

1 Billion Smartphones a Year and Counting

Dr Chris Poole

chrispoole@uk.ibm.com

@chrispoole

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Agenda

- It's a Mobile world!
- CICS mobile enablement options
- z/OS Connect and CICS: an evolution
 - Compare and contrast
- CICS TS and IBM MobileFirst Foundation
- Setup and demo of z/OS Connect in CICS

It's a Mobile world

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THERE ARE CURRENTLY MORE THAN
1.038 BILLION
 SMARTPHONES IN USE



that's 1 out of every 6.7 people on the planet.

MOBILE USERS ARE
FIVE TIMES MORE
LIKELY TO
ABANDON THE TASK
 IF THE SITE ISN'T OPTIMIZED
 FOR MOBILE.

79%
WILL SEARCH
FOR ANOTHER SITE TO
COMPLETE THE TASK.

MEDIA TABLET SALES

in 2012
118.9
 MILLION

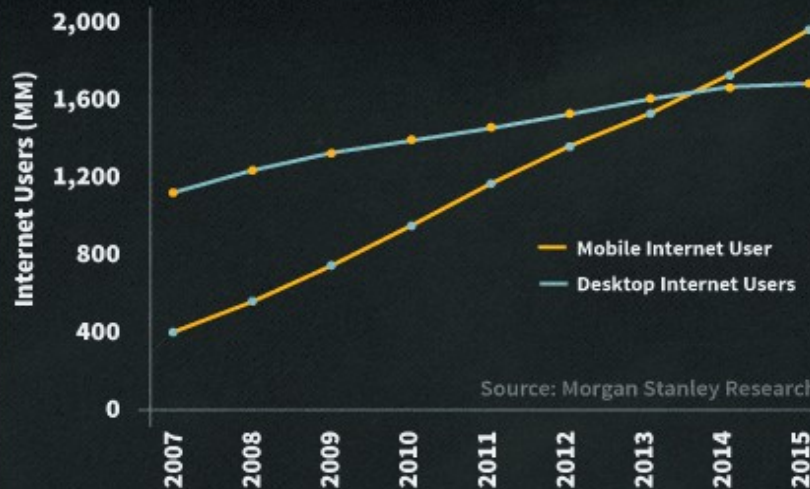
by 2016
369.2
 MILLION
 tablets we will be sold

IN THE LAST 16 YEARS
 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14

1 BILLION
 SMARTPHONES SOLD

THE NEXT
 ONE BILLION
 WILL BE SOLD
 IN JUST THE
 NEXT 2 YEARS

GLOBAL MOBILE VS. DESKTOP INTERNET USER PROJECTION, 2007 - 2015

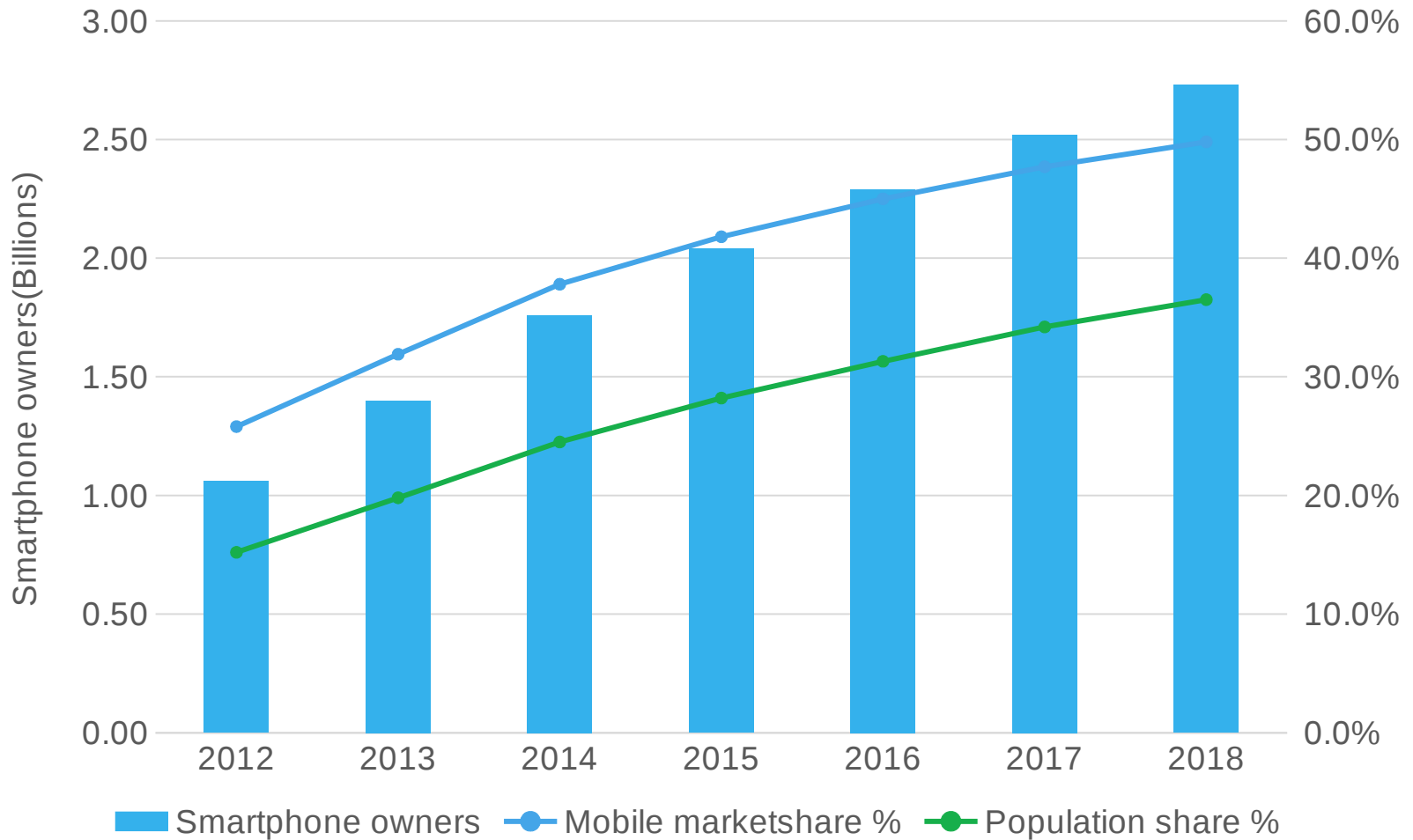


Google estimates by 2013
MORE PEOPLE WILL USE
MOBILE PHONES THAN
DESKTOP PCS TO GO ONLINE.



