

# AppLovin (NASDAQ: APP)

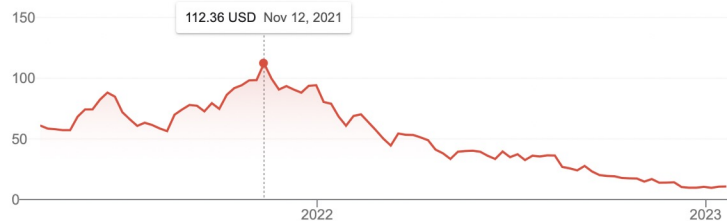
Advay Mohindra, Jay Sivadas, Jeremy Lu,  
and Jiwon Lee

# Company Overview

## Business

- Ad Exchange: online marketplace where publishers make ad inventory available while brands/ad agencies bid on and purchase it
  - Demand-Side Platform (DSP): aggregates ad inventory from several exchanges in one place, allowing for greater efficiency for marketers
  - Sell-Side Platform (SSP): allows publishers to sell ad inventory across different exchanges
  - Data Management Platform: allows brands to store relevant data in one place to use whenever they run an ad campaign

## Price Summary



*APP Stock Chart (down 90.38% from its high in Nov '21)*

## Leadership

- Adam Foroughi (CEO, Co-Founder)
- Herald Chen (President, CFO)
- Andrew Karam (VP of New Initiatives, Co-Founder)

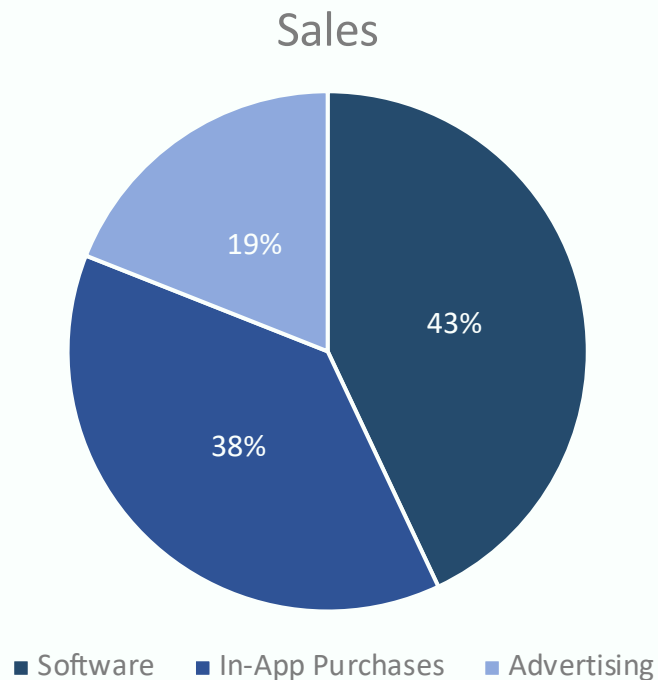
The company is currently founder-led and much of the shares are owned by the leadership, hence enabling them to align shareholder and management incentives

# Company Overview (Cont.)

## Customer Base

- APP develops and owns 350 free-to-play (F2P) mobile games across 19 studios and 5 genres
  - 200 million monthly active users (MAU)
  - 3 million monthly active in-app payers
  - #1 in downloads for all mobile game developers in 2021
- Generates revenue through in-app purchases and advertising to users on these platforms

## Revenue Breakdown



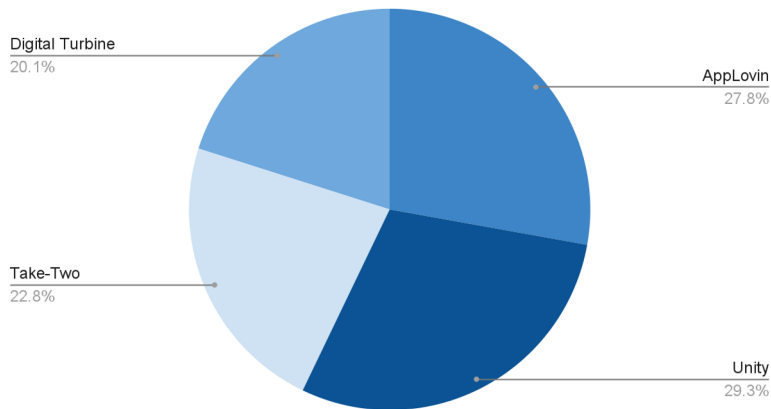
# Industry Overview

## Products

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## Main Players

Market Share (Mobile Gaming Ad Tech)



