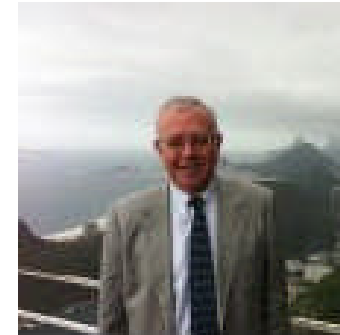
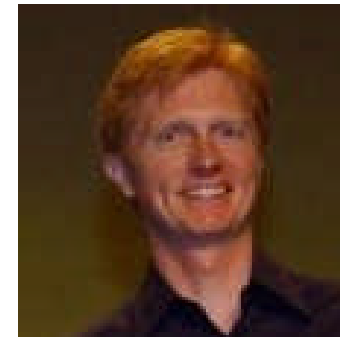


## Featured Speakers

- **Ray Jones, Vice President, System z Worldwide Software Sales, IBM Software Group**



- **Kevin Stoodley, IBM Fellow and CTO for Rational Software, IBM Software Group**



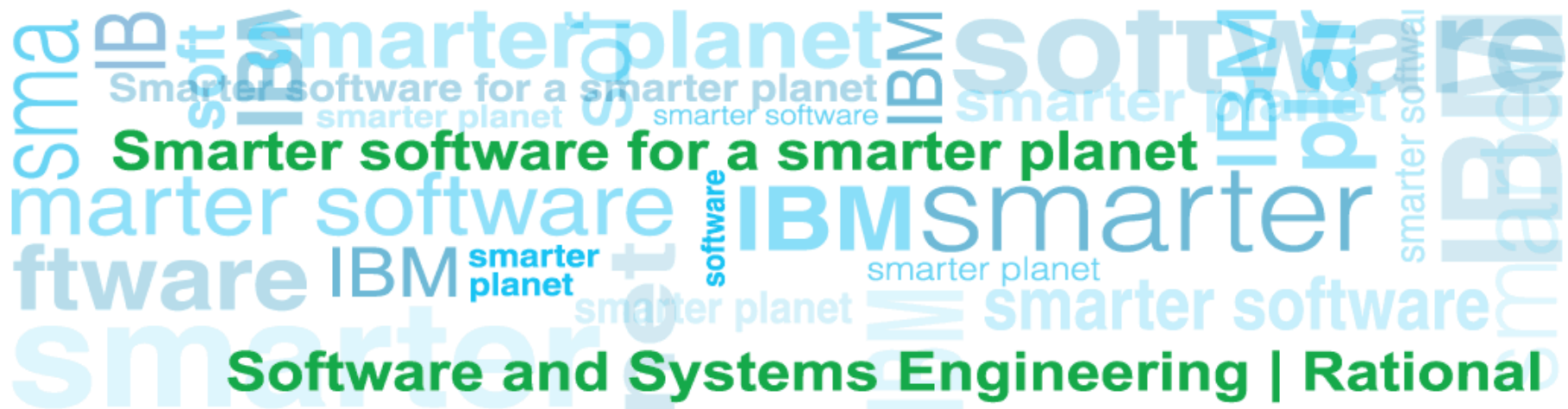
Ray Jones,  
Vice President System z WW Software Sales  
IBM Software Group

Kevin Stoodley,  
IBM Fellow and CTO: Rational  
IBM Software Group



# Full Steam Ahead with business-critical COBOL applications on System z

(May 1, 2013)



## Enduring Value of COBOL

- COBOL celebrated its 50<sup>th</sup> birthday in 2009.
  - Still a dominant programming language for processing critical business transactions around the world.
    - Banking, Insurance, Retail, Government, Human Resource, Shipping...
  
- Today, most business transactions are processed with COBOL on IBM System z servers
  - Tightly woven into our every day lives
    - ATMs, credit cards, airline tickets, insurance claims, banking transactions...
  
