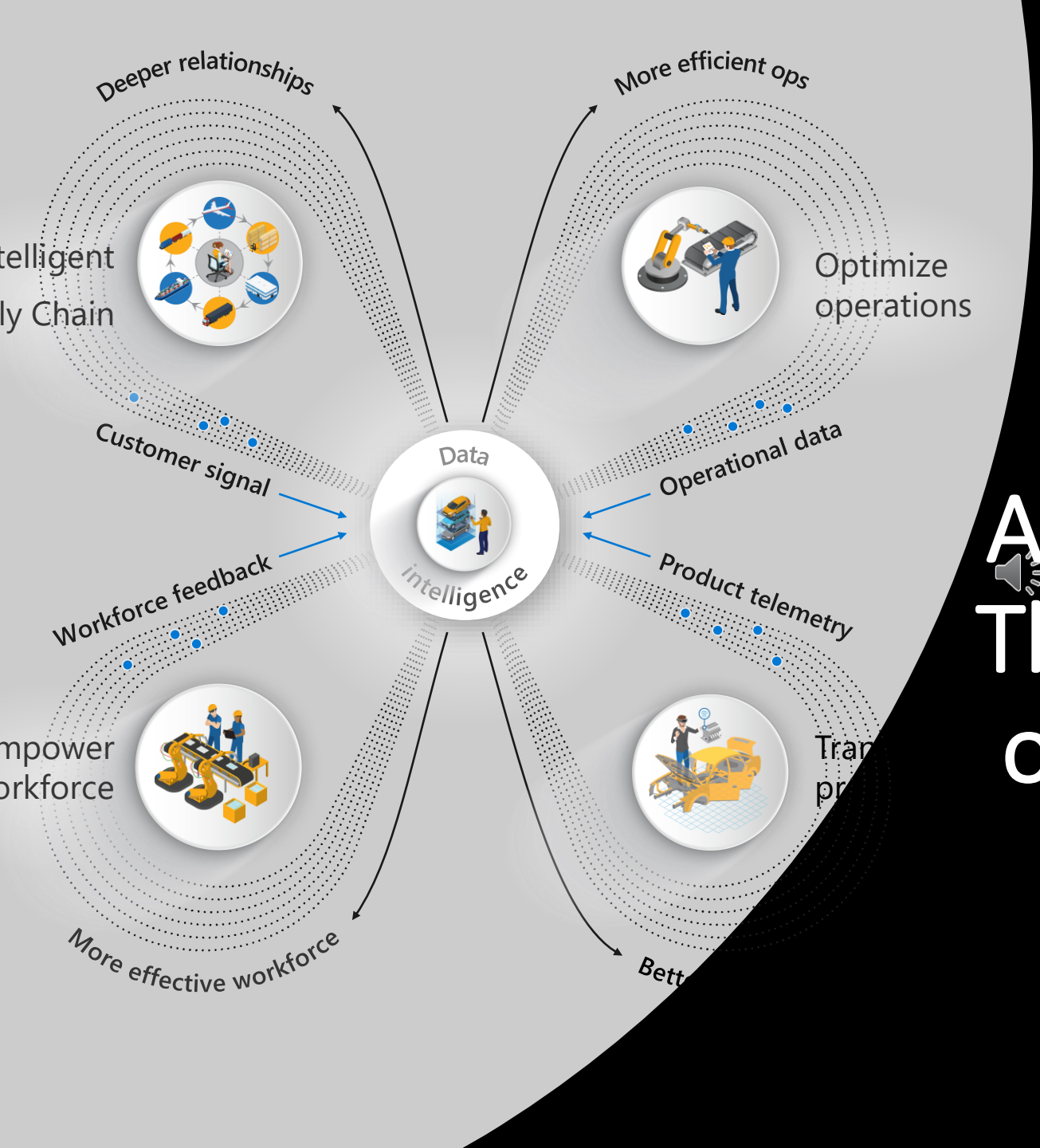


AI - Applied Intelligence. The use and the promise of AI in the Industry 4.0

Mattia De Rosa
Cloud Solution Architect Manager
Microsoft aka.ms/drmattia

AI IMPACT

$4 trillion

Growth in manufacturing output by 2025

14 percent

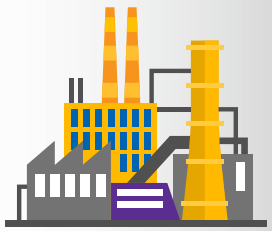
Increase in global GDP by 2030

2.4 million

Unfilled manufacturing jobs in the U.S. by 2028

Trends driving transformation in manufacturing

INDUSTRY



CUSTOMER EXPERIENCE IS KING

86% of buyers will pay more for a better customer experience and greater transparency[19]

PRODUCT-AS-A-SERVICE

83% of manufacturers said that selling products as services would increase profits[17]

75% of chemical companies plan to double level of digitization by 2020[4]

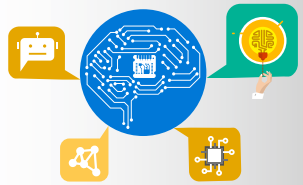
MODERN AGILE FACTORIES

80% of manufacturers expect that improved factory connectivity will help them to increase output levels[16]

Manufacturers are seeing an average **17-20%** productivity gain from smart factories[3]

50% of companies that embrace AI over the next five to seven years may double their cash flow[2]

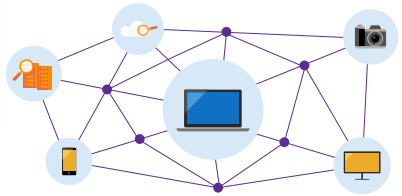
TECHNOLOGY



CLOUD **90%** of manufacturing supply chains will use cloud applications within supply chain fulfillment by the end of 2019[15]

76% expected increase in worker production and **70%** expected increase in demand for products and services based on AI[5]

Predictive analytics is the **#1** AI use case for enterprises across manufacturing[5]



IoT total potential economic impact **$3.9-$11T** by 2025[14]

IIoT **IN 3-5 YRS** hundreds of millions of things will be represented by digital twins[18]

SUSTAINABILITY

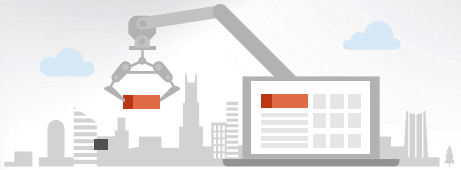
$60B estimated energy cost savings for commercial buildings with **1-4%** increase in intelligent technology[7]

