Android App for eBikes : Uniquely for riders

The KSS App is an Android App for eBikes developed by us at Skillion. The App has been designed to help riders enjoy their eBikes and keep track of their rides. The App includes several features, such as:

- A **moving map** and auto-router
- A **bike computer** to track a rider's progress
- A **dashboard** to control the eBike via a Bluetooth IF module
- A **find-a-bike** feature to find other KSS App riders and friends

….and much more.

Most biking Apps fall into the following categories:

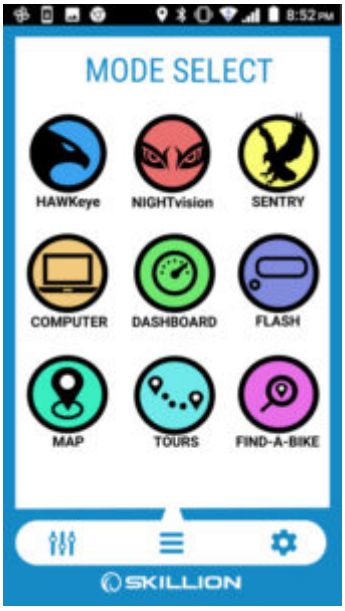
1. Apps that use the **phone's GPS** to track the ride, for example, Strava, Endomondo, Map My Ride, Cyclemeter, Bike Hub, Map My Tracks and,

2. Apps that are **fitness trackers** (Garmin, Wahoo, Strava, Endomondo)

The problem with these Apps and most others is that they are often difficult to read. They can be hard to operate while riding, they work in isolation from other Apps, are not consistently accurate, are not connected to the bike or bike systems, undermine instead of improving rider safety, and rely on the rider's phone, which can put the rider at risk.

Fundamentally most phone Apps used for bikes are not designed to be "for the rider" and miss the point that the rider is "digitally disconnected" while riding. Being "digitally disconnected" occurs when the rider is attending to the ride but loses their awareness of what services and relevant data are available. This happens because the phone is not accessible, put in a pocket or backpack, or cannot be operated. The rider cannot command or receive information from the Smart phone.

The KSS App has been designed to overcome these problems and includes several features to make it easy to use while on the go.



First, the KSS App is an integrated App with multiple features in one. This is an issue for riders using a small cellphone as the amount of useful data is large but the screen is small. A car can solve this issue with a large screen, for example, Tesla, has a large centrally mounted display. A large screen is impractical on the handlebars of a bike. A smaller screen means that not all the necessary information is available. To overcome this, the KSS App uses "modes" which allow the rider to quickly switch between various screens at the touch of a button. Airline cockpit designers employ modes and mode selection to solve the same issue. Currently, there are ten modes, with many more being added. For example, if the rider wants to check their performance on the eBike Computer, then move to navigation via the Moving Map, they press one button, and the KSS App screen displays the Moving Map.

The "discovery" of modes was only made through extensive field trials and the founder's background. Since 2014 Skillion has been developing eBike and eBike technologies. Skillion developed a complete IoT system for tracking and controlling a fleet of eBikes it has grown in Australia. Skillion's founder was an Airline Pilot for Qantas and led the development of a $270m 747 engineering refit. The linking of these two unrelated industries was a unique insight that Skillion had to create this feature.

Secondly, is the development of the "IF module" and Thumb controller. This electronics module connects to the eBike motor and, via Bluetooth, to the phone and KSS App. The Thumb controller is fitted near the hand grips and allows easy operation by the Thumb while riding without looking down. One press of the mode button, and the KSS App switches modes. This keeps the rider "heads-up," offering them the best opportunity for high "situational awareness," in the same way as Airline and fighter pilots do.

The IF module and Thumb Controller were an innovation required to "clean up" the bike handlebars. Our prospective customers demanded that we not clutter them with loads of devices. In this case, we could remove the typical display and Thumb Controller used on most eBikes with the KSS App and the IF module and compact Thumb Controller. This offered one single display in front of the rider.

Third are the unique features that are only on the KSS App, including Find-a-bike, Flash Messaging, Tours, and Hawkeye. Hawkeye is a rear camera that uses cameras and AI to detect vehicles approaching from behind the rider. Hawkeye is a stand-alone device; check it out at hawkeye.bike. It has been integrated seamlessly into the KSS App.

Find-a-bike plots the location of other bikes using the KSS App on display. This is very useful when riding with others as you can see if they become separate, for example, if they are not keeping up (or getting too far ahead), have taken a wrong turn, or have stopped.

Flash messaging offers quick messages to be sent to (and from) other KSS App riders. This is useful if riders want to send simple requests, for example, "slow down," "turn left," "wait there," and so on. The messages are preset and can be sent with only a simple set of presses from the Thumb Controller. There are multiple messages to chose from, and custom messages can be created.

Tours allow riders to share routes and details of rides they like. Any course can be defined, even ones mapped out on a computer but not ridden. For example, a video about a particular sight's history can be added. Tours are great for bike hire shops as it offers a virtual time to improve the riding experience and keep customers coming back for more.

Forth is the use of audio (yet to be implemented). This means critical sounds or words are announced. For example, when the rider changes modes from Bike Computer to Moving Map, the voice announces "Moving Map". This keeps the rider "heads up" and again improves the rider's situational awareness.

The fifth and final feature discussed here is the Sentry mode. This electronically locks the bike and alerts the rider if the cycle is disturbed via messaging. The KSS App allows the owner to be remote from the

motorcycle to interrogate the system, turn the motor off, sound a siren, track the bike's movement and even view a live video of the rider (or thief). The KSS App can be downloaded onto any device, including low-cost Android phones. The rider can have this phone dedicated to the bike inexpensively and not risk their personal phone.

Many more features and functions of the App are not detailed here.

To develop a sleek, easy-to-use, and highly functional App, we undertook extensive field testing as a continual process. When new features were created, we would release the App with this feature and test it extensively in the field. Sometimes, it needed rework as its function was not as intended.

In one such case, we developed an auto-router for the moving map, but it was routed via roads. This we deemed undesirable as there were great biking paths directly to the destination. This occurred because the App used the Google API that defaulted to car travel. We modified our App to favor bike trails and made the ride much safer and more fun.

The App is (will be) available for free on the Google Play Store

*) The numbers in the Case Study are illustrative only and not intended to be accurate.

Pete Cooper is a CEO and Program Manager with 20+ years of diverse experience as a Program Manager and eight years as a CEO. His career started as a design engineer and grew to the executive level. He has worked in various fields, including Software Development, AI/ML, Product Design Aviation, App development, RF design, Electronics Design, Mechanical Design, Telehealth, Semiconductors, IoT, and more.

Pete is a thought leader in applying Program Management methodology as a CEO. He has received recognition for overseeing complicated projects in various sectors. He holds an Engineering Degree, MBA, an Airline Pilot's Licence, and multiple Program Management Certifications, including FAIPM.

At Skillion, where Pete is the CEO, we pride ourselves on our ability to implement and educate Program Management woven into our customer projects. If you need more than just a technical solution but need it managed end to end, don't hesitate to get in touch with us today to learn more.

info@skillion.tech

Download PDF

Pete Cooper