CHAPTER

1

Wireless and Mobility Defined

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Introduction

The terms *wireless* and *mobility* are quite often confused in the world of mobility. In fact, many mobile technology users consider these two terms as having the same or very similar definitions. However, the two words have very unique meanings, yet are used interchangeably, especially in the mobile business world. What then is the difference? *The American Heritage Dictionary* definitions are:

> *Wireless: "Having no wire or wires."*
>
> *Mobility: "1. Capable of moving or of being moved readily. 2. Changing quickly from one condition to another."*
>
> *(The American Heritage Dictionary, 3rd Edition, Delta Trade Paperbacks by Dell Publishing, copyright 1992)*

As mentioned, in the world of mobile technology, the two terms wireless and mobility are often used interchangeably, especially when we talk about business applications for the enterprise. In any case, these definitions can get somewhat confusing, so let's talk about what they mean in the

mobile business-applications sense. Hopefully, our definitions will give you a better idea of how you can apply wireless technologies and mobile technologies to your unique situation.

What Is Mobility?

There is no doubt that mobility can mean many things, depending upon the situation. Let's look at some interesting examples of mobility. Start by imagining yourself on a trip to your favorite vacation spot in Costa Rica. Generally, a flight in an airplane is required to get there. You are mobile in the sense that your physical person can be moved through various means to get to your destination. The device(s) or vehicles that you use to get to your destination are an airplane and probably a car or taxicab to drive you to your hotel while in sunny Costa Rica. The taxicab, the car, an airplane, or bicycle, are all examples of mobile devices or mobile objects. The hotel you stay in while in Costa Rica and the restaurant where you eat dinner are certainly not high on the mobility list. Besides yourself, the airplane, and the car, what other mobile devices might you use during your trip? Well, you may have taken along your calculator for expense management. You may have also used your personal digital assistant (PDA) to manage your vacation schedule while in Costa Rica. For that matter, assume that your son loves to play *Tetris* on your IPAQ device as well. These are all examples of mobile applications in the traditional sense. Let's take a look at mobile applications with more of a business perspective. As our dictionary definition explained, mobility is the capability of being moved readily. There's certainly much more to that definition that meets the eye, which is where we'd like to pick up. Our definition of mobility is:

> *The application of mobile devices and wireless technology to enable communication, information access, and business transactions from any device, from anyone, from anywhere, at anytime.*

You may have noticed that this definition includes the word *wireless*. The key pieces of this definition here are that mobility and wireless can go together and are not necessarily separate entities. For an additional perspective, see Figure 1.1.

