



17781: Mainframe Skills – the Myth and the Reality

David Rhoderick, IBM

Updated with
SHARE
survey results



#SHAREorg



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There's a perception of a mainframe skills shortage...

- ... which might discourage companies from deploying new workload on the platform
- ... or lead others to consider moving off the mainframe altogether



**...Let's look at the facts
and try to understand the real picture**

Three things to keep in mind

1

Numerous indicators show mainframe usage continuing to grow for the foreseeable future

2

IBM has made considerable investment in intuitive, GUI-based tools for mainframe administration and development

3

IBM continues to invest heavily in development of mainframe skills for the next generation

Mainframe usage is growing and is projected to continue

Finally, despite regular declarations that “the mainframe is dead,” the research shows this has never been further from the truth. In reality, the mainframe is working harder than ever. Almost two-thirds of respondents (62%) which were initially using mainframes to support external applications is putting added workloads on MIPS. This is even more so for those who believe that the mainframe will continue to be used (chart 10).

Mobile Apps Increase MIPS Consumption

FIGURE 3 Perceived Change in Company's Mainframe Workloads Over the Next 5 Years

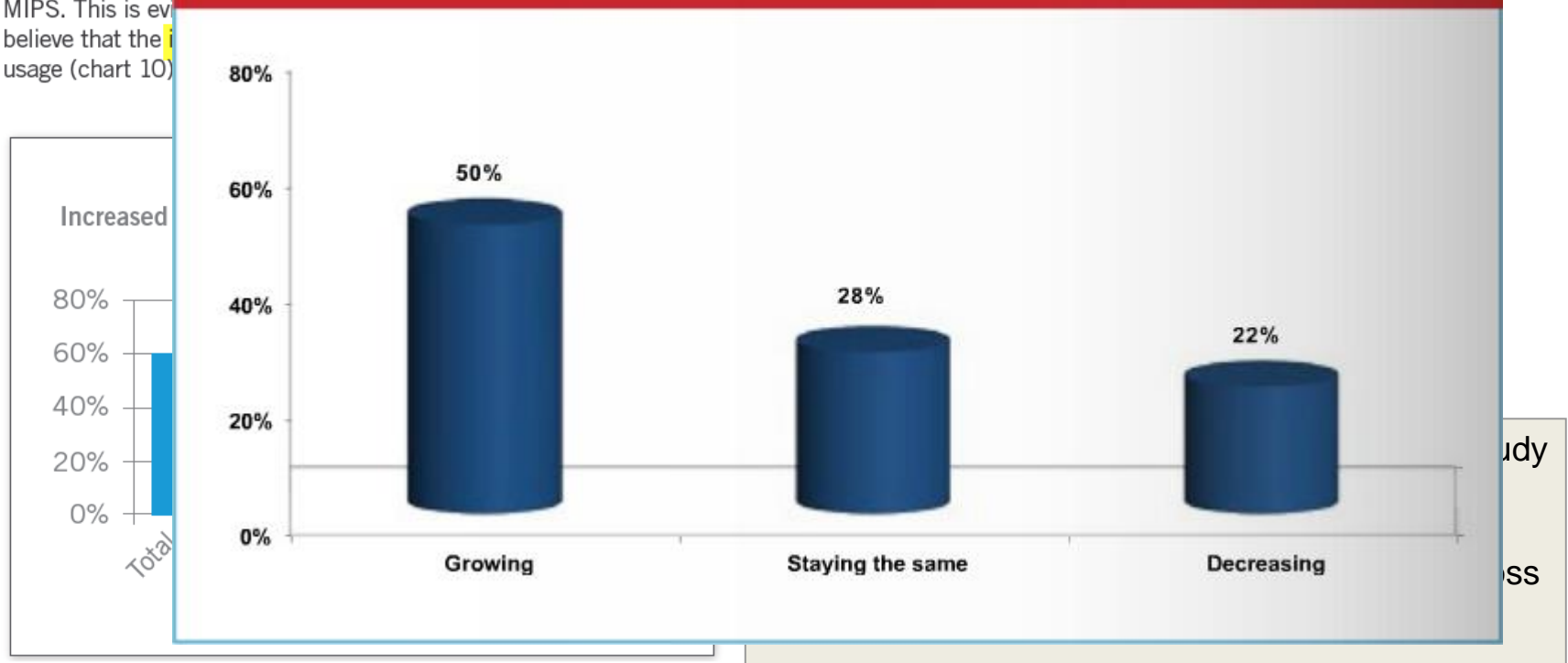
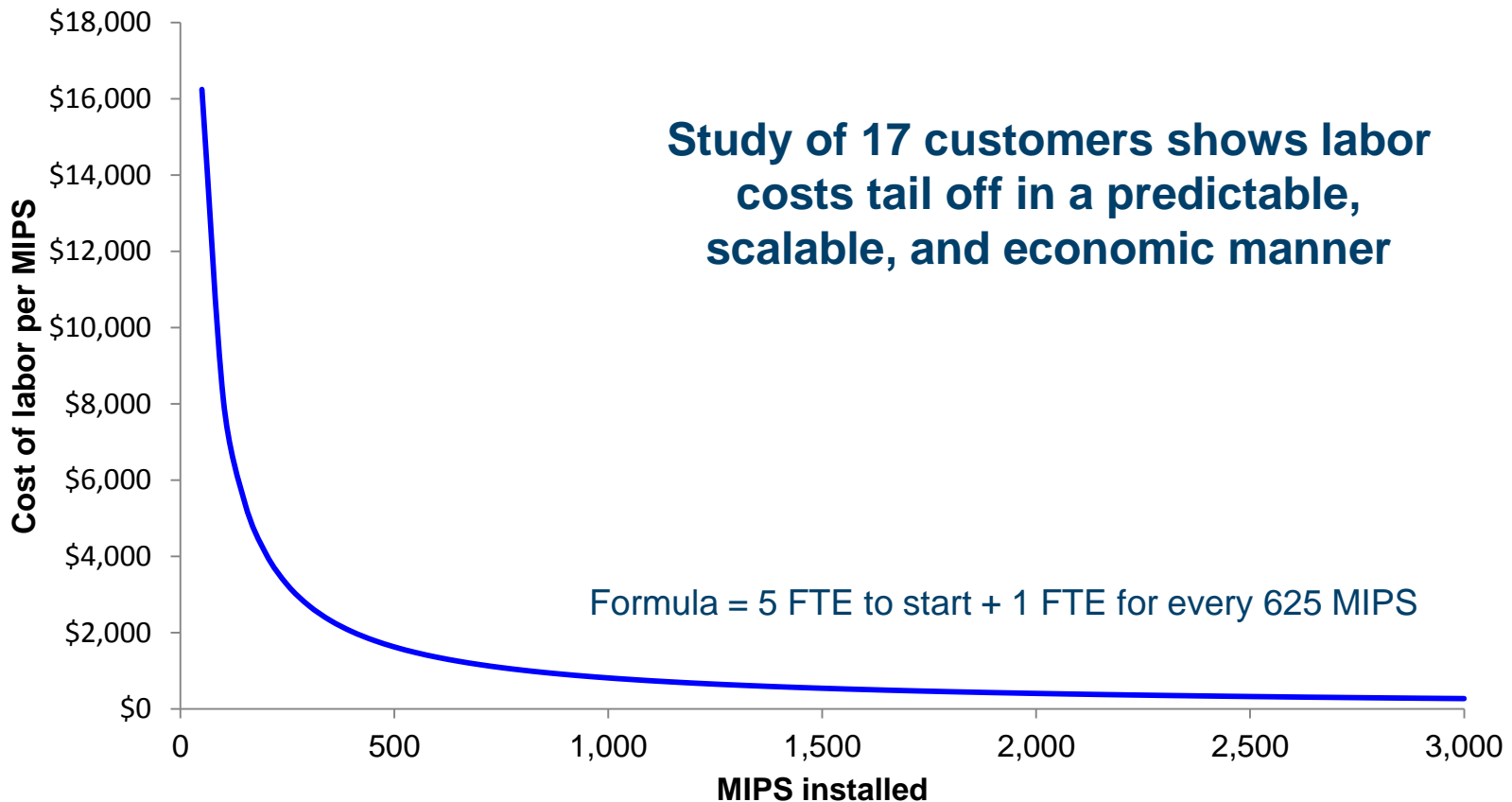


Chart 9: 62 percent of companies are using their mainframes to support external applications, such as online banking.

ibmsystemsmagmainframedigital.com/MFSkills

Eagle studies validate that adding workload to mainframes *reduces* labor cost per unit of work

Labor cost per mainframe MIPS



Source: IBM Eagle Team

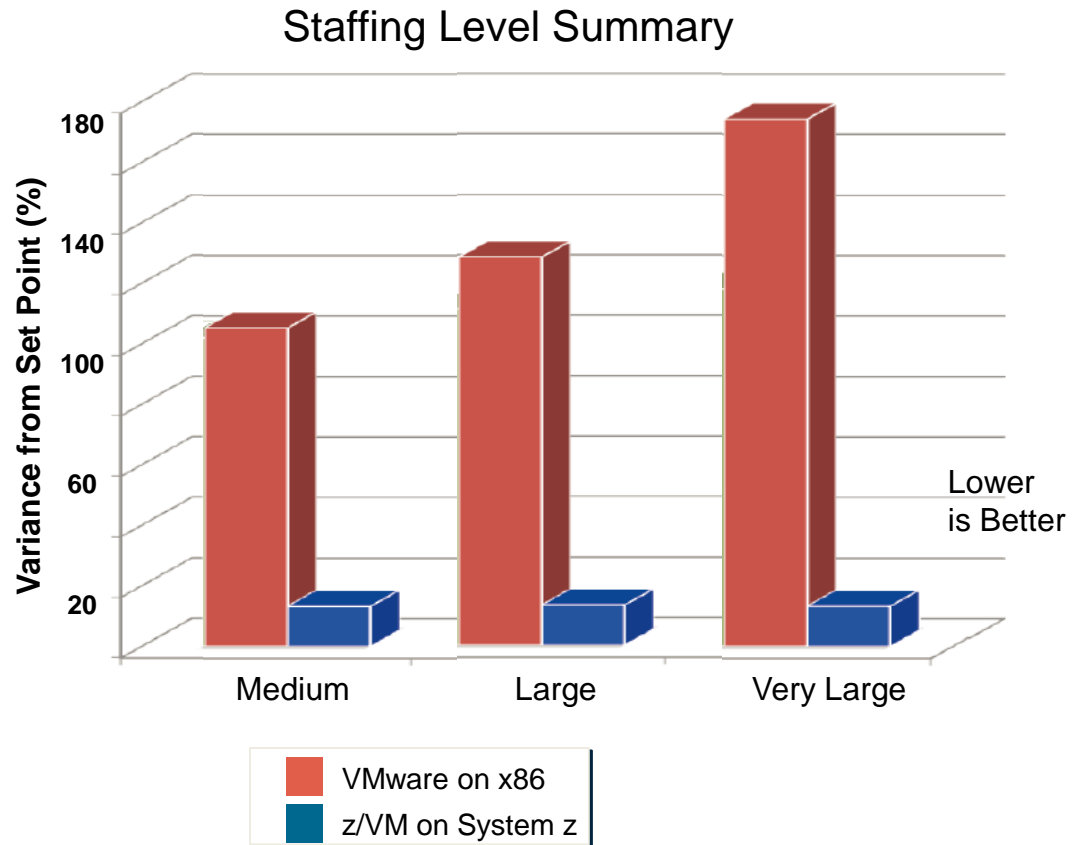
Independent analysis shows that mainframe administration requirements are typically less than for distributed platforms

Staffing levels required to maintain a “gold standard”:

- Normalized to VMWare in Medium sized environment
- Staffing levels for z/VM was as much as 13x smaller

