



SUSTAINABLE DIGITAL
INFRASTRUCTURE ALLIANCE

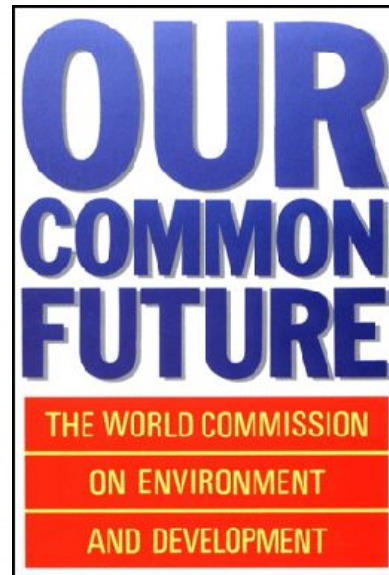
What does the sustainable development of a digital sector look like?

Keynote, Mercedes Benz

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?

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

But wait, who says it's not sustainable already?



Carbon neutral since 2007.
Carbon free by 2030.

Microsoft will be carbon negative by 2030

Jan 16, 2020 | [Brad Smith - President & Vice Chair](#)

Commitment to 100% product return

At the World Economic Forum in January 2018, Cisco CEO Chuck Robbins and eight other tech executives signed the Capital Equipment Pledge, in which Cisco committed to 100% product return.



- 82% of 100 analyzed blue chips disclosed their commitment to the SDG in their 2016 annual reports.

PRODUCT SUSTAINABILITY

396.5 million

pounds of sustainable materials in our products and packaging.

Find Out More →

RECYCLING

2.5 billion

pounds of used electronics recovered for reuse and recycling since 2007.

Recycle Now →

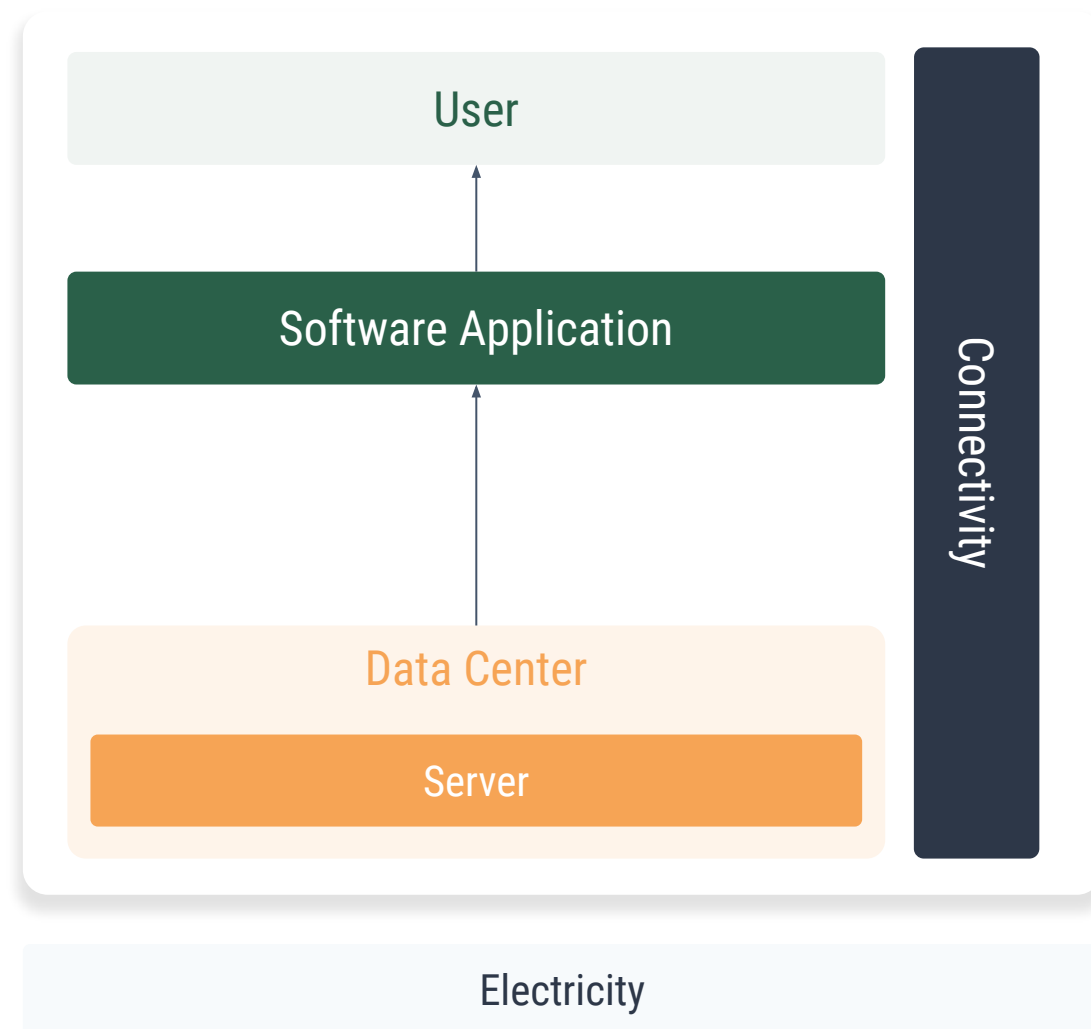


“to measure is to know”

