

Implementing a Dynamic Infrastructure The Value of IBM System z



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Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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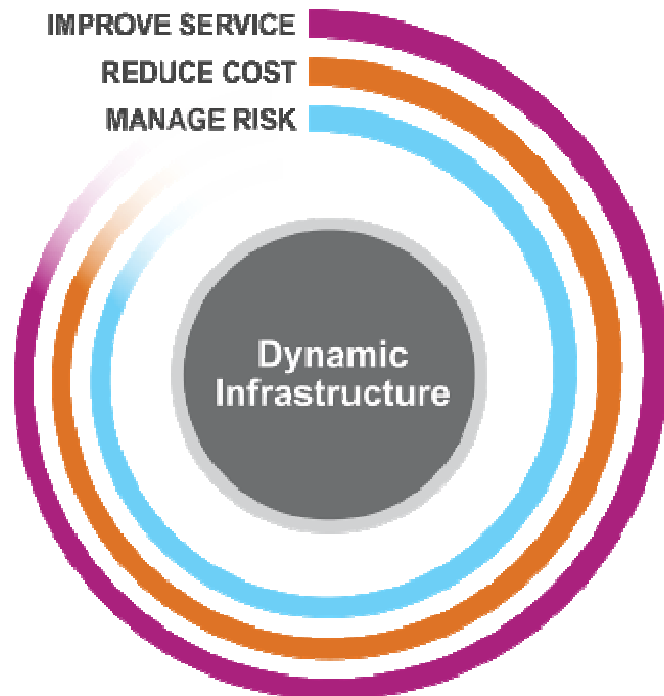
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IBM System z innovations for a Dynamic Infrastructure

... IBM System z® delivers extreme business value by helping you reduce cost, manage risk and improve service

IBM System z



REDUCE COST

- Industry-leading virtualization, energy efficiency, and scale
- Optimized performance, problem management, and workload automation
- Improve operating efficiency and reduce cost with business process management



MANAGE RISK

- Secures your business, reduces risk, builds trust and confidence
- Superior qualities of service allows clients to run their businesses reliably



IMPROVE SERVICE

- Dynamic, policy based, and automated SOA infrastructure
- Adapt and respond quickly to changing business imperatives
- Modernize mainframe assets

Reduce cost with System z

- **System z delivers industry leading capabilities...**
 - Unique virtualization technology for Unparalleled scale of consolidation
 - Extensive automation capabilities across all aspects of IT service provision
 - Continual high utilization through automated prioritization and scheduling of IT tasks
 - Reuse and extend existing mainframe application investments

SMART IS

Saving millions in annual operating costs



Bank of Russia: Reduces payment processing costs by 95 percent, saving US\$400 million per year. Server and data center consolidation create further savings on hardware and software licensing, maintenance and electricity, and increased security. Workload for technical staff reduced by 85 percent.

...To directly impact the bottom line

- ✓ **Dramatic reductions in energy and facilities requirements**
- ✓ **Far fewer software licenses**
- ✓ **Reduced labor requirements**
- ✓ **Maximized ROI**
- ✓ **Reduced total capacity requirement**
- ✓ **Faster deployment of new services with fewer resources**

Manage risk with System z

- **System z delivers industry leading capabilities...**
 - Comprehensive protection against all types of IT security threats
 - Availability protection spanning component failure to full disaster recovery
 - Centralized visibility, management and control to maintain availability

SMART IS

Protecting your customer... and your brand with no loss of data



Bank of Montreal: Providing a recovery point of zero and a recovery time of 2 hours helps reduce operational risk, increases client trust, improves availability, and meets stringent regulatory compliance requirements

...To deliver peace of mind

- ✓ Industry's pinnacle in security certification
- ✓ Massive throughput of secure transactions
- ✓ Application availability of 99.999%
- ✓ Leading portfolio of disaster recovery solutions
- ✓ Automated notification and response to potential future failures
- ✓ Protection from scheduled and un-scheduled outages

Improve Service with System z

- **System z delivers industry leading capabilities...**
 - The ideal enterprise hub for dynamic delivery of resources & applications as services
 - Centralized secure data serving for an enterprise wide view of real time data
 - Business-driven service delivery and management
 - Reduced application development time by reusing proven assets

