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**Mobile Internet Market in Japan: An
Overview.**



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1. Overview on the Internet and Mobile Phone Usage in Japan

1.1. Internet

The Japan Ministry of Public Management, Home Affairs, Posts and Telecommunications published its White Paper 2002 in July¹. According to its statistics, as of December 2001, the total number of Internet users in Japan is 55.93 million (a year-on-year increase of 18.8% or 8.85 million people), which comes second in the world following the U.S. The population penetration rate has increased from the former year by 6.9 points to 44.0%. Household penetration has also risen 26.5 points to 60.5%, growing at rapid speed.

The total Internet users worldwide, is 54.420 million people, as of February 2002. Japan's population penetration rate comes 16th, while each of the three top countries Sweden, Iceland, and Denmark top 60% penetration rate.

The broadband Internet, making rapid growth all over the world and especially in Korea, has also been making tremendous growth in Japan over the last year. As of March 2002, the number of broadband Internet subscribers total up to 3.87 million people, or 4.5 times more compared to the former year. Especially growing is the DSL subscribers of 2.38 million people, which has expanded 34 times more in this last year. It is estimated for approximately 20 million households to have subscribed to broadband Internet by the end of 2005.

1.2. Mobile Phone

The total number of mobile phone contracts in Japan is approximately 66.77 million as of the end of April 2002. This accounts to 54.8% of Japan's population. In comparison to the advanced countries of Northern Europe with 70-80% penetration it may be still a little behind, however with the rapid growth rate Japan is sure to reach a similar level soon.

The average talking time of the total mobile phone users in Japan is 1.81 hours per week. 63.4% of men and 51.7% of women makes a call more than one time a day, and 57.2% of men and 49.3% of women receives a call more than one time a day. The average length per call is 5.29 minutes for men, and 8.15 minutes for women. By age, people in their twenties are the heaviest users.²

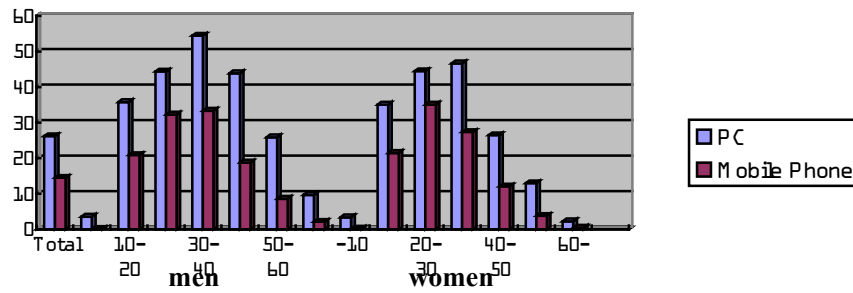
1.3. Mobile Internet

A particular characteristic of the Japanese market is that 78.7% of mobile phone users are using the Internet connection service. Approximately 6.6 million Japanese people access the Internet solely via mobile phones. Since NTT DoCoMo, the largest company of mobile phones in Japan, introduced its "i-mode" in February 1999, mobile phones have become a major tool for Internet usage among Japanese. Subscribers to mobile Internet services were 56.347 million as of August 2002.

¹ http://www.johotsusintokei.soumu.go.jp/whitepaper/eng/WP2002/press_information01.pdf

² <http://www.yusei.go.jp/policyreports/japanese/papers/99wp/html/B2933000.html>

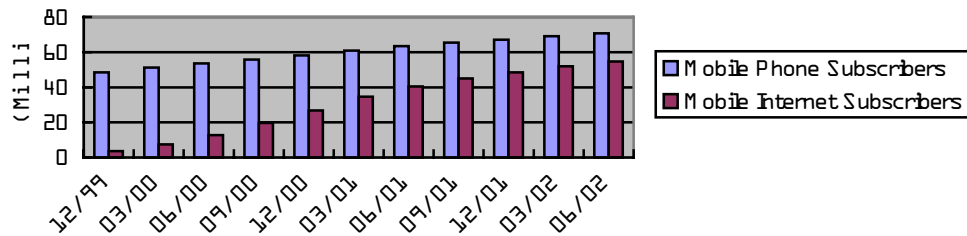
Internet Usage from PC and Mobile Phone



Ref: Video Research Net-com Ltd.

<http://www.vrnetcom.co.jp/press/pressdata/200110101.html>

Trends in the Number of Subscriptions to Mobile Phones and Internet



Ref: Telecommunications Carriers Association

<http://www.tca.or.jp/japan/daisu/yymm/0208matu.html>

1.4. PHS

PHS (Personal Handy-phone System) is also a “cell” phone used in Japan, which started its service in 1995. The mechanism of PHS originates in the idea of cordless handsets in households, and originally had become popular because of its low pricing and connectivity in underground. On the other hand, it had weak points such as small service area and no connection when moving at high speed. Therefore, mobile phones had completely overpowered the PHS market. Today, companies are now shifting PHS usage from voice to data connection utilizing its fast connection speed of 144Kbps coming from its 1.9GHz frequency. Needs have been arising mainly from businessmen.

PHS subscribers (August, 2002)

Carrier	Increase/ment	Total Subscribers
NTT DoCoMo	600	1,848,000
DDI Pocket	-24,000	2,949,400
Astel	-1,900	848,100
Total	-25,300	5645500

Ref: Telecommunications Carriers Association

<http://www.tca.or.jp/japan/daisu/yymm/0208matu.html>

2. Technological Standards

Japan, a fairly developed mobile phone country as it may seem, has not succeeded nor scarcely advanced into markets outside the country. Vice versa for foreign companies in Japan. The world's number one mobile phone vendor Nokia is seldom recognized among the Japanese people. Japan has its own isolated market within the country.

There may be various reasons for this, for example, difference of language difference, different cultural backgrounds and needs of Japanese consumers. But the main reason probably lies in the difference of technical standards between Japan and the rest of the world.

While more than 150 countries centring Europe and Asia, or approximately 71% of the total digital wireless market today uses the Global System for Mobile Communications (GSM)³ system, Japan has mostly adapted to Personal Digital Cellular (PDC) system, developed by NTT DoCoMo. There is also the cdmaOne system adapted by KDDI, which was developed by America's Qualcomm (however Japan's cdmaOne phones cannot be used since it uses different bandwidths from America's). Whichever the system, communication outside the country is impossible, except for the global service enabled in part of KDDI's phones and the 3G phones.

Why not use the world's de facto? The common theory is that the PDC system was the best system at the time, in terms of high usage rate of radio waves, which means more user capacity for companies. However another interpretation is that this was actually a conspiracy intrigued by the government and NTT (formerly part of the government organization) to create an entry barrier against foreign countries. The truth is unknown.

Chart: Transition of Mobile phones and PHS in Japan

Generation	1G (Analog)		2G (Digital)		3G	-
System Name	NTT format	TACS	PDC	CdmaOne	IMT-2000	PHS
Protocol	FDMA/FDD	FDMA/FDD	TDMA/FDD	CDMA/FDD	DS-CDMA/FDD, MC-CDMA/FDD	TDMA/T DD
Network	800MHz	800MHz	800MHz/1.5Ghz	800Mhz	2GHz	1.9GHz
Speed	(voice only)	(voice only)	~28.8kbps	~64kbps	~384kbps	~128kbps
Developing country	Japan	U.S.	Japan	U.S.	Japan, U.S., Europe, etc.	Japan
Service start	1979	1989	1993	1998	2001	1995

Ref: Ministry of Public Management, Home Affairs, Post and Telecommunications
<http://www.tele.soumu.go.jp/j/system/ml/compare.htm>

³ <http://www.gsmworld.com/index.shtml>

Chart: Technological Standards of Main Mobile Phone Carriers in Japan

	NTT DoCoMo	KDDI/au	J-Phone
Mobile Internet service name	i-mode	EZWeb	J-Sky Web
Total Subscribers (Aug 2002)	41.922 million	12.931 million	12.901 million
Mobile Internet Subscribers (Aug, 2002)	34.444 million	10.960 million	10.943 million
Internet Service Launch Date	22. Feb., 1999	14 April, 1999	10, Dec., 1999
Markup Language	i-mode compatible HTML	HDML (WAP), WML	MML
Microbrowser	Compact Netfront	Ezbrowser	Proprietary
Image formats	GIF	BMP, PNG	PNG, JPEG
Gateway Protocol	Proprietary	Wap-compatible	Proprietary
Protocol	TDMA (PDC/P)	CDMA (cdmaOne)	TDMA (PDC)
Network	800 MHz	800 MHz	1.5 GHz
Speed	28.8 kbps	64 kbps	28.8 kbps
Packet Compatibility	i-mode & DoPa	CdmaOne / PacketOne	
International roaming	Korea (3G phone)	52 cities (Korea, Hong Kong, China ⁴ , USA ⁵ , etc.)	
ISP	Mopera	Daredemo Internet	J-Phone Access Internet
SMS	Short Mail	Petit Mail / C-Mail	Sky Walker

