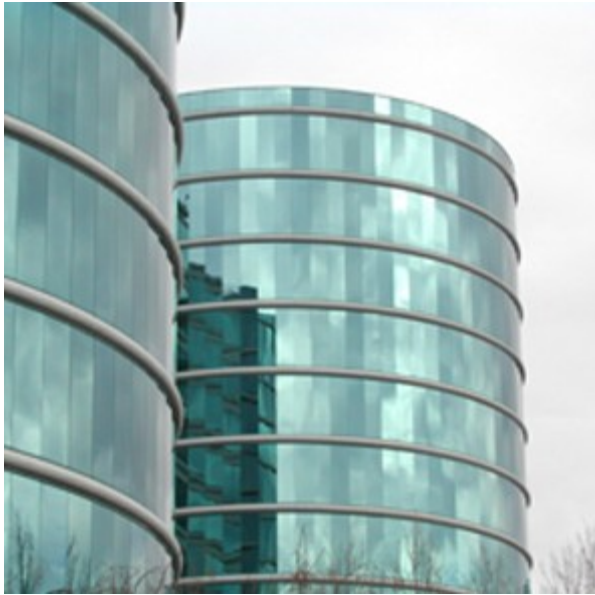


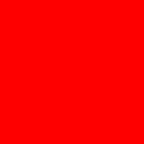
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# Advancing The Java ME Platform



Roger Riggs  
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# Agenda

- Phase 0 – Current JSR Status
- Phase I – Modernize the core
- Phase II – Expand the platform

# Oracle is Committed to Modernize Java ME

- Committed to getting JSRs moving
- Work is already underway
- Sharing CDC Next, CLDC Next texts next week, integrate feedback and file immediately

# Phase 0 Get Moving Now

- Supply licensing terms for MSA 2 to SL
- Release JSRs in progress
  - JSR 290
  - JSR 242
  - JSR 229
  - JSR 253

# Modernization Plan

- Phase I - Modernize ME platform
  - Adopt/Incorporate platform and language enhancements from JDK 6
  - Preserve CLDC/CDC split, but drive for larger common ground between them and the JDK
- Phase II - Expand ME Platform
  - Many requests for additional APIs/capabilities
  - Prioritize and distribute as appropriate to profiles, optional packages, or new optional packages
  - Work in parallel as much as possible

# Modernization Goals

- Enable API and library re-use across ME, SE
  - Consistent core language features
  - Re-use of ME APIs with SE (Location, Sensor, etc).
  - Re-use of SE APIs with ME (JPA, Units)
- Reduce dissonance for developers
  - Consistent tools, programming patterns, etc.
- Fit within (updated) device memory budgets



# Java ME Evolution – Phase I

- CLDC is the common subset of JDK for Java ME
  - Java Language
  - Java Virtual Machine
  - Java Runtime Libraries
- Minimize business disruption
  - Keep backward compatibility
  - Application ecosystem stability
- Existing Optional Packages
  - Without changes are backwards compatible
  - Can be updated to use Common Language, VM, Libraries

# Language and VM Updates

- Compatible with the Java Language Specification
  - Generic Types
  - A Simple Assertion Facility
  - Annotations\*
  - Extending the Java™ Programming Language with Enumerations, Auto-boxing, Enhanced for loops and Static Import
  - Unicode Supplementary Character Support (4.0)
- Compatible with the VM Specification
  - Memory Model and Thread Specification Revision,
  - Class File Specification Update

\* CDC Supports full Annotations, CLDC supports a subset due to the absence of reflection

# Library Updates

- Synchronize APIs already in CLDC/CDC to JDK 1.6
- Update built-in type support
  - String – extended to full Java 6 Strings
  - Math functions – Trig, BigDecimal, etc.
- Collections\*
- Standard File APIs\*
- Concurrency Utilities\*
- NIO Buffers
- Create common specification for Generic Connection Framework (GCF)

\* Subset as necessary to achieve footprint goals

# CLDC Updates

- Common enhanced language, VM, and Libraries
- Retain equivalent level of functionality
  - Security model (same as CLDC 1.1.1)
  - No application dynamic loading of classes
  - Generic Connection Framework, networking, etc.

# CDC Update

- Common enhanced language, VM, and Libraries
- Combine CDC and FP (No separate FP)
- Updates
  - Security - JCE, JSSE, JAAS
  - New I/O APIs for the Java™ Platform
  - Networking,
  - Logging optional package

# Discussion

- What are the issues?
- Can you commit to contribute and support?
- Lead, follow, or get out of the way!  
Which role will you take?

