| **Case # 7[1]** |
| **NTT DoCoMo's I-Mode Phone: A Case Study[2]** |

Introduction

NTT DoCoMo[3] is a spin-off of Japan's telecommunications giant- Nippon

Telegraph and Telephone(NTT). It is best known for its I-Mode phone, which

has been a tremendous success in Japan. In February 2002, there were 40

million Imode uses in Japan and the company had a market share of 62% at

the end of December 2001[4]. In March 2000, an analyst counted an average of

40 million daily page views at NTT DoCoMo vs. 70 million daily page views

for Yahoo! Japan[5].   At one point, the company was so overwhelmed with

demand that it had to temporarily shut down its services. The company is

also immensely profitable. In the fiscal year ended March 31 2001, the

company posted a record profit of $3 billion on revenues of $45 billion. This

represented a 26% increase in revenues and a 45% increase in profit from the

previous year.

This has made DoCoMo the poster-child for the proponents of the Wireless

Web. While many other ventures providing access to the Internet and the

Web have failed, DoCoMo seems to have found the "secret sauce" leading to

success.

Users of the I-Mode phone have access to the Internet and the Web. They

can send e-mail and text messages to others. They can also visit web sites.

There are two types of web sites on the I-Mode system: official and unofficial. Official sites are those that are approved by DoCoMo and they have a privileged position. They are easily accessible to users and access charges to their sites appear on individual's monthly phone bill. Unofficial sites can only be accessed if an individual hears about it and then types in the entire address(i.e., URL). They do not have access to DoCoMo's billing system and hence, must either establish direct billing relationships or make money in other ways.

In addition to e-mailing and sending text messages, I-Mode users can-

- Play video games(e.g. the Hello Kitty game from Bandai)

- Reserve airline and concert tickets.

- Find a restaurant.

- Check their bank balance and transfer money

- Read news and weather reports.

- Check train schedules and city maps

- Download wallpaper images and ringtone melodies, etc.

- Create photo albums that can be accessed from anywhere.

As shown in Table 1, the most common applications of the I-Mode phone have to do with Entertainment, News and Tickets/Living with Entertainment leading by far.   As shown in Table 2, the most common activity of iMode

users is to visit official sites followed by e-mail. By one estimate, users spend 40% of their time on e-mail and 60% on web functions. The average number of page-views per day is about 10.5[6].

[Insert Table 1 and Table 2 About Here.]

I-Mode has taken Japan by storm and it has become a common sight to watch young people using their portable phones on trains, in malls and in general, everywhere. Moreover, the success of DoCoMo has become a powerful symbol of Japanese success over its European and American rivals. Table 3 summarizes the financial performance of NTT DoCoMo.

[Insert Table 3 About Here.]

The Growth of NTT DoCoMo

NTT DoCoMo has grown at a tremendous clip. As shown in Figure 1, the number of customers has grown five-fold from April 2000 to August 2001. As of February 2002, the company has 40 million users. Moreover, new subscribers are still signing on at the rate of 43,000 a day, 1.3 million a month[7].

[Insert Figure 1 About Here.]

The company still retains a lion's share of the wireless Internet market. But, it has strong competition within Japan.   EZWeb and J-Sky are the two other

competitors.   Table 4 provides a comparison between the three services-
some of the differences may be accessible to the technical reader. The EZWeb
and other services in Europe use the Wireless Application Protocol (WAP- see
the Appendix on WAP at the end of the chapter). This competing protocol has
struggled to make any inroads on DoCoMo worldwide.

[Insert Table 4 About Here.]

According to Takeshi Natsuno, the Executive Director of I-Mode, the reason
for their success comes from following the "Internet way of thinking" as
opposed to the "Telecom way of thinking". More specifically, he says that
there are three components to the NTT DoCoMo way of thinking[8]-

> "First, <u>technology</u>. We selected Internet technology - HTML, MIDI for ring-
> tone downloads, Java. But telecom people only care about what's best for
> their infrastructure. So in Europe they invented a new technology (WAP) to
> fit the wireless space, but it was very difficult for Internet people.
>
> Second, <u>business model</u>. US approach or European approach is to gain some
> mileage on content providers by sharing in their ecommerce revenue. But a
> normal fixed-line operator cannot take any portion of E-Commerce. We
> thought in the same way. By providing a better platform, transactions will
> increase - that is the biggest benefit to us. So we keep our traffic revenue, and
> they keep their transaction revenue - and if we can provide value-added
> services, like a billing system, of course we can share some revenue.

The third thing is <u>marketing</u>. In the telecom way of thinking, technology is very important. But AOL - they have never mentioned technology. Amazon.com - they just say, 'We offer the best price.' That is Internet way of thinking. So we never mention 'Internet' or 'protocol' or 'wireless something,' because content is everything".

Japan and the Internet[9]

PC-based Internet access in Japan is billed on a per-minute basis. As a result, consumers are not used to the unlimited usage that consumers in the United States enjoy.

Some key statistics about the online population in Japan-

- As of December 2000, 47.08 million Japanese consumers, or 37% of the population were connected to the Internet, a 74% jump from the previous year.
- Of this total, 8.16 million users accessed the Internet solely through their mobile phone, while 15.48 million used both a mobile phone and personal computer, and 23.45 million used only their computer.
- 95.8% of companies with more than 300 employees had Internet access, compared to 88.6% a year ago.
- As of April 2001, there were 112,200 DSL subscribers and 784,400 cable Internet subscribers.

- Of those households with Internet access, 50.2% used 56K modems, 34% used 64K ISDN, 7.4% through persistent ISDN connections, and 4.6% through broadband.

Why is I-Mode So Successful?

There are multiple reasons attributed to I-mode's success.

Perhaps the most important one of them all is DoCoMo's strong connection with NTT. NTT owns an advanced packet-switched wireless network in Japan that was made available to DoCoMo. While its competitors continued to offer circuit-switching systems, DoCoMo was able to offer consumers with an always-on connection leading to a key competitive advantage. The connection with NTT also led to a strong brand positioning within Japan and there was no burden to create brand awareness. It also gave the company the necessary clout to form partnerships with handset suppliers. These suppliers worked closely with the company to design a world-class user interface.

