# Introducing the
Smarter Banking Showcase

Smarter Banking Showcase Team
WW Banking Centre of Excellence, IBM Montpellier
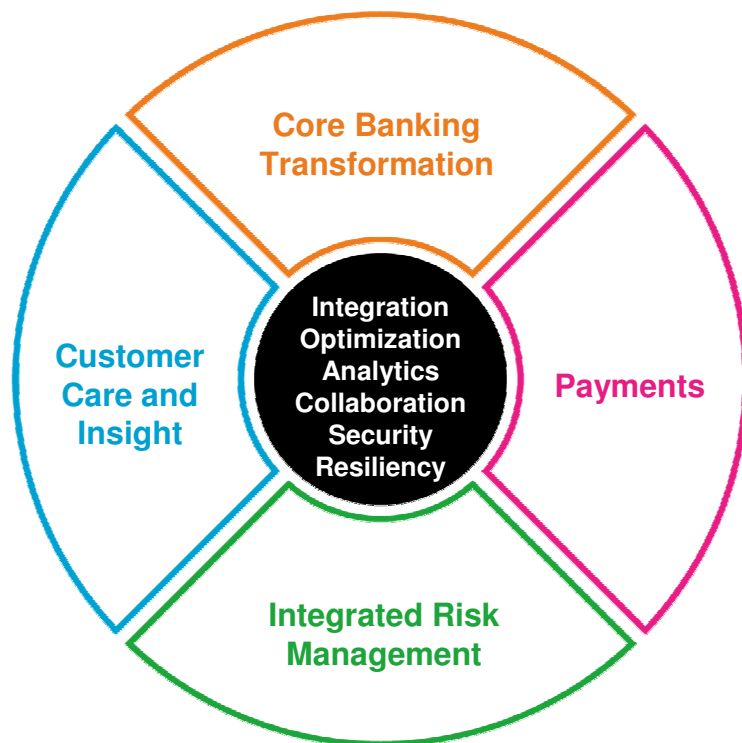
Smarter Banking Showcase

- The Smarter Banking Showcase is a simulation of a retail bank running at IBM Montpellier. Based upon the zEnterprise System, it includes the latest releases of IBM and Banking partner products, prioritised by customer requirements and industry analysts' recommendations

- Established using IBM Banking Industry Framework
    - Supports mixed workloads across many channels (Core Banking, Payments, Risk, Customer Care and Insight etc..)
    - Contains 6 million clients and 12 million client accounts
    - Performs between 80-800 trans per second
    - Demonstrations on many functional and non-functional characteristics, including High Availability and Disaster Recovery

- zEnterprise - cross-platform services
    - Core components including DB2, CICS, Websphere, Tivoli and ISV applications running across zEnterprise
    - Linux on System z applications – such as Cognos BI
    - Hybrid workloads
        - Business Decision application - Java application running on Power blade accessing DB2 on zOS
        - Partner access application – Web services running on DataPower blade accessing CICS on zOS

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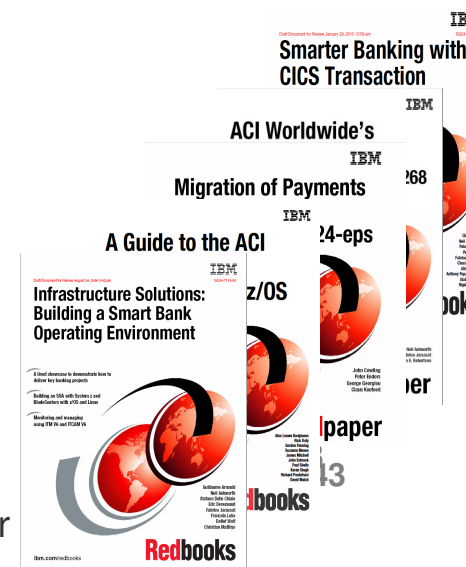
IBM provides a comprehensive framework that delivers accelerated solution deployment

