EQUITY RESEARCH

RBC Capital Markets, LLC
**Matthew Swanson** (Analyst)
(612) 313-1237,
matthew.swanson@rbccm.com
**Matthew Hedberg** (Analyst)
(612) 313-1293,
matthew.hedberg@rbccm.com
**Dan Bergstrom** (Analyst)
(612) 313-1254,
dan.bergstrom@rbccm.com
**Anushtha Mittal**, CFA
(Senior Associate)
(347) 637-0003,
anushtha.mittal@rbccm.com
**Simran Biswal** (Senior
Associate)
(646) 618-6894,
simran.biswal@rbccm.com

December 21, 2023

# Ad-Tech: A look into 2024

## Updated forecasts and trends for '24

**Our view:** Following updated ad-tech spending forecasts, the 2024 outlook has started to take shape, with cyclical headwinds as a constant theme in recent years in which Magna Global expects 2024 growth rates to increase by 480 bps relative to 2023 or 50 bps ex-cyclical events (election, Olympics, etc.). From a format perspective, growth trends remain strong for CTV, social media and retail media, all reflecting an increased focus on premium advertising content. In our first look at political data, we're seeing fundraising above previous election cycles and up double digits compared to this time in 2019. A better overall macro environment combined with cyclical drivers like political spend are setting up FY/24 as a year of re-acceleration for the advertising environment. Given both cyclical and secular trends, we're likely to see a bit of a rising tide lifting all ships, though we remain focused on companies that are thematically well-positioned to provide differentiated data assets. We view this as the key to unlocking CTV and retail media but more broadly the centerpiece of our focal trend for '24 around ad spend optimization for KPIs.

**All you need to know:** In conversations with management teams over the past several weeks, we've come away feeling comfortable about fourth quarter results in the seasonally strong year-end. Specifically, a strong Cyber Week was not followed by a dramatic drop-off in December like last year as open-internet players are currently looking for Q4 q/q growth of 14.3% vs. 15.6% last year. Seasonality also points to an attractive Q4 setup, particularly given the easier '23 compare. Looking out further, we would expect companies to remain conservative around the initial FY/24 guidance despite what is generally expected to be a better macro environment. On average, open-internet peers have reduced their '24 estimates by 410 bps relative to the start of 2023; that said, current '24E average revenue growth of 12% is up 600 bps relative to current '23 expectations. The end result is that current expectations are for 600 bps of acceleration of a lowered bar in a year with both cyclical and secular drivers. This leaves us feeling optimistic about the current setup for our open-internet players including DV, MGNI, PUBM, TRMR, and TTD.

**Thoughts into 2024:** As we head into 2024, we looked through forecasts and deeper into macro indicators as well as transcripts heading out of Q3. After this analysis, we believe in 2024 there will be opportunities for outperformance, particularly from companies that can harness the trends listed below. While the environment appears to be getting stronger, we don't think advertisers will forget the lessons they learned in the challenging macro environments of 2022 and into 2023, with optimization and data-driven attribution remaining ongoing themes.

- **The Art of marketing gets a data overhaul:** We've seen a multi-year trend toward advertising and marketing optimization. Most notably has been supply path optimization or advertisers trying to bring clarity to their cost structure and make sure those receiving value in a transaction are creating value. While these trends around cost control and spend consolidation will likely continue, the next stage of optimization has been around performance, and in order to optimize performance, we need data that can be attributable to KPIs.
- **Is the CTV waiting game almost over?:** Optimism around CTV as a format remains as high as ever and the proliferation of ad-supported content continues to expand while tools to support targeting within CTV are improving. That said, the success of the format remains more qualitative than quantitative for the majority of vendors in the space. We expect linear dollars to continue to transition towards streaming, the pace at which this happens will be determined by the ability of publishers to get users to switch to AVOD and the ad-tech eco-systems' ability to prove out ROAS to support CPMs. Ultimately, we feel this market moves towards programmatic to fully leverage the primary advantage of streaming, which is the ability to target on an individual basis.

- **Retail media in focus:** Similar to CTV, the sentiment around retail media has been greater than the quantifiable results. Also similar to CTV with linear, retail media is pulling net/new dollars into the open-internet TAM by enabling greater levels of attribution to compete with the walled gardens. We feel this aligns with the overall optimization theme of being able to correlate spend with KPIs.
- **The good, the bad, and the pretty;** The early thoughts on generative AI centered as much on the broader advertising environment as the potential company-specific benefits. The concept of made-for-advertising content has come into focus with one panelist during our marketing AI panel at the RBC TIMT conference suggesting that up to 70% of online content may be computer generated. This could be at least in part a cause for declining display CPMs as supply has outpaced demand. The question is what is the net impact for the advertising industry over the long run, as there appear to be two trends that are in some ways opposites emerging from generative AI.

# Setting the stage for 2024

Capital Markets

# Four themes for 2024

Part 1

Capital Markets

# Overall theme: Ad Spend Optimization and the battle of art vs. science

- **The Art of marketing gets a data overhaul:** We've seen a multi-year trend towards advertising and marketing optimization. Most notably has been supply path optimization or advertisers trying to bring clarity to their cost structure and make sure those receiving value in a transaction are also creating value. While these trends around cost control and spend consolidation will continue, the next stage of optimization has been around performance, and in order to optimize performance, we need data that can be attributable to KPIs.
- **What are the numbers:** In a recent programmatic media supply chain transparency study, the Association of National Advertisers (ANA) took a deeper look at the issue. The key finding was that out of every dollar spent by advertisers on a DSP, only 36 cents reaches the consumer. When looking at the rest of the dollar, 29 cents goes to transaction costs or DSP and SSP fees while 35 cents is loss of media productivity costs. Essentially, more money is wasted in the eco-system than is paid to DSPs and SSPs with the ANA concluding there are $22B in potential efficiency gains.
- **The secular drivers:** The two big themes in ad-tech have been CTV and retail media, both of which relate to a growing emphasis on data-driven advertising. Surprisingly to some investors, retail media has grown faster than CTV in recent years highlighting the importance of attribution. Retail media allows for advertisements to be attributable to sales both online and in-store as well as creating sponsored search opportunities and could be a key to unlocking long-term CTV CPM support. CTV is a great format for reach and attention, but is top of funnel, as we feel data is key to proving out the differentiated value of CTV targeting.
- **Where GenAI comes into play:** GenAI is part of a growing challenge in the advertising market, particularly the proliferation of made for advertising (MFA) content. In the same ANA study referenced above they saw that 21% of impressions and 15% of ad spend was spent on MFA content. Between the ability to generate content and images, entire websites can be created faster than ever creating content that is specifically designed for pulling in advertising dollars despite low engagement and targeting. This is significantly lengthening the long tail of inventory and further emphasizes the importance of premium data-backed content. On the other side, personalized marketing is seeing growing interest due to the ability to generate more creative content efficiently. For this to be effective, it will require data for better targeting and attribution as A/B testing becomes A to Z testing. Long term, truly personalized marketing on a one-to-one basis would increase CPMs but also take rates due to data utilization.
- **Macro?:** When you say optimization in tech, the first thought for most is cloud spend optimization. We think that ad spend optimization has some similarities. Both were trends that were triggered following the bullish spending environment of 2021, but the challenging macro in '22 and '23 accelerated the trends beyond an organic rate. That said, regardless if the environment gets better or worse in '24, we believe advertisers are not going to give up the efficiency gains they worked for over the past two years. While spending will likely increase, we feel that the focus on utilizing data to create attributable ROAS will continue, which could create a long-term bifurcation in CPMs that would be widened further if Google removes cookies.

## CTV on in the waiting room

- **Is the CTV waiting game almost over:** Optimism around CTV as a format remains as high as ever. The proliferation of ad-supported content continues to expand while tools to support targeting within CTV are improving. That said, the success of the format remains more qualitative than quantitative for the majority of vendors in the space. We expect linear dollars to continue to transition towards streaming, the pace at which this happens will be determined by the ability of publishers to get users to switch to AVOD and the ad-tech eco-systems' ability to prove out ROAS to support CPMs. Ultimately, we feel this market moves towards programmatic to fully leverage the primary advantage of streaming, which is the ability to target on an individual basis.
- **Carrot and the stick:** Streaming has overtaken linear viewership in terms of total hours viewed, this is misleading from an advertising standpoint though since the majority of streaming is still subscription. While just one example, Hulu is seen as the most mature ad-supported streaming platform and has proved at least in their case that AVOD has a higher ARPU than SVOD. Early results seem to indicate that this trend has carried through to other publishers as we expect 2024 to see a greater emphasis on either a carrot or stick approach to moving consumers toward AVOD models. Specifically, raising SVOD prices or lowering AVOD prices. One advantage of AVOD for publishers is being able to directly attribute revenue to content, where in SVOD content is mainly utilized to reduce churn.
- **A generational gap:** In a study by Magna Global and Samsung Ads, they noticed that Gen Z and millennial respondents spent 56% and 52% of TV viewing time on streaming networks while Gen X and Boomers were 30% and 15%, respectively. This creates an interesting dynamic on a brand-by-brand basis where certain audiences are found in certain formats. Additionally, Gen Z and Millennials felt that CTV ads were better quality and more relevant than cable and satellite.
- **What does this all mean?:** We continue to monitor the transition by focusing on the TAM within the TAM. The overall shift from Cable and Satellite is going to have a long tail, but FY/23 was a better year for CTV the deeper you look into the numbers. In Magna Global's most recent forecast, they expect Linear Networks to be down 8% in FY/23 while AVOD, CTV and FAST are up 11.7%. Given the relative scale, an 8% decrease in linear should have resulted in a much stronger growth rate in CTV. According to Magna Global estimates, local and national streaming declined by roughly ~$4.5B in 2023 in the US while AVOD, CTV, and FAST only expanded by $1.1B. We feel the current macro environment is masking the shift to CTV which is gaining share on a relative basis, but FY/24 should show a much stronger year in absolute spending. Within this shift, the secondary TAM of programmatic should continue to gain speed.

# Retail Media

- **Retail media in focus:** Similar to CTV, the sentiment around retail media has been greater than the quantifiable results. Also similar to CTV with linear, retail media is pulling net/new dollars into the open-internet TAM by enabling greater levels of attribution to compete with the walled gardens. We feel this aligns with the overall optimization theme of being able to correlate spend with KPIs.
- **By the numbers:** According to Magna Global, retail media networks generated $124 billion of ad revenue in ’23 including $43 billion in the United States representing 15% of global advertising revenue. While there are many definitions used by different vendors in the space around what exactly counts as retail media, from a monetary standpoint there is a clear answer as 87% of retail media revenue was attributable to keyword search-based formats representing 23% of total search advertising revenue outside of China.
- **How this evolves:** There has been one overwhelming market share leader when it comes to retail media and that is Amazon being able to fully leverage the strength of their e-commerce platform with the strength of their broader media and tech network. Companies looking to follow on the path of Amazon are turning to technology partners to help build out their retail media capabilities. Much like we see the open-internet band together for scale to bring a more compelling value proposition relative to walled gardens, we expect to see ad-tech companies combine disparate retail media data sets to create a more compelling data mosaic to compete with Amazon’s scale.
- **Why this is important:** We feel the growth in retail media is important for several different reasons. One reason is expanding the definition of performance advertising by creating more attribution to up-funnel advertisements. Currently, the last click gets all the credit for a transaction, but a consumer has been primed for that final ad placement previously. With more data on actual sales, advertisements and marketing spend can tie closer to actual performance. From an open-internet perspective, there is the opportunity for a value proposition that is more competitive with walled gardens including Amazon but also the broader social media space.

## Generating interest

- **The good, the bad and the pretty:** The early thoughts on generative AI centered as much on the broader advertising environment as potential company-specific benefits. The concept of made for advertising content has come into focus with one panelist during our marketing AI panel at the RBC TIMT conference suggesting up to 70% of online content may be computer generated. This could be at least in part a cause for declining display CPMs as supply has outpaced demand. The question is what is the net impact for the advertising industry over the long run, as there appear to be two trends that are in some ways opposites emerging from generative AI.
- **The first trends we already touched on**, that is the explosion of AI-generated content, so overall volume is going up in what for now is generally display media. In terms of engagement from consumers, AI generated content is not necessarily worse, but it does increase the amount of publishers spreading out volume. Assuming ad loads are equivalent, the overall volume shouldn't fluctuate because consumers aren't going to three times as many websites a day just because three times as many exist. The challenge is from a targeting perspective these additional sites are adding more noise to the marketplace and increasing the size of the long tail; essentially creating more low-quality impressions impacting CPMs.
- **While the environment will get more complicated,** there are also going to be opportunities, namely in the realm of personalized marketing. Generated creative content is going to be able to be personalized in ways that were never realistic at scale previously making advertisements and marketing material that better align with the intended recipient. The ability to generate creative content is half of the equation, and the other half will be the ability to target on an individualized basis. Without personalization, companies will still have the ability to go from A/B testing to A to Z testing trying more iterations of creatives for performance, but long term we feel the true value will come from combining data on individuals with generated content to create more engaging tailored experiences.

# Recent market data points

Part 2

Capital
Markets

# Magna Global Ad revenue forecast (U.S. forecast, most recent update in December)

**Updated market forecast:** The forecast for the U.S. has improved slightly for 2023 and 2024, now expected to grow 5.4% and 5.9% excluding cyclical, respectively, compared to 5.2% and 5.6% previously which points to a 0.2% and 0.3% increase relative to prior Magna estimates. We believe this reflects better sentiment in the advertising market as we head into CY/24.

