System z in the Mobile World

Sophia Lopez

CICS, TPF & WebSphere on System z ,
Product Line Management and Market Enablement,

IBM Software Group

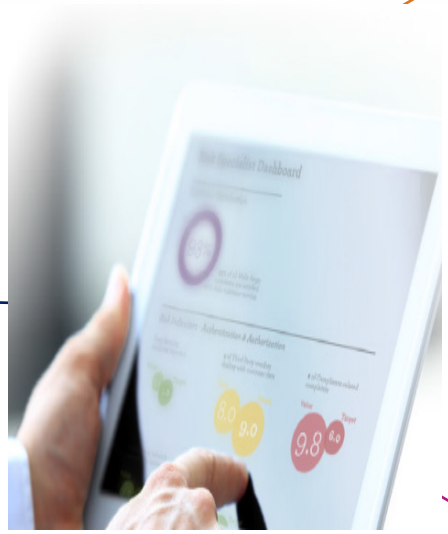
Celebrating 50 years

Mobile is changing everything and provides new challenges and opportunities for businesses

Achieve a Single View of The Customer
using mobile contextual information

Manage security to Protect Privacy and Data

Delight Customers



Create New Business Opportunities

Empower Employees to improve operations and customer service

Mobile is unleashing the 24x7 consumer and opening up new markets

Banking and Financial Services

Deposit a check, move money, check balances instantaneously, track portfolio, get alerts, receive quotes, execute trades

Travel and Transportation

Flight information to, reservation booking, seat assignments, check-in and streamline car rental process, hotel reservations

Insurers

File claims, provide quotes, compare prices, enroll, view policies, capture data to develop new offerings

Retailers

Delivering personalized offers for cross sell, up-sell and establishing customer loyalty through mobile

Automotive

Enable mobile sensors for diagnostics and safety

Mobile driven growth in new interactions and transactions bring unprecedented pressures to the business and IT

Time to Market

Best in class time to market adds **60%** to first year innovation sales[10]

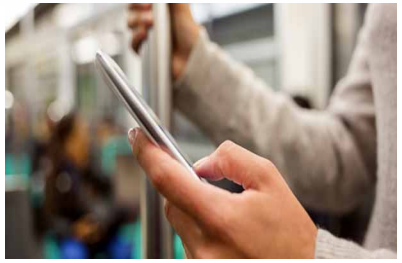
Transaction Volatility

Mobile driven transaction growth to average **35%** annually through 2017[11]

Information Accuracy

40% have gone to a competitor's site after a bad mobile experience[12]

Response Time



57% of mobile customers will abandon a site if they wait 3 seconds+ for a page to load[13]

System z is delivering against these requirements – *always-on, always-open, and always-protected*

Time to Market

Quickly extend mainframe enterprise apps and data for mobile on the go services

Delivers ROI in as little as 16 days[14]

Transaction Volatility

Handle transaction explosion with ease and minimal downtime

Support Millions of transactions at 16% less per transaction than x86[15]

Information Accuracy

Bridge System of Record with System of Engagement for data and transaction integrity with lowest cost

Leverage a single version of the truth

Response Time

Deliver consumer expectations with immediacy

Provide less than a second response time; 36% faster than x86[16]

The world's leading businesses depend on System z and mobile to provide new opportunities

92 of the top 100 worldwide banks[1]

90% Of mobile banking app users check account balances or recent transactions[5]

23 of the top 25 US retailers[2]

22% Of all 2013 Black Friday online sales were mobile[6]

10 out of 10 of the world's largest insurers[3]

73% Of insurers will offer mobile claims services by 2016[7]

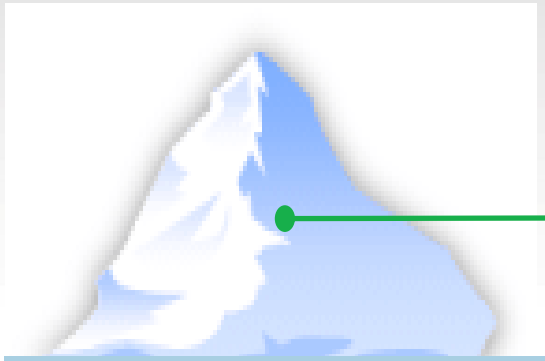
23 out of 25 of the world's largest airlines[4]

44% Of travelers use mobile to research travel while traveling[8]

91% of surveyed CIOs said that new customer-facing applications are accessing the mainframe[9]

Fancy Apps Don't Equal Business Value

Creating a truly engaging Mobile experience involves far more than building great Mobile apps



Building Mobile apps that support a range of devices, are easy to use and look really cool

Increasing speed to market to deploy capabilities

Rapidly innovating to keep enhancing experience

Protecting Mobile access to enterprise data

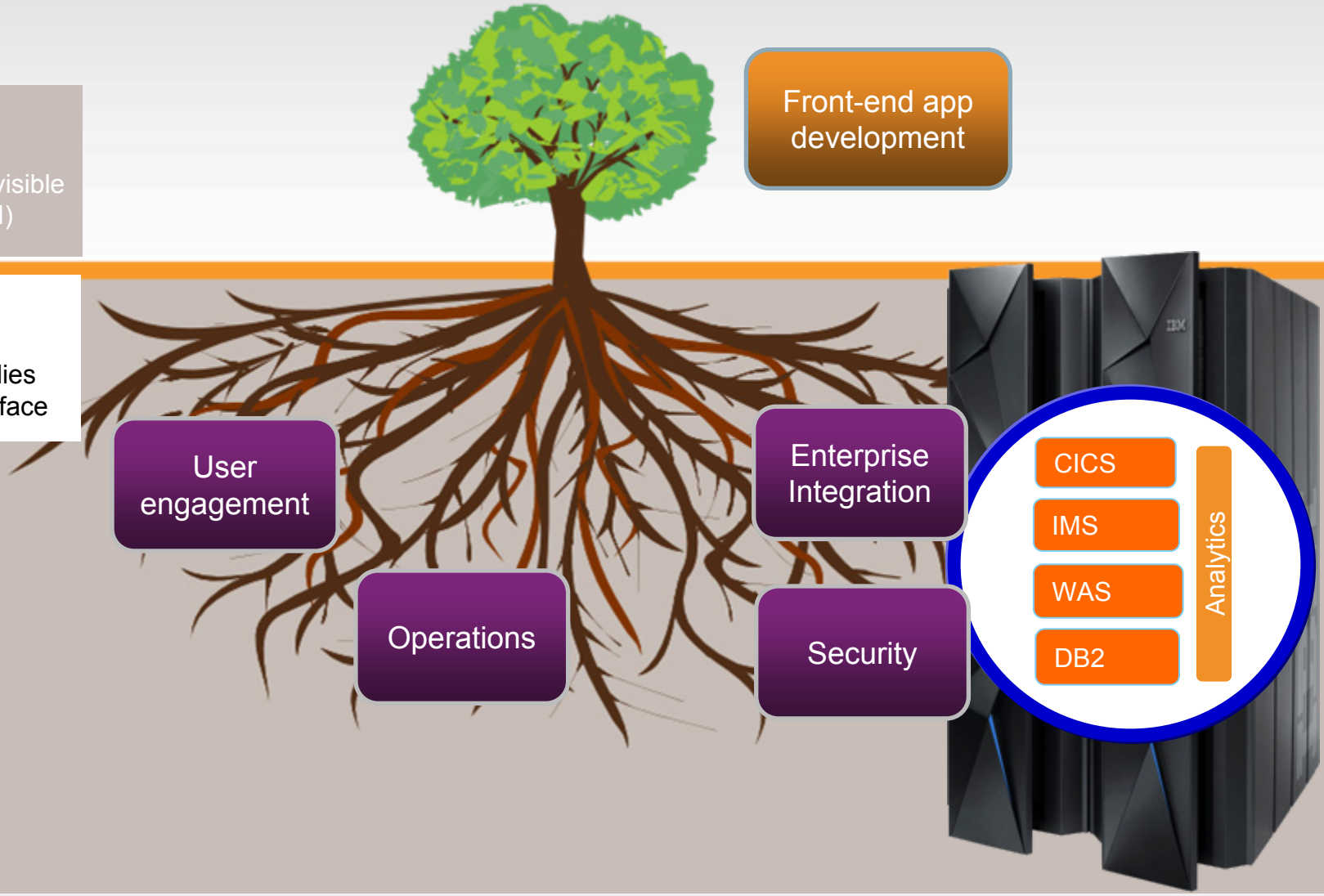
Scaling elastically to deliver responsiveness

