

Valley Industrial Association

AI KEYNOTE

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FEB 21, 2025



**The world has
changed**

Industries are transforming rapidly with AI

AI is empowering human potential like never before

AI is shaping our future

Changing the face of industry

Data has helped unlock
some isolated impact
across our value chain

Together with modern
infrastructure and compute
AI gives all data value

17%

Inventory cost
reduction

20%

Throughput
increase

22%

Productivity
increase

40%

Downtime
reduction



AI drives Business Value

AI is set to boost Productivity by 40% in 2035

65% of manufacturers will save 10% of Opex through process digital twins using IoT and ML by 2030

AI in manufacturing market expected to grow from \$1.1 billion in 2020 to \$68 billion in 2032

The opportunity is yours to
lead the AI transformation

Artificial Intelligence

Machine Learning

Deep Learning

Generative AI



Artificial Intelligence

the field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence



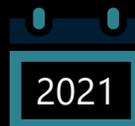
Machine Learning

subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions



Deep Learning

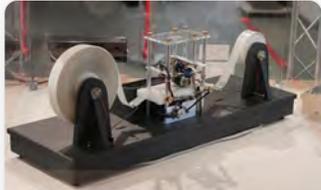
a machine learning technique in which layers of neural networks are used to process data and make decisions



Generative AI

Create new written, visual, and auditory content given prompts or existing data.

Evolution of AI in Manufacturing



1936

Turing Machine

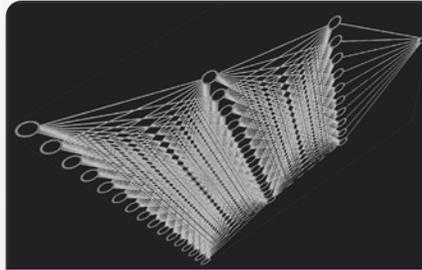
a mathematical model of computation describing an abstract machine capable of implementing any computer algorithm.



1950s

Artificial Intelligence

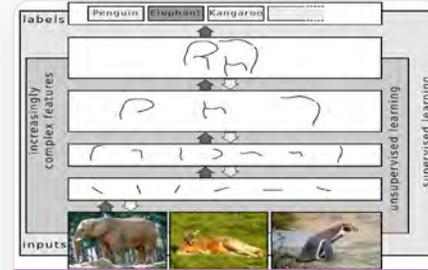
(1950s) the theory and development of computer systems that can perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision making, and language translation.



1990s

Machine Learning

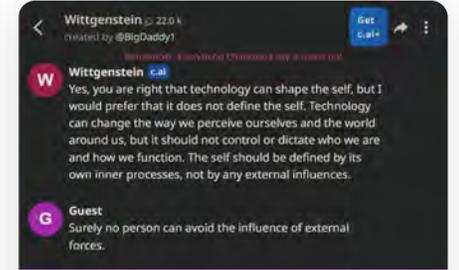
(1990s) a subset of AI and computer science where algorithmic models are trained to learn from existing data to make decisions or predictions.



2010

Deep Learning

(2010s) a machine learning technique that uses labeled data and layers of neural networks to process data and make decisions.



2020s

Generative AI

(2020s) a type of AI technology that uses algorithmic models to create new written, visual, and auditory content when given prompts or existing data.



Instrumentation
(1940s)



Plastic Molding
(1950s)



Robotics
(1960s)



Programmable Logic Controller
(1970s)



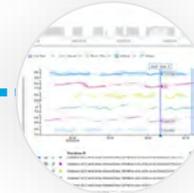
Machine Vision
(1980s)



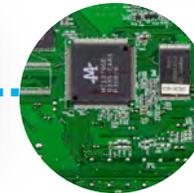
Computer Vision
(1990s)



Internet of Things
(2000s)



Predictive Analytics
(2010s)