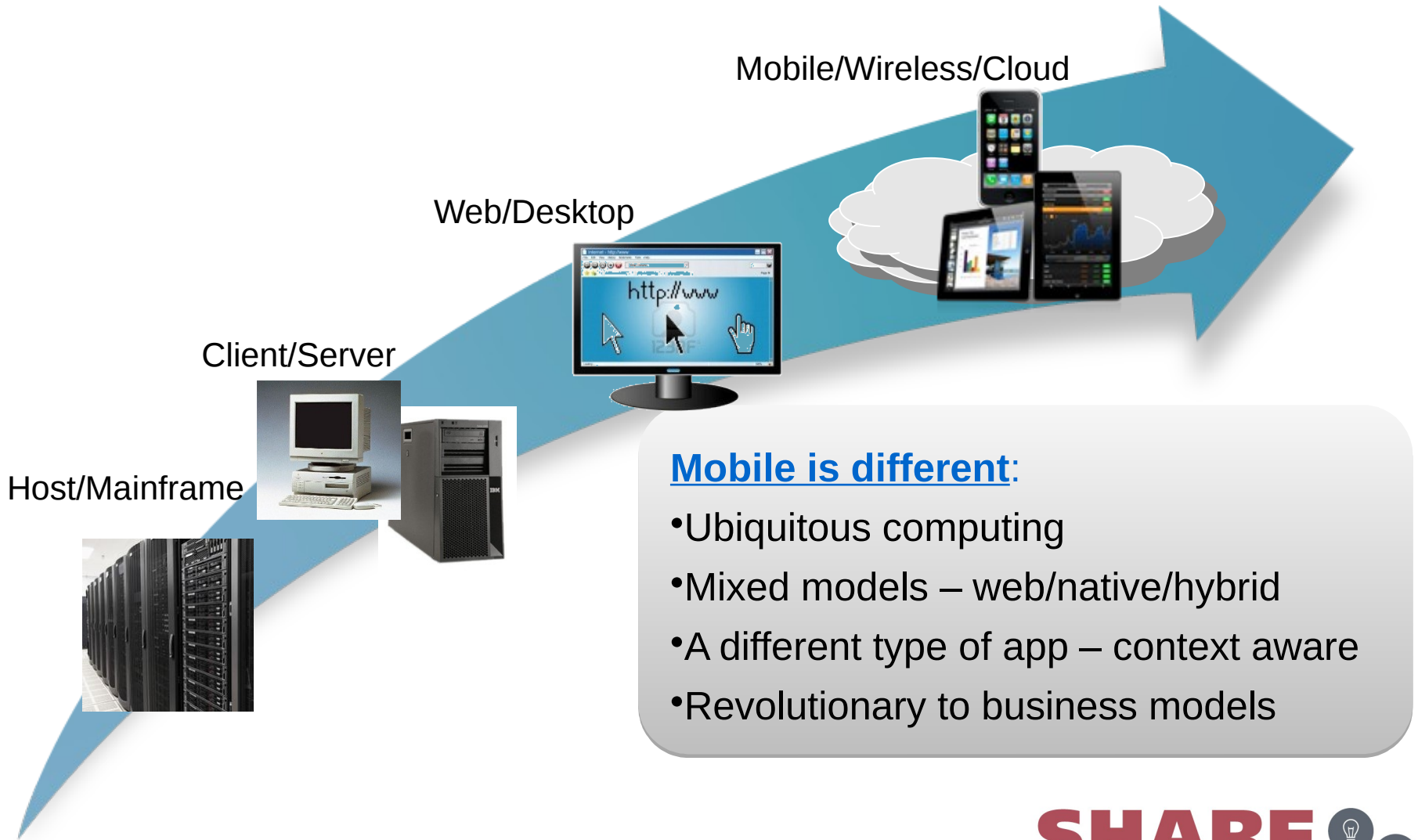
>50% Smartphone adoption in 9 countries now

WW Smartphone adoption 2012-18



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Mobile: Another stage in computing history



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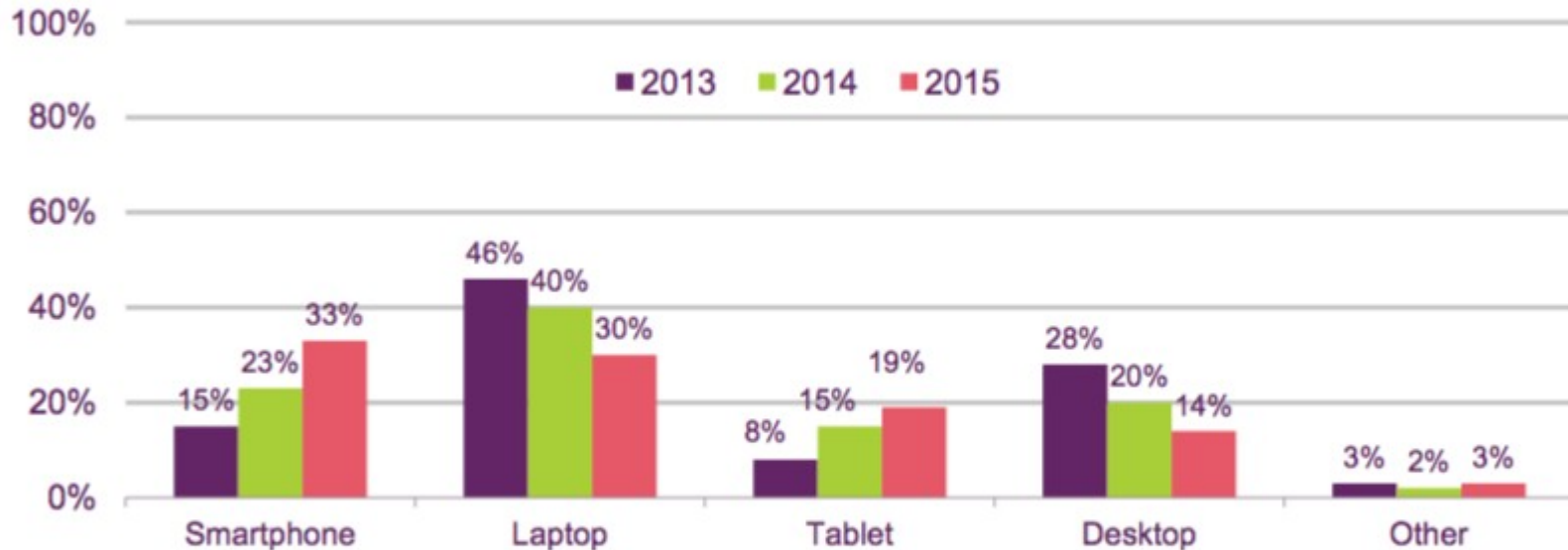


"Flipkart would move to an app-only format within a year"

Post-PC Era

Figure 1.9 Most important device for connecting to the internet: 2013-2015

Proportion of internet users (%)



Source: Ofcom Technology Tracker, Data from Q1

Base: All adults aged 16+ who use the internet at home or elsewhere

QE11(QE40): Which is the most important device you use to connect to the internet, at home or elsewhere? 'Other' includes: 'netbook', 'games console', 'other device', 'none' and 'don't know'.

Ranked by 2015

<https://twitter.com/BenedictEvans/status/629157862732738564>

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MAKE THE EXTRAORDINARY
POSSIBLE
IBM Mainframe50

Even though the world is awash in unstructured data, it's the **transactional data** that decision makers are focused on right now. And since the mainframe holds the vast majority of that data, **it has a real role to play.**

80%

of world's corporate data resides or originates on mainframes



CICS mobile enablement options: *The story so far*

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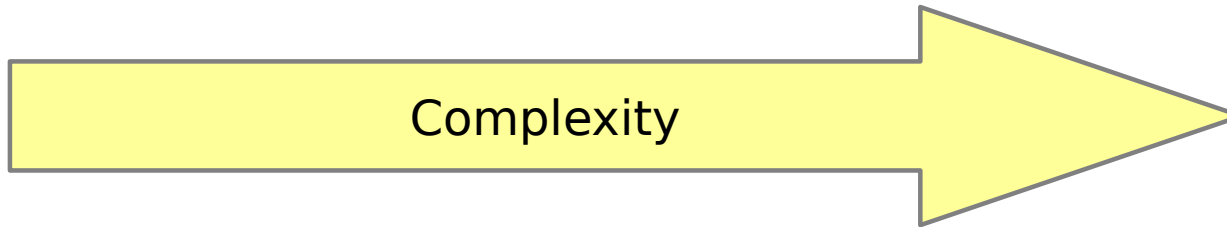
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CICS mobile enablement – solution complexity

The level of “friction” between SoE & SoR data models determine the complexity of the enablement solution

“Zero-code” solution



Bespoke integration

WSBind-based solutions

- Based upon tooling not coding
- Creates re-usable assets
- Ideal for top-down / bottom up
- Simple to use with fast ROI
- Less flexible in terms of data transformation options

Custom adapter / RESTful web app

- Based upon bespoke integration code
- Can always integrate between independent SoE and SOR worlds
- Code must be written *somewhere* e.g.
 - JAX-RS application in WAS or CICS Liberty profile

