



**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 | User Journey Brainstorming



# Battery Kiosk | Scale Studies

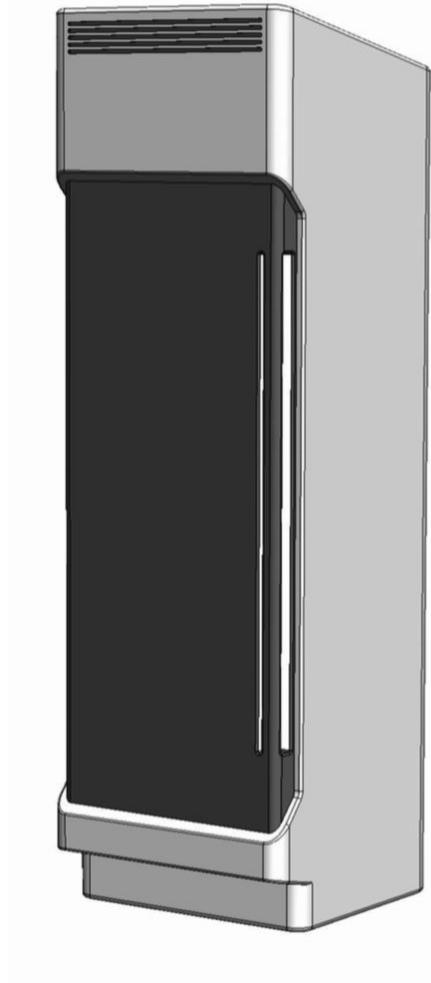


Built studies to investigate scale and ergonomics

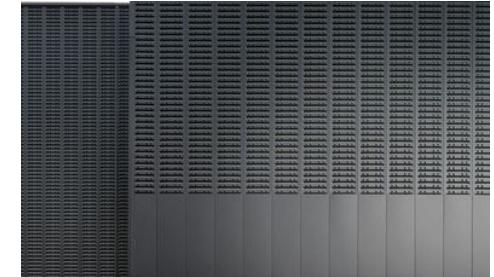
Created early prototype of a check-in area to authenticate a battery and unlock the access door

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

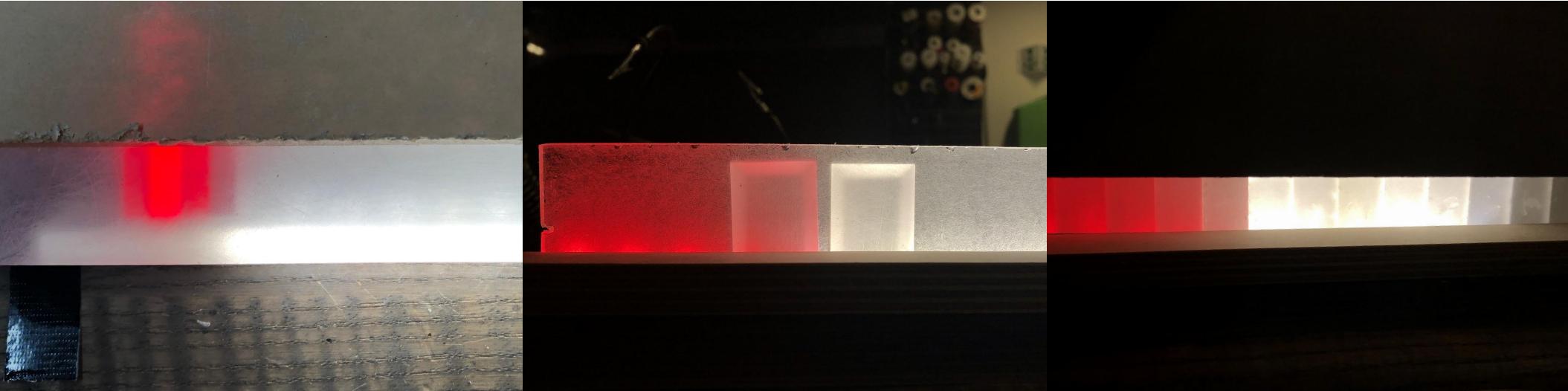
# Battery Kiosk | CAD Sketches



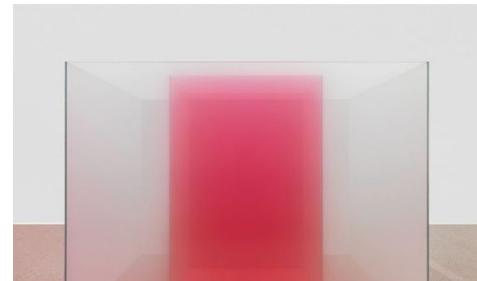
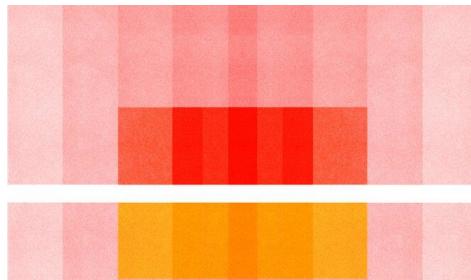
Inspiration



