IBM SolutionsConnect 2013
L'IBM TechSoftware nouvelle génération

Expériences Mobile & IMS: Théorie & Réalisations

Parlons évolution et comment nos clients ont pu "facilement" avec IMS accepter les innovations dues à la révolution Mobile.
La légendaire élasticité de la plateforme z avec IMS est responsable de son succès. L'effort d'intégration que IBM insère intégre dans l'ADN de ses produits a fait le reste.

Hélène Lyon

IBM Distinguished Engineer

EMEA IMS Architecture Team Technical Executive

IBM®

Agenda

- **The Mobile Transformation**

- **The IBM Offering for System z**

- **An IMS Customer Reference**
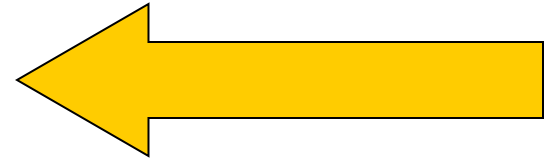
Change, complexity and uncertainty have become opportunities for businesses to innovate, transform, and grow in new ways

Mobile is a mandatory transformation

- Users are migrating to mobile as **preferred channel of interaction**, therefore organizations need to leverage and extend their existing capabilities and meet the mobile demand
- As BYOD becomes more pervasive, it is critical to protect and manage the device while **securing access to corporate data**
- The dynamic nature of mobile is forcing organizations to be more agile with both their business models and IT delivery

▪Highly engaging, personalized, and differentiated experiences

▪Drive customer satisfaction, improve brand loyalty & reduce costs

▪Provide tools that can help advisors close business faster

▪Become easy-to-do-business-with for servicing needs

▪Improve employee productivity through effective collaboration

▪Reduce cost of doing business by transparent processes

Customers

Advisors

Employees

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#solconnect13
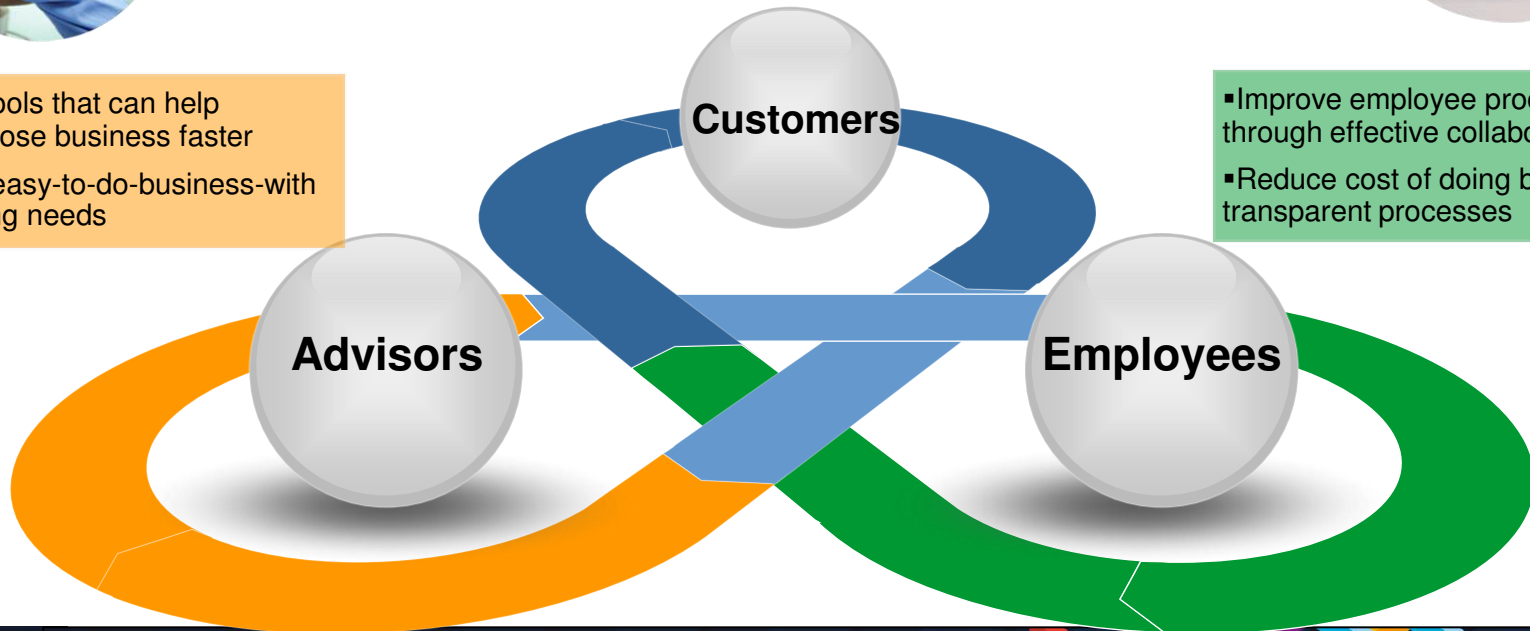
Mobile is changing the way that you interact with your customers

When a large payment has been requested then…

Request biometric authentication

Online / Mobile

Teller

Personal

Branch Touchpoints

When a customer's card is not returned by the ATM then…

Send SMS with location of nearest branch

ATM

When a pending transaction will cause an account to be overdrawn then…

Promote overdraft protection offer

Customer

Customer Service Manager

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An Enterprise has four key 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

Delivering high quality apps

- Consumers demand a high quality user experience where quality is influenced as much by design as it is by function

Accelerated time to market requirements

- Higher frequency of new releases puts added pressure on teams to deliver on time and with high quality

Connecting apps with existing enterprise systems

- Apps typically need to leverage existing enterprise services, which must be made mobile-consumable
- Enterprise wireless networks are running out of bandwidth to accommodate employee devices

Characteristics of Mobile Workloads
On any platform

- **Increased web traffic**
  - Mobile applications drive an increase in overall transaction rates. When a user can check their bank balance anytime, they tend to do it more often.
- **Increased off-peak web traffic**
  - Traditional workload peaks change or are smoothed out when more mobile devices are driving the traffic.
- **New mobile applications are often first deployed rapidly to cloud-based servers.**
  - According to Intel -- A new cloud server is required for every 600 smart phones (or 120 tablets) sold. This leads to over a million new servers required in 2013.
- **Mobile applications could cause huge spikes in transactions.**
  - Consider a time-sensitive offer sent to mobile users. Since they are more likely to see and respond to the offer quickly this could cause a huge and sharp spike in transaction invocations. This drives the move toward light-weight data transports like JSON.
- **Think Sensors and Actuators**
  - Mobile is more than smartphones. Think of any device relaying information to a server.

