

A group of people are riding bicycles along a paved path that runs alongside a calm lake. The path is on the left, and the lake is on the right. In the background, there are tall pine trees and other deciduous trees with some autumn-colored foliage. The sky is overcast with grey clouds. The people are wearing helmets and casual clothing. The person in the foreground is wearing a black shirt and a grey helmet, riding a red bicycle. Other people are further ahead on the path.

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Getting to the heart of the biking experience

FAB
LAB
CHCH

What we're capturing:

Journeys, experiences and stories that track where, how and why bikers move.

To provide live data for:

Businesses and council staff who benefit from knowing how people move and spend in the city.

The Problem

Cycling is our least-understood and potentially most transformational mode of movement in cities.

Planning decisions are currently based on research undertaken at a specific time of year, or in review of a new piece of infrastructure.

There's currently no in depth understanding of the human experience of cycling or access to an ever evolving pool of user stories.

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The Challenge

To create a participatory platform that enables citizens to share their biking stories to positively promote cycling and help shape our cycling infrastructure

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The Concept

A Smart Bike Bell

To create a bike friendly device in the form of a bell.

Riders sound one ring for a negative experience and two for a positive experience. Experiences, captured on the journey via a mobile phone, are sent to the cloud in real time and displayed on an interactive map.

Vibrant stories shared by participants would help encourage friends to get out on their bikes, and over time, rider contributions to the experience map would provide useful insights for cycleway planners.

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The Concept

An Open Heat Map

At the core of the challenge is to create a device and interface that encourages citizen participation. To achieve this, the process must be citizen led. Participants can contribute anonymously to an open heat map, adding to a community of experiences and stories that have the power to influence the way we move around our cities.

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A group of cyclists is riding on a paved path that winds through a lush, green park. The path is shaded by large trees on the right and left. In the background, a body of water is visible. The cyclists are wearing helmets and casual clothing. The scene is bright and sunny, with shadows cast on the path.

The Concept

Spreading Stories

Biking is a sensory experience. On a bike, you are closer to nature, you physically feel the elements. Every bump on the road. The sound of nature and traffic. Wind and gravity working for and against you. It's a heightened experience that feeds personal stories, both positive and negative. By focusing on capturing and sharing stories about riding, the App has the potential to increase awareness of the biker's journey. In turn, these stories have the potential to influence other people to ride and shape the way our city is built.