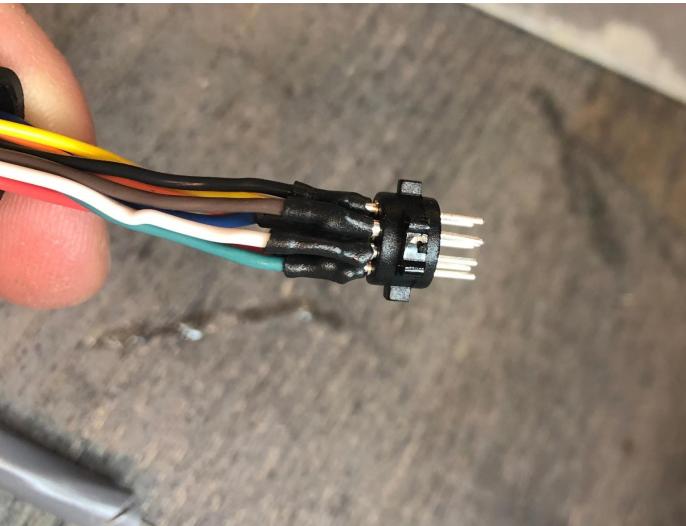
# Battery Kiosk | Beacon Light Studies



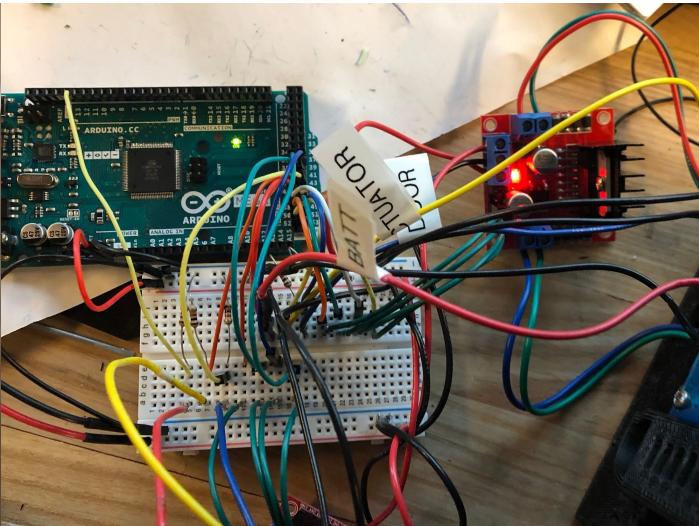
Inspiration



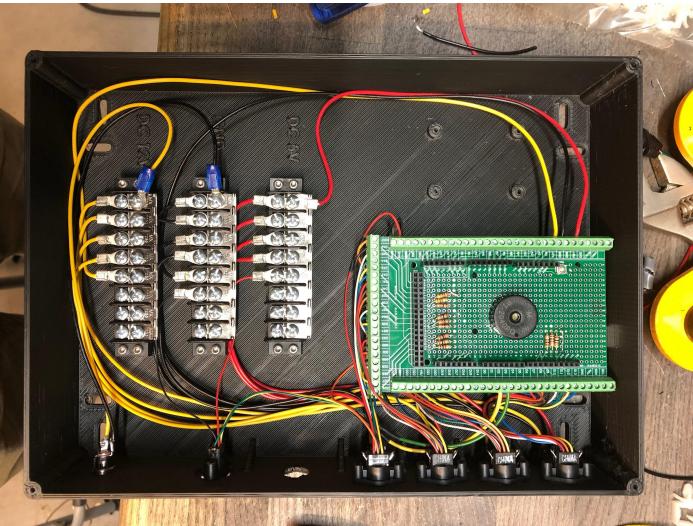
# Battery Kiosk | Electronics Prototyping