The second big factor that contributed to I-Mode's success may have been the low PC penetration and high mobile phone penetration rate in Japan (as of December 2001, about 66 million Japanese users owned mobile phones[10]). Since PC-based Internet access is billed by the minute, it is an expensive proposition for most Japanese and was adopted by a few. As a result, I-Mode

was the first time many Japanese users were being exposed to the Internet and the Web making it an exciting proposition.

Third, I-Mode instituted a system that benefits the official content providers immensely. The key attraction for the content providers is that they can piggyback on I-Mode's billing system. This reduces their costs and provides direct access to a consumer base. Of course, DoCoMo takes a commission for doing this. Overall, this leads to a strong win-win proposition. In many ways, this mirrors the business model of AOL for its Web business.

Moreover, as Gerald Faulhalber from the Wharton School points out[11]-

> "i-mode did not get into the content business. They wanted to be a conduit for content, but essentially had an open-architecture model where others developed the content, and they were satisfied with taking a cut for its use. In the U.S. and Europe, all the conduit companies wanted to get into content, and the resulting content was pretty poor."

Fourth, I-mode would probably not have become so popular so quickly without the easy-to-use and well-designed handsets. I-Mode has been praised for the user-friendliness of its handsets and they have been called cute. In contrast to its competitors (See Table 4), I-Mode was built for a packet-switched network using cHTML- a stripped down version of HTML. Since EZWeb uses WAP, that has acted as a further hindrance (see the

Appendix on WAP at the end of the chapter). As a result, download speeds were much faster and the service is always on.

Fifth, I-Mode adopted an innovative billing system where users are charged by the number of packets they send rather than paying a flat fee. Thus, users are not charged to compose e-mails- only to send them and that too, based on the size of their document. Similarly, individuals are charged for downloading web pages based on the size of the page. This innovative pricing system is really the first successful implementation of micropayments and has been embraced by the market.

Finally, many cultural factors may have contributed to DoCoMo's success. The Japanese people have a strong love for gadgets. The first adopters of DoCoMo were teenagers and young people and they acted as catalysts in spreading the phone to the mainstream market.

8

Jeff Funk's Framework

The author of a recent book[12] argues that in order to understand DoCoMo and I-Mode one must understand the positive feedback process among the different elements of the company's ecosystem. As shown in Figure 2, Funk asks us to think of the following six elements- Users, Content, Phones and other devices, Business Models, Search Engines/Portals and Services.

[Insert Figure 2 About Here.]

There are two positive feedback loops in this system. First, these six elements reinforce one another to channel the company to desirable outcomes. For example, the company first marketed I-Mode to young users who were attracted to the content such as e-mail and video games. The company did not wait for the introduction of fancy 3G phones initially reducing another potential barrier to adoption.

Second, <u>within each element</u> there was a positive feedback loop leading to natural progression in the company strategy. For example, while the company focused on young users initially, over time the average age rose. Similarly, while the initial phones were simplistic, the company has now launched phones that can operate on the 3G network. In many cases, the company started with a simple solution and progressed to a more complex and rich solution later.

Further, he asks us to understand the concepts of richness and reach. "Richness" refers to the quality and quantity of information. Information that is sparse (e.g. traffic, directions, product location) is considered to be less rich. On the other hand, information such as a large website would be considered to be very rich.

"Reach" refers to the number of people who can participate in the sharing of the information. Mobile phones have smaller screens and keyboards and thus cannot access the level of rich information that can be accessed with a desktop computer. However, they have higher reach than desktop computers and even personal digital assistants (PDAs). The larger reach of mobile phones comes from their greater diffusion, greater mobility, and faster power-up as compared to desktop computers.

This is shown graphically in Figure 3.

[Insert Figure 3 About Here.]

A technology such as a wristwatch cannot handle very rich information. However, given its simplicity, it has ubiquitous reach. On the other hand, a personal computer (PC) is capable of complex computation and information manipulation. However, given its bulk and price, the portability is limited

leading to limited reach. Technologies such as Personal Digital Assistants (PDAs) fall somewhere in between these two extremes.

In the wireless Internet space, the Japanese approach was to start with high reach and low richness and then steadily move up to greater richness. On the other hand, the European and US approaches (i.e., WAP- more on this later) was to start with rich applications targeted at corporate users first. At this point, it seems that the Japanese approach was more appropriate. Put otherwise, the I-Mode approach was driven by a "consumer electronics" mindset rather than a "computing" mindset.

Users

NTT DoCoMo targeted young users as the main target audience initially for the I-Mode phone. As Jeff Funk explains-

> People under 25 generally spend a much larger amount of their time away from home and the office (if they have one), and make greater use of public transportation (buses and trains) and walking, compared to older people.

As a result, these are ideal "first adopters" for a product such as I-Mode. Clearly, the company did not want to remain a company for young people only. Over time, the average cell phone user also signed up for I-Mode thus increasing the average age of the I-Mode user. Now, when a new user signs up for NTT's services, he or she also signs up for the I-Mode service.

<u>Content</u>

Content is very important to DoCoMo. As shown in Figure 4, users are exposed to images from well-known and respected brands from around the world. Users can play a Disney game or get the latest headlines from CNN.

[Insert Figure 4 About Here.]

From a content perspective, I-mode sites can be divided into two basic types, official I-mode sites and unofficial or voluntary sites. Official I-mode sites are ones that appear automatically on the I-menu of any I-mode mobile phone, because they have been officially checked, approved and listed there by NTT DoCoMo. Unofficial sites are not listed on the menu-menu, but can be reached by typing in the URL or sending a bookmark to the phone by e-mail. These sites have no official connection to NTT DoCoMo's I-mode service. Some have viewed I-Mode as a <u>walled garden</u> that is carefully cultivated. Others have argued that it is more of an ecosystem.

DoCoMo's approach to content is described by Natsuno[13]-

> "Our goal is very simple. We are providing links to the good-quality content. If you have three minutes to kill, you don't have time to waste just on searching."

The company has 20 people monitoring official sites and the content is carefully monitored. The following excerpt adds to this[14]-

> In fact, mode's-mode's success comes less from being walled than from being obsessively tended. Users are free to browse the thousands of unofficial sites and bookmark any they choose for instant access. But like the meticulously landscaped entrances to Tokyo office towers, I-mode is monitored by a small army of caretakers who, oblivious to the sprawling chaos around them, root out even the most infinitesimal weed in a campaign to ensure that here, at least, perfection reigns. "It's very carefully cultivated," says Kazutomo Robert Hori, CEO of Cybird, a company that creates I-mode sites. "Very carefully. Very, very carefully."

