



Demand for Location-Based Services - Results from a Causal Model Examining the 5 U's: Users, Uses, Usability, Usefulness, and Usage

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Contact:

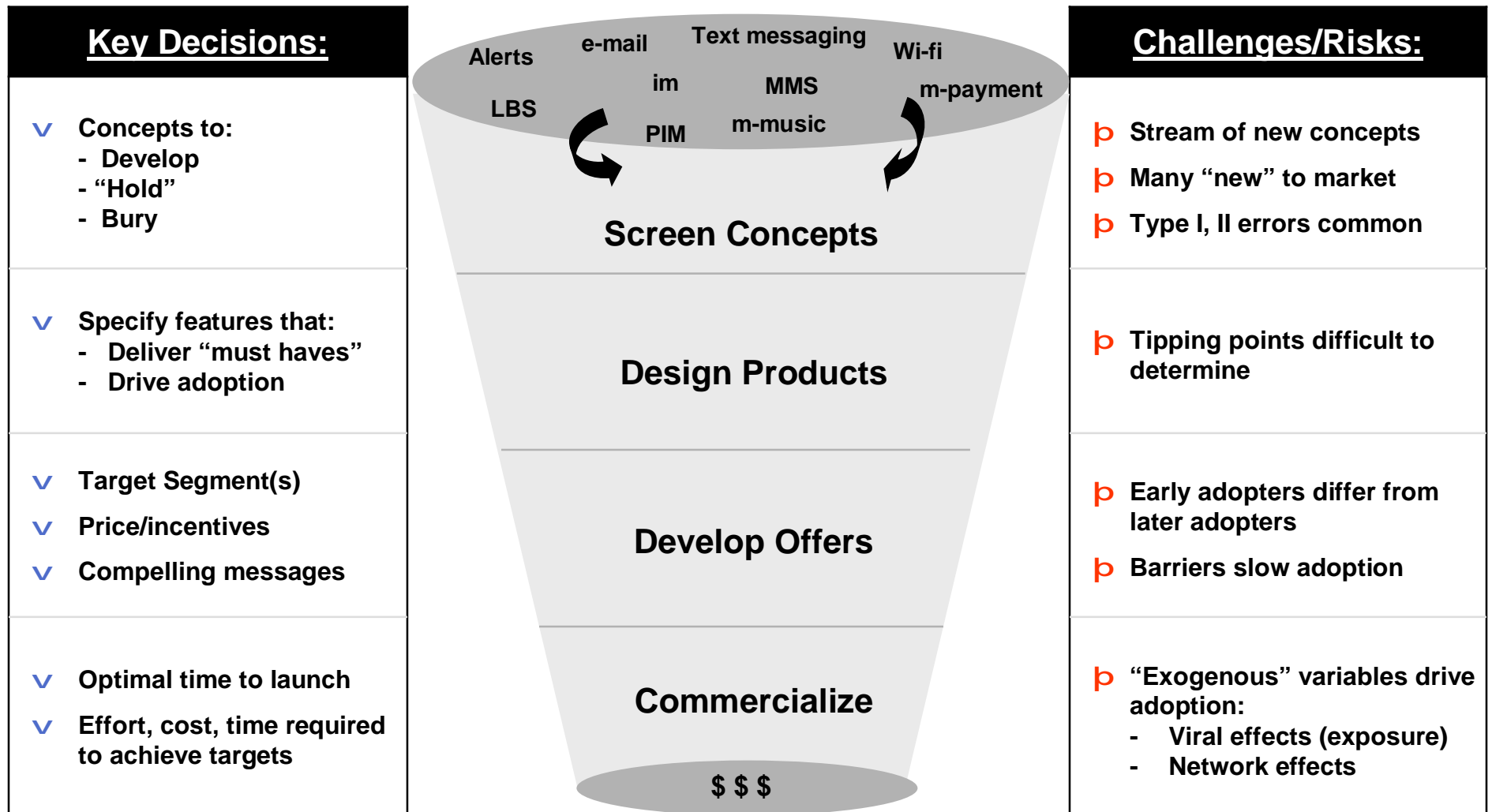
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Development Funnel Drives Growth

Success depends on ability to identify, evaluate, and bring “hits” to market





Overview of LBS Study

	Quantitative
Timing	June 2004
Research Design	Online Survey, Choice Model
Data	Ratings, Choices
Sample	Nationally representative
Sample size	500
Focus	Verification/calibration of hypotheses: § Market potential § Demand for selected services/packages § Price elasticity § Importance/value of features
Analysis	Causal Model, Choice Model, InSite

Location-based Services Examined



Wireless Location-based Services (accessed/displayed on cell phone, PDA, or built-in system in vehicle)	
Directions	Provides maps and turn-by-turn directions from current location to desired destination
Business Finder	Lists nearby businesses within selected category (e.g., gas station; bank; ATM; restaurant)
Parking Finder	Shows and directs you to nearest available parking spaces
Concierge	Shows times, prices, and availability for attractions, restaurants, and events near you
Price Shopper	Shows the prices and availability of a product you are shopping for at nearby businesses (e.g., fuel; laundry; book; etc.)
Points of Interest	Lists things to do and see near your location
Tour guide	Provides detailed information about a point of interest along a route as you approach or enter (e.g., sites along a historic drive; exhibits in a museum; etc.)
Friend finder	Allows you to locate individuals (friends/family) on your "buddy list" and determine who is close by
Whereisit	Allows you to locate and/or track an object (such as a vehicle or even your cell phone)
Real-time Zagats	Allows you to view or hear comments and reviews left by recent customers (e.g., for restaurants, hotels, etc.)
Special offers	Allows you to receive special offers from nearby establishments (for the specific types of businesses you choose)
Digital profile	Allows you to create a profile and automatically share information (preferences, size, etc.) with selected establishments as you enter/approach (e.g., retail store; restaurant; hotel; airline; etc.)
Alerts	Alerts you to changes in weather, traffic, etc. in your vicinity or along your route
e911	Connects you to a 911 operator and automatically transmits your location



Findings and Conclusions

LBS Ü Classic Discontinuous Product	<ul style="list-style-type: none"> q Penetration in the single digits in the U.S. q New to market (low levels of familiarity) q Few prospects know enough to buy
Enormous Interest	<ul style="list-style-type: none"> q Over 50% would like to have top 3 LBS applications (Directions, Alerts, e911) q Nearly 1 in 3 would like to have next 3 LBS apps (Business Finder, Whereisit, Points of Interest)
Usefulness, Usability Matter	<ul style="list-style-type: none"> S \$ WTP = f (Usefulness, Usability) S Usefulness increases price WTP from \$8.43 to \$9.78, or 16 percent S Usability increases price WPT by approximately 10^
Portability Wins	<ul style="list-style-type: none"> p Portable handsets preferred <u>6:1</u> over fixed, in-vehicle systems
Significant Price Elasticity, Demand	<ul style="list-style-type: none"> p Resistance to paying much more than \$1 - \$1.50/month per app p Nearly 2/3 would purchase an LBS-package at \$10/month, with discounted handsets p At \$5.00/month, demand jumps to near 90%
Privacy concerns overstated	<ul style="list-style-type: none"> n Prospects focus on cost and usability, shun information about privacy

Key	
q	Survey
n	InSite
S	Causal Model
p	Choice Model





The Challenge

Background	<ul style="list-style-type: none">q New Mobile Apps (Mapps) Ü expected to boost subscriber growth, usage, and ARPUq Significant investment, considerable effort Ü results often disappointingq Verifying and calibrating market response (size, timing, and drivers) Ü difficult
Problem	<ul style="list-style-type: none">q Data from research, consulting and analyst firms Ü inconsistent, often yields conflicting conclusionsq Inconsistent data/conflicting advice Ü heightened uncertainty, costly mistakes, missed opportunities
Challenge	<ul style="list-style-type: none">q Provide valid, robust insights into demand and market potential so that we can:<ul style="list-style-type: none">Ø <u>Calibrate</u> likely take-up and demand under various scenariosØ Identify information that <u>triggers interest</u> and stimulates purchaseØ Determine the "<u>tipping points</u>" on features, price, and other elementsØ Identify characteristics that distinguish <u>early and later adopters</u>