# Java ME Direction – Phase II

- Phase I - Modernize ME platform
  - Adopt/Incorporate platform and language enhancements from JDK 1.6
  - Preserve CLDC/CDC split, but drive for larger common ground between them and the JDK
- Phase II - Expand ME Platform
  - Many requests for additional APIs/capabilities
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# Breadth vs Depth Strategy

- Java ME must fill gaps in functionality
- Updates to existing APIs
  - For improvements to current functionality
- New APIs should be created for new functions
  - Must have a proactive committed owner with adequate resources
  - Must be designed to be usable across Java ME and Java SE
  - Must be developed in parallel to feed the eco-system quickly
  - Design for modular delivery with JDK 8 modules
- Avoid monolithic processes and complex decisions



# Monolithic vs Agile

- JSRs with lots of functionality have proved to be less efficient models for JSR development due to scale and complexity
  - The amount of work for the SL and the complex decision process resulted in excessive delays
- Smaller more focused JSRs get results quicker
  - Maintenance also more efficient

# Device Specific vs Reusable

- Profiles so far are not used and as such not reusable across all ME devices
  - MIDP on STBs
  - PBP/PP on Mobiles
- Criteria for pushing new functionality into current profiles vs new standalone reusable optional packages
  - Functionality specific to one device type only ?
  - Reusable across devices ?
  - Availability speed

# Gaps to be Filled

- OpenGL ES 2.0 Java API
- UI - touch input, Stereoscopic display control
- Modular delivery of new APIs and libraries across ME, SE with explicit dependencies and fully secure delivery
- And more examples...

# Core Modernization

## Proposal

- *Java ME Core Platform modernization*

## Features

- *AMS: Application Manager to support multiple application model and integrate Generic Application Store*
- *Profile: Service Framework (publish/access local services, e.g. contacts)*
- *Profile: Event Framework, i.e. cross application/platform event bus*

- *Profile: Networking extensions, e.g. Multicast*
- *Profile: Configuration Framework central to/for all applications*
- *Profile: add multi-touch and Gesture support as well as multilayer and printer output capabilities to User Interface*



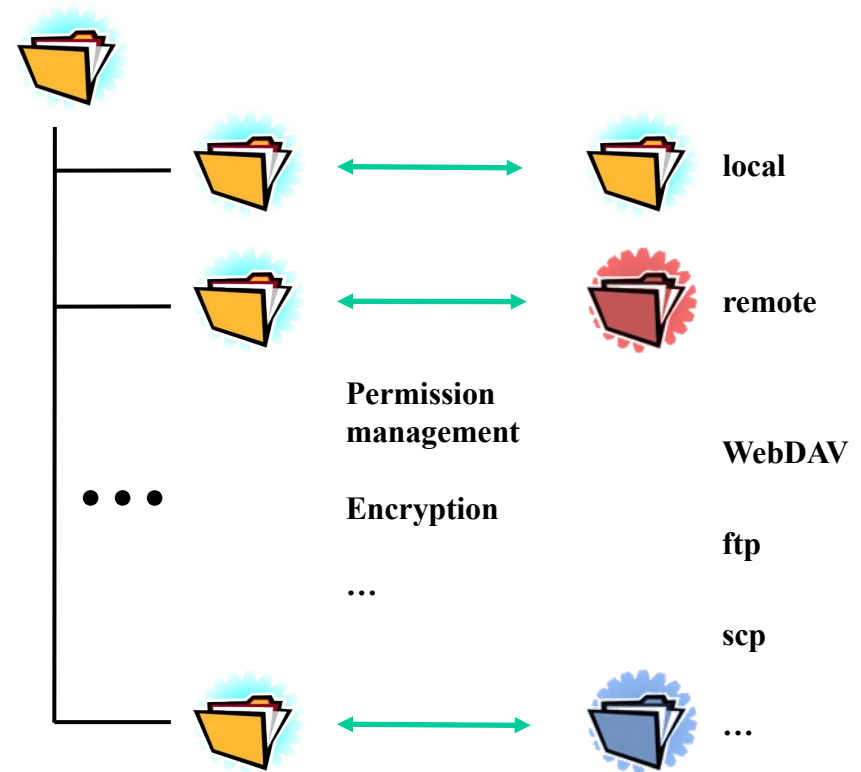
# Advanced File System

## Scope

*Specifies a GCF based generic file system to access local and state of the art remote file systems such as Dropbox, Box.net, Mobile Me, WebDAV, ...*

## Main Feature

- *support local file systems*
- *mount remote file systems over WebDAV, sftp, scp...*
- *allows applications to register new file system plugin (e.g. such as Dropbox, or Encrypted File System...)*
- *Generic file system interface adding permission management, file list retrieval, ...*



# UPnP DLNA

## Scope

- *Specifies ability for apps to discover and remote control UPnP DLNA compliant devices on the local network. Gives the application a way to find devices, list available media (Music, Video) and control play, stop, ... them ... i.e. act as a Control Point*
- *The specification could allow for the application to behave as a UPnP AV Media Server*

