8th November 2023

Sustainable Digital Creativity AVARA – Art & Tech <3 Sustainability event

Photo: Jenina B. / Design Inspis

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Taiteen edistämi Centret för konstfrämjande Arts Promotion Centre Finland

S+T+ARTS



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CREATIVE · CLIMATE · ACTION

Julie's Bicycle

APPLIED SCIENCES



Agenda

- Introduction
- Digital footprint
- Environmental and social impacts
- Eco-responsible solutions
- Good practices

CREATIVE • CLIMATE • ACTION

Who we are

Julie's Bicycle is a pioneering non-profit, mobilising the cultural and creative community to take action on the climate, nature and justice crisis.

Founded by the UK music industry in 2007, we now work across the creative and cultural community in the UK and internationally.



What we do

- Skills training
- Leadership development
- Resources
- Consultancy
- Partnership working
- Policy development and advocacy





Introduction Environmental Sustainability in the Digital Age of Culture





Everything digital has a physical impact

- Everyone uses the Internet, whether for personal or professional purposes, and relies on electronic devices to carry out their daily tasks.
- Although digital pollution is invisible, odourless and hardly perceptible, it relies on a physical infrastructure that consumes energy.

Dematerialisation vs. Decarbonisation

- Dematerialisation, or the reduction of physical materials, doesn't necessarily equate to decarbonisation, or the reduction of carbon emissions.
- Even though we can't see them, digital interactions leave a footprint that must be taken into account.







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Unseen Consequences

- It's crucial to remember that the internet and technology usage have environmental and social impacts, which often go unnoticed.
- These impacts should be acknowledged and discussed, even though they are somewhat invisible in nature.

The Data Dilemma

- Our increasing data consumption and dependency, internet usage, and data storage pose challenges.
- Greater infrastructure efficiency may lead to more data usage, especially with technologies like 5G.
- Combined with a greater planned obsolescence and rapid over-consumption trends.





Digital footprint



"Researchers have estimated the internet could consume more than a fifth of the world's electricity by 2025"

Climate Home News, 2017

"Internet energy and carbon footprint are estimated to exceed those of travel."

> Digital Clean Up, Graenskref, 2020



2015-2021

- 60% increase in internet users from 3 to 4.9 billion
- Internet traffic quadrupled
- 10-60% increase in data centre energy use
- 20-60% increase in data transmission network energy use

Source: IEA, Data Centres and Data Transmission Networks, 2023





If the IT sector was a country, its electricity consumption would rank:

If the internet was a country, its greenhouse gas emissions would rank:





Digital Emissions and Impact



Source: Greenpeace, 2017, Click Green

01. Devices (34%)



- E-waste: equipment, hardware and devices ends up as toxic waste in landfills or incinerators
- Dangerous informal disassembly operations hazardous to people and planet
- Solutions include reducing, recycling and refurbishing



02. Networks (29%)



- Communication networks that transmit our data.
- Including construction, operation and maintenance of networks for both mobile and fixed networks.



03. Data centres (21%)



- Data centers are very energy intensive and need to be permanently air conditioned to be cooled.
- Data storage makes turn the equivalent of five nuclear power plants in the world.
- The volume of stored data doubles every two years.



04. Manufacture (16%)

\rightarrow human cost

 \rightarrow environmental cost

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Some minerals are mined in conditions of armed conflict and human rights abuses. Miners often work in unsafe conditions for unfair wages.

Mining for minerals and metals such as gold and cobalt is very water intensive, causes deforestation and land degradation leaves behind toxic wastewater and soil.



Coltan mines, an indispensable mineral in the technology industry, have financed armed conflicts in Congo and Rwanda. Credit: *MONUSCO/Sylvain Liechti*

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In the Salar de Atacama (Chile), water is evaporated to obtain the lithium that fuels our electronic batteries. Credit: *Francesco Mocellin*

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Where are we now

- Growing considering of justice, inclusion and accessibility
 - As with the climate crisis, digital environmental harms are unequally distributed and the people and places most affected are generally the least responsible
 - Not everyone has access or easy access to digital culture e.g. people who can't afford devices, older people who can't use digital technology, people with visual or hearing impairments
- Numerous benefits of digital detox to improve physical and mental health



Eco-responsible solutions to reduce digital footprint



Digital Declutter – clean your mailbox

- Use instant messaging systems instead of emailing
- Regularly delete the heaviest emails with attachments
- Unsubscribe from unnecessary mailing lists
- Replace mail attachments with file sharing links
- Use sites like WeTransfer to send large documents (PDFs or HD images)
- Reduce the number of email recipients (Cc, Bcc)
- Use a minimal email signature (no banners, no gifs, etc.)
- Delete email accounts you no longer use

 \rightarrow See Whole Grain Digital – Digital Declutter



Carbon cost of an email

Email Type	Emissions (CO2e)
Spam email picked up by your filters	0.03 g
Short email sent and received on a phone	0.2 g
Short email sent and received on a laptop	0.3 g
Long email that takes 10 minutes to write and 3 minutes to read sent and received on a laptop	17 g
Email blast that takes 10 minutes to write and sent to 100 people, of whom 1 reads it and the other 99 glance at it for 3 seconds to decide that they should ignore it	26 g



Declutter your social networks

- Regularly delete or archive old online content including old social media posts or blog articles)
- Disable the automatic playback of videos
- Delete accounts you no longer use
- Remove unnecessary saved and liked posts





