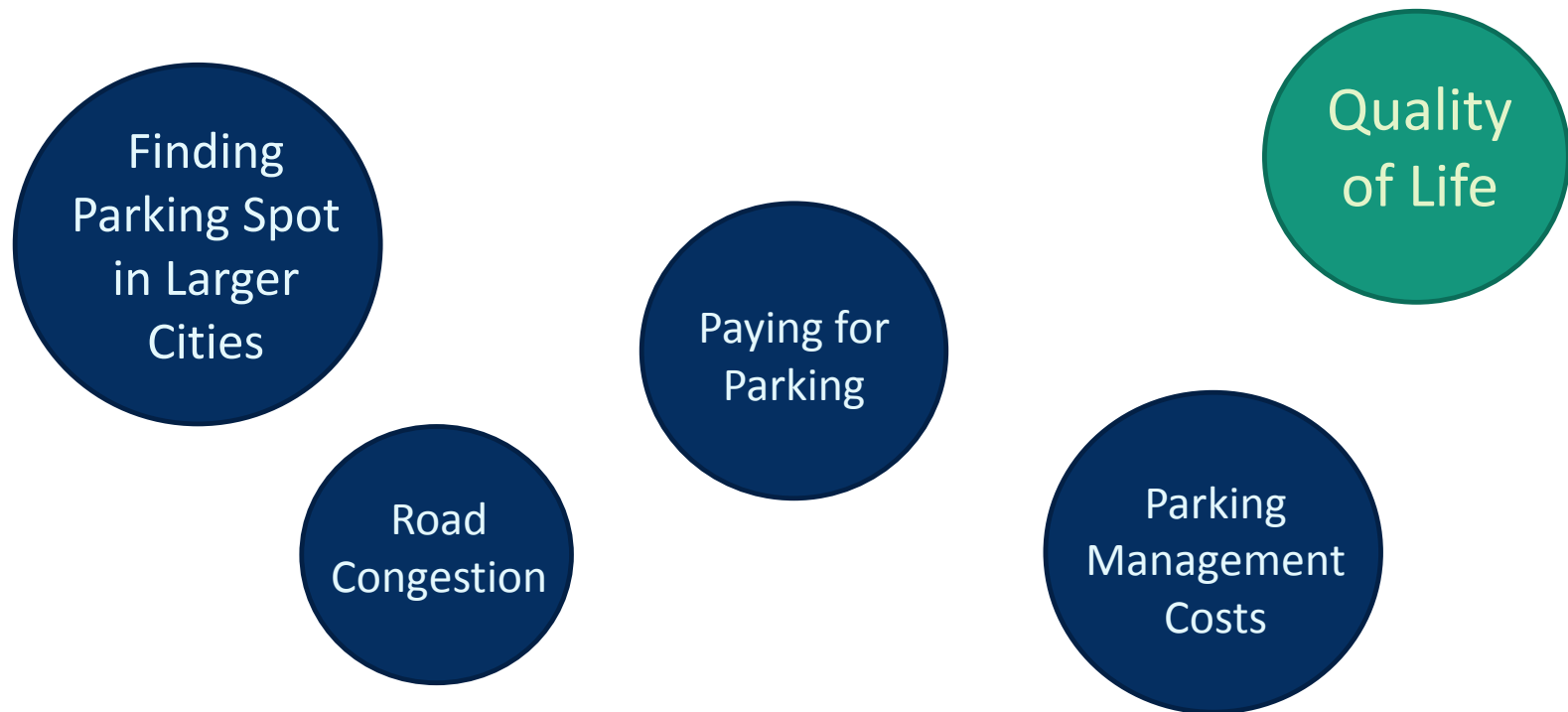


**Pahk**  
**University of Massachusetts Lowell**  
Ana Gouveia, E.I.T.  
Structural Engineering Graduate Student

# Problem:

**“The quality of city life across the world is negatively impacted by atmospheric pollution and congested roads.”**



# PAHK



USER INTERFACE

Automatic Detection of Parkers Location  
Real-time parking spots data  
Electronic Payment based on parking  
time and spots demand

Live Parking & Transit Data Information  
Improving Transportation Experience for  
Parkers

Solution for Cities offering Transportation  
Systems Integration further improving Traffic &  
Parking Management & Control

