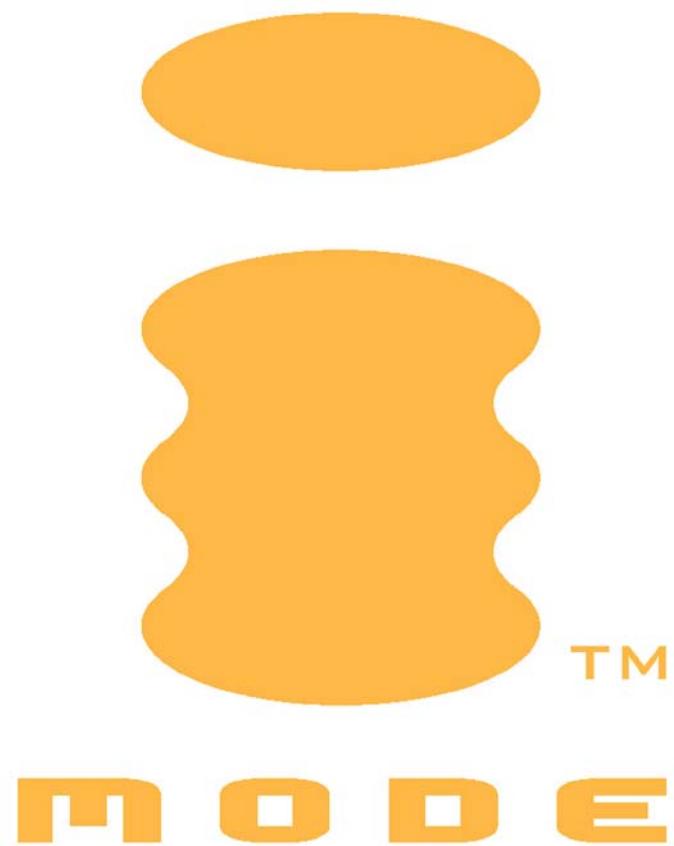


How to create an i-mode site



Version 1.3 – 18-11-2002



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Introduction

This document describes the steps necessary to build your own i-mode website. Building an i-mode site is easy. Just create a website that uses Compact HTML (cHTML) and publish your site on the internet. This document helps you develop your own i-mode site by presenting the topics you should be aware of when developing for a mobile device and contains a cHTML tag reference.

Audience

The audience for this document is anyone who wants to build an i-mode site. It is assumed this person has a basic understanding of HTML and the HTTP protocol and other internet related technologies.

Layout of this document

First some considerations are mentioned when developing an i-mode site. Next, the cHTML tag reference is presented. The document concludes with a few appendices.

Document revision history

Below is the revision history of this document:

Version	Date	Author	Comments
1.0	03-04-2002	JvV	Initial release
1.1	11-04-2002	JvV	Added revision history; added Tips & Tricks; i-mode branded; added chapter about character entities; fixed typos
1.2	23-07-2002	JvV	Added email and telbook attributes for A tag; Added web server error messages; Updated comments about XHTML compatibility; Added TABLE, TD and TR Tags; Added My First i-mode site chapter; Fixed small typos and style errors; Added PDF hyperlinks; Added Accept-Language HTTP Header section; Added Tag Comparison Chart; Added Mail chapter; Added Handset comparison
1.3	18-11-2002	JvV	Clarified use of Accept HTTP header for different NEC N21i software versions; added additional NEC N21i User Agent; added NEC N22i specifications; added istyle overview; added "Period Expired" explanation



What is i-mode?

From a mobile phone used only for talking to a mobile phone you can actually use, i-mode has changed the fundamentals of mobile phone use. With an i-mode phone, you can get information from i-mode sites and Internet sites that are i-mode compatible, and you can exchange i-mode mail. Simple operation, inexpensive charges and no longer only in Japan, but also available in Europe. KPN Mobile has started with i-mode in Germany (E-Plus), The Netherlands and Belgium (Base) in the first half of 2002.

Every country has an i-mode portal that lists sites of official content providers. However, you can also create an i-mode site without becoming an official KPN partner. Any site on the internet, written in cHTML can be viewed on an i-mode handset.

The cHTML specification has been submitted to the World Wide Web Consortium (W3C) and can be found at <http://www.w3.org/TR/1998/NOTE-compactHTML-19980209>.



My first i-mode site

So you want to create your own i-mode site? Let's start with the obligatory "Hello, i-mode" example:

```
<html>
<head>
<title>Hello, i-mode</title>
</head>
<body>
Hello, i-mode
</body>
</html>
```

Put this page (imode.html) on a website where you can upload files to. If you have an account with a Dutch ISP, you can put these files in a location like <http://www.isp.nl/~yourlogin/imode.html>. Consult your ISP how to upload files to your personal website and which URLs you can use.

Next, enter the URL of the page you have just uploaded in your handset. Your first i-mode page is now visible on your handset.

Adding links

Let's add a link from one page to the other:

page1.html

```
<html>
<head>
<title>Page 2</title>
</head>
<body>
<p>Page 2</p>
<p>&#59106; <a href="imode.html" accesskey="1">home</a></p>
</body>
</html>
```

If you now access page1.html on your site from your handset, you'll see a link back to the page you created in the previous section. You can press the [1] key to navigate this link, or select the link and click "select". The accesskey attribute of the A tag indicates the key to press to follow the link. There is also an emoji icon in front of the link to indicate that you can follow this link with the [1] key. Emoji icons are a great way to enhance your page without using graphics. For a complete list refer to Appendix 2: Emoji icons.

Adding images

Adding images is just like on a normal web page. The only difference is that the handset only supports GIF images. So if you have JPEG photos you need to convert these first. There are very many tools that can do that for you, e.g.



Adobe Photoshop on Windows and Mac; PaintShop Pro and ULead PhotoExpress on Windows; ImageMagick on Unix.

```
<html>
<head>
<title>Image</title>
</head>
<body>
<p>Download image</p>
<p><a href="fullimage.gif"></a></p>
</body>
</html>
```

Pages can be no more than 10kB in size, both HTML and images. Note the maximum screen sizes of the handsets, refer to Screen size on page 9.

Sending e-mail

If you want to send mail from an i-mode site, just use the example in the Tips & Tricks: Sending mail section.

Receiving e-mail

Every i-mode handset comes with an @imail.nl e-mail address. Sending an e-mail to this address (and keeping it less than 1000 characters and without attachments) is easy. Make sure that you send a plain text and not an HTML or RTF formatted mail message (as most mail programs do automatically). If you want to add hyperlinks in this mail, this is possible as long as you use the full format (start with "http://"). Adding hyperlinks is the only way to send (a link to) an image, as image attachments are not supported. Note that there's a limit of 75 characters that will be recognized as a URL in a mail message.

Debugging i-mode sites through the Internet

It is not very convenient to debug a site with a mobile handset. If you want to check the HTML that you've written or that is generated by a CGI script, you might want to start-up your favorite browser, like Microsoft Internet Explorer, Netscape or Opera to view the site in your browser. Now you have the ability to view the source of the (generated) HTML. However, emoji icons are not rendered by your browser, but will show a square instead. Additionally, normal browsers do not support i-mode specific attributes like the cti, email and telbook attributes of the A tag, and the accesskey attribute of the A, INPUT and TEXTAREA tags. Also, font sizes and colors are different, but it will still give you an idea of how the page will be rendered in your handset or why it doesn't do it the way you like it to be.



Considerations

Developing an i-mode site is easy. However, it is not the same as developing a site for the World-Wide Web. When creating an i-mode website, you might want to take the following into account:

An i-mode handset has

- A small screen
- Limited colors
- Limited memory
- Limited navigational options

The above items indicate that you should carefully consider how you develop your i-mode site.

Screen size

Below is a table with minimal and typical handset screen sizes:

Display	Minimal (pixels)	Typical (pixels)
Display area	120 x 128	120 x 160
Welcome, Goodbye and screensaver size ¹	< 120 x 128	120 x 130
Idle screen size (includes network information)	< 120 x 128	120 x 110

Fonts

Most handsets have only one single 6 x 12 pixels proportional font. This results in 10 (double-byte) to 20 (single-byte) characters on 7 to 9 lines. Hence bold, italic and headings cannot be used on an average handset. The character set available in the handset is Windows codepage 1252.

An i-mode handset contains a set of emoji characters, which are small icons (12 x 12 pixels) that can be used to enhance your i-mode site, without using graphics (and a lot of additional bandwidth). A complete list of all emoji icons is presented in Appendix 2: Emoji icons.

Color support

One of the key differences with older mobile phones is of course the support of color screens. Current i-mode handsets support 256 colors, but future handsets might support more (4096 colors). A complete list of all supported colors can be found in Appendix 1: Color palette. Note that this palette is not the same as the well-known "web safe" palette. Maybe it is possible to convert JPEGs you want to show on your i-mode handset using this palette with your graphical conversion tool (like Adobe Photoshop).

¹ Screen saver and idle screen sizes are smaller, because of status indicators (battery status, e-mail and SMS notifications and network status), and labels for softkeys.



Memory

i-mode handsets have only a limited amount of memory. This implies that pages should be no bigger than 10 kB maximum (including HTML and all images). This also applies to ringtones. Preferably you should limit yourself to 5 kB total and 2 kB images to keep your site responsive and data traffic (and costs for a user) to a minimum.

Navigational possibilities

As an i-mode handset only has a small screen and only a few options to provide user input, you should carefully plan how you want a user to navigate through your i-mode site. Some quick wins are:

- Use accesskeys to speed up the following of a link
- Limit the number of menu items in one screen
- If for example you would like to input the name of a city, have a user only type in the first few characters and present a pulldown box with all cities whose name starts with those letters.

Images

The first i-mode handsets support standard GIF and WBMP images. Only the NEC N22i supports JPEG, because it is the only phone with a palette of 4096 colors.

Currently, supported image formats are:

- GIF87
- Interlaced GIF89a
- Animated GIF
- Transparent GIF
- Wireless Bitmap (WBMP)

Not supported image formats are:

- JPEG (except NEC N22i)
- PNG
- BMP

In Appendix 4: Handset Comparison an overview is given of the different i-mode handsets available on the market.



HTTP

The handset communicates with the i-mode gateway with the HyperText Transfer Protocol (HTTP/1.1). The i-mode gateway communicates with the internet with the HTTP/1.0 / HTTP/1.1 protocol. The only supported scheme is http, no https (secure http) as the current handsets do not support it. The only supported methods are GET and POST. For a detailed description of the HTTP protocol refer to RFC 2068, available at <http://www.ietf.org/rfc/rfc2068.txt>.

