OUTLOOK 2024

The Logjam Begins to Break

UNION SQUARE ADVISORS

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Union Square Advisors is a leading technology-focused investment bank that supports clients in pursuing and executing their most important strategic transactions.

Our team includes former heads of the world's largest technology investment banking practices, plus senior professionals with deep experience providing superior advice to boards of directors and management teams in multiple arenas.

We specialize in board advisory and special committee assignments, mergers & acquisitions, buyouts, restructurings, special situations, public and private capital raises, capital structure optimization, liability management and other capital markets transactions.

With extremely deep sector knowledge and strong relationships throughout the tech ecosystem, our business centers on advising the leading companies and pools of capital across the technology universe.

Since its founding in 2007, Union Square Advisors has advised on more than 175 transactions, with total transaction value in excess of $120 billion.

Welcome

2024 Is Off to a Good Start — But the Ride Is Likely to Remain Bumpy for a Bit

By its very name and nature, an "Outlook Report" is a forward-facing document, one that focuses on a path to the future — and you will find plenty of thoughts on the dynamic environment that our team expects for the year ahead within these pages. Before going there, however, we thought it would be instructive to briefly revisit what we expected for 2023 when we released last year's report.

Our opening comment in the welcome letter last year read "2022 was tough, and 2023 will be too." Boy, was that right! We went on to write that "tantalizing opportunities still abound," and that proved to be correct as well, although they were harder to find than we had thought or hoped. We discussed the headwinds of 2022 that were likely to persist into 2023 — including stubborn inflation, persistent higher interest rates, geopolitical crises, and the ongoing effects of COVID — and we saw all those issues continue to affect the technology landscape and broader markets for most of the year. Finally, we described a U.S. economy that was (and remains) fundamentally solid despite these challenges, and our expectation, despite the ongoing bumpy ride, that "we are getting near the bottom where things will turn for the better."

In this last statement we also were fundamentally correct — but our timing was off a bit... At that point in January 2023, we genuinely believed that the desire (really, the need) on the part of technology companies and investors to transact was already beginning to eclipse the effects of the headwinds we described. It was, but very slowly; the change of sentiment required to really foster greater financing and strategic transaction activity levels percolated for another 6-9 months before finally taking root this past autumn. This led to a significantly more muted environment for tech M&A and financing deals during the first three quarters of last year. Once again we were reminded that expecting markets to be cyclical over the long run is wise, but that trying to time those cycles is never easy.

So where does that put us as we now look forward to 2024? For the most part, with similar, guardedly optimistic expectations for the coming year — although at this point with the benefit of a lot more data and actual "green shoots" of activity than we had a year ago, and an inflation/interest rate environment that looks to be at least somewhat more benign in the coming year. Investors often operate at the leading edge of a cycle change due to the pressure they are under to deploy committed capital and generate returns for their LPs (and themselves), so it's useful to take note when their activity levels pick up as we have seen over the last quarter or so. Equity capital providers ranging from early- and mid-stage venture investors all the way up through their growth equity and private equity counterparts are virtually all expecting a significantly busier year of investment in 2024. At the same time, many also expect to be far more active in working to increase their funds' liquidity positions, proactively culling their portfolios via company sales.

On the credit side of the landscape, our capital markets team details later in this report the continued rise of the private credit asset class as a true alternative to the syndicated debt markets. We expect the continued strength, flexibility and creativity of the private credit market to provide the backbone for tech lending activities in 2024 and beyond — especially as we are at the beginning of a massive, 2+ year maturity cycle that will see a huge number of companies needing to refinance their existing debt. It will be critical for these companies to start the refinancing journey early, and to ensure that they are working with the right lending partners (and the right advisor) as they evaluate the wide range of credit options available to them.

The increased activity levels we are now seeing on the technology landscape are not confined to our advisory work with companies and investors on the financing front; we also are seeing a pickup in the willingness of companies and boards to engage in strategic combination discussions. Certainly this is in part due to the cyclical nature of the M&A markets as well, and a general expectation of their recovery after a meaningfully down year. And corporate buyers, in particular, continue to recognize the fundamental truth that their strategic imperatives (e.g., technology/product enhancement, addressable market growth and geographic expansion) can be much more fully and rapidly achieved via key acquisitions. However, this activity increase also reflects a fundamental acceptance on the part of buyers, sellers and their owners/investors that current valuation levels are, indeed, the "new normal" — and therefore that continuing to wait for a meaningful movement up (for sellers) or down (for buyers) from these levels puts them at a disadvantage relative to their peers.

Beyond our simply witnessing numerous signs that tech financing and M&A transaction levels will be higher in 2024, we are most excited that our team remains well-positioned to advise clients in those technology sectors that we believe will be most active in the coming year. As you'll read in the following pages, our continued work across multiple areas of the tech landscape positions us very well for a busy 2024 — these include HealthTech (a coverage area in which we significantly added to our senior team in 2023); Risk Management and GRC; Customer and Employee Engagement + Human Capital Management; ESG and Supply Chain Management; Construction and Industrial Technologies; and, of course, the now-ubiquitous arena of Artificial Intelligence + Machine Learning. We also wrote last year of the continued growth and amazing resilience of the enterprise technology space, and that has never been more true than in these and other key sectors.

The final truth from the 2023 Outlook Report that bears repeating is the following: We are here to help. We spent much of the past year hunkered down with our clients and other key market participants in preparation for this resurgence in activity, and we understand deeply where and how strategic and financing transactions can get done in this rapidly evolving, still-volatile environment. Relying on informed, creative advice from a deeply knowledgeable and highly experienced team is more crucial than ever to ensure the completion of a successful transaction, and it is exactly that superior team of advisors that we have spent the last 17 years building. We look forward to working with you to help you successfully achieve your key financing and strategic goals in 2024 and, as always, we are deeply grateful for your ongoing support of our mission.

Carter McClelland
Chairman and Co-Founder

Ted Smith
President and Co-Founder

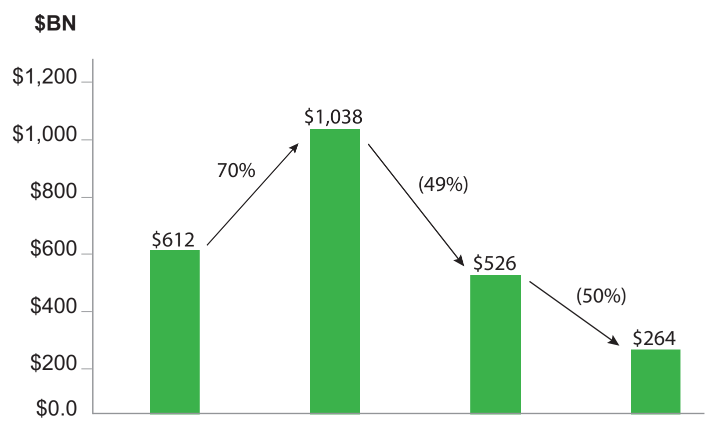
2023 Review and 2024 Outlook for Technology M&A

Hyper-Challenging Macro Environment Affected Tech M&A Activity in 2023

The negative global economic and geopolitical environment directly affected technology M&A activity during much of 2023. The banking crisis in the first quarter resulting from a rapid rise in interest rates caused significant market disruption but is now in the rear-view mirror. However, high inflation and high interest rates, elevated commodity prices, supply chain constraints, mixed corporate earnings, and disruptions caused by climate change continued to persist throughout the year. Geopolitical issues also contributed to volatility, including the Israel/Hamas war, Russian/Ukraine war, China/U.S. economic and political tension, Russia's growing relations with China, North Korea and Iran, and U.S. domestic issues with gridlock in Congress and a looming Presidential election in 2024. As a result, the equity markets were volatile in 2023, although they are now well above the October 2022 lows. The NASDAQ, S&P 500, DJIA, and Russell 2000 each rose from the October 2022 trough to December 2023 by +43%, +24%, +14%, and +16%, respectively.