Integrating Mobile activities with rest of business

Infrastructure Matters for Enterprise Mobility

20%
of the effort is visible (mobile UI)

80%
of the effort lies under the surface



Mobile app development is a top enterprise priority

35% of developers are currently targeting tablets, with more than **90%** plan to develop for tablets in the near future.

29% of mobile developers currently focus on Hybrid app development with another 49% expected to focus on it in the next year.

Nearly 90% of developers are currently extending enterprise apps to mobile or plan to in the near future.

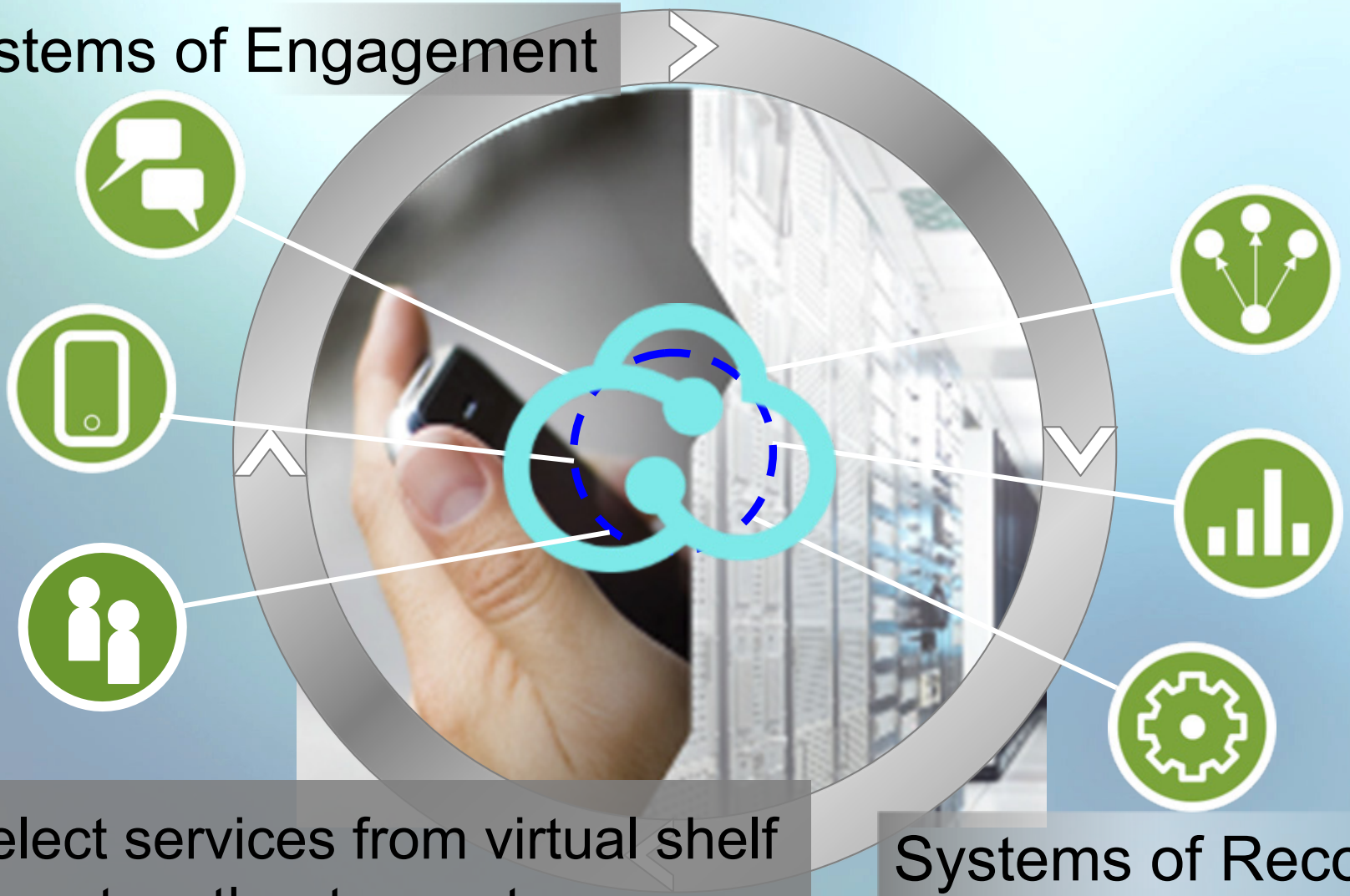
In the next 12 months **77%** of developers will be focused on Hybrid application development.

More than **200M** people upgraded to iOS7 in the first week (September, 2013)

Almost all expect to deploy more than **25** mobility applications in the next two years

Source: Evans Data Mobile Developer Survey Mobile Development Report 2012 Volume
Source: Business Insider (September 2012)

Composable Business



- Select services from virtual shelf
- Snap together to create new apps & business processes

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 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.

…and Unique z Requirements

- Development tools that seamlessly integrate z data and trans.

- Mobile tools supported in Cloud-based development and production environments.

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

System z addresses Enterprise mobile development and delivery challenges

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IBM Worklight Studio and RDz

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

System z Scalability

- System z Linux enables rapid provisioning of Worklight servers.
- z/OS is highly and easily scalable to handle workload increases.

z/OS is mobile enabled

- z/OS subsystems are mobile-ready, with z/OS Connect feature embedded within WAS, IMS and CICS.
- End to end mobile security.
- High-performance access from Linux on System z

System z helps clients to accelerating mobile implementations and results

Effective Mobile Enterprise

Transactions are high in quality and usability and as secure as they are convenient

Develop and deliver exceptional mobile applications with speed, flexibility and quality

Fast response time with ***accurate*** data

Advanced analytics to data from mobile interactions to derive insights, drive better decisions, and differentiate the customer experience

System z

Pervasive best-of-breed ***security, scalability, RAS***

Fastest response time with ***real-time*** access to System of Record, not a copy

Only System z can handle the ***massive spikes*** and growth of mobile workloads

Bridges system of record to system of engagement for rapid mobile service delivery

Predictive analytics that won't impact performance

The IBM mobile Application Development lifecycle

Design & Develop
Worklight &
Rational Developer for z

Instrument
Tealeaf (User Experience)
Security (Fiberlink, Trusteer)

