It's Groundhog Day
at the European Commission

Response to the Commission's White Paper
"How to master Europe's digital infrastructure needs?"

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It's Groundhog Day at the European Commission.

Even though it's summer, it appears to be Groundhog Day again at the European Commission.[1]

It's time for yet another proposal from the European Commission to require websites and applications to pay so-called "network fees" to the largest ISPs in Europe. Network fee proposals would force websites and applications to pay broadband companies like Telefonica, Orange, and Deutsche Telekom, so the largest ISPs can get paid twice for delivering the traffic the ISPs' customers requested – once by their own internet service customers, and once by the sites and apps these customers are using.

These kinds of fees were proposed by Europe's largest telecom companies more than 12 years ago and were rejected at the time by Europe's top telecom regulator BEREC, European governments, the European Commission, and the ITU. They were rejected again by BEREC in a report in 2022, and thoroughly opposed by everyone except the largest ISPs and their trade associations in last year's Commission consultation on the future of the electronic communications sector and its infrastructure.

Last year, the justification for these network fees was that there was a supposed massive investment gap that would keep Europe from meeting its 2030 goals of having 5G and fiber to the home for everyone in the EU.

But the Commission's fuzzy math last year has been solidly refuted. European ISPs continue to invest in next generation networks, with coverage comparable to or exceeding that in comparable countries. Europe is on track to meeting its 2030 deployment goals, with only minimal need for public funding for build outs in rural areas that would otherwise be unprofitable.

And, thanks to robust competition, broadband remains affordable in Europe – often shockingly so to Americans.

The European Commission ought to be celebrating, but instead the Commission's reaction is to release a White Paper, which could be entitled *Doom and Gloom: The Danger of Europe Becoming a Digital Backwater*.

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[1] I submit this response as an independent academic and net neutrality expert. I have not been retained or paid by anyone to participate in this consultation. Additional information on my funding is available here: http://cyberlaw.stanford.edu/about/people/barbara-van-schewick.
Parts of this response to this consultation draw on my earlier writings. For a list of my recent writings on network fees, see http://cyberlaw.stanford.edu/about/people/barbara-van-schewick.

To keep justifying its policy prescriptions, the Commission keeps moving the goal posts and denying the real progress being made. The justification changes, but the wrong prescriptions remain the same:

- force applications to pay fees to ISPs that have never existed before,
- reduce competition by allowing for industry consolidation and eliminating wholesale access to last-mile networks, and
- give ISPs lots of government money to do what they should be doing with their own money.

In other words, it's Groundhog Day all over again.

This time, the European Commission released a white paper supposedly about the future of Europe's digital infrastructure.[2]

Not only is it wrong and misguided, it's actively harmful and counterproductive for any ISP that is trying to raise external financing for network expansion.

The White Paper reads like a fevered dream of a mid-level telecom exec who is enamored with buzzwords, is prone to overly confident predictions about the future of technology without any grounding in actual examples, and is extremely allergic to acknowledging his previous predictions didn't come true.

The White Paper cites missing investment in next generation telecom infrastructure, to the tune of hundreds of billions of dollars, without which Europe will supposedly become a digital has-been, without acknowledging that the Commission said almost the exact thing last year and was wrong about that.

Passionate and breathless predictions are presented as inevitabilities, despite the lack of any supporting evidence or working examples.

If policy makers don't accept the White Paper's policy advice, doom and digital serfdom await Europe, according to the paper.

In the end, the policy prescriptions are the same that Europe's largest telecoms have been pushing for, unsuccessfully, for years: find a way to get the biggest ISPs paid twice, tax the online services that provide the demand for broadband service, provide government subsidies to telecoms, and reduce broadband competition so that Europeans pay more to get online and ISPs get higher profit margins.

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[2] https://digital-strategy.ec.europa.eu/en/consultations/consultation-white-paper-how-master-europes-digital-infrastructure-needs ("White Paper").

This time the story goes that the key to Europe's digital future is putting smarts and computing into the ISPs' network. No longer will ISPs just be pure conveyances, shuttling data from devices to servers and back again.

Instead, the networks will be full of servers and standardized APIs. All the application providers, device manufacturers, cloud hosting providers and CDNs will want to move the intelligence out of server farms and edge devices and instead move all that into the thousands of networks owned by different companies around the world.

These new networks will make it possible to have drones, robot factories, health monitoring, autonomous cars, and Web 4.0. What Web 4.0 actually means is left to the reader – no definition or hint of a definition is given.

But Europe's telecoms aren't making enough money to invest in all the fancy new acronyms, NaaS, CCC, 6G, and Web 4.0. And if Europe doesn't invest tens or hundreds of billions to fill this newly invented "funding gap", it will be left behind to rot economically.

The White Paper misunderstands what made the internet successful.

There are lots of problems with this picture, but the biggest one is that it fundamentally misunderstands why the Internet became the most powerful communication network the world has ever seen.

Since the dawn of the internet, the model for the network has been end-to-end computing, with most traffic following a model like this:

DEVICE <—> IP TRANSPORT <—> SERVER/SERVER FARMS/CDNs/CLOUD PROVIDERS

In other words, once a device connects to a network that's part of the internet, it can send data to and receive data from any other device connected to the internet.

All internet content, applications, and online services run on devices connected to the network. The network simply shuffles the data between the devices – the "end points" or "ends" of data transmission.

It's much like getting a pizza. If I place a takeout order, drive to a pizza place, then drive back home, the road has no idea what I'm doing. It just exists to let me get to where I'm going and back again.

This principle has allowed the internet to serve as an engine of innovation and economic growth. The network isn't involved in running applications, so new applications don't require changes to the network. Instead, developing new content, apps or services simply involves writing software

that runs on a device attached to the internet. As a result, anyone can develop apps at low costs, without interference from network providers.[3]

To be clear, cloud computing and Content Delivery Networks are part of the end-to-end model. With cloud computing, it's simply easier to create a server on which your application can run and to have multiple copies of it around the world. You just have a lot more ends.

