

Towards digital autonomy

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By Sander van der Waal

How do we move towards a more inclusive and sustainable city where the technology we adopt is under our own collective control? What is needed to make progress on that journey and what is the role of academia, governments, societal organisations and private companies?

These were the guiding questions for an event that Waag Futurelab organised in collaboration with the VU in the iconic Waag building in the city centre of Amsterdam. Waag's Research Director and VU Connected World Research Fellow Sander van der Waal hosted the afternoon, where in three panel discussions various dimensions of Digital Autonomy were explored.

Waag's new Research Agenda includes an updated version of the Public Stack, an assessment framework that is designed to help move us towards a society where technology serves the public interest. For Waag, Digital Autonomy is an important prerequisite: only when we are in control over the technology we adopt, can we be sure that it can lead to a more just society.

The event kicked off with the introduction of six dimensions of this Public Stack framework and corresponding key questions to address when assessing existing technology, or designing new technology:



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dimensions of the public stack

1. power & representation → who designs?
2. assumptions → what are we optimising for?
3. ownership → how do we organise ownership of tech?
4. governance → how to govern in the public interest?
5. legislation & regulation → how do we achieve social justice?
6. ecology → how do we stay within planetary boundaries?

In three panel discussions, these perspectives were explored further from the frame of Digital Autonomy.

Towards a more equal and inclusive society

Firstly, the focus was on power, representation and ownership. **Ilse Heeremans** (SINA) and **Karien Sondervan** (Cybersoek) work daily with Amsterdam residents who struggle to participate in today's increasingly digital society. 20% of Amsterdam citizens have issues with digital systems, and the onus is often on themselves, or willing but underfunded organisations to help them deal with everyday issues. **Pascal Wiggers**, lector Responsible IT at the Amsterdam University of Applied Sciences, explained how

his research focuses on including those perspectives when designing digital systems. He stressed the importance of applying situated technology: an approach where technology is being studied in real-life conditions including the perspectives of those affected by it. A strong conclusion from the debate was that it is not feasible to expect digital systems to fully replace personal interactions in our society, whether in the context of a local government or commercial services. Therefore, there should always remain an option of dealing with a person instead of with a system, which should not be a less valued or demoted approach.

Towards democratic ownership and governance

In the second panel, we turned the focus towards social media platforms and discussed their ownership and governance aspects. **Danny Lämmerhirt**, research lead of Waag's Public Tech programme, introduced a novel approach towards moderation of social media platforms. He emphasised the importance of organising governance at the community level. This level sits between two others: on the one hand, the overall platform moderation layer, including a platform's terms of service, community guidelines, and (semi-)automated content moderation. On the other hand it includes individual user controls, such as the ability to subscribe, block, mute, or report content. The community level acts as a middle ground: It is where groups of users can collectively decide what kind of content is acceptable for their specific community. At this level, society can regain some control over how online spaces are shaped. On emerging decentralised social media platforms such as Mastodon and Bluesky, this is also the level where most innovation is currently taking place. It offers important opportunities to develop new ways of governing and shaping online communities.

Next, **Mariken van der Velden** (Associate Professor of Political Communication at the VU), explained vividly how the democratic debate is currently under threat because of existing social media platform dynamics. The polarisation, induced and exacerbated by the algorithms, drown out moderate voices. These algorithms also influence our politicians, who tend to prioritise statements that elicit strong emotions. Lastly, **Douwe Schmidt** of the City of Amsterdam added his perspective, as he works closely with inhabitants of Amsterdam in real-world settings to shape the policy of the city in relation to for example AI. From the discussion that unfolded, a shared conclusion was that polarisation in itself is not necessarily something to be fully avoided. Just as Ajax and Feyenoord football fans will never agree on which club is the best. But where in the realm of football there is pitch where within the boundaries of a game the rivalry plays out, we don't have a similar online space for our discussions.

Towards a healthy and regenerative planet

The final discussion of the day centred on the environmental impact of technology. As the Public Stack framework indicates, we should always assess the use of environmental resources, from minerals to energy and water, when making informed choices about technology adoption. This topic has significantly increased in relevance after the launch of ChatGPT and its related hype of LLM-based generative AI models and applications. **Judith Veenkamp**, lead of the Regenerative Technology research programme at Waag, explained how collaborations with artists has helped Waag and its audiences to better understand the interplay between technology and its natural environment. From these artistic explorations, new ideas emerge on how to imagine and build technology with a more substantive consideration of its environmental impact (see photo).



An example is [the Electric Garden project by Sunjoo Lee](#). Electric Garden is an artistic research project focused on building mud cell batteries that generate electricity from soil. These batteries use microbial fuel cells, which produce small amounts of power through the natural activity of soil bacteria. The project develops outdoor and mobile gardens that function as living power sources. It also includes workshops where participants learn how to make mud cells and use them to power small electronic devices.

Patricia Lago, Professor of Software Engineering at the Software and Sustainability (S2) Research Group at the VU, explained the excellent work she's done on the Sustainability Assessment Framework Toolkit. She's researched how organisations can achieve digital sustainability *by design*, and the toolkit helps organisations evaluate options with regards to software architectures' impact on the environment. Her key take-away was that there is no sustainability without digital autonomy and sovereignty.

As the final speaker of the day, **Robert Keus**, founder and CEO of GreenPT, explained his vision for AI deployment where environmental considerations are at the heart. Environmental impact of generative AI use is notoriously difficult to assess, and Robert concluded early on that only the way to achieve meaningful transparency and control is to have control over the full technology stack of the AI service, and that's what his company is offering. GreenPT is also experimenting with ways of further reducing environmental impact, for example by making suggestions to the users of the chatbot prompt. In the discussion, some questions were asked about the trajectory of big LLM-models, and whether or not newer more sustainable paradigms should be developed that may also fulfil the tasks for which people now use the LLM services. While there was no agreement on one right approach, the shared conclusion was that more innovation with attention to environmental concerns is definitely needed.

Concluding reflections: towards a people-centered, sustainable Public Stack

In conclusion, the event showed a richness of discussion across the various perspectives of the Public Stack. It demonstrated how many different topics should be considered when moving towards more digital autonomy. It should consider non-digital autonomy as well, and ensure that human interactions are never fully removed. It should consider new community level governance approaches for social media, making room for moderate voices while not fully trying to eliminate polarising views. And lastly, considerations for environmental sustainability should be an integral aspect of deciding on the design and deployment of digital systems.

If you want to be kept updated about the research at Waag, you can [sign up for our newsletter](#) (available both in English and in Dutch) or giving us a follow on [our Mastodon](#). If you have any questions or wish to collaborate on a project, feel free to reach out to sander (at) waag (dot) org.