

# Mobile application download: key considerations for mobile operators

## Key points:

Operators introducing application download services face a choice between a number of technologies, each with different characteristics and implications for their future service portfolio. This paper highlights these options.

Looking forward, Northstream believes:

- Handset vendors will continue to include proprietary extensions to differentiate their products and to offer enhanced features.
- Content providers will need to continue to optimise applications for each device manufacturer or device class.
- Operators and content providers should focus their efforts on exploiting existing standards by launching attractive services and devices, and discovering what customers will pay for.

At the same time, joint efforts in JCP are required to enable a short time-to-market for the next generation of mobile Java.

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## About Northstream:

Northstream provides strategic technology and business advice to the global wireless industry. Northstream has assembled a multinational team with some of the world's best experts and analysts on wireless communication business and technology.

Northstream's list of clients include several of the world's leading operators and system suppliers, e.g. Vodafone, AT&T, NTT DoCoMo, Orange, Sonera, Telia, Mitsubishi, Ericsson, Nokia and Microsoft, as well as some of the leading investment banks and financial institutions. Northstream is established in Stockholm (Sweden), Sophia Antipolis (France), and Tokyo (Japan).

For more information please visit us at: [www.northstream.se](http://www.northstream.se)

***Introduction***

Mobile application download services, can be implemented in a variety of ways and enable customers to browse for new applications on their phone, download them over the mobile network and execute them locally.

Bundling downloadable applications with value-added services (such as on-line gaming or community features) can enable network operators to increase data traffic, participate in content revenue shares and tighten their customer relationships. Customers can enjoy greater possibilities for personalising their phone and can browse for new offerings to download.

***Services enabled by application download***

Northstream's observation of the industry, combined with our knowledge of technology capability, leads us to believe that the key application download services are:

**Gaming and entertainment:** includes downloading and usage of games, horoscope or gambling clients, erotic services, screensavers

**Travel applications:** includes maps and location guides

**Business applications:** includes stock ticker, expense calculator, currency converter and world clocks

**Corporate applications:** includes corporate access client and company-specific applications (e.g. sales catalogue)

**Application software for mobile services:** includes clients for mobile services such as messaging, video or browsing

For an operator it is key to understand that application download technologies are primarily used as a service enabler (similar to e.g. WAP), but can also be a service in their own right. This distinction becomes particularly relevant for calculation of application download revenues. Naturally, revenues can be directly related to a standalone application download service, such as a gaming download service. When application download instead acts as a service enabler (e.g. download of a messaging client), revenues cannot be fully attributed to it, as only the data traffic used for download can be accounted. Operators need to consider that this support for other revenue generating services is also a benefit of application download. Other benefits include greater potential for customers to personalise their handsets.

***Key role for other industry players***

Other industry players are also involved in the provision of these services. Operators will partner with content providers who have a wide choice of attractive applications. Handset vendors can use application download technology as a means to differentiate their products and also as a way to improve product quality. In addition there is potential for application download to be used by handset vendors to set up and foster direct relationships with consumers.

***Technology options for offering application download services***

In 1999, Sun Microsystems introduced the Java 2 Platform, Micro Edition (J2ME); an application environment optimised for small computing platforms such as mobile phones, personal digital assistants, set-top boxes and smart cards. J2ME platforms are based on configurations and profiles.

The J2ME Connected Limited Device Configuration (CLDC) lays out the API and virtual machine features intended for small mobile devices with simplified user interfaces, memory budgets starting at about 128 kilobytes, and intermittent network connections with low bandwidth.

The Mobile Information Device Profile (MIDP) is a collection of more specific APIs that are employed to define and control applications, display text and graphics, respond to user events, store data and implement network connectivity amongst other things. MIDP was designed for battery-powered mobile handheld devices such as cell phones, two-way pagers, and personal digital assistants. CLDC with MIDP built on top of it forms a complete J2ME environment.

In addition to J2ME based execution environments, there are other solutions on the market, which bring different considerations to operators.

In today's European market, one can distinguish between the following technology options for launching application download services:

**A) J2ME based services**

Such services can be either based on standard J2ME or in addition support proprietary APIs, which are usually defined by handset vendors.

**B) Proprietary application download services**

To support these services, operators need to offer handsets with specific execution environments to their subscribers. The content sourcing can also be different and can be directly handled by the technology provider.

Operators that consider introducing application download services therefore face a choice between a number of technologies, each with different characteristics and implications for their future service portfolio. Operators and service providers should note that it is not immediately straightforward to identify the potential for any of these options/technologies. There are many determinants of success. These include implementation in the particular device, how powerful the device is, and how good the actual application is.

The following table gives an overview of the technologies currently available, and a description of them according to criteria that should be evaluated by operators.