These market gyrations and persistently high interest rates have had a significant impact on deal activity. In 2023 tech M&A volumes were $264B, down 50% vs 2022 volumes of $526B.

Annual Tech M&A Volume (2020-2023)



Source: S&P Global Market Intelligence's 451 Research

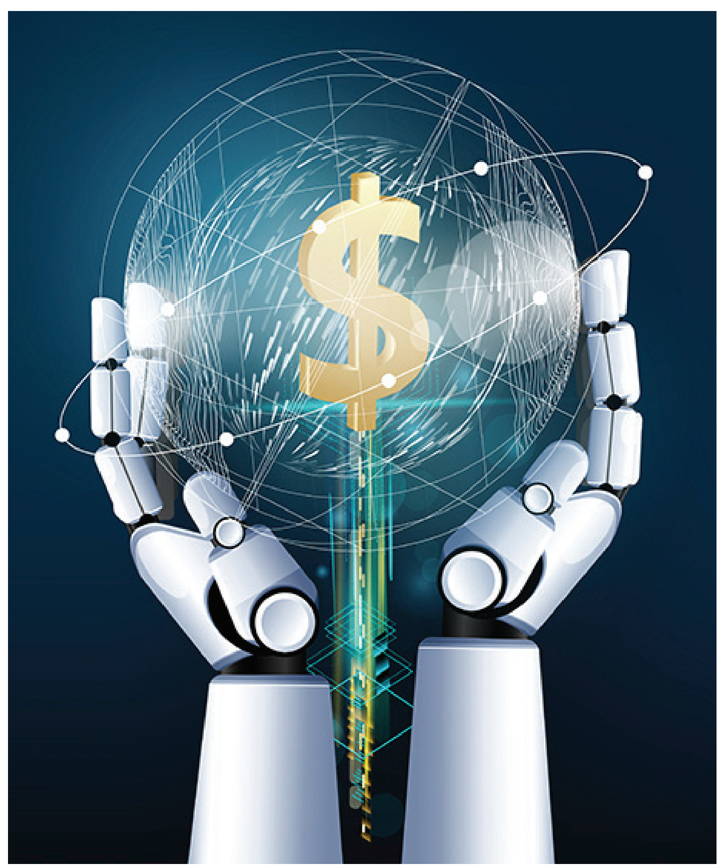
Tech M&A Activity with Strategics and Private Equity is Slowly Improving

Public tech companies enjoyed a rebound in 2023 from their October 2022 lows but many were still trading meaningfully below their 2021 highs and therefore remained attractive targets for both strategic acquirors and private equity firms. Private companies in VC and PE portfolios also experienced some pressure to exit as cash and debt became harder to secure to fund growth. Despite this backdrop, value expectations in many cases didn't fully align between buyers and sellers and, with the ongoing higher cost of financing and rebounding valuations, deals were challenging to get done in 2023. As a result, we saw the return of more creative structures, such as stock consideration instead of cash, and for private deals, more earnouts and seller paper.

Since hitting a low point in the first quarter, we have seen a slow but steady increase in Q/Q volumes in Tech M&A – but still significantly below the levels seen in 2021 and 2022. Strategic deals of note in 2023 included: Cisco/Splunk ($29B, cybersecurity and observability), Nasdaq/Adenza ($10.5B, risk management/regulatory software), Emerson Electric/National Instruments ($8.3B, automated testing/measurement), Savvy Gaming/Scopely ($4.9B, mobile games), Concentrix/Webhelp ($4.8B, outsourced customer care), IBM/Apptio ($4.6B, cloud-based business solutions), WT Microelectronics/Future Electronics ($3.8B, electronic component distribution), Thales/Imperva ($3.6B, cyber security software), Rocket Software/Open Text Application Modernization and Connectivity business ($2.8B enterprise infrastructure software), AGCO/Trimble's Ag Assets & Technologies ($2.4B, agtech hardware and software), Dish/EchoStar ($1.8B, satellite communications), TGS/PGS ($1.6B, seismic imaging for O&G), Fortive/EA Elektro-Automatik ($1.5B, electronic test and measurement), Magna/Veoneer Active Safety ($1.5B, AI safety and restraint control systems for auto), Edenred/Reward Gateway ($1.4B, HR-related employee engagement), Nuvei/Paya Holdings ($1.4B, payment management SaaS), Roper/Syntellis Performance Solutions ($1.4B, data science and EPM), Databricks/MosaicML ($1.3B, generative AI), Aristocrat Leisure/NeoGames ($1.2B, online gambling/lottery), Proximus Opal/Route Mobile ($1.2B, CPaaS), and Visa/Pismo Solucoes Tecnologicas ($1.0B, cloud-native digital banking and payments).

Private equity experienced its own pain, having had the pressure to deploy their sizeable funds over the last few years and paying up for assets, only to be forced to endure rising interest rates on the significant debt in their portfolio companies – not to mention similarly high costs for debt associated with new acquisitions. Nevertheless, PE firms still managed to find opportunities by either targeting undervalued public companies or purchasing well-run assets from other sponsors; they also pursued numerous tuck-in opportunities for their existing portfolio companies. Private equity deals in 2023 included: KKR/Netco ($20.1B, fiber fixed access network services) GTCR/Worldpay ($17.5B, online payment processing), Silver Lake/Qualtrics ($12.5B, AI-based experience management), Francisco Partners & TPG/New Relic ($6.1B, performance and availability monitoring), Bain/Guidehouse ($5.3B, IT consulting), Clearlake & Insight Partners/Alteryx ($4.4B AI-based analytics), Blackstone/Cvent ($4.2B, event planning), Leonard Green/IRIS Software ($4.0B, accounting, payroll and HR software and services), Vista Equity/EngageSmart ($3.6B, customer engagement), Searchlight Capital & BCI/Consolidated Communications ($3.1B, fiber communications), Vista Equity/Duck Creek Technologies ($2.6B, insurance policy management), Blackstone/Rover ($2.0B, online pet care), Francisco Partners/Sumo Logic ($1.7B, security and network data management), KKR/Smart Metering Systems ($1.7B, EV charging systems) GTCR/ADT Commercial Fire and Security Segment ($1.6B, fire, security and life safety business), Thoma Bravo/NextGen Healthcare ($1.6B, EMR and practice management), Symphony Technology Group/Momentive Global ($1.5B, SaaS survey software), Symphony Technology Group/Avid Technology ($1.4B, digital media SaaS), TPG/Nextech Systems ($1.4B, specialty HealthTech), and General Atlantic & Dragoneer/Arco Platform ($1.2B, educational content).

Thematically, M&A and financings were laser-focused on AI in 2023, including acquisitions of Veoneer Active Safety, MosaicML, InstaDeep, and Blume, and the capital raises for Anthropic, Aleph Alpha, Inflection AI, Sandbox AQ, Adept, Cohere, Character.AI, and Humane. One of the largest partnerships this year – and certainly the most visible – was Microsoft extending its relationship with OpenAI, the maker of ChatGPT, with a rumored $10B investment. Other rival companies also worked on their own AI chatbots including Google/Bard, Baidu/Ernie, and Amazon/Hugging Face.



