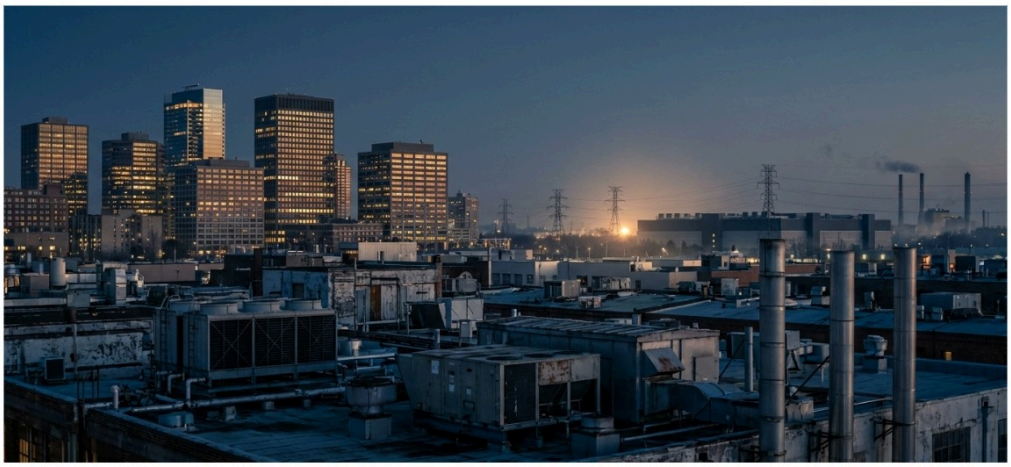
INFRASTRUCTURE AI WHITE PAPER

Galaxy Agentic Operating System (GAOS)

The Intelligence Layer for Autonomous Infrastructure.

A globally distributed, self-evolving intelligence layer for buildings, enterprises, and cities.

01 Why infrastructure needs an operating system.



Around the world, the physical systems that keep cities and enterprises running are becoming more complex every year. Buildings rely on dozens of disconnected control systems. Utilities juggle fluctuating demand, distributed generation, and aging networks. City agencies try to coordinate transport, energy, water, safety, and digital services—often using tools that were never designed to work together at scale.

In most cases, each system operates in isolation. A building automation system optimizes HVAC locally. A city traffic management platform adjusts signals on selected corridors. A utility monitors grid loading in its own control room. Data is trapped inside vertical silos, and decision-making is reactive and fragmented.

At the same time, a new class of agentic AI is emerging. These AI agents are capable of perceiving context, coordinating across domains, and acting autonomously to achieve complex goals. Yet there is no shared "operating system" that allows such agents to orchestrate physical infrastructure holistically across buildings, enterprises, and entire cities.

> **The Galaxy Agentic Operating System (GAOS) is designed to fill this gap — a globally distributed, self-evolving intelligence layer that sits above existing systems and connects them into a coherent, adaptive whole. GAOS enables AI agents to ingest data from many sources, collaborate across domains, and execute decisions in real time, transforming static infrastructure into a living, autonomous ecosystem.**

02 From fragmentation to city-scale intelligence.

Modern infrastructure suffers from three structural problems:

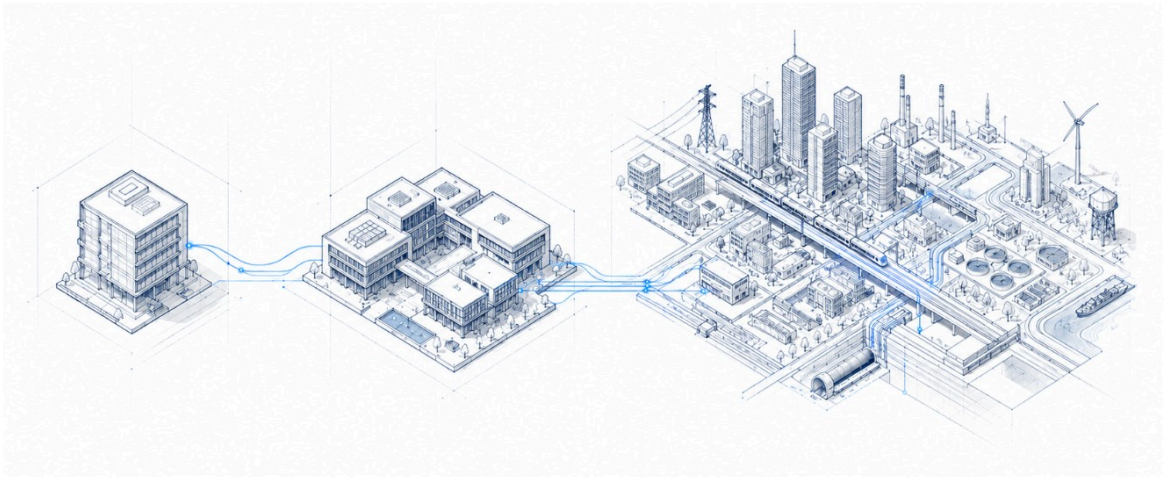
- **Buildings and facilities operate in isolation**, even when owned by the same organization.
- **Data is siloed** across devices, vendors, and departments.
- **Operational decisions are local, manual, and often reactive** rather than predictive.

