

Architecting for the Future with the Mainframe

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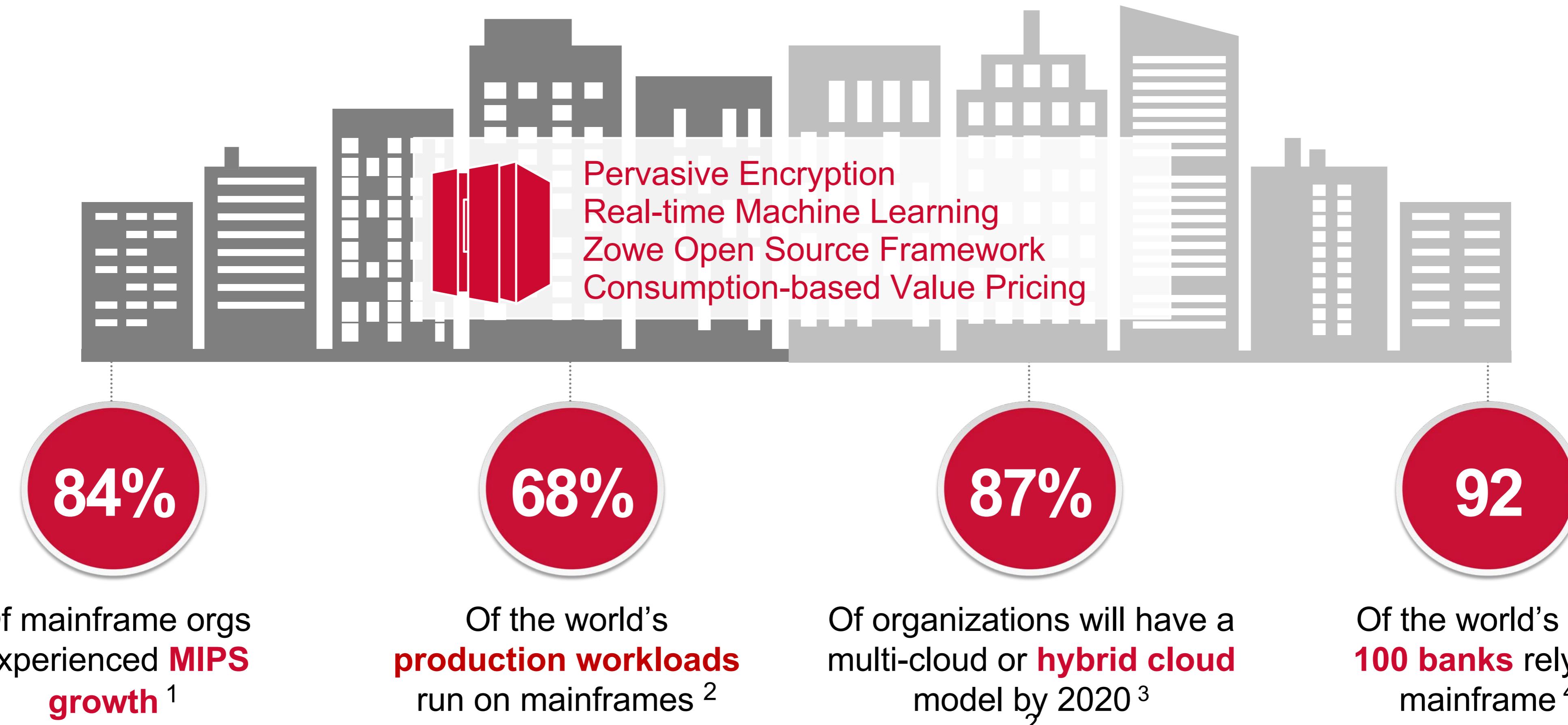
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Our View of the Mainframe Market

The backbone of organizations has become a platform for innovation



1. New: Arcati Mainframe Yearbook 2019: <http://www.arcati.com/newyearbook19/newyearbook.pdf>

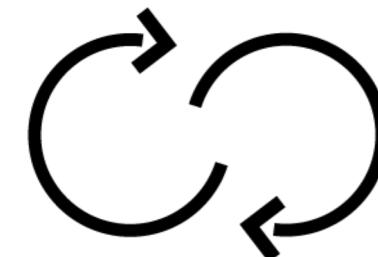
2. IBM Mainframe ushers in a new era of data protection, July 2017: <https://www-03.ibm.com/press/us/en/pressrelease/52824.wss>