- When looking at verticals for 2024, Magna noted strength in travel, auto, pharma, and government/political. Next, restaurants, retail, telecoms, personal care, food, drinks, and finance are expected to be moderate. Lastly, media and entertainment as well as betting is expected to be weak.
- From a format perspective, AVOD/CTV/FAST growth expectations improved to 12.2% for FY/23, up 50 bps and increased to 12.9% for FY/24 or +160 bps. Additionally, social media also improved to 14.3% growth in FY/23 or +90 bps compared to previous expectations and 11.9% growth for FY/24 or +100 bps. Cinema saw the greatest decline for FY/23 with slight declines in traditional media owners, national TV, linear, audio, OOH, and direct mail.

| Media Channel | 1H/23 growth | Q3/23 growth | 2023 growth | 2023 growth previous | 2024 growth | 2024 growth previous | 2023 vs. previous 2023 | 2024 vs. previous 2024 | 2024 vs. 2023 |
|---|---|---|---|---|---|---|---|---|---|
| All Media (excl. cyclical and DM) | 2.9% | 7.0% | 5.4% | 5.2% | 5.9% | 5.6% | 0.2% | 0.3% | 0.5% |
| All Media (inc. cyclical, excl. DM) | 2.1% | 5.2% | 3.6% | 3.4% | 8.4% | 8.0% | 0.2% | 0.4% | 4.8% |
| | | | | | | | | | |
| Traditional Media Owners (excl. cyclical) | -5.1% | -3.6% | -4.3% | -3.6% | -2.9% | -2.0% | -0.7% | -0.9% | 1.4% |
| National TV | -4.1% | -5.1% | -4.7% | -3.9% | -4.4% | -3.2% | -0.8% | -1.2% | 0.3% |
| Linear network | -6.3% | -9.9% | -8.0% | -7.0% | -8.5% | -6.6% | -1.0% | -1.9% | -0.5% |
| AVOD/CTV/FAST | 7.2% | 15.6% | 12.2% | 11.7% | 12.9% | 11.3% | 0.5% | 1.6% | 0.7% |
| Local TV | -7.4% | -2.9% | -5.1% | -5.3% | -4.0% | -3.7% | 0.2% | -0.3% | 1.1% |
| Audio | -3.8% | -3.3% | -3.7% | -2.6% | 0.4% | 1.3% | -1.1% | -0.9% | 4.1% |
| Publishing | -10.0% | -3.8% | -6.9% | -7.3% | -4.1% | -3.5% | 0.4% | -0.6% | 2.8% |
| OOH | 2.0% | 0.2% | 2.1% | 4.2% | 4.5% | 5.3% | -2.1% | -0.8% | 2.4% |
| Cinema | -2.4% | 26.9% | 12.4% | 21.3% | 12.7% | 17.8% | -8.9% | -5.1% | 0.3% |
| | | | | | | | | | |
| Digital Pure Play (excl. cyclical) | 7.2% | 12.0% | 10.2% | 9.6% | 10.5% | 9.8% | 0.6% | 0.7% | 0.3% |
| Social Media | 9.8% | 17.8% | 14.3% | 13.4% | 11.9% | 10.9% | 0.9% | 1.0% | -2.4% |
| Search/Commerce | 7.6% | 11.3% | 10.1% | 9.8% | 10.5% | 9.9% | 0.3% | 0.6% | 0.4% |
| Short Form Video | 4.2% | 11.3% | 8.0% | 5.9% | 9.5% | 9.1% | 2.1% | 0.4% | 1.5% |
| | | | | | | | | | |
| Direct Mail (excl. cyclical) | -3.6% | -4.4% | -3.7% | -3.0% | -4.2% | -4.2% | -0.7% | 0.0% | -0.5% |

*Source: Magna Global estimates, RBC Capital Markets*

## Magna Global Ad revenue forecast (update from December)

**Global market forecast:** In December, Magna increased the 2023 global ad spend forecast by 80 bps.

- Looking at formats, the 2023 digital pure players was raised by 190 bps while traditional media was lowered by 100 bps.
  - The largest decline was seen in cinema.

- Looking at geographies, all broader regions saw improvements in 2023 with the largest improvement in APAC and least in LATAM.
  - On an absolute dollar basis, growth continues to be driven by NA and APAC.

| Media Channel | 2023 $BN | 2023 growth | 2023 growth previous | 2023 share | 2024 growth | 2023 vs. previous 2023 | 2024 vs. 2023 |
|---|---|---|---|---|---|---|---|
| Total All Media | $ 853 | 5.5% | 4.7% | 100.0% | 7.2% | 0.8% | 1.7% |
| | | | | | | | |
| Digital Pure Play | $ 587 | 10.5% | 8.6% | 68.8% | 9.4% | 1.9% | -1.1% |
| Search/Commerce | $ 298 | 9.4% | 9.1% | 34.9% | 9.3% | 0.3% | -0.1% |
| Social | $ 182 | 15.2% | 9.8% | 21.3% | 11.6% | 5.4% | -3.6% |
| Digital Video | $ 70 | 9.6% | 8.9% | 8.2% | 9.2% | 0.7% | -0.4% |
| | | | | | | | |
| Traditional Media Owners | $ 266 | -4.1% | -3.1% | 31.2% | 2.2% | -1.0% | 6.3% |
| Television | $ 158 | -6.2% | -5.0% | 18.5% | 3.1% | -1.2% | 9.3% |
| Audio | $ 29 | -2.0% | -0.5% | 3.4% | 1.0% | -1.5% | 3.0% |
| Publishing | $ 45 | -5.1% | -4.0% | 5.3% | -2.9% | -1.1% | 2.2% |
| OOH | $ 32 | 6.9% | 6.1% | 3.8% | 5.8% | 0.8% | -1.1% |
| Cinema | $ 2 | 14.3% | 23.0% | 0.2% | 8.4% | -8.7% | -5.9% |

*Source: Magna Global estimates, RBC Capital Markets*

# How have 2023 estimates moved throughout the year

## Current 2023 estimates compared to entering 2022:

- Compared to where estimates were on 1/1/2022, only two companies have seen 2023 estimates grow during the year.
  - ZETA, DV
- On average, we've seen consensus 2023 estimates grow by 6.0% compared to 21.7% from expectations at the beginning of 2022, pointing to a 15.7% decrease in average growth.
- Note: Bold names are companies currently under coverage
  - Digital Turbine switched from gross to net revenue reporting

| | Company names | CY/22E on 1/1/2022 | CY/23E on 1/1/2022 | Previous growth | CY/22 | Current 2023E | Current growth | Current 2023E growth vs. previous 2022A | CY/23 % change |
|---|---|---|---|---|---|---|---|---|---|
| ZETA | Zeta Global Holdings Corp. Class A | 518.2 | 613.4 | 18.4% | 591.0 | 725.9 | 22.8% | 40.1% | 18% |
| **DV** | **DoubleVerify Holdings, Inc.** | 431.4 | 549.3 | 27.4% | 452.4 | 572.2 | 26.5% | 32.7% | 4% |
| **TTD** | **Trade Desk, Inc. Class A** | 1548.5 | 1975.5 | 27.6% | 1578.0 | 1922.7 | 21.8% | 24.2% | -3% |
| IAS | Integral Ad Science Holding Corp | 403.0 | 514.7 | 27.7% | 408.3 | 471.4 | 15.4% | 17.0% | -8% |
| CTV | Innovid Corp. | 130.5 | 177.7 | 36.2% | 127.1 | 137.6 | 8.3% | 5.5% | -23% |
| RAMP | LiveRamp Holdings, Inc. | 607.0 | 732.9 | 20.8% | 579.8 | 623.9 | 7.6% | 2.8% | -15% |
| **MGNI** | **Magnite, Inc.** | 530.0 | 650.4 | 22.7% | 514.6 | 544.3 | 5.8% | 2.7% | -16% |
| CRTO | Criteo SA Sponsored ADR | 1010.0 | 1098.6 | 8.8% | 928.2 | 1006.8 | 8.5% | -0.3% | -8% |
| **PUBM** | **PubMatic, Inc. Class A** | 283.5 | 346.8 | 22.3% | 256.4 | 260.6 | 1.6% | -8.1% | -25% |
| **TRMR** | **Tremor International Ltd. Sponsored ADR** | 349.1 | 407.2 | 16.6% | 309.7 | 313.3 | 1.2% | -10.2% | -23% |
| TBLA | Taboola.com Ltd. | 1644.5 | 1872.4 | 13.9% | 1401.2 | 1456.1 | 3.9% | -11.5% | -22% |
| APP | AppLovin Corp. Class A | 3745.4 | 4653.5 | 24.2% | 2817.1 | 3241.3 | 15.1% | -13.5% | -30% |
| DSP | Viant Technology, Inc. Class A | 177.4 | 212.2 | 19.6% | 124.7 | 142.8 | 14.5% | -19.5% | -33% |
| ATY | illumin Holdings Inc. | 118.1 | 142.1 | 20.4% | 87.9 | 94.4 | 7.3% | -20.1% | -34% |
| OB | Outbrain, Inc. | 1226.3 | 1457.9 | 18.9% | 992.1 | 939.3 | -5.3% | -23.4% | -36% |
| SST | System1, Inc. Class A | 994.8 | 1215.2 | 22.2% | 826.7 | 495.8 | -40.0% | -50.2% | -59% |
| APPS | Digital Turbine, Inc. | 1496.9 | 2016.6 | 34.7% | 686.1 | 598.1 | -12.8% | -60.0% | -70% |

*Source: FactSet estimates as of 12/20/2023, company reports, RBC Capital Markets*

# How have 2024 estimates moved throughout the year

## Current 2024 estimates compared to entering 2023:

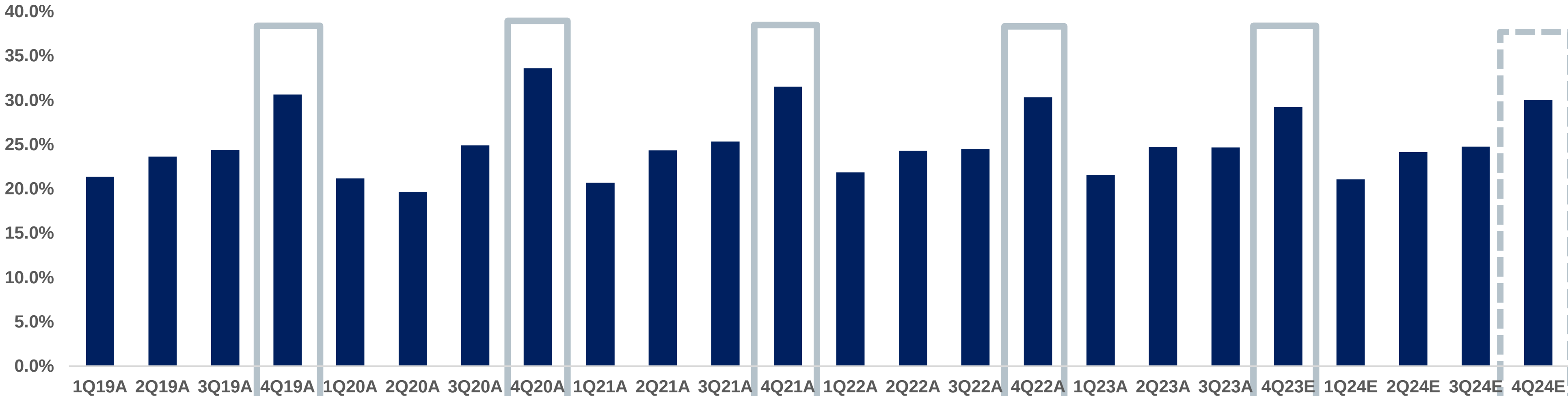
- Compared to where estimates were on 1/1/2023, we've seen six companies grow 2024 estimates during the year.
- On average, we've seen consensus reduce their 2024 estimates by 4.1%.

