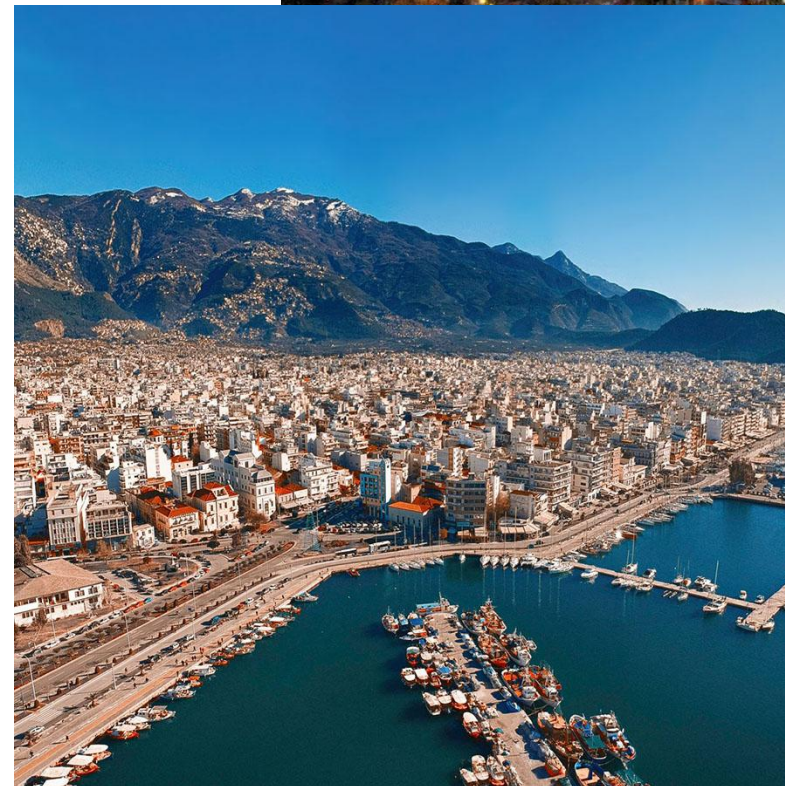
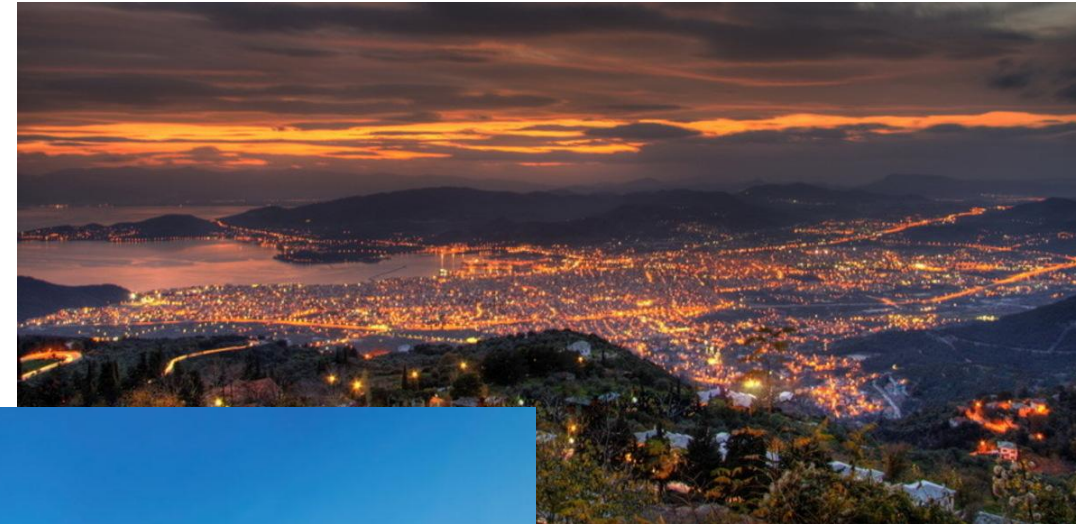


Red Hat

Nikolas Goulias

Principal Solutions Architect
Red Hat

Volos



Volos...



Volos...

NATURE AND ENVIRONMENT | GREECE

Mass fish die-off in Greece: The search for answers begins

Kaki Bali
09/03/2024

After flooding, record temperatures and wildfires, Greece has been hit by yet another environmental disaster: the recent mass fish die-off near Volos. As the clean-up continues, the search for answers begins.