The Prototype

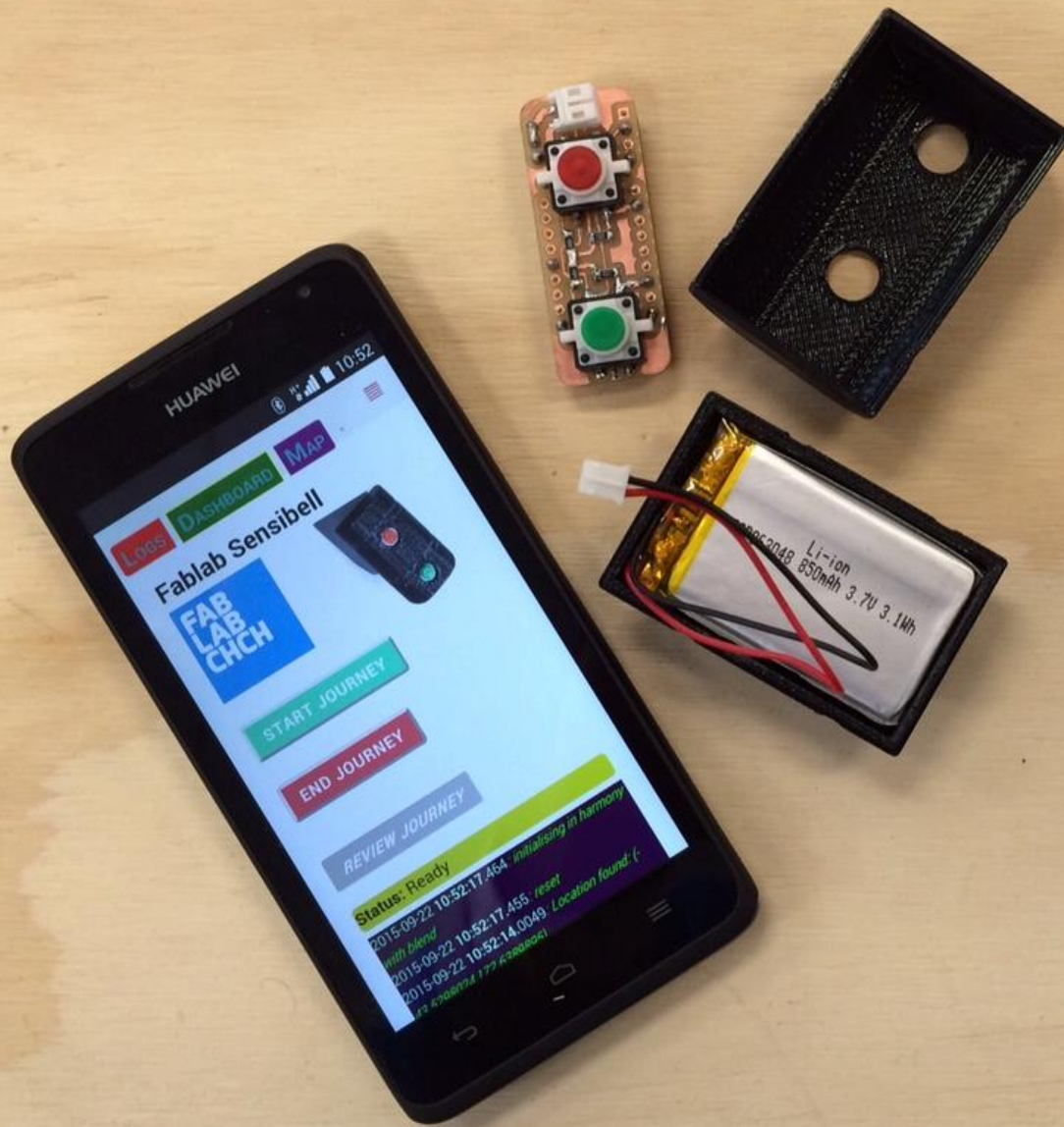
Proof of Concept

With an investment of \$15,000 from Internet NZ, Fab Lab Chch developed a minimum viable product – a thumb activated device that sends rider feedback to a mobile phone, then to the cloud.

The device and App, rapidly prototyped over eight weeks, have all the fundamental technology proposed in the original the bell concept.

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The Prototype

Features

App:

- GPS Tracking
- Bluetooth device syncing
- Journey mapping
- Experience location plotting

Device:

- Bluetooth enabled
- 2x Buttons (good/bad)

Handwritten notes on green sticky notes, organized in columns. Some legible text includes:

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Field Testing

Trial 1: 6th September 2015

Objectives

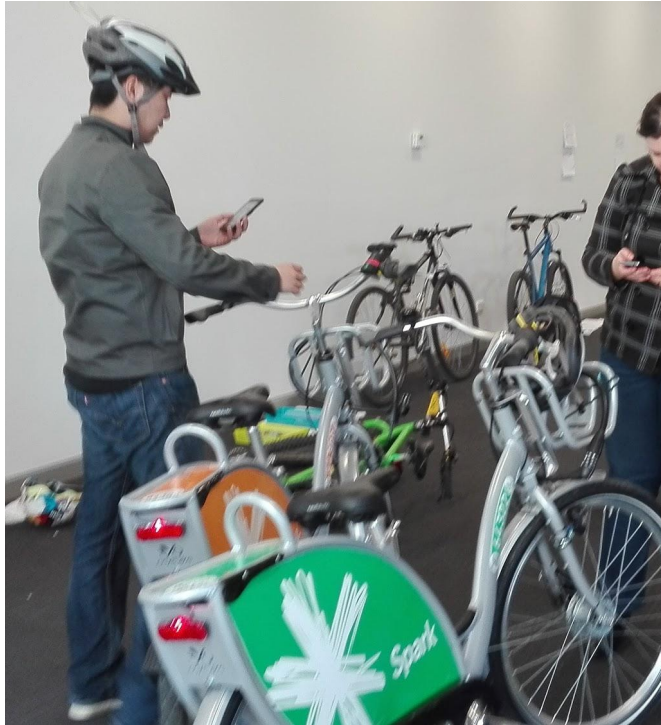


The objective of trial one was to:

- Test the connectivity of the App and the device.
- Gather user feedback on the concept of a community aggregated platform for cycling.
- Collect user-defined definitions for “good” and “bad”.
- Understand what would motivate and incentivise people to engage with the platform and cycle in general.

Trial 1: 6th September 2015

Participants



A diverse group of riders from different background and experience were invited to the trial.

8 Males, 8 Females

Ages: 20-45

**non-riders to very
experienced riders**

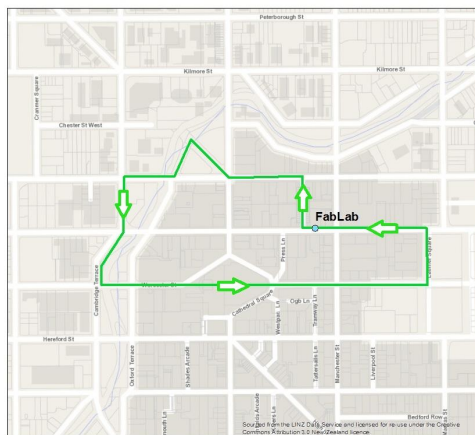
With thanks to:
Spark Bikes

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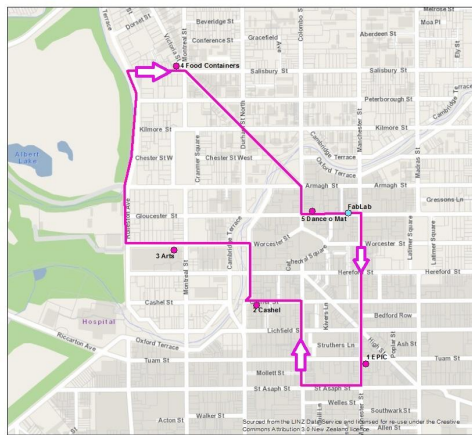
Trial 1: 6th September 2015

