Microsoft AI for Healthcare

Better experiences. Better insights. Better care.

IMAGINE IF…

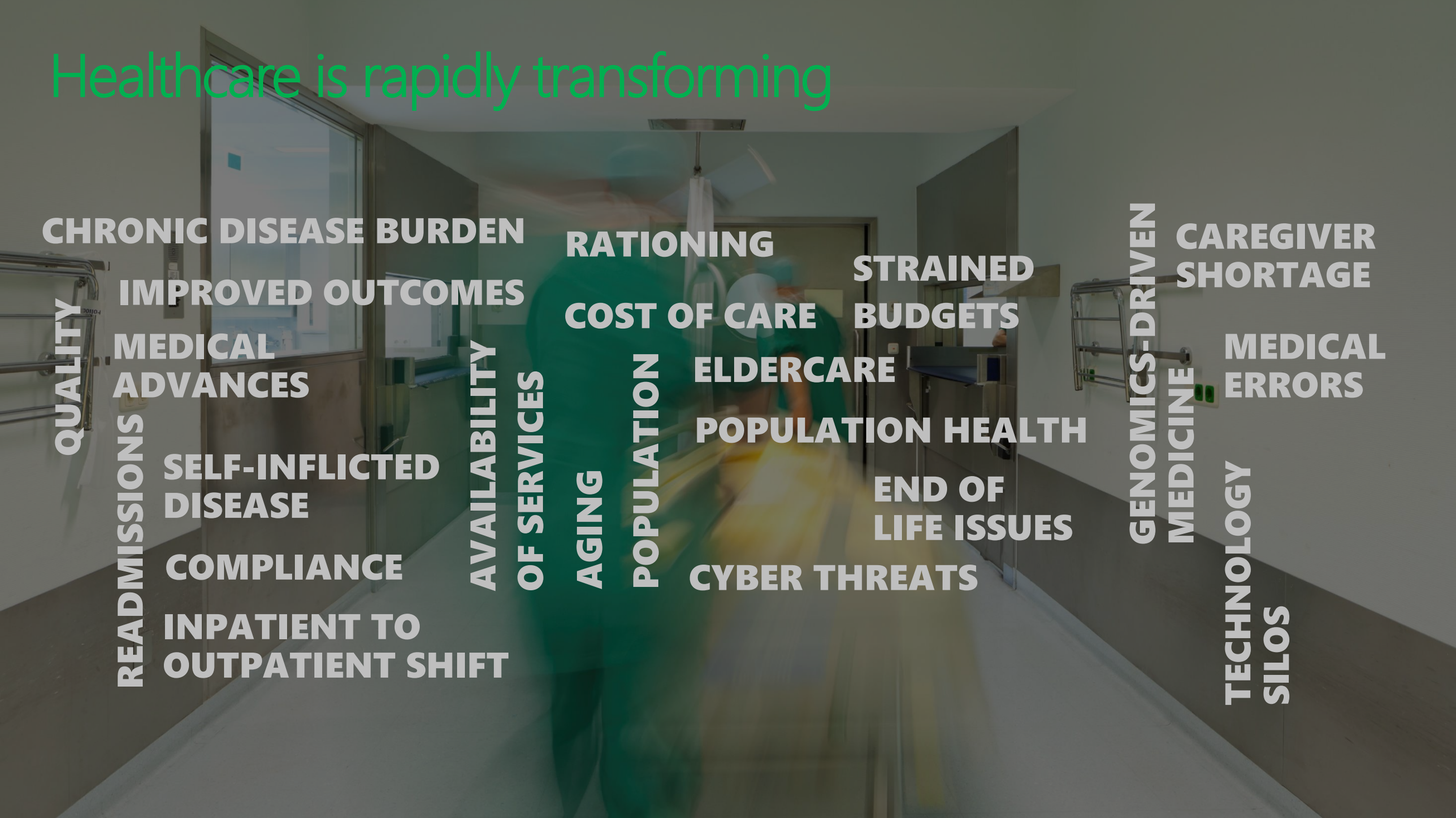
Patients and their family members are more informed about their healthcare…

Clinicians and administrators have the right information at the right time for treating patients…

Providers can analyze a patient's healthcare data from many internal and external sources…

Health organizations can harness the power of data and precision medicine to manage population health and save lives…

Healthcare is rapidly transforming



What is artificial intelligence?