Technology M&A Outlook for 2024

In the second half of 2023 we saw a meaningful increase in the number of technology companies making the decision to raise capital or pursue a sale to strategics or private equity. We anticipate this positive momentum will continue into 2024, with the reasons for this uptick as follows:

- **Equity markets have recovered from October 2022 lows (despite recent choppiness), with valuations recovering meaningfully;**
- **Inflation appears to be declining, and interest rates have, hopefully, peaked;**
- **Strategic buyers are largely through their internal cost cutting initiatives and returning to pursue M&A activities again;**
- **Venture capital firms can't continue to support cash burning start-ups indefinitely, and they need to find buyers or new capital/investors for them;**
- **Private equity-backed companies are experiencing higher interest expense or accelerating maturities on their debt and need to recapitalize or sell;**
- **Private equity firms are looking to fundraise again and feeling pressure to return capital to LPs – this creates the need for them to exit from some of their portfolio companies to show returns;**
- **Still other private equity firms are looking to deploy their large pools of capital by making tuck-in acquisitions for their portfolio companies or finding new platforms to invest in; and**
- **The IPO markets are slowly reopening, creating alternatives for companies to explore a dual track path to liquidity via either IPO or sale.**

And yet, transactions still are challenging to complete for a number of reasons:

- **The bid/ask spread in valuations, while narrowing, still remains intact in many cases;**
- **Interest rates are causing the cost of financing to remain high, making it more expensive to fund acquisitions;**
- **Extensive diligence continues to be required to get comfortable with target companies' projections and operations, primarily due to acquirors' demands for predictable revenue and profitability/ path to profitability;**
- **Deal terms are more heavily negotiated and indemnification provisions/risk allocation remains a focus;**
- **Target companies remain less amenable to structured deals, but buyers are increasingly proposing earnouts, seller paper and equity interest roll-over in order to bridge the gap in valuation expectations; and**
- **Regulatory scrutiny is increasing both domestically and internationally (e.g., the Adobe/ Figma transaction was recently terminated due to challenges in clearing European and UK regulatory review)**

While 2024 M&A activity likely won't be at the rapid pace we saw in 2021, this recent gradual improvement is a positive signal for the year ahead. There is still too much capital sitting on the sidelines that needs to get deployed.

While 2024 M&A activity likely won't be at the rapid pace we saw in 2021, this recent gradual improvement is a positive signal for the year ahead. There is still too much capital sitting on the sidelines that needs to get deployed. Strategic buyers who are seeing a rebound in their stock prices, particularly those that have managed to eke out positive earnings with modest topline growth and cost reductions, will seek to place strategic bets to position for the market rebound while also divesting underperforming/non-core assets. Private equity buyers are feeling the pressure from their LPs to return capital, and they will sell assets to accomplish this while still making smart investments and tuck-in acquisitions for their portfolio companies. Lastly, venture firms continue to be under pressure to triage their portfolio investments and will therefore continue to sell their companies.

As a result, we remain guardedly optimistic that going into 2024 we will see a meaningful pickup in activity in M&A, barring increased negative sentiment arising from a potential recession or heightened geopolitical risk, including a broadening of the conflict in the Middle East. Certain sectors will continue to experience strong activity, including AI (particularly Generative AI), ML, analytics, fraud/risk/compliance, supply chain solutions, cybersecurity, office of the CFO solutions, devops, cloud technologies, digital transformation, industrial automation, ESG/sustainability, and HealthTech.

Thanks to our approach to building strong domain knowledge that underpins our transaction advisory capabilities, these sectors represent significant areas of expertise and execution activity for Union Square Advisors. As your board of directors and executives complete their 2024 planning cycle and continue to evaluate strategic and financing opportunities in the new year, we welcome the opportunity to engage with you, and to help you evaluate and navigate your options in this ongoing challenging market environment.

Wayne Kawarabayashi – *Chief Operating Officer, Head of Mergers & Acquisitions (left)*
Devon Ritch – *Partner, M&A (middle)*
Phil Kim – *Managing Director, M&A (right)*

Capital Markets, Private Equity, & Venture Capital

2023 Capital Markets Review and 2024 Markets Outlook

Macroeconomic Backdrop: From Bleak to Cautious Optimism

The capital markets grappled with numerous crosswinds in 2023, including persistent inflation, rising interest rates, slowing global growth, the prospect of a U.S. recession, a regional banking crisis and increased geopolitical uncertainty. However, despite these challenges, the deployment of private capital continued across the entire debt-equity spectrum. Private debt investors took solace in tighter covenants, stronger documentation and higher interest rates, while private and growth equity investors broadened their investment strategies by invoking creativity around transaction stage, structure and format.

While we anticipate the macroeconomic backdrop to improve in 2024 on the heels of cooling inflation, the expectation of more accommodating Federal Reserve monetary policy and a more stable to benign interest rate environment, significant risks remain that could upend a recovery. The still-present potential for an economic recession, the 2024 U.S. elections, expanding global conflicts and increased geopolitical turmoil will be top of mind for investors. In addition, the markets will be focused on record debt levels across government, corporate and consumer balance sheets as the economy is only starting to feel the impact of higher interest rates. Even with all these competing forces, however, capital can be raised in this environment with the right preparation and go-to-market strategy – and the right advisor.

Private Credit Continues to Take Share

Over the past 24 months, the private credit market has demonstrated unwavering strength and become a formidable competitor to the broadly syndicated markets (following their dislocation in 2022) and the bank market (having dislocated in early 2023 during the regional banking crisis). In 2023, LCD estimates the

> Looking forward, we expect private credit to play an increasingly significant role as borrowers and private equity firms continue to seek alternatives to the broadly syndicated markets. While defaults are projected to peak in 2024, private credit market participants take solace in tighter covenants and stronger documentation.

private credit market priced $128 billion in total volume, nearly on par with the broadly syndicated market last year and over three times the total volume of the High Yield market in 2023. The private credit market stands at $1.5 trillion today and is projected to grow to over $3.0 trillion by 2028, according to Preqin.

While the broadly syndicated markets staged a recovery during 2023, they faced stiff competition from private credit – a trend we expect to continue into 2024. Historically, borrowers and sponsors looked to private credit investors to provide capital in more bespoke situations. In 2023, however, private credit players provided a true alternative to the broadly syndicated market for a wider range of transactions, from buyout financings to more mainstream refinancing deals. We expect to see more broadly syndicated debt refinanced via private credit, given private market players' ability to be more thoughtful and creative around structure. Sponsors have been taking advantage of this dynamic, utilizing PIK interest and preferred equity components to enhance leverage and reduce the impact of cash interest on their portfolio companies.

Looking forward, we expect private credit to play an increasingly significant role as borrowers and private equity firms continue to seek alternatives to the broadly syndicated markets. While defaults are projected to peak in 2024, dry powder for private credit transactions remains strong. Given the favorable performance of the asset class during historical periods of volatility, many investors continue to see it as a shelter in the storm.

Equity Markets – Limited IPOs, but More Active Private Markets

The tech IPO market remained mostly dormant throughout the last twelve months, but we did see meaningfully sized tech IPOs begin to test a reopening in Q3, including ARM ($4.9B offered, +24.7% one-day performance, next-gen chip design), Instacart ($660M, +12.3%, online grocery shopping) and Klaviyo ($576M, +9.2%, marketing automation). We also are starting to see some SPAC deals reemerge, as these entities continue to pursue mergers with private companies before their investment window closes.

> Despite the slight thawing in the public equity markets, we continue to believe that the real story (much as with the debt markets) is on the private side.

Despite the slight thawing in the public equity markets, we continue to believe that the real story (much as with the debt markets) is on the private side. 2023 showcased some challenges in this market as well, especially in earlier-stage venture capital availability, forcing some once high-flyers to accept significant down round valuations. With the overall lag in M&A volumes and private equity exits witnessed over the last two years, private capital funds across the investment stage spectrum all have focused on the

need for distributions relative to paid-in-capital, seeking creative ways to return capital to LPs and to bolster their desire to raise new funds. Nevertheless, private equity capital remains a crucial financing source, and the best liquidity option, for companies across the technology sector.

