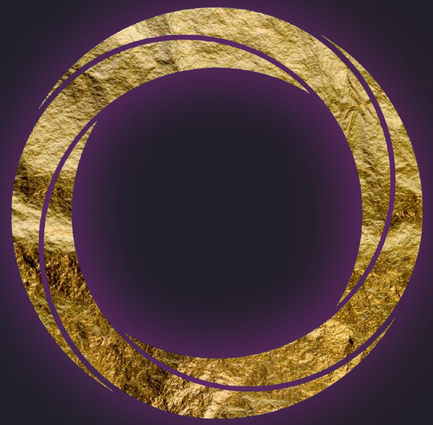

RESPONSIBLE RESEARCH AND INNOVATION
Civic Infrastructure for Systems Innovation

OBSERVATORY PROTOCOL

Fostering a Sustainable Future Through Innovation and Collaboration

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ABOUT

THE GLOBAL CENTRE FOR RISK AND INNOVATION (GCRI)

International non-profit organization dedicated to pioneering global risk management, resilience and sustainability through multilateral cooperation, standardization and acceleration

Global pioneer in risk and innovation management
Responsible research and innovation ecosystem
Anticipatory action plans for global risks mitigation
Food-energy-water-health nexus security and sustainability
Civic infrastructure for disaster risk reduction
Upgrade of international environmental law
Advancing international standards in risk management
Capacity building programs at local, national, regional levels
Just transition, digital transformation, sustainable development

In Special Consultative Status with The United Nations Economic and Social Council ECOSOC (since 2023)

Global Impact Award Winner for Covid-19 recovery programs 2021

Civil Society Organizations (CSO) member of of World Bank and IMF (since 2019)

Sustainable Development Solutions Network (SDSN) member since 2019

Incorporated as non-profit under Innovation, Science and Economic Development Canada (ISED) 2018

MISSION/VISION

RISK MANAGEMENT, RESILIENCE BUILDING AND SUSTAINABLE DEVELOPMENT

As a centre of excellence, GCRI excels in research, innovation, and capacity building across enterprise risk and innovation management, addressing the societal impacts of technological disruptions and financial evolution. Uniting experts from economics, finance, policy, and technology, we are committed to building interdisciplinary tools, capacities, and communities for risk mitigation, resilience building, and sustainable development

Mission: Global risks challenges through innovative technologies and collaborative networks
Vision: Resilient, prosperous and equitable life or all on a sustainable planet
Core Values: Innovation, reusability, multidisciplinary, sustainability
Focus Areas: Environmental monitoring, risk management, sustainable development
Stakeholders: Governments, academia, industry, civil society, local communities
Approach: Leveraging cutting-edge technologies and collective intelligence

NEXUS OBSERVATORY

EARLY WARNING SYSTEM FOR ANTICIPATORY ACTION

Providing a comprehensive framework for responsible research and innovation projects, utilizing advanced technologies and governance mechanisms with a credit-based system to ensure efficient and impactful outcomes

- **Foundation:** Integrates blockchain, AI/ML, IIoT, and quantum-cloud
- **5G and 6G Networks**: Utilizes high-speed, low-latency technology
- **Real-Time Monitoring:** Collects and analyzes environmental data
- **Global Network:** Observatories, institutions, and communities
- **Credit-Based Incentives:** Boosts engagements and validations
- **AI and ML Integration:** Advanced task matching and optimization
- **Blockchain Security:** Ensures secure and transparent transactions
- **Human-Machine-Nature:** Ecosystem and biodiversity services
- **Collaborative Tools:** Structured quests, bounties, and builds

PROTOCOL

Technology Layer

ECOSYSTEM

Application Layer

UNIVERSE

Integration Layer

MARKETPLACE

Acceleration Layer

LIVING LABS

Adoption layer

THE GLOBAL CENTRE FOR RISK AND INNOVATION

ISSUES

Climate change intensifies disasters: 2023 saw $250 billion in **global damages**
Siloed approaches hinder effective global **disaster management**
Data fragmentation limits **predictive capabilities**
Lack of standardized, scalable solutions for **diverse regions**
Reactive strategies **prove increasingly inadequate and costly**

