Meta and Google Are Wiring the World's Oceans: What Does This Mean for Geopolitics and Business?

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November 2, 2026

Abstract

Submarine cables transmitting most intercontinental communications are a foundation of the world's economy. For policymakers, they are a strategic infrastructure that must be secured in case of conflict and whose resilience must be improved. They are largely built and operated by privately owned firms, yet policymakers rarely make explicit how these businesses make money and how this ultimately matters to the resilience of the cable network.

In this paper, I focus on the growing role taken in the submarine cable sector by so-called Big Tech (or "hyperscaler") firms—Microsoft, Amazon, Google, and Meta. I argue that the causes of Big Tech's growing role are typically misunderstood. Conventional wisdom sees these investments and direct ownership as a simple consequence of their share of data traffic.

However, I find that two firms, Google and Meta, have come to dominate investment in submarine cables. The routes they choose differ sharply from those taken by traditional actors in the sector. They are more likely to avoid maritime chokepoints and they effectively create alternative worldwide cable loops.

I argue that Google and Meta behave differently because they can uniquely capture positive security externalities from the resilience of their networks that other firms cannot capture. Their shared business model based on advertising puts a unique premium on the integrity of their global networks. This explains their peculiar choice of routes and why other players do not follow suit.

For policymakers, the first lesson is that Google and Meta have become suppliers of communication resilience at a global scale. This alleviates concerns about resilience but, at the same time, creates another set of dependencies. The second lesson is that policymakers must understand in depth the internal logic of private actors, beyond what conventional wisdom may suggest, to anticipate their incentives, decisions and the geopolitical implications.

1 Introduction

In the past 20 years, two of the largest technology firms—Meta and Google—have been engaged in massive investments in subsea fiber optic data cables, making them the leaders of the sector and giving them an immense lead over their "Big Tech" competitors. As owners of critical communication infrastructures, they have acquired a unique position among private actors and are accelerating the pace of their investments. While these infrastructures are increasingly the object of conflicts between states, this note revisits the business rationales behind these investments with a view to articulating their internal business logic and how they produce resilience and security externalities.[1]

1. For another example of using business logic to answer questions relevant to policymakers, see Olivier Chatain, *The Business Model of Content-Sharing Platforms and the Supply of Content Moderation: Implications for Combating Information Manipulations*, Report 99 (Paris: IRSEM, October 2022), https://www.irsem.fr/media/etude-irsem-99-chatain-business-model.pdf.

For analysts of economic security, this note will reveal the business logic underlying these investments and make the point that they are due to a business model specific to these two firms and not shared by other Big Tech firms. However, the active role these two firms took in communication infrastructures is largely due to business calculations which follow clear and general principles. The design of any policy touching on economic security must consider these principles to anticipate future behavior. This note will concentrate on the decision to vertically integrate and how it interacts with a platform-based business and the supply of a common good: the resilience of global communications networks.

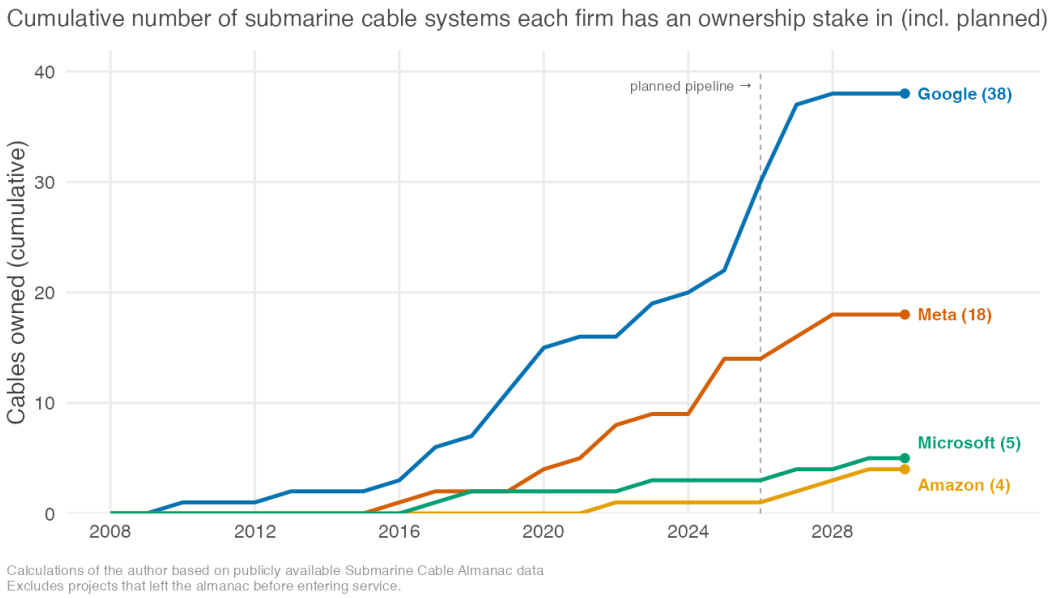
For business strategists, this note will make the point that the convenient analytical separation between business decisions and national security is no longer tenable in an age of increased state rivalry. When businesses create assets that are global common goods, such as global communication infrastructure, they may be taken hostage or exploited by state and non-state actors alike. In the ascending phase of economic globalization, such conflicts were comparatively muted and predictably resolved. Outside of the energy and the defense industries, firms mostly had the luxury of not having to think about interstate conflicts. However, in an era where all economic activities are potentially weaponized, firms must anticipate how decisions following a narrow business logic may put them at risk.

Examining the development of subsea fiber-optic cable activities of Meta and Google shows remarkable patterns. The two firms have undertaken similar projects of unprecedented scale following unusual routes. In early 2025, Meta announced its Waterworth project, a planned 50,000 km subsea cable of the highest capacity starting from the East coast of the U.S., stopping in Brazil, South Africa, India, and Australia before looping back to the West coast.[2] This project will add to the 14 subsea cables Meta already partly owns around the world (in service at the end of 2025). Meta is playing catch-up with Google, which has started a sequence of projects since 2020 that rivals Meta's ambitions. Google has been quietly and systematically assembling subsea cable projects off the beaten path, allowing the following voyage around the world, entirely on Google-owned infrastructure (it already owned 22 systems in service at the end of 2025). First descend from California to Chile, from there crisscross the South Pacific Ocean, reach Australia, cross it on land and then plunge into the Indian Ocean to land in South Africa, connect to a cable going up the West coast of Africa, land in Portugal and finally, again on a Google-led project, arrive on the East Coast of the U.S. Remarkably, the only two other "giants" of technology that own cables, Microsoft and Amazon, have a very restrained approach, each only owning a few cables. Figure 1 shows the number of cables owned by so-called Big Tech firms. Notice the gap between Google and Meta on the one hand, and Microsoft and Amazon on the other. No other large tech firm is active as a submarine cable owner as of 2026.[3]

2. "Unlocking Global AI Potential with Next-Generation Subsea Infrastructure," Engineering at Meta, February 14, 2025, accessed October 15, 2026, https://engineering.fb.com/2025/02/14/connectivity/project-waterworth-ai-subsea-infrastructure/; "Meta's Project Waterworth Reveals Australian Landing Plan with Vocus," W.Media, July 13, 2026, accessed October 15, 2026, https://w.media/metas-project-waterworth-reveals-australian-landing-plan-with-vocus/.

