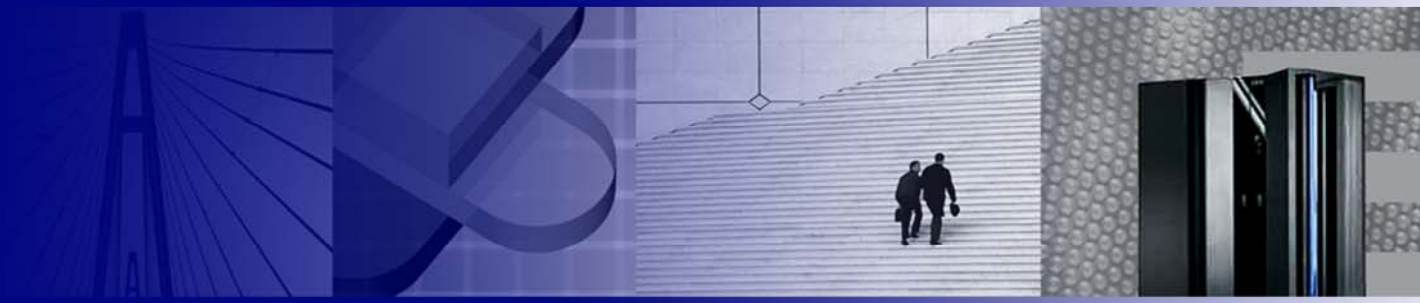
The New Face of Application Development for System z



February 2007

A. Hayden Lindsey
IBM Distinguished Engineer
Director, Rational System z and System i

Agenda

- Key messages
- Today’s realities
- Evolution of desired value
- Reshaping software development
- The IBM SDP
- Version 7
- The Future

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Key Messages – What you need to know

- ✓ Businesses need to change to stay viable, and IT must enable it
- ✓ To be sufficiently nimble, there are several enablers that we are exploiting
  - Communities
  - Modularity
  - Governance
- ✓ The IBM Software Delivery Platform provides world-class application development support for System z
  - Development & deployment of SOA solutions is easy and efficient
  - IBM provides the integrated tools, team infrastructure and governance platform to help your existing and future staff productivity create new solutions and also maintain the existing applications that run your business

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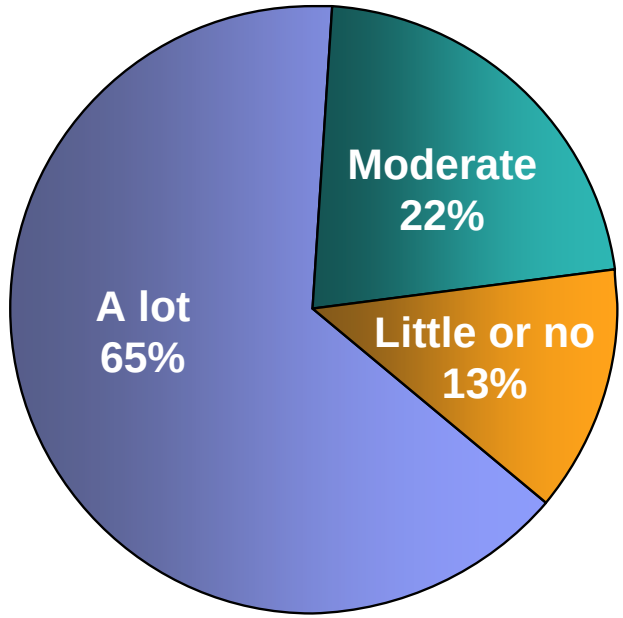
Enterprise pressures and opportunities – What you see

- commoditization pressures
- new/increased competition
- global market opportunities
- adjacent market opportunities
- global volatility & disruption
- competing business models

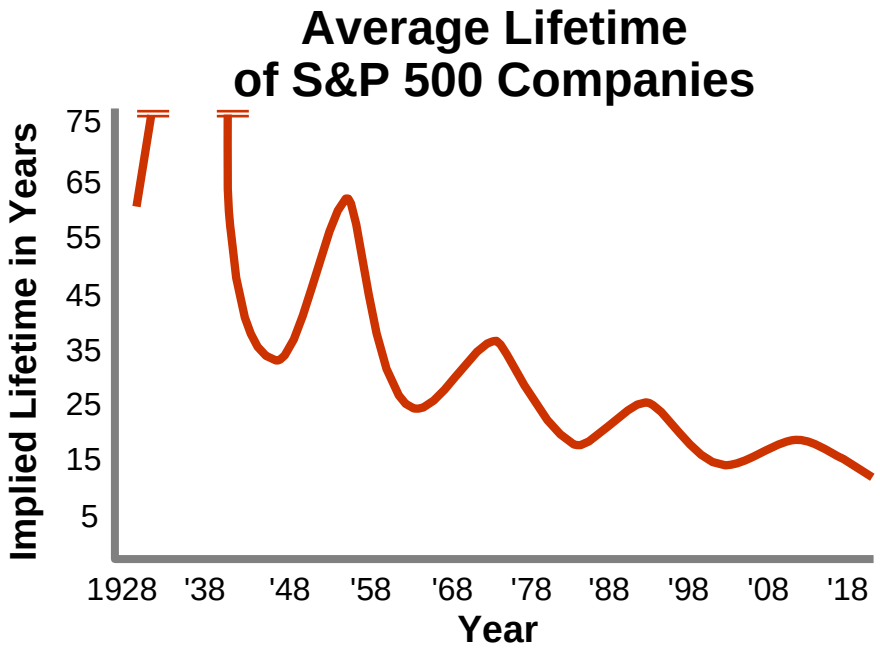
CEOs: Extent of fundamental **change needed** over next two years



... and 83% think its likely that changes in a competitor's business model will change their industry

Marketplace destabilization – What you see

- *Technology* systematically reduces interaction costs and extends global reach
- *Globalization* increases complexity of business requirements and IT agility
- Constant global policy shifts alter *regulatory* and competitive climates
- Intense pressure on *business models* drives focus on core competencies



