



# Developing an IBM MobileFirst platform application for z Systems

Track 3: Extending the mainframe to the mobile enterprise



## Where we are in today's agenda

- Mobilizing the mainframe
- Modernizing mainframe applications for mobile and more
- Exposing mainframe applications and services to mobile
- Developing an IBM MobileFirst platform application for z Systems
- Optimizing applications and data for mobile workloads
- Client use cases and getting started with mobile and z Systems

## Agenda

- How can you ensure that mobile applications are written once for supporting multiple device types?
    - Native Webapp Hybrid
    - Mobile middleware tier and studio tier
  - Which tools from the IBM Rational portfolio are most useful in creating mobile applications to access z Systems services?
    - Starting point bottom up
    - RDz or IMS Explorer for Development – create web services
    - Explorer
  - This session focuses on developing a mobile application to access the mainframe with an emphasis on the server run-time and development environment of the IBM MobileFirst Platform.
    - Recap studio and server components, need for each
    - RTC SCM and task management
    - Use studio to generate application
    - Run live
    - Recap value of IBM Software
  - Security and Mobile
  - Value of embracing tooling – great products become brilliant with great tooling
- We look at the development from a CICS application use-case perspective and demonstrate the steps to connect to the CICS application from mobile devices.

## About me

The screenshot shows the top of the University of St Andrews website. At the top left is the university's crest, followed by the text "University of St Andrews". To the right is a search bar with the placeholder text "Enter search keywords" and a "Search" button. Below this is a navigation menu with links: "Study at St Andrews", "Academic Schools", "Alumni", "Parents", "Administration A-Z", "Research", "Library", "About us", "News", "Events", and "Visiting". The main content area features a blue sidebar on the left with the heading "Scotland's first university" and text stating "St Andrews is Scotland's first university and the third oldest in the English-speaking world, founded in 1413." Below this is a paragraph: "Over six centuries it has established a reputation as one of Europe's leading and most distinctive centres for teaching and research." To the right of the sidebar is a large image of the Earth. Overlaid on the right side of the Earth image are two logos: "THE WORLD UNIVERSITY RANKINGS" and "QS WORLD UNIVERSITY RANKINGS". Below the Earth image, the text "World class" is displayed, followed by "One of the world's top universities THE 2012-2013 Rankings and QS World University Rankings". A double arrow icon is at the bottom right of the image area.

*extreme*blue X

## Native, Webapp, or Hybrid....

- Native – SDK for specific brand of device, specific tooling – Best end user experience
- Webapp – Responsively designed websites let minimal investment return basic mobile support as a staple entry point to the mobile world
- Hybrid – A combination of Native and Webapp – Best of both worlds?

[Press room](#) > [Press releases](#) >

### **Apple and IBM Forge Global Partnership to Transform Enterprise Mobility**

## The need for a mobile middleware tier

- Regardless of your choice (native, webapp, hybrid) the IBM MobileFirst Platform server is where consistent value is delivered
- This is where 'magic' happens to reach z System services
- The platform offers:
  - An integration layer – keep client side code clean, light, simple
  - A security layer – keep authenticity and app management for you
  - Operational analytics – app crash logs, app->server comms tracking
  - Secure offline data store with synchronisation capabilities
  - Consistent connectivity point for all calls to service providers, z Systems, distributed systems, public systems

# CICS Application Overview

- CICS Catalog Manager Application
  - COBOL based CICS application (EGUI)
  - VSAM File
  - Separate Presentation Logic and Business Logic
  - Callable Interface - Container

EGUI\_

```

CICS EXAMPLE CATALOG APPLICATION - Inquire Cata
Select a single item to order with /, then press

Item      Description
-----
0010      Ball Pens Black 24pk
0020      Ball Pens Blue 24pk
0030      Ball Pens Red 24pk
0040      Ball Pens Green 24pk
0050      Pencil with eraser 12pk
0060      Highlighters Assorted 5pk
0070      Laser Paper 28-lb 108 Bright 500/ream
  
```

CICS EXAMPL

Select an a

```

Action . . . . 1 1. List Items
                2 2. Order Item Number 0010
                3 3. Exit
                Cost 0
                -----
                2.90
                2.90
                2.90
                2.90
                1.78
                3.89
                7.44
  
```

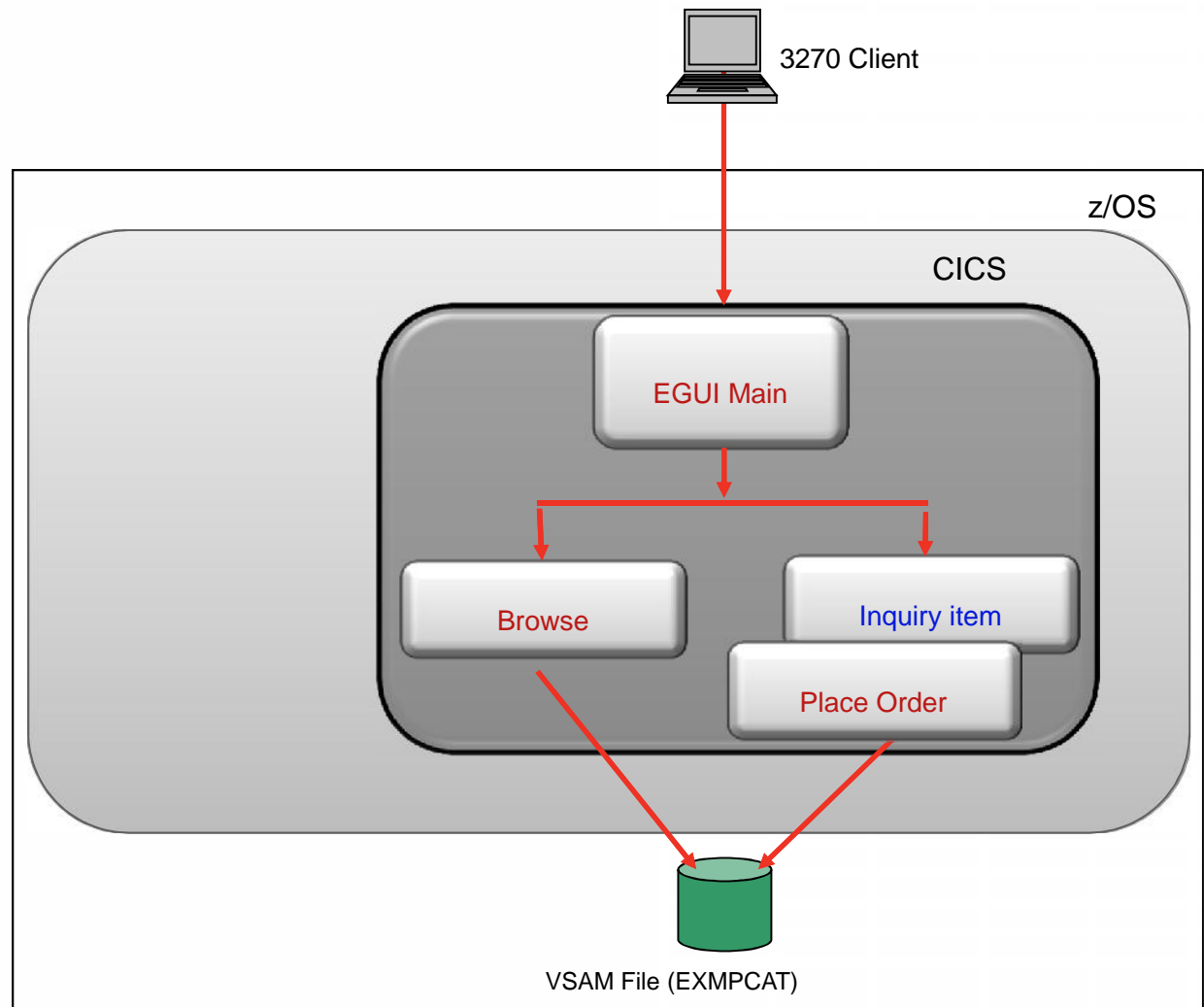
```

CICS EXAMPLE CATALOG APPLICATION - Details of your order
Enter order details, then press ENTER

Item      Description                Cost      Stock      On Order
-----
0020      Ball Pens Blue 24pk              2.90      0003      050

Order Quantity: 003
User Name: Regi
Charge Dept: Barosa
  
