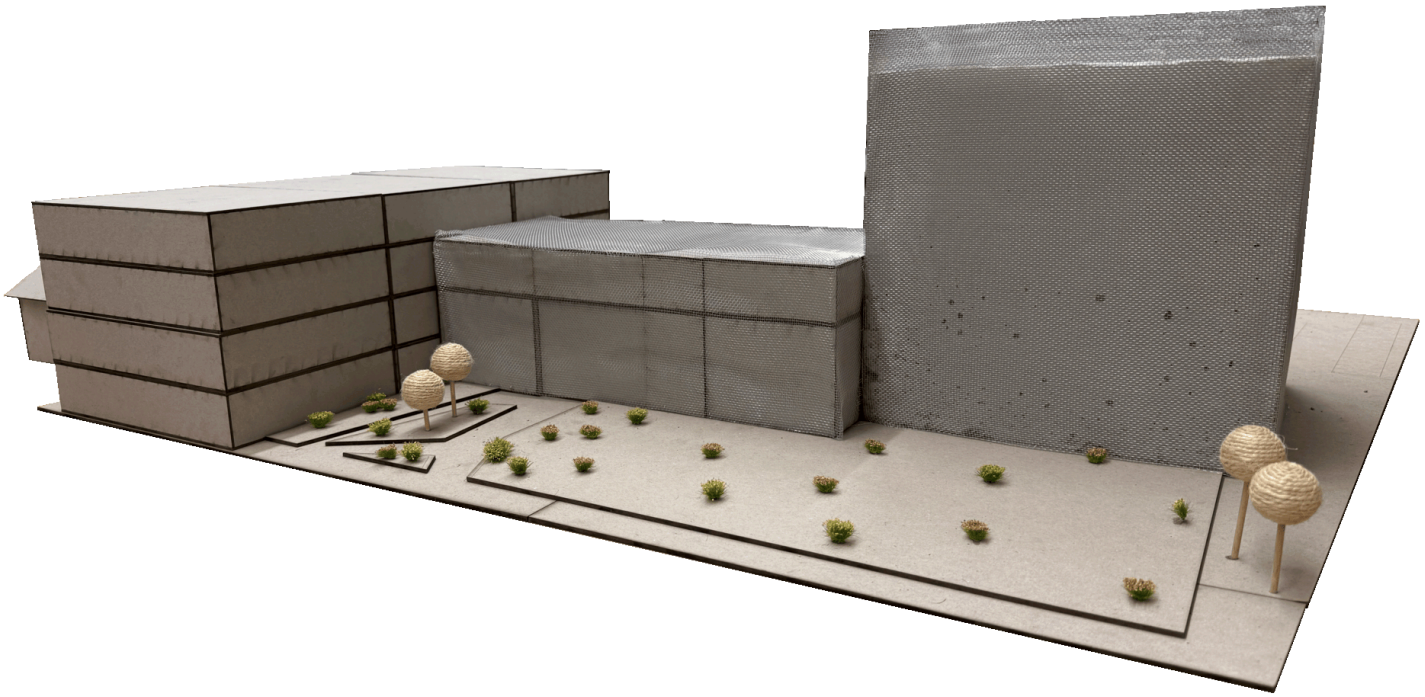
ETH Zurich Department of Architecture
ARCHITECTURE OF TERRITORY
Chair of Architecture
and Territorial Planning
Professor Milica Topalović

The Production of Cloud
Fall 2025

Rethinking Zurich's Data Centres: What Is Truly Civic Infrastructure?

Lena Good, Aqil Durrani, Gabriele Zanni, and Omar El Sayed



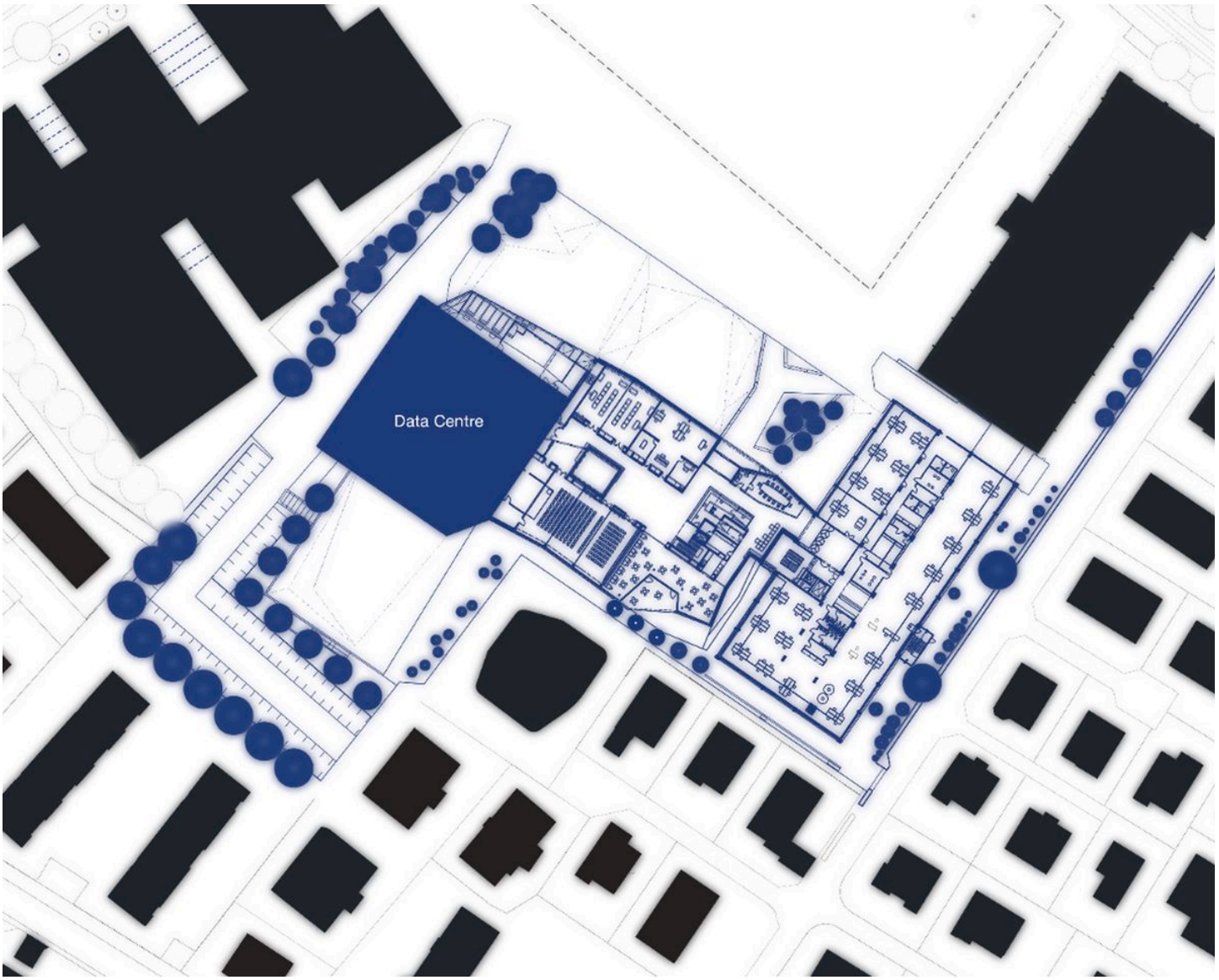
OIZ (Organisation und Informatik) is located right in the heart of Zurich, which is unusual for a data centre.

To the north, it is surrounded by the Utogrund stadium and a small-scale housing neighbourhood. The grey metal façade covering the exterior gives the former Siemens industrial site a uniform appearance. While no telephone components are assembled here today, the site stores data from various city of Zurich branches and is home to banks such as Julius Bär, Vontobel, and the Swiss National Bank. Despite its large footprint, the building often goes unnoticed, as does the inside. In this work, we will examine the various spatial and technological layers of a data centre to reveal the processes and materials behind data storage.