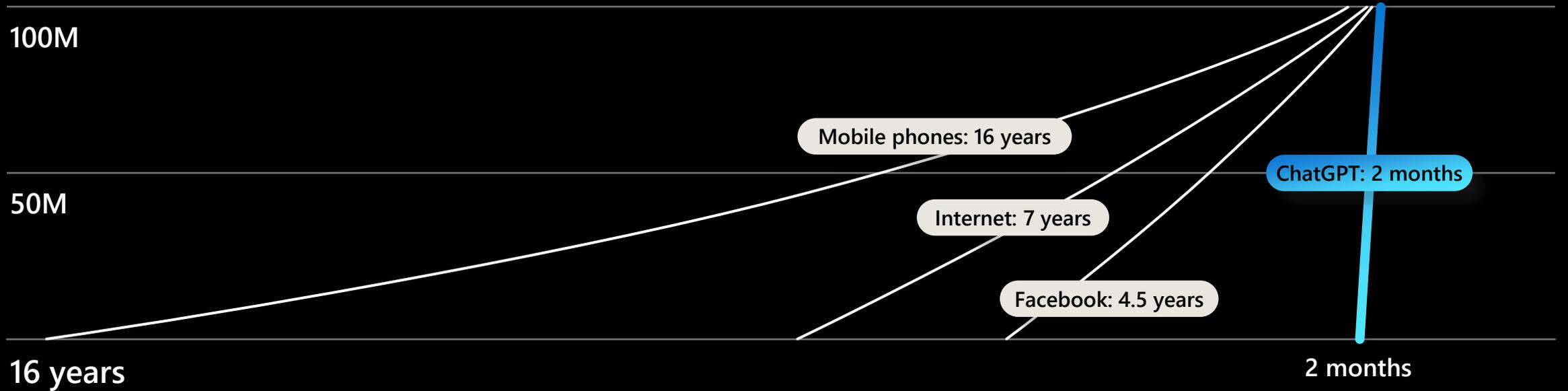
AI Vision
(2010s)



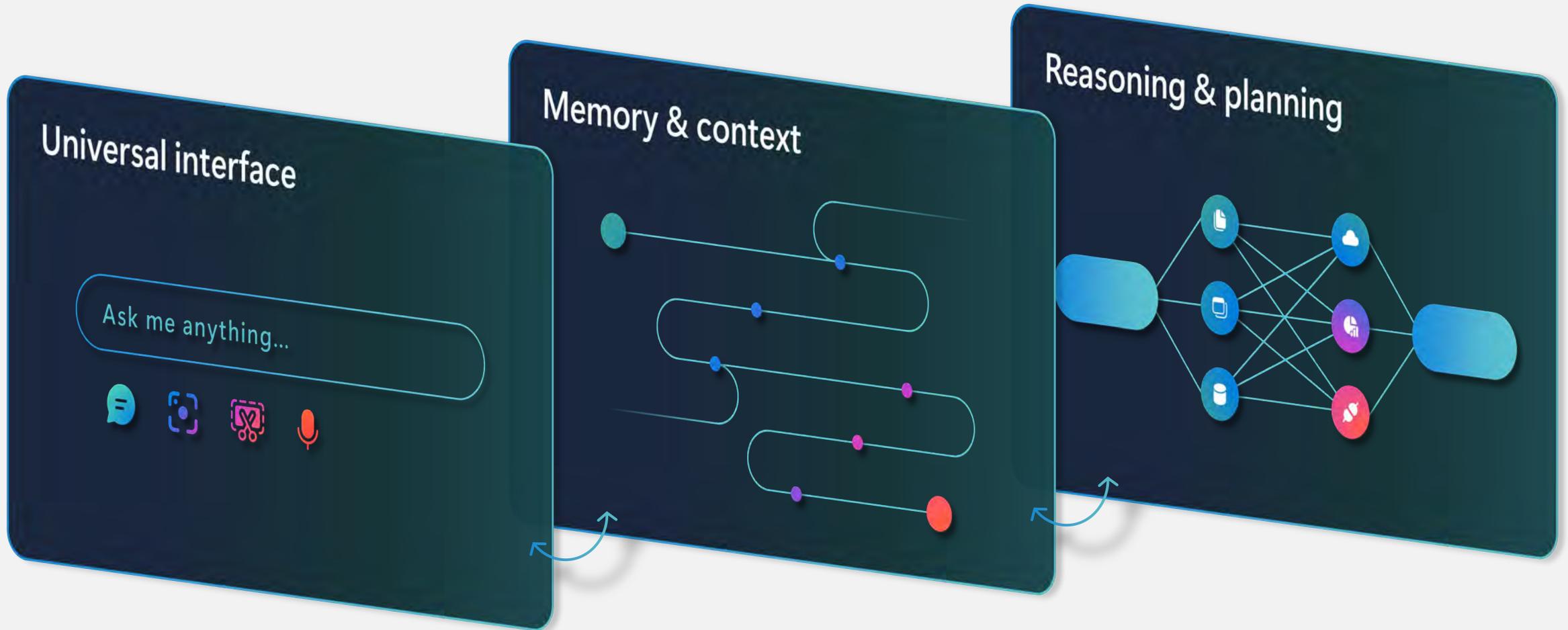
Factory Copilot
(2020s)

