How to Leverage Clouds to Fuel Digital Transformation

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Microsoft

Agenda

- Digital Transformation
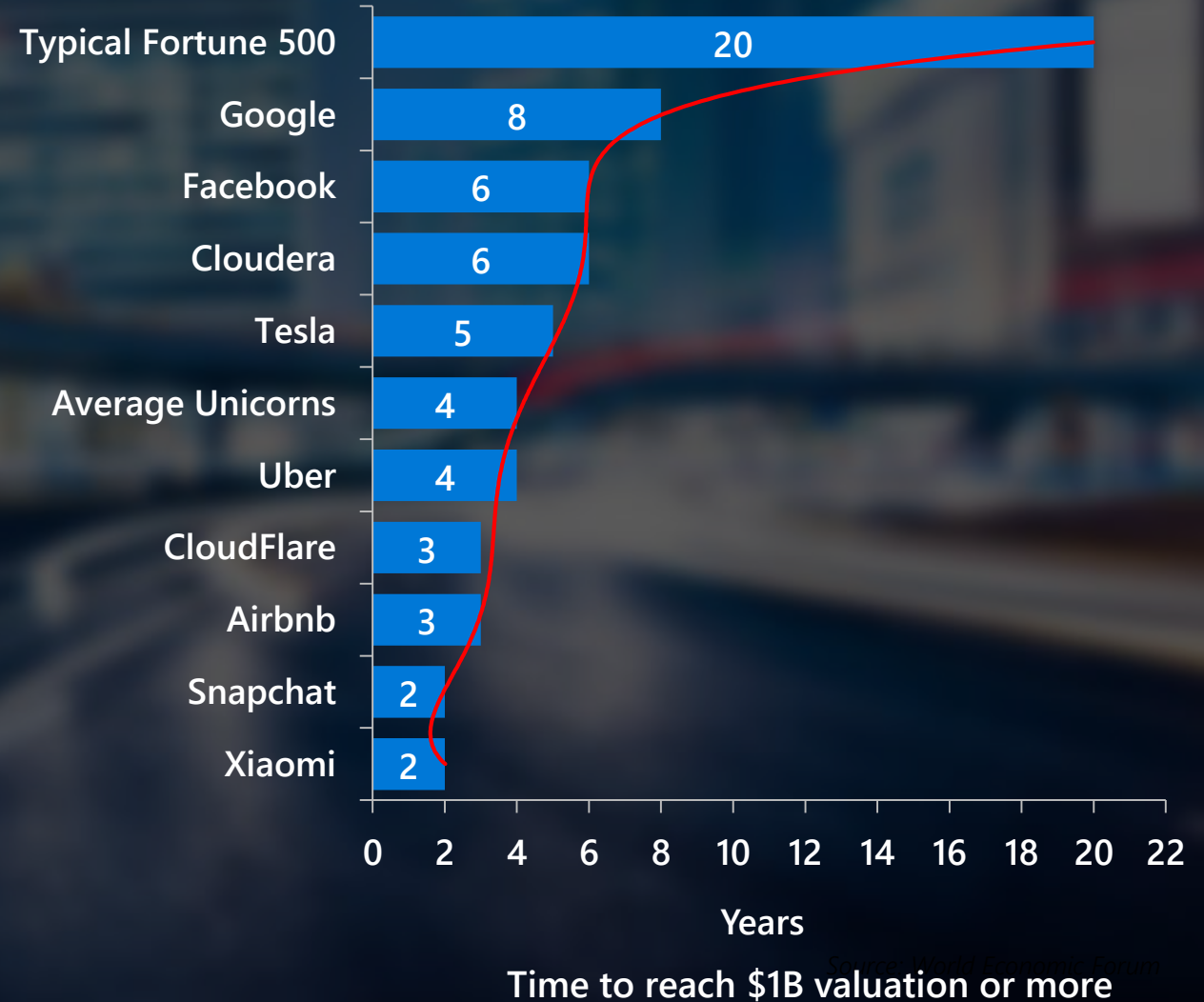- Technology trends
- Why Cloud?
- AI Revolution

Disruption

3

Astonishing Pace of Change

	2007	$100,000
Drones	2017	$300
3D Printing	2007	$40,000
	2017	$100
Industrial Robots	2007	$550,000
	2017	$10,000
	2000	$2.7bn
DNA	2007	$10m
	2017	$1,000
Solar	1984	$30
	2017	$0.16
Sensor (3D)	2009	$30,000
	2017	$25
Smartphones	2007	$499
	2017	$10

The cost of key technologies has fallen rapidly

Chart: Time to reach $1B valuation or more (Years)

- Typical Fortune 500: 20
- Google: 8
- Facebook: 6
- Cloudera: 6
- Tesla: 5
- Average Unicorns: 4
- Uber: 4
- CloudFlare: 3
- Airbnb: 3
- Snapchat: 2
- Xiaomi: 2