Slow fund disbursement: Traditional financing mechanisms are often too slow to release funds based on forecasts.
Scalability challenges: Successful pilot projects struggle to achieve widespread adoption.
Data fragmentation: Lack of standardized, integrated data sources for effective risk assessment and early warning.
Lack of real-time risk assessment: Inability to continuously update risk models with new data.
Limited predictive capabilities: Insufficient use of advanced AI and machine learning for disaster forecasting.
Privacy concerns in data sharing: Difficulty in sharing sensitive data across borders and organizations.
Inadequate community engagement: Lack of effective mechanisms to involve local communities in disaster preparedness.
Regulatory compliance across jurisdictions: Challenges in navigating diverse legal and regulatory frameworks globally.
Ethical concerns in AI decision-making: Lack of transparency and potential biases in AI-driven disaster management systems.
Inefficient resource allocation: Suboptimal distribution of resources before and during disaster events.
Limited interoperability: Lack of standardized protocols for different systems and stakeholders to work together seamlessly.
Insufficient funding for anticipatory action: Anticipatory action represents less than 1% of total humanitarian aid.
Lack of standardized impact assessment: Difficulty in measuring and comparing the effectiveness of anticipatory actions.
Centralized decision-making: Slow and often disconnected decision-making processes in disaster management.
Inclusion of vulnerable populations: Inadequate representation of at-risk communities in disaster planning and response.
Lack of incentives for proactive measures: Insufficient mechanisms to encourage and reward anticipatory actions.
Complexity of multi-hazard scenarios: Difficulty in predicting and responding to compound and cascading disasters.
Knowledge gaps in emerging risks: Lack of understanding and preparedness for new types of disasters.

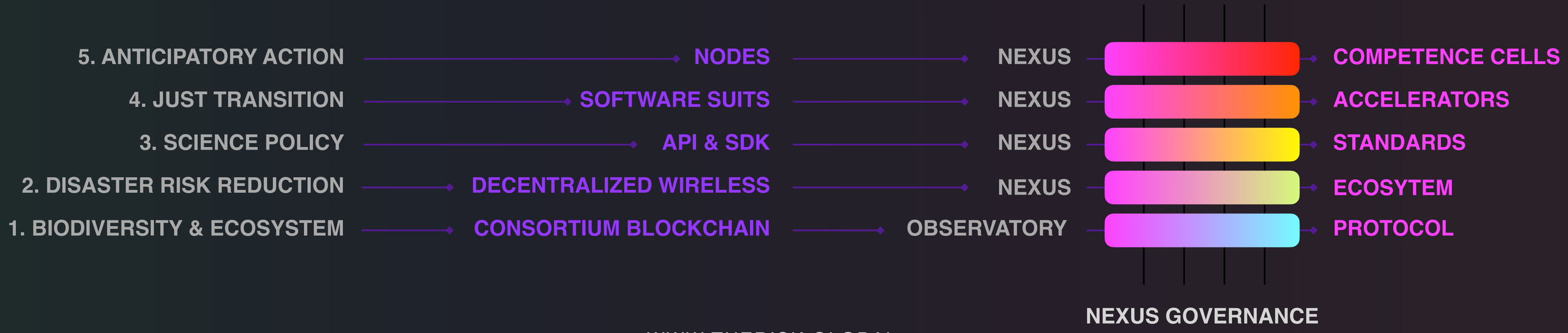
RISK MODELING & FORECASTING

PARAMETRIC FINANCE

Anticipatory Action Plans (AAP) involves taking predefined measures based on scientific forecasts and risk analysis to prevent or mitigate the effects of imminent hazards. These actions can include everything from pre-positioning emergency supplies to evacuating vulnerable populations, tailored to the specific risks and needs of the community

- **Risk Analysis:** Identifying potential hazards and assessing community vulnerabilities
- **Pre-Agreed Actions:** Developing specific, actionable steps that can be triggered by forecasted conditions
- **Activation Triggers:** Establishing precise conditions under which these actions are initiated
- **Financing Mechanisms:** Securing and allocating funds to ensure rapid deployment of resources
- **Stakeholder Coordination:** Engaging local communities, governments, NGOs, and international community
- **Monitoring and Adaptation:** Continuously tracking progress and adapting strategies based on evidence

	FRAMEWORK	*FUNCTION*	*TARGET-VALUE*
5	**Sendai Framework**	**Management**	Community Deployment- equitable
4	**SDGs, ESG, CSR**	**Acceleration**	Portfolio Development- accessible
3	**ITU, IAEA, FAO**	**Standardization**	System Interoperability- resilient
2	**IPBES, UNEP, UNDRR, IFRC**	**Development**	Systems Innovation- epistemic
1	**CBD: Kunming-Montreal Biodiversity**	**Cooperation**	Digital Infrastructure- systemic

