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Sun GlassFishTM Mobility
Platform: Getting from zero
to Mobility

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This session is intended to help you learn about how GlassFish Mobility Platform helps address challenges in mobile application development. The topics covered include tools for OMA-DS (synchronization), Mobile Security, and Mobile Enterprise application development.



Agenda

- Mobility Challenges
- GlassFish Mobility
- Architecture
- Security
- Enterprise Connector API
- Mobile Client Business Object API
- Provisioning
- Developer Tools

Evolution of mobile computing

TELEPHONY



Cellular Voice
Text Messaging
Video Chat

PRODUCTIVITY



Mobile Email
Mobile Calendar
Mobile IM

ENTERPRISE APPS



Mobile Presence
One Device
Mobile IT

Device, Network, & Application challenges

- Multiple device platforms with limited display characteristics
- Still evolving browsing experience
- Network connectivity
- Weak security
- Different protocols (SMS, GPRS) driven by consumption pattern
- Application/device provisioning
- Accessing to enterprise content
- Desktop synchronization



GlassFish Mobility Platform



Access to
Anything



Access from
Anywhere



Access for
Anyone

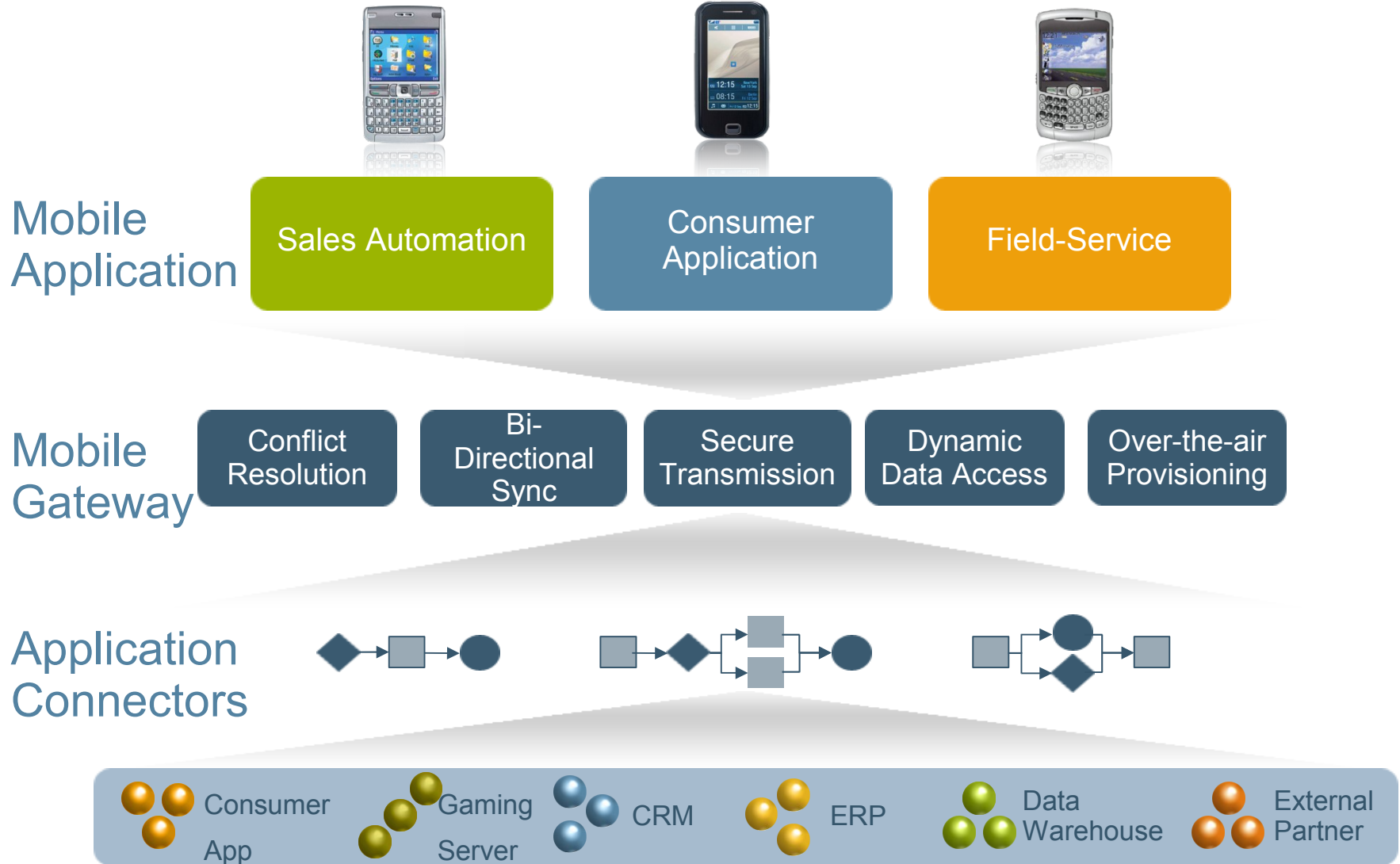
Access at
Anytime

- Secure data access and synchronization to:
 - > Enterprise Apps (Siebel, Oracle, SAP)
 - > Consumer Apps (Twitter, FaceBook, Photo sharing)
 - > PIM (Email, Calendar, Network Address Book)
- Support for OMA-DS and multiple mobile development frameworks
- Integrates with MySQL, Java CAPS
- Device and carrier agnostic

Design Goals

- > Make it faster and easier to develop and deploy Mobile Solutions
- > Use of standard technologies and protocols
- > Rapid and flexible deployment
- > Security suitable for enterprise deployment
- > Modularity
- > Easy to configure and manage

A Closer Look



Components and Features

Client Library

- > Synchronization of business objects cached on device
- > JerseyMe for realtime access to data using RESTful web services
 - RESTful resources cached on device for off-line support
- > Standards: OMA DS 1.1.2 and 1.2, JAX-RS 1.0, MIDP 2.0 / CLDC 1.1 and 1.1.2
- > JavaSE MCBO Client SDK

Components and Features

SyncML Engine

- > Over-the-air data synchronization between client and server systems
 - Synchronize to any arbitrary enterprise backend data, e.g. Siebel, SAP, Oracle
- > Standard based – SyncML (OMA DS) protocol
- > 100% Java implementation

