Montclair State University
Industrial Design BFA
2012

Anthony Fragola
Industrial Design
Portfolio 2013

Contact: Anthony@AFragolaDesign.com
Cell: (201)281-9077

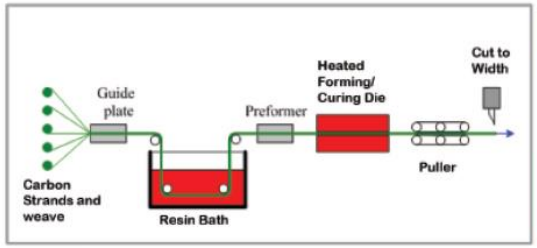
Senior Thesis Semester 1

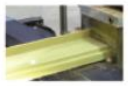
MODULAR AUTOMOTIVE CHASSIS

Anthony Fragola, BFA Industrial Design

Objective: Design a Safer, Lighter, More Efficient Automobile: Using new materials and manufacturing processes; these processes must remain fast and affordable, the automotive industry must progress, not step backwards. "It's the car of tomorrow because it is also the car of today"-Top Gear

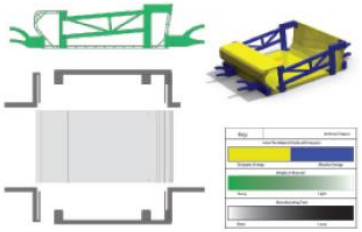
Pultrusion Process





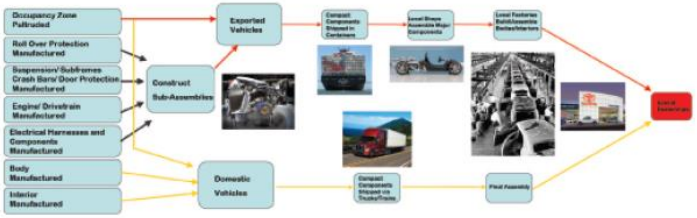
Pultrusion: This design uses composite materials in conjunction with a new manufacturing process called 'Pultrusion' to make a vehicle occupancy zone. To raise production numbers and make this chassis even more affordable, one occupancy zone must work in all passenger vehicles in a brand's line-up.

Occupancy Zone Design



Safety: Subframe components and door protection will be made with a high strength impact absorbing aluminum-foam to protect the occupants in the event of a collision.

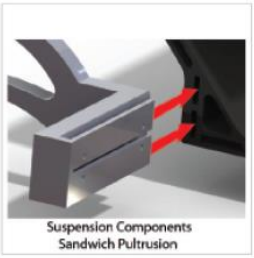
Manufacturing, Assembly, Exporting and Delivery



Exporting/ World Market: This smaller/lighter modular chassis will be more compact for shipping which means that more cars will be able to be shipped on the same boats, trucks and trains, using the same amount of fuel. This will drastically reduce each vehicle's carbon footprint even before it is ever driven.


Chassis Cut to Width


Final Machining

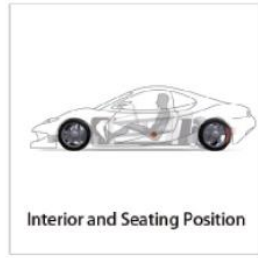

Suspension Components Sandwich Pultrusion

Assembly Process


Sub-Components Assembled


Door Bars Attached

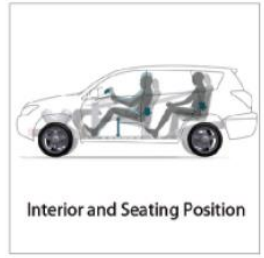

Body Mounted


Interior and Seating Position


Sub-Components Assembled


Rear Seat, Front and Rear Door Bars Attached

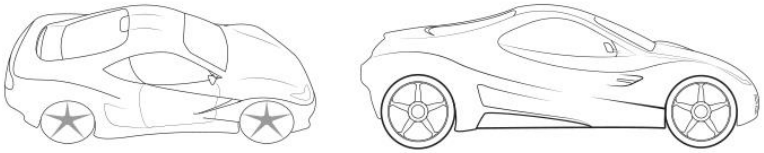

Body Mounted

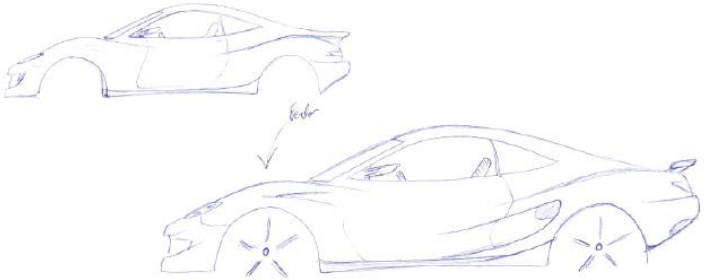

Interior and Seating Position

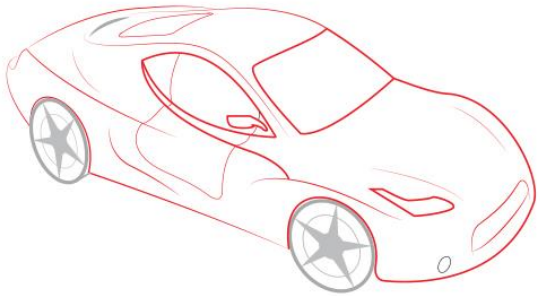
Benefits:
Composites are widely used in motorsports for their superior strength, weight saving and safety characteristics. Pultrusion is a process very similar to extruding which allows for more efficient manufacturing of composites.