© SAKIS MITROLIDIS/AFP

Dead fish along the waterfront in Volos, central Greece

Image: SAKIS MITROLIDIS/AFP

SOURCE: DW & CBS News

WORLD
Dead fish clog waters around Greece's Volos port, as weather changes cause mass die-off and a "strong stench"

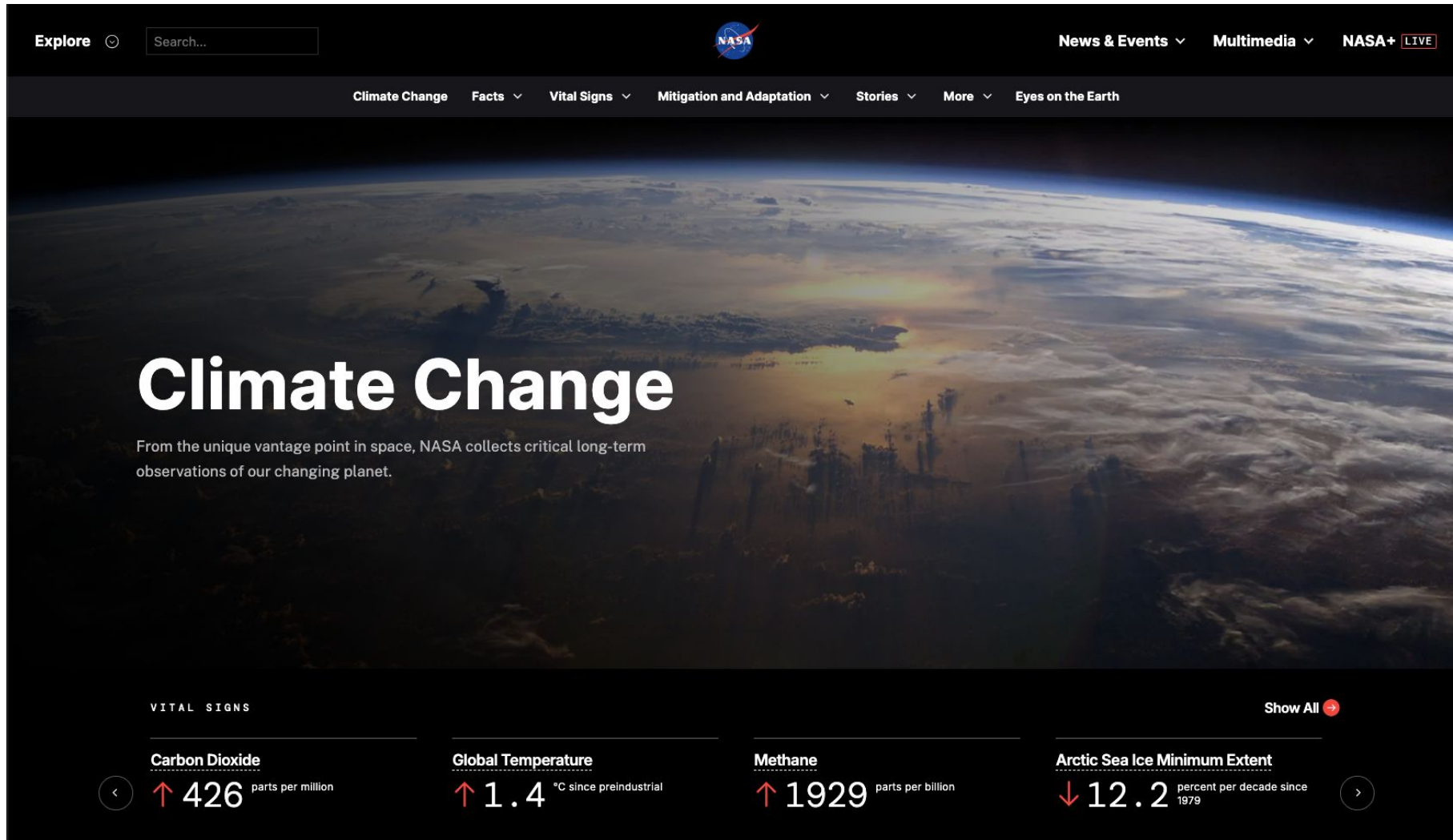
Updated on: August 30, 2024 / 12:42 PM EDT / AP

MORNINGS

CBS NEWS TENS OF THOUSANDS OF DEAD FISH WASH UP ON TEXAS COAST

cbsnews.com

▶ AMERICA DECIDES: MON - THURS @ 5PM, 6PM, 9PM & 12:30AM ET



The image shows a screenshot of the NASA Climate Change website. The top navigation bar includes 'Explore' with a search box, the NASA logo, and links for 'News & Events', 'Multimedia', and 'NASA+ LIVE'. A secondary navigation bar lists 'Climate Change', 'Facts', 'Vital Signs', 'Mitigation and Adaptation', 'Stories', 'More', and 'Eyes on the Earth'. The main content area features a large background image of Earth from space with the title 'Climate Change' and a subtitle: 'From the unique vantage point in space, NASA collects critical long-term observations of our changing planet.' Below this is a 'VITAL SIGNS' section with a 'Show All' link and four data points: Carbon Dioxide (426 ppm), Global Temperature (1.4°C increase), Methane (1929 ppb), and Arctic Sea Ice Minimum Extent (12.2% decrease).

Explore NASA News & Events Multimedia NASA+ LIVE

Climate Change Facts Vital Signs Mitigation and Adaptation Stories More Eyes on the Earth

Climate Change

From the unique vantage point in space, NASA collects critical long-term observations of our changing planet.

