



clean-IT: Towards Sustainable Digital Technologies

Welcome to the clean-IT Forum

Prof. Dr. Christoph Meinel
Dean, Institute Director, and CEO
Hasso Plattner Institute, Germany

The Digital Transformation is Present...



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Prof. Dr. Chr. Meinel
Dean & CEO | HPI

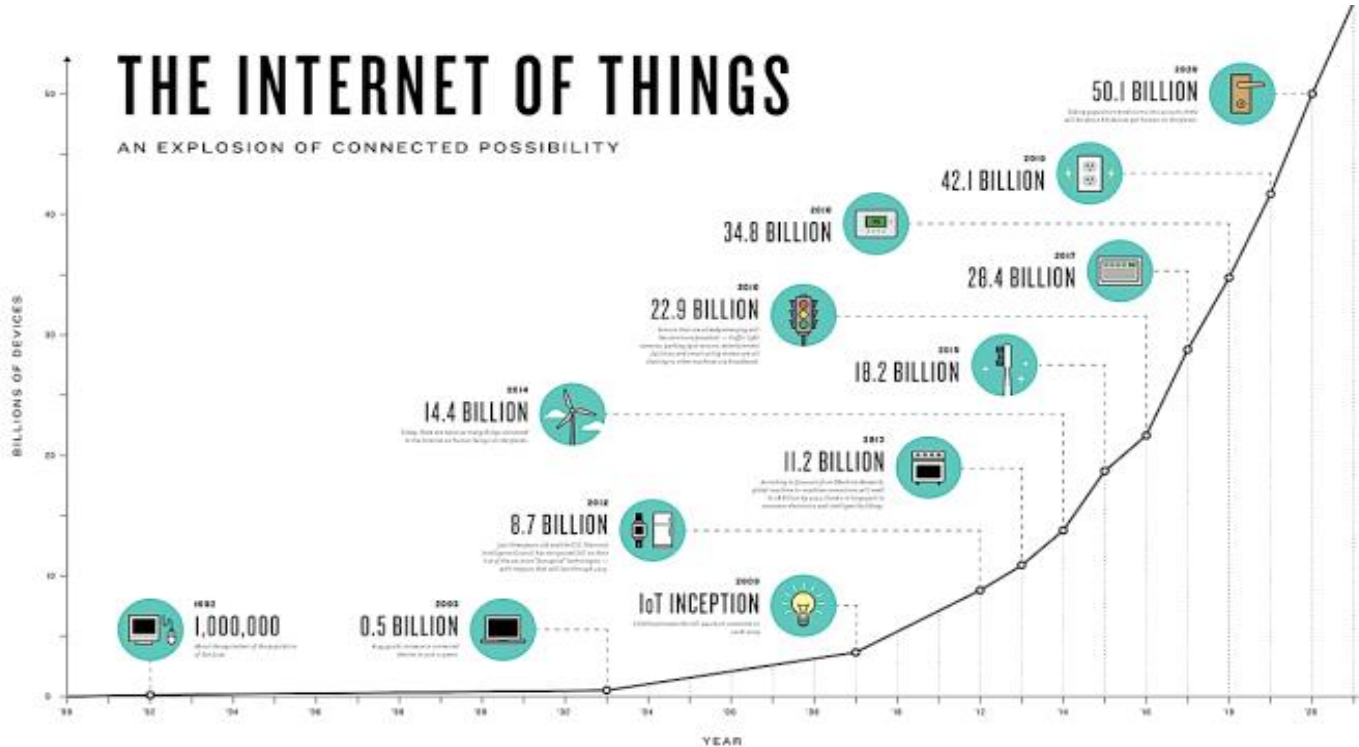
People and Machines are Globally Interconnected



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The Internet of Things – Exponential Growth of Smart Devices



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Digital Transformation Enables Us to Tackle Global Societal Challenges as Outlined by the SDGs