The same goes for CDNs. They simply store copies of your content on more devices around the world, but having more ends doesn't change the end-to-end principle.

Cloud computing is not much different than a fast food chain. Instead of forcing me to fly from Paris to Los Angeles to get a Big Mac from the original McDonalds in San Bernardino, California, McDonalds puts McDonalds restaurants everywhere. I can go to the closest one.

In cloud computing, instead of forcing everyone's devices to reach out to one distant server to download the *New York Times*' homepage, the *New York Times* uses cloud hosting to have its website delivered from more than 50 servers around the globe, while data-intensive images and videos are served from a CDN that has more than 90 locations around the globe.

That's still end-to-end.

But in the new model that undoes more than 30 years of internet history and which is, we are assured, absolutely critical to Europe's digital future, it'll look like this:

DUMB DEVICE <—> (A GOULASH NETWORK FULL OF SERVERS EVERYWHERE THAT THE EDGE PROVIDERS/
DEVICE MANUFACTURERS/CDNs WILL TOTALLY PAY FOR)

Or in the telecom network jargon of the White Paper:

> "Connectivity markets are facing transformative technological developments the result of which will be both a converged supply (i.e. network and service provision) as well as a converged demand by end-users. Yesterday's separation between 'traditional' electronic communications networks/service providers and cloud or other digital service providers will tomorrow be superseded by a complex converged ecosystem."[4]

In this model, if I wanted to get a pizza for takeout, I would get in my car and drive down the road a bit. The pizza place no longer physically exists.

Instead, I would tell the road I wanted a pizza. A road sign would put all the ingredients on some dough and throw it in an underpowered microwave in the middle of a roundabout. Then I'd drive around the roundabout, the road would throw the finished pizza in the passenger seat and take

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[3] See, e.g., van Schewick, 2010, Internet Architecture and Innovation, MIT Press.
[4] White Paper, p. 15.

money from my digital wallet. I'd then drive home, while the road would argue with the pizza joint about how much of the pizza price it got to keep.

The report calls this NaaS, or Network as a Service, or sometimes the 3C Network, short for Connected Collaborative Computing.

The paper says this will be necessary to do things like health monitoring, remote doctor visits, and, oddly and slightly Orwellian, health care drones.

> "Another example is the use of secure high-speed connectivity in order to provide advanced e- health services, including advanced e-health monitoring and e-health care in remote areas, using low-cost devices. For this, it will be necessary to migrate functionality and use artificial intelligence to the network, which should be located as close to the user as possible. Other technologies that could be part of the health care system of 2030 are sensor-based monitoring, extended reality (XR) and drones."[5]

While health monitors, online health consultations and drones work perfectly fine on current networks without having to consult the network, the White Paper somehow takes as a given that we'll need a 6G NaaS 3C network to make it work in the future so that your health drone service can pay the network.

In this model, all the application providers that used to be at the edge or use cloud services will decide to migrate *into* the network, while ISPs start to do what edge and cloud providers used to do – offer end-user services.

> "This technological change triggers the emergence of new business models in the electronic communications services sector. *The increasingly complex network operations push companies in different segments of the value chain to work together at the infrastructure layer while competition at the service layer becomes more complex.* Main trends include network sharing, the separation of infrastructure and service layer and the creation of service platforms based on concepts like Network as a Service (NaaS) and IoT.
>
> NaaS creates a common and open framework between operators that makes it easier for developers to build apps and services in partnership with large cloud providers and content application providers (CAPs) that seamlessly communicate with each other and work for all devices and customers."[6]

That's quite a reimagining of the internet with the goal of letting everything "seamlessly communicate with each other and work for all devices and customers."

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[5] White Paper, p. 8.
[6] White Paper, p. 8 (emphasis added).

It's a bit odd that's the goal, when that's exactly what the IP protocol did and does.

The magic of the IP protocol is that it doesn't matter what kind of network you are on: DSL over copper phone lines, internet access from a Starlink satellite, fiber to your home, IP over power lines, wireless access on your mobile device and even internet delivered over ham radio.[7]

As long as the network can speak IP, applications and devices can talk to each other and humans can communicate directly.

Key to that is that the devices and applications don't need to have any knowledge whatsoever of what kind of network the other party is on, how many networks their data travels over to exchange info, or what paths the data takes.

Moreover, this model means that any device or application that speaks IP can get on the internet without having to ask networks for permission. This is known as "the freedom to innovate without permission." As long as innovators respect the foundational Internet protocols, the applications they build work anywhere on the global Internet.

Innovators do not need to negotiate with ISPs around the world to get to users. Nor do they need to create different versions of their application for different ISPs.

This principle enables any innovator with a great idea but little resources – students in dorm rooms, entrepreneurs in garages, and start-ups – to reach people around the world at low costs. And by removing gatekeepers that could create bottlenecks for innovation, "innovation without permission" increases the chances that innovators can bring their ideas to market.

The opposite of that were mobile phones in the early 2000s, where the only applications your phone could use were the ones that your phone provider allowed to run on its network and on the devices they allowed on its network.

The irony is that the IP revolution created exceptional demand for broadband networks and infrastructure, even as the protocol turned the networks into commodity offerings that are substitutable.

Gone are the days when if you wanted to use a Blackberry you had to use o2 or T-Mobile.[8]

Today if you want to use WhatsApp, you can use whatever ISP you want or just use the library's free WiFi.

People now choose broadband connections on the basis of their speed, capacity, reliability, and local availability, not based on what apps are supported by the network. It's simply a given that every network will support every app.

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[7] https://en.wikipedia.org/wiki/AMPRNet.
[8] https://www.theregister.com/2003/03/05/tmobile_signs_up_rim/.

But, we are assured that the digital sovereignty of Europe lies in overturning this end-to-end model by making the network the star of the technology show in the 21st century.

That's quite a jump given that none of the applications that the White Paper claims need a converged 6G network appear to need that at all: drones perform even using high latency networks like Starlink: just ask the Ukrainian army.

