SDIA

Building a Sustainable, Federated European Cloud: **A Vision for Europe**

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This document outlines the vision for a sustainable and accessible European cloud; one that will be open-source, fair, and create economic opportunities for all. Despite existing challenges, it is possible and may soon become a reality. Such digital infrastructure will reflect European values and provide a blueprint that others around the world can draw inspiration from to further develop their own digital economies.

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Executive Summary

We have identified several challenges in the existing cloud infrastructure.

1. Cloud infrastructure is currently wasting resources and therefore creating a larger carbon footprint than necessary.
2. There is a lack of European geopolitical presence, as big US-based tech firms are dominating the market.
3. We have identified anti-competitive customer acquisition practices, such as big cloud providers giving 'credits' to use cloud infrastructure to both existing businesses and startups.
4. Existing cloud providers are of a vertical nature, locking in the customer to one vendor. We need to unbundle the services from the underlying market to create a more competitive market.

Our Vision is to create a European cloud platform of regional marketplaces.
The design criteria of a European cloud platform are:

- Fairness: creating a competitive European marketplace
- Efficiency: greater competition between digital power suppliers also promotes efficiency, increasing data center and hardware utilization rates while reducing energy waste and carbon emissions.
- European Alignment: we need a unified approach to access green digital power across Europe, amplify diversity, foster innovation, and facilitate fair competition.

Next steps: regional and national starting points and using Europe's existing data center infrastructure.

Different regions can create their own infrastructure and make it part of their nation's total cloud infrastructure by participating in a national marketplace. Each nation taps into a European or even global single market, creating a competitive marketplace for digital power on which the digital economy can be built in a sustainable way and with a long-term vision.

There are several reasons for bringing together Europe's existing infrastructure.

1. We need to focus on upgrading, retrofitting, and renovating existing resources, as IT hardware needs to be continuously renewed regardless of the age of the facility.
2. Bigger is not necessarily better: advances in IT hardware efficiency and performance have levelled out, meaning that applications now need to scale horizontally. They need more total infrastructure, rather than upgrading to faster or better infrastructure.
3. The existing infrastructure is vastly underutilized due to layers of redundancies and architecture that is designed for "peak capacity."

1
Context: Europe in the cloud age

At present, Europe and its ecosystems have all the necessary resources at their disposal to become leaders in the ever-growing global digital economy. This would benefit individuals and societies by providing greater opportunities, as well as the environment thanks to the European Union's (EU) high sustainability standards. Likewise, it offers the potential to enhance businesses' competitive edge.

Digital infrastructure includes data centers, fiber and mobile networks, and the equipment within those facilities. This infrastructure is fundamental in transporting data, delivering applications, computing complex problems, deriving insight, and decision making. Without this infrastructure, the promise of the digital revolution cannot be realized, and tech giants will continue to determine the pace and direction of the digital economy's growth.

> *As digital infrastructure becomes increasingly critical for the proper function of modern society, the primary question is how to make digitalization accessible, sustainable, and secure for all.*

While it is certainly a technical challenge to create equal and universal access to digital power, it is also not a totally unfamiliar challenge. Electrification was once inconceivable, and yet today the majority of the worlds' population has inexpensive and virtually unlimited access to electricity. Europe's current digital infrastructure has the capacity to provide everyone with affordable access to available digital resources.

> *What is lacking is a unified and open interface for the computation, storage, and network capacity that would unlock access to available digital resources, namely through regional digital marketplaces.*

Such marketplaces would liberate access, create transparency, provide redundancy, and enable fair pricing.

As Europe increasingly embraces cloud infrastructure, it could leverage its strengths in terms of renewable energy, research and development, innovation, and the desire to lead in creating a sustainable economy. A functional European cloud platform would be the ideal infrastructure for the continent's growing digital economy, one that would offer limitless opportunities by encouraging local, small-business innovation and digital transformation in both an environmentally and economically sustainable way.

