

Summary of Research Studies.xls

Study#	Author (organization)	# of pages	Title	Date	Key Findings:
1	Goldman Sachs	4	Mobile Internet (US)	7-Sep-00	<ul style="list-style-type: none"> >Large Markets: \$22B data access revenue by 2005 >Enterprise Market: \$13B in 2005 with \$9B in recurring service fees and software >Enterprise Benefits: Higher workforce productivity, efficiency, more timely and resolve client service and increased revenue. >Mobile Internet 'Landscape' chart
2	Creative Good	26	The Wireless Customer Experience	September, 2000	<ul style="list-style-type: none"> >Single most important factor for success of the wireless industry: Customer Experience >Wireless service must provide a customer experience that is better than existing alternatives >Wireless Internet is nothing like the web, on a cell phone >Tiny screens, no graphics and poor text entry >Constraints of wireless: Device physical interface; network lacks bandwidth >Device constraints: weak processor; limited memory; tiny screens; poor data entry >Network: slow speeds; limited capacity; limited coverage
3	Goldman Sachs	33	RIMM Technology: Mobile Internet	6-Apr-01	<ul style="list-style-type: none"> >Increased estimate for US mobile internet enterprise market in 2005 from \$13B to \$20B (currently \$383M) >TCO: Enterprise Laptop \$9.7k/year; Blackberry \$2k/year >Laptop Usage: 12hrs/month; 23MB/month
4	Wit Sound View	15	Handheld Computing	9-Nov-00	<ul style="list-style-type: none"> >Handheld computing devices represent one of the fastest growth opportunities for technology investors >Evolution of computing analysis shows Internet Appliances to exceed PC industry >Device divergence, not convergence is the rule (interesting analysis) >Networks in the future: Lower barriers to entry for new hardware providers (interesting analysis shows lessening of carrier influence on Handheld vendors)
5	Meta Group	4	Gateway to the Wireless Web	22-May-00	<ul style="list-style-type: none"> >Devices lack the screen size, pointing devices, and memory capacity to handle standard HTML Web pages >UI servers will evolve out of early transcoder gateways as a new product category.
6	Various	19	Mobile Internet: Korea	Jun-01	<ul style="list-style-type: none"> >High penetration of cell phones & internet, while wireless-internet (WAP) fails to get acceptance
7	US General Accounting Office (GAO)	57	Defense Spectrum Management	Aug-01	<ul style="list-style-type: none"> >3G spectrum study concludes DOD cannot vacate spectrum until at least 2017
8	Jupiter	34	Mobile Revenue Models	2000	<ul style="list-style-type: none"> >Cumbersome navigation, per-minute pricing, and limited access to online content make the phrase mobile Internet somewhat misleading >Mobile Access will evolve to the level where browsing-interface matures to include graphics and open-access dominates >Per-minute pricing creates a major hurdle -- flat rate pricing is key
9	Hambrecht & Quist	41	Internet Appliances and Universal Access	Mar-99	<ul style="list-style-type: none"> >Fundamentally, the ability to access all information from repository is critical to making appliances useful. >Content, services and applications already exist >Extension of the PC, not replacement >International usage will be huge >Internet will cause the Viral adoption of appliances >Shift from PC-centric computing to Information-centric computing
10	Jupiter	7	Next-Generation Wireless	3-Jan-02	<ul style="list-style-type: none"> >Next generation networks are not 'broadband', but instead are 'persistent narrowband' >Suboptimal interface capabilities have stymied use of WAP services >Static menus, poor display and input hardware and text-only interface

