Optimize and Innovate with IMS
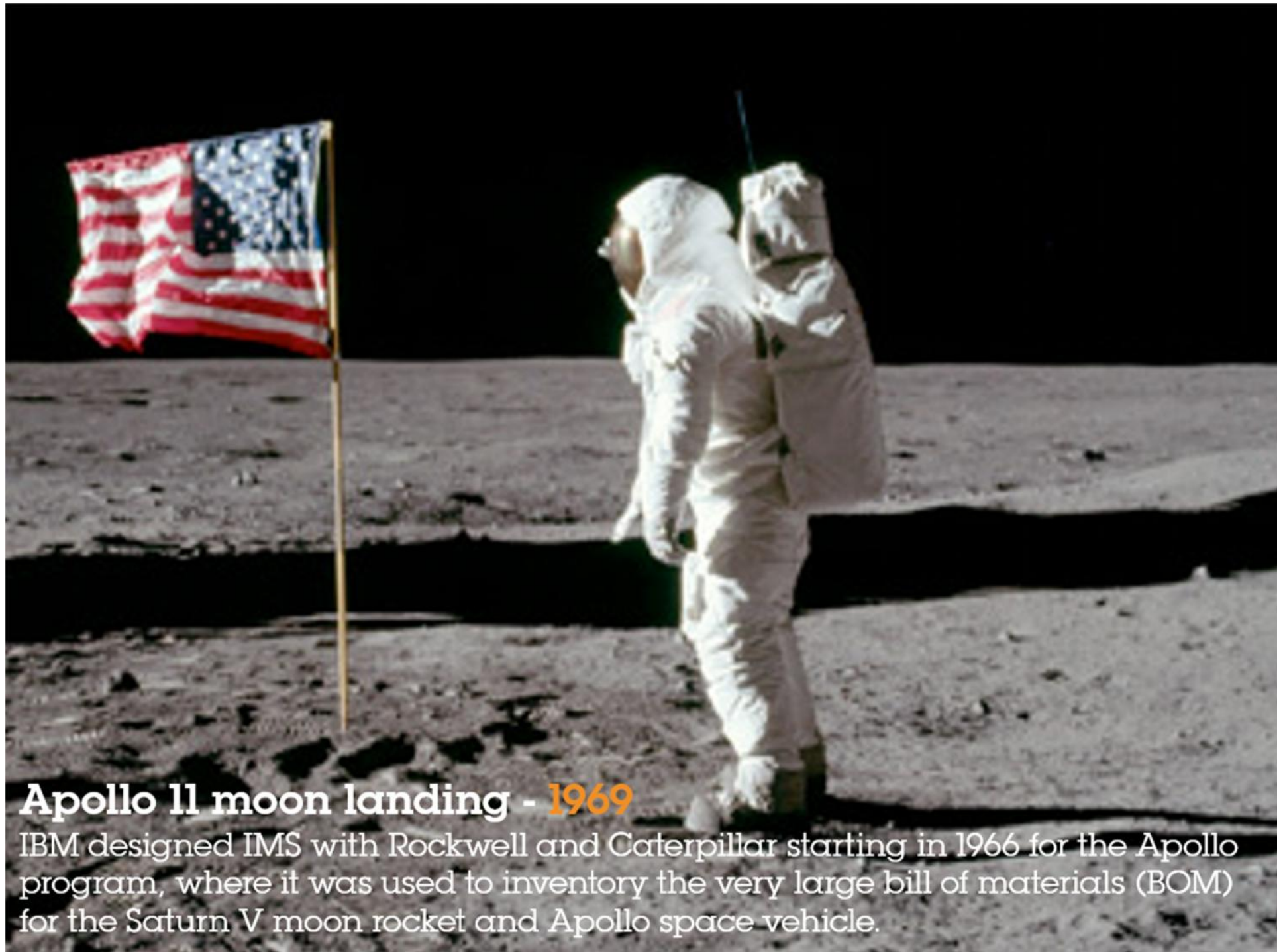
Kyle Charlet
Distinguished Engineer
IMS Architect: Cloud, mobile, analytics

Nick R Griffin
Product Manager
IMS Tools

Apollo 11 moon landing - 1969

IBM designed IMS with Rockwell and Caterpillar starting in 1966 for the Apollo program, where it was used to inventory the very large bill of materials (BOM) for the Saturn V moon rocket and Apollo space vehicle.

First National Bank, South Africa - 2014
Providing upward mobility for Africa through critical mobile financial services to Africa's unbanked 80 percent, relying on the mainframe and IMS for performance, scalability and reliability.

There are three important shifts fundamentally changing IT

Data

Data is becoming the world's new natural resource

Cloud

The emergence of cloud is transforming IT and business processes into digital services

Engagement

Social. Mobile. Security. Empowering people with knowledge, enriching them through networks and changing expectations.

Business and industries are being transformed by these shifts

72% say greatest value will come from analyzing transactional data

Systems of Record

91% say new customer client-facing apps will access the Mainframe

Systems of Engagement

12% amount of data being analyzed in the enterprise

55% of enterprise applications need mainframe to complete transactions

Systems of Insight

Cloud

70% of enterprises to pursue hybrid cloud by 2015

Mobile

IMS Product Strategy is aligned with these shifts

Strategic Intent

- **Continue to deliver the IMS Value Proposition**
  - Superior performance, reliability, availability and serviceability
  - Minimize cost per transaction

- **Innovate and extend the value of your IMS investment**

- **Expand and empower the IMS talent population**

Investment

- **Core Capabilities**
  - Reduce path length, contention, I/O...
  - Reduce planned outages
  - More dynamic capabilities

- **Data & Analytics**
  - Accelerate time to insight
- **Cloud/Mobile**
  - Rapidly enable/control cloud & mobile access to IMS resources

- **Open interfaces & Java**
- **Modern tooling for administrators, developers and DBAs**

Leaders are optimizing & innovating with IMS…
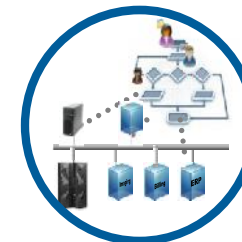
Systems Management

Performance
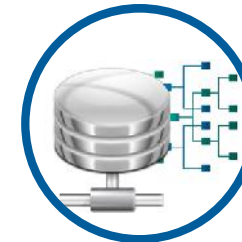
TCO

Database Management

Tx Management

Scalability

IMS Tools
- **Complete Database Management**
- **Optimize IMS Performance**
- **Accelerate IMS upgrades**

IMS TM

IMS DB

SOA and Open Integration

Mobile Access

Business Analytics

Open Database

Java

Application Modernization

Optimize ———————————— **Innovate**

# Delivering value to their businesses
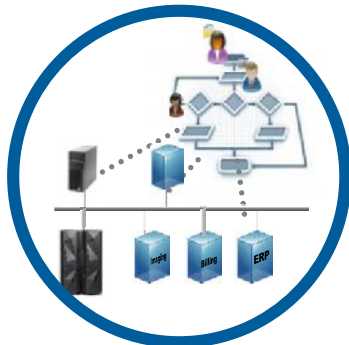
SOA and Open Integration

Who: A large South African bank

What Business Need: business pressure due to expansion, regulation and consumer demand requires speed and agility

Solution: enable IMS applications to call, in-line, to an enterprise decision management solution

Benefits Delivered: quickly respond to changing business needs
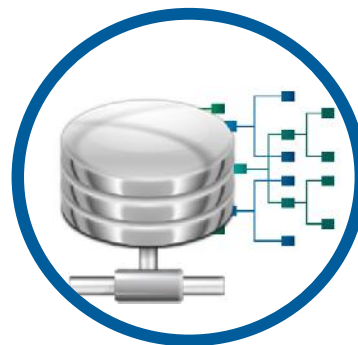
Open Database

Who: A large insurance client

What Business Need: Easier Access to IMS Data

Solution: IMS Open Database infrastructure

Benefits Delivered: Easy access to IMS data using SQL from any platform Helps to drive open standards and open technology into IMS

Application Modernization

Who: IT Service Provider for banks

What Business Need: Evolve their core banking processes

Solution: Promoted the use of Java on z/OS, especially Java and COBOL interoperability hosted by IMS

Benefits Delivered: Skills, rapid development, reduced application logic & complexity

Optimize and Innovate with IMS

2014 Key Deliveries

IMS TM VUE - Enables clients to expand new workloads in IMS through an alternative pricing option

IMS Mobile Feature Pack - Easily extend IMS reach to cloud and mobile – 20+ clients in/starting POC

IMS IDAA POT - Accelerate analysis of IMS Data with IDAA

IMS 14 – QPP began January 2015

Optimize and extend the value of your IMS investment in the era of Data, Cloud & Engagement
- *Simplified, standards-based management and integration for hybrid cloud, analytics, mobile, and big data*
- *Improved IMS TCO and Qualities of Service*

"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."