# Industry Trends

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## Reliance on First Party Data

- Increasingly relevant following the announcement of Apple's App Tracking Transparency (ATT) rule in early '21

## Expanding Popularity of Immersive Ads

- Forecasts of digital video consumption surpassing TV viewing time by 2026<sup>1</sup>
- Introduction of shoppable video ads, livestream ads, and mobile game ads foster real-time connection

## Shift from Console to Mobile Gaming Spending

- Smartphone games currently account for 45% of global video gaming revenue
- With smartphone penetration is continuing its steady growth, mobile games revenue is expected to surpass \$100bn by 2023<sup>2</sup>

1. Statista, "Average daily time spent with video content among adults in the United States from 2019 to 2026, by device"

2. Statista, "Mobile gaming market in the United States - Statistics & Facts"

# Investment Thesis

# Investment Thesis Summary

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## Quality Data Advantage

- APP collects data from its >200mn mobile game users that feeds quality first-party data to its recommendation algorithms

## Unique Application Ecosystem

- APP's software stack is uniquely integrated at scale, thus providing a competitive advantage against competitors

## Market Overreaction

- Market overreaction to macroeconomic and industry headwinds do not reflect APP's intrinsic values

## Margin Expansion

- Software revenue (65% margins) will be a majority of total revenue in the future instead of apps revenue (14% margins)

APP is trading at 2.2x EV/Revenue and 5.9x EV/EBITDA while competitors are trading at 3.4x and 13.9x median respectively, indicating the market currently views it as an inferior player in the space. We believe that as a leader in the industry with multiple growth runways, the company is significantly undervalued compared to its competitors' valuations as well as based on APP's own potential future cash flows.

# Thesis Point 1: Competitive Advantage of Data



# Niche and Quality Data

APP has an advantage due to its niche data and product offering compared to larger competitors

- APP collects data from user behavior directly from their 300+ mobile games and >200mn users
  - APP's DSP (MAX) and SSP (AppDiscovery) have also scaled significantly, increasing the number of data points
- All these sources are directly related to APP's advertising as their recommendation algorithms are built and trained on this data
- In particular, APP's data is related to mobile games. They can build their models off this quality data, creating a “content fortress”
- Quality data is so sought after that DSPs like Google, Snapchat, and LinkedIn purchase this data from APP



# Advantaged Machine Learning Models

APP has been able to build recommendation algorithms of significantly higher quality than competitors

- First-Party Data: Collected by companies through a direct relationship with consumers
  - For example, when someone plays a mobile game, APP is able to collect data on their play style, risk tolerance, and in-app purchases
- Machine learning models are built off the amount and quality of data<sup>3</sup>
  - More data means lower variation in estimates
  - Higher-quality data is used to build more predictive inputs into the model, hence improving the machine model's efficacy
  - Low-quality data, even in large sums, leads to poor predictive models
  - Better recommendation models means better ad conversion rates, leading to customer satisfaction, higher NRR for APP, and improved cash flow

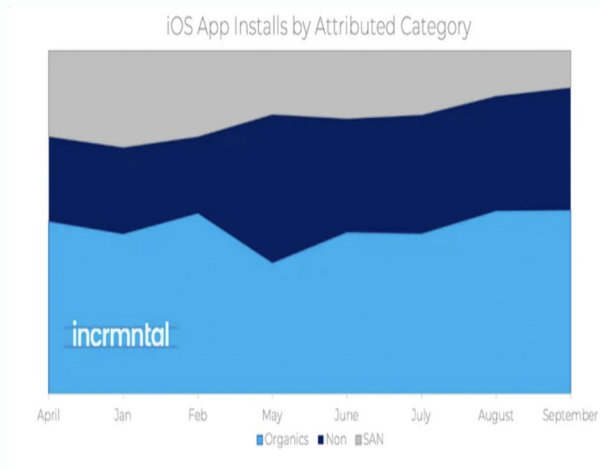
# App Tracking Transparency

APP is in a defensive position to handle changes in recent regulations due to its quantity of first-party data from its 350+ mobile applications

