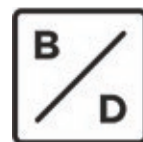




I am a designer irretrievably lost to the pursuit of creation, invention and problem-solving. My projects contain and often combine elements of digital fabrication, traditional fabrication, electronics and programming. A fascination with human nature, technology and the future drives me to create thoughtful products that awaken the imagination.

Troy Baverstock



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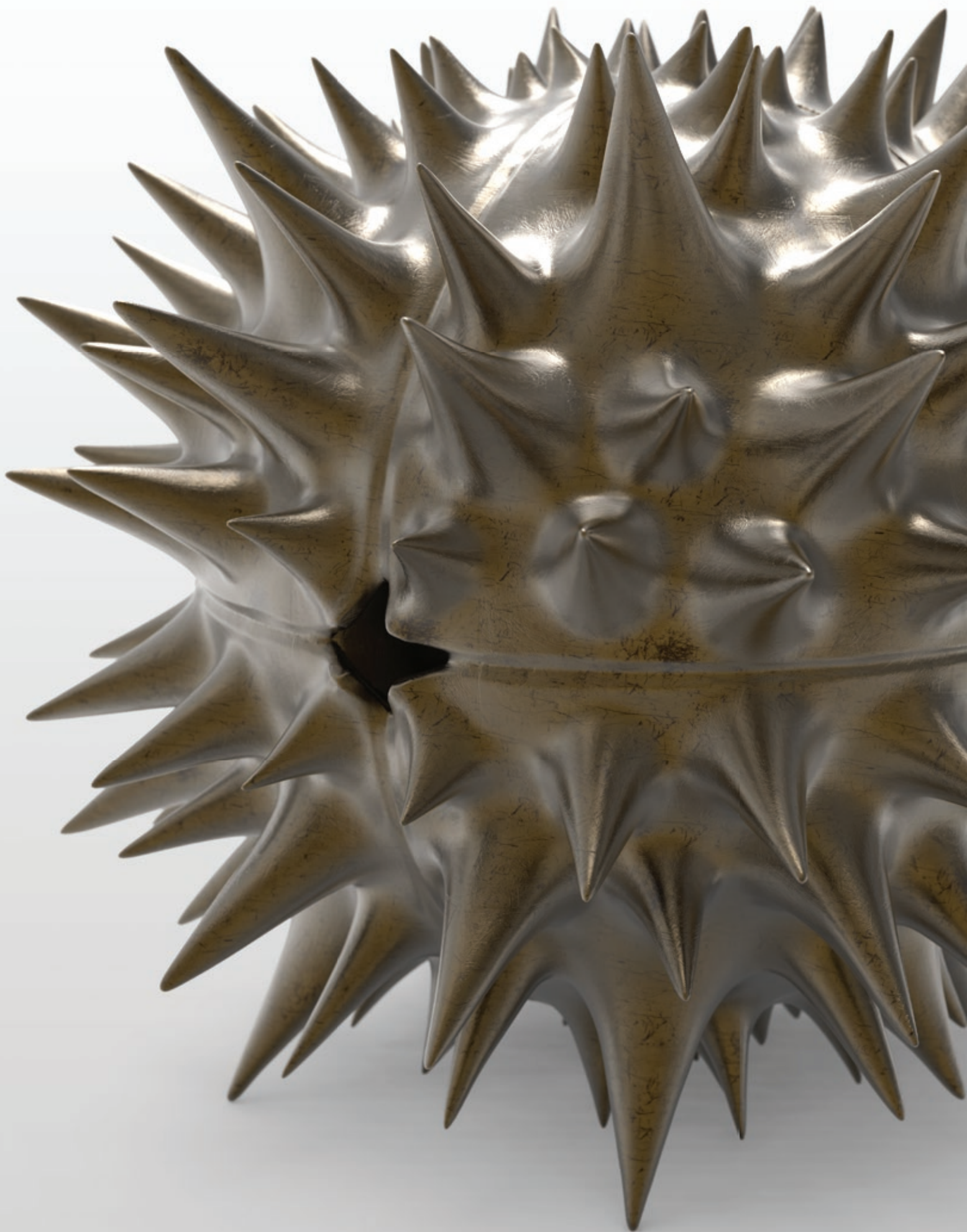


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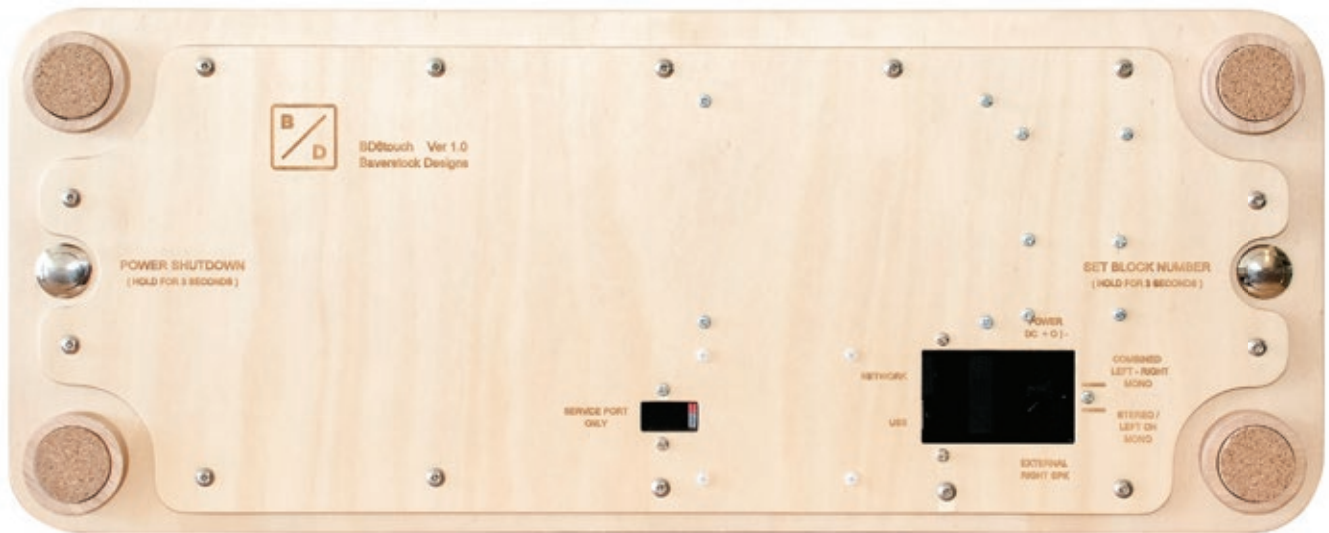
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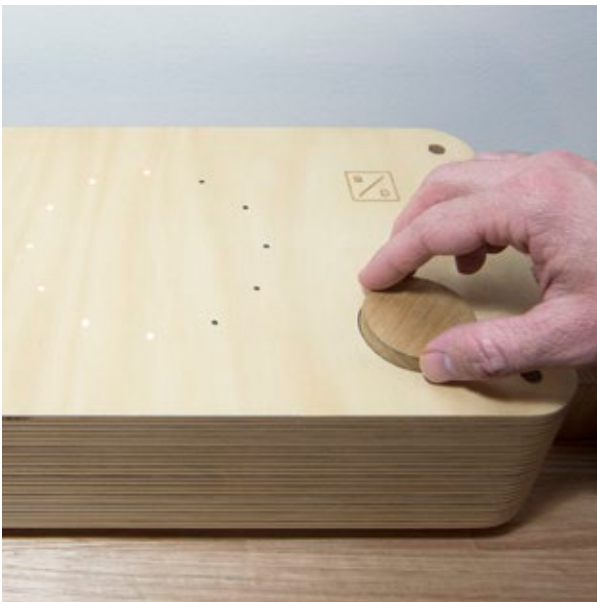
DATE - Oct, 2016
SOFTWARE - Solidworks, Illustrator, programming (C & Python)
HARDWARE - Laser cutter, CNC router, 3D printer, electronics

BD6touch is a minimalist wooden music player that invites a tactile user experience through a series of interactive wooden blocks. Seeking to recapture the tactile charm of vinyl records, placing a block on the player reveals the music contained within; while lifting and replacing the block changes tracks akin to the action of a record needle. Up to twelve programmable blocks can summon any number of music tracks from local and network files, internet radio stations or Spotify playlists. With the convenience of internet music streaming and the ability to play high definition lossless audio, BD6touch can satisfy our modern music demands in a simple and intuitive way.