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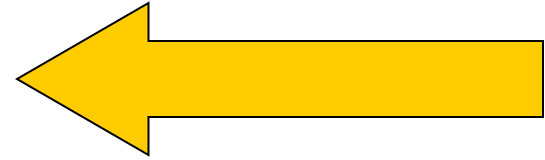
The IBM MobileFirst Development Lifecycle

- **Mobile Apps are the front-end to a complex (enterprise) back-end system**
    - Mobile Apps are rapidly becoming a critical user interface to enterprise systems
    - But they are just one part of a multi-tier, multi-component application "eco-system"
    - Developing and delivering mobile apps requires coordination across that whole eco-system

Design & Develop
WorkLight

Instrument
Analytics & Security

Obtain Insight
Tealeaf

Integrate
CastIron

Industrialize
IBM Mobile Development Lifecycle Solution

Manage
Endpoint Manager

Test
Rational Test Workbench

Deploy
WorkLight

Scan & Certify
AppScan

Deliver enterprise mobility with System z

Construct, debug, and test mobile UIs

Worklight Studio and RDz IDEs run on a workstation
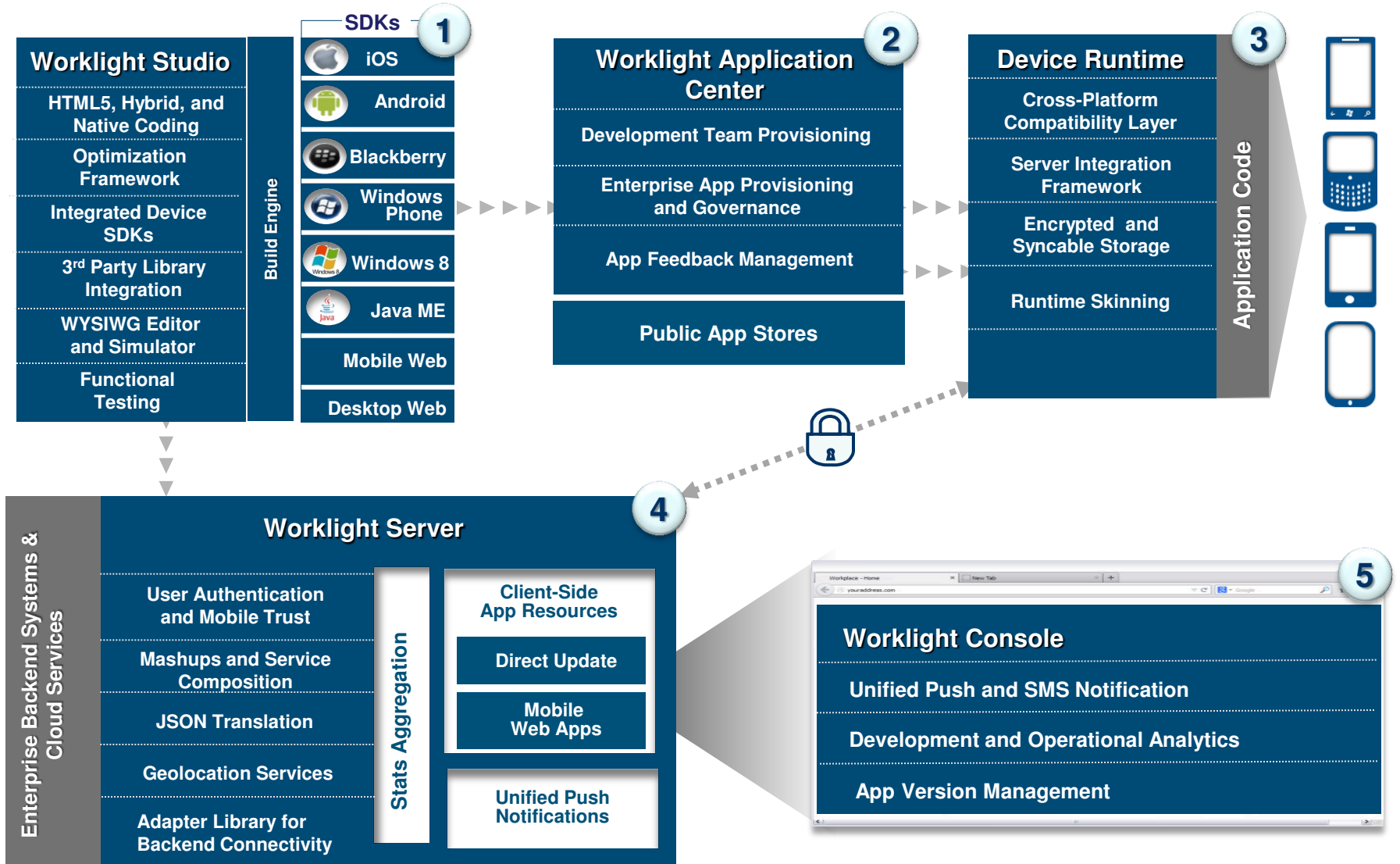
Apple **Android** **Black berry** **Windows Phone**

Check "**Considerations in opening the mainframe to mobile devices**"