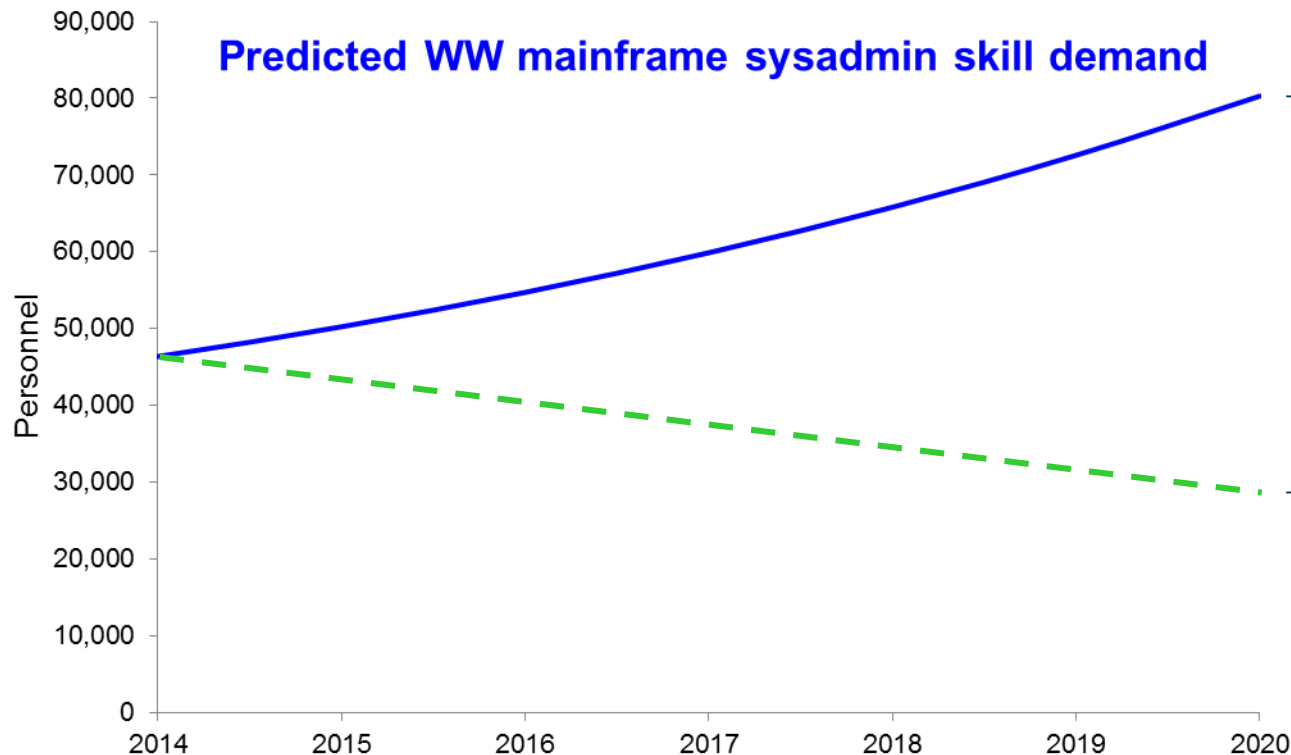
U.S. customer:

- **75 VMs/FTE** for Linux on z
- **55 VMs/FTE** for VMware



Estimation of the potential mainframe skills demand over the next six years

- IBM CPO projects 37,200 additional mainframe positions needed WW by 2020
 - Projection based on mainframe MIPS growth from 2005-13
- Some number of today's personnel will retire by 2020, increasing that demand



IBM programs such as the Academic Initiative are targeted to meet this demand

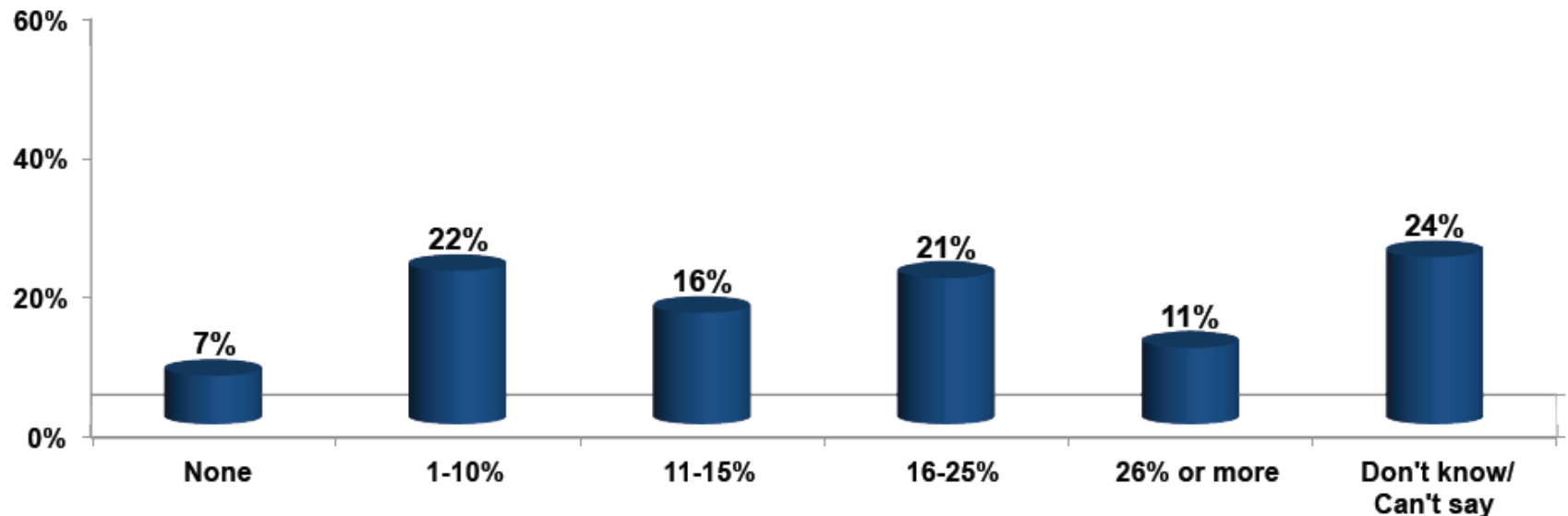
(Academic Initiative trains on average 6,400 annually)

Source: IBM CPO estimations based on IBM data and assuming current productivity levels

Most companies say they are OK now, but many need a talent replenishment plan

FIGURE 1

Percentage of Individuals in Organization Currently Working on or Maintaining IBM Mainframe Applications Who Will be Retiring Over the Next 5 Years

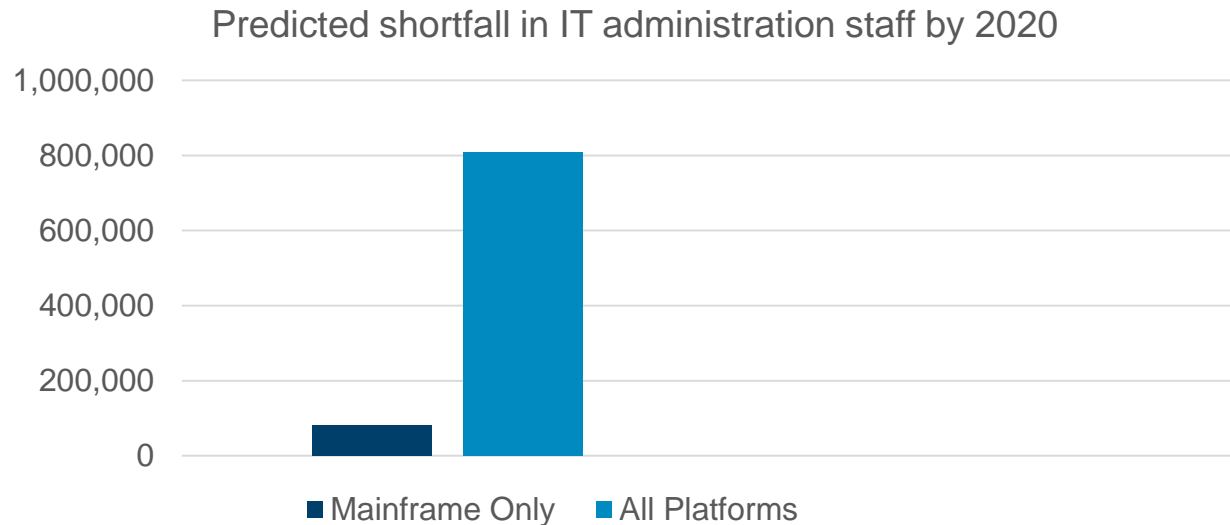


ibmsystemsmagmainframedigital.com/MFSkills

Source: IBM's 2013 System z Tracker

**computerworld.com/s/article/9225099/Cobol_brain_drain_Survey_results?taxonomyId=154&pageNumber=1

STEM skills shortage is universal – projected mainframe issue is 10% of all Information Technology requirements



- US government predicts that approximately **810,000** new and replacement administrative personnel will be needed across *all* platforms by 2020

... development of a talent plan should cover all platforms within the data center, and not just the mainframe

Three things to keep in mind

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Numerous indicators show mainframe usage continuing to grow for the foreseeable future

2

IBM has made considerable investment in intuitive, GUI-based tools for mainframe administration, development and security

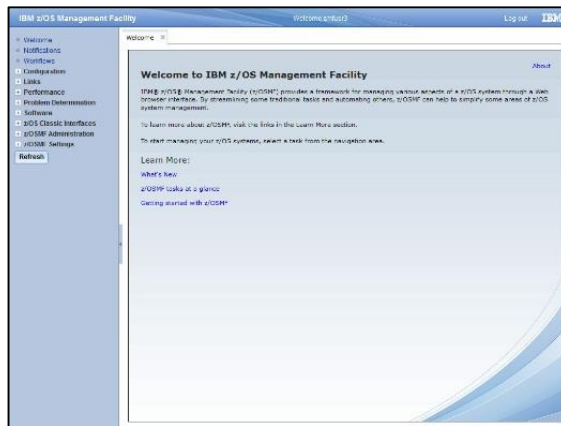
3

IBM continues to invest heavily in development of mainframe skills for the next generation

Today, mainframe system administrators use the latest workstation-based tools

IBM z/OS Management Facility (z/OSMF) - a modern, browser-based console for management of day-to-day operations and administration

- Maximizes productivity of a diversified workforce
 - Simplification of tasks
 - Enhanced collaboration
 - Reduced learning curve
- Role-based, scenario-based
- Integrates with other tools



z/OSMF

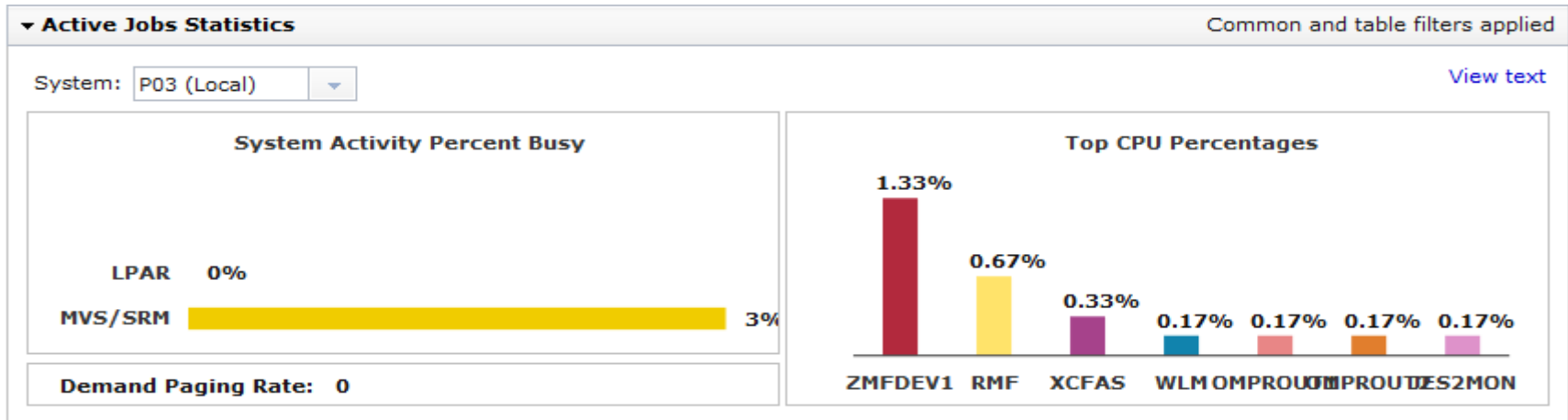
Browser



HTTP(S)



z/OSMF (Jobs and Resources → SDSF section)



Active Jobs

[Common Filters](#)

Properties of HZPENG

Actions ▼ View ▼

JOBNAME	StepName	ProcStep	JobID
DEBUG15	STEP1		S00002
IGVDGNMN	IGVDGNMN	IGVDGNMN	S00002
<input checked="" type="checkbox"/> HZPENG	PROCDB	SP0TC001	T00002
P00SVR2S	P00SVR2S	STEP1	S00002
HZPENG	STEP1		S00012
DEBUG12	*OMVSEX		S00012
DEBUG12	STEP1		S00012

Total: 344, Selected: 1

Page 1 of 4 Rows 100

Properties are more current than table data.

