Building a Smarter Planet with IBM System z

IBM solutions for a Smarter Planet

IBM

The integration of people and enterprises around the globe is transforming the way the world works today, driving wholesale change in systems and processes for everything from the way we create, buy and sell products, to how we move people, goods and services, to how we fundamentally work and live. Change on such a massive scale presents tremendous challenges for organizations on many levels:

- The proliferation of technology in an increasingly interconnected world can make it challenging to fully utilize and effectively manage technology assets. For example, according to some reports, 85 percent of computing capacity in distributed environments today sits idle.[1]
- Digital data is being generated in unprecedented volumes—more than 15 petabytes daily.[2] As a result, it is often difficult to quickly and easily find needed information. In fact, 42 percent of people report they are forced to make decisions with the wrong information at least once a week.[3]
- The business models of the past can no longer support effective collaboration and communication across businesses and with customers. Ninety-one percent of CEOs say they need to restructure the way their organizations work.[4]
- Organizations are under increasing pressure from stakeholders, customers and regulators today to pursue environmental sustainability. CEO concern about environmental issues has doubled over the past four years globally.[4]

With these challenges come opportunities to succeed by becoming more efficient, productive and responsive. IBM's Smarter Planet™ initiative focuses on helping people and organizations seize opportunity, by bringing a new level of intelligence to how the world works. The initiative focuses on four key areas:

- **Dynamic Infrastructure:** How do we create an intelligent infrastructure that drives down cost, is secure, and is just as dynamic as today's business climate?
- **New Intelligence:** How can we take advantage of the wealth of information available in real time from a multitude of sources to make more intelligent decisions?
- **Smart Work:** How can we work smarter, supported by flexible and dynamic processes modeled for the way people buy, live and work?
- **Green and Beyond:** How do we drive greater efficiencies, compete more effectively, and respond more quickly by taking action now on energy, the environment and sustainability?

Leveraging IBM System z as the technology platform for a smarter planet

IBM System z® solutions deliver value across all four of the critical areas making up the Smarter Planet initiative. System z empowers organizations by delivering advanced virtualization, provisioning and automation capabilities, enabling organizations to rapidly adjust capacity to business needs. It speeds analysis and delivery of critical information and applies near-real-time analytics to data. It helps organizations work smarter by supporting dynamic, flexible business processes and models. And it offers a uniquely powerful and comprehensive solution for managing resources efficiently to fulfill environmental responsibilities and achieve sustainability.
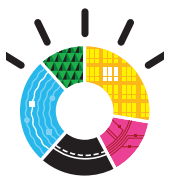
Dynamic Infrastructure

Organizations today are being driven by multiple forces to change their technology infrastructures. Cost pressures are continually rising as a result of underutilized business and IT assets, as well as increasing operational complexity. Service expectations have never been higher, with customers demanding continuous service availability and high-quality user experiences across a range of assets, applications and services. New security risks and threats are emerging from the accelerated pace of business change and the blurring of traditional infrastructure boundaries. And a host of smarter and more adaptive technologies—cloud computing, virtualization, Web 2.0—is emerging that must be leveraged effectively to drive innovation. These challenges demand a dynamic infrastructure with capabilities to help reduce costs, improve service, and manage risk. System z technology can play a pivotal role in meeting each of these challenges.

To reduce costs, for example, System z offers industry-leading virtualization and large-scale consolidation capabilities to drive down the costs of managing and maintaining the tremendous proliferation of servers in today's technology infrastructures. Service management on System z also helps control costs by automating performance optimization and problem management operations, such as prioritization of user requests and incident resolution. Enterprise modernization offerings from IBM Rational® software help reduce application maintenance costs by efficiently managing core application assets, skills and teams to deliver expanded ROI and business value. And business process management software for System z streamlines business activities to improve operating efficiency and lower costs.

To improve service, System z delivers the agility and responsiveness that today's businesses need, including just-in-time deployment of resources to respond dynamically to changing business priorities. Enterprise modernization software specifically enables more rapid and flexible responses by allowing System z users to create and reuse mainframe services and applications as Web services, and to leverage existing domain knowledge. Sophisticated data management capabilities help to ensure that information is consistently available when needed without compromising data security.

To manage risk, System z builds on a long-established reputation as the platform of choice for mission-critical workloads, with comprehensive security capabilities, centralized management of service execution performance, and a robust, agile application foundation based on IBM's SMART SOA™

approach. The IBM mainframe is the only general purpose, large-scale commercial server to have received EAL 5 certification. Advanced security techniques from System z and IBM Tivoli® software cover multiple types of security exposure: user authorization and access control, encryption to secure data, security compliance, and protection from viruses and malware. System z also takes advantage of IBM's workload-optimized approach to system design, management and delivery, which helps reduce risk by continually working to match technology to the task.

