

Solutions for OEM, ODM and Platform manufacturers



Winwap
Technologies

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Browser

MMS

Email

OMA DL

Codecs

Our core Business: Software technology for Mobile Devices

Applications for connected consumer devices

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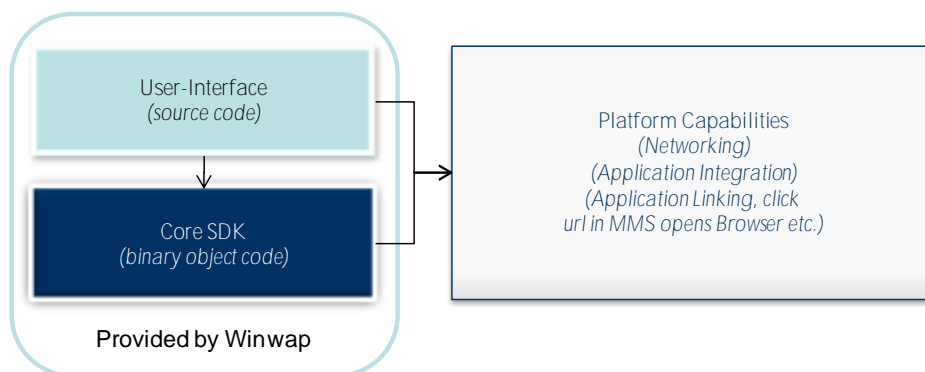
Apps with open User-Interface

Keep one look and feel for your entire device

The Winwap MMS, Email, Browser and OMA DL solutions for most platforms are divided into SDK and User-Interface parts. The SDK is provided in binary object code and provides the core functionality for each application. The User-Interface can optionally be provided as source code for easy integration and customization.

- Integrate the applications seamlessly into your device.
- The SDK's support both touch and non-touch methods.
- Licensing are terms adjusted to fit your business model.
- Get quick integration support from the same guys that have developed the software.
- Interoperable on a global scale thanks to over 10 years of development.

Device integration is simple and allows to customize the User-Interface to match the rest of the device. Winwap can also design and write the entire User-Interface and integration on request.



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WEB & WAP Browser

The core functionality is built into the SDK.

Only a simple browser frame UI is required as most action takes place within the actual browser engine, but you can design any UI yourself.

Email Client

All the complex POP and IMAP functionality as well as folder handling has been integrated into this very sophisticated SDK. The UI can as with MMS be designed to look any way you like and this allows you to integrate into widgets and any other part of your specific device solution to add value to the product.

MMS Client

The functionality within the SDK includes all transport mechanisms and encoding, decoding of the MMS Messages. For the User-Interface you can use a very simple featurephone model or design a complex MMS composer system. The SDK supports full SMIL functionality so it's up to you to device which kind of UI to design.



Mobile Internet Browsing, Messaging
and related technologies for
Embedded platforms

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OEM Browser 5

Mobile Internet Browser

WEB and WAP browser for networked devices

The Winwap OEM Browser is a desktop-equivalent browser with additional WAP capabilities that has been ported to a wide range of platforms and operating systems. This browser is capable of showing the content in the same way as your regular PC Browser.

Advanced capabilities on limited platforms

The browser has zooming and advanced drag-to-scroll features for touch-screen devices to provide a comfortable browsing experience on all platforms. It's also modularized so that the User Interface can be easily customized to fit other device designs, and integrate to match the devices look and feel.

Embedded Platform Browser

- Provides WEB and WAP browsing capabilities as part of the device functionality
- The Winwap browser is robust and used worldwide in phones, kiosks, and heavy-duty testing and measuring applications.
- Winwap helps you with your embedded implementation in order to achieve the shortest possible time to market.

OEM/ODM Integration

- The Winwap OEM browser comes with integration help by the same engineers that have developed the software and it will be specifically built for new devices.
- We can customize different aspects of the browser to add more value to the total solution.
- Licensing terms are flexible and can be tailored to the requirements of the customer





OEM Browser 5

Browser Capabilities, page 1

The Browser is a desktop-equivalent browser for embedded platforms. The browser shows the same content as your PC browser, and provides zooming features that allows for comfortable browsing on a small screen. The Browser SDK embeds the browser features mentioned here and allows the OEM to create their own User Interface on top of the browser SDK.