Private Equity

Private equity deal volume remained low over the course of 2023 (consistent with the back half of 2022), showcasing deal volume down roughly 7% and deal value down approximately 29%; the greater decline in deal value largely can be attributed to reduced buyout activity relative to minority/expansionary capital transactions. Across the landscape of private equity deal types, new platform investments declined most significantly due to contracting leverage ratios, volatile market dynamics and continued market risk aversion. That said, private equity acquirors have been willing to deploy capital during these uncertain times via bolt-on/tuck-in M&A, allowing them to acquire smaller players that could not successfully access capital on attractive terms – see our section on M&A in this Outlook Report for some of the more significant 2023 PE transactions. Private equity exit activity effectively ground to a halt over the last twelve months in light of macro headwinds and depressed equity valuations, though we began to see some bright spots in the second half of the 2023 as the valuation gap between buyers and sellers narrowed. In addition, exits remain the cornerstone for PE firms seeking to return capital to their LPs and to raise new funds, for which pressure will only ratchet up in 2024.

> Private equity exit activity effectively ground to a halt over the last twelve months in light of macro headwinds and depressed equity valuations, though we began to see some bright spots in the second half of the 2023 as the valuation gap between buyers and sellers narrowed.

For these reasons, we expect an uptick in private equity deal activity, especially exit activity, over the course of 2024 and 2025. Private equity firms remain eager to deploy larger amounts of capital, and both buyers and sellers have increasing conviction around “the new normal” in terms of market and valuation dynamics. Many private equity firms also have used the recent market slowness to refine their investment parameters (some have expanded their scope, while others have contracted), and to hone their specific investment theses and associated key assets to target. We have witnessed fewer broad auctions and more bespoke M&A processes over the recent term, and we expect this trend to continue as activity creeps back to more normalized levels.

Growth Equity and Venture Capital

Growth equity activity in 2023 persevered amidst the broader market slowdown. Growth equity deal volume exceeded that of LBO volume in early 2023 and has continued to do so, largely driven by the all-equity nature of transactions due to credit market volatility. That said, the growth-at-all-costs mentality that peaked over the course of 2021 has fallen far out of favor, with growth investors now prioritizing more mature, sustainable growth business models with attractive unit economics and accretive spending behavior – both organically and via M&A. Growth equity’s appetite to fund significant ongoing operating losses reached trough levels, catching some mid- and late-stage companies by surprise and forcing them to find buyers or shut down.

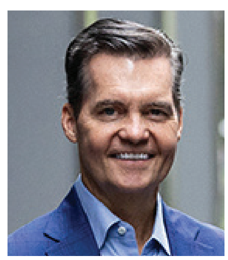
After being significantly more cautious last year (at least in every area that was not AI-driven), venture capital investors remain flush with dry powder and are now actively looking to place new and follow-on bets across the technology ecosystem. Activity around generative AI was white hot in 2023 on the heels of Microsoft’s investment in OpenAI and the general release of ChatGPT, signaling a new digital gold rush. However, in the back half of 2023 we saw a distinct shift in venture AI investing away from a “deploy capital at all costs” mentality and more to one that places a premium on companies that uniquely address real enterprise use cases and therefore have a sustainable defensive moat. Similar to that for other investor types, the bar for new investments in all sectors (including AI/ML) has risen substantially over the last year, and we expect it will remain there for the foreseeable future.

Despite the headwinds and volatility we saw in growth and venture capital investing during 2023, several transactions of note were announced, including

Stripe (internet/mobile payment platform $6.5B), Anthropic ($2B, next gen AI assistant), Inflection AI ($1.3B, personal AI), Northvolt ($1.2B, EV batteries), Wayflyer ($1B, e-commerce loans), CoreWeave ($642M, GPU cloud provider), Cubic Telecom ($513M, software-based networking for vehicles), Aleph Alpha ($500M, generative AI for data sovereignty), Databricks ($500M, data analytics platform), Sandbox AQ ($500M, quantum tech and AI), Rippling ($500M, benefits/payroll management), Mistral ($487M, AI for chatbot development), Netskope ($401M, cloud application analytics), Butternut Box ($352M, subscription canine cuisine), Adept ($350M, research and product A.I. lab), Udaan ($340M, B2B e-commerce), Denodo ($336M, data management), SumUp ($304M, payments), Wiz (cloud security, $300M), Ramp ($300M, finance automation), OpenAI ($300M, chatGPT), Madhive ($300M, advertising software), EquipmentShare ($290M, digital solutions for construction industry), Neuralink ($280M, brain implant technology), Cohere ($270M, enterprise AI platform), Boston Metal ($262M, steelmaking decarbonization), Driveco ($258M, EV charging), Cato Networks ($238M, networking and security), Hugging Face ($235M, A.I. data science), Pragmatic ($229M, silicon-free chips), Perfios ($229M, real time credit underwriting), and EGYM ($225M, smart fitness technology), CoreWeave ($221M, cloud compute provider), AI21 ($208M, AI systems for enterprise), Saviynt ($205M, identity governance and administration), Kite ($200M, commerce scaling), Tabby ($200M, buy now/pay later fintech), ShieldAI ($200M, autonomous flying tech), EVPassport ($200M, charging infrastructure), and QI Tech ($200M, fintech).

In 2024 we expect to see ongoing aggressive investment in the growth equity arena, and increased activity across the venture capital landscape, as technology investors continue to look for creative ways to deploy capital. The key to a company's successfully raising capital in this environment is to be laser focused on matching the company with the right investor(s) based on a number of key factors, including nature of investment thesis, expectations and tradeoffs for growth and profitability, governance and executive support dynamics, exit timing, and others.

We also expect to see VCs continue to move a good number of their existing portfolio companies toward exit events in 2024, in order to enhance their own liquidity profiles and deliver capital back to LPs. This will create new standalone investment opportunities for both growth and private equity firms looking to partner with companies of scale that are less likely to be on a direct IPO path, while earlier-stage companies will continue to present attractive bolt-on opportunities for existing strategics and sponsor-backed entities. In some cases, venture capital investors will retain small post-transaction stakes, allowing them to benefit from additional upside at a future exit date.





Mike Meyer – *Chief Executive Officer, Head of Capital Markets (top left)*

Emily Anderson – *Managing Director, Head of Sponsor Coverage (top middle)*

Michael Moore – *Managing Director, Capital Markets (top right)*

Jono Peters – *Director, Capital Markets (bottom left)*

Dean Riskas – *Vice Chairman (bottom right)*

The Evolution of Governance, Risk, and Compliance in the Modern Business Landscape

Many More Risks to Cover

In the ever-evolving realm of business, the landscape of Governance, Risk, and Compliance (GRC) has undergone a remarkable transformation, expanding far beyond its original focus. It has transitioned into a much more expansive sector that encompasses expanded enterprise use cases, a wider coverage of risk vectors, and an increased scope across diverse industries.

Initially conceived within a confined framework, GRC was primarily associated with regulatory compliance. It centered on ensuring adherence to established laws and standards, often focusing solely on mitigating risks that threatened legal compliance. However, the paradigm shift in the business environment has forced GRC platforms and GRC point solution providers to transcend these limitations, embracing a multifaceted role in today's risk-aware organizations.

The expansion of enterprise use cases means that GRC now encompasses a much broader spectrum of functionalities, including operational and strategic initiatives. When fully utilized across an enterprise, GRC solutions serve as strategic tools that foster a culture of ethical conduct, drive operational efficiency and safety, and align business objectives with risk management strategies. This shift has elevated GRC from a mere back-office box-ticking exercise to a pivotal driver of organizational resilience and sustainable growth.

Furthermore, the expansion of coverage of risk vectors has been instrumental in redefining GRC's scope; the traditional focus on regulatory and financial risks now has grown to encompass a myriad of risk dimensions. Cybersecurity threats, data privacy concerns, geopolitical instabilities and environmental sustainability are among the myriad risk vectors that modern GRC frameworks now aim to actively address. This widened purview equips organizations to proactively navigate a complex risk landscape, ensuring holistic, integrated risk mitigation strategies. Examples of this expansion of GRC use cases and key vendors tackling these problems include:

Environmental, Social and Governance: 2023 was the year that ESG firmly entrenched itself into the GRC framework, and it is here to stay. Key stakeholders in the modern economy now demand improved transparency into how businesses operate from an ESG lens. A KPMG survey of more than 1,300 global CEOs found that 69% now face higher levels of stakeholder pressure to improve their companies' ESG reporting transparency. Key companies leading the way include EcoVadis and SupplyShift in supplier and third party ESG visibility, One Concern in climate + physical risk, and Persefoni and Watershed in climate accounting. We further explore the increased intertwining of ESG and GRC later in this Outlook Report.