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11	UCLA	95	Surveying The Digital Future (Internet Report)	Nov-01	>The primary reason for not using the Internet given by non-users who were once users is the same as the response of those who do not currently use the Internet: "no computer available."
12	Ovum	1	Wireless Advertising	29-May-00	>Companies are expected to spend up to \$2.9 billion on wireless advertising in the U.S. by 2004.
13	eTForecasts	10	Information Appliances	Nov-01	>Display size moves from 320 to 640 pixels
14	IDC Research	3	Smart Handheld Devices Market	1998	>Market continues to perform under expectations due to high devices costs, continuing product delays and wireless infrastructure issues affecting the U.S.
15	Micrologic Research	6	Wireless Communications Market	1999	>Large Markets
16	Merrill Lynch	2	Internet Appliances	3-May-00	>RIM's CEO admitted that distribution was a limiting factor on sales >Most people would continue to use multiple devices in the future despite the likely introduction of all-in-one devices.
17	eTForecasts	5	Worldwide PDA Forecast	2001	>Move from Vertical & Industrial applications to Email and Web Access >Move from 160/320 pixel displays to VGA width
18	eTForecasts	6	Internet User Forecast by Country	2001	>Large market worldwide -- not just restricted to rich western nations
19	eTForecasts	4	Worldwide PC Forecast	2001	>Internet PC Appliances will gain a significant market share
20	eTForecasts	4	Computers-in-Use	2001	>Information/web appliances will augment PCs as access devices
21	TheStreet.com	7	What works in wireless trading	7-Nov-00	>Main drawback to wireless-access trading right now is wireless access >Good service under the circumstances, but the circumstances are lousy >Pain points: Coverage Area; Slow Data Speeds; Devices Not Designed For Trading; Data-Entry Limitations
22	UPSIDE magazine	42	No Strings Attached	Mar-01	>Devil is in the Details: Serving up web access at 9Kbps provides for a frustrating user experience; Web portals designed to deliver single lines of ASCII text do not drive consumer applications; business users, unlike adolescent users, do not want to constantly tap in short text messages; and, finally, there is a lack of compelling services. >3G Implementation Issues: Tradeoff between bandwidth (the amount of spectrum owned by the carrier), density of the user base (the number of callers within broadcast cells), level of usage (the voice and data traffic that has to be carried), and installation complexity. >I mode Killer App? Ring tone/wallpaper download 32%; Game/Fortune telling 19%; Other entertainment 19%; Info 17%; Transaction 9%; Database 4% -- don't look very compelling >Pain points: Small screen sizes; partial keyboards; interface issues; limited storage capabilities and lack of processing power all diminish the end-user experience.
23	Hewlett Packard	5	Helpful Facts About PDAs		>After pressure from consumer organizations, HP put out this 'Honesty in Advertising' pamphlet to set expectations: "...the ability to access the content of the Internet through a PDA is more limited than through a desktop computer."
24	Kellogg	38	Wireless Applications for Business	Mar-01	>Ability to conduct business from anytime and anywhere >Significant m-commerce will not take place before the right end-user terminals are widely available >Differentiators of wireless technology: Mobility/Ubiquity (anytime/anywhere access); Speed (no plug-in time, high data rates); Tracking/localization (anytime/anywhere but right here right now); Personalization; Easy to tap into the infrastructure (no physical connections); Safety (user is never alone and user can stay at a safe distance)
25	Unwired Planet	12	Enabling the Wireless Internet	Feb-99	>Corporate Applications: Sales Force Automation & Dispatch
26	Fortune/Alsop	5	Wonderful Wireless World: In Your Dreams	Nov-00	>Problem: Devices that are big, expensive, slow and chew-up batteries like candy. >Need: Devices that are small, cheap, fast, and easy to use. >Key: Don't have to alter your behavior

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27	Seybold: Outlook 4Mobility	4	Lessons We Should Learn From Japan	14-May-02	>Coverage (backward compatible); Devices; Content; Pricing >Providing compelling data applications on great devices at reasonable prices can lower churn, attract new customers and enhance quarterly results.
28	All Net Devices	1	Faster Wireless Won't Help WAP	11-May-01	>Problem: Limited content & awkward interface >Extending the depth and breadth of the Internet is the most successful business case for providing wireless data. In that respect, WAP can only fail because it is fundamentally unable to deliver an excellent Internet experience over a wireless phone.
29	NY Times	5	Cool U.S. Reception to Wireless	29-Jan-01	>Americans are less likely to settle for watered-down wireless Internet service >Accessing the Internet on anything without a decent-sized monitor is like reading a book on Post-it notes.
30	Seybold: Outlook 4Mobility	5	What's Ahead For The Wireless Industry In 2002	7-Jan-02	>Keyboard devices for data; not cell phones.
31	US News	4	Wireless But Useless	5-Jul-01	>People are not upgrading their cell phones as actively as we expected. >A lot of carriers portrayed it as the real Web on the device. When you look at your cell phone and see a bunch of words and a text menu on a tiny screen, there's no comparison.
1B	Economist	4	Only Fakirs Need Apply	1-Feb-01	>The best way telecoms firms can generate future revenues from 3G networks is simply to provide customers with mobile access to the Internet. Complicated high-bandwidth applications are best left to others.
2B	ARC Group	19	Wireless Internet: Market Trends and Strategies	September, 2000	>Applications: Navigation; Entertainment; Internet Browsing; Intranet; Financial Services; E-commerce/Retail, PIM >Voice AARPU continues to decline, to be replaced by the Wireless Internet
3B	Strategis Group	17	European Wireless Portals Market		>Form Factor - Size, Display, Battery, Interface
4B	Accenture	56	Future of Wireless	2002	>Wireless Services: Utility (News, Weather, Travel, Banking); Intimacy (SMS, Email, Alerts, eCards) >Wireless Products: Utility (Tickets, Books, Electronics, Stocks); Intimacy (Flowers, Impulse purchases, Concierge items) >Pain Points: Too expensive; Difficult to read screen; Data input difficult; Slow access; Difficult to work with files; Limited product/service selection; Difficult to access to sites of interest; Privacy; Quality of information poor; Unreliable service
5B	Greenfield	2	Wireless Survey	2001	>54% find wireless devices not easy to use >Will pay X for wireless device: 44% (\$50 to \$99); 19% (\$100 to \$199); 9% (\$200 to \$299); 2% (\$300 to \$399)
6B	Business 2.0	1	Giving The Right Message	Jan-01	>When someone talks to me about 'surfing the Net' there is this curious unspoken agreement that we're chatting about using a PC or laptop to browse a rich, multicolor medium
7B	Bell Mobility	6	IP Addressing Schemes for 1xRTT	2002	>Speed depends on network load...likely to be around 28000bps, very time of day dependant
8B	Bell Mobility	17	Technology Update	2002	>Co-incident Developments to 3G: Support for Advanced Terminals; Compression Technology; Customization (Applications); Security Enhancements; Browser Evolution; Location
9B	Microsoft	32	Mobility Strategy	24-Apr-01	>Mobile Application Developer's Requirements: -Leverage existing content and skills in building mobile applications -Interoperability through Internet standards -Centralized access to user identity and profile data

