Campaigning for environmental impact awareness in the Dutch Digital Heritage Network

26th of March 2024, Tamara van Zwol

dutch digital heritage network

Greener IT: from storing to streaming data

dutch digital heritage network

THE CO_2 EMISSIONS OF STORAGE AND USE OF DIGITAL OBJECTS AND DATA

CASE STUDY PLATFORM DELPHER

1. Servers

- CO_2-impact digital heritage is mainly caused by the **power consumption of servers**
- In recent years, the effiency of data centres has **improved significantly**
- Especially the **storage for fast data availability** requires a lot of energy
- Servers still use ¾ of their power when they are **not processing data**

2. Use

- Searching and viewing the collection causes only about **30 grams of CO_2 per GB** of data transmission
- A large part of the digital collection is not accessed, so usage has only a **limited CO_2 impact**
- Most use on **Sundays and in the evening**
- In comparison with books and magazines, **newspapers and videos have high emissions** at Delpher.

Smart control of hard disks (via Raid techniques) reduces the total CO_2 impact

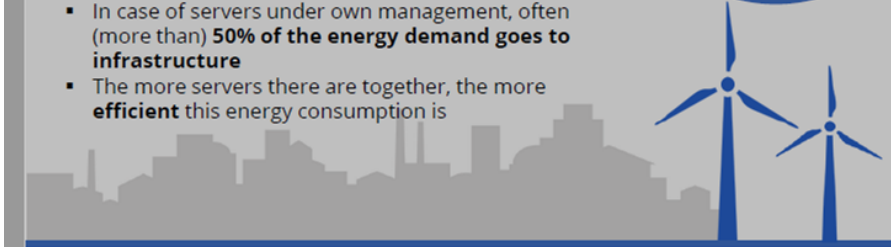
Reducing the size of collections (e.g. through deduplication) reduces the CO_2 impact

File compression before shipping reduces the CO_2 impact of data transmission significantly

Search options (such as year or publisher) reduce the part of the of the collection that is searched, and therefore, the server usage

3. Infrastructure

- A lot of energy is needed for the infrastructure around the servers, especially for **cooling servers**
- In case of servers under own management, often (more than) **50% of the energy demand goes to infrastructure**
- The more servers there are together, the more **efficient** this energy consumption is



4. Cloud Storage

- With cloud storage, the data and computing power of many companies is distributed over different servers. This ensures a very efficient use of the servers (capacity)
- Cloud providers innovate quickly, so they have the latest hardware at their disposal
- Biggest disadvantage: you have no control over where your data is stored and processed

Large shared data centres can be up to 40% more efficient due to their **scale and innovate cooling techniques**

By **purchasing green electricity**, the development of renewable sources is stimulated

Switch **to cloud storage reduces power consumption** significantly**

****Relative electricity consumption of three types of hosting**

Concerning the platform Delpher, moving the servers of the National Library to the government's data centre saves per year:

196.000 kWh

This is equivalent to **79 households** per year

109 tonnes of CO_2

(based on Dutch grey electricity)

This is as much as **5500 trees** get out of the air in a year

www.netwerkdigitaalerfgoed.nl

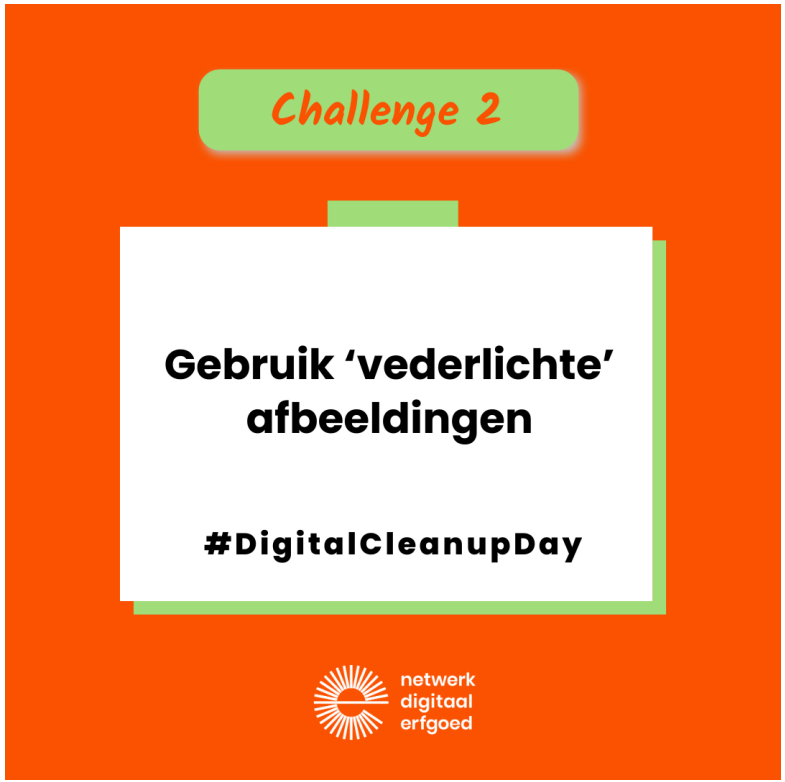
Talking to heritage professionals

- Climate awareness grows
- Green IT impact is kind of invisible
- Behavioral changes comes from within
- User dilemma’s
- Will climate impact be a regular factor now to take into consideration?

Campaign Network group Green IT

- Research:
  - Delpher good practice
  - Analysis of impact of cultural heritage websites
  - Blogs green techwatcher about storage, green software, AI
- Share tips and challenges
- Roadmap about green IT (in the making)
- Events about green(er) IT: facilitating conversation between heritage professionals

Challenges for business and fun



Roadmap for green(er) digital heritage

- What do you already take on?
- Talk about it with your colleagues
- Set your goals
- Implement a climate action team
- Meten = weten (to measure = to know)
- Make plans to diminish climate impact
- Go for it

User takes centre stage. So what about our website(s)?

- Analyze your website(s)
- Change to green hosting parties
- Be aware when using images and visuals
- Make sure information can be found quickly
- Downsize when it comes to scripts, plugins etc..

Discussion

What are your challenges and opportunities?

Questions?
Feel free to ask!

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