- Jay Prag, CIO Hogan Channels, FNB

FNB

IMS processes **the world's transactions**

117,292

50,000,000,000

secure transactions per day

IBM IMS: The world depends on it

Many of the largest corporations in the world rely on IBM Information Management System (IMS) to run their business. Which, when you stop to consider it, is really your business.

Announcing the z13

Mainframes account for 68% of production workloads, but only 6% of IT spend

- Mobile Test Dr...
- IBM Mobile Ce...
- Enterprise Rea...
- US Mobile ISV...
- Enterprise Com...
- Urban Code 6.1...
- CICS TS v5.3 Ope...
- Rational Test Workb...
- Mobile Application Thro...
- BPM and Monitor v8.5.6 for ... on z Systems
- IBM Integration Bus v10
- IBM zSecure Audit Reporting SSE
- Java 8

Mainframe organizations demonstrate an average of 35% lower IT Cost of Goods; and computational growth roughly 3x more economically efficient

Configurable cores - CP, IFLS, zIIP, ICFs, SAP

Total capacity improvement over zEC12

- Mega Memory
- Simultaneous Multi-Threading
- SIMD

40%

Up to

10 TB

- ...stem
- ...or Linux*
- ...ystems
- ...ux on z
- ...s¹, Docker
- ...t Agreements
- ...vices Offerings
- ...LM)
- Cloud Manager w Openstack v4.2
- Optimized WebUI for z Systems*
- Hybrid cloud connect test drive

Up to 56% better throughput on z13 and Java8 than Intel Haswell for IBM middleware solutions

Analytics

- IBM DB2 Analytics Accelerator
- CPLEX Optimizer for z/OS
- IBM DB2 BLU for Linux on z Systems
- IBM InfoSphere System z Connector for Hadoop
- IBM SmartCloud Analytics + Log Analysis z/OS Insight Packs

Skills

- Master the Mainframe Country Contests
- Master the Mainframe World Championship in 2016
- New Jobs Board/Connector
- MOOCs available on line, all the time
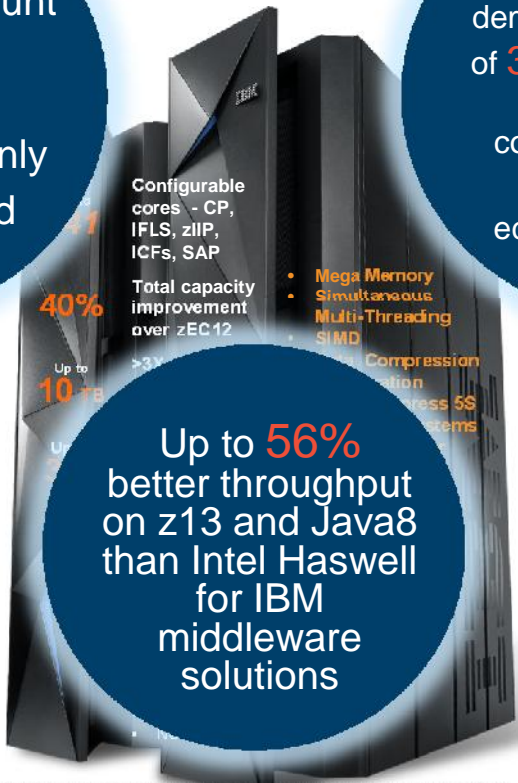
IMS 13 Fast Path Performance on z13

FP4 Workload ITR vs Transaction Rate

IBM z13

100K IMS   **IMS 13 celebrating 45 years**
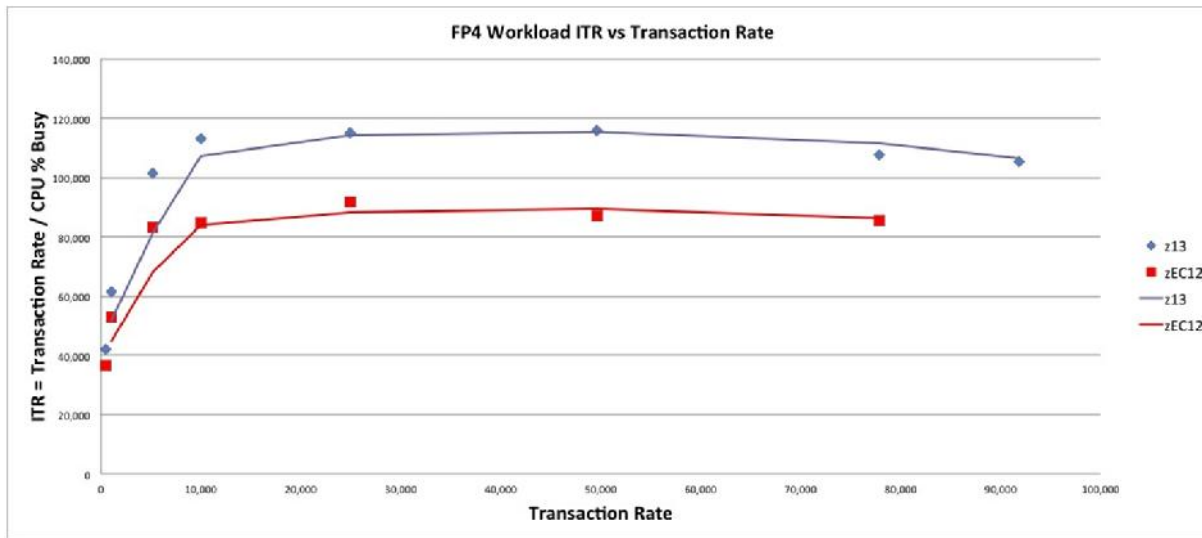
Up to 25% throughput improvement on z13
over IMS 13 on equivalent EC12 using an IBM internal high volume fast path workload