## Main Feature

- *UPnP DLNA Client*
- *UPnP AV Media Server: Multiple applications can register different content however all is offered merged as one Media Server*

## Related to

- *Platform support for Multicast*



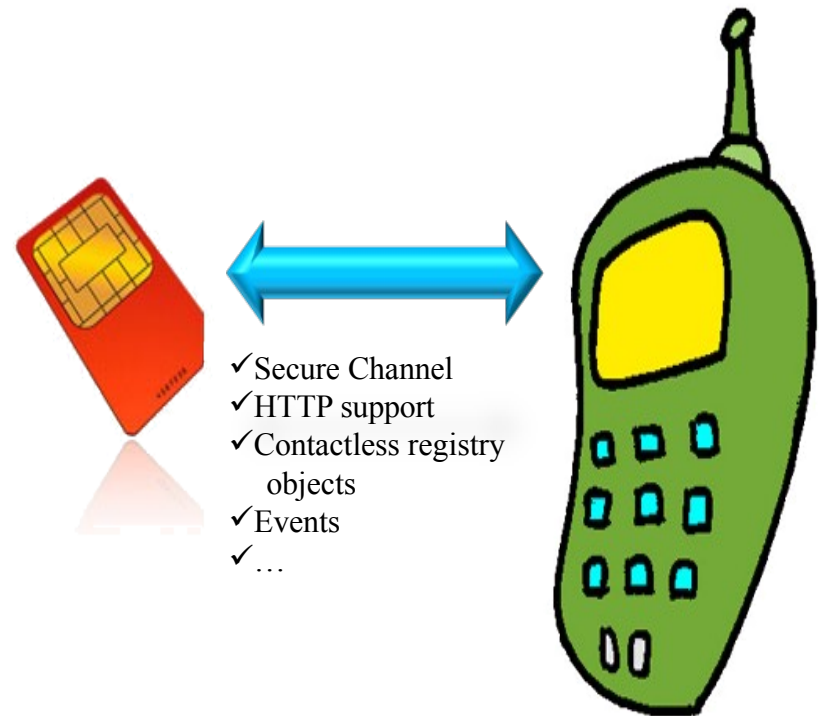
# SIM Support

## Scope

*Specify enhanced support for communication at the interface between card and handset*

## Main Feature

- *secure channel specification from ETSI*
- *contactless service registry defined by GlobalPlatform to provide a user interface for the contactless services in the card*
- *discovery of SIM card with SCWS / Servlet engine*
- *support events coming from SIM via TCP/STK/HCI*



# Social Networking Interface

## Scope

- *Specify APIs to JavaME allowing thereby to applications and local web services (servlets) to interface and host 3<sup>rd</sup> party social applications (e.g. hi5, LinkedIn, MySpace, Netlog, Ning, orkut, XING, Yahoo! ...) like OpenSocial.*
- *This interface is both used for open Internet as well as Enterprise social networking.*

## Main Feature

- *Generic Framework*
- *Interface for applications to define new Containers*
- *Retrieve Social Networking information*