Senior Thesis Semester 2

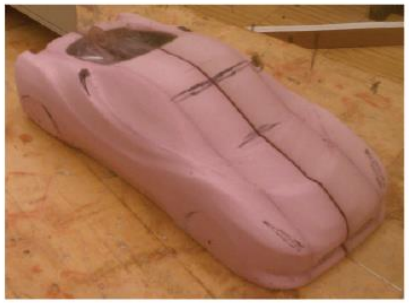
Ideation Sketches



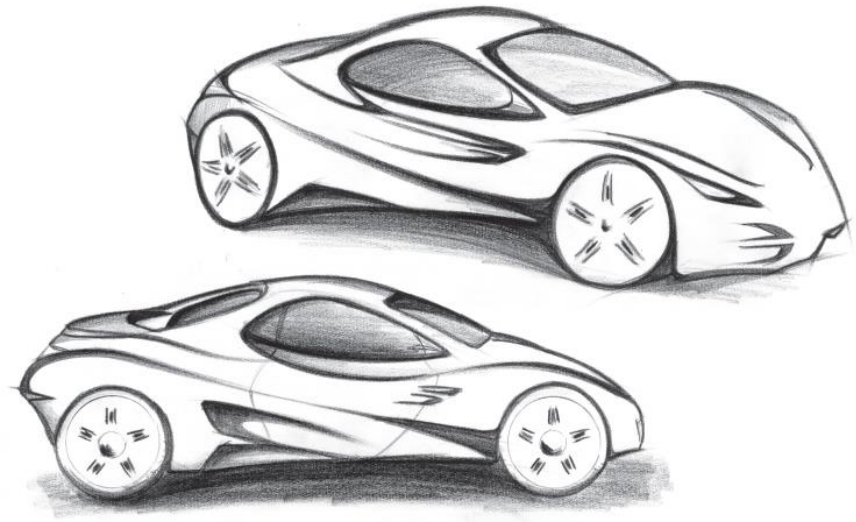


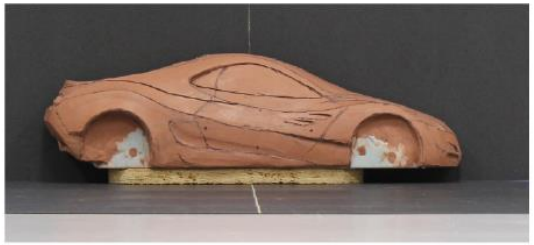


Foam Ideation Models

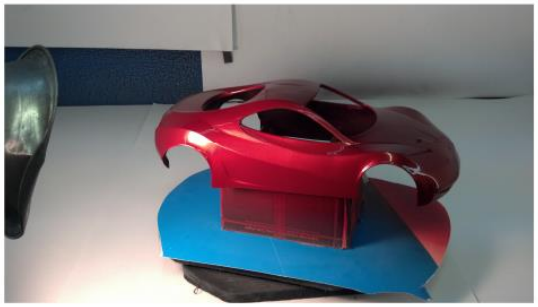


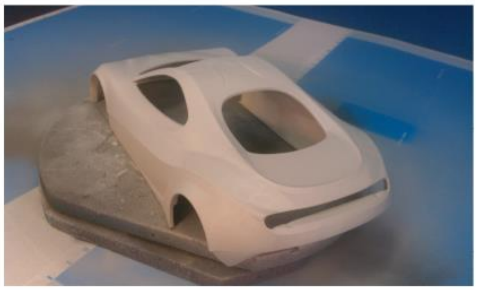
Final Sketches and Clay Model





Final Model

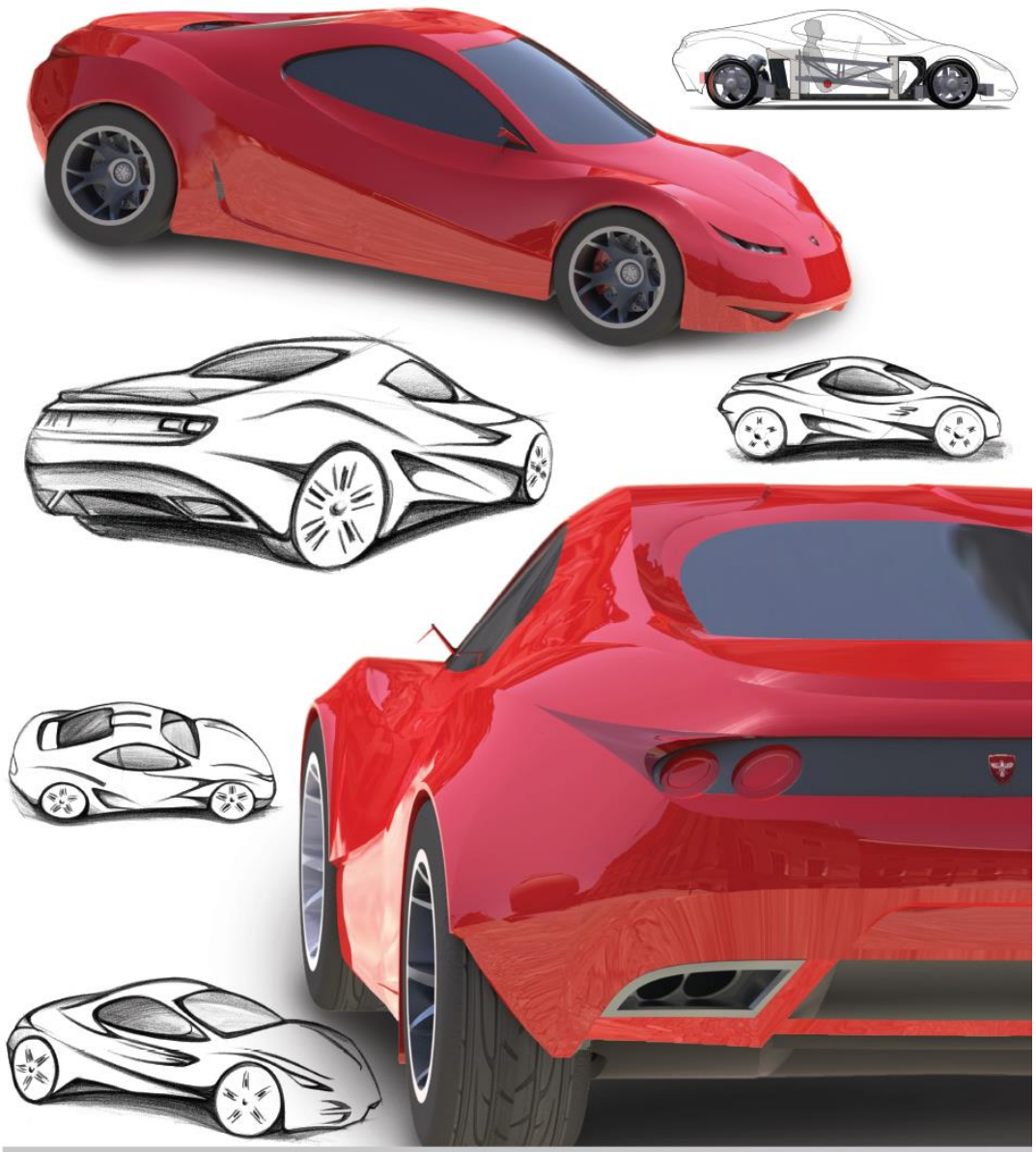




Final Presentation

Toyota FT-MR

Flagship vehicle to utilize the modular chassis system. Mid-engine, rear-wheel drive sports coupe; proving that safety efficiency and performance can go hand in hand

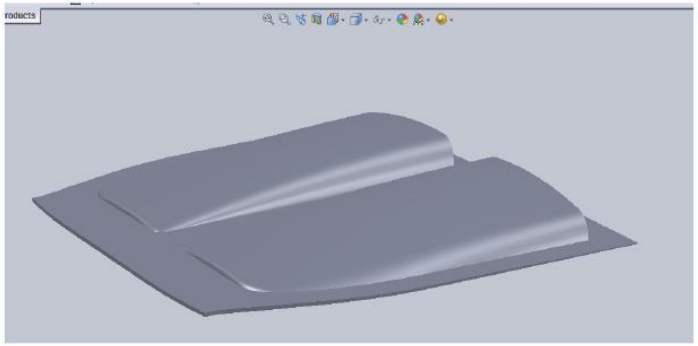


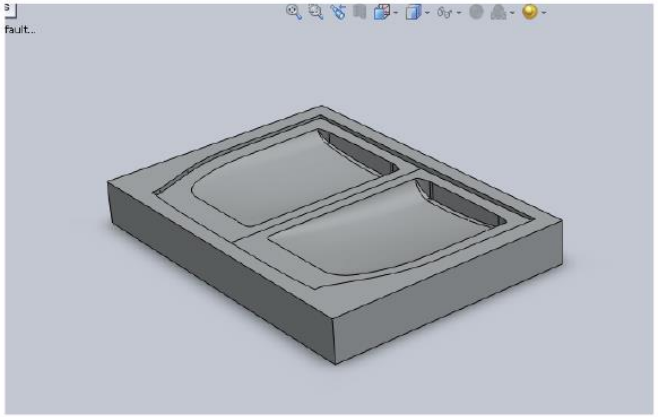
MSU INDUSTRIAL DESIGN
SENIOR THESIS PROJECT

Anthony Fragola
Modular Car Chassis

MKII Toyota Mr2 MotorLid

Solidworks Mold and Plug



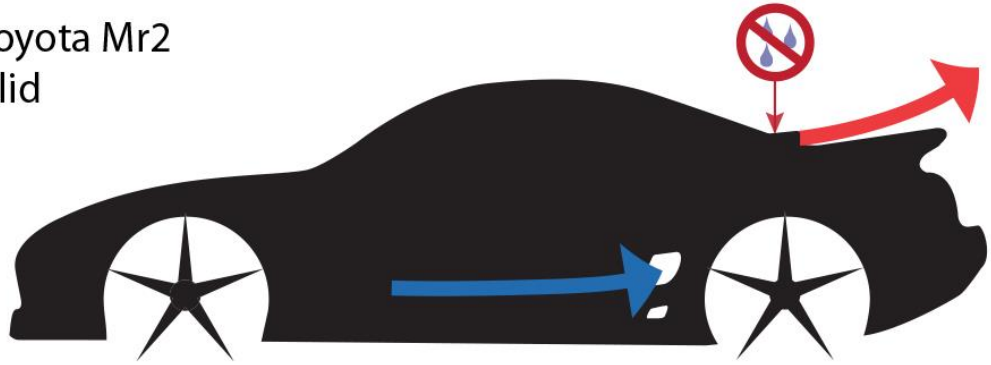


Opportunities:
Factory Engine lid allows water and dirt to enter engine bay
Aftermarket lids have more openings for water and dirt to enter, or do not fit the styling of the car properly

Forming Model Scoop

Fiberglass Prototype

MKII Toyota Mr2
Motorlid



View from rear window: Matches the curvature of the stock spoiler

2006+ Honda Civic Gauge Pod

XVRACING.COM

NEW PRODUCT RELEASE

XVRacing Carbon Fiber 2 Gauge pod

For use with 52mm gauges (2-1/16")

Fits the 8th generation (2006+) Honda Civic coupe and sedan.

Spruce up your interior with the XVRacing Gauge pod. This carbon fiber gauge pod was designed to match the interior styling of the Civic perfectly. It replaces the factory plastic trim around the speedometer cluster and holds the gauges right in your line of sight.
Hand crafted in the USA! Real Carbon Fiber
Easy installation- Clips right into the stock location. Fits 52mm (2-1/16 inch) gauges

Introductory Sale Prices:

Carbon Fiber $99.99

Fiberglass $79.99

Visit www.XVRacing.com for more Info and products

Contact: sales@xvracing.com

1991 Toyota MR2 Build

Custom Turbo Kit and Trunk - Mount Intercooler

Bodywork and Paint

Scoops Molded in behind windows, feed cool air to the intercooler

DESIGN THE FUTURE

LG

TARGET AUDIENCE:

Ages: 16-45 who want to stay connected and technologically up-to-date.