- All in One:** Full-featured WEB and WAP browser.
- Small:** Footprint with all features is ~2,3 Kb.
- Expandable:** NPAPI compliant Plug-in support.
- Efficient:** Color-depth from 8-bit grayscale to 32-bit true color.
- Global:** Supports Multiple Character Sets (full Unicode).

Supported WEB and WAP Standards

- HTML 5
- XHTML (Full & Mobile Profile)
- WML 1.3
- CSS 2
- DOM Level 2
- JavaScript 1.7
- AJAX
- HTTP 1.1 (Keep Alive, Basic and Digest Authentication, Support for gzip)
- WSP/WTP (WAP 1.2) Transport and download
- WAP Push

Security Protocols

- TLS 1.0
- SSL 3
- WTLS (Optional on some platforms)

Color-Depth & Color-Model

- 8-bit t- 32-bit
- Grayscale or Full Color
- RGB565, RGB574, RGB0555, etc.

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The browser fully supports full HTML with Ajax, JavaScript and NPAPI plug-ins. The browser engine is platform independent and can be ported to new platforms in a short time.

- HTML 5
- XHTML
- WML
- CSS
- DOM Level 2
- JavaScript 1.7 (AJAX)
- TLS 1.0/SSL 3.0
- HTTP 1.1 transport and download
- WSP/WTP transport and download
- WAP Push



The browser has been deployed on mobile devices on the market by several world leaders in mobile telephony and navigation. For a list of some of our reference customers visit <http://winwap.com/references/references>





OEM Browser 5

Browser Capabilities, page 2

User Features

- Cookies
- Cache Management (in memory or persistent)
- User-Customized JavaScript Objects
- Bookmarks and History
- Mouse, Keyboard and Touchpad
- Drag to scroll
- Zoom in/out/focus

Graphic Formats

- JPEG
- GIF (Includes Animated)
- PNG (With Alpha Blending)
- WBMP (Wireless Bitmap)
- Adobe Flash (Plug-in optional; May require)

Supported Text Encodings

- Unicode
- Shift-JIS, EUC-JP
- Big5, EUC-CN
- EUC-KR
- Cyrillic
- ISO8859

Memory Requirements

- ~2,2 MB ROM (1,3 MB with minimum features)
- ~2 MB RAM (Depending on complexity of content viewed)

Optional Integration Customization

- Dialer, pause on incoming call and dial a phone number
- Email, send message to email address from a web page
- Picture viewer, download and save new image files
- Download and save new ring tones

OMA Compliance

All supported WAP features of browser are built based on Open Mobile Alliance (OMA) Browsing 2.2 Specifications.

The product specifications can change at any time. Check for the latest details with Winwap Technologies.

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The browser engine has been specifically designed for portability and to run on limited resource platforms



Use all the traditional websites as well as the Telecom Carrier walled gardens with one browser. Supports the technologies required by carriers to generate revenue on ringtones and other content.

