IMS on IBM System z: Optimized for Mobile

IBM Information Management, System z – Keeping you mobile

August 12

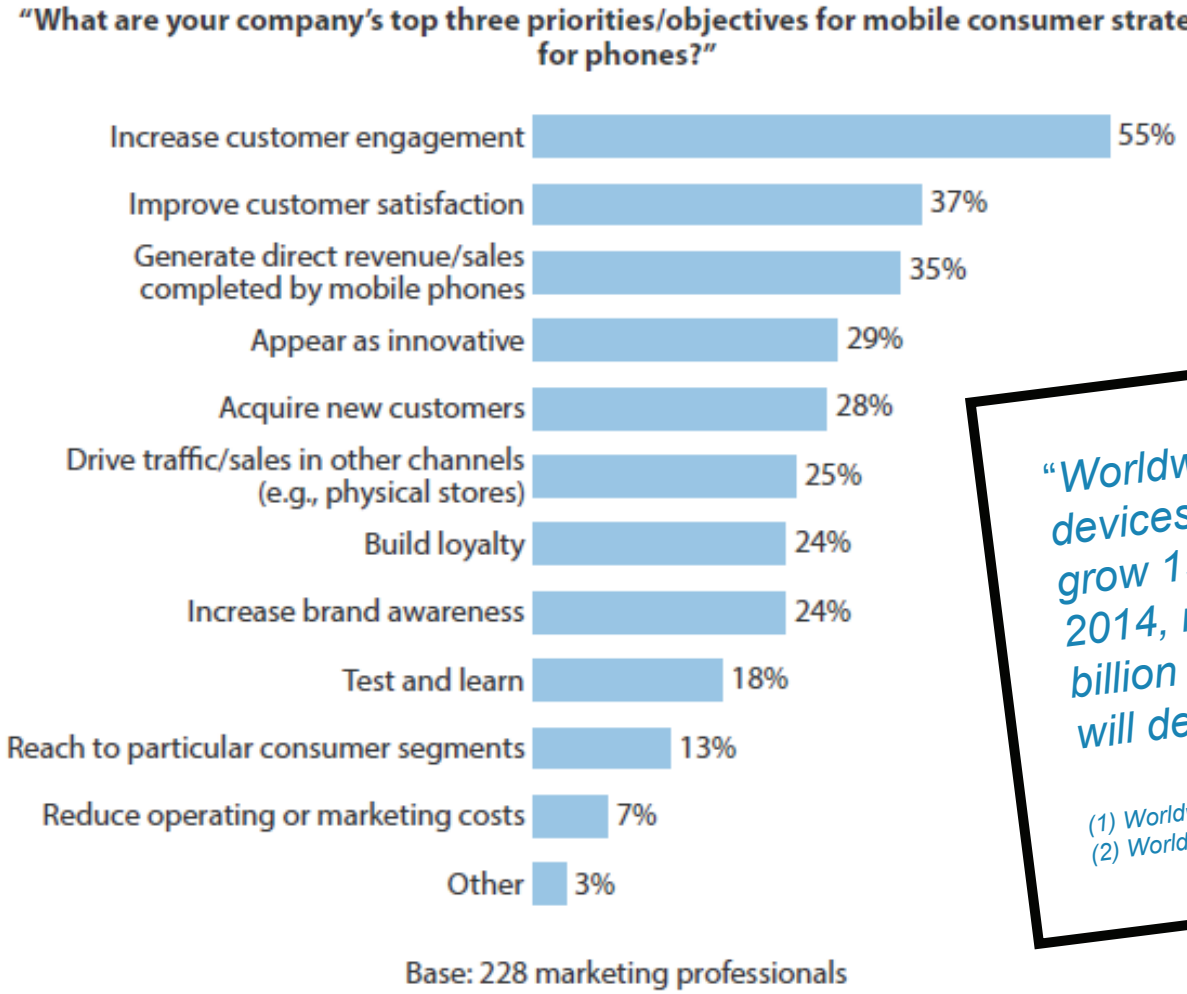
Mark Simmonds – IT Architect , Information management System z Product Marketing

Kyle Charlet – STSM, IMS Architect: SOA, cloud, mobile, analytics and modernization

Agenda

- **Mobile business drivers and challenges**
- IBM System z and IMS – the best platform for mobile apps and data
- Mobile development and secure access to your IMS data and transactions
- Summary and Call to Action

Companies top 3 priorities for mobile consumer strategy



"Worldwide smart connected devices (SCD) are forecast to grow 15.6% year over year in 2014, reaching close to 1.8 billion devices(1).... PC shipments will decline 1.7% to 74.4M(2) "

(1) Worldwide Quartely SCD Tracker – IDC, Jun 17 2014
(2) Worldwide Quartely PC Tracker – IDC, Jul 9 2014

Source: Q1 2013 Global Mobile Maturity Executive Online Survey

Source : "Make The Most Of Analytics To Meet Your Mobile Objectives", by Thomas Husson, Forrester Research Inc. September 9, 2013

Mobile changes the definition of the Data Center

91%

mobile users keep their device within arm's reach 100% of the time

75%

mobile shoppers take action after receiving a location based message

96%

year to year increase in mobile cyber Monday sales between 2012 and 2011

90%

users use multiple screens as channels come together to create integrated experiences

900%

increase of global machine-to-machine connections by 2022 (2 billion in 2011 to 18 billion at the end of 2022)

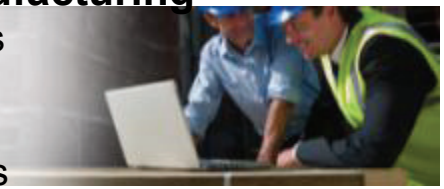
Client drivers for mobile solutions span all industries

Finance & Banking

Manage their investment portfolios and accounts from anywhere for complete bank transactions

Construction & Manufacturing

Manage complex projects and operations on site and streamline survey and work order processes



Insurance

File, process and manage claims and document damages as they happen

Retail

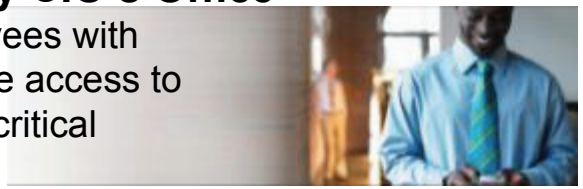
Engage shoppers in new ways and intelligently target personalized and location sensitive marketing offers

Travel & Transportation

Provide up to date information specific to their itineraries and location and enable customer self-service

Cross-Industry CIO's Office

Empower employees with anytime, anyplace access to dashboards and critical information