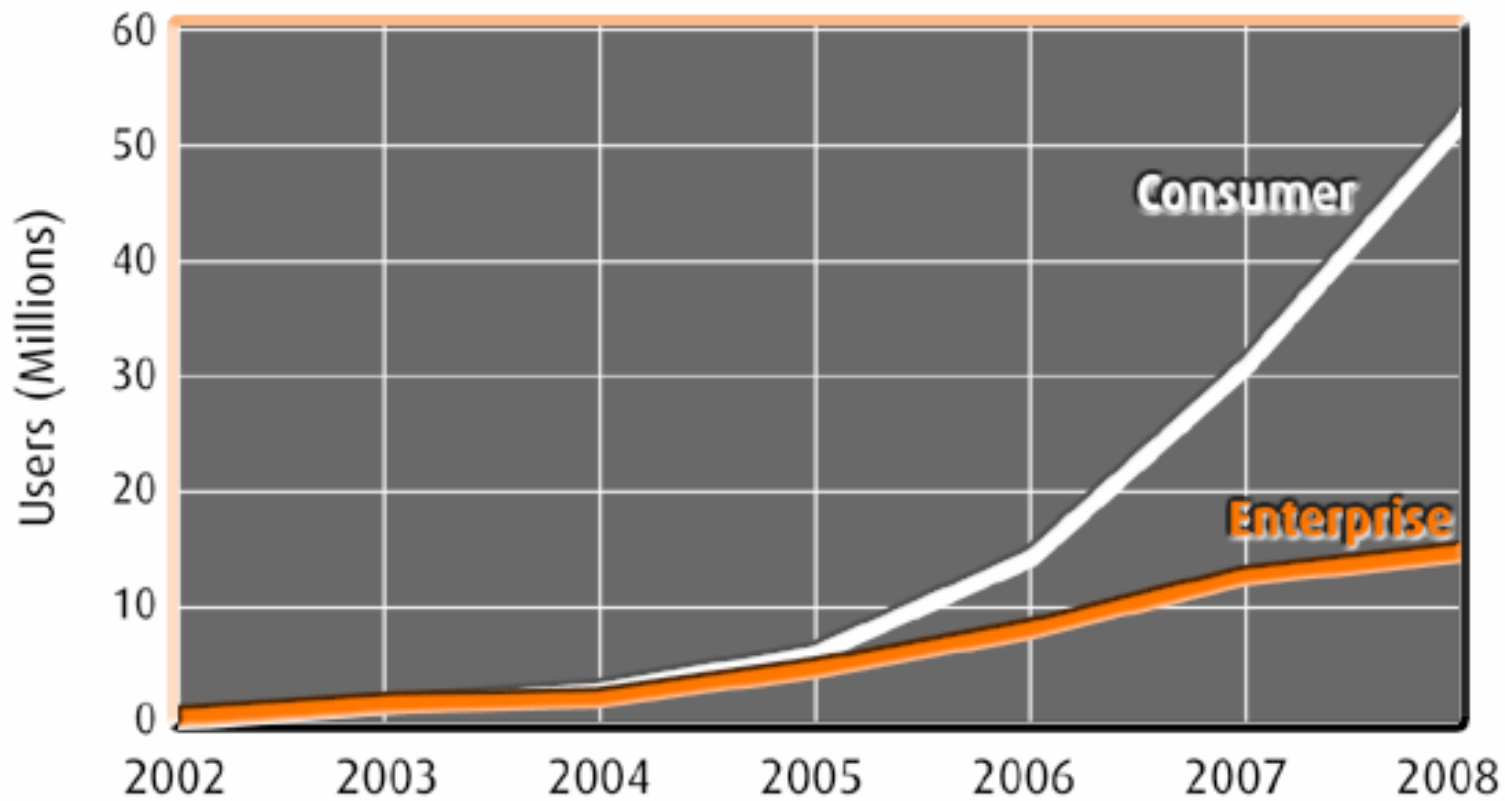
Characteristics of Wireless Apps

Characteristic	Wi-Fi	MMS	LBS	PTT	m-pay	Others
✓ Products new to the market (“really new products”)	ü	ü	ü	ü	ü	Mobile: – advertising – commerce – entertainment – financial services – games – IM ...
✓ Considerable speculation about market potential	ü	ü	ü	ü	ü	Monitoring – Personal – Asset ...
✓ Potentially disruptive technology	ü	ü	ü	ü	ü	m2m
✓ Customers have limited knowledge of product or features	ü	ü	ü	ü	ü	Enterprise – SFA – Medical • • •
✓ Significant gap between penetration and potential	ü	ü	ü	ü	ü	



Market Potential

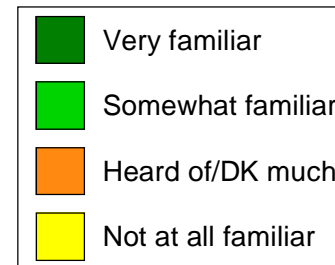
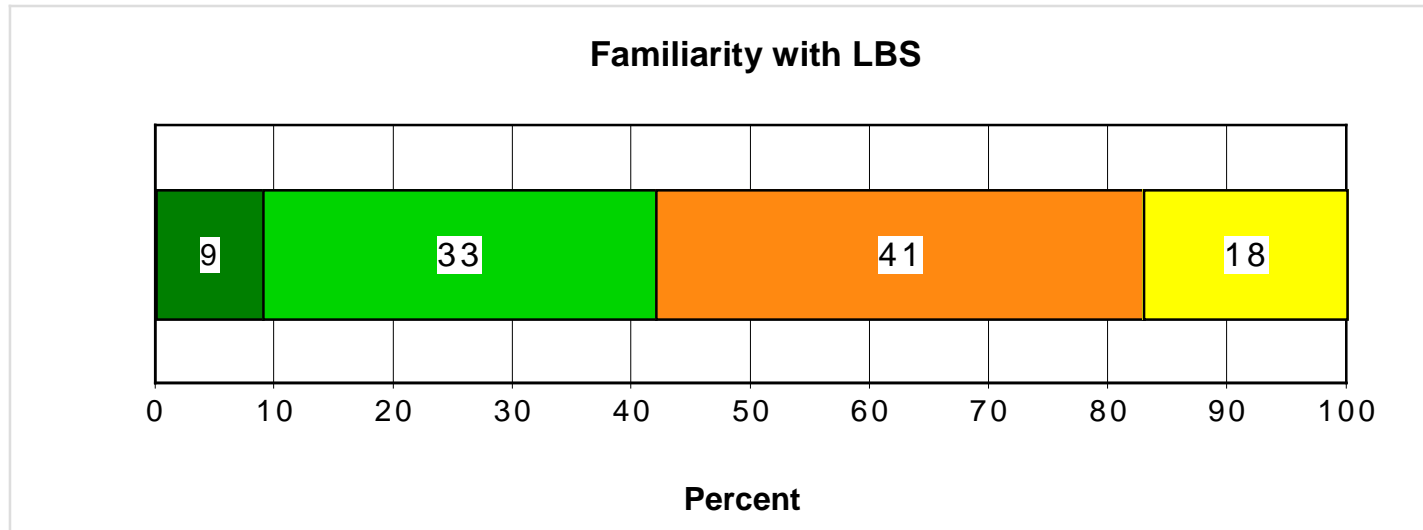
Location-Based Services Market: User Forecasts – Enterprise vs. Consumer (U.S.), 2002-2008