3. "Big Tech" is an ill-defined category, but Meta, Google, Amazon, Microsoft, and Apple generally make the list (see "GAFAM" in French), based on their market value. Surprisingly, most reports in the general and specialized press fail to notice how the involvement of "Big Tech" in submarine cables is first of all the story of Meta and Google while other firms comparatively have played a minor or even nonexistent (Apple) role. Other generic terms such as "hyperscalers", "OTTs" ("over the top"), and "content-providers" are also frequently used but fail to make distinctions within those groups. It is analytically loose to lump firms together in a pre-existing category without clear criteria. Applied to the submarine cable context, it implicitly assumes that the involvement of large tech firms is obvious and needs no explanation beyond their size or volume of data traffic.

FIGURE 1. Cumulative number of submarine cable systems with an ownership stake of each Big Tech firm, announced projects included, abandoned projects excluded



Calculations of the author based on publicly available Submarine Cable Almanac data.

Once completed, these projects will change the resilience of the global telecommunication network by creating new belts of high-capacity subsea cables away from most of the existing bottlenecks. That these assets are built and controlled by two private firms raises many questions. How will these new routes matter for the world's economic security? Why is no one—neither state nor firm—challenging Meta and Google? What does this mean about the balance of power between giant firms and states? Is this a prime example of the irrelevance of states in the face of technological developments? What responses should be expected to this? How will the rush to build more data centers and to develop AI models affect this balance?

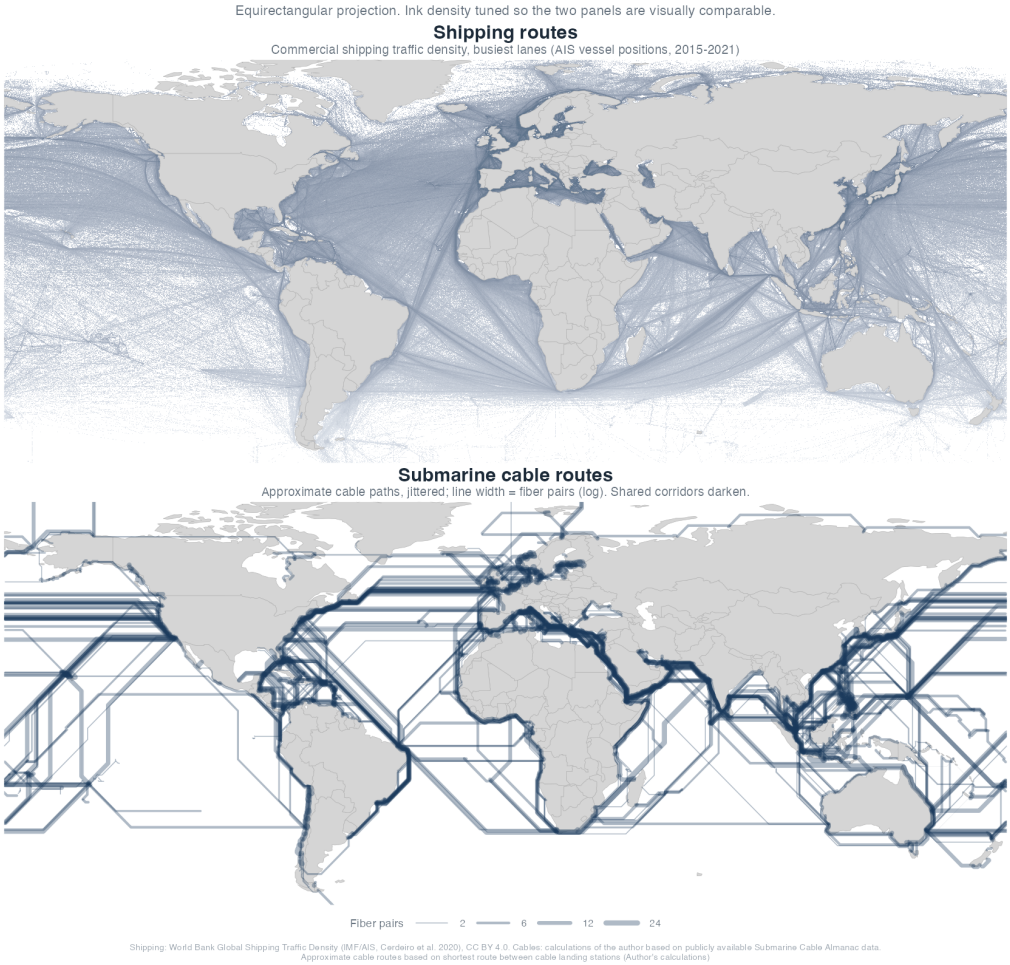
2 Submarine Communication Cables: An Invisible, yet Fragile, Infrastructure of the Global Economy

2.1 Submarine cables: Essential but individually fragile

Submarine telecommunication cables are the unsung heroes of the digital age, carrying data across the world with bandwidth far superior to satellite-based alternatives (those have the advantage of being available everywhere). These bundles of optical fiber, as thick as a thumb, snake on oceanic seabeds. They can each transmit as much as 600 terabits of data per second,[4] land unassumingly in beach-side utility rooms that connect them to the land network and carry most of the international data traffic. Without these cables, no integrated international financial markets, no worldwide Internet, no digital platforms operating at global scale. By comparison, low Earth orbit constellations such as Starlink can only carry a fraction of the bandwidth and currently represent a complement to, rather than a substitute for, submarine cables. Submarine cables use the same routes as shipping traffic (Figure 2) and are covered by the same UN convention guaranteeing

4. See ASN's press release for a 24-fiber pair, 624 Tbps design capacity cable: "Unitirreno Launches World's First 24-Fiber Pair Repeatered Subsea Cable, Transforming Mediterranean Connectivity," Alcatel Submarine Networks, accessed August 6, 2026, https://www.asn.com/press-release/unitirreno-launches-worlds-first-24-fiber-pair-repeatered-subsea-cable-transforming-mediterranean-connectivity/.

FIGURE 2. Submarine cables and the world's shipping lanes



Top: commercial shipping traffic density (AIS, 2015-2021). Bottom: approximate submarine cable routes; line width proportional to fiber pairs. Sources: World Bank Global Shipping Traffic Density; calculations of the author based on publicly available Submarine Cable Almanac data. Fiber pairs from the Submarine Cable Almanac, completed for a few cables with TeleGeography and submarinenetworks.com, or estimated.

freedom of navigation on the high seas.[5]

Because of their importance and fragility, these cables have always been a target at the beginning of armed conflicts as early as World War I, when belligerents attacked each other's telegraph networks, located on virtually the same routes as today's fiber cables. This is still true today, as gray-zone conflict tactics are making the news. Cables are located on seabeds that are largely in international waters and very difficult to monitor, making them elusive but ultimately soft targets. Several incidents in the Baltic Sea and the Taiwan strait where civilian ships dragged anchors right on top of cables, severing them, have been investigated as possible gray-zone warfare incidents. Even though these incidents had little consequence, individual incidents, most often due to natural causes (earthquakes, subsea landslides) or normal human activity (e.g., fishing, navigation incidents) can have real, tangible effects. For instance, a conjunction of fiber-optic cable failures in March 2024 had long-lasting consequences for Internet traffic in several West African countries.