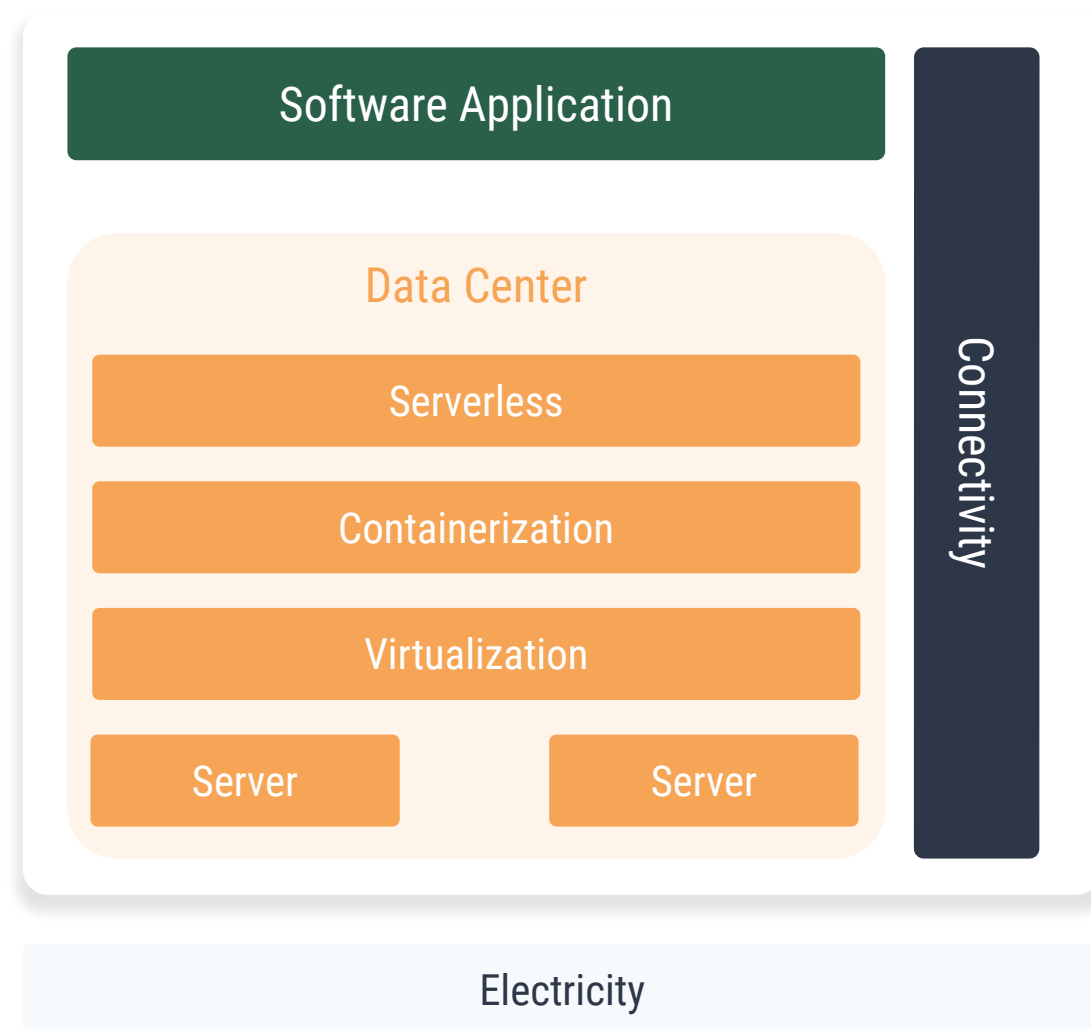
Lord Kelvin

THE PAST

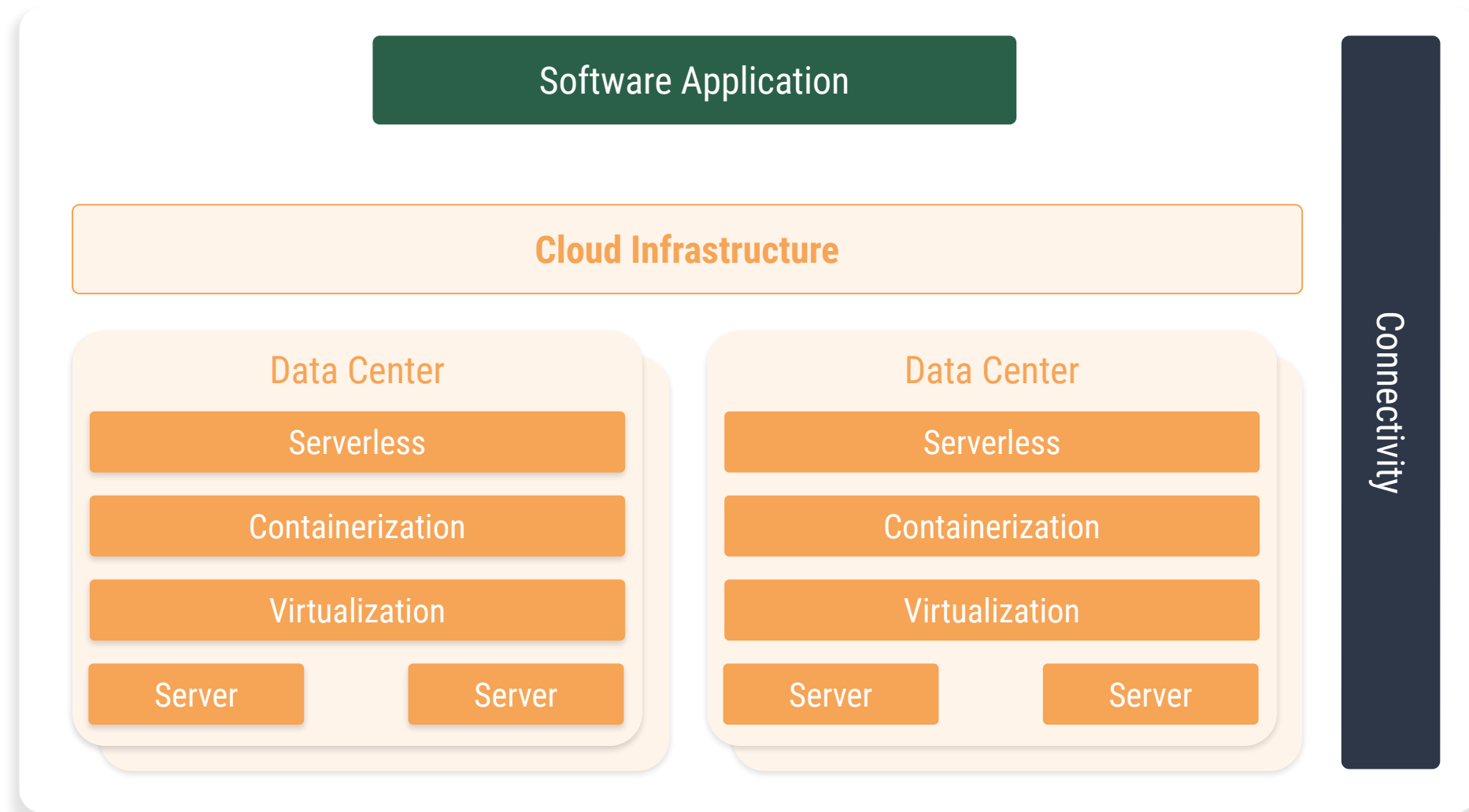
When I started my career, software applications and their infrastructure looked like this:



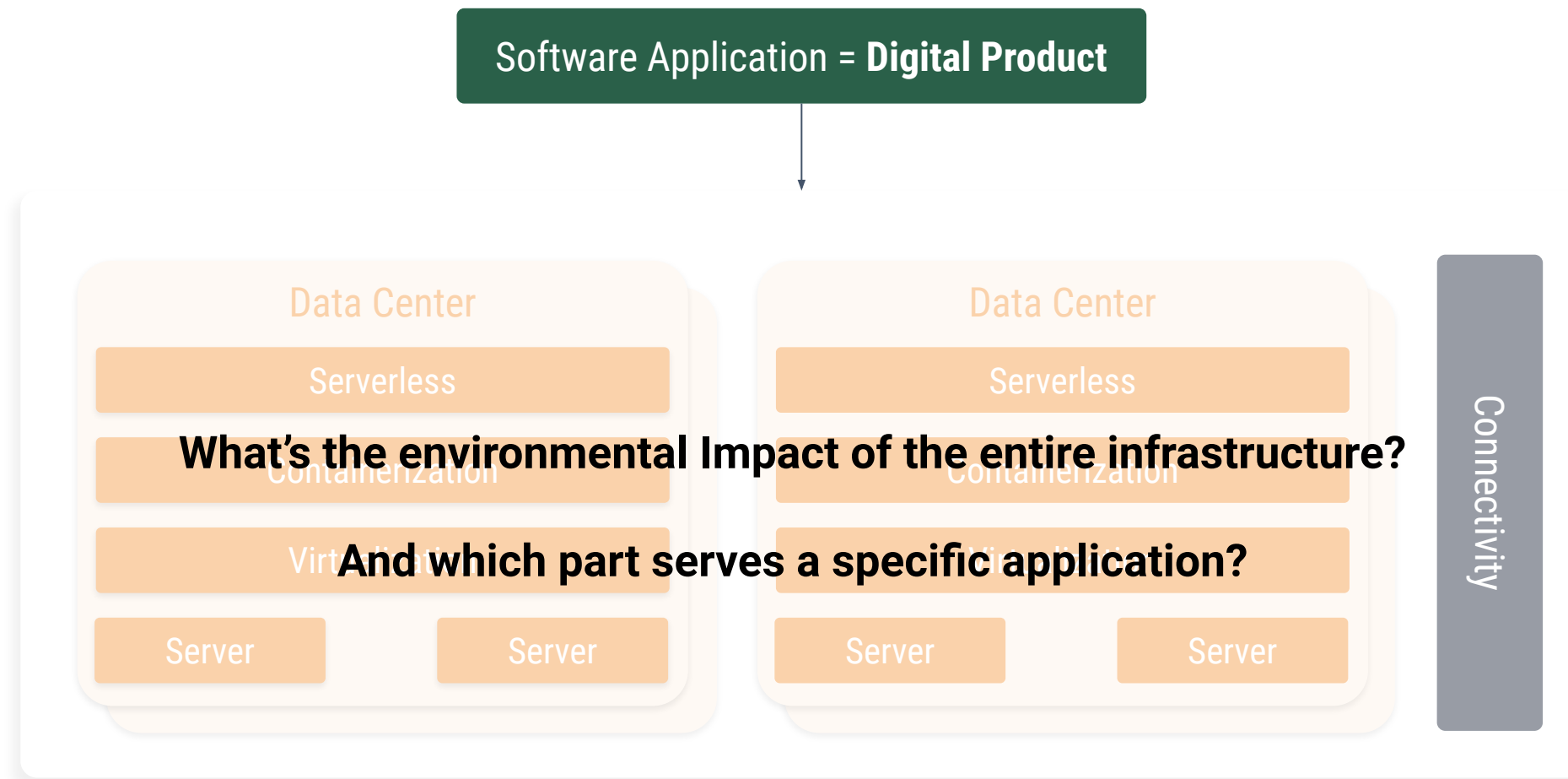
As my career advanced, I watched the application move further and further away from the physical infrastructure.