The Bank of Russia consolidated their entire computing infrastructure for payment processing to just four IBM System z9® Enterprise Class mainframes in two data centers and reduced its operating costs associated with payment processing by 95 percent, saving US$400 million per year. The bank's original computing infrastructure, created back in the early 1990s, had more than 200 distributed servers in 74 data centers across 11 time zones, resulting in high transaction costs and low operational efficiencies. Their server and data consolidation has not only reduced operating costs but has also created savings on hardware and software licensing, maintenance and electricity.

To learn more about building a dynamic infrastructure based on System z, visit **ibm.com**/software/os/systemz/systemzsp/dynamicinfra
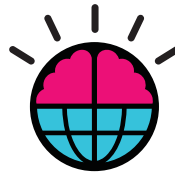
New Intelligence

Perhaps the only thing worse than not having enough information to make knowledgeable decisions is having too much. The massive amount of information being generated today is unprecedented. But even though there is more information available than ever, less of it is being effectively captured, managed, analyzed and made accessible for the people who need it. And it's not just that there is such a huge *volume* of information, but also that there are so many different *kinds* of information. Expanded sources of information mean greater variance in the nature of that information. Some of it is likely to be error-ridden, for example. And in a world of real-time decision making, there's no time to cleanse it. It's no wonder so many people find themselves using the wrong information to make decisions. To make the most of the wealth of information being generated today and deliver an information-led transformation, organizations need to methodically plan an information agenda, institute real-time business analytics for information, and establish a flexible information platform that will empower them to generate more revenue, lower costs, reduce risk, and predict future outcomes with more confidence. System z can help organizations carry out the activities required for an information-led transformation.

An information agenda is a strategic plan that organizations can use to align their information with their business objectives. IBM InfoSphere™ Foundation Tools on System z can help create optimal infrastructures that enable more effective

management of information. In addition, IBM offers industry-specific assets to use with System z to make sure that the information agenda meets the key requirements of an organization's particular industry.

With real-time business analytics, organizations can optimize decisions through better monitoring, reporting and predictive analysis of information. IBM InfoSphere software for System z includes a variety of tools to help define and govern information across the enterprise, including a unified, powerful data warehouse for access to information and data in real time. IBM Cognos® 8 BI for Linux® on System z enables more informed, faster and more aligned decisions with business intelligence on the mainframe. The Smart Analytics Optimizer for System z will use advanced data in-memory technologies to provide fast, accurate responses to queries on real-time data for accelerated decision making.

System z's strength as a large-scale, secure, data serving platform makes it the ideal foundation for delivering new intelligence. The System z platform offers the agility, infrastructure and common software services to ensure that information can be shared and securely accessed by the right people at the right time. Because of its huge scale, System z can handle very large databases that can support multiple applications and multiple access points to the data. One of the key benefits of this is that users get the same view of data no matter how they access it; even more importantly, the data is updated in real time so the users get an accurate and timely view of the data they want to access. System z software for a flexible information platform includes IBM DB2® for z/OS®,

IBM Information Management System (IMS™), and DB2 and IMS Tools for information management. Enterprise content management solutions on System z enable an integrated view of unstructured content, and storage management solutions ensure robust backup and recovery and disaster recovery capabilities.

System z serves as the underlying hardware infrastructure for a new retail banking platform that Allied Irish Banks (AIB)—Ireland's largest bank—deployed to replace its aging and rigid core banking systems. The new platform employs DB2 as its core database and also includes IBM WebSphere® Application Server, DB2, the IBM Tivoli product suite and IBM WebSphere MQ, all implemented on System z running IBM z/OS. This new retail platform will give AIB the flexibility, scalability and efficiency they need to compete in the dynamic European marketplace.

To learn more about achieving new intelligence on System z, visit **ibm.com**/software/os/systemz/systemzsp/newintel
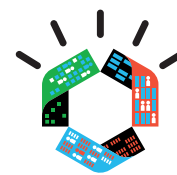
Smart Work

The processes and methods that have served organizations for many years are now proving inadequate to meet the demands of a new, more connected world. To succeed in this dynamic, global environment, an agile new business model must replace the inflexible, reactive model that has governed operations for so long. Fluid business processes that easily adapt to change must supplant rigid, manual processes. Organizations must deliver trusted information and smarter analytics, and streamlined applications and

systems must take the place of siloed, redundant ones. This is what working smarter is all about: adopting more-dynamic business processes and methods across the organization, promoting smarter collaboration among people, delivering trusted information and analytics, and adopting technology that aligns easily with changing business needs. System z helps achieve all four of these principal goals of Smart Work.

To adopt more-dynamic business models and methods, System z works with a variety of IBM WebSphere software solutions that enable organizations to simplify business process integration and management, carry out business modeling of technology solutions, monitor and evaluate business activities and events, and automate IT management processes. Other software solutions for System z provide additional capabilities such as business rules management, change management, and industry-specific process guidance to further promote business agility.

To enable smarter collaboration, System z provides support for automated and collaborative software development, flexible solutions, and situational applications based on Smart SOA and Web 2.0. In addition, Rational enterprise modernization software on System z enables organizations to create and test multiplatform applications far more efficiently than before.