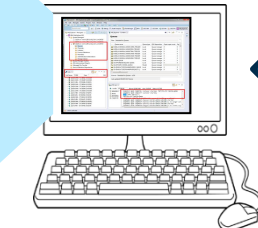
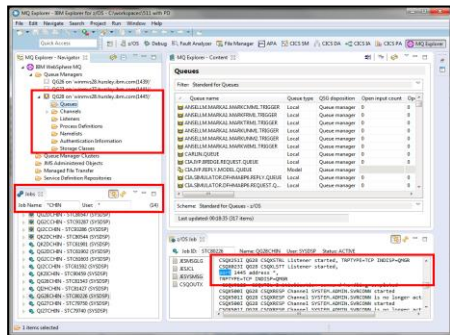
Type to filter properties

- General**
- Advanced**
- Performance**
- Scheduling**
 - C:
 - DP:
 - ResGroup: TSOHIGH
 - RptClass:
 - SP: 1
 - SrvClass: TSOHIGH
 - Workload: TSO_WLD
- Security**
- Status**

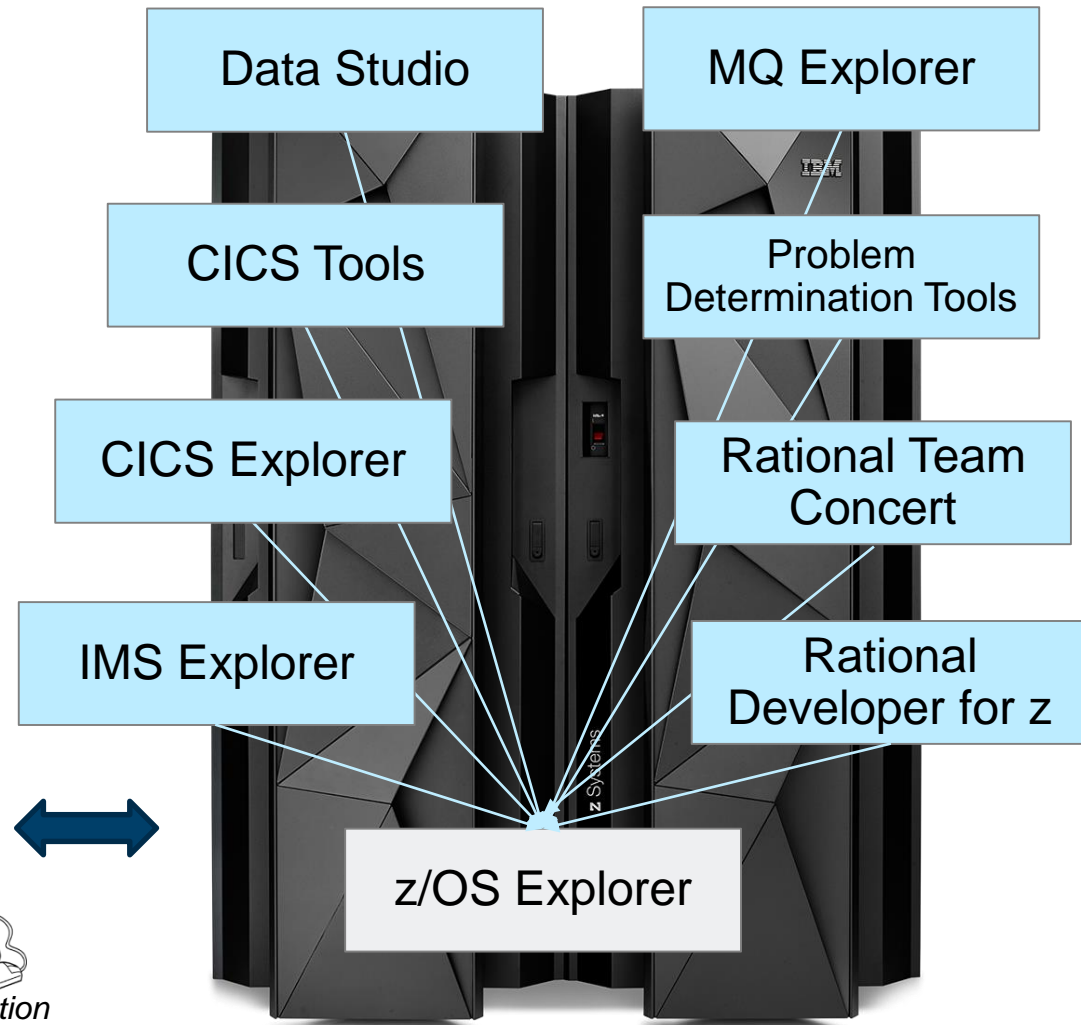
z/OS administrators can work on an Eclipse-based integration platform

- Runs on a workstation; common base for many z/OS tools
- Foundation for a workbench of plug-ins with which to develop/test z/OS applications and manage related sub-systems
- Extendable to accommodate user's roles and responsibilities using Eclipse-based plug-ins

MQ Explorer plug-in in z/OS Explorer – showing Queues and Jobs



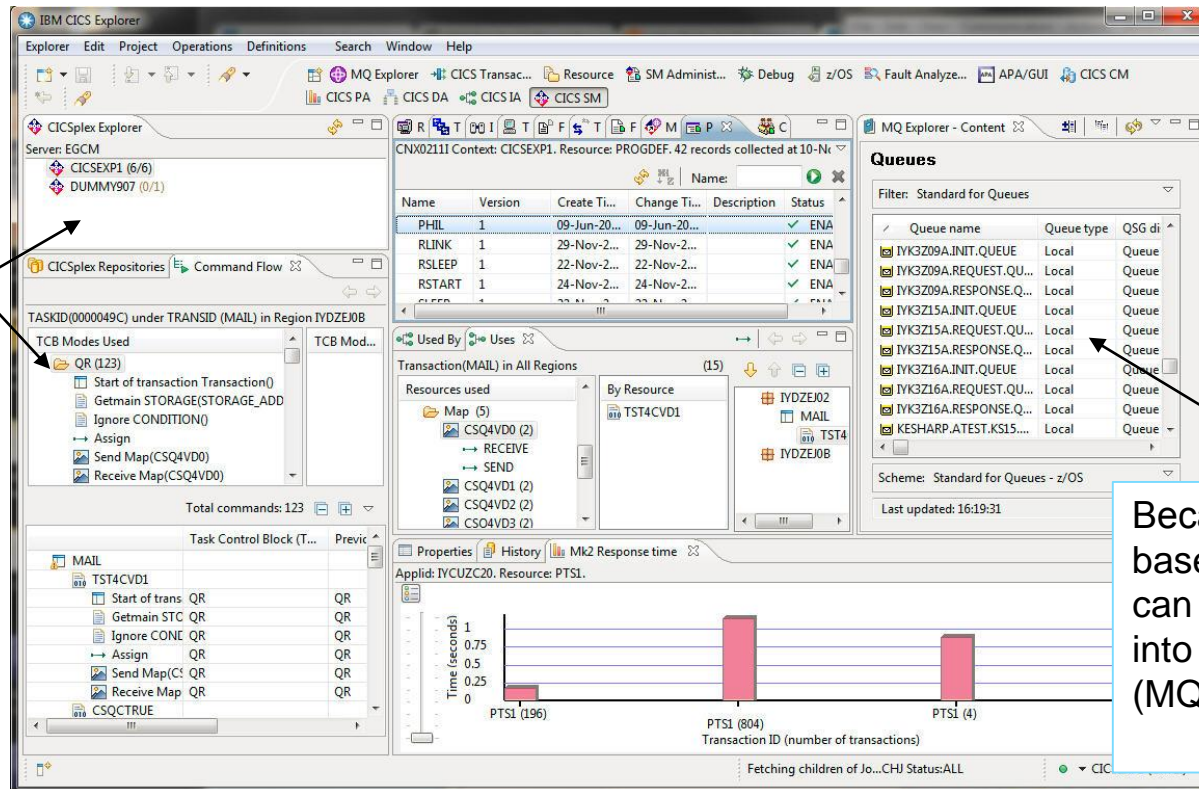
Eclipse workstation



For example, CICS Explorer eases CICS management

- View and control the CICS runtime and its resource definitions
- Easily create and manage CICS regions, tasks, files, transactions, events, etc.

CICS Explorer is especially useful when managing across a CICSplex (CICS Parallel Sysplex)



The screenshot displays the IBM CICS Explorer application window. The interface includes a menu bar (Explorer, Edit, Project, Operations, Definitions, Search, Window, Help) and a toolbar. The main workspace is divided into several panels:

- Left Panel:** Shows the CICSplex Explorer tree for Server: EGCM, listing CICSplexes (CICSEXP1 (6/6), DUMMY907 (0/1)) and CICSplex Repositories. Below this, it shows TASKID(0000049C) under TRANSID (MAIL) in Region IYDZEJ08, listing TCB Modes Used and a list of commands (Start of transaction Transaction(), Getmain STORAGE(STORAGE_ADD), Ignore CONDITION(), Assign, Send Map(CSQ4VD0), Receive Map(CSQ4VD0)).
- Top Center Panel:** Displays a table of resources with columns: Name, Version, Create Ti..., Change Ti..., Description, Status. The table lists resources like PHIL, RLINK, RSLEEP, RSTART, and CSQ4VD0.
- Bottom Center Panel:** Shows a bar chart titled "Transaction ID (number of transactions)" with data for PTS1 (196), PTS1 (804), and PTS1 (4). The Y-axis represents Time (seconds) from 0 to 1.0.
- Right Panel:** Displays the MQ Explorer - Content view, showing a list of queues with columns: Queue name, Queue type, QSG di. The list includes queues like IYK3Z09A.INIT.QUEUE, IYK3Z09A.REQUEST.QU..., IYK3Z09A.RESPONSE.Q..., IYK3Z15A.INIT.QUEUE, IYK3Z15A.REQUEST.QU..., IYK3Z15A.RESPONSE.Q..., IYK3Z16A.INIT.QUEUE, IYK3Z16A.REQUEST.QU..., IYK3Z16A.RESPONSE.Q..., and KESHARP.ATEST.KS15....

