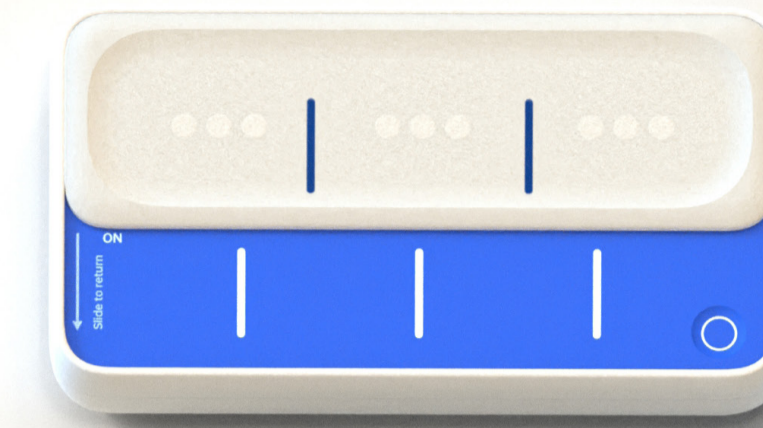
Reinventing the Smart Pillbox's EoL Return Journey

From User to Returner

Redesign recommendations

Based on user insights and iterative feedback, a number of design recommendations emerged. These included transformative features such as a **'switch for state'**, **printed instructions**, a **'deactivate/ reset button'**, an **SMS reminder system** and a dedicated **web/app-based return instruction platform**. These enhancements, visualised in a conceptual example of application, aim to streamline the user's return experience.

Comprehensive Guideline

User Interaction

Design for 'Returner'

Key Moments of Nudging

Seamless Return Reminders

Change of Perception

Communication

Lifecycle Communication

Prominent 'Return' Markings

Avoid Solely Paper-Based Cues

Increase Return-Related Elements in Hardware

SMS Notifications

Trust & privacy

Provide Data Erasure Methods

Transparency in Remanufacturing Journey

System

Digital Integration

Postal Returns as Primary

Monetary Incentives
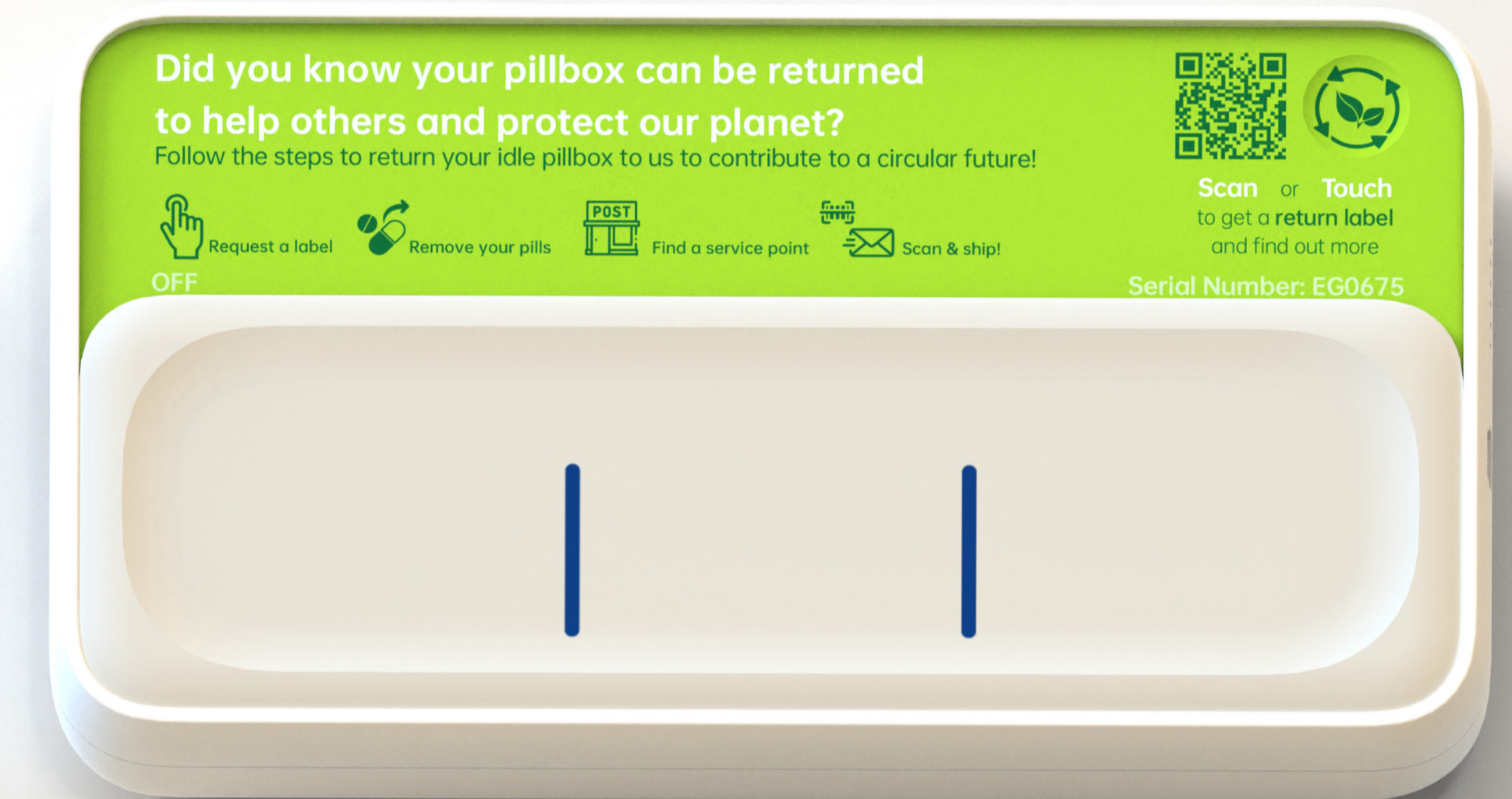
Yifeng Mao
Improving the return rate of a smart pillbox
in a circular economy
28.08.2023
MSc Integrated Product Design

Committee

Dr. Jeremy Faludi
MSc. Tamara Hoveling

TUDelft