Amplifying human ingenuity with intelligent technology

Reasoning

Learn and form conclusions with imperfect data

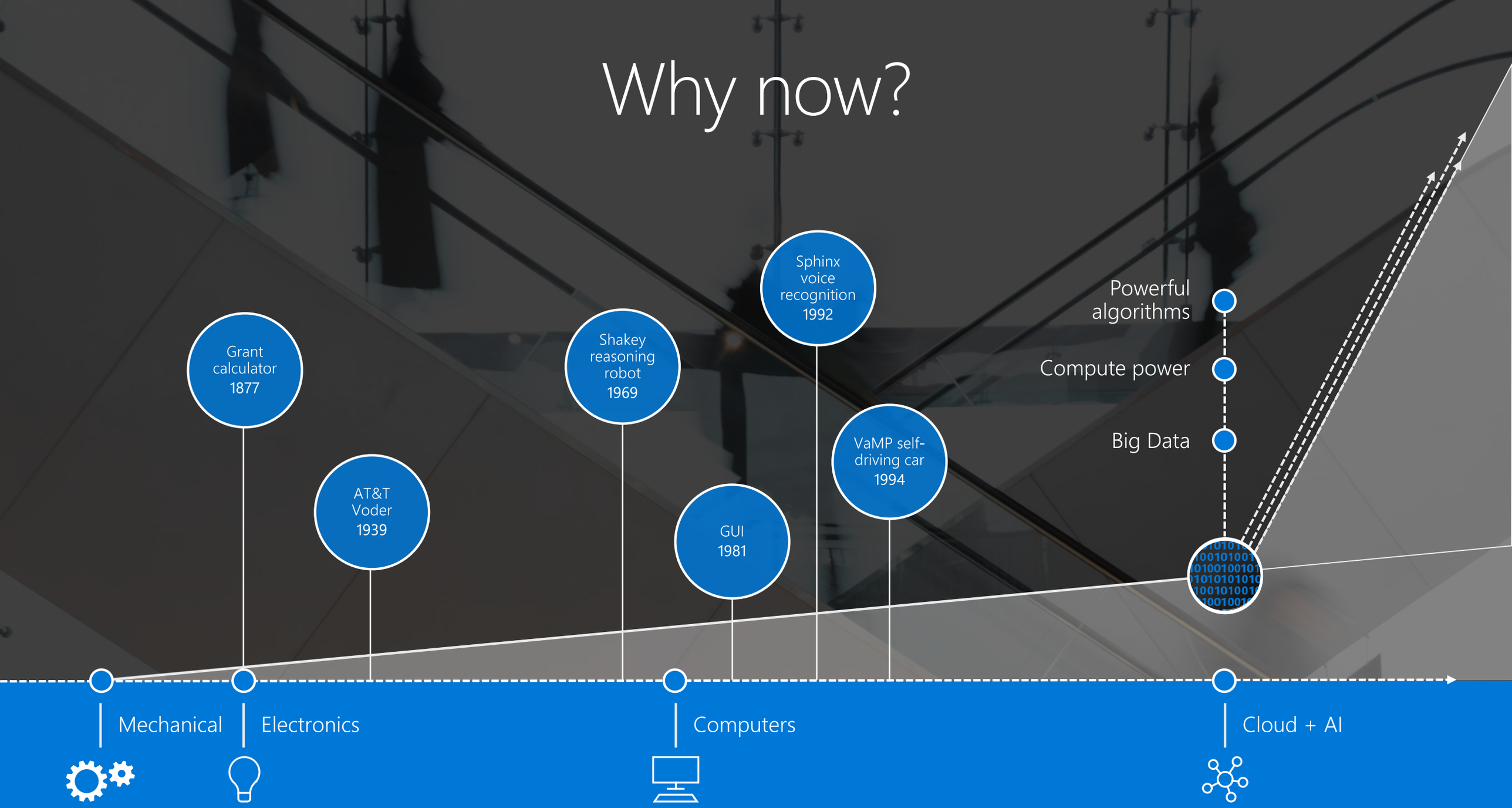
Understanding

Interpret meaning of data including text, voice, images

Interacting

Interact with people in natural ways

Why now?


Grant calculator 1877
AT&T Voder 1939
Shakey reasoning robot 1969
GUI 1981
Sphinx voice recognition 1992
VaMP self-driving car 1994
Powerful algorithms
Compute power
Big Data
Mechanical
Electronics
Computers
Cloud + AI