Routes Travelled & Approach



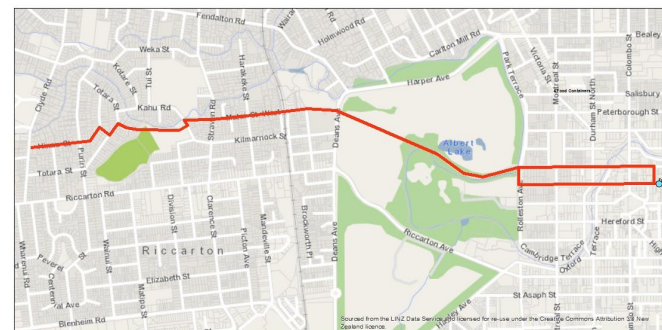
Short Ride

10 mins around the CBD
with varying terrain



Spark Route

Connecting all the Spark Bike
stations around the city



Uni Cycle

New route that connects UC
with the CBD

Approach: Riders we asked take a ride and log a positive (green) or negative (red) experience with the device with no prior input. After the ride an open discussion was facilitated to draw out experiences and feedback.

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Trial 1: 6th September 2015

General Discussion: The Concept

“In the general sense, wearable technology **makes you stop and think about what is going on.**

You notice all the things.
Interesting experience but when does the novelty wear off.”

“Conversation starter when riding with others. **Turns subconscious thought into hard reality.** “

“Often don’t remember the good or bad points at the end of a journey. Often think at the time **“I wish I could let the council know about this”**. It would be nice to be able to do this. Integrate with social media or council app. “

“Use it to map out cycle routes in the future. A collective experience.”

“When biking you have a sense of powerlessness. You are always against something. **It is a good way to feel like you have control** of some aspect of the environment. It creates a link between feeling annoyed but I am here and I can do something about this.”

“Network of subjective experiments. See what trips look like. Car vs bike comparison. More likely to log negative experiences which results in a bad image for cycling.”

The whole trip is a positive feature, so **it is easier to mark the negatives.** Negatives were generally infrastructure related. Some were bike related.

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Trial 1: 6th September 2015

General Discussion: Device & Platform

Device:

- Can it be built into the handle bars?
- Lever for the thumb.
- Left and right button.
- Slider, like the classic bell eg a big ring if it is bad.
- Duration of bell press to register intensity
- Think of a horn or wave as you would when driving.
- Have a button for infrastructure and one for other people's behaviours and other elements, eg I pressed the button when I smelt flowers.

How to keep this alive

- Social media
- Theme rides
- Attractions
- Geocaching
- Collection points
- Cafe owners - tag it
- Support other cycling events
- Selfie orienteering

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Trial 1: 6th September 2015

General Discussion: Positive Experiences

Parking for bikes
Left hand turn
protection
Hook turn options
Pavers - Old European
Intersections with
advance box for cyclists
Good cycling specific
signage
Nice architecture
Patient drivers
Cars that give you
space
Separated cycleway
Smell
Moving
Nice Weather
Smooth under wheels
Not crossing tram
tracks

Vitamin D
Breaking the law
Speed was safer
Smiles give/recieved
Visible bike parking
Families out with kids
Park greenery
Other cyclists
Tailwind
Sunshine
Catching the green
bike light and not
stopping
Smell of flowers
Car free street (New
Regent)
Riding in a park
Being off road
Nice views

Riding next to someone
else and talking
New un-damaged path
When pedestrians
notice, they get out of
your way
Minimal traffic
Drivers waited
Taking the lane doesn't
get you honked at
Riding through the
square (no traffic)
Open flat road
Smooth pavement
Dedicated bike lane on
most roads
Easy riding off the
street eg park
Quick convenient travel
Green lights
People on spark bikes

Wide clear path for cycles
only
Small hill to go down
Nice view
Quick light changes on
unicycle way
Shoulder on Colombo
Ramps on Victoria
Square
Some drivers respect
your space
Guided tour
Cycling specific
infrastructure
Smooth tarmac
Traffic lights with bike
priority
No body else
No cars
Awesome photo
opportunities

Trial 1: 6th September 2015

General Discussion: Negative Experiences

Turning right
Intersections too narrow
to share with cars when
stopped
Lack of bike parking
Bike parking not suited
to most bikes
Crappy road surface
Bike parking at a big
distance to key
destinations compared
to car parking
Turn lanes hard to
access by bike lane
Puncture
Low hanging signs near
miss with headroom
Headwind
Narrow shared paths
Intersections without
advance boxes

