Microsoft Tech Summit

Build your skills with the latest in cloud technologies
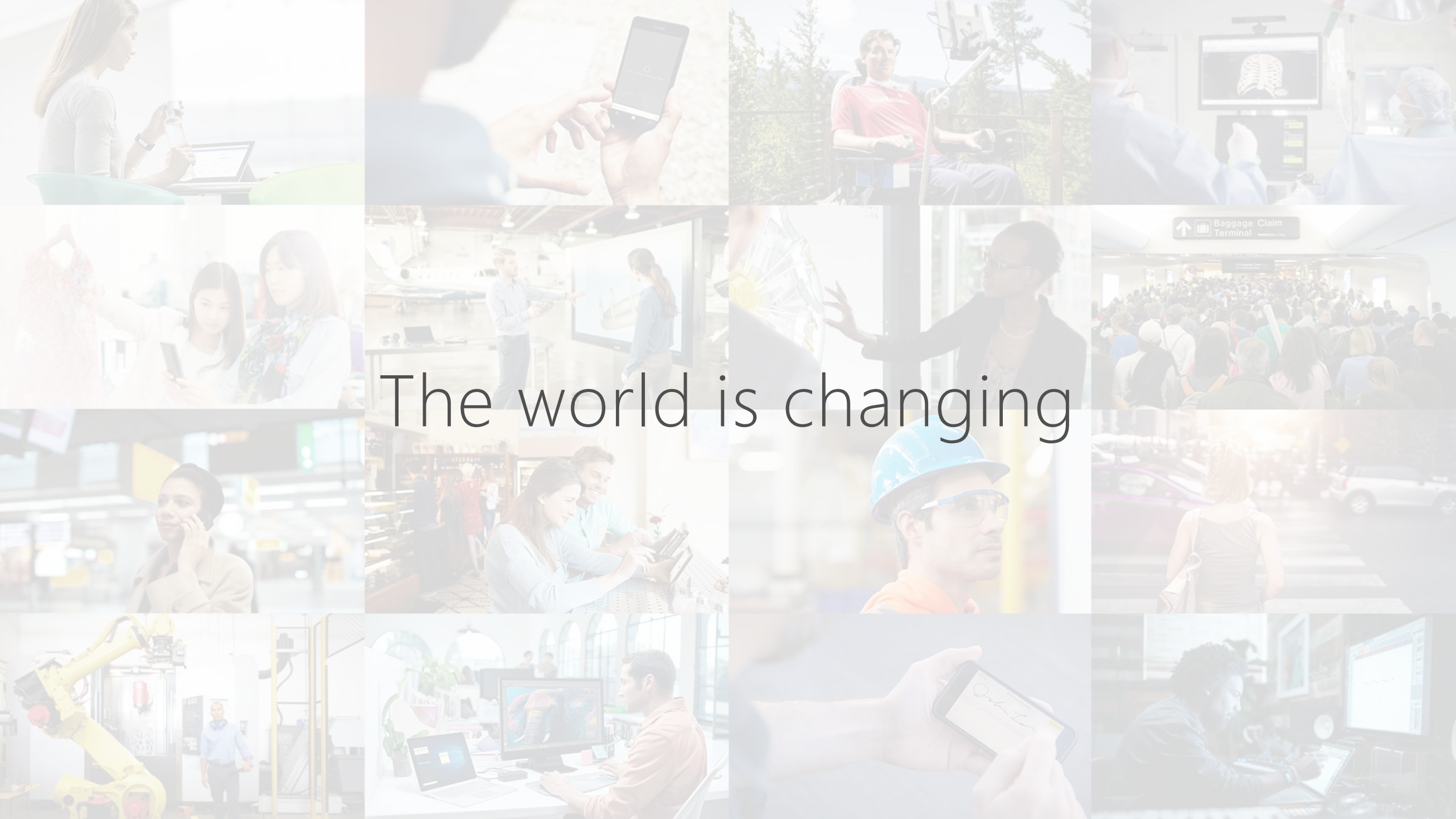
The world is changing

