



2020 Senior Capstone
Sponsored by Harley – Davidson

SPARK
an electric entry-level motorcycle

GROWING BRAND ACCESS

Harley Davidson wants to increase ridership but has low retainment of its beginner riders and an aging market. Potential young riders feel financially incapable and have shifted values from past generations.



younger generation

inspiring young
beginner riders



increasing ridership



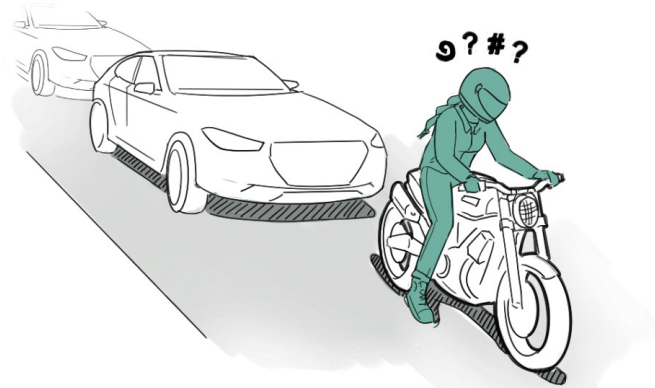
Veronica, 18



Damian, 22

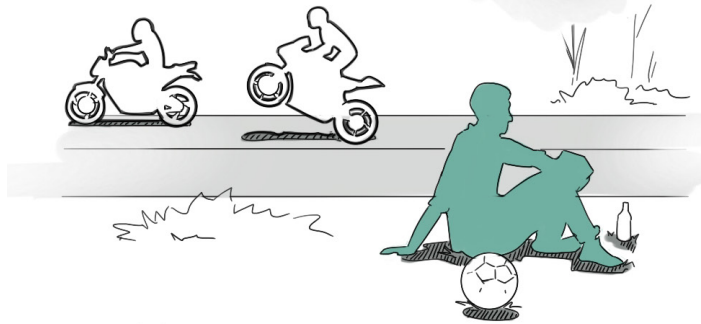


Sheyla, 22



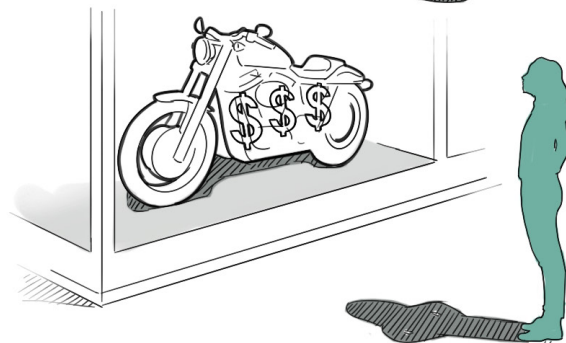
Riding can take a lot of **time to figure it out**. Shifting gears and gaining confidence on the road can be frustrating and create unenjoyable first moments. A **desire for intuitive** and easy to use products is growing.

Self-image
Intuitive



Perceives a **lack of innovation** in the industry. Negative stereotypes such as being noisy or rowdy can be unappealing to a beginner audience. Many are looking for **new types of experiences and technology**.

Utility
Innovation



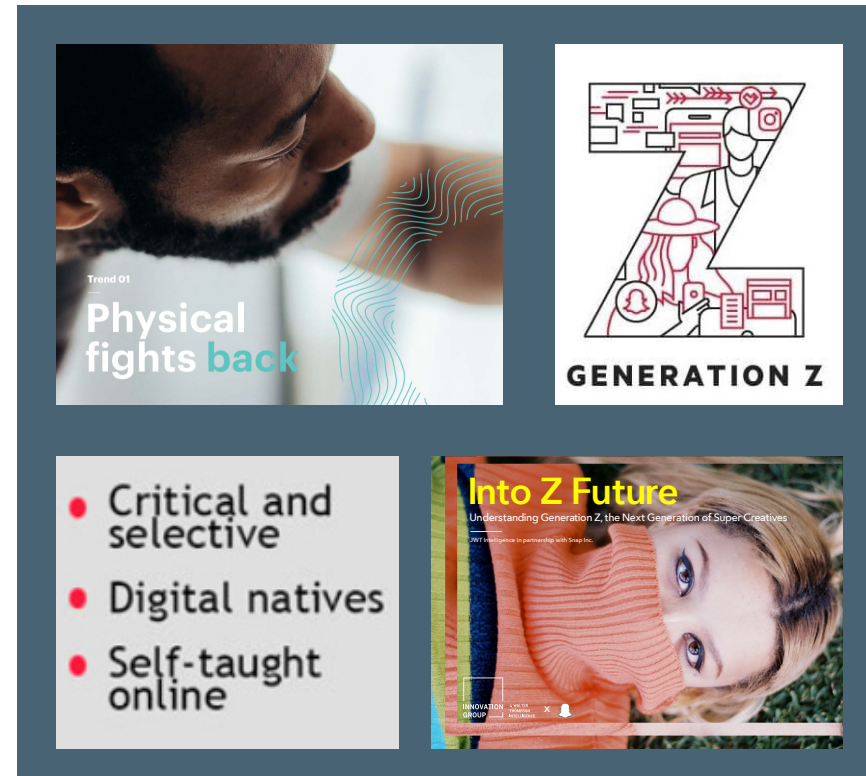
Lack of affordable options can be deterring, motorcycles are often seen as a luxury. With increasingly shared markets, young users want **flexible ownership**.

Accessible
Approachable



Pick up and Play

Popular product trends include personalization, subscription based or shared platforms, motivating through gamification and experiences that fit to your lifestyle.



Creative Utilitarian

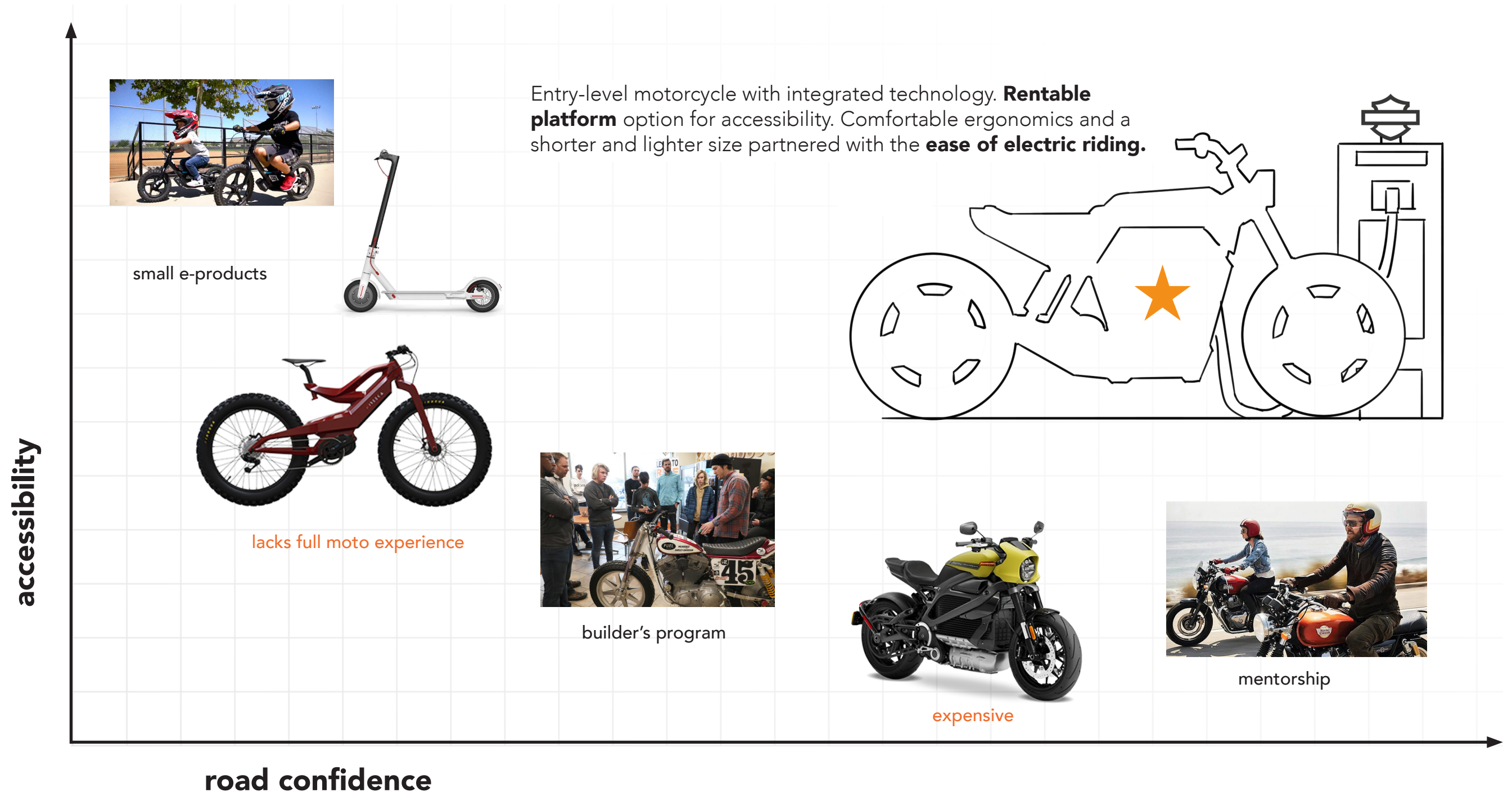
Generation Z values innovation, authentic brands, sustainability, technology integrated into experiences, access versus ownership and the idea that "instant is a given."