Supply Chain Visibility and Third Party Risk Management: The COVID pandemic proved to be a critical awakening to the vulnerability of global supply chains, with enterprises and governments alike recognizing the need to harden their supply chains and third party relationships. Today an increasingly complex regulatory environment, geopolitical turmoil, cyber threats, severe climate events and resource scarcity all have led to an increase in supply chain risk and complexity. There has never been a more critical time for enterprises and governments to make their supply chains more secure, resilient and dynamic. Vendors helping to solve this growing threat include Aravo, Everstream Analytics, Exiger and Resilinc. We also dig further into the nature of post-COVID supply chain technologies in an upcoming section of this Outlook Report.

Cybersecurity Risk Management: Given the ever-present and increasing occurrence of cyber attacks, data breaches and exploitable corporate vulnerabilities, cybersecurity risks naturally have entered the risk management framework. While the marriage of the two was inevitable, the integration of cybersecurity defense capabilities with GRC solutions is still evolving. Critical focus areas within GRC that meet this need include Third Party Cyber Risk Monitoring, with players like Black Kite, HackNotice, Security Scorecard, RiskRecon and Upguard leading way; and Data Governance platforms that allow users to know, control and protect critical data, including players such as ALTR, Collibra, Immuta and Privacera.

And More Industries in Need of Coverage

In tandem with a growing risk landscape, GRC also has witnessed a meaningful expansion in industry coverage. As GRC has moved beyond narrow back office solutions, it is no longer confined to specific sectors; it now permeates a diverse range of industries, including finance, healthcare, energy, technology and more. Each industry brings a unique set of challenges, regulations and risks, thereby necessitating an approach to GRC that can be appropriately tailored. Consequently, GRC professionals now operate across a vast spectrum of industries, utilizing customized frameworks that suit the nuanced needs of each sector.

Healthcare / Life Sciences: As the healthcare industry evolves, key constituents face increasing challenges regarding risk management. The broad healthcare arena is governed by a dizzying myriad of regulations, including HIPAA, HITECH, NAIC MAR and JCAHO to name a few, while also being tasked with its primary, critical mandate of providing quality patient care. GRC solutions provide a crucial framework to guide healthcare providers through this increasingly complex regulatory and operational landscape. Healthcare-focused GRC point solutions and platforms enable organizations to manage a wide range of risks relating to medical records, patient data, medical devices, supply chains and third parties, to name a few. Key vendors addressing these needs include: Censinet, Compliancy Group, RLDatix and Symplr.

Retail / CPG: Perhaps more than in any other sector of the economy, retail + CPG players became acutely aware of the need for robust risk management during and following the COVID pandemic. With their unique mix of managing both physical and online properties, coordinating increasingly complex supply chains and having to handle highly sensitive consumer data, these businesses are acutely aware of the need to adopt GRC solutions that reduce risk exposure and improve operations. Risk management solutions like Assent Compliance, Everstream Analytics and Source Intelligence provide these businesses with full visibility into the products they sell and their components, including deep insights into their suppliers and their suppliers' suppliers. Quality management solutions allow retailers and brands of all shapes and sizes to assess and manage their policies and procedures, standard activities, incidents and product specifications; key players in this space include Arena, CMX1, and Ideagen.

Energy: The energy industry is a cornerstone of global infrastructure, literally powering the world's economy. As the sector grapples with diverse challenges ranging from increased environmental regulations to geopolitical shifts, maintaining stringent governance is vital. Effective and comprehensive oversight mitigates critical operational risks, ensuring the safety of energy production, distribution, and consumption. Given the highly sensitive nature of energy production processes, it is essential that all constituents within the value chain are thoroughly vetted and qualified to engage. Companies like Avetta, ISN and Veriforce provide services which ensure that suppliers within the broader energy industry are prequalified to work in a safe and sustainable manner. Compliance efforts are equally crucial, aligning industry practices with evolving regulatory frameworks, fostering sustainability and addressing ESG- and EHS-related goals. Key players helping to push the industry forward by ensuring participants are aligned with key ESG and EHS frameworks include KPA, Intelex, Sphera, and VelocityEHS.

Looking Forward

The evolution of Governance, Risk and Compliance technology providers has been a journey from offering narrow, constrained regulatory management frameworks to delivering comprehensive, multifaceted solutions that underpin the strategic resilience of modern organizations. The transformation to encompass expanded enterprise use cases, a broader coverage of risk vectors and a broad range of industries signifies the pivotal role these solutions play in navigating the complexities of today's business environment. As the GRC landscape continues to evolve, an adaptable and holistic approach will remain crucial to ensuring sustainable and resilient business operations.

Andrew Atherton – *Partner, GRC and Fintech*

Customer Engagement Continues Its Run – and Picks Up the AI Banner

The COVID pandemic and its aftermath brought unprecedented acceleration in the digital transformation of organizations of all types and disrupted almost every corner of the software ecosystem. Early on, fiscal and monetary policy responses to the pandemic underpinned the broad availability of extremely cheap capital and contributed to higher market valuations, larger software budgets and a red-hot investing and M&A environment. With the world returning to a version of "normal," policies have reversed to combat inflation, making capital decidedly more expensive over the last 18+ months. The resulting correction in market valuations, tighter software budgets and more challenging capital and M&A markets has been significant – yet the advancements born from the period of rapid digital adoption remain.

We also are now experiencing the next tectonic shift in technology – the rise of generative & next-generation AI. The combination of these trends is creating a unique shift in software – with vendors reconsidering budget strategies that worked during the "boom" COVID-era and re-prioritizing towards the "do more with less" mantra. This is especially true in the Customer Engagement categories, including SalesTech, MarTech, Customer Service and CX, as well as in next-generation Talent Management systems, including Talent Acquisition and Employee Engagement offerings. We expect the following themes and market trends to continue to re-shape the competitive landscape, create new category winners, and help drive strategic investments, consolidation and deal activity in 2024.

Predictive Analytics & Customer Insights

Predictive analytics are becoming a cornerstone in effective customer engagement strategies, empowering businesses to anticipate customer needs and optimize customer lifetime value. By analyzing prospect behavior patterns and customer data, predictive analytics help organizations to proactively identify selling opportunities, address customer concerns, and respond to potential issues before they escalate. The power of predictive analytics is further unlocked by capturing unique and holistic customer signals that span the entire customer journey.

As examples, Voice of the Customer platforms leverage targeted customer surveys from across the customer journey, coupled with text and sentiment AI, to surface unique customer insights. End-to-end B2B Revenue Enablement platforms collect intent data from every prospect touchpoint to surface valuable insights and optimize revenue opportunities. Predictive analytics enables targeted and automated approaches to sales, marketing, and customer service – which enhances the "do more" efficiencies and ROI of Customer Engagement investments and strategies.

Personalization & Customer-Centric Approaches

As customer expectations continue to rise, personalization has become a critical element in sales, marketing, and customer service strategies. Advanced technologies enable businesses to gather and analyze massive amounts of customer data to create highly personalized experiences at scale. Personalized content, recommendations and communications resonate more effectively with customers, fostering higher satisfaction and brand loyalty and driving repeat purchases. Sales teams leverage personalization in their interactions as well, tailoring pitches and proposals to individual client needs, while marketing campaigns use personalized content and messaging to improve success rates. Contact center agents can use personalization to better understand customer concerns, decrease call times and increase resolution rates. These automated and highly targeted customer-centric approaches, enabled by AI-driven personalization, are increasing the impact of go-to-market initiatives while reshaping the way businesses build customer relationships.

