



# SESSION WIRELESS MARKET APPLICATIONS

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## NORTH AMERICA

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## 1 Session Wireless – Key Issues for North America

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*Rapid subscriber growth in North America is slowing as early adopters reach saturation. Heavy competition creates downward pricing pressure to retain market share acquisition.*

The North American mobile communications market is entering a period of rapid change in terms of technology, applications and market structure. North American wireless penetration is now just over 40%, and subscriber numbers adds are slowing or require more aggressive acquisition programs than before. Previous market growth was largely fuelled by rapid take-up in the early adopters.

*The cost of current provisioning methods outweighs the revenue from mid to late adopters.*

Although some carriers have begun to reduce the handset subsidies which they used to encourage subscriber adds, there are still many marginal user segments – and new emerging machine-to-machine segments - where the cost of provisioning is too high for the carriers to make a profit. Examples of these segments include low ARPU users, infrequent users, emergency users (e.g. mobile phones kept in an automobile in case of breakdown), tourists, transient or occasional users and 'outgoing only' users. Carriers are therefore now trying to strike a balance between enabling easy access to wireless for users who may in future become profitable ('universal service') while limiting the cost of other unprofitable users.

Wireless carriers are spending hundreds of millions of dollars in handset activation and service provisioning operations, from exploding growth of customer care call centers to activation commissions paid to retail channel partners. This expense scales in a linear path with new customer adds, but future customer segments may not be as lucrative-per-user as previous segments (business, early adopters) creating downward pressure on profitability from today's new customers.

*Session wireless can enable operators to serve many different user segments profitably*

Session wireless allows the carrier to provide wireless services on a session basis to simple devices or transmitters. With the intelligence residing in the network, session wireless can offer the following benefits to carriers:

- low-cost provisioning of service when and if it is required
- recycling of assets when they are no longer needed for a particular user
- the preferred service mechanism for low-cost, low-intelligence devices

While the capability of the technology can extend to voice, data and machine-to-machine communication, the initial value proposition for the operator can be clearly defined to address their number one problem area – new device activation and service provisioning.

Session wireless technology challenges the traditional business model, first, by increasing revenues through enabling new types of subscribers, and second, by reducing the costs that are associated with a large number of current subscribers.

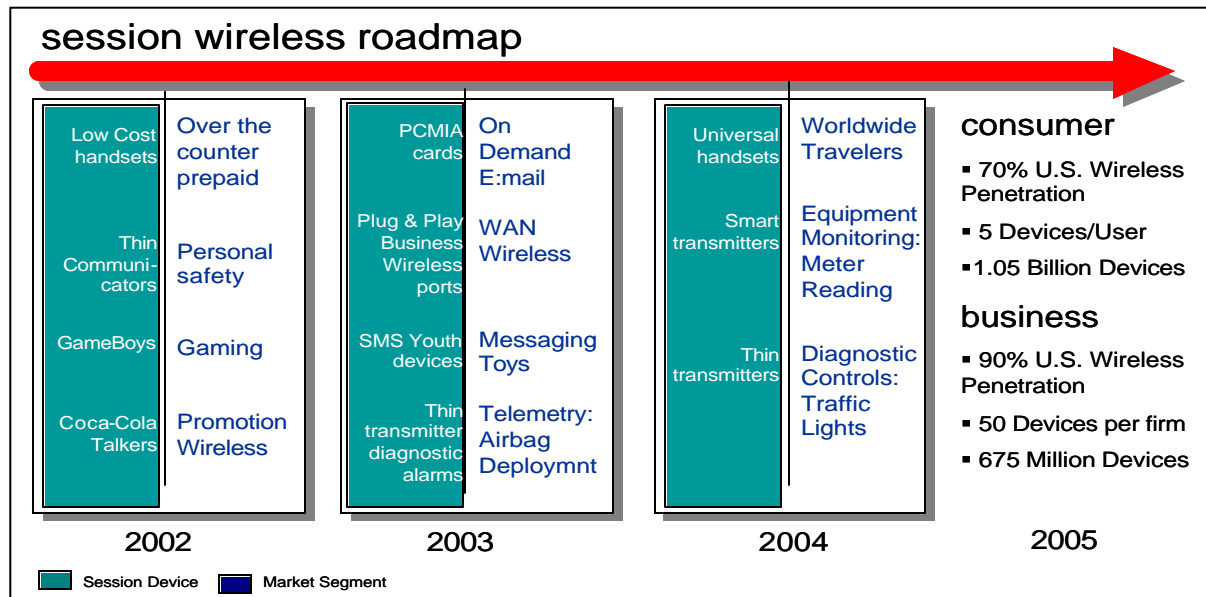
## 2 What is Session Wireless?