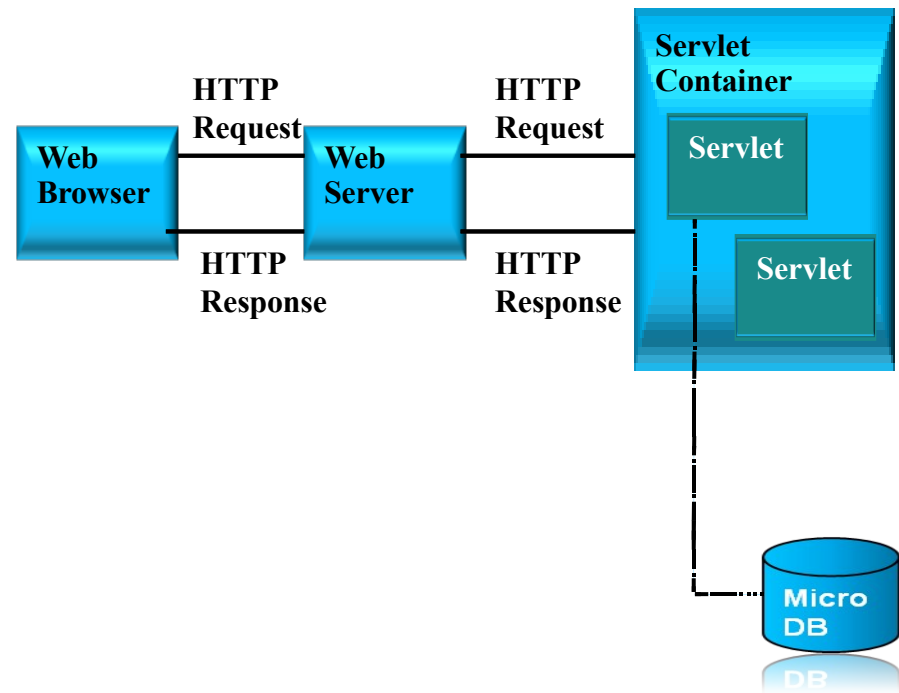
# Servlet Application Model

## Scope

*Introducing a new Application Lifecycle Model to Java ME based on Servlets. This model lets a given bundle to register straight away as a service and to bind to the platform's local web server. It supports the on going trend to have service access for local or remote clients.*

## Main Feature

- *Combine Servlet Application Model as offered by JSE/JEE with constraints and limitation similar to those defined by Java Card 3 Connected Servlets*



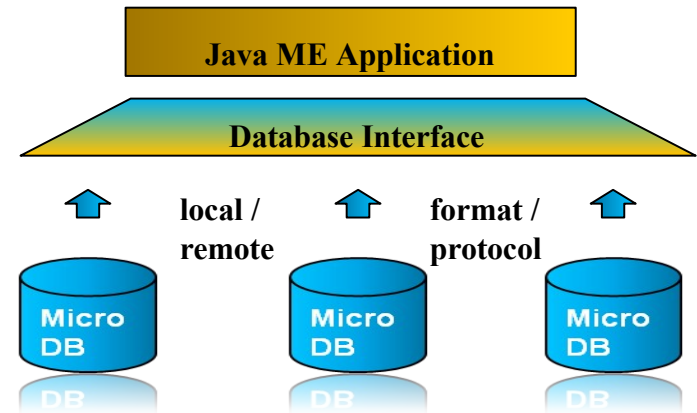
# Database Interface

## Scope

*Specifies generic access to local and remote Databases*

## Main Feature

- *generic interface*
- *defines hooks for most widespread micro DB without mandating any*
- *JDBC inspired, investigate CLDC reusability*
- *allows applications to register as new DB plugin e.g. to interface either own local/remote format/protocol DB*
- *allows typical random access and relational searches*



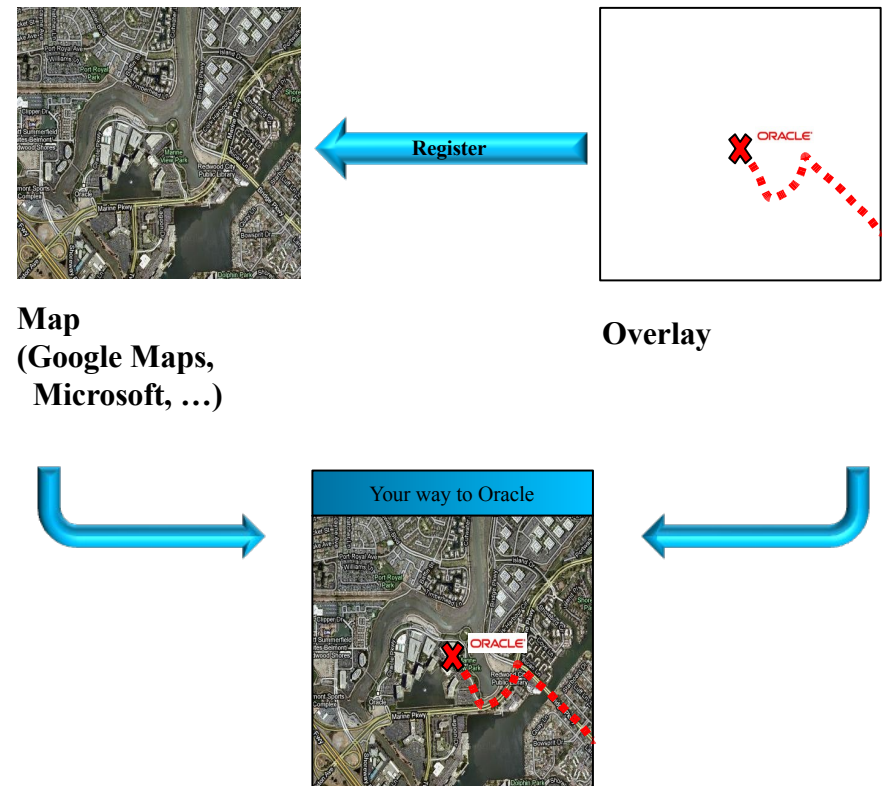
# Maps

## Scope

*Specifies the mean to draw maps and overlays based on a given location by wrapping the platform native map engine.*