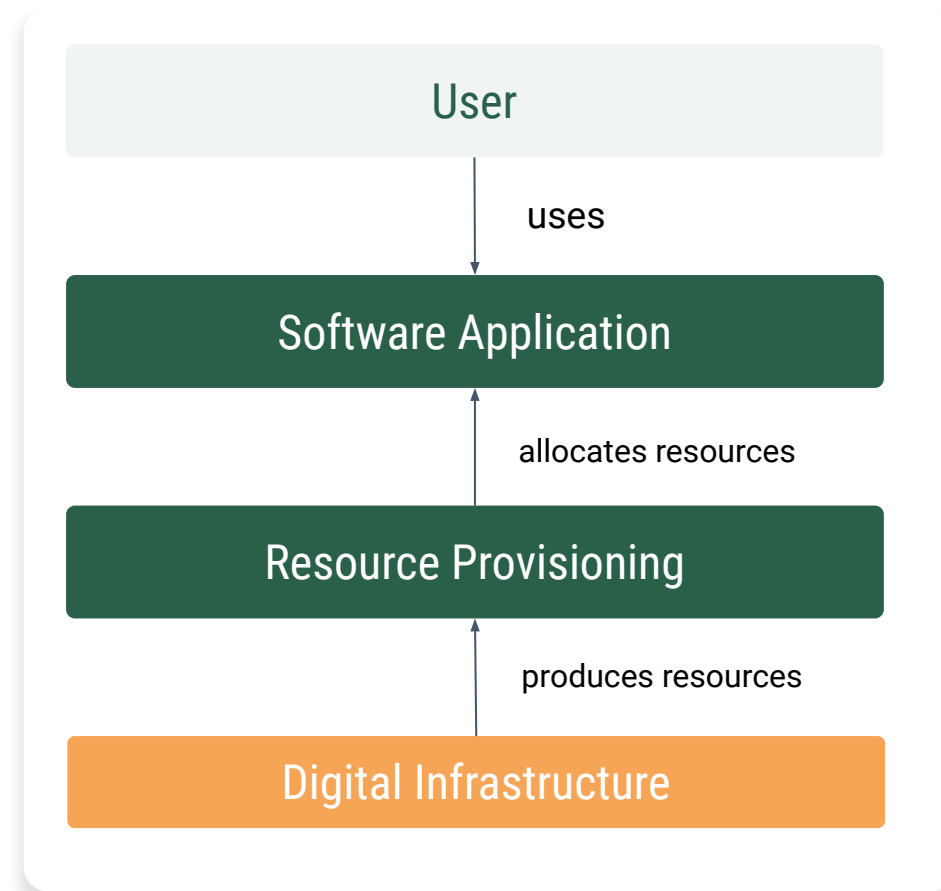
Each layer of abstraction made the one below invisible - the illusion of infinite resources is created.



Now if attempt to assess the environmental impact of the application we get lost in complexity.

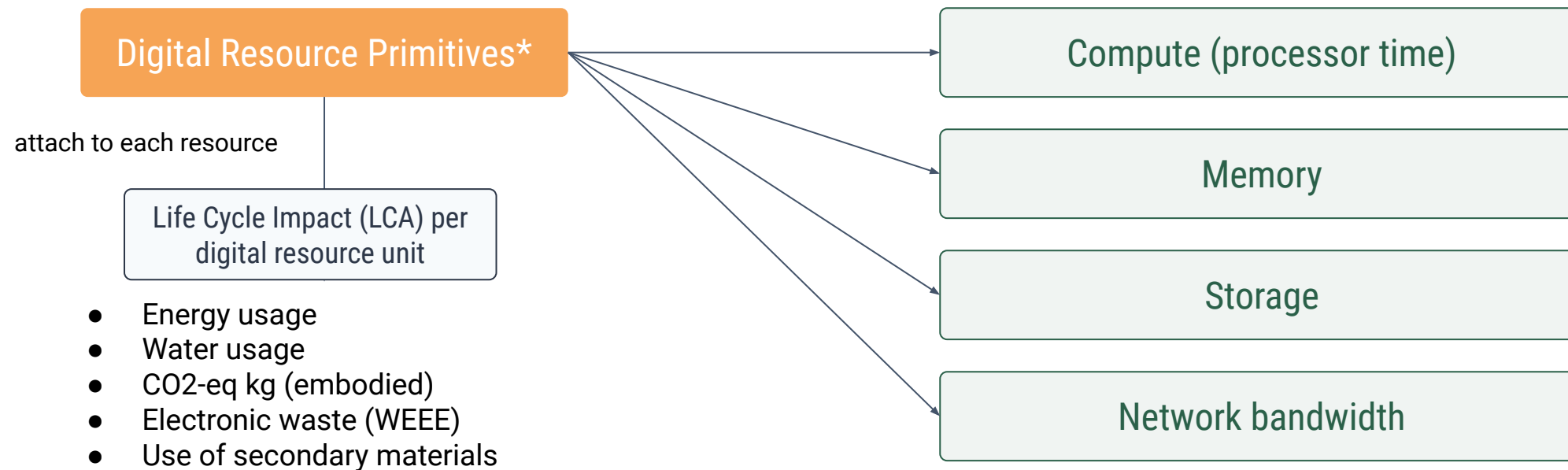


So we started to define a more simplified model & school of thought on how we can look at digital products & infrastructure:



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

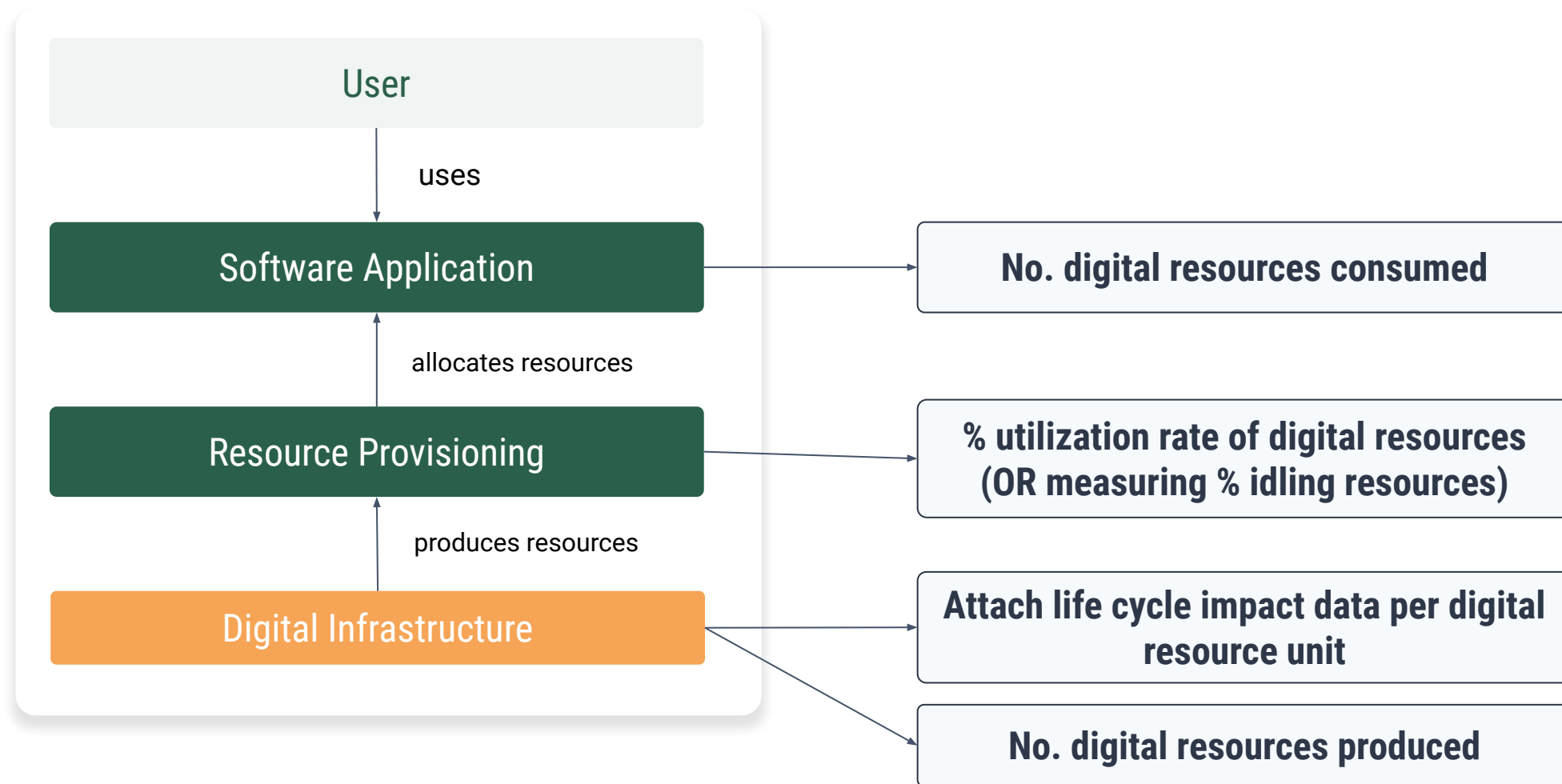
With this simplified model and the introduction of the concept of a digital resource that can be produced & consumed...



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

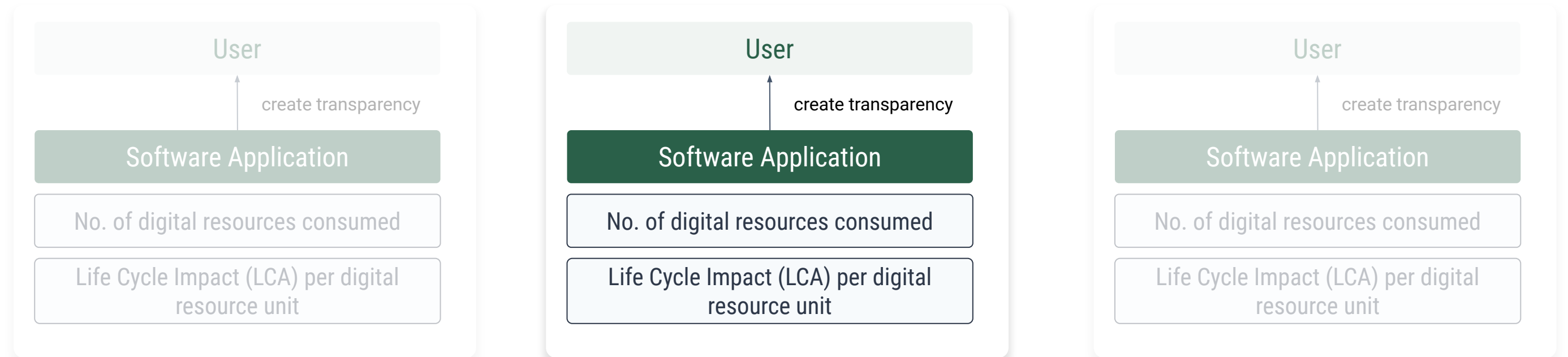
* More information on the exact definition can be found at knowledge.sdialliance.org

...measuring becomes a lot easier.



