May 21, 2026

The Honorable Todd Blanche
Acting Attorney General
U.S. Department of Justice
950 Pennsylvania Ave. NW
Washington, DC 20530

The Honorable Andrew N. Ferguson
Chairman
U.S. Federal Trade Commission
600 Pennsylvania Ave. NW
Washington, DC 20580

Re: Docket No. ATR-2026-0001, Request for Information for Guidance on Business Collaborations

The Council for Innovation Promotion (C4IP) appreciates the opportunity to comment on the joint Request for Information issued by the Department of Justice Antitrust Division and the Federal Trade Commission on February 23, 2026, seeking input on updated guidance for collaborations among competitors.

C4IP is a bipartisan coalition dedicated to promoting strong and effective intellectual property rights that drive innovation, boost economic competitiveness, and improve lives everywhere. C4IP is chaired by two former directors of the U.S. Patent and Trademark Office, Andrei Iancu and David Kappos, who served under Presidents Trump and Obama, respectively. Our board further includes two retired judges from the Court of Appeals for the Federal Circuit, former Chief Judge Paul Michel and Judge Kathleen O'Malley, as well as two distinguished public servants: Lamar Smith, former U.S. Representative for Texas's 21st congressional district and Chairman of the House Judiciary Committee, and Gary Locke, former Governor of Washington, U.S. Secretary of Commerce, and U.S. Ambassador to China under President Obama.[1] Strong IP protections allow American innovators to invest in high-risk research, bring new products to market, and compete fairly abroad.

[1] C4IP Board co-Chair Andrei Iancu recused himself from deliberations on this issue.

Consistent with C4IP's mission of promoting strong and effective intellectual property rights, this comment focuses on IP-related issues that could be implicated by the Agencies' inquiry rather than on antitrust concerns in horizontal collaborations more generally. To that end, this comment addresses three issues that have not previously been a part of this guidance, but which fall at the intersection of antitrust law, intellectual property, and standards development: (1) whether the Agencies should issue guidance on licensing negotiation groups; (2) the appropriate treatment of patent pools within any updated guidance framework; and (3) whether the guidance should specifically address the antitrust risks posed by standards development organizations whose intellectual property policies lack FRAND (fair, reasonable, and non-discriminatory) commitments — an issue on which longstanding federal statutory and regulatory policy frameworks provide important grounding for the Agencies' analysis.

Licensing Negotiation Groups: Guidance Is Premature

We recommend that the Agencies refrain from issuing guidance on licensing negotiation groups (LNGs) at this time. The issue has received considerable attention in the European Union, but that very attention illustrates why caution is warranted: this remains a fast-moving area where international consensus has not emerged and where U.S. and EU enforcement positions diverge sharply.

LNGs are arrangements in which competing technology implementers jointly negotiate licensing terms with patent holders. In 2024, the German Bundeskartellamt approved the Automotive Licensing Negotiation Group (ALNG).[2] The European Commission followed suit in July 2025 with an informal guidance letter similarly permitting the arrangement under analogous conditions.[3]

Critically, the DOJ Antitrust Division reached a contrary conclusion. In early 2026, it became publicly known that the Division had opened an investigation into the same ALNG, examining whether the arrangement constitutes a buyer cartel under U.S. antitrust law.[4] This divergence — between EU regulators broadly permitting the practice and the U.S.

[2] *BMW, Mercedes, Thyssenkrupp and VW Can Negotiate Jointly for the Acquisition of Certain Technology Licences*, Bundeskartellamt (June 10, 2024), https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2024/10_06_2024_ALNG.html.

[3] European Commission, Informal Guidance, Case AT.40979 – Guidance – Automotive LNG (July 9, 2025), https://ec.europa.eu/competition/antitrust/cases1/202536/AT_40979_104.pdf.

[4] Ike Brannon, *The EU Just Blessed a Car Industry Patent Cartel—and the U.S. DOJ Is Fighting Back*, Fortune (Apr. 29, 2026), https://fortune.com/2026/04/29/policy-eu-antitrust-automotive-licensing-negotiation-group-doj-investigation/.

Department of Justice actively scrutinizing it — underscores that LNGs remain deeply contested as a legal and economic matter.

Indeed, within the EU itself, the ultimately adopted Technology Transfer Guidelines, effective May 1, 2026, notably eliminated the proposed safe harbor for LNGs that had appeared in the September 2025 draft consultation.[5] The Commission elected instead to enumerate factors relevant to competitive assessment rather than establish clear presumptions of permissibility. The EU thus recognized, even in the act of issuing guidance, that a definitive framework for LNGs remains elusive.

The United Kingdom's Competition and Markets Authority (CMA) went even further in its April 30, 2026 draft guidance on technology transfer agreements, declining to address LNGs at all.[6] Having indicated earlier that it would consider whether to provide guidance on LNGs, the CMA ultimately declined to do so, explaining that LNGs have emerged relatively recently, that the CMA has no institutional experience in assessing LNG arrangements, and that no LNGs are currently operating in the UK. The CMA concluded that it is more appropriate at this time to assess LNG arrangements on a case-by-case basis. This judgment by a competition authority with close familiarity with the EU experience is a further indication that issuing categorical guidance on LNGs is premature.

Against this backdrop, the issuance of U.S. guidance on LNGs could have the unintended effect of lending legitimacy to arrangements that may undermine incentives for innovation, artificially suppress royalties paid to patent holders, and effectively create buyer cartels in technology licensing markets. The core concern is that an LNG, by aggregating otherwise-competing implementers into a single negotiating bloc, may exercise monopsonistic buying power to drive down compensation to patent holders in ways that distort incentives to invest in research and development. C4IP recently commissioned an independent study from a prominent academic on this issue, who voiced these very concerns.[7] A copy of that paper is attached to this submission.

[5] *See* European Commission, *Commission Updates EU Competition Rules for Technology Licensing Agreements* (Apr. 15, 2026), https://ec.europa.eu/commission/presscorner/detail/en/ip_26_809.

[6] U.K. Competition & Markets Auth., Draft Guidance on the Application of the Chapter I Prohibition in the Competition Act 1998 to Technology Transfer Agreements ¶¶ 2.19–2.21 (Apr. 30, 2026), https://assets.publishing.service.gov.uk/media/69f228ad2fae53a037096894/Draft_guidance_on_the_application_of_the_Chapter_I_prohibition_in_the_Competition_Act_1998_to_technology_transfer_agreements.pdf.

[7] Jonathan Barnett, *An Unbalanced Proposal: Licensing Negotiation Groups for Wireless Technology in the Automotive Industry* (Apr. 14, 2026), https://c4ip.org/wp-content/uploads/2026/04/An-Unbalanced-Proposal-Licensing-Negotiation-Groups-for-Wireless-Technology-in-the-Automotive-Industry.pdf.

The wiser course is to allow the law to develop through enforcement actions and case-by-case analysis — the approach the Division is already pursuing — rather than to crystallize guidance in a rapidly evolving area where the analytical frameworks remain unsettled.

Patent Pools: The Federal Government's Approach Has Been Successful and Should Be Maintained

Patent pools have long been recognized as a procompetitive mechanism for reducing transaction costs and promoting access to complex standardized technologies. By allowing implementers to obtain a single license covering a large portfolio of relevant patents, pools lower the barriers to bringing standards-compliant products to market. The Agencies have recognized these benefits for decades, and the federal government's overall policy of permitting appropriately structured patent pools has been successful. We encourage the Agencies, if they consider developing updated guidance on patent pools, to reaffirm the overall framework that has proven successful.

