

Bo

An intelligent network agent to promote physical activity in children with Congenital Heart Defects

Challenge

There are various organisations such as the European Society of Cardiology (2012) and American Heart Association (2013), which describe why physical activity is essential for the development in youth. Unfortunately, children who have a Congenital Heart Defect (CHD), may suffer from a lack of opportunity to perform physical activity, decreasing cognitive maturation, motor development and autonomy during childhood (Krol, 2003). This impediment arises due to a misunderstanding from parents, who do not know to what extent their child can exercise safely, and therefore adopt overprotective behaviours (Schwartzmann, Thomet, & Moons, 2016).

Design process

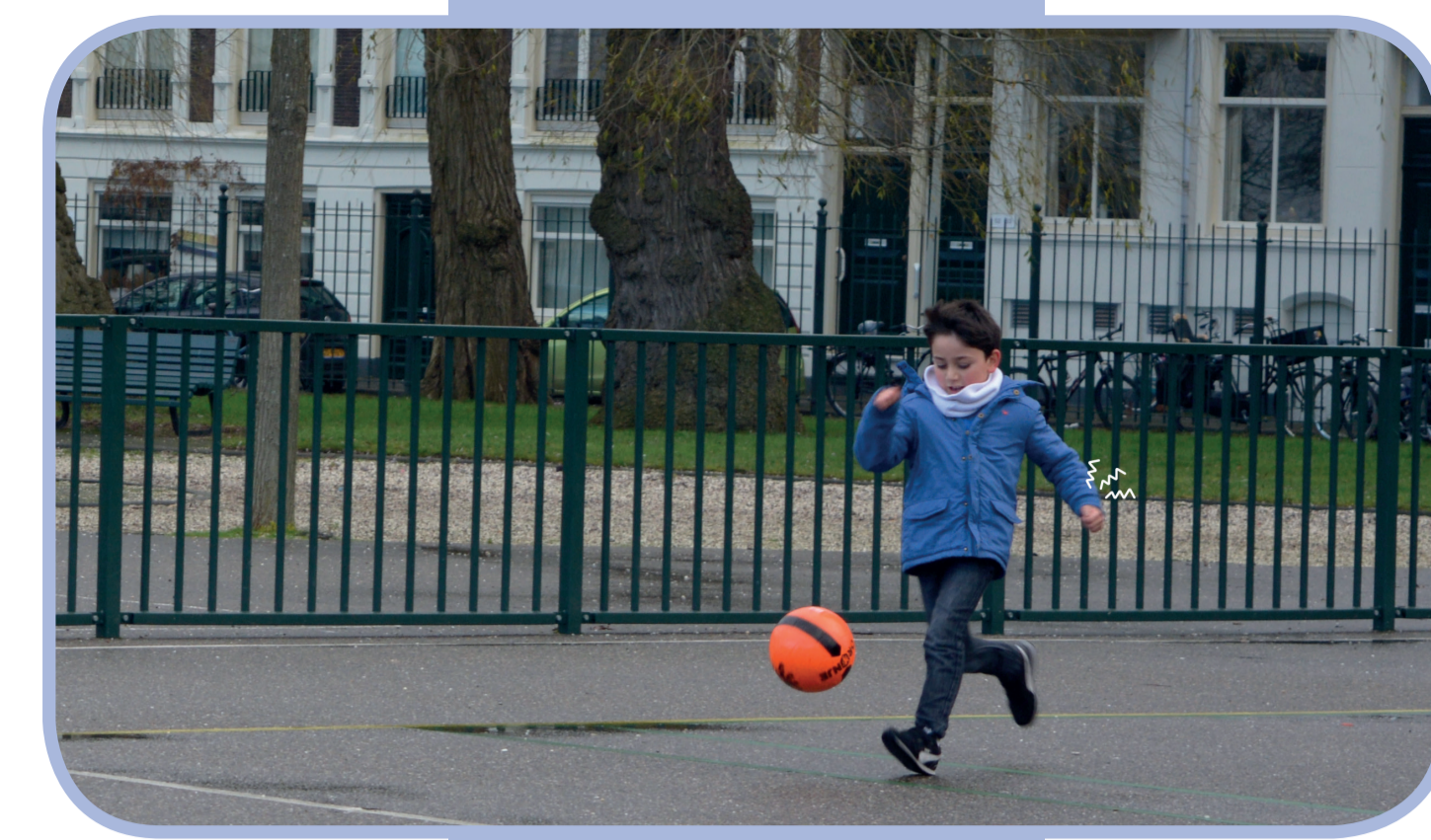
In order to understand better overprotection during childhood, 305 online parental stories from various patient-association websites were analysed using Natural-Language-Processing techniques. The results exhibited the lifetime journey of these families, where an uncertain future evoked a constant search for symptoms. The findings of this phase were employed during generative interviews with seven families with a CHD paediatric patient to understand the continuous search for symptoms during exercise. The combination of the insights gathered from interviews and the lifetime journey was presented to five medical team members to inspire a co-creation session.