IBM Banking Industry Framework

Core Banking Transformation

Customer Care and Insight

Integration Optimization Analytics Collaboration Security Resiliency

Payments

Integrated Risk Management

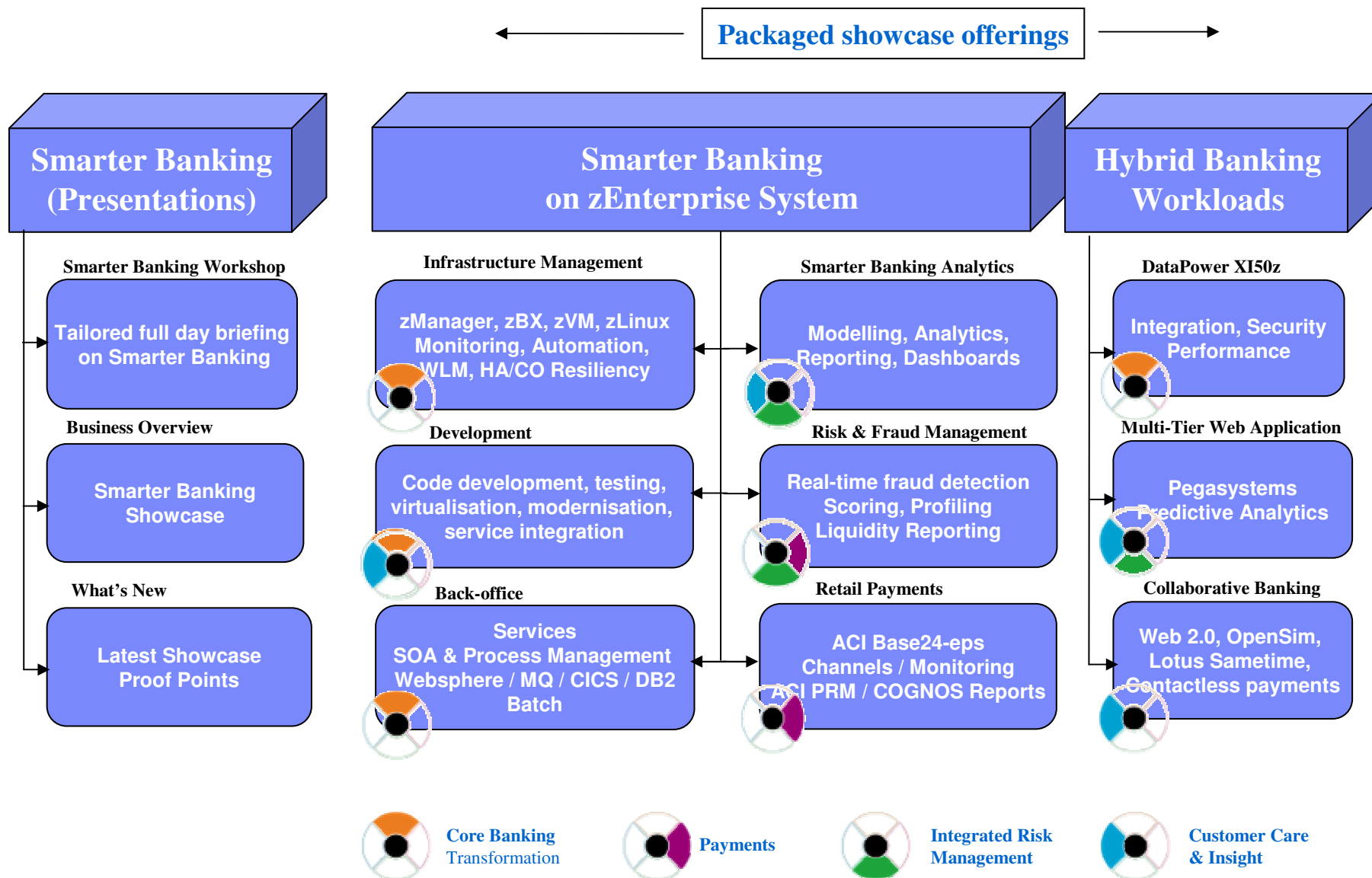*The framework gives you speed, flexibility and choice in deploying solutions while reducing cost and risk!*

The framework provides a banking-specific software platform with…

- Banking extensions and pre-built solution accelerators to speed deployment

- Best practices and business- specific usage patterns to lower risk

- Support for adoption of open and industry standards

- A choice of business applications from IBM business partners

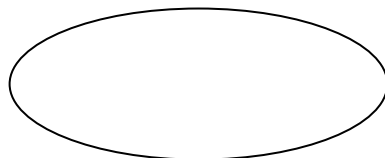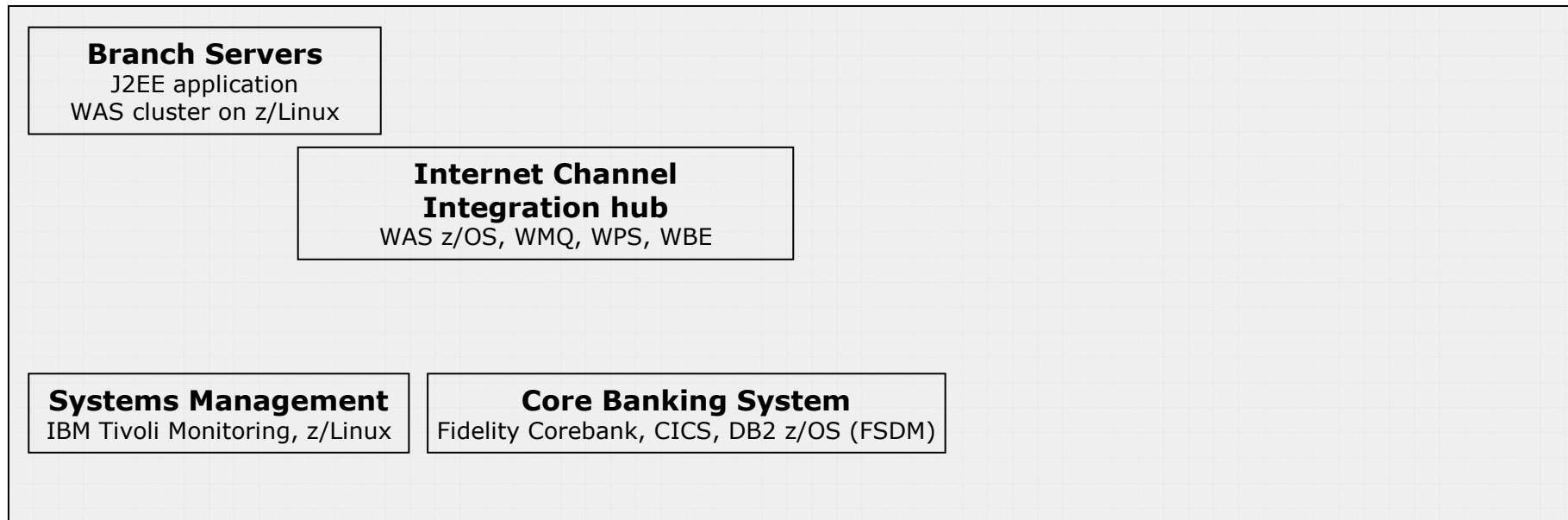- An approach to align technology with business needs