Data will grow to **44 ZB in 2020**
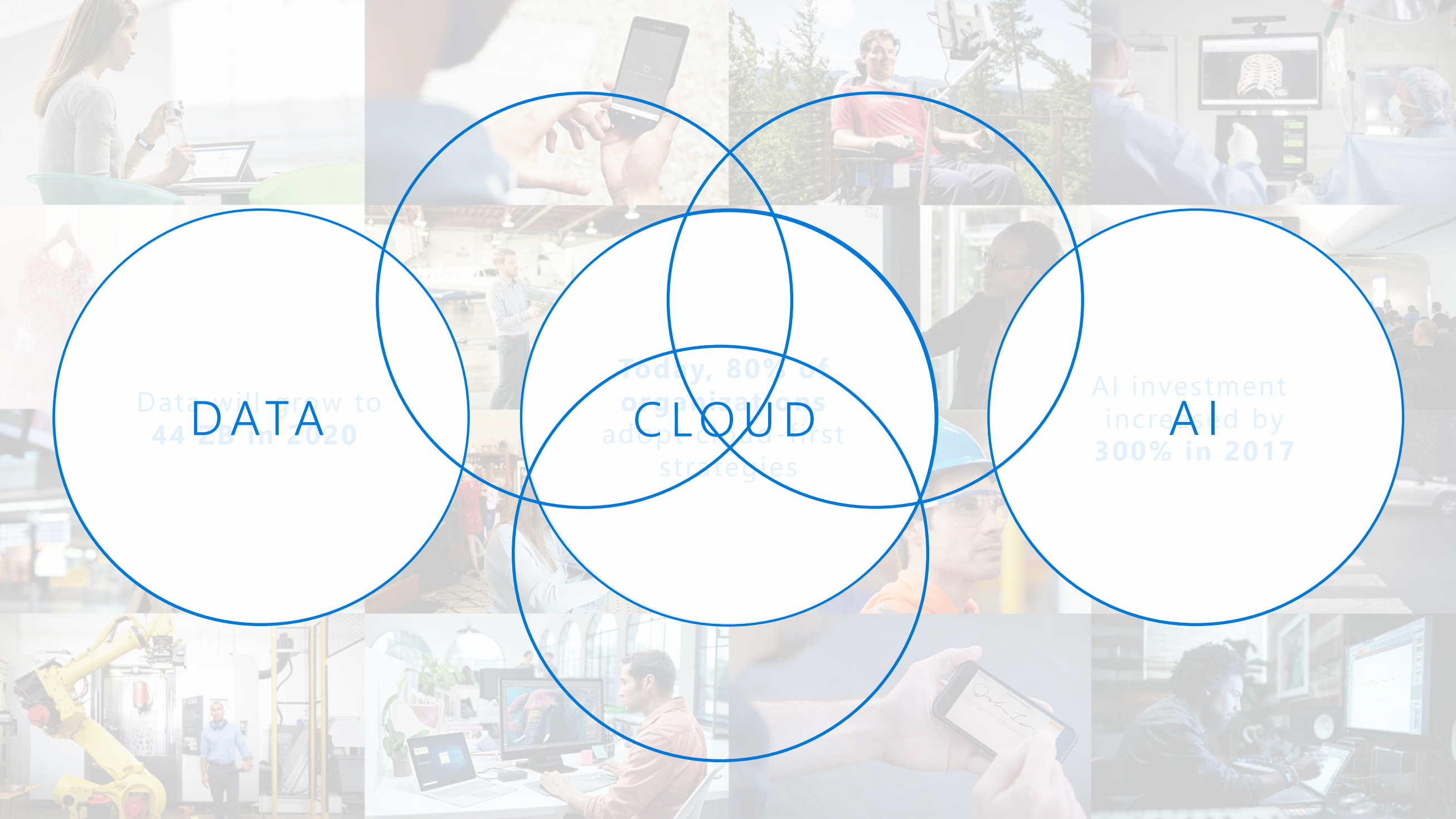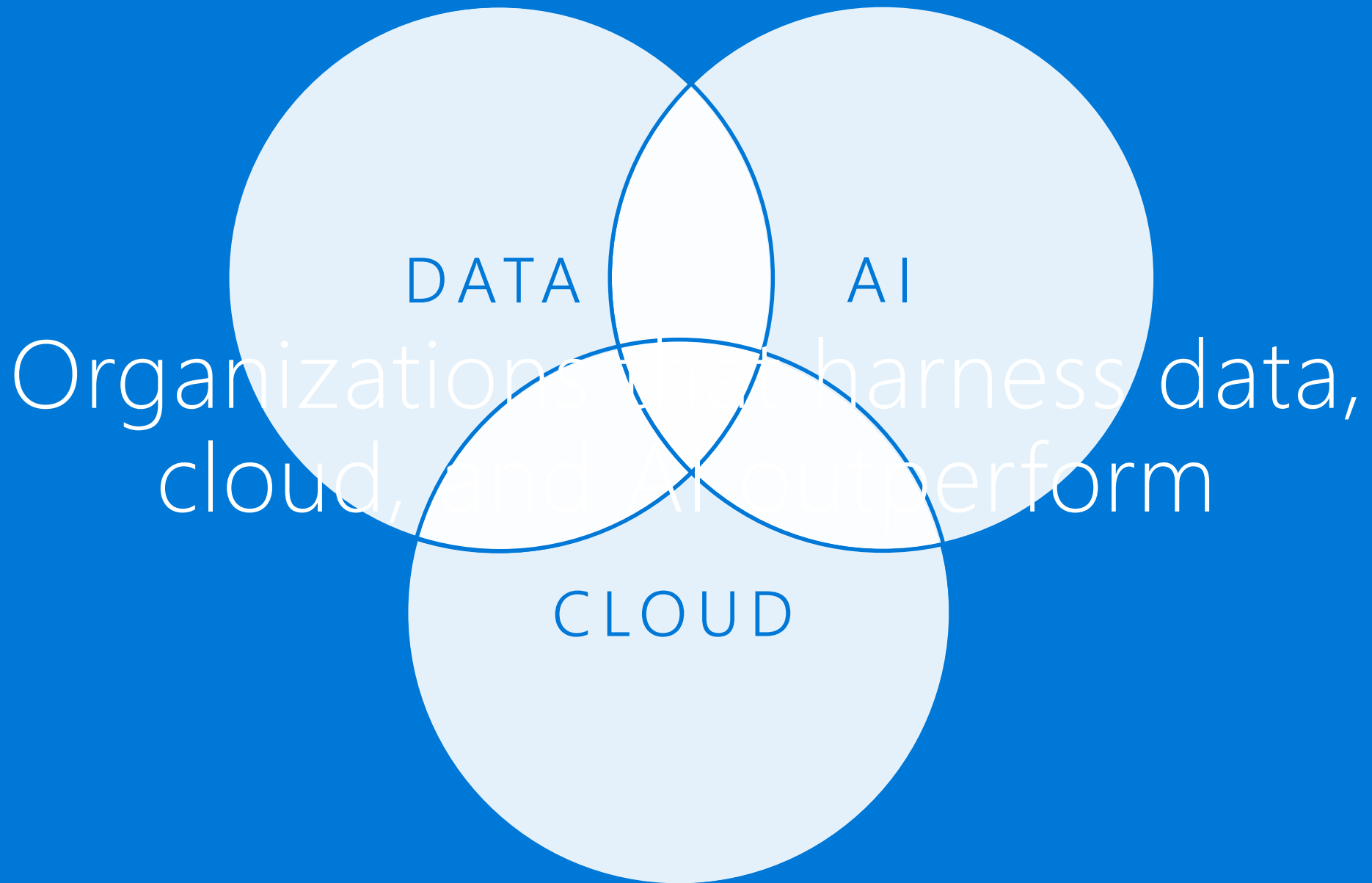
Today, 80% of organizations adopt cloud-first strategies

AI investment increased by **300% in 2017**

DATA

AI

CLOUD

Organizations that harness data, cloud, and AI outperform

Companies surveyed include well-known enterprises across key industries

Financial services

VISA · citi · AMERICAN EXPRESS · CHASE · Goldman Sachs · Fidelity INVESTMENTS

Retail

THE HOME DEPOT · COSTCO WHOLESALE · Walmart · TORY BURCH · Walgreens · Levi's

Manufacturing

3M · AIRBUS · KIA · tyco · GE · PIRELLI

Consumer goods

Nike · pepsi · Campbell's · MATTEL · HERSHEY'S · P&G

Source: Keystone Strategy interviews Oct 2015 - Mar 2016

Organizations that harness data, cloud, and AI outperform

Nearly double operating margin

$100M in additional operating income

They out-innovate

Jet   DocuSign®   Honeywell

They rely on a modern data estate

THE MODERN DATA ESTATE

On-premises
Private cloud

HYBRID

Cloud

Operational databases

Data warehouses

Data lakes

Operational databases

Data warehouses

Data lakes

Reason over any data, anywhere | Flexibility of choice | Security and Performance

THE MODERN DATA ESTATE

Microsoft's on-premises solution
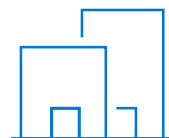
SQL Server

1/10th the cost of Oracle

Operational databases > **Industry leader 5 years in a row**

Data warehouses > **#1 TPC-H performance**

Data lakes > **T-SQL query over any data**

Reason over any data, anywhere

Only commercial DB with AI built-in

R

Flexibility of choice

Any language, any platform, anywhere

JAVA   MULTI

Security and Performance

Most secure over last 7 years

Vulnerabilities

150
100
50
0

SQL Server

SQL SERVER 2017

INDUSTRY-LEADING PERFORMANCE AND SECURITY NOW ON LINUX AND DOCKER

1/10th the cost of Oracle

Choice of platform and language

T-SQL	PHP
Java	Node.js
C/C++	Python
C#/VB.NET	Ruby

Industry-leading performance

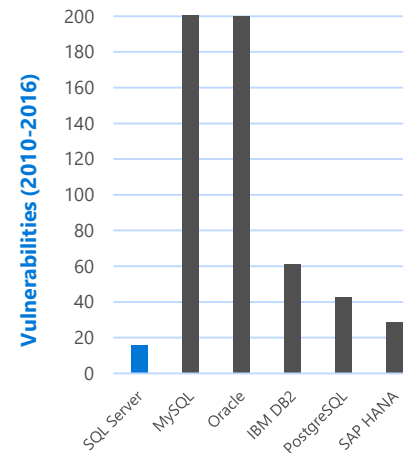#1 OLTP performance[1]

#1 DW performance on 1TB[2], 10TB[3], and 30TB[4]

#1 OLTP price/performance[5]

#1 DW price/performance on 1TB[2], 10TB[3], and 30TB[4]

Most secure over the last 7 years

Vulnerabilities (2010-2016)

	Vulnerabilities
SQL Server	~15
MySQL	200
Oracle	200
IBM DB2	~61
PostgreSQL	~43
SAP HANA	~29