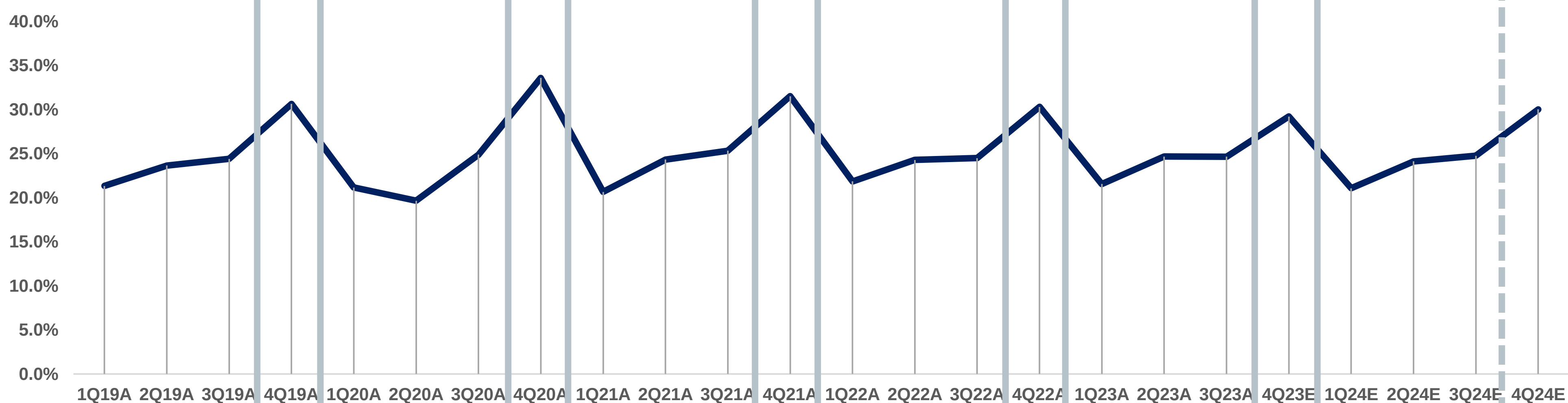
| Company names | | CY/23E on 1/1/2023 | CY/24E on 1/1/2023 | Previous growth | CY/23E | CY/24E | Current growth | Current 2024E growth vs. previous 2023E | CY/24 % change |
|---|---|---|---|---|---|---|---|---|---|
| TBLA | Taboola.com Ltd. | 1426.8 | 1599.6 | 12.1% | 1456.1 | 2114.2 | 45.2% | 48.2% | 32% |
| APP | AppLovin Corp. Class A | 2831.6 | 3162.8 | 11.7% | 3241.3 | 3776.2 | 16.5% | 33.4% | 19% |
| **DV** | **DoubleVerify Holdings, Inc.** | 559.3 | 690.8 | 23.5% | 572.2 | 707.1 | 23.6% | 26.4% | 2% |
| ZETA | Zeta Global Holdings Corp. Class A | 676.2 | 815.8 | 20.6% | 725.9 | 850.3 | 17.1% | 25.8% | 4% |
| **TTD** | **Trade Desk, Inc. Class A** | 1894.4 | 2390.0 | 26.2% | 1922.7 | 2313.0 | 20.3% | 22.1% | -3% |
| DSP | Viant Technology, Inc. Class A | 129.6 | 140.0 | 8.0% | 142.8 | 156.4 | 9.5% | 20.7% | 12% |
| IAS | Integral Ad Science Holding Corp | 459.6 | 531.1 | 15.6% | 471.4 | 543.3 | 15.2% | 18.2% | 2% |
| RAMP | LiveRamp Holdings, Inc. | 631.7 | 719.2 | 13.8% | 623.9 | 672.9 | 7.9% | 6.5% | -6% |
| **MGNI** | **Magnite, Inc.** | 557.9 | 667.2 | 19.6% | 544.3 | 589.2 | 8.3% | 5.6% | -12% |
| ATY | illumin Holdings Inc. | 98.5 | 110.7 | 12.5% | 94.4 | 103.8 | 10.0% | 5.4% | -6% |
| CTV | Innovid Corp. | 152.8 | 180.9 | 18.4% | 137.6 | 155.0 | 12.6% | 1.4% | -14% |
| **PUBM** | **PubMatic, Inc. Class A** | 280.9 | 333.6 | 18.8% | 260.6 | 284.9 | 9.3% | 1.4% | -15% |
| CRTO | Criteo SA Sponsored ADR | 1029.8 | 1125.9 | 9.3% | 1006.8 | 1039.7 | 3.3% | 1.0% | -8% |
| OB | Outbrain, Inc. | 1008.0 | 1113.1 | 10.4% | 939.3 | 994.1 | 5.8% | -1.4% | -11% |
| APPS | Digital Turbine, Inc. | 785.0 | 959.7 | 22.3% | 598.1 | 621.3 | 3.9% | -20.8% | -35% |
| **TRMR** | **Tremor International Ltd. Sponsored ADR** | 455.3 | 520.0 | 14.2% | 313.3 | 334.2 | 6.7% | -26.6% | -36% |
| SST | System1, Inc. Class A | 884.5 | 1038.6 | 17.4% | 495.8 | 442.3 | -10.8% | -50.0% | -57% |

*Source: FactSet estimates as of 12/20/2023, company reports, RBC Capital Markets*

# Ad-tech seasonality – revenue growth

**Average ad-tech seasonality –** Ad-tech is inherently a macro-driven vertical. The seasonality of advertiser spend correlates to the revenues seen by players in the industry since they operate on transaction-based models. While verticals may advertise on different seasonal patterns, the industry as a whole typically peaks in the fourth quarter corresponding to holiday season, back to school, and political ad spend. We expect Q4 seasonality to be ~110 bps lower in CY/23 compared to CY/22 and then pick up again in CY/24 or +80 bps.




| Seasonality | 1Q19A | 2Q19A | 3Q19A | 4Q19A | 1Q20A | 2Q20A | 3Q20A | 4Q20A | 1Q21A | 2Q21A | 3Q21A | 4Q21A | 1Q22A | 2Q22A | 3Q22A | 4Q22A | 1Q23A | 2Q23A | 3Q23A | 4Q23E | 1Q24E | 2Q24E | 3Q24E | 4Q24E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 21.4% | 23.7% | 24.4% | 30.6% | 21.2% | 19.7% | 24.9% | 33.6% | 20.7% | 24.3% | 25.3% | 31.5% | 21.9% | 24.3% | 24.5% | 30.3% | 21.6% | 24.7% | 24.7% | 29.2% | 21.1% | 24.1% | 24.8% | 30.0% |
| Delta vs. seasonal avg. | -0.2% | -0.6% | 0.1% | 0.3% | -0.4% | -4.6% | 0.6% | 3.2% | -0.9% | 0.1% | 1.1% | 1.1% | 0.3% | 0.0% | 0.2% | -0.1% | 0.0% | 0.4% | 0.4% | -1.2% | -0.5% | -0.2% | 0.5% | -0.4% |

*Source: Factset utilized for all estimates, RBC Capital Markets*

## Looking at Q4 seasonality

**Current Q4 estimates as a percentage of CY/23**

- Looking at the ad-tech group as a whole, consensus expects Q4 to represent 28.6% of CY/23 revenue, in line with CY/22.
- We'd highlight that Q4 of last year saw a sharper decline in advertising budgets leading to weaker results.

| Ticker | CY/Q4 as a % of CY/23 estimates | CY/Q4 as a % of CY/22 estimates | 23 vs. '22 seasonality |
|---|---|---|---|
| TBLA | 30.3% | 26.5% | 3.8% |
| APP | 28.4% | 24.9% | 3.5% |
| DSP | 29.4% | 26.8% | 2.6% |
| OB | 27.7% | 26.0% | 1.7% |
| **PUBM** | 30.0% | 29.0% | 1.0% |
| APPS | 24.4% | 23.7% | 0.8% |
| **DV** | 30.0% | 29.5% | 0.5% |
| CTV | 26.3% | 26.5% | -0.2% |
| CRTO | 29.8% | 30.5% | -0.7% |
| **TTD** | 30.3% | 31.1% | -0.9% |
| RAMP | 26.5% | 27.4% | -0.9% |
| **MGNI** | 29.5% | 30.4% | -0.9% |
| IAS | 27.8% | 28.8% | -0.9% |
| ZETA | 28.6% | 29.6% | -1.0% |
| ILLM | 31.1% | 33.0% | -2.0% |
| **TRMR** | 28.1% | 33.3% | -5.2% |
| **Average** | 28.6% | 28.6% | 0.1% |

*Bold names are RBC covered companies. Source: FactSet estimates as of 12/20/2023, company reports, RBC Capital Markets*

# Looking at Q4 q/q growth

**Current Q4 q/q growth estimates compared to CY/22**

- Looking at the ad-tech group as a whole, consensus expects Q4 to grow 14.3% from Q3 compared to 15.6% last year. This reflects a 130 bps decline compared to last year.
- We watch for additional details around CY/24 guidance during year-end earnings season as we think it will set the stage for growth next year.

| Ticker | CY/Q4 2023 q/q growth | CY/Q4 2022 q/q growth | 2023 vs. 2022 growth |
|---|---|---|---|
| TBLA | 22.4% | 11.7% | 10.7% |
| APPS | 2.1% | -7.2% | 9.2% |
| APP | 6.6% | -1.5% | 8.1% |
| **PUBM** | 22.8% | 15.2% | 7.6% |
| DSP | 7.4% | 4.1% | 3.3% |
| ILLM | 36.1% | 33.9% | 2.2% |
| CTV | -0.1% | -2.2% | 2.1% |
| OB | 13.3% | 12.6% | 0.7% |
| **DV** | 19.4% | 19.0% | 0.4% |
| **MGNI** | 20.8% | 22.7% | -1.9% |
| RAMP | 3.3% | 7.8% | -4.5% |
| ZETA | 9.8% | 15.0% | -5.2% |
| **TTD** | 17.9% | 24.4% | -6.4% |
| IAS | 9.1% | 15.9% | -6.8% |
| CRTO | 22.3% | 32.8% | -10.5% |
| **TRMR** | 14.9% | 45.3% | -30.4% |
| **Average** | 14.3% | 15.6% | -1.3% |

*Bold names are RBC covered companies. Source: FactSet estimates as of 12/20/2023, company reports, RBC Capital Markets*

# Magna Global Ad revenue forecast (update from December)

**Global market forecast from June:** In Magna's update, the United States remains the largest advertising market in the world, roughly twice the size of China.

- Brazil and China were the fastest growing advertising markets in 2023 and Brazil and the US are expected to be fastest for 2024.
- Growth was most challenged for Germany and the US in 2023 and is expected to the most challenged for Australia and Germany in 2024.
- Globally, 2023 growth was 5.5% and 2024 growth is expected to accelerate to 7.2%

| Markets | 2023 $BN | 2023 growth | 2023 growth previous | 2023 share | 2024 growth | 2023 vs. previous 2023 | 2024 vs. 2023 |
|---|---|---|---|---|---|---|---|
| **Global** | $ 853 | 5.5% | 4.7% | 100.0% | 7.2% | 0.8% | 1.7% |
| **North America** | $ 355 | 3.6% | 2.7% | 41.6% | 8.2% | 0.9% | 4.6% |
| **EMEA** | $ 185 | 4.6% | 4.2% | 21.8% | 6.2% | 0.4% | 1.6% |
| **APAC** | $ 286 | 8.2% | 7.1% | 33.5% | 6.3% | 1.1% | -1.9% |
| **LATAM** | $ 27 | 8.8% | 8.7% | 3.1% | 8.9% | 0.1% | 0.1% |
| | | | | | | | |
| US | $ 338 | 3.6% | 2.7% | 39.6% | 8.4% | 0.9% | 4.8% |
| China | $ 152 | 9.8% | 8.4% | 17.8% | 6.5% | 1.4% | -3.3% |
| Japan | $ 49 | 5.0% | 2.6% | 5.8% | 4.8% | 2.4% | -0.2% |
| UK | $ 46 | 3.9% | 4.6% | 5.4% | 5.7% | -0.7% | 1.8% |
| Germany | $ 35 | 2.5% | 1.5% | 4.1% | 4.3% | 1.0% | 1.8% |
| France | $ 19 | 5.7% | 2.8% | 2.3% | 6.3% | 2.9% | 0.6% |
| Australia | $ 19 | 4.9% | 4.1% | 2.2% | 3.8% | 0.8% | -1.1% |
| Canada | $ 17 | 4.4% | 2.9% | 2.0% | 5.1% | 1.5% | 0.7% |
| South Korea | $ 16 | 7.3% | 6.8% | 1.8% | 7.0% | 0.5% | -0.3% |
| Brazil | $ 15 | 10.5% | 9.9% | 1.8% | 9.2% | 0.6% | -1.3% |

*Source: Magna Global estimates, RBC Capital Markets*


**Matthew Swanson** (612) 313-1237; matthew.swanson@rbccm.com

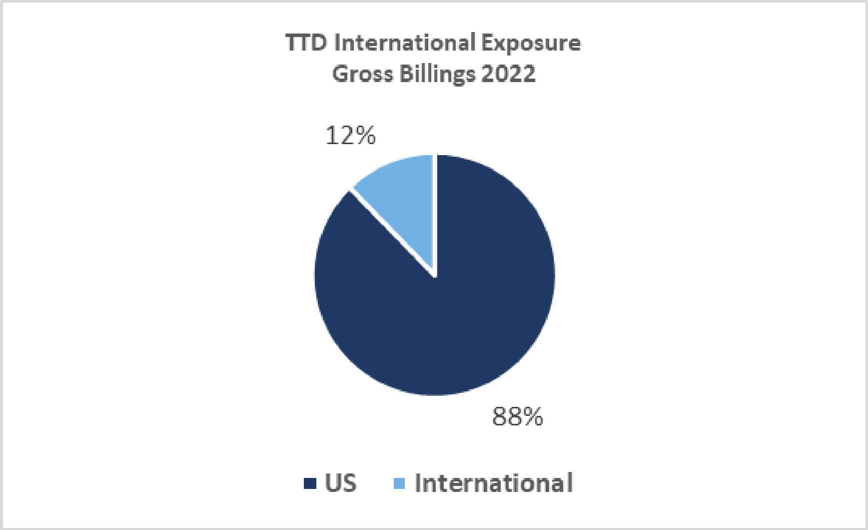
## International Exposure

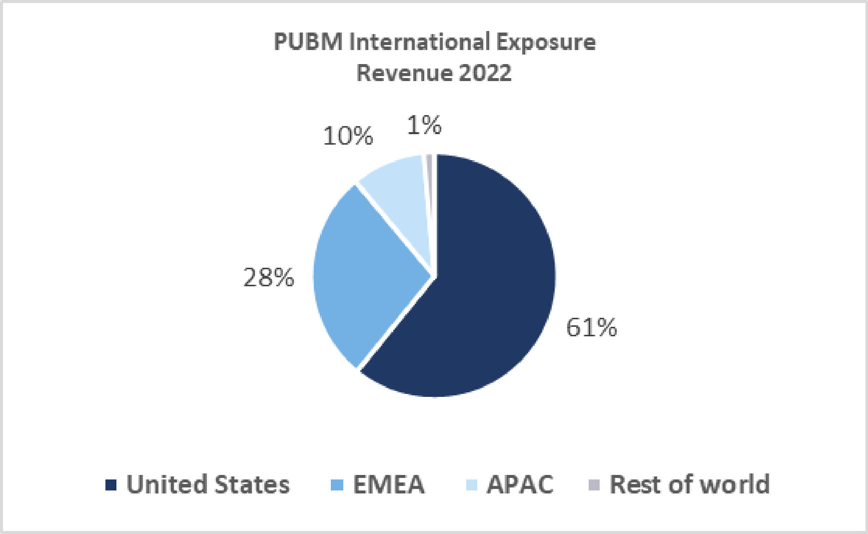
**Our view:** Overall, international growth seems to largely have outpaced North America growth as we think that our companies will benefit from global expansion. That said, we remain mindful of the risks in the near term.

**TTD –** In 2022, about 88% of gross billings came from the US and 12% came from international. In Q3/23, management noted that international growth outpaced North America for the third quarter in a row.