## Main Feature

- *Draw maps in a viewport given a location*
- *Interface for applications to register being an overlay*
- *Interface for applications to load/draw registered overlays*
- *Retrieve a selected/pointed location*



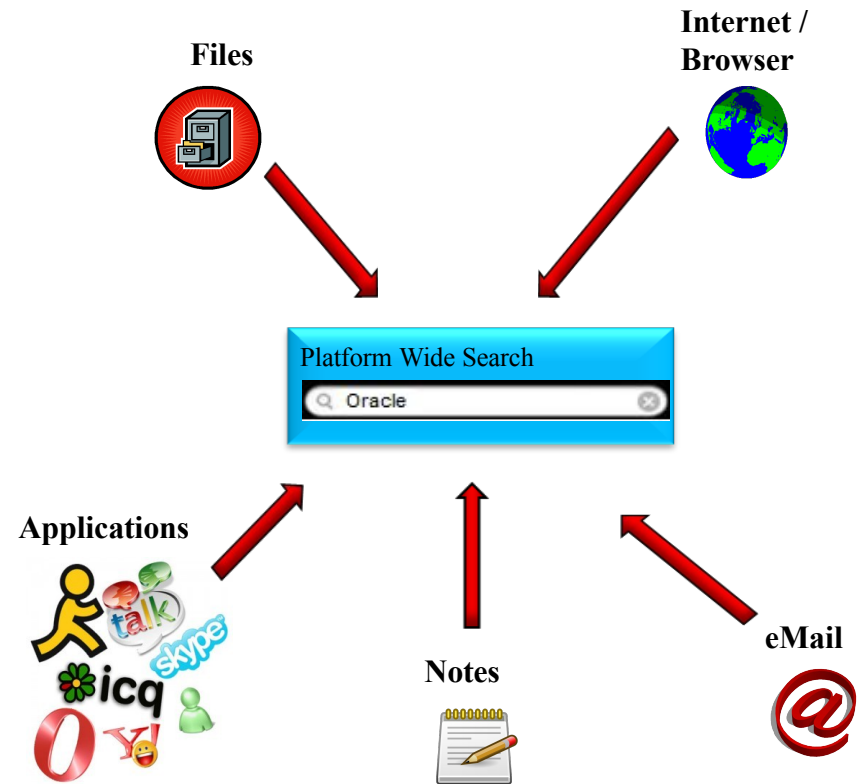
# Platform Wide Search

## Scope

*Specifies platform wide search function allowing apps to look by keywords for platform objects*

## Main Feature

- *search by keyword*
- *returns list of platform objects accessible/controllable by the java application (e.g. file, native/java apps, PIM objects, email, online store, ...)*
- *interface for applications to become searchable (allows thereby also to create new bridges to the internet: Yahoo, Google, Facebook ...)*



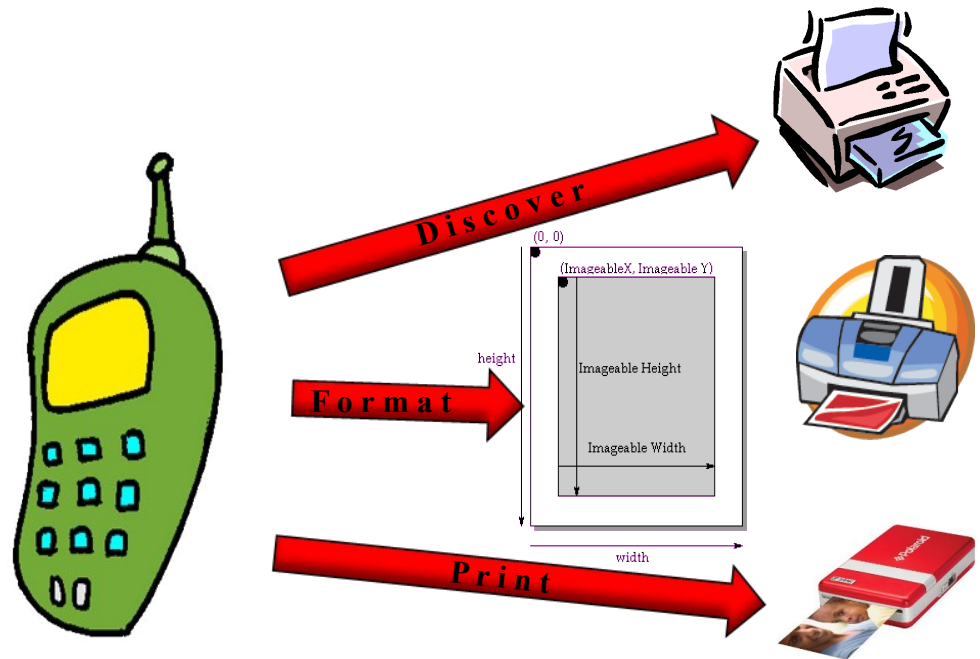
# Mobile Printing

## Scope

- *Add Printing capabilities to ME*
- *Create a suitable subset of JSR 6 (Printing for SE)*