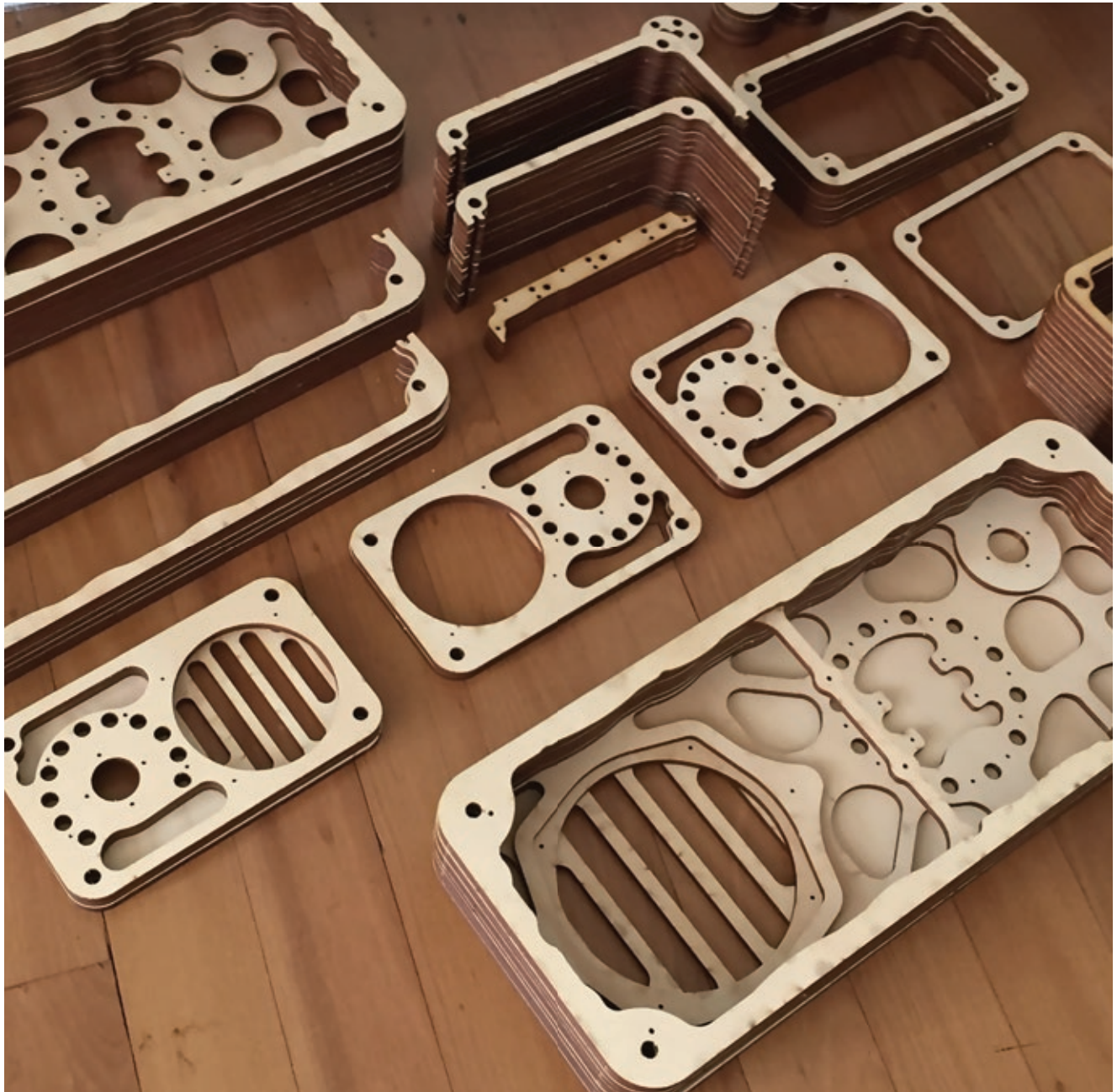
The player's top surface has a clean, simple appearance and a hand-rubbed wax finish. It contains one speaker on the left, a ring of 12 flush mounted lights in the centre and a single wooden volume dial on the right. The bottom of the player

houses the power button; SD card slot for upgrade purposes; network port as an alternative to the inbuilt wifi; USB socket for local music files; power connection; additional speaker output for optional stereo and a button for programming the blocks.



The speaker grill is influenced by radii of the past and makes use of discontinued upholstery samples. Oak music blocks are weighted to give a sensation of correct orientation and are laser etched with symbols or imagery for discrimination.

Turning the wooden dial increases the volume, indicated by the illuminated light ring. To play music simply place a block within the centre of the light ring; to stop, remove the block; to change tracks, momentarily lift the block and replace.



The enclosure is constructed from multiple stacked layers of laser cut plywood that are glued together and sanded down to a silky smooth finish. Material wastage is minimised by nesting other designs such as the smaller BD4simple dementia player

seen above, within the BD6touch pattern also seen above. The Australian plantation grown hoop pine plywood is sourced from a local manufacturer who focuses on waste minimisation, low formaldehyde levels and responsible chain of custody.



Of the 13 stacked layers, nine are unique and serve different functional purposes. The top layers form an inner web-like structure, adding rigidity without bulk to maximise the internal volume for speaker performance. Undulating interior walls reduce

undesirable internal acoustic reflections. The four exposed oak fixing dowels, CNC routed oak feet and volume knob provide a visual contrast to break up the plywood repetition. 3D printed parts secure the electronics and various connections.



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3D PRINTING
INDUSTRY

DATE - Jun, 2014
SOFTWARE - Solidworks, programming (C), Photoshop
HARDWARE - 3D printer, electronics

limbU is a 3D printed device that enhances traditional prosthetic limbs by transforming their utilitarian appearance and function into a smart, bluetooth-connected wearable device. limbU contains a personal activity tracker, speaker system, phone charger and medical diagnostic tool, along with interchangeable aesthetic covers. Sensors in limbU track a range of activity and environmental metrics which can aid physicians in the rehabilitation of wearers by tracking the limb's orientation and movement, thereby minimising potential problems with fit, adaptation and recovery. limbU seeks to redefine a wearer's relationship with their limb through co-creation and personalisation of its form and function.



The limbU prototypes are constructed from 3D printed ABS plastic treated with acetone vapor to smooth and strengthen the surface. The colour and pattern of the inner lighting is user controllable and affords unique opportunities for individual



expression, style, interaction and fashion. limbU has appeared in galleries in Queensland, Philadelphia and Hong Kong; print and online articles; radio segments; and television and poster advertisements for Griffith University.



limbU is an attachment for existing prosthetic legs, offering new forms of expression and functions to enhance modern life. The colour, finish, functions and interchangeable aesthetic covers are co-created with the wearer to encourage a sense of

ownership and individuality. limbU was designed not only to benefit the wearer but also to alter the perception of prosthetic limbs in the greater community, fostering an open dialogue of interest, familiarity and acceptance.



limbU contains stereo bluetooth speakers for listening to music, videos and audio books around the home or in the car. A USB charger for mobile phones, tablets, cameras and other devices keeps them powered up when you are out and about.