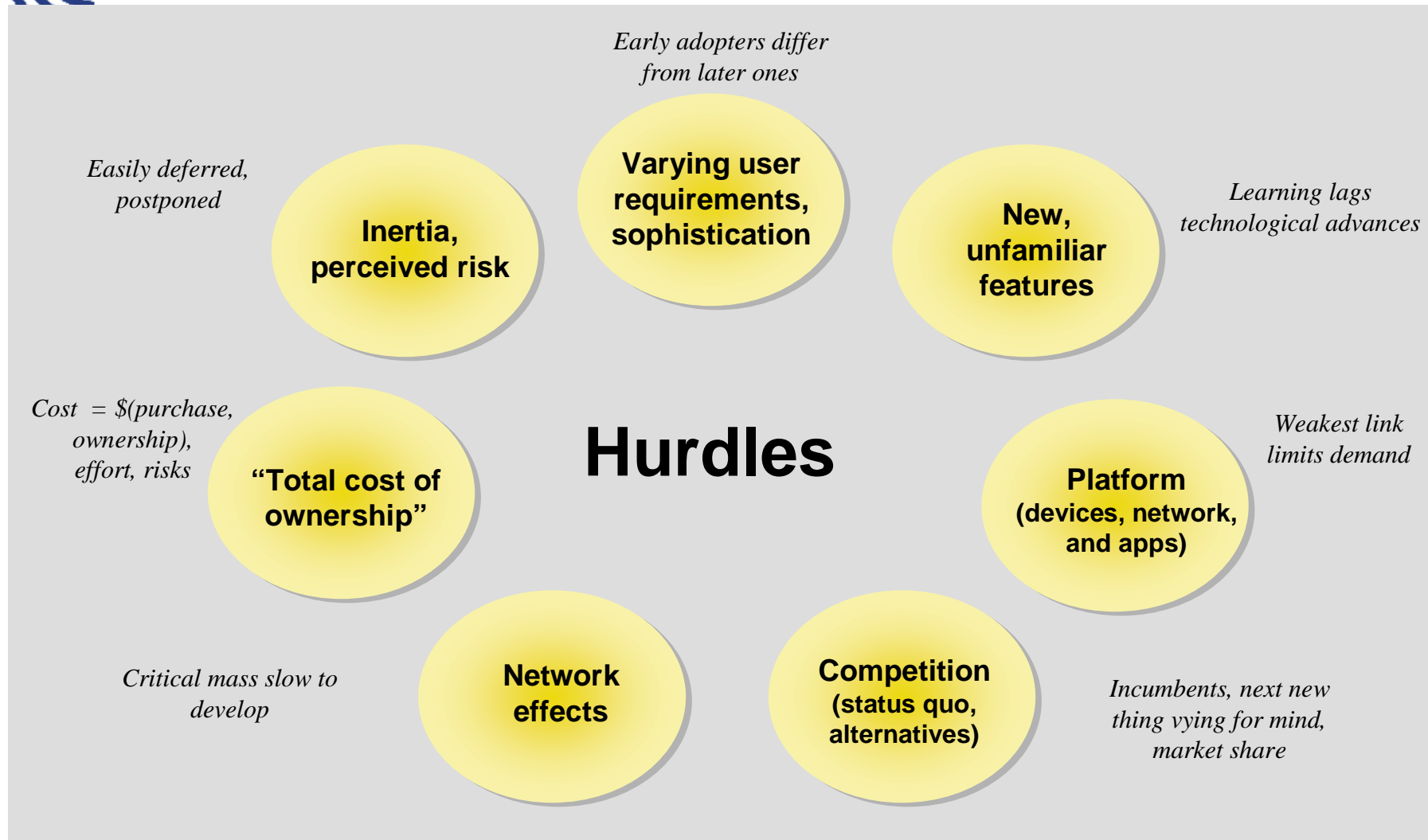
Note: All figures are rounded; the base year is 2002. Source: Frost & Sullivan




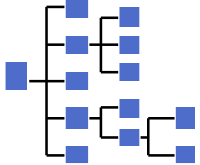
Familiarity with Location-based Services



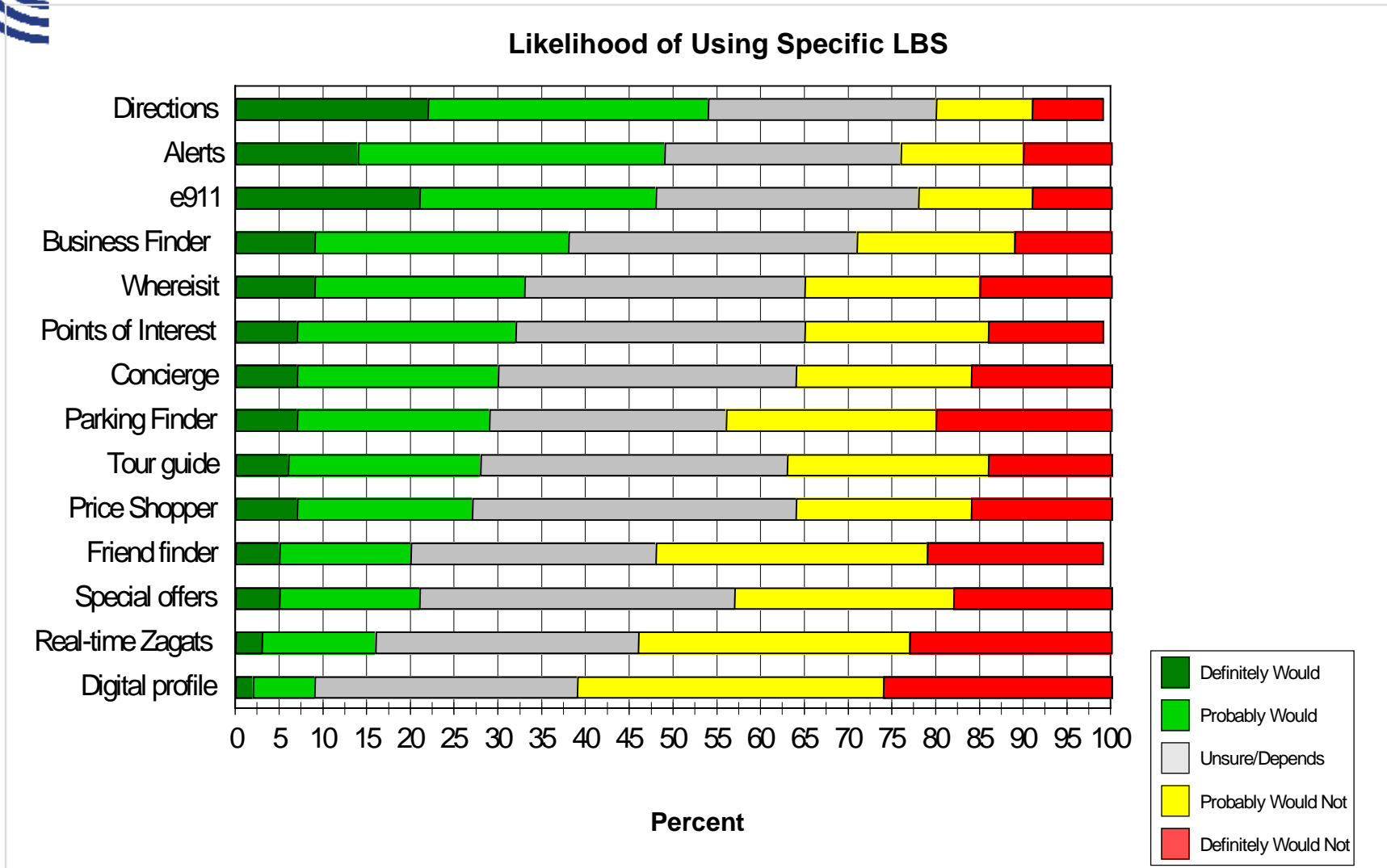
Hurdles slow adoption overlooked, underestimated



Research Approach

			Description	Benefits							
1	 <p>Virtual Prototype</p>	<p>§ R's view (interact with, "use") virtual prototype</p> <p>§ MApp_i displayed, demonstrated with static and dynamic images (size, form, features, uses/applications, operation, etc).</p>	<p>√ "Informed" prospects provide more reliable responses</p>								
2	 <p>InSite Exercise</p>	<p>§ R's choose, access, and view information about MApp_i in a hierarchical, nested structure</p> <p>§ Information accessed traced digitally, recorded</p>	<p>√ Reveals information sought by prospects</p>								
3	<table border="1"> <thead> <tr> <th></th> <th>Option 1</th> </tr> </thead> <tbody> <tr> <td>Feature 1</td> <td>Xlwolsls</td> </tr> <tr> <td>Price</td> <td>\$xx</td> </tr> <tr> <td>Purchase?</td> <td><input type="radio"/></td> </tr> </tbody> </table> <p>Choice-based Conjoint</p>		Option 1	Feature 1	Xlwolsls	Price	\$xx	Purchase?	<input type="radio"/>	<p>§ R's view, evaluate offerings of MApp_i (with price, features varied according to an experimental design)</p> <p>§ Indicate which (if any) they would purchase</p>	<p>√ Reliably estimate:</p> <ul style="list-style-type: none"> o Impact/value of features o Price elasticity o Demand and Market Potential
	Option 1										
Feature 1	Xlwolsls										
Price	\$xx										
Purchase?	<input type="radio"/>										

Likelihood of Using Specific LBS





U⁶ Model of Adoption

Users	∅ User characteristics associated with propensity to adopt, willingness to pay
Uses	∅ Which applications garner most interest
Usability	∅ Ease of use (accessing, viewing)
Usefulness	∅ Expected value of specific services
Usage	∅ Expected frequency of use
Ubiquity	∅ Expected availability/penetration