Ref: Mobile Wireless Project <http://www.ecrp.org/english/MWP/Technology/Technologyindex.htm>

Chart: Technological Standards of Java Services in Japan

	NTT DoCoMo	KDDI	J-Phone
Java Service Name	i-apli	ezplus	Java apli
Service Launch Date	26 Jan., 2001	July, 2001	June, 2001
VM	Not unified	JBlend	JBlend
Profile	Doja	MIDP + KDDI-P	MIDP + CLDC
JAR Size	30 KB	50 KB	30 KB
Data Memory Size	5 KB	10 KBq	20 KB

Chart: Technological Standards of 3G Services in Japan

	NTT DoCoMo	KDDI/au	J-Phone
3G Service Name	FOMA	cdma2000 1x	-
Subscribers (Aug 2002)	133,500	2,142,100	-
Protocol	W-CDMA	cdma2000	W-CDMA
Service Launch	1 Oct., 2001	1 April, 2002	(planned for December, 2002)
Spectrum (uplink)	1920-1940 MHz	1940-1960 MHz	1960-1980 MHz
Spectrum (downlink)	2110-2130 MHz	2130-2150 MHz	2150-2170 MHz
Speed	384 kbps	144 kbps	384 kbps

⁴ <http://www.kddi.com/english/release/2002/0708/index3.html>

⁵ <http://www.kddi.com/english/release/2002/0708/index2.html>

3. The Market

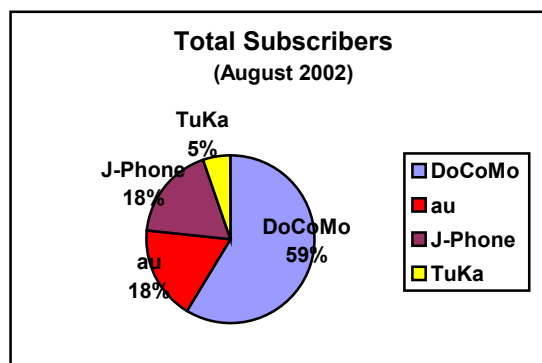
3.1. The Carriers

The Japanese mobile phone market is composed by three major companies: NTT DoCoMo (41.922 million), KDDI (12.931 million), and J-Phone by Japan Telecom Holdings Co Ltd / Vodafone Groups Plc (12.901 million).

While NTT DoCoMo takes almost half the share of Japanese mobile phone subscribers, KDDI and J-Phone are at severe competition switching ranks almost every month. In spring, J-Phone had slightly taken lead with their hit product “Sha-mail”, phones with digital cameras, however KDDI exceeded when its 3G phone handsets came out.

NTT DoCoMo is supported by a wide range of users. Perhaps because of its history of formerly being part of the governmental service, DoCoMo is often chosen by middle aged and elder generation for its reliability⁶. Also, because many companies have contracts with DoCoMo, businessmen often tend to have DoCoMo phones too.

Au, KDDI’s mobile phones are popular among the younger generation, since it started its “Gakuwari” service, which offers a 50% discount to students. J-Phone is used by many young female users. Reason to decide carriers are various. Price, design, functions, or even trends around one’s community can be a good reason to chose carriers.



Ref: Telecommunications Carriers Association
<http://www.tca.or.jp/japan/daisu/yymm/0208matu.html>

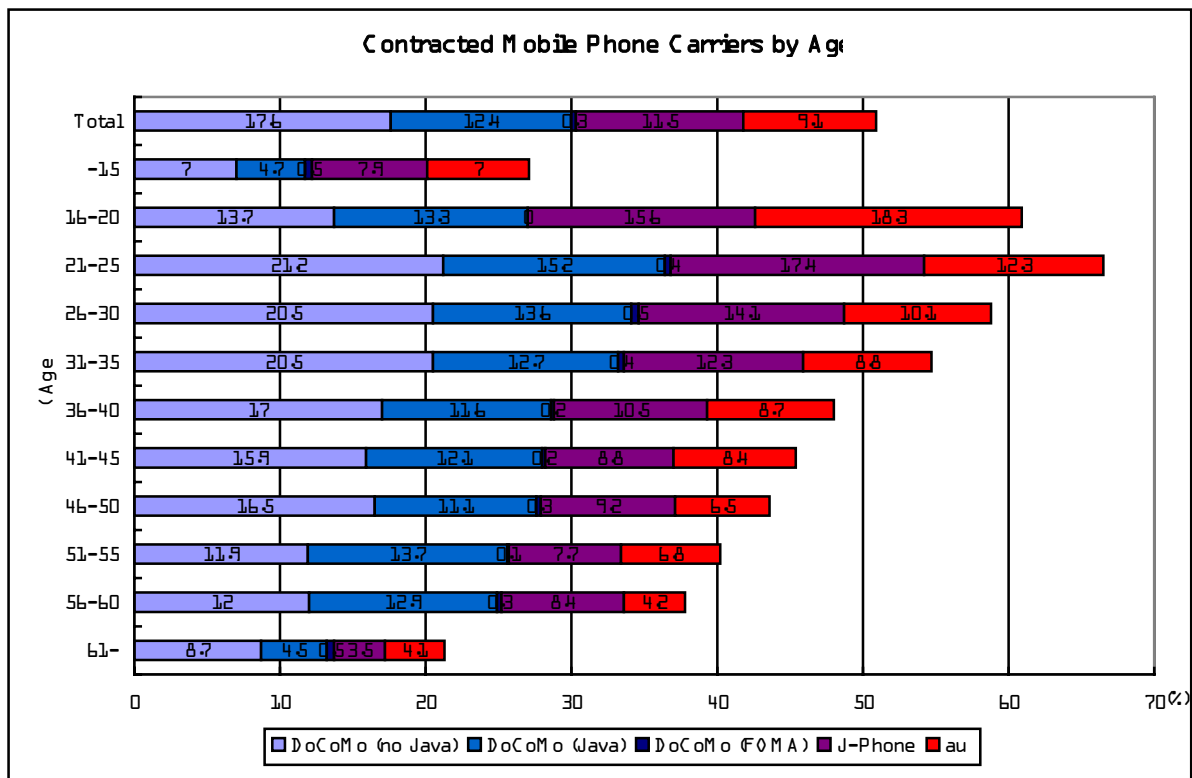
Chart: Comparison of Market in Major Japanese Mobile Phone Carriers

	NTT DoCoMo	KDDI/au	J-Phone
Total Subscribers (Aug 2002)	41.922 million	12.931 million	12.901 million
Annual increase	4.76 million	2.25 million	1.23 million
Mobile Internet service name	i-mode	EZWeb	J-Sky Web
Internet Service Launch Date	22. Feb., 1999	14 April, 1999	10, Dec., 1999
Mobile Internet Service Subscribers (Aug, 2002)	34.444 million	10.960 million	10.943 million
3G Service Name	FOMA	cdma2000 1x	-
3G Service Subscribers (Aug 2002)	133,500	2,142,100	-
Service Launch	1 Oct., 2001	1 April, 2002	(Planned: Dec., 2002)
Sales Amount	51,715 billion Yen	15,280 billion Yen	13,600 billion Yen
Capital Investment	1,322 billion Yen	2,230 billion Yen	3,500 billion Yen
Profit	1,028 billion Yen	590 billion Yen	1,070 billion Yen
Income for the Current Year	8 billion Yen	530 billion Yen	490 billion Yen
ARPU*	8480 Yen	7230 Yen	7176 Yen
ARPU from data transmission	1540 Yen	900 Yen	1066 Yen

*ARPU: average revenue per use (per month)

