you can

Canon

MEAP

multifunctional embedded
application platform

A dynamic opportunity for independent software developers

meap
POWERED BY

Create truly customised applications for a business market with unlimited potential

Canon is inviting independent software developers to create customised programs for a totally unique technology: MEAP (Multifunctional Embedded Application Platform). This Java-based platform allows developers to integrate virtually any business or bespoke application into the next generation of Canon MFP devices; to meet the precise needs of individual companies. This presents an outstanding opportunity for ISVs who will be offered access to MEAP for the development of business applications in conjunction with Canon.

FROM MFPs TO MEAP: INNOVATION AHEAD OF ITS TIME

As a recognised leader in the field of office automation and IT solutions, Canon has overseen major developments in the last few decades. Stand-alone analogue copiers and printers gave way to productive digital devices - culminating in the development of our 'intelligent' MFP systems, capable of sending and receiving digital documents to and from a vast array of sources. Now Canon is ready to implement the most important stage of all: using embedded applications in the MFP device to deliver simple and effective solutions. Transforming the device into whatever the customer needs it to be.

A JAVA-BASED PLATFORM FOR OPTIMUM VERSATILITY

MEAP has been expressly designed as a development environment, facilitating the creation of Java-based applications and thus allowing developers to maximise the utility of Canon MFP dynamic devices. MEAP can be used to design and implement custom interfaces, to efficiently accomplish complex document processing chores, or to automate special tasks; all simply using applications developed with the familiar Java language. This presents highly flexible possibilities, giving developers maximum freedom to utilise their abilities and come up with diverse application ideas.

COMBINE YOUR EXPERTISE WITH CANON'S EXTENSIVE EXPERIENCE

While any previous experience in developing applications for the office equipment market is useful, it is not a necessity. Canon will supply all the basic information and resources, thus allowing ISVs to access a previously closed market - with every Canon client that purchases a MEAP enabled device becoming a potential application customer. This puts you in a prime position to develop and structurally support emerging business models working in partnership with Canon.

MEAP technology overview

WHAT IS MEAP?

MEAP is an acronym for Multifunction Embedded Application Platform, a software platform embedded in Canon MFP devices. MEAP has been developed specifically for use with Canon MFP devices.

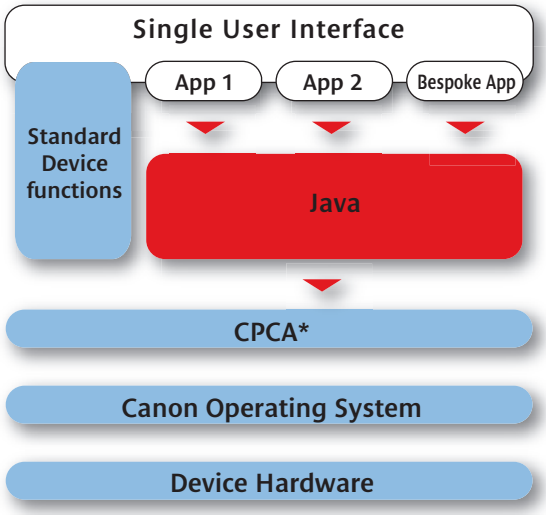
With the MEAP platform, developers can create Java applications which can then be installed and run on MEAP-embedded MFPs. In the folllowing text,, MEAP-enabled devices will be referred to as "MEAP devices".

MEAP FUNCTIONALITY

MEAP was developed as a software platform to allow MEAP applications the following functionality:

- Job submission functions such as print, scan, copy, etc.
- Job management functions such as cancel, pause, resume.
- Device management functions such as status monitoring, changing device settings, etc.
- User interface management functions such as those performed through a console (LCD touch panel).
- Remote host connections through a network. Web page display and secure network connections using a remote browser.
- MEAP functionality provides developers with the freedom to connect their own applications directly into Canon devices.

MEAP PLATFORM



* (CPCA - Common Peripheral Controlling Architecture)

MEAP ARCHITECTURE

MEAP is based on the J2ME (Java 2 Micro Edition) environment with user interface functions (touch panel or hardware key input) embedded in the MEAP Device.

The MEAP architecture consists mainly of the Platform, MEAP System Services, and applications running on the Platform.

MEAP PLATFORM

The Platform consists of the following components:

- Java Runtime Environment: Java byte code execution environment including Java VM (Virtual Machine), CDC (Connected Device Configuration), Foundation Profile, Personal Basis Profile, and Personal Profile.
- CPCA (Common Peripheral Controlling Architecture) Class Library: Provides MEAP Device control functions. CPCA is Canon's proprietary device control architecture.
- Application Manager: Controls the application life cycle (install, activate, deactivate, uninstall). Also manages functions provided by each application and makes them available to other applications.
- Utility Native Component: Provides security algorithms, image processing functions, and USB interface.
- Utility Class Library: Wraps the Utility Native Component for access from the Java environment.