Early prototype of communication connector

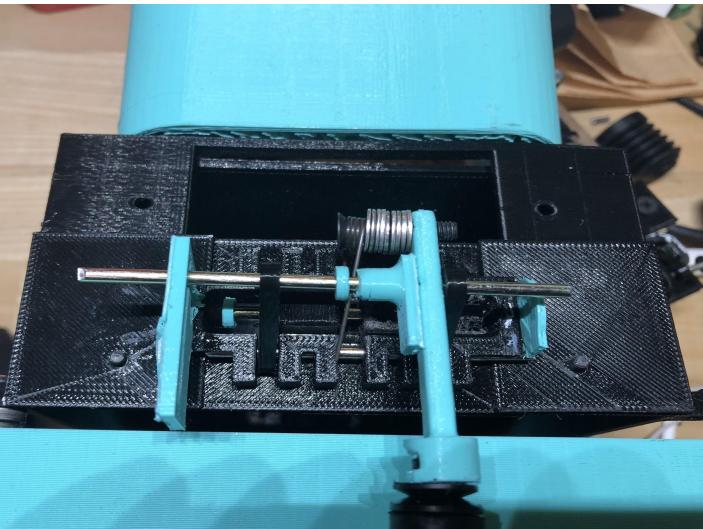


Arduino prototype to manage system operations



Control box power distribution

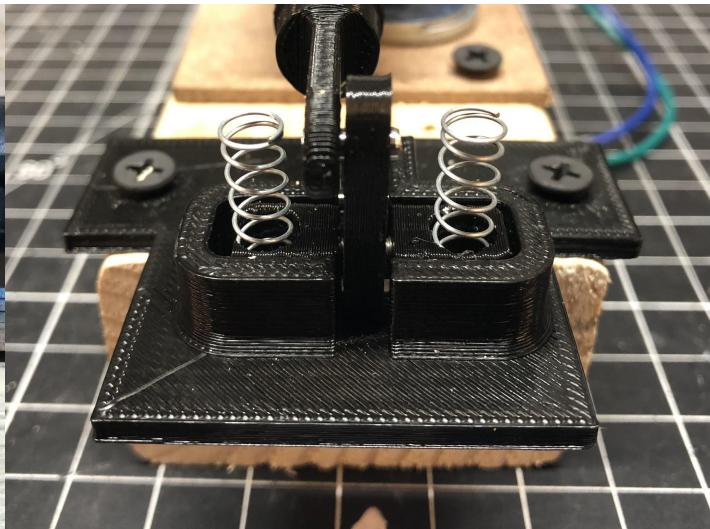
# Battery Kiosk | Latching Mechanism Prototyping



