IBM®

New Realities in Enterprise Modernization - Driving down the costs of Innovation

Peter Wassel

Program Director, Rational System z and
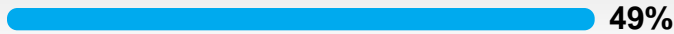Cross-Platform Segments, IBM Software Group

Many businesses are challenged by growing complexity
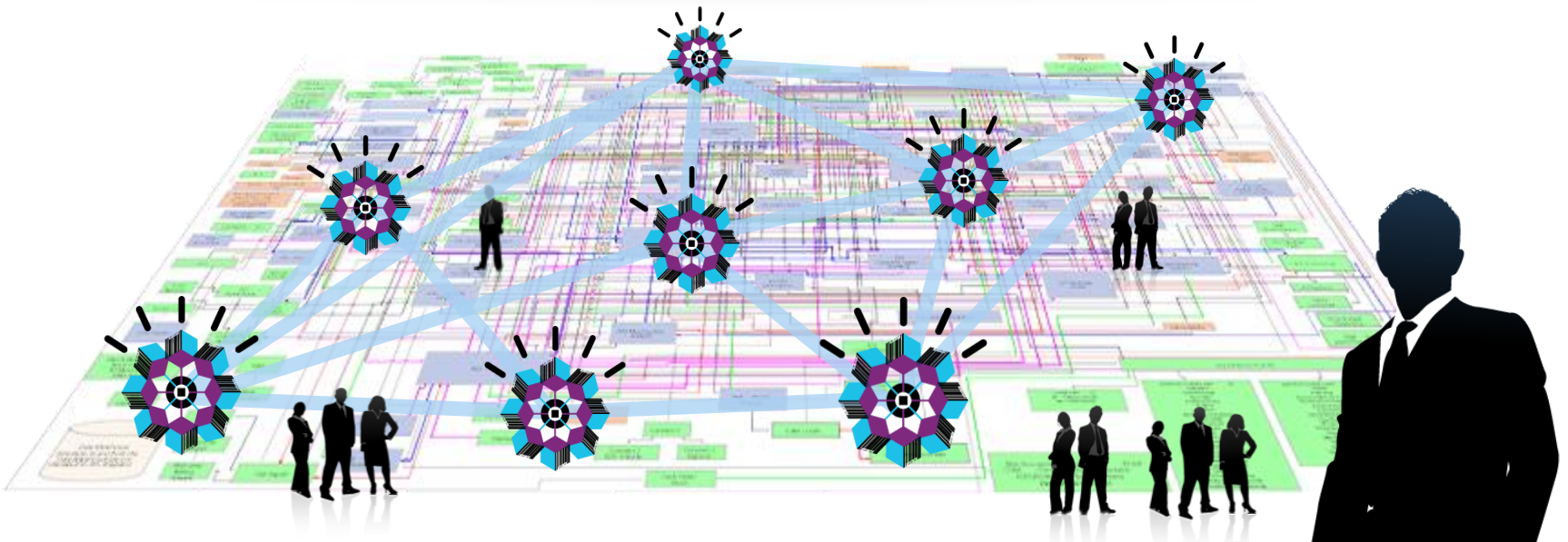
8 in 10 CEOs anticipate significant complexity ahead.

79%

30%
complexity gap

49%

Half Feel prepared to handle it.

Source: IBM Global CEO Study 2010
"Capitalizing on complexity".

Growing Complexity

…and the numbers can be unpleasant

Investment

CAGR 8%
Cumulative Value

$ 4.5T

$ 3.3T

$ 2.6T

$ 1.5T

1995 2000 2005 2010

■ In-house developed   ■ Work for Hire   ■ Purchased
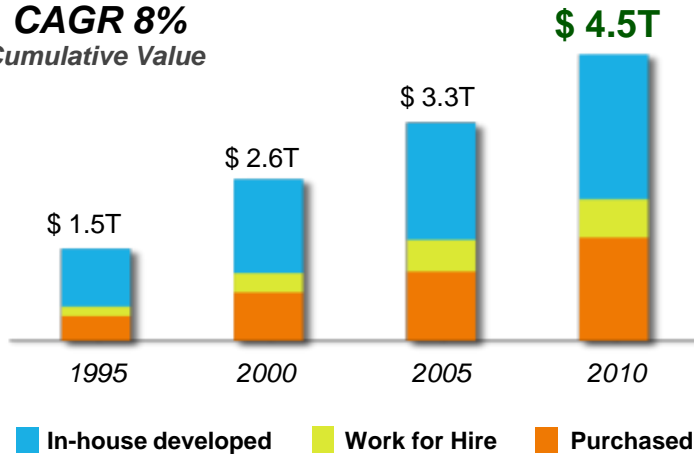
Challenges

- **70%** budget locked in maintenance
- **80%** of Mainframers are 50+ years old
- **50%** IT projects rolled back
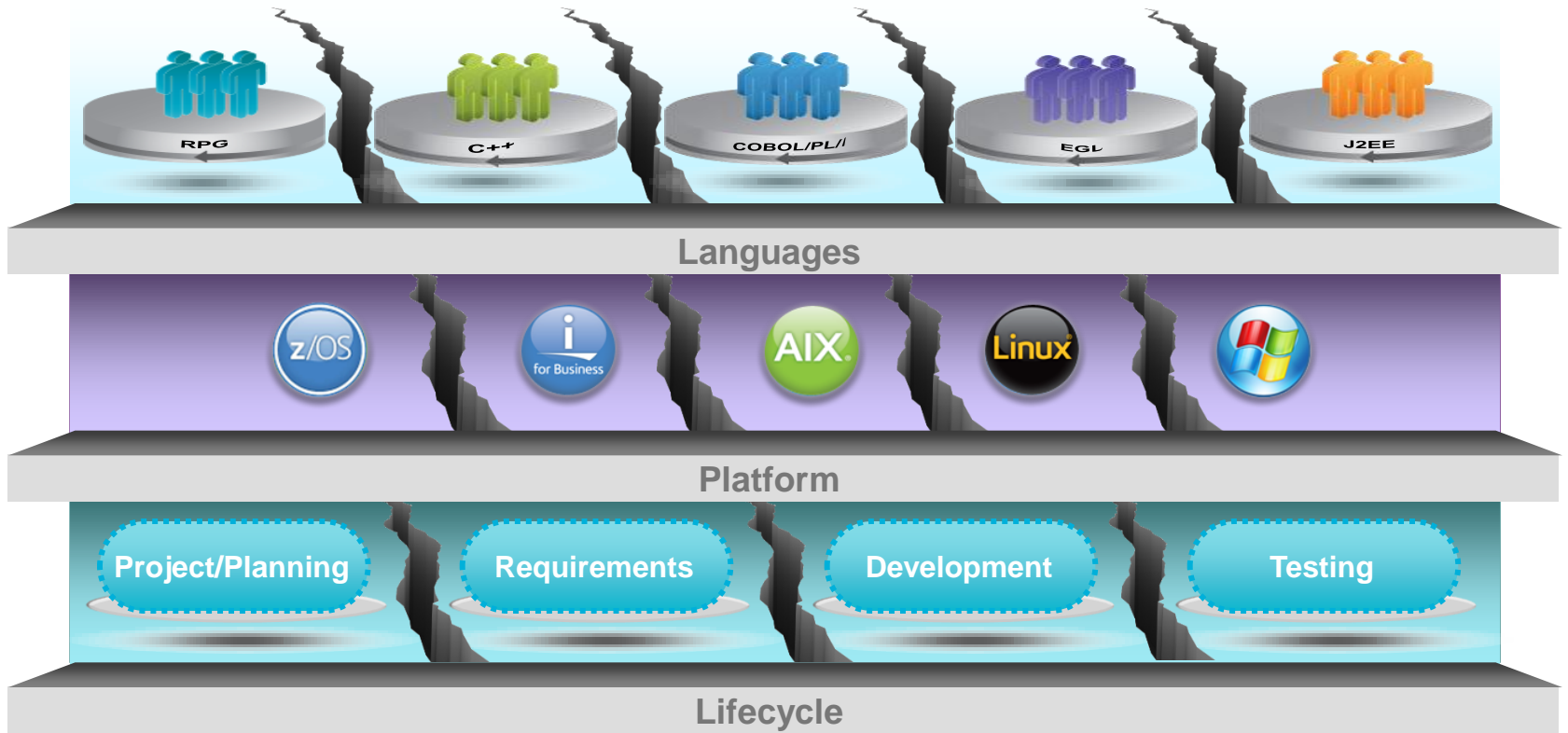- **85%** of distributed computing capacity is idle