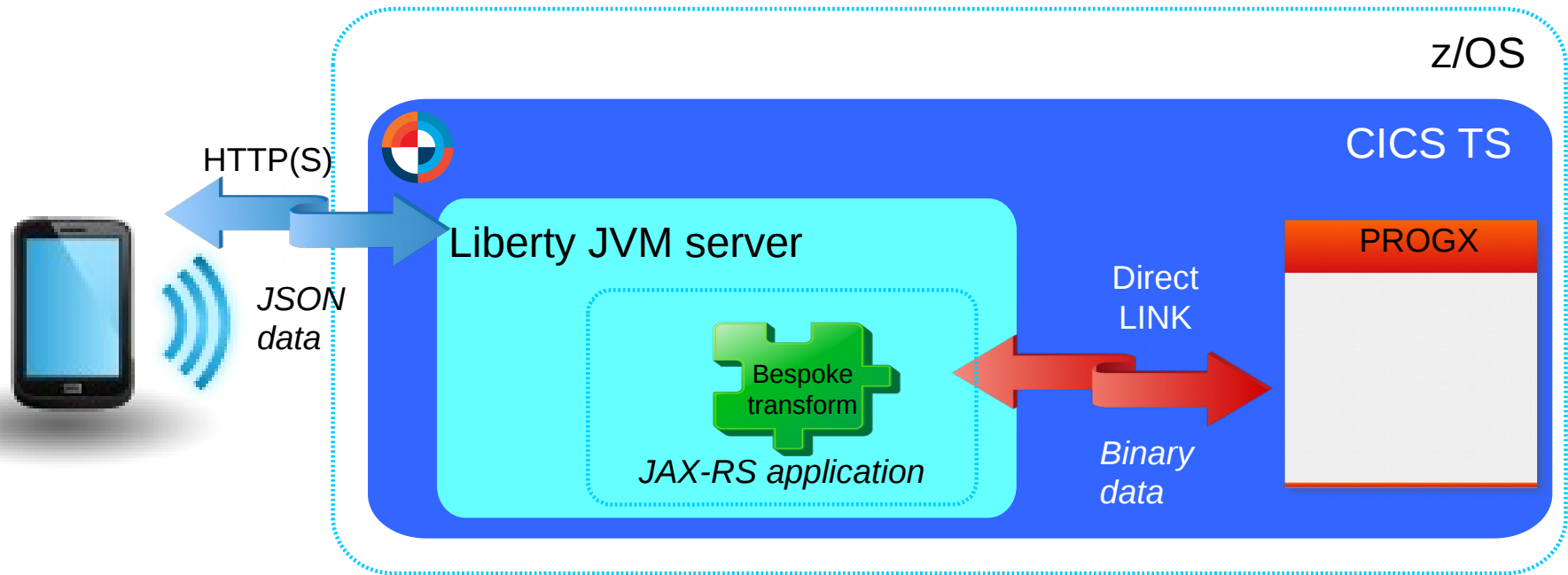
Composite solutions might also use MobileFirst adapters, or CICS-COBOL wrapper with any of the above

Simplicity vs Flexibility

Topology #1: CICS Liberty JAX-RS

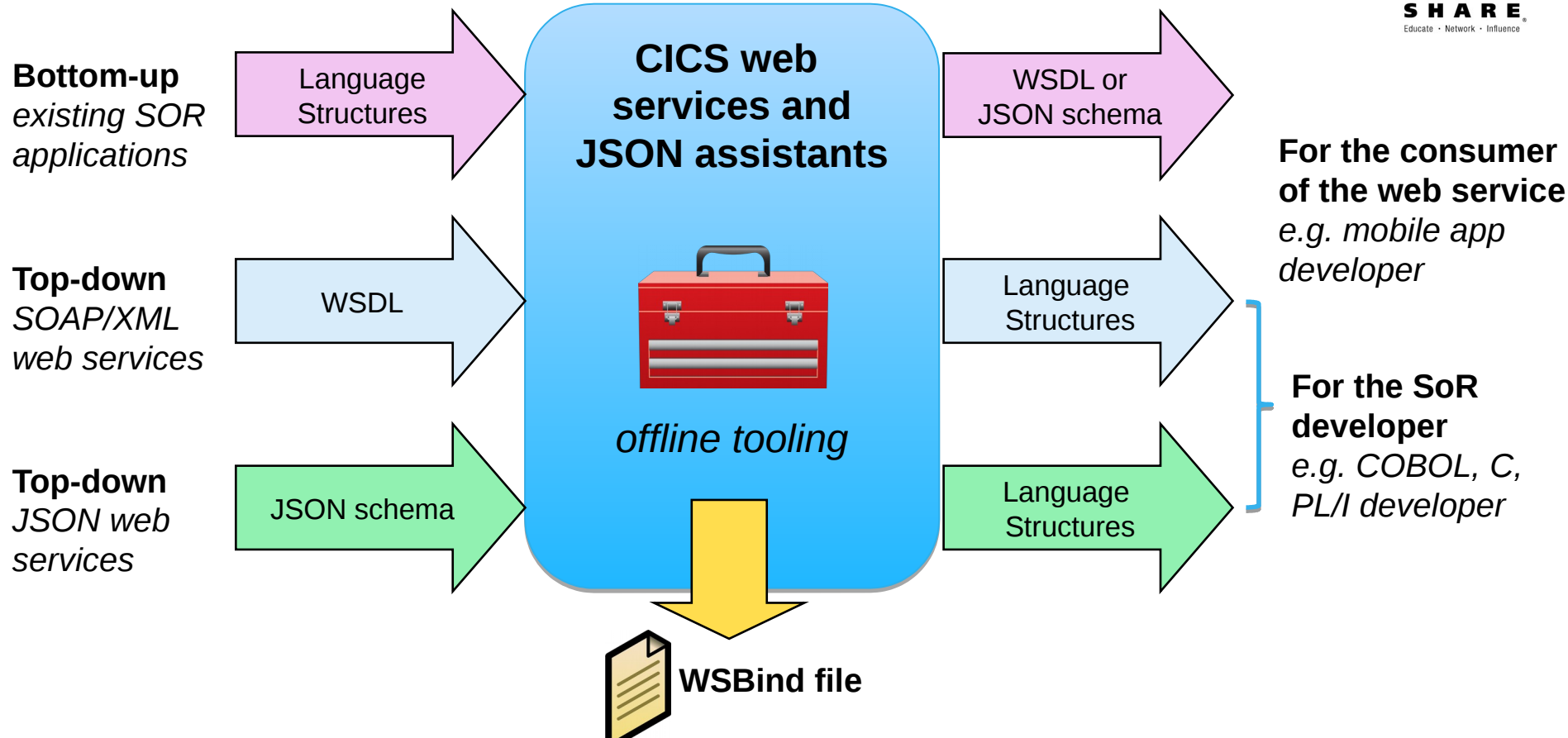


- **Web Service provider:** CICS Liberty
- **Data transform:** Bespoke/custom user code
- **CICS integration:** Direct LINK
- **Base release:** CICS TS V5.1



Bespoke transformation e.g. JZOS classes for Data Access

What are WSBind files and the assistants?



