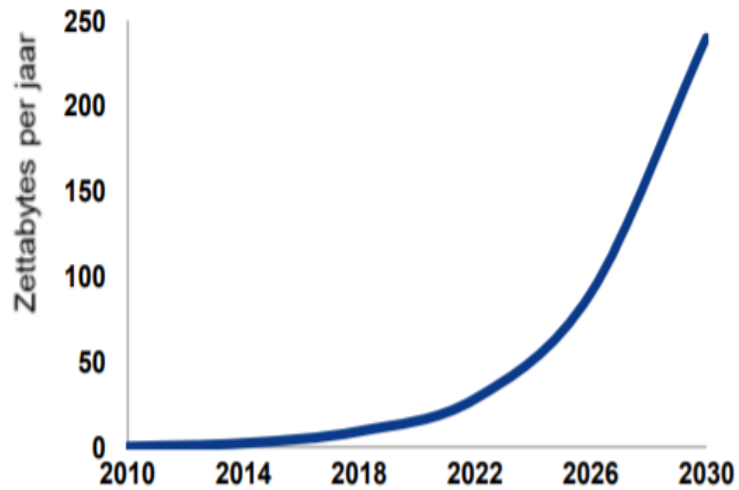


LEAP

“Joining forces to take a leap forward”
NEA, Frank Hartkamp

November 25, 2021 CA EED Workshop on Datacenters and Energy Efficiency Brussels

The future is digital



Bron: BCI o.b.v ING Economics en Cisco (2019)

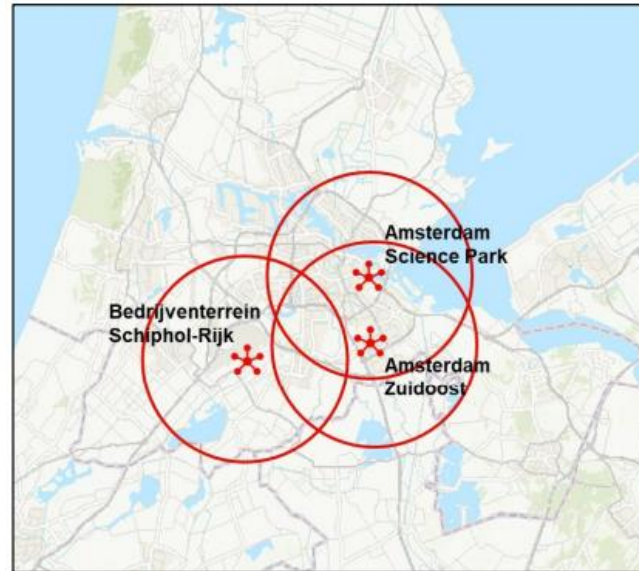
Sustainability is part of everyones agenda



The Metropolitan Region of Amsterdam is one of the key datacentre hubs



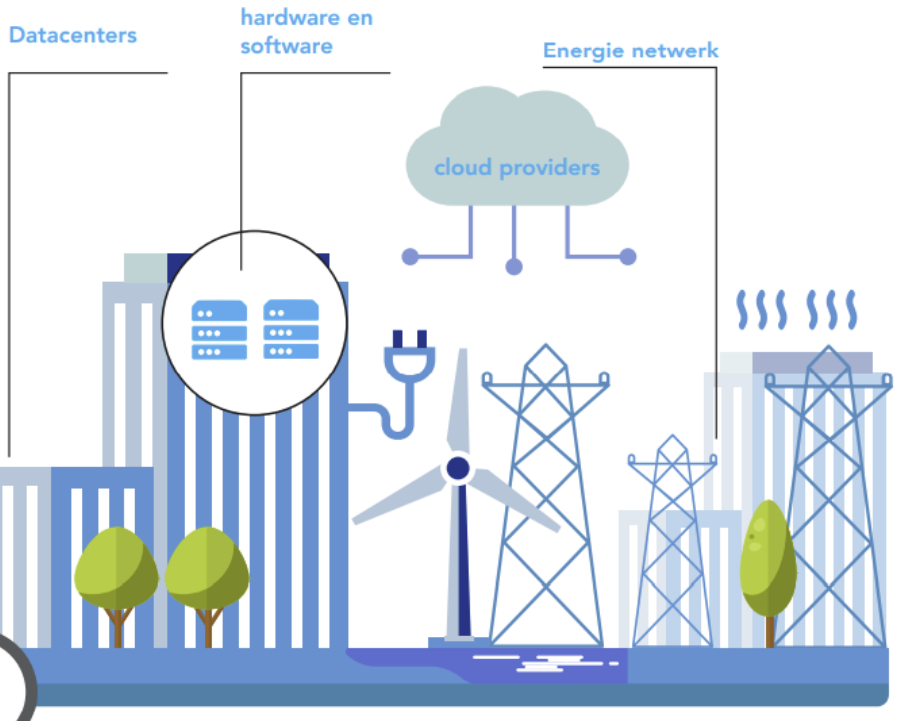
Figuur 8: Hyperconnectiviteit in Nederland