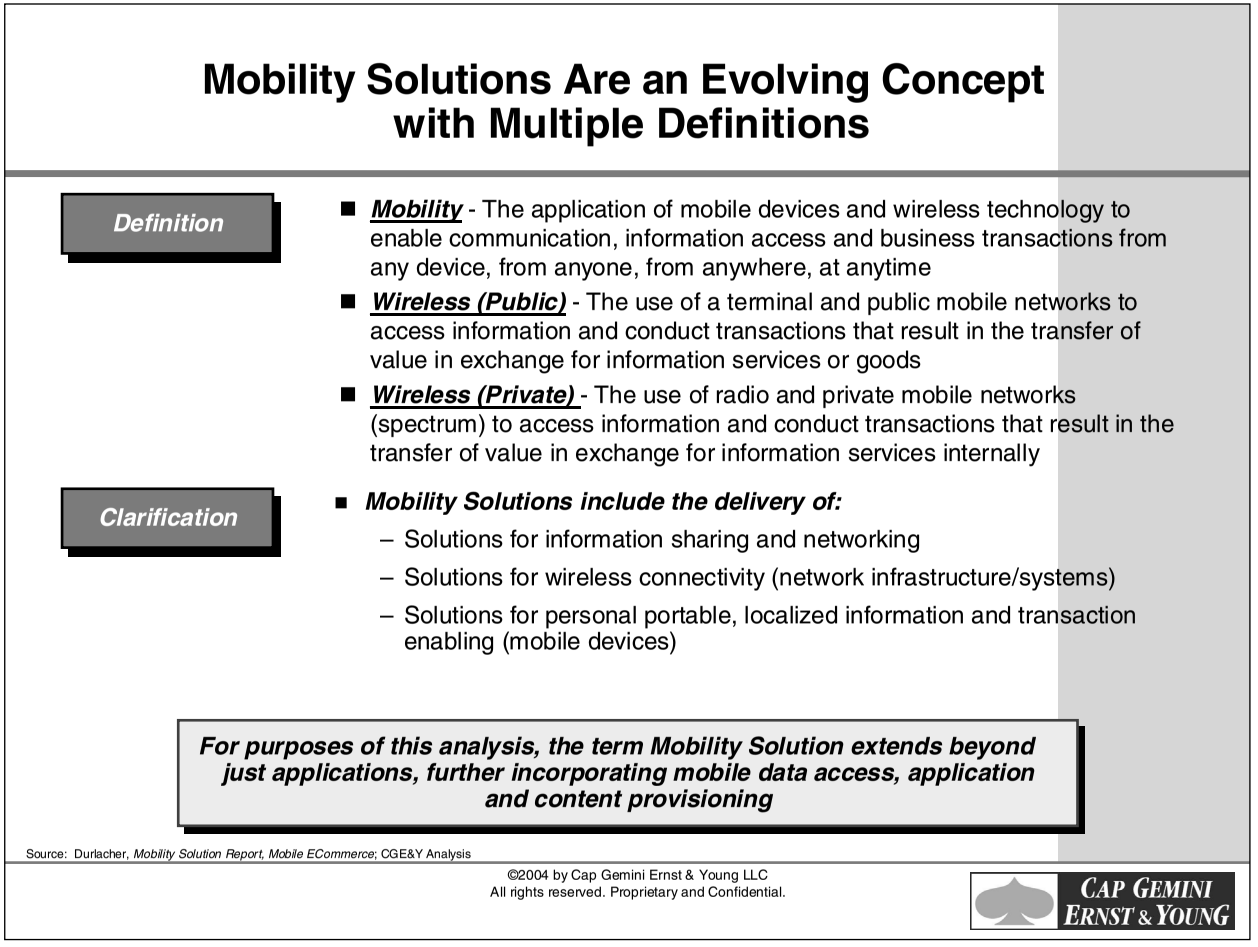


Figure 1.1 Multiple definitions of mobility.

As Figure 1.1 illustrates, mobility solutions may include the delivery of applications for information sharing and networking such as accessibility to corporate e-mail or groupware applications through a mobile device instead of a desktop computer. These types of mobile applications are typically categorized as mobile office solutions. The most important point to remember about mobile solutions is that the device need not be constantly connected to a network or the Internet to provide value. The mobile office is a perfect example of a mobile application. Many of us in the consulting world typically carry laptops or some sort of mobile device. Probably one of the most heavily used applications on the desktop or the laptop is e-mail. The beauty of most e-mail applications today is that a wired connection is not required. You can type the e-mail, attach files, and create documents while sitting in a car, on a plane, almost anywhere! When a mail message is sent in disconnected mode, it typically is stored in a cached outbox or other temporary storage mechanism. Once the user logs on to his or her normal network connection, voilá, the e-mail is delivered to the intended recipient automatically! As you can see, e-mail is a great example of a mobile application. You can manage your e-mail and calendar anywhere and anytime, even without a network connection. E-mail generally falls into the mobile office category, along with word processing, spreadsheets, groupware, Web browsing, and many other applications. We'll go into greater detail on the different types of mobile applications in Chapter 2. For now, let's continue our discussion and define what we mean by wireless solutions and applications.

What Are Wireless Applications?

There are really two categories of wireless solutions that need to be defined. As Figure 1.1 illustrates, one type of wireless application is a wireless "public" solution. In other words, it's the use of a terminal and public networks to conduct transactions and access information that ultimately results in the transaction of some sort of service or exchange. A Web browser such as Internet Explorer for Pocket PC is an example of a wireless "public" application. Unless you're browsing cached pages, a Web browser typically is of little use for obtaining up-to-the-minute stock quotes unless you're connected to the Internet. The same holds true for the wireless Web browser application that resides on a mobile device such as a WAP (Wireless Application Protocol) phone or a Pocket PC device. Other examples of wireless "public" applications are described in the following sections.

Real-Time Quoting Engines

These are applications that provide real-time information to the end-user typically for informational or analysis purposes. The key term to remember here is *real-time*, because most truly Wireless services supply essential information as it happens, such as emergency alerts, or a stock price drop. Typically, real-time information is required to make immediate and informed business decisions. Nonessential data, such as news articles, can usually be downloaded to a mobile device and read while on your train ride home or at home.

