

Digital Permaculture

Presentation by Dominik Jais

in October 2025
for the PAB

This presentation is based on my book "Digital Permaculture - design for personal digital sustainability"

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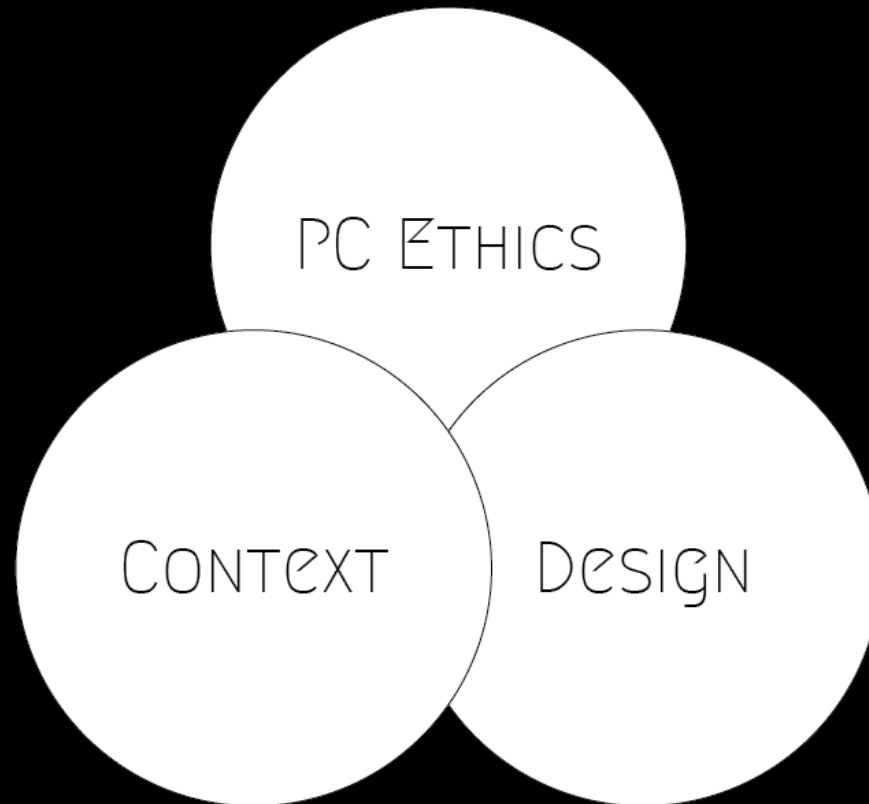
We'll explore what Digital Permaculture is, why it is needed, and how we can use permaculture design to design our digital life

First things first

What is permaculture (for you)?

Who are you?

The 3 pillars



- Ethics + Design, without Context → “Abstract idealism”
- Design + Context, without Ethics → “Exploitation / Technocracy”
- Ethics + Context, without Design → “Good intentions without impact”

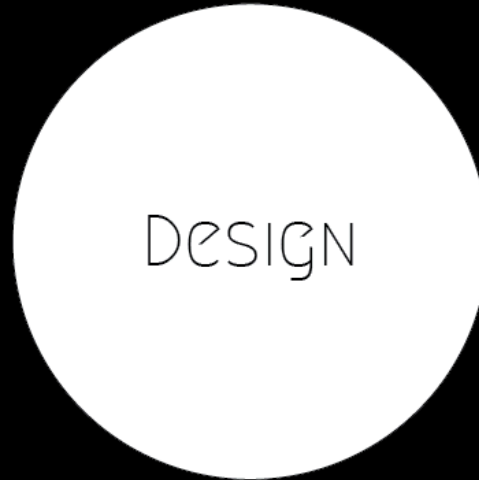
→ **We need all three to achieve permaculture's full potential!**

Ethics



- Earth Care
- People Care
- Fair Share (or my version: Limits of resources and consumption and redistribution of surplus)

Design



Mollison's book is called "Permaculture: A designers manual" - It is neither "Permaculture: a farmers manual", nor is it "Permaculture: a gardeners manual."

It's "a designer manual" - and Mollison was clear: "Permaculture is the subject of design."

Design, especially permaculture design, comes with its own rules. → see [Diploma in Applied Permaculture Design](#).