HTTP requests

A basic HTTP request has the following layout:

```
METHOD <space> url <space> HTTP/version2
Header1: Value1¶
Header2: Value2¶
¶
Request body
```

For Example

```
GET /index.jsp HTTP/1.1¶
Host: imode.contentprovider.com¶
Accept: text/html, text/plain¶
Connection: close¶
¶
```

Supported HTTP request headers are:

Header name	Description
Accept ³	text/html, text/plain, image/gif, application/octet-stream (for MIDI ringtones) are understood; text/vnd.wap.wml, image/vnd.wap.wbmp for WAP content
Accept-Language	Determines the languages acceptable for the user, see As can be seen in the table above, the NEC N21i has two different User Agent strings. It is therefore convenient to test only on the part after 'portalmmm/1.0' and before the '-', i.e. whether a N21i, N 22i or TS21i accesses an i-mode site. Accept-Language HTTP header.
Authorization	Used in a response to a 401 (Unauthorized) response status. Only BASIC authentication is supported. Format is Authorization: basic <space> base64-encoded(username ":" password) ⁴

² [¶] represents the carriage return / line-feed combination (ASCII codes 10 and 13).

³ Different software versions for the NEC N21i send different Accept HTTP header: especially the application/octet-stream and text/plain content types were added in more recent software versions (S/W version 5735, not in 572E). To enable ringtone download for handsets with an OLD software version the .mld extension should map to text/html, unfortunately.



Content-Type	application/x-www-form-urlencoded for POST requests
Host	Virtual host header
If-Modified-Since	For cache control
User-Agent	Name of handset, see Accept HTTP header

HTTP responses

A basic HTTP response has the following format:

```
HTTP/version <space> STATUSCODE <space> MESSAGE
Header1: Value1
Header2: Value2
Body content
```

For Example

```
HTTP/1.1 200 OK
Date: Thu, 11 Apr 2002 12:13:28 GMT
Server: Apache/1.3.22 (Unix)
Connection: close
Content-Type: text/html
Content-Length: 94
<
<html>
<head>
<title>Hello, World</title>
</head>
<body>
Hello, World
</body>
</html>
```

For a list of complete status codes consult the HTTP/1.1 specification. The handset understands the following status codes:

Status	Description
200	OK, normal response
301 and 302 ⁵	Moved, use Location: HTTP header to indicate redirected URL. Note that this URL has to be a complete URL.
304	Not Modified
401	Unauthorized, a WWW-Authenticate header must be present in the response

⁴ Refer to RFC 2068, section 11.1 for details.

⁵ Note that the NEC N21i presents a pop-up when receiving a 302 status code with the message Invalid Data Received.



Many other status codes, like 404 (Not Found) and 500 (Internal Server Error) will most of the time present an error page from the web server. You should optimize these error pages for i-mode.

Supported HTTP response headers are:

Header name	Description
Content-Length	Length of the response in bytes. Required for dynamic pages (e.g. CGI)
Content-Type	text/html, text/plain, image/gif, application/octet-stream (for ringtones) are understood; text/vnd.wap.wml, image/vnd.wap.wbmp for WAP content
Date	Date of response
Last-Modified	Last modification date
Location	Redirection URL for response statuses 301 and 302
WWW-Authenticate	Header used for authenticating a URL. The handset supports only BASIC authentication ⁶

Accept HTTP header

The Accept HTTP header indicates which content types the handset supports. If the webserver sends a content-type the handset will not understand, a 406 not acceptable error will be shown. See: Why do I get an HTTP error response 406 (Not Acceptable)?

Handset	Accept HTTP header
NEC N21i	text/html text/plain image/gif text/vnd.wap.wml image/vnd.wap.wbmp application/octet-stream ⁷
NEC N22i	text/html text/plain image/gif image/jpeg text/vnd.wap.wml image/vnd.wap.wbmp application/octet-stream
Toshiba TS21i	text/html text/plain

⁶ See RFC 2068 sections 11 and 14.46.

⁷ This header was added in recent software versions of the NEC N21i only to support ringtones. To support both old and new software versions, content-type text/html should be sent for files in MFi (the NEC ringtone format).



	image/gif text/vnd.wap.wml image/vnd.wap.bmp audio/midi audio/mid
--	---

User-Agent HTTP header

A handset will send a User-Agent HTTP header indicating which mobile phone is accessing an i-mode website. This allows you to make maximum use of the possibilities of a handset by presenting the right content for this handset. The User-Agent header can be obtained through the HTTP_USER_AGENT CGI variable.

The User Agent string has the following structure:

portalmmm/1.0 <model>

Below is a table with User-Agent strings for current handsets:

Handset	Cache size (kB)	User Agent string
NEC N21i	10	portalmmm/1.0 n21i-10(c10) <i>and</i> portalmmm/1.0 n21i-20(c10)
NEC N22i	10	portalmmm/1.0 n22i-10(c10)
Toshiba TS21i	10	portalmmm/1.0 TS21i-10(c10)

As can be seen in the table above, the NEC N21i has **two** different User Agent strings. It is therefore convenient to test only on the part after 'portalmmm/1.0' and before the '-', i.e. whether a N21i, N 22i or TS21i accesses an i-mode site.

Accept-Language HTTP header

The portal adds an Accept-Language HTTP header based upon the operator (either KPN Mobile for the Netherlands, or BASE for Belgium) and the language the subscriber has selected (only Dutch for the Netherlands; English, Dutch (Flemish) or French for Belgium). Language codes are based upon the Tags for the Identification of Languages reference and use two-letter ISO 639 Language codes.

The Accept-Language header has the following syntax:

Accept-Language: *country-name '-' language-name*

Below is a table of supported language codes:

Language	ISO Language Code	KPN Mobile (NL)	BASE (BE)
Dutch	nl-nl	✓	✗



Language	ISO Language Code	KPN Mobile (NL)	BASE (BE)
Flemish (Dutch as spoken in Belgium)	nl-be	✗	✓
French (as spoken in Belgium)	fr-be	✗	✓
English	en-us	✗	✓



Tag Reference

cHTML is a combination of tags from the HTML 1.0, 2.0 and 4.0 specifications with some “mobile” extensions. There are three different versions of cHTML (versions 1.0, 2.0 and 3.0). Below is a list of all supported tags for all handsets for cHTML versions 1.0 and 2.0. cHTML 3.0 is omitted from this list, as this specification adds support for Java in next generation handsets in Japan, which are not yet available in Europe. See Appendix 3: Tag Comparison Chart for a complete list of tags.

Some (future) handsets might implement additional tags.

Tags	
<!DOCTYPE>	<html>
<!-- -->	
<a>	<input>
<base>	
<blink>	<marquee>
<blockquote>	<menu>
<body>	<meta>
 	
<center>	<option>
<dir>	<p>
<div>	<plaintext>
<dl>, <dt>, <dd>	<pre>
	<select>
<form>	<textarea>
<h1> - <h6>	<title>
<head>	
<hr>	

Some of these tags have additional (i-mode) attributes that are listed below:

Tag name	Additional attribute name
a, input, textarea	accesskey
input type="text", textarea	istyle
a	cti, email, telbook

All tags and attributes are explained in more detail below.

DOCTYPE declaration

The DOCTYPE declaration declares the type of HTML used.



Syntax

```
<!DOCTYPE "-//W3C//DTD Compact HTML 1.0 Draft//EN">
```

Usage

The DOCTYPE declaration should be at the start of every HTML document.

Comment tag

Comment tag

Syntax

```
<!-- Your comments here -->
```

Usage

Any comments that should not be rendered by the browser. Comments are not visible for the user. Do not use many comments in one page, as this will increase the size of the page.

Entities

Character entity references use symbolic names so that authors need not remember code positions. For example, the character entity reference ë refers to the lowercase "e" character topped with an umlaut (e.g. "ë"); "ë" is easier to remember than ë.

If a "<" character is necessary you should use "<" (ASCII decimal 60) to avoid possible confusion with the beginning of a tag (start tag open delimiter). Similarly, use ">" (ASCII decimal 62) instead of ">" to avoid problems with older user agents that incorrectly perceive this as the end of a tag (tag close delimiter) when it appears in quoted attribute values.

Authors should use "&" (ASCII decimal 38) instead of "&" to avoid confusion with the beginning of a character reference (entity reference open delimiter). Authors should also use "&" in attribute values since character references are allowed within CDATA attribute values.

Some authors use the character entity reference """ to encode instances of the double quote mark ("") since that character may be used to delimit attribute values.

Entity	Character
� – ÿ	Numeric references
&	&
<	<
>	>
®	®
©	©
"	"



Entity	Character
 	(non-breakable space)

Handsets do implement other entity references as well. For a complete list refer to <http://www.w3.org/TR/html4/sgml/entities.html>. If a handset does not implement the textual entity reference it still might implement the numerical entity reference.

Note

Some handsets might not implement the € entity. Use € instead.

A Tag

The A tag presents a link to another page, for http: style anchors; presents a telephone number for tel: style anchors; and presents a mail form for mailto: anchors.

Attributes

Attribute	Description
accesskey	0 1 2 3 4 5 6 7 8 9 * # - The shortcut key
cti	Since cHTML 2.0, indicates telephone number
email	Since cHTML 3.0, E-mail address, maximum 50 characters
href	URL to jump to (http:), telephone number to dial (tel:), or e-mail to send (mailto:)
name	Indicate URL marker
telbook	Since cHTML 3.0, phonebook name entry, maximum 20 characters

Usage

For normal linking from one page to the other use the href attribute with an http: URL. For dialing a number use the tel: protocol, for sending mail use the mailto: protocol.

Using an emoji icon in front of a link with an accesskey is a convenient way to quickly navigate through an i-mode site. The appendix contains a list of all emoji characters.

The cti attribute has been added in cHTML 2.0. It has precedence over the href attribute. It allows tone dialing with additional pauses and input after the call has started. This functionality can e.g. be used to communicate with Intelligent Voice Response (IVR) systems.

The email and telbook attributes have been added in cHTML 3.0 and can be used to conveniently add names, phone numbers and e-mail addresses to the handset's internal phonebook.



Note

- When the href attribute is empty (), the URL indicated by the BASE tag will be followed. If no BASE tag has been specified, the current page will be reloaded.
- When using accesskeys note that some handsets do not support # and *, only 0 to 9.
- The maximum size of a telephone number is 24 digits.
- Always use the international telephone number format to support roaming, e.g. +31201234567.
- When using the cti attribute you should note the following:
 - In handsets that support this function, the cti attribute takes precedence over the href attribute. Handsets that do not support this tag will not understand the cti attribute and will therefore use the href attribute.
 - The telephone number is dialed and as soon as the receiving end picks up, the function will be paused.
 - After the "confirm" button has been pressed, tone input will begin.
 - The cti attribute has a maximum size of 128 bytes
 - The "tel:" prefix is not necessary before the telephone number.
 - Use the following characters in the cti attribute:

Digit	Description
0 1 2 3 4 5 6 7 8 9 * #	Will transmit this digit or tone
,	Wait for 1 second
/	Pause, wait for key input. Pause cannot be repeated
Other characters	Not used

- When using the href mailto format the email attribute will be ignored.
- The email and telbook attributes are not supported by every handset.

