

AI in Healthcare

Trends and Intrapreneurship

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Microsoft Canada



A brief history of AI

Artificial Intelligence

Artificial Intelligence

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

Machine Learning

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

Deep Learning

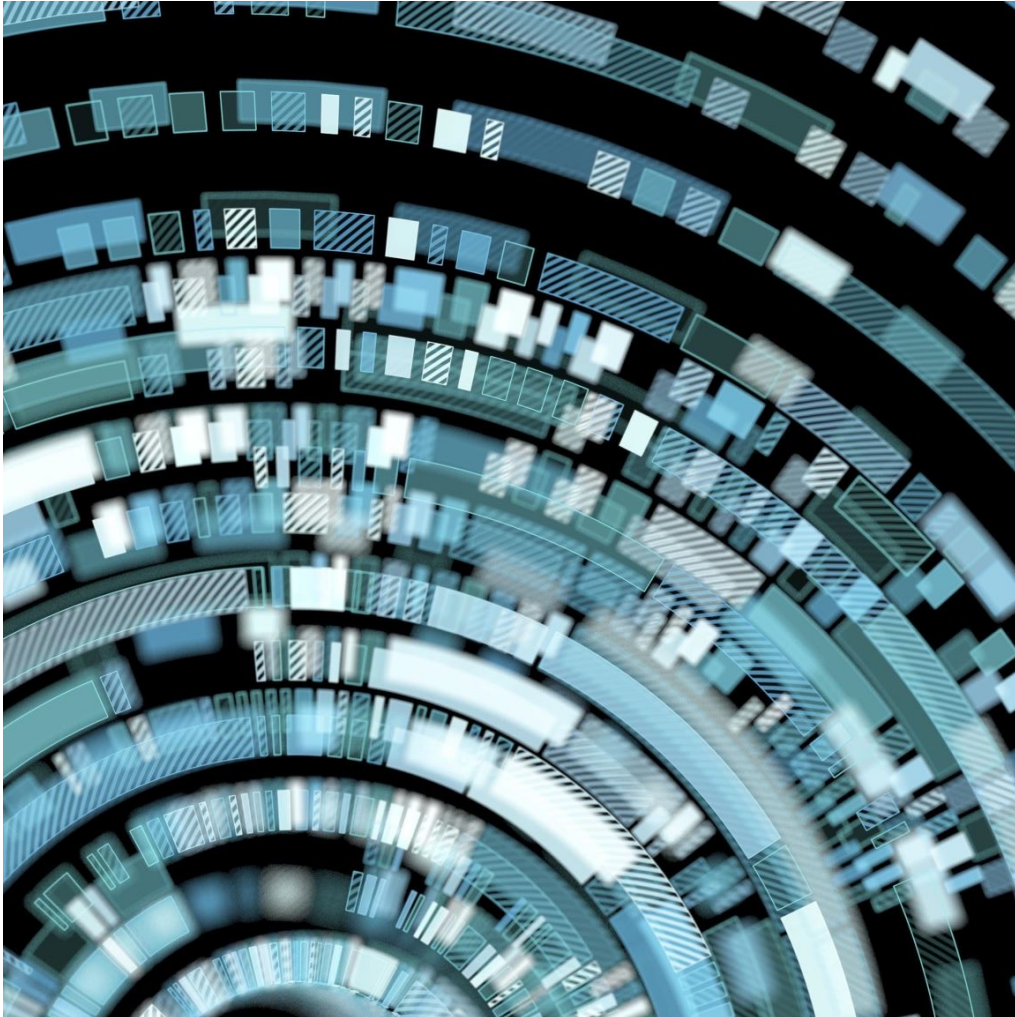
a machine learning technique in which layers of neural networks are used to process data and make decisions.