Such a platform naturally embodies and reflects European values of collaboration, transparency, and inclusivity. By bringing Europe's existing infrastructure together to make it accessible, sustainable, and competitive, it would create a region-wide platform that supports digital businesses' and applications' growth and innovation. Furthermore, a rigorous, locally-owned and distributed digital infrastructure would also hedge against political instability, acting as a bulwark against both local corporate takeovers and geopolitical threats from overseas.

With the ongoing process of digitalization affecting almost every aspect of our lives, Europe needs to have quality digital infrastructure that will last for decades. Digital power — the commodity that combines all digital resources produced by such digital infrastructure — is the key ingredient for new emerging digital technologies, and this will

also contribute significantly to the growth of Europe's digital economy over the coming years.

Designed as a set of regional marketplaces, a European cloud platform, will enable sustainable and competitive digital power procurement. This will both provide support for emerging digital technologies as well as attracting global technology companies to build their digital business on Europe's backbone.

At the same time, a European cloud platform needs to provide the same level of convenience that consumers have become accustomed to, while leveraging existing European infrastructure and creating inclusive growth opportunities for the pan-European community. The resulting operating model of a sustainable cloud platform can then act as a blueprint for other nations or regions to follow. Using open values, the technologies and business models that drive this sustainable digital economy can be made available to everyone.

2
Current challenges of the existing cloud infrastructure

2.1
Carbon footprint

Many enterprise data centres across Europe are significantly underutilized, operating, on average at less than 30% capacity. This results in unnecessary energy consumption, wasted resources, and heat-generation as well as a large carbon footprint. In fact, the Information and Communication Technology (ICT) sector is singularly responsible for "5-9% of the world's total electricity use and more than 2% of all emissions" (European Commission, 2020, p. 6). Meanwhile, companies across Europe continue to install servers rather than utilizing existing infrastructure to access cloud technologies that could be provided by existing infrastructure, often more securely. There are green data centres powered by renewable energy, particularly in the Nordic region however, these sustainable practices are not sufficiently rewarded in the cloud market at present.

2.2
Lack of European geopolitical presence

The current market structure of cloud computing is oligopolistic, with big tech firms in the United States dominating market share. This creates significant barriers preventing many European providers from entering the market, raising concerns about fair access and competition (or the lack thereof). On the demand side, an increasing number of companies in Europe, particularly small and medium-sized enterprises (SMEs) and start-ups, are moving business operations to the cloud, invariably through a large US

provider. As a result, the European business ecosystem is currently missing out on potential revenue generated by the ongoing costs of using the public cloud, exacerbating the ever-widening gap in digital power provision. With European businesses paying for foreign cloud infrastructure, Europe is financing the expansion and capital investments of foreign cloud providers, strengthening their market position further and expanding their oligopoly.

2.3 Anti-competitive customer acquisition practices

Today's cloud providers are flooding the market with free digital resources — making them available as 'credits' to existing businesses and emerging startups. These upfront credits can be worth anywhere between €20-100,000 upfront, which is beyond the means of most regional and national cloud infrastructure providers. Offering such 'free' resources requires building underlying infrastructure, something that most providers do not have capital for and simply cannot afford. Furthermore, even if a product, service, or infrastructure is greener, more cost competitive, or simply better, the current incentive system for new customers stymies competition. This is especially true for new entrants into the cloud infrastructure market, who are generally unable to offer the same types of credits and large discounts as multibillion dollar companies. Such practices create a distorted market environment; one in which only actors who can afford to pay upwards of €20,000 are able to compete.

2.4 The vertical nature of existing cloud providers

The current landscape of cloud providers evolved quickly from providing solely infrastructure to offering value-added services like databases and backups. In the process, the underlying machinery has been made invisible, providing digital resources that are fungible commodities.

Using any of these cloud services, which are convenient and reduce the development costs of software applications, creates an automatic lock-in, as all of these services are powered by the same resources generated by the cloud infrastructure provider. Even though the resources are commodities, the consumer is locked in to one vendor when using these services. Selling more services therefore increases lock-in and simultaneously increases the market share of the underlying cloud infrastructure.