Location-Based Services

Location-based applications require the device to be constantly connected, or always on. It involves a two-way communication of information based on the location of a device (for promotions, emergency services, and so on). For example, the local hardware store can push coupons to a user's mobile phone as they're driving by the store. Location-based services have received some pushback from the consumers for security reasons. After all, who wants Big Brother watching over your shoulder, sending you messages at his whim? On the other hand, location services can also be used to locate individuals in need of help, as is done by E911 or enhanced 911 services. We'll cover these and other location services in more detail in the following section.

Wireless Portal/Commerce

Web portals such as Yahoo.com, MSN.com, and so forth require a live Internet connection to provide the door to enter their various services. The wireless Internet ultimately acts as that door. The Web portal can also be a corporate intranet portal that allows the employees of the company access address books or administrative applications such as ERP reports. The wireless device is another vehicle with which to access the portal. In the book *CGE&Y Guide to Wireless Enterprise Application Architecture*, we cover the various concepts behind wireless portals, including exchanges for B2B (business to business), B2C (business to consumer), B2E (business to employee), and so forth. For now, it's important to understand that wireless technology is a springboard for bringing the portal to life.

Sales Force Automation (SFA)

In today's world, the sales force plays an integral role not only in marketing a company's products to its clients, but also in building the strong business relationships that will ultimately lead to that "big deal." The technology that combines the power of a virtual sales team with up-to-the-minute decision-making processes is known as *sales force automation* (SFA). SFA is arguably a great deal more than just a client relationship management tool, but for our definition, it's a fair start. Generally, SFA applications fall into a far broader category known as customer relationship management (CRM). Sales teams are generally known as a mobile workforce, which makes them perfect candidates for leveraging mobile applications. SFA mobile applications can be as simple as a Personal Information Management (PIM) tool that manages schedules, to a sophisticated data warehouse generating monthly sales reports. We'll talk about what some of those SFA applications are in more detail in Chapter 9.

Global Positioning Systems (GPS)

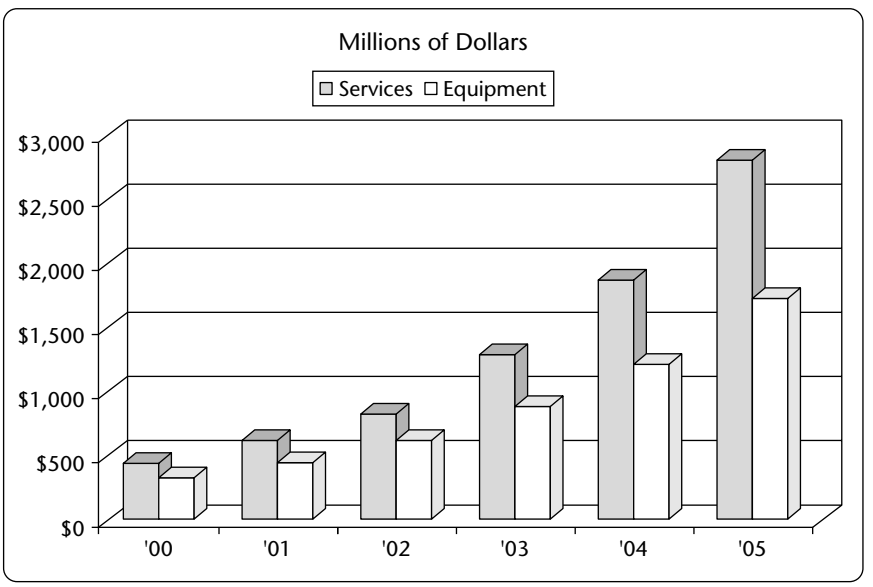
One of the more captivating mobile technologies that has been around for quite some time is the global positioning system. The government has leveraged this technology for defense systems since the 1970s. More recently, the consumer and enterprise business markets are becoming aware of this technology; it's now being built for the everyday mobile user. A simple explanation of a global positioning system is that it provides the ability to pinpoint the exact location (within 10–50 feet) of an object carrying a GPS locator device, using satellites in outer space. An example of a GPS device is a golf ball tracking mechanism at your local golf course. Usually residing on a golf cart, a small television screen maps out the distance of a golf ball location to the final destination, the pin. It's designed to tell the golfer the proper golf club to use in any particular situation. By the way, the golf club also has the opportunity to provide additional services to the golfer through food or golf equipment ads. When golfers reach hole 9, they receive a message asking them if they would like to order food or beverages before reaching hole 10. The food and beverages are ordered and (theoretically) waiting for them once they complete the front 9.