**PUBM –** In 2022, about 61% of revenue came from the United States, 28% came from EMEA, 10% came from APAC, and 1% came from all other regions, which points to about 39% of international exposure for the year. In Q3/23, management highlighted that they launched Activate in the Asia-Pacific region as we expect momentum to continue to expand over time.

**DV –** The company has not disclosed certain geographic information regarding revenues. In Q3/23, international measurement was strong with 62% y/y growth in which EMEA grew 75% and APAC grew 46%. Management highlighted that international growth is driven by social.



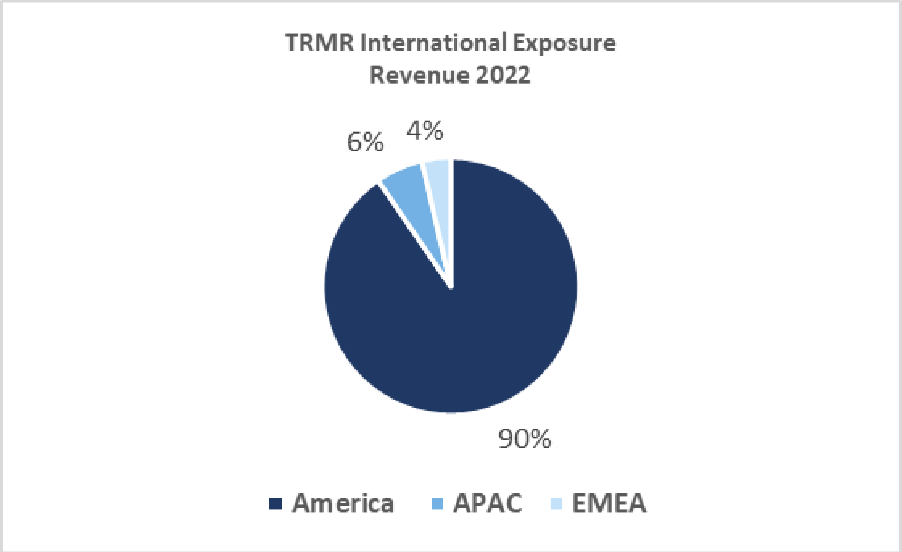




*Source: Company reports, RBC Capital Markets*

# International Exposure

**TRMR –** In 2022, about 90% of revenue came from America, 6% came from APAC, and 4% came from EMEA. Last quarter, management noted that VIDAA now serves as the TV operating system for 21M+ CTVs in about 180 countries, which further expansion opportunities.

**MGNI –** In 2022, about 78% of revenue came from the US and 22% of revenue came from International, though the international business was not broken out into specific regions. In Q3/23, management highlighted that international results outpaced the US and were driven by their DV+ business with new publisher wins and overall volume growth.



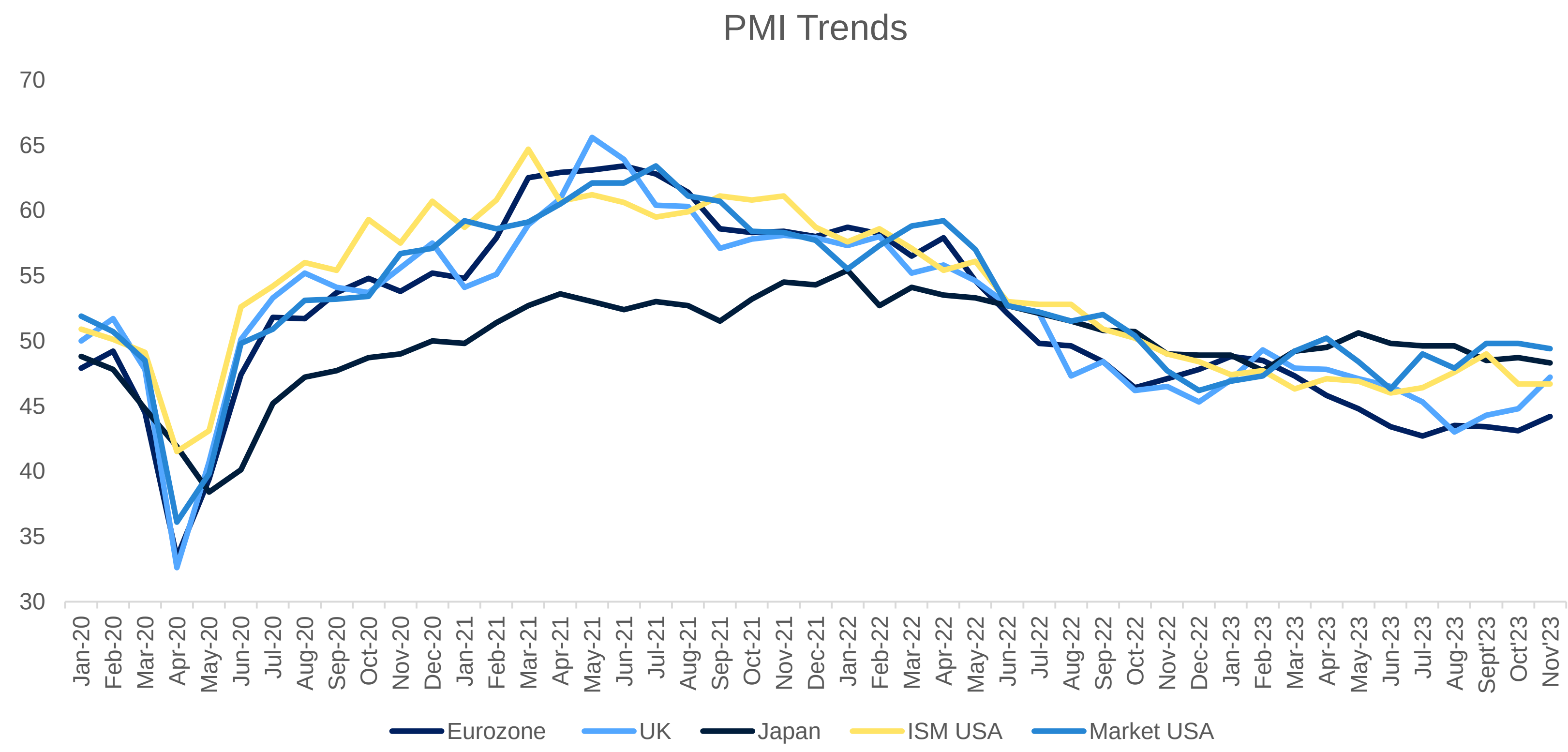


*Source: Company reports, RBC Capital Markets*

## Manufacturing data and the impact on supply chains

**Manufacturing PMI or the Purchasing Managers Index measures sentiment around the manufacturing sector.** Any score above 50 reflects growth or expansion compared to the previous month.

- Since the COVID lows in April 2020, PMI data has been improving across all regions, then dipped again through 2022 and the first half of 2023 and now seem to have stabilized.
- While supply chain challenges have eased, helping manufacturers reduce the backlog, the demand continues to be relatively weak as management companies remain focused on cost optimization and margin expansion.
- Overall, PMI data seems to be relatively flat into 2H/23 though seems to be leaning upwards.



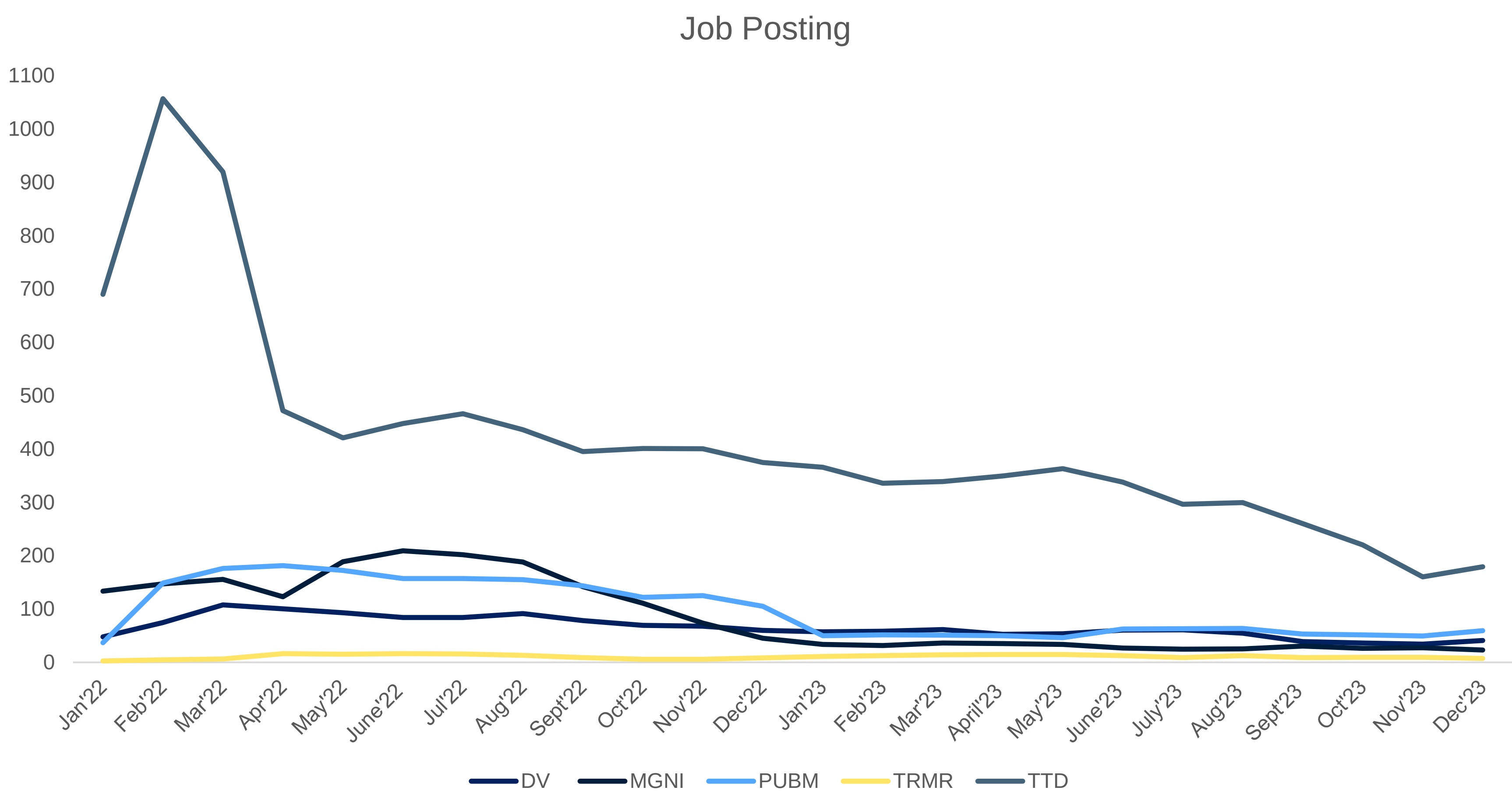

*Source: Markit Economics, ISM, RBC Capital Markets*



**Matthew Swanson** (612) 313-1237; matthew.swanson@rbccm.com

# Job posting trends within ad-tech

**Ad-tech job postings –** We believe that job postings data provides additional insights on the health and expansion efforts of a company as it seeks to grow and invest in more talent. Postings continue to remain pressured as a result of the uneven macro environment as management teams focus on cost efficiency. As of mid-December, ad-tech peers are +1.3% w/w, (4.7%) m/m, and (48.5%) y/y. Breaking it down by company y/y, DV is (30.0%), MGNI (63.1%), PUBM (45.8%), TRMR +25%, and TTD (50.9%).




*Source: RBC Capital Markets, company websites*

## Adobe Cyber Week data

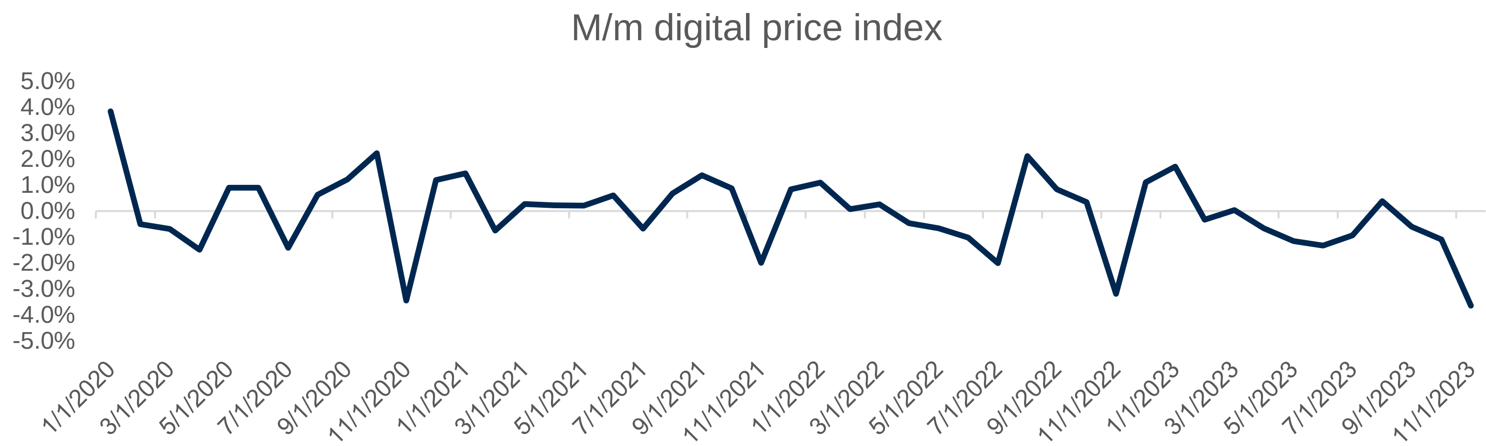
**Cyber week:** The five-day window between Thanksgiving and Cyber Monday is known as Cyber Week where marketing and advertising are ramped up in order to capitalize on the concentrated consumer spending ahead of the holiday season. Adobe Analytics is part of the Adobe Experience Cloud which is utilized by over 85% of top 100 internet retailers in the U.S, as part of their Cyber Week data the company analyzes over one trillion visits to U.S. retail sites and 100 million SKUs across 18 product categories.