Smarter Banking

Smarter Banking Showcase 2011

Packaged showcase offerings

Smarter Banking (Presentations)

Smarter Banking on zEnterprise System

Hybrid Banking Workloads

Smarter Banking Workshop

Tailored full day briefing on Smarter Banking

Business Overview

Smarter Banking Showcase

What's New

Latest Showcase Proof Points

Infrastructure Management

zManager, zBX, zVM, zLinux Monitoring, Automation, WLM, HA/CO Resiliency

Development

Code development, testing, virtualisation, modernisation, service integration

Back-office

Services SOA & Process Management Websphere / MQ / CICS / DB2 Batch

Smarter Banking Analytics

Modelling, Analytics, Reporting, Dashboards

Risk & Fraud Management

Real-time fraud detection Scoring, Profiling Liquidity Reporting

Retail Payments

ACI Base24-eps Channels / Monitoring ACI PRM / COGNOS Reports

DataPower XI50z

Integration, Security Performance

Multi-Tier Web Application

Pegasystems Predictive Analytics

Collaborative Banking

Web 2.0, OpenSim, Lotus Sametime, Contactless payments

Core Banking Transformation

Payments

Integrated Risk Management

Customer Care & Insight

Smarter Banking

Multi channel architecture

Branch Servers
J2EE application
WAS cluster on z/Linux

**Internet Channel
Integration hub**
WAS z/OS, WMQ, WPS, WBE

Systems Management
IBM Tivoli Monitoring, z/Linux

Core Banking System
Fidelity Corebank, CICS, DB2 z/OS (FSDM)

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Smarter Banking

Showcase Data Model & Database

12 million accounts and 6 million customers

The product mix was gathered based on information we took from the marketplace. While the mix does not directly represent any one bank, it does approximately represent the product mix in a number of well-known European retail banks.

Product Mix	% DB mix	No. a/cs in DB	Pre-loaded postings
Time/Term Deposits/Certificate of Deposit (20%)	20%	2.405.434	4.810.868
Current Accounts / Checking Account (40%) Tiered credit/debit interest – 2500 OD limit	8%	962.401	5.293.206
Tiered credit interest – low	4%	481.201	1.924.804
Tiered credit interest - high	28%	3.362.185	7.943.551
Savings Account (30%) Tiered credit interest – monthly capitalisation	3%	361.717	723.434
Tiered credit interest – yearly capitalisation	27%	3.225.461	6.450.922
Loans (10%) – Mortgage loan – up to 25 years	5%	614.312	1.828.772
- Car loan – up to 10 years	5%	604.869	1.828.772
TOTALS	**100%**	**12,017,580**	**29,804,329**

Source: The data model for this operational database is an implementation of the FSDM data model from IFW

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Online Workload

1 Based upon research into typical retail banks workloads

Within this transaction mix we cover straightforward inquiries, to mini-statements showing posting activity, to all major types of online financial transactions