Since the service is billed by the minute, the goal of DoCoMo has been to carefully control what content makes their system. The goal of DoCoMo has been to create a branded experience that is completely controlled by them.

Phones/Devices

In order to be able to access the wireless Internet, users first need to have phones that are Internet-ready. Since DoCoMo was able to control the design of phones, such phones were available early in Japan.

As described by Jeff Funk,

Large displays are needed on mobile-Internet-compatible phones. The most popular Japanese mobile Internet phones have displays that are larger than two square inches. They first appeared in early 1999, and by late 2000 these display sizes and mobile Internet capabilities had become standard items on almost all Japanese mobile phones. These screens could display as many as 100 Japanese characters in spite of the fact that Japanese characters are far denser than Roman characters. And users could acquire many of these phones for less than $100, even if they existed, as opposed to new, subscribers.

Further, the positive feedback between phones, users, contents, business models, and portals/search engines has caused innovations to flourish in the Japanese mobile phone market. Phones with displays larger than two square inches keep getting lighter, while smaller and new functions keep being added because the basic electronic devices keep getting smaller. Polyphonic capabilities, a capability that is popular with young people, have evolved from four tones to 128 tones as of early 2001. Color displays had appeared by the end of 1999 and had become the standard for all phones by the end of 2000. Higher-resolution color displays that can display more than 65,000 colors had appeared by the end of 2000 and are expected to become the standard for all phones by the end of 2001.

Moreover[15]-

"The first keitai (cell phone), the so-called candy-bar models, had small black-and-white screens and were about half the size of Western cell phones. Now, with the advent of color and animation, the featherweight candy bars are giving way to slightly heavier, folding handsets with larger, high-resolution screens. They combine in one sleek device the functions of three separate gizmos in America: cell phone, handheld computer, and wireless email receiver."

Business Model

The basic business model of NTT DoCoMo is shown in Figure 5. The company has two sources of revenue- individual consumers and official sites (corporate revenue was not expected to be very great). The company has a billing relationship with the individual consumer. As shown in Table 3, each consumer pays a flat monthly charge to sign up for the service. Then, the individual is charged on the basis of the number of packets transferred by him or her. Individuals can then sign up for specific content packages. The company takes a 9% commission out of these service charges from the official sites. Not all official sites charge- one estimate is that about 50% of these sites charge. <u>The big money makers are downloadable ring tunes and wallpaper images for phone screens</u>.

[Insert Figure 5 and Table 3 About Here.]

Pricing by packets was a key innovation. Many critics have argued and continue to argue that consumers will never understand packets. The thinking in America is to encourage flat pricing with unlimited usage- the case of America Online (AOL) switching to a flat fee is frequently brought up.

However, DoCoMo took up this challenge and felt that for the Mobile user experience this was the appropriate model for pricing. Users who download large applications or chunks of data pay more. This pricing system does not stop user. It just sets up the incentives in the appropriate manner. For example, users are not charged for composing e-mail messages. The billing event is the act of sending the message.

Search Engines/Portals

While DoCoMo provided a simple menu on the I-Mode phone with access to the official sites, traffic to the unofficial or voluntary sites exploded. As shown in Figure 6, the number of official sites has grown at a tremendous rate.

[Insert Figure 6 About Here.]

As a result, users needed to use a search engine or a portal to locate the site that they wanted. As described by Jeff Funk-

"By March 2001 there were more than 25 times the number of unofficial sites (more than 40,000) registered on the main search engine for these unofficial sites than there were official sites (1,480) on DoCoMo's set menu. Further, it was estimated that there were more than 20 times the number of pages on unofficial sites than on official sites. <u>This dramatic rise in the number of unofficial sites and pages had caused traffic to these sites to exceed traffic to the official sites by the fall of 2000</u>. The extraordinary growth in the unofficial sites has generated a large number of portals and search engines, which in turn are driving the number of unofficial contents and users".

<u>Services</u>

In order to get a user started, the company has to offer an array of services. DoCoMo's packet-based pricing strategy allows users to try a variety of services.

Travails of Unofficial Sites[16]

The unofficial sites are in a tough spot. The fastest way to access them is to enter their web addresses manually. This is a slow and cumbersome process on cell phones due to the small size of the device and the keypad.

Moreover, while official sites get a cut of the monthly subscription fee charged by DoCoMo, unofficial sites do not. Since they do not have a billing

relationship with the customer, their options are limited. Many have contracted with credit card companies to charge directly.

Yoshihiro Shimizu, Director of IT business for Mobilephone Telecommunications International (MTI) has said that DoCoMo executives "have set themselves up according to their own group of exclusionary alliances centered on Old Economy companies". Even the government executive in charge of telecom policy says- "We have been inundated with complaints from companies that say they are unfairly shut out of DoCoMo sites". However, critics say that the government will not act since it owns a huge stake in the company.

The company has promised to open its services to third-party ISPs when 3G services are established by 2003.

Global Expansion of NTT DoCoMo

NTT DoCoMo has no intention of being a regional player forever. It has made aggressive moves to move to become a global player. Here is a list of some of the key acquisitions of the company[17]

- Hutchison Whampoa - Hong Kong. In December 1999, DoCoMo acquired a 19% stake and in May 2000 Hong Kong became the 2nd place in the world where I-mode is available.

- <u>Dutch KPN Mobile</u> - May 2000, NTT DoCoMo bought a 15% stake and they will be setting up Europe's first I-Mode service.

- <u>Telecom Italia Mobile (TIM) - Italy</u>. TIM has had a joint alliance with NTTDoCoMo since 1997 (with no exchange of equity), exchanging engineers.

- <u>AT&T Wireless- United States</u>. November 2000, they bought a 20% stake for $9.8 Billion and have their sites on establishing the first 3G I-Mode networks here in 2003-4.

- <u>SK Telekom</u> - South Korea's biggest mobile provider - in July 2000, DoCoMo purchased a 10% stake for $3 Billion.

- <u>KG Telecom Taiwan</u> - NTT DoCoMo has acquired a 20% stake in KG Telecom. The firms are to jointly provide wireless broadband services in Taiwan.

- <u>Tele Sudeste Celular Participacoes</u> – DoCoMo acquired a 7% stake in this Brazilian company.

In addition, DoCoMo owns 43.5% of AOL Japan and has established a strategic alliance with companies such as Palm.