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

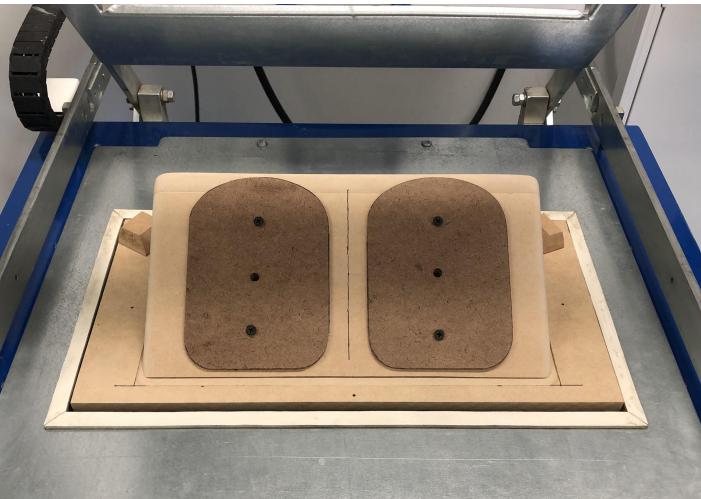


Bell crank mechanism to change direction of motion from horizontal to vertical



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

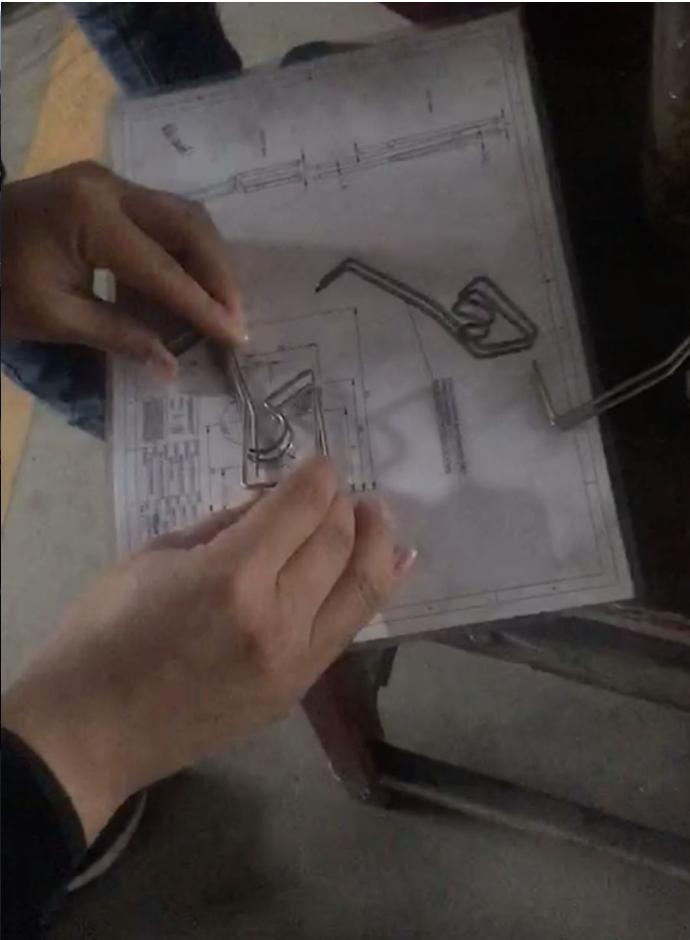
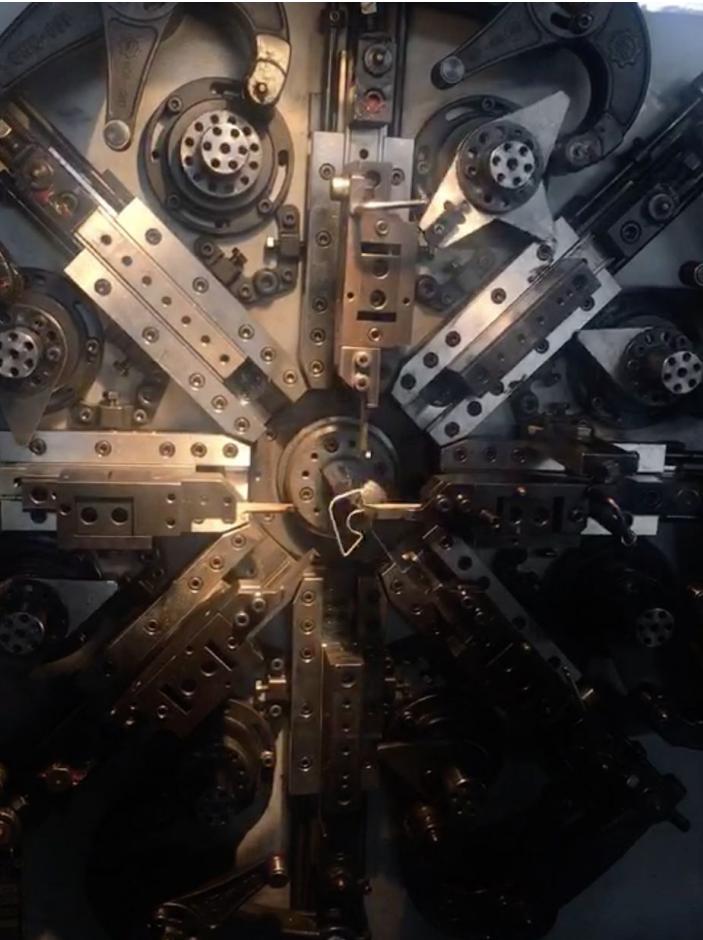
### Design Brief