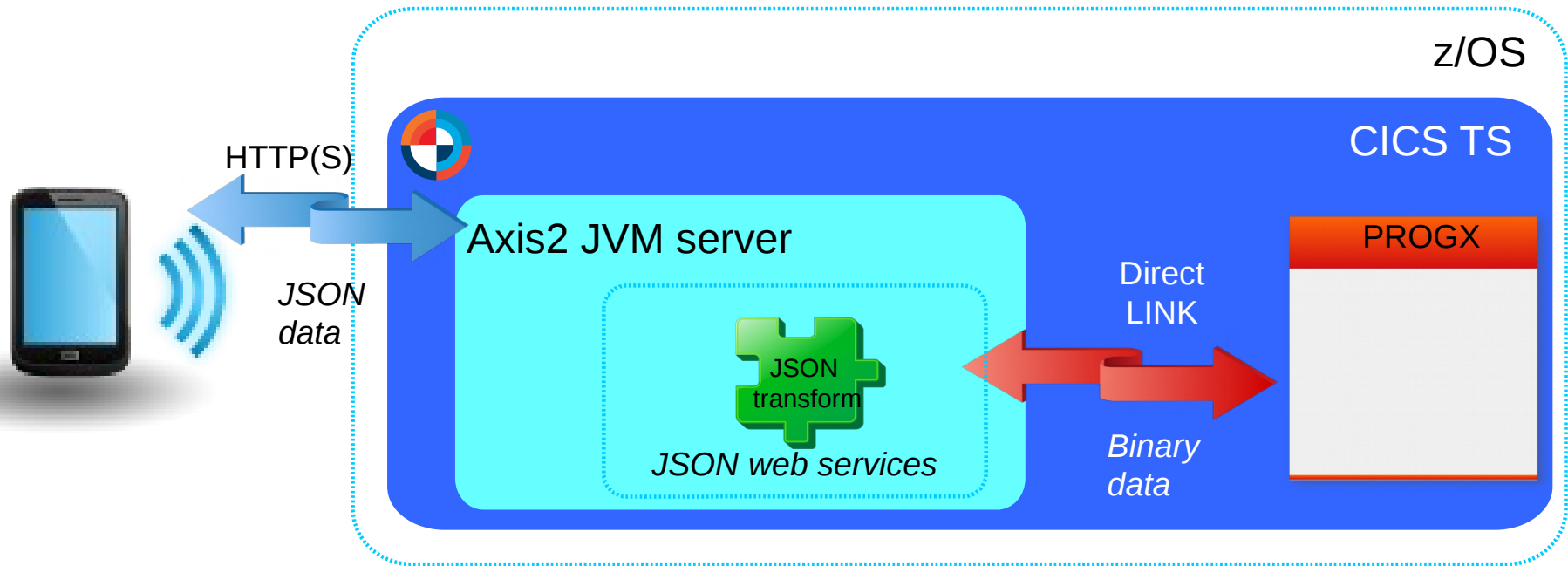
- Generated by off-line tooling e.g. DFHLS2JS
- Stored on zFS
- Maps data between a **web service** and an SOR **language structure** representation at run time
 - e.g. JSON schema to COBOL copybook

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Topology #2: CICS TS JSON web services



- **Web Service provider:** CICS JSON web services
- **Data transform:** WSBind files
- **CICS integration:** Direct LINK
- **Base release:** CICS TS V5.2

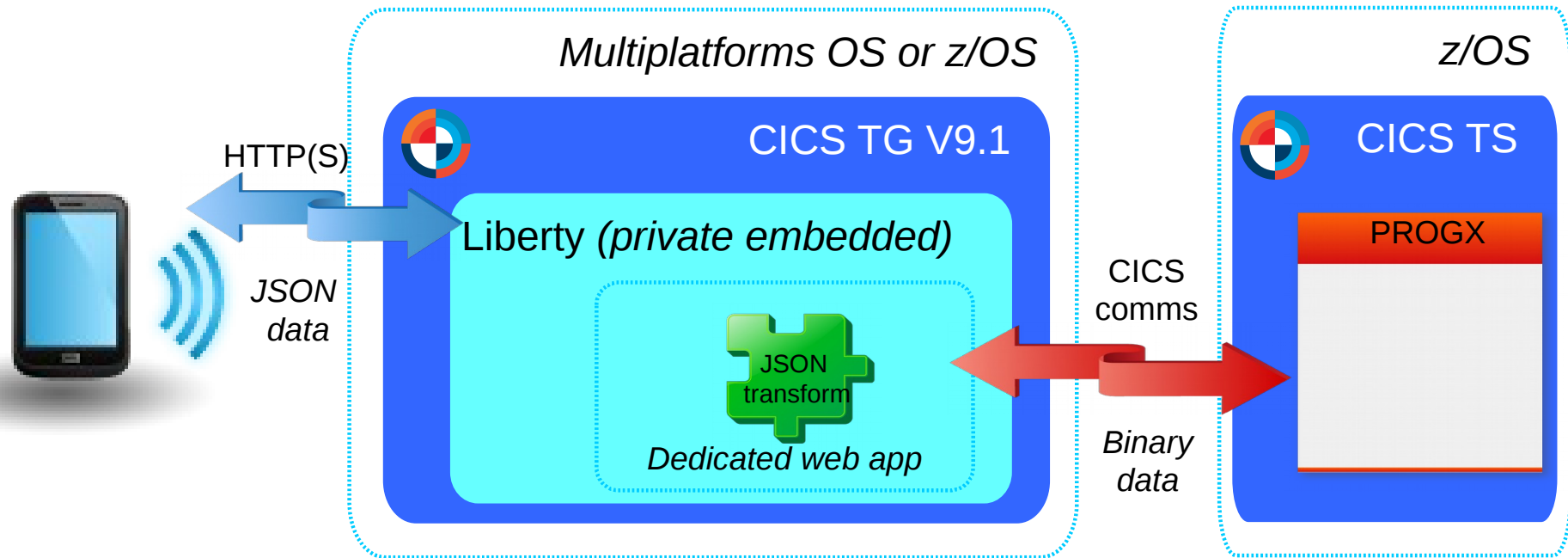


a.k.a. "CICS TS Feature Pack for Mobile Extensions" (V4.2, V5.1)

Topology #3: CICS TG JSON web services



- **Web Service provider:** Liberty (embedded)
- **Data transform:** WSBind files
- **CICS integration:** Standard CICS communications
 - *enables z/VSE, TXSeries and "i" integration*
- **Base release:** CICS TG V9.1



What is z/OS Connect?

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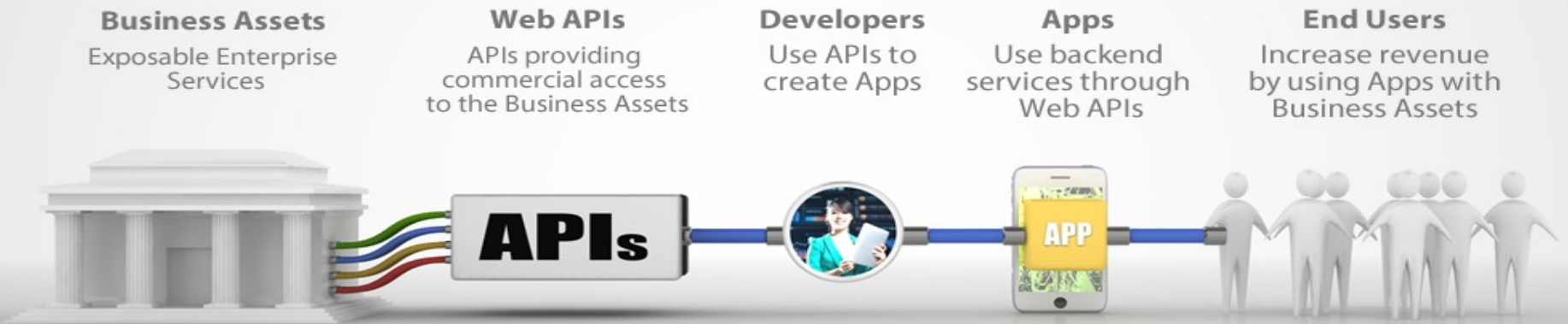