This fragmentation wastes energy and money, slows response times, and limits resilience. It also prevents operators from seeing the full picture: how energy use, mobility, comfort, safety, and sustainability interact across a campus, portfolio, or city.

Infrastructure AI proposes a different model built around three pillars:

- **A unified intelligence layer** that connects assets, systems, and data streams.
- **A global agentic ecosystem** where specialized AI agents collaborate.
- **A platform for continuous, autonomous optimization** rather than one-off projects.

When these pillars are in place, infrastructure stops behaving like a collection of isolated systems and begins to function as an integrated intelligence network. GAOS is the software and coordination framework that makes this shift possible at scale, enabling city-level situational awareness, orchestration, and optimization across many stakeholders.

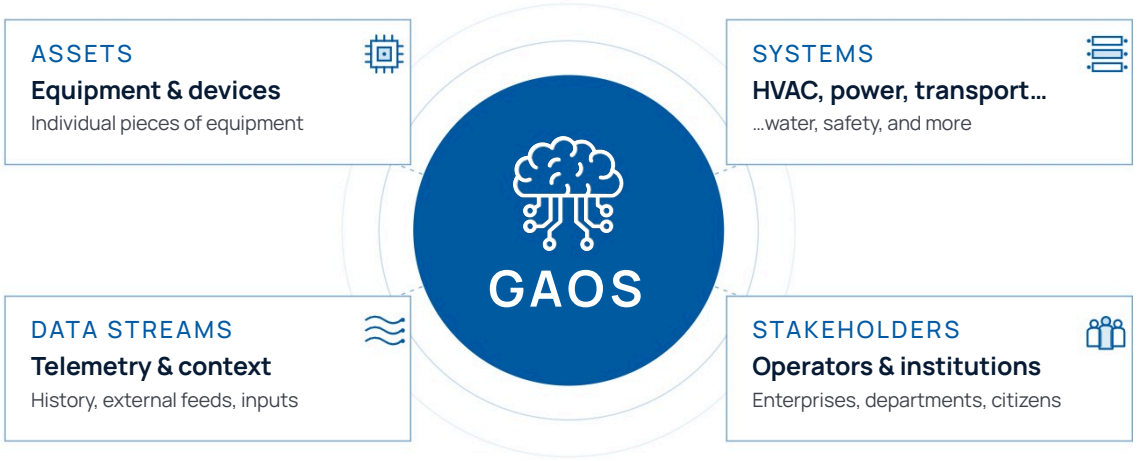


03 A distributed intelligence fabric.

The Galaxy Agentic Operating System (GAOS) is a proprietary, distributed operating system built for AI agents that operate physical infrastructure. It provides the environment in which these agents can:

- **Ingest and interpret data** from heterogeneous sources (sensors, systems, APIs).
- **Collaborate with one another** across domains and organizational boundaries.
- **Execute autonomous decisions in real time**, within defined safety and policy constraints.
- **Continuously learn from outcomes** and evolve their strategies over time.

In practical terms, GAOS functions as the central intelligence fabric that connects four key elements:



By turning these elements into a single coordinated fabric, GAOS creates the conditions in which agentic AI can safely manage complex, interdependent systems.