We recognize that past agency guidance has been placed elsewhere, namely in the Agencies' 2017 Antitrust Guidelines for the Licensing of Intellectual Property, likely reflecting the view that pools aggregating complementary rather than substitute technologies may raise distinct analytical considerations from other horizontal collaborations.[8] Likewise, the Agencies have developed a nuanced and fact-specific body of guidance on the conditions under which pools are unlikely to raise antitrust concerns through the case-by-case process of successive business review letters.

Given this existing body of guidance, we are mindful that this topic may be properly addressed through various means, including through a revision of the horizontal collaboration guidelines or other existing guidance documents. To the extent that the Agencies consider further guidance in revisiting this document or elsewhere, we urge them to preserve the flexibility for context-sensitive analysis that has allowed the federal government's approach to evolve alongside the technology and standards landscape.

[8] U.S. Dep't of Justice & Fed. Trade Comm'n, Antitrust Guidelines for the Licensing of Intellectual Property § 5.5 (Jan. 12, 2017), https://www.justice.gov/atr/IPguidelines/dl.

Non-FRAND Standards Consortia: A Subject Warranting Guidance

While we recommend restraint with respect to LNGs and continuity with respect to patent pools, we believe there is a genuine need for guidance on the antitrust risks posed by standards development organizations whose intellectual property policies lack FRAND commitments. This concern is grounded in federal statutory and regulatory policy, reflecting longstanding commitments to market-based standards development.

Congress established the foundational framework in the Standards Development Organization Advancement Act of 2004 (SDOAA), Pub. L. 108-237, which amended the National Cooperative Research and Production Act of 1993 to extend antitrust protections to standards development organizations engaged in voluntary consensus standards development activity. The SDOAA's legislative history makes clear that these protections were premised on the procompetitive character of voluntary, consensus-based standards development, which depends critically on open participation and non-discriminatory access.[9] Standards consortia whose IP policies foreclose fair compensation to contributing innovators operate outside the model that Congress sought to encourage and protect.

The federal policy framework is reinforced by OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities," originally issued in 1993 and most recently revised in 2016, which directs federal agencies to participate in and rely upon voluntary consensus standards bodies in preference to government-unique alternatives.[10] The Circular defines voluntary consensus standards as those developed through a process characterized by openness, balance of interests, due process, and consensus, attributes that are generally incompatible with standards consortia that impose mandatory royalty-free cross-licensing or other IP policies that may advantage dominant implementers at the expense of independent innovators. By directing agencies toward voluntary consensus standards, OMB Circular A-119 implicitly recognizes that the processes used to create proprietary standards present distinct concerns that may warrant scrutiny.

Taken together, the SDOAA and OMB Circular A-119 reflect a sustained, cross-administration judgment that the procompetitive benefits of standards development depend on maintaining the integrity of the voluntary consensus process, including the assurance

[9] H.R. Rep. No. 108-125 (2003), https://www.congress.gov/committee-report/108th-congress/house-report/125/1?outputFormat=pdf.

[10] Office of Mgmt. & Budget, Exec. Office of the President, OMB Circular No. A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities (revised Jan. 27, 2016), https://www.whitehouse.gov/wp-content/uploads/2017/11/Circular-119-1.pdf.

that innovators who contribute patented technologies to standards will have the opportunity to be fairly compensated. Proprietary consortia whose IP policies lack FRAND commitments erode that assurance and undermine the policy foundations that have made collaborative standards development such an important engine of American innovation. These longstanding federal concerns have found particularly strong expression in recent speeches by Deputy Assistant Attorney General Dina Kallay, who has highlighted the antitrust risks of non-FRAND standards consortia — including mandatory royalty-free cross-licensing requirements — as a priority for the Antitrust Division, situating them within the broader federal commitment to protecting incentives for innovation in standards-based industries.[11]

We concur with this framing and believe the concern warrants elaboration in the updated guidelines. Proprietary consortia whose IP policies lack FRAND commitments may present antitrust risks across several dimensions.

First, mandatory royalty-free cross-licensing requirements imposed by some dominant consortia can enable large implementors to extract the innovations of smaller participants at no cost, fundamentally altering the economic calculus of participation in standards-setting activity. When companies that depend on the ability to monetize their intellectual property — including through patent licensing to those who incorporate their technologies into standardized products — are effectively required to forgo that income as a condition of participation, the result is a distortion of incentives to invest in research and development. The standards ecosystem has thrived precisely because the FRAND framework assured innovators that contributions to a standard would be fairly compensated.

Second, non-FRAND consortia may lack the governance structures that give FRAND-based standards development organizations their legitimacy. Traditional SDOs operate with balanced representation across stakeholders, transparent procedures, and rules designed to prevent capture by any single interest group, the hallmarks of the voluntary consensus process that both the SDOAA and OMB Circular A-119 were designed to foster. Proprietary consortia, by contrast, may be controlled by a subset of dominant implementers whose interests diverge from those of independent innovators, small technology developers, or other market participants. The resulting standards may reflect the technological preferences and business models of the dominant participants rather than technological merit, with potentially significant downstream effects on the trajectory of the underlying technology itself.

[11] Dina Kallay, Deputy Assistant Att'y Gen., U.S. Dep't of Justice Antitrust Div., Remarks at the Concurrences Dinner, New York: *"That's What F/RANDs Are For" and Antitrust Implications When They're Gone* (Sept. 19, 2025), https://www.justice.gov/opa/speech/daag-dina-kallay-delivers-keynote-concurrences-dinner-new-york.

Third, when a standard developed under a non-FRAND framework achieves broad adoption — whether through network effects, regulatory mandates, or market tipping — implementors may become locked in without the protections that FRAND commitments were designed to provide. The DOJ has expressed concern about this dynamic in its Statements of Interest filed in patent litigation, including in the *Radian v. Samsung* matter, where the agency highlighted allegations that a company had been pressured to join a private consortium requiring mandatory royalty-free cross-licensing as a condition of access to the standardized technology.[12]

Guidance in this area need not and should not commit the Agencies to any specific enforcement standard for non-FRAND consortia. The rule of reason and a case-by-case approach remain appropriate given the diversity of arrangements and market contexts. However, guidance articulating the relevant factors — including whether the consortium's IP policies are consistent with the voluntary consensus process contemplated by the SDOAA and OMB Circular A-119, the governance structure of the consortium, whether participation is genuinely voluntary, the availability of alternative technological pathways, the extent to which IP policies may suppress returns to innovation, and the competitive effects on technology development itself — would provide valuable direction to businesses and practitioners without foreclosing context-specific analysis.

* * *

In summary, we urge the Agencies to: (1) decline to issue guidance on licensing negotiation groups at this time, given the unsettled state of the law and the ongoing transatlantic divergence on the proper approach; (2) reaffirm, to the extent the Agencies believe it is necessary and in such form as the Agencies consider appropriate, the overall framework that has permitted appropriately structured patent pools and has proven successful in facilitating access to complex standardized technologies; and (3) include in any updated guidelines a substantive discussion of the antitrust concerns raised by standards development organizations whose IP policies lack FRAND commitments, grounded in the longstanding federal framework established by the SDOAA and OMB Circular A-119.