5. Camille Morel, *Les câbles sous-marins : enjeux et perspectives au XXIe siècle*, Biblis 265 (Paris: CNRS Éditions, 2023). For the limits of the Convention, see Félix Blanc, "Géopolitique des câbles : une vision sous-marine de l'Internet," *Les carnets du CAPS*, no. 26 (June 2018): 39, https://www.diplomatie.gouv.fr/IMG/pdf/6_carnets_26_dossier_geopolitique_cables__cle43116d.pdf.

In May 2026, Iranian leaders threatened to levy a toll on submarine cables going through the Strait of Hormuz.[6]

2.2 A missing market for global network resilience?

For a communication network, resilience is the ability to sustain damage and yet keep operating. A communication network more resilient to incidents, conflicts and generally to malicious actors is clearly beneficial to its users.

To understand how Meta and Google's projects fit in this, why they are of consequence, and why they are unprecedented, requires explaining what makes networks vulnerable, and what stands in the way of making them more resilient while keeping in mind that the provision and operation of these cables are largely left to a private market. Understanding private incentives (or the lack of these) for building these infrastructures is thus fundamental.

We can classify forms of resilience by the level at which it is beneficial. A first source of resilience is to prevent individual cables from being cut. Given a chosen set of landing sites, a cable's path may avoid risky undersea areas, making the cable less likely to rupture from natural (earthquake, submarine landslides) or accidental (fishing, anchor dragging) causes. Burying cables in the seabed offers a first line of protection and is required in some busy areas. The interests of private operators are well aligned with dealing with this concern.

At the level of a route (considering all cables taking the same corridor), resilience comes from redundant capacity on the same route across multiple cables to offer protection against a single-cable failure, leaving time for specialized ships to mend the cut while the rest of the cables can sustain a surge in utilization. This requires enough cables on the route, with sufficient spare capacity so that traffic can be switched to another cable on the same general route. This also assumes that there are enough specialized repair ships available to carry out the repair. Again, if the route draws a lot of traffic, we can expect a variety of actors to compete on it, and the multiplicity of cables will create this kind of resiliency.

At an even higher level of analysis, resilience can be assessed by considering the network *as a whole*, rather than individual routes. The idea is to reduce the dependency on any single route by making the network richer in alternative independent paths, so that alternative routes can be easily taken should a bottleneck become obstructed.[7] This can be seen within regional clusters, but also globally.

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6. Pierre Manière, "Iran is considering taxing users of undersea cables in the Strait of Hormuz," *Le Monde*, May 22, 2026, accessed July 30, 2026, https://www.lemonde.fr/en/economy/article/2026/05/22/iran-is-considering-taxing-users-of-undersea-cables-in-the-strait-of-hormuz_6753735_19.html; Dan Milmo, "Wire Cutters: How the World's Vital Undersea Data Cables Are Being Targeted," *The Guardian*, November 22, 2024, accessed July 30, 2026, https://www.theguardian.com/world/2024/nov/22/wire-cutters-how-the-worlds-vital-undersea-data-cables-are-being-targeted; Reuters, "Two Telecoms Cables in Baltic Sea Severed, Raising Suspicions of Sabotage," *The Guardian*, November 18, 2024, accessed July 30, 2026, https://www.theguardian.com/world/2024/nov/18/telecoms-cable-in-baltic-sea-may-have-been-severed-says-finnish-owner; Jonathan Reed Winkler, *Nexus: Strategic Communications and American Security in World War I*, Harvard historical studies 162 (Cambridge, Mass: Harvard University Press, 2008); "Undersea Cable Failures Cause Internet Disruptions for Multiple African Countries," Cloudflare Blog, March 14, 2024, accessed September 29, 2026, https://blog.cloudflare.com/undersea-cable-failures-cause-internet-disruptions-across-africa-march-14-2024/; Internet Society, *2024 West Africa Submarine Cable Outage Report* (Internet Society, April 18, 2024), accessed September 29, 2026, https://www.internetsociety.org/resources/doc/2024/2024-west-africa-submarine-cable-outage-report/.

7. For instance, Pakistan's Internet access is heavily dependent on a single submarine cable landing point in Karachi. Nowmay Opalinski, Zartash Uzmi, and Frédérick Douzet, "The Quest for a Resilient Internet Access in a Constrained Geopolitical Environment," in *Proceedings of the 19th Asian Internet Engineering Conference*, AINTEC '24 (New York, NY, USA: Association for Computing Machinery, 2024), 55–66, accessed 2024, https://doi.org/10.1145/3674213.3674220, https://dl.acm.org/doi/10.1145/3674213.3674220.

This can be addressed within a regional cluster, for instance in the case of archipelagic states (e.g., Indonesia) or of a group of neighboring countries (e.g., the European Union). From the viewpoint of a cluster, the goal is to ensure that there is enough redundancy of routes within the cluster, so that it is possible to connect islands or member states in multiple ways. This requires making sure that there are enough alternative routes with the needed capacity to divert traffic around bottlenecks when they exist. Of course, bottlenecks matter precisely when alternative routes are more costly and less attractive to use because they impose taking a much longer path.

The basic issue with establishing structural resilience is that the benefits are for everyone (a positive externality), but that the costs fall on a few actors who may not be able to recoup them. Global resilience has the character of a global commons.[8] This gives rise to a classic free-rider problem that is better resolved through coordinated action. The European Union's first steps into submarine cable security are mainly focused on connections between member states and their dependencies.[9]

Going one level up, considering the international submarine cable network in its entirety, the same notion of structural resilience thanks to redundancy can be applied. We see that at a global level the main concentration of submarine cables is heavily dependent on a few bottlenecks. The current structure of the submarine cable network shows a core path with a few well-known bottlenecks as well as underserved areas that constitute the periphery of the main network. It has the shape of a loop around the world mainly located in the Northern Hemisphere (Figure 3) whose narrowest bottlenecks are the Red Sea (Suez Canal), the Malacca Strait near Singapore, the South China Sea and the Taiwan Strait.[10] Underserved areas in the de facto periphery have included South America, Sub-Saharan Africa and the Indian subcontinent.

The continued dependency on these bottlenecks reflects *the lack of provision of global network resilience*. Global resilience would be achieved by creating "transversal" routes that directly link up the currently peripheral areas, providing efficient ways around current bottlenecks, and making them less crucial to everyone.

Consistent with this structure, the early projects (before 2020) of Google and Meta retrace parts of this loop (Figure 4), starting from North America towards the east and the west, with forays toward South America and Southeast Asia. However, and strikingly, after 2020, Google and Meta seem to invest heavily in such transversal routes. They not only complete the northern loop, but are also creating cables that follow transversal routes and avoid all the bottlenecks on the northern loop. The map of cables built or announced since 2020 (Figure 5) shows Meta and Google's projects crisscrossing oceans and directly connecting continents that were previously lacking dense connections.