• A 25% improvement in ITR was observed when comparing an IBM internal high volume IMS Fast Path workload running on a zEC12 vs z13 both configured with 9 general purpose engines
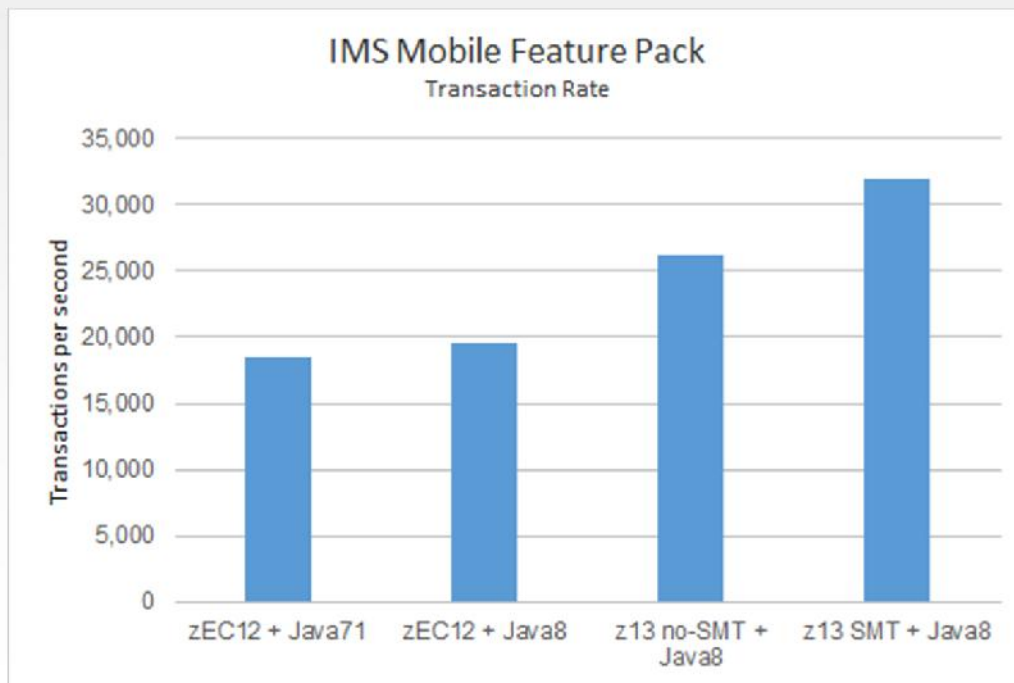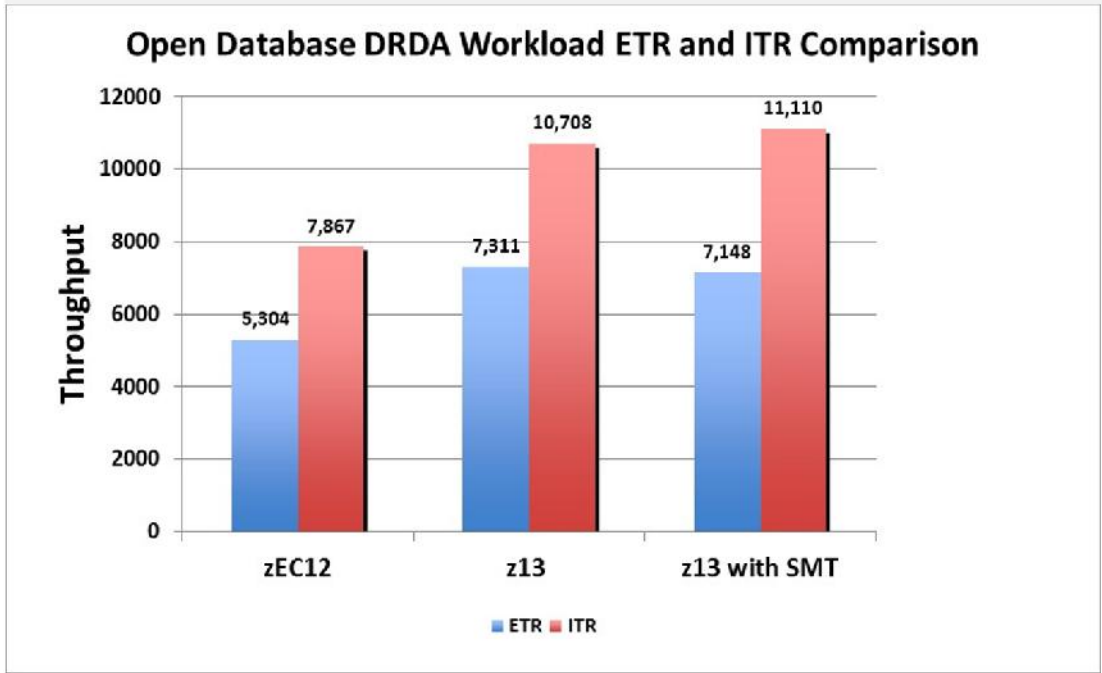
IMS Mobile Feature Pack

73% increase in throughput using z13 and IBM Java8

IMS Mobile Feature Pack
Transaction Rate

(Controlled measurement environment, results may vary)

© 2015 IBM Corporation

Open Database distributed JDBC

29% increase in throughput using distributed JDBC at equivalent CPU in z13 as compared to zEC12

Open Database DRDA Workload ETR and ITR Comparison

(Controlled measurement environment, results may vary)

Open Database local JDBC (IMS hosted apps)
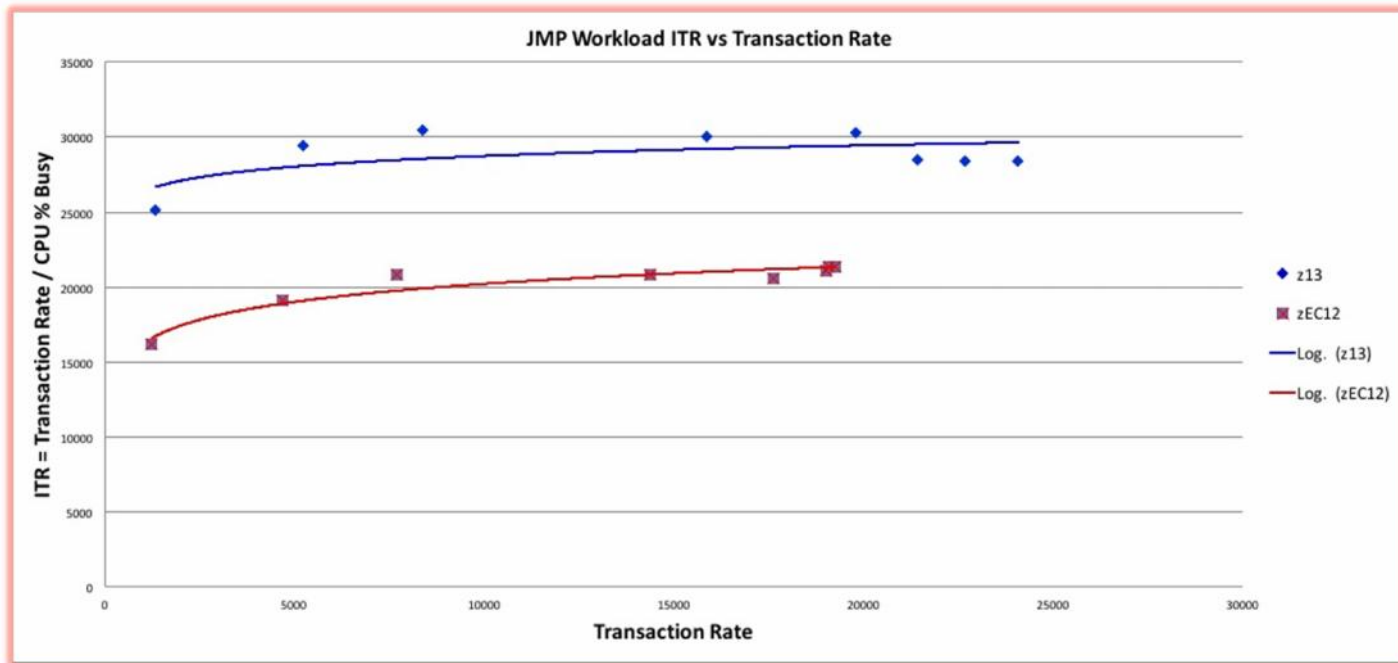
IMS 13, when running the IMS Java transaction processing workload on IBM z13, showed as much as a 38% increase in throughput at equivalent CPU as compared to zEC12

Open Database local JDBC (IMS hosted apps)

39,163 TPS in z13!