Unbundling these services from the underlying infrastructure is key to enable a more competitive market for cloud infrastructure while reducing costs and enhancing quality of the services themselves. It gives customers greater freedom to choose between various providers based on factors such as who is greener, more cost competitive, or more regional.

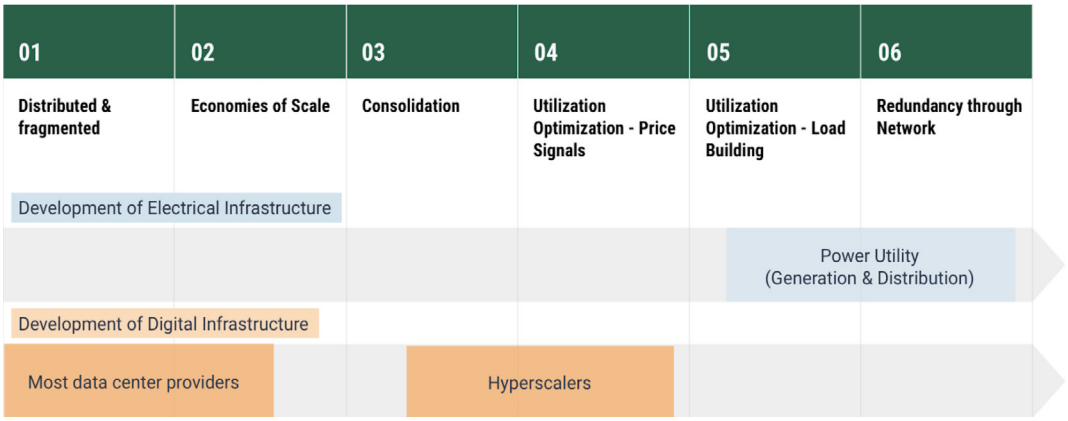
The unprecedented growth in construction of bundled, siloed, hyperscale data centers across Europe essentially duplicates the same infrastructure for each individual cloud service provider. While this may make sense financially due to high profit margins, it is also an unnecessary and colossal waste of resources. As a society, we would not build

five of the same train tracks next to each other so that train operating companies can compete. Would we not argue instead that they should rather compete on the same rail which is itself the commodity?

The concentrated nature of the market, along with the vertical integration tactics of the major providers, results in restricted consumer choice and vendor lock-in. Gaia-X, the EU's current cloud infrastructure project, seeks to tackle this problem by ensuring "interoperability and portability across infrastructure, applications and data." Despite ongoing efforts, a feasible solution has not yet emerged.

3
Our Vision - A European cloud platform of regional marketplaces

Research conducted by the Sustainable Digital Infrastructure Alliance (SDIA, 2020) has found striking similarities between digital power and electricity in terms of their properties as a utility. For example, both are transient and instantaneous in consumption. Like electricity, digital power is increasingly necessary and critical to the function of daily life. M&A activity in the data center industry over the last decade closely mirrors the behaviour of electricity suppliers prior to the formal market creation in the 20th Century, particularly in terms of market consolidation.



As such, the evolution of electricity markets provides case studies to guide avenues of research. Building a European digital power marketplace based on an energy marketplace paradigm averts the type of bottlenecks the latter encountered in its formation.

Europe today has a single market for electricity which has made it easier to trade across borders, and resulted in more providers, lower prices, and better value for customers and society at large.

3.1 Design criteria of a European cloud platform

The proposed digital infrastructure will offer technology companies what they crave: a fair and accessible market that produces a competitive and sustainable cloud platform offering affordable resources. One that is capable of delivering digital power that will help companies and enterprises participate in the digital economy, with no negative impact on the environment.

3.1.1 Fairness

A competitive European marketplace brings fairer conditions that expand the market to a greater diversity of providers. Inclusive participation of cloud infrastructure and information technology (IT) service providers, as well as small to medium-scale data center operators, stimulates infrastructure investment in regional areas. An effective platform for the exchange of digital power requires interoperability, meaning that the quality and suitability of provisions determines success, as opposed to relying largely on vendor lock-in. Unbundling the marketplace leads to greater choice and flexibility for the burgeoning number of cloud adopters across Europe.

