APP NATION

A primer on parking app development and use.

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There's an app for this and an app for that! Companies have Facebook pages so you can like them, and celebrities are Tweeting about any and all topics. And every person and business seems to have their own website. Trying to stay abreast of the electronic and social media posts is difficult, and that's before your colleagues and superiors ask you about your plans to have your facilities and operations online.

If you are like most people, getting your Facebook page started is a challenge, as is understanding how to apply all of this technology to your parking and transportation operations. This article will give you a short primer on the various technologies that can improve your operations, help market your facilities, and provide useful services to your customers. We will also review the value of data generated from your facility and how data is used by various mobile apps.

Mobile Applications and Websites

Applications have made the smartphone a useful and critical tool in our daily lives. From helping us find a restaurant, reading our emails anywhere, and flinging birds at pigs, to getting our airplane boarding pass, the mobile app has been developed into many useful services. We have seen many apps developed for the parking and transportation industry over the last three years. But which is the best to use?

Before we answer, let's discuss the different type of mobile phone apps and how each might fit with your operating goals and target customers. Understanding the tradeoffs will help you determine which type of app you should develop or use in your operation.

There are three basic categories of apps: native applications, web applications, and hybrid applications.

Native applications are software packages that make use of all the phone's features, such as the camera, geolocation, storage card, and other hardware. Because the app uses the features of a specific phone, it must be written and tested to work on that phone. As exhibit A (p. 20) shows, there are several competing platforms, none of which dominate the marketplace. When developing an app, the developer needs to decide which platform(s) he will use to reach the most customers.

While native apps are more expensive to develop, there are benefits to using them. First, they do not need to be connected to the internet to be used; they can work in offline mode when there is no internet connection. However, many parking and transportation apps require an internet connection, depending on functionality and available data. Because they use the features of smartphones, such as the camera, geolocation, and augmented reality, companies can offer a richer, more immersive experience. And most importantly, native apps can be easily distributed to consumers in the various app marketplaces (App Store for iPhone, Android Marketplace for Android phones, etc), thus reaching a large number of people quickly.

Web apps, on the other hand, work inside the phone's existing browser. This allows your web app to work across all devices. The same base code can be used to support all devices, including iPhone and Android, without writing new code.
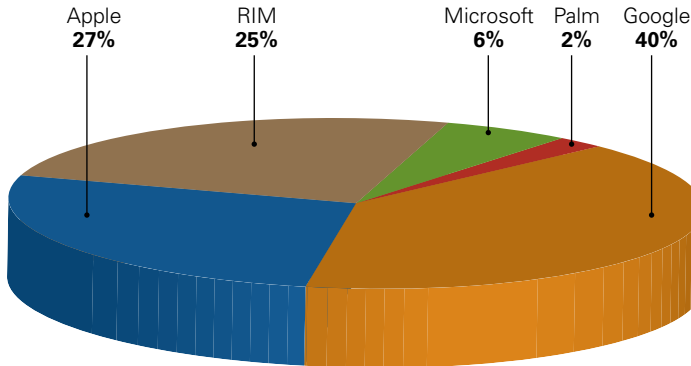
That said, there are drawbacks to web apps. While less expensive to develop, they do not make use of the phone's other features, such as the camera or geolocation hardware. Most importantly, web apps cannot be deployed to the phone's marketplace, so you will have to find a way to make the public aware of your app. This also means that they have a built-in revenue model, because consumers may have to pay to download the app. For some folks, such as those with a university, it may be easy to distribute an app to the target population, but for a public operator, that may be more difficult.

Finally, there are hybrid mobile apps, which combine the features of native and web apps.

Using a development framework, companies can develop cross-

platform applications that use web technologies (such as HTML, JavaScript, and CSS), while still accessing the phone's features. A hybrid app is a native app with embedded HTML. Selected portions of the app are written using web technologies. The web portions can be downloaded from the web or packaged within the app. This option allows companies to reap all the benefits of native apps while ensuring longevity associated with well-established web technologies.