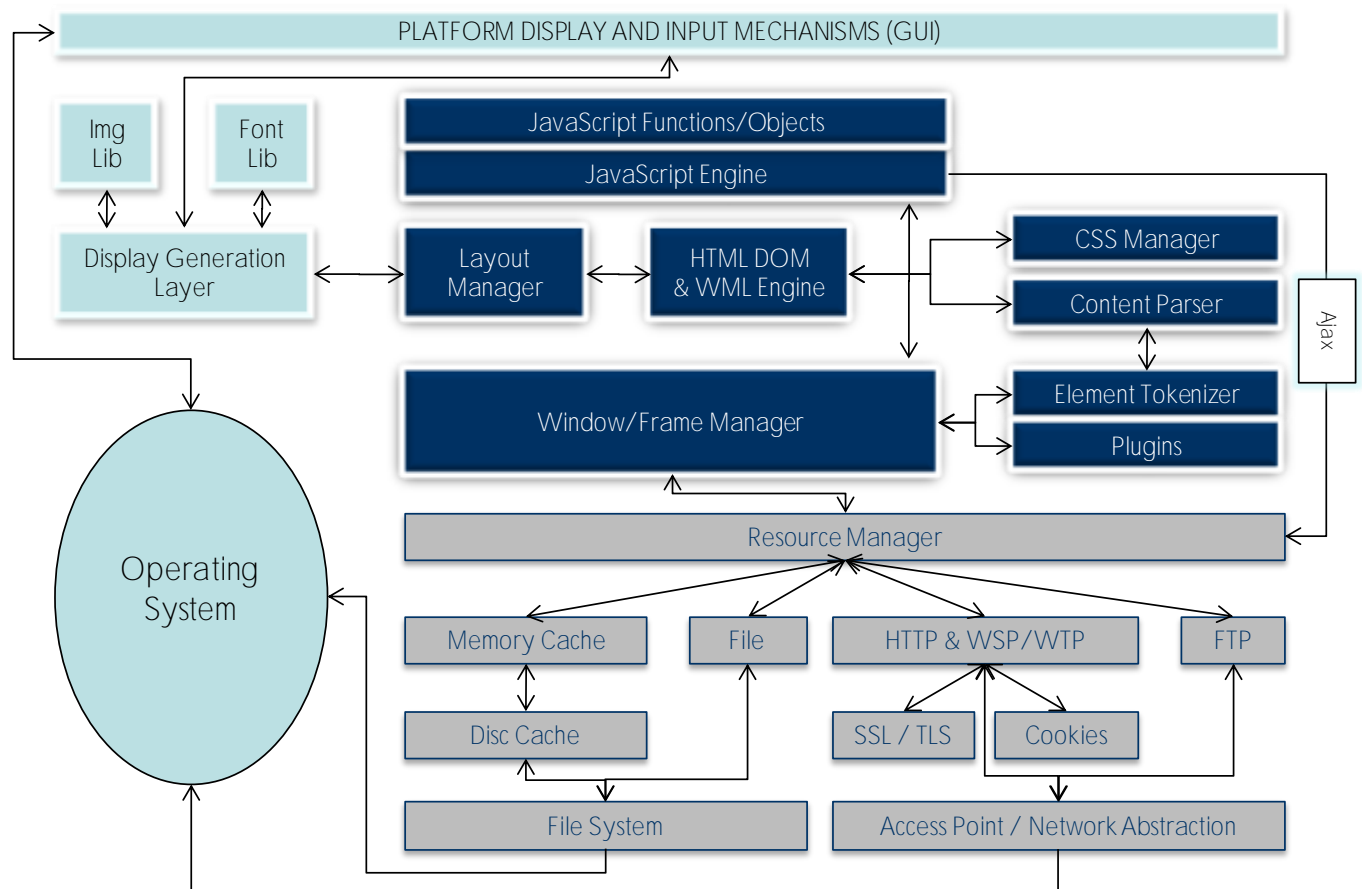
OEM Browser 5

Modular Browser Design

The browser has been designed to provide the best possible browsing experience on all platforms. The modular design assures that customization and porting to new platforms will be quick. This also keeps interoperability with carrier gateways and services and providing the best browsing experience for the end user.



The three browser layers, listed above, are all integrated into the platform independent parts of the engine, as shown below.





Mobile Internet Browsing,
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for Embedded platforms

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MMS Client

Powerful messaging solution that integrates seamlessly with the rest of the device.

Winwap's MMS Client

- Provides MMS messaging capabilities as part of the device core functionality
- The MMS Client provides a powerful message composer and reader (User-Interface)
- The MMS messaging engine is used by companies all over the world in applications ranging from heavy-duty testing applications to end user MMS clients.

OEM Customer benefits

- The WinWAP MMS Client will be specifically built for the OEM customer and we can customize different aspects of the MMS Client to add more value to the total solution. The MMS client is based on the MMS Software Development Kits offered by Winwap Technologies.
- Licensing terms depend customer business model and technical requirements.

Easy to integrate

The WinWAP MMS Client is available as a customized fully featured end user application that provides everything needed for Multimedia Messaging.

Optimize the time to market and total device value by integrating Winwap's robust MMS Client.

Suitable for a wide range of devices

Porting and customization is done according to customer specifications. The MMS Client UI can be separated for easy customization, and the product can easily be compiled for a wide range of platforms.