## Main Feature

- *Printer discovery (connected, proxied, Wifi, Bluetooth)*
- *Printer capabilities*
- *Page rendering*



# JSR Finalization

## Proposal

- *JSR 230: DS*
- *JSR 246: DM*
- *JSR 259: Ad hoc Networking*
- *JSR 266: Unified Message Box*

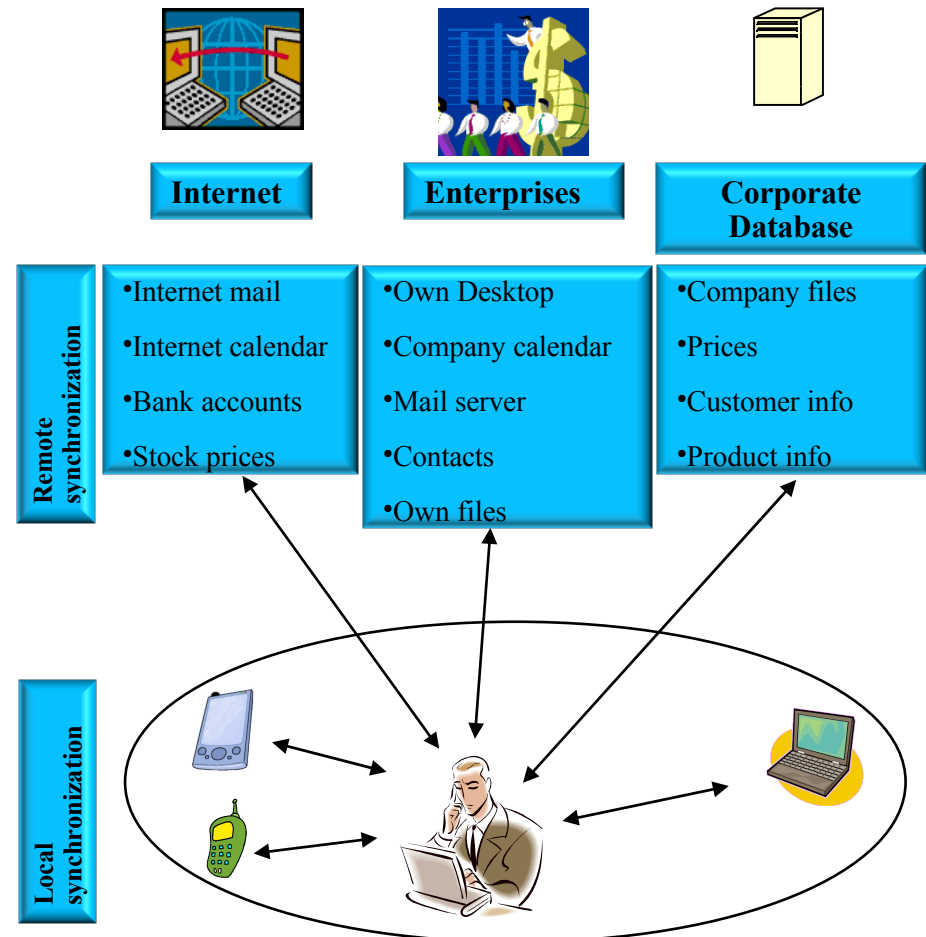
# JSR 230: Data Sync API

## JSR Scope

*APIs allows to synchronize application specific data stored in the terminal with corresponding data stored on a server*

## Main Feature

- *API to synchronization engine (e.g. for adding, deletion, update of data)*
- *sync protocol agnostic*
- *usage of containers for data exchange*