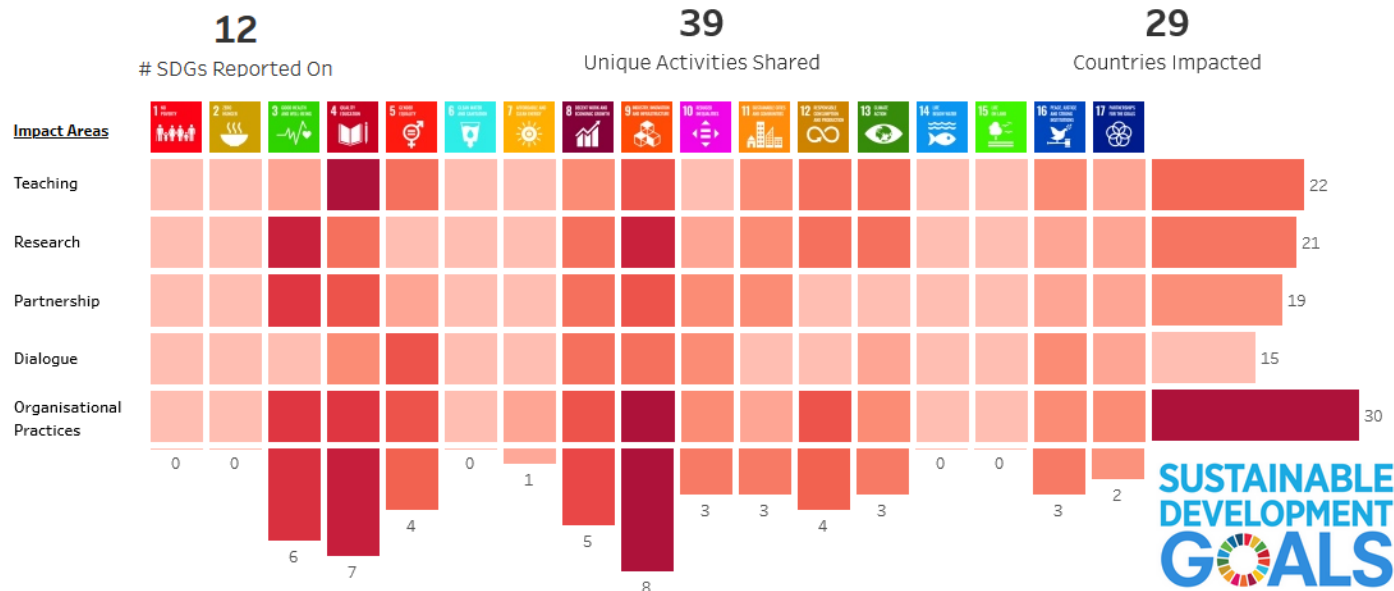


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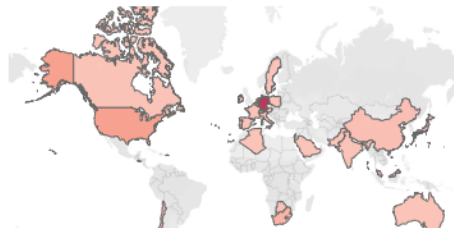
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Engagement for UN Sustainable Development

The **HPI SDG-Dashboard** (www.hpi.de/sdgs)



THE GLOBAL GOALS
For Sustainable Development



- 1 Dialogue : Academy Every year the HPI offers free IT-related offers for schoolchildren ..
- 2 Dialogue : Although the studies at the HPI are entirely privately financed, it is free of ..
- 3 Dialogue : HPI startups Chevalier and Hopkins are legal technology companies with a ..
- 4 Dialogue : Melton Foundation : Together with the Melton Foundation, the HPI D-Scho..
- 5 Dialogue : The energy consumption of the latest digital technologies such as cloud co..
- 6 Dialogue : The HPI "Female Quotient" Lounge was set up to involve the HPI students i..

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Digital Technologies – Problem or Solution?



Digital technologies contribute **significantly** to the global carbon emissions!

