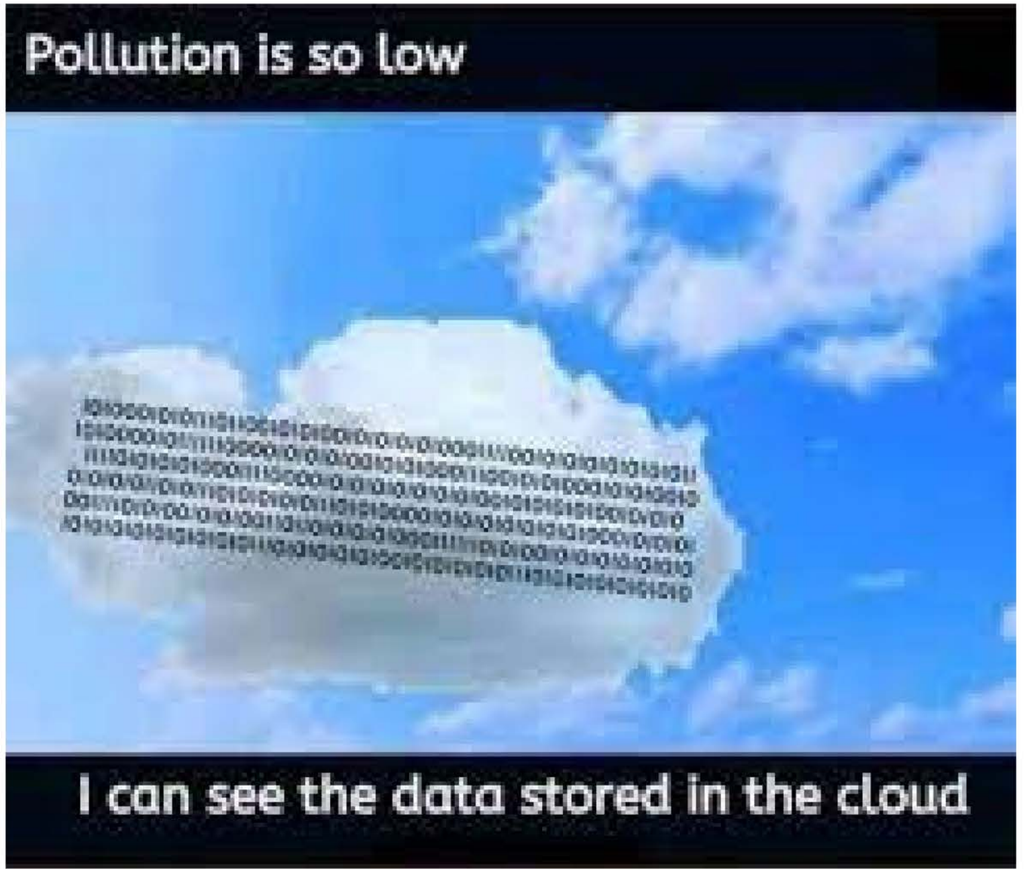
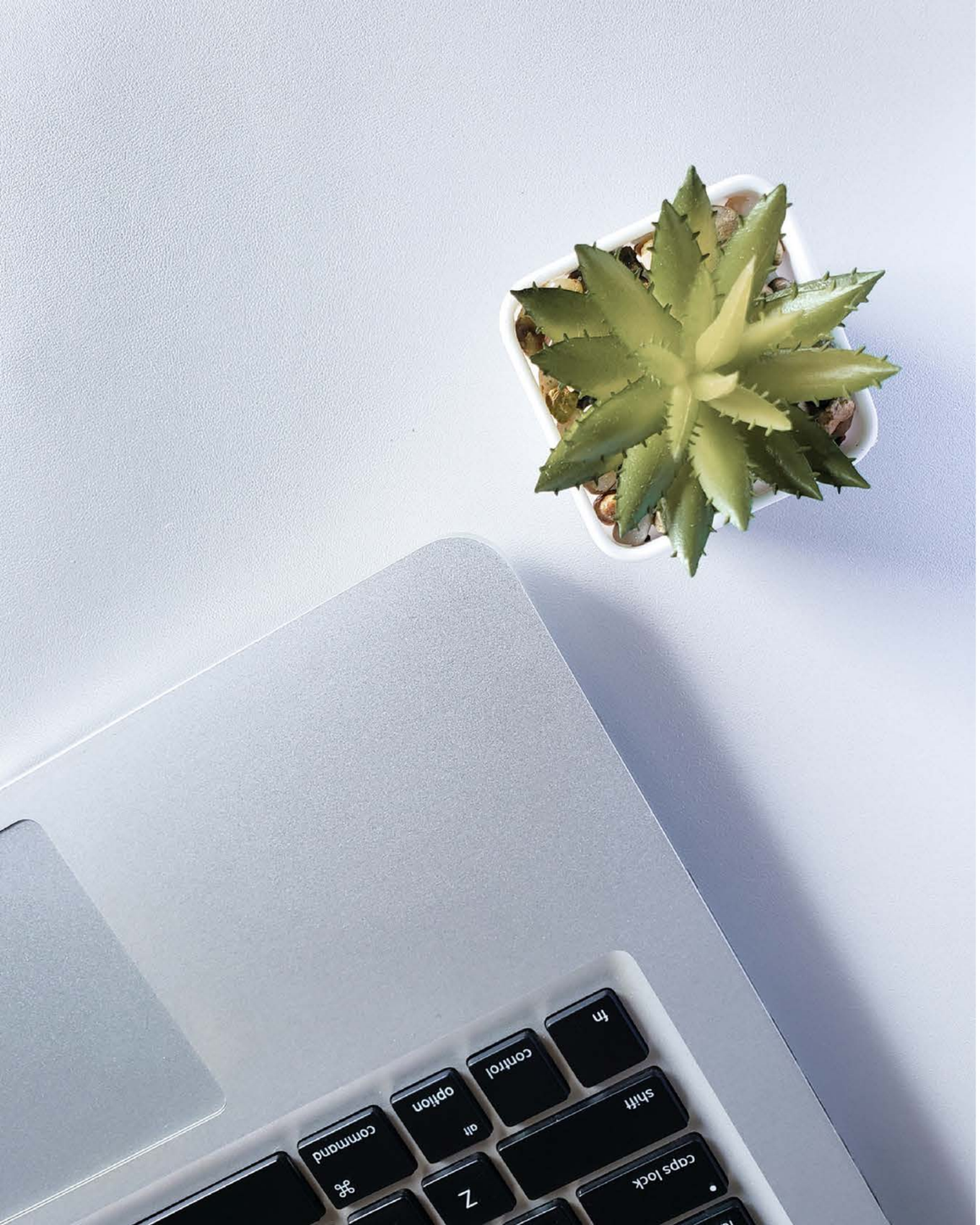
Green DevOps: Building Sustainable Software