The result is an environmental footprint per application or digital product and the ability to measure the digital economy.

Environmental Impact of Digital Economy & Transformation



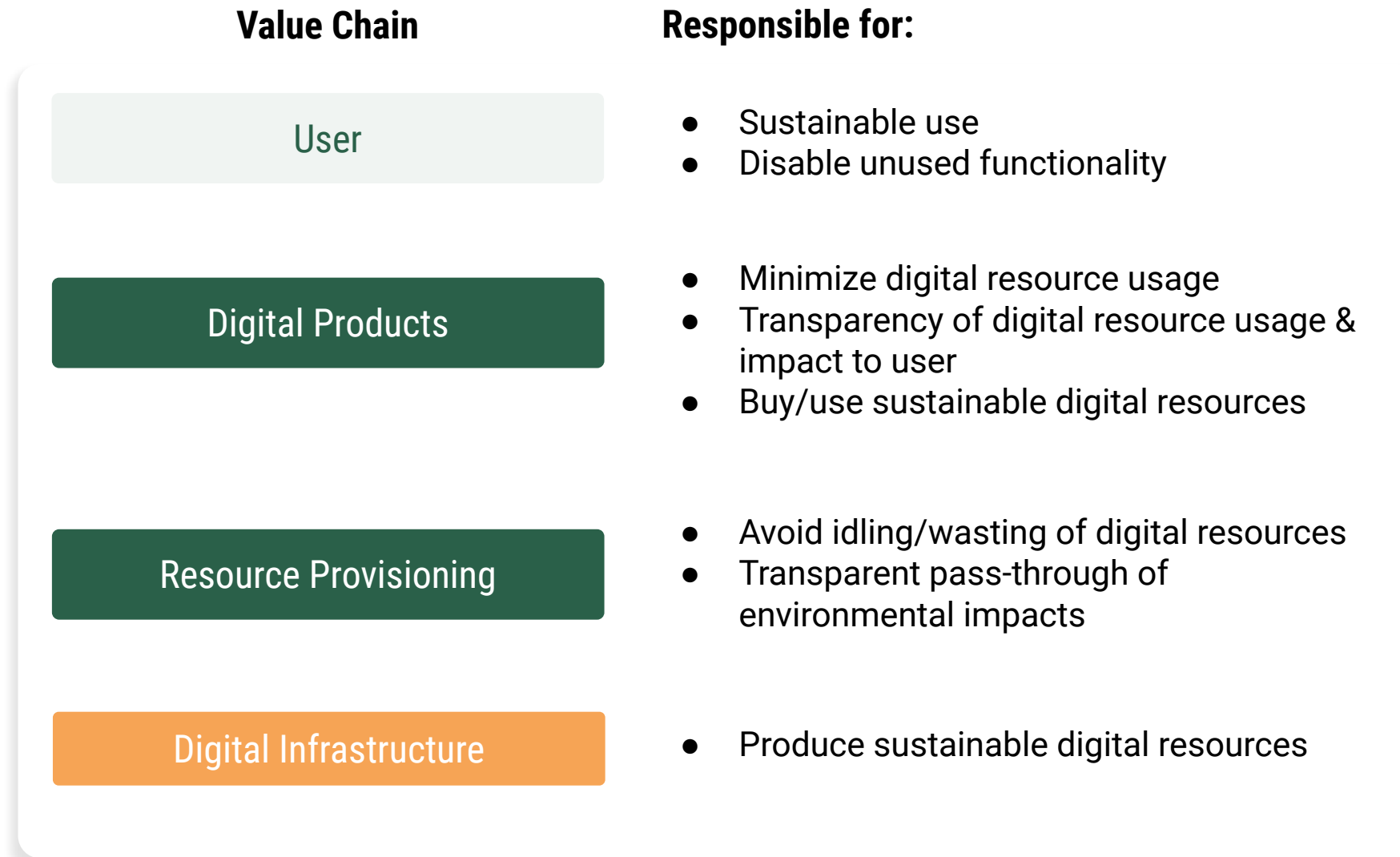
Digital Infrastructure

(physical infrastructure required by digital economy & transformation)

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 responsibilities.



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

Value Chain

User

Digital Products

Resource Provisioning

Digital Infrastructure

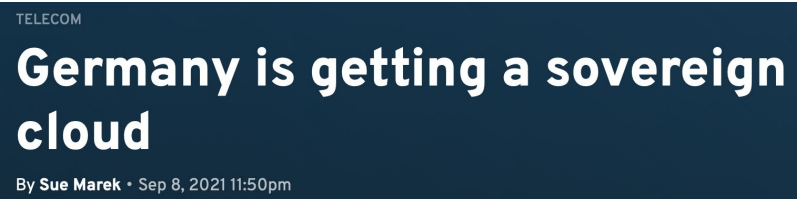
Enabling policies & tools by the SDIA:

- Best practices
- Education & awareness on sustainable use
- Label for environmental impact of digital products/transparency
- Best practice to reduce resource utilization
- Optimization strategies beyond cloud to further reduce wasted digital resources
- Label for efficient resource provisioning technologies
- 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?