```

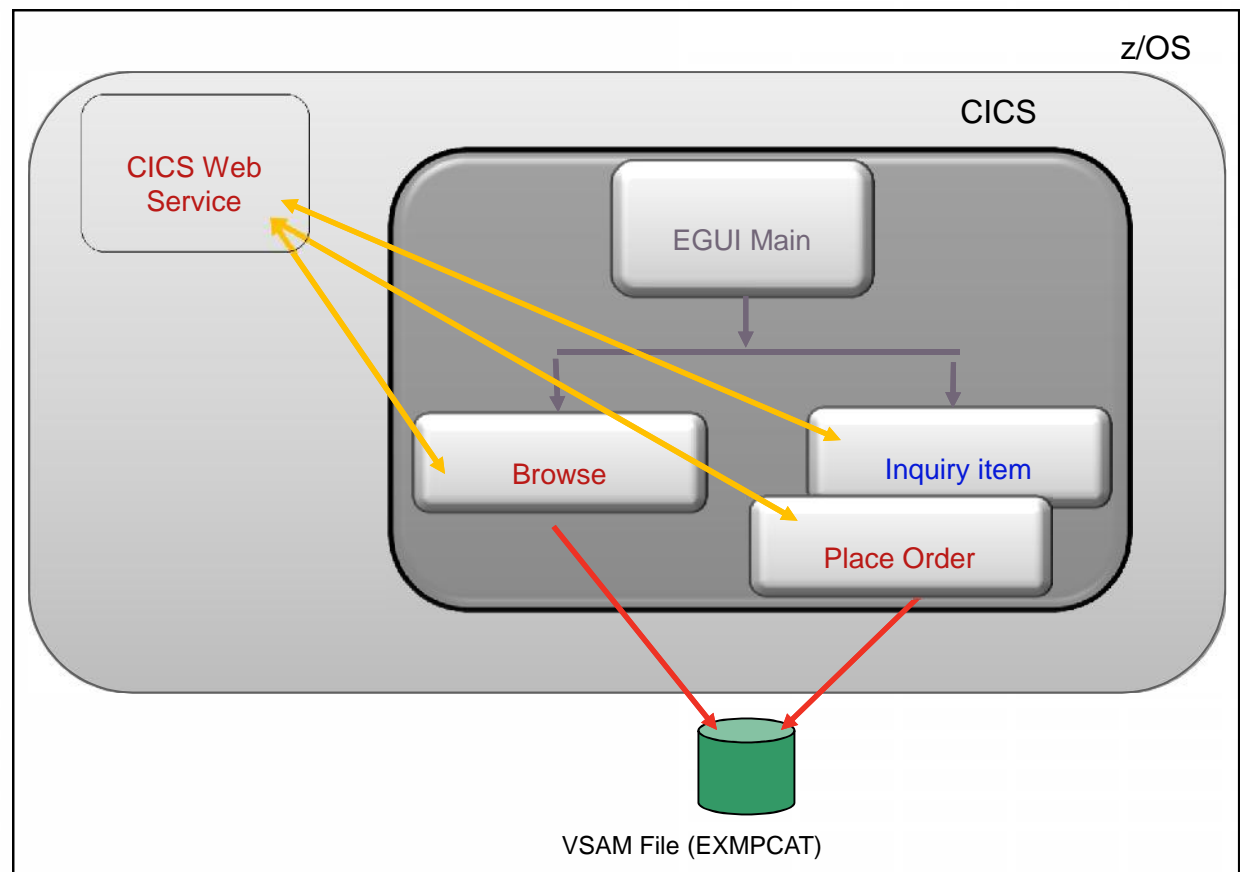
# Existing CICS 3270 Application



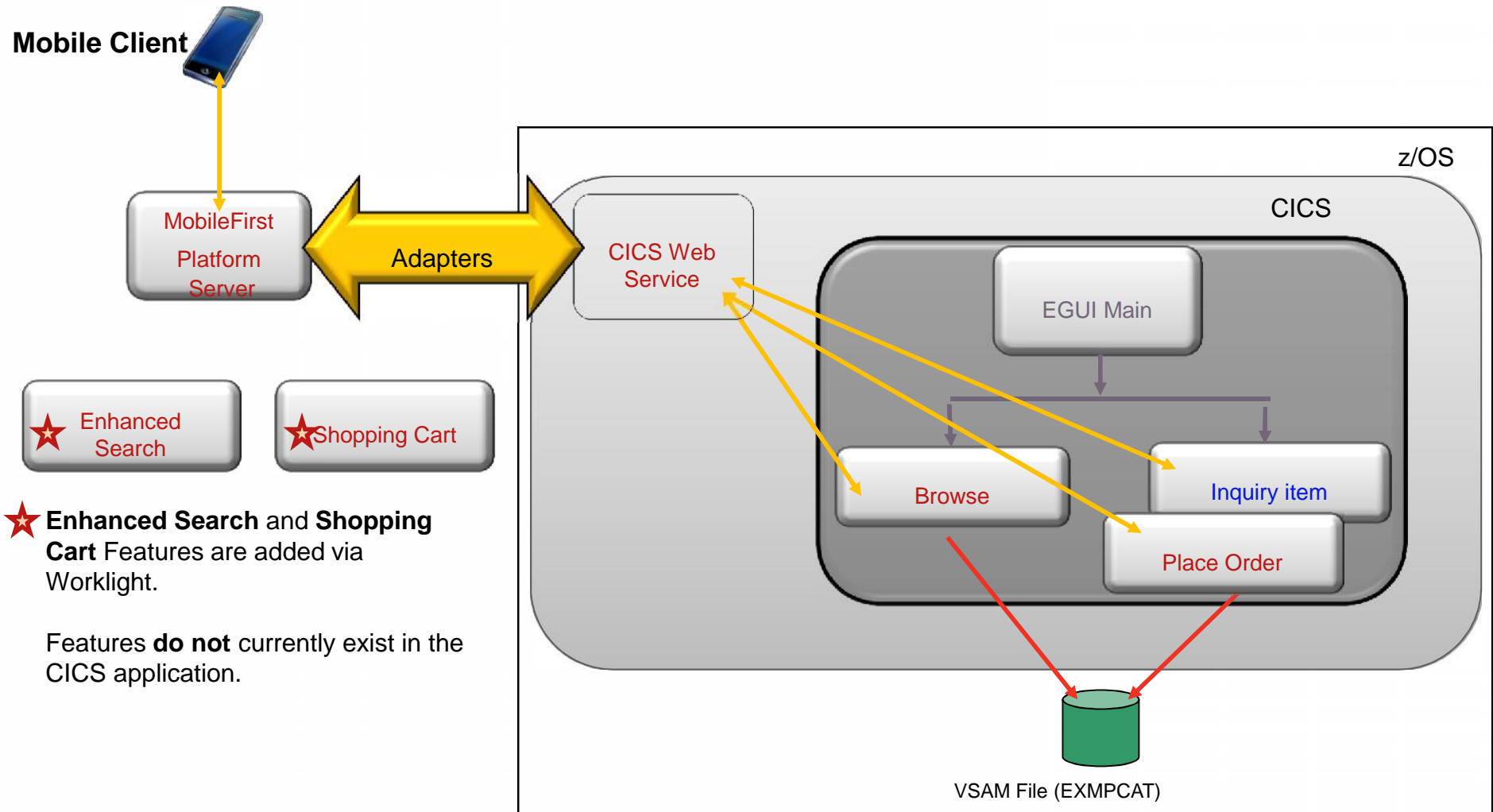


# RDZ and Debug Tool

## Web Service enables and test existing app



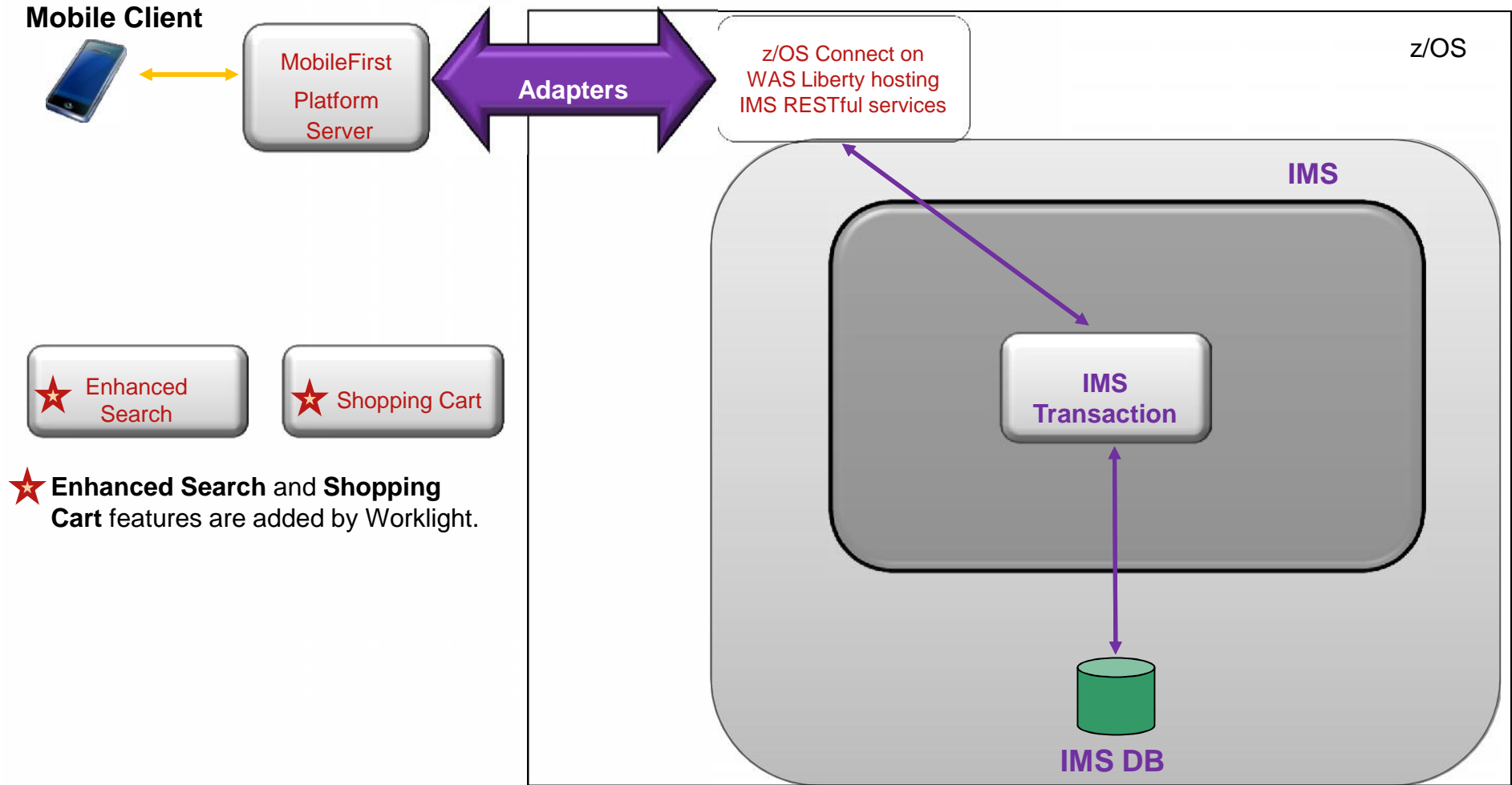
# How MobileFirst enhances the CICS Web Service Enabled App



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

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