Curent Problem:

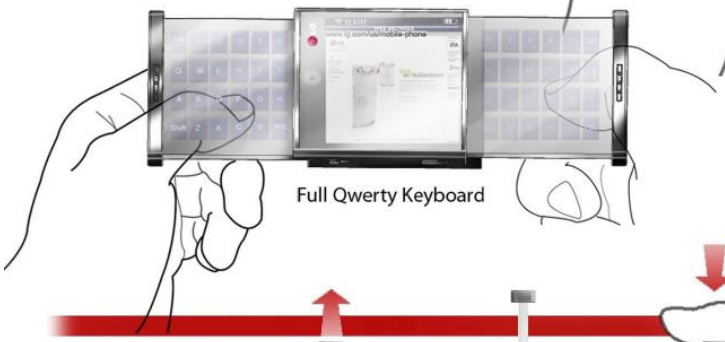
People want a smart phone but don't want to carry a bulky and obstructing device.

IN USE:

Front Screen Texting

Open text mode

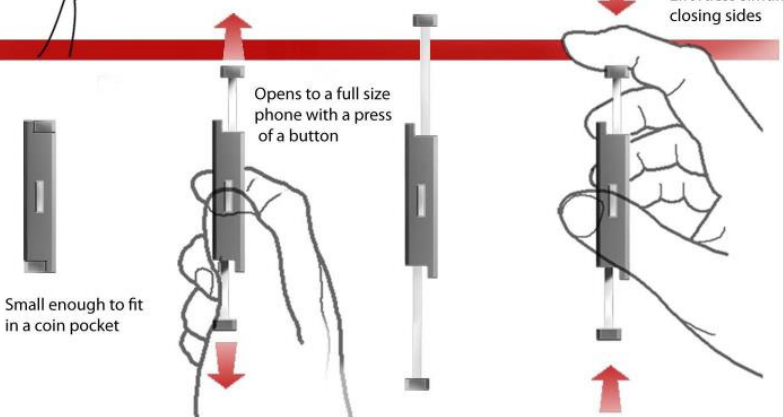
Lexan OLED touchscreens



Full Qwerty Keyboard

Effortless simultaneous closing sides

Opens to a full size phone with a press of a button



Small enough to fit in a coin pocket

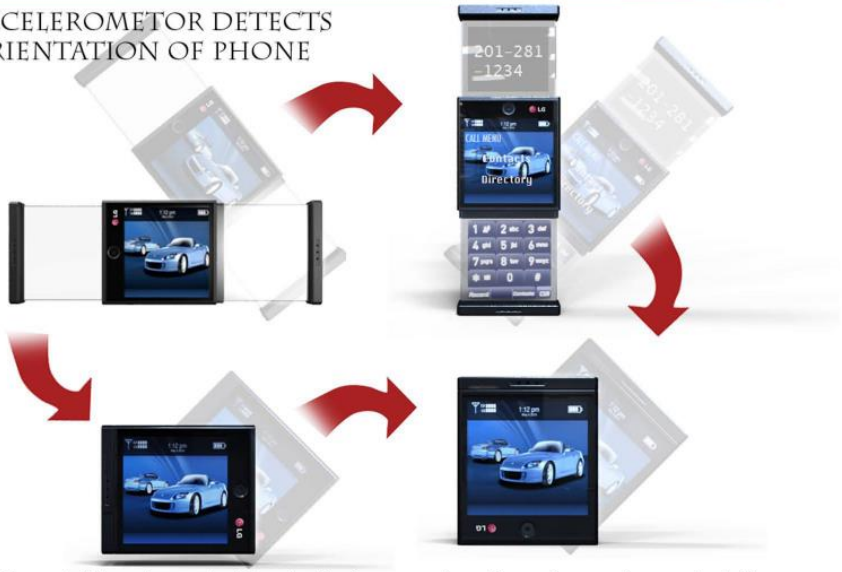
Kinetic charging allows for a smaller battery and better energy savings

Simple, Clean Styling

Camera Button

Screen Lock

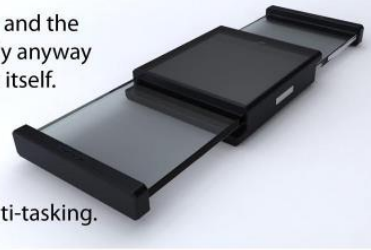
ACCELEROMETOR DETECTS ORIENTATION OF PHONE

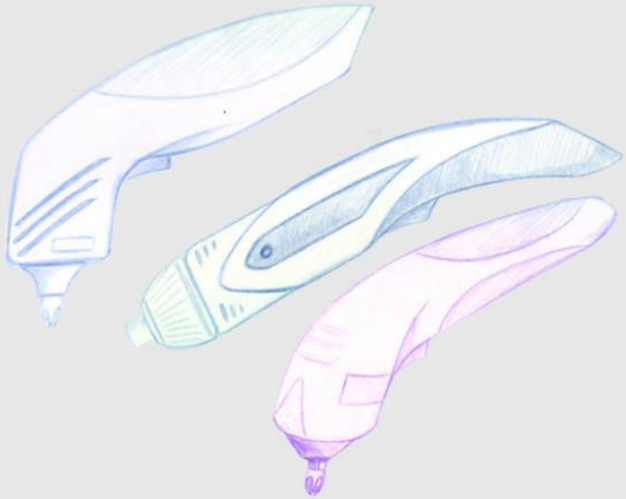


Dynamic Microphones double as both mics or speakers depending on phone orientation

Users will be happy with the simplicity and the user friendliness of the design. Virtually anyway a user picks up this phone it orientates itself.