Research Approach

Measurement Tools Used to Calibrate Demand for Discontinuous New Products

Virtual Prototypes	InSite™	Choice-based Conjoint
<ul style="list-style-type: none"> § MApp_i demonstrated and displayed (vs. described) § Static and dynamic images presented § Respondents can examine, interact with, "use" § Shows size, form, features, uses/applications, operation 	<ul style="list-style-type: none"> § Information about MApp_i made available in nested structure § Respondents given 5-8 minutes to access, view § Respondents' clickstream data captured, summarized § Reveals information sought by prospects 	<ul style="list-style-type: none"> § Offerings of MApp_i formed by combining prices, features according to experimental design § Respondents evaluate offerings, indicate which (if any) they would purchase § Data analyzed using advanced statistical methods

MApp_i = Mobile Application



Causal Model of Adoption of LBS

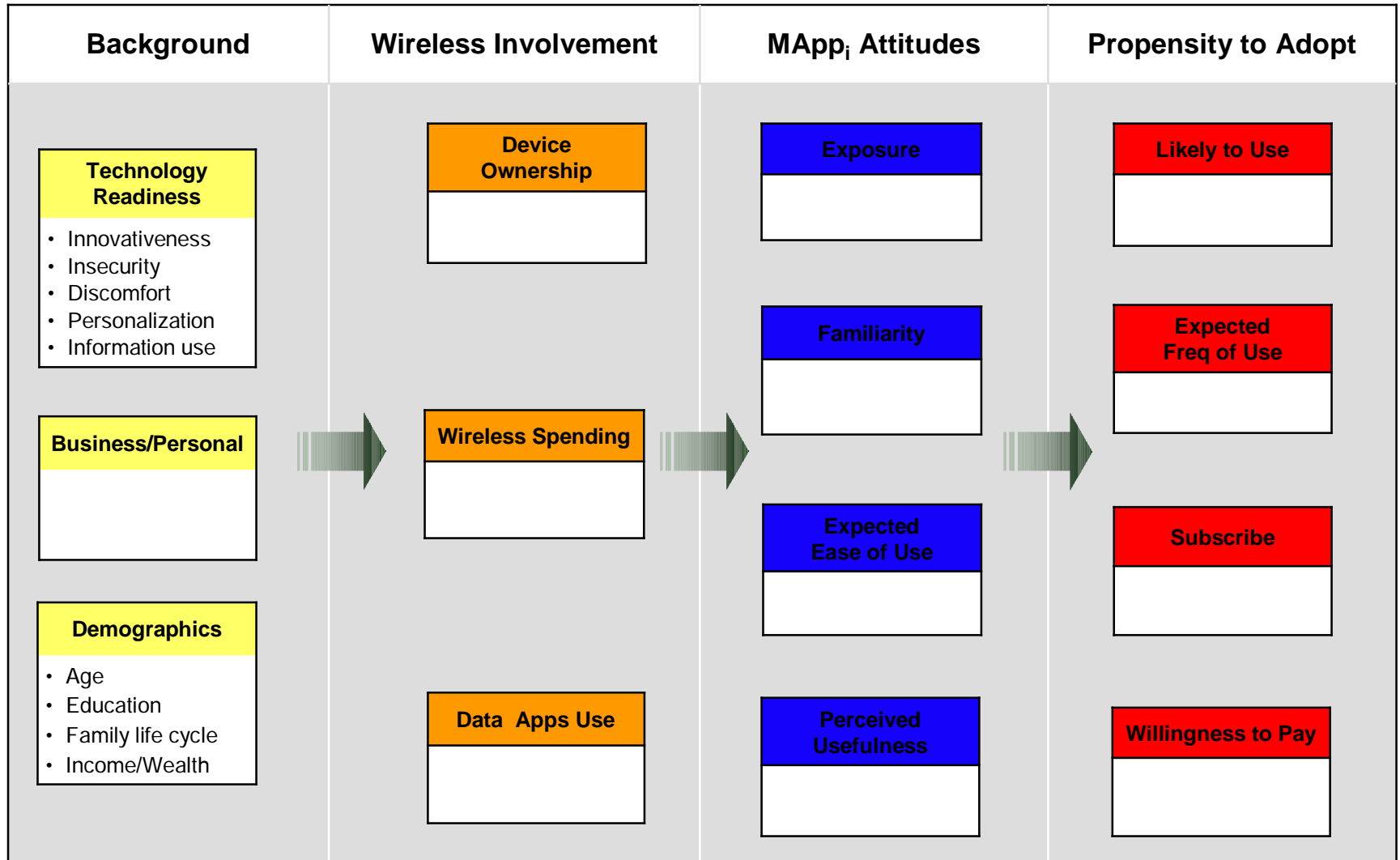
Q16 The following questions relate to **[INSERT APP NAME]**, the wireless LBS service that **[INSERT APP DESCRIPTION]** on your cell phone, PDA, or in-vehicle system.

Q16a How familiar are you with...	Very familiar				Very unfamiliar								
§Uses and benefits of the service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
§Features of the service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
§Pros and cons to consider before deciding to buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
§Price of the service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Q16b With [INSERT APP NAME] , how easy do you think it would be to...	Very Easy	Easy	Not sure	Difficult	Very difficult								
§Provide commands or other inputs the service might require	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
§Hear or view and use results delivered by the service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
§Use the service, overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Values for Drop down box:													
Q16c If [INSERT APP NAME] was available on your cell phone, PDA, or in your vehicle, how often do you think you would use it?	- Select one - ,		<table border="1"> <tr> <td>Several times/day</td> <td>Several times/month</td> </tr> <tr> <td>Daily</td> <td>Monthly</td> </tr> <tr> <td>Several times/week</td> <td>Several times/year</td> </tr> <tr> <td>Weekly</td> <td>Once a year or less</td> </tr> </table>			Several times/day	Several times/month	Daily	Monthly	Several times/week	Several times/year	Weekly	Once a year or less
Several times/day	Several times/month												
Daily	Monthly												
Several times/week	Several times/year												
Weekly	Once a year or less												
Q16d And if you were to use [INSERT APP NAME] , how useful do you feel it would be?	- Select one - ,		<table border="1"> <tr> <td>Extremely useful</td> </tr> <tr> <td>Very useful</td> </tr> <tr> <td>Somewhat useful</td> </tr> <tr> <td>Not very useful</td> </tr> </table>			Extremely useful	Very useful	Somewhat useful	Not very useful				
Extremely useful													
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Not very useful													

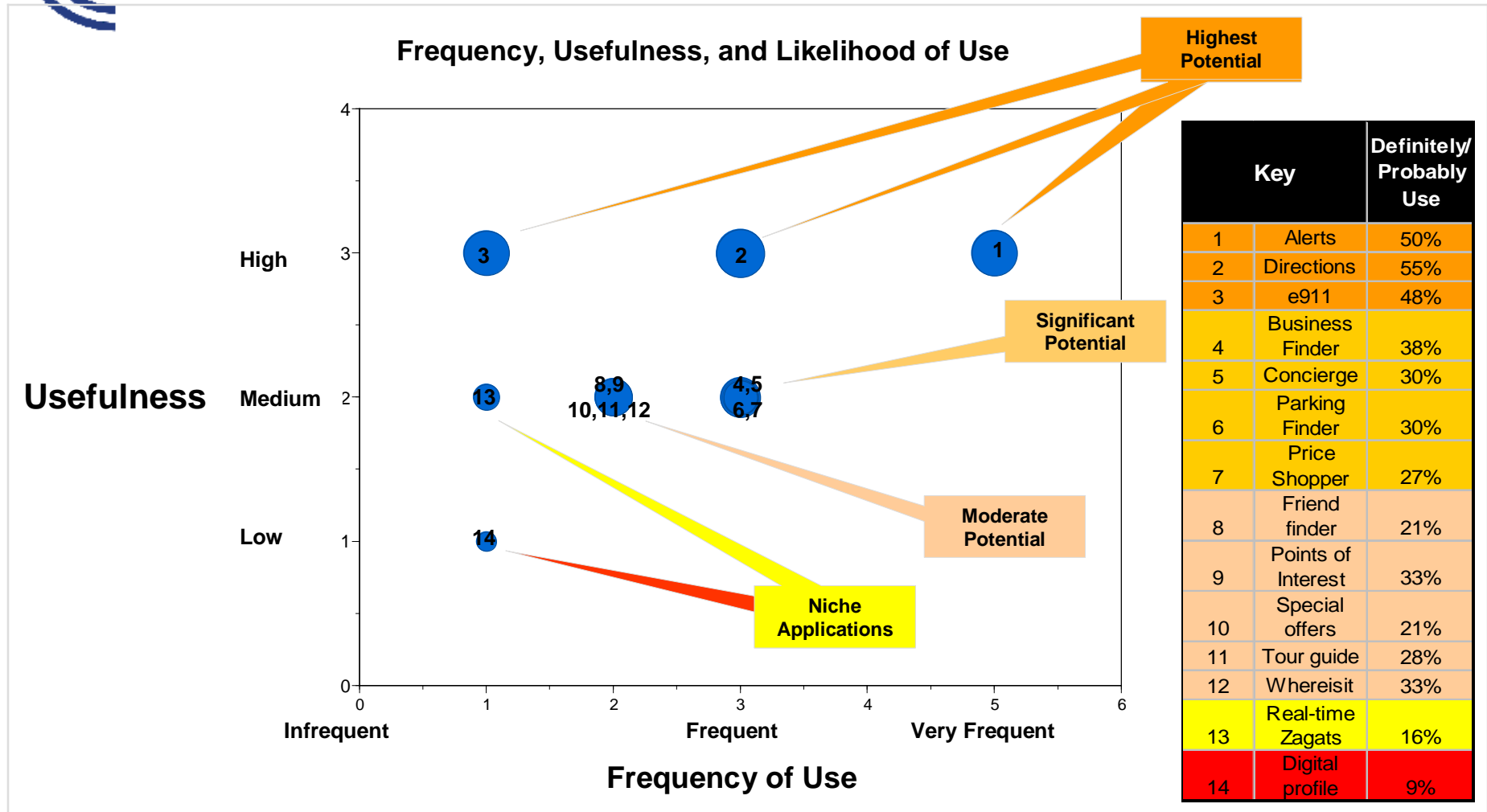
Q17 Suppose that you could purchase a package that included any of the Location-based Services listed below. Assume that each would work on a cell phone, a wireless PDA, or on a system built-in to your vehicle. For each one, click on the arrow € to indicate which you would subscribe to and the maximum price per month you would be willing to pay for the service. The total monthly cost of the package of services you would choose appears at the bottom of the screen.