Obtain Insight
Tealeaf

Integrate
z/OS Connect,
Worklight, MQ/MQTT,
IIB, DataPower

Manage
Worklight &
Fiberlink

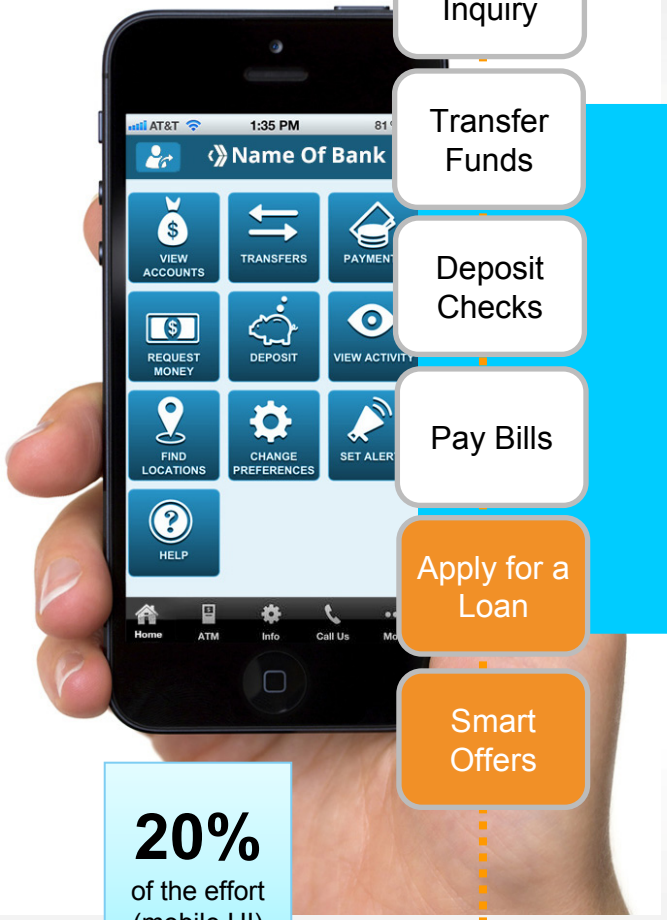
Test
Rational Test Workbench
Mobile Quality Assurance

Deploy
Worklight & UrbanCode

Scan & Certify
AppScan

Run on z

Accelerate speed to market by re-purposing existing data and transactions for mobile



Balance Inquiry

Transfer Funds

Deposit Checks

Pay Bills

Apply for a Loan

Smart Offers

Mobile Engagement System

Core Banking

Analytics
- Anti-Fraud
- Next Best Action

Business Rules

Customer Data

Cloud Services

CREDIT REPORT

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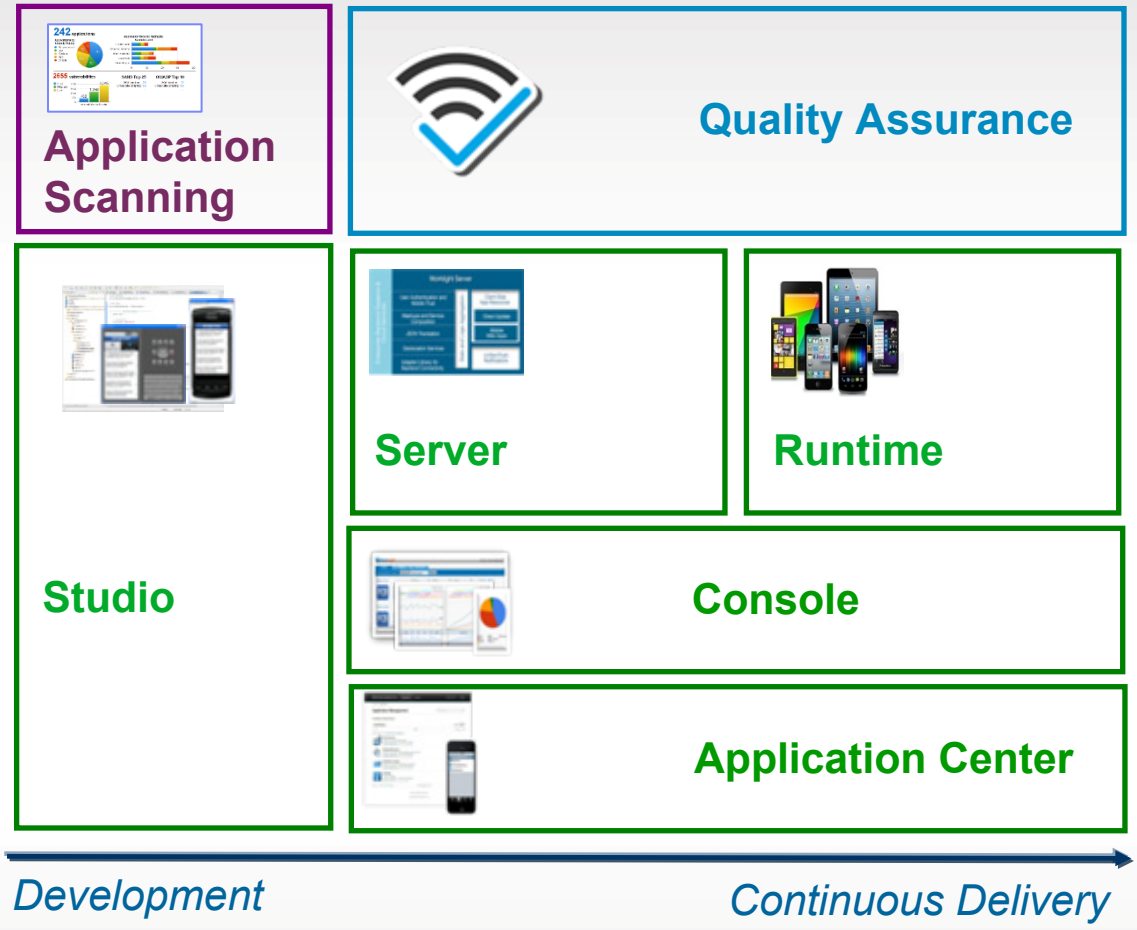
Campaign Mgt

20%
of the effort
(mobile UI)