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API/Web Economy Lifecycle

API Economy Lifecycle

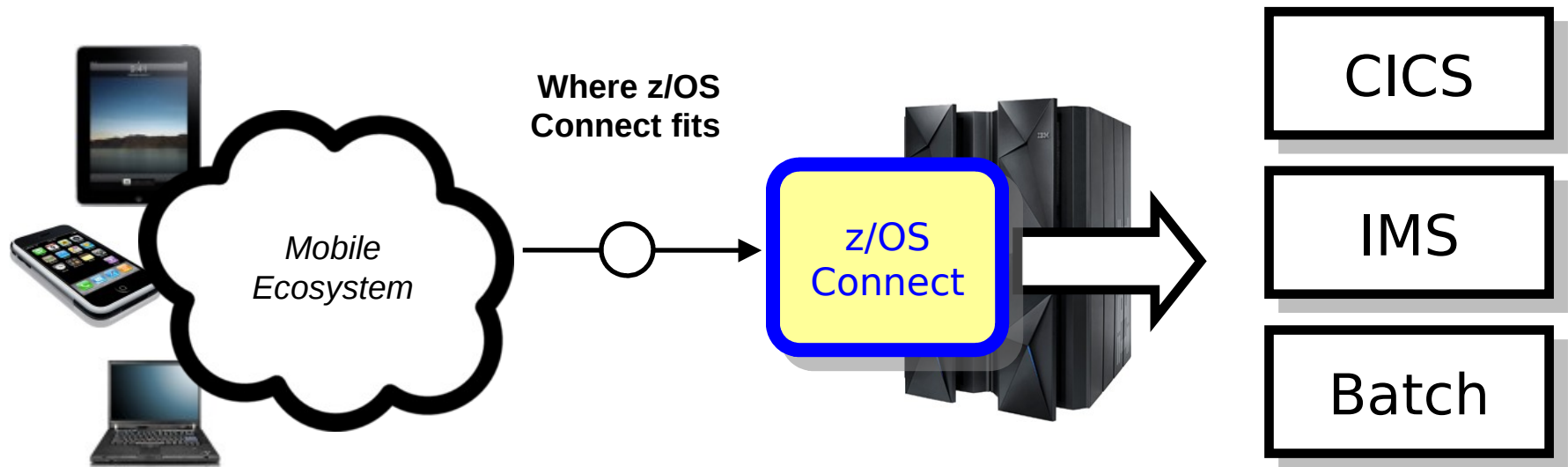


The API Economy

Where companies [providers] expose their (internal) digital business assets or services in the form of (Web) APIs to third parties [consumers] with the goal of unlocking additional business value through the creation of new assets

z/OS Connect – What is it?

It's about getting REST and JSON into your mainframe environment in a way that enables you to best take advantage of the assets that exist there:



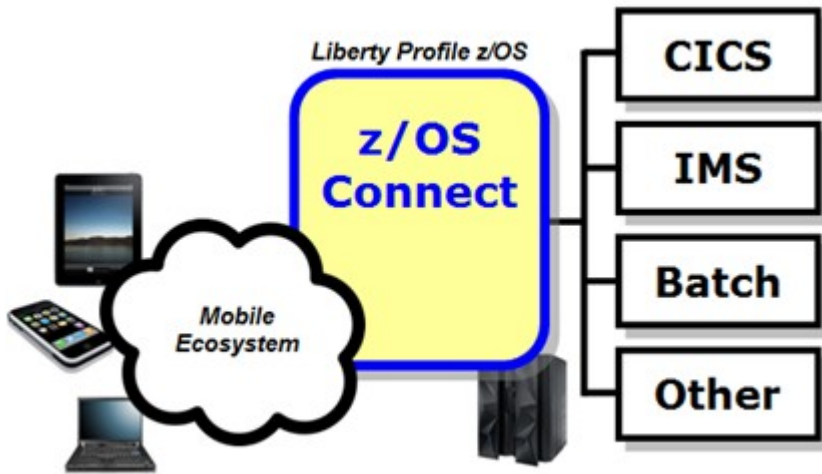
REST – Representational State Transfer ... the use of HTTP URLs that map to a 'service', such as 'query account' or 'update data'

JSON – JavaScript Object Notation ... a standard of representing data as a set of name/value pairs. This is passed back and forth along with REST request/responses

- Liberty Profile Server
- Function IBM wrote to run in Liberty Profile
- No charge function provided with license entitlement for WAS z/OS, CICS or IMS customers

Why z/OS Connect?

This represents another component to configure and maintain in your environment. So what value does it bring?



You *could* enable Mobile access without z/OS Connect
z/OS Connect simplifies and makes the environment more consistent and manageable

- Provides a common and consistent entry point for mobile access to one or many backend systems
- Java, so runs on speciality engines
- Shields backend systems from requiring awareness of RESTful URIs and JSON data formatting
- Provides point for authorization of user to invoke backend service
- Provides point for capturing usage information using SMF
- Simplifies front-end functions by allowing them to pass RESTful and JSON rather than be aware of or involved in data transformation

Different Delivery Approaches

WAS z/OS

Delivered as function that runs inside Liberty Profile z/OS. Initially will use WOLA (WebSphere Optimized Local Adapters) to access backend.

CICS

Delivered as part of Liberty Profile that runs inside of CICS region with a JCICS local LINK, and CICS TG using standard CICS ISC connections.

IMS

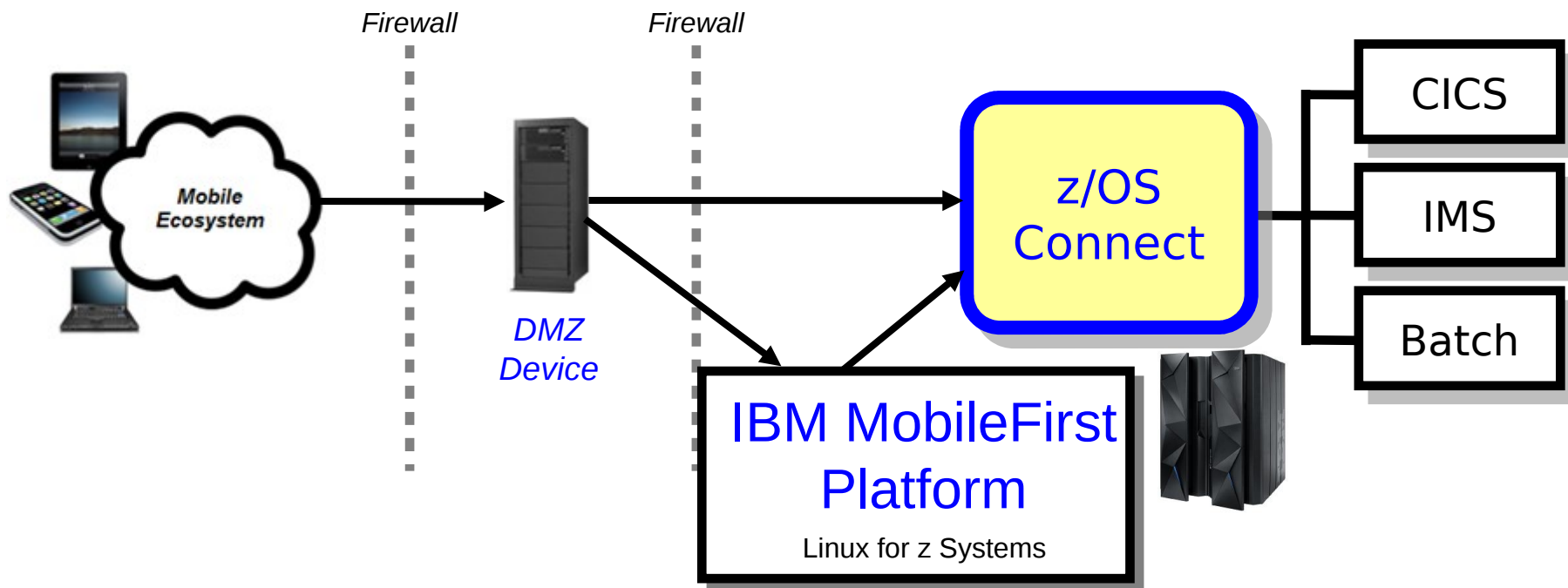
Liberty Profile with z/OS Connect inside. IMS z/OS Connect uses JCA* to talk to IMS Connect to get access into IMS.