IMS Java transaction throughput from 2009 to 2015
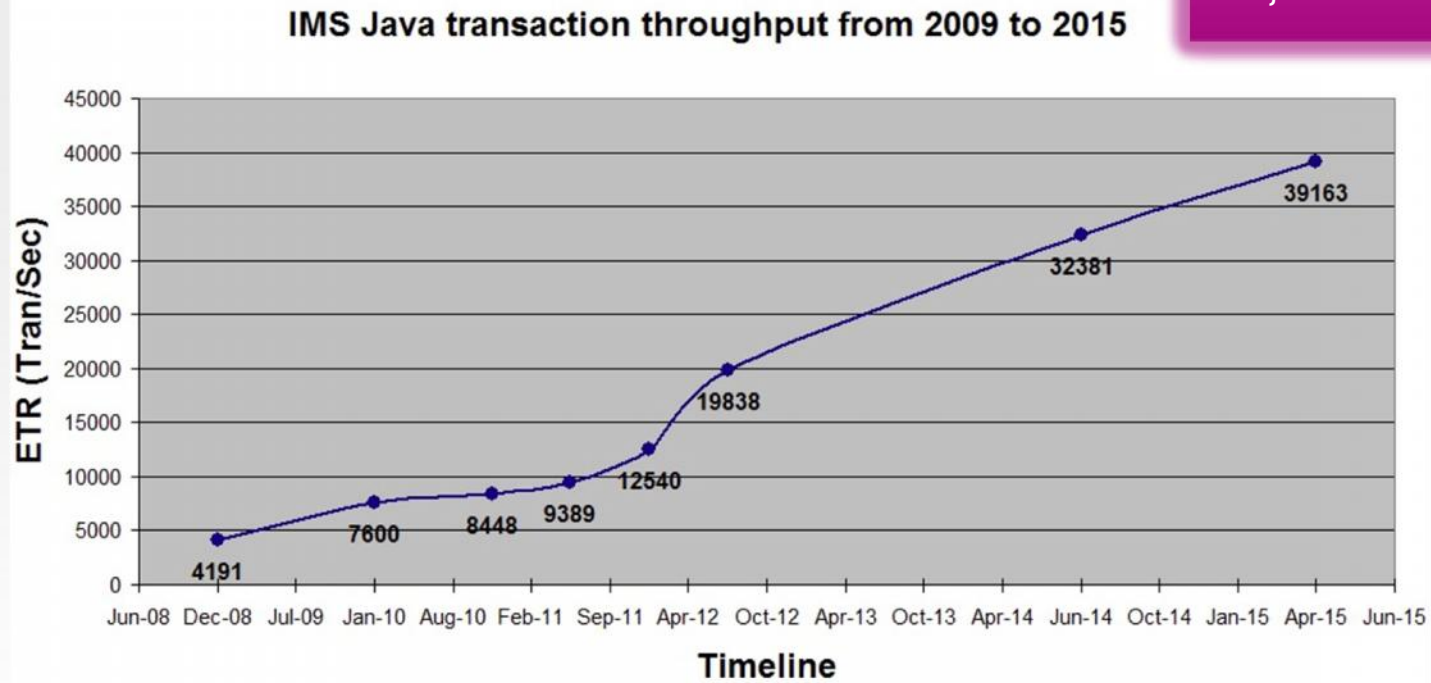
Over 9.3x aggregate throughput improvement from 2009 to 2015 due to the following enhancements

- Java version to version performance improvements
- IMS improvements
- Hardware improvements
- DASD improvements

(Controlled measurement environment, results may vary)

IMS
Data and Analytics

z Systems and IBM DB2 Analytics Accelerator

DB2 Analytics Accelerator and DB2 for z/OS

A self-managing, hybrid workload-optimized database management system that runs each query workload in the most efficient way, so that each query is executed in its optimal environment for greatest performance and cost efficiency

IDAA Use Cases with IMS Data

Make better decisions faster

Large volume reporting of combined IMS and DB2 assets

Better understand your customers

Leverage full breadth of transactional data for analytics

You Tube

Trust your data

Ensure consistency of data relationships between IMS and DB2
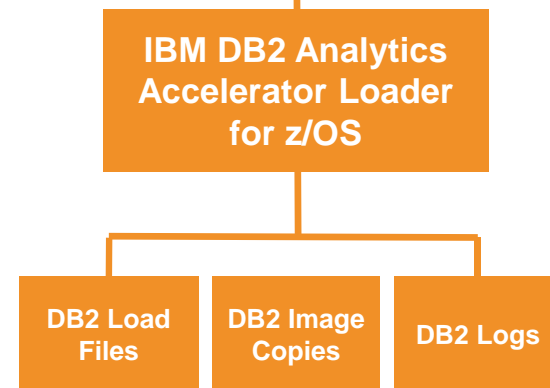
Resources:

Implementation "cookbook"
http://bit.ly/IMS_Analytics_Cookbook
with links to a related article, white paper, and recorded demo

IBM DB2 Analytics Accelerate for z/OS

DB2 for z/OS

IBM DB2 Analytics Accelerator

DB2 Base Tables

Accelerator Tables

Accelerator Only Tables

IBM DB2 Analytics Accelerator Loader for z/OS

DB2 Load Files
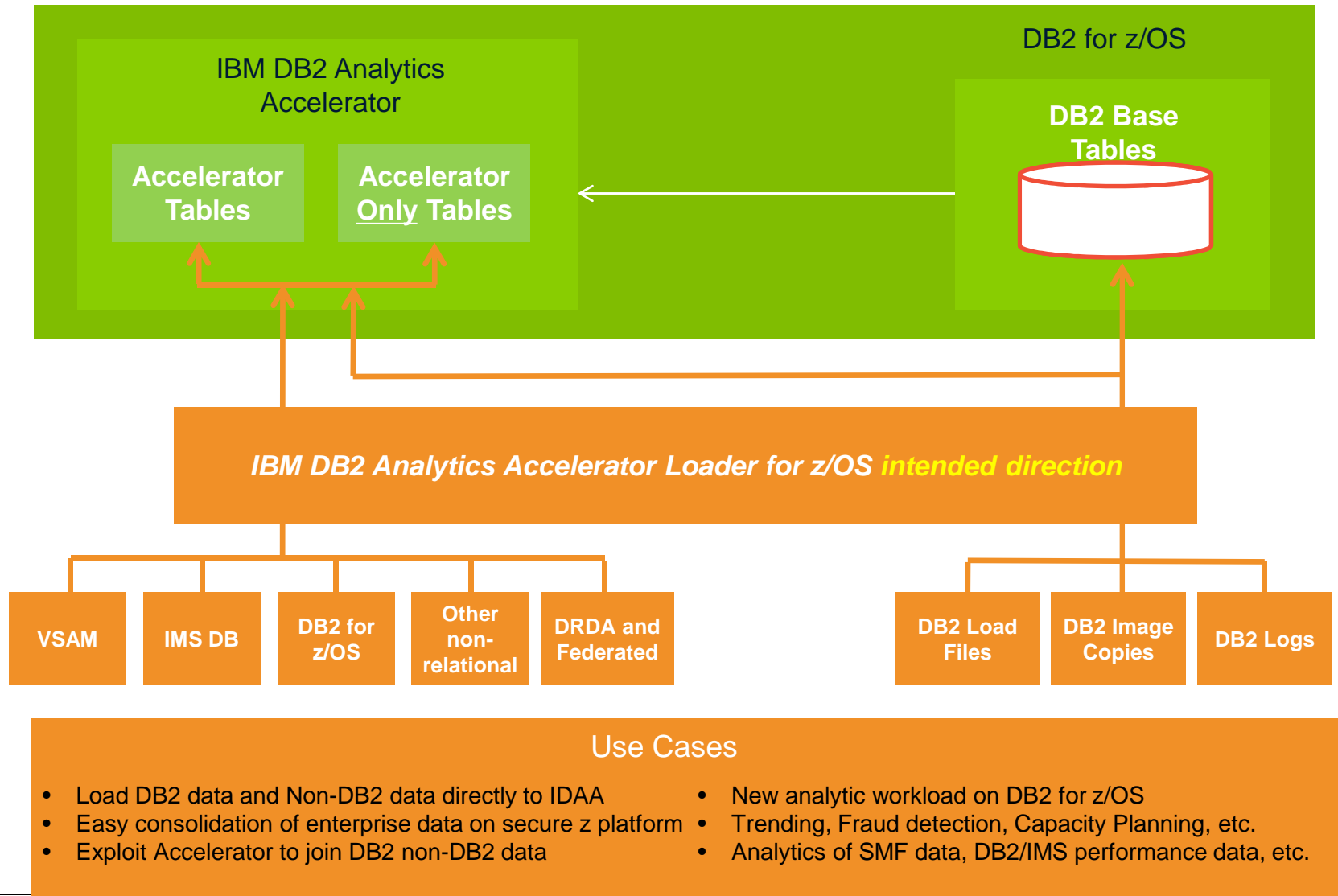
DB2 Image Copies
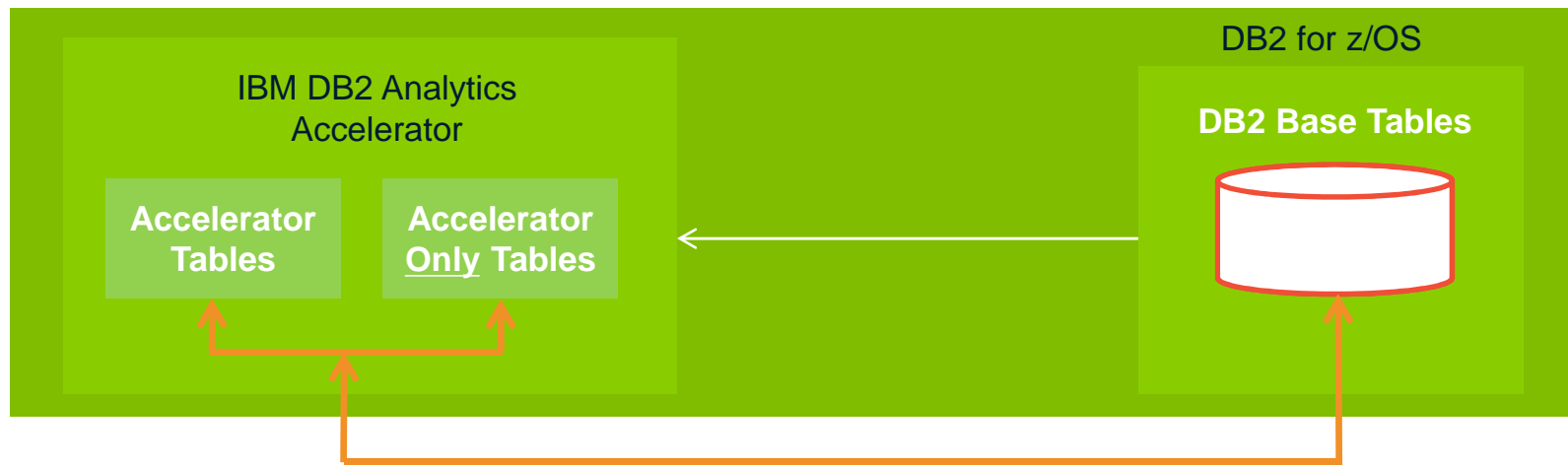
DB2 Logs

