IBM Mobile Platform for System Z

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Thursday August 7, 2014 10:00 AM

Session 16184
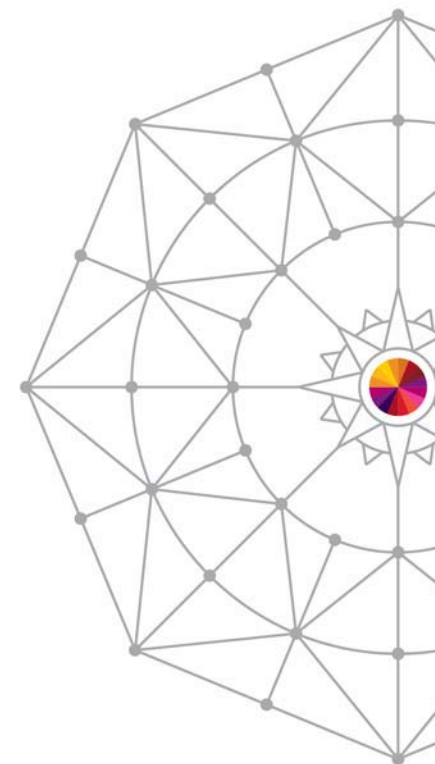
Agenda

- Mobile Landscape

- IBM Worklight Mobile Platform

- Mobile on System Z

- CICS & Worklight Demo Application

Mobile business opportunity is huge

Time Magazine, January 2014
Projections of mobile growth and PC decline based on Gartner data

SHARE
Educate · Network · Influence

The Death Of the PC?

Now that we carry computers in our pockets, desktops and laptops are on the decline

SMALLER DEVICES WILL TAKE OVER

1.2B
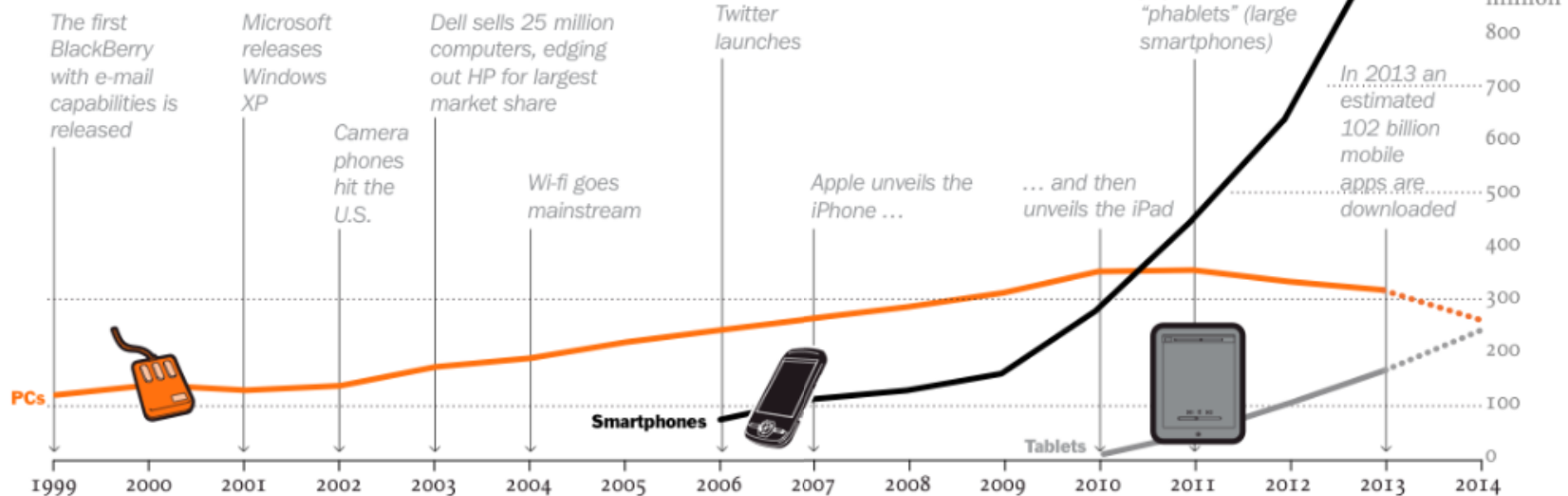
NOTE: Ericsson predict 4.5B in 2018
(World population ~ 7.2+B)
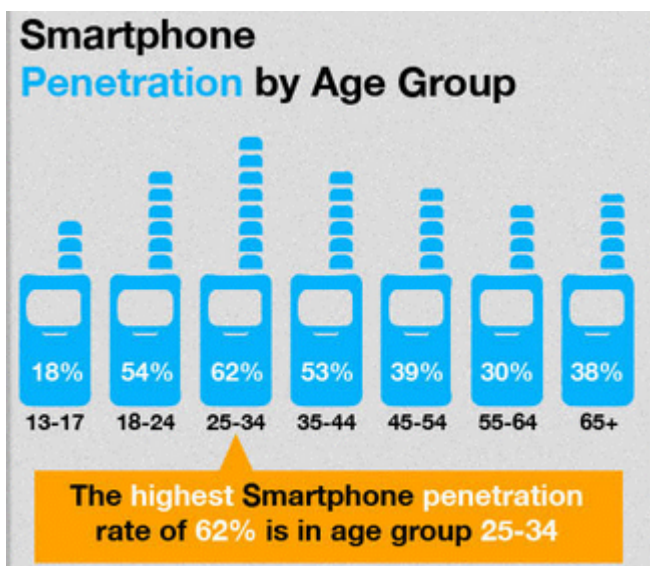
The PC Slowdown
Units sold

PROJECTED

1 billion

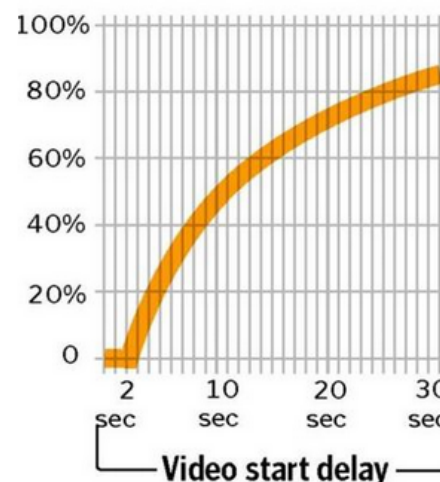900 million

800

The first BlackBerry with e-mail capabilities is released

Microsoft releases Windows XP

Dell sells 25 million computers, edging out HP for largest market share

Facebook opens to everyone

Twitter launches

Samsung's Galaxy Note popularizes "phablets" (large smartphones)

In 2013 an estimated 102 billion mobile apps are downloaded

700

600

500

Camera phones hit the U.S.

Wi-fi goes mainstream

Apple unveils the iPhone ...

... and then unveils the iPad

400

300

Smartphones

Tablets

200

PCs

100

0

| 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |

SOURCE: GARTNER, DECEMBER 2013

RE 2014

Smartphone users demand instant gratification and real data

Smartphone **Penetration** by Age Group

18%	54%	62%	53%	39%	30%	38%
13-17	18-24	25-34	35-44	45-54	55-64	65+

The highest Smartphone penetration rate of 62% is in age group 25-34

How long do viewers wait for a video to start up?

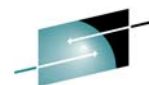Abandonment rate

— Video start delay —

SOURCE: Prof. Ramesh K. Sitaraman
Computer Science, UMass Amherst

GLOBE STAFF

*Millenials don't have patience –
they expect the data to be instant and accurate*

Replicated copy is unacceptable and results in excessive requests

So Why is Mobile so Challenging?

Mobile Enabling Your Business Is Not Easy! - There are many Challenges

Fragmentation of devices and platforms

Speed and frequent iteration of the mobile lifecycle and continuous delivery

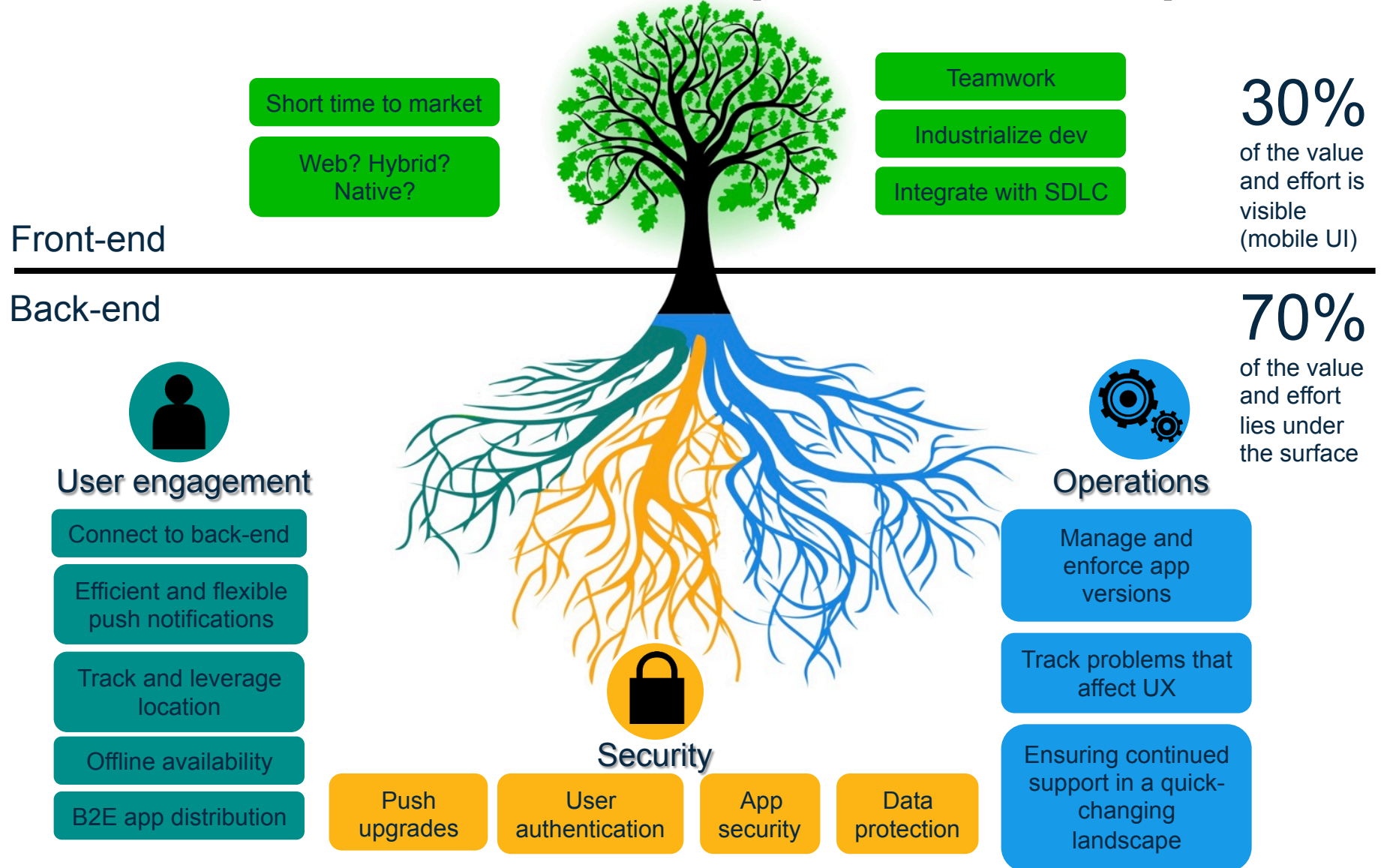**Connectivity** to back-end systems and cloud

Security to protect corporate data and managing BYOD (Bring Your Own Device)

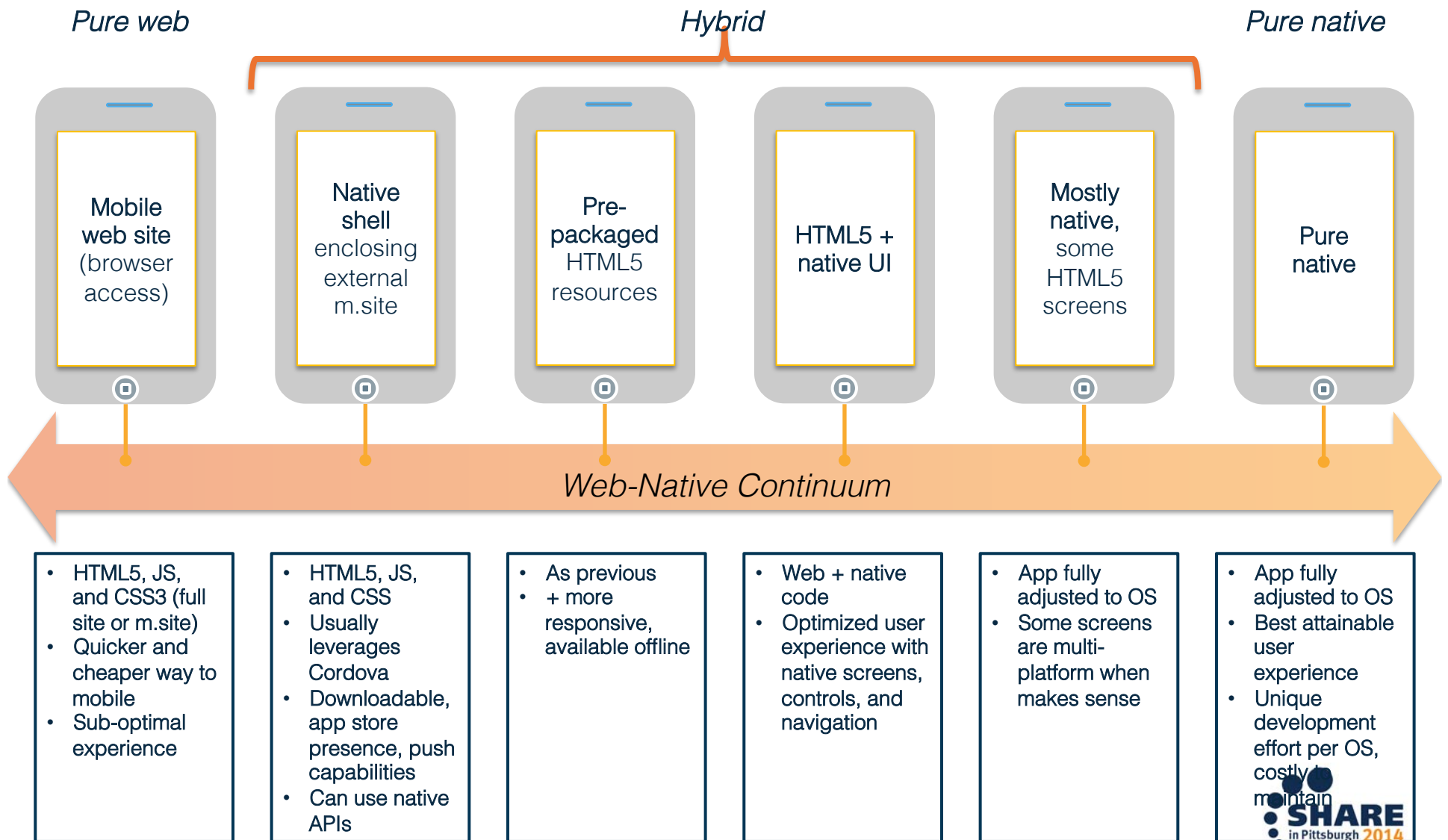**Mobile Context** taking advantage of unique capabilities such as geo-location

Delivering high quality apps and rapidly incorporate customer feedback

Mobile Lifecycle

The Roots of Mobile Development Run Deep

Short time to market

Web? Hybrid? Native?

