

ONLINE APPENDIX

APPENDIX A: RESTRICTIVE, SELF-SERVING PLATFORM RULES

Table 1: Examples of platform rules restricting complementors' market strategies

Platform Owner	Rule	How the rule restricts complementors
Apple (iOS App Store)	<i>Mandatory use of Apple's in-app purchase system:</i> If you want to unlock features or functionality within your app (by way of example: subscriptions, in-game currencies, game levels, access to premium content, or unlocking a full version), you must use in-app purchase. Apps may not use their own mechanisms to unlock content or functionality." (Section 3.1.1, App Store Review Guidelines, April 2023)	Mandates that all initial app purchases occur in the App Store and that transactions for digital goods or services within the app use Apple's proprietary payment system, preventing complementors from using or creating alternative distribution and payment channels.
Google (Play Store)	<i>Mandatory use of Google's in-app payment system:</i> "Developers charging for apps and downloads from Google Play must use Google Play's payment system." (Google Play Developer Policy, September 2021)	Google's policy prevents complementors from using alternative payment methods and from retaining larger revenue shares by avoiding Google's fees.
Microsoft (Xbox Store)	<i>Imposing a commission on sales through Xbox Store:</i> "A 30 percent commission on all apps, games, and in-app purchases on Xbox consoles." (Microsoft Xbox Store Rules, October 2023)	Microsoft's rules stipulate that all game developers must use the Xbox Store to sell their digital games, preventing complementors from using independent stores or establishing alternative distribution channels.
Meta (Oculus VR)	<i>Favoring sales through the Oculus Store:</i> "Meta Platforms Technologies provides several options for selling and distributing apps on our platform" (it then goes on listing two Meta-owned stores; while sideloading is possible, it comes with disadvantages for the side-loaded apps) (Oculus Developer Guidelines, 2023).	Meta's rules stipulate that developers either sell their apps through Meta's own store or through a less-desirable sideloading option (e.g., sideloaded apps do not appear in the Quest's "home library", constraining effective alternative distribution.

APPENDIX B: KEY FIGURES—APPLE, SPOTIFY, AND EPIC

	Apple	Spotify	Epic
Business model	Consumer technology products including its main product iPhone	Ad- and subscription-based music-streaming platform	Video game development and distribution
Revenue	\$365.82 billion worldwide, thereof \$192 billion for the iPhone, and \$25.4 billion for the App Store	€9.66 billion worldwide across platforms	\$5.36 billion worldwide across platforms
Employees	154,000	6,617	4,147
Users	1.23 billion iOS users (installed base of iPhones)	380 million monthly-active users across platforms and devices	500 million registered Fortnite users across platforms, 116 million on iOS*

Note: All figures are from 2021, a year marked by significant conflicts between complementor giants and Apple (Source: Statista)

*before Fortnite was banned from the App Store in September 2021.