The aesthetic covers are physically and electrically secured with magnets for safety and easy removal. The covers can be changed at a moment's notice to suit the occasion and provide opportunities for additional sensors, lighting and other functions.



limbU functions are accessed via bluetooth. The personal app provides activity feedback including steps, distance and intensity; environment temperature, humidity and altitude; and control over the internal lighting. The limbU diagnostic

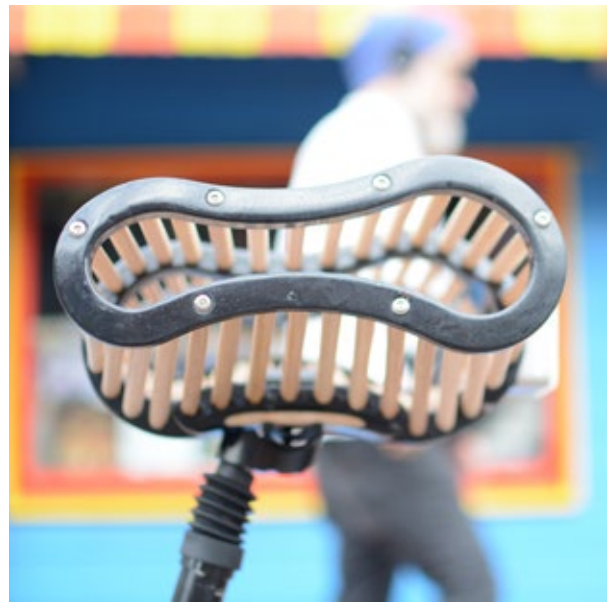
app for physicians tracks the orientation and movement of the limb in real-time, assisting with rehabilitation, check-ups and troubleshooting. The main body clamps around existing prosthetic legs while the battery pack is installed within its tube.





DATE - Oct, 2014
SOFTWARE - Solidworks, Keyshot, Photoshop
HARDWARE - 3D printer, electronics

Styx Saddles are ergonomic, noseless bicycle saddles designed to reduce the problematic pressures placed on the body by traditional saddles. The hybrid 3D printed and wooden rod construction allows for a wide range of customisation, accommodating personal anatomy and riding styles. Selecting the material of the printed frame, seat width, timber species and thickness of the rods allows the suspension, comfort, ergonomics and aesthetics of the saddle to be fine tuned. Accessories to complement the Styx Saddles include a magnetic smart light, adjustable gel cushioning modules and lockable storage pods. Customise, accessorise and personalise your ride with Styx Saddles.



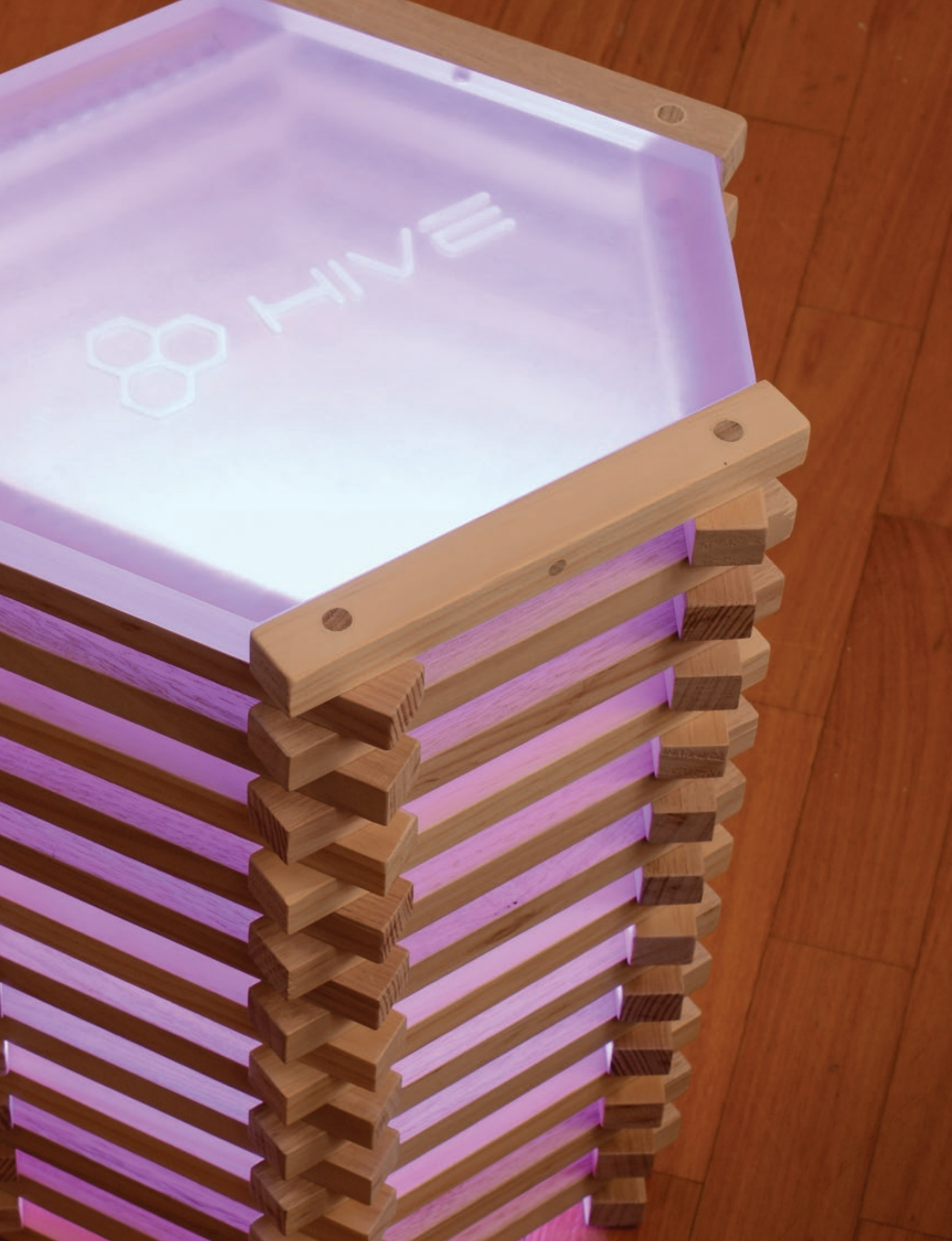
The Styx prototype is constructed from 54 oak dowels held in tension by three frames of 3D printed ABS plastic. The sweeping dowel underside of the saddle requires multiple insertion angles into the frames, making it difficult to produce with

injection moulding. 3D printing however is suited to this form and offers the use of various materials that can alter the suspension characteristics, facilitate tailored sizes for different riders and accommodate dowels of different thicknesses.



Styx was designed with a range of accessories such as lockable storage pods that sit within the saddle's inner voids. A magnetically attached rear light that automatically turns on when in place, intelligently becomes brighter in response to approaching

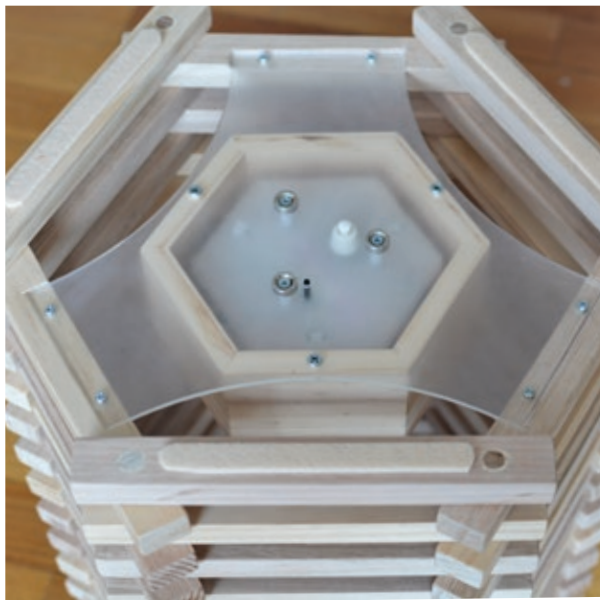
headlights, and flashes upon rapid deceleration to warn rear-approaching traffic. Gel modules available in a range of colours and densities allow riders who want additional cushioning to place them for best comfort and styling.