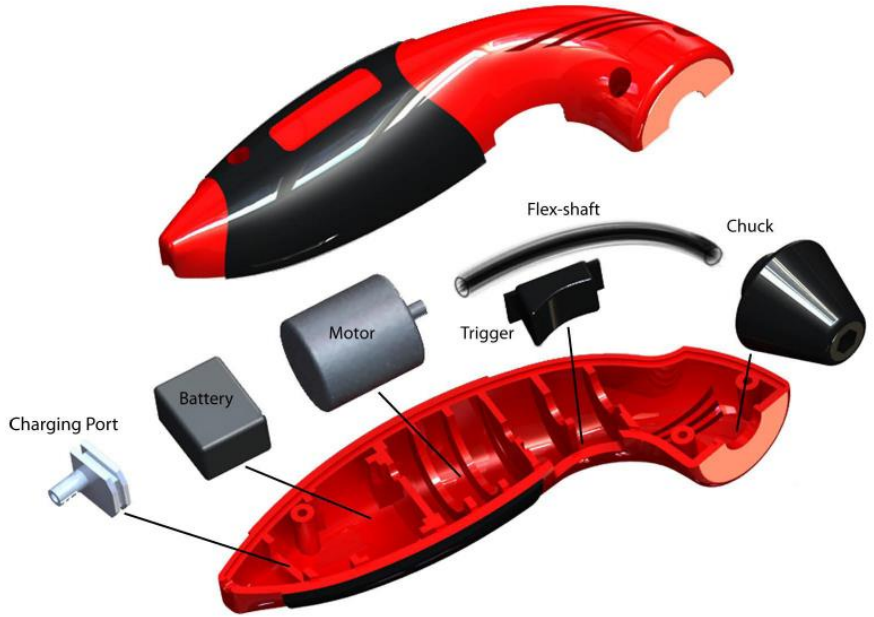
Because of the 3 screens entertainment and business are enhanced due to the possibility of multi-tasking.



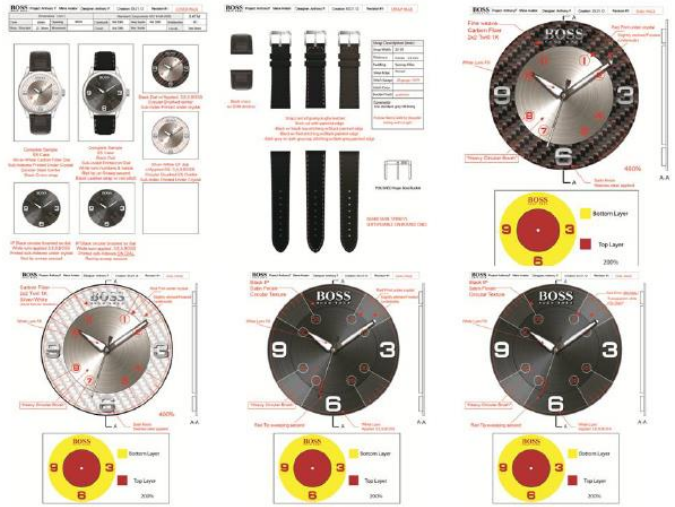


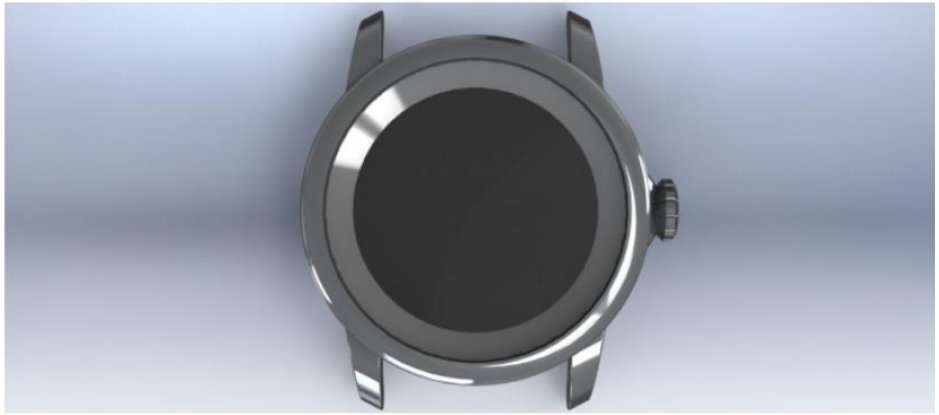
Objective:

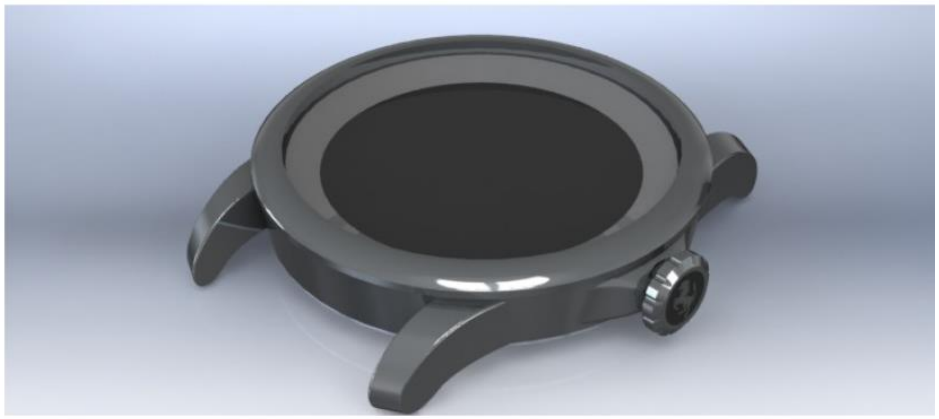
Design a sleek drill
Must not resemble a gun
Small and ergonomic
Powerful enough for typical household and hobbyist use
Lightweight/strong construction
Battery must hold charge for long storage periods
1/4" Hex drive (to fit universal drill bits and accessories)