Years

Time to reach $1B valuation or more

Source: World Economic Forum

Digital transformation is rapidly reshaping the landscape

"Every business will become a software business, build applications, use advanced analytics and provide SaaS services."
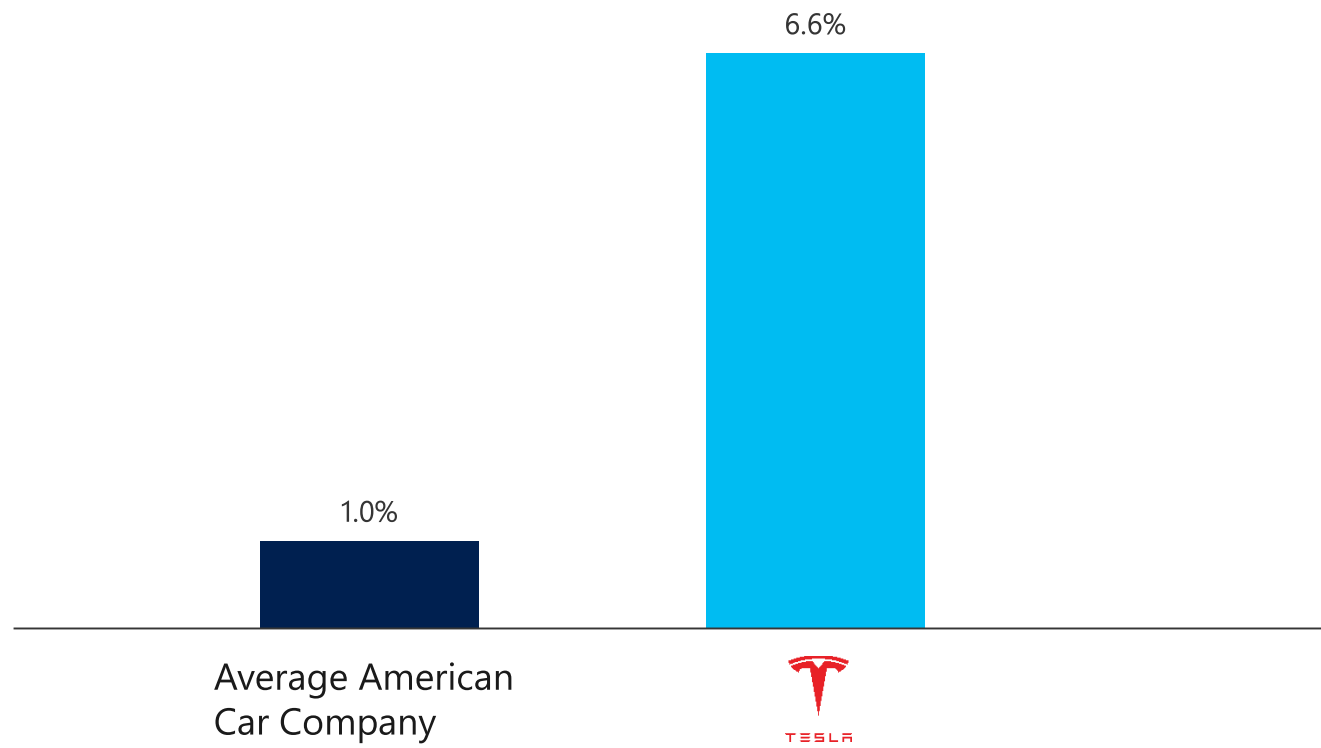
\- Satya Nadella

Role of software in Automotive

Role of SW in Auto
Developers as a % of Overall Headcount

Driving forces behind digital transformation

60% computing
in the public cloud by 2025
Source: IDC

DATA & IoT
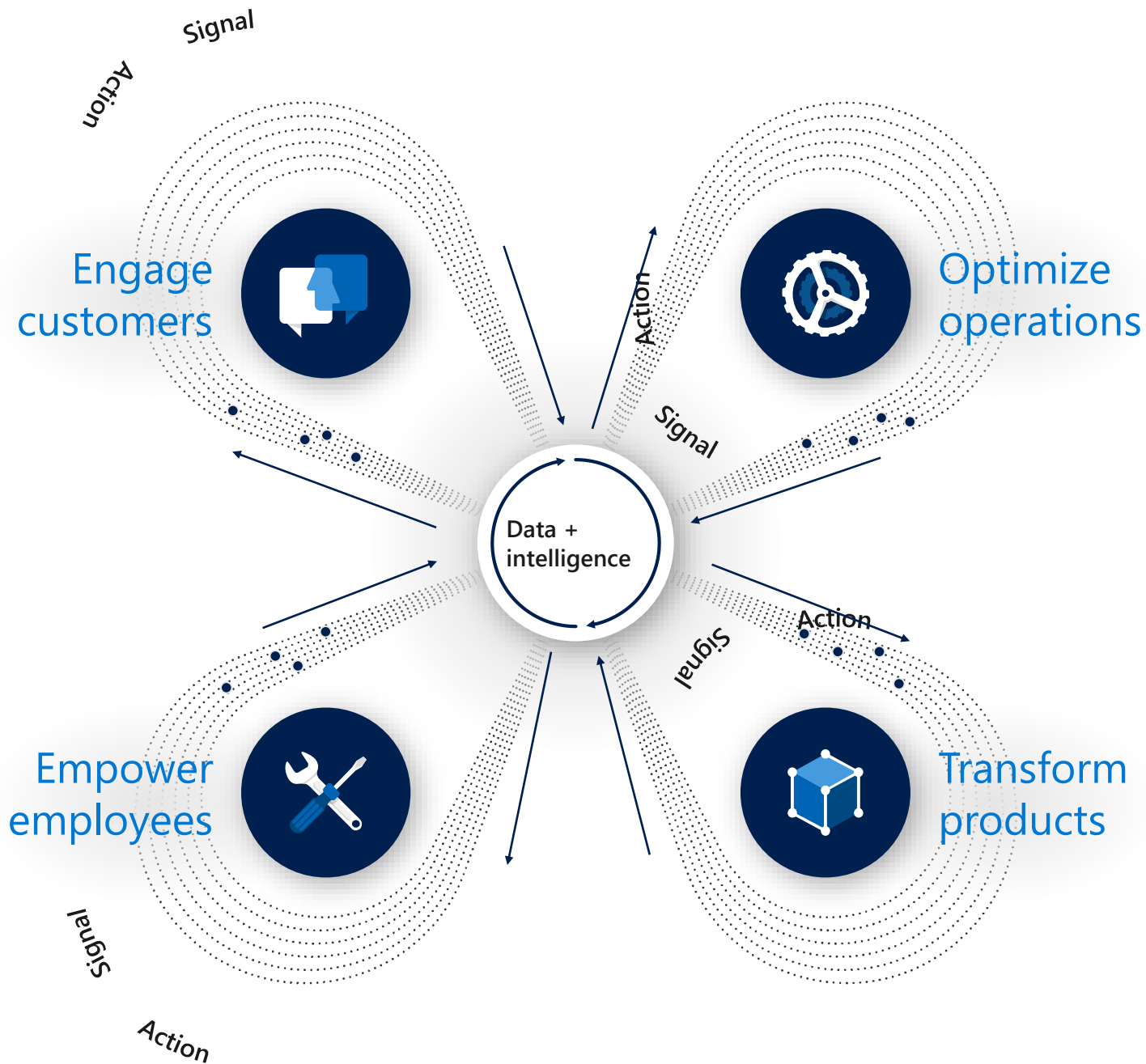**163 zettabytes** annually by 2025

ANALYTICS & AI
$200 billion global market by 2020

CLOUD
Cloud shift will affect more than
$1 trillion in IT spending by 2020

Democratizing Enterprise IT

Source: Forbes, Gartner

Engage customers

Optimize operations

Empower employees

Transform products

Data + intelligence

Signal

Action

Signal

Action

Signal

Action

Signal

Action

80B
Connected "things" by 2025 generating 180ZB of data

$130B
New monetization avenues due to IoT-related services

80%
Companies that increased revenue as a result of IoT implementation

$100M
Average increase in operating income (avg. 8%) among the most digitally transformed enterprises

Why Cloud?