Crossing tram tracks
Cycling alongside
tramlines and
pedestrians without
having designated
cycle space
Too many people on
the shared paths
Stopping to push bike
bottom
Non-working sensors
on path
Traffic lights that don't
give bikes priority
Rubbish on the road,
glass
Narrow roads with
cars
Poor visibility on
corners when turning
Road works

Slippery brick on path
Cars on my road
Bumpy roads
Tam tracks
Inattentive drivers
Street furniture
Poorly designed
intersections
Gravel
Cycle lane to nowhere
Road cones
Shared space with cars
Obstacles in bike lane
Potholes
Glass on the road
Red lights
Bad smells
Tram tracks
Head wind
Confusion on shared
paths

Trams
Bad parking in cycle ways
Tram tracks
Turning right
Transition to cycles ways
Transition from road to
cycleway (Latimer square)
Back pedal bikes
Car doors
One way streets
Pedestrians not aware of
shared path etiquette
Cars
Hazards that force you onto
the road eg road cones
No cycling specific signage
People walking backwards
into us

Trial 1: 6th September 2015

General Discussion: Incentivising Use

Gamify idea
Backing current events
eg Parking day
Benchmarking KPI
(CCC) of improvements
based on data
Due determines
allocation of cycle
infrastructure funding
(from councils)
Instant gratification
Followers based on
your cool journeys
Tracked and public
visible data
Survey and prizes
Discuss bigger picture
Non-monetary
Positive feedback
Benefits to future
generations

Show the difference it
makes
Community
Data on cycling
uptake numbers
Highlight individual
contributions
Instant data and
photo feedback
Direct council link
Reduction of “red”
spots
“Heat map”
Free access to spark
bikes via points
Free bike services
Positive badges
Evidence that people
are using it (app)

Data in exchange for
bike related services
Free coffee
Geocaching - pokemon
catch em all
Data use and positive
outcomes
Online strava
community
Qualitative over
quantitative -----
Feeling good about
enacting positive social
change
Knowing where the
good routes are
Free
Warm and fuzzies
Collective impact
Social movement
Sense of freedom

Resulting data, own and
others, easily accessible
Live tracking
Goals to work toward
Logging own personal data for
own use (maps, distance etc)
Non-FOMO
Knowing the transport planners
are listening
Integration with other apps
Reliability
Ease of use
Seeing actual positive change
as a result of the data
Assurance it won't be used for
nefarious purposes (GSCB
etc)
Knowing that a broad
demographic is using the apps

Trial 1: 6th September 2015

Outtakes

The Device and Platform

On the whole, most people felt the device gave them a voice and a way to communicate their experiences, whether it be socially or to the council. In many respects it gave the rider a sense of control.

The Form and Interaction

The more ergonomic the form the better. As well as being desirable, it must be able to communicate the range of emotion across the positive and negative spectrum.

Experiences

The range of experiences captured can be distilled down into categories for easier cataloguing and analysis.

For example:

- Physical Infrastructure
- Bike mechanics
- Environmental
- Spatial
- Empathy

These need further defining and refining so they're clear and quick to understand.

Incentivising participation

Intrinsic motivation came through as the main point. Riders participating get a sense that they're contributing to improving the biking experience. They want to be connected to the community, and to see some positive change happening as part of the contributed data.

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Trial 2: Date to be confirmed

Trial 2: Objectives

Test some different ergonomic forms of the device.

Test improved beta App and allow for direct user interaction

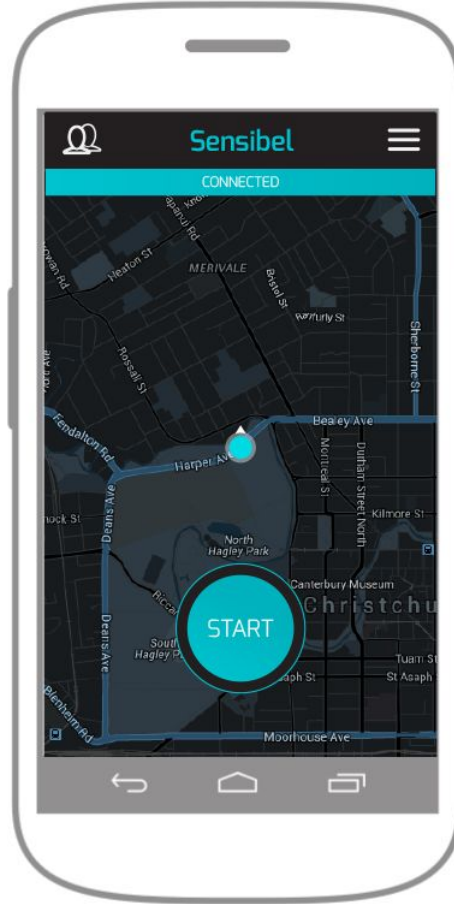
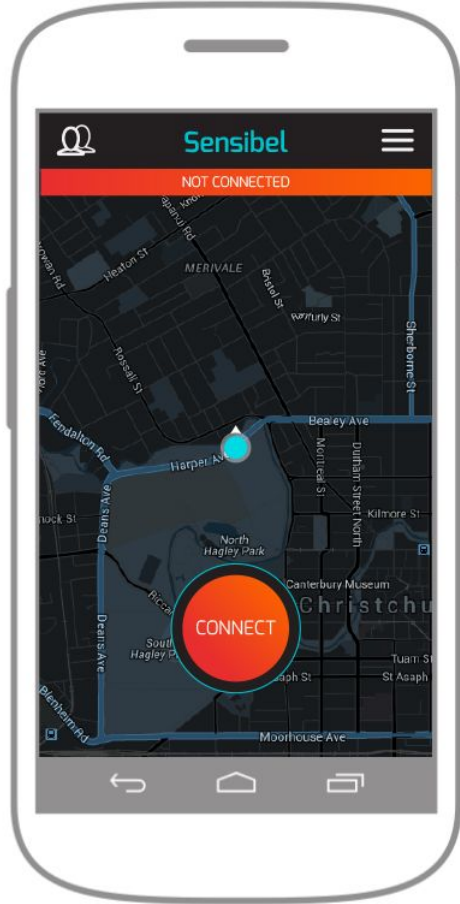
Trial devices with a group of cyclists over a weekend, to allow for longer and more diverse journeys.