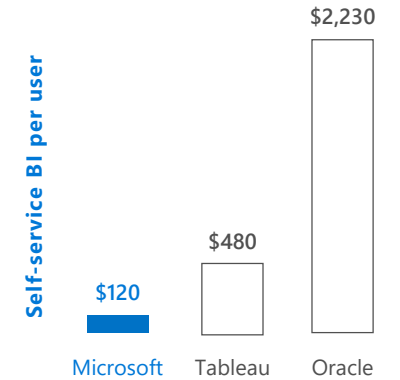### Only commercial DB with AI built-in

R and Python + in-memory at massive scale

Native T-SQL scoring

End-to-end mobile BI on any device

Self-service BI per user

	Cost
Microsoft	$120
Tableau	$480
Oracle	$2,230

A fraction of the cost

In-memory across all workloads

Private cloud ←→ Public cloud

Most consistent data platform

INDUSTRY LEADING TCO

AVOID EXPENSIVE ORACLE ADD-ONS WITH BUILT-IN FEATURES

IN-DB ADVANCED ANALYTICS

MOBILE BI & SELF-SERVICE BI

#1 TPC-H—DW

BUILT-IN ETL

INDUSTRY LEADER—OLTP

$320K

SQL Server

Everything
built-in

$3,745,000

ORACLE®

11.7x
more

LEADER IN

OPERATIONAL DATABASE MANAGEMENT SYSTEMS
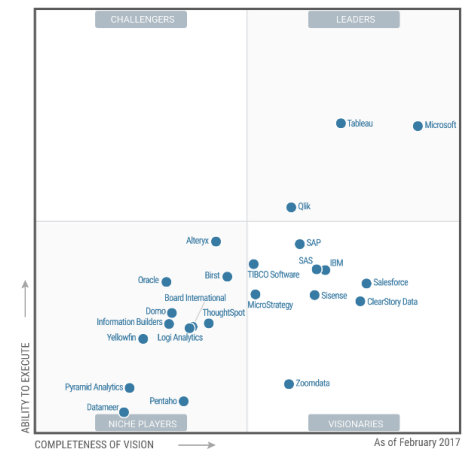
Leader in BI and analytics platforms

Leader in data management solutions for analytics

NEW FEATURES IN SQL SERVER 2017

Support for graph data and queries

Advanced Machine Learning with R & Python

Native T-SQL scoring

Adaptive Query Processing and Automatic Plan Correction

Cross Platform HA (OS level redundancy)

Agile Dev/Ops with support for containers
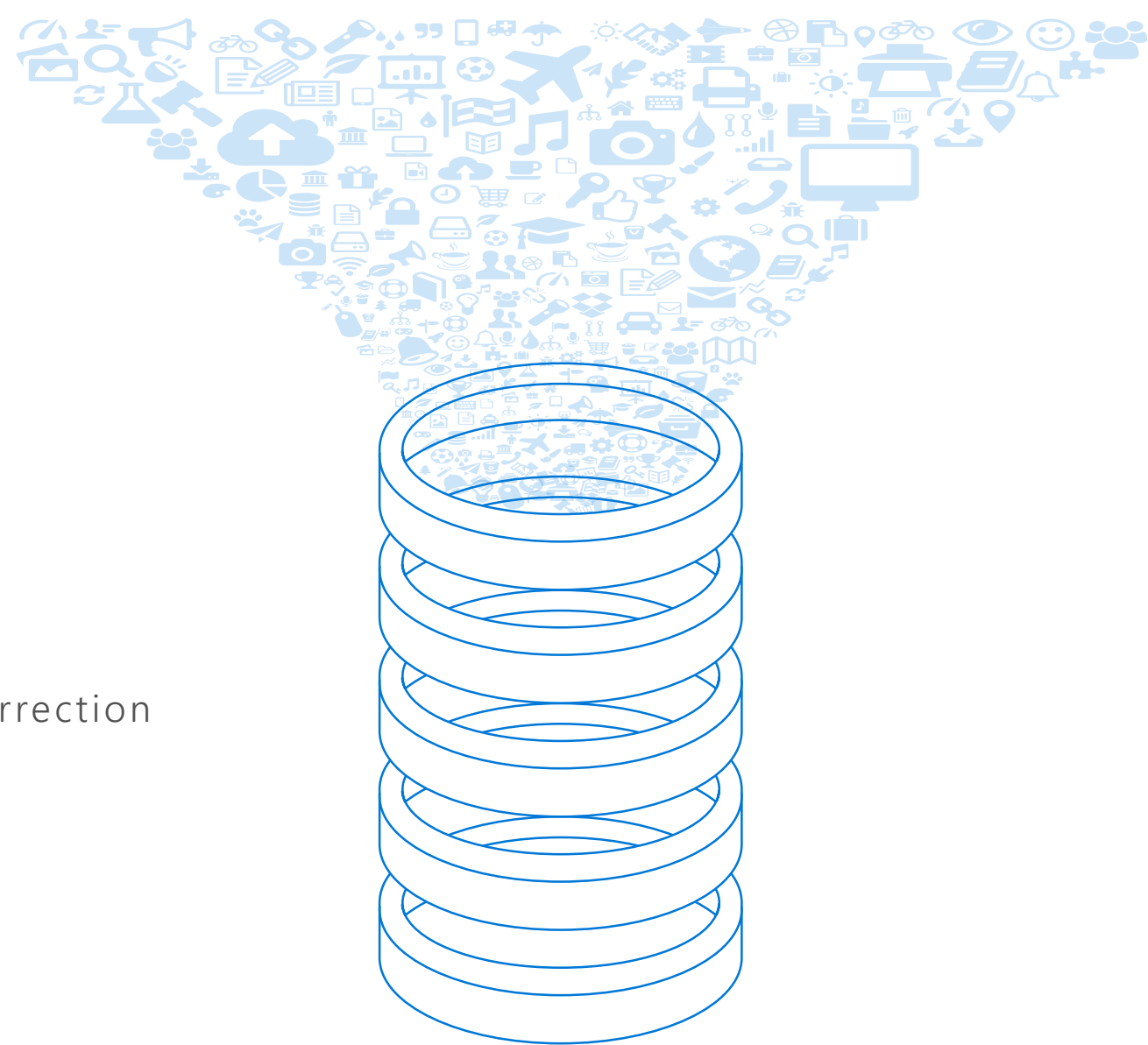
ENCRYPT DATA AT REST AND IN MOTION

Always Encrypted

Produbanco
Grupo Promerica

Client side | **Server side**

Search for single customer record

Query

Enhanced SQL Server Library

SQL

Sensitive data remains encrypted inside SQL Server

Result set with unencrypted data

Data set | **CIPHERTEXT**

Customer	Credit card #	Exp.
Denny Usher	4949-8003-8473-1930	5/17

Customer	Credit card #	Exp.
Tim Irish	1x7fg655se2e	7/19
Denny Usher	0x7ff654ae6d	5/17
Alicia Hodge	0y8fj754ea2c	4/18

Column master key

Column encryption key

SQL BASED TECHNOLOGIES SUPPORT YOUR GDPR SECURITY NEEDS

Track personal data

Easily query databases to uncover personal data

Tag data with sensitivity labels using Extended Properties

Separation of duties

Securely authenticate to your database and apply granular authorization policies

Restrict access to users using Dynamic Data Masking and Row-Level Security

Encryption everywhere

Encrypt data whether at rest, in transit or in client applications

Track and log database events to identify potential threats or security violations

Use continuously learning algorithms to identify unusual or suspicious activity

Audit capabilities

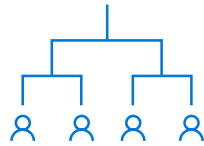Track and report on all database activities with granularly configurable auditing