Mainframe

Distributed

…and IT is often viewed as a root cause

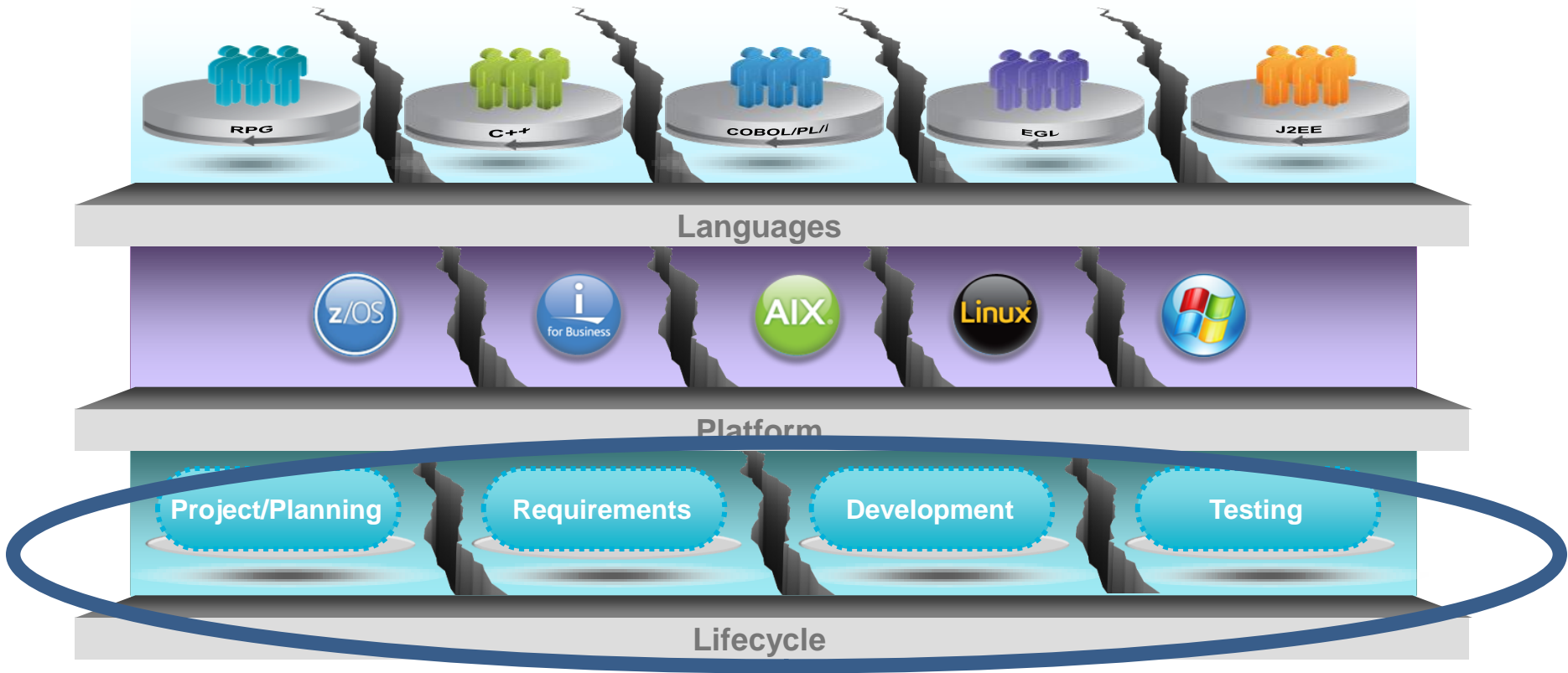*"For IT to regain relevance, it must reinvent itself as an organization that moves beyond its legacy burdens and helps the business take charge of the new IT capabilities available in the market."*

Forrester Research, Inc., Accelerating At The Intersection Of Business And Technology -- A Sneak Preview Of Forrester's IT Forum 2011, April 2011
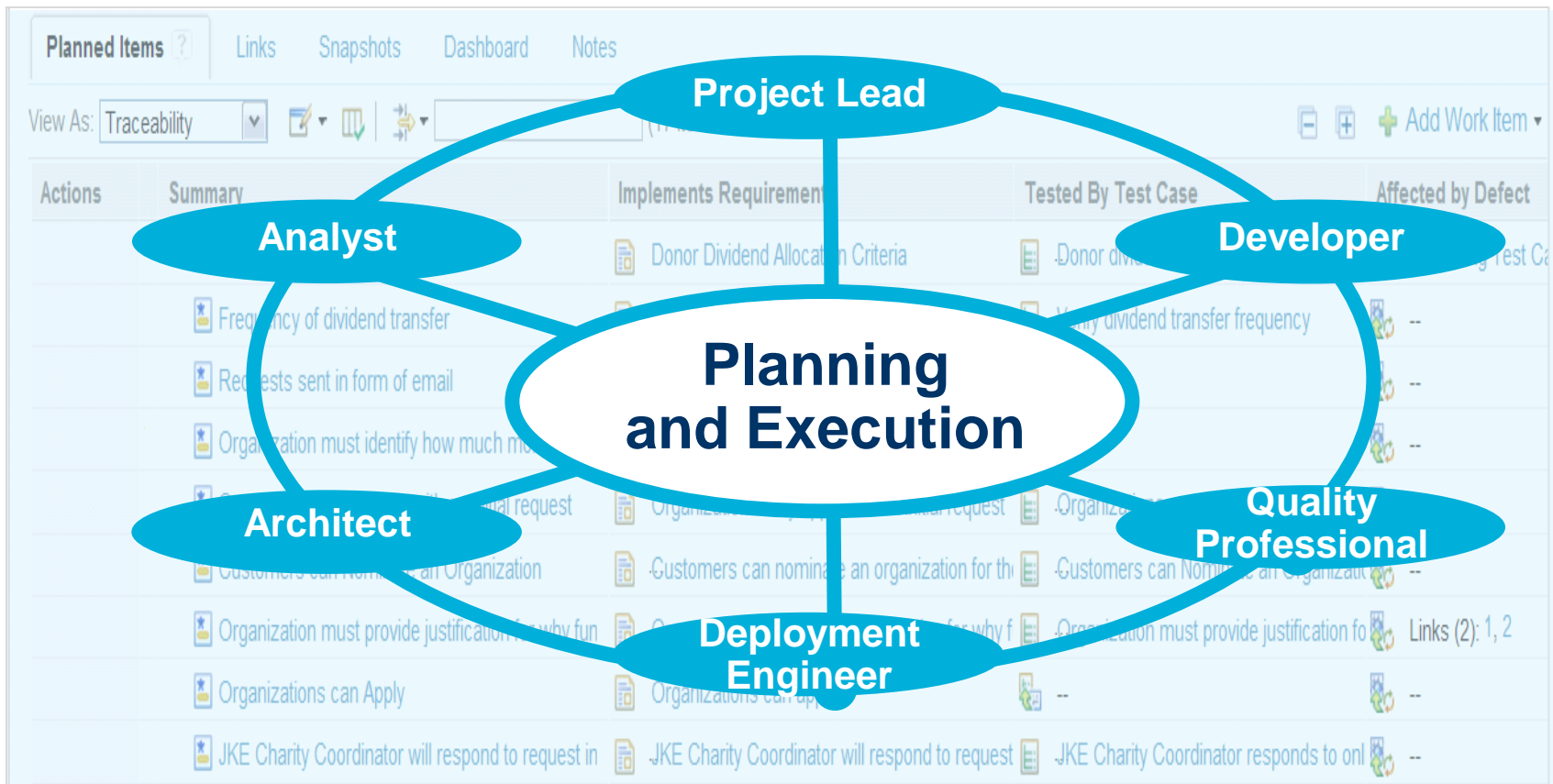
Enterprise Integration Barriers

Enterprise Integration Barriers
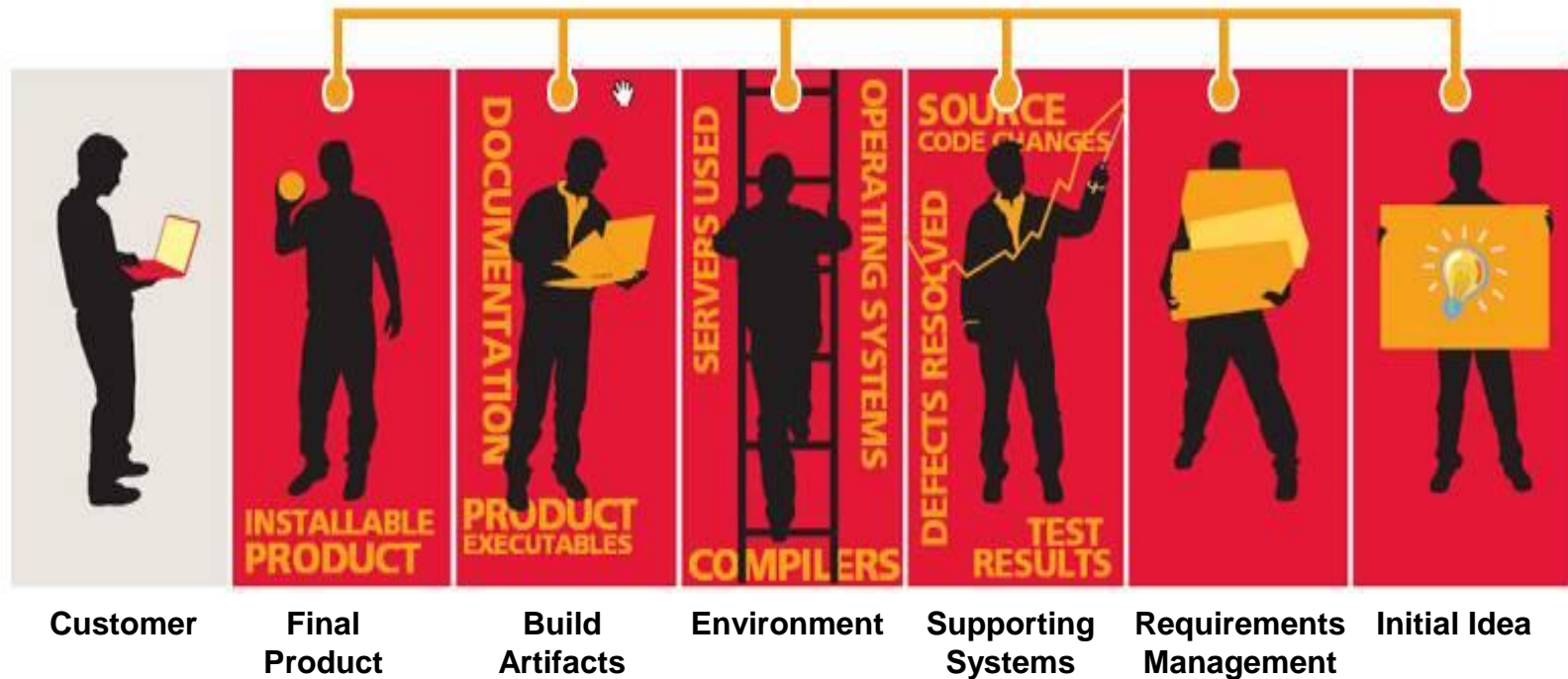
Imperative 1: Real-Time Planning