Movado Design Work







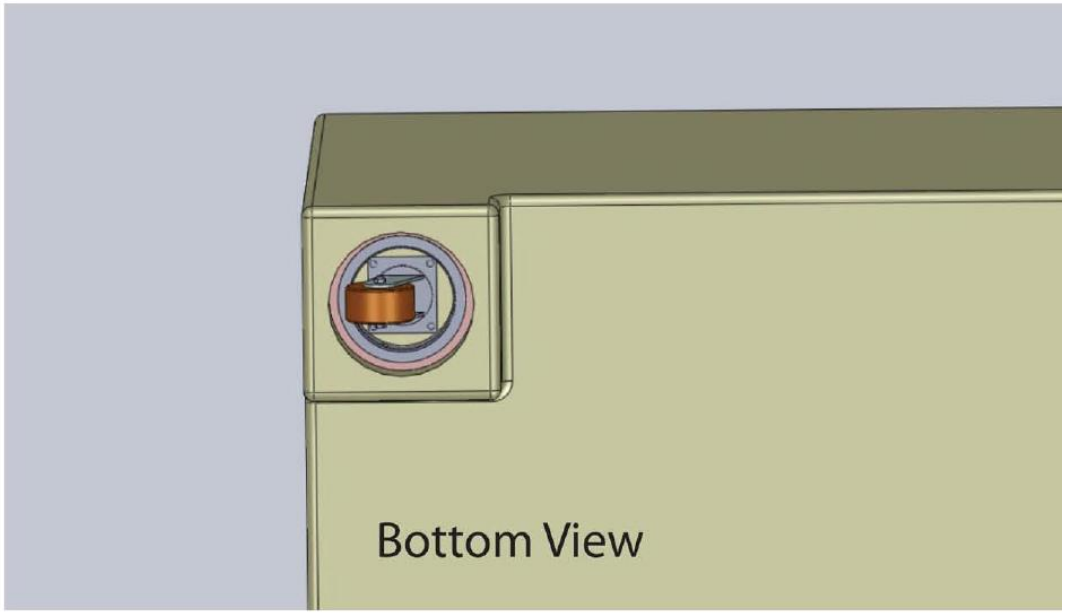
Caster Brake

Meet with Client, Design, Prototype, Price, R+D, Materials and Components, into Full Production Including Tooling and Fixtures

Caster Brake System

To be used on containers which hold expensive medical equipment weighing over 1,000 LBS

Casters are completely surrounded, protecting them against damage from fork lifts. Making access for a conventional foot brake impossible.



Clients Demands

No parts protruding from the container.

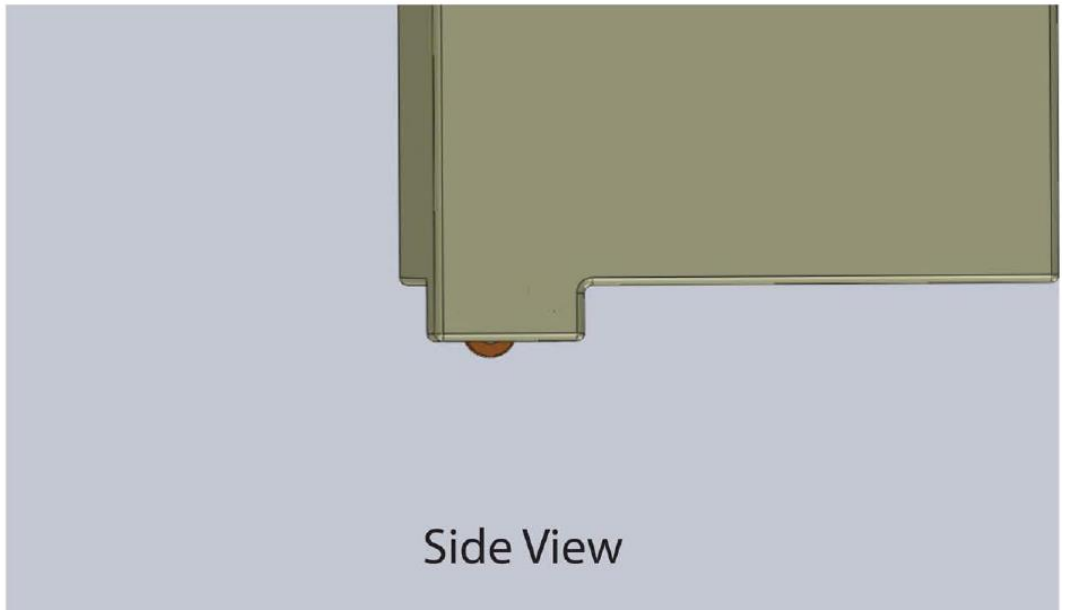
All parts and mechanisms must be

contained within the caster protection box.

Brake must stop wheel, no plungers jacking the box up off the ground.

The wheels cannot be raised and lowered to set the box down.

$150 per unit cost.



Manufacturing Process and Pricing





Caster Brake Part Numbers + Prices 7/15/2011:

MCMASTER-CARR:

P/N	DESCRIPTION	PRICE	PER UNIT	FOR 100 UNITS
61135K14	Handles	$5.40EACH	1	100 $540
98340A110	CLEVIS PINS	$4.16 PER 25	1	4 $16.64
90499A033	1/2"-13 NUTS	$7.27 PER 50	1	2 $14.54
98957A736	1/2"-13 THREADED ROD	$9.46 PER 6'	1- 3.5"	5 $47.30
8920K13	3/8" ROD	$7.78 PER 6'	15PCS 4.565"	7 $54.46
99041A103	SQUARE WASHERS	$8.28 PER 10	4	40 $331.2
90134A031	SPRING WASHER	$7.20 PER 50	4	8 $57.60
89955K86	7/8 TUBING	$29.24 PER 6'	1- 2.875"	4 $116.96
91124A065	3/4 WASHER	$5.88 PER 25	1	4 $23.52
90692A712	5/32" ROLLPINS 7/8" LONG	$9.50 PER 250		2.5 $3.80
90126A031	3/8" .055" THICK WASHERS	$3.60 PER 140-1600		12 $43.20
98338A100	1/6" X 1/2" COTTERPINS	$1.00 PER 100		1 $1.00

TOTAL PER 100= $1250.22 = $12.50 PER UNIT

PIPE:

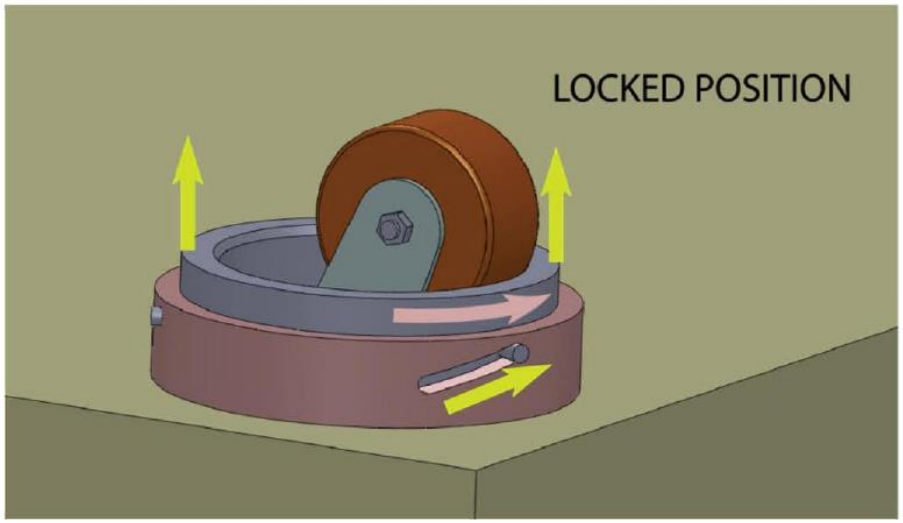
6" SCHEDULE 40 $19 PER FOOT- 2.25" EACH	20 $380 PER UNIT $3.80	
5" SCHEDULE 40 $14.50 PER FOOT - 1.25" EACH	12 $174 PER UNIT= $1.74	
CUT TO LENGTH= 200 PARTS	TOTAL: $??? = $??? PER UNIT	
LABOR: 1HR EACH $80	TOTAL: $8,000.00 = $80 PER UNIT	
PROTOTYPING AND SETUP: 50HR	TOTAL: $4,000.00 = $40 PER UNIT	

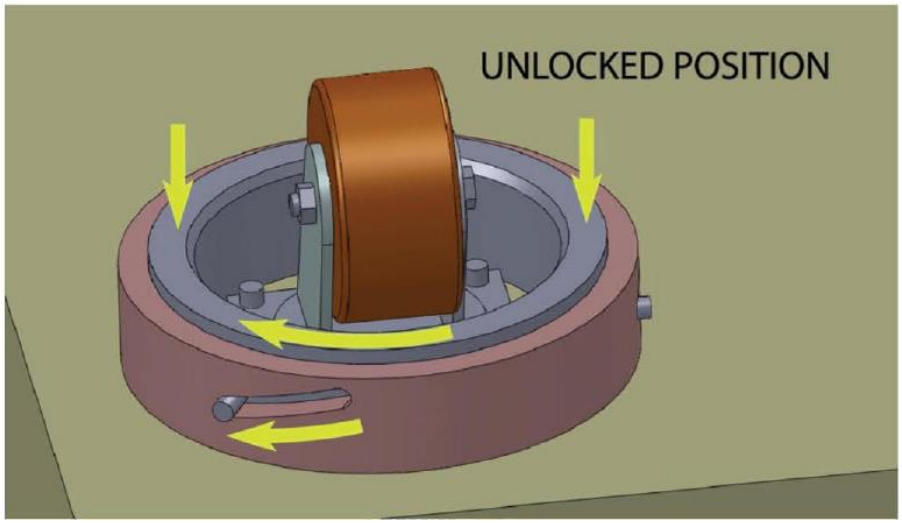
CLIENT'S BUDGET $150 PER UNIT TOTAL GROSS ORDER= $15,000.00

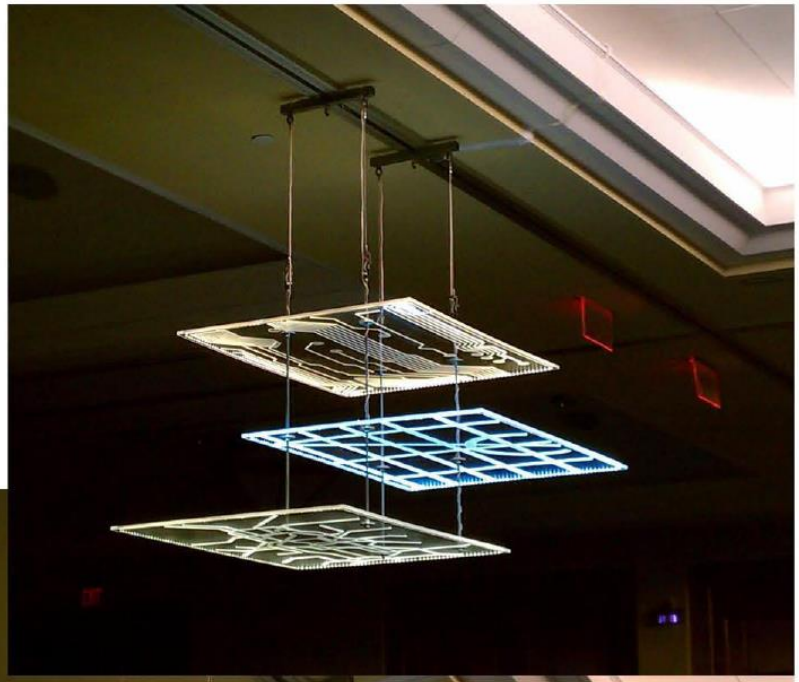
TOTAL PRICE PER UNIT= $138.04 (- CUTTING) TOTAL ORDER= $13,804.00