Telematics

Last, but not least, is the technology that combines the best of all the worlds of mobility, *Telematics*. In one sense, Telematics combines location-based

services, wireless portals, CRM, and GPS. Telematics is the use of wireless applications in vehicles, such as cars, buses, trains, and so on. Telematics applications typically provide a wireless connection to some service provider that allows the exchange of data between the vehicle and the service provider, like an automotive dealership. A real example of Telematics is General Motors' On-Star system. With On-Star, data about your automobile, such as when it's time for an oil change, is tracked and sent to the nearest dealership in your vehicle's area. You, as the vehicle's owner, are notified to complete the service. Other services provided include emergency services, stolen vehicle tracking, voice-activated wireless telephony, roadside assistance, and accident assistance to name a few. Telematics services are growing exponentially, as Figure 1.2 illustrates. We'll dig deeper into more Telematics examples in Chapter 9.

Worldwide Telematics Revenues



	'00	'01	'02	'03	'04	'05
Services	$450	$610	$832	$1,286	$1,887	$2,810
Equipment	$320	$460	$626	$872	$1,219	$1,730
Total	$770	$1,070	$1,458	$2,158	$3,106	$4,540

Source: Micrologic Research

Figure 1.2 The growth of Telematics services.

The other category of wireless applications that we need to discuss is wireless "private" applications. Referring back to Figure 1.1, you can see that our definition of wireless "private" applications involves the use of radio and private mobile networks (spectrum) to access information and conduct transactions that result in the transfer of value in exchange for information services internally. Now, let's decipher that quickly. The wireless "private" application has actually been used in the enterprise for many, many years. A good example is renting a car. Many automobile renting services, such as Avis, have been using ruggedized wireless devices to check cars back into their lots when a customer returns a rental car. Most of us don't even give it a second thought, because the service is very much behind the scenes.

When you drop off the car, the attendant supplies you with a receipt of payment literally within minutes of doing so. That attendant holds a commercial mobile device that is designed to withstand outside temperatures and can take being dropped (called a *ruggedized mobile device*). This device connects to an internal wireless radio network that accepts the transaction, looks up the renter's information as to when the car was dropped off, rates, and so forth. If the information is accepted, the device spits out a receipt of the transaction and off you go to your flight or next destination.

Other examples of wireless "private" networks include supply chain optimization for manufacturing processes, commercial Telematics, and wireless home networks. Wireless "private" applications generally exclusively use private spectrums, but in some instances can use the wireless Internet to conduct transactions. A wireless B2B exchange is an example. Usually, exchanges require many organizations to become members of the exchange to conduct business transactions. To reduce costs and provide easy access to the exchange, the Web is used as an access tool. Mind you, the back-end processes and accounting usually still occur in a private setting, but the initial browser access and transaction initiation can occur in a public setting. Figure 1.3 illustrates some other wireless and mobile solutions that we've applied to the utilities industry.

Without going into great detail on each of the solutions in Figure 1.3, you can see the enormous potential for leveraging mobility in the enterprise. The bottom line is, if a workforce is mobile, there likely exists mobile or wireless applications that improve processes and reduce costs. Hopefully, some of the topics covered in this book will help you understand the importance of mobility, where it is, and where it's going, and ultimately help you make intelligent decisions to apply mobile services that will affect your bottom line.

Mobility Solutions in the Utilities Industry

	Wireless Portals	Location-Based Services	Telematics/Fleet Management	Remote Field Service	Mobile Networking
					
Target process	• Infrastructure maintenance • Consumer service • Knowledge mgmt. • Travel & expenses	• Billing (meter reading) • Asset Management • Scheduling	• Transmission monitoring • Fleet maintenance	• Field service management • Infrastructure maintenance	• Office networking • Operations
Sample mobile solutions	• Access and pay bills online • Provide rugged devices for use in certain environments • Provide wireless timesheets and expenses	• Access meter readings without entering the premises • Enable dynamic access to infrastructure status information • Dynamic scheduling	• Wireless SCADA • Provide in-cab system for maintenance vehicles	• Real-time inventory replenishment • Real-time dispatch • Access to product info., handbooks, and technical specs.	• 802.11b • MSDS • eForms • ERP Access • BlueTooth