[12] DOJ Antitrust Division and USPTO, *Statement of Interest*, Radian v. Samsung, case no. 2:24-cv-1073 (E.D. Tex.) (June 24, 2025), https://www.justice.gov/atr/media/1404506/dl?inline.

We thank the Agencies for the opportunity to provide input and welcome any further dialogue on these matters.

Sincerely,

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An Unbalanced Proposal: Licensing Negotiation Groups for Wireless Technology in the Automotive Industry

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Background

Wireless communications technologies stand at the heart of the digital ecosystem, enabling not only communications devices but a constantly expanding ecosystem of products and services that are enabled by these technologies. During the multi-decade evolution of wireless communications spanning the 2G, 3G, 4G/LTE, and 5G standards, each technology generation has spawned new applications and even transformed entire industries. Without wireless standards that enable data-rich and low-latency communications networks, social messaging, audio and video streaming, mobile banking, and a plethora of other digital applications would be infeasible.

Typically, the development and deployment of wireless technologies have relied on a handful of companies that specialize in chip design.[1] In turn, those companies have monetized these R&D investments through standard-development organizations (SDOs) and intellectual property (IP) licensing relationships with mobile communications device producers. This three-level structure has generated revenue stream to support technological development by upstream innovators, promoted interoperability through standardization, and facilitated dissemination among downstream implementers through IP licensing. Ultimately, this structure benefits consumers through a continuous flow of new and improved devices and the development of complementary services in the broader wireless-enabled ecosystem.

In the latest iteration of this innovation, standardization, and implementation cycle, wireless technology standards are now being adopted beyond the mobile communications device market to support connectivity services in the global automotive sector, also known as the "connected vehicle" sector. Licensing relationships between wireless communications innovators, which protect their technologies through standard-essential patents (SEPs) and other IP rights, and automotive original equipment manufacturers (OEMs) have taken place through bilateral licensing relationships, collective licensing platforms, and patent pools.

Executive Summary

In July 2025, the European Commission (EC) issued non-binding informal guidance taking the view that, subject to certain conditions, a licensing negotiation group (LNG) comprising automotive manufacturers and component suppliers "does not raise concerns" under applicable EU competition law (specifically, Article 101 TFEU[2]) that prohibits certain forms of collaboration among competitors.[3] In the request for guidance reviewed by the Commission (which is not publicly available), the founding members of the proposed LNG, which includes some of the world's largest automotive OEMs, propose negotiating collectively with SEP owners (or entities representing SEP owners) over the royalty rates and other terms for licensing wireless technology for use in "connected" vehicles.

This policy brief assesses whether the EC's position on the proposed LNG is sound as a matter of competition policy. This brief is organized as follows. Part 1 describes the LNG proposal and the EC's analysis of the proposal. Part 2 reviews the consensus understanding in the

antitrust literature and regulatory commentary concerning the procompetitive and anticompetitive effects of joint purchasing groups, a close analogue to the proposed LNG. Part 3, which is the brief's core component, applies this analytical framework to the proposed LNG, comparing price-distortion risks against transaction-cost savings and "level the playing field" effects. Part 4 identifies potential effects the LNG mechanism may have on the global competitiveness of the European wireless tech sector. This brief does not express any view on the legality of the proposed LNG under EU competition law or U.S. antitrust law.

The brief presents three core findings:

- *LNG entities inherently raise the risk of licensee collusion through "hold-out" strategies that could distort royalty rates for wireless technologies in the connected automotive and other wireless-enabled sectors, resulting in pricing distortions that are likely to discourage investment and innovation in this sector.*

- *The SEP licensing sector does not appear to suffer from a market failure that necessitates incurring the pricing risks inherent to licensee collaboration. There do not appear to be material transactional obstacles to SEP licensing in the automotive market. Based on historical experience in the wireless communications industry, there is little evidence that SEP owners widely engage in "patent holdup" that would push royalty rates above competitive levels.*

- *De facto regulatory clearance of LNGs in the automotive sector is likely to act as a "green light" for large OEMs to form similar entities in other wireless-enabled sectors and other commercially significant jurisdictions (in particular, China), raising comparable risks of pricing distortions and discouraging investment and innovation in wireless technologies in Europe and elsewhere.*

1. The LNG Proposal and European Commission Guidance

The LNG proposal reviewed by the EC was submitted by the LNG's founding members, BMW Group, Mercedes-Benz Group, Thyssenkrupp, and Volkswagen.[4] The proposal contemplates that the members will form an automotive LNG (ALNG) to negotiate with individual SEP owners and SEP pools the royalty rates and other terms for licensing SEP-protected wireless and connectivity technologies in the automotive sector. The proposed ALNG includes the following principal elements:

1. The ALNG will be open to membership by vehicle manufacturers and component suppliers in the automotive industry.

2. For each negotiation with a SEP owner, the ALNG will form a negotiating group consisting of ALNG members who elect to join the group.

3. The negotiating team acting on behalf of a negotiating group will not consist of individuals who are current officers or employees of ALNG members. However, ALNG members who join the group will inform the negotiating team of their "expectations regarding acceptable licensing terms."[5]

4. ALNG members can elect not to join a negotiating group and negotiate licensing terms separately with the SEP owner. Negotiations are expected to conclude within six months but, "depending on . . . the complexity of the negotiations," could last longer.[6] During this indefinite period, the SEP owner will agree not to pursue litigation against any member of the ALNG negotiating group.

5. An ALNG member that joins a negotiating group may withdraw from the group, or reject the agreed-upon terms, and enter into separate negotiations with the SEP owner. However, while negotiations are proceeding between the negotiating group and the SEP owner, any member of the negotiating group may not commence separate negotiations with the SEP owner.

In reviewing the ALNG proposal, the EC's analysis appropriately recognizes that it is necessary to assess the risk that any joint purchasing arrangement could be used for collusive purposes. As such, while the EC's guidance concludes that the proposed ALNG "does not raise concerns" under applicable EU competition law, this view is conditioned on the satisfaction of several criteria that limit risks of collusion. These criteria are as follows:

1. The combined market share of the ALNG members constitutes less than 15% of the "total demand for the SEPs or standards concerned."[7]

2. SEP owners are free to enter (or not enter) into a negotiation with the ALNG or to terminate any such negotiation.

3. Exchanges of information between ALNG members are limited to "what is objectively necessary to conduct the joint licensing negotiations" and "no commercially sensitive information is shared between members."[8]

The EC guidance apparently determines that, based on the information provided by the requesting parties, these criteria have been satisfied for purposes of providing informal guidance. As the rest of this brief will explain, the EC guidance does not fully engage in the balancing analysis that is typically undertaken to assess collaboration among competitors, relies on an inappropriately broad definition of the relevant market, and does not take into account the dynamic efficiencies that are critical for antitrust analysis in innovation markets. Based on currently available information, this brief finds that the ALNG would bring no material improvement to competitive conditions while posing a significant risk of generalized holdout

that can distort royalty rates and, in the longer term, reduce investment and innovation in the wireless tech sector.