3. Gartner - Market Insight: Making Lots of Money in the New World of Hybrid Cloud and Multicloud, 2018

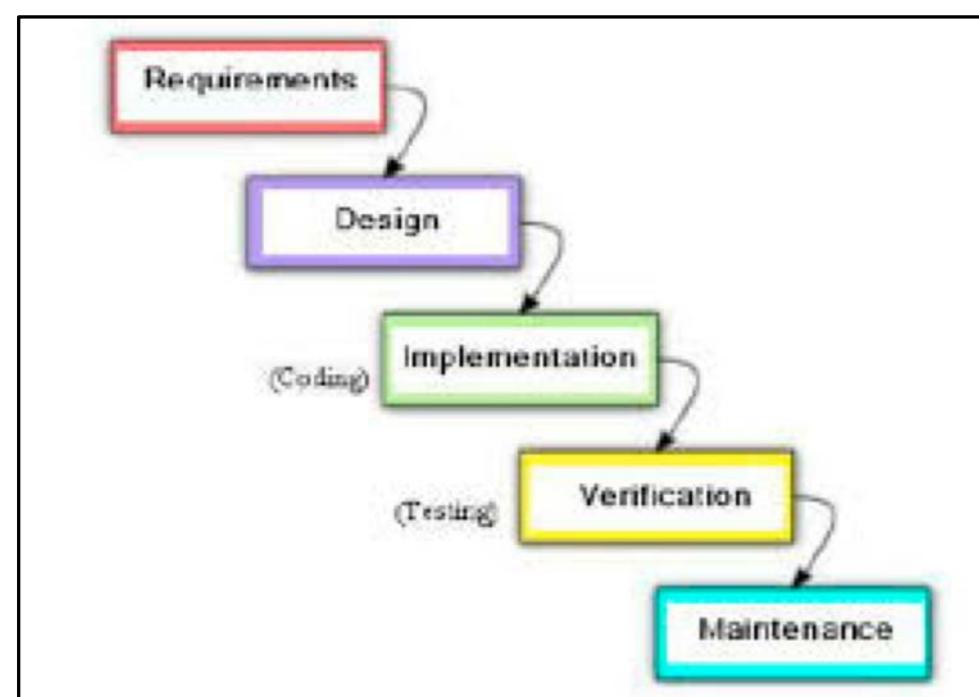
4. SHARE, "Mainframe Matters: How Mainframes Keep the Financial Industry Up and Running", April 2018: <https://www.share.org/blog/mainframe-matters-how-mainframes-keep-the-financial-industry-up-and-running>

Mainframe Challenges

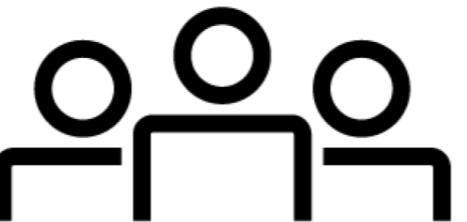
Processes



Old ways of working,
once state of the art, are
now outdated



People



As the mainframe workforce continues to age and retire, a skills shortage is looming



Tools



Traditional tools don't appeal to next gen developers nor provide high productivity

```
Menu Utilities Compilers Options Status Help
ISPF Primary Option Menu
Option ==> 0

0 Settings Terminal and user parameters User ID . : SCOMST0
1 View Display source data or listings Time. . . : 14:53
2 Edit Create or change source data Terminal. : 3277
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
5 Batch Submit job for language processing Appl ID . : ISR
6 Command Enter TSO or Workstation commands TSO logon : DBPROC9G
7 Dialog Test Perform dialog testing TSO prefix: SCOMST0
9 IBM Products IBM program development products System ID : S0W1
10 SCLM SW Configuration Library Manager MVS acct. : GROUP2
11 Workplace ISPF Object/Action Workplace Release . : ISPF 6.1
12 z/OS System z/OS system programmer applications
13 z/OS User z/OS user applications

Enter X to Terminate using log/list defaults
```