Context



- The to be designed subjects define the additional level of knowledge required.
- Additional knowledge as in addition to pc core concepts, like Zones / Sectors and the tools used in design
- The amount of the to be designed subjects / contexts is limitless
- Examples: Agroforestry, Aquaculture, Architecture, Community Building, Education, Energy Systems, Forestry, Governance, Health, Land Management, Legal Systems, Livestock Management, Marketing & Economics, Soil Science, Waste Management, Water Management
- **And now: Digital!**

The limits of knowledge

After I finished the Diploma in Applied Permaculture Design a friend asked me:

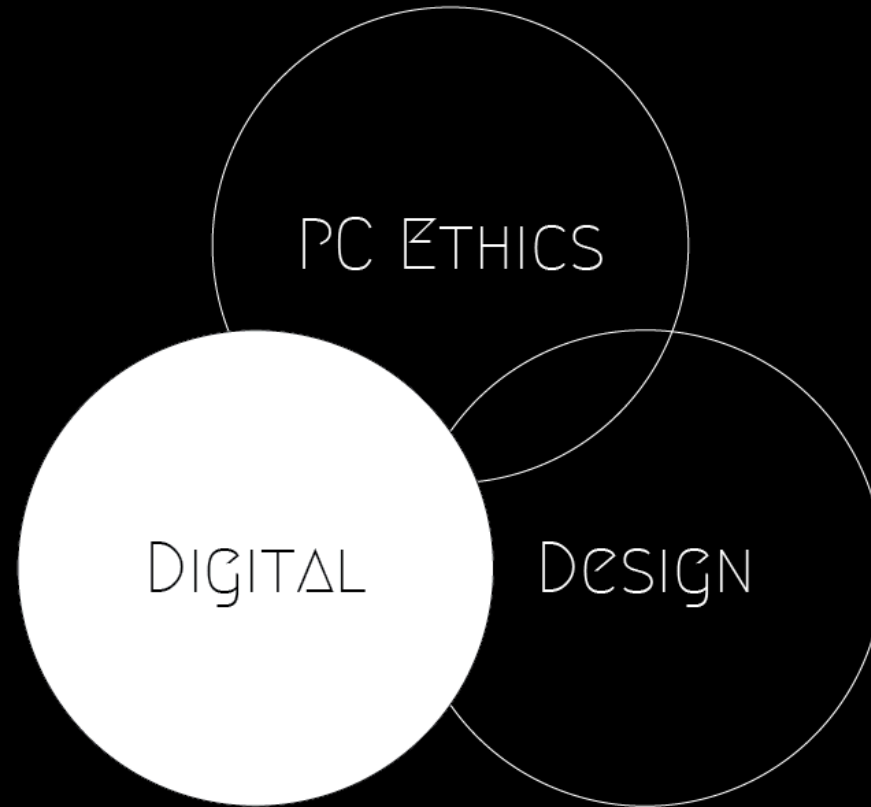
How did you learn it all?

My answer was:

Define "all".

There is no "all" since the speed and amount of knowledge that is constantly created exceeds what one person can learn in their lifetime.

What is Digital Permaculture?