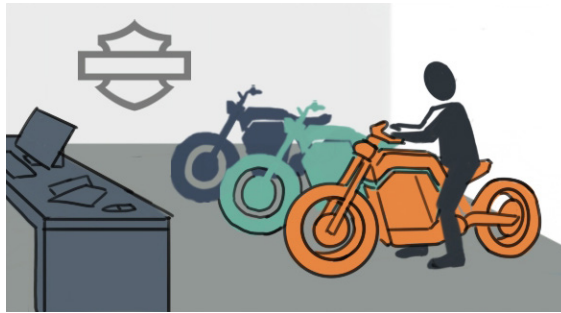
Milestone Memories

Experienced riders shared how they learned at their own pace, borrowing motorcycles that fit them best, taking emptier roads and growing experience. Many showed brand loyalty to their first bikes.

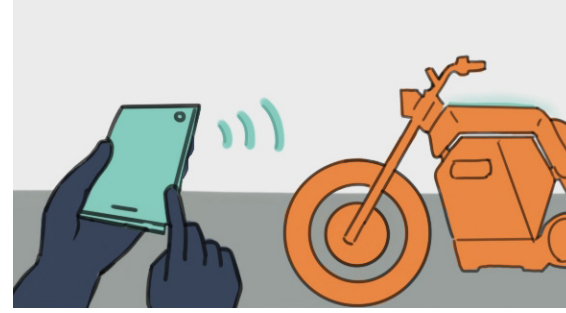
SOLUTION APPROACH | product placement



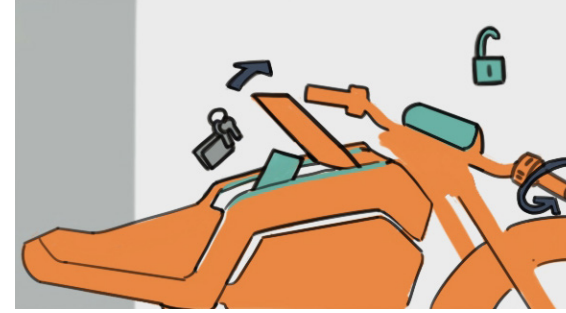
CONCEPT | user journey



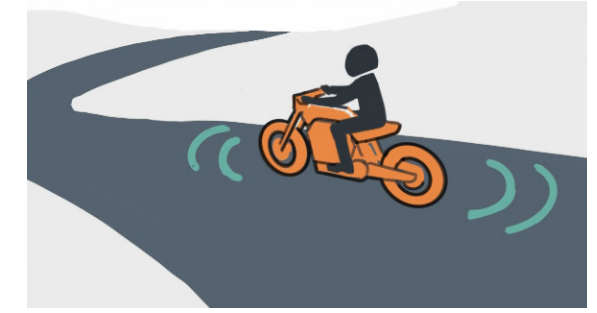
1 Spark can be rented from a Harley-Davidson dealership for any desired period of time. Feel confident with your feet flat on the ground.



2 Your phone can connect to Spark offering customization of power consumption, other settings, milestones and navigation.



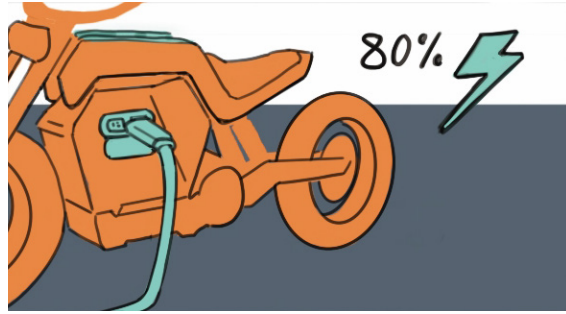
3 Store your phone and small belongings in the body of Spark. This area can also act as a wireless charger. Then just twist to go.



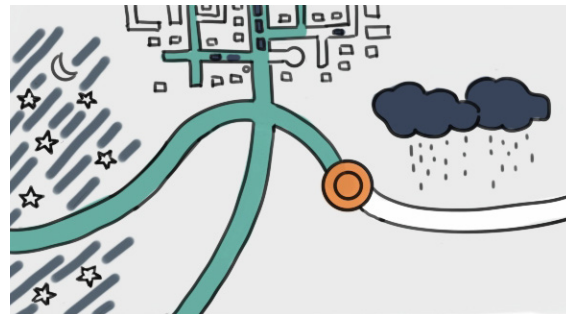
4 Experience a seamless first ride, utilizing Spark's alert system to sense nearby cars and receive navigation instructions.



5 Haptic feedback creates a physical response to riders actions. Notifying the user of milestones, battery life and acceleration.



6 Take a break, charge up and go again.



7 Build confidence when riding through new experiences with Spark's approachable size, positive feedback and easy to ride nature.

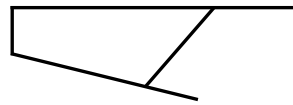


8 As you grow through these experiences you can return Spark and continue your journey as a rider confidently.

INSPIRATION | styling board

Industrial Momentum

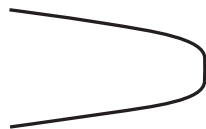
negative space
contrasting light/dark
strong lines and angles



In times of urban growth, contrast and structured objects reflect critical and pragmatic thinking.

Pinch & Pull

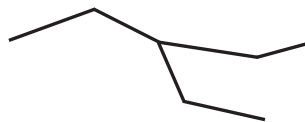
resolved loop
long continuation
balanced asymmetry



Refining products with a sense of organic nature, imitating fluidity and intentional living.