- Apple's introduction of ATT furthered this competitive discrepancy through limitations of third-party data
  - Third-party Data: Comes from sources not directly related to app or website usage
  - For example, the cookies that Google uses to track someone across multiple websites
- In 2021, Apple introduced a new policy (ATT) which limited the collection/access of third-party data by asking individuals for their consent on being tracked
  - 62% of users refuse to allow third-party data
  - This hurt advertisers as they could no longer rely on third-party data to optimize recommendation algorithms, leading to worse targeting, lower ROI and decreased spending for advertisers

# Market Share Cannibalization

- ATT has pushed the reliance to data being generated on-platform
- Mobile game focused ad tech companies (Non) are taking significant market share in the mobile advertising space from general advertisers like Meta and Google (SAN) since ATT

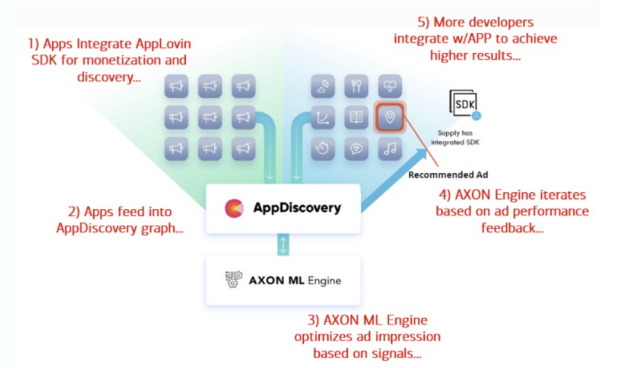


# Thesis Point 2: Unique Application Ecosystem

# Flywheel Effect of Product Offering

Improved recommendations increases ROI for both demand and sell side products

- Unique integration of first-party data and the data from developers on its demand-side platforms (DSPs)
- The integration of the different data forms improves the quality of inputs and continuously improves the recommendation algorithms
  - Will continue to improve as the DSP scales
  - Creates the “flywheel” effect



# Scale Advantage

## Data Quality Advantage

- APP's portfolio of 200+ mobile games is wider than other players in the space such as Zynga
- This strategy allows for collection of data across more genres while also minimizing APP's dependence on a few titles
- APP was the #3 source of iOS app installs in Jan behind Google & Meta, but ahead of competitors Unity & ironSource<sup>5</sup>

## Data Integration

- APP has the more users on apps than other competitors.
  - Its DSP is also more scaled than competitors like Zynga and Digital Turbine.
- This larger integrated scale of first-party data as well as scale of ad tech software enables APP to have an advantage over other players in the space
- While other companies have the “flywheel effect”, APP's first-mover advantage in this niche puts it in a unique competitive positioning

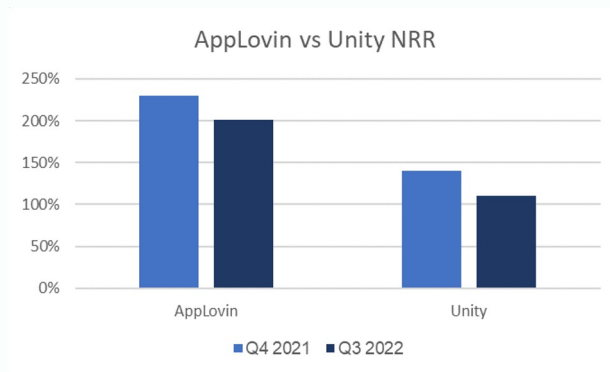
# APP's Superior Software

## Current Penetration

- Unity has much larger penetration on the DSP side (750,000 apps vs 150,000 for AppLovin)
- This is because Unity has a unique integration where their customers typically automatically integrate their developed games into the Unity DSP ecosystem

## Opportunity

- Unity lacks access to first-party data like APP to fuel their recommendation algorithms
  - Their Net Retention Rate is currently 110% compared to APP's 166% (which is 201% excluding non-recurring publisher bonuses)<sup>6</sup>
- Despite the scale of their DSP software, Unity has not been able to drive organic growth at the same rate APP has, which is evident by their NRRs
  - As APP's DSP grows, this discrepancy will be furthered