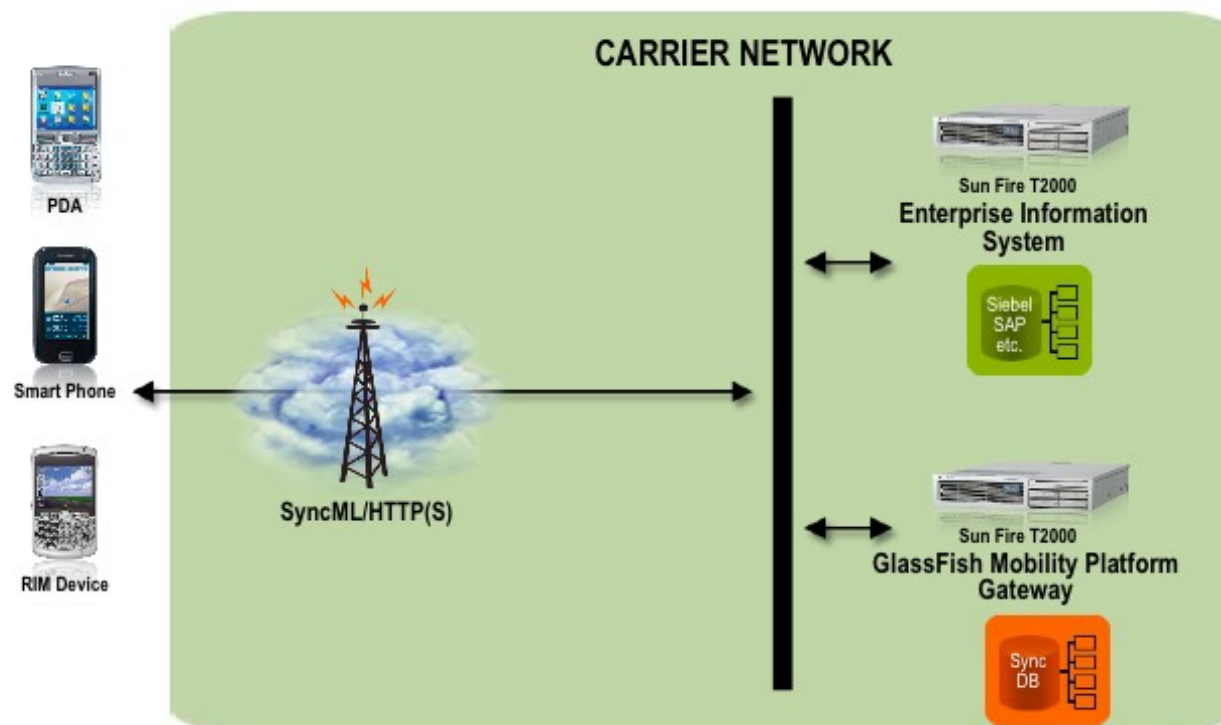
Components and Features

Connector Library

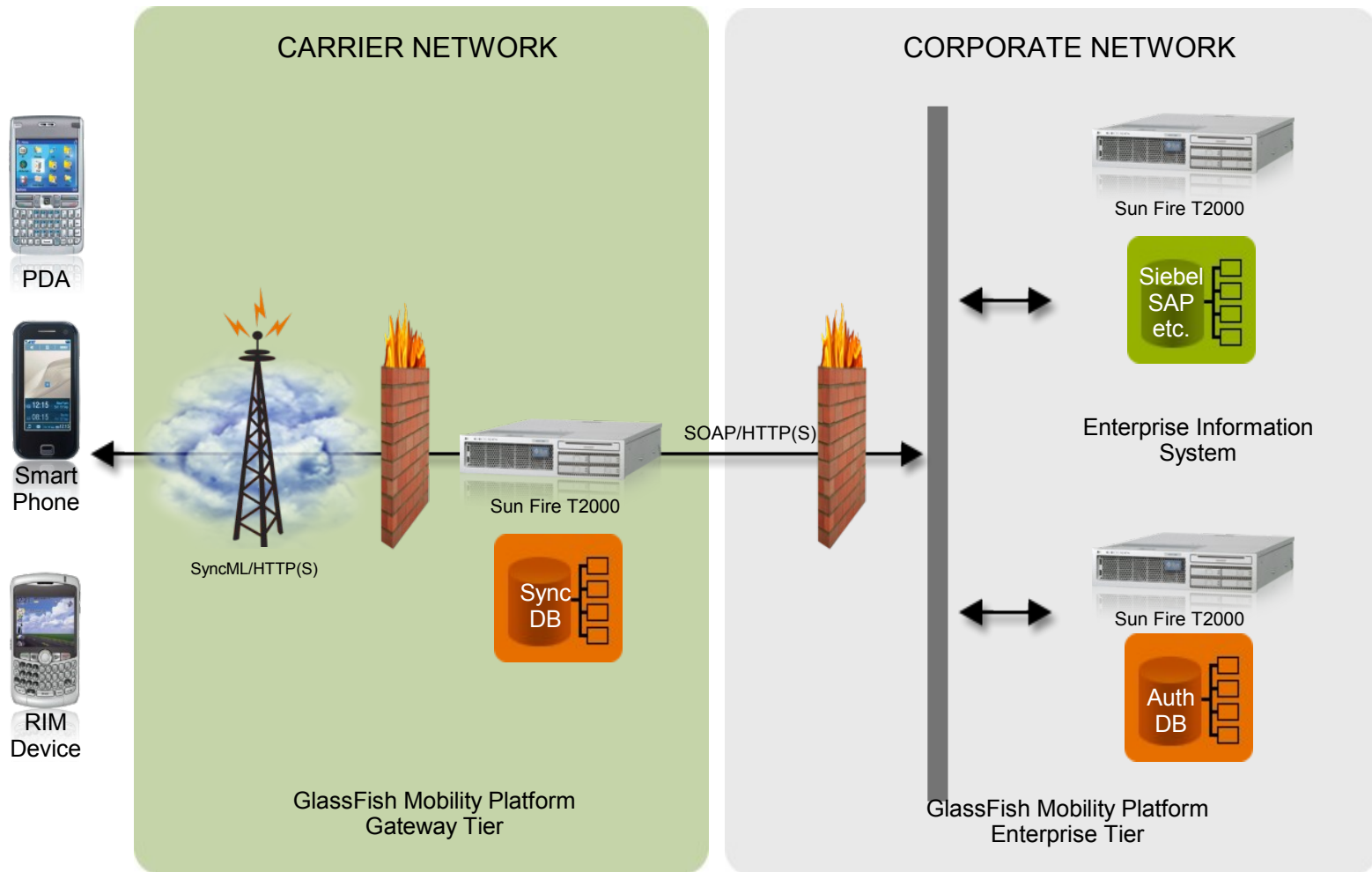
- > Enables development of connectors to access enterprise data using ECBO or JAX-RS
- > JAX-RS connectors can implement sync logic and provide access to dynamic data (queries, reports, etc.)
- > Access to Sun JCA adapters for Siebel, SAP, Oracle, etc.
- > Conflict resolution via object merge