IBM Customer innovation with mobile channels and apps

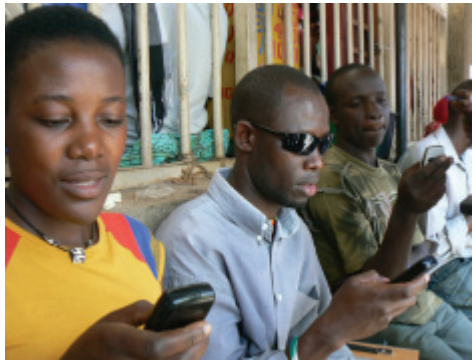
BMW Group

Steering towards smarter, eco-friendly motoring with mobile apps and smart apps

FNB First National Bank

Video

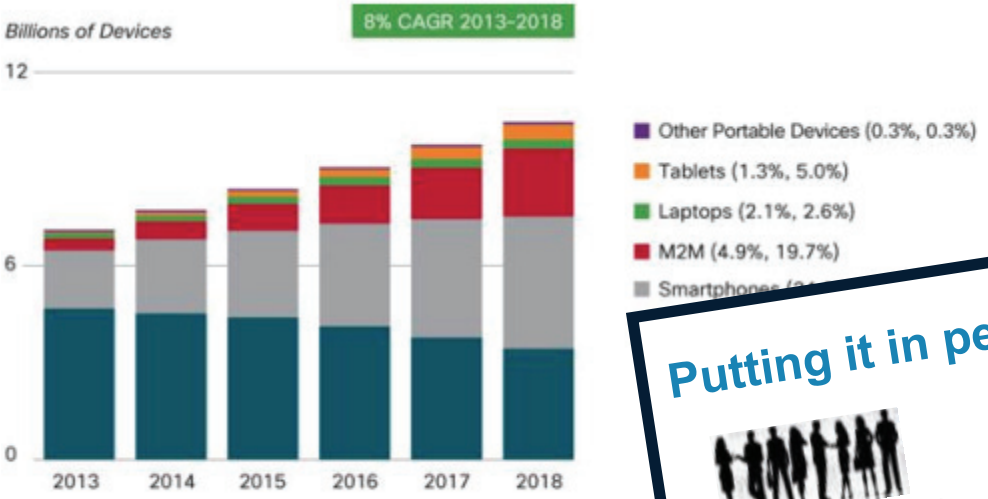
"From 1000 mobile transactions to over 1 Billion, all on the same System z machine. We are changing the face of banking in Africa" - **Jay Prag, CIO, FNB**

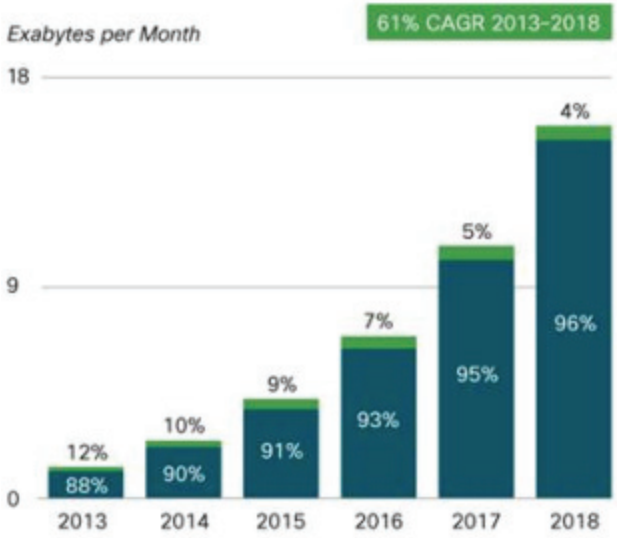


VISA

47,000 TPS. Zero down time during holiday shopping season for last 20 years. Removing risk and fraud in real time because of the capabilities of the mainframe

And data through the mobile channel is growing 61% CAGR





- By end of 2014, the # mobile-connected devices (7.5B) will ex the number of people on .2M) rising to 10B onnected devices and ple by 2018

- Mobile data traffic will grow at 61%(CAGR) 2013 to 2018 (11x), reaching 15.9 exabytes per month by 2018.

Mobile computing driving real-time and 247 business analytics

- **Business execs need to know the health of their business 24/7/365**
- The “mobile office” supporting timely, confident decision making - delivering business insight any time any where

- **Mobile drives real time business analytics**
- Customer experience influenced by content -geo-specific offers and coupons while consumers are in the store

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Why mobile on System z? Because customers want…

INSTANT Response	TOUGHEST Data security and resilence	AVAILABLE data 24/7
Fastest response time with ***real-time*** access to System of Record, current data - not an outdated copy	Modern ***agile tooling*** with pervasive best-of-breed ***security, scalability, RAS***	Only System z can handle the ***massive spikes*** and growth of mobile workloads

Mainframe continues to be more adaptive and affordable for mobile workloads

NIBM announces new pricing : up to 60% reduction on processor capacity for mobile workloads (no LPAR isolation) and also OTC VUE options

Volumes of data enabled for mobile consumption

- A large percent of the data and transactions accessed originates/resides on IBM zEnterprise
  - 80% of world's corporate data
  - 2/3 of business transactions for U.S. retail banks
- Businesses that run on zEnterprise
  - Top 66 worldwide banks
  - 24 of the top 25 U.S. retailers
  - Top 10 global life/health insurance providers
- Massive data warehouses for business analytics
- EAL 5 encryption and cryptographic hardware to secure data in motion and at rest

- The downtime of an application running on System z equates to approximately 5 minutes per year
- Run over a thousand virtual Linux images
- Virtualization of services for cloud implementations

Enterprises face unique mobile application challenges…

Fragmentation and developing for multiple mobile platforms

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

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.

Connecting apps with existing enterprise systems

- Apps need to leverage existing enterprise services, which must be mobile-consumable, and secure.
- Enterprise systems must be able to instantly provision new services and environments.

System z delivers the right capabilities

Fragmentation and developing for multiple mobile platforms

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

- **Development tools that seamlessly integrate and leverage z resources.**

Accelerated time to market requirements

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- **System z qualities of service designed to securely cope with unexpected and unpredictable workloads**

Connecting apps with existing enterprise systems

- Apps need to leverage existing enterprise services, which must be mobile-consumable, and secure.
- Enterprise systems must be able to instantly provision new services and environments.

- **Easy access to z data and transactions.**
- **End to end trans security.**
- **Low incremental MIPS cost.**

Mobile workloads Impact System z differently than web workloads.

- Increased z/OS transactions. Increase in off-peak transactions. Expect 10-50% growth as you add a mobile channel.
- Increased query or “read-only” transactions. As many as 50% of mobile transaction could be “read-only”.
- Unanticipated spikes in workload due to popular apps, features or special offers. No traditional times for workload spikes.
- Inefficient applications written by “non-professional” coders. Drives up z/OS transaction rates.

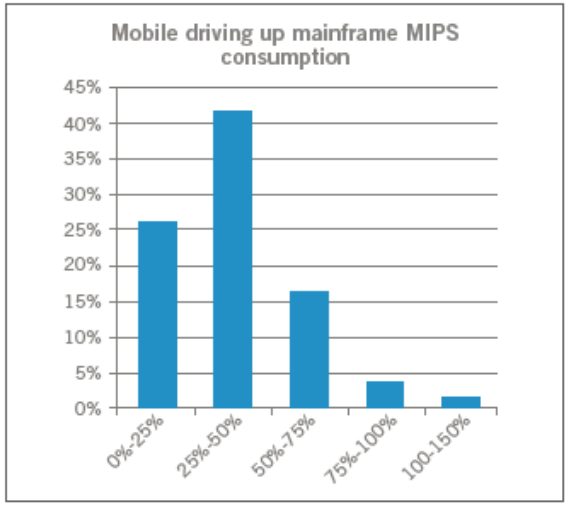

Chart 7: The increased use of mobile applications has increased MIPS consumption by more than two-fifths (41 percent), with 2 percent saying it has more than doubled.

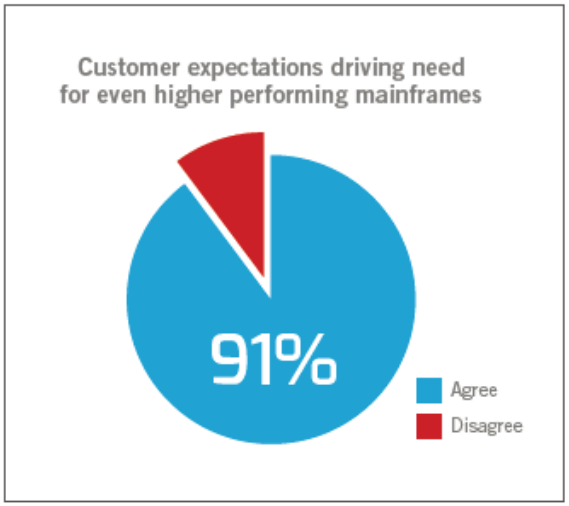

Chart 4: 91 percent of CIOs say now that customer-facing applications are using the mainframe and performance expectations on it have increased.

