

# IBM Information Management System (IMS™)

## Trends & Directions

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# Agenda

## **The broader landscape**

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## **IMS strategic direction**

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IBM Information Management System (IMS<sup>™</sup>) provides an integrated platform that paves the path to hybrid cloud...

# 60%

of executives are speeding up digital transformation during the pandemic<sup>1</sup>

Source: 1 [COVID-19 and the future of business](#), IBM Institute for Business Value, September 2020, origin

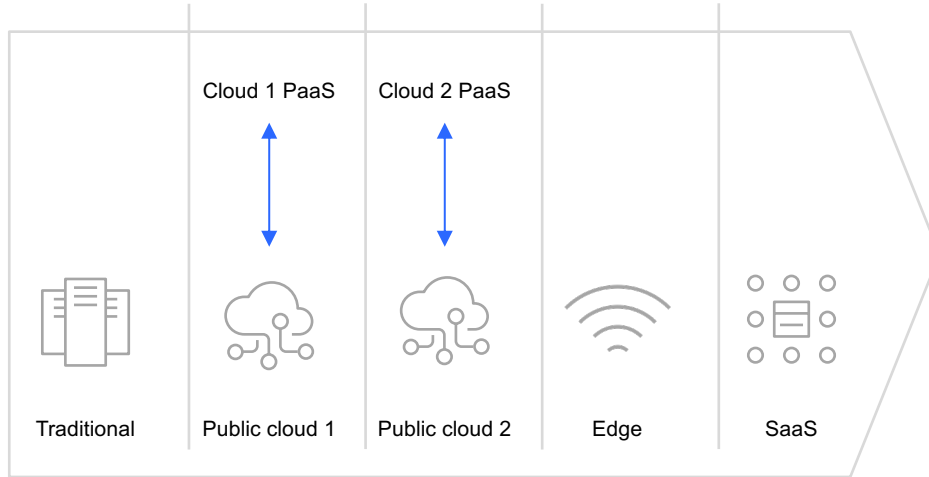
# 265%

more executives saying digital transformation is a significant or great priority than 2 years ago<sup>2</sup>

Source: 2 [Forrester Analytics Business Technographics Infrastructure Survey, 2020](#)

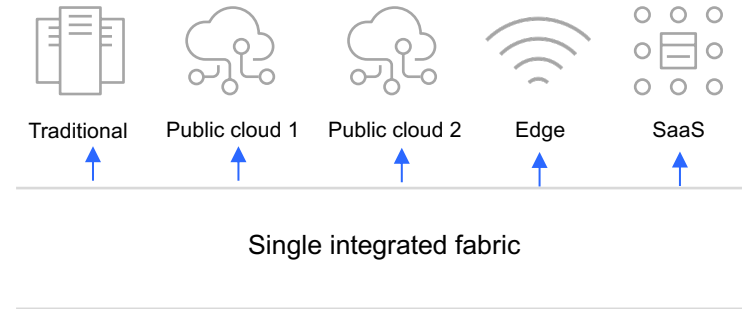
# Hybrid cloud, can provide a better architecture for application modernization

## Heterogenous environments are becoming more complex



- Proprietary technologies in separate environments
- Siloed developer teams with manual, duplicative processes

## Hybrid cloud platform



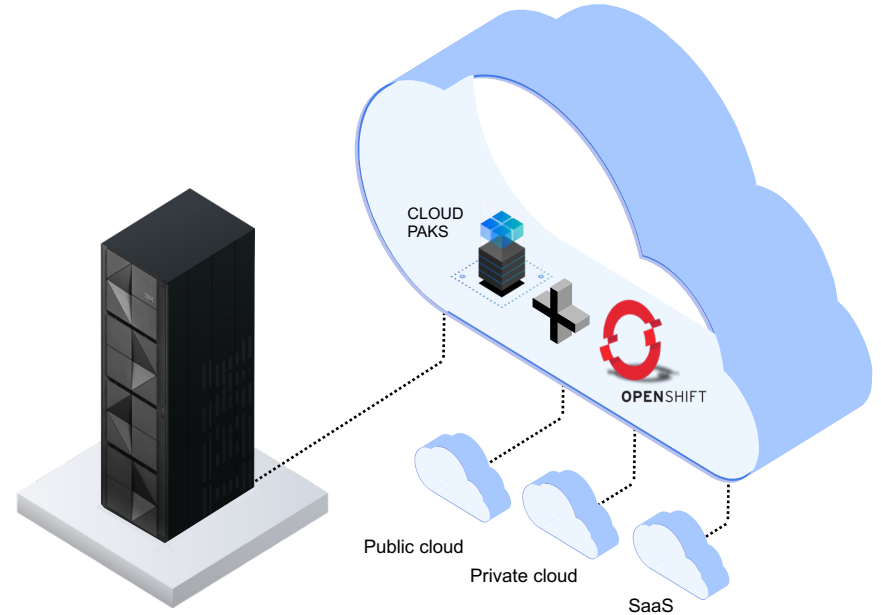
- Common platform
- Developer teams use agile practices with common set of processes

# The best of the mainframe and the innovation of cloud



## Strategy

- Significantly expand your talent pool
- Bring an enterprise-wide DevOps practice
- Easily access IBM zSystems® data without moving off-platform
- Optimize costs
- Maintain the option of repatriating cloud applications



Modernize does not mean  
migration to public cloud!