Because it's Eclipse-based, other tools can be integrated into the same view (MQ Explorer)

Business Connexion, Ltd. (South Africa) – Services company simplifies its IT to better meet customer requirements

A committed CICS service provider looking to continue delivering strong value proposition

Business challenge:

- Customers consistently requesting “more for less”
- Required easier-to-use interfaces into its CICS systems

Solution:

- Reinvented their IT with the CICS Explorer, CICSplex System Manager (CPSM), Events Processing and ATOM feeds features
- Enhanced CICS resources to populate a business operations dashboard – highlights all the CICS events in the system

Benefits:

- Made system administration more intuitive and user friendly
- Provides greater control and monitoring, helping customers better react to situations

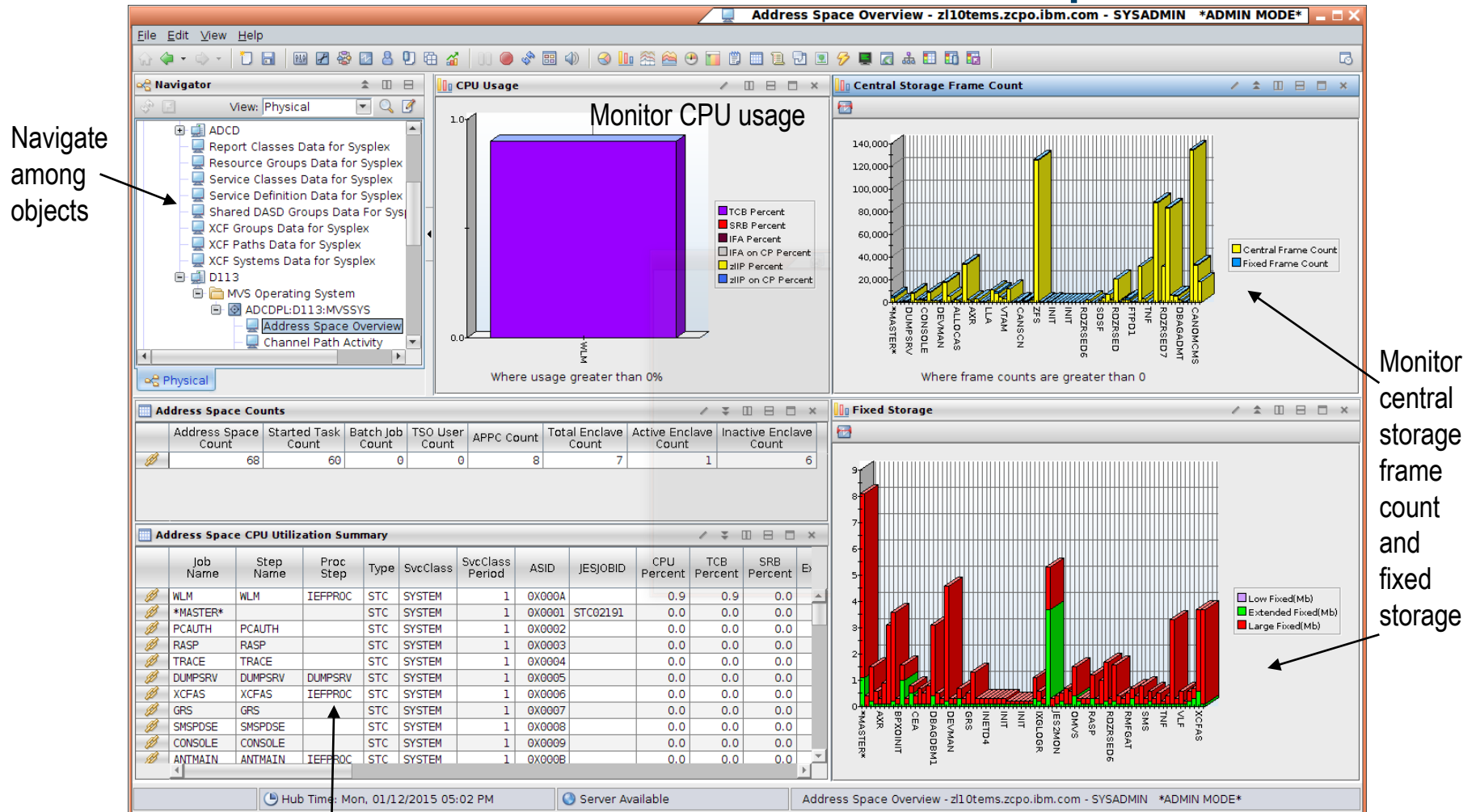
"The CICS Explorer is a non-chargeable Eclipse based tool that provides our clients views of their resource state and information across multiple CICS Systems - it's simple to deploy and simple to use and should make it easier for our new staff to become competent on our CICS systems more quickly"

- Rob Loyd, data center services manager



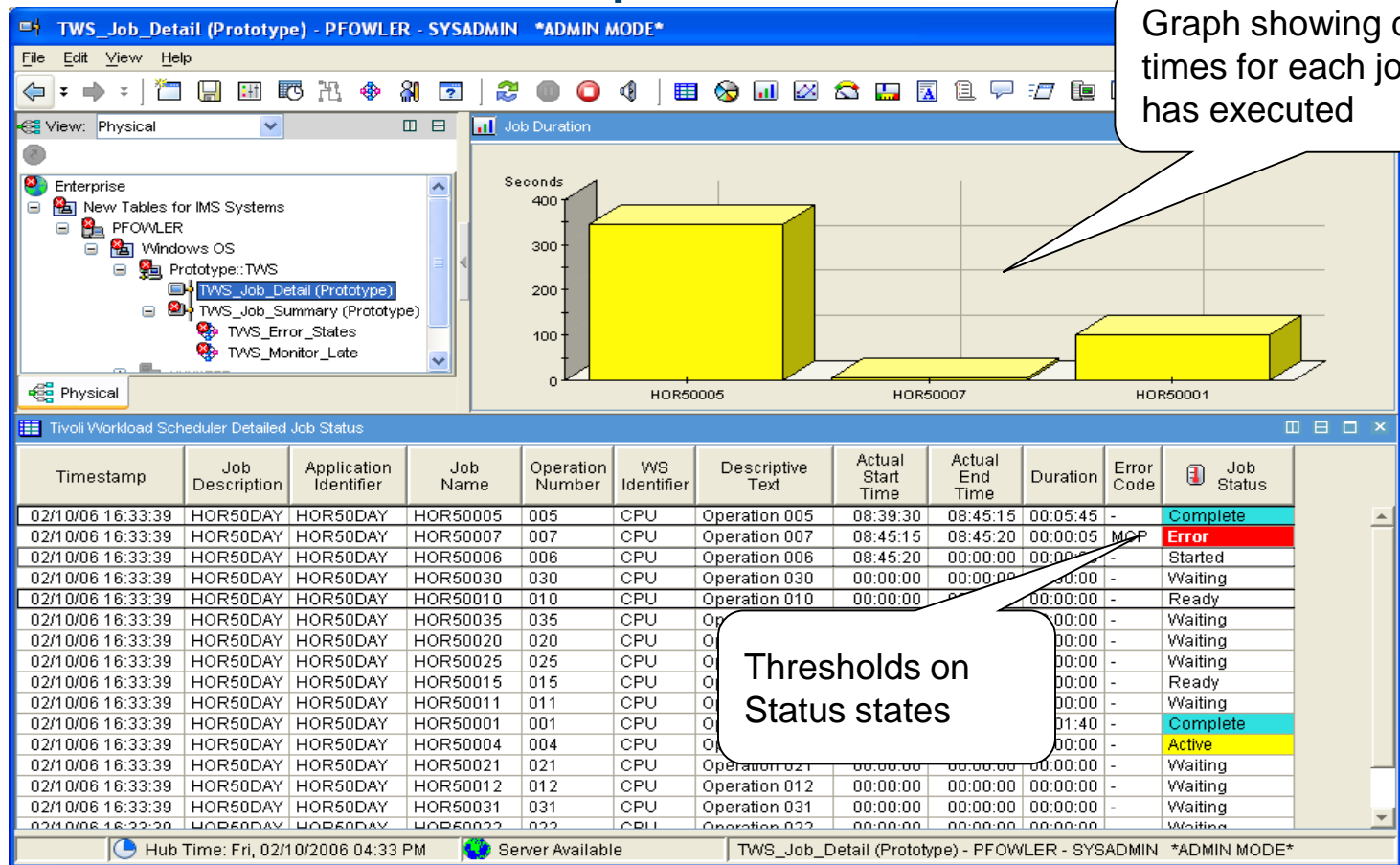
Additional GUI-based tools enable efficient management of the entire enterprise

Tivoli Enterprise Portal



Errors can be handled quickly and intelligently

Tivoli Enterprise Portal



(Tivoli Enterprise Portal was used in the demos in modules 1 and 4)

COBOL continues to be alive and well!

Is Cobol being used in your organization to develop new business applications?

Yes: 53%



No: 44%



Don't know: 3%



Base: 131 IT professionals

To what extent do your organization or systems use these programming languages?

Language name	A lot	A little	None
Cobol	48%	16%	37%
JavaScript	41%	41%	19%
Java	39%	40%	22%
C#	26%	25%	50%
VB.net	25%	38%	38%
Visual Basic	22%	49%	30%

Base: 202 IT professionals.

Percentages may not add up to 100 because of rounding.

- See ***“Leaving the Myth business to the ancient Greeks and Romans: COBOL is dead ... seriously?”*** (http://get.syr.edu/news_alt.aspx)

**YOUR IT CAREER**

By Eric Bloom

FOLLOW

College students learning COBOL make more money

ITworld | September 15, 2014

Yes, you read the title of this column correctly. College students who take COBOL as an elective course as part of their college studies were hired at a higher starting salary than their peers.

I had the great pleasure of speaking with Professor Leon Kappelman, Ph.D. He is the Director Emeritus, Information Systems Research Center in the Information Technology and Decision Sciences Department (ITDS) at the College of Business, University of North Texas (UNT).

Just by chance, Prof. Kappelman saw my ITworld blog titled [COBOL will Outlive Us All](#) and contacted me to tell me about a joint venture that UNT has with IBM and how his graduates get high-paying jobs with major US corporations that have COBOL based applications running within their data centers.

As funny as it sounds, if you are looking for a job in IT that will most likely exist for a very long time, learn to program in COBOL. The companies with these COBOL-based systems are very smart, well run IT shops. They know that this issue exists or will exist soon. As a result, some are outsourcing the maintenance of these systems to other companies in other countries. Some companies, at great expense, are once again trying to replace or rewrite them using newer technologies. Finally, other companies will make the decision to recruit and, if needed, train a new generation of programmers.

In the early 1980s, I was told that COBOL was going away and that I should quickly move toward other programming languages. Well, thirty years later, COBOL is alive and well and living in large companies everywhere.

Yes, more and more smaller COBOL programs are being written in the past few years.

FEATURED RESOURCE

Presented by PC Connection | EMC

**10 Reasons:
VSPEX End User
Computing with
XtremIO**

Languages should be selected using “fit-for-purpose”

COBOL's use

- ✓ building mission critical applications in the business logic and data management layers
- ✓ where records are processed and calculated
- ✓ where performance is important in delivering high service levels
 - sub-second response time is needed
- ✓ where you need to get programmers to learn a language quickly and that the resulting code needs to be readable by non-programmers
- ✗ not for the presentation layer where chasing a mouse around a screen is required

Compared to more modern programming languages such as Visual Basic, C#, C++ and Java, how does Cobol rate for these characteristics:

Function	Much better/ Somewhat better	About the same	Worse/ Much worse
Batch processing	82%	12%	4%
Transaction processing	65%	24%	9%
Handling business-oriented features	55%	21%	19%
Run-time efficiency	54%	33%	8%
Security	39%	38%	15%
Reporting	45%	37%	17%
Development cost	39%	32%	17%
Maintenance cost	43%	29%	18%
Ability to hire programmers	13%	25%	55%
Agility	15%	33%	45%

Base: 131 IT professionals

“Right now, it's pretty easy to hire programmers, and if they understand Java I can bring them back to procedural languages like Cobol”

— David Brown, managing director of BNY Mellon's IT transformation group**

From: http://get.syr.edu/news_alt.aspx?recid=269

http://www.computerworld.com/s/article/9225099/Cobol_brain_drain_Survey_results?taxonomyId=154&pageNumber=2

Today, COBOL application development is simplified using Eclipse-based graphical editing tools

- Supports all major languages (COBOL, PL/I, ASM, C/C++, Java)
- Supports all major runtimes (IMS, CICS, Batch, USS, DB2, WAS, Linux, Cloud)
- Web Services/JSON functionality, plugins for code analysis, debugging, and more