Generative AI

Generative AI

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

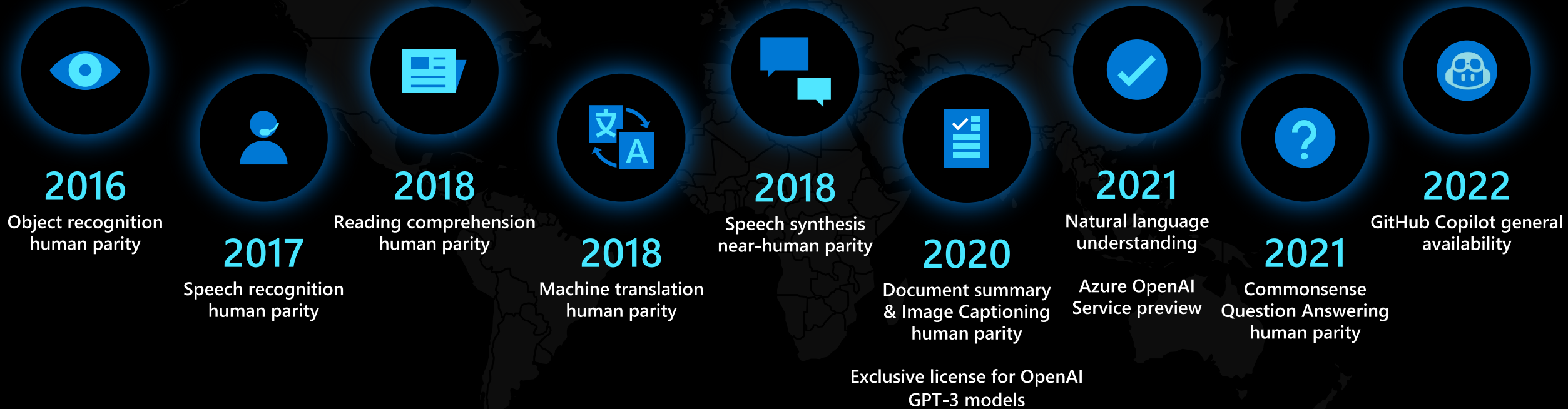
Microsoft's Approach to AI



We have made huge investments in AI because we're **optimistic about what it can do to help people, industry and society**, and because we're committed to **bringing technology and people together to realize the promises of AI responsibly**.

AI Advancements

Accessing the AI Tools and Training



AI Timeline 2023



January

Microsoft extends partnership with OpenAI



February

Dynamics 365 Viva Sales with GPT



February

Bing Search in Windows 11



March

Power Platform GPT enhancements



March

Microsoft 365 Copilot (Word, Excel, PowerPoint, Teams, Viva Engage, Business Chat)



March

Bing Image Creator



2023 +

Nuance introduces DAX Express
More coming soon

January

Azure OpenAI Service generally available

February

Bing & Edge Copilot using GTP-4

March

Dynamics 365 Copilot (Sales, Service, Marketing, Insights, Supply Chain, Business Central)

March

ChatGPT available in Azure OpenAI Service

March

Copilot in Power Platform (PowerApps, Power Automate & Power Virtual Agents)

March

GitHub Copilot coding assistant (GPT-4)





The next
revolution in
computing

Microsoft AI innovation in 2023

January ●

- Azure OpenAI Service becomes generally available
- Microsoft extends our partnership with OpenAI

February ●

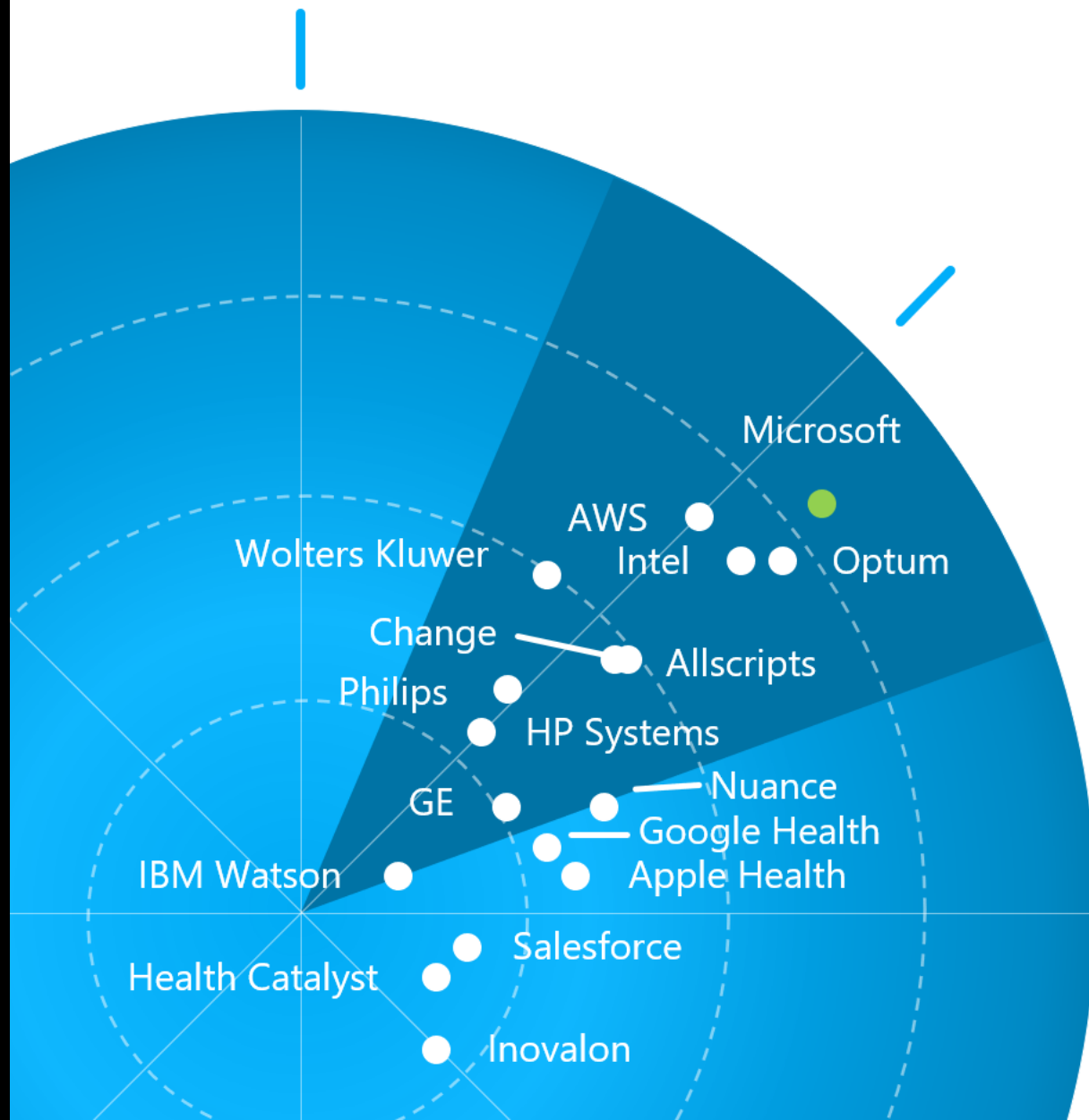
- Teams Premium with GPT becomes generally available
- Viva Sales adds generative AI capabilities
- Microsoft announces the new Bing and Edge
- Microsoft announces Bing momentum and Skype Copilot
- Windows 11 updates bring AI-powered Bing to the taskbar

