The most wanted asset for IT professional in the future

Helsingin yliopisto – 12.12.2023

Ville Nordberg | Trail Openers Oy

Ville

Trailrunner, dad, board member, founder, alumn

- Software engineering course in 2006

- Graduated 2008

- ~ 1500 km training per year

- 2nd time as an entrepreneur

- Guided (and led) planning and developing of a patient and customer information system from scratch (React, Node, GCP, GraphQL)

DIGITODAY

Erotuomarit tarkkailuun opiskelijoiden ohjelmalla

Ryhmä Helsingin yliopiston tietojenkäsittelytieteen laitoksen opiskelijoita on osana opintojaan rakentanut tietokoneohjelmiston jalkapalloerotuomareiden tarkkailupalautteiden laatimiseen sekä niiden käsittelyyn. Tarkkailijoiden keräämät tiedot kootaan suoraan tietokantaan, ja tavoitteena on ollut muun muassa päästä eroon paperityöskentelystä, yliopisto kertoo.

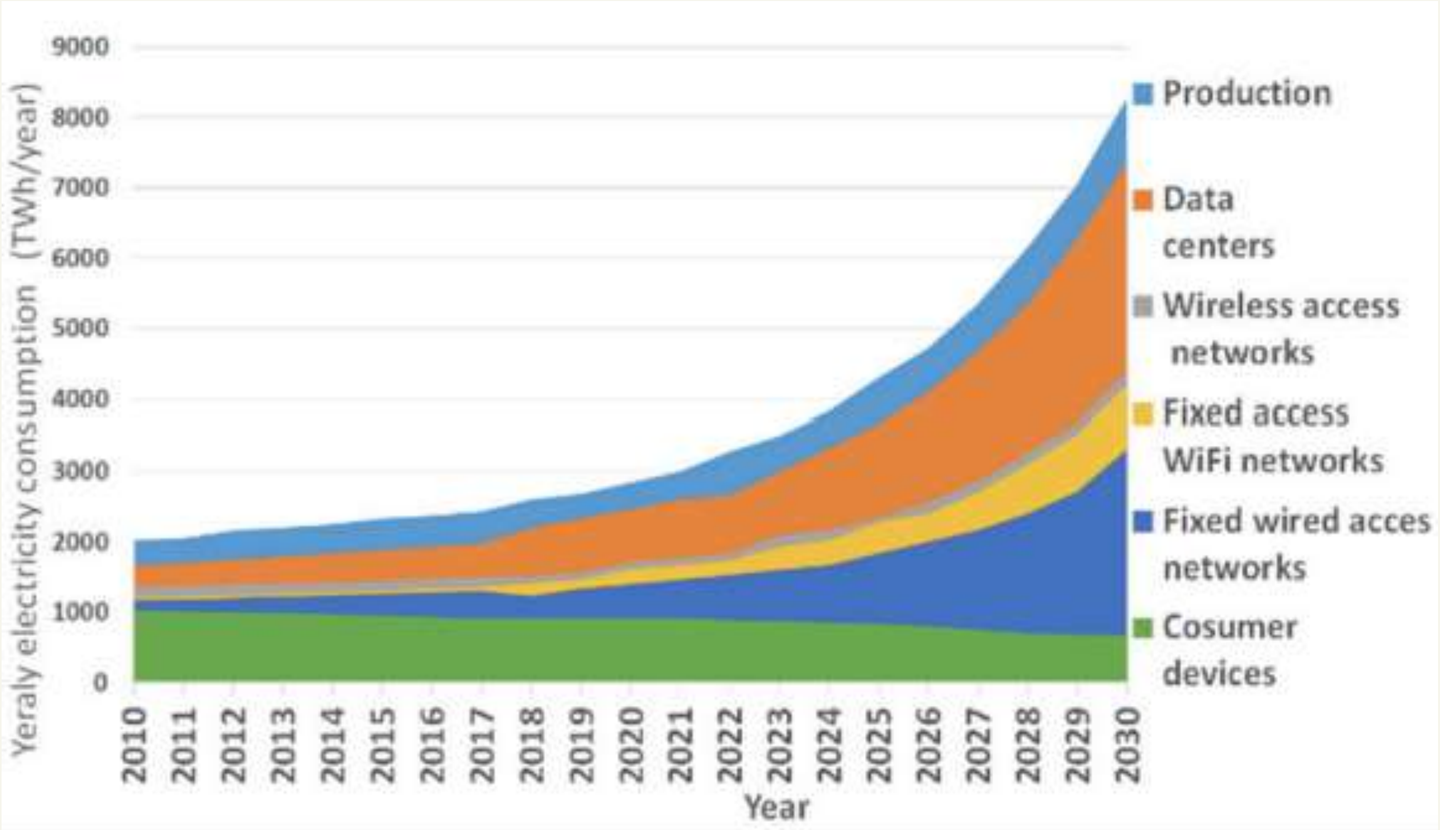
How many of you are aware of what sustainability means in digital services?

