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Superplatform: A framework to analyse and regulate Google's online ad ecosystem

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Abstract: This paper introduces the concept of the superplatform to analyse and regulate Google's online advertising ecosystem. As the operator of the world's largest ad exchanges, Google often escapes regulatory oversight and scholarly scrutiny. The superplatform is conceptualised as an integrated process comprising a demarketised computational-industrial supply chain and a supermarketised dual-core exchange system. It operates through three main economisation modes – marketisation, barterisation, and demarketisation – and coordinates a network of platforms, including AdX, AdSense, Ad Manager, and Google Ads. The dual-core structure encompasses a direct exchange for Google-owned inventory and an open exchange with limited competition. Google simultaneously acts as market maker, buyer, seller, producer, publisher, and infrastructure provider. Advancing critical platform studies and regulatory frameworks for platform economies, the concept of superplatform serves as a simple theoretical tool to make sense of a complex stacked economisation process that shapes market dynamics and their disruption under corporate control.

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Introduction

The one search we can't Google is how to approach Google itself – a company that runs the world's largest online ad ecosystem. What exactly are Google Ads, AdSense, AdX, or Ad Manager? How do Chrome, Gmail, Maps, and dozens of other services feed into the same network?

On the surface, Google's ecosystem appears seamless. Underneath, however, lies a dense web of platforms that outsiders struggle to understand. Each part is graspable, but the whole remains elusive. Social science has often treated platforms as either multi-sided markets (Rochet and Tirole, 2003) or as systems that generate negative consequences (Zuboff, 2015). Neither perspective fully explains how these networks really function. Even economists and legal scholars now admit the limits of the multi-sided market model (Katz and Sallet, 2017; Luchetta, 2014), yet alternatives are scarce.

This paper contributes to the addressing of that gap by analysing Google's advertising ecosystem through the concept of the superplatform: a multi-cored, stacked economisation process that leverages demarketised supply chains to coordinate platforms, services, and devices. The superplatform framework reveals how Google structures conditions under which economic transactions occur – or fail to occur.

We build on scholarship that treats platforms as socio-technical systems with layered dependencies (Spink and Zimmer, 2008; Srnicek, 2017; Vaidyanathan, 2011). Programmability enables platforms to expand, integrate, and extract value across domains (Helmond, 2015; Valas and Schor, 2020). Yet most accounts remain fragmented, isolating mechanisms without capturing their integrative logic (Nieborg, Poell, and van Dijck, 2023).

Our focus on online advertising complements and extends a growing body of literature that seeks to understand platforms not as neutral intermediaries but as

spaces of encounter that actively participate in the shaping of economic action. Critical platform studies has long emphasised that platforms configure the conditions of visibility, participation, and behaviour through ranking systems, recommendation engines, and data infrastructures (van Dijck et al., 2018; Helmond, 2015). Search has been shown to function as a mass-media apparatus that structures knowledge and social differentiation (Noble, 2018; Rogers, 2018). Yet much of this work remains at the level of platform consequences. As shown in recent work on Google Search's digital-industrial supply chain, platforms also operate as production systems that gather, classify, and transform data through a series of tightly coupled production-exchange stages (Caliskan, MacKenzie and McGowan, 2025). This perspective provides a foundation for analysing platforms not simply as *loci* of data extraction but as materially organised computational industries.

Within digital advertising scholarship, recent studies have begun to foreground the contested materiality of programmatic systems. Scholars have examined how auctions, bidding hierarchies, and targeting pipelines are shaped by technical frictions, infrastructural lags, and organisational disagreements (Beauvisage and Mellet, 2020; Cluley, 2020). These accounts highlight how digital advertising is held together by intermediaries and mediators whose partial perspectives and practical improvisations stabilise markets that are neither smooth nor transparent (Caliskan and MacKenzie, 2024). Recent work on header bidding and decentralised auctions has further underscored the role of material politics – in the sense of Law and Mol (2008) – in shaping who benefits from infrastructural changes, whose bids win, and whose revenues grow (MacKenzie, Caliskan and Rommerskirchen, 2023). These analyses align with broader studies of platform capitalism, which show how platforms consolidate power through integration, data capture, and infrastructural control rather than through classical market mechanisms (Srnicek, 2017; Birch and Muniesa, 2020). Data colonialism research extends this argument further by demonstrating how non-market forms of extraction and appropriation generate new terrains of economic dependency (Couldry and Mejias, 2019).

Science and Technology Studies provides methodological and conceptual tools that further situate platforms as socio-technical agencements composed of code, servers, devices, interfaces, and human practices (Dourish, 2016; Mackenzie, 2006). The stacked economisation framework extends this lineage by showing how platforms layer multiple modes of economisation, including marketisation, gifting, bartering, and demarketisation, into vertically integrated processes (Caliskan, MacKenzie, and Callon, 2024). This resonates with economic and management scholarship examining auctions, real-time bidding, and market-design infrastructures (Edel-

man, Ostrovsky and Schwarz, 2007; Borgs et al., 2007), while also challenging the abstraction of these models by demonstrating how auctions are materially situated and politically contested. For example, milliseconds of latency, device-side scripts, and server alignments were shown to reconfigure bidding outcomes and reshape market power (MacKenzie, Caliskan and Rommerskirchen, 2023). Bringing these strands together reveals a shared insight across disciplinary lines: contemporary digital advertising cannot be understood through the lens of multi-sided markets alone. It requires attention to the socio-technical operations, infrastructural supply chains, and stacked economisation processes that constitute what we call the superplatform.