Ref: Nikkei Communications 2002.5.20 p.74

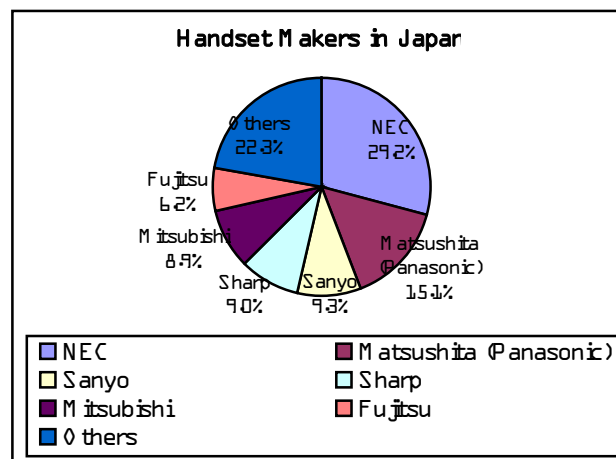
⁶ <http://www.myvoice.co.jp/voice/enquete/4302/>



Ref: Nikkei NetBusiness 2002.1.10 25 p.41

3.2. The Vendors (Handsets)

The handset vendor market is also almost dominated by Japanese companies. NEC takes more than one fourth of the market (12.50 million handsets) and is especially supported by many NTTDoCoMo users. Surveys show that it is chosen by its design and style. Matsushita, known for its “Panasonic” or “National” brand name comes second (6.47 million), and is most often chosen by its brand name. Third is Sanyo (4 million), intent in the global roaming service. Sharp (3.85 million), which comes fourth is making great success in its J-Phone “Sha-mail” handsets. Then come Mitsubishi (3.80 million) and then Fujitsu (2.63 million), both well-known Japanese companies.⁷



Ref: EC Research Corp. <http://www.ec-r.co.jp/>

The average length before buying a new handset is 1 to 2 years. Trends in handsets are also important for young generations, such as the two-fold design or lightness in weight.

3.3. The Content Provider

Japan has again another original system in the mobile Internet content market. In the west and many countries from Asian, the contents makers and handset makers make strategies together to decide providing services, and carriers must oblige to that decision. However in Japan, the carriers have the power to decide everything from the service contents, handset features and shapes.

⁷ http://k-tai.impress.co.jp/cda/article/news_toppage/0_9705_00.html

Most of the mobile Internet contents providers are venture companies that were established within the last 5 years. One of the largest contents providing company is Cybird Co., Ltd, established in 1998. Cybird was one of the first to provide sites for i-mode in 1999. Today, it offers 46 contents with 3.36 million users in its ring tone and game download sites. Earnings for the fiscal year, ended March 2002, made its first surplus.

Index Corp., another major mobile Internet contents provider offers 71 contents, with 4.25 million users. It puts strength in providing contents by tie-ups with TV and movies, for instance providing preliminary scenes of TV dramas by animation distribution. Imagineer Co., Ltd has also tied up with Sanrio and provided “Hello Kitty” contents, which gathered 700 thousand users in a year. High update rate is essential to keep members to their sites.

But companies know that entertainment contents are not enough for the future, and are working on diversification. For instance, Index affiliated with a major fire alarm company, Hochiki Corp., and started a security service “S-mode”, that sends an emergency mail or calls to mobile phones when an abnormal situation occurs at the house. Optional services also provide monitoring of house or control of lights and door locks from mobile phones.

Cybird is intent in services for companies. It has already made success in marketing for major companies via mobile phones and has made 43% increase in profit from the former year. Cybird is also making advances to overseas, in conjunction with i-mode’s movement to Europe.

Chart: Major Contents Providers for Mobile Internet

Company Name	Website URL	Establishment	Main Contents
Cybird Co., Ltd	http://www.cybird.co.jp/	Sep. 1998	Entertainment and mobile promotion
Digital Adventure	http://www.digiadv.co.jp/	Apr. 1998	Gravure photos and entertainment
Gigno System Japan, Inc.	http://www.gignosystem.com/	Dec. 1996	Idle screen photos with high update rate
Imagineer Co., Ltd.	http://www.imagineer.co.jp/	Jan. 1986	Providing information using Hello Kitty
Index Corp.	http://www.indexweb.co.jp/	Sep. 1995	Collaboration with TV stations
MTI Ltd.	http://www.mti.co.jp/home/	Aug. 1996	Traffic and Weather information
Mediaseek Inc.	http://www.mediaseek.co.jp/	Mar. 2000	Pro-wrestling information, etc.
Nihon Enterprise Co., Ltd.	http://www.nihon-e.co.jp/	May 1992	Entertainment (mostly KDDI contents)
Oricon Inc.	http://www.oriconge.jp	Oct. 1999	Ring tones and music
K Laboratory Co., Ltd	http://www.klab.org	Aug. 2000	JAVA applications and software platforms for i-mode, etc.

4. Mobile Internet Contents and Services

4.1. Overview

According to The Digital Contents White Book 2002⁸ published by the Digital Contents Association of Japan (DCAj), the mobile Internet contents had grown immensely last year by 184%, to a market size of 1,154 billion Yen. DCAj says, the killer contents were ring tones and idle screens. However DCAj also estimates that, without a new killer content like ring tones, the growth rate will acutely go down due to decrease in obtaining new users.

In the three and a half year, mobile Internet has developed greatly in Japan. The 56.347 million mobile Internet users account to 78.7 % of the total mobile phone users in Japan. For 6.6 million of them, mobile phones are their only Internet tools. To many people today, life without mobile phones would be impossible.

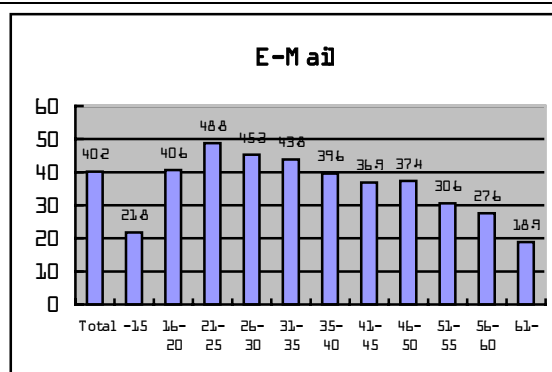
4.2. Basic Contents

1. Communication

- Mail

Service Name: E-mail

Characteristic: Highly used by all generation. Users aged 21-25 use the most with 48.8%, and even the least marks 18.9%, 61 or older. Some students and businessman forward their PC e-mails to their mobile phones in order to stay updated at all times.

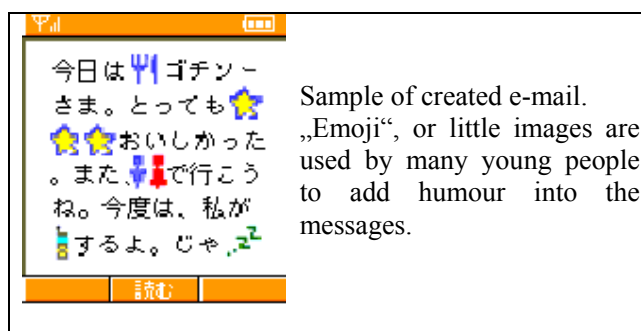


*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

Among the various contents and services offered, e-mails are the top most used function, even including the standard functions provided. The graph "Frequently used functions" shows that e-mail is used even more than clocks or address books. In a survey asking what Internet contents and services one uses, the results were 92.7% for e-mails, 48.1% for download services, 45.8% for news, and 44.2% for weather. Also, e-mail services are the only service used frequently by all generations.

Each carrier also have text message services,



Sample of created e-mail. „Emoji“, or little images are used by many young people to add humour into the messages.

Ref: KDDI <http://www.au.kddi.com/>

⁸ Digital Content Association of Japan <http://www.dcaj.or.jp/form2/setsume.html>

but are not used so much since they can only be used within the same carriers, and using both would mean having two mail boxes.

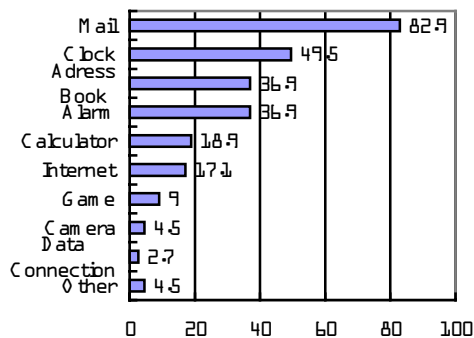
Being able to use normal e-mail can be convenient, but irritating as well. *Daily Yomiuri* newspaper reported that more than 950 million e-mails are sent and received on mobile phones everyday, 800 million messages (84%) or more consisting of spam. NTT DoCoMo is especially targeted and is fierce to block spam mails and are calling upon users to change mail addresses to longer and complicated ones. The Government is also restricting with legislations.⁹

Related to spam mails are the *One-giri* calls, where computers dial numbers randomly, ring once, and hang up. The callers, usually dating services, do not get charged because no one picks up. But the incoming call leaves a phone number on the receiver's handset and when one calls back to see who called, they get charged with extraordinary fee.