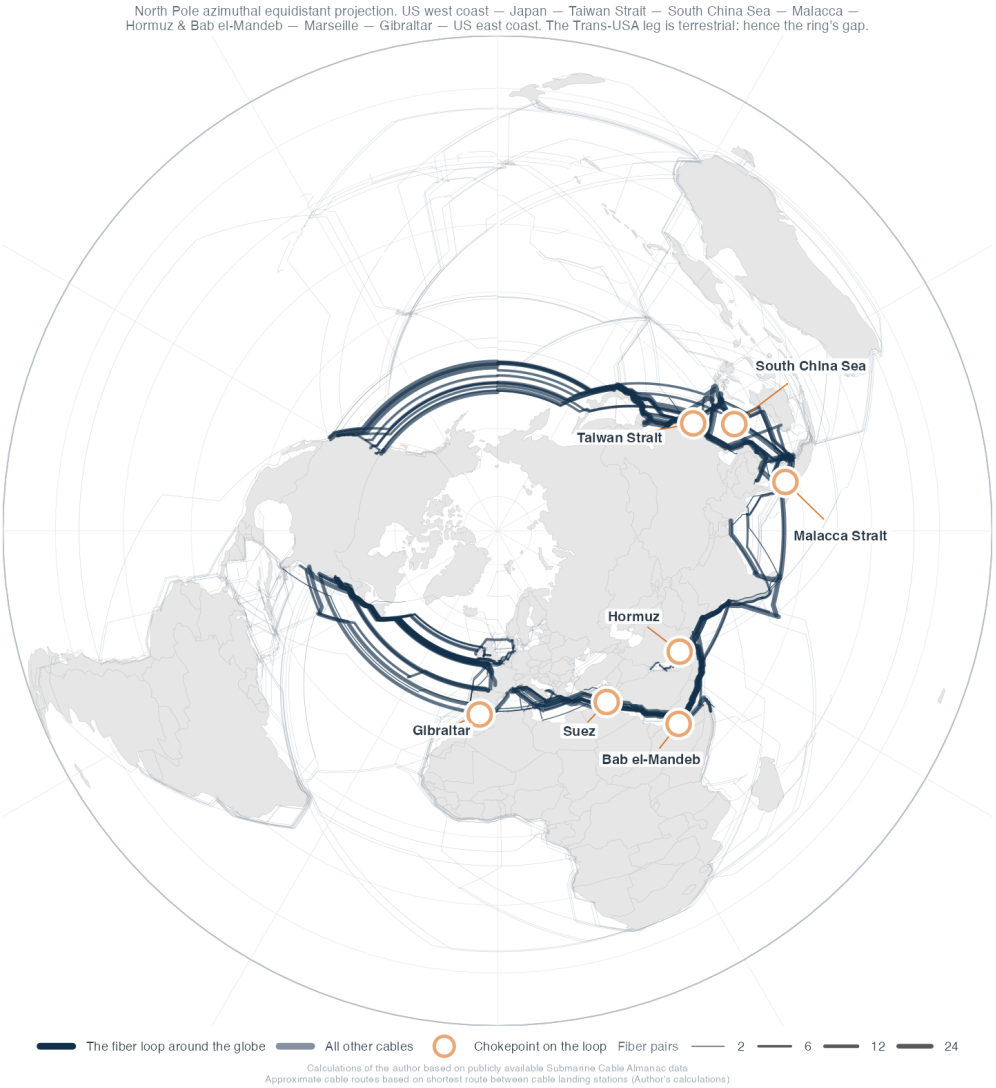
The interesting fact is that until Google and Meta's projects, these bottlenecks, well known to all actors, have largely persisted with only a few attempts at diversifying away from them. This is essentially a "market failure": there is a valuable good (global resilience), which would benefit many actors, and yet has not been provided.

8. Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Canto classics (Cambridge, United Kingdom: Cambridge University Press, 2015); Camille Morel, "Les câbles sous-marins : un bien commun mondial ?," *Études*, no. 3 (March 2017): 19–28, https://doi.org/10.3917/etu.4236.0019.

9. European Commission, "Joint Communication to Strengthen the Security and Resilience of Submarine Cables," Shaping Europe's Digital Future, accessed August 3, 2026, https://digital-strategy.ec.europa.eu/en/factpages/joint-communication-strengthen-security-and-resilience-submarine-cables.

10. See Patrick Faidherbe et al., "Submarine Cables Hubs Around the World," *Submarine Telecoms Forum Magazine*, no. 116 (January 2021), https://subtelforum.com/subtel-forum-magazine/. The "Fiber-optic Loop Around the Globe" is also the name of a set of breakthrough submarine cable projects set in motion in the late 1990s.