A new era of computing

1970s

Mainframe era

One computer
per many users

1980s

Personal computer
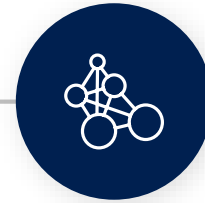era

One computer
per user

2000s

Mobility era

Several computers per
user

2010s

Cloud era

many computers
per many users

2020 and beyond

Ubiquity era

Millions of computers
per many users

Why Cloud Computing?

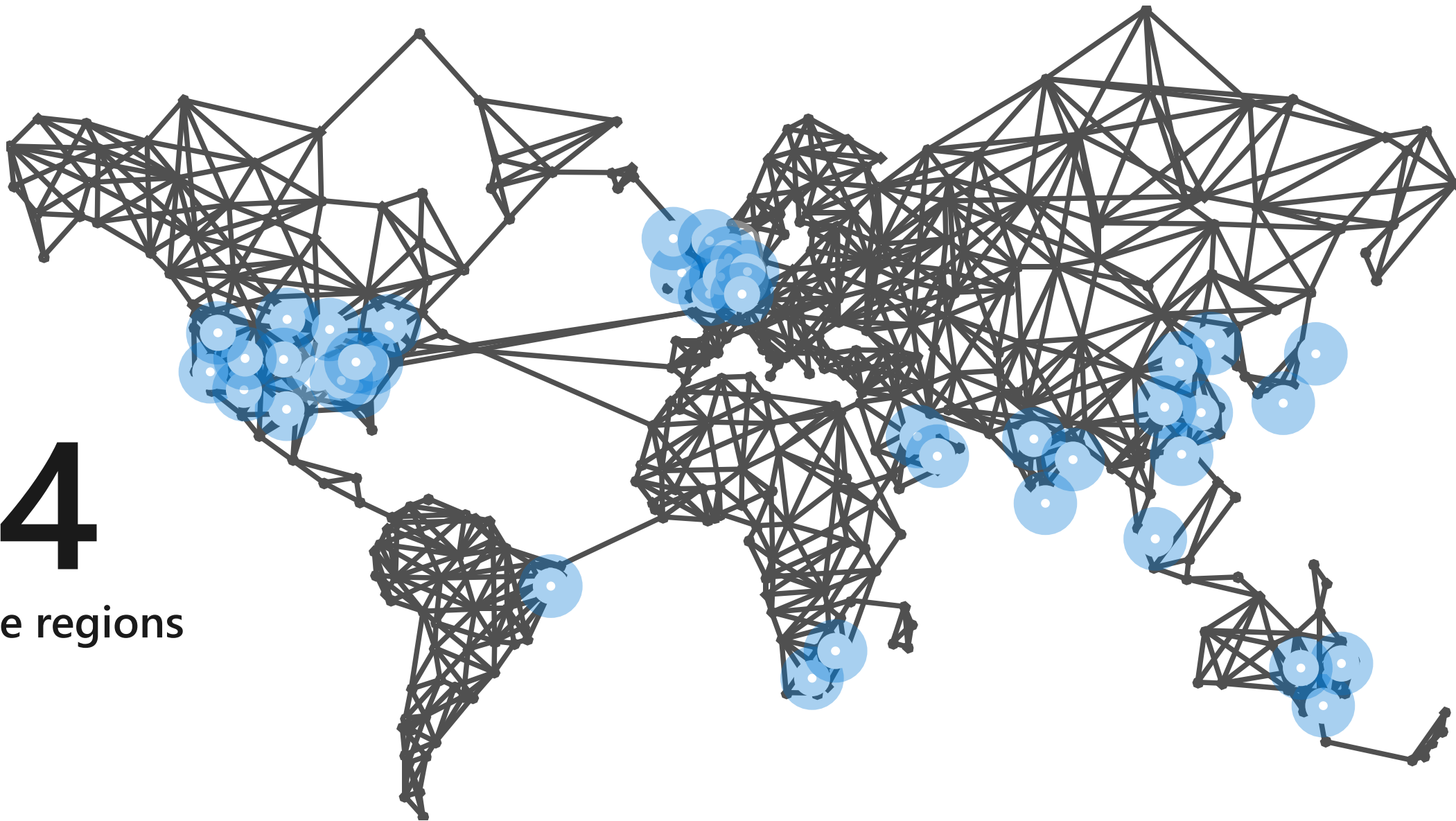|	
Agility	Performance
Elasticity	Productivity
Global Scale	Reliability
Cost Savings	Security

54

Azure regions

What are the market and customer trends?