Neel Shah - DevOps Community Guy

- Building Devops Communities
- GDG Cloud,CNCF ,Docker ,Hashicorp
- Mentored more than 15+ hackathons
- Product Manager @ Internauts Infotech

I have all my data(infra) on Cloud ,so I don’t emit CO2





As we revel in the innovations driven by software development, we must also acknowledge the considerable carbon footprint associated with traditional development practices

What is Green DevOps ?

Green DevOps is the integration of sustainable practices into the software development lifecycle. Unlike traditional development approaches that prioritize speed and functionality, Green DevOps puts environmental considerations at the forefront. It is an ethos that seeks to harmonize technological progress with ecological responsibility

Benefits of Green DevOps

- **Reduced Energy Consumption**
  - Optimize resource utilization throughout the development process.
  - Lower energy consumption not only translates to cost savings but also minimizes the carbon footprint of software development.

Benefits of Green DevOps

- **Improved Resource Efficiency**
  - Encourages developers to use resources wisely, minimizing waste and maximizing efficiency.
  - Practices include code optimization, infrastructure right-sizing, and efficient testing processes.

Benefits of Green DevOps

- **Enhanced Software Quality**
  - Encourages developers to use resources wisely, minimizing waste and maximizing efficiency.
  - Practices include code optimization, infrastructure right-sizing, and efficient testing processes.