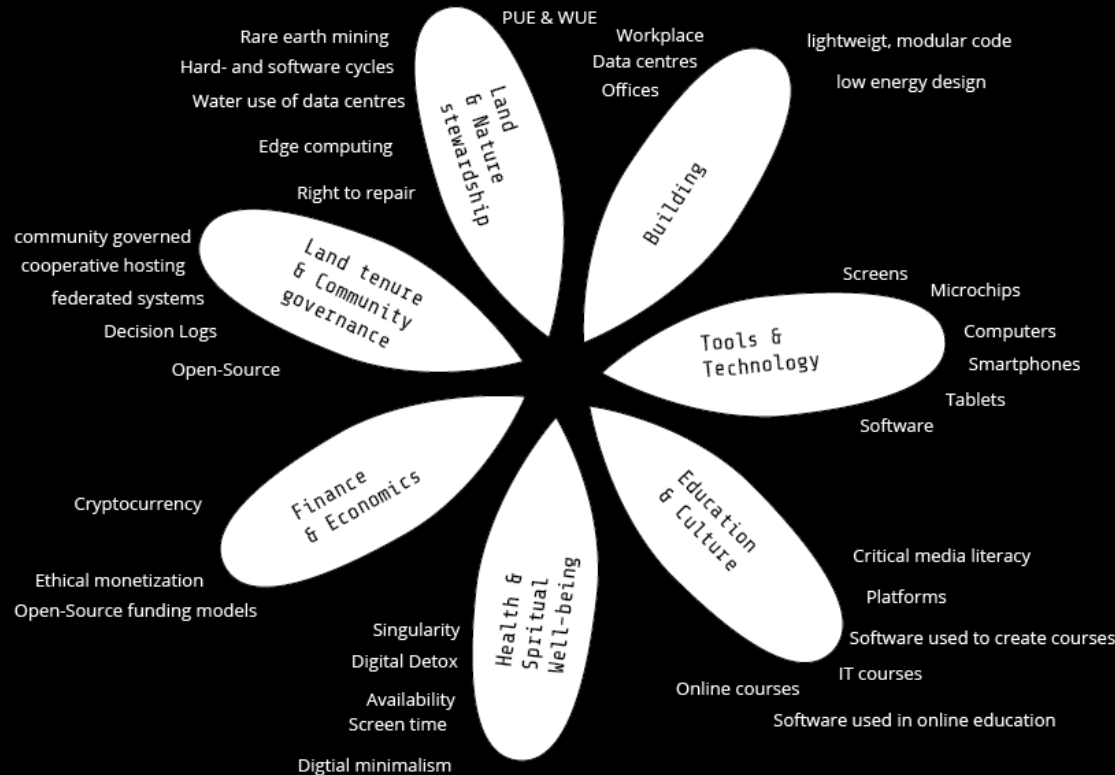


Digital Permaculture is the conscious and considered use of digital tools and systems in a way that aligns with the ethics of permaculture.

It involves designing and implementing digital solutions that are sustainable, regenerative, and beneficial to both individuals and communities.

... If permaculture is design for sustainable living systems...
then Digital Permaculture is design for sustainable digital systems ...

What does it entail?



Digital permaculture is a wide field. It comes with a large set of sub-contexts.

Start at your Zone 0 and design your way outwards!

* The image above is based on David Holmgren's Permaculture Flower

Why is it needed?

- Digital technology is deeply integrated into our lives, culture, and societies
- It has significant environmental, social, and ethical implications
- Current digital practices often lead to negative outcomes, such as **data privacy issues¹**, **digital addiction²**, **environmental degradation³**, **social isolation (digital divide)⁴**, and **biased AI** - to just name some.
- There is a growing need for sustainable and ethical approaches to digital technology

Permaculture, and by its extension Digital Permaculture, offers an ethical framework, processes and tools to design for or against those challenges.

- ¹ Source: [Reuters: Data Privacy threats compiled by Reuters](#)
- ² Source: [Combatting digital addiction: Current approaches and future directions](#)
- ³ Source: [Greenmatch: Environmental impact of technologies](#)
- ⁴ Source: [Wikipedia: Digital Divide](#)

Some numbers

- About 5.5 billion use the internet (68% of the population)¹.
- About 3 billion use WhatsApp (~54% of all internet users)²
- Out of 200 members of the European Permaculture Network (EuPN) 40 are on Facebook ~ 20%
- Out of 100 projects hosted at the EuPN 50 are on Facebook ~ 50%³
- ICT (Information and Communication Technology) makes up to 4% of GHG⁴
- GAMAM (Google, Amazon, Meta (FB/Insta), Apple, Microsoft) are multi billion dollar companies which shape the world we live in
- The Terms & Service of many major apps require a lot of reading time.⁵
- **screen time* per day per person is 6 hour 45 minutes**⁶
- With an 80-year lifespan this is ~ 21 years
- and so on ...

- ¹ Source: Statista: Number of internet users worldwide from 2005 to 2024
- ² Source: Statista: Number of monthly active WhatsApp users worldwide from April 2013 to July 2023
- ³ EuPN = European Permaculture Network
- ⁴ Source: World Bank Group: Measuring the Emissions and Energy Footprint of the ICT Sector
- ⁵ Source: Visualizing the Length of the Fine Print, for 14 Popular Apps
- ⁶ Source: Demandsage: Screen Time Statistics
- * Screen time isn't necessarily internet time - it is the time in front of a screen.