Example

The following example shows the use of a named anchor:

```
<html>
<head>
<title>A example</title>
</head>
<body>
<a href="#bottom">Go to bottom</a>
...
<a name="bottom">
Bottom of page
</body>
</html>
```

The following example shows the use of the accesskey attribute. The corresponding emoji icon is also shown.

```
&#59106; <a href="http://i-mode.contentprovider.com/
```



```
index.jsp" accesskey="1">Home</a>
```

To send e-mail:

```
<a href="mailto:info@contentprovider.com?subject=This+is+a+subject&body=The+body">info@contentprovider.com</a>
```

To dial a number:

```
<a href="tel:+31201234567">020-1234567</a>
```

Use of cti attribute:

```
<a href="tel:+31201234567" cti="+31201234567/,,12345#,678#">020-1234567</a>
```

This will result in the following:

- The handset will dial "+31201234567";
- The handset will wait for key input once the receiving end picks up (user key input);
- After the user pressed a key, the handset will dial "12345#" after 2 seconds;
- The handset will dial "678#" after 1 second.

Handsets that do not support the cti attribute will only dial "+31201234567".

Use of email and telbook attributes:

```
Add John Doe to <a href="tel:+31201234567" name="John Doe" email="john.doe@company.com">phonebook</a>
```

Clicking "menu" and "Save phone#" on this link will add John Doe with his email address and telephone number to the phone's internal phonebook.

BASE Tag

The BASE tag indicates a URL that is used as the base path for any relative URLs in the page.

Attributes

Attribute	Description
href	Indicates the base URL

Usage

The BASE tag is part of the HEAD of an HTML document.

Note

- When the href attribute is empty in an A tag (), the URL indicated by the base tag will be followed. If no base tag has been specified, the current page will be reloaded.
- Use <base href="http://i-mode.contentprovider.com" /> for XHTML Basic compliant BASE tags.

Example

```
<html>
<head>
<title>BASE example</title>
<base href="http://i-mode.contentprovider.com">
</head>
<body>
<!-- Image will be loaded relative from the BASE URL --&gt;
&lt;img src="logo.gif" width="120" height="20" alt="Logo"&gt;
&lt;/body&gt;
&lt;/html&gt;</pre>
```

BLINK Tag

The text between the BLINK tags will be shown blinking.

Since

cHTML 2.0

Example

```
This text is <blink>blinking</blink>.
```

BLOCKQUOTE Tag

Text between BLOCKQUOTE tags will have a left and right indent of one full-width space.

Example

```
<html>
<head>
<title>BLOCKQUOTE example</title>
</head>
<body>
Some text
<blockquote>This text is indented both left and
right</blockquote>
Some more text
</body>
</html>
```

BODY Tag

The BODY tag is the part of the HTML document that contains the content. An HTML document should always at least contain an HTML, HEAD and BODY element.

Attributes since cHTML 2.0:

Attribute	Description
bgcolor	The background color of the page
link	The link color of the page



text	The text color of the page
------	----------------------------

See Appendix 1: Color palette for colors in the i-mode palette.

Example

```
<html>
<head>
<title>BODY example</title>
</head>
<body bgcolor="#000000" text="#ffffff">
Here is the body content
</body>
</html>
```

BR Tag

The BR (break) tag starts the text at the next line on the screen.

Attributes

Attribute	Description
clear	left right all

Usage

With the clear attribute, character string wraparound is canceled after the tag.

Note

- Use `
` for XHTML Basic compliant breaks.

Example

```
<html>
<head>
<title>BR example</title>
</head>
<body>
Small list:<br>
Item 1<br>
Item 2<br>
</body>
</html>
```

CENTER Tag

The text between the CENTER tags will be shown centered on the screen.

Example

```
<html>
<head>
<title>CENTER example</title>
</head>
<body>
```

```
<center>company</center>
<p>
The services we provide are ...
</body>
</html>
```

DIR Tag

The DIR tag is used to create lists.

Syntax

```
<dir>
<li>...</li>
...
</dir>
```

Example

```
<html>
<head>
<title>DIR Example</title>
</head>
<body>
Cartoons
<dir>
<li>Cow & Chicken</li>
<li>Dexter</li>
<li>Tom & Jerry</li>
</dir>
</body>
</html>
```

DIV Tag

The DIV (Division) tag groups text and tags together.

Attributes

Attribute	Description
align	left right all

Usage

The align attribute indicates whether the text between the DIV tags should be left or right aligned or centered.

Example

```
<div align="right">This text is right aligned</div>
```

DL, DT, DD Tags

These three tags are used for Definition Lists



Syntax

```
<dl>
<dt>...</dt>
<dd>...</dd>
...
<dt>...</dt>
<dd>...</dd>
...
</dl>
```

Usage

A Definition List starts with a DL tag, the Term to be defined is between DT tags and its definition between DD tags.

Example

```
<html>
<head>
<title>DL DD DT Example</title>
</head>
<body>
List of National Parks:
<dl>
<dt>Hokkaido</dt>
<dd>Rishiri Rebun Sarobetsu</dd>
<dd>Shiretoko</dd>
<dd>Akan</dd>
<dd>Kushiro marsh</dd>
<dd>Daisetsuzan</dd>
<dd>Shikotsu Toya</dd>
<dt>Tohoku</dt>
<dd>Towada Hachiman</dd>
<dd>Rikuchu Kaigan</dd>
<dd>Bandai Asahi</dd>
</dl>
</body>
</html>
```

FONT Tag

The FONT tag changes the text color.

Since

cHTML 2.0

Attributes

Attribute	Description
Color	Hexadecimal color code color name



Usage

For the i-mode color palette see Appendix 1: Color palette. Use contrasting colors to be sure users can read your i-mode pages.

Note

- The FONT tag is not a valid tag in XHTML Basic Strict, but it is supported in XHTML Basic Transitional.

Example

```
This text is <font color="#ff0000">red</font>
```

FORM Tag

The FORM tag is the parent for any fill-in form fields, like <INPUT> and <TEXTAREA>.

Attributes

Attribute	Description
Action	The URL to GET or POST to on submitting the form
Method	GET POST

Usage

As URLs on handsets cannot be any longer than approximately 200 characters, use the POST method for larger form inputs.

Example

See examples for the SELECT Tag and INPUT Tag.

H1 - H6 Tags

The H1, H2, H3, H4, H5, H6 tags are header tags that will show the text between these tags in varying sizes, with H1 the biggest and H6 the smallest.

Attributes

Attribute	Description
align	left center right

Usage

The align attribute indicates whether the header should be aligned left or right, or centered.

Note

- As most handsets have only one proportional font, the H1 to H6 tags have no effect on the font size.

Example

```
<html>
<head>
```



```
<title>H1 - H6 example</title>
</head>
<body>
<h1 align="left">Left header</h1>
<h2 align="center">Centered header</h2>
<h3 align="right">Right header</h3>
...
</body>
</html>
```

HEAD Tag

The HEAD tag contains information about the HTML document.

Usage

The HEAD tag should be the first child of the HTML root element. An HTML document should always at least contain an HTML, HEAD and BODY element.

Example

```
<html>
<head>
<title>HEAD example</title>
</head>
<body>
...
</body>
</html>
```

HR Tag

Presents a Horizontal Ruler.

Attributes

Attribute	Description
align	left right all
size	number of pixels, default 2
width	number of pixels or percentage, default entire screen width

Usage

The HR tag presents a horizontal ruler with an alignment indicated by the align attribute, a size indicated by the size attribute and a width indicated by the width attribute.

Note

- No 3D effects (shading) are available.
- Use `<hr />` for XHTML Basic compliant rulers.

Example

```
<html>
```

```
<head>
<title>HR example</title>
</head>
<body>
Some text
<hr align="left" size="2" width="50%">
Some text
<hr align="right" width="80">
Some text
</body>
</html>
```

HTML Tag

The HTML tag is the root element of any HTML document. It is required after the DOCTYPE definition.

Example

```
<html>
<head>
<title>HTML example</title>
</head>
<body>
My first cHTML document.
</body>
</html>
```

IMG Tag

Loads an image from a URL.

Attributes

Attribute	Description
align	left right all
alt	Alternative text
height	The height of the image in pixels
hspace	The width of the image in pixels
src	The URL of the image
vspace	The number of pixels to use as vertical spacing, default 0
width	The number of pixels to use as horizontal spacing, default 0

Usage

The IMG tag loads an image in a supported format (GIF, WBMP) from a URL (src attribute). The align attribute indicates whether the image should be aligned left, right or centered; the alt attribute indicates the alternative text to display if the image is not available; the width and height attributes indicate the size of the image in pixels; the hspace and vspace attributes indicate the horizontal and vertical space respectively (in pixels) to reserve around the image.



Note

- Use `` for XHTML Basic compliant images.

Example

```
<html>
<head>
<title>IMG example</title>
</head>
<body>

</body>
</html>
```

INPUT Tag

Various forms of input fields for use within a FORM.

Attributes

Attribute	Description
accesskey	0 1 2 3 4 5 6 7 8 9 * # - The shortcut key
checked	If the value is selected for <code><input type="radio"></code> and <code><input type="checkbox"></code>
istyle	1 2 3 4
maxlength	The maximum numbers of characters allowed to be input
name	The name of the input field
size	The size of the input field on the screen (in characters)
type	checkbox password radio submit text
value	The (initial, default) value for the input, for <code><input type="password"></code> , <code><input type="submit"></code> and <code><input type="text"></code>

Usage

As with all input fields, INPUT tags should be contained within a FORM element.

For text inputs:

```
<input type="text" name="name" accesskey="accesskey"
istyle="istyle" maxlength="maxlength" size="size"
value="value">
```

Text input fields can have an istyle attribute that indicates the input mode for the field:

istyle	Description
1	Not used
2	Not used
3	Alphanumeric: Pressing the 2 repeatedly yields: a b c 2 ...



istyle	Description
	For the Toshiba TS21i this disables T9 support
4	Numeric: Pressing the 2 repeatedly yields: 2222

See istyle and input modes overview for more details.

For password fields:

```
<input type="password" name="name" accesskey="accesskey"  
maxlength="maxlength" size="size" value="value">
```

The default istyle attribute value for password inputs is numeric (4) and cannot be changed, except for the NEC N21i and TS21i. For these handsets you should force the style to numeric.