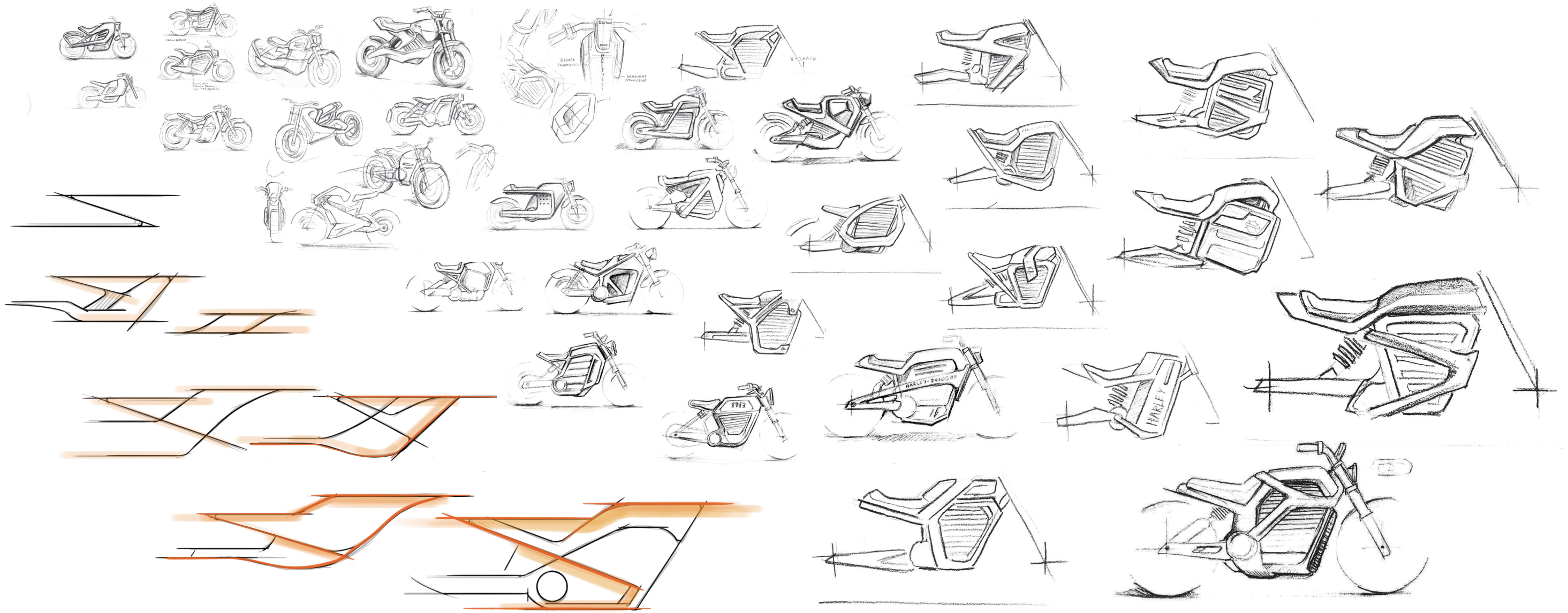
Branching Strength

dynamic motion
division into limbs
stretched with organic bends

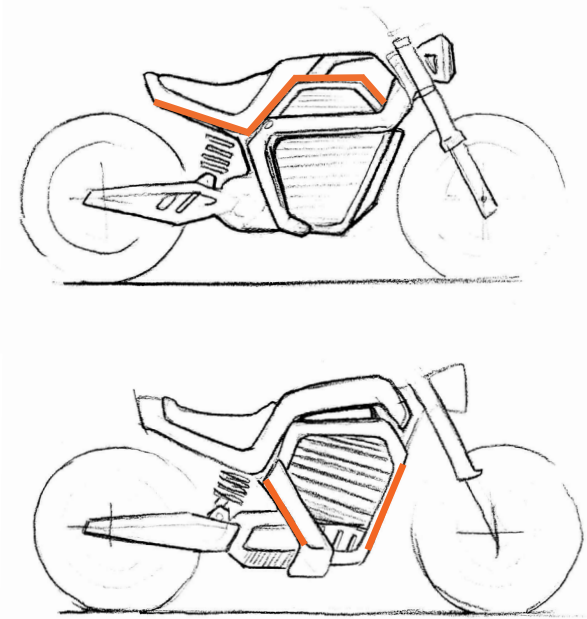
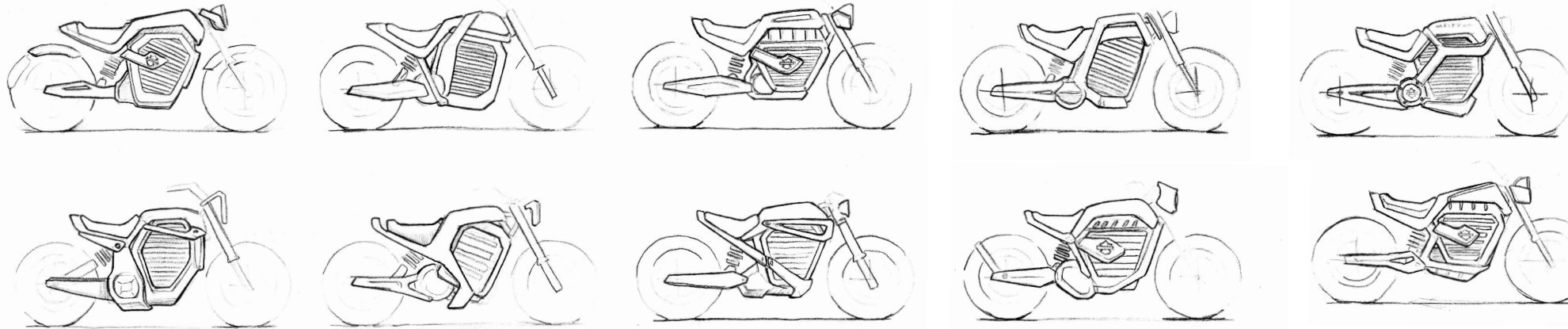


Modern love for outdoor adventure, movement and feelings of freedom, speed, and energy.

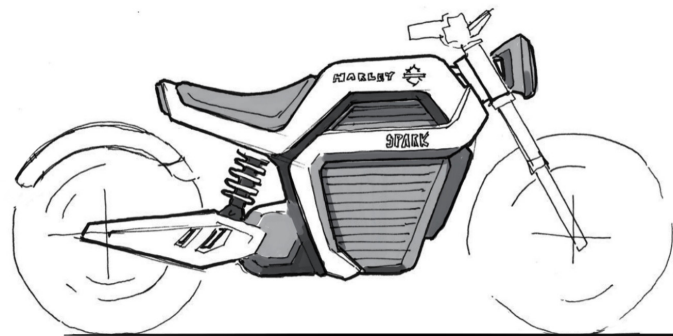
IDEATION | styling exploration



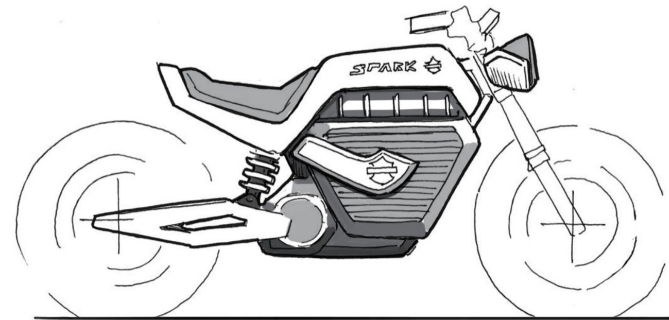
IDEATION | refining VBL



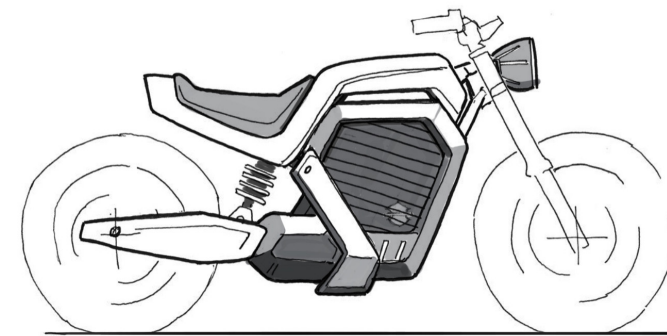
creating a consistent seat shape, unified body in "lightning line," tapering battery form



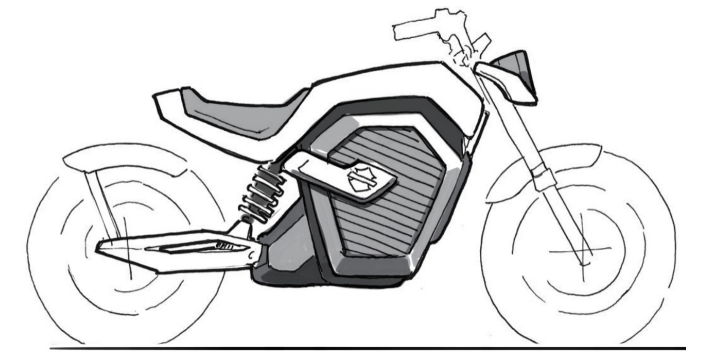
A external cast frame reflecting forms grounded and balanced