	Standard MIDP <sup>1</sup> 1.0	i-appli, JSCL	ExEn <sup>2</sup>
<b>Services</b>	Various	Various	Games only
<b>Discovery and download</b>	WAP	i-mode (i-appli) or J-Sky (JSCL) browsing	Discovery over pre-installed catalogue
<b>Supporting GSM handsets</b>	New models from all main manufacturers	None	Philips, Trium, Sagem, Siemens
<b>Developer support</b>	Extensive	Extensive (Japan)	Limited
<b>Specific capabilities</b>	HTTP connections	Sound capabilities, 3-D graphics (JSCL), UI integration	High speed of execution, UI integration, Gaming features
<b>Reference services</b>	T-Mobile Telenor, Mobilcom, Halebop, Jamba etc.	NTT DoCoMo i-appli, J-phone J-Sky	Vodafone D2, Orange France, SFR, Omnitel Vodafone, Telefonica, China Mobile
<b>Owner / Standards body</b>	Sun / Java Community Process	Sun and NTT DoCoMo, Aplix (JSCL)	In-Fusio

#### Java specification process

Sun's Java Community Process is responsible for the evolution of Java regarding J2EE (Java 2 Platform Enterprise Edition), J2SE (Standard Edition) and J2ME. With over 300 companies or individual participants as members, the JCP's goal is to ensure the stability and interoperability of Java across all types of supported devices. Current new developments (Java Specification Requests (JSRs)), most relevant to the mobile industry are outlined in the following table:

JSR	Name	Purpose	Status
82	Java APIs for Bluetooth	Development of APIs for Java devices to use Bluetooth functionality	Public review since Dec 01
118	MIDP 2.0	Definition of the next MIDP generation, featuring more security, M-Commerce functions, push, improved UI, sound API	Public review since Apr 02
120	Wireless Messaging API	Enabling access to handset communication functions (SMS, USSD and Cell Broadcast)	Public review since Jun 02
134	Java Game Profile	Definition of a game-specific profile, designed for high-end devices	Expert group formation in Jun 01
135	Mobile Media API	Allows access and control of audio and video capabilities	Final release available since Jun 02
179	Location API	Enablement of positioning features, using GPS or E-OTD function of the handset, for example	Expert group formation in Apr 02
184	3D Graphics API	Development of small-footprint and interactive 3-D API	Expert group formation in May 02

<sup>1</sup> Mobile Information Device Profile

<sup>2</sup> Execution Engine

***Application download market evolution***

Although standards will continue to evolve, it is likely handset vendors will continue to include proprietary APIs to differentiate their products and to offer enhanced features. Siemens, Motorola and Nokia are participating in the definition of new APIs in JCP while continuing supporting their proprietary extensions to MIDP 1.0. This will continue in the short to medium term.

Content providers will need to make use of proprietary APIs to offer enriched experiences to users. This means that they will continue to optimise applications for each device manufacturer/class of device.

Northstream believes that European operators and content providers should focus their efforts on exploiting existing standards by launching attractive services and devices today, and discovering what customers will pay for. A carefully formulated customer proposition and segmentation should form the basis for this.

Regarding future evolution, operators should collaborate in standard groups and other initiatives to define and agree a common implementation that would facilitate content creation and simplify content management. MIDP 2.0 standardisation in JCP is a first step, but development in this area needs to continue to enable more advanced Java applications.

***Northstream's expertise***

Areas where Northstream can provide assistance to operators and service providers include:

- Strategy and goals for mobile application download services.
- Assist in identifying target groups, customer proposition, service definition, applications and value-added services.
- Technology evaluation support, including advice on handset based acceleration and optimisation methods.
- Support in formulating the business proposition to application providers.
- Competitive analysis of operators' offerings, platform providers, content providers etc.
- Support in standardisation ranging from monitoring, to impact assessment, to contributing on their behalf to standardisation activities.

**List of Acronyms**

API	Application Program Interface
E-OTD	Enhanced Observed Time Difference
ExEn™	Execution Engine from In-Fusio
GPS	Global Positioning System
J2EE	Java 2 Platform Enterprise Edition
J2ME	Java 2 Platform Micro Edition
J2SE	Java 2 Platform Standard Edition
JCP	Java Community Process
JSCL	J-Phone Specific Class Libraries
JSR	Java Specification Request
MIDP	Mobile Information Device Profile
SMS	Short Message Service
UI	User Interface
USSD	Unstructured Supplementary Services Data
WAP	Wireless Application Protocol

**Contact:**

Northstream has studied all aspects of **Mobile application download services**. Please contact us if you would like to find out more about this or about our company and the services we provide.

E-mail us at [info@northstream.se](mailto:info@northstream.se) or call us at +46 8 564 84 800 (SE) or +33 4 9723 2450 (FR)