How much time do you spent in front of a screen per day?

We can't be in an ethically undesigned environment for 21 years.

We must apply permaculture design & ethics onto our digital life!

How can we design our digital life as we design our garden?

Applying permaculture tools to the digital world

Principles are either universal or can be adapted.

Zones and Sectors are universal as a concept.

In order to use standard permaculture concepts like Zones or Sectors we need to use the most common definition in order to be able to transfer them to a different context.

Zones

Permaculture: Zones are a function of time - of frequency of visit and duration of stay.

Digital permaculture: The frequency of using a piece of hard- / software and the duration of usage.

Sectors

Permaculture: Sectors are (external) energies that impact the site.

Digital permaculture: External influences that impact our hard- and software choices.

Ethical boundaries and digital commons

Licenses are a way to define how software can be used, modified, and distributed.

They are important because they define the rights and responsibilities of users and developers.

There are many different types of licenses, but they can be broadly categorized into three groups:

- **Proprietary software** is released under restrictive licenses that limit how users can use, study, modify, or share it. Examples include Microsoft Windows and Adobe Photoshop. It is usually called EULA - End User License Agreement.
- **Open Source Software (OSS)** is software whose source code is publicly available and can be used, modified, and redistributed under licenses that meet the Open Source Definition (maintained by the Open Source Initiative). Examples include projects under the MIT, Apache, or GPL licenses.
- **Free and Open Source Software (FOSS)** emphasizes both *freedom* and *open development*. It combines the practical openness of OSS with the ethical principles of the Free Software movement. See the four essential freedoms¹ defined by the Free Software Foundation. Examples include Linux, Firefox, and LibreOffice.

Which one do you think aligns best with pc ethics?

- [Comparison of Open Source licenses at Wikipedia](#)
- ¹[The four essential freedoms](#)

Open Source vs. Free & Open Source Software

Both share open code and collaboration, but differ in philosophy and intent.

Aspect	Open Source Software (OSS)	Free & Open Source Software (FOSS)
Origin	Coined by the Open Source Initiative (OSI) in 1998	Rooted in the Free Software Foundation (FSF), 1980s
Focus	Practical benefits - better software through collaboration	Ethical freedom - users' right to control their computing
Key message	"Open source is a development model."	"Free software is a social movement."
Typical audience	Developers, businesses, pragmatic adopters	Activists, educators, digital rights advocates
Licenses	MIT, Apache, GPL, BSD - open collaboration focus	Same licenses, but emphasized for user freedom
Philosophy	Transparency and efficiency	Freedom and ethics

In short: OSS focuses on *open development*, FOSS adds the commitment to *freedom and ethics*.

FOSS aligns perfectly with permaculture ethics.

But I don't care about the license

That's okay! You are not alone. However, understanding the license can help you make informed decisions about the software you use and support.

Why should we care about licenses?

- Because we are permaculture designers! - and we properly evaluate our options!
- Our choices have to align with permaculture ethics.
- Using proprietary software often means supporting companies that may not align with our pc ethics. (Remember the multi billion dollar companies that we support when we use and pay for their software?)
- Using open source software can help promote collaboration, transparency, and community-driven development.
- It can also help reduce reliance on large corporations and promote digital sovereignty.
- And so on ...

So please check the license of the software you are using and build a digital inventory!

Please support FOSS & OSS

Build a digital inventory

In the Survey phase of a design, we first gather information about what already exists. In Digital Permaculture: our digital landscape.

Let's go for our circle of influence - the soft- and hardware we actually have influence over (and not the Data Centre at the end of the world - of course that as well if you run or own one).

Hardware inventory

- What hardware do I own?
- When have I bought that hardware?
- Was it a conscious decision to start / continue using it?
- Which operating software is it running?
 - Licensing model?
- Am I locked in?
- Am I using leased hardware or hardware given to me by e.g. the company I work for?