80%
of the effort
and value

IBM Worklight integrates all aspects of the mobile application lifecycle

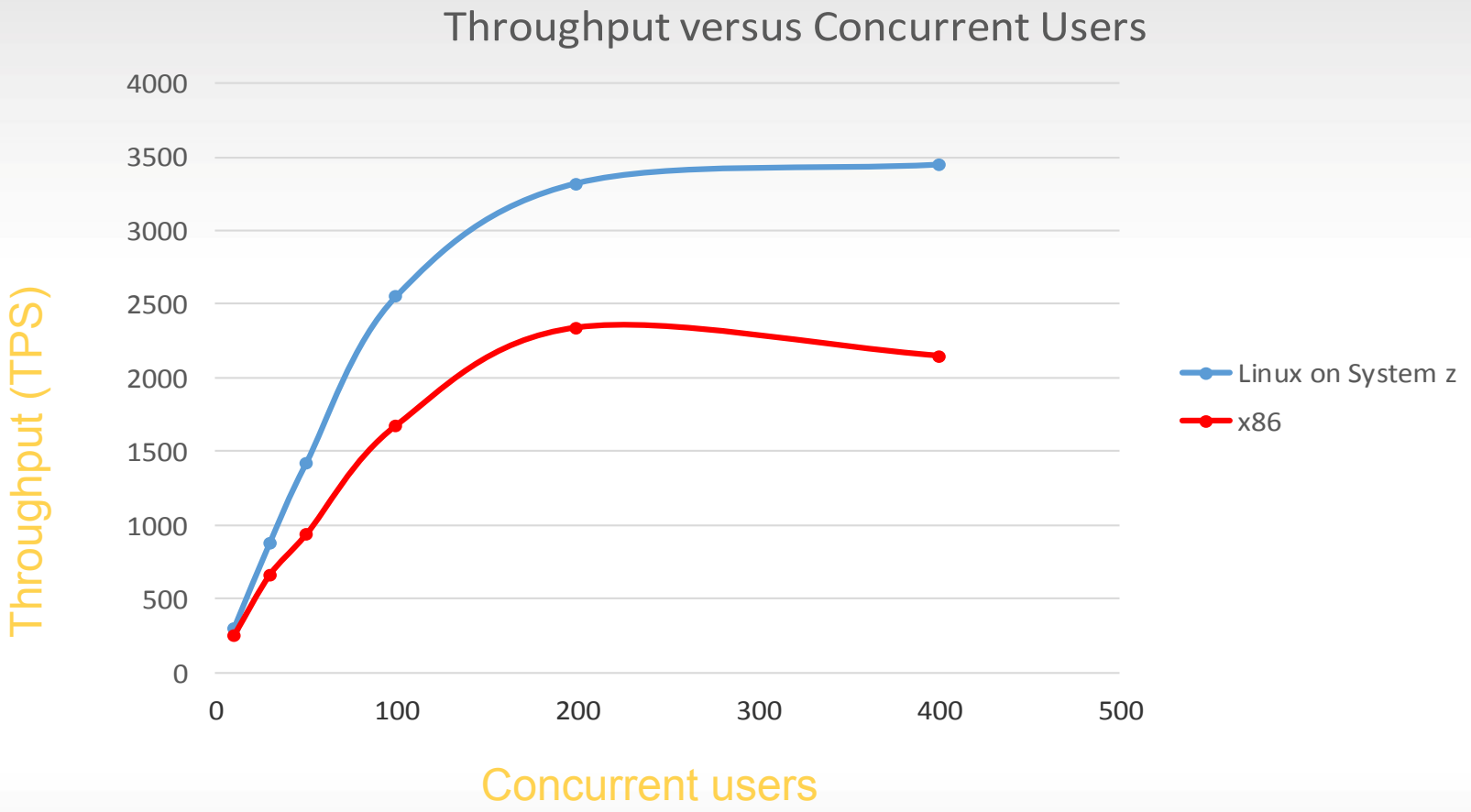


Application Scanning
Detect code vulnerabilities at the time of development

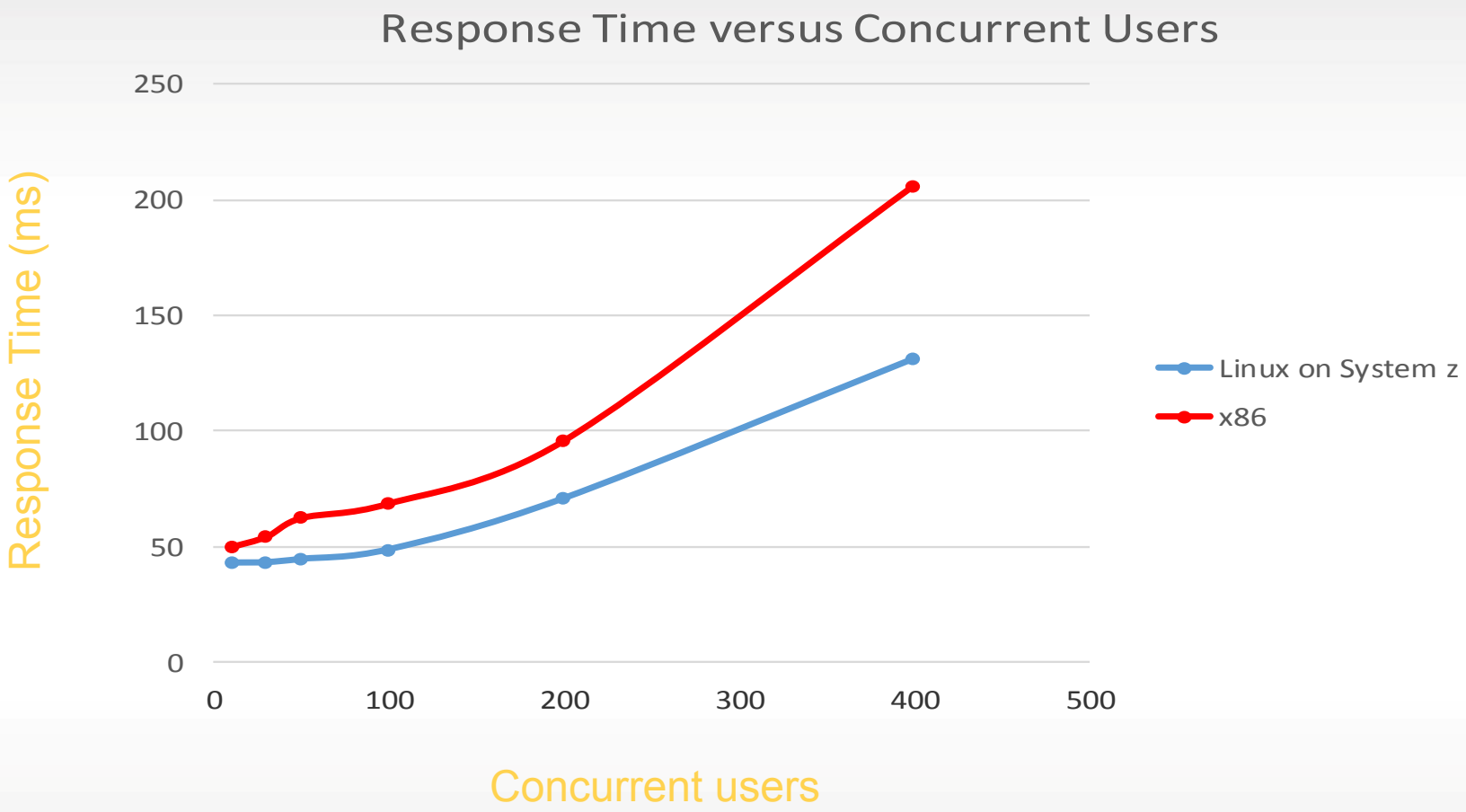
Quality Assurance
Collect beta test feedback, crashes and analyze user sentiment

Foundation
Development, Runtime, Operations Console & Private Store

Worklight scales better on Linux on System z than x86



Worklight provides lower Response Time on Linux on System z than x86



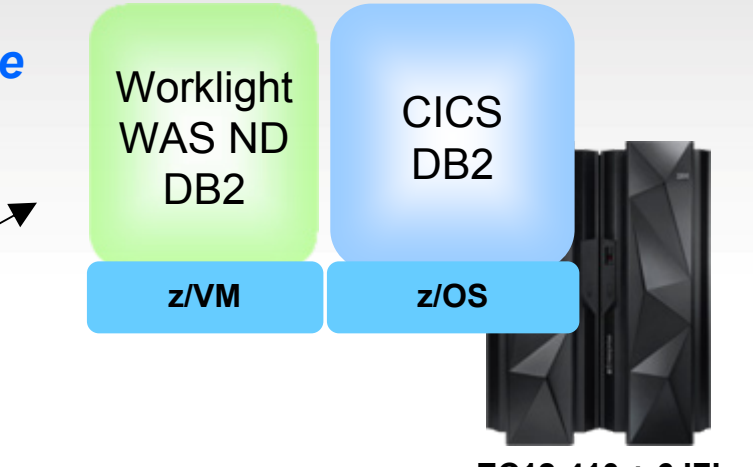
Co-locating Worklight with System of Record increases throughput by 61%, reduces response time by 36% and TCA by 10%

Which platform provides the lowest TCA over 3 years?