Location-based Wireless Services		Click to Subscribe and Indicate Maximum price/ month willing to pay	
Directions	Provides maps and turn-by-turn directions from current location to desired destination	- Select one -	,
Business Finder	Lists nearby businesses within selected category (e.g., gas station; bank; ATM; restaurant)	- Select one -	,
Parking Finder	Shows and directs you to nearest available parking spaces	- Select one -	,
Concierge	Shows times, prices, and availability for attractions, restaurants, and events near you	- Select one -	,
Price Shopper	Shows the prices and availability of a product you are shopping for at nearby businesses (e.g., fuel; laundry; book; etc.)	- Select one -	,
Points of Interest	Lists things to do and see near your location	- Select one -	,
Tour guide	Provides detailed information about a point of interest along a route as you approach or enter (e.g., sites along a historic drive; exhibits in a museum; etc.)	- Select one -	,
Friend finder	Allows you to locate individuals (friends/family) on your "buddy list" and determine who is close by	- Select one -	,
Whereisit	Allows you to locate and/or track an object (such as a vehicle or even your cell phone)	- Select one -	,
Real-time Zagats	Allows you to view or hear comments and reviews left by recent customers (e.g., for restaurants, hotels, etc.)	- Select one -	,
Special offers	Allows you to receive special offers from nearby establishments (for the specific types of businesses you choose)	- Select one -	,
Digital Profile	Allows you to create a profile and automatically share information (preferences, size, etc.) with selected establishments as you enter/approach (e.g., retail store; restaurant; hotel; airline; etc.)	- Select one -	,
Alerts	Alerts you to changes in weather, traffic, etc. in your vicinity or along your route	- Select one -	,
e911	Connects you to a 911 operator and automatically transmits your location	- Select one -	,
Total monthly cost for the package of Location-based Services you would choose ,, ,,			\$00 .00

