Connect

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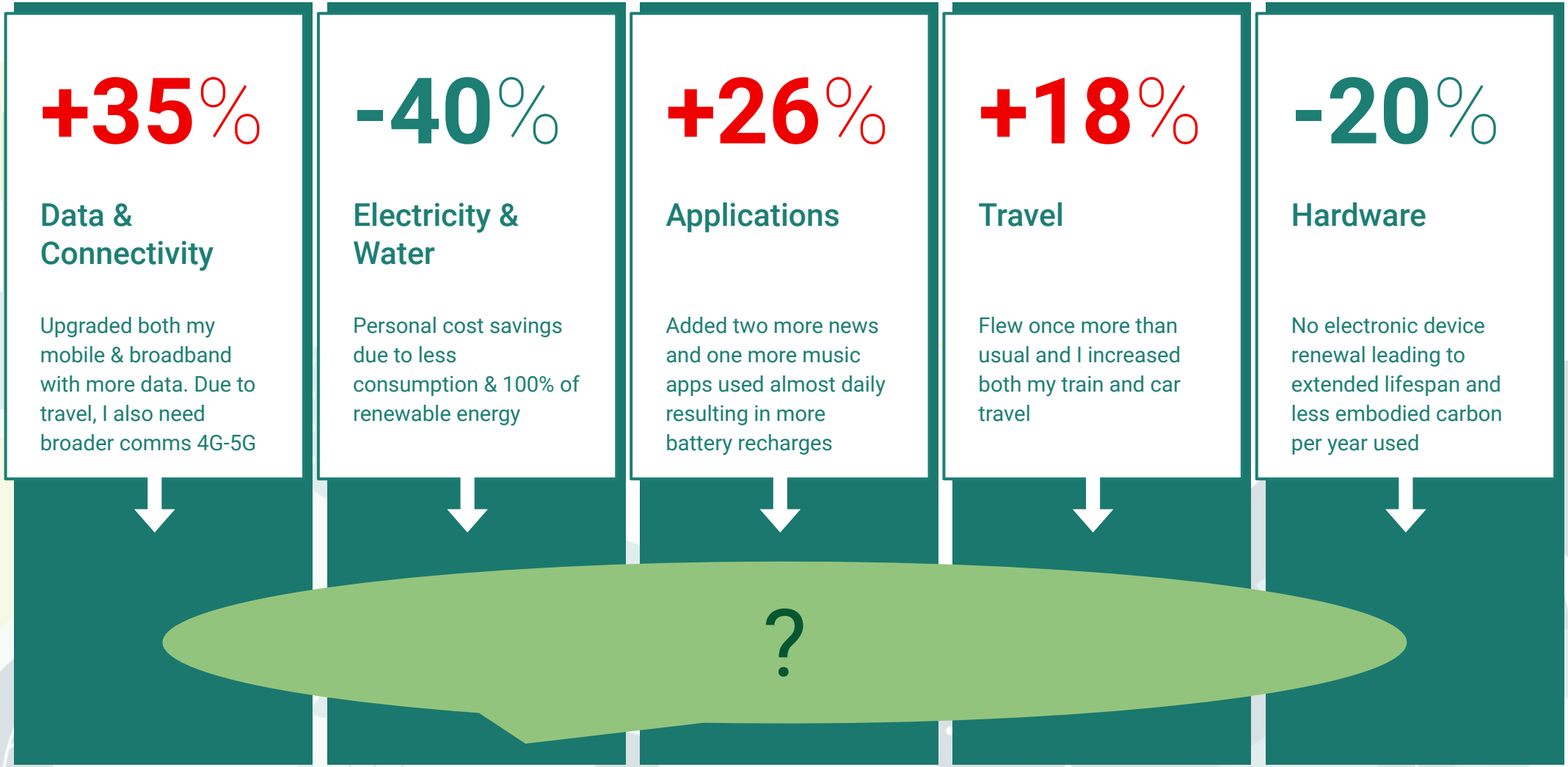
Now is the time to act on your IT emissions!

Measure, report and reduce using real data

Nikolas Goulias

Senior Solutions Architect - Global Accounts

Red Hat


+35%
Data & Connectivity
Upgraded both my mobile & broadband with more data. Due to travel, I also need broader comms 4G-5G
-40%
Electricity & Water
Personal cost savings due to less consumption & 100% of renewable energy
+26%
Applications
Added two more news and one more music apps used almost daily resulting in more battery recharges
+18%
Travel
Flew once more than usual and I increased both my train and car travel
-20%
Hardware
No electronic device renewal leading to extended lifespan and less embodied carbon per year used
?

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Takeaways

The role of IT in climate sustainability

Parameters affecting **IT sustainability**

How to **measure, report & reduce** IT emissions?

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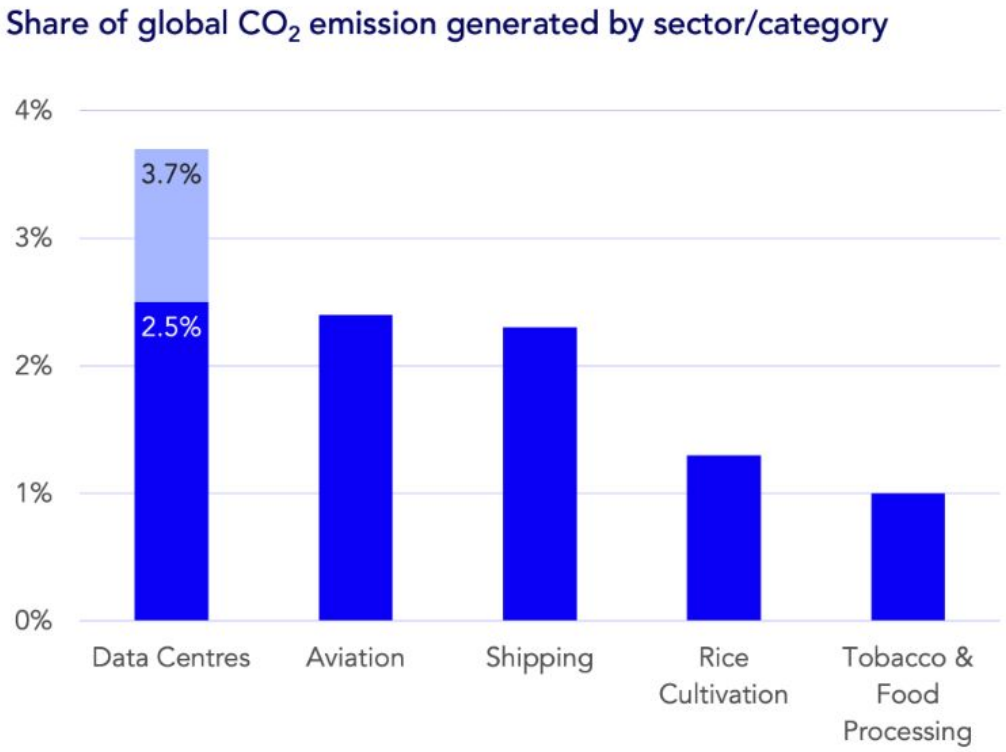