VITAL SIGNS [Show All](#)

Carbon Dioxide	Global Temperature	Methane	Arctic Sea Ice Minimum Extent
↑ 426 parts per million	↑ 1.4 °C since preindustrial	↑ 1929 parts per billion	↓ 12.2 percent per decade since 1979

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Sustainability in the AI Era

Balancing technology demands with efficiencies to use AI but contain its environmental impacts

Nikolas Goulias

Principal Solutions Architect - Global Enterprise Accounts

Takeaways

The bright side of AI actively helping with climate sustainability objectives

The reality: technologies enabling AI are environmentally harmful

Becoming ambidextrous to both **use AI and contain its environmental impacts**

Actively helping with climate sustainability objectives

The Bright Side of AI

Energy use: optimizing building design & control can reduce energy consumption by 29% and more (US Department of Energy)

THE LINUX FOUNDATION PROJECTS

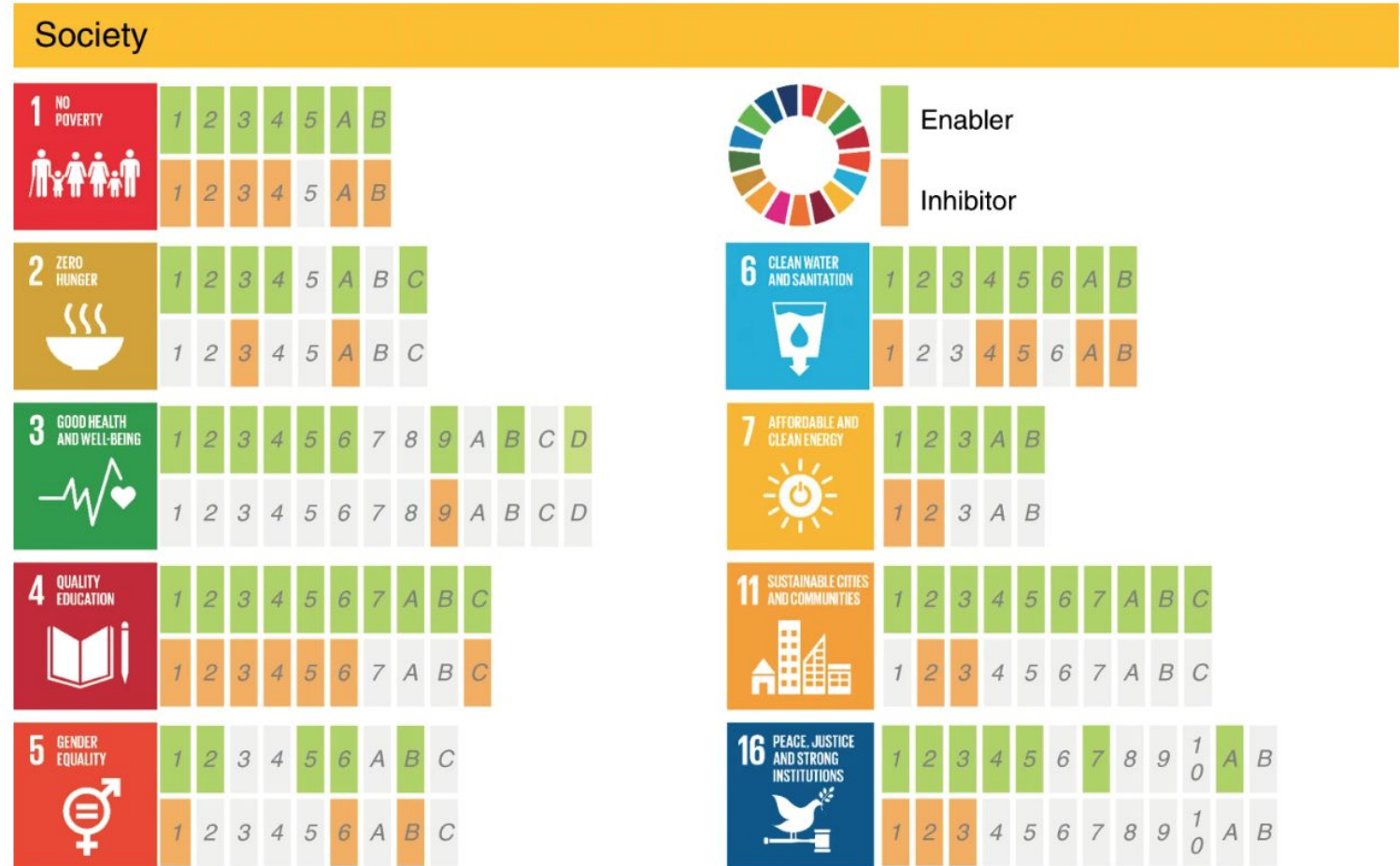
LFENERGY

Energy & grid management: balancing supply and demand based on consumption data analysis that fluctuate massively & are hard to predict

Food & agriculture: supercharging “precision agriculture” can boost farm efficiency by 40%. AI tools can be used to reduce food waste