Source: *Creative Destruction*, by Richard Foster

Destabilizing forces converge to significantly intensify global competition

Today's realities – What you have

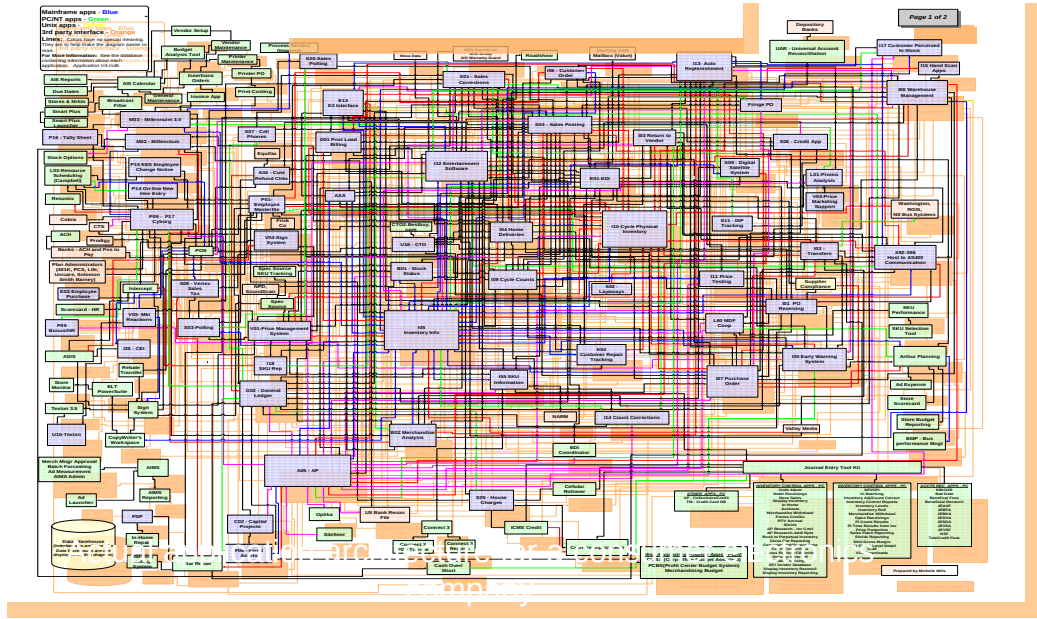
Complex, tightly coupled architectures

"Today's IT architectures, arcane as they may be, are the biggest roadblocks most companies face when making strategic moves."

The McKinsey Quarterly Special to CNET News.com,

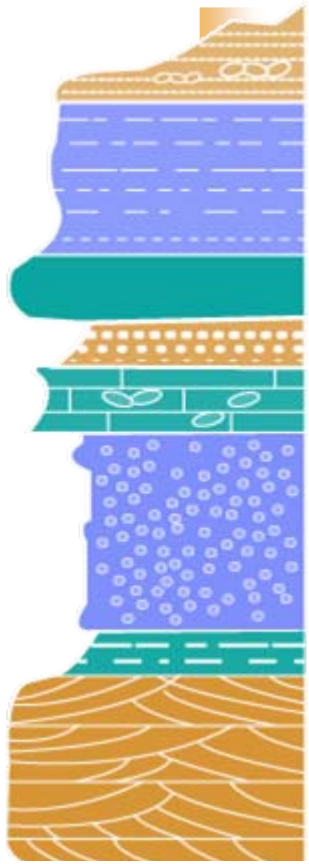
"Flexible IT, Better Strategy", January 24, 2004

- Lack of flexibility
- Infrastructure built with no roadmap
- Inability to manage change and impact
- Lack of traceability through IT infrastructure



Today's realities – What you have
Large variety of middleware

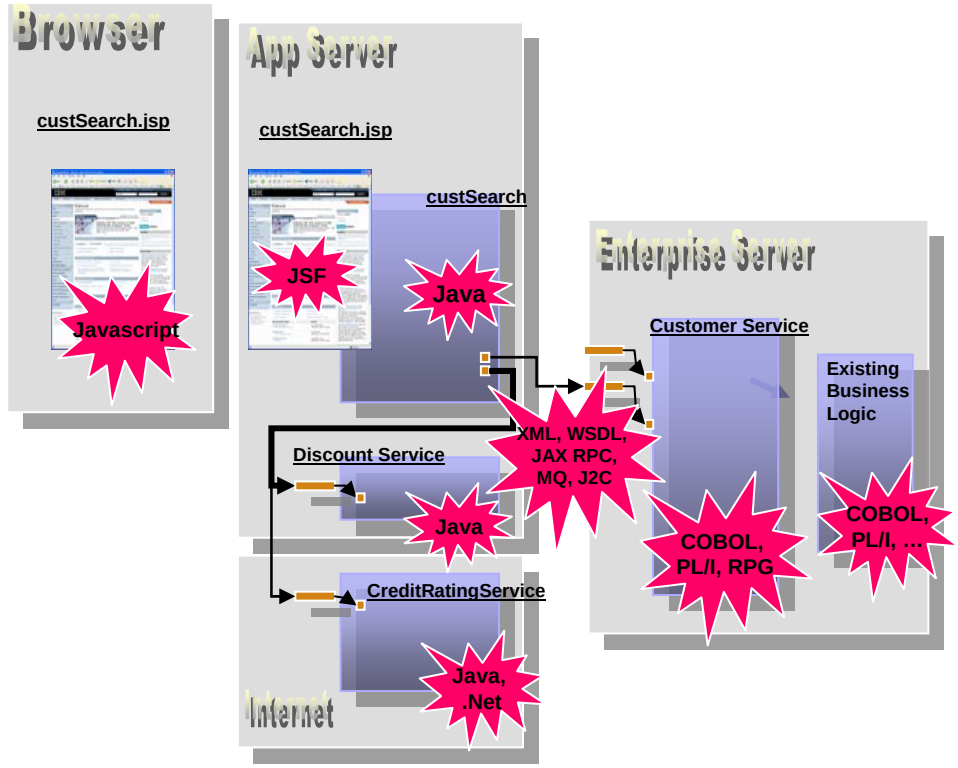
- In contrast to physical computing
  - Software evolution is constrained by decades of legacy code
  - Agility is constrained by layers
  - Value comes in automation of new business abstractions, rules and models
- Chaos results from
  - Multiple generations of 'captured intelligence' in the form of code / business rules
  - Mixed with new generations of technology assumptions (mainframe to C/S to peer distributed – and variants)
- Software archeology or software architecture?



Source: *"The Agile Dance of Architectures",* by John Hagel, III and John Seely Brown

Today's realities – What you have
Many technologies; who has the skills?

