The Future of Cloud:

Strategy, Investments and Future Innovation Areas

The core incubations and disruptive technologies shaping the cloud's future and the next wave of innovation across industry, government and society

Sara Nagy
Senior Director, Customer Engagement

The Future of Cloud

FUTURE OF NETWORKING

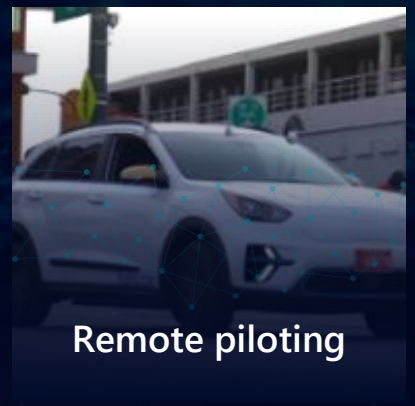
Modern Connected Applications

FUTURE OF COMPUTING

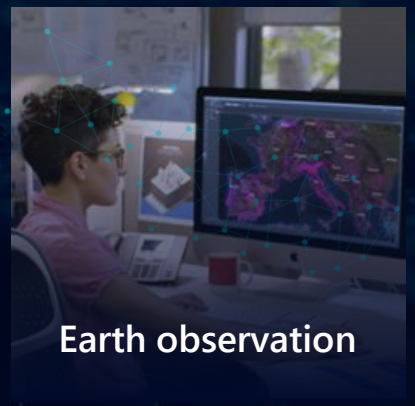
Artificial Intelligence & Quantum at Scale