March ●

- LinkedIn introduces collaborative articles
- Microsoft introduces Dynamics 365 Copilot
- Florence comes to Azure Cognitive Services for Vision
- Azure OpenAI Service adds ChatGPT capabilities
- Microsoft announces powerful new virtual machines
- LinkedIn adds new AI-powered capabilities
- Microsoft introduces Microsoft 365 Copilot
- Microsoft introduces Copilot for Power Platform
- Azure OpenAI Service adds GPT-4
- Bing Image Creator comes to the new Bing
- GitHub introduces GitHub Copilot X
- Microsoft introduces Microsoft Security Copilot
- Nuance introduces DAX Express (Dragon Ambient eXperience)

Microsoft AI for Healthcare

Frost & Sullivan recognized Microsoft as the “undisputed leader” in global AI platforms for the Healthcare IT.



Generative AI

Top 4 capabilities



Content generation

Automatically generate responses to inquiries

Generate personalized website UIs or marketing images



Summarization

Summarize patient-physician conversation logs

Summarize research papers, documents, and publications



Code generation

Convert natural language to data base query language to "ask questions" of your data

Comment and document code



Semantic search

Search instructions for a specific protocol/procedure

Discover new insights and knowledge mining

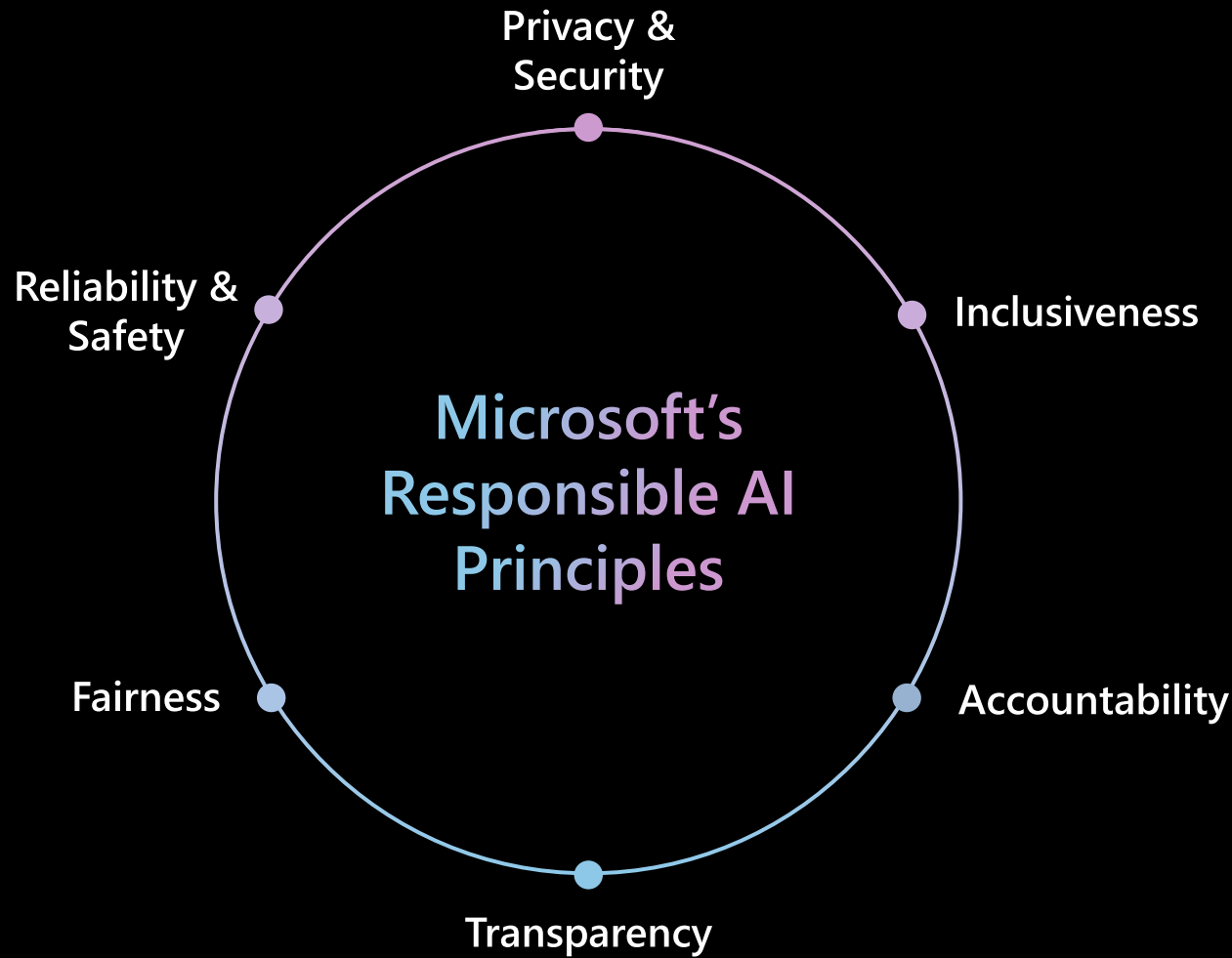
...and when they are used all together

End to end call center analytics: classification, sentiment, entity extraction, summarization and email generation

Customer 360: hyper-personalisation using timely summarization of customer queries & trends, search, and content generation

Business process automation: search through structured & unstructured documentation, generate code to query data models, generate content