Health monitoring devices are getting increasingly smarter with embedded models running on the device, thanks to work by companies like Edge Impulse. Precision farming, one of the report's sole examples of apps enabled by 6G, hardly needs any connectivity at all.

It's quite a fantasy.

The White Paper proposes to introduce network fees through the back door.

That's not the only successful internet model the European Commission's White Paper proposes to overthrow.

Network fees would discard decades of successful internet economics.

The internet has flourished using an economic model called bill and keep. Large ISPs have long wanted to replace that model with the model used by traditional voice-calling networks,[9] and the White Paper proposes to do so through the back door.

In the voice calling model, phone network A gets paid a per minute/call rate for completing incoming calls to A's customers from any other network (a "termination fee"). So if my mom is on phone network A and I call her from my network, phone network B, then network A charges my network for completing the call to my mom, and my network passes the cost on to me.[10]

But phone network A knows that the only way I can call my mom is through its network. So it says completing calls to its network cost EUR 5 a minute. All the other networks also have a monopoly over completing calls to *their* customers (a "termination monopoly"), so they charge high termination fees too. Countries recognize they have a termination monopoly over everyone in their country, so they add a surcharge for anyone outside of their country to call into their country.

This is the mechanism that made long-distance and international calls incredibly expensive.

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[9] https://arstechnica.com/information-technology/2012/12/dear-itu-please-dont-bill-internet-use-like-phone-calls/.
[10] This model is also called "calling-party network pays."

But since communication is good for commerce and social health, nations then have to set up regulatory agencies to keep the prices for completing calls from being too high, and so you get a complicated bureaucracy that has to set termination fees.

Then the new pricing models create bizarre arbitrage opportunities, where a small network might find a way to get lots of calls into its network so that other networks have to pay them.[11]

This was and remains how the phone system works. It's messy, makes calls expensive, and requires lots of regulation.

This is the model the White Paper wants to adopt for the internet.

The internet uses a very different model called bill-and-keep. Under this model, the access networks that people and businesses use to connect to the internet are not paid by others for accepting the data their ISPs' customers requested and delivering it to their customers. That's what their customers' internet subscription fees pay for.

In this model, every access network pays to connect its network to all the other networks that are part of the internet. Generally, this is through a so-called transit provider which lets the access network reach the rest of the internet.

Access networks get a pipe from the transit provider that lets them send and receive data, and they pay for how much capacity they get or in some cases, how much they use in a month. This works almost exactly like your mobile phone or home network where you pay X Euros for a 100Mbps or 1Gbps connection.

When I send my mother an email or call her on a video calling app, neither my home broadband network nor the email provider or video calling app pay my mother's broadband network for transporting the email or video data over its network to my mother.

One of the brilliant side effects of this model is that since each access network has a big pipe they pay for to send and receive traffic to the rest of the internet, every network has an incentive to connect, for free, with neighboring networks.

So for example, assume 25% of the traffic on my network goes to the network in the next town, and 40% of their traffic comes to my network. Instead of sending that traffic through the pipe I'm paying for and for them to send it through the pipe they are paying for, the two networks can just connect directly.

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[11] There are hundreds of examples of this. Here are two: https://www.fastcompany.com/90304830/why-800-numbers-are-getting-their-own-robocalls; https://www.techdirt.com/2007/02/07/phone-call-arbitrage-is-all-fun-and-games-and-profit-until-att-hits-you-with-a-2-million-lawsuit/.

Now, I'm sending 25% less traffic through the pipe I pay for (so I have more capacity or can negotiate to buy a smaller pipe) *and* the traffic gets there faster since the networks are directly connected. The same goes for the other network.

And it doesn't matter *at all* whether I send more traffic than I receive or vice versa. Both parties benefit either way.

The only traffic sent through this kind of connection is the traffic sent and requested by each network's customers to the other network's customers (this is called "peering").

Network interconnection also adds resiliency. If my big pipe to the internet goes down, my customers can at least still reach the neighboring network, and if the connection between the neighbor networks goes down, we can just reroute traffic through our big pipes.

And if my internet access customers like to watch lots of cat videos on a popular video application, I can connect my network directly to the video provider; then my big-pipe bill goes down and their traffic reaches my customers faster.

That's why the vast majority of access networks worldwide interconnect with big providers like Facebook, Netflix, YouTube, Cloudflare, Akamai and others for free. Doing so is in the interest of the access network, because it saves money.

In other words, the bill-and-keep model encourages network interconnection and cooperation, which increases network capacity, increases resilience, and reduces the cost of an access network's big pipe.

That's why 99.9996% of peering agreements around the world involve no payment and simple handshake agreements.[12] All the networks have to do is set up a connection or meet up in a central spot (known as Internet Exchange Points or IXPs) where lots of networks interconnect in one building.

For internet access providers, this also makes for a sweet business. Thanks to permissionless innovation, hordes of people make websites, publish online news, create videos, build apps and put cat videos on the internet. And the more sites and apps they put online, the more people want to get online, so more people want to buy my (the access network's) broadband connection.

Basically, everyone else in the world is creating the demand for my product, and more and more of them are using hosting services that want to connect directly to my network, lowering my cost of running a network.

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[12] Packet Clearing House, 2021, 2021 Survey of Internet Carrier Interconnection Agreements, p. 4, which analyzed more than 15 million peering agreements by 17,000 networks in 192 countries, https://www.pch.net/resources/Papers/peering-survey/PCH-Peering-Survey-2021/PCH-Peering-Survey-2021.pdf.

In addition, the tech for running a network gets better and better every year, so I can constantly increase the amount of data and bandwidth that customers can get, while costs remain the same or even fall.[13]

It's a great model for ISPs, innovators, and everyday people.

But the largest ISPs, often phone companies, remember the good old days of getting paid both by their own phone customers and by those trying to reach them, and they want to get paid twice on the internet, too – once by their own internet service customers and once by the apps and sites these customers are using.

So instead of being happy that the services their customers want to use the most will deliver traffic right to their network doors for free, the biggest ISPs want to get paid by those big services for accepting the data the ISPs' customers requested and delivering it to these customers.