The future of the cloud is applicable to businesses today

Modern Connected Applications

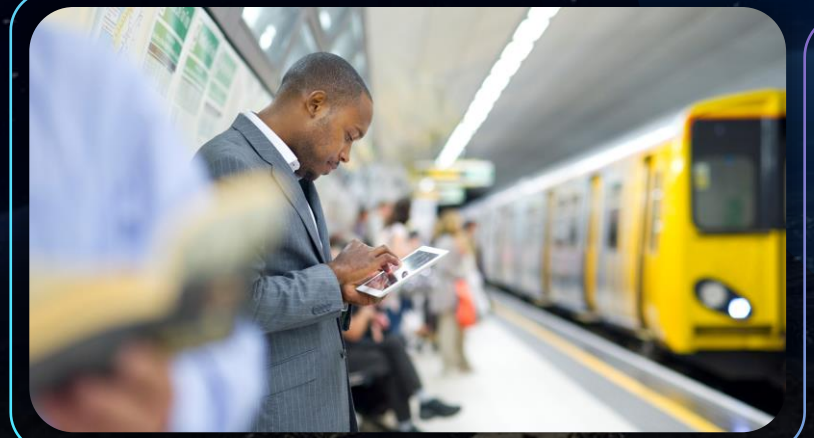


Artificial Intelligence & Quantum at Scale



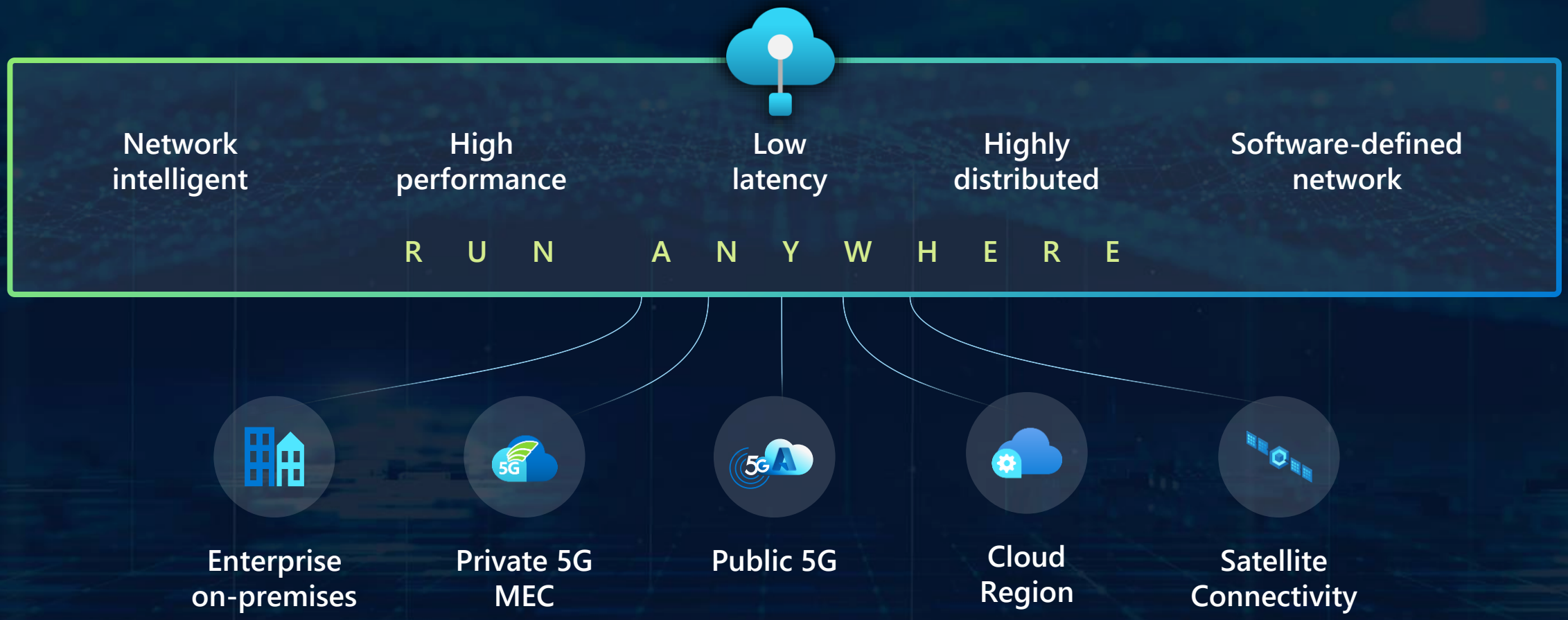
Space

Future of networking



5G

Enabling a new breed of modern connected apps



We see new business scenarios emerging across industries

Large outdoor Infrastructures

Energy (oil and gas)

Large numbers of underground, connected devices

Agriculture

Connectivity for rural areas to enable irrigation sensing

Long linear Infrastructures

Smart Roads

Improve traffic flow, safety, and maintenance operations

Smart Rail

Connectivity supporting passengers and cargo

Indoor + Outdoor Facilities

Manufacturing

Automation to improve worker safety and productivity

Transportation

Improved airport operations for baggage handling

Remote Portable Networks

Healthcare

Support field operations with remote expert help and augmented reality

First Responders

Improve first responder safety and effectivness

Public/Consumer Facilities

Smart Spaces

Real-time digital signage in public areas

Retail

Real-time in-store stock updates to faciliate curbside pick-up

Smart Vehicles

Automotive

Autonomous vehicles with connected apps

Commercial

Support fleet operations and individual drivers

There are common patterns and needs as well across industries

Large outdoor Infrastructures	Long linear Infrastructures	Indoor + Outdoor Facilities	Remote Portable Networks	Public/Consumer Facilities	Smart Vehicles
Industries					
• Air transport • Energy • Mining	• Transportation	• Manufacturing • Retail	• Defense • First responders	• Sporting events • Concerts	• Automotive
Patterns and Techniques					
• Video analytics • Drones management • Telemetry analytics	• Video analytics • Sensor analytics • V2X • Space/Orbital	• Video analytics • Autonomous guided vehicles	• Video Analytics • Portable 5G network • Space/Orbital • AR headsets	• Video streaming • Infotainment • User to user	• Video analytics • Car2Car communication • Infotainment • AI car control
Use Cases					
• Smart Airports • Oil/gas infra • Mining infra • Port operations	• Smart Roads • Smart Rail	• Smart Factory • Store checkout	• Tactic units • War ships • Firefighters	• Stadiums and arenas • Arts venues	• Connected vehicles • Remote control • Autonomous vehicles • Fleet management