- Some interesting facts about COBOL<sup>1</sup>
  - 90% of global financial transactions are processed in COBOL
  - Supports over 30 billion transactions per day
  - Investment made into COBOL systems over the past 50 years is estimated to be worth about \$2 trillion dollars.
  
- COBOL is strategic (over 80% of System z customers use COBOL)
  - Committed to improving the underlying technology to bring more value to customers
    - *Focus areas: Advanced optimization technology, hardware exploitation, application modernization, programmer productivity, middleware support*



<sup>1</sup> Source: <http://cis.hfcc.edu/faq/cobol>

## COBOL Skills

- Learning COBOL
  - COBOL is easy to learn
    - Simple programming language that encourages a straightforward programming style
    - Programs are self documenting
  - Challenge: COBOL is closely tied to business rules
    - Transfer business knowledge to new developers is not easy
- IBM Academic Initiative – System z: Mainframe Computing <http://www-03.ibm.com/ibm/university/academic/pub/page/systemz>
  - Provide resources to teach students about mainframe computing
    - Partner with colleges and universities worldwide
    - Organize Master the Mainframe Contest worldwide for high school and college students

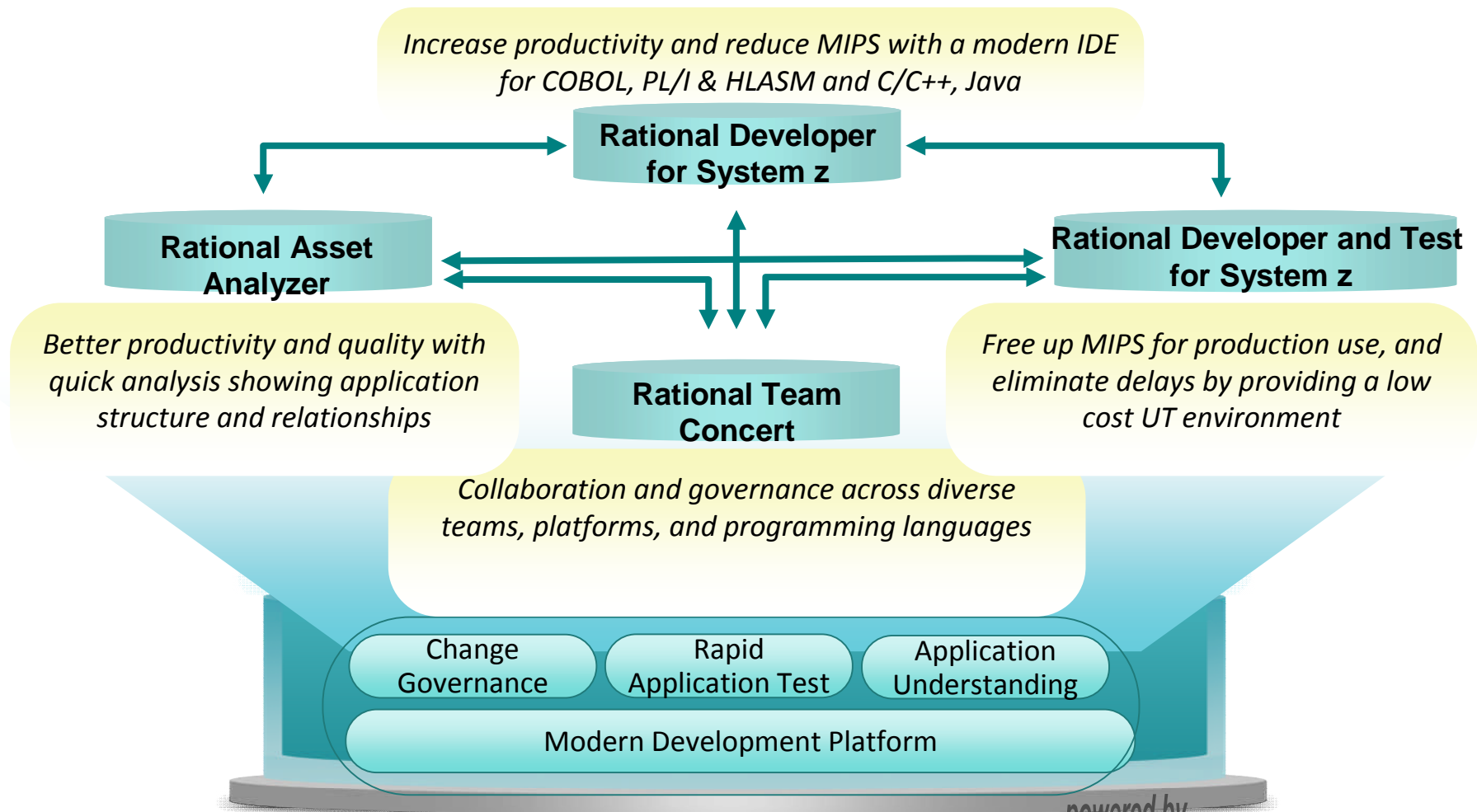


2012 Winners



Lake Brentley High School  
Master the mainframe contestant

Developing applications on System z  
 Similar to distributed platforms with modern tools



**Rational Software Delivery Platform**

powered by



## Enterprise COBOL

### Premier Enterprise Class COBOL Compiler

- Enterprise COBOL power the world's most business critical applications
  - Delivers innovation for application modernization
  - Delivers new features to simplify programming and increase developer productivity
  - Bolsters overall benefit of CICS, IMS, DB2



“System z is modernising all the time, investing in compilers means IBM COBOL customers can now take full advantage.”