DATE - May, 2015
SOFTWARE - Solidworks, programming (C), Keyshot, Photoshop
HARDWARE - 3D printer, laser cutter, electronics

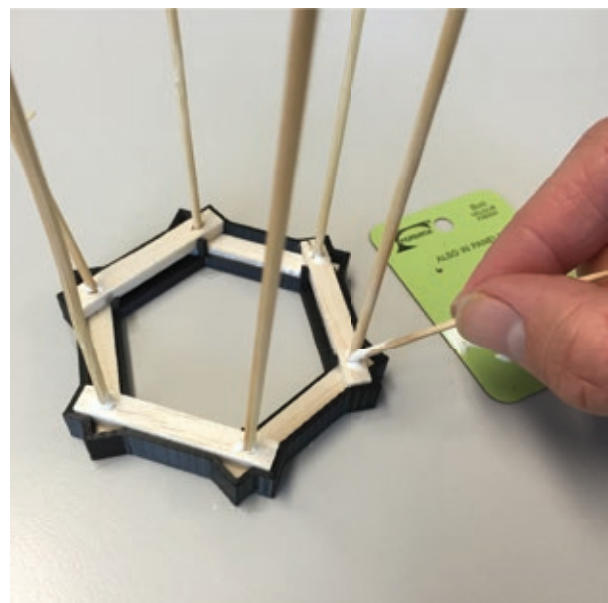
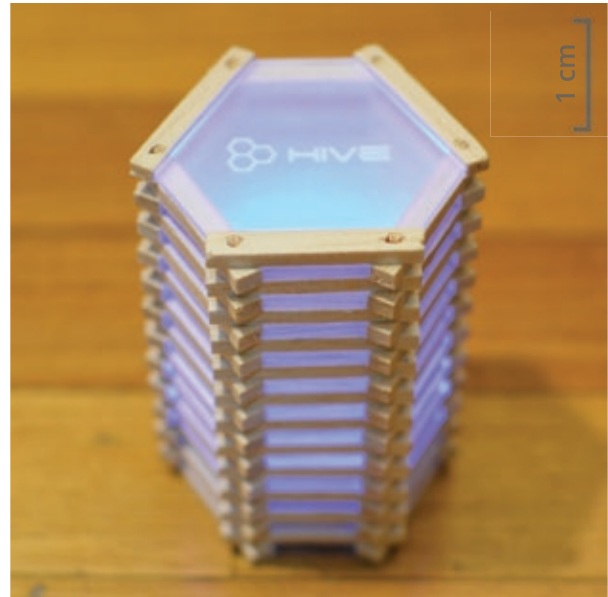
Hive is a smart stool for bars that detects occupancy, acts as a wireless food-ready beacon and adds general ambient lighting to a venue. Arrive at a bar and know which stools are taken at a glance as the interior lighting in hive signals how long it has remained unoccupied. Hive can be used in place of wireless food-ready beacons by signalling with colour and pattern when your food order is ready, or can aid service staff in locating your table. As ambient lighting, Hive stools can create a unique and ever changing atmosphere, including choreographed displays and per table colour themes.



The top of Hive is a solid acrylic slab with the logo CNC routed into the reverse side and secured in place by dowel locking pins. Turning the stool upside down at the end of the night automatically turns it off and exposes the magnetic charging

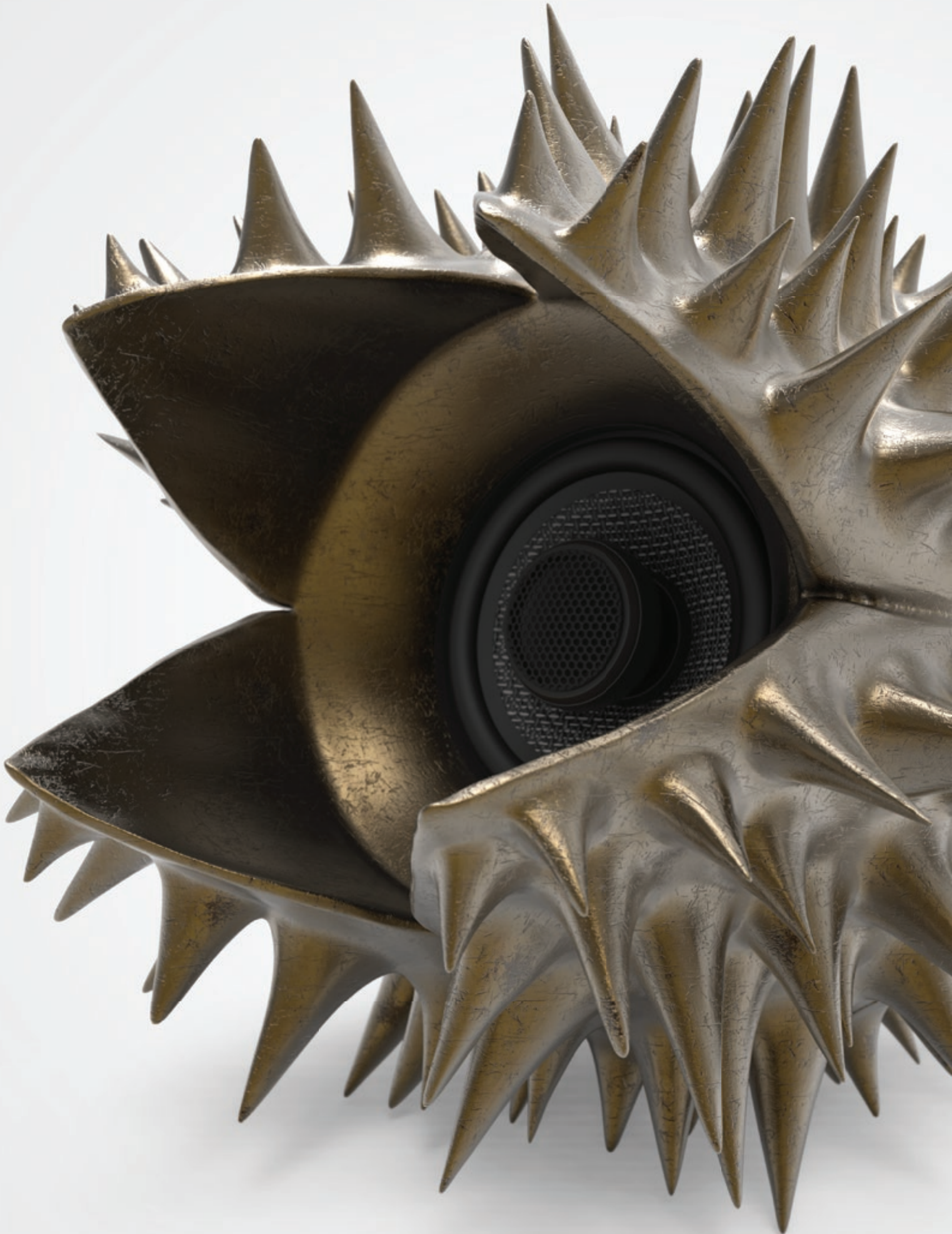


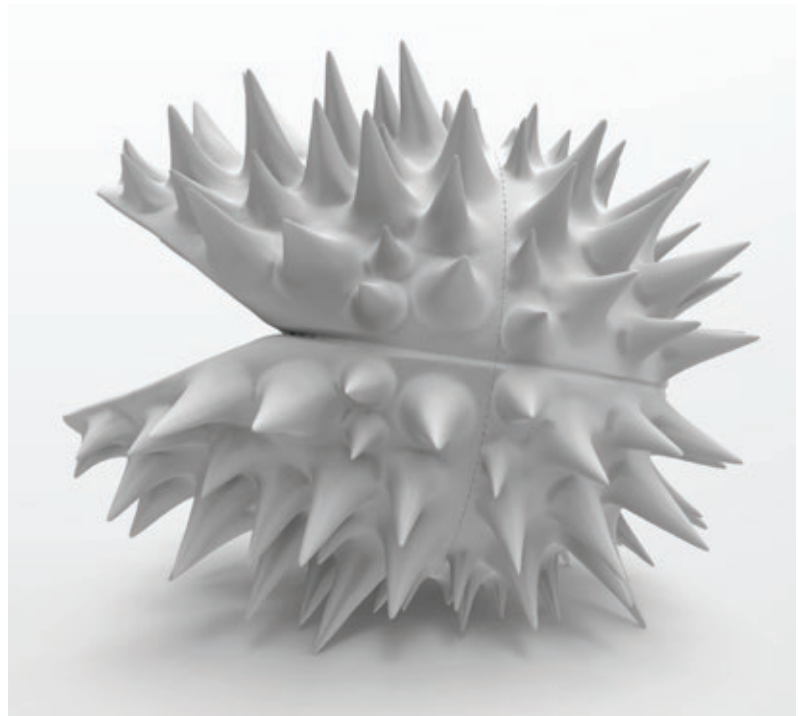
points for quick connection and disconnection. The charge controller, lighting, microcontroller, ambient light sensor for automatic dimming and contactless heat sensor for occupancy sensing are all housed within a central hexagonal enclosure.