Unprecedented vertical growth

Time to reach 100M users



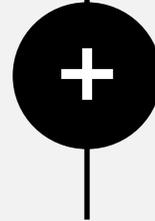
Major advancements in AI



Microsoft and OpenAI partnership



Ensure that artificial general intelligence (AGI) benefits humanity



Empower every person and organization on the planet to achieve more

Azure OpenAI Service

GPT-4, GPT-4-Turbo, GPT-3.5-Turbo

Language

GPT-4-Turbo with Vision

Multi-Modal

Babbage, Davinci, GPT-3.5-Turbo

Fine Tuning

DALL-E 3

Images

Whisper

Transcription & Translation

Microsoft AI Platform

Platform
purpose-built for
AI innovation

Copilot & AI Stack

Extend
Microsoft Copilot

Build your
own copilot

Innovate and
automate with AI

Copilot Studio



Visual Studio



GitHub



AI platform

App services

Data services

AI infrastructure

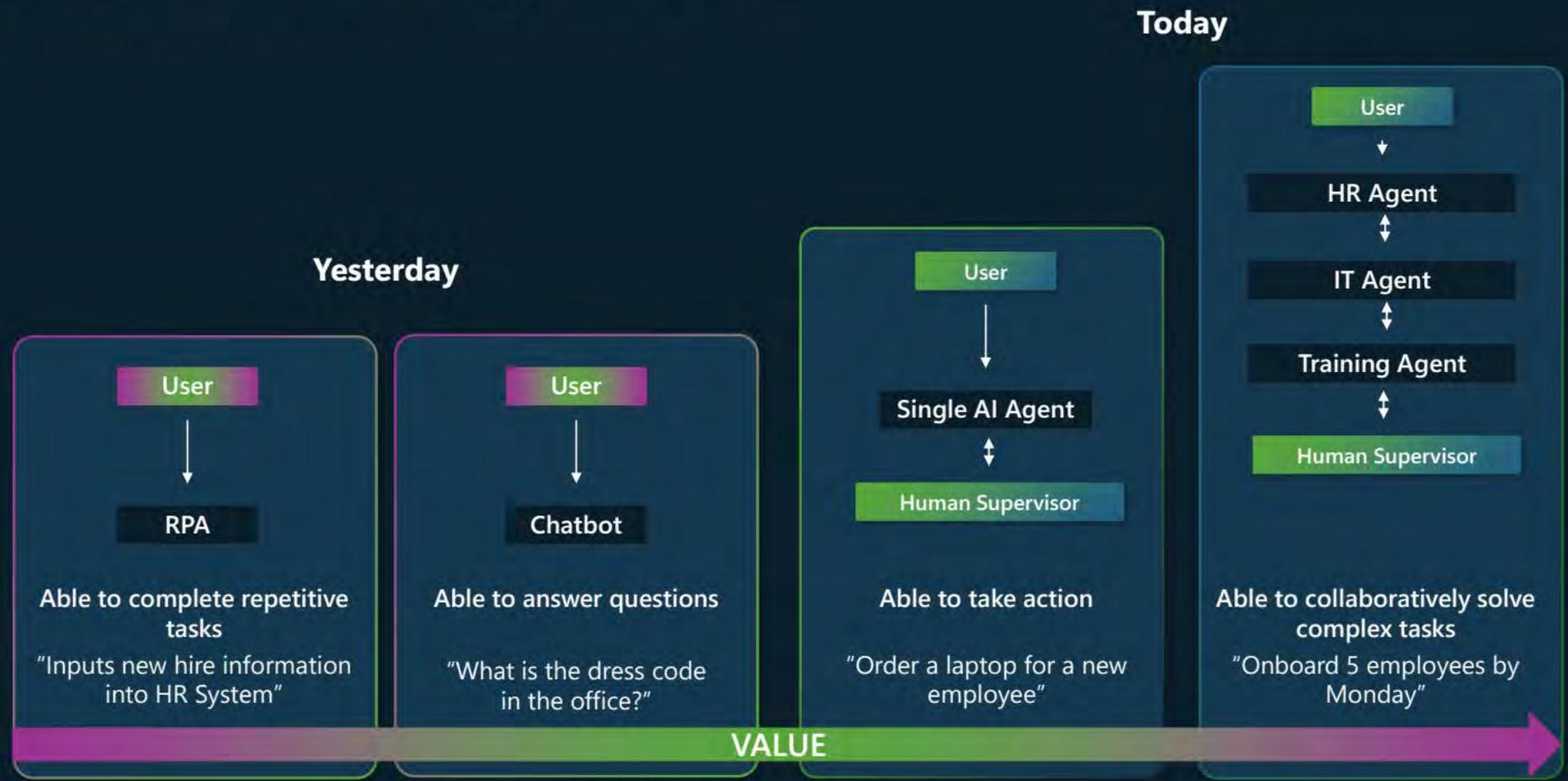


Azure

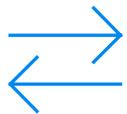
AI privacy, safety and security

Agentic AI Evolution: From past to present

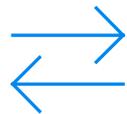