*James Governor, principal analyst and co-founder of RedMonk*

## Modernizing Enterprise COBOL

- Background
  - Enterprise COBOL is proven and reliable
    - Continues to deliver new capabilities for modernizing business critical applications and improving productivity
  - New z hardware is becoming increasingly complex
    - Need to transition to new technology for timely delivery of exploitation and advanced optimization
    - Proactively put plan in place to “modernize” Enterprise COBOL
  
- The project
  - Preserved key technology that handles COBOL source (i.e. compiler front end)
  - Incorporated proven, leading edge optimization technology shipped in Java to Enterprise COBOL
  - Modernized COBOL runtime
  
- Experience
  - Successfully added new resources to expand and diversify the compiler team
  - Executed project plan in an agile way with direct customer involvement
    - Delivered a number of iterations; validated objectives
    - Ran a managed beta program over 12 months period to validate final 5 iterations with customers and ISVs
      - Addressed feedback from beta participants
      - Resulted in adding one more beta code drop

## Enterprise COBOL for z/OS V5.1 (Announced on Apr 23)

- Affirms IBM's commitment to COBOL on System z
- Focus on improving performance of CPU intensive applications with advanced optimization technology and z/Architecture exploitation
- Maintains compatibility with previous COBOL releases
- Delivers new features to improve application modernization capabilities and programmer productivity
- Supports the ecosystem of COBOL development tools supplied by IBM and ISVs.

***Generally Available on June 21***

***Runs on z/OS  
V1.13 and above***



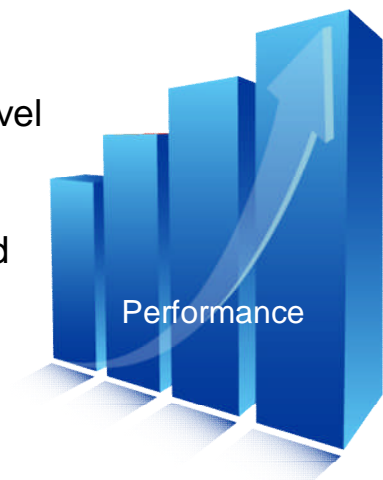


## Improve performance of COBOL applications

*Deploy business critical COBOL applications optimized for target System z servers to shorten processing time and reduce operating cost*