It's about picking the right  
platform for optimal business  
performance.

**IBM Information Management System (IMS™)** has innovative strategies in each of the following trending areas to support your modernization journey...

Integration



Application  
Modernization



Development  
& Automation



Education  
& Co-creation







# Develop cloud and on-premise applications using a foundation built for digital transformation



## Cloud-ready with API

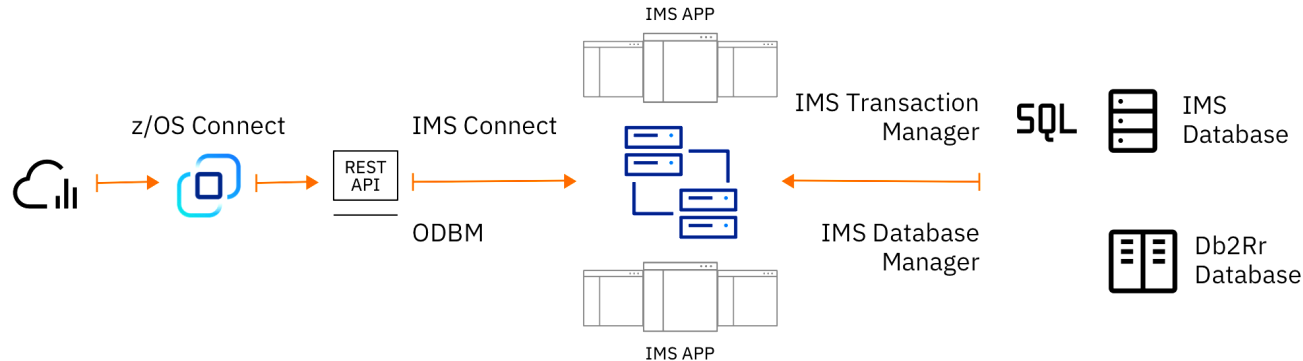
- Build APIs with IBM z/OS® Connect to make IBM IMS transactions and data easily accessible from any cloud applications without coding
- Accelerate your cloud readiness while keeping transactions and data in place
- Grow your business capability by enabling IMS to call out to other APIs inside or outside the enterprise



# API Integration with IMS & z/OS Connect: Unlock the potential of hybrid cloud



- Drive value to existing IMS applications
- Extend your IMS investment
- Integrate into hybrid cloud via the API economy
- API access to existing IMS transaction
- API access directly to IMS DB
- IMS application to callout to API

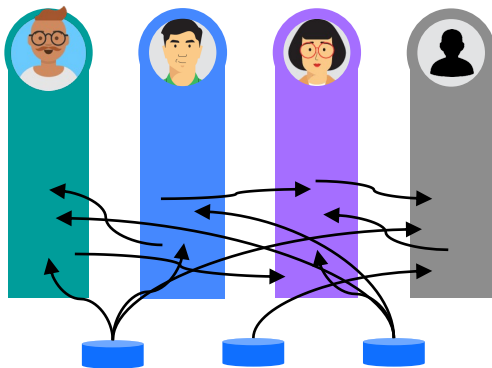


# IMS & event streaming

## Need for a common foundation



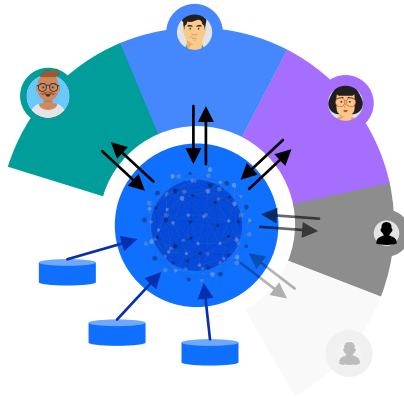
Unmanageable siloed use of events across different domains



*Move to...*



Common foundation or real-time events available across the enterprise to all who need them