The Facebook app is an example of a hybrid app: it is downloaded from an app store and has all the features of a native app, but requires updates from the web to function.

In addition to smartphone apps, we must also consider what the automotive manufacturers are developing. Many cars come with built-in GPS units and the auto manufacturers are looking for parking and transportation apps to enhance the convenience to the customer. It is widely expected that most vehicles will have some way to connect to the internet in the next couple of years, and it is foreseeable that your car will have apps that it can use on the dash units.

Which Is Best?

To cover all bases, it is important to recognize that con-

sumers are not using these various apps in a mutually exclusive manner. They are using both native applications and browser-based apps, so the best strategy is to develop both types. The decision to invest in an app or in a mobile website depends on the organization's target audience and the functionality of the app. Organizations need to consider time, budget, and resources to develop each solution.

You have decided you want to build an app. What will your app do? There are several categories of app functions most relevant to parking and transportation.

Location Aware

Many apps for the parking and transportation markets fall under the Location Aware category of apps. Knowing where a device is in real time means that information about your current location can be fed right to the device. Such devices let you find parking by matching your current location to available spaces. Another app lets you keep track of where you parked and helps you navigate to your vehicle when you return. Other apps can help you locate services nearby and can deliver a coupon for discounted services or tell you about available parking spaces.

Phone as a Credential

You may have used this function to board an airplane or buy your coffee. The credential can be used as a unique identifier for a variety of purposes. Access control systems rely on a unique identifier, such as a barcode, RFID tag, mag-stripe, proximity card, or other media. The smartphone can be used as a credential in a couple of ways, either through information on the display (code number, barcode) or something embedded into the device, such as an NFC chip (near-field communications circuit). As long as the identifier is unique and readable, it can provide access.

App Development Comparison

	Device Access	Speed	Development Cost	App Store	Approval Process
Native	Full	Very Fast	Expensive	Available	Mandatory
Hybrid	Full	Native Speed as neccessary	Reasonable	Available	Low Overhead
Web	Partial	Fast	Reasonable	Not Available	None

Source: Worklight, http://w2ww.scribd.com/doc/50805466/Native-Web-or-Hybrid-Mobile-App-Development

Location Aware Apps
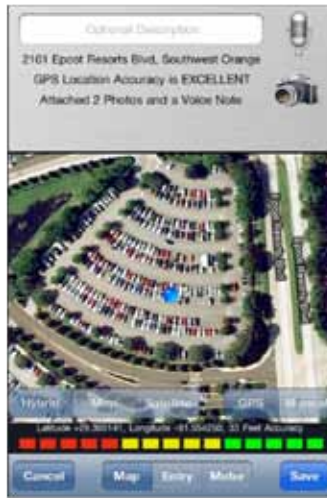
Smartphone as Payment

Mobile commerce, sometimes called m-commerce, is a growing area of technology that doesn't yet have a lot of standards. The basic concept is that the smartphone device you're carrying can also be used to make a payment. Most commonly, the device is used as a credential that is linked to a credit card or bank account from which funds are drawn and transferred to the merchant (parking operation). In a few rare cases, the charge shows up on your cellular phone bill. Security can be a concern when payment information is stored on the device or linked from the device, and a username or password will often protect the payment application. Sometimes the payment application is generic and can be used for any purpose, while in other cases the payment is tied to a transaction in parking (such as pay-by-cell).

Other Transportation Apps

The plethora of apps is mind-boggling, and some apps created for other purposes are finding their way into parking. Some examples include an app to find gas. Another shows you how full the charge is on your electric vehicle. One "tattletale" app uses GPS coordinates to anonymously report municipal issues and offenses such as potholes, graffiti, and (yes) even parking issues.