Some observers have been skeptical of the ability of NTT DoCoMo to go global. The main argument from the skeptics is[18] that, first, due to its association with NTT, DoCoMo has been sheltered in Japan. Examples of this are DoCoMo's ability to set the specifications for handsets- not the

manufacturers of the handsets! Moreover, DoCoMo did not have to bid for the wireless spectrum in Japan. It was simply given to them because of NTT's stature. Also, DoCoMo was able to dip into NTT's existing customer base.

In addition, DoCoMo will not be able to control the entire user experience in other countries. In Japan, the company controls all aspects of the user experience- Design and sale of the handsets, Types of calling plans and rate structure, Billing and service options, Number and type of official content providers etc. This will not be easy to replicate in countries outside Japan.

Naturally, the market characteristics may be different. Remember, in Japan, to many users the Internet/Web is synonymous with I-Mode because of low PC penetration. The big question is if Americans (and users in other markets) will be as taken by this technology after being jaded with years of the PC-based Internet/Web. Nobody in the US has tried to price based on the packet. Many have said that Americans are used to simple pricing schemes and this may not work. The usual issue of cultural differences is also brought up. Will American teenagers be excited by the same things as Japanese teenagers?

Also, as Prof. Meyer from the Wharton school points out[19]-

Mobile operators in Hong Kong, for instance, found that the market for value-added services is mostly kids. Business consumers weren't so interested in seeing pictures of the party they were conversing with. So, the people with pockets aren't often the people who want expensive services. That makes it difficult to do anything.

Finally, the technology may not be ready in American and European markets. The necessary infrastructure may not be in place for these phones. Building a packet-switched network may take time. The hardware may have to be modified to make it compatible with the new types of content.

These are certainly not easy challenges and the company's future will depend on surmounting them effectively.

Conclusion

NTT DoCoMo's I-Mode phone has created in the worldwide wireless industry. It has established that it is possible to successfully provide access to the Wireless Internet/Web to users. What remains to be seen is how much of their business model and approach can be transported to other markets.

Discussion Questions

1. Analyze the case using the technology, business model and marketing framework. What is DoCoMo's core competence?

2. What are the advantages and disadvantages of using a "walled garden" approach to content development and delivery? What is that makes this approach a success for cable TV and a failure for most Internet content firms?

3. What are the fundamental differences between starting with a low richness, high reach strategy and a high richness, low reach strategy? Which one is suited for which situation?

4. Can Internet Service Providers(ISPs) in the US use packet-based charging? Why or why not?

5. Have other companies in the US adopted the strategy of focusing on young users? When is this strategy appropriate? When is it not?

6. How important is the leverage of an existing billing relationship to the success of DoCoMo? Will AT&T Wireless be able to leverage its billing relationship with the customer base to create a similar success story in the US?

7. What challenges will DoCoMo face in the American market? What will not be available to it here?

APPENDIX
WAP

An introduction to WAP

The key competitor to DoCoMo is not a company. Rather, it is an open standard, a protocol. The Wireless Application Protocol(or WAP) is a communications protocol and an application environment that works with various wireless networks. WAP is developed by The WAP Forum, an alliance of over 500 companies including large giants such as Ericsson and Nokia. It was started by technologies developed by phone.com.

The WAP protocol enables mobile systems such as phones, pagers, smart phones, and handheld devices to receive information and services from one another. Its focus is on maximizing the interoperability between different devices. Hence, it is not a specific application or a language.

One of the main problems with cell phones is that they cannot handle the Hypertext Markup Language(HTML)- the most commonly used language on the Web. As a result, WAP supports a special language called WML or Wireless Markup Language[20].

Web pages that are currently written in HTML cannot be read by WAP phones. Therefore, web site owners who want their pages to be read by a cell phone will have to create a different page in WML. This, obviously, creates a new layer of costs and only few web sites have gone through with this.

DoCoMo vs. WAP[21]

As per one study, Imode is the dominant wireless Internet system in the world. As of November 2000, 60% of the world's wireless Internet users used Imode, 39% used WAP and 1% used PALM. The users are distributed across different countries. Japan has about 20 million wireless Internet users (both imode and WAP), Korea has 2-3 million users and Europe has 1-2 million WAP users.

There are many differences between Imode and WAP. First, most WAP implementations in Europe are circuit-switched whereas the Imode phone uses packet-switching. As a result, most WAP users have to dial-up if they wish to connect whereas Imode provides the more desirable "always on" capability. Interestingly, in Japan the WAP implementations also use packed switching. The reason for this is that DoCoMo had access to NTT's packet-switching network whereas WAP operators had to build such a network from scratch.

Imode includes images, animated images and color. On the other hand, WAP implementations in Europe at the moment only use text and no images. WAP in Europe is marketed to business whereas Imode is mainly marketed to ordinary consumers. Imode handsets in Japan have large full color (256 colors) displays and can display animated full color gifs and ten lines of text or more, while European implementations of WAP today have handsets showing four lines of text in black/white without images.

Marketing of WAP based services in Europe presently focus on business applications (banking, stock portfolio, business news, flight booking), while marketing of WAP-based services in Japan and imode in Japan focus on fun and everyday life-style: restaurant guides, games, images, ringing melodies.

WAP users are charged for the connection time. For example: if one user looks at a newspaper headline or a football result for 10 minutes, he/she is charged for 10 minutes connection time. Imode (in Japan): imode users are charged per packet of downloaded information. So if an imode user looks at a news item or at a football result for 2 seconds or 3 hours on his/her mobile handset, the charge is the same whether it's 2 seconds or 3 hours, as long as he/she does not download additional information. In addition to information

transfer charges, there is a basic charge and also subscription charges for premium sites, and in some cases transaction, download or other charges.

WAP Usability

In December 2000[22], the Nielsen Norman Group commissioned a WAP usability study in Europe. Users were given a WAP-enabled phone and were asked to use it for a week. They were asked to perform specific tasks. But, they were also free other tasks.

The study concluded that the usability of WAP phones was 70% negative. Specifically, checking the weather took the user 2.7 minutes at first. Even after using the phone for 1 week, the average user still took 1.9 minutes to check the weather. The study points out that with a newspaper this takes 10 seconds or less.

The author of the study has pointed out that the user interface will be impoverished for two reasons[23]. First, a tiny screen cannot show any context, nor can it show menus or visualizations of alternatives. Second, telephone push-buttons are poor controls for advanced functionality. As a result, he dubs WAP the "Wrong Approach to Portability". However, this study has been discredited by its detractors on the grounds that it was based on 20 users only.

