SUSTAINABLE DIGITAL
INFRASTRUCTURE ALLIANCE

A Vision for a Digital Sustainability.

Neos Conference - 27th of April 2023

Sustainability = A balance of environmental, societal and economic needs.

Even more important: The sustainable development of our society & economy.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

United Nations Brundtland Commission, 1987

What does this mean for us in the SDIA Community?

"We want to chart a path for the sustainable development of IT, Digitalization, the Digital Economy, and Digital Infrastructure and execute it."

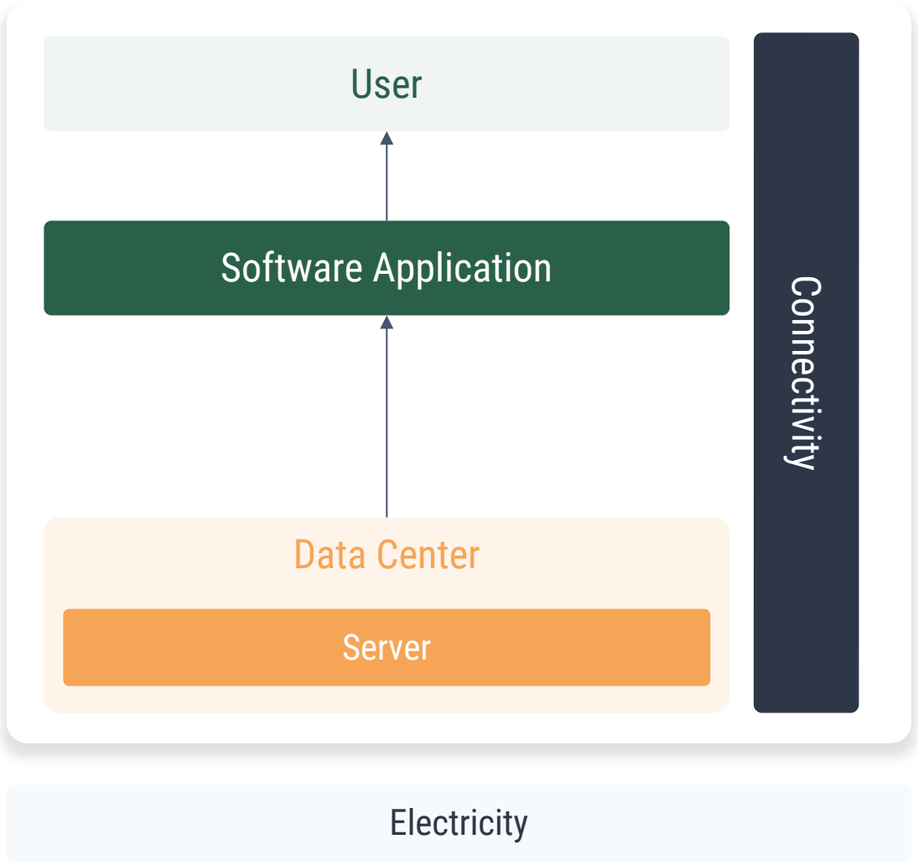
SDIA

“to measure is to know”