Carrier-hosted Services

Managed mobility services can be offered as a service by telecom carriers with no upfront investments from the users



Enterprise Mobility

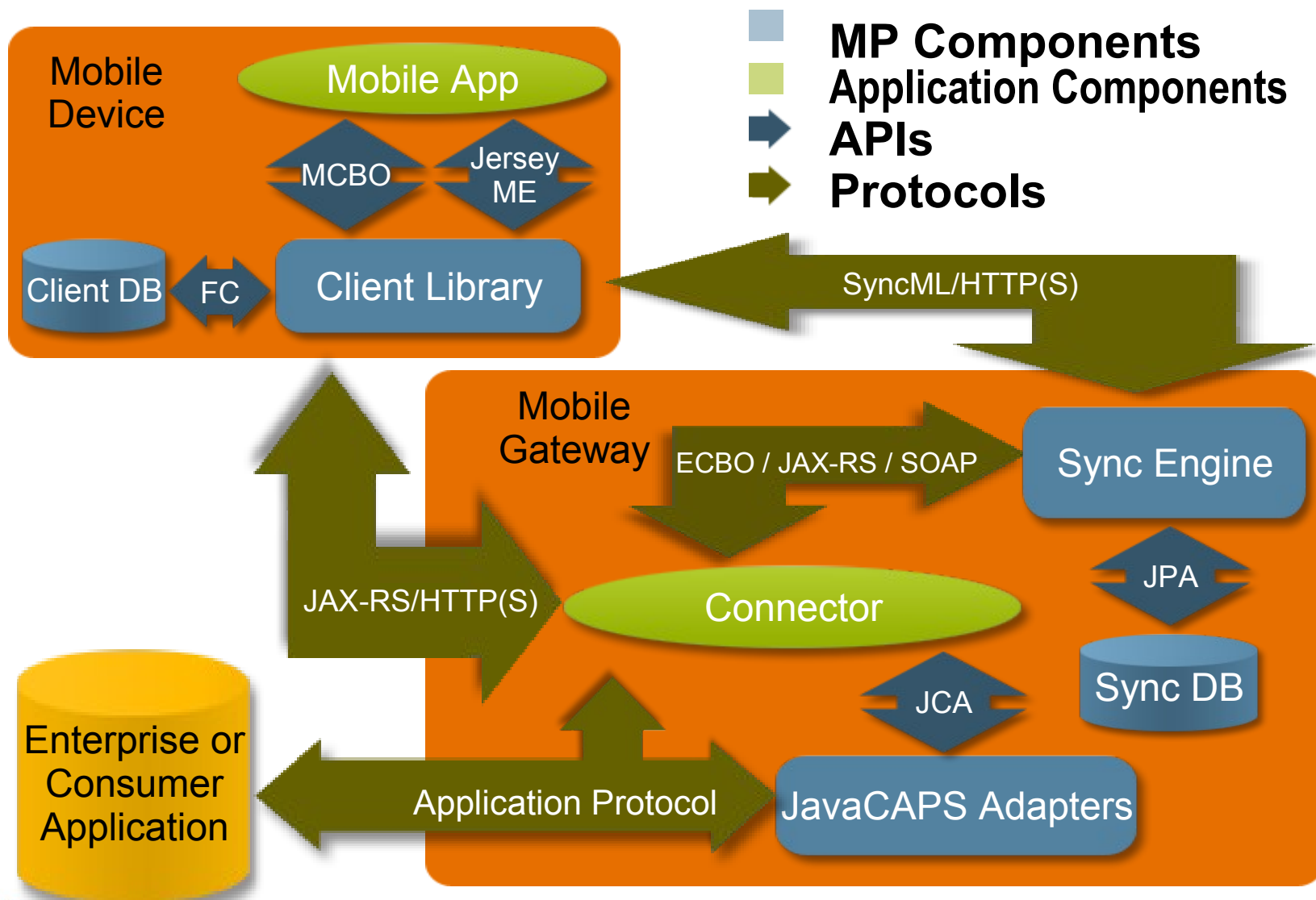




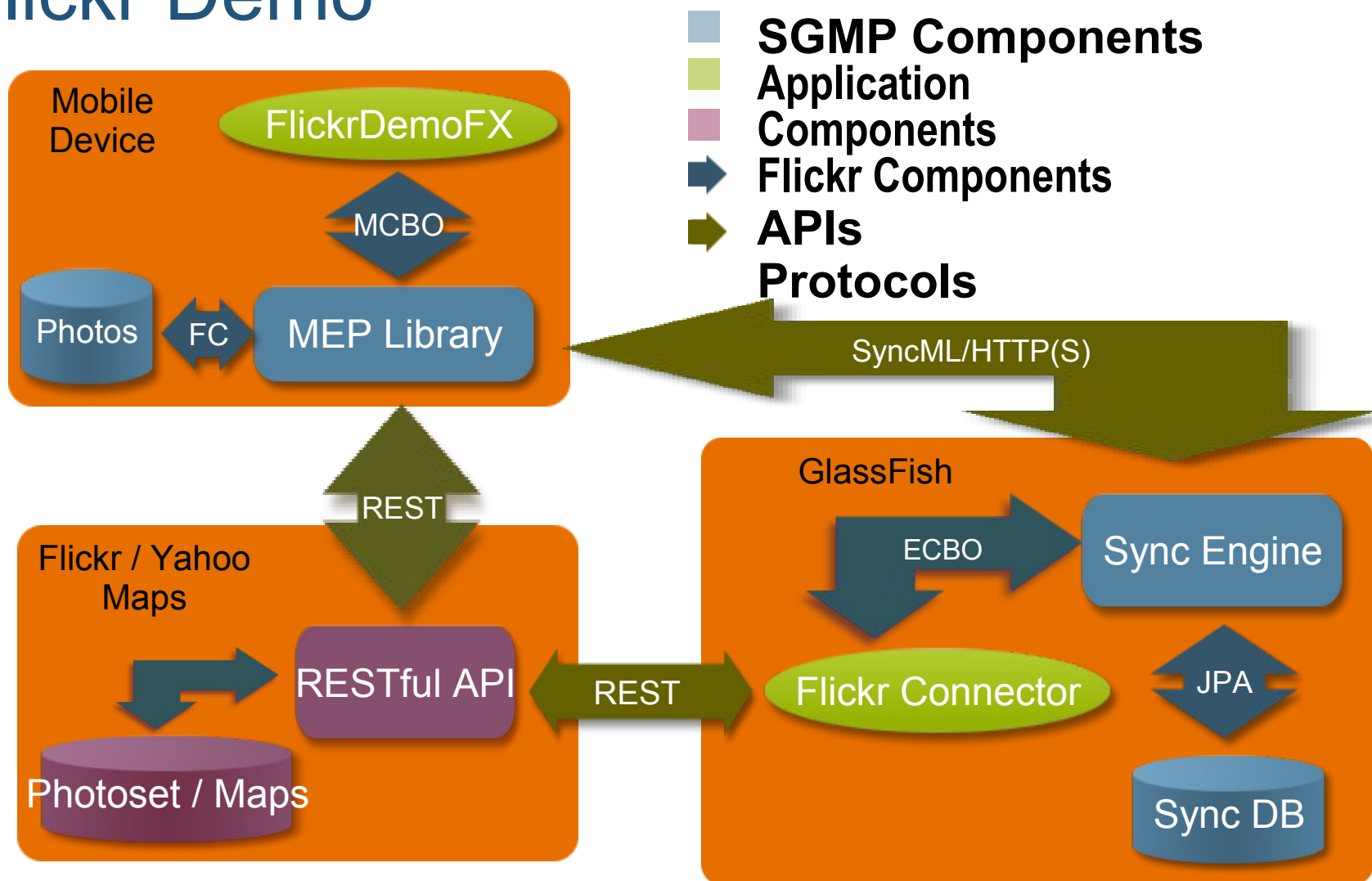
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- Mobility Challenges
- GlassFish Mobility
- **Architecture**
- Security
- Enterprise Connector API
- Mobile Client Business Object API
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Mobility Platform Architecture