Despite these advances in understanding auctions, tracking practices, and programmatic supply chains, much of the ecosystem remains opaque: the demarketised infrastructures that produce ad commodities, the vertical integration linking search, devices, and advertising, and the upstream computational operations that shape market conditions long before transactions occur. What is still missing is a framework that makes these invisible layers analytically legible. Our concept of the superplatform contributes to the filling of this gap by shifting attention from narrow markets to the stacked economisation processes through which platforms combine gifting, barter, demarketisation, and marketisation into a single, multi-cored socio-technical system. This perspective clarifies how platforms create, coordinate, and control economic conditions across layers of infrastructure, and offers a more accurate basis for understanding – and ultimately governing – the forms of power that remain hidden when platforms are treated merely as multi-sided markets.

One previous attempt to conceptualise “super-platforms” (Ezrachi and Stucke, 2016) highlighted corporate power but lacked definitional clarity, often shifting between metaphors and analogies. More recent work (Nieborg and Poell, 2025) shows how platforms consolidate through infrastructuralisation, platformisation, conglomeration, and financialisation – processes that reshape and sometimes sabotage markets.

Our study advances this discussion by foregrounding how superplatforms operate through heterogeneous economisation modes – marketisation, demarketisation, barter, and gift – stacked and orchestrated through devices, infrastructures, and actors. This perspective moves beyond reductionist models to show how dominance emerges from layered strategies of economic organisation.

A key part of this analysis is the materiality of online advertising. Unlike analogue

ads, digital ads are not durable or reusable (MacKenzie and Caliskan, 2026). They exist only in fleeting encounters between a consumer (C), a screen (S), and a moment in time (t_0). Once consumed or bypassed, they vanish. This peculiar temporality makes ads contingent bundles of time-space-attention rather than stable commodities. Understanding this property is essential to explaining why ad markets function as they do and why they are central to Google's power.

This material specificity also structures variation across ad formats – search, display, and video – each tied to particular devices and interactions. Together, these formats sustain Google's superplatform, where visibility itself becomes a marketable commodity. By integrating multiple ad types, logistical infrastructures, and automated bidding, Google consolidates not just supply and demand but also the means of mediation.

The paper has four sections: the first briefly explains our methodological approach. The second examines online ads as contingent and material commodities that emerge in three main ad types. The third describes and analyses Google's ecosystem as a dual-core superplatform of direct sales and exchange. The fourth theorises the superplatform as a stacked economisation process that goes beyond conventional platform models. By framing Google's ecosystem as a superplatform, we offer a new, clear lens that both advances platform studies and supports effective regulation.

Section 1: Methods

The complexity of Google's advertising ecosystem required a research design capable of engaging its technical architectures, material practices, and economic arrangements at multiple levels. No single method can account for the intertwined systems that constitute digital advertising, so we employed a multi-method approach built around interviews, documentary analysis, hands-on experimentation, and design-based inquiry. The objective was not just to collect accounts but to reconstruct the system's socio-technical arrangements. The breadth of our data sources reflects the fragmented, often opaque structure of online advertising, where actors regularly interact with only a fraction of the overall system and where organisational vantage points shape what can be known.

Our primary data source consisted of 140 semi-structured and recorded interviews with 116 industry actors. Interviewees were recruited through purposive sampling, beginning with individuals identified through trade press, technical forums, and industry conferences as having deep familiarity with key systems. We then used

snowball sampling to reach engineers, campaign managers, sales staff, policy specialists, and critics whose perspectives helped counterbalance the “official” narratives provided by senior executives. This approach ensured coverage across publishers, Supply Side Platforms (DSP), ad servers, advertisers, Demand Side Platforms (DSP), agencies, and the intermediaries and auditors who operate between them. Interview questions were organised around three main domains: technical systems (bidding logic, auction structure, ranking, data flows), material practices (optimisation strategies, workflow configurations, troubleshooting, latency management), and economic arrangements (pricing rules, contracting, access, cross-platform dependencies). Because initial interviews sometimes yielded rehearsed, sanitised, or overly strategic accounts, we conducted 24 repeat interviews with central informants, returning after rapport had been established to probe gaps, contradictions, and contested details.

To make our analysis traceable and to address reviewers’ concerns that the method be more explicit, we coded interview transcripts in two stages. First, we performed thematic coding guided by our conceptual categories – materiality, economisation, systematicity, and power – so that empirical accounts could be interpreted through the broader analytic framework of the paper. Second, we used iterative case reconstruction: specific technical claims (for example, on unified pricing, header bidding, targeting algorithms) were traced across multiple interviews, operationalised as empirical questions, and then checked against documentary, experimental, and workshop data. Divergent accounts were treated as indicators of asymmetries between actors – differences in access, knowledge, and organisational role – rather than as errors to be reconciled or smoothed over. This process made it possible to understand which aspects of Google’s system were commonly experienced across actors, which were visible only from certain positions in the ad stack, and which were kept opaque even to technically experienced participants.

Interview findings were triangulated across four additional data streams. First, we analysed a wide range of documentary materials including legal filings, expert declarations, API documentation, technical integration guides, and historical accounts of Google (e.g. Levy, 2011). The extensive documentary record from recent antitrust litigation in the EU and US was especially valuable: lawsuit exhibits, sworn testimony, and expert reports clarified auction rules, bidding pathways, and internal decision-making logs that are not disclosed in technical manuals. Second, we followed industry discourse by reading the trade press daily and attending six in-person and twelve online conferences as well as 41 industry events. These included every Google Marketing Live event, which offered insight into Google’s

strategic framing, public-facing technical updates, and attempts to narrate its ecosystem to advertisers and regulators. These events exposed internal debates, shifting standards (e.g., around viewability and fraud detection), and negotiations between Google, publishers, and intermediaries.