Warning AI industry could use as much energy as the Netherlands

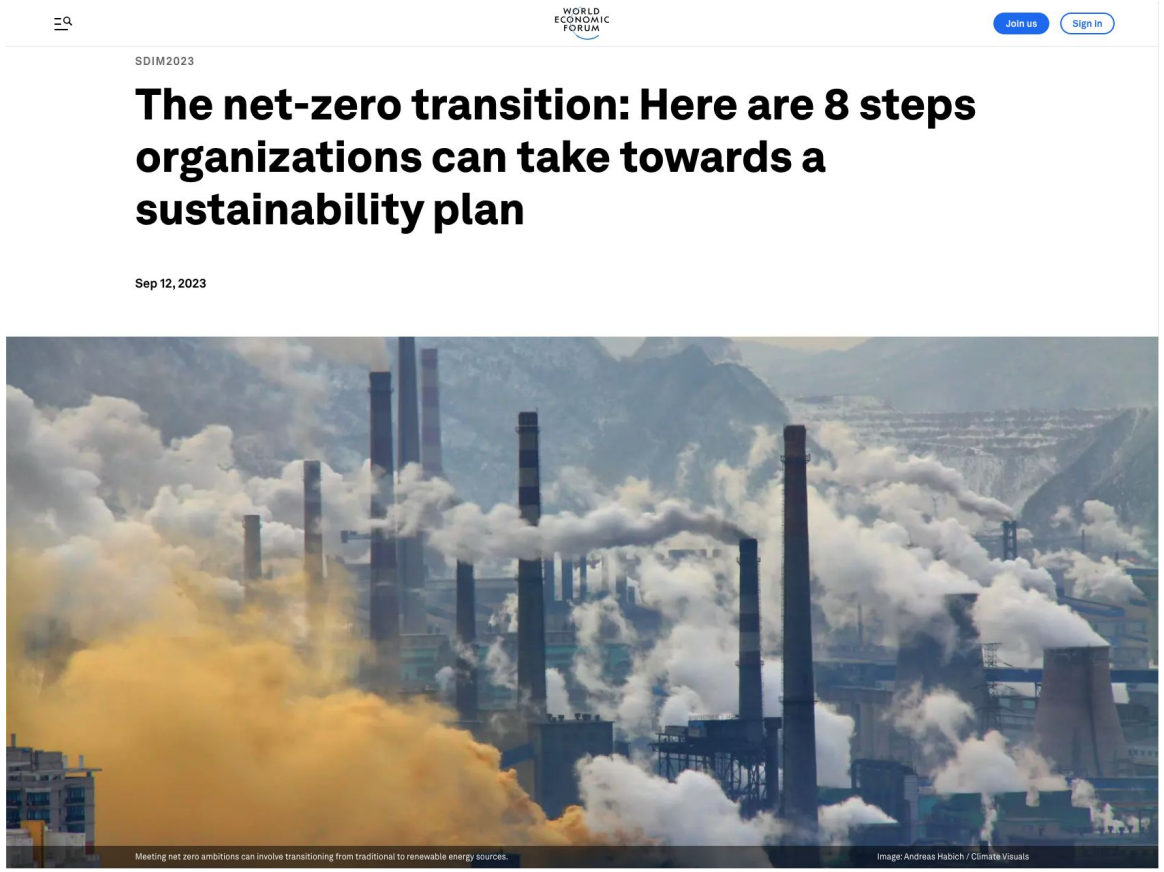
10 October

Climate

By Zoe Kleinman and Chris Vallance

Technology team

SOURCE: Measuring GHG emissions in Data Centres & BBC: Warning AI industry could use as much energy as the Netherlands