Consistent programmability experience

Developers and application partners can build to a single programming surface

Scale across SQL editions and the cloud

SQL Server 2017 features

SQL Query Language
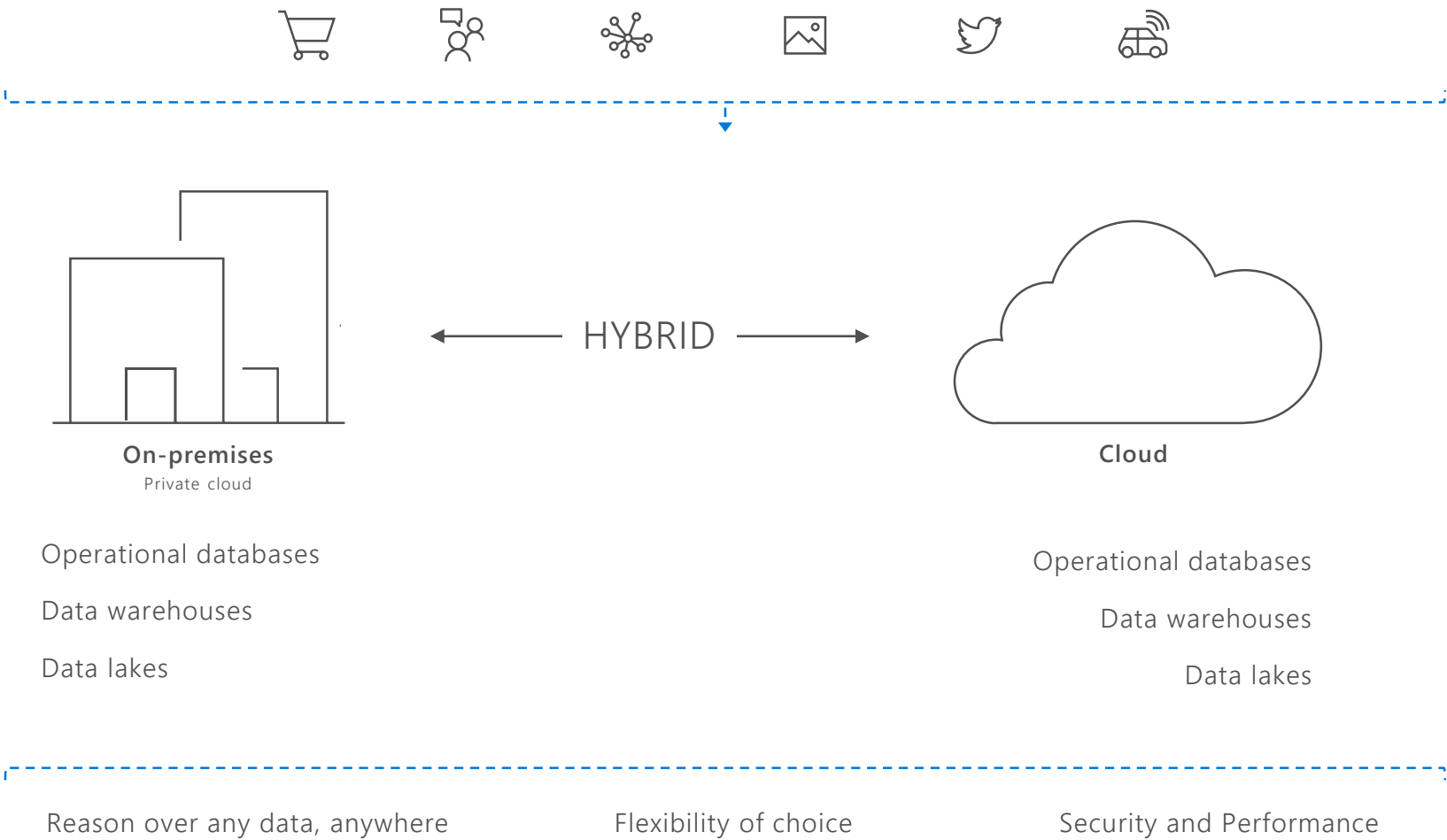
Dynamic Data Masking (DDM)

Row-Level Security (RLS)

Windows Server authentication

Transparent Data Encryption

Always Encrypted

Auditing for SQL Database and SQL Server audit

Temporal tables

SQL Database Threat Detection

Since SQL Server 2016 SP1

THE MODERN
DATA ESTATE

On-premises
Private cloud

HYBRID

Cloud

Operational databases

Data warehouses

Data lakes

Operational databases

Data warehouses

Data lakes

Reason over any data, anywhere   Flexibility of choice   Security and Performance

THE MODERN DATA ESTATE

Microsoft's cloud solution

Azure data services

Operational databases > **70% faster than competition**
Azure SQL Database > **<10ms latency SLAs**
Azure Cosmos DB