Third, hands-on experimentation provided an essential complement to interviews and documents. We completed two Search Engine Optimisation (SEO) training programmes and became certified Google search-quality evaluators, enabling us to understand the operational criteria used to assess and rank content. We also conducted two nine-month SEO campaigns with a budget of USD 7,500, experimenting with keyword strategies, content design, and bid adjustments. This direct immersion in Google's systems allowed us to observe platform behaviour in real time and to test interviewees' claims about algorithmic responses, auction timing, and campaign optimisation. The third author's long-standing professional experience and expertise in digital advertising (2014–present) further enriched the interpretive process by providing a grounded understanding of organisational norms, data-management practices, and client-facing constraints.

Finally, we used design as a new method of socio-technical inquiry to reveal dependencies and structures not accessible through interviews or documents alone. We organised four structured design workshops with over 100 participants – including economic sociologists, anthropologists, legal and management scholars – in which we reverse-engineered Google Search and AdX. Participants mapped infrastructural layers, visualised supply chains, reconstructed the flow of data and value, and generated counterfactual system configurations. These workshops treated design tools as analytic research instruments rather than illustrations, enabling us to interrogate interface components, infrastructure segments, and computational-industrial supply-chain nodes through speculative and reverse-engineered forms of analysis (Ryan et al., 2025). Design inquiry proved particularly effective for identifying hidden couplings – such as the relationship between demarketised supply chain components and supermarketised ad markets – that interviewees themselves often could not articulate. Taken together, these methods provided the combinatorial depth necessary to study a system whose mechanisms are dispersed, proprietary, and partially opaque even to actors who work within it.

Section 2: The materiality and types of online ads

Unlike analogue ads, online ads are fleeting, responsive, and valuable only in brief, personalised encounters (MacKenzie and Caliskan, 2026). Their commodification requires three elements at once: a consumer (C), a screen (S), and a moment in

time (t_0). Without this general formula and its alignment, $\{C, S, t_0\}$, there is nothing to sell. Ads vanish, the instant attention shifts, the screen goes dark, or time moves on, making each impression highly contextual and transient.

Unlike reusable digital files, ads are events bound to time, place, and interaction. Their value lies in immediacy and context, making them a peculiar commodity expressed through three main formats: search, display, and video. Search ads appear alongside query results, display ads show visuals on publisher sites, and video ads run across websites, social media, and connected TV. In 2024, global online advertising markets reached USD 792 billion, with 93% concentrated only in these three formats – search (39%), display (30%), and video (24%) (Statista, 2025). Together they not only drive monetisation but also structure the socio-technical systems through which ads are commodified.

Search ads capture intent through keyword bidding, and shopping ads embed images of products directly into results, turning visibility into a commodity. Their influence extends to professions like SEO, which align content with Google's programs. Display ads appear on publisher sites, often tailored to context. They range from static images to interactive formats aimed at conversions. Video ads, in turn, use audio-visual storytelling before, during, or after content on platforms like YouTube, TikTok, and Instagram.

Display and video rely on creative supply chains – directors, journalists, influencers, technical labour, and material investment. Search, however, is produced in an entirely different manner. Users often assume Google searches the open internet, but in fact it searches its private index, assembled within a computational-industrial supply chain (Caliskan et al., 2025). This supply chain has five nodes – Crawler, Indexer, Ranker, Search Results Publisher, and Data centre – each managed by distinct teams. The Crawler gathers data, the Indexer organises it into a catalogue, the Ranker customises results, the Publisher produces “Searchpaper” pages with ads, and Data centres provide infrastructure.

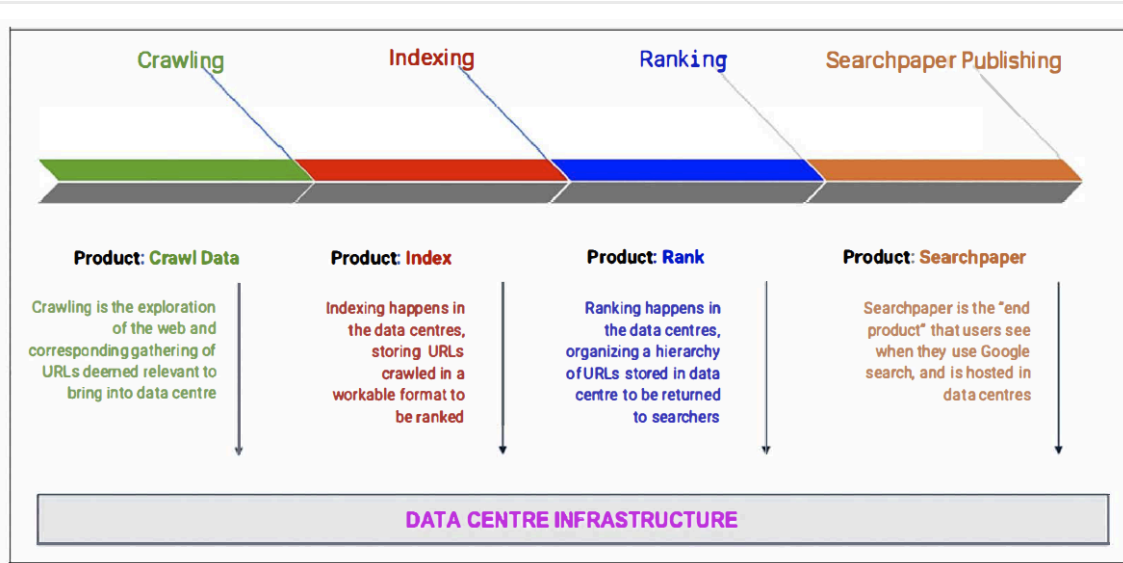


FIGURE 1: The five nodes of the Google Search supply chain (Source: By the authors).