### Modern, advanced optimization

- Based on proven compilation technology shipped in Java on System z since 2006
  - Provides COBOL-specific optimizations
  - New ARCH option enables COBOL users to fully exploit z/Architecture
- Provides significant performance improvements over Enterprise COBOL V4<sup>1</sup>
  - Many well structured, CPU-intensive batch applications have shown performance increases greater than 10%
  - Many numerically intensive programs have shown performance increases greater than 20%
  - Better exploitation of z hardware, specifically z10, z196, zEC12
  - Savings to customers in terms of CPU utilization and ability to meet Service Level Agreements.
- Provides a solid framework to enable timely delivery of z/Architecture exploitation and advanced optimizations
  - Lays groundwork for delivering release-to-release performance improvement roadmap for COBOL on System z

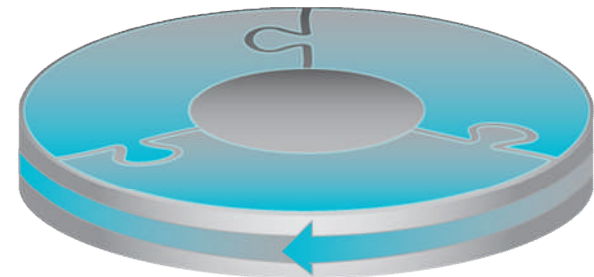


<sup>1</sup> Results are based on an internal compute-intensive test suite. Performance results from other applications may vary.

## Maintain compatibility with older COBOL releases

*You can stage upgrade effort from previous releases of COBOL. No need to recompile entire application to benefit from Enterprise COBOL V5.1*

- Provide source and binary compatibility
- Most correct COBOL programs will compile and execute without changes and produce the same results
- “Old” and “new” code can be mixed within an application and communicate with static or dynamic calls
- Removed some very old language extensions and options
  - Millennium Language Extension
  - Label Declaratives
  - Non-reentrant programs above 16MB line
  - OS/VS COBOL Inter-operation
  - AMODE 24
  - XMLPARSE(COMPAT)



## Modernize business critical applications

*You can add modern graphical user interfaces to business critical COBOL applications or extend them to work with web, cloud or mobile infrastructures.*

- Modernization enables reuse of proven business logic
  - Deliver new enhancements quicker with less cost and lower risk.
  - Build on proven applications; no need to rewrite from scratch
- XML enhancements
  - Uses the z/OS XML parser to enable customers to offload parsing workload to specialty processors to reduce MIPS cost
  - Provide COBOL applications better control in generation of XML documents
- Support for Unbounded tables and groups
  - Allows programmers to declare a group member that naturally maps to a declaration in an XML schema (where an element may occur an unbounded number of times.)
  - Improves usability for top-down mapping of XML to COBOL.
- Support Java 7



## Increase programmer productivity

*Improve overall efficiency, reduce administrative overhead, allow your programmers to focus on business logic*

- Simplifying programming
  - Raised the total size of all Working-storage or Local-storage section data items to 2GB (from 128MB).
  - Raised the maximum size of an individual data item to 999,999,999 bytes (From 128MB).
  - Added new built in functions to improve programmability of UTF-8 applications
    - Improve capability for processing UTF-8 data in DB2 and XML
- Reducing administration cost
  - Provide support for z/OS System Management Facilities (SMF) records
    - Provide full support for sub-capacity pricing
- Improving usability
  - New Floating comments
  - New pseudo-assembly in program listings
  - New debug interface based on DWARF industry standards
  - New NOLOAD debugging segments in program object
    - Does not increase loaded footprint of executable
    - Debugging data always matches executable
  - Continue to support debugging optimized code

