

Nokia 9110 Communicator WWW Browser Style Guide

Mobile Phones
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1. ABOUT THIS DOCUMENT

This is a design guide for content providers seeking to produce usable WWW pages with HTML for the Nokia 9110 Communicator browser. This guide outlines some of the basic considerations that should be taken into account when designing web sites for the Nokia 9110 Communicator.

A basic understanding of the words WWW, HTML, HTTP, browser, page, screen, pixel and bit is necessary to benefit from this document. Additional reference material is listed at the end of this guide.

This guide is not a general HTML style guide [Lynch, 1995], a general communicator design guide [GO, 1992] nor an HTML syntax check [Halsoft, 1995]. For more information on these subjects, refer to the references section at the end of this document. If a conflict between the suggestions of this document and other referenced documents arises, this document should be given preference.

2. HTML CONSIDERATIONS

The basic HTML for the Nokia 9110 Communicator should be based on the HTML 3.2. There are some minor exceptions and limitations which must be taken into account. These restrictions are set mainly by the size of the view and by the layout capabilities of the system. E.g. it is not always possible to handle element positioning or image sizing as defined in HTML source code. These and other design suggestions will be discussed in this document.

The browser parser in the Nokia 9110 Communicator is not strict and will not attempt to interpret HTML tags it does not support. Note that the basic screen and graphic design for the Nokia 9110 Communicator is radically different from a desktop computer. To maximise the properties of both platforms, WWW page versions should be created for both the Nokia 9110 Communicator and PC platforms. HTML comments, excessive white space, non-usable tags, and heavy graphics should be avoided to ensure maximum download speed.

3. SUPPORTED PROTOCOLS AND MIME TYPES

The protocols that can be used in fetch operation by default are listed in the following table.

Protocol	Description
File	Protocol for fetching local files.
Http	Hypertext transfer protocol.
Https	Protocol for SSL (Secure Socket Layer). SSL is a transparent software layer that is located above TCP/IP and below the application protocols in the protocol stack. SSL enables to transfer the user's sensitive data over a public network securely. WWW browser of the Nokia 9110 Communicator has SSL version 3 capability.
Mailto	Protocol to send email from WWW page. Opens up a Mail editor.

The following MIME types are supported by WWW:

/		Unknown MIME types
Application/vnd.nokia.ringing-tone	.rng	Communicator ringing tones
Application/ringing-tone	.rng	Communicator ringing tones
Application/x-nokia-9000-communicator-add-on-software	.aos	AOS files
Application/vnd.nokia.configuration-message	.ncm	Configuring Smart Message file
Audio/wav	.wav	Wav audio file
Audio/x-wav	.wav	Wav audio file
Image/gif	.gif	GIF image
Image/jpeg	.jpg, .jpe	JPEG image
Text/html	.html, .htm	Html file
Text/plain	.txt	Plain text file

4. PAGE LAYOUT CONSIDERATIONS

The size of the 9110 Communicator screen is 200 x 640 pixels. The pixel shape is rectangular and the pixel pitch is 0,17mm. The display is able to show 16 grey tones. The area displaying WWW-page content is 200 X 540 pixels, as a part of the screen is covered by the browser options and window.

4. 1. The Text

The standard text size is 12 points, with support for both mono-spaced and variable-spaced typefaces. Underline, bold and italics styles are also supported. All text links are displayed as underlined. All levels of headings (H1-H6) are supported. Text to be read first should be formatted to fit on the first screen of the page.

Note that preformatted text (<PRE> tag) should be avoided as the user cannot resize the window of the browser. Approximately 75 characters fit on a single line when the basic text size is used. This is dependent on which letters are in the text (i's are thinner than m's).

Underlined text should not be used, since the Nokia 9110 Communicator underlines all links. Underlined text, therefore, appears as a link to the user.

When displaying pre-sized text, lines which are too long for the screen continue onto the next line making all the text available to the reader.

It is not useful to use pictures as bullets when making lists. This can mix the list up and could cause the user wonder what the pictures are for if they are not auto-loading images.

4. 2. Tables

The Nokia 9110 Communicator Browser supports tables. There is a table button, which is a button icon opens a separate table viewer to display the table. Table viewer is horizontally and vertically scrollable note. It contains a cursor that can be moved to enable select and copy of the table contents.

Arrow keys move the cursor by cells. It is possible to move the cursor inside the cell with Ctrl + arrow key. Shift + arrow selects the text in one cell. Ctrl + h moves the focus to upper left corner of the table. Ctrl + e moves the focus to lower right corner of the table. Chr + arrow scrolls one screenful in the selected direction.

Title line in the viewer displays the string from the CAPTION tag on the left side. Right side of the title line shows the cell coordinates for the current position of the cursor, for example 2,3 for column 2 and row 3.

Table viewer is available when there is a table on a web page. Only if the table contains form elements or there are mainly image icons or text fields that are over the maximum length in the table, the table viewer is not available.