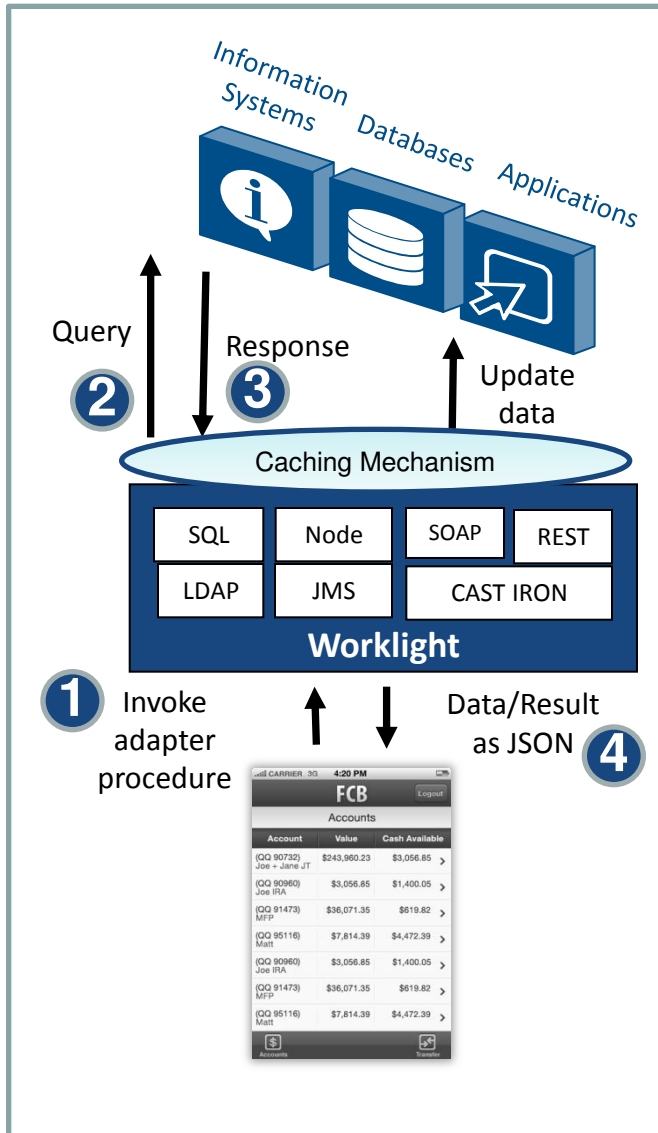A guide for enterprise teams working on mobile applications

Leigh Williamson, Distinguished Engineer, Software Group, IBM

Summary: As more and more enterprises in all industries realize the need for mobile versions of their business applications, there is a need for an enterprise-class approach to mobile app development that leverages past investments in information technology and infrastructure. Leigh Williamson explains the five key themes of the IBM approach to mobile application development, which exploits existing information and transaction systems for maximum speed to market and reuse of services.

- **Why z as Mobile Apps container**
  - Massive scalability in a single footprint, to handle the workload of millions of devices and sensors.
  - Workload Management to provide a quick reaction to sharp spikes in demand
  - Hardware encryption speeds SSL applications.
  - Business Resiliency for critical mobile apps.
  - Integration of co-located existing applications & data

z/Linux   z/OS

Linux on z

z/OS

WAS

DB2

CICS

IMS

DB2

WAS

Worklight Server
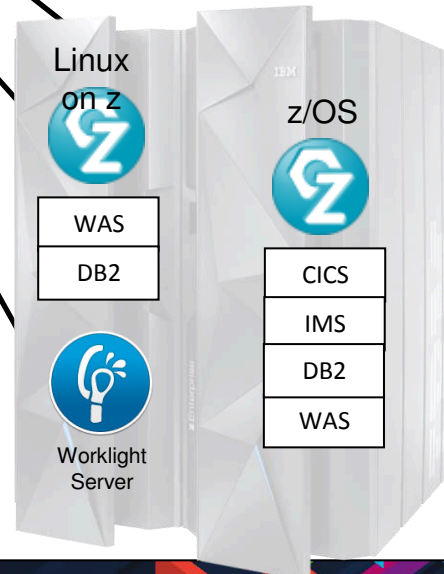
Refactor and extend existing logic on enterprise platforms as mobile-consumable services

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Worklight Components

SDKs — 1

Worklight Studio

HTML5, Hybrid, and Native Coding

Optimization Framework

Integrated Device SDKs

3rd Party Library Integration

WYSIWG Editor and Simulator

Functional Testing

Build Engine

- 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 Skinning

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 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

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Worklight Server- Adapters

Information Systems Databases Applications

Query

Response

Update data

2

3

Caching Mechanism

SQL	Node	SOAP	REST
LDAP	JMS	CAST IRON	

Worklight

1 Invoke adapter procedure

Data/Result as JSON **4**

Universality
Supports multiple integration technologies and back-end information systems

Read-only as well as Transactional Capabilities
Adapters support read-only and transactional access modes to back-end systems

Fast Development
Defined using simple XML syntax, and easily configure with JavaScript API

Security
Use of flexible authentication facilities to create connections with back-end systems
Adapters offer control over the identity of the connected user

Caching
Caching utilized to store retrieved back-end data

Transparency
Data retrieved from back-end applications is exposed in a uniform manner regardless of the adapter type

Worklight Studio with RDz a complete set of System z Development and Test capabilities for Mobiles

Integration with Team Concert for Lifecycle and Source Management

Access to typical System z sub-system functionality in z/OS, CICS, IMS, DB2, WAS

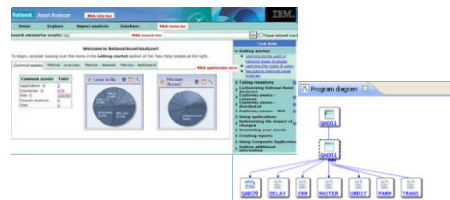Integration with RD&T for flexible access to System z environment