Improves time to delivery by:

- ✓ Providing a single plan spanning all stages of the development lifecycle
- ✓ Integrating planning with execution
- ✓ Allowing everyone to participate interactively in maintaining plan currency
- ✓ Helping teams respond timely to unexpected changes

Imperative 2: Lifecycle Traceability

Instant access to details from any point in the development process

| Customer | Final Product | Build Artifacts | Environment | Supporting Systems | Requirements Management | Initial Idea |

Improves quality by:

- ✓ Enabling impact analysis across all artifact types
- ✓ Helping to quickly understand context by tracing links to associated artifacts, e.g. corresponding requirements
- ✓ Delivering transparency enabling fully informed decisions

Imperative 3: In-Context Collaboration
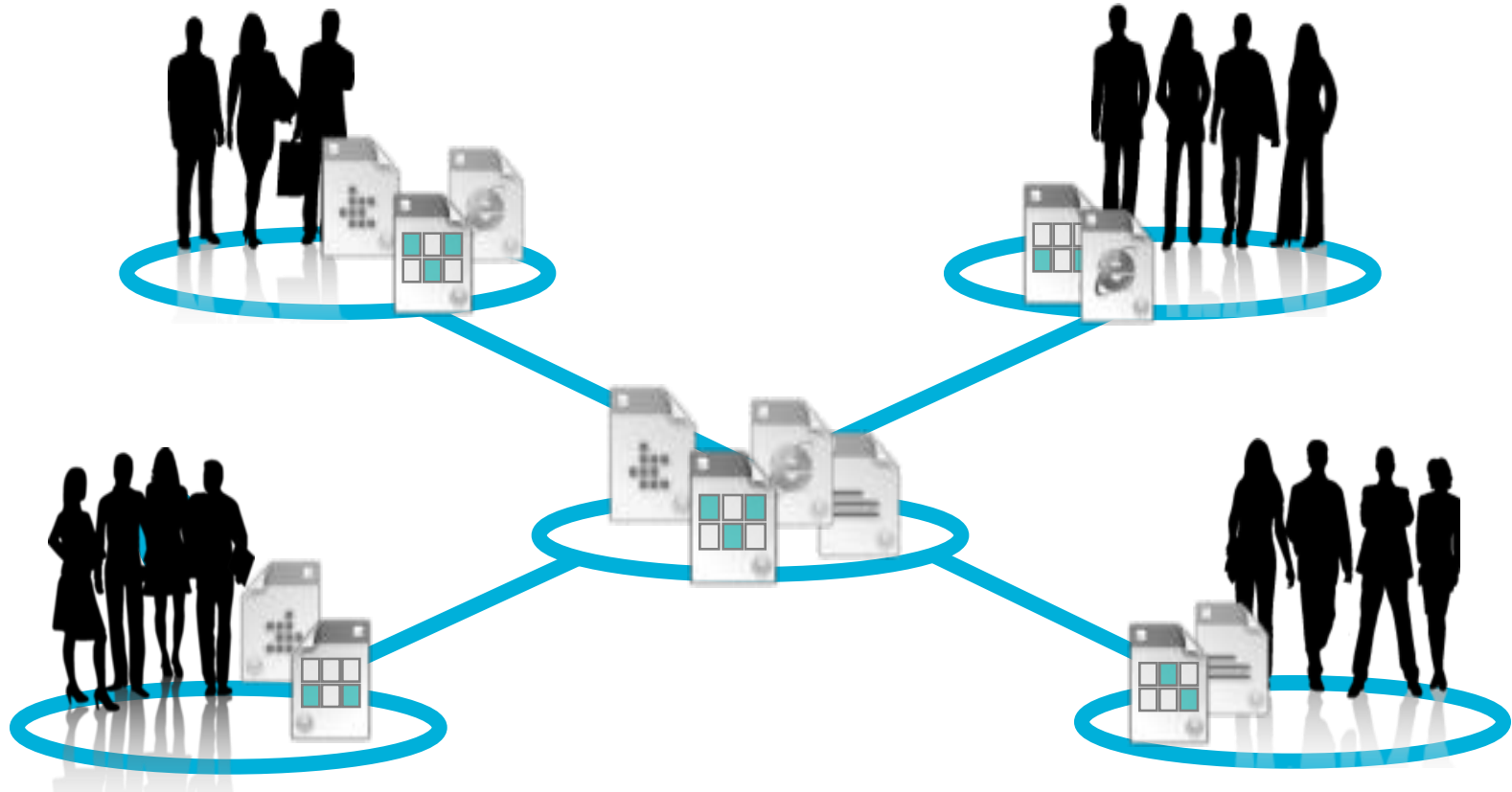
Maximizes time to value by:
- ✓ Making information immediately accessible to the team in the context of their work
- ✓ Empowering teams to collaborate and regularly review software artifacts
- ✓ Providing a single source of truth hosted in a shared repository for all team members

Imperative 4: Development Intelligence
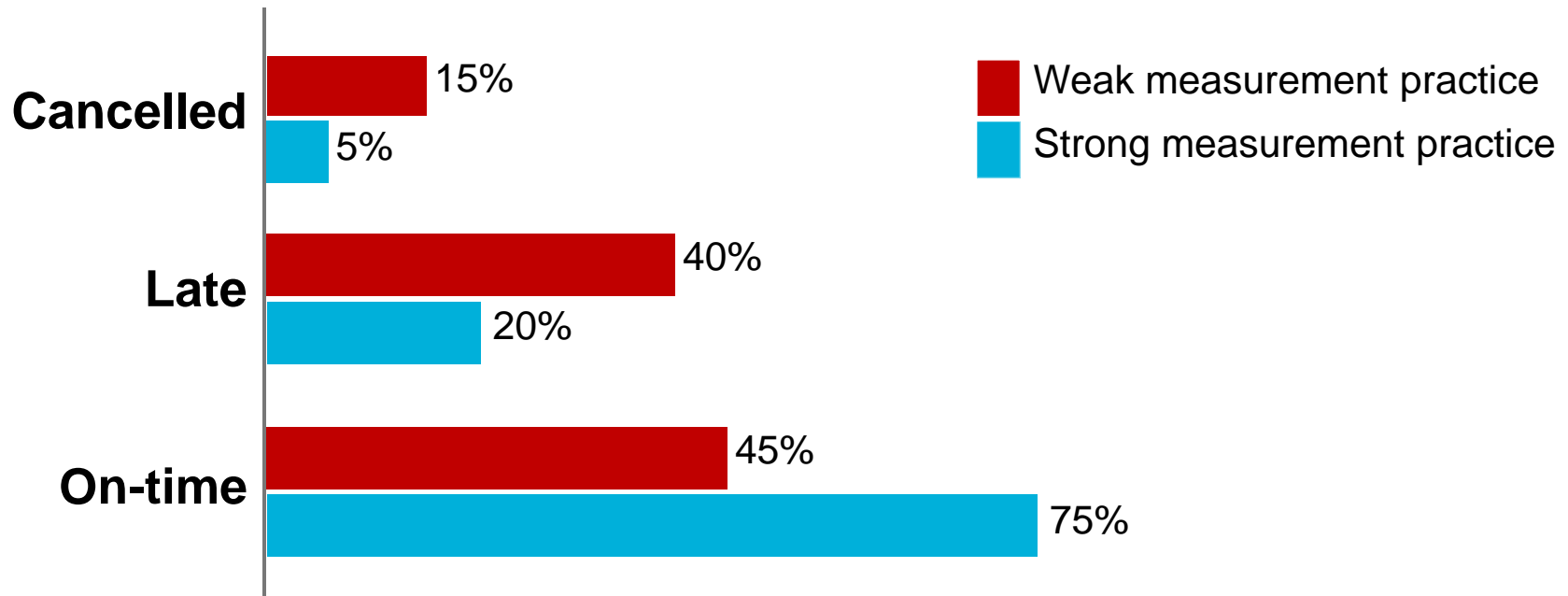
Measurement Practices Impact Project Success

Cancelled — Weak measurement practice: 15%, Strong measurement practice: 5%

Late — Weak measurement practice: 40%, Strong measurement practice: 20%

On-time — Weak measurement practice: 45%, Strong measurement practice: 75%

Legend:
- Weak measurement practice
- Strong measurement practice

Source: Capers Jones, Measurement, Metrics and Industry Leadership, 2009 and Software Engineering Best Practices, McGraw Hill, 2010.

Improves predictability by:
- ✓ Applying business intelligence techniques to software and systems development
- ✓ Enabling fact-based decision making
- ✓ Steering projects and programs to deliver on-time

Imperative 5: Continuous Improvement

Assess

Act

Steer

ROADMAP

jazz

"Successful analytics requires taking it beyond software and reporting, and into the realm of management practices and operations improvement."