Session wireless is a new way of wireless service delivery provisioned and activated automatically, in real-time and for limited use. The service is delivered upon demand and could be limited by time, usage, capacity and/or content.

Session wireless was designed as advanced service delivery automation for wireless carriers. Session wireless opens new markets of service for wireless carriers through exciting new service delivery models coupled with greater service delivery and operational efficiencies.

Session wireless lowers wireless account initialization costs through auto-provisioning and auto-activation for devices. Session wireless technology automatically pools, multiplexes and recycles network resources to minimize network resource usage and limit operation costs to the carrier. In addition, session wireless dynamically allocates the needed resource to an account only when it is actually required. For example, if the service does not need a dialable phone number because it does not receive calls, one is not assigned to the device. Multiple users or devices can now share one application account via session wireless' dynamic resource assignment. Additionally, for many session wireless applications, device functionality and complexity can be transferred from the device to the network, delivering additional economies of scale efficiency.

Session wireless allows carriers to rapidly grow their voice and data revenues while provisioning these minutes of service at lower operating costs. Session wireless technology gives carriers a critical solution to dramatically increase wireless usage penetration – and broaden their revenue base - through a more efficient service delivery model.



## 2.1 Session Wireless and Device Interface

Operationally, a device accessing the wireless network via session wireless has the ability to automatically access a proxy account that can be thought of as a temporary or “bridge” account. The proxy account is restricted to a very limited service in a highly secure manner. Additionally, the account has a minimal set of network resources assigned to it. The ability to access the network lies inherent in the device, via dormant software in the device, and is only initialized with network authorization.

When the device is triggered (button presses, icon selected, or other trigger) the device “wakes up” and requests network service.

When the device is turned on, it can only access the restricted session wireless service. In this instance the user would be presented with a choice of signing up for a limited period of time or to subscribe. The session wireless sign-up application converts the proxy account into an appropriate subscriber account, prepaid account or application-specific action upon authentication and validation of credit. This conversion is facilitated by session wireless certificates that are created by the network and returned to the device.

The proxy accounts follow one of the following lifecycles:

- **Convert to subscriber account** – at the end of the sign-up process the session wireless network software sets up an account in real time based on service properties selected by the subscriber. The proxy account resources are then recycled.
- **Convert to prepaid account** – at the end of the sign-up process the session wireless network software converts the proxy account to a “prepaid” account. The proxy account resources are then recycled. The resources associated with the account are also automatically recycled upon termination.
- **Application-specific action** – other dispositions of the proxy account are application-specific. The proxy account itself can be locked for a very short period with restricted service access such as in a mobile telematics application where a car component calls a central server to report an error condition, the receiving party (the auto manufacturer) would pay for the airtime. In this case the proxy account would appear, the device would send its data, then become dormant again until the next trigger or deactivation. The proxy account resources are then recycled.

Session wireless generally follows a set standard flow outlined below. Steps in this flow may be completely automated requiring no user interaction, or the device or application may present the user with choices.