400% expected increase in amount of water needed for manufacturing through 2050[10]

70% expected increase in agriculture output needed to feed the world in 2050[9]

Global access to food and water would reduce poverty for **65%** of world's rural poor[8]

WORKFORCE



75 million jobs displaced by automation **&** **133 million** new jobs created between 2018-2022[11]

Machines complete **29%** of tasks today and **71%** by 2025[6]

Microsoft

CYBERSECURITY

$6T annual global cost of cybersecurity damages by 2021[12]

$1T global spend on cybersecurity products and services by 2021[13]

Traditional manufacturing – doesn't have a digital feedback loop

DIGITAL HOTSPOTS

Inbound/Outbound Logistics
Manage Distributed Orders
Optimize transportation and routing
Monitor supply chain performance

Warehousing
Manage Distributed Inventory
Manage capacity and consumption
Monitor inventory lifecycle

Manufacturing Execution System
Manage MRO and WIP inventories
Manage production and maintenance
Remotely monitor and control

Microsoft

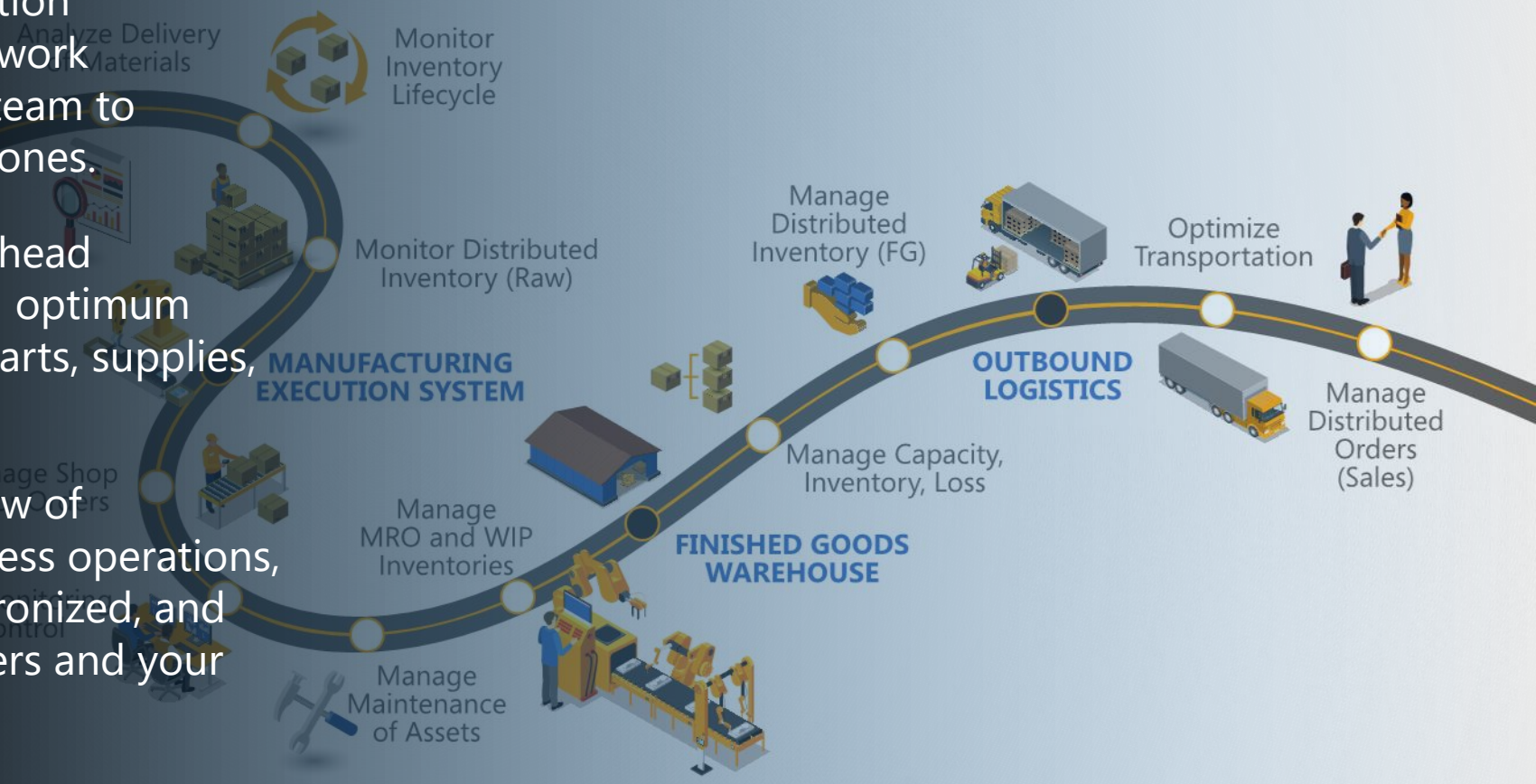
IMAGINE IF…

Imagine if you could gather information about the use of your products and work collaboratively with a development team to improve products and develop new ones.

Imagine if you could stay one step ahead of your customers needs, identifying optimum times and processes for refreshing parts, supplies, equipment.

Imagine if you could increase the flow of information across your entire business operations, keep your business processes synchronized, and improve your interaction with partners and your supply chain.

Imagine if you could attract, train, and retain an empowered workforce that could keep up with your new speed of business.



Warehousing
Manage Distributed Inventory
Manage capacity and consumption
Monitor inventory lifecycle

Manufacturing Execution System
Manage MRO and WIP inventories
Manage production and maintenance
Remotely monitor and control