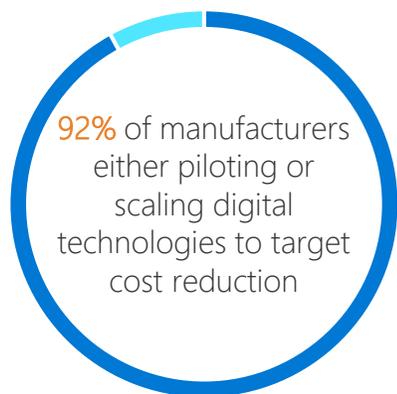
Agentic AI Progression



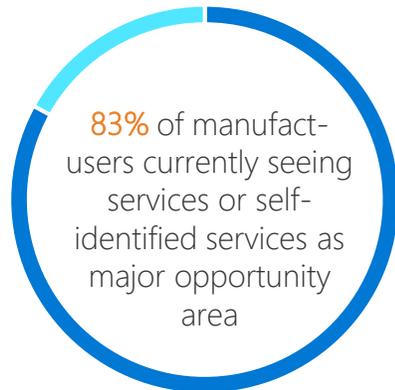
Disruptive changes are impacting every manufacturing industry



EBITDA Improvement



Service-based business models



Innovation speed



Sustainable operations



Microsoft's Strategy Framework for Manufacturing

AI Transformation



Improve Customer Experience



Enable Intelligent Factories



Resilient Manufacturing Supply Chain



Unlock Innovation and introduce new products

Enable the intelligent plant of the future



Connected & Enabled Workers



Empower frontline workers with immersive training, data visibility, and seamless communication tools



Production Monitoring & Optimization



Leverage end-to-end production data to improve operations and identify opportunities for optimization with AI

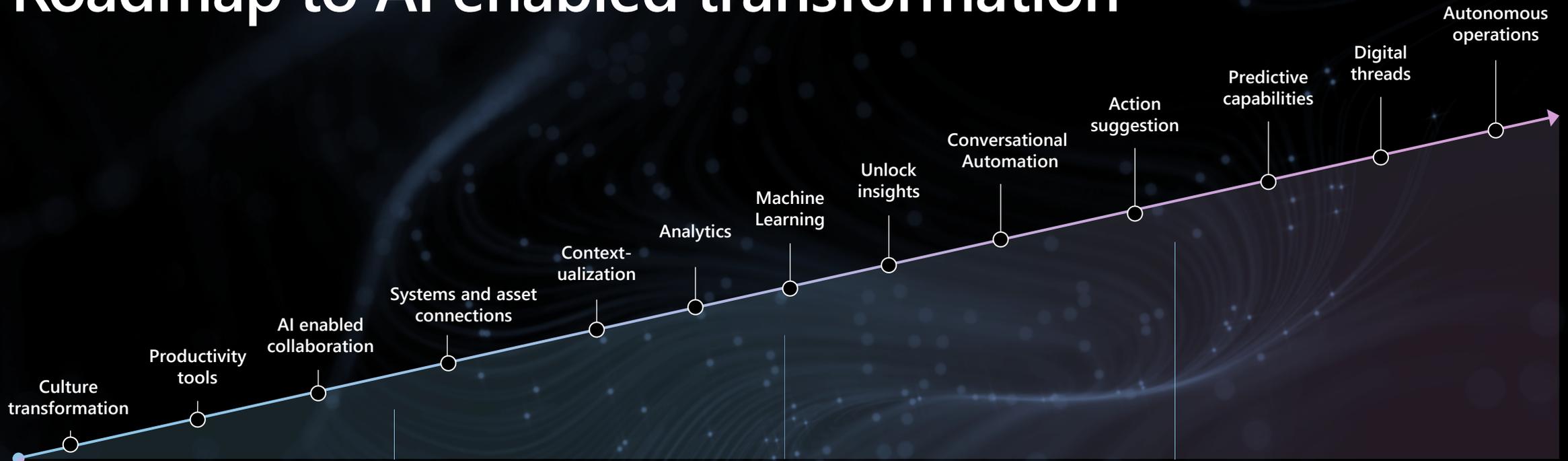


Maintenance & Quality



Utilize digital solutions and AI to do asset maintenance, track materials and automate complex quality inspection processes