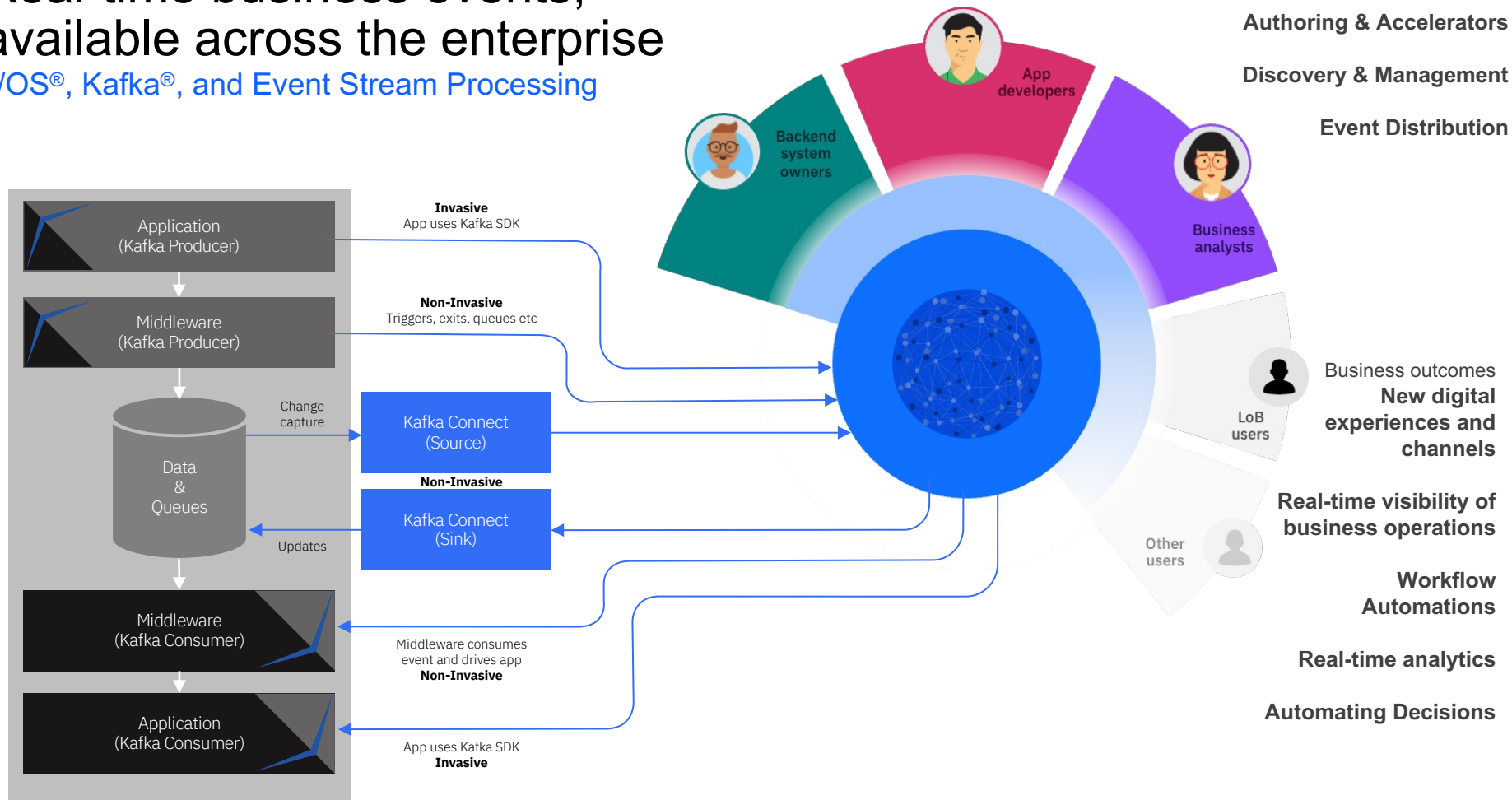


- Brittle point 2-point connections
- Difficult to manage
- Slow to create new integrations
- Inefficient; same events moved multiple times
- Impossible to track lineage
- Exponential scaling problem