Striking the Right Balance

Innovating while keeping the business running

Example:

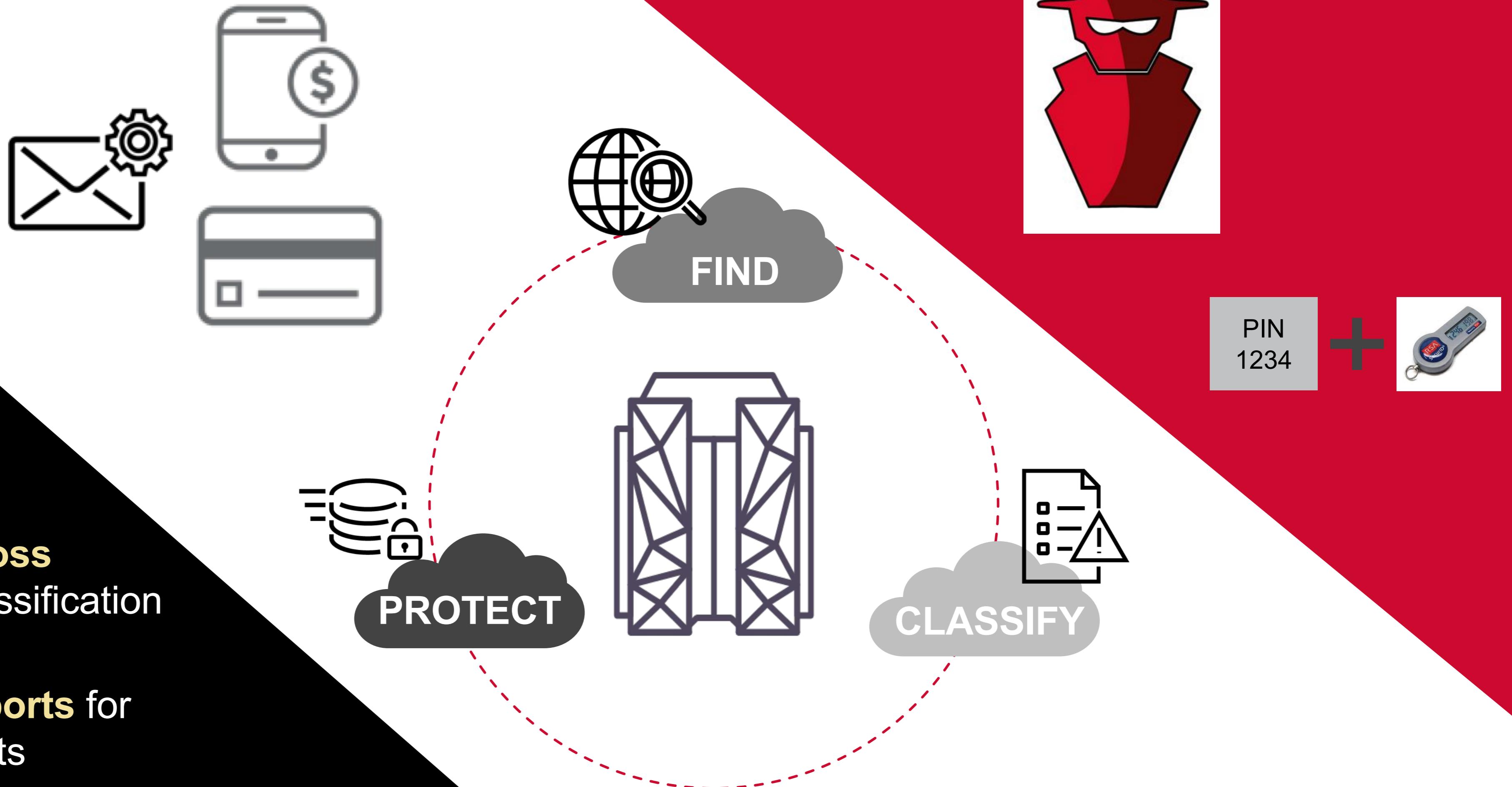


Our Balancing Act

	Modernize	Innovate
DevOps and Application Development	CA Development Environment for z CA Endevor support for Git/Jenkins	CA Brightside CA Continuous Delivery for IBM Z
Intelligent Operations and Management	Specialty Engine Support - IDMS, etc. Modern UX deployments	CA Mainframe Resource Intelligence CA Mainframe Operational Intelligence CA Dynamic Capacity Intelligence
Enterprise-wide Security and Compliance	Pervasive Encryption Day 1 Support: CA ACF2 and CA TopSecret	CA Data Content Discovery CA Trusted Access Manager for z