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

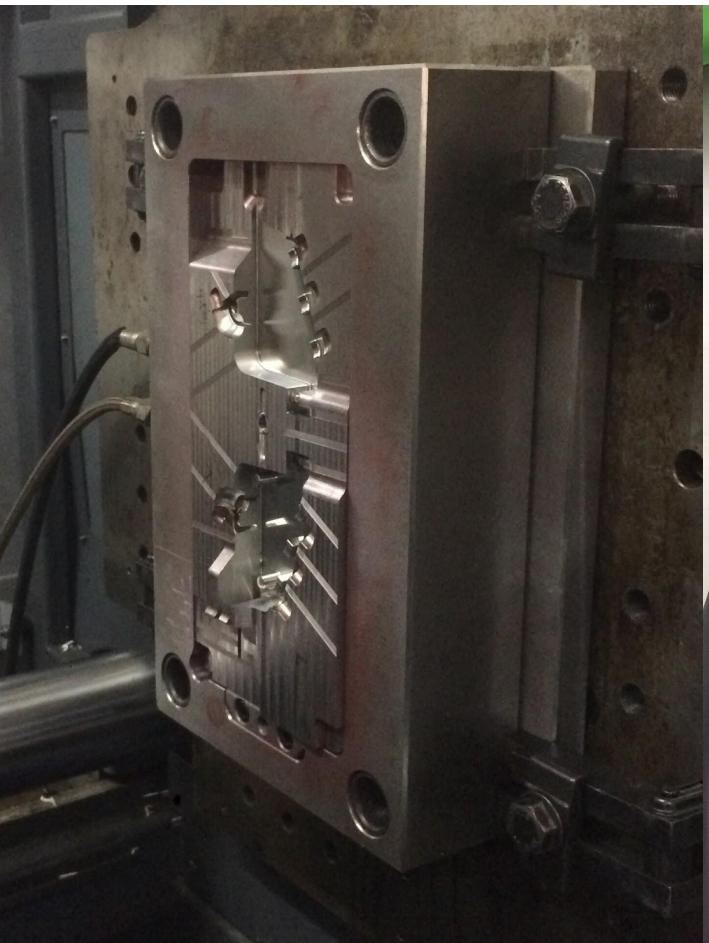


Sourced spring vendor and worked closely to develop numerous prototypes to retain the bike in the charging dock

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

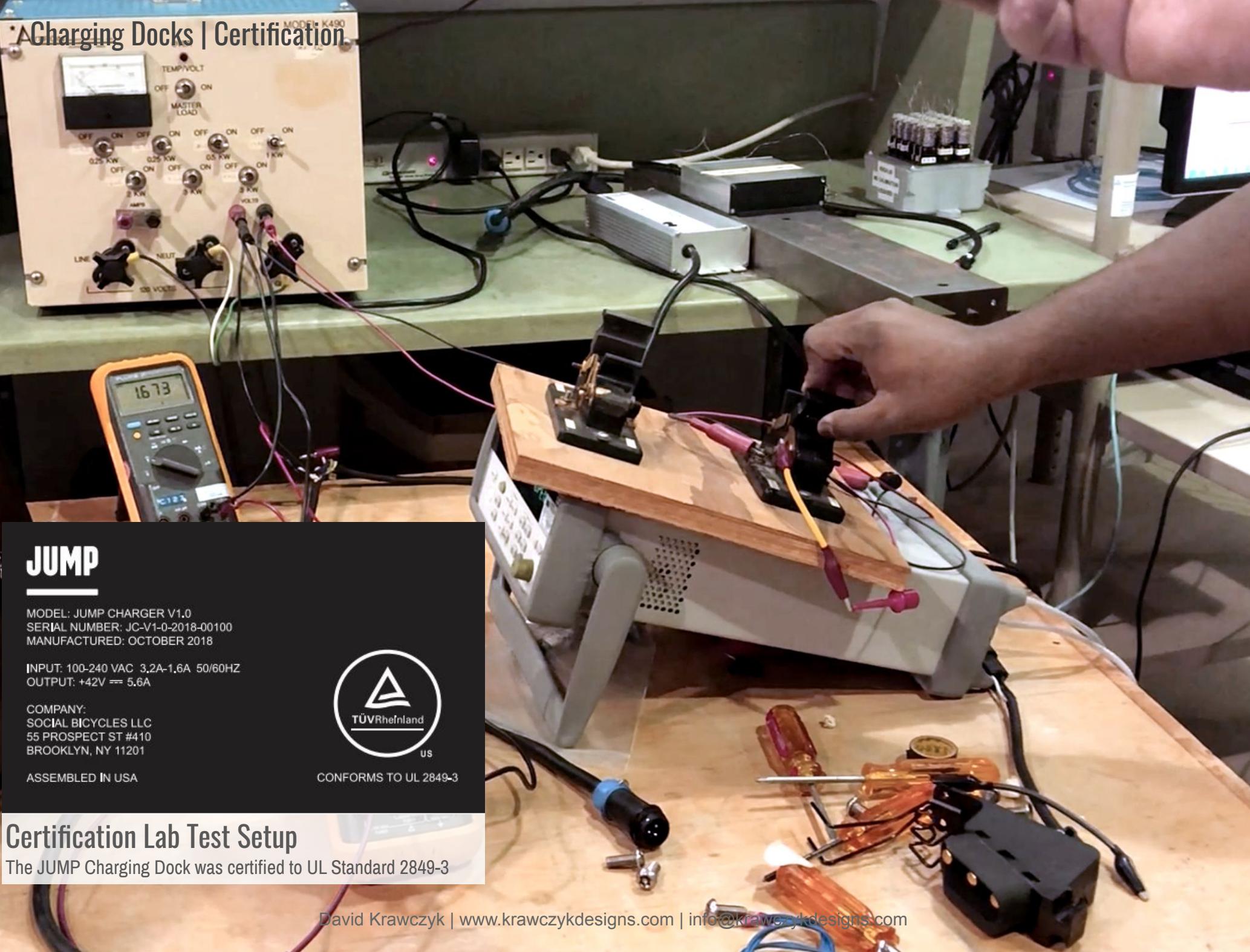


Evaluated first article assembled with gasket, spring clip retainer bracket, and spring clip