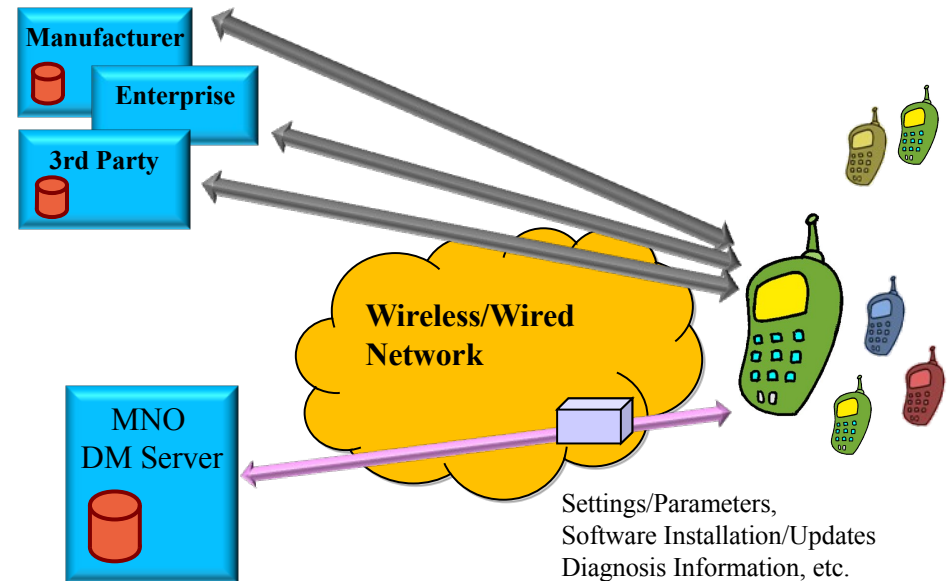
# JSR 246: Device Management API

## JSR-Scope

*generic interface to device management  
implementation in the terminal*

## Main Feature

- *provides access to application parameters managed remotely on the device*
- *mechanisms to manage events, data monitors, session notifications*





# JSR 259: Ad-hoc Networking API

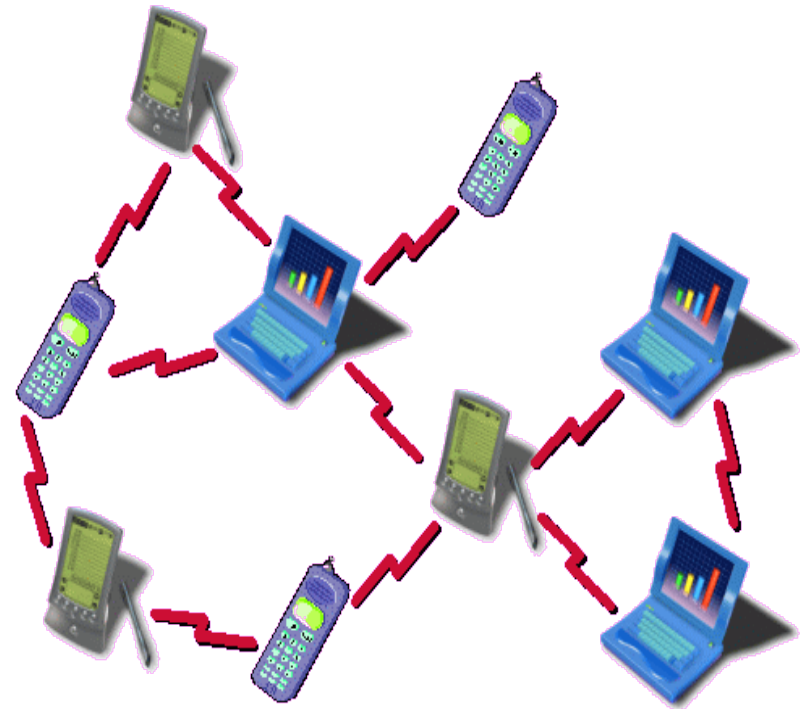
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## JSR-Scope

*APIs enable communication between mobile devices in a bearer agnostic peer-to-peer ad-hoc network environment*

## Main Feature

- *Service discovery*
- *Service registration*
- *Service availability alert*
- *Service and service capability inquiry*
- *Remote service consumption*