**Scale:** During Cyber Week consumers spent $38 billion which was up 7.8% y/y. Zooming out further, between November 1st and November 27th consumers had spent $109.3 billion, up 7.3% y/y, which we view as a bullish indicator for the resiliency of the advertising budgets into year-end. Looking forward, Adobe now expects that the full holiday season from November 1st to December 31st will hit $221.8 billion, up 4.8% y/y.

**Format mix:** Adobe currently expects $1 out of ever $5 to be spent online this holiday season as e-commerce growth is outpacing in-store shopping, aligning with a growing ad budget mix towards digital. Within digital, 51.8% of Cyber Week shopping was done by mobile, up from 49.9% in 2022. This is the first time Mobile has become the majority of Cyber Week spend.

**Marketing channels:** Adobe saw paid search as the biggest driver of sales for retailers across Cyber Week accounted for 27% of online sales followed by 21% direct, 17% organic search, 15% email and 12% affiliates and partners. Revenue directly attributable to social media was less than 5% of total sales but share has grown 6% y/y.

**Inflation update:** Adobe's digital price index which tracks online prices across 18 product categories showed the third consecutive month of m/m decline in November, down 3.64% as seen in the chart below. On a y/y basis, prices are down 6.4%. We view this as supporting broader marketing and advertising spend around discounting, but also enhancing the value proposition of e-commerce.



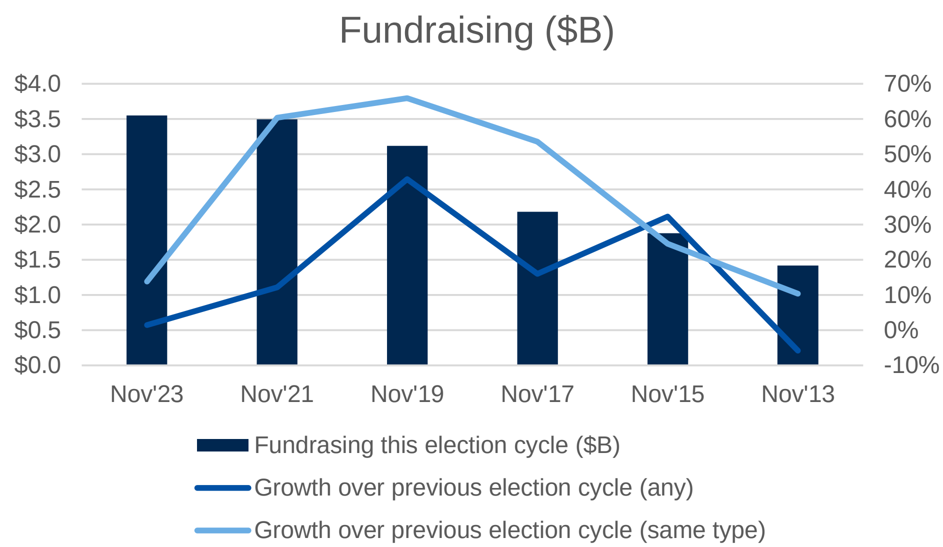

*Source: Adobe*


**Matthew Swanson** (612) 313-1237; matthew.swanson@rbccm.com

## Political sneak peak

**Political starting to heat up:** While still very early in the fundraising cycle, political is off to a good start with a record high in terms of money raised through November. That said, there is also a notable drop-off relative to the scale of growth we've seen compared to the recent election cycles, growing 1.5% relative to '22 midterms and 13.8% relative to the '20 presidential election.

**From a format perspective:** We've continued to hear an increasing focus on digital from a political spending perspective as being able to target based on geography has increased importance. Additionally, we feel that the political landscape may create new opportunities for third party verification providers like DoubleVerify who have not traditionally benefited from political spend and user generated content has the potential to become more divisive, brand safety will take an increased focus.




| Date | Fundrasing this election cycle ($B) | Growth over previous election cycle (any) | Growth over previous election cycle (same type) |
|---|---|---|---|
| Nov'23 | $3.6 | 1.5% | 13.8% |
| Nov'21 | $3.5 | 12.2% | 60.4% |
| Nov'19 | $3.1 | 42.9% | 65.9% |
| Nov'17 | $2.2 | 16.1% | 53.6% |
| Nov'15 | $1.9 | 32.3% | 24.6% |
| Nov'13 | $1.4 | -5.8% | 10.4% |

*Source: Federal Election Commission*

# Key commentary from Q3 earnings

Part 3

Capital Markets

## Let’s hear from our players: CTV

**Key takeaways:** CTV continues to be a key catalyst for growth and is outpacing the broader macro environment. While the shift from linear to streaming is a benefit to the overall TAM, we continue to monitor how the market matures both in terms of buying but also execution.

**DV** – “Our scale in **CTV continues to grow faster than the industry**, where DV covers the platforms that receive nearly all CTV ad spend. DV's industry-leading solutions span all aspects of CTV ad buying, from pre-bid avoidance to post-bid blocking and monitoring, and have **spurred CTV measurement growth of 29% in the third quarter, doubling the 14% sector growth** estimated by Magna Global.”

**MGNI** – “We were pleased with our execution in the quarter as we continued to solidify our position as the leading independent player in CTV. And as product mix shift stabilize and macro ad spend returns to normal, we believe our **CTV contribution ex-TAC growth will overtime approach our ad spend growth.** In this respect, it's important to remember that we are still in the early days of programmatic CTV…publishers are just now ramping AVOD and their inventory is limited and in high demand by advertisers. **With this dynamic, pubs generally prefer to sell programmatic deals through their direct sales teams**. The good news is **they're using our technology to execute those transactions.’**

**MGNI –** “We believe that as programmatic **C**TV scales, buyers will want to purchase **the majority of their CTV programmatically using advanced data targeting within biddable environments, a process that can't be executed using a direct sales team**. This evolution will attract a significantly broader advertiser base, increased ad spend, a more competitive CPM environment and better ROI in COGS for both buyers and sellers.”

**TTD – “From a scaled channel perspective, CTV, by a wide margin, led our growth again during the quarter**. In Q3, video, which includes CTV, represented a mid-40s percentage share of our business and continues to grow as a percentage of our mix.”

**TTD** – **“CTV is moving the streaming more and more and they're also moving to biddable** both as a total and as a percentage at a faster rate than it ever has before. Content has more competition than ever, and it needs ad as a part of their strategies more than it ever has as we mentioned in the prepared remarks. We're convinced that their incremental subscribers and the incremental revenue are largely going to come from ads.”

**PUBM** – “In May, we launched Activate to seamlessly connect buyers and publishers for **premium CTV and online video monetization, which represents a $65 billion TAM expansion controlled from the sell-side**.”

**PUBM** – “We are particularly **excited about the growth potential in CTV, where PMP and programmatic guaranteed transactions are most prevalent.**”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: Retail Media

**Key takeaways:** Retail media continues to be a growth lever though remains in the early innings with most updates being qualitative. At this point, management teams continue to focus on partnerships and product capabilities as we watch for more quantitative metrics around this catalyst. As an outlier in terms of disclosure, we’d note that DoubleVerify specifically called out +75% y/y growth YTD.

**DV** – “In addition to social, we are **continuing to scale across retail media networks**, which **generated 75% year-over-year revenue growth year-to-date, with a revenue contribution across all three business lines**. Our measurement tags are accepted on over 60 of the leading retail media networks and sites globally, including 14 of the top retail media platforms and over 45 major retailers. Today, we are thrilled to announce that we have expanded our measurement capabilities by being the first third-party verification solution for advertisers using Amazon custom audiences in Amazon DSP.

**TTD** – “Fourth**, retail media has become one of the fastest growing areas** of our business and **we expect this to continue in 2024.** Retail media is revolutionizing the way many advertisers in the CPG space think about measurement and attribution, and our innovation is at the center of this.”

**TTD** – “So what I look for in the **next two to three years is to see that continue and to see the trends of retailers** saying, I want to help close the loop. I want to use my data to help the biggest brands in the world sell products in my store. I want to spin my flywheel faster, and we want to see more and more retailers think about their business the way that Amazon thinks about their business, which is about spinning the flywheel and using data to make better decisions. If they simultaneously make that data available for measurement and attribution, it will be better for everyone, including and arguably especially, them. So we want to see them do that over the next two to three years.”

**PUBM** – “And so, we are going after opportunities where we can bring together a suite of offerings with onsite monetization, sponsored listings, as well as display and video along with offsite monetization. So, that's inventory or audience extension and **use of first party data to be able to scale retailers' budgets. So with the launch of Convert now we have a unified platform that can bring all of these use cases together and deliver that to commerce media participants**.”

**PUBM** – “The expanding opportunities for Convert supplement our **strong existing business with retailers who leverage our products to drive monetization**.”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: Signal Loss

**Key Takeaways:** As a reminder, Google announced that it will migrate 1% of Chrome users to Privacy Sandbox and disable third-party cookies in early FY/24, staying on track to deprecate cookies completely by 2H/24. The eventual cookie-loss is now being discussed as more of a slight tailwind than a headwinds as management teams have adapted to new methods of targeting. Investors remain more skeptical on the benefit as well as lack of disruption.

**DV** – “The Attain partnership, along with the recently launched ability to use DV's attention measurement data in Scibids AI through the DV Algorithmic Optimizer and our premier partnership with TVision to expand attention metrics to CTV, are great examples of the groundbreaking work that we are doing to action and expand the use of attention measurement data, **which we believe will be core to the future of digital ad verification performance as cookies become challenged**.

**MGNI** – “I think where we're starting to see – and you can see it with services that have been around for some time, take a look at a Hulu, you're starting to see this openness to biddable just largely because the buyers are wanting that to occur. And they want to use more data targeting and they want to use more audience definition that may be coming from the buy side, not just the sell side. **So, I think that you have that occurring with that cohort of advertisers, a desire to do more automated, to do more data targeting, to do advanced biddable environments**.”

**TTD** – “The advances in CTV in 2023 for The Trade Desk have been accelerated by the fourth category of innovation I wanted to discuss today, identity. **With Google's latest disclosure that they plan to deprecate cookies in 2024, the industry has been more focused than ever on coalescing around a better alternative. Nearly all of the major streaming companies in the US have embraced UID2.** They understand that if advertisers only advertise on users likely to be interested in their products, then advertisers will pay meaningfully more for those impressions.”

**TTD** – “And the results were very impressive. **In the US alone, their conversion rate with UID2 was more than 400% higher than with cookies**. Their return on ad spend was 900% higher and their cost per acquisition was 83% lower. For the first time ever, in 2024, we expect the majority of CTV and premium video impressions to be bought on our platform using either EUID or UID2.”

**PUBM** – “As privacy regulation continues to increase around the world with the consumer at the center of how their data is used to deliver relevant advertising to them, through Connect, we had developed and scaled a portfolio of approaches to help publishers and ad buyers move **beyond the limitations of anonymous targeting solutions such as third-party cookies or Apple's IDFA. As** the primary programmatic advertising platform at the intersection of the consumer and the publisher, we sit at the nexus of consumer consent, which we believe is **a long-term structural advantage**.”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: Walled Gardens vs. open-internet

**Key takeaways:** Overall, the open-internet continues to benefit from the momentum in CTV, where the walled gardens are less prevalent. While these share losses may be minimal relative to the size of walled gardens, they free up more dollars for the open-internet. Additionally, we think recent the anti-trust issues have created more demand for transparency and visibility.

**DV** – “When **we move our Meta solution to GA in 2024**, a large part of the long-term growth opportunity is cross-selling DV's Meta measurement solution to existing DV customers who are not currently implementing our solutions on the channel. **While Meta is the largest contributor to DV's social revenue**, over 50% of our current social advertisers still have yet to activate our measurement solutions on Meta.”

**DV** – “And I think that's the one really unique thing about DV versus anybody else in the ad tech space, **which is we have open Internet.** We've got **social, we've got programmatic, we've got the ability to look at geos for growth, we've got new client growth**. I mean, all of these things give us a lot of different levers to pull. If one area looks soft, one geography looks soft, or one platform isn't performing. And I think that's the real takeaway for us, which is having optionality with a large basket of goods in many markets and covering many platforms puts us in a really unique position.”

**MGNI** – “We're also encouraged by the fact that a lot of the growth in our CTV business is being enabled through advanced integrations with our ad server, SpringServe. As you know, ad serving puts us one step closer to the publisher and creates a stickier relationship. With SpringServe, our platform is more deeply embedded within the client workflow and becomes a central technology in their overall monetization strategy. The stickiness of the software and development we provide in CTV is far different than a typical SSP model. We **are clearly growing share, as shown by our ad spend growth above 20%, and this is a result of working with nearly every scaled media owner outside of the walled gardens**. These clients have continually expanded their relationship with us, both vertically and horizontally.”

**TTD** – “With that same foresight**, I believe the walled garden strategy will not work for most companies, if any, at end-state**. Competition, innovation and the benefits of globally integrated markets outweigh the benefits of draconian walled gardens. The surest way to prove the value of the open Internet is to continue to innovate in the third and fourth and fifth innovations that I want to talk about today, CTV, identity and retail media.”

**TTD** – “Our results are a reflection of the premium advertisers are placing on precision, agility and transparency, **as they continue to shift away from linear media and walled gardens**.”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: Vertical specific commentary

**Key takeaways**: There seemed to be vertical strength in travel while there was more weakness in media and entertainment due in part to the writers strikes. Overall, the environment remains cautious as management teams continue to navigate with less visibility. We remain cautious but optimistic around CY/24.

**MGNI** – “From a vertical perspective**, travel** was our strongest performing category, while weaker performing categories **included retail, financial services, and media and entertainment related to the actors and writers' strikes**.”