Teamwork

Industrialize dev

Integrate with SDLC

30%
of the value and effort is visible (mobile UI)

Front-end

Back-end

70%
of the value and effort lies under the surface

User engagement

Connect to back-end

Efficient and flexible push notifications

Track and leverage location

Offline availability

B2E app distribution

Operations

Manage and enforce app versions

Track problems that affect UX

Ensuring continued support in a quick-changing landscape

Security

Push upgrades

User authentication

App security

Data protection

Spectrum of mobile app development approaches

Pure web   *Hybrid*   *Pure native*

| Mobile web site (browser access) | Native shell enclosing external m.site | Pre-packaged HTML5 resources | HTML5 + native UI | Mostly native, some HTML5 screens | Pure native |

Web-Native Continuum

• HTML5, JS, and CSS3 (full site or m.site) • Quicker and cheaper way to mobile • Sub-optimal experience	• HTML5, JS, and CSS • Usually leverages Cordova • Downloadable, app store presence, push capabilities • Can use native APIs	• As previous • + more responsive, available offline	• Web + native code • Optimized user experience with native screens, controls, and navigation	• App fully adjusted to OS • Some screens are multi-platform when makes sense	• App fully adjusted to OS • Best attainable user experience • Unique development effort per OS, costly to maintain

Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval

IBM Worklight: Main Components

Development
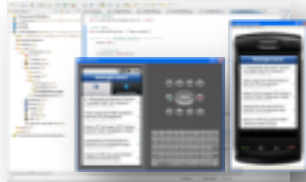
Worklight Studio

Leading tools for cross-platform hybrid development that maximize code reuse, speed up development, and promote team work

Operational Analytics

Run Time

Operational Console

UI for app deployment, management, and version enforcement, real-time operational analytics, push notifications
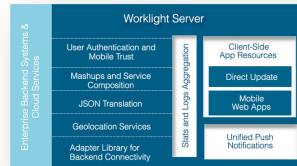
Worklight Server

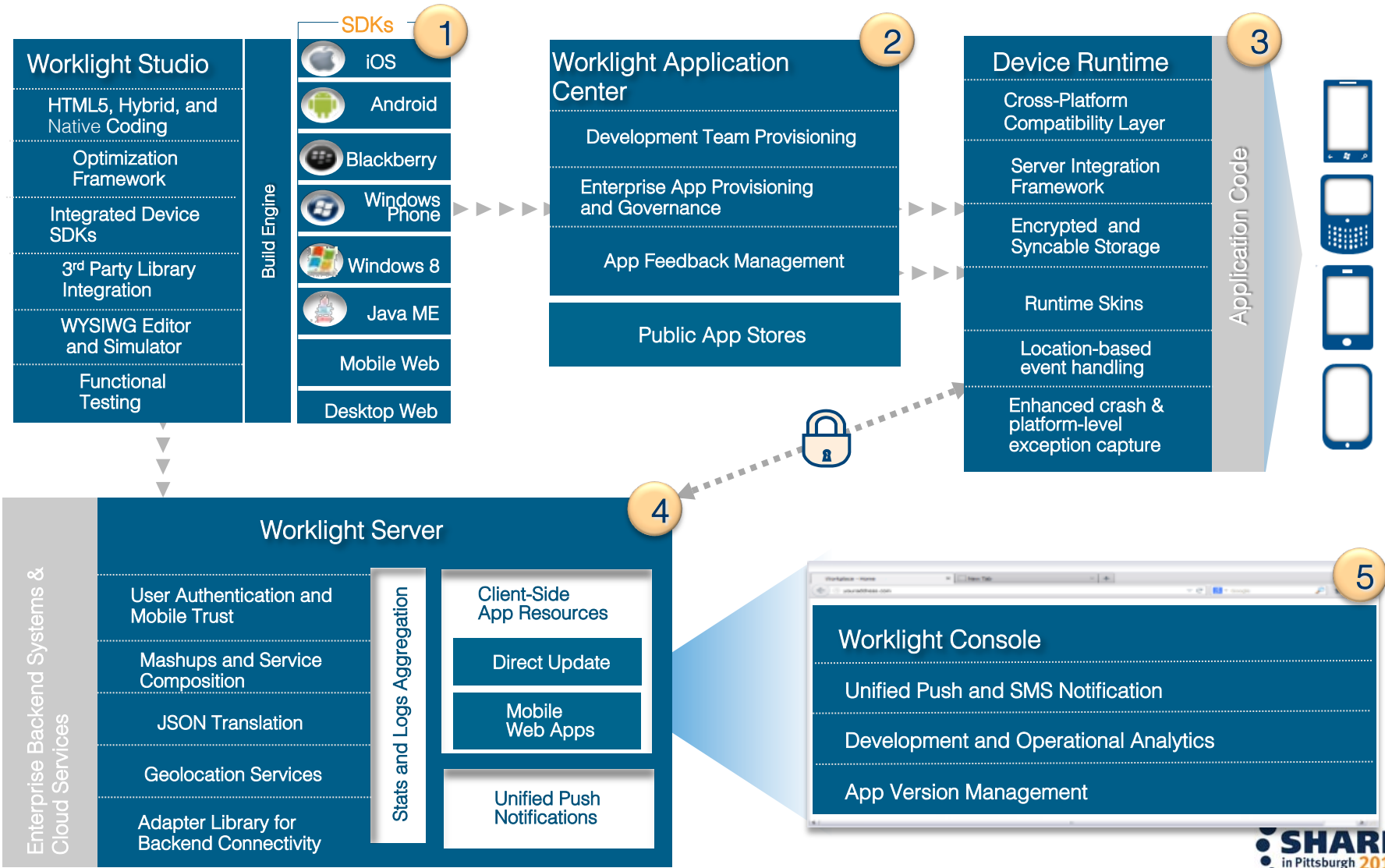Gateway for mobile user engagement, security, analytics, and application control

App Runtime

Client APIs available for **native**, **hybrid**, and **web** apps

Worklight App Center

A non-MDM, cross-platform, private mobile app store tailored to the needs of development team or as an enterprise store

Worklight flow in detail

Worklight Studio

- HTML5, Hybrid, and Native Coding
- Optimization Framework
- Integrated Device SDKs
- 3rd Party Library Integration
- WYSIWG Editor and Simulator
- Functional Testing

Build Engine

SDKs ①

- iOS
- Android
- Blackberry
- Windows Phone
- Windows 8
- Java ME
- Mobile Web
- Desktop Web

Worklight Application Center ②

- Development Team Provisioning
- Enterprise App Provisioning and Governance
- App Feedback Management

Public App Stores

Device Runtime ③

- Cross-Platform Compatibility Layer
- Server Integration Framework
- Encrypted and Syncable Storage
- Runtime Skins
- Location-based event handling
- Enhanced crash & platform-level exception capture

Application Code

Worklight Server ④

Enterprise Backend Systems & Cloud Services

- User Authentication and Mobile Trust
- Mashups and Service Composition
- JSON Translation
- Geolocation Services
- Adapter Library for Backend Connectivity

Stats and Logs Aggregation

Client-Side App Resources
- Direct Update
- Mobile Web Apps

Unified Push Notifications

Worklight Console ⑤

- Unified Push and SMS Notification
- Development and Operational Analytics
- App Version Management

Studio – WYSIWYG UI Construction *(HTML, JQuery or Dojo)*

Eclipse perspective for Worklight projects.

Optimized layout for hybrid app development

Rich page editor for visual development

Change scale, orientation, and design/source split direction for optimal editor layout

Select from a range of device form factors

jQuery Mobile or Dojo Mobile widgets in the palette

Create and manage instances of dojo mobile "view" or jQuery mobile "page"

Property sheets for dojo mobile and jQuery mobile widgets

Rich mobile simulator for hybrid applications
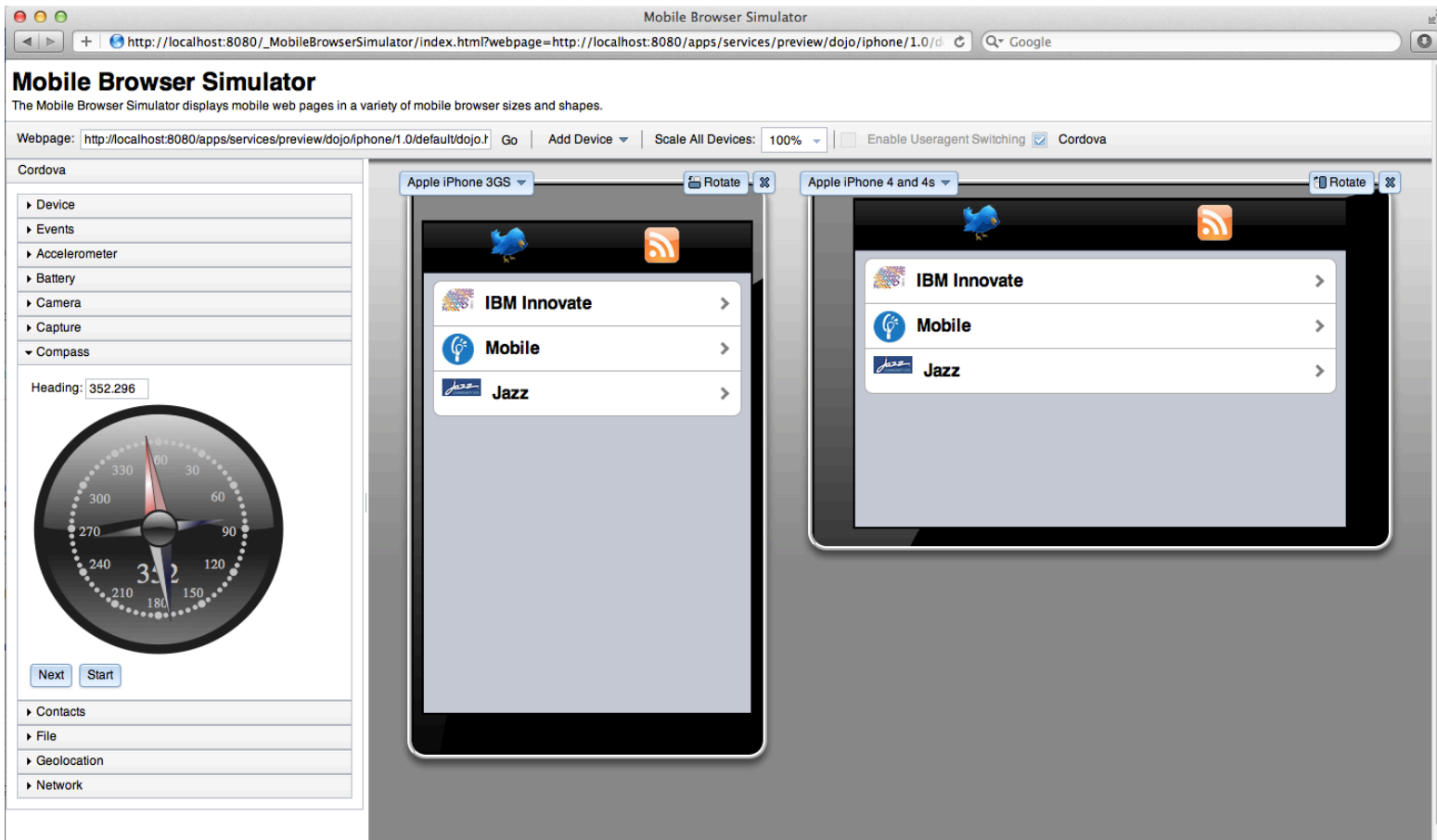
- Device specific tests early during development.
- Change device types, orientation, device settings (GPS, accelerometer, etc...)
- Supports Cordova and Worklight client API

Worklight Server: Adapters
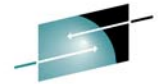
•Run time
- Lightweight server-side logic to expose systems of records in a mobile-friendly way
  - Automatic JSONification of enterprise data for quick transport and ease of consumption by mobile developer
  - Server-side service composition to reduce number of requests over slow mobile network
  - XSLT to reduce fat SOAP responses
- Security
  - Automatic enablement of server-side authentication control and audit
- Analytics
  - Automatic collection of user actions and device and app properties
- Data sync
  - Enables synchronization with on-device JSON Store
- Mobile user engagement
  - Push notifications and geo-based event management

For the server developer
- JS anywhere: Simple APIs for server-side JavaScript development
- Extensibility: Java API for custom adapters

For the client developer
- Easy-to-use, consistent client-side API to call any back-end system

Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval

SQL / JDBC	SOAP / HTTP
JMS	REST
CAST IRON	Java Extension
Node*	ESB**

Worklight Server

Enterprise back-ends and cloud services

Enterprise back-ends and cloud services

Enterprise back-ends and cloud services
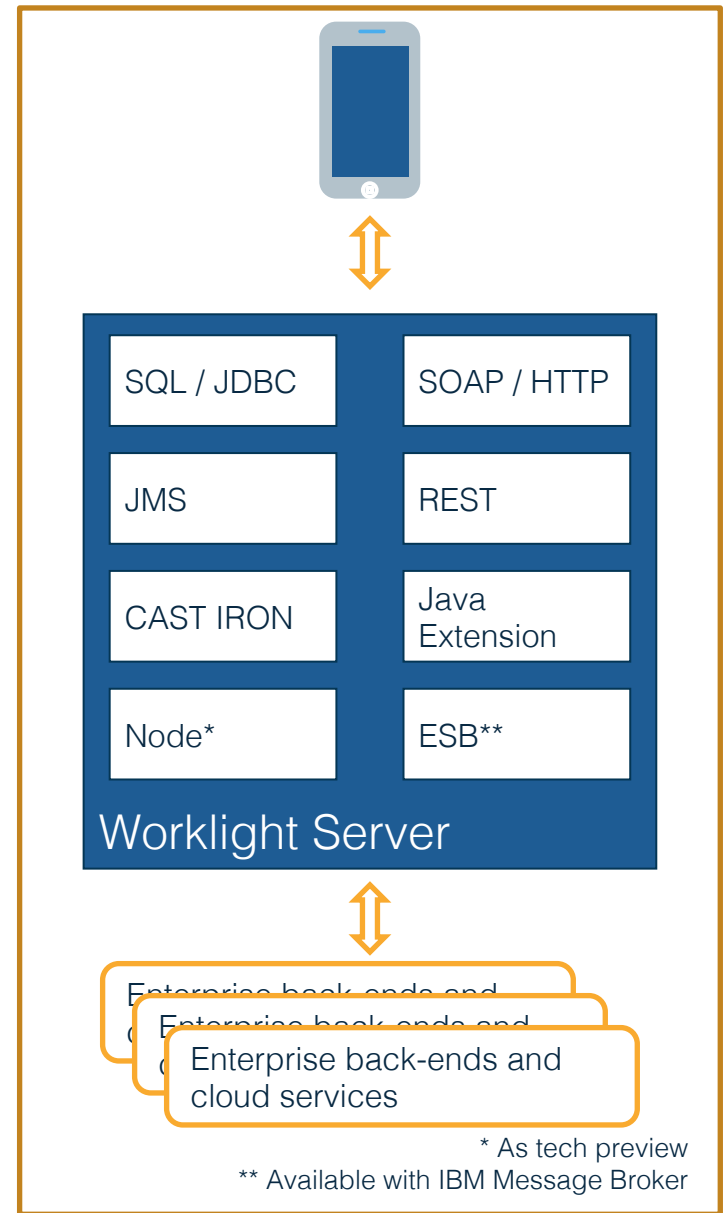
* As tech preview
** Available with IBM Message Broker