Detailed assessment of the impact of AI on the UN's Sustainable Development Goals

Nature Communications



The technologies enabling AI are environmentally harmful

The Reality of AI

“AI is Contributing to Mushrooming Energy Use” (MIT Sloan Mgmt. Review)



- Powerthrust complicates investors: press tech giants for more data on AI's environmental impact
- AI boom could boost data center power demand 160% by 2030 - Goldman Sachs
- Fossil fuel industry uses AI to find more resources and fast fashion industry to identify more niche markets and produce more short-lasting apparel

And our market is aware

83%

of organizations have an initiative to reduce the energy consumption of their infrastructure

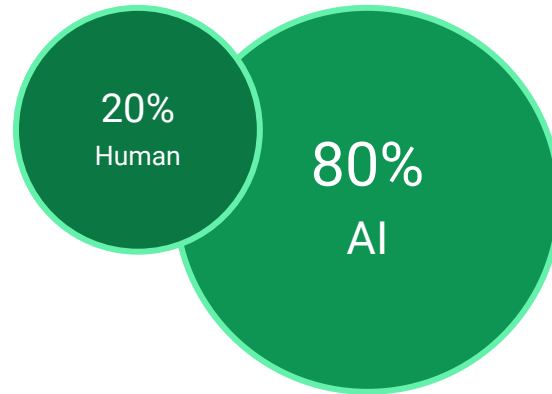
75%

of organizations have moved data or relocated a workload to reduce emissions

90%

of enterprise IT buyers report that the sustainability profile of IT suppliers impacts product and vendor selection

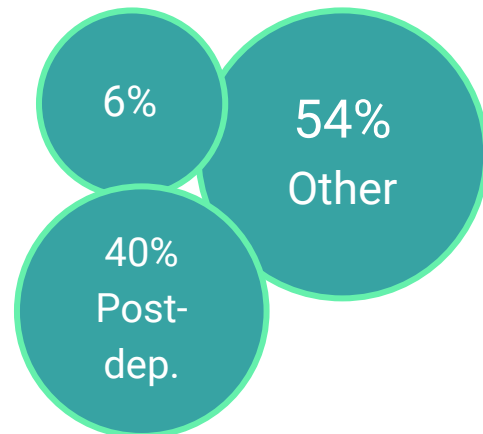
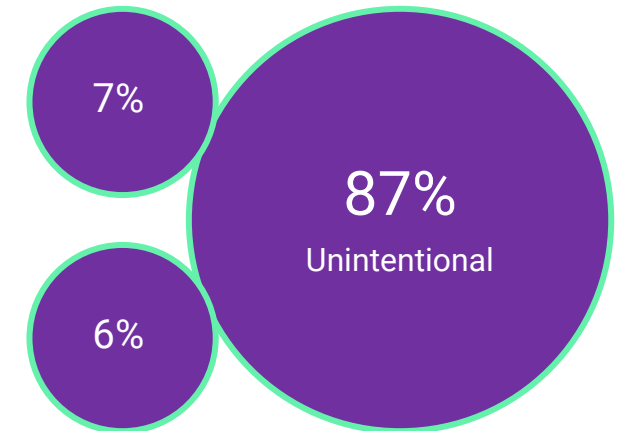
The technologies enabling AI are environmentally harmful



The environmental risk is caused by a decision or action made by an AI system or **humans**



The environmental risk occurs due to an expected / **unexpected outcome of pursuing a goal**