Microsoft

Data will grow to 44 ZB in 2020

Transactional systems

Complex implementations

Spreadmarts

Siloed data

ETL

OLAP

Enterprise data warehouse

Operational reporting

Interactive Dashboards

Ad hoc analysis

Hadoop

Machine learning

Any data

In-memory

CLOUD

MOBILE

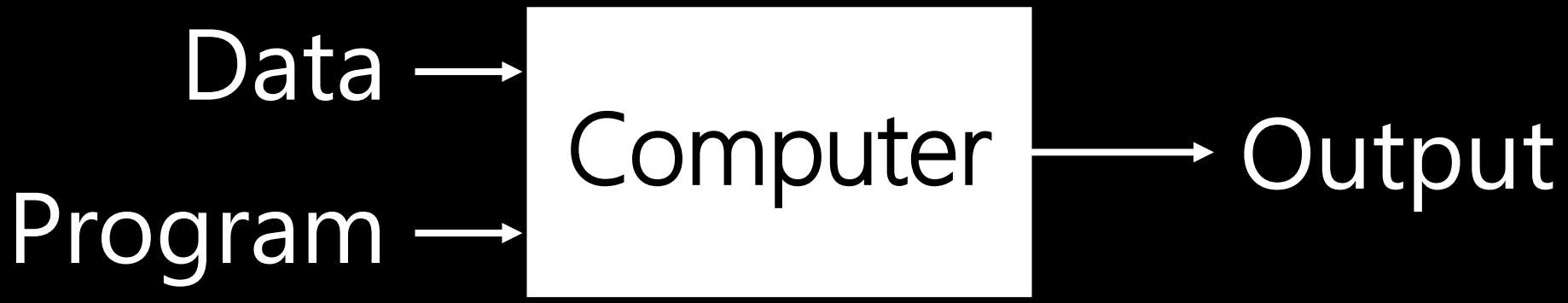
INTERNET CONNECTED

DIGITAL

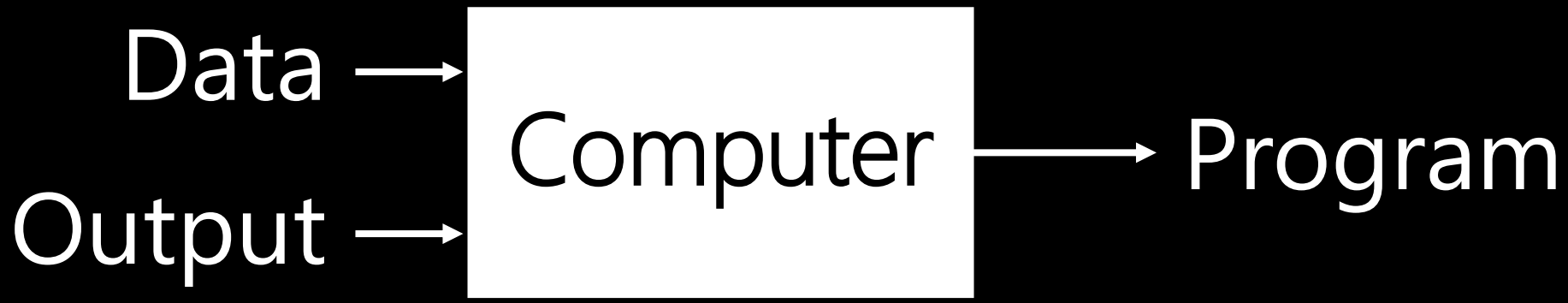
ANALOG

1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020

TRADITIONAL PROGRAMMING



MACHINE LEARNING

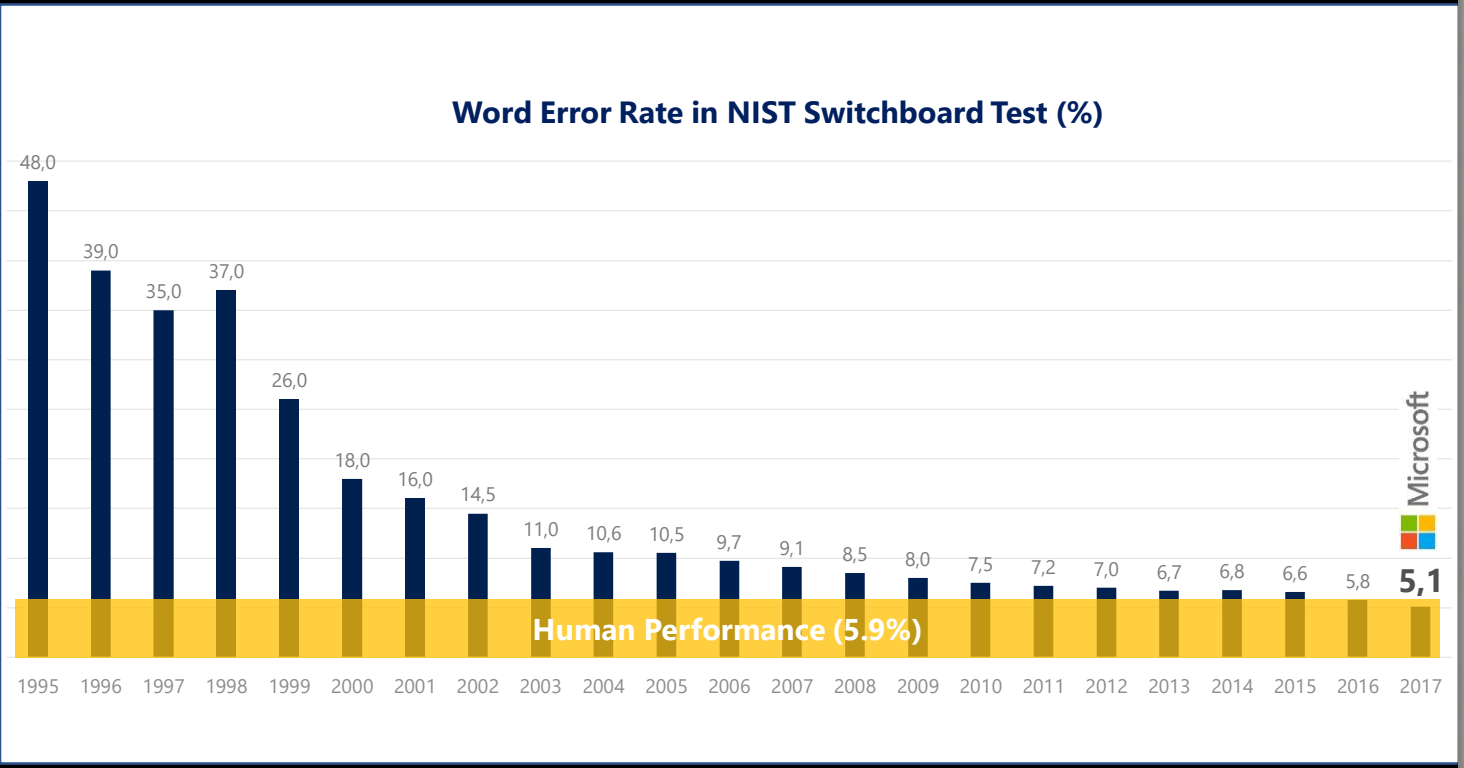


Why now

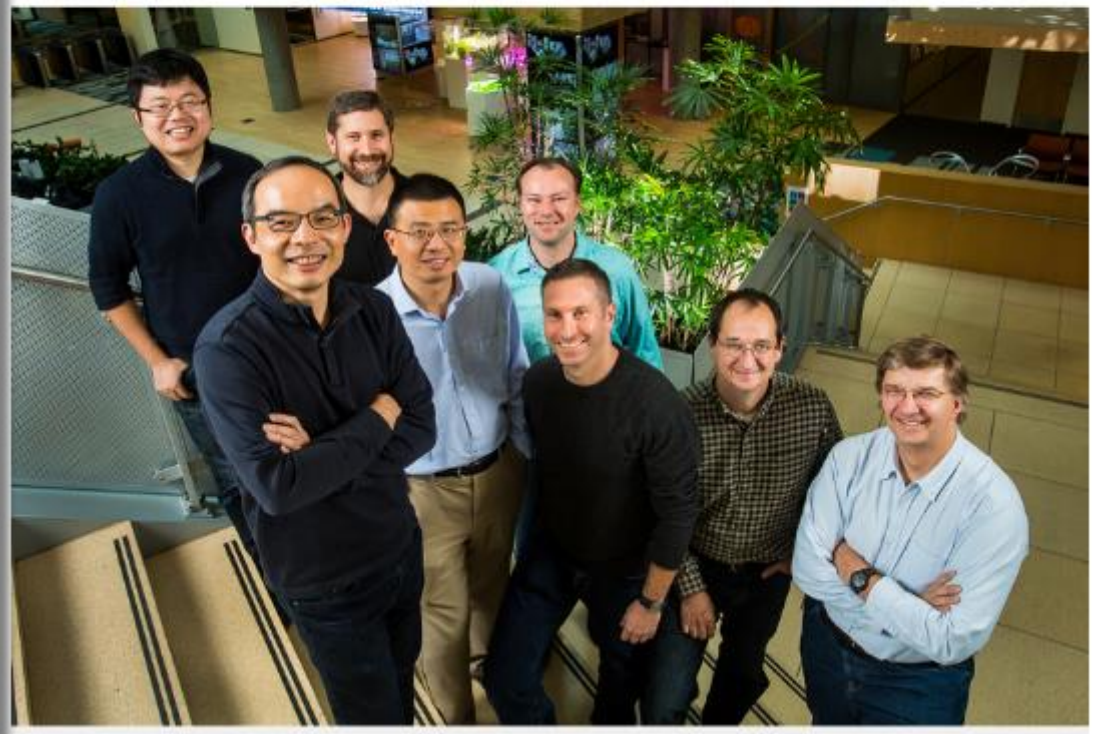

Pervasive
Data
Powerful
Algorithms
Big **Computing**
in the Cloud