Roadmap to AI enabled transformation



Data foundation



Aggregate data from IT, OT and ET sources, from sensors to ERP systems and PLM applications, create a unified industrial data foundation in the cloud

Scaled AI innovation



Leverage Microsoft's Azure AI services to accelerate AI solution adoption. From modernizing existing applications with AI to creating new ones with a repeatable approach

Industrial Metaverse adoption

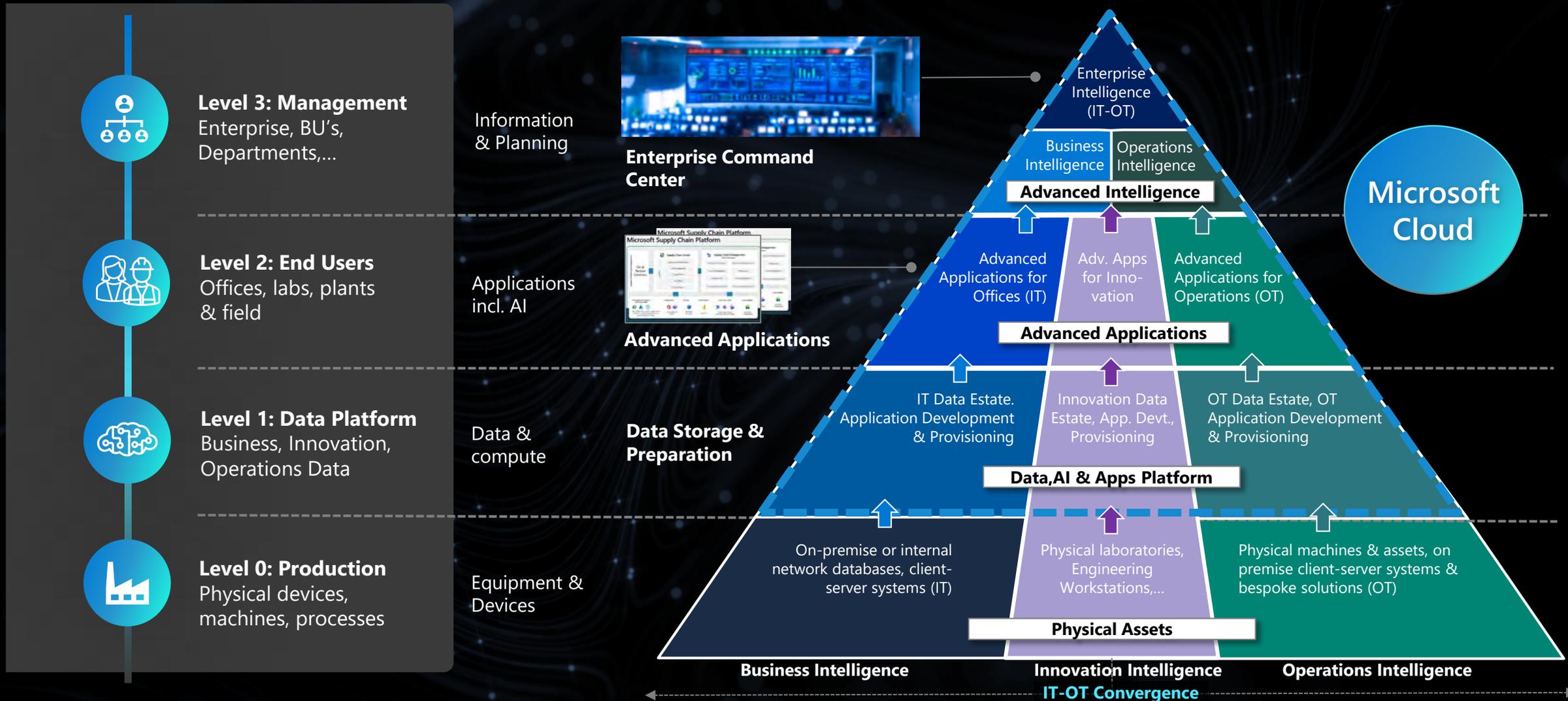


Leverage emerging technologies to enable systems to autonomously operate and avoid disruptions, increasing business agility

Culture transformation



New Plant Blueprint - Data Empowered Enterprise



Intelligent Factory | High Potential Use Cases

Daily Operations

- Real time KPI monitoring / performance dashboards
- Advanced analytics, reporting and prioritization to enable troubleshooting and corrective action / remediation
- Digital twin for production line / system level optimization
- Enterprise level production analytics and intelligence