Chart: Comparison of e-mail functions and prices

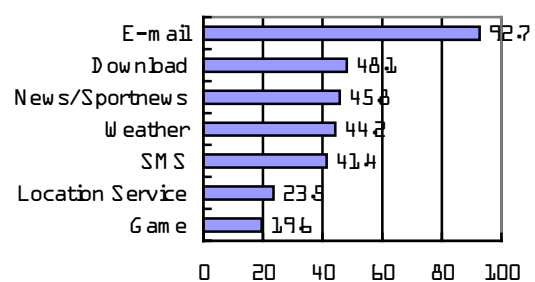
	NTT DoCoMo	KDDI	J-Phone
Service Name	i-mode mail	ezweb@mail	J-Sky long e-mail service
Monthly Fee	300 Yen	200 Yen	250 Yen
Sending Price	0.3 Yen /128 bytes	0.27 Yen /128 bytes	3 Yen /mail
Receiving Price	0.3 Yen /128 bytes	0.27 Yen /128 bytes	8 Yen /mail (Free up to 384 letters)
Maximum Sending Capacity	500 letters	10000 letters	6000 letters
Maximum Receiving Capacity	500 letters	10000 letters	6000 letters

Frequently used functions



Ref: Fukui Chamber of Commerce & Industry
<http://www.fcci.or.jp/chousa/totteeki/ke-tai02/index.htm>

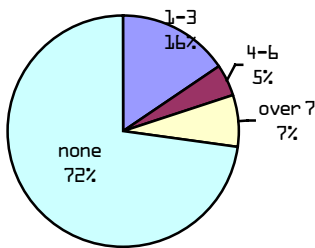
Utilized Mobile Internet Service:



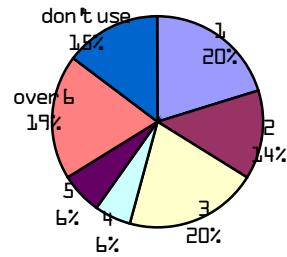
Ref: Electronic Commerce Promotion Council of Japan
<http://www.ecom.or.jp/>

⁹ <http://www.vnunet.com/News/1133197>

Number of "Mail" Pa&



Number of Mails per Day



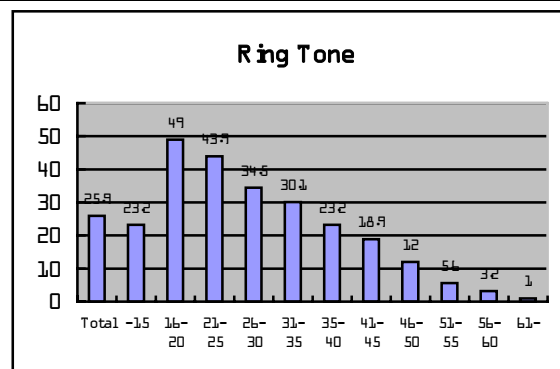
Ref: Fukui Chamber of Commerce & Industry <http://www.fcci.or.jp/chousa/totteoki/ke-tai02/index.htm>

2. Downloads

- Ring Tones

Service Name: Ring Tones

Characteristic: The graph for ring tone users shows an acute down hill starting with 49% for 16-20 year old, and decreasing to 1% for 61 years old and older. Ring tones are popular among the young generation.



*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

The huge business in mobile phone pay service is the ring tone download service. Having your favorite or newest ring tones for incoming calls and mails are a big hit in Japan. It is estimated that 60% of the mobile phone users have experienced this service.

Most sites require monthly fees with an average of 100 Yen (appx. 1 Euro) for 5 ring tones, 300 Yen for 15. Application procedures are very simple and payment is included in the monthly telephone bills. Major sites have 3 to 4 million members. Although most users do not root in one specific site but roam around different sites, 4 million users with 300 Yen fee would account to 12 billion Yen (appx. 1200 million Euro) per month. This business model of gaining little from many people may be expressed as typical e-commerce style.

The competition in this market is severe, with more than 100 sites offering ring tone downloads, but for the majoring companies this should be a juicy business. The whole market is estimated to be worth about 600 billion Yen (6 billion Euro), and including the profit made from downloading datas for the communications industry, the market price should be at least double.

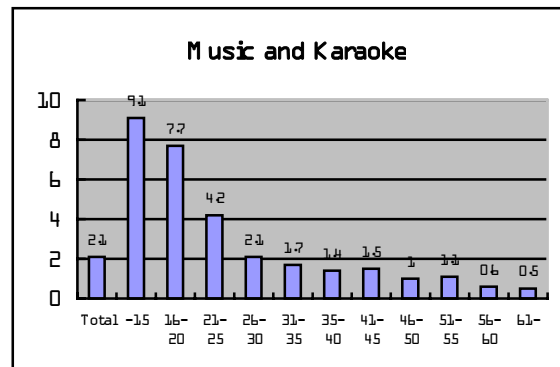
Ring tones are one type of fashion for Japanese youths, and it is even common to have different ring tones depending on the person you receive a call or mail from. The main chorus part is taken from the newest or hottest hit-music and commercial songs, and made into a 45 second-or-so long ring tone. Many mobile phones today can play more than 16 cords and have various tones, from normal sounds, piano, music box, etc.

Copyright royalty paid to artists were formely 7.7 Yen per ring tone, but from consultation from the industry has lowered the fee to 5 Yen per ring tone. There are even some artists who got unexpected incomes due to hits of remakes into „Chaku-melo“ ring tones.

- Music & Karaoke

Service Name: Music and Karaoke

Characteristic: This category is seldom used by all ages, with 9.1% for 15 years old and younger with the maximum point. Downloading music or karaoke seems not to be very popular for now, since sound qualities are not nearly as good as CDs nor MDs.



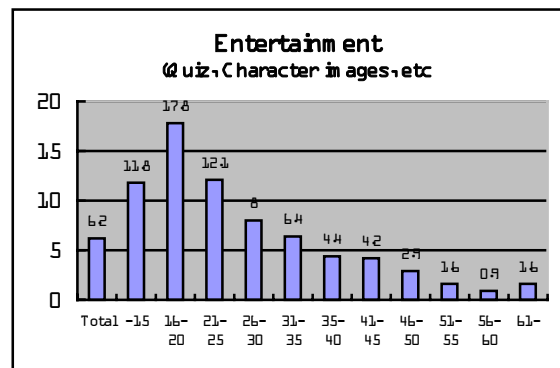
*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

- Idle Screens

Service Name: Entertainment (Quizzes, character images, etc)

Characteristic: Entertainment contents are used by young generations as well, with a peak of 17.8% for 16-20 year olds and going down to 0.9% for 56-60 years old, then increasing slightly again to 1.6% at 61 years or older.

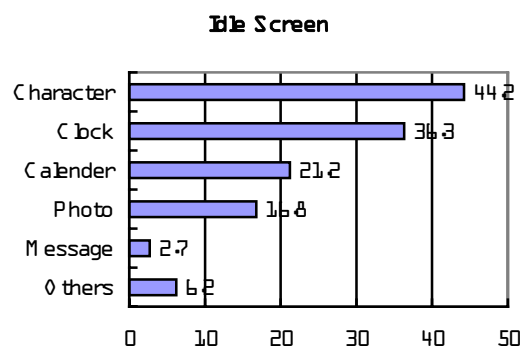


*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

Idle screens are the screens shown when phones are not used. Formely, it only showed a clock, battery meter, and connectivity, but with the development of i-mode, downloading your favorite picture became a standard act.

Today, not only images but motion pictures have also appeared since NTT DoCoMo's i-anime came out.