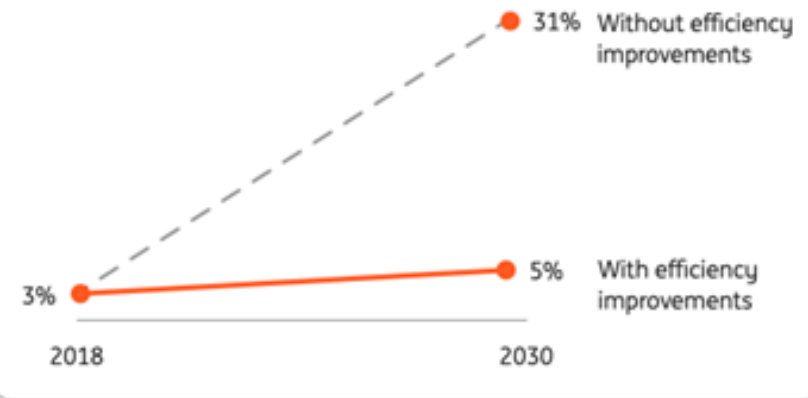
Bron: BCI, 2019



Digital is physical...



Around 5% of global power needed for data flows
Electricity use as % of total electricity consumption worldwide



Source: ING Economics Department based on BNEF

... and impacts use of energy, space, water- and material



Challenge

How do we accelerate the transition to a **sustainable digital infrastructure** for future generation of datacenters in which we integrate innovative (technological) developments at the heart of the **energy system** and provide a solution for **spatial planning** with **circular use of materials**?



LEAP

- Based on the need to develop new public-private partnerships in the data center sector to envision and develop sustainable digital infrastructures for the future
- LEAP intends to built a platform for collaboration, knowledge sharing and communication
- LEAP aims to make a positive contribution to a green and smart society where growth, environment, people and society go hand in hand; in an energy efficient way while preserving critical materials.



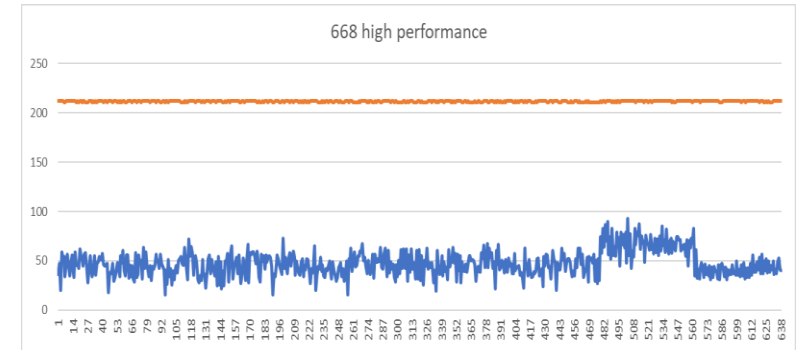
**“Through collaboration,
we are able to work on
the future from
different perspectives
and accelerate new
developments”**

LEAP coalition = a platform for collaboration



First project: LEAP Eco-modus

- Pilots: low-power mode 10 percent less energy consumption
 - No performance loss observed
- Knowledge and behavioral change are key to better use of eco-mode and virtualization
 - Best practices
 - Happy Flow manual
 - Masterclasses
- Currently: embedding in policy and regulations in collaboration with the data center sector



'Ook voor een k speler zoals wij interessant'
Slechts drie bescheiden servers heeft de Noordzeekanaalgebied (CD NZKG) staa het nou helemaal uitmaken? Maar we b procent energie door simpelweg de por Als je dat ontspookt naar alle andere i het tech interessant.'