**TTD** – “In terms of the verticals that represent at least 1% of our spend, we continued to see strong performance **in food and drink, travel, and automotive**. **Health and fitness and business** were below the average.”

**TTD** – “Another reminder, we represent the Ad Age Top 200 advertisers and, of course, the majority of the S&P 500, something that I've pointed out many times before. These are, of course, the largest advertisers in the world. And, of course, that means that we represent nearly every major sector of the economy as well**. So that said, starting about the second week of October, we began to see some transitory cautiousness around certain advertisers.** For example, **we saw some reduction in brand spend in verticals, such as automotive and consumer electronics, for instance, specifically around cell phones and media and entertainment….Some of these industries have been recently impacted by strikes**, such as the US auto industry. So the first week in November, we have **seen spend stabilize,** and we're very confident that we will continue to outpace our industry and gain market share. Excluding election spend in Q4 of 2022, we're guiding to about 22% year-over-year growth, which is significantly faster than the industry and illustrates the long-term strength of our business model, especially when you consider those comps.”

**PUBM** – “In terms of ad vertical trends, we saw improving growth through the quarter for the majority of our top 10 ad verticals. We saw double-digit growth for the **automotive, food and drink, travel, technology and business verticals**. **Shopping** increased sequentially by about 10% from Q2, but remained below prior year levels. Overall, our top 10 ad verticals grew 8% year-over-year in aggregate.”

**PUBM** – “In terms of ad spend by vertical, the majority of the **top 10 verticals improved sequentially through October**. Nevertheless, given **current macroeconomic and geopolitical conditions, we remain cautious on brand advertising spend** and accordingly have broaden our Q4 outlook range.”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: International

**Key takeaways:** Overall, momentum continues to grow with international outpacing the Americas and management teams remain focused on expanding their global reach. Longer-term, we think international can be a good catalyst for growth across our coverage.

**DV** – “On the international growth, **we saw 75% growth across EMEA, 46% growth across APAC**. So some variation there, but still strong growth across all the sectors that we have out there. If you look at what's driving growth in both of those regions outside the US, it's very similar to what we've seen in the US, which is social. Social is driving growth. Short-form video is driving social. So all those things together, we think, **are helping continue to drive the expansion that we are seeing in EMEA and APAC**.”

**MGNI** – “Geographically**, our international results outpaced our US results, led by our DV+ business** with new publisher wins and overall volume growth.”

**TTD** – “Geographically, North America represented about 87% of our business in Q3 and international represented about 13%. We are **very pleased that international growth slightly outpaced North America for the third quarter in a row**. **CTV across EMEA and North Asia was very strong during the quarter**, growing over 100% year-over-year in each region.”

**PUBM** – “Most recently, **we launched Activate in the Asia-Pacific region** with partners including dentsu APAC, iQIYI, KINESSO India, a unit of IPG, Madison Digital and Wishmedia. Central to our conversations around Activate is the need to simplify the digital advertising supply chain and drive greater efficiency. ”

**PUBM** – “We have also scaled Connect to support dozens of global data providers, further extending privacy-safe targetable data available for buyers. The end result is again higher ROI for the buyer and incremental revenue for our publishers. For example, Audigent utilizes Connect to offer buyers premium multi-publisher curated datasets to meet advertisers' goals across CTV, online video, mobile and display inventory at scale. And in an industry-first, buyers now have access to experience unique commerce media targeting capabilities, including data such as spending models, property data, automotive audiences and shopping preferences. **PubMatic is the first and only SSP with direct access to this data in both the United Kingdom and United States.”**

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

## Let’s hear from our players: All else macro (inflation, recession, etc.)

**Key takeaways:** Sentiment around the macros has remained mixed with companies like The Trade Desk seeing some weakness in October which stabilized in November while companies like DoubleVerify saw better stability. Overall, we think management teams and investors are both cautious into year-end given the unexpectedly tough environment in December’22.

**DV** – “On the macro look, we've kind of talked about this story previously where we came into 2023 with really a big question mark of what the year was going to look like. **The end of last year kind of sputtered out and that perspective beginning of this year was not great**. I mean**,** **that has improved throughout the year to a point where I think we've said things have stabilized.** And we noted in the script that we see a **pretty stable rest of the year ahead of us**. And I think we have not had the privilege of having big ad growth tailwinds yet we continue to grow at pretty extraordinary rates as far as we're concerned. Look, I think we're going to have a good Q4. We're guiding to a solid Q4. I **think we feel a lot more confident at the end of this year** than we did probably at the same time last year. So we don't have a really – we don't have a crystal ball about 2024. But I can say as we look today towards the end of this year, we feel **definitely better now than we did at the same time last year**.”

**MGNI** – “And so, with that in mind, our **2024 revenue guide certainly reflects caution around the macro, caution in our managed service business, modest expectations from the presidential year**. And so, if I think about upside from a CTV perspective, certainly, I think **if the macro turns around, that certainly pushes more dollars into some of our longer tail, higher take rate channels in CTV, there could be upside from the presidential election as well**. So, overall, we just try to take a very cautious approach with the focus on giving some visibility around our cost structure.”

**TTD –** “Another reminder, we represent the Ad Age Top 200 advertisers and, of course, the majority of the S&P 500, something that I've pointed out many times before. These are, of course, the largest advertisers in the world. And, of course, that means that we represent nearly every major sector of the economy as well. **So that said, starting about the second week of October, we began to see some transitory cautiousness around certain advertisers**. For example, we saw some reduction in brand spend in verticals, such as automotive and consumer electronics, for instance, specifically around cell phones and media and entertainment….Some of these industries have been recently impacted by strikes, such as the US auto industry. **So the first week in November, we have seen spend stabilize, and we're very confident that we will continue to outpace our industry and gain market share**. Excluding election spend in Q4 of 2022, we're guiding to about 22% year-over-year growth, which is significantly faster than the industry and illustrates the long-term strength of our business model, especially when you consider those comps.”

**PUBM** – “But we also have seen continued progress on display volume growth. **And so, to your point about the macro, the macro has largely affected CPMs**. But because we've been stayed focused on our customers and the infrastructure, **we're seeing really good volume trends in display**.”

*Note: Red and green text emphasis by RBC Capital Markets. Source: Company earnings call transcripts*

# Valuation

Part 4

# Current ad-tech valuations

| | | Price | EV | EV/Revenue | | Rev. Growth | | EV/EBITDA | | EBITDA Margin | | Growth + Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ticker | Name | NOW | ($M) | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E |
| APP | AppLovin Corp. Class A | $ 43.59 | $ 19,394 | 6.0x | 5.1x | 15% | 17% | 13.3x | 10.8x | 45% | 47% | 60% | 64% |
| APPS | Digital Turbine, Inc. | $ 7.06 | $ 1,066 | 1.8x | 1.7x | -13% | 4% | 8.8x | 8.5x | 20% | 20% | 7% | 24% |
| ATY | illumin Holdings Inc. | $ 1.12 | $ 28 | 0.3x | 0.3x | 8% | 10% | 52.0x | 6.1x | 1% | 4% | 8% | 14% |
| CRTO | Criteo SA Sponsored ADR | $ 24.99 | $ 1,332 | 1.3x | 1.3x | 8% | 3% | 4.8x | 4.6x | 27% | 28% | 36% | 31% |
| CTV | Innovid Corp. | $ 1.40 | $ 192 | 1.4x | 1.2x | 8% | 13% | 10.7x | 8.4x | 13% | 15% | 21% | 27% |
| DSP | Viant Technology, Inc. Class A | $ 7.07 | $ 303 | 2.1x | 1.9x | 14% | 10% | 11.1x | 9.1x | 19% | 21% | 34% | 31% |
| **DV** | **DoubleVerify Holdings, Inc.** | **$ 36.05** | **$ 6,333** | **11.1x** | **9.0x** | **26%** | **24%** | **35.0x** | **29.0x** | **32%** | **31%** | **58%** | **54%** |
| IAS | Integral Ad Science Holding Corp | $ 15.31 | $ 2,310 | 4.9x | 4.3x | 15% | 15% | 14.6x | 12.5x | 34% | 34% | 49% | 49% |
| **MGNI** | **Magnite, Inc.** | **$ 9.67** | **$ 1,831** | **3.4x** | **3.1x** | **6%** | **8%** | **11.0x** | **9.9x** | **31%** | **31%** | **36%** | **39%** |
| OB | Outbrain, Inc. | $ 4.28 | $ 194 | 0.2x | 0.2x | -5% | 6% | 6.5x | 4.6x | 3% | 4% | -2% | 10% |
| **PUBM** | **PubMatic, Inc. Class A** | **$ 17.69** | **$ 865** | **3.3x** | **3.0x** | **2%** | **9%** | **11.9x** | **10.3x** | **28%** | **30%** | **30%** | **39%** |
| RAMP | LiveRamp Holdings, Inc. | $ 36.33 | $ 2,117 | 3.4x | 3.1x | 8% | 8% | 22.2x | 16.2x | 15% | 19% | 23% | 27% |
| SST | System1, Inc. Class A | $ 2.07 | $ 676 | 1.5x | 1.7x | -46% | -10% | 19.2x | 17.2x | 8% | 10% | -38% | 0% |
| TBLA | Taboola.com Ltd. | $ 3.86 | $ 1,454 | 1.0x | 0.7x | 4% | 37% | 18.1x | 7.1x | 6% | 10% | 9% | 47% |
| **TRMR** | **Tremor International Ltd. Sponsored ADR** | **$ 4.82** | **$ 305** | **1.0x** | **0.9x** | **1%** | **7%** | **3.7x** | **3.2x** | **26%** | **29%** | **27%** | **35%** |
| **TTD** | **Trade Desk, Inc. Class A** | **$ 77.65** | **$ 39,923** | **20.8x** | **17.3x** | **22%** | **20%** | **52.5x** | **44.1x** | **40%** | **39%** | **61%** | **59%** |
| ZETA | Zeta Global Holdings Corp. Class A | $ 8.98 | $ 2,039 | 2.8x | 2.4x | 23% | 17% | 16.1x | 12.9x | 17% | 19% | 40% | 36% |
| **Mean** | | | | **3.9x** | **3.4x** | **6%** | **12%** | **18.3x** | **12.6x** | **21%** | **23%** | **27%** | **35%** |
| **Median** | | | | **2.1x** | **1.9x** | **8%** | **10%** | **13.3x** | **9.9x** | **20%** | **21%** | **30%** | **35%** |

*Source: FactSet estimates (as of 12/19/2023), RBC Capital Markets*

# Current rule of 40 vendors with +15% growth

| | | Price | EV | EV/Revenue | | Rev. Growth | | EV/EBITDA | | EBITDA Margin | | Growth + Margin | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ticker | Name | NOW | ($M) | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E | CY/23E | CY/24E |
| BILL | BILL Holdings, Inc. | $ 83.56 | $ 8,615 | 7.5x | 6.5x | 34% | 17% | 64.3x | 48.2x | 12% | 13% | 46% | 30% |
| CRWD | CrowdStrike Holdings, Inc. Class A | $ 258.33 | $ 63,187 | 21.2x | 16.4x | 37% | 29% | 86.5x | 64.0x | 25% | 26% | 62% | 55% |
| DDOG | Datadog Inc Class A | $ 122.41 | $ 42,895 | 20.4x | 16.6x | 26% | 22% | 86.0x | 69.6x | 24% | 24% | 49% | 46% |
| DT | Dynatrace, Inc. | $ 55.18 | $ 16,888 | 12.5x | 10.4x | 22% | 20% | 44.1x | 36.8x | 28% | 28% | 51% | 48% |
| **DV** | **DoubleVerify Holdings, Inc.** | **$ 36.05** | **$ 6,333** | **11.1x** | **9.0x** | **26%** | **24%** | **35.0x** | **29.0x** | **32%** | **31%** | **58%** | **54%** |
| FTNT | Fortinet, Inc. | $ 57.76 | $ 43,101 | 8.1x | 7.2x | 20% | 12% | 27.6x | 25.3x | 29% | 29% | 49% | 41% |
| NET | Cloudflare Inc Class A | $ 85.51 | $ 29,899 | 23.2x | 18.2x | 32% | 28% | NM | NM | 19% | 18% | 51% | 46% |
| NOW | ServiceNow, Inc. | $ 707.71 | $ 149,811 | 16.8x | 13.8x | 23% | 21% | 52.0x | 42.1x | 32% | 33% | 56% | 54% |
| PANW | Palo Alto Networks, Inc. | $ 308.61 | $ 114,630 | 15.4x | 13.0x | 22% | 19% | 54.8x | 44.5x | 28% | 29% | 50% | 48% |
| PAYC | Paycom Software, Inc. | $ 207.98 | $ 12,095 | 7.2x | 6.5x | 22% | 11% | 17.0x | 15.7x | 42% | 41% | 65% | 52% |
| PCTY | Paylocity Holding Corp. | $ 166.86 | $ 9,477 | 7.3x | 6.2x | 27% | 19% | 22.3x | 18.2x | 33% | 34% | 60% | 53% |
| SNOW | Snowflake, Inc. Class A | $ 199.02 | $ 71,884 | 26.3x | 20.2x | 37% | 30% | NM | NM | 10% | 13% | 47% | 43% |
| TEAM | Atlassian Corp Class A | $ 233.07 | $ 62,731 | 16.3x | 13.6x | 21% | 20% | 75.8x | 62.1x | 22% | 22% | 43% | 42% |
| **TTD** | **Trade Desk, Inc. Class A** | **$ 77.65** | **$ 39,923** | **20.8x** | **17.3x** | **22%** | **20%** | **52.5x** | **44.1x** | **40%** | **39%** | **61%** | **59%** |
| U | Unity Software, Inc. | $ 40.94 | $ 18,794 | 8.8x | 7.8x | 53% | 13% | 50.6x | 30.1x | 17% | 26% | 71% | 39% |
| ZS | Zscaler, Inc. | $ 224.04 | $ 36,355 | 20.0x | 15.7x | 38% | 28% | NM | 72.2x | 18% | 22% | 57% | 50% |
| **Mean** | | | | **15.2x** | **12.4x** | **29%** | **21%** | **51.4x** | **43.0x** | **26%** | **27%** | **55%** | **48%** |
| **Median** | | | | **15.9x** | **13.3x** | **26%** | **20%** | **52.0x** | **43.1x** | **26%** | **27%** | **53%** | **48%** |

*Source: FactSet estimates (as of 12/19/2023), RBC Capital Markets*


**Matthew Swanson** (612) 313-1237; matthew.swanson@rbccm.com

# Companies mentioned

DoubleVerify Holdings Inc (NYSE: DV US; $35.52; Outperform)
Magnite, Inc. (NASDAQ: MGNI US; $9.55; Outperform)
Pubmatic, Inc. (NASDAQ: PUBM US; $16.96; Outperform)
The Trade Desk, Inc. (NASDAQ: TTD US; $75.47; Outperform)
Tremor International Ltd. (NASDAQ: TRMR US; $4.87; Outperform)

# Required disclosures

## Conflicts disclosures

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors, including total revenues of the member companies of RBC Capital Markets and its affiliates, a portion of which are or have been generated by investment banking activities of the member companies of RBC Capital Markets and its affiliates.
With regard to the MAR investment recommendation requirements in relation to relevant securities, a member company of Royal Bank of Canada, together with its affiliates, may have a net long or short financial interest in excess of 0.5% of the total issued share capital of the entities mentioned in the investment recommendation. Information relating to this is available upon request from your RBC investment advisor or institutional salesperson.