03 A planet-scale nervous system for infrastructure.

GAOS is designed to behave like a planet-scale nervous system for infrastructure. The analogy is deliberate:

SENSORY ORGANS	**Sensors & systems.** Provide continuous data inputs.
NEURAL PROCESSORS	**AI agents.** Interpret signals and formulate responses.
COGNITIVE CENTRE	**The GAOS core.** Coordinates perception, planning, and execution.
MOTOR OUTPUTS	**Dashboards & control actions.** Change how infrastructure behaves in the real world.

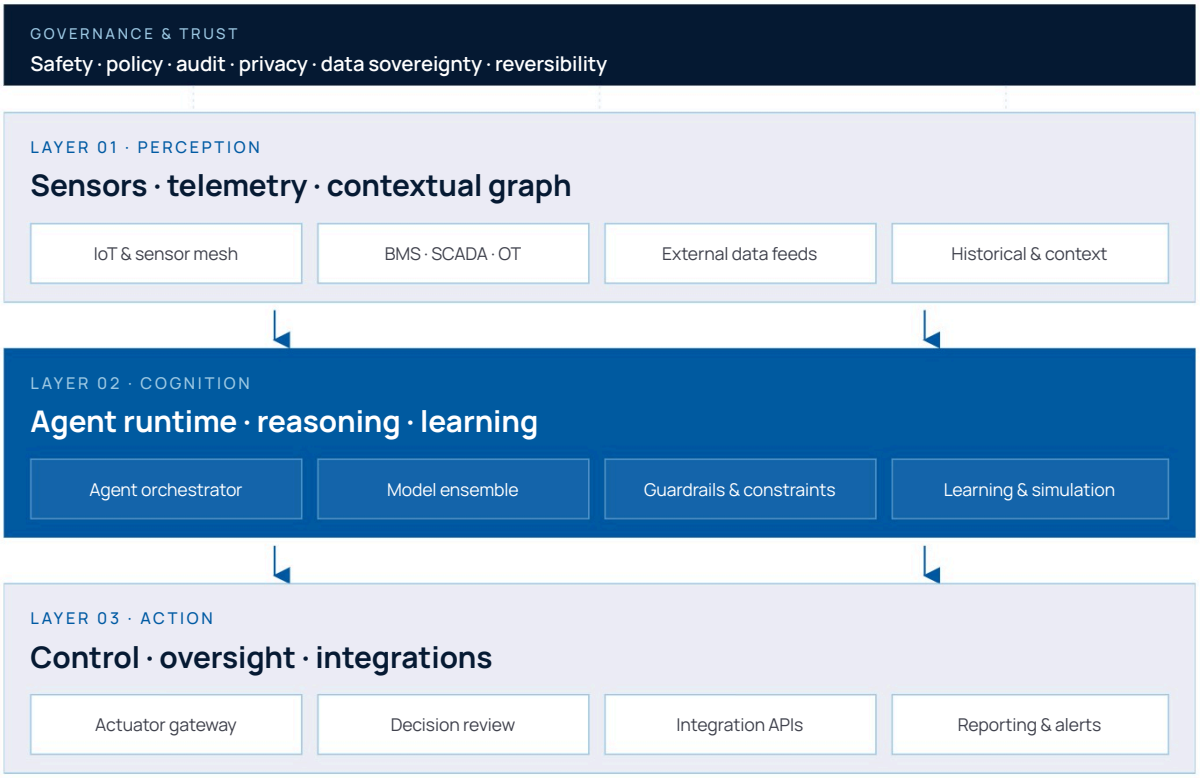
This design enables three critical capabilities:

- **Real-time situational awareness** — understanding what is happening across assets, facilities, and networks at any moment.
- **Cross-domain decision-making** — balancing energy, comfort, safety, cost, and sustainability together instead of in isolation.
- **Coordinated system-wide responses** — making sure that action in one domain (e.g., energy curtailment) aligns with priorities in another (e.g., hospital reliability).

> **In effect, GAOS transforms infrastructure from a set of disconnected control systems into a coherent, responsive organism.**

03 A single loop, three layers.

GAOS is organized as a layered architecture. Each layer has a distinct role, but together they form one continuous loop — sensing, deciding, acting, and learning, in real time, under a shared governance plane.



Each layer is independently composable, but they share the same governance plane — every action GAOS takes is bounded by policy, auditable, and reversible.

04 Intelligence for individual sites.

GAOS is designed to operate at several layers simultaneously, from single buildings to entire cities. Each layer adds scope and complexity while building on the same core architecture.