SMART IS

Growing your business confidently in a rapidly changing economy

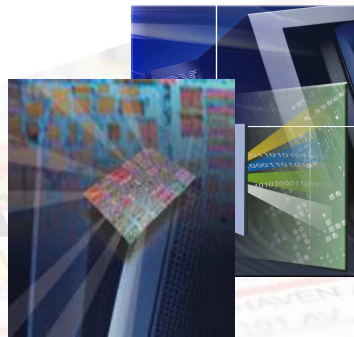


Transzap: Consolidates to System z to provide the stability and Internet scale needed to accommodate triple digit volume growth and 100% YTY growth-plan to production. The System z infrastructure securely and rapidly services more than 44,000 users across 4,200 companies with tens of billions in transaction details flowing through the company's systems each year.

...To deliver dynamic IT services to the business

- ✓ **IT services aligned to business processes**
- ✓ **A common view of data across enterprise applications and all access methods**
- ✓ **Centralized management and control of IT services**
- ✓ **Rapid and efficient deployment of new IT services and user interfaces**

Technology Roadmap to Deliver Client Value



**Specialty
Engines**



IBM System z10™

**The worlds most
powerful enterprise
computing platform**



**Integrated or
network attached
Accelerators**

***Enable new solutions
with optimal
efficiency,
performance and
service and cost***



**The next evolution of
IBM Mainframe
computers**

***Extend mainframe
qualities to
heterogeneous platforms
within a Dynamic
Infrastructure® to Support
Business Critical
Applications***

The road ahead for Dynamic Infrastructure with z

Our goal is to extend mainframe qualities to heterogeneous platforms within a Dynamic Infrastructure to Support Critical Applications



- End-to-end systems management
- Policy based automation across the applications stack
- Mainframe security
- Application resiliency
- Consolidated disaster recovery
- Improved economies of scale and efficiency



Globally, systems and infrastructure are reaching a breaking point.

- Explosion of data, transactions, and digitally-aware devices strains IT infrastructure and operations.
- Exponential growth in communications subscribers and services exposes bandwidth limitations.
- Supply inefficiencies and demand spikes tax energy and utility systems.
- Clogged and congested roadways impact productivity.
- Networks, supply chains, and borders face a proliferation of new risks and threats.

Meanwhile, customer expectations and competitive pressures are increasing.

It's time to start thinking **differently**
about infrastructure.

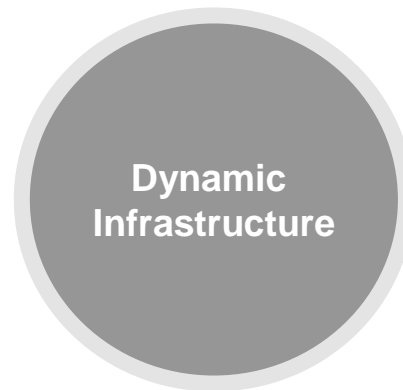
A Dynamic Infrastructure addresses today's challenges *and* tomorrow's opportunities

IMPROVE SERVICE

Not only ensuring high availability and quality of existing services, but also meeting customer expectations for real-time, dynamic access to innovative *new* services.

REDUCE COST

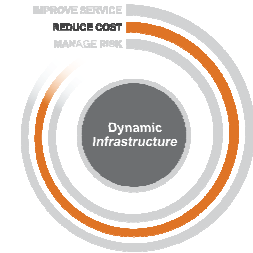
Not just containing operational cost and complexity, but achieving *breakthrough* productivity gains through virtualization, optimization, energy stewardship, and flexible sourcing.



MANAGE RISK

Not only addressing today's security, resiliency, and compliance challenges, but also preparing for the new risks posed by an even more *connected* and *collaborative* world.

Reduce cost with System z



Integrated, enterprise-wide, hub for the cost-efficient deployment of business and IT services

Reduce operating costs through large scale consolidation of distributed workloads

z/VM®
Virtualization and Linux® on System z

Dramatically reduce energy consumption and costs

z/VM
Virtualization and Linux on System z

Reduce cost through optimizing performance & problem management

Tivoli® Service Management Center for System z

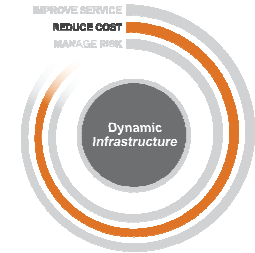
Workload automation to balance resources across multiple types of workloads

