

**Over the last couple of years, we have collected over 60 studies, executive-summaries and industry surveys. We have sorted these 800 pages of documents, and listed each with the significant findings detailed in the specific report (spreadsheet attached). These studies confirm DataWind's vision, strategic-positioning and implementation strategy.**

*Please note most of the language of this narrative is direct quotes from the specific studies.*

### **Market Size:**

**The studies confirm that the markets DataWind is pursuing are very large:**

Numerous studies forecast an imminently large market for wireless data<sup>15</sup>. Goldman Sachs forecasts a market of \$22 Billion for wireless data access by 2005<sup>1</sup>. This market is not just for the consumer, but is to be dominated by Enterprises consuming \$13 billion in data access, of which recurring service fees and software is forecasted to reach \$9 billion<sup>1</sup>. While most forecasts have been toned down after the dot-com bubble burst, forecasts for Enterprise mobile data have increased to \$20 billion<sup>3</sup>. Handheld computing devices represent one of the fastest growth opportunities for technology investors<sup>4</sup>. Evolution of computing analysis shows Internet Appliances to exceed PC industry<sup>4</sup>.

Studies also show an increase in wireless implementation at Fortune 500 companies from an average of \$360k in 2001 to \$680k in 2002, a dramatic rise of 94%, despite the recession<sup>23B</sup>.

This is not just a U.S. phenomenon; studies show that international usage will be huge<sup>9, 18, 29</sup>. The Internet will cause the viral adoption of appliances, which will render a shift from PC-centric computing to Information-centric computing<sup>9, 18</sup>.

Along with data-access revenue, other business models are also forecasted to evolve from the wireless internet: for example, companies are expected to spend up to \$2.9 billion on wireless advertising in the U.S. by 2004<sup>12</sup>.

### **Studies confirm that the wireless web has failed:**

**One of the reasons for this failure is that Carriers did not set expectations correctly. Currently the wireless-web is not the real-web. No-one has effectively delivered the real-web to a mobile environment. DataWind expects to be very successful, because its technology is the first to offer the real-web to a mobile environment:**

Despite high expectations, the first incarnation of the wireless internet, in the form of WAP has been a failure. 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<sup>31</sup>. 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, multi-color medium<sup>6B</sup>. It's really not a wireless Web as landline users are used to thinking about the Web. Industry pundits forecasted that the end-user experience will fall short of expectations<sup>15B</sup>. The 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<sup>2</sup>. WAP's failure is not only a North American event, but a world wide rejection. Despite high penetration of cell phones & the internet in Korea, the wireless-internet (WAP) has failed to get acceptance<sup>6</sup>.

**An analysis of the success of the wireless web in Japan is necessary. I-Mode Analysis:**<sup>31B</sup>

At first, the I-mode 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 through business users already familiar with personal computers.

Seven Myths about Japanese m-Commerce:

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 group participants all complain 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 Net through their phones: DoCoMo boasts over 1,500 sites and 25,000 others. Users generally try out a few sites, but quickly tire of the novelty, 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% each, and people switch from I-mode to WAP often.
5. Japanese are doing a lot of commerce on their phones: They are buying screensavers and ringing tones -- but just that.
6. Japan's mobile phenomenon is mostly a youth experience: 30% of DoCoMo's customers are over the age of 40.
7. Mobile phone use is high among Japanese teens because they are so affluent: Overall, Japanese teens are very conscious of how much they are spending on their phones. They have adopted a number of strategies to minimize costs.

**Pain Points:**

**DataWind's solution addresses all the significant Pain Points, identified by the various studies:**

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. 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. It's awful, and not ready for prime time<sup>16B</sup>.

### **Pain Point: Network Speed, Capacity, Coverage**

**Our core technology provides network improvements related to: Speed, Capacity, and Coverage. DataWind's data-reduction solution improves speed and capacity. Since the technology is network independent, it provides the broadest coverage of any solution:**

Constraints of wireless: network lacks bandwidth: slow speeds; limited capacity; limited coverage<sup>2, 21, 17B, 14</sup>. Serving up web access at 9Kbps provides for a frustrating user experience<sup>22</sup>. Coverage broadened by backward compatibility is critical<sup>22</sup>. Survey: Wireless Users Value Coverage over Price. Beyond anything else, geographic coverage remains the most important characteristic for mobile enterprise users<sup>20B</sup>.