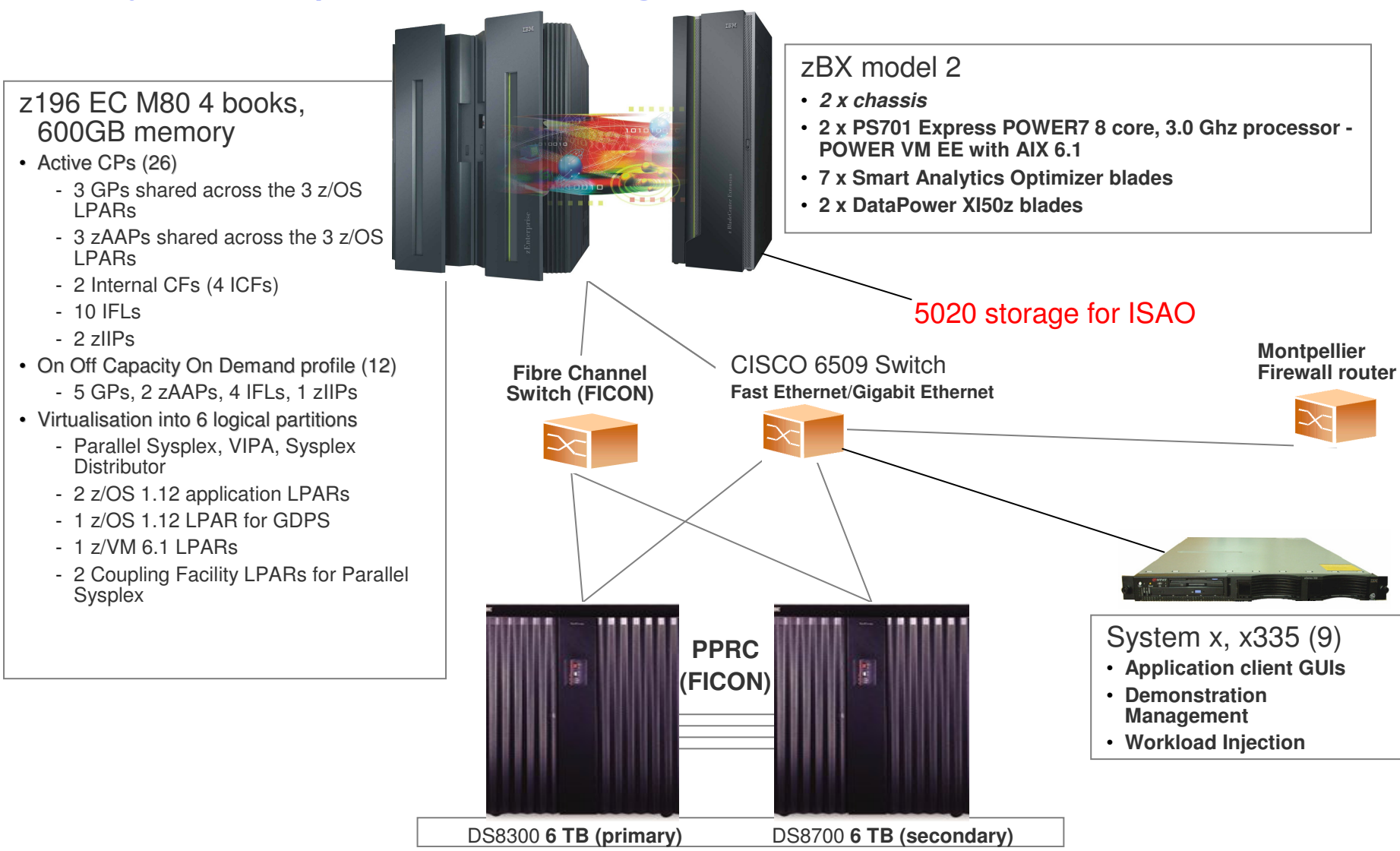| Operation Type	% mix*1
Balance Inquiry	35%
Customer statement at the Branch Posting Inquiry	10%
Mini-statement Posting Inquiry	5%
Customer Arrangement/Account List What is their relationship with the institution?	5%
Cash Withdrawals	16%
Transfer (Account to account within the institution)	7%
Transfer (Beneficiary account is external to the institution)	5%
Cash Deposits (Branch/Counter)	5%
Single Cheque Deposit (on-us)	7%
Single Cheque Deposit (not-on-us)	3%
Bill Payments	2%
Loan applications	1%

Partners

Branch

Retail payments & ATM

Internet Banking

Represents ~ 95% of typical retail banks daily transaction mix

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Physical Operational diagram

z196 EC M80 4 books, 600GB memory
- Active CPs (26)
  - 3 GPs shared across the 3 z/OS LPARs
  - 3 zAAPs shared across the 3 z/OS LPARs
  - 2 Internal CFs (4 ICFs)
  - 10 IFLs
  - 2 zIIPs
- On Off Capacity On Demand profile (12)
  - 5 GPs, 2 zAAPs, 4 IFLs, 1 zIIPs
- Virtualisation into 6 logical partitions
  - Parallel Sysplex, VIPA, Sysplex Distributor
  - 2 z/OS 1.12 application LPARs
  - 1 z/OS 1.12 LPAR for GDPS
  - 1 z/VM 6.1 LPARs
  - 2 Coupling Facility LPARs for Parallel Sysplex

zBX model 2
- *2 x chassis*
- **2 x PS701 Express POWER7 8 core, 3.0 Ghz processor - POWER VM EE with AIX 6.1**
- **7 x Smart Analytics Optimizer blades**
- **2 x DataPower XI50z blades**

5020 storage for ISAO

Fibre Channel Switch (FICON)

CISCO 6509 Switch
Fast Ethernet/Gigabit Ethernet

Montpellier Firewall router

PPRC (FICON)

System x, x335 (9)
- **Application client GUIs**
- **Demonstration Management**
- **Workload Injection**

DS8300 **6 TB (primary)**   DS8700 **6 TB (secondary)**

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Subsystem & ISV diagram

zEnterprise 196 (z196)

- **z/OS 1.12**
  - WLM, RMF
  - CICS TS & CICSplex/SM 4.1
  - CICS Transaction Gateway 7
  - WebSphere Application Server 7
  - WebSphere Process Server 7
  - WebSphere MQ 7.1
  - DB2 z/OS 9
  - ITMv6.2.2: TEMS and OMEGAMON TEMAs for z/OS
  - ITCAM for WebSphere & SOA
  - Netview 5.1
  - System Automation 3.3
  - GDPS 3.6
  - **FIS Corebank 4.2**
  - **FICO TRIAD 8.0**
  - **ACI BASE24-eps 6.2 & 8.2**
  - **ACI PRM rel 7.1**
  - **Pegasystems Decision Manager 6.4**
  - **Pegasystems Recommendation Advisor 6.3.1**
  - SBSWeb & SBSATMWeb applications deployed to WebSphere Application Server (PSSC)
  - CellPricer Java5 – JZOS (PSSC)
- **z/VM 6.1 + Linux Guest - SUSE Linux Enterprise Server 10.0 (2.6 kernel) 64 bit**
  - WebSphere Application Server 7.1 ND
  - DB2 UDB 9.1 (TEPS)
  - ITMv6.2.2: TEPS, TEMS and TEMA for Linux OS
  - SBSWeb application deployed to WebSphere Application Server (PSSC)
  - Audelium Linux provisioning manager (PSSC)