Private versus public cloud → Distributed hybrid cloud

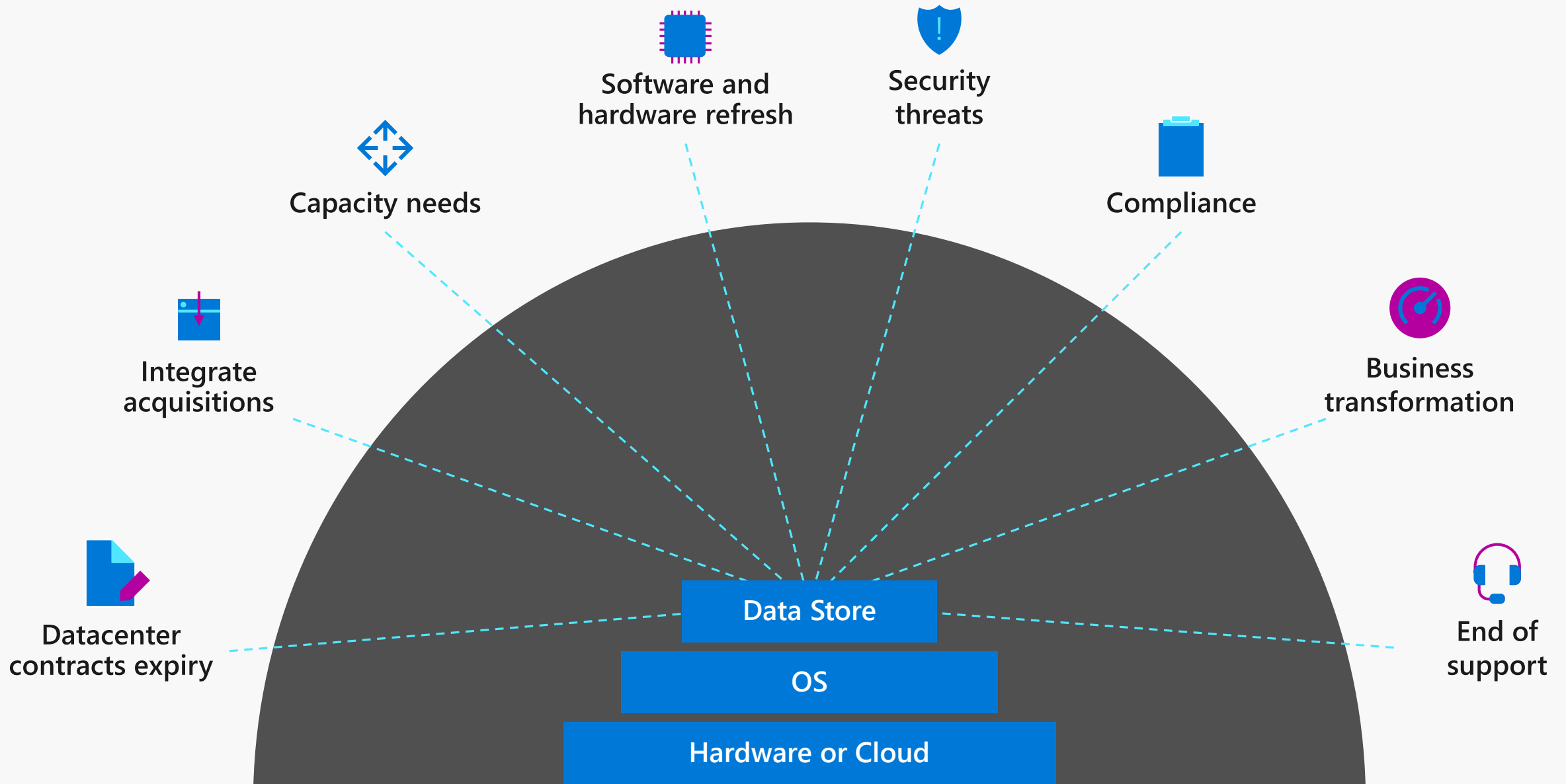Virtualization → Microservices & containers

Disparate databases → Connected data estate

Big data & machine learning → Cognitive services & AI

Cloud Transformation triggers

Software and hardware refresh

Security threats

Compliance

Capacity needs

Business transformation

Integrate acquisitions

Datacenter contracts expiry

End of support

Data Store

OS

Hardware or Cloud

End of Service presents opportunity to modernize your infrastructure & avoid business risk

No security updates

Compliance & regulatory concerns

Additional cost for support + patches

Missed innovation opportunities
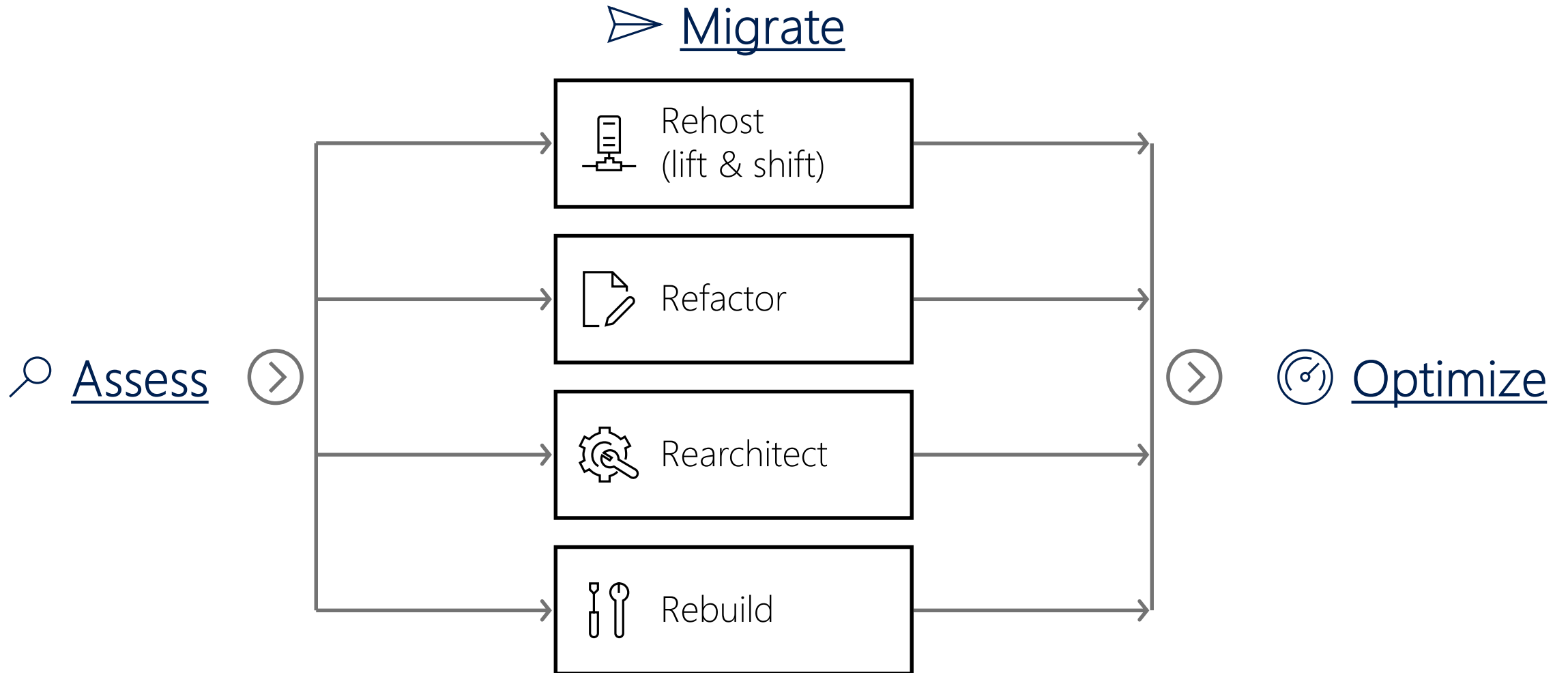
2008 | R2