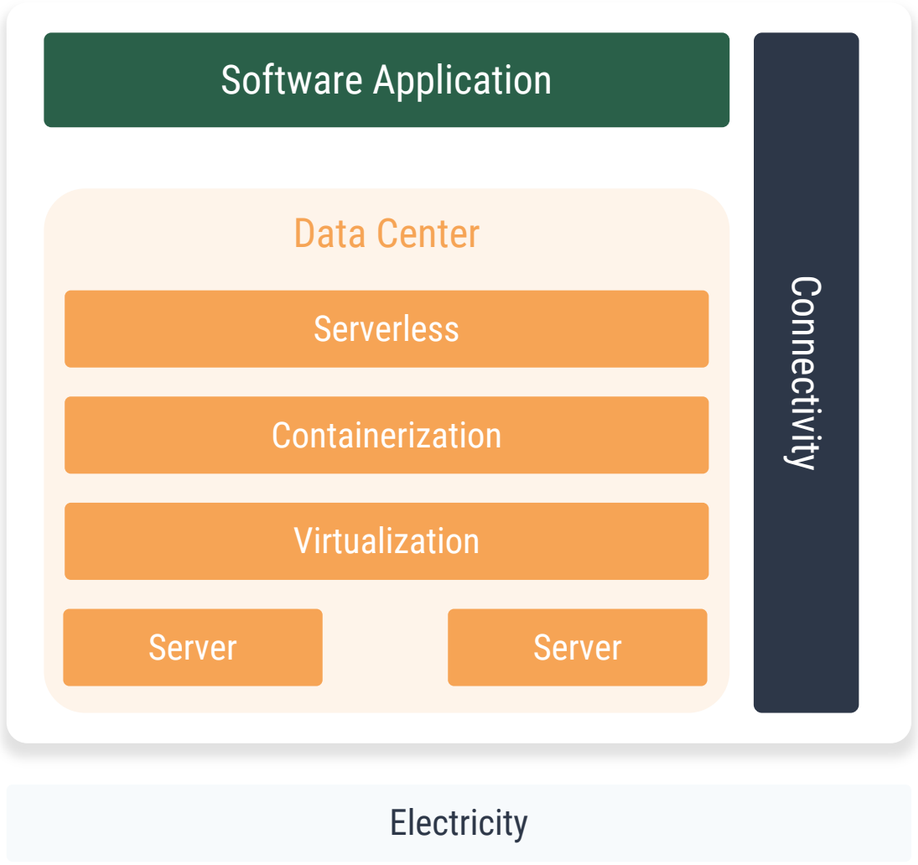
Lord Kelvin

THE PAST

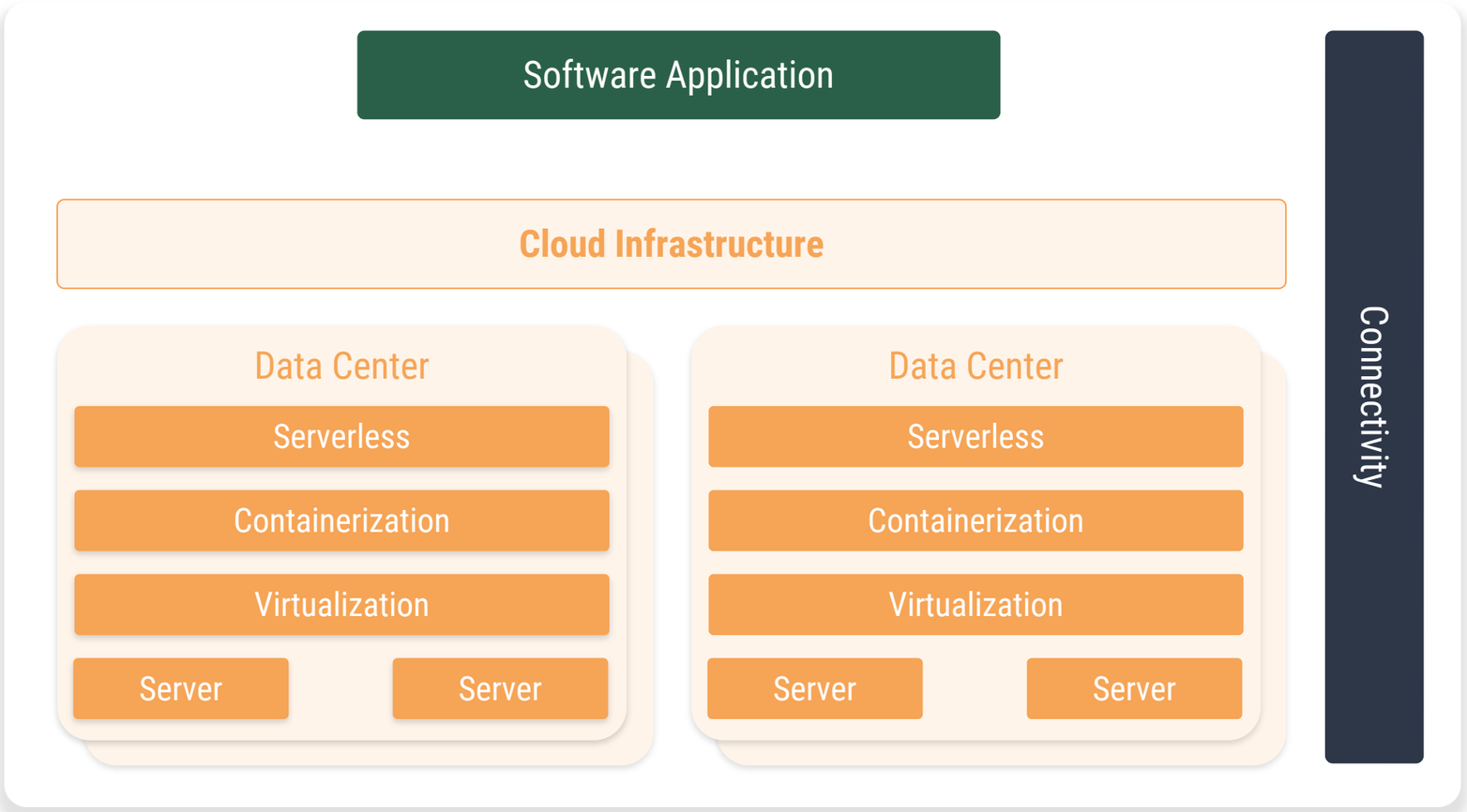
When I started my career, software applications and their infrastructure looked like this:



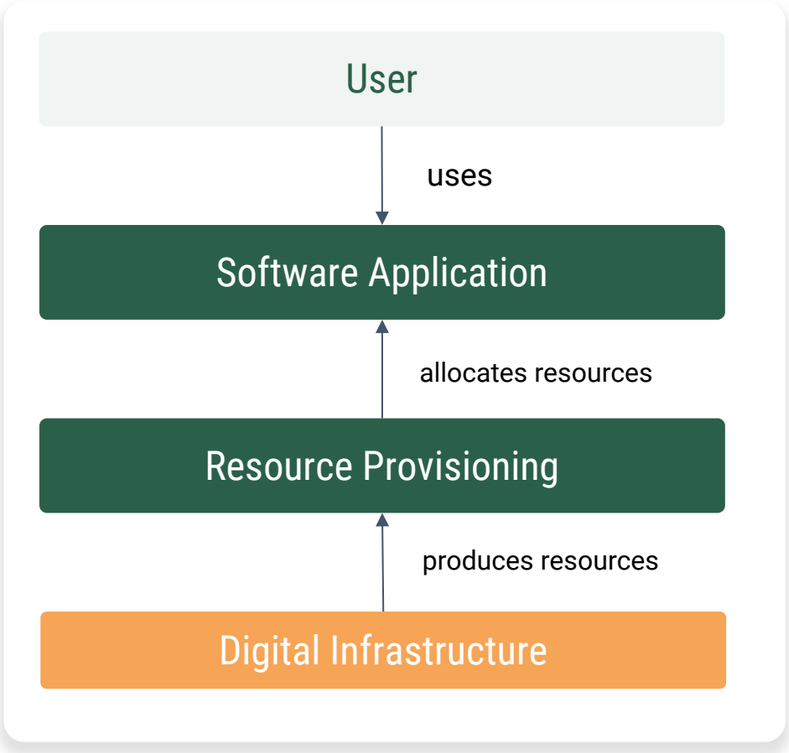
As my career advanced, I watched the application move further and further away from the physical infrastructure.



Each layer of abstraction made the one below invisible - the illusion of infinite resources is created.