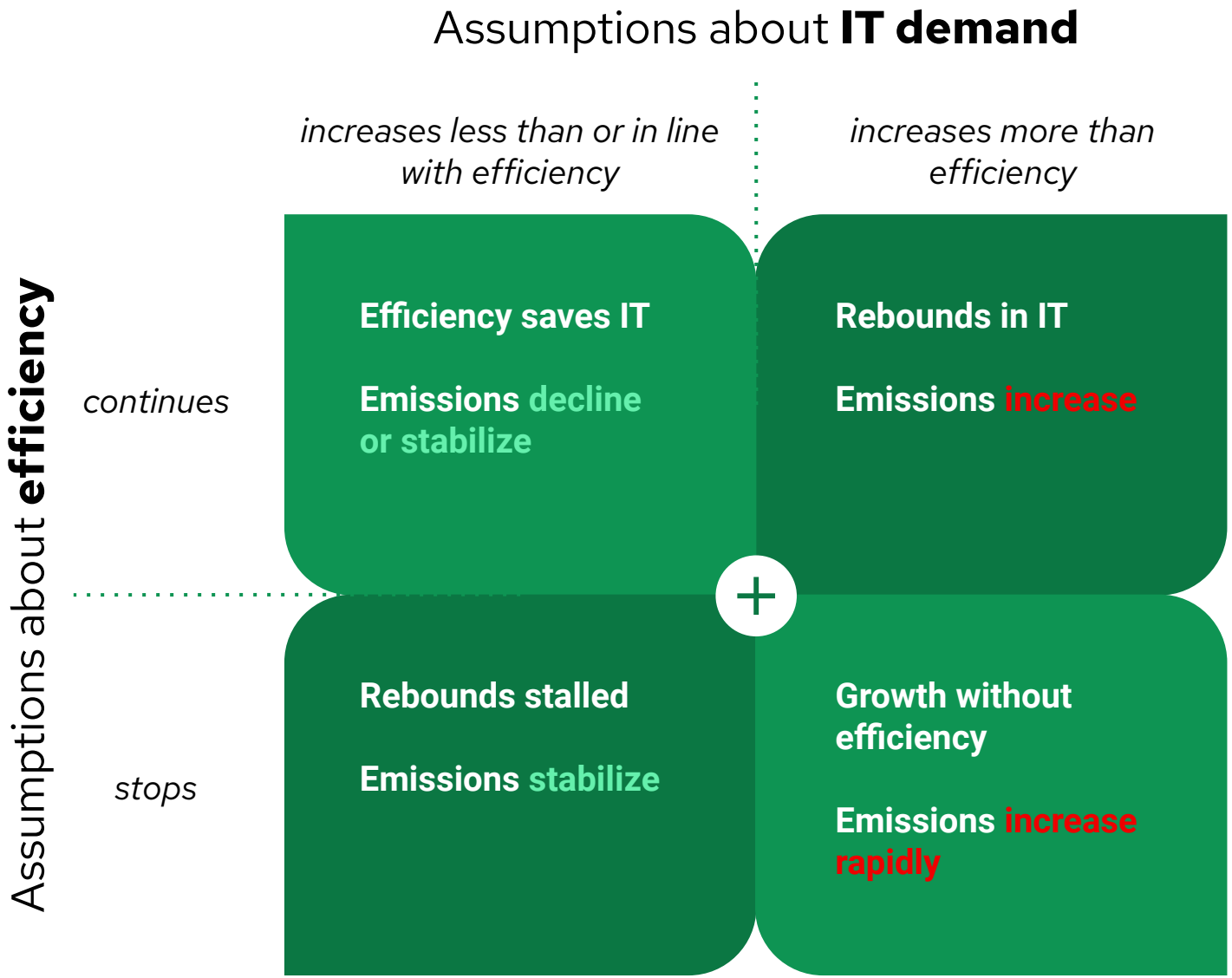


Integrate sustainability in the **core business strategy**

Address energy usage & associated financial barriers

Leverage technology and implement advanced sustainability **data management systems**

SOURCE: World Economic Forum - The net-zero transition



SOURCE: Lancaster University "The climate impact of ICT: A review of estimates, trends and regulations" (December 2020)

Green Software Principles

Energy Efficiency

Consume the least amount of electricity possible

Hardware Efficiency

Use the least amount of embodied carbon possible

Carbon Awareness

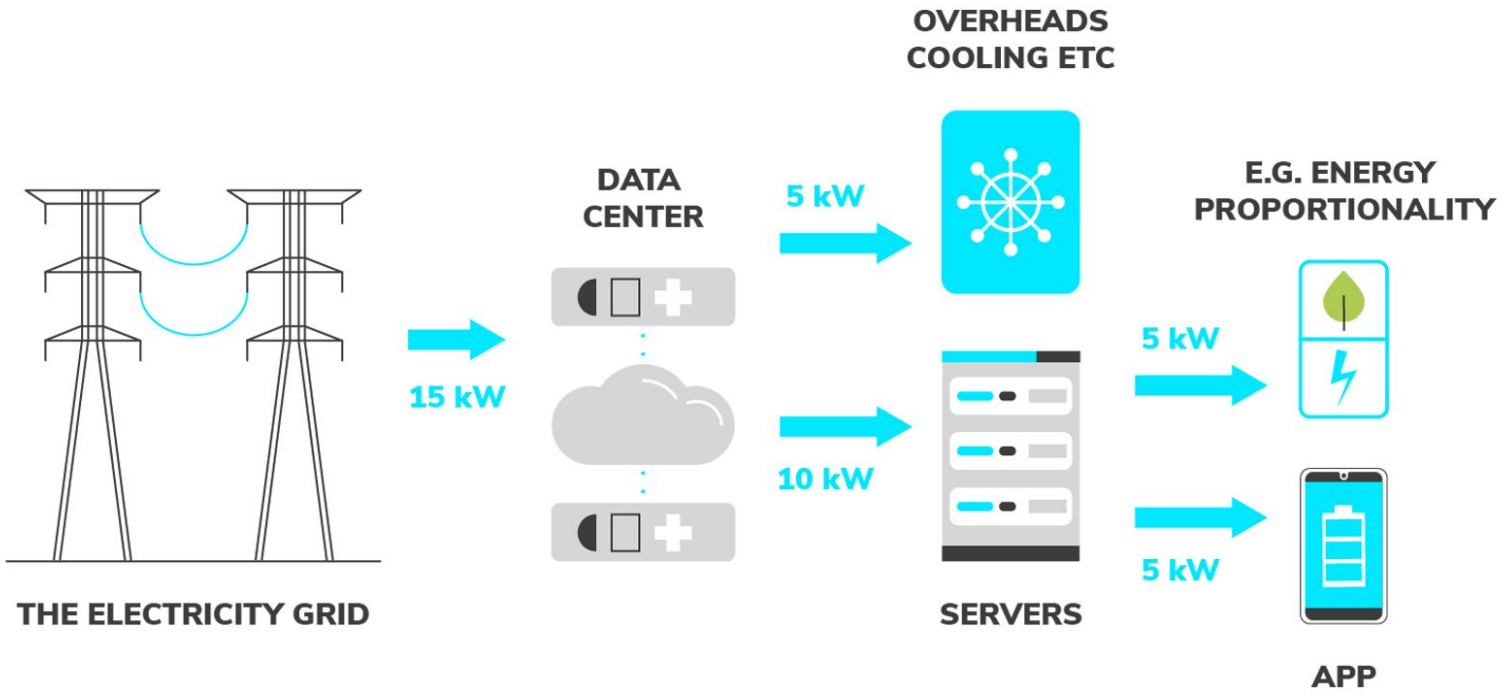
Do more when the electricity is clean and less when it's dirty