Flickr Demo





Agenda

- Mobility Challenges
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- Architecture
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Mobile Client Security

- > Client application authentication
 - syncml:auth-basic / syncml:auth-md5 over https
- > Transport layer security via https
- > On-device data encryption
 - Pin based encryption scheme
 - MD5 digest of pin used as encryption key
 - Data encrypted with triple DES/AES



Server Authentication

- > Single tier deployment
 - User/pass authentication directly with back-end (not storing credentials on gateway)
- > Two tier deployment
 - User/pass authentication with Mobile Gateway
 - Mobile Gateway server authenticates with enterprise tier gateway
 - Mobile user mapped to enterprise user in enterprise datastore/application
 - Two password domains: Gateway tier and Enterprise tier

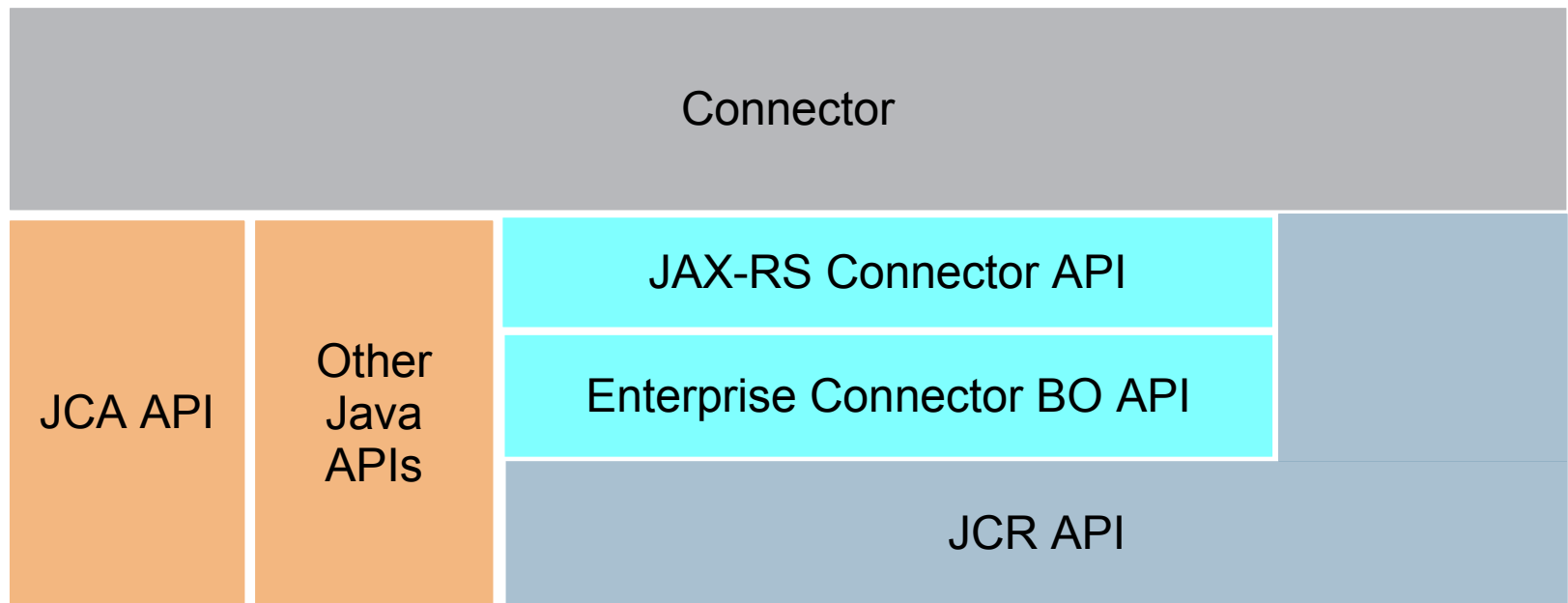




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Connector Architecture



Enterprise Connector Business Object API

- > Supports synchronization of arbitrary Java objects
- > Each object instance is identified by a name
- > Object serialization of your choice
 - Java serialization, XML, JSON, etc.
 - Contract between mobile application and connector
- > Typical connector is only 5 classes
- > Sits on top of JCA to access Sun JCA Adapters

JAX-RS Enterprise Connector API

- > JAX-RS Bridge to ECBO
- > RESTful Web Service endpoint
- > Object serialization of your choice
- > Can be remotely deployed in any standard servlet container

Business Object Abstraction

- > Business Objects are the entities being synchronized
- > They are serialized into data records
 - Data records are encoded in base64 in SyncML
- > Implement CRUD operations with back-end systems
 - With Sun JCA Adapters: Siebel, SAP, Oracle Apps, etc.
 - Without Sun JCA Adapters: JDBC, file system, etc.

