

BACHELOR OF
INDUSTRIAL DESIGN
(HONOURS)

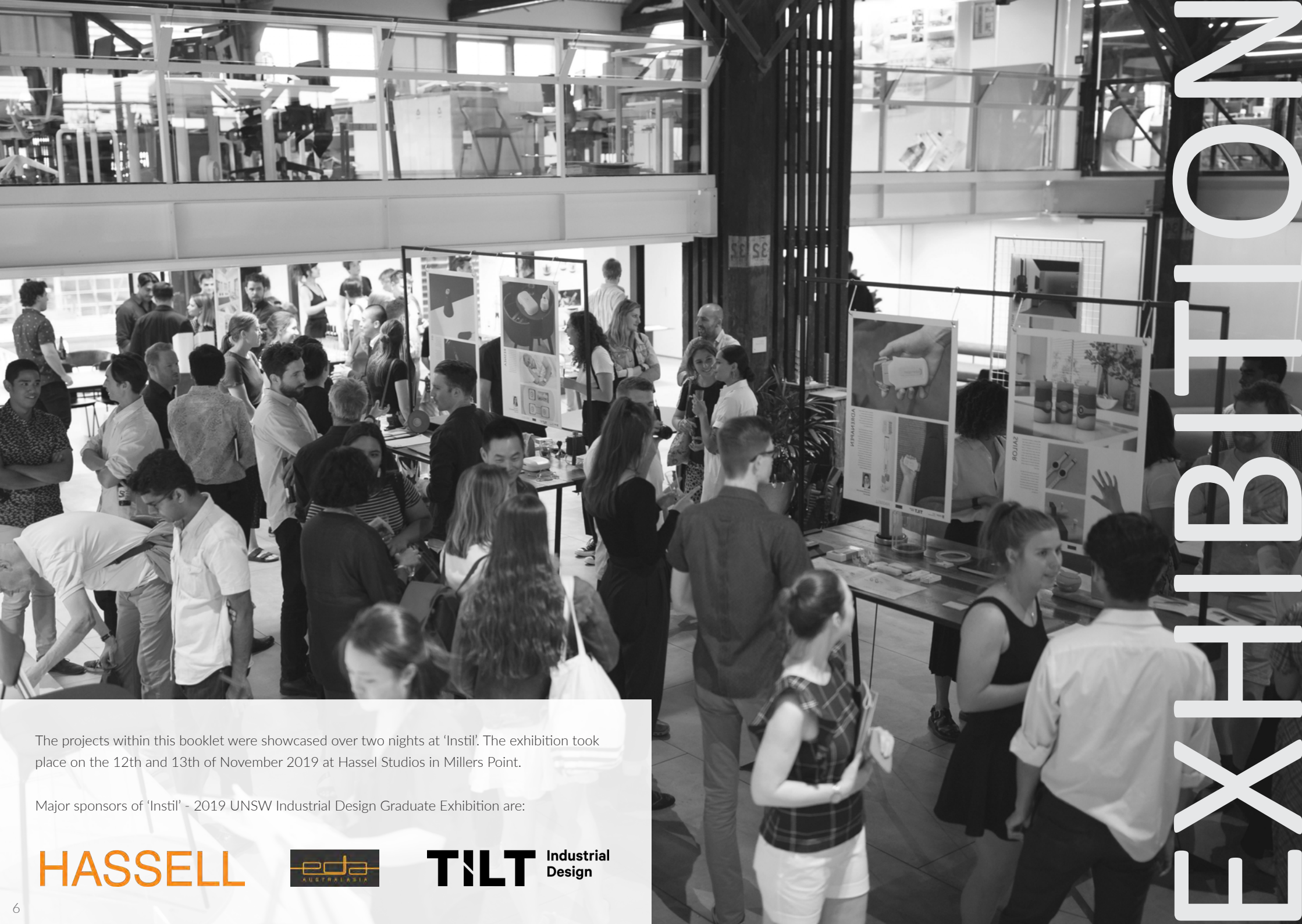
GRADUATION PROJECTS



Built
Environment

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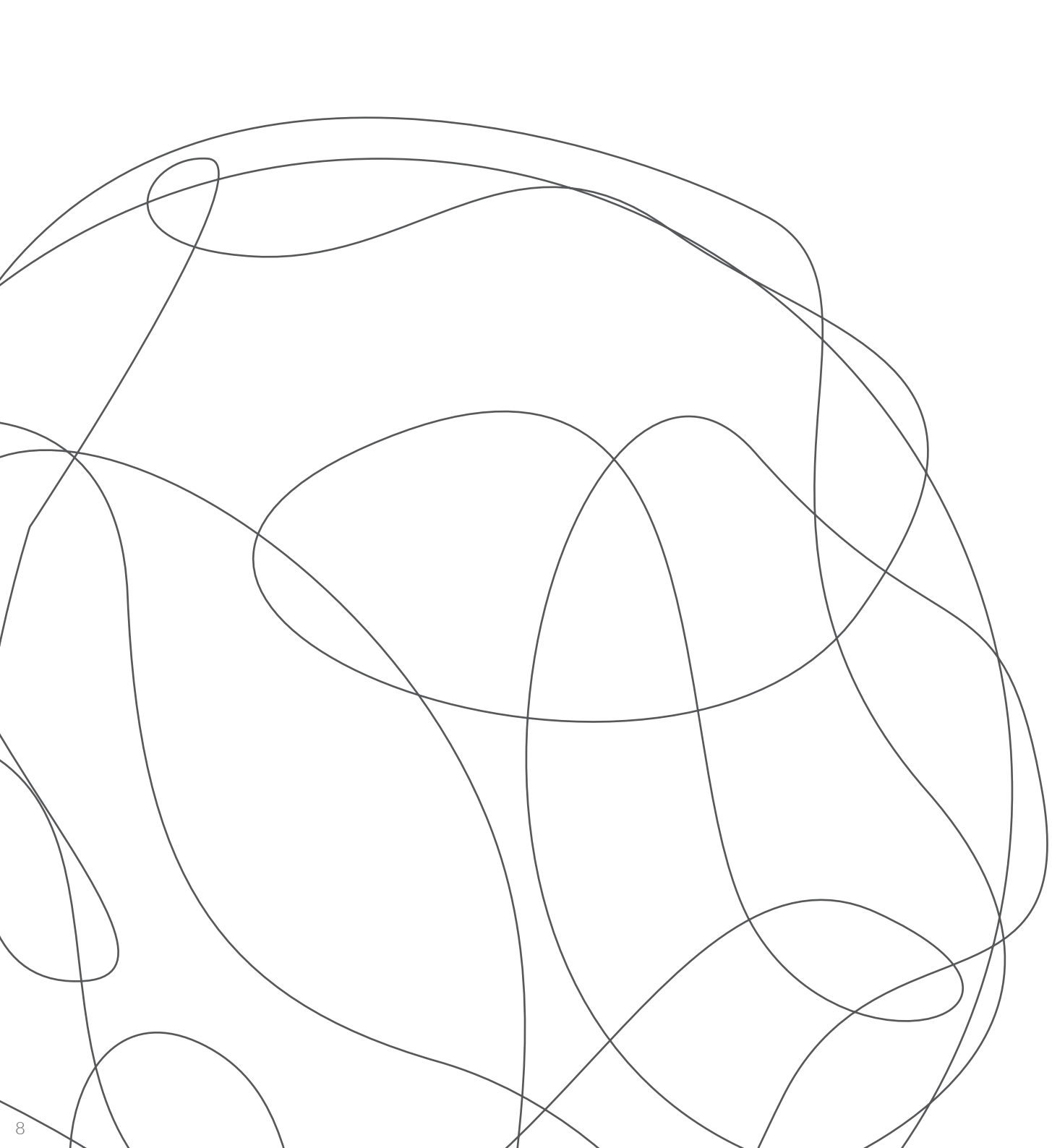
The projects within this booklet were showcased over two nights at 'Instil'. The exhibition took place on the 12th and 13th of November 2019 at Hassell Studios in Millers Point.

Major sponsors of 'Instil' - 2019 UNSW Industrial Design Graduate Exhibition are:

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The following section contains a snapshot of each of the projects from the 2019 UNSW industrial design honours class.

PROJECTS



HANNAH ATKIN

RESNEA

Resnea is a sleep apnea testing device, used within the home. Sleep apnea affects over 100 million people worldwide and often goes undiagnosed and untreated. This condition increases the likelihood of developing more serious conditions, such as depression and heart failure.

By using the newest innovative technologies, Resnea monitors and records sleeping patterns to detect any irregularities and give extremely accurate results. With its compact size, Bluetooth connectivity, and adjustable straps, Resnea allows for a comfortable sleep with minimal interruption.

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ANIKA VAN BLOMMESTEIN

TUBO

Tubo is a passive product that optimises terracotta, water and airflow to naturally cool; simply, seamlessly and beautifully. We are constantly seeking new passive cooling methods as alternatives to the energy-hungry methods of our modern society. With this in mind, integrating passive cooling into the current built environment is often intrusive and expensive.

Drawing upon natural methods of cooling from the past, Tubo utilises terracotta's often overlooked innate properties of porosity, durability and versatility. This naturally-sourced material absorbs water, and as airflow passes over its surface, creates an evaporative cooling effect. As form follows function, Tubo ensures a seamless integration into any built environment.



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**THERMAL
POWERED
BICYCLE
LIGHTS.**



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DYLAN BROWN

SPARK BICYCLE SADDLE

Imagine powering your personal devices with nothing other than your bioenergy. The Spark bicycle saddle does just this. It fulfils the need of charging bicycle lights for regular bicycle commuter without the hassle of batteries or charging.

The spark bike saddle harnesses the rider's thermal energy, this powers the integrated rear lights with the excess energy stored for later usage, creating a 'ready to ride' solution at any time. This energy harnessing is achieved thanks to Peltier tiles that generate energy through harvesting the thermal difference between the cyclist and the underside of the saddle.

The form features a timeless design that comfortably fits into any contemporary cycling setting, while still being tough enough to withstand the harsh conditions that all bicycle saddles face.

