



DAVID KRAWCZYK | Industrial Designer

WORK SAMPLE



JUMP

User Swappable Battery Kiosk

Design Brief

Develop a battery swapping system that allows JUMP Riders to seamlessly swap a battery during their trip. Kiosk must be designed to withstand abuse and vandalism.

Role: Industrial Designer

Developed user-swappable battery kiosk from ground up; led development of system architecture, component design and working proof of concept.

Battery Kiosk | Scale Studies



Built studies to investigate scale and ergonomics

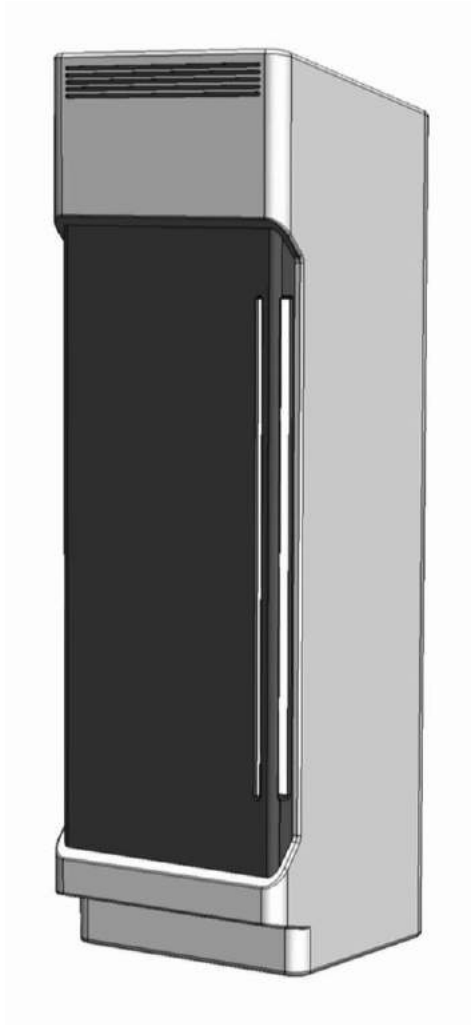


Created early prototype of a check-in area to authenticate a battery and unlock the access door



Access door provides an added layer of protection against the outdoor urban environment