Mobile solutions provide field staff with improved resource planning, preparation and knowledge management

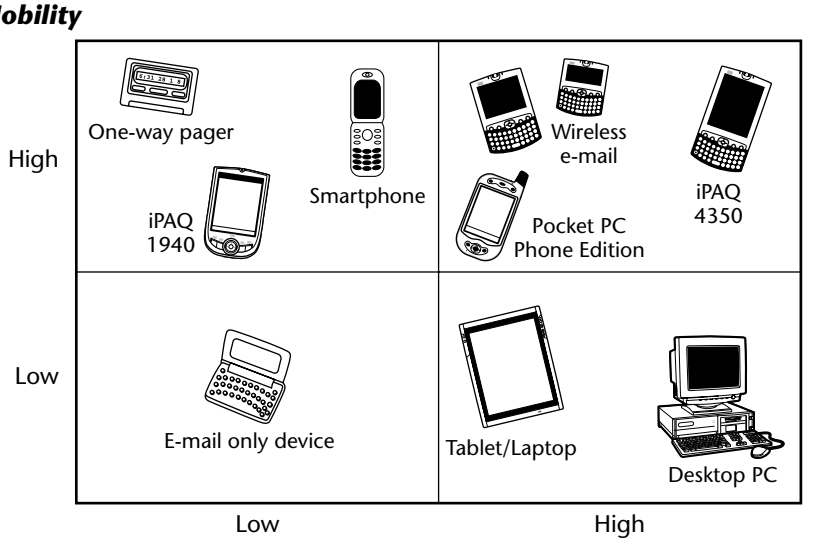
Figure 1.3 Wireless "public" and "private" solutions.

Now that we've covered the basic differences between what wireless applications and services are and what mobile applications and services are, let's go into more detail about the attributes and applications of mobility and wireless services.

Attributes of Mobility and Wireless Services

Now that we've talked about the differences and complements between a wireless and a mobile application, let's get a better understanding of the characteristics of the two and how they might be applied to a sample business scenario.

One of the first important points to mention regarding the attributes of mobility and wireless is the plethora of devices used to enable these applications. At last count, the number of mobile devices available to the marketplace was over 100 and rising. Many of these devices perform similar functions, whereas others are in a class of their own. We'll get into the various mobile devices available today and their characteristics in Chapter 3. For now, take a look at Figure 1.4, which gives you a high-level idea of the categories of devices and whether they fit into the wireless or mobile attribute category.



Source: CSFB

Figure 1.4 Mobile or wireless devices?

In Figure 1.4, CGE&Y performed a study that indicates various devices and where they might fit in a spectrum between requiring a wireless connection to simply acting as a stand-alone mobile device. The most obvious nonwireless, nonmobile device is the desktop PC, because a wired connection is typically required and carrying your PC with you is an unlikely scenario. On the other end of the spectrum is a wireless e-mail device or a Pocket PC, both of which are easy to take along with you wherever you go and usually require some wireless capability for their applications to function. It is important to note, however, that a Pocket PC type of device also fits well as a fully functional nonwireless mobile device, whereas a nonwireless Palm III is primarily a nonwireless mobile device.

Always On

The term "always on" refers to the characteristic of a wireless device to have to have the capability to constantly send or receive data. In other words, it's not necessary to initiate a dial-up connection with a modem, but the connection is constant. "Always-on" technology is quite often referred to in the third generation (3G) world of wireless systems. In case you're wondering what we mean by 3G, take a look at Figure 1.5 for a brief overview of the timeline of the generations of wireless technologies.

Without going into great detail on each of the generations of wireless technology, it's fairly easy to see in Figure 1.5 that each generation enables new functions and experiences for the mobile user. One of the best examples of "always-on" technology is an E911 (Enhanced 911) service. The basic idea behind E911 is to locate an individual who requires emergency attention. The device that is carried by the person needing attention transmits a signal that enables the home office to find the person within 50 and 300 meters. Not bad, but the device must always be on for the patient to be found.

Remote Access

An attribute of mobility that probably comes to mind first is the ability to access information while away from the office or home where the comforts of the wired desktop PC reside. Most devices, even a laptop, are small enough that they can be carried virtually anywhere. Even better, if my device is capable of a wireless connection, I can now access my data almost anywhere.