Business Object Provider Abstraction

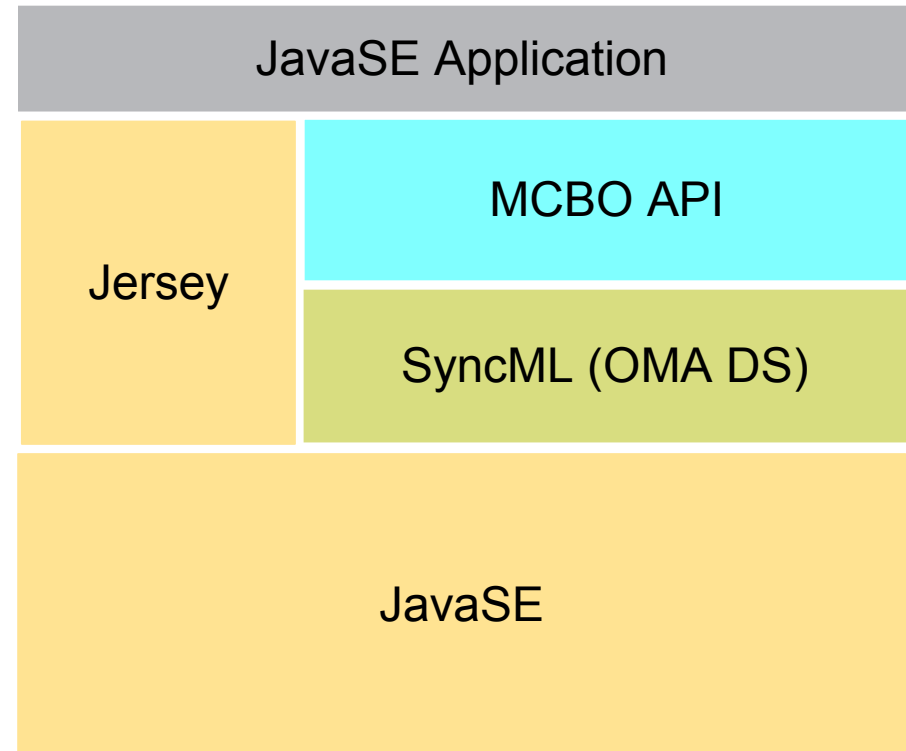
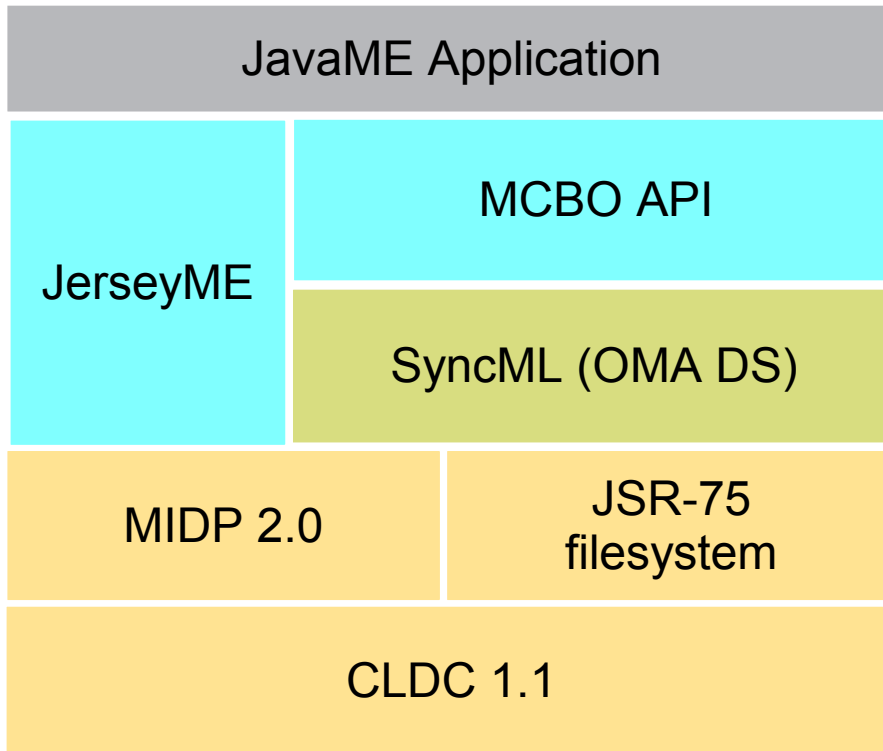
- > A connector's entry point
 - Life cycle methods to initialize and terminate
- > Factory for Business Objects
- > Provides access to session context
- > Implements the R in CRUD
 - Single operation to retrieve list of Business Objects



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- Mobility Challenges
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- **Mobile Client Business Object API**
- Provisioning
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Client Architecture



Mobile Client Business Object API Overview

- > **BusinessObject** defines your data model and the serialized form used to store the data on the device
 - Application developer must implement:
 - bean properties for your data model
 - **abstract void deserialize(byte[] data)**
 - **abstract byte[] serialize()**
- > **BusinessObjectStorage** manages storing and retrieving instances of **BusinessObject** on the device

Mobile Client Business Object API Overview

- > **SyncManager** controls synchronization with gateway
- > **SyncType** and **EncodingType** enumerate synchronization types and encoding types
- > **SyncResults** provides coarse-grained stats after syncs

Mobile Client Business Object API Overview (cont.)

- > **SecurityManager** – provides the security features in the MCBO API
 - Extensible - developers can provide their own encryption implementation
- > Developers can choose any, all, or none of these features

Mobile Client Business Object API

Sync types

- > Six types of client initiated syncs
 - Client ↔ Server
 - Two way sync (aka fast sync), Slow sync
 - Client → Server, Server - Client
 - One way: modifications sent
 - Refresh: data replaced
- > Server initiated syncs
 - Server can initiate syncs via SMS messages to the device



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Provisioning Portal

Based on JSR-124

- > Provisioning server
 - OTA discovery/provisioning
 - Integrated content repository
 - Provisioning based on device capability
- > Content management
 - Add/upgrade applications
 - Content versioning





Agenda

- Business landscape
- GlassFish Mobility
- Key Benefits
- Architecture
- Security
- Enterprise Connector API
- Mobile Client Business Object API
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- **Developer Tools**