Windows Server

Ends January 14, 2020

SQL Server

Ends July 9, 2019

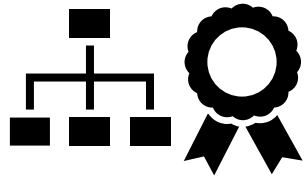Find lifecycle support deadlines at: support.microsoft.com/lifecycle

Cloud migration journey

▷ Migrate

Rehost
(lift & shift)

Refactor

🔍 Assess ❯

Rearchitect

❯ 🕐 Optimize

Rebuild

Best practice investment areas for large scale Cloud migration
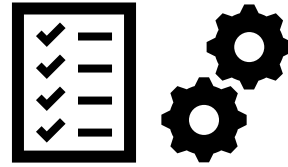
People

Drive org culture change

Set up migration center of excellence

Enable learning paths & certifications

Use skilled migration partners

Planning & Process

Build biz case w/ exec sponsorship

Evaluate application portfolio

Perform a migration pilot

Track migration scorecard

Drive continuous optimization

Technology

Govern Azure environments/ resources

Set up hybrid networking/ identity

Establish robust security foundation

Use common security/management tools

DevOps

Empowering organizations with AI

85%

of Enterprises using
AI by 2020[1]

25%

Have started or are
planning to start their AI
initiatives in the near term[2]

Unstructured, chaotic **data estate**

Lack of skills and **productivity**

Solutions not **Enterprise-ready**

[1].Source: Gartner, Smarter with Gartner, 2017.
[2.] Source: Gartner, CIO Report, 2017.

Amplifying human ingenuity
with intelligent technology

Reasoning
Learn and form
conclusions with imperfect
data

Understanding
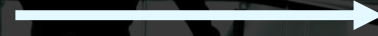Interpret meaning of data
including text, voice, images

Interacting
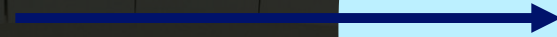Interact with people
in natural ways

Artificial Intelligence
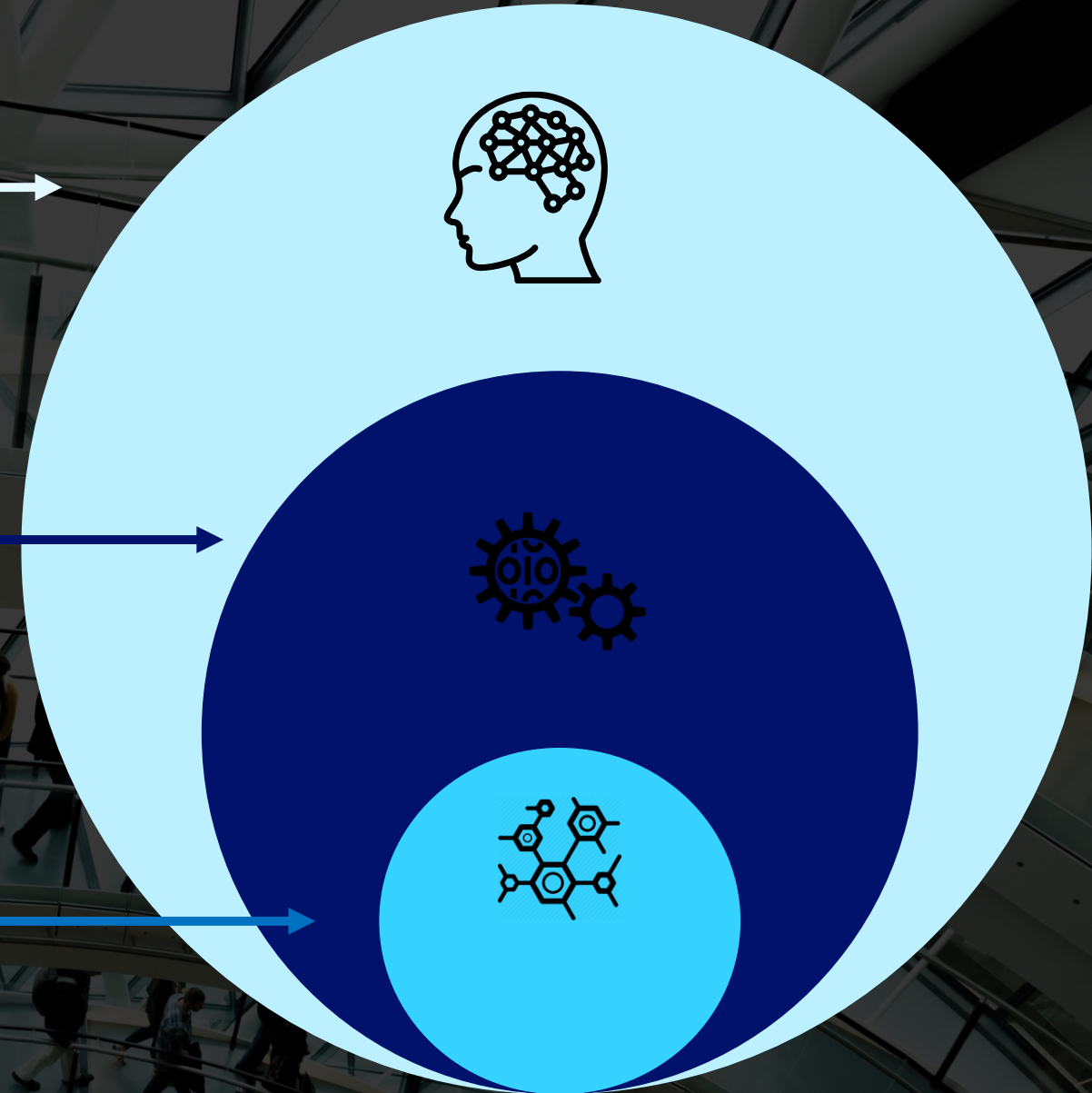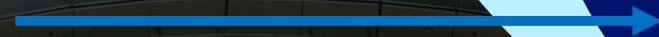Any technique which enables computers to mimic human behavior.

Machine Learning
Subset of AI techniques which use statistical methods to enable machines to improve with experiences.

Deep Learning
Subset of ML which make the computation of multi-layer neural networks feasible.