PSS solution - BO

To encourage families to have a safe, ordinary sports-life, BO is introduced, a smart PSS aiming to support parents and their children with a CHD to understand better the safety boundaries of exercise during free-living conditions. With an activity tracker and his nine system modules, Bo aims to guide the child through different heart rate zones defined by doctors. Furthermore, Bo has a conversational agent function where parents can send concerns to the medical team and find relief when seeing their child's heart rate zone visualised in the physical activity path.

Implementation

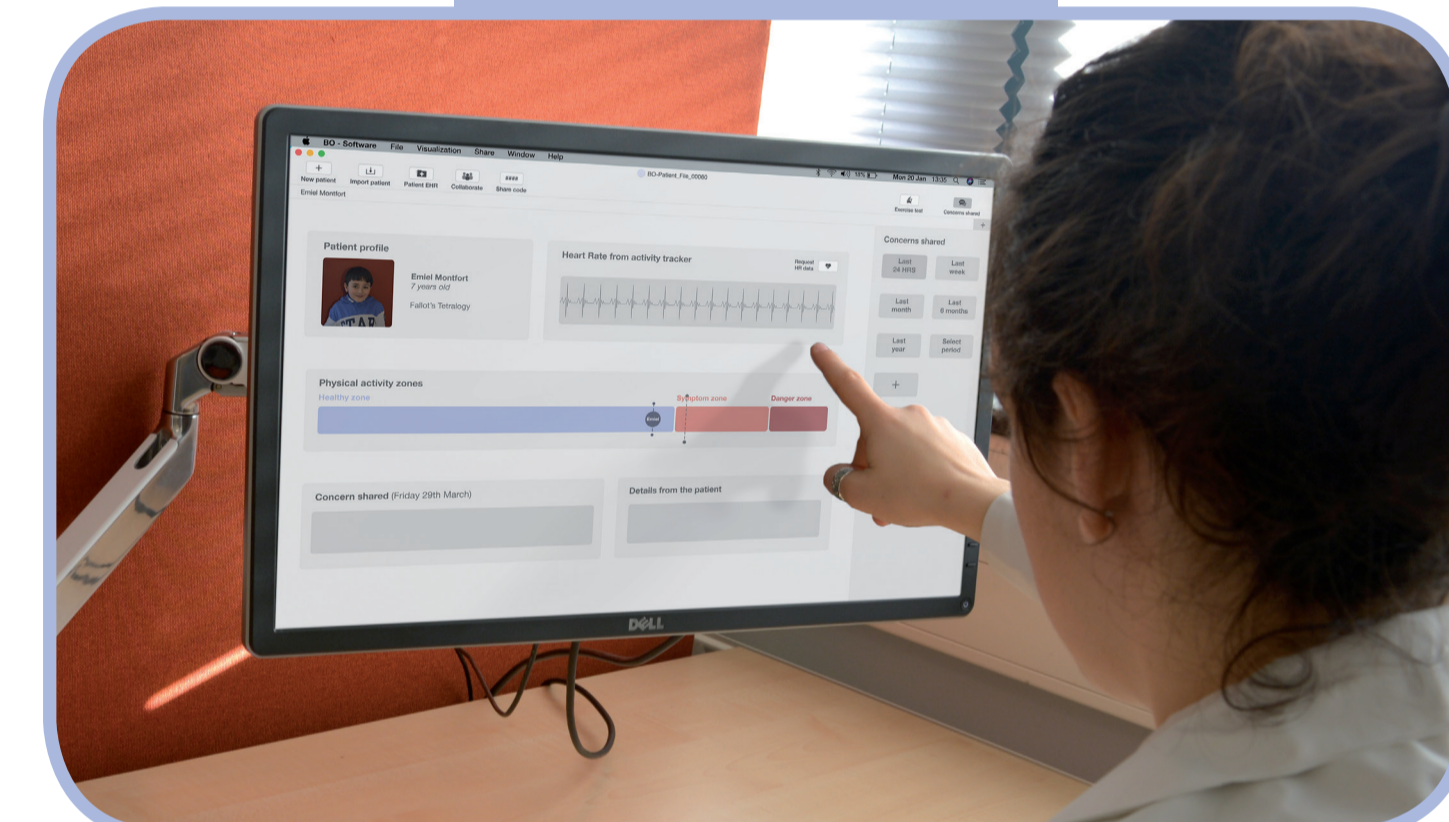
A functional prototype of the conversational agent was developed and implemented in the real context of four families to understand how could it influence overprotection. The implementation experience and overall concept of Bo were evaluated through in-depth interviews with paediatric CHD patients and their parents and three different specialities from the medical team. The results showed that Bo provides a supportive exploratory environment for the family, where the child can self-discover the safety boundaries and parents, instead of limiting the child, adopt an encouraging attitude towards physical activity.