- Request network registration for device (automatic or interactive)
- Register device on the network (automatic)
- Request user registration (automatic or interactive)
- Request service (automatic or interactive)
- Request account credit (automatic or interactive)
- Authenticate user / service / account
- Grant or deny service (automatic)

## **2.2 Session Wireless and User Interface**

Many session wireless services do not require a user interface. For example, a wireless monitoring device may “wake-up” due to an alarm trigger, jump on the wireless network, report to a specialized data application, and “jump off” the network. In this example, the session wireless device API would be used to automatically authenticate and access the network. The priority of this kind of service could be controlled by the carrier to be either on-demand or at particular restricted hours.

For other types of applications (for example postpaid voice service), interaction with the user is required. Session wireless technology provides a User Interface framework and API to facilitate communications to the wireless network for users and devices. To perform its processes seamlessly to the underlying network, session wireless technology gathers information or displays information to the user in an unobtrusive and user-friendly manner in real time.

These services in their simplest form can be thought of as the role of the operator when using a payphone. Reporting credit needed, ensuring credit, interrupting when credit is running low, etc..

Note that applications that have user interaction should be designed to maximize the offline gathering of user information and minimize the wireless connection time of the proxy account.

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## 3 Session Wireless Markets – Two Examples

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### 3.1 Over-the-Counter Mass Market Wireless

Over 60% of the U.S. market, and 90% of the global market, do not use wireless communications technology due to concerns about wireless' affordability, complexity and limited access. These end users, representing an untapped multi-billion dollar market opportunity, include families, seniors, teens and preteens, and the credit-challenged, all awaiting a wireless offering tailored to their economic and user situations. Wireless carriers continue to search for solutions to serve this untapped market that deliver profitable revenue streams built upon a platform of long-term growth potential.

Because session wireless provides fully automated device and service provisioning, activation and recycling of network resources, session wireless specifically addresses the untapped over-the-counter wireless user market. Session wireless efficiently addresses:

- *Account initialization costs* through automation of account initialization: auto-provisioning, auto-activation, and auto-recycling of network resources.
- *Network operations costs* through multiplexing and recycling key resources such as Device IDs, phone numbers, etc.
- *Network resource scalability.* automation and recycling support an efficient scaled use of network resources by multiplexing wireless application accounts therefore optimizing carrier use of existing network infrastructure.
- *Thin client, lower cost mobile devices* through a new class of cost-reduced handsets

### 3.2 Equipment Condition Monitoring (ECM) and Mobile Telematics

The global wireless network has become the lifeline for telematics technology. But the cost of constant wireless connectivity comes with its own set of problems. Though costs are coming down, streaming airtime rates make many basic telematics services, such as automatic airbag deployment notification, cost-prohibitive for all but luxury vehicles, since the service requires the availability of cellular service for the vehicle (generally by subscription). Currently, GM's OnStar service counts only 75,000 paying subscribers. Or, to achieve 100% vehicle compliance, Mercedes-Benz announced that it will cover the basic service cost of its new Tele Aid system for the life of several of its new models.

Session wireless offers auto manufacturers and telematic service technologies the ability to “jump on” the wireless network securely and automatically, in a controlled, secure activation/deactivation model.