APPENDIX C: DETAILS ON DOCUMENTS QUOTED IN FINDINGS AND APPENDICES

No.	Description
[D1]	Court document: Epic's opening demonstratives in Apple vs. Epic case, citing internal App Store satisfaction study.
[D2]	Court document: Personal communication between Apple's head of marketing (Phil Schiller) and Apple's CEO (Steve Jobs), Apple vs. Epic case.
[D3]	Court document: Testimony of Phil Shoemaker, Director of App Store Review, US House Investigation of Competition in Digital Markets.
[D4]	Court document: Phil Shoemaker, Director of App Store Review, Reflections on the history of the App Store, Apple vs. Epic case, Exhibit No. PX-0099.
[D5]	Press release: Apple's official statement on introduction of subscriptions for new reader app category, published February 15, 2011.
[D6]	Court document: Personal email communication between Matt Fisher and Edy Cue (both Apple senior leadership), Apple vs. Epic case, Exhibit No. DX-3363
[D7]	Press article: The Guardian reporting about the rumored launch of Apple's own music streaming service, "Apple to launch streaming service to compete with Spotify", Published March 26, 2015.
[D8]	Court document: Spotify email from July 08 2015 calling customers to sign-up outside the Spotify app. Email used as evidence in investigation into Apple's anticompetitive behaviors by EU Commission;
[D9]	Press article: Wall Street Journal reporting about Spotify's small fees for creators, "Spotify Considers Allowing Some Artists to Withhold Music From Free Service," Published December 08, 2015.
[D10]	Press article: Apple blog Daringfireball accusing Spotify of hypocrisy over fees for creators, Published June 30, 2016.
[D11]	Blog post: David Smith—a well-known indie developer—complaining about the shortcomings of the iOS App Store and the App Store Review process, Published November 15, 2015.
[D12]	Podcast: iOS developers publicly discuss problems and shortcomings of App Store, Published November 04, 2015.
[D13]	Official statement from Phil Schiller (Head of marketing, Apple) on revision of ASRG issued in June 2016, Published in The Verge as part of a profile of the revamped App Store.
[D14]	Timeline of key events in the relationship between Apple and Spotify, recorded and published by Spotify on its website as part of its media campaign against Apple, accessed via archive.org.
[D15]	Written legal complaints: Spotify's letter to Apple complaining about grave harm that Apple's rejections cause, Original letter written by Spotify lawyer Guitierrez and excerpts from the letter leaked by Recode on June 30, 2016.
[D16]	Public statement: Senator Elizabeth Warren accusing Apple of anti-competitive practices making it difficult for competitors like Spotify to offer competing streaming services, recorded by Recode, June 29, 2016.
[D17]	Press release: Spotify's official public reaction explaining the grounds for its formal complaint against Apple's business practices at the EU Commission, released on March 13, 2019.
[D18]	Timetoplayfair.com: A dedicated website launched by Spotify as part of its PR campaign against Apple's anticompetitive conducted, first launched March 13, 2019, accessed via archive.org.
[D19]	Press article: BusinessInsider article that describes Apple's actions against Spotify as one instance of problematic and potentially anticompetitive business practices on Apple's part, "Spotify has bloodied Apple's nose once before. Now, it has a chance to cut its \$853 billion rival down to size," published March 13, 2019.
[D20]	Press article: TechCrunch commentary criticizing Apple for sidestepping addressing Spotify's substantive claims, "Apple addresses Spotify's claims, but not its demands," published March 15, 2019.
[D21]	Official statement: The Subcommittee on Antitrust, Commercial and Administrative Law (US House) announcing its investigation into competition problems in digital markets, released June 03, 2019).
[D22]	Transcript of sworn testimony: Apple CEO Tim Cook answers questions about Apple's powerful position in the App Store in front the US House Antitrust Subcommittee, July 29, 2019.
[D23]	Transcript of sworn testimony: David Heinemeier Hansen (Co-founder, Basecamp) describes Apple's anticompetitive business practices in front of the US House Antitrust Subcommittee, January 17 2020.
[D24]	Press release: EU commission announcing investigation into Apple's App Store rules, released June 16, 2020.
[D25]	Public statement: David Heinemeier Hansen (Co-founder, Basecamp) providing background on Apple's rejection of its app, published via Twitter June 15, 2020).
[D26]	Public statement: Phil Schiller (Head of the App Store, Apple) defending the rejection of Basecamp's 'Hey' app in interview with TechCrunch, "Interview: Apple's Schiller says position on Hey app is unchanged and no rule changes are imminent," published June 18, 2020.