Algorithms alone cannot generate these outputs. As Wirth (1975) observed, algorithms require data structures, just as recipes need ingredients. Google's services emerge through the interplay of programmes, data, infrastructure, and human labour (MacKenzie and Caliskan, 2026). Crucially, consumer data in a variety of forms such as cookies or website content are bartered in this process: users exchange their information for visibility. This supply chain leads to what we call *prodexchange* (Caliskan et al., 2025): the simultaneous integration of production and exchange. Unlike classical political economic theories that treat production and exchange as sequential, *prodexchange* shows how digital products such as Search are co-produced through data barter and the right to be searchable. Websites refusing this exchange by blocking crawlers become practically invisible. The situation is asymmetrical: for many sites, absence from search is fatal.

According to multiple Google interviewees, Search originates from two sources: consumer data and Google's algorithms processing it. Yet search itself is not commodified even though it could be – indexing or ranking could, in principle, be separate businesses. Instead, across Google's five-node supply chain, components like crawling and indexing are demarketised: they are bartered internally or exchanged with users, not sold. This makes market competition well-nigh impossible. In the English-speaking world, only Brave and Microsoft's Bing attempt fully to replicate the chain, given the vast cost of building each node.

Because upstream components are demarketised, Google can super-marketise endpoints like ads, which become highly profitable. Search ads are correspondingly expensive and effective, and Google dominates their sales. This dual logic – de-

marketised supply chains feeding supermarketised ad markets – has contributed to US federal antitrust charges, with extensive rulings by two judges (U.S. District Court for the District of Columbia, 2024) finding Google’s practices monopolistic.

How does this super-marketisation work in practice? Once ad spaces around searches, videos, and banners are produced, they are bought and sold through Google’s vast ad ecosystem. Understanding this requires looking under the hood of Google’s “engines” and the architecture that organises their flow.

Section 3: Google as a dual-core superplatform

It is essential to approach superplatforms like Google without falling into technical mystification – the belief that only AdTech experts can understand them. Garcia (2025) calls this the “AdTech Spaghetti” explanation, invoking the image of many tangled connections between Google components drawn during the trial to “weaponize [their] complexity”. While such systems require technical skills, so do infrastructures like transport or healthcare. The issue is not complexity itself but the loss of public understanding through overwhelming detail. To enable democratic oversight, we must explain them in clear language so non-experts can question and govern.

Analysing platforms solely through supply and demand is misleading, producing another kind of “spaghetti.” Platforms do not just match demand with supply; they reshape, segment, and redirect both. They operate through varied modes of economisation – markets, barter, and demarketisation. A better lens is to examine how platforms construct and manage demand for the commodities they monetise, deploying diverse economic modes and optimising outcomes.

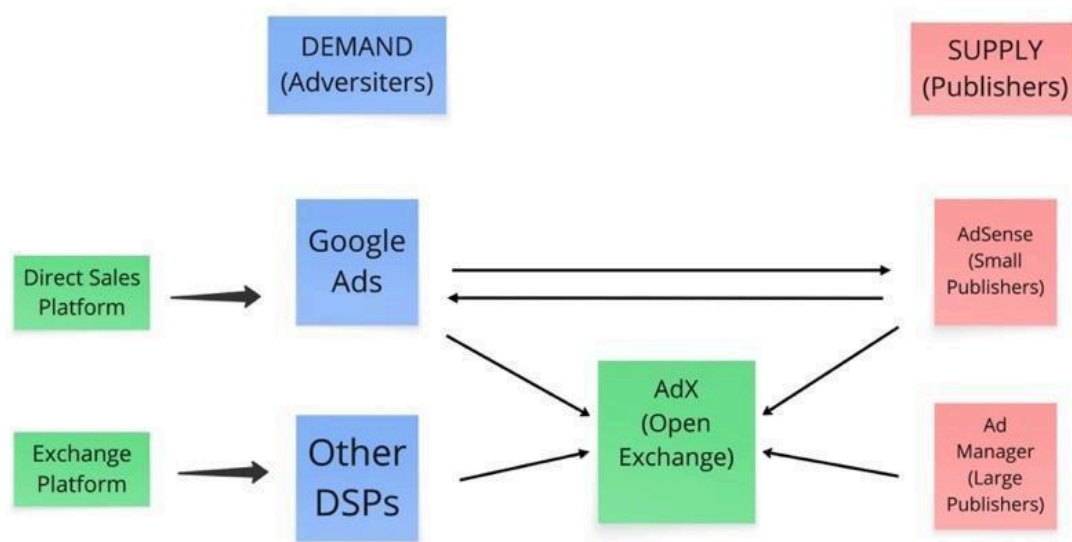


FIGURE 2: Google's superplatform and its dual core (Source: By the authors).

As shown in Figure 2, Google channels ad demand through two core pathways: Direct Sales and the Exchange. All other components support this dual-core architecture. The first is Direct Sales, where Google sells its own ad inventory (e.g., Search, Video) directly to advertisers. Nearly 90% of US queries flow through Google – 95% on mobile – making rivals' offerings hard to match (U.S. District Court for the District of Columbia, 2024, p. 156). Search ads are sold inside a closed “walled garden” (Lyon, 2003), where Google controls data, inventory, and performance metrics.

The second core is AdX, where Google auctions third-party publisher space in real time, while also selling its own unsold inventory. Here, Google competes with publishers and advertisers even as it facilitates their competition. The superplatform is the orchestration of these two cores – Direct Sales and AdX – supported by ancillary platforms like ad servers. Together, they maintain the coherence of Google's superplatform.