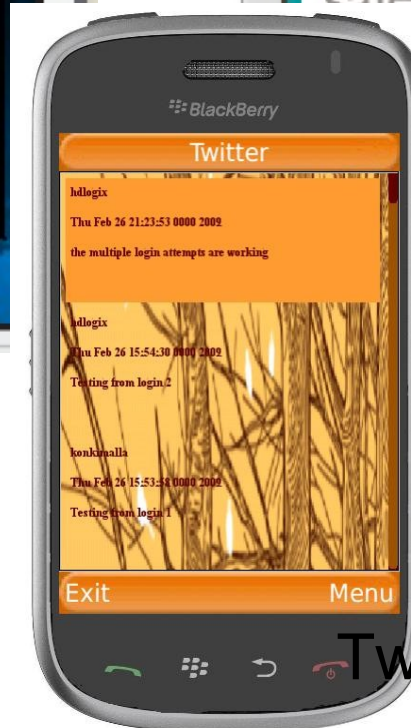
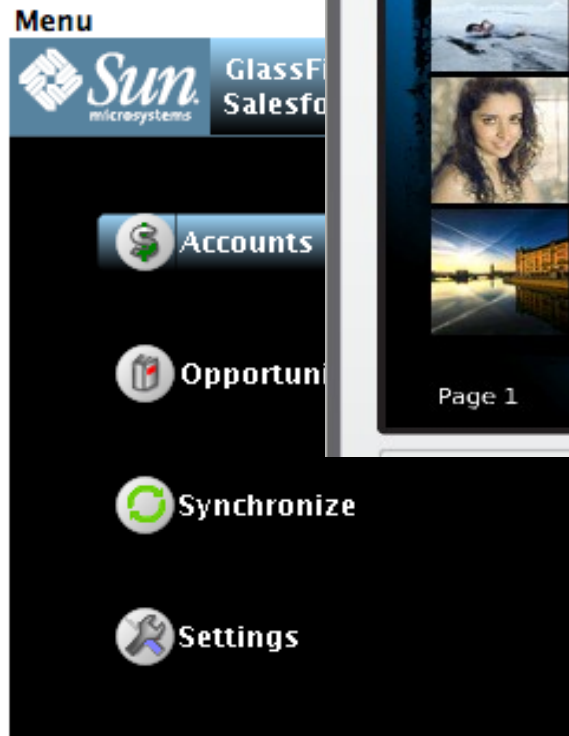
Development Tools - MP Client

- > JavaME client development
 - NetBeans 6.5 IDE w/ Mobility Pack
 - Full integration with JavaME Wireless Toolkit
 - Choice of UI framework: (LWUIT, LCD UI, SVG, etc)
 - Mobile Client Business Object library
 - JerseyMe client
- > Easy to plug-in device emulators (Nokia, BlackBerry, Sprint, etc)
- > JavaSE client development

