SDIA SUSTAINABLE DIGITAL INFRASTRUCTURE ALLIANCE

IT INFRA 2021

The Regional Cloud for the Sustainable Digital Economy

SDIA is building the regional cloud for the transition to a sustainable digital economy

FHI IT INFRA

www.sdialliance.org – September 2021

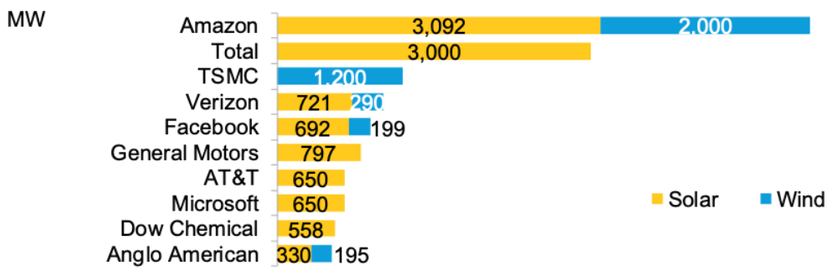
Sustainability in the digital economy and IT is happening now

Governments around the world are prioritizing sustainability.

SUSTAINABLE DEVELOPMENT GOALS

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11



Big Tech already largest buyers of green power in the world.

SAP Accelerates Climate Protection to Achieve Carbon-Neutrality by 2023

SAP

Microsoft will be carbon negative by 2030

"By 2050, we committed that we'll remove from the environment all the carbon that Microsoft has emitted directly or through electricity use since the company was founded in 1975."

Microsoft

Google Pledges 24/7 Carbon-Free Energy by 2030

"We are the first major company that's set out to do this, and we aim to be the first to achieve it," says Google CEO Sundar Pichai.

Google

The transition to a sustainable economy is happening, but we need to ensure it is open and inclusive

The transition is now:

An inclusive digital economy:

- Stable macroeconomic policies
- Public investment in education & infrastructure
- Equal opportunities available to the majority of citizens and businesses
- Free markets
- Business friendly
- Creative destruction (encouraging innovation)

Source: CB Insights, 2021

Members & partners of the Alliance from across the digital ecosystem are committed to create a sustainable digital economy

VATTENFALL
PENTA INFRA
bulk
RiT
submer
Rolls-Royce
Atos
DELL EMC
TriplePoint
BUREAU VERITAS
ITRENEW
Greenit amsterdam region
Asperitas
VERTIV
RISE
+GF+
legrand
colt
STULZ
switch datacenters
south pole
ekwb
SURF
Carbon IT
SIMS METAL MANAGEMENT
windCORES
CLOUD & HEAT
interxion A DIGITAL REALTY COMPANY
LEVITON
SADC
HK
alliander
OPEN Compute Project
blockheating
atom86
dc-ce rz-beratung
LULEÅ UNIVERSITY OF TECHNOLOGY
BUSINESS FINLAND
aliter networks
Alticom
ScaleUp Technologies
EcoDataCenter
STG
BODEN BUSINESS AGENCY
EVRYTHNG
TechData
EXAMESH
VALOSSA
Labster
emcore
Data Center Excellence
windcloud
Mobius Labs
b'
InfraBurst
helio
AISIGHT
Empa
ROCKSCAR
DCX
Tomorrow
cobra SYSTEMS
DigitalInfra Network
Resourcefully
HeatVentors The cool way to store heat!
AALBORG UNIVERSITET
BABLE
SDIA

Our Roadmap defines a set of metrics that measures progress toward sustainability across the entire digital ecosystem

Underlying infrastructure of a digital business

Enabling Infrastructure → **Digital Infrastructure** → **The Internet & Enabling Digital Technologies** → **Digital Economy (businesses & applications)**