Security & Compliance Balance

- ✓ **Multi-factor authentication** — additional layer of trust for privileged user access
- ✓ **Data discovery across mainframe**; data classification by sensitivity level
- ✓ **Comprehensive reports** for compliance and audits
- ✓ **New data insights** available for critical business decisions



AIOps Balance

- ✓ Enhanced products with **modern visual analytics**, dashboards, and reports
- ✓ Solve complex issues quickly with the most comprehensive **contextual intelligence**
- ✓ Drive **self-healing systems** through automation



DevOps Balance



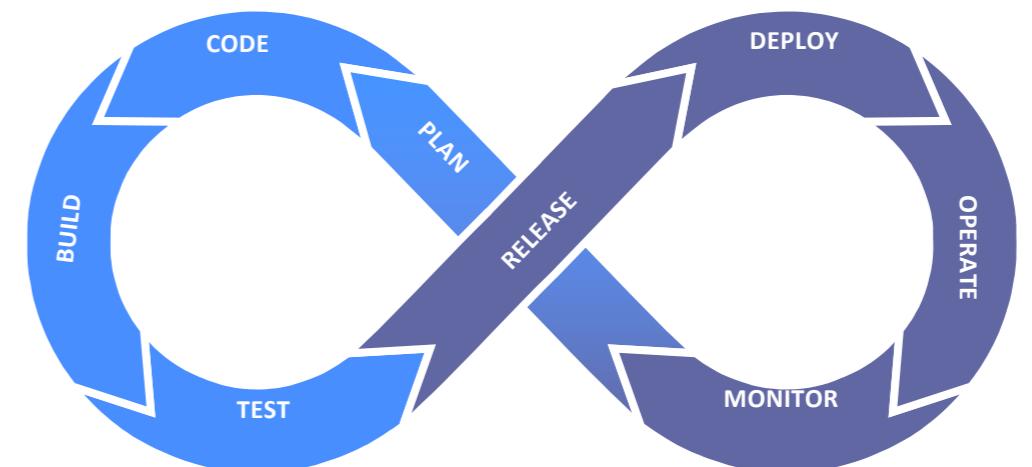
- ✓ **Core Zowe** includes API Mediation Layer, CLI, and Web Desktop.
- ✓ **CA Endevor Plugin** to Zowe + **integration** with enterprise GIT repository

(Additional Integrations to popular Agile, CI/CD and pipeline management tools)

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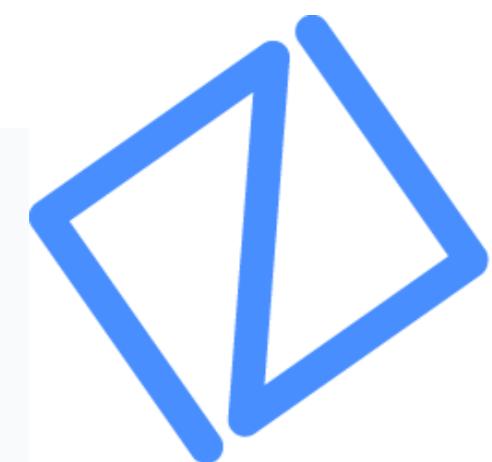


CA Endevor®



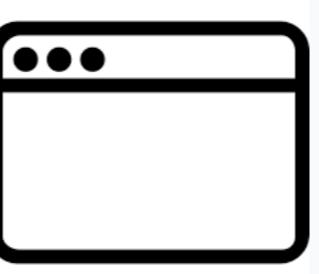
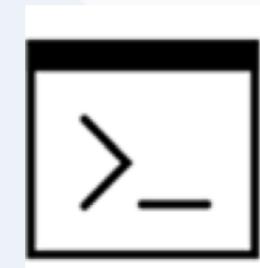
BROADCOM®