These different delivery mechanisms tend to obscure the main story of what it is and how it works, so for now let's stipulate IBM offers several ways to get this and now focus on some details

* A supplied IMS JCA resource adapter, as opposed to the local adapter support

Context within Mobile Architecture

The message here is that z/OS Connect is a *piece* of the Mobile architecture, but in most cases will not be the only component:

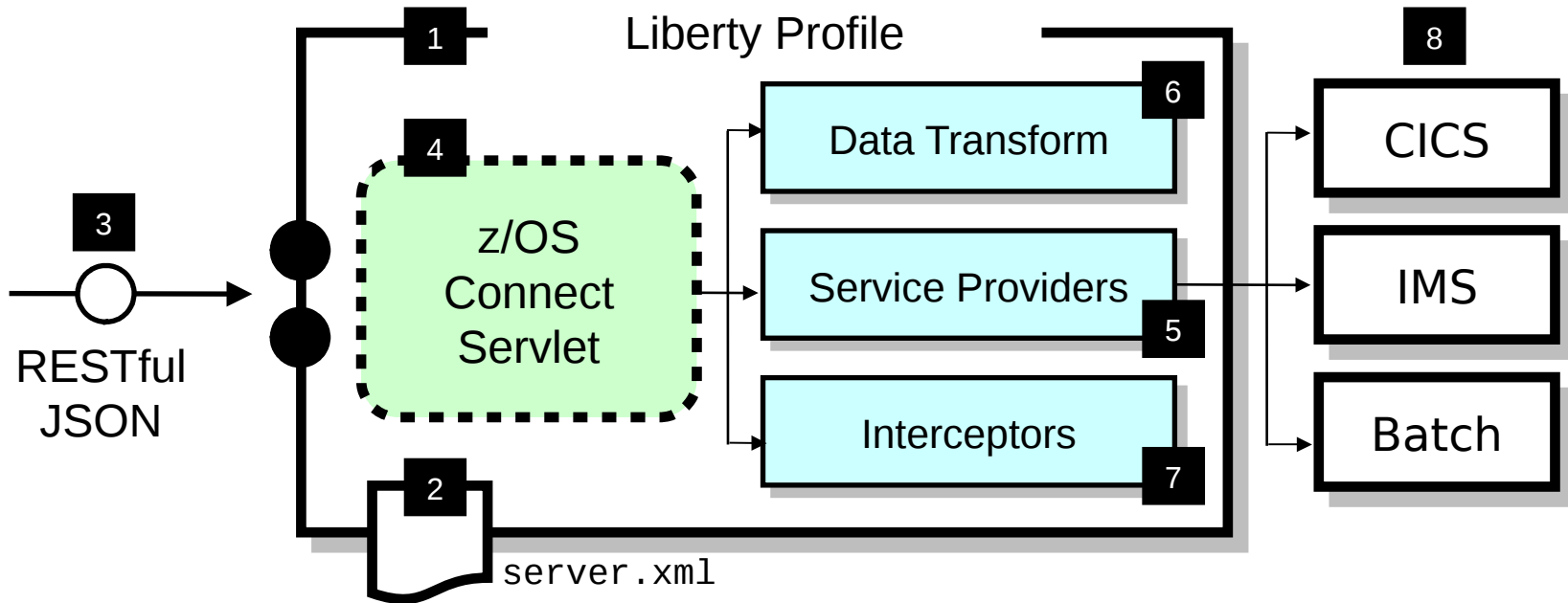


Users of z/OS Connect would access through normal corporate firewall infrastructure

IBM MobileFirst Platform to provide application management, security and operational governance for mobile applications

z/OS Connect would be behind the secure firewall, and on LPARs along with backend systems

z/OS Connect anatomy



1 z/OS Connect is software function that runs in a Liberty Profile

2 z/OS Connect is described and configured in the Liberty server.xml file

3 z/OS Connect is designed to accept RESTful URIs with JSON data payloads

4 One part of z/OS Connect is a servlet that runs in Liberty Profile

5 A 'Service Provider' is software that provides the connectivity to the backend system

6 z/OS Connect provides the ability to transform JSON to the layout required by backend

7 'Interceptors' are callout points where software can be invoked to do things such as SAF authorization and SMF activity recording

8 Initially the backend systems supported will be CICS, IMS and Batch

z/OS Connect and CICS

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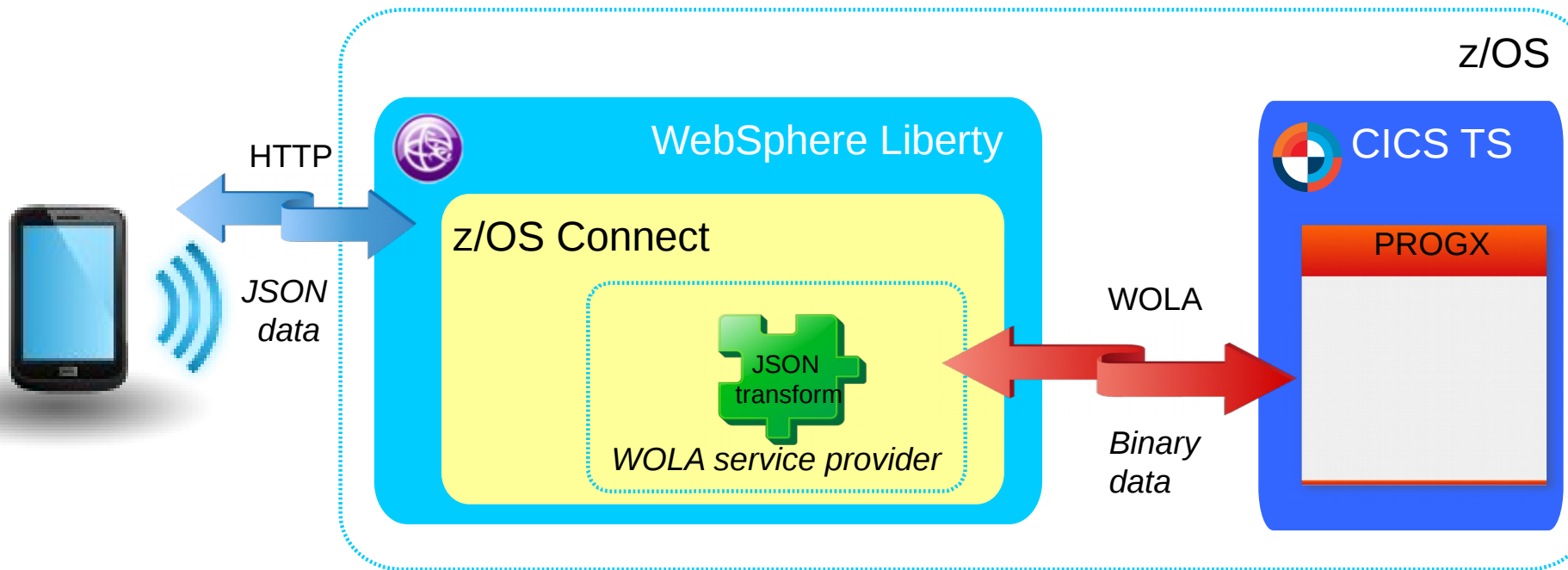
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Topology #4: WAS z/OS Connect



- **Web Service provider:** WebSphere Liberty on z/OS
- **Data transform:** WSBind files
- **CICS integration:** WebSphere Optimized Local Adapter (WOLA)



IBM CICS Transaction Server V5.3 open beta



enterprise grade mixed language application serving



Service Agility

Enhanced support for Java and the WebSphere Liberty profile

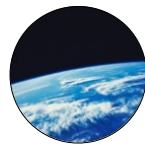
- Additional Liberty features
- Enhanced interoperability
- Simplified management
- Enhanced Java SE support



Operational Efficiency

Performance optimizations, enhanced metrics and additional security

- Web service optimizations
- Performance improvements
- Enhanced metrics
- Additional security options



Cloud with DevOps

New cloud and DevOps support to automate CICS deployments

- Automated builds
- Scripted deployments
- UrbanCode Deploy support
- Enhanced cloud enablement

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CICS TS V5.3 open beta : Service Agility

Enhanced support for Java and the WebSphere Liberty profile

Additional Liberty profile features

Enhanced interoperability

Simplified management

Enhanced Java SE support

The CICS TS V5.3 open beta offering also includes a technology preview of the ability for Java programs in a Liberty profile JVM server and non-Java programs to call each other using standard CICS API calls. This technology preview enables:

- Java applications to use the standard JEE Connector Architecture (JCA) to invoke CICS programs in any supported language.
- Non-Java CICS programs to issue an EXEC CICS LINK to call a Java application running in a Liberty profile JVM server.