Green Software Foundation

greensoftware.org

SOURCE: Green Software Foundation

Energy Efficiency
Consume the least amount of electricity possible

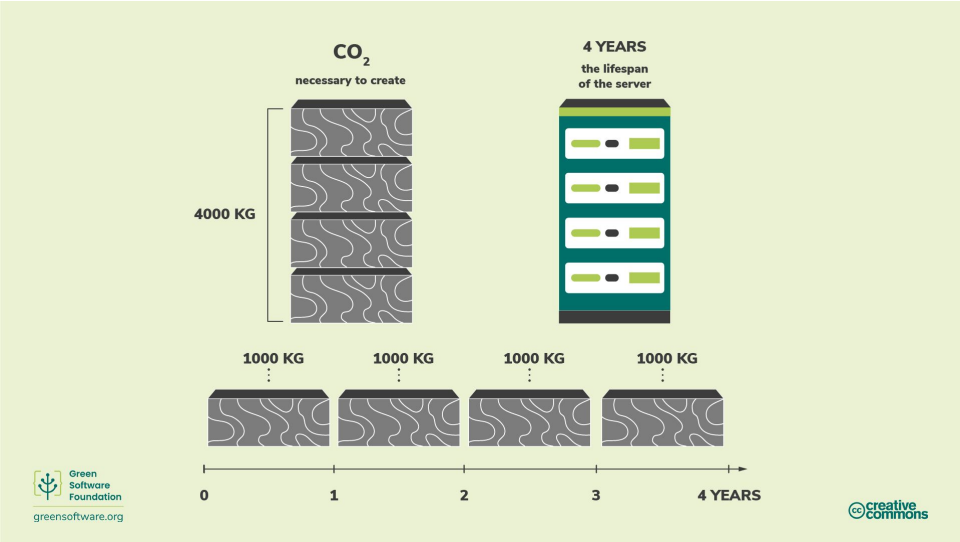


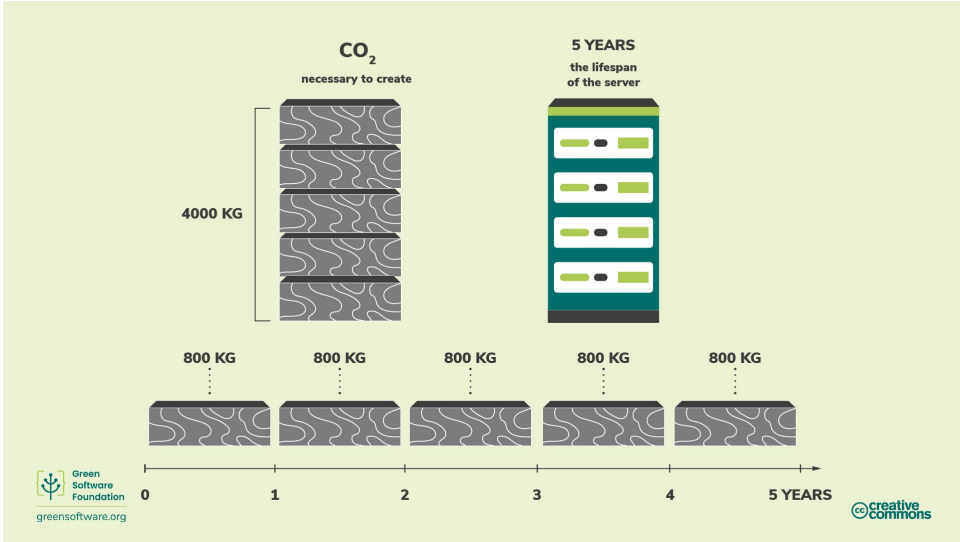
Green Software Foundation
greensoftware.org

SOURCE: Green Software Foundation

IT Sustainability: *Parameters to consider*

Hardware Efficiency
Use the least amount of embodied carbon possible





Embodied carbon

Utilization

SOURCE: Green Software Foundation

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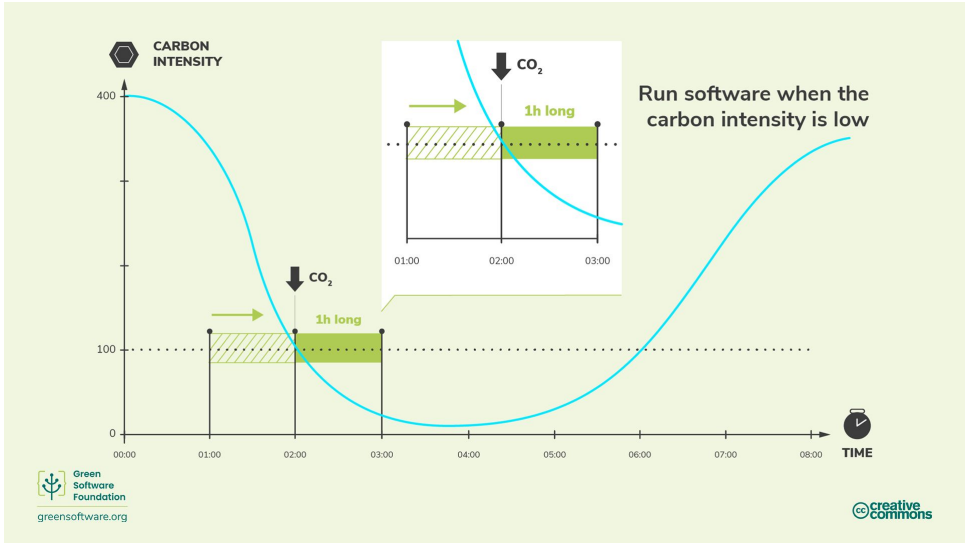
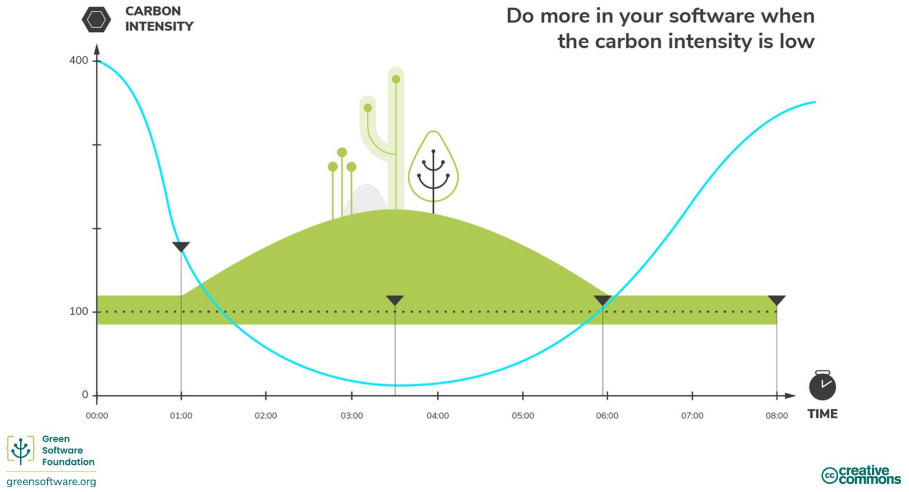
IT Sustainability: *Parameters to consider*