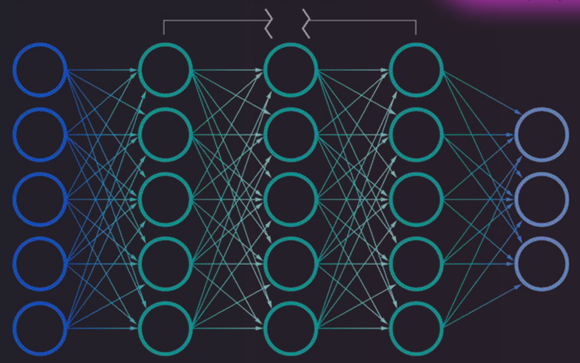


DECENTRALIZED WIRELESS NETWORK

DISTRIBUTED INTELLIGENCE

Supports environmental monitoring, health and safety, energy management, and food security by enabling continuous data collection from sensors and facilitating the integration of machine learning into smart grids and agricultural practices. OP strengthens emergency response efforts by connecting real-time data from facilities with responders, making it a vital tool for advancing SDGs related to clean energy, health, food security, and disaster risk reduction

COMPETENCE CELLS	CIVIL SOCIETY
ACCELERATORS	ACADEMIA
STANDARDS	INSTITUTIONS
ECOSYSTEM	INDUSTRY
PROTOCOL	GOVERNMENTS



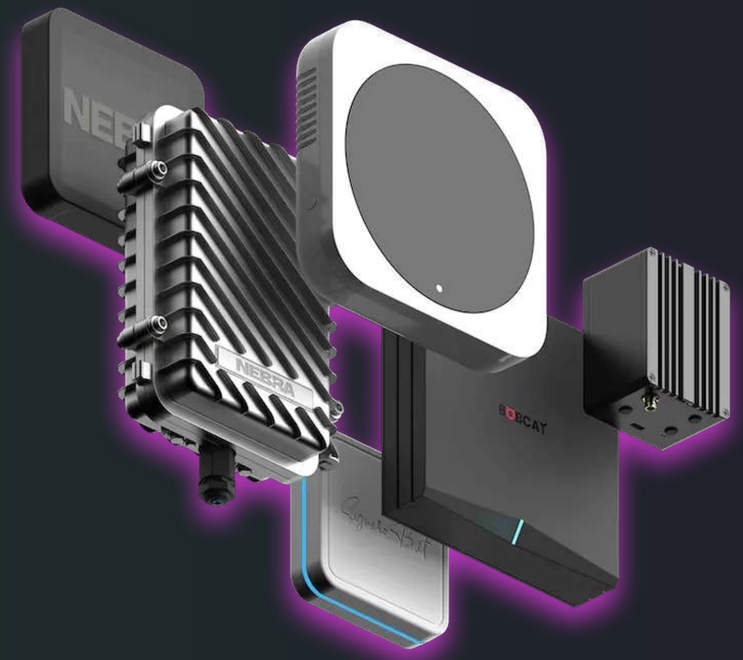
COMMUNITY OPERATED

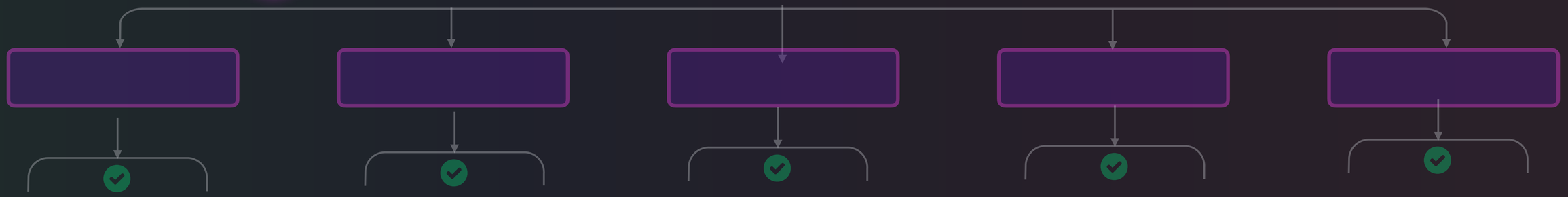
STATIONS, HOTSPOTS, SENSORS

1. PLACE

2. DEPLOY

3. EARN



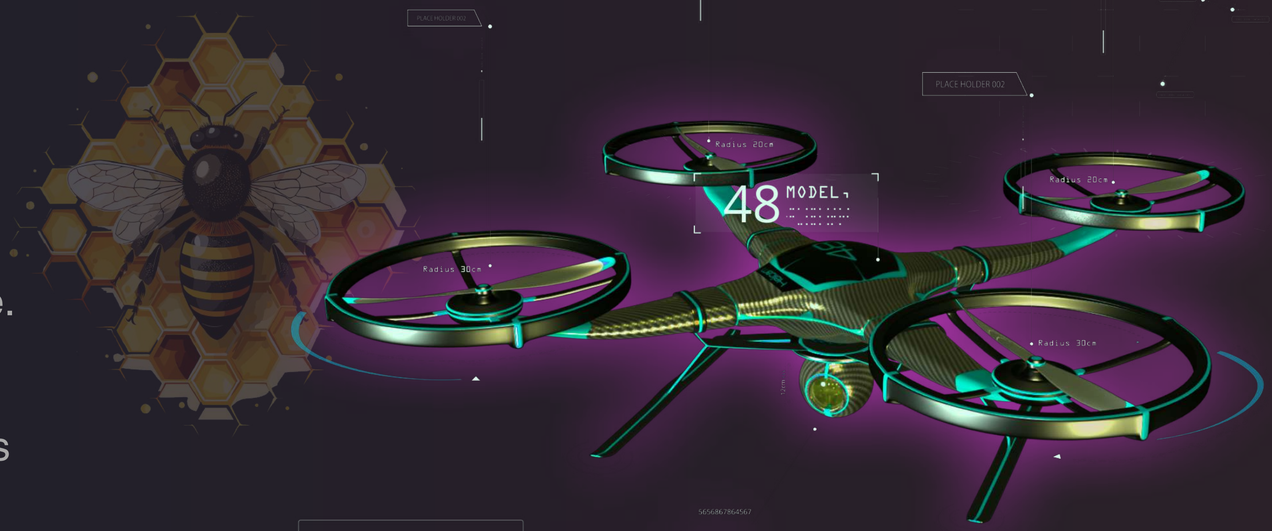