26

This is a typical user story-

> (DoCoMo's) Kamada's microbrowser opened I-mode to anyone who can create a Web page. Satoshi Nakajima, a Japanese expat who heads a Seattle startup called UIEvolution, discovered what that means when he set out to construct a little wireless site that converts US measurements to the metric system. Because he knows HTML, he was able to create an I-mode site in one evening; a day later he discovered that several hundred people had already visited it. It took him two weeks to develop a WAP version for the American market. "It was a really painful experience," he says, "and at the end of it I got no hits."

Conclusion

At this point, it seems like DoCoMo's I-Mode service has trumped WAP. While WAP has languished, I-Mode has made its mark in Japan and now promises to replicate its success in the US and Europe.

Figure 1
Charting the success of DoCoMo's I-Mode Phone
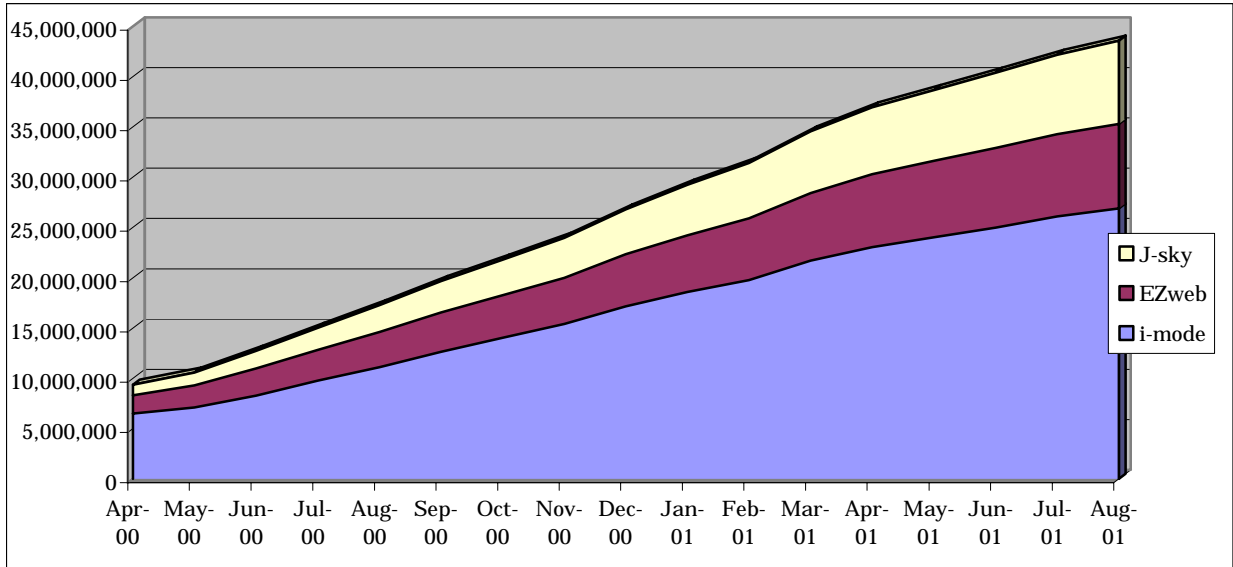
(Source: Telecommunications Association of Japan, <http://www.tca.or.jp/index-e.html>)

Figure 2
Feedback Loops Operating in DoCoMo
(Source: Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West
Disconnected", ISI Publications.)

Simple (Micro-payment & packet services) TO Complex (Java, 3G)

Services

Simple TO Complex

Young TO All Ages

Portals/Search Engines

Users

Simple TO Rich

Contents

Simple TO Complex

Business Models

Phones/ Other Devices

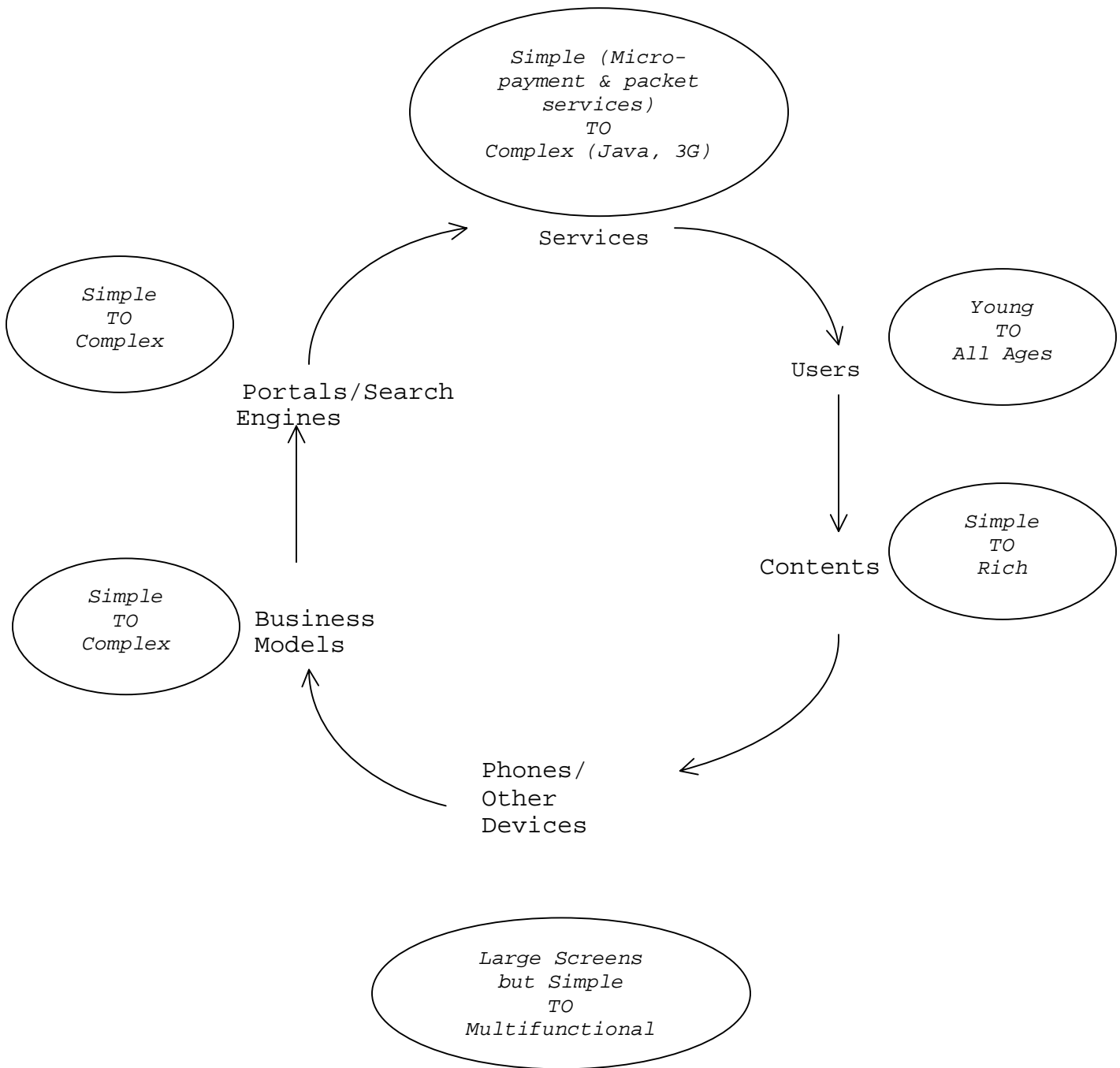*Large Screens but Simple TO Multifunctional*