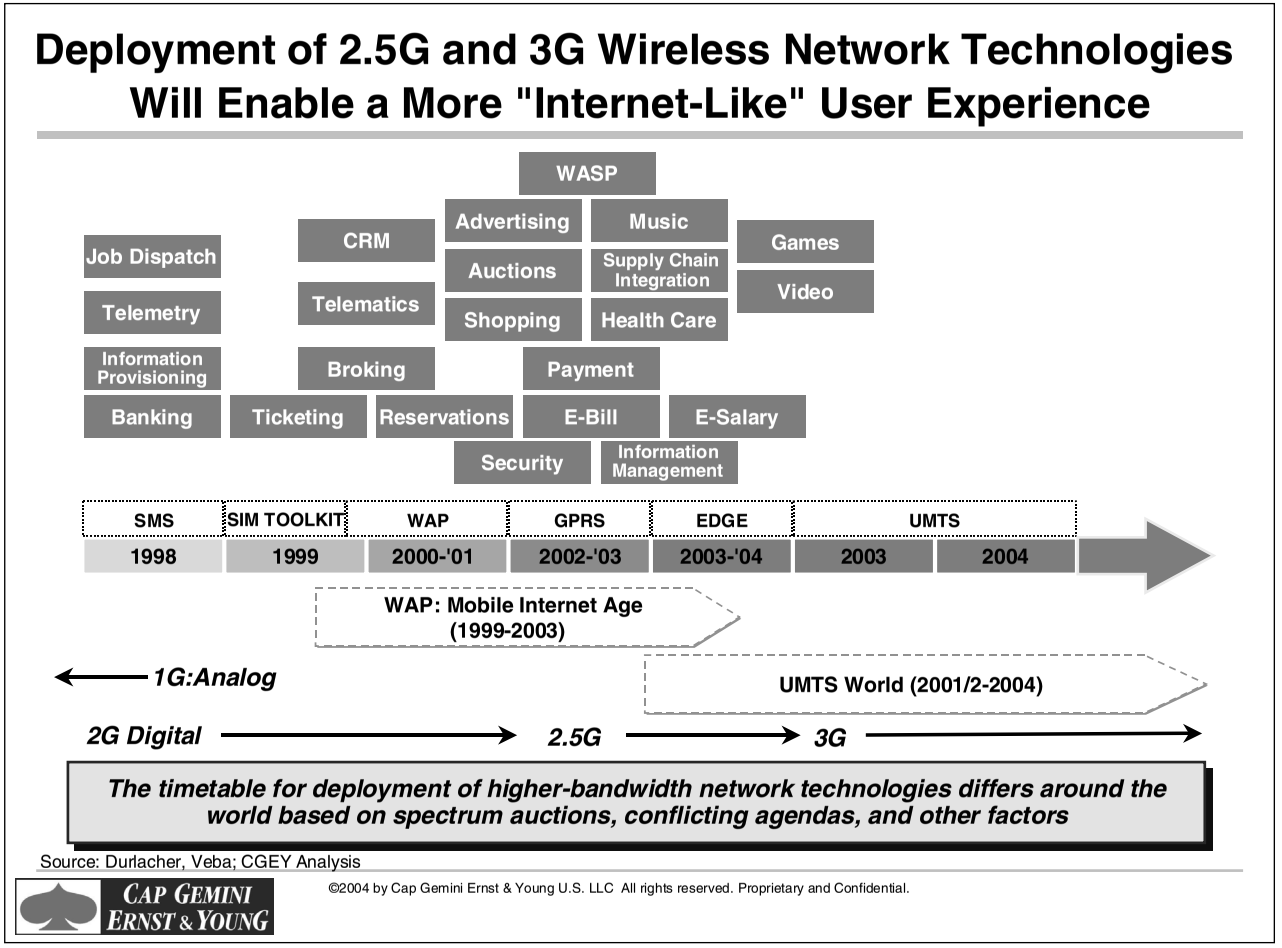


Figure 1.5 The generations of wireless technologies.