VOICE RECOGNITION WITH 5.9% ERROR RATE REACHING HUMAN PARITY

(October 18th, 2016)



Historic Achievement: Microsoft researchers reach human parity in conversational speech recognition



Microsoft researchers from the Speech & Dialogue research group include, from back left, Wayne Xiong, Geoffrey Zweig, Xuedong Huang, Dong Yu, Frank Seide, Mike Seltzer, Jasha Droppo and Andreas Stolcke. (Photo by Dan DeLong)

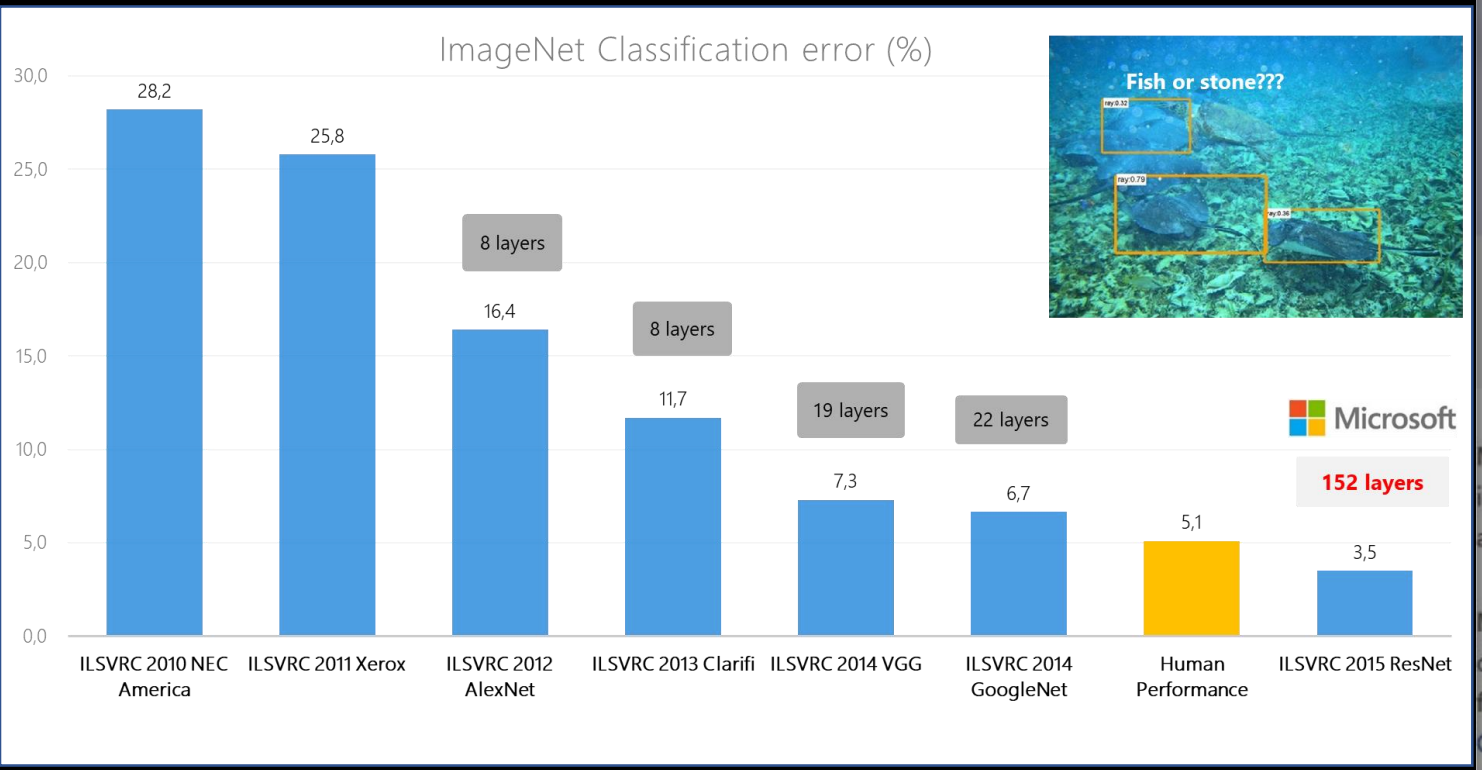
Posted October 18, 2016 By **Allison Linn**

Microsoft has made a major breakthrough in speech recognition, creating a technology that recognizes the words in a conversation as well as a person does.