Between 2015 and 2021, internet visitors increased **60 %**, whilst web traffic increased **440 %**

If the internet were a country it would be one of the top five polluter

Invisible e-waste of 9 billion kg’s annually. Equals half a million dump trucks and lined up bumper to bumper those trucks would span from Nairobi to Rome.

(Invisible e-waste: small consumer items including vapes, e-toys etc)



Source: J. Lorincz et al., Greener, Energy-Efficient and Sustainable Networks: State-Of-The-Art and New Trends, 2019

Acronyms

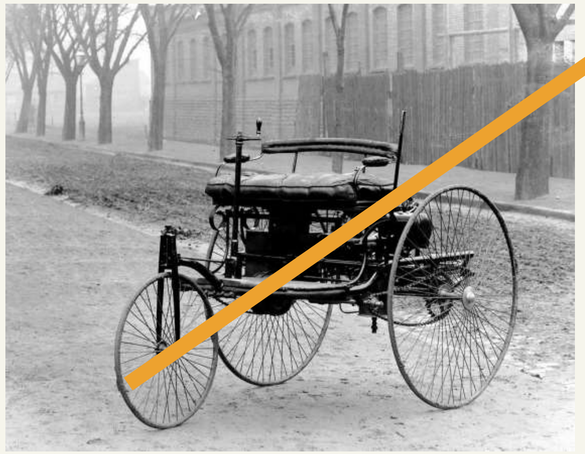
- ESRS (European Sustainability Reporting Standards) → CSRD (Corporate Sustainability Reporting Directive)
  - CSRD → legal framework for sustainability reporting
  - ESRS → Framework and roadmap for compliance (and reporting issues)
- GCD (Green Claims Directive)
  - Guidelines how companies should market their environmental impacts and performance
- UN SDG’s (United Nations Sustainable Development Goals)
  - 17 interlinked objectives designed to serve as a shared blueprint for better today and tomorrow
- GR491 - HANDBOOK OF SUSTAINABLE DESIGN OF DIGITAL SERVICES

Development cycle

Usage

Speed

Sustainability



1 cylinder

0,75 hp

Presented in 1888

16 cylinder

1001 hp

574 CO_2 g/km

(range: 400 km)