Please note that current conflicts disclosures may differ from those as of the publication date on, and as set forth in, this report. To access current conflicts disclosures, clients should refer to https://www.rbccm.com/GLDisclosure/PublicWeb/DisclosureLookup.aspx?entityId=1 or send a request to RBC CM Research Publishing, P.O. Box 50, 200 Bay Street, Royal Bank Plaza, 29th Floor, South Tower, Toronto, Ontario M5J 2W7.

RBC Capital Markets, LLC makes a market in the securities of DoubleVerify Holdings Inc.

RBC Capital Markets, LLC makes a market in the securities of Magnite, Inc..

RBC Capital Markets, LLC makes a market in the securities of Pubmatic, Inc..

RBC Capital Markets, LLC makes a market in the securities of Tremor International Ltd..

A member company of RBC Capital Markets or one of its affiliates received compensation for products or services other than investment banking services from Tremor International Ltd. during the past 12 months. During this time, a member company of RBC Capital Markets or one of its affiliates provided non-securities services to Tremor International Ltd..

RBC Capital Markets has provided Tremor International Ltd. with non-securities services in the past 12 months.

RBC Capital Markets, LLC makes a market in the securities of The Trade Desk, Inc..

## Explanation of RBC Capital Markets Equity rating system

An analyst's 'sector' is the universe of companies for which the analyst provides research coverage. Accordingly, the rating assigned to a particular stock represents solely the analyst's view of how that stock will perform over the next 12 months relative to the analyst's sector average.
**Ratings**
**Outperform (O):** Expected to materially outperform sector average over 12 months.
**Sector Perform (SP):** Returns expected to be in line with sector average over 12 months.
**Underperform (U):** Returns expected to be materially below sector average over 12 months.
**Restricted (R):** RBC policy precludes certain types of communications, including an investment recommendation, when RBC is acting as an advisor in certain merger or other strategic transactions and in certain other circumstances.
**Not Rated (NR):** The rating, price targets and estimates have been removed due to applicable legal, regulatory or policy constraints which may include when RBC Capital Markets is acting in an advisory capacity involving the company.
**Risk Rating**
The **Speculative** risk rating reflects a security's lower level of financial or operating predictability, illiquid share trading volumes, high balance sheet leverage, or limited operating history that result in a higher expectation of financial and/or stock price volatility.

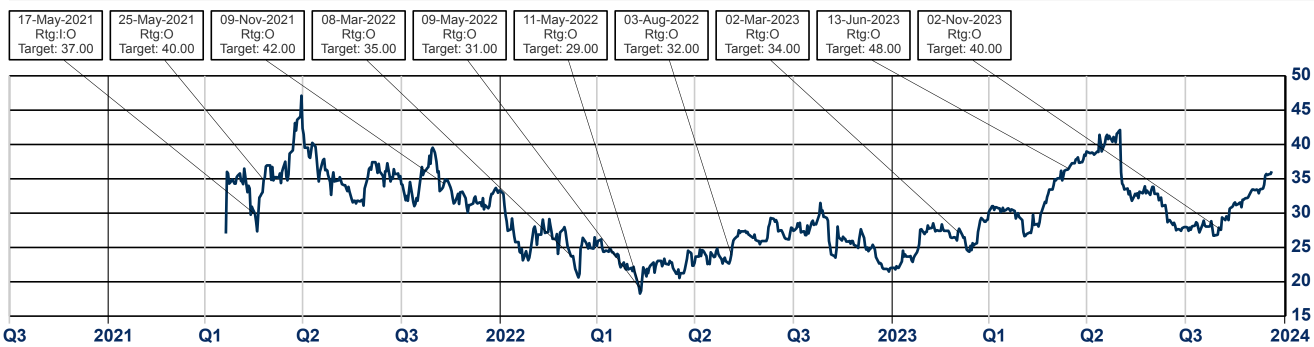
## Distribution of ratings

For the purpose of ratings distributions, regulatory rules require member firms to assign ratings to one of three rating categories - Buy, Hold/Neutral, or Sell - regardless of a firm's own rating categories. Although RBC Capital Markets' ratings of Outperform (O), Sector Perform (SP), and Underperform (U) most closely correspond to Buy, Hold/Neutral and Sell, respectively, the meanings are not the same because our ratings are determined on a relative basis.

**Distribution of ratings**
**RBC Capital Markets, Equity Research**
**As of 30-Sep-2023**

| | | | Investment Banking Serv./Past 12 Mos. | |
|---|---|---|---|---|
| Rating | Count | Percent | Count | Percent |
| BUY [Outperform] | 820 | 55.97 | 250 | 30.49 |
| HOLD [Sector Perform] | 590 | 40.27 | 148 | 25.08 |
| SELL [Underperform] | 55 | 3.75 | 5 | 9.09 |

**Rating and price target history for: DoubleVerify Holdings Inc, DV US as of 19-Dec-2023 (in USD)**




Legend:
O: Outperform; SP: Sector Perform; U: Underperform; R: Restricted; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage;
NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.

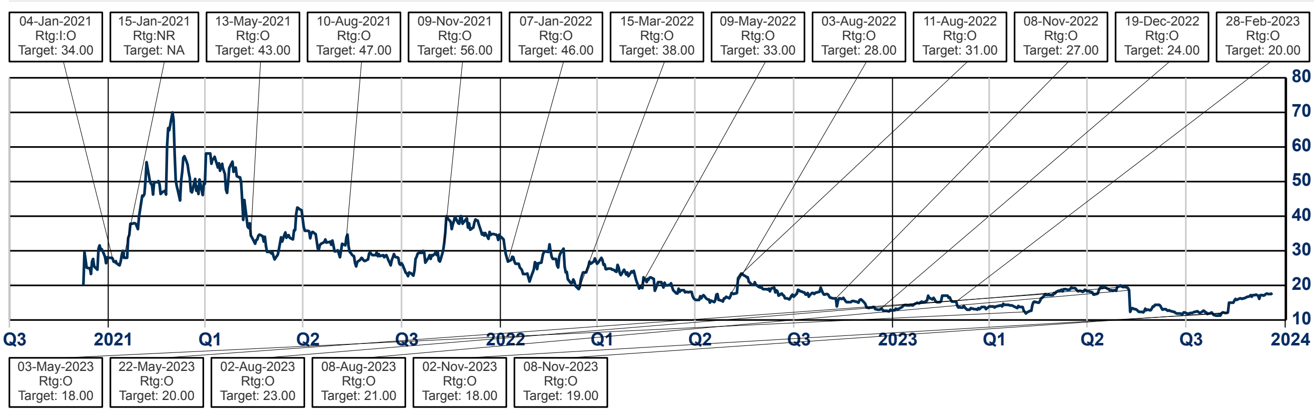
Created by: BlueMatrix

### Rating and price target history for: Magnite, Inc., MGNI US as of 19-Dec-2023 (in USD)


Legend:
O: Outperform; SP: Sector Perform; U: Underperform; R: Restricted; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage;
NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.

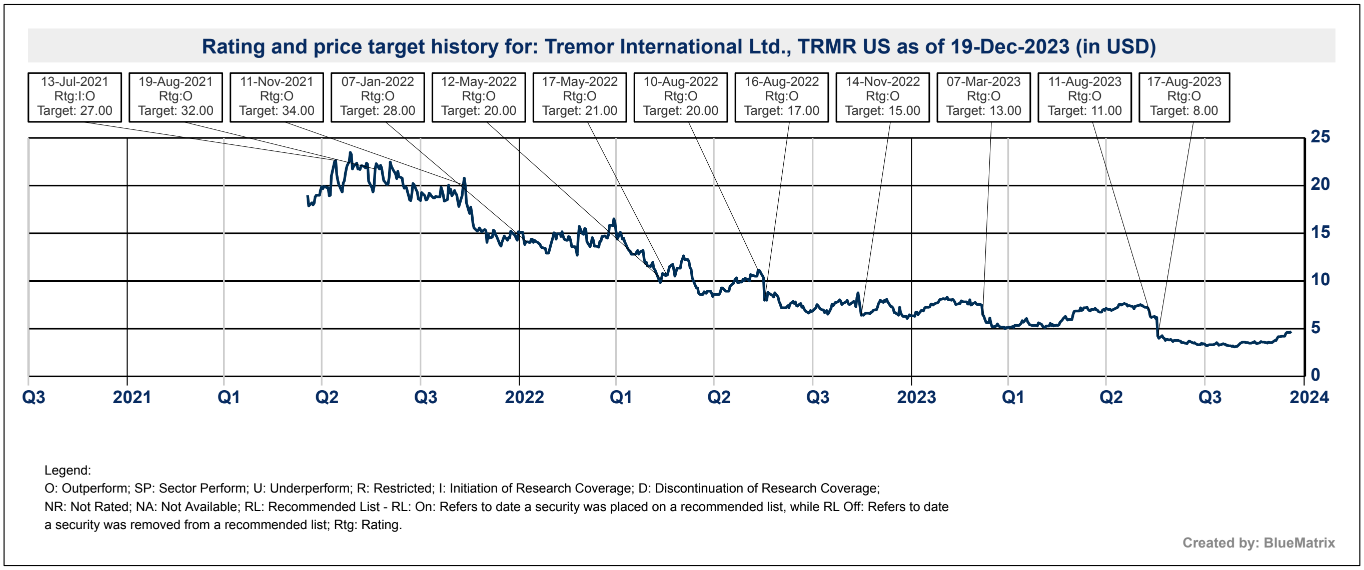
Created by: BlueMatrix

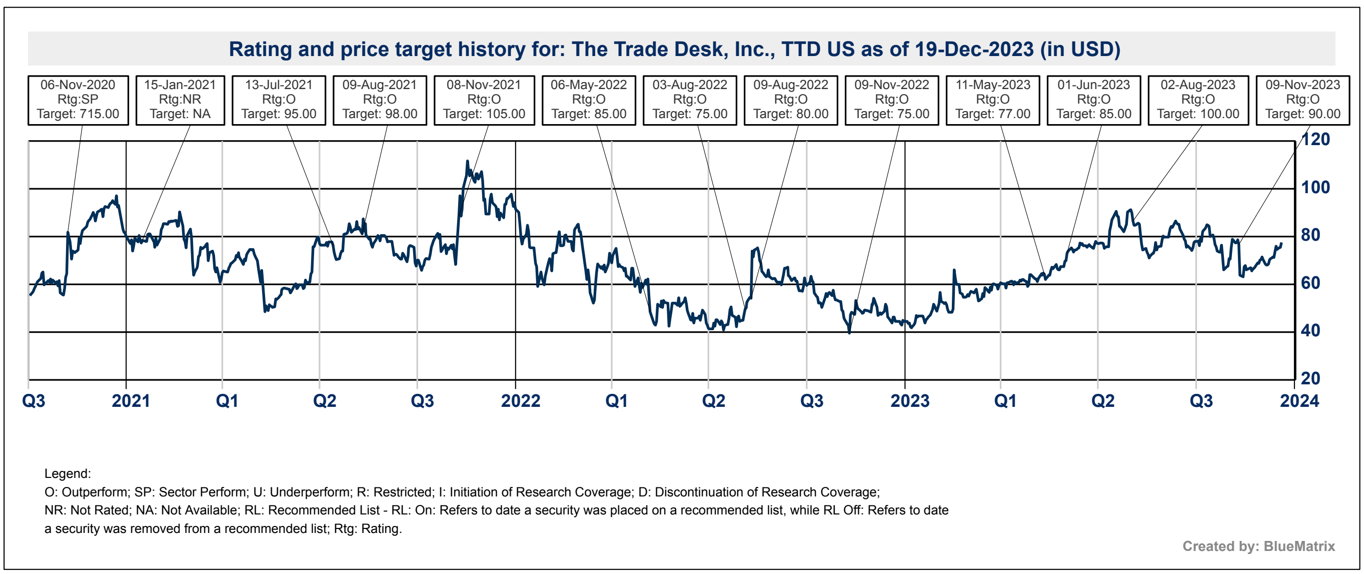
### Rating and price target history for: Pubmatic, Inc., PUBM US as of 19-Dec-2023 (in USD)




Legend:
O: Outperform; SP: Sector Perform; U: Underperform; R: Restricted; I: Initiation of Research Coverage; D: Discontinuation of Research Coverage;
NR: Not Rated; NA: Not Available; RL: Recommended List - RL: On: Refers to date a security was placed on a recommended list, while RL Off: Refers to date a security was removed from a recommended list; Rtg: Rating.