Inventec and Nexcom:
Transforming factory operations with private 5G

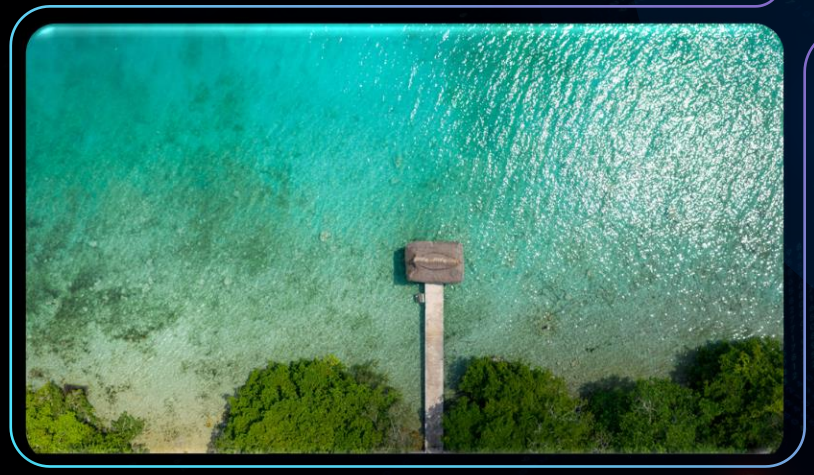
Inventec’s connectivity infrastructure solution enables factories to become smart factories

Efficiency is unlocked with automated optical inspection, image recognition, remote collaboration, and more