Mobile Users

- **400 concurrent users**
- **60% Login, 30% Add or Delete,10% Update**

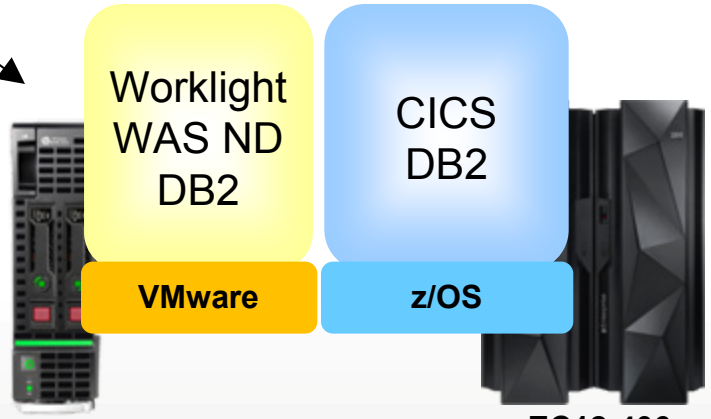
Mobile Insurance workload using Mobile Workload Pricing



zEC12-410 + 6 IFLs

3,446 TPS
131.4ms RT
$2,355 per TPS
(3 yr. TCA*)
Prod + Dev/QA + DR

10%
lower cost



HP ProLiant BL460c
Intel E5-2697v2 2.7GHz 6co

zEC12-406

2,145 TPS
205.4ms RT
$2,631 per TPS
(3 yr. TCA*)
Prod + Dev/QA + DR

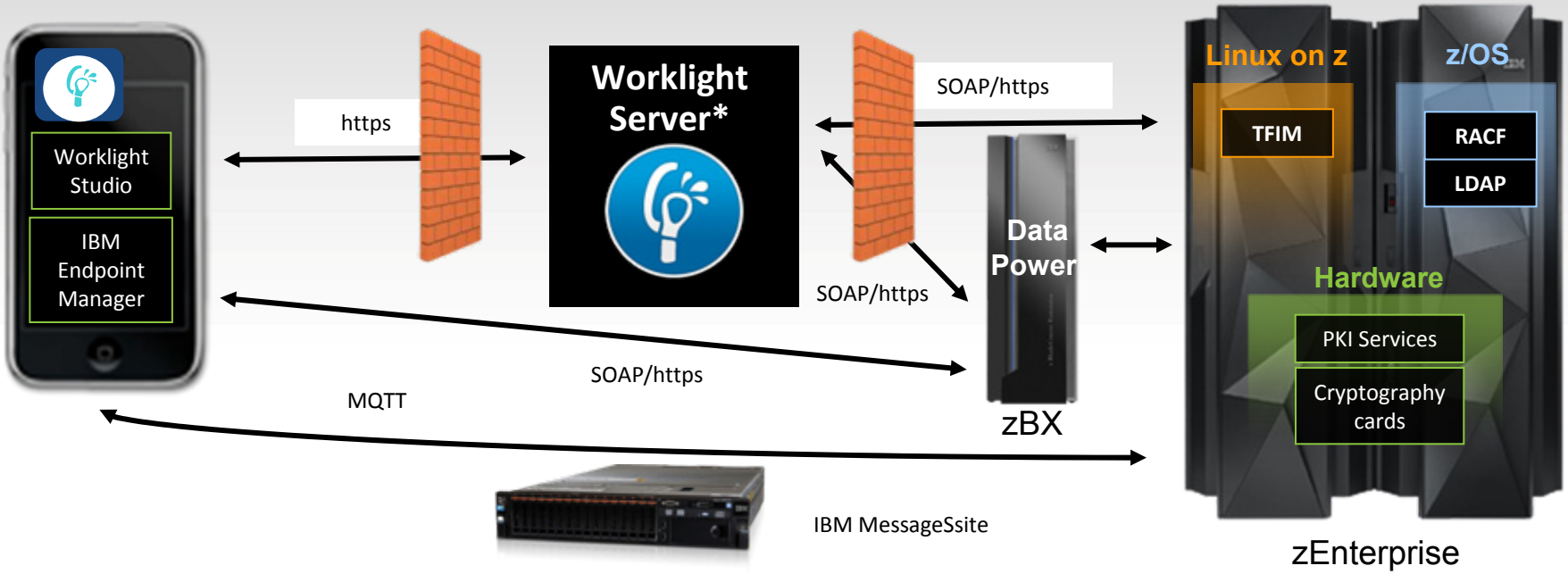
* 3-Year TCA includes list prices for Hardware and Software total cost for front and back end incorporating Mobile Workload Pricing for zOS components. Sizing shown is for Production to which 30% is added for System z for Dev/QA and CBU pricing for DR and 2x for Distributed

IBM WebSphere Liberty z/OS Connect for Secure and Consistent Enterprise Connectivity for Mobile

FREE feature that ships with WAS, CICS, and IMS. Runs in z/OS only.

- **Built for z/OS** – Builds on z/OS qualities of service - security, auditing, chargeback.
- **Unifies connectors** – A common solution for mobile, cloud, and web
- **Simplified integration** – Hide complexity of connecting to z/OS using REST
- **API Management** – Mobile developers can discover the transactions you choose.

End to end security from mobile to the mainframe



- **End to end capability of mobile users identity permits, syncing of LDAP, auditing of transactions, and simplified identity mapping** with RACF®
- **Advanced scalability of encryption processing** with System z cryptography cards
- **Centralized certificate management** with z/OS PKI services
- **Secured integration gateway for System z services, centralized key management and mobile access policy capabilities** with DataPower
- **High level security to backend applications** via HiperSockets or IEDN support with Worklight Server

**Worklight Server can also reside on Linux on z*

IBM provides unique differentiation for enterprise clients

"We are reimagining how work is done and remaking professions and companies."

-- Ginni Rometty

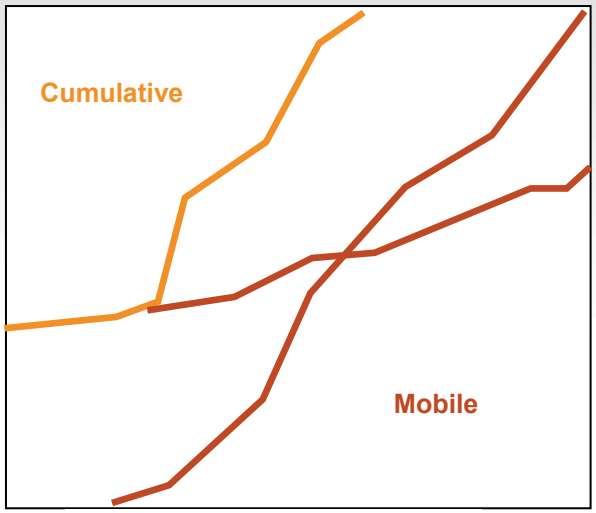
System z enables a 16 day return on investment

International grocery retailer

16 Day ROI

New B2E mobile based inventory management system on System z keeps shelves freshly stocked with what customers want, saves over **2.4M** per year for ROI in only **16 days**