JACKSON CAIRES

LUMINANCE

What affects people most are their immediate surroundings and everyday possessions. The objects that they interact with daily. For that reason, such things should be beautiful, created with love. To be lived with and used with love, because these everyday objects function in the same way as love itself. They shape our lives.

Taking inspiration from the growth of Finish Industrial Art in the 1950's, Luminance takes a meaningful approach to design by creating beautiful objects of enduring quality for everyday occasions. Luminance is the answer to peoples desire for beauty. It is designed to be timeless in its design. The simple expression of the geometric form is designed to be essential in its ability to stand the test of time. It is a simple gesture that highlights the balance between the material and geometric form, animating the object beyond its functional use. For this reason, Luminance is an expression for the love of beauty. It has been created with love, thought out with love, and will ultimately be loved.



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CLAY CANTARELLA

SURFERS SWAG

Surfing is quickly becoming one of the fastest growing sports in the world. Previously tame and uncrowded surf spots have now become increasingly popular with the growing involvement, worldwide attention and infrastructure around these areas.

The surfer's swag is the ultimate run away accessory and addition to any hardcore surfer's paraphernalia. The surfer's swag allows for the last remaining uninhabited spots to be accessed whilst removing the tedious processes involved in getting to and camping in these locations. The product combines the average travel board bag with the humble swag thus creating a compact and lightweight home for both you and your surfboard for your next extreme surf expedition.

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DOTS.

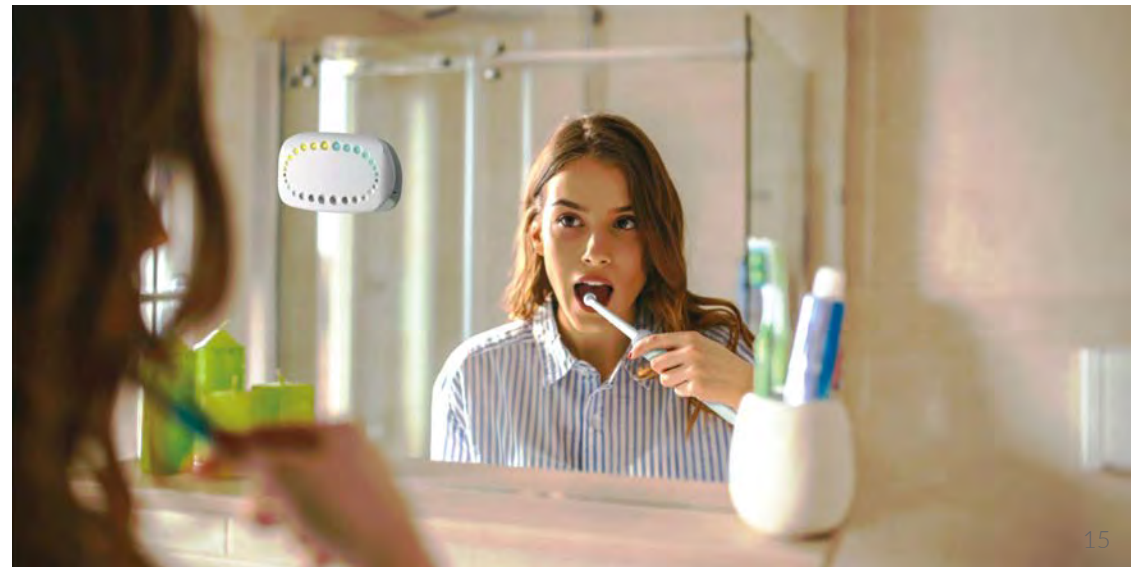
Dots. is a dental care product that can guide people to clean their teeth properly, designed for teenagers who have problems with brushing their teeth.

Although brushing teeth may seem easy for teenagers, most of them brush their teeth in the wrong way. Some research has found that adolescents (13-21 years) only brush 50% to 67% of the surface of their teeth. Incorrect brushing methods allow plaque to build up and attack the tooth enamel leading to tooth decay or gum diseases.

Dots. solves this problem by providing LED light and sound guidance to users. They can follow the instructions to spend the right amount of time to brush each teeth section and different tooth surfaces, including inner, outer and chewing surface. It can effectively remove plaque and food debris in the mouth which will help users to maintain healthy teeth.



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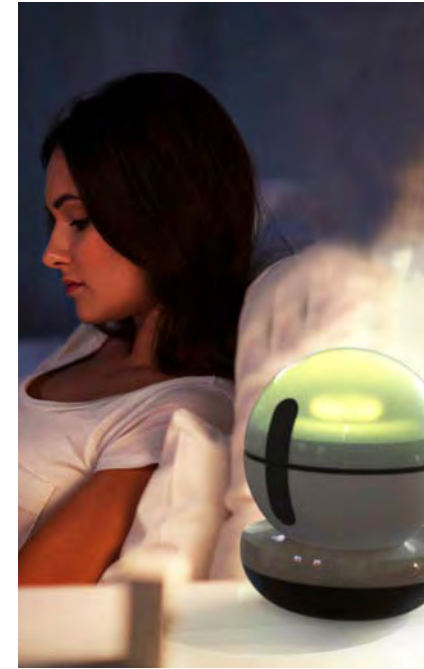




SEAN CLARKE

SIRCA

SIRCA is a combination of a speaker, light and oil nebulizer designed to have seamless integration with each other as well as with the user. Designed to aid in providing improved sleep quality for the user by manipulating the environment around them creating an atmosphere which is conducive to high quality sleep. Through sound, light and scent to help relax the user back into a more neutral mental state, allowing the user to find ease in drifting off into sleep. The user's inputs allow for a more personalized experience, they can choose which songs to play, what colour lights and which scented oils to use. This means that the user can adjust SIRCA to achieve the most efficient results.