zBX Model 2

- **AIX 6.1**
  - **Oracle Business Inteligence 10.1.3.3**
  - **Pegasystems Visual Business Director 6.4**
  - ITMv6.2.2: TEMS + Distributed TEMAs
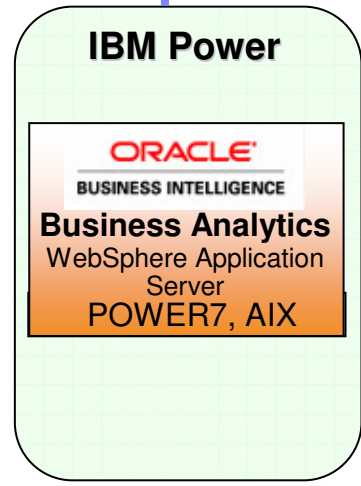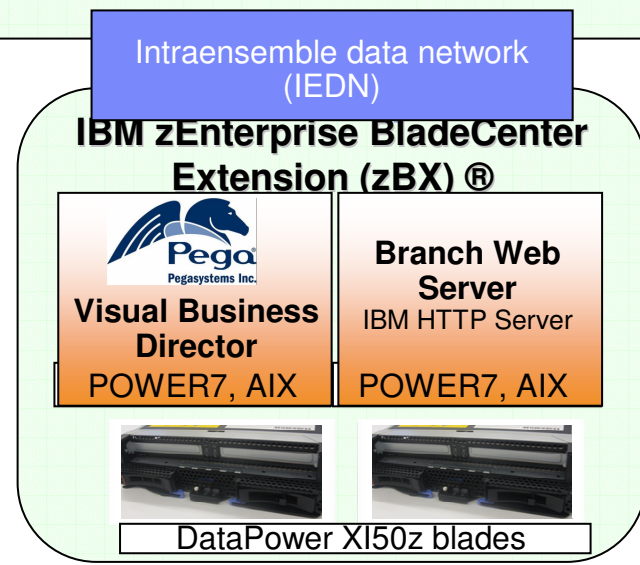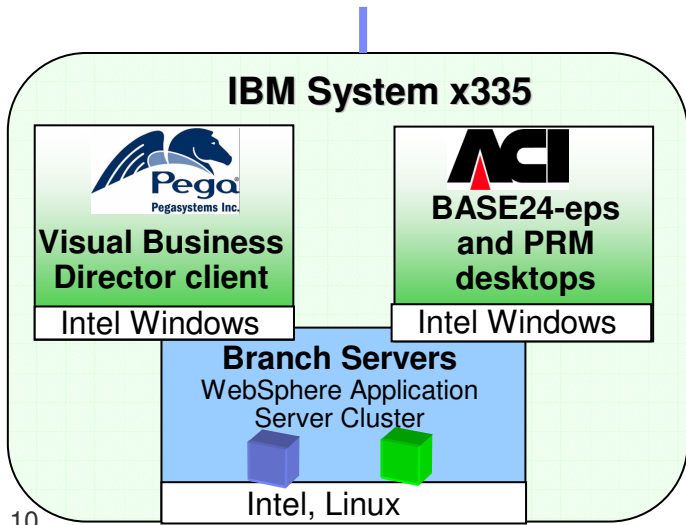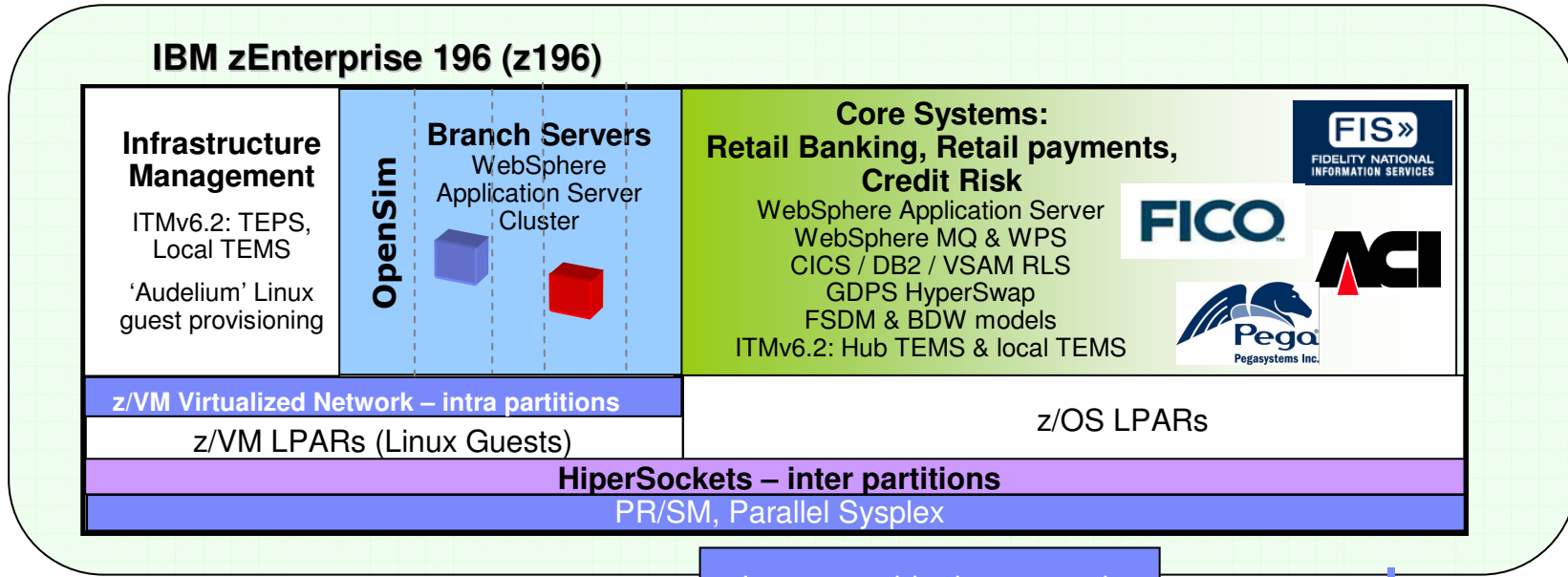- **DataPower XI50z with firmware 3.8.1**

