CareLink Transcript

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The world's aging population is expected to triple in the next 30 years, and with that will come an increase in the need for aged care. The number one cause of death in aged care is people falling over. Residents in aged care homes have falls nearly five times more often than the average person. We want to solve this problem with a cost effective solution.

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So we created a care link, a smart mattress with a software application. It's named after the link we want to create between health professionals and the elderly and is designed to not only save lives but also improve them. So how does it work? Take Mr. Jones. He's 84 years old and lives at a residential care home. He has dementia and because of that, he often wakes up and wanders off in the night.

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Sometimes he has a fall. Health care workers might not know he has left his bed, and so all of his falls are not always reported. Carelink can solve this. It has proximity detection. So when Mr. Jones leaves his bed, an alert will be sent to all health professionals in the facility. Virus software application on their phones can also has pressure detection, which can help prevent pressure sores, rapid movement detection for seizures and pain and moisture detection.

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In case of incontinence. There's also a call button for Mr. Jones if he needs to ask for help. The software application will also have the current set up of every resident. Resident details, alarm reminders, instructions for a missing patient and personalized settings. An important component in any business is meeting key performance indicators and deliverables. And aged care is no different.

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To complement the mattress and software, there is a web application that allows the data to be collected and managed. That will help management monitor patient care and ensure best practice is followed. Carolyn Cue says graphic pixels inside the mattress. They're graphene, pixels and data directed to the cloud. Where did this process said for a software owner? They data can be also access and in our application for data exports and for reporting, Carelink is designed to improve and save lives from residents such as Mr. Jones and his loved ones to health professionals and management.

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Carelink will revolutionize the way we care for the elderly. Carelink was developed as a joint project between students at Aalto University in Finland and Swinburne University in Melbourne. Each of us contributed our expertise in different disciplines. Industry Partner. Imagine Intelligent Materials challenge the team to create a life changing but cost effective product, using its graphene coating as a sensing surface.

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The team decided to explore the problem broadly. At first, looking at it through the prisms of healthcare, security and transportation. We researched an overview of the market, including the trends and possible future growth. With this knowledge, the group chose healthcare as the industry to create a product for studying occupational therapy. We know that the need to improve quality of life in aged care is really important.

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Through our research we discovered that falls is a big issue in this industry. We also undertook interviews with aged care workers, managers, older adults and relatives. The interviews also revealed that fall detection flooring is common, but there was still a need for more technology in this area. So we decided to create a smart mattress. Armed with our research, we started prototyping.

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The task was split between user research, software and hardware. Our user research initially focused on the human element of this product. After all, if our target group didn't want to use this product, why would we bother creating it? Our software team began with a wide range prototype of the software application, drafting some initial ideas on how the phone should work in hardware.

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We used a new microprocessor in which we had no previous experience with. It meant that we had a steep learning curve in using the new software development tools. The user research team began by focusing on the workflow, how healthcare professionals currently monitor and respond when a fall happens. Initially, we made a simple wireframe mockup to test the application with our peers.

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We then put together a video for health professionals to explain the user workflow. We had plans to test this further, but due to the COVID 19 restrictions, we were unable to. The creation of the two prototypes allowed us to identify issues in the workflow, including integrating a comment function that has been inserted into the final design. While the user research team was considering the workflow, the software research team started developing the first page of the web application, focusing initially on Android platforms.

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This was a whole new process for me. Why are we outsourcing sound to a developer? I self taught myself to create two pages a mockup for web page and Android app. The hardware team started testing through trial and error. We spent a lot of time figuring out how the panels and the works should be attached. We tried gluing the panels, but that did not work, so we decided that sewing would be the best attachment method.

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Initially, we had problems with the inconsistent data output from the graphene pixels. Their problems were caused by us having these long Ethernet cables inside the mattress. We were able to tackle this problem by increasing the amount of Ethernet cables and thus achieving a working prototype. I think our greatest achievement is that we have not had any major failures.

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That is due to us testing everything early on with small scale prototypes. Our thorough research and prototyping has helped us develop a product which will improve quality of life in aged care. Aged care affects us all, and Carelink wants to make that phase of life as comfortable and as enjoyable as it can be.