Client Applications & User Interfaces

Salesforce using ODP

Flickr using
JavaFx

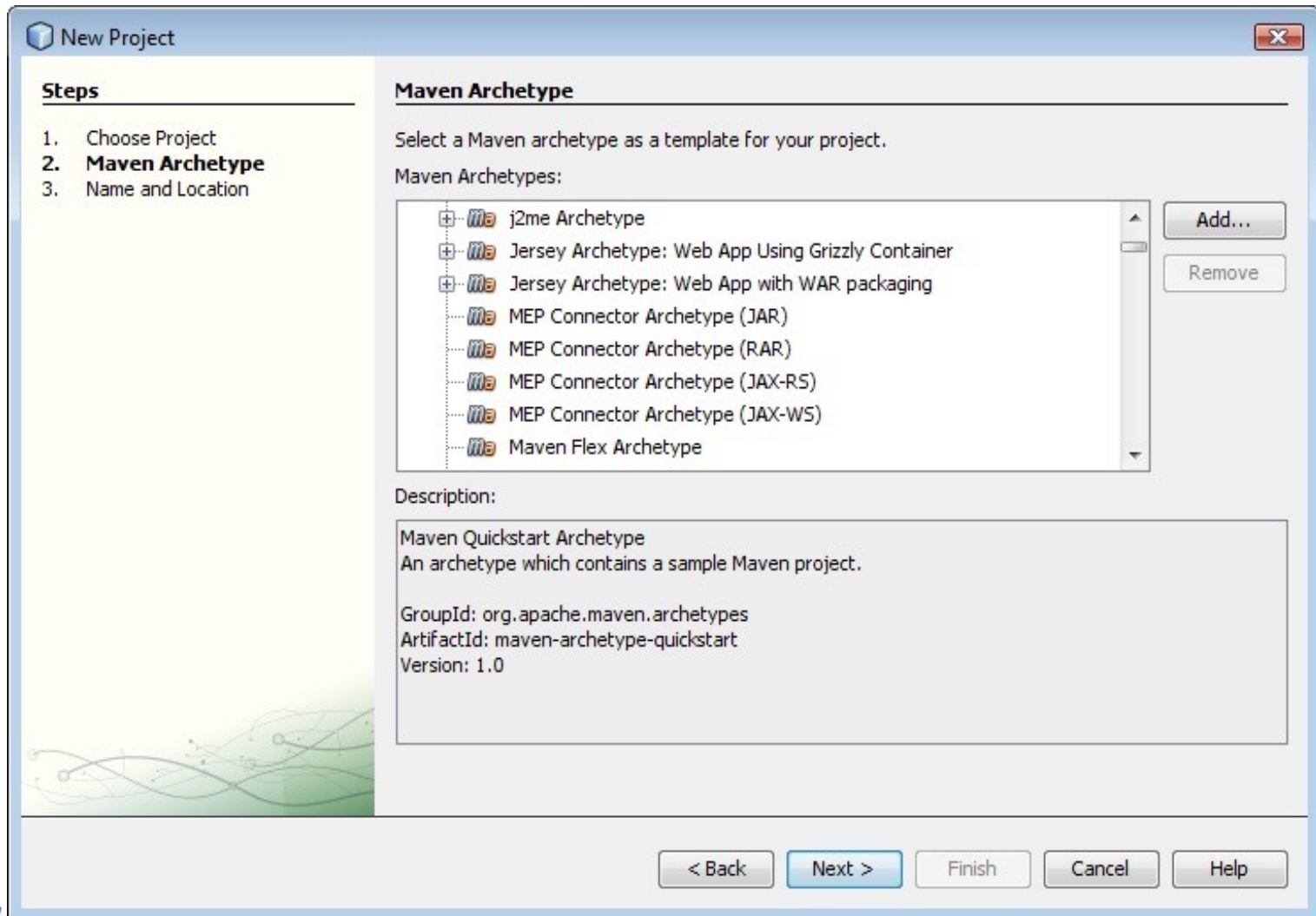


Twitter using LWUIT

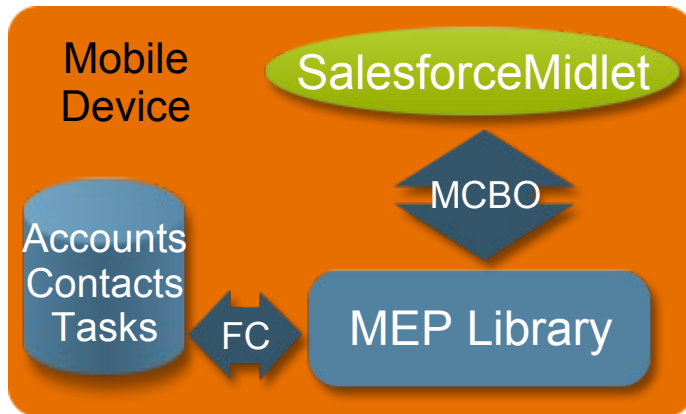
Development Tools - MP Connector

- > Connector templates using Maven archetypes
 - Archetype-based generation supported in multiple IDEs including Eclipse and Netbeans
- > Object Type Definitions (OTDs) for various enterprise systems
 - Wizards included in MP plugin for Netbeans
 - OTDs generated from enterprise system's meta-data

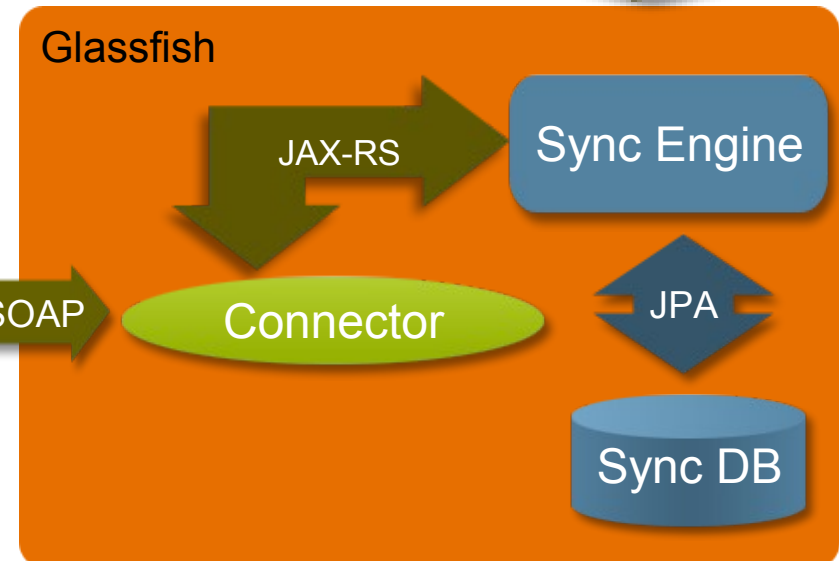
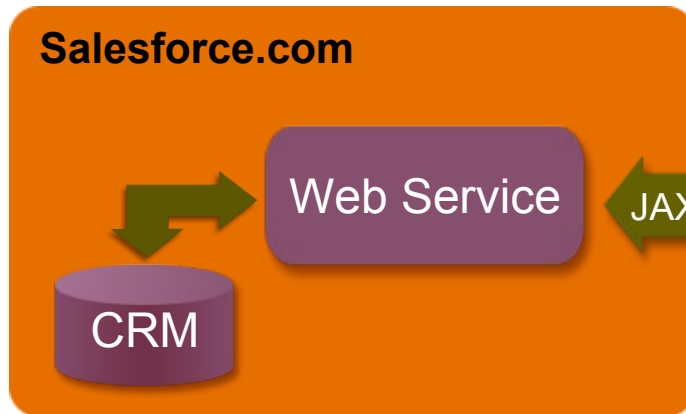
Development - Connector Archetypes



Salesforce Demo



- SGMP Components
- Application Components
- Salesforce Components
- APIs
- Protocols



Summary

- > SGMP is a platform for rapid development of secure, mobile enterprise solutions
- > Based on open standards
- > Business Object APIs hide all complexity
- > 1.1 Available now!

For more information

- **Product Website:**
 - ✂ <http://www.sun.com/mobility>
- **Product Documentation:**
 - > <http://docs.sun.com/app/docs/coll/1780.1>
- **Sun Mobility Blog:**
 - > <http://blogs.sun.com/mobility>
- **Sun GlassFish Mobility Platform Team:**
 - > mep-feedback@sun.com



GlassFish Portfolio Partner Program

<http://partneradvantage.sun.com>

Offering Overview:

Our goal is to help partners drive business with the GlassFish community of over 18 million users.

> To support partner products and services, we offer:

- Development and validation assistance
- Self-service validation testing (via the EZQual Virtual Lab Environment)
- Partner logos and profiles on the GlassFish Portfolio Partner Showcase Web site
- Partner profiles in The Aquarium and other high-profile Sun blogs and social networks
- Partner articles in Sun newsletters and mailings to opt-in mailing list
- PR support - GlassFish Portfolio launch participation opportunities; Sun quotes for partner press releases
- **NEW!** Lead generation through Sun's online marketing system
- **NEW!** Features in "GlassFish Unplugged" podcast series
- **NEW!** Participation in Java User Group Speaker's Bureau

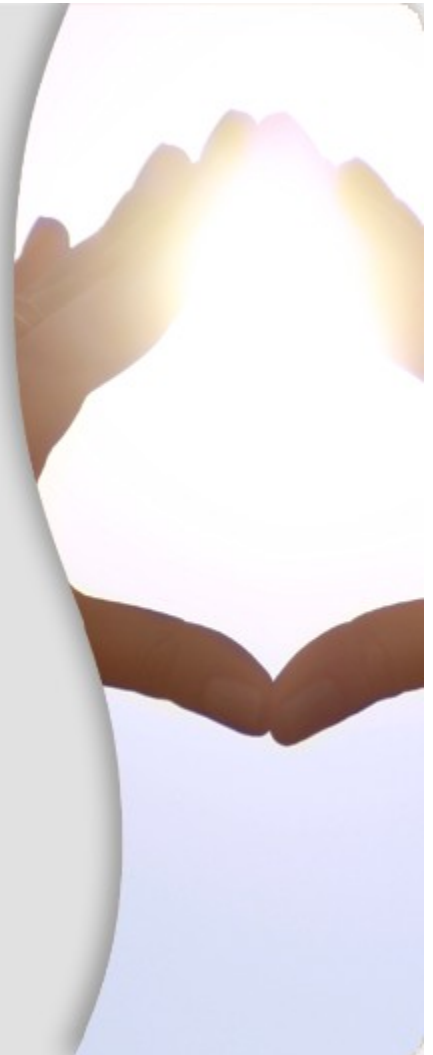
GlassFish Portfolio Partner Program

Want to talk to a live partner program person?