# MobileFirst enhances the IMS Web Service Enabled App



## Starting point – bottom up

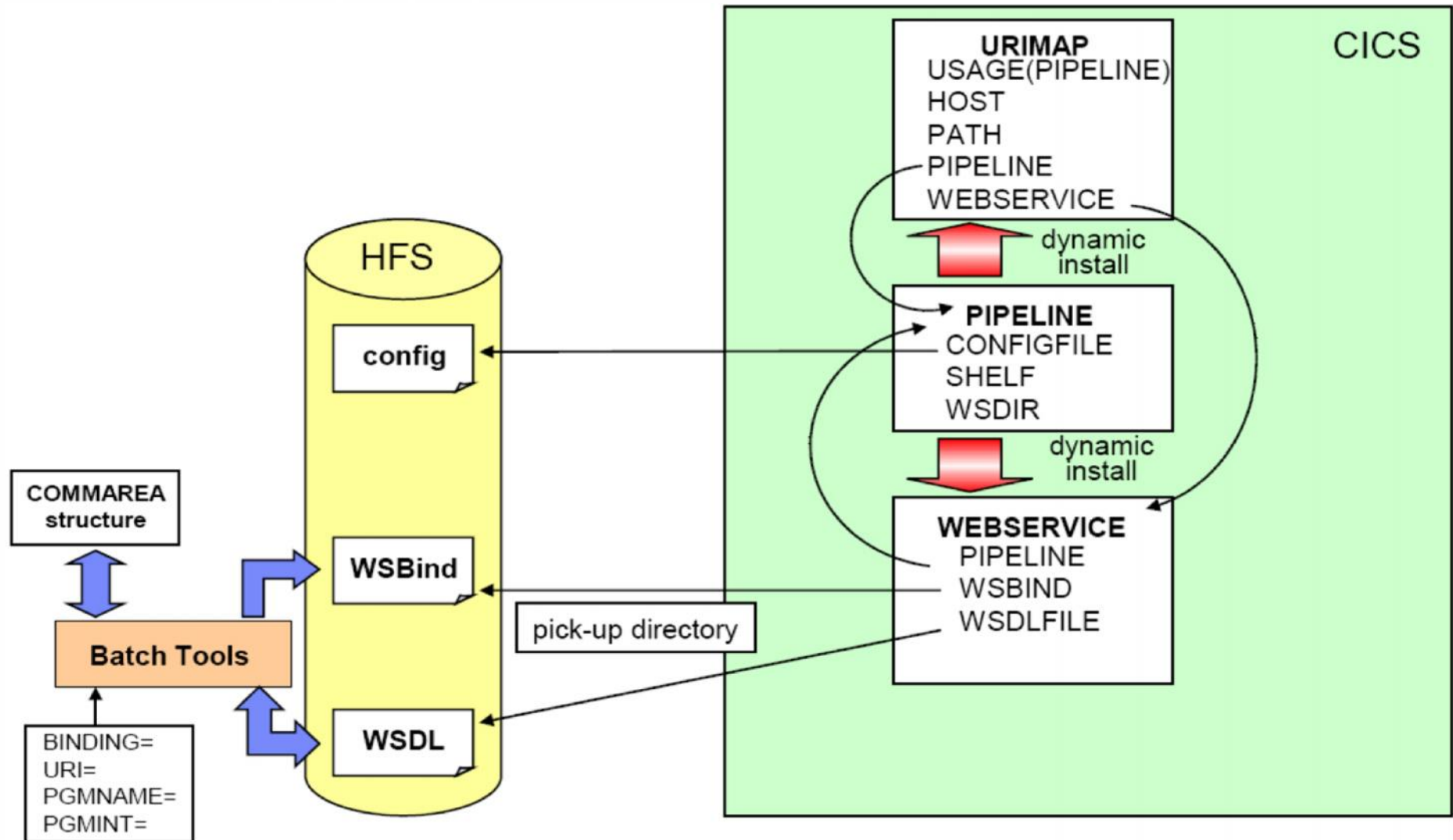
- We need services for our app to connect to our Systems of record
- IBM MobileFirst platform can use standard web services (SOAP, JSON, SAP)
- How do we make these services?
  - CICS -> DFHLS2WS, DFHLS2JS
  - IMS -> IMS SOAP Gateway (SOAP Services), IMS Mobile feature pack (REST Services)
  - Spring? JAX-RS?
- What would these services look like?