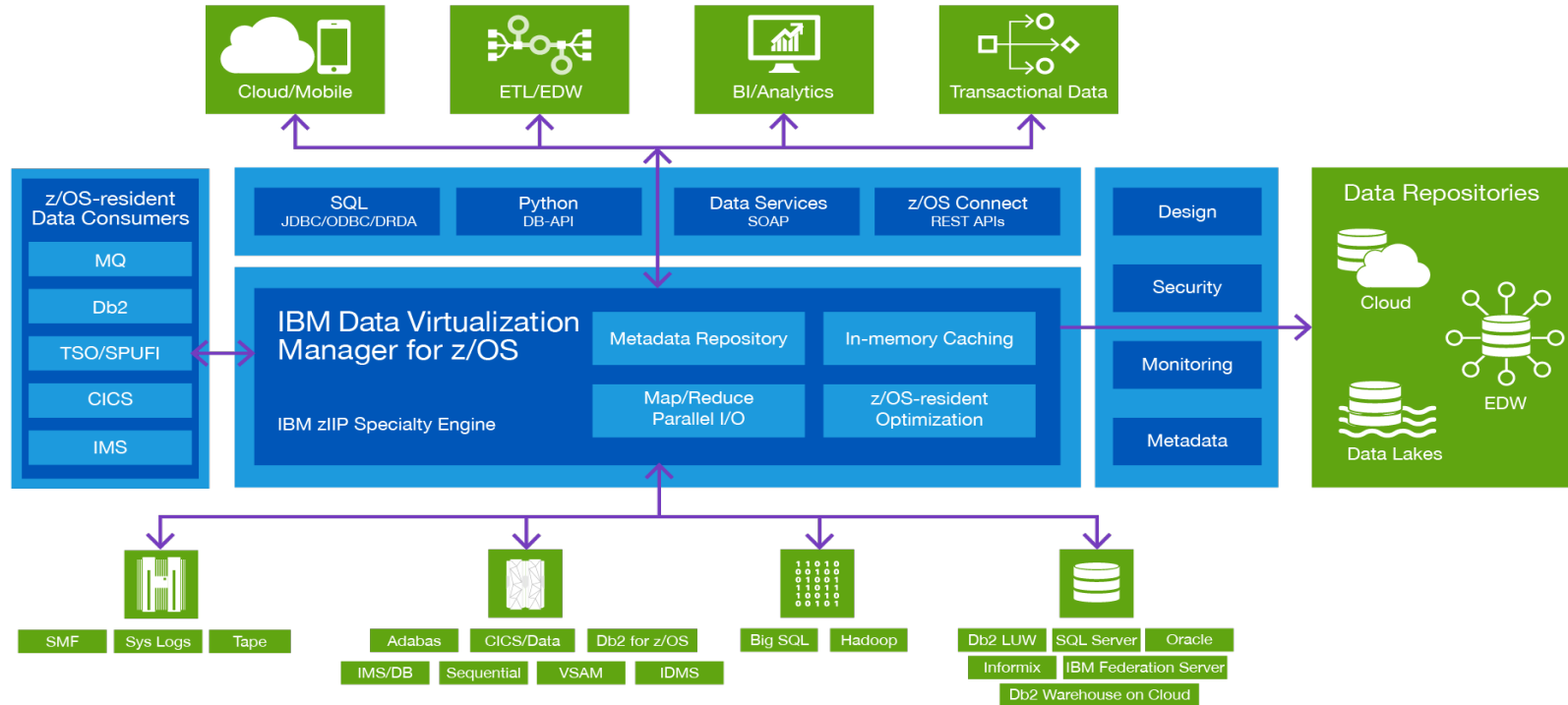
- Clearly defined and versioned interfaces
- Control points for enterprise policies
- Self-service; increasing agility
- Efficient data movement
- Clear visibility of lineage
- Scale linearly

# Real-time business events, available across the enterprise

z/OS®, Kafka®, and Event Stream Processing



# IBM Data Virtualization Manager for z/OS





# Application Modernization

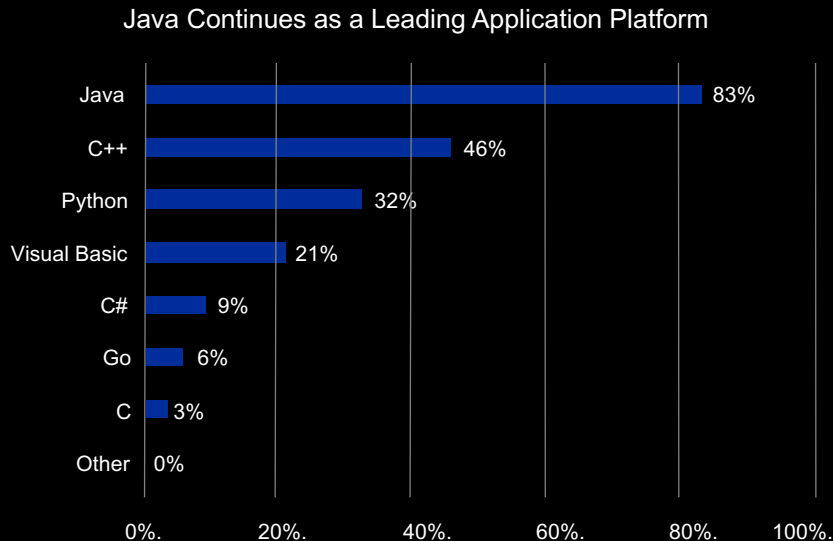
Embrace hybrid cloud  
with a modern on-prem  
environment





# Java<sup>TM</sup> in the enterprise

Q1: Select the most important programming languages for your enterprise (Top 2)



# 83%

of enterprise companies regard Java as one of their top two most important languages

# Java on z/OS

## Let us help you build...



### **Integrate**

z/OS® middleware  
WebSphere Application  
Server, CICS® Transaction  
Server for z/OS, IMS, & Db2®



### **Develop**

Efficiently build batch and  
transactional applications,  
microservices and more



### **Leverage**

An abundance of APIs,  
libraries, and frameworks



### **Build**

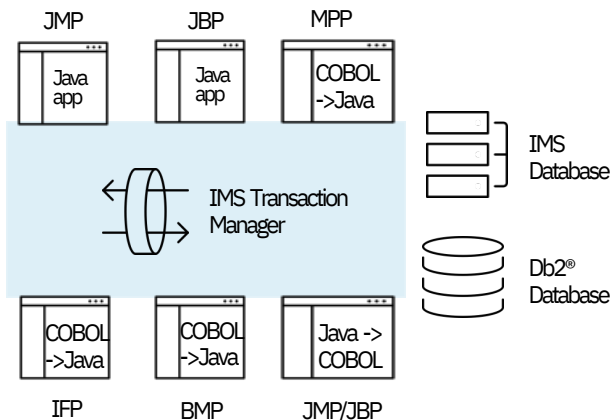
Design the architecture  
that's ideal for your business