DIGITAL TRANSFORMATION & AI

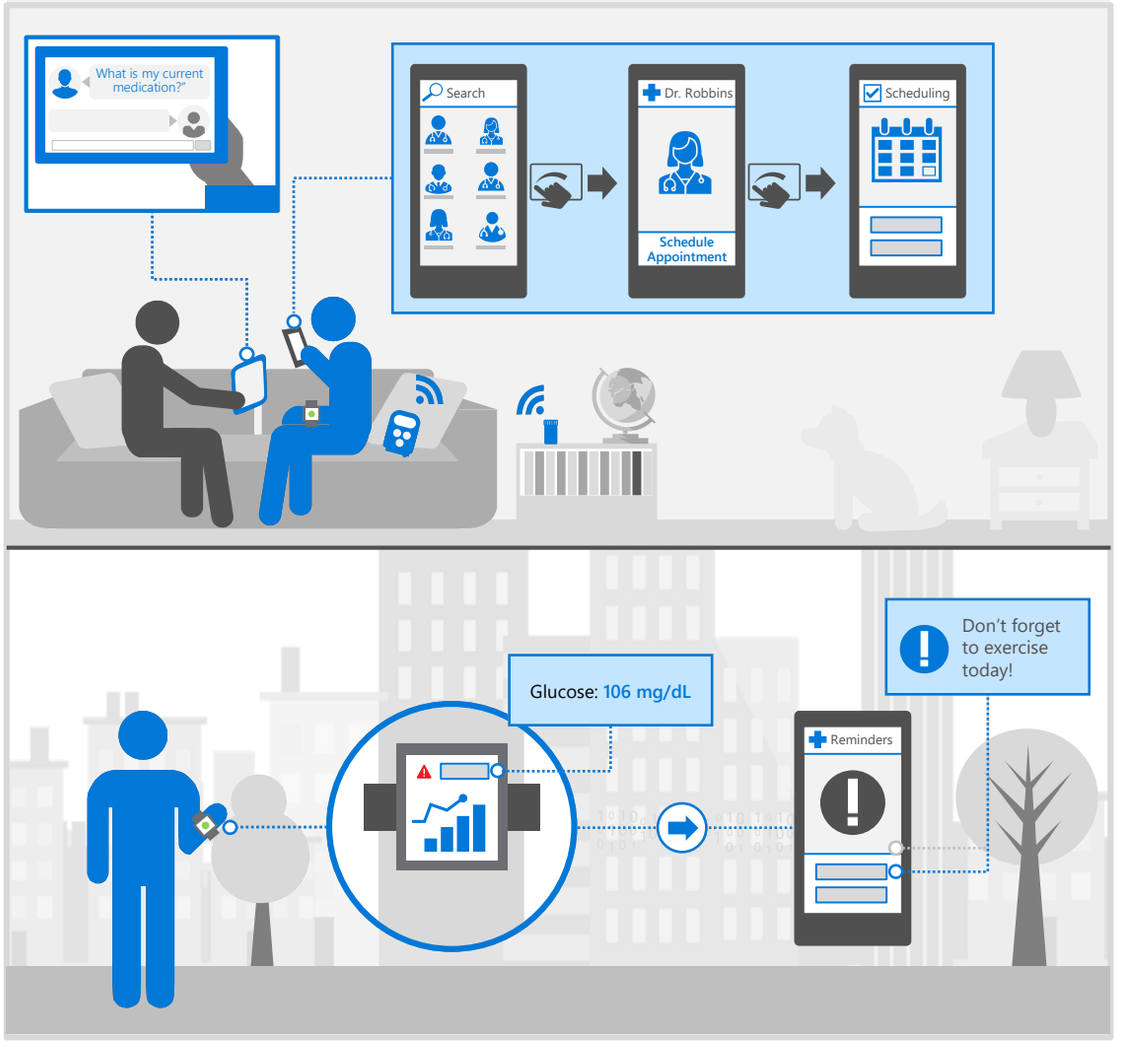
Engage customers

Empower employees

Optimize operations

Transform products

Proactively engage your patients in their health



Create digital assistants to give patients instant access to their health information and care plans

Enable intelligent search to find providers and schedule care appointments

Provide personalized care notifications and recommend preventive actions

Empower your care team with effective, efficient care coordination

Enable intelligent tools to recommend next best actions for individual care plans

Engage digital assistants to record and transcribe patient history and chart notations

Provide remote patient monitoring while applying analytics to generate care team alerts

Optimize clinical and operational effectiveness

Apply advanced analytics to identify chronic diseases, prevent readmissions and drive efficient staff allocation

Employ intelligent search models to track and predict public health epidemics

Enable connected devices to monitor condition of critical care equipment and recommend preventive maintenance