Winwap's MMS core is embedded in products running on all carrier networks and is interoperable with all major networks.



MMS Client

General Capabilities, Page 1

Feature Set

- Support for any screen size
- Any kind of attachment
- Can support delivery and read receipts
- Open API to for easy UI customization
- Encode and Send MMS message
- Decode MMS Notification
- Retrieve and Decode MMS message
- WAP 1.2 and 2.0 protocol support
- MMS Player
- Supports both GSM and CDMA

Text and Bitmap support

- Text Support: US-ASCII
- Text Support: UTF-8
- Text Support: UTF-16
- Bitmap Support: GIF 87a
- Bitmap Support: GIF 89a
- Bitmap Support: WBMP
- Including other formats, depending on System capabilities.

Video and Audio support

- Depends on Device capabilities. (for more about Co-decs, see page 11)
- The User-Interface can be designed to play the content directly or hand it to some other application.

Image support

- Any image format supported by the platform/device



MMS Client settings can if required be hard coded which locks the application so it only works with one specific telecom operators services.

All supported features of the MMS Client are built based on Open Mobile Alliance (OMA) 1.2 Specifications



The MMS Client provides a powerful MMS composing interface that supports all common picture, audio and video formats.

Telecom Operators gain additional revenue from Mobile services that deliver payable content over MMS messaging.



MMS Client

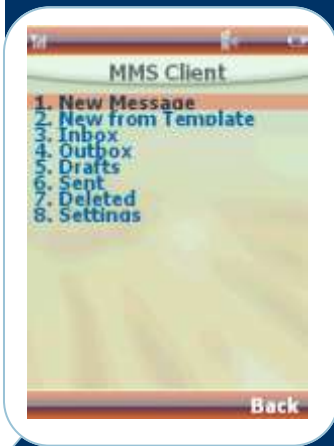
General Capabilities, Page 2

Other application integration (User-Interface level)

- Camera, take and send picture from MMS application, take and send video from MMS application
- Handwriting recognition (if applicable), ability to enter text
- Media player, play sound/video files received
- Browser, load a URL contained in a message

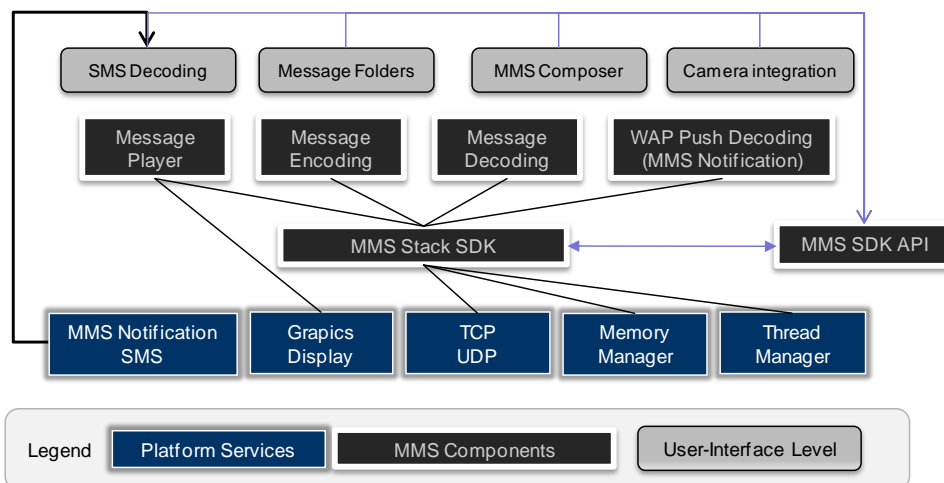
OMA Compliance

All supported features of the MMS Client SDK are built based on OMA 1.2 Specifications. If an OEM customer needs a specific sub item from OMA Requirements that currently is not supported in the WAP browser then Winwap Technologies can add the required feature.



All supported features of the MMS Client are built based on Open Mobile Alliance (OMA) 1.2 Specifications

MMS Client Modules





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Email Client

Full email capabilities for any connected device

Winwap Email

- Easy to integrate with existing inbox solutions
- Supports methods to provide a device with both thin and full functionality email clients.
- Winwap helps you with your embedded implementation in order to achieve the shortest possible time to market.