Example of hardware inventory

Hardware Layer	Year	What	OS	Conscious
HL 0	2015	Self build PC	Windows, Linux	Yes
	2012	E-Book reader	Linux	Yes
	2019	Smartphone	Google Android	Yes
HL 1	2015	Laptop	Linux	Yes
Layer 2	2020	Camera	Proprietary	Yes
	inherited	Tablet	Lineage Android	-
	inherited	Tablet	Lineage Android	-
HL 3	2013	Raspberry Pi	Linux	Yes
HL 4	2018	Raspberry Pi	Linux	Yes
	2021	Drone	Proprietary	Yes
HL 5	2019	Gimbal	Proprietary	Yes

- Source: Digital Permaculture book page 84 - Chapter about Survey -> Hardware

Let's gather some data!

- Breakout groups of 3 -> 7 minutes total
- What is your main communication hardware you are using often?
- What brand is it?
- When have you acquired it?
- Do you know the license? If yes, which is it?
- Anything interesting?
- When we come back we share our findings

Software inventory

- What software are we currently using?
- What is the license model?
- Why are we using that software?
- Was it a conscious decision to use that software?
- Who is developing that software?
- If a company → What is their revenue?
- What alternatives are there? Are there any?
- Are we in a locked-in system or can we install software freely from different sources?
- What sectors influenced my decision?
- Does it require an internet connection?

Example of simple software inventory

Software Layer	What
SL 0	Office, Vector Graphics editor, Raster Graphics editor, Email, Tasks & Projects, Websites & CMS, Code editor, Virtual Machine
SL 1	Photo RAW editor, Note taking / Wiki, Messenger, Teleconference, Social Media, Calendar / Scheduling
SL 2	CAD & 3D, Forms, Mindmaps, Cloud storage, Online document collaboration
SL 3	GIS, Website analytics, Collaboration platforms
SL 4	Video editing, Audio recording, Screen recording, Login providers, Newsletter, Arduino IDE
SL 5	Virtual Machine, Windows XP, Electronic arts

- Source: Digital Permaculture book page 88 - Chapter about Survey -> Software inventory

Let's gather some data!

- Breakout groups of 3 -> 7 minutes total
- **What is your main messenger?**
- Who develops it?
- What is their yearly revenue (check Wikipedia)
- Do you know the license? If yes, which is it?
- Anything interesting?
- When we come back we share our findings

Layers

Layers got introduced in Digital Permaculture in 2024 and extend Zones.

We have the Hardware Layer (HL) and Software Layer (SL).

Example:

- Software layer - WhatsApp on our phone. Shortcut on the home screen - 2 hours a day - SL 0
- Hardware layer - Main phone - HL 0
- Physical layer - Zone 0 - the phone is usually always with us.
- Shortcut writing Z 0 | HL 0 | SL 0

Example for Software Layer 0

E-Mail is a good example for SL 0 / HL 0 / Z 0 - because we usually have it on our main device (phone / computer) and use it frequently.

E-Mail

- I use Mozilla Thunderbird¹ with own domain
- Thunderbird is developed by Mozilla Foundation² non-profit
- Open-source
- Conscious decision. I use it since 2010, before I used Outlook, KMail, Netscape Navigator
- Sectors: Manufacturer, Culture, Economic condition
- There are alternatives available
- While an internet connection is needed to receive and send mails all my mails are stored locally. With Thunderbird I'm able to read and compose mails while I'm offline.

• ¹ Link: [Thunderbird](#)

• ² Link: [Mozilla Foundation](#)

• Source: Digital Permaculture book page 94 - Chapter about Survey -> Software inventory -> Software Layer 0

Each of us has a digital ecosystem. Mapping it is the first step towards conscious design!

How does your hardware and software inventory look like?

Read Lumia Huhdanpää's Diploma Design "[Lumia's personal Digital Permaculture Design](#)" to see an inventory example.

Yeah, but why do we need to gather all that information?

Because we want to make informed decisions!

We want to align our digital life with permaculture ethics!

We want to actually design our digital life!

We want to reduce our digital footprint!

We want to be digitally sovereign!

and so on ... (there are a lot more reasons)

From observation to action

- Survey and analyze your inventory
- Identify areas for improvement
- Research alternatives (There is usually always an OSS or even FOSS alternative)
- Make a plan for change (Implementation plan)
- Implement changes gradually
- Monitor and adjust as needed

Remember: Small changes can make a big difference over time!