Microsoft's Responsible AI principles



Building blocks to enact principles



Tools and processes



Training and practices

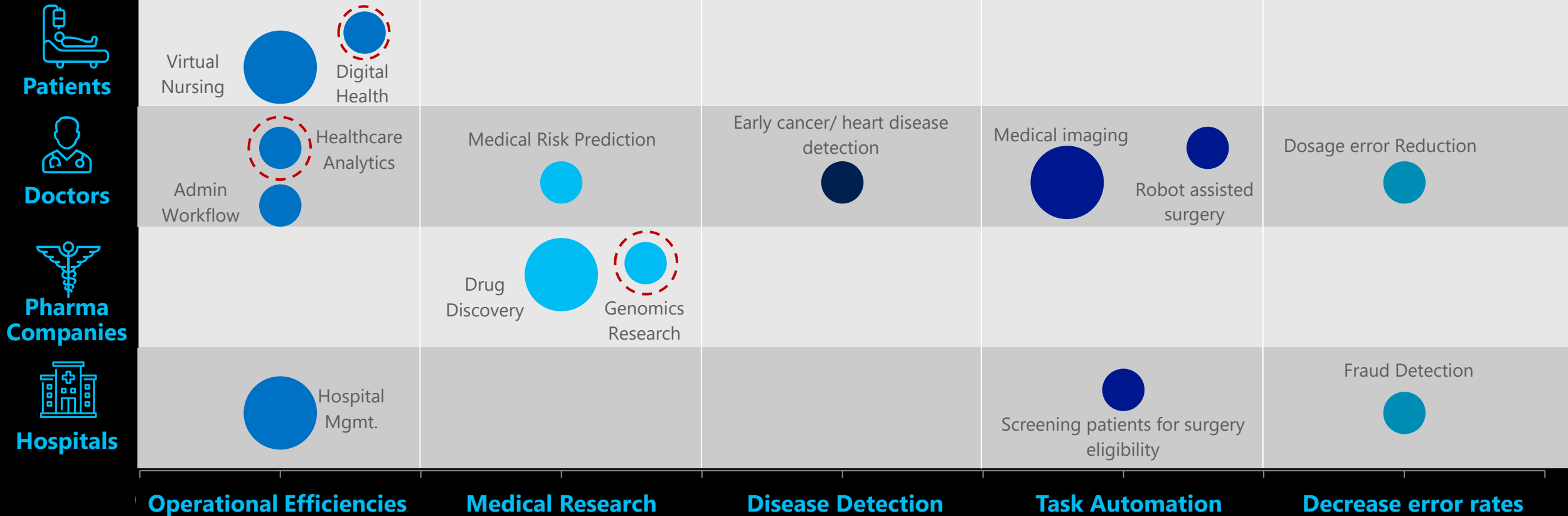


Rules



Governance

Canadian Healthcare Trends & Applications by End-User



* Size of the bubble represents potential of growth in Canada

() Areas with accelerated growth due to COVID-19

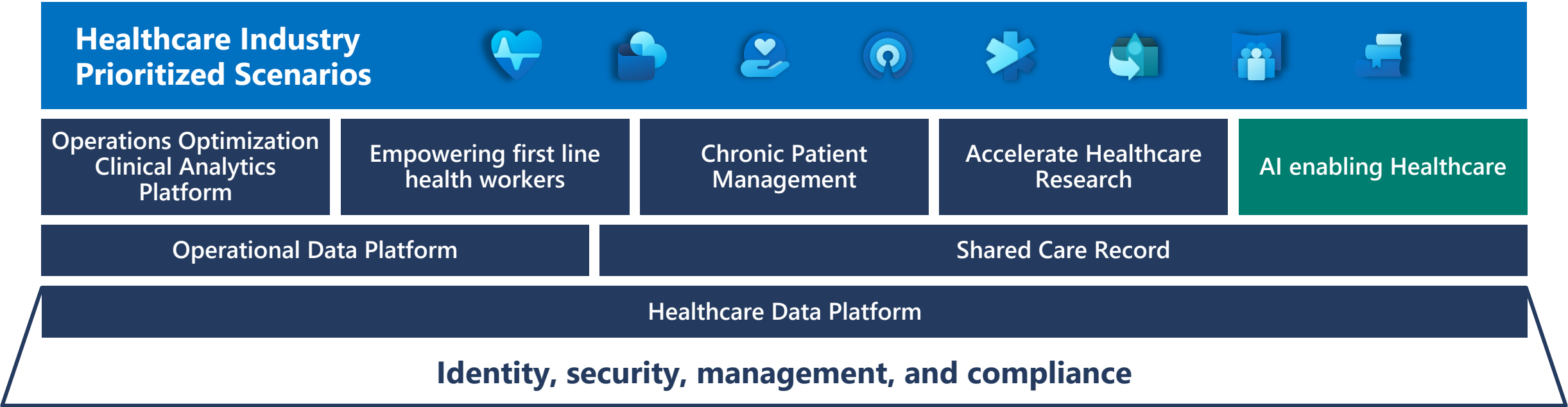
Why are we focusing on AI enabling Healthcare

Precision Medicine initiatives leverage on **AI capabilities** and **longitudinal multi-omics data** generated by hospitals. The main challenge is to functionally **aggregate the diverse data sources** and **generate meaningful insights** to clinicians, enabling informed decisions.

By providing longitudinal -omics and AI-driven capabilities we enable clinicians to **prevent or detect diseases earlier** and **define personalized treatments**.

The goal of this approach is to **increase health outcomes, patient's and provider's experience**, with a net increase in productivity and cost reduction for the hospital.

Canadian Health Priorities



AI Intrapreneurship

Common Elements of Success

Overcoming Challenges of Leading a Change

- Beyond Roles & Responsibility
- Up-skilling & Change Management
- Productization beyond POC/POV

Improve Readiness of Technology Adoption

- Improve & Modernize Applications & Infrastructure
- Break Data Silos & Create Common Data Models
- Developing & Improving AI Strategy