### **Save**

Run eligible Java™  
work on IBM Z  
Integrated Information  
Processors (zIIPs)

# How do you use Java on Z with IMS?



## Extend existing IMS applications with Java

- Extend new business logic in Java
- Call Java code as subroutines from COBOL or PLI application or program-switch to Java transaction
- Convert heavy CPU consumption routines to Java
- Transitions development from COBOL to Java

## New IMS applications in Java

- Write new IMS application in Java (JMP/JBP)
- Allows for easier maintenance
- Can still interoperate with existing COBOL or PL/I code

\*Java can interoperate with COBOL or PLI



# 31-bit COBOL and 64-bit Java™ Interoperability

*New enhancement*

An IMS application developer can extend existing 31-bit COBOL applications that run in the IMS Message Processing Program (MPP), Batch Messaging Processing (BMP), and IMS Fast Path (IFP) regions to call 64-bit Java code to expand memory and process more data without a full rewrite.

**Enable** in place modernization on IMS

**Leverage** existing COBOL apps which interoperate with Java to ease Java adoption in IMS

**Expand** memory usage to process large loads of data without a rewrite



# Database standardization

## Catalog, SQL and DDL



# Industry standards adoption is more important than ever for the modern workforce



## New generation of IMS DBAs

- Steve is new to IMS
- Probably has relational database experience
- More then likely is a “Universal DBA” i.e., is responsible for both relational databases (Db2®) and IMS
- Challenge for Steve is to hit the ground running, but IMS tasks are proprietary



Steve  
Database Administrator (DBA)

# Process of industry standards adoption



## Approach

- Removal of the IMS proprietary database administration tasks
- Adopting industry standard approaches for database administration tasks
- Embracing standard approaches for database access

## Benefits

- Easier on-boarding of IMS Professionals
- Allows for the “Universal DBA” to manage & administer both IMS as well as relational databases like Db2®

# Industry standards adoption



## Streamlined DevOps

- Elevate productivity and promote a repeatable, driven development and management cycle.
- RESTful API access of IMS data through IBM [z/OS® Connect](#)



## SQL adoption

- Data Definition Language (DDL) vs. (PSBGEN, DBDGEN & ACBGEN)\*
- Concept of storage groups
- IBM IMS Native z/OS DDL Utility (zDDL)
- Data Manipulation Language (DML) – continue embracing SQL
- Future item: Data Control Language (DCL) – (grants & revokes)



## Java

- Java Database Connectivity (JDBC) SQL or Java™ DLI access to IMS Data
- Applications can access data in-place

\* PSBGEN -Program Specification Block Generation  
DBDGEN -Database Description Generation  
ACBGEN -Application Control Block Generation





# Development, Automation & Operation

# Accelerate application modernization and IT automation on IBM Z<sup>®</sup>



Simple access to  
applications and data

Secure API creation and  
integration in minutes

Agile enterprise  
DevOps

Cloud native development with  
industry standard open tools

Standardized IT  
automation

Reduce need for specialized skills  
and empower developers



**IBM Z and Cloud Modernization Stack**

# IBM Z® and Cloud Modernization Stack



Flexible, integrated application modernization and IT automation platform for IBM Z



## Application analysis

Reduce risk of application changes

- Visual insights of application dependencies
- Rapid analysis of application changes
- Analysis of COBOL, PL/I, Java™, and Assembler



## Create and deploy APIs

Secure access to applications and data

- Agile development of OpenAPI 3 APIs in minutes
- Secure and scale business critical APIs
- Seamless integration with enterprise API Management



## Cloud native development

Increase speed and agility for greater productivity

- Common cloud development experience across enterprise
- Choice of languages including Python, Node.js, Go and Java™
- Integration with standard, enterprise-wide CI/CD pipeline



## Standardized IT automation for z/OS®

Reduce need for specialized skills, empower developers

- Automated z/OS software management
- Personal z/OS sandbox on Red Hat® OpenShift®
- Self-serve access to z/OS environments for dev/test



Pay only for the capabilities you use

Optimized for Red Hat® OpenShift®

Content Certified by IBM and Red Hat



# Red Hat® Ansible® Automation Platform

**Network**

**Lines of business**

**Security**



**Operations**

**Infrastructure**

**Developers**

**Engage**

Ansible Hosted Services: Engage users with an automation focused experience

**Scale**

Ansible Tower: Operate & control at scale

**Create**

Ansible Engine: Universal language of automation

Fueled by an open-source community

Ansible® Engine runs Ansible Playbooks, the automation language that can perfectly describe an IT application infrastructure.

Ansible® Tower allows you scale IT automation, manage complex deployments and speed productivity.