For submit buttons:

```
<input type="submit" name="name" accesskey="accesskey"  
value="value">
```

For reset buttons:

```
<input type="reset" name="name" accesskey="accesskey"  
value="value">
```

For radio buttons:

```
<input type="radio" name="name" accesskey="accesskey"  
value="value" [checked]>
```

For checkboxes:

```
<input type="checkbox" name="name" accesskey="accesskey"  
value="value" [checked]>
```

Note

- The maximum value of the size attribute is 14.
- The maximum value of the maxlength attribute is 256 for `<input type="text">` and 14 for `<input type="password">` and `<input type="submit">`.
- There can be no more than 40 radio buttons or checkboxes on one page.
- There can be no more than 30 submit buttons on one page.
- There can be no more than 30 `<input type="text">`, `<input type="password">` and `<textarea>` tags combined on one page.
- There can be no more than 20 `<input type="submit">`, and other input tags combined on one page.
- Use `<input type="type" />` for XHTML Basic compliant input fields.

Example

Text Input:

```
<input type="text" name="email" value="@imail.nl"  
maxlength="50">
```



Tip: To limit the number of characters a user has to type in, use sensible default values.

Password Input:

```
<input type="password" name="pincode" maxlength="4" size="4" style="4">
```

Tip: Limit password inputs to numeric only and indicate that a PIN code is required, rather than a password.

Radio Buttons:

```
Gender:<br>
<input type="radio" name="gender" value="M">Male<br>
<input type="radio" name="gender" value="F">Female<br>
```

LI Tag

Represents a List Item within a numbered (OL), unordered (UL) list, DIR or MENU list.

Syntax

	<dir>
...	...
...	...
...	...
	</dir>

or

	<menu>
...	...
...	...
...	...
	</menu>

Attributes

Attribute	Description
type	Since cHTML 2.0, 1 a A, default 1
value	Since cHTML 2.0, the number to start the list with, default 1

Usage

The type and value attributes are only valid for Ordered Lists (OL tag). The type indicates whether numbers ("1"), lowercase letters ("a") or uppercase letters ("A") should be used. If letters are used, the value has to be "3" to start the list with "C" or "c".

Example

```
<html>
```

```

<head>
<title>LI example</title>
</head>
<body>
Characters in Japanese fairy tales
<ol>
<li>Momotaro</li>
<li>Kintaro</li>
<li>Urashimataro</li>
<li>Issunboshi</li>
<li type="a">Orihime</li>
<li>Kaguyahime</li>
<li>Oyayubihime</li>
</ol>
</body>
</html>

```

MARQUEE Tag

Presents scrolling text.

Since

cHTML 2.0

Attributes

Attribute	Description
behavior	scroll slide alternate, default scroll
direction	left right, default left
Loop	number of times

Usage

The text between the MARQUEE tags will be scrolled *loop* number of times, in the direction specified by the *direction* attribute (left (default) meaning from right to left, right from left to right). Below is a table which specifies the behavior of the marquee:

Behavior	Description
scroll	Default value: repeatedly move the character string across the screen in one direction.
slide	Stop the marquee when the last character appears on the screen.
alternate	Repeatedly change the direction of the move when the last character appears on the screen.

Note

- The MARQUEE tag may not work properly if nested within other tags than the BODY tag.
- The maximum length of the text between the MARQUEE tag is 64 characters.
- Maximum four marquee tags can be used on one page



- When a MARQUEE tag is placed in a section of a page that falls outside the current display area, the tag remains inactive until the section comes into the display area.
- The scroll speed is fixed.
- Only one line of text can be scrolled.

Example

```
<html>
<head>
<title>MARQUEE example</title>
</head>
<body>
<marquee behavior="scroll" direction="left">
abcdefghijklmno</marquee>
</body>
</html>
```

MENU Tag

The MENU tag is used to create a list.

Syntax

```
<menu>
<li>...</li>
...
</menu>
```

Example

```
<html>
<head>
<title>MENU example</title>
</head>
<body>
Services<br>
<menu>
<li>mobile banking</li>
<li>tour reservations</li>
<li>i-mode mail</li>
<li>other</li>
</menu>
</body>
</html>
```

META Tag

Contains META information about the document, like Content Type and character set information. Part of the HEAD of the HTML document.

Syntax

```
<meta http-equiv="Content-Type"
content="text/html; charset=SHIFT_JIS">
```

Since

cHTML 2.0

Attributes

Attribute	Description
content	text/html; charset=SHIFT_JIS
http-equiv	Content-Type

Note

- cHTML does not implement the http-equiv refresh method.
- Use `<meta http-equiv="Content-Type" content="text/html; charset=SHIFT_JIS" />` for XHTML Basic compliant meta-information. The character set SHIFT_JIS contains all emoji characters.

Example

```
<html>
<head>
<title>META example</title>
<meta http-equiv="Content-Type"
content="text/html; charset=SHIFT_JIS">
</head>
<body>
...
</body>
</html>
```

OL Tag

Starts a numbered list. The items are aligned at the . (dot) after the number.

Syntax

```
<ol>
<li>...</li>
<li>...</li>
...
</ol>
```

Attributes since cHTML 2.0:

Attribute	Description
start	Number to start the list with
type	1 a A



Usage

The type indicates whether numbers ("1") (default), lowercase letters ("a") or uppercase letters ("A") should be used. The default value is "1". If letters are used, the value has to be "3" to start the list with "C" or "c".

Example

See example of the LI Tag.

OPTION Tag

Represents a single option within a <SELECT> in a <FORM>

Syntax

```
<select>
<option value="..." [selected]>...</option>
<option value="..." [selected]>...</option>
...
</select>
```

Attributes

Attribute	Description
Value	The value of the item
selected	Whether the item is selected

Usage

The value of the item is the value that will be transferred upon submitting the form.

Note

- There can be no more than 31 options in a SELECT tag.
- The maximum length of the value attribute is 42 characters.
- Use `<option value="..." selected="selected">...</option>` for XHTML Basic compliant selected options.

Example

See example of the SELECT Tag.

P Tag

Indicates a Paragraph.

Attributes

Attribute	Description
align	left center right

Usage

The align attribute indicates whether the text between the P tags should be left or right aligned or centered.



Example

```
<p align="right">This text is right aligned</p>
```

PLAINTEXT Tag

Displays any HTML tags as-is.

Example

```
<html>
<head>
<title>PLAINTEXT example</title>
</head>
<body>
<plaintext>
<b>bold</b> text
</plaintext>
</body>
</html>
```

PRE Tag

Presents the text between the PRE tag with all formatting (e.g. white space) preserved.

Example

```
<html>
<head>
<title>PRE Example</title>
</head>
<body>
<pre>
    Things are
        shown
    as they are.
</pre>
</body>
</html>
```

SELECT Tag

Presents a (multiple) select box in a <FORM>.

Attributes

Attribute	Description
multiple	Since cHTML 2.0; whether more than one item from the select box can be selected
name	The name of the select box
size	The number of options to show in the pulldown



Usage

A select box contains one or more option tags.

Note

- There can be no more than 31 options in a SELECT tag.
- Use `<select multiple="multiple">...</select>` for XHTML Basic compliant multiple selects.

Example

```
<form method="get" action="form.jsp">
Your gender:<br>
<select name="gender">
<option value="m">Male</option>
<option value="f" selected>Female</option>
</select>
</form>
```

TABLE Tag

The TABLE tag is the container tag for a table. Its children are TR tags for every row in the table.

Attributes

Attribute	Description
bgcolor	Background color of the table
cellspacing	Number of pixels of spacing between rows and columns
cellpadding	Number of pixels of padding within a table cell
border	0 1 — Whether a border will be shown around the table

Note

- Tables are not a part of the cHTML specification but are supported by the available handsets.

Example

```
<table border="0">
<tr valign="top">
<td>Symbol</td>
<td>Price</td>
</tr>
<tr valign="top">
<td>ABC</td>
<td align="right">€ 23,50</td>
</tr>
<tr valign="top">
<td>DEF</td>
<td align="right">€ 67,54</td>
</tr>
<tr valign="top">
```

```
<td colspan="2" align="right">€ 81,04</td>
</tr>
</table>
```

TD Tag

The TD tag indicates a single table cell. Its parent is the TR Tag.

Attributes

Attribute	Description
align	left center right – Alignment of the content in the table cell
bgcolor	Background color of the table
colspan	Number of columns that are merged
rowspan	Number of rows that are merged

Note

- Tables are not a part of the cHTML specification but are supported by the available handsets.

Example

See example of the TABLE Tag.

TEXTAREA Tag

Presents a multi-line input field in a <FORM>

Attributes

Attribute	Description
accesskey	0 1 2 3 4 5 6 7 8 9 * #, Quick Focus key, see A Tag
cols	Number of columns
istyle ⁸	1 2 3 4, input style, see INPUT Tag
name	Name of the textarea
rows	Number of rows

Note

- No more than 512 characters can be input in a TEXTAREA for the NEC N21i, 1000 characters for the Toshiba TS21i.
- Maximum number of cols and rows depend on the screen size of the handset. As the NEC N21i shows all input fields in a new screen after selecting it, the rows and cols attributes are ignored.

Example

```
<html>
<head>
```

⁸ For the Toshiba TS21i, setting the istyle to 3 disables T9 support.



```
<title>TEXTAREA example</title>
</head>
<body>
Tell us what you think<br>
<form method="post" action="feedback.jsp">
<textarea name="feedback" cols="14" rows="4">
please type your comment here
</textarea>
<input type="submit" value="send">
<input type="reset" value="reset">
</form>
</body>
</html>
```

TITLE Tag

Indicates the title of the HTML page, used as a name for a bookmark.

Usage

The title tag is part of the HEAD of an HTML document. As bookmarks cannot be too long, choose an appropriate title for the HTML page.

Example

```
<html>
<head>
<title>TITLE example</title>
</head>
<body>
My first cHTML document.
</body>
</html>
```

TR Tag

The TR tag indicates a single table row. Its parent is the TABLE Tag, its children are TD Tags.

Attributes

Attribute	Description
bgcolor	Background color of the table
vAlign	top middle bottom – The vertical alignment of the table cells

Note

- Tables are not a part of the cHTML specification but are supported by the available handsets.

Example

See example of the TABLE Tag.



UL Tag

Starts an unordered list.

Syntax

```
<ul>
<li>...</li>
<li>...</li>
...
</ul>
```

Usage

Use UL to create bulleted lists. Each bullet in the hierarchy is one full space wide.

Example

```
<html>
<head>
<title>UL Example</title>
</head>
<body>
Mail functions<BR>
<ul>
<li>Compose mail</li>
<li>Read mail</li>
<li>Reply</li>
<li>Forward</li>
</ul>
</body>
</html>
```



Mail

Every i-mode phone has an associated e-mail address. Plain text mails can be sent to an i-mode phone as long as they are less than 1000 bytes. Embedded links to websites are automatically recognized and clickable as long as they are complete URLs (including the http:// part) and no longer than 75 characters.

