Welcome to Binghamton!

VM Workshop 2022

It's great to be back!

Who is this guy?

- Gerard Howells – Recovering Systems Programmer
- Funny accent
- ~10 Years on the Mainframe
- 1st love is VM!

kyndryl

Thank you Bing!

Has it really been 50 years?

But virtualization is new isn't it?

Why has VM persisted?

Culture and Community

The Future

The VM Workshop Planning Committee

Bill Bitner

Marc Smith

Len Santalucia

Marianne Eggett

Wilhelm Mild

Len Diegel

Chip Davis

Andy Hartmann

Mike Riggs

Dianne Griffin

Gonzalo Muelas-Serrano

Mike Giglio

Jim Moling

Bill Munson

Chuck Morse

Andrea Palmeri

Brian Hugenbruch

Kate Stringfield

Brian Jagos

Eric Schuler-Dalverny

Phil Tully

Rich Smrcina

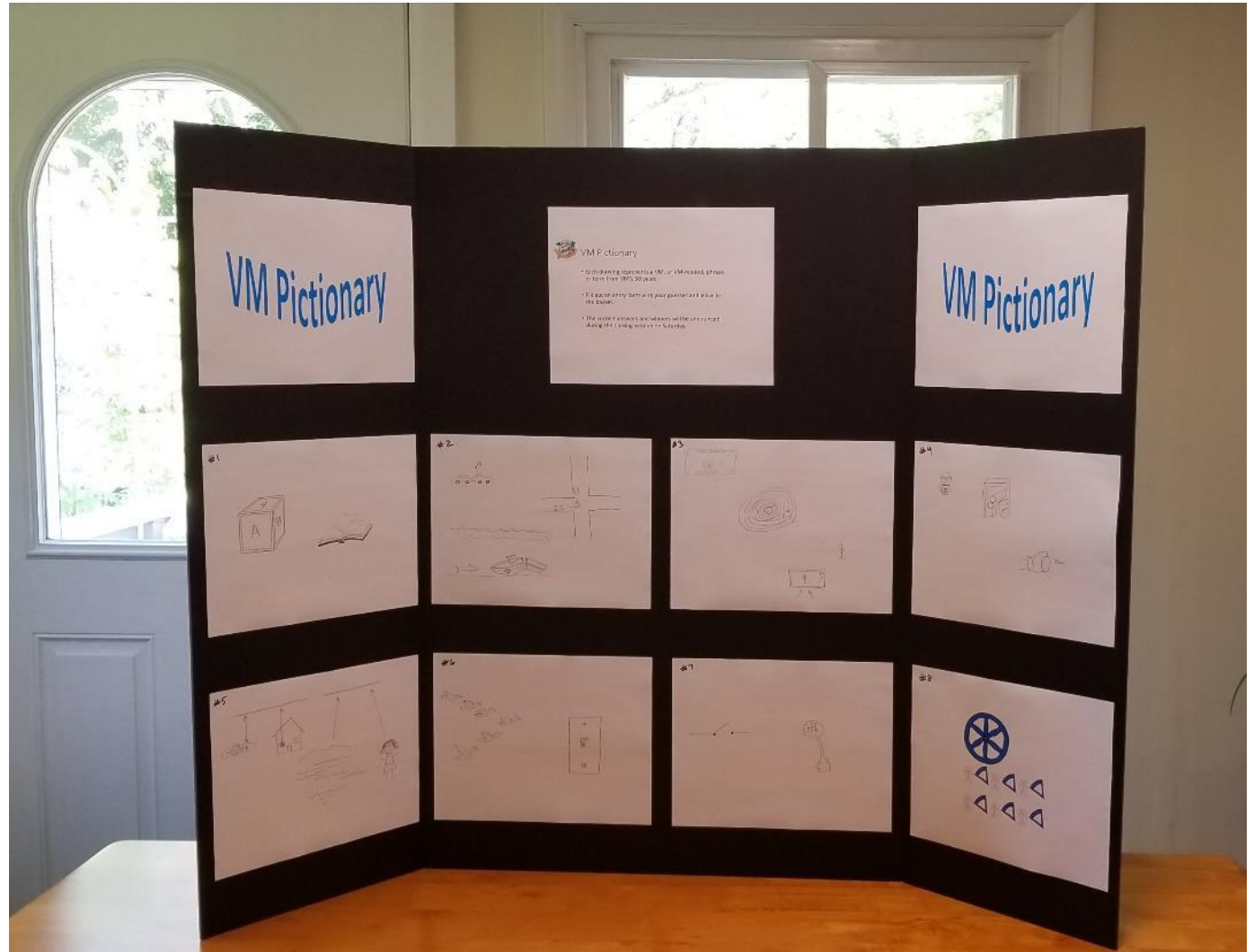Jacob Gagnon

VM Mobile Museum

- Be sure to check out the VMMM and other memorabilia

- Located in Biotechnology Building, Room 2201

VM Pictionary

- Each drawing represents a VM, or VM-related, phrase or term from VM's 50 years.

- Fill out an entry form with your guesses and leave in the basket.

- The correct answers and winners will be announced during the Closing session on Saturday.

- No professional artists were engaged in this, so set expectations appropriately.

- Located in Biotechnology Building, Room 2201.

Sponsors

BINGHAMTON

U N I V E R S I T Y

STATE UNIVERSITY OF NEW YORK

Harvey Stenger

President – Binghamton University

Keynote

VM Workshop

—

Kara Todd
Director of Linux, IBM zSystems and LinuxONE
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Tina Tarquinio
Director, IBM zSystems Product Management