'De eyeopener van LEAP? Dat we al he efficiënt zijn'
Power management en virtualisatie negatieve impact op performance e beschikbaarheid? LEAP-deelnemer Rabobank doet op dat gebied al het maxima... Lees verder

'De eco-mode be nog zeven proce energie extra'
De coronacrisis heeft de transitio digitale economie versneld: we i thuis, bestellen onze boodschap en netflixen meer. Dat zorg... Le

'Powermanagement op dataservers levert ons 10 tot 13 procent energiebesparing op'
De LEAP-pilot van Royal Schiphol Group leverde met een verblijvend kleine inspanning een energiebesparing van 10 tot 13 procent op. Het is vooral e... Lees verder



Handleiding Happy Flow 1.0

Energie-efficiënte inrichting van datacenters door powermanagement en virtualisatie

Lower Energy Acceleration Program (LEAP) v.o.w. RVO
15 december 2019



Trends & Scenario Landscape

LEAP TECHNOLOGY TRENDS & SCENARIOS
Building future-proof and sustainable digital infrastructures
 JUNE 2021

The Lower Energy Acceleration Program (LEAP) aims to accelerate the transition to a sustainable digital infrastructure. This document provides an overview of existing and new solutions and scenarios to speed up the transition to energy efficient and effective digital infrastructures. The solutions range from the environmental to the technical to the social. Four scenarios, which have been carved out by combining solutions, demonstrate a shift towards a sustainable future. The aim is to inspire and to set direction.

Digital infrastructures have to deal with massive amounts of data. High bandwidth data transfers, affordable data plans, cloud migrations and the increasing popularity of streaming services mean data consumption is growing at unprecedented rates. While over the past few decades the energy efficiency of computing hardware has drastically improved and software performance and usability have become far more effective, they still cannot keep up with demand. The growing energy needs of ICT is especially important in the Netherlands—a prominent European "data hub" distributed over a relatively small geographic area.

The transition to a sustainable digital infrastructure need to speed up. Using renewable energy resources is only part of the solution, since its production still has limitations. The innovative solutions available need to be leveraged, new ones stimulated and barriers hindering adoption removed. The digital system will need to be more integrated within our energy infrastructure and environment.

Table of contents

- Horizon 1: Solutions for today
- Horizon 2: Solutions for the near future
- Horizon 3: Solutions further away
- Challenges
- Four scenarios for an energy-efficient infrastructure
- What is needed to accelerate?
- LEAP and the technology trends and scenarios

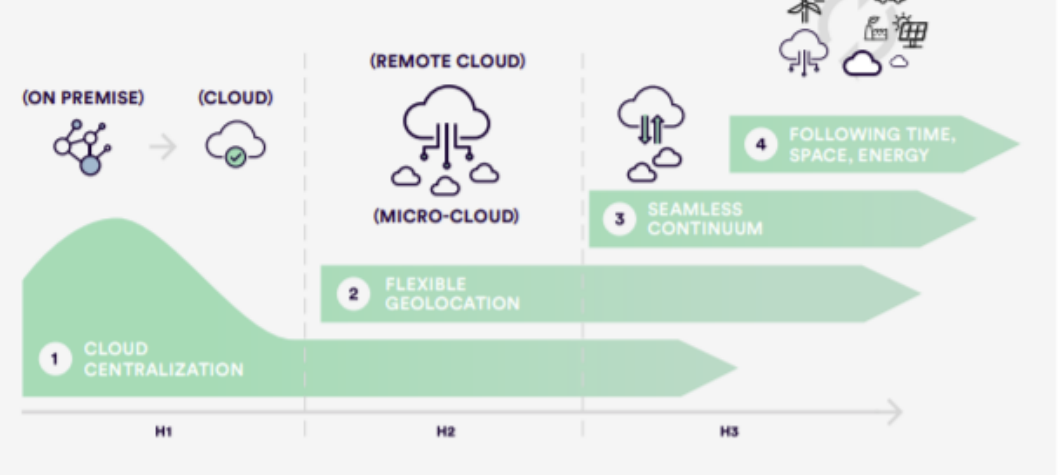
VU Amsterdam, PhotonDelta

<https://amsterdameconomicboard.com/en/news/leap-technology-landscape-trends-and-scenarios>