## IMS Enterprise Suite SOAP Gateway

- Enable IMS transactions as both web service providers and consumers
- Support industry web service and security standards
  - HTTP(S), SSL, SOAP, WSDL, WS-Security, AT-TLS, SAML 1.1 and 2.0
- Support both call-in and callout from IMS
- Integrate with Rational Developer for System z tooling
  - Supports Top-down, Meet-in-the-middle and Bottom up application design approach
  - Supports COBOL and PL/I converter generation that handles XML/Unicode to EBCDIC bytes conversion



## Web service resource interrelationships



## RDz – generate web services easily

- Live(ish) demo – catalog manager web services creation
  - [https://www.youtube.com/watch?v=YCG\\_LtllrLk](https://www.youtube.com/watch?v=YCG_LtllrLk) 4m 22 -> 8m 15
- Speak with William(Bill) on RDz dev team
- Make some services, install them using explorer integrated into RDz
- How do we source control any source changes? How do we track the task of making the web service?
  - Integrate changes made via RDz with existing solution
  - Use RTC for SCM and Task Management (example to follow)

## CICS Explorer

- Confirm programs, pipelines, web services are installed correctly
- Confirm TCPIP port and URIMaps for service URL
- Live demo of doing this



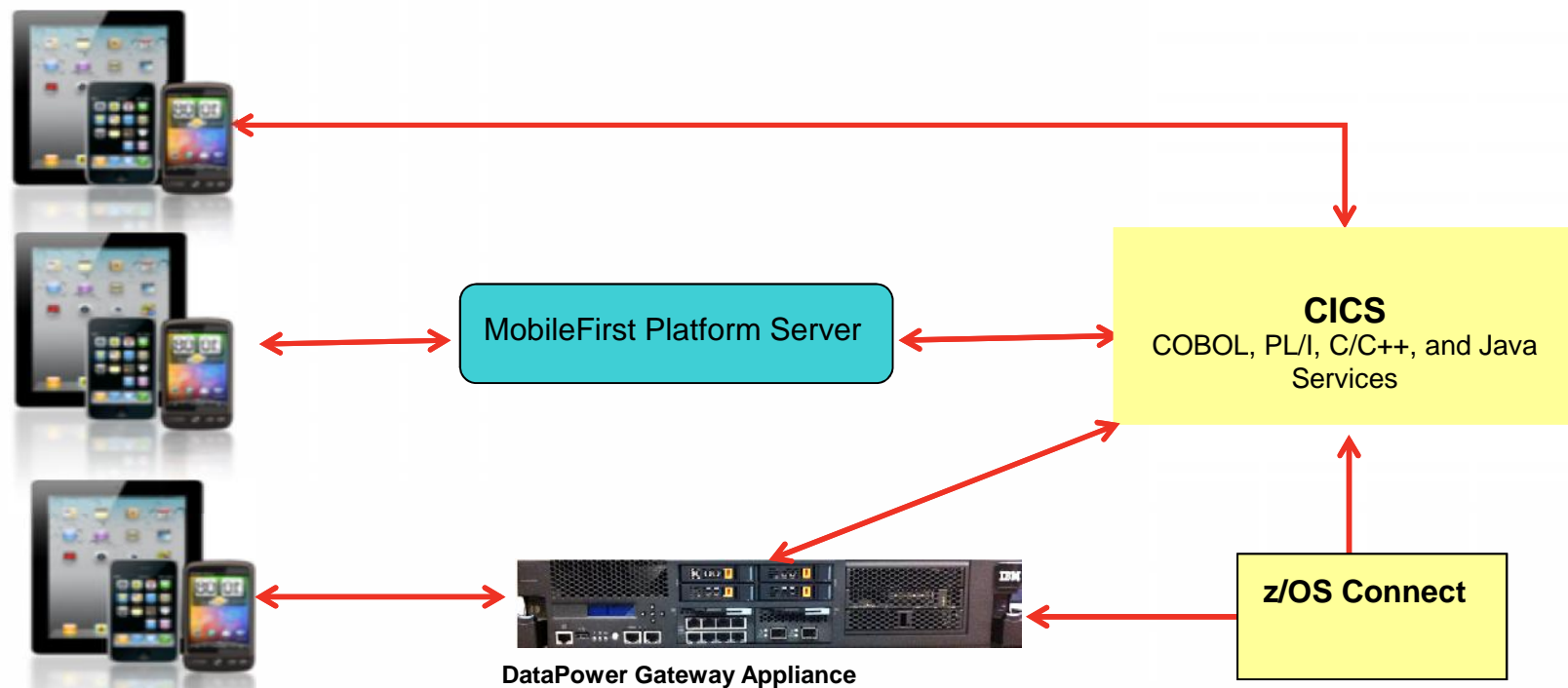
## Make mobile application

- We have made our web service for the IBM MobileFirst Platform to access our core business logic running on z system
- Now use MobileFirst Studio to build a mobile application to call the service we have exposed
- Live demo of creating this mobile application calling a CICS Service

## RTC – SCM system and time management

- How do we track this work?
  - Task management
- How do we track the source code changes?
  - Task Management tie in to source control
- How do I integrate the code changes deployed to z Systems?
  - RTC Builds