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:

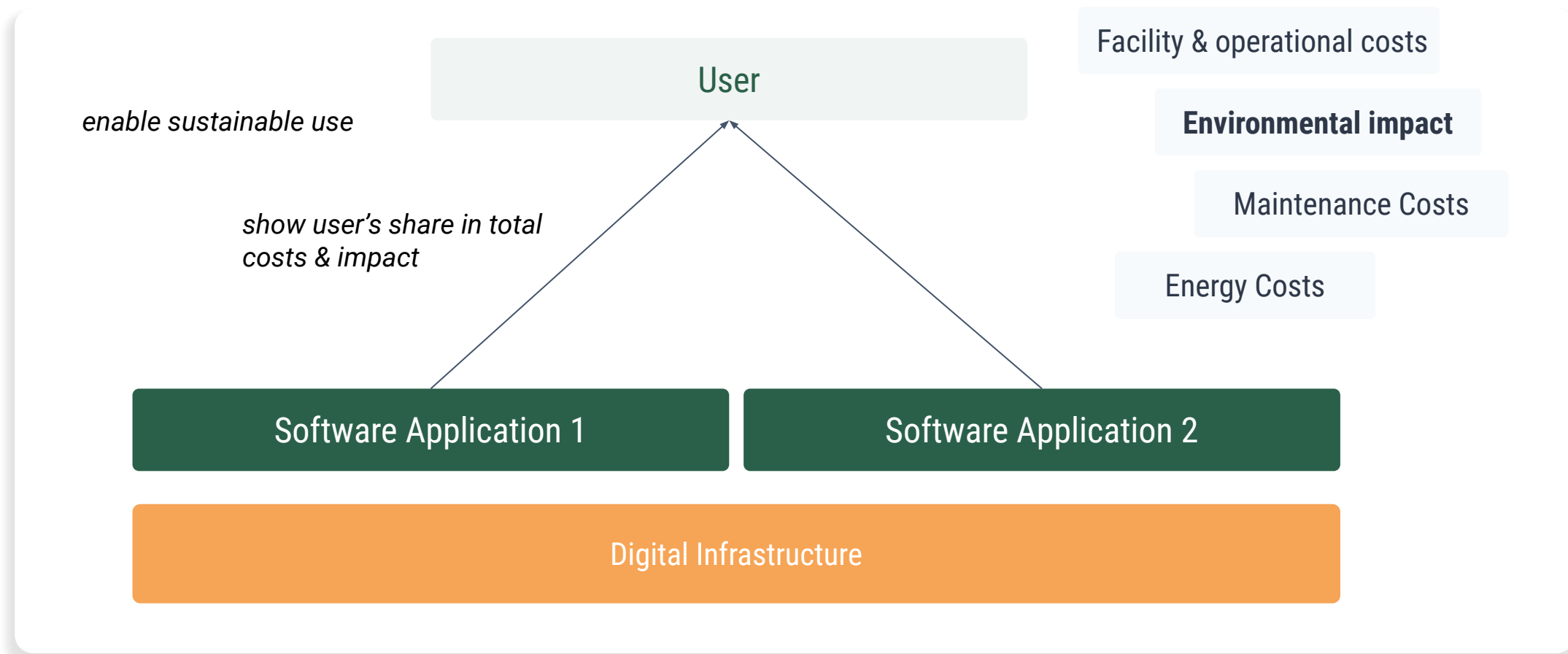
- Peace
- Democracy
- Human rights
- Freedom
- Social justice
- Equality
- ...
- **Sustainability**



And what can we do know?

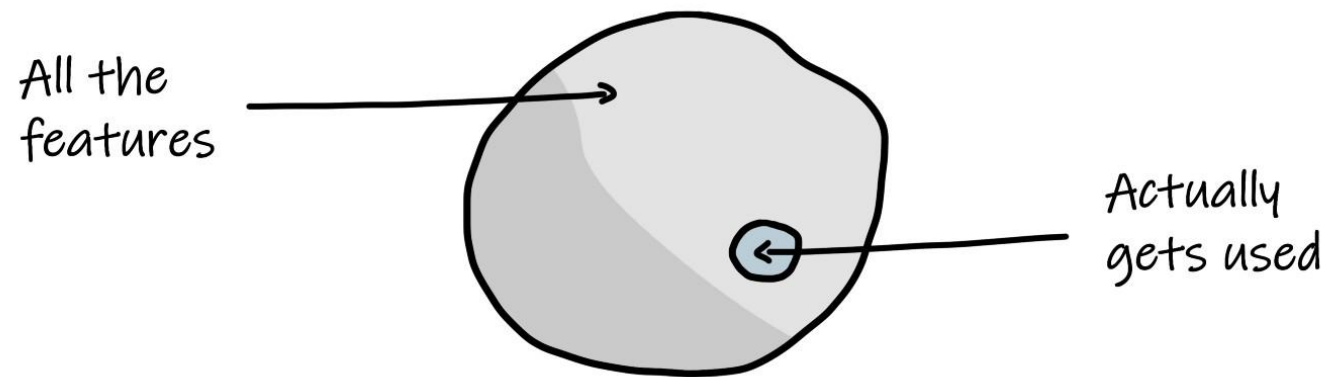
5 ideas for Mercedes Benz from no-brainer to moonshot.