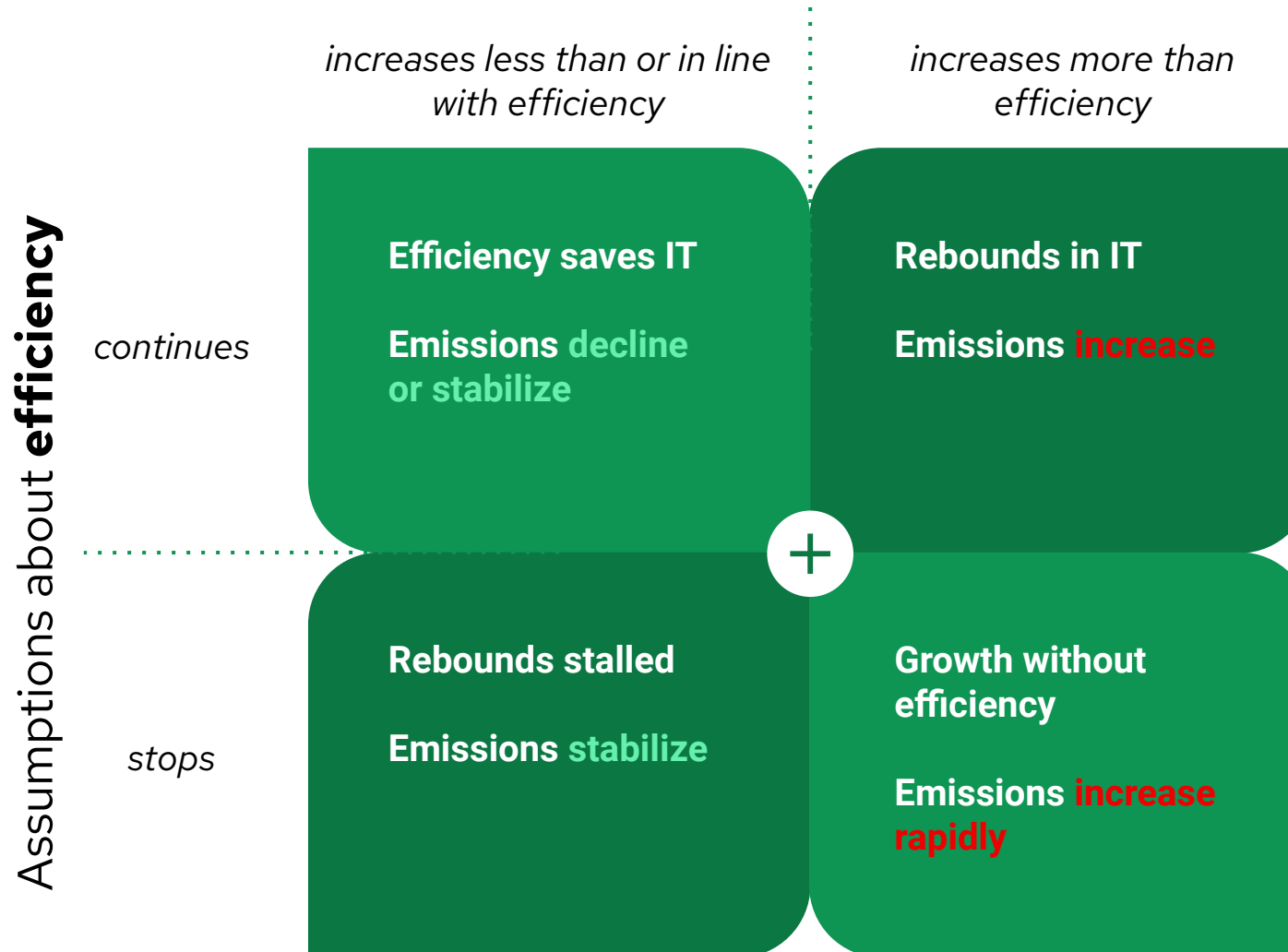


The environmental risk occurs before or after AI is trained and deployed. Or is presented **without** a clearly specified **time of occurrence**