Use Cases

- Loads DB2 data to IDAA
  - DB2 Image Copies, DB2 Logs, and DB2 Load Files
  - Customer responsible for building DB2 Load Files

- Consolidate DB2 data from many systems to a single IDAA (or DB2)
- Load a related set of DB2 data to IDAA with no affect to production data
- Easily load DB2 Image Copy data across systems
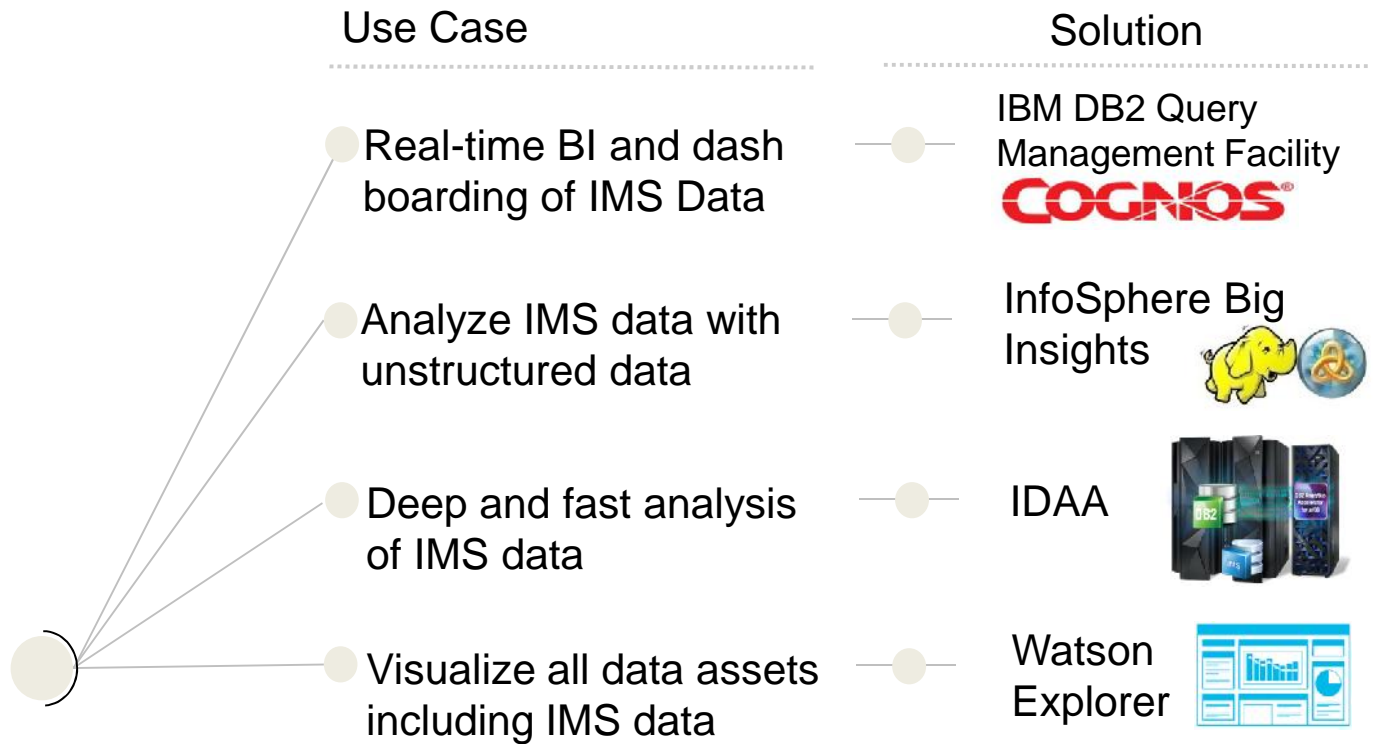- Historical loading of DB2 data for month-end, year-end analysis

Intended direction

IBM DB2 Analytics Accelerator

DB2 for z/OS

Accelerator Tables

Accelerator **Only** Tables

DB2 Base Tables

***IBM DB2 Analytics Accelerator Loader for z/OS** intended direction*

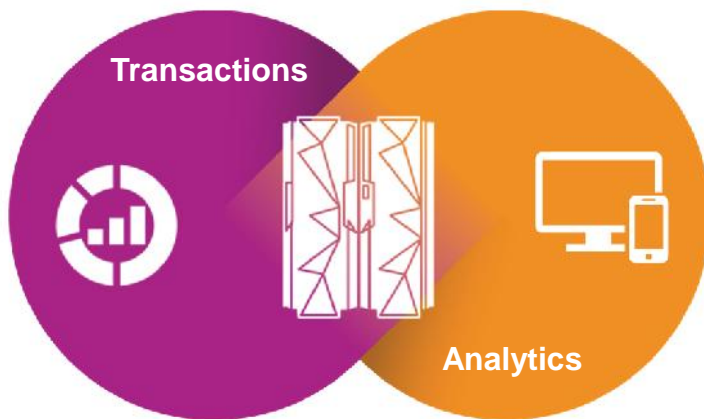| VSAM | IMS DB | DB2 for z/OS | Other non-relational | DRDA and Federated | DB2 Load Files | DB2 Image Copies | DB2 Logs |

Use Cases

- Load DB2 data and Non-DB2 data directly to IDAA
- Easy consolidation of enterprise data on secure z platform
- Exploit Accelerator to join DB2 non-DB2 data

- New analytic workload on DB2 for z/OS
- Trending, Fraud detection, Capacity Planning, etc.
- Analytics of SMF data, DB2/IMS performance data, etc.

IBM z Systems

IMS supports a range of analytics solutions today

Use Case	Solution
Real-time BI and dash boarding of IMS Data	IBM DB2 Query Management Facility / COGNOS
Analyze IMS data with unstructured data	InfoSphere Big Insights
Deep and fast analysis of IMS data	IDAA
Visualize all data assets including IMS data	Watson Explorer

…and we'll continue to integrate analytics with core transactions

Transactions

Analytics

- Right-time insight at point of impact

- Increased business agility

- Improved data governance and security

- Reduced infrastructure cost and complexity

72%
greatest value will come
from analyzing transactional data

55%
of enterprise applications need
mainframe to complete transactions

IMS
Cloud and Mobile

Cloud and Mobile enables innovation that creates new business opportunities

Apps Everywhere

With more mobiles than humans and ¼ of the world on social networks, apps drive more successful business outcomes.