Data warehouses > **2x the global reach**
Azure SQL Data Warehouse

Data lakes > **99.9% SLA**
Azure Data Lake, HDInsight

Reason over any data, anywhere

AI built-in

R

Flexibility of choice

Any language, any platform, anywhere

JAVA

Security and performance

More certifications than any other cloud

ISO   AICPA SOC   CSA

FedRAMP   NIST

CLOUD-FIRST APPROACH BREEDS FASTER INNOVATION

Continuous enhancements

SQL

SQL

SQL

SQL
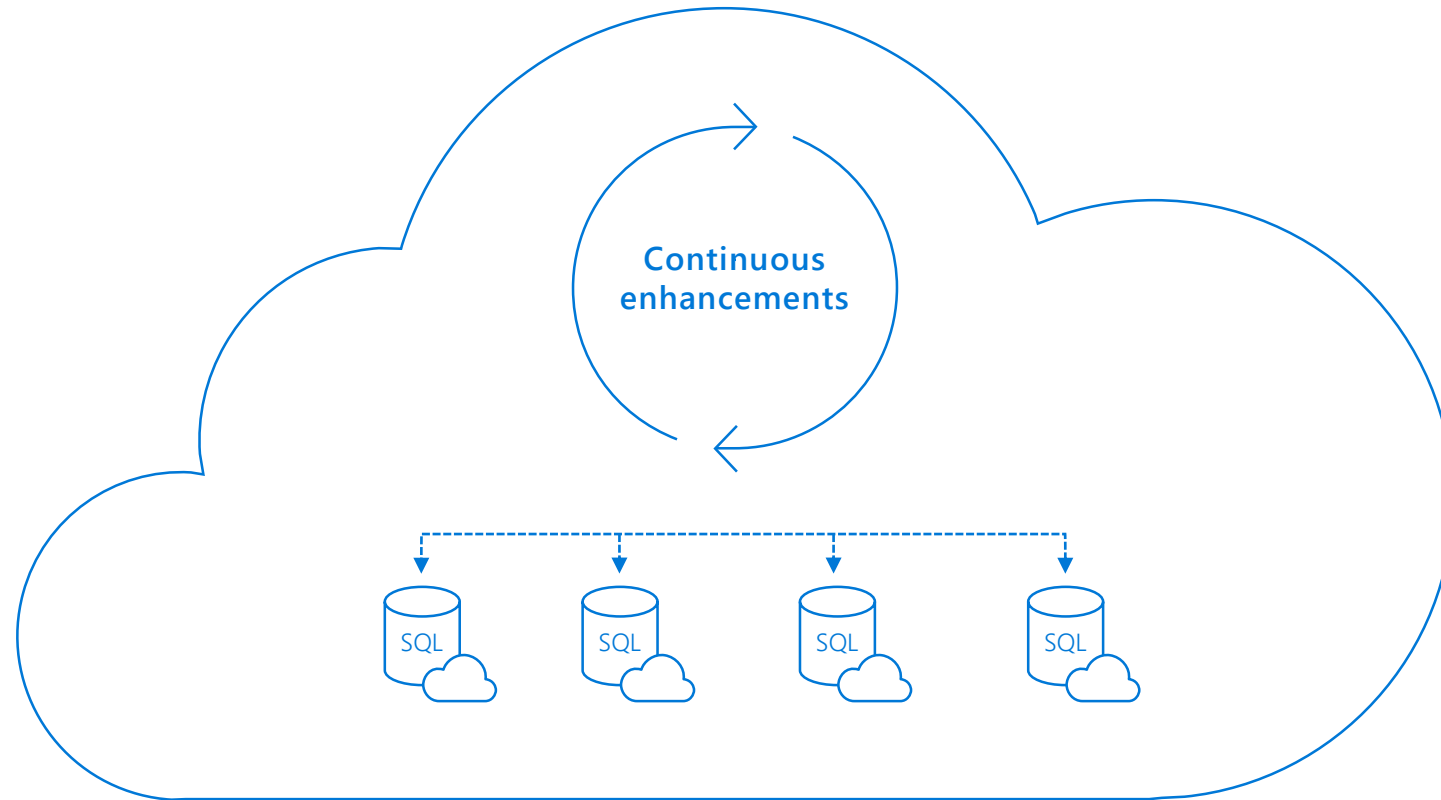
AZURE RELATIONAL DATABASE PLATFORM

Power BI, App Services, Data Factory, Analytics, ML, Cognitive, Bot...	SQL Data Warehouse	SQL Database	PostgreSQL	MySQL

Database Services Platform

Intelligent: Advisors, Tuning, Monitoring

Flexible: On-demand scaling, Resource governance

Trusted: HA/DR, Backup/Restore, Security, Audit, Isolation

Azure Compute

Azure Storage

Global Azure with 43 Regions
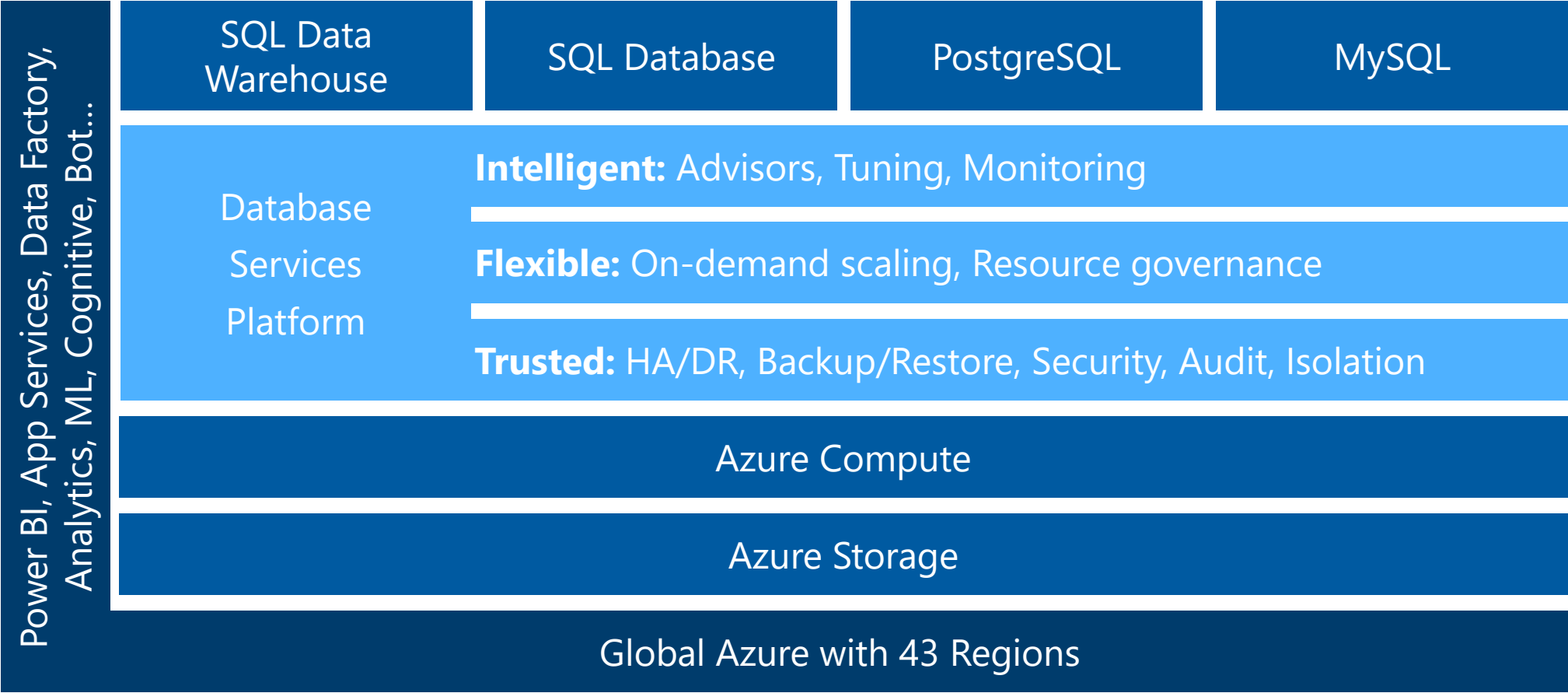
STREAMLINE YOUR JOURNEY TO THE CLOUD
WITH EASY APP MODERNIZATION

