: Melbourne

Tikkun Olam Makers

SWINBURNE

DESIGN FACTORY MELBOURNE

TOM @ UNIVERSITY

PHASE 1 REPORT 2019

TOMMELBOURNE.ORG
















CONTENTS

WHO ARE WE

TOM : Melbourne

Tikkun Olam Makers

We create and build products that improve the lives of people with a disability, where there is no obvious or current solution in the market. We focus on making assistive technology more accessible and affordable for people with complex needs.

We work with people with a disability who have a specific need, "Need-Knowers", and connect them with a diverse group of professionals, including engineers, industrial designers, health professionals and tradespeople, "Makers".

Together, they design and build products that solve a complex problem and improve the everyday life of the Need-Knower. Recent prorotypes include robotic arms, powered crutches, wheelchair wheel cleaners and bespoke exercise machines. The intellectual property for every product is then shared through open-source Digital Product Files, so others can replicate or iterate it in their own communities around the world.

We focus on making assistive technology more accessible and affordable for people with complex needs.

Since 2016, TOM: Melbourne has developed a range of programs, including holding Makeathon events, building a developer network, establishing TOM @ University and offering STEM workshops in schools.

TOM: Melbourne has seen some great impact so far. We've helped 50 people with a disability, created a network of over 425 "Makers" and partnered with innovative organisations, such as Swinburne University of Technology, PwC and Solve Disability Solutions.


little diff-ent!


TEAM JOANNE

TOM @ UNIVERSITY

Building on shared values of design, innovation and inclusion, TOM: Melbourne and Swinburne University of Technology successfully piloted the first ever TOM @ University program in 2018/2019. TOM @ University is the first of its kind in Australia - combining the TOM process, where teams of Makers and Need-Knowers create extremely affordable assistive technology solutions for the daily challenges of people living with disabilities, together with interdisciplinary, human-centred design and engineering curriculum.

TOM @ University is broken down into two stages, the prototyping stage held at the Design Factory Melbourne (DFM) followed by the productising stage within the Product Design Engineering capstone projects (PDE).

In addition to the development of unique assistive technology products, students also develop Digital Product Files, allowing the solutions to be digitised and uploaded to the TOM web platform for distribution and replication around the world.

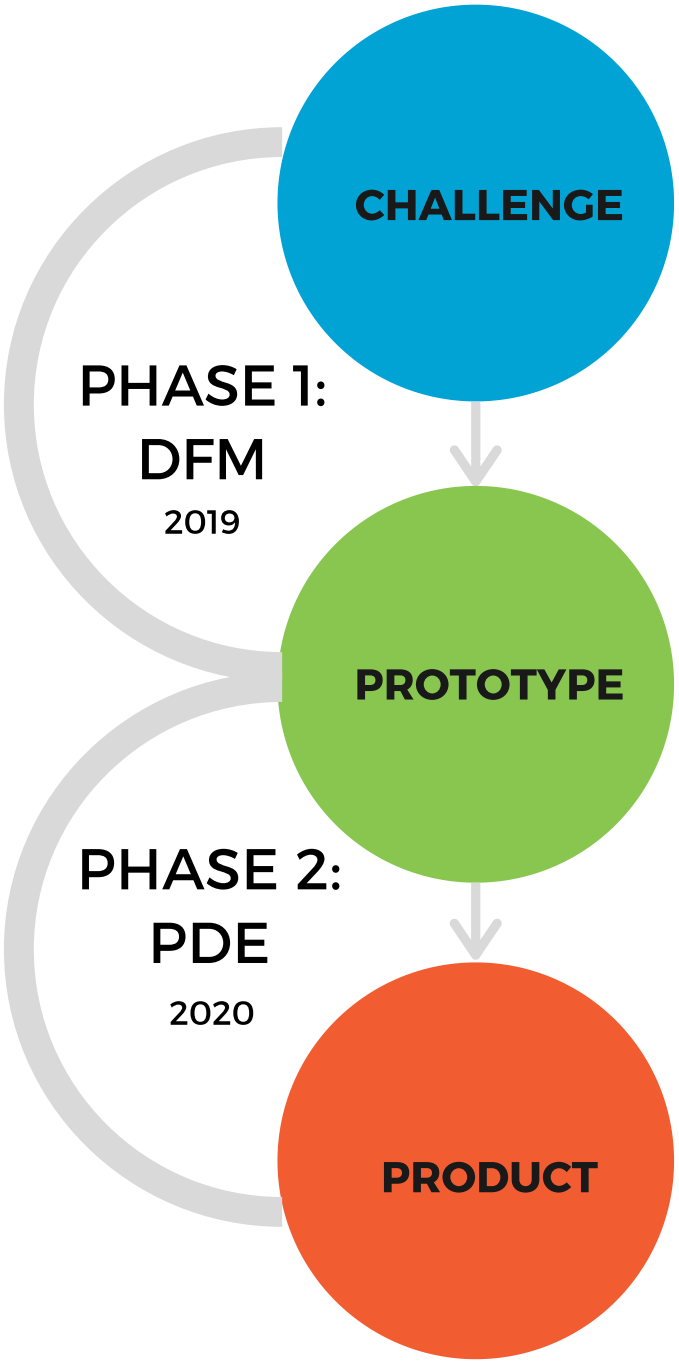
TOM @ UNIVERSITY HAS MADE ME WANT TO CONTINUE DOING SOCIAL IMPACT PROJECTS LIKE THIS ONCE I LEAVE SWINBURNE AS A GRADUATE