[D27]	Public statements: Collection of 90 Apple-critical comments publicly made by iOS developers in the wake of the rejection of the 'Hey' app, collected by Apple blogger MJ Tsai, "'HEY Rejected From the App Store' (published June 16, 2020), 'It doesn't Work' (published June 19, 2020).
[D28]	Press article: Apple blogger John Gruber accusing Apple of misusing the power it has over smaller developers, "The Flimsiness of 'Business vs. Consumer' as a Justification for Apple's Rejection of Hey From the App Store for Not Using In-App Purchases," published June 16, 2020.
[D29]	Court document: Internal slide deck from Epic describing Project Liberty, Apple vs. Epic case, Exhibit No. DX-3774.
[D30]	Court document: Project update slide deck from Epic describing status of 'Project Liberty', Apple vs. Epic case, Exhibit No. DX-4561.
[D31]	Court document: Internal communication, i.e., email from Matt Weissinger to Tim Sweeney (Epic, CEO) outlining goals of Project Liberty, exhibit No. DX-4477.
[D32]	Sworn testimony: Joseph Kreiner (VP of Business Development Epic), Exhibit No. DX-3032.
[D33]	Public statement: CAF listing anticompetitive business practices of Apple on new website, launched Sep 26, 2020, accessed via archive.org.
[D34]	Court document: Internal communication, i.e., emails from Matt Weissinger (VP of Marketing, Epic) discussing the goals, logistics, and costs for founding a coalition,, Apple vs. Epic case, Exhibit No. DX-4177).
[D35]	Court document: Contract, i.e., Statement-of-work between Epic and Messina Group consulting about CAF, Apple vs. Epic, Exhibit No. DX-3297.
[D36]	Court document: Internal communication, i.e., email trail between high-level Apple executives about possible changes to the App Store, Apple vs. Epic, Exhibit No. DX-5627).
[D37]	Apple.com/app-store: A dedicated website describing benefits of the App Store for users and developers, launched on September 24, 2020.
[D38]	Public communication: Apple whitepaper about benefits of App Store for users and developers, "Building a Trusted Ecosystem for Millions of Apps—The important role of App Store protections," published June 2021.
[D39]	Public statement: Transcript of interview with Tim Cook (Apple, CEO), published April 05, 2021, New York Times (Sway Podcast).
[D40]	Public statement: Blogpost by iOS developer Marco Arment criticizing recent changes to the App Store.
[D41]	Press article: Apple blogger John Gruber observing resentment among iOS developers, published June 09, 2020.
[D42]	Court documents: Bill of indictment from joint lawsuit of French DCRF and France Digitale, July 01 2019.
[D43]	Official statement: Nicolas Brien (CEO, France Digitale) on lawsuits vs. Apple, Politico.eu, published June 23, 2021.
[D44]	Press release: EU Commission, Official statement on Antitrust ruling against Apple, released April 30 2021.
[D45]	Press release: UK Competition and Market Authority, Official statement on its investigations into Apple's App Store, released March 04, 2021.
[D46]	Press release: Japan Fair Trade Commission, Official statement on its investigations into Apple's App Store, released Sep 02, 2021.
[D47]	Public communication: Transcript of interview with Margaret Vestager, EU Commissioner, published June 10, 2021, New York Times.
[D48]	EU law proposal: Digital Market Act, published Dec 15, 2020.
[D49]	US law proposal: Open App Market Act, introduced in Senate, August 11, 2021.
[D50]	Court document: Legal settlement between Apple and Japan Fair Trade Commission, published August 26, 2021.
[D51]	Press release: Apple on implications of legal settlement with Japan Fair Trade Commission, published Sep 02, 2021.
[D52]	Court document: Ruling of the US District Court for Northern District of California, Apple vs. Epic case, published Nov 09, 2021.
[D53]	Court document: Apple's appeal of the ruling in the Apple vs. Epic case, published December 08, 2021.
[D54]	Court document: Ruling of the US Court of Appeals for the Ninth Circuit, Apple vs. Epic case, published November 14, 2022.
[D55]	Press release: Eu Commission, Official clarification of antitrust ruling against Apple confirming the ruling against the NLR, dropping its objections against mandatory use of IAP and associated commissions.
[D56]	Court documents: Internal slide deck from Epic describing Project Liberty, Apple vs. Epic case, Exhibit No. DX-4018.
[D57]	Court document: Notice of compliance in which Apple lays out how it will implement the ruling in the Epic vs. Apple case, published January 16, 2024.
[D58]	Public statement: Epic announces return of Fortnite to iOS (in Europe), published January 25, 2024.
[D59]	Public statement: Epic CEO Tim Sweeney in a tweet commenting on Apple's compliance plans with EU regulation, published Jan, 25, 2024.