LIFT + SHIFT AND TRANSFORM

Seamless and reliable migration at scale

Lift and shift to the cloud with
no code changes

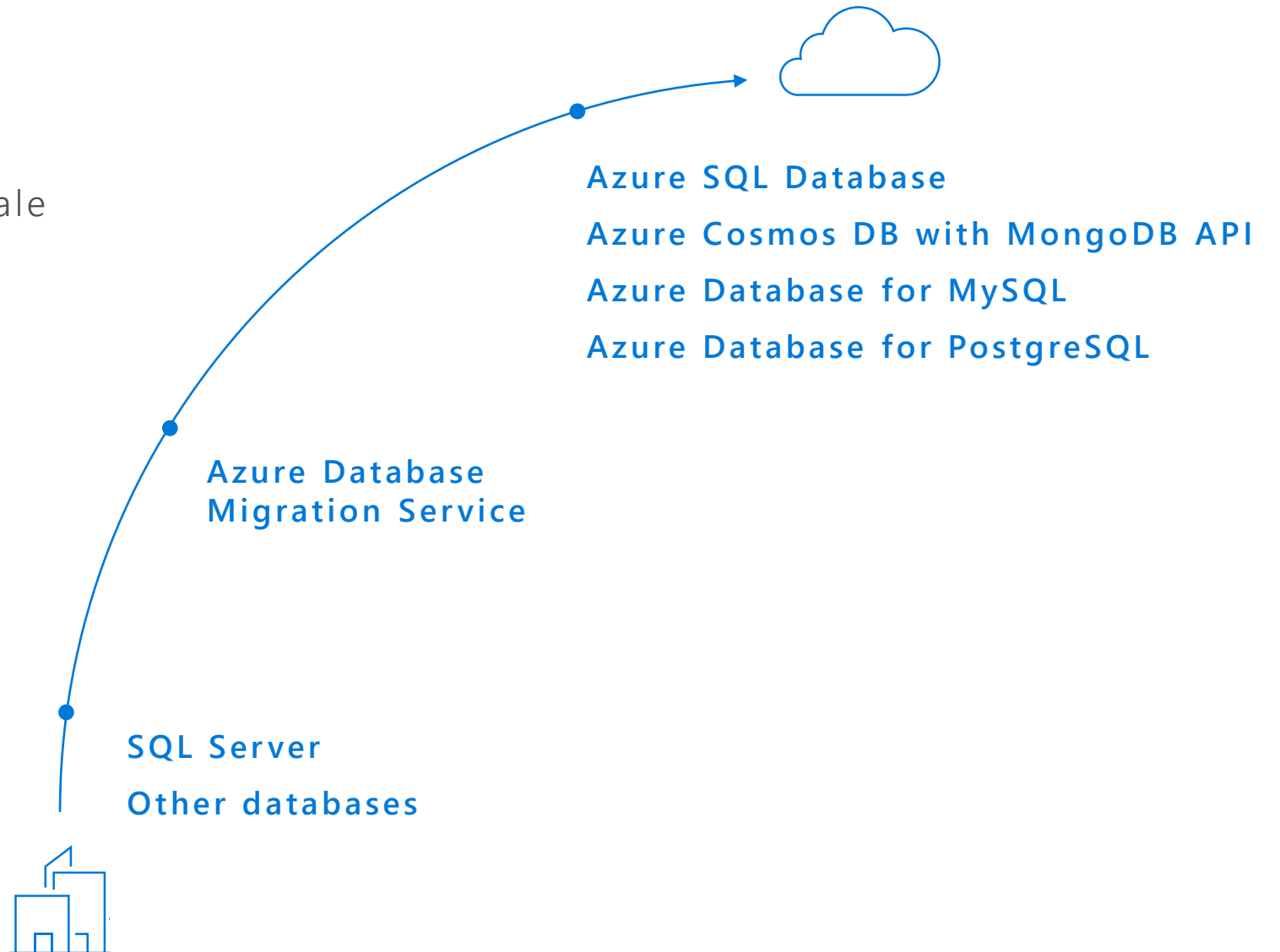Modernize across SQL Server,
PostgreSQL, MySQL and MongoDB

Maximize current on-premises
license investments NEW

Azure SQL Database

Azure Cosmos DB with MongoDB API

Azure Database for MySQL

Azure Database for PostgreSQL

**Azure Database
Migration Service**

SQL Server

Other databases

AZURE SQL DATABASE

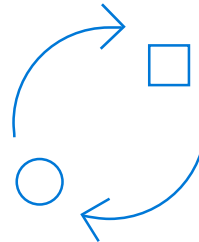## THE INTELLIGENT CLOUD DATABASE FOR APP DEVELOPERS

Intelligent DBaaS

Privacy and trust

Seamless and compatible

Competitive TCO

Lift and shift SQL Server apps

Migrate SQL Server data marts

Build intelligent apps with R built-in

Save up to 30% with Azure Hybrid Benefit for SQL Server

SERVING 55K CUSTOMERS WITH 100 STAFF
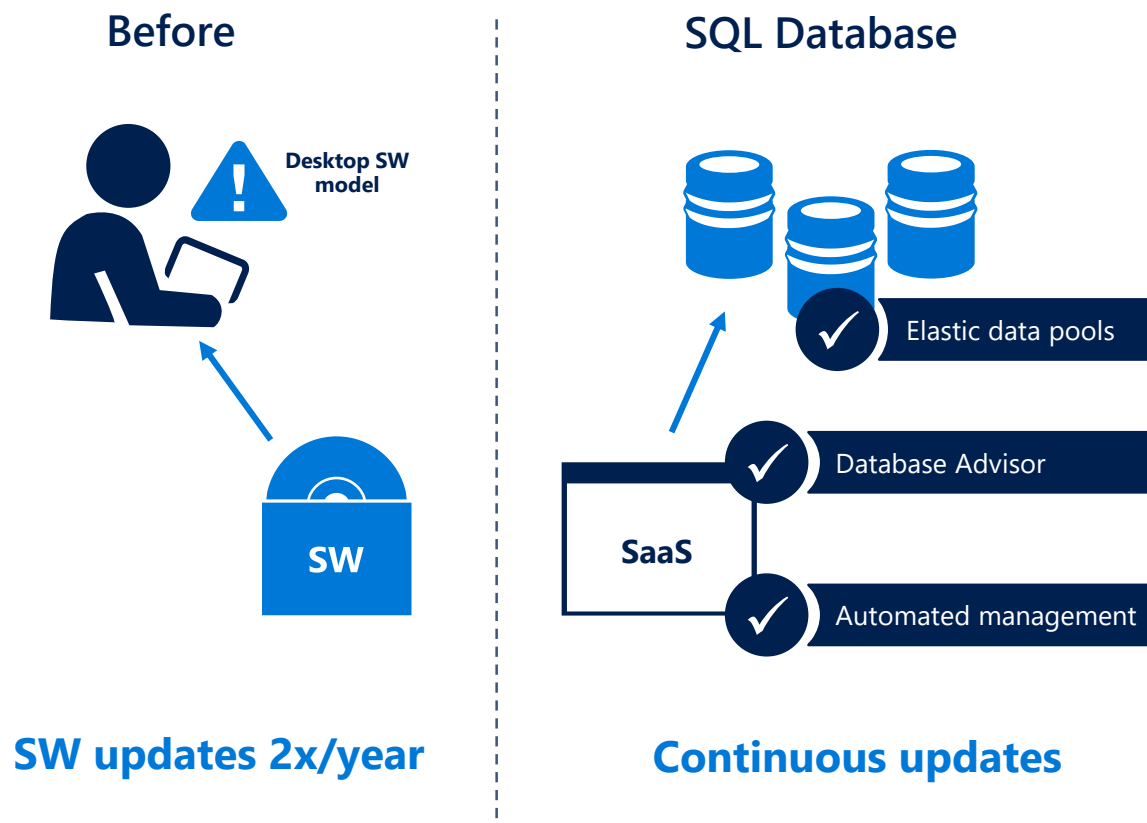
ISV deploys SaaS at cost-effective scale

CHALLENGE

Dutch SW provider needed to replace desktop SW delivery model to innovate faster and meet customer needs

IMPACT

Better customer experience through frequent product updates and SaaS model that scales on demand