The body of the stool is constructed from 72 alternating stacked pieces of wood in a hexagonal pattern. This repetition, in terms of manufacture, assembly and accumulating errors, benefited greatly from the use of 3D printed jigs that saved

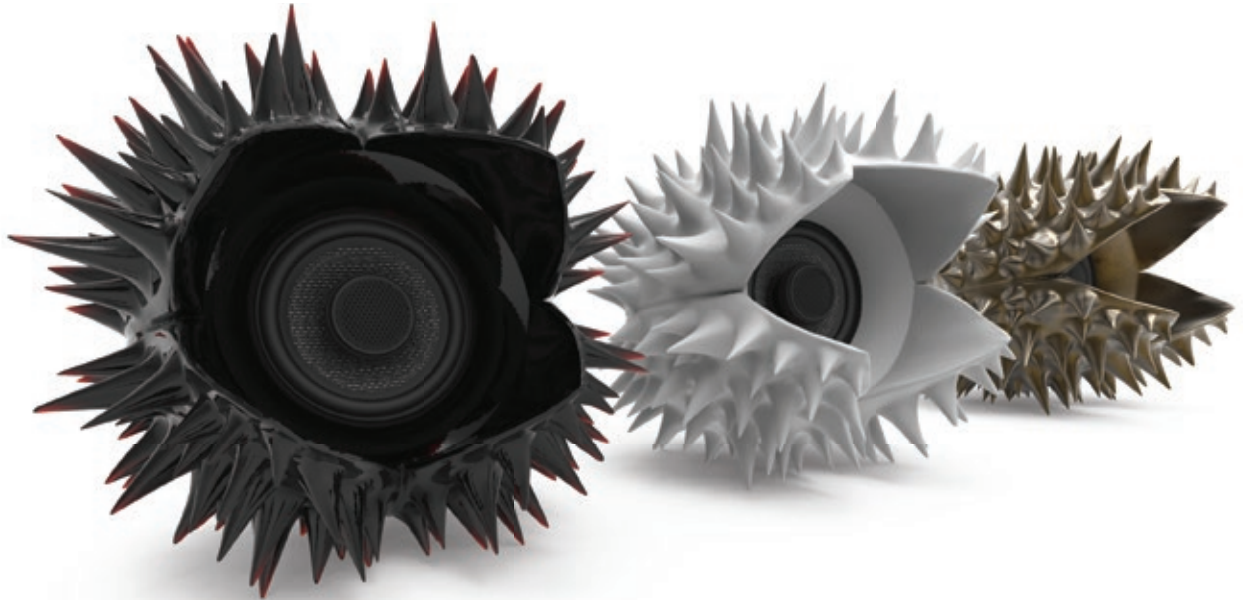
time, removed human error and eliminated the need for measuring and marking. Designing Hive first in CAD allowed the process of construction and jig use to be trialled on a scale model, then resized and repeated for the final stool.





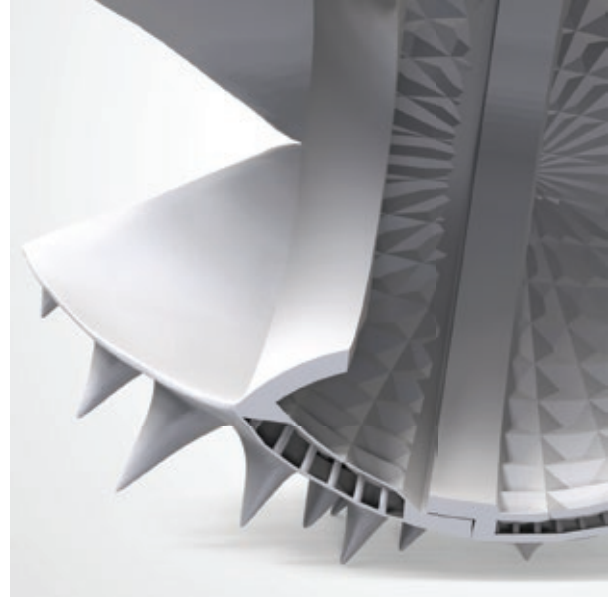
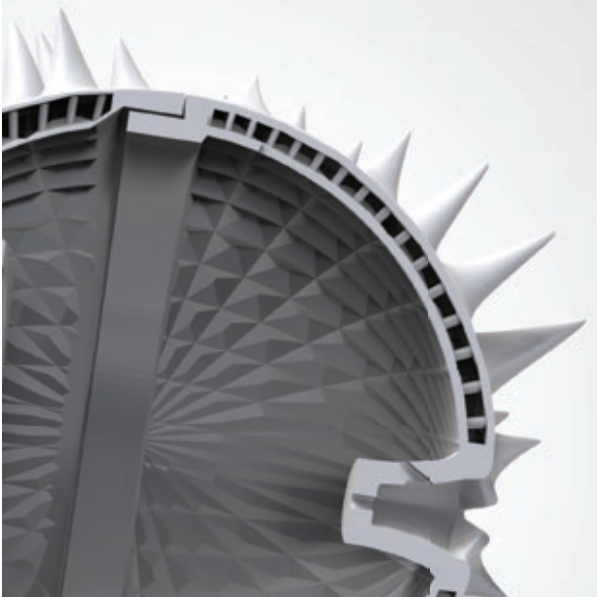
DATE - Feb, 2015
SOFTWARE - Mudbox, Sculptris, Solidworks, 3-matic, Meshmixer, Keyshot, Photoshop

Pod Audio is an organically sculpted speaker drawing influences from the Datura seed pod and the magnetically induced geometric patterns of ferrofluid. Recorded sound has the ability to fool our senses into hearing instruments and singers as though they were present before us, yet in reality this is an illusion, a neurological hallucination. This, like the potent hallucinogenic properties of the Datura seed (also known as Devil's Trumpet) can alter our subjective reality. Pod Audio is a bespoke statement piece whose internal and external geometry is suited to 3D printing in polymer and metal, or alternatively can be cast in resins.



The design of Pod Audio required a number of modelling packages, with the inner core designed in SolidWorks, the outer structure sculpted in Mudbox and Sculptris, and the resulting parts assembled in Meshmixer. Optimisations for 3D

printing were produced in 3-matic, the final renders and animations were composed in KeyShot and After Effects. The speaker itself can be scaled for production to suit drivers from 3 inch full range to 6.5 inch coaxials.



Pod Audio can be directly 3D printed in polymer and metal, or resin cast and cold cast in silicone moulds using a 3D printed pattern. To reduce material volume and save on related 3D printing costs, a double skin linked by hundreds of