GHG Protocol

Scope 1 : Direct emissions

Scope 2 : Indirect emissions related purchased energy

Scope 3 : Other indirect emissions (value chain emissions)

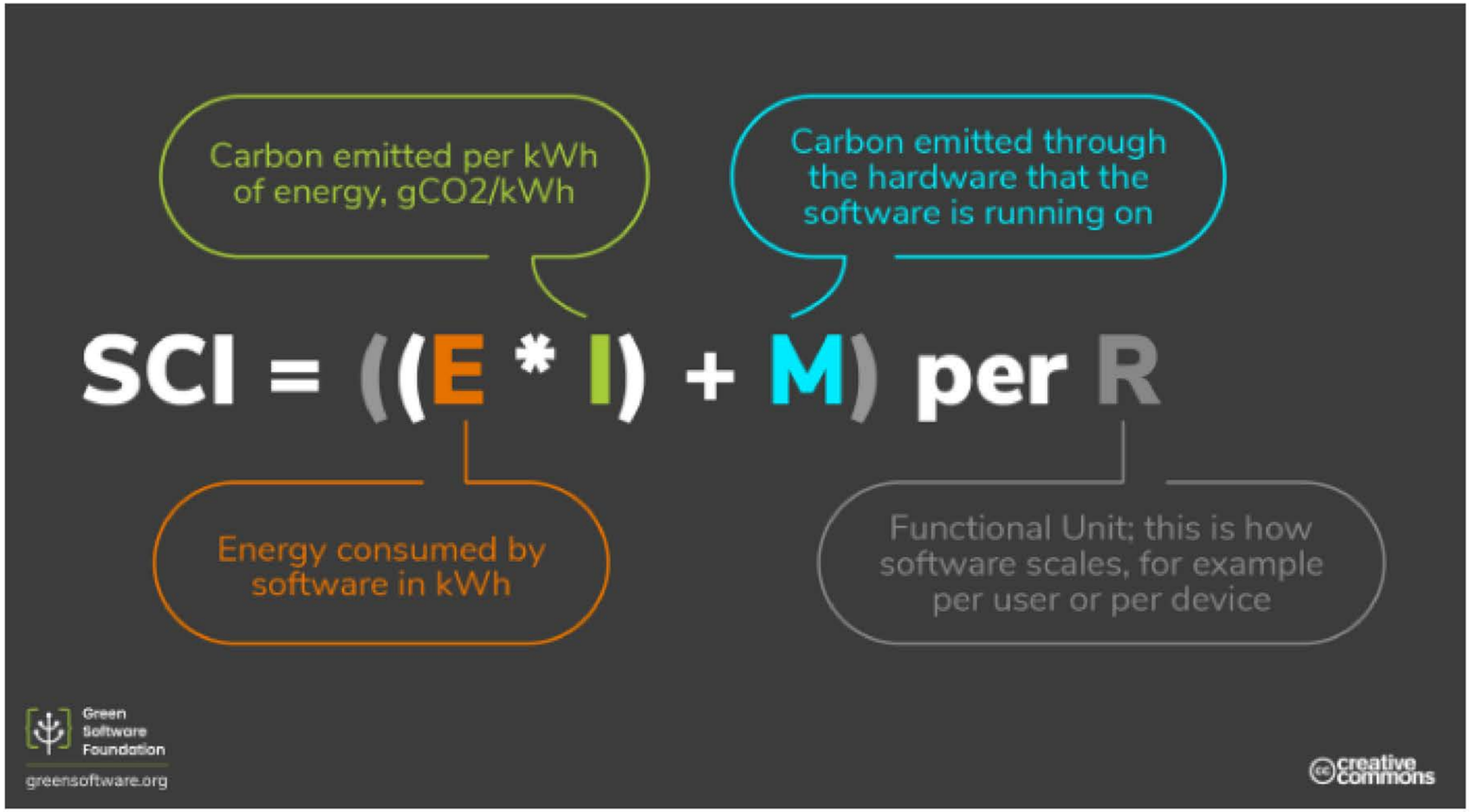
- **business travel**
- **raw material purchased**
- **services purchased**

GHG Scope

GHG Scope	2	3
Private Cloud	Energy	Embodied
Public Cloud	-	Energy + Embodied
Hybrid Cloud	Some Energy	Some Energy + Embodied
Front End	-	Energy + Embodied