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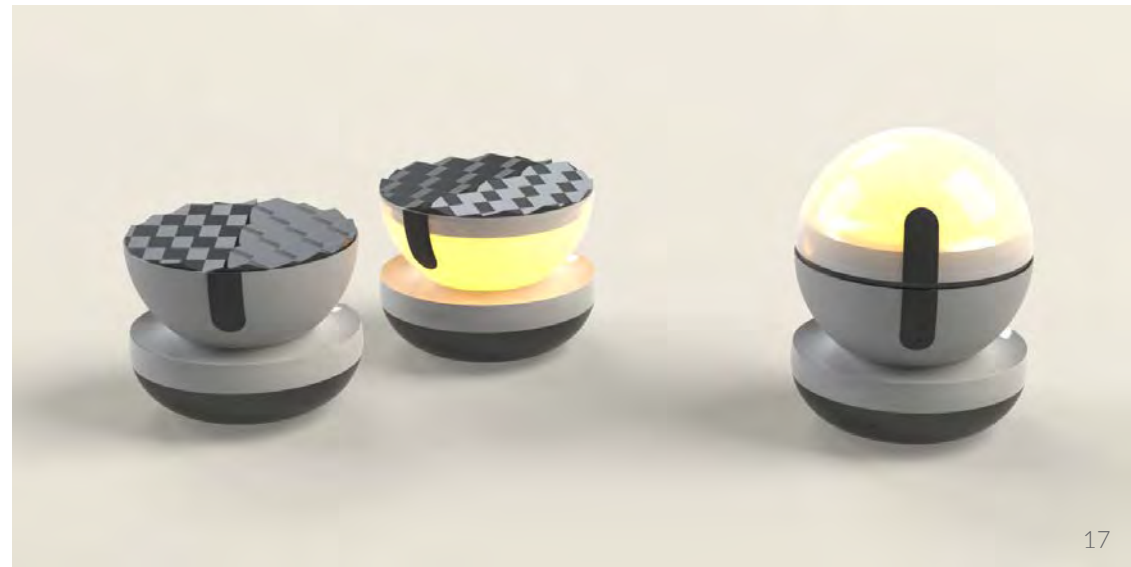
KAELI

Kaeli is an asthma monitoring kit that seeks to alleviate poor asthma management in child patients. Unlike anything currently in the market, Kaeli provides a holistic approach to asthma management through integrating core products and leverages smart technology to connect child patients to parents, caretakers and doctors,

Kaeli consists of six products; two smart inhalers (a preventor and a reliever), a smart peak flow meter, a spacer, a charging dock with inbuilt audio sensors and a mobile app. These products track medication usage and exacerbations to ensure a higher adherence to medication and to provide a better understanding of patient's asthma condition.

Designed to seamlessly synchronize information through each product, Kaeli will guarantee control and peace of mind for parents and caretakers when treating their child's asthma.

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ASHLEY CONEN

NURTURE

Nurture is used in reforestation projects to help establish newly planted seedlings and encourage stronger growth. Traditional methods of reforestation have a success rate ranging from 20% to 70%, but Nurture can increase that number to 90% or higher.

Nurture achieves this is through creating a micro-climate for the seedling it is placed around. A seedling is most vulnerable during its first year after being planted, so Nurture provides the seedling with water and protects it from harsh winds and extreme temperatures.

Nurture is cost-effective, easy to install, and requires no further user interaction once installed. It collects water from rain and morning dew, and completely biodegrades after a year of use, releasing beneficial nutrients into the soil. Nurture is made from a fibrous pulp called bagasse, which is a by-product from sugarcane. It is then waterproofed with a biodegradable plant-based coating, allowing it to hold water and last longer.

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YUTONG DU

MOOVES

Mooves is a motion capture system that's designed for intermediate to advanced tennis players to improve their techniques, minimise injuries, and to learn from their favourite players. Motion capture records movements of either objects or people. Mooves helps players to improve techniques by comparing their captured moves with the correct ones. By spotting the differences between the actions, they can improve more effectively. Utilising biomechanics, actions that could potentially result in injuries will be recorded and reported to players. As an inspiration for players, they can compare their strokes with their favourite players to learn from them. There are no similar products on the market at the moment, therefore Mooves strives to be the help that tennis players need.