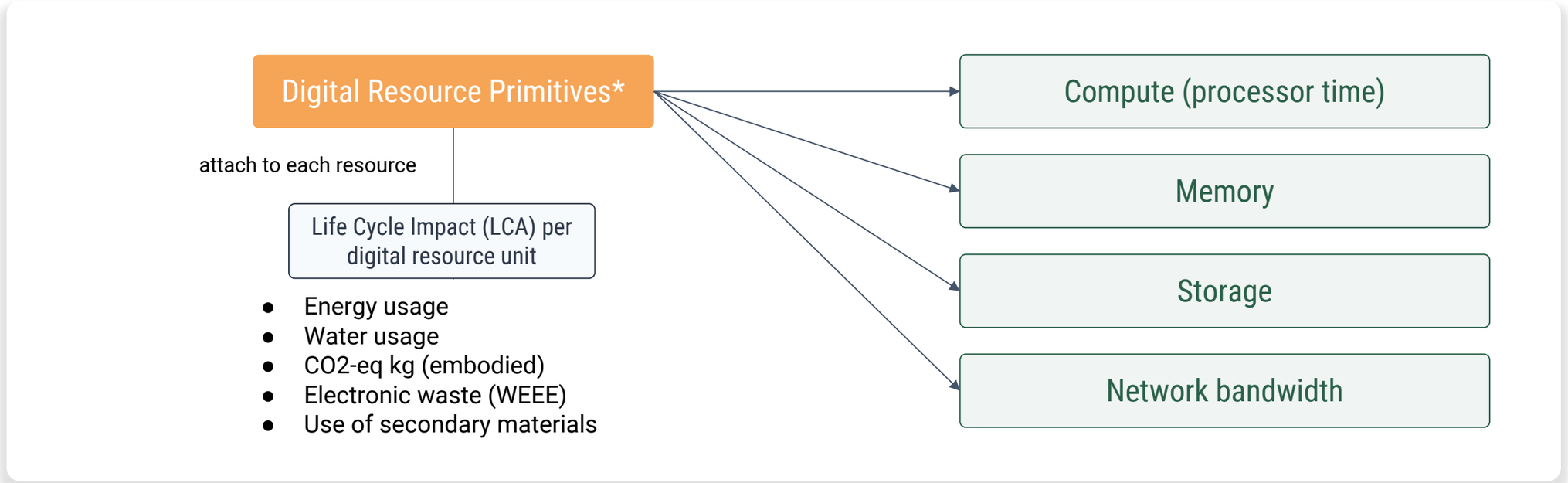


So we started to define a more simplified model & school of thought on how we can look at digital products & infrastructure:



A more detailed version can be found in the paper Taxonomy for a Digital Economy Schulze, Kumar, Oghia, 2021 published by the Commonwealth & SDIA

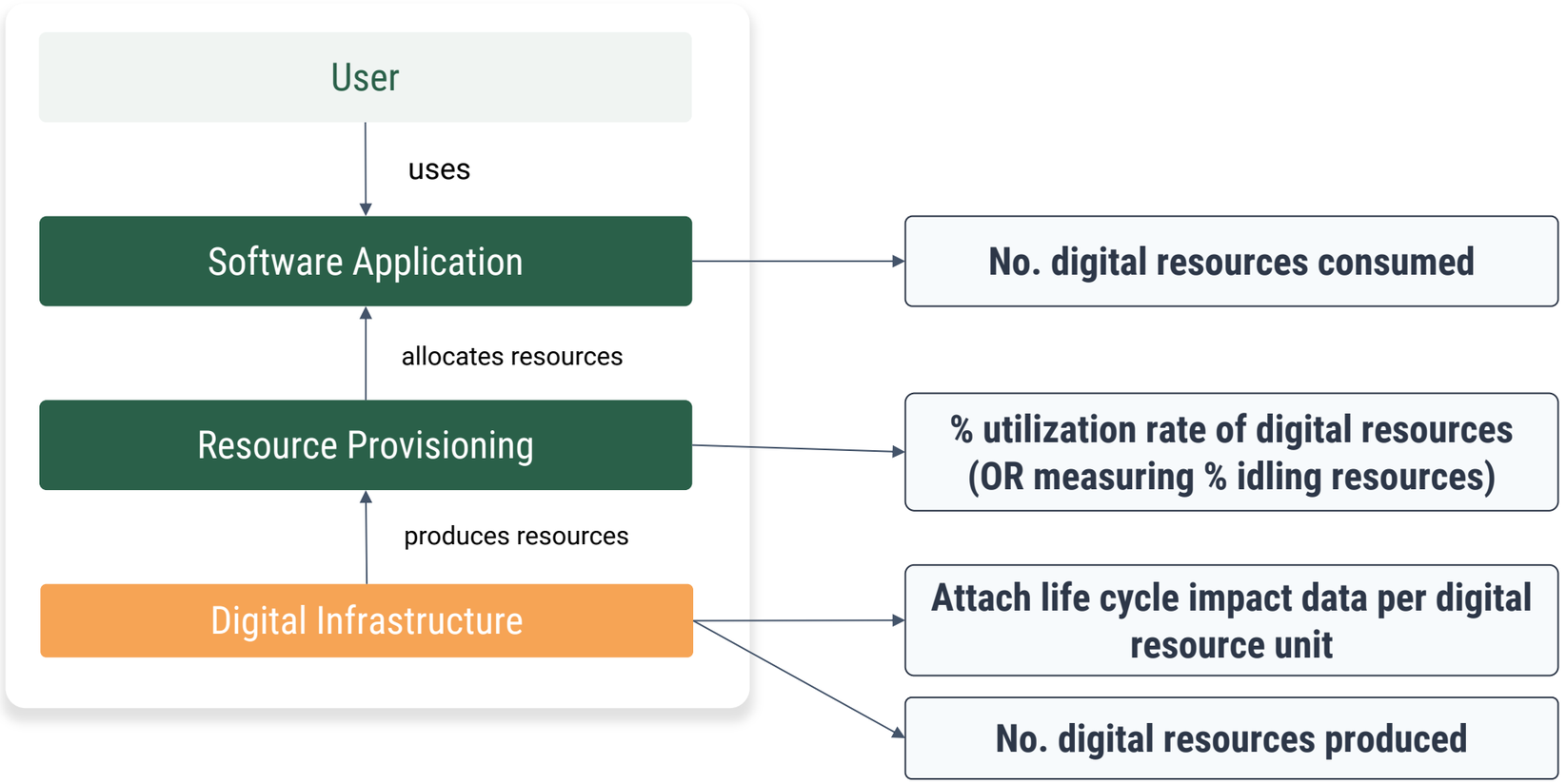
With this simplified model and the introduction of the concept of a digital resource that can be produced & consumed…