Heart Rate
Vibration feedback



Conversational agent
feedback

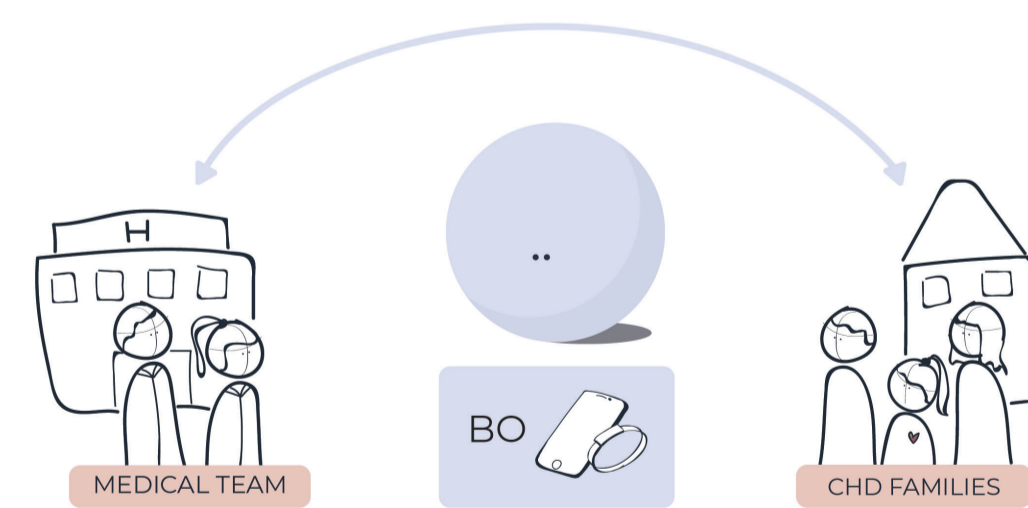


Summarized
real-time data



Medical team feedback

Hi! My name is Bo :)



PSS aim



PSS devices

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