2. Antitrust Economics of Joint Purchasing Groups

It is widely agreed that coordination by sellers on price or output generally has few plausible procompetitive justifications and hence, antitrust law generally prohibits these practices outright, with limited exceptions. The reason is straightforward: collusion enables multiple firms to act as a monopolist who can raise price or restrict output unilaterally without fear of discipline from competitors. In general, coordination by buyers is viewed as posing similar risks to the market's price-setting mechanism by enabling buyers to act as a monopsony that pushes price or output away from competitive levels.[9] In Europe, this has resulted in prosecutions and significant fines against buyer cartels in the tobacco processing, car battery recycling, and ethylene markets.[10]

Nonetheless, scholars and agencies have recognized that there are limited circumstances where horizontal collaboration may have procompetitive benefits. Under EU law, horizontal agreements are assessed under Article 101(1) TFEU to determine whether they restrict competition "by object" or "by effect," with the latter subject to an effects-based inquiry under Article 101(3), which permits consideration of offsetting efficiencies.[11] Under U.S. law, horizontal agreements are analyzed under either per se rules—where price fixing is condemned outright[12]—or the rule of reason, which balances anticompetitive harms against procompetitive benefits and permits restraints that are reasonably necessary to achieve efficiencies.[13] In both systems, cooperative arrangements such as joint purchasing or joint licensing are more likely to be upheld when the practice is ancillary to a procompetitive purpose, generates offsetting efficiencies, and includes safeguards limiting anticompetitive risks. By contrast, direct coordination among competitors, whether buyers or sellers, on price, output, or other competitive parameters generally cannot be shielded by procompetitive efficiencies.[14]

Within this evaluative framework, joint purchasing groups or similar cooperative arrangements may survive scrutiny when the arrangement yields transaction-cost savings by reducing duplicative negotiation or related logistics, or enables smaller firms to approximate the negotiating or related transactional efficiencies of larger firms. Moreover, it is necessary to determine that those efficiencies redound substantially to the benefit of consumers.[15] To be clear, reduced input costs achieved through buyer cooperation do not necessarily result in lower prices for consumers; rather, this depends on the extent to which competitive conditions compel firms to pass on cost-savings to consumers.[16] At the same time, any procompetitive benefits attributed to a joint purchasing group must be balanced against the inherent risks of collusion, which depends on the group's share of the relevant market and the extent to which the group mechanism may facilitate information exchanges that can result in price coordination.

3. Likely Effects of LNGs on the Automotive SEP Licensing Market

Consistent with this established analytical framework, the impact of the proposed ALNG on competitive conditions can be assessed using a balancing analysis that weighs the likely procompetitive and anticompetitive effects of this mechanism, contextualized within the practical realities of wireless technological development and SEP licensing and enforcement.

Procompetitive Effect: Transaction Cost-Savings

The ALNG entity would reduce transaction costs to the extent it substitutes a single set of negotiations—between the ALNG entity and multiple SEP owners or a single SEP pool—for multiple bilateral negotiations involving licensors and licensees. However, it is not clear that the *incremental* cost-savings attributable to the ALNG are significant since the existing number of licensees and licensors in the automotive SEP market is relatively small. This factor was not addressed in the EC guidance.

On the licensee side, there are 15 large multinational automotive corporations in the global market with annualized revenues in excess of $50 billion (based on 2024 and 2025 data), including five based in Europe (all founding members of the ALNG, except Renault and Stellantis).[17] On the licensor side, transaction costs have already been reduced by the availability since 2016 of a SEP pool, Avanci, that has aggregated most of the large SEP owners in the wireless connectivity sector for the automotive sector. Negotiation costs are further reduced by the fact that Avanci offers a uniform per-vehicle royalty rate, depending on whether a licensee prefers 5G/4G/3G or 4G/3G capabilities.[18]

According to analysis based on LexisNexis IPlytics data (as of 2024), Avanci's 5G Vehicle Program encompasses approximately 80%-85% of 2G, 3G, 4G, and 5G cellular SEPs issued by the five major patent offices.[19] As of 2026, Avanci estimates that the 5G Vehicle license pool encompasses over 85 SEP licensors, including the six chip developers, Ericsson, Huawei, LG, Nokia, Qualcomm, and Samsung, with the largest and highest-quality SEP portfolios.[20] Licensees in the Avanci pool encompass most major automotive OEMs in the U.S., Europe, Japan, and South Korea, including all three members of the ALNG that are automotive OEMs.[21] As of April 2025, Avanci's vehicle licensing programs reportedly covered over 200 million vehicles, encompassing over 110 automotive brands.[22]

Hence, while the ALNG would consolidate negotiations to some extent on the licensee side (depending on the number of OEMs who join the ALNG and the number of ALNG members who join a particular negotiating group), the incremental cost-savings would be limited since automotive OEMs can already procure access to the bulk of the applicable SEP portfolio through a "one-stop shopping" platform. Moreover, given that Avanci offers a uniform per-vehicle rate based on the selected license, per-transaction negotiation costs are also already limited. Lastly, it should be noted that, as the ALNG lowers transaction costs by adding members (as contemplated by the EC guidance[23]), it would necessarily increase collusion risk as discussed subsequently.

Procompetitive Effect: Level the Playing Field

It is recognized that joint purchasing groups can enhance competition when the members are smaller downstream firms who cannot otherwise secure as favorable terms from upstream sellers as larger firms. This scenario does not apply to the proposed ALNG. The founding members of the ALNG are large automotive OEMs and, given the scale-intensive nature of the automotive market, the same would be true of other members in the future. Additionally, any incremental reduction in the royalty rate expected to arise from the ALNG is likely to be minimal since, as noted in the EC guidance, the existing royalty rate charged through the Avanci pool is already a "very small" portion of the vehicle sale price.[24] Specifically, the royalty rate for the Avanci 5G license is $32 per vehicle, which, as of 2024, constitutes approximately .064% of the average sale price of a new passenger vehicle in the U.S.[25] and .065% of the average sale price of a new hybrid passenger vehicle in Europe.[26] Hence, even if the entire reduction in the royalty rate secured through the ALNG flows through to consumers in the vehicle sale price, the pricing effect would be trivial.

Anticompetitive Effect: Pricing Distortions

There is considerable risk that the ALNG would distort royalty rates in the SEP licensing market for automotive licensees. If some of the largest automotive OEMs act collectively in rate negotiations through the ALNG, they may have the ability to secure a royalty rate that falls below the rate that would be reached through independent arm's-length negotiations. U.S. antitrust agencies have recognized that joint licensee negotiation in wireless markets raise concerns that it could "eliminate competition among the potential licensees for the patented technology."[27] This risk derives from two sources.

Revisiting Market Share

The ALNG members may hold a sufficient share of the global or regional automotive market such that they could exercise "take it or leave it" pricing power in SEP licensing negotiations. The EC's favorable view of the ALNG is conditioned on the assumption that the members collectively represent less than 15% of "total demand for the SEPs or standards concerned."[28] Given that 3G, 4G, and 5G wireless standards are used widely in mobile communications devices, the ALNG members most likely fall below this threshold if "total demand" refers to the global SEP licensing market across all industries.