B detailed casing on battery floating badge over port slight downward style line



C negative space in "tank" frames the battery

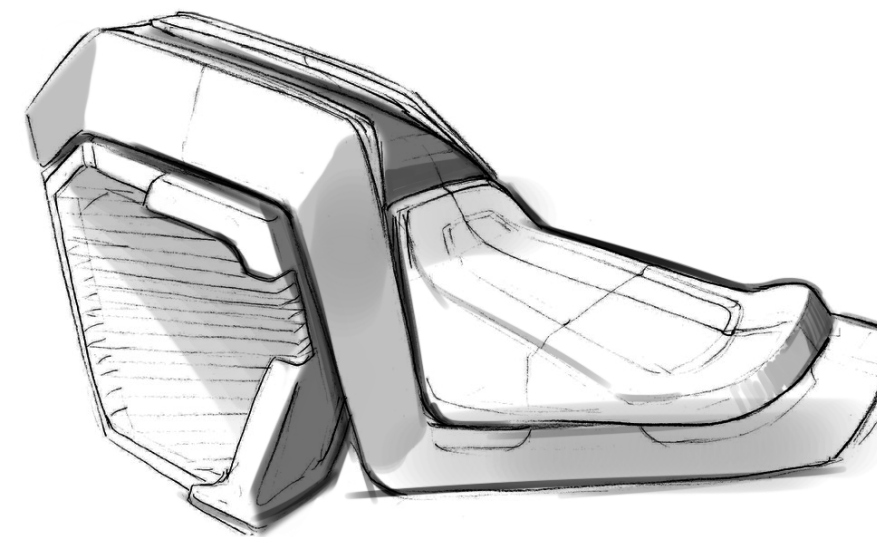
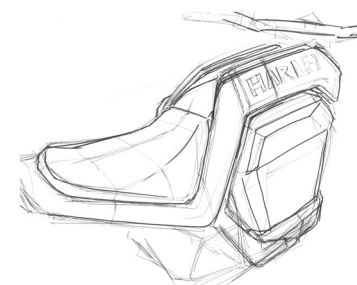
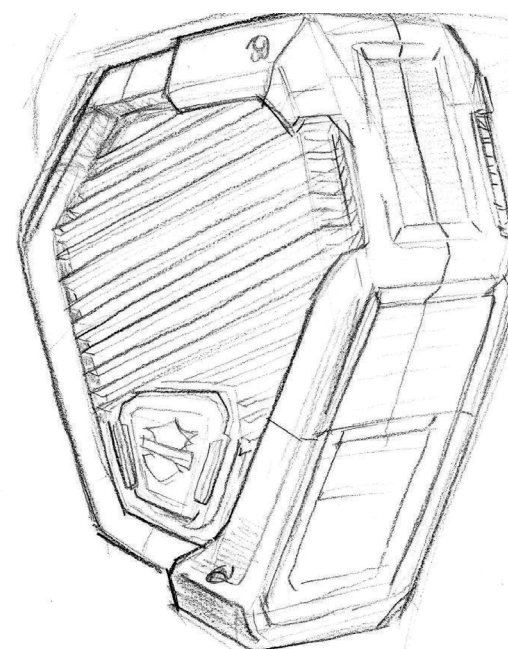
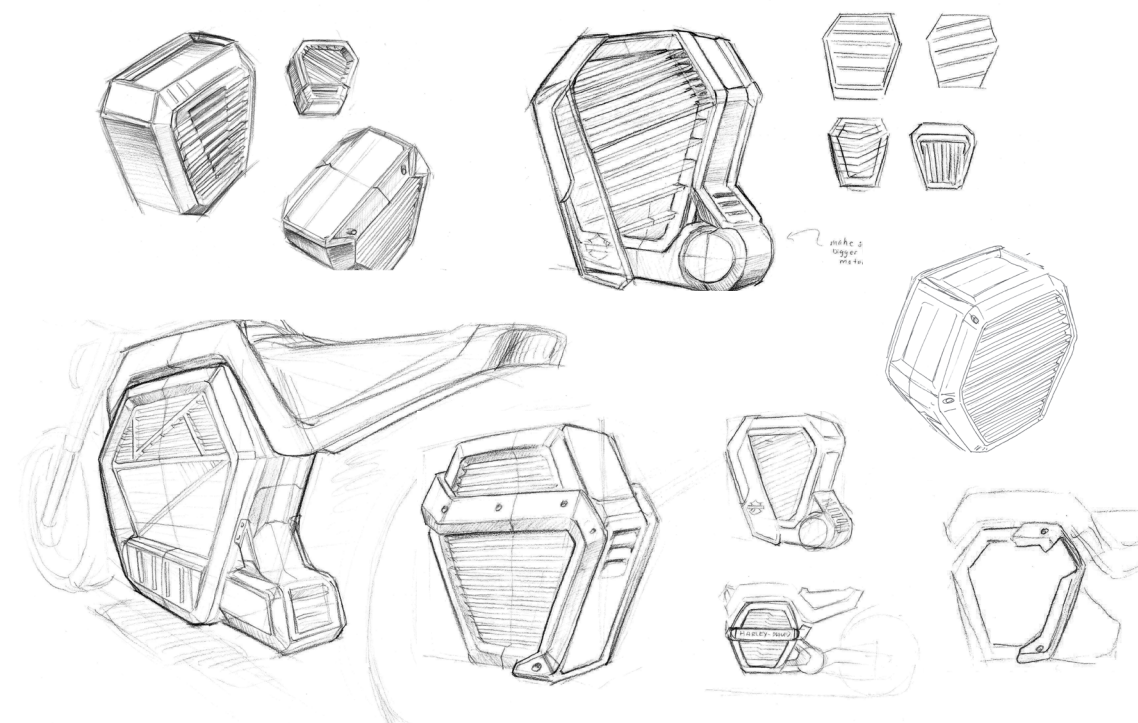
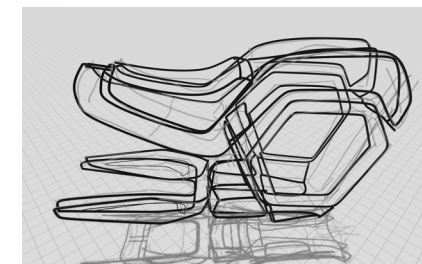