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 == 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

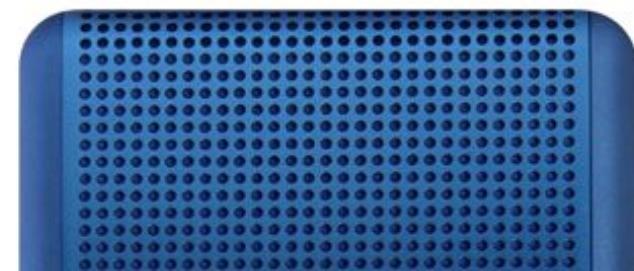
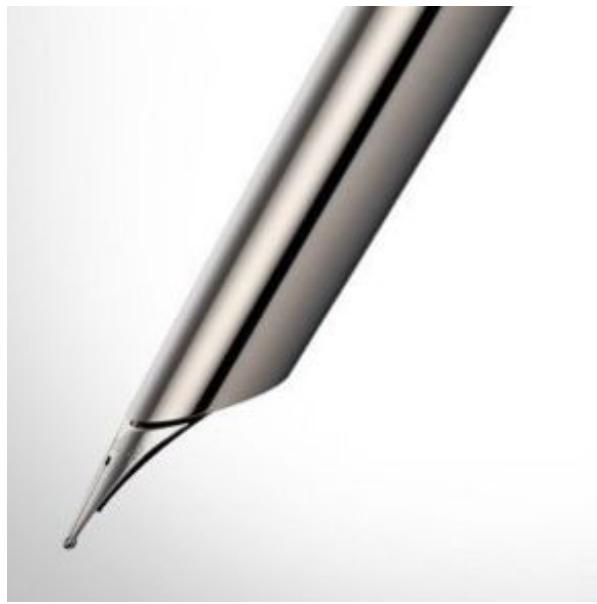
Develop a smartwatch that features the latest capabilities in manufacturing techniques

### Role

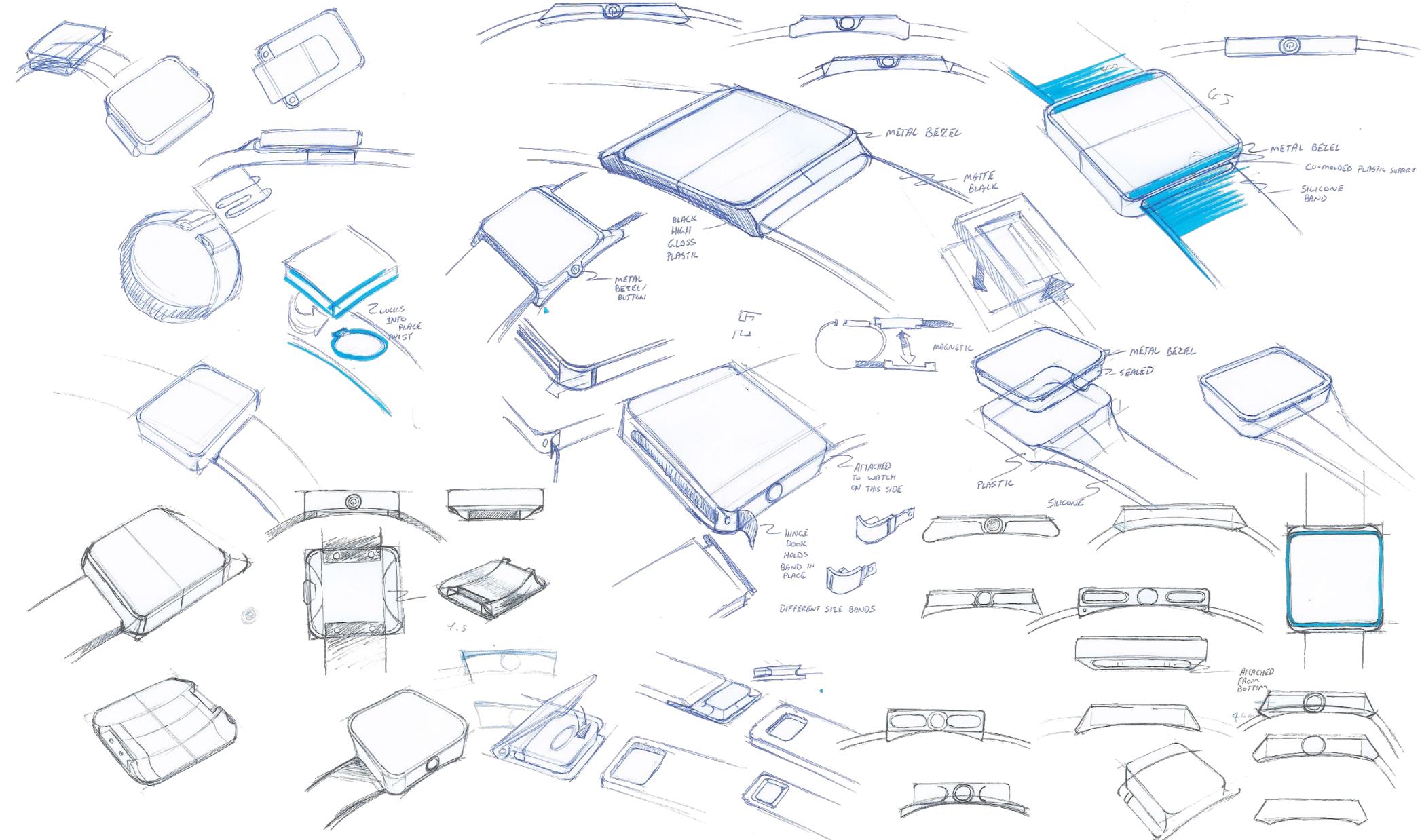
Market and manufacturing research, concept development, sketches, 2D renderings, 3D modeling and renderings