# IBM Z<sup>®</sup> and Ansible

Flexible, integrated application modernization and IT automation platform for IBM Z



## Provisioning and Maintenance

- Build and provision middleware
- Roll out fix packs to hundreds of servers
- Self-service provisioning portals



## Configuration management

- Middleware configuration
- Network and security configuration



## Security Automation

- SSL certification renewal process
- Password resets, create new users



## CI/CD and Application Deployment

- Integrate infrastructure provisioning and Z application deployment into CI/CD pipeline



## Orchestration

- Orchestrate and replace existing siloed in-house automation
- Integrate existing automation into overall workflow



## Probe the mainframe

- Collect audit and security configuration details, system status and health checks

# Red Hat® Ansible® Certified Content for IBM Z





6 Ansible Collections  
available in Ansible  
Galaxy or Automation  
Hub


z/OS Core	IMS	CICS
z/OSMF	System Automation	Z HMC

Additional Ansible  
playbook samples for  
other IBM Z products  
available in Ansible  
for Z Sample  
Repository

z/OS Connect	DB2	MQ
UCD	WAS	
z/OS Broker	DFSMS	DS8000


































































# Red Hat® Ansible® Certified Content for IBM Z

 GALAXY

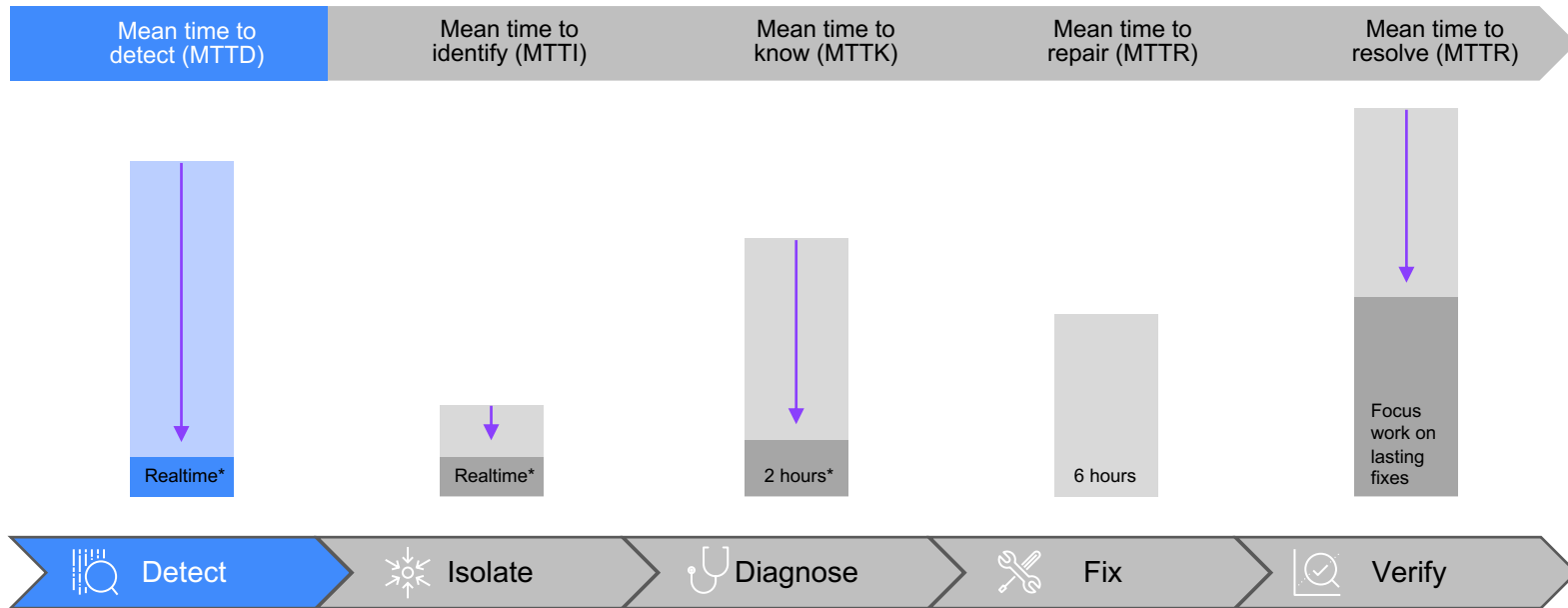
  
ibm

### ibm\_zos\_sysauto

The IBM Z System Automation collection includes roles and sample playbooks to access the IBM Z System Automation Operations REST server.