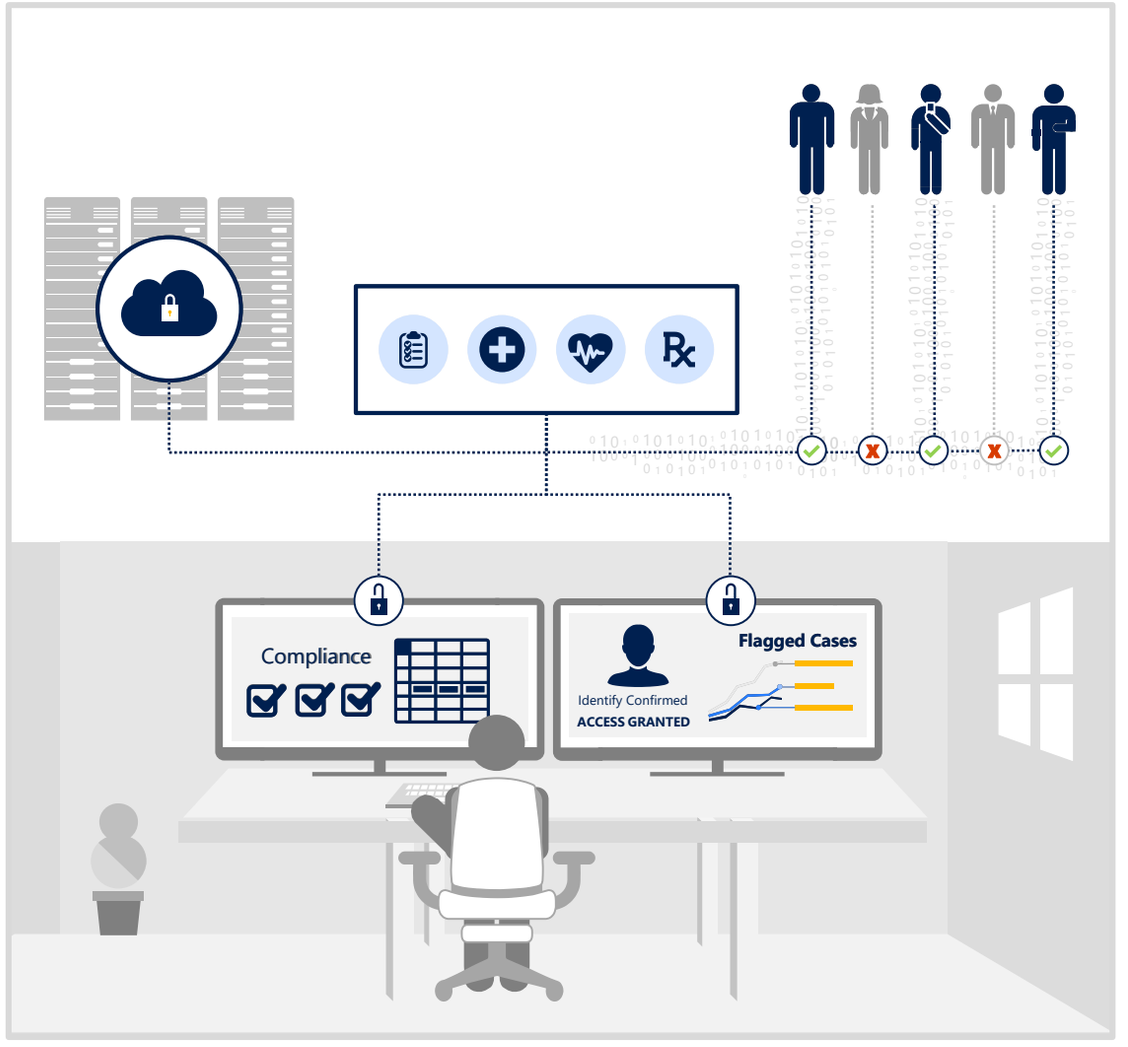
Transform the care continuum

Enable virtual nursing assistants to remotely assess patient symptoms and decrease unnecessary visits

Employ advanced learning models to expedite the medical imaging workflow and identify potential findings

Combine cognitive robotic capabilities with medical records to guide and enhance physician instrument precision

Strengthen trust in technology with security and compliance



Employ advanced analytics and predictive models to identify and prevent regulatory and compliance risks

Augment existing security authentication with advanced facial and speech recognition

Analyze and monitor enterprise-wide access logs and flag suspicious cases for administrator review

Reinventing smart help centers

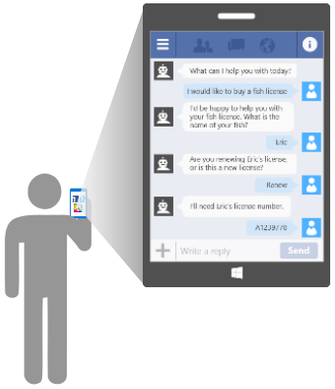
Bots are communication interfaces with natural language processing capabilities

Business Systems Integration

Machine Learning

Big Data

Patient



Deepen engagement

Smart recommendations, personalization, immersive experiences

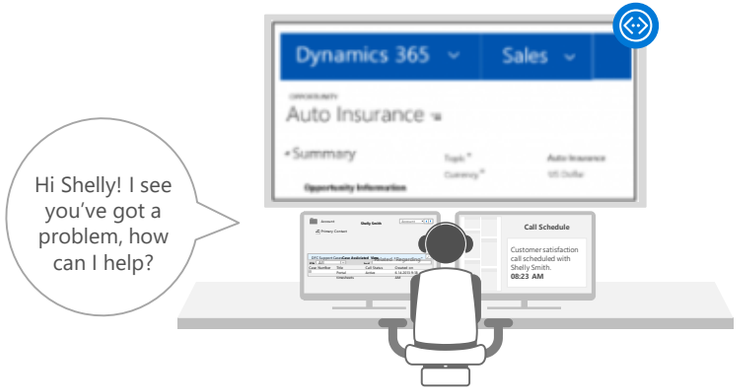
Infusing business processes with intelligence

Dynamics CRM

Hidden insights beyond your data

Advanced analytics, Azure Machine Learning, data enrichment

Operations Manager



Contact center of the future

SRL-Microsoft Pathology Consortium introduces Cervical Cancer Image Detection API

The work done by the SRL-Microsoft consortium, in developing deep learning-based algorithms for Assistive Technology in a relatively short span of time, speaks volumes about the capabilities of both the partners. This API will be useful in screening liquid-based cytology slide images, for detection of cervical cancer in the early stages."