NEXCOM
智造賦能之關鍵技術 論壇
Future Factory In Today

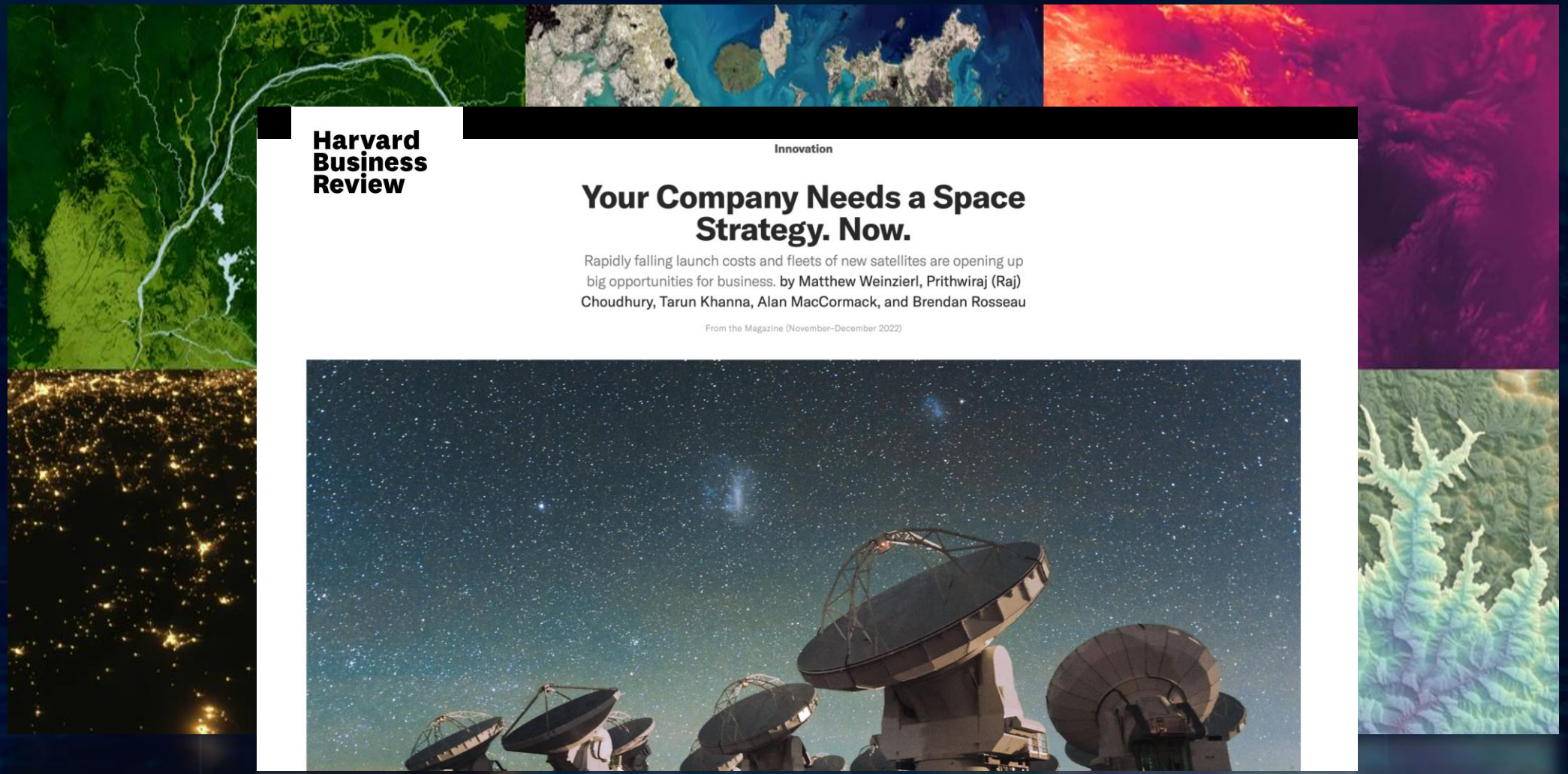
AI

Future of Computing



Quantum

Earth observation



Harvard Business Review

Innovation

Your Company Needs a Space Strategy. Now.

Rapidly falling launch costs and fleets of new satellites are opening up big opportunities for business. by Matthew Weinzierl, Prithwiraj (Raj) Choudhury, Tarun Khanna, Alan MacCormack, and Brendan Rosseau

From the Magazine (November–December 2022)

Planetary Computer Data

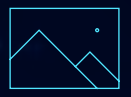
~67PB of Earth data, over 100 collections

Remote sensing data

- Landsat 4-9
- Sentinel-1, -2, -3, -5P
- GOES-16, -17, -18
- MODIS, NAIP, ASTER,