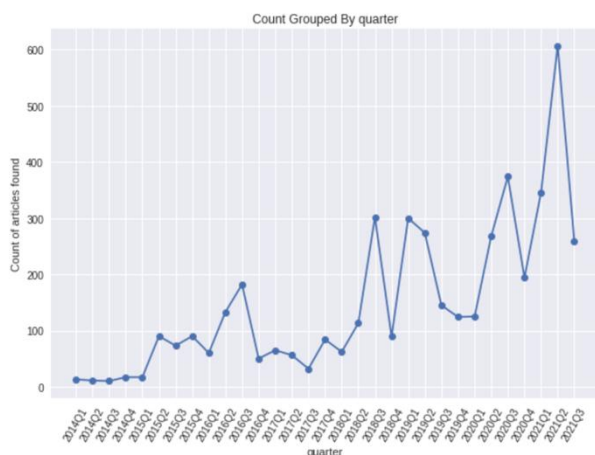
[D60]	Press release: Apple criticizing the EU ruling, “The App Store, Spotify, and Europe’s thriving digital music market”, published March 04, 2024.
[D61]	Public statement: Epic CEO Tim Sweeney in a tweet commenting on Apple’s compliance plans with EU regulation, published August 08, 2024.

APPENDIX D: NEXIS DATA LAB® QUERIES

Methodological details for queries

Description	
Theme	- Each query focused on a different theme - Themes were primarily emerging from our historic analysis of primary and secondary source material
Search string	- Search strings designed to reflect content of each theme in a set of keywords - Iterative refinement of keywords as we became more familiar with how media was covering each theme - Use of Boolean operators “AND” and “OR”, and the near/x function to select articles in which two keywords appear in close proximity to each other - Example: “Apple” near/5 “Spotify” looks for articles in which the terms Apple and Spotify occur within a proximity of 5 words
Timeframe	- We plotted the number of articles returned for each query in two distinct histograms: - Timeframe 1: 2009-September 2021 (granularity: by year) - Timeframe 2: 2014- September 2021 (granularity: by quarter)
Coverage	- Covered languages: Publications in English (Query 1-4) or French (Query 5) - Covered outlets: Newspapers, newswires and press releases, industry trade press, magazines and journals, news transcripts, aggregate news sources, blogs, web-based publications, and news

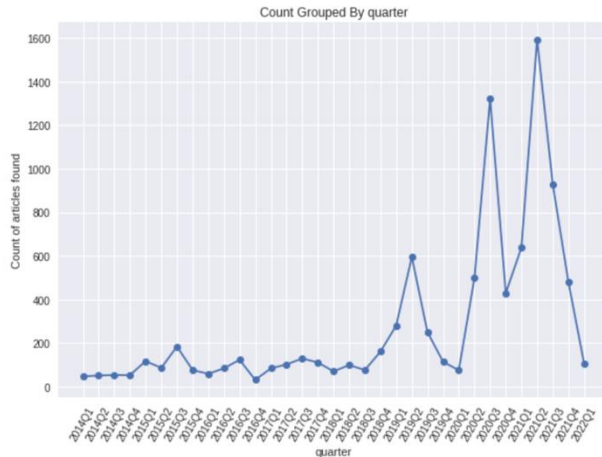
Themes, search strings, and returned articles for queries



Search string: (Apple near/5 Spotify)
AND ("Appstore" OR "app-store" OR
"platform" OR "app store") AND ("conflict"
OR "war" OR "dispute" OR "competition"
OR "fight" OR "battle" OR "rivalry" OR
"combat" OR "clash")