D fitted look with battery floating badge over port reduced details

DEVELOPMENT | component ideation

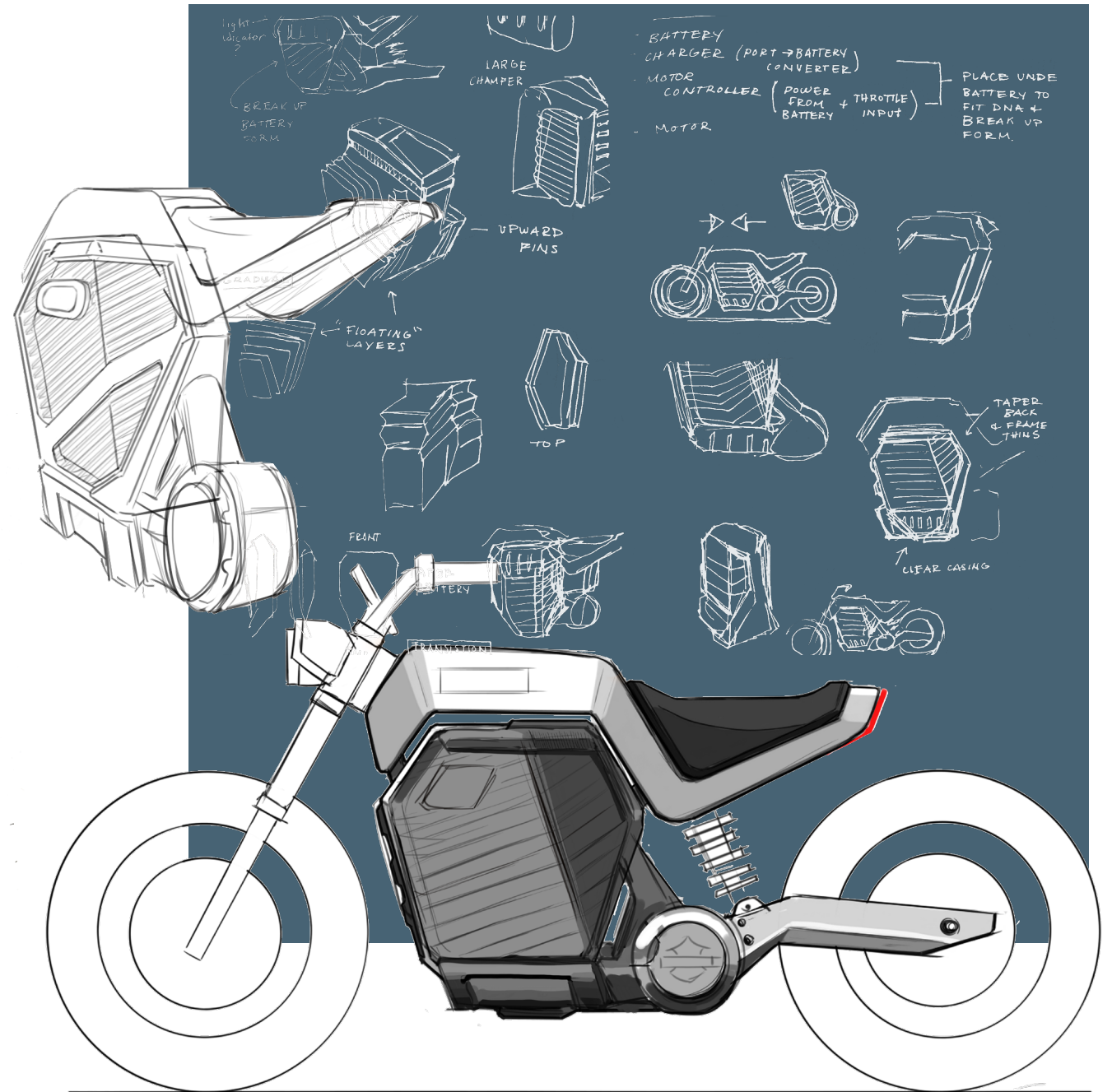
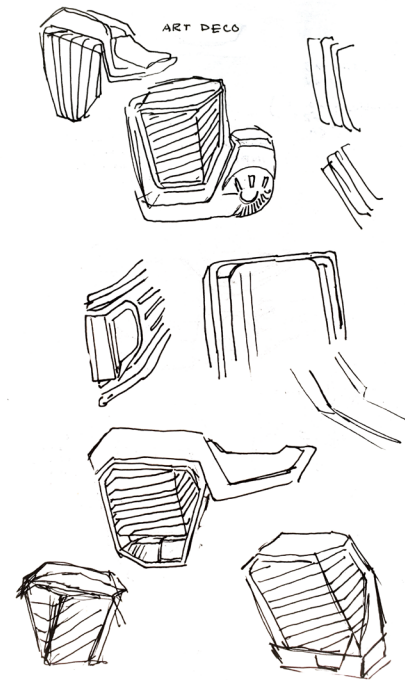
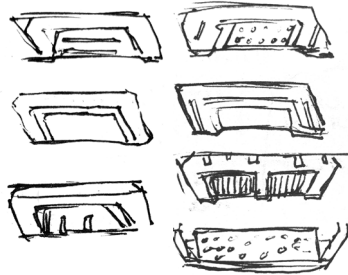
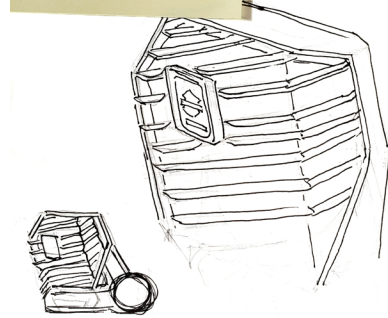
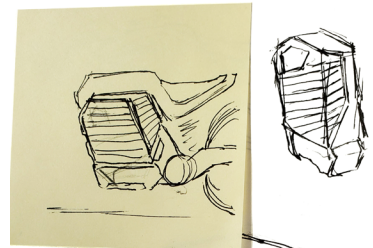
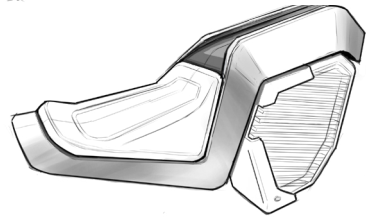
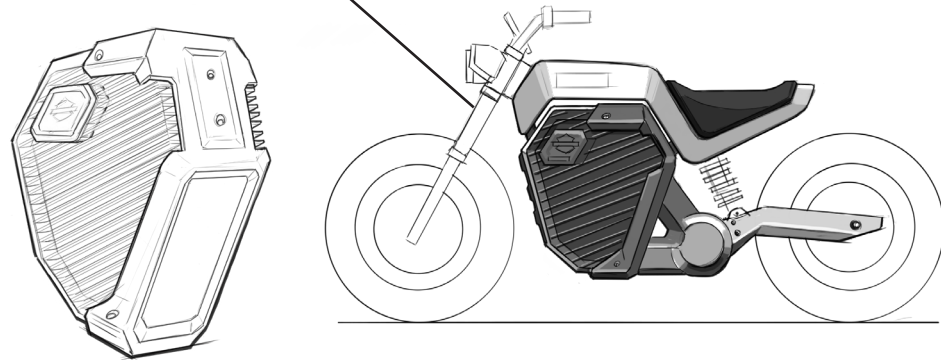


VR Exploration



REFINEMENT | revising concept

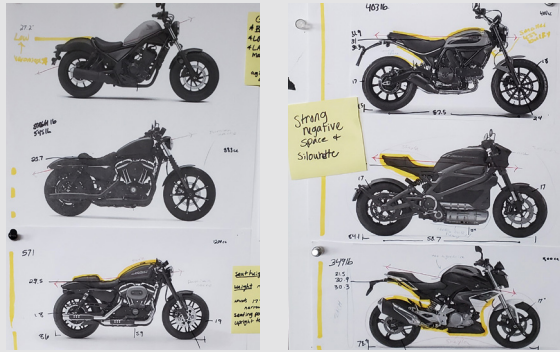
Initial concept



Feedback:
 "The battery needs more dimension, the body has movement for days."

"Consider the Livewire DNA and add the motor controller to the bottom."