Zowe

Open source mainframe interface for the *next generation*



- ✓ Bridges enterprise devops to the mainframe
- ✓ Shifts the mainframe balance of power from vendors/proprietary to community/OSS
- ✓ Makes mainframe an exciting career choice

ABOUT ZOWE

- Part of Linux Foundation's Open Mainframe Project (OMP)
- First open source project based on z/OS
- Four main components:
 - **Command line interface (CLI)**
 - **API Mediation Layer**
 - **Web UI**
 - **Microservices**
- Initial contributions from IBM, Broadcom, Rocket
- Over 2,500 downloads
- v1.0 released February 11th
- Zowe.org

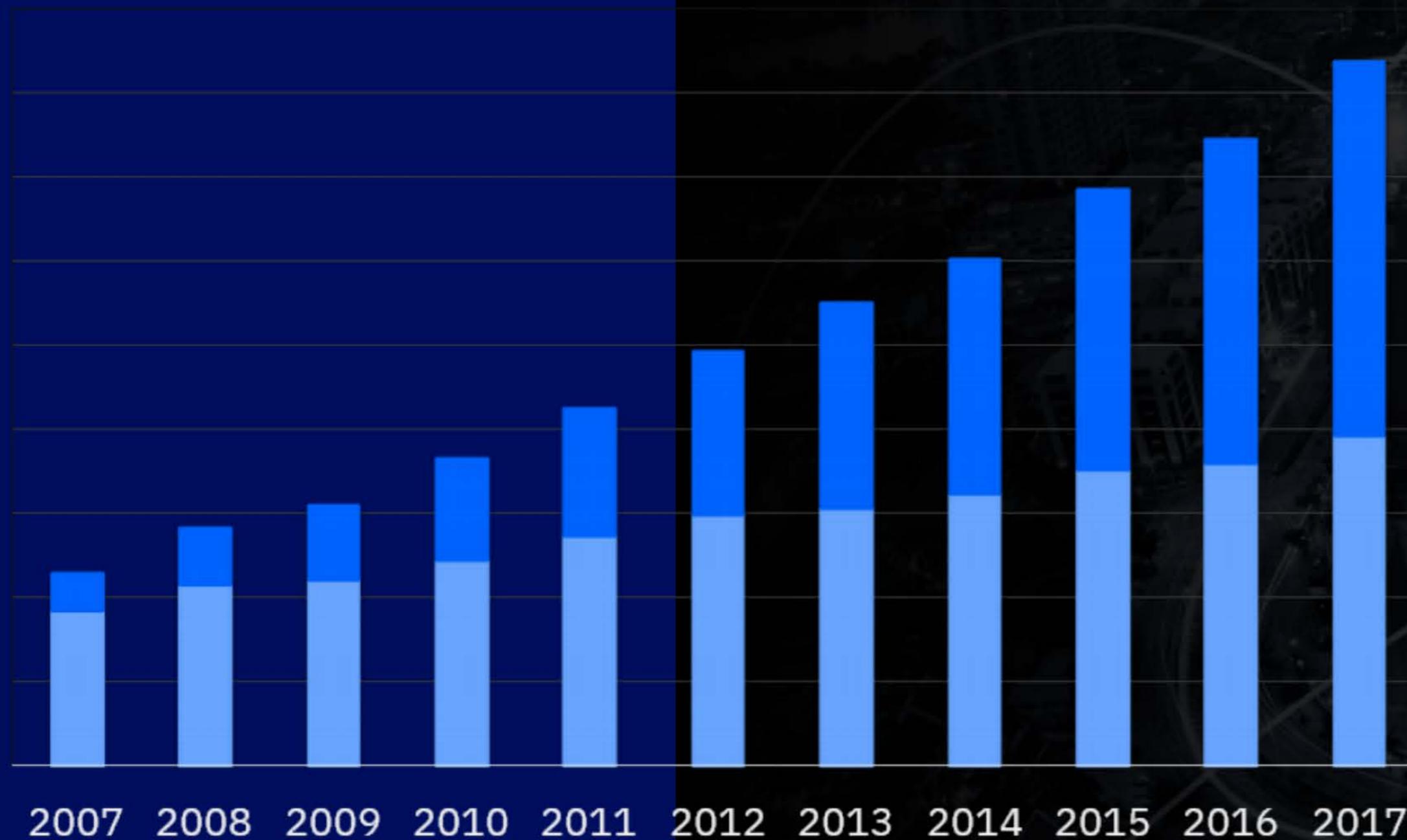
Mission To Modernize

**Tarun Chopra, Director, IBM Z
Offering Management**



Clients increasing momentum with IBM Z

**Continuous Reinvention of Enduring
Platforms for Business**



Workload as measured by installed Million Instructions Per Second (MIPS)

30 billion
transactions

400 million
retail
transactions

1 million
hotel nights

29 billion
ATM
transactions

ANNUALLY
87% of all
credit card
transactions

90% of all
airline
reservations

DAILY

Driving IBM Z into the future



IBM to use Samsung 7nm EUV for Next-Gen POWER and z CPUs

- *"We are seven quarters into the z14 cycle and the program continues to track ahead of the prior program. We had strong growth in volumes or shipped MIPS, and new workload MIPS continue to outpace our standard MIPS,"*
- *"our Single Frame z14 designed specifically for cloud datacenters remains a growth driver"*
 - IBM CFO James Kavanaugh (1Q19 earnings report)

IBM Z: Designed for the future of digital business



Quantum Computing

Seamless integration for hybrid quantum-classical applications to tackle previously intractable problems.



Edge and IoT