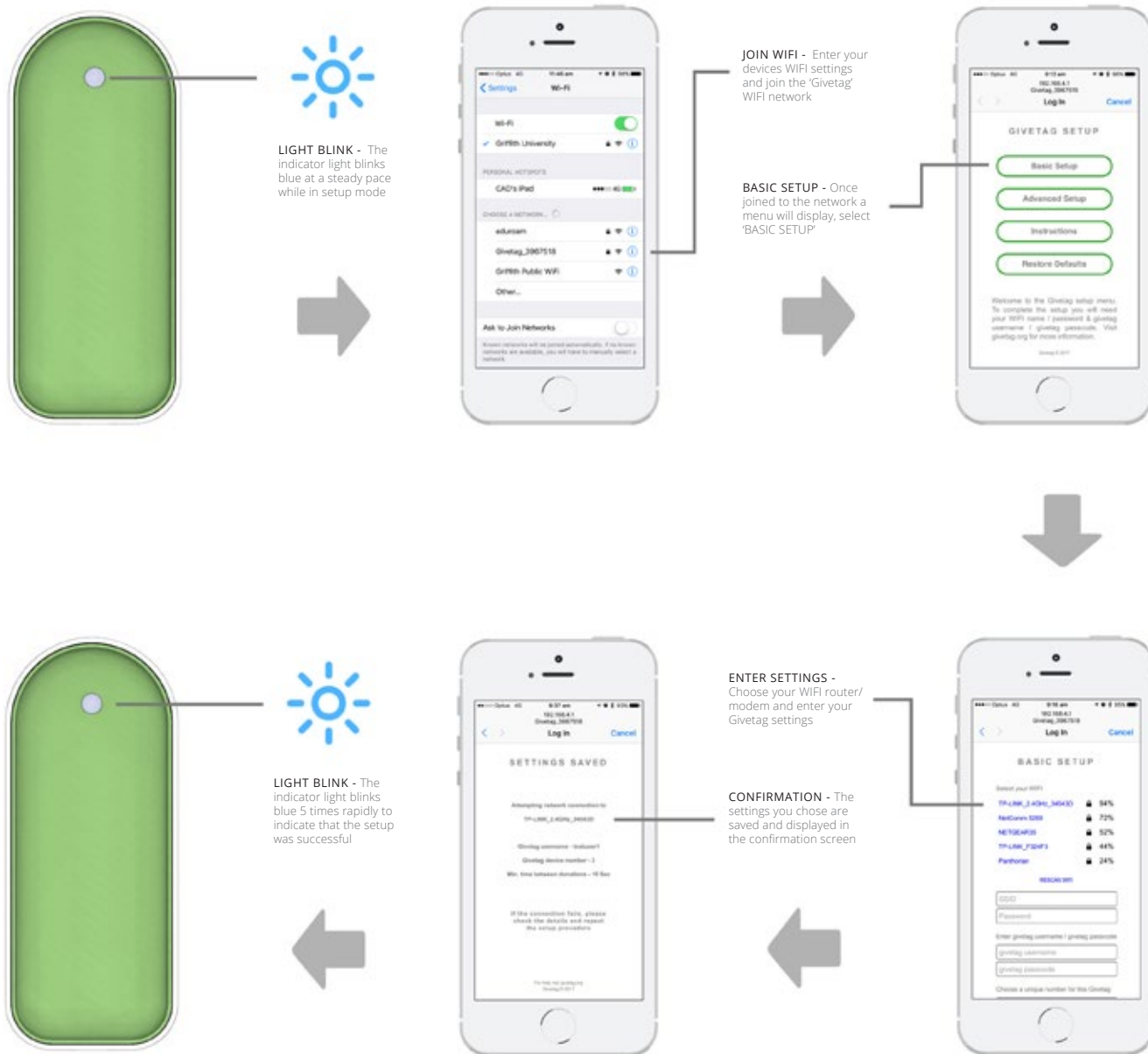
supporting pillars is employed, allowing the recapture of unused material from within the voids. Geometric patterns on the interior of Pod Audio are designed to reduce internal acoustic reflections that can adversely affect the sound.





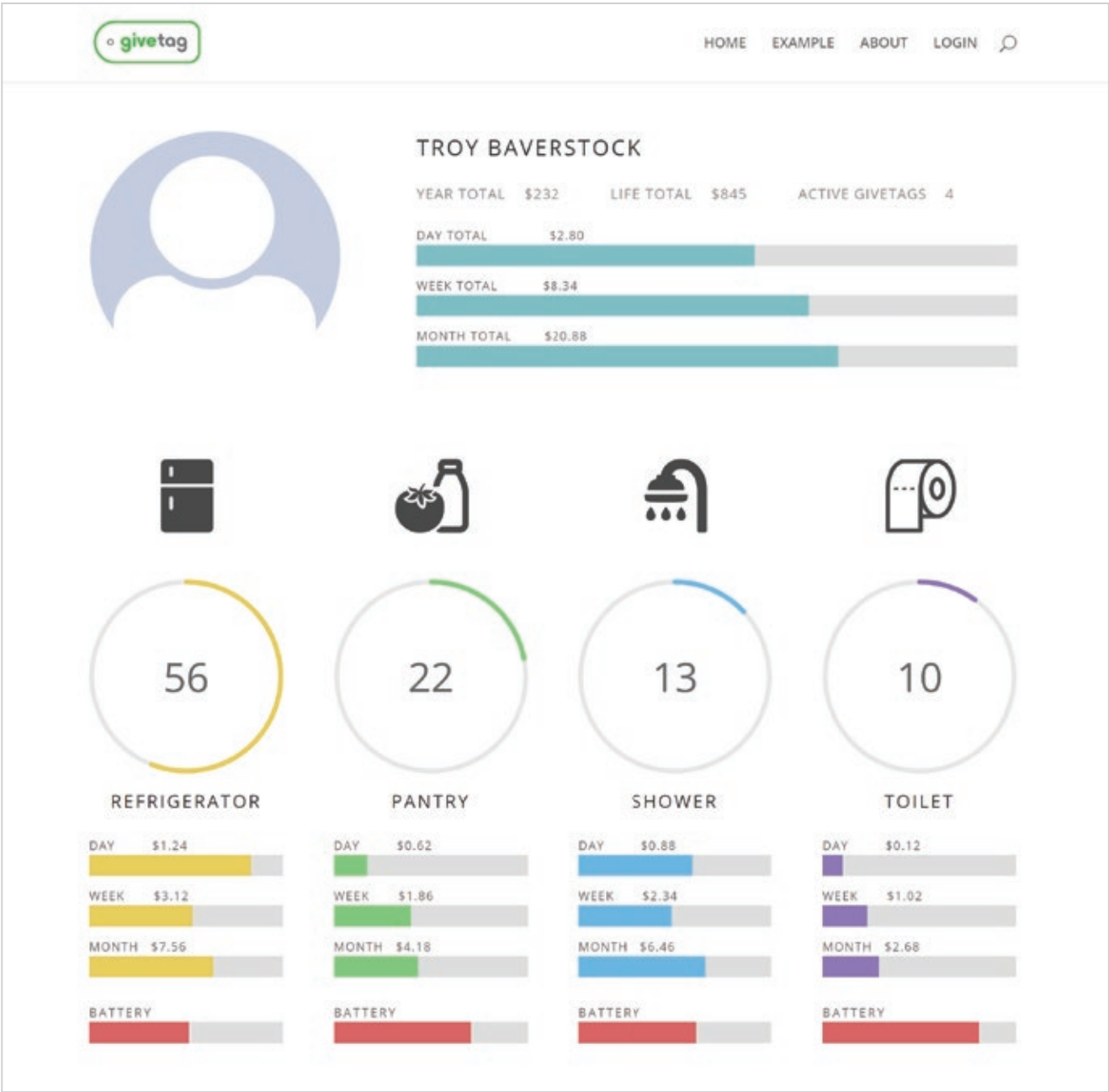
DATE - May, 2017
SOFTWARE - Solidworks, Keyshot, programming (C), programming (PHP), programming (MySQL), programming (HTML)
HARDWARE - 3D printer, electronics

Givetag is an internet-connected smart donation device that can be placed on doors, drawers and other movable objects around your home or business. Upon movement, Givetag makes a micro donation, of typically a few cents to a charity of your choice. A Givetag on a refrigerator door might donate to food-aid, one on the front door to homeless charities, while one on the toilet seat might support sanitary aid in developing countries. The choice of charity and donation amount are entirely within your control along with safety caps to limit your financial commitment. Givetag donations are related to your personal resource use rather than arbitrary monthly amounts and provide you with real-time awareness of your usage via the web platform and smartphone app.



Givetag requires connection to the internet through your existing wifi network. During the setup procedure, givetag creates a wifi hotspot you can connect to with your phone or computer. Following the setup screens you will be prompted

to select your wifi network, enter your password, name your Givetag and set a minimum time delay for valid repeat activations. Once successful, Givetag will indicate via its LED light that it is connected to the internet and ready for use.