Weather/climate data

- CMIP6, ERA5, GFS, ISD, NEXRAD,



Land cover data

- CCI, Corine, CCAP, NLCD, CDL, USGS GAP, Esri/Impact Observatory 10m

Biodiversity data

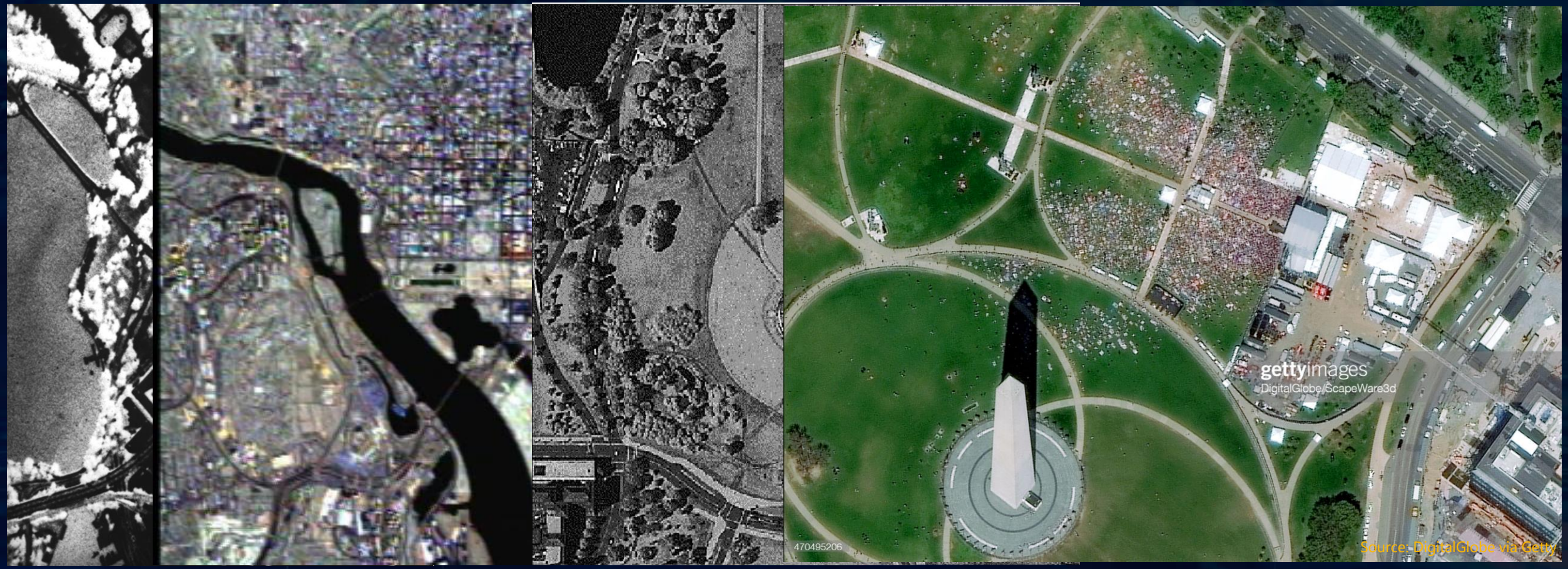
- GBIF, NatureServe MoBI

...and many more

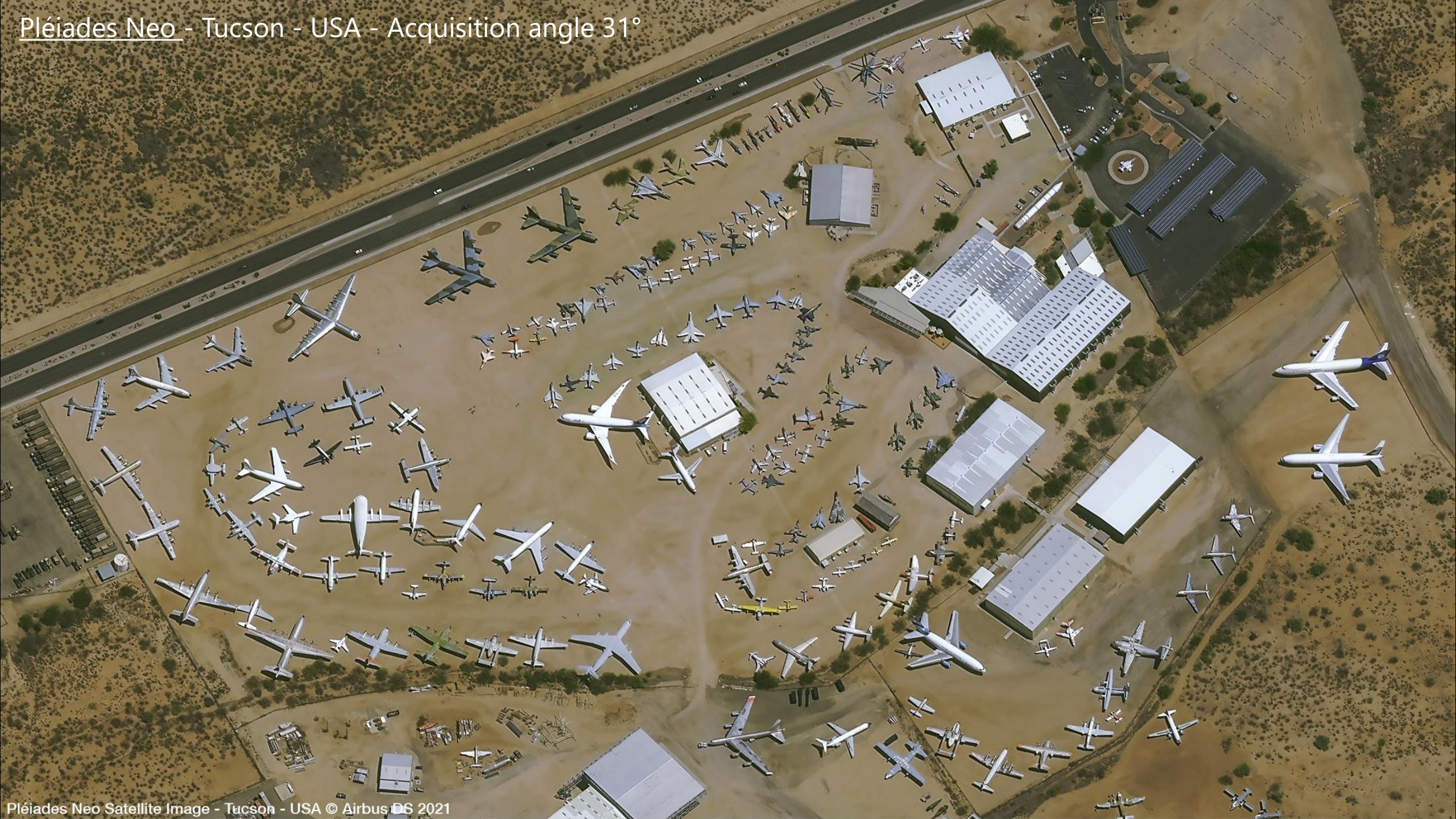
planetarycomputer.microsoft.com/catalog

Evolution of satellite imagery

Corona (1967) Landsat-7 (1999) Ikonos-2 (circa 2000) WorldView-3 (circa 2015)



Pléiades Neo Satellite Image - Tucson - USA © Airbus DS 2021


Pléiades Neo - Tucson - USA - Acquisition angle 31°
Pléiades Neo Satellite Image - Tucson - USA © Airbus DS 2021

Microsoft Premonition

Hyperconnected multi-source sensing & data

Biological

Arthropod

Animal

Human

Abiotic

Geospatial

Advanced AI Models

Assess

Predict

React

Biosecurity

Climate security

Food security

“

Our goal is to compress the next 250 years of chemistry into the next 25.”