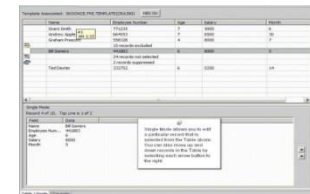Robust Mobile Development in conjunction with Worklight

Integration with Fault Analyzer for Dump Analysis
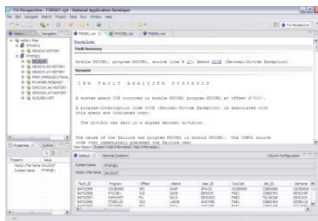
Integration with Asset Analyzer for Application Understanding and Impact Analysis

Integration with File Manager and Fault Analyzer for file and test data handling and Dump Analysis

IBM Integration portfolio – Comprehensive Connectivity

IBM Cast Iron
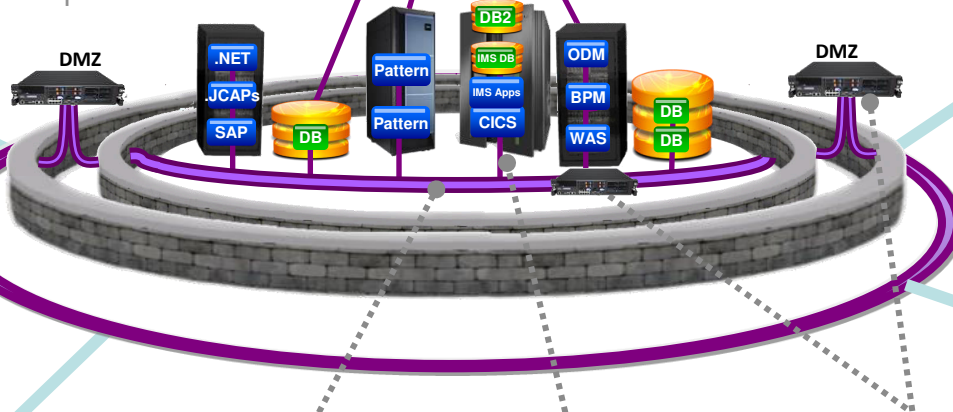Synching data with SaaS apps to leverage new cloud economy

IBM PureApplication System
Enterprises looking to achieve "more with less" by better managing IT resources as collectives

IBM DataPower Gateway Appliance
B2B Integration Gateway for secure collaboration with communities of trading partners

IBM Caching Appliance
Cache grids improve scale and performance

Public Cloud

Private Cloud

DMZ

.NET
JCAPs
SAP

Pattern
Pattern

DB2
IMS DB
IMS Apps
CICS

ODM
BPM
WAS

DB
DB

DMZ

Trading partner communities

Mobile

IBM Worklight
Productive multi-device development and management

Internet of Things

IBM MQTT
Reliable, efficient, scalable messaging for mobiles and sensors

IBM Message Broker
Integration Bus provides universal connectivity for heterogeneous environments across enterprise processes, applications, and data

IBM MQ messaging
Messaging backbone provides reliable transport and data delivery across data center

IBM DataPower Gateway Appliance
Integration Gateway for secure & controlled access to enterprise resources, while optimizing workload delivery

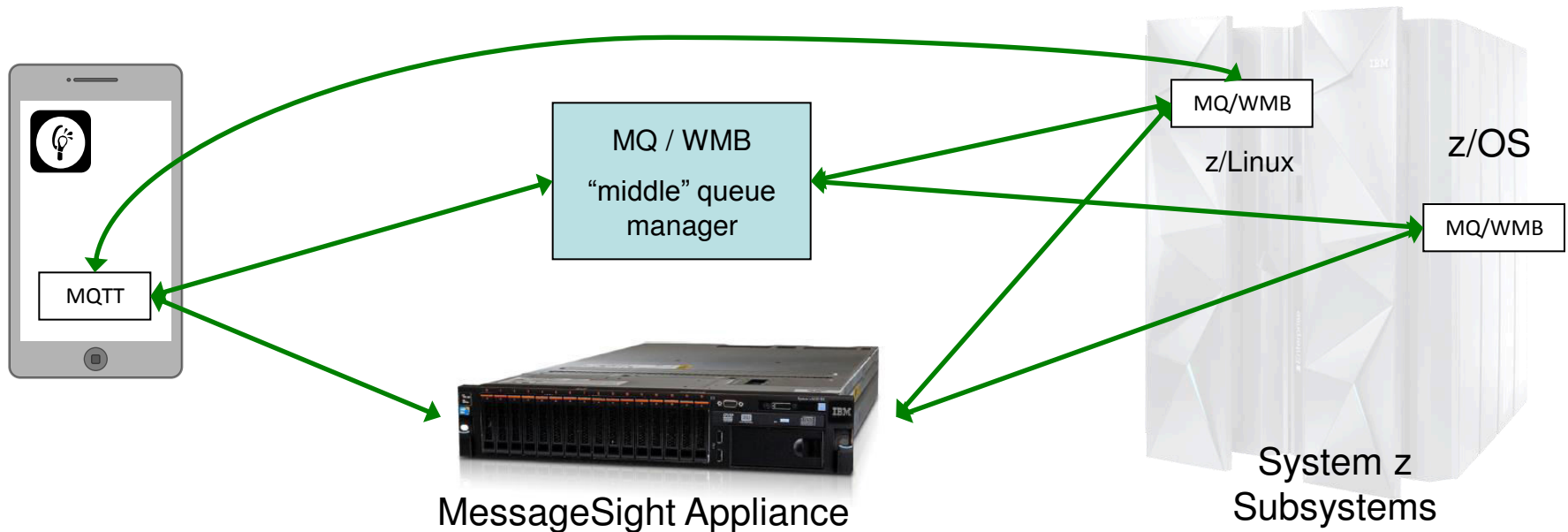Developer Communities

IBM Web API Management
Manage your APIs to open up access encouraging innovation from App Developers

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IBM leads the market for Connectivity & Integration

- **Cloud, Mobile, and API Connectivity**
  - IBM has the most complete SOA portfolio, including the ability for customers to securely connect their existing environments to cloud applications, mobile devices, and expose their services as APIs, while optimizing the delivery of traffic

- **Breadth and Scale**
  - IBM extends Connectivity into Big Data, B2B, mobile and cloud, at an Internet-scale that our competitors cannot match.