3.1.2 Efficiency

Greater competition between digital power suppliers also promotes efficiency, increasing data center and hardware utilization rates while reducing energy waste and carbon emissions. Consumers subsequently benefit from more competitive and transparent pricing, and an ecosystem arises that encourages competitive digital-native businesses and brings Europe closer to a full digital transformation.

3.1.3 European alignment

A European marketplace can be effectively regulated to align with European goals. For example, a key part of the work within the SDIA is to analyze the role of market tools and policies in achieving carbon neutral targets and ensuring green data centers are fully utilized. This could shift digital power production to areas with the capacity to generate renewable energy. A single marketplace could also alleviate issues raised by restrictions on the transatlantic data flow and build trust between European market participants: a centralized European cloud platform composed of diverse regional infrastructure providers, acting in Europe's best interest.

Creating a cloud that is more cost-competitive and more sustainable in both economic and environmental terms will also help drive digital innovation across the continent.

A European cloud will also align with the sustainability goals of the EU's European Green Deal, while accelerating its progress and enabling a green transformation. At the same time, by utilizing existing infrastructure, it will not create a new environmental impact, which makes it even more necessary given the already present climate crisis. Sustainable European cloud infrastructure provides the foundation upon which new and existing sustainable software technology and digital business models can be built – ones that Europe urgently needs to realize its ambitious climate goals.

A competitive European cloud infrastructure inspires innovation, from sustainable software technology to new digital business models, that improves the lives of all Europeans. Concurrently, such innovation enables the continent to set a new precedent for climate goals, all while using digital technologies. Service providers dependent on digital power as their main commodity can utilize the European cloud platform to offer a unified marketplace of sustainable digital services.

A unified approach to access green digital power across Europe

> *Providers and builders of digital products and services have a tangible benefit from a European cloud platform. Even though its infrastructure is decentralized and uses markets to optimize costs and allocate resources efficiently, the resulting European cloud platform enables the centralized sourcing of green digital power across Europe.*

This unified interface of digital resources builds on Europe's existing regional resource production and internal market competition, driving a better end-product for European businesses and citizens. As European businesses increasingly digitize and compete globally, they require a strong, resilient, and sustainable backbone to deliver digital products and services on a global stage.

A cloud that embodies European values and offers better solutions

European values – including an emphasis on security, respecting privacy and data protection, and accountability – are the compass that helps technology companies navigate the digital revolution. In this case, they will serve as tools shaping digital technologies and enabling a sustainable, thriving European economy.

Furthermore, a federated digital infrastructure highlights Europe's strengths, resilience, and diversity, offering transparency and inclusiveness via strong decentralized structures available to all European technology companies, enterprises, and communities.

An inclusive and fair ownership structure also offers its users more viable solutions by creating a shared, European utility for digital power. Existing initiatives such as GAIA-X, which seek a unified marketplace for digital services, require a common sustainable, competitive, European digital infrastructure. The European cloud outlined here is a key facilitator of that vision and is critical to achieving the EU's Europe Fit for the Digital Age strategy and its European Cloud Initiative.

Moreover, while SDIA supports GAIA-X as part of ongoing efforts, our vision for a

European cloud takes a more holistic, unified approach that goes beyond the relatively narrower scope of marketplaces and digital services, while also placing more emphasis on sustainability and European identity. GAIA-X's primary objective is to close the gap of cloud services and foster the development of European alternatives available to all European cloud providers. These services are meant to run solely on GAIA-X-certified infrastructure. However, in line with EU principles of sovereignty, it is important to ensure Europe has its own robust and resilient physical digital infrastructure. SDIA's vision for a European cloud provides a blueprint for this infrastructure, which will lay the foundation for many of GAIA-X's services. With the European cloud, these services will become more accessible to smaller regional actors, increasing interconnection and providing a decentralized, resilient network of regional cloud infrastructure.

The structures outlined above will also amplify the strengths of participants in the digital economy, creating a new open market platform where anyone can offer or purchase digital power at the best value, while creating prosperity for the continent and beyond.