### **Pain Point: Device Constraints**

**By shifting the processing power to the server, DataWind's technology solves some of the significant Device constraints:**

Device constraints: weak processor; limited memory; tiny screens; poor data entry<sup>2, 5, 10, 21, 3B, 4B, 17B</sup>. These device constraints lead to static menus and sub-optimal text-only interfaces<sup>10</sup>. 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<sup>22</sup>. The problem is that devices are big, expensive, slow and chew-up batteries like candy. The need is for devices that are small, cheap, fast, and easy to use<sup>26</sup>. Americans are less likely to settle for watered-downed wireless Internet service. Accessing the Internet on anything without a decent-sized monitor is like reading a book on Post-it notes<sup>29</sup>. Device limitations create cumbersome navigation<sup>8</sup>.

Pain points: Small screen sizes; partial keyboards; interface issues; limited storage capabilities and lack of processing power all diminish the end-user experience<sup>22</sup>.

### **Pain Point: Ease of Use**

**A simple web-interface provides Ease of Use with DataWind:**  
54% find wireless devices not easy to use<sup>5B</sup>.

**Pain Point: Costs****Device costs and wireless implementation costs are addressed by DataWind's turnkey solution:**

Plan on spending at least \$200k to \$300k for an off the shelf solution. The typical cost of a pre-packaged solution is \$20k per server and \$1k/user. The biggest cost is Integration & Customization. The major costs of mobile initiatives are: Devices; Software including customization; linking mobile applications to legacy systems; airtime. 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<sup>14B</sup>. Market continues to perform under expectations due to high devices costs<sup>14, 4B</sup>. Surveys show that users will pay X for a wireless device: 44% (\$50 to \$99); 19% (\$100 to \$199); 9% (\$200 to \$299); 2% (\$300 to \$399)<sup>5B</sup>. With only 2% willing to pay more than \$300, which is the entry level cost of wireless devices, there has not been mass-acceptance of such products.

Along with device cost, it is important to define the usage cost that would be palatable for a large number of users. A reasonable monthly rate at which consumers probably would use data services is in the range of \$40 to \$50 – about what users pay, for example, for e-mail service on a Blackberry device<sup>32B</sup>. Studies also show that mobile laptop usage was on average 12 hours/month consuming 23MB of data<sup>3</sup>. This amount of time translates to less than \$30 of airtime based on current rates available to consumers through wireless carriers in the U.S. DataWind's technology would reduce the 23MB of data to less than 3MB, which costs less than \$15 on most next-generation packet networks in the U.S.

Illustrating the need for low cost, easy to use internet appliances for both wireless and wire-line applications, surveys show that 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”<sup>11</sup>.

**Pain Point: Pricing****DataWind's content-reduction solution makes flat-rate pricing possible:**

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<sup>8, 27, 24B</sup>. Low consumer demand for wireless Net access is due, in part, to current per-minute pricing<sup>17B</sup>.

**Pain Point: Content****By providing ubiquitous seamless access to the web, DataWind's mobility solution provides access to more content than any other solution.**

Limited access to online content makes the phrase mobile Internet somewhat misleading<sup>8</sup>. Limited access to online content also impedes adoption<sup>27, 28, 17B</sup>. I-

mode executives say you need content to be successful in the wireless space<sup>31B</sup>. The real problem isn't WAP, but the content - or lack thereof - available on the wireless Web<sup>26B</sup>. There is a lack of compelling services<sup>22</sup>. Providing compelling data applications on great devices at reasonable prices can lower churn, attract new customers and enhance quarterly results<sup>27</sup>. While numerous studies complain of the lack of content for the wireless-web, they acknowledge that content, services and applications already exist for the real web<sup>9</sup>.

### **Studies show that next generation 3G networks will continue to be plagued by many of the current problems:**

#### **Won't have as much speed or capacity:**

Next generation networks are not 'broadband', but instead are 'persistent narrowband'<sup>10</sup>. 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<sup>22</sup>. Speed depends on network load....likely to be around 28000bps, very time of day dependant<sup>7B</sup>. GPRS doesn't appear to work well with standard Internet connections. GPRS networks do things like prioritizing voice calls ahead of data transfers -- "bursty flow". Currently they have only been achieving average speed of 20kb/s<sup>25B</sup>.

#### **Is further off than anticipated:**

3G spectrum study concludes DOD cannot vacate spectrum until at least 2017<sup>7</sup>.

3G does not solve all problems; there are various technologies whose development will be coincidental to 3G. Co-incident Developments to 3G include: Support for Advanced Terminals; Compression Technology; Customization (Applications); Security Enhancements; Browser Evolution; Location<sup>8B</sup>.

New networks require new devices, the lack of availability of these, and lack of backward compatibility may result in hindrances to adoption<sup>27</sup>. This is already an issue, as people are not upgrading their cell phones as actively as we expected<sup>31</sup>.