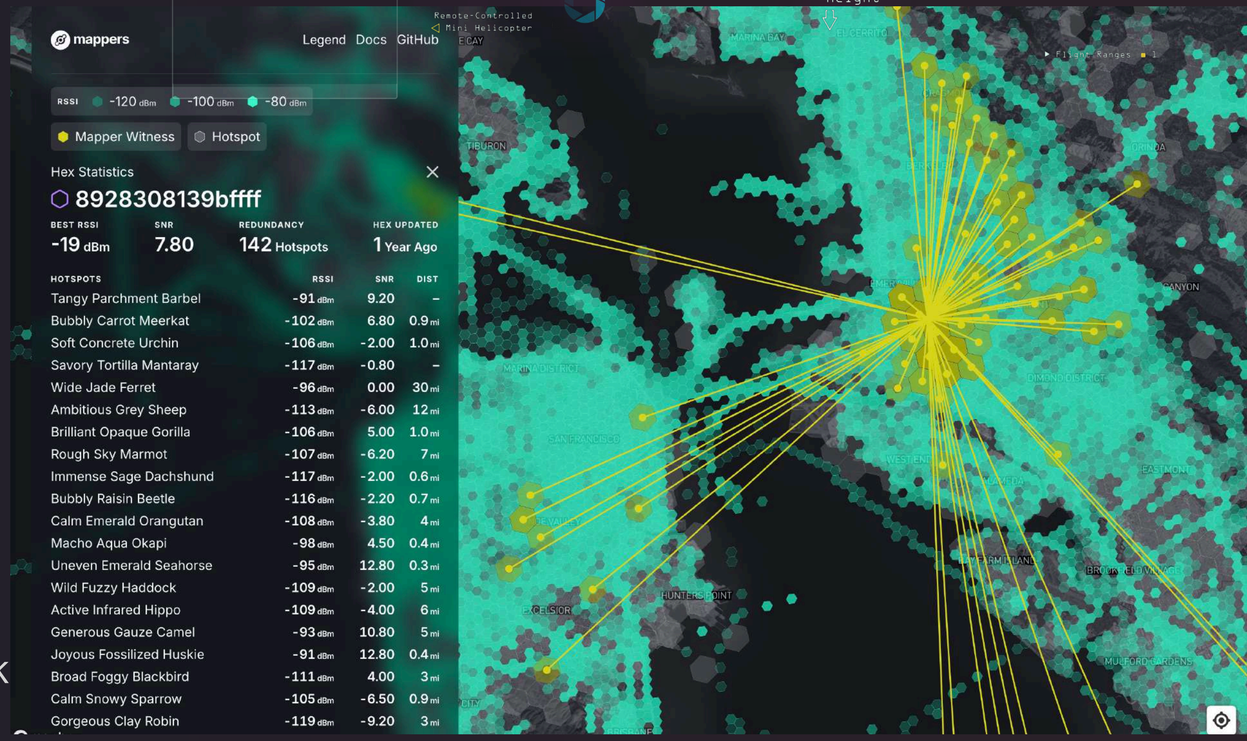
SWARM INTELLIGENCE IN CRISIS

OPTIMAL RESOURCE ALLOCATION

Optimizes node placement and resource allocation in decentralized wireless networks, crucial for disaster response. OP enhances disaster risk reduction by enabling swarm intelligence through a decentralized, real-time network of sensors, mobile devices, and satellites. This network provides continuous monitoring, rapid data analysis, and adaptive, coordinated responses, crucial for managing resources and critical infrastructure during emergencies. By decentralizing data collection and decision-making, OP ensures resilience and flexibility, allowing effective resource deployment even as situations evolve

- **Community Nodes for Early Warning and Action**
- **Disaster Response and Recovery**
- **Humanitarian Relief Operations**
- **Global Disaster Preparedness**