TOTAL UNDER BUDGET= $11.60 TOTAL SAVED $1,160.00


Final Product



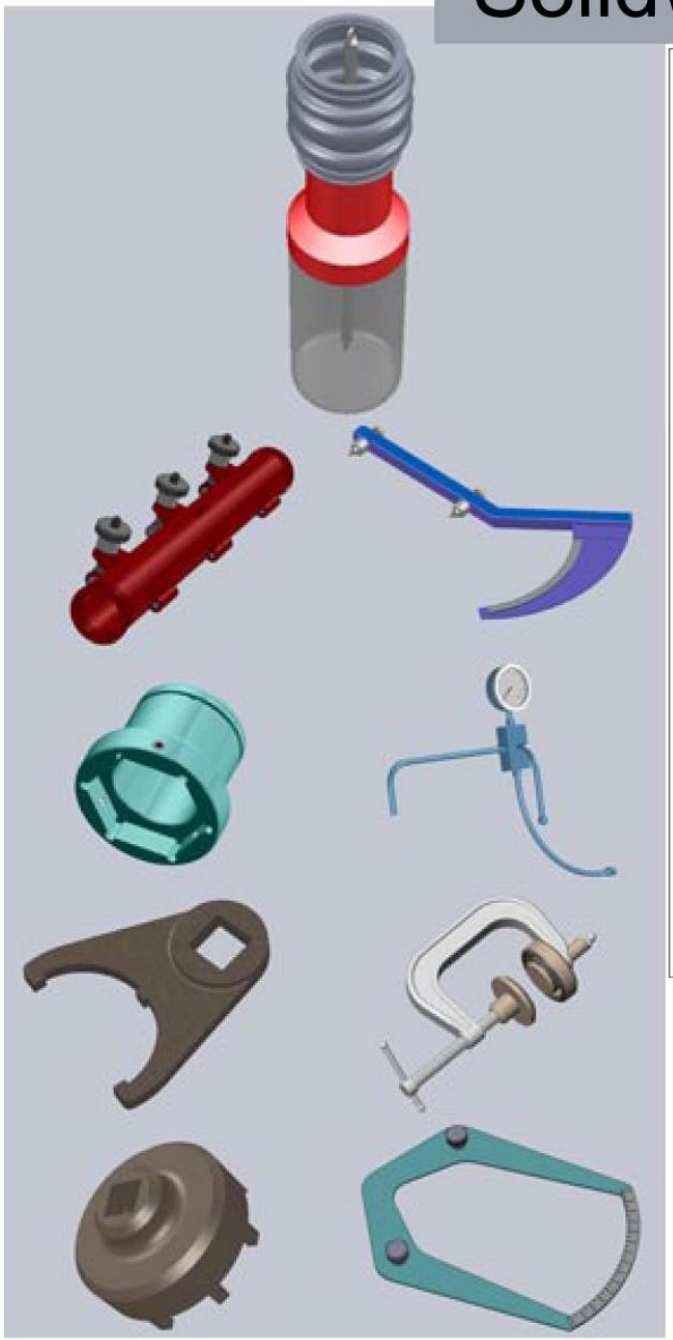




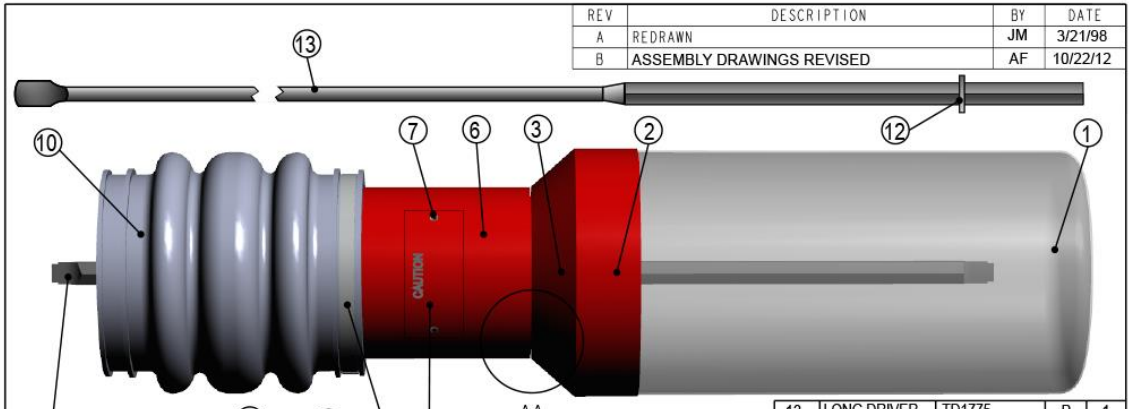
Team Project

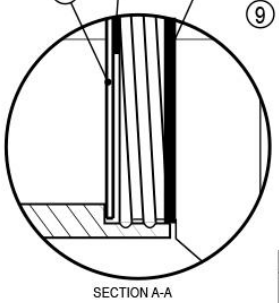
Objective:
Design and fabricate a light piece to hang over the bar for the 2011 MSU Presidents Dinner.
Must fit a futuristic NYC theme and resemble subways, city streets, and the rebuilding.

Solidworks: Parts Assemblies and Technical Drawings



REV	DESCRIPTION	BY	DATE
A	REDRAWN	JM	3/21/98
B	ASSEMBLY DRAWINGS REVISED	AF	10/22/12





SECTION A-A

ITEM	DESCRIPTION	PART NO.	REV.	QTY
13	LONG DRIVER	TD1775	B	1
12	RETAINING CLIP	SH-31STZD		2
11	DRIVER	TD1170	B	1
10	BELLOWS	41852		1
9	CLAMP	AS2229		1
8	TAG	TD2700	C	1
7	RIVETS	97482A035		2
6	HOUSING	TD2250	B	1
5	RETAINING DISK	TD2050	A	1
4	O-RING	9464K331		1
3	BODY	TD2115	D	1
2	RETAINING RING	TD3191	C	1
1	RESERVOIR	TD3528	C	1

NOTE: PROTECTION,
STEEL PARTS: NICKEL PLATED
ALUMINUM PARTS: ANODIZED RED

DEFAULT TOLERANCES	SIGNATURES	DATE	TOLIN DESIGN
.XX = ± .015	DRAWN: AF	10/22/12	
.XXX = ± .010	CHECKED:		DRAIN BOTTLE
FRACTION = ± 1/64	APPROVED:		
ANGLE = ± .5°	MATERIAL:		SIZE A / PART NUMBER: FGFB912001A5 / REV B
	FINISH: SEE NOTE		
	NEXT ASSY:		SCALE: NOT TO SCALE / SHEET 1 OF 1