At the individual customer level, GAOS appears as a tailored operational environment focused on one building, campus, or facility. In this context, GAOS provides:

- **A dedicated agentic environment** tuned to that customer's assets and goals.
- **A ground-level operational dashboard** giving operators full visibility and control.
- **AI agents trained for specific service requirements**, such as comfort, reliability, or cost reduction.

Typical capabilities include:

- **Building-level optimization** for energy, HVAC, lighting, security, and other systems.
- **Predictive maintenance and diagnostics**, detecting faults before they cause failures.
- **Real-time control and setpoint adjustments** driven by live conditions.
- **Customized analytics and reporting** aligned with business and compliance needs.

Each customer runs an independent micro-GAOS instance, ensuring that:

- **Data sovereignty** is preserved in line with local privacy and regulatory constraints.
- **Operational autonomy** remains with the owner and operator.
- **Adoption can start small** and scale progressively as trust and value grow.

04 Portfolio-oriented intelligence.

At the enterprise level, GAOS becomes a multi-asset orchestration platform spanning many sites and business units. Here the focus shifts from individual facilities to the behavior of an entire portfolio.

Key capabilities at this layer include:

- **Aggregation** of multiple customer or site environments into a unified view.
- **Cross-portfolio analytics** that reveal patterns, benchmarks, and outliers.
- **Service orchestration across locations**, such as coordinated energy programs or maintenance campaigns.
- **Stakeholder-specific dashboards** for operations, finance, sustainability, and executive teams.

In this context, agents:

- **Coordinate** across multiple data sources and subsystems.
- **Adapt in real time** to changing stakeholder priorities and external conditions.
- **Deliver enterprise-wide intelligence** that informs strategy and day-to-day operations.

04 The intelligence backbone of autonomous cities.

The most ambitious layer is Enterprise Galaxy GAOS, which extends GAOS to the scale of entire cities or regions. At this level, GAOS acts as:

- **The central intelligence engine** for multi-sector urban infrastructure.
- **A real-time coordination layer** that spans energy, transport, utilities, and public services.

Capabilities at city scale include:

- **Integration of city-wide data streams**, from buildings and public infrastructure to mobility and environmental sensors.
- **Dynamic coordination of services** such as energy dispatch, traffic management, public safety, and utilities.
- **Demand-based optimization** across multiple systems, matching resources to real-time needs.
- **Continuous self-improvement** as GAOS and its agents learn from every interaction and event.

> This city-scale layer defines GAOS's strategic ambition: to become the intelligence backbone of autonomous cities, without replacing existing systems but orchestrating them through a common cognitive layer.

04 Six domains, one cognitive layer.

At city scale, GAOS coordinates six interdependent domains through a single cognitive core. Each domain keeps its own controls — GAOS only orchestrates the seams between them, where every meaningful optimization actually lives.

Energy supply tracks transport demand. Building loads negotiate with the grid. Water quality flags routes through citizen services. The value is in the cross-domain handshakes — and they only happen because every domain reports to the same cognitive layer.

05 A persistent software fabric, not a point solution.

Historically, infrastructure technologies have evolved system by system. A building implemented a better BMS. A city upgraded traffic signals. A utility deployed smart meters. Yet each improvement remained confined to a single domain or vendor stack.

GAOS proposes a different paradigm:

TRADITIONAL MODEL	GAOS MODEL
Independent buildings. Static automation and reactive operations, confined to one domain or vendor stack.	**Interconnected infrastructure.** Autonomous agent orchestration and predictive, adaptive operations.

In a GAOS-enabled environment:

- **Data flows continuously** between systems instead of ending at their boundaries.
- **AI agents coordinate across domains**, for example by aligning building demand response with grid conditions and transport patterns.
- **Decisions are no longer one-off manual interventions** but part of continuous intelligence loops that adapt over time.

> This shift marks the emergence of a unified, intelligent infrastructure layer — a persistent software fabric that constantly processes data and orchestrates outcomes at scale, rather than a collection of point solutions.

06 A system that grows smarter.

A defining characteristic of GAOS is that it is designed to evolve with usage. It is not a fixed product but a living system whose intelligence deepens as more infrastructure connects to it. As GAOS scales, several reinforcing dynamics emerge:

DYNAMIC 01

More data → richer insights.