Why IMS is an attractive platform for mobile connectivity

IMS 13

100K IMS

Delivering the highest levels of performance, availability, security, scalability and connectivity in the industry

- **Breaking through 100k TPS** 800% greater than IMS 12
- **CPU reductions up to 62% for Java Apps**
- **SQL access to IMS data from both .NET and COBOL applications**
- **Greater flexibility and faster deployment** for new applications with database versioning
- **Big data exploitation** of Hadoop / Big Insights, MDA, Watson Explorer…
- **Simplified mobile access** with JSON, JDBC, IMS Connect….

First National Bank (FNB)

Achieving sub-second response for hundreds of millions of monthly transactions on the mainframe

The need:

The ubiquity and convenience of cellphones and tablets as computing devices represented a clear growth opportunity for FNB; in South Africa, more people have cellphones and smart mobile devices than bank accounts. FNB wanted to launch a reliable, secure and highly responsive mobile channel before its competitors, and looked for a platform that would enable very short time-to-market.

The solution:

FNB integrated a new Java-based mobile front-end directly with tried-and-trusted business logic and core banking services running on IBM® Information Management System (IMS™) on an IBM zEnterprise® EC12 server. IBM IMS Enterprise Suite Connect APIs for Java and C and IBM IMS Enterprise Suite SOAP Gateway manage links between the channel applications and core functionality and data on the mainframe.

The benefit:

- Rapid deployment enabled FNB to gain first-mover advantage in the market, gaining the number one spot for mobile banking
- Ultra-low average end-to-end response times of 30 milliseconds ensure snappy performance for mobile banking users
- Fast, secure and reliable mobile banking generates more business for FNB and reduces its average cost per transaction

FNB First National Bank

"We don't start from the premise that the mainframe is best; rather, we look at the requirements—big data, huge numbers of concurrent processes, high performance, high scalability, high security—and then look at what technology can deliver all of those things. The answer is IBM zEnterprise and IMS."

—Jay Prag, CIO – Hogan Channels, FNB

Solution components:

- IBM® zEnterprise® EC12
- IBM z/OS®

ZSP03833-USEN-00

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Mobile also brings business and IT challenges

Mobile devices **are shared more often**

- Personal phones and tablets shared with family
- Enterprise tablet shared with co-workers
- Social norms of mobile apps vs. file systems

Mobile devices **have multiple personas**

- Work tool with BYOD
- Entertainment device
- Personal organization
- Security profile per persona

Mobile devices **are diverse**

- OS immaturity for enterprise mgmt
- BYOD dictates multiple OSs
- Vendor / carriers dictates multiple OS versions

Mobile devices **are used in more locations**

- A single location could offer public, private, and cell connections
- Anywhere, anytime
- Increasing reliance on enterprise WiFi

Mobile devices **prioritize the user**

- Conflicts with user experience not tolerated
- OS architecture puts the user in control
- Difficult to enforce policy, app lists

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 Worklight Server on System z

Linux on z

z/OS

Device Runtime

PhoneGap

Worklight

- Security and Authentication
- Back-end Data Integration
- Caching and local data

Application Code

Linux on z

Worklight Server

Server-side Java App Code -- WAS	**Application Center Enterprise App Store**
Worklight Console	JSON Translation
Push Notifications	Authentication
Analytics	Adapter Library

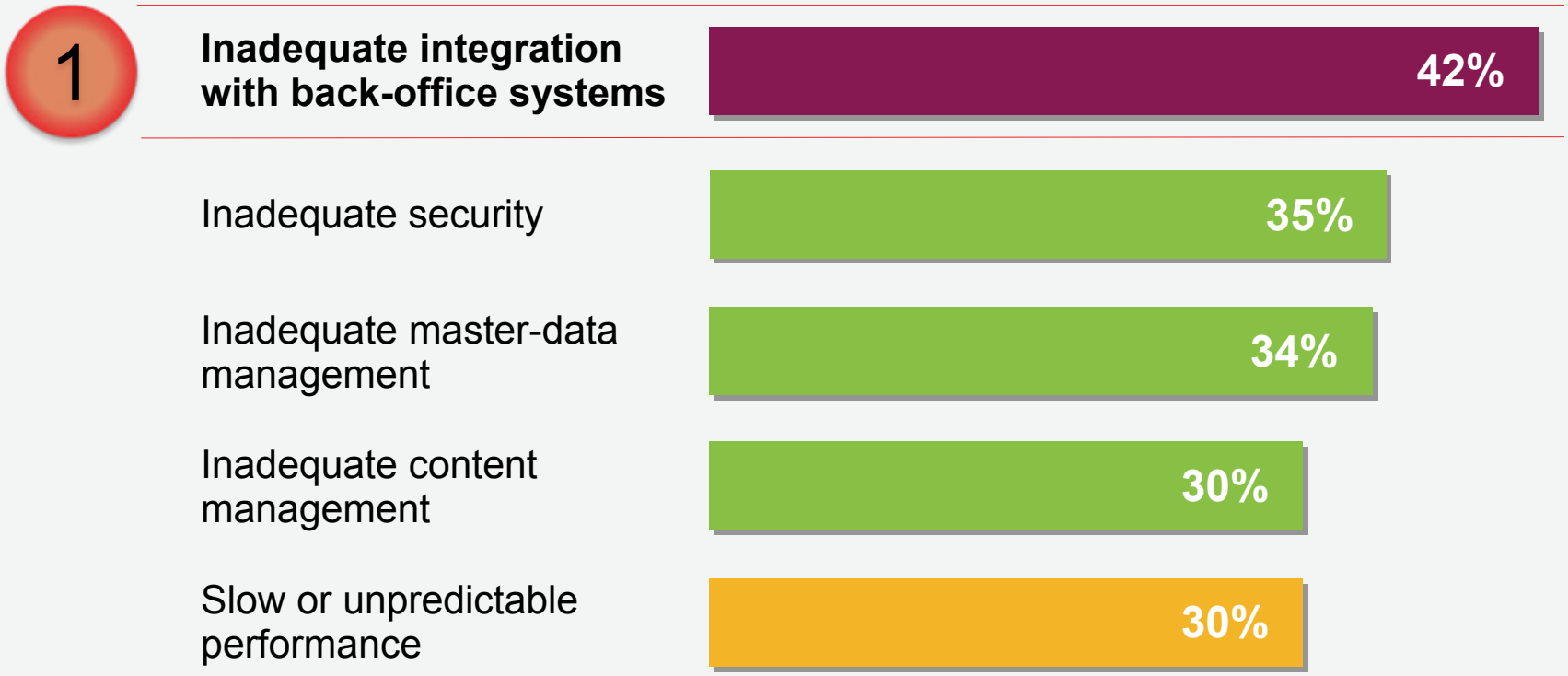
SAP
SQL
WMB
SOAP
HTTP/REST
Cast Iron

z/OS

DB2, IMS, CICS

Primary challenge: Back-office system integration

The most significant technical barrier
to creating effective customer-facing systems