System z workload management and Tivoli

Improve operating efficiency and reduce costs

Business Process Management on System z

Improve utilization of assets through industry-leading virtualization



- Run 10s or 100s of application instances on a single System z server
- Drive hardware utilization rates near continuously at 85%+
- Dynamically optimize resources according to business priorities
- Deliver extra capacity for Linux virtual servers typically at no extra cost with z10™ specialty engines

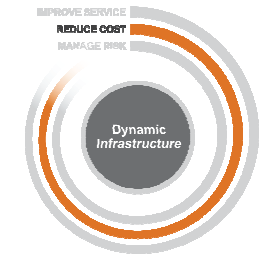
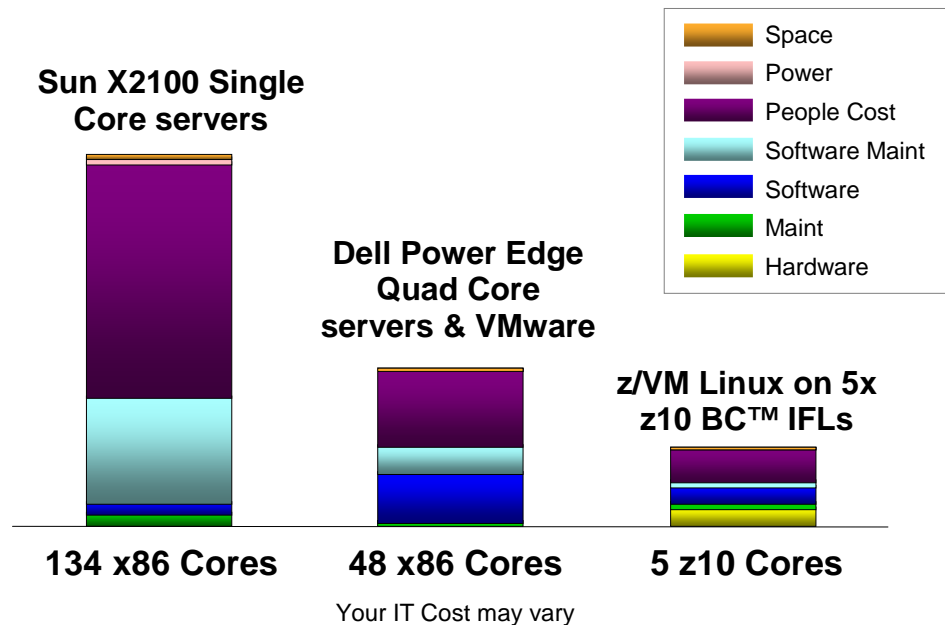


... System z delivers large scale consolidation capabilities for savings of up to 80% in total cost of ownership compared to distributed platforms

It's cool to consolidate penguins

Consolidating 134 Linux servers to 5 IFLs Can save up to 50% over x86 with VMware

Oracle DB Workload, 3-Year Total IT Cost

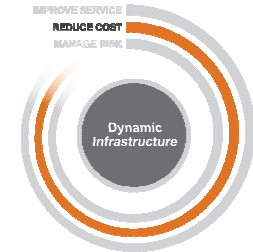


*Here's a cool example:
IBM will consolidate 3,900 servers to about 30 System z servers with expected reductions in energy consumption of over 80%*

**Consolidation:
Save up to 50% over x86
virtualization**

The Green effect

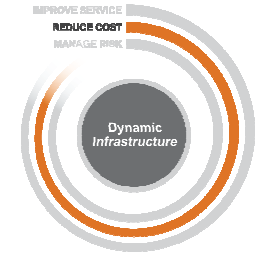
- Do the workload of up to hundreds of distributed servers in a single energy efficient System z10
- z10 technology delivers improved performance per KWh
- Active Energy Manager and Mainframe gas gauge to help manage energy consumption



“The IBM System z platform can be configured to require 1/12th the electricity as a distributed server farm with equivalent processor capability.” (1)

1 IBM System z: Platform Star for Linux and Open Source Software, Ptak, Noel & Associates.

Better management to drive efficiencies



Automate operations to reduce TCO

- Improved management of resources helps you maximize value from your assets
- Improve productivity with a single graphical interface to manage millions of jobs across mainframe and distributed environments
- Significantly reduce labor costs through automation of manual processes and ticket generation