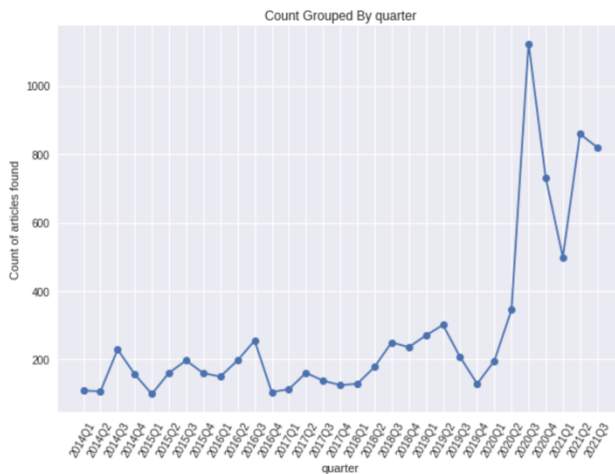
Returned articles: 4,696

(1) Theme 1: Apple vs. Spotify



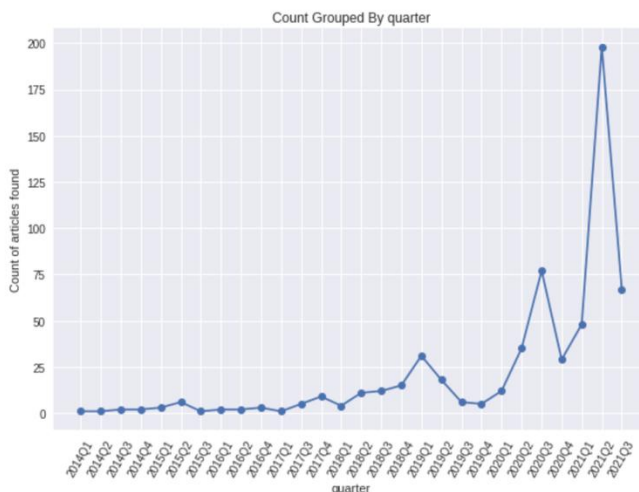
Search string: "Apple" near/17
 (("Antitrust" OR "monopoly" OR "power")
 AND ("Appstore" OR "app-store" OR "app
 store"))
Returned articles: 10,923

(2) Theme 2: Apple Antitrust/Monopoly Conversation



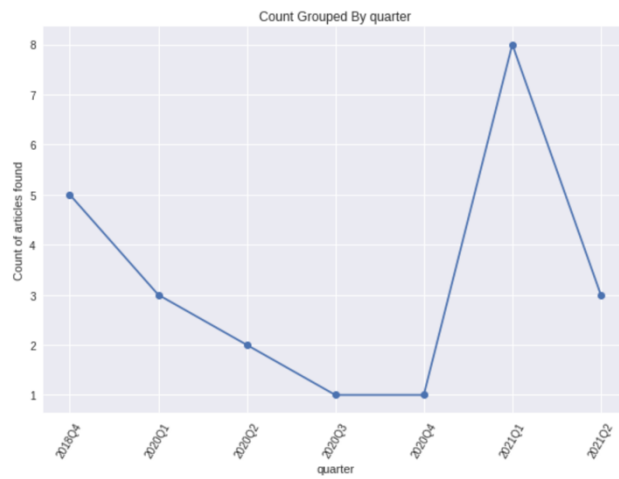
Search string: ("Apple" OR "Appstore"
 OR "app store" OR "app-store") near/5
 (("apple tax" OR "commission" OR "fee"
 OR "30 percent" OR "30%" OR "thirty
 percent") OR ("in app payment" OR "IAP"
 OR "in-app payment" OR "payment") OR
 ("payment system" OR "link out" OR
 "antisteering" OR "anti-steering")) AND
 ("3rd-party" OR "3rd-parties" OR "3rd
 party" OR "3rd parties" OR "third-party"
 OR "third-parties" OR "third party" OR
 "third parties" OR "app developer" OR
 "app developer" OR "developer")
Returned articles: 18,320

(3) Theme 3: Apple-specific antitrust issues



Search string: "Apple" near/25 ("appstore
 rules" OR "rules" OR "rule enforcement")
 AND ("arbitrary" OR "abusive" OR "abuse"
 OR "inconsistent" OR "random" OR
 "uneven" OR "disproportionate" OR
 "unbalanced") AND ("appstore" OR "app
 store" OR "app-store")
Returned articles: 680