Microsoft AI Network for Cardiology with Apollo Hospitals to bring new insights in predicting population-based heart diseases

Despite the sheer number of cases, doctors in India struggle to identify the probability of cardiac ailments when patients come for their regular health check-up. While there are some scores or algorithms available worldwide that predict the probability of a patient having a heart attack in the next 10 to 20 years, doctors can't extrapolate the same risk-factors and apply them to patients

Is a global visual impairment epidemic on the horizon?

Visual impairments and refractive errors have become a global health issue in recent years. "Uncorrected refractive error is the leading cause of visual impairment and one of the major causes of blindness in the world," says Dr. G.N. Rao, Founder and Chair, L V Prasad Eye Institute.

eyecare providers need better tools to monitor cases and detect the ones with a higher risk of turning severe.

Microsoft Seeing AI's Latest Update Will Help the Blind Identify Indian Currency

Designed for users with visual impairment, the free app combines artificial intelligence and rich computer vision to narrate the world around users in real-time. By describing surrounding people, text, objects, colors, and currencies, Seeing AI serves as an example of how inclusive technology empowers people of all abilities.

Optolexia

Using eye movement patterns for early detection of dyslexia in children

Watch video

The challenge

Optolexia wanted the ability to iterate and scale their dyslexia detection model in order to accommodate expansion into schools, new environments, and enable additional condition screenings.

Machine Learning in action

- **Visualized models, scoring, and results without writing new code** to refine the testing tool
- **Screened over 1k students and identified signs of dyslexia earlier than ever before,** leading to improved student care, education, and self-esteem
- **Created a scalable model** enabling experimentation and testing with new languages and conditions

"The flexibility and ease of use of the Azure Machine Learning analytics platform makes it a perfect foundation for expanding our existing solution into new areas."