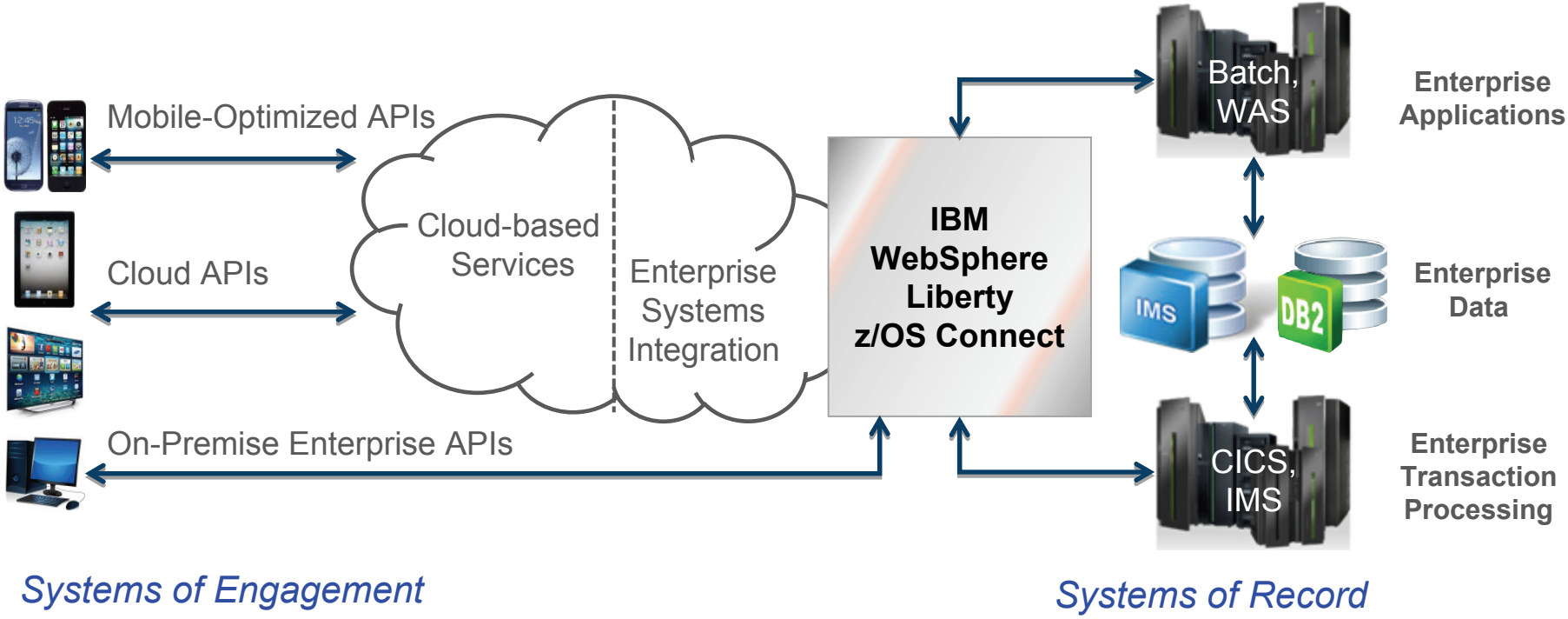
91% of CIOs said new customer client-facing apps will access the mainframe

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, Q1 2013

New

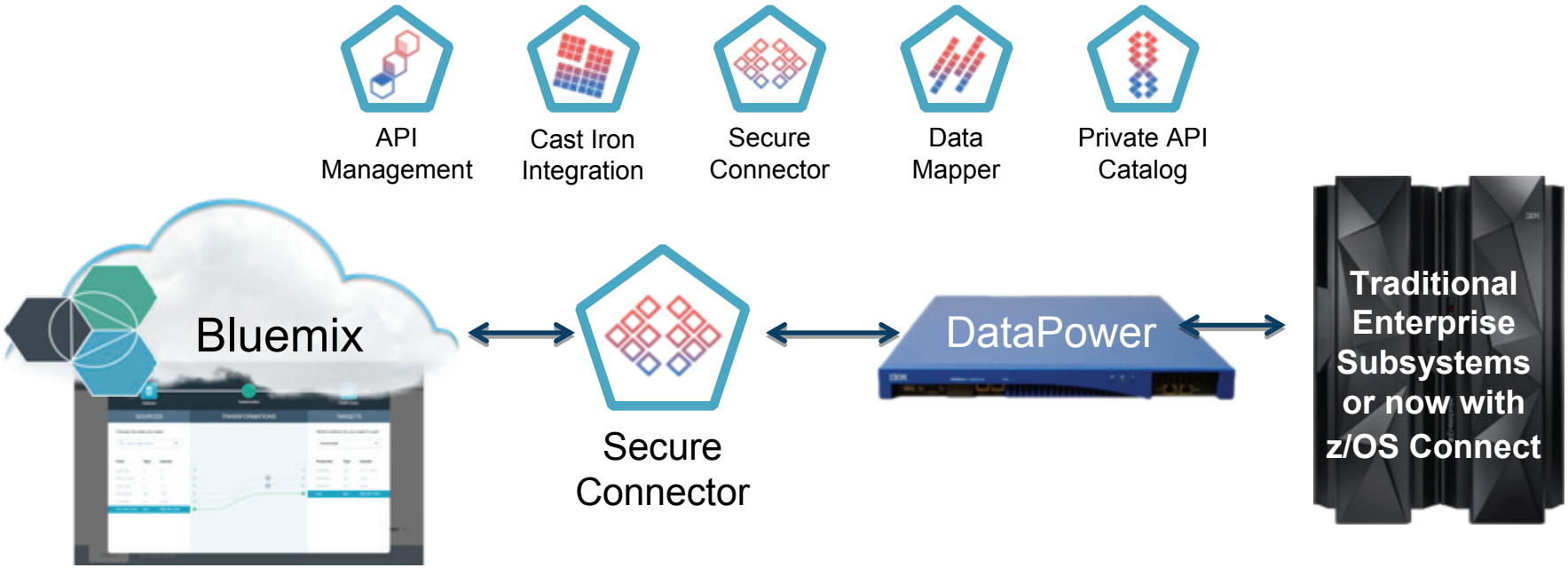
Secure and consistent enterprise connectivity for mobile and cloud

- *IBM WebSphere Liberty z/OS Connect* – Shipped with WAS, CICS, and IMS
- *Unifies z/OS connectors* – a common solutions for mobile, cloud, and web
- *Simplified integration* – Hide complexity of connecting to z/OS using REST



Integrate into existing applications

- *Combine mobile and cloud for best of both* – mobile applications in the cloud linked to the enterprise is your competitive advantage
- *Fast time to market of cloud based applications* – combined with the trusted transactions of traditional mainframe systems
- *Securely connect* – leverage data from your existing enterprise systems



Enterprise APIs for mobile

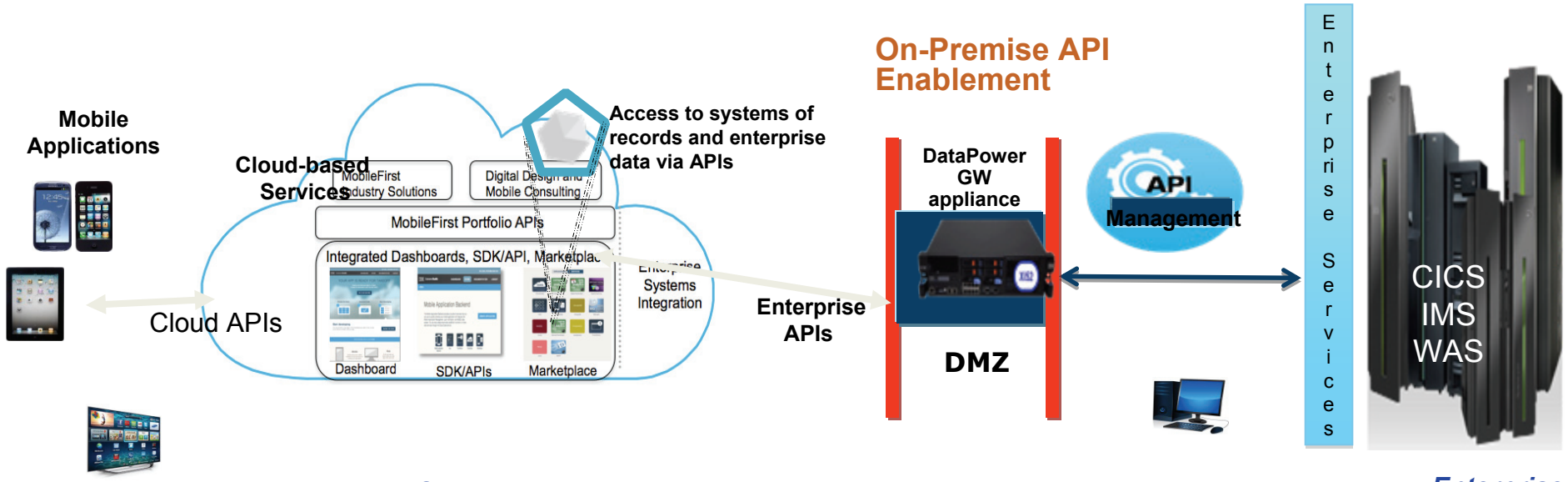
- *Rapidly define APIs* – Use the web interface to construct the API contract
- *Manage and monitor* – Built in analytics provide insight into your API usage
- *Develop new revenue streams* – Safely make APIs available externally