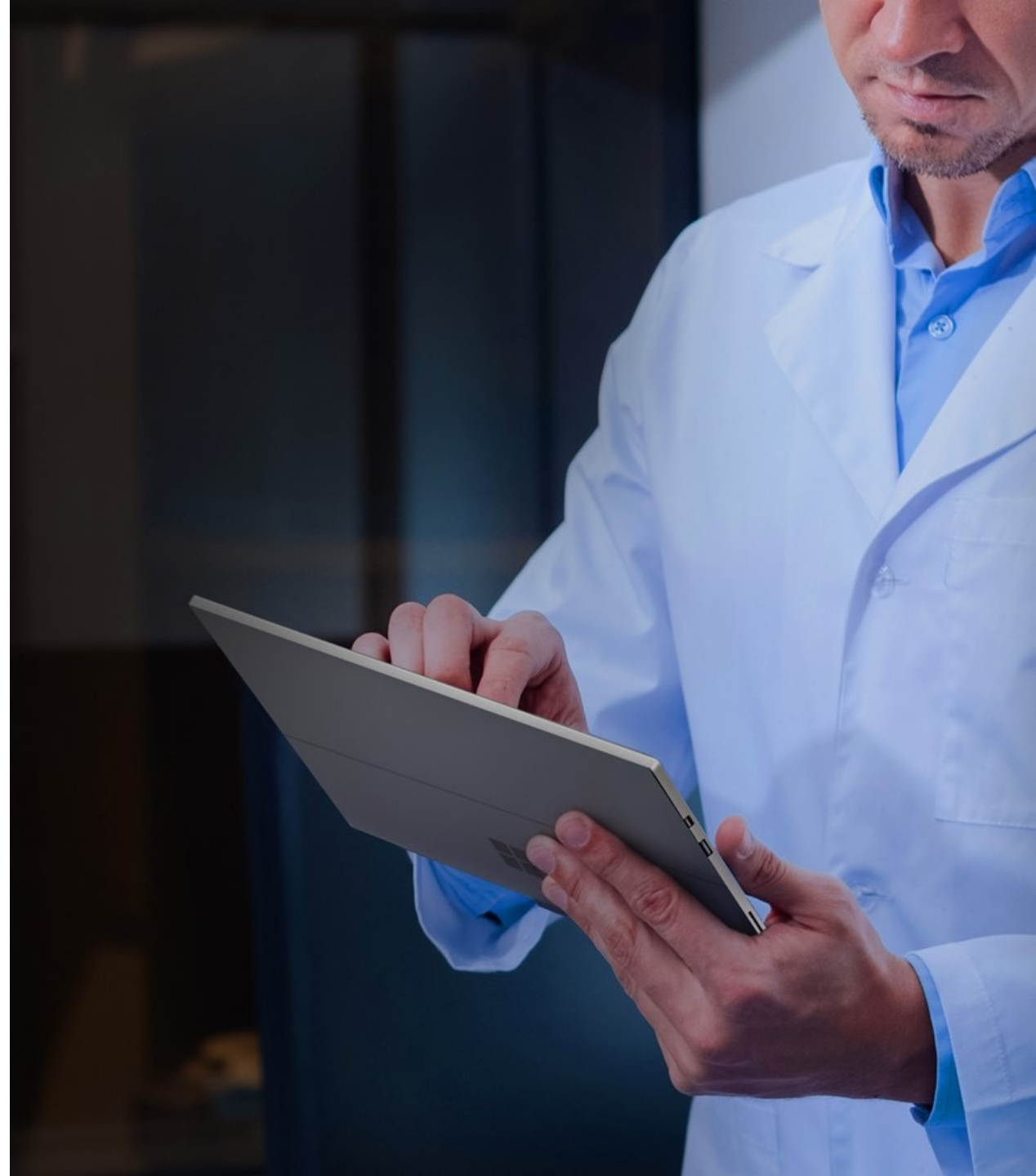
Accessing the AI Tools and Training

- Pre-Built AI Solutions/Components
- Low-Code & No-Code Platforms for AI Development
- Data Analytics & Cloud Partners

AI in healthcare Intrapreneurship

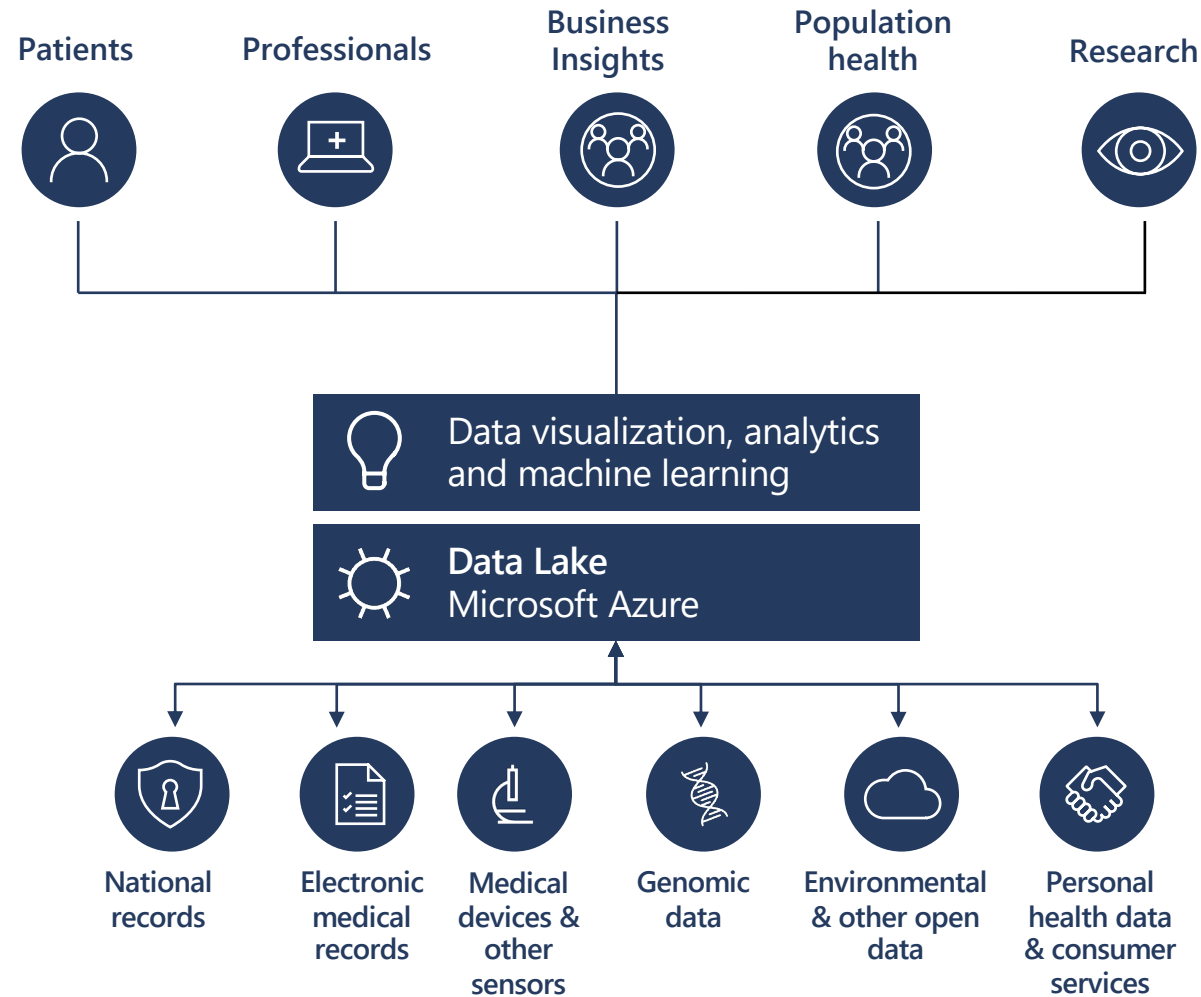
The key benefits include:

- **Patients** and their families benefit from an enhanced care experience
- **Clinicians** have the right information at the right time for diagnosing and treating patients
- **Health Providers** harness the power of data, via preventive and precision medicine initiatives, to manage population health and save lives
- **Researchers** discover new patterns and associations by combining complex data sources together
- **Health Authorities** safeguard health workers by preventing the risk of burnout