Fredrik Wetterhall
Chief Executive Officer at Optolexia

optolexia

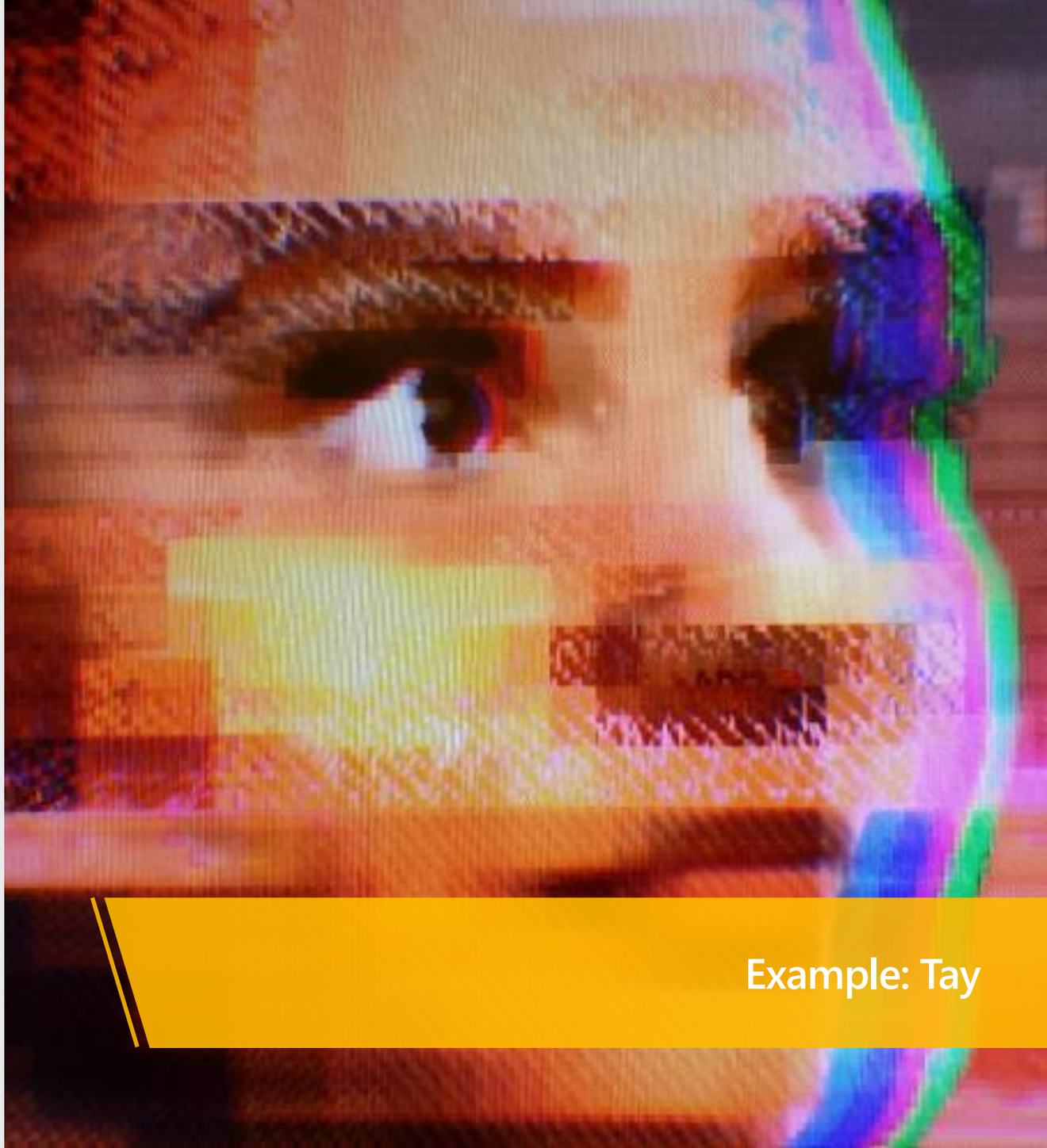
Litware chat bot demo

Privacy and Security

Like other technologies, AI systems should be able to **protect private information and resist attacks**

Key considerations

1. Comply with relevant data protection, privacy, and transparency laws
2. Design AI systems to de-identify and maintain the integrity of personal data
3. Protect AI systems from bad actors
4. Design AI systems with appropriate customer controls
5. Conduct security and privacy reviews



Example: Tay

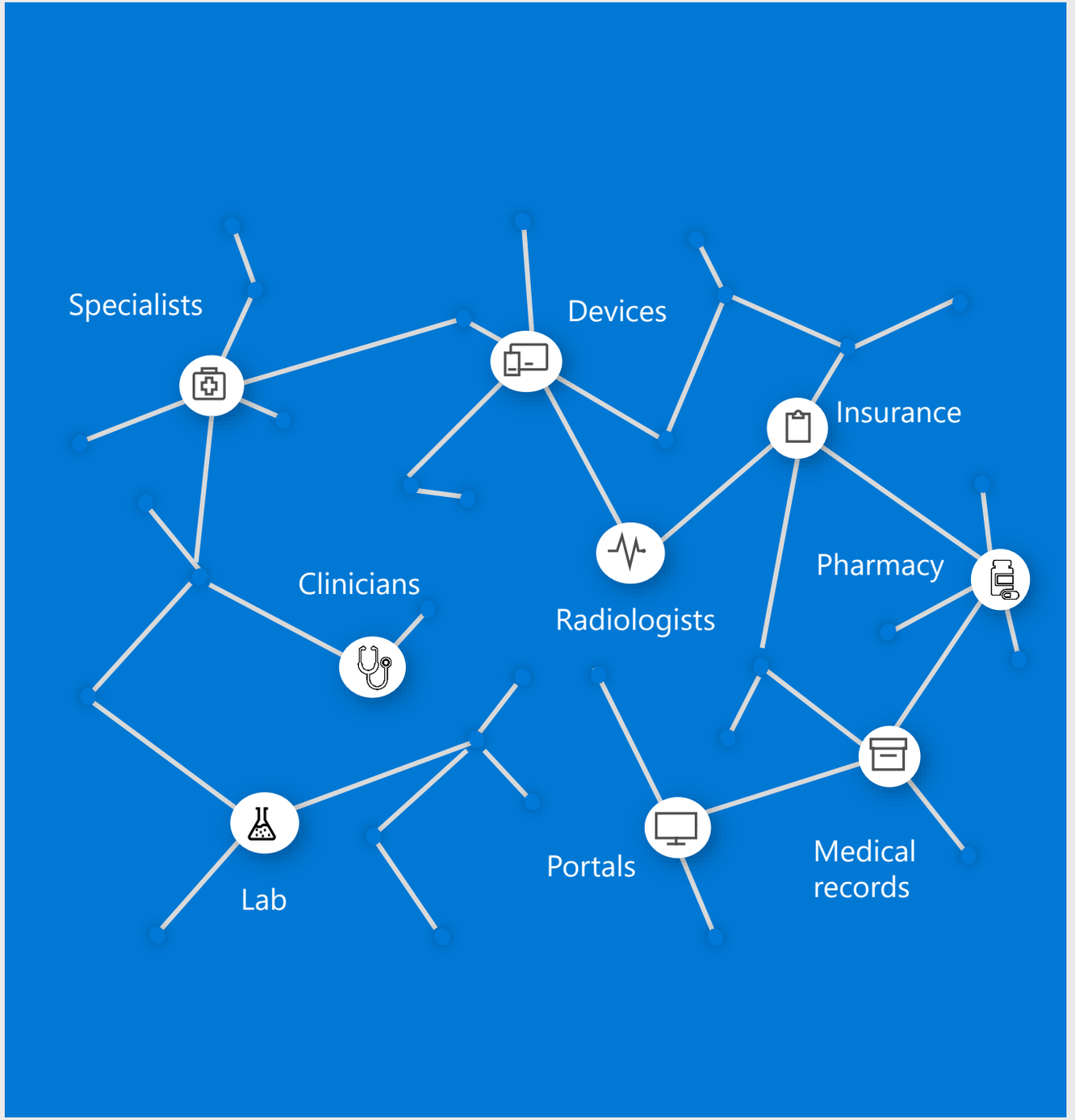
Are you ready to claim your future?