## z Systems mobile security topologies

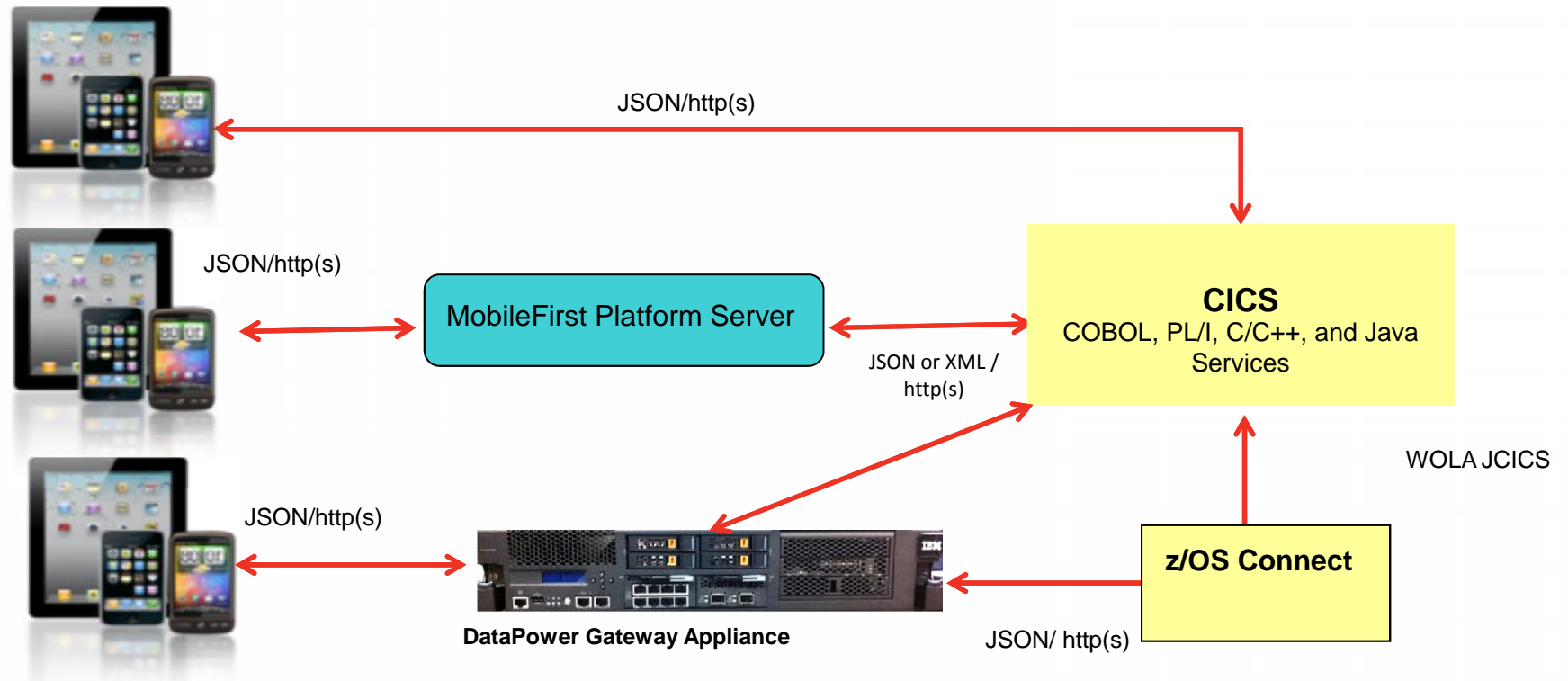


**IBM Statement of Direction:** IBM intends to deliver IBM WebSphere Liberty z/OS Connect (z/OS Connect) as a common program component of WebSphere Application Server for z/OS, IMS Enterprise Suite for z/OS, CICS Transaction Server for z/OS, and CICS Transaction Gateway. z/OS Connect is intended to provide a simplified, secure, and scalable gateway functionality to route web, cloud, and mobile application traffic that accesses applications provided by the aforementioned z/OS products, as well as z/OS Batch and z/OS UNIX™ System Services applications.

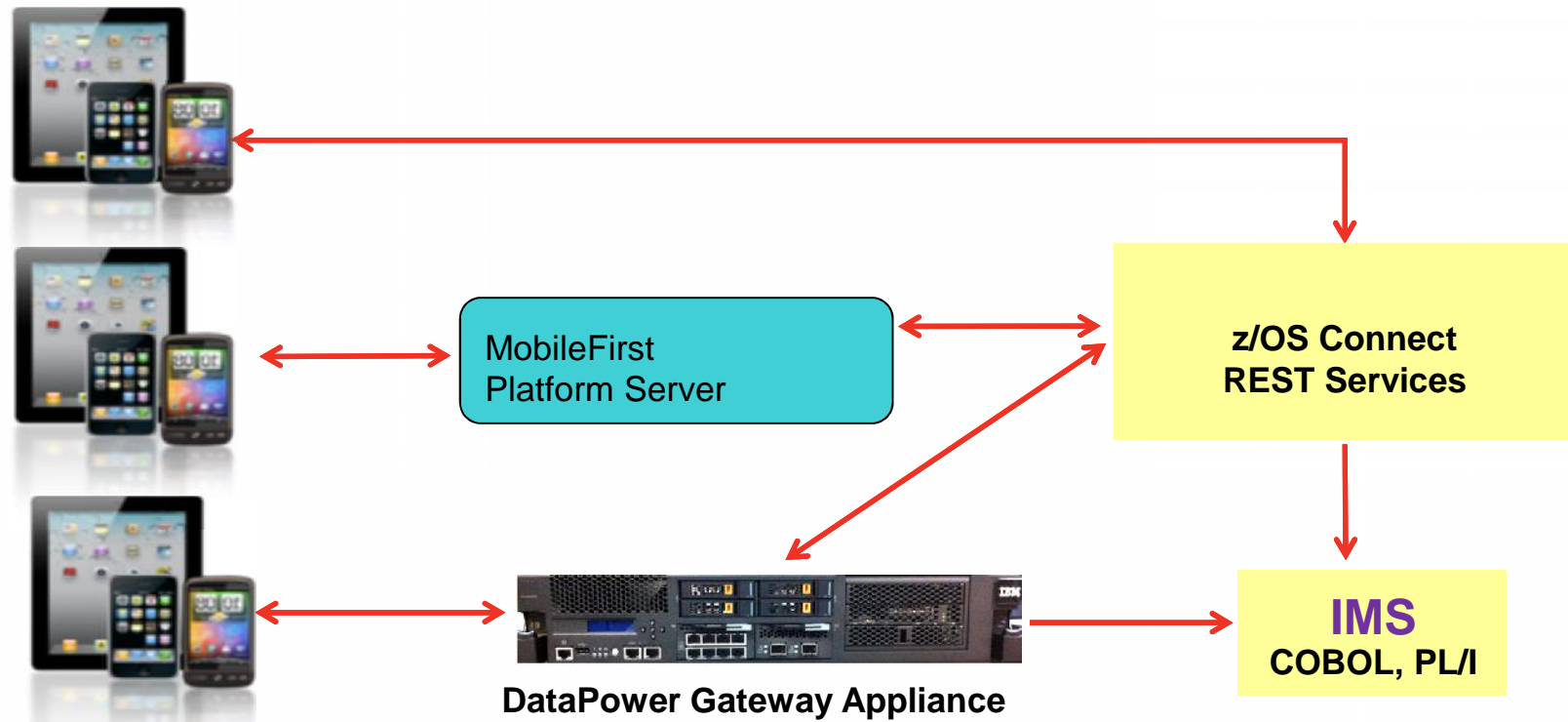
## So how to chose the right mobile security solution?

- **Type of user**
    - B2E
    - B2C
  
  - **Type of mobile app**
    - Web
    - Native
    - Hybrid
    - Worklight?
  