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MOOVES





THEODORE HARDIONO

SAILOR

80% of parents in Australia are worried that their kids are not drinking enough water. Due to the concerns of dehydrated children, the research and development of Sailor takes place. Sailor is for kids aged 6-10 who needs to develop a good hydration habit. A smart hydration device that helps monitor and encourage children to drink regularly. Unlike other products in the market, we have a hydration sensor that accurately measures water levels.

The information gathered from the bottle and the watch is used to accurately measure the hydration intake and water required for the children. Hydration is made exciting through a mobile game that helps children compete with their peers. Parents are also able to track their children's water intake through their end of the mobile app.



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RAESHAAN GOH

HAVEN

Fermentation is a healthy option for working class Australians looking to enhance the flavors of their prepared meals. Haven is a smart fermentation system that tracks the progress of your fermentation, through a paired app, while creating a controlled environment for it to sustain itself. Haven is the first product of its kind, utilizing a water cavity to create the function of a fermentation chamber (used in restaurants) and combining it with microcontrollers and sensors. Together these create a fully automated fermentation process, inviting a more user-friendly approach to the practice and increasing the chances of successful ferments.

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MADELYNE KELLY

SOLACE

Solace uses timeless technology for users who want to enjoy a cafe quality coffee in the comfort of their home, it is a stove top coffee maker that guides the user through the experience with subtle indicators to ensure a consistently great cup of coffee, regardless of the users expertise.

Solace utilises a world first fusion of brewing methods to create a coffee making experience like no other. It aspires to give back to ritual and the manual process, creating a rewarding process for the user to enjoy. It is a product to be cherished and shared, careful consideration lies in every feature. There is a rich and thriving coffee culture that is unique to Australia, Solace manifests this culture into a tangible product that is relevant to a global market.

KAREN KONG

MISURA

A FULLY ADJUSTABLE ORCHESTRAL CHAIR

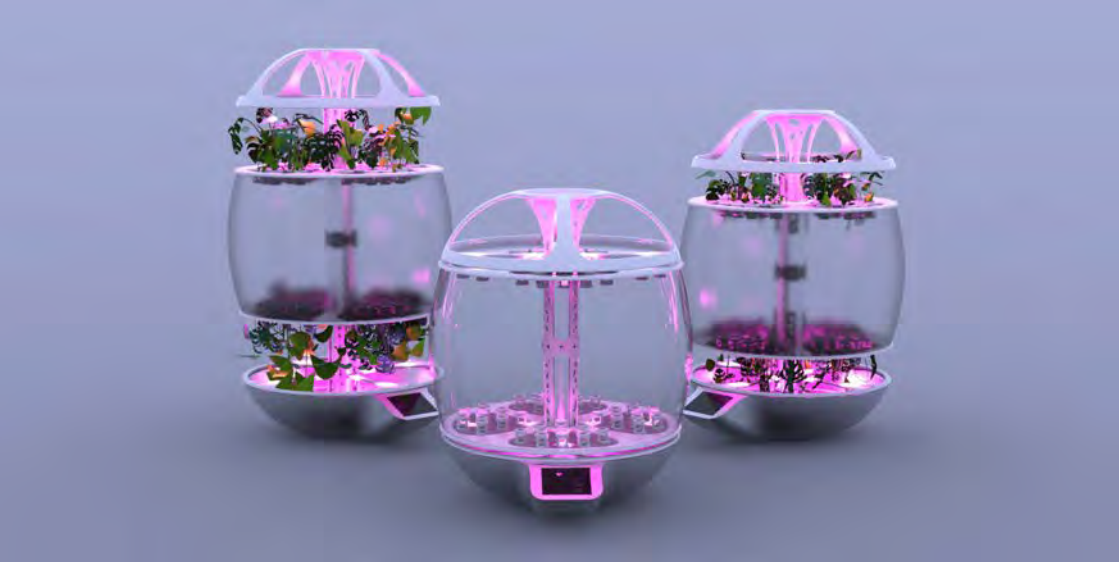
Due to the high physiological demands that orchestral musicians face, over 50% of musicians in Sydney's leading professional orchestras experience musculoskeletal injuries. In order to reduce the chances of injuries occurring, a fundamental yet crucial area to look into are the chairs that orchestral musicians sit on during rehearsals and performances as it significantly influences their posture and therefore their overall physiological health.

The chair Misura, is a significant improvement to the leading adjustable orchestral chair on the market. The chair legs can be moved up and down, the backrest can move back and forth, up and down and it is easily stackable. Misura is lighter, slimmer, more quiet with adjustments, more user intuitive and more elegant. Every musician is different, Misura caters for all kinds of different.



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REJUVINATE

KIWA LANG

Rejuvenate is a crop growing product for singular households. It uses the most advanced and efficient horticultural growing method, fogponics, to maximise growth cycles while maintaining low environmental repercussions.

There is very limited amount of domestic horticultural products on the market. "Growing your own food using horticultural methods" does not exist as products, but they are home-made by people that are invested and determined to put time and effort into growing their own crops.

It is a product that can be used as an independent regenerative food source and it was designed to be tailored for individual use by particularly focusing on improving the areas of man-made help to grow plants.