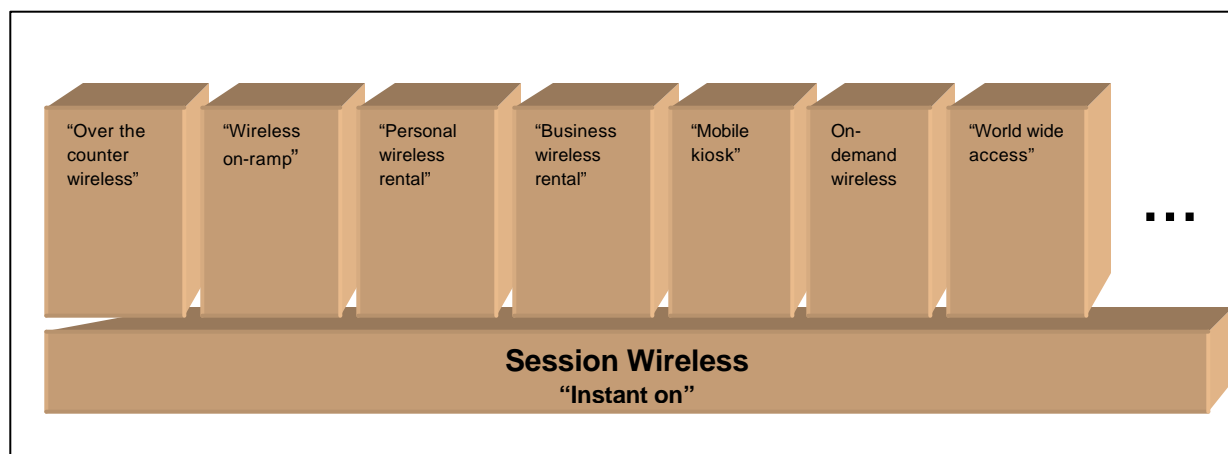


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## 4 Session Wireless Market Applications

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Session wireless enables a wide range of new applications that can transform wireless use and distribution. “Applications”, in this instance, usually means the use of a new or existing device to meet the needs and usage patterns of a specific market. Session wireless enables and enhances several markets and applications for wireless. These are described below:



### **Over-the-Counter Wireless**

Over-the-Counter wireless refers to the 60% U.S. and 90% global un-served market of families, pre-teens/teens, seniors and late adopters to wireless technology who are looking for low-cost, ease-of-use, and convenience. Session wireless, combined with low cost devices, effectively exploit this vast market segment. Session wireless services can be sold through mass-market distribution – gas stations, convenience stores, and supermarkets – are “instant-on” and can be bought as a prepaid device with simple replenishment.

Session wireless catalyzes this market by providing: instant-on service, low-cost devices and enabling consumer distribution (i.e. low security) distribution of devices that can be activated in a secure manner.

### **Wireless On-Ramp / Wireless Sign-Up Application**

An application that will enable all wireless handset, PDA, communicator and laptop devices today to sign-up for wireless service automatically *over the wireless network*. Devices enabled for session wireless can be turned on instantly to either charge a prepaid account or to create a subscription. In this way session wireless is like the generic sign-up mechanism that AOL and MSN ship on new computers. A special application dials into a special temporary account using a “free” call, gets user credit information and then transfers the user to a pre- or post-paid account. This application allows wireless devices that are sold through non-secure channels to get onto the network in a secure and automated manner.

Session wireless catalyzes this market by providing: wireless sign-up services to foster wireless sign-up and usage, and by enabling consumer distribution (i.e. low security) distribution of devices that can be activated in a secure manner.

### **Personal Wireless Rental**

The personal wireless rental is the market where there are a temporary, high needs to stay in touch or connected. This market is addressed to day by handset rentals as add-ons to car rentals and theme park admissions. Session wireless technologies expand the opportunities in these markets by enabling less cumbersome activations of devices, user-driven activation and extension of services, and less expensive devices thus making the segment much more attractive.

### **Business Wireless Rental**

"Business wireless rental" refers to the market rented portable business devices where there is a temporary or mobile high need for secure communication or secure transactions. These include rental of devices like mobile cash registers, and portable credit card validation stations. Session wireless enables a simple temporary account for the time of rental that is paid by debit or credit card for the period of rental.

### **Mobile Kiosk**

"Mobile Kiosk" refers to the market where there is an impulse need for information / communication. Applications include local and specialized information offered through a car dashboard, handset or PDA. Session wireless technology makes this market more attractive by reducing the network resources needed to "push" information to the kiosk, and simplifying the pay-per-use interface to the kiosk.

### **On-Demand Wireless – Mobile Equipment Monitoring Control and Telematics**

"On demand wireless" refers to the market where there is a need to send high value, secure information intermittently or time-critically. This market includes alarm, monitoring systems and diagnostics in a variety of business sectors. Applications in this market usually "wake-up", jump on the network, transmit information and "jump off" based on an alarm condition. Applications might include and equipment subsystem in a car, printing device or industrial equipment sending data to a maintenance center when maintenance is needed; alarm systems automatically dialing a control center; remote diagnostics reporting at predefined times (e.g. a fleet of cars reporting their odometer readings to home office) or conditions (e.g. report car diagnostics when the odometer hits 100,000 miles).