For all its influence, Google is not unconstrained. Not everyone in AdTech is a small fish. What happens when the buyer is Pepsi – not a small restaurant – and the seller is NYT.com – not a blog? In these cases, as several Supply Side Platforms (SSP) engineers independently described to us, the superplatform shifts into a different mode. Premium buyers and sellers are served by human reps, receiving a degree of personalised service. These transactions can, but often do not, involve the self-service Google Ads interface. Instead, large buyers use Demand Side Platforms (DSPs) such as Google's DV360. Big publishers typically employ independent

SSPs like PubMatic, which often in effect run their own exchanges. Yet despite alternatives, most programmatic transactions still pass through Google's AdX.

To sell through AdX, publishers must meet high monthly ad impression volumes. Like traditional exchanges (e.g. NYBOT), entry requires formal approval. Google doesn't publish exact thresholds, but access typically demands millions of page views per month. Smaller publishers, however, can gain indirect access via Certified Resellers or Google Certified Publishing Partners like CafeMedia and Mediavine. These partners aggregate inventory from smaller sites, allowing them to bypass direct infrastructure while still participating in the open exchange.

AdX runs real-time auctions nonstop, millisecond by millisecond. On the supply side, the process begins when a publisher or its SSP – either directly or via a Certified Publishing Partner – integrates with AdX through Google Ad Manager. Google Publisher Tags placed on webpages notify Google's ad server when a user visits. The server prepares the impression, AdX auctions it, and then informs Ad Manager which ad to deliver. But AdX isn't a neutral conduit. It enforces rules, price floors, eligibility standards, and quality filters to determine which impressions qualify for auction, at what minimum value. Publishers for example, cannot set different price floors for different sources of demand. The result: even before the auction starts, the market is curated and pre-filtered – making the "open exchange" a tightly managed, programmatically enclosed space.

On the demand side, advertisers do not bid directly into AdX. Instead, they use Google Ads or other DSPs, including Google's own DV360. These systems calculate bids in real time based on hundreds of signals – device type, time of day, location, page content, user profile, and past campaign data. When a user opens a webpage with an AdX-connected ad slot, that impression is bundled with metadata and sent as a bid request. Within milliseconds, DSPs submit their bids. Then, AdX runs a unified auction, and Google's ad server also considers the prices available from other demand sources, as well as any directly-reserved ad campaigns the publisher might have negotiated. The auction uses a first-price model (winner pays their bid amount). Floor prices set by the publisher are also considered.

The auction process is embedded in Google's superplatform logic. While AdX appears to enable open exchange, Google retains full control over market structure and flow. It serves the ad, reports the data, collects the payment, and takes a cut – and the different forms of auction data logs that publishers receive from Google have been criticised as hard to reconcile (CMA 2020). Google plays multiple roles: intermediary, market maker, seller, server, and infrastructure provider.

Google's exchange gives publishers access to global demand and gives advertisers broad reach, but Google controls the auction by setting the rules. A key rule – Unified Pricing Rules (UPR) – prevents publishers from setting different price floors for different buyers. Everyone must face the same minimum price. Google calls this “fairness,” but it removes a basic pricing tool. It's like an apple farmer who normally charges supermarkets one price, restaurants another, and walk-up customers retail. That flexibility helps the farmer match different kinds of demand and maximise income. Forcing one single price would hurt the farmer's business. UPR does the same to publishers by taking away their ability to price strategically.

Similarly, if a publisher wants to lower the floor on a non-Google SSP like OpenX to attract more bids, unified pricing rules prevent this without also lowering the floor on AdX. This strips publishers of pricing flexibility, and the recent anti-trust ruling covering the issue concludes that “Unified Pricing Rules increased the number of impressions AdX won and the revenue it received, while decreasing impressions won and revenue received by third-party exchanges” (U.S. District Court for the Eastern District of Virginia, 2025, p. 39).

Google is powerful, but not omnipotent. Platform users – especially publishers – retain agency and have found ways to resist centralisation. Among the most effective tactics has been targeting Google's pricing advantage. Recognising that pricing is a key lever in platform economies, publishers developed their own systems to auction impressions *before* Google could place a bid – a move requiring both technical skill and collective effort (MacKenzie and Caliskan, 2026).

Header bidding gave publishers new control over ad sales (MacKenzie, Caliskan, and Rommerskirchen, 2023). By embedding JavaScript in a webpage's <head>, they triggered real-time auctions where multiple buyers – including those outside Google – could bid simultaneously before Google entered. This broke AdX's exclusive capacity to insert bids in real time into Google's ad server, raising competition, boosting CPMs, improving transparency, and forcing Google to adapt.

Think of a silent art auction: if one bidder can see others' estimates before placing a bid, they can win cheaply. Header bidding changed this dynamic in digital advertising. Instead of one privileged bidder (Google) getting first look, all bids now arrive at the same time. Multiple studies and industry investigations show that this shift increased publisher revenues and reduced Google's ability to dominate each auction. Large publishers adopted header bidding not only to earn more but as a form of strategic resistance. Google responded with its own server-side alternative – Exchange Bidding, later called Open Bidding – run within Google's infrastructure

and marketed as faster and simpler, but operating under Google's rules.

This restored Google's partial control over auction visibility, pricing, and bid flow. Open Bidding kept core infrastructure – user data, auction timing, and eligibility – under Google's control. Critics argue it enclosed competition by channelling even non-AdX demand through Google systems (Texas et al., 2022). The Jedi Blue case suggests Google worked to ensure Facebook joined Open Bidding instead of header bidding (Paparó, 2025). Thus, while header bidding decentralised initial auctions, Google's countermeasures restacked economisation around its infrastructure, keeping the superplatform's core largely intact.

