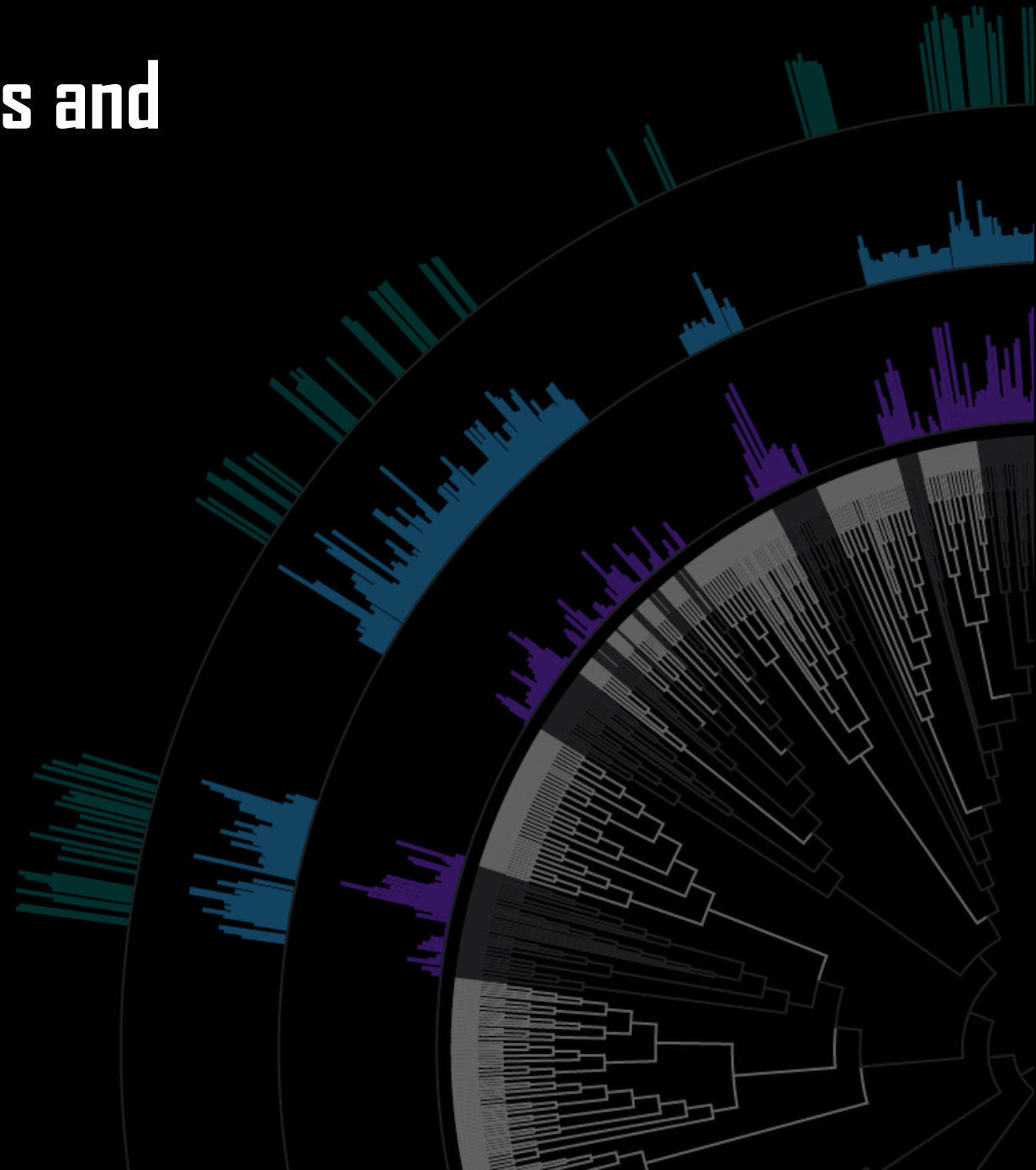# Accelerated Discovery **Partnerships and Ecosystem**
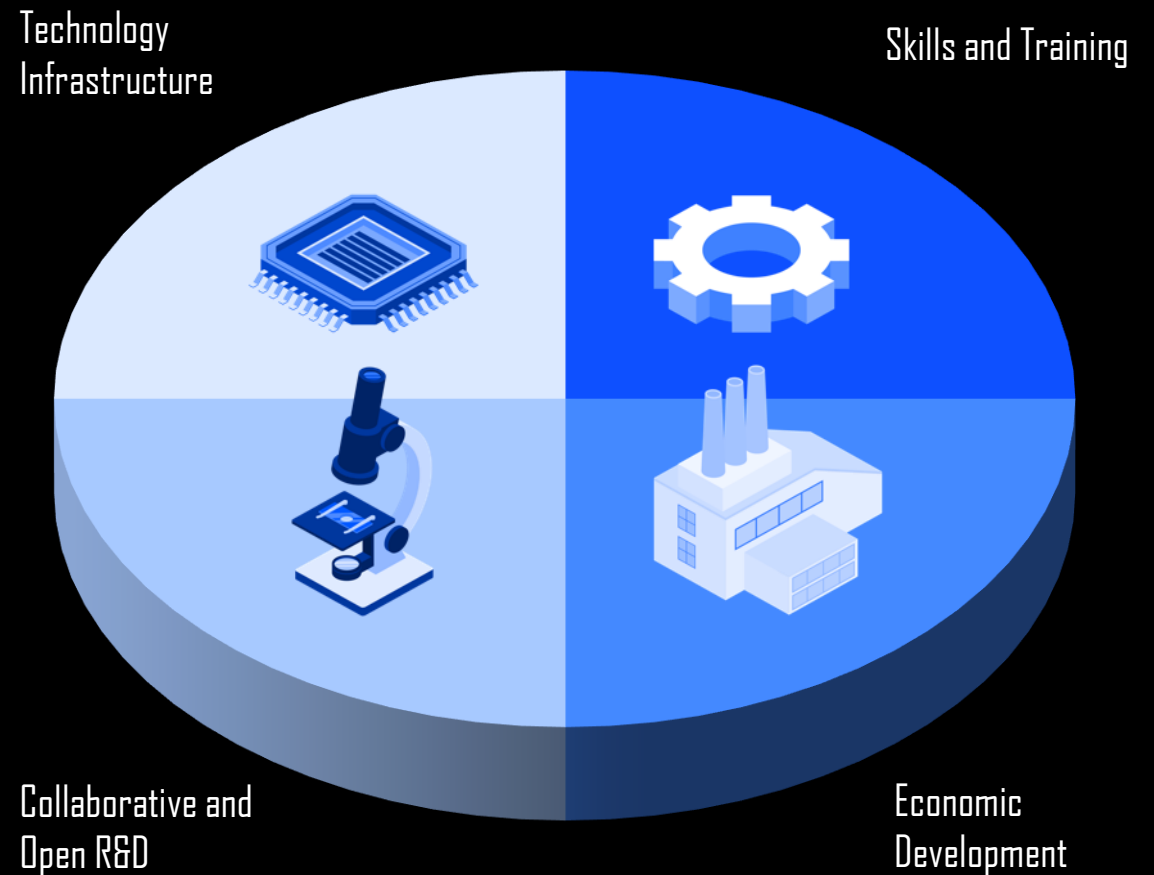
Jeff Welser