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OLIVER LAVERMICOCCA

SWELL ENERGY TOWER

Swell Energy Tower is a wave energy device installed onto pre-existing structures such as pontoons and large jetties. The tower converts the linear movements from waves generated by boats and stormy conditions into electricity. This can be stored in local batteries such as the Telsa Powerwall.

Small scale renewable systems such as solar panels and home batteries are increasing in popularity each year however, these do not reduce our dependence completely of fossil fuels.

By extracting energy from multiple facets of our environment, businesses that are in close proximity to the water can operate with less dependency on non-renewable fossil fuels.



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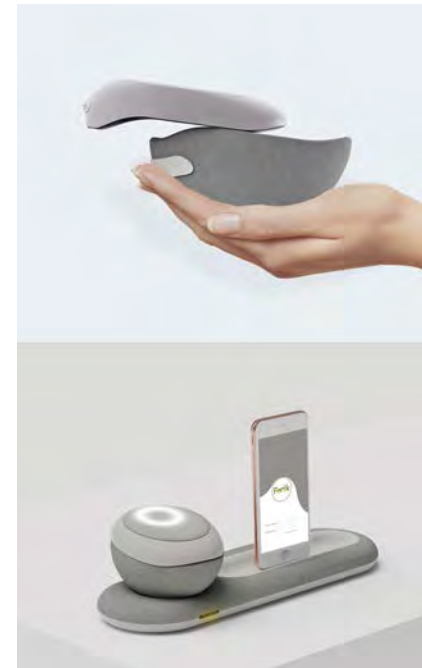
RENFEI LIU

FERSK

Panic attack also known as anxiety attack affects 60% of Australian's life but there are only 16% received proper treatment. For those who are unable access to the clinic service, Fersk is designed to help.

Fersk is a panic attack calming companion that helps peoples to stay calm and in control while they are anxious or panic. The human-like breathing guidance can effectively help users to regulate breathing and heart rate. The instant biofeedback encourages a positive feedback from users and finally they can retrieve the inner peace of their body. It can be used as supplement to the clinic treatment if required.

Fersk recreates a new way of dealing with mental health problem with a tangible product. Panic attack sufferers should gradually established confidence with Fersk and finally live a life without panic and anxiety.



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JIACHEN LIU

01

O1 is a product-service system designed to help the user have an enjoyable sleep experience. Utilising sound therapy, light effects and techniques from cognitive behaviour therapy, O1 reduces sleep latency, enhances deep sleep, and reduces morning lethargy.

The device is both a Bluetooth speaker and a pendant light. The associated app can control various ambient themes such as light effect and sound. These different themes are designed to empower other activities in the user such as relaxation, focus, and meditation.

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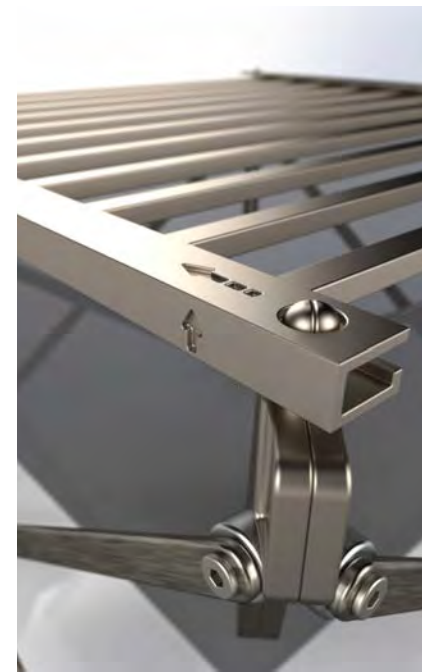
DANIEL MURPHY

EMBER

Ember is an elevated fire pit and cooking apparatus. It promotes safe fire practices and is purposely designed to encourage the relationship between Australia's bushlands and its campers.

Through ease of use and intuitive design it inspires safe and efficient fire practices. With its compactable aluminium frame, rollable stainless-steel grill and folding net, it is unobstructed by the typical challenges associated with current camp-specific, cooking technology. It is light weight and durable, designed to withstand the harsh conditions of the Australian coastline, without compromise to its function.

Ember is the effective design solution to combat human-error bushfires whilst also provoking a greater appreciation of our natural environment.



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CHEN LYU

SAFEHAND

SAFEHAND is a sanitizing door handle, designed for the ward doors in the hospital. It is an integration product of door handle and sanitizer dispenser, which can help and remind users to sanitize their hands without interrupting their work.

When the user presses down on the handle, the alcohol-based sanitizer will be spray on the back of their hands. To complete the hand disinfection, the users only need to rub their hands when walking into the room.

This product will improve the hand hygiene compliance rate in the health care environment by helping workers and visitors maintain their hand hygiene more efficiently.

SAFEHAND optimized the existing hand hygiene product range in the hospital and make all the workers work in a safer effective way.

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CAITLIN NEIL

ADRENAPEN

Anaphylaxis is a severe allergic reaction which can be fatal if not treated promptly. People at risk should always carry adrenaline; however, existing adrenaline auto-injectors are notoriously unintuitive to use, and their large size makes them difficult to continuously carry around.