However, the EC guidance leaves "open" the "precise market definition" and does not take any definitive view on the ALNG members' combined market share, due to the absence of "pertinent documentation."[29] If the market is defined as the SEP licensing market for the automotive sector, whether in Europe or globally, it is likely that ALNG members would breach the 15% threshold. In 2023 and 2024, the ALNG's founding members represented approximately 43% of car sales in Europe, and approximately 19% and 18%, respectively, of global car sales, as measured by number of vehicles sold.[30] These percentages will increase as the ALNG gains more members, which it would be required to admit under the qualifying criteria in the EC guidance.[31]

The automotive SEP licensing market is distinguishable from the smartphone SEP licensing market on which the EC guidance preliminarily relies for purposes of assessing compliance with the 15% threshold. In smartphones, standardized wireless technologies are integral to the device's core functionality. In contrast, cellular connectivity in vehicles primarily supports more limited functionalities such as entertainment, software updates, and vehicle-to-everything (V2X) applications.[32] These differences in the centrality of wireless technology in each sector are reflected by the fact that SEP licenses in the smartphone market have royalty rates that are materially higher, as a percentage of the sale price, than SEP licenses in the automotive market. In the smartphone market, OEMs have historically paid to SEP licensors an aggregate royalty equal to about 5% on average of the device sale price.[33] This figure is significantly higher than the Avanci 5G royalty rate, which (as noted[34]) is equal to approximately .064% and .065% of the average sale price of a passenger vehicle in the U.S. and Europe, respectively.

Patent Holdout Risk

OEMs are inherently in a stronger negotiating position relative to SEP owners. This arises from two factors: (1) chip-design firms incur billions of dollars in R&D costs substantially prior to OEMs' adoption of a new technology standard[35], and (2) SEP owners have limited ability to secure injunctive relief against infringing OEMs, who therefore typically have access to the SEP owners' technology during the negotiation process. The latter factor reflects the *Huawei v. ZTE* decision by the Court of Justice of the European Union, which provides that a SEP owner may not seek injunctive relief so long as the infringing user demonstrates willingness to enter into a license on "fair, reasonable, and nondiscriminatory" (FRAND) terms, as demonstrated by good-faith negotiation.[36] While some European and UK courts have recently granted injunctions to SEP owners, this has only occurred in a limited number of cases after years of litigation and millions of dollars in legal expenditures, and may apply only to a specific model or national market and therefore have limited commercial impact on an infringing OEM.[37] Moreover, SEP owners operate under uncertainty as to whether an infringer would be deemed an "unwilling licensee," especially since this determination sometimes rests on whether a proposed royalty rate conforms to the FRAND standard.[38] Consequently a SEP owner often lacks a credible threat to seek injunctive relief on a timely basis against a prospective licensee that is making use of its technology.

Under these circumstances, the ALNG may enable its members to engage in a form of collective "patent holdout" through protracted multi-venue litigation with SEP owners. Without adoption by OEMs, a chip-design firm will earn no return on its R&D investment and hence it does not have a credible "walk-away" right when negotiating with an ALNG representing a significant portion of the licensing market. This asymmetry is exacerbated by the fact that the ALNG proposal contemplates that, while negotiations are pending between the ALNG negotiating group and the SEP owner (up to six months but potentially longer, as noted in the EC guidance[39]), the SEP owner would commit not to take legal action. At the same time, any

member of the ALNG negotiation group would be precluded from entering into separate negotiations with the SEP owner while group-level negotiations are still proceeding.

Competition authorities in the U.S., EU, and Japan have recognized patent holdout risk in SEP licensing markets[40] and scholars have identified multiple real-world examples.[41] This strategy is prone to arise in SEP litigation where, as is typical, OEMs have resources to fund litigation almost indefinitely, while SEP owners face financial pressure to earn returns on already-incurred R&D investment. This asymmetric situation can enable OEMs to secure reduced royalty rates from SEP owners who seek to avoid protracted litigation and face financing constraints.[42] In a "domino effect," these depressed rates may then be used as "comparables" by business parties in licensing negotiations and by courts in damages proceedings, resulting in pricing distortions throughout the SEP licensing market.

This risk of generalized patent holdout would grow as the ALNG's share of the automotive OEM market grows by adding new members. Since the EC's guidance assumes that the ALNG remains open to membership by any automotive producer[43], there is no upper bound to the ALNG's potential share of the automotive OEM-licensee market. If patent holdout strategies exercised by the ANLG, or specific ALNG negotiation groups reduce royalty rates below competitive levels, this would discourage investment and innovation in the wireless sector if chip-design firms have difficulty attracting capital given reduced expected returns when monetizing R&D through licensing relationships with OEMs. Those social costs are magnified since wireless technology enables product and service innovations in wireless-enabled markets in consumer services, industrial applications, and national defense. Consistent with standard economic understandings of the critical role of innovation in promoting economic growth, any longer-term decline in innovation output arising from royalty rate suppression would easily overwhelm any nominal short-term reductions in vehicle sale prices attributable to the ALNG.[44]

Reflecting these considerations, U.S. antitrust authorities have sometimes expressed concern that patent pools or standards-development organizations (SDOs) can adopt policies that distort licensing practices to reduce costs for implementers but adversely impact returns for firms that specialize in innovation. In a business review letter concerning the 3GPP patent pool, issued in 2002, the U.S. Department of Justice Antitrust Division expressed concern that hardware manufacturers predominated in the pool's membership and could use the pool to depress royalty rates.[45] Concerning a change in policy at the IEEE, a major SDO, that recommended using the "smallest saleable practicing patent unit" (SSPPU) as the royalty base for SEP licensing in wireless-enabled devices, the Antitrust Division recognized, in a 2015 business review letter, that the policy could promote the economic interests of "parties desiring lower royalty rates."[46] In 2020, the Antitrust Division issued a supplemental letter to clarify that SDOs that predefine the royalty base for SEP licenses at the SSPPU level, or take the position that a SEP owner's FRAND commitment implies a waiver of injunctive relief, may incentivize patent holdout strategies by prospective licensees.[47]

Patent Holdup Objection

It may be objected that the ALNG entity is necessary to counter the market power sometimes attributed to SEP owners in negotiating royalty rates with licensees. Following this "patent holdup" theory, SEP owners exert pricing power because OEMs must deliver an interoperable product that conforms to the relevant standard and hence are "compelled" to accept the royalty rate offered by the SEP owner.[48] Yet evidence on SEP licensing practices in wireless communications markets fails to support this theory.

Multiple empirical studies have found that SEP licensors tend to negotiate modest royalty rates (as noted, about five percent in the aggregate of the average sale price of a smartphone device[49]) and tend to hold those rates at approximately constant levels.[50] Both findings are inconsistent with the patent holdup model, which predicts that SEP owners would demand exorbitant royalties and increase rates as OEMs make investments specific to a technology standard. Rather, these findings conform to a repeat-play model where innovator firms maintain royalty rates at reasonable and constant levels to induce OEM adoption of future technology standards. A track record of stable adoption enables a repeat-play innovator to attract investment in next-generation R&D under the expectation that it will generate a royalty stream sufficient to earn competitive returns compared to other investment opportunities.[51]

While automotive SEP licensing is a relatively young market, there are already indications that SEP owners, or SEP pool operators, behave in conformity with this repeat-play model. According to third-party estimates, the royalty rate charged by Avanci, which (as noted) offers a patent license covering as much as 80% to 85% of global 5G SEPs[52], represents about 10% of the value that 5G connectivity technology contributes to a vehicle's resale value[53] and, as noted, less than one-tenth of one percent of the average vehicle sale price.[54] This restrained pricing strategy is consistent with tendencies observed in long-standing SEP licensing markets for mobile communications devices, where SEP owners negotiate royalty rates that capture single-digit percentages of the economic value in the smartphone supply chain, with 34% to 42% captured by device OEMs.[55] It is also consistent with behavior observed in the most successful patent pools in consumer electronics markets, some in place since the late 1990s and early 2000s, which assess royalty rates that are a small fraction of device sale prices.[56] These consistent patterns across several decades of tech licensing suggest that the repeat-play model where licensors seeks to seed and cultivate the wireless-enabled ecosystem, rather than the patent holdup model where licensors seek to "hold up" OEMs, typically provides the most empirically relevant framework for assessing proposed policy interventions in SEP licensing markets.