# Thesis Point 3: Market Overreaction to Headwinds

# Market Overreaction

## App Tracking Transparency (ATT)

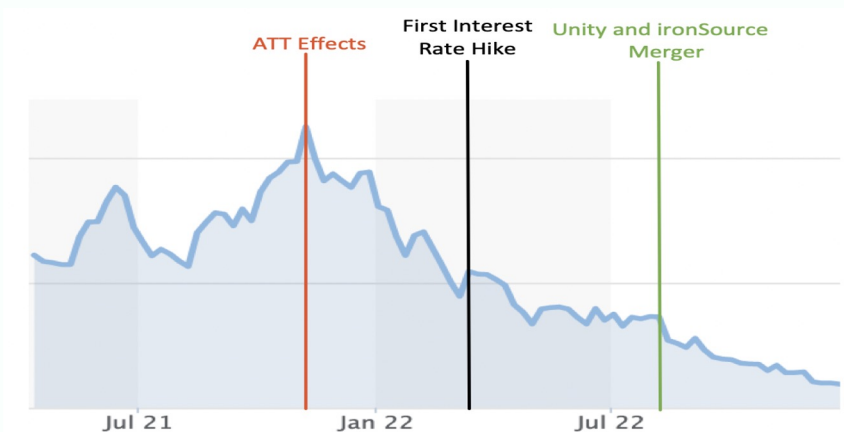
- ATT limits the ability for mobile developers to collect third-party data
  - This reduces data inputs, impacts recommendation algorithms, and hurts advertisers' conversion rates

## Macroeconomic Headwinds on Ad-Spend

- Investors are concerned about macroeconomic headwinds that is predicted to limit consumer discretionary income
  - This may result in less in-app purchases as well as declining ad spend

## Competition from Unity-Ironsource Merger

- APP's competitors, Unity and IronSource, completed a merger in November 2022
- Fearing increased competition from the consolidation of large competitors, the market devalued APP

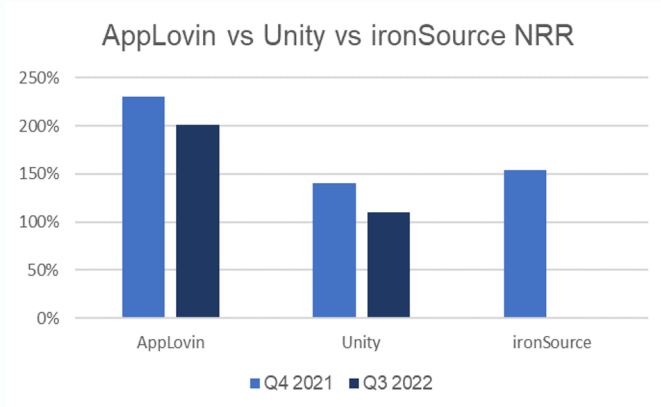


# Overreaction to Potential Competitive Pressures

The market significantly overreacted to the potential competitive pressures from the Unit-Ironsource merger

## Merger Concerns

- APP's largest and 4th-largest competitors completed a merger in November 2022
  - The market was concerned about consolidation into one large player
  - Unity also gains access to ironSource's portfolio of apps through SuperSonic



## APP's Unique Defensive Positioning

- The market priced in this competitive risks without taking into account the unique factors of APP
  - APP has significantly higher Net Retention Rates than Unity and ironSource
  - APP is also the largest mediation platform (has the largest integration of different ad networks)
  - Both DSPs & SSPs prefer APP as shown by NRRs and APP's scale as a mediator
- There is also significant risk in the merger and it will take significant time periods before a successful merger can properly compete with APP

# ATT's Limited Impacts

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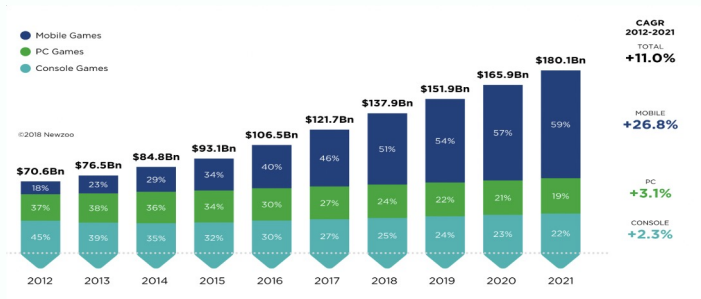
- APP is uniquely protected from ATT due to its limited reliance on third-party data for machine learning recommendation models
- The market discounted APP at a similar scale to competitors that don't have similar data advantages