Ref: Fukui Chamber of Commerce & Industry

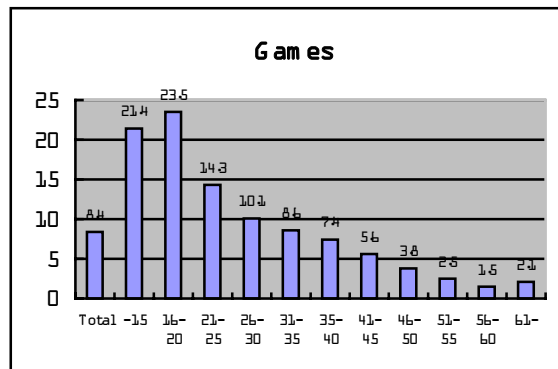
<http://www.fcci.or.jp/chousa/totteoki/ke-tai02/index.htm>

- Games

Service Name: Games

Characteristic: The pattern for games has a similar shape to ring tones and entertainment contents. Statistics for teenagers mark the highest score at 23.5%, and decreases as the age goes up. The one exception is again at the end, where 61 years or older has 2.1% users, while ages 56-60 only has 1.5%. Perhaps needs in entertainment arise again when people retire and have more time to spend using their gadgets.

Official sites: 90



*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

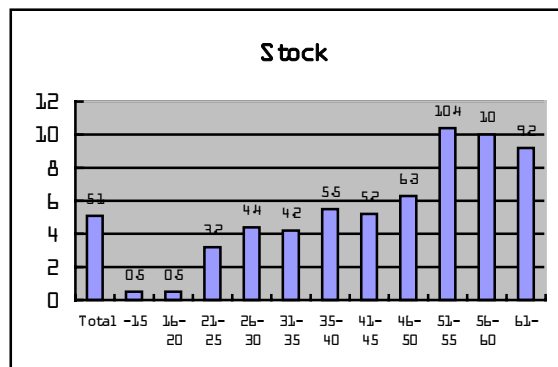
3. Information

- Stock

Service Name:

Stock exchange and price information services

Characteristic: Statistics for stock services goes with the age, and is especially popular among people in their 50's or older.



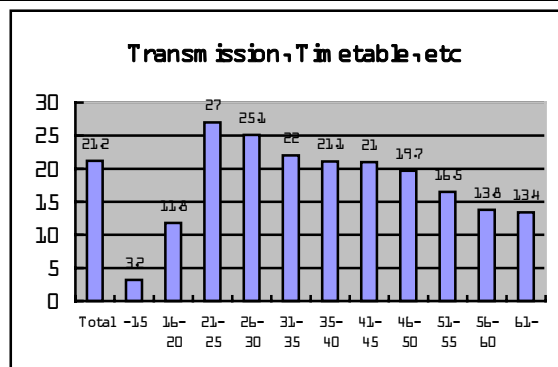
*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

- Timetable & Transmit

Service Name: Transmission, Timetable, etc.

Characteristic: Services concerning traffic information and timetables are used the most by ages 21-25 with 27%, which is the age of students or business men/women. These services are useful when moving in cities, especially to new places. Also, this comes in handy when finding out the last train.



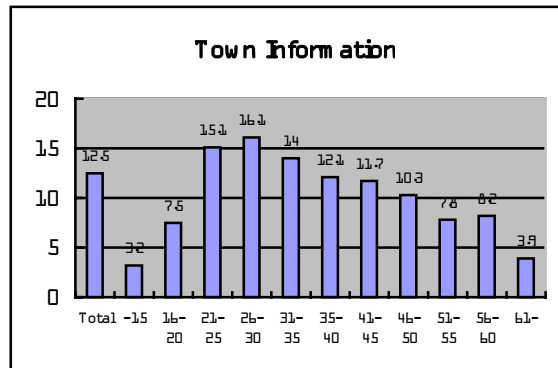
*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

- Town Information

Service Name: Town Information (Shops, etc.)

Characteristic: Statistics for town information services, providing information or enabling search on shops, restaurants and cafes, forms a hill shape with 26-30 years old as the peak with 16.1%. These services may be used by office ladies (OL), who like to look for trendy shops and cafes.



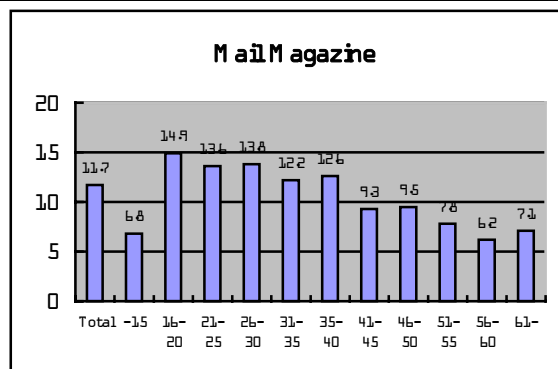
*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

- Mail Magazine

Service Name: Subscription to Mail Magazines

Characteristic: Subscriptions to mail magazines where around 10% for all ages, with a slight downhill from the younger age towards the elder. Contents for mail magazines can vary from news, sports, stocks, business, entertainment world, movies, daily fortune telling, music, etc.



*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

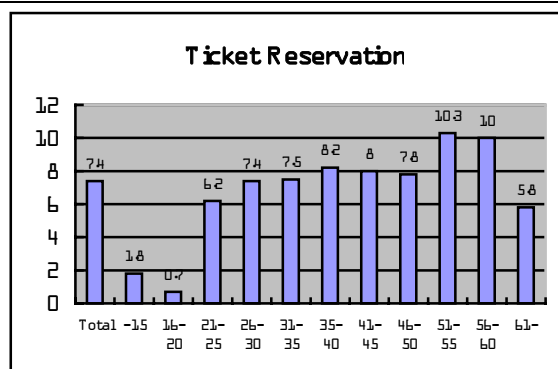
4. Transaction Support

- Tickets and Reservations

Service Name:

Ticket Reservation (Flight tickets, hotels, etc.)

Characteristic: Ticket reservation services are used among middle to older generations, with 10.3% for 51-55 year old being the highest. Reservable tickets include flights, trains, hotels, rental cars, sport games, concerts, etc.

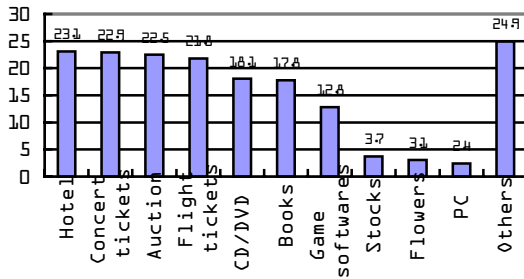


*Survey include non-mobile users

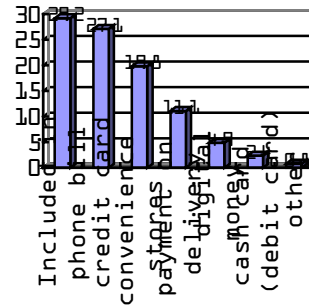
Ref: Nikkei NetBusiness 2002.1.10 25 p.40

Online shopping on mobile phones is a fairly new service, but usage has been gradually increasing. Unlike online shopping in normal computers, where food, computers, books & magazines, clothes are mostly purchased, sales through mobile online shopping are mostly online reservations for flight and train tickets, hotels.

Reservations and Purchases made by i-mode Users



Payment Method

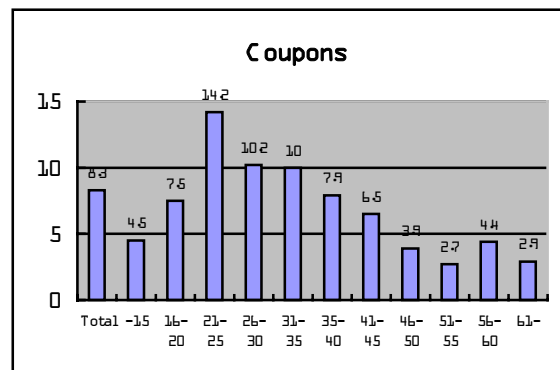


Ref: http://www.ecom.jp/press/20020312_1.html

● Discount Coupons

Service Name: Discount Coupons

Characteristic: Discount coupons, are services enabled by going to websites of shops or restaurants, and downloading a particular screen. When one shows the screen at the shops, a discount will be offered. This service is used the most by ages 21-25 with 14.2%, and forming a hill on both sides.



*Survey include non-mobile users

Ref: Nikkei NetBusiness 2002.1.10 25 p.40

Cmode

In April 2002, NTT DoCoMo, Coca Cola Japan and Itochu started its new customer service “Cmode”. By tying up i-mode with various vending machines, users are enabled to receive services such as cashless shopping, idle screen or ring tone downloads.