COO IBM Research

VP Exploratory Science & University Partnerships

Advancing Science and Societal Impact

In order to advance science and translate results into broad societal benefits, a comprehensive approach to ecosystem building is essential.

Technology Infrastructure

Skills and Training

Collaborative and Open R&D

Economic Development

The Discovery Accelerator Partnership

MISSION: Accelerate scientific discovery and societal impact with a convergence of AI, quantum, and hybrid cloud in a community of discovery with research, academic, industry, startup and government organizations working together.

ACCELERATED DISCOVERY

Quantum

AI

EDUCATION

Hybrid Cloud

Technology + Collaboration + Community
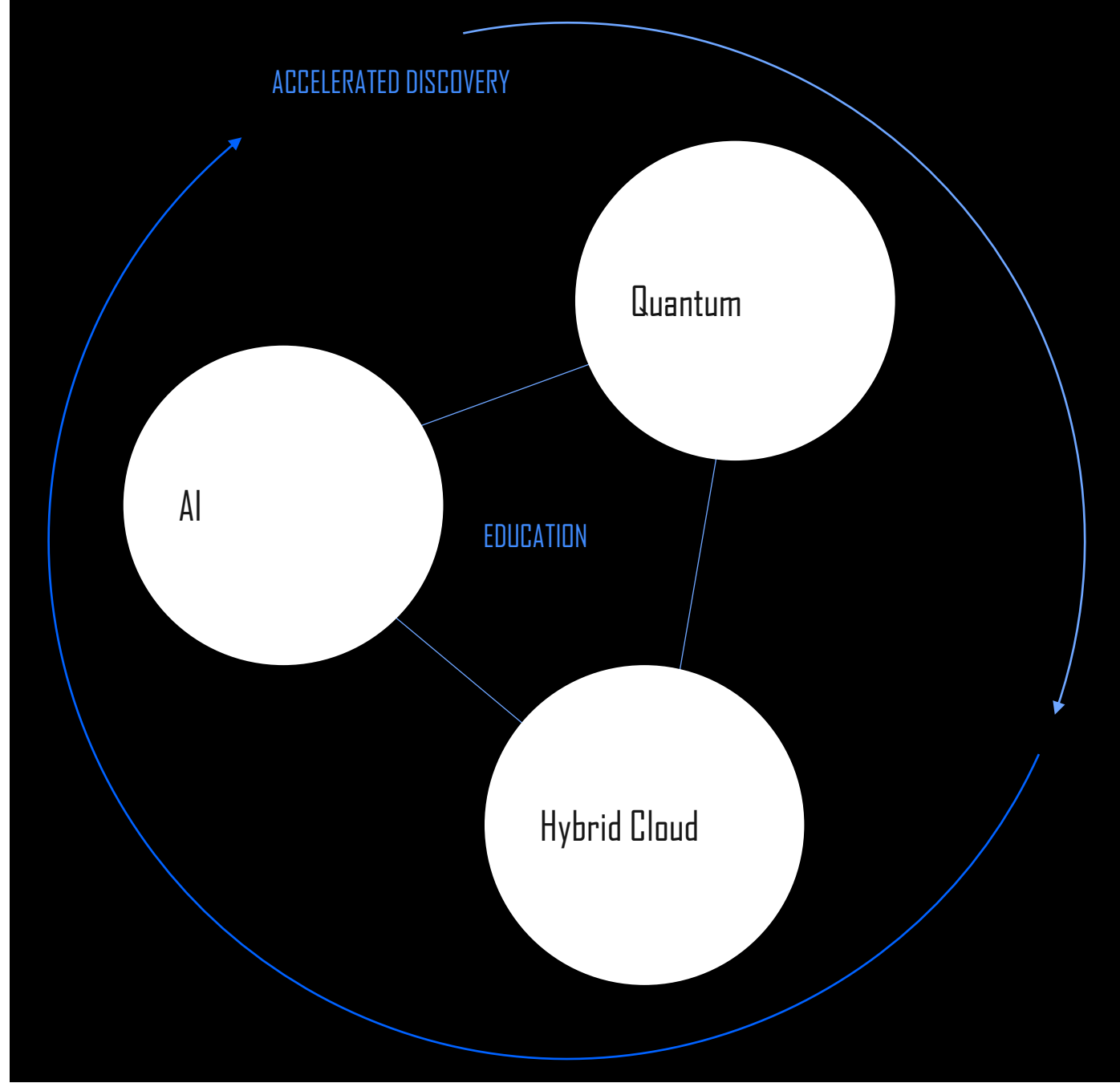
We apply the supercharged scientific method …
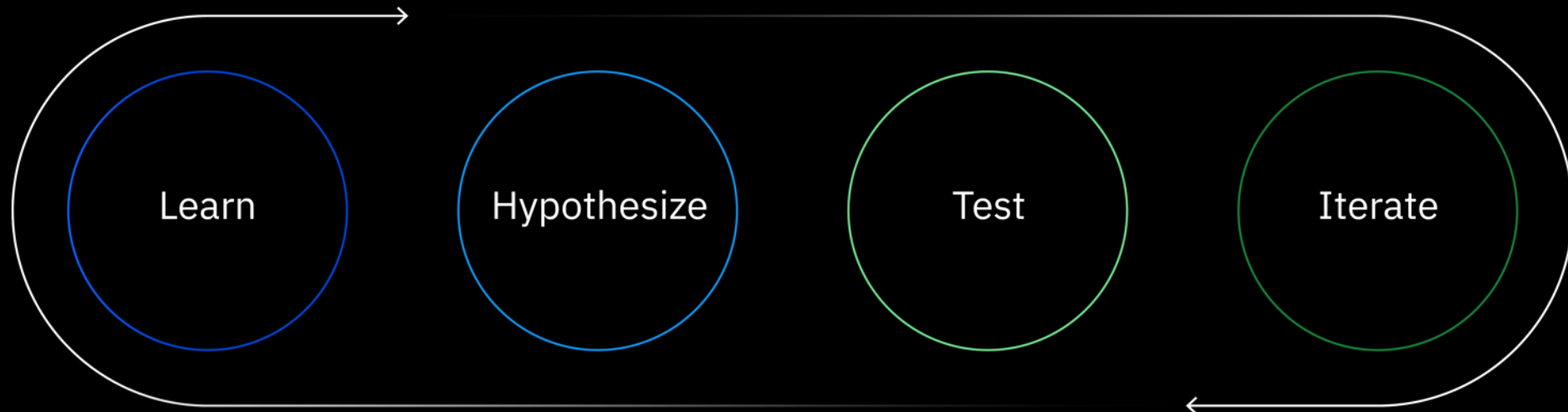
AI is accelerating materials discovery and chemistry.
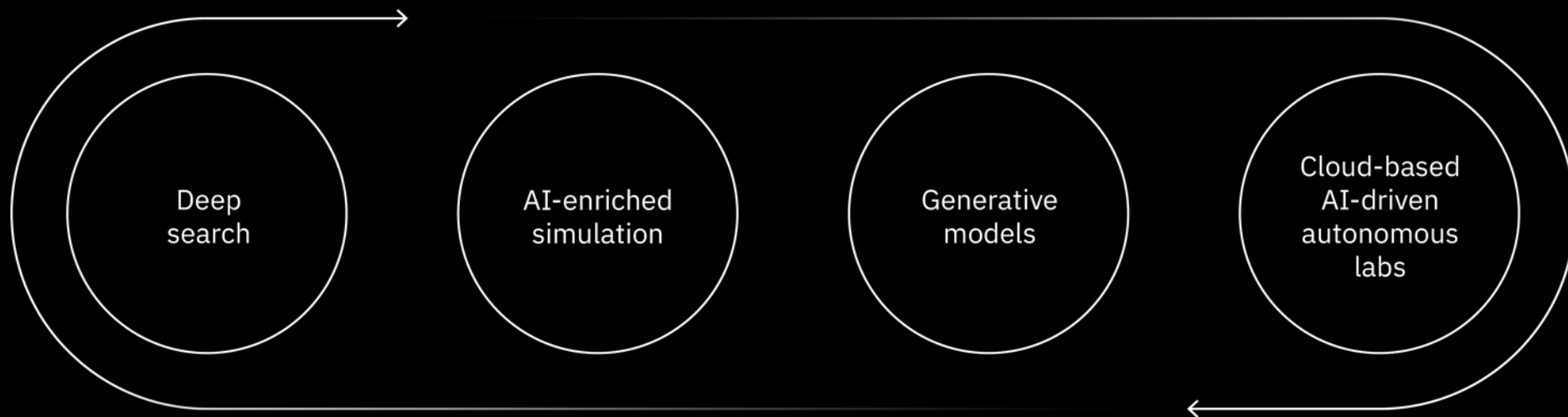
→ **1000x** faster ingestion of existing literature to create a knowledge database.

