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**DEBATE ARTICLE**

# AN OFFICE WITHOUT GAFAM?

## Sustainable Infrastructures as Corporate Digital Responsibility

From large corporations to small businesses, IT systems, software, and social media have become indispensable for companies. They are dependent on digital services provided by only a few IT corporations, e. g., Google, Amazon, Facebook, Apple, or Microsoft (GAFAM). 85% of companies in Germany use Microsoft's Office software, another 9% use Google's – only 2% use the open alternative Libre Office **(Statista, 2022a).**

### THE GAFAM DEPENDENCY OF GERMAN COMPANIES

In Germany, companies **(Statista, 2022a)** and the state **(Bitkom, 2021)** are highly dependent on imported digital services and expertise provided by very few IT corporations. The market for cloud services, for example, is strongly concentrated: Amazon Web Services (AWS), Microsoft, and Google alone share two-thirds of the market and have asserted their lead worldwide **(ISG, 2018; Statista 2022b)**. Such dominant providers mainly offer closed solutions based on proprietary use, i.e., manufacturer-specific standards, leading to a high dependency on their services due to high switching costs or lack of viable alternatives **(Schauf and Neuburger, 2021; PwC, 2019)**.

The de facto dependence on foreign IT corporations is countered by German companies' desire for digital sovereignty. Four of five German companies agree that Germany is too dependent on foreign countries **(Bitkom, 2021)**. They also find data sovereignty particularly important **(BMWK, 2021)**. Digital sovereignty is therefore a key strategic goal for companies, out of self-interest and out of a desire to live up to their social responsibility. Yet although more and more companies are committed to corporate digital responsibility, their sustainability reporting rarely mentions this goal or related measures **(Lautermann and Frick, 2023)**.

## WHAT ARE THE RISKS OF GAFAM DEPENDENCY?

In the current energy crisis, it has become drastically clear that independence, resilience, and security are essential features of dependable infrastructures. Relying on the services of a few large companies that have oligo- or even monopolistic structures poses risks for digital infrastructures. It also results in a power imbalance: Companies fully depend on their provider's services, who can discontinue or change the services at will. Companies should be aware that, when they outsource cloud computing, they relinquish sovereignty over their infrastructure. GAFAM services also have surveillance issues. Microsoft, for example, can track which colleagues, projects, and programmes employees interact with when, how, and for how long **(Lang, 2021; Microsoft, 2023)**. Further, the companies' user assurances that their servers are located in Europe is meaningless as the location of the headquarters determines most of the legal framework for data protection and surveillance. All US-based companies, such as Google, Microsoft, and Zoom, are subject to the Foreign Intelligence Surveillance Act (FISA), which allows US intelligence agencies to access data of non-US citizens – regardless of a companies' privacy policy or server location **(Vladeck, 2021)**. Nevertheless, most German companies entrust sensitive data to these infrastructures, not only exposing their own business details but also putting their customers' and employees' data at risk.

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## SUSTAINABLE ALTERNATIVES ARE AVAILABLE BUT RARE

To reach digital sovereignty, viable alternatives to GAFAM services must be available. Free or Libre open source software (FLOSS)[1] and platforms are such sustainable alternatives **(Pohl et al., 2021)**. FLOSS is more sustainable because its code is openly accessible to everyone. Software projects can be developed co-operatively and no license fees are incurred when using FLOSS. A federated FLOSS-based infrastructure guarantees individuals, companies, and the public sector control over access to their information. Such FLOSS alternatives include:

[1] *On the difference between Open Source and Free Software: https://libreplanet.org/wiki/ What_is_the_difference_between_ Open_Source_and_Free_Software%3F*

**Linux** instead of ➡ *Microsoft or Apple:* an operating system used in several companies.

**JitsiMeet** instead of ➡ *Zoom, Skype or Webex:* video conferencing application suited to quick exchanges in small groups (approx. 20 participants), easily started in the browser and shared via a link.