Section 4: A superplatform analysis

To better understand superplatforms like Google, we adopt a theoretical lens that views platforms as stacked economisation processes. This builds on the framework developed by Caliskan, MacKenzie, and Callon (2024), defining economisation as:

a process that involves designing, defining, and linking the foundational elements of a socio-technical agencement (e.g., devices, consumers, networks, and representations) with an organized intention that is seen as economic by scientists or other consumers ... We [define] platforms as 1) stacked economization processes that combine or independently operate various economization modes, including gift-giving, bartering, and marketization, 2) equipping consumers with the means to imagine and discover their needs in an exploratorium, 3) where a digital-material interaction design entails layers of power relations. (p. 3)

Economisation is not the rational allocation of scarce resources or cost-conscious decisions. It refers to the deliberate design of socio-technical arrangements (of devices, representations, networks and infrastructures, and agencies) that are recognised as economic by platform participants or observers. This perspective helps us not only demonstrate that platforms are not merely two- or multi-sided markets, but are, in fact, processes composed of stacked modes of economisation. Moreover, unlike many accounts that prioritise the agency and determining power of devices (auction mechanisms), networks (infrastructures), agencies (corporations), or representations (such as neoliberalism) or their permutations, this framework not only accounts for all, but also gives us an opportunity to study their relative powers in making platforms. But still, this perspective is for making sense of platforms. But Google is not just a platform – it extends far beyond that.

It is a telling irony that, in the DOJ vs. Google antitrust trial, Google was presented

by its attorney Karen Dunn as a neutral facilitator of multi-sided markets – a mere connector of advertisers and publishers. To sustain this narrowing, Dunn invoked *Ohio v. American Express Co.*, treating digital advertising as a credit-card-style two-sided market (Feiner, 2024). In that case (138 S. Ct. 2274, 2018), the Supreme Court required plaintiffs to show harm on both sides simultaneously, collapsing economic “two-sidedness” into legal market definition. The result was a doctrinal straitjacket that raised evidentiary thresholds and obscured infrastructural and ecosystem power – precisely the forms of power that characterise Google’s ad stack (MacKenzie and Caliskan, 2026; Salop et al., 2022; Parikh, 2020).

The European Union responded by moving beyond this transactional lens. Rather than seeing platforms as price-setting interfaces between two user groups, the EU approached them as systemic infrastructures that generate risks, dependencies, and cross-market leverage invisible to two-sided market tests (Bostoen, 2023; Cabral et al., 2021; Deutscher, 2022). This shift crystallised in the Digital Services Act (EU 2022a) and Digital Markets Act (EU 2022b). The DSA designates Very Large Online Platforms (VLOPs) and Very Large Online Search Engines (VLOSEs), subjecting them to systemic-risk assessments, independent audits, ad transparency, and researcher access (Broughton Micova and Schnurr, 2024; Husovec, 2024). The DMA extends this infrastructural view into competition law by defining gatekeepers and imposing ex-ante obligations on self-preferencing, interoperability, and cross-service data use (Cennamo et al., 2023). Recent scholarship reinforces this view, showing that platform power emerges not from market transactions but from the socio-technical architectures that structure visibility, data flows, and accountability (Gültekin-Várkonyi, 2024). In doing so, the EU abandoned the *Ohio v. Amex* Case’s vision of platforms as mere interfaces and recognised them as layered socio-technical systems whose power arises from integration, scale, and control.

This newer orientation needs to be further developed and supported. The DSA and DMA move beyond *Amex*, yet they still operate within a market-centric imaginary: platforms are treated as distorted or risky markets rather than as stacked economisation processes whose upstream demarketised infrastructures precondition competition long before exchange begins. Regulatory attention remains fixed on prices, interoperability, and non-discrimination while leaving largely unexamined the computational-industrial supply chains, forced and hidden barter relations, and demarketised components that produce the very commodities being regulated. The EU thus acknowledges that platforms exceed markets, but still governs them as if they were simply overflowing markets rendered too large, too strong, and at times out of scale. We propose that the first step toward understanding platforms

is to move beyond market-based analogies and examine how platforms stack different modes of economisation. These stacks can include marketisation, barter, gift, and their reversals – such as demarketisation – each strategically configured to define, shape, and precondition economic behaviour. The problem, then, is not simply how many markets Google operates, but what kinds of non-market exchanges it enables – and, crucially, how many it demarketises. This is why we must look beyond not only the market, but beyond platforms as well.

Stacked economisation refers to the way platforms deploy multiple economic modes – sometimes in sequence, often in overlapping layers – to generate and capture value. Unlike traditional firms in retail or manufacturing, platform companies activate several economisation modes simultaneously, during and after production and exchange. This layering is a hallmark of their historical specificity. For example, Google orchestrates barter (search service against consumer data), and marketisation (ad auctions) within a single framework. Each layer is not only a revenue mechanism but also a site of control, extraction, and power.

Our research, supported by a stacked economisation framework, reveals that Google does not embody a single stacked economisation process but rather multiple ones, structured around a dual-core *platformation*: the Direct Sales Platform and Google's Exchange. This observation makes visible how Google has moved not only beyond markets but also beyond established notions of platforms themselves. Illustrated in Figure 3, Google's vast ecosystem of interconnected platforms operates as a superplatform – a vertically integrated process across exchange modes and a horizontally integrated process from supply chains to final sales. Google coordinates multiple modes of economisation, controls the industry supply chain, governs not just transactions but the very *possibility* of transactions themselves. It does so by selectively configuring market access and competition through its specific and historically hegemonic superplatform architecture. This dual-core marketised architecture is made possible and maintained daily by the five demarketised nodes of computational-industrial supply chains that we have listed above.