# The world with AIOps: Enterprise challenges in incident management & resolution



Incident management workflow

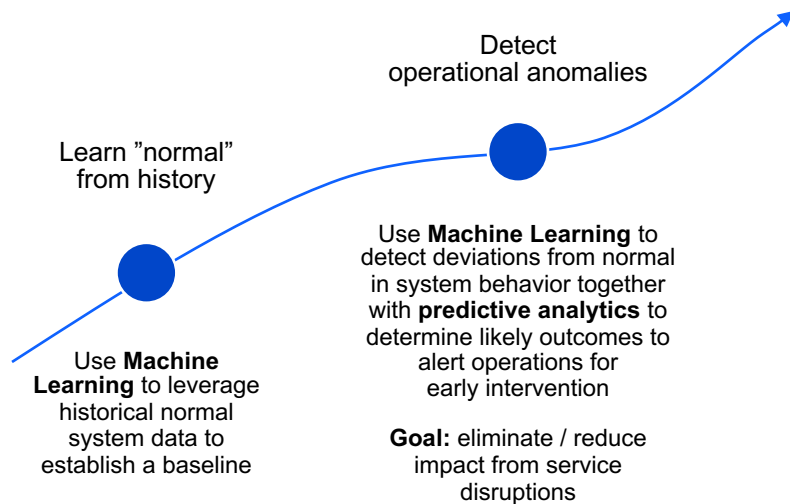
\*Potential impact





# Anomaly detection overview

## IBM Z Anomaly Analytics with Watson

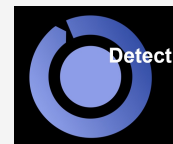


### Learning "normal" from history

- Data is normalized to remove unwanted periods
- Data seasonality: fine grained models require vast amounts of data – difficult to obtain due to workload, business, and hardware changes

### Detect operational anomalies

- Anomalies don't always mean there is a problem, anomalies mean something is different



# IBM Z Anomaly Analytics with Watson

## **Environment Modelling**

Understand and visualize normal behavior for your environment subsystems and messages

## **Metric Anomaly Detection**

Detect anomalies in subsystem specific KPIs for Db2®, CICS®, MQ® and IMS®

## **Message Anomaly Detection**

Detect anomalies in occurrence, frequency, or sequence of system messages

## **Topology Service**

Visualize anomalous activity to accelerate problem isolation

## **Event Notification and Hybrid Correlation**

Notify operations of anomalous behavior and correlate the events with IBM Cloud Pak for Watson AIOps





# Education & Co-creation

# The IMS organization is deeply committed to fostering your educational journey



## Insight #1

IMS remains committed to providing our internal and external communities with the tools they need to leverage their skills and promote long term success.

*“Fast responses and detailed research and investigation”*

— Major Electronics Company

## Insight #2

IMS is backed by a highly qualified, deeply knowledgeable world class support team.

*“My experience has been the IBM IMS Support staff is very professional, very prompt and thorough in researching our issues and providing us a fix in a timely manner.”*

— Major US Financial Company

*“Great professional response in a timely manner. Prompt, professional, knowledgeable assistance.”*

— Major Banking Company



Education content  
has been seen 49,177  
times (and counting)...

Media has been played  
for 228,347 minutes  
on 22,457 occasions  
(and counting)...

# Education

## IMS Central

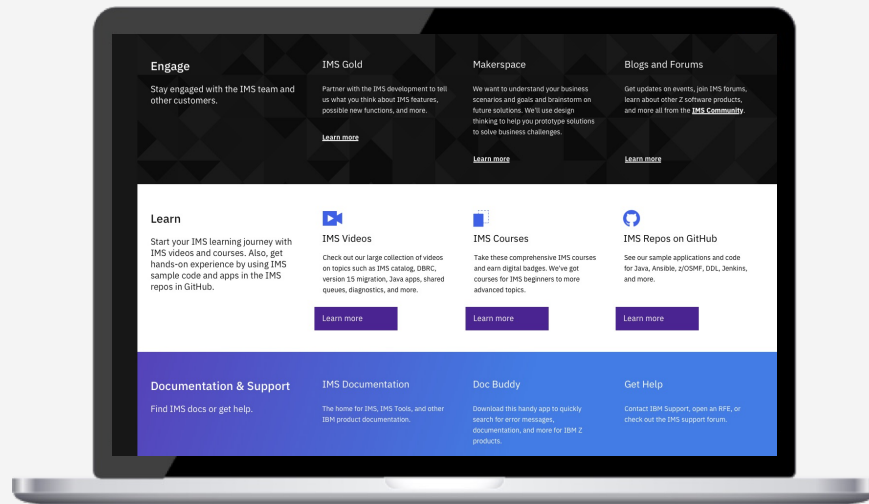
IMS Central an easy-to-use hub with links and information on IMS and supporting technologies, documentation, education, support, and more.

### Content includes:

- White papers
- Videos
- Comprehensive online courses
- GitHub repository references
- Support site references

### Topics include:

- Red Hat® Ansible® and IBM Z®
- Java™
- z/OS® Connect
- IMS fundamentals
- Fast Path
- Migrating to IMS 15
- IMS diagnostics
- Shared queues
- IMS catalog



Scan the QR code or visit [IMS Central](#) to learn more

# Education

## Our commitment to you...



1.

Drive knowledge



2.

Enable growth



3.

Provide resources



4.

Promote long-term  
success



Scan the QR code or visit [IMS Central](#)  
for more information



Contact the IMS PM team to help enable a more detailed  
conversation with your client





We want to help you  
modernize your IMS assets  
to efficiently solve for your  
business needs.

# IMS Makerspace

A multi-day framework that emphasizes IMS modernization and incorporates education of assets, design thinking exercises and a potential POC & Production delivery.