Automated management reduced overhead and provisions performance with scale

★ snel**start**

Before

Desktop SW model

SW

SW updates 2x/year

SQL Database

✓ Elastic data pools

✓ Database Advisor

SaaS

✓ Automated management

Continuous updates

AZURE DATABASE FOR MYSQL AND POSTGRESQL
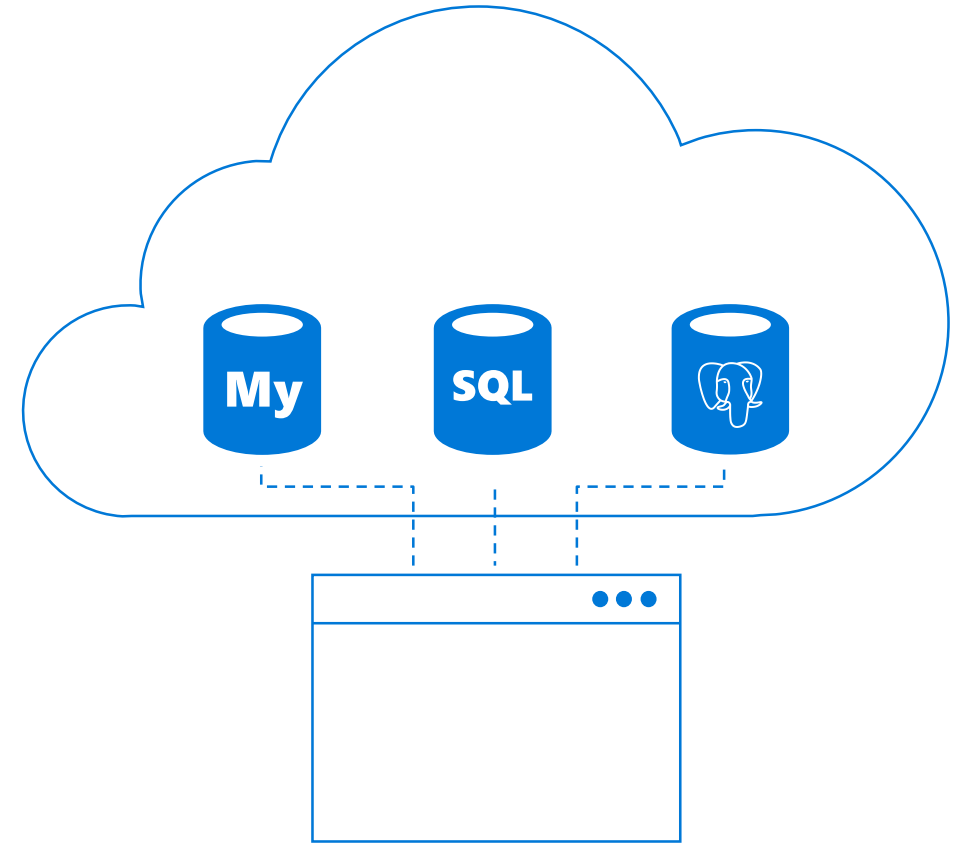
Work in the DB of your choice

Create with built-in high availability

Set up in minutes, scale on the fly

Sustain performance with adaptive improvements

Rest easy with unparalleled security

Standard tier PREVIEW

Lift and shift MySQL
and PostgreSQL apps

Migrate WordPress
and Drupal

Build apps with your
OSS DB of choice

AZURE COSMOS DB

GLOBALLY DISTRIBUTED, MULTI-MODEL NOSQL DATABASE SERVICE

Multi-model data with your favorite API

Elastically scale storage and throughput

Multiple, well-defined consistency levels

<10ms latency guarantees at the 99th percentile

Industry-leading SLAs across performance,
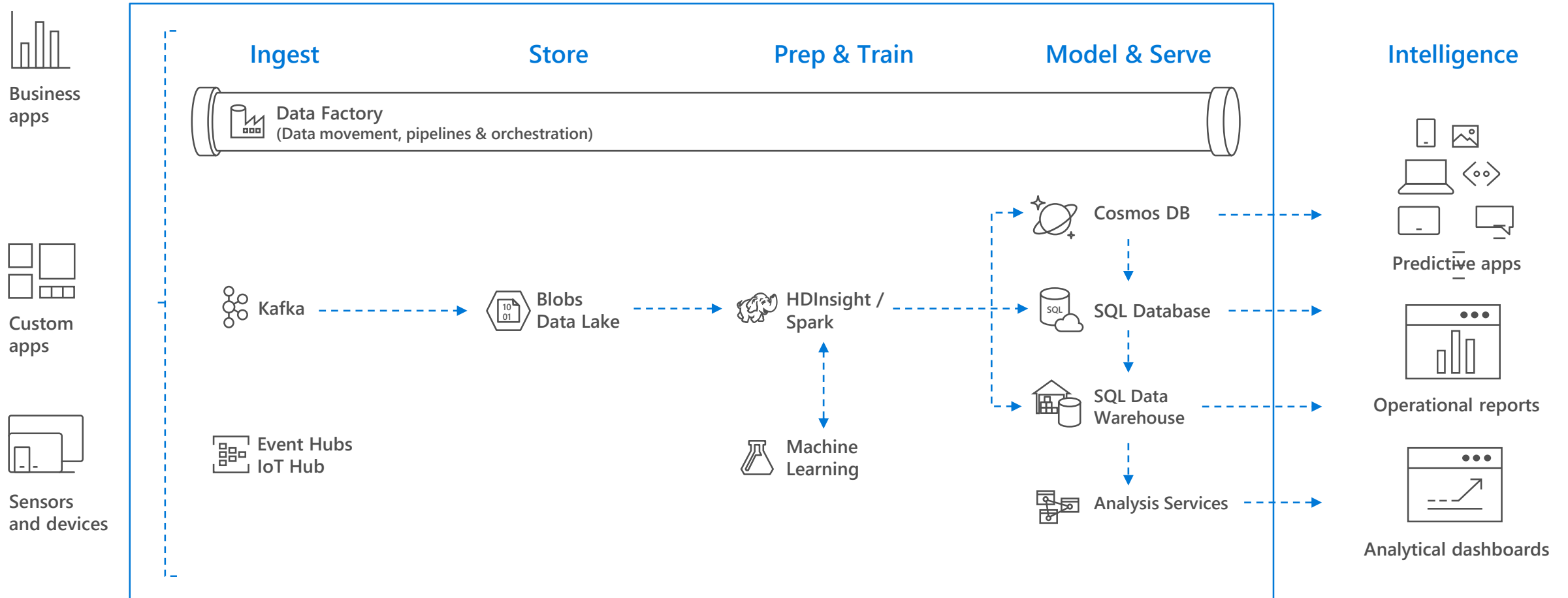latency, availability and throughput

Table API

mongoDB.

Gremlin
$G = (V, E)$

JS

Lift and shift
MongoDB apps

Run Spark over
operational data

Build real-time
customer experiences

Ideal for IoT, gaming
and eCommerce

DATA MANAGEMENT SOLUTION FOR INTELLIGENCE IN THE CLOUD

Business apps

Custom apps

Sensors and devices

Ingest

Store

Prep & Train

Model & Serve

Intelligence

Data Factory
(Data movement, pipelines & orchestration)