- Dwindling IT skills to maintain legacy applications
- Difficulty attracting new development talent
- System z innovation (e.g. zAAP) cannot be exploited without having to retrain traditional developers to Java
- Skills islands and team silos not conducive to efficient communication, productivity, and flexible resource allocation



"200 Billion lines of COBOL code in existence" *eWeek*

"5 Billion lines of COBOL code added yearly" *Bill Ulrich, TSG Inc.*

"2 Million COBOL developers" *Gartner*

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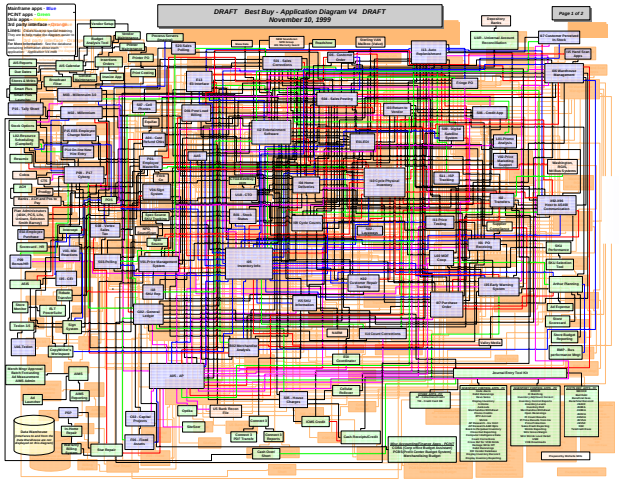
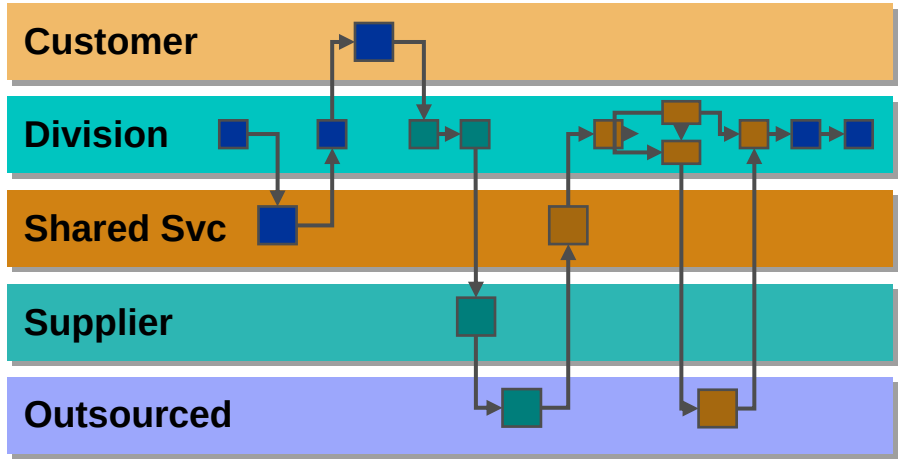
Evolution of Desired Value – What you want

Flexible architectures to enable business agility

- Reuse existing highly stable code that embodies enterprise business logic, data access
- Service-enable this business logic for wider use and value
- Separate service flow from service implementation to attain optimal flexibility
  - For example, to support outsourcing or use of supplier-provided services