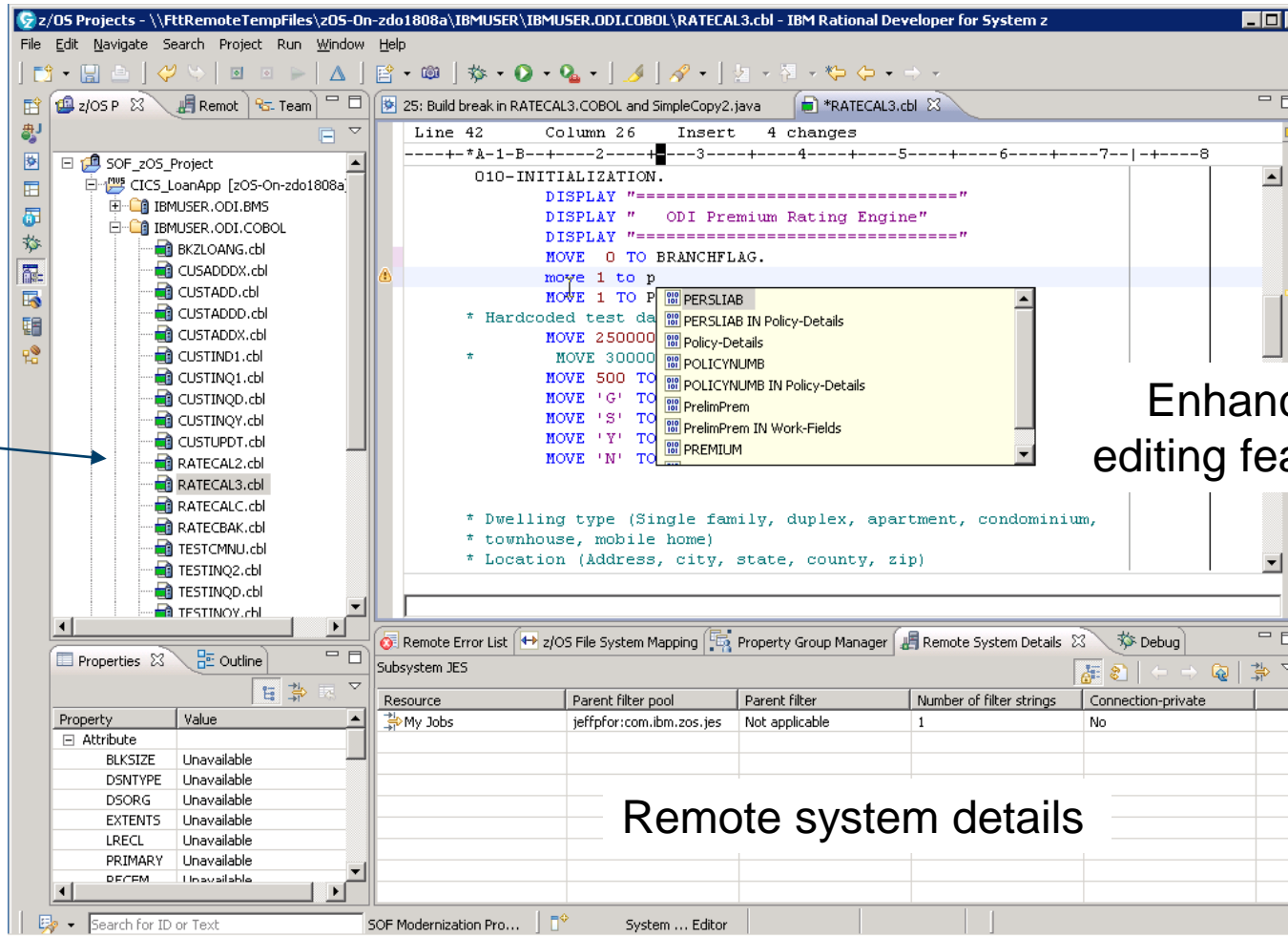
Edit host files and members, filtered file sets, or work disconnected

The screenshot displays the Eclipse IDE interface for COBOL development. The main editor shows a COBOL program with syntax highlighting and error checking. The left sidebar contains the Outline view, which presents the COBOL structure. The right sidebar shows the Remote Systems view, listing various file sets and members. Annotations point to specific features:

- Syntax highlight**: Points to the COBOL code in the main editor.
- Error Checking**: Points to the error list at the bottom left.
- Content Assist**: Points to the context-sensitive help window that appears over the code.
- Accesses Copybooks**: Points to the 'SERVER-REQUEST' section in the context-sensitive help window.
- Edit/Submit JCL**: Points to the 'JES' option in the Remote Systems view.
- View JES output**: Points to the 'JES' option in the Remote Systems view.
- Outline view presents COBOL structure**: Points to the Outline view in the left sidebar.

COBOL development using state-of-the-art Eclipse-based tools

COBOL
files



The screenshot shows the IBM Rational Developer for System z interface. The left pane displays a project tree with various COBOL files. The main editor window shows the code for `RATECAL3.cbl`, with a tooltip providing details for the `PERSLIAB` variable. The bottom panel displays the 'Remote Error List' and 'z/OS File System Mapping' tabs, with a table showing system details.

Enhanced editing features

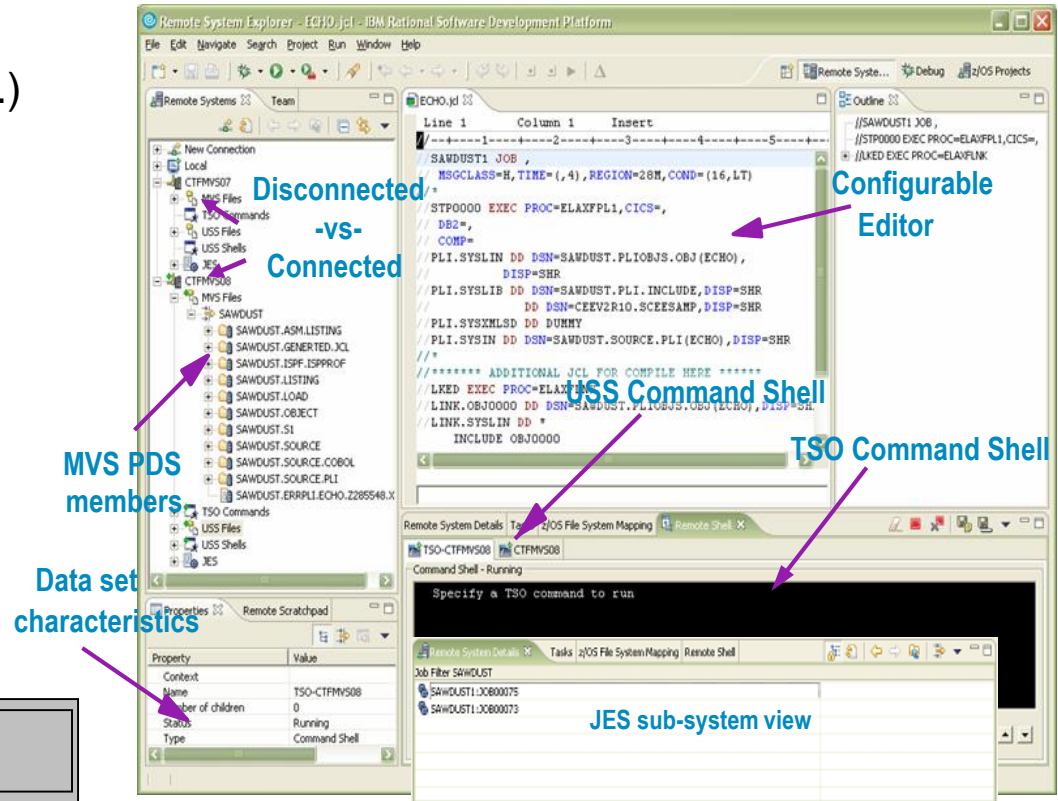
Remote system details

Resource	Parent filter pool	Parent filter	Number of filter strings	Connection-private
My Jobs	jeffpfor.com.ibm.zos.jes	Not applicable	1	No

Use a single, rich, integrated interface for all zEnterprise development

Rational Developer for System z

- Supports all mainframe languages (COBOL, PL/I, C/C++, ASM, Java, etc.) and runtimes (CICS, IMS, Batch, USS, DB2, WAS, etc.)
- Fully supports development and reuse of all mainframe assets
- Connected and disconnected modes
 - Connect to z/OS for debug, job generation, etc.
 - Disconnect and reduce mainframe MIPS usage and costs
- Includes Web Services and JSON wrappers



RDz Eclipse interface

Grow and enhance the skills set of development teams through use of multi-faceted, integrated tools

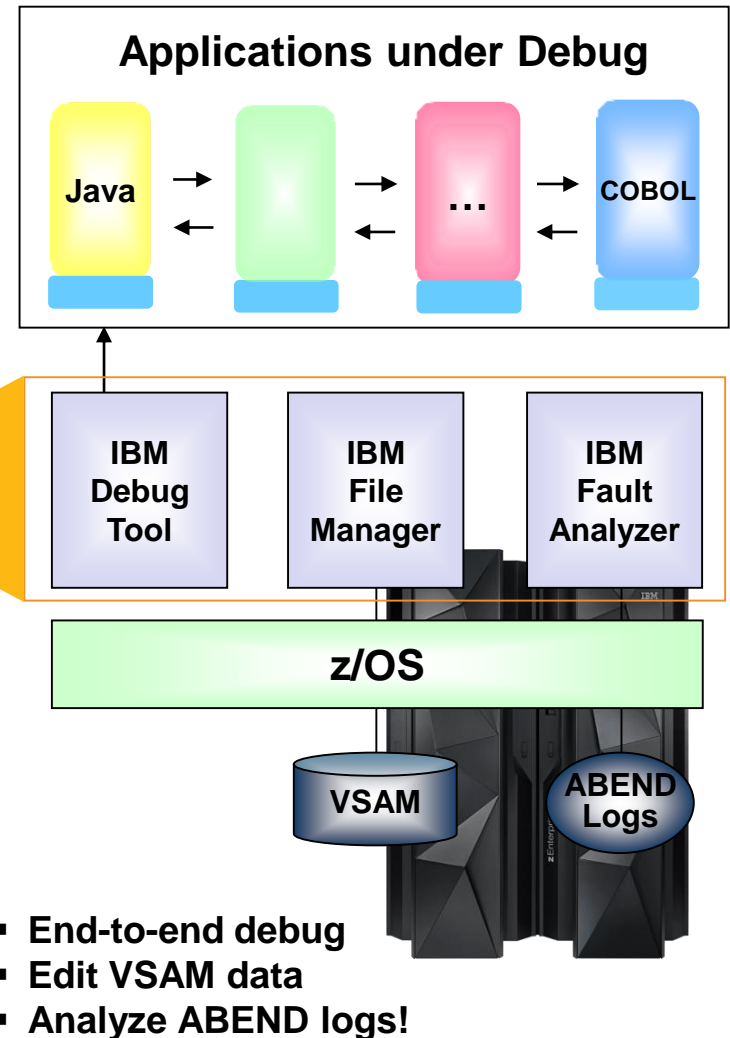
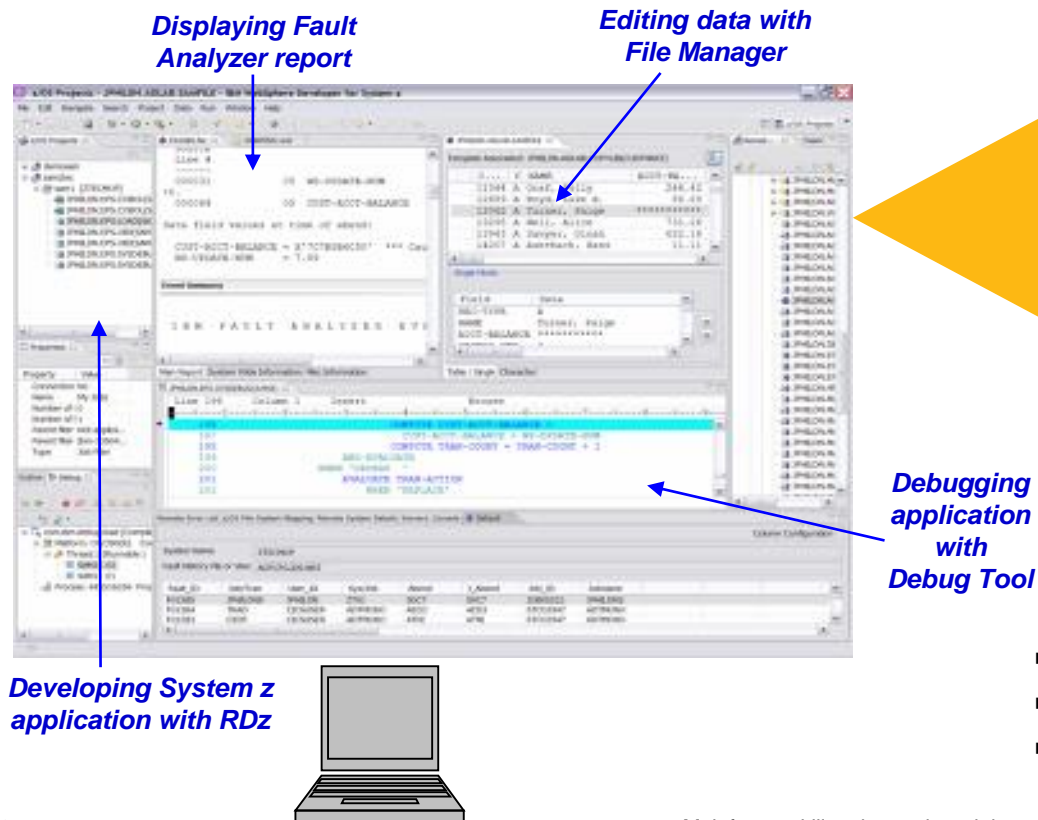
- Features in RDz enable cross-pollination of development skills
- RDz makes it easy for Java developers to also contribute to COBOL applications
- Build for z/OS, for Linux on z, for a cloud of Linux on z servers

The image is a collage of four screenshots from the IBM Rational Developer for System z (RDz) environment, illustrating its multi-faceted capabilities. Red boxes with black arrows point to specific features in each screenshot, with text labels explaining their use.