Attachments in a mail message

Attachments are not supported and will be stripped by the mail server before the mail is delivered to the phone's inbox. The only supported "attachment" is a base64 encoded ringtone file inside the body text of the mail. The ringtone will automatically be played when the recipient opens the message.

The format of the mail is as in the following example that will play the well-known "We Wish You A Merry Christmas" tune on a NEC N21i⁹:

```
From: me@imail.nl
To: you@imail.nl
Date: Wed, 17 Jun 2002 17:19:41 +0200
MIME-Version: 1.0
Content-Type: text/plain; charset="iso-8859-1"
X-Mailer: Your favorite mailer software here
Subject: I wish you...

... a merry christmas.

--B:M
bWVsbwAAAXIAJwEBAXNvcmMAAQB0aXRsAA2KeYK1gqK42L3PvYLwdmVycwAEMDEwMHRyYWMA
AAFBAP/QAAD/w30A/+AVAP/hAgD/4EEA/+FCAP/ggQD/4YIA/+DBAP/hwgD/4i8A/+JvAP/i
rwD/4u8wZxkAGxkYZwsAGwsMIAAsAbAskIA0AbA0MIAcAbAcIbg8A1g0MIgcEoA0AbA0MoAcA
bAcIXw8AKw8QaQsAHQskKQsAXQskHRkAaRkYaQsAHQsM1gsAbgskIg0Abg0MbgaIgcIcA8A
JA8QYg0ALg0MLgcAYgcIYA8ALA8QHxkAaxkYHwsAawsMZwsAGwckZxkAGxkYGw8AZwsMcAsA
pAckcA0AJA0McAcAJAcIcQ8AJQ8QJA0AcA0MJAcAcAcIIg8Abg8QLBkAYA0MYA8MLAsMXQcA
KQckJwsAWwsUGw8AZwcQGQsAaQckWQsALgskawcAGwskpB8AWx8AFBkA7A0M7A8MFA80/98A
```

Note that the text of the mail is separated from the ringtone with a --B:M on a separate line. This line indicates the start of the ringtone data. As base64 will result in bigger files (3 source bytes convert to 4 encoded bytes), ringtones can be no longer than approximately 600 bytes (800 bytes encoded) if you add any plain text to the message itself. The total message can be no more than 1000 bytes.

To create base64 encoded ringtones, use a public domain program that will convert a regular file to a base64 encoded one, like the one found on <http://www.fourmilab.ch/webtools/base64/base64.zip> (for the Windows platform).

For more information about base64 refer to RFC 1341, section 5.2, found at <http://www.ietf.org/rfc/rfc1341.txt>.

⁹ The NEC N21i and Toshiba TS21i support different ringtone formats (MFi and SMF respectively). The example is known to work on a N21i but not on a TS21i.



Tips & Tricks

Below is a list of tips & tricks to make developing and using an i-mode site easier.

Use accesskeys for navigation

Use the accesskey attribute for the A, INPUT and TEXTAREA tags to speed up navigation. Associating an emoji icon indicating the key to be pressed is even better:

```
&#59106; <a href="somepage.jsp" accesskey="1">Link to  
page</a>  
  
<form method="post">  
&#59107; Message<br>  
<textarea name="message" accesskey="2">  
Type your message here  
</textarea>  
</form>
```

What is the code for the Euro symbol €?

€ The handset does not support €

See <http://www.w3.org/TR/html4/sgml/entities.html> for a complete list of all entities in HTML 4, and their corresponding numerical values if the handset does not support the named entity.

Sending mail

The following syntax can be used to send mail:

```
<a href="mailto:info@contentprovider.com?subject=The+  
subject&body=The+body">info@contentprovider.com</a>
```

Note the use of the subject and body parameters.

Limiting input for users

You should limit the amount of information you request and only request it when absolutely necessary:

Only ask a nickname in a game if the user gets into the highscore list.

Use sensible default values:

```
E-mail:<br>  
<input type="text" name="email" value="@imail.nl"  
size="50" maxlength="50">
```

is better than:



```
E-mail:<br><input type="text" name="email" value="" size="50"maxlength="50">@imail.nl
```

This limits the input to only the nickname, but also enables the user to enter a different (i.e. non @imail.nl) e-mail address.

If you need to input a name of e.g. a city, allow entry of only the first few characters and present a dropdown list of matching choices.

Bookmarks

Always add a (short) title to your i-mode pages, so users can bookmark a page and know which page they have bookmarked.

Why do I get an HTTP error response 406 (Not Acceptable)?

An HTTP 406 error indicates that the handset sends a list of Content-Types it can handle in the HTTP request with an Accept header, but the web server was unable to fulfill the request because the requested document does not have a supported Content-Type.

This might for example be the result of an ill-configured web server that serves a ringtone with a not accepted Content-Type application/midi, or a JPEG image (which the handsets do not support at all) with Content-Type image/jpeg.

See HTTP for more details about the HTTP protocol.

Be ready for the future: XHTML Basic

If you want your i-mode site to be ready for the future and future specifications, you might want to make sure your site is compliant with XHTML Basic. Future handsets will implement this specification that is endorsed by the World Wide Web Consortium (W3C). You might not be able to be compliant with the strict version this specification (e.g. the `` tag and bgcolor, link and text attributes of the `<body>` tag are no longer allowed in XHTML Basic), but the transitional variant should almost always be possible.

The specification can be found at <http://www.w3.org/TR/xhtml-basic>.

Note that the examples in this tag reference **may not be** XHTML Basic compliant.

Below is a list of rules you should follow to create an XHTML Basic compliant i-mode site. In the left column a correct example is shown, in the right column an incorrect one.

Right	Wrong
Your HTML document should contain a Document Type Definition	
<!DOCTYPE "-//W3C//DTD XHTML Basic 1.0 Transitional//EN">	<html> ... </html>
Your HTML document should contain <html>, <head> and <body> tags:	
<html> <head> <title>...</title> </head> <body> ... </body> </html>	<html> <body> ... </body> </html>
You must indicate the character set used with a META tag¹⁰:	
<html> <head> <title>...</title> <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" /> </head> ... </html>	<html> <head> <title>...</title> </head> <body> ... </body> </html>
You should use all lowercase tags:	
<html>	<HTML>
You should properly nest tags, overlapping is not allowed:	
<i>italic</i> and bold	<i>italic and bold</i>
You should quote attribute values:	
You should not minimize attribute value pairs:	
<select multiple="multiple"> ... </select>	<select multiple> ... </select>
You should terminate empty elements:	
Note the space before the terminating slash (/) for compatibility with older browsers.	
You should close all non-empty elements:	
<p>Some text</p>	Some text<p>
<p>Some more text</p>	Some more text<p>
You must make proper use of entity references:	
Link	Link

¹⁰ Or use the Content-Type: text/html; charset=iso-8859-1 HTTP header. Note that emojis are not a part of the ISO-8859-1 character set.



```
<a href="details.jsp?name=John+'Neill">John</a>
```

```
<a href="details.jsp?name=John O'Neill">John</a>
```

Regularly check the generated HTML in your i-mode site with an HTML validator, like <http://validator.w3.org/>



Web server error pages

Errors occur: not found (404) and internal server error (500) errors are a fact of life. One thing you might want to change is the web page your web server serves for these error messages to the i-mode handset instead of the default ones or the ones especially designed for your website.

404 (Not Found) Example

```
<html>
<head>
<title>Not Found</title>
</head>
<body bgcolor="#ffffff">
<font color="#ff0000">Error</font><br>
<p>The page you are trying to display cannot be found on
this web server.</p>
<p>If you think this is an error, please contact the
<a href="mailto:webmaster@company.com?
subject=404+Error">webmaster</a>.</p>
<p>&#59106; <a href="/" accesskey="0">Home</a></p>
</body>
</html>
```

Optimizing content for different handsets

There are three handsets on the market, the NEC N21i and N22i and the Toshiba TS21i. They have different screen sizes (120 x 130 for the NECs and 128 x 91 for the Toshiba). Especially the width is an important factor when rendering logos at the top of the page. Here's an example of how to use the bgcolor attribute of the TD tag to extend the background color of a logo so the logo will fill the entire width of the screen. The important attributes are **bold**. The background color of the logo is RGB #ff0000.

NEC N21i / N22i and Toshiba TS21i logo example

```
<html>
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-16">
<title>i-menu</title>
</head>
<body bgcolor="#ffffff" link="#990000" vlink="#990000">
<table border="0" cellspacing="0" cellpadding="0" width="100%">
<tr>
<td bgcolor="#ff0000">

</td>
</tr>
</table>
```

```

1. <a href="page1.html" accesskey="1">link1</a><br>
2. <a href="page2.html" accesskey="2">link2</a><br>
3. <a href="page3.html" accesskey="3">link3</a><br>
4. <a href="page4.html" accesskey="4">link4</a><br>
5. <a href="page5.html" accesskey="5">link5</a><br>
</body>
</html>

```

As shown on NEC N21i / N22i



As shown on Toshiba TS21i



Note the amount of extra red at the right-hand side of the yellow i-mode i in the Toshiba example.

For a complete overview of the differences between these handsets refer to Appendix 4: Handset Comparison Chart.

istyle and input modes overview

Below is a complete overview of the istyle settings for the NEC N21i and N22i and Toshiba TS21i for text inputs:

Setting	NEC N21i / N22i	Toshiba TS21i
<input type="text" istyle="1">		
T9	T9 default OFF	T9 default ON
Input mode	Abc	Abc
Switching between lowercase, uppercase and digits possible	Yes	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	Yes (key [1], and/or Menu, [5], Insert Symbol)
<input type="text" istyle="2">		
T9	T9 default OFF	T9 default ON
Input mode	Abc	Abc
Switching between lowercase, uppercase and digits possible	Yes	Yes



Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	Yes (key [1], and/or Menu, [5], Insert Symbol)
<input type="text" istyle="3">		
T9	T9 default OFF	T9 default OFF
Input mode	Abc	ABC
Switching between lowercase, uppercase and digits possible	Yes	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	No
<input type="text" istyle="4">		
T9	T9 default OFF	T9 default OFF
Input mode	123	123
Switching between lowercase, uppercase and digits possible	No	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	No	Yes
Inserting other special characters like "@" or "/" possible	No for N21i Yes for N22i	No

The above four settings imply that for an input field where an e-mail address (including the "@") is expected, istyles 1 and 2 are the only possibility for the Toshiba TS21i. Unfortunately these have T9 default to ON.