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Digital transformation turns to reinvention

10 years of digitization in under **one year**

34%

16%

Global Disruption

Percent of business channels replaced by digital over the last decade

Enterprises that were slow to digitize were left behind

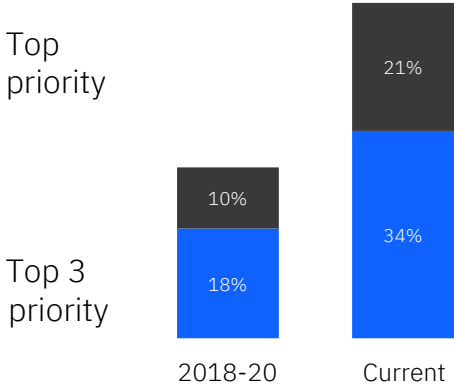**9 of 10** have now sped business digitization

Urgency to build new businesses that create new advantage

- Technological innovation
- Customer-centricity
- Ecosystem co-creation
- Sustainability

7 in 10

CEOs are driving large-scale change in value creation and ways of working

By 2026, half of revenue will come from businesses that do not exist today

Top priority

Top 3 priority

21%

10%

18%

34%

2018-20   Current

6 in 10

rank new business building as a top priority – doubling since the global disruption

Major challenges to address

... as digital transformation accelerates, extends to mission-critical processes

Manage increased complexity, given heterogenous IT/ clouds

– 75% users utilizing two+ public clouds

– 70% workloads not on public clouds

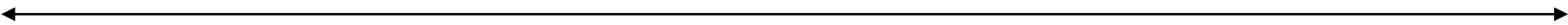– 20B internet-connected devices by '24

Derive value from an explosion of available data

– 2-3x growth in total data by '25

– Chief Data Officer role growing fast

– Top AI needs for decision making and automated business operations

Drive competitive operations, despite worker shortages

– 30% of innovation, client support, ecosystem and workforce, virtualized by '23

– 80% Enterprise agree that intelligent automation can improve business results[6]