- Top Left Screenshot:** Shows the 'Remote System Explorer' view. A red box highlights the 'New Connection' button, with an arrow pointing to it and the text 'Use the Remote System Explorer to see P on z Sys'.
- Top Right Screenshot:** Shows the 'z/OS Projects' view. A red box highlights the 'SOF_zOS_Project' folder, with an arrow pointing to it and the text 'Switch t Projects to edit C'.
- Bottom Left Screenshot:** Shows a COBOL editor window. A red box highlights the 'IDENTIFICATION DIVISION' section, with an arrow pointing to it and the text 'Switch to the Java perspective to edit Java files'.
- Bottom Right Screenshot:** Shows a Java editor window. A red box highlights the 'SimpleCopy2.java' file, with an arrow pointing to it and the text 'Switch to the Java perspective to edit Java files'.

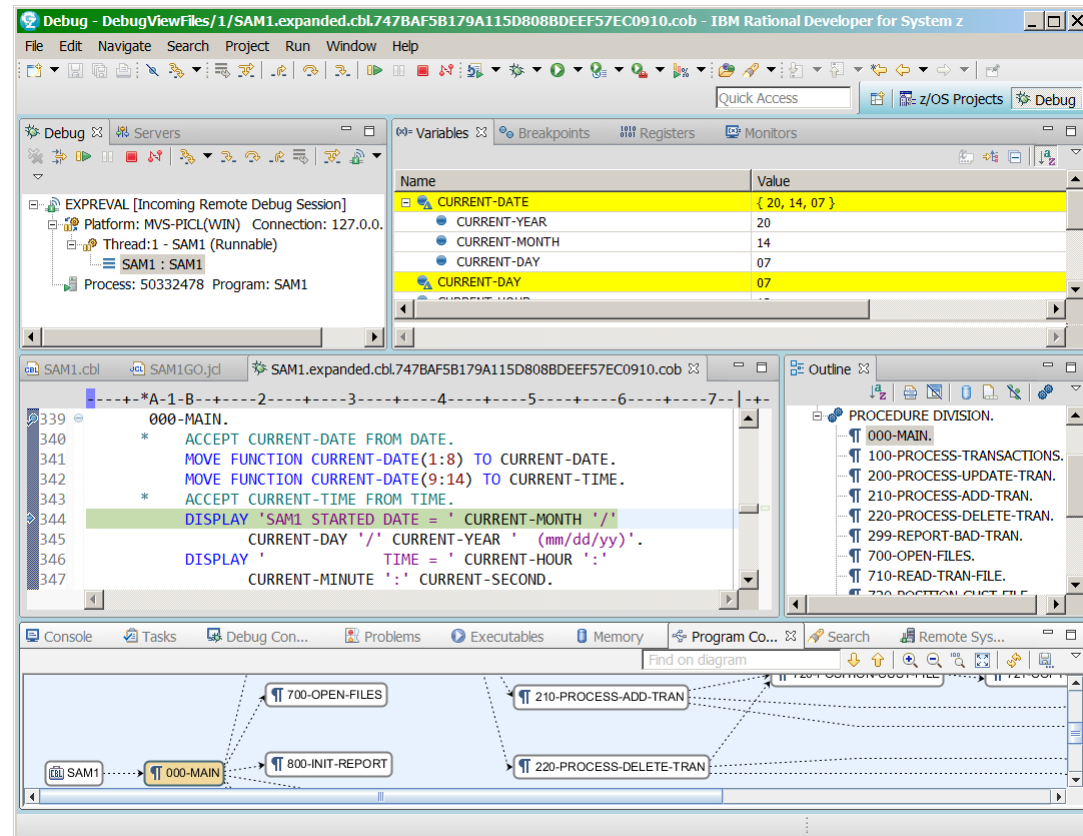
Mainframe Problem Determination Tools (PDT) are integrated into the workstation development environment

- Easily debug and step through multi-tier applications



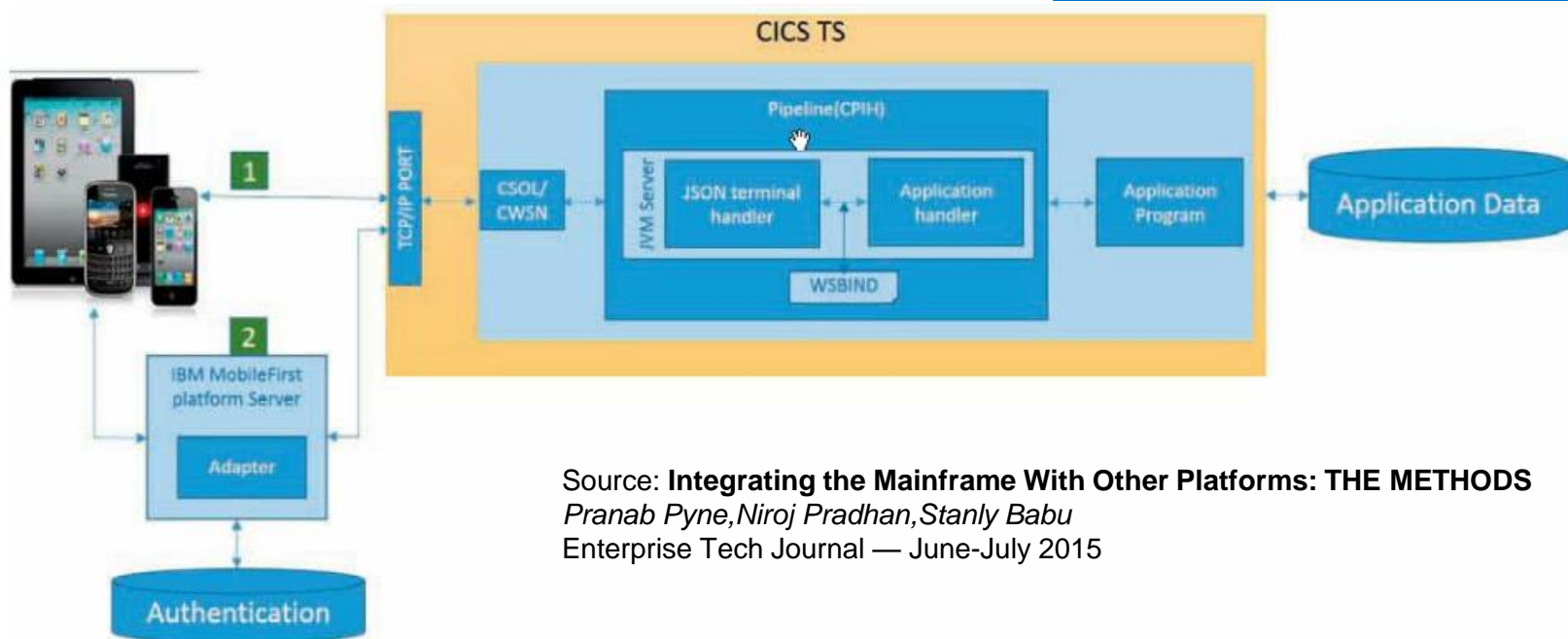
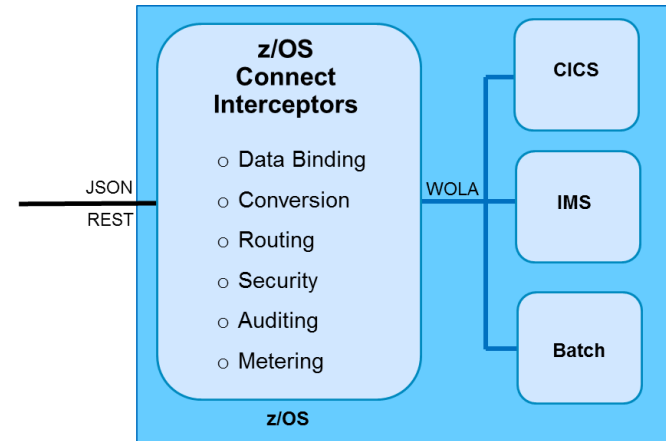
RDz v9.1 new Integrated Debugger

- Leverages the workstation CPU with smaller mainframe footprint
- Has tighter integration with other views
- Multi-language support
- New breakpoints types can be saved across debugging sessions
- View memory in different formats
- Watch complex variables and see all occurrences of a variable in the code
- New Code Coverage analysis to see what's executed and what's not



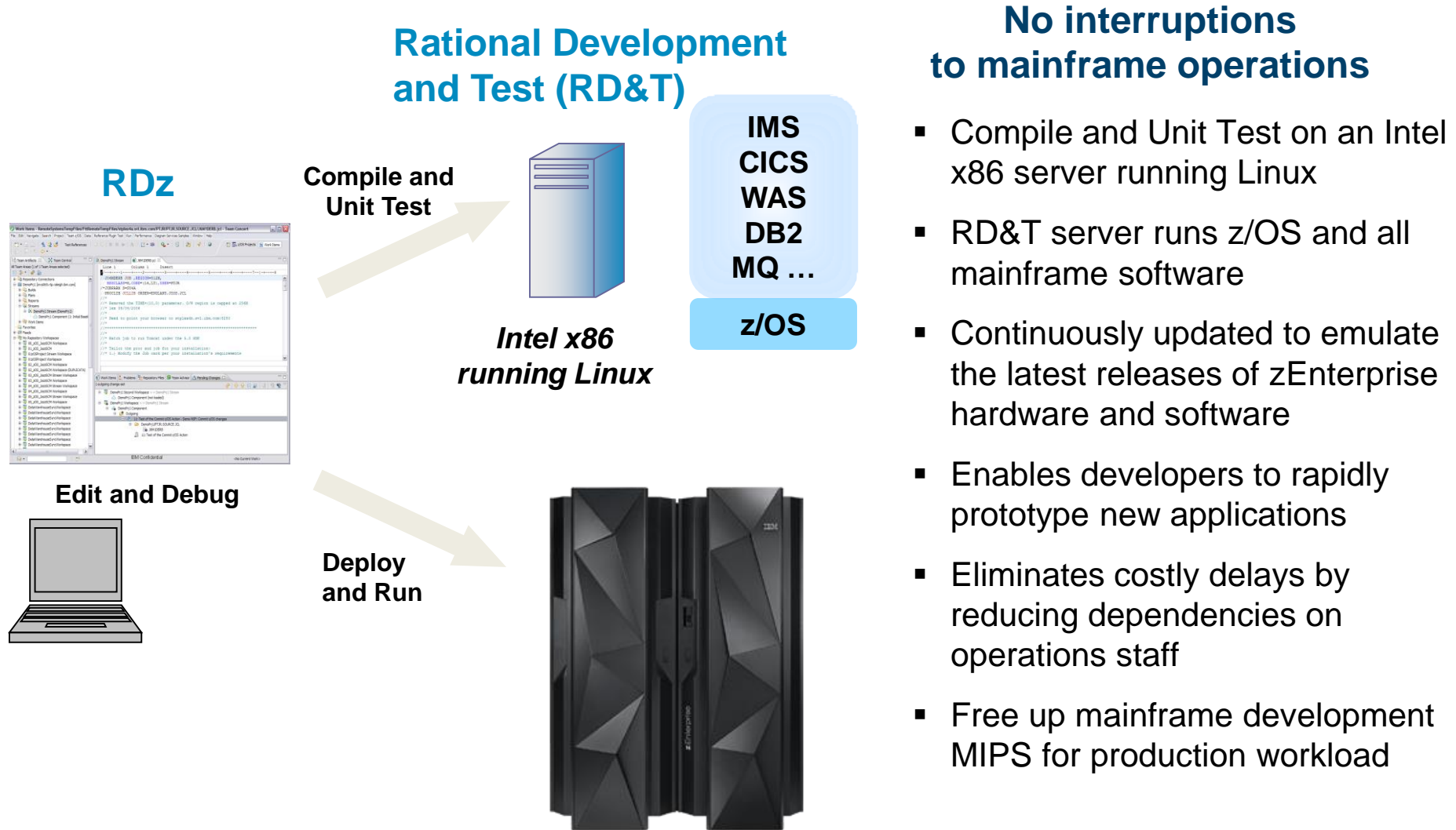
New REST/JSON capabilities make access to CICS apps easy for non mainframe programmers