  - **Type of access**
    - Intranet/extranet
    - Internet
  
  - **Number of users**
    - Small (10s to 100s)
    - Medium (1000s)
    - Large (or unknown?)
- ▶ **Security requirements**
    - Authentication
    - Authorization
    - Confidentiality
    - Integrity
  
  - ▶ **Sensitivity of data and transactions**
    - Financial?
    - Personal?
    - Will sensitive data be stored on the device?
  
  - ▶ **Security standards**
    - Company
    - Government or external body
  
  - ▶ **Existing security architecture**
    - User registry
    - Security products

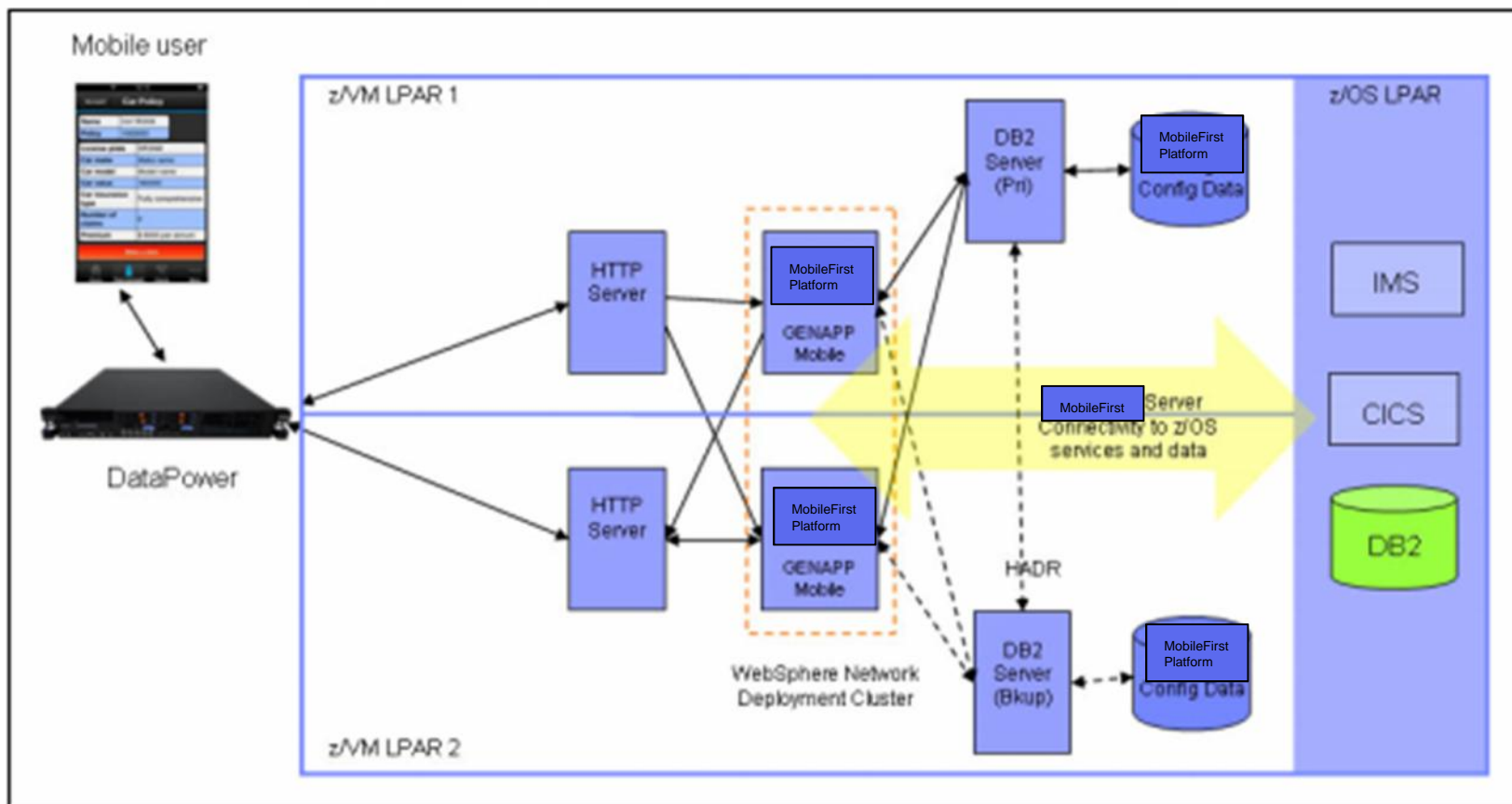
## CICS mobile security topologies



## IMS mobile security topologies



# Security



# DataPower Mobile Security Features

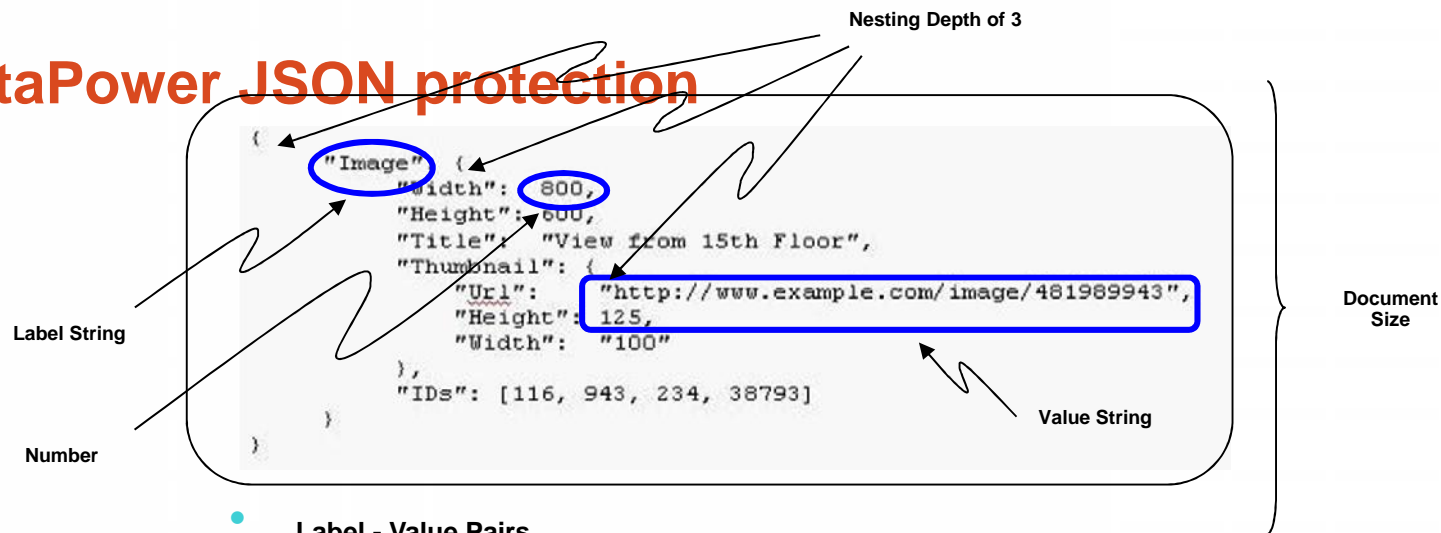
*Available as a physical or virtual appliance*



- Security, Control, Integration & Optimization of mobile workload
- Enforcement point for centralized security policies
- Authentication, Authorization, **SAML**, OAuth 2.0, Audit
- Threat protection for XML and JSON
- Message validation and filtering
- Centralized management and monitoring point
- Traffic control / Rate limiting
- Integration with MobileFirst Platform