Carbon Awareness
Do more when the electricity is clean and less when it's dirty

Spatial shifting



Temporal shifting



Demand shaping

SOURCE: Green Software Foundation

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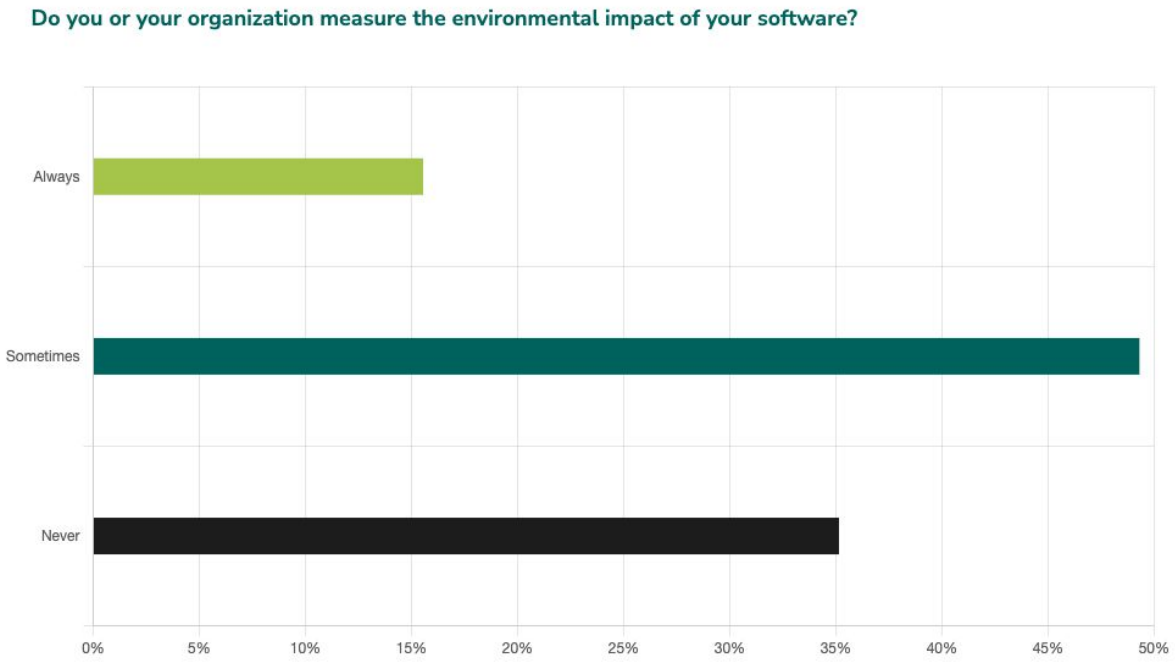
“If you can’t measure it, you can’t manage it”

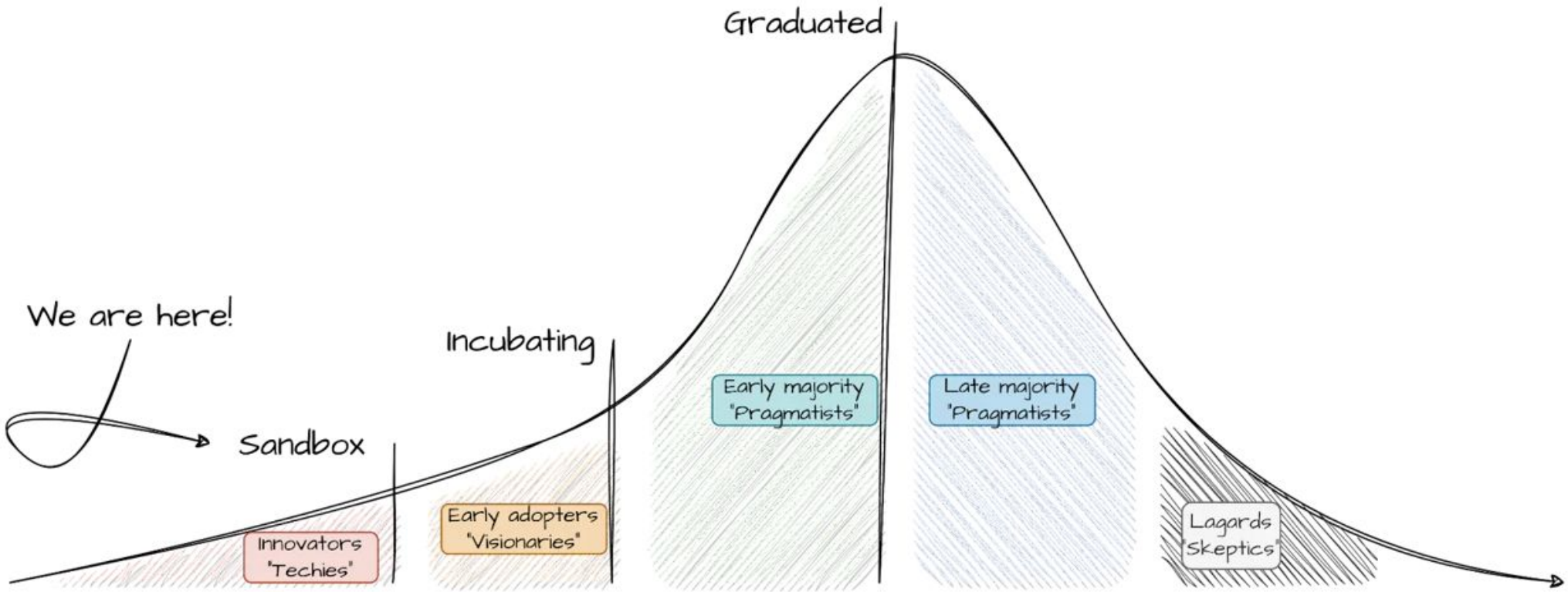


85% of organisation **do not** consistently measure environmental impact of software