Feedback on the user interface design

Discuss community orientated roll-out plan.

Next Step

The App: User Interface

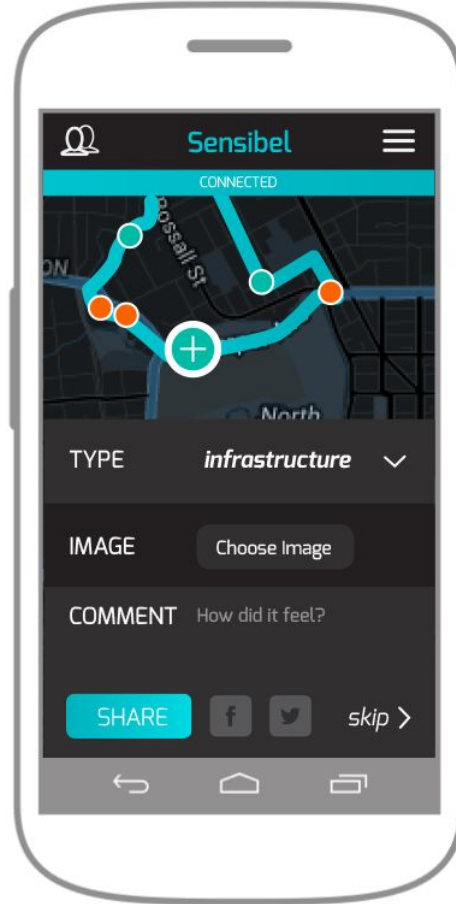
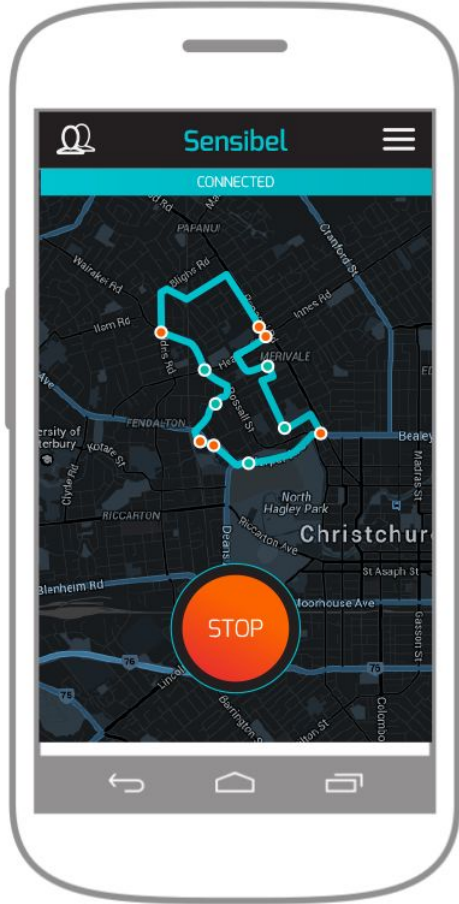


The App is only engaged at the beginning and end of the journey, or at points of interest during the journey where the biker has disembarked.

All interaction during the journey is done via the Sensibel device attached to the handlebars of the bike.