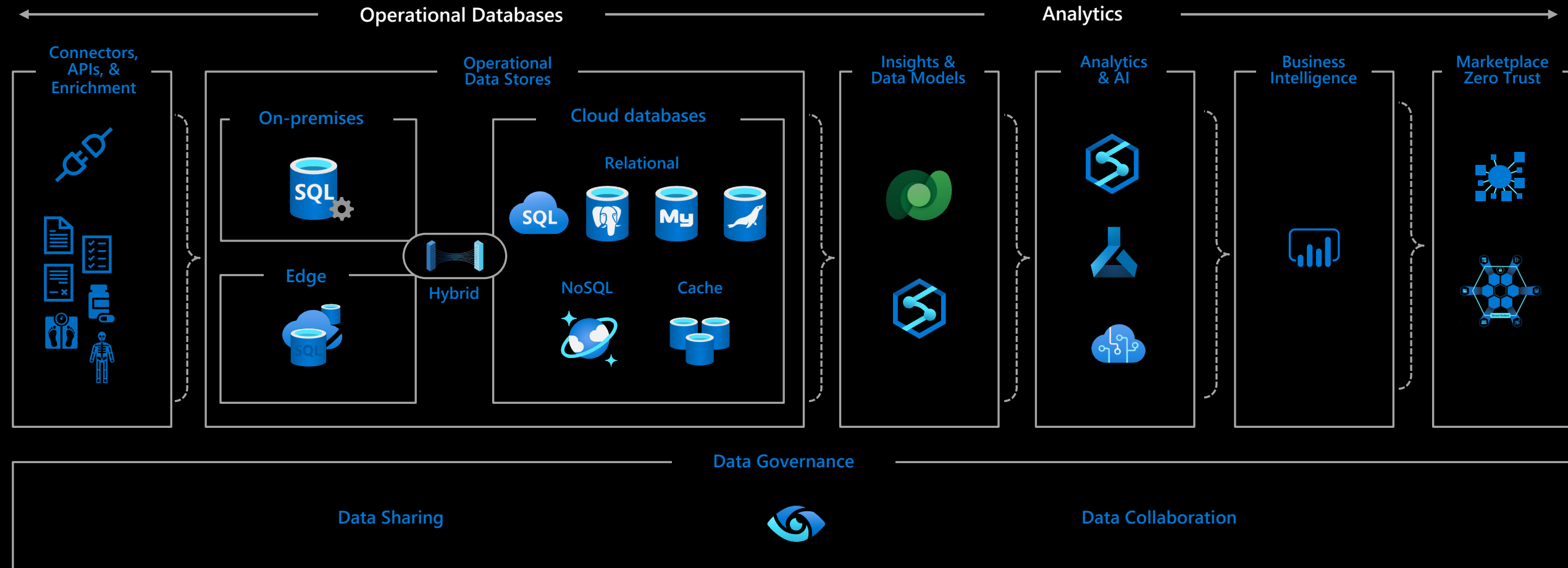
Access to detailed health and wellbeing data

(Breaking data silos - Open, scalable, compatible)



Industry-relevant intelligent data platform

Innovation everywhere



Azure Confidential Compute

A hardware root-of-trust, customer verifiable with remote attestation, and memory encryption

EXISTING ENCRYPTION



Data at rest

Encrypt inactive data when stored in blob storage, database, etc.



Data in transit

Encrypt data that is flowing between untrusted public or private networks

CONFIDENTIAL COMPUTING



Data in use

Protect/encrypt data that is in use, while in RAM, and during computation

Value Proposition



Enforces Policies
through Technology



Ensures High-
Fidelity data



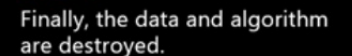
Protects Data & Model IP

Confidential Compute – BeeKeeperAI™ (Zero Trust Platform)

- Using Azure Confidential Computing
- The algorithm owner cannot see the data
- The data steward cannot see the algorithm model
- BeeKeeperAI cannot see neither the data nor the model

How BeeKeeperAI™ works

BeeKeeperAI™ uses novel technology and standardized workflows



*Third parties validate that data security has met all compliance requirements

How do I get started?

Get your data estate AI-ready with Azure

Learn how migrating your data to Azure can give you the foundation for better AI experiences

Leverage AMMP to conduct a data estate assessment

Build intelligent app experiences with Azure AI

Learn how to build AI-powered applications for your organization on Azure

Book an AI executive briefing session

Increase developer productivity with GitHub

Learn how GitHub Copilot can drive 55% greater developer productivity

Try GitHub Copilot

Get ready for Copilot with Microsoft 365

Learn how Microsoft 365 brings together identity, applications, management, security, and your enterprise data so you can be AI-ready