SOURCE: State of Green Software Report Survey

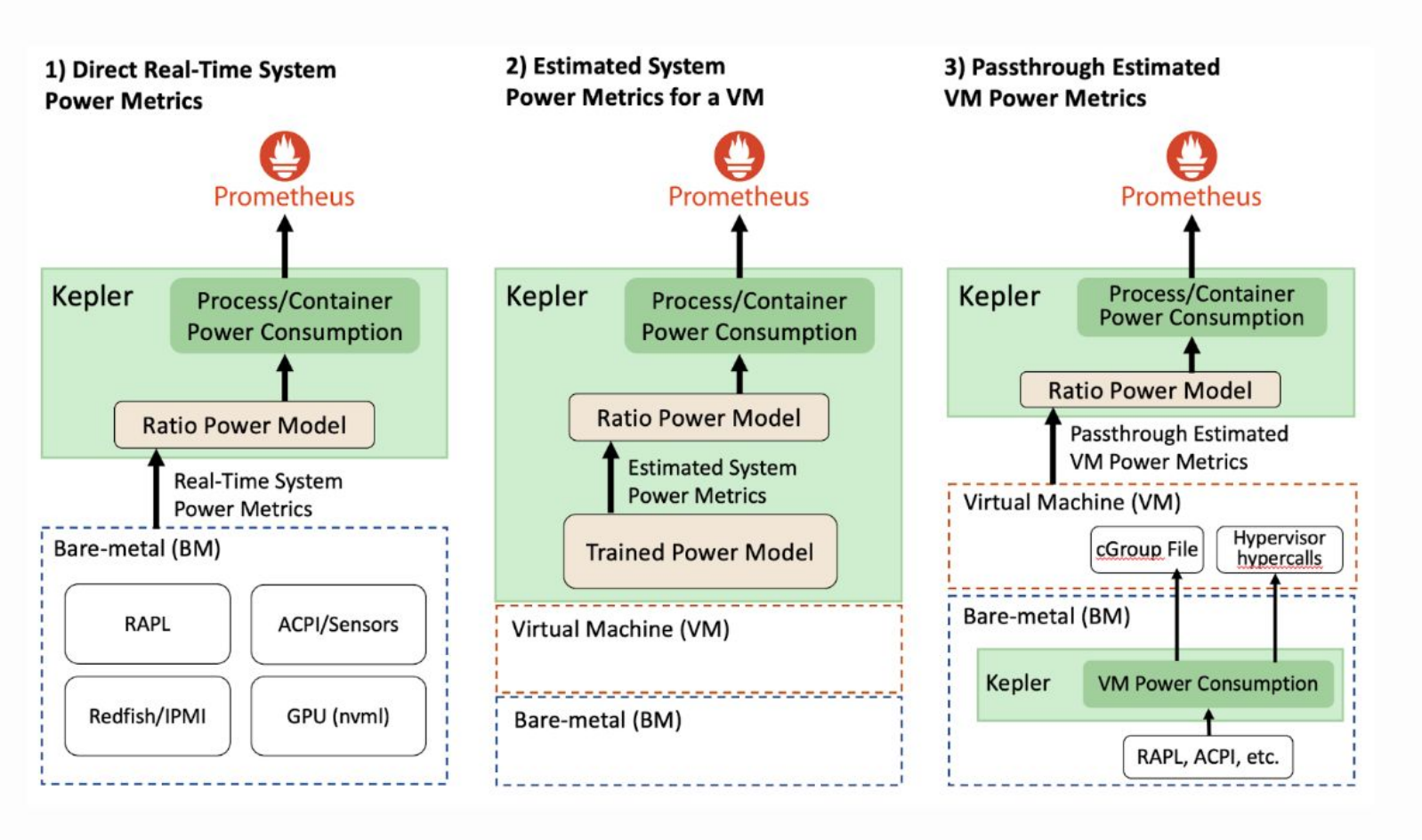
KEPLER is a CNCF project

Kubernetes-based **E**fficient **P**ower **L**evel **E**xporter



SOURCE: KEPLER project details

Collecting system power consumption



SOURCE: Exploring Kepler's power consumption

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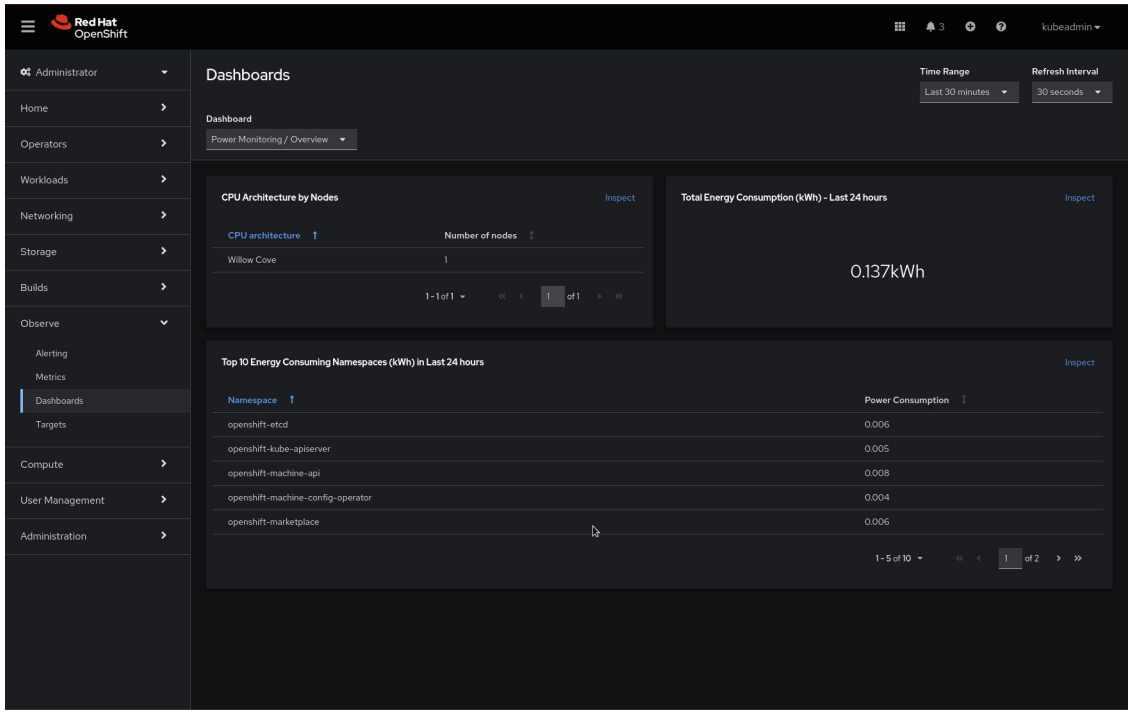