A federated and open market drives the efficient use of resources, while at the same time allowing the continent's digital economy to sustainably grow and expand. In turn, the digital transformation also cements Europe's pole position on renewable energy and overall energy transition. A single European digital power market, based on open standards and designed with accessibility and fairness at its heart, can unbundle the vertically integrated market of cloud services today. As discussed earlier, it has become increasingly difficult to procure cloud and digital services that are not bundled and integrated with the digital resource platforms of large foreign-owned cloud infrastructure providers. In contrast, a common regional market provides equal access to resources and promotes fair participation in supplying digital power, products, and services.

Amplifying diversity and strengthening Europe's digital economy

The digital infrastructure outlined above champions Europe's diversity by amplifying the strengths of those who participate in the digital economy, creating an open marketplace that fosters a united and inclusive European ecosystem.

The timing of this development could not be more critical. Across both Europe and more globally, the ongoing centralization of digital infrastructure in hyperscale data centers reduces cost and increases energy efficiency. According to the International Energy Agency (IEA), data center electricity use accounts for around 1% of global demand. Despite the exponential increase in demand for data services, energy demand remains flat thanks to improved efficiency and the shift to cloud and hyperscale data centers.

However, increased centralization means greater concentration of power and influence, risking a less democratized authority over data and transparency. What this ultimately amounts to is a potential and significant loss of control over one of Europe's greatest assets. This is not just in reference to protection and governance of data, but also the social and environmental value that data centers and other parts of the digital infrastructure ecosystem provide, along with the necessary accountability to ensure sustainable infrastructure powered by renewable energy.

At present these assets are obstacles to a carbon-neutral energy system. The vast majority of data centers and hyperscale-facilities in particular demand continuous power supply from the grid, often with redundant power feeds. An incentive-based marketplace

could easily alleviate this issue by scaling back the operation of non-profitable facilities or relocating resource production to areas with abundant renewable energy. In order to accelerate the integration of renewable energy, every energy system needs to reduce the number of baseload customers who demand a constant supply of electrical power. Transforming data centers into prosumers and ultimately utilizing them for energy storage can only happen if we embrace digital power as a commodity and create a single European market allowing it to be traded across borders. Installation of fiber connectivity – the interconnectors of the digital age - is vastly cheaper than high-voltage power transmission systems. Put simply, embracing digital power production is easier and makes more financial sense than its predecessor.

Additionally, The EU's Heating and Cooling Strategy makes clear the requirement to decarbonize Europe's heating and cooling grids, which together make up half of the EU's total energy consumption. An analysis in Denmark revealed that approximately 30% of the surplus heat created by hyperscalers could be utilized annually by 2030, which equates to 2,500 gigawatt-hours (GWh) per year. It is both sensible and advantageous to adopt this and other related strategies by integrating them into European infrastructure and making them a central tenet of its design.

A European cloud that is sustainable, federated, open, and inclusive would ensure that the expansion of the digital economy does not result in an expansion of non-renewable sources of value creation. In order to create a digital economy with digitized industries, digital power must be accessible, cost-competitive, and sustainable. In the long run, the benefits of running on European digital infrastructure would also be felt globally, offering experience and insights to other developing digital economies while learning from them and adopting innovative approaches.

Fostering innovation and facilitating fair competition

Returning to the example of electrical power, increased connectivity has historically led to greater innovation in different technology (microwaves, electric cars, heat pumps, etcetera). The lower the cost of electricity, the greater the likelihood that these inventions will be adopted. When that electricity comes from physically renewable and environmentally sustainable sources, it can unlock long-term, lasting growth in the usage of products that run on electricity.

The same is possible with digital power. Imagine every application developer had reliable access to digital power at predictable and competitive rates with no negative impact on the environment, anywhere in Europe. This would unlock a new digital age in which digital power – and thus the ability to process and store massive amounts of data – fosters applications that improve lives and industries, all while addressing the challenges posed by the climate crisis.

Exploring these benefits will also help various startups and enterprises to fully achieve their goals of innovation and development. The resulting digital infrastructure will focus fully on creating value that is pioneering and non-discriminatory, propelling the next generation of digital ecosystems on a national, regional, and European level.