FIGURE 3. The fiber loop around the globe

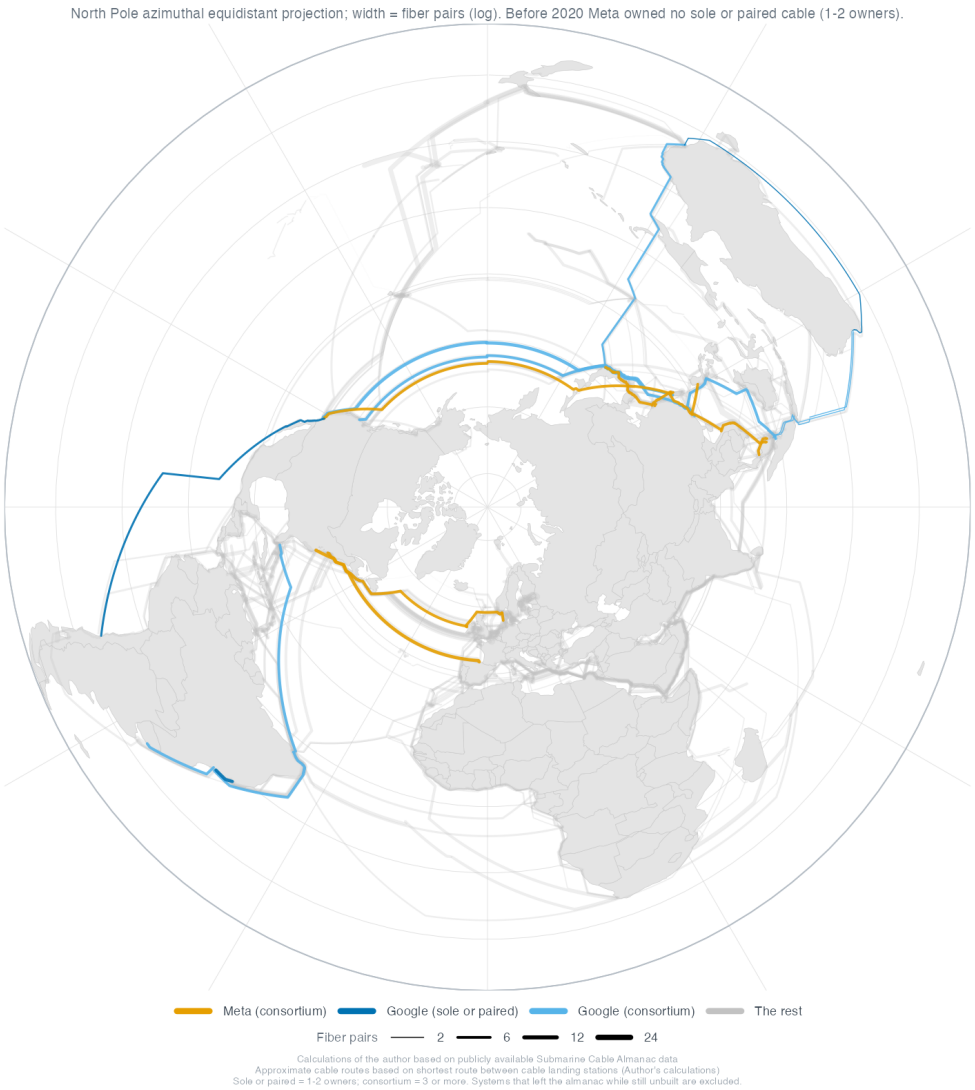


The highlighted corridor shows the main Northern Hemisphere loop and the main chokepoints (Taiwan Strait, South China Sea, Malacca, Hormuz, Bab el-Mandeb, Suez, Gibraltar). The loop comprises 58 cables; projects abandoned before entering service are excluded. Calculations of the author based on publicly available Submarine Cable Almanac data. Fiber pairs from the Submarine Cable Almanac, completed for a few cables with TeleGeography and submarinenetworks.com, or estimated.

If bottlenecks create vulnerabilities, why are Google and Meta seemingly doing what others have not done so far? What does this reveal about what prevents the private and the public sector from supplying such an essential good and, comparatively, about what is special about Google and Meta's incentives and intentions?

The explanation lies in geography, business, and geopolitics. Bottlenecks matter because geography constrains the options available to go easily from one point to the other. From a business standpoint, traditional operators, often descending from national communication monopolies, may not find it profitable to establish links that go around bottlenecks. For them, the transversal routes are backup routes for which average demand is never large enough to justify the investment, since the route through bottlenecks is faster. Moreover, there is no market for providing insurance and backup capacity, as the expenses are large but the benefit only sporadic. Even individual countries or groups of countries face the same lack of incentives.

FIGURE 4. Cables built before 2020, by owner and ownership type



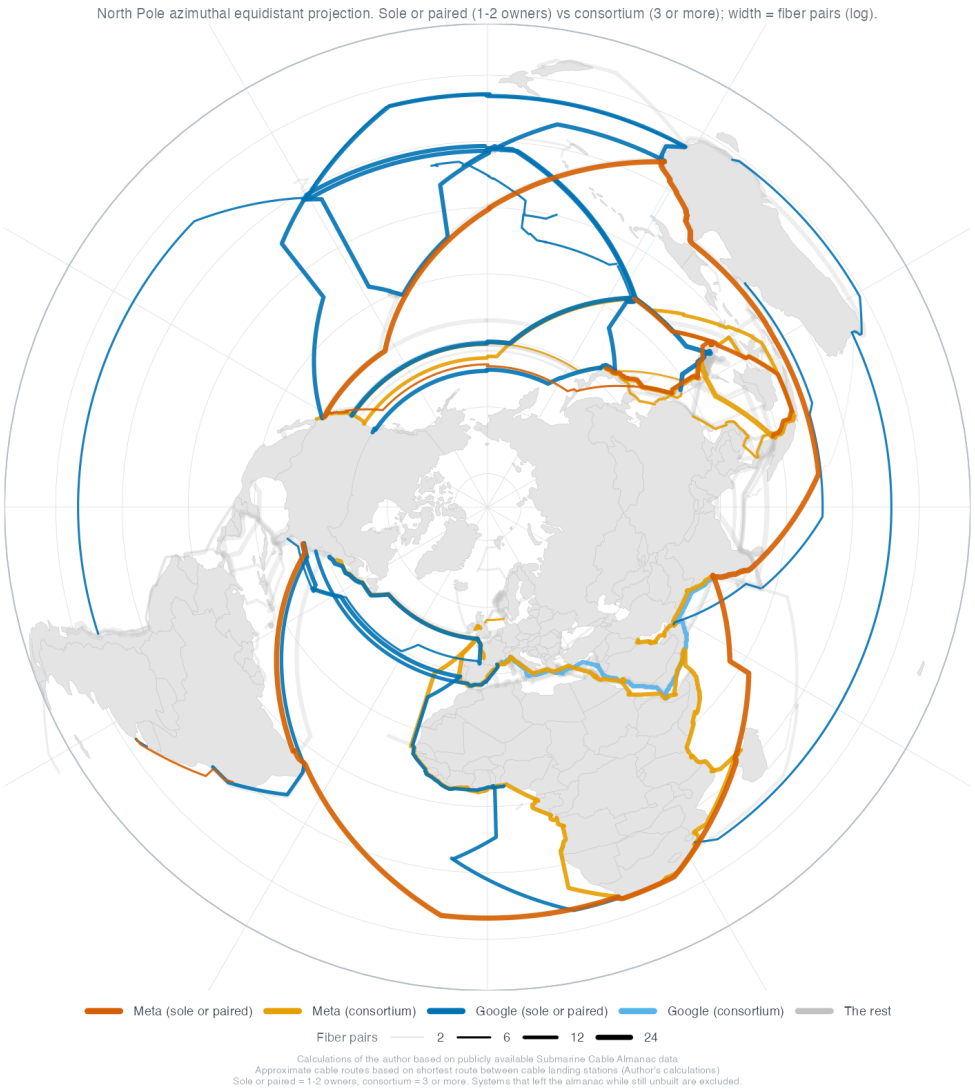
Before 2020 Meta owned no cable alone or with a single partner: every Meta system was a consortium of three or more owners. Google had three. Calculations of the author based on publicly available Submarine Cable Almanac data. Fiber pairs from the Submarine Cable Almanac, completed for a few cables with TeleGeography and submarinenetworks.com, or estimated.

More perversely, the incentives of some states may even go *against* the establishment of alternative routes if they find it convenient to be the bottleneck, giving them the ability to monitor and, if necessary, selectively cut, as eloquently described by Farrell and Newman in their work on weaponized interdependence.[11] The prime example is the United States using its terrestrial presence (land links between east and west coast of the continental U.S.) on the Northern Hemisphere fiber loop to monitor incoming internet traffic.[12] As a result, no one has so far stepped up

11. Henry Farrell and Abraham L. Newman, "Weaponized Interdependence: How Global Economic Networks Shape State Coercion," *International Security* 44, no. 1 (2019): 42–79, https://doi.org/10.1162/isec_a_00351.

12. Henry Farrell and Abraham Newman, *Underground Empire: How America Weaponized the World Economy*, First edition (New York: Henry Holt and Company, 2023). A well-documented example is how, after 2014, Russian authorities and separatist forces diverted Internet traffic in Crimea and Donbass away from continental Ukraine. In Crimea, traffic moved onto Russian networks and, by 2017, onto new cables across the Kerch Strait. See Frédérick Douzet et al., "Measuring the Fragmentation of the Internet: The Case of the Border Gateway Protocol (BGP) During the Ukrainian Crisis,"

FIGURE 5. Cables built or announced since 2020, by owner and ownership type



Meta and Google's recent projects open transversal routes that avoid the chokepoints of the northern loop. Google now builds mostly alone or with one partner (20 of 23 systems), while Meta remains mostly a consortium member (10 of 14). Projects abandoned before entering service, such as BtoBE and HKA, are excluded. Calculations of the author based on publicly available Submarine Cable Almanac data. Fiber pairs from the Submarine Cable Almanac, completed for a few cables with TeleGeography and submarinenetworks.com, or estimated.

to be in a position of rewiring the global undersea communication cable network—until Meta and Google's recent projects. But what made these two firms willing to pay for global resilience, while other actors would not?