Driving AI innovation

96%
RESNET vision test
152 layers

5.1%
Switchboard speech
recognition test

88.5%
SQuAD reading
comprehension test

69.9%
MT
research system
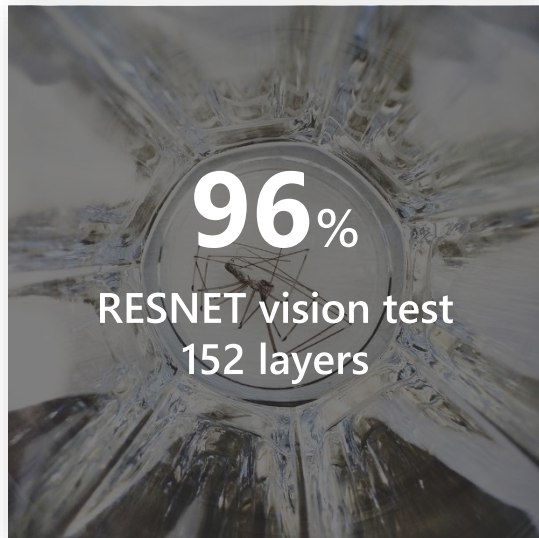
2016

Object recognition
Human parity

2017

Speech recognition
Human parity
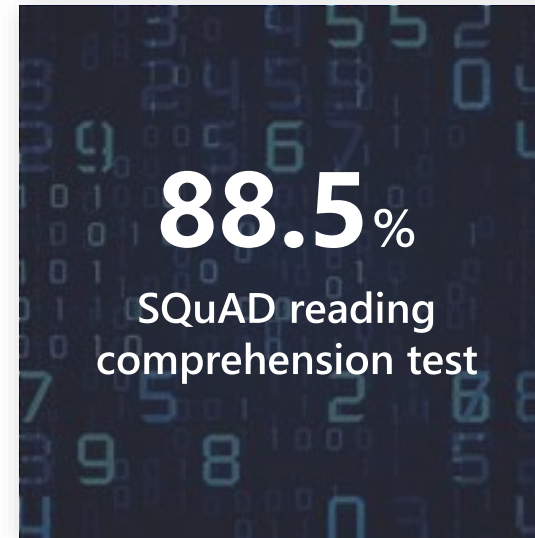
January 2018

Machine reading comprehension
Human parity

March 2018

Machine translation
Human parity

The AI journey

Bring AI to
every application

Bring AI to every
business process

Bring AI to
every employee

Incubation

Transformation

**Performance/
productivity**

From production to product-as-a-service

Reimagine manufacturing
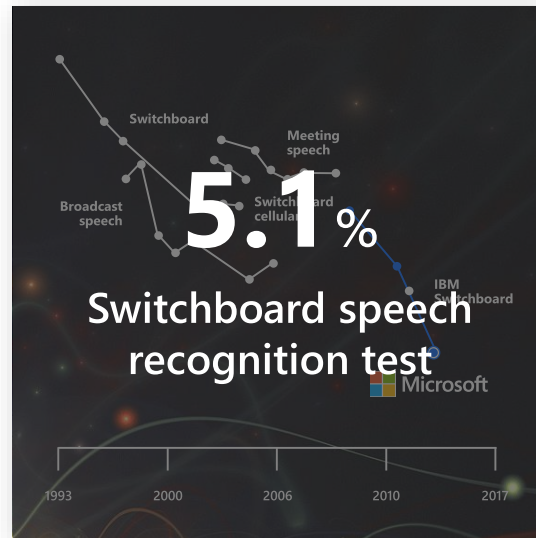
Deliver new services

Empower your workforce

Optimize digital operations

Empower manufacturers to achieve more

Innovate with advanced technologies to create a sustainable future

Create new business value with digital services

Equip the workforce with the skills and tools to keep up with digital manufacturing

Leverage IT and OT to optimize factories and supply chains

What does the intelligent manufacturer look like?
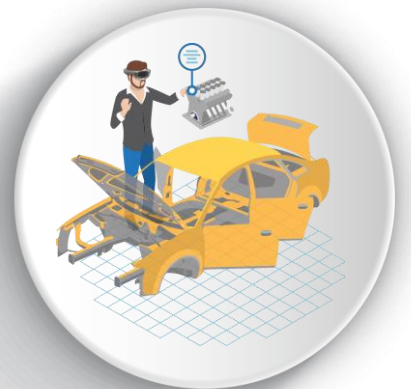

Expand business models to deliver product-as-a-service and help manufacturers differentiate

Connected Field Service

Enable proactive engagement throughout the product lifecycle with connected field service

Connected Sales and Service

Customize sales and services to strengthen relationships and build loyalty

Connected Product Innovation

Enter new markets by increasing the speed of innovation with digital product and process twins

Intelligent Supply Chain

Utilize an optimized supply chain to produce the right things at the right time for the right price

Factory of the Future

Leverage industrial IoT and other smart technology for agile production in the Factory of the Future

Manufacturing

Selling Packaging as a Service

Connecting machines to collect real-time data has enabled performance and future failure monitoring, allowing Tetra Pak to revolutionize their business model