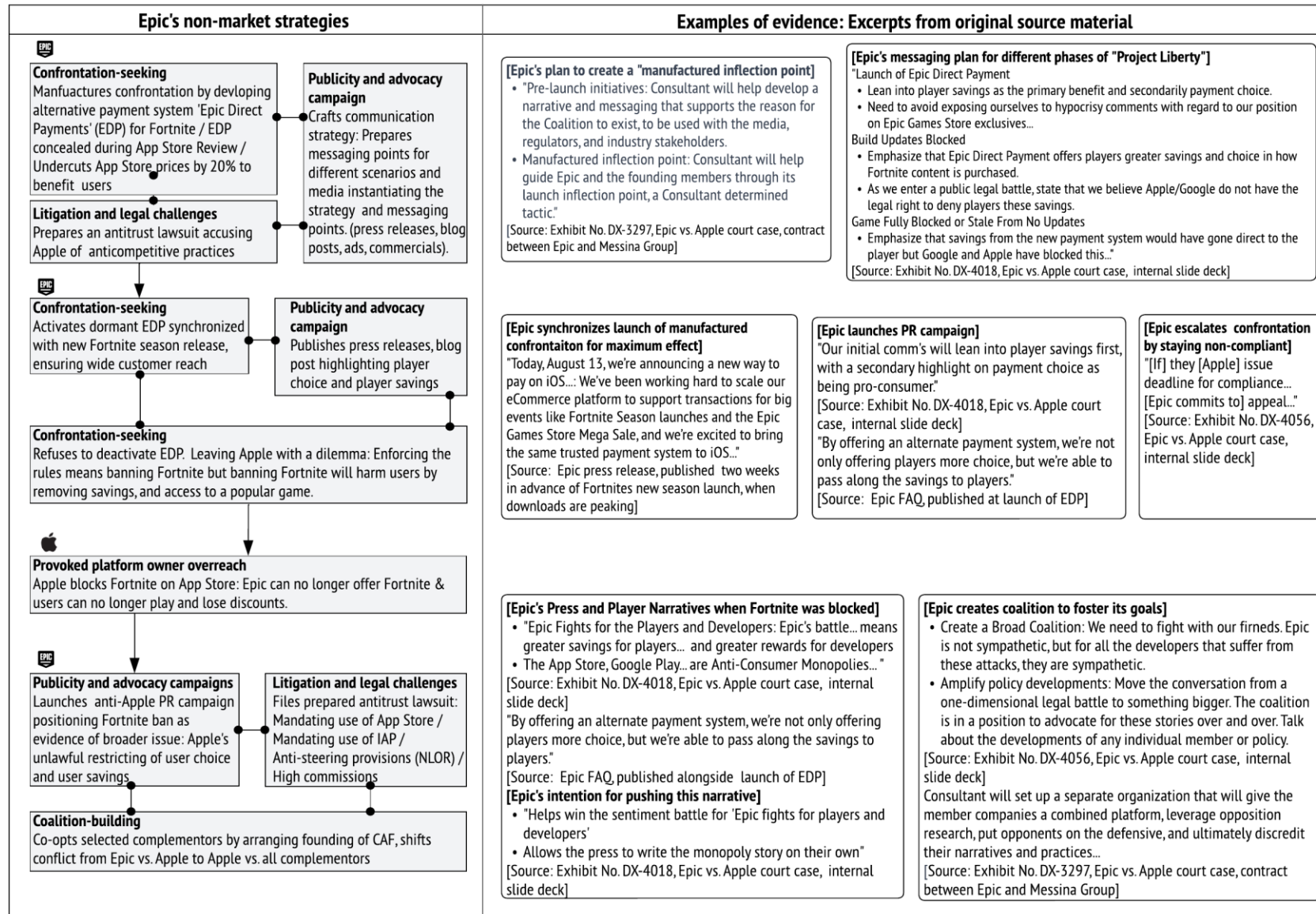
(4) Theme 4: Apple's arbitrary Appstore rules and rule enforcement



Search string: "France Digitale"
near/25 ("CAF" OR "Coalition for App
Fairness" OR "Coalition App Fairness" OR
"Coalition") (*original query in French*)
Returned articles: 23

(5) Theme 5: France Digitale joins CAF (only French-speaking media)

Appendix E: Epic's counter-orchestration: Designing and timing non-market attacks in Project Liberty



APPENDIX F: From Empirics to Theory—Complementor Giant Counter-orchestration & Stock Variables