Digital technologies will also **decrease** carbon emissions in other sectors by making use of data analysis and AI

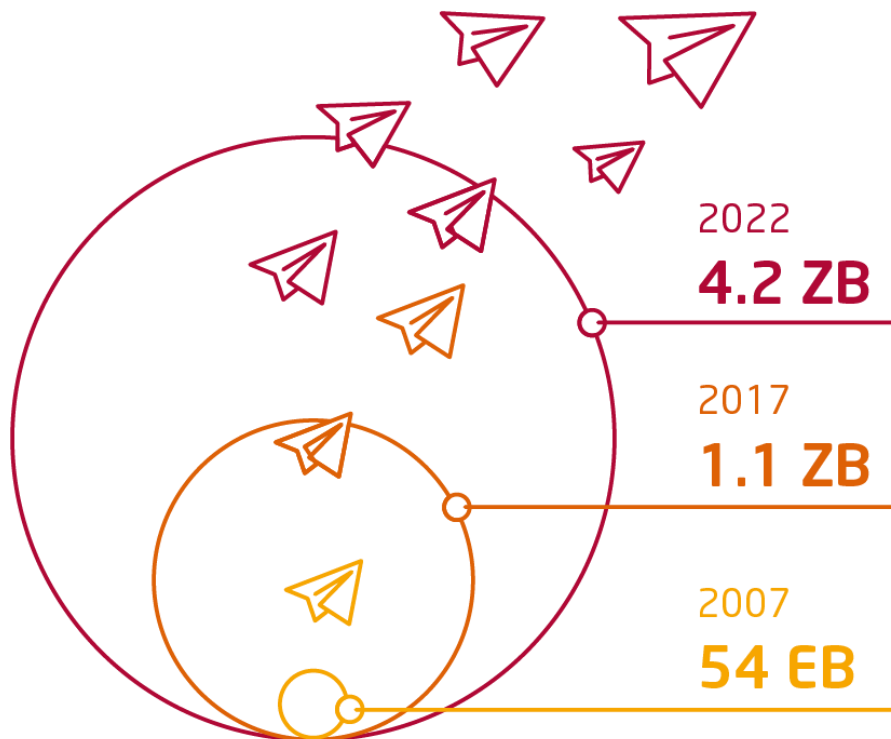
But carbon emissions of IT need to be **reduced!**

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Environmental Impact of Digitalization

Global Internet Traffic on the Rise



Exponential Growth of Internet Traffic Globally

1 Exabyte = 1 billion gigabytes

1 Zettabyte = 1 trillion gigabytes

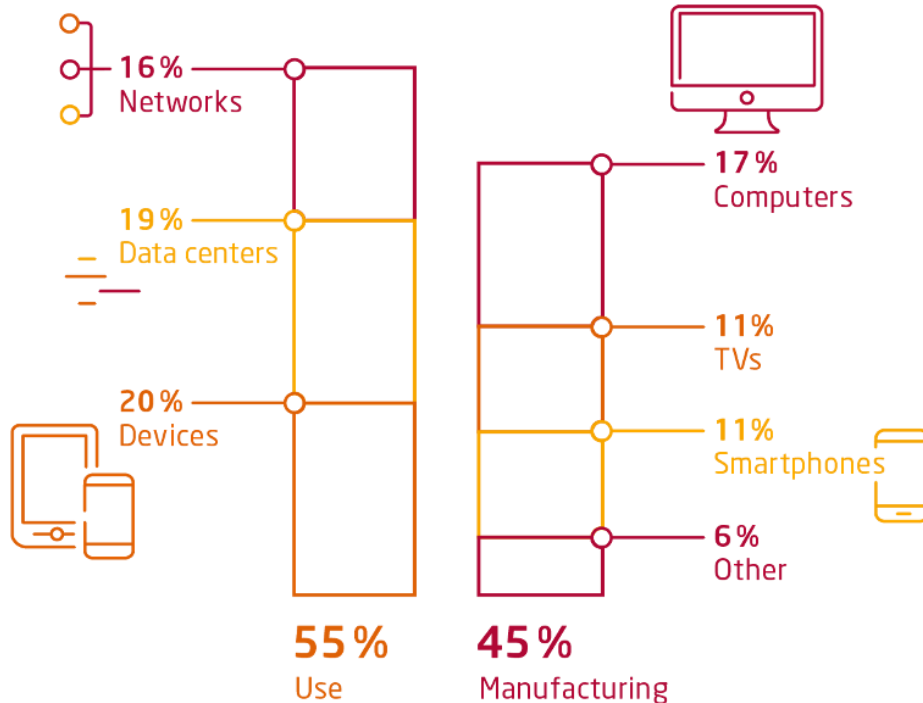
Source: [IEA – International Energy Agency 2017](#)