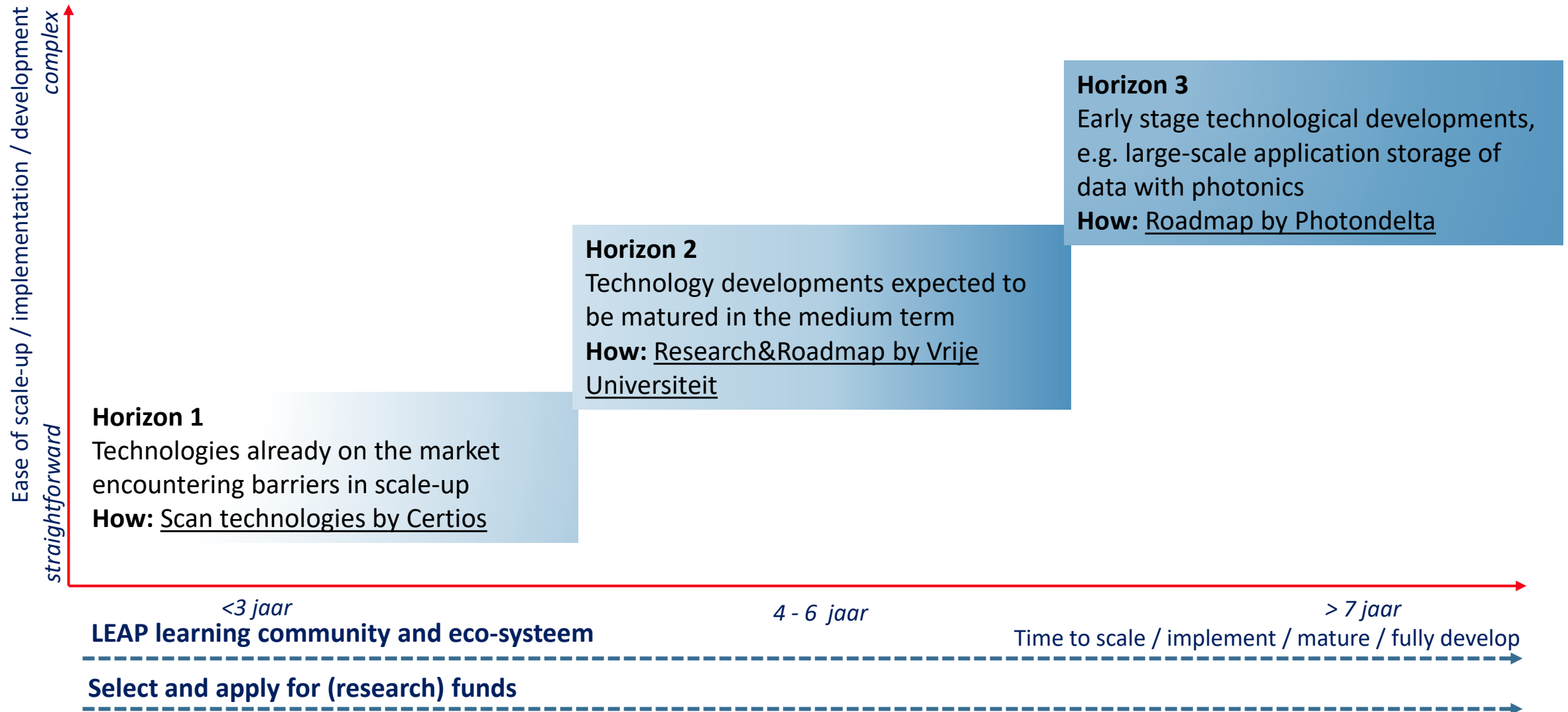
Solutions across time horizons



Overview of Sustainable Digital Infrastructure Scenarios



Three horizon's in the Trends & Scenario Landscape



Next steps: developing collaborations across 3 themes

Horizon 1

Horizon 2

Horizon 3



Technology - becoming more energy-efficient with four soft- and hardware related topics



Distributed - developing a more distributed, flexible, energy aware, smart system with four distinct topics



Circular - ICT infrastructure with energy and circularity integrally connected



Collaboration Platform - a place for inspiration, awareness and knowledge sharing

Prioritized topics on a collaboration platform

- Energy efficient software
- Efficient cooling techniques
- Accelerate adoption of photonics available today

- New business platform for distributed cloud services

- Circular Resource Planning for IT (RePlanIT)

- Learning community
- Network and eco-system
- Communication

Summary

- Increasing digitization ensures strong growth of the data centre sector and electricity demand
- Ever-expanding data centres are increasingly difficult to integrate into the energy and spatial system
- More intensive public-private partnership are needed
- LEAP is working on an eco-system with collaborations across 3 themes
- Together we can make the Netherlands and Europe the most innovative sustainable digital hub in the world

READ MORE?

General info

<https://amsterdameconomicboard.com/en/initiative/leap-lower-energy-acceleration-program>

LEAP Technology Landscape

<https://amsterdameconomicboard.com/en/news/leap-technology-landscape-trends-and-scenarios>

LEAP Infographic

<https://amsterdameconomicboard.com/en/news/innovations-needed-for-transition-to-sustainable-digital-infrastructure>

Contact: frank.hartkamp@rvo.nl



THE
fossiel

THE
schoon