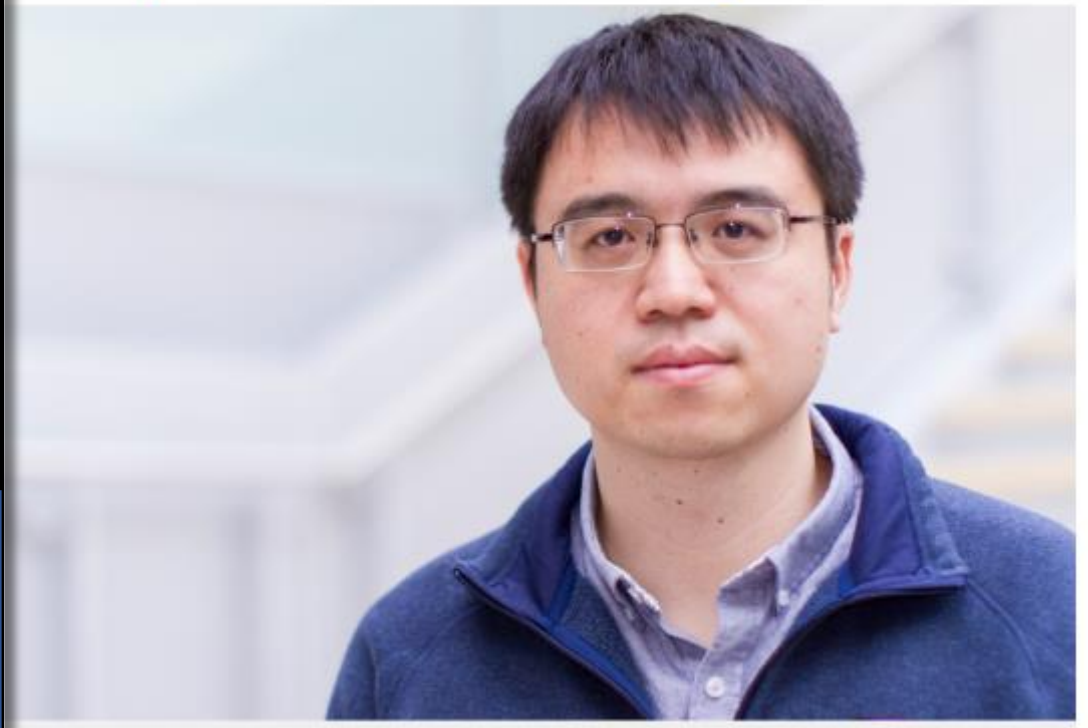
In a paper published Monday, a team of researchers and engineers in Microsoft Artificial Intelligence and Research reported a speech recognition system that makes the same or fewer errors than professional transcriptionists. The researchers reported a word error

WORLD LEADING OBJECT RECOGNITION POWERED BY 152 LAYER DEEP NEURAL NETWORK

(December 10th, 2016)



Microsoft researchers win ImageNet computer vision challenge



Jian Sun, a principal research manager at Microsoft Research, led the image understanding project. Photo: Craig Tuschhoff/Microsoft.

Posted December 10, 2015 By **Allison Linn**

179

Microsoft researchers on Thursday announced a major advance in technology designed to identify the objects in a photograph or video, showcasing a system whose accuracy meets and sometimes exceeds human-level performance.

Microsoft's new approach to recognizing images also took first place in several major categories of image recognition challenges Thursday, beating out many other competitors from academic, corporate and research institutions in the ImageNet and Microsoft Common Objects in Context challenges.

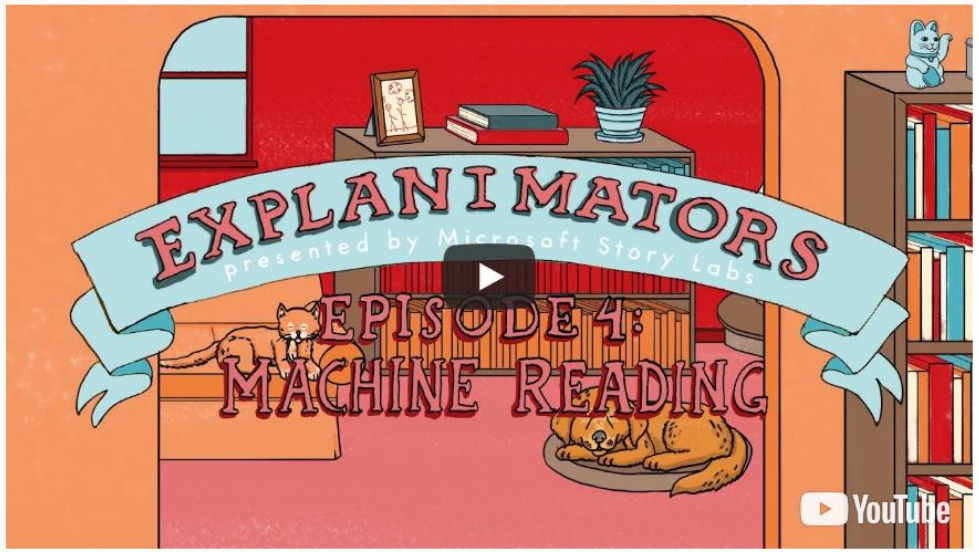
QUESTION ANSWERING WITH 82.650 SCORE REACHING HUMAN PARITY (82.350)

(January 15th, 2018)

Microsoft creates AI that can read a document and answer questions about it as well as a person

Jan 15, 2018 | Allison Linn

Facebook Twitter LinkedIn 10K+ Reddit



Microsoft researchers have created technology that uses artificial intelligence to read a document and answer questions about it about as well as a human.

It's a major milestone in the push to have search engines such as Bing and intelligent assistants such as Cortana interact with people and provide information in more natural ways, much like people communicate with each other.

A team at Microsoft Research Asia reached the human parity milestone using the Stanford Question Answering Dataset, known among researchers as SQuAD. It's a machine reading comprehension dataset that is made up of questions about a set of Wikipedia articles.