Excerpts from empirical source material	Concept development/refinement: Codes and subcodes emerging from initial coding	Concepts emerging from focused coding
Communications Phase 1: July - August 1. Define our Cause • Create our Policy Points and Establish them Publicly: Work with comm's team and Greenbrier to create a list of advocacy points to establish a "Get rid of the tax!" along with some additional issues to avoid a one-dimensional argument. • Research Positions and Support them with Media: Work with Greenbrier and the newly formed coalition to develop research to help establish our position (Are prices too high? Do players care about developers?), then seed with press and run ads to help generate awareness around our positions. 2. Establish a 501c4 Organization to Advocate on Behalf of Our Policy Issues • Work with Established Providers: Partner with Greenbrier to help manage the organization. This will take one to two months to get started, and require \$80K - \$100K to get the coalition initially funded, with an expected life of project cost between \$400K - \$700K. • Create a Broad Coalition: We need to fight with our friends. Epic is not sympathetic, but for all of the developers that suffer from these attacks, they are sympathetic. This includes all of our gaming and app partners who are losing out due to unfair platform/pricing practices. 3. Create the Sustain Campaign • Build the Press Cycle for Alternate Perspectives: Create messaging materials and stories to ensure we're not the only voice in the cycle, and the conversation is much larger. When it comes to the press, that results in more neutral to positive coverage. • Amplify Policy Developments: Move the conversation from a one-dimensional legal battle to something bigger. The coalition is in a position to advocate for these stories over and over. Talk about the developments of any individual member or policy. Source: Exhibit No. DX-4561 from the Epic vs. Apple court case, excerpt taken from an internal Epic slide deck describing status of 'Project Liberty • Manufactured inflection point: Consultant will help guide Epic and the founding members through its launch inflection point, a Consultant determined tactic. Coalition Launch The proven and tested Coalition formula is as follows: established to correct a wrong + media interest + sustained public attacks = success. Thus, for the Coalition to be effective, Consultant will help to establish a reason for it to exist (either organic or manufactured), and introduce the campaign with a widespread media and marketing attention moment followed by a long tail of recurring media interest inflection points. Source: Exhibit No. DX-3297 from the Epic vs. Apple court case, excerpt taken from the statement-of-work between Epic and Messina Group (Consultant) • Pre-launch initiatives: Consultant will help develop a narrative and messaging that supports the reason for the Coalition to exist, to be used with the media, regulators, and industry stakeholders.	<u>Publicity and advocacy campaign combined with Coalition-building</u> ▪ Public challenge of platform rules: Epic campaigns to 'Get rid of the tax!', highlighting injustice of commissions ▪ Framing platform rules as unjust: Epic prepares "messaging materials and stories" to "move the conversation from a one-dimensional legal battle to something bigger" ▪ Mobilizing media through "seed[s] with press" and "ads" <u>Epic's attacks designed to instigate responses from others</u> ▪ Epic builds CAF with goal to mobilize developers ▪ Epic builds CAF to benefit from their popularity ▪ CAF created in order to "build the press cycle" and to ensure that "the conversation is much larger" <u>Confrontation-seeking deliberately combined and synchronized with Publicity and advocacy campaign</u> ▪ Epic creates a "manufactured inflection point" (i.e., the Fortnite scandal) that needs to be corrected ▪ Manufactured inflection point is directly followed by sustained media campaign <u>CAF enables other complementors to attack Apple</u> ▪ Epic prepares Apple-critical talking points and sustained public attacks ▪ CAF provides "messaging material" and "rapid response tools" for use by other third-parties	<u>Counter-orchestration</u> ▪ Epic carefully designs various non-market attacks to interlock ▪ Epic carefully times non-market attacks for maximum effect <u>Issue confluence</u> ▪ CAF makes complementors (appear to) converge on problems, solutions, motivations, and responsibility <u>Public opportunities</u> ▪ Fortnite scandal provides stage for complementors and users to air grievances and support for Epic <u>Legitimacy</u> ▪ Epic's activities and claims legitimized by 3rd-party support ▪ Epic's activities and claims legitimized by media scrutiny