CICS Connectivity Options with Worklight
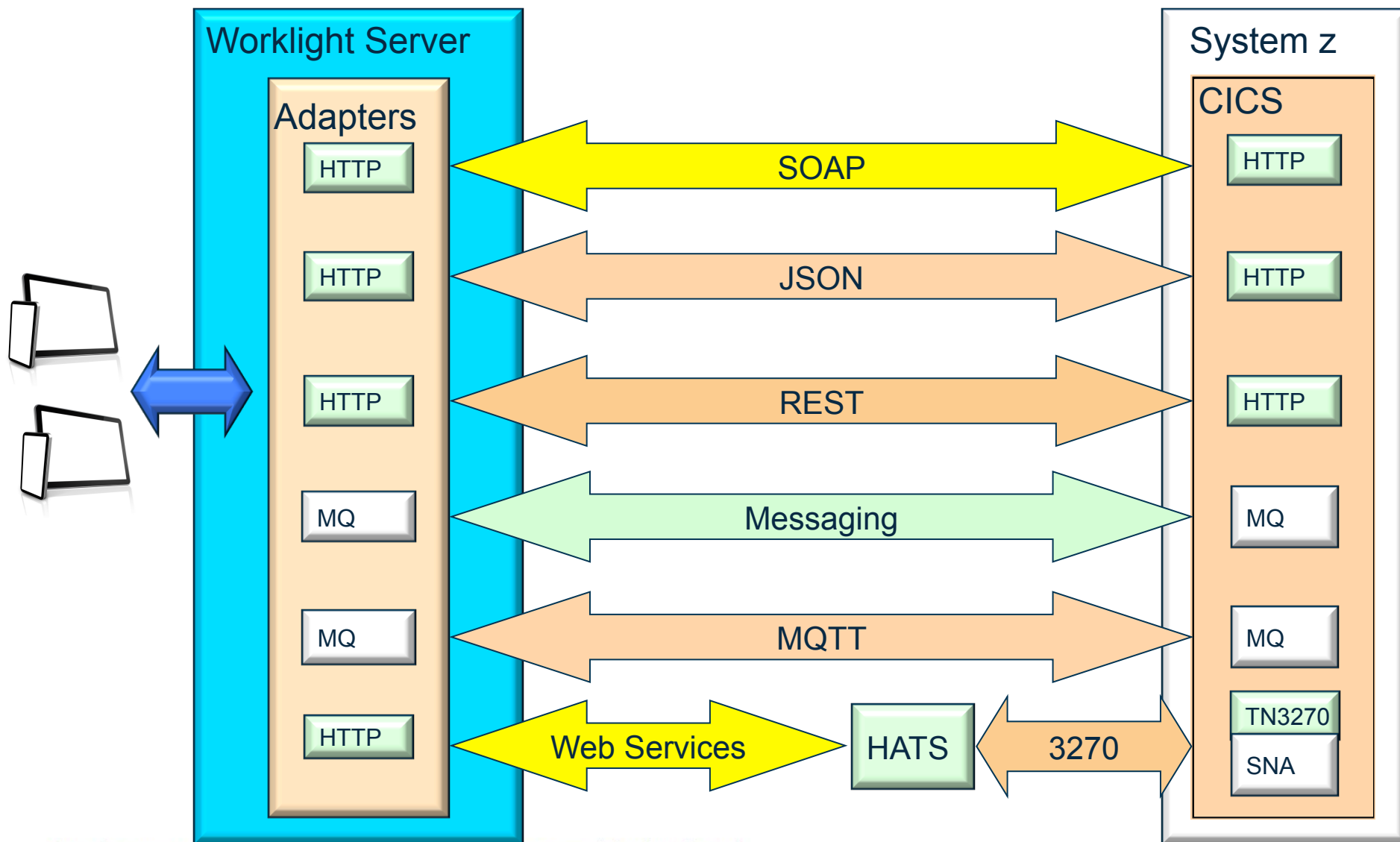
Unified Push Notifications

- Uniform access to push notifications providers
  - Register for, notify, and receive a notification via Worklight APIs or SMS

- Register for and send SMS based notifications
  - E.g.
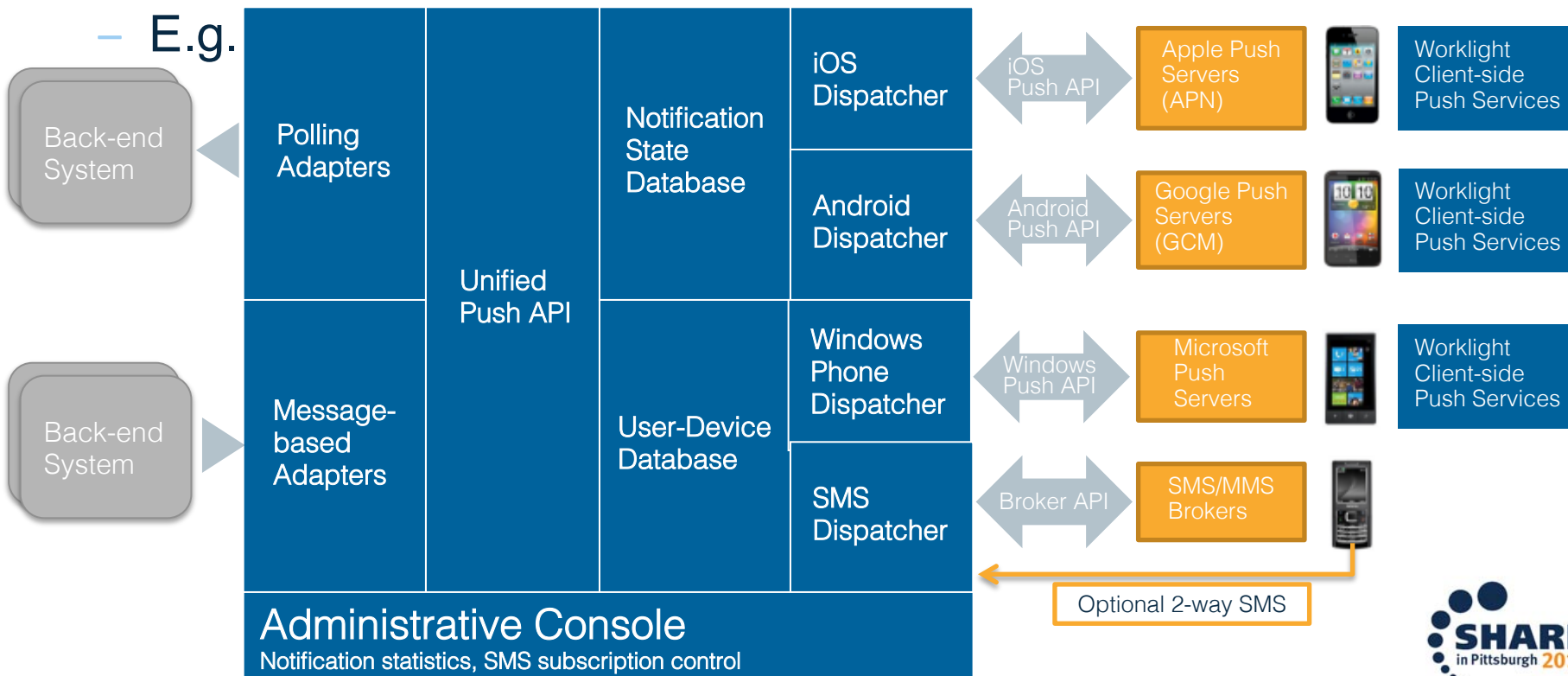
Transform business processes with geo-location services

- Geo-location info has important potential for consumer and employee-facing applications
  - Creating differentiating services based on user location
  - Optimizing business processes and operations
  - Increasing application security

- But holds challenges
  - What to **collect** and how?
  - How to **use** what's collected?

- **Worklight provides you simple and strong tools to:**

COLLECT and **USE** on the mobile device | **USE** on the server

| Control acquisition of GPS and Wifi coordinates | Define points of interest and geo-fences | Trigger actions based on location changes | Efficiently transmit to Server | Store | Handle events | Perform analytics |
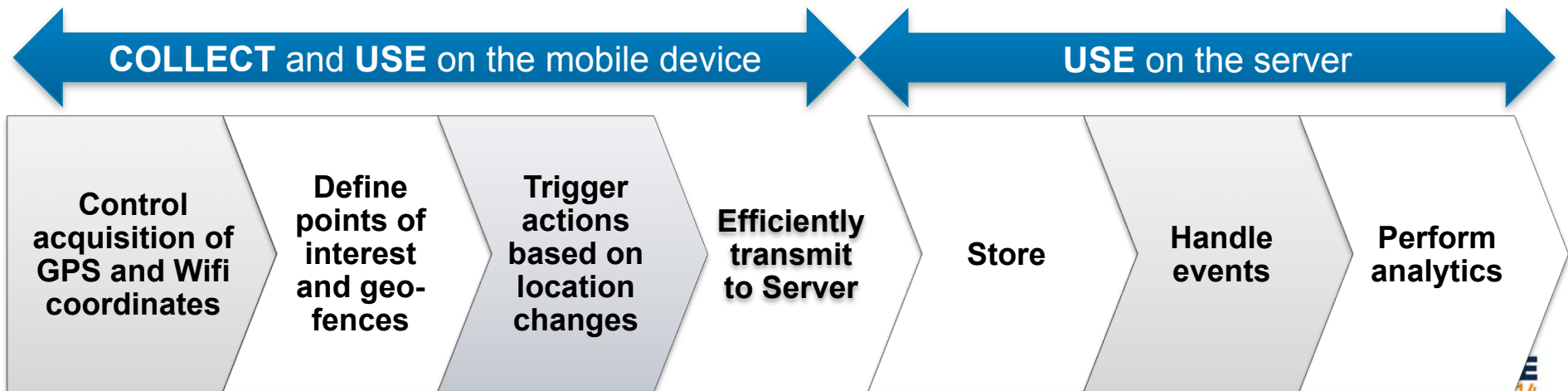
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Encrypted and synched on-device data storage
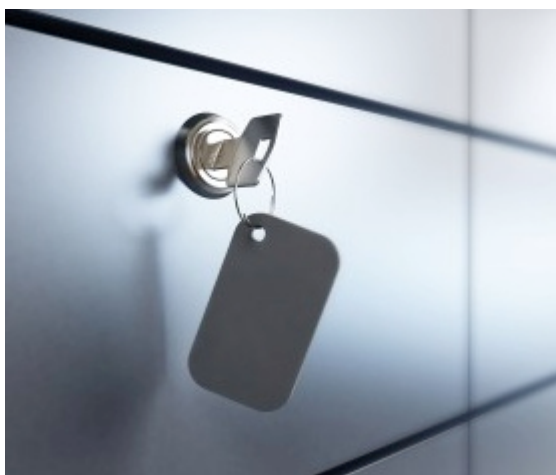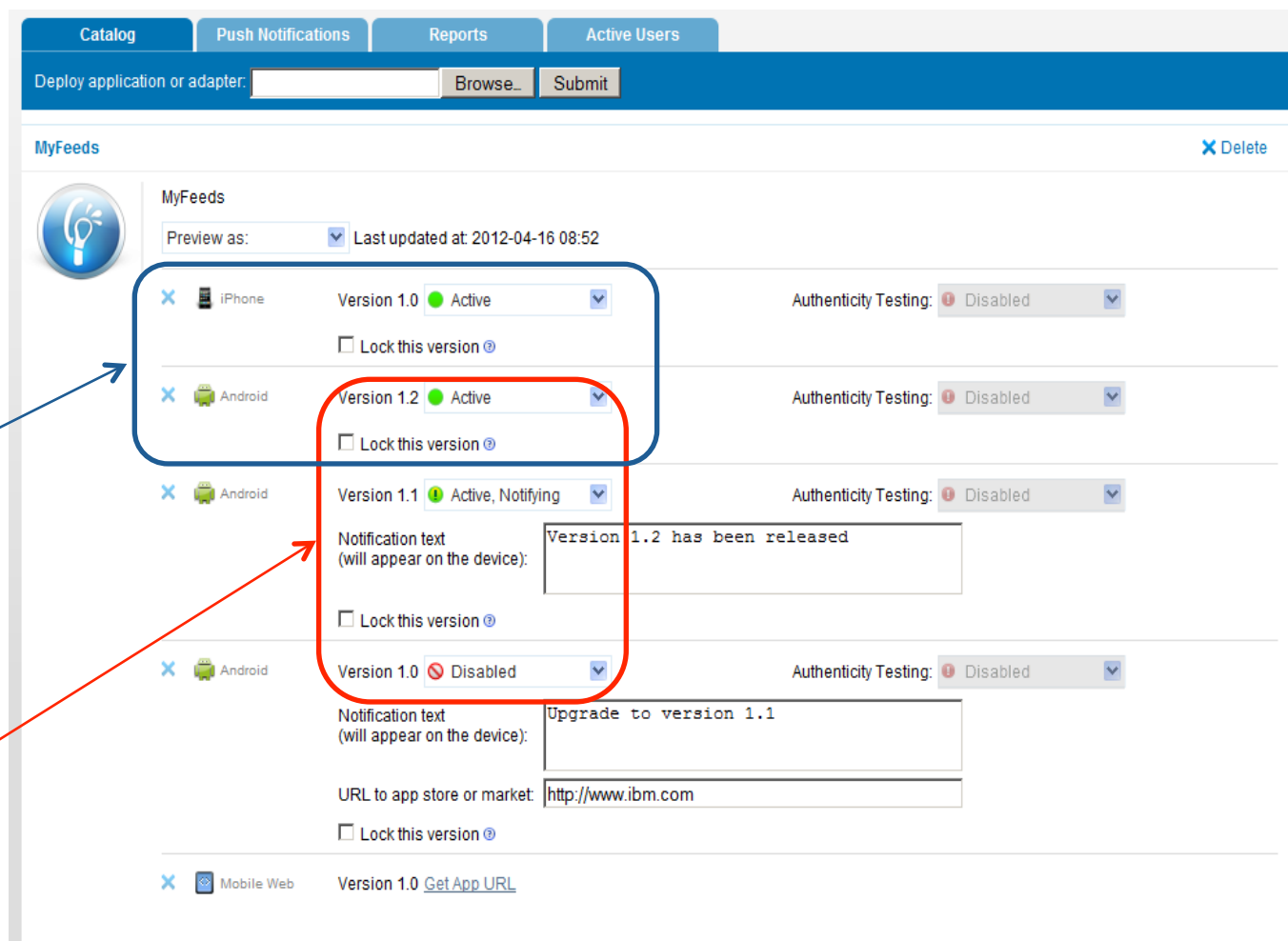
Embedded JSON mobile database:

- JavaScript APIs to store, query and update data
- Multiple user support on the same device
- Supports data encryption
- Bi-directional data sync for simplified off-line operations
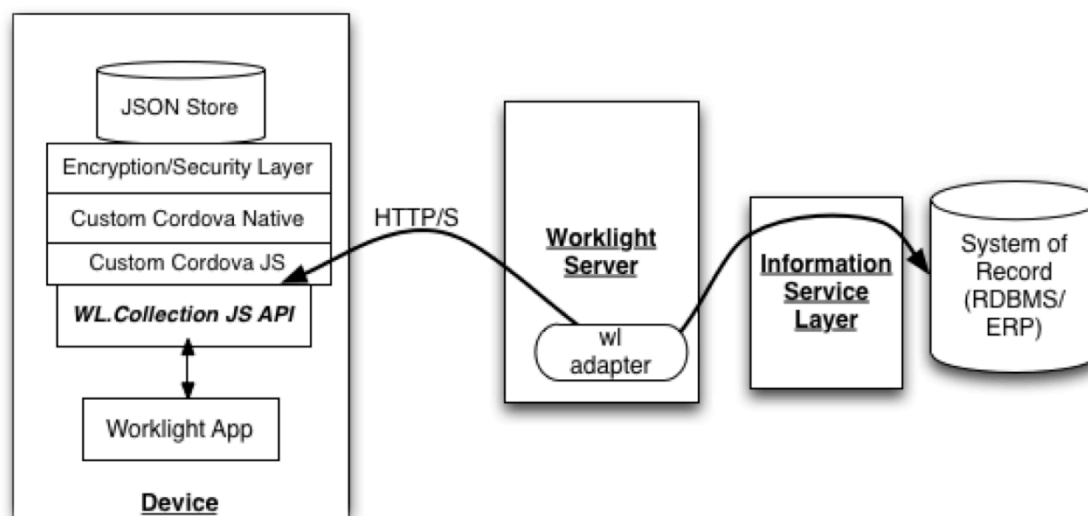
Worklight Operations Console
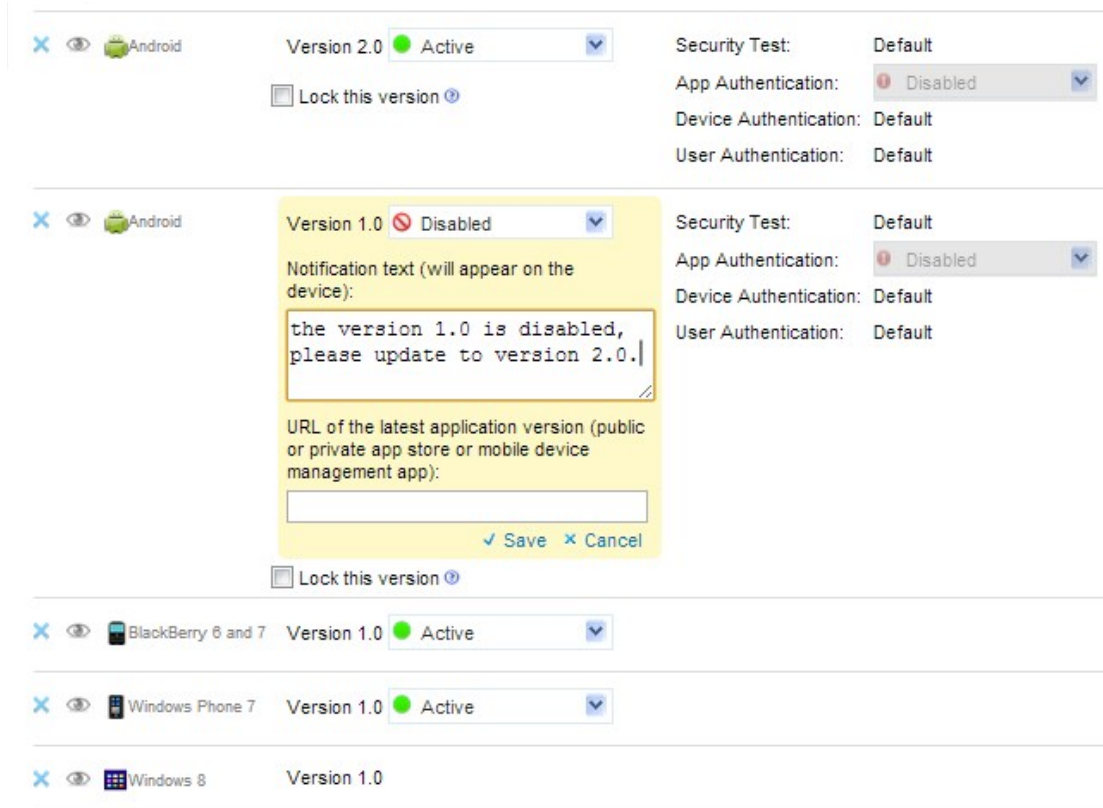
App Version Management

Remote Disable: Deny access to an app of a specific version on a specific environment

- Ensure users use the latest security fixes
- Avoid using previously installed old versions that are no longer supported
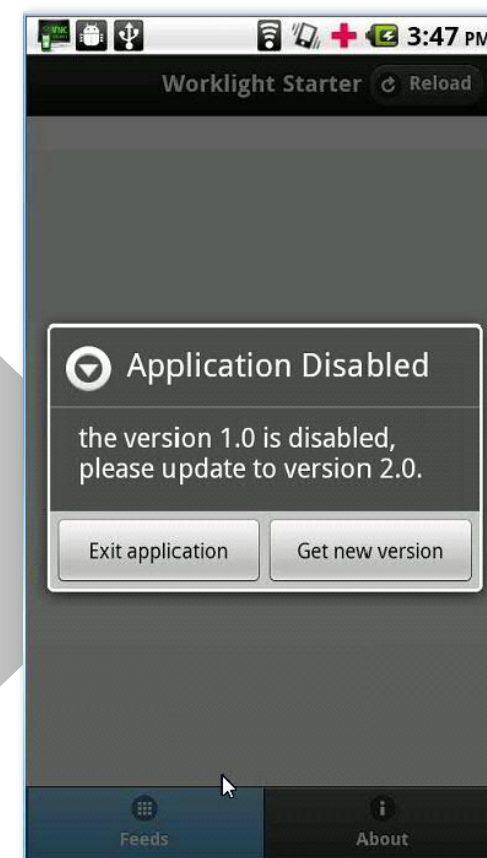
Direct Update On-device Logic

1. Web resources packaged with app to ensure initial offline availability

2. Web resources transferred to app's cache storage

3. App checks for updates on startup and foreground events

4. Updated web resources downloaded when necessary, with user confirmation or silently

Fine-grained Blocking of Users

- Block access of a specific app from a specific user device, to address scenarios where a device is lost, stolen, or is otherwise banned from accessing the system

	User ID	Friendly Name	Device Model	Device Version	Device ID	Status	Delete Device
+	Jeremy	Jeremy's Work IPad	iPad3,1	6.0.1	015BF697-729D-4E9B-AD5C-FD8BBE0B1...	DEVICE EXPIRED ⇕	Delete
+	Jeremy	Jeremy's iPad mini	iPad2,5	6.0.2	08A63CB0-395F-4F8E-B155-AF3B756EE2...	ACTIVE ⇕	Delete
−	Jeremy	Jeremy's Droid Simulator	Android SDK built for x86	4.1.1	09351bb7-b9c5-3e6b-bebc-f6f65be5dfcf	ACTIVE ⇕	Delete

	Application		Certificate Serial Number		Status
	FormBasedAuthApp				ENABLED ⇕

	User ID	Friendly Name	Device Model	Device Version	Device ID	Status	Delete Device
+	Jeremy	Jeremys Droid Tablet	Nexus 7	4.2.2	1bb31456-f2e5-36c8-b183-3a335ec21b4a	ACTIVE ⇕	Delete
+	Jeremy	Jeremy's iPhone Simulator	iPhone Simulator	6.1	60C50010-8D35-47C7-AC93-BC8A3DC53...	ACTIVE ⇕	Delete
+	Jeremy	Jeremy's iPhone	iPhone4,1	6.0	924A2CBC-349A-4800-8DB5-D8A54FCA6...	ACTIVE ⇕	Delete

Search

Jeremy

Search

* Indicates a changed record

IBM Application Center

- Share apps across developers, testers, and other stakeholders
  - iOS, Android, Windows Phone 8, BlackBerry 6 and 7

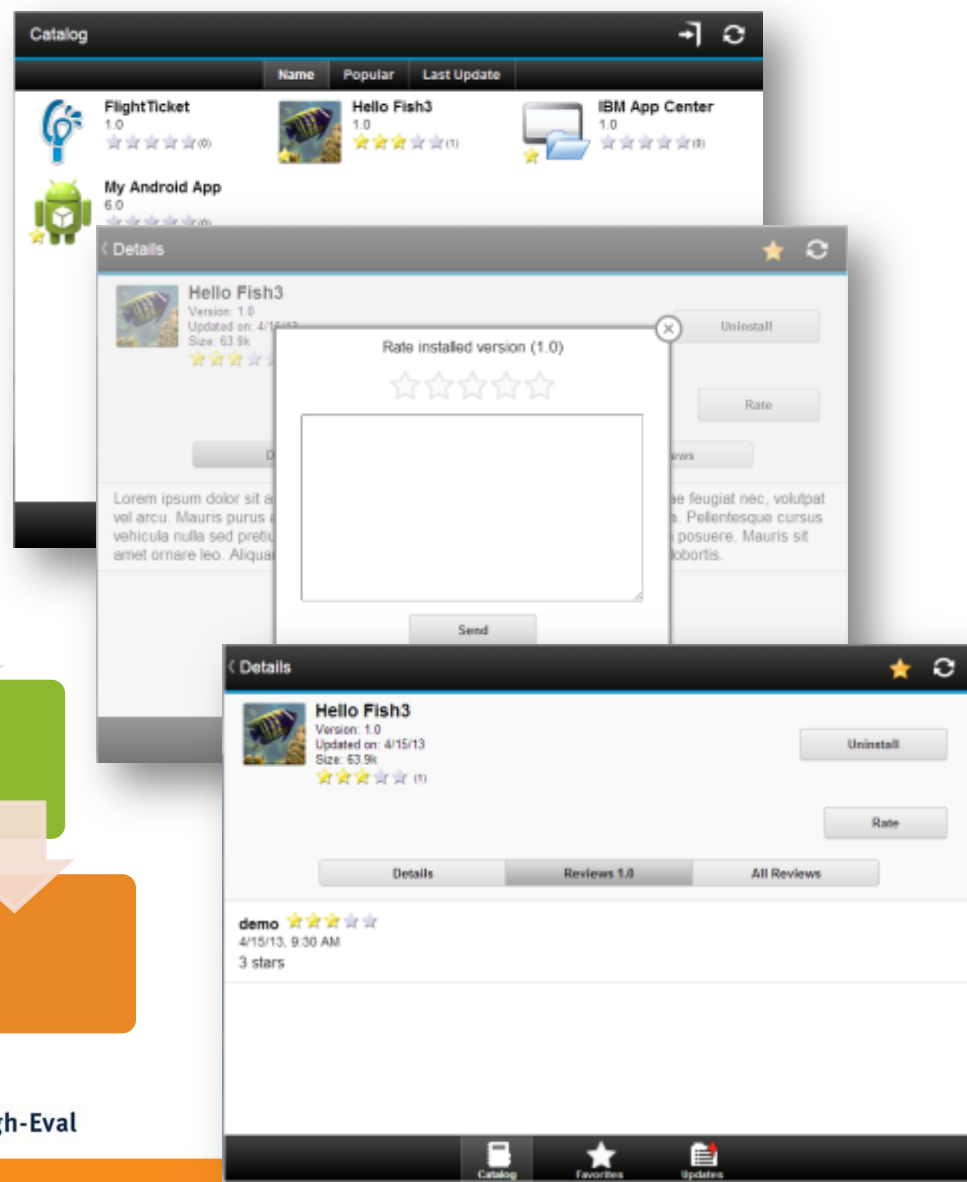**Developers**
- Easily distribute app to testers

Testers
- Easily find apps and versions to test

Testers
- Provide rating and feedback directly from the device

Developers
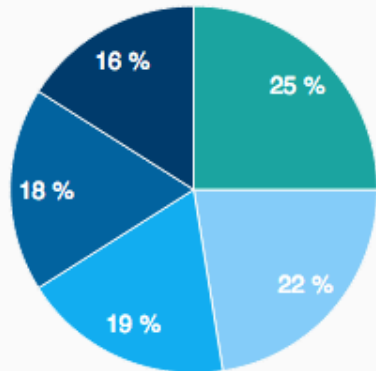- Access all feedback in a centralized manner

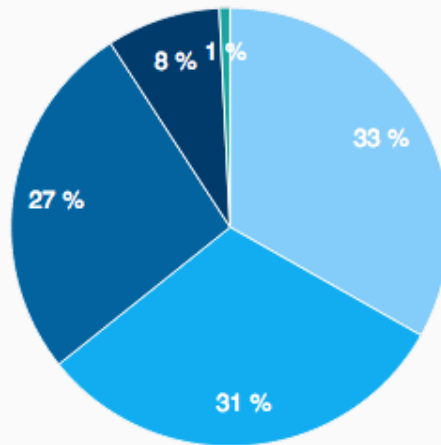Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval

Worklight Analytics

App Usage	Environment Usage	Adapter Calls

App Usage pie chart: EGUI 22%, openInsuranceCustomer 19%, WLOutdoorsApp 18%, AppCenter 16%, Other 25%

Environment Usage pie chart: android 33%, iphone 31%, ipad 27%, mobilewebapp 8%, Other 1%

Adapter Calls pie chart: InquireCatalogWrapper 46%, AuthAdapter 23%, InquireSingleWrapper 13%, PlaceOrderWrapper 11%, Other 6%

Application	Hits
EGUI	115
openInsuranceCustomer	95
WLOutdoorsApp	92
AppCenter	82
Other	128

Environment	Hits
android	170
iphone	159
ipad	136
mobilewebapp	43
Other	4
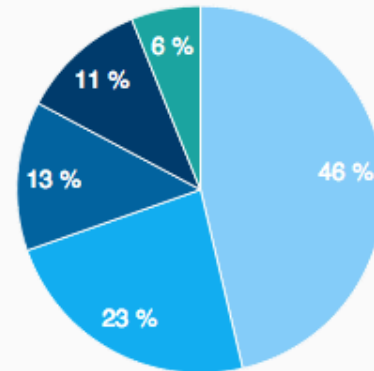
| Adapter	Hits
InquireCatalogWrapper	721
AuthAdapter	363
InquireSingleWrapper	205
PlaceOrderWrapper	173
Other	95