OEM/ODM Integration

- Get support and integration help from the same engineers that have developed the software
- Keep the UI similar for all applications on your system by customizing the UI yourself to match the expectations of your devices other capabilities.
- Licensing terms are flexible and can be tailored to the requirements of the customer

Customizable Email Application (SDK+UI)

Provides POP3, IMAP and SMTP email functionality for your Networked device. The Email Client uses the Email SDK as the core engine. This is a powerful API library that integrates all the backend emailing technology so device system architects can focus on User-Interface and create a powerful user experience capable of competing on the growing Smartphone, feature phone or any connected device markets.

Technical support is provided during integration and beyond by the same guys that designed and wrote the software.

Email Client

General Capabilities, Page 1

Secure Email

Secure connection types may include **SSL2, SSL3, TLS**, and the availability of these encryption methods varies depending on the device capabilities.

Mime Encoder

The Email Client takes care internally of all encoding and decoding to and from MIME, both for messages and attachments to messages. So in the UI layer messages are always available in their human usable format.

The MIME implementation is compliant with RFC documents:

- **RFC2045 MIME:** Format of Internet Message Bodies
- **RFC2046 MIME:** Media Types
- **RFC2047 MIME:** Message Header Extensions for Non-ASCII Text
- **RFC2049 MIME:** Conformance Criteria and Examples

The the following MIME encoding content types are supported:

- **multipart/mixed**
- **multipart/alternative**
- **message/rfc822**

The Email SDK supports emails that contain different sections of text in the following different formats:

- **text/plain**
- **text/rtf**
- **text/html**

The embedded encoder wraps these sections according to MIME format automatically.

For MIME **decoding** all **text parts are decoded**, and all **media parts are considered to be the mail attachments**.

The **image, audio, video, application, application/octet-stream and postscript** Mime-Types are interpreted **as attachments**.

The **message (message/rfc822, message/partial, message/external-body)** type is used for decoding embedded messages.

Embedded Email Client
that is customizable to
customer specifications.

Modularized
technology saves
porting and
integration time.





Email Client

General Capabilities, Page 2

Supported email protocols

SMTP Protocol

- SMTP authorization
- Secured SMTP protocol (over SSL).
- Switching to & working in the secured TLS mode.
- Implemented in compliance with RFC2821.
- Authorization is implemented in compliance with RFC4954.
- The implementation supports authorization via AUTH command.
- Secure SMTP extension in compliance with RFC3207.
- The STARTTLS command is supported

POP3 Protocol

- Secured POP3 protocol is supported (over SSL).
- POP3 implementation supports switching to and working in the secured TLS mode.
- POP3 protocol is implemented in compliance with RFC1939 (methods from MUST category are implemented).
- Secure POP3 protocol is implemented in compliance with RFC2595.

IMAP Protocol

- IMAP version 4 revision 1 protocol is supported.
- Secured IMAP protocol is supported (over SSL).
- IMAP protocol implementation supports switching to and working in the secured TLS mode.
- Managing folders structure is supported.
- IMAPv4rev1 protocol in compliance with RFC3501.



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All common email technologies are supported.