Network fee proposals have been thoroughly rebutted.

The European Commission understands all of this about the pricing models, and how bad an idea it is to either force websites and applications to pay ISPs (the phone model) or to create some other way to help the biggest ISPs demand network fees from applications and service providers.

BEREC wrote a whole report rejecting this proposal in 2012.[14] The International Telecommunications Union voted this down in 2012. The European Commission ignored this precedent and championed the network fees proposals pushed by Europe's largest telecom companies in 2022 and 2023. Scared of the damage the network fee proposals would do to the internet in Europe and around the world, BEREC wrote a whole new report debunking and rejecting the idea in September 2022.[15]

The European Commission tried to pretend that didn't happen, continuing on with its grand plan to require network fees, and only after much pressure, finally opened a public consultation in 2023.

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[13] See, e.g., van Schewick, 2023, Comments to Commission 2023 Exploratory Consultation, https://cyberlaw.stanford.edu/sites/default/files/van_Schewick_2023_Comments_EU_Network_Fees_Consultation_Online.pdf, pp. 4-5.

[14] BEREC, 2012, BEREC's comments on the ETNO proposal for ITU/WCIT or similar initiatives along these lines, BoR (12) 120 rev.1, https://www.berec.europa.eu/sites/default/files/files/document_register_store/2012/11/BoR%2812%29120rev.1_BEREC_Statement_on_ITR_2012.11.14.pdf.

[15] BEREC, 2022, BEREC preliminary assessment of the underlying assumptions of payments from large CAPs to ISPs, BoR (22) 137, https://www.berec.europa.eu/en/document-categories/berec/opinions/berec-preliminary-assessment-of-the-underlying-assumptions-of-payments-from-large-caps-to-isps. For a summary, see https://cyberlaw.stanford.edu/blog/2022/11/eus-top-telecom-regulator-big-telecoms-proposal-force-websites-pay-them-puts-internet.

The vast majority of participants in the consultation opposed network fees, including BEREC (again).[16]

As the consultation responses established conclusively, these network fees, which have never existed before, are unnecessary. They would reverse decades of successful internet economics, reduce the quality of popular online services, increase costs for European consumers and businesses, and are unlikely to foster broadband deployment.[17] They would also violate Europe's net neutrality law.[18]

Opponents of network fees include BEREC, the majority of member states, members of the European Parliament,[19] a wide range of industry groups and civil society organizations, including the Motion Picture Association of America (MPAA), owners of sports television rights, digital rights organizations like Epicenter.Works and European Digital Rights (EDri), Mozilla, Creative Commons, the Internet Architecture Board, European librarians, the Internet Society, the European Consumer Association (BEUC), and small ISPs – all of whom argued that the Commission proposal is a terrible idea that violates net neutrality.[20]

Only Europe's largest ISPs and their trade associations, who had made the proposal, liked the idea.

Negotiated network fees are still network fees.

Seeing the hostility, the bad press and pushback from member countries, Europe's largest ISPs tried a different approach.

They offered a backup proposal, which said that Europe didn't need to require payment from websites to ISPs. Instead, it should set up a tribunal, with final authority, to settle disputes when ISPs demand payment and applications or websites refuse the payment.[21]

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[16] European Commission, 2023, Summary Report on the results of the exploratory consultation on the future of the electronic communications, pp. 16-19, https://ec.europa.eu/newsroom/dae/redirection/document/99182. BEREC, 2023, Annex to complement Section 4 of the BEREC Consultation Response, pp. 14-15, https://www.berec.europa.eu/system/files/2023-05/BoR%20%2823%29%20131d%20Annex%20to%20Section%204.pdf.

[17] See, e.g., van Schewick, 2023, Comments to Commission 2023 Exploratory Consultation, https://cyberlaw.stanford.edu/sites/default/files/van_Schewick_2023_Comments_EU_Network_Fees_Consultation_Online.pdf.

[18] See, e.g., https://cyberlaw.stanford.edu/blog/2023/07/yes-telefonica-forcing-apps-pay-isps-violates-net-neutrality.

[19] https://arstechnica.com/tech-policy/2022/07/eu-lawmakers-slam-idea-of-forcing-big-tech-to-pay-for-isps-network-upgrades/; https://cyberlaw.stanford.edu/blog/2023/06/when-media-gets-it-wrong-eu-parliament-actually-said-no-forcing-websites-pay-isps.

[20] For links to opponents, see, e.g., https://epicenter.works/sites/default/files/statement_against_nf_020523_-_final_0_0.pdf; https://cyberlaw.stanford.edu/blog/2023/07/yes-telefonica-forcing-apps-pay-isps-violates-net-neutrality; https://cyberlaw.stanford.edu/blog/2023/05/european-commission-proposal-force-websites-pay-isps-violates-net-neutrality-harms.

[21] GSMA/ETNO Summary of the Joint Telecom Industry Response to the EU consultation on The future of the electronic communications sector and its infrastructure, https://etno.eu/downloads/positionpapers/summary%20of%20the%20joint%20telecom%20industry%20response.pdf).

This proposal would require certain content providers and European ISPs "to negotiate … a fair and reasonable contribution for traffic delivery."[22] If talks break down, an arbitrator would step in and decide which company's final offer wins.

In plain language, this proposal requires certain online services to negotiate with ISPs over the size of the fee, not whether there *is* a fee.

And if an online service disagrees with the requested fee or an ISP thinks an online service isn't offering enough money, some arbitrator will decide how big that fee is.

This "obligation to negotiate network fees" was shopped in the EU as a compromise alternative to mandated network fees, but it was anything but.

In fact, it was and is exactly the same.

While the telcos market the obligation to negotiate network fees as light-touch, less intrusive, and less regulatory than mandated network fees, an obligation to pay network fees is baked into the proposal: the negotiation determines *how much* the specific content provider has to pay the specific ISP, not *if* it should pay *at all*.

That's a mandated fee.

As I said last year, a pig with a wig is still a pig.[23]

The harms remain the same.