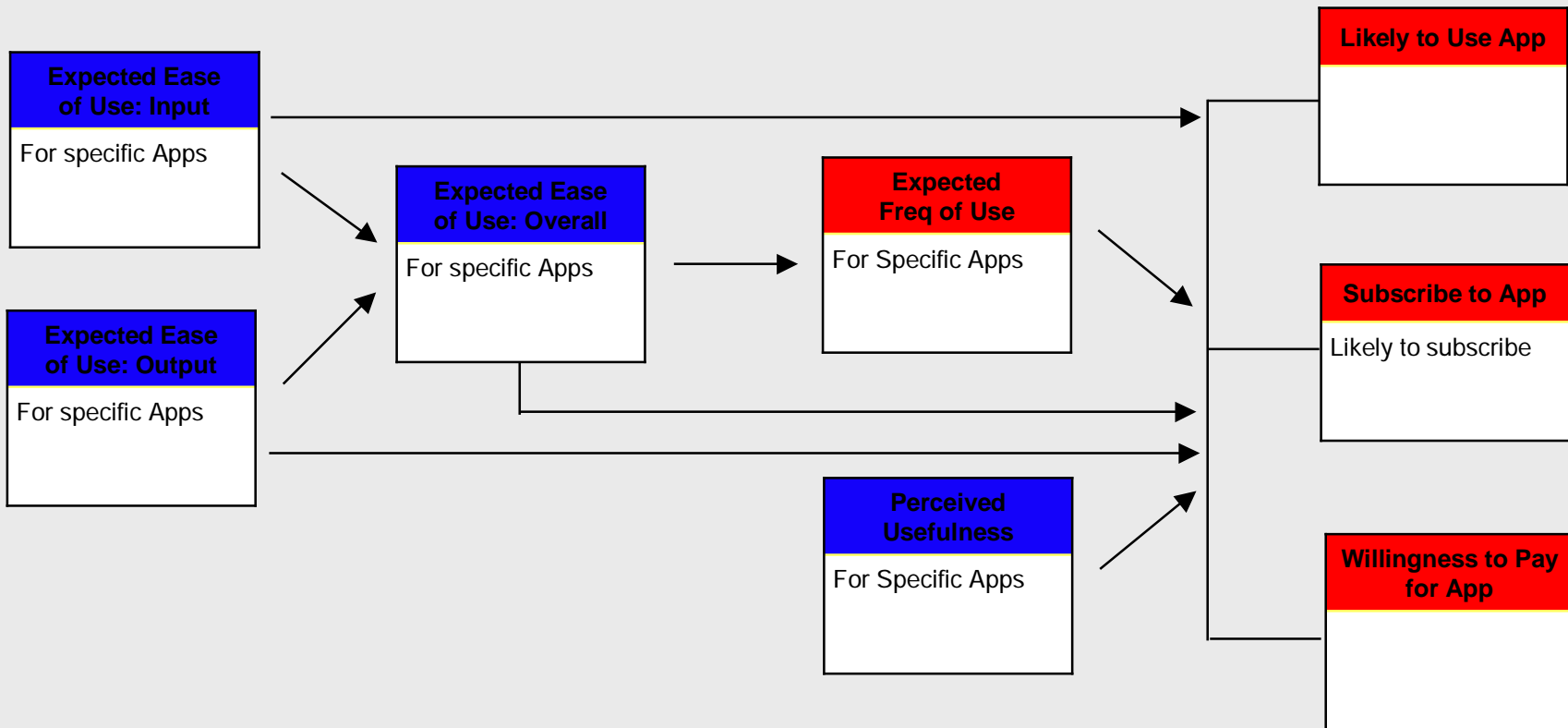
Model of LBS Adoption



Expected Frequency, Ease, and Likelihood of Use

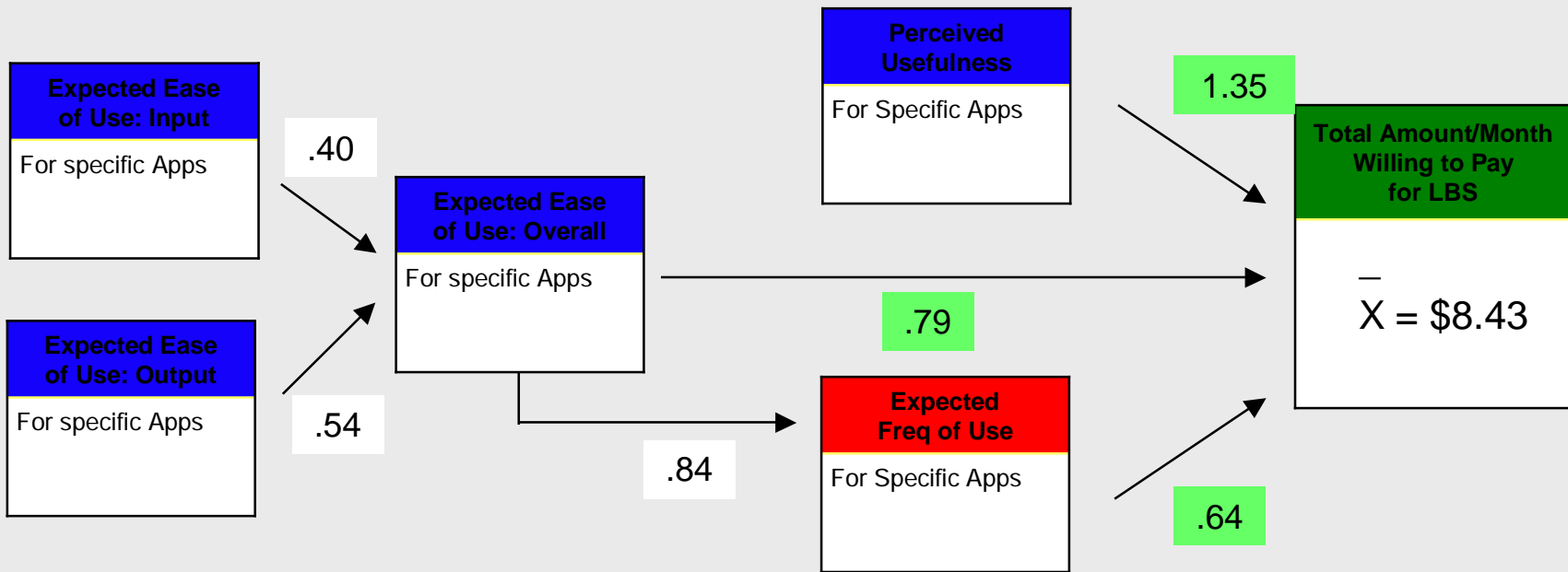


Modeling Adoption, WTP for LBS Apps



*Subset of R's rated each LBS App

Modeling Adoption, WTP for LBS Apps



*Subset of R's rated each LBS App



InSite for LBS

- FAQ - LBS and Navigation Services
 - What are Navigation services?
 - What are key benefits of Navigation services?
 - How do Navigation services work?
 - What type of equipment is needed?
 - How are commands, data entered?
 - What do outputs look like?
 - What features should I consider?
 - Who provides Navigation services?
 - How much do Navigation services cost?
 - What about privacy?
 - Skip FAQ's - Resume Survey

The next section presents a number of new LBS Navigation packages for you to evaluate. After completing the section, your name will be entered into the prize drawing for \$500. You will be asked to indicate - should you win the prize - whether you wish to (i) receive the \$500 in cash, or (ii) use part of the award to purchase one of the LBS Navigation Service packages shown and receive the remainder in cash.

To help you evaluate and decide, this section contains frequently asked questions (FAQ's) about LBS Navigation Services. The FAQ's are divided into the following sections:

- What are Navigation services?
- What are key benefits of Navigation services?
- How do Navigation services work?
- What type of equipment is needed?
- How are commands, data entered?
- What do outputs look like?
- What features should I consider?
- Who provides Navigation services?
- How much do Navigation services cost?
- What about privacy?

Click on any of the questions in the left-hand pane, and the answers to those question will appear.

Review as many of the FAQ's as you would like.

When you are ready to move to the next section, just click on the last tab marked Skip FAQ's - Resume Survey

- FAQ - LBS and Navigation Services
 - What are Navigation services?
 - What are key benefits of Navigation services?
 - Avoid traffic, save time
 - No need to ask for directions
 - Never miss a turn
 - Voice-guided directions keep your eyes on the road
 - Find shortcuts, save time and money
 - Accurate ETA
 - No more paper maps
 - Businesses and POI's at your fingertips
 - Let the Concierge help
 - Don't leave home without it
 - Emergency service at the push of a button
 - How do Navigation services work?
 - What type of equipment is needed?
 - How are commands, data entered?
 - What do outputs look like?
 - What features should I consider?
 - Who provides Navigation services?
 - How much do Navigation services cost?
 - What about privacy?
 - Skip FAQ's - Resume Survey

No need to ask for directions

By speaking a few simple voice commands, Navigation services gives you easy-to-follow directions from your current location to the desired destination. An information bar at the bottom of the screen can also show the direction of travel, the distance to your next turn, your estimated time-of-arrival (ETA), and the mileage to your destination.

With turn-by-turn directions and a dynamic digital map that you can pan or zoom in on, you'll never have to ask for directions again.

Advantages of LBS Directions:

Location-enabled	The service knows where you are, so you don't have to enter the origin
On-screen display	Directions and map are shown on the screen of your cell phone, PDA, or in-vehicle display
Voice-guided directions	Turn-by-turn directions are announced as you travel
Dynamic rerouting	If you make a wrong turn, directions are updated to get you back on the correct route



Choice Model for LBS

Navigation LBS Packages - Base Case Scenario

Navigation LBS Packages to Choose From†						
Features of Packages:	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System	None of these
Audio through Vehicle Sound System	No	No	No	No	Yes	
Price of equipment (device, display)	\$200	\$300	\$500	\$500	\$1,000	
Interface	Automated Response	Automated Response	Automated Response	Automated Response	Live Operator	
Voice Enabled	No	No	No	No	Yes	
Subscription Price/month‡	\$10.00	\$10.00	\$10.00	\$10.00	\$15.00	
Check <u>one</u> you would purchase...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
(check box of Navigation LBS Package you would purchase, or “none”)						

†All packages include Directions, Business Finder, Concierge, Points of Interest, Alerts, and e911

‡LBS subscription does not include monthly price for your regular cellular plan

Base Case: R's not exposed to InSite

Discrete Choice Analysis - LBS Packages Tested[†]

Characteristics of LBS Systems - Explanation					
[These characteristics do not change]					
LBS Systems „	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System
Characteristic:					
Location Technology	Uses your cellular provider's network and GPS receiver built-in to cell phone/PDA/PPC. LBS can be used whenever you are within cellular coverage area			These two systems use GPS (Global Positioning System), which relies on the GPS satellite system. LBS can be used as long as you have "line of sight" with satellites (e.g., tall buildings can interfere)	
Device Used	§ Cell phone - LBS services work best on newer cell phones w/ larger, color screen, and built-in speakerphone, and Smartphone (cell phone with PDA functionality built-in) § Both with GPS receiver built-in		Newer model PDA's (like the Palm, IPAQ) that have cellular phone and GPS receiver built-in	Newer model PDA's can have GPS receiver built-in	System (GPS receiver/in-dash display) installed in your vehicle
Portable	Cellular and PDA devices are portable and can be taken with you and used in a rental car; while walking; etc.				Available only in your vehicle
Display+	Display+ is a supplemental display that can be placed in or mounted on your vehicle's dashboard. The display is larger (6"x8") than a cell phone or PDA display, which makes it easier to view maps, directions, etc.				Part of system
Service provider	LBS services provided by your cellular company			Hardware/software based system; real-time traffic, alerts provided by co like LocatioNet	Auto manufacturer (like GM or Ford) or company specializing in LBS (like OnStar or ATX)
"Air-time"	When transmitting or receiving LBS information, usage counts against cell phone plan minutes (or data amounts included)			These systems are independent of your cellular plan, and there are no "per minute" charges	
LBS Subscription	Billed along with your cell phone (cost in addition to your regular monthly plan)			Billed separately	Billed separately

[†]Table contains descriptions of products respondents were shown. Features varied are shown on next 2 pages.



Instructions

In the exercises that follow, each of the Navigation LBS packages will vary with respect to price and the features included, as explained below.