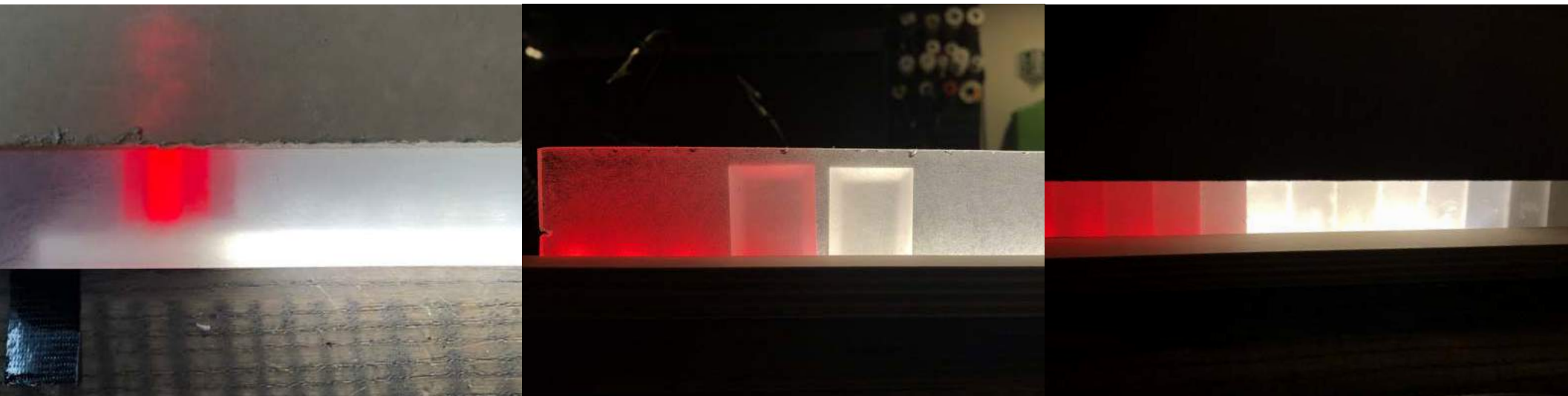
Battery Kiosk | CAD Sketches



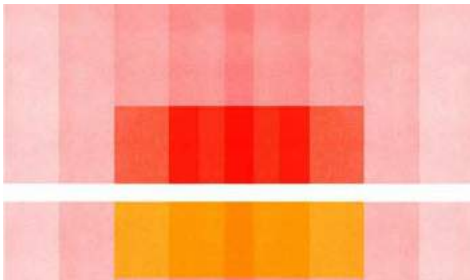
Inspiration



Battery Kiosk | Beacon Light Studies



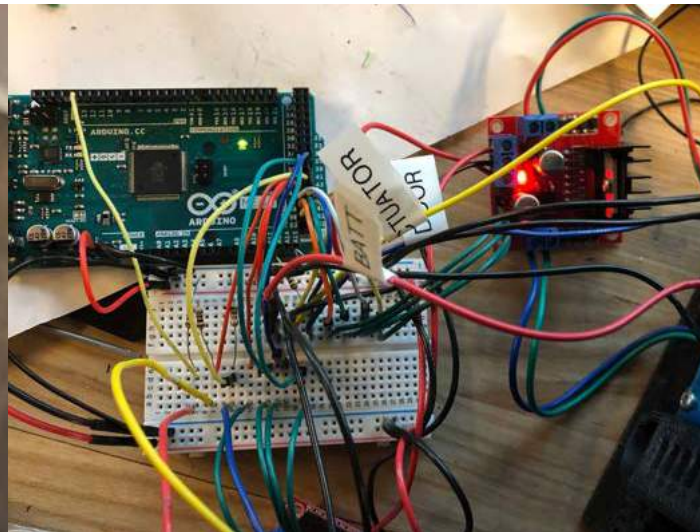
Inspiration



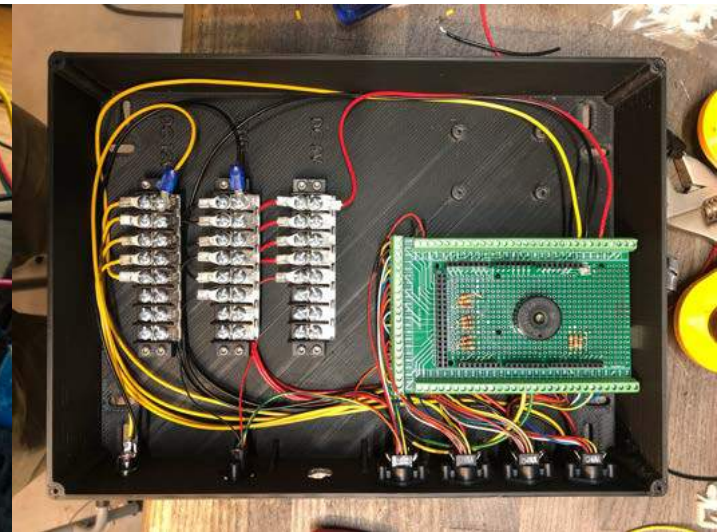
Battery Kiosk | Electronics Prototyping



Early prototype of communication connector

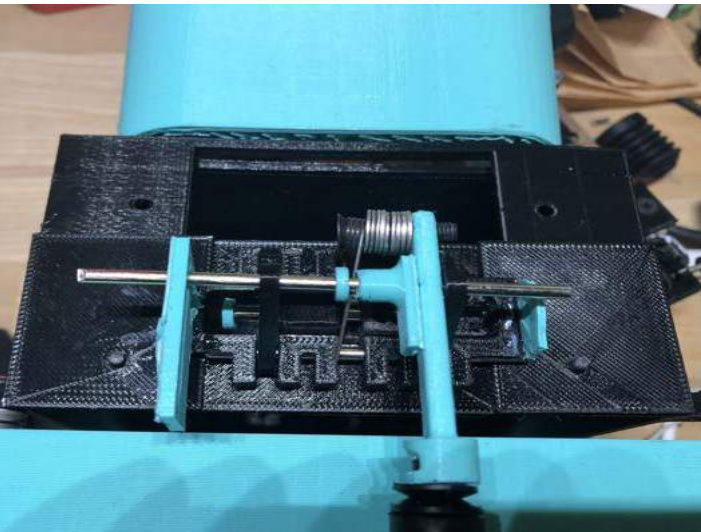


Arduino prototype to manage system operations



Control box power distribution

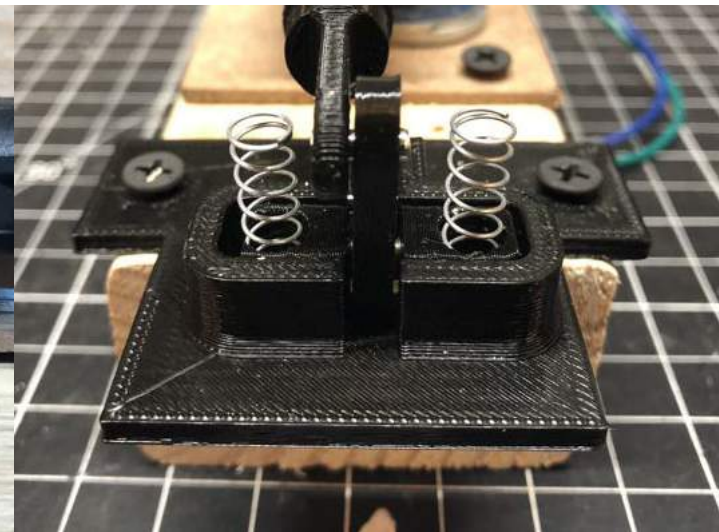
Battery Kiosk | Latching Mechanism Prototyping



Prototyped various latching mechanisms to investigate different latching states to determine best user experience