Just like mandated network fees, negotiated network fees would undermine the internet's economics, violate net neutrality, make online services worse, subsidize ISPs' own video

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[22] Ibid., p. 9: "Obligation to negotiate: A contribution mechanism should be based on commercial negotiations enshrined in a framework that obliges the parties to negotiate, in good faith and based on common EU principles, a fair and reasonable contribution for traffic delivery."
[23] https://cyberlaw.stanford.edu/blog/2023/07/eu-telecoms-newest-proposal-force-websites-pay-them-just-terrible-their-previous-one.

services at the expense of user choice, and harm European consumers, businesses, and smaller competitive ISPs.[24]

And to top it off, they are unlikely to promote network deployment, which is the ostensible reason for network fees.

The White Paper's reasons for introducing negotiated network fees don't hold up.

Ignoring the resounding rejection of network fees in last year's consultation, the Commission now proposes to establish network fees by introducing the *same* dispute resolution mechanism demanded by the large ISPs. The White Paper suggests either doing so directly, or, in a more sneaky fashion, by extending the scope of the European Electronic Communications Code to cloud providers.

Not only is it infuriating to pretend this is something unsettled, it's frankly a waste of time.

Small ISPs, startups, the Internet Society, civil society and consumer groups all have better things to do than reply to the European Commission every year to explain how asinine and retrograde the same proposal is.

There's no need for a new dispute resolution mechanism to resolve disputes between last-mile ISPs and content and application providers.

As the White Paper acknowledges, the market for interconnection with last-mile providers is working well.[25] Just as in the rest of the work, transit providers, content and application providers, and cloud providers generally do not pay last-mile ISPs in Europe for accepting the data that an ISP's customers requested and delivering it over the ISP's network to the ISP's customers. A recent draft report by Europe's top telecom regulator BEREC reached the same conclusion.[26]

Grasping for a reason to nevertheless introduce the dispute resolution mechanism requested by Europe's largest ISPs, the White Paper points to a few "cases of intervention" discussed in a recent report by WIK Consult for the German telecom regulator.[27]

The White Paper provides no further details on the nature of these disputes – for good reason.

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[24] See, e.g., van Schewick, 2023, Comments to Commission 2023 Exploratory Consultation, https://cyberlaw.stanford.edu/sites/default/files/van_Schewick_2023_Comments_EU_Network_Fees_Consultation_Online.pdf.

[25] White Paper, p. 26.

[26] BEREC, 2024, Draft BEREC Report on the IP Interconnection ecosystem, BoR (24) 93, p. 37, https://www.berec.europa.eu/en/document-categories/berec/reports/draft-berec-report-on-the-ip-interconnection-ecosystem ("BEREC 2024 Draft Interconnection Report").

[27] White Paper, p. 26; WIK-Consult, 2022, Final study report "Competitive conditions on transit and peering markets", pp. 74-76, https://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Peering/download.pdf?__blob=publicationFile&v=1 ("WIK-Consult 2022 Report").

They are examples of Europe's largest ISPs – the ones that are asking Europe to force content and applications providers to pay them – exploiting their control over their millions of internet service customers to force companies delivering data that these customers requested to pay them recurring network fees.[28]

Put simply, if a big video site or a cloud provider offers to bring its traffic to the ISP's network for free, the large ISP says "pay me." If the video provider says "no thanks, we will just let you connect to us through your big pipe to the rest of the internet," the large ISP has a trick. It says "well sorry, that pipe is congested. If your videos go through that pipe, your site will be very slow to load. All the cat videos will stutter."

This leaves such entities with two options: pay the large ISP for a direct, uncongested connection to its network, so the large ISP's customers can access the company's service at good quality. Or refuse to pay and let the large ISP's customers access the company's service through the congested big pipe. But all of the data that comes in through the ISP's congested big pipe has bad quality. Online calls break up, sites load slowly, and videos stutter.

These are the largest ISPs that control access to a large part of the internet customers in a country. Most providers cannot afford to have their apps and sites suck for so many customers, so many providers choose to pay the ISP directly or use a provider that pays the ISP. Apps and services that pay work well, the others do not.

In essence, these large ISPs are taking their customers hostage to force apps and services to pay them a ransom.

This happened, for example, to the German Research Network in a case that was widely reported in the press.[29] During the pandemic, students, faculty and staff of German universities had to study and work from home. They used their Deutsche Telekom home internet connections to access their university's websites and online resources, which were stored on computers connected to the German Research Network.

Naturally, all of these requests for university content increased the amount of data that German Research Network delivered to Deutsche Telekom through GRN's internet provider, congesting that provider's connections into Deutsche Telekom's network. For Deutsche Telekom customers, accessing university resources took forever or didn't work at all, even though they had paid Deutsche Telekom for a fast connection to the entire internet.

To solve the problem, GRN offered to interconnect with Deutsche Telekom directly for free, so Deutsche Telekom's customers could access their university's resources at good quality.

But Deutsche Telekom refused to interconnect directly until GRN bought an expensive uncongested connection to Deutsche Telekom's network directly from Deutsche Telekom.

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[28] See BEREC 2024 Draft Interconnection Report, pp. 26-30.
[29] WIK-Consult 2022 Report, p. 75.

As the recent BEREC draft interconnection report explains, these are isolated problems that can and should be addressed case-by-case under Europe's Open Internet Regulation.[30]

By contrast, the White Paper proposes to set up a dispute resolution mechanism that can resolve disputes over the size of the ransom.

Thus, BEREC says "we can use the Open Internet Regulation to end the hostage taking."

The White Paper says "let's come up with a way to ensure the hostage taker gets a good ransom fee."

It's the worst telecom policy parody of Groundhog Day.

There's no need to extend the EECC to cloud providers. It's just a backdoor way of trying to mandate network fees.

The White Paper also proposes to expand the scope of the European Electronic Communications Code (EECC) to include cloud infrastructure and services.[31]

The White Paper's justification?