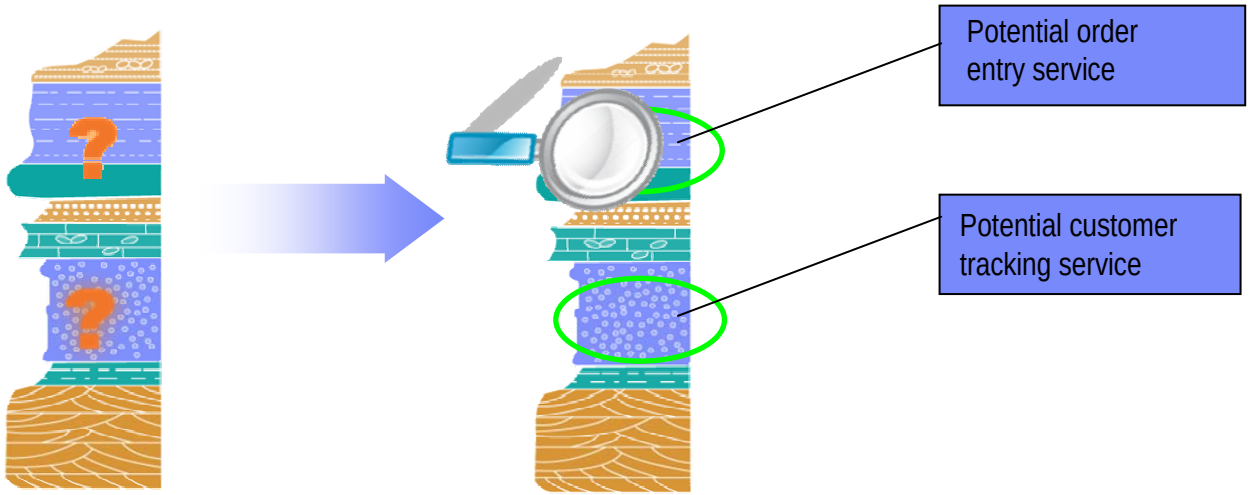




Evolution of Desired Value – What you want

Discovery tools to identify, understand, and reuse assets

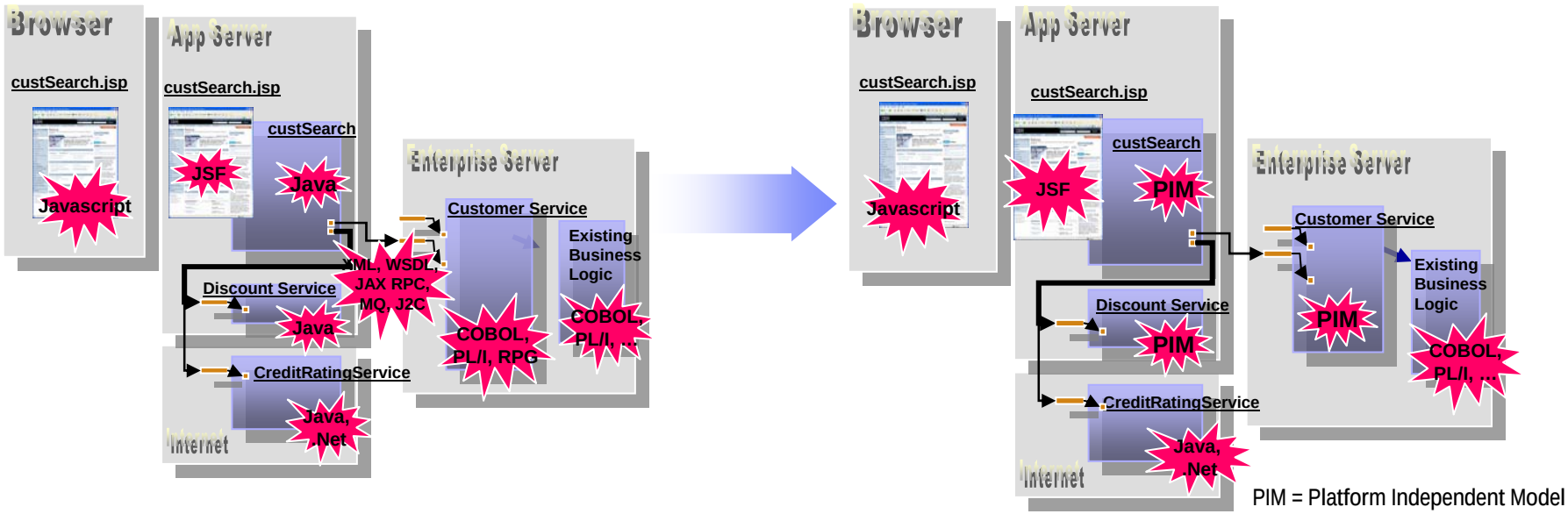
- Extract value hidden within existing code via discovery and analysis
- Understand breadth of usage and criticality to business
- Gain insight into potential impact of changes once application inventory built



Evolution of Desired Value – What you want

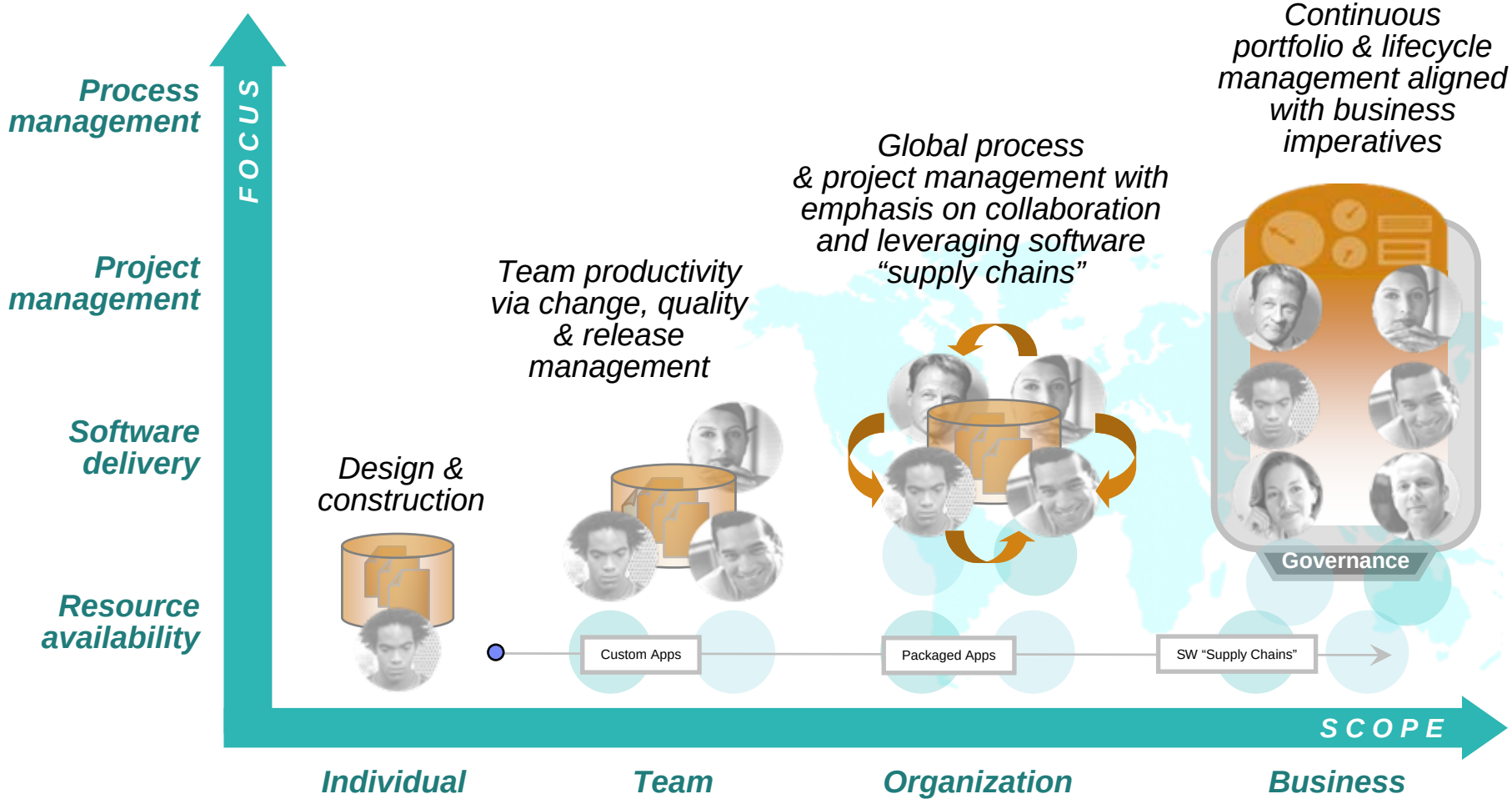
Powerful tools and abstractions to harness current employee skills

- Exploit new technologies without retraining your staff
- Use high-level abstractions to hide underlying middleware complexity
- Standardize on common processes and tools to improve productivity and communication
- Leverage tool advisors and best practices to “do it right” the first time



