CASE STUDY

Trek Expands Opportunities with Flagship Mobile App
BCycle (https://www.bcycle.com/)

Client Profile

Trek Bicycle Corporation is a major bicycle and cycling product manufacturer and distributor under brand names Trek Bicycle, Bontrager and Electra. They also own subsidiaries BCycle and Ascend. Headquartered in Waterloo, Wisconsin, their yearly revenue is nearly $1 billion, and their bicycles are marketed through 1,700 dealers across North America, subsidiaries in Europe and Asia as well as distributors in 90 countries worldwide.

BCycle is a wholly-owned subsidiary of Trek Bicycle and offers a rider-centric bike-sharing system, combining state-of-the-art bicycles and supporting hardware with high-performance, cloud-based, software-as-a-service. Its mission is to revolutionize the way people use public transportation to help solve environmental, health, and infrastructure challenges that modern communities face. Its programs provide more than 1,500 bike sharing stations and over 15,000 shared bicycles to users via a mobile application, website, and in-person kiosks.

Business Situation

BCycle doesn't see itself as a bike company; instead, it sees itself as a transportation company. Therefore, they wanted an easier way to provide bicycles as transportation and reduce the barrier of entry for riders.

Existing station-based systems rely on RFID key chain passes, RFID cards and the use of credit card-based account lookup at physical kiosks. BCycle wanted a mobile app alternative to simplify the bike checkout process because people often don't have a credit card on hand to pay for rides.

They were looking for a secure solution that would allow customers to drive the entire bike sharing experience

from initial account sign-up and renewal, to check out and return. They also wanted to map stations and track bike routes in real-time from the user's phone. They had an existing mobile application that provided basic station and bike availability data to the user, but they wanted and needed a flagship bike transportation app.

BCycle turned to Skyline's mobile team for our technical knowledge and experience. Together we ideated and developed a modern flagship mobile app and server software solution. Both made their bike-sharing systems easy to use and helped ensure BCycle systems remained secure. The resulting solution would lay the groundwork for an even more ambitious project: the BCycle Dash smart bike (https://www.skylinetechnologies.com/Case-Studies/bcycle-dashes-into-new-markets-smart-bikes).

> *"Skyline took BCycle's mobile vision and made it a reality—shepherding it all the way to its official release. Entering the mobile market was a huge step for us that was made painless with Skyline's help."*

Stephen Adam
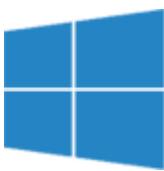*Software Engineer Manager*
Trek Bicycle

Technologies Used

ASP.NET Web API 2

Indentity Server

Microsoft Azure

Azure SQL

Service Bus

Notification Hub

Virtual Machines / Networking

Storage

SQL Server

Xamarin

Xamarin Partner   Microsoft Partner   Cross-Functional Team   Mobile App Dev

Skyline Solution

The collaboration began by assembling a cross-functional team comprised of members from BCycle and Skyline. The team utilized Scrum to deliver high-quality requirements in an iterative process. This allowed BCycle to see results earlier, foresee and quickly adapt to high-risk items, and keep the project on schedule and within budget.

To develop the mobile app, Skyline utilized Xamarin as the main mobile development tool and MapBox to solve the mapping challenges. BCycle had an existing cloud-based backend API, which coordinated communication between

the existing kiosks and the database. This API was enhanced to support the needs of the mobile app and to facilitate communication between the app and the kiosks.

Through the API, the app can intelligently query the kiosks for information such as the number of available bikes for check out or empty docking slots for bike return. The app, website, and backend services were enhanced to provide a seamless and single sign-on experience for users of the app and other applications.