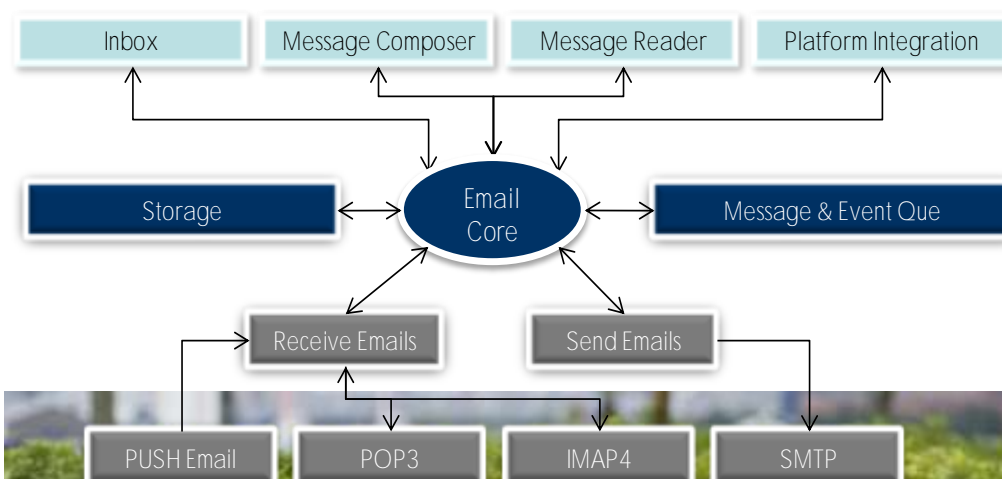
Email Client

Modular Design simplifies UI Customization

The modular design assures that customization for new devices can be done in a short time while keeping interoperability with carrier systems and services intact.

Optionally a Push email module can be provided (upon request) for common Push technologies like the push-email functionality based on IMAP IDLE.

Modules of Email Client





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OMA Download Agent

OMA DL Client application for mobile devices

Benefits for Content providers and Carriers:

- Downloads are confirmed so the provider knows when a download was complete.
- A description of the downloadable media objects can be published on the presentation server.
- The user can be directed to a Web location provided in the download descriptor.

Benefits for Device users:

- The probability of downloading a media object that the device cannot support is minimized.
- The user is given a chance to see the details about the download and confirm before actually downloading.
- Provides a familiar download experience independently of web sites and networks.
- The download object metadata in the download descriptor can be stored in the device and be made available for the user to read later.

The OMA Download Agent is designed for handling the download of objects such as ringtones, images or games using the OMA download Over The Air (OTA) specifications.

Any device that includes the OMA Download Agent will thus support posting reports back to the network after download. These reports are used as the basis for billing or monitoring the quality of the service by making sure customers actually receive the downloads.

Telecom carriers and the companies that provide payable content on carrier networks often use OMA Download to handle downloadable content both for billing and for checking the quality of service.

In order for a device to be able to download any content provided using the Download Descriptor format the device must also have the OMA Download Agent installed to interpret and handle the OMA Download Descriptor

data and perform the actual download of the Media object.

Winwap's OMA Download Agent provides a quick way to add OMA Download Over The Air (OTA) capabilities. The Agent works both with **Winwap's own Browser** as well as any other browser, as the underlying operating system **forwards the "DD" content** to the Download Agent that then takes over the download.

The OMA Download Agent is available for multiple platforms and is customized on a device by device basis to provide optimum performance on all devices.

Winwap provides full support and maintains the product which allows any OEM/ODM/Platform vendor to spend their resources on other things.



OMA Download Agent

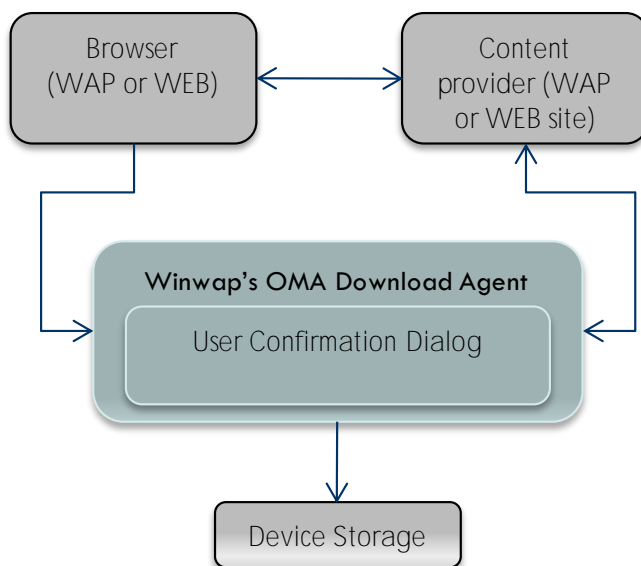
Features

General benefits of OMA Download

- Enables various payment models to support launch of e-commerce concepts.
- Avoids fragmentation of content space. Content for mobile devices with different capabilities can be published using a consistent concept.
- Create commonality between the download process of all types of media: e.g. games, melodies, and pictures.
- Enable both automated as well as manual client driven capability negotiation.
- Enable a mechanism that allows the initial download solution to be extended with new attributes and functionality.
- Quick and easy to implement so that time to deployment is short.