Start using Microsoft 365

Thank you

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Azure AI Solutions

Customizable,
high quality AI
models

Cognitive Services



Vision



Speech



Language



Decision



OpenAI

Scenario specific
AI services

Applied AI Services



Bot
Service



Cognitive
Search



Form
Recognizer



Video
Indexer



Metrics
Advisor



Immersive
Reader

Azure



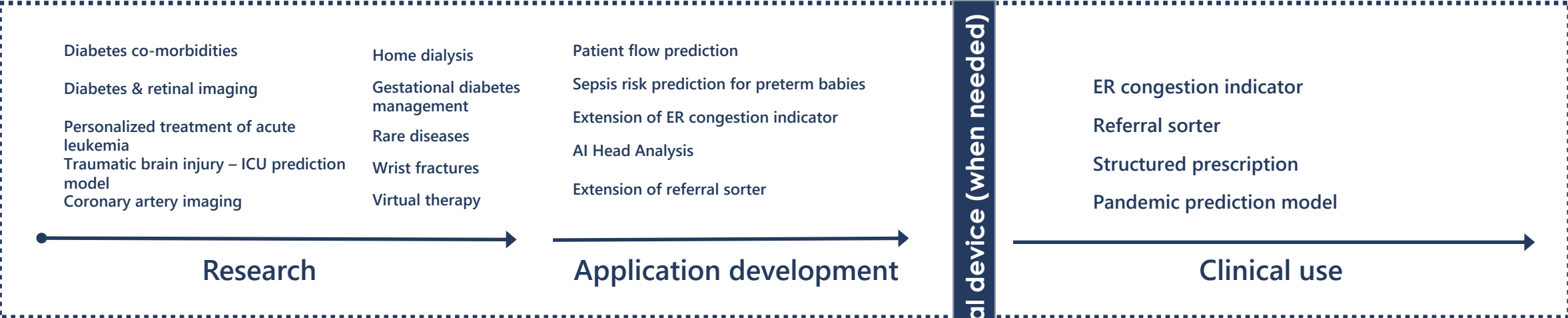
Azure Machine Learning



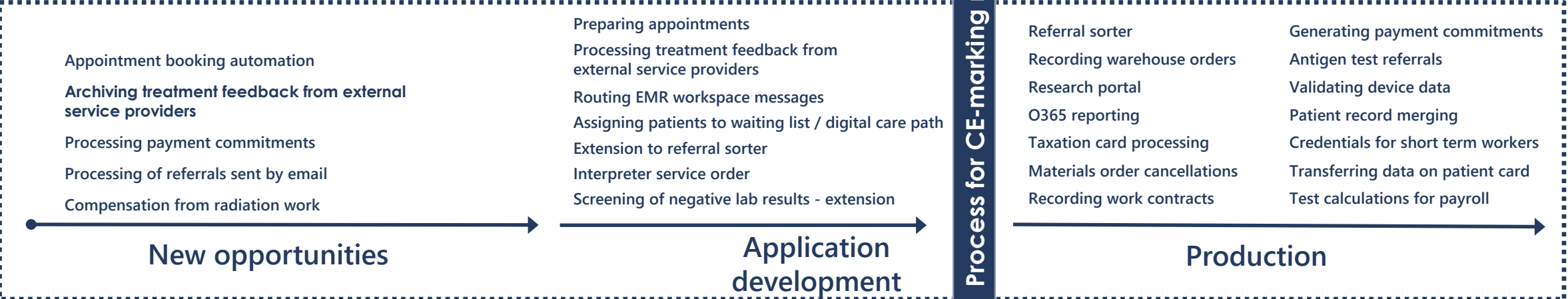
GPT-3

Reliable applications for healthcare




















AI – artificial intelligence



RPA – robotic process automation



AI & Machine Learning on Azure

Domain specific pretrained models To simplify solution development	 Vision	 Speech	 Language	 Web search	 Decision
Familiar data science tools To simplify model development	 Visual Studio Code	 Azure Notebooks	 Jupyter	 Command line	
Popular frameworks To build advanced deep learning solutions	 PyTorch	 TensorFlow	 Scikit-Learn	 ONNX	
Productive services To empower data science and development teams	 Azure Machine Learning	 Azure Databricks	 Machine Learning VMs		
Powerful infrastructure To accelerate deep learning	 CPU	 GPU	 FPGA		

Applications of ChatGPT in Healthcare

Health Payors

- Claims processing
- Eligibility verification
- Fraud detection
- Provider network management
- Prior authorization
- Care management
- Cost estimation
- Automated documentation

Health Providers

- Patient access/bot integration for triage and care navigation
- Contact center liaison assistance
- Patient education: caring for illness, interpret results, medication
- Provider shift reports
- Provider education/adv ed
- Health summaries: ambient listening, charts, Rx
- Referral documentation
- Mental health support
- Supply chain optimization

Health Pharma

- Clinical trials matching
- Clinical trials recruitment
- Adverse event reporting
- Help-desk automated FAQ
- Drug information
- Medical education
- Post-market surveillance and safety
- Market research
- Patient engagement
- Supply chain optimization



Changing Healthcare Landscape

84% healthcare executives believe AI will revolutionize the way they obtain information ¹

14M providers will suffer from a projected shortage of workers worldwide by 2030 ²

150B projected savings for healthcare providers by 2026 with AI helping to prevent medication dosing errors ³

81% patients unsatisfied with their current healthcare experience ⁵

41% providers say data and analytics challenges are preventing them from succeeding in value-based care models ⁶