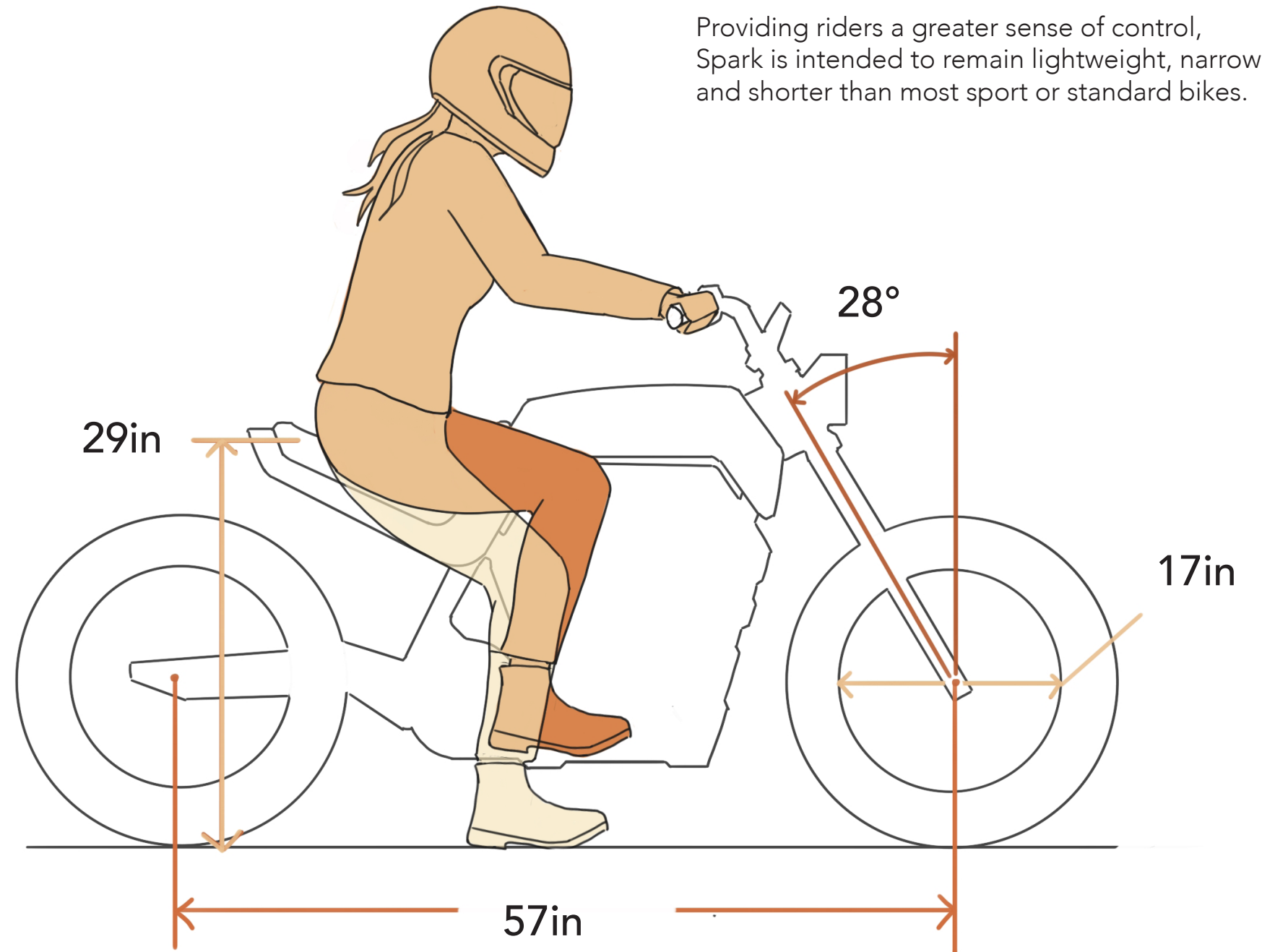
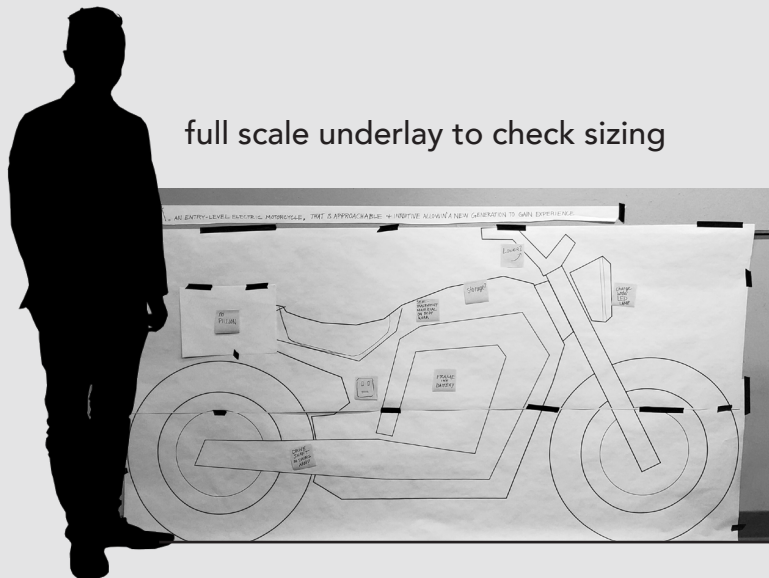
comparing existing bikes

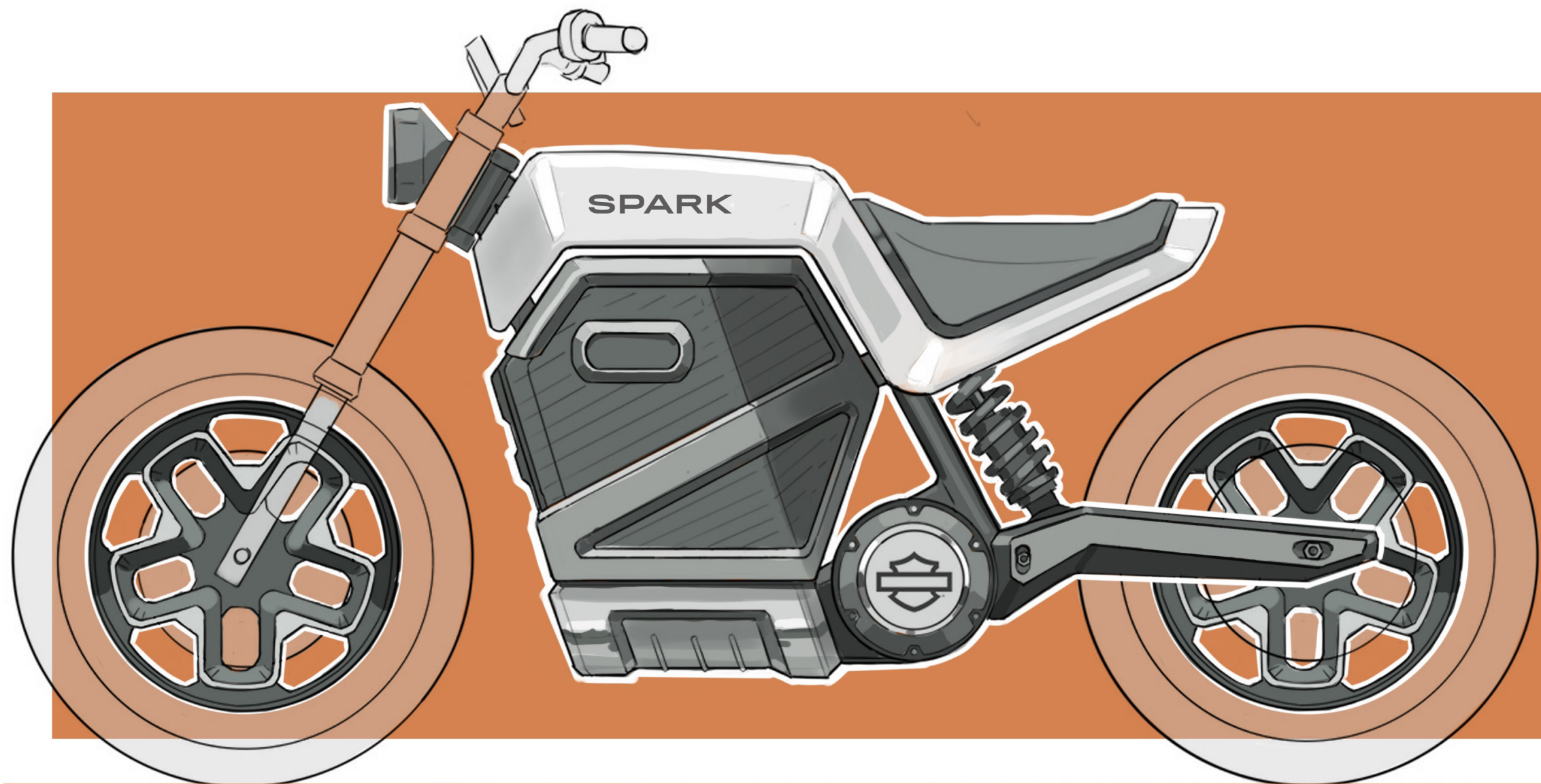


user provided feedback:

- neutral/upright riding position
- feet flat on ground
- influence from sport bike silhouettes
- negative space used as an identifier

full scale underlay to check sizing





Motor controller added beneath battery to reflect H-D EV DNA.

Pill-shaped battery port and matching headlight. Opposite side will have a identical shaped badge.