- **Extending Connectivity with Business Insights**
  - IBM is evolving Connectivity to generate business insights from existing services and support the Engaging Enterprise to increase relevancy to the line of business and customers of all sizes.

- **End-to-End Messaging Fabric**
  - IBM has extended his leadership in messaging into the Internet of Things, mobile device, managed file transfer and advanced security with a commitment to open standards such as MQTT.

- **Universal Integration**
  - IBM supports the widest range of integration styles, including the addition of integration capabilities into the Application Server.

- **Workload Optimized Systems**
  - With decades of experience building optimized systems, IBM delivers capabilities within systems designed to yield value in hours, not days or weeks.

Connecting a mobile world with reliable real time messaging

- **WebSphere MQ Telemetry, extension of IBM messaging solution to support the MQ Telemetry Transport (MQTT) protocol with potentially different qualities of service**
  - MQTT, as Lightweight Publish Subscribe messaging protocol allowing a message to be published once and multiple consumers (applications / devices) to receive the message

- **IBM MessageSight messaging appliance, extension of the messaging network outside the datacenter**
  - Designed for machine to machine (m2m) and mobile environments
  - Optimized for message throughput and to to handle concurrent connectivity between a multitude of devices and applications with predictable latency

MQTT

MQ / WMB
"middle" queue manager

MQ/WMB

z/Linux

z/OS

MQ/WMB

System z Subsystems

MessageSight Appliance

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Connect Mobile Apps with Enterprise Apps & Services
Security, Control, Integration & Optimization of mobile workload

Securely expose enterprise data to Mobile Apps while **optimizing** delivery of the workload

IBM DataPower Gateway Appliance

e.g. REST (JSON/XML) over HTTPS

e.g. SOAP over HTTPS

Message Oriented, Legacy Apps

Worklight, WAS ND

Web Apps, Services

SSL Offload
Threat Protection
Rate Limiting
Validation, Filtering
now with Native JSON Support**
Authentication
z/OS identity propagation
Authorization
OAuth 2.0
Security Token Translation (e.g SAML)
Transformation
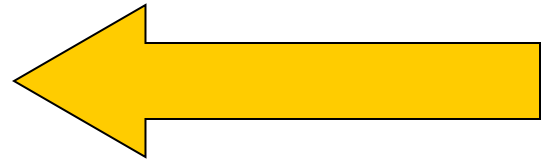Content-Based Routing
Intelligent Load Distribution
Response Caching Locally or to XC10 **

Enhanced form-based authentication support for quick integration with **Worklight applications** running on mobile devices **
Ready-to-use configuration pattern as reverse proxy & security policy enforcement point in front of **Worklight Server****

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Mobile Connectivity with IMS TM - Inbound to IMS

WebSphere Servers
WAS, WTX, IIB, BPM

IMS TM
Resource
Adapter

JCA

WAS – WebSphere Application Server
WOLA - WebSphere z/OS Optimized Local Adapters
WTX – WebSphere Transformation Extender
IIB – IBM Integration Bus (was WeSphere Message Broker)
BPM - IBM Business Process Manager (BPM) Advanced

REST &
JSON

Worklight
Server
Or RYO

SOAP
over IP

IMS SOAP
Gateway

WebSphere
DataPower

WAS / WOLA

IMS

TCP/IP on z/OS

IMS
Connect

O
T
M
A

B

D

MQTT

JDBC

JDBC /
ODBC

DB2 SP
(DSNAIMS)

IMS DB &
XML DB

DB2

MQ Client

WMB &
DataPower

JMS or MQ API

MQ

MQ IMS Bridge

MQ Trigger
Monitor

Callin

B Business logic

D Data Access

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First National Bank, South-Africa

*Easy **Mobile Channel** integration with core z/OS IMS applications to improve customer experience and add new revenue opportunities at low implementation cost*

Business challenge
Allow shift to self-service mobile banking
Grow business while keeping high-level of performance
Reduce IT costs by leveraging core business infrastructure

Solution
Numerous channel connectivity to IMS Apps using a 2-Tier architecture based on a proprietary IMS Connect socket API
Service layer based on IMS SOAP Gateway on z/OS to interact with all external web services with inbound and outbound requests
Orchestration layer developed in IMS Apps
Additional performance tuning by consolidating complex services into a single IMS transaction - thus effectively lowering the transaction volume and improving response times

Benefits
- Architecture simplification by using z/OS IMS applications as core orchestration and business logic execution layer
- Constantly innovating with new systems and frameworks to support growing business needs resulting in IMS Workload growth up to **X 8 in 10 years** - Now up to 920 Million transactions a month
- Customer initiated transactions workload including mobile **doubled every year since 6 years**

"Innovation and technology are core to FNB business strategy. We achieved our goals with IMS as our core strategic transactional system providing both transactional and batch workload support, capability to scale in both transactional and database volumes, cloud like concepts and 24x7 service capability"
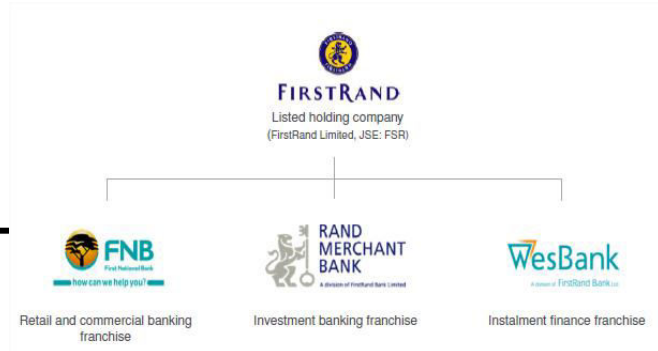   *Jay Prag, CIO – Channels at FNB*