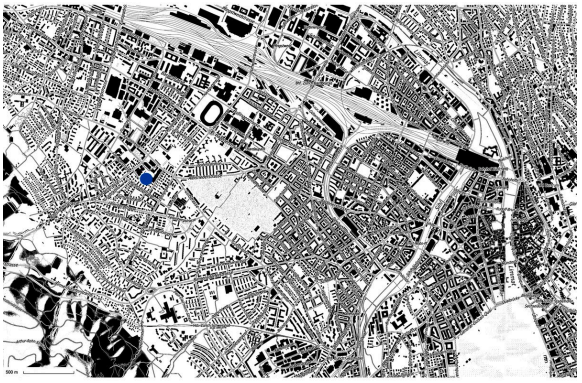
We find that the OIZ remains indifferent to global trends in scale, demand, and resource use. Being a civic infrastructure, we raise the question whether the OIZ should not prioritise the needs of the local communities.

Our design brief challenges the current data centre typology, proposing a true civic data centre that will become a catalyst for how we use and perceive data in the future.

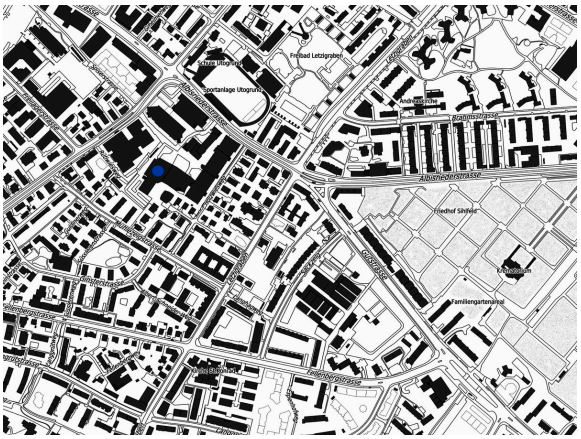
Organisation Und Informatik: By The City, For The City?



The Organisation und Informatik Zürich (OIZ) is a data centre run by the City of Zurich for its own administrative needs. The process began with a vote in favour in 2009 and ended with the opening of the centre in Kreis 9 in 2012. But is it truly for the city? Or does it remain a cog in the current system of data? Through our eye-level perspective of the site and street interviews with neighbourhood residents, we discover an “invisible” entity: it is a civic infrastructure only by name.



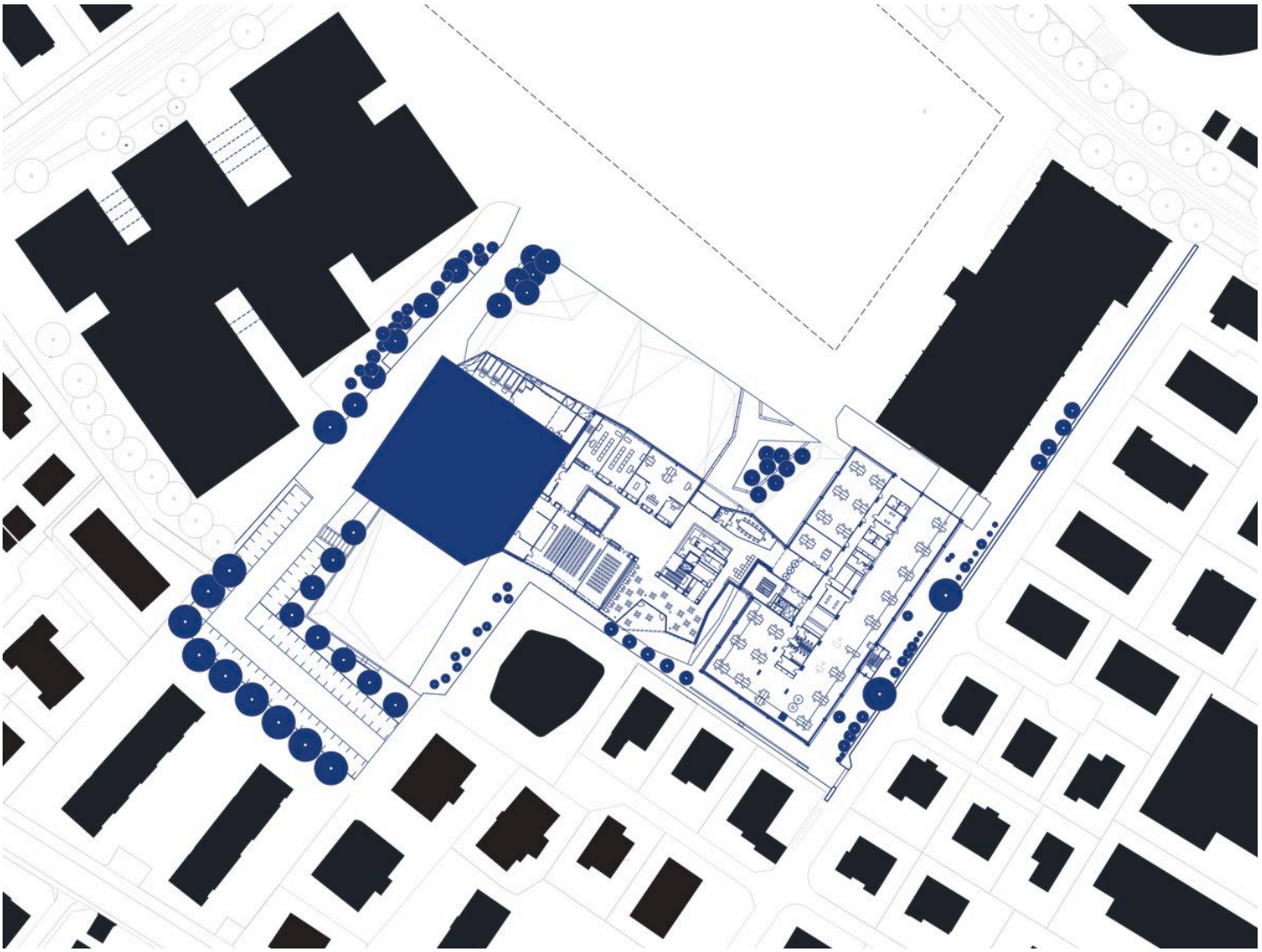
Location of the OIZ in Zurich.
Source: maps City of Zurich.



Location of the OIZ in Zurich.
Source: maps City of Zurich.

The OIZ is located in the centre of Zurich, which is unusual for a data centre as they are often located on the outskirts of cities. Located in Kreis 9, near the Letzigrund sports stadium, it occupies the former Siemens site. It is one of two data centres commissioned by the city to support its digital infrastructure and centralise previously scattered data centres.

The OIZ is made up of three parts, all of which are housed within one coherent building: the data centre, meeting rooms for the city, and offices for the administration.



OIZ Albis nestled within a neighbourhood community. Source: VBK Architects.



Rechenzentrum Albis, Objektkredit von 139,4 Mio. Franken.

Gebiet	Beteiligung (in %)	Ja-Anteil (in %)	Ja-/Nein-Anteil (in %)	Nein-Anteil (in %)
Stadt Zürich	36.4	75.1		24.9
Kreis 1+2	37.4	76.8		23.2
Kreis 3	32.7	76.7		23.3
Kreis 4+5	30.2	78.6		21.4
Kreis 6	40.3	79.2		20.8
Kreis 7+8	42.8	77.6		22.4
Kreis 9	35.1	72.5		27.5
Kreis 10	40.5	75.4		24.6
Kreis 11	34.8	71.4		28.6
Kreis 12	31.0	65.6		34.4

Population approves credit for OIZ. Source: Abstimmungen City of Zurich, 2009.



November 25, 2010

The City of Zurich's Department of Organization and Information Technology wins the Vontobel Group as a data center customer

The City of Zurich's IT department (OIZ) will also house parts of the Vontobel Group's IT infrastructure starting in 2012. A corresponding contract has been signed.