Appendix G: Analytic journey from descriptive codes to final theoretical model

Stage 1 - Early iterations of initial and focused coding (Movement phase)	
06/2017-06/2021	Analytic focus: Initial mapping of complementor protests against Apple (Who? What? When?) Descriptive codes (subcodes): Actors (Individuals, Organizations, Institutions) / Reach of actors (global, local) / Outcomes (Rule changes by Apple, new regulation proposals by policymakers) Key insights: Protest actions appear coordinated and inter-dependent, resembling an emerging movement.
07/2021 - 12/2022	Analytic focus: Use social movement lens to acquire a deep understanding how protests culminate in rule change Emergent codes (subcodes): Movement activities (Lamenting, Demanding, Manufacturing confrontations, Legal mobilizing, Giving Direction), Types of enacting movement activities (reactive engagement, deliberate combination, synergistic integration), Movement actors (Intermediate 3rd-parties, Small 3rd-parties), Protest opportunities, Public awareness, Support through lawmakers, Support through regulators Key insights: Movement grows broader and more coordinated / Changes in public conversation and support from lawmakers and regulators synchronized with movement activities / Large, resourceful complementors emerge as leaders, challenging the notion of decentralized, organic emergence usually associated with movements
Stage 2 - Later iterations of Initial and focused coding (Non-market strategy phase)	
01/2023-08/23	Analytic focus: Re-code using non-market strategy lens to foreground role of large, resourceful complementors Emergent concepts (subconcepts): Core category “counter-orchestrating” (Fitting Protest Activities, Interweaving Peripheral Actors) / Protest activities (Problematizing, Legal mobilizing, Manufacturing confrontations, Coopting complementors) / Peripheral actors (Small complementors / Media / Government regulators) Key insights: Complementor giants orchestrate rule change by engaging in a number of non-market tactics / Non-market framing makes their central role explicit.
10/23-04/24	Analytic focus: Unpack the process through which complementor giants improve the chances of rule change Emergent concepts (subconcepts): Non-market tactics (Problematizing, Manufacturing confrontations, Legal mobilizing, Coopting complementors) / Stakeholder support (Complementor support, user support, media support, regulatory support) / Provoked rule enforcement / Levers of complementor influence (protest opportunities, ties, counter-legitimacy of complementor demands) / Foundations of platform governance (platform rules, salience of platform governance tensions, legitimacy of platform owner) / Chance of complementor-accommodating rule change Key insights: Complementor giants orchestrate rule change by deliberately designing and pacing non-market tactics / Complementor giants deliberately instigate support from external stakeholders and provoke responses from the platform owner
Stage 3 – Mechanisms articulation and final process model	
07/24-11/25	Analytic focus: Explain the process through which complementors effect rule change Final concepts (subconcepts): Mechanisms of rule change (Collective Action Cycle, Exposure Cycle, Long-Term Accumulation Cycle) with complementor giant counter-orchestration at their center / Responses (Regulatory and media scrutiny, Complementor and user opposition, Platform owner overreach) / Collective efficacy (Public opportunities, Issue convergence, Salience of tensions, Legitimacy) / Non-market attacks (Corporate political activity, publicity and advocacy campaigns, Coalition-building, Confrontation-seeking) Process explanation of complementor-driven platform rule change: Complementor giants initiate and sustain the Collective Action and Exposure Cycles, which spark reinforcing responses from ecosystem participants (complementors and users) / External stakeholders (regulators and media), and the platform owner, thereby creating mounting pressure and momentum for rule change (Long-Term Accumulation Cycle).

Appendix H: Empirical Illustration: Epic's careful scenario planning in Project Liberty (from internal presentation of Epic's communication strategy (Court Document, DX-4018))

Phase 1-3	Reaction	Proposed Messaging
1) Launch of Epic Direct Payment	- Sentiment will be largely positive. - Players and press will highlight 20% savings. - Sentiment will be negative in certain regions where Epic Direct Payment is unavailable.	- Lean into player savings as the primary benefit and secondarily payment choice. - Need to avoid exposing ourselves to hypocrisy comments with regard to our position on Epic Games Store exclusives. - Must be clear that console savings are automatically applied to all players.
2) Build Updates Blocked	- Sentiment will be positive to neutral as long as players can continue to play on their devices. - Press will begin speculating around the potential legal battle that looms.	- Emphasize that Epic Direct Payment offers players greater savings and choice in how Fortnite content is purchased. - As we enter a public legal battle, state that we believe Apple/Google do not have the legal right to deny players these savings.
3) Game Fully Blocked or Stale From No Updates	Free players (55% on iOS) will react negatively to being blocked from the game (no benefit). Paid players (45% on iOS) may understand the benefit to the battle (20% savings), but will also be blocked from playing something they love, creating mixed sentiment.	- Emphasize that savings from the new payment system would have gone direct to the player but Google and Apple have blocked this. - If we are entering a protracted battle, we will enter into a Paragon situation: need to offer refunds for all Apple/Google users as they can no longer play the game.