[Click](#) to learn more

Transforming the urban landscape

Gathered data from sensors and systems to create valuable business intelligence and shift from reactive to proactive maintenance.
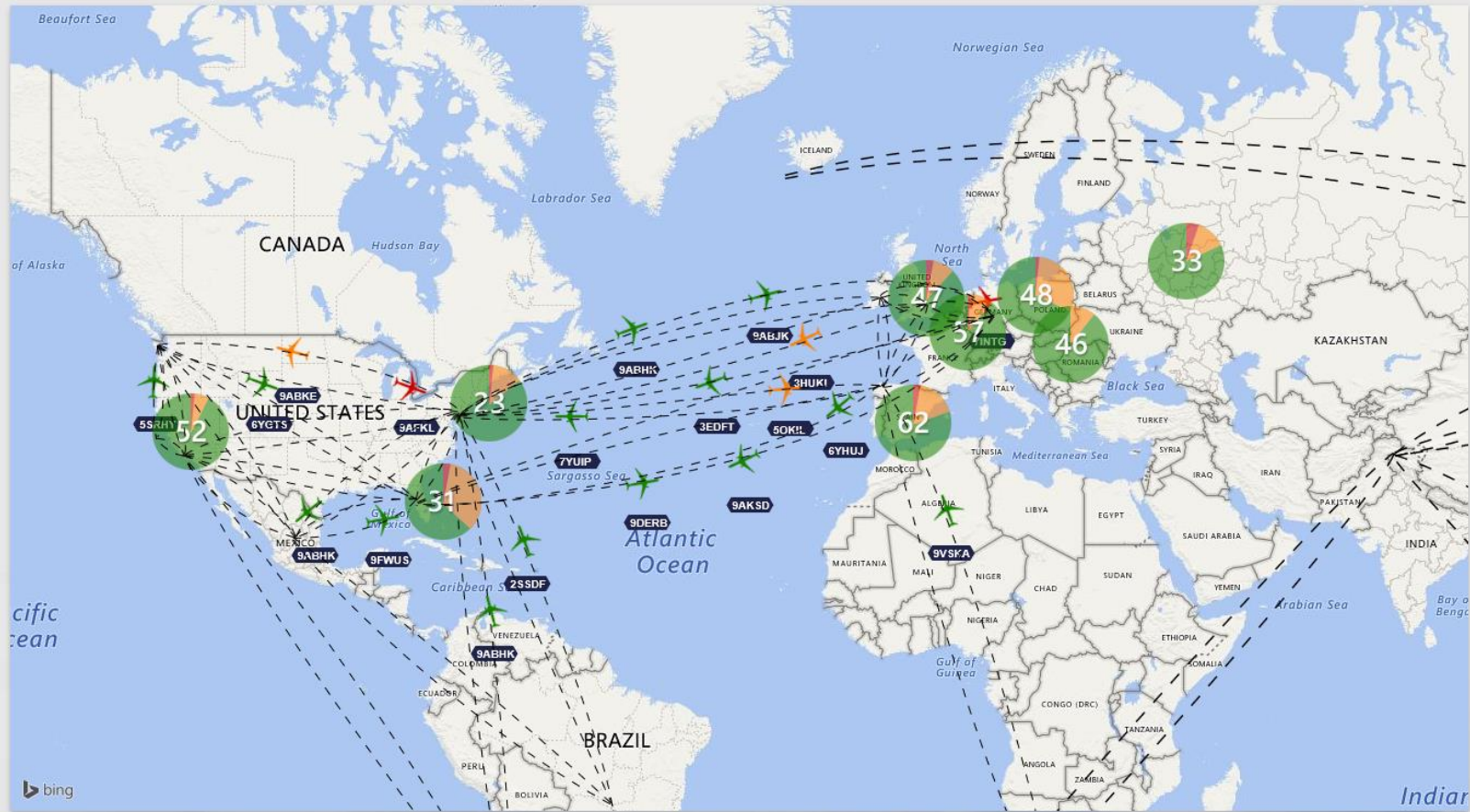
[Click](#) to learn more

Filtering the signal from the noise

Used analytics to discover actionable insights around fuel usage, predictive maintenance and stop unscheduled delays.

[Click](#) to learn more
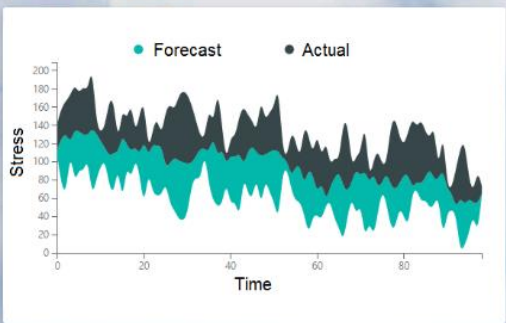
Rolls-Royce

Fleet Location Map

52 5SRHY 6YGTS 9ABKE 9AFKL 9ABHK 9FWUS 47 37INTG 48 46 33 23 31 62 9ABJK 9ABHK 3HUKI 7YUIP 3EDFT 5OKIL 6YHUJ 9DERB 9AKSD 9VSKA 2SSDF 9ABHK

Fleet Status

STATUS	TAIL ID#	TYPE	DEST	TIME REM	ADVISORY
Early Watch List					
🔴	7INTG	A350	LHR	3:45 (hr)	Primary Fuel Pump
🟠	7IALK	787	FRA	7:16 (hr)	Hydraulic System
🟠	7TJWB	A350	KEF	0:18 (hr)	Control Surface
🟠	7CEEP	A380	DFW	2:11 (hr)	Main Door Seal
🟠	7JLJW	787	CDG	0:45 (hr)	Engine Bleed Air
🟠	7VSKA	777	GVA	12:18 (hr)	Oxygen System
🟠	7HOLS	A320	DTW	2:10 (hr)	Scheduled Maintenance
🟠	7VLQK	757	IAH	0:06 (hr)	Landing Gear

Flight Scheduling (UTC)

7CEEP	SIN 0119	PVG 0602	SIN 1626	CDG 0552	
7INTG	AKL 0024		FRA 1067	SIN 1067	
7VSKA	SIN 0134	HKG 0606	SIN 1121	SIN 1458	LHR 0504
7HOLS	LHR 1059				
7VLQK	CDG 1003		SIN 2310		
7JLKJ	SIN 0039	PEK 0834	SIN 1523		

Maintenance Scheduling

TAIL ID#	TYPE	LOC	TIME REM	SYSTEM	Service
7SKAJ	A380	FRA	16 hrs	Engine	Engine Wash Service
7ASKO	A320	LHR	2 hrs	Fuel Pump	Preventative Maintenance
7MNWL	777	FRA	2 days	ALL	Scheduled Service
7XOWK	787	FRA	2 days	Engine	Engine Overhaul
7PLKA	A350	CDG	6 hrs	Hydraulic System	Preventative Maintenance
7WKAL	747	FRA	5 days	ALL	Scheduled Service
7UOSL	A340	CDG	1.5 hrs	Fuel Pump	Preventative Maintenance
7QKAO	737	FRA	18 hrs	Engine	Engine Wash Service

Operating KPI's

NORMALIZED FUEL EFFICIENCY

89%

FLEET UTILIZATION

91%

Schedule Stress

Forecast • Actual

Stress / Time

On-time Performance

Actual • Target • SLA

Time

AI for Accessibility

Ubiquitous computing
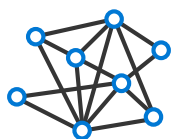
Artificial Intelligence
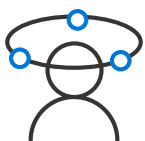
Multi-sense, multi-device experiences