Information Management Online, February 23, 2011

Reduces cost by:
- ✓ Delivering "out of the box", customizable, development process templates
- ✓ Improving delivery through ongoing adoption of best practices and automation
- ✓ Promoting both incremental and breakthrough improvement

# The Five Imperatives of Application Lifecycle Management
Improve productivity 4-6% annually

1. Accelerate **time to delivery** with real-time planning

2. Improve **quality** with lifecycle traceability

3. Maximize **time to value** with in-context collaboration

4. Refine **predictability** with development intelligence

5. Reduce **costs** with continuous improvement

Remaining Enterprise Integration Barriers
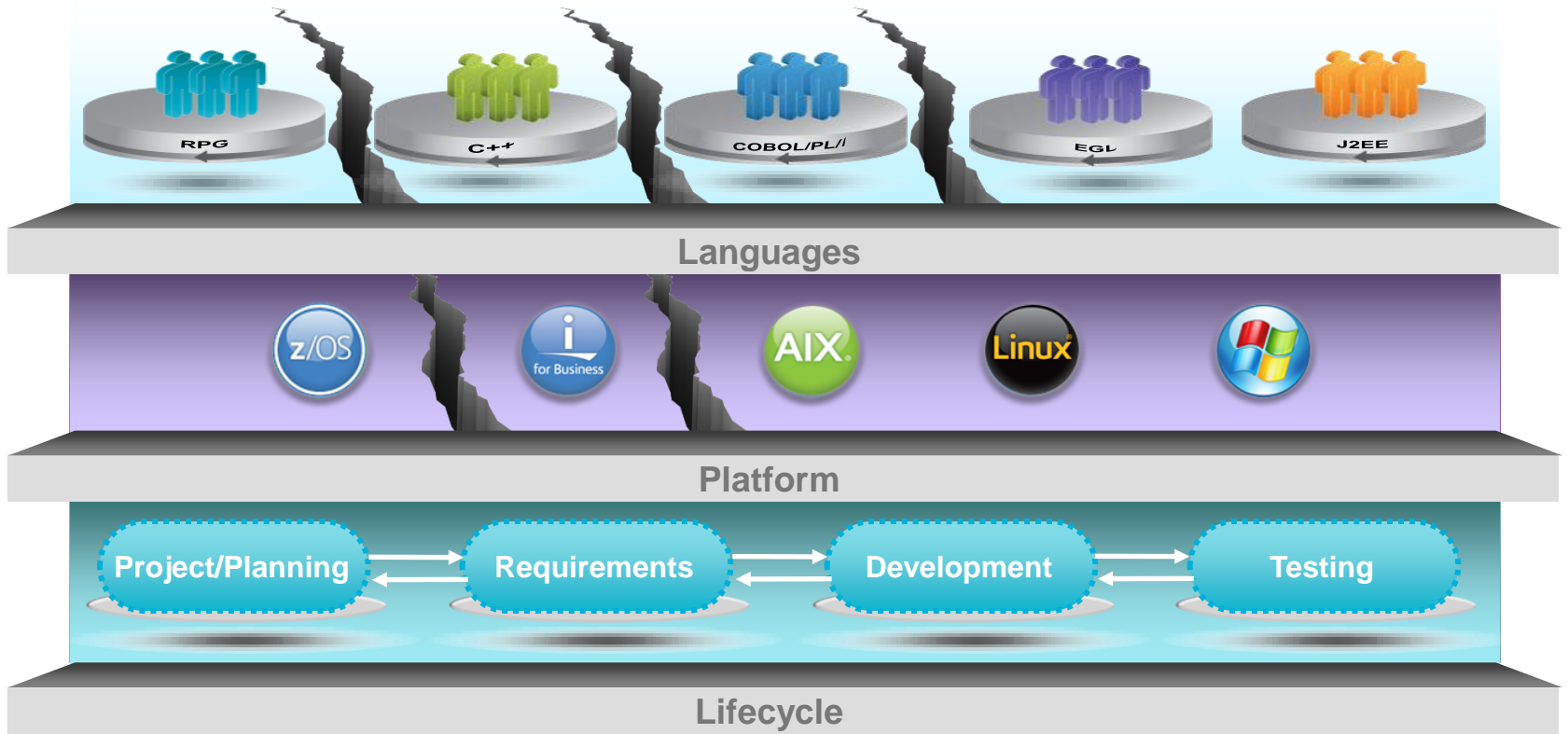
Enterprise Modernization Solutions

Increase flexibility	Boost productivity	Maximize business agility	Improve system utilization
Revitalize Applications	Empower People	Unify Teams	Optimize Infrastructure

- **Increase flexibility** by revitalizing existing application portfolios

- **Boost productivity** and accelerate innovation with modern skills

- **Maximize business agility** by bridging organizational silos

- **Improve system utilization** by leveraging hardware capabilities

Maximize organizational agility and performance by unifying development teams and modernizing skills

Increase flexibility	Boost productivity	Maximize business agility	Improve system utilization
Revitalize Applications	**Empower People**	**Unify Teams**	**Optimize Infrastructure**

Modern IDEs for all platforms and languages

Modern business language

Enterprise training programs, communities and resources

Consolidated, agile team infrastructure

jazz

COBOL Fun Facts

200x more COBOL transactions/day than **Google searches**

5 billion new COBOL LOC yearly

250 billion LOC of COBOL in existence

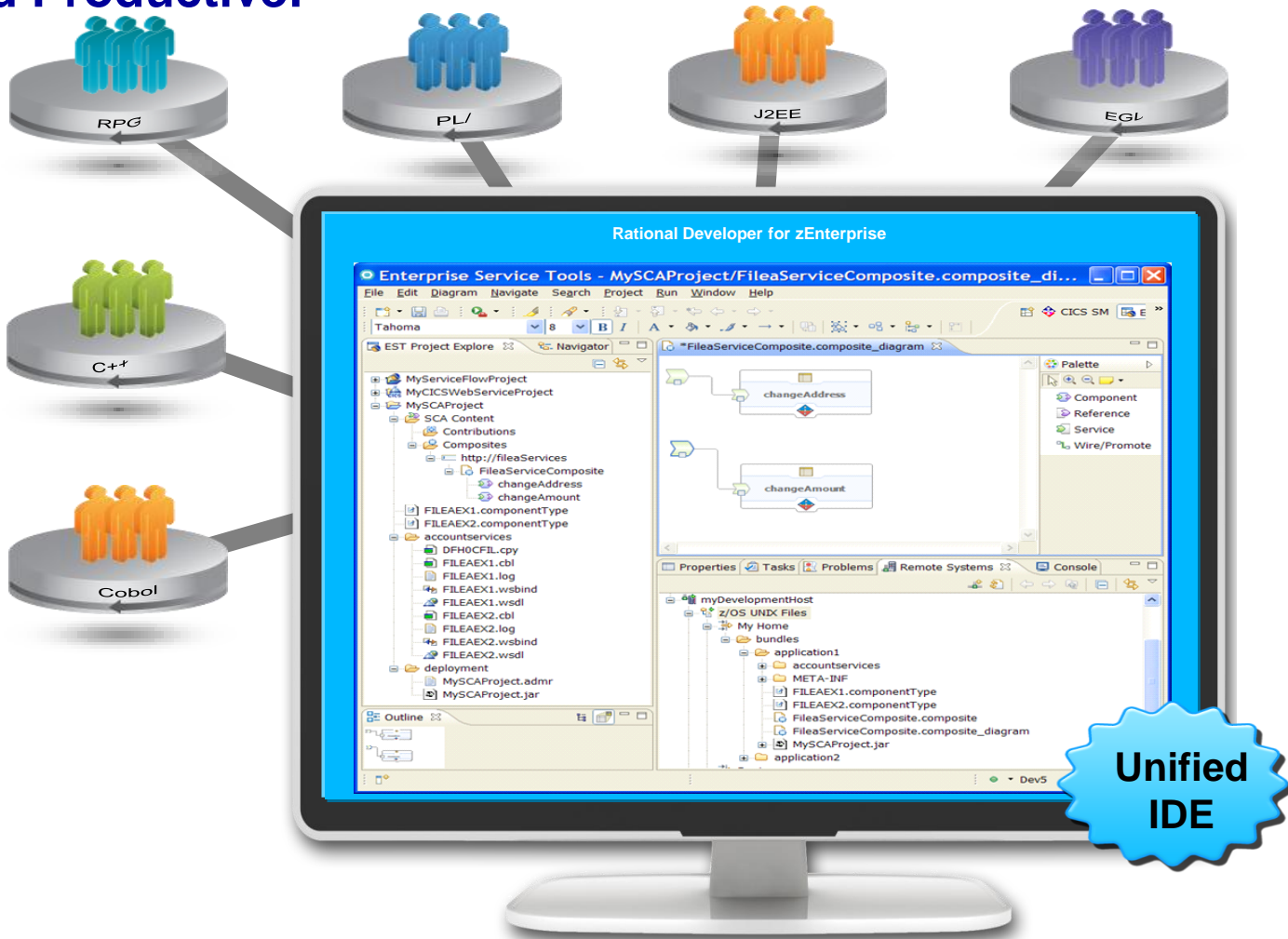COBOL training **no longer offered** at most universities

