

The World Wide Web is beckoning mobile devices and consumers are beginning to realize that the Web is not tied to their PCs. The time for the truly Mobile Web is here.

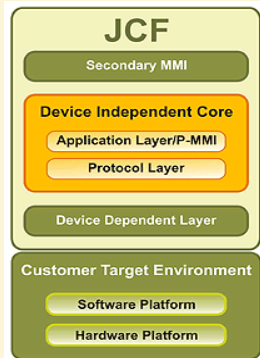
With the expectations set very high by the users, what is required is a browser that will not disdainfully cut out the mobile web but one that will lead the user to the World Wide Web without sacrificing carefully built portals and content.

**jB5 – Our Truly Mobile Browser** rises to these expectations with its Adaptive Rendering Technology - ART® has the ability to make the vision of ubiquitous mobile browser a reality.

## Key Features

**Multiple browsers in one:** jB5 packs the operator requirements of full WAP support and consumer needs for HTML support in one efficient package.

**High portability:** Jataayu Client Framework (JCF®), the foundation on which all Jataayu's handset products are built, is designed to strike a fine balance between high levels of portability and standards compliance with contrasting customer need to extensively customize the product. JCF allows customers to implement jB5, with a look and feel, which is completely homogenous with the rest of the applications on the handset. JCF has been ported on over 12 platforms ranging from sophisticated smartphones to



basic cordless phones and a wide range of feature phones.

**Flexible configuration:** jB5's highly scalable and modular architecture allows customers to pick and choose needed components. jB5 supports OMA as well as W3C standards. Depending on the memory availability the customers can choose the markup languages to be supported on the device. Customers can also choose to have WAP stack or HTTP stack with or without security enabled. By picking the components the customer can have either a WAP browser, Basic WEB browser (WAP2.0 + HTML) or a Full Web browser (WAP2.0, HTML + ECMA Script +JavaScript).

**Extensible, powerful plugin support:** jB5 supports multiple levels of plugins to let platform providers, ODMs, OEMs, etc To harness the power of the browser to other applications and add more features. Read-Only and Read-Write plugin definitions allow need based access to browser facilities.

**Secure:** Support for full transport level security algorithms WTLS, SSL and TLS, as well as support for class 1, 2 and 3 secure authentication mechanisms, deliver maximum security to applications.

**Efficient:** jB5 provides one of the most efficient packaging of either a WAP or HTML browser individually or together. jB5 brings the benefits of full HTML browsing to a larger class of devices and lets manufacturers deliver higher functionality without significantly increasing phone capabilities.

**Multi-mode adaptation:** jB5 provides ART based, very usable, fit-to-display-width rendering which allows page viewing without horizontal scrolling. It also provides Natural mode rendering to see screens in a Virtual Desktop view and a Text Only mode which allows some quick browsing. ART provides full flexibility to add more rendering modes.

**Touch screen support:** Full support for touch screen based devices as well as keypad only devices makes jB5 effective on both mobile-phone and PDA form factor devices.

**Operator specifications support:** Jataayu has successfully met operator specific requirements of Tier1 carriers in a number of countries in Europe and Asia, including China.

**Improved user experience:** jB5 supports rendering of data as and when it downloads logical chunk of data that can be displayed. The user can scroll and read this page content that is rendered while the remaining content is downloading in the background.

**Highly customizable UI and branding options:** The user-interface and application layer can be easily developed or modified to meet particular requirements or customization. It enables a developer to create the entirely new application based on the jB5 browser engine.

For device manufactures it ensures a differentiated product with minimal engineering effort. For the mobile operator, this means that a monolithic, consistent application user interface can be defined across all types of device.

End-users will experience almost identical functionality regardless of the device used.

**Localization:** jB5 supports single byte characters as well as Unicode char sets. It also supports bi-directional algorithm for rendering Right to Left language(s)

## Device Independent Features

### WAP & OMA Compliance

- OMA Browsing v 2.1, v 2.2 and v 2.3
- Download Client v 1.0
- WAP 1.2.1 and WAP 2.0

### Generic Features

- Progressive rendering of page content as it downloads and display the inline media content as it is received.
- Smart rendering of image if width and height are available in the markup language.
- Tables are supported
  - Column Span and Row Span
  - Nested Table (no restriction on levels of nesting)
  - Row and column group handling
  - No restriction on number of objects and different kind of object types within the table
- Both frame and iframes are supported.
- Provides better navigation for the Image Map support.
- Supports bi-directional algorithm for rendering Right to Left language(s) such as Hebrew.