Features of Navigation Packages[†] - Explanation:

<p>Audio through Vehicle Sound System</p>	<p>§ Some of the systems can play audio (e.g., for automated response, turn-by-turn directions) through your vehicle's sound system. The others play audio through the device (e.g., cell phone or PDA)</p>
<p>Price of equipment (device, display, and receiver for GPS))</p>	<p>§ Equipment included with each system:</p> <p>§ For cellular - new LBS cell phone or Smartphone with color display, built-in speaker, and built-in GPS receiver</p> <p>§ PDA/PPC with cellular - a PDA/PPC that can also work as a cell phone, with built-in GPS receiver</p> <p>§ PDA/PPC with GPS - a PDA/PPC with either a built-in or separate GPS receiver</p>
<p>Interface</p>	<p>§ Live operator - a live person assists you</p> <p>§ Automated voice response - audio responses generated, transmitted digitally</p>
<p>Voice Enabled</p>	<p>§ With voice enabled systems, you request service by speaking (e.g., "give me directions to the nearest gas station")</p> <p>§ Otherwise, your cell phone or PDA keypad (or touchscreen) is used to request service, enter information</p>
<p>Subscription Price/month</p>	<p>§ The cost to subscribe to the service</p> <p>§ For cellular-based plans, subscription price is in addition to the monthly price of your cell phone plan</p>

[†]All packages include Directions, Business Finder, Concierge, Points of Interest, Alerts, and e911





Navigation LBS Packages - Discrete Choice Design

Features and Levels Varied in Discrete Choice Analysis										
		1	2	3	4	5				
Levels:		1	2	3	4	5				
Audio through Vehicle Sound System (all except in-vehicle)		Yes	No							
Audio through Vehicle Sound System (for in-vehicle)		Yes								
Price of Equipment: LBS Cell phone or Smartphone (Col. 1)		Free	\$50				\$100	\$200		
Price of Equipment: LBS Cell/Smartphone w/ Display+ (Col. 2)		\$50	\$100				\$200	\$300		
Price of Equipment: PDA/PPC with cellular built-in or PDA/PPC with GPS, Display+ (Cols 3 and 4)		\$200	\$300				\$400	\$500		
Price of Equipment: In-vehicle System (Col. 5)		\$200	\$400				\$800	\$1,000		
Interface		Automated response	Live Operator							
Voice Enabled		Yes	No							
Subscription Price		\$5.00	\$7.50				\$10.00	\$15.00		
Additional Information (used to assign R's to InSite module - not shown in Choice Sets)		Available	Not Available							



Navigation LBS Packages - Base Case

Navigation LBS Packages to Choose From [†]						
Features of Packages:	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System	None of these
Audio through Vehicle Sound System	No	No	No	No	Yes	
Price of equipment (device, display)	\$200	\$300	\$500	\$500	\$1,000	
Interface	Automated Response	Automated Response	Automated Response	Automated Response	Live Operator	
Voice Enabled	No	No	No	No	Yes	
Subscription Price/month [†]	\$10.00	\$10.00	\$10.00	\$10.00	\$15.00	
Estimated Share	11.1%	11.2%	4.3%	6.3%	4.3%	62.8%

[†]Base Case: R's not exposed to InSite



Navigation LBS Packages - Scenario 4: Scenario 3 + Moderately Priced Equipment

Navigation LBS Packages to Choose From†						
Features of Packages:	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System	None of these
Audio through Vehicle Sound System	Yes	Yes	Yes	Yes	Yes	
Price of equipment (device, display)	\$50	\$100	\$300	\$300	\$400	
Interface	Automated Response	Automated Response	Automated Response	Automated Response	Live Operator	
Voice Enabled	Yes	Yes	Yes	Yes	Yes	
Subscription Price/month†	\$10.00	\$10.00	\$10.00	\$10.00	\$15.00	
Estimated Share	19.3%	20.4%	7.9%	9.5%	6.8%	36.1%
Base Case	11.1%	11.2%	4.3%	6.3%	4.3%	62.8%



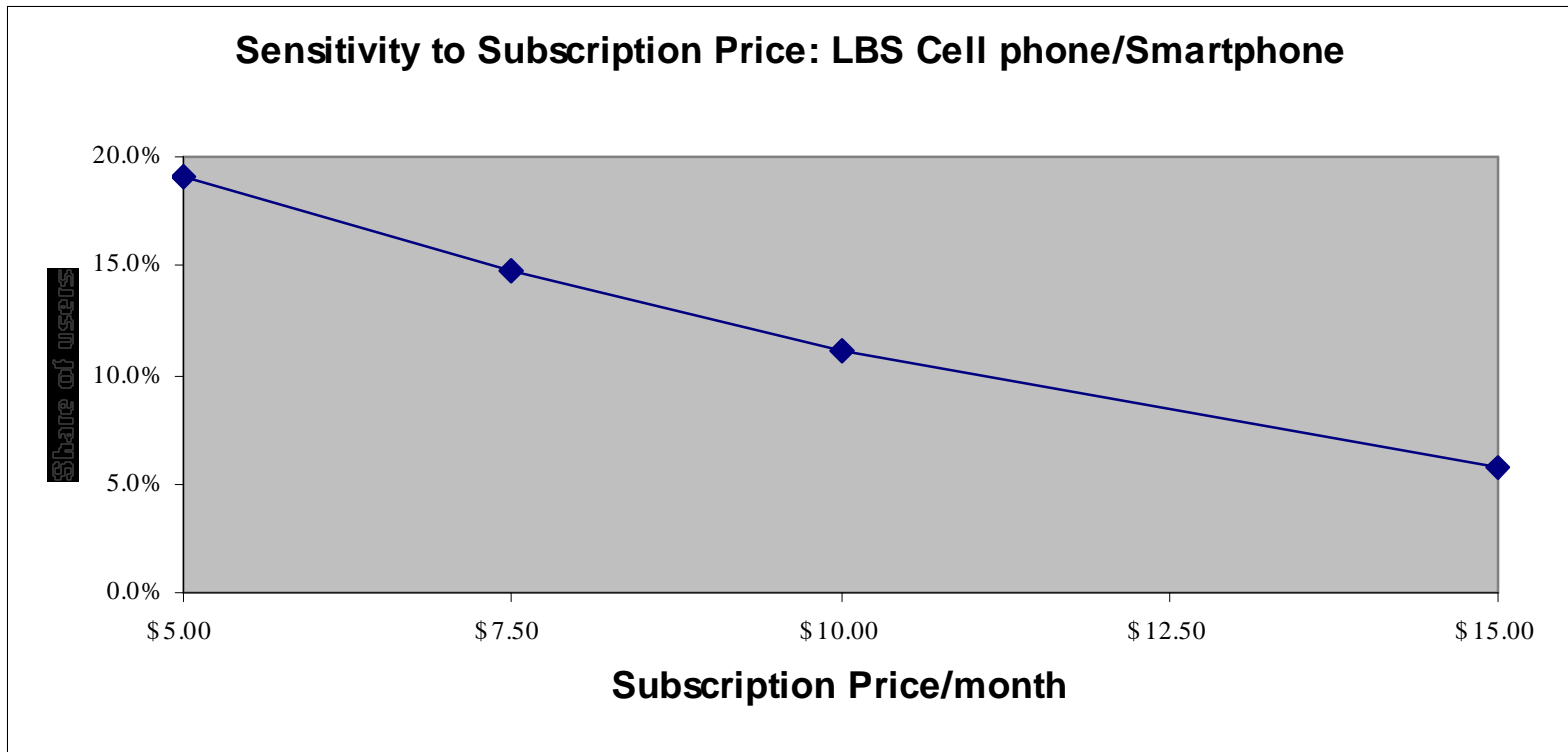
Navigation LBS Packages - Scenario 5: Scenario 4 + Lowest Priced Equipment

Navigation LBS Packages to Choose From†						
Features of Packages:	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System	None of these
Audio through Vehicle Sound System	Yes	Yes	Yes	Yes	Yes	
Price of equipment (device, display)	Free	\$50	\$200	\$200	\$200	
Interface	Automated Response	Automated Response	Automated Response	Automated Response	Live Operator	
Voice Enabled	Yes	Yes	Yes	Yes	Yes	
Subscription Price/month†	\$10.00	\$10.00	\$10.00	\$10.00	\$15.00	
Estimated Share	23.0%	20.3%	8.0%	9.7%	8.7%	30.4%
Base Case	11.1%	11.2%	4.3%	6.3%	4.3%	62.8%

