

Technology

Radio Frequency Identification (RFID)

RFID tags store information and communicate wirelessly with a reader from a range of up to 20ft for passive tags and 100ft for actively powered tags. Distributing RFID windshield stickers would allow us to identify customers quickly and precisely enabling features such as expedited entrance/exit, directions to parked vehicle, and automated payment. We are in contact with Zebra Technologies and Barcodes Inc .

Optical Recognition

Cameras can be programmed to recognize patterns ranging from a simple mark on the floor to the characters of a license plate. By marking each parking spot in a facility, cameras could identify which spots are vacant and provide real time information to update signs and compile usage statistics. By recognizing a license plate we could index the location of vehicles and direct customers to their parked vehicles. The technology is not yet consistent enough to reliably use for billing.

Counter

A simple counter integrated into the entrance and exit gates would provide occupancy information to be displayed on signs and would provide a cheap way to make a garage's vacancies searchable via web and mobile applications.

Smartphones

Smartphones are integrated with many technologies including WiFi, GPS, camera and increasingly near field communication (NFC). We can utilize the WiFi capabilities to set up a local positioning system (LPS) to detect entering users and track users throughout the garage. GPS is not precise enough for locating within a garage, but will integrate with the search and direction functions of our app. Labeling sections of a garage with quick response (QR) codes would allow users to scan the location of their vehicles for quick look upon return. NFC works similarly to RFID, but from distances of only a few inches so it would require more user interaction to bring the phone within range of the reader. Zebra Technologies and Standard parking expressed great interest in smartphone integration.

Website and Mobile Applications

Applications will make garage vacancies searchable by location and price, providing directions to the chosen garage. It would also provide customers the ability to set up an account for automatic billing.

Data Analysis Software

The individual events recorded by the sensors needs to be processed to form presentable reports for proprietors so they can gain insight into their business operations. IBM's Cognos package could provide the required analysis.