Satya Nadella

Our approach to Quantum Computing

Accelerate scientific discovery

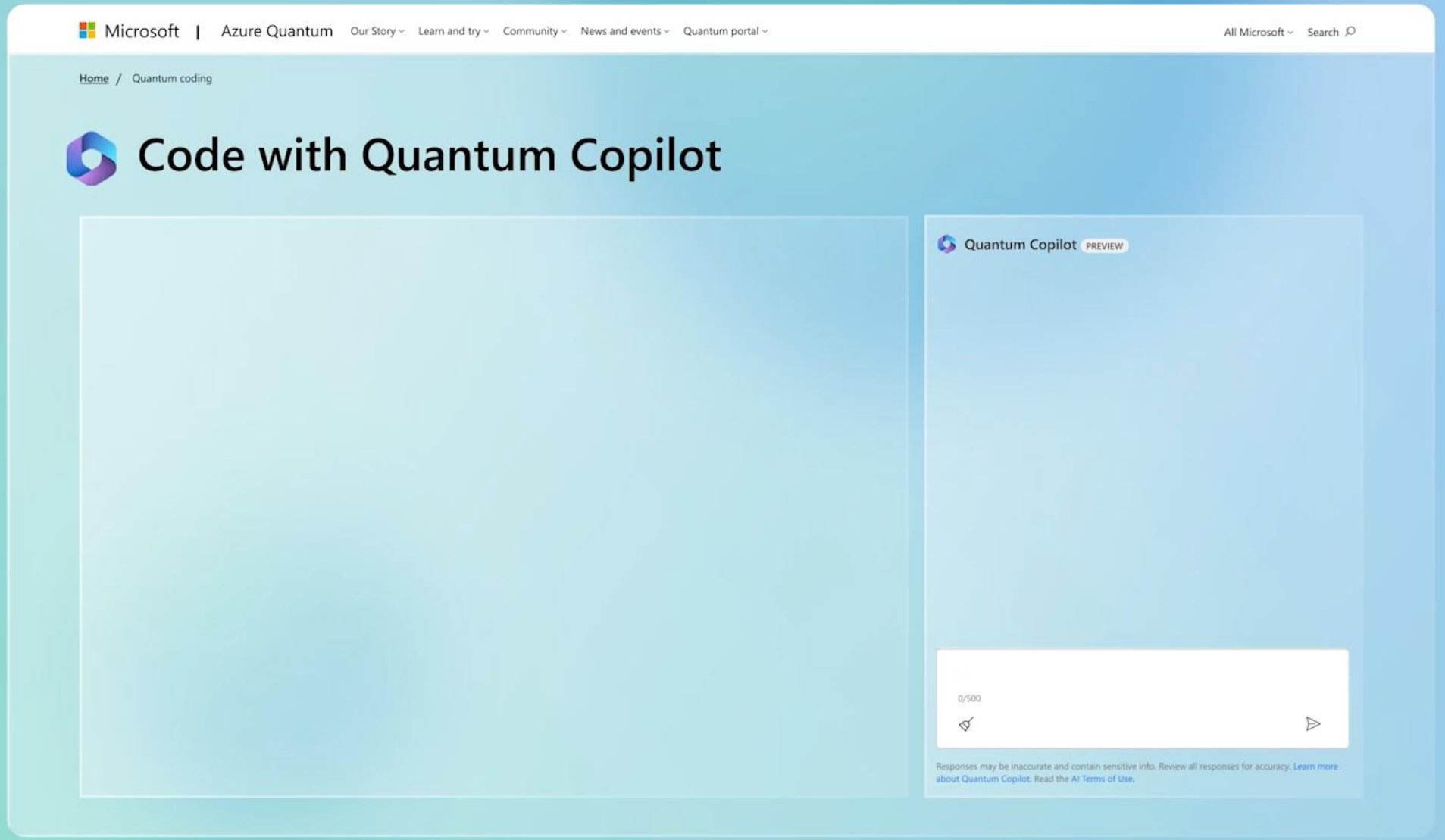
Engineer a quantum supercomputer

Enable a quantum-ready ecosystem

AZURE QUANTUM

Elements

Accelerating scientific discovery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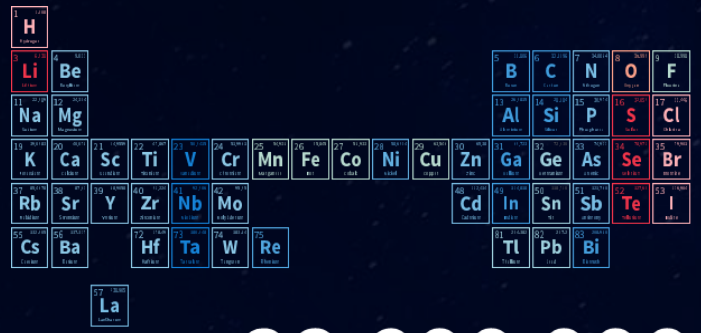
Pacific Northwest
NATIONAL LABORATORY



From simulation to full synthesis of new viable material in a proof-of-concept battery.

32,600,000	Elements-trained AI Models Relevant element replacement in crystal structure