# Pahk:

## CITIES

Optimized  
Transportation  
Integration,  
Management &  
Control

Cleaner Air  
Smart City

## PAHKERS

Automatic  
Electronic  
Payment after 5  
minutes idling in  
a spot

Live parking  
spots & pricing  
information

# PAHK's Benefits in a Nutshell:

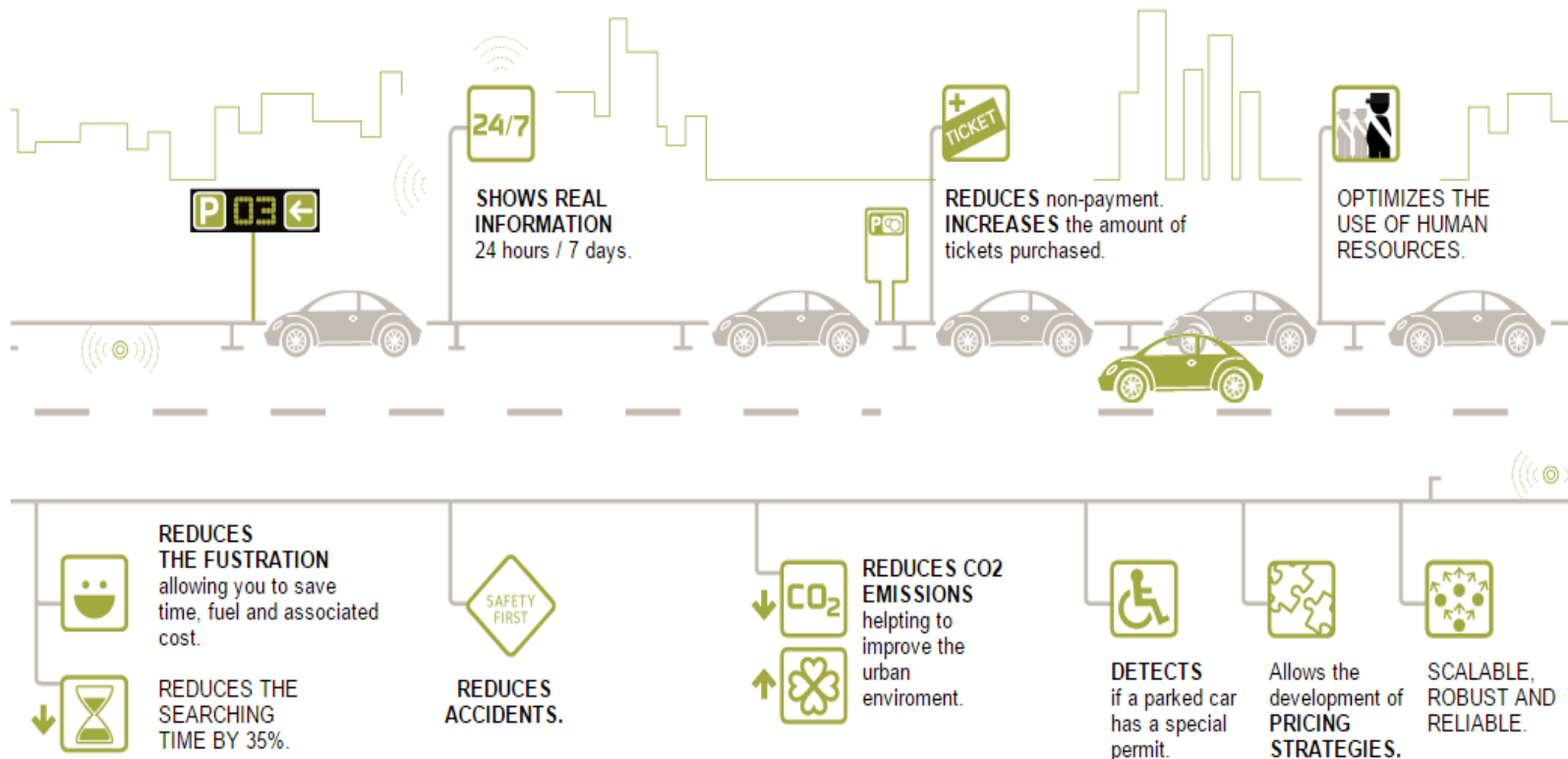


Figure 6. Fastprk <http://www.fastprk.com/our-solution/how-does-it-work.html>

# PAHK's Differential:

- ✓ Technology Application
- ✓ Reduced implementation cost
- ✓ Better than current solutions