4. Likely Effects on Global Competitiveness

In 2024, the widely publicized "Draghi Report" observed that Europe suffers from an innovation and commercialization gap and recommended various steps to restore Europe's place as a global technology leader alongside the U.S. and China.[57] Yet, a bright spot in Europe's innovation economy is a handful of firms (Arm, Ericsson, and Nokia) that lead globally in chip

design for wireless communications and other wireless-enabled sectors. In a 2022 analysis, the U.S. Patent & Trademark Office identified the leading SEP owners in the 5G wireless technology standard as Qualcomm, Huawei, Samsung, Nokia, Ericsson, and LG. When adjusted for quality, all firms but Huawei were ranked even more highly.[58] Additionally, Arm, a UK-based firm, provides the most widely used architecture for chip design in the smartphone market.

Given that European firms are among the leading innovators in the wireless chip market, and that these firms rely on IP licensing relationships with OEMs, the proposed ALNG would seem to run counter to the competitiveness goals outlined in the Draghi report. To the extent the ALNG depresses royalty rates below competitive levels that would be reached through arm's-length negotiations, it would reduce anticipated returns and discourage investment in the European chip design segment. These adverse effects may extend beyond the automotive sector. If LNGs are permitted in the automotive sector, then OEMs and other implementers are likely to view this policy action as a "green light" to establish LNGs in other wireless-enabled sectors, discouraging parties from entering into arm's-length rate negotiations and potentially pushing royalty rates below competitive levels. This would further reduce the returns to European chip-design firms and hinder the ability to attract capital.

Internationally, the EU's approval of LNGs in the automotive sector could be viewed as a precedent by Chinese regulators, who may then permit the formation of LNGs in the Chinese market, which would distort royalty rates in the world's second-largest market. There is precedent for this concern. In wireless SEP licensing for smartphones, Chinese competition regulators adopted patent holdup theories developed by U.S. and EU regulators, resulting in actions under China's competition and patent laws that disproportionately targeted foreign chip suppliers.[59] There is evidence that some regulators and courts adopted these theories based on mercantilist objectives promoted by the Chinese government to lower royalty rates for domestic OEMs.[60]

There are already indications of similar mercantilist efforts in the Chinese automotive sector. In February 2025, it was reported that two Chinese automotive industry associations had encouraged their members not to take a license from Avanci and to decline any rate *above 10%* of the pool's standard royalty.[61] This is effectively an industry-wide patent holdout strategy designed explicitly to lower royalty rates. If Chinese competition regulators permit the formation of LNGs (or do so on a *de facto* basis), the result would be artificially reduced royalties that favor automotive OEMs over chip-design innovators in the world's largest automotive market (representing approximately 35% of the global market as of 2025, based on vehicles sold[62]). This development could have significant adverse consequences on the expected returns on wireless technological innovation, leading investors to shift capital to other sectors. That outcome would seem to degrade, rather than enhance, the EU's efforts to enhance its global competitiveness.

Lastly, the formation of an ALNG by European automotive OEMs may create a conflict with U.S. antitrust agencies' or courts' view of that same practice. This could expose the ALNG members to significant legal exposure in the U.S. market, which is typically those companies' first or second-most important market. Confirming the seriousness of this concern, the U.S. Department of Justice Antitrust Division announced an investigation in March 2026 into the proposed members' efforts to form an ALNG entity.[63]

Conclusion

Antitrust law has typically applied strict standards to horizontal cooperation since it inherently raises the risk of collusion or other pricing distortions, whether formed among sellers or buyers. Antitrust law generally applies a balancing analysis that weighs the procompetitive and anticompetitive effects of joint purchasing groups and other forms of horizontal collaboration that are apparently ancillary to procompetitive purposes. Within this framework, it is hard to justify the formation of ALNGs in the automotive SEP licensing sector. The proposed entity would facilitate price coordination among direct competitors and, at best, yield incremental transaction-cost savings. In particular, the ALNG may facilitate industry-wide patent holdout that could harm incentives to invest in technological innovation in wireless-enabled markets. This development would not only raise competition concerns in the wireless tech sector but, more broadly, may hinder the competitiveness of the European tech ecosystem in the global marketplace.

ENDNOTES

[1] This paragraph relies on information in Jonathan M. Barnett, *Antitrust Overreach: Undoing Cooperative Standardization in the Digital Economy,* 25 Mich. Tech. L. Rev. 163 (2019).
[2] Consolidated Version of the Treaty on the Functioning of the European Union art. 101, Oct. 26, 2012, 2012 O.J. (C 326) 47.
[3] European Commission, Case AT.40979 – Guidance – Automotive LNG, Brussels 9.7.2025, C(2025) 4265 final.
[4] This section relies principally on the information disclosed in the EC guidance letter, *see id.*
[5] Id., at 3.
[6] Id.
[7] Id., at 2.
[8] Id., at 7.
[9] For the leading scholarly source, see Roger D. Blair & Jeffrey L. Harrison, *Monopsony: Antitrust Law and Economics* 29-36, 41-48 (2010). For regulatory guidance, see European Commission, *Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements* (2023/C 259/01) ¶¶ 279-282; Fed. Trade Comm. & U.S. Dept. of Justice, *Antitrust Guidelines for Collaborations Among Competitors* § 3.31(a) (2000) [hereinafter Fed. Trade Comm. & U.S. Dept. of Justice, *Antitrust Guidelines*]; Fed. Trade Cmm'n & U.S. Dept. of Justice, *Horizontal Merger Guidelines* § 12 (2010).
[10] European Commission Case AT.38238 – Raw tobacco (ES), original decision Oct. 2004, updated decision with revised fines, June 2017; European Commission Case AT.38281 – Raw tobacco (IT), decision Oct. 2025; European Commission Case AT.40018 – Car battery recycling Apr. 2017 (correcting decision Oct. 2017); European Commission Case AT.40410 – Ethylene, decision July 2020.