Solution components:
- IBM System z & z/OS
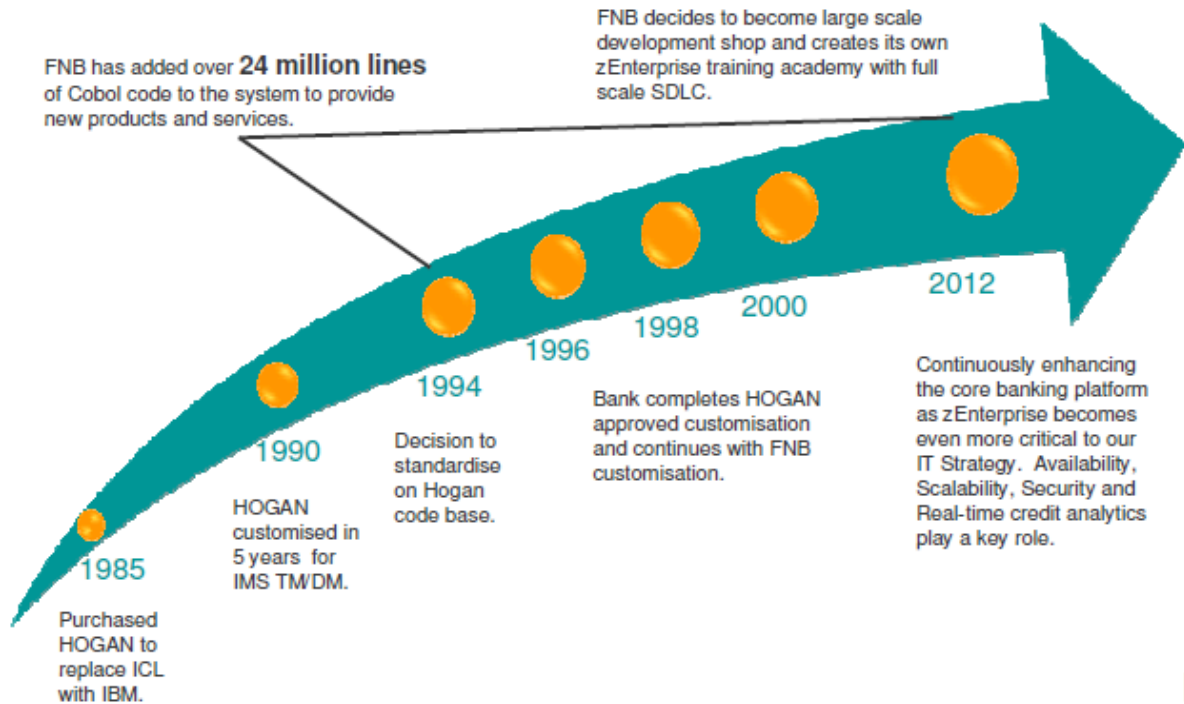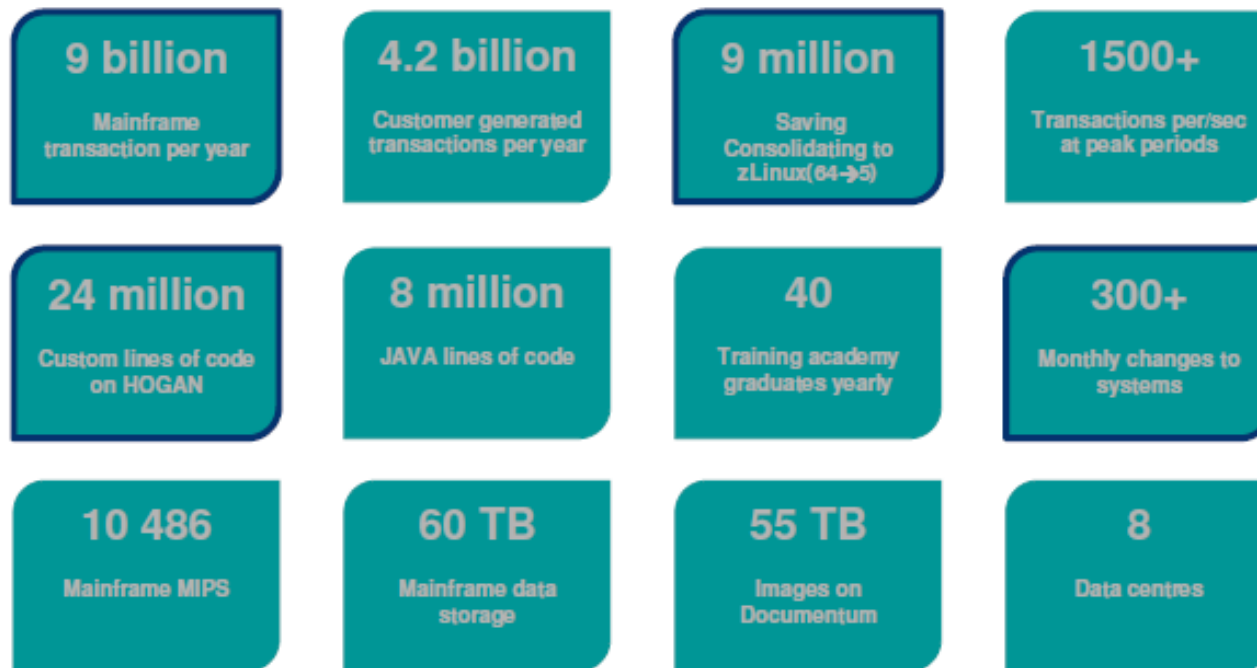- IBM IMS 11
- IBM IMS Connect & IMS SOAP Gateway

FirstRand – Core banking platform

The core banking platform, which runs on IBM's System z mainframe, plays a key role in the consolidation of the FirstRand IT Strategy on zEnterprise

FNB has added over **24 million lines** of Cobol code to the system to provide new products and services.