8. December 2010

Bank Julius Bär also becomes a data center customer of the OIZ

With Bank Julius Baer, the organization and IT of the City of Zurich (OIZ) was able to win a second Swiss private bank as a third-party tenant in the municipal data center of Albis. While the IT infrastructure will be moved to the completely separate area of the new location as of March 2012 and secured according to the bank's standard, the actual operation remains fully the task of the IT of the Bank Julius Baer as before.

Press release on hosting partners. Source: Medienmitteilungen City of Zurich, 2010.

In 2009, the people of Zurich voted in favour of the credit for the new data centres in Albis and Hagenholz. With a clear majority in favour, the way was paved for a democratically decided data centre to meet the city's need to store sensitive data, such as health and police data. Meanwhile, half of the area is rented out to third parties, particularly banks such as the Vontobel Group, Julius Bär, and the Swiss National Bank.

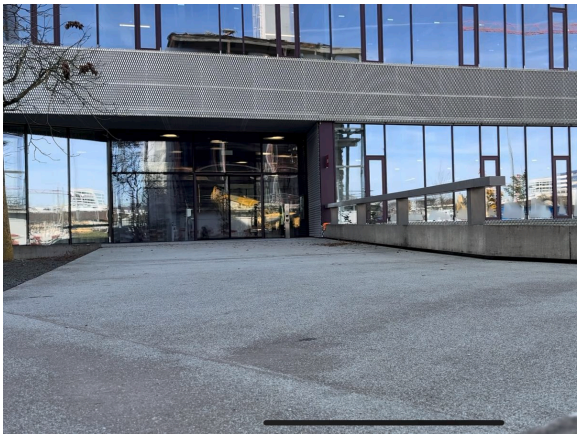
Research on site reveals that there is little functional and aesthetic difference between OIZ and private data centres.



OIZ nestled within the neighbourhood. Photograph: film still from *Missed Opportunities*, the authors, 2025.



OIZ. Photograph: film still from *Missed Opportunities*, the authors, 2025.

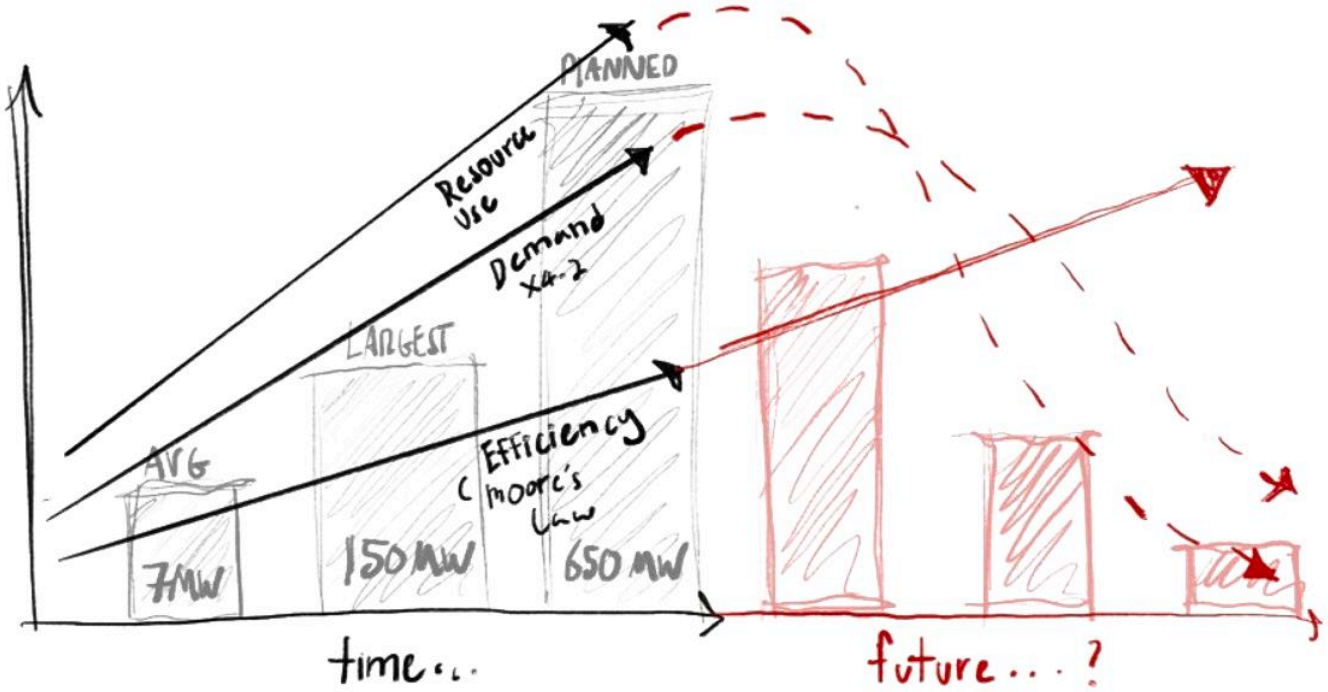


OIZ. Photograph: film still from *Missed Opportunities*, the authors, 2025.



OIZ. Photograph: film still from *Missed Opportunities*, the authors, 2025.

The Generic Global Anatomy Of Data Centres: How OIZ Isn't Any Different



We take a closer look at the data centre, uncovering its layers step by step. From its structural language to its hardware and the data systems they operate on, we find indifference. Although it is called the OIZ, it plays no role in challenging global tendencies in terms of scale, demand, and resource use.

The Language Of Layers



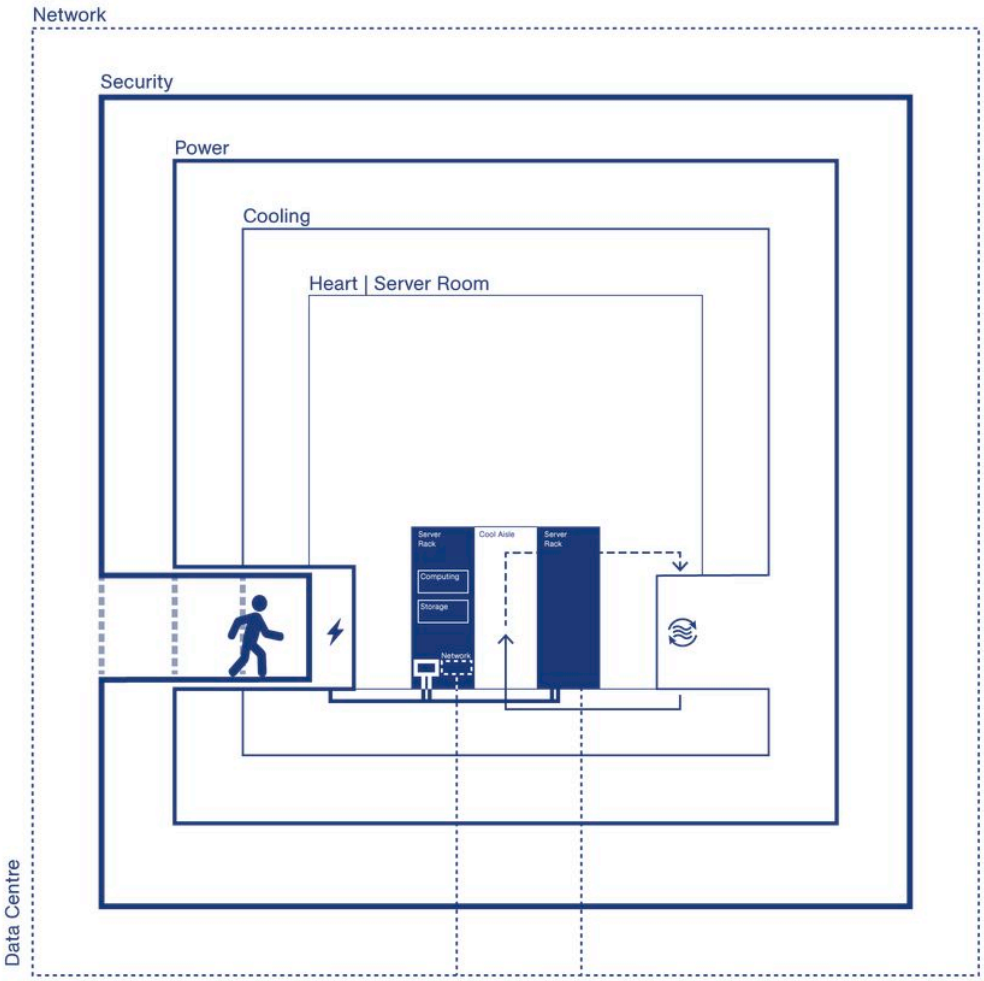
OIZ today. Collage: Aqil Durrani, 2025.