Enabling mobile growth on System z

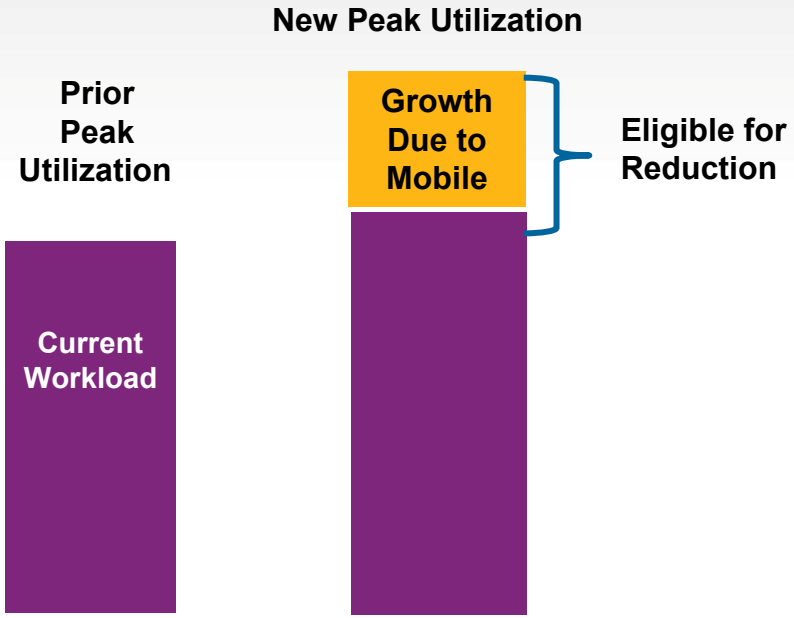


BARCLAYS

Increased mobile transaction volumes by **40%** from 2011 to 2013

Mobile Workload Pricing

NEW



Industry first for pricing mobile workloads *provides up to a* ***60% reduction*** *on the processor capacity reported for mobile transactions*

Serving mobile data directly from z/OS is 38% less expensive *than exporting to a System of Engagement*

System z Mobile is growing rapidly

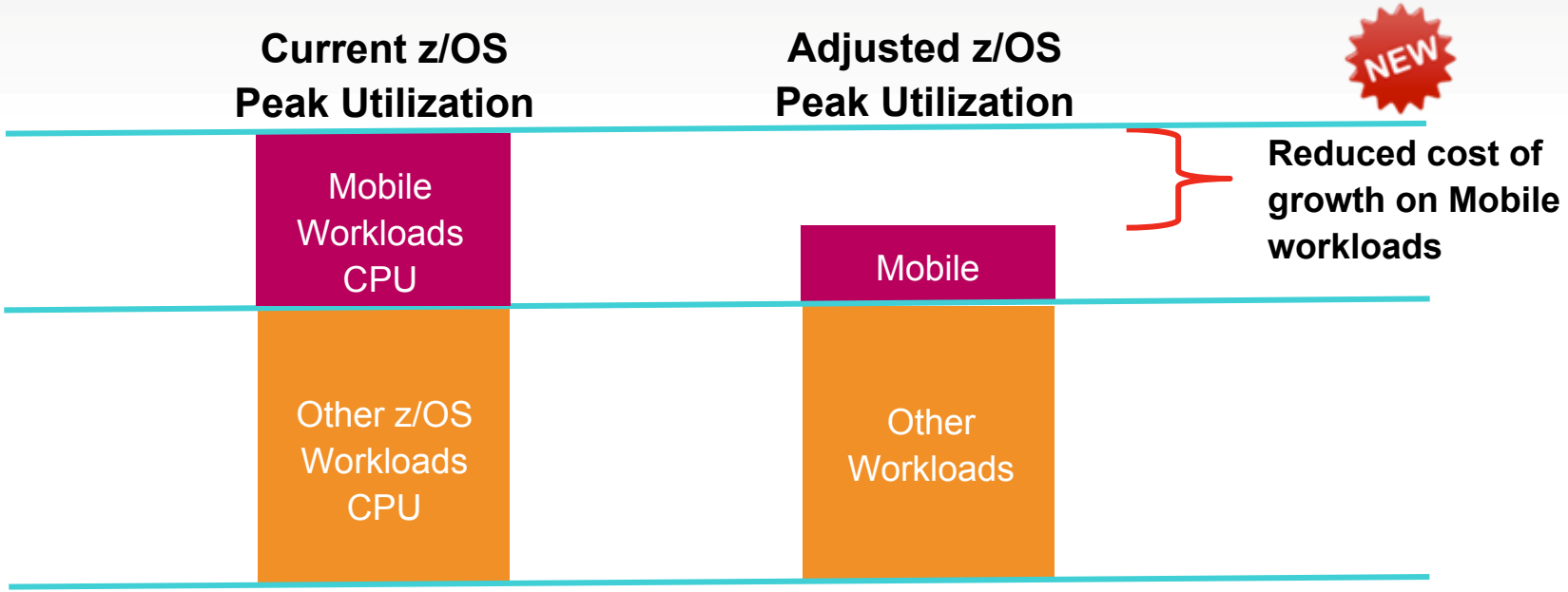
1/3 of all IBM Worklight business is on System z

"Running our mobile banking service on Linux on zEnterprise is another step forward in our continual evolution on the mainframe."

he maturity flexibility of IBM zEnterprise makes it the ideal platform for achieving speed to market with mobile applications."

New System z Mobile pricing enables IT investments to scale with the growth & business returns of mobile

- Reduce z/OS peak MSUs attributable to mobile workloads -- up to 60%
- No Infrastructure Changes Required… (such as separate LPARs)



- Customers must tag and track z/OS CPU seconds from mobile workloads.
- New MWRT tool replaces SCRT and will subtract mobile CPU seconds from peaks.
- Announcement letter.

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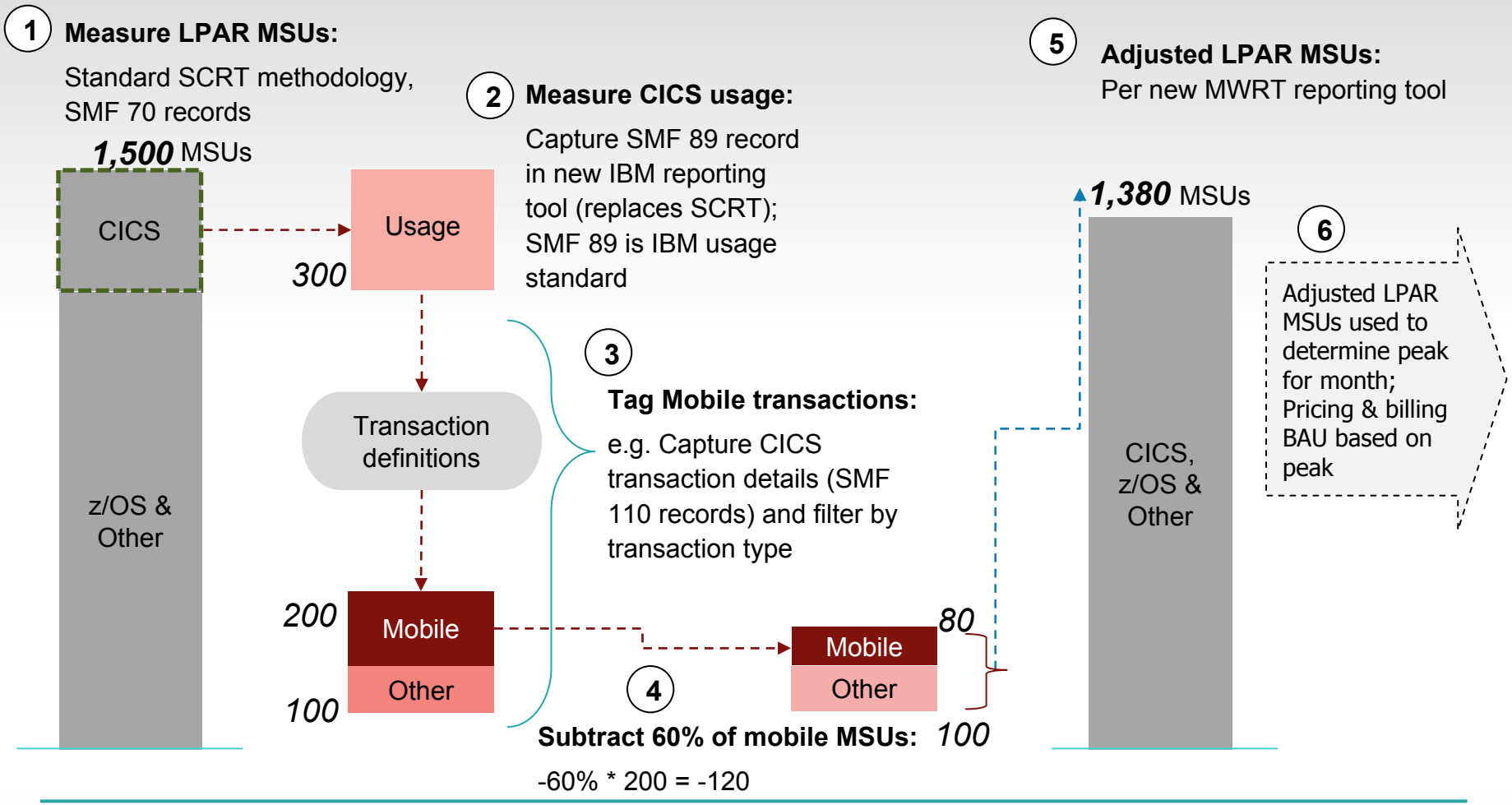
Example: Mitigating mobile impact to reported LPAR MSUs