FNB decides to become large scale development shop and creates its own zEnterprise training academy with full scale SDLC.

1985
Purchased HOGAN to replace ICL with IBM.

1990
HOGAN customised in 5 years for IMS TM/DM.

1994
Decision to standardise on Hogan code base.

1996

1998
Bank completes HOGAN approved customisation and continues with FNB customisation.

2000

2012
Continuously enhancing the core banking platform as zEnterprise becomes even more critical to our IT Strategy. Availability, Scalability, Security and Real-time credit analytics play a key role.

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FirstRand – Core banking platform

The core banking platform on IBM z196 supports a 24 x 7 x 365 business operation in South Africa and key African markets showing scalability and availability.

9 billion	4.2 billion	9 million	1500+
Mainframe transaction per year	Customer generated transactions per year	Saving Consolidating to zLinux(64→5)	Transactions per/sec at peak periods

24 million	8 million	40	300+
Custom lines of code on HOGAN	JAVA lines of code	Training academy graduates yearly	Monthly changes to systems

10 486	60 TB	55 TB	8
Mainframe MIPS	Mainframe data storage	Images on Documentum	Data centres

Note: Figures as of August 2012

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FNB – Mobile Banking & IMS – Evidences

Banking App growth since launch
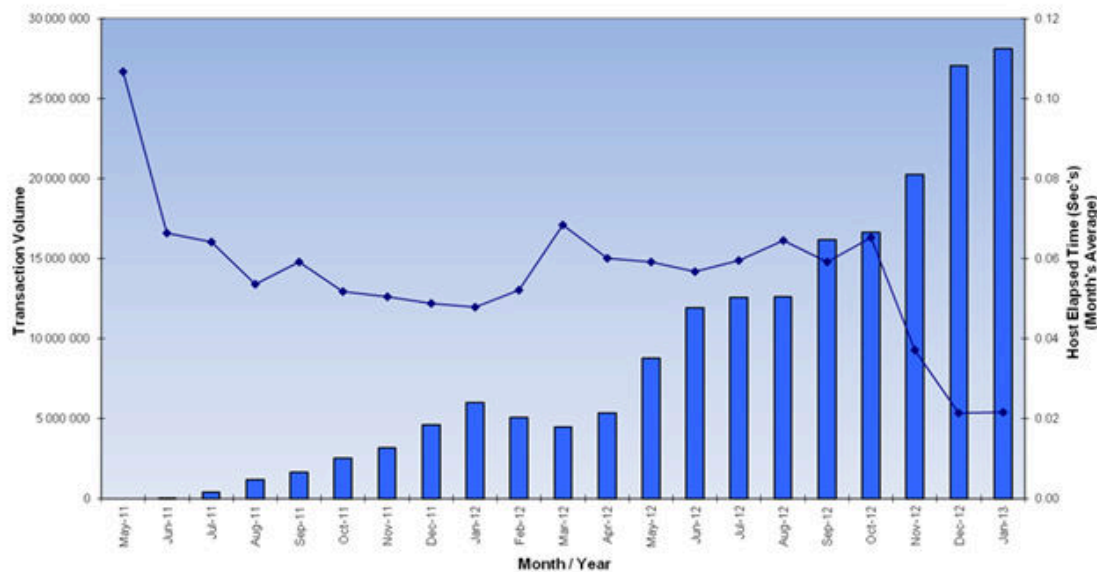
Customer Initiated Transactions including mobile, ATM, internet
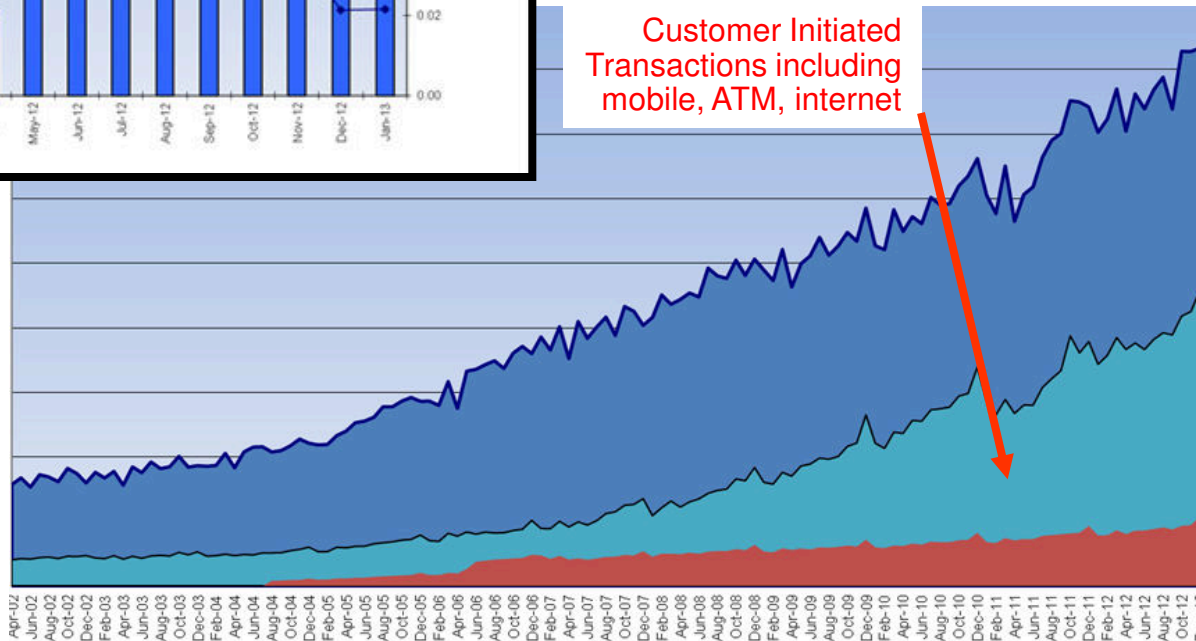
Quotes from Jay Prag, CIO – Channels at FNB

"Innovation is at the heart of FNB's ongoing success: we always look to be first into new markets, and mobile was no exception. Our business has an owner-manager culture in which each business unit focuses on what they need to develop for their specific requirements. Our 90-day development cycles require enormous flexibility at the architectural level, and the ability to bring new products to market very rapidly. The maturity of IMS on IBM zEnterprise makes it the ideal platform for achieving this speed to market."