Customers today also expect to engage with businesses seamlessly across various channels, whether it be through phone calls, emails, chat, social media or other platforms. Customer engagement software is adapting to this trend by delivering omnichannel and multi-modal capabilities. Omni-channel capabilities enable businesses to communicate with customers across preferred channels with a unified and consistent experience across all touchpoints, while multi-modal support allows for interactions via two or more channels simultaneously. This ensures that the customer journey remains cohesive and interconnected, irrespective of the communication channel. As a result, businesses again benefit from enhanced customer satisfaction, loyalty and revenue – and as a result, optimize the return on every customer interaction.

Workflow & Automation

Automation has become a cornerstone in enhancing efficiency and streamlining processes across various business functions. In the realm of sales, marketing, and customer engagement, automation tools have revolutionized repetitive tasks, allowing teams to focus on high-value activities. Modern marketing platforms automate the decisioning elements of campaign execution by leveraging unified customer profiles, predictive segmentation and orchestration & activation capabilities. Sales automation tools facilitate lead nurturing and customer relationship management. Moreover, the integration of workflows across different software applications has eliminated data and workflow silos, fostering seamless collaboration between sales and marketing teams and providing a truly unified view of customer interactions.

Talent acquisition & management use cases also are relevant. Next-generation talent marketplaces leverage AI-powered automation to improve matching efficiencies, increasing the velocity of placements. Talent assessment and onboarding capabilities incorporate automated workflows to remove time-consuming repetitive tasks and increase efficiencies with cross-team collaboration. The result of intelligent workflow and automation is more efficient customer and candidate engagement, as well as happier customers and employees.

Conversational AI and Natural Language Processing (NLP) Capabilities

AI-driven chatbots and virtual assistants are increasingly becoming the first point of contact for customers, handling routine queries and providing instant responses. NLP capabilities enhance the conversational aspect of these interactions, making the experience more natural and human-like. This not only improves efficiency by automating repetitive tasks but also allows human agents to focus on more complex and emotionally nuanced customer issues – thereby elevating the overall quality of the interactions. We predict that the market winners in this area will deliver the capabilities that can automate a variety of both simple and complex conversations at scale. This includes both external (with customers) and internal (with employees) conversations, with use cases that require use of sensitive data and complex back-office system integrations. The successful use of next-generation Conversational AI and NLP will unlock massive efficiencies – forever changing the way individuals interact with their customers and their employers.

Just Getting Started

Although the advances in multiple areas of enterprise software during and following the pandemic have been nothing short of breathtaking, particularly when coupled with the ongoing digital transformation agenda and the generative AI revolution, we're still in the early innings of what is possible. Solutions with even greater levels of data capture and analytics, personalization, automated workflows and NLP+conversational AI will be built (leveraging AI-driven development tools!) and deployed in the coming months, at an increasingly rapid pace, further enhancing all aspects of customer- and employee-facing applications. Vendors that embrace this new and accelerating reality in delivering their next-generation products will enjoy great success – and are likely to attract significant strategic interest.

Will Andereck – *Managing Director, Enterprise Application Software*

Behavioral Health and HealthTech – Driving Toward a Digital Future

An Enormous Market and Opportunity to Improve Quality of Life

The U.S. behavioral health market size was estimated to be $80B in 2022, with expectations that it would grow to $84B in 2023 and to $115B by 2030, a CAGR of 4.7%. Services in this market are focused on assessing daily habits, behaviors and actions of an individual, all of which can impact physical and mental well-being. Conditions such as mental illness, anxiety, depression, substance abuse and eating disorders are primary reasons for distress and disability among the U.S. population, and the rising demand for treating these health issues will further increase the market size going forward.

The COVID pandemic elevated the need for behavioral healthcare services due to the increasing prevalence of depression, anxiety and stress. According to the Centers for Disease Control and Prevention, the percentage of U.S. adults receiving treatment for mental health increased from 19.2% in 2019 to 21.6% in 2021. The pandemic also disrupted the supply of medicines, medical devices and related goods, and in many cases forced therapists and patients to adopt virtual care approaches. These conditions combined to drive an increase in the number of patients suffering from mental illnesses, including Post-Traumatic Stress Disorder (PTSD), which in turn has led to growing cases of substance abuse, one of the major behavioral disorders.

One of the key factors affecting growth in this market is the insufficient availability of behavioral health services, caused by increasing demand for treatment and a constrained supply of trained healthcare professionals. Another factor limiting market growth is the high cost of treatment; although the Affordable Care Act in the U.S. requires insurers to cover behavioral and mental healthcare, the cost of treatment still limits the level of available access to mental health services. A lack of financial resources prevents many individuals from seeking professional help or from receiving adequate treatment.

HealthTech providers, both major existing players and new entrants, are introducing platforms and applications that collect real-time patient data and recognize changes in behavior patterns, leading to earlier diagnoses of episodes of depression, psychosis and other conditions.

Transition Toward Advanced Digital Tools

The increasing demand for behavioral health services, as well as the need for improved access to treatment, enhanced patient monitoring and overall cost reductions, are driving providers and consumers to greater use of digital health tools. HealthTech providers, both major existing players and new entrants, are introducing platforms and applications that collect real-time patient data and recognize changes in behavior patterns, leading to earlier diagnoses of episodes of depression, psychosis and other conditions. Initiatives launched by leading employers to promote mental health awareness in their organizations also have encouraged HealthTech players to launch new products catering to this demand, resulting in increased consumer preference for using digital tools and growing demand for behavioral therapies.

This increased prevalence of digital health technologies has meaningfully improved the overall accessibility of therapeutic services. At the same time, the integration of virtual tools and telehealth offerings also has increased the adoption of these services by patients, making them easier and less time-consuming to access, and available beyond traditional geographic boundaries. The integration of artificial intelligence and smartphone-assisted therapies, including AI chatbots, enables patients to practice cognitive-behavioral therapy and to better self-assess their individual conditions, while the seamless interaction provided by these apps creates a positive therapeutic experience for the user. This has driven existing and emerging HealthTech companies to focus on R&D initiatives to deliver AI-integrated digital tools in support of behavioral therapies, with the goal of making them universally accessible.

While the tech-enabled behavioral health space holds great promise, challenges such as ensuring equitable access, addressing therapeutic disparities and maintaining quality of care must be addressed. There also is a strong sentiment that patients need a more consumerized experience, as many offerings fall short of providing an intuitive, easy-to-understand user experience despite a proliferation of features. Essentially, features don't equal engagement and, in an era marked by hyper-customization around personal preferences, a one-size-fits-all approach won't cut it. Ultimately, continued collaboration between technology developers, healthcare providers, regulators and mental health advocates will be essential to realize the full potential of these innovations in improving mental health outcomes.

A Delicate Dance Between Providers and Payers

One of the more challenging aspects of this market revolves around the often-misaligned objectives of healthcare providers and payers. While there is common ground for collaboration, systemic friction persists; at its core, this friction comes from opposing revenue generation methods and objectives that are critical to both parties' bottom lines. The best chance for reducing this friction and improving the behavioral experience for patients comes in finding shared wins, an approach that starts with transparency in patient benefits and outcomes.

Improving outcomes while decreasing costs in the behavioral space often involves innovative approaches that combine technology and the adoption of evidence-based practices. For example, predictive modeling and advanced analytics can help identify key risk factors and emerging patterns associated with behavioral issues, enabling more efficient resource allocation and improved targeting of interventions for those who are at higher risk.

And the integration of care models that combine mental and physical health services can improve coordination among primary care providers, mental health professionals and other specialists, leading to more comprehensive and cost-effective treatments.