Recently, ISPs began using a new generation of network routing equipment where the software controlling the router wasn't on the device. Instead, they could control the software remotely, not too different from the current generation of home routers you can buy that have an app on your phone that lets you change the settings without having to log in to your computer and type in 192.168.0.8 to get to your router interface.

Then ISPs figured out, like many other software developers, that cloud computing centers had powerful, easy-to-use software tools and that ISPs could use Amazon or Google or Microsoft's cloud computing platforms to help run their networks and routers.

The White Paper argues that now that ISPs are using cloud computing to control their public-facing and regulated networks, the cloud computing companies are now tainted, and their private, non-public facing cloud computing networks should now be in the same regulatory category as the broadband networks that you and I pay for.

It's an absurd argument.

It's as if a law firm decided to stop using word processing software installed on their computers, switched to Office 365 in the cloud, and then claimed that all Microsoft employees were now lawyers who needed to pass the bar exam.

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[30] BEREC 2024 Draft Interconnection Report, pp. 34-36, 37.
[31] White Paper, pp. 15-16, 25, 36 (Scenario 4).

In a draft report released in March this year, BEREC came to the same conclusion.[32]

BEREC concluded there is no need to expand the scope of the EECC just because ISPs may use cloud services to provide internet access or other electronic communications services.

That's because the definitions in the EECC are technology neutral: They focus on the functionality provided by the service, not the technology used to provide the service.[33] Thus, it doesn't matter whether a provider of internet access uses software in the cloud to provide its service; the resulting internet access service is still an electronic communication service.

> "The EECC takes into consideration the functionality provided by the services independently of the underlying technology used. Such general approach for the definition of the services is applied as well on cloud-based networks, in line with the abovementioned recital 14 EECC. Therefore, in general terms, the substitution of physical elements by software elements would not impact the definitions and, thus, the scope of application of the EECC."[34]

So why would the Commission want to do this?

While the White Paper does not discuss this, extending the scope of the EECC to cloud providers would likely subject cloud providers to the obligation to negotiate for interconnection (Art. 60 EECC) with ISPs and to a dispute resolution mechanism (Art. 26 EECC) that could be used to force cloud providers to pay network fees to large ISPs.[35]

Of course, the White Paper does not explain what exactly it would mean to include cloud providers in the scope of the EECC. But one can only assume it would mean treating their private networks in the same way as "public electronic communications networks" under the regulation, and their services as "electronic communications services," which would establish the dispute resolution mechanism large ISPs have been demanding.

You don't have to look too hard to see it's that pig in a wig again.

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[32] BEREC, 2024, Draft BEREC Report on Cloud and Edge Computing Services, BoR (24) 52, March 7, 2024, p. 51, https://www.berec.europa.eu/en/document-categories/berec/reports/draft-berec-report-on-cloud-and-edge-computing-services ("BEREC 2024 Draft Cloud Report").

[33] DIRECTIVE (EU) 2018/1972 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 establishing the European Electronic Communications Code, Recital 14: "Definitions need to be adjusted to ensure that they are in line with the principle of technology neutrality and to keep pace with technological development, including new forms of network management such as through software emulation or software-defined networks." https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L1972.

[34] BEREC 2024 Draft Cloud Report, p. 51.

[35] Art. 26 EECC empowers national regulators to resolve disputes between providers of electronic communications networks and services about obligations under the EECC through binding decisions.

The Commission should celebrate, not eliminate, broadband competition and affordable internet access.

If only the White Paper stopped there.

But unfortunately, the White Paper goes on to paint some very dark pictures about the state of EU broadband investment, the dangers of competition, and the high price to the EU's digital sovereignty because EU citizens have affordable broadband.

The White Paper paints a false, gloomy and harmful picture of the state of broadband deployment and investment in Europe.

Like the Commission's consultation did last year, the White Paper pretends that the EU is in dire straits when it comes to 5G and fiber to the home, when in fact, it's on track to meet its deployment goals on both fronts.

This false characterization drew intense fury from ECTA, the coalition of small and competitive ISPs, in their response to the White Paper.

> "First and foremost, the EU is not performing badly in any segment of electronic communications. Quite to the contrary, it excels in FTTH deployment and in 5G standalone vis-a-vis US, as it is confirmed by the recent European Parliament Report, and several EU Member States are in fact world leaders.
>
> The EU also excels in the affordability and inclusion of broadband offers: the EU27 has the lowest prices for Triple Play offers among all speed categories and prices for bundles in all speed baskets are lower in the EU27 than in Japan, the USA, Norway, Iceland except those of the UK which has been a full EU Member until 31 January 2020 and has not materially changed the applicable legal framework."[36]

ECTA notes quite correctly that the EU is on path to meet its aggressive 5G and Fiber to the Home goals, and that the Commission's complaints about the relative profit per subscriber compared to the US are foolhardy:

> "When it comes to the investments by the biggest telcos in the EU vis-a-vis those made by the biggest telcos in US (a strict oligopolistic market with poor wholesale access regulation), the picture for Europe is positive and not the catastrophe painted by the Commission's WP (and claimed by the biggest incumbents for their lobbying purposes).

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[36] ECTA, 2024, ECTA Considerations on the European Commission's White Paper "How to Master Europe's Digital Infrastructure Needs?", June 24, 2024, p. 7, https://www.ectaportal.com/images/Press_Releases/ECTA_Considerations_on_Commission_White_Paper_24_June_2024.pdf.

According to recent academic research that analysed the investments of the biggest telcos in both sides of the Atlantic (i.e. the capital expenditure in proportion of revenue for major European telcos and US telcos in percentage), US and European average capex stood at the same level in 2012 at around 13% of revenue.

In 2021 average European capex rose to 16% of revenue and average US declined to below 12% of revenue. The research shows that <u>major EU telcos' average investment is higher than that of US telcos, confirming that competition drives investments</u>. In fact, the research affirms that <u>initial profitability taken before infrastructure investment is comparable between US and EU telcos</u>. However, the profitability of US telcos after taking into account investments in assets is higher. Lower levels of infrastructure investment in the US explain this extra profitability of US telcos."[37]

The US's telecoms, now down to three major wireless carriers, have higher profit margins after investment than EU telecoms because they invest less in improving their networks, likely because they face less competition.