3 From Chasing Milliseconds to Submarine Cable Players: Why Did Meta and Google Take Up This Role?

But if states and traditional business players have not found it worthwhile to invest in a resilient network, why have Google and Meta done it? Is it because they had geopolitical ambitions of

in *2020 12th International Conference on Cyber Conflict (CyCon 2020): 20/20 Vision: The Next Decade*, ed. T. Jančárková et al. (Tallinn: NATO CCDCOE Publications, May 2020), 157, 173–177, 179, https://doi.org/10.23919/CyCon49761.2020.9131726.

their own? The likely answer is that it was not the key initial motivating factor for Meta and Google. Their undertaking these projects is best seen as the culmination of a multiyear internal process, driven by the particulars of their business. This almost accidental byproduct of how they compete and are organized as businesses is nevertheless consequential outside of the business sphere, irreversibly turning Meta and Google into geopolitical actors of a new nature.

A telling fact is that Google and Meta are the only two members of Big Tech to have heavily invested in undersea communication cable infrastructure. Microsoft is a giant in business-to-business applications yet owns or leases long-term only a handful of cables (three). Amazon, straddling direct-to-consumer retail and data centers for business thanks to Amazon Web Services, has only limited direct control over its cables and relies instead on long-term contracts (it partially owns one cable). Among users of bandwidth, Netflix does not own any cables—its data is kept distributed in local data centers.

3.1 Why own submarine cables?

By contracting (rather than owning) for the use of communication cables and sourcing this service from specialist firms, Amazon and Microsoft are doing exactly what business theories of vertical integration, under the moniker "Transaction-Cost theory", would predict.[13] Data transmission is a commodity, served by a large array of suppliers in a competitive market. As such, there is no apparent reason for a business to own these activities—no more than a manufacturer of cars needs to own highways or dig tunnels. This is because owning and controlling such infrastructure is costly in capital and corporate attention. Firms balance these costs of ownership with its benefits, and favor contracting whenever they can rely on a competitive market. By contrast, the benefits of ownership are especially clear when firms depend on assets that are specific (specialized) to their activities and hard to procure from third parties. If such an asset were not owned by the firm, but controlled by a third party, a firm would be very vulnerable to its supplier, which could renege on agreements and renegotiate. It is notable that this cost-benefit calculation stands in stark contrast with that of states, for which control is usually the priority. This illustrates how and why business and states behave very differently concerning these matters.

This general principle (ownership is preferred for assets specific to the firm and not supplied easily by the market) leads us to ask why submarine cables could be considered an essential and specialized asset for Google and Meta, but not for Amazon and Microsoft. To answer this question, we need to identify what is special about Meta and Google's business model versus that of other tech giants.

A leading explanation for cable ownership lies in their business model—i.e., how they make money—which depends on optimizing communications within their information network to generate revenue. These two firms have consistently, and from their inception, made money by serving dynamic advertising and customized content at a global scale. Their business model, at its core, is that of a platform getting revenues from advertising.[14] As a platform, they bring together

13. See: R. H. Coase, "The Nature of the Firm," *Economica* 4, no. 16 (1937): 386–405, https://doi.org/10.1111/j.1468-0335.1937.tb00002.x; Benjamin Klein, Robert Crawford, and Armen Alchian, "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process," *Journal of Law and Economics* 21, no. 2 (1978), https://chicagounbound.uchicago.edu/jle/vol21/iss2/4; Oliver E. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York: Free Press, 1985).

14. Jean-Charles Rochet and Jean Tirole, "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association* 1, no. 4 (2003): 990–1029, https://doi.org/10.1162/154247603322493212; Geoffrey G. Parker and Marshall W. Van Alstyne, "Two-Sided Network Effects: A Theory of Information Product Design," *Management Science* 51, no. 10 (2005): 1494–1504; Mark Armstrong, "Competition in Two-Sided Markets," *The RAND Journal of Economics* 37, no. 3 (2006): 668–691.

users and advertisers. This relies on creating network effects for individual users, by serving them a stream of customized content (web search for Google, personalized feed for Facebook) and accompanying this content with an ever-fresh supply of advertising that is determined in real time. Crucially, to match ads with viewers, these firms must synchronize, process, and deliver personalized content and ads across distributed locations in a split second. Latency—the time between a user's request and the answer—must thus be minimized (the speed of light puts a limit) and made as predictable as possible, which requires controlling the entire chain of transmission. The uncertainty in the timing and provenance of user-generated content and in business demand for advertising makes it impossible to store in advance all the information in data centers next to users.

Moreover, to keep users engaged, every millisecond of latency must be squeezed out, as users are easily frustrated by the smallest delay.[15] This requires a bespoke information technology network infrastructure that can control how each packet of data transits from end to end. This is quite the opposite of the open Internet, where each piece of data may be wandering through different places and the delivery time is not guaranteed. As a result, Meta and Google have very early on treated their IT network as a crown jewel and built it with the goal of traffic optimization in mind. This is what sets them apart from the others, and the race for low latency and reliability requires as much end-to-end control as possible, which in turn justifies the ownership of key submarine cables.[16] Thus, for Meta and Google, a rise in latency above a certain level in communications between their data centers would be disastrous for generating revenue and for keeping users happy.

By contrast other firms such as Amazon and Microsoft arguably do not need the same level of integration because the fine-grained synchronization of data use across locations is not as fundamental to their business. They host and process the data for other businesses which are not usually in need of such a level of synchronization across locations. Keeping data on nearby servers should usually be enough. Another firm that generates a lot of traffic, Netflix, knows in advance what it offers and can reasonably forecast demand for titles in its catalogue.[17] It can store in advance the most frequently watched titles in data centers located close to customers.

This is not to say that Amazon and Microsoft are not taking steps to tailor their communication network to their needs and that they do not value integration across distributed locales. They do rely on long-term contracts and quasi-ownership (indefeasible rights of use, IRUs) for parts of cables in addition to owning a few cables and recently launching new projects.[18] However, between 2015 and 2025 they have not embraced vertical integration in submarine cables as notably as Google and Meta.

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15. Jake Brutlag, *Speed Matters for Google Web Search* (2009), accessed November 12, 2024, http://research.google/blog/speed-matters/.

16. Julien Nocetti, *A Splintered Internet? Internet Fragmentation and the Strategies of China, Russia, India and the European Union*, Études de l'Ifri (Paris: Ifri, February 2024), 16, https://www.ifri.org/sites/default/files/migrated_files/documents/atoms/files/ifri_nocetti_internet_fragmentation_february_2024.pdf.