Below is a list of the istyle behaviour for the password input.

Setting	NEC N21i / N22i	Toshiba TS21i
<input type="password" istyle="1">		
T9	Default off	Off
Input mode	Abc	Abc
Switching between lowercase, uppercase and digits possible	Yes	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	Yes, with [1]



<input type="password" istyle="2">		
T9	Default off	Off
Input mode	Abc	Abc
Switching between lowercase, uppercase and digits possible	Yes	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	Yes, with [1]
<input type="password" istyle="3">		
T9	Default off	Off
Input mode	Abc	ABC
Switching between lowercase, uppercase and digits possible	Yes	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	Yes	Yes
Inserting other special characters like "@" or "/" possible	Yes	No
<input type="password" istyle="4">		
T9	Default off	Off
Input mode	123	123
Switching between lowercase, uppercase and digits possible	No	Yes
Special characters like "á" and "ë" possible by pressing "1" or "3" repeatedly	No	Yes
Inserting other special characters like "@" or "/" possible	No for N21i Yes for N22i	Yes

Period expired pop-up

The period expired pop-up is shown when pressing the "back" key on the handset to go back one page in history. This causes the handset to retrieve the page from its cache if it is available or retrieve it again from the network. The latter happens if this page was explicitly configured not to be cached, e.g. with one of the following HTTP headers:

HTTP header	Description
Expires	Indicates the date on which the content of the page will expire
Cache-control	Determines the behaviour of a caching proxy



See the HTTP/1.1 specification RFC 2068, available at <http://www.ietf.org/rfc/rfc2068.txt> for more details.

The pop-up only informs the user that the handset will retrieve the page from the network once again. If you think this is an annoying feature, do not add the explicit HTTP headers in the table below to the response.



Glossary

Below is a list of terms used in this document:

Base64	A way to encode binary files to transfer them across heterogenous networks. Used by e-mail clients.
CGI	Comman Gateway Interface: A way to create dynamic web pages
GIF	Graphics Interchange Format A file format for graphics
HTML	HyperText Markup Language The markup language for web pages
HTTP	HyperText Transfer Protocol The protocol used to request and retrieve web pages
JPEG	Joint Photographic Expert Group A file format for graphics
NTT DoCoMo	The Japanese mother company of i-mode
URL	Uniform Resource Locator Used to indicate a resource on the web
W3C	World-Wide Web Consortium The institute that defines the standards used on the web
WBMP	Wireless Bitmap A file format for graphics for WAP
WML	Wireless Markup Language The markup language for WAP pages
XHTML	Extensible HyperText Markup Language A rewrite of HTML to make it more standards compliant and modular



References

Below is a list of resources.

CHTML	Note on Compact HTML http://www.w3.org/TR/1998/NOTE-compactHTML-19980209
HTML 4.01	W3C's endorsed specification of HTML 4.01 http://www.w3.org/TR/html4
HTML Validator	W3C's tools to check HTML pages for validity http://validator.w3.org/
HTTP	HyperText Transfer Protocol 1.1 is described in RFC 2068 http://www.ietf.org/rfc/rfc2068.txt
ISO 639	ISO 639 Codes for the representation of names of languages http://ftp.ics.uci.edu/pub/ietf/http/related/iso639.txt
Language Codes	Tags for the Identification of Languages is described in RFC 3066 http://www.ietf.org/rfc/rfc3066.txt
NTT DoCoMo	The Japanese mother company of i-mode http://www.nttdocomo.co.jp
XHTML Basic	W3C's endorsed specification of XHTML Basic http://www.w3.org/TR/xhtml-basic



Appendix 1: Color palette

Below is the 8 x 8 x 4 RGB color palette for i-mode with hexadecimal color codes. Emoji icons can also be given another than their default color.

Example

```
This text is <font color="#ff0000">red</font>
```

000000	000055	0000aa	0000ff	920000	920055	9200aa	9200ff
002400	002455	0024aa	0024ff	922400	922455	9224aa	9224ff
004900	004955	0049aa	0049ff	924900	924955	9249aa	9249ff
006d00	006d55	006daa	006dff	926d00	926d55	926daa	926dff
009200	009255	0092aa	0092ff	929200	929255	9292aa	9292ff
00b600	00b655	00b6aa	00b6ff	92b600	92b655	92b6aa	92b6ff
00db00	00db55	00dbaa	00dbff	92db00	92db55	92dbaa	92dbff
00ff00	00ff55	00ffaa	00ffff	92ff00	92ff55	92ffaa	92ffff
240000	240055	2400aa	2400ff	b60000	b60055	b600aa	b600ff
242400	242455	2424aa	2424ff	b62400	b62455	b624aa	b624ff
244900	244955	2449aa	2449ff	b64900	b64955	b649aa	b649ff
246d00	246d55	246daa	246dff	b66d00	b66d55	b66daa	b66dff
249200	249255	2492aa	2492ff	b69200	b69255	b692aa	b692ff
24b600	24b655	24b6aa	24b6ff	b6b600	b6b655	b6b6aa	b6b6ff
24db00	24db55	24dbaa	24dbff	b6db00	b6db55	b6dbaa	b6dbff
24ff00	24ff55	24ffaa	24ffff	b6ff00	b6ff55	b6ffaa	b6ffff
490000	490055	4900aa	4900ff	db0000	db0055	db00aa	db00ff
492400	492455	4924aa	4924ff	db2400	db2455	db24aa	db24ff
494900	494955	4949aa	4949ff	db4900	db4955	db49aa	db49ff
496d00	496d55	496daa	496dff	db6d00	db6d55	db6daa	db6dff
499200	499255	4992aa	4992ff	db9200	db9255	db92aa	db92ff
49b600	49b655	49b6aa	49b6ff	dbb600	dbb655	dbb6aa	dbb6ff
49db00	49db55	49dbaa	49dbff	dbdb00	dbdb55	dbdbaa	dbdbff
49ff00	49ff55	49ffaa	49ffff	dbff00	dbff55	dbffaa	dbffff
6d0000	6d0055	6d00aa	6d00ff	ff0000	ff0055	ff00aa	ff00ff
6d2400	6d2455	6d24aa	6d24ff	ff2400	ff2455	ff24aa	ff24ff
6d4900	6d4955	6d49aa	6d49ff	ff4900	ff4955	ff49aa	ff49ff
6d6d00	6d6d55	6d6daa	6d6dff	ff6d00	ff6d55	ff6daa	ff6dff
6d9200	6d9255	6d92aa	6d92ff	ff9200	ff9255	ff92aa	ff92ff
6db600	6db655	6db6aa	6db6ff	ffb600	ffb655	ffb6aa	ffb6ff
6ddb00	6ddb55	6ddbaa	6ddbff	ffdb00	ffdb55	ffdbaa	ffdbff
6dff00	6dff55	6dffaa	6fffff	ffff00	ffff55	ffffaa	ffffff

A few colors also have a name that is presented in the list below.



Example

This text is green

Color name	Hexadecimal code
black	000000
green	008000
silver	c0c0c0
lime	00ff00
gray	808080
olive	808000
white	ffffff
yellow	ffff00

Color name	Hexadecimal code
maroon	800000
navy	000080
red	ff0000
blue	0000ff
purple	800080
teal	008080
fuchsia	ff00ff
aqua	00ffff



Appendix 2: Emoji icons

Using emoji icons is easy: just look up the emoji you would like to use from the list below with standard 160 emojis and enter the following code in your HTML document:

```
&#decimal;
```

Please note that emoji's have a default color that might differ from your text color. Some handsets allow you to change the color of the emoji by embedding the emoji within `...` tags. Some handsets may provide additional emoji icons. Emojis use a private part of the UNICODE characters space, they are not part of the standard ISO-8859-1 to ISO-8859-10 character sets.

Emojis cannot be used in i-mode mail.

Example

```
&#59106;
```

for the emoji icon for [1]

Nr	Decimal	Hex	Emoji	Description	Default color
1	58942	E63E	☀	Fine	Red
2	58943	E63F	☁	Cloudy	Blue
3	58944	E640	☂	Rain	Blue
4	58945	E641	☃	Snow	Blue
5	58946	E642	⚡	Thunder	Orange
6	58947	E643	🌀	Typhoon	Red
7	58948	E644	🌫	Fog	Blue
8	58949	E645	🌦	Drizzle	Blue
9	58950	E646	♉	Aries	Red
10	58951	E647	♉	Taurus	Orange



Nr	Decimal	Hex	Emoji	Description	Default color
11	58952	E648	♊	Gemini	Green
12	58953	E649	♋	Cancer	Blue
13	58954	E64A	♌	Leo	Red
14	58955	E64B	♍	Virgo	Orange
15	58956	E64C	♎	Libra	Green
16	58957	E64D	♏	Scorpio	Blue
17	58958	E64E	♐	Sagittarius	Red
18	58959	E64F	♑	Capricorn	Orange
19	58960	E650	♒	Aquarius	Green
20	58961	E651	♓	Pisces	Blue
22	58963	E653	⚾	Baseball	Black
23	58964	E654	⛳	Golf	Blue
24	58965	E655	🎾	Tennis	Green
25	58966	E656	⚽	Soccer	Black
26	58967	E657	🎿	Ski	Blue
27	58968	E658	🏀	Basketball	Orange
28	58969	E659	🏁	Motor sports	Black
29	58970	E65A	📠	Pager	Purple
30	58971	E65B	🚂	Train	Green
31	58972	E65C	🚇	Subway	Orange



Nr	Decimal	Hex	Emoji	Description	Default color
32	58973	E65D	🚄	Bullet train	Blue
33	58974	E65E	🚗	Car (sedan)	Black
34	58975	E65F	🚐	Car (RV)	Green
35	58976	E660	🚌	Bus	Red
36	58977	E661	🛳	Ship	Blue
37	58978	E662	✈️	Airplane	Blue
38	58979	E663	🏡	House	Red
39	58980	E664	🏢	Building	Blue
40	58981	E665	🏣	Post office	Red
41	58982	E666	🏥	Hospital	Red
42	58983	E667	🏦	Bank	Purple
43	58984	E668	🏧	ATM	Red
44	58985	E669	🏨	Hotel	Green
45	58986	E66A	🏪	Convenience store	Blue
46	58987	E66B	⛽	Gas station	Purple
47	58988	E66C	🅿️	Parking	Blue
48	58989	E66D	🚦	Traffic signal	Black
49	58990	E66E	🚻	Toilet	Black
50	58991	E66F	🍴	Restaurant	Black
51	58992	E670	☕	Cafe	Green