ECTA points out, quite correctly, that there's a real and counter-productive price to be paid for the Commission's false doom and gloom:

"Overall, there is a serious concern that the Commission's WP's characterisation of the telecom sector dampens the appetite for investment and hinders the innovation potential that will come from the effective collaboration of the electronic communications sector with other sectors."[38]

According to the White Paper, a brighter future demands elimination of competition, industry consolidation and higher broadband prices.

As I pointed out last year, you can't look at the amount of money needed to build out 5G and fiber to meet the European goals by 2030 and call that an investment gap, without taking into account the money that ISPs are investing in their networks to roll out 5G and fiber.[39]

The White Paper cites the same investment number estimated to get to the 2030 deployment goals as last year's consultation, implying that money is missing.[40]

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[37] Ibid., p. 7 (emphasis and paragraph breaks added).

[38] Ibid., p. 6.

[39] van Schewick, 2023, Comments to Commission 2023 Exploratory Consultation, p. 2, https://cyberlaw.stanford.edu/sites/default/files/van_Schewick_2023_Comments_EU_Network_Fees_Consultation_Online.pdf.

[40] White Paper, p. 10. This year's consultation quantifies the investment needs to meet Europe's 2030 deployment goals for fiber and 5G at €148 billion, plus an additional €28-79 billion to cover major transport corridors with 5G. Ibid, p. 10. Last year's consultation combined the €148 billion and €28 billion for transport corridors into a single number of €178 billion. See Exploratory Consultation Questionnaire, Section 2.3. and Fn. 5.

But that investment is already covered by the money that large ISPs are investing, without even considering the significant investment by smaller ISPs.[41]

The White Paper goes on to move the goalposts from last year's dire report, and invent yet another funding gap – claiming that tens or maybe hundreds of billions are missing to build 6G, CCC, and Web 4.0 networks.

> "The successful completion of software and cloud-based solutions to provide NaaS would require additional significant investment capacities. There is an estimated cloud investment gap in the EU of EUR 80 billion until 2027."[42]

How to close that fake gap? Bust into the treasury to shovel money to ISPs:

> *Massive investments in connectivity capacity are required to support the creation of a collaborative connectivity and computing ecosystem. The Commission may consider different options in order to frame these investments into a simplified and coordinated support framework for a truly digital single market drawing on European and national, public and private investments.*[43]

It's not enough to find ways to have the public fund giant telecoms.

According to the White Paper, the large ISPs need to be able to consolidate into fewer and fewer and bigger and bigger players and be able to jettison the wholesale obligations that enable competitive carriers so that there's less competition, higher prices and more profits.

> "While prices and coverage differ considerably between Member States48 due to the inherently different market and regulatory landscapes, beyond the need to ensure affordability in Member States with lower purchasing power, mobile and fixed broadband prices are typically lower in the EU compared to the US for the vast majority of tariffs, **bringing significant short-term consumer benefits**. At the same time, coverage for fibre is higher in the EU and basic 5G coverage is comparable to the US levels. However, while the single market, on average, delivered on price, it did not deliver on the mass deployment of advanced infrastructures and services like 5G standalone or the proliferation of advanced industrial and IoT services".[44]

In other words, competition and low-priced broadband service need to get sacrificed to build new big complex networks, which will somehow make large industrial players decide to pay for special networks, which they have largely so far declined to do.

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[41] See, e.g., van Schewick, 2023, Comments to Commission 2023 Exploratory Consultation, p. 2, https://cyberlaw.stanford.edu/sites/default/files/van_Schewick_2023_Comments_EU_Network_Fees_Consultation_Online.pdf; https://www.project-disco.org/european-union/telcos-biggest-fair-share-myths-debunked-by-new-eu-connectivity-investment-study/.
[42] White Paper, p. 10.
[43] White Paper, pp. 24 (Scenario 3).
[44] White Paper, pp. 14-15.

This was the promise of 5G, that big industrial groups would pay for very expensive, private networks, but very few chose to.

And, according to the White Paper, because big companies didn't see the value in that, consumers should pay more and the government should fund ISPs to build 6G networks that big industries will *definitely* pay for.

All this new funding and market consolidation, paired with bureaucratic muscle to force applications to pay ISPs as well as new unprecedented regulations on private networks, are, of course, vital to Europe's future, according to the White Paper:

> "We need to ensure that these innovations are implemented in the EU and safeguard our economic security and prosperity."[45]

It's the same old, same old, just dressed up in a new costume.

The White Paper refuses to concede what the market has made clear:

The 5G hype didn't work out.

To be clear, 5G and fiber are generational jumps in speed and capacity. The tech advance was real.

But the ISPs' dreams that industry would show up in droves to buy industrial 5G private networks and other fantasies about all the new revenue levers they could push only with 5G's new capabilities haven't become real.

Customers aren't flocking to 5G in Europe, at least not when they have to pay a premium to do so.

It's clear that users do like faster speeds and higher data caps, but it's increasingly clear they aren't willing to pay extra.

That doesn't mean the 5G upgrade isn't good for ISPs. They get much more capacity in their networks, lower operating costs, and customers get a better online experience.[46]

And 5G does open up new lines of business, even if it's still the basic internet access service.

The biggest data users of 5G in the U.S. and India are people replacing their cable systems with wireless connections to their homes, something mobile carriers can only do because of the increase in network capacity from 5G.

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[45] White Paper, p. 20.
[46] https://www.ericsson.com/en/blog/2023/2/is-it-still-worth-to-invest-in-5g-in-a-flat-revenue-scenario.

The carriers in the U.S. now say they could serve up to 18 million homes with 5G home service with no data caps.

Even telecom industry publications aren't buying the industry hype anymore.