Layers of a "data centre."
Collage: Aqil Durrani, 2025.

When we look into the composition of a data centre, we discover a system of layers, with the servers at its core, supported by layers of security, cooling, and power, all covered by an envelope of facades without openings. This structural organisation, rendering the data centre an entity with no relation to its site, is the global anatomy of data centres.

The first layer is the security layer, which controls who is allowed to enter. The second and third layers contain the power and cooling infrastructure, which supports the third layer: the server room. The same logic applies to the OIZ: the server room and the cooling infrastructure on the roof, as well as the power infrastructure’s chimneys. The Faraday cage in the façade shields against radiation, while the two-door security system prevents access to the data centre.



The layers of a data centre. Drawing: Aqil Durrani, 2025.

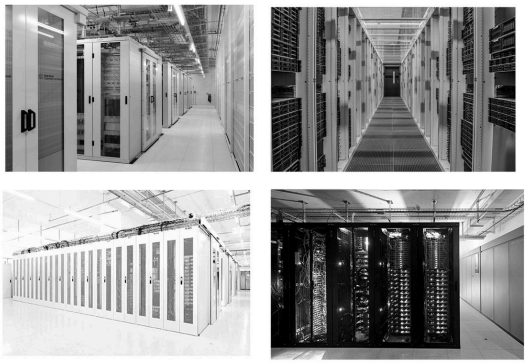


OIZ top view, showing the elements visible on the roof: the power and cooling infrastructure. Source: VBK Architects.

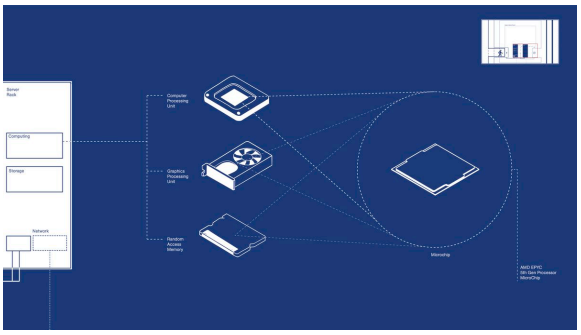


OIZ floor plan: the server rooms, security Layers and network lines. Source: VBK Architects.

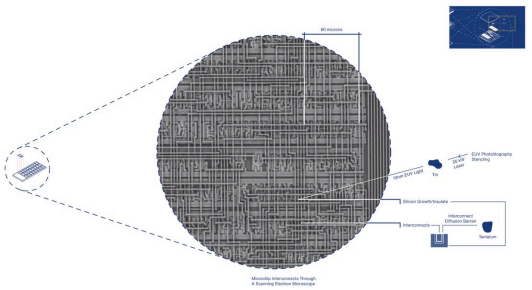
Heart'ware, Same Everywhere



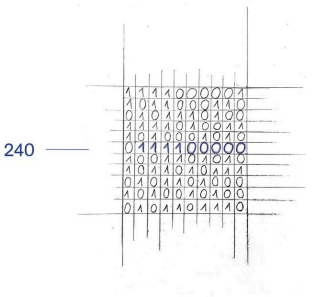
Resembling server racks. Photographs: OIZ, Green, Digital Realty. Composition: Leandro Gohl, 2025.



Components of the microchip. Drawing: Aqil Durrani, 2025.



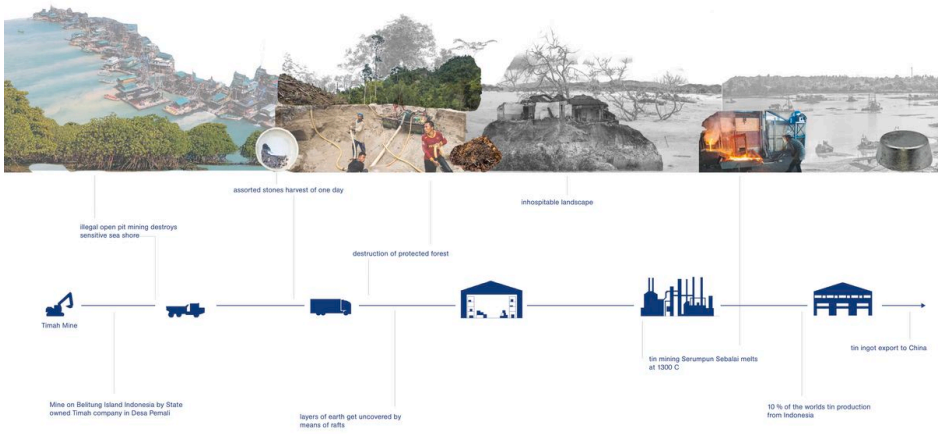
Layering of the microchip.
Source: Aqil Durrani, 2025.



Data is one's and zero's.
Drawing: Lena Good, 2025.

At the very core of the data centre lies its heart, the server rooms, which contain racks that compute and store data twenty-four seven. The top left rack belongs to the OIZ; the others come from the various other data centres. We delved deep to uncover the individual layers within the server room itself. From the hardware components to the individual microchips, they all share the same physical materiality. Zooming in further, beyond what the human eye or any machine can see, we can observe the structure of data: the ones and zeros that run the digital world.

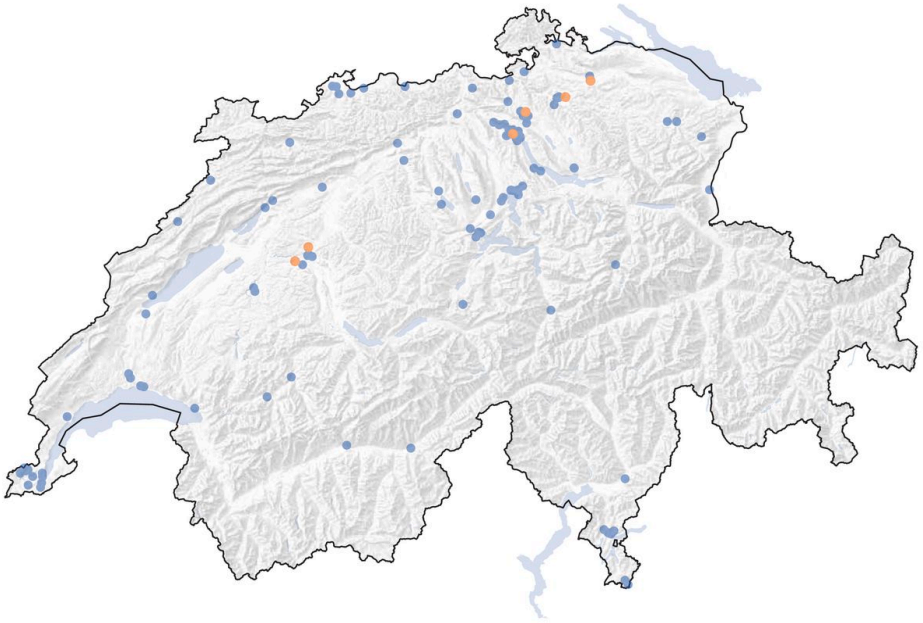
Tin Production for Microchips



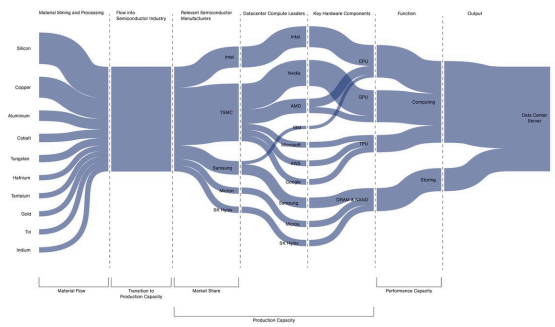
Tin production. Source: The Guardian, 2012,
Akutmag, 2014. Drawing: the authors, 2025.