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10B	RIM	4	Wireless Internet Conference	2001	<p>>Even RIM acknowledges that Email is not the only application</p> <p>>Value propositions that sell:</p> <ul style="list-style-type: none"> - Email and workgroup messaging - Financial information - Corporate Intranet - Internet content <p>>Keys to mobile handhelds: Small; Wide coverage; Long battery life; Low cost of ownership; Always on, Always connected; Low latency; Applications; Secure.</p>
11B	Compaq Canada	6	Wireless Internet Conference	2001	<p>>Killer App: Unified Personal & Professional Information</p> <p>>Professional: Corporate e-mail; Enterprise data access; collaboration; Vertical apps; Process mobilization; Task lists; Contact lists</p> <p>>Personal: Stock quotes; Travel schedules; Financial data; News, weather, sports; Task lists; Contact lists; Electronic wallet; Games & entertainment</p>
12B	Palm	10	Wireless Solutions	2001	<p>>Goals for Handheld Computing</p> <ul style="list-style-type: none"> -Data Transfer: Multiple methods; Managing data volatility -Data Access: Instant; Searching; Manipulation; Security -Data Interaction: Rich Display; Rich Input
13B	CTIA	11	Wireless Industry Survey	2002	>AARPU drop from \$96.83 in 1987 to \$45.27 in 2000
14B	mBusiness Daily	6	Budgeting for a wireless initiative	2002	<p>>Plan on spending at least \$200k to \$300k for off the shelf</p> <p>>\$20k per server and \$1k/user</p> <p>>Biggest cost: Integration & Customization</p> <p>>Major costs of mobile initiatives: Devices; Software including customization; Linking mobile applications to legacy systems; airtime</p> <p>>Total cost can rise as high as \$50 million, for say, an airline deploying a mission-critical wireless application that allows customers to buy tickets and check flight times from mobile devices</p>
15B	CNET	3	Wireless Net desperately seeking content providers	1-Dec-99	>It's really not a wireless Web as landline users are used to thinking about the Web. I think the end-user experience will fall short of expectations.
16B	Wall Street Journal	8	Walt Does Wireless	29-Sep-00	<p>>Imagine that the Internet could be viewed only on tiny, two-inch screens with green backgrounds capable of displaying fewer than 10 lines of blocky black text, and no color or graphics.</p> <p>>On top of that, visualize these screens filled with an endless series of confusing menus that must be navigated to get where you want to go online. And then consider that only a few Web sites could be viewed with any semblance of clarity or organization.....with those kinds of limitations, the Internet would never have become as popular or important as it is today. And yet, that is the typical experience in the year 2000 of using the so-called Wireless Web.</p> <p>>It's awful, and not ready for prime time.</p>
17B	Industry Standard	6	Wireless Net: Not Yet	2000	>Low consumer demand for wireless Net access is due, in part, to the limitations of mobile devices. Small screens and keypads make navigating the Net cumbersome. Current per-minute pricing and limited access to online content also impede adoption. Throughput averages 9.6kbps much slower than even outmoded 14.4kbps dialup modems.
18B	Motorola	30	Wireless Internet Strategy	2001	>There is no single killer application for wireless data
19B	Rogers Wireless	15	Investor Presentation	2002	<p>>Wireless Metrics: AARPU; Churn; # of subscribers</p> <p>>Sales & Marketing Cost per Subscriber Addition: \$423</p>
20B	Gartner	1	Survey: Wireless Users Value Coverage Over Price	1-May-02	>Beyond anything else, geographic coverage remains the most important characteristic for mobile enterprise users.