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



Introduce resource usage as a design constraint for all software applications

The Death Star of feature creep



Facility & operational costs

Environmental impact

Maintenance Costs

Energy Costs

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

- The sustainability rating will be given to IT products in addition to the already used CIA-rating (confidentiality, Integrity, Availability)
- The sustainability rating is based on the **resource dynamics of the product/workload** and is divided into several stages
- The stages rank from 100% of the resources allocated to the workload all the time (label F) to a 100% dynamic resource allocation only when the product is in use.
- Current products/workloads can be rated and a target can be set for a future average rating on sustainability. Next to that, a minimum rating can be set as guideline for future IT products acting as a **Design Driver**.
- This is a basic/limited/start Model, looking at efficient resource usage, we are working to develop a holistic 'IT Sustainability Quality Model' (with the VU).

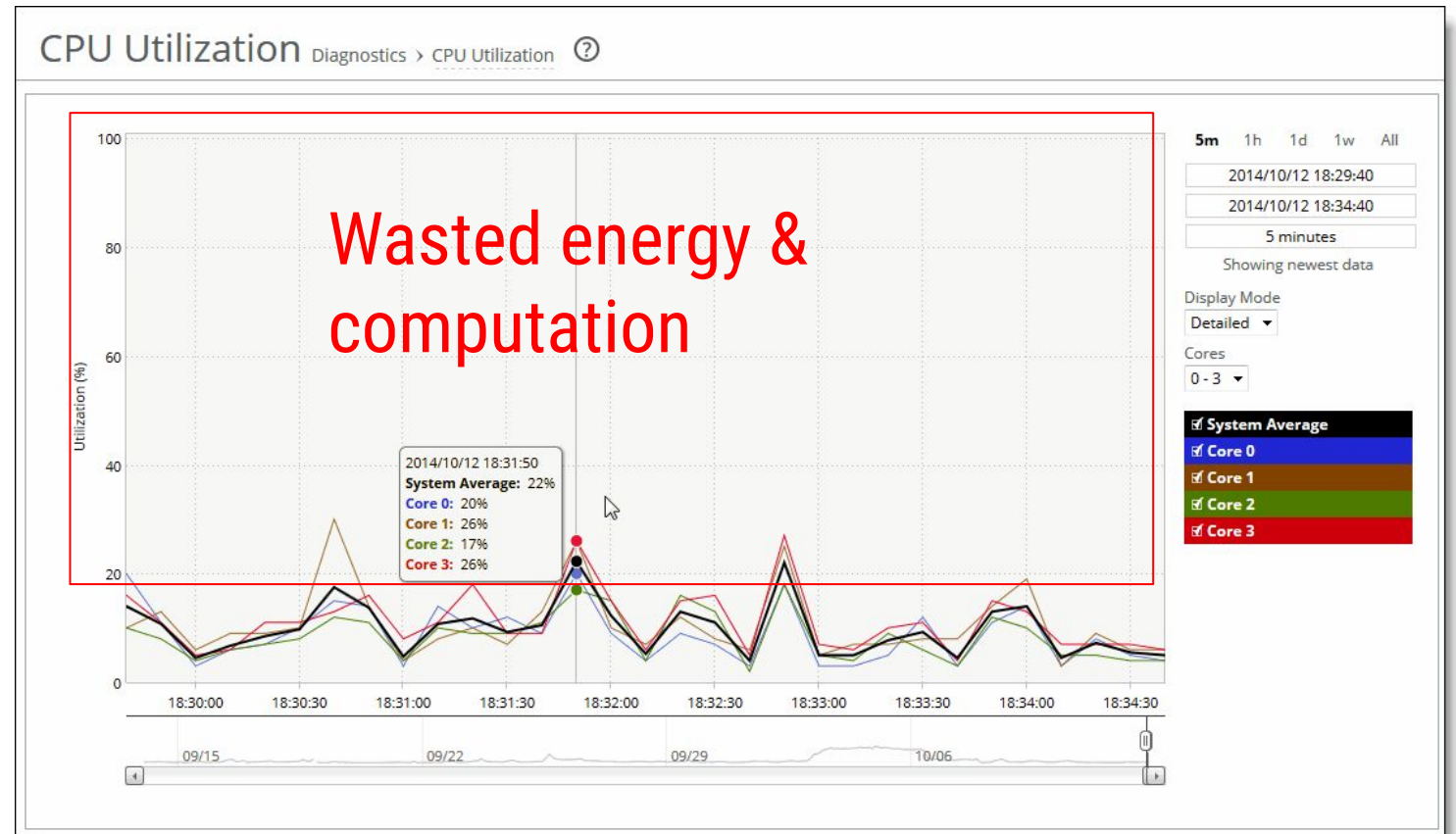
Enhancement to current workload classification structure: **CIA-S**

Sustainability Rating (S)	Resource and Footprint Dynamics Archetypes / Characteristics <small>Applicable on Product/Workload and/or Business process level</small>	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

Crazy idea: When cars are charging or idling - can their computational power be used, e.g. to pre-process log files?



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

Mercedes Benz keeps parts from all cars ever manufactured - why doesn't the IT supplier?

- *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*

Salesforce Urges Suppliers to Reduce Carbon Emissions, Adds Climate to Contracts



Thank you!

My contact details



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