4. 3. Frames

Each frame will be displayed as a link. If a web page has four frames, the Nokia 9110 Communicator will show four corresponding links. When a link is selected, it will take the browser to a new page which shows the content of the frame chosen.

NOTE: It may cause user problems, if cookies are used within a frame document. User should then load the correct frame before cookie is handled.

4. 4. Movement Within a Page

The user moves from one discrete link to another by using the scroll keys on the Nokia 9110 Communicator. The scroll keys move the browser to the next line or next hyperlink. The active area of the page also changes accordingly. The **Chr** and scroll keys can be used to scroll a full screen of material at once. Ctrl -H can be used to move to the beginning of the page and Ctrl-E to move to the end of the page. There is no cursor for continuous scrolling through the page. Since free movement within a page is restricted, links should be carefully placed. Hierarchical pages are easier for the user to navigate than a single long page.

4. 5. Hierarchy

A good rule is that a page should not have more than five hyperlinks unless it is a selection menu listed with proper sub-headings. A maximum of three hierarchical levels are recommended for casual browsing. If more than three hierarchical levels are required, the designer should ensure easy navigation between the levels. This is especially important in sub-categorised hierarchies of three or more levels. Give the user a chance to go back easily to a sub-category home page as well as to the main home page. Again, avoid long pages as downloading and navigating them can be slow.

5. GRAPHICS CONSIDERATIONS

The graphics display attributes of the Nokia 9110 Communicator should be taken into account when incorporating graphic images. In addition to the size and depth attributes of the display, other important considerations are the communication speed of the browser, the speed of the HTTP protocol, and the use of image maps (ISMAP). When displaying paragraph text, approximately 75 characters can be displayed. Use the **ALT** attribute to specify a text string that the browser can display as an alternative to the in-line image.

5. 1. Display Attributes

Pre-rasterizing of all pictures with more than 8 shades of gray is recommended. A stochastic raster with 8 shades of gray works best in most cases. Images with large uniform color areas look better than heavily screened images. Images placed horizontally in a normal-sized screen (desktop or laptop PC) will be displayed vertically on the Nokia 9110 Communicator. Pictures can be loaded faster using RLE compression, which is important because of the transfer rate.

An external picture should not be larger than 570 X 200 pixels, because this size fills the whole screen. The maximum dimensions for inline pictures are 540 X 200 pixels. If a picture exceeds the maximum width, the picture will be zoomed out using standard factors (1:2, 1:3, etc.). For example, if the inline image width is 541 pixels it will be zoomed out using the factor of 1:2 and be displayed as 270 pixels wide. An image with a 540 pixel width will be

shown full-size using the entire screen width. The height of a image is not so important, as the screen can be scrolled up and down.

GIF, JPG , and UPF (Uni Picture Format, format of the IrTran-P digital camera images) format pictures can be viewed with external image viewer, but progressive JPEG compression should not be used. A maximum of four images per page is recommended. General image size should not exceed 10 kilobytes. Since a user can turn off image auto-loading, it is advisable to warn the user if you are offering a graphics-intensive page.

6. DATA TRANSFER SPEED CONSIDERATIONS

The HTTP protocol specifies a “slow start”, which slows down the start of each HTTP transfer. The HTTP protocol is also connectionless, requiring all images on a page to be retrieved with their own HTTP request. Each request takes time to execute due to negotiation overhead of the protocol. Considering the data transfer speed of the Nokia 9110 Communicator (9600 bit/s or 14400 bit/s if supported by the GSM network), the number of images on a page should be evaluated carefully and all image sizes should be kept to a minimum. It should not take more than 10 seconds to fetch and display a typical page on the Nokia 9110 Communicator browser.

It is often better to use one large image map rather than separate images, because one image loads faster than several smaller images. Since image maps are somewhat slower to navigate than text links, they should only be used where needed.

7. MULTIMEDIA CONSIDERATIONS

The 9110 Communicator Browser supports WAV format. WAV audio files can be fetched and files can be played using Digital Voice recorder.

The WAV files can not be played simultaneously with an active data call. When an audio file is downloaded and there is an active data call, the file is stored in Tones folder. Animated GIFs are not supported. Only the first picture from the series will be displayed. If the animation is saved to the Downloaded files folder, the animation will be played as whole when opened.

8. LINK CONSIDERATIONS

All links are displayed as underlined text. To avoid confusion between links and other text, do not use underlining for text emphasis. Note that the emphasis tag () may also produce an underlining effect for the text emphasized.

Link placement should allow users to clearly distinguish between links on the page. For example, two short words (links) side-by-side may not appear as separate links to the user. Links that go semantically together should usually be placed so that the user does not have to scroll down to the next screen in order to access the next link.