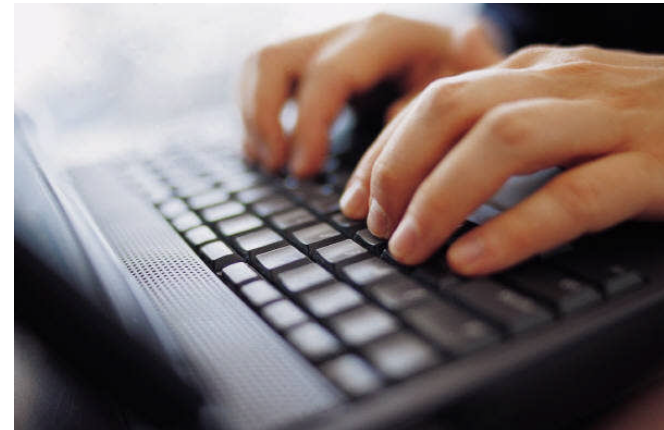


## Tools Ecosystem Support

*Enterprise COBOL is part of a larger system z ecosystem. Enterprise COBOL V5.1 is supported by development tools supplied by IBM and ISVs.*

### IBM

- COBOL Report Writer
- PD Tools
  - Application Performance Analyzer
  - Debug Tool
  - Fault Analyzer
  - File Manager
  - Workload Simulator
- Rational Developer for z
- Rational Development and Test Environment for System z
- Rational Team Concert
- Rational Asset Analyzer



## Support Tools Ecosystem - ISVs

Contact Vendors for detail



- ASG-Existing Systems Workbench (ESW) Suite,
- ASG-SmartTest,
- ASG-SmartScope

"ASG's involvement in the COBOL VNext Beta program continues our commitment to supporting new COBOL releases without interruption."

- Mark Karier, Senior Director, Solution Architect, ASG



- BMC Application Restart Control for DB2
- BMC Application Restart Control for IMS
- BMC Application Restart Control for VSAM

"BMC Software is working with IBM to determine the impact of the new COBOL V5 compiler on its products. Efforts are underway to identify possible enhancements that might be required to tolerate the new COBOL compiler in our products."



- CA Endeavor® SCM
- CA File Master™ Plus
- CA File Master™ Plus for IMS,
- CA Datacom®,
- CA Mainframe Application Tuner,
- CA IDMS™, CA Telon®

CA Technologies supports Enterprise COBOL, part of the larger system z ecosystem that is critically important to many of our customers."



- Abend-AID
- Abend-AID for CICS
- Compuware Program Analyzer
- Compuware Shared Services (CSS)
- DevEnterprise
- Strobe
- Xpediter/CICS
- Xpediter/TSO,
- Xpediter/Xchange

"Compuware has a 35-year history of providing leading IBM COBOL programmer productivity solutions. As we have done with previous IBM COBOL introductions, our COBOL development teams have worked directly with IBM COBOL teams defining, designing and developing interfaces. When customers start to migrate production applications to take advantage of IBM Enterprise COBOL 5.1, they can be assured that our solutions will be capable and ready to assist, whenever needed. In addition, Compuware's source level support will continue to provide unmatched debugging and fast, reliable automatic problem resolution with minimal programmer involvement."

--Kris Manery, Senior Vice President and General Manager, Mainframe Solutions Business Unit, Compuware Corporation ."



- IAM
- IAM/Plex

"Customers choosing to modernize their VSAM applications with IAM and the new COBOL 5 for z/OS are going to experience eye opening resource reductions and significant performance improvements. Ready to help customers see it for themselves, INNOVATION is offering no obligation trials of IAM to all customers who want to try it in concert with the new COBOL 5 for z/OS. Contact INNOVATION and ask for your free, no obligation trial."

-- Thomas J Meehan, Vice President, INNOVATION Data Processing



- DumpMaster
- TraceMaster
- CodeTrack
- TraceMaster
- InSync

"We at Macro 4 have participated throughout the IBM Cobol 5.1 Beta program to ensure the compatibility of our products."