System x x335 (9)

- **Windows 2003 Server**
  - ITMv6.2.2: Distributed TEMAs
  - Demo Presentation Servers, RPT Agents
  - Second Life Web Server (PSSC)
  - RPT Tuning Tool (PSSC)
- **Windows 2003 Server**
  - ITMv6.2.2: TEMS + Distributed TEMAs + DW & PA (Datawarehouse & Pruning Agents)
  - **ACI BASE24-eps Desktop 6.2 & 8.2**
  - **Pegasystems Visual Business Director 6.4 client**
- **SUSE Linux 10.0**
  - WebSphere Application Server 7.1 ND
  - ITMv6.2.2: Distributed TEMAs
  - SBSWeb application deployed to WebSphere Application Server (PSSC)

Subsystem & ISV Legend

- **IBM SWG or STG product**
- Independent Software Vendor
- **Utility or Software created in PSSC**

Smarter Banking

# Experience a cost effective, secure, smarter business infrastructure

IBM zEnterprise 196 (z196)

Infrastructure Management

ITMv6.2: TEPS, Local TEMS

'Audelium' Linux guest provisioning

OpenSim

Branch Servers
WebSphere Application Server Cluster

Core Systems:
Retail Banking, Retail payments, Credit Risk
WebSphere Application Server
WebSphere MQ & WPS
CICS / DB2 / VSAM RLS
GDPS HyperSwap
FSDM & BDW models
ITMv6.2: Hub TEMS & local TEMS

FIS» FIDELITY NATIONAL INFORMATION SERVICES

FICO

ACI

Pega Pegasystems Inc.

z/VM Virtualized Network – intra partitions
z/VM LPARs (Linux Guests)

z/OS LPARs

HiperSockets – inter partitions
PR/SM, Parallel Sysplex

Intraensemble data network (IEDN)

IBM System x335

Pega Pegasystems Inc.
Visual Business Director client
Intel Windows

ACI
BASE24-eps and PRM desktops
Intel Windows

Branch Servers
WebSphere Application Server Cluster
Intel, Linux

IBM zEnterprise BladeCenter Extension (zBX) ®

Pega Pegasystems Inc.
Visual Business Director
POWER7, AIX

Branch Web Server
IBM HTTP Server
POWER7, AIX

DataPower XI50z blades

IBM Power

ORACLE
BUSINESS INTELLIGENCE
Business Analytics
WebSphere Application Server
POWER7, AIX

10

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Setting the scene – early morning at the bank!

State of our bank

- Light traffic – early morning ATM & internet traffic with some background batch activity

- Multiple channels

- Core banking system

- Payments Hub

- 24/7 operation

- Branch servers consolidated onto System
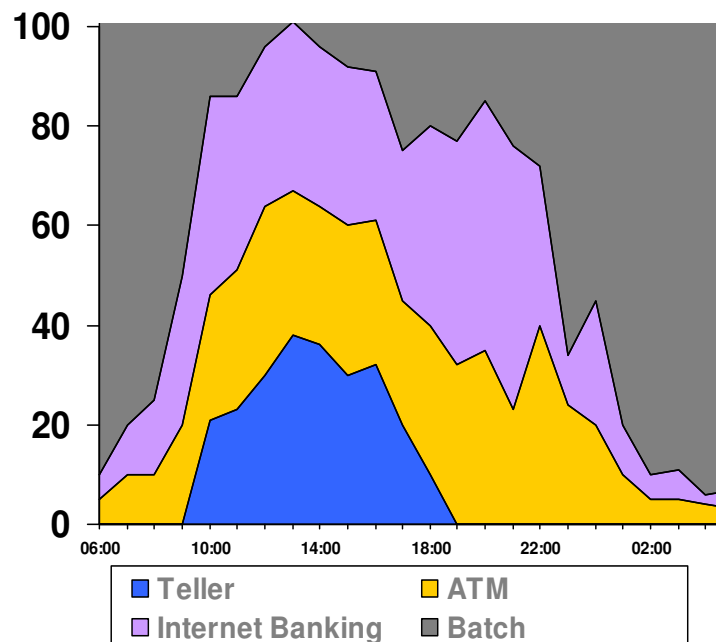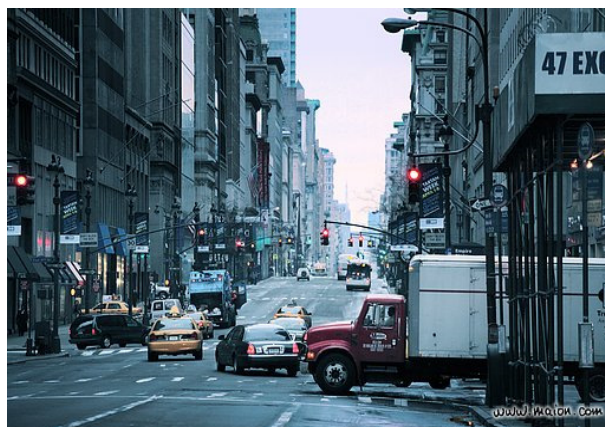
Note: the machines run ~100% as batch fills all available resource