Adrenapen is an intuitive, portable adrenaline auto-injector. The directed form, tactile touchpoints and vibrant part differentiation clearly indicate to the user how to interact with the product. The straightforward pictorial instructions allow them to quickly understand how to activate the device under pressure.

The unique auto-injector mechanism is remarkably compact, allowing the housing to be two thirds the size of the market leader. This, in combination with the smooth curved housing make it conveniently easy to carry around. The casual, non-clinical aesthetic also makes it a product which people want to carry with them, as well as being less intimidating to inexperienced users.



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RORY NAGLE-RUNCIMAN

CORAL CRADLE

The Coral Cradle is a coral restoration system that, in comparison to other existing solutions, allows coral to be re-introduced into an ocean environment in a far more efficient and time-effective way.

Coral reefs are significantly under threat. It became clear during research that there are many organisations attempting to solve this issue and prevent the degradation of coral reefs through new propagation techniques and research into isolating climate resistant coral strands. An area that clearly lacked attention and stability was the methodologies used in “re-planting” corals once they had been successfully propagated and grown.

Through it’s unique design and accessible manufacturing process, the Coral Cradle will be able to bridge this gap, and acheive change where change is needed.

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YUKI SUGIMURA

OSCAR

Oscar is an affordable solution of man overboard (MOB) detection system with passive motion sensors that detect human falling into the sea from cruise ships, and alarm software which sends a notification to the bridge and the other crews. It could eliminate any time loss from the incident and ultimately increase the survival rate of the MOB.

While the other existing MOB detection systems rely on a thermal image analysis which is extremely expensive and has a high chance of malfunction, Oscar uses radio wave Doppler sensor. This approach is so promising and reliable in such extreme conditions because there are no moving parts or lenses to break; just tiny sand on the board that could penetrate the protections and accurately track the people falling.

Besides, Oscar could utilise the pre-installed CCTV instead of dedicated cameras for the crews to visually confirm the MOB to minimise false alarms.



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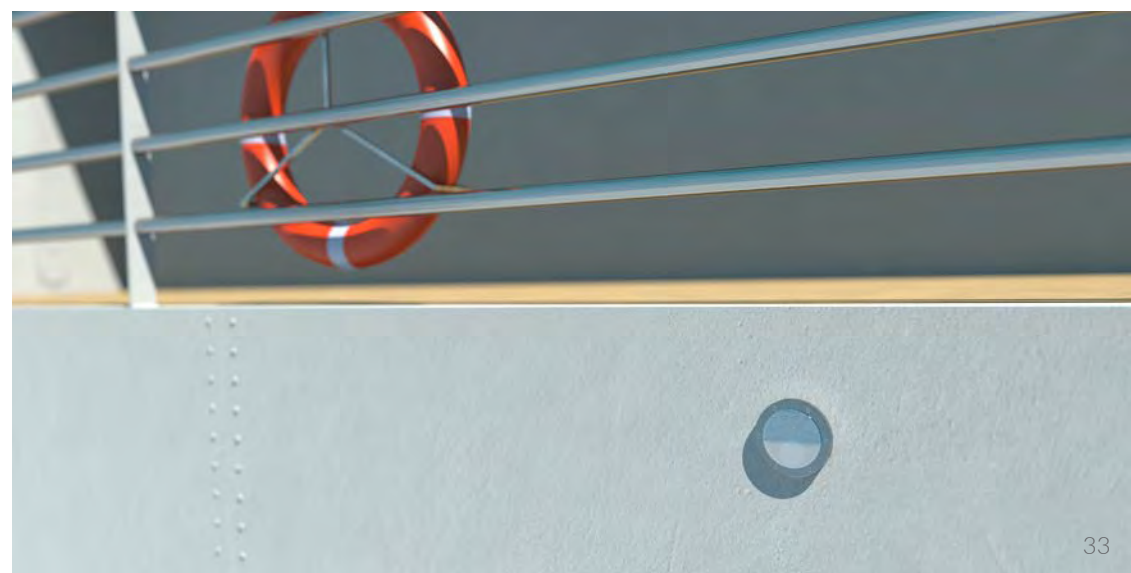
WELLFORMER

The Wellformer is a design solution that seeks to improve the most salient issues related to the rehabilitation processes of recovering from a high-grade Anterior Cruciate Ligament injury.

Lack of motivation and diligence in regard to performing prescribed rehabilitation exercises can often be detrimental for injured individuals in the long-term.

As such, this product provides a controlled, and safe 'tool', whereby users can perform said-exercises with reduced anxiety and strain. With the ability to closely monitor progress of patients, physiotherapists can adjust and modify exercises based on information provided through a specialised app.

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sound
drop



CELINE VU

SOUND DROP

Sound Drop is a sensory music kit that allows children with Rett Syndrome (RTT) and on the spectrum of Autism (ASD) to create music using their own body movements. It also encourages children to build up their independence while having fun. This kit comes with an interactive speaker, two sensor wristbands and a wireless charger.

Most children with RTT and ASD have difficulties learning and picking up certain skills which can lead to meltdowns. With the Sound Drop, it involves music which has been popularly used as a form of therapy for children, especially to help them convey their thoughts and emotions.