## Managed Beta Program

- Objectives
  - Provide early access to ISVs to enable their tools to support Enterprise COBOL v5
  - Provide early access to Enterprise COBOL v3 and v4 customers to preview the new features and validate product acceptability
  - Gather feedback & suggestions for improvement
- Program ran from April 2012 to April 2013
- Assigned advocate for all beta participants
- Delivered 5 code drops, each with a specific objective:
  1. Tool interface (ISV only)
  2. Compatibility
  3. New features
  4. Performance + Quality
  5. Extra code drop to address feedback from beta participants



## Feedback from beta participants



“Our company’s key mainframe workloads are written in COBOL, and with Enterprise COBOL Version 5, IBM has provided significant enhancements. Just by recompiling existing programs, we can take advantage of new compiler technology that generates object code that takes advantage of the latest enhancements present in the hardware architecture to improve performance and reduce our costs.”

“XML is increasing in importance for our company, and IBM has enhanced XML support in Enterprise COBOL Version 5 with changes that allow us to take advantage of z/OS XML System Services to reduce the cost of COBOL-based XML processing.”

*IT Architect, a North American Health Care company*

"Our testing of COBOL V5 shows a significant performance improvement for math. As a financial services company with a continually narrowing batch window, that improvement is very important to us. It will help us meet our Service Level Agreements and reduce cost driven by CPU utilization.

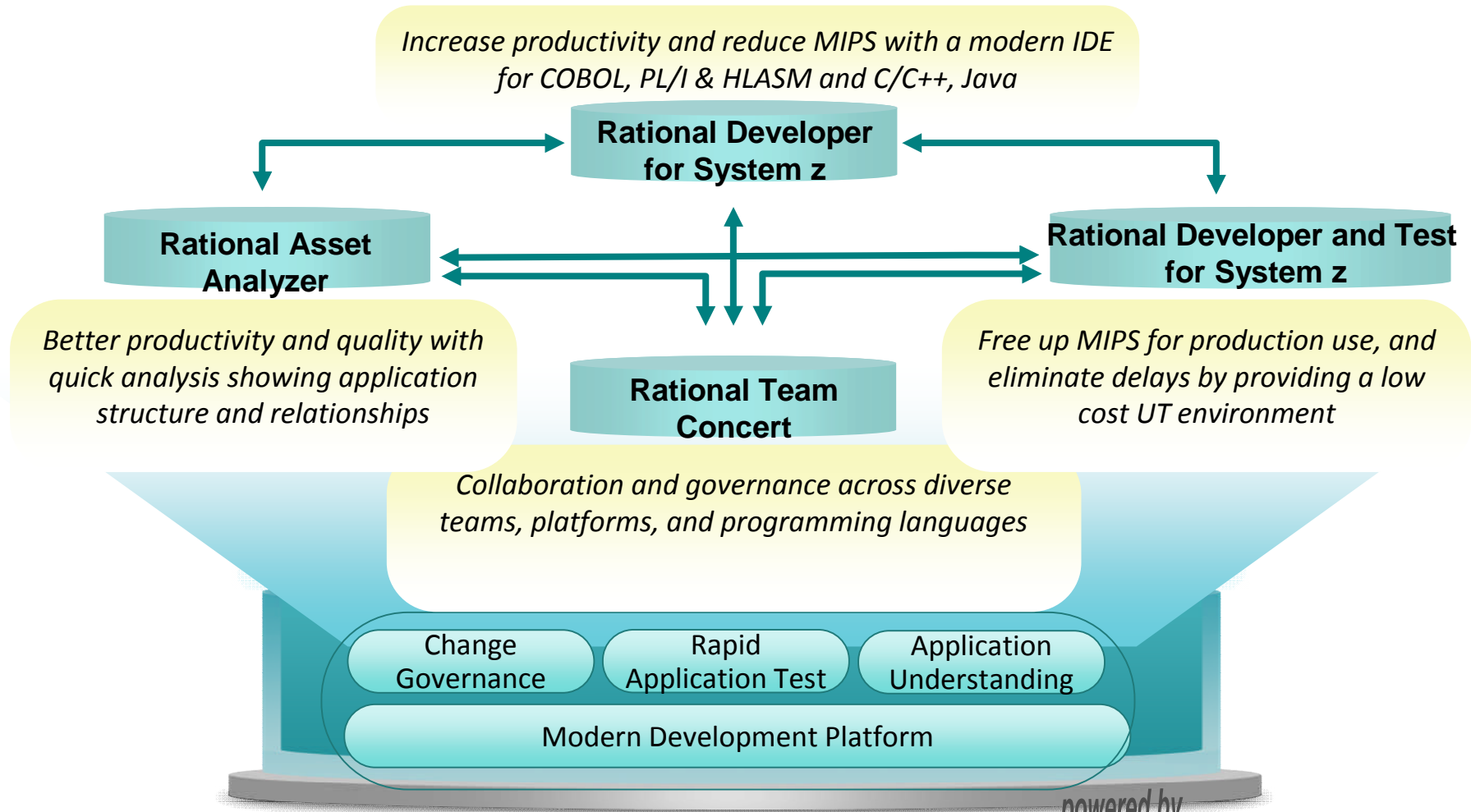
This new compiler optimizes machine code for the CPUs we have **now**. Our testing shows measurable improvement when we optimize for newer mainframes. It will also be able to optimize for tomorrow’s mainframes when we install them. Our software performance will continue to improve with virtually zero effort on our part.