# Market Overreaction to Macroeconomic headwinds

Investors overreacted to macroeconomic uncertainty regarding ad-spend and its impact on APP

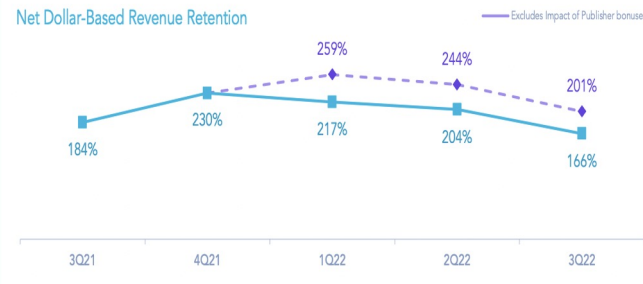
## Shift to Mobile

- First, there has been a continued shift towards mobile games as the primary revenue source in the gaming industry
  - Due to lower discretionary income, consumers will shift away from expensive console games to F2P mobile games
  - Larger number of users will offset declining spending



## Sticky Product in Fragmented Market

- There are 5.6mm applications on the App Store and Google Play
- The market is fragmented, and a company must advertise for their application to gain traction and user growth
- Even with declining market conditions, NRR for APP was 166% (201% excluding frictions from acquisitions)



# Thesis Point 4: Shift to Higher Margin Business

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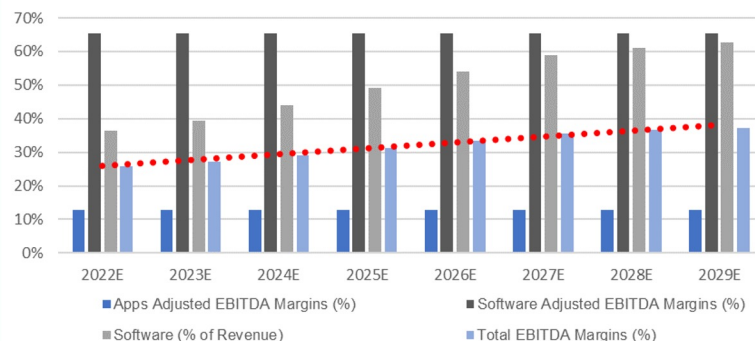
## Software as a Larger % of Revenue

- Software-adjusted EBITDA margins are 65%
  - This is much higher compared to 14% margins for apps
- APP is focusing on growing their software vertical as well as investing less on their applications growth
  - It is expected that in the future, software will make up a larger portion of revenue with declining costs from app-related investments
- Blended margins will be significantly higher than current margins moving onwards, driving significantly higher cash flow for the company

## Non-Recurring Costs Impacting S.T. Cash Flow

- APP paid \$200mn in non-recurring costs to transition old customers to a new platform resulting from the MAX acquisition in 1Q22
- Additionally, APP has realized \$100mn in merger costs from the MoPub acquisition (also in 2022)

AppLovin EBITDA Margin Projections



# Valuation



# Valuation Summary

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Bull Case: 165% Upside

- Larger TAM and growing market share driving faster Software segment revenue growth
- Stagnant Apps segment revenue
- Long-term blended EBITDA margins at 40%

Base Case: 98% Upside

- Short-term Software segment revenue impacts with long-term growth
- Stagnant Apps segment revenue
- Long-term blended EBITDA margins at 37%

Bear Case: 28% Upside

- Slower growth of TAM and stagnant market share driving slower Software segment revenue growth
- Declining Apps segment revenue
- Long-term blended EBITDA margins at 35%

# Public Comparable Analysis

## Public Comparables Analysis

\$ in millions

Company Name	Ticker	Share Price (actual)	Market Cap	Total EV	EV/Sales (NTM)	P/E (NTM)	EV/EBITDA (NTM)
Unity Software	U	31.57	14,370	14,390	6.3x	132.1x	155.5x
Take Two	TTWO	105.03	18,696	20,035	3.4x	17.8x	13.9x
Digital Turbine	APPS	16.85	1,715	2,082	2.2x	10.9x	7.5x
Magnite	MGNI	9.92	1,435	1,907	2.5x	12.6x	7.5x
The Trade Desk	TTD	47.03	24,364	23,043	14.4x	42.9x	37.0x
Maximum		105.03	24,364	23,043	14.4x	132.1x	155.5x
75th Percentile		47.03	18,696	20,035	6.3x	42.9x	37.0x
<b>Median</b>		<b>31.57</b>	<b>14,370</b>	<b>14,390</b>	<b>3.4x</b>	<b>17.8x</b>	<b>13.9x</b>
25th Percentile		16.85	1,715	2,082	2.5x	12.6x	7.5x
Minimum		9.92	1,435	1,907	2.2x	10.9x	7.5x
<b>AppLovin</b>	<b>APP</b>	<b>10.68</b>	<b>4,018</b>	<b>6,292</b>	<b>2.2x</b>	<b>36.7x</b>	<b>5.9x</b>