According to the SQuAD leaderboard, on Jan. 3, Microsoft submitted a model that reached the score of 82.650 on the exact match portion. The human performance on the same set of questions and answers is 82.304. On Jan. 5, researchers with the Chinese e-commerce company Alibaba submitted a score of 82.440, also about the same as a human.

The two companies are currently tied for first place on the SQuAD "leaderboard," which lists the results of research organizations' efforts.

MICROSOFT'S AZURE EDGE AI FOR WORKPLACE SAFETY

rendered: 168006, dropped: 0, current: 18.48, average: 20.56

thyssenkrupp

REINVENT HOW CITIES MOVE

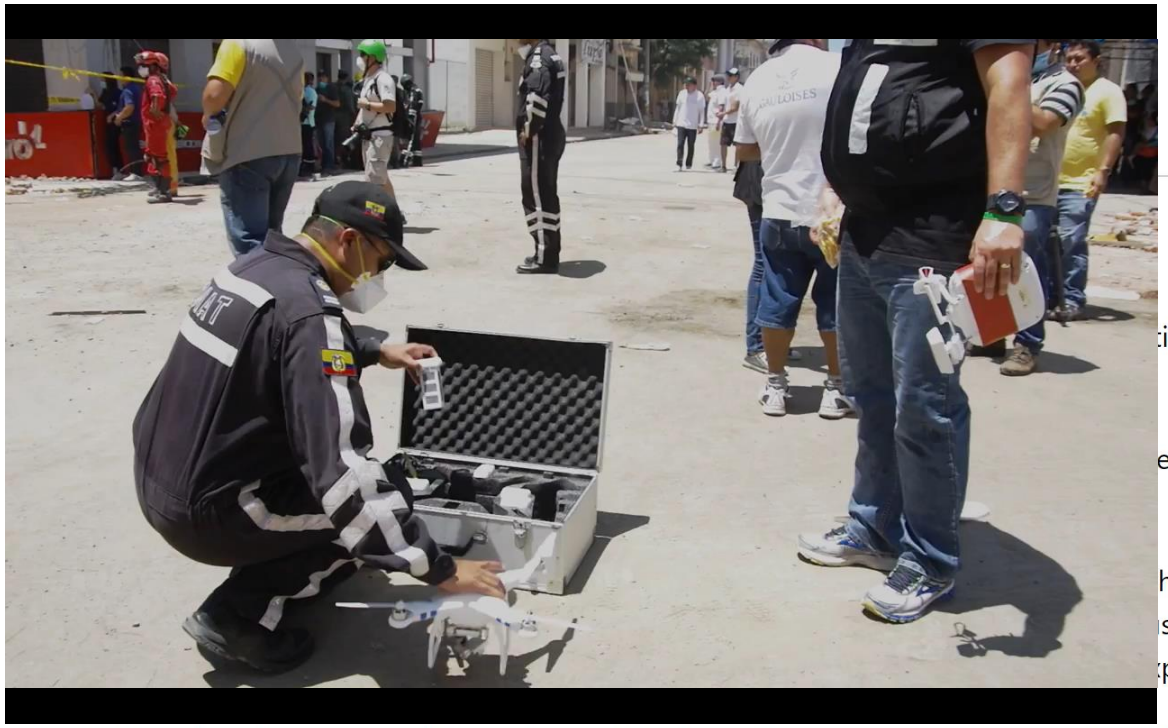
Microsoft

JABIL

PREDICT ASSEMBLY FLOOR ERRORS

Microsoft

Aerial Informatics and Robotics Platform



tics simulation

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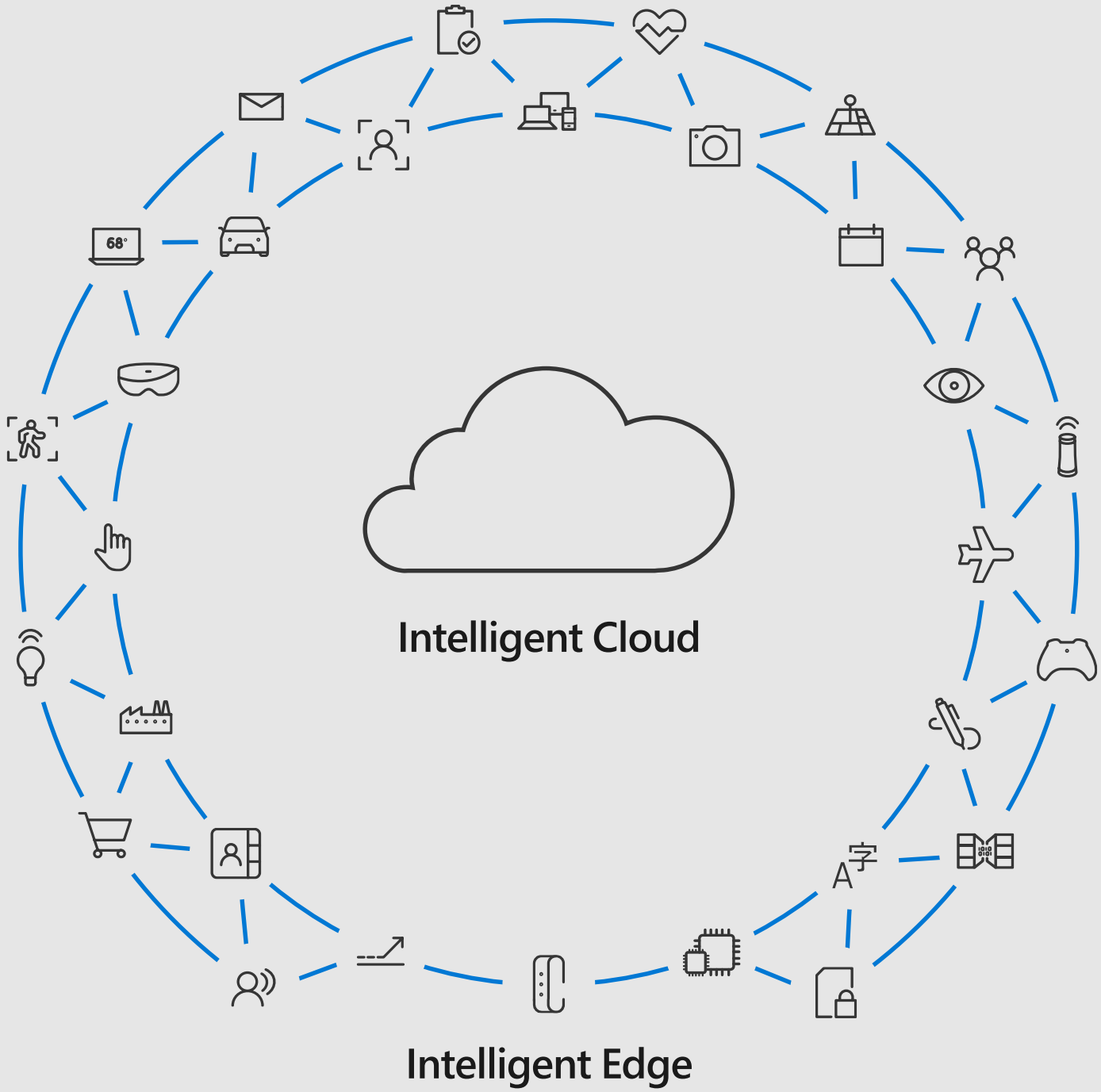
AirSim solves these two problems: the need for large data sets for training and the ability to debug in a simulator. It provides a realistic simulation tool for designers and developers