Assembly / Packaging

- Digital operating procedures with integrated workflows
- MR / AR to train and guide operators
- Digitally enabled product configurations, material requisitions, variable takt times
- Realtime location of high value / perishable raw materials & components
- Advanced analytics for productivity / cycle-time optimization

Planning & Scheduling

- Dynamic production scheduling / order sequencing / operator assignments
- Interactive tools to facilitate shift / line changeovers
- Digital lean tools – eKanban, eAndon, eSpaghetti, etc.
- Predictive forecasting and replenishment
- Supply chain visibility to proactively identify material / logistics constraints

Machine / Asset Operation

- IoT / Integration of machine-level OT data to enterprise systems
- Real time visibility to production status, alerts, anomalies and trends
- Intelligent maintenance / asset management
- Remote support / assistance
- Digital twins for machine / process monitoring and validation
- AI enabled / autonomous process controls



Quality Inspection / Validation

- IoT enabled quality data platform
- Digital operating procedures with integrated workflows
- End-of-line test automation and defect inspection
- In-line optical inspection of critical process and product parameters
- Predictive analytics to correlate quality specifications and production inputs

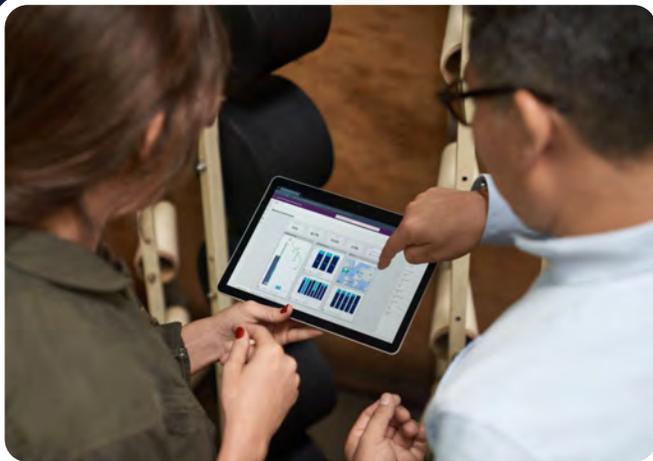
Safety and Sustainability

- Dynamic operator staffing based on skill / certification levels
- Automated monitoring / lockout of high-risk operations / areas
- Digital auditing of regulated processes and hazardous materials / byproducts
- Product traceability / genealogy
- Energy cost / water / waste management
- Sustainability reporting

Drive continuity, agility, sustainability, and resiliency



Visibility & Risk Management



Harness always-on supply chain visibility to act with agility and avoid disruptions



Forecasting & Planning



Leverage data to forecast demand and optimize supply chain planning



Warehousing & Fulfillment

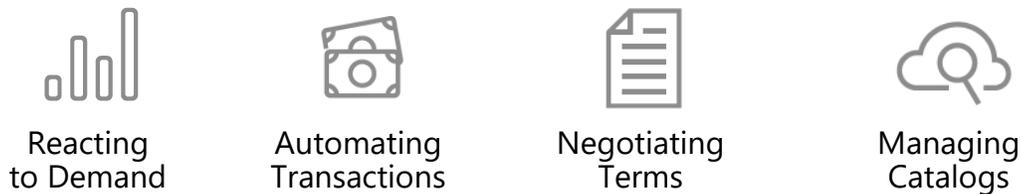
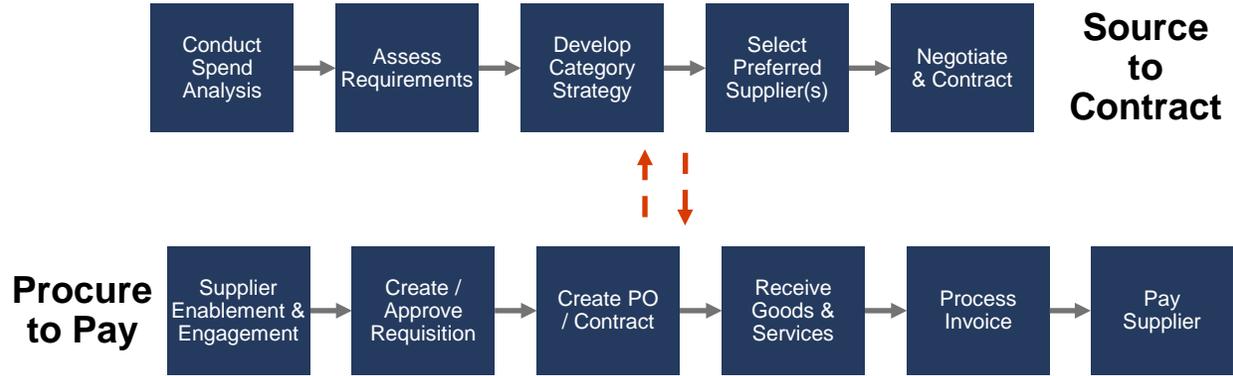