Experiments on Cmode services were held last year for 4 months from September to December around the Shibuya area of Tokyo. The 41 Cmode vending machines attained 20 thousand users, mainly young and female customers. Coca Cola plans to place 2000 Cmode vending machines by the end of this year.

To become a member, users register in the “Club Cmode” site in their i-mode menu. After prepaying at a Cmode machine, tickets can be bought online, and be sent as two-dimensional barcodes, which can be certified automatically.

Cmode enabled services so far include purchases for tickets for amusement parks, idle screens and ring tone contents, location services and other tickets or coupons.



NTT DoCoMo <http://www.nttdocomo.co.jp>

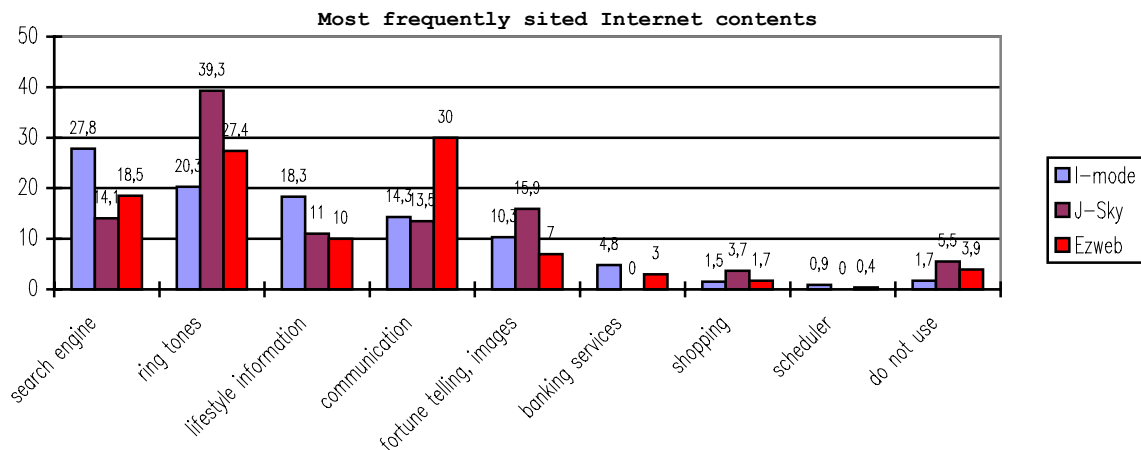
4.3. Characteristics in Contents by Carrier – i-mode/Ezweb/J-Sky

1. i-mode : Business tools

NTT DoCoMo announced 2, June 2002, that i-mode subscribers had topped 33 million users. Among them, 13.6 million (41%) has an i-apli enabled handset. DoCoMo says that more than 95% of i-mode users are active users that access the Internet more than once a month, and 78% are users who access the i-menu more than once a month. The market size for i-mode is approximately a 1 trillion Yen market per year, since the profit for a month in March was 80 billion Yen. This does not include material exchanges such as e-commerce sites to purchase books or clothes. This money comes purely from digital contents like ring tones and idle screens. It can be said that i-mode has the world's largest market in digital contents. The average membership site is now estimated to be about 2.5 per person.¹⁰

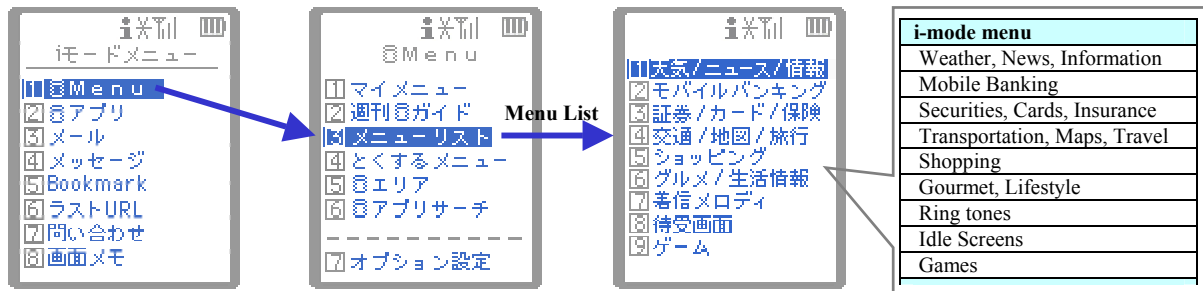
NTT DoCoMo not only has the largest number of subscribers, but also the widest range of users in age. Many middle or elderly aged generation are DoCoMo users. Therefore, the i-mode menu, DoCoMo's Internet services are information based, such as news, banking, etc. As can be seen in the graph "Most frequently used Internet contents", search engines and lifestyle information are much more referred to than the other two mobile IP users.

I-mode has currently more than 3000 official web sites, but many times more unofficial sites as well. Because DoCoMo is especially keen to keep their quality level at high standards, assessment for the official i-mode menu is severe and takes time.



Ref: http://www.goo.ne.jp/help/info/n_release/n_010216.html

DoCoMo's i-mode menu



¹⁰ http://www.zdnet.co.jp/mobile/0206/06/n_natuno.html

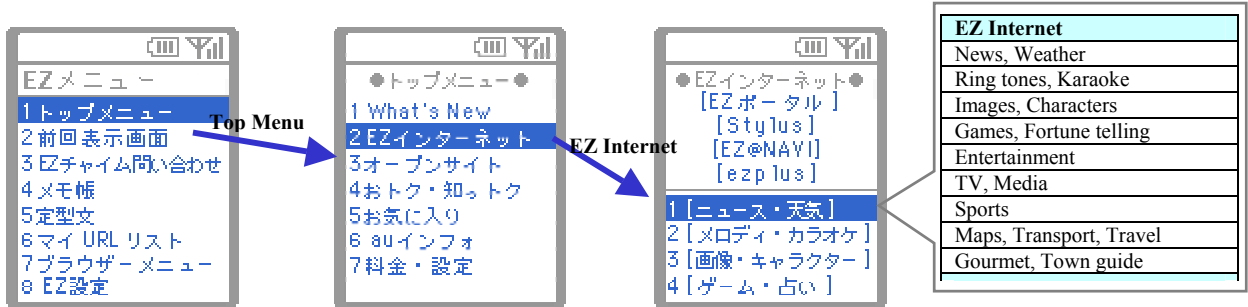
2. KDDI/au : Entertainment

KDDI/au's Ezweb contents is targeted mainly on the young generation. Since au started its "Gakuwari" service, which offers a 50% discount to students, au has become strong in younger generations. Therefore, au's Ezweb contents concentrate in entertainment topics popular among young generation, such as ring tone downloads or games. In the same graph, it can be seen that communication sites are visited the most by Ezweb users. These communication sites, often meet-a-mate sites, are popular among young generations.

	- 29 years old	30 years old -
i-mode	43□	57□
J-SKY	49□	51□
Ezweb	67□	33□

Sep., 2001 for i-mode and Ezweb, Jul., 2001 for J-Sky¹¹

Au's Ezweb menu



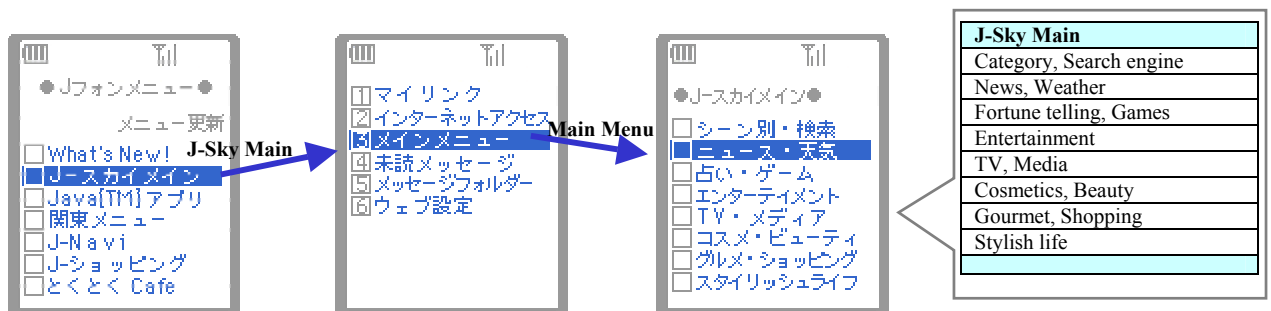
3. J-SKY : Female sites

J-phone is strong in the women's market. J-sky is the only mobile Internet provider where more than half the users are female. Therefore, J-Sky provides more contents targeted towards young women, such as fortune telling, cosmetics, beauty, and shopping. Popular sites are ring tones and images download sites.