80% of all active code is **COBOL**

85% of all transactions are **COBOL**

ISPF…Modern? Productive?
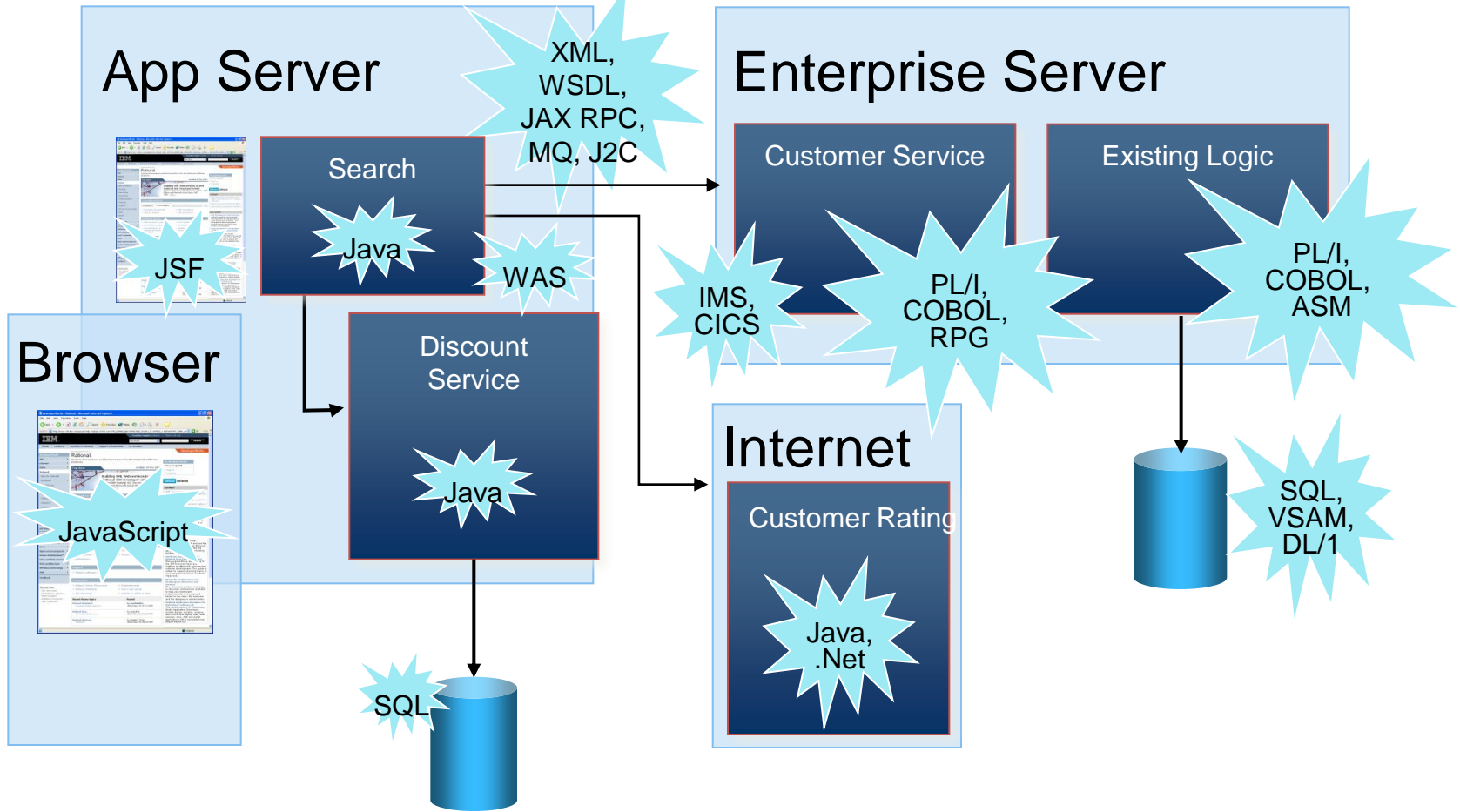
Modern and Productive!

- Rational Developer for System z
- Rational Developer for zEnterprise
- Rational Developer for Power Systems
- Rational Application Developer
- Rational Business Developer
- Rational Programming Patterns for System z

Middleware Complexities Exposed

App Server

Browser

JSF

JavaScript

Search

Java

WAS

Discount Service

Java

SQL

XML, WSDL, JAX RPC, MQ, J2C

Enterprise Server

Customer Service

Existing Logic

IMS, CICS

PL/I, COBOL, RPG

PL/I, COBOL, ASM

Internet

Customer Rating

Java, .Net

SQL, VSAM, DL/1

Middleware Complexities Hidden

App Server

Search
EGL

Discount Service
EGL

Browser
EGL

Enterprise Server

Customer Service
EGL

Existing Logic
PL/I, COBOL, ASM

EGL

Internet

Customer Rating
Java, .Net

OPEN

Eclipse EGL Development Tools Project
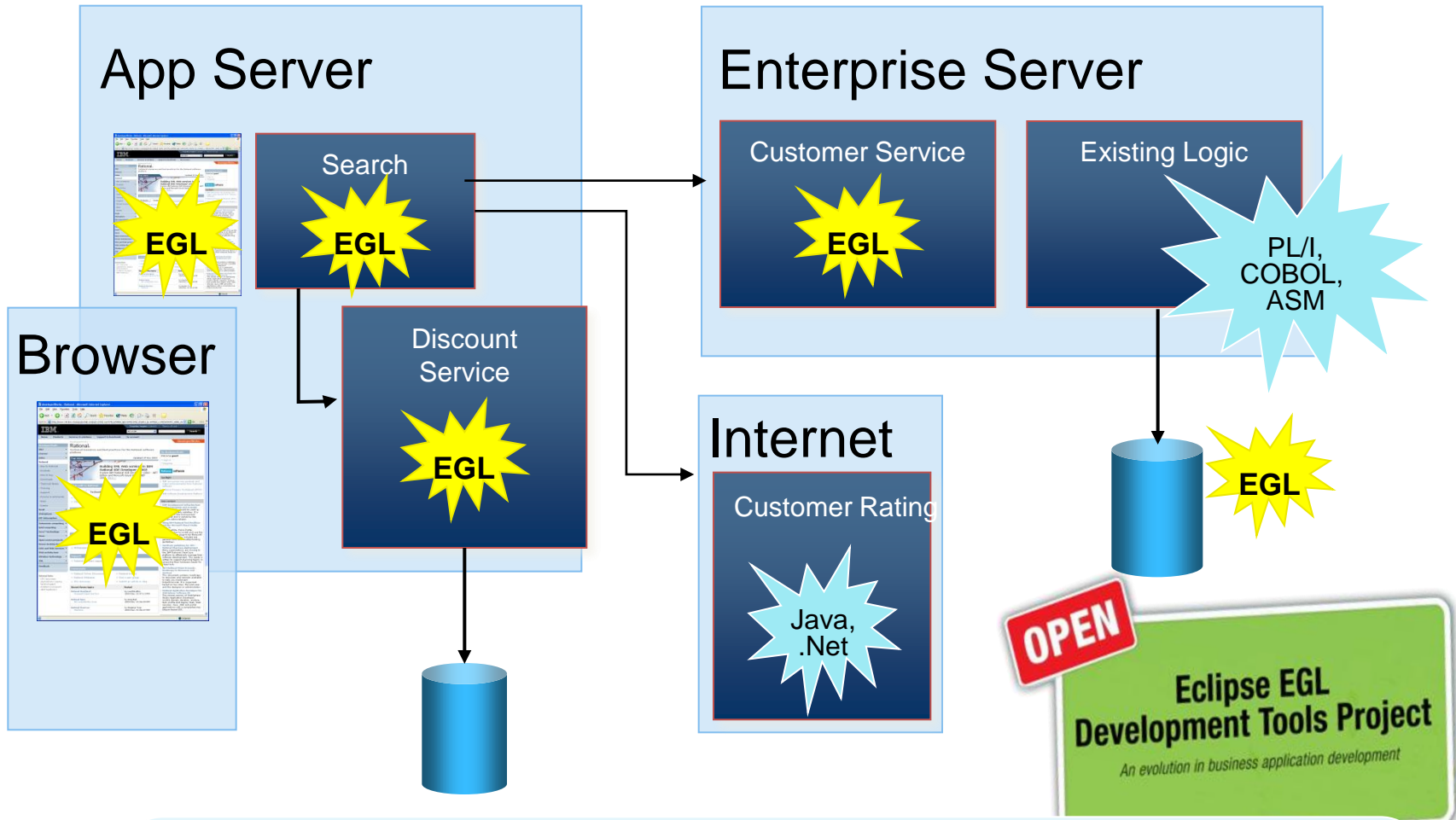*An evolution in business application development*

- Rational Business Developer
- Rational Developer for System z with EGL
- Rational Developer for zEnterprise
- Rational Developer for Power Systems
- Rational Developer for I for SOA Construction
- Rational Migration Extension for Natural
- Rational Migration Extension for CA
- Rational Migration Extension for Rich UI
- Rational Migration Extension for IBM i

Disconnected Teams and Infrastructure

Project/Planning	Requirements	Development	Testing
• Business Drivers	• Use Cases	• Test Driven Development	• Scenario-Driven Automation
• Iterations	• Contract	• Build Management	• Fill Cracks
• Contract	• Risk Assess	• Static Analysis	• User Involvement
• Risk Assess	• Threat Model	• Source Management	• Contract Validation
• User Involvement	• Test Requirements	• Pair Programming/Code Review	

Application Lifecycle Management

Integrated Teams and Infrastructure
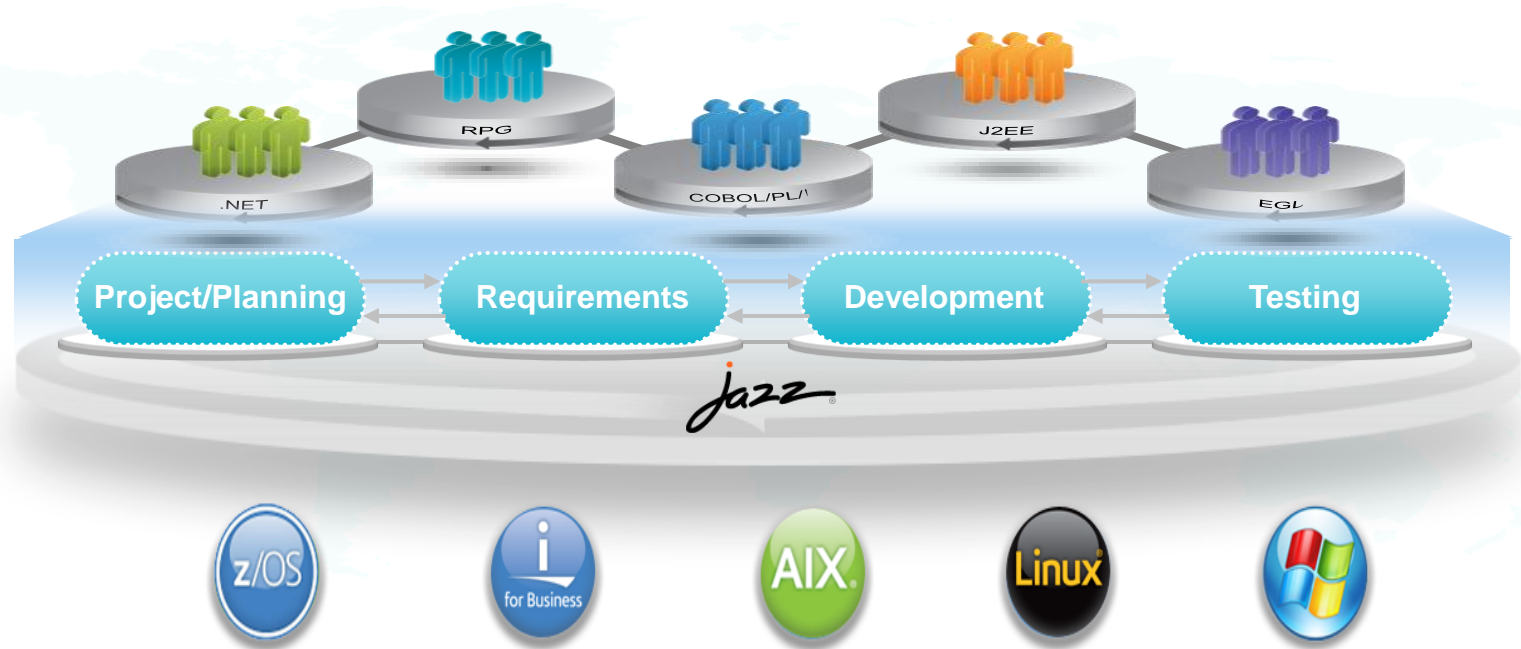
- Rational Team Concert
- Rational Requirements Composer
- Rational Software Architect Design Manager
- Rational Quality Manager
- Rational Build Forge