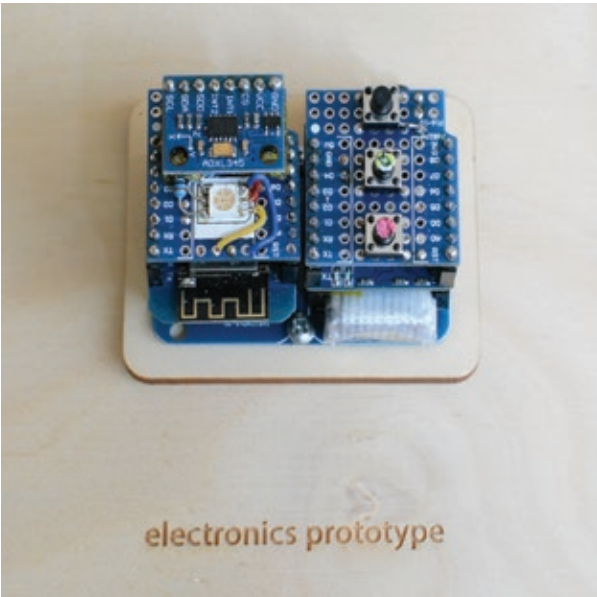


The web portal provides feedback on the active Givetags in your home or business, such as the tag's name or purpose; the number of weekly activations; the donation amounts for the day, week and month along with the current battery

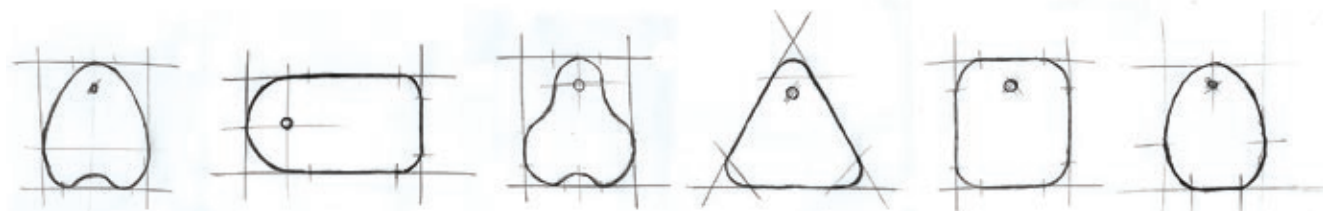
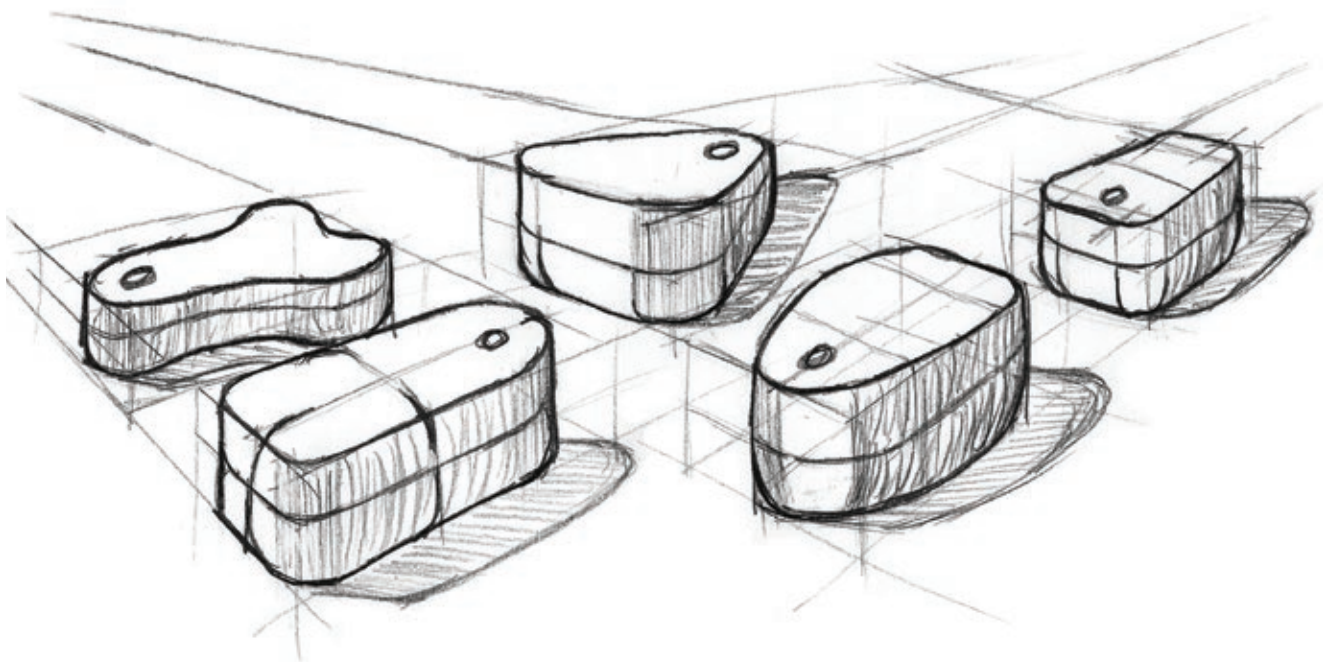
levels. Here you can also select your charities, set your donation amounts and see via the bar meters how close to your pre-set safety cap your donation totals are. Link to friend's accounts to share progress and inspire mutual philanthropy.



Givetag is constructed from four injection moulded plastic pieces, one pressed steel fixing plate (for adhesion to non-metallic surfaces), a custom circuit board, rechargeable battery and two screws. Two functional prototypes were produced,



programmed and tested with the Givetag web portal, website database and setup procedure. The first was a proof of concept utilising a base of modular electronics, the second a more compact unit with longer battery life and 3D printed casing.



The initial form of the Givetag concept passed through a number of permutations but quickly resolved around the practical constraints of the electronic components, with the goal of minimising size. The final development choice

seen on the previous pages hinged on the practical considerations of the tag's surface real estate available for charity promotional decals along with its overall shape being consistent with the Givetag logo (based on the classic gift tag shape).





DATE - Oct, 2013
SOFTWARE - Solidworks, Keyshot

Reclaim watches are a series of timepieces fashioned with reclaimed materials from obscure and often unexpected sources. These watches derive their value and appeal from the unique history of the materials used in their construction, predicated on the idea that an object's witnessed past gives rise to a sense of meaning, much like Hitler's pocket watch or Einstein's wrist watch have value far beyond their material worth. Materials sourced for these pieces range from the macabre to the sentimental, their true nature concealed, except for the unique webpage accessed from the QR code etched into the back plate of each watch.