68°
Intelligent Cloud
Intelligent Edge

Intelligent Cloud and Intelligent Edge everywhere

* Two Azure Government Secret region locations undisclosed

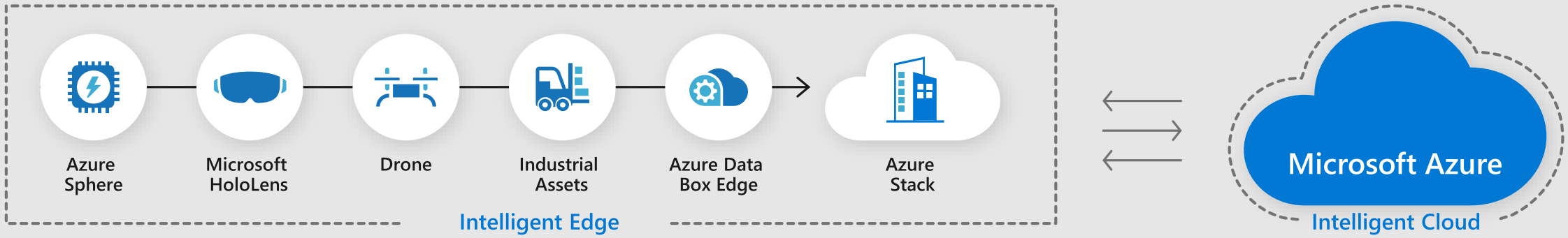
54 Azure regions

100s of service providers

1,000s of enterprises

1,000,000s of devices

Intelligent Cloud and Intelligent Edge approach



Azure IoT Edge	Azure Services

Azure Serverless

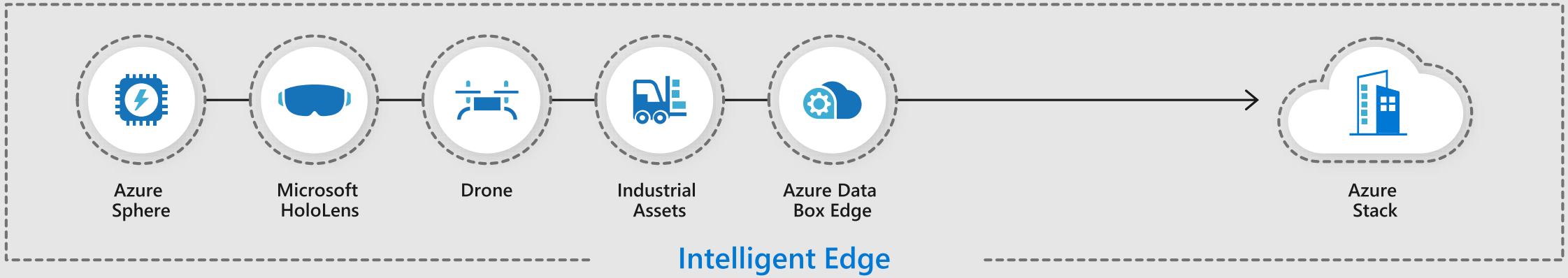
Azure Security Center

Azure Active Directory

Azure Management

Azure AI & Machine Learning

Run the Edge locally and disconnected with Azure Stack

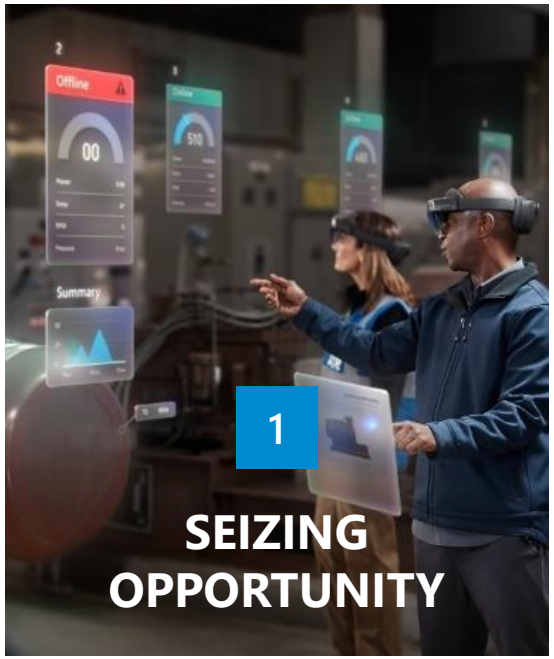


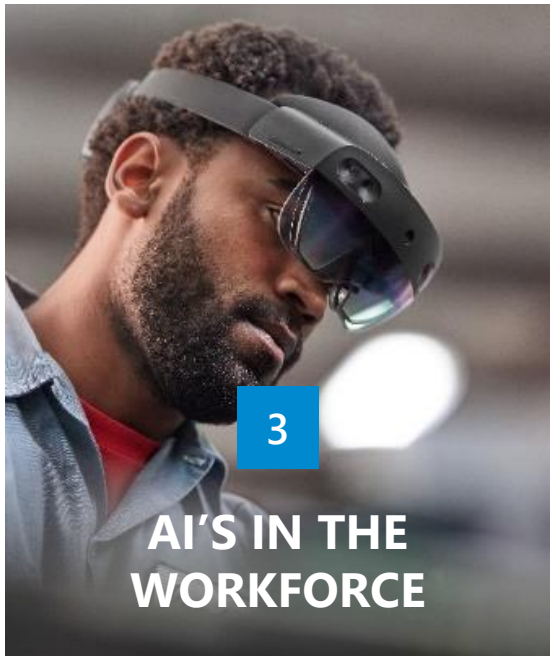
Azure IoT Edge	Azure Services
Azure Serverless	
Azure Security Center	
Azure Active Directory	
Azure Management	
Azure AI & Machine Learning	

