Development options for Series 40

If you want to develop applications or content for Series 40, you have the following options:

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Installable Applications

Series 40 devices enable users to install Java technology and Adobe Flash Lite application on their phones.

Java applications

The Series 40 platform provides a Java ME environment based on MIDP 2.0 (MIDP 1.0 on Series 40 1st Edition) with a range of additional APIs provided by various JSR implementations.

For more information on Java development, see Java ME.

In addition, Series 40 6th Edition, Feature Pack 1 offers the Gesture API and FrameAnimator API to enable applications to take full advantage of the Touch and Type UI. More information on these APIs can be found in the Java Developer's Library and the wiki article Getting started with the Gesture API & FrameAnimator API.

Development is undertaken with either Eclipse or NetBeans with NetBeans by adding one of the Series 40 platform SDKs.

Nokia Asha SDK 1.0 (beta) (14 May 2013): Nokia Asha SDK 1.0 (beta) is available for download. This SDK enables you to target your Java apps at phones based on Nokia Asha software platform 1.0. SDKs for Series 40 (including *Nokia SDK 2.0 for Java*), can be downloaded from here.

Web apps

Series 40 web apps offer an easy entry point to mobile app development. You utilise your web developer skills to create content with HTML, CSS, and JavaScript code. Follow the getting started guide or watch the video to learn how to create a web app, preview it in the simulator, and run it on a Series 40 device.

Read Getting Started with Nokia Asha Web Apps

Adobe Flash Lite

Using Adobe Flash Lite you can deliver rich multimedia applications and content to Series 40 devices.

Flash Lite has been supported from Series 40 3rd Edition, Feature Pack 1 onward for stand-alone applications and content, as well as animated screen savers. With Series 40 5th Edition, Feature Pack 1 onward, Flash Lite can also be used to create animated 'organic' wallpaper.

Flash Lite applications have access to various device parameters using `fscommand2`, such as battery level, network type, and signal strength. Various actions can be initiated from Flash Lite, such as making a phone call using the `getURL()` function. This enables you to create rich content and applications that interact with a Series 40 device.

Because each edition and feature pack of the Series 40 platform offers different support for `fscommand2s`, it is recommended that you make use of Adobe Device Central. It provides a searchable library of device profiles that enables you to quickly determine the features supported on various Series 40 devices.

The following Flash Lite players are supported in Series 40:

- Series 40 6th Edition (and feature packs) — Flash Lite 3 Player.
- Series 40 5th Edition — Flash Lite 2.1 Player, with the Flash Lite 3 Player available on selected Series 40 5th Edition, Feature Pack 1 devices.
- Series 40 3rd Edition, Feature Pack 2 — Flash Lite 2.0 Player, which adds features including ActionScript 2.0 support, device video playback, persistent data storage, support for loading device-specific sound and image formats, the ability to control backlight duration, and XML processing support.
- Series 40 3rd Edition, Feature Pack 1 — Flash Lite 1.1 Player.

Flash Professional can be used to create Flash Lite content, as well as a number of third-party Flash tools, such as Kuneri Lite.

Flash Lite content is made available to Series 40 devices by packaging it within a Nokia Flash Lite (NFL) file.

Mobile browsing

The Series 40 platform support browsing of WML, XHTML MP and HTML websites.

The default browser on devices varies.

The latest Series 40 devices are compatible with the new proxy assisted and web app capable Nokia Browser for Series 40. Some recent devices also include a WebKit based browser, whereas some devices ship with Opera Mini as the default browser.

Web browsing is supported in the platform as follows:

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- Series 40 6th Edition
  - HTML 4.01, CSS2, JavaScript™ 1.5, and Ajax.
  - XHTML Mobile Profile (XTHML-MP) 1.1 with ECMAScript Mobile Profile support for XHTML-MP 1.1 tags.
  - WAP CSS and WML 1.3 with support for WMLScript.
  - OMA version 2.1 browsing over wTCP/IP.
- Series 40 5th Edition:
  - HTML 4.01 (subset) and XHTML-Mobile Profile (XHTML-MP) browsing over wireless profiled TCP/IP (wTCP/IP) with ECMAScript.
  - OMA version 2.1 browsing over wTCP/IP.
- Series 40 3rd Edition:
  - HTML 4.01 (subset) and XHTML-MP browsing over wTCP/IP with ECMAScript.
  - OMA version 2.1 browsing over wTCP/IP.
- Series 40 2nd Edition:
  - XHTML-MP browsing over wTCP/IP.
  - WAP 1.3 browsing over wTCP/IP.
- Series 40 1st Edition:
  - WAP 1.2.1 browsing for GSM device implementations.
  - WAP 1.1 browsing for CDMA device implementations.

Flash Lite web content included in a website can be rendered on some more recent versions of the platform.

Any web authoring tool can be used to create websites for Series 40 devices, such as Visual Web Developer Express and Dreamweaver CS3.

Content

A wide variety of audio, video, and still image formats can be viewed in Series 40 devices. In addition, there are options to create themes and use messaging.

Media

The Series 40 platform includes a mechanism that allows users to personalise their devices by installing polyphonic ring tones, logos, and wallpaper using OTA or via PC connectivity.

Various content types can be downloaded to Series 40 devices. All supported types are accessible through WAP downloading, PC connectivity (via IrDA or cable), and MMS messages.

Supported media includes:

- Video files — A range of video formats, including Windows Media Video (WMV) 9, 3GPP formats (H.263), H.264/MPEG-4 Advanced Video Coding (AVC), and MPEG-4.
- Pictures — A wide range of image formats, including BMP, JPEG, GIF87a, GIF89a, Wireless Bitmap (WBMP), and Portable Network Graphics (PNG).
- Audio files — A range of audio formats, including Advanced Audio Coding (AAC), AAC+, eAAC+, MP3, MP4, Windows Media Audio (WMA) 9, WMA 10, Mobile XMF, SP-MIDI, Adaptive Multi-Rate Narrow Band (AMR-NB), MIDI Tones (poly 64), True Tones (Adaptive Multi-Rate Wideband [AMR-WB]), and Nokia ring tone.
- PIM files — vCard and vCalendar.
- Other files — Wallpaper, screen savers, and operator logo icons.

Themes

Themes enable the visual appearance and sound of a wide variety of elements within the Series 40 UI to be changed. These elements include the wallpaper, the screen saver, various backgrounds, highlight images, menu icons, and specific colours.

From Series 40 5th Edition, Feature Pack 1 onward, the ability to create animated ‘organic’ wallpaper using Flash Lite content has been provided.

Themes are created with Carbide.ui.

Messaging

Messaging can be used as the basis for application or the delivery of content. The Series 40 platform provides support for SMS and Smart Messaging and the following support for MMS:

- Series 40 6th Edition — OMA MMS version 1.3 is supported, and the maximum supported message size has been increased to 600 kB.
- Series 40 3rd Edition and Series 40 5th Edition — OMA MMS version 1.2. True interoperability is now provided among the content classes: image basic, image rich, video basic, and video rich. Synthetic audio and video can now be included in messages, and the maximum supported message size has been increased to 300 kB.
- Series 40 2nd Edition — Support for Synchronized Multimedia Integration Language (SMIL) 2.0 Basic Language Profile in MMS. SMIL is a markup feature that defines the layout, order, and display timing of the multimedia elements in an MMS message, allowing messages to be played as a slide show.
- Series 40 1st Edition — Basic MMS.

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