Figure 3
Richness vs. Reach
(Source: Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West Disconnected", ISI Publications.)
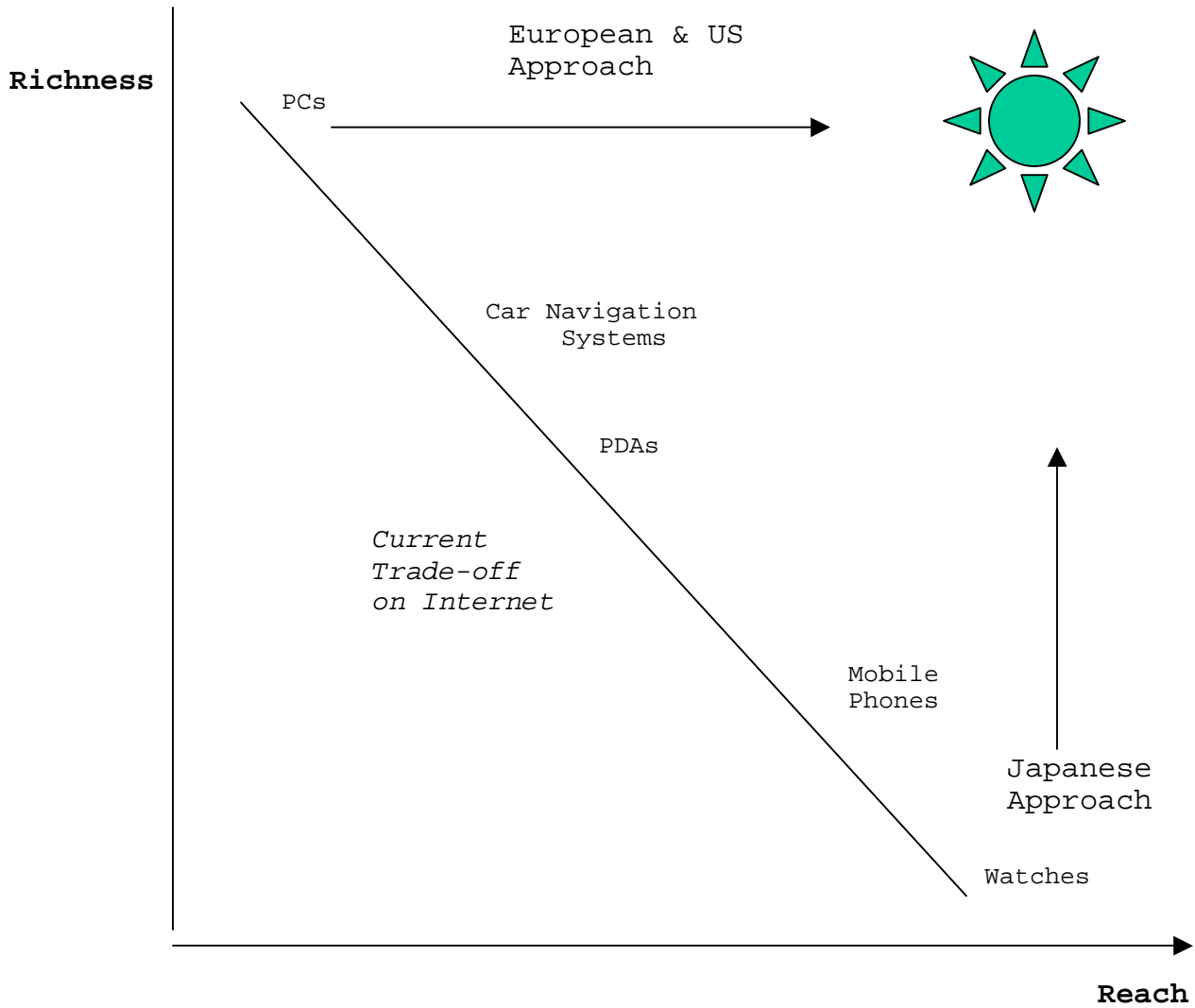

Richness

European & US
Approach

PCs

Car Navigation
Systems

PDAs

Current
Trade-off
on Internet

Mobile
Phones

Japanese
Approach

Watches

Reach

Figure 4
Examples of I-Mode Content

Figure 5
NTT DoCoMo's Business Model
(Source: Adapted from- Hata, Max(2000), "DoCoMo's I-Mode", October 10,
<http://www.communiweb.net/ipv6/hata_DoCoMos_I-Mode.pdf>)