Kafka

Blobs
Data Lake

HDInsight /
Spark

Cosmos DB

SQL Database

SQL Data
Warehouse

Event Hubs
IoT Hub

Machine
Learning

Analysis Services

Predictive apps

Operational reports

Analytical dashboards

DATA - - - - - - - - - - - - - - - - -> INTELLIGENCE - - - - - - - - - - - - - - - - -> ACTION

INTELLIGENT WATER UTILIZATION SAVES $5.2M
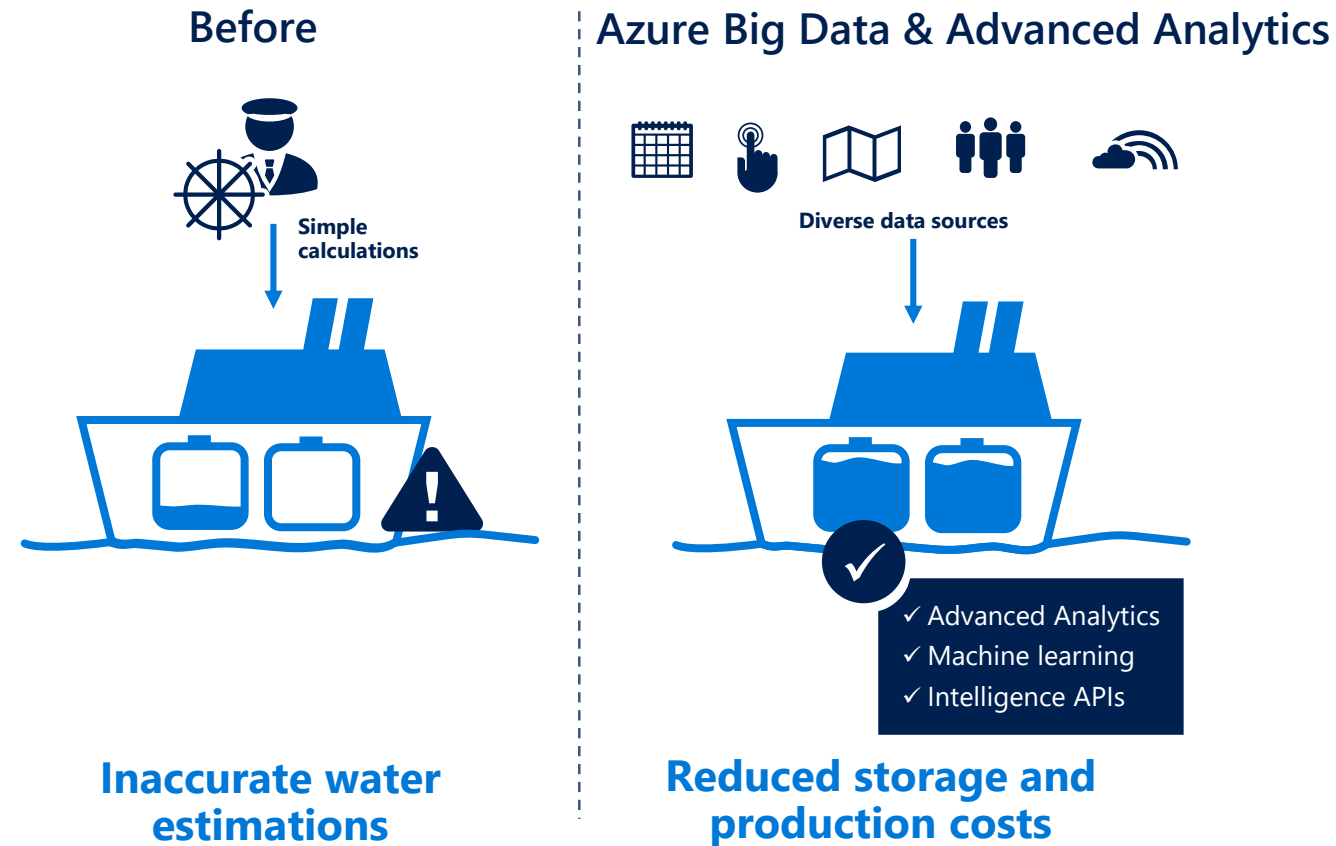
Power of Advanced Analytics and AI

CHALLENGE
Cruise line struggled to accurately predict water usage onboard ships, leading to costly water storage or production
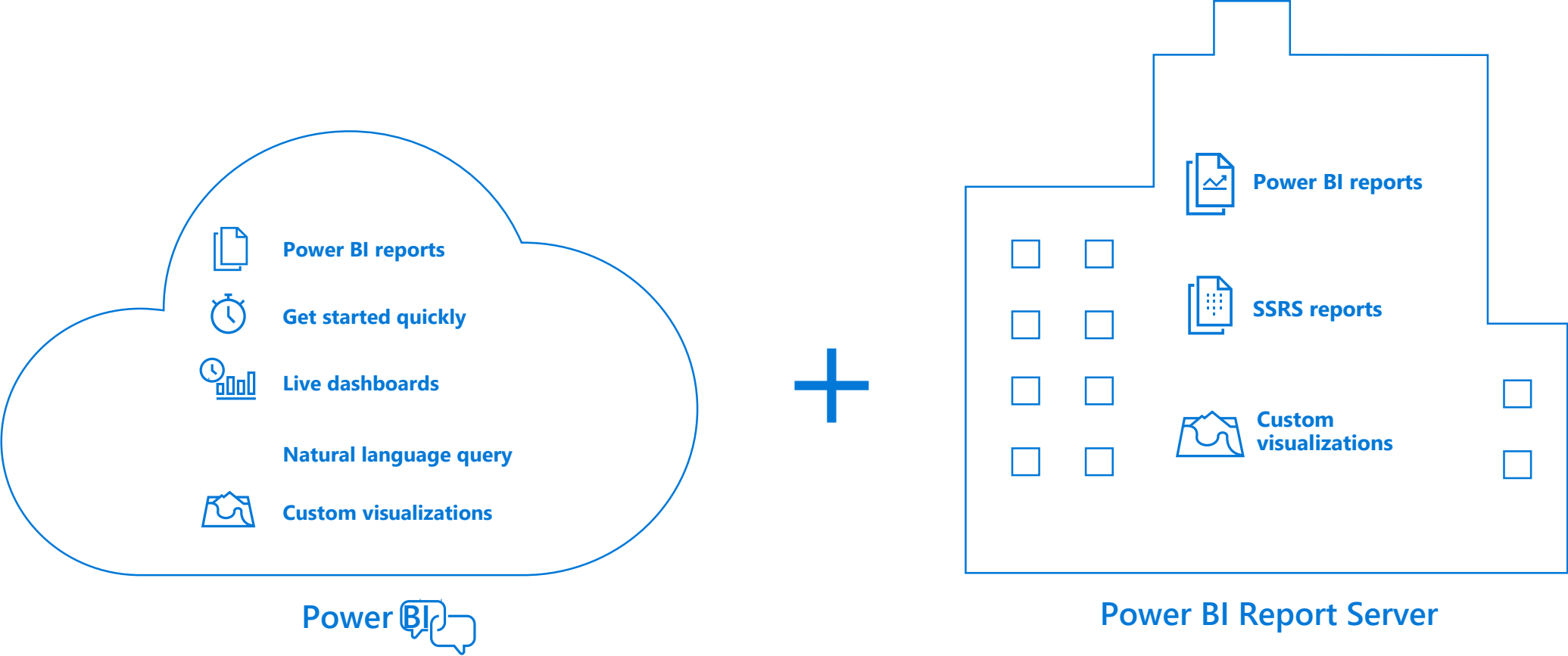
IMPACT
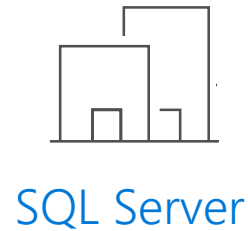Advanced Analytics model optimizes onboard water storage, **saving $200k per ship annually**

Historical and real-time data analysis enables **predictive maintenance**

CARNIVAL
M A R I T I M E

Before

Simple calculations

Inaccurate water estimations

Azure Big Data & Advanced Analytics

Diverse data sources

✓ Advanced Analytics
✓ Machine learning
✓ Intelligence APIs

Reduced storage and production costs

POWER BI AND
POWER BI REPORT SERVER

Power BI reports

Get started quickly

Live dashboards

Natural language query

Custom visualizations

Power BI

Power BI reports

SSRS reports

Custom visualizations

Power BI Report Server

MICROSOFT FOR YOUR MODERN DATA ESTATE

| LOB | CRM | Graph | Image | Social | IoT |

SQL Server ← HYBRID → Azure Data Services

**Easiest lift and shift
with no code changes**

Industry leader 4 years in a row	Operational databases	Operational databases	**70% faster**
#1 TPC-H performance	Data warehouses	Data warehouses	**2x the global reach**
T-SQL query over any data	Data lakes	Data lakes	**99.9% SLA**

AI built-in | Most secure | Lowest TCO

| Reason over any data, anywhere | Flexibility of choice | Security and performance |

Empower today's innovators to unleash the power of data and reimagine possibilities that will improve our world

Microsoft