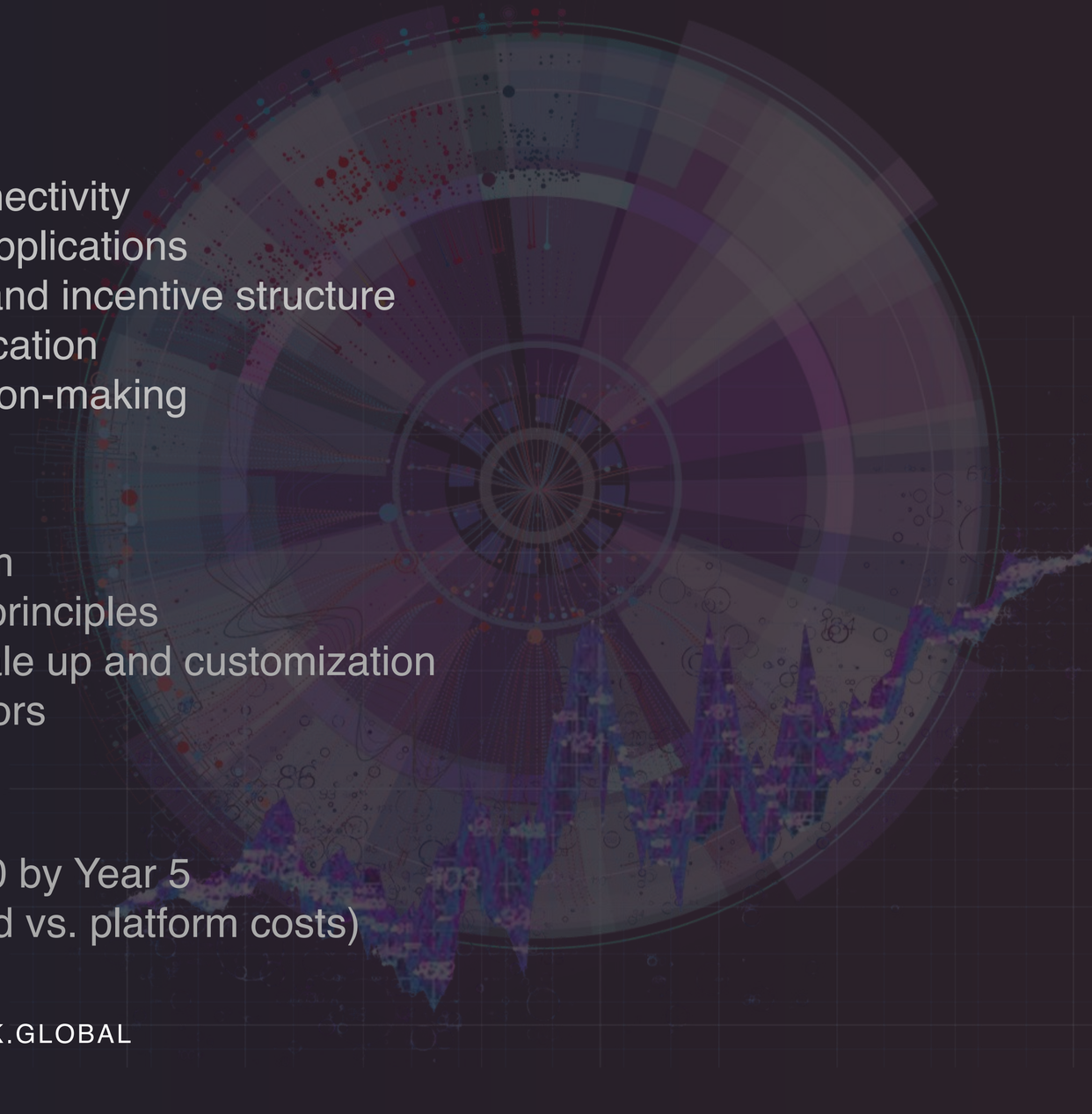




VALUE PROPOSITION

COMMUNITY-RUN RISK OBSERVATORIES

Community-operated mesh network for local resilience
Helium LoRaWAN for long-range, low-power sensor connectivity
Mobile, Satellite and 5G integration for high-bandwidth applications
Blockchain-based network data economy, governance and incentive structure
Software-defined networking for dynamic spectrum allocation
Edge computing for localized data processing and decision-making



Unique Value Proposition:

First global, interconnected disaster risk reduction platform
Comprehensive integration of AI, IoT, and data economy principles
Open standards and architecture allowing for modular scale up and customization
Strong partnerships across public, private, and NGO sectors

Key Metrics:

Platform Adoption: 50 countries by Year 3, 120 by Year 5
Data Contributors: 10,000 organizations by Year 3, 50,000 by Year 5
ROI for Participating Regions: 5:1 (disaster losses avoided vs. platform costs)

MECHANISMS

INTEGRATED ECOSYSTEM

- **Integrated Learning Account (ILA):** Provides a lifelong learning pathways with embedded credit rewards for continuous professional development
- **Integrated Credits Rewards System (iCRS):** Incentivizes participation and innovation by rewarding contributions across the ecosystem