	Men	Women
i-mode	58□	42□
J-SKY	49□	51□
Ezweb	63□	37□

Sep., 2001 for i-mode and Ezweb, Jul., 2001 for J-Sky¹²

J-Phone's J-Sky menu



4.4. Digital Camera

	NTT DoCoMo	KDDI	J-Phone
Service Name	i-shot		Sha-mail
Service Launch	June, 2002	April, 2002	Nov., 2000
Variation of Handsets	2	8	20

¹¹ http://www.altovision.co.jp/report/report007_1.htm

¹² http://www.altovision.co.jp/report/report007_1.htm

The hit product in the mobile phone market last year was definitely mobile camera phones, or „Sha-mail“ (picture messaging service) of J-Phone. J-Phone first introduced its camera equipped mobile phone in November, 2000, and started the „Sha-mail“ service in June, 2001. Users increased at a steady speed and in March, 2002, J-phone exceeded the number of au subscribers to become the second largest vendor in Japan (however au has recovered again now, since its 3G phones have appeared).

Recently, J-Phone announced that the number of „Sha-mail“ units topped 6 million units as of 9, August 2002. Now the number of „Sha-mail“ users account to 47% of J-Phone’s total subscriber base.

While J-Phone leads the market with a lineup of 20 different types of „Sha-mail“ equipped handsets, au and DoCoMo have also started services in mobile camera phones this year. au introduced its first handsets in April, and DoCoMo in June. Not only pictures can be sent, but motion pictures as well.

Pictures are often not sent but only stored in one’s mobile phone to look at. 10% of taken pictures are sent by mail, and approximately half the users send Sha-mails more than twice a week¹³.

4.5. Location Services

	NTT DoCoMo	KDDI	J-Phone
Service Name	i-area	eznavigation	Station
Service Launch	July 2001	December 2001 (July 2000 for	April 2001 (Area limited service October 2000)
System Specifics Public Release	Feb., 2002	-	Jan., 2002
Transmission method	PDC Packet	cdmaOne Packet	PDC
Service fee	Free	Free	100 Yen/month

1. NTT DoCoMo: i-area / J-Phone: Station

i-area is i-mode’s location service launched June 2001. It enables users to search weather information, maps and restaurants in the surrounding area, cost free. Unlike the GPS services, location information does not have high accuracy. NTT DoCoMo announced that there are 400 thousand access per day for location service compatible contents.

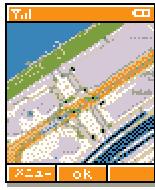
2. KDDI: eznavigation

KDDI’s location service, eznavigation uses the gpsOne technology developed by Qualcomm. GpsOne can achieve location within 10 – 20 meter error. However so far, it takes approximately 10 seconds to attain the location information.

¹³ http://www.zdnet.co.jp/mobile/0207/31/n_hisyatai.html

Examples of eznavigation services

EZ@NAVI



KDDI's original service, that locates your current point on map. The map can be scrolled or zoomed in and out. This map can also be sent to friends via e-mail or used for train transmits at stations.

[Fee 210 Yen/month, by KDDI]

HELP Net



Emergency call service that connects to the nearest police, fire, coast department by locating current location by GPS.

[Fee 315 Yen/month]

Seaman



With the „Chika-tomo“ search system, one can search for friends listed on their seaman list, and see who is currently nearby and how near. Schedule and mailing list services are provided as well.

[Fee 315 Yen/month, by MTI/Vivarium]

GPS Character MAP



A make-your-original map service by placing characters and icons on the map. Area limited idle screens and original characters can be downloaded from specific areas.

[Fee 210 Yen/month, by Bandai Networks]

KDDI: http://www.au.kddi.com/ezweb/eznavi/index_h.html

4.6. Local range Wireless Communication – Bluetooth and IrDA

1. Bluetooth

„Bluetooth“ is a short-distance wireless communication technology, founded by Ericsson, Nokia, Toshiba, Intel, and IBM. The technology uses the 2.4 GHz frequency band with network speed of 1 Mbps within distance of 10m. Bluetooth enables data synchronization between PC and its surrounding devices such as printers, PDA, car navigation, audio players, projectors, and also mobile phones.

The first (and so far only) mobile phone handsets with bluetooth chips, „C413S“ made by Sony came out from KDDI in May, 2001. Data that could be transmitted between the same KDDI's handsets were address books, schedule, profile, task list, and specific games. Transmissions with PCs were access to the Internet via mobile phones, address books, profile, and images (only from PC to phone). NTT DoCoMo also released a PHS handset with the chips in November 2001.

Skyley Networks, Inc.¹⁴ a venture company founded July 2001 is intense in producing P to P service using bluetooth techniques. They have already released “DECENTRA”, a middle ware for wireless transmission.

However on the whole, bluetooth is not making a great success. Companies that have expressed intention of developing Bluetooth products total 2100, but only 531 have been released, as of March 2002. One reason may be because of the complicated and costly procedure companies must go through when in making bluetooth products. This expensive “Qualification Program” is laid down by the Bluetooth SIG(Special Interest Group).

Also, not having many bluetooth products yet in the market can be a critical problem, because the point of bluetooth is to connect more than two devices with bluetooth chips.

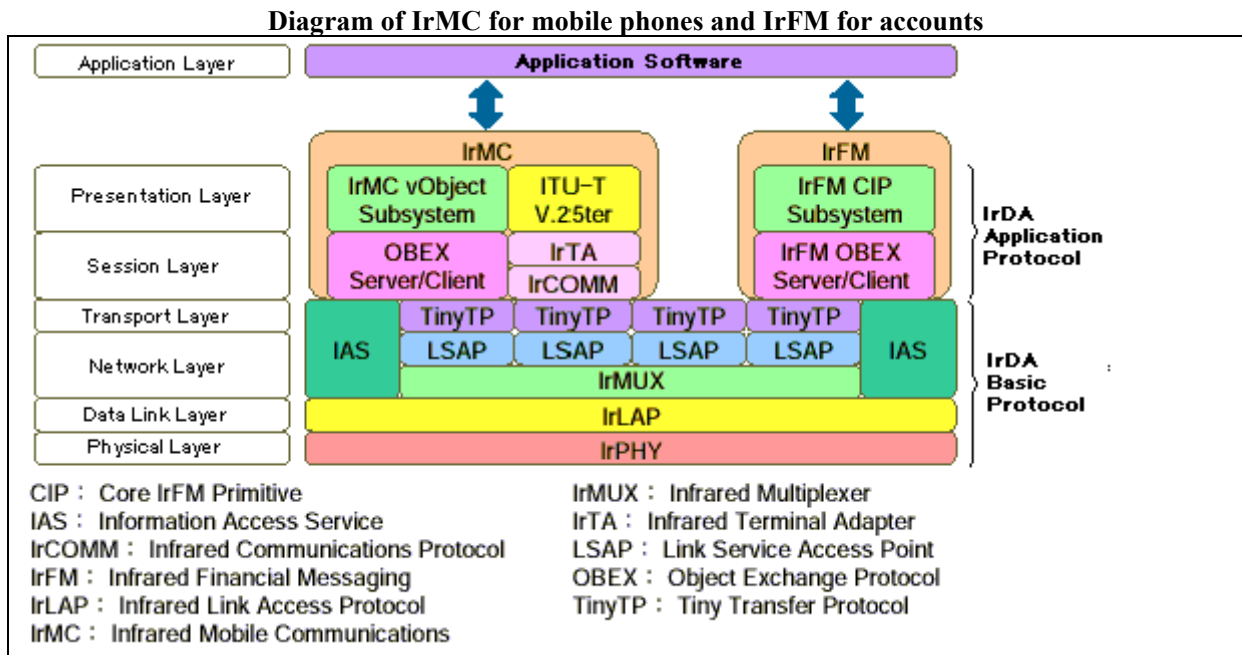


Skyley's P to P terminal

¹⁴ <http://www.skyley.com/>

2. IrDA

In contrast with bluetooth, the Infrared Data Association (IrDA) is attracting attention once again as the local networking standard. Transceiver costs are cheap and the low transmission speed of 115 KBps will not be a big problem as long as music or motion contents are not transmitted. NTT DoCoMo's "Mova 504i series" were released in May 2002 with the IrDA, with "IrMC" for its profile. In two months it had sold 1.5 million handsets. Already put in practical use are data transfer for fortune telling games and membership recognition for shops. Receipts, coupons, point cards, prepaid cards, and cash cards are also currently under development. In the future, DoCoMo wishes to use IrDA techniques for credit cards and public certificates. KDDI will also release a handset with "IrFM" aiming online payment and financial data transmissions this fall.