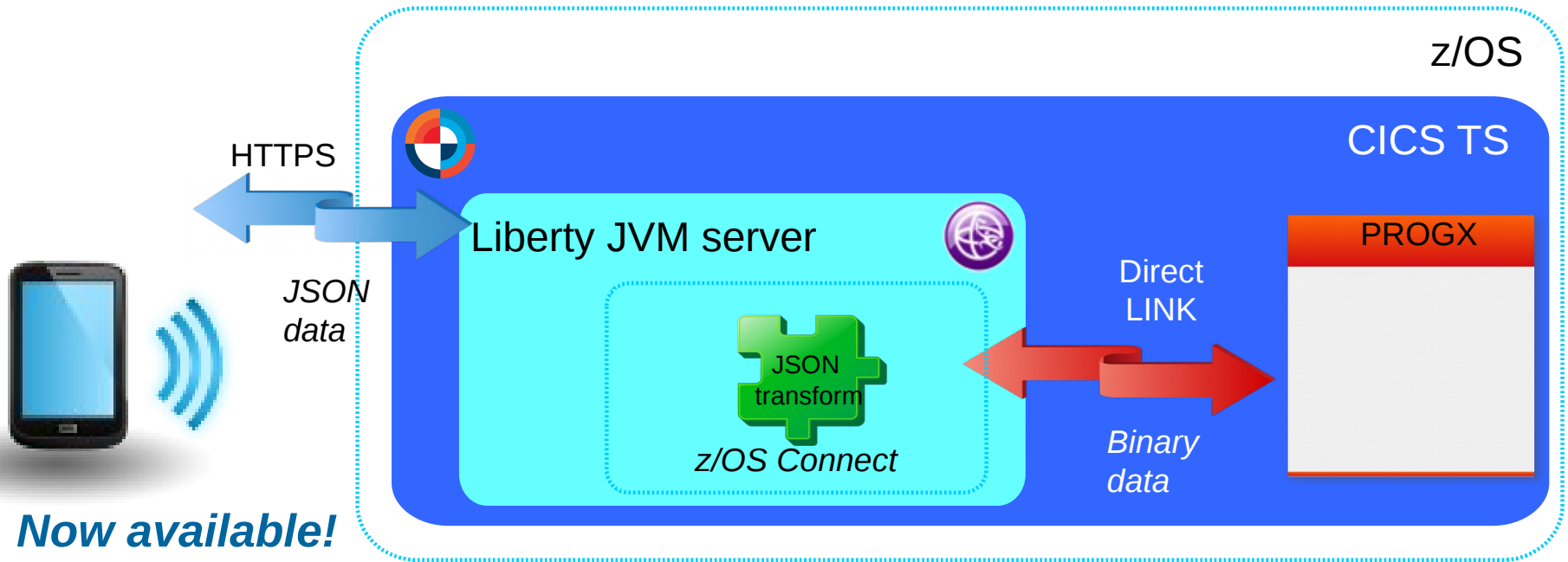
Additionally, the **Liberty z/OS Connect** feature is now supported by the CICS TS V5.3 open beta offering*. This provides RESTful APIs and accepts JavaScript Object Notation (JSON) payloads between CICS, mobile devices, and cloud environments.

* Also available in CICS TS V5.2 via APAR PI25503.

Topology #5: CICS TS z/OS Connect



- **Web Service provider:** CICS TS z/OS Connect (embedded)
- **Data transform:** WSBind files
- **CICS integration:** Direct LINK



Now available!

- **CICS TS V5.3 open beta** includes embedded z/OS Connect
– *Also available in CICS TS V5.2 via APAR PI25503*

CICS mobile enablement – Product options

Product	Delivery vehicle	Characteristics
CICS TS for z/OS	CICS Mobile Feature pack <ul style="list-style-type: none"> • CICS TS V4.2, V5.1 JSON web services <ul style="list-style-type: none"> • CICS TS V5.2, or later 	<ul style="list-style-type: none"> ✓ Proximity to data ✓ Integrated with CICS admin ✓ Outbound invoke
	CICS z/OS Connect <ul style="list-style-type: none"> • CICS TS V5.2 PTF • CICS TS V5.3 open beta 	<ul style="list-style-type: none"> ✓ Proximity to data ✓ Service management + APIM integration
CICS TG products	JSON web services <ul style="list-style-type: none"> • CICS TG V9.1 • CICS TG V9.2 open beta 	<ul style="list-style-type: none"> ✓ CICS TS family + TXSeries ✓ Choice of platforms including cloud e.g. SoftLayer
WAS for z/OS	WebSphere Liberty z/OS Connect <ul style="list-style-type: none"> • WAS for z/OS V8.5.5.2 Liberty repository feature	<ul style="list-style-type: none"> ✓ Multiple z/OS subsystems <i>CICS, IMS, Batch</i> ✓ Service management + APIM integration

WAS for z/OS + CICS TS for z/OS both also offer JAX-RS through Liberty

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CICS mobile enablement – Product options



Product	Delivery vehicle	Characteristics
CICS TS	CICS Mobile Feature pack	✓ Proximity to data
<p>Each of these solutions share common code for <u>both</u> tooling and run time to transform data between JSON and binary representations.</p> <p>Data transformation for CICS programs is based around “WSBind” files. They represent the SOR data structure and enable the run-time transformation for JSON web services.</p>		
WAS for z/OS	WebSphere Liberty z/OS Liberty repository feature	Multiple z/OS subsystems CICS, IMS, Batch Service management + APIM integration

WAS for z/OS + CICS TS for z/OS both also offer JAX-RS through Liberty

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CICS TS and IBM MobileFirst Platform Foundation

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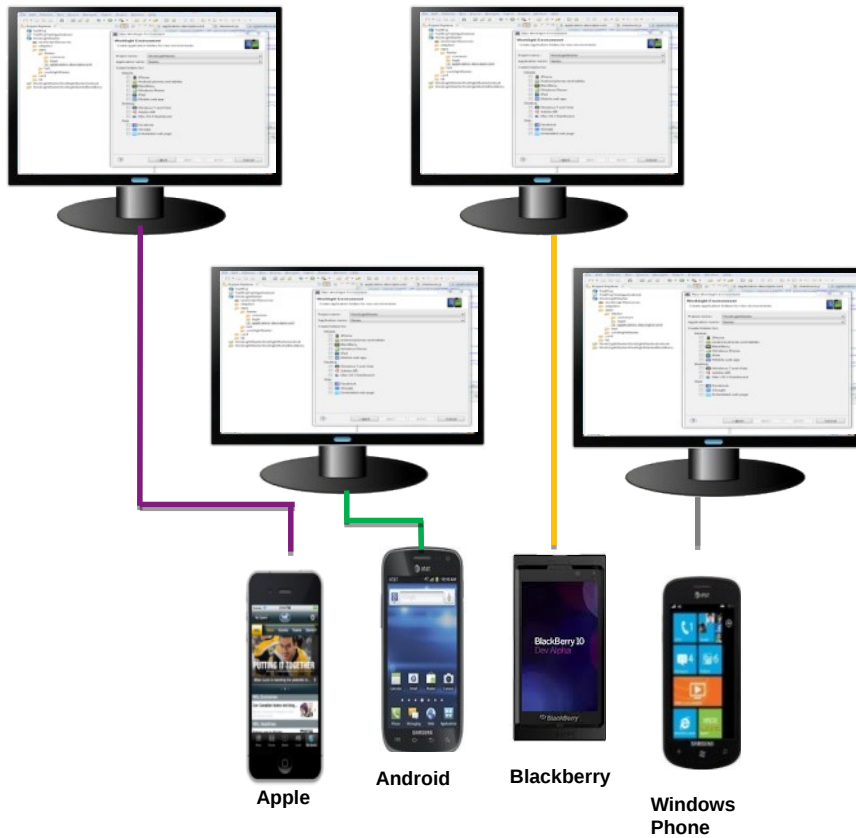
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Rapid multi-platform development using a single shared codebase

From the complexity of many...