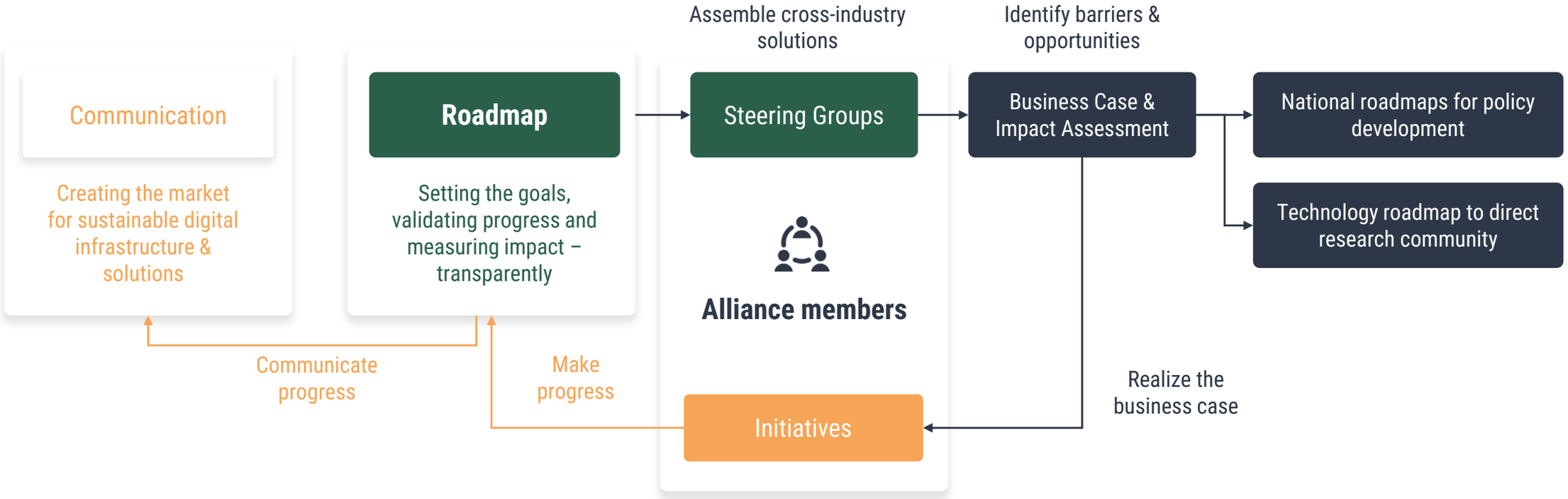
Emissions	Energy Consumption	Electronic Waste	Resource Consumption	Pollution	Cost of Digital Power*
as measured by CO2-eq	*as measured by kWh*	*as measured by WEE*	*as measured by ADP*	*as measured by kilogram/pollutant*	*as measured by the cost of digital power**

SDIA **Transparent Reporting via the Alliance**

SDIA

** Digital power is a term defined by the Alliance as the aggregate of computational capacity, storage, and network.*

Our strategy: Advancing the Roadmap through collaboration & finding the business case in sustainability



In each Activity, members collaborate to design sustainable solutions, for which the Alliance finds the business case

Technical concept business case for the integration of digital infrastructure in wind turbines

VATTENFALL windCORES

VATTENFALL

A business case for heat recovery

Disassembled the public cloud business model

helio ScaleUp Technologies

Report: Collaboration opportunities between grid, power generation, and digital infrastructure

A bidding marketplace for data centers & local utilities for heat and power

Catalyst

bulk blockheating

Reuse of excess heat

A business case & architecture for hydrogen-powered data centers

Rolls-Royce

ecoqube

More efficiency for legacy data centers

Combined Heat & Compute: An integration architecture for digital infrastructure within cities

CLOUD & HEAT VATTENFALL

Showcasing the business case of refurbished & recycled hardware

CEDaCI

A carbon footprint for software – creating transparency across the stack

south pole

What is the problem?

In Europe we are dependent on three large cloud provides

Their business model is completely vertically integrated, owning the hardware as well as the compute

This results in an imbalance of power between cloud providers and the end users of their services.

Non-compliance with GDPR directive and privacy concerns

Vendor lock in through free credits and closed ecosystem

Sustainability not key to the architecture of the solution

EU Cloud

Solution: How can we build better?

Starting point

Use our lag to our advantage by avoiding architecture mistakes:

- Open Source
- Transparent
- no lock in
- No EU-equivalent of AWS/Azure/etc,

Collaborate

Local partners in the supply chain of the digital infrastructure

Goal

Creating an competitive environment through regulation in which sustainable digital products are preferred choice by establishing the marketplace for Digital Power and therefore deliver the unbundling of digital infrastructure and products.

How do we get there?

Transparency by publishing the blueprint and relevant metrics for stakeholders

Cross value chain collaboration; the SDIA brings the actors in the digital infrastructure together to unlock the business case in sustainability

Sustainability through second-life hardware, local sourcing and fully renewable energy powered

Building the first PoC with local actors

1 End User Cluster

managed Kubernetes clusters run on local data centers on refurbished hardware, and provide superior customizability without sacrificing performance or reliability

2 k8s-as-a-service

Service layer for customers and resellers to manage kubernetes clusters, including payment. For step 1 (PoC) this will be pragmatic, for step 2 (commercial rollout) this will be ready to scale.

3 Compute infrastructure and services

Refurbished hardware, in datacenters. For the PoC SDIA brings in 3 full racks from ITRenew (Facebook hardware). For commercial rollout we need this funded or include an ITRenew in the consortium.

4 Datacenters

Local datacenters with green energy. First step is 1 datacenter, but with the racks as independent availability zones. For commercial rollout we need distinct (isolated) datacenters with dedicated network.

Product: Sustainable Kubernetes as a service

- Build with refurbished hardware
- Run with local partners
- Powered by Renewable Power
- Developed on Kubernetes
- Costing at ⅔ of AWS

Board

Management

1. End User Cluster **(Local municipality)**
2. k8s-as-a-service **(Local)**
3. Compute infrastructure and services **(Local)**
4. Datacenters **(Local)**

- Build for profit commercial entity to operate and manage the regional cloud.
- Local municipality finances credits for Startups to use allowing regional cloud to kickoff.
- Fulltime management and professional oversight key.
- Local municipality oversees through board membership
- Royalties of blueprint-usage flow back to non-profit SDIA