Chart legend:
- Teller
- ATM
- Internet Banking
- Batch

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Retail Bank – typical online business operations workload

Operation Type
Balance Inquiry
Customer statement at the Branch Posting Inquiry (Branch/Counter)
Mini-statement at the ATM Posting Inquiry (ATM)
Customer Arrangement/Account List What is their relationship with the institution?
Cash Withdrawals (ATM & Branch/Counter)
Transfer (Account to account within the institution)
Transfer (Beneficiary account is external to the institution)
Cash Deposits (Branch/Counter)
Single Cheque Deposit (on-us)
Single Cheque Deposit (not-on-us)
Bill Payments

1

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Summary – early morning at the bank!

Business benefits

- Support online and workloads while completing batch processing within service goals

- Multiple channel strategy enable consistent user experience

- We are performing real business operations

Technical benefits

- Live operational system

- Workload injection with Rational Performance Tester

- Real-time updates to operational database

- Java applications on Linux provide topology options depending on desired quality of service

- Consolidated servers optimise infrastructure choice

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Branches open, workload increasing

Business Operations
- Teller traffic adding to increasing transaction volumes
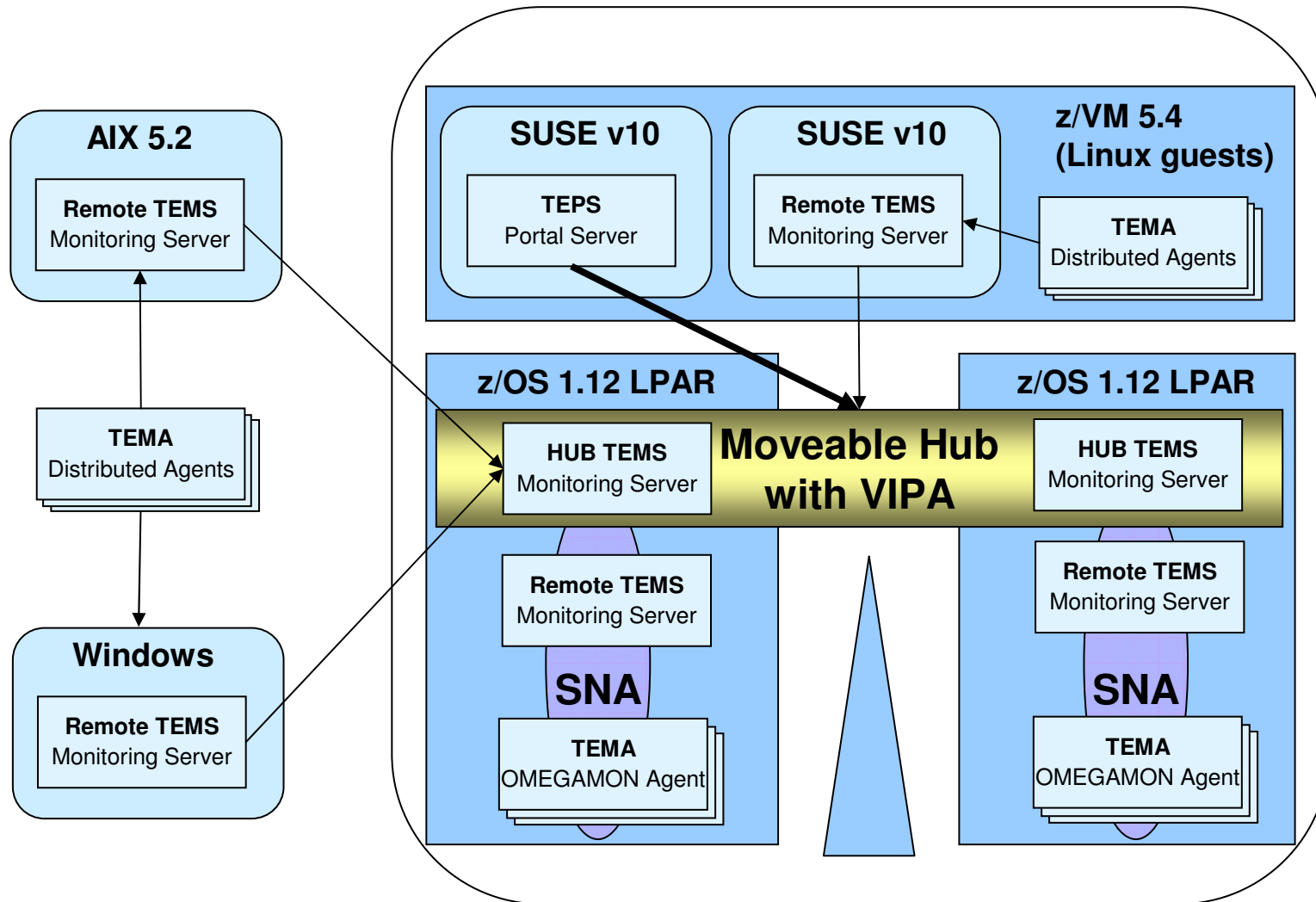
IT Operations
- Monitoring the status across all bank's systems ensure that the customer and other needs are met