Microchips are made from numerous different materials, often extracted from the soil by large extractive industries. Tin mining, which is crucial for the functioning of microchips, mainly takes place on Belitung Island in Indonesia, leaving destroyed seashores and destabilised livelihoods in its wake. The same goes for the extraction of tantalum. The international trade route, which includes countries such as the DRC, China and Taiwan, each specialising in a part of the process, affects the environment and the population negatively.

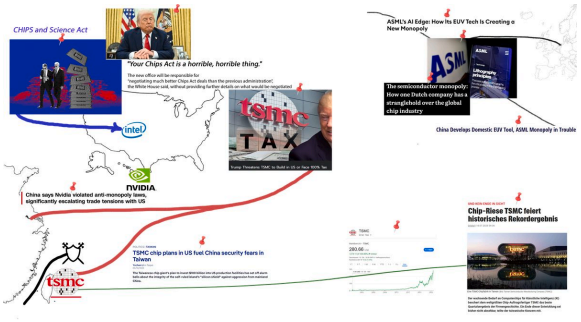
Commodification of Data and the Global Dependencies on Monopolies



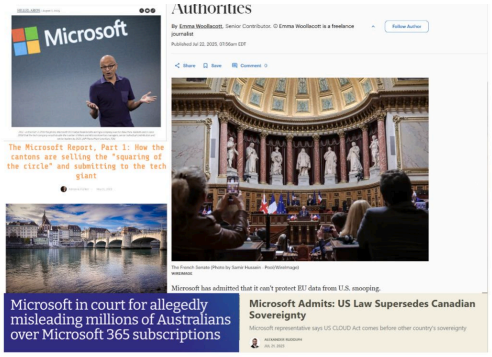
Map of Switzerland showing the distribution of private (blue) and public (orange) data centres. Drawing: the authors, 2025.



The supply chain of microchips from the material extraction to the assembly in server racks. Drawing: the authors, 2025.



Geopolitical tensions: collage: the authors, 2025.



Articles highlighting the issues arising due to the dependency on Microsoft. Source: ACCC 2025. Collage: the authors, 2025.

Both private and publicly owned data centres are deeply embedded in global systems of dependency. They rely on hardware, software and services supplied through a highly concentrated market dominated by a small number of powerful corporations. Consequently, public digital infrastructures remain vulnerable to economic fluctuations, political decisions and strategic interests beyond their control.

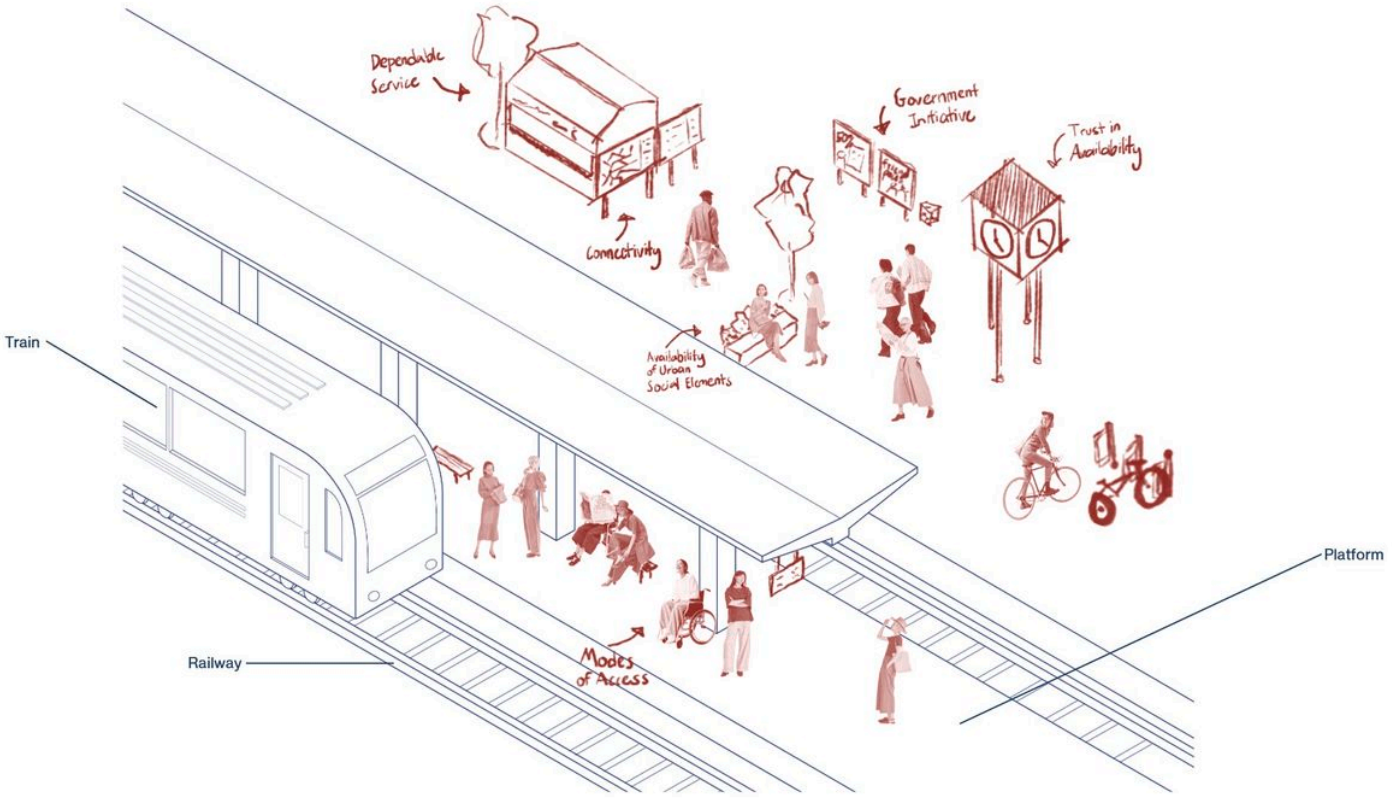
These dependencies extend far beyond individual technologies or service providers. The semiconductor supply chain itself is shaped by monopolistic structures and geopolitical tensions. A small number of companies control critical stages of chip production and manufacturing technologies, while state-led initiatives and trade policies are increasingly attempting to secure national advantages within this global competition. Digital infrastructure thus becomes a strategic asset, becoming intertwined with international power relations rather than being governed solely by civic or public interests.

Beyond material dependencies, control over data and digital platforms further complicates questions of sovereignty. Core operating systems, cloud services and digital ecosystems are largely owned and governed by private corporations headquartered outside the jurisdictions in which they operate. This creates a structural imbalance in which even state actors struggle to maintain autonomy over their own digital infrastructure.

This condition is also evident in Switzerland, where public authorities are increasingly dependent on proprietary platforms and global suppliers. The result is long-term dependency, which limits public oversight and weakens states’ capacity to ensure digital sovereignty.

The central issue is not the dominance of a single company, but a systemic condition whereby the ability of states to govern, secure, and democratise their digital systems is fundamentally constrained when digital infrastructure is built upon monopolised supply chains and private, foreign-controlled platforms.

What Is Civic Infrastructure In Switzerland? The Failure Of OIZ



What does “civic infrastructure” mean in the Swiss context? Looking at different civic infrastructures in Switzerland and what makes them “civic”, we extrapolate three characteristics: publicness, accessibility, and transparency. Rather than aligning with these, data centers currently resemble infrastructural typologies like water treatment facilities or power systems—essential, yet largely detached from the public realm.