Protect businesses from cybercrime: 40% increase in number of malicious security breaches in 2020
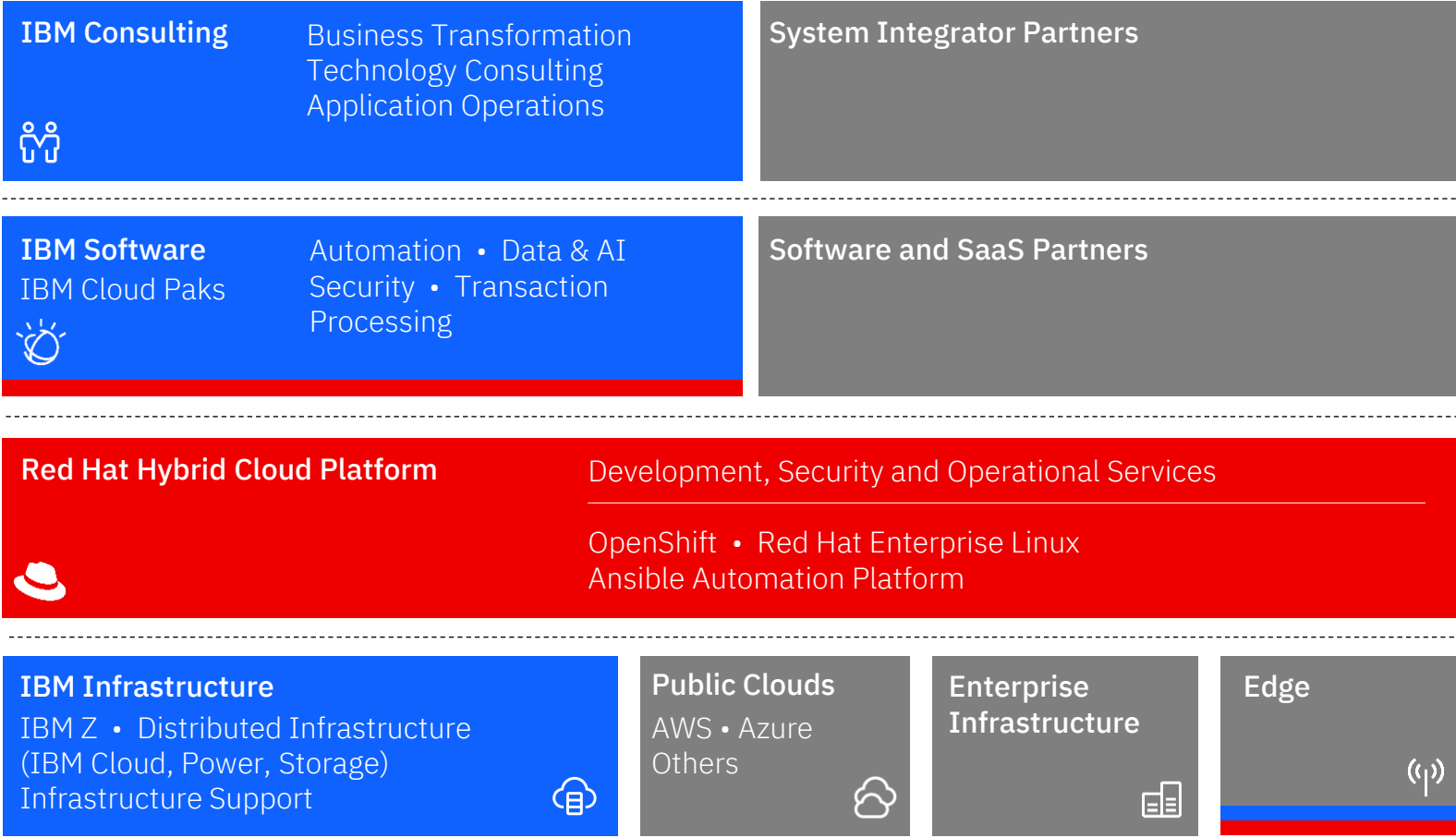
Be sustainable end-to-end: 85% of companies have a sustainability strategy, only 35% have acted on it