- Ensure branch traffic meets service level objectives
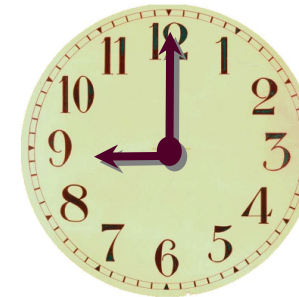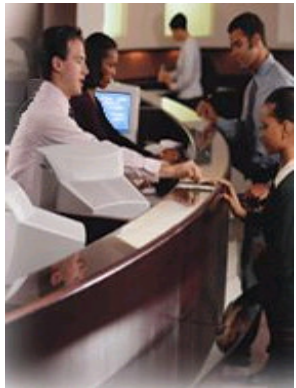
We differentiate ourselves by our customer service

Workload	Warning (sec)	Action (sec)	Service class
Branch	>= 0.085	>= 0.200	Branch – Inquiries, Cash, Transfers, Cheques
ATM	>= 0.800	>= 1.000	ATM – Inquiries, Cash
Retail Pmts	>= 0.100	>= 0.500	VISA – Inquiries, Payments
Internet	>= 0.300	>= 0.800	Internet – Inquiries, Transfers
Gold	>= 0.280	>= 0.800	Gold
Silver	>= 0.300	>= 0.800	Silver

Monitoring to support resilient infrastructure

Distributed TEMAs:
- Windows TEMAs connect to Windows Remote TEMS by default
- AIX, Linux TEMAs connect to AIX Remote TEMS by default
- z/Linux TEMAs connect to z/Linux Remote TEMS by default
- If one Remote TEMS not available the agents will try and connect to another.

AIX 5.2

Remote TEMS
Monitoring Server

TEMA
Distributed Agents

Windows

Remote TEMS
Monitoring Server

z/VM 5.4 (Linux guests)

SUSE v10

TEPS
Portal Server

SUSE v10

Remote TEMS
Monitoring Server

TEMA
Distributed Agents

z/OS 1.12 LPAR

HUB TEMS
Monitoring Server

Remote TEMS
Monitoring Server

SNA

TEMA
OMEGAMON Agent

Moveable Hub with VIPA

z/OS 1.12 LPAR

HUB TEMS
Monitoring Server

Remote TEMS
Monitoring Server

SNA

TEMA
OMEGAMON Agent

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Summary - Branches open, workload increasing

Business benefits

- Branch channel opens and we can monitor by channel

- Provide secured logical monitoring view to lines of business within an institution

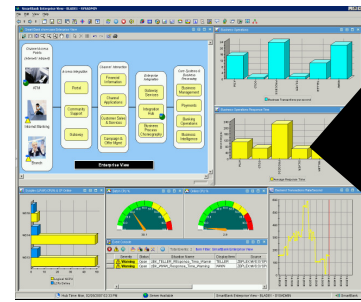- We know that operations can monitor our critical customer facing channels

Technical benefits

- Monitor across the Banks systems with ITM v6.1

- Monitor and manage the service level agreements for our lines of business

- High availability for our monitoring and managing infrastructure

- Workloads and resources dynamically added to monitoring

- Workload priorities managed by WLM on z/OS
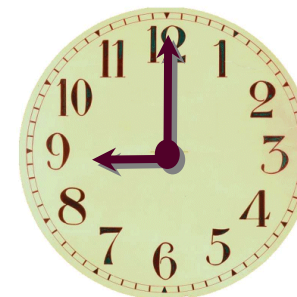
Smarter Banking

Smarter Banking – what technologies?

INSTRUMENTED

INTERCONNECTED

OnLineBanking

Event

Accounts

Event

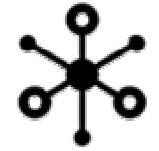Regulation

Event

Branch

INTELLIGENT

SMARTER BANKING

+ + =
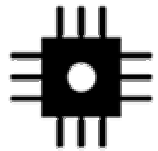
Financial products are decomposed and managed at the atomic level, allowing the participants to measure, control, sense and respond quickly and precisely based on a "single source of truth."

A smart bank is built on systems that advance processing to better automate transactions with counterparties, partners and suppliers to enable innovation across the value chain.
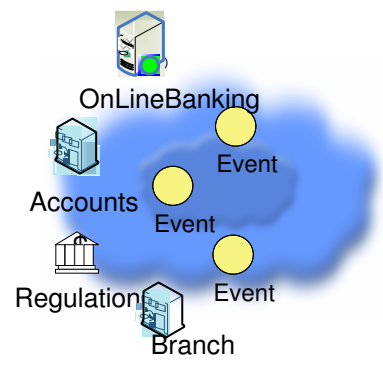
A smart bank enables the rapid, intelligent analysis of a vast mix of structured and unstructured data to improve insight, enable informed judgment and fight abuse.

A smart bank anticipates client needs and delivers innovative products more quickly and consistently than the competition. It can respond nimbly to changes in market conditions.

Smarter Banking

Smarter Banking Summary

- The Smarter Banking Showcase is based on zEnterprise and exploits the value of hybrid workloads through integrated systems and workload management

- The Showcase was developed using the IBM Banking Framework – a robust and flexible approach to transform and maintain an agile business model

- The Showcase provides regular updates to encompass the latest technology and partner offerings, these updates are often captured within IBM Redbooks, so our customers and colleagues can learn from our experiences

- Finally, the Showcase team have a breadth and depth of knowledge in running a real-life simulation of a Bank, so please feel free to approach us if you have any further questions

Thank You

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