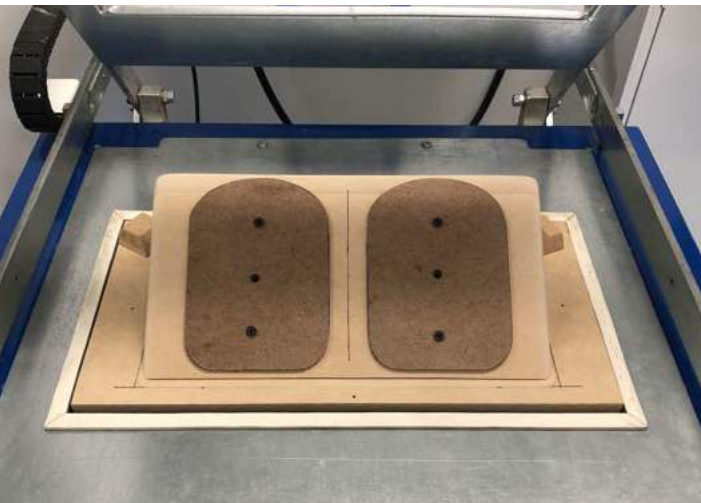


Bell crank mechanism to change direction of motion from horizontal to vertical



Spring loaded mechanism for a normally latched state

Battery Kiosk | Model Making



Constructed vacuum forming buck for quickly creating multiple high quality bezels



Painted CNC machined aluminum parts



Lighting feature and vent detail

Battery Kiosk | User Testing



First round of user testing:

Users' hand grip and battery orientation were evaluated



Second round of user testing:

User interacting with battery check-in area for the first time without additional guidance



Second round of user testing:

User riding up to the kiosk to swap a battery from the bike without dismounting

Battery Kiosk | Proof of Concept





JUMP

Electric Bike Share Charging Docks

Design Brief

Design a certifiable outdoor rated means to charge electric bike share fleet

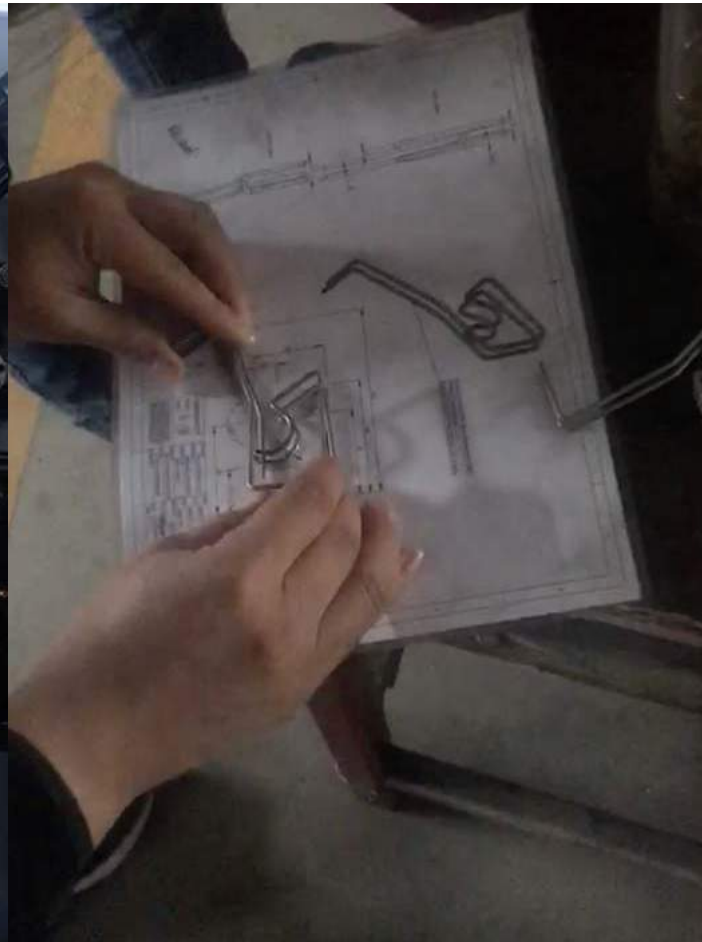
Role: Industrial Designer

Designed subassemblies, sourced vendors, oversaw manufacturing, developed installation plan, led certification effort to UL standard

Charging Docks | Mechanical Retention



Sourced spring vendor and worked closely to develop numerous prototypes to retain the bike in the charging dock



Spring clips absorbed the shock of the bike being rolled into the dock while also serving as a replaceable wear item