Integrations That Really Do Matter!

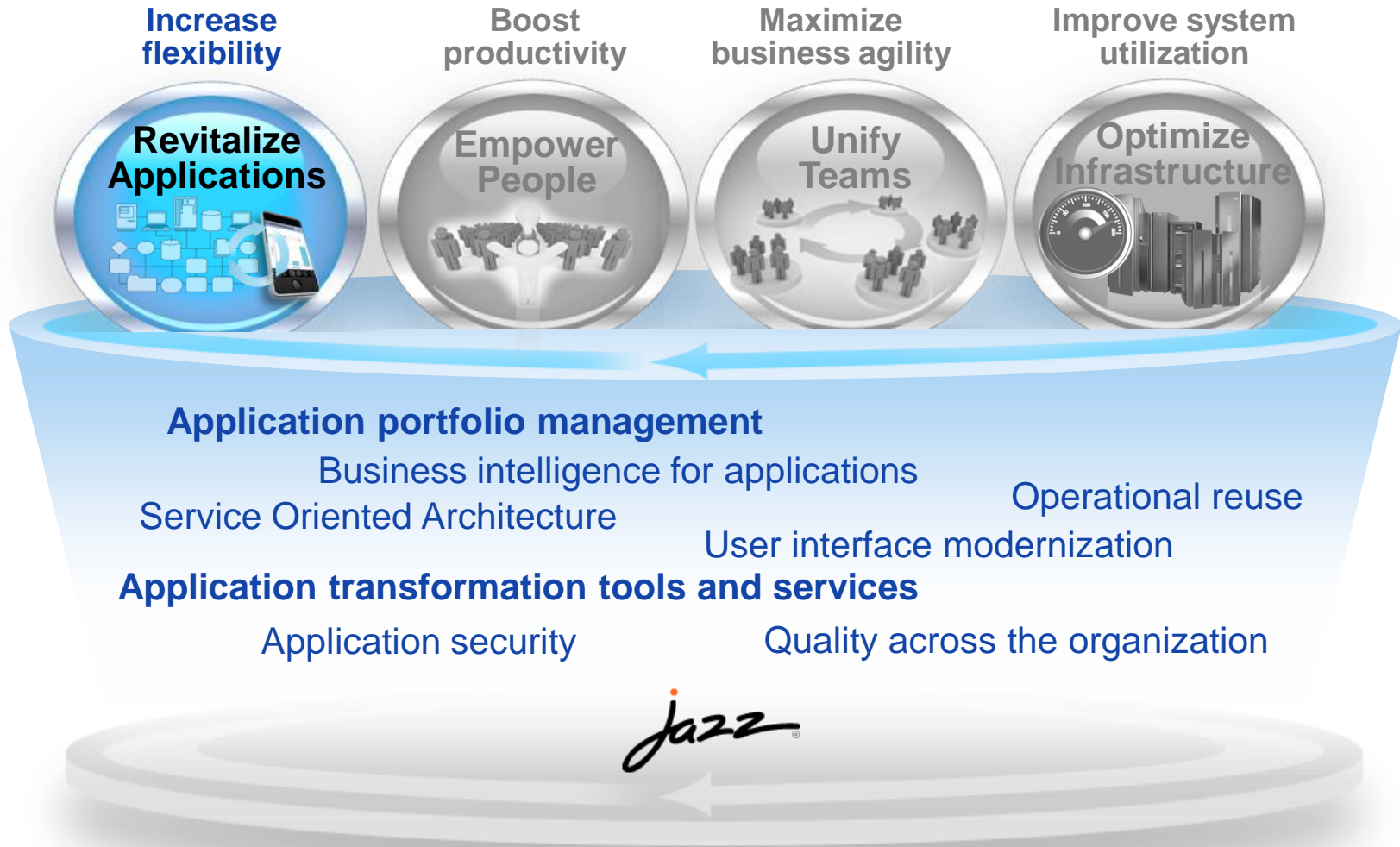
		Languages		
RPG	C++	COBOL/PL/I	EGL	J2EE

Languages

Platform — z/OS, i for Business, AIX, Linux, Windows

Lifecycle — Project/Planning → Requirements → Development → Testing

23

Increase flexibility by revitalizing existing application portfolios

Increase flexibility

Boost productivity

Maximize business agility

Improve system utilization

Revitalize Applications

Empower People

Unify Teams

Optimize Infrastructure

Application portfolio management

Business intelligence for applications

Service Oriented Architecture

Operational reuse

User interface modernization

Application transformation tools and services

Application security

Quality across the organization

Enterprises want to…

Align their application portfolio to the business' overall strategy

Increasing Business Pressures

Minimize costs for maintaining and operating existing systems

Enable new business opportunities through new and innovative systems

Minimize risk exposure (Compliance, Schedules, Security, …)

Drive business process optimization through technology

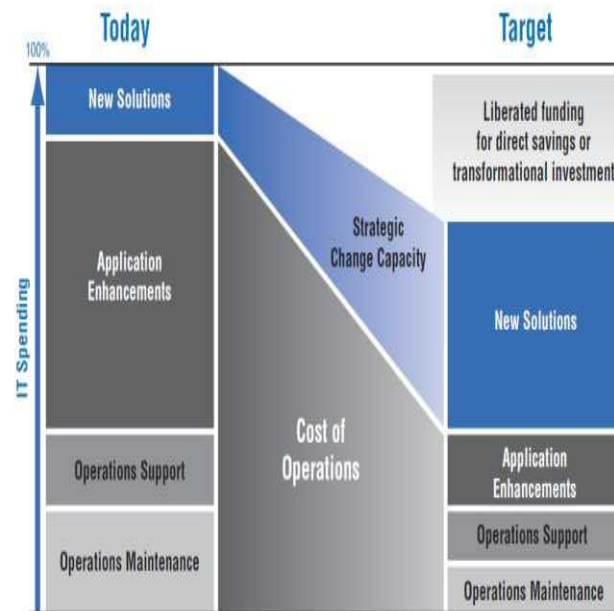Aging population possessing key domain, business and technology knowledge

Complexity driven by continued expansion of technology options

Duplicated and competing capabilities and technologies

Degrading maintainability as a result of aging technology and brittle architectures