Green Software Foundation
greensoftware.org
creative commons

Software Carbon Intensity Formula

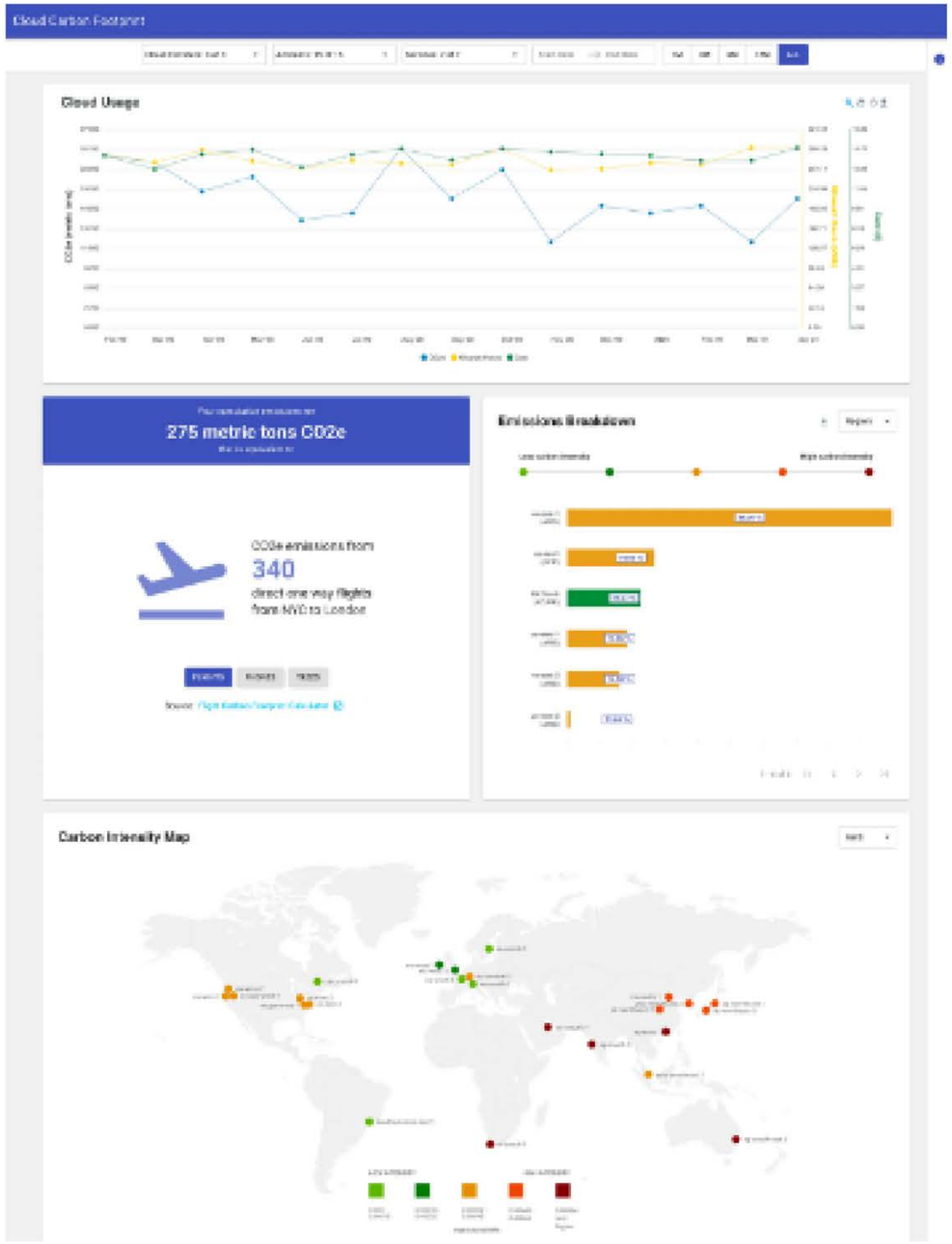


Measure Carbon Footprint

- AWS Carbon Footprint Tool
- Google Cloud Carbon Footprint
- Microsoft Azure Sustainability Calculator

Cloud Carbon Footprint

Cloud Carbon Footprint



Reduction

- Cache Static Data
- Delete unused storage resources
- Implement Stateless Design
- Queue non urgent processing requests
- Scale Down infra when not in use
- Use serverless cloud services

Reduction

- Software Ecodesign
- Choice of instance type Right size (On spot)
- Keep it to a minimum

auto-scaling groups

containers

...

- Change region / zone

Cloud Awareness

- Temporal Shifitng
- Demand Shaping
- Spaital Shaping

FinOps + GreenOps

Connect with me for any queries !

Thank You