~~0 cylinder~~

825 hp

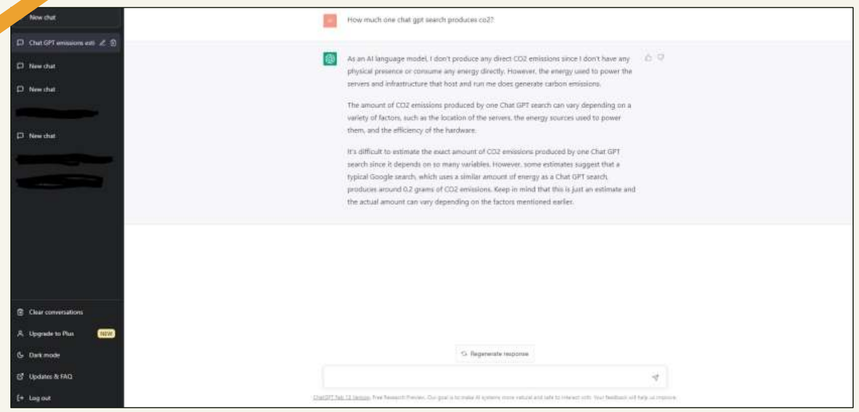
0 CO_2 g/km

Range: 570 km

Development cycle

Usage

Speed



1st digital computer ever

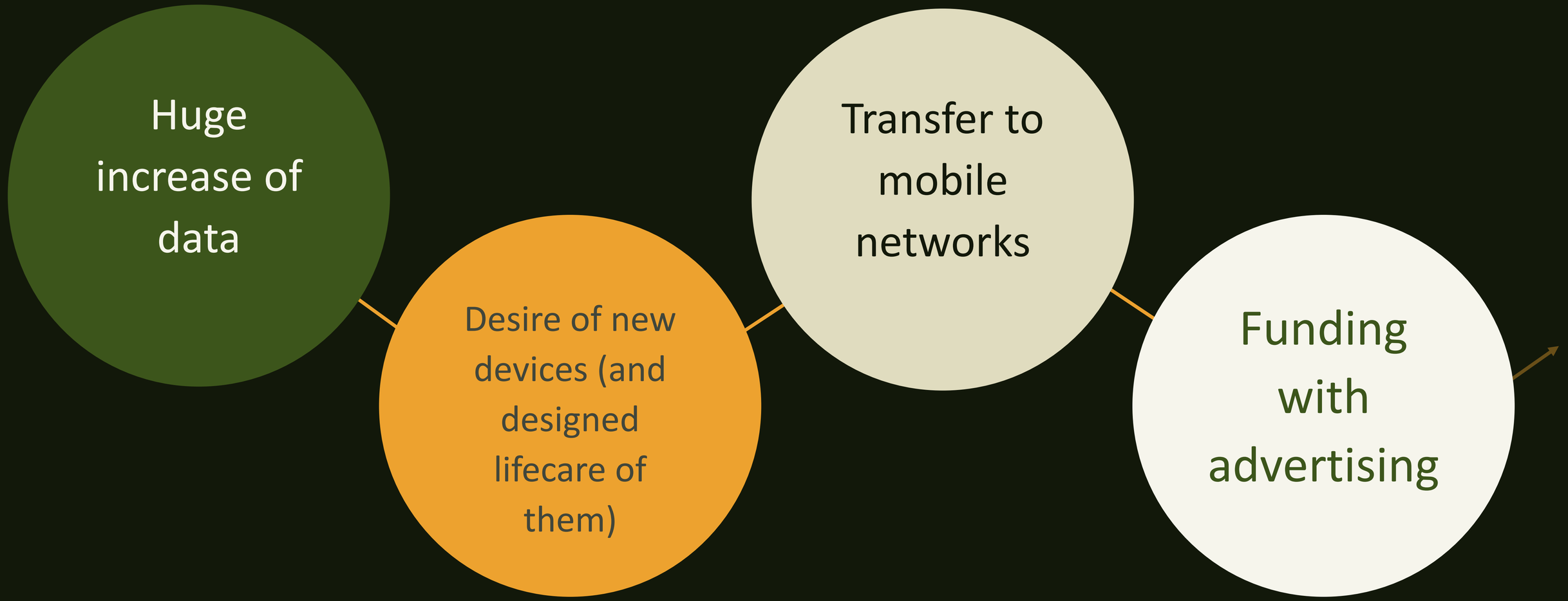
1st Apple computer ever

ChatGPT

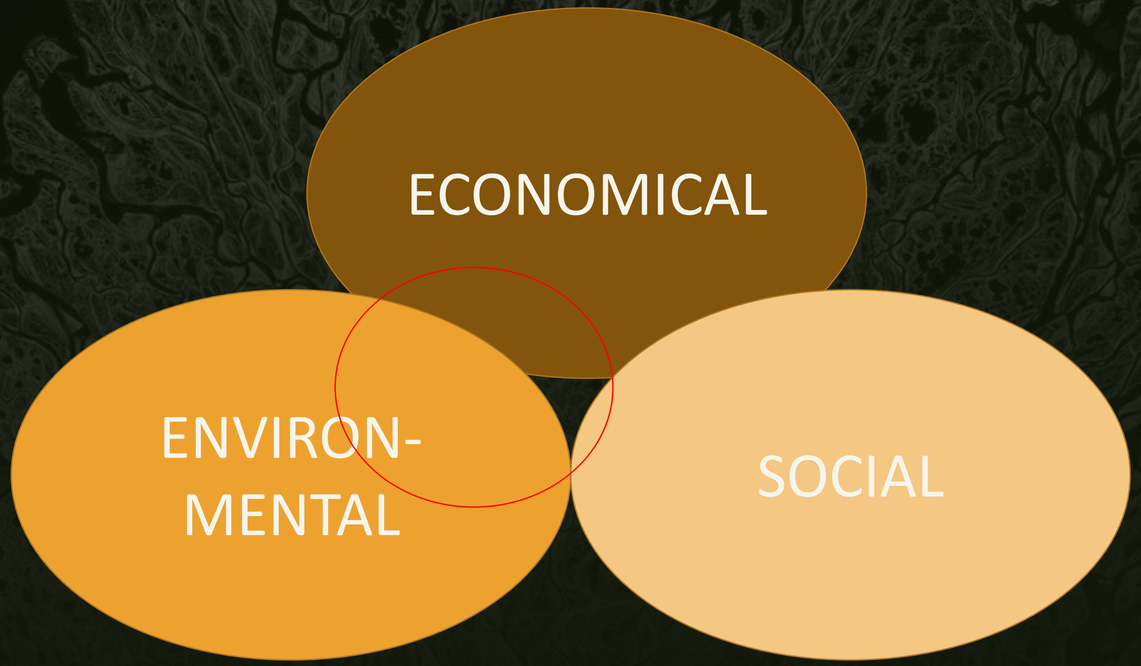
ICT Industry produces already more CO^2 than aviation

– By 2030 it will be at least 2-3x more if we don’t change the way we design and create digital services.

Trends are changing numbers to wrong direction



Sustainability in digital services



Digital sustainability is the process of applying social, economic and environmental stewardship principles to digital products, services and data delivered via the internet.

Energy consumption in digital services (roughly, it varies)