A data hub for the enterprise while extending data protection to adjacent compute nodes.



Federated Analytics

Leverage data in place across the business and the ecosystem to drive immediacy and value creation.



Hybrid Cloud

Every service orchestrated in the cloud, securely delivered at speed and at scale



Enterprise Blockchain

Engineered with enterprise qualities of service and integrated in to the core of the business.



Pervasive Security

End to end data protection in all clouds underpinned by provenance and proof, delivered transparently

IBM z13/z13s



Built for the
Mobile Enterprise

Introduction of SMT
for Linux workloads

Introduction of SMC-R
for memory to memory
communication

**Single Instruction
Multiple Data (SIMD)**

Up to 141 cores
RAIM memory up to 10 TB
Increased System I/O Performance
Flash Express

IBM z14



Pervasive Encryption

100% encryption with no application
changes

Cognitive Solutions

Integration with insight from z data delivers
new business value

Simplified user experience

without mainframe skills requirements

Industry Standard Form Factor

Delivers environmental savings while increasing
options for data center planning

Faster I/O and compression

Improves data serving performance

Up to 170 cores
RAIM memory up to 32 TB
Enhanced SMT2 efficiency

IBM Z Horizons



Cyberthreat Secure Z

System build for Data Protection and Data Privacy.
Quantum-Safe and homomorphic encryption,
system hardening, embedded AI for security

Modular System Design

Standardization across the family

Multi-cloud Ready, Public, Private, Hybrid

On and Off-Chip Accelerators

Inferencing Acceleration, Compression,
Cryptography, Sort, Resiliency

Significant investment on Resiliency.

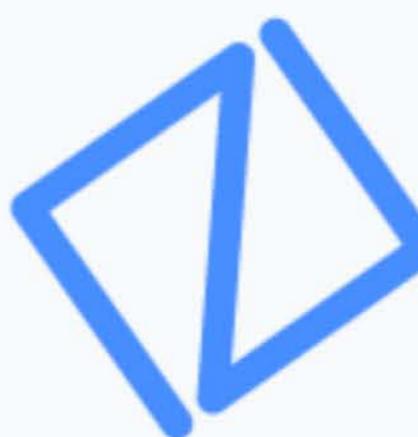
Availability and continued platform simplification