Full features include:
- GPS data from ride collected in app, posted securely to BCycle via API.
- GPS visualizations so riders can see diagrams of previous rides.
- Maps and directions to nearest kiosk or point of interest, e.g. "How can I use a BCycle to get from my hotel to the museum?"
- Retrieval of bike/dock availability.
- Walkup single ride membership at system kiosks with "join now" feature and ID validation.
- Mobile secured payment integration via credit card in PCI compliant manner. System allows for initial sign-up fee collection, subsequent charges for usage fees incurred and processes refunds as needed.
- Mobile Unlock System for a quicker bike checkout, obviating the need for users to carry credit cards or RFID key fobs.
- Multi-city navigation and integration.
- Notification options in app: bike checked in successfully, warnings for usage fees, promotions, etc.
- Support specific branding based on location.
- Sponsor integrations.
- Contact local customer service.

The Results

Since its release, the BCycle app has shown tremendous popularity and growth across the country. The app already supports around 30,000 unique users per month.
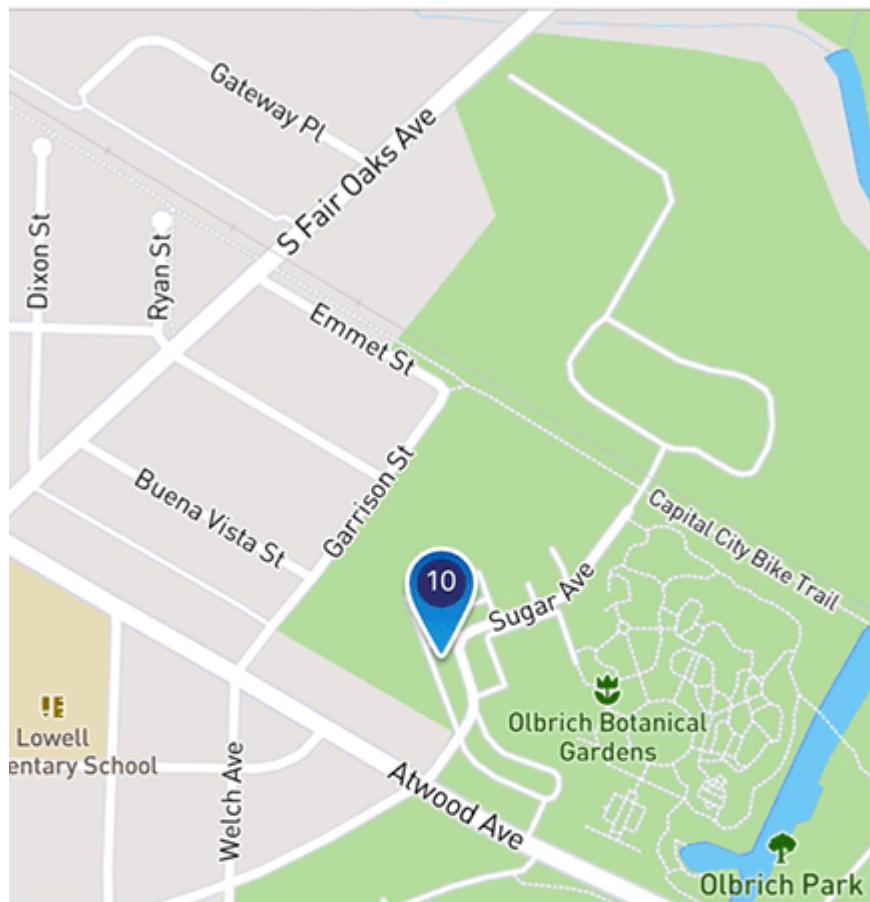
Skyline's solution drives the user experience from users' phones, providing payment, mapping, and notifications while seamlessly integrating the mobile, kiosk and bicycle data with BCycle's cloud-based software.

Since the beginning of the project, Skyline has supported the app and BCycle team through multiple app iterations, releases, and ongoing enhancements. BCycle continues to look to Skyline for expertise and forethought, and is committed to building on the foundation put in place by the new app to enhance the bike sharing user experience everywhere.

CONTACT US

Contact us today to learn more about how Skyline can help your business!