→ **2-40x** faster screening, augmenting database by predicting materials properties or predict chemical reactions.

→ **10x** faster design by generating candidate materials or molecular designs.

→ **100x** faster synthesis.

Our Global Discovery Accelerators

Quebec, Canada

MISSION: Converge quantum computing with AI, HPC and cloud to supercharge scientific discovery in health and climate, and grow a new ecosystem for broad economic impact.

Cleveland Clinic, USA

MISSION: Apply AI, quantum computing, HPC and hybrid cloud to pathogen research and translation to practice, and build the future technology workforce in healthcare.

Hartree Center, UK

MISSION: Apply AI, quantum, and HPC to accelerate discovery, innovation, solution creation, and skills development with industry with focus on accelerated modeling and simulation.

University of Illinois Urbana-Champagne, USA

MISSION: Advance the science and technology foundations of accelerating scientific discovery with hybrid cloud, quantum and AI with focus on new materials.

Major Application Focus Areas of Interest to the IBM Team	
Sustainability	Effective **carbon capture** and storage
	Rethinking **energy storage**
	Circular and **sustainable materials**
Healthcare	Discover **small molecules**
	Novel **peptides**
	Novel **biologic** therapies
Computing	High-performance **advanced devices**
	Enhanced **packaging materials**
	Scaling for **quantum roadmap**

Discovery Accelerator at Cleveland Clinic

TEN YEAR MISSION: Deploy the next frontier of computing technologies and tools including AI and quantum computing in the hybrid cloud to revolutionize the practice of healthcare and discovery in the life sciences and foster the next generation workforce.

Cleveland Clinic and IBM Unveil Landmark 10-Year Partnership to Accelerate Discovery in Healthcare and Life Sciences
IBM Hybrid Cloud, High Performance Computing, Artificial Intelligence, and Quantum Computing technologies to serve as foundation for newly launched Cleveland Clinic Global Center for Pathogen Research & Human Health
IBM plans to install its first private-sector, on premises quantum computing system in the U.S. at Cleveland Clinic. Cleveland Clinic also plans to receive first, next-generation IBM 1,000+ qubit quantum system in the coming years

Mission

Apply AI, quantum computing, high performance computing and hybrid cloud technologies to advance pathogen research and translation to practice, and create the future technology workforce in healthcare.

Focus Areas

drug discovery | clinical imaging | outcome prediction | trusted AI | hybrid data management | quantum

Learn more at research.ibm.com

→ What is Accelerated Discovery
→ IBM Research: Inventing What's Next
→ Urgency of Science
→ IBM RXN for Chemistry
→ Project Photoresist
→ Science and Technology Outlook 2021

→ Cleveland Clinic–IBM Discovery Accelerator
→ UIUC–IBM Discovery Accelerator Institute
→ STFC–IBM Hartree National Centre for Digital Innovation