Increased System capacity, memory, and I/O
functions

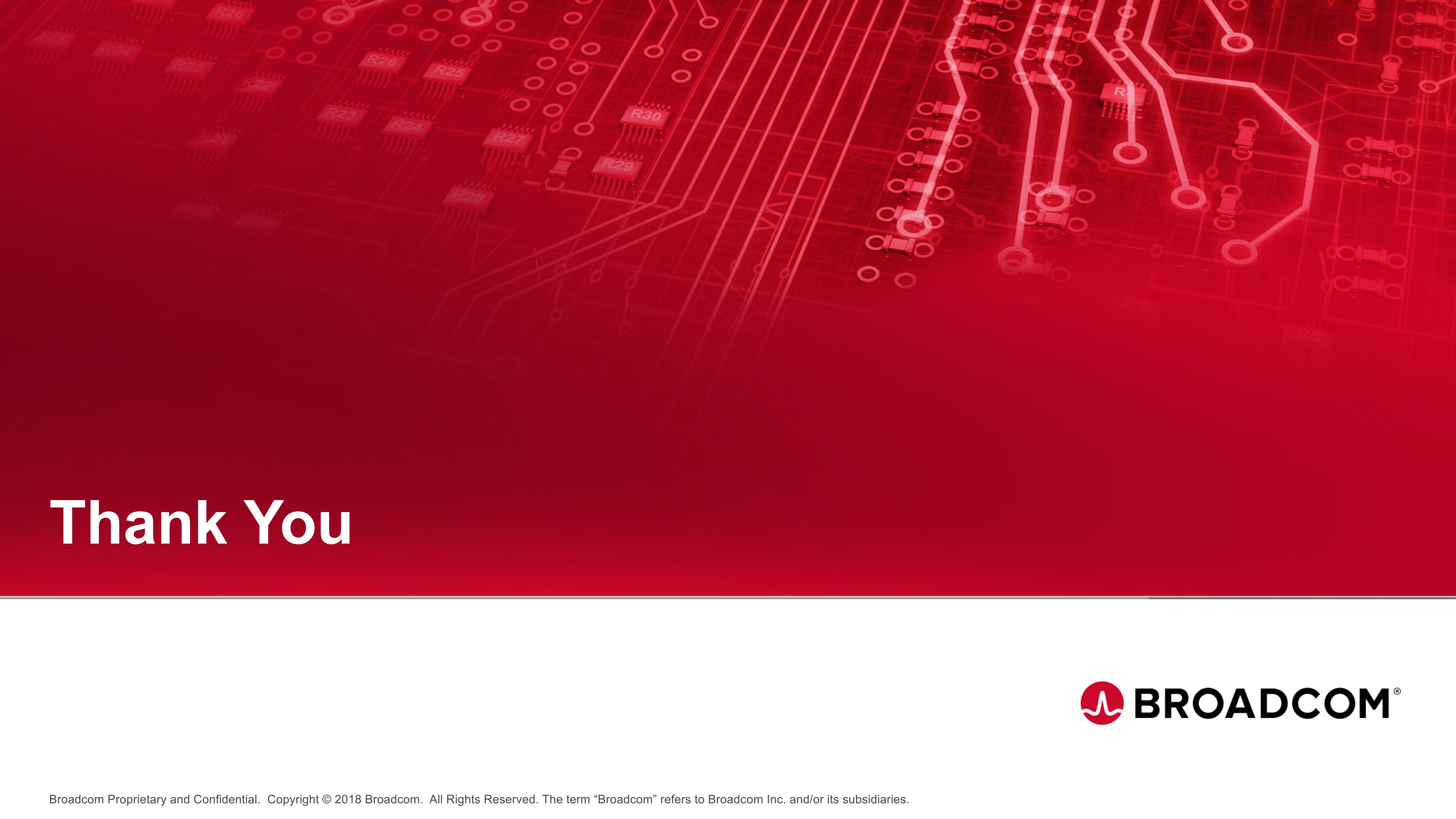
Introducing Zowe (Ecosystem and Simplification)



- An extensible framework for connecting applications and tools to mainframe data and applications.
- Aims to make the mainframe an integrated and agile platform within the changing IT architectural landscape.
- First open source project on z/OS. All code is licensed under the Eclipse Public License version 2.0



Zowe



Thank You