## Education



Understand the assets available for modernizing the existing IMS System



## Design Thinking

Reflect on current pain points and business scenarios best related to specific Makerspace agenda



## Prototype

Use customer assets to create and deliver on a Prototype that solves a business need



Optional



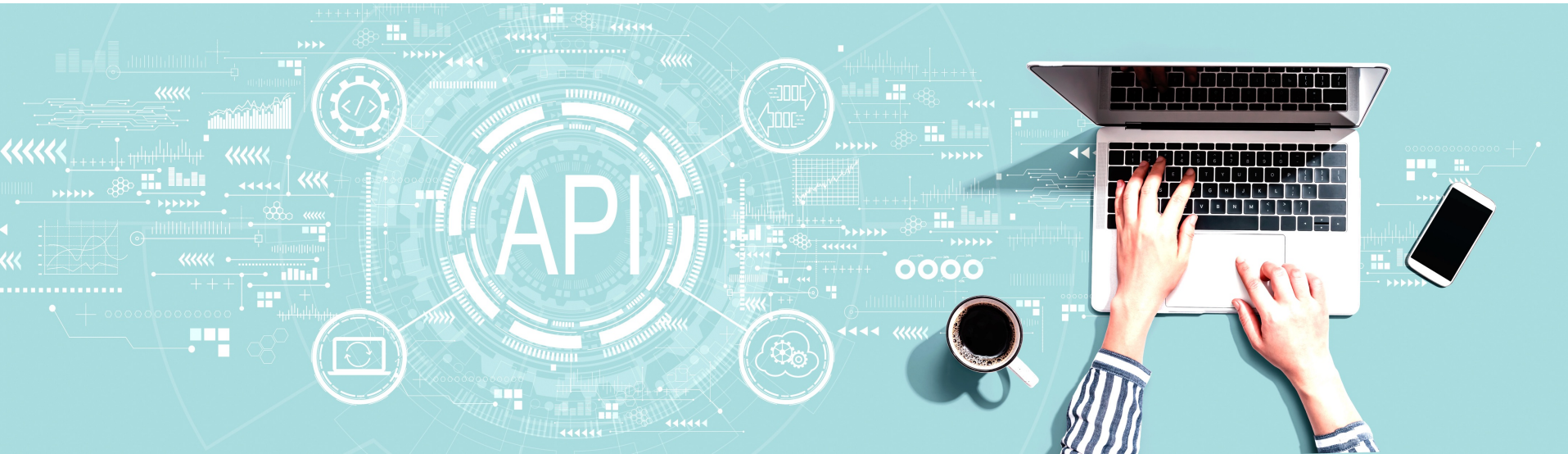
## Production

Solve a complex use case(s) and deploy into production

# Potential Makerspace Offerings

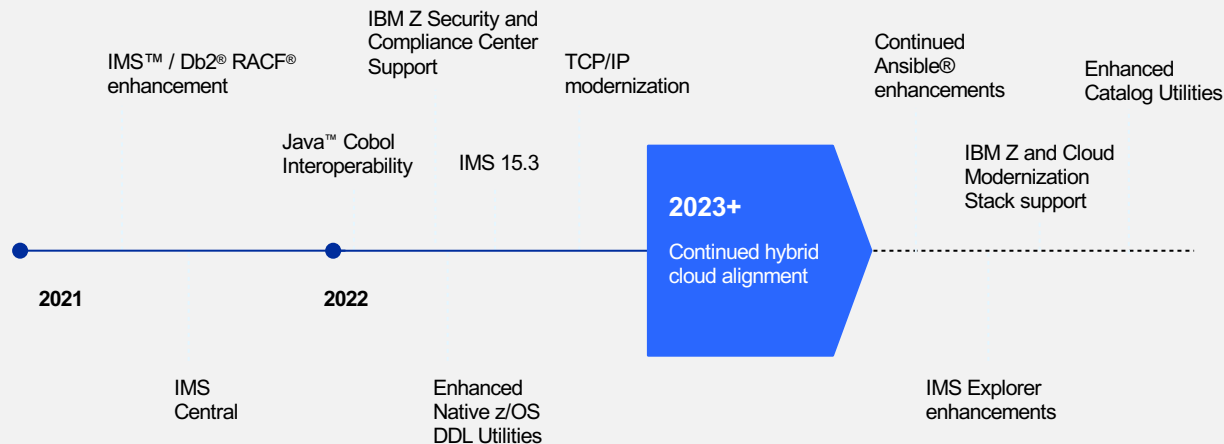


- **API**  
Open IMS transaction and database access as APIs
- **Open Database**  
Access to IMS DB with JDBC and SQL  
Administrate IMS database with catalog and DDL
- **Java in IMS**  
Extend existing or develop new IMS applications with Java
- **DevOps and Automation**  
Integrate IMS assets into enterprise DevOps pipeline. Automate IMS process with Ansible



# Confidence now.

# Confidence in the future.



## IMS trending topic areas:

- IBM Z Anomaly Analytics
- IBM Z Cyber Vault
- Event driven architecture support
- Data virtualization support

# Thank you



**Deepak Kohli**

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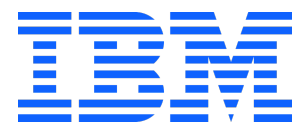
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