Figure 6
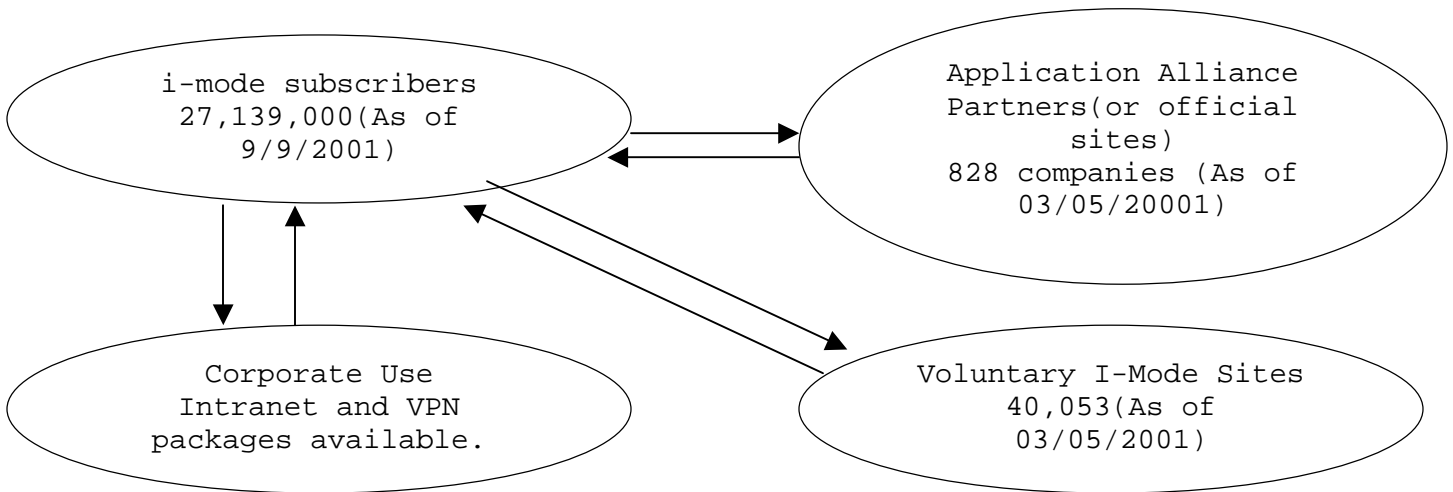**Number of Unofficial I-Mode Sites**
(Source: Mobilemediajapan(2000), "More than 10 million I-Mode Subscribers", August 6,
<http://www.mobilemediajapan.com/newsdesk/imode10million/>)

Table 1
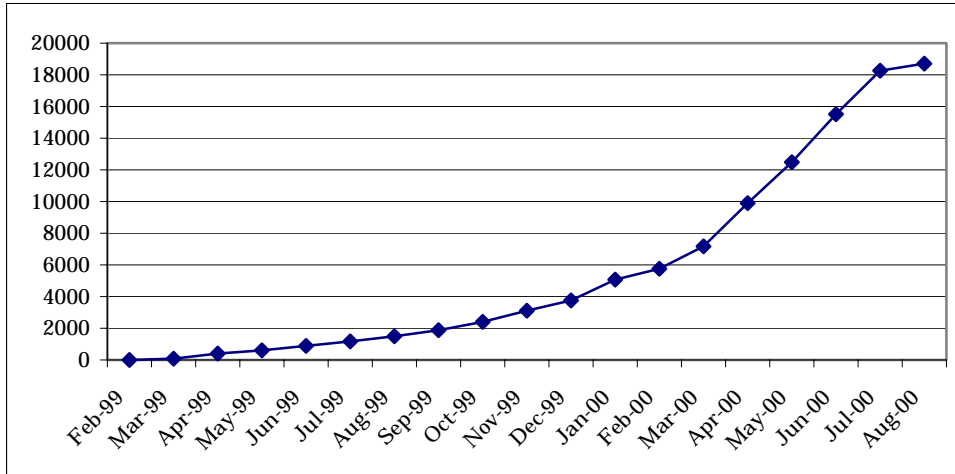**Breakdown of I-Mode Accesses to Official Sites**
(Source: Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West
Disconnected", ISI Publications.)

Category	Percent
Entertainment	55%
News	14%
Tickets/Living	11%
Financial	6%
Town Info.	5%
Business Tools	5%
Travel	3%
Restaurants/Recipes	1%
	100%

Tab le 2
Breakdown of I-Mode Traffic
(Source: Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West Disconnected", ISI Publications.)

Official Sites	34%
Mail	27%
Automatic Messages	16%
Unofficial Sites	14%
Menu	9%
	100%

Table 3
Financial Statements for NTT DoCoMo
(Source: http://www.hoovers.com/annuals/5/0,2168,58535,00.html,

All amounts in millions of US Dollars except per share amounts.)

Income Statement	Year Ending March 2002	Year Ending March 2001	Year Ending March 2000
Revenue	38,977.90	37,194.20	35,245.80
Cost of Goods Sold	26,680.80	11,916.00	--
Gross Profit	12,297.10	25,278.20	--
Gross Profit Margin	31.50%	68.00%	--
SG&A Expense	0	14,331.80	--
Depreciation & Amortization	4,738.70	4,744.30	--
Operating Income	7,558.40	6,202.10	5,172.70
Operating Margin	19.40%	16.70%	14.70%
Total Net Income	6.5	3,200.20	2,389.80
Net Profit Margin	0.00%	8.60%	6.80%
Diluted EPS ($)	0	0.67	--
Balance Sheet	2-Mar	1-Mar	Mar-00
Cash	2,262.00	943.3	4,558.90
Net Receivables	6,524.70	7,051.80	4,207.70
Inventories	843.3	855.5	673.4
Total Current Assets	10,145.00	9,833.40	10,731.60
Total Assets	44,563.10	47,925.00	34,245.20
Short-Term Debt	1,933.10	3,902.20	2,292.10
Total Current Liabilities	9,112.10	11,815.40	8,958.50
Long-Term Debt	8,557.10	7,593.50	5,570.70
Total Liabilities	20,180.40	21,490.60	15,900.30
Total Equity	24,382.70	26,434.50	18,344.90
Shares Outstanding (mil.)	5,018.00	5,018.00	--

Some figures may not add up due to rounding.