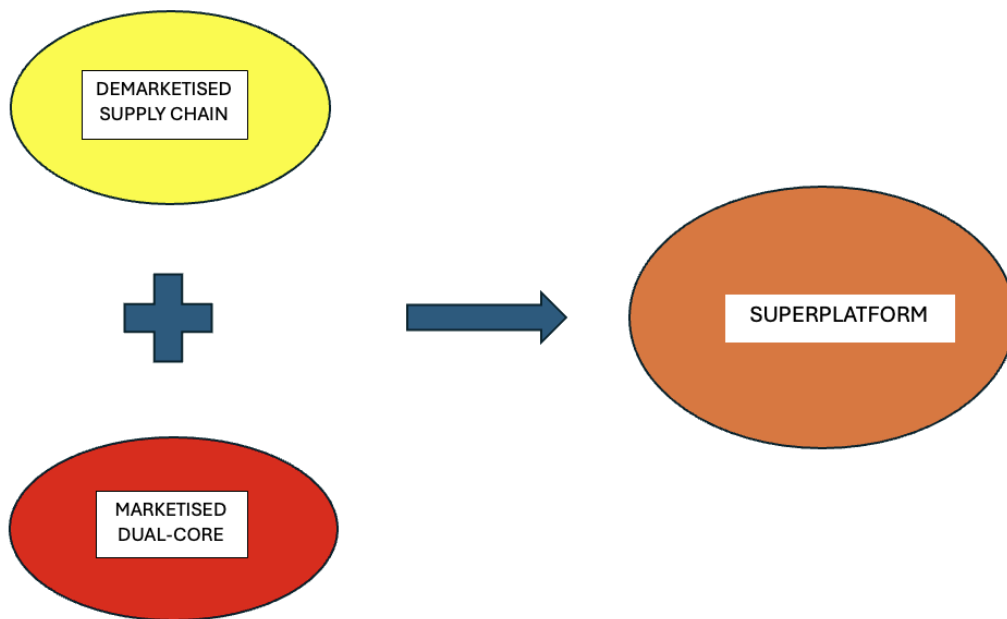


FIGURE 3: Simple view of Google's Superplatform (Source: By the authors).

This empirical conclusion informed our definition of superplatform and marked its difference from platform. We define the superplatform as a multi-cored, stacked economisation process through which diverse platforms converge around a limited number of economic centres that, by leveraging demarketised supply chains, orchestrate the coordination of other platforms, services, and devices to structure the conditions under which economic transactions, competition, and their sabotage are rendered possible. Platforms are single-core stacked economisation processes that may or may not draw on industry dominating supply chains.

Google is a defining example of such a superplatform, structured around a dual-core architecture. In its Direct Sales Platform, Google acts as both auctioneer and seller, and owner of a demarketised search industry supply chain. Through products such as Search, it sells its own ad inventory directly to advertisers with no immediate external competition. This happens thanks to a demarketised environment – where search results or video spaces do not only appear “free” or “organic,” but most components of these platform products (index, ranking, searchpaper etc.) are closed to market competition. These direct sale ad markets draw on almost entirely demarketised supply-chains.

The second core is AdX, which enables programmatic trading of ad slots among external advertisers and publishers, where Google sets the auction rules, enforces

unified pricing, and retains infrastructural and data advantages. Even when functioning as an “open platform,” AdX operates as a managed, curated market.

In our framework, “cores” are not metaphors but analytical anchors: each platform has a combination of stacks that structures its design priorities, business model, and strategic direction. This is what we call a platform’s core, for example retail for Amazon or payments for Alipay. Platforms rarely operate through a single stack. They layer marketisation, gifting, barter, banking, and exploration on top of one another into what we describe as a stacked economisation process (Caliskan et al., 2024). A superplatform emerges when several such platforms, each with its own core and stacks, are deliberately connected and managed together, forming a higher-order stacked economisation process. Calling Google merely an “ecosystem” or a “set of platforms” misses this engineered integration; calling it a superplatform clarifies that its components function together as one designed, governed, and power-laden economisation stack. This specification removes the ambiguity and makes explicit the conceptual contribution: platforms are structured, multi-stack systems that can be analysed through their cores, stacks, and the coordination that binds them.

In this superplatform context, pricing must be understood not as a reflection of market value but as a *platform device* – an active instrument of governance, not a passive tool, but an actor in platformisation. Price floors, auction rules, and bid visibility structure market behaviour. For example, Unified Pricing Rules force publishers to treat all demand sources equally, removing their ability to engage in price differentiation. In doing so, Google does not merely respond to market or platform signals; it defines what counts as the market, when, and for whom. Thus, price in a superplatform is first and foremost a platform configuration device, not a mere consequence of a trading decision.

Perhaps the most crucial property of Google’s superplatform lies in its pre-exchange design. Google’s position is based not just in its marketplaces but in the supply chains that make these markets possible in the first place. Through demarketisation – such as bartering search, indexing, and services in exchange for consumer data – it creates streams of data inaccessible to competitors. Google supermarketises its search product that uses the component products of the supply chain as “raw material.” This means that by the time marketisation begins (e.g. in ad auctions), the playing field is already tilted by upstream demarketisation that preconditions who is able to participate, on what terms, and at what cost.

The rise of header bidding, for example, showed that publishers recognised this

pattern and attempted to create decentralised auction systems to regain some autonomy. Header bidding allows auctions to run on the user's own device, gathering bids from multiple SSPs before calling Google's Ad Manager. But Google responded with Open Bidding – a server-side auction structure that promised speed and simplicity but also embedded the process within its own ecosystem. This was a defence not just of market share, but of infrastructural primacy – of controlling the superplatform's market stack devices.

Conclusion

Google cannot be understood simply as a software system, ecosystem, two-sided or multisided market or platform. It combines a demarketised supply chain with barter and market infrastructures dedicated to producing and distributing online commodities. This computational-industrial process is operationalised through devices and agencies – tracking scripts, auction rules, campaign managers, ad servers – each contributing to a choreography governed by Google. The superplatform shifts strategically between modes of gift, barter, market, and demarketisation, in both direct and indirect forms.