Modernize warehouse operations and achieve precise fulfillment

Source-to-Pay Transformation Vision

Analog Now

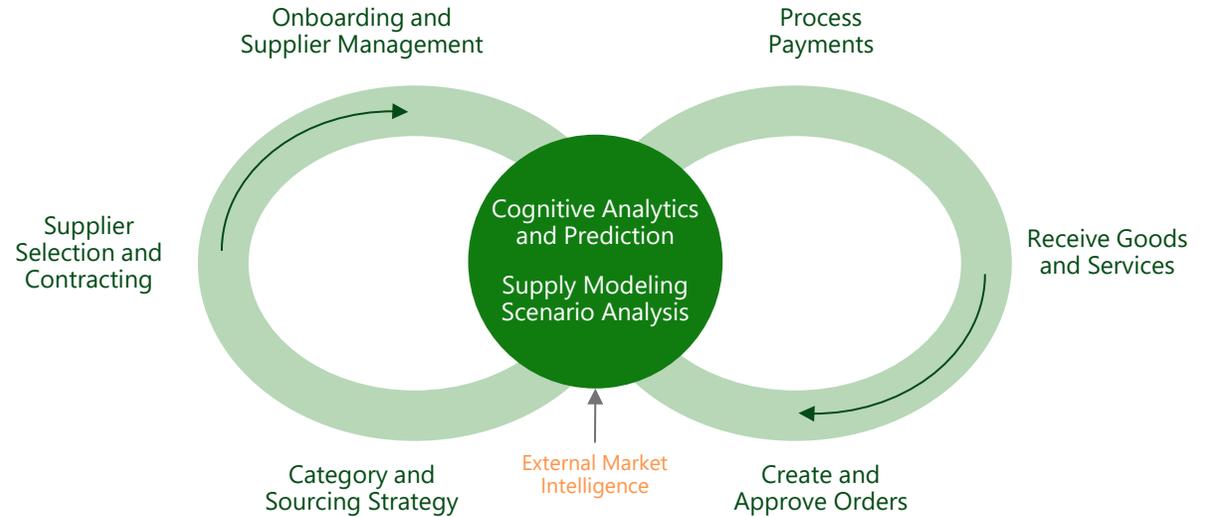
Schedule driven, linear and sequential processes



Competitive Differentiation through Productivity and Cost Advantage

Digital Future

End-to-end, insight driven and closed-loop services



Agile Architecture for Continuous Change in a New Era of Growth

AI advancements that can deliver rapid, proven ROI

Agentic Reasoning



mimic human-like decision-making, allowing purchasing teams to analyze complex scenarios and make faster, more accurate decisions



Multimodality



process and integrate text, images, and audio to enable procurement professionals analyze diverse data sources for better strategies



AI Agents



automate routine tasks, allowing human teams to focus on strategic initiatives, solve complex problems and deliver new innovations

Source to Contract



- **RFx Agent:** responsible for creating RFx including orchestration of sub-agents for different types (RFI, RFQ, RFP)
- **Supplier Response Agent:** manage and validate supplier responses and automatically provide feedback to suppliers if something is wrong or missing
- **Response Evaluation Agent:** generate a scorecard to recommend the best supplier based on different evaluation criteria / weighting
- **Award Agent:** award business to the selected supplier and convert the information captured during the sourcing process into a contract
- **On-boarding Agent:** guide new suppliers through onboarding including auto-populating fields based on data gathered through the sourcing and selection process

Procure to Pay



- **Buying channel guidance:** determine the best and most efficient buying channel for a requisitioner considering role, region, intent, company policies, etc.
- **Supplier recommendation:** suggest the best supplier(s) for a given request based on a company's preferred supplier list, past transactions, and performance data
- **Intelligent PR/PO creation:** create purchase requisitions and orders by extracting key information from contracts and proposals including multi-line requests
- **Smart bid reviews:** review vendor proposals and bids to ensure consistency with the requisitioner's intent, buying channel, and category
- **Anomaly detection:** identify and mitigate non-standard requests, buying processes, supplier responses, prices and services / add-on charges