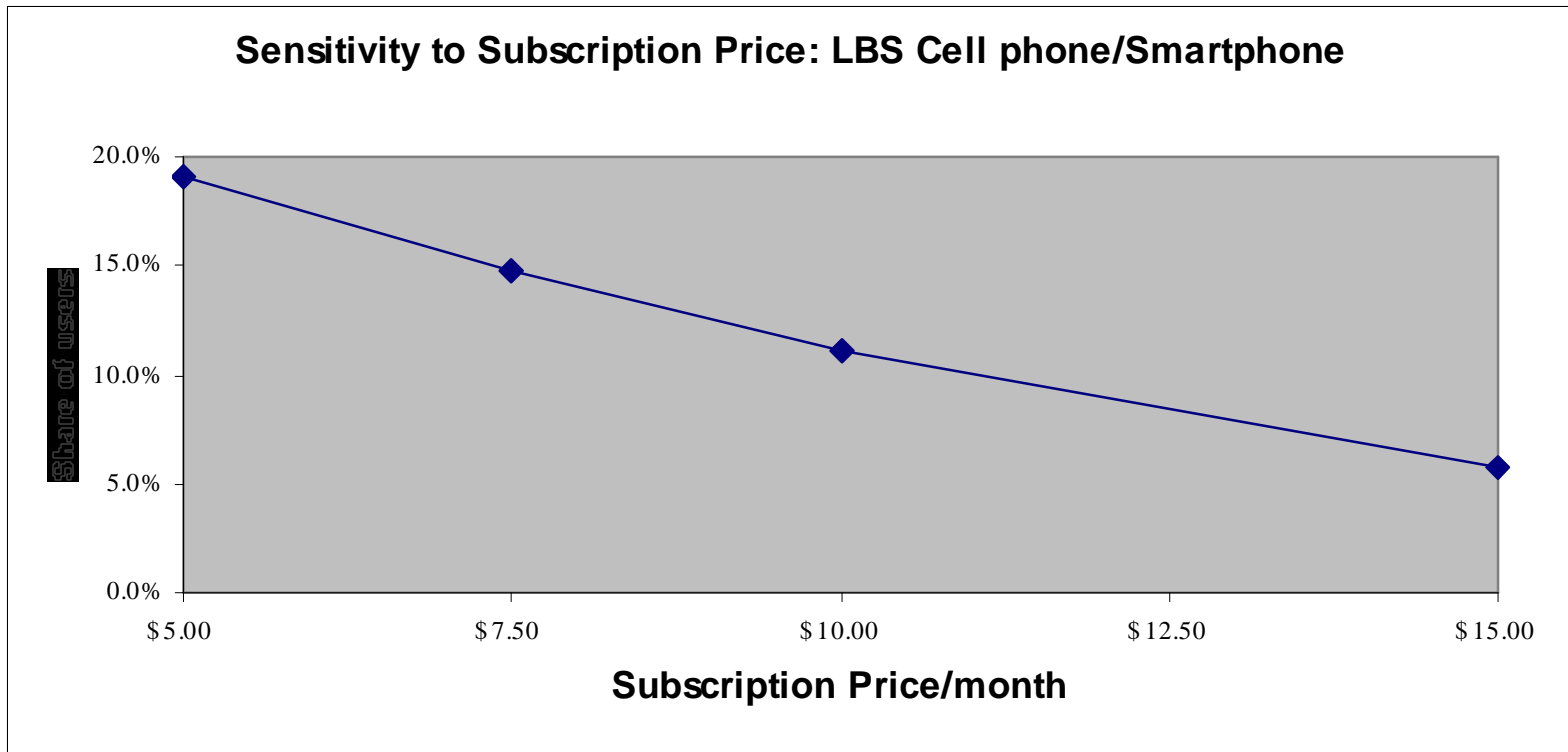
Navigation LBS Packages - Scenario 7 - Scenario 6 + Lowest Monthly Price

Navigation LBS Packages to Choose From†						
Features of Packages:	LBS Cell phone or Smartphone	LBS Cell phone or Smartphone with Display+	PDA/PPC with cellular built-in	PDA/PPC with GPS, Display+	In-vehicle GPS System	None of these
Audio through Vehicle Sound System	Yes	Yes	Yes	Yes	Yes	
Price of equipment (device, display)	Free	\$50	\$200	\$200	\$200	
Interface	Automated Response	Automated Response	Automated Response	Automated Response	Live Operator	
Voice Enabled	Yes	Yes	Yes	Yes	Yes	
Subscription Price/month†	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	
Estimated Share	26.9%	23.7%	8.3%	10.1%	12.2%	18.8%
Base Case	11.1%	11.2%	4.3%	6.3%	4.3%	62.8%

Navigation LBS Packages - Price Elasticity

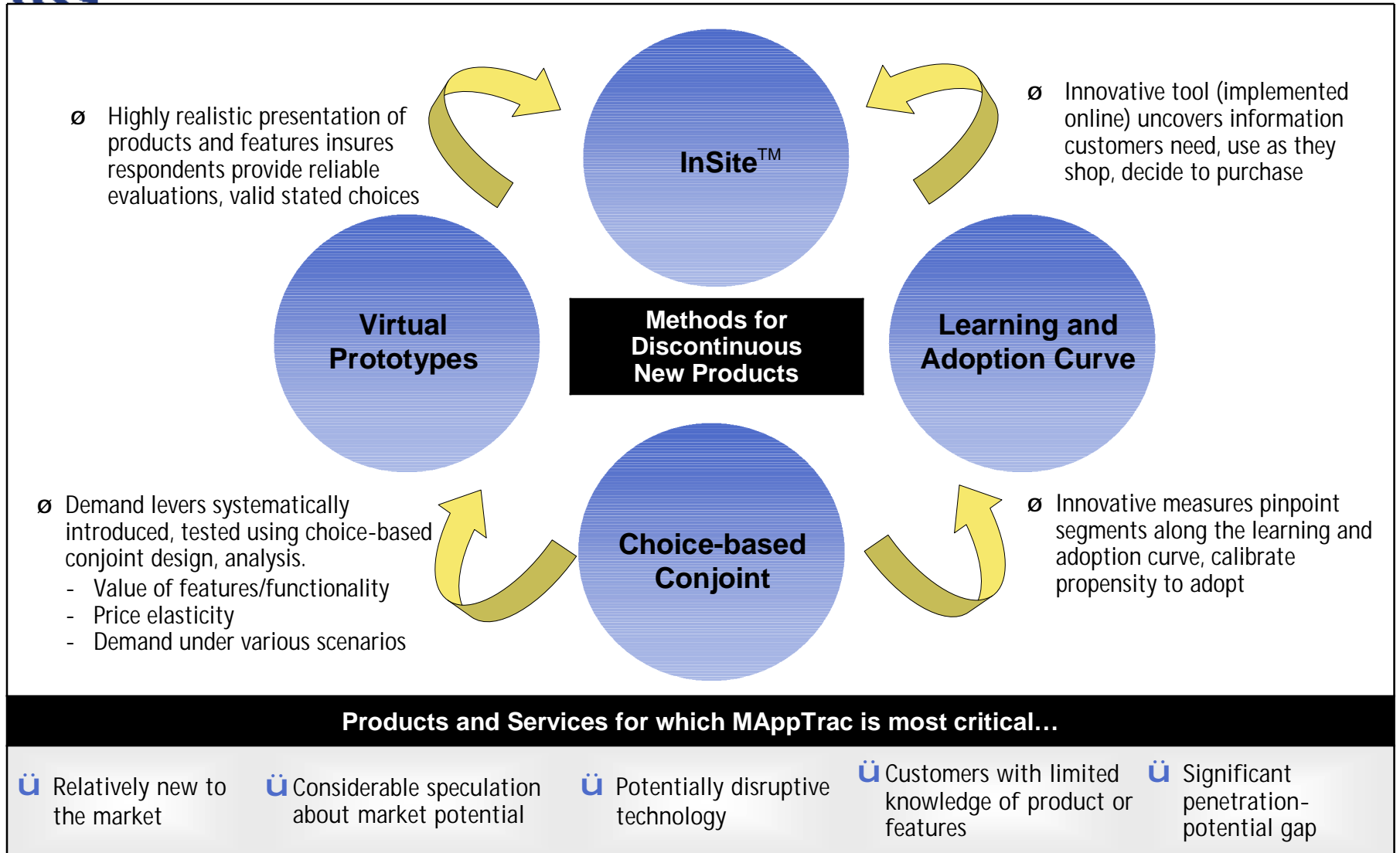


Navigation LBS Packages - Price Elasticity





Recap - Research for Discontinuous Services





About the Author

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Dr. Phil Hendrix is the founder and director of immr (the Institute for Mobile Markets Research), a research organization focused on strategic issues in emerging wireless/mobile markets. He specializes in helping companies calibrate demand and accelerate the adoption of really new products. Dr. Hendrix has developed perspectives and research-based tools to help clients uncover hurdles slowing adoption, trigger interest and adoption among prospects, and optimize the features and pricing of new products and services. Before founding immr, Phil was a partner with DiamondCluster (strategy and technology consultancy), founder and head of IMS (Integrated Measurement Systems), and a principal with Mercer Management Consulting. He has held faculty and research positions at Emory University and the University of Michigan, teaching courses in research design and analysis, buyer behavior, and strategy, and the Survey Research Center at U of M. After receiving his PhD from the University of Michigan, Dr. Hendrix completed post-doctoral studies in applied statistics and mathematical psychology.