Supported OMA Download Features

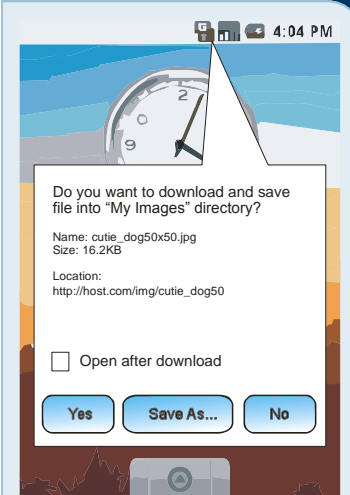
- Supports download using both WAP1.x and WAP2.0 protocols.
- Supports multipart/related and application/vnd.wap.multipart.related content types.
- Separate and combined delivery.
- User Authentication.
- Simple GUI to display information about object to be downloaded and options for user to decide what to do (download or cancel download).
- Object installation support.
- The OMA Download Agent is compatible with the OMA [OTA] OMA-Download-OTA-V1_0-20040625-A specifications.



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- 1 Download Descriptor Received
- 2 User Confirms the Download
- 3 OMA DL Agent receives the Download
- 4 Other events (server confirmation etc) are handled by OMA DL Agent.

The OMA Download Agent provides a quick way to add full OMA DLOTA support for your mobile device



The Download Agent confirms the download with the user before it begins.



Multimedia Codecs

Optimized codecs and application solutions for handsets and wireless ICs

Highly efficient software modules enable the fast implementation of multimedia to embedded devices

Dependent on the target market, the processor of a typical mobile handset will have a clock frequency between 50 and 350MHz and undertaking multimedia with such limited available resource is a challenging task. Through the development and implementation of proprietary algorithms, to reduce computational complexity without compromising quality, Hantro embedded software solutions bring compelling performance and enable the fast deployment of applications such as: camcorder, player / streamer, video telephony and mobile TV.

Software Modules Available

ID	TYPE	ID	TYPE
VP7	On2 VP7 Decoder	2400	GSM-AMR Narrow Band Encoder
VP6	On2 VP6 Decoder	2500	Enhanced AAC Decoder
8100	Sorenson Spark Decoder	2600	Enhanced AAC Encoder
7100	VC-1 Simple & Main Profile Decoder	3000	MP4 / 3GP Format Read / Write
6200	H.264 / AVC Baseline Encoder	3010	ASF / WMV / WMA Format Reader
6100	H.264 / AVC Decoder	3200	Pre-processing Library
4200	MPEG-4 SP, H.263 Profile 0 Encoder	3240	Camera Stabilization
4100	MPEG-4 SP, H.263 Profile 0 Decoder	3300	Post Processing Library
2300	GSM-AMR Narrow Band Decoder		

Delivery Package includes

- Libraries compiled to target platform
- Application programming interface documentation
- Test bench and test streams

Please contact Winwap Sales representatives for more information!

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On2 Technologies

The codecs are provided by On2 Technologies through a co-marketing arrangement with Winwap Technologies.

Special licensing terms suitable to bundle with Winwap application terms are available, so please contact a Winwap sales representative and let him provide you with further details on how to get the special licensing deals.



Mobile Internet Browsing, Messaging and
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Winwap Technologies provides software technologies and applications for networked mobile devices. The product portfolio includes a powerful Internet Browser, Multimedia Messaging (MMS, SMS) and Email software, and toolkits based on these technologies that allow others to integrate the functionality into their own products.

Winwap is a privately owned company that was founded by the current CEO, Mikael Krogius, in 1995. Winwap has always worked with telecommunications software, and entered the mobile Internet market in 1999 with the WinWAP browser. Today the core business is to provide customized software for embedded platforms with integration support and maintenance services for companies involved in the different manufacturing steps of networked mobile devices.

At Winwap Technologies we constantly strive to make our software better and to keep our customers satisfied with our products and support while remaining innovative and creating new technologies for mobile devices.



- Browser
- MMS Client
- Email Client
- OMA Download Agent
- Multimedia Codecs
- Integration Support
- Flexible Licensing
- Multi-Platform Technologies