Intelligent Cloud

Intelligent Edge
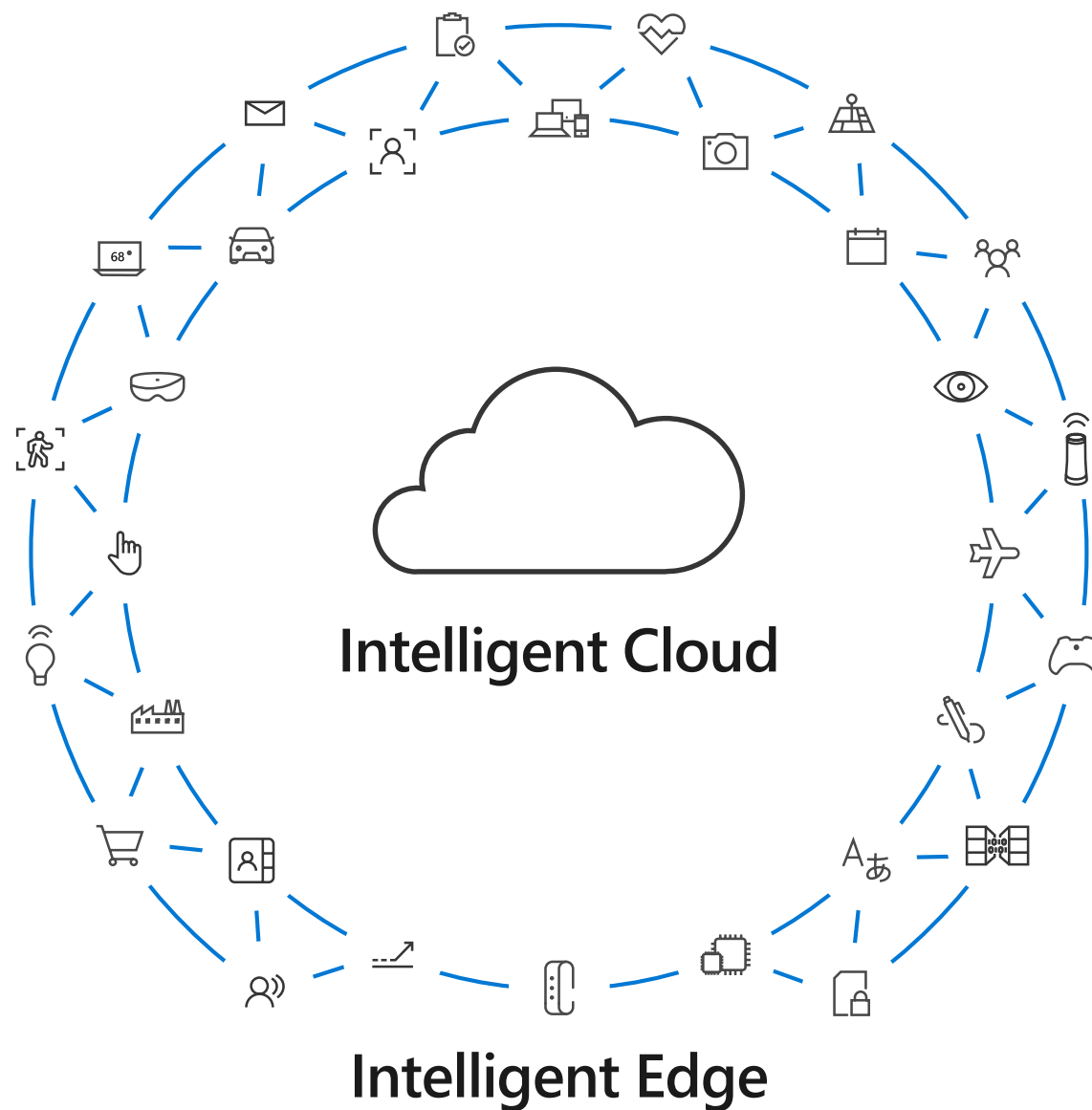
Digital Transformation
is a unique journey

THANK YOU

Microsoft

Microsoft

Creating new revenues with packaging as a service

Tetra Pak® technology keeps food and drink flowing safely from farm to table

Tetra Pak, a supplier of food processing and packaging solutions to manufacturers in more than 175 countries, uses the cloud to foresee machine problems—or spot breakdowns—reducing plant downtimes and the high costs they carry. By connecting packaging lines to Microsoft Azure, Tetra Pak collects operational data to help predict informed maintenance timing. If repairs are needed, Tetra Pak service engineers use Microsoft HoloLens headsets to diagnose and fix machine issues, even in remote locations.

Tetra Pak®

Products and Services	Organization Size	Industry	Country	Partner	Business Need
Microsoft Azure
Microsoft HoloLens	24,000 employees	Food processing and packaging	Switzerland	N/A	Cloud

Microsoft

Cutting fuel consumption and save up to $250,000 per plane, per year

Optimizing engine performance and maintenance with predictive analytics

Rolls-Royce has more than 13,000 engines for commercial aircraft in service around the world, and for the past 20 years, it has offered customers comprehensive engine maintenance services that help keep aircraft available and efficient. As the rapidly increasing volume of data coming from many different types of aircraft equipment overtakes the airlines' ability to analyze and gain insight from it, Rolls-Royce is using the Microsoft Azure platform to fundamentally transform how it uses data to better serve its customers and better optimize its maintenance operations.

Rolls-Royce

Products and Services	**Organization Size**	**Industry**	**Country**	**Partner**	**Business Need**
Microsoft IoT solutions Azure IoT Hub Azure Security Center Azure Traffic Manager Azure Cosmos DB Azure Active Directory	Corporate	Manufacturing	United Kingdom	Ixto GmbH	Predictive Maintenance Remote Monitoring

Microsoft

Creating a competitive edge, transforming maintenance operations, creating new efficiencies in workflow, cutting operating costs, and increasing elevator uptime

thyssenkrupp

ThyssenKrupp brings a new vision to elevator maintenance

ThyssenKrupp created a connected, intelligent asset monitoring system that connects thousands of sensors and systems in its elevators to the cloud and draws this data into a dashboard available on numerous devices for a real-time view of KPIs. This downtime and cost reducing solution is now being expanded to include connected field service with HoloLens for their 1.1 million elevators.

Products and Services	**Organization Size**	**Industry**	**Country**	**Partner**	**Business Need**
Azure	Corporate	Manufacturing	Switzerland	CGI	Remote Monitoring
Azure IoT Hub					Predictive Maintenance
Power BI					Connected Field Service
Windows Server 2012 Datacenter					

THE MODERN DATA ESTATE

On-premises
Private cloud

Cloud

HYBRID

Operational databases

Data warehouses

Data lakes

Operational databases

Data warehouses

Data lakes

**Reason over
any data, anywhere**

**Flexibility
of choice**

**Security
and performance**