[11] European Commission, *Guidelines, supra* note 11, at ¶¶ 4.1-4.3 (2023) (recognizing efficiencies from joint purchasing and analyzing the practice under effects-based framework); Case C-67/13 P, *Groupement des cartes bancaires v. Comm.*, 2014 E.C.R. ¶¶ 41–58 (limiting "by object" category and distinguishing it from effects-based analysis). For further explanation, see Damien Geradin, Anne Layne-Farrar and Nicolas Petit, *EU Competition Law and Economics* (2012), at ¶¶ 6.11, 6.15-6.16.
[12] *U.S. v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 223-24 (1940) (holding price-fixing agreements per se illegal regardless of asserted justifications).
[13] Fed. Trade Comm. & U.S. Dept. of Justice, *Antitrust Guidelines, supra* note 9, at §§ 3.2-3.3 (recognizing that integrating certain economic activities across competitors is sometimes necessary to achieve efficiencies and applying rule-of-reason to those arrangements); *Broadcast Music, Inc. v. CBS*, 441 U.S. 1, 19–24 (1979) (applying rule of reason to joint licensing arrangement because it created a new product and generated efficiencies); *Northwest Wholesale Stationers, Inc. v. Pacific Stationery & Printing Co.,* 472 U.S. 384 (1985) (applying rule of reason to joint purchasing group, on ground that group lacks market power and comprises smaller retailers that could use the group to "level the playing field" with the largest incumbent).
[14] European Commission, *Guidelines, supra* note 11, at ¶¶ 264–270 (distinguishing lawful joint purchasing arrangements from agreements that coordinate purchase prices or other core parameters, which constitute restrictions of competition by object); Fed. Trade Comm. & U.S. Dept. of Justice, *Antitrust Guidelines, supra* note 9, at §§ 3.34, 3.36-3.37 (2000) (balancing harms and efficiencies of competitor collaborations under the rule of reason, including joint purchasing groups), and § 3.2 (horizontal agreements fixing prices or limiting output are per se unlawful).
[15] European Commission, *Guidelines, supra* note 11, at ¶¶ 49–51, 202–204, 206, 210 (recognizing efficiencies from joint purchasing agreements, including cost savings and enhanced competition, and requiring that such efficiencies benefit consumers); Fed. Trade Comm. & U.S. Dept. of Justice, *Antitrust Guidelines, supra* note 9, at §§ 3.2, 3.36(b), 3.37(a) (describing rule-of-reason balancing and efficiencies from purchasing collaborations, including transaction-cost savings, and requiring consumer pass-through).
[16] OECD, *Purchasing Power and Buyers' Cartels* 22-23 (2022) (joint purchasing may generate cost savings that are passed on to consumers, but only under certain conditions); Roger D. Blair & Jeffrey L. Harrison, *Antitrust Policy and Monopsony,* 76 Cornell L. Rev. 297, 300 (1991) (stating that "there is no correlation between an initial decrease in prices and any overall long-run benefits to consumers").
[17] The companies are as follows (listed by size of revenues): Volkswagen, Toyota, Ford, General Motors, Mercedes-Benz, BMW, Honda, Hyundai, Stellantis, BYD, Tesla, SAIC Motor, Nissan, Kia and Renault. Annualized revenue figures calculated based on reported earnings for 2025 or, if 2025 data not fully available, Q2/3/4 2025 and Q4 2024. Source: *Top publicly traded automakers by revenue*, https://companiesmarketcap.com/automakers/largest-automakers-by-revenue/.
[18] Avanci, *Avanci Vehicle,* https://www.avanci.com/vehicle/; Avanci, *Avanci 5G Vehicle,* https://www.avanci.com/vehicle/5gvehicle; Avanci 4G Vehicle, https://www.avanci.com/vehicle/4gvehicle;
[19] Tim Pohlmann, *Avanci CEO stresses importance of simple approach to SEP licensing,* IAM (July 3, 2024), https://www.iam-media.com/article/avanci-ceo-stresses-importance-of-simple-approach-sep-licensing; Tim Pohlmann, *The SEP Couch: Avanci's 5G Vehicle SEP Program*, IPWatchdog (Oct. 19, 2023), https://ipwatchdog.com/2023/10/19/sep-couch-avancis-5g-vehicle-sep-program/
[20] On SEP portfolio size, see U.S. Patent & Trademark Office, Patenting activity among companies developing 5G (Feb. 2022), https://www.uspto.gov/sites/default/files/documents/USPTO-5G-PatentActivityReport-Feb2022.pdf.
[21] Avanci, *Avanci Vehicle,* https://www.avanci.com/vehicle/; Avanci, Avanci 5G Vehicle, https://www.avanci.com/vehicle/5g.
[22] Avanci, *Avanci Announces 5G Vehicle License Agreement with JLR* (Apr. 7, 2025), https://www.avanci.com/2025/04/07/avanci-announces-5g-vehicle-license-agreement-with-jlr/
[23] European Commission, *supra* note 3, at 6.
[24] Id.
[25] Author's calculations. For average car price, see Cox Automotive, *Kelley Blue Book Report: Average New-Vehicle Prices Climb Higher For Fourth Consecutive Month* (Jan. 15, 2025), https://www.coxautoinc.com/insights/december-2024-atp-report (reporting average new vehicle car price of $49,740 as of December 2024).
[26] Author's calculations. For average car price, see JATO Dynamics, *European new car market growth in 2024 driven by hybrids and Chinese brands* (Jan. 30, 2025), https://www.jato.com/resources/media-and-press-releases/european-new-car-market-growth-in-2024-driven-by-hybrids-and-chinese-brands (reporting average hybrid

price of €42,222, equivalent to approximately $49,427). Note that hybrid vehicles are the most popular passenger vehicle type in Europe.

[27] U.S. Dept. of Justice & Fed. Trade Comm., *Antitrust Enforcement of Intellectual Property Rights: Promoting Innovation and Competition* 53 (2007).

[28] European Commission, *supra* note 3, at 6.

[29] Id.

[30] Author's calculations, based on European Automobile Manufacturers' Association (ACEA), *Economic and Market Report: Global and EU auto industry: Full year 2024* (Mar. 2025), at 7, Tbl. 2, https://www.acea.auto/files/Economic_and_Market_Report-Full_year-2024.pdf; and 2024 annual reports of BMW Group, Mercedes-Benz Group, and Volkswagen Group. Sources define Europe to encompass the EU, UK, EFTA, and, in some cases, certain other European countries.

[31] European Commission, *supra* note 3, at 7.

[32] McKinsey, *The automotive software and electronics market through 2035* (Jan. 6, 2026); McKinsey, *Automotive software and electronics 2030* (July 2019).

[33] Alexander Galetovic et al., *An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results*, 42 Telecomm. Policy 263, 266 (2018) (average estimated "cumulative royalty yield" for patent owners collectively in 2016 was 3.4% or $9.60 per device); Alexander Galetovic et al., *Is There an Anticommons Tragedy in the World Smartphone Industry?*, 32 Berkeley Tech. L. J. 1527, 1527, 1532-33 (2017) (as of 2016, average total patent royalty burden on smartphone device represented 3.4% of average selling price); Keith Mallinson, *Cumulative Mobile-SEP Royalty Payments No More Than Around 5% of Mobile Handset Revenues*, WiseHarbor (2015), http://www.wiseharbor.com/pdfs/Mallinson%20on%20cumulative%20mobile%20SEP%20royalties%20for%20IP%20Finance%202015Aug19.pdf (estimating aggregate royalty burden paid by smartphone manufacturers to IP licensors to be approximately 5% of mobile handset revenues); J. Gregory Sidak, *What Aggregate Royalty Do Manufacturers of Mobile Phones Pay to License Standard-Essential Patents?*, 1 Criterion J. Innovation701 (2016) (estimating aggregate royalty burden paid by smartphone manufacturers to IP licensors and reaching upper bound of 4-5%).

[34] *See supra* notes 26 and 33.