Table 4
Comparison of the three main competitors in the Japanese market
(Source: Mobilemediajapan(2000), "Main Mobile Internet Services in Japan", November,
<http://discuss.mobilemediajapan.com/stories/storyReader$1432>)

	NTT DoCoMo	KDDI/AU	Tu-ka	J-Phone
Mobile Internet service	I-mode	EZweb		J-Sky
Markup language	I-mode compatible HTML	HDML (WAP)		MML
Microbrowser	Compact Netfront	EZbrowser		Proprietary
Numbers of official sites	576 (July 2000)	303 (August 2000)		287 (August 2000)
Mobile Internet fee	300 yen monthly basic fee + 0.3 yen per packet*	200 yen monthly basic fee + 0.27 yen per packet*		2 yen per request (no monthly basic fee)*
Image formats	GIF	BMP, PNG		PNG, JPEG
Email acquisition method	Email is sent to handset immediately	Notification of new email is sent to the handset		Notification of new email is sent to the handset
Sending email	max. 250 double-byte characters (500 single-byte)	max. 255 double-byte characters (510 single-byte)		max. 3000 double-byte characters (6000 single-byte)
Receiving email	max. 250 double-byte characters (500 single-byte)>	max. 2000 double-byte characters (4000 single-byte)		max. 3000 double-byte characters (6000 single-byte)
Email storage on server	50 messages for 30 days	200 messages for 7 days (inbox), 100 messages for 14 days (archive)		192 messages for 72 hours
Email attachments functionality	None**	Images and melodies		Images and melodies
Network	800 MHz Digital Packet switched PDC/P (TDMA)	Circuit switched PDC & 800 MHz Packet switched cdmaOne (CDMA)	1.5 GHz Circuit switched PDC (TDMA)	1.5 GHz Circuit switched PDC (TDMA)
Speed	9.6kbps (I-mode), 28.8kbps (DoPa)	9.6kbps (PDC), 14.4~64kbps (cdmaOne)	9.6kbps	9.6kbps
Packet Compatibility	I-mode & DoPa	CdmaOne/PacketOne	Planned for summer 2001 (28.8kbps)	Not planned on PDC

Targeted users	Universal	Business people	Young women	Young women in their 20s & 30s
Phone Usage Basic Fee Plan (monthly)	Plan A: 4,500 Yen*	PDC: 4,400 Yen*, cdmaOne 4,600 Yen*	Business Plan: 4,500 Yen*	Standard Plan: 4,500 Yen*
Color support	256 colors	256 colors	256 colors	256 colors
International roaming	Korea	Korea, Hong Kong, USA (Honolulu, San Francisco, New York City...), Australia (Melbourne, Sidney, Brisbane, Perth)	None	None
Main mobile accessories	Pocket Board, Exire, Pacty, Camesse petit	Photo Palette, Web Palette, Mail Palette	Cara	Sky ePad, Sky Photo Pad
Affiliated Internet Service (ISP)	Mopera	Daredemo Internet	Internet Freeway	J-Phone Access Internet

*100 Yen = US$0.92

**Some I-mode handsets can send ring tones as attachments via e-mail -- but only to the same model handset.

Main Source: "Cellular Phone White Paper 2000," in: Internet Magazine 2000.11, Impress Corporation.

Table 5
I-Mode Revenue Per Subscriber Per Month in Yen

(Source: Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West Disconnected", ISI Publications.)

	Revenue for DoCoMo	Revenue for content providers	Total Revenue
Monthly Charge	300	0	300
Packet charge	1500-2000	0	1500-2000
Paid Services	27	273	300
Total	1827-2327	273	2100-2600

Table 6
Key Landmarks in IMode History
(Source: Compiled from press releases at- www.nttdocomo.com)

February 22, 1999	Service launched
June 28, 1999	Users Exceed 0.5 million
August 8, 1999	Users Exceed 1 million
March 15, 2000	Users Exceed 5 million
August 6, 2000	Users Exceed 10 million
November 22, 2000	Users Exceed 15 million
March 4, 2001	Users Exceed 20 million

ENDNOTES

[1] All URLs in this case are current as of April 14, 2002.

[2] I am thankful to my MBA student, Tushar Mehta, for locating important information in connection with this case.

[3] Docomo is a Japanese word that means "everywhere". The "I" in I-Mode stands for information. Also, "ai" is the Japanese word for love.

[4] Mobile Media Japan, Home Page, <http://www.mobilemediajapan.com>.

[5] Techbuddha(2000)"i-mode: Lessons for Asia's Cellular Operators", August, <http://www.techbuddha.com/nextlevel/wappt3imode.html>.

[6] Bickers, Charles(2001), "The way of the mobile warrior", *Far Eastern Economic Review*, June 21, 164(24), 46-50.

[7] Rose, Frank(2001), "Pocket Monster", September, <http://www.wired.com/wired/archive/9.09/docomo.html>.

[8] Rose, Frank(2001), "Pocket Monster", September, <http://www.wired.com/wired/archive/9.09/docomo.html?pg=3&topic=&topic_set= >.

[9] Japan Marketing News, "Japan's Technology Performance Index", <http://www.jmnews.net/v1i14_numbers.htm>.

[10] Nikkei Communications(2001), "Mobile Phone Subscription Rates Slow in Japan", December 11, <http://www.nikkeibp.asiabiztech.com/wcs/leaf?CID=onair/asabt/cover/159566>.

[11] Knowledge@Wharton, "Can I-Mode Go Global?".

[12] Funk, Jeff Lee(2001), "The Mobile Internet: Why Japan Dialed Up And The West Disconnected", ISI Publications.

[13] Rose, Frank(2001), "Pocket Monster", September, <http://www.wired.com/wired/archive/9.09/docomo.html?pg=4&topic=&topic_set= >.

[14] Rose, Frank(2001), "Pocket Monster", September, <http://www.wired.com/wired/archive/9.09/docomo.html?pg=2&topic=&topic_set= >

[15] Rose, Frank(2001), "Pocket Monster", September, <http://www.wired.com/wired/archive/9.09/docomo.html?pg=3&topic=&topic_set= >

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[17] Palowireless, "Imode Resource Center", <http://www.palowireless.com/imode/background.asp>.

[18] Scuka, Daniel(2000), "DoCoMo: Easy Cell", October 17, <http://japaninc.net/online/sc/ntt/oct00_sc_docomo.html>.

[19] Knowledge@Wharton, "Can I-Mode Go Global?".

[20] http://www.sciam.com/2000/1000issue/1000bannan.html

[21] Eurotechnology.com, "The unofficial independent imode FAQ: Imode vs WAP", <http://www.eurotechnology.com/imode/faq-wap.html>.

[22] Watss, Jonathan(2000), "Japanese craze that could wipe out Wap", June 15, <http://www.guardian.co.uk/online/story/0,3605,332060,00.html>

[23] Nielsen, Jakob(1999), "Graceful Degradation of Scalable Internet Services", October 31, <http://www.useit.com/alertbox/991031.html>.