Session wireless technology catalyzes this market by removing network resource and operations costs – up to 100 times – for short-term on-demand wireless applications. Session wireless technology achieves these savings through automated provision, activation, recycling and pooling, and wireless bootstrapping.

### **World Wide Wireless**

"Worldwide wireless" refers to the market of people with a need to stay connected on a worldwide basis. Session wireless technology has the ability to seek local wireless services that offer session wireless services. This would enable a traveler to use his device to seek local wireless service wherever he or she is traveling.

### **Emergency Wireless**

"Emergency Wireless" refers to the market when there are extremely high needs to communicate or perform transactions. This might be any emergency or disaster situation where special non-subsidized battery-operated devices are sold and service is prepaid or activated on a per-use basis. Examples are emergency phones in vehicles, and communicators that are included in emergency and/or disaster relief kits.

Session wireless technology catalyzes this market by minimizing network and operational costs and enabling instant-on access to the network in the emergency situation.

## Market Approaches for Session Wireless

	Market	Approach	Sample applications	Sample devices	Sample customer	Distribution	Billing relationship
1.	Over-the - Counter	<p>Instant on</p> <p>Personal consumer devices</p> <p>Mass-market distribution</p> <p>Easy-to-use</p> <p>Inexpensive entry point</p> <p>Primarily un-served wireless market today</p> <p>=&gt; Impulse buy</p>	<p>Low-cost, easy-to-use devices that are distributed through consumer channels. They includes single-button "instant-on" services</p>	<p>Low cost mobile phones</p> <p>Consumer instant-on communicator / email device.</p>	<p>Currently not using wireless: Families, Pre-Teens/Teens, Seniors, late adopters, credit challenged.</p> <p>Travelers (business and consumer)</p>	<p>Mass market retail and mobile retail: Convenience stores, Gas stations, and vending machines.</p> <p>Carrier sells to retailers.</p>	Prepaid
2.	Wireless On-Ramp / Wireless Sign-Up	<p>Instant on</p> <p>Any business and consumer devices</p> <p>Any distribution channel</p> <p>Select a service &amp; go</p> <p>=&gt; Instant gratification</p>	<p>"Wireless sign-up" application.</p> <p>All wireless devices will have an instant-on button or icon that allows them to choose a service, choose a payment (pre-paid or post-paid), and start using the device.</p>	<p>Current handsets with "sign-up" menu.</p> <p>Handsets, PDAs, Email devices and laptop computers with "sign-up" software pre-loaded.</p>	All wireless users (comes built into the device)	<p>Any distribution (dependent upon device).</p> <p>Carrier works with device manufacturers.</p>	Subscribers and some prepaid
3.	Personal Rental	<p>Instant on</p> <p>Personal consumer and business devices</p> <p>=&gt; Temporary high need to stay in touch/connected</p>	<p>Communicators, Info devices, Email devices that are rented from a ski resort, Disneyland, a convention organizer for use for a fixed period of time.</p>	<p>Pagers, phones and communicators for the day or week.</p>	<p>Family at theme park, Businessperson at a convention, person at a resort, spectator at the Olympics.</p>	<p>Resorts, Convention centers</p> <p>Carrier works with large theme parks, Olympics, etc.</p>	<p>Sessions per period of time or airtime dollars</p> <p>New session every time device is rented.</p>