Both use AI and contain its environmental impacts

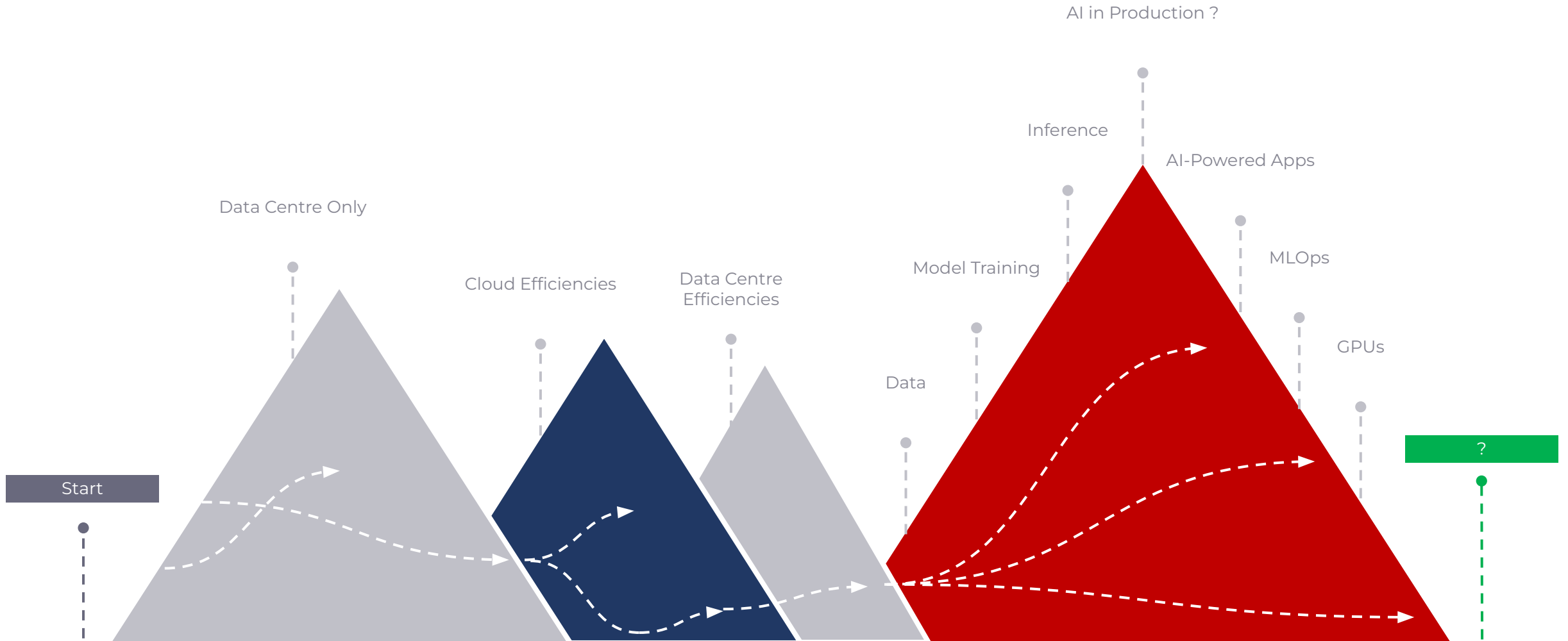
Aiming for IT Ambidexterity

Assumptions about **IT demand**



Technology Electricity Consumption Trail

Adding AI into an existing, changing & evolving technology estate



Tech Electricity Trail

Using AI and Applying Holistic Sustainability Practices

Technology efficiencies to balance AI's electricity demands

Green Software Development Practises

Containers Everywhere

Mature Automation

Minimise Resource Waste

Optimize Workloads

Apply AI ESG Requirements

Open & Inner Source Communities



**How Quarkus makes your apps cheaper, greener and happier*
by Holly Cummins



70%

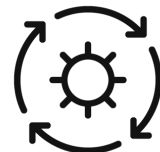
SOURCE: [IBM IT Sustainability at a Crossroad](#)



People



Tools

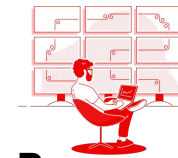


Processes



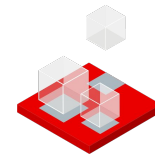
Workload Efficiency

Reducing utilization related to data storage, compute, and transfer



Resource Optimization

Maximizing the efficiency and utilization of computational resources



Scalability

Ensuring AI systems can scale efficiently without a drop in performance

- ▶ Embrace sustainable by design principle
- ▶ Create a sustainable IT supply chain
- ▶ Setup green IT nerve centre
- ▶ Actively manage energy consumption associated with AI
- ▶ Adopt an AI fit-for-purpose approach