- Multiple sets of tools & frameworks
- Four codebases to develop and maintain



To the simplicity of one

- One development environment
- One codebase to develop and maintain

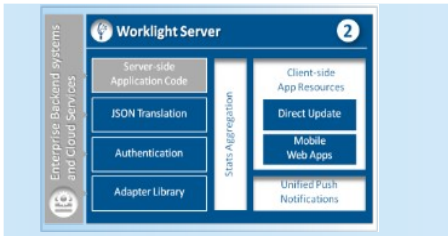


IBM MobileFirst Platform Foundation components



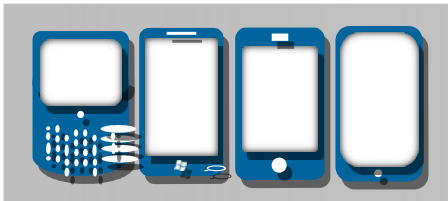
MobileFirst Studio

Leading tools for native and hybrid development that help maximize code reuse and accelerate development.



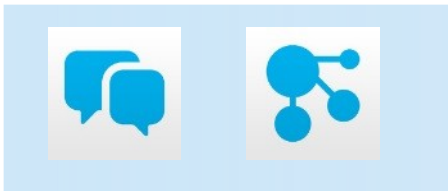
MobileFirst Server

Mobile-optimized middleware providing a gateway between applications, back-end systems and cloud-based services.



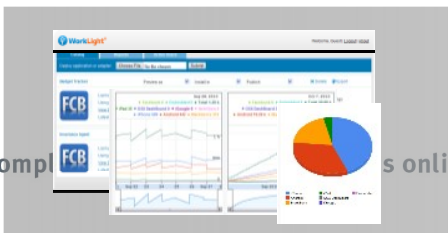
Client-side runtime components

Runtime client APIs designed to enhance security, governance and usability



Application Center

Set up an enterprise app store that manages the distribution of production-ready mobile apps

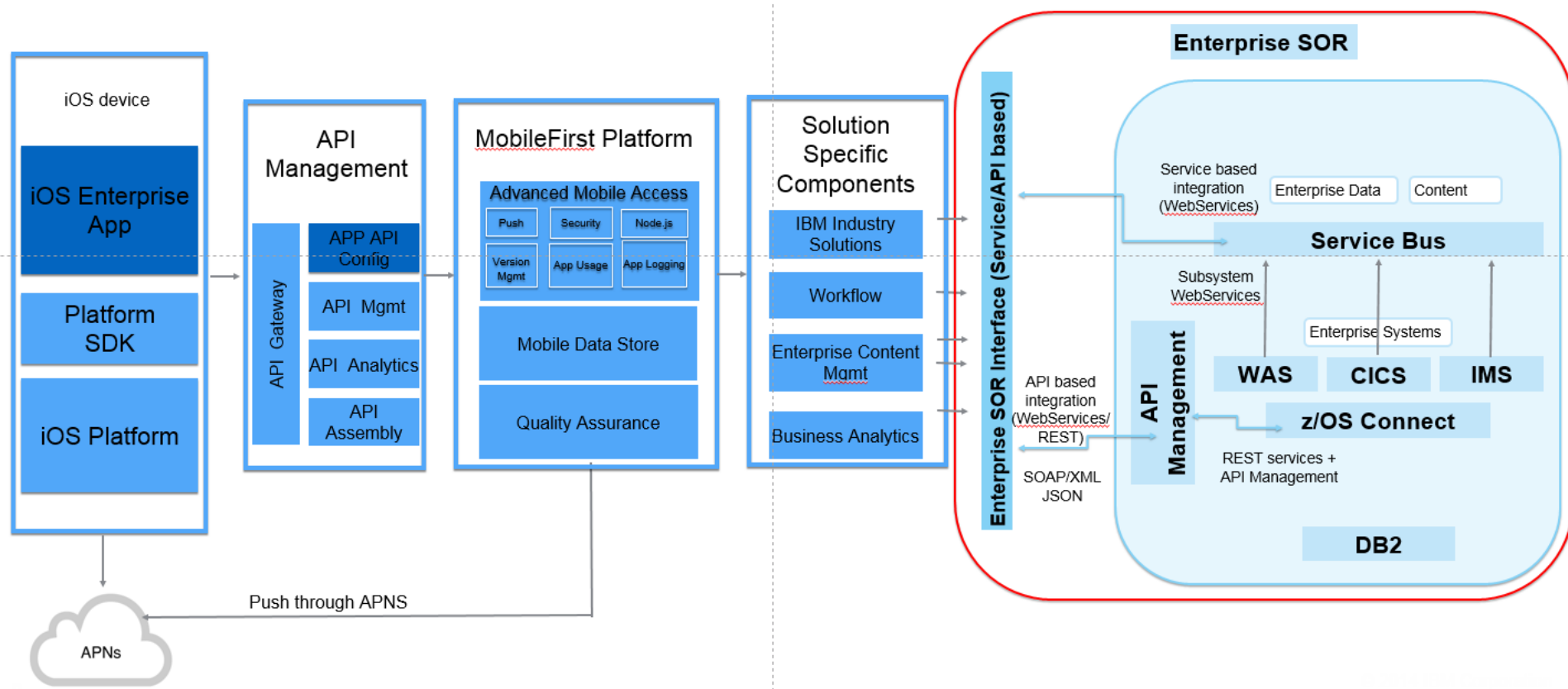


MobileFirst Operations Console

An admin GUI with real-time operational analytics for the server, adapters, applications and push services. Manage, monitor & instrument.



MobileFirst iOS Solution standard architecture z Systems detail



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Demo

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IBM Mobile Test Drive

- **Partner with IBM resources for a complimentary Mobile Test Drive:**
 - Select an entry point such as composing a **Bluemix mobile app** connected to a system of record, assessing the benefits of **Mobile Workload Pricing**, leveraging API enablement using **API Management or z/OS Connect**, building a **mobile front end for an existing 3270 app**, and others
- **Benefits:**
 - Work with IBM mobile specialists to **review existing mobile projects, priorities and requirements**
 - Leverage **best practices and subject matter expertise** for input into your enterprise mobile infrastructure strategy and enterprise mobile roadmap
 - Learn how others **accelerate time to value and differentiate their business with mobile projects** by integrating high value enterprise data and transactions
- **Who should be interested?**
 - Clients that are looking to **leverage existing z Systems data and applications via mobile channels** to drive more value from mobile initiatives
- **What is the commitment?**
 - **1-2 days Discovery** that IBM mobile experts facilitate with your business and technical team, followed by a **deeper Mobile Test Drive**, for **up to a two weeks engagement**
 - IBM will provide **complimentary** technical expertise and access to resources during the Mobile Drive engagement



Contact: Nathan Brice (nbrice@uk.ibm.com)

<http://ibm.biz/MobileTestDrive>

13/08/15

IBM Mobile Centers of Competency



- **IBM mobile & z Systems integration specialists help you shape your Mobile Enterprise strategy**
 - Mobile CoC's located at **5 IBM Client Centers** around the world
 - Leverage **experts in enterprise mobile solutions** to help you integrate mobile applications with existing systems and access data in your enterprise without compromising security or performance.
- **Offerings:**
 - **Executive briefings**
 - **Mobile on z workshops:** Systems of Record (SoR) in a mobile world
 - **Design workshops** for mobile enablement and SoR integration
 - **Demos and access to mobile technologies**, such as MobileFirst Platform on Linux on z Systems
 - **Benchmarks, proof of technology (POT) and proof of concept (PoC)**



ABK-Systeme GmbH
worked with the Boeblingen Client Center and is now developing mobile productivity apps for the financial services industry using IBM MobileFirst Foundation running on IBM z Systems, accelerating time-to-market and efficiency.

Beijing,
China

Boeblingen,
Germany

Montpellier,
France

Poughkeepsie,
NY, USA

Tokyo,
Japan

Contact: Erich Amrehn (AMREHN@de.ibm.com)

www.ibm.com/systems/services/clientcenters/mobile

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in Orlando **2015**