Civic infrastructure comprises complementary halves: hard infrastructure systems are supported and enabled by soft infrastructure systems. Without good connections, infrastructure simply has no civic purpose.

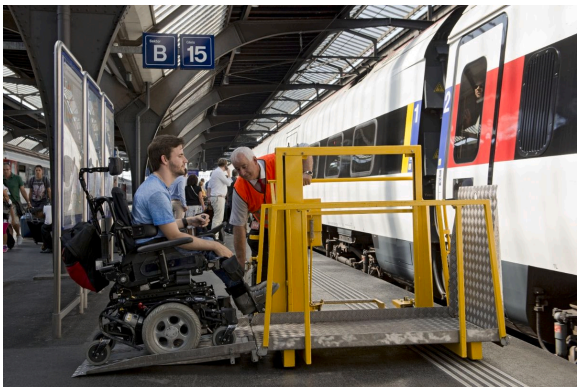
This relationship can be easily understood by considering the typology of major train stations such as Zurich main station. The physical elements of stations, such as the railways, platforms, and trains, constitute this system of hard infrastructure. However, when we experience a train hub, it is more than just physical elements.

Soft infrastructure is present in the trust we have that the trains will arrive on time. These include the multifunctional spaces provided by the different architectural elements, the myriad secondary spaces that support the station and the ease of access for different mobility options. Soft infrastructure also encompasses the government's role in ensuring connectivity to even the most isolated areas and the availability of tiered fare systems. These soft infrastructure systems complete the identity of civic infrastructures.

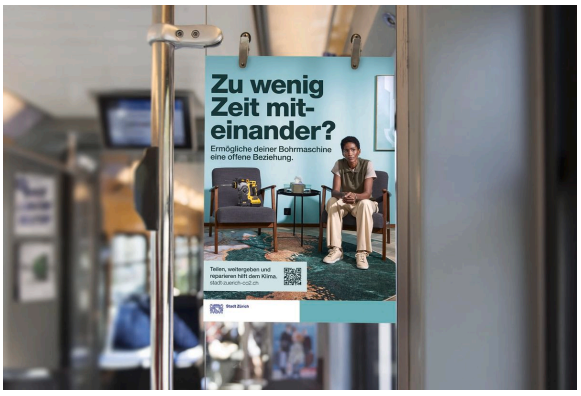
Publicness, Accessibility, Transparency



Publicness. Source: Diepost, 2023



Accessibility. Source: SBB, 2025



Transparency. Source: Jeff, 2024

To compare different infrastructures, we defined three criteria based on what we consider essential for a civic infrastructure.

PUBLICNESS

The first criterion is publicness. It addresses whether an infrastructure is readable and understandable, whether it is inviting, and whether it is clearly recognizable for what it is. Publicness is not only about physical presence, but about how an infrastructure communicates itself to the public and whether it can be perceived as part of everyday civic life.

ACCESSIBILITY

The second criterion is accessibility. This includes questions of access, openness, and usability. Accessibility examines whether an infrastructure can be easily reached and entered, whether it is open to different groups of people, and how intuitively and comfortably it can be used in everyday situations.

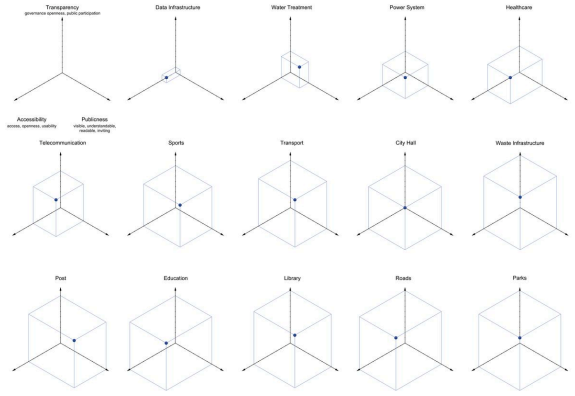
TRANSPARENCY

The third criterion is transparency. It relates to governance openness, understood as transparent communication by public authorities, as well as to the possibility of public participation. Transparency considers whether the processes behind an infrastructure are communicated openly and whether the public is able to engage in discussion and discourse around it.

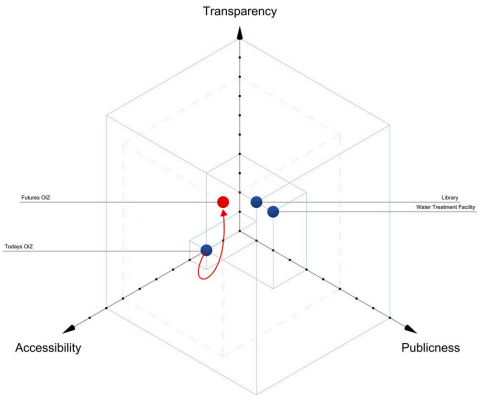
Using these three criteria as axes in a comparative framework, we evaluated different types of public infrastructure. This comparison reveals how poorly data centers perform when measured against civic standards. Rather than aligning with institutions such as libraries or city halls, data centers currently resemble infrastructural typologies like water treatment facilities or power systems—essential, yet largely detached from public life.

This raises the question of whether this is the point at which a shift must occur, particularly in the context of OIZ. While transparency may be achievable within existing operational constraints, the notions of publicness and accessibility fundamentally challenge conventional understandings of how data centers function.

How, then, can the current perception of a data center be transformed? How might it be understood less as a hidden technical facility and more as a civic institution comparable to a library? To address these questions, it is first necessary to examine how data infrastructure is currently perceived and which factors shape this perception.



Comparing data centres to other civic infrastructures according to the three characteristics: publicness, accessibility, and transparency. Drawing: the authors, 2025.



To become a truly civic infrastructure, the OIZ would have to adapt in terms of publicness, accessibility, and transparency. Drawing: the authors, 2025.



Missed Opportunities, the authors, 2025.