Unified Client and Server Analytics

- ## Out-of-the-box analytics address the following:

  – User adoption, device and app properties

  – User actions and called adapter procedures

  – Performance and data usage information

  – Exceptions, crashes, logs, response time

  – JSONStore performance
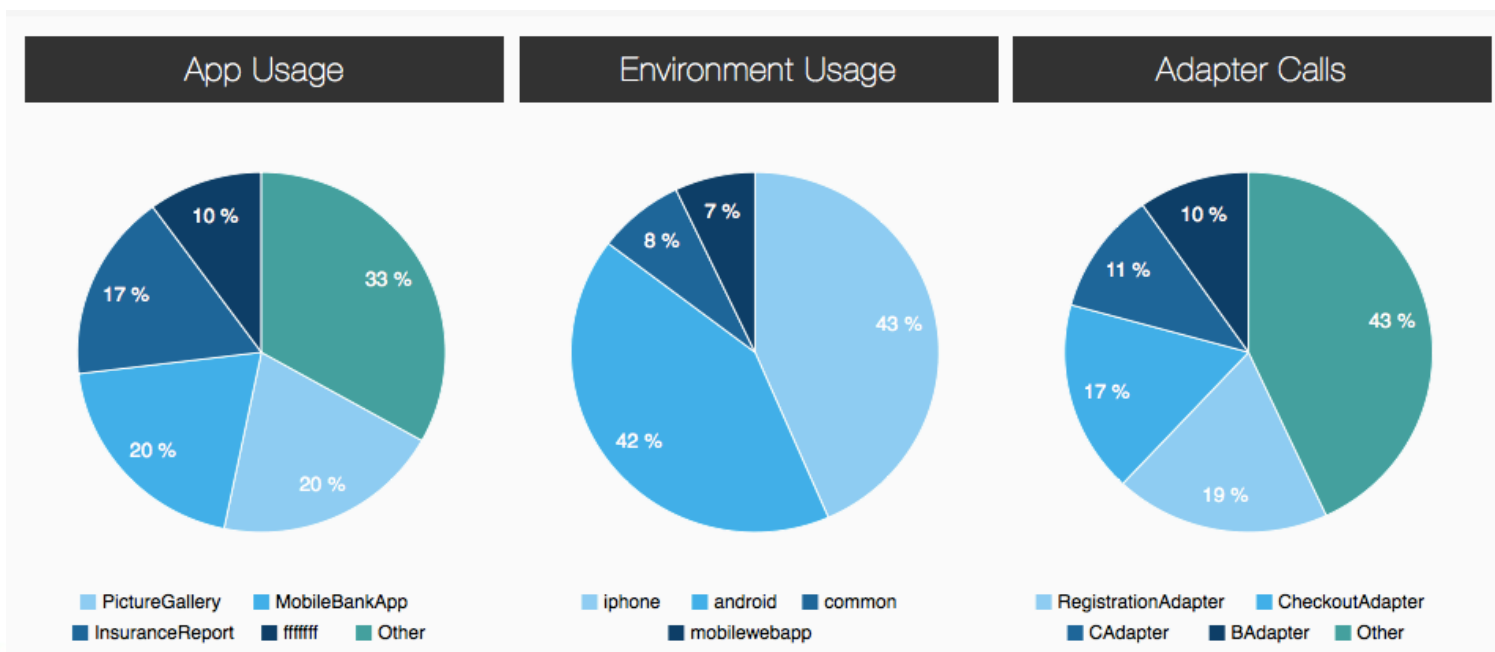
Service integration analytics

- Robust analytics for adapter usage including average response time, average data usag~~~~~~~~~~~~~~~~~~~~~~~~~~~~
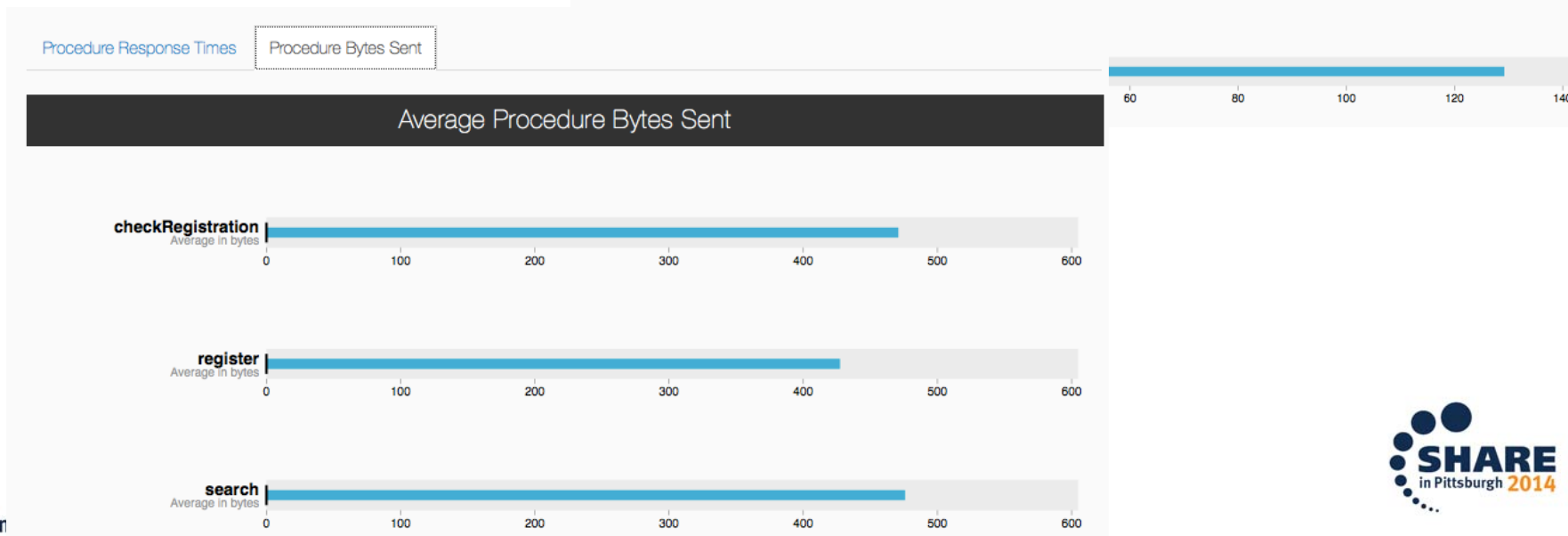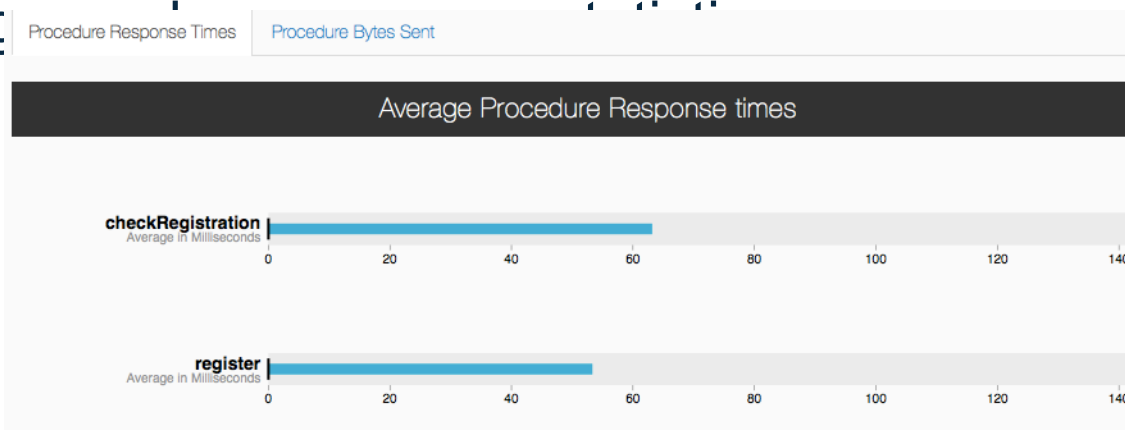
Server and Client log inspection made easy

- Worklight Analytics Console enables easy searching of both client and server logs

System z addresses Enterprise mobile development and delivery challenges

Fragmentation and developing for multiple mobile platforms

- Highly fragmented set of devices, platforms, languages, and tools complicates development, test, and operations

IBM Worklight Studio and RDz

- Seamless integration with z data and transactions.
- Device runtime provides mobile device independence.

Accelerated time to market requirements

- Accelerated development demands instant provisioning of development servers.
- Spikey mobile traffic demands highly scalable cloud-based infrastructures, for both SoE and SoR.

System z Scalability

- System z Linux cloud enables rapid provisioning of Worklight servers.
- z/OS is the leader in transaction processing and easily scalable to handle workload increases.

Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable, and remain secure.
- Enterprise systems must be able to instantly provision new services and environments.
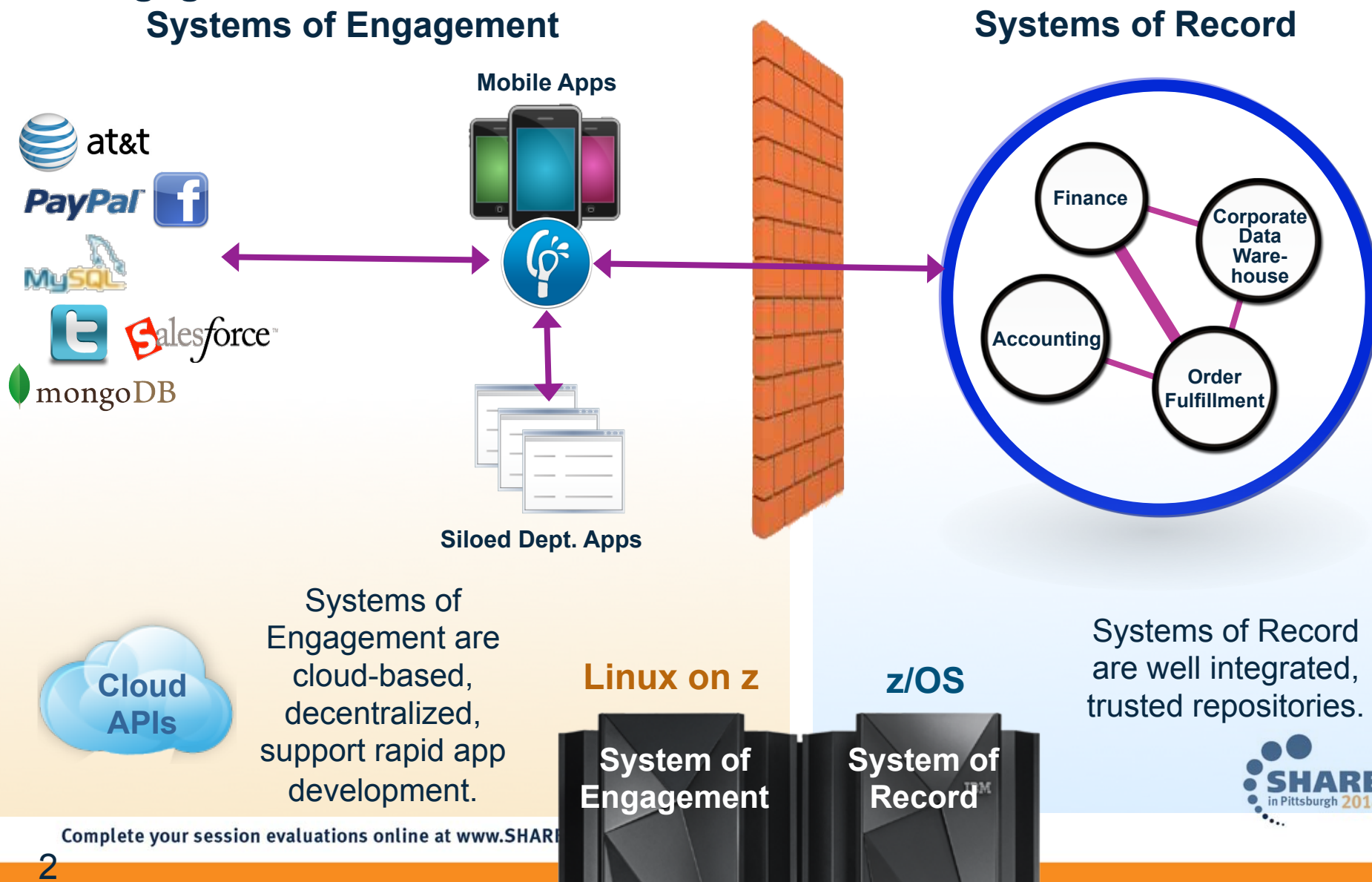
z/OS is mobile enabled

- z/OS subsystems are mobile-ready, with consumability enhancements planned. Eg: MongoDB API for DB2
- WAS Liberty z/OS Connect
- End to end mobile security.
- High-performance access to z/UNIX

27

System z bridges Systems of Record and Systems of Engagement

Systems of Engagement

Mobile Apps

Siloed Dept. Apps

Cloud APIs

Systems of Engagement are cloud-based, decentralized, support rapid app development.

Linux on z

System of Engagement

Systems of Record

Finance

Corporate Data Ware-house

Accounting

Order Fulfillment

Systems of Record are well integrated, trusted repositories.

z/OS

System of Record

Complete your session evaluations online at www.SHARE

Do I have to buy new servers to run Worklight?

No! Worklight will run on zLinux!
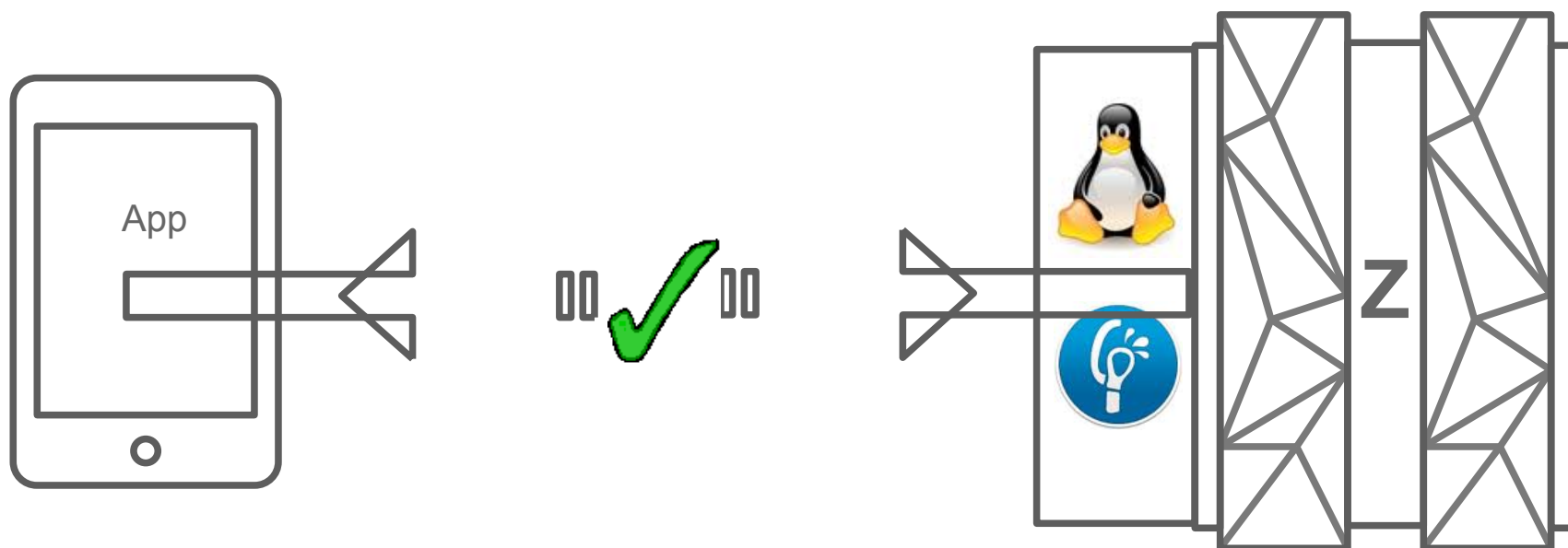
If you have an Integrated Facility for Linux (IFL) you can get started NOW!