Localization

Localization refers to the ability to locate your customers and provide them services based on their current location. Sound familiar? It should, because localization was mentioned in the previous section under location-based services. Localization is another attribute of wireless devices that provides additional services to the wireless user. An example of such a service goes back to sales force automation application. Again, the sales force is typically a mobile workforce traveling from city to city routinely. Wouldn't it be nice to know if another member of your sales team is in your area so that he or she may be able to assist on a presentation? There has been a great deal of talk about privacy and localization. Do I want just anyone to know where I am at all times? It really depends on the customer and what the service is. Some consumers don't mind receiving coupons for coffee while passing the local Starbucks. E911 services are dependent upon localization to work properly. The bottom line is that localization can be turned off. It's certainly not a requirement. The potential, however, is very high, especially for the enterprise, because it can target customers based on their likes, dislikes, and location.

Ubiquity

Whether you carry a wireless or a nonwireless mobile device, you always benefit from the ubiquitous personality of mobility. Any mobile device has the ability to perform work anywhere and anytime. Whether you're walking in the park and need to check your work schedule or you're receiving an e-mail message on your mobile phone, mobile devices go anywhere you go.

Personalization

As people, we are all unique beings who like and dislike different things. I like to listen to blues and rock music, whereas the next person may like jazz. I like to eat Italian food, whereas the next person may like Greek. It's an ever-changing and evolving world we live in that constantly gives us new things to enjoy and new places to go. The world of the Internet also strives to provide an adaptable experience that makes us want to come back.

The idea of personalizing the Internet experience opens the door to commercialization. If I know what my users are interested in buying, I can market specifically those products to them, instead of mass marketing a million different products to them. A good example of personalization is the very popular Amazon.com site. Once you log into the site and tell

Amazon a few things about yourself, the shopping experience begins. As I shop throughout the various electronic malls at Amazon and make various purchases, my personal likes are cataloged for future reference. For instance, I bought a classical music CD and a comedy DVD movie. In my future shopping with Amazon.com, they will provide me with links or match the new comedy movies to my user profile. Additionally, I won't be bombarded with online commercials for every ad under the sun.

Now, let's take personalization to the next level and provide a mobile spin to it. One of the advantages of location-based services is the ability to pick and choose what kind of alerts I would like to receive. For instance, when I'm in Chicago, I'd like to be notified of a good blues bar when I'm driving near an area rated high on Zaggat's list of blues bars. Because I'm also a fan of Italian food, I'd also like to be notified when I'm near a highly rated Italian restaurant. You can imagine the possibilities if we can learn more about our customers. The customers are happy because they feel like they are being treated as individuals and not just part of the mass market. The business is happy because customer satisfaction and the percentage of return business are high.

Proactive Push

One of the characteristics of mobility (notice that we said mobility and not just wireless technology) is that we now are holding a device that can accept information anytime and anywhere. Thus, our business partners now have the ability to send us e-mail, instant messages, alerts, and other data. This is called pushing the messages or data to the device as opposed to the device requesting the information. Proactive pushing works quite well in location-based services applications because it's a messaging-based service. Pushing messages to our customers is one of the earliest innovations in mobility. Small message services (SMS) have been around for quite some time, and in fact, is the most popular mobile service in Europe. SMS messages are basically like mini-e-mail messages that can be sent to and from any SMS enabled device, such as a mobile phone. The simplest example of pushing data to a device is an instant message sent at the same time every day with the day's weather. There are numerous services, such as MSN Mobile and Yahoo mobile, that provide instant messaging to capable mobile devices. Proactively pushing messages works quite nicely in the business world as well. Supply chain optimization applications that monitor product shipments and notify the proper management personnel of breaks in the supply chain through hot alerts, are an example of push technology. We'll cover proactive push applications throughout this book.

Summary

As we bring this first chapter to a close, let's quickly review some of the key concepts. You learned that the terms wireless and mobile can actually have very different meanings when applied to the world of mobility. Generally, when we talk about wireless devices or wireless technology, some sort of direct connection to a network is required for the application to function as intended. The wireless connection can be through a company network, usually a firewalled private network, or through a public Internet connection through a wireless service provider. An example of a wireless application is Web browsing through Internet Explorer or some browsing device. The term mobile spans the realm of wireless or nonwireless applications because in many instances it's not necessary to be fully connected to a network to perform work. An example of a mobile application is an intercompany address book. The names in the address book are available anytime and anywhere, whether you are connected to a network or not. Once the user syncs or initiates a wireless connection to a network, the address book is updated with the most current changes. Finally, we covered the various attributes of mobility and what makes these characteristics unique to mobile and wireless applications. The next chapter covers the growth factors of mobility.