simplified, each resource primitive can of course have further attributes (e.g. type of compute, storage, etc.)

** More information on the exact definition can be found at knowledge.sdialliance.org*

…measuring becomes a lot easier.



OK, we can measure it, but how does it become sustainable?

How we do enable the sustainable development of the digital economy & digitalization?

It starts with clarifying and taking up responsibilities across the software value-creation chain.

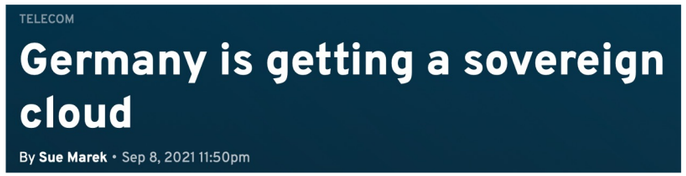
Value Chain	Responsible for:
User	• Sustainable use • Disable unused functionality
Digital Products	• Minimize digital resource usage • Transparency of digital resource usage & impact to user • Buy/use sustainable digital resources
Resource Provisioning	• Avoid idling/wasting of digital resources • Transparent pass-through of environmental impacts
Digital Infrastructure	• Produce sustainable digital resources

And the tools and policies needed to fulfill those responsibilities – the work of the SDIA:

Value Chain	Enabling policies & tools by the SDIA:
User	• Best practices • Education & awareness on sustainable use
Digital Products	• Label for environmental impact of digital products/transparency • Best practice to reduce resource utilization
Resource Provisioning	• Optimization strategies beyond cloud to further reduce wasted digital resources • Label for efficient resource provisioning technologies
Digital Infrastructure	• Roadmap for sustainable digital infrastructure • Label for sustainably produced digital resources

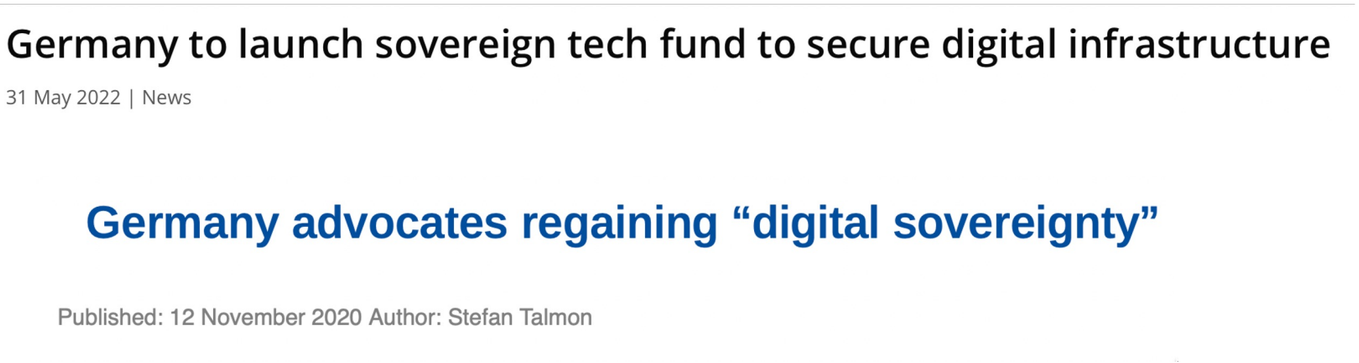
What role does Germany and Europe want to play in the sustainable development of the digital sector?