"Another critically important factor for us is the maturity of the platform and the management discipline that we've built around it. This means that we can build extremely robust and secure code on IMS on zEnterprise, then extend the functionality across the second tier of the architecture, which is all of the channels."

"With IMS as our core orchestration and business logic execution layer, we have true 24/7 service capability and the ability to manage growth without worrying about scalability," says Prag. "IMS structures and manages data in a much more efficient way than a relational database. We are using 30 TB of storage space for all data on the mainframe; if we had a relational database, we would probably be running with 300 or 400 TB."

"The IMS Fast Path database concept is a key enabler for the phenomenal end-to-end response times we are able to offer mobile banking users," comments Prag. "Delivering a reliable, secure, convenient and high-performance service is critical in helping us move customers from branches to mobile devices. That is strategically important because our overall business can grow much faster on mobile, where we don't have the physical constraints and costs of a bricks-and-mortar operation.

"Since 2010, monthly transactional volumes in our branches have fallen from 16 million to 10 million, while online transactions have risen from 68 million to a peak of 162 million, and mobile transactions from 108 million to 158 million. This is all about reducing the cost of transactions and increasing the convenience for customers – while simultaneously enabling tellers in our branches to focus on more complex and higher-value transactions."
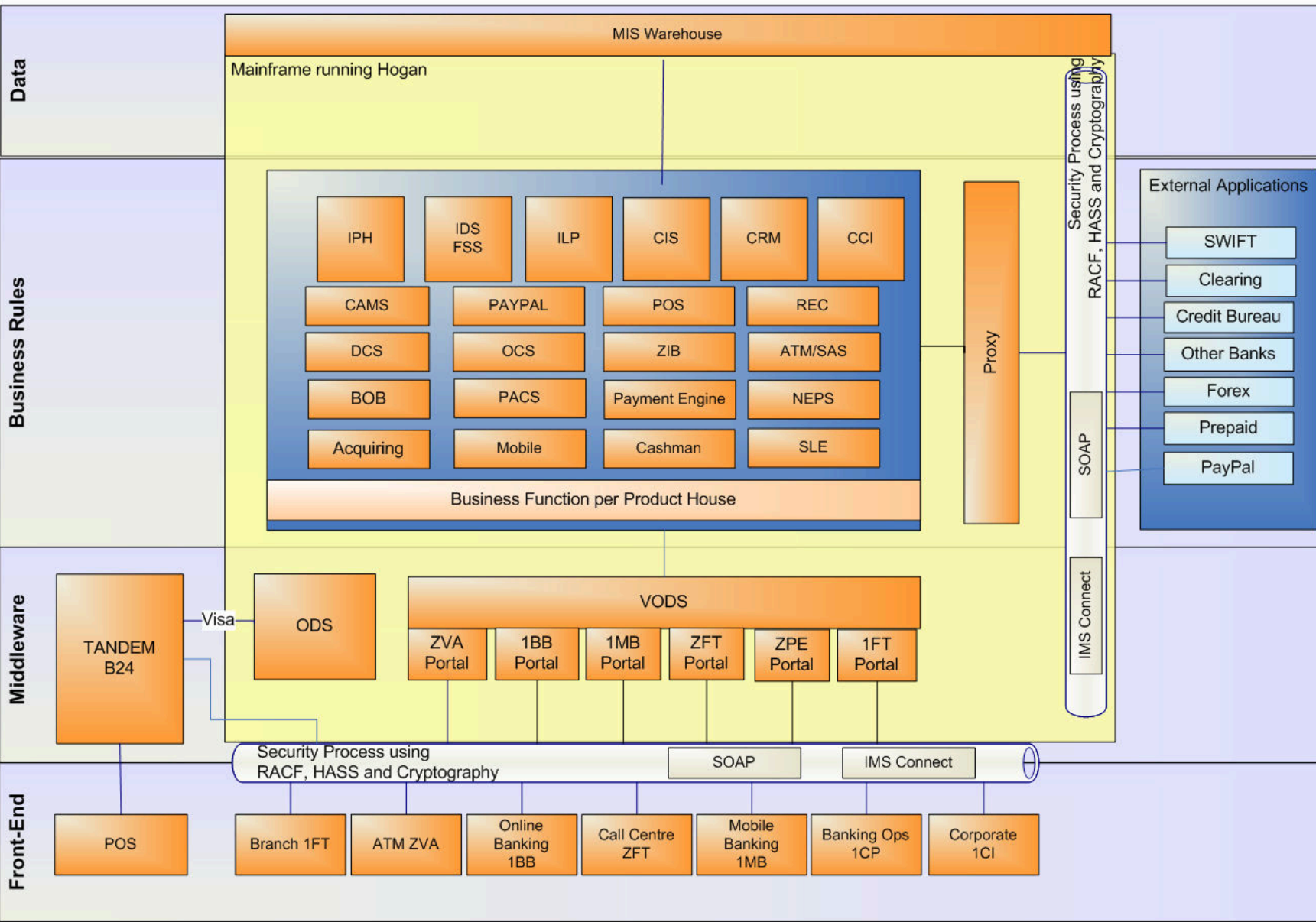
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What about YOUR implementation?

IMS Mobile Demo

- **A demo showing access to IMS data from a mobile device**
  - With IMS Mobile Explorer, a client written in Worklight, using hybrid code (mix of html 5 and native API)
  - Access to an IBM System z DemoCenter (zserveros)