### Markup Language

- WML 1.3
  - text/vnd.wap.wml
  - application/vnd.wap.wmlc
- WML 2.0
  - application/wml+xml
- XHTML Mobile Profile
  - application/vnd.wap.xhtml+xml
  - application/xhtml+xml
- XHTML 1.1 \*
- HTML 4.01 \*
- Street HTML (HTML code where tags are not closed properly)
- cHTML
- Plain Text
- Multipart Mixed
  - application/vnd.wap.multipart.mixed
  - multipart/mixed
- Multipart Related
  - application/vnd.wap.multipart.related
  - multipart/related

### Encoding

- WBXML
- Integration with Deflate/GZIP

### Cascading Style sheet

- WAP CSS
- CSS Mobile Profile
- CSS 1.0 \* and CSS 2.0 \*

### DOM

- DOM Level 2 - Core \*, HTML \* and Events \*

### Scripting Language

- WML Script (application/vnd.wap.wmlscriptc). Lang, Float, String, URL, WMLBrowser and Dialogs are supported
- Standard ECMA 262 3<sup>rd</sup> Edition \*. Object, Function, Array, String, Regular Expression, Number, Date, Error, Boolean and Math are supported
- ECMAScript Mobile Profile
- JavaScript 1.5 \*

### Charset

- US ASCII
- UTF-8 and UTF-16
- ISO 10646-1 UCS-2
- ISO-8859-1 to ISO-8859-11 and
- ISO-8859-13 to ISO-8859-16
- Big-5
- Shift-JIS
- ISO-2022-JP
- EUC-JP
- GB-2312
- TIS-620
- Windows-874, 1250, 1251, 1252, 1255, 1256 and 1258

### Push

- Service Indication (SI)
  - text/vnd.wap.si
  - application/vnd.wap.sic
- Service Loading (SL)
  - text/vnd.wap.sl
  - application/vnd.wap.slc
- Cache Operation (CO)
  - text/vnd.wap.co
  - application/vnd.wap.coc
- Download Descriptor
  - application/vnd.oma.dd+xml
- E-Mail Notification
  - text/vnd.wap.emn+xml
  - application/vnd.wap.emn+wbxml
- Common Push Inbox for SI and SL

### WTAI

- Public WTAI. Supported functions are:
  - Make Call
  - Send DTMF
  - Add Phone Book Entry

### Bookmarks

- Add New Category
- Add URL to the existing category or without category
- Delete Category / URL
- Storing of bookmark in v-Bookmark format
- Transfer Bookmark

## History

- View by Title / URL
- Clear specific history, clear domain or clear all entries in history.
- The number of domains and entries in domain lists are configurable by platform vendor.
- When adding a new history record to a full history storage, the record with lowest priority (using LRU algorithm) gets deleted.

## Navigation

- Navigation information, the number of entries in navigation is configurable by the platform vendor.
- Navigation information stores current x & y position, when navigated back to a page will be taken to the same position.

## Save Page

- Save Page as multipart MIME (where the main page and inline content are stored as a single file)
  - Images
  - CSS
- Save Page as individual file (where the main page and inline content are stored in separate file(s))
- Save only the main page (where the main page is stored as a separate file and inline content are ignored)

## User Agent Profiling

- Browser allows sending the UA Profile header (x-wap-profile). The platform needs to provide the RDF URL information with the browser and device capabilities.

## DRM

- Integration with DRM Engine on the platform for supporting:
  - Forward Lock
  - Combined Delivery
  - Super distribution

## RSS

- Provides list of feed URL's that are available in the page.
- Supports rendering of RSS content as part of the browser.

## Cache

- Cache module supports attributes like max-age, s-maxage, no-cache, no-store and Pragma (Expires)
- Least Stale Cache
- Persistent Cache
- Operator Cache, where operator specific content are stored in separate cache file. A list of domain's can be set for this cache.
- If Cache-Control is set to 'no-store', the browser shall not store the content. It shall not be allowed to be used by other applications such as set as wallpaper, ring tone, etc.

- Generic and operator cache sizes configurable by vendor.
- Clear cache features for generic and operator cache.

## Cookie

- Set-Cookie2 header is supported
- Netscape Cookie
- Cookie Persistent
- Least Recently Used (LRU) algorithm used to remove the cookies to make room to newer cookie if cookie size is full.
- Size of the cookie is configurable, recommended up to 1024.
- Allows configuring number of cookies per domain.
- Clear cookie to delete all session and persistent cookies.