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JOHN WALSH

GLOVEIT

Gloveit: A surgical gloving system designed to simplify application and decrease the risk of surgical site infections.

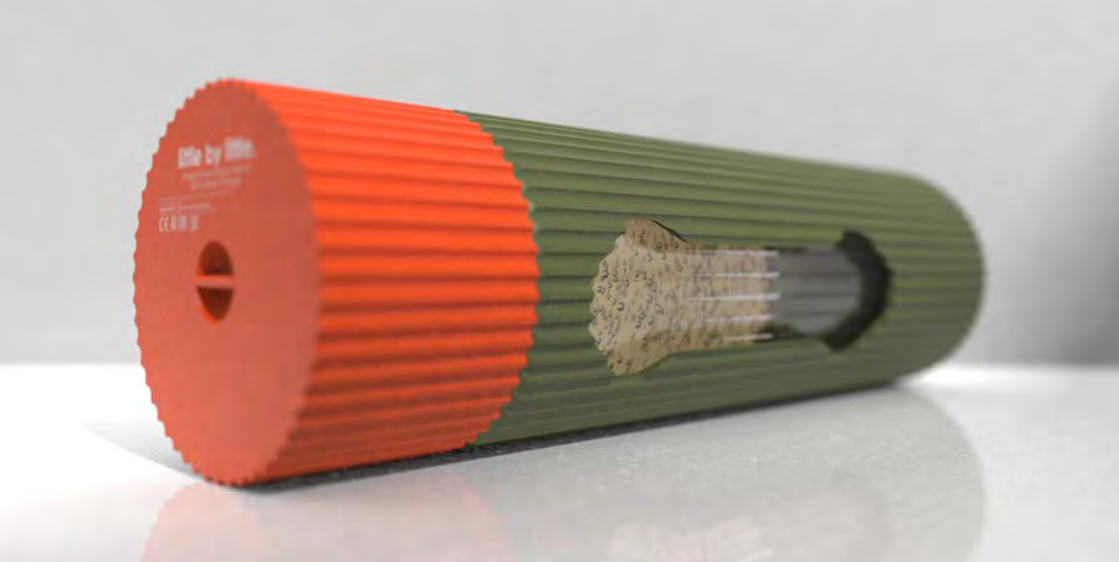
The touchless device allows theatre staff to insert their hands into gloves without contacting the exterior or exposure to contaminants prior to entering the surgical field.

The system begins in the manufacturing process and packaging of gloves and returns reusable components back to manufacturing. This system is far more ecologically sustainable and economically viable than current surgical packing and deployment. Detailed explanations can be found at the end of my process journal and in the design specifications.



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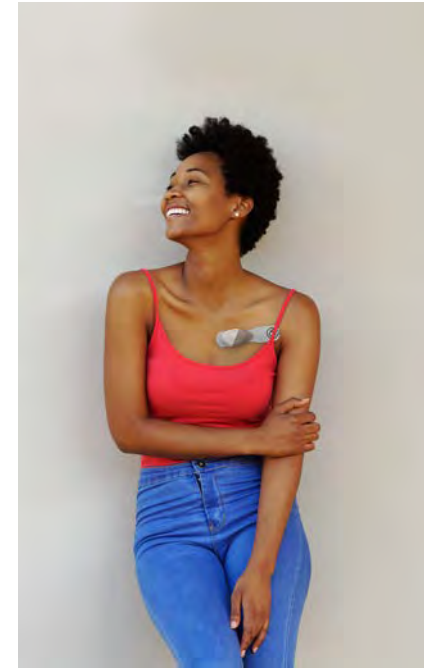
SARAH YERIKO

WAVELENGTH ONE

A modern take on the Holter monitor

For patients with abnormal heart rhythms, medical professionals will prescribe a device called a Holter monitor that will record a patient's heartbeat for several days at a time. Its non-invasive nature allows physicians to prescribe it more freely to suspecting patients. However, due to its accuracy and product ergonomics leaves much to be desired.

Wavelength One is a realistic take on reimagining the Holter with up to date technologies and improved comfortability. This is done by identifying the pain points in a Holter and designing around it. It incorporates technologies as recently invented as 2014, a few aspects of IOT and a medical emergency contact button only available to patients who share symptoms of riskier types of abnormal heart rhythms. Sizes of its internal components, distribution channels and price points are also taken into account within this project.



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MURRAY WHITESIDE

LITTLE BY LITTLE

Rapid Haemostatic Device

Little by little is a rapid haemostatic device designed to achieve haemostasis in puncture wounds on parts of the body where other treatments lack, namely the truncal region of the body as tourniquets cannot be used here. A puncture wound is incredibly difficult to treat as there is a trail of damage, often tearing through muscle tissue, ligaments, tendons, organs and rupturing blood vessels.

If a main artery is ruptured a patient can bleed out in less than a minute. Little by little achieves haemostasis within 30 seconds by redesigning the application of haemostatic agents into a wound. It is a single use, spring loaded syringe that administers the haemostatic agent, a gel consistency, into a puncture wound. It can be done single handily and can be self-administered.

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