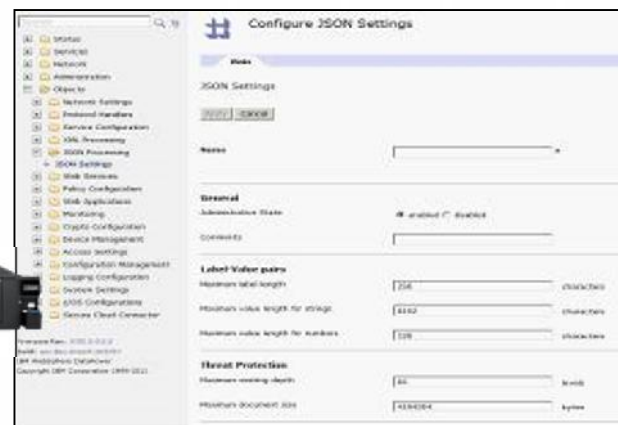


# DataPower JSON protection

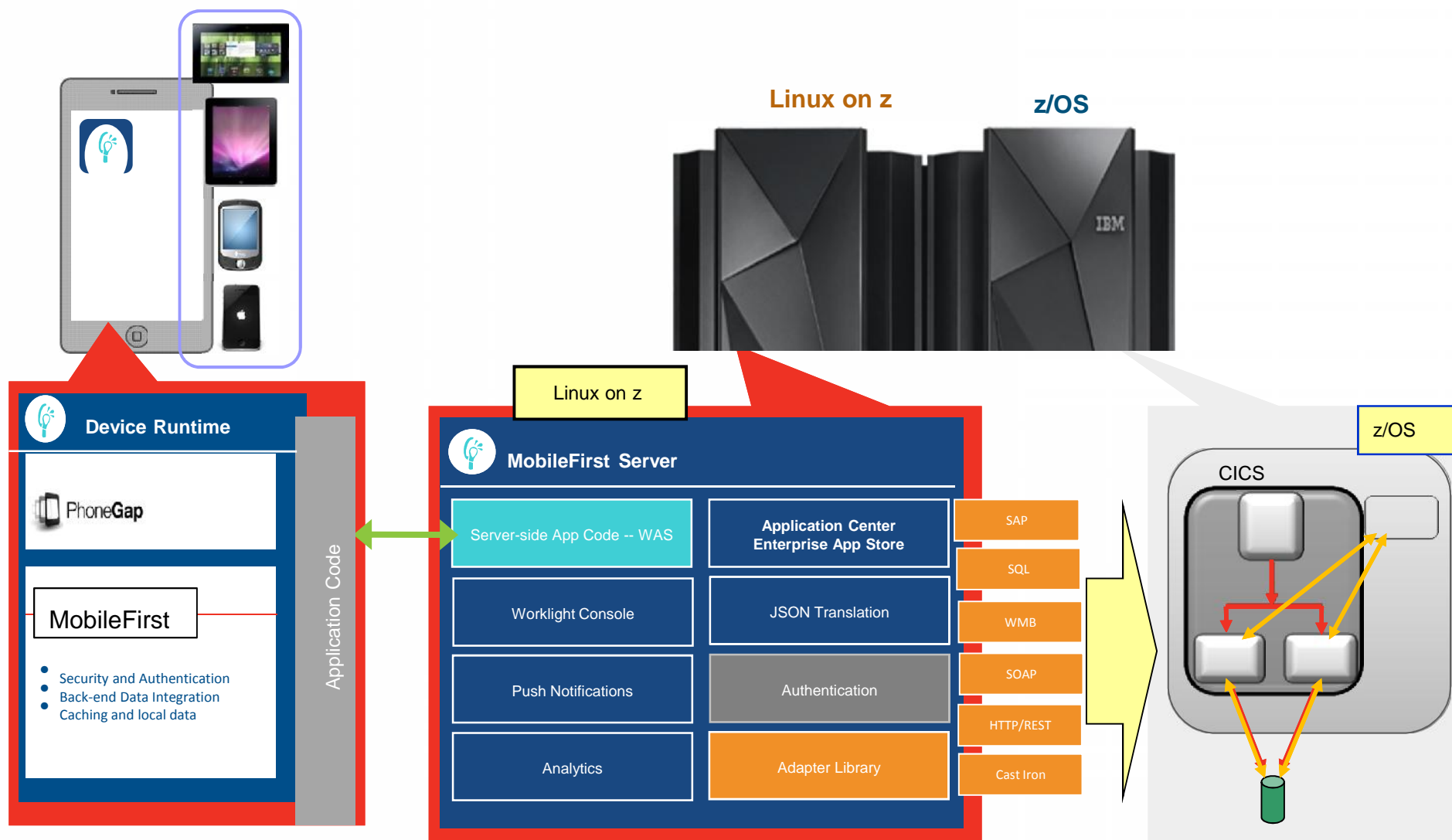


- **Label - Value Pairs**
  - Label String Length (characters)
  - Value String Length (characters)
  - Number Length (characters)
- **Threat Protection**
  - Maximum nesting depth (levels)
  - Maximum document size (bytes)