17. Netflix and Amazon have been growing their advertising business with the introduction of an ad-supported subscription tier for Netflix and with the selling of marketplace ads on Amazon's online store. In both cases, there are reasons to believe that the latency and cross-location synchronization requirements are not as stringent. Netflix is only serving ads at intervals of minutes (vs. split seconds) while Amazon only advertises products already available in each country's store.

18. For example: "Telxius and Amazon Web Services Reach Agreement on Transatlantic Subsea Cable MAREA," Telxius, January 19, 2019, accessed August 3, 2026, https://telxius.com/en/telxius-and-amazon-web-services-reach-agreement-on-transatlantic-subsea-cable-marea/.

3.2 Why take the longer route? How Google and Meta internalize the benefits of global resilience

While the quest for latency—a commercial necessity—may justify getting into the communication cable business, what explains the big leap these firms are taking now by creating links that go around bottlenecks of the global network?

The network effects inherent to their businesses have created global firms, which each serve billions of customers. Their geographical reach surpasses that of the traditional operators, which often still carry the footprint of early deployment of telegraph networks, and, by definition, that of any state. As a result, the fate of Google and Meta as businesses is now tied to that of their internal data networks which themselves depend on the health of the entire global network. So far, other firms have not undertaken the creation of these global commons, because they could not capture the positive externalities created by the resilience of the network. But now, Meta and Google, by the nature of their operations which makes them value the integrity of communication at planetary scale, can capture these externalities, which motivates them to undertake these investments. As a result, the free rider problem that caused the lack of investment in the global commons of structural network resilience has been unexpectedly solved by private firms.

Yet benefiting from global resilience comes with strings attached. Google and Meta do not sell bits of their raw bandwidth, but access to their services which in turn benefit from the respective firm's network infrastructure. Consumers benefit through the services offered by Google or Meta (e.g., YouTube, WhatsApp); businesses benefit by using these firms' data centers and business services.[19]

4 Business Models with Geopolitical Fallout?

4.1 Google and Meta vs. states?

Meta and Google have set themselves apart by assuming a role that no government has even attempted: creating a redundant and resilient communication backbone for the planet on the seabed of the world's oceans. The low-latency requirements of Meta and Google's operations, combined with their unprecedented scale, propelled them to commission and control infrastructural assets that matter to everyone on the planet. A fundamental factor has been that these firms care more about the resilience of global communication than any other private or state actor — effectively assuming a role akin to that of a global government. This process is abruptly transitioning from the economic to the geopolitical sphere in a very visible way. By owning and operating geopolitically relevant assets, they can no longer behave as passive takers of international relations. That these firms have a geopolitical nature has been clear for a long time, including to themselves, since at least the Snowden revelations, when they realized that even the agreements they had with their home country could be covertly broken by intelligence agencies.[20]

While Meta and Google cannot escape all rivalry among states, what margin of autonomy may they have? As companies that are first and foremost consumer-facing, their leverage depends on how valuable and indispensable their products (social networks, messaging apps) are to their users, and in turn to constituents that matter to states (business and consumers). In the case of Meta,

19. Until July 2026, Meta had not been selling significant services to businesses. It recently announced it was going to rent TPUs (produced by Google, and hosted in Meta's data centers) to other businesses. Hannah Murphy, "Meta and Anthropic in Talks for up to $10bn Data Centre Deal," *Financial Times*, July 17, 2026, accessed September 1, 2026, https://www.ft.com/content/0ae58f76-3386-464a-9248-090cc68e9864.

20. Ben Buchanan, *The Hacker and the State: Cyber Attacks and the New Normal of Geopolitics* (Cambridge, Massachusetts: Harvard University Press, 2020).

resilience in connectivity solidifies how important its services (especially WhatsApp) are for the daily life of its customers around the world. Meta is thus reinforcing with physical infrastructures the value and indispensability of its service infrastructure. Google has the added ability to offer resilience to businesses as part of its data center, networking, and AI offerings, creating additional stickiness. Meta's tiptoeing into providing AI data center capacity follows the same path.

As they consider their dependence on these firms, states must weigh benefits according to their specific circumstances, accounting for the dependence that is created and the ability to mobilize alternatives.[21] A determining factor is that any relationship with Meta and Google will ultimately be seen as a dependency on a potentially nakedly opportunistic U.S. government, which remains the home of these firms. This fundamentally restricts the trust that states can place in Meta and Google, including by traditional allies of the U.S.

Smaller and more isolated countries will value new sources of connectivity, especially for projects that are on the margins of the traditional routes. This may mean increased dependence on private companies, but alternatives on offer may be unappealing. For instance, cable connectivity offered by a Chinese company may be valued less as access to the Chinese Internet will be intrinsically less appealing. As such, we can expect Meta and Google to remain the preferred alternative if the choice is between them and a Chinese project. Moreover, the U.S. has no problem pushing back on Chinese-led projects, for instance in Kiribati,[22] and reacted heavy-handedly to a China-Chile cable project, going as far as imposing personal sanctions on Chilean officials.[23]

Larger states with means and ambitions, and that have been kept underserved so far (e.g. Brazil, South Africa, India) may welcome the new pathways but will likely be cautious about their relationships with Meta and Google. Brazil, especially, has been very proactive in creating connectivity alternatives and its institutions are not shy of confronting large companies. These states will likely publicly welcome Meta and Google's projects but be wary of the potential for interference from the U.S. government. They may be the most motivated to favor and commission additional projects that seek to reduce their direct dependence, their sheer size making alternatives viable.

Even more complex will be the impact on the EU and major European countries. The increase in direct connectivity is of marginal interest to these countries as they have always been in the inner rings of the communication cable network, except for ensuring links to overseas territories. More importantly for the future, the EU has learned from the experience of Ukraine's dependence on Starlink and the vulnerability it creates. After concerns about selective cuts to Starlink's service, the EU vowed to bolster homegrown alternatives to Starlink and reduce its dependency.[24] While the implementation of these plans may take a lot of time, the issue of reducing the continent's dependence on U.S.-based platforms is irrevocably on the table. Finally, Europe may be

21. This calculus of dependency by states versus Meta and Google closely mirrors that of Meta and Google versus their suppliers of undersea communication.

22. Éric Frécon, *L'influence chinoise dans les Kiribati à l'épreuve de la longue durée*, Focus 1 (Paris: IRSEM, July 2025), 30–31, 78–79, https://www.irsem.fr/storage/file_manager_files/2025/07/focus-irsem-1-frecon-v2.pdf; Kaelan Deese, "US Quashed Undersea Communications Cables for Pacific Island Nations: Report," Washington Examiner, June 18, 2021, accessed September 29, 2026, https://www.washingtonexaminer.com/news/2333798/us-quashed-undersea-communications-cables-for-pacific-island-nations-report/.

23. "US Ambassador Defends Travel Bans on 3 Chilean Officials as a "Sovereign Decision"," AP News, February 23, 2026, accessed September 1, 2026, https://apnews.com/article/chile-united-states-china-visa-sanctions-top-officials-c0d6eb2ce06581f478024747bdb30b4c.

24. "The EU's Answer to Starlink Moves One Step Closer to Launch," Euronews, August 10, 2026, accessed September 1, 2026, https://www.euronews.com/next/2026/08/10/the-eus-answer-to-starlink-moves-one-step-closer-to-launch.

wary of, e.g., Google leveraging its newly acquired subsea cable assets and the intrinsically low utilization level to compete against Europe's own telecommunications companies on the market for international data transmission.