Evolution of Desired Value – What you want

Customers are maturing their approach to software delivery



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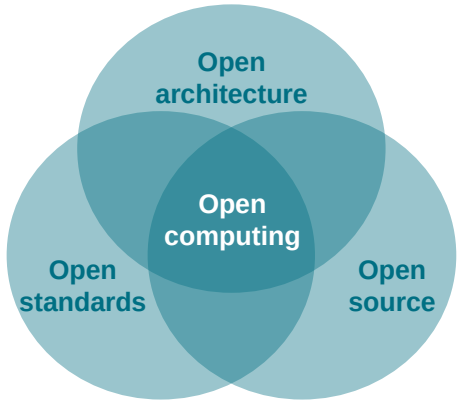
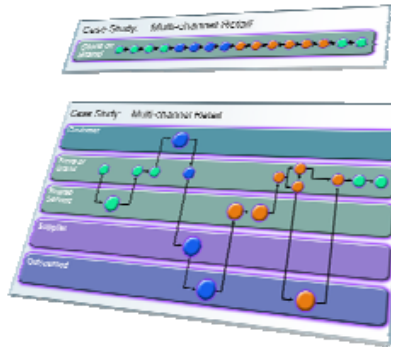
Reshaping software development – How you get there

- Communities
  - Leverage community effects from open computing, Metcalf's law, social networking
- Modularity
  - Exploit SOA as a key enabler of business flexibility
  - Do so on all platforms – it is an architecture!
- Governance
  - Maximize value and flexibility of the knowledge-based workforce
  - Leverage governance integrated into tools platform
  - Minimize chaos while maximizing individual decision rights
  - Allow accountability





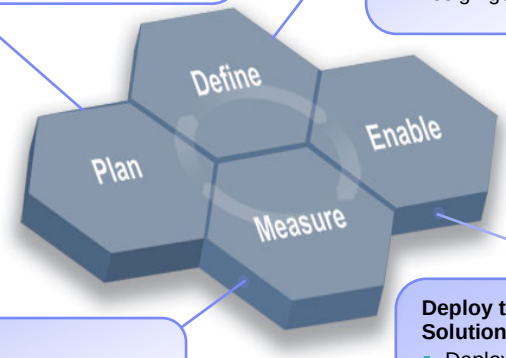
What is Governance?

Establishing decision making rights

Establishing mechanisms and policies used to measure and control the way decisions are made and carried out

Plan and Evolve the Governance Solution
- Document and validate business strategy
- Assess current capabilities
- Define/Refine vision and strategy
- Review current Governance capabilities and arrangements
- Layout governance plan

Define the Governance Solution
- Define/modify governance processes
- Design policies and enforcement mechanisms
- Identify success factors, metrics
- Identify owners and funding model
- Design governance infrastructure



Monitor and Manage the Governance Solution
- Monitor compliance with policies
- Monitor compliance with governance arrangements
- Monitor effectiveness metrics

Deploy the Governance Solution Incrementally
- Deploy governance mechanisms
- Deploy governance infrastructure
- Educate and deploy on expected behaviors and practices
- Deploy policies

Benefits

- Improve performance
- Address risk
- Ensure compliance

Example

End-to-end requirements tracking

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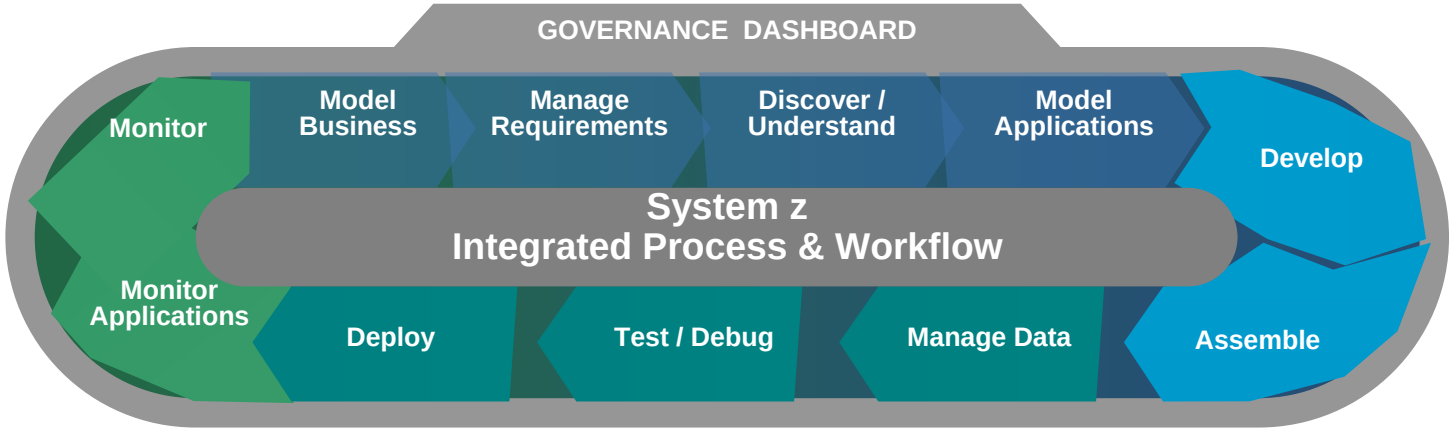
The IBM Software Delivery Platform – How you get started today

Enable predictable, integrated, cross-platform software delivery

Extending the IBM Software Delivery Platform to System z

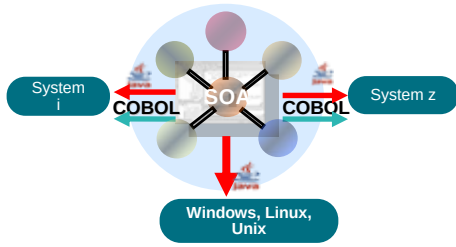
- **Improve developer productivity & reduce costs**
  - Common processes & tools regardless of deployment platform provide greater team flexibility, productivity
  - Fewer tools means lower support & training costs
  - New tools support modern architecture and technologies (e.g. SOA, rich web UIs) to create new business value
- **Enhance quality & flexibility of your solutions**
  - Tools facilitate application discovery, understanding and re-factoring to extract value from existing code
  - Model-driven development & SOA tools exploit latest in productivity, quality and flexible architectures
  - Best practices and integrated tool advisors help you “do it right”
- **Effectively govern enterprise development**
  - Dashboards for identifying and managing project risk, monitoring and managing runtimes aid decision-making
  - Converged source code libraries & change management facilitate end-to-end solution development



ISPF was good yesterday…the SDP carries you into the future…

SDP Solutions for System z – How you get started today

Proven solutions to meet your needs



- **Exploit Enterprise Technology with EGL** – help business developers rapidly develop sophisticated, multi-platform, end-to-end applications and services that harness enterprise technology with little knowledge of the underlying middleware