81%
of Mobile Leaders say mobile fundamentally changed their businesses

Experience Matters

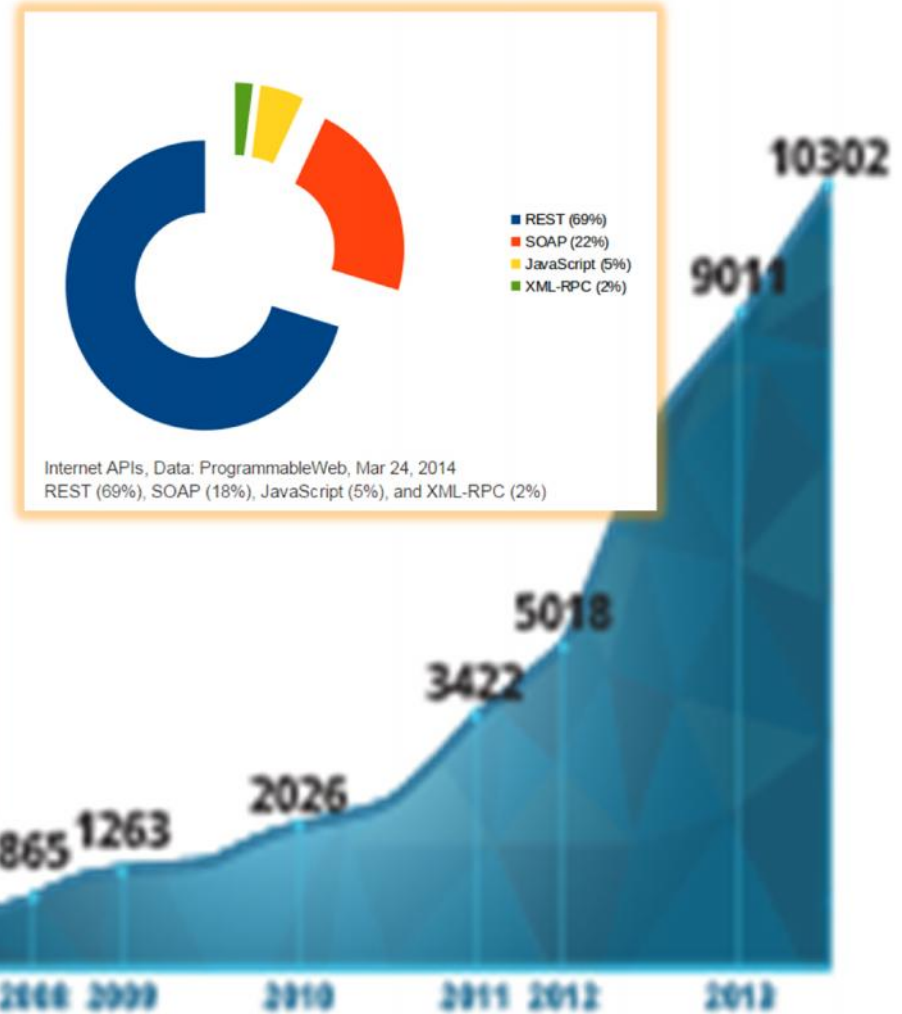*Always-connected, socially-networked customers expect a delightful, seamless, and personalized experience across all interactions with a business.*

$235B
The amount of mobile payment transactions this year, alone.

Cloud
Makes it possible

Apps today can be stitched together quickly with pre-built assets. Cloud makes the API economy possible.

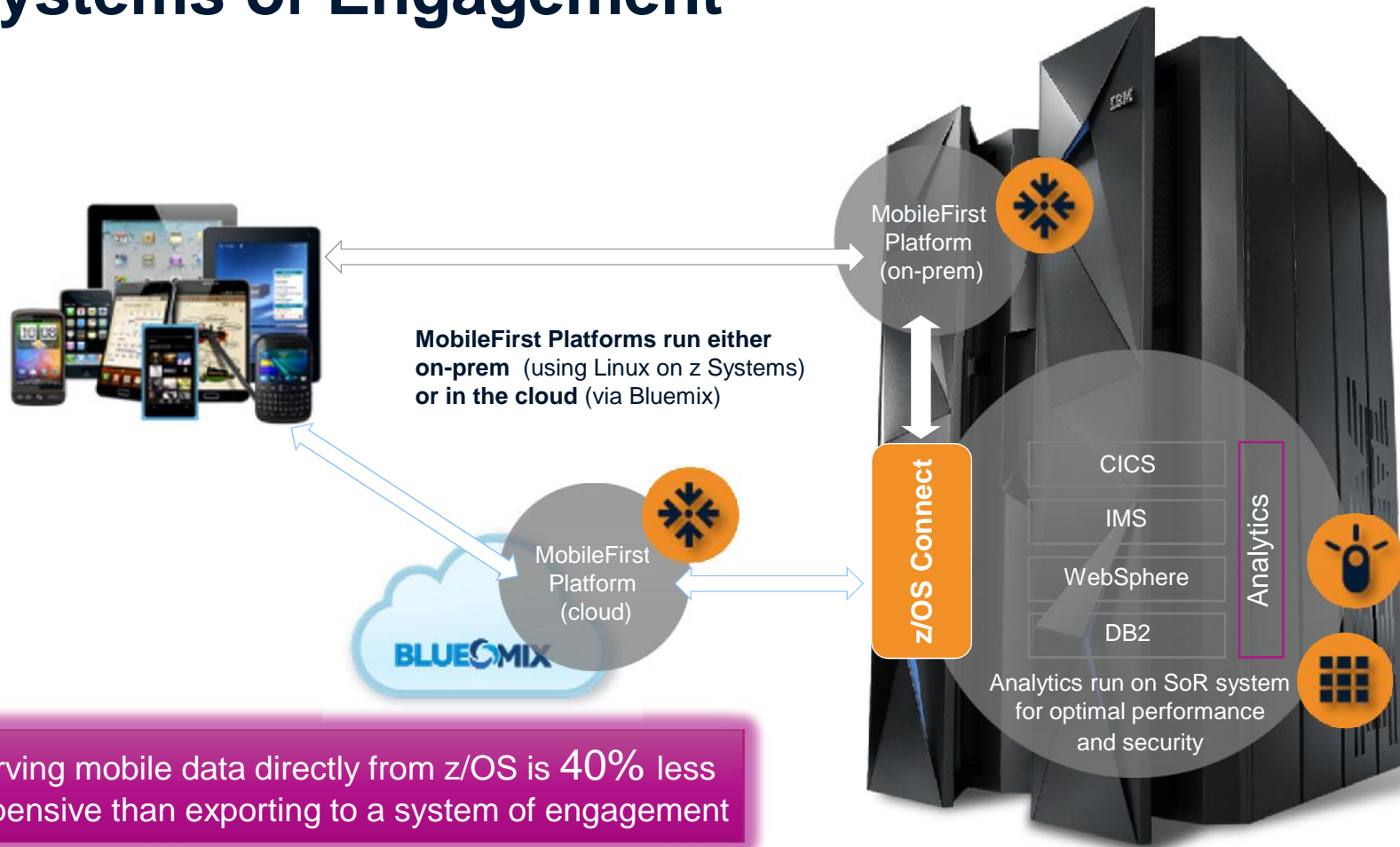# This isn't just about "social"…

ProgrammableWeb
Fastest Growing Web API Categories (6 months)

SOCIAL 28
SCIENCE 31
MAPPING 35
GOVERNMENT 35
ADVERTISING 38
MESSAGING 43
PAYMENTS 43
BACKEND 52
ENTERPRISE 66
FINANCIAL 70

REST (69%)
SOAP (22%)
JavaScript (5%)
XML-RPC (2%)

Internet APIs, Data: ProgrammableWeb, Mar 24, 2014
REST (69%), SOAP (18%), JavaScript (5%), and XML-RPC (2%)

