



# i-MODE

mobile internet service

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## **About the Tutorial**

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NTT DoCoMo's i-mode is a mobile internet service popular in Japan. i-Mode was invented by a team led by Mari Matsunaga in February 1999 at NTT DoCoMo.

This tutorial explains the basic concepts and applications of i-Mode.

## **Audience**

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This tutorial is designed for those who would like to understand the basics of i-Mode in simple and easy steps.

## **Prerequisites**

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Before proceeding with this tutorial, you should have a basic understanding of the terms used in Networks and Telecom domain.

## **Disclaimer & Copyright**

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# 1. I-MODE – INTRODUCTION

**i-Mode** stands for Internet Mode is a microbrowser technology that supports text, graphics, audio, and video for Web access over the Japanese cellular network. It was introduced by a team led by Mari Matsunaga in February 1999 at **NTT DoCoMo**. Fortune Magazine recently selected Mari Matsunaga as one of the most powerful women in business in Japan.

i-Mode is one of the most successful services offering wireless web browsing and e-mail services from mobile phones in Japan.

i-Mode provides packet-data transmission, which enables operators to charge their customers according to the volume of data transmitted and users do not pay for the time they are connected to a website or service.

Transmission between the handhelds and the i-Mode-enabled cell sites is via packet mode, using packets of 128 octets at high-speed data transmission rates.

i-Mode customer base is increasing exponentially every day in the whole world and is being provided worldwide through DoCoMo's partners through a licensing scheme.

The current i-Mode center is called **CIRCUS** in DoCoMo's Kawasaki office and the operation support system is called **CARNIVAL**, which is hosted in the Toranomom JT Building.

There are DoCoMo's competitors in the market who launched very similar mobile data services: KDDI launched EZweb, and J-Phone launched J-Sky etc.

## i-Mode History

Year	Milestone
Feb. 1999	i-mode service launched
Dec. 1999	i-mode compatible handsets with color screens are marketed
Jan. 2001	i-appli service launched
Jul. 2001	i-area service launched
Nov. 2001	i-motion service launched
Jun. 2002	i-shot service launched
Jan. 2003	i-motion mail service launched
Jul. 2004	"Osaifu-Keitai" service launched
Sep. 2005	i-channel service launched
Nov. 2005	"ToruCa" info-capture function offering started
Dec. 2005	"iD" credit card brand launched
Apr. 2006	"DCMX" mobile credit services launched
Oct. 2006	keyword search service for i-mode launched

## 2. I-MODE – BASIC CONCEPTS

i-Mode phones have a special i-mode button for the user to access the start menu. There are plenty of official websites, which are linked to DoCoMo's i-mode portal page and DoCoMo's billing services.

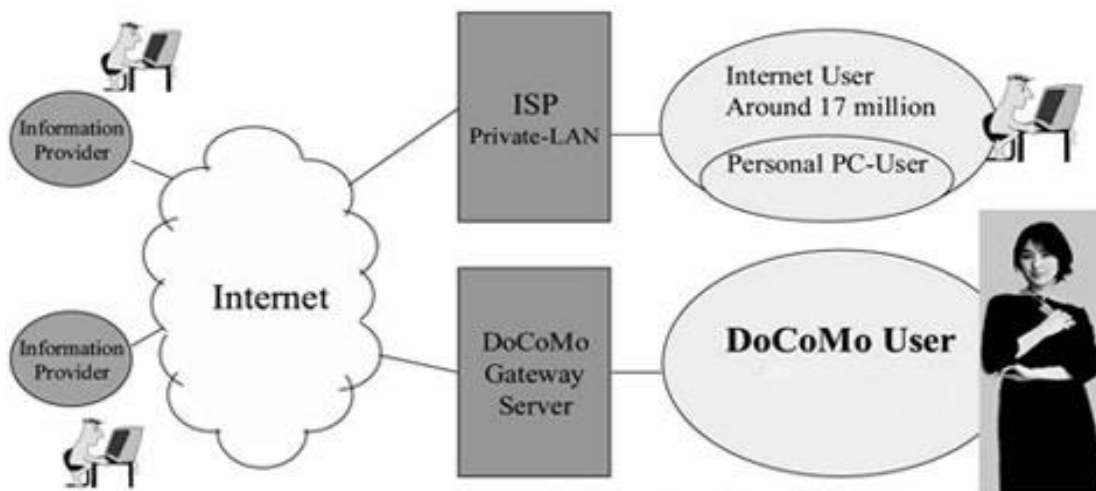
i-mode users pay for both sent and received data. There are operators, who are charging their customers with additional charges on a monthly subscription basis for premium services.

NTT DoCoMo takes care of all the contents and operations of all official i-mode sites, most of which are commercial. These official sites are accessed through DoCoMo's i-mode menu, but in many cases, official sites can also be accessed from mobile phones by typing the URL or through the use of QR code (a barcode).

There are essentially four main components that are required for the i-Mode service. They are as follows:

- A cellular phone capable of voice and packet communication and with a browser installed.
- A packet network.
- An i-mode server.
- Information providers.

The following picture depicts a very broad overview of i-mode concept:



(source: MPT of Japan).

# 3. I-MODE – USING CHTML

In consideration of the inherently limited bandwidth of the cellular network, i-Mode employs Compact HTML (C-HTML), a simplified version of HTML similar to Wireless Markup Language (WML) used in WAP networks and as well as DoCoMo proprietary protocols ALP (HTTP) and TLP (TCP, UDP).

i-Mode-compatible HTML websites are easy to navigate since all basic operations can be performed using a combination of four buttons, cursor forward, cursor backward, select, and back (return to previous page).

There are functions that require two-dimensional navigation such as image maps and functions that require more intensive processing such as frames and tables are not included in the standard i-Mode HTML specifications.

i-Mode-compatible HTML provides extended tags for special use on cell phones such as the 'tel:' tag, which is used to hyperlink a telephone number and let users initiate a call by clicking on a link.

Following major features of HTML have not been included in i-Mode compatible HTML, i.e., cHTML:

- Background colors and images
- Frames
- Image maps
- JPEG images
- Multiple character fonts and styles
- Style sheets
- Tables

cHTML compliance hardware includes:

- **Small memory:** 128-512Kbytes RAM, and 512K-1Mbytes ROM.
- **Low power CPU:** 1-10 MIPS class CPU for embedded systems.
- **Small display:** 50x30 dots, 100x72 dots, and 150x100 dots.
- **Restricted colors:** mono-color (black and white).
- **Restricted character fonts:** only single font.
- **Restricted input method:** several control buttons and number buttons (0-9).

i-Mode supports 256 color GIF files. In addition, only images in GIF 87, 87a, and 89a formats can be used. The maximum size of a GIF image should be 94 x 72 dots.

The World Wide Web Consortium ([www.w3.org](http://www.w3.org)) contains a complete listing of the cHTML tags available to developers. Also, you can visit the NTT DoCoMo site at [www.nttdocomo/ser2.htm](http://www.nttdocomo/ser2.htm) for an outline of cHTML tags available to developers.

There are millions of HTML-based content resources, various software tools, and public materials, which can be used to develop i-Mode applications.

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