- **Enterprise Application Transformation** – transform legacy applications into EGL in order to modernize, service-enable, and exploit the full value of the SDP

- **Reuse and Productivity** – identify assets for reuse, develop in a highly productive IDE, and create services, while leveraging existing developer skills and exploiting new technologies

- **IT Governance for System z** – ensure compliance & implement effective governance for cross platform application development by consolidating onto the industry-leading team infrastructure

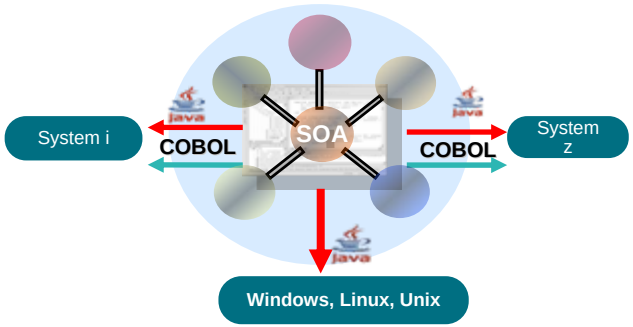
SDP Solutions for System z

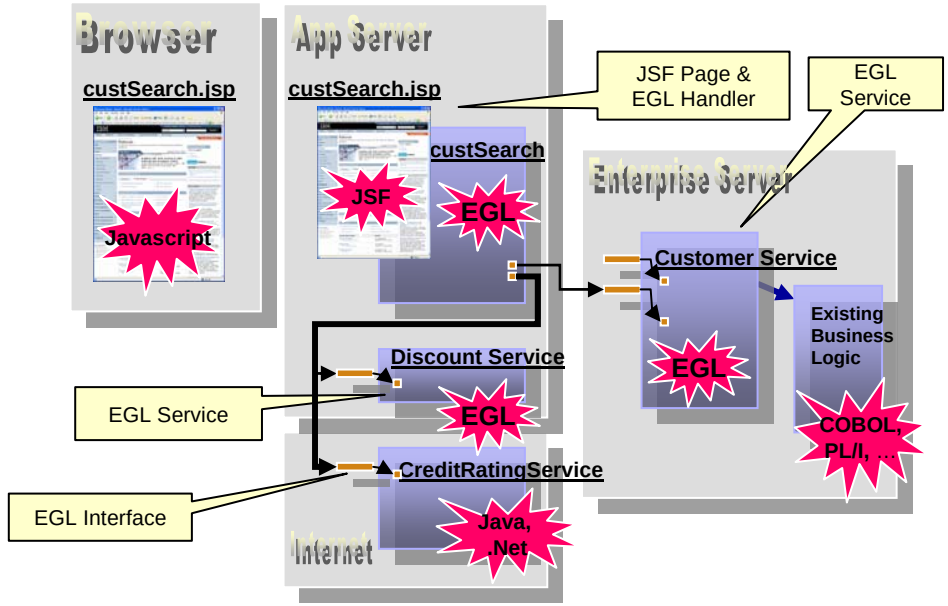
Modernize with Enterprise Generation Language (EGL)

Scenario:

We need to extend our existing applications to leverage modern architectures like J2EE and SOA. We also have numerous existing System z assets that we want to make available as web services, but lack the development skills. We face the following challenges:

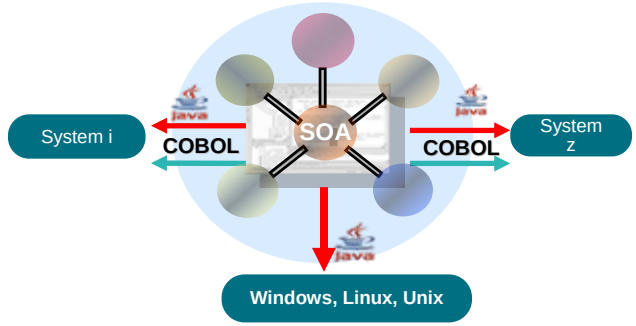
- System z development skills eroding
- Reuse of System z assets requires web services & SOA skills
- System z innovation (e.g. zAAP) cannot be exploited without having to re-train traditional developers to Java
- Skills islands and team silos not conducive to efficient communication, productivity, flexible resource allocation





SDP Solutions for System z

Exploit Enterprise Technology with EGL



Solution:

- **Rational Business Developer**, with support for Enterprise Generation Language (EGL) – IBM's modern business language
- **Rational Business Developer extension** to RAD, RSA, WDz, WDSC-AE

Solution Benefits:

- **Complexity:**
  - Learn and use quickly and easily
  - Avoid complexity of underlying middleware
  - Create EGL services and deploy to CICS
  - Build rich web UIs (e.g. JSF)
  - Leverage existing COBOL and PL/1 applications
- **Platforms**
  - Deploy to Solaris, Linux, CICS, IMS, z/OS batch, WAS, Windows, HP-UX, System i
- **Skills**
  - Allows new developers to quickly deploy to System z
  - Allows traditional developers to create modern solutions
  - Allows all developers to be more productive

- **Background:**
  - Belgian Bank & Insurance company. 50000 employees, 12 million clients across Central Europe
  - Numerous acquisitions, expect to continue.
- **Solution: EGL** – unify application development across all platforms and transaction managers (e.g. WAS, IMS)

"…we want to avoid the "skill silos", what we really need is a large group of general developers who should not worry about target platforms and focus on developing business components, and only a small number of technology specialists, so that we can swiftly allocate general developers to upcoming business needs….EGL is helping us achieve this goal.."

Lieven.Gouwy IT Architect,

KBC,Redmonk Podcast

SDP Solutions for System z
Enterprise Application Transformation

Scenario:

We have large investments in critical legacy software systems and need to transform the applications to provide a platform to adopt modern architectures, such as SOA, while leveraging existing application business logic. We face the following challenges:

- High maintenance costs for legacy software applications
- Inability to adopt new and emerging application architectures (i.e. SOA with existing development tools and application architecture)
- Dwindling IT skills to maintain legacy applications
- Difficulty in attracting new development talent

"There are many benefits to Legacy Modernization tools and they significantly reduce the risk of failure when maintaining or transforming aging legacy systems."
Dale Vecchio, Research Director - Gartner

SDP Solutions for System z
Enterprise Application Transformation

Solution:

- Automated Enterprise Application Transformation on existing application code targeting the IBM SDP:
  - **Rational Business Developer**

- **Rational ISSR and IBM Rational Business Partner Services -** for education, knowledge transfer, PoCs, application implementation, testing and deployment

Solution Benefits:

- **Reduce costs –** Reduce or eliminate maintenance costs
- **Business flexibility –** Provide architecture to easily adopt new middleware and modern application architectures
- **Preserve existing productivity –** Preserve development productivity with similar high-level business language
- **Exploit employee business domain knowledge –** Eliminate re-staffing and retraining costs
- **Reduce risk –** Automate conversion of applications to EGL without rewriting code
- **Increase competitive advantage –** Leverage software as the critical differentiator for providing new services and opening new markets.