- z/OS Connect interfaces to back end
- MobileFirst platform supports mobile
- BlueMix, DataPower Gateway
- API Management
- As well as SOAP and XML



Source: **Integrating the Mainframe With Other Platforms: THE METHODS**
 Pranab Pyne, Niroj Pradhan, Stanly Babu
 Enterprise Tech Journal — June-July 2015

Agile compilation and unit test can be done off-platform to reduce costs and simplify operations

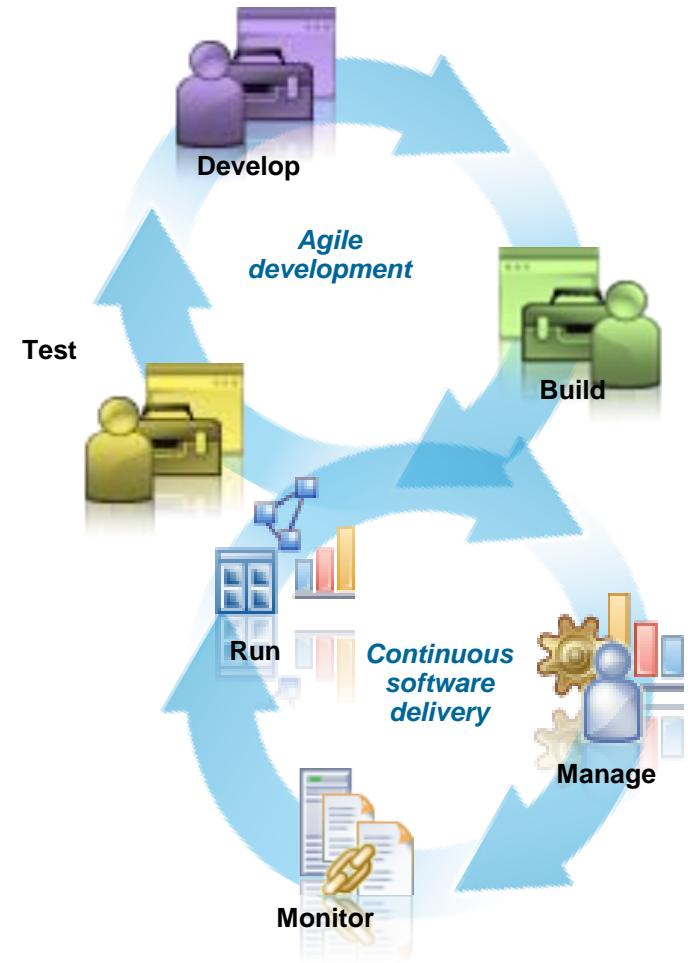


Tools enable a DevOps approach for continuous development, operations and integration across the enterprise

Today, customers expect **better product quality** and **shorter release cycles**. Businesses must meet this challenge, while **keeping costs low**

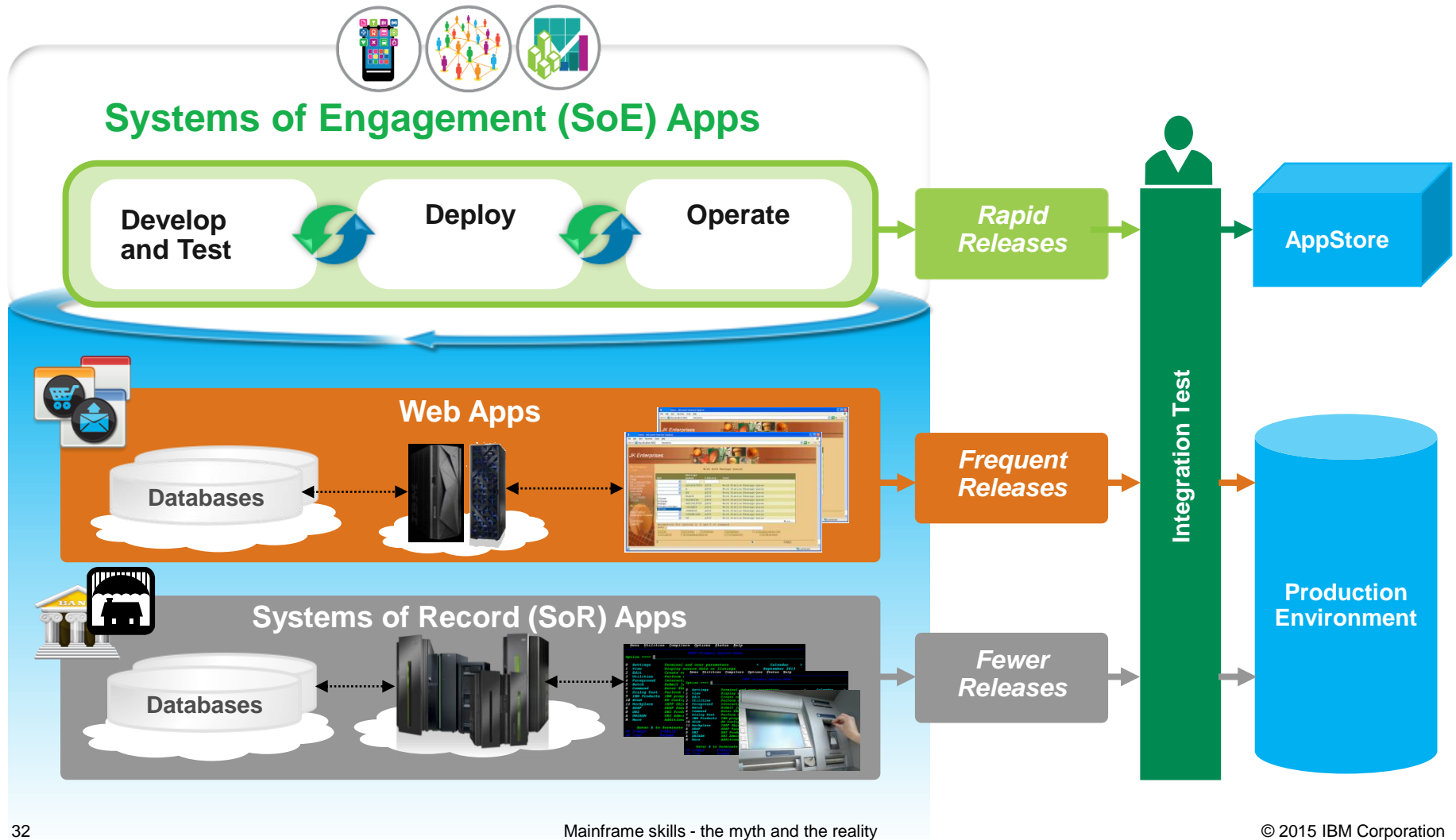
DevOps:

- A process that addresses this challenge
- Unites Development and Operations around a continuous and agile delivery model
- Enables Testers to have production-like environments
- Ensures an integrated view to govern and manage end-to-end delivery pipeline



Integrate systems of engagement with systems of record

By bringing together the culture, processes, and tools across the entire software delivery lifecycle – spanning mobile to mainframe platforms

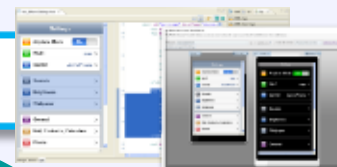


DevOps capabilities for mobile applications with enterprise systems

Rational Test Workbench
 IBM MobileFirst Platform
 IBM UrbanCode Deploy
 Rational Developer for the Enterprise

Accelerate mobile application development

*Construct, debug, and test
 mobile and Web applications*



Design

Code

Deploy

Test



*Refactor and extend existing logic
 as mobile-consumable services*



Continuous Delivery

Open Lifecycle and Service Management
 Integration Platform

jazz

Nationwide embraces DevOps to drive continuous delivery across platforms and improve speed to market

50% increase
in software **quality**
over the last three years

90% on-time delivery
vs. 60% previously

70% decrease
in user downtime

58% of developers moved
to industry top quartile
in **productivity measures**



“We’re more agile as a business and more responsive to our customers. Collaboration has become an expected part of our culture”

— Steve Farley, Vice President,
Application Development Center, Nationwide



Nationwide®
On Your Side™

Three things to keep in mind

1

Numerous indicators show mainframe usage continuing to grow for the foreseeable future

2

IBM has made considerable investment in intuitive, GUI-based tools for mainframe administration and development

3

IBM continues to invest heavily in development of mainframe skills for the next generation

Through the Academic Initiative, IBM is working to train new developers and administrators

- Since its inception in 2003, the program has grown significantly benefiting schools, students, and clients
- Market place demand for enterprise systems resources over the last decade has remained strong
- Our clients have expressed continued interest in expanding the program to ensure a healthy ecosystem

<http://www.ibm.com/university/systemz>

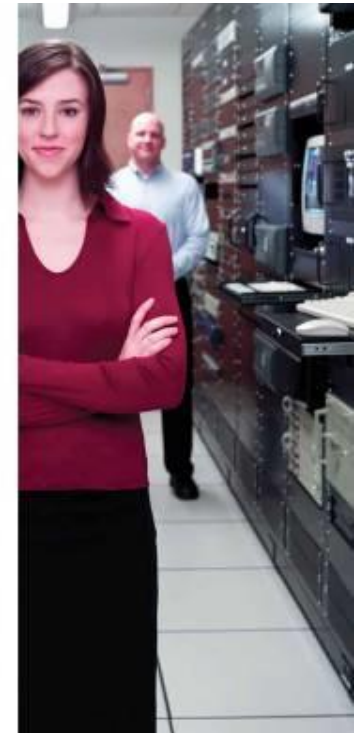
Corporate Engagement
360+ companies actively recruiting

Professional Connections
9 Communities

Job Candidates
Over 4,200 Job Seekers

Program Investment
\$10M+ over in 10 years

Growth
68K+ Students
Over 1K Schools
in 67 countries



IBM Academic Initiative

Major Academic Institutions and Key Recruiters



Recruiters

Cigna
Compuware
EMC
Fidelity
JP Morgan Chase



Recruiters

Baldor
BB&T
Dillards
JB Hunt
Walmart

EBERHARD KARLS
**UNIVERSITÄT
TÜBINGEN**



Recruiters

Daimler
Dt. Bank
SAP



Recruiters

CROC
Lusoft
Rosoboronexport



Recruiters

HSBC
Tivit



Recruiters

**China Construction
Bank**



Recruiters

Citi



Recruiters

Bull
Groupama

The Solution

- Develop cohesive recruiting strategy
- Develop compelling and consistent messaging
- Partner with universities
- Think fun
- Select tools that students recognize
- Leverage their strengths



Source: Dave Dischiave, Syracuse University

Mainframe skills - the myth and the reality

Reach Millennials Where they Live

- Adopt the new tools
- Sell the value of your organization
- Sell the value of the mainframe
- Join the IBM Academic Initiative
- Develop strong and lasting relationships with universities
- Most of all think “fun”



Teaching Mainframe since 2007 and learned students ...

- Hate Java
- Love COBOL
- Love the mainframe

Let's capitalize on the momentum

The Academic Initiative is also partnering to offer mainframe-focused Massive Open Online Courses (MOOCs)



“An Introduction to Enterprise Computing”

<https://mooc.marist.edu/web/ecc>



“Enterprise Computing Strategies”

<http://ischool.syr.edu/contact/forms/ecsmooc.aspx>



“Introduction to Linux”

<https://www.edx.org/course/introduction-linux-linuxfoundationx-lfs101x-2>

Master the Mainframe competition is helping a new generation find opportunity in the mainframe

A three-part contest of increasing difficulty offered to students around the world



Coming soon, the
"2016 z Systems
Master the
Mainframe World
Championship"

2014 Master the Mainframe
World Championship

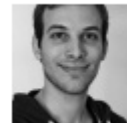
New York City

Participants from **23** countries

National Taiwan University
Taiwan



Rijnard van Tonder - 2
Score: 3329
Stellenbosch University
South Africa



Philipp Egli - 3
Score: 3186
University of Brighton
United Kingdom




Mugdha Kadam - 4
Score: 3031
University of South Florida
United States

68,000+

Participants
since 2005!