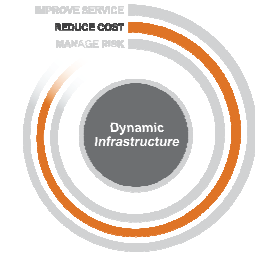


✓ *Automate business & IT interactions*

✓ *Automate tasks (including problem management) across domains*

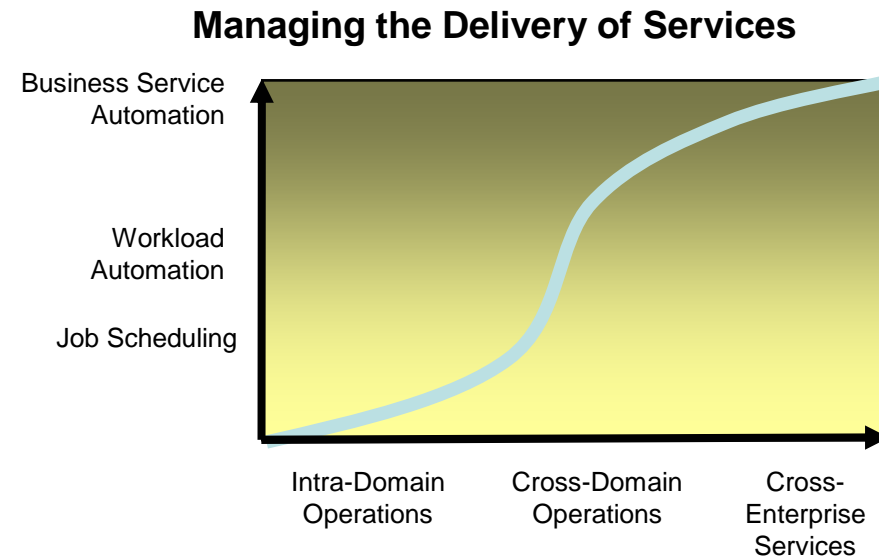
✓ *Automate tasks within domains*

Make better use of IT assets

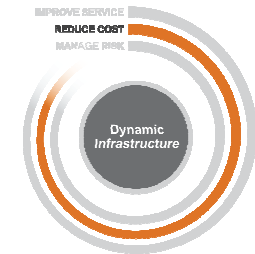


Balancing resources across multiple types of workloads

- Optimize efficiencies based on service requirements and the importance to the business
- Specialty engines optimize costs for Linux, Web and data workloads – freeing up general purpose engines
- Balance workloads by running non-critical jobs at less costly times
- Leverage existing investments in mainframe applications through intelligent reuse of code to reduce application development costs



Dynamic Infrastructure Smart is: Reducing Cost



SMART IS

Consolidating hundreds of servers to maximize space, reduce power consumption and operating costs



Bank of New Zealand: Consolidates its front-end systems data center reducing its footprint by 30 percent; power consumption by nearly 40 percent; heat output by 33 percent; and carbon dioxide emissions by 39 percent. BNZ is also expecting 20 percent ROI over the life of the platform, deploys new environments in minutes vs. days and, with just one administrator needed per 100 virtual servers, is saving on resources used to manage the platform.

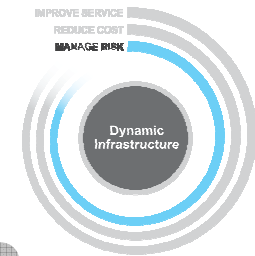
SMART IS

Saving millions in annual operating costs



Bank of Russia: Reduces payment processing costs by 95 percent, saving US \$400 million per year. Server and data center consolidation create further savings on hardware and software licensing, maintenance and electricity, and increased security. Workload for technical staff reduced by 85 percent.