> *A European cloud platform is possible. Let's start building it together.*

4
What now?

As businesses navigate a post-Covid-19 era in which cloud adoption is increasingly crucial, there has never been a better time to capitalize on the idea of a European cloud platform. New connectivity and the rise of power-hungry digital technologies complement the overall demand for digital power, creating a host of cross-industry benefits. The increased accessibility of digital power facilitated by a European single market will ensure these benefits are widespread across Europe.

Trust issues surrounding data flow between jurisdictions worldwide has led to restrictions increasing "dramatically in the past decade" (World Economic Forum, 2019, p. 7). The recent examples of EU scrutiny into transatlantic data flows presents an exciting opportunity for European digital power producers to flourish and compete in a European marketplace.

Finally, as there is currently no other nation or region considering a single marketplace for digital power, the SDIA stands to benefit from using its findings to seize this brief window of opportunity.

4.1
Regional and national starting points

The creation of the kind of infrastructure outlined above requires starting at the local and regional levels with municipalities, cities, and states. SDIA has already begun assembling existing infrastructure and service providers in the Netherlands and Germany to showcase that regional cloud infrastructure can be established quickly and efficiently. Other organizations such as the Green Web Foundation are creating communities to work on more awareness when choosing cloud infrastructure providers. Most of the tools needed to do this exist today. Open source cloud infrastructure tools such as OpenStack and Kubernetes, as well as tools to make the environmental footprint of any offering visible (Scaphandre, Cloud Carbon Footprint), creates a level of transparency that is unmatched by existing providers. Most of the components are there, and the ones that are missing can be developed as open-source software and open infrastructure through SDIA's collaboration platform.

These examples demonstrate how to utilize existing infrastructure, and transform it to minimize environmental impact. Using refurbished equipment across the majority of each platform wherever possible while adapting existing buildings and infrastructure in-line with the SDIA's Roadmap to Sustainable Digital Infrastructure by 2030, acts as a framework for ensuring sustainable digital infrastructure.

These pilot regions demonstrate that a three-legged, fully sustainable approach is possible: a regional cloud platform that is cost-competitive, environmentally friendly, and fosters inclusive prosperity. By employing existing local knowledge and infrastructure, each region can build up its own cloud platform, creating economic opportunities for local companies based on their needs.

Using a trust platform or digital marketplaces with other regions to interconnect these regional cloud hubs will ensure resilience, redundancy, and competition through the trading of digital power. A single European market can further enhance this interconnection, creating equal opportunity for any business or individual in Europe to access the same digital power resources.

The United Kingdom's Open Energy Platform provides an example of a well-implemented governance platform for the creation of regional markets in the energy sector. Focused specifically on data access, its members can easily publish and access energy data without requiring a bilateral contract or having to agree to a unique set of terms and conditions every time a new data sharing arrangement is set up. Instead, members must gain accreditation to join and agree to Open Energy's rules and common data sharing licences. The governance platform automatically applies these rules, creating a framework of trust that enables secure access to energy data.

Different regions can create their own infrastructure and make it part of their nation's total cloud infrastructure by participating in a national marketplace. Such infrastructure can serve the national government as well as large national or multinational digital applications. In turn, each nation taps into a European or even global single market, creating a competitive marketplace for digital power on which the digital economy can be built in a sustainable way and with a long-term vision. If this all sounds somewhat familiar, it is because this approach resembles the design of the Internet itself; a global network without borders that successfully reaches half of the world today.

Each of these markets can be further scaffolded depending on individual requirements for factors like availability or resiliency. For instance, a cooking blog from Rome, might have a different availability requirement than the National Bank of Belgium would for their payment processing. This model also offers greater transparency on the total consumption of digital power, providing better insight into the size of the digital economy as a whole.

We must begin to develop these regional hubs now before the infrastructure is removed and rebuilt somewhere else. We must embrace the commodity of digital power and pioneer the development of fair, accessible regional markets for it. We must embed sustainability into the resources of our digital age – digital power – so that we can have a digital economy that does not have a negative impact on the environment, one that enables local and regional prosperity all while supporting the transformation to a global digital ecosystem empowered by the Internet.