HAPPIER + GREENER + SUSTAINABLE = SMART CITY

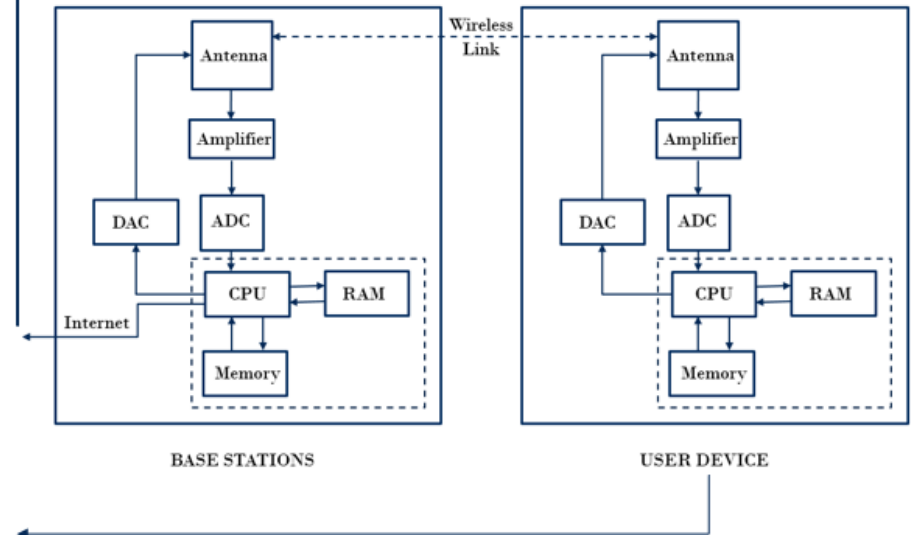


USER INTERFACE

Automatic Detection of Parkers Location

Real-time parking spots data

Electronic Payment based on parking time and spots demand



# Competitive Landscape

## ➤ A few well known competitors:

### The hunt for parking

Several free mobile apps promise to make it easier to park in and around Boston. All are available for iPhone or Android, and all wisely suggest not using them while driving.

### Haystack

App enables you to buy and sell metered or permitted street spots when you are ready to leave them. You can either let the app set the price (typically about \$5; the company pockets 25 percent), or set your own. Usage has been light in the app's first week of operation in Boston.

### Parker

In Boston, Cambridge, and Brookline, app helps you find both garages and lots. It also can guide you to about 330 metered spots in the Seaport/Innovation District — if they're still available when you arrive.

### SpotHero

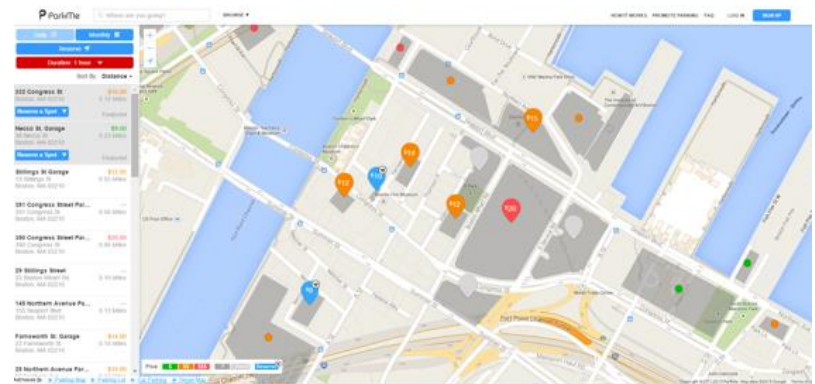
Find spaces, some at a discount, in parking garages and lots. Pay with a credit card, and either print out the e-mailed confirmation or show your screen when you exit.

### Spot

Earn money by renting out your own private parking space (like a driveway or garage spot) by the hour, day, week, or month. Drivers can also use a map and photos to find spaces available for rent.