define, assemble, secure

analytics and operational insight

a branded developer portal

End-to-end architecture for mobile and cloud applications invoking z services using APIs



JANE - Mobile app developer
Uses APIs to access BE services

Shavon – API developer
Develops APIs from z based services

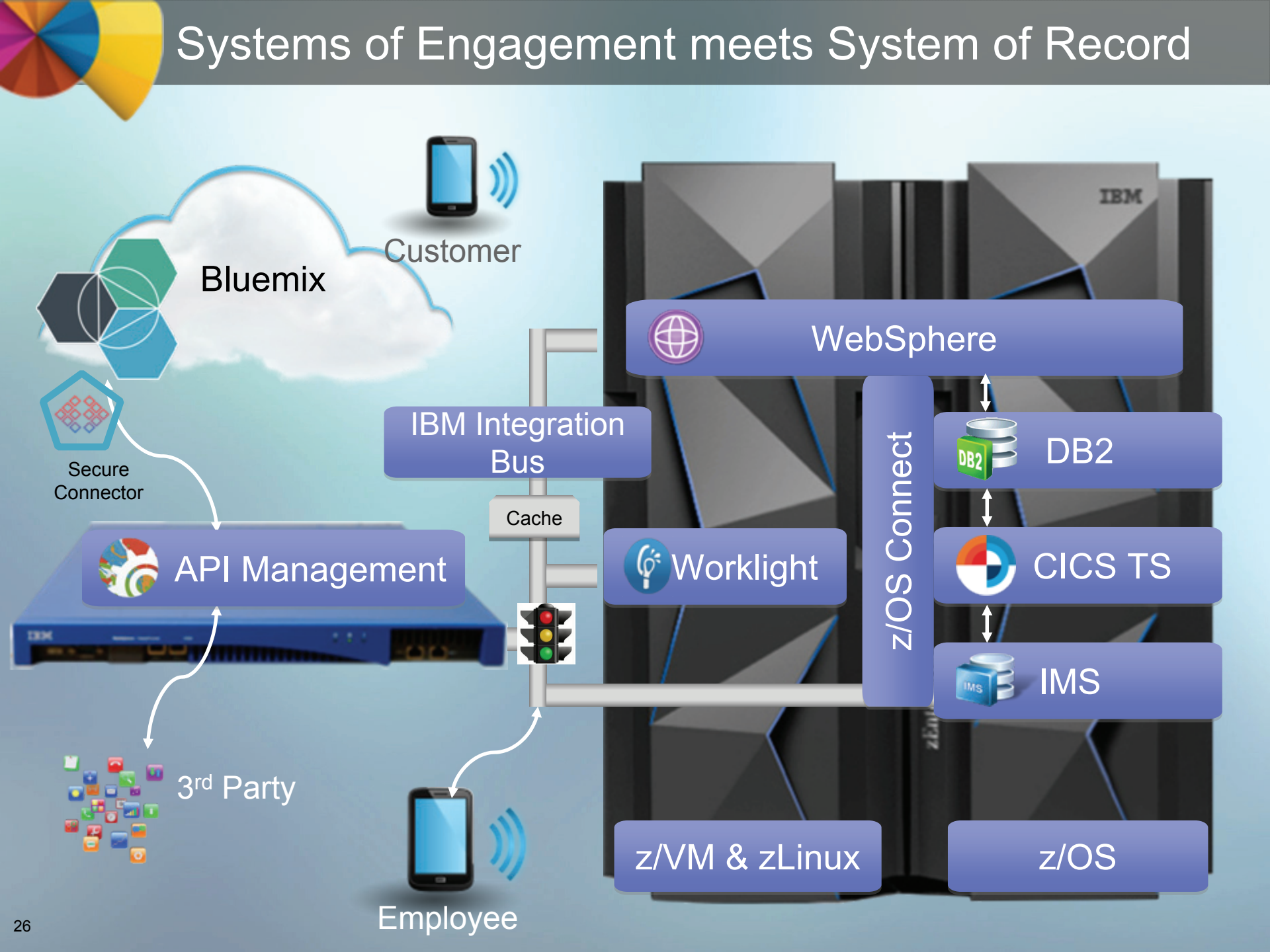
BOB – developer of z based Services
Develops services from CICS, IMS and other z applications

Mobile Application Development
- Invokes APIs for accessing SOR

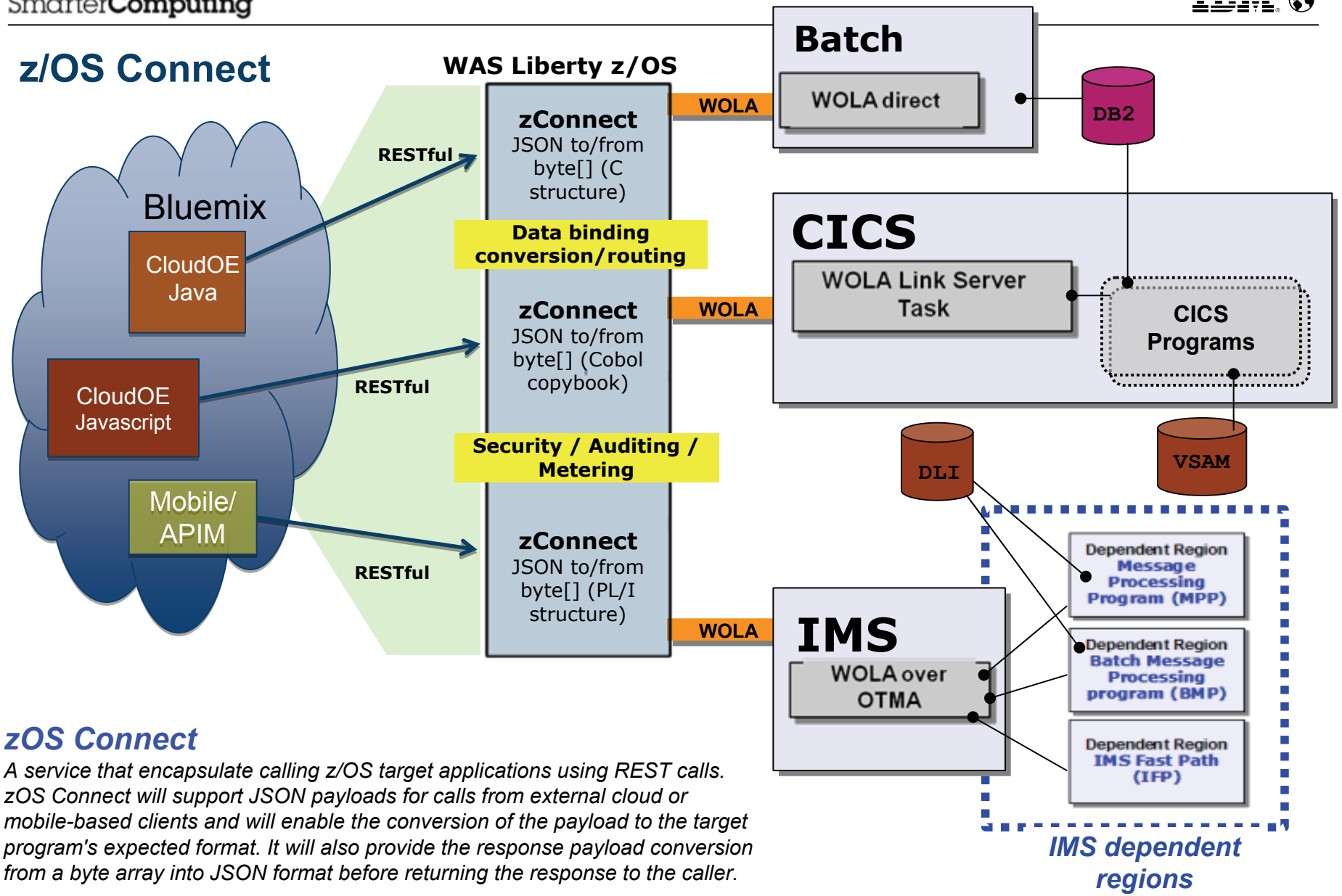
API Enablement:
- Consumability by internal and external developers (creation and look up)
- Entitlement Management (securing, workload enforcement)
- Usage monitoring & Analytics