Augmented Reality

One of the earliest augmented reality applications is Shazaam, which provides a decoder to identify a song, artist, and year of release just by "hearing" the song (Picture yourself hearing an old song and wondering "who sang this?" Just whip out your phone and let it listen to the song for a couple seconds. It then finds the relevant

Phone as a Credential
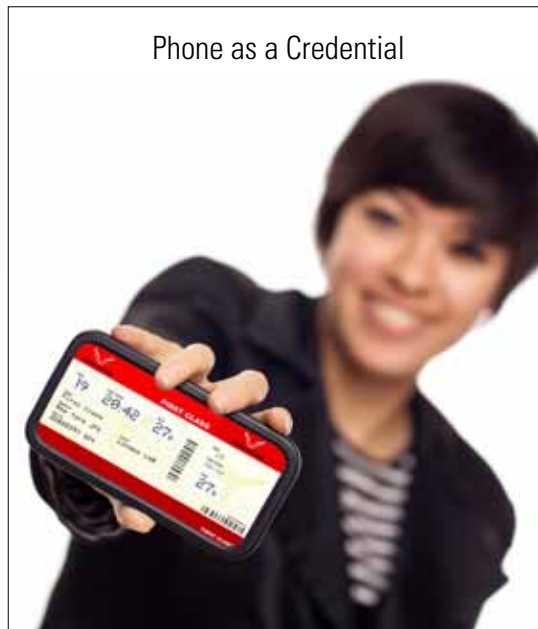
data for you). Similarly, there are augmented reality apps to recognize images while augmenting them with text and information about their location, or even real-time translation of signage from one language to another (you don't even need to snap a photo—the translation is done right on the screen while the image is present or moving around).

As it relates to parking and transportation solutions, imagine taking a picture of your location and seeing available parking options nearby or mass transit options (train schedules bus schedules, etc).

Business Model	App Developed by You	App Developed by Third Party and Offered to You
Free	Used by organizations to generate demand for their services.	If it is offered free to you, the firm is likely using your data under one of the other business models.
Free supported by advertising	Give users the app for free but offset your costs by allowing advertisers to market via your app. Only works if app has broad distribution.	Some third party businesses make a majority of their money from advertising. This is how Google started.
Fee to download	Allow users to download and use your app for a small fee at the time of download. Best for apps sold via App Store or Android Market.	Some firms might allow you to list your locations for free but they charge customers to download their app.
Fee per transaction	Provide app for free but charge for defined uses of the app (ex Fandango, pay by cell phone apps, etc).	Provide app for free but charge user for defined uses of the app (ex Fandango, pay by cell phone apps, etc). In some cases this can be extended to charge the garage owner for a fee as well (ie a commission for bringing a parker).
Aggregator sells data	Not applicable – need lots of data to have value.	Aggregator asks for your data and offers to help you market your garage. Aggregator collects data and sells it to various businesses needing the data. (Axciom, InfoUSA).
Aggregator charges for business	Not applicable – need lots of data to have value.	Aggregator charges you each time someone looks at your data listed on their sites. This is Google pay by click service.

How Can Apps Make Money?

There are a variety of business models that organizations employ when delivering mobile apps. Many firms are for-profit businesses that need to generate income from their apps, while others are content giving their apps away to meet a public need or generating value from the app in other ways. The more common business models employed include those listed above:

Many of us are less concerned about building our own apps and more interested in how our parking and transportation information can be inserted into an existing app. The key for each of us is to understand how the third party handles our data and how they charge your potential customers for using their app. Other considerations:

1. Does the data fit your operation's objectives? Your parking operation has a reason for pushing data out to the audience. Make sure the data you're distributing also meets the needs of your operation and drives business or behavior the way you want it to.

Transportation Related

2. Does the data fit the needs of your audience? Your audience has some information they want and plenty that they don't. Sometimes they need different information at different times or different locations. Predict, if possible, what they want when they want it. This will serve them best without subjecting them to information overload.

3. Is it okay for others to make money from your data assets? May depend on your business goals or operational restrictions. Do you own the data in the first place?