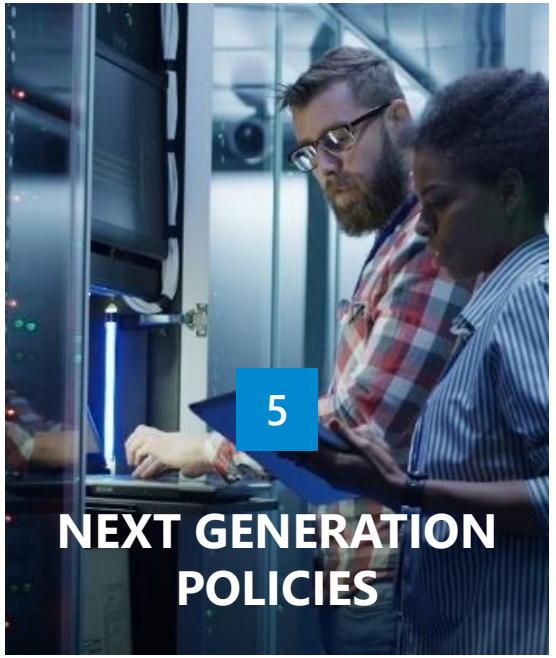
Microsoft

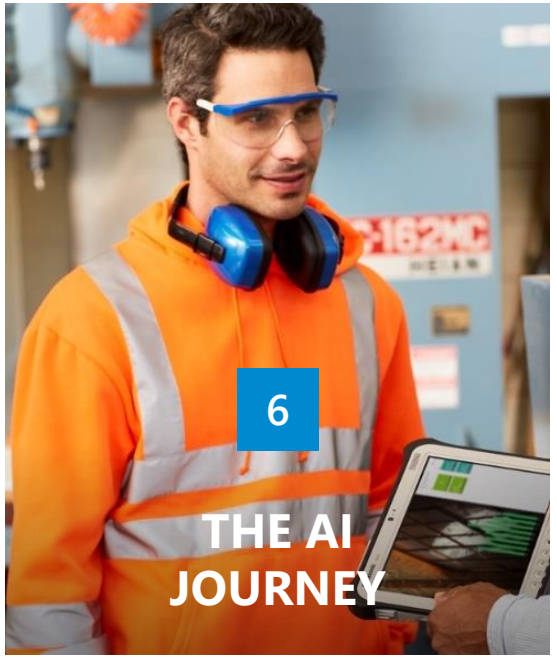
Download today

KEY INSIGHTS

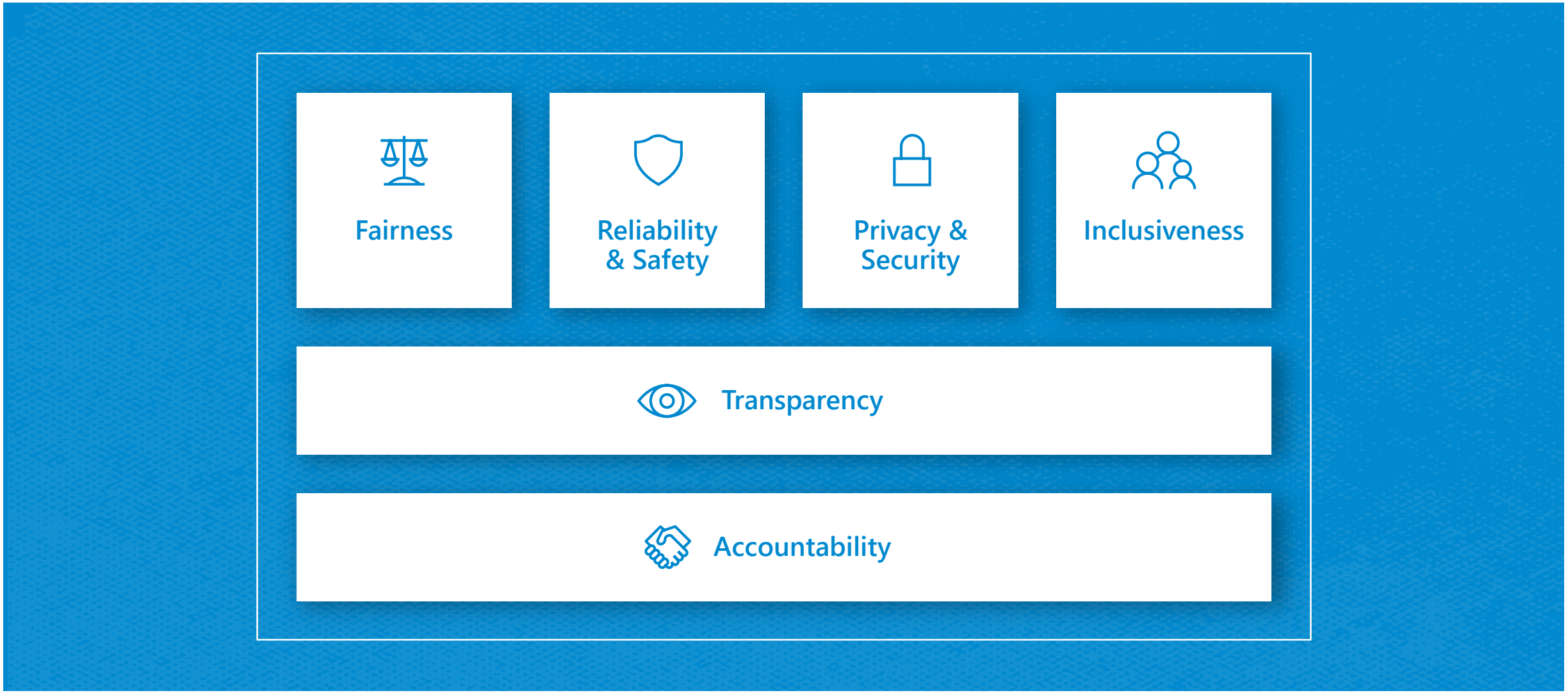








A PRINCIPLED APPROACH




Microsoft