### **Killer Application:**

#### **What is the Killer Application for wireless data?**

Motorola claims that there is no single killer application for wireless data<sup>18B</sup>. Mobility requires the ability to conduct business from anytime and anywhere<sup>24</sup>. Fundamentally,

the ability to access all information from repository is critical to making appliances useful<sup>9</sup>. Wireless applications must provide the following Enterprise Benefits: Higher workforce productivity, efficiency, more timely and resolve client service and increased revenue<sup>1</sup>. Corporate Applications are primarily Sales Force Automation & Dispatch<sup>25</sup>. Even RIM acknowledges that Email is not the only application<sup>10B</sup>. Value propositions that sell:

- Email and workgroup messaging
- Financial information
- Corporate Intranet
- Internet content

Compaq believes that the Killer Application is Unified Personal & Professional Information<sup>11B</sup>:

- Professional: Corporate e-mail; Enterprise data access; collaboration; Vertical apps; Process mobilization; Task lists; Contact lists
- Personal: Stock quotes; Travel schedules; Financial data; News, weather, sports; Task lists; Contact lists; Electronic wallet; Games & entertainment

Microsoft defines Mobile Application Developer's Requirements as<sup>9B</sup>:

- Leverage existing content and skills in building mobile applications
- Interoperability through Internet standards
- Centralized access to user identity and profile data

Another study defines the applications as: Navigation; Entertainment; Internet Browsing; Intranet; Financial Services; E-commerce/Retail, PIM<sup>2B</sup>. Potential Wireless Services are: Utility (News, Weather, Travel, and Banking); Intimacy (SMS, Email, Alerts, eCards). Potential Wireless Products are: Utility (Tickets, Books, Electronics, and Stocks); Intimacy (Flowers, Impulse purchases, Concierge items)<sup>4B</sup>.

The Kellogg study defines the 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)<sup>24</sup>.

Japanese I-mode killer applications do not look very compelling<sup>22</sup>: Ring tone/wallpaper download 32%; Game/Fortune telling 19%; Other entertainment 19%; Info 17%; Transaction 9%; Database 4%.<sup>22</sup>

Studies forecast a move from Vertical & Industrial applications to Email and Web Access<sup>17</sup>. 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<sup>28</sup>. The best way telecom 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<sup>1B</sup>.

Mobile Access will evolve to the level where browsing-interface matures to include graphics and open-access dominates<sup>8</sup>. Key: Don't have to alter your behavior<sup>26</sup>.

UI servers will evolve out of early transcoder gateways as a new product category<sup>5</sup>.

### **Future of Handheld Computing:**

**DataWind's solution meets all the criteria set-forth by various studies defining the future of devices.**

RIM defines the following goals for Handheld Computing<sup>12B</sup>:

- Data Transfer: Multiple methods; managing data volatility
- Data Access: Instant; Searching; Manipulation; Security
- Data Interaction: Rich Display; Rich Input

Keys to mobile handhelds: Small; Wide coverage; Long battery life; Low cost of ownership; Always on, Always connected; Low latency; Applications; Secure<sup>10</sup>.

Devices are to be an extension of the PC, not replacement<sup>9</sup>. Information/web appliances will augment PCs as access devices<sup>20</sup>. Device divergence, not convergence is the rule<sup>4</sup>. Consolidation of devices is not critical<sup>30B</sup>. Most people would continue to use multiple devices in the future despite the likely introduction of all-in-one devices<sup>16</sup>. Move from 160/320 pixel displays to VGA width<sup>13,17</sup>. Keyboard devices will be used for data; not cell phones<sup>30</sup>.

Studies forecast that significant m-commerce will not take place before the right end-user terminals are widely available<sup>24</sup>.

Industry pundits claim, 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<sup>27</sup>.

### **Motivation for Channel:**

**What is the willingness of the channel to distribution such product? DataWind's solution addresses the problems plaguing the carriers and its benefits can be directly measured against the prime metrics covering this industry.**