4. Is it legal to deploy data in this manner? There can be restrictions on data! FERPA (Family Educational Rights and Privacy Act) prevents some student data from being deployed by colleges/universities. The Drivers Privacy Protection Act (DPPA) prohibits sharing of license plate owner information. And many states and countries are expanding distracted driver laws to prevent the use of handheld devices such as smartphones while driving.

Without Data, It's Useless

While we just spent time providing an overview of apps, the key to all apps in the transportation and parking industry is data. You have useful data throughout your operations. Without data, all of the apps we have discussed are useless. It is for this reason that you likely receive many calls from firms asking you to share your data with them or to list your locations in their app. Understanding the value of your data and how you want to serve your customers will help you develop an appropriate data and mobile app strategy and decide whom to partner with for an app.

Defining Value

Dollar value is the value that firms will pay your operations for use of your data. When you sell or license the data, you give up certain rights to the data. Not all operations are concerned about selling or licensing their data to others and some prefer to use their data for their own use.

Intrinsic value is the value of allowing people to find your parking facility more quickly. This includes such benefits as reducing congestion on the roadways and sharing information about relevant conveniences in your facilities (carpool programs, electric car charge stations, etc).

Operational value is the value derived from understanding how efficient and effective your operations are. Does the facility generate more profit by offering an early bird special? Is it worthwhile to operate the garage 24 hours a day or are you better off to close that garage at a certain time and save energy and labor expense?

Once you understand how you value your location's data, you should think about the type of data you have. There are five different categories of parking data. It's best to think about this data in terms of levels or tiers. Each level requires a solid foundation of the previous level to be able to generate value. The levels include (from the bottom up):

1. Foundational/Physical/Static. This level represents the physical properties of the real-world object that is being measured. Generally it's static information that rarely changes. Examples include number of physical spaces in a garage, location of streets, violation codes on a citation, tax rate, etc.

Augmented Reality

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2. Hours/Rates/Amenities. This level represents information that can be derived from Level 1. It often includes variable information. Some examples include pricing and time schedules, number of available spaces, location of an offense, number of credentials issued, etc.

3. Reservations/Pre-pay. Level 3 moves a portion of the parking transaction out of the space or facility and into the hands of the parker. This includes being able to reserve and pay for parking before arrival. Most commonly, this is done through an online e-commerce website or smartphone app.

4. Real-time Information/Dynamic. This involves monitoring the parking operation 24/7 and pulling out key pieces of information for real-time publication (usually every couple of minutes). Common examples include real-time occupancy in a facility or on-street area, officer whereabouts via GPS, the amount of money in a device, varying pricing based on demand, etc. This data can be used internally and externally (e.g. some parking operations publish current occupancy to their website every 60 seconds).
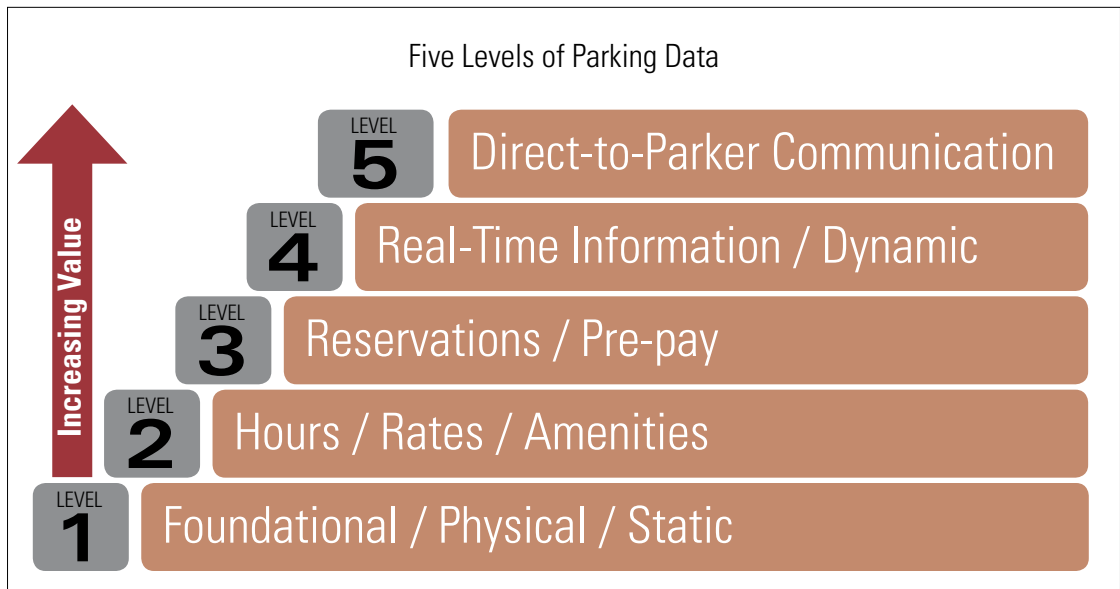
5. Direct-to-Parker Communication is the highest level of data value. This involves pushing information to parkers in a way that's timely enough for them to benefit from it. Such examples can include email messages for reminders and events, a Twitter feed for announcements, and so forth. Parkers communicate with you in myriad ways, so you need to find a way that they enjoy and leverage that, even if it means using multiple different channels and media.

