View on Evolution of Mobile-Phone Usage

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Yutaka Yasuda, Dr. Eng.

General Manager
Service Development Department
au Strategic Business Planning Division
KDDI Corporation
1. Mobile Communication Service Growing
Increase of Mobile Handset Subscribers Accessible to Internet

January, 2003
- i-mode: 36.6 million
- EZweb: 12.0 million
- J-SKY: 11.7 million

Total: 60.2 million
(Total Mobile Phone Subscribers: 73.9 million)

Telecommunications Carriers Association
Evolution of Data Transmission Rate and Prospect

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<th>28.8kbps</th>
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- 2.4kbps, 9.6kbps, 28.8kbps: Initial transmission rates
- 64kbps: Deployment of packet service
- 128kbps: Faster 2Mbps
- 144kbps: CDMA 2000 1X
- 384kbps (FOMA): 2Mbps
- Maximum: 2.4Mbps
Macro Trends of the Mobile Handset Market

Total Subscribers (10 thousands)

+ New Market (Business, Cars, etc.)

Consumer Market

Module Multimedia

Movie

Picture

Text Data

Fiscal Year

Text Data

Picture

Movie

Module Multimedia

Consumer Market

+ New Market (Business, Cars, etc.)
Concept: Car connected to the Internet

Internet ITS

Ubiquitous Network

Traffic Info
Location of a Friend
Providing a Photo
Providing Music
Sales Information
Marketing Research
Surveys on Accidents
Exchanging Information with Other Cars
Satellite Office
Exchanging Information on hobbies

Wiress LAN
DSRC
PHS
FTTH
ADSL
PDA

KAZAKHSTAN
INDIA
NEPAL
BANGLADESH
BURMA
THAILAND
LAOS
VIETNAM
NORTH KOREA
KOREA
SOUTH JAPAN
AFG.
RUSSIA
KIRGHIZIA
TAJIKISTAN
MAINLAND CHINA
MONGOLIA
TAIWAN
SOUTH CHINA SEA
BAY OF BENGAL
PEKING
SHANGHAI
CANTON
TAIPEI

Great Wall
Capital Cities

0 100 200 300 400 500 KM
0 100 200 300 400 500 MI
Handset Market Trend - From a Growth in Quantity to Growth in Quality

Handset Evolution (The Three Trends)

- Remote Control
- Remote Monitoring
  (Conversion of Camera and Communication)

- Utilizing Location Information

- Substitute for Wallet/Commuting Pass

Privacy Countermeasures

- Movie Submission from a Handset
  - Remote Control Using a Handset
  - Remote Control

Core Functions in the Ubiquitous Environment

- Car Navigation
- Man Navigation

- Management of Personnel, Products and Vehicles

Security Countermeasures

- Mobile Commerce

- Personal Identification
- Attribute Identification
**ezmonitor** (Trial Service)

- Remote video monitor application using ezmoive
- Uploads an image from a fixed point observation camera
- An ubiquitous monitoring is possible through ezmovie handsets
- Fit for monitoring nurseries, home, pets, offices, etc.

**Example**

Fixed Point Camera Image Providing System “ezmonitor”

Vacant Home

USB Camera

PC + ezmonitor uploader software

ADSL etc.

Internet

ezmonitor server

[Hardware+ Software]

CDMA2000/1X Base Station

Outdoor

ezmovie handset
Outdoor, Indoor, Underground...
wherever one may be, a user can receive service from a location information acquirable depending on one's present location.

Network Base  GPS

Urban Environment  Rural Environment

Indoor measurement technology
Example
Handset as a Substitute For a Wallet

Certification Authority (CA)
Settlement Institution
Internet
Authorization
Electronic Settlement
E-Commerce
Provides Digital Certificate

Virtual Shop

UI M Card
- Communication Security
- IC Card Application

Deployment for Virtual usage

* Local Interface
(Bluetooth, IrDA, Contactless IC, Bar Code)

Vending Machine
POS Register
Traffic Facility
Multimedia Kiosk

Deployment for Real usage
2. Deployment of the Seamless Service of Fixed and Mobile (FMC)

-Collaboration with Communication and Broadcast-
Roadmap for Providing Seamless Service

Fixed (Broadband Internet)

Wireless (Hot Spot, FWA)

Cellular (3G System, etc.)

Digital Broadcast (BS/CS, Terrestrial, CATV)

Deployment of Individual Service

FMC (Fixed Mobile Convergence)

Integration of Communication and Mobile

Genuine Ubiquitous Broadband Era
Collaboration of Communication and Broadcast Through Mobile Handset

Attachment of the broadcast receiver function

**Broadcast (Digitalization)**
- Land digital broadcast
- S-band broadcast
- BS/CS broadcast
- AM/FM radio

**Collaboration**

**Communication**
- (faster, multi-function, smaller)

**Attachment of the communication module**
- (Mobile handset, Wireless LAN)

**Collaboration of Communication and Broadcast Through Mobile Handset**

- Mobile Handset
  - PC
  - PDA
  - Digital Camera
  - Watch
- Car Navigation
- Car Radio
- Car TV
- TV
- STB
- Digital AV Equipment
- Personal mobile handset
- Mobile communication
- Fixed communication
Ubiquitous Services

- Internet Car Navigation
- Emergency Notice Service
- Downloaded Audio
- Digital Radio
- Driving Assistance

- Delivery Monitoring
- Remote Repairing

In-Vehicle Network
- Internet Car Navigation
- Emergency Notice Service
- Downloaded Audio
- Digital Radio
- Driving Assistance

In-Office Network
- SFA
- Household Security Confirmation for the Elders
- Internet Refrigerator
- Game of Network Match-Up
- In-House EC

Indoor Network
- ITS
- Schedule
- Electrical Memo
- Electrical Newspaper
- SOHO
- B to C
- Information Link between Mobile Phone and Car Navigation

Theft Notice

ITS Car Multi Media for Consumers

KDDI Proprietary Information
Variety of functions are realized through a cellular handset in a ubiquitous gateway.
3. Usage Examples of the Mobile Handset in The Future
I'm gonna take a movie of Washington D.C. and mail the image to my boyfriend!

Oh, an E-mail from my girlfriend traveling in USA! Wow! It’s a movie!

Send Photo/Movie in place of a postcard!

Photos and movies taken abroad will be able to be sent to other handsets and PCs by attaching the file to the E-mail!
Future Cultural Exchange
Using the Mobile Handset

Attached is the photo of Fuji-San.

You can send E-mail...
You can directly talk to them...
Automatic translation function enables you to communicate with friends all over the world!
School Newspaper Using the GPS Handset

Sends the photo with location information attached from the GPS handset

Digital map
Newspaper

< Editor >
Aroma Communication
(+ Voice Guidance)

by adding “aroma” to the communication, it is more easier to communicate one’s feelings and emphasize one’s presence.

Tonight’s supper is curry rice! Come back home!

E-mail from your Mommy!

“Tonight’s supper is curry rice! Come back home!”

You can smell it! Push the button!

The smell of the curry made me hungry, and I’m going home now!
Communications With Animals

**Example 1**

I'm not working overtime today.

I'm lonely and I'm hungry. I want someone back home...

**Example 2**

John is mad at something. What is it?

Oh no, a crook in the house. I must call the police!

**Example 3**

Pochi is in the park.

Where am I? How do I get back home? Mommy!

I'll buy something good and go back soon.

I'm feeling good today. I want everyone to come back home early!

Bow! Bow! Bow!

If one could understand the dog's feelings...

Communications With Animals

Example 3

Example 1

Example 2
Designing The Future

The End