**Source:** Boston Globe [<http://www.bostonglobe.com/business/2014/07/26/new-parking-apps-pass-test/0SwGocck3rSPdtLlzakNqJ/story.html>]

### ParkMe



### SpotHero

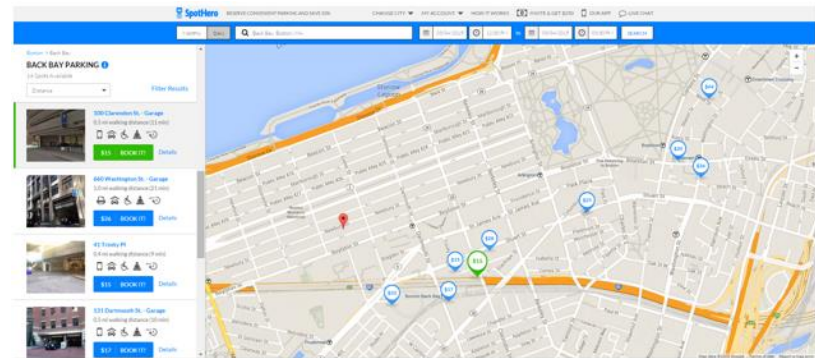


Figure 2. ParkMe and SpotHero web interface.



# Competitive Landscape

## ➤ Most successful initiatives:

### Fastprk

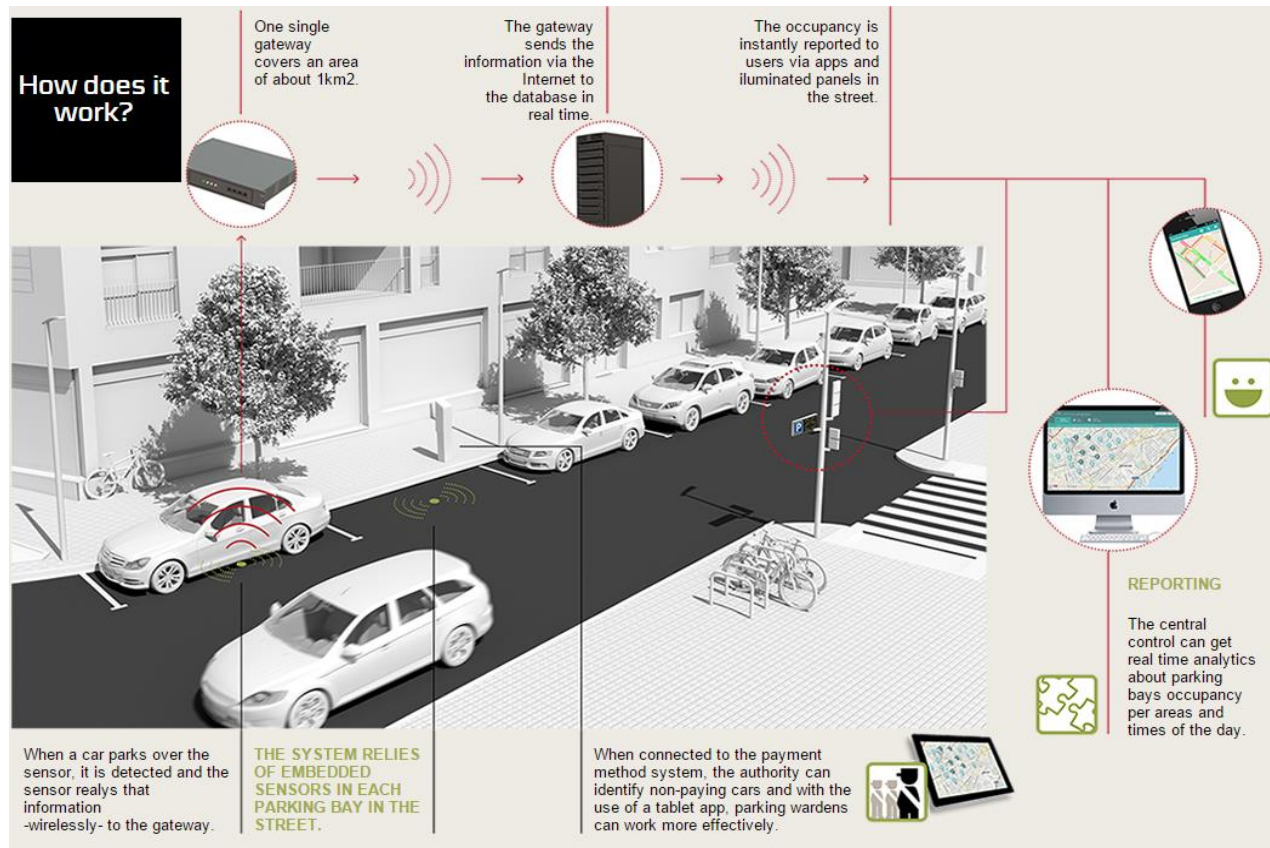


Figure 3. Fastprk <http://www.fastprk.com/our-solution/how-does-it-work.html>

### Parker

- City Partnership;
- Uses Similar Parking Bay Occupancy System & Technology as of Fastprk and Libellium;