<http://www.ibm.com/systems/z/education/academic/masterthemainframe/>

Use the IBM z Systems Job Connector to find needed skills

**z Systems Job Connector**

<http://systemzjobs.com>

Welcome to the IBM z Systems Job Connector!

The IBM z Systems platform is at the heart of what organizations everywhere depend upon to drive enterprise level cloud, mobile, and analytic solutions - all with unmatched security. The IBM z Systems Job Connector website has been designed to support employers and candidates interested in filling/finding enterprise computing jobs that require skills and familiarity with IBM z Systems mainframe technology. Start your z connections right here today!

Employers

- ▶ Post a Job
- ▶ View Resumes
- ▶ Products and Pricing
- ▶ Access Your Recruiter Account

Job Seekers

- ▶ Search Jobs
- ▶ Post a Resume
- ▶ Set up an Email Job Alert
- ▶ Access Your Job Seeker Account

Keyword Search:

[Advanced Search](#)

Featured Jobs

Office Manager/EA
New York, NY
MarketShare

Mainframe Systems Programmer
Harrisburg, PA
PHEAA

IBM zIQ – Can you go five minutes

Manages **80%** of all corporate data

Enables the majority of enterprise transactions

00:00 / 0:51 YouTube

But ... maybe “The STEM Crisis Is a Myth” – a counter view from IEEE Spectrum



Feature | At Work | Education

The STEM Crisis Is a Myth

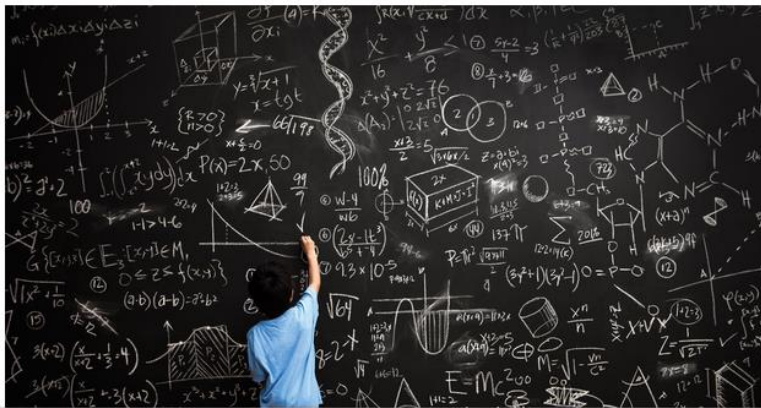
Forget the dire predictions of a looming shortfall of scientists, technologists, engineers, and mathematicians

By Robert N. Charette

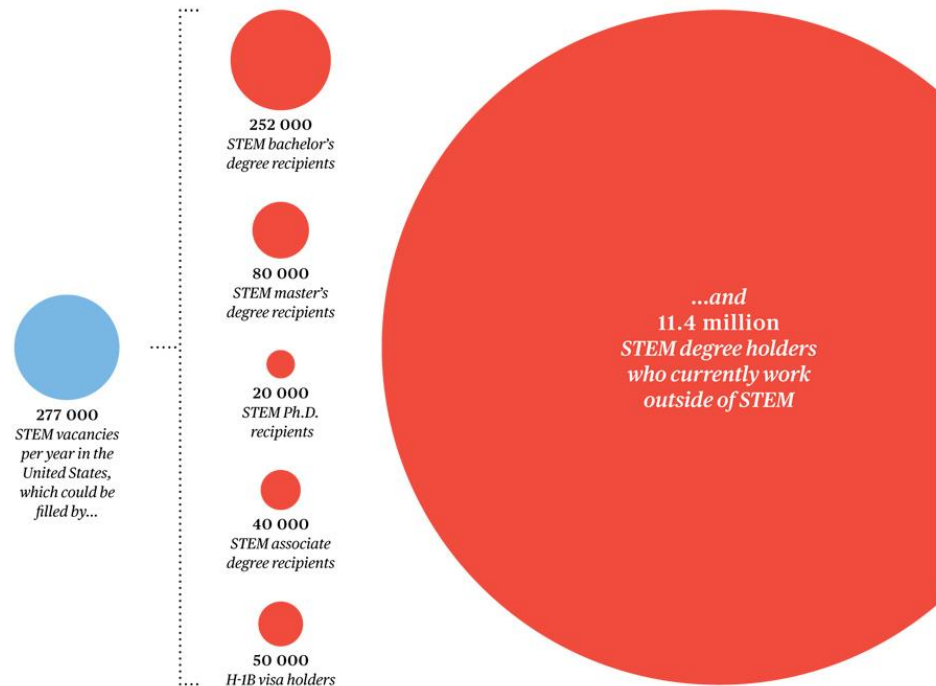
Posted 30 Aug 2013 | 14:00 GMT

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<http://spectrum.ieee.org/at-work/education/the-stem-crisis-is-a-myth>



“Critical thinking and discipline, not skills, that are important”

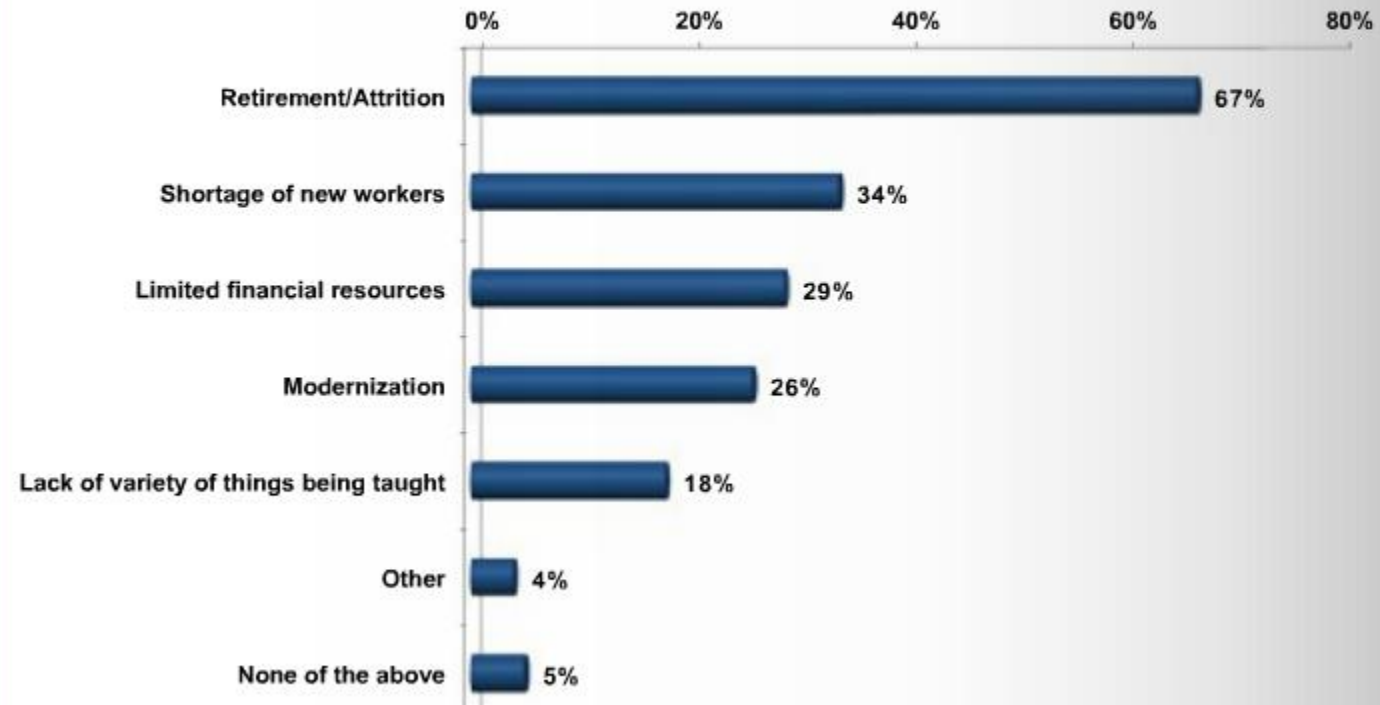


A Matter of Supply vs. Demand: Every year U.S. schools grant more STEM degrees than there are available jobs. When you factor in H-1B visa holders, existing STEM degree holders, and the like, it's hard to make a case that there's a STEM labor shortage.

- STEM not well defined
- 57% STEM workers don't have STEM degrees
- 75% STEM graduates work outside of STEM
 - 1/3rd of computer science grads
- Market place doesn't show a shortage
- “alarm, boom, bust”
- Most important - “ability to think broadly, and read and write clearly”
 - Lockheed Martin ex-CEO

Is demographics the real issue?

FIGURE 2 Top Challenges Within Company Regarding a Skills Gap



Suggestions to prevent skills shortages

1. Align **long-term** talent plan with strategic architecture plan
 - Replenish in advance
2. Hire brains not skills
 - Ability to learn on the job is key
 - Self-learning is strong quality
3. Hire in cohorts for improved retention
 - Don't shop for skills, self-learn or retrain (49% of the skills survey)
 - Leverage IBM Academic Initiative & Job Connector when possible
4. Use latest tools and technologies
 - As appropriate

See “Mainframe Modernization and Skills: The Myth and the Reality message... *please distribute!*”

<http://www.redbooks.ibm.com/abstracts/redp5115.html?Open>

Mainframe Modernization and Skills: The Myth and the Reality

An IBM Redbooks Point-of-View publication

By **Emily Farmer**, Senior Software Engineer, and **Michael Casile**, Senior Software Engineer

Highlights

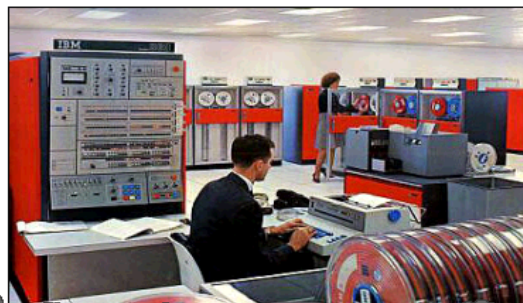
- ▶ Defying predictions, the IBM mainframe is not only alive today, running much of the world's business, but its usage continues to grow. So to prepare for future resource needs, mainframe customers must adopt plans to onboard the new developers and administrators that will be needed in the future.
- ▶ Attracting qualified talent to work on mainframes is not the challenge some might think. IBM has developed a wealth of modern, GUI-based mainframe tools, making the platform more interesting to a new generation and, just as important, more comfortable for those now working in distributed environments who are thinking of making a switch.
- ▶ IBM is investing heavily in training a new supply of mainframe resources. More than 360 companies are participating in these initiatives, with some 68,000 people, and counting, trained to date.



Is the mainframe a *modern* platform?

In April 2014, IBM® celebrated the 50th anniversary of the first mainframe computer, the System/360 (see Figure 1). Growth over that time has been such that today, much of the world's business runs on IBM mainframes, including 97 of the world's top 100 banks¹. Yet perhaps because it has been around as long as it has, the mainframe is seen by some as not modern enough for today's demands.

Many in business still assume that the only interface to mainframes is through the traditional *green screen*, that administration is cumbersome and difficult, and that the only people with the skills to administer and develop applications on mainframes are those who grew up with the platform, that is, post-World War II baby boomers. As these boomers approach retirement, some business leaders fear an impending skills shortage, and distributed server vendors have been known to use this fear to promote migrating off the mainframe to more “modern” platforms. A 2011 ComputerWorld study² even found that some younger IT professionals were reluctant to focus on the mainframe, seeing it as a stagnant environment.



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Every mainframe IT manager should know...

The Academic Initiative!

- Locate schools **teaching enterprise systems to recruit new talent**
- Partner with IBM **to build new skills for your business**
zskills@us.ibm.com
- Advertise job opportunities **to students and experienced professionals**
systemzjobs.com
- Use resources **to assist with building employees skills (internal training programs)**
www.ibm.com/systems/z/education/skills_coursematerials.html
- Build credentials **through the Mastery Test**
www.ibm.com/certify/mastery_tests/ovrZ05.shtml
- *Online mainframe education (certificates)*
www.idcp.org/learnzos.html
- Stay connected **with through communities and social media. “Like” us on Facebook.**



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