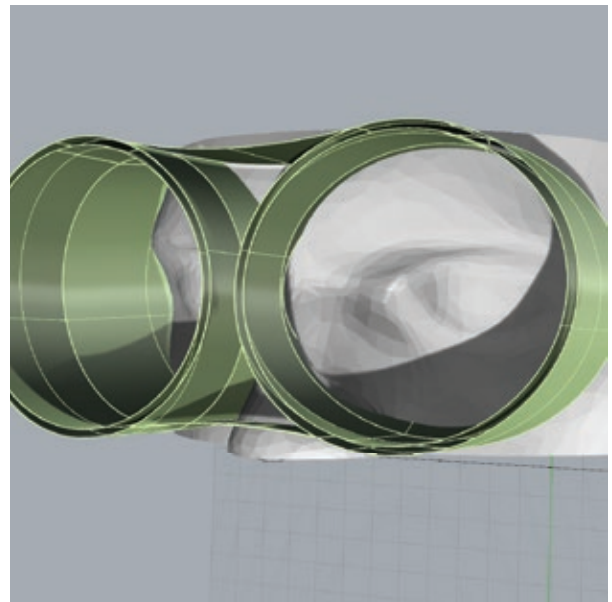
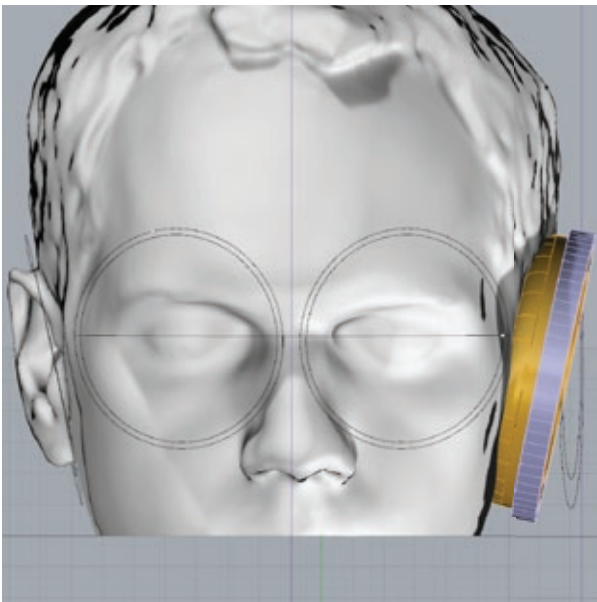
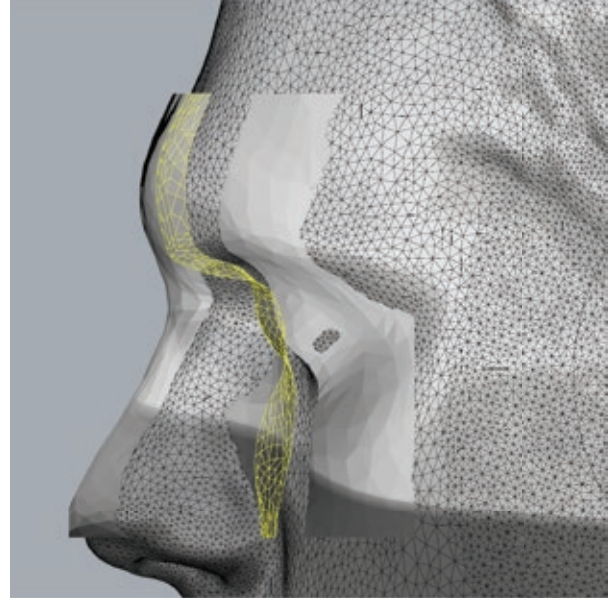
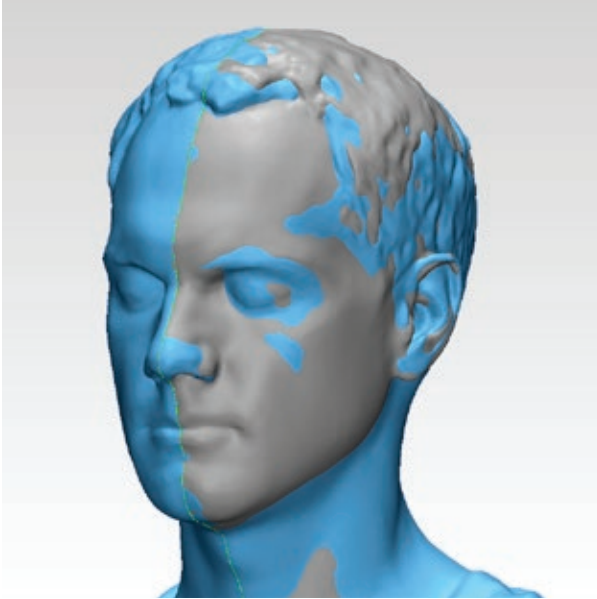
DATE - Oct, 2016
SOFTWARE - Rhino 3D, 3-matic, Artec Studio, Keyshot, Sculptris
HARDWARE - Artec Eva & Artec Spider 3D scanners

RamVR is a concept virtual reality headset customised to fit a individual's head, reducing wearer fatigue while increasing comfort. A user's head is first 3D scanned and the model adjusted to fit. Contoured goggles follow the lines of the face to apply even pressure and prevent light leakage. The sweep of the headset from the integrated headphones through the crown support and then toward the forehead provides balanced pressure relief and is visually reminiscent of a ram's horn.



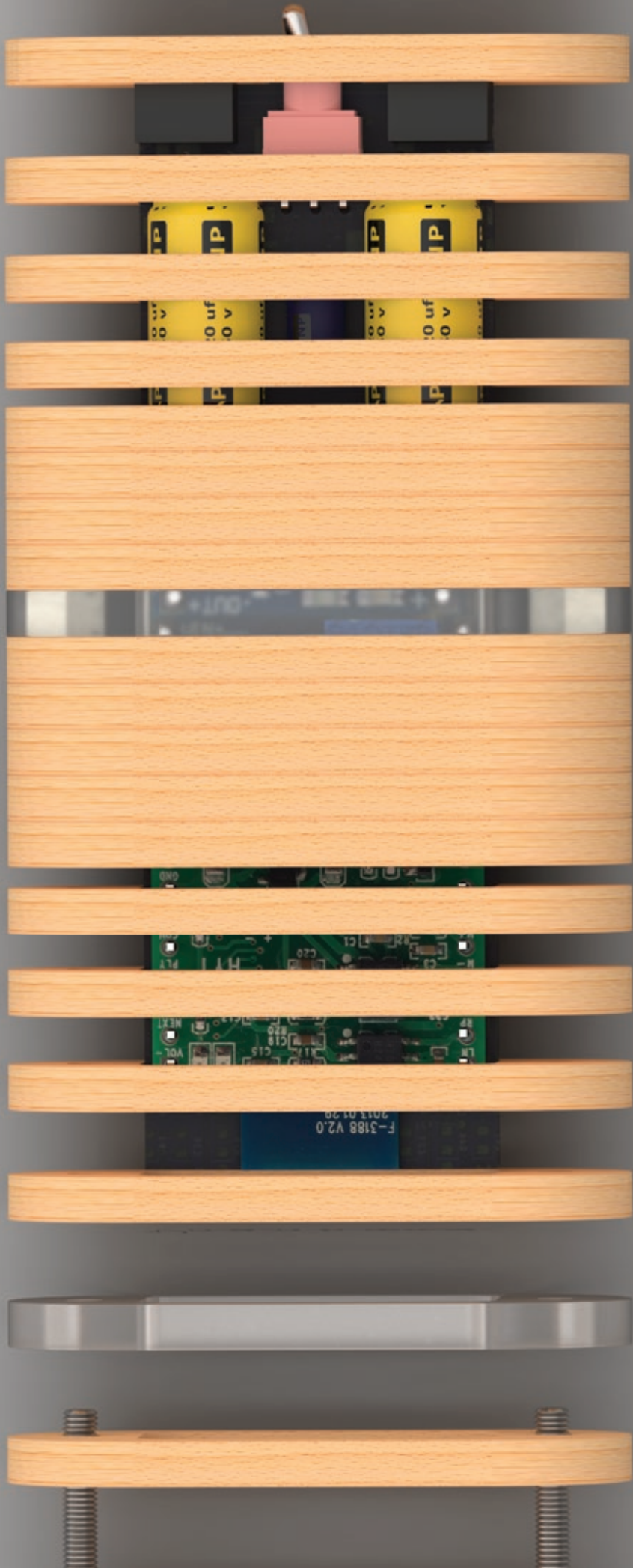
The RamVR headset is not intended for production but as an exploration piece into wearable technology, custom modelled around a 3D scan the wearer's head. The headset was created in Rhino 3D, a modeling package that works well

with complex dense meshes and allows flexible freedom of forms. Final images and animation were rendered in Keyshot.



3D scans of the user's head were captured with the Artec Eva and Artec Spider handheld 3D scanners. Resulting point cloud data was merged, repaired and meshed in the Artec Studio software. Further repair and symmetry analysis of the head mesh

was conducted in 3-matic. The resulting model was imported into Rhino 3D and the headset modeled around the location of the ears, eyes and crown. The headset's face mask was modeled around the contours of the face for a custom fit.






For more projects, information and videos visit troybaverstock.com. Vagabond mini is a portable bluetooth amplifier that turns any disused speakers into modern functional bluetooth speakers. Retro Gamer Jr. is a self contained retro

arcade and console emulator for your TV. The Huxley Collection is a range of CNC constructed modular furniture that combine to create dozens of furniture variations. Curve is a laminated plywood iPhone dock with passive acoustic amplification.



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