Next Step

The App: Mapping & Annotation



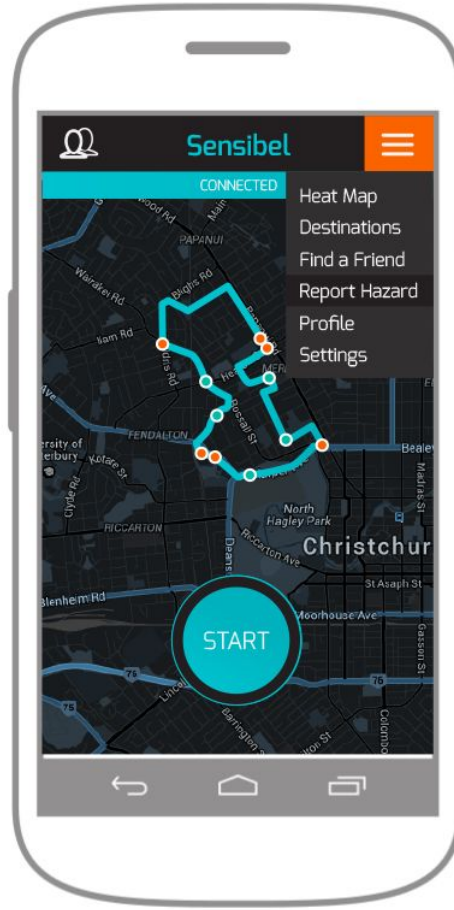
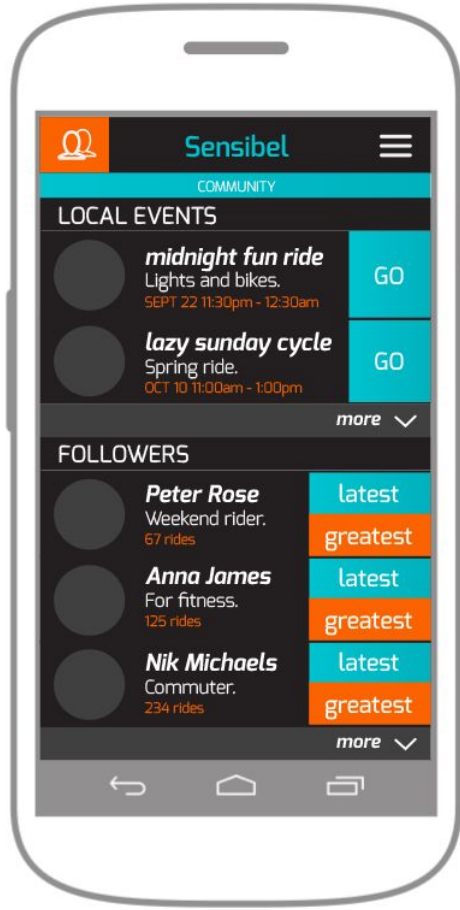
Positive and negative experiences are plotted along the biker's journey.

Once completed the biker can add an extra layer of context through imagery or story.

These stories, or the entire journey can be shared socially.

Next Step

The App: Socialising & Data



Users can initiate or participate in local biking related events and invite friends.

Users of the App can also follow fellow bikers and see their favourite rides or places.

The platform can be used to show most popular cycling routes, trouble areas or even report a hazard directly to the council.

Data captured can be analysed by urban planners to improve the hard infrastructure of a city and improve the biking experience.