500,000	Fast AI screening + AI/HPC Simulation Material stability + Physics-based simulations
800	DFT on HPC validation Physics-based simulations
150	Molecular dynamics on HPC AI-accelerated MD simulations
18	Expert guided AI Models Availability/novelty/etc.
1	New electrolyte ~ 70% less lithium compared to existing lithium-ion batteries

Faster materials discovery with AI acceleration

AI INFERENCE

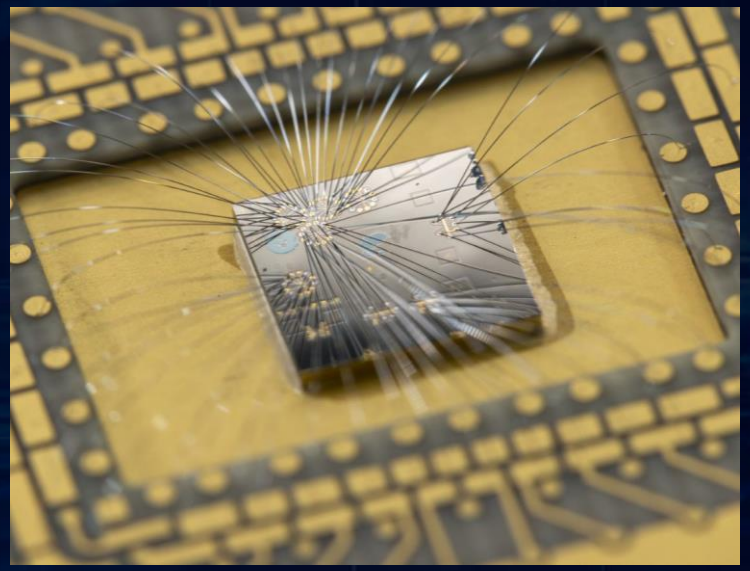
HPC SCREENING

HUMAN INFORMED VALIDATION

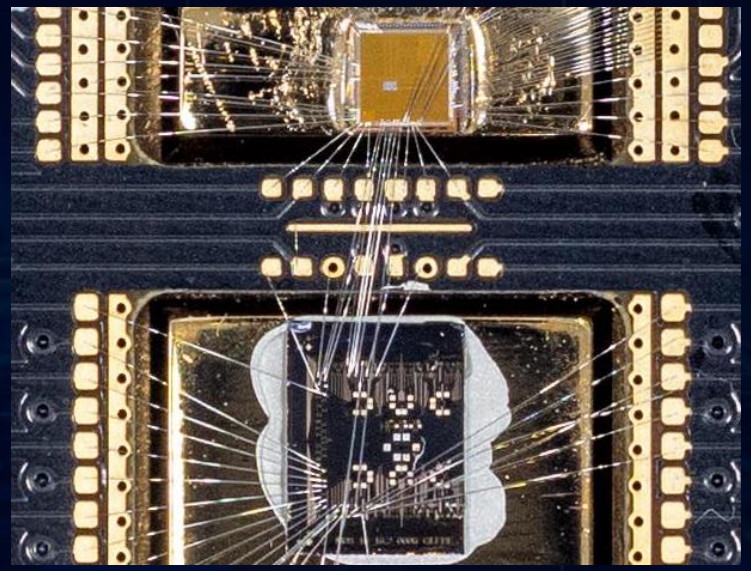
Quantum at scale: Our approach

Quantum will require millions of physical qubits to unlock industrial-scale capabilities