**BigBlueButton** instead of ➡ *MS Teams, Zoom or Webex:* a video conferencing for larger groups, often applied in the education sector. It runs browser-based and allows the assignment of presenter or moderator roles and breakout sessions.

**Nextcloud** instead of ➡ *Dropbox, Google Docs, OneDrive or iCloud:* documents can be stored and managed by different user groups. It can be integrated into the desktop.

**nuudel** or **Termino** instead of ➡ *Doodle:* data-secure, non-tracking tools to schedule events or conduct a survey.

**RocketChat** or **jabber** instead of ➡ *WhatsApp, Slack or Telegram:* an open-source messenger with an extensive range of functions for web and smartphones that does not copy the address book to the server and protects privacy.

The demand for these alternatives exists: Especially governmental organisations, the NGO sector, and church organisations have an interest in guaranteeing data protection, as they could otherwise be putting members, employees, or activists at risk.

## RESOURCE AND POWER DISTRIBUTION ARE THE PROBLEM – BUT ALSO THE SOLUTION

Yet still, better solutions remain niche. Convenience is a main reason: Employees use Google because it is easy, Zoom because they got used to it during the pandemic, Microsoft because it allows full compatibility with other companies' infrastructures. Also, most employees have been acquainted with GAFAM programmes since childhood – schools and universities primarily use these services as well – while the alternative services are not well known.

FLOSS cannot compete with proprietary software financially, either. GAFAM offer valuable applications for free, cross-financing them with advertising. Google, in fact, finances more than 81% of its business through advertising **(Coafono, 2023)**. In comparison, less money is going into FLOSS development, maintenance, and marketing. Sustainable and open-source alternatives urgently need investment, whether to improve usability or other features. Efficient, reliable, and data-secure infrastructure comes at a price – and it is high time companies start asking themselves whether they prefer to pay that price with money or by giving up (not only their) digital sovereignty and privacy. More sustainable business and payment models are needed to provide user-friendly sustainable digital services **(Frick et al., 2021)**. Investing in, using, and developing these services should be a core strategy of corporate digital responsibility.

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## A CALL TO POLITICAL, CIVIC AND ENTREPRENEURIAL ACTION

The US companies that dominate the digital market today with proprietary software have grown with the help of government funding **(Mazzucato, 2013)**. The ‹public money, public code›[2] has the following demand: if software development is funded with public money, then the product must also be available to the public. In other words, it should be open-source software. If this stipulation were a precondition for public funding, at the EU or German level, then the tide would turn in favour of sustainable and decentralised alternatives and the companies that offer them. Additionally, encouraging the education system to integrate FLOSS services into their teaching could create a broad competence basis for FLOSS implementation.

The oligopoly structure of IT infrastructures represents a fundamental and global market failure. This failure can only be countered by regulation and anti-trust law. To reverse monopolisation tendencies and decentralise power structures, policies should also foster technical federalism. Further regulation is needed to shift the balance of power: Tracking and personalisation in online advertising is not only

[2] *See also:*
*Free Software Foundation Europe*
*https://fsfe.org/activities/publiccode/index.de.html*

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///<quote>
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GAFAM's main source of revenue but also has various harmful effects[3] and should therefore be restricted **(McCann et al., 2021).**

We conclude with a call to action – companies, politics, and civic society need to actively democratise our digital infrastructure, which means reducing GAFAM dependency. For digitalisation to be sustainable, it will take more than switching to green electricity or recycling computers. Sustainability goals also require a sovereign, resilient, and decentralised infrastructure, a central component of which is free or open-source software.

[3] *See Tracking-free Ads Coalition – A group of a coalition of political leaders, civil society organisations, and companies from across the EU that are committed to putting an end to the pervasive tracking advertising industry that dominates the internet today.*
*https://trackingfreeads.eu/the-costs-of-tracking-ads/*

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