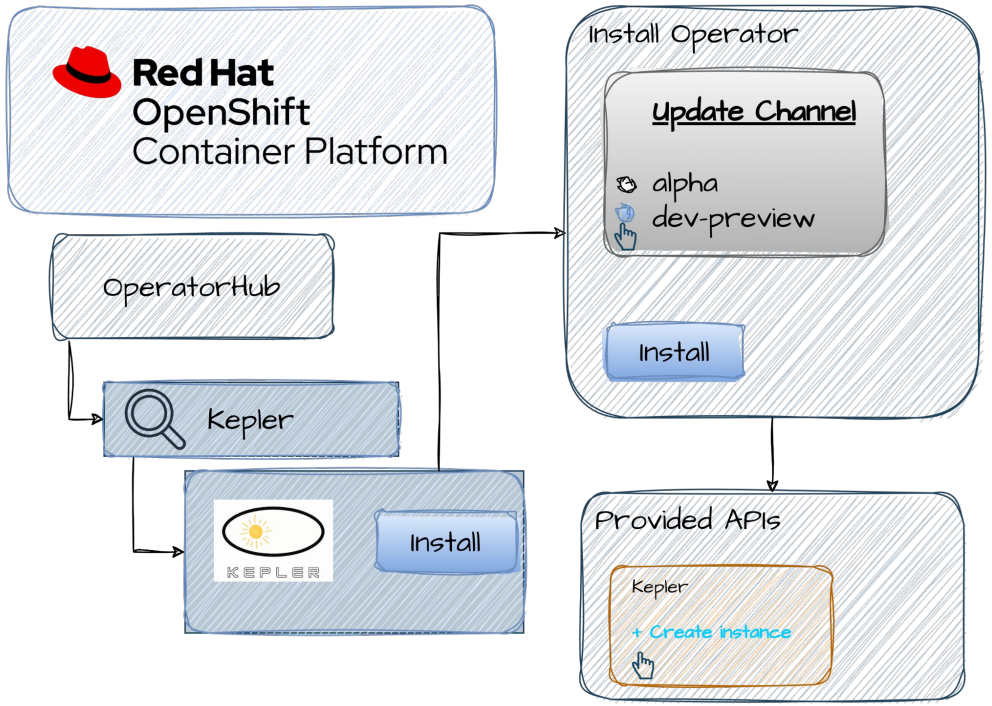
Power monitoring operator for OpenShift

- **Power monitoring for Red Hat OpenShift** is the downstream of Kepler project
- Embedded in the observability stack console, you can easily **experiment with Kepler** and **observe power consumption**





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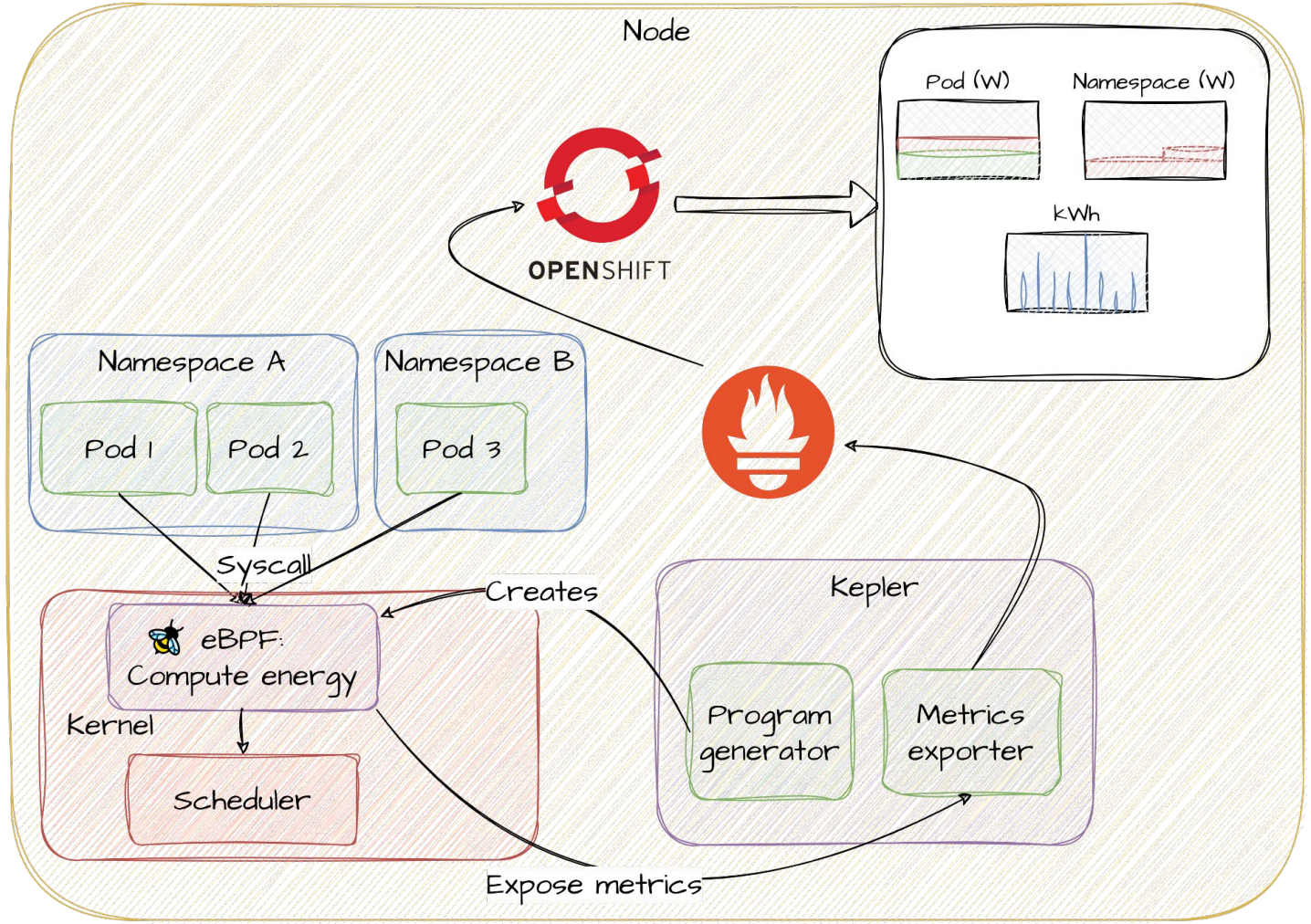
OpenShift power monitoring architecture