Similarly, the use of digital therapeutics and mobile apps for evidence-based interventions can provide cost-effective alternatives to traditional therapies while offering continuous support to patients. And the transition to value-based care models that prioritize outcomes and patient satisfaction over the volume of services provided appropriately incentivize providers to focus on achieving positive outcomes in a cost-effective manner. These approaches, coupled with increasing advocacy for mental health and the de-stigmatization of individuals' seeking such help, will contribute to a more favorable environment for the adoption of tech-enabled behavioral health solutions.

Strong M&A Outlook

Market conditions are ripe for the next wave of digital health consolidation, driven by a more challenging funding environment, startup valuation declines and an unfriendly IPO market. Acquisitions offer strategic players the opportunity to expand their product offerings, accelerate time-to-market for critical solutions, and keep shared service costs down.

In the near term, we expect consolidation among solutions providers selling into the employer market, given the burden of trying to manage multiple point solutions today. Payers are leveraging their influence and similarly driving the shift of digital behavioral health offerings away from narrow point solutions, intensifying demand for more end-to-end behavioral health platforms that combine and deliver care in an integrated manner. As healthcare evolves into an omnichannel, hybrid "click-and-mortar" model of care, providers are creating more consumer-centric primary care services based on a range of digital health solutions, and traditional health systems will need to respond. The prevailing underlying M&A theme for tech-enabled behavioral health transactions is to provide access to more patients that need treatment while saving health systems and payers money.

Zeke Navar
Managing Director – Head of HealthTech

ESG Increasingly Intertwined with GRC

The evolving role of Environmental, Social, and Governance (ESG) solutions within the Governance, Risk and Compliance (GRC) sector highlights a significant shift in how organizations perceive and address sustainability issues. With the growing recognition that environmental and social factors can affect long-term financial performance, ESG has become a crucial – though at times controversial – component of effective risk management and corporate governance.

> The integration of ESG into risk assessment frameworks allows organizations to better anticipate and mitigate risks that can have a significant impact on their operations, reputations and stakeholder relationships.

ESG considerations have transitioned from being confined to narrow ethical assessments to a broad and fundamental aspect of business operations. This shift can be attributed to changing regulations, increased demand from investors for sustainable investments, and growing societal awareness of environmental and social issues. As a result, companies are facing mounting pressure to integrate ESG principles into their strategies and operations, both to mitigate risks and to capitalize on emerging opportunities.

As awareness of ESG continues to permeate the corporate landscape, companies are increasingly realizing that incorporating sustainability principles into their business models can create long-term value. This includes identifying and managing environmental and social risks, improving operational efficiency with both materials and services procurement, identifying suppliers that may pose outsized risk against an ESG rubric, and enhancing overall brand reputation. Incorporating ESG into corporate strategies not only aligns companies with evolving societal expectations but also helps them stay ahead in a rapidly changing business landscape.

Risk assessment frameworks have traditionally focused on financial and operational risks; however, there is a need to expand these frameworks to include environmental and social risks as well. Companies now need to identify, assess and manage risks related to climate change, resource scarcity, supply chain vulnerabilities, labor practices and community impacts. The integration of ESG into risk assessment frameworks allows organizations to better anticipate and mitigate risks that can have a significant impact on their operations, reputations and stakeholder relationships.

Additionally, the evolving role of ESG within the GRC sector emphasizes the importance of stakeholder engagement. Companies now need to actively engage with a wide range of stakeholders, including employees,

customers, suppliers, partners, investors, communities and regulators, to effectively address environmental and social challenges. Meaningful stakeholder engagement allows companies to understand diverse perspectives, identify material issues and develop strategies that align broadly with stakeholder expectations. This engagement also enhances transparency and trust, which are crucial for attracting socially responsible investors (and the measurement of which is more common and more critical than ever within the investor ecosystem).

Boards of directors are increasingly responsible for overseeing ESG initiatives and ensuring the integration of sustainability considerations into corporate decision-making processes. This includes setting performance targets, monitoring progress and disclosing relevant ESG information. As the role of ESG within the GRC sector continues to grow, there is an acute need for improved reporting standards and frameworks to provide reliable and standardized ESG data and metrics. As the drivers for ESG standards can differ meaningfully from region to region, let alone country to country, developing technology-based solutions that are capable of managing these differences will be critical to enabling global organizations to manage their ESG demands.

In the last decade ESG has transformed from a discretionary (and often ignored) consideration to a critical component of business operations within broader GRC frameworks. The integration of ESG into corporate strategies, risk assessment frameworks, stakeholder engagement practices and overall corporate governance is essential for organizations to effectively manage risks, create long-term value and meet evolving societal expectations. As the importance of sustainability and responsible business practices continues to grow, organizations must adapt and embrace the evolving role of ESG to thrive in the increasingly complex global landscape. In doing so, the adoption of GRC platforms and solutions that incorporate comprehensive, flexible and standards-driven ESG components will be increasingly important.

Todd Holman – *Managing Director, ESG and Back-Office Technologies*

Unleashing the Power of Digitization in the Industrial and Construction Sectors

Finally Coming Into the Light

The industrial and construction sectors are extremely large ($20+ trillion on a combined basis) and critical components of the global economy. They are distinct in their operations and objectives, but they share common characteristics of being highly complex and oriented toward large-scale projects. The industrial sector primarily revolves around the production of goods, encompassing a wide range of activities from manufacturing to processing. This sector is marked by its reliance on heavy machinery, extensive supply chains, and the need for precise coordination of various processes. The construction sector is centered around planning, creating and maintaining buildings and infrastructure, with each project's being unique in terms of location, design and use requirements. Both sectors face challenges in managing complex schedules, coordinating communications across multiple stakeholders, ensuring production/project efficiency and quality, and adhering to environmental and safety regulations.

Both sectors also have historically been characterized by a primary reliance on manual processes and a general resistance to software solutions, but they now are undergoing an accelerating shift towards embracing advanced technologies. For years, underinvestment in software solutions and a reluctance to fully adopt digitization by legacy operators have hindered progress, rooted in concerns about the learning curve associated with new technologies, potential disruptions to existing workflows, and the perceived high costs of implementation. Now more than ever, a confluence of factors is driving a new era of innovation, yielding a myriad of benefits – including increased efficiency, improved quality control and data-driven decision-making.

Although adoption and implementation challenges persist, a growing number of players in these sectors are recognizing the transformative potential of digitization. Companies up and down the value chain already have made significant progress in deploying well-established software solutions to optimize back office functions such as payroll, enterprise resource planning (ERP) and workforce management, the result of which is a streamlining of operations and reduction in manual errors.

Many industrial and construction firms have struggled with being data-rich and analysis-poor, and now the significant ROI available from data-driven decision-making is coming into focus for companies that heretofore have resisted adoption. Real-time monitoring and predictive analytics powered by next-generation silicon and software solutions enable extremely rapid response times to various issues, minimizing downtime and maximizing productivity.

> The opportunity to apply advanced analytical tools across the industrial value chain is no longer just an option – it's now an operational necessity.

Software also is automating routine tasks, allowing human talent to focus on more complex and value-added activities. Machine learning algorithms are being deployed for predictive maintenance, reducing equipment downtime, lowering maintenance costs and driving margin expansion. The opportunity to apply advanced analytical tools across the industrial value chain is no

longer just an option – it's now an operational necessity. Companies face make or buy choices to implement solutions before their competitors, and they risk falling behind and losing market share if they delay these decisions. Expect this trend to accelerate in 2024 in areas where operational technologies can be further enhanced with increasing uses of ML/AI-based offerings. This proliferation of targeted AI-based software to optimize workflows and production processes for industrial and construction vertical use cases also will create a significant potential for M&A among the various solutions providers in the year ahead.

The Next Step: A Holistic Approach to Digital Transformation

In the past five years we've seen an explosion of cheap processing power and data availability/collection, and companies are already looking beyond basic operational enhancements toward a range of new products, services and revenue models. For example, in 2022 John Deere introduced a brand new subscription model, shifting from a purely product-centric approach to a service-oriented, comprehensive solution that includes data analytics and insights— estimated to be a $5B business by 2030.