# Valuation Summary

## Major Drivers

- APP faces headwinds in 2023 but software expansion drives growth in 2023 and beyond
- APP captures market share from both large and small players
  - Blended EBITDA margins expand from 21% to 37%
  - Software (% of Revenue) (36% → 63%)
  - Software margins constant (65%)
  - Apps margins constant (13%)

## Model Inputs

- WACC: 11.98%
- Terminal Growth Rate: 2.5%
- Unlevered Beta: 1.99
- Market Risk Premium: 6.94%

# Base Case DCF

Discounted Cash Flow Analysis				Year									
\$ in thousands				2020A	2021A	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E
NOPAT						27,510	310,308	453,647	631,377	808,743	1,005,930	1,126,190	1,208,176
(+) Depreciation and Amortization						585,633	339,096	289,068	220,282	186,217	158,496	135,402	116,243
(-) Change in NWC						(160,684)	3,987	(24,833)	(27,647)	(33,710)	(39,275)	(22,857)	(14,979)
(-) Capital Expenditures (Including Capitalized Software Costs)						(7,030)	(11,247)	(14,534)	(15,976)	(17,734)	(19,782)	(20,974)	(21,755)
Unlevered FCF						445,429	642,143	703,348	808,038	943,516	1,105,369	1,217,760	1,287,685
Unlevered FCF Growth							44%	10%	15%	17%	17%	10%	6%
Period							1	2	3	4	5	6	7
Discount Factor							1.12	1.25	1.40	1.57	1.76	1.97	2.21
PV of Unlevered FCF							573,430	560,877	575,409	599,989	627,697	617,522	583,108
Terminal Value													13,918,567
Implied EBITDA Exit Multiple													8.46x
PV of Terminal Value													6,302,805
Enterprise Value													10,440,836
(-) Total Debt													(3,217,531)
(-) Preferred Stock													-
(-) Non-Controlling Interest													-
(-) Financial Leases													-
(+) Cash													943,508
Equity Value													8,166,813
Diluted Shares Outstanding													378,462
Implied Share Price													21.58
Current Share Price													10.90
Implied Upside													98%

# Sensitivity Analysis

## Implied Upside Sensitivity Analysis

	WACC					
	98%	11.69%	11.94%	12.19%	12.44%	12.69%
Terminal Growth	2.00%	98%	91%	84%	78%	72%
	2.25%	102%	95%	88%	81%	75%
	2.50%	107%	99%	92%	85%	79%
	2.75%	112%	104%	96%	89%	82%
	3.00%	117%	109%	101%	93%	86%

# Risks

# Macro Headwinds in the Gaming Industry

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- Apple's privacy changes has made it more difficult for advertisers to target users while also raising average CPI (cost per install)
- The reopening of the economy following COVID as well as weaker consumer spending in general has decreased spend on mobile games
  - This has meant lower ad budgets
- However, as aforementioned, APP is more resilient to ATT. So even as advertiser budgets fall, APP remains a more attractive choice
  - Hyper-casual games were up year-over-year, and APP's leading market position as a mediator will be an advantage as these games are ad-based and less focused on in-app purchases
- All players in the industry are affected by this trend, and it is not necessarily indicative of a problem specific to APP

# Eroding First Party Data Advantage

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- In recent years, management has discussed the restructuring and decreased focus on its Apps business
  - This could erode their first-party data advantage, leaving them more vulnerable to ATT
- However, in the short term, the firm's focus is to run Apps more profitably, improving margins this year from 8% to 17%
  - The firm still treats the segment as a valuable tool, and we expect it to be value-additive (in terms of data collection)
- APP can benefit from the apps' data without having the segment operate as the main business focus
- The integration of MoPub data will also help offset this potential loss of some data