ignite new or accelerate existing innovative initiatives

Healthcare is a top target for cybercriminals

The threats and key points of vulnerability

- Phishing
- Care coordination
- Care planning
- Case management
- Patient preferences
- Data retention and discovery



Why Responsible AI?

Advancements in AI are different than other technologies because of the pace of innovation, and its proximity to human intelligence - impacting us at a personal and societal level.

Vision

2016

Object recognition human parity

Speech Recognition

2017

Speech recognition human parity

Reading

2018

Reading comprehension human parity

Translation

2018

Machine translation human parity

Speech Synthesis

2018

Speech synthesis near-human parity

Language Understanding

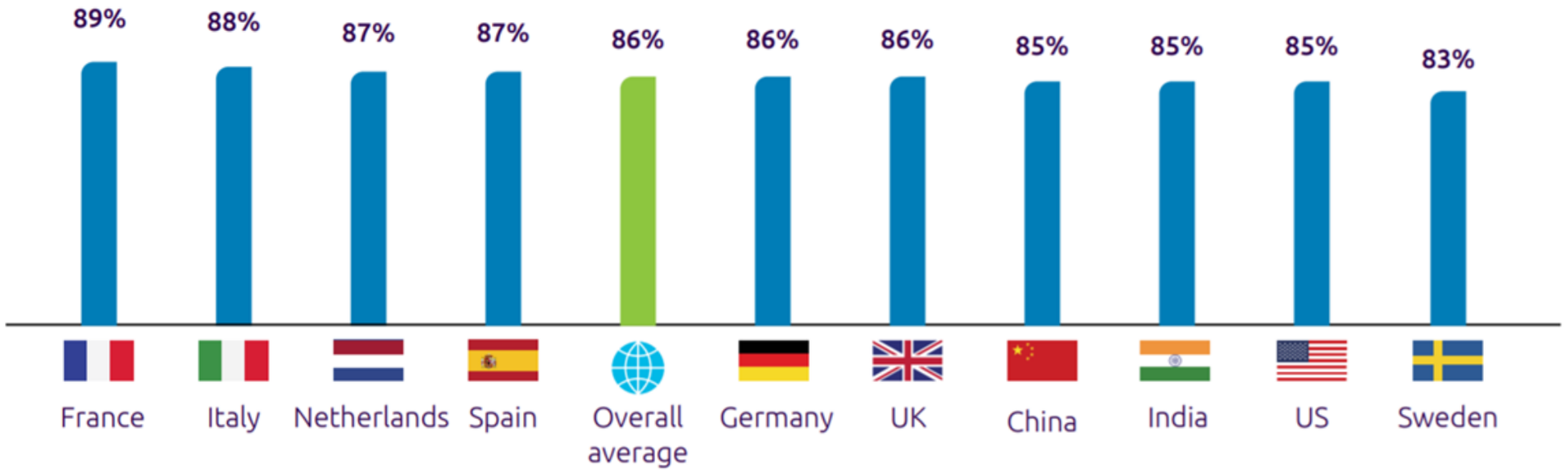
2019

General Language Understanding human parity

Why Responsible AI?

Nearly nine in ten organizations across countries have encountered ethical issues resulting from the use of AI

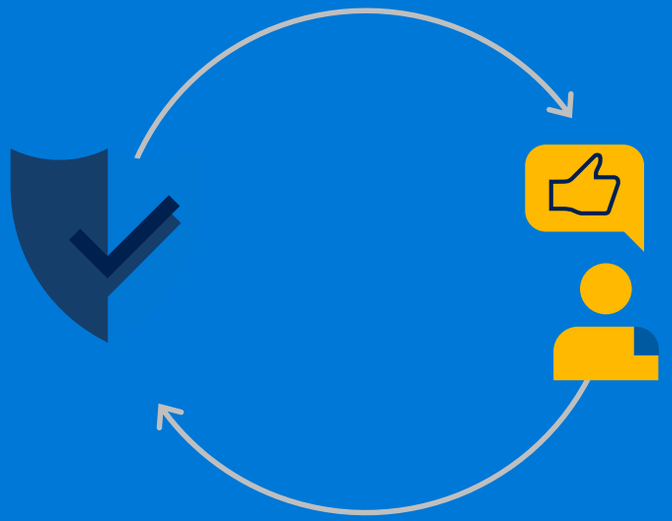
In the last 2-3 years, have the below issues resulting from the use and implementation of AI systems, been brought to your attention? (percentage of executives, by country)