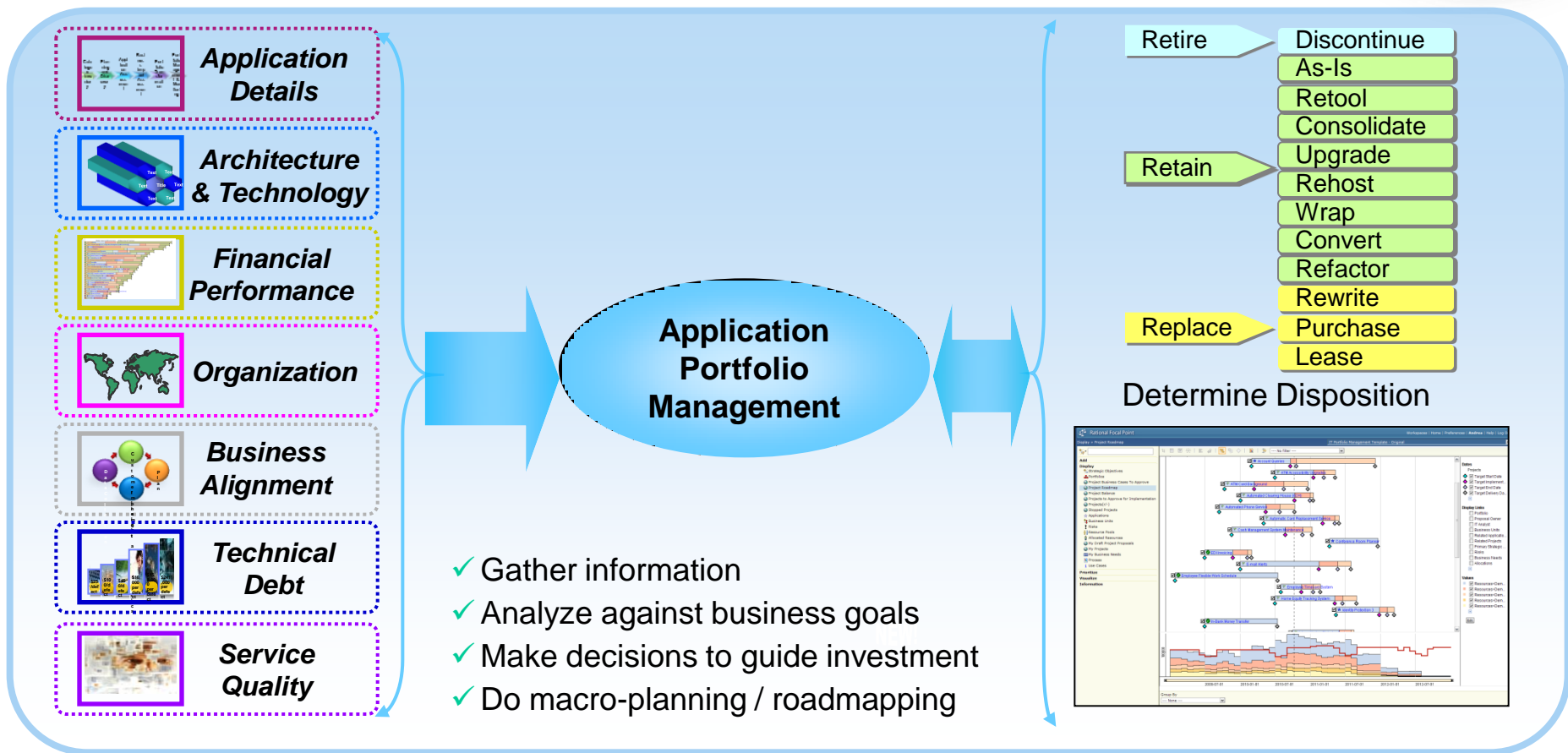## Increasing IT Constraints

Insufficient Strategic Spend

But…

Lack of business and IT information makes decision making ad-hoc, error prone and politically driven versus analytical and fact-based. Limited awareness of applications (usage, design, relationship to business requirements, etc.) increases cost, slows development delivery and reduces quality.

Solution: Comprehensive application portfolio management
Helps organizations proactively make faster and better-informed decisions

Application Details

Architecture & Technology

Financial Performance

Organization

Business Alignment

Technical Debt

Service Quality

Application Portfolio Management

- ✓ Gather information
- ✓ Analyze against business goals
- ✓ Make decisions to guide investment
- ✓ Do macro-planning / roadmapping

Retire — Discontinue

As-Is
Retool
Consolidate

Retain — Upgrade
Rehost
Wrap
Convert
Refactor
Rewrite

Replace — Purchase
Lease

Determine Disposition

"Smarter APM and associated application revitalization has enabled IBM's IT to cut maintenance costs by 20% and defects by 58%."

— IBM Corporation

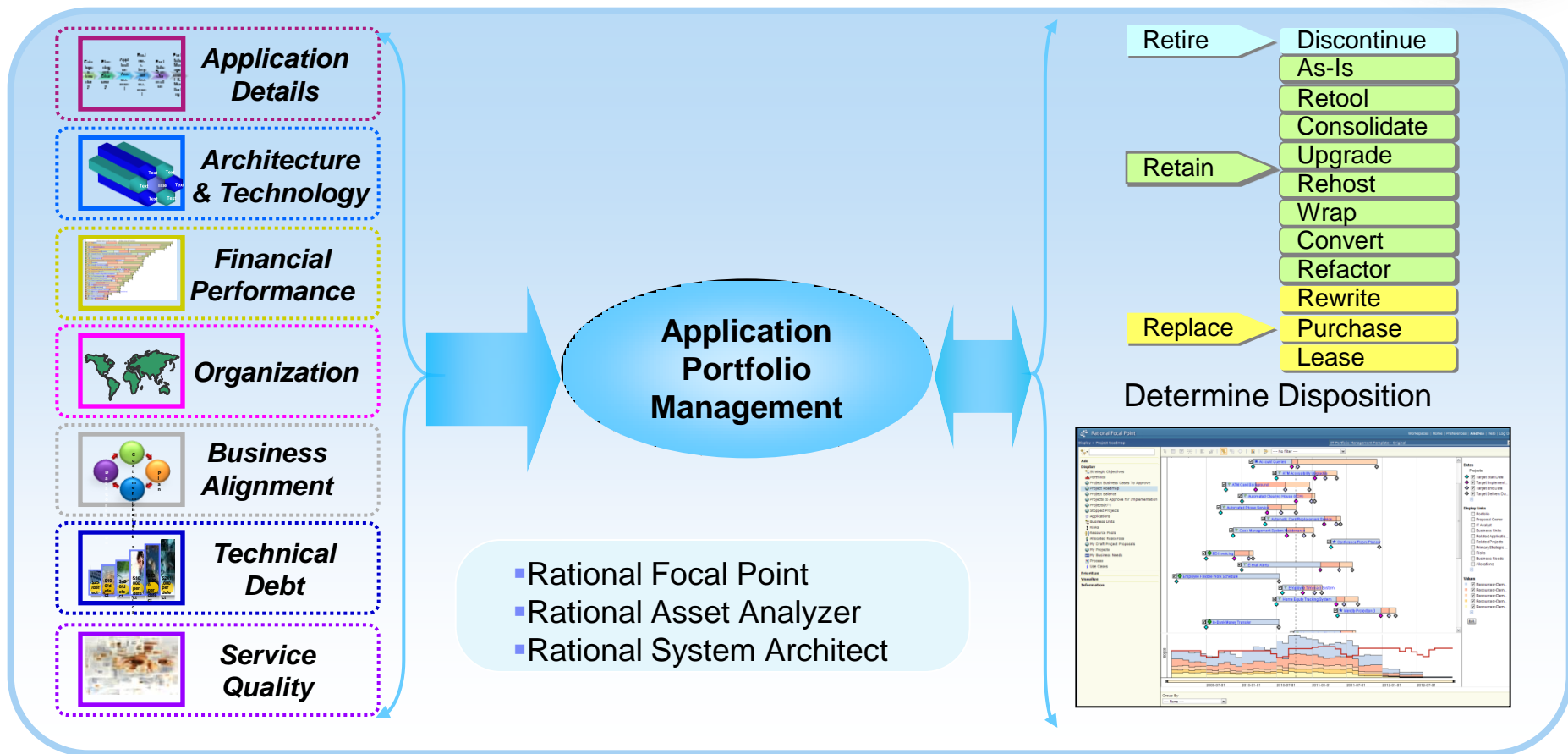**IBM**

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Application Details

Architecture & Technology

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Service Quality

Application Portfolio Management

- Rational Focal Point
- Rational Asset Analyzer
- Rational System Architect

Retire
- Discontinue

- As-Is
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Retain
- Upgrade
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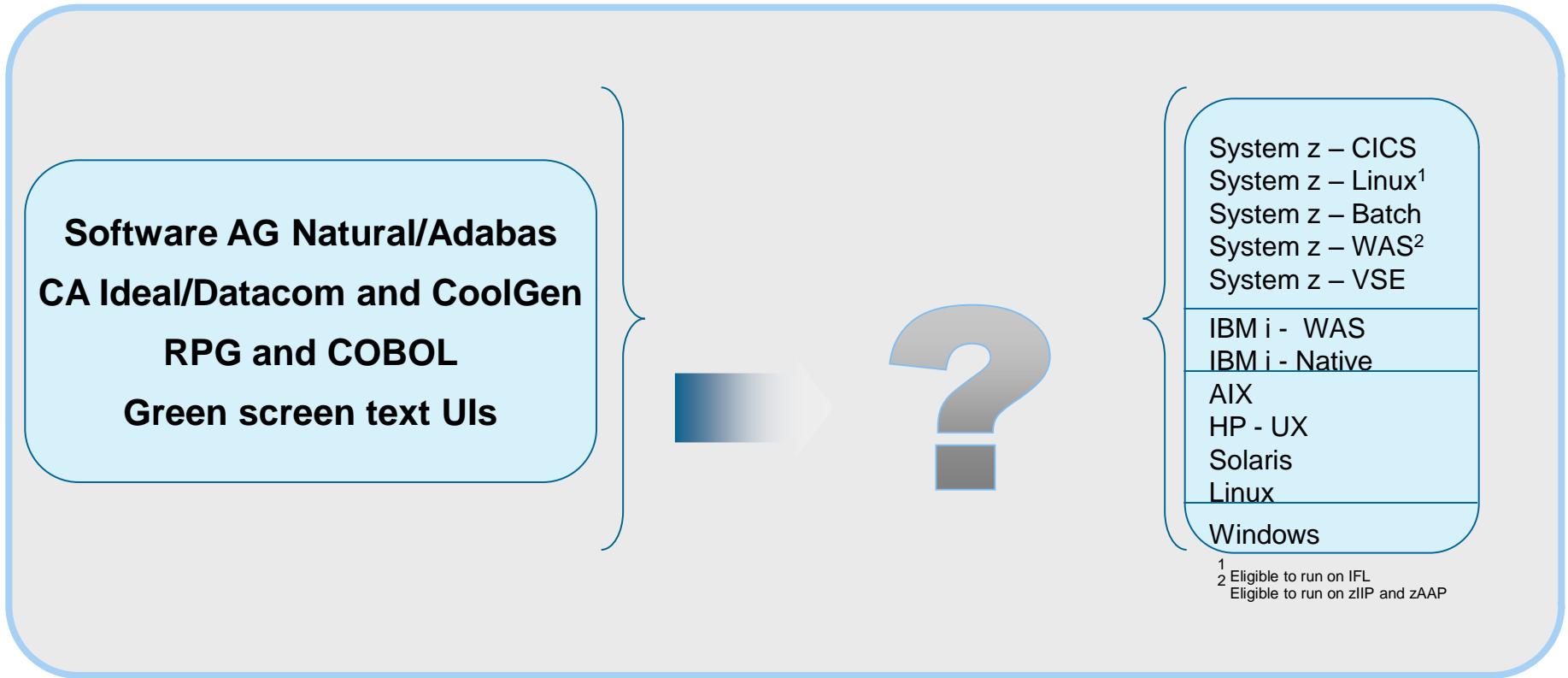— IBM Corporation

IBM

Enterprises want to…

Reduce tool support costs and move to modern platforms, languages, and tools for their multiplatform application development

Software AG Natural/Adabas

CA Ideal/Datacom and CoolGen

RPG and COBOL

Green screen text UIs

?