MEAP SYSTEM SERVICES

The following MEAP System Services provide functions to MEAP applications running on the Platform:

- SIS (System Interface Service)
  Redirects events from the device to Services.
- AVS (Applet Viewer Service)
  Shows the user interface provided by Services on the local console.
- HTTP
  Web server that supports the servlet interface.
- LMS (License Management Service)
  Manages the licensing of applications.
- SMS (Service Management Service) Provides a user interface on the Web for managing the life cycle of applications.
- LLS (Local Login Service)
  An application that displays a modal dialogue on the local console for entering and processing user authentication information (e.g. user name and password, or a smart card).
- RLS (Remote Login Service)
  An application that displays a Web page on a remote browser for entering and processing user authentication information (e.g. user name and password).

MEAP APPLICATION CLASSIFICATIONS

MEAP applications are classified into three different types, based on the user interface:

- Applet Type: An application that displays a user interface on the console.
- Servlet Type: An application that displays web pages on a remote web browser.
- Esplet Type: An application that does not have a user interface.

The MEAP architecture, consisting of these core elements, allows for flexible integration and/or redesign of MEAP Device functions into customised applications.

CPCA

CPCA (Common Peripheral Controlling Architecture) performs a very important role within the overall MEAP architecture.
CPCA is implemented in MEAP as a Java class library. Any application built under MEAP can submit and control a printer, scanner, copier job by invoking the class library.
The following is a brief description of some of the functions available when using the CPCA CL (Class Library). The functionality of the MFP device itself, however, may exclude one or more of the functions listed below:

- Copy, scan, print job submission
- Job management
  (cancel, hold, resume)
- Device management
  (get device status, get/change device settings)
- Log management
  (get job history)
- Mailbox and document management (list documents in mailbox, retrieve documents in mailbox, move/ copy documents to other mailboxes and/or locations)
- Resource management
  (fonts, colour calibration, etc.)

MANAGING NUMBER OF PRINTS OR SCANS FOR EACH APPLICATION

The functions of the CPCA and the LMS (License Management Services) let developers and application vendors track or limit the number of prints, scans, etc. on a per-application basis. The License File is a file that is installed separately from the application, that contains defined usage conditions such as application expiration date or MFP device serial number(s). This lets application vendors manage nearly all aspects of how the application is to be used, on a machine-by-machine basis if so desired. This flexibility means that the application vendor can charge customers for the purchase of the application itself, or charge on a pay-per-use basis, where customers pay for use of the "function" that is provided by the application

WORRY-FREE APPLICATION, DEPLOYMENT, DISTRIBUTION

Applications are encrypted before deployment or distribution. The License File includes a key to decrypt the application, as well as the serial number of the target MEAP Device(s). The License File therefore prevents the application from running on any MEAP Device other than the one(s) intended by the developer/ application vendor. This structure also prevents the installation of unauthorised copies, and makes it difficult for others to analyse the application code during the distribution process. Developers can distribute their applications without having to worry about losing control of the code after it has been released.

INSTALLATION OF APPLICATIONS AND LICENSE FILES

The SMS (System Management Service) is used for the installation of applications and License Files to a MEAP Device. The SMS is a type of web application, displaying the installer page on the Web browser of a PC connected to the target device. This allows a user to easily progress through installation menus, installing application and License Files using their PC's Web browser.

APPLY FOR THE MEAP SOFTWARE DEVELOPMENT KIT

Canon has created the 'MEAP SDK' for software developers. The MEAP SDK contains all the necessary tools required to build MEAP applications, these include:

- Build Library
- Sample Code
- Documentation
- Use Cases
- Tools

SYSTEM MANAGEMENT SERVICE INTERFACE

The actual development work for MEAP applications can be performed using SUN's Java development kit (JDK), VisualCafe, JBuilder or any other 'off-the-shelf' development environment can be utilised.

MEAP TOOLS

In order to assist the MEAP SDK, a series of tools will be available specifically to aid developers. These tools are designed to significantly shorten the development cycle, of MEAP applications and encourage the use of reusable components using Java technology.

The technology introduced here gives an overview of useful functions available in MEAP. Java developers can use MEAP to create all manner of powerful applications for Canon MFP devices. So take up the challenge, the possibilities are endless!

Accept the challenge

For full details on how you can join the Canon Business Solutions Developer Programme, and receive the MEAP Software Development Kit, visit our dedicated web site and take advantage of a powerful tool that promises to expand your future business.

www.bsdp.canon-europa.com

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Canon

Canon Inc.
30-2, Shimomaruko 3-Chome, Ohta-ku,
Tokyo 146-8501, Japan
www.canon.com

Europe, Africa and Middle East
Canon Europa N.V.
P.O. Box 2262, 1180 EG Amstelveen,
the Netherlands
www.canon-europa.com

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