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Environmental Impact of Digitalization

Use > Manufacturing



Using digital systems consumes already today more energy than producing digital devices with a rapidly growing share in the future

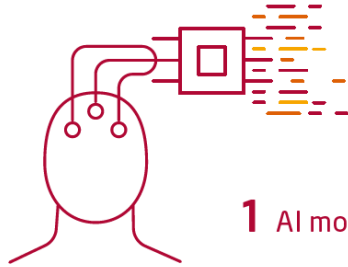
Source: [The Shift Project 2017](#)

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Environmental Impact of Digitalization

Energy Consumption of Training AI



1 AI model training

Training a specific single AI model has enormous energy requirements

Source: [University of Massachusetts Amherst: Stubell et al. 2019](#)



= 300
round-trip flights



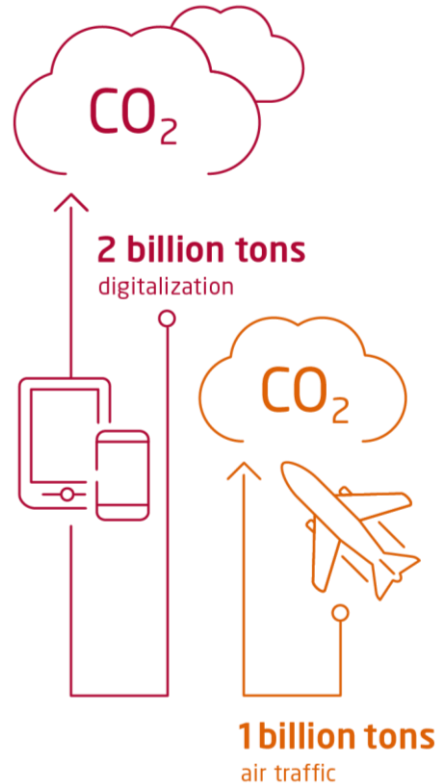
= 5 car life cycles

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Environmental Impact of Digitalization

Global Carbon Footprint of IT



Before the Corona Crisis:

Total global carbon emissions of digital technologies are **twice** as high as direct emissions of global air traffic!

Source: [ATAG – Carbon Footprint of Aviation 2019](#)

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HPI Initiated the “clean-IT” Initiative at the World Economic Forum 2020 in Davos



HPI signs UN Global Compact

clean-IT initiative launched at WEF 2020

Research of energy-efficient IT systems, e.g. AI algorithms

Support of SDG's – the HPI SDG-Dashboard: www.hpi.de/en/sdgs



THE GLOBAL GOALS
For Sustainable Development

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HPI clean-IT Initiative: Cooperating for a Sustainable Future

Partners and Supporters



Cooperation of all societal actors required to shape the future of sustainable digital transformation:

- International Organizations
- Politics
- Industry
- Academia
- NGOs
- ...



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HPI clean-IT Forum –

Virtual Platform to Exchange clean-IT projects

How to save energy using digital devices in everyday life

clean-IT solutions of HPI

- energy-efficient algorithms and databases
- energy-aware computing – next generation data centers
- energy-efficient AI systems
- ...

clean-IT solutions of international partners

- SAP SE, IEEE Standards Association, eco Verband der Internetwirtschaft, ...



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HPI clean-IT Forum on openHPI.de: Share Your Practical Ideas, Conceptions & Solutions



Upcoming courses



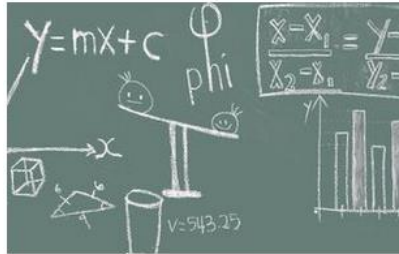
Digitization and Climate



clean AI



**Energy-efficient
Data Centers**



**Energy-efficient
Algorithms and Databases**

HPI will collect clean-IT solutions from academic and industry partners for future publications on <https://open.hpi.de/clean-it-forum>

**You are invited to contribute
by recording your clean-IT
solution!**

Contact: maxim.asjoma@hpi.de



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HPI clean-IT Initiative. Welcome to the clean-IT Forum

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