Service Enablement:
- Enables invocation of z applications by remote applications using standard protocols (WSDL, REST)

Systems of Engagement meets System of Record



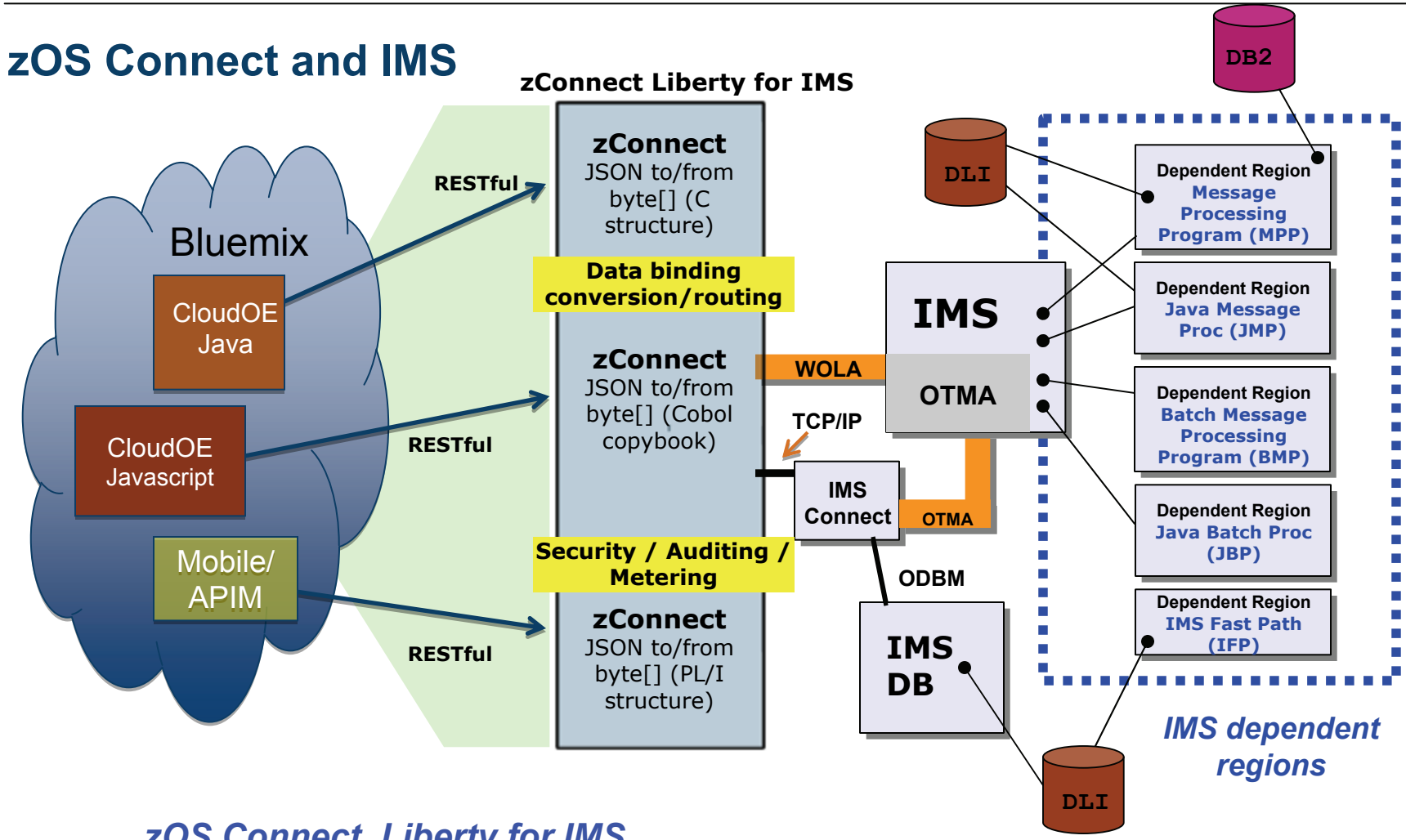
z/OS Connect



zOS Connect

A service that encapsulate calling z/OS target applications using REST calls. zOS Connect will support JSON payloads for calls from external cloud or mobile-based clients and will enable the conversion of the payload to the target program's expected format. It will also provide the response payload conversion from a byte array into JSON format before returning the response to the caller.

zOS Connect and IMS



zOS Connect Liberty for IMS

Same zConnect implementation – WOLA or the IMS Connect service provider handles requests targeted to existing IMS transactions and data.

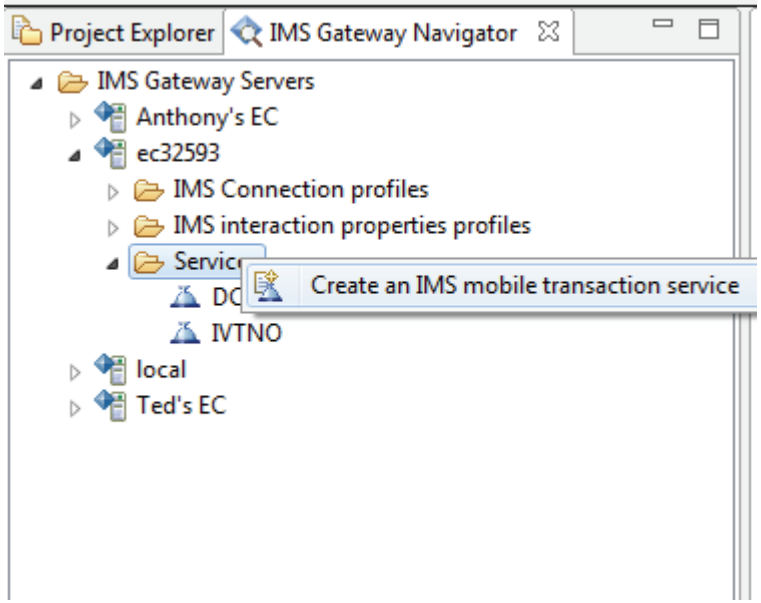
IMS Mobile Feature Pack

- The IMS mobile strategy gives our customers a mobile foundation they can depend on
- Expand IMS ecosystem via delivery of mobile infrastructure
  - Offer an integrated platform for full discovery, modeling, deployment and execution of both transaction and data assets for mobile consumption
  - REST interface with JSON wire protocol