Manage Risk with System z



Integrated, enterprise-wide, hub for the secure and resilient deployment of business and IT services

Leadership technologies to protect corporate assets



System z, RACF®, Tivoli and zSecure

System-wide availability capabilities for 24/7 service provision



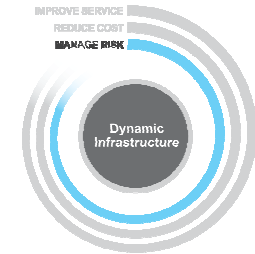
System z, Parallel Sysplex® and GDPS®

Visibility, automation and control for System z help increase availability



Tivoli Service Management Center for System z

Leadership technologies for peace of mind



- Comprehensive protection with System z, RACF, Tivoli, zSecure:
 - User authorization and access control
 - Encryption to secure data
 - Security Compliance
 - Protection from viruses and malware
- Industry leadership capabilities and certification - (EAL5)
- Dedicated cryptographic processors

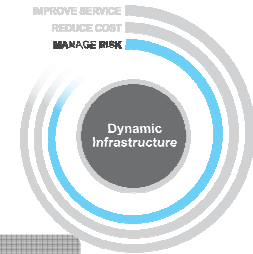


✓ *Mitigating the risk of security breaches*

✓ *Helping to protect your organization's brand image – and bottom line*

✓ *Helping to address compliance needs*

Availability built in across the system



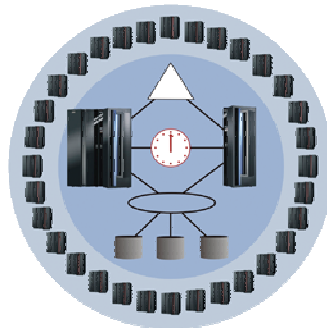
Designed to deliver availability at the application level

Single System z



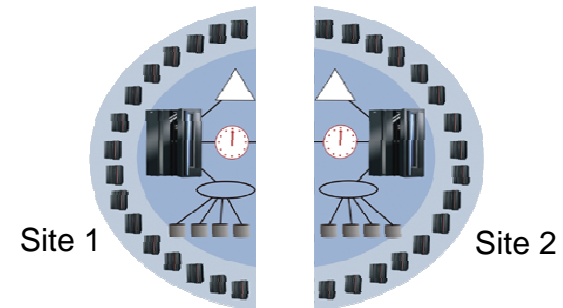
Where mean time between failure is measured in decades

Multiple System z



Designed for application availability of 99.999%

Multiple Data Centers



Industry-leading solution for disaster recovery

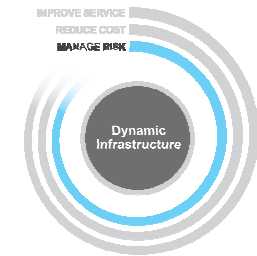
- ✓ *Avoiding the cost of downtime*
- ✓ *Ensuring access to critical applications*

- ✓ *Maintaining productivity of users*
- ✓ *Open to clients 24/7*

Visibility, Control & Automation help increase availability

Utilize System z as a centralized and resilient management hub, to:

- Eliminate human error through automation of processes
- Proactively manage the health and availability of your IT infrastructure, end-to-end
- Create an integrated view of the enterprise for problem prevention and resolution
- Automate management of user accounts, permissions, and passwords from creation to termination

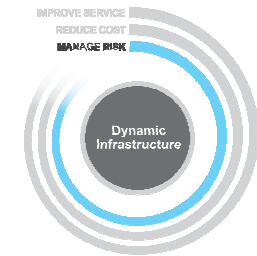


✓ **Centralized management**

✓ **Proactive management**

✓ **Automated management**

Dynamic Infrastructure Smart is: Manage Risk



SMART IS

Connecting to the world securely with 24x7 availability



Kookmin Bank: Consolidates all of the bank's business units across the world, providing a highly responsive, flexible and secure platform for 26 million active clients across 1,218 branches.

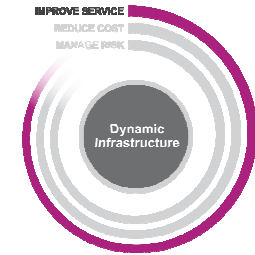
SMART IS

Protecting your customer... and your brand with no loss of data



Bank of Montreal: Providing a recovery point of zero and a recovery time of 2 hours helps reduce operational risk, increases client trust, improves availability, and meets stringent regulatory compliance requirements

Improve service with System z



Integrated, enterprise-wide, hub for the efficient management of business and IT services

Optimize IT resources to your business priorities:

*z/VM
Virtualization and workload management*

Visibility, automation and control for System z and the enterprise:

Tivoli Service Management Center for System z

Centralized secure data serving for applications across the enterprise:

IBM System z10, z/OS® and DB2®

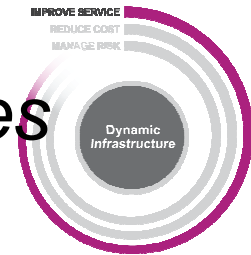
Flexible & dynamic delivery of resources & applications as services