## Scrolling

- Application can configure different scrolling speeds at runtime.
- Allows page navigation - up, down, left and right. It can be configured to support only up and down. It provides Page Up, Page Down, Page Left and Page Right feature as well.
- Form based navigation
- Focus based navigation
- Non-focus scrolling

## Find

- Search for the specific keyword
- Search for the specific pattern
  - Number, Currency, Telephone Number, E-Mail ID, URL

## Download Manager

- Supports parallel mime downloading for different URL.
- Supports Byte Range as in RFC2616 for mime downloading.
- It is possible to suspend and resume the download.

## Other Features

- Image
  - Options are provided so that image(s) that are not linked will not be selected if user chooses this option.
  - Save Image
  - Smart Image option allows user to control the image to be downloaded from the same domain as the page content.
- Different Object handling – requires integration with external media player
- When user requests updation, the browser sends 'Cache-Control: no-cache' and 'Pragma: no-cache' headers.
- Validation of input data when input format is specified.
- Support for the Unicode support in URL – punycode.
- Persistent caching of the user input form data.

## Transport (Device Independent Features)

### Transport Task

- Supports simultaneous session handling
- Integration with Data Connection Layer (Bearer Management) using abstraction layer.

### WAP Stack

- Connection Oriented
- Segmented and Re-Assembly

- WTLS \*\*
  - Class 1, Class 2 and Class 3
- MOR
- Suspend and Resume
- HTTP Authentication
  - Basic Authentication and Digest Authentication

## WP-HTTP

- HTTP 1.1
  - Persistent Connection
  - Pipelining
- Through Proxy
- Direct Communication with Origin Server
- SSL 3.0/TLS1.0\*\*
  - Connect
- HTTP Authentication

- Basic Authentication and Digest Authentication
- HTTP Server

## Push

- Push over SMS
- Confirmed and Unconfirmed Push over IP
- HTTP Push
- Unauthenticated Terminal ID, where no authentication is carried out at the device.

## Device Dependent Features

### User Interface

- URL Wizard for entering new URL,
- Option to pick URL from history.
- Bookmark Management
- Multiple Languages
- Multiple Window or Tabbed browsing
- Full Screen view
- Enable/Disable Graphics option
- Option to shift between different modes of rendering.
- Saved Pages
  - List Saved Pages and Delete Saved Pages

### Settings

#### Profile Management

- Enable/Disable Graphics option
  - Display Mode – Natural view, F2S view, Text only mode
  - Image selection, if it is not linked whether to be selected or not while scrolling.
  - Full Screen view
  - Audio – enable or disable
  - Script – enable or disable
- Cache
  - Size configuration
  - Clear Cache option
- Cookie
  - Enable or disable option and Clear cookie option
- Find
  - Find Next/Previous
  - Use Value; when searching for pattern like telephone number, currency, and e-mail address.
- Push Inbox

#### Import Bookmark

- Allows user to import all bookmarks from the desktop to jB5 Mobile Browser using the Jataayu backend server support.

### Image Decoder

- Image codecs available on the platform can be integrated
- JPEG, BMP, WBMP, GIF89a, GIF87a and PNG formats supported

### Personalize Wizard

- Personalize Wizard allows to preserve values entered in form fields for future use. Thus frequently used pages with form fields such as login pages, query pages, etc, can be saved and accessed without having to re-enter these fields again.
- Pages stored using Personalize Wizard will take you directly to the resulting page, thus bypassing the initial page where these fields would otherwise have to be entered.
- The personalize wizard content is protected by the PIN.

### Integration

#### Integration with

- Deflate abstraction layer with existing zlib/deflate code in the platform.
- DRM engine
- SMS, MMS and E-Mail for sending URL (Page URL, Currently highlighted link URL, Bookmark URL)
- MMS and E-Mail for sending currently focused image
- Audio player for supporting background audio

### Other Features

- Deflate library
- Pictogram
- Zoom
- Blinking text
- Fonts
  - Face, Size and Style
- Media Download
  - Checks for availability of space on mobile before downloading content.

## Coming shortly

- Zoom - Thumbnail view
- JavaScript 1.5
- AJAX
- Security policy for scripting
- RSS content viewer
- Download client 2.0
- DOM Style
- Gadget/Widget Support

\* Detailed conformance sheets are available for the individual items.

\*\* Required abstraction layer are defined for WTLS and SSL. Based on the customer requirement, this can be integrated with any 3<sup>rd</sup> Party library.