IBM approach for Hybrid Cloud and AI

Be the catalyst that makes the world work better

IBM Consulting

Business Transformation
Technology Consulting
Application Operations

System Integrator Partners

IBM Software
IBM Cloud Paks

Automation • Data & AI
Security • Transaction
Processing

Software and SaaS Partners

Red Hat Hybrid Cloud Platform

Development, Security and Operational Services

OpenShift • Red Hat Enterprise Linux
Ansible Automation Platform

IBM Infrastructure
IBM Z • Distributed Infrastructure
(IBM Cloud, Power, Storage)
Infrastructure Support

Public Clouds
AWS • Azure
Others

Enterprise Infrastructure

Edge

Hybrid Cloud differentiators with IBM Z & LinuxONE

IBM Z Benefits

Low Latency and Large Volume Data Serving and Transaction processing

Enterprise class infrastructure – Elastic, Scalable, Available and Resilient

Highest levels of Security and Compliance

Adoption Patterns

Enterprise Hybrid Cloud
2.4M containers-per-box

Colocation & Modernization with z/OS
7x shorter batch windows

Secure Cloud Native
Confidential computing

Extreme Consolidation and scalable Data Serving
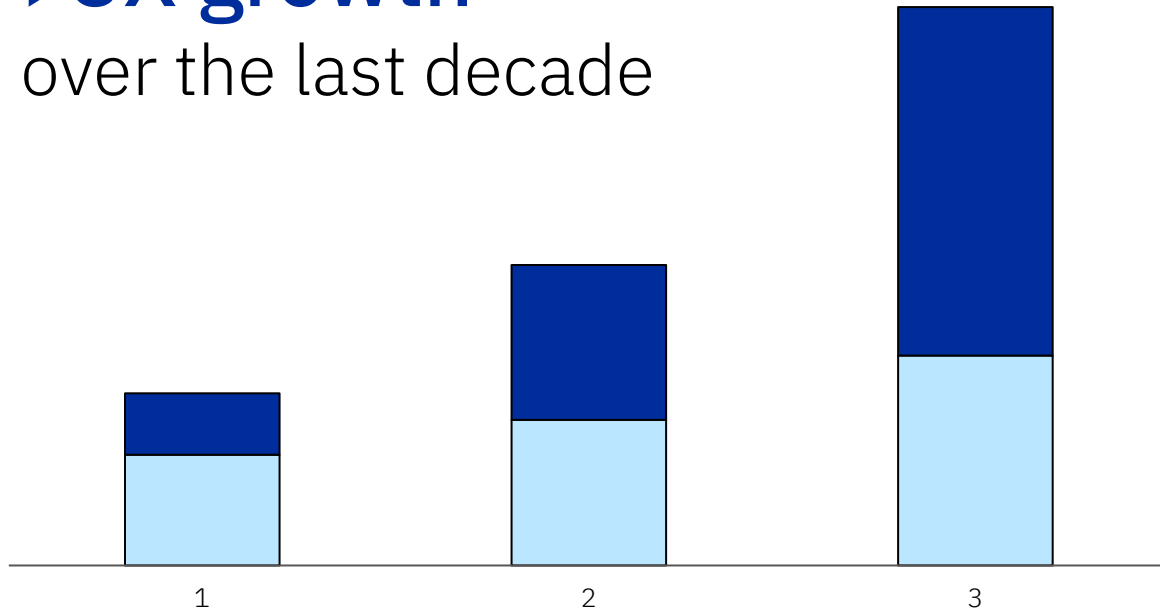69% lower Total Cost of Ownership

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99.99999% system availability

4:1 better data-center footprint
2:1 lower power envelope

3.8x better Java throughput

Enterprise grade. **Open** by design. **Secured** by IBM Z.