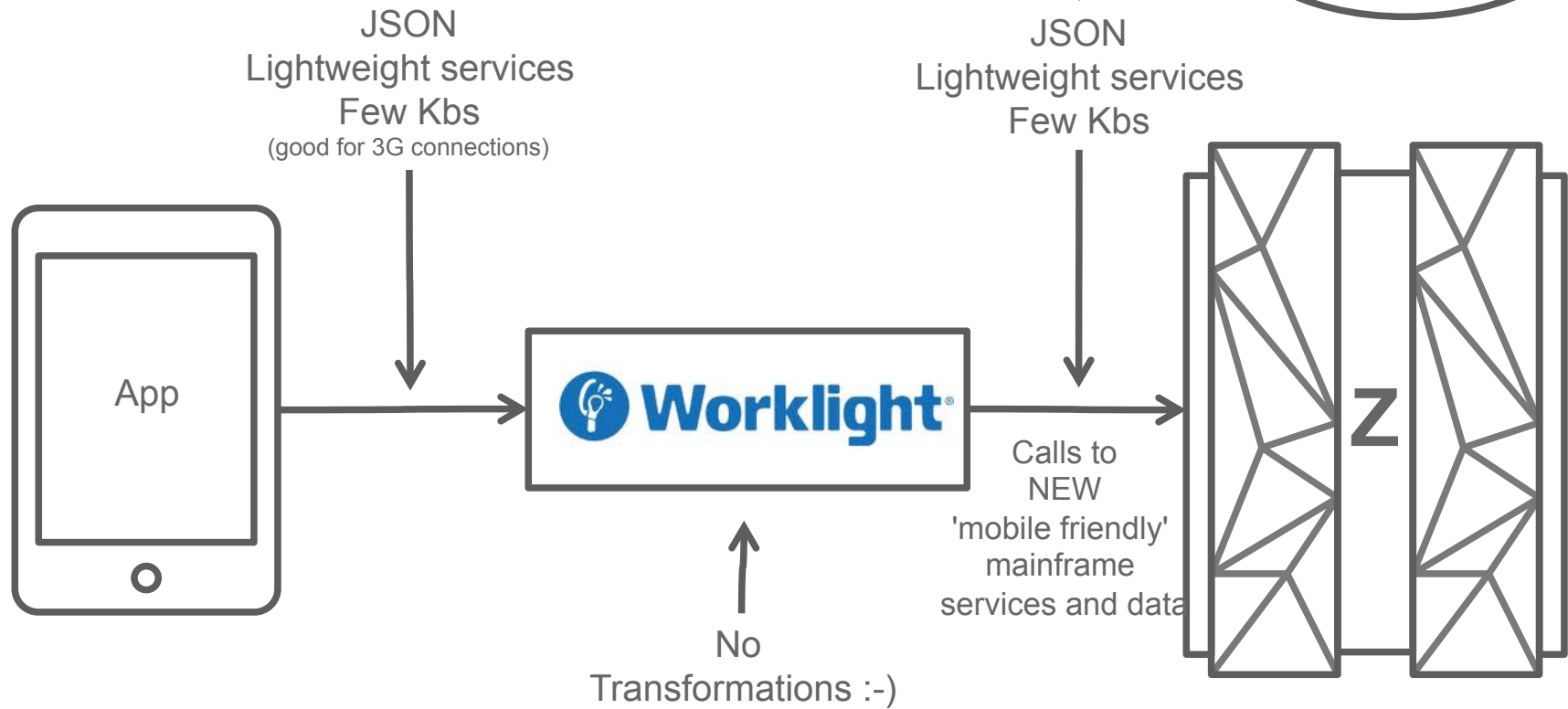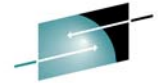# Typical Services Deployment… Good, but can be better

JSON
Lightweight services
Few Kbs
(good for 3G connections)

SOAP/XML
Heavyweight services
Many Kbs

App

Worklight®

z

Calls to existing mainframe services and data

JSON → SOAP/XML
JSON ← SOAP/XML
Transformations
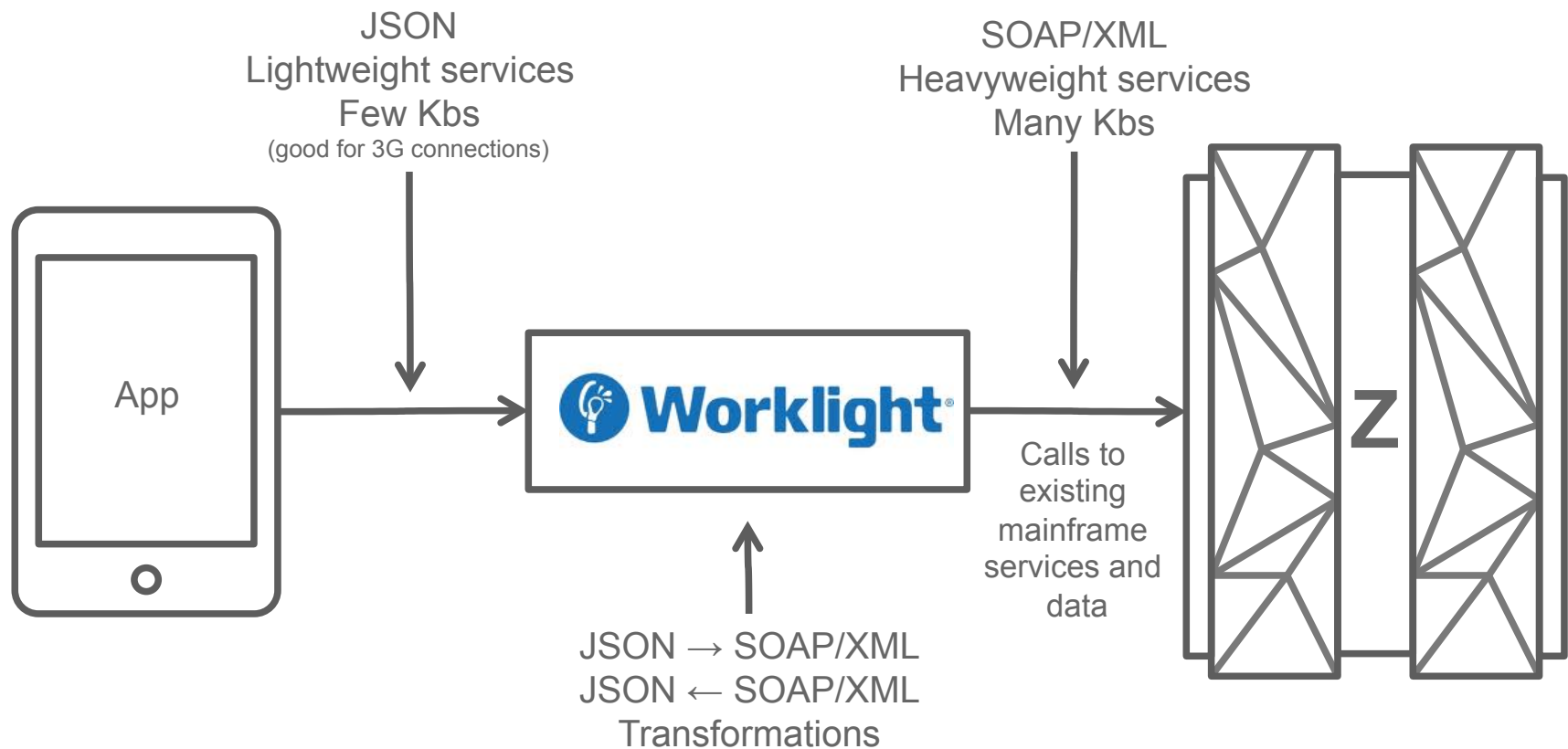
Parsing XML Takes time and CPU
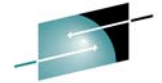
CICS V5.1 Mobile Feature Pack

NEW
CICS V5.1
Mobile Feature
Pack

JSON
Lightweight services
Few Kbs
(good for 3G connections)

JSON
Lightweight services
Few Kbs

App

Worklight

Z

Calls to
NEW
'mobile friendly'
mainframe
services and data

No
Transformations :-)

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IBM WebSphere Liberty z/OS Connect

Embedded in z/OS Middleware:
*   CICS, IMS, Batch, UNIX apps
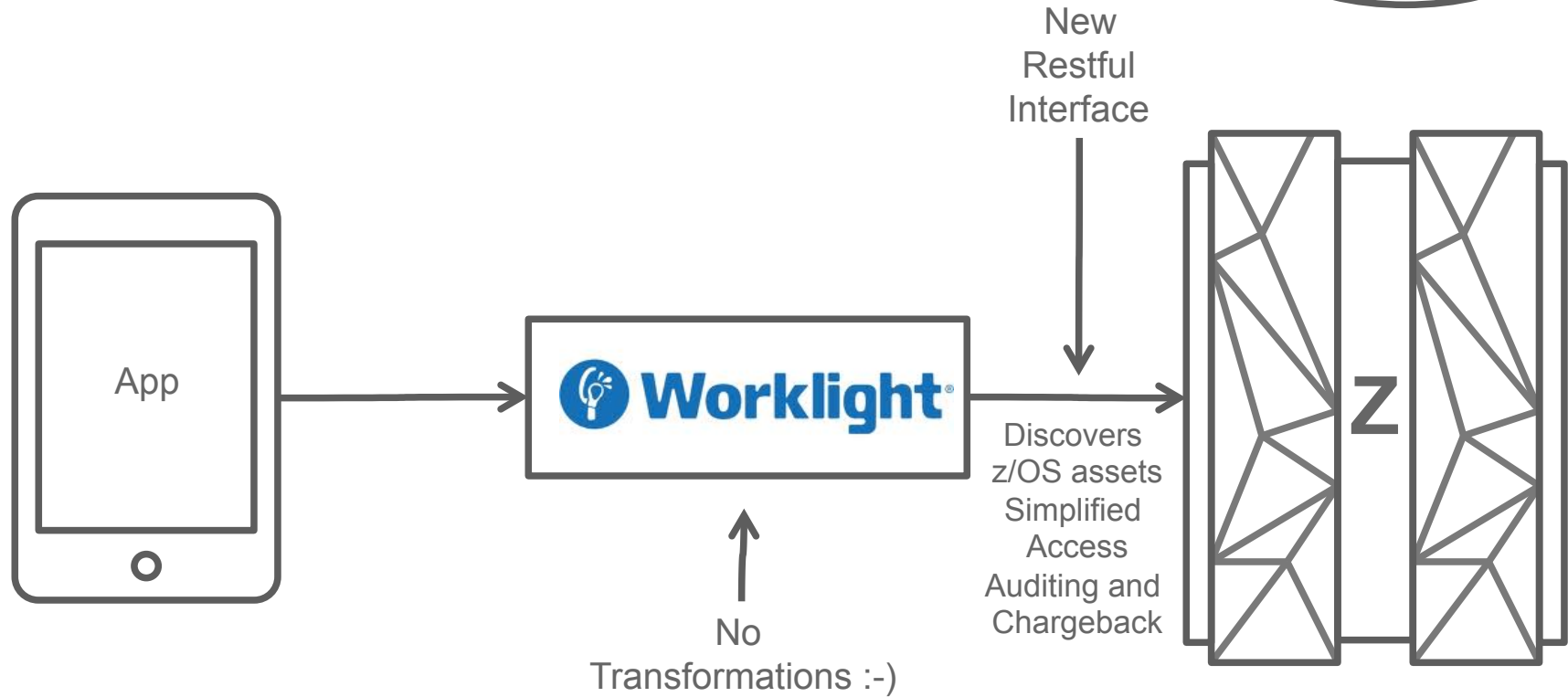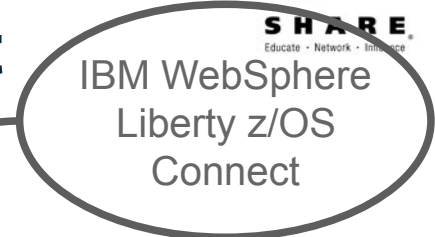
IBM WebSphere Liberty z/OS Connect

New Restful Interface

App

Worklight

No Transformations :-)

Discovers z/OS assets
Simplified Access
Auditing and Chargeback

Z

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Demonstration

CICS Application Walkthrough

CICS Application Overview

- CICS Catalog Manager Application
  – COBOL based CICS application
  – VSAM File
  – Separate Presentation Logic and Business Logic
  – Callable Interface - Commarea

Existing CICS Web Service Enabled App

3270 Client

z/OS

CICS

EGUI Main

Browse

Place Order

VSAM File (EXMPCAT)

Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval
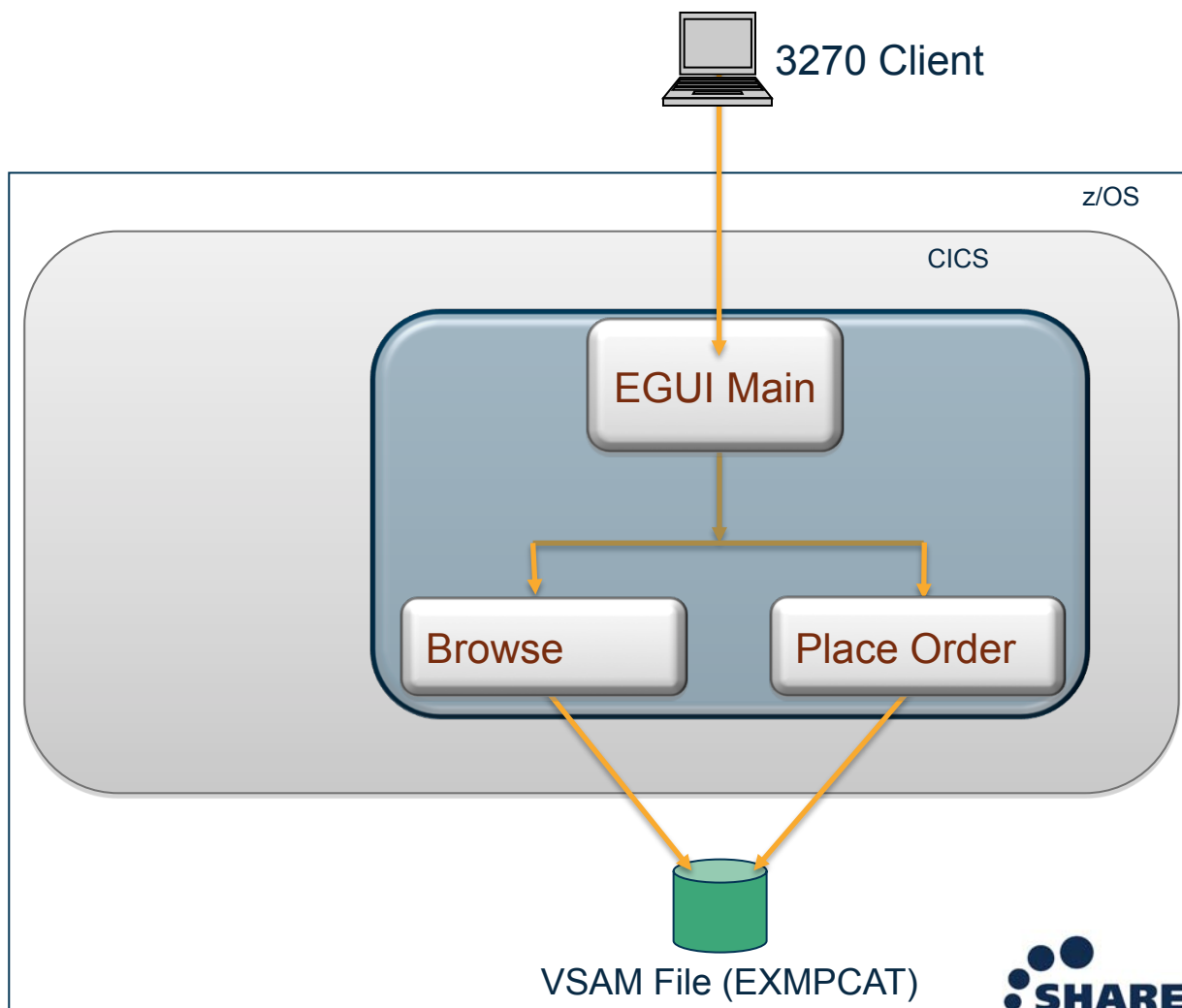
Worklight Modernizes the CICS Web Service Enabled App

Mobile Client

Worklight Server

Web Services

CICS Web Service

z/OS

CICS

EGUI Main

Browse

Place Order

VSAM File (EXMPCAT)

Complete your session evaluations online at www.SHARE.org/Pittsburgh-Eval
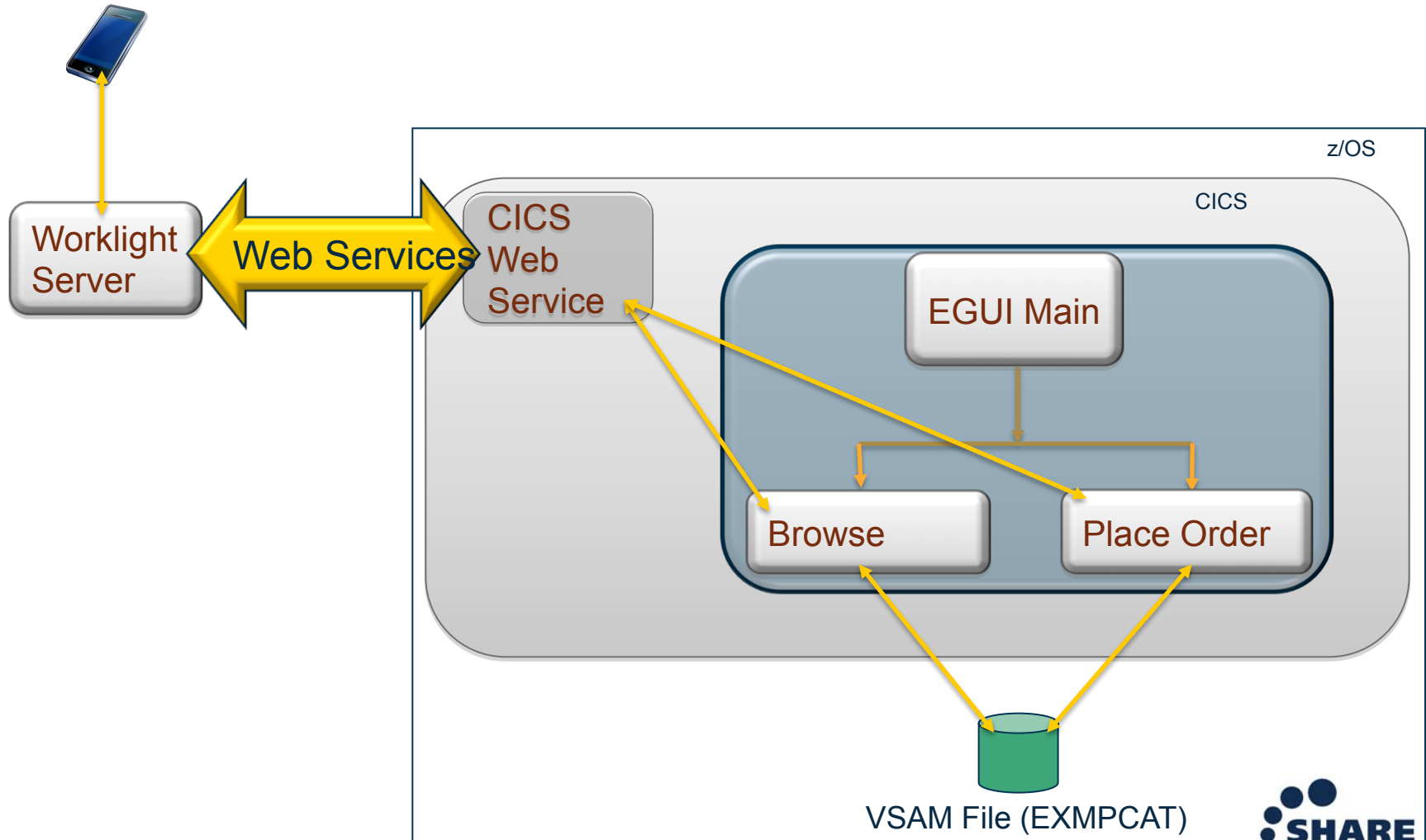
Worklight Enhances the CICS Web Service Enabled App

Mobile Client

Worklight Server

Web Services

Enhanced Search
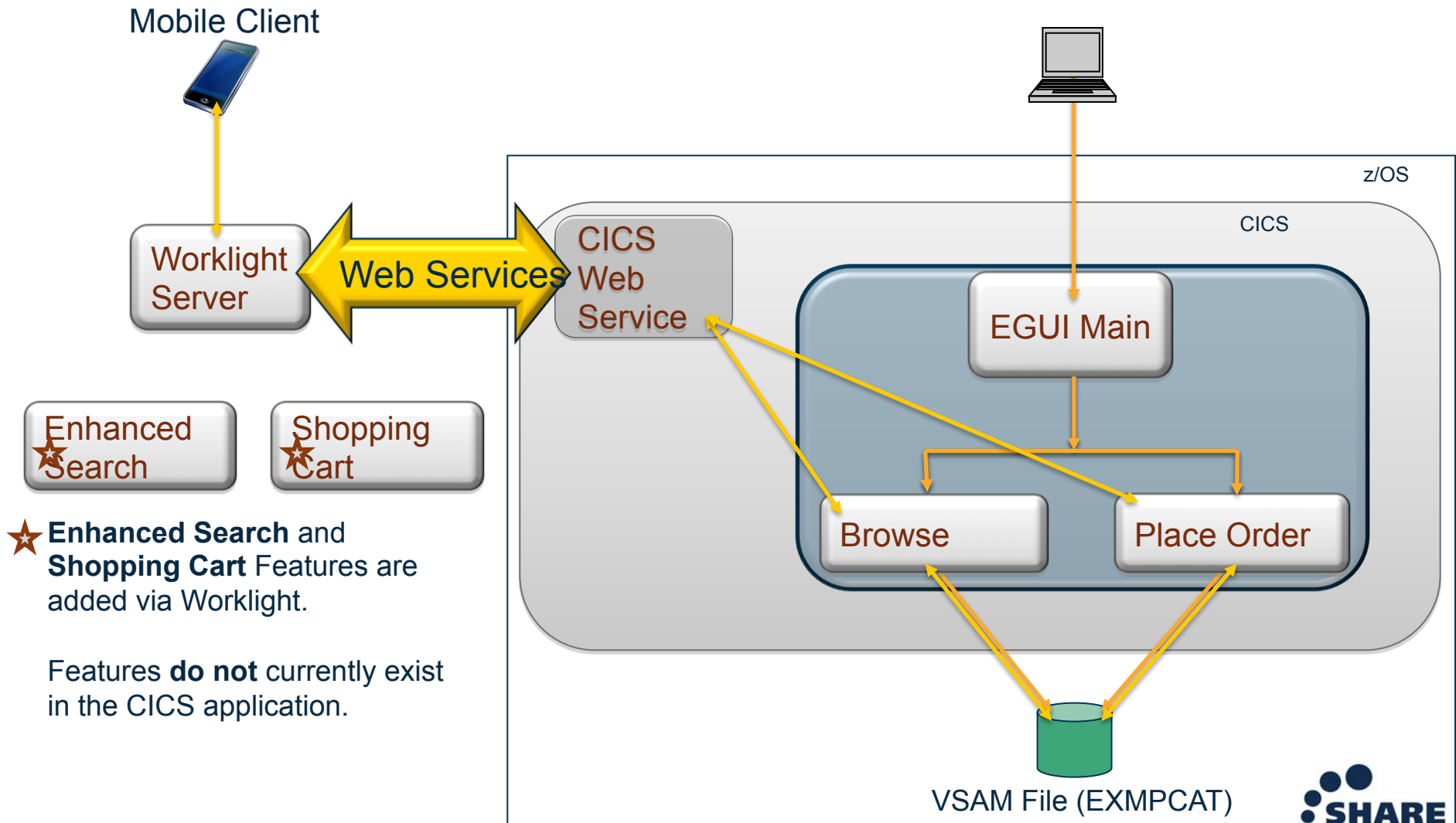
Shopping Cart

Enhanced Search and **Shopping Cart** Features are added via Worklight.

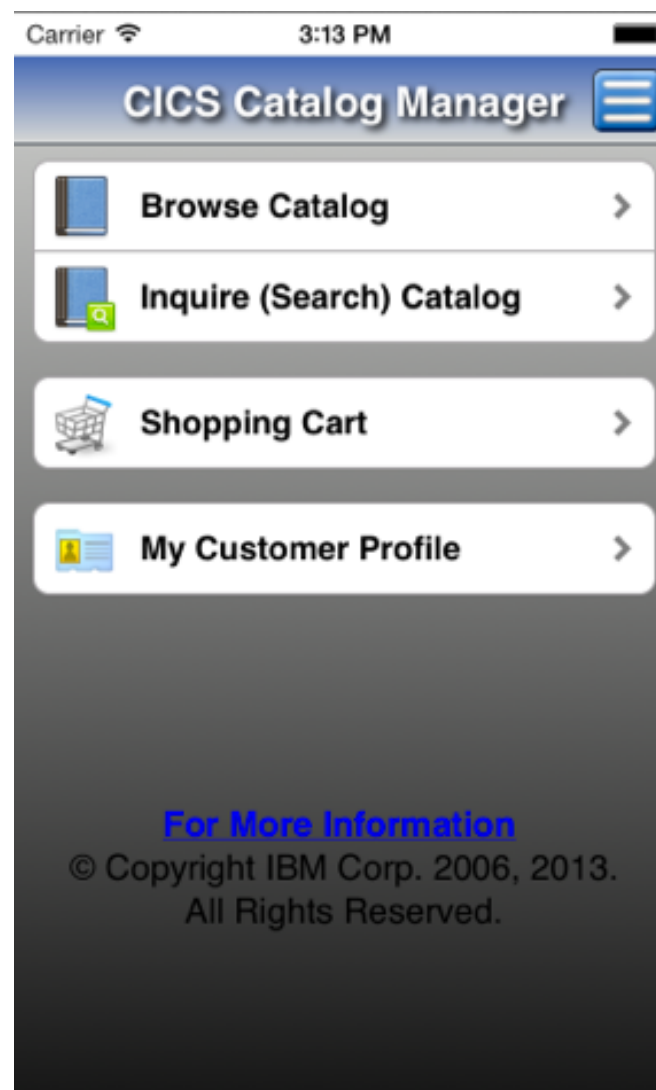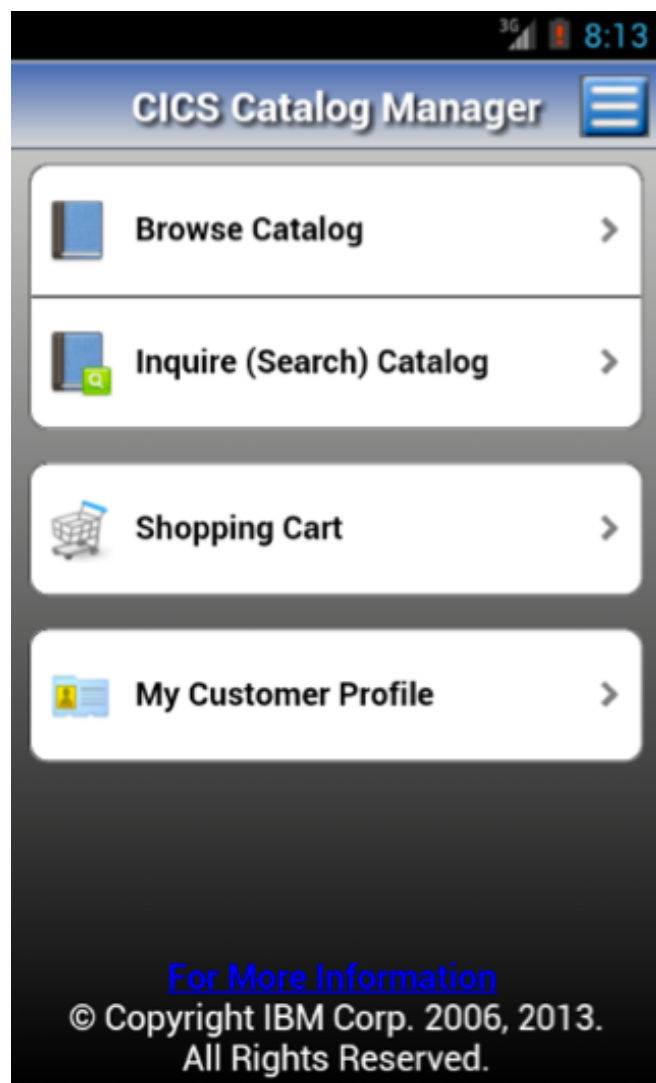Features **do not** currently exist in the CICS application.