TIFFANY REASBECK

MASTER OF DESIGN STUDENT, TEAM JOHN

PROCESS

TOM @ University is broken down into three distinct stages: challenge, prototype and product. TOM: Melbourne in partnership with Swinburne University of Technology's Design Factory Melbourne and Product Design Engineering Department work together to reflect this process.



TOM: Melbourne together with a multidisciplinary committee from Occupational Therapy, Engineering and Design faculty's within Swinburne University of Technology, select daily challenges faced by people with lived experience of a disability for the TOM @ University program.

The prototyping stage held at the Design Factory Melbourne (DFM), sees Need-Knowers work alongside teams of Design and Occupational Therapy students to create functional prototypes. This involved 4 Need-Knowers and 6 teams.

The productising stage sees Product Design Engineering develop both a Digital Product File and a refined physical product based upon the prototypes and reports provided by the Design Factory Melbourne students and Need-Knowers.

PHASE 1

DESIGN FACTORY MELBOURNE

As a key pillar in the Swinburne Innovation Precinct, Design Factory Melbourne provides an interdisciplinary platform for industry-engaged research. It brings end-users, students, researchers and industry together in early stage product and service development, to experiment with concepts and their potential value.

The first twelve weeks of the project involved the Design Factory Melbourne where Master of Occupational Therapy students work alongside Design Honours and Masters students to create prototypes for 4 unique challenges provided by TOM: Melbourne.

Prototypes from the DFM program were documented by the students and presented as design demonstrators or working models, with a focus on the value these design solutions provide to the Need-Knowers.

THE STUDENTS HAVE A FAIRLY UNIQUE OPPORTUNITY TO STEP AWAY THEIR BOOKS AND STEP INTO SOMEONES LIFE.

MARY HENLEY-COLLOPY

TOM @ UNIVERSITY NEED-KNOWER

Phase 1 Dates:
1st August 2019 - 1st November 2019


• Asking any questions
• Getting to know each other!
• Discussion time
• Use this hour to make the most of the valuable time you have with each other!

TEAM JACK

POOL AID

CHALLENGE

Jack is a young man of 19 with multiple disabilities including Spinal Muscular Atrophy, Autism Spectrum Disorder, Intellectual Disability as well as having his right hip removed aged 14 due to sepsis. The challenge for Jack and his therapists is that Jack struggles to hold himself upright when in the pool, and requires the exercise physiotherapist to physically support his body. This compromises the exercises Jack can do in the pool and as such his pool exercise sessions suffer. Jack and his physiotherapist would like a solution that helps Jack support his body in the water independently while allowing the exercise physiotherapist to perform the exercises with Jack.

SOLUTION

Jack's teams have created a modular and flexible system to enable Jack to participate in hydrotherapy without the assistance of multiple therapists. Team 'Lasercutterz' focused on creating a pillow with in built neck support and an anchor system that ensures that Jack remains secure in a supine (horizontal) position in the pool. Team 'Double Destiny Design' developed a customised and modular wetsuit (AKA the Jacksuit) which contains several pockets for foam, helping to define Jack's buoyancy in the water, as well as large zips that make putting on the Jacksuit simple and easy! Together both teams' solution integrate to form a unified system for Jack!

TEAM MARY

CPAP MASK APPLICATOR

CHALLENGE

Mary Henley-Collopy is a 57 year old woman living with the effects of Thalidomide, resulting in quadruple shortened limbs (from birth). In addition, Mary has moderate/severe obstructive sleep apnea first diagnosed over 25 years ago. Mary has been sleep-deprived for over 25 years due to her inability to independently use a CPAP mask. Mary has no 'reach' beyond her right ear and no reach on her left side due to her fore-shortened upper limbs. Mary is unable to place the headstraps of any standard commercially available mask onto her head. Mary would like to have her sleep restored to regain strength from the overwhelming and relentless fatigue she experiences on a daily basis.