4.2
Bringing together Europe's existing infrastructure

Much like the unnecessary duplication of newly built cloud infrastructure discussed earlier, Europe can avoid a similar situation by making use of existing digital infrastructure, namely data centers. Some of these facilities are outdated and will require retrofitting. From a resource consumption standpoint, though, and especially in light of our climate ambitions, it makes more sense to focus on upgrading, retrofitting, and renovating existing resources rather than starting from scratch.

Information technology (IT) hardware needs to be continuously renewed regardless of the age of the facility. Upgrading fiber-optic cables, adding interconnections and

installing new equipment can all take place within the framework of the European Commission's Renovation wave programme. When it comes to increasing efficiency through retrofitting, data center facilities o different than any other building in Europe.

Of course, there is the argument of scale: larger facilities can bring costs down. This was certainly the case with electrical power stations in the past – large scale production meant cheaper per-unit cost. But as electricity matured, small-scale, decentralized production became possible as well. Digital infrastructure is at the same turning point. Advances in IT hardware efficiency and performance have leveled out, meaning that applications now need to scale horizontally. They need more total infrastructure, rather than upgrading to faster or better infrastructure. In order to do this, they need to "scale out" across a more broadly distributed network of infrastructure, creating the opportunity to use existing data center infrastructure across Europe.

Another argument for the use of existing infrastructure is that the currently available infrastructure is vastly underutilized due to layers of redundancies and architecture that is designed for "peak capacity." Again, this is not unlike the electrical power system. A European cloud platform can take advantage of this, creating a unified marketplace for demand and supply of digital power.

For a European cloud platform to emerge, the existing operators of digital infrastructure across Europe must accept a level of commoditization. Of course, differences in quality, availability, resilience, locality, and security exist as varieties of digital power. All operators, however, must agree to a common framework to measure both the quality and quantity of the digital commodity that powers its applications.

The largest cloud providers realized early on that even though digital power is a commodity that can be used to build digital products, the commodity itself is rather low-margin over the long-run.

> *The standardization of IT hardware, facilities, and infrastructure software allowed them to minimize costs and maximize profits from selling cloud services instead of digital power itself.*

Yet many other competitors within the IT infrastructure landscape still believe that no two applications are the same and each software application requires a bespoke infrastructure; a completely custom-made variety of digital power. This bespoke service – from managed services to applications – has driven high-profitability for companies over the last decade. However, commoditization has led to greater homogeneity in the types of digital power on offer in a price-driven marketplace, meaning there is less profit to go around. In addition, cloud providers increasingly offer value-added services directly to consumers, letting them completely ignore digital power, at a scale that most companies cannot compete with.

5 Conclusion

Europe's current digital infrastructure is lacking a unified and open interface for the computation, storage, and network capacity that would unlock access to available digital resources, namely through regional digital marketplaces. A large carbon footprint, lack of European geopolitical presence, anti-competitive customer acquisition practices, and the vertical nature of existing cloud providers are the current challenges that the existing cloud infrastructure is facing.

We envision a European cloud platform of regional marketplaces. This should be designed fairly, efficiently, and should be aligned with European goals. We can create this by starting regionally and nationally, using Europe's existing digital infrastructure.

About SDIA

Established in 2019 and co-based in Germany and the Netherlands, the Sustainable Digital Infrastructure Alliance e.V. (SDIA) is a nonprofit network of more than 65 members and partners working to catalyze the transition to a sustainable digital economy. The SDIA brings together stakeholders from across industries and fields, both public and private, to realize its Roadmap to Sustainable Digital Infrastructure by 2030. It is meant to offer a holistic, systems-thinking approach to solving the challenges facing ICT sustainability, ranging from energy supply and data centers to fiber-optic networks and software.

If you' d like to join the Roadmap and participate in the Steering Group work, please apply here. In case you have a questions on the above paper, reach out to Max Schulze, SDIA Founder at:

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