z/OS

CICS

CICS Web Service

EGUI Main

Browse

Place Order

VSAM File (EXMPCAT)

Worklight gives a Mobile UI to CICS Services
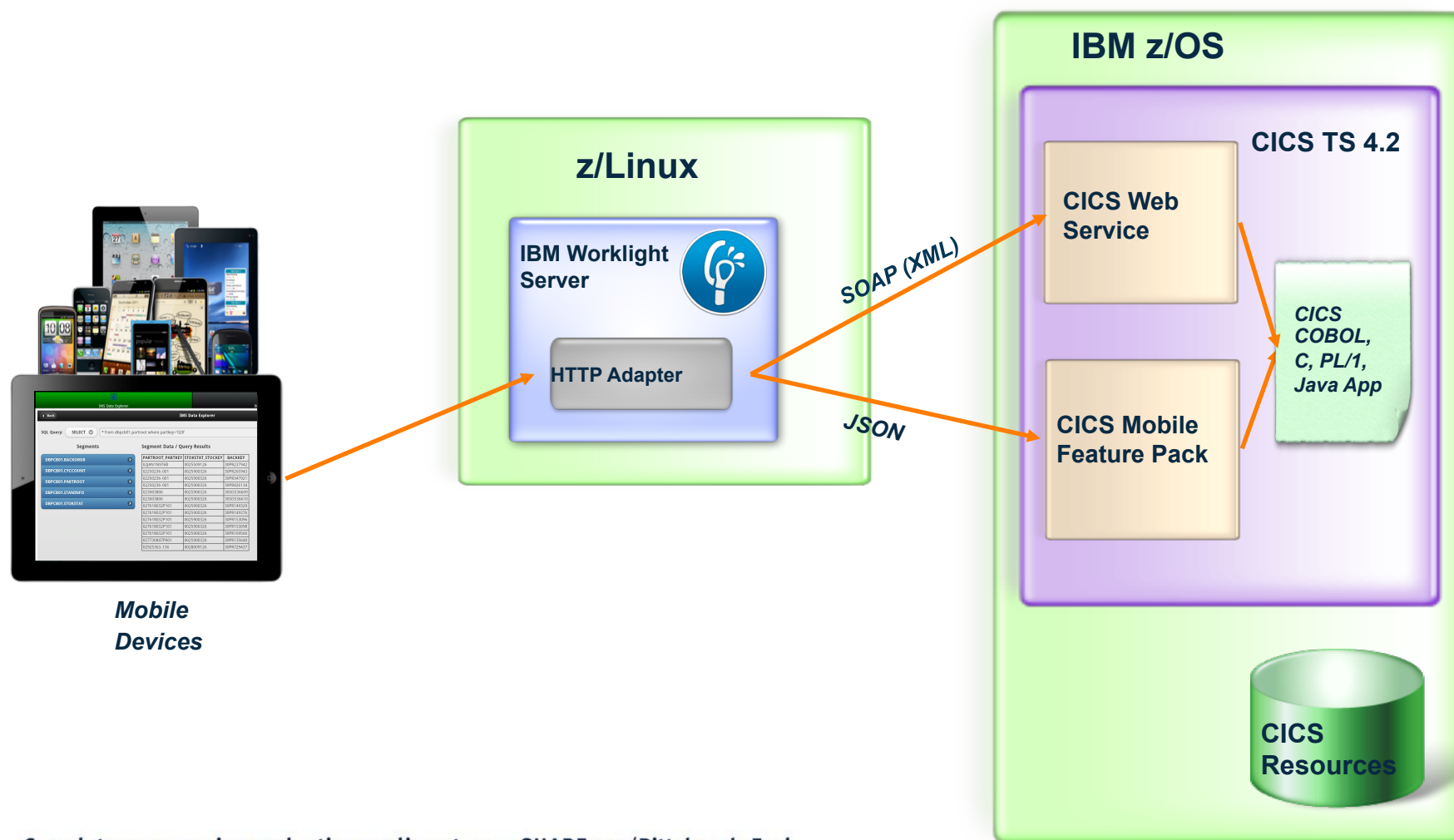
Mobile Devices

z/Linux

IBM Worklight Server

HTTP Adapter

SOAP (XML)

JSON

IBM z/OS

CICS TS 4.2

CICS Web Service

CICS Mobile Feature Pack

CICS COBOL, C, PL/1, Java App
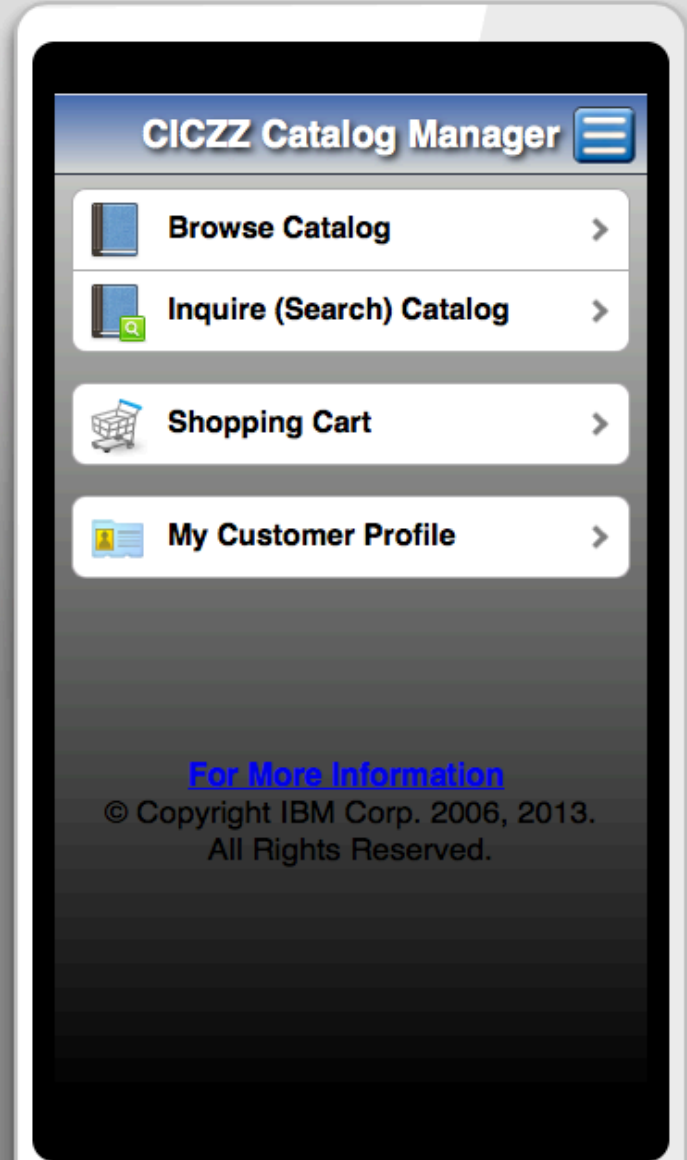
CICS Resources

CICS application for Android and iOS

Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.
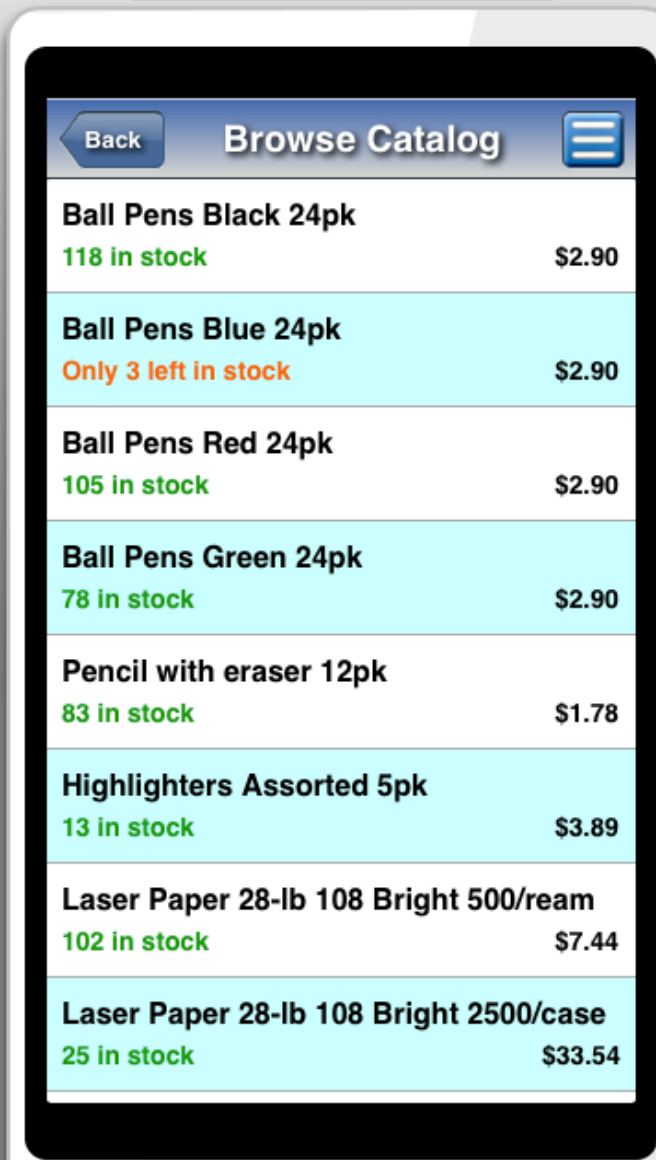
Webpage: /MobileEnterprise/apps/services/preview/EGUI/android/6.1   **Go / Refresh**   Add Device ▾   Scale All Devices: 100% ▾   ☐ Enable Useragent

Cordova

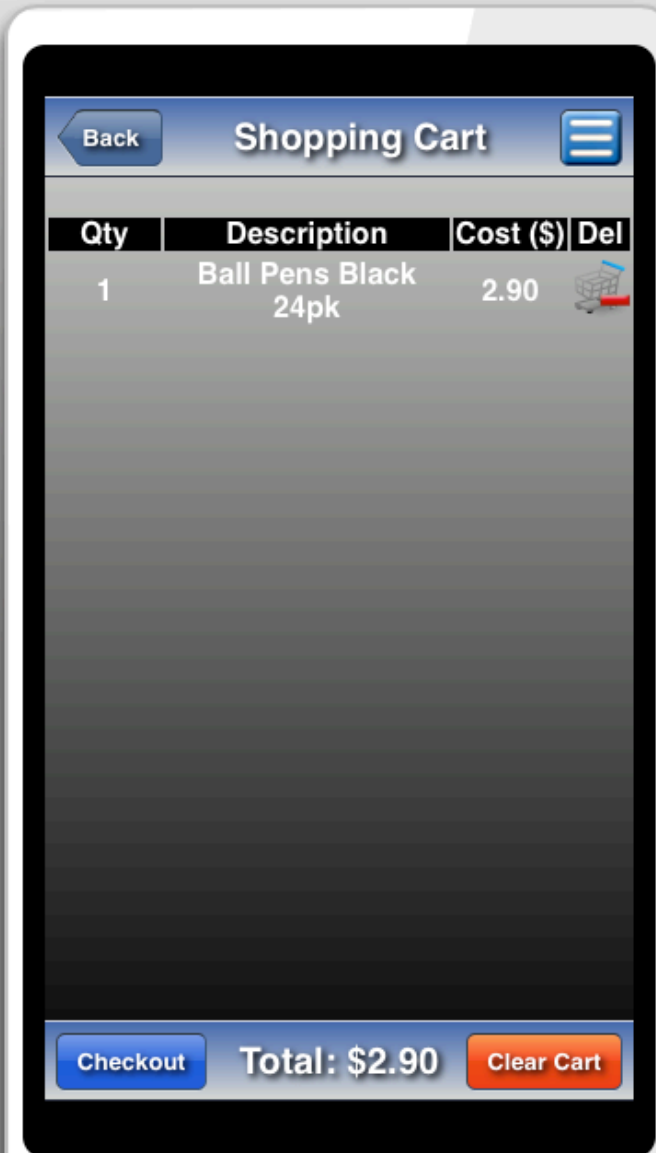- ▸ Device
- ▸ Events
- ▸ Accelerometer
- ▸ Battery
- ▸ Camera
- ▸ Capture
- ▸ Compass
- ▸ Contacts
- ▸ File
- ▸ Geolocation
- ▸ Network
- ▸ Scenario

Skin ▾ | 📎 | ▦ | 🖨 Rotate | ✖

CICZZ Catalog Manager ☰

📘 **Browse Catalog** ❯

📘 **Inquire (Search) Catalog** ❯

🛒 **Shopping Cart** ❯

📇 **My Customer Profile** ❯

For More Information
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Mobile Browser Simulator

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▸ Device
▸ Events
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▸ Contacts
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▸ Network
▸ Scenario

Skin ▾ | 🔗 | ▦ | 🖥 Rotate | ✖

Back | **Browse Catalog** | ☰

Ball Pens Black 24pk
118 in stock $2.90

Ball Pens Blue 24pk
Only 3 left in stock $2.90

Ball Pens Red 24pk
105 in stock $2.90

Ball Pens Green 24pk
78 in stock $2.90

Pencil with eraser 12pk
83 in stock $1.78

Highlighters Assorted 5pk
13 in stock $3.89

Laser Paper 28-lb 108 Bright 500/ream
102 in stock $7.44

Laser Paper 28-lb 108 Bright 2500/case
25 in stock $33.54

Display a menu

Mobile Browser Simulator

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▸ Network
▸ Scenario

Skin ▾ | ✎ | ▦ | 🔒 Rotate | ✖

Back | **Inquire an Item** | ☰

🔍 pen ⊗

Ball Pens Black 24pk
118 in stock $2.90

Ball Pens Blue 24pk
Only 3 left in stock $2.90

Ball Pens Red 24pk
105 in stock $2.90

Ball Pens Green 24pk
78 in stock $2.90

Pencil with eraser 12pk
83 in stock $1.78

Display a menu

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▸ Network
▸ Scenario

Skin ▾ | 🔗 | 🔳 | 🔒 Rotate | ✖

Back   **Item Details**   ☰

Description:	**Ball Pens Black 24**
Item Ref #:	**10**
Department:	**10**
Unit Cost:	**$2.90**
Stock Qty:	**118**
On Order:	**0**

Quantity

＋

1

－

🛒 **Add to Cart** ＞

Display a menu

Mobile Browser Simulator

The Mobile Browser Simulator displays mobile web pages in a variety of mobile browser sizes and shapes.

Webpage: /MobileEnterprise/apps/services/preview/EGUI/android/6.1 | **Go / Refresh** | Add Device ▼ | Scale All Devices: 100% ▼ | Enable Useragent

Cordova

▶ Device
▶ Events
▶ Accelerometer
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▶ Geolocation
▶ Network
▶ Scenario

Skin ▼ | 🔗 | ▦ | 🖨 Rotate | ✖

Back | **Shopping Cart** | ☰

Qty	Description	Cost ($)	Del
1	Ball Pens Black 24pk	2.90	🛒

Checkout | **Total: $2.90** | **Clear Cart**

Display a menu

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