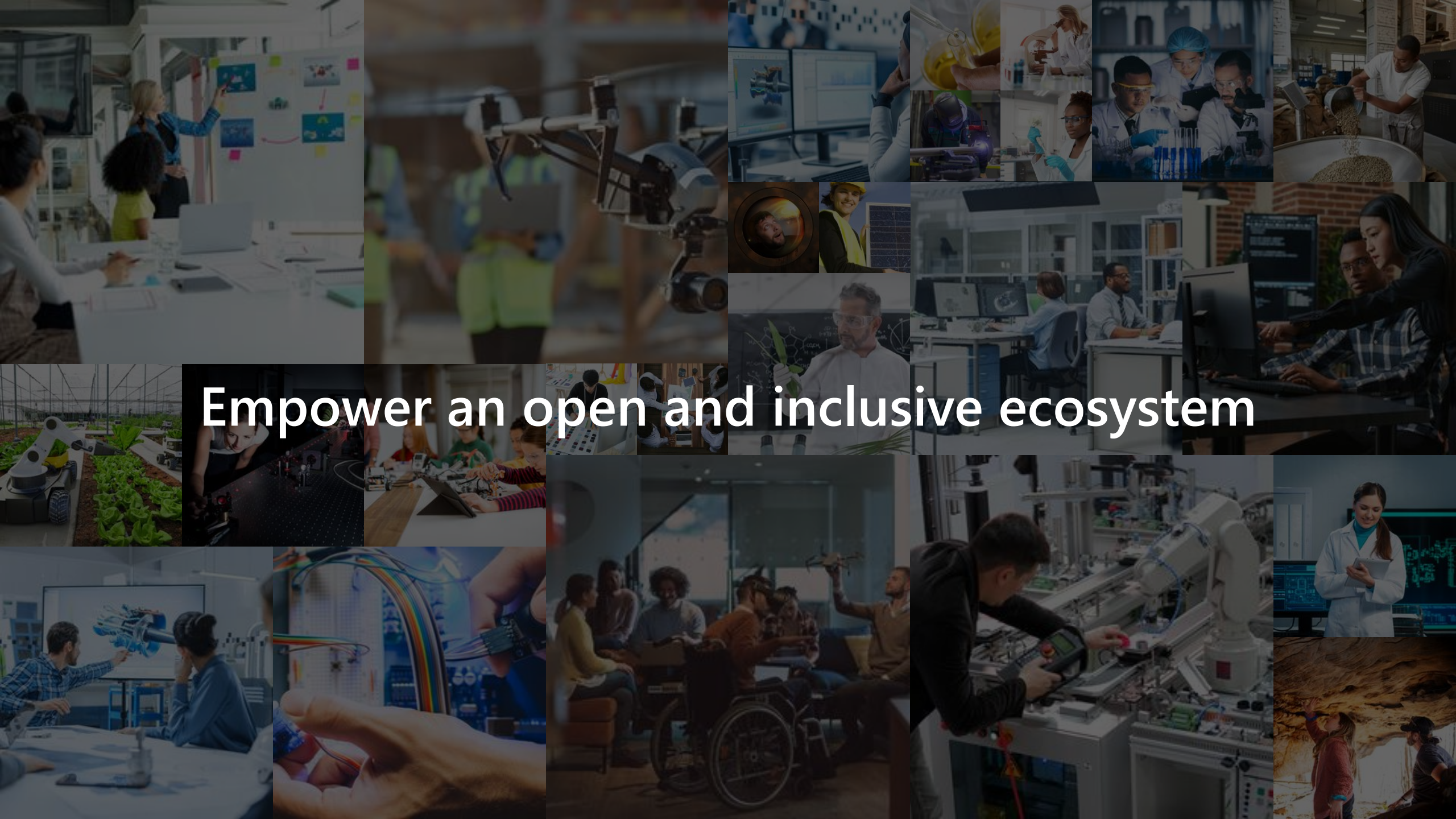
Small



Fast



Controllable



Empower an open and inclusive ecosystem

Thank you!
https://aka.ms/futureofcloud