Nr	Decimal	Hex	Emoji	Description	Default color
52	58993	E671		Bar	Purple
53	58994	E672		Beer	Orange
54	58995	E673		Fast food	Orange
55	58996	E674		Boutique	Red
56	58997	E675		Hairdresser	Blue
57	58998	E676		Karaoke	Black
58	58999	E677		Movie	Black
59	59000	E678		Diagonally upward toward right	Black
59	59001	E679		Amusement park	Orange
60	59007	E67F		Smoking	Black
66	59008	E680		Non-smoking	Red
67	59009	E681		Camera	Black
68	59010	E682		Bag	Red
69	59011	E683		Book	Orange
70	59012	E684		Ribbon	Red
71	59013	E685		Present	Red
72	59014	E686		Birthday	Red
73	59015	E687		Phone	Black
74	59016	E688		Mobile phone	Black
75	59017	E689		Memo	Orange

Nr	Decimal	Hex	Emoji	Description	Default color
76	59018	E68A	📺	TV	Blue
77	59019	E68B	🎮	Game	Black
78	59020	E68C	💿	CD	Blue
79	59021	E68D	❤️	Heart	Red
80	59022	E68E	♠️	Spade	Black
81	59023	E68F	♦️	Diamond	Red
82	59024	E690	♣️	Club	Black
83	59025	E691	👀	Eyes	Black
84	59026	E692	👂	Ear	Orange
85	59027	E693	✊	Hand (rock)	Orange
86	59028	E694	✌️	Hand (scissors)	Orange
87	59029	E695	✋	Hand (paper)	Orange
88	59030	E696	↗️	Diagonally downward toward right	Black
89	59031	E697	↖️	Diagonally upward toward left	Black
90	59032	E698	🦶	Foot	Orange
91	59033	E699	👟	Shoe	Black
92	59034	E69A	👓	Eyeglasses	Black
93	59035	E69B	♿	Wheelchair	Blue
94	59036	E69C	🌑	New moon	Black
95	59037	E69D	🌒	Waning moon	Black



Nr	Decimal	Hex	Emoji	Description	Default color
96	59038	E69E	🌙	Half moon	Black
97	59039	E69F	🌘	Crescent moon	Black
98	59040	E6A0	🌕	Full moon	Black
99	59041	E6A1	🐶	Dog	Orange
100	59042	E6A2	🐱	Cat	Orange
101	59043	E6A3	🏨	Resort	Blue
102	59044	E6A4	🎄	Christmas	Green
103	59045	E6A5	↗	Diagonally downward toward left	Black
145	59086	E6CE	☎️	phone to	Black
146	59087	E6CF	✉️	mail to	Black
147	59088	E6D0	📠	fax to	Black
148	59089	E6D1	📱	i-mode	Orange
149	59090	E6D2	📱	i-mode (with a frame)	Orange
150	59091	E6D3	✉️	i-mode mail	Black
151	59092	E6D4	📠	Provided by DoCoMo	Black
152	59093	E6D5	คะแน	DoCoMo point	Black
153	59094	E6D6	💴	Fee charging	Red
154	59095	E6D7	🆓	Free of charge	Red
155	59096	E6D8	🆔	ID	Red
156	59097	E6D9	🔑	Password	Red

Nr	Decimal	Hex	Emoji	Description	Default color
157	59098	E6DA	🖨️	Continuing	Red
159	59099	E6DB	CLEAN	Clear	Red
160	59100	E6DC	🔍	Search	Blue
161	59101	E6DD	🆕	NEW	Red
162	59102	E6DE	📍	Location information	Red
163	59103	E6DF	📞	Free dial	Black
164	59104	E6E0	#	Sharp dial	Black
165	59105	E6E1	Ⓜ	MopaQ	Black
166	59106	E6E2	1	1	Black
167	59107	E6E3	2	2	Black
168	59108	E6E4	3	3	Black
169	59109	E6E5	4	4	Black
170	59110	E6E6	5	5	Black
171	59111	E6E7	6	6	Black
172	59112	E6E8	7	7	Black
173	59113	E6E9	8	8	Black
174	59114	E6EA	9	9	Black
175	59115	E6EB	0	0	Black
176	59116	E6EC	❤️	Black heart	Red
177	59117	E6ED	❤️	Fluttering heart	Red



Nr	Decimal	Hex	Emoji	Description	Default color
178	59118	E6EE	💔	Heartbreak	Red
179	59119	E6EF	❤️	Hearts	Red
180	59120	E6F0	😊	Happy face	Purple
181	59121	E6F1	😡	Angry face	Red
182	59122	E6F2	😔	Disappointed face	Blue
183	59123	E6F3	😢	Sad face	Green
184	59124	E6F4	😵	Dizzy	Blue
185	59125	E6F5	⤴	Good (upward arrow)	Red
186	59126	E6F6	抃	Cheerful	Red
187	59127	E6F7	♨️	Comfort (thermal spring)	Red
188	59128	E6F8	✳️	Cute	Purple
189	59129	E6F9	💏	Kiss	Red
190	59130	E6FA	✨	Shining (new)	Orange
191	59131	E6FB	💡	Good idea	Orange
192	59132	E6FC	😠	Angry	Black
193	59133	E6FD	👊	Punch	Red
194	59134	E6FE	💣	Bomb	Black
195	59135	E6FF	⚡	Mood	Red
196	59136	E700	⬇️	Bad (downward arrow)	Blue
197	59137	E701	💤	Sleepy (sleep)	Blue





Appendix 3: Tag Comparison Chart

Below is a list of tags and attributes supported in HTML, XHTML Basic, XHTML Basic Mobile Profile (MP), cHTML and by the Access browser used in the NEC N21i / N22i and Toshiba TS21i.

Event attributes like **onblur**, **onchange**, **onclick**, **ondblclick**, **onfocus**, **onkeydown**, **onkeypress**, **onkeyup**, **onload**, **onmousedown**, **onmousemove**, **onmouseout**, **onmouseover**, **onmouseup**, **onreset**, **onselect**, **onsubmit**, and **onunload** are not listed for elements that should support it because scripting is not supported in i-mode handsets.

+ = Supported o = Partially supported
- = Not supported w = Supported in WML

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
!--	-	2	+	+	+		HTML Comments
!DOCTYPE	-	2	+	+	+		DOCTYPE definition
&xxx;	-	2	+	+	+		Entities
A	-	2	+	+	+	+	
	accesskey="char"	4	+	+	-	+	
	charset=	4	+	+		-	
	href="URL"	2	+	+	+	+	
	hreflang=	4	+	+		+	
	methods=	2	-	-	-	-	Obsoleted in HTML 3.2
	name=	2	-	-	+	+	
	rel=	2	+	+	-	+	
	rev=	2	+	+	-	+	
	tabindex=	4	+	+		-	
	title=	2	+	+	-	-	
	type=	4	+	+		-	
	urn=	2	-	-	-	-	Obsoleted in HTML 3.2
ABBR	-	4	+	+	-	-	
ACRONYM	-	4	+	+	-	-	
ADDRESS	-	2	+	+	-	o	
APPLET	-	3.2	-	-	-	-	Deprecated in HTML 4.0
	align="left center right"	3.2	-	-	-	-	
	alt=	3.2	-	-	-	-	
	codebase=	3.2	-	-	-	-	
	height=	3.2	-	-	-	-	
	name=	3.2	-	-	-	-	
	hspace=	3.2	-	-	-	-	

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	vspace=	3.2	-	-	-	-	
	width=	3.2	-	-	-	-	
AREA	alt=						
	coords=						
	href="URL"						
	nohref						
	shape=	3.2	-	-	-	-	
B	-	2	-	+	-	o	
BASE	href="URL"	2	+	+	+	+	
BASEFONT		3.2	-	-	-	+	Deprecated in HTML 4.0
	color=					o	
	face=					o	
	size=					o	
BDO	-	4	-	-	-	-	
BIG	-	3.2	-	+	-	o	
BLINK	-	?	-	-	-	+	
BLOCKQUOTE	-	3.2	+	+	+	+	
	cite=		+	+	-	-	
BODY	-	2	+	+	+	+	
	alink=	3.2	-	-	-	+	Deprecated in HTML 4.0
	background=	3.2	-	-	-	-	Deprecated in HTML 4.0
	bgcolor=	3.2	-	-	-	+	Deprecated in HTML 4.0
	link=	3.2	-	-	-	+	Deprecated in HTML 4.0
	text=	3.2	-	-	-	+	Deprecated in HTML 4.0
	vlink=	3.2	-	-	-	-	Deprecated in HTML 4.0
BR	-	2	+	+	+	+	
	clear="all left right"	3.2	-	-	+	+	Deprecated in HTML 4.0
BUTTON	-	4	-	-	-	-	
CAPTION	-	3.2	+	+	-	+	
	align="left center right"						Deprecated in HTML 4.0
CENTER	-	3.2	-	-	+	+	Deprecated in HTML 4.0
CITE	-	2	+	+	-	o	
CODE	-	2	+	+	-	-	
COL	-	4	-	-	-	-	
COLGROUP	-	4	-	-	-	-	
DD	-	2	+	+	+	+	
DEL	-	4	-	-	-	-	
DFN	-	3.2	+	+	-	o	
DIR	-	2	-	-	+	+	Deprecated in HTML 4.0
	compact				-		
DIV	-	3.2	+	+	+	+	

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	<td></td> <td>-</td> <td>-</td> <td>+</td> <td>+</td> <td>Deprecated in HTML 4.0</td>		-	-	+	+	Deprecated in HTML 4.0
DL	-	2	+	+	+	+	
	compact		-	-	-	-	Deprecated in HTML 4.0
DT	-	2	+	+	+	+	
EM	-	2	+	+	-	o	
FIELDSET	-	4	-	+	-	w	
FONT	size="n"	3.2	-	-	-	o	Deprecated in HTML 4.0
	face=	3.2			-	o	
	color=	3.2			-	+	
FORM	action=	2	+	+	+	+	
	enctype=	2	+	+	+	+	
	method="GET POST"	2	+	+	+	+	
FRAME	-	4	-	-	-	-	
FRAMESET	-	4	-	-	-	-	
HEAD	-	2	+	+	+	+	
Hn	-	2	+	+	+	o	n = 1 - 6
	<td>3.2</td> <td>-</td> <td>-</td> <td>+</td> <td>+</td> <td>Deprecated in HTML 4.0</td>	3.2	-	-	+	+	Deprecated in HTML 4.0
HR	-	2	-	+	+	+	
	<td>3.2</td> <td>-</td> <td>-</td> <td>+</td> <td>+</td> <td>Deprecated in HTML 4.0</td>	3.2	-	-	+	+	Deprecated in HTML 4.0
	noshade	3.2	-	-	+	+	Deprecated in HTML 4.0
	size=	3.2	-	-	+	+	Deprecated in HTML 4.0
	width=	3.2	-	-	+	+	Deprecated in HTML 4.0
HTML	-	2	+	+	+	+	
	version=	3.2	+	+	+	o	Deprecated in HTML 4.0
I	-	2	-	+	-	o	
IFRAME	-	4	-	-	-	-	
	<td></td> <td></td> <td></td> <td></td> <td></td> <td>Deprecated in HTML 4.0</td>						Deprecated in HTML 4.0
IMG	<td>2</td> <td>-</td> <td>-</td> <td>+</td> <td>+</td> <td>Deprecated in HTML 4.0</td>	2	-	-	+	+	Deprecated in HTML 4.0
	alt=	2	+	+	+	+	
	border=	3.2	-	-	+	+	Deprecated in HTML 4.0
	height=	3.2	+	+	+	+	
	hspace=	3.2	-	-	+	+	Deprecated in HTML 4.0
	ismap=	2	-	-	-	-	
	longdesc=		+	+			-
	src=	2	+	+	+	+	
	usemap=	3.2	-	-	-	-	
	valign="top middle bottom"	2	-	-	+	+	
	vspace=	3.2	-	-	+	+	Deprecated in HTML 4.0
	width=	3.2	+	+	+	+	