Smart SOA on System z

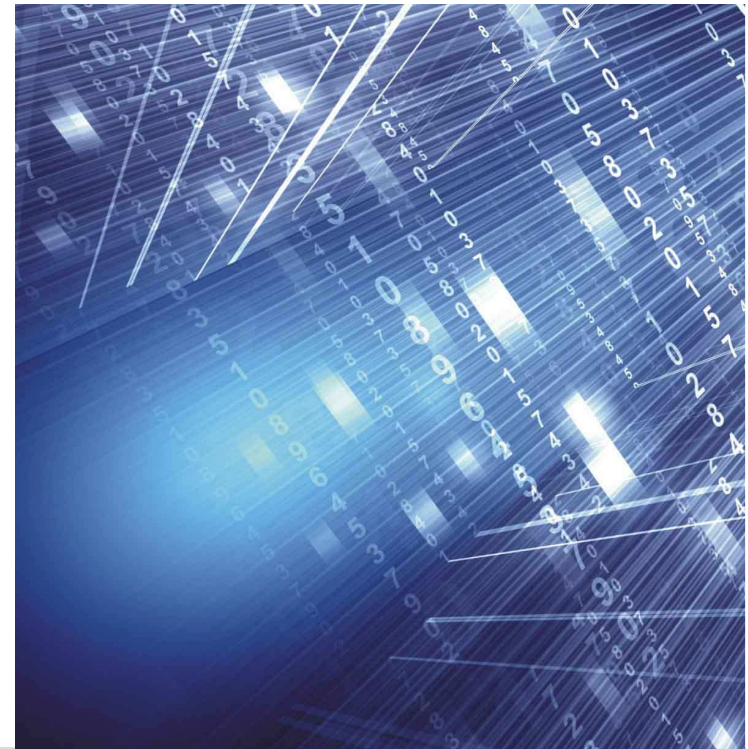
Maximize the value of your mainframe applications & skills:

Enterprise Modernization on System z

Optimize IT resources to your business priorities



- A wide choice of operating environments delivers flexibility and choice to the business
- Hugely flexible deployment options to optimize use of IT resources
- Huge scalability and leading provisioning technologies to respond to changing business demands



z/OS

z/VM

z/VSE™

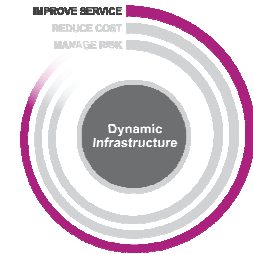
z/TPF

Linux

Centralized management for better visibility, control and automation

Deliver services aligned to your business goals

- Superior management of end-to-end business – and IT – services with System z as the integrated, enterprise-wide hub
- Enable businesses to standardize service delivery and management processes through automation of entire IT infrastructure
- Make the business process more efficient and effective with a single point of control

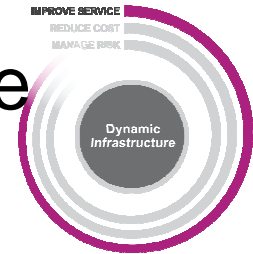


✓ *Improve performance with comprehensive visibility*

✓ *Improve effectiveness with a single point of control*

✓ *Improve responsiveness and reduce errors through automation*

Intelligent information service for the enterprise



System z builds on 45 years leadership in large scale enterprise data serving delivering:

- Provides centralized highly scalable data serving across the enterprise
- A consolidated and integrated view of real time data across the enterprise
- A suite of business analytics and data visualization tools and applications

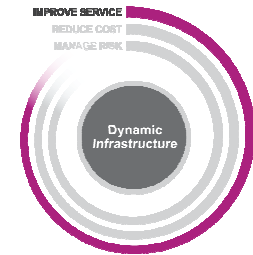


Delivering value in Business Intelligence by helping customers transform their data into a strategic asset enabling:

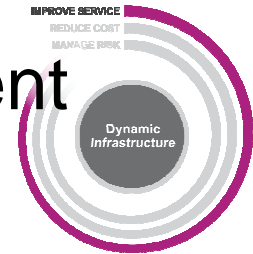
- *Actionable information*
- *Intelligent decision making*
- *Business foresight*