Sometimes you have to try out different hard- and software until you found the one working for you.

Websites

As a senior website architect and consultant websites are my personal interest. :)

Let's have a look at some permaculture related websites and their size, CO₂ production, use of analytics and if they are hosted on green energy.

Our websites are our digital landscapes, like gardens, they can be more or less sustainable.

Some of those website at the following page are managed by me - they are in my circle of influence.

Many permaculture sites aren't digitally sustainable yet.

Website	Size	CO ₂	Green	Analytics	Other scripts
Lowtech magazine	0.54MB	0.06g	yes	no	
European Permaculture Network*	0.62MB	0.13g	yes	Matomo	
Beyond Buckthorns*	0.83MB	0.07g	yes	Matomo	
Permaculture Colab	3.1MB	0.62g	no	Umami,Matomo	Google Recaptcha, Google Fonts
Permaculture Association Denmark	7.9MB	0.68g	yes	Google GTAG	Google Fonts
Permaculture Association Finland	8.2MB	0.72g	yes	Google GTAG	Google Fonts, Statcounter, Google Ads, Doubleclick, Youtube
Permaculture Ireland	9.9MB				Stripe, Google Recaptcha, Google Fonts, Google Maps, Cloudflare, Gravatar
Ecolise	10.1MB	0.34g	yes	Google GTAG	
Permaculture Association Britain	15.6MB	1.92g	yes	Google GTAG	
Permaculture Institute Germany	25.9MB			Matomo	Google Recaptcha

- < 400 KB = perfect
- < 1 MB = good
- < 4 MB = acceptable
- > 4 MB = needs work
- > 10 MB = unacceptable
- * = managed by me
- Sharing data with Google is unacceptable, especially if there was no consent given.

- Co2 Source: [Website Carbon Calculator](#)
- Green Hosting Source: [Green Web](#)
- Data collected in October 2025

Case Study: European Permaculture Network

I got bored with all those slow carbon footprint heavy permaculture website.

I then resurrected the European Permaculture Network

- Highly optimized and customized website
- Size per frontpage load: 0.62 MB (good)
- Green energy hosting
- No data sharing with 3rd parties - No Google Analytics, No Google Fonts, nothing
- Additional: Open Source Forum
- Additional: Open Source Cloud storage

Result: A fast, secure, privacy friendly permaculture website(s) with a low CO₂ footprint.

More about the project at [European Permaculture Network](#)

Some general thoughts about data

The higher the hit-rate (how many people (or bots) come to our website) the more optimization is necessary. (That's why we looked at mostly national permaculture projects)

The more data we transfer the more CO₂ is produced.

We can reduce the data we transfer by reducing the size of our websites.

In general: Text < Image < Audio < Video < High res Video < ...

Check <https://www.chaseandsnow.com/en/blog/sustainable-websites> for more information how to reduce the size of your website.

Chase and Snow oy (the company I co-own) also offers a website sustainability check:
<https://www.chaseandsnow.com/en/services/website-sustainability-check>

Famous last sentences

Some common un-designed digital habits.

Ever heard one of those sentences:

Let's open a Google Drive.

Let's create a WhatsApp group.

Let's zoom.

I can run WordPress.

We need to be at Facebook - it is where the users are.

High tech waste

According to statista.com global e-waste is more than 50 million metric tons per year (can you imagine that amount?).

The amount of e-waste to be collected and properly recycled is 17.4%¹. One can only speculate what the dark digit looks like.

- ¹E-Waste worldwide

Artificial Intelligence

The biggest problems are those we don't see, understand or simply ignore.

- Artificial Intelligence is among us since the Social Media times - it sorts what we see and proposes new content according the target points we gave (freely).¹
- Generative AI is just an advancement in decades of research into the topic.
- The "genie" is now for a long time out of the bottle.²
- The industry is driven by newly build data centres, powerful GPUs mainly delivery by Nvidia, and again only in the hands of some few companies - shaping again the future of humanity.
- Overvalued - A bubble ready to burst.

• ¹ Source: [YouTube: Tristan Harris and Aza Raskin on the "The Dilemma of AI"](#).