- **Background:**
  - A Leading International Airline Maintenance, Repair and Overhaul company
  - Rapid growth and expansion of services
- **Solution:**
  - **Enterprise Application Transformation** of existing Natural/ADABAS system to EGL, DB2 and WebSphere.
    - 30M lines of Natural code
    - New UI interface required
    - Complete ADABAS to DB2 migration

SDP Solutions for System z

Reuse and Productivity

"I want to reuse key parts of my mainframe applications in a SOA, but how do I get there from here?"

Scenario:

- We are committed to SOA. We need a development lifecycle infrastructure that provides immediate value and grows with us as we mature.
- We need to move away from old technologies supporting old architectures (e.g. ISPF). We have limited budget to train our mainframe experts in new architectures.
- We need to improve quality by enhancing our ability to gauge application completeness end-to-end, from requirements to production.
- We need to create test environments, test, and find and fix problems quickly, while reducing costs.
- We need to improve our IT throughput by improving our ability to manage, change, and reuse application assets.

"I can't afford to rewrite my applications for these new web applications or find it hard to integrate them together."

"Many of my experienced mainframe developers are retiring or leaving."

"We've accumulated 20 to 40 years of changes to our valuable applications, but I don't have reliable documentation of them."

SDP Solutions for System z
Reuse and Productivity

Solutions:

- **For Discovery, Understanding, and Reuse:**
  - **CICS Interdependency Analyzer (CICS IA)** – capture interdependency information and analyze transaction affinities
  - **WebSphere Studio Asset Analyzer (WSAA)** – perform impact analysis across the enterprise
  - **Asset Transformation Workbench (ATW)** – perform pattern identification, extract business rules, assess suitability for reuse in SOA
  - New! **Rational Asset Manager (RAM)** – manage reusable assets during development
  - **WebSphere Service Registry & Repository (WSRR)** – store, access, and manage info. about services
- **To Develop applications:**
  - **Rational Application Developer (RAD)** – develop J2EE & web applications for WebSphere
  - New! **Rational Business Developer (RBD)** – develop J2EE, web, LUW, System z, and System i solutions
  - **WebSphere Developer for System z (WDz)** – RAD and COBOL + PL/1 + CICS + IMS + Batch

Solution Benefits:

- Modern, highly productive development environment
- Ability to leverage existing IT assets
- Support for all languages and platforms needed for end-to-end solution

COMMERZBANK

- **Background:**
  - German Bank providing financial services to private companies and small/medium businesses across Europe
  - Leading provider of online banking services.
- **Challenge:** upgrade teller workstations and ensure they continue to work with existing 3rd-party customer COBOL runtime environment.
- **Solution:**
  - New application framework based on IBM COBOL standard
  - WDz to design new COBOL/other runtime code

"In one tool, we have a single development environment for multiple environments. I don't have to jump between different tools to do different tasks. The tool is very complete."
— Armin Schiller, Transaction Banking Payments and Cash Transactions, Commerzbank AG

SDP Solutions for System z
IT Governance for System z

Scenario:

We need to ensure compliance & implement effective Governance for cross-platform application development. We face the following challenges:

- Lack of coordination of development, testing, and deployment of application components on various platforms, including System z
- Lack of traceability of end to end processes for enterprise applications
- Challenges to deploying development resources effectively because of disparate tools and processes across platforms

SDP Solutions for System z

IT Governance for System z

Solutions:

- **Rational ClearQuest (CQ)** - coordination, traceability and consistency for cross-platform development, testing, and deployment
- **Rational ClearCase (CC)** – version control, parallel development support, build and release management for multiple platforms
- **Rational Build Forge (BF)** – high-performance builds throughout the software lifecycle, including z/OS
- **Rational ClearQuest Test Manager (CQTM)** – central console for test activity management, execution, and reporting
- **SCLM Advanced Edition** – centralized z/OS SCM solution
- **Rational Method Composer (RMC)** – leverage expertise in portfolio management, collaborative distributed development, and service oriented architectures
- **Rational Portfolio Manager (RPM)** – project, portfolio, and resource management with unified dashboard
- **Rational Requisite Pro** – requirements management for project teams

GENERALI Assicurazioni Generali S.p.A.

- **Background:** Third largest European insurance provider, with worldwide operations and clients.
- **Challenge:** Minimize the impact of maintenance costs, resource availability, staff turnover, and a lack of documentation standards on the ability to maintain software GGS provides to the Group's companies.
- **Solution:** Highly automated solution to manage and support the software changeover from start to finish: from the opening of the job file to the distribution of the new version to all target systems.
- **Benefits:** The solution guarantees the complete processing of release management, with automatic handling of changes. The integrated SCM solution not only lets project heads trace all current activities, but is also simpler to use, through a unique browser interface which improves communication between work groups.

Solution Benefits:

- **Increased productivity and lower development costs** – use common end-to-end processes and tools to develop, build, test, and deploy applications more efficiently and effectively
- **Higher quality applications** – produce integrated end-to-end solutions to ensure applications address business requirements and are developed in a predictable, traceable, auditable, and reliable manner
- **Address IT governance and compliance requirements** – provide traceability and auditability of all lifecycle processes to meet all governance and compliance requirements

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What's new in Version 7 – Highlights for System z

Rational. software

- **ReqPro**:
  - With RSA and RSM, create model elements from requirements
  - Better integration with ClearQuest, RSA, RSM, WID, and WBM
- **RSM/RSA:**
  - Transform models to code and vice versa, for Java, C++, EGL, and COBOL
- **RAD:**
  - Support for WAS 6.1, WAS for z/OS and WAS for z/Linux (including new Java 5 and Web services tools)
  - Support for WebSphere Portal 6.0, including WebSphere Portal Enable/Extend for z/OS 6.0
- **RMT, RPT, RFT:**
  - Adoption of Process Advisor to enhance tool experience
  - Integration with ITCAM

Many SDP products are platform agnostic so System z users can take advantage of all V7 features

- **RPM:**
  - Translation support for globally-distributed development
  - Integration with ClearQuest, allowing RPM to manage work associated with project artifacts

- **Build Forge:**
  - An adaptive build-and-release management framework, helping development teams standardize repetitive tasks, manage compliance mandates, and share information
- **ClearCase (CC):**
  - Improved z/OS usability and security
  - Release automation with Tivoli Provisioning Manager
- **ClearQuest (CQ):**
  - Advanced workflow and activity management
  - Build and deployment management and tracking with integration with Build Forge
  - Enhanced RequisitePro integration
- **ClearQuest Test Manager (CQTM):**
  - Integrated test management provides end-to-end traceability
  - Integration with RFT and RPT

And so much more!