What we are talking about in Europe?


TELECOM

Germany is getting a sovereign cloud

By **Sue Marek** • Sep 8, 2021 11:50pm


Germany to launch sovereign tech fund to secure digital infrastructure

31 May 2022 | News

Germany advocates regaining “digital sovereignty”

Published: 12 November 2020 Author: Stefan Talmon

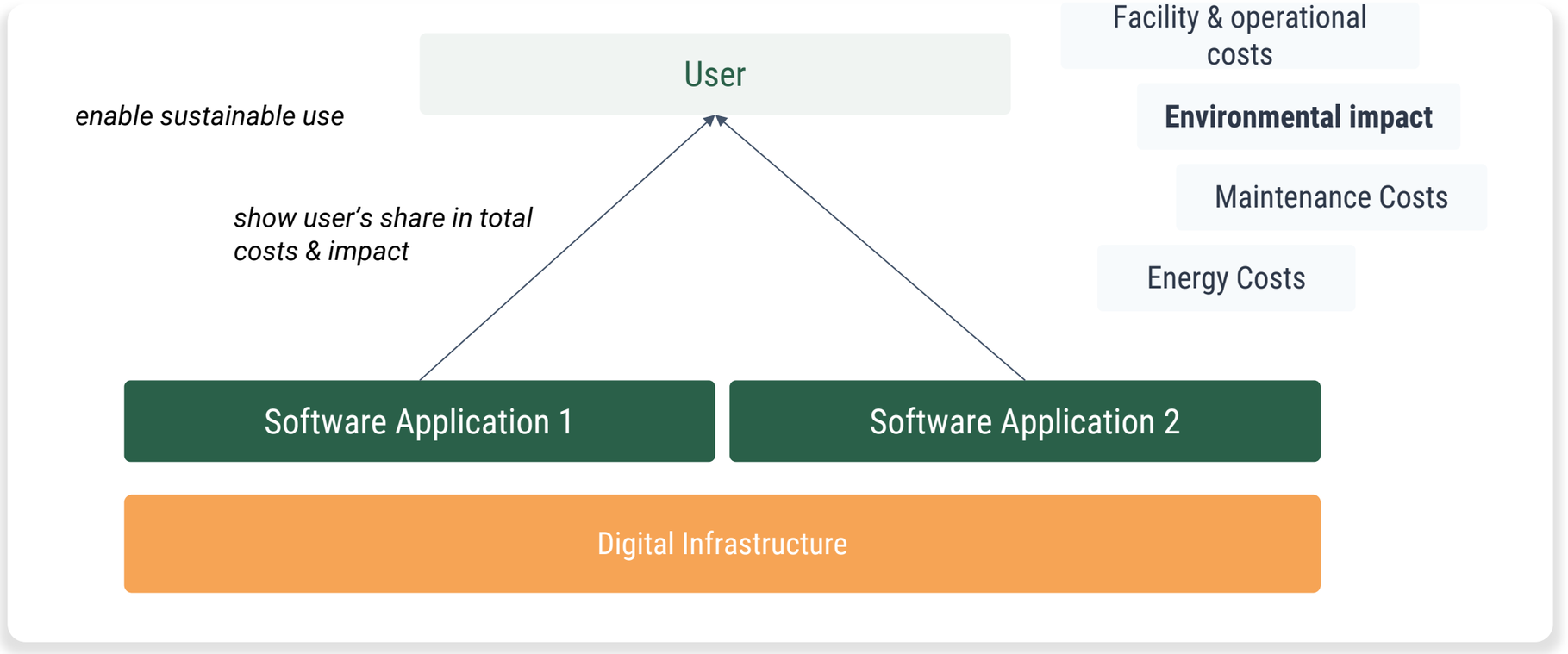
Was uns ausmacht:

- Peace
- Democracy
- Human rights
- Freedom
- Social justice
- Equality
- …
- **Sustainability**

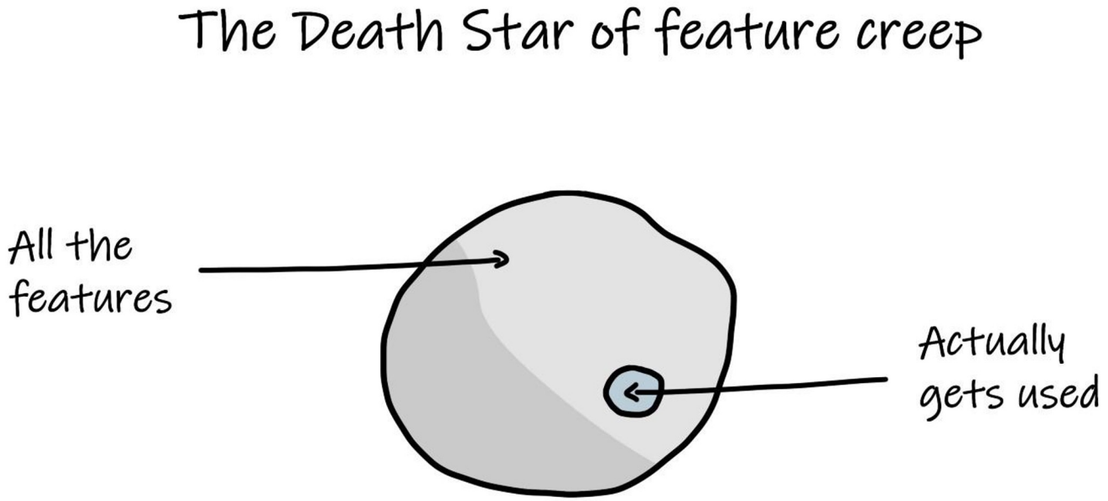
And what can we do know?

Some best practices & food for thought for you.

Link usage of a user to costs & environmental impact and make it visible.