74% of CIOs say mobile solutions are part of their vision for increasing competitiveness

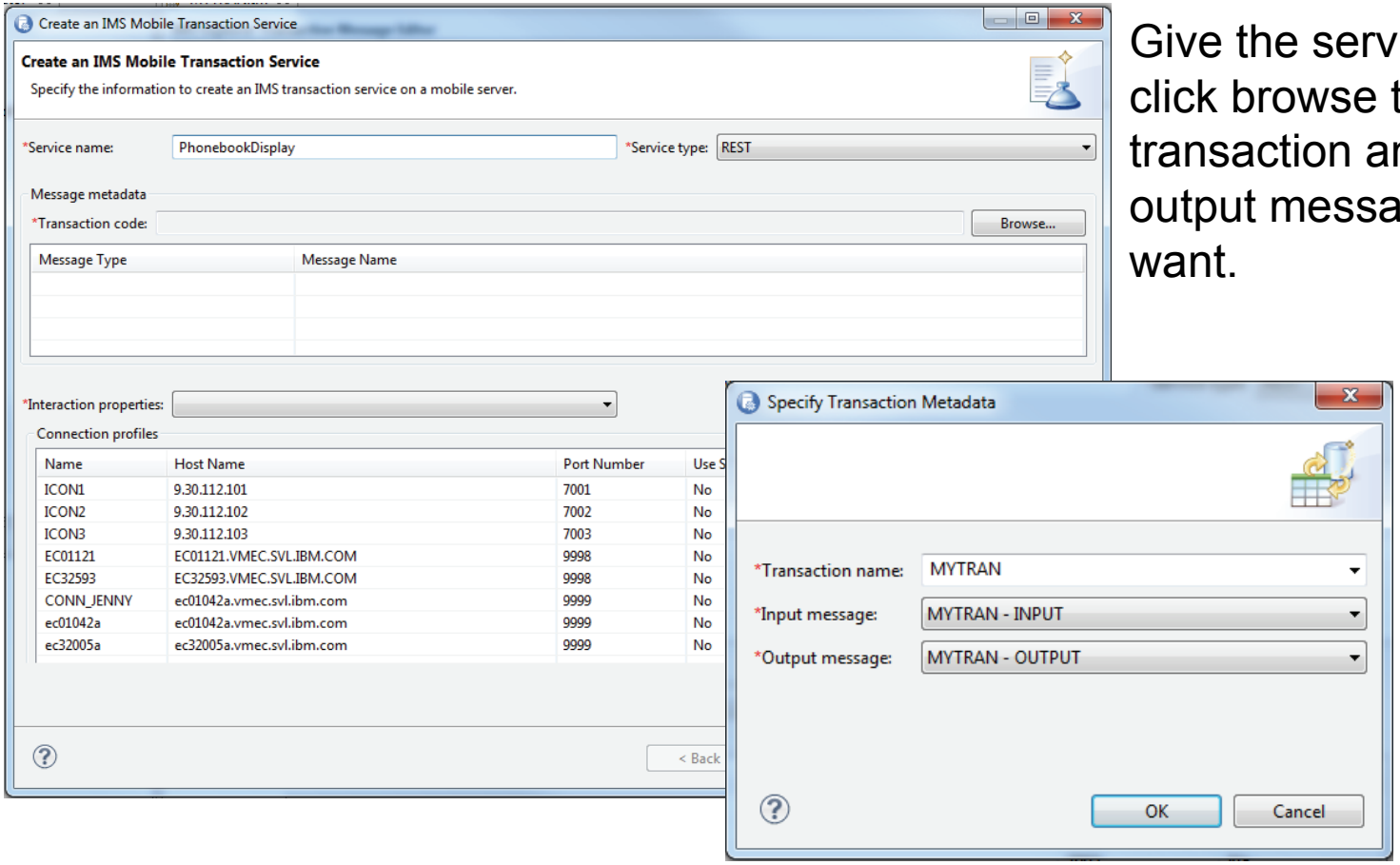
Create and publish REST service

Create and publish REST service



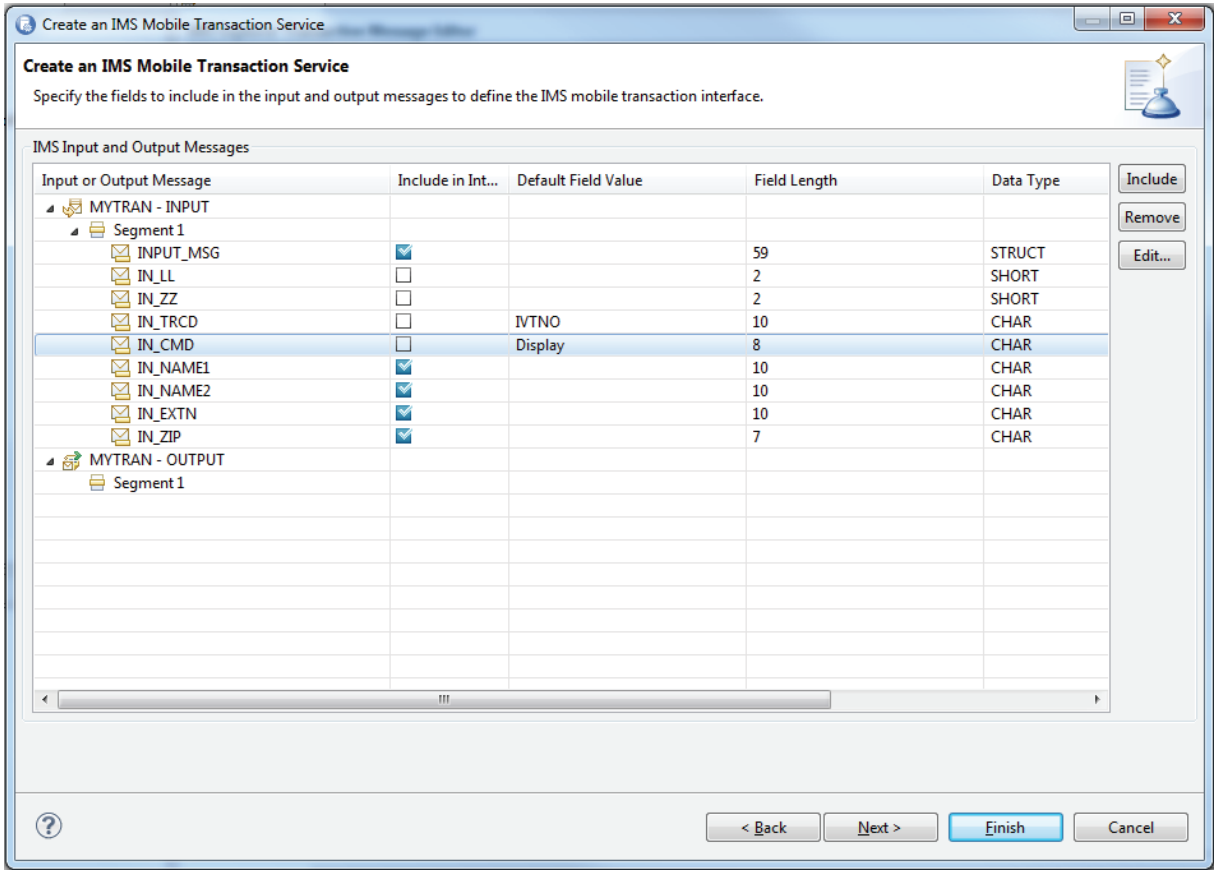
From the IMS Gateway Navigator view, right click the Services folder and select “Create an IMS mobile transaction service”.