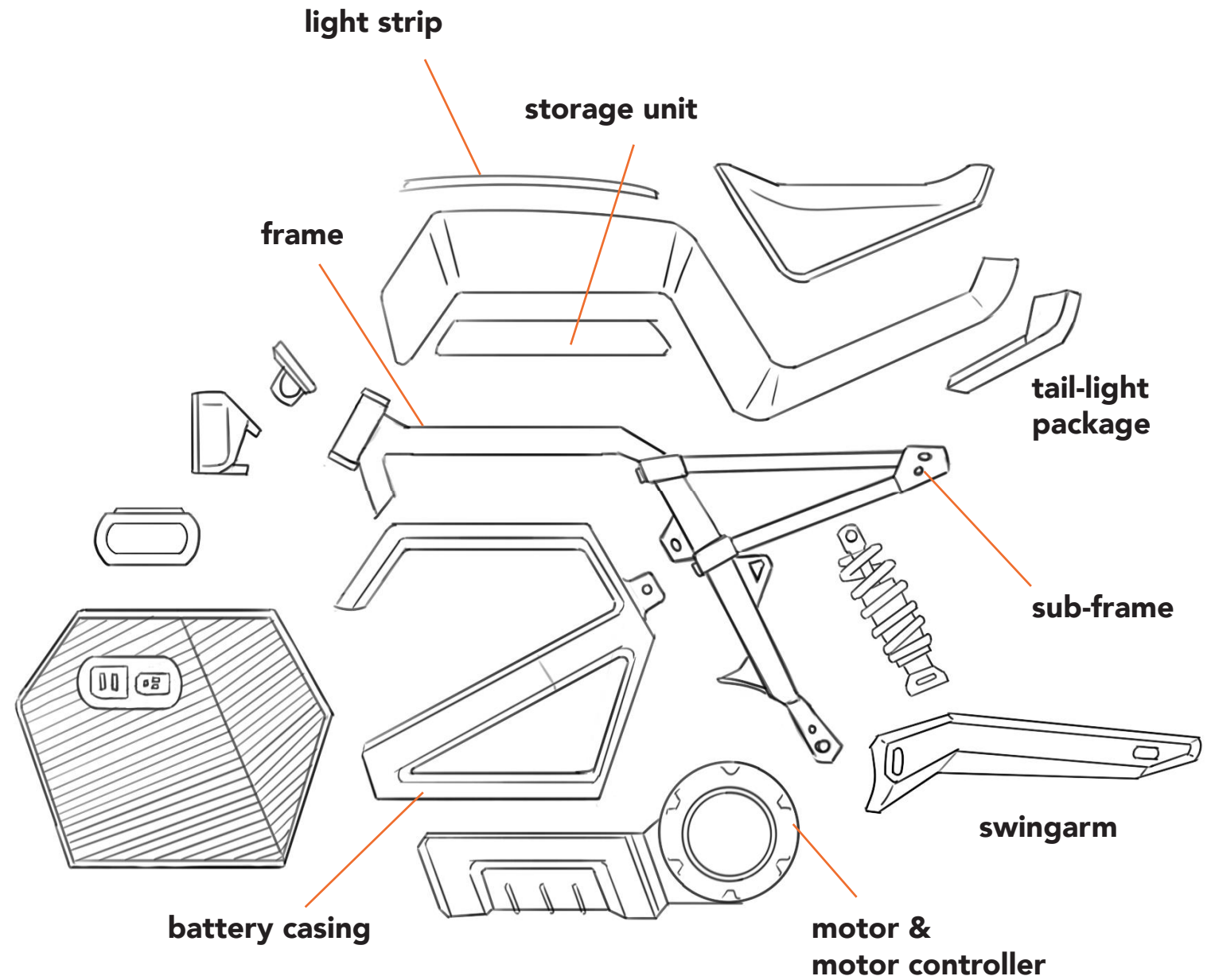
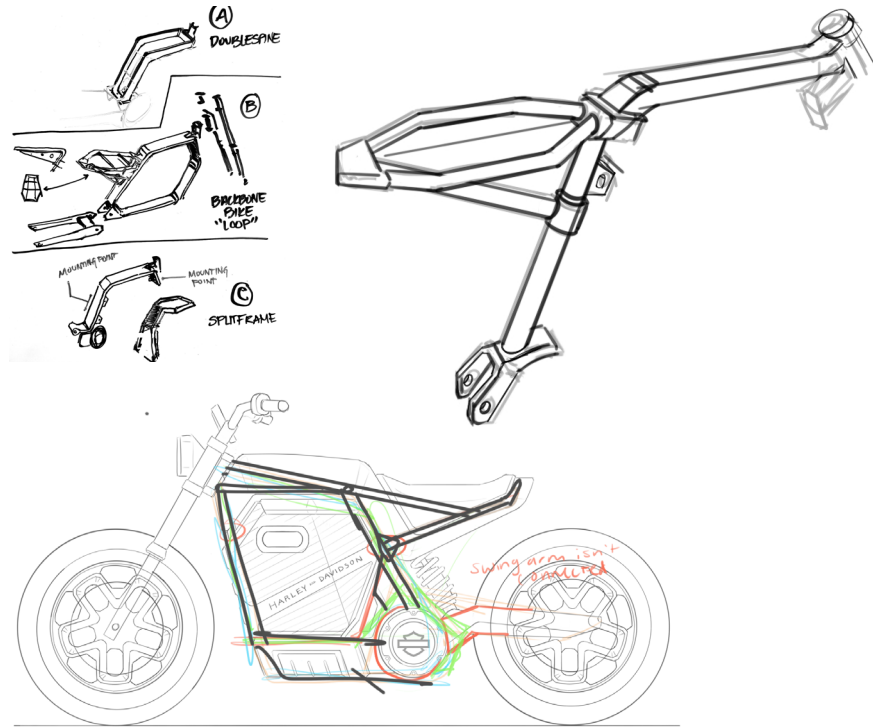
Attention and design detail brought to motor and battery form for visual balance.

Reconsidered frame geometry and connections points

Automotive inspired wheels that reflect the VBL of the bike



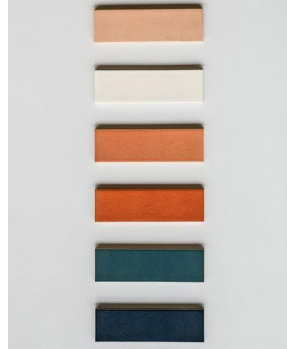
CONCEPT | breaking it down



Exploration of Spark's component layout, frame and assembly. An aluminum backbone frame allows for easy detachment of battery and motor components. The frame is also kept simple and hidden to allow for potential modifications of parts and flexibility of the design.

The battery casing aids in attaching the battery to the frame, providing added protection and acting as a design element.