Introduce resource usage as a design constraint for all software applications



Facility & operational costs

Environmental impact

Maintenance Costs

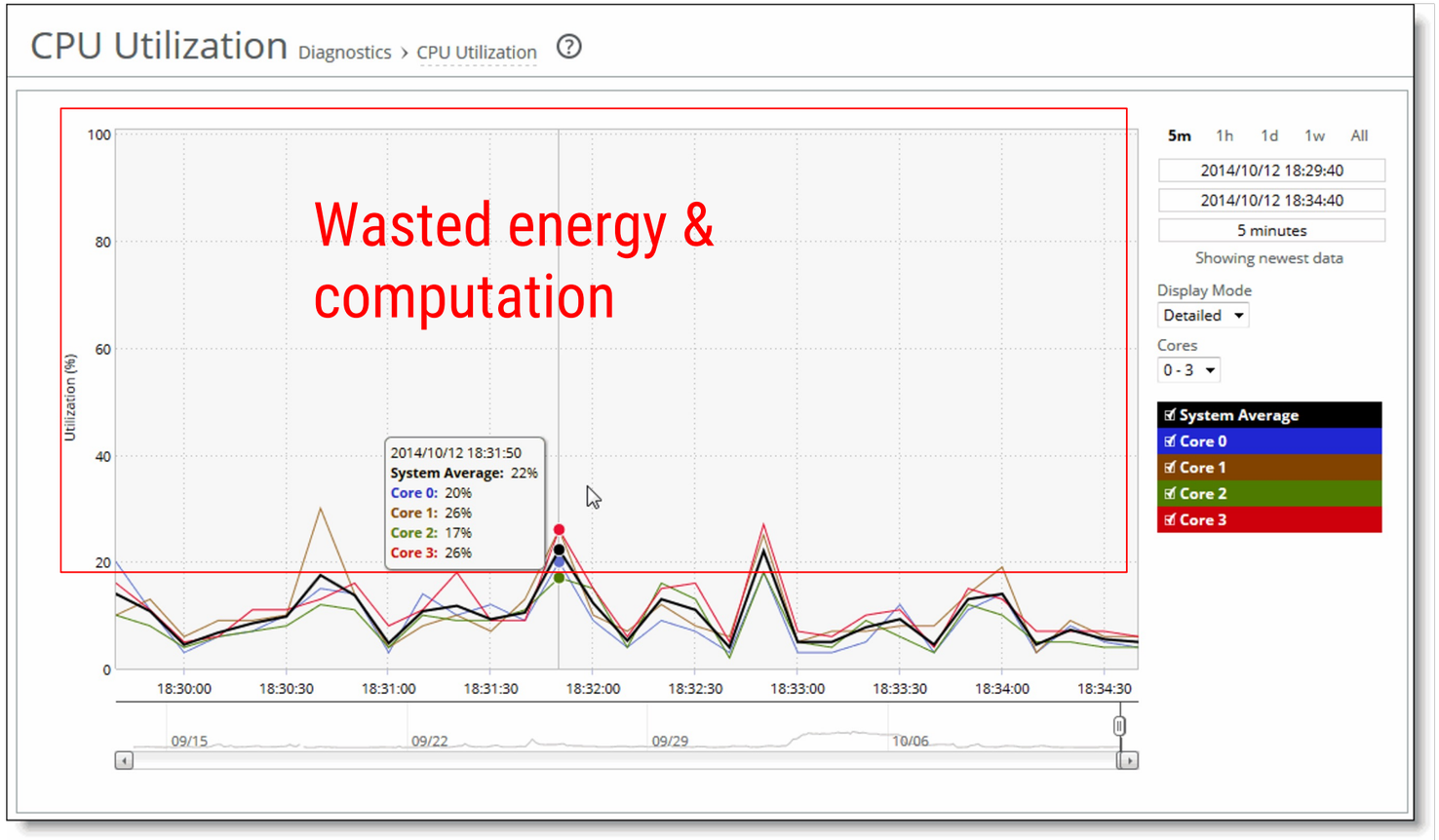
Energy Costs

Classify applications, components, containers, services, … by criticality & redundancy requirements

Enhancement to current workload classification structure: CIA-S

Sustainability Rating (S)	Resource and Footprint Dynamics Archetypes / Characteristics Applicable on Product/Workload and/or Business process level	Typical / background
0 Label A	**'Always-off or default-off'** Resources scaling back to 0, when no workload present/needed. Footprint 100% dynamic when workload in use (autoscaling *)	Excl. listener/orchestrator/backup Compute scaling down to 0 Data scaling down to 0 *Driven by sessions/transactions/analytics/etc.
1 Label B	**'Always-off or default-off'** Resources not scaling back to 0, when no workload present/needed. Footprint 100% dynamic when workload in use (autoscaling *)	Excl. listener/orchestrator/backup Compute scaling down to 0 Data not scaling down to 0 (persistent Data footprint remains)
2 Label C	**'Partly-off' -** minimal 3 of 3: 1. No permanently allocated OTA Footprint 2. No permanently allocated DR Footprint 3. No permanent allocated Peak load Footprint	Additional resources reside in consumable platform(s) Typical Bursting / On demand provisioning
3 Label D	**'Partly-off' -** minimal 2 of 3: 1. No permanently allocated OTA Footprint 2. No permanently allocated DR Footprint 3. No permanent allocated Peak load Footprint	Additional resources reside in consumable platform(s) Typical Bursting / On demand provisioning
4 Label E	**'Partly-off' -** minimal 1 of 3: 1. No permanently allocated OTA Footprint 2. No permanently allocated DR Footprint 3. No permanent allocated Peak load Footprint	Additional resources reside in consumable platform(s) Typical Bursting / On demand provisioning
5 Label F	**'Always-on or Default-on'** All resources permanently allocated and active. Footprint 100% all the time (incl. DR/Peakload/OTA)	All capabilities/capacities (e.g. resources) always allocated and active. WvdZee Febr. 2020

Minimize idling (wasted) computation + energy use in idling state



BEST PRACTICE

Pressure suppliers for transparency, repairability of IT components, maximize lifetime

- Demand full transparency on caused Scope 1, 2 & 3 emissions from facilities, data centers, Cloud providers, etc.
- Ask IT software suppliers to deliver a full life cycle assessment for all software products/per version
- Ask vendors to guarantee a lifetime support of any firmware required to operate IT hardware
- Ask vendors to enforce repairability or allow production of spare parts

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Thank you!

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