001 186 438 865 1263 2026 3422 5018 9011 10302
2005 2006 2007 2008 2009 2010 2011 2012 2013

Integrating new applications with Systems of Record data and applications is critical

Core IT

IaaS

PaaS

IBM **SoftLayer**

IBM **Bluemix**

91% of CIOs said new customer client-facing apps are accessing the Mainframe

Pitney Bowes
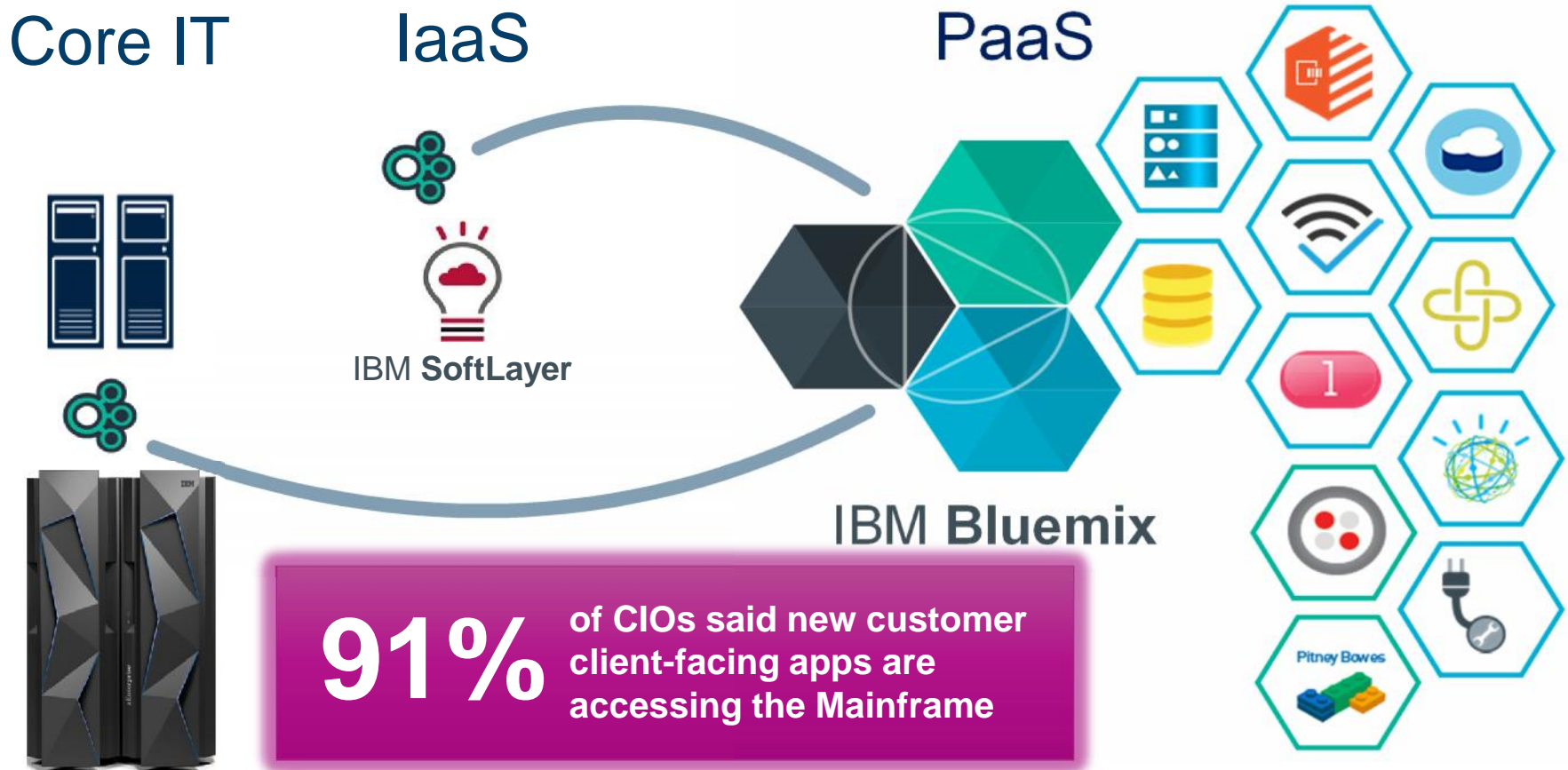
z/OS Connect bridges Systems of Record with Systems of Engagement

MobileFirst
Platform
(on-prem)

MobileFirst Platforms run either on-prem (using Linux on z Systems) **or in the cloud** (via Bluemix)

MobileFirst
Platform
(cloud)

BLUEMIX

z/OS Connect

CICS

IMS

WebSphere

DB2

Analytics

Analytics run on SoR system for optimal performance and security

Serving mobile data directly from z/OS is 40% less expensive than exporting to a system of engagement

IMS Cloud and Mobile Integration Available Today!

▪ **IMS Mobile Feature Pack** *(in IMS Enterprise Suite 3.1.1 – GA June 13, 2014)*

> Deliver IMS applications and data to mobile and cloud developers in a secure, governed, and optimized way via:
>
> –An integrated platform that supports full discovery, modeling, enablement, and deployment of both IMS transactions and IMS data
>
> –Built on z/OS Connect: the singular approach WebSphere, CICS, IMS, and DB2 for z/OS

34,925 TPS!

IMS Mobile Feature Pack
Performance Benchmark Available

27% increase in throughput w/ z13 at equivalent CPU as compared to zEC12

29

IMS programs

IMS Internship Program

- In depth education provided by IMS Subject Matter Experts @ IBM's Silicon Valley Lab

- Attendees will have the opportunity to participate in training sessions that fits their needs.

- Topics include:
  - IMS Performance
  - IMS Installation & Maintenance strategies
  - OMEGAMON Installation
  - SOAP Gateway
  - IMS Fundamentals
  - IMS DB topics
  - Locking
  - IMS Sysplex Manager
  - And more…

NEXT Customer
Internship: 3Q15

"*…every subject was successfully covered by the most appropriate expert. While I was there at SVL, the program was flexible enough so we could address certain topics which I personally identified, that would benefit me…*"

IBMIMS@us.ibm.com

IMS Business Value Assessment Workshop

Help clients identify ways to get more out of their IMS investment

- A proactive assessment

- Provides tactical and strategic recommendations to:

  - Increase benefits

  - Lower costs

  - Improve processing efficiencies for IMS applications

A no-charge workshop!

IMS Value Assessment?

Project Kickoff Call

Discovery Workshop

Supported by Subject Matter Experts from Development Lab

Data Consolidation and Technical Assessment

Generate Recommendations and develop workshop materials

Deliver Recommendations
Proposal for next steps
IBM Client team follow-up

Joint Proof Of Concept   Client Implementation   IBM or BP Services for Deployment

IBMIMS@us.ibm.com

IMS User Interfaces and IMS Tools

Innovations for Developers and System Administrators

IMS Explorer for Development (Eclipse)

IBM Management Console for IMS and DB2 for z/OS (Web)
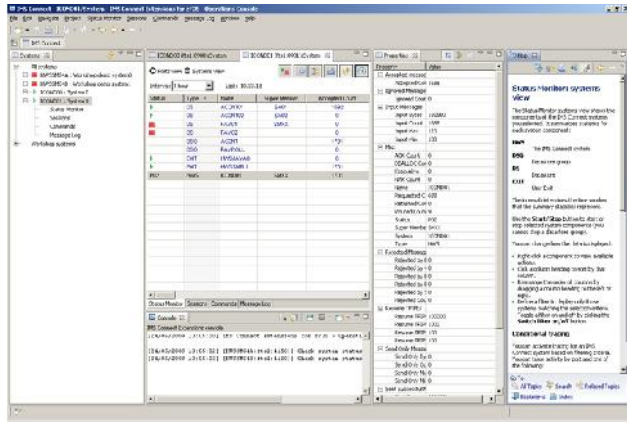
Developers   Administrators
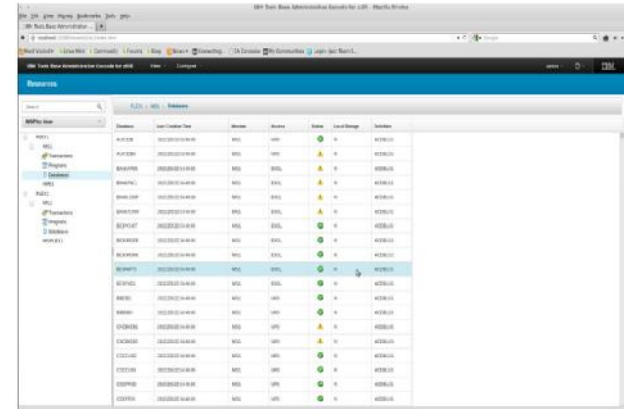
ISPF
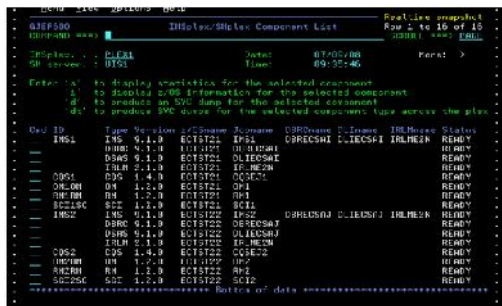
IMS