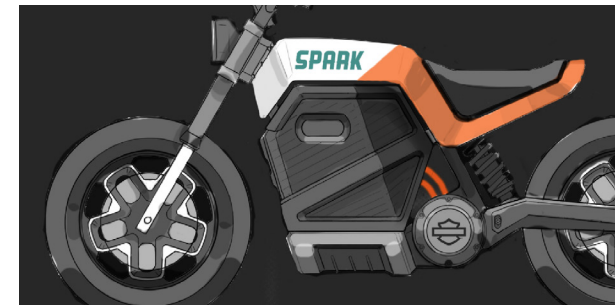
NEO-RETRO



easy going



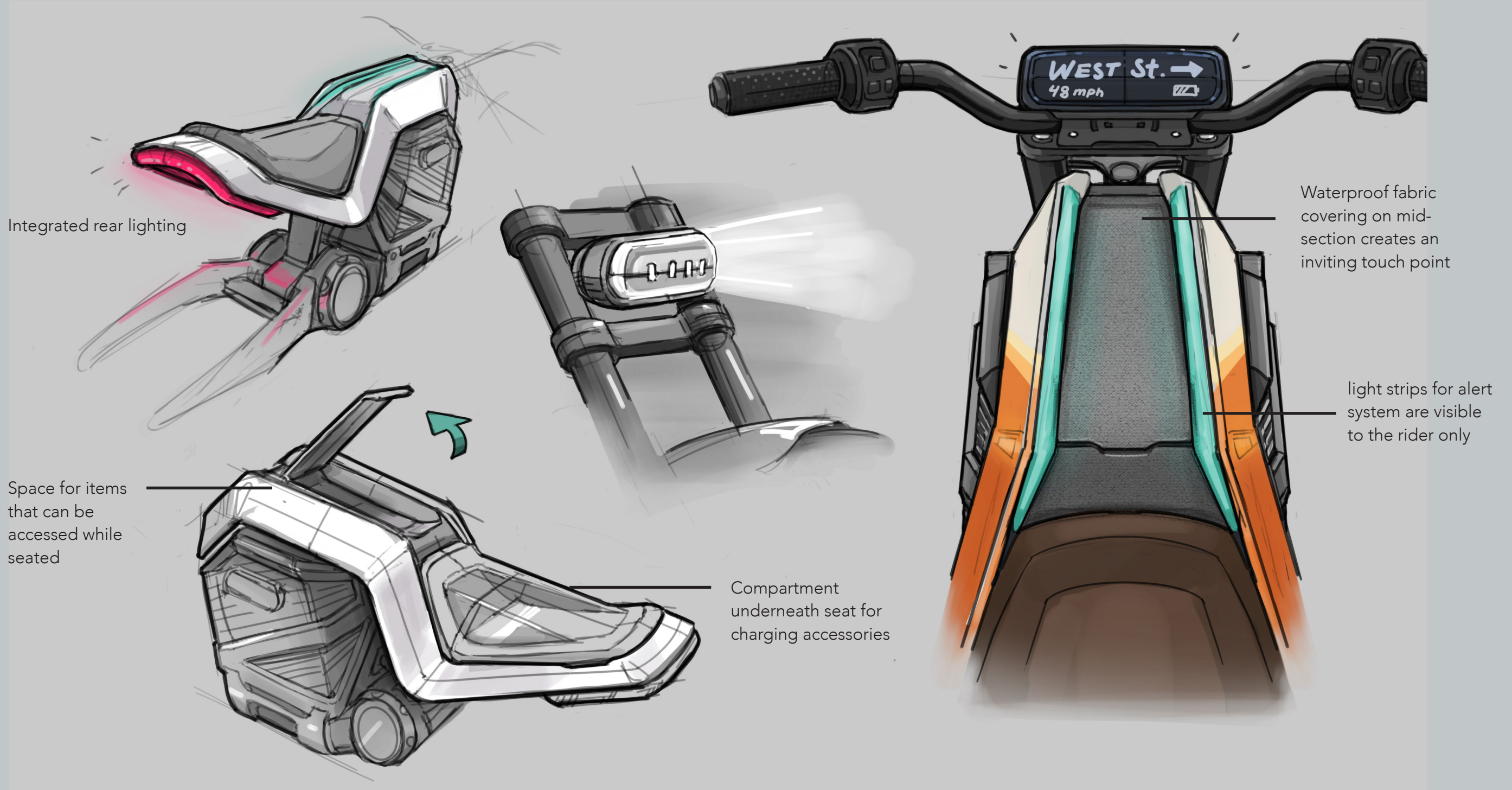
Bright sunset orange, with light warm neutrals and a range of blues with black.



- Inviting** - fresh, comfortable
- Refined** - capable, mature
- Youthful** - fun, graphic

Trending use of fabric on electronic products
Thin strips of accenting color or metal finish
Color blocking and simple shapes used to define space.

CONCEPT | features



Integrated rear lighting

Space for items that can be accessed while seated

Compartment underneath seat for charging accessories

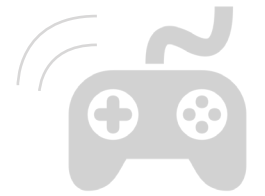
Waterproof fabric covering on mid-section creates an inviting touch point

light strips for alert system are visible to the rider only



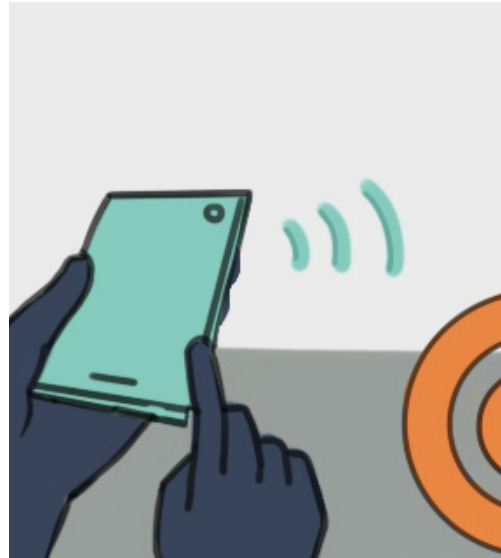
Integrated tech motivates and encourages steps forward in gaining experience, reducing some initial frustration. Through haptic feedback, riders can feel a physical response to their riding.

Advanced Vibration patterns convey information with predefined haptic waveforms created by a motor. A discrete way to provide information and enhance the experience.



THE SOUL OF **SPARK**

creating life in a silent bike,
forming a conversation with the rider as they learn and grow experience.



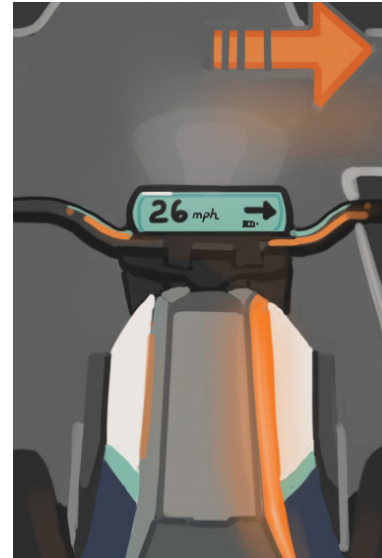
Phone

Power consumption, braking and riding modes can be modified

Go-home feature and route customization in app

Check charging status of bike from a distance

Set milestones to achieve



Lights

Navigation cues suggest merging or turning points for flexible routes

Indicate when Spark is charging, or powered on

Alerts milestone achievements

Can indicate nearby vehicles



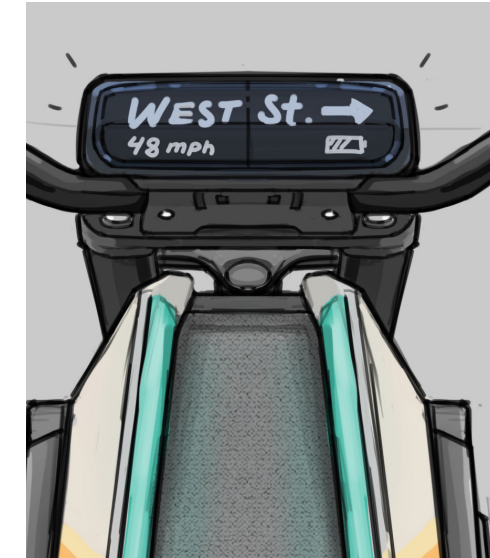
Haptic feedback

Power on heartbeat

Charge warning vibration

Recognizable haptic chime for indicating milestones achieved

Optional vibration ramps paired with acceleration



Screen

Greeting rider by name

Large street-names paired with navigation

Standard gauge info

The battery charge port is located on the left side of the bike at an accessible height, while keeping the electrical cord away from the bike.

The port has a hinged door that clips shut and is orientated to not interfere with the charging process when open.



Amplify Your Adventure

create new experiences



Ride with friends, or on your own



A bike for anyone, that's easy, fun and personal



Feel ownership and confidence instantly

Spark is an electric, easy-to-ride motorcycle, made affordable through renting. This design intends to make riding motorcycles more approachable and accessible. With seamlessly integrated tech and a playful graphic style Spark attracts the future of Harley-Davidson riders.

Spark tells a story that focuses on you, and your journey first. As it is designed to foster growth and positive memories during those crucial firsts few rides out on the road.

This project and design was inspired by a personal passion for riding and a desire to share that feeling of freedom with as many as possible.

Thank you to the Harley-Davidson design & styling team for their sponsorship and continual support.

SPARK

Start Your Journey



Maxis Siu