Spring clips were electrophoretically coated after the CNC bending operation

Charging Docks | Component Manufacturing



Injection molding tool of the spring loaded pogo pin connector housing

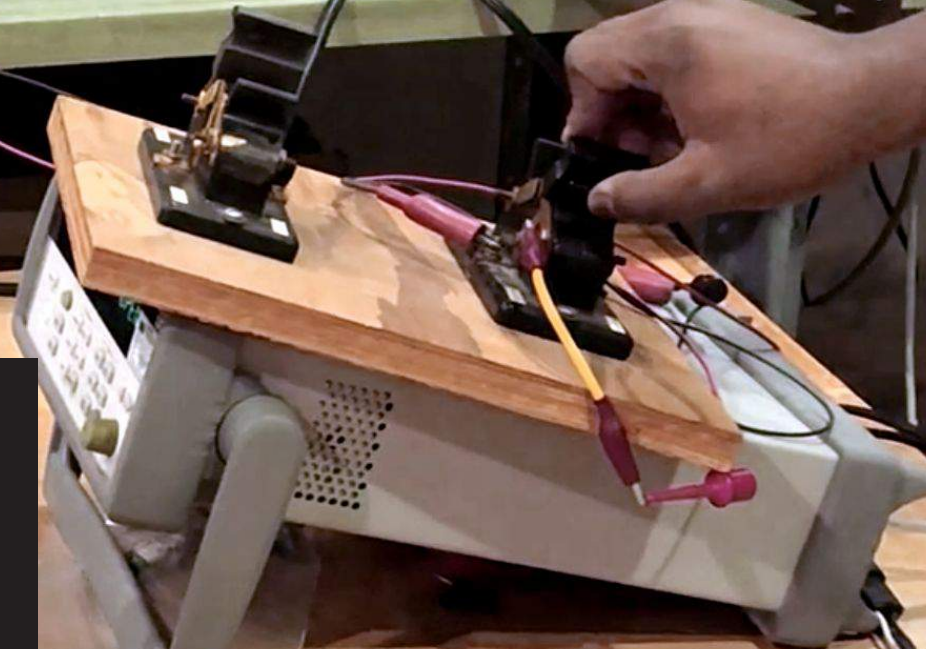
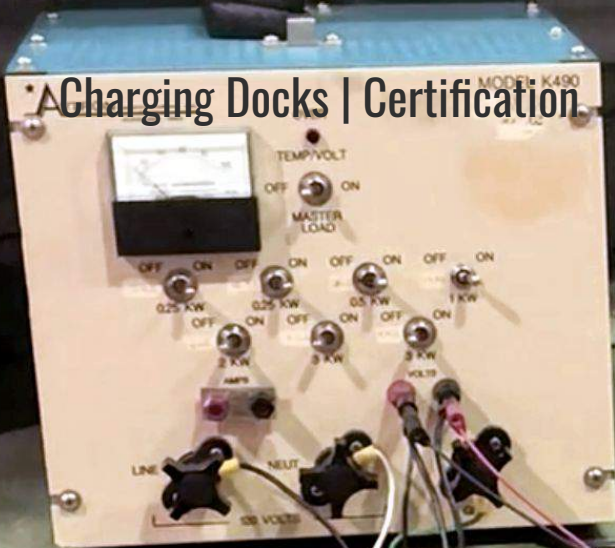


Evaluated first article assembled with gasket, spring clip retainer bracket, and spring clip



Spring clip is retained with a friction fit bracket that slides over the connector housing

Charging Docks | Certification



JUMP

MODEL: JUMP CHARGER V1.0
SERIAL NUMBER: JC-V1-0-2018-00100
MANUFACTURED: OCTOBER 2018

INPUT: 100-240 VAC 3.2A-1.6A 50/60HZ
OUTPUT: +42V \approx 5.6A

COMPANY:
SOCIAL BICYCLES LLC
55 PROSPECT ST #410
BROOKLYN, NY 11201

ASSEMBLED IN USA



CONFORMS TO UL 2849-3

Certification Lab Test Setup

The JUMP Charging Dock was certified to UL Standard 2849-3

JUMP Charging Docks | Sacramento, CA



Integre

Smartwatch

Design Brief

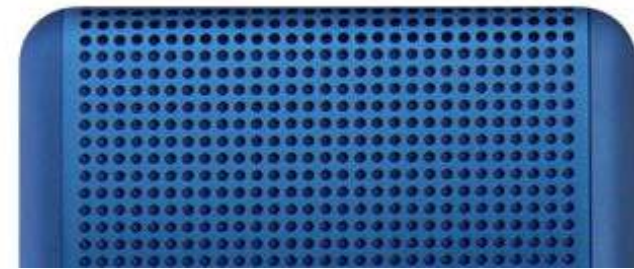
Develop a smartwatch that features the latest capabilities in manufacturing techniques