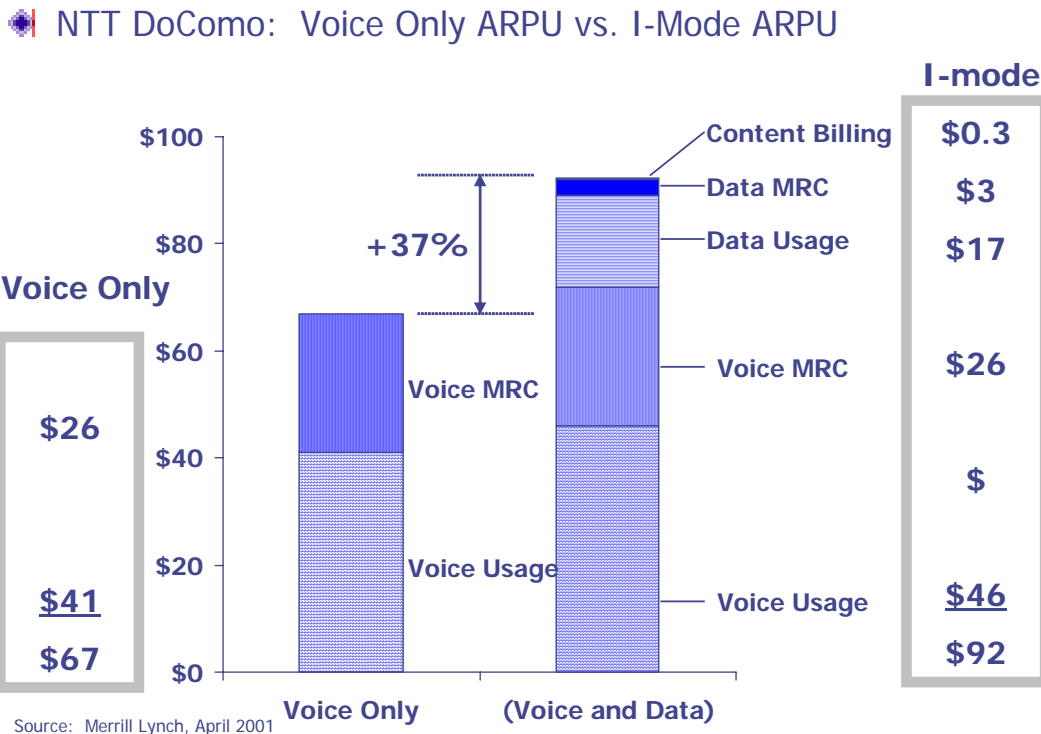
RIM's CEO admitted that distribution was a limiting factor on sales<sup>16</sup>. Major Problems Facing Carriers are: <sup>21B</sup>

- 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

The metrics that the wireless carriers operate with are: ARPU (average revenue per user); Churn; number of subscribers<sup>19B</sup>. To be successful, each vendor must define a direct improvement to these metrics with its solution. Historically ARPU has dropped from \$96.83 in 1987 to \$45.27 in 2000<sup>13B</sup>. Voice AARPU continues to decline, and needs to be replaced by the Wireless Internet<sup>2B</sup>. Customer acquisition costs are very high, with Sales & Marketing costs per subscriber addition at \$423<sup>19B</sup>. 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<sup>28</sup>.

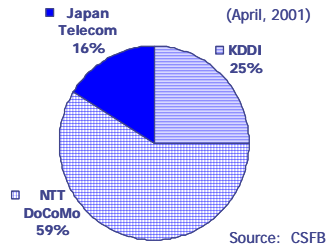
The following charts illustrate how data matters to carriers:



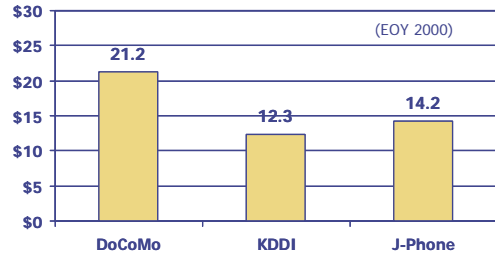
*Mobile Data substantially improves ARPU*

**Japanese Mobile Network Operators**

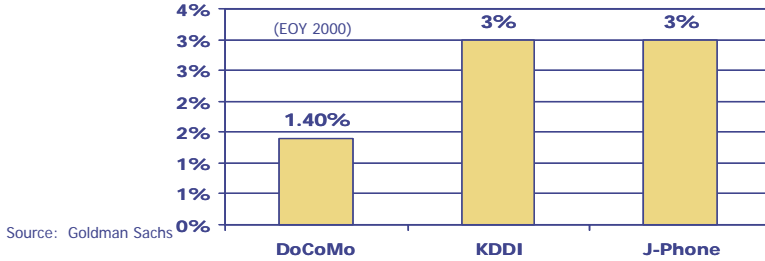
**Market Share of Cellular Subs**



**Data ARPU**



**Churn Comparison (monthly)**



*NTT DoCoMo has captured a majority of the mobile data market in Japan and leads all competitors in ARPU and Churn*

**Along with Carriers, there are also other channels that can distribute the DataWind solution:**

Cell phones & PDAs form customer acquisition tools for other businesses<sup>22</sup>. Studies also forecast that networks in the future will render lower barriers to entry for new hardware providers (interesting analysis shows lessening of carrier influence on Handheld vendors)<sup>4</sup>.