IBM Z: Increasing momentum in the era of Hybrid Cloud

>3X growth
over the last decade

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

Standard MIPS
Specialty MIPS

67 of the Fortune 100

45 of the world's top 50 banks

8 of the top 10 insurers

4 of the top 5 airlines

7 of the top 10 global retailers

8 of the top 10 telco's

24 of the top 25 countries by GDP*

*24 of the top 25 global countries ranked according to their GDP have public sector organizations that run on IBM Z or IBM LinuxONE

Enterprise-grade Linux

The best of **ENTERPRISE COMPUTING**	The best of **LINUX & OPEN**

- Dynamic Resource Allocation
- HW optimized virtualization
- Non-Disruptive Scalability
- Continuous Business Availability
- Operational Efficiency
- Trusted Security
- Data and Transaction Serving

- Freedom & Agility
- Standards Based
- Common tooling
- Speed of Innovation
- Developer Productivity
- Community Collaboration
- Quality of Software

Mongo as a Service on IBM zSystems – A large NA Bank

Solution elements

Function	On IBM zSystems
Deployment Catalog	Integrated with existing tools
Automation	Provision via Ansible / IBM CIC
Mongo Instance	Mongo Enterprise on IBM zSystems
OS & Virtualization	RHEL 8 / IBM z/VM
Encrypt Data @ Rest	H/W accelerated on IBM zSystems and Storage
Compression	H/W accelerated on IBM zSystems and Storage
FFIEC Appendix J	IBM Safeguarded Copy
Logging	Mongo Ops Manager

Solution benefits
- 50% more efficient in terms of data center space, power, cooling
- Support for Franchise Critical Applications
- FFIEC Appendix J Support for backup and restore via storage

Today
- In Production for an initial set of Mongo Applications

Future
- Expand to more Mongo deployments as use grows
- Apply same approach to Oracle, EDB, Kafka, Cassandra (ScyllaDB), OpenShift etc.

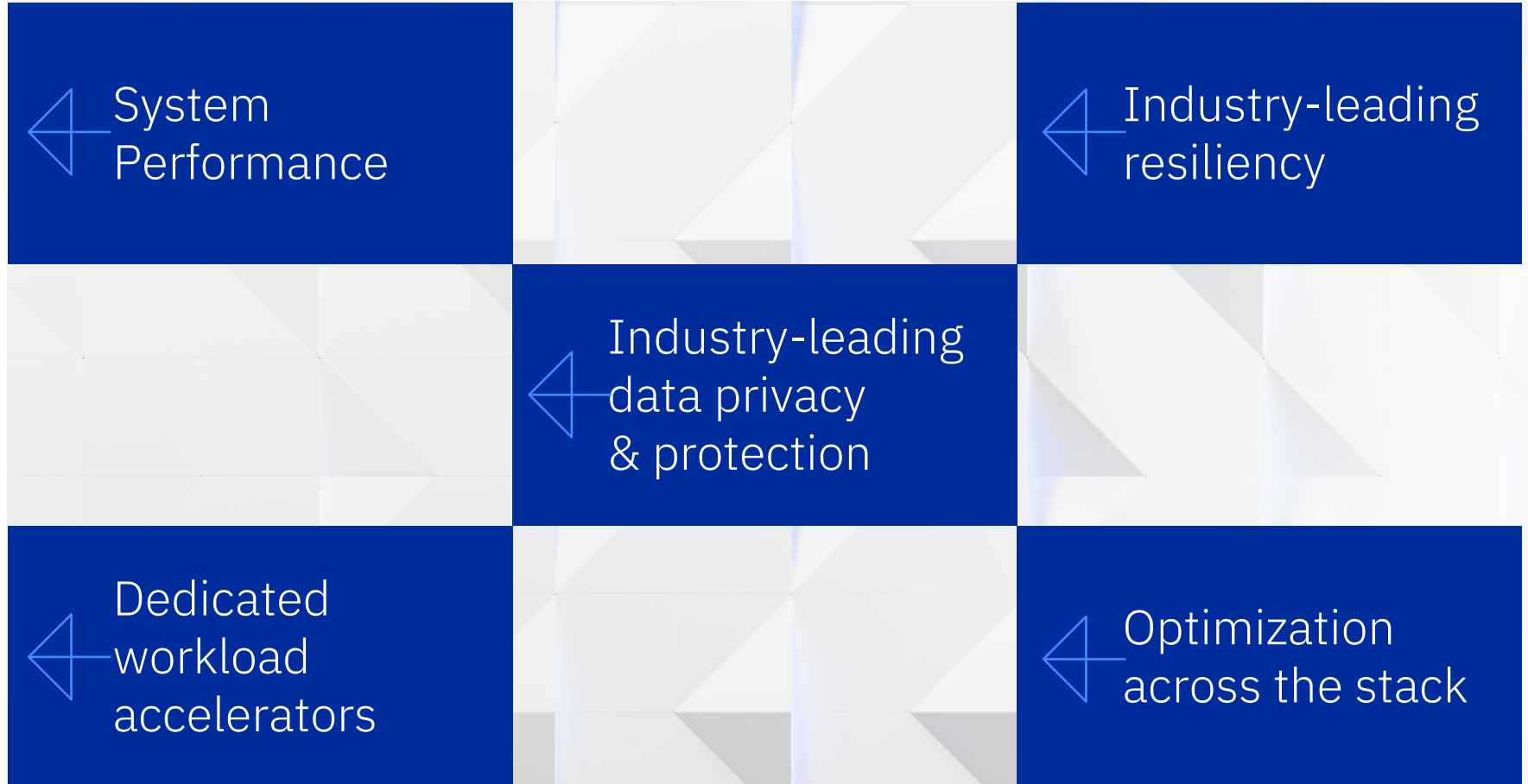**Business requirements from the large North American bank**
- FFIEC Appendix J compliant technology solution for Franchise Critical applications running MongoDB
- Sub-second recovery speed for multi-TB instances to meet strict RTO requirements