LPAR MSUs (Standard)	
z/OS/Other	1,500
CICS	1,500

Figures are for illustrative purposes only.

LPAR MSUs (Adjusted)	
z/OS/Other	1,380
CICS	1,380

Detailed MWRT Reporting Example

5655-S97	CICS TS for z/OS V4					
Processor Type Serial	2817-XXXX					
Date Time of Interval	**LPAR Total MSUs**					Machine
	LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
02 Nov 2013 - 00:00 UTC	197	354	28	143	198	920
02 Nov 2013 - 01:00 UTC	205	329	27	131	180	872
02 Nov 2013 - 02:00 U						
02 Nov 2013 - 03:00 U						
02 Nov 2013 - 04:00 U						
02 Nov 2013 - 05:00 U						
02 Nov 2013 - 06:00 U						
02 Nov 2013 - 07:00 U						

1 **Capture LPAR MSUs** (SMF 70 records)

Mobile MSUs					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
79	142	11	57	79	368
82	132	11	52	72	349
73					
54					
42					
38					
43					
49					

2 **Customer requirement – Provide Mobile MSUs by interval:** *Customer input* with IBM approval. Values provided monthly in CSV format.

Mobile MSU reduction					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
(47)	(85)	(7)	(34)	(48)	(221)
(49)	(79)	(6)	(31)	(43)	(209)
(44)					
(33)					
(25)					
(23)					
(26)					
(30)					

3 **Tool will subtract 60% of Mobile MSUs from LPAR original values**

Adjusted LPAR Values for Billing					Machine
LPAR1	LPAR2	LPAR3	LPAR4	LPAR5	Total
150	269	21	109	150	699
156	250	21			
138	213	19			
103	162	16			
80	131	16			
73	140	17			
81	138	18			
93	139	18			

4 **Adjusted LPAR totals used to determine new monthly peak.**

LPAR1 Total MSUs = 197

Mobile only MSUs = 79

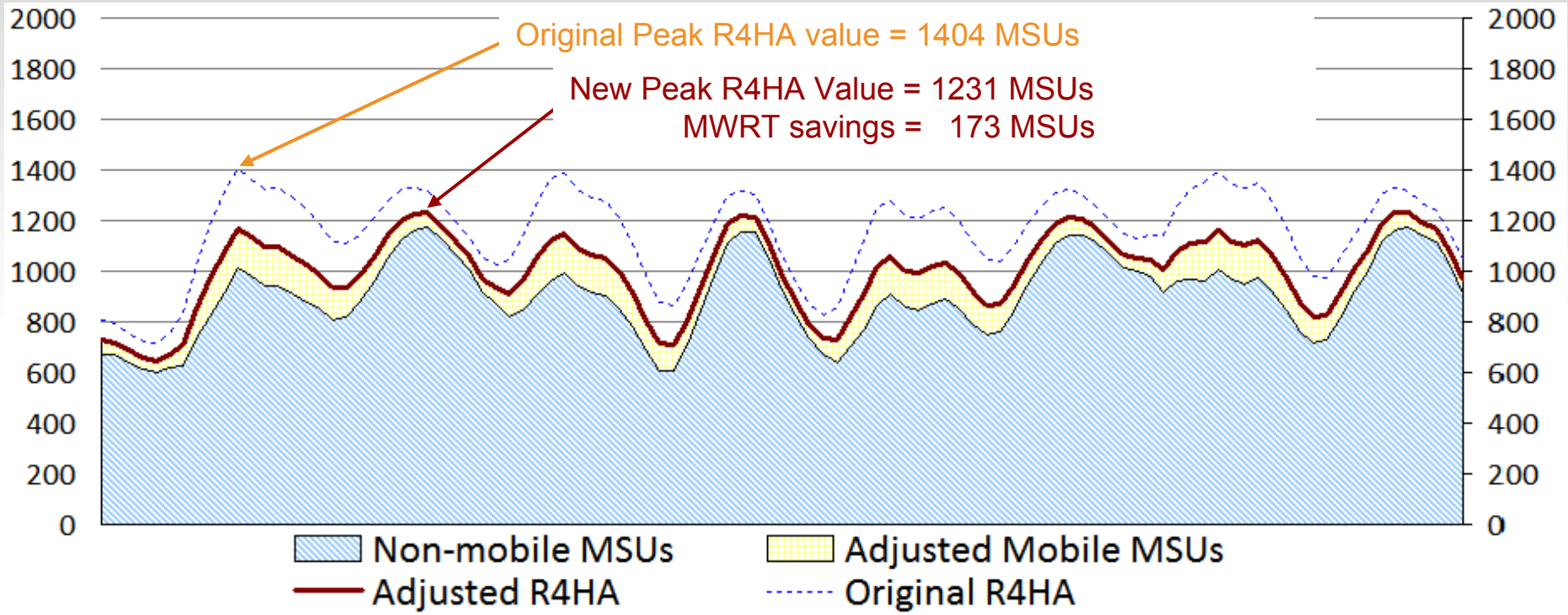
Subtract 60% of Mobile =

(79 * 0.60 = 47)

Adjusted LPAR MSUs:

197 – 47 = 150

LPAR MSU values adjusted for mobile contribution



- MWRT removes 60% of the Mobile workload, interval-by-interval
  - Non-mobile workload is unchanged
  - Billing for the month is based upon the newly calculated R4HA curve after the mobile workload has been reduced

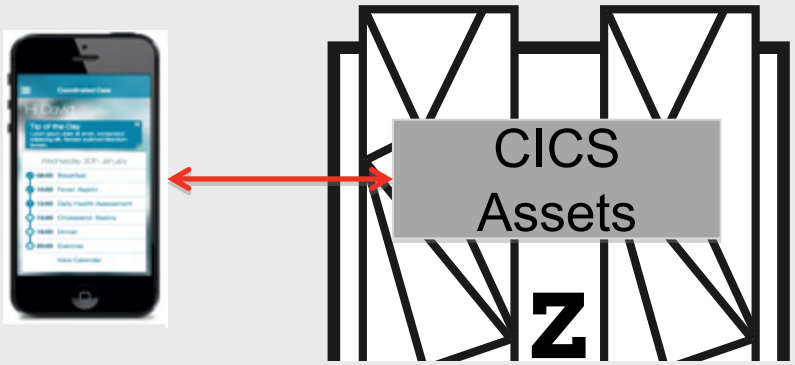
Provides benefit when Mobile workloads contribute to monthly peak MSUs; Off-peak MSU adjustments will not affect MSUs used for billing.