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21B	Alexander Resources	2	American Wireless Carriers Setting Themselves up for Failure	Mar-02	<p>>Major Problems Facing Carriers:</p> <ul style="list-style-type: none"> -Service agreements & pricing plans do not reflect quality and technology limitations of wireless data -Lack of low priced 2/5G/3G smart phones and PDA/handheld and laptop modems -2.5G/3G phones, modems and terminals that do not operate on competitive networks -Complexity of software used to connect a 2.55G/3G phone to PDA/HPC and laptop -Unreliable, complex, and difficult to use phone to PDA/laptop software -Limited service availability -Lack of special in-building coverage -Speed and throughput declines with user congestions -Lack of enhanced security
22B	Various Advertisements	9	Customer Acquisitions Tools	Various	>Cell phones & PDAs form customer acquisition tools for other businesses
23B	WITSA	3	Wireless Budgets to Increase 94%	2002	>Average spending on wireless will reach \$680k in 2002 a dramatic rise of 94% over \$360k in 2001
24B	Seybold: Outlook 4Mobility	3	Wireless Data Pricing	25-Feb-02	>Pricing by the KB or minute is the wrong approach. My view is that there should be unlimited flat-rate pricing as well as pricing for the occasional user.
25B	Unstrung	3	Operators Cast Doubts on GPRS	20-Feb-02	<p>>GPRS doesn't appear to work well with standard Internet connections</p> <p>>GPRS networks do things like prioritizing voice calls ahead of data transfers -- "bursty flow"</p> <p>>Only been achieving average speed of 20kb/s</p>
26B	Industry Standard	1	Misrepresenting WAP	9-Oct-00	>The real problem isn't WAP, but the content - or lack thereof - available on the wireless Web.
27B	Fortune/Alsop	5	Perfect Information Appliance	24-Nov-00	>The perfect information appliance has the following properties: It is cheap. It is broadband. It is beautiful. It uses the World Wide Web as its medium.
28B	Wireless Week	1	Building The Relationship	3-Dec-01	>Carriers spend from \$250 to \$500 to add a new customer, only to turn around and lose those customers at a rate of between 25 percent to 40 percent annually.
29B	ITU	3	Worldwide Cellular Mobile Subscribers	9-Jan-02	>Cell phone subscriber growth worldwide country-by-country
30B	Accenture	3	Everything Has Its Place	18-Jan-01	>Consolidation of devices is not critical

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31B	Various	6	I mode Japanese Analysis	Various	<p>>You need content to be successful in the wireless space</p> <p>>At first, the team had a hard time selling i-mode to the company. Almost everyone at DoCoMo thought that if mobile Internet was ever to take off, it would have to be thorough business users already familiar with personal computers.</p> <p>>Seven Myths About Japanes m-Commerce:</p> <ol style="list-style-type: none"> 1. Japanese are heavy users of the mobile Internet: Vast majority of Japanese give up on most or all of the mobile Internet soon after their first try. 2. Japanese see their color screen cell phones as a fine interface to the web: Focus groups participants all compalin about the resolution (still too low) and the size (still too confining). They say you just can't do much on these screens. Others add that color doesn't help that much. 3. Japanese access a lot more of the Next through their phones: DoCoMo boasts over 1,500 sites and 25,000 others. Users generally try out a few sites, but quicky tire of the novetly, and report that only a couple of information services keep them coming back. One tells them when the last train of the day is from any given subway or train station to any other station; the other is weather. 4. There is only one big mobile phone company in Japan: Two other competitors with about 20% e 5. Japanese are doing a lot of commerce on their phones: They are buying screensavers and ringi 6. Japan's mobile phenomenon is mostly a youth experience: 30% of DoCoMo's customers are ove 7. Mobile phone use is high amoung Japanese teens because they are so affluent: Overall, Japan
32B	Ecommerce Times	2	Mysteries of the Wireless Pricing Puzzle	3-May-02	<p>>A reasonable monthly rate at which consumers probably would use data services is in the range of \$40 to \$50</p> <p>>Giga's Thomas noted that once pricing issues are ironed out, carriers will still have to convince users to trade in their older devices for newer ones enabled for optimum use of m-commerce services.</p>