Ref: Nikkei Electronics 2002.8.26

4.7. JAVA

	NTT DoCoMo	KDDI	J-Phone
Java Service Name	i-apli	ezplus	Java apli
Service Launch Date	26 Jan., 2001	July, 2001	June, 2001
JAR Size	30 KB	50 KB	30 KB

In 2001, each carrier competed to release Java handsets. Because of its small capacity of 30 to 50 KB, only simple programs such as games and graphs of stock information could be made, but with the release of 3rd generation phones, the possibilities have arisen.

K Laboratory Co., Ltd (K-Lab)¹⁵, is the leading company of mobile phone Java software. In June 2000, K-Lab presented the world's first Java application on mobile phones. Today, they hold various applications from entertainment applications, including games, ring tone downloads, and fortunetellers, to more practical tools, such as maps and weather forecasts. This year in June, K-Lab was awarded the BREW Award as KDDI's "Carrier's Choice" at QUALCOMM's BREW 2002 Developers Conference in San Diego, USA. The award was in recognition of K Lab's 'Kyara Komyu', an instant messenger communication application for KDDI's service. K-Lab also developed "K-tai FLASH", which enables FLASH to move on mobile phone screens.

CdmaOne has also adapted BREW, developed by America's Qualcomm. While the Japanese Java services operate on HTTP, the protocol for WWW services, BREW operates on a layer below – TCP/IP. Therefore, developers have more freedom in the applications they make. Also, BREW is paid attention for its fast motion.

¹⁵ <http://www.klab.org/>

Examples of i-apli sites

icon♥Datingbook



A romance simulation game. Users can send messages and trade profiles via the Internet.

[Fee 300 Yen/month]

Dwango7



Various genre of games can be downloaded from this site, from net RPG, quiz games, shooting, etc.

[Fee 300 Yen/month]

DLJ Direct



Charts of stocks (daily, weekly, monthly) and real time market prices can be easily checked.

[Fee free]

“Ugoku-ID”



A “make your original idle screen” service. The typed text, for instance one’s name or initial comes out as an animation.

[Fee 200 Yen/month]

NTT DoCoMo: http://www.nttdocomo.co.jp/p_s/imode/corp/pdf/iappli.pdf

4.8. 3G Mobile Phone

In October 2001, NTT DoCoMo launched the worlds’ first service of IMT-2000, the third generation mobile communications system (3G). The two other majoring mobile phone career companies follow, with KDDI already starting its service in April 2002, J-Phone planning to begin this December.

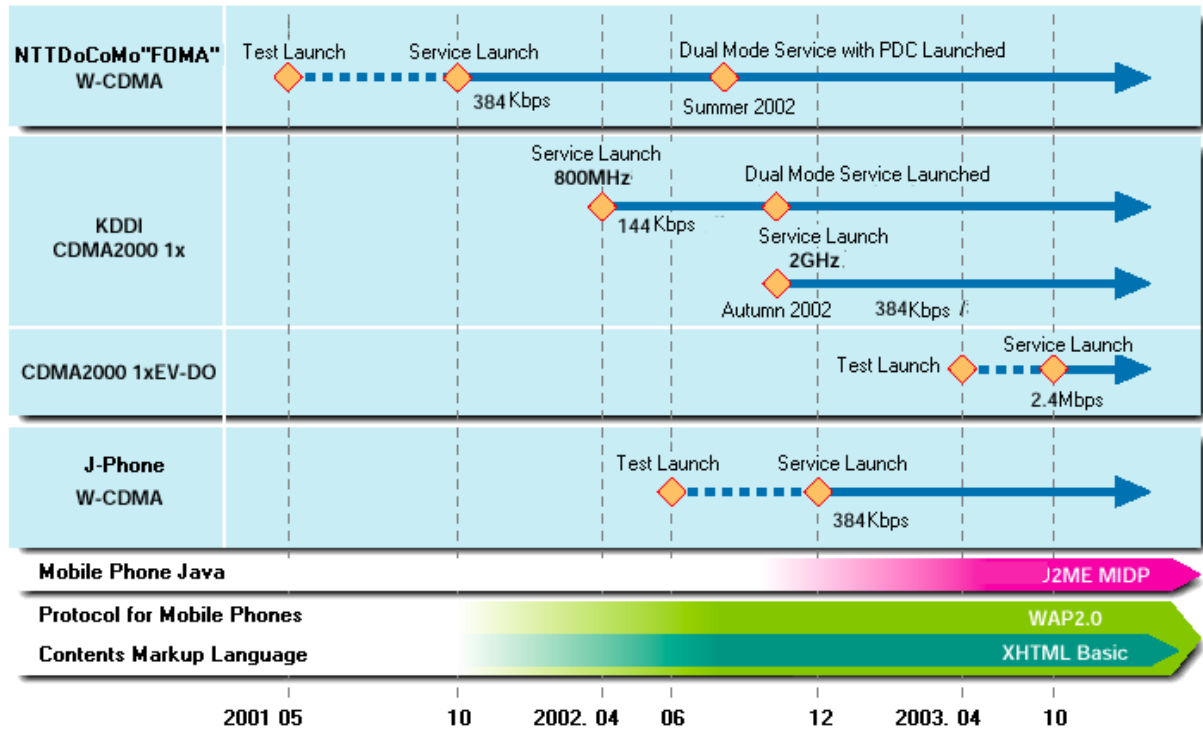
FOMA, NTT DoCoMo’s 3G service subscribers have not increased at the anticipated rate. When the service was started, the company expected the number of subscribers to reach 150,000 by the end of March 2002, but in actuality, the number was only about 90,000.

In contrast, KDDI is making an excellent start, outnumbering DoCoMo by nearly ten times many subscribers in three months since its launch of "CDMA 2000 1x" service this April. In one month, KDDI achieved 330,000 subscribers, 1,000,000 in three months, and currently 2,142,100 as of the end of August. More impressive is that 400,000 of the 1 million at three months were new subscribers, not customers upgrading from KDDI’s existing service.

There are several factors for this success, according to Paul Kallender’s article, “KDDI Makes Wave With 1X”¹⁶. One advantage is the number of handsets available – six in total, compared to the three available for FOMA subscribers. The GPS capabilities and camera equipped handsets may have helped greatly too. Also, the 1xRTT service is already available in 43 municipalities in Japan, is backwards compatible with KDDI’s 2G service, cdmaOne, and is planned to reach 90 percent population coverage by the end of this year.

¹⁶ http://www.unstrung.com/document.asp?doc_id=17811

Movement in the 3G Services of Japan



Ref: Nikkei Internet Technology 2002.8 p.38

Examples of i-motion sites

Asahi, Nikkan Sports



Asahi and Nikkan Sports, the major mass media industries in Japan, report on update news and interviews using motion pictures and text. [100 Yen/month]

WNI Weather Information



Reports tomorrow's weather feature with realistic images and an analysis from the weather forecaster. [partially 100 Yen/month]

Kara X



Motion pictures of video clips from famous artists to indies. [Free (partially 200 Yen)]

Golf PAR72



Golf lessons from mobile phones. Motion pictures of swings for image training with one point advices. [Free (partially 200 Yen)]

NTT DoCoMo: http://www.nttdocomo.co.jp/p_s/imode/im/contents/

5. Reference Data

	History
1979.12	Car telephone started
1985.9	Shoulder Phones started
1987.4	Mobile Phones started
1995	PHS Service started

1997.7	Location services for PHS started
1998.11	E-mail services started (J-Phone)
1999.1	PHS usage in hospitals started
1999.2	Mobile Internet services started (NTT DoCoMo)
1999.4	cdmaOne service started (KDDI)
1999.12	Mobile phones with colorLCD released (NTT DoCoMo)
2000.3	Satellite phone service ended
2000.5	Mobile phones with „Bluetooth“ functions released (KDDI)
2000.7	Location service started (KDDI)
2000.11	Digital camera phones (J-Phone) Audio functioned phones (KDDI)
2001.8	Experiment for Japan's first account settlement mobile commerce service (KDDI)
2001.10	3G FOMA (NTT DoCoMo)
2002.4	Shopping credit service experiment (KDDI etc.)