- **Work-Integrated Learning Paths (WILPs):** Offers structured learning experiences that integrate academic knowledge with real-world work opportunities
- **Micro-Production Model (MPM):** Promotes decentralized, community-driven production ecosystems to enhance local resilience and sustainability
- **Integrated Value Reporting System (iVRS):** Ensures transparency and accuracy in ESG reporting by leveraging blockchain and AI technologies
- **Global Risks Index (GRIx):** Standardizes and benchmarks risk data, enhancing global awareness and preparedness for various risk categories
- **Decentralized Innovation Commons Ecosystem (DICE):** Fosters cross-sectoral collaboration and innovation through a decentralized data commons, supporting sustainable development initiatives

BENEFITS

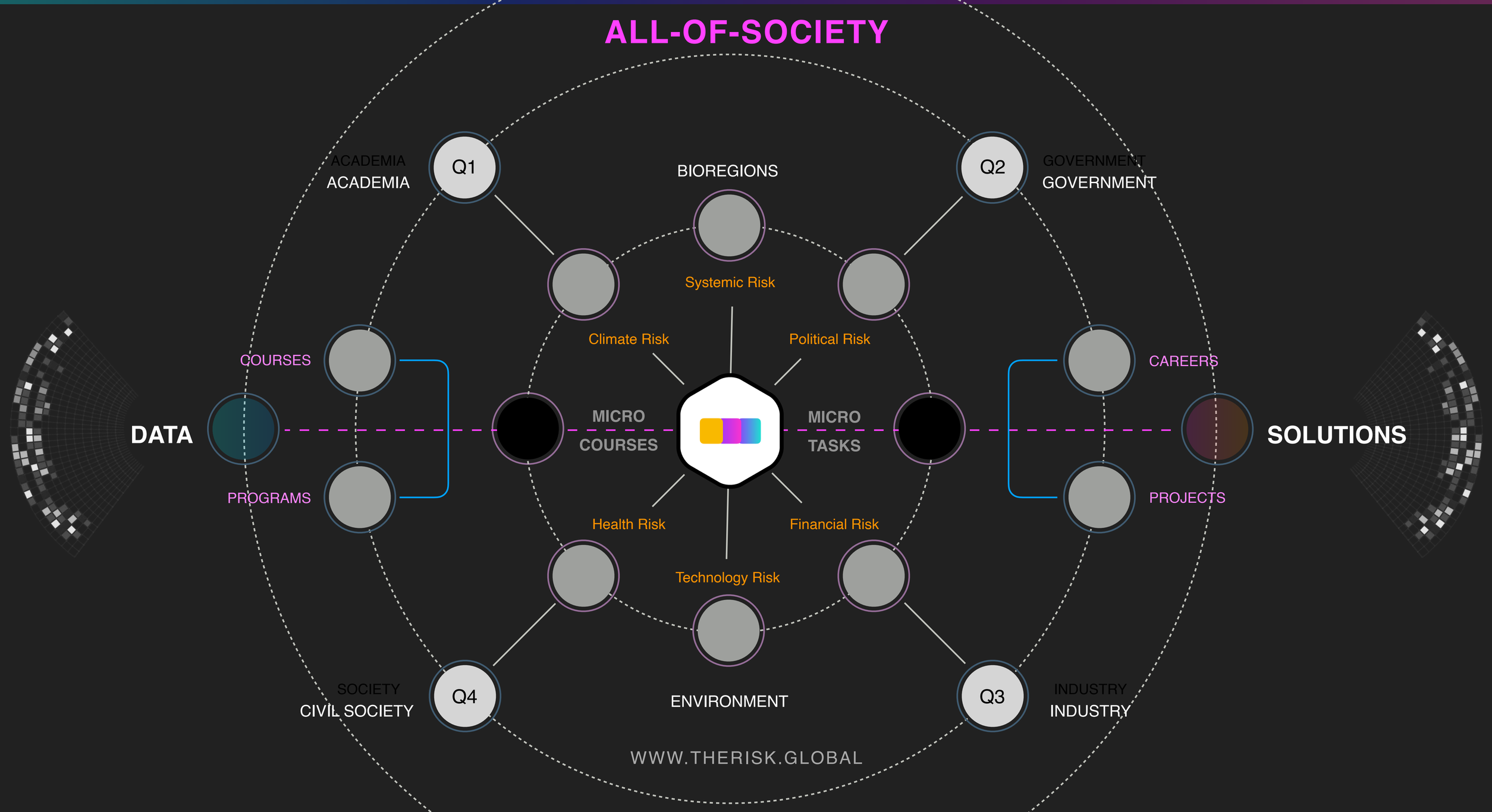
Reduces **disaster-related fatalities** by up to 50%
Decreases **economic impacts** by an average of 60%
Improves **global collaboration** and innovation
Enhances **data-driven decision-making** for policymakers
Creates new economic opportunities through the **data marketplace**
Standardizes **best practices** while **respecting local contexts**

Enhanced Predictive Capabilities: Utilizes advanced AI and machine learning for more accurate disaster forecasting and risk assessment.
Real-Time Monitoring: Integrates IoT devices, satellite imagery, and ground sensors for continuous environmental monitoring.
Rapid Fund Disbursement: Employs blockchain-based smart contracts for near-instantaneous release of funds when triggers are met.
Cross-Sector Coordination: Facilitates seamless collaboration between governments, NGOs, and private sector entities.
Data-Driven Decision Making: Provides actionable insights based on comprehensive, real-time data analysis.
Scalable Solutions: Offers adaptable protocols that can be implemented globally while accommodating local variations.
Transparent Operations: Utilizes blockchain technology to ensure full transparency and traceability of all actions and fund movements.
Privacy-Preserving Analysis: Employs advanced cryptographic techniques like zero-knowledge proofs for secure data sharing and analysis.
Automated Compliance: Uses AI to continuously monitor and adapt to changing regulatory landscapes across jurisdictions.
Ethical AI Framework: Ensures all AI systems adhere to strict ethical guidelines, promoting fair and unbiased decision-making.
Cost-Effective Interventions: Enables more efficient resource allocation and early interventions, potentially reducing overall disaster costs.
Ecosystem Interoperability: Facilitates seamless interaction between different systems and data sources, enhancing global cooperation.
Multi-Hazard Integration: Provides a unified approach to managing diverse types of disasters and their interactions.
Environmental Sustainability: Implements a carbon-negative operational model, contributing to broader sustainability goals.
Innovative Financing: Offers new financial instruments like disaster futures and tokenized contributions to expand funding sources.
Capacity Building: Provides training and certification programs to enhance global disaster management capabilities.
Decentralized Governance: Employs advanced voting mechanisms and autonomous modules for fair and efficient decision-making.

THE GLOBAL CENTRE FOR RISK AND INNOVATION

ALL HAZARADS

ALL-OF-SOCIETY



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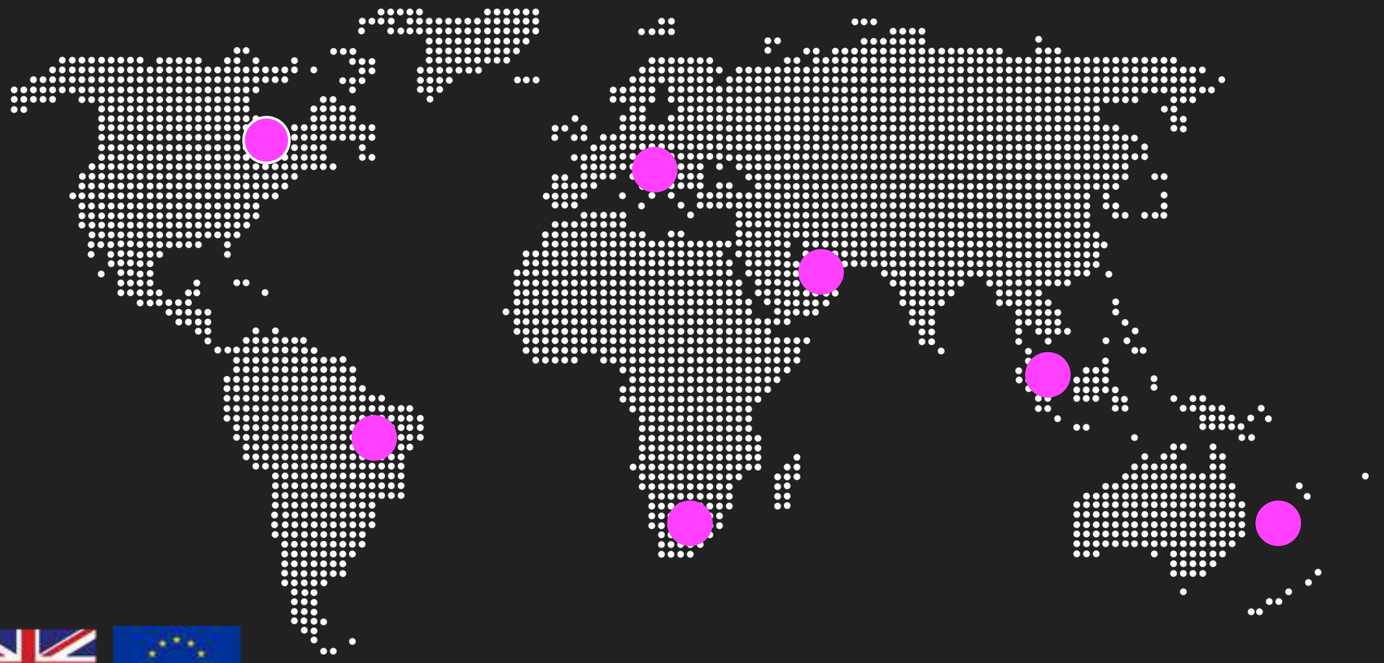
GLOBAL COVERAGE

NEXUS GOVERNANCE

Nexus communities, under the expert guidance of the Nexus Governance leadership, strategically integrate place-based and transnational networks, including indigenous and diaspora groups, to advance sustainable development through Responsible Research and Innovation (RRI)



Nexus Ecosystem leverages the strengths of local and indigenous communities, connecting them with global expertise and resources to foster collaborative projects, facilitate knowledge exchange, and mobilize resources effectively. Anchored in RRI and supported by the latest academic research, Nexus communities ensure that sustainable development initiatives are inclusive, ethically sound, and socially beneficial. The global leadership, with GCRI headquarters strategically located in South Africa, Brazil, Singapore, Switzerland, the UK, UAE, and Canada, provides comprehensive regional coverage, strategic direction, amplifies advocacy efforts, and promotes a cohesive, scientifically validated approach to addressing both local and global challenges, driving impactful and sustainable outcomes aligned with international sustainability goals

COMMUNITY

NETWORK

1900+ ACADEMIC PARTNERS

Leveraging the SDSN network, we collaborate with world-class institutional partners globally to drive research, innovation, and sustainable solutions

10K+ INDUSTRY PARTNERS

Harnessing the combined technologies of industry giants and emerging innovators, we offer access to over 300,000 products and solutions

10M+ TALENT POOL

With a reserve talent pool of over 10 million through global partners and affiliate student organizations, we ensure a continuous influx of skilled professionals

15M+ GLOBAL REACH

Our integrated nexus platforms provide a digital reach of 15 million monthly, connecting diverse audiences across key disciplines and industries worldwide

100+ COUNTRIES COVERAGE

Covering 100+ countries, our regional stewardship boards ensure effective governance, policy and local adaptation of global strategies

150K+ VOLUNTEER HOURS

Unwavering commitment and hard work have made GCRI fully independent, democratic and resilient in driving its mission and objectives

leveraging a comprehensive ecosystem of top-tier technology and cybersecurity partners to drive forward our mission in security, resilience, and sustainability. Our collaborative network provides state-of-the-art solutions in cloud computing, data analytics, AI, and cybersecurity, ensuring robust protection and innovative capabilities at scale