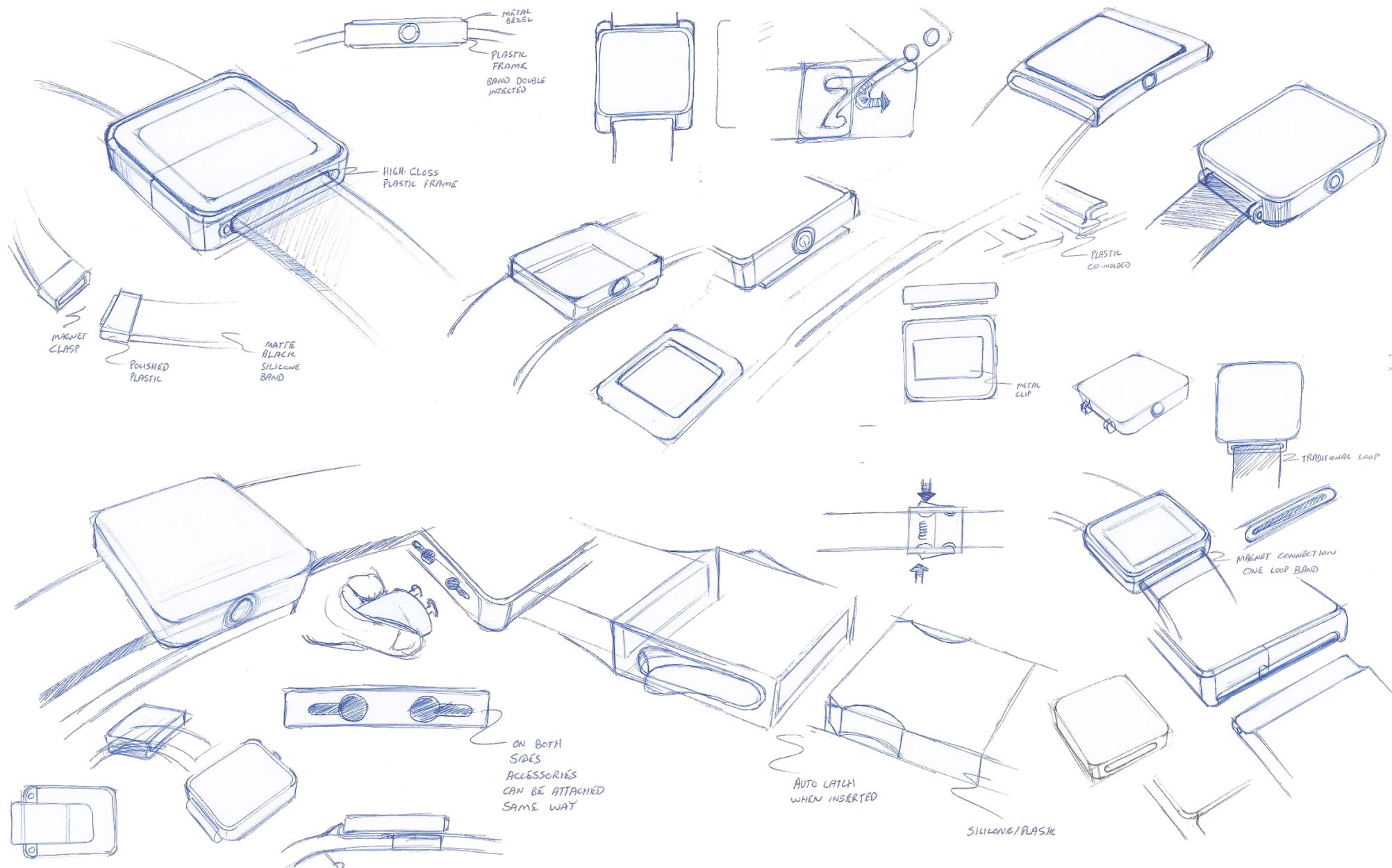
Integre | Inspiration



# Integre | Ideation Sketches



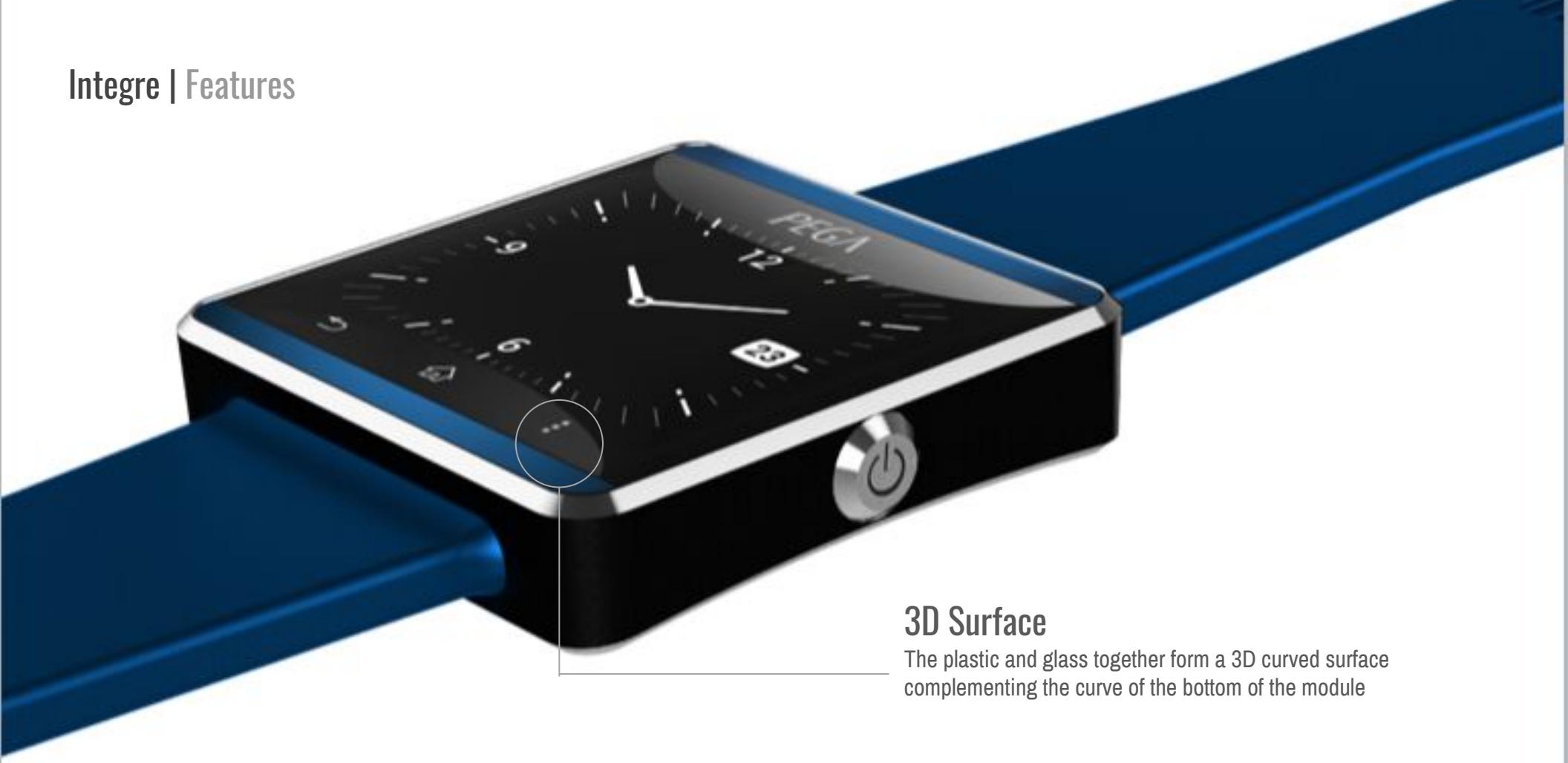
# Integre | Ideation Sketches



# Integre | CMF



# 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!**