Every new building, device, or system adds fresh signals. Over time, GAOS learns typical patterns, rare events, and cross-system dependencies that are invisible at smaller scales.

DYNAMIC 02

More agents → deeper specialization.

Different agents can specialize in distinct tasks: optimizing chillers, orchestrating fleets, balancing comfort and cost, or coordinating emergency response.

DYNAMIC 03

More interactions → stronger intelligence loops.

Each decision and outcome becomes training data. Successful strategies are reinforced and generalized. Failure modes are detected, understood, and avoided in the future.

These feedback loops create a self-reinforcing intelligence network: the more GAOS is used, the more capable it becomes. GAOS is best understood as a dynamically evolving global operating system — one that continuously reshapes its models and strategies based on the data it consumes.

06 The intelligence flywheel.

GAOS turns every interaction into compounding capability. Data captured today becomes the model that informs tomorrow's decision — whose outcome refines the next captured signal. The loop never stops, and it never resets.

> Each turn of the wheel raises the floor on every future turn. Scale, in GAOS, is not a deployment milestone — it is an effect.

07 A horizontal intelligence layer.

Infrastructure AI positions GAOS not as a vertical point solution, but as a horizontal intelligence layer that spans sectors and use cases. The platform is designed to support:

- **Cross-sector applicability** — from commercial real estate and industrial campuses to utilities and municipalities.
- **A freemium-to-enterprise progression** — allowing organizations to start with narrow, low-friction use cases and graduate to full portfolio or city-scale deployments.
- **A global ecosystem for agents, data, and services** — where partners and third parties can build on GAOS rather than compete with it.

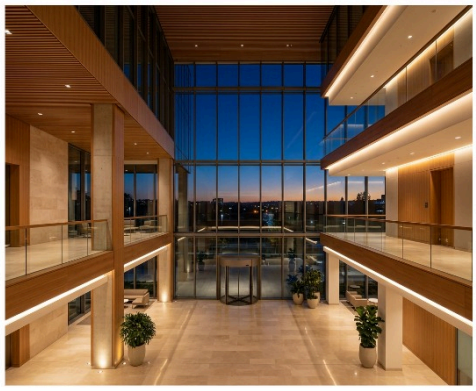
This platform strategy allows GAOS to sit at the center of an expanding network of participants who all benefit from shared intelligence and interoperability.

GAOS delivers distinct value to different stakeholder groups:

FOR INDIVIDUAL CUSTOMERS

Buildings & campuses.

- **Autonomous optimization** of building operations, reducing energy and operational costs.
- **Enhanced reliability and comfort** through predictive maintenance and real-time control.
- **Clear, actionable insights** presented through intuitive dashboards.



FOR ENTERPRISES

Multi-site owners & operators.

- **Portfolio-level intelligence** that reveals inefficiencies and best practices across assets.
- **Centralized oversight** combined with localized, decentralized execution via agents.
- **Evidence-based decision-making** for capital planning, sustainability, and risk management.

07 From cost center to strategic asset.

FOR CITIES AND GOVERNMENTS

- **Integrated management of infrastructure** spanning energy, transport, water, and public services.
- **Improved service delivery** through coordinated, data-driven operations.
- **More sustainable, resilient, and responsive** urban environments.

In all cases, GAOS shifts infrastructure from a cost center that must be managed to a strategic asset that can be continuously optimized.

7.3 — Economic Model.

GAOS unlocks several complementary revenue and value creation models:

MODEL 01

Subscription-based agent services.

Recurring revenue tied to the scope and sophistication of deployed agents.

MODEL 02

Data monetization via ecosystem.

Anonymized insights that can power benchmarks, analytics, or third-party applications.

MODEL 03

Marketplace-driven service delivery.

A catalog of agents, services, and integrations from Infrastructure AI and partners.