SOLUTION

Team Mary have created a weighted system to allow her to independently use her CPAP mask. When Mary engages the button, with her foot, the storage box opens and when she places her head on the box the swinging arms raise up to fit and secure the mask around Mary's head. After further development this prototype will allow Mary to have her sleep restored and regain strength throughout the day.

TEAM LOU

PICK UP DEVICE

CHALLENGE

Lou Ellen Deyzel is a 54 year old woman living with Neuromyelitis Optica, a rare disease that causes damage to motor and sensory neurons in the spinal cord. Lou's spinal cord is damaged from C4 downwards leading to blindness in her left eye and problems using her arms. Lou also has arthritis in both hands and has trouble feeling them making holding things or picking things up extremely difficult. As a result, Lou is an electric wheelchair user that would like a solution to help her pick things up off the floor, as most pick up sticks on the market are simplistic and lack the dexterity to pick up small objects such as coins as well as wider objects.

SOLUTION

Lou's teams have created two unique prototype solutions. Team 'Innov8tors' designed a 3 claw grip system that will allow her to pick up a range of items off the floor, while Team 'Designudden'sclaw' inspired prototype is interfaced with an extendable suction cup, magnetic flippers, a silicon grip and a leg lifter so Lou can pick up items and also lift and move her leg when required.

TEAM JOHN

QUAD AMPUTEE DOG LEAD

CHALLENGE

John is a 55 year-old Quadruple Amputee, wheelchair user and new puppy owner! John is looking for an easy and manageable solution to putting on a dog lead. Traditional dog leads that use a spring loaded clip or clasp attached to a collar are not suitable for John. As such, John would like a system that enables him to safely, securely and independently operate a dog lead.

SOLUTION

Team John created a two-part prototype solution that will allow him to take his puppy for a walk! The solution consists of a retractable dog lead attached to his wheelchair and a dog walking harness interfaced with magnetic V-Buckle's that John can operate independently.

DESIGN FACTORY MELBOURNE STAFF

PARIS TRIANTIS

LECTURER

RAVI BESSABAVA

PROTOTYPING COACH

ANNE PRINCE

UNIT COORDINATOR

PAULIINA MATTILA

COACH LECTURER AND STRATEGIST

ANGELA PYE

RESEARCH & DEVELOPMENT STRATEGY

ANNE WILLIAMS

ACADEMIC OCCUPATIONAL THER

”What makes TOM @ University so great is that we’re working with real people with real challenges and we’re co-designing with them rather than using a hypothetical brief.”

PARIS TRIANTIS

TOM @ UNIVERSITY LECTURER

”What is most exciting about this project is that the students are working on real world solutions with Need-Knower’s to develop physical outcomes to benefit their lives”

RAVI BESSABAVA

PROTOTYPING COACH

”Where there has been an obstacle, they have been able to overcome it.”

PAULIINA MATTILA

COACH LECTURER AND STRATEGIST

PHASE 2

PRODUCT DESIGN ENGINEERING

Phase 2 of TOM @ University will involve Product Design Engineering students. The students will develop both a digital product file and a refined physical product based upon the prototypes and reports provided by the Design Factory Melbourne teams.

The product design engineering students have a unique skill set that will enable them to design innovative and sustainable products. The students are specifically trained to blend industrial design and engineering, linking the creativity and human-centred approach of industrial design with the academic rigour of engineering science, material and manufacturing process selection, project management and innovation.

The students will engage in the projects as part of their 4th year capstone project. They will follow a framework that supports innovative and detailed product development underpinned by robust research and project management processes.

The projects will span over a 9-month period where they will work closely with their Need-Knower to develop a quality TOM product and a Digital Product File.

Phase 2 Dates:
2nd March 2020 - 1st November 2020


Asking any questions
Getting to know each other!
Discussion time
Use this hour to make the most of the valuable time you have with each other!


Use this hour to make the most of the
time you have with each other!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SWINBURNE

Product Design Engineering

Onemda

THE TOM GLOBAL COMMUNITY

The global movement is made up of local TOM Communities, which create and disseminate affordable solutions while working collaboratively towards our moonshot goal to help 250,000,000 people. While we share the same mission, values and process, we always consider the Australian context in how we go about our work.

Click here to visit the global web-platform and see more about how this vision is being achieved:

Tikkun Olam Makers