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What is coming next

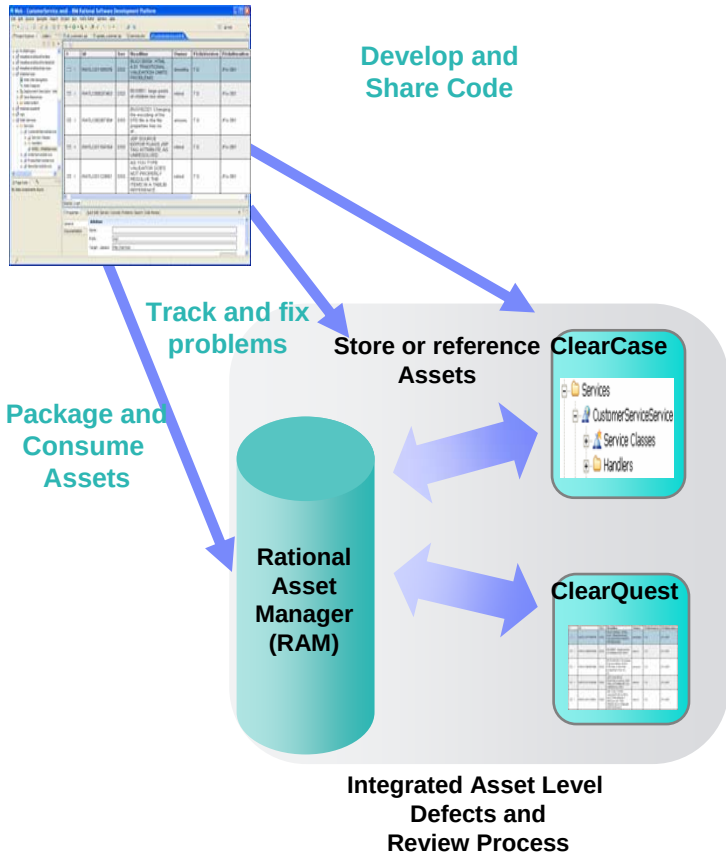
Rational. software

- **Rational Business Developer (RBD)** - develop J2EE, web, LUW, System z, and System i solutions
- **RPM, ReqPro, ClearQuest** - support DB2 for z/OS as data store
- **RUP for System z** - extension to RUP to describe how to best leverage legacy assets

- **Rational Asset Manager (RAM)** - manage reusable assets during development

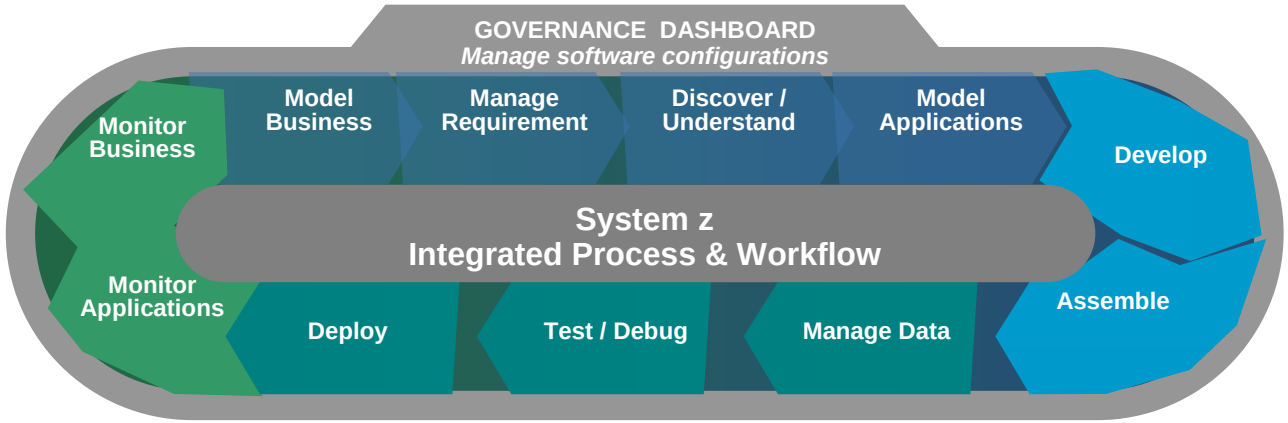
- **Rational Tester for SOA** – permit functional and performance testing of individual services and business processes

- **Jazz for System z Tech Preview** - An open, scalable, extensible team collaboration technology foundation that provides seamless real-time team collaboration between all disciplines of the software delivery lifecycle.



We need your feedback to make the SDP even better for System z

Summary



- The marketplace is undergoing rapid change; IT must adapt by leveraging:
  - Communities, Modularity and Good Governance
- Good governance is a key enabler
  - Creates business advantage
  - Empowers and enables practitioners
    - Process and governance should become part of the organization's culture and day-to-day work
    - A key enabler is process automation and information integrated into productivity tools
- The IBM SDP offers leading edge, high productivity tools for System z just as for distributed platforms.

You can get started today – We can help!

IBM Rational Software Development Conference

June 10-14 Walt Disney World Swan and Dolphin Orlando, FL

- Over 275 sessions – 12 tracks
- 3 and 5 hour Technical Workshops
- Keynotes with industry leading experts
- Exhibit Hall showcasing complimentary product and services
- Access to IBM engineers and IBM research
- Unlimited network opportunities
- IBM Solution Center
- Interactive Birds-of-a-Feather Sessions
- Luncheon Discussion Tables
- Evening Receptions
- omers and partners

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