Created by: BlueMatrix




References to a Recommended List in the recommendation history chart may include one or more recommended lists or model portfolios maintained by RBC Wealth Management or one of its affiliates. RBC Wealth Management recommended lists include the Guided Portfolio: Prime Income (RL 6), the Guided Portfolio: Dividend Growth (RL 8), the Guided Portfolio: ADR (RL 10), and the Guided Portfolio: All Cap Growth (RL 12). The abbreviation 'RL On' means the date a security was placed on a Recommended List. The abbreviation 'RL Off' means the date a security was removed from a Recommended List. As of April 3, 2023, U.S. RBC Wealth Management's quarterly reports will serve as the primary communication for its models and will highlight any changes to the model made during the quarter.

## Equity valuation and risks

For valuation methods used to determine, and risks that may impede achievement of, price targets for covered companies, please see the most recent company-specific research report at www.rbcinsightresearch.com or send a request to RBC Capital Markets Research Publishing, P.O. Box 50, 200 Bay Street, Royal Bank Plaza, 29th Floor, South Tower, Toronto, Ontario M5J 2W7.

**DoubleVerify Holdings Inc**

### Valuation

We calculate our base-case price target of $40 by applying an 9.5x multiple to our CY/24 revenue estimate. Our target multiple is in line rule of 40 peers growing at least 20%, in our view warranted due to the potential for upside to estimates, better profitability and resiliency to macro challenges. Our price target supports our Outperform rating.

### Risks to rating and price target

DoubleVerify is a transactional model; contracts are "evergreen" without guaranteed minimums.

DoubleVerify is tied to the advertising vertical; any macroeconomic event that impacts the supply or demand of digital advertising could cause an adverse impact on its end markets that is disproportionate to other software markets.

**Magnite, Inc.**

### Valuation

We calculate our price target of $13 by applying a 4x multiple to our CY/24E revenue estimate or 13x EV/EBITDA. Our target multiple is a slight premium to contracted ad-tech peers, in our view warranted due to the potential for upside to estimates driven by strong CTV traction balanced by increased risk from the nascent stage of that same market. Our price target supports our Outperform rating.

### Risks to rating and price target

- Magnite has seen both headwinds and tailwinds resulting from the COVID-19 environment, which could impact the advertising industry and the company's performance.
- Magnite is a transactional model; revenue is based on the number of transactions and could lead to more revenue variability based on company-specific and macro challenges.
- Magnite is tied to the advertising vertical; any macroeconomic event that impacts the supply or demand of digital advertising could cause an adverse impact on their end markets disproportionately to other software markets.
- Magnite has created an advantage in CTV/OTT. Failure to manage and defend these emerging growth opportunities could lead to market share losses.

**Pubmatic, Inc.**

### Valuation

We calculate our base-case price target of $19 by applying a 10.6x multiple on higher CY/24E adj-EBITDA estimates. Our target multiple is in line with ad-tech peers, in our view warranted due to the potential for upside to estimates, better profitability and overall model durability. Our price target supports our Outperform rating.

### Risks to rating and price target

- PubMatic has seen both headwinds and tailwinds resulting from the COVID-19 environment, which could impact the advertising industry and the company's performance.
- PubMatic is a transactional model; revenue is based on the number of transactions and could lead to more revenue variability based on company specific and macro challenges.
- PubMatic is tied to the advertising vertical; any macroeconomic event that impacts the supply or demand of digital advertising could cause an adverse impact on their end markets disproportionately to other software markets.
- PubMatic has created an advantage in CTV/OTT as well as mobile and video channels. Failure to manage and defend these emerging growth opportunities could lead to market share losses.

**The Trade Desk, Inc.**

### Valuation

We calculate our base-case price target of $90 by applying a 19.9x multiple to our CY/24 revenue estimate, which is 52.6x CY/24E adj-EBITDA. Our target multiple is a premium to rule of 40 peers growing at least 20.5% in CY/24 on a sales multiple and 15.6% on an adj-EBITDA multiple, in our view warranted due to the potential for upside to estimates, much better profitability, and in-line growth balanced with vertical-specific risks and lower visibility. Our price target supports our Outperform rating.

### Risks to rating and price target

- The Trade Desk has seen both headwinds and tailwinds resulting from the COVID-19 environment, which could impact the advertising industry and the company's performance.
- The Trade Desk is a transactional model; revenue is based on the number of transactions and could lead to more revenue variability based on company-specific and macro challenges.

- The Trade Desk is tied to the advertising vertical; any macroeconomic event that impacts the supply or demand of digital advertising could have a disproportionately adverse impact on its end markets compared to other software markets.
- The Trade Desk has a history of utilizing third-party cookies that are scheduled to be phased out in 2023. This could impact the broader ad-tech industry including Trade Desk's operations.

**Tremor International Ltd.**

### Valuation

We calculate our base-case price target of $8 by applying a 5.4x multiple to our CY/24E adj-EBITDA. Our target multiple is a discount to ad-tech peers' CY/24E EV/EBITDA, due to expectations for higher profitability but lower growth than peers in CY/24E. Our price target supports our Outperform rating.

### Risks to rating and price target

- Tremor has seen both headwinds and tailwinds resulting from the COVID-19 environment, which could impact the advertising industry and the company's performance.
- Tremor is tied to the advertising vertical; any macroeconomic event that impacts the supply or demand of digital advertising could cause an adverse impact on its end markets disproportionately to other software markets.
- Tremor derives a larger percentage of revenue from a limited number of large advertising customers including 10% of revenue in 2020 from one DSP customer.
- As a dual-listed stock, there is potential for currency fluctuations to impact the price of the ordinary shares traded on the London Stock Exchange.

## Conflicts policy

RBC Capital Markets Policy for Managing Conflicts of Interest in Relation to Investment Research is available from us on request. To access our current policy, clients should refer to
https://www.rbccm.com/global/file-414164.pdf
or send a request to RBC Capital Markets Research Publishing, P.O. Box 50, 200 Bay Street, Royal Bank Plaza, 29th Floor, South Tower, Toronto, Ontario M5J 2W7. We reserve the right to amend or supplement this policy at any time.

## Dissemination of research

RBC Capital Markets endeavors to make all reasonable efforts to provide research content simultaneously to all eligible clients, having regard to local time zones in overseas jurisdictions. RBC Capital Markets provides eligible clients with access to Research Reports on the Firm's proprietary INSIGHT website, via email and via third-party vendors. Please contact your investment advisor or institutional salesperson for more information regarding RBC Capital Markets' research.
For a list of all recommendations on the company that were disseminated during the prior 12-month period, please click on the following link: https://rbcnew.bluematrix.com/sellside/MAR.action
The 12 month history of Quick Takes can be viewed at RBC Insight.

## Analyst certification

All of the views expressed in this report accurately reflect the personal views of the responsible analyst(s) about any and all of the subject securities or issuers. No part of the compensation of the responsible analyst(s) named herein is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the responsible analyst(s) in this report.

## Third-party disclaimers

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard & Poor's Financial Services LLC ("S&P") and is licensed for use by RBC. Neither MSCI, S&P, nor any other party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

RBC Capital Markets disclaims all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any statements made to the media or via social media that are in turn quoted in this report, or otherwise reproduced graphically for informational purposes.

## Disclaimer

RBC Capital Markets is the business name used by certain branches and subsidiaries of the Royal Bank of Canada, including RBC Dominion Securities Inc., RBC Capital Markets, LLC, RBC Europe Limited, RBC Capital Markets (Europe) GmbH, Royal Bank of Canada, Hong Kong Branch, Royal Bank of Canada, Singapore Branch and Royal Bank of Canada, Sydney Branch. The information contained in this report has been compiled by RBC Capital Markets from sources believed to be reliable, but no representation or warranty, express or implied, is made by Royal Bank of Canada, RBC Capital Markets, its affiliates or any other person as to its accuracy, completeness or correctness. All opinions and estimates contained in this report constitute RBC Capital Markets'' judgement as of the date of this report, are subject to change without notice and are provided in good faith but without legal responsibility. Nothing in this report constitutes legal, accounting or tax advice or individually tailored investment advice. This material is prepared for general circulation to clients and has been prepared without regard to the individual financial circumstances and objectives of persons who receive it. The investments or services contained in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about the suitability of such investments or services. This report is not an offer to sell or a solicitation of an offer to buy any securities. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. RBC Capital Markets research analyst compensation is based in part on the overall profitability of RBC Capital Markets, which includes profits attributable to investment banking revenues. Every province in Canada, state in the U.S., and most countries throughout the world have their own laws regulating the types of securities and other investment products which may be offered to their residents, as well as the process for doing so. As a result, the securities discussed in this report may not be eligible for sale in some jurisdictions. RBC Capital Markets may be restricted from publishing research reports, from time to time, due to regulatory restrictions and/ or internal compliance policies. If this is the case, the latest published research reports available to clients may not reflect recent material changes in the applicable industry and/or applicable subject companies. RBC Capital Markets research reports are current only as of the date set forth on the research reports. This report is not, and under no circumstances should be construed as, a solicitation to act as securities broker or dealer in any jurisdiction by any person or company that is not legally permitted to carry on the business of a securities broker or dealer in that jurisdiction. To the full extent permitted by law neither RBC Capital Markets nor any of its affiliates, nor any other person, accepts any liability whatsoever for any direct, indirect or consequential loss arising from, or in connection with, any use of this report or the information contained herein. No matter contained in this document may be reproduced or copied by any means without the prior written consent of RBC Capital Markets in each instance.

Additional information is available on request.

**To U.S. Residents:**

This publication has been approved by RBC Capital Markets, LLC (member FINRA, NYSE, SIPC), which is a U.S. registered broker-dealer and which accepts responsibility for this report and its dissemination in the United States. Any U.S. recipient of this report that is not a registered broker-dealer or a bank acting in a broker or dealer capacity and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report, should contact and place orders with RBC Capital Markets, LLC.

**To Canadian Residents:**

This publication has been approved by RBC Dominion Securities Inc.(member CIRO). Any Canadian recipient of this report that is not a Designated Institution in Ontario, an Accredited Investor in British Columbia or Alberta or a Sophisticated Purchaser in Quebec (or similar permitted purchaser in any other province) and that wishes further information regarding, or to effect any transaction in, any of the securities discussed in this report should contact and place orders with RBC Dominion Securities Inc., which, without in any way limiting the foregoing, accepts responsibility for this report and its dissemination in Canada.

**To U.K. Residents:**

This publication has been approved by RBC Europe Limited ('RBCEL') which is authorized by the Prudential Regulation Authority and regulated by the Financial Conduct Authority ('FCA') and the Prudential Regulation Authority, in connection with its distribution in the United Kingdom. This material is not for general distribution in the United Kingdom to retail clients, as defined under the rules of the FCA. RBCEL accepts responsibility for this report and its dissemination in the United Kingdom.

**To EEA Residents:**

This material is distributed in the EU by either RBCEL on an authorised cross-border basis, or by RBC Capital Markets (Europe) GmbH (RBC EG) which is authorised and regulated in Germany by the Bundesanstalt für Finanzdienstleistungsaufsicht (German Federal Financial Supervisory Authority) (BaFin).

**To Persons Receiving This Advice in Australia:**

This material has been distributed in Australia by Royal Bank of Canada, Sydney Branch (ABN 86 076 940 880, AFSL No. 246521). This material has been prepared for general circulation and does not take into account the objectives, financial situation or needs of any recipient. Accordingly, any recipient should, before acting on this material, consider the appropriateness of this material having regard to their objectives, financial situation and needs. If this material relates to the acquisition or possible acquisition of a particular financial product, a recipient in Australia should obtain any relevant disclosure document prepared in respect of that product and consider that document before making any decision about whether to acquire the product. This research report is not for retail investors as defined in section 761G of the Corporations Act.

**To persons receiving this from Royal Bank of Canada, Hong Kong Branch:**

This document is distributed in Hong Kong by Royal Bank of Canada, Hong Kong Branch which is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission. This document is not for distribution in Hong Kong, to investors who are not “professional investors”, as defined in the Securities and Futures Ordinance (Cap. 571 of Hong Kong) and any rules made under that Ordinance. This document has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. Past performance is not indicative of future performance. WARNING: The contents of this document have not been reviewed by any regulatory authority in Hong Kong. Investors are advised to exercise caution in relation to the investment. If you are in doubt about any of the contents of this document, you should obtain independent professional advice.

**To persons receiving this from Royal Bank of Canada, Singapore Branch:**

This publication is distributed in Singapore by the Royal Bank of Canada, Singapore Branch, a registered entity licensed by the Monetary Authority of Singapore. This publication is not for distribution in Singapore, to investors who are not “accredited investors” and “institutional investors”, as defined in the Securities and Futures Act 2001 of Singapore. This publication has been prepared for general circulation and does not take into account the objectives, financial situation, or needs of any recipient. You are advised to seek independent advice from a financial adviser before purchasing any product. If you do not obtain independent advice, you should consider whether the product is suitable for you. Past performance is not indicative of future performance. If you have any questions related to this publication, please contact the Royal Bank of Canada, Singapore Branch.

**To Japanese Residents:**

Unless otherwise exempted by Japanese law, this publication is distributed in Japan by or through RBC Capital Markets (Japan) Ltd. which is a Financial Instruments Firm registered with the Kanto Local Financial Bureau (Registered number 203) and a member of the Japan Securities Dealers Association (JSDA) and the Financial Futures Association of Japan (FFAJ).

**® Registered trademark of Royal Bank of Canada. RBC Capital Markets is a trademark of Royal Bank of Canada. Used under license.**
**Copyright © RBC Capital Markets, LLC 2023 - Member SIPC**

Copyright © RBC Dominion Securities Inc. 2023 - Member Canadian Investor Protection Fund
Copyright © RBC Europe Limited 2023
Copyright © Royal Bank of Canada 2023
All rights reserved