4.2 Who wants to be a cable owner? Cables, AI and data centers

Are other tech firms going to follow the same path, combining technological weight in their domain of origin with sway over subsea communication infrastructures? We can already notice that Microsoft and Amazon are increasing their involvement, ramping it up about ten years behind Google and Meta. Will the rise of AI, and the prominent role of data centers for its training and delivery, change the pattern of cable deployment?

Moving to the impact of AI, it is first striking to see how different the scales of investment are between subsea cables and planned AI-dedicated data center deployment. Sources peg the cost of a state-of-the-art transpacific cable at around $400 million, while a single data center for AI, such as the one Mistral is building near Paris, can cost twice as much.[25] The implication is that the geography of data center operating costs, and especially access to cheap energy, must be taken into account in addition to any tradeoffs related to latency. Moreover, issues of data sovereignty will matter.

To reason through this with the large language model (LLM) paradigm of AI, we must first break down what AI-dedicated data centers are doing and distinguish between model training and inference to understand the nature of the needs for communication, and the need for vertical integration. On the model production side (training), latency is important because operations on the training dataset (which is enormous) must be coordinated. As a result, it makes sense to concentrate training within the same data center or in geographically close data centers, which calls for dedicated land lines (possibly custom-made), not for intercontinental fiber optic cables. Moreover, new techniques make it less essential to group all training in the exact same site. The output is a model, a digital asset that can be copied and distributed to be used for inference. Training is thus tied to the location of the largest data centers and should not drive the shape of the communication network.

On the inference side, a data center hosts a copy of the model and uses computational power to answer queries from users. In this scenario, the latency that matters (time between prompt and answer) is the sum of transmission, queuing, and computation time. Shorter is better, but the time spent by the inference operations currently dwarfs the time spent by the data transmission itself. This is amplified by the turn to agentic AI, which relies on multiple inference operations building on each other. If transmission latency is a small part of the total time to wait, then it is worth trading distance for something else, such as access to energy. In this case, we could expect data center providers and computation providers such as Amazon and Microsoft (in addition to Google and Meta) to ultimately compete on latency and reliability, which may prompt them to use subsea cables over routes that link their data centers to the largest concentrations of customers.

Concerns about data jurisdiction may then create another tradeoff. If the energy-efficient data center is in a third-party state, then there are issues with letting data transit and be hosted in other jurisdictions. Take the viewpoint of a business and concentrate on the case of open-weight models, whose parameters the customer can download and run on infrastructure of their choosing. Businesses may prefer open-weight to frontier proprietary models to avoid supplier lock-in. With

25. Lane Burdette, "The Economics of Submarine Cables," TeleGeography, September 4, 2025, accessed September 1, 2026, https://resources.telegeography.com/the-economics-of-submarine-cables; Le Monde with AFP, "French AI Firm Mistral Borrows $830 Million to Build Paris Data Center," *Le Monde*, March 30, 2026, https://www.lemonde.fr/en/france/article/2026/03/30/french-ai-firm-mistral-borrows-830-million-to-build-paris-data-center_6751956_7.html.

open-weight models, the location is no longer tied to the decisions of the model maker.

In that case, we can imagine two scenarios. On the one hand, business customers may insist on open-weight LLMs run in the jurisdiction where they will be used, drawing on the customer's proprietary data. This obviates data issues, but this requires a local data center, possibly higher costs of inference (energy, land), but likely no intercontinental transmission. The use of undersea cable is thus less likely. On the other hand, business customers may still want open-weight LLMs to lessen dependence on vendors, but will insist on the lowest cost possible. This points to doing the computations on data centers located in energy-cheap areas, delivering outputs in the customer's locale, and ensuring enough transmission capacity between the two.

This turns the tables on the data center owner. If the energy efficient location is poorly served by international connectivity (including subsea cables), or there exists a clear bottleneck between the data centers and the customers, then the risk of hold-up is borne by the data center owner. On such routes several private providers will be motivated to provide bandwidth and low latency, including by planning, e.g., land segments to bypass bottlenecks such as the Suez Canal.[26] But if there are not enough of these, the cable becomes an asset-specific investment, and it may make sense for the data center owners to take ownership of the cable to avoid being vulnerable. Otherwise, their capital investment in data centers may be at risk. These owners may be firms such as Amazon and Microsoft, but they could also be pure data center providers. Note that Amazon and Microsoft have only recently (as of fall 2026) begun building frontier models of their own, and that their cloud businesses run whatever model their customers want, including those of other firms. We can speculate that the implications for the shape of the global network are not an increase in global resilience, but rather an increasing concentration of routes between places lacking customers but with low-cost energy, and those where business customers operate.

5 Conclusion

International communication depends on submarine cables. The shape of the submarine cables network is a determinant of its resilience. The private actors that make and operate cables are following a logic that is determined by their business models and can vary substantially from one actor to another. This logic is sometimes subtle, buried in the details of how they sustain profitability, and requires unpacking. Policy makers must therefore understand the fine lines of the behavior and internal logic of private actors that provide dual-use infrastructures.

This note focused on the case of Google and Meta and related their behavior of vertical integration and route selection in the submarine cable business to elements of their business that clearly set them apart from other firms of the Big Tech category. Google and Meta have vertically integrated into submarine cables much more than others and have a pattern of choosing routes that are fostering redundancy and creating backup itineraries. This has a double-edged effect: the network is arguably stronger, but fragility is reintroduced because the newly acquired resilience depends on only two actors from one country. This creates dilemmas for states that must tune how much they want to cooperate vs. depend on these actors.

Methodology

Data is taken from yearly snapshots of the SubTel Forum Submarine Cable Almanac, 2011-2026. Maps were drawn in R using Natural Earth data and ggplot2. Cable routes are notional and were

26. Erin L. Murphy and Thomas Bryja, *The Strategic Future of Subsea Cables: Egypt Case Study* (Center for Strategic and International Studies, November 12, 2025), accessed September 2, 2026, https://www.csis.org/analysis/strategic-future-subsea-cables-egypt-case-study.

generated by calculating the minimum spanning trees between cable landing stations on a 0.125-degree grid. Landing station geolocations were taken from various publicly available sources and are approximate. Fiber pairs per cable are taken from the Submarine Cable Almanac, completed with TeleGeography and submarinenetworks.com; where none of these gives the number, it is estimated from design capacity, length and year, and cables with no information are imputed the median figure. AI assisted the production of code, maps, and the editing of the text. This research was supported by the Fondation HEC.

Acknowledgments

The author thanks industry participants and audiences at the European Cyber Week, Rennes, November 2024, the Conference "Big Tech as an Actor of Global Security and Geopolitical Conflicts," Paris, 2-3 May 2024, the "Colloque infrastructure et données : Leviers de pouvoir et instruments de puissance", MSH Rennes, 10-11 June 2025, and members of the HEC strategy department for their feedback. Thanks to Madhulika Kaul, Julien Nocetti, and anonymous industry insiders for discussions related to the topic. The opinions expressed in this note are the author's own, as are any errors and omissions.