Tina Tarquinio
Director, IBM zSystems Product Management
tinatar@us.ibm.com

IBM Z design principles

Ensure IBM Z
remains the
premiere
data serving
and transaction
processing
platform through …

System
Performance

Industry-leading
resiliency

Industry-leading
data privacy
& protection

Dedicated
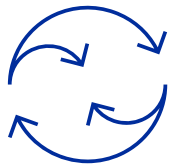workload
accelerators

Optimization
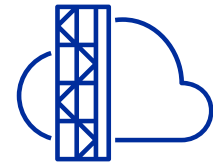across the stack

IBM z16 ™ is built to build

We built a powerful and secure platform for business.
Let's build the future of yours.

Predict and Automate for
Increased Decision Velocity

Secure with a Cyber
Resilient System

Modernize with
Hybrid Cloud

At the heart of IBM z16:
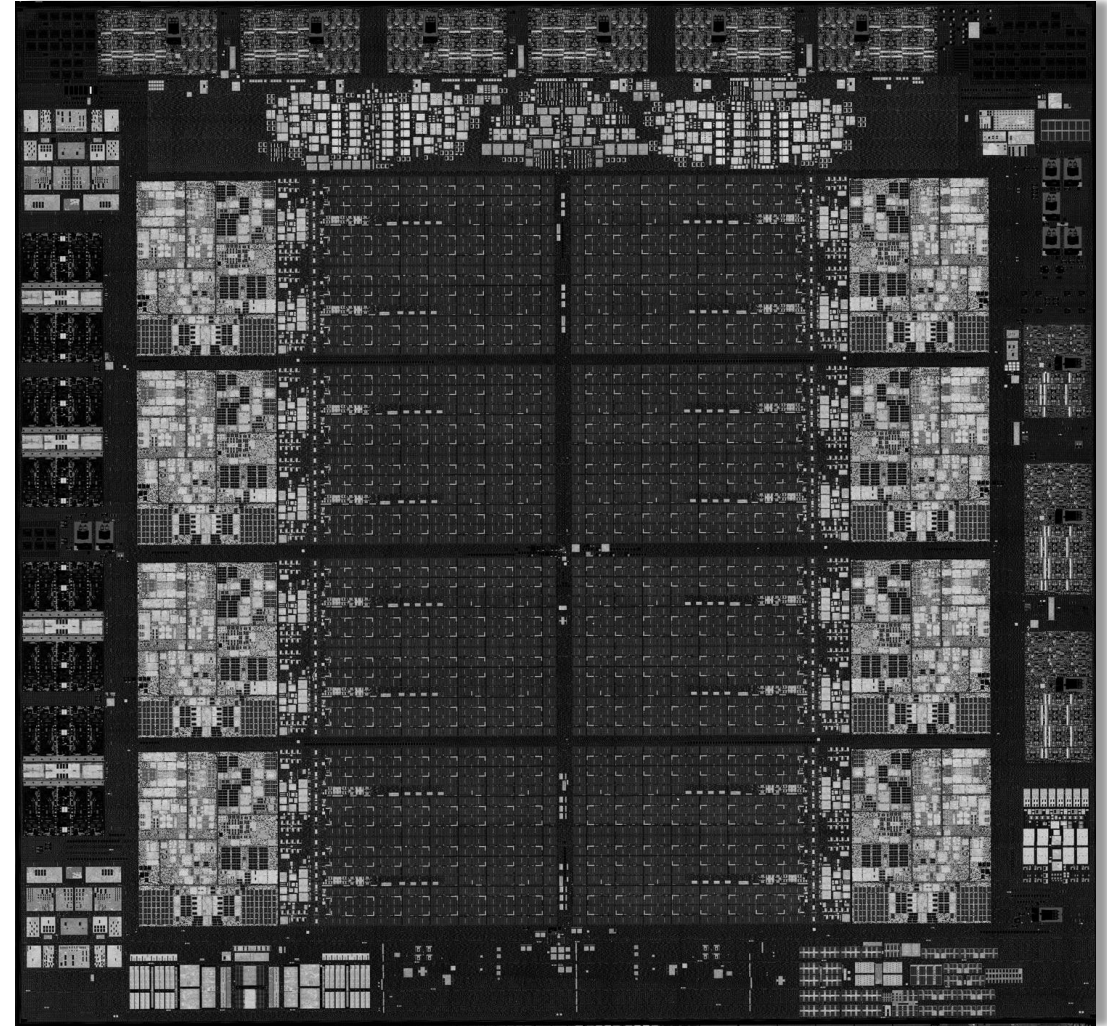# IBM Telum Processor

Optimized for enterprise workloads with embedded real-time AI insights

Performance and Scale

On-Chip Integrated Accelerator for AI

1.5x Cache growth

7nm, 5.2GHz

IBM z16
Built to build the future of business

Up to 200 Cores

11% per core performance improvement

17% total system capacity growth

25% more processor capacity per drawer

Up to 40TB memory

1 to 4 19-inch frames

[1,]see notes for claims

Design thinking
IBM z16 co-created with clients

70+
enterprises

IBM Z Sponsor user program

IBM Z Design Council

GM Advisory Council

Cross section of users
(geos, industries, size)

1 on 1 Interviews and Surveys

Hill value validation

Prototype evaluations

1100+
interaction
hours

2x more engagements over IBM z15
from developers, architects, to execs

Driven by early engagements across
IBM Z and LinuxONE

Innovations through cross-team
alignment from product management,
design, marketing, development, sales
and support

23
user
personas

Application Architect

Application Developer

Application Owner

Auditor

Chief Data Officer

Chief Privacy Officer

Chief Sustainability Officer

Cloud Architect

CTO, CIO, CFO, CISO / CIRO

Data Architect

Dev Ops Engineer

Director of Mainframe Datacenter

Evidence Provider

Infrastructure Architect

Line of Business Owner

Security Architect

System Admin

VP of AI / Analytics

VP of Application Development

VP of Infrastructure

Thank You

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