# JSR 266: Unified MessageBox

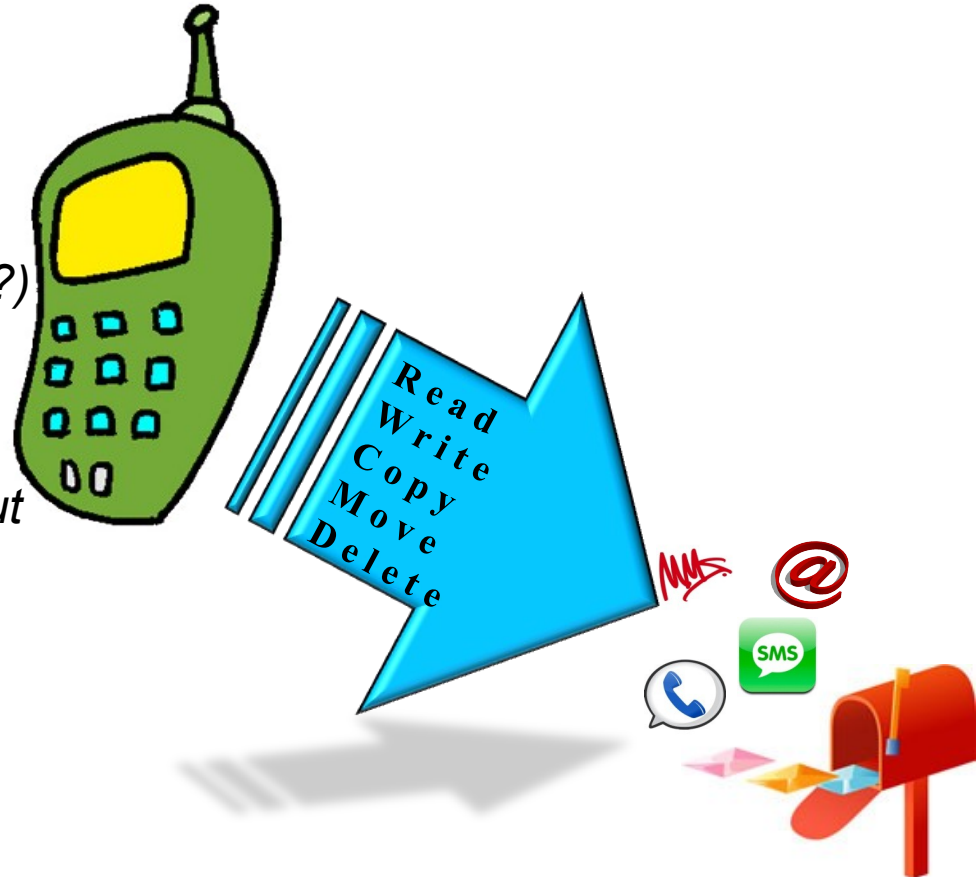
## JSR-Scope

- *Unified Message Box Access API (UMBA-API)*

## Main Feature

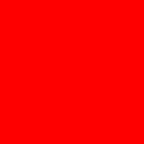
- *Management of message boxes.  
(query of info, rename, copy, delete?)*
- *Read, write, copy, move and delete content*
- *Access to message attributes*
- *Register listeners to be notified about modifications to the message box*

+ *Extensions to support voice mail message boxes*



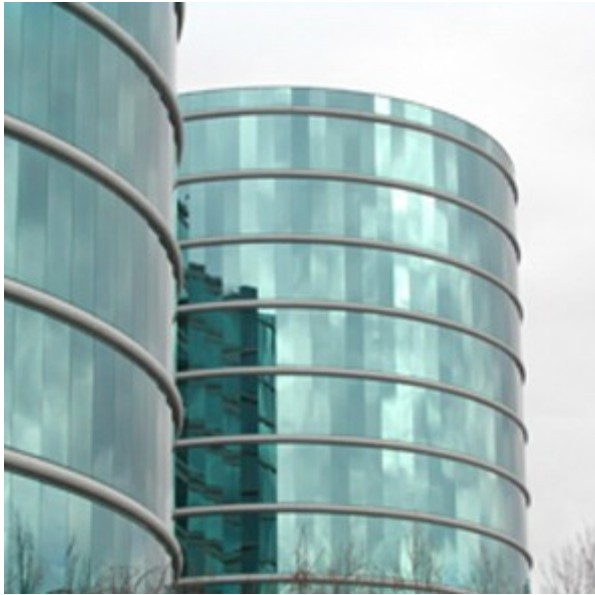


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# Backup

# MSA 2 – Standard Platform

- 6Mb static footprint
- CLDC
- MIDP 3.0
- Mobile Media
- Messaging – SMS/MMS
- File and PIM
- Bluetooth
- Mobile I18n
- Sensor API
- SVG 2.0
- SIM card API
- Content Handler API
- Location API
- XML – SAX, STaX, DOM
- Internet Messaging Svc
- Additional Optional APIs
  - Crypto
  - SIP
  - OpenGL ES 1.1
  - Contactless Comm
  - XML UI

# Target Devices

- CLDC
  - 1Mb static memory
  - 1Mb dynamic memory
- CDC
  - 4Mb static memory
  - 2Mb dynamic memory

\* Profiles and Application memory are in addition



# CLDC Packages (Common)

- java.lang [subset]
- java.lang.ref [subset]
- java.io [subset]
- java.util [subset]
- java.io [subset]
- java.security [subset]
- java.nio
- javax.microedition.io

# CDC Packages

- java.io
- java.lang
- java.lang.ref
- java.lang.reflect
- java.lang.annotation
- java.math
- java.net
- java.nio
- java.nio.channels.\*
- java.nio.charset.\*
- java.text.\*
- javax.microedition.io
- java.security
- java.security.cert
- java.security.interfaces
- java.security.acl
- java.security.spec
- java.util
- java.util.jar
- java.util.zip
- java.util.spi
- java.util.regex
- java.util.concurrent.\*
- java.util.logging
- javax.security.auth.x500