This paper offered a new way to understand Google – the world's largest advertising corporation, dominating the most consolidated ad market in history. The scale and complexity of this ecosystem have long defied public understanding, academic analysis, and effective regulation. We showed that what often seems like an impenetrable “platform spaghetti” of systems can be systematically explained through the concept of the superplatform.

Superplatforms first demarketise. This manoeuvre strengthens market power because rivals cannot simply purchase supply-chain intermediates but must build entire chains themselves. Google's capacity to “(infra)structure, platformise, conglomerate, financialize” (Nieborg and Poell, 2025) stems from stacked economisation. Its superplatform pairs demarketised supply chains with supermarketised exchanges, governing timing, visibility, and pricing. By vertically integrating infrastructures, setting pricing rules, and stacking modes – marketisation, barter, demarketisation – Google not only participates in markets but shapes their conditions.

Equally important is the materiality of the commodity. Digital ads are not durable goods but fleeting events: when a consumer (C) encounters a screen (S) at a specific time (t_0). $\{C, S, t_0\}$ creates the ad as an ephemeral but economisable product. Ad space is not rented; it is auctioned as place-time, vanishing once consumed. This

explains the volatility of ad markets and why Google's infrastructure is optimised for real-time data flows, profiling, and automation. The situated nature of online ads is not peripheral to the superplatform – it is foundational.

This materiality clarifies why regulation may lag. The invisibility of what is bought, combined with infrastructural opacity, has created confusion and ineffective oversight. A core contribution of this paper is to render that complexity legible and show that what superplatforms mystify can be explained through the superplatform concept.

We arrive at two general conclusions. First, to grasp the novelty of today's megacorporations, we need new concepts. We offer superplatform – foregrounding stacked economisation, supply-chain integration, and commodity materiality. Future research and regulation must move beyond narrow competition analysis and ask: (1) What supply chains produce barter commodities like search? (2) What barriers to entry exist in these upstream processes – do they create prodexchange monopolies? (3) How do demarketised infrastructures shape competition before exchange begins? (4) How do superplatform architectures vary across sectors?

This matters because the public holds not only a right to know but also partial property rights in the components of the digital-computational products they co-create with their personal data. The question “Where does search come from?” illustrates this point. Google Search is built from consumer-generated data and Google's internal algorithms, yet its core components – indexing, ranking, crawling, publishing, and storage – are demarketised (Caliskan, MacKenzie, and McGowan, 2025). These services are not bought or sold, but internally bartered within Google's ecosystem and exchanged with users and websites in return for data and attention. Crucially, these asymmetrical barter relations cannot be addressed through data privacy frameworks alone – they raise questions of competition and equity in non-market economisation.

This demarketisation is not inevitable. Each component of the search product – index, rank, crawl data, searchpaper, and storage – is produced and maintained by different teams within Google, yet none are offered as standalone, market-based services. In principle, these functions could be unbundled and provided by separate firms, enhancing competition and transparency. Instead, Google's internal barter system locks them into its infrastructure, reinforcing superplatform dominance.

By reframing Google as a superplatform – a vertically integrated system built on

demarketised supply chains and stacked economisation modes – our analysis offers regulators a clearer basis for intervention. Market-centric tools miss where power is actually constituted: upstream, in pre-exchange infrastructures. A regulatory approach informed by stacked economisation would therefore extend oversight beyond transactions to the demarketised components of search and advertising, including auditing supply-chain nodes, mandating interoperability in indexing and ranking, and expanding data-access rights for independent authorities. Central to this shift is recognising barter – the exchange of data, attention, and visibility for access – as one of the defining and least regulated modes of twenty-first-century economisation. Current regimes treat platforms as distorted markets even when no market exists. Effective governance requires a regulatory imagination capable of incorporating these non-market, barter-based exchanges and subjecting them to transparency, fairness, and accountability obligations. Such a perspective also improves taxation instruments by identifying new taxable events in non-market contexts, enabling fiscal systems to account for value creation where neither prices nor markets explicitly operate. In doing so, regulators can address dominance at its source, not only its market-level symptoms.

Second, the regulation and taxation of superplatforms must be redesigned. Conventional models of oversight, rooted in defunct visions of market competition, fail in the face of superplatforms that operate as infrastructural economic systems. The two U.S. Department of Justice’s antitrust cases against Google mark a historic shift, with rulings such as that Google “unlawfully tied its publisher ad server (DFP) and ad exchange (AdX)” (U.S. District Court for the Eastern District of Virginia, 2025, p. 1). Remedies have been proposed to structurally break up these alleged monopolies, while Google counters that such interventions would harm publishers – an argument requiring critical scrutiny.

Breaking up only a part of a superplatform, however, will not address the underlying issues. Our research shows that Google’s power begins upstream in demarketised infrastructures. Rivals must build costly supply chains from scratch, while Google supermarketises profitable endpoints such as advertising. This lets it dominate ad markets while keeping core components closed off. Current regulations miss the mark – forcing Google to sell Chrome or spin off tools would not dismantle dominance, only redistribute benefits. The real issue is not just how Google sells but how it structures production and exchange in its supply chain.

There is something profoundly broken when five corporations – Google/Alphabet, Meta, Amazon, Microsoft, and Apple – amass nearly USD15 trillion in market value, surpassing the Gross National Income of all countries except the US, the EU, and

China. These firms do not simply operate multi-sided markets – they run super-platforms, structuring the terms under which platforms interact. Governing them requires not just new policies but a new platform-economic vision – seeing platforms not as tools, infrastructure, places, firms, or multi-sided markets, but as stacked economisation processes. In short, we need to see them as superplatforms.

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