01

Servers

30 %

Cloud infra produces up to 98 % less co_2 than traditional servers

02

Data Transfer

30 %

Mobile data transfer is x00 % more ineffective than optical fibre

03

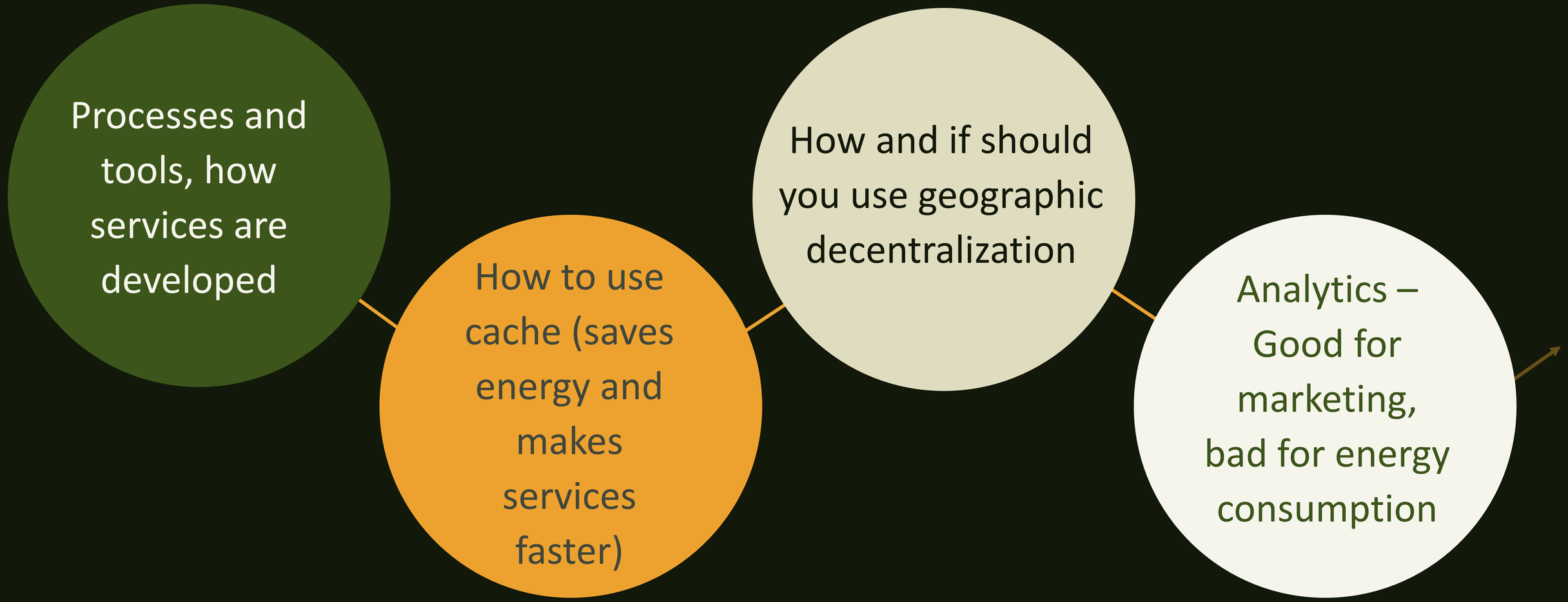
End devices

40 %

Mobile devices are very well optimized – e.g. Big screens are not.

Measurement is hard but it’s progressing. Start with basics, learn and improve !

What should be considered (**also** from energy consumption aspect)



80 %

Owned by its employees

34,5 M€

Revenue 2022

170+

Experienced owners in the ecosystem

6

Ecosystem companies

Services

Improving digital sustainability

By optimizing resources (e.g. cloud, development environments, amount of data transfer…) intelligently organizations can save planet and money

Fullstack development

Quality and minimization of used resources (e.g. energy consumption) by utilizing the most comprehensive developing methods and templates. We are also excellent in fullstack software development projects.

Co2 calculation & Compensation portfolio

Partner and counterplayer for sustainability director – How to include digital services into sustainability strategy

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- Cleaner than 58 % of all web pages
- 0,39g / site load

- Rough estimation using only transferred data as a measurement
- Easy to optimize when decision for lower emissions has been made
- Result looks like that there would be more to optimize, but it’s a good result compared to other universities.

- Few other relevant results:
- Aalto, cleaner than 61 %
- University of Tampere, dirtier than 69 %
- LUT, dirtier than 96 %

- (Trail Openers, cleaner than 93 %, A+)

What can YOU do ?

As a buyer:

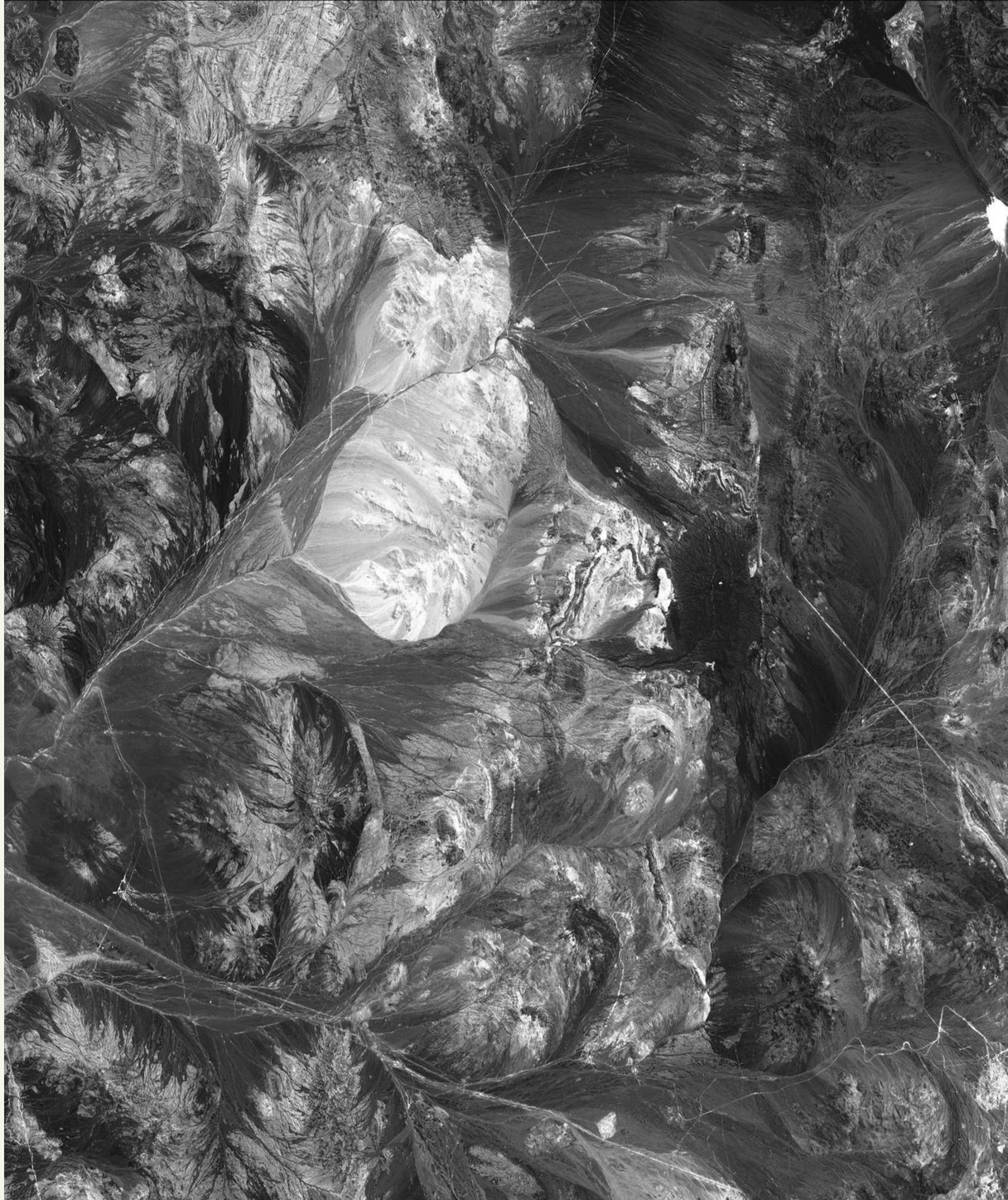
- Ask consumption and sustainability reports and/or how will these aspects affect to the service your provider provides?
- Choose a green host

As a developer, search for better and more optimized solutions to:

- Save energy consumption (e.g. evaluate the need of different components and libraries)
- Minimize transferred data (e.g. picture optimizing, loading during scrolling…)
- Analyze the usage of libraries, are they really needed
- Don’t optimize only one part of the service. It can lead to disaster in other parts (slide 12)

As a decision maker:

- Longer lifecycle for corporate laptops and mobile phones
- Require more transparent reporting of sustainability (or energy consumption) from digital services and maybe add this to BSC’s ?
- Ask how sustainability is taken care of in architecture design