IBM MobileFirst Business Acceleration: CICS Integration speeds time to market

IBM Ready App: CICS Banking Accelerator

Beyond the reference framework, the CICS Banking Accelerator provides essential code and resources to simplify the integration of the mobile application with your existing mainframe banking solution

- ***Simplify integration with existing mainframe assets***
- ***Simplifies identification of mobile workload to qualify for Mobile Workload Pricing***



CICS Application Integration

1. CICS Best Practices
Recommended best practices for mobile workload (including mobile pricing data collection recommendation)

2. CICS Resource definitions
Pre-built resources for inclusion in your CICS systems to simplify installation and integration with existing apps

3. CICS Workshop
Advice and hands-on labs to help you rapidly exploit the IBM Ready Apps or other mobile apps

IBM

MOBILE MAINFRAME APP THROWDOWN

Will you be our mobile champ?

CICS | IMS | WAS | DB2

Open to existing System z clients

The challenge: Build a proof-of-concept demonstrating mobile enablement of your existing mainframe apps.

Get IBM help to build your mobile PoC

Call us 'Coach': We provide getting started guides and access to IBM zMobile Experts for questions and queries.

Win a week with IBM experts & more

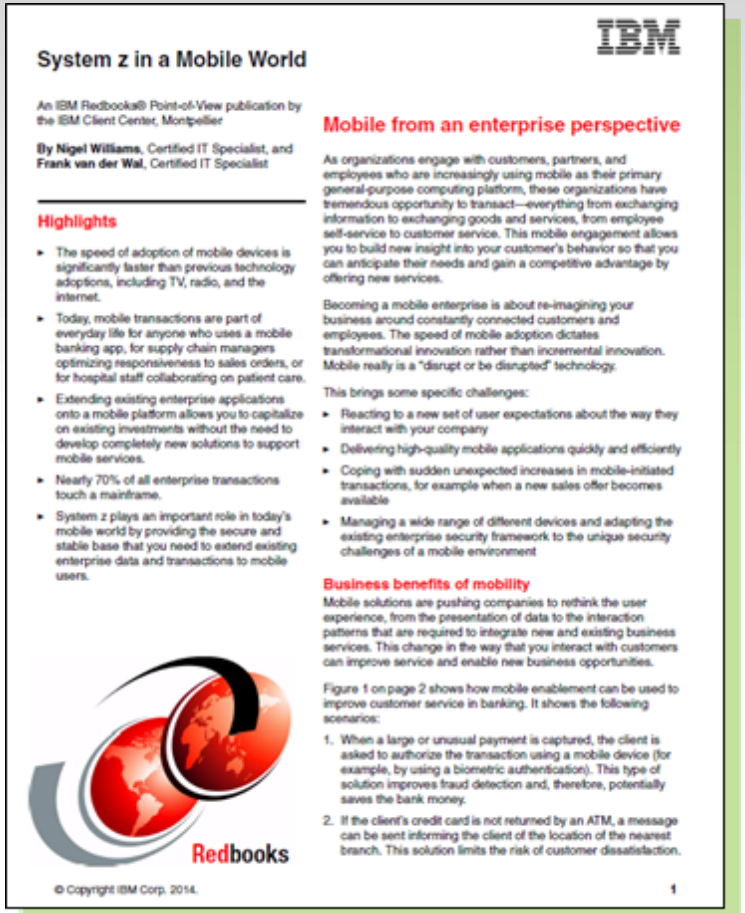
Make it real: Win help from IBM to bring your mobile app to life.

ibm.biz/mmathrowdown

No submission of code required, only screenshots.
Entries must be complete and submitted by **17 Sept 2014.**

Interested? Next steps…

- Read our Point-of-View paper.
- Request a Demo.
  - Banking, Retail, Government, Insurance
  - Use Worklight on Linux on System z
  - Use z/OS transactions.
- Try the System z Mobile demo apps
  - CICS Genapp.
  - CICS EGUI
  - IBM Remote. Sample App you can use to manage z HMC.
- System z Mobile home page
  - Customer case studies
  - Analyst reports
  - Customer Videos.



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System z in a Mobile World

An IBM Redbooks® Point-of-View publication by the IBM Client Center, Montpellier

By Nigel Williams, Certified IT Specialist, and Frank van der Wal, Certified IT Specialist

Highlights

- The speed of adoption of mobile devices is significantly faster than previous technology adoptions, including TV, radio, and the internet.
- Today, mobile transactions are part of everyday life for anyone who uses a mobile banking app, for supply chain managers optimizing responsiveness to sales orders, or for hospital staff collaborating on patient care.
- Extending existing enterprise applications onto a mobile platform allows you to capitalize on existing investments without the need to develop completely new solutions to support mobile services.
- Nearly 70% of all enterprise transactions touch a mainframe.
- System z plays an important role in today's mobile world by providing the secure and stable base that you need to extend existing enterprise data and transactions to mobile users.

Mobile from an enterprise perspective

As organizations engage with customers, partners, and employees who are increasingly using mobile as their primary general-purpose computing platform, these organizations have tremendous opportunity to transact—everything from exchanging information to exchanging goods and services, from employee self-service to customer service. This mobile engagement allows you to build new insight into your customer's behavior so that you can anticipate their needs and gain a competitive advantage by offering new services.

Becoming a mobile enterprise is about re-imagining your business around constantly connected customers and employees. The speed of mobile adoption dictates transformational innovation rather than incremental innovation. Mobile really is a "disrupt or be disrupted" technology.

This brings some specific challenges:

- Reacting to a new set of user expectations about the way they interact with your company
- Delivering high-quality mobile applications quickly and efficiently
- Coping with sudden unexpected increases in mobile-initiated transactions, for example when a new sales offer becomes available
- Managing a wide range of different devices and adapting the existing enterprise security framework to the unique security challenges of a mobile environment

Business benefits of mobility

Mobile solutions are pushing companies to rethink the user experience, from the presentation of data to the interaction patterns that are required to integrate new and existing business services. This change in the way that you interact with customers can improve service and enable new business opportunities.

Figure 1 on page 2 shows how mobile enablement can be used to improve customer service in banking. It shows the following scenarios:

1. When a large or unusual payment is captured, the client is asked to authorize the transaction using a mobile device (for example, by using a biometric authentication). This type of solution improves fraud detection and, therefore, potentially saves the bank money.
2. If the client's credit card is not returned by an ATM, a message can be sent informing the client of the location of the nearest branch. This solution limits the risk of customer dissatisfaction.

Redbooks

Connecting mobile & your enterprise

- ✓ Do you know what your overall enterprise mobile strategy is?
- ✓ Are you adapting your System z infrastructure to support mobile?
- ✓ Are you designing and developing applications to take advantage of your existing investments?