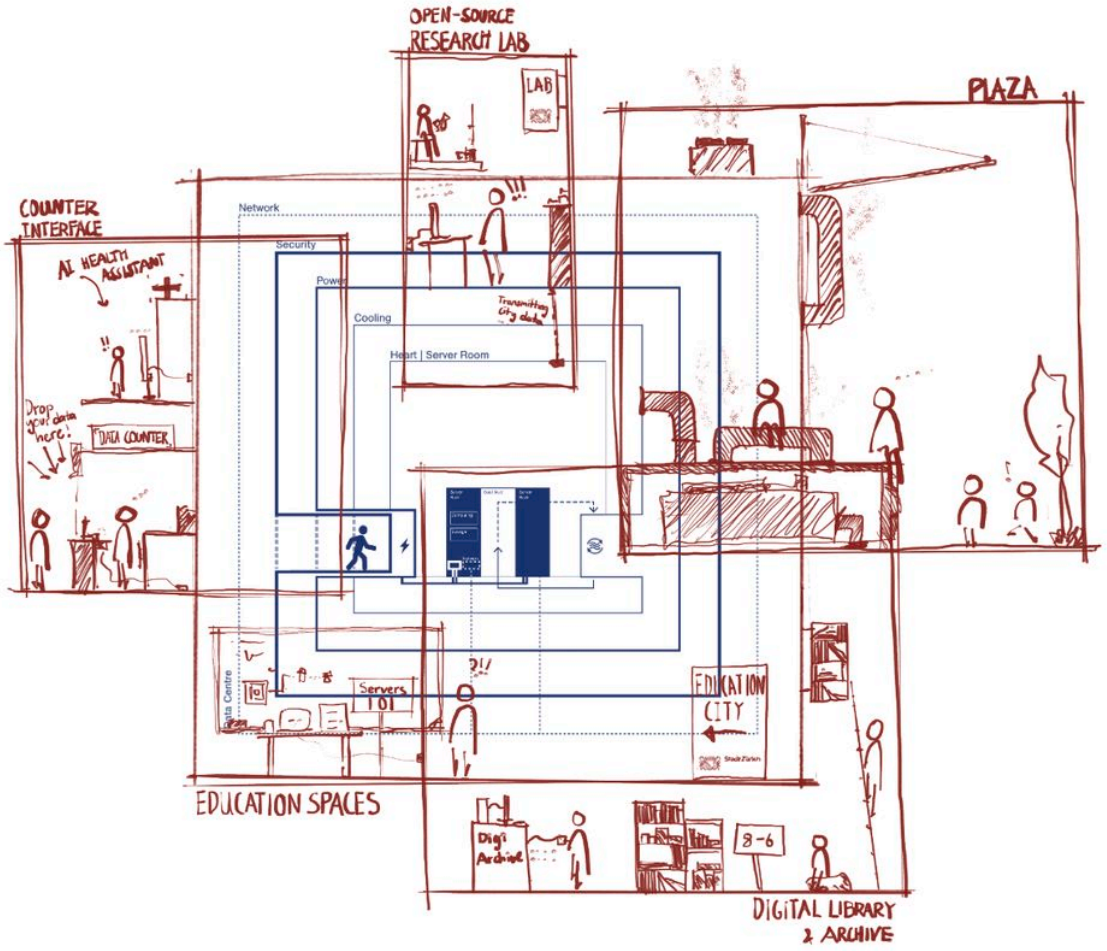
https://youtu.be/yGOt2raav1Q

We began our fieldwork and video reportage by investigating the distinctive characteristics of OIZ, given that it is run by the city. As discussed in the first chapter, we reached the disappointing conclusion that the data centre does not appear to differ significantly from others. However, there is more to it than that. Our interviews with nearby residents revealed a shocking truth about OIZ's failures as a civic infrastructure.

A lack of education and awareness is a key factor. This is evident in the fact that the residents could not even identify that it was a data centre. However, this issue also exists at a deeper social level, rooted in the systemic dependency on service models sold to us by monopolies such as Microsoft. As a society, we consume data without considering how it works or the consequences of data production.

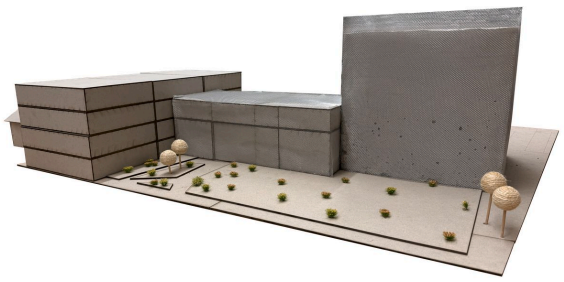
The still shots of the data centre and the interviews also reveal another issue. There is a lack of civic interface. We are presented with blank metallic façades and the opinion that the space is not meant to be entered. While it is understandable that the data centre operates in this way due to factors such as security, perhaps as a civic infrastructure it should be perceived more like a library than a water treatment system. We can question this position of material and physical indifference.

Social Spaces In A Digital World

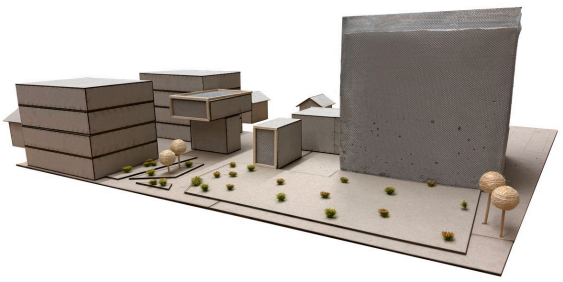


By proposing a new civic data centre typology, we have positioned OIZ differently within global data trends, exploring what it means to be “for the city, by the city.”

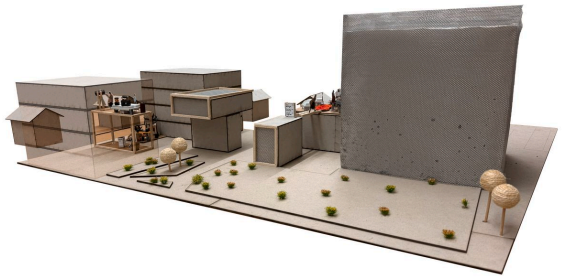
The System



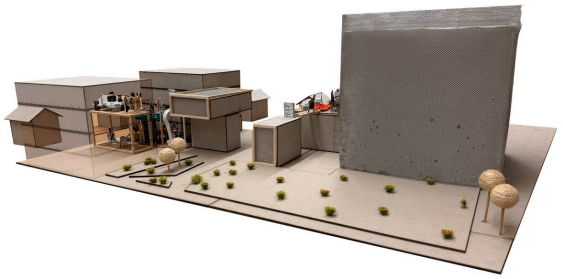
The original building. Photograph and model: the authors, 2025.



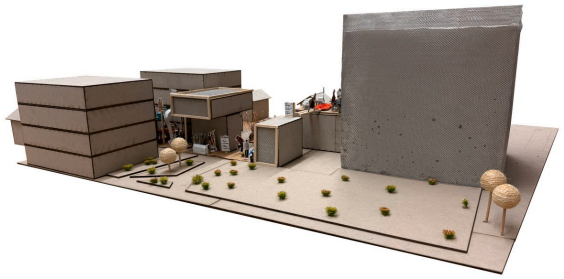
Freeing the façade and form. Photograph and model: the authors, 2025.



Educational space dioramas. Photograph and model: the authors, 2025.



Library and digital archive dioramas. Photograph and model: the authors, 2025.



Plaza dioramas. Photograph and model: the authors, 2025.



Counter-interface dioramas. Photograph and model: the authors, 2025.

We explored the idea of supporting the data centre as hard infrastructure by incorporating social spaces to create interwoven soft infrastructure systems adapted to the digital world. This approach builds upon the layers of the data centre to create a data-centric hub based on the context of the government, city, and site. This would foster transparency in how data operates and is used by the city, making the data centre more legible as the physical backbone of the city's data system and encouraging access to data as a public good instead of a commodity.

Our proposal is not radically different, but the physical manifestation of these social spaces sets a precedent for reimagining new social constructs within which data can operate. As a civic data centre, the OIZ becomes a catalyst for future change in how we use and perceive data, establishing a new position within global trends in scale, demand, and resource use.

The Spaces



EDUCATIONAL AND WORKSHOP SPACE
Photograph and model: the authors, 2025.

EDUCATION AND WORKSHOP SPACES

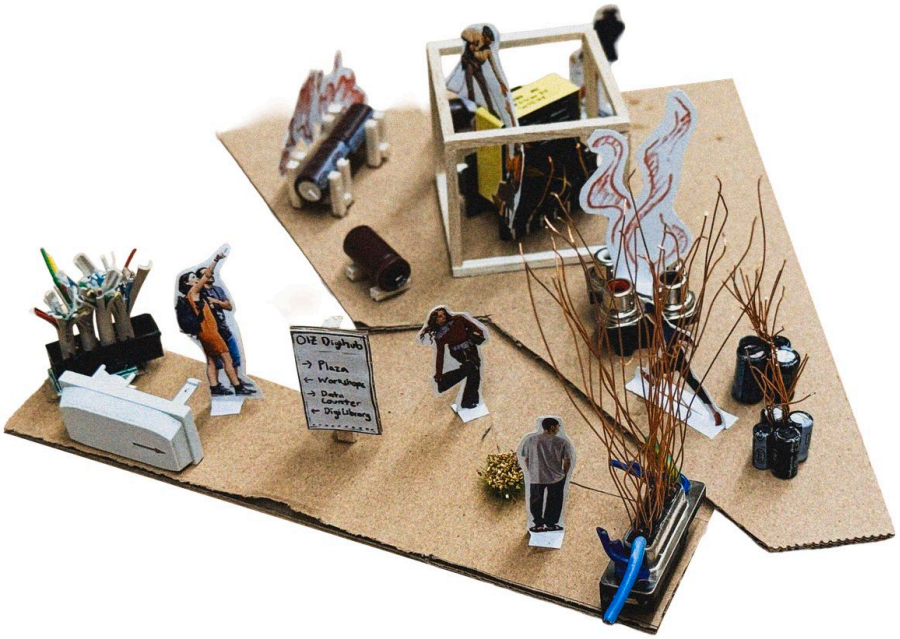
Data is a fairly new concept, and many people are unaware of the problems associated with the world of data. The lack of understanding of how data works and its physical nature poses a danger to future generations. The data and digital infrastructure we know today perpetuates global tendencies of scale, demand and resource use. Breaking this cycle and establishing the OIZ as a civic infrastructure begins with fostering a deep societal understanding of how data works. In order to break the system, it must first be understood and then challenged. The workshops and educational spaces provide a medium for collaboration and sharing and demonstrate that a strong knowledge base is needed in our current society.