[35] Barnett, *Antitrust Overreach, supra* note 1, at 193-94.

[36] Case C-170/13, *Huawei Techs. Co. Ltd. v. ZTE Corp.*, ECLI:EU:C:2015:477 (July 16, 2015).

[37] See, e.g., *Optis Cellular Tech. LLC v. Apple Retail UK Ltd.*, [2025] EWCA Civ 552, Case No CA-2024-000695 (May. 1, 2025) (determining global FRAND license terms after approximately seven years of litigation, in a framework where refusal to accept FRAND terms may result in an injunction); Mathieu Klos, *Federal Court of Justice confirms Munich ruling in VoiceAge vs HMD,* JuvePatent (Jan. 27, 2026), https://www.juve-patent.com/cases/federal-court-of-justice-confirms-munich-ruling-in-voiceage-vs-hmd/ (after lengthy litigation, upholding injunction in favor of SEP owner deemed to be unwilling licensee), and Mathieu Klos, *Munich Higher Regional Court confirms new FRAND guidelines in VoiceAge vs HMD,* JuvePatent (Mar. 20, 2025), https://www.juve-patent.com/cases/munich-higher-regional-court-confirms-new-frand-guidelines-in-voiceage-vs-hmd/ (describing seven years of FRAND litigation between VoiceAge and HMD, starting in 2019)).

[38] On conflicting decisions on this point, see Barnett, *Antitrust Overreach, supra* note 1, at 224.

[39] European Commission, *supra* note 3, at 3.

[40] U.S. Dept. of Justice, U.S. Patent & Trademark Office, and National Institute of Standards and Technology, *Policy Statement on Remedies for Standard-Essential Patents Subject to Voluntary F/RAND Commitments* 5 n.13 (2019); European Commission, *Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee: Setting out the EU approach to Standard Essential Patents* 9-10 (Nov. 29, 2017), https://ec.europa.eu/docsroom/documents/26583; Japan Pat. Off., *Guide to Licensing Negotiations Involving Standard Essential Patents* 1-2 (June 5, 2018), https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/document/seps-tebiki/guide-seps-en.pdf.

[41] For further discussion of protracted SEP litigations given the lack of injunctive relief, see Jonathan M. Barnett & David J. Kappos, *Restoring Deterrence: The Case for Enhanced Damages in a No-Injunction Patent System*, in *5G and Beyond: Intellectual Property and Competition Policy in the Internet of Things* 129-152 (Jonathan M. Barnett & Seán M. O'Connor eds., Cambridge Univ. Press 2023); Bowman Heiden & Nicolas Petit, *Patent "Trespass" and the Royalty Gap: Exploring the Nature and Impact of Patent Holdout*, 34 Santa Clara High Tech. L. J. 179, 221-24 (2018); Richard A. Epstein & Kayvan B. Noroozi, *Why Incentives for "Patent Holdout" Threaten to Dismantle FRAND, and Why It Matters*, 32 Berkeley Tech. L. J. 1381, 1414-21 (2017).

[42] Barnett & Kappos, *supra* note 4141, at 135-42. For similar thoughts, see Kalyan Dasgupta & David Teece, *Protecting Innovation in the Mobile Wireless Ecosystem: Understanding and Addressing 'Hold-Out,* 38 Berkeley Tech. L. J. 313, 314 (2023).
[43] European Commission, *supra* note 4, at 7.
[44] On this point, see Barnett, *Antitrust Overreach, supra* note 1, at 226; J Gregory Sidak, *Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations*, 5 J. Comp. L. & Econ. 123 (2011).
[45] Letter from Charles A. James, Assistant Attorney General, Antitrust Div., Dept. of Justice, to Ky P. Ewing, Vinson & Elkins 12 (Nov. 12, 2002), http://www.justice.gov/atr/public/busreview/200455.pdf (expressing concern over monopsony risk but ultimately concluding that pool was structured to mitigate it). For further analysis, see Jonathan M. Barnett, *From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy,* 55 Jurimetrics 1, 34, 45-46 (2014).
[46] Letter from Renata B. Hesse, Acting Assistant Attorney General, Antitrust Div., U.S. Dept. of Justice, to Michael A. Lindsay, Dorsey & Whitney LLP 7 (Feb. 2, 2015) (responding to request from Institute of Electrical and Electronics Engineers concerning certain amendments to the standard development process), https://www.justice.gov/file/338591/download.
[47] Letter from Assistant Attorney General Makan Delrahim, Antitrust Div., U.S. Dept. of Justice, to Sophia A. Muirhead, General Counsel, Institute of Electrical and Electronics Engineers 8-9 (Sept. 10, 2020) (expressing concern over "the possibility of 'hold out' by patent implementers").
[48] Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 Tex. L. Rev. 1991 (2007).
[49] *See supra* note 33.
[50] Galetovic et al., *An Estimate of the Average Cumulative Royalty Yield, supra* note 33.
[51] Barnett, *Antitrust Overreach*, *supra* note 1, at 203-204.
[52] Tim Pohlmann, *The SEP Couch: Avanci's 5G Vehicle SEP Program*, IPWatchdog (Oct. 19, 2023), https://ipwatchdog.com/2023/10/19/sep-couch-avancis-5g-vehicle-sep-program/
[53] J. Gregory Sidak, *What Is FRAND All About? The Value of Cellular Connectivity in Automobiles*, 36 Berkeley Tech. L. J. 1107, 1138–40 (2021).
[54] *See supra* note 26.
[55] Jason Dedrick & Kenneth L. Kraemer, *Intangible Assets and Value Capture in Global Value Chains: The Smartphone Industry* 17-18 (World Intellectual Prop. Org., Working Paper No. 41, 2017). The data relates to the Apple iPhone 7, Samsung Galaxy S7, and Huawei P9 models.
[56] Barnett, *From Patent Thickets to Patent Networks, supra* note 45, at 44-45 (showing that implied aggregate rate of all MPEG LA royalties borne by large OEM in PC market equals approximately .307% of sales revenue).
[57] *The future of European competitiveness,* Part A, at 6, 14 (European Union 2025),
[58] U.S. Patent & Trademark Office, *supra* note 20.
[59] Jonathan M. Barnett, *Antitrust Mercantilism: The Strategic Devaluation of Intellectual Property Rights in Wireless Markets,* 38 Berkeley Tech. L. Rev. 259, 266, 277-78 (2023).
[60] Id., at 278-307.
[61] Olivia Sophia Rafferty, *Chinese automotive industry associations 'encouraging Chinese automakers not to take a license from Avanci,* ipfray.com, Feb. 24, 2025, https://ipfray.com/chinese-automotive-industry-associations-encouraging-chinese-automakers-not-to-take-a-license-from-avanci
[62] *China accounted for 35.6% of the global automotive market in 2025, a new record high*, CarNewsChina.com, Feb. 5, 2026, https://carnewschina.com/2026/02/05/china-accounted-for-35-6-of-the-global-automotive-market-in-2025-a-new-record-high/ (citing data from China Passenger Car Association).
[63] Khushira Vasant, *BMW, Volkswagen, others under U.S. DOJ antitrust investigation over licensing,* MLex, Mar. 23, 2026, https://www.mlex.com/mlex/antitrust/articles/2456216/bmw-volkswagen-others-under-us-doj-antitrust-investigation-over-licensing