MODEL 04 · FUTURE

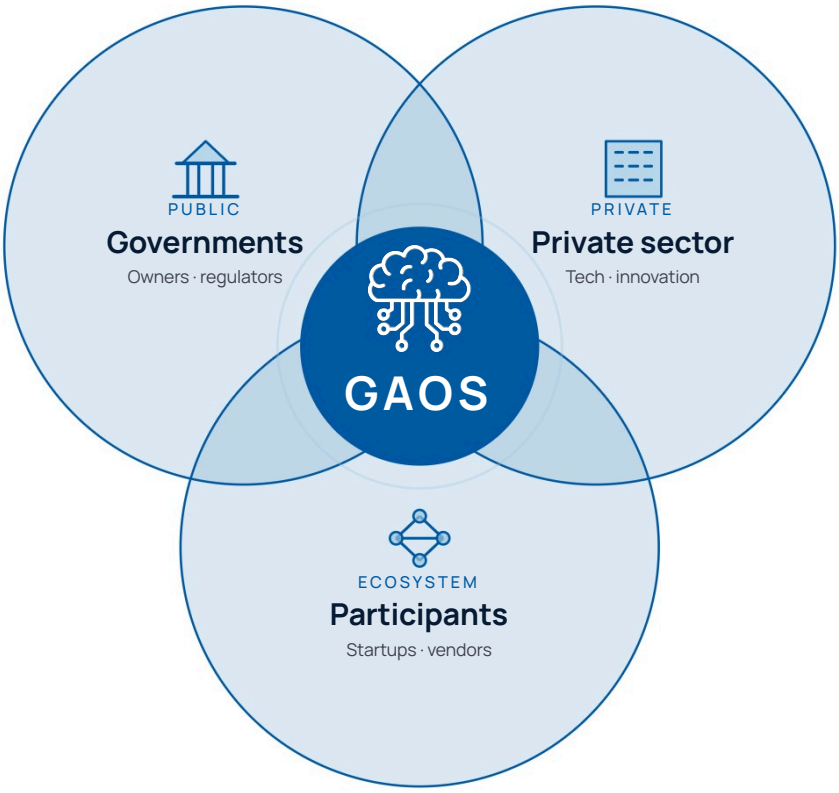
Tokenized infrastructure intelligence.

Mechanisms to attribute, trade, or reward contributions to the collective intelligence graph over time.

> This economic architecture is designed to scale with adoption and to incentivize collaboration rather than fragmentation.

08 A new collaboration model.

GAOS also provides a blueprint for a new form of public–private partnership in infrastructure. Three constituencies converge — and the platform sits exactly where their interests overlap.



Together, they build:

- **Shared intelligence ecosystems** where multiple entities benefit from pooled data and insights.
- **Collaborative operational models** in which cities, utilities, and private operators coordinate via a common platform.
- **New economic frameworks** for cities that harness data and intelligence as assets rather than byproducts.

> GAOS becomes not only a technical platform but also an institutional and economic framework for governing autonomous infrastructure at scale.

09 What makes GAOS different.

Many technologies claim to optimize buildings, grids, or cities, but GAOS is differentiated along several axes:

AXIS 01

Agentic architecture.

Instead of traditional software. GAOS is built around autonomous agents that can perceive, decide, and act, rather than static rules or fixed workflows.

AXIS 02

City-scale intelligence.

Instead of isolated optimizers. GAOS is designed to connect multiple domains and jurisdictions, not just improve a single system in isolation.

AXIS 03

Dynamic learning.

Instead of static automation. Operations improve over time as GAOS learns, rather than remaining locked into the logic defined at deployment.

AXIS 04

Unified ecosystem.

Instead of fragmented point solutions. GAOS aspires to be the common fabric that links many vendors, systems, agents, and data sources into one coherent network.

This combination positions GAOS as the defining platform for autonomous infrastructure intelligence, rather than just another application in the stack.

10 The foundational operating system for a new category.

The Galaxy Agentic Operating System is more than an advanced software platform. It is the foundational operating system for a new category: Autonomous Infrastructure Intelligence.

By introducing a distributed, agentic intelligence layer that spans buildings, enterprises, and cities, GAOS turns infrastructure from:

- **Passive systems** into active intelligence networks.
- **Isolated operational silos** into integrated ecosystems.
- **Human-managed environments** into AI-orchestrated systems where people focus on strategy, policy, and innovation.

As GAOS matures and scales, it will reshape:

- **How cities** manage resources, services, and resilience.
- **How enterprises** understand and optimize their physical footprints.
- **How global infrastructure economics** value intelligence, efficiency, and adaptability over raw capacity.

> Infrastructure AI, through GAOS, is positioning itself not just as a technology vendor but as the architect of an intelligent, autonomous world — one where physical infrastructure continuously learns, adapts, and cooperates to deliver better outcomes for people and the planet.