The high-efficiency, highly utilized System z infrastructure provides the ideal platform for the flexibility and agility that drive smart work. In this infrastructure, IBM's Smart SOA

approach replaces redundant, siloed applications with reusable, flexible services. System z's enhanced application infrastructure capabilities help increase productivity, reduce skills requirements, and improve decision making about splitting workloads and moving applications. Enhanced connectivity solutions help move data more reliably for more adaptable, responsive IT operations, and enterprise modernization capabilities on System z help organizations access a more agile and integrated development environment.

Ball State University is leveraging a new service-oriented architecture (SOA) infrastructure on System z to streamline and automate its online student enrollment process. It all started with one seemingly minor problem the university was having keeping students' names and addresses consistent across multiple databases. Once that was taken care of, it quickly became apparent that using a services-based approach to manage business processes could create multiple opportunities for improvement for the university. The change in process has helped Ball State recapture lost revenues by increasing the number of successful enrollments. Furthermore, automated processes delivered using SOA have freed up scarce human resources.

A trusted information and analytics solution for Smart Work can be found in the New Intelligence solutions that IBM delivers on System z. To learn more about enabling Smart Work on System z, visit **ibm.com**/software/os/systemz/systemzsp/smartwork

Green and Beyond

Organizations today face more pressure than ever to go "green." As customers, investors, regulatory agencies, and other influencers continue to demand increased accountability and timely action, the challenge is to become more environmentally responsible while at the same time lowering costs and risks. To address this challenge, organizations must build more energy-efficient technology infrastructures in every area, including equipment, data and applications. They must seek sustainable solutions that implement new ways to source, manufacture and distribute goods and services without increasing costs. And they must use intelligent systems to manage resources such as utilities, traffic and water systems at the macro level. System z supports these efforts with one of the strongest platforms for a green agenda.

IBM System z10™, for example, is a world-class mainframe server that incorporates a number of features to support greener infrastructures, including a smaller footprint that reduces power and cooling requirements, allowing organizations to both conserve power and save on costs. And with its leadership IBM z/VM® virtualization technology, a single System z10 can handle the same workload as hundreds of distributed servers. System z10 and z/VM virtualization together are designed to reduce energy usage by more than 80 percent when used to consolidate x86 servers. System z10 also monitors energy consumption and channels the information it collects to IBM Systems Director Active Energy Manager™ to track power usage trends for improved resource management.

In the search for more sustainable solutions, organizations will find considerable support from System z, including enhanced service governance capabilities to help deploy sustainable strategies. System z also leverages enterprise modernization

software to introduce product development and manufacturing processes that use less material, create less waste, and consume less energy. And System z's incorporation of IBM Tivoli security software helps improve security and regulatory compliance while reducing compliance auditing and administration costs.

To enable intelligent systems that optimize the use of resources, System z provides comprehensive capabilities for collecting, analyzing, storing and querying information for decision making, leveraging DB2 for z/OS, InfoSphere, and Cognos products on System z. Ultimately, intelligent systems go beyond the operations of individual businesses; by using them to gather, synthesize and apply information in new ways, organizations can help create shifts in entire industries, making them more efficient and sustainable.

Nationwide Insurance was recently faced with the need to build a new, multimillion-dollar data center to cope with server proliferation and to streamline application development and daily operations. Instead, the company made a strategic decision to move all of their new development to virtualization. As the cornerstone of this new strategy, they deployed two System z mainframes running Linux. Their approach to IT has reduced data center environmental costs—including power, cooling and floor space—by 80 percent, and it is also expected to result in overall savings of US$15 million over three years.

To learn more about going green and beyond on System z, visit **ibm.com**/software/os/systemz/systemzsp/greenbeyond

A smarter technology platform

With industry-leading technology to improve infrastructures, manage information, redefine business models, and support sustainability, System z delivers value across every aspect of

IBM's Smarter Planet initiative. Organizations that want to excel in a world that's becoming more intelligent, more instrumented, and more interconnected every day will find that System z is the ideal technology platform for smarter, more sustainable operations.

For more information

To learn more about how System z is helping deliver on the promise of a smarter planet, contact your IBM sales representative or IBM Business Partner, or visit **ibm.com**/systems/z and **ibm.com**/systems/z/software

[1] "85 percent of resources in computer networks idle," *The Sunday Times*, July 12, 2009. http://sundaytimes.lk/090712/Financial Times/ft319.html

[2] "2008 Annual Review: Intelligent Information," Thomson Reuters. http://ar.thomsonreuters.com

[3] "Managers Say the Majority of Information Obtained for Their Work is Useless, Accenture Survey Finds," Accenture, January 04, 2007. http://newsroom.accenture.com/article_display.cfm?article_id=448

[4] "The Enterprise of the Future," IBM Global CEO Study, 2008. **ibm.com**/enterpriseofthefuture