Bike Sharing System

The Smart Bike Share system provides bike-sharing services to its users with the 500 electric-assist bikes and 250 8-speed bikes in its fleet. The smart bike share system includes different components: Smart Bike (SB), Bike Share Website (BWA), Bike Mobile Application (BMA), and Rider (R).

Smart Bike (SB)

The fleet of smart bikes is fitted with smart sensors (i.e. global positioning system (GPS) receiver, RFID sensors) and network capabilities (i.e. 4G) for decision-making communication with other components of the system.

The smart bikes communicate with the bike share system in real-time providing information about the bike (from the bike software collecting statistical data on your rides, speed, distances, etc), a summary of customer activity and can take prompt action in case of emergencies or support.

Bike Share Website (BW)

The bike-share website can be found at ratas.tartu.ee. The website provides the following services to its riders:

- Account signup for the bike share system to access its services.
- Direct purchase of bike-share membership.
- Checking bicycle and dock availability at the nearest bike station.
- Opportunity to link personalized bus card to a rider account. This link allows for a free membership to the system when the rider has a right to free-ride on city buses or active bus tickets: 10, 30 or 90-day tickets.
Bike Mobile Application (BMA)

The bike-share mobile application comes in both android and iOS implementations.

iOS: https://apps.apple.com/app/id1458482220

The bike mobile application allows riders to achieve the following:

- Direct purchase of bike-share membership and allows immediate access to the bikes.
- Unlock any smart bike at any designation station.
- Direct access to the rider profile. This provides an easy way to follow personal cycling achievements by tracking previous bike rides, seeing how far a rider has travelled and checking the time of each ride.
- Conveniently check smart bike and dock availability at the nearest bike station (or at any bike station in the city).
- Directly report defective bikes or emergencies as well as any other inquiry to customer service.

Rider (R)

The rider is a user registered on the smart bike share system and possessing a valid and active account on the system. A rider has access to the bike-sharing services provided by the system. A rider account cannot use more than one smart bike.

Ride Service

The bike ride service process is a major functional process of the smart bike-sharing system, consisting of several processes;

- **Find the bike dock location.** Here, the R can search for the nearest SB dock locations using the BMA or BWA.
- **Confirm bike availability.** Once the desired bike location is chosen, R can confirm SB availability for a ride.
- **Unlock selected bike.** Using the BMA or a valid transport card, R unlocks an available bike. This unlock action is recorded by the BMA and BWA.
- **Ride bike.** The R commutes with the SB from the pickup location to the D’s intended destination.
- **Bike return and billing.** Once the ride is completed, the D returns the SB to the nearest dock station. Once the bike is returned, the BWA issues the invoice and automatically processes the payment. Bike return and billing information are recorded by the BMA and BWA.