SOURCE: Exploring Kepler's power consumption

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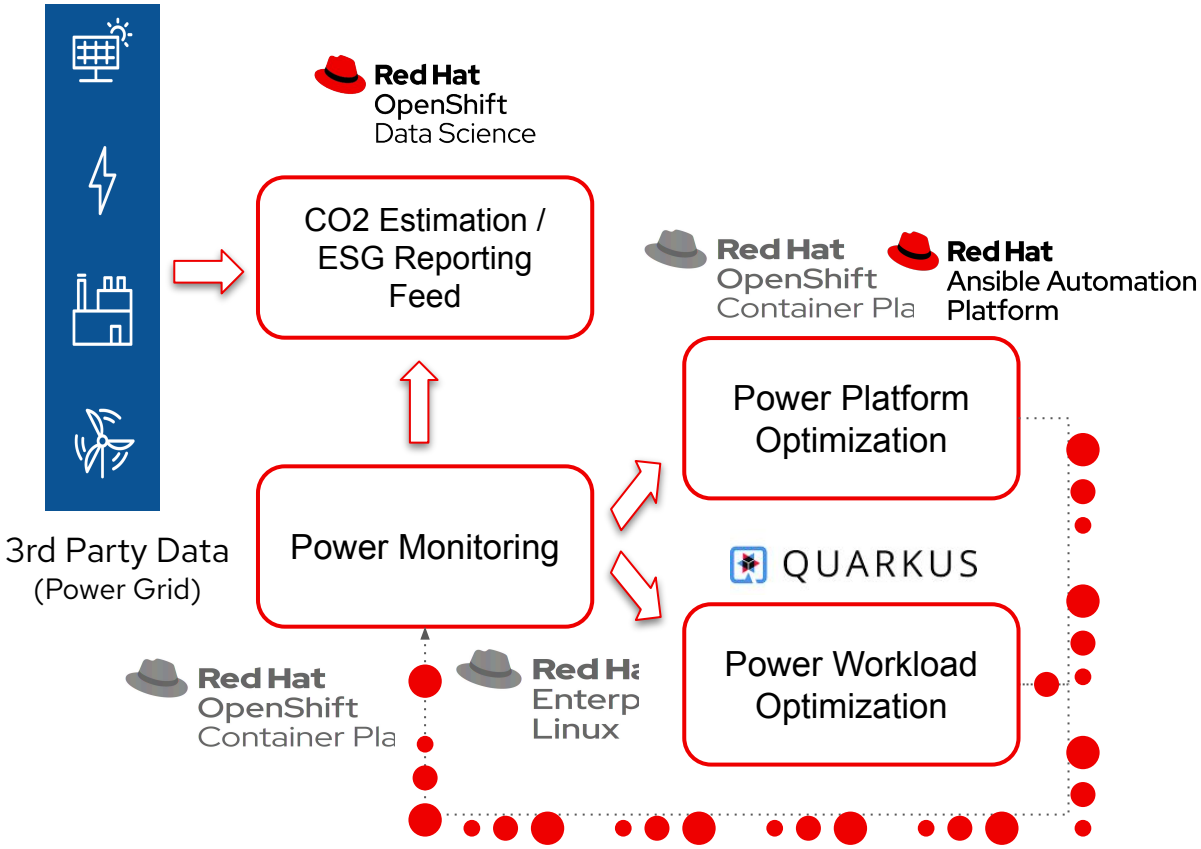
Now is the time to act with Red Hat portfolio



- Monitor power consumption with Kepler
- Reduce and optimize platform and workload with Red Hat portfolio
- Data management for estimation & reporting

SOURCE: How the Kepler project is working to advance environmentally conscious efforts

Advance our environmental efforts

- Report, measure and manage power consumption
- Recognize the carbon footprint of your workloads
- Schedule power-aware workloads & actively autoscale
- Minimize or eliminate vampire power & resources
- Containerize applications, use Quarkus & extend the lifespan of HW
- Use Kepler in CI/CD and help developers drive greener software
- Increase efficiencies with a holistic IT automation approach

SOURCE: How the Kepler project is working to advance environmentally conscious efforts & Hyper-automation: The IT-enabler addressing climate change

Takeaways

IT is the business! Only efficiencies will save IT's impact to the environment

Consider energy & hardware efficiency along with carbon awareness for **IT sustainability**

Measure & report with **Kepler** and reduce your emissions with **Red Hat technologies**

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Red Hat Summit

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