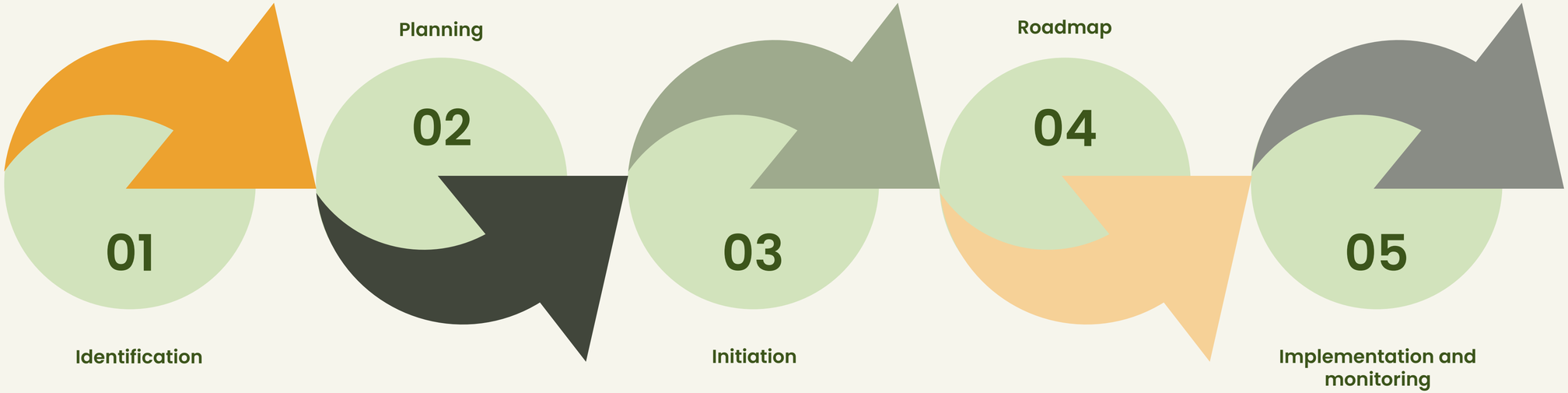
Case G - Summary

- G is a smallish company from USA and it does marketing in co-operation with charity organisations (part of the marketing income goes directly to charity and this is their business model)
- G has been Trail Openers customer since TO was founded. We have been developing customers architecture and front-end technology (and services) after they changed us as a supplier.
- As G joined to sustainable marketing consortium they’ve wanted to invest more to find out impacts of their actions, also within digital environment.
- Trail Openers Oy has helped customer to find out their own digital co2 footprint and made a road map to a digital service with less co2 emissions. This has also included optimization consultation and first numbers have been huge: we’ve managed to diminish 90% of co2 emissions in part of the service.

Case G

Trail Openers designed a model to find out starting point. This fitted perfectly to customers environment and need.

After the workshop report with action plan and roadmap was created.



Identification of the need to find out the situation of digital environment regarding sustainability.

Cloud environment surveillance was started, customers digital services were reviewed with TO's own tool. We also used web analytics as basis for calculation and kept a workshop with customer to find and confirm items founded.

Action plans implementation and monitoring has been started with prioritizing items, light actions and extra planning.

So what is the most wanted asset in IT professional within few years?

Knowledge of sustainable ways of designing and developing IT systems

Prediction from Google: By 2025, 3 out of 4 developers will lead with sustainability as their primary development principle

Trail Openers

Thank you.

Ville Nordberg

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Further reading

- Janne Kalliola Green Code: https://www.exove.com/green-code/
- Tom Greenwood: Sustainable web design
- MitViDi research program (Green metrics for public digitalization acquisitions, why not applicable also for private sector) https://tieke.fi/en/projects/green-metrics-for-public-digitalization-acquisitions-mitvidi/
- Digiosallisuuden käsite ja keskeiset osa-alueet (sorry only in finnish): https://julkaisut.valtioneuvosto.fi/handle/10024/163036
- SoftAWERE program: https://knowledge.sdialliance.org/softawere
- GR491: **HANDBOOK OF SUSTAINABLE DESIGN OF DIGITAL SERVICES**