Role

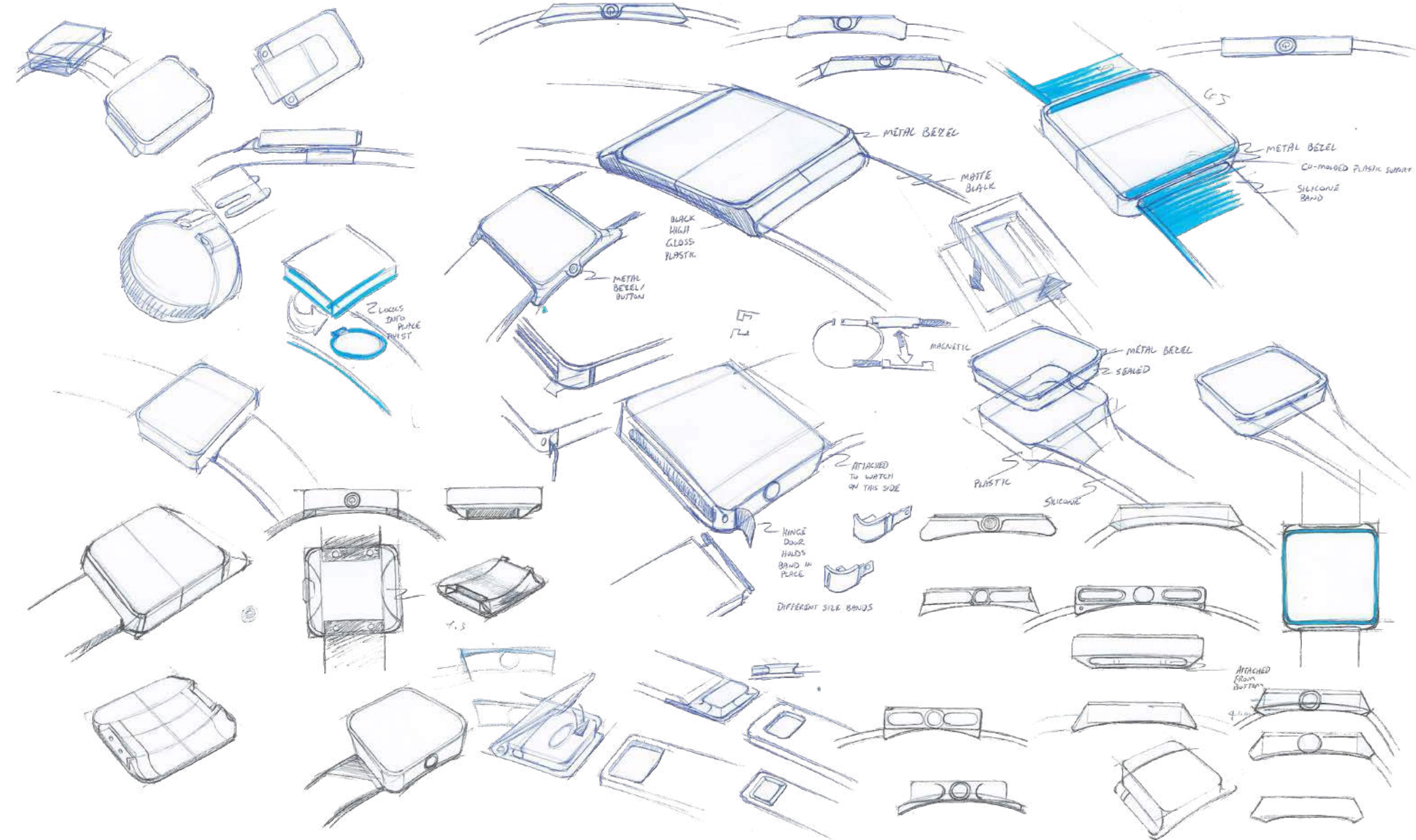
Market and manufacturing research, concept development, sketches, 2D renderings, 3D modeling and renderings