• ² Source: [Wikipedia about ImageNet](#)

Artificial Intelligence in permaculture

- Has already been used to write parts of Diploma designs¹.
- Lot's of AI images to advertise permaculture courses on social media.²
- Lot's of purely AI written articles (and no - you can't use another AI to detect whether or not it was written with AI)
- Lot's of outdate knowledge in regards to training (- lots of manual labour before LLM, see ImageNet)³
- Difficult to avoid: It is everywhere. If you are using SaaS (Software as a Service - for example Canva) chances are that you used AI without knowing it.⁴
- If you are using large "for free" platforms (Slack, Facebook, etc.) chances are they are training their AI with your data.⁵

- ¹ Source: [Thoughts about artificial intelligence in permaculture](#)
- ² Source: [Midjourney AI at Discord - search for permaculture](#)
- ³ Source: [Training of Large Language Models](#)
- ⁴ Source: [Canva AI assistant](#)
- ⁵ Source: [Inside Slack's AI training controversy](#)
- [Article by Steve Read: AI, Permaculture and my village](#)

A way out of it?

Not without design

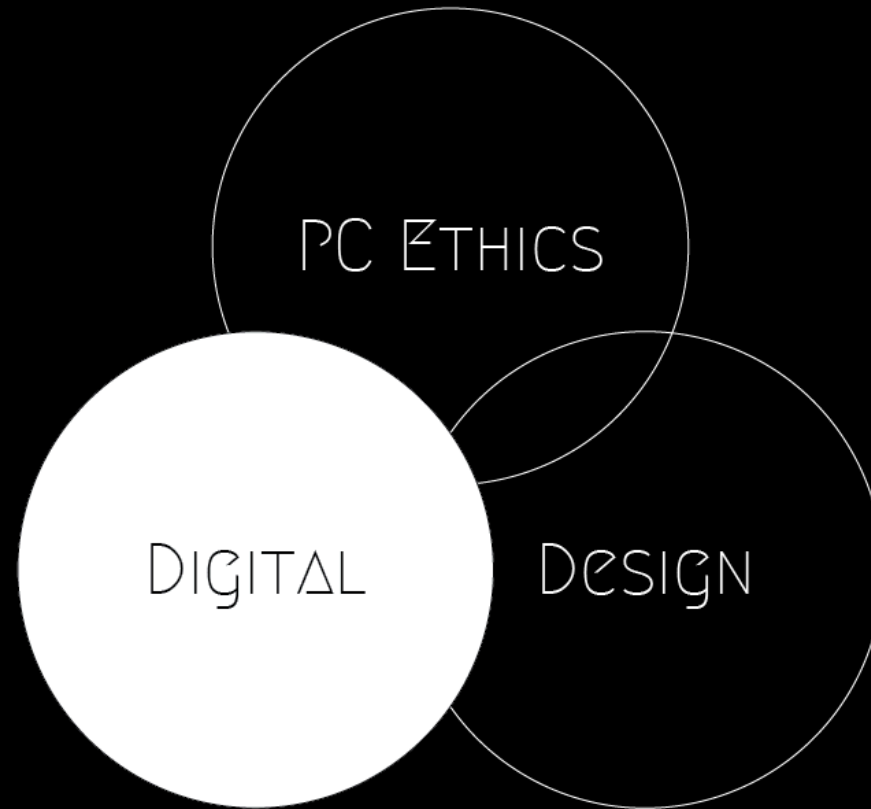
Again: Don't use SaaS platforms.

Again: Use Open Source software.

Again: Use local software (installed on your own computer) or self hosted software.

Local installed AI is possible - but it requires a very good (pricy) GPU or actually even multiple of them.

- Book: Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence by Kate Crawford
- Book: Artificial Intelligence by Melanie Mitchell
- Book: Nexus: A Brief History of Information Networks from the Stone Age to AI (2024) by Yuval Noah Harari



Digital permaculture uses the same ethics and design principles / process / tools but in the digital landscape.

Start designing!

Thank you for your attention!

Any questions?

Discuss Digital Permaculture with me on [Matrix](#)

This presentation is available as PDF at [Beyond Buckthorns](#)

Please give feedback at <https://www.beyondbuckthorns.com/digital-permaculture-feedback>

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