Greener use of the internet

- Use green search engines, such as Ecosia or Lilo
- Type the website name directly in the URL bar as opposed to the search bar
- Limit the number of tabs or programmes opened
- Set up a 'low impact inactive tabs' feature
- Clear your browsing history
- Reduce your streaming and video viewing
- Alternatively, watch low-resolution (less than 480p)





Phone usage

- Delete unused applications
- Disable applications notifications
- Connect via Wi-Fi rather than 4G or 5G, which consume 5 to 25 times more energy
- Turn off Wi-Fi, GPS, or Bluetooth functions when you don't need them
- Clean up your history of SMS and Whatsapp messages (including obsolete groups)





Eco-friendly IT uses

- Turn off computers when not in use
- Set computers, printers and other IT equipment to go into "power save" mode when not in use
- Unplug chargers when equipment is fully charged
- Lower screen brightness
- Keep your laptop and other digital equipment for longer periods
- Recycle technology and opt for second-hand devices





Eco-responsible solutions to reduce digital footprint

- Calculate the carbon footprint of your website
 - websitecarbon.com (Wholegrain Digital)
 - ecograder.com
- Design and develop an energy efficient website
 - Reduce the number of pages and old content (no longer relevant blog articles)
 - Reduce the number and size of images & videos
 - SEO
 - Choose fonts carefully
 - Write clean code
 - Use less Java-Script



Eco-responsible solutions to reduce digital footprint

• Example of Palais de Tokyo's "eco-mode" button

						$ \land $	
<u>The Palais de</u>	13, AVENUE DU	PRÉSIDENT W	ILSON 75116 PARIS	CLOSED	FR/ EN	ECO-MODE	BUY TICKETS
<u>Tokyo logo</u>	WHAT'S ON	VISIT	EXPLORE	OUTREACH	SHOP	\smile	corporate tokyopass Q



Next steps

- Organise 'digital clean up' sessions at work
- Advocate and speak up
- Be transparent
- Offset your impact



Tomas Saraceno — Web(s) of Life



The Royal Parks, Serpentine South Gallery 1 June - 10 September 2023





Ballad of Weather Dependency is an intergenerational, intercultural, multispecies performance that turges visitors to $Web(\phi)$ of Life to adapt, change, and modify their activities according to the thrythms of the planet, as many other human cultures, animals and plants already do. Web(\phi) of Life is wholly reliant on solar power from newly installed zyma sculpture panels on the Serpentine sroof.

This exhibition produces more energy than it communes. At its peak it produces (20Wh, napplyne) as structors with a required total of 3, 5Wh, locking the surplus 1.0 Wh into the national grid. Depending on weather, the exhibition functions in different modes Sharm (1, 5WH), Farth Sharm (2, 12Wh), Cloudy (1, 2Wh) in which certain installations will writch off, or run at lower frequency to adapt to the available power apply. In Herawaw Mode, the indoor guileris will be partially cloud to humans, who are invited to join other participants, such as birds, spiders, bees, and squirrels in equivant the mattering of the structure of the structure of the structure of the participant structure with other beings and places.

No energy is clean, but by generating power for the exhibition on site, its various costs monetary, social, and ecological become more immediate. Because technology should be worldchanging, not world-ending, please join us in weather dependency.

Show production (total): 693.1kWh

Show consumption (total):



Web(s) of Life in collaboration with Tomas Saraceno Ballad of Weather Dependency

25 26 27 28 31 32 O On 293033 O Lowered Off 24 (1)(16) (34) (41) (36) 35 open 7 open Exit 10 14 open -3 13.9 20 **21** 22 **23** (40) -18-19 38 2 5 ightarrow (3.6) 6 open ch. 1 ON AIR STA B Bi-cycles for 1 life-cycle

Current mode of operation of the show:

www.websof.life

Artwork's consumption breakdown:



Ballad of Weather Dependency

ALL P



Web(s) of Life

TOMÁS SARACENO IN COLLABORATION: WEB(S) OF LIFE

1 June – 10 September 2023

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TOMAS SARACENS EXHIBITION Supported by LUMA FOUNDATION * PICTET ----

> 1000 Anti-Counce Hiterandway Indu And

A Bi-cycles for life-cycles (Go as fast as you can as slow as you must*)

COI

Tomas Saraceno's Web(s) of Life

- AC turned off
- Solar panels installed
- Bikes to power energy
- Phones off



Further readings

ENVIRONMENTAL SUSTAINABILITY He DIGITAL AGE OF CULTURE

OPPORTUNITIES, IMPACTS AND EMERGING PRACTICES



Studio Olafur Eliasson

Carbon footprint report // March 2021





REPORT OF THE WORKING GROUP DIRECTED BY HUGUES FERREBOEU FOR THE THINK TANK THE SHIFT PROJECT – MARCH 2019





SMART GUIDE TO CLIMATE CHANGE

The surprising cost of being online

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Further reading

- Briefing Report: Environmental Sustainability in the Digital Age of Culture, Julie's Bicycle, 2020
- <u>Whole Grain Digital Digital Declutter</u>
- Mike Berners-Lee, How Bad are Bananas?: The Carbon Footprint of Everything, 2020
- Lean ICT, The Shift Project, 2019
- <u>Click Green</u>, Green Peace, 2017
- Why your internet habits are not as clean as you think, BBC, 2020
- <u>The real climate and transformative impact of ICT: A critique of estimates</u>, <u>trends, and regulations</u>, 2021
- We need to include digital sustainability in climate action, LSE, 2023



Alexandra Daisy Ginsberg — *Pollinator Pathmaker*