System z – CICS
System z – Linux[1]
System z – Batch
System z – WAS[2]
System z – VSE

IBM i - WAS
IBM i - Native

AIX
HP - UX
Solaris
Linux

Windows

[1] Eligible to run on IFL
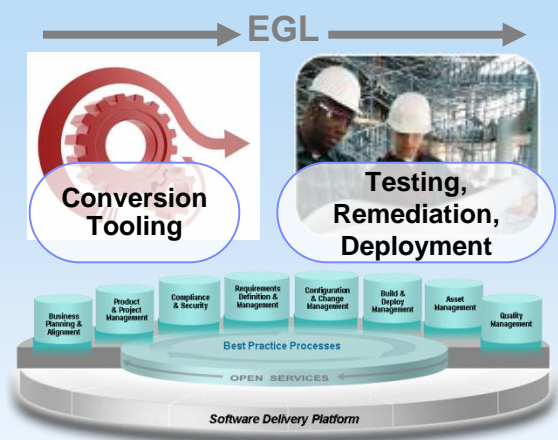[2] Eligible to run on zIIP and zAAP

But…

They are using older languages and/or are stuck on poorly supported, expensive, legacy development platforms

Solution: Application transformation tools and services

Migrate from older languages and expensive tools to modern development platforms, languages, databases and tools

Software AG Natural/Adabas

CA Ideal/Datacom and CoolGen

RPG and COBOL

Green screen text UIs

EGL →

Conversion Tooling

Testing, Remediation, Deployment

Business Planning & Alignment | Product & Project Management | Compliance & Security | Requirements Definition & Management | Configuration & Change Management | Build & Deploy Management | Asset Management | Quality Management

Best Practice Processes

OPEN SERVICES

Software Delivery Platform

WEB 2.0

System z – CICS
System z – Linux[1]
System z – Batch
System z – WAS[2]
System z – VSE

IBM i - WAS
IBM i - Native

AIX

HP - UX

Solaris

Linux

Windows

[1] Eligible to run on IFL
[2] Eligible to run on zIIP and zAAP

✓ Greatly reduced development platform support costs
✓ More flexible, integrated development environment

Operating costs were reduced 55 percent by migrating from the VAGen legacy application to Java. "The migration to EGL combines the best of both worlds: The stability of IBM System z and the flexibility of Java." Massive cost savings are also included!

— Frank Landewee, project manager, Atos Origin GmbH, Essen
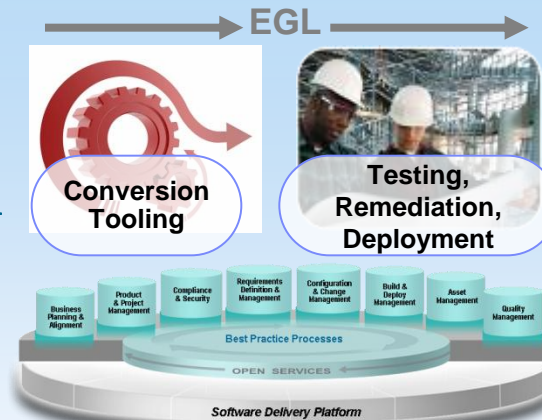
Atos Origin™

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WEB 2.0

EGL

Software AG Natural/Adabas

CA Ideal/Datacom and CoolGen

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Best Practice Processes

OPEN SERVICES

Software Delivery Platform

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Atos Origin™

Improve application performance by exploiting latest hardware

Increase flexibility

Boost productivity

Maximize business agility

Improve system utilization

Revitalize Applications

Empower People

Unify Teams

Optimize Infrastructure

Free up production MIPS

Exploit new advanced optimization technology in C/C++, Java, COBOL, PL/I, Fortran and RPG compilers

Enterprises want to…

Reduce application development MIPs usage and increase development autonomy

Application Development

Operations

Cost

But…

Testing requires System z MIPs and negotiation for time with the production team

Solution: Test mainframe applications on x86 Linux server

COBOL, PL/I, C++, Java, EGL, Batch, Assembler, Debug Tool

IMS
DB2
CICS
WAS
MQ
z/OS

x86 PC running Linux

RDz user

RDz user

RDz user

ISPF user

RDz & ISPF user

RDz user
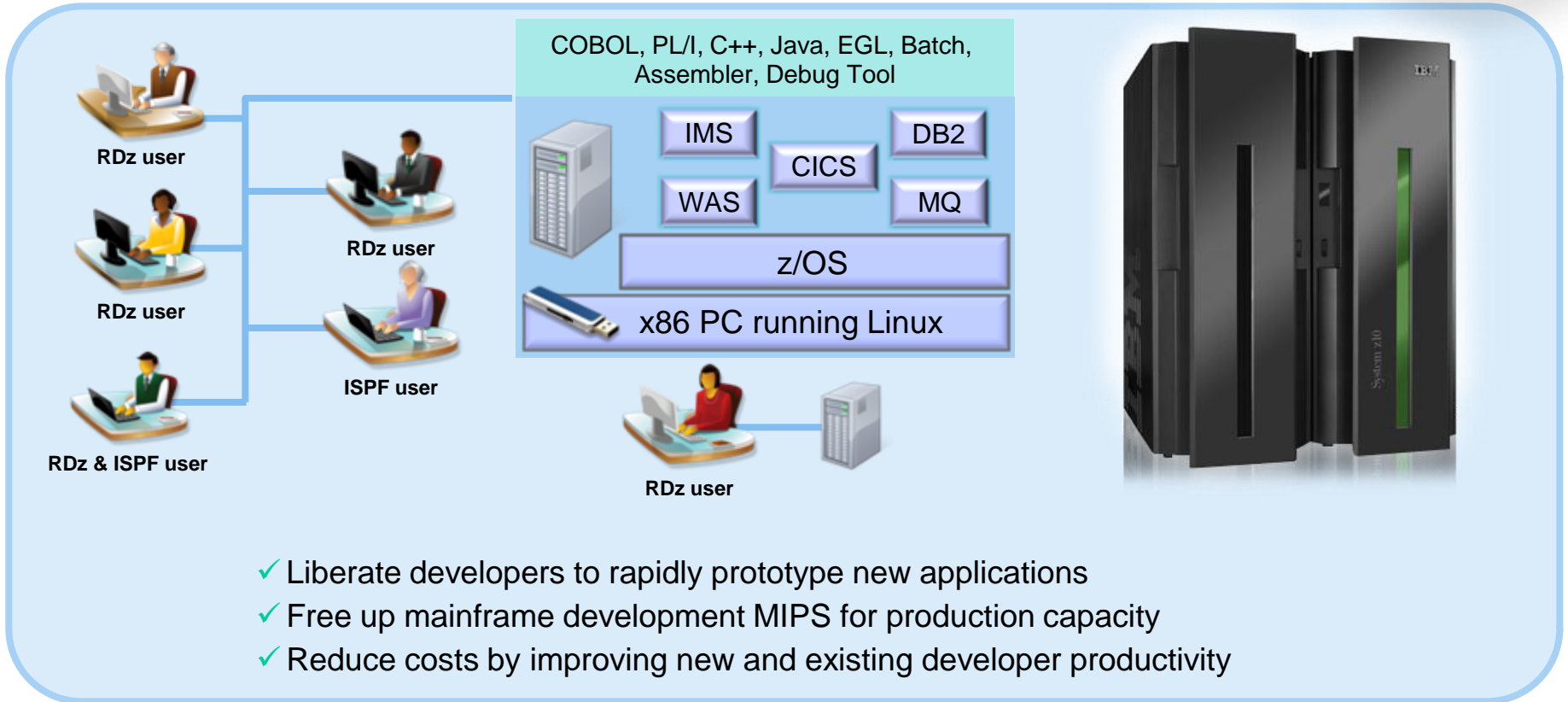
✓ Liberate developers to rapidly prototype new applications
✓ Free up mainframe development MIPS for production capacity
✓ Reduce costs by improving new and existing developer productivity

"RDz Unit Test gives our developers the ability to have their own z/OS environment to prototype, compile, debug and test while our customers make the necessary changes to their test, QA and production environments… This shortens our time to delivery, shortens our project cycles, makes our customers happy and increases our margins…At the price… it's a no brainer."
— Eric Simone, CEO, ClearBlade

CLEAR BLADE®

Note: This Program is licensed only for development and test of applications that run on IBM z/OS. The Program may not be used to run production workloads of any kind, nor more robust development workloads including without limitation production module builds, pre-production testing, stress testing, or performance testing.

Solution: Test mainframe applications on x86 Linux server

COBOL, PL/I, C++, Java, EGL, Batch, Assembler, Debug Tool

IMS | DB2 | CICS | WAS | MQ

z/OS

x86 PC running Linux

RDz user
RDz user
RDz user
ISPF user
RDz & ISPF user
RDz user

- Rational Developer for System z Unit Test Feature

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CLEAR BLADE®

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Getting started
Next steps to modernize your enterprise applications

Increase flexibility	Boost productivity	Maximize business agility	Improve system utilization
Revitalize Applications	Empower People	Unify Teams	Optimize Infrastructure

jazz

To learn more visit: ibm.com/software/rational/announce/modernization/

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Get prescriptive service solutions

Latest skills: System z job board

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