Once you have identified the data you possess and have an understanding of how you will generate value from the data, you need to determine how you will deploy your data. First, you need to define your target customers and the data they will need. Do not try to collect and disseminate all types of data to all customers. It will take time to implement the necessary activities to ensure you are providing good, clean data to your customers via mobile apps.
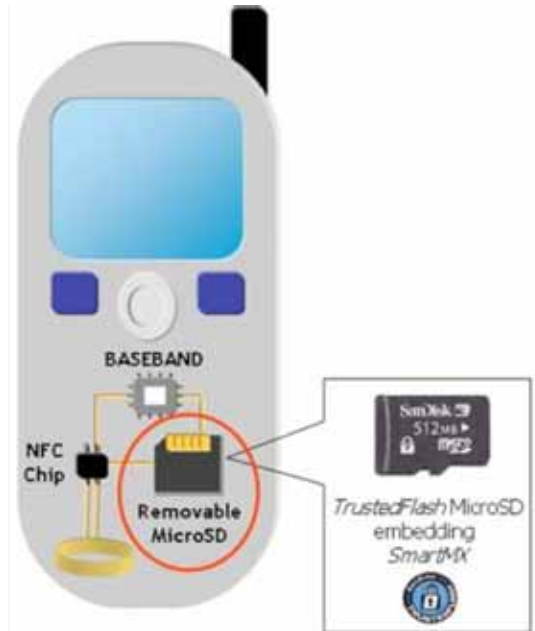
Next you need to define who you will share the data with. Will you build in your own apps or will you work with third parties and allow them to use and/or disseminate your data? When working with a third party, it is important to understand their business model and how they intend to use your data. Be very thoughtful about this step: once you provide the data, it is hard to gain control of the information again.

Understand how frequently you will need to refresh the data. Location information may only need to be

Five Levels of Parking Data

Increasing Value

LEVEL **5** Direct-to-Parker Communication

LEVEL **4** Real-Time Information / Dynamic

LEVEL **3** Reservations / Pre-pay

LEVEL **2** Hours / Rates / Amenities

LEVEL **1** Foundational / Physical / Static

Phone for Payment

updated annually, pricing information may require two or three updates per year, and space availability requires updates every couple of minutes. Understand the update requirements of the data you are sharing. Finally, evaluate the success of your apps and data sharing programs. If an activity is not generating the results or impacts you expected, discontinue it. If it is successful, continue to promote and grow the data and the app program.

Finally, as you continue your journey with electronic media, apps, and data sharing, think about the procedures and policies you need to establish within your operations. What data are you willing to share with the public? If you provide data to third parties, are there restrictions on the use of the data you want to impose? What rights and control do you want to retain related to data? Will you require firms you work with to work with other entities to help improve the overall transportation systems we use? **ⓟ**