Mobile

IBM Management Console for IMS and DB2 for z/OS, V1.1
Common console for administrating IMS and DB2

10/2014 GA

Results of DB health-check

Reports produced by Solution Pack tools

IBM One UI

✓ Administrator Console, which was previously included in IBM Tools Base V1.4, are now integrated into IBM Management Console for IMS and DB2, V1.1

DB name search and grouping

✓ Dashboard to integrate the resources and utilities reports for IMS and DB2

✓ Statistics and health-check results of databases are displayed in a Web browser
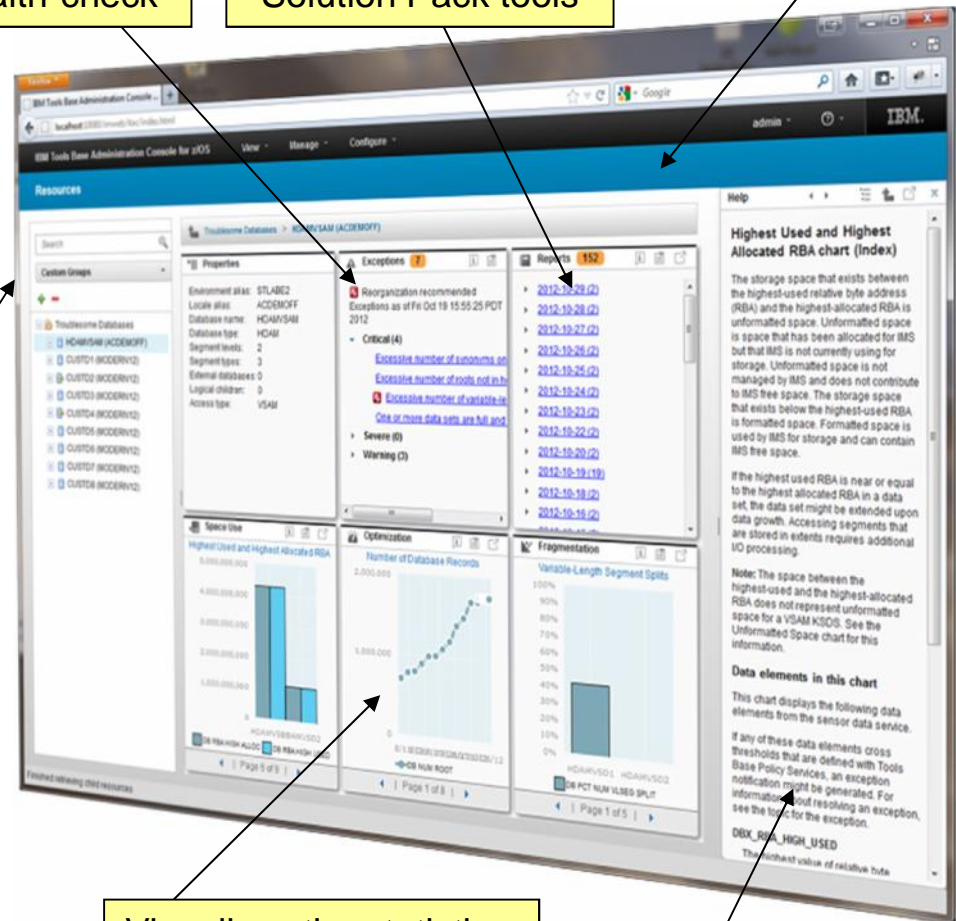
Visualizes the statistics of database and space

Online help

Dashboard based Design

- Current IMS Dashboards
  - IMSPlex
  - IMS Subsystem
  - IMS Connect
  - Databases (HDAM/HIDAM/DEDB/etc)
  - Partitions / Areas
  - Transactions
  - Programs
  - Routing Codes
  - Command Console
- Future Dashboards
  - Message Queues
  - IMS CF Structures
  - etc…

- Current DB2 Dashboards
  - Data Sharing Group
  - Subsystem
  - Database
  - Tablespace
  - Tablespace Partition
  - Indexspace
  - Indexspace Partition
- Future Dashboards
  - Tables
  - Indexes
  - Packages / Collections
  - etc…

Holistic Dashboards of IMS Databases

...from Various HP Tools

...from Autonomics Director

from Auto Discovery

...from Sensors

Holistic Dashboards of DB2 Objects

Drill down on Exceptions from an Enterprise-wide View

Synchronize action contacts each system pulling in exceptions from across the enterprise

Resource status, errors and recommendations are prioritized and presented in a simple summary with the ability to drill-down

5 IBM Corporation

Control of Autonomics for IMS and DB2

Ability to view all Autonomics Profiles as well as define and visualize Maintenance Windows

Integrated Help / Education

IMS Tools help you get the most from you IMS investment

Accelerate IMS upgrades & optimize IMS performance

1. Quickly clone your IMS systems with the **IMS Cloning Tool**
2. Analyze, modify, and deploy IMS resources and parameters with the **IMS Configuration Manager**
3. Measure and compare IMS system performance with the **IMS Performance Analyzer**
4. Diagnose and pinpoint overall transaction performance issues with the **Transaction Analysis Workbench for z/OS**

- Deliver on your performance and high availability requirements with the **IMS Performance Solution Pack**

Complete Database Management

- Monitor, manage and maintain your IMS databases with the **IMS Database Solution Pack** and the **IMS Fast Path Solution Pack** including enhanced autonomics to better sense the health of your databases and take action for you
- Backup and restore your IMS databases with speed and confidence with the IMS capabilities with the **IMS Recovery Solution Pack**

IMS Tools Solution Packs

All with support for the latest IMS version on Day 1 – QPP & GA!

IMS Database Solution Pack

- Autonomics
- IBM Administration Console

- DB Reorg Expert
- HP Unload
- HP Load
- HP Prefix Resolution
- Index Builder
- HP Image Copy
- HP Pointer Checker
  - IMS DB Repair Facility
- IMS Library Integrity Utilities

IMS Fast Path Solution Pack

- Autonomics
- IMS Administration Console

- HP FP Utilities
  - FP Advanced Utilities
  - FP Online Utilities
- IMS DB Repair Facility
- IMS HP Image Copy
- IMS Library Integrity Utilities

IMS Recovery Solution Pack

- IMS Administration Console

- DB Recovery Facility
- HP Change Accumulation
- HP Image Copy
- DRF Extended Functions

IMS Performance Solution Pack

- IMS Administration Console

- IMS Connect Extensions
- IMS Performance Analyzer
- IMS Problem Investigator

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Get Connected with IMS!

facebook.com/IMSFans

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twitter.com/IBM_IMS

linkd.in/IBM_IMS

instagram.com/ibm_ims

bit.ly/IMS_YouTube

ibmims@us.ibm.com

http://www.youtube.com/user/ReThinkIMS

Are You Ready for Something Big?

Insight2015

1,500+ deep dive sessions, 120+ hands-on labs, certification & training

IBM IMS: The world depends on it

Many of the largest corporations in the world rely on IBM Information Management System (IMS) to run their business. **Which, when you stop to consider it, is really *your* business.**