Superior service to the business

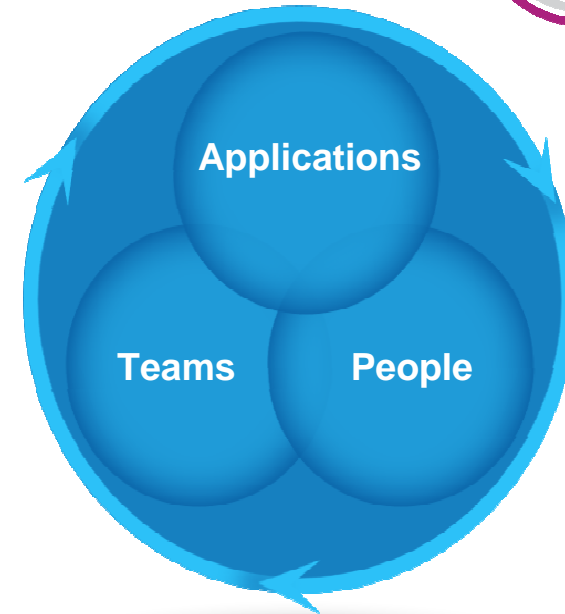
- Create an application foundation with WebSphere® and CICS® to build, deploy and manage existing and innovative new services
- Add new capabilities to existing business data that resides on System z
- The ideal enterprise hub to orchestrate SOA infrastructures underpinned by the highest qualities of service
- Deploy SOA enterprise hub alongside corporate data for tight integration and better service to users
- Build upon the resiliency and openness of System z as you deploy the enterprise service bus at the heart of your SOA implementation



Increased efficiency for new service deployment



- Extend the life of existing System z application investments through intelligent reuse of code
- Respond quickly to business changes and increase overall application quality
- Achieve greater business agility and productivity by leveraging existing domain knowledge and new talent
- Increase team efficiency & collaboration across the software lifecycle

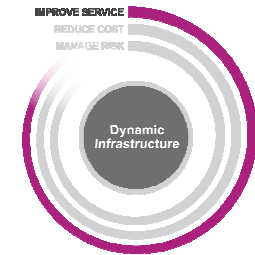


✓ *Cut application development time by reusing proven assets*

✓ *Accelerate deployment of new services and user interfaces*

Dynamic Infrastructure

Smart is: Improving Service



SMART IS

Improving customers' satisfaction by streamlining processes



Ball State: Leverages its new SOA infrastructure on System z to streamline and automate its online student enrollment process resulting in improved student satisfaction and recapture of lost revenues.

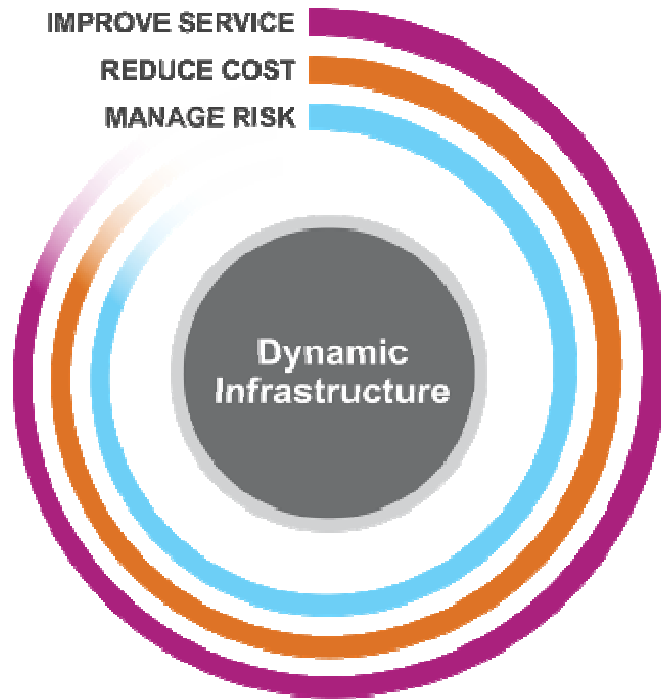
SMART IS

Reducing response times and improving customer satisfaction



Häfele GmbH & Co KG: Deploys IBM System z technology resulting in a reduction in transaction processing and online response times of 50 percent for customers in over 150 countries.

In summary the Future runs on System z...



... System z delivers extreme business value by helping you reduce cost, manage risk and improve service