	Market	Approach	Sample applications	Sample devices	Sample customer	Distribution	Billing relationship
4.	Business Rental	Instant on High-security transactions for temporary situations => Temporary or mobile high need for secure communication	Transaction-based devices (Cash registers, Credit card authorization stations (e.g. Verifone), etc.) that are temporarily rented for an event.	Portable cash registers  Portable point-of-sale verification stations	Business renting point of purchase equipment at a convention, concert, etc.	Business device rental and lease services.	Sessions per period of time  New session every time device is rented.
5.	Mobile Kiosk	Instant on Voice, info and audio devices built into mobile units, => Impulse need for information / communication	Information screen on a car dashboard, Kiosks set up in airports, at conventions, outdoor events, etc.  Features wireless applications– on-demand voice portals, radio, news and info.	Electronic Kiosks  Vehicle communications panels.	Businessperson waiting at an airport, train station, etc.  Person at a mall or theme park needing local information – times for attractions, etc.	Kiosk leasing companies, rental vehicles with kiosk services.	Short-term billed at end of session.
6.	Gaming	Instant on Immediate wireless access for new game downloads, multi-user interactions => Impulse need for gratification, need for “latest trend”	All gaming devices will have an instant-on button or icon that allows them to download new games, choosing a payment (pre-paid or post-paid), and start using the game immediately.	GameBoys, PlayStations	Teens/PreTeens  Adults  Seniors	Any distribution (dependent upon device).  Carrier works with device and gaming manufacturers.	Short term prepaid; MOU block sale to game device mfr.

	Market	Approach	Sample applications	Sample devices	Sample customer	Distribution	Billing relationship
6.	On-Demand Wireless: Equipment Condition Monitoring (ECM) and Mobile Telematics	Instant on Specific devices – usually monitoring systems and alarms – that need to “wake-up”, jump on the network, transmit information and jump off.  => Need to send high value, secure information time critically.	Can jump onto a subscribed carrier network when needed due to a problem, alarm or emergency situation.  In a car: airbag deployment notification, emergency services, stolen vehicle tracking, accident assist, remote diagnostics.	Alarm systems  Diagnostic and monitoring subsystems  Monitoring devices on cars, in manufacturing equipment, in expensive equipment	A sub-system that the end-user may not be aware of that sends alerts, alarms and reports wirelessly to a monitoring center.  May be built into cars, remote manufacturing equipment, mobile alarm and monitoring systems.	Multiple distributions depending upon device.	Temporary account(s) billed as a block of usage to the corporation.
7.	World Wide Wireless	Instant on Higher-end device that can find local wireless service wherever it is.  => Need to stay connected worldwide	Multi-band devices that connect to any local SIWA system and present services that can be paid for or used.  Can jump on to any carrier in an emergency.	Handsets	Worldwide business traveler, Military.	Handset and device distribution channel.	Prepaid or pay-per-use account billed at beginning or at end of session.
8.	Emergency Wireless	Instant on Devices used in an emergency or disaster situation  => Extremely high need to communicate / transact business in an emergency or disaster and its aftermath.	Portable, battery operated devices used in emergency conditions when electricity, phone lines and other equipment may not be operating.  Glove-compartment emergency phone or communicator.	Handsets Email devices PDAs	Part of any consumer or business emergency backup system.	Distribution dependent upon device.  Handset manufacturers, Device manufacturers.	Prepaid account that can be extended or subscription.

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## 5 Telespree Communications

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Telespree Communications was founded in 1999 to enhance the future of wireless. Telespree's patented core technology establishes a real-time, secure link on-demand between wireless devices and the network. This system enables millions of people and devices to access wireless services for unlimited amount of time, for "sessions" of wireless. For carriers, this is a network breakthrough that allows them to manage millions of new customers - or existing customers accessing new services - conveniently and automatically without additional infrastructure costs. Telespree unleashes the full potential of the wireless network, dramatically accelerating carrier revenues by pushing millions of transactions through already existing infrastructure.

Telespree, a wireless software company, has developed a network software and new wireless protocol that enables wireless devices to self authenticate and provision themselves securely over the network, with automated life cycle management of these devices and the services supported. This new technology creates a remarkably more efficient delivery and operational system for carriers, allowing them to for the first time profit from sales of wireless service to the "mass market". Telespree's technology is licensed to wireless carriers, and its SIWA<sup>SM</sup> protocol is provided to device manufacturers, giving the wireless industry a critical access platform to reach new markets and provide new classes of applications.