Jumbo JSON Payload

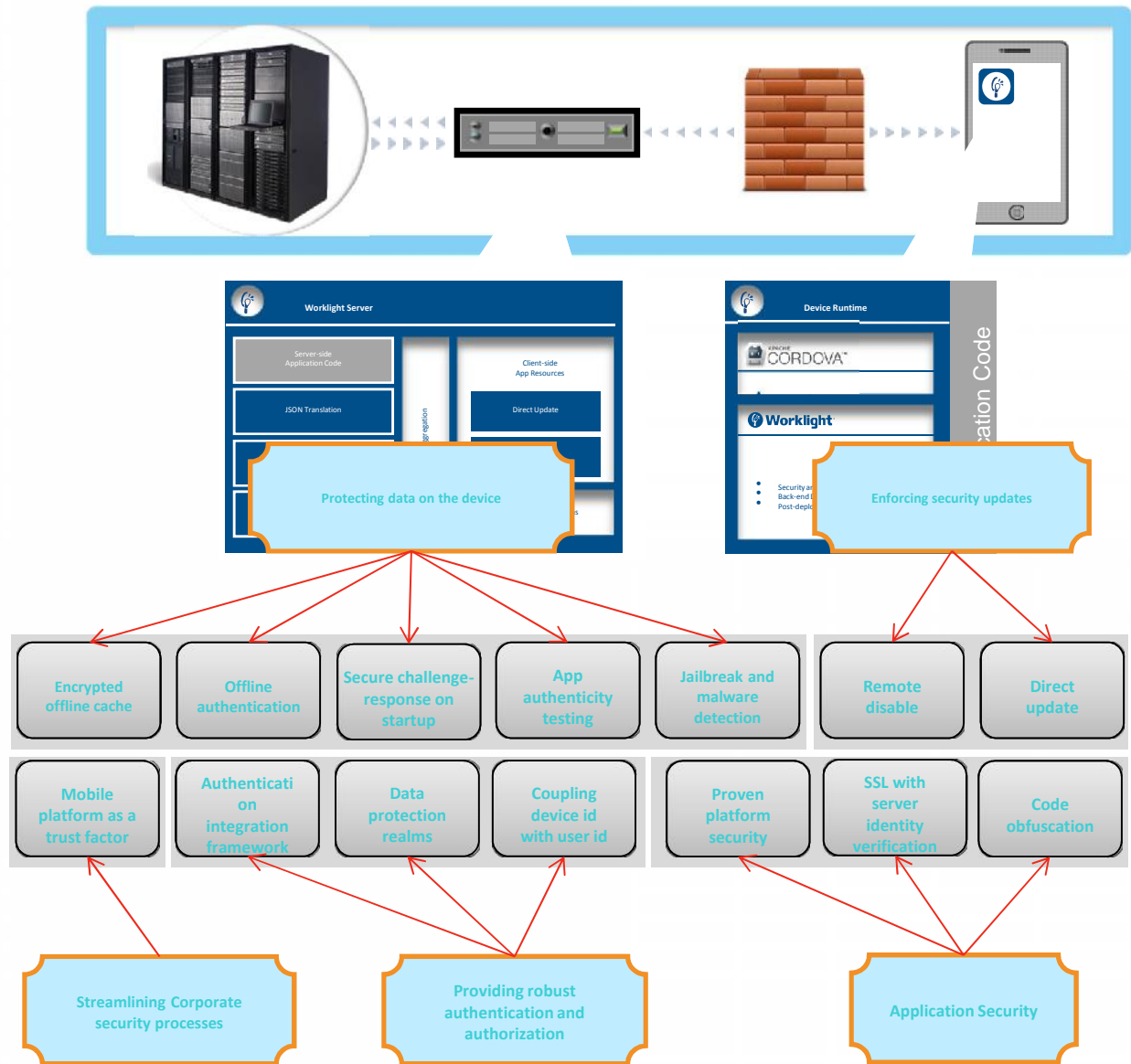


# IBM MobileFirst Platform Server on z Systems



# IBM MobileFirst Security Features

- Ensure that only specific applications on specific devices can connect to enterprise systems
- Extensible framework for authentication of mobile application users
- Encrypt data on the device
- Enforce security updates
- Propagate identity to enterprise systems



## Products and Technologies – a recap

Rational Team Concert (RTC)

Rational Developer for System z (RDz)

Rational Development and Test Environment for Systems z (RD&T)

IMS Explorer for Development

IMS Enterprise Suite SOAP Gateway

CICS Explorer

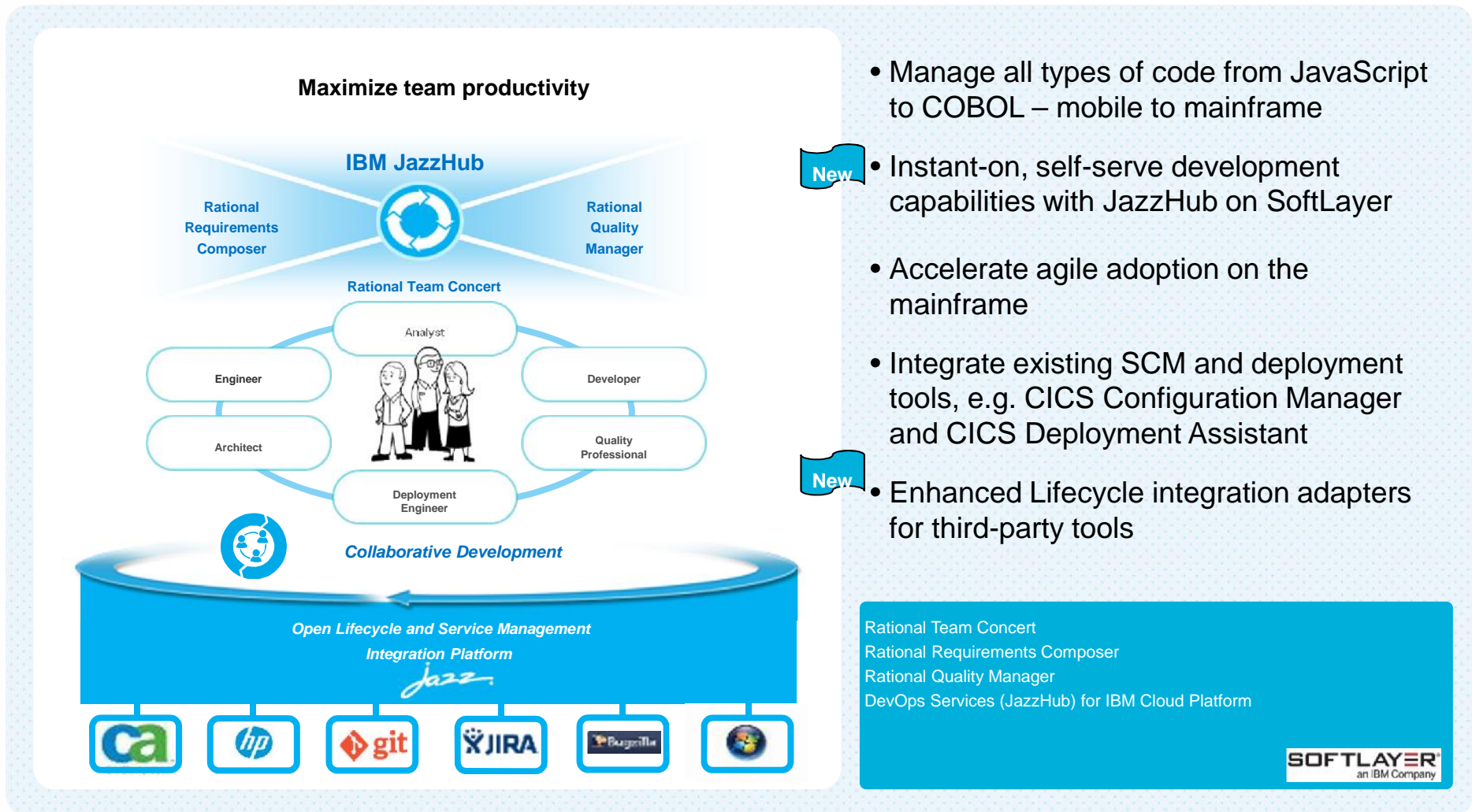
z/OS Debug Tool

IBM MobileFirst platform

DataPower

API Management

## Break down silos by moving to an Agile team environment



## Adoption of RRC and RTC for CICS

- RRC (Rational Requirements Composer) used for
  - Roadmaps and Features
  - CICS Portfolio View
  - External view of requirements and business value
- RTC (Rational Team Concert) used for
  - EPICs and Stories
  - Tasks and Defects
  - SCM and build
  - And **much** more
  - *“If it’s not in RTC, it’s not happening”*
- RTC Dashboards can show
  - Candidates for this and future iterations
  - Planned items for iteration
  - Tasks for the team
  - Defects for developer to fix, for tester to verify
  - Burndown charts
  - Creating marketing collateral and events

## What was the net outcome?

- Stronger uptake of CICS TS V4 in comparison with CICS TS V3
- APAR and PMR receipts of V4 lower than V3 in the first 18 months
- Started Managed Beta V4 activities with customers 18 months prior to GA, in V3 and prior releases the beta started 4 months to GA
- Open Beta released 6 months prior to GA
- Delivery of multiple Feature Packs during the development phases
- Ability to respond to market, changing planned content based on business value and market feedback - delivering the right content for the market place at the right time

## Thank you



Tweet me comments and questions

**@BrightSituation**

More from me...

<http://asmarterplanet.com/mobile-enterprise/blog/2014/12/six-things-ibm-mobilefirst-platform-server.html>

- The need for a mobile middleware tier

For more Mobile...

<http://www-01.ibm.com/support/docview.wss?uid=swg24031760> - GENAPP

<http://www.redbooks.ibm.com/abstracts/sg248215.html?Open> - System z in a mobile world

<http://www.redbooks.ibm.com/abstracts/sg248161.html?Open> - CICS JSON Web Services Redbook



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# Thank You