7.5.19 Report from Capgemini

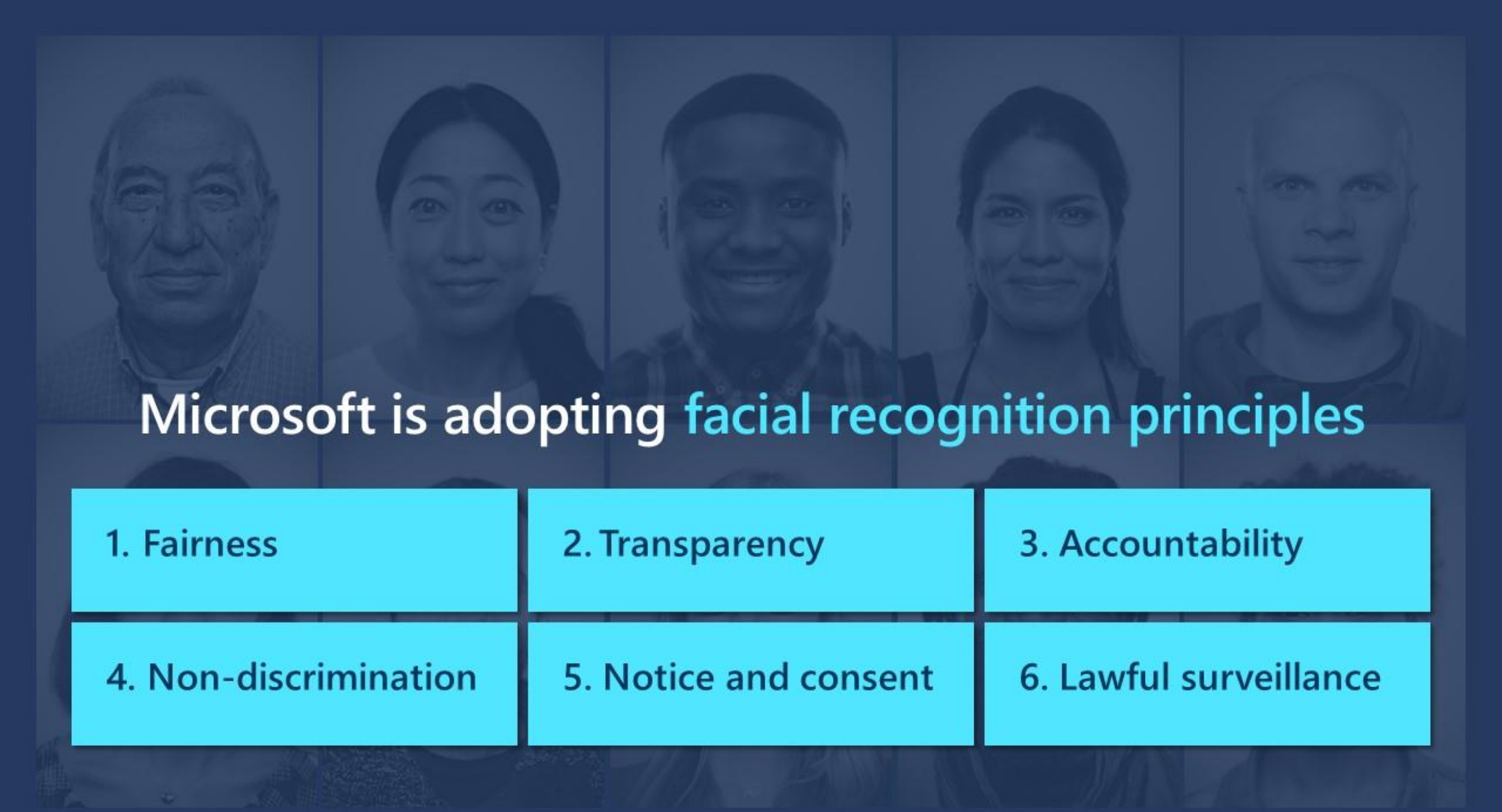
Our approach

Responsible AI



Trusted AI

Fairness • **Reliability** • **Inclusivity** • **Privacy** • **Transparency** • **Accountability**



Microsoft is adopting facial recognition principles

1. Fairness	2. Transparency	3. Accountability
4. Non-discrimination	5. Notice and consent	6. Lawful surveillance

AI for Good