Strategic Framework for AI Transformation in Manufacturing



**DEFINE VISION AND
BUSINESS OBJECTIVES**



**BUILD A STRONG DATA
FOUNDATION**



**IDENTIFY AND PRIORITIZE AI
USE CASES**



**DEVELOP AND DEPLOY
AI SOLUTIONS**



**UPSKILL WORKFORCE AND
DRIVE CHANGE
MANAGEMENT**



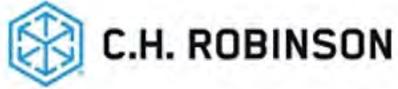
**SCALE, CONTINUOUSLY
IMPROVE AND OPTIMIZE**

Success Factors in AI Transformation

- ✓ Strong executive sponsorship and leadership buy-in
- ✓ Robust data infrastructure and AI governance
- ✓ Scalable and secure AI architecture
- ✓ Continuous workforce training and change management
- ✓ Measurable KPIs and iterative improvements



CH Robinson



Transforms business outcomes using Azure AI:

- C.H. Robinson receives tens of thousands of emails from customers daily, for routine tasks that had to wait hours before an employee could get to them.
- C.H. Robinson used Microsoft Azure AI Studio and Azure OpenAI Service to build generative AI tools that automate emailed customer requests, improving employee productivity and customer service.
- Incorporating Azure AI into C.H. Robinson's proprietary technology is reducing speed to market from hours to seconds, creating better business outcomes for its shippers.

Volkswagen Group

VW Group: Transforms translation efficiency with Azure AI

- **2 billion words annually:** Translated in over 60 languages using Azure AI.
- **100 million brand-specific texts:** Leveraged for high-quality, consistent translations.
- **Significant efficiency boost:** Faster, precise translations, reducing turnaround times.



The responsibility is ours

"The true measure of AI's success will not be in its capabilities, but in how responsibly we wield its power to benefit humanity without compromising our ethical standards."



RESPONSIBLE AI STANDARDS

FAIRNESS

How might an AI system allocate opportunities, resources, or information in ways that are fair to the humans who use it?



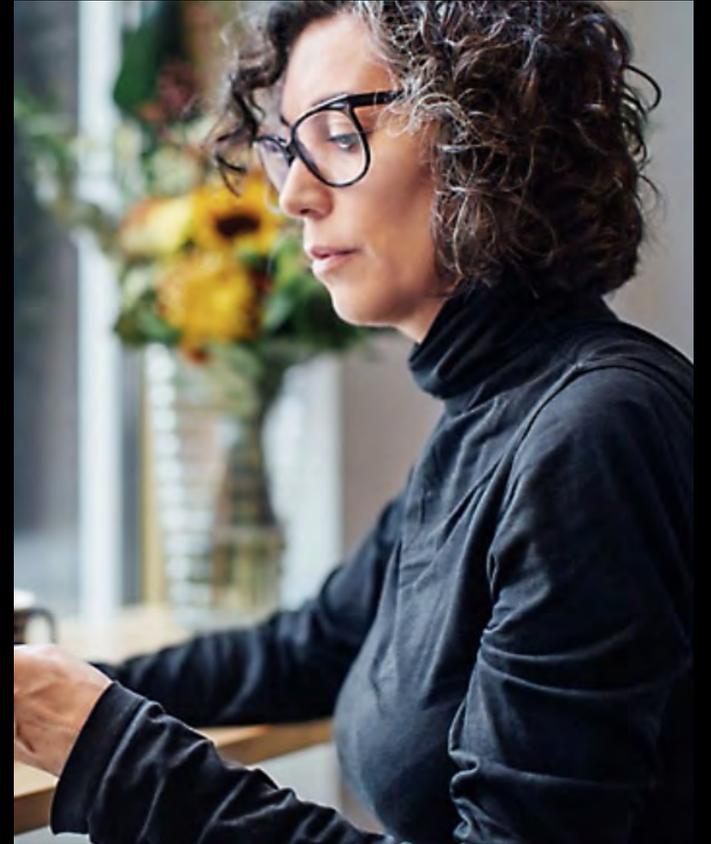
RELIABILITY and SAFETY

- How might the system function well for people across different use conditions and contexts, including ones it was not originally intended for?



PRIVACY and SECURITY

- How might the system be designed to support privacy and security?



INCLUSIVENESS

- How might the system be designed to be inclusive of people of all abilities?



TRANSPARENCY

- How might people misunderstand, misuse, or incorrectly estimate the capabilities of the system?



ACCOUNTABILITY

- How can we create oversight so that humans can be accountable and in control?





In closing.....

1. What is your AI vision and strategy?
2. How will you drive sustainable innovation with AI?
3. How will you ensure the AI is governed and used ethically and responsibly?



THANK YOU