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
INPUT	type="text"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	istyle=	?	-	-	-	+	
	maxlength=	2	+	+	+	+	
	name=	2	+	+	+	+	
	size=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="password"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	maxlength=	2	+	+	+	+	
	name=	2	+	+	+	+	
	size=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="checkbox"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	checked	2	+	+	+	+	
	name=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="radio"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	checked	2	+	+	+	+	
	name=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="hidden"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	?	
	name=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="image"	2	+	+	-	-	
	align="top middle bottom left right"	3.2	-	-			Deprecated in HTML 4.0
	name=	2	+	+			
	src=	2	+	+			
	type="submit"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	name=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="reset"	2	+	+	+	+	
	accesskey="char"	?	+	+	-	+	
	name=	2	+	+	+	+	
	value=	2	+	+	+	+	
	type="file"	3.2	+	+	-	-	



Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	name=		+	+			
	tabindex=		+	+			
	value=		+	+			
INS	-	4	-	-	-	-	
ISINDEX	-	2	-	-	-	-	Deprecated in HTML 4.0
	prompt=	3.2			-		
KBD	-	2	+	+	-	-	
LABEL	-	4	+	+	-	-	
	accesskey=		+	+			
	for=		+	+			
LEGEND	-	4	-	-	-	-	
LI	-	2	+	+	+	+	-
	type="1 A a I i"	3.2	-	-	-	+	Deprecated in HTML 4.0
	type="circle disk square"	3.2	-	-	-	+	Deprecated in HTML 4.0
	value=	3.2	-	-	-	+	Deprecated in HTML 4.0
LINK	charset=		+	+			
	href="URL"	2	+	+	-	-	
	hreflang=		+	+			
	media		+	+			
	methods=		-	-			
	rel=		+	+			
	rev=		+	+			
	title=		-	-			
	type=		+	+			
LISTING	-	2	-	-	-	-	Obsoleted in HTML 4.0
MAP	name=	3.2	-	-	-	-	
MARQUEE	behaviour="scroll slide alt ernate"	?			-	+	
	direction="left right"	?	-	-	-	+	
	loop="n"	?			-	+	Number of times
MENU	-	2	-	-	+	+	Deprecated in HTML 4.0
	compact				-	-	
META	content=	2	+	+	+	+	
	http-equiv=	2	+	+	+	+	
	name=	2	+	+	+	+	
	scheme=		+	+		-	
NEXTID	n=	2	-	-	-	-	Deleted from HTML 3.2
NOFRAMES	-	4	-	-	-	-	
NOSCRIPT	-	4	-	-	-	-	
OBJECT	-	4	+	+	-	-	

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	border=	4	+	+	-	-	Deprecated in HTML 4.0
	hspace=	4	+	+	-	-	Deprecated in HTML 4.0
	vspace=	4	+	+	-	-	Deprecated in HTML 4.0
OL	-	2	+	+	+	+	
	compact	2	-	-	-	-	Deprecated in HTML 4.0
	start=	3.2	-	-	-	+	Deprecated in HTML 4.0
	type="1 A a I i"	3.2	-	-	-	+	Deprecated in HTML 4.0
OPTGROUP	-	4	-	+	-	-	
OPTION	-	2	+	+	+	+	
	selected	2	+	+	+	+	
	value=	?	+	+	-	+	
P	-	2	+	+	+	+	
	align="left center right"	3.2	-	-	+	+	Deprecated in HTML 4.0
PARAM	-	4	+	+	-	-	
PLAINTEXT	-	2	-	-	+	+	Obsoleted in HTML 4.0
PRE	-	2	+	+	+	+	
	width=	3.2	-	-	-	-	Deprecated in HTML 4.0
Q	-	4	+	+	-	-	
	cite=		+	+	-	-	
S	-	2	-	-	-	+	Deprecated in HTML 4.0
SAMP	-	2	+	+	-	-	
SCRIPT	-	3.2	-	-	-	-	
	language=	3.2			-	-	Deprecated in HTML 4.0
	type=				-	-	
SELECT	multiple	2	+	+	+	+	
	name=	2	+	+	+	+	
	size=	2	+	+	+	+	
	tabindex=		+	+		+	
SMALL	-	3.2	-	+	-	w	
SPAN	-	4	+	+	-	-	
STRIKE	-	2	-	-	-	+	Deprecated in HTML 4.0
STRONG	-	2	+	+	-	o	
STYLE	-	2	-	+	-	-	
SUB	-	3.2	-	-	-	+	
SUP	-	3.2	-	-	-	+	
TABLE	-	3.2	+	+	-	+	
	align="left center right"		-	-		+	Deprecated in HTML 4.0
	bgcolor=		-	-		+	Deprecated in HTML 4.0
	border=		-	-		+	
	cellpadding=		-	-		+	
	cellspacing=		-	-		+	



Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	summary=		+	+		-	
	width=		-	-		+	
TBODY	-	4	-	-	-	-	
TD	-	3.2	+	+	-	+	
	abbr=		+	+		-	
	align="left center right"		-	-		+	Deprecated in HTML 4.0
	axis=		+	+		-	
	bgcolor=		-	-		+	Deprecated in HTML 4.0
	colspan=		+	+		+	
	headers=		+	+		-	
	height=		-	-		+	Deprecated in HTML 4.0
	nowrap		-	-		-	Deprecated in HTML 4.0
	rowspan=		+	+		+	
	valign="top middle bottom baseline"		-	-		+	Deprecated in HTML 4.0
	width=		-	-		+	Deprecated in HTML 4.0
TEXTAREA	accesskey=		+	+		+	
	cols=	2	+	+	+	+	
	istyle=	?	-	-	-	+	
	name=	2	+	+	+	+	
	rows=	2	+	+	+	+	
	tabindex=		+	+		-	
TFOOT	-	4	-	-	-	-	
TH	-	3.2	+	+	-	+	
	abbr=		+	+		-	
	align="left center right"		-	-		+	Deprecated in HTML 4.0
	axis=		+	+		-	
	bgcolor=		-	-		+	Deprecated in HTML 4.0
	colspan=		+	+		+	
	headers=		+	+		-	
	height=		-	-		+	Deprecated in HTML 4.0
	nowrap		-	-		-	Deprecated in HTML 4.0
	rowspan=		+	+		+	
	valign="top middle bottom baseline"		-	-		+	Deprecated in HTML 4.0
	width=		-	-		+	Deprecated in HTML 4.0
THEAD	-	4	-	-	-	-	
TITLE	-	2	+	+	+	+	
TR	-	3.2	+	+	-	+	
	align="left center right"		-	-		+	Deprecated in HTML 4.0
	bgcolor=		-	-		+	Deprecated in HTML 4.0

Elements	Attributes	HTML	XHTML Basic	XHTML MP	cHTML	Access	Comments
	valign="top middle bottom baseline"		-	-		+	Deprecated in HTML 4.0
TT	-	2	-	-	-	-	
U	-	3.2	-	-	-	+	Deprecated in HTML 4.0
UL	-	2	+	+	+	+	
	compact	2	-	-	-	-	Deprecated in HTML 4.0
	type="disk circle square"	3.2	-	-	-	-	Deprecated in HTML 4.0
VAR	-	2	+	+	-	0	
XMP	-	2	-	-	-	-	Obsoleted in HTML 4.0



Appendix 4: Handset Comparison Chart

The table below shows an overview of the differences between the three available handsets, the NEC N21i and Toshiba TS21i and NEC N22i. In red things that you should note.

Specification	NEC N21i	Toshiba TS21i	NEC N22i
General			
Screen size (gross / nett)	120 x 160 / 130	128 x 121 / 91	120 x 160 / 130
cHTML support	Yes	Yes	Yes
WAP / WML 1.3 support	Yes	Yes	Yes
Image support	GIF87, GIF89a, Animated GIF, WBMP		GIF87, GIF89a, Animated GIF, WBMP, JPEG
Colors	256	256	4096
Table support	Yes	Yes	Yes
Memory	8 Mb ROM / 1Mb RAM	8 Mb ROM / 2 Mb RAM	T.B.D.
User memory	600 kb	T.B.D.	T.B.D.
User-Agent string	portalmmm/1.0 n21i-10(c10) and portalmmm/1.0 n21i-20(c10)	portalmmm/1.0 TS21i-10(c10)	portalmmm/1.0 n22i-10(c10)
Screen & font			
Max # (effective) lines	10	7	10
Max # chars per line -- single/double byte (emojis)	16-24 / 8-12	20 / 9	16-24 / 8-12
Max page size (HTML+images)	10 kB	10 kB	10 kB
Font code page	Windows Codepage 1252 (Latin-1)		
Emoji color changeable	Yes	Yes	Yes
Ringtones			
Ringtone format	MFi	SMF	MFi 3.2
Polyphonic chords	16	16	32 + 8 ADPCM
Max ringtone size	10 kB	10 kB	10 kB
Embedable / downloadable ringtones	13 / 10	20 / 10	23 / 16
E-mails			
E-mail message size	1000 bytes	1000 bytes	1000 bytes
E-mail attachments	Only one ringtone, see Attachments in a mail message		
E-mails in Inbox	45	≥ 45	45
E-mails in Draft Box	10	T.B.D.	10
E-mails in Sent Items		≥ 10	
Screensavers / Wallpapers			
Screensaver size	10 kB	10 kB	10 kB
Max / storable wallpapers	5 / 5	20 / 10 (animated GIF, 5 frames)	7 / 5
Max / storable CLI screens	10 / 10		20 / 20
Max / storable welcome animations	2 / 1		2 / 1
Phonebook entries (phone / SIM)	500 / 200	T.B.D.	500