# Appendix

# Revenue and Margin Build

Revenue Build and EBITDA Margins				Year								
\$ in thousands	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	
Software Platform Revenue												
Total Revenue Generating Game Application Publishers		29,000	31,030	29,479	28,594	30,596	32,737	35,029	37,014	38,618	39,777	
Game Application Publishers Growth			7%	-5%	-3%	7%	7%	7%	6%	4%	3%	
Percent of Publishers >400k in Revenue		7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	
Total Addressable SPECs	2,030	2,172	2,063	2,002	2,142	2,292	2,452	2,591	2,703	2,784		
Applovin SPEC Market Share		7%	17%	26%	26%	27%	27%	28%	30%	30%	30%	
Software Platform Enterprise Clients (SPECs)	146	142	380	531	515	570	629	694	777	811	835	
Revenue per SPEC	1,300	1,404	1,634	1,811	1,947	2,161	2,399	2,663	2,885	3,048	3,140	
Growth in Revenue per SPEC		8%	16%	11%	8%	11%	11%	11%	8%	6%	3%	
Total Revenue from SPECs	189,800	199,368	620,920	962,089	1,003,218	1,230,961	1,508,855	1,847,700	2,242,474	2,472,228	2,622,786	
Software Platform Revenue	198,305	207,285	673,952	1,016,209	1,059,652	1,300,206	1,593,732	1,951,638	2,368,619	2,611,297	2,770,325	
Revenue from SPECs as % of Software Platform Revenue		96%	96%	92%	95%	95%	95%	95%	95%	95%	95%	
Apps Revenue												
Monthly Active Payer (millions)	1.0	1.5	3.0	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
Monthly Active Payer Growth		50%	100%	-21%	0%	0%	0%	0%	0%	0%	0%	
ARMAP (actual)	32	41	43	41	40	42	42	42	42	42	42	
Consumer Revenue	398,156	739,934	1,458,595	1,181,927	1,067,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	
Business Revenue												
Business Revenue Per Monthly Active Payer		0.34	0.22	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Apps Revenue	795,799	1,243,801	2,119,152	1,778,162	1,625,531	1,658,531	1,658,531	1,658,531	1,658,531	1,658,531	1,658,531	
Total Revenue	994,104	1,451,086	2,793,104	2,794,371	2,685,183	2,958,737	3,252,263	3,610,169	4,027,150	4,269,828	4,428,856	
Software Platform as % of Total Revenue		14%	24%	36%	39%	44%	49%	54%	59%	61%	63%	
EBITDA Margins												
Software Adjusted EBITDA Margins			71%	65%	65%	65%	65%	65%	65%	65%	65%	
Apps Adjusted EBITDA Margins			11%	13%	13%	13%	13%	13%	13%	13%	13%	
Software (% of Revenue)			24%	36%	39%	44%	49%	54%	59%	61%	63%	
Adjusted EBITDA Margins			25%	32%	33%	36%	38%	41%	44%	45%	46%	
Adjusted EBITDA			711,613	889,604	898,615	1,059,965	1,251,735	1,485,568	1,757,995	1,916,545	2,020,443	
EBITDA Margins as % of Adjusted EBITDA Margins			83%	81%	81%	81%	81%	81%	81%	81%	81%	
EBITDA Margins			21%	26%	27%	29%	31%	34%	36%	37%	37%	

# WACC Build

WACC Calculation					
\$ in millions					
Company Name	52 Week Beta	Debt	Market Cap	Debt to Equity	Unlevered Beta
Unity Software	2.80	1,706	14,370	11.9%	2.56
Take Two	0.70	3,235	18,696	17.3%	0.62
Digital Turbine	2.92	447	1,715	26.1%	2.42
Magnite	2.79	726	1,435	50.6%	1.99
The Trade Desk	1.90	0	24,365	0.0%	1.90
Median Unlevered Beta					1.99
Median Debt to Equity Ratio					17.3%
Levered Beta					2.27
Risk Free Rate (avg. 10 year govt. bond yield)					3.50%
Market Risk Premium					5.94%
Unlevered Cost of Equity					16.96%
Cost of Debt					7.30%
Weight of Equity					56%
Weight of Debt					44%
Weight of Preferred Stock					0%
<b>WACC</b>					<b>11.98%</b>