Create and publish REST service



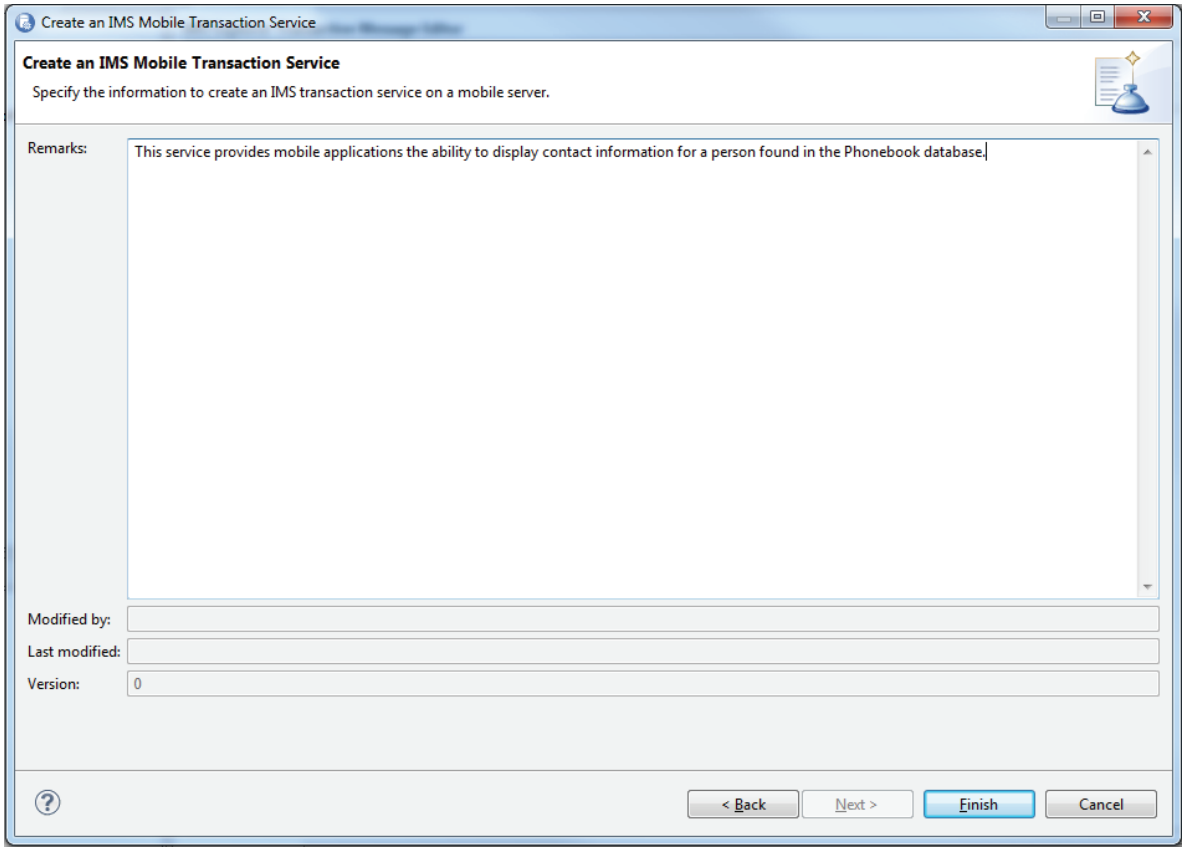
Give the service a name and click browse to select a transaction and the input and output message layouts you want.

Create and publish REST service



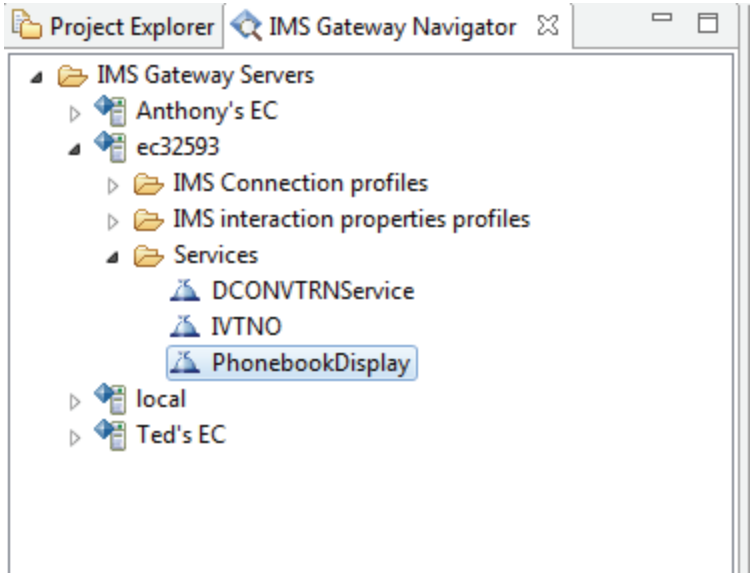
Define the interface to the service by selecting the fields to include in the input and output messages (i.e. the mobile applications can only provide values for the included fields). provide any default values for either included or excluded fields. Excluded field default values cannot be overridden by the mobile applications.

Create and publish REST service



On page 3 of the wizard you can type in remarks describing information about the service.

Create and publish REST service



After clicking Finish you will see that the new service has been added to the IMS Gateway Navigator view.

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IBM continues to redefine and extend the role of the mainframe to deliver new strategic capabilities and deeper client value

Big Data Ready

Enterprise data repository that integrates operational analytics for accelerated insight

- Enterprise data hub
- High-volume secure and reliable transaction processing
- Integrated, real-time operational analytics

Mobile Ready

Connecting backend systems to mobile devices to turn each interaction into an opportunity

- Build and connect to back end systems
- Secure and manage with the highest level of security
- Extend and transform capabilities to mobile devices

Cloud Ready

Highly scalable, agile heterogeneous enterprise private cloud

- Elastic, virtually limitless expansion
- Shared everything design
- Secure hybrid computing with centralized management
- Built on open industry standards

Security Ready

Trusted security and reliability for critical business processes, applications and data

- Ultimate data security protection
- Built-in cryptography
- Unmatched resiliency and availability

System z a proven mobile platform

- ✓ System z is leader in transaction processing with the ability to handle volumes of critical data
- ✓ System z secures the data for mobile processing from mainframe to mobile device
- ✓ System z is the perfect environment for developing a mobile transaction and analytics integrated solutions

System z

A sophisticated platform for mobile computing

System z Unique Characteristics to support Mobile Applications

- Easy-to-consume APIs from IMS allow you to leverage your investment in z/OS transactions to quickly add a mobile channel.
- z/OS enables massive and simple scalability in a single footprint, to handle the workload of millions of devices and sensors
- z/OS Workload Management ensures your crucial applications remain responsive during sharp spikes in demand.
- Low-latency I/O. Mobile usage patterns favor short, read-only data requests (Users check account balances) So fast access to operational data, with low latency, is key. The mainframe offers exceptional I/O with dedicated hardware I/O processors. This reduces latency, which increases mobile app response times.
- Business Resiliency for critical mobile apps

- Apple + IBM

Infrastructure matters for mobile applications. The System z platform's scalability, security, and resilience can enhance critical mobile applications.

zEnterprise – *the most trusted and secure source of data for Mobile apps*

System z applications

Core IMS applications enabled and mobile ready

Mobile Devices

Build and deploy mobile apps today for access to data and analytics : IBM Worklight Server

Governance and Security

Real time monitoring and alerting to help prevent security breaches across the enterprise for every regardless of device

Visit ibm.com/systems/z/solutions/mobile.html