By collecting, analyzing, and monetizing data generated throughout their operations (around both product and service delivery), industrial and construction companies can create additional value for themselves and their customers. Forward-looking firms are shifting the build-vs-buy focus from one-time, point solution purchases to technologies and models that fit with broader, long-term strategic goals. This not only enhances near-term performance but also builds resilience in the face of evolving market demands.

For players in the industrial and construction sectors, the journey from historical underinvestment in software to the current era of accelerated digitization represents a profound shift in mindset and strategy. The companies that recognize and embrace the full spectrum of digitization's potential, from operational enhancements to the creation of new products, services, and revenue models, will undoubtedly position themselves as leaders in the evolving landscape. These enormous sectors, now more than ever, stand at the forefront of a digital renaissance, and those companies that navigate this transformation with foresight and agility are poised for sustained success in the digital age.

Tyler Graham
Director – Industrial and Construction Software

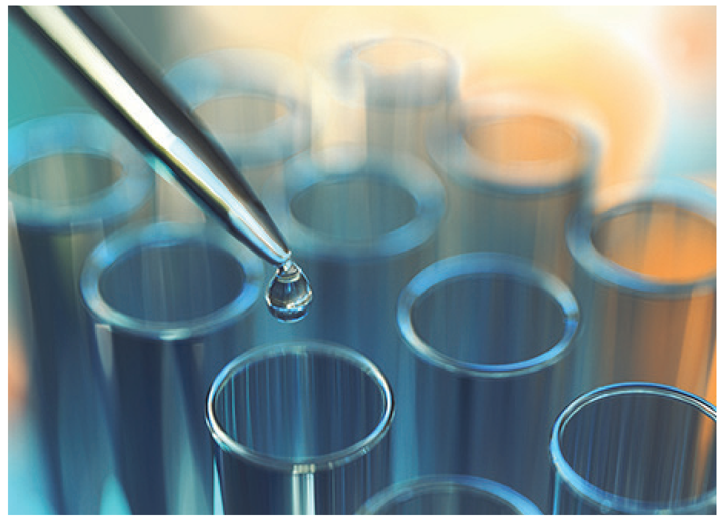
Life Sciences Technologies – Significant Opportunity in a Very Dynamic Market

A Critical Moment in Drug Development

Despite the financial tumult spanning late 2022 and 2023, investors continue to steer capital towards the ever-evolving realm of the life sciences. This capital allocation is strategically focused on technologies and services revolutionizing drug discovery, simplifying clinical trials, hastening time-to-market, and ensuring precise drug delivery with proven efficacy and adherence. Two overarching megatrends drive this investment: the rise of specialty drugs and precision medicine, and the widespread adoption of value-based care.

Specialty drugs, an increasingly vital category of pharmaceuticals, are complex medications meticulously crafted to address rare diseases and chronic conditions. They are a critical facet of personalized medicine, highly tailored to an individual's genetic makeup. Treating various cancers continues to be the largest driver in this space, with oncology drugs making up ~55% of the current pipeline for Merck and ~39% for Pfizer and AstraZeneca. In addition, new cell and gene therapies (which are not exclusively focused on oncology) continue to be an explosive area of development, with 30+ projected to launch by 2027. These new drugs target smaller, disperse patient populations, distinguishing them from the traditional one-size-fits-all pharmaceutical approach. Their increasing adoption has prompted the acceleration of decentralized and hybrid clinical trials, and the technologies that support them.

However, as drug development becomes ever more complex, overall return on investment is decreasing: large biopharma companies saw a decline in R&D ROI from ~10% in 2010 to ~2% in 2018 and beyond. This is primarily because of the "R&D Speed Limit" created by numerous potential bottlenecks that can lengthen timelines and increase costs (e.g., difficulty in recruiting



patients, shortage of equipment or biospecimens in-house, lack of specialized personnel, etc.). Moving into the commercialization phase also creates challenges for manufacturers, such as when patients deviate from prescribed schedules as they struggle with increasingly specialized treatment regimens. Studies show that a staggering 50+% of individuals veer off medication adherence within the first six months, a dynamic that leads to 66% of new drugs falling short of launch expectations and suffering from significant revenue underperformance.

At the same time, key tenets of the U.S. Inflation Reduction Act – including the ability for the Department of Health & Human Services to negotiate directly to shift liabilities away from Medicare & Medicaid programs and back to manufacturers and payers – are placing downward pressure on drug manufacturers' revenues. Given this and the fact that specialty drugs now constitute over 50% of pharmacy expenses, payers are more focused than ever on containing costs and reimbursements, further pressuring pharma revenues and margins. In this environment, manufacturers are increasingly exploring risk-sharing agreements to enhance ROI, exemplified by Luxterna's gene therapy model tied to patient recovery milestones. Going forward, successful drug commercialization strategies will hinge on such creative approaches to improving ROI.

AI-infused software and health-specific cloud platforms also have emerged as critical solutions to a number of these challenges. As demand intensifies for the analysis of hyper-scale, real-world datasets, and for increased coordination across diverse stakeholders, a cloud-based ecosystem connecting pharma, payers, providers and patients has become a must, facilitating more efficient drug development, expediting clinical trials, and improving patient engagement while reducing costs. A promising future awaits the verticalized SaaS providers delivering/supporting this framework, with network effects driving incremental value from each new user and dataset.

2024 Will Be a Year of Increased Investment and M&A Activity – With Some Constraints

Looking ahead, key trends observed in 2023 will continue to drive investment and M&A activity in 2024. The impact of AI on drug discovery has been profound, with its already having been used in the discovery of 150+ new small molecule drugs. Platforms like Benchsci and Causaly benefit from this approach, as do solutions providers using AI for engagement, marketing, and real-world evidence generation. Regulatory tailwinds have the potential to further accelerate AI's effectiveness in pharma (see the recent European Health Data Space proposal).

Breaking the R&D Speed Limit by replacing legacy processes with new platform solutions that automate, integrate and innovate will continue to be top of mind. Since the beginning of 2021, more than $6B of capital has been invested into R&D and lab software companies that reduce costs, increase productivity and accelerate critical research. Among these companies, Science Exchange is leading the charge via its next-generation SaaS orchestration platform, linking 3,000+ service providers and accelerating pre-clinical activities, Phase I studies, and now health economics and outcomes research (HEOR) assessment.

The once white-hot space for software tools supporting more general drug development and clinical trials has cooled significantly post-COVID, thanks to tightening pharma budgets and an overabundance of point solutions providers; most eClinical solutions (EDC, CTMS, eSource, etc.) have become table stakes. Investors and strategic acquirors are struggling to deploy capital in this space, given the limited supply of scaled, growing and profitable assets. Many earlier stage companies are finding it difficult to achieve $10MM of revenue and/or are continuing to burn significant cash. That said, technology-based solutions for assessing clinical outcomes, capturing "small" datasets for selected therapeutic areas (e.g., oncology, immunology and neuroscience), and generating patient diversity within clinical trials all continue to be sought after, especially if they can reach higher levels of revenue and, eventually, profitability.

Providers of tools for compliance, financial assistance and benefits verification, all built on top of robust data & analytics platforms, will see active investment. For both strategic and financial players, FinTech integrations with data providers stand out as critical. They seek technology that automates payments and reimbursements, allowing clinical trial sponsors to forecast and budget development accurately. This not only reduces cycle times and speeds up payments, but also enables a more diverse patient population to participate in trials – critical for trial and treatment success.

Pharma companies transitioning to the demand optimization era require digital hubs for omnichannel engagement and commercialization efforts. These are crucial for driving payer acceptance and provider adoption, and for maximizing ROI once drugs are launched post-trial. Key technology providers like IntegriChain and Aktana offer platforms for driving better commercial outcomes and AI-infused omnichannel engagement, while Medisafe and Redi Health drive personalized adherence through direct-