LIBRARY AND DIGITAL ARCHIVE
Photograph and model: the authors, 2025.

LIBRARY AND DIGITAL ARCHIVE

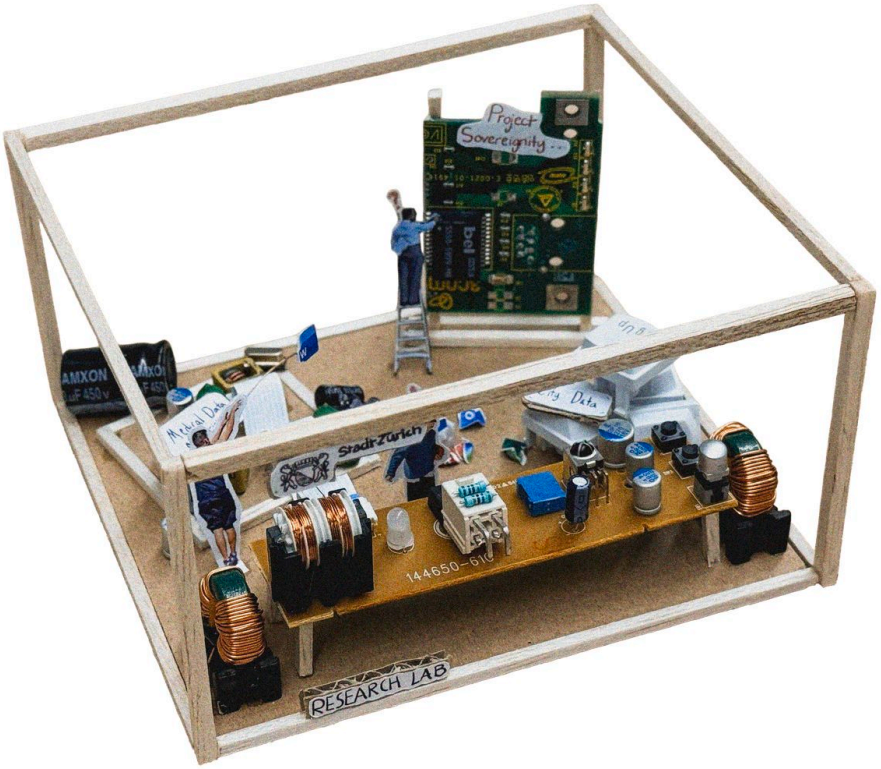
Fast, round-the-clock access to high-resolution data. This is how the world operates. We have become increasingly accustomed to the parameters within which data operates today. Dependency is created through the service models offered by companies, and we as a society do not dare to challenge the assumption that data should function in this manner. But what if we did? What if we treated data non-homogenously? These questions have led us to the digital library and archive. This is a manifestation of the argument that some data can be handled differently. It provides physically constrained access and is not always online. This space provides an area for interaction and proposes the concept of a dataset within the bounds of a biological rhythm. It is an archive of city data stored within a non-intensive data centre, challenging all assumptions about data storage.



PLAZA
Photograph and model: the authors, 2025.

PLAZA

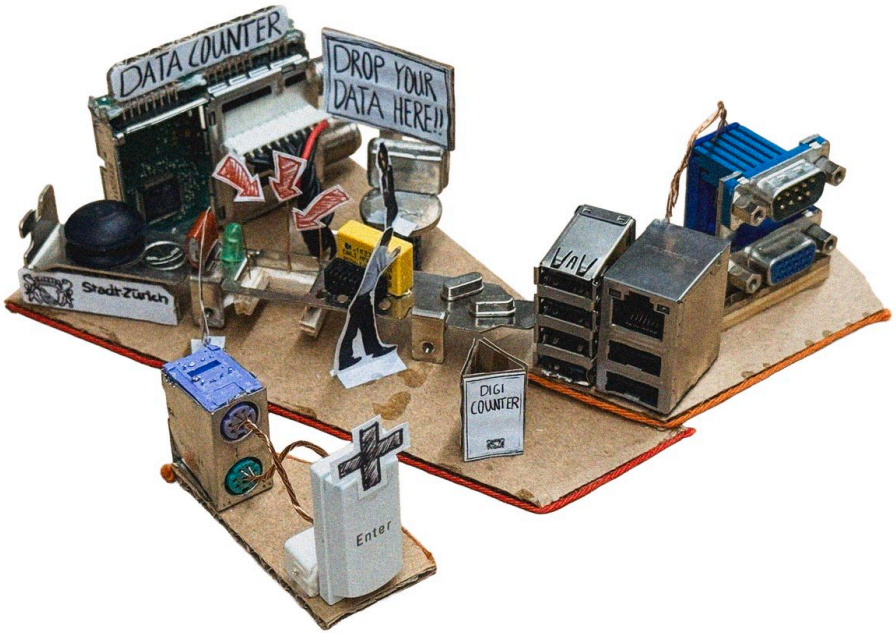
Our early investigation of data centres led us to understand the issue of waste heat. While this was not our primary objective, the fact that most data centres, including the OIZ, produce more heat than district heating networks can handle presented us with a unique opportunity. A plaza is usually seen as a symbolic space. In pursuit of difference, the OIZ could symbolise the city's transition to sustainable data practices and digital sovereignty. By exposing the heating pipes that lead into the city, we can emphasise the importance of data infrastructure whilst creating heated spaces that encourage social interaction. Other supporting infrastructures, such as pipes, vents and power systems, can be reimagined to become symbols of what data truly is.



OPEN SOURCE RESEARCH LAB
Photograph and model: the authors, 2025.

OPEN SOURCE RESEARCH LAB

The commodification of data is the primary driver of global trends in scale, demand, and resource usage. As a society, we have fallen into data dependency, consuming data without questioning or challenging the assumptions of data systems. Much as the foundations of education are needed to put the OIZ and the city in a position of difference, a driving force is also needed to claim digital independence. We realised this through our concept of an open-source research lab. Like the concepts of Eurostack and open-source platforms, the lab represents a shift away from these dependencies. Everything from microchips and service models to the operating systems on which data functions fall within the purview of a few major players. The aim of the Open Source Research Lab is digital sovereignty, which involves not only creating independent systems, but also challenging the industries that produce the physical infrastructure behind data by giving a voice to the people.



COUNTER-INTERFACE
Photograph and model: the authors, 2025.

COUNTER-INTERFACE

As digital spaces become increasingly individualised, humans begin to lose their sense of self. Digital spaces are becoming smaller with every technological improvement, with screens becoming smaller and physical media becoming less and less present. We challenge this way of operating with data by inviting human-to-human interaction with data. This is a counter where data services are treated as public goods rather than commodities. Here, the possibilities are endless. We have imagined a digital vault that would be made available to the public for storing their data away from the reach of private companies. An AI assistant accompanies this service, providing residents with an interface to ask about health symptoms. It is trained using reliable data gathered within the city. These services represent a shift away from providers such as Google Cloud and OpenAI, towards the creation of a reliable system governed by the city, while also fostering human interaction within the data sphere.

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