- GlassFish Portfolio Partner Offering experts will be walking the exhibit hall floor throughout the show
- Look for the people in the black Sparky fedoras and GlassFish T-shirts. Partners are welcome to call to set up impromptu meetings:
 - Kim Buck: 312-806-6130
 - Julio Tapia: 650-793-0277
 - Ruth Anne Ares: 508-344-4473

Next steps

- Check out the demos!
- Download Mobility Platform & samples
- Fillout the GlassFish survey
 - www.tinyurl.com/j1survey
- Signup as a partner





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Thank You

Satish Hemachandran

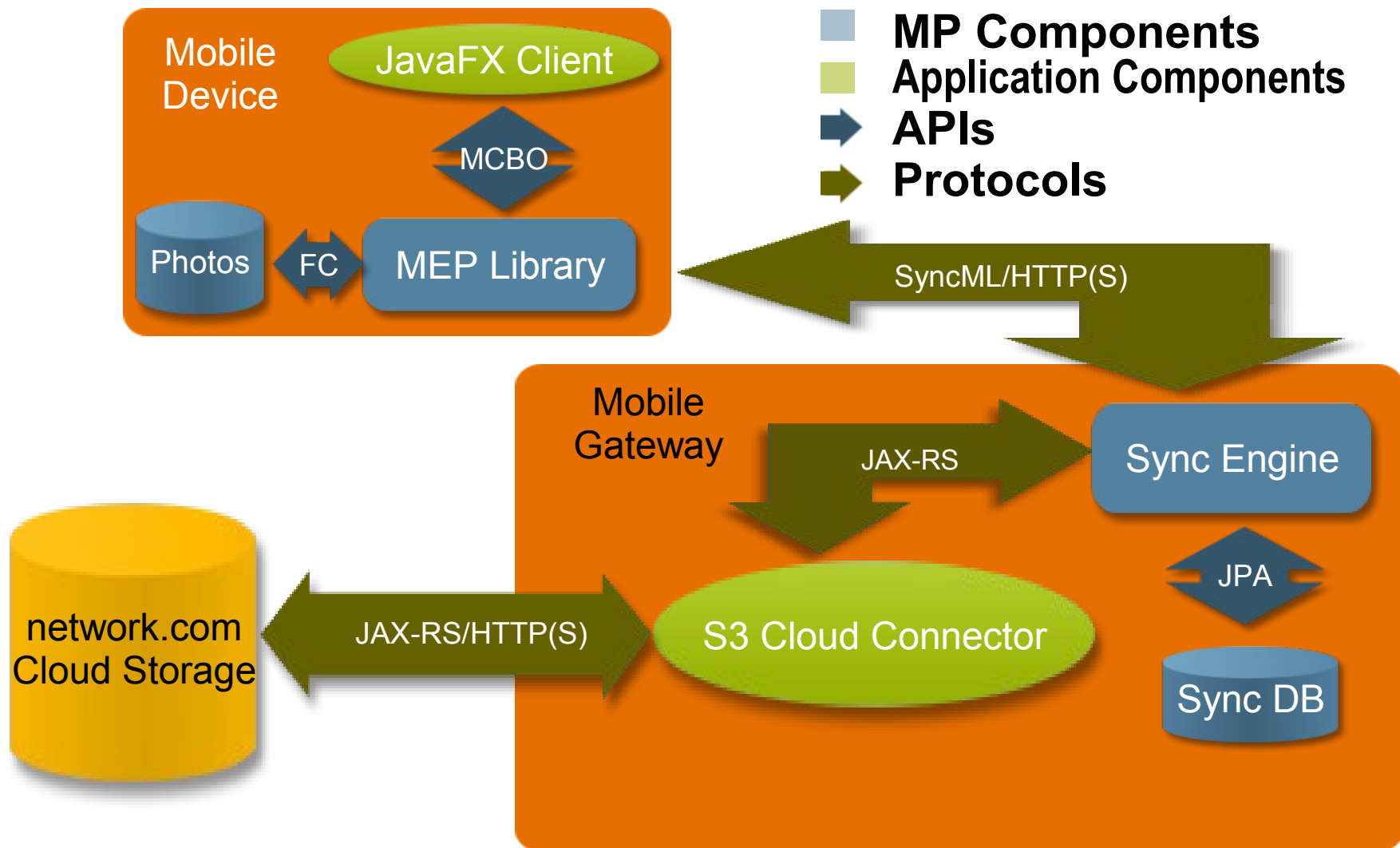
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JavaFX-Cloud Sync Demo



For More Information on GlassFish

Resources

GlassFish Project

- <http://glassfish.dev.java.net>

GlassFish v2

- <http://www.sun.com/glassfish>

GlassFish v3

- <http://www.sun.com/glassfishv3>

Java EE

- <http://java.sun.com/javaee>

v3 Download

- <http://www.glassfish.org/downloads/v3>

For More Information on SailFin

Resources

- Project Sites
 - <http://sailfin.dev.java.net>
 - <http://glassfish.dev.java.net>
 - <http://shoal.dev.java.net>
 - <http://jvoicebridge.dev.java.net>
- SIP Servlets
 - <http://jcp.org/en/jsr/detail?id=289>
 - <http://jcp.org/en/jsr/detail?id=116>
- SIP Based Web Conference Manager
 - <http://research.sun.com/projects/dashboard.php?id=85>

JAX-RS Connector Template

```
/**
 * Returns a binary representation of a business object. The
 * binary representation is part of the contract between a
 * connector and a client.
 *
 * @param user    User's name logged into the session
 * @param password User's password logged into the session
 * @param sessionId Sync session id generated by gateway
 * @param id      Business object's identifier
 * @return        Binary representation of business object
 */
@GET
@Produces("application/octet-stream")
public byte[] getBusinessObject(
    @QueryParam("username") @DefaultValue("username") String user,
    @QueryParam("password") @DefaultValue("password") String password,
    @QueryParam("sessionId") @DefaultValue("") String sessionId,
    @PathParam("id") String id)
{
    // INSERT CODE: return object representation for client
    return new byte[0];
}
```