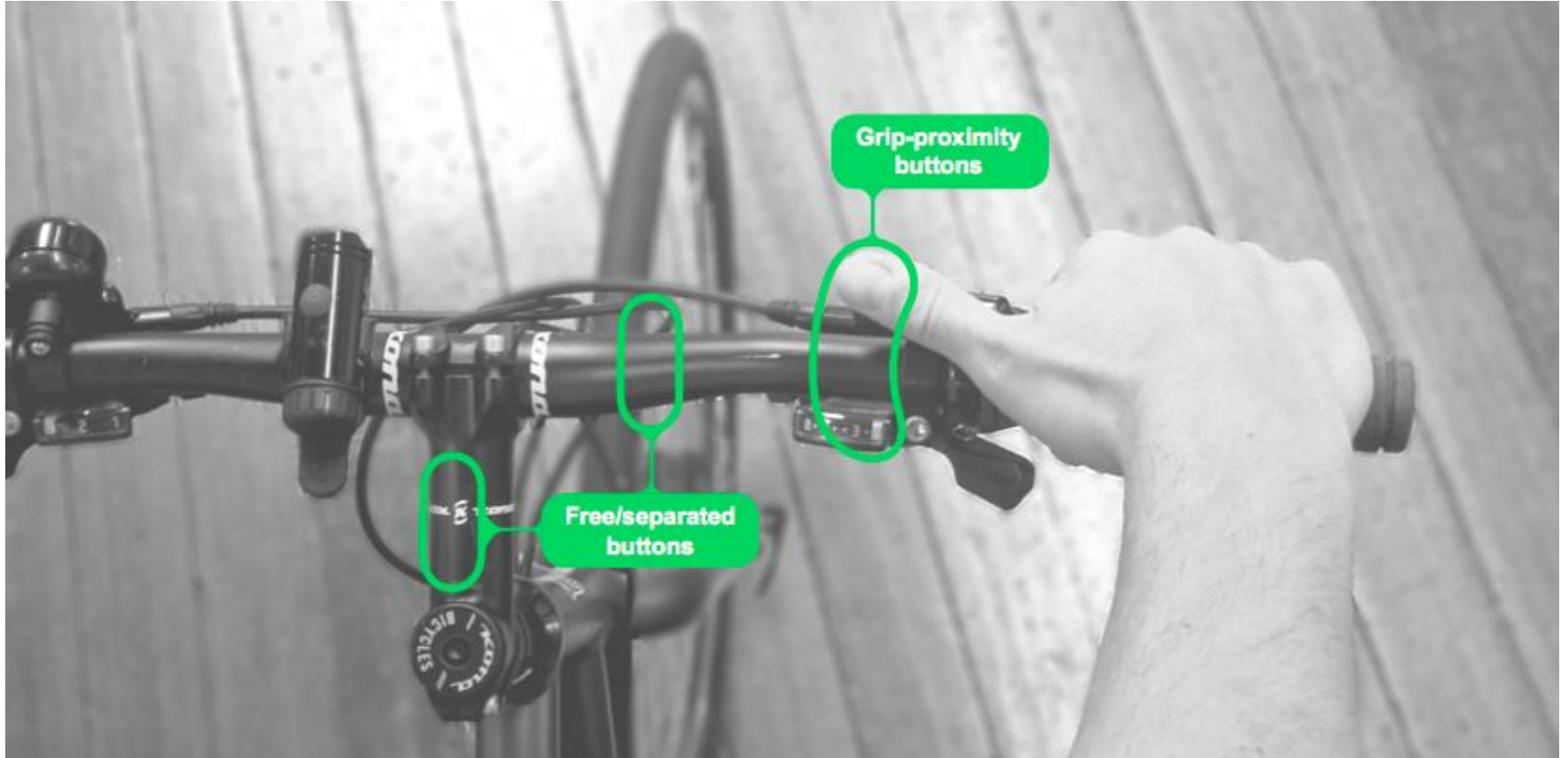
Next Step

Product Design: Handlebars



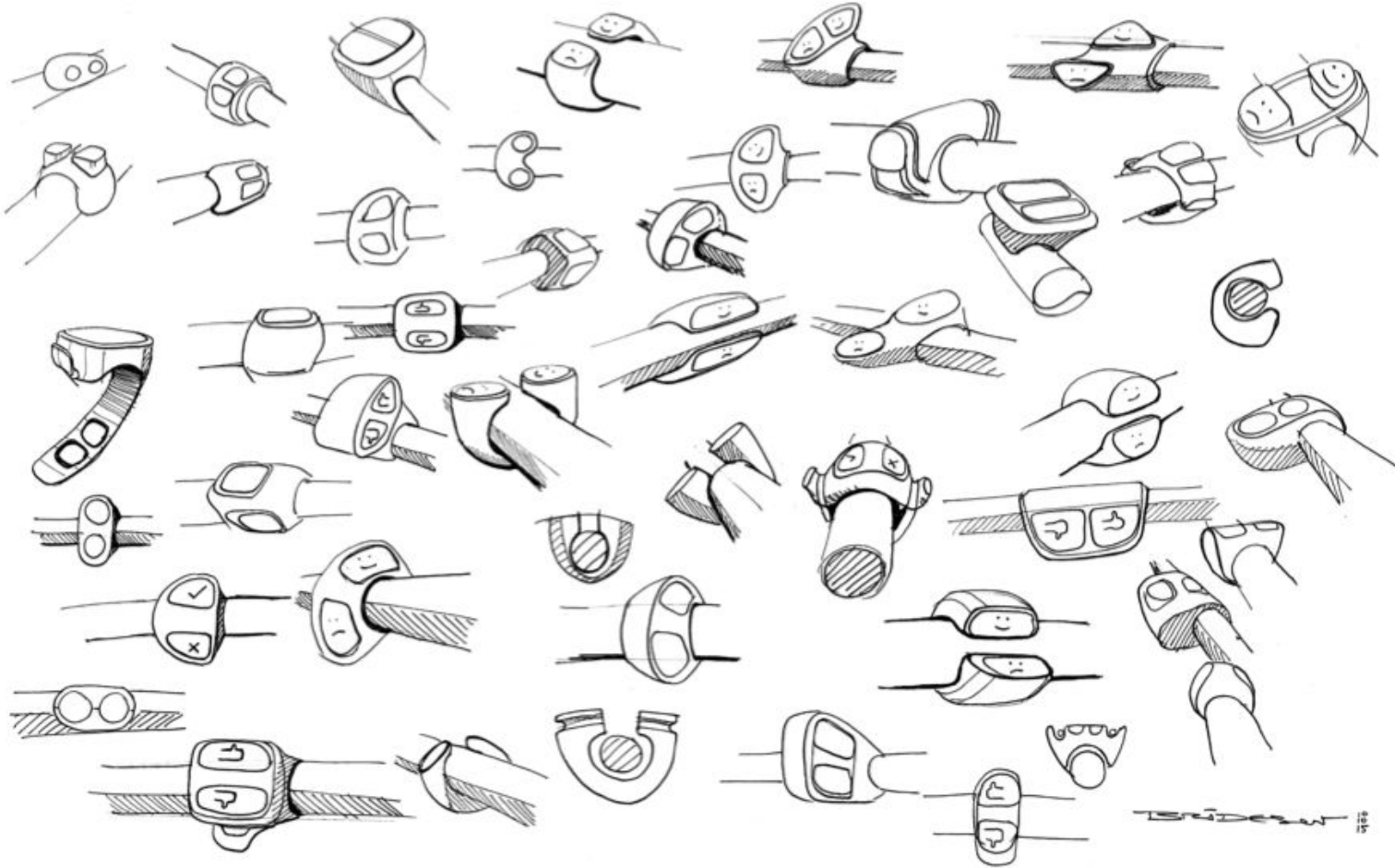
Next Step

Product Design: Placement

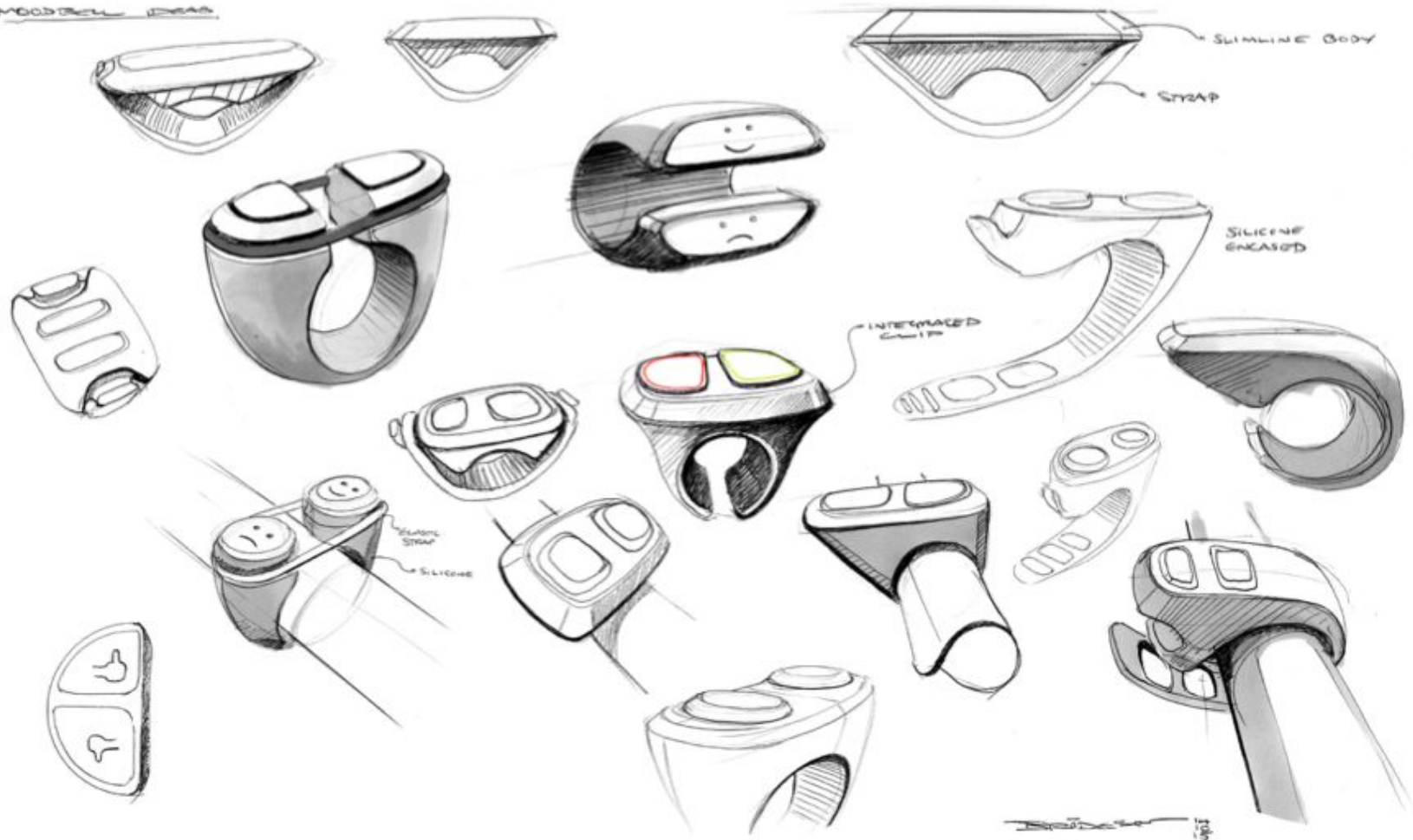


Next Step

Product Design: Ideation



Product Design: Ideation



Prototyping Team

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With support from



Principal Funders



Bike 2050 strategy



Cheers!

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