Light Reading, long an industry backer, had this to say about the 2024 Mobile World Congress, in a piece headlined "MWC Barcelona stinks of quiet desperation:"

> "Everyone here knows that 5G isn't living up to the sky-high expectations laid out at previous MWC shows. They know that, as a result, big vendors and network operators are engaging in a rising tide of layoffs amid a spending slowdown that has shown few signs of abating. And – deep down – they know that all the hype around AI is primarily (exclusively?) focused on automation.
>
> Meaning, the vast majority of AI discussions here at MWC will ultimately involve eliminating jobs, not creating them.
>
> Attendees here know that. For some, this will be their last MWC. [...]
>
> Yes, attendance at this year's MWC seems up significantly from the show's pandemic years. But the industry as a whole appears to be shrinking."[47]

That's from Mike Dano, Light Reading's Editorial Director, 5G & Mobile Strategies.

That leaves the European Commission as the only one still uncritically believing all the promises at the top of the 5G hype curve.

AI won't save the White Paper's vision.

AI isn't going to save the industry from its inevitable plateauing into being a commodity service (albeit a vital one) that largely shuffles a lot of data back and forth between devices and servers, with margins buoyed by the occasional enterprise client.

AI isn't reliant on massive connectivity. The biggest winners so far in AI are NVIDIA for its chips and GPUs used in data centers, as well as OpenAI's centralized services.

Centralized services like OpenAI *do* take advantage of 5G and fiber, which provide much lower latency than 4G and wired alternatives like cable.

AI Large Language Models (LLMs) take much longer than traditional servers to decide on what to send back to a user after a request. With a traditional app or a static website, content gets sent

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[47] https://www.lightreading.com/ai-machine-learning/mwc-barcelona-stinks-of-quiet-desperation.

back to a user from a server in a few milliseconds, with cached assets or very simple database lookups.

LLMs can take some time to generate a non-precomputed answer, so they do rely on low latency network connections to make up for that time spent computing. That low network latency, which users experience as speed, helps things like an AI chatbot feel natural.

But that doesn't require any convergence; it just needs a fast, uncongested modern network.

The next wave in AI appears to be embedding AI in end devices, whether that's in tiny sensors like smartwatches, or AI-capabilities like LLMs in smartphones and desktops. In the last year and a half, hobbyists, startups, and the largest smartphone manufacturers have been racing to run powerful LLMs on local workstations, commodity PCs, and even on smartphones.

Google put its Gemini LLM on Pixel and Samsung phones, and Apple made a big announcement at Apple's Worldwide Developers Conference in June about Apple Intelligence that's nearly entirely on device.

If you want to see the likely future of consumer AI, look no further than the segment starting at 1 hour and 4 minutes into Apple's presentation at WWDC.

Here are Apple's 5 pillars.
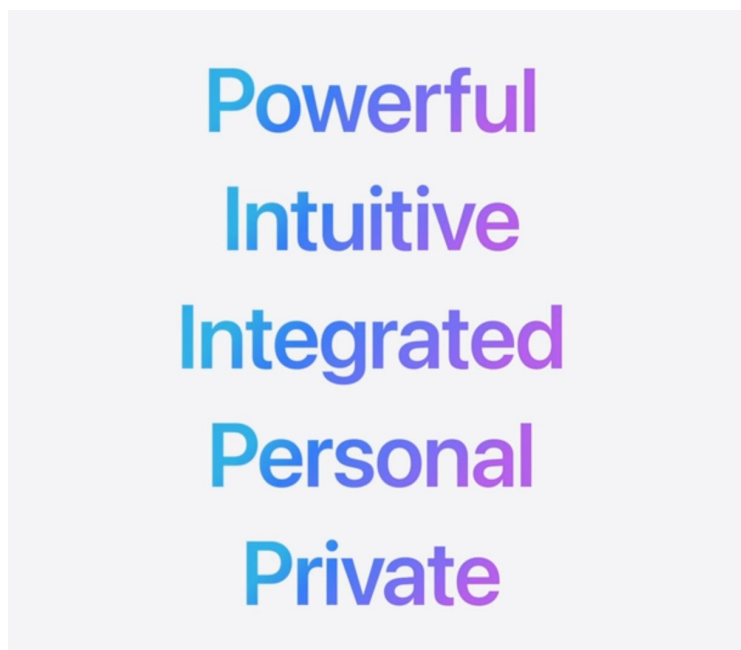
Take note of the two pillars: Integrated and Private. That means the AI is on the device, and that data stays the device until the user chooses to share the AI-created or altered text, image or video.

That means Apple Intelligence will create very little additional traffic or network usage for Apple iPhone users.

Apple made clear that when the LLM on the device couldn't handle the request locally, it would send that data encrypted to an Apple data center.[48]

That means no AI server embedded in the network.

That's the opposite of a converged ecosystem.

That's on-device with a fallback to a little, fully encrypted, network traffic to a cloud computing data center.

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For 20 years, ISPs have been frantically trying to make real the fever dream that the networks will be the star of the tech revolution.

But networks have never been the thing, the same way that electricity was never the thing.

Electricity, like broadband, is magical. But that magic gets expressed by the things that plug into those networks. Radios, turntables, refrigerators, TVs, microwaves, air conditioners, and air fryers.

Likewise, with IP-based networks, it's the devices, apps, and services that communicate across them that dazzle us and revolutionize our daily lives, society and economies.

To paraphrase a line from *Halt and Catch Fire*, the Netflix show about the history of computing: Broadband isn't the thing. It's the thing that gets you to the thing.

The European Commission's continual insistence on buying into that telecom dream of becoming the center of technology innovation as a central pillar of European industrial policy is not just foolhardy.

It leads to repeatedly awful policy prescriptions that distract from the real work that needs to be done to build Europe's digital future.

Here's hoping it won't be Groundhog Day again soon. We all have better things to work on.

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[48] https://www.apple.com/newsroom/2024/06/apple-extends-its-privacy-leadership-with-new-updates-across-its-platforms/.

Internet and Society. She has received no direct or indirect corporate funding, and the Center does not accept corporate funding for its network neutrality-related work.

*Unless covered by event organizers.