Links that together form a set of choices, from which the user selects one link, should all be visible at the same time on the screen. This helps the user to see the hyperlink options in a glance, without having to scroll up and down the page. The chance that a link will not be noticed is reduced if links are grouped properly.

The mail-to HREF-link is supported, but Nokia 9110 Communicator does not support other data transfer protocols (i.e. wais, ftp, gopher) and they should not be offered. If there is a need for these services, an http gateway should be set up to provide these services for the user.

The user can keep a list of personal bookmarks on the Nokia 9110 Communicator, but this capability should not be used to force the user to add new links to the list in order to properly navigate a certain WWW hierarchy.

9. OTHER CONSIDERATIONS

WWW browser of the Nokia 9110 Communicator has two different cache systems. The basic “online” cache stores the documents that are fetched with normal fetch operations. This cache has maximum size of 300 kb. Older documents are removed when the cache is full and new documents are fetched. The other “offline cache” stores only documents that are fetched with timed fetching. This cache does not have a fixed maximum size. All fetched items, except secure documents and documents that are fetched with HTTP headers “Cache-Control:no-cache” or “Pragma:no-cache”, are stored in the cache.

Authentication (inserting a name and password in a dialog) is also supported and can be used. Forms or dialogs requiring heavy text input should be avoided so the user is not overwhelmed with data entry. Users are likely to avoid pages that are too cumbersome to use. When the authorization data is asked for the second time in the same domain, application offers automatically the username and password from the earlier contact. If this fails the authorization dialogue is opened with default username. Successful authorization is transparent to the user.

The Nokia 9110 Communicator WWW browser supports client pull (HTTP-EQUIV=”Refresh”) feature. It is also possible to set an automatic update to certain pages.

For best results, we recommend providing links to pages specifically designed for the Nokia 9110 Communicator browser, as well as other browsers, based on the browser identification information which can be queried with the HTTP protocol. Pages should be optimized with the appropriate level of HTML DTD, graphics, and links for each browser. When designed properly, these pages offer maximum usability and can be used as templates for the creation of additional pages. Templates allow the automatic generation of additional pages with similar design elements and functions. Changes to the browser can be accommodated by changes to the template, rather than to all of the individual pages created for the browser.

The Nokia 9110 Communicator browser name is “Nokia-Communicator-WWW-Browser/3.0 (Geos 3.0 Nokia-9110)”. The browser can identify itself by including the User-Agent request-header field with requests. The User-Agent request-header field contains information about the user agent originating the request. To ensure that users receive pages that are compatible with the Nokia 9110 Communicator, use a script that checks the User-Agent request-header field and returns the communicator-optimized pages.

10. CHECKLIST

A list of the major guidelines for designing WWW pages for the Nokia 9110 Communicator is offered here as a tool for checking page sketches or final designs. This checklist should be used each time new pages are designed, or existing pages are modified. When designing pages for the first time, an HTML manual [Tilton, 1995] and WWW design style guide [Lynch, 1995] should be consulted first.

10. 1. Graphics

- Use only HTML 3.2. Limitations are listed in this document.
- The maximum file size of a single image is 10 kB.
- Use a maximum of four images per page.
- Images have been reduced to 10 grays or less.
- The maximum image dimensions are 540 X 200 pixels.
- Do not use progressive JPEG compression on images.
- Horizontally placed images can be displayed vertically.
- The ALT attribute is used with in-line images.
- It is recommended not to use frames.

10. 2. Text

- Underlining is not used for text emphasis.
- Most important text is visible at the top of the screen.

10. 3. HTML 3.2 DTD Commands Not supported By Communicator Browser

- APPLET element
- BASEFONT element
- FONT element
- ISINDEX element
- LINK element
- SCRIPT element
- STYLE element
- U element
- Attributes in A element: rel, rev, title
- Attributes in BODY element: bgcolor, text, link, vlink, alink, background
- Attribute in BR element: clear
- Attributes in HR element: align, noshade, size, width
- Attributes in IMG element: align, width, height, border, hspace, vspace
- Attributes in OL element: type, compact
- Attribute in PRE element: width
- Attribute in SELECT element: size
- Attributes in TABLE element: align, border, cellspacing, cellpadding, width
- Attribute in CAPTION element: align
- Attribute in TD element: nowrap, width, height, align, valign
- Attribute in TH element: nowrap, width, height, align, valign
- Attributes in TR element: align, valign
- Attributes in UL element: type, compact

10. 4. Hierarchy

- No more than five major links on a page (unless with lists)
- No more than three major levels of hierarchy (unless the hierarchy is categorized into sub-hierarchies)
- Navigation back to the home page and sub-category home page is available.

10. 5. Links

- Links are grouped to enable selection without scrolling
- Links should be visually separate from each other

10. 6. Usability

- Each page takes about 10 seconds to load and display
- No links that point to multimedia data types

10. 7. Browser Identification

- The server identifies the 9110 browser and uses an optimized layout template.

11. REFERENCES

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