COBOL V5 emphasizes IBM’s commitment to our existing COBOL application base while improving its interoperability with our open systems components. IBM has addressed a number architectural limits within the previous compiler, thereby extending the life of my extensive COBOL inventory. They continue to improve XML capabilities and UNICODE support enabling us to reuse existing components.

*Michael A Todd, Software Architect, a multi-national financial services company*



# IBM Integrated Solution for System z Development



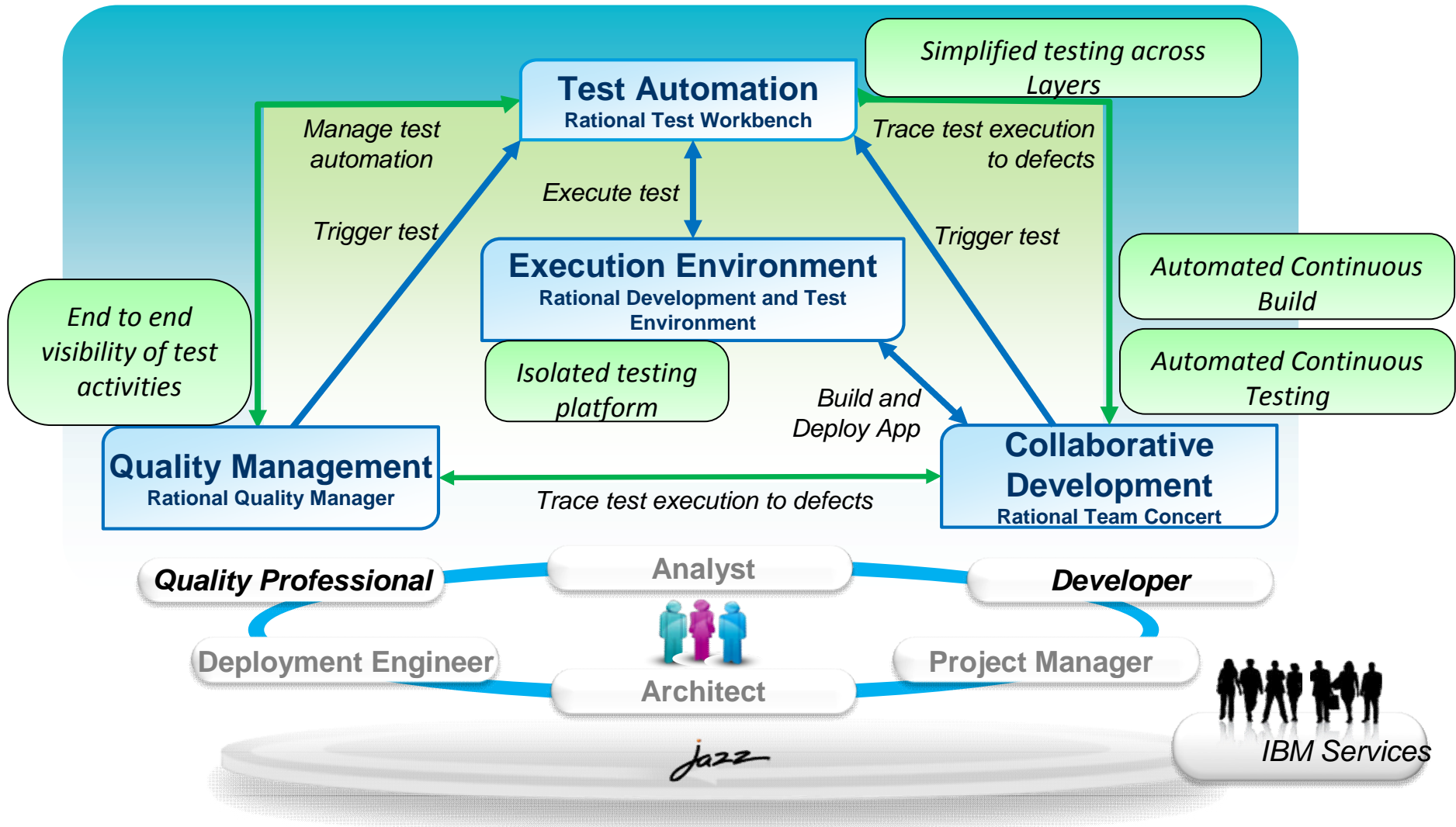
## Rational Software Delivery Platform

powered by



# IBM Continuous Integration Solution for System z

Reduced delivery time, improved end-to-end visibility of test activities, reduced risk and quicker V2V migrations



## Summary

- COBOL is strategic and runs the world's most critical business applications. Enterprise COBOL v5.1 affirms IBM's strong commitment to COBOL on System z.
- With its advanced optimization technology, Enterprise COBOL v5.1 delivers compelling performance improvements
  - Provide savings to customers in terms of CPU utilization and ability to meet Service Level Agreements.
  - Lays solid groundwork for delivering release to release performance improvement and timely machine exploitation for COBOL on System z
- Enterprise COBOL v5.1 continues to deliver new programming and application modernization capabilities to help customers deliver enhancements to business critical applications quicker with less cost and lower risk
- Enterprise COBOL v5.1 enables customers to significantly reduce administration overhead and take full advantage of sub-capacity pricing with support for z/OS System Management Facilities (SMF).
- Enterprise COBOL v5.1 is supported by an ecosystem of development tools supplied by IBM and ISVs.



IBM Software

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Enterprise Development tracks !**

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for First hand experience on COBOL V5.1**

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## For more information



- Enterprise COBOL for z/OS Product information  
<http://www-01.ibm.com/software/awdtools/cobol/zos/>
  
- Enterprise COBOL for z/OS Product Documentation  
[http://www-306.ibm.com/software/awdtools/cobol/zos/library/?S\\_CMP=rnav](http://www-306.ibm.com/software/awdtools/cobol/zos/library/?S_CMP=rnav)
  - Compilers and Application Tools user communities  
Rational Café <https://www.ibm.com/developerworks/rational/community/cafe/>
  
- RFE Community  
COBOL Compilers [http://www.ibm.com/developerworks/rfe/?PROD\\_ID=698](http://www.ibm.com/developerworks/rfe/?PROD_ID=698)
  
- Rational Enterprise Modernization Products  
<http://www-03.ibm.com/software/products/us/en/category/SWY00>
  
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# QUESTIONS

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