Integre | Inspiration

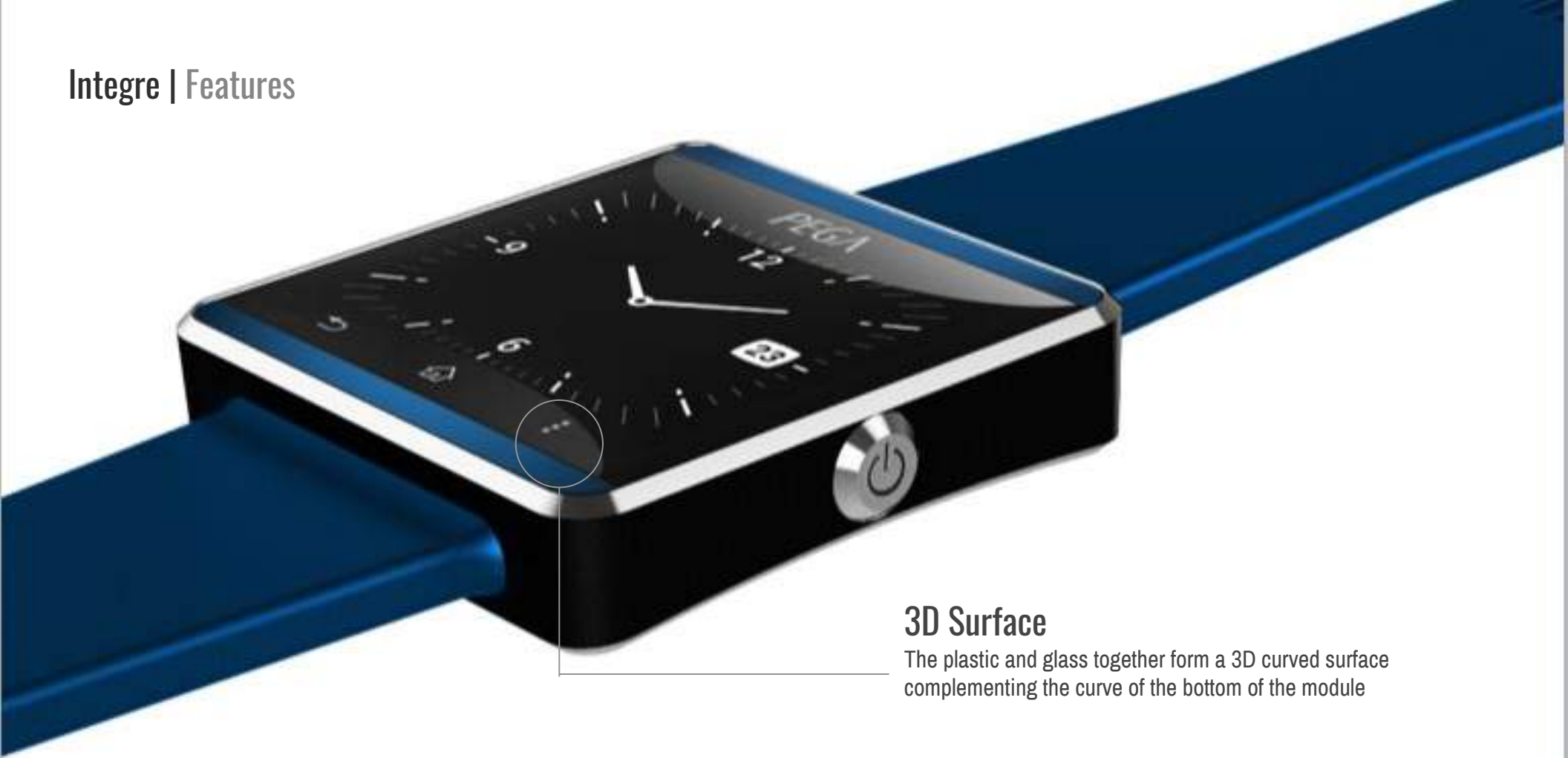


Integre | Ideation Sketches





Integre | Features



3D Surface

The plastic and glass together form a 3D curved surface complementing the curve of the bottom of the module

Seamless Design

The silicone band is co-molded to the plastic structure within the module. The band passes through a slot in the metal frame



THANK YOU!