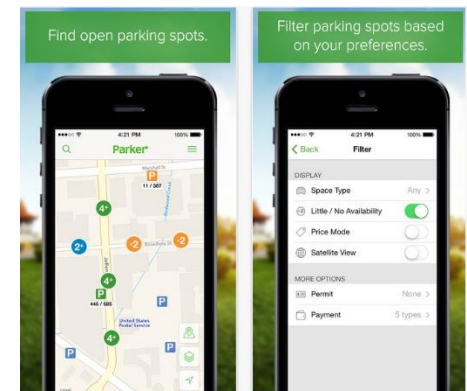


Figure 4. Parker User Interface



# Business Opportunity Numbers:

## ➤ Devices as a Product:

- Number of Vehicles in MA: **2,481,482<sup>1</sup>**
- Price of Unit: **\$10** x
- **24,814,820**

<sup>1</sup> <http://www.statista.com/statistics/191011/registered-private-and-commercial-us-motor-vehicles-by-state-2009/>

## ➤ Use of System for Smart Parking

- Payment accountability for city
- Possible reduction in the use of human resources (*i.e., meter maids*)
- Real-time spot occupancy data and demand-based parking cost control
  - Possible monetization through City-Pahk service

## ➤ For Pahkers

- Payment System Flexibility (*i.e., no quarters, no dash-board tickets, no hassle*)
- *Better cities, better lives.*

# Opportunity

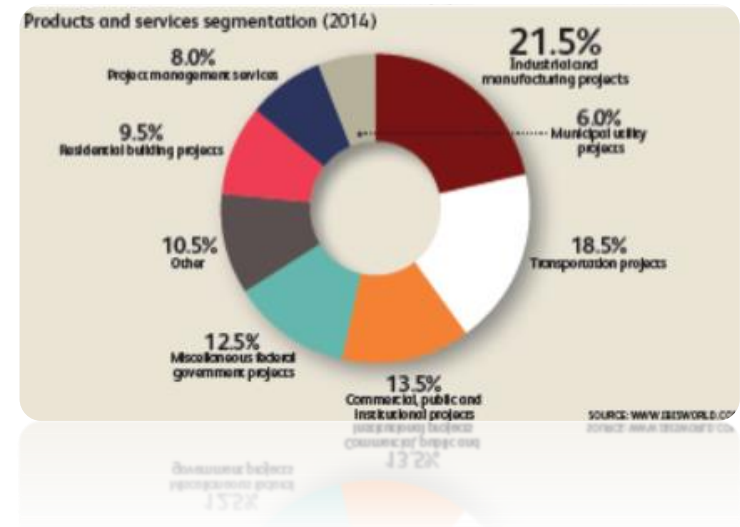
## Industry at a Glance

Engineering Services in 2014

### Key Statistics Snapshot

Revenue	Annual Growth 09-14	Annual Growth 14-19
<b>\$201.1bn</b>	<b>0.5%</b>	<b>3.9%</b>
Profit	Wages	Businesses
<b>\$17.7bn</b>	<b>\$86.8bn</b>	<b>143,764</b>

Figure 1. October 2014 Ibis World Report [<http://www.ibisworld.com>]



### ➤ City of Boston Example of Interest & Demand:

budget called for allocating \$250,000 for a pilot program to pair real-time parking sensor technology and smartphone apps to make finding parking easier.

#### Article Source:

[http://www.boston.com/yourtown/news/south\\_boston/2013/12/parking\\_sensors\\_to\\_tell\\_boston\\_drivers\\_smartphones\\_where\\_to.html](http://www.boston.com/yourtown/news/south_boston/2013/12/parking_sensors_to_tell_boston_drivers_smartphones_where_to.html)

**QUESTIONS?**