**Optimizing AI workloads with Red Hat*
by Erica Langhi & Dominika Oliver

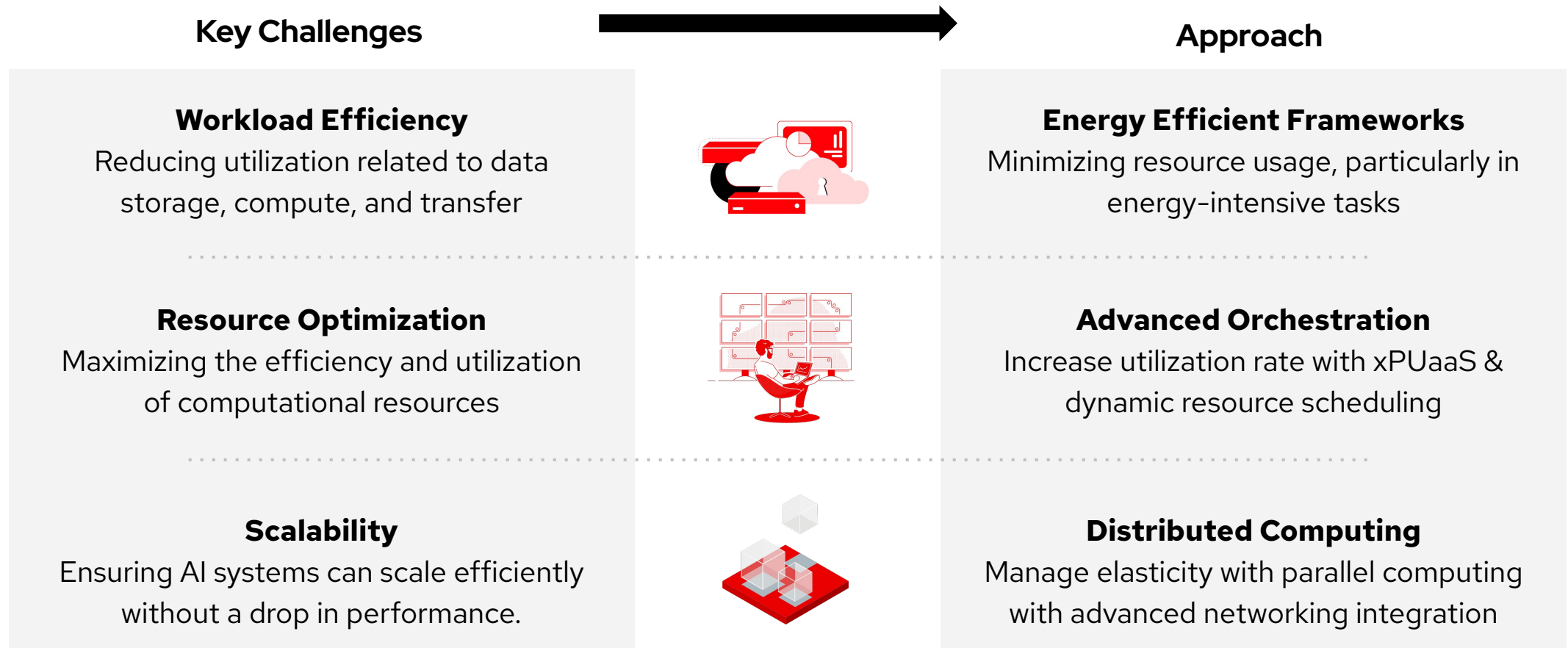


CLOUD NATIVE COMPUTING FOUNDATION



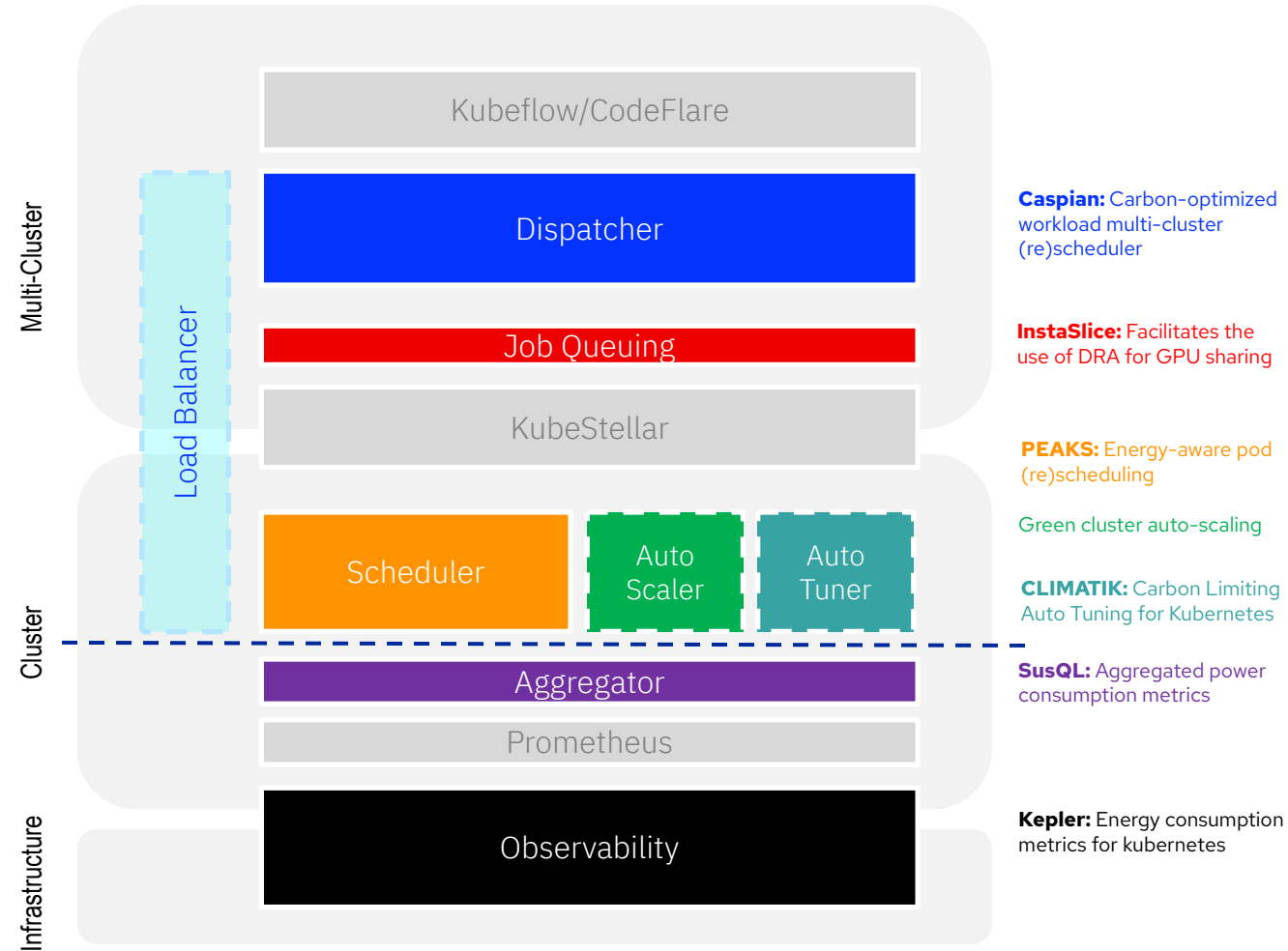
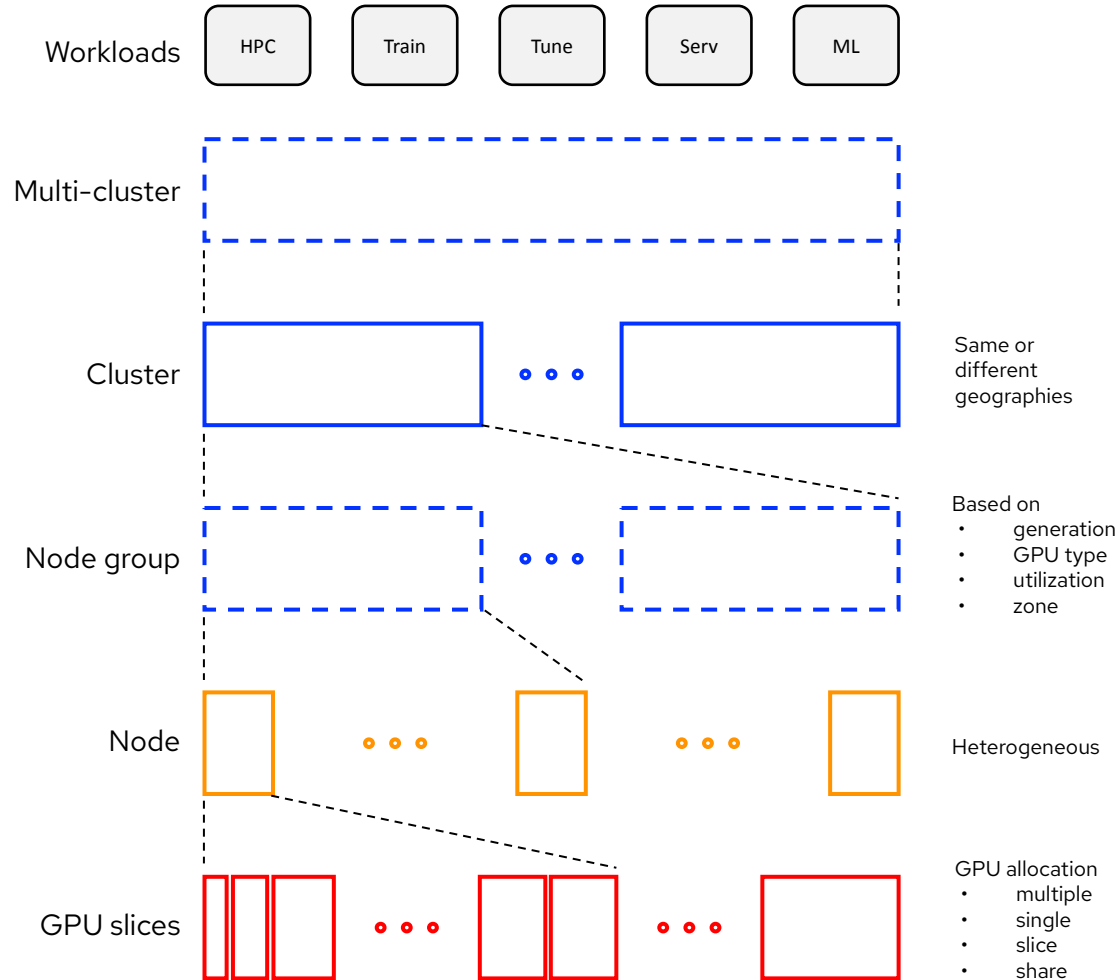
What is Red Hat doing?

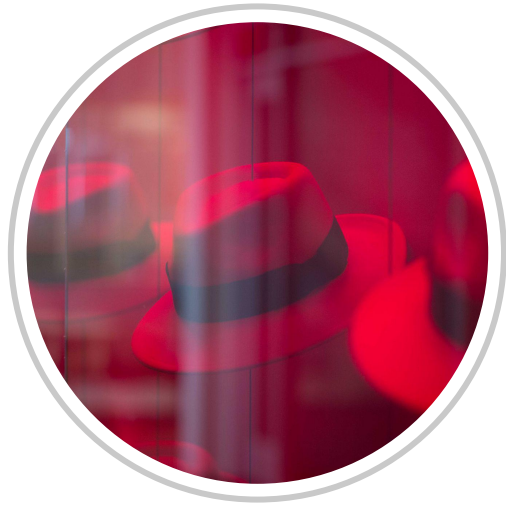
Advancing sustainable AI technologies for infrastructure efficiency and intelligent scaling



Potential Open Source Research Projects

In-context energy quantification and optimization built at each layer





Announcement: Sustainable AI Innovation Centre

A joint initiative by IBM Research, Dell, Intel and Red Hat

- **Focus on advancing sustainable AI technologies** to optimize workload scalability and resource efficiency.
- **Integration of cutting-edge research with real-world applications** through industry and academic partnerships.
- **Commitment to aligning AI development** with economic and environmental sustainability goals.
- **Enhancement of local and global technological landscapes** through open source development and innovations, and investment in academic development.

Takeaways

AI has great potential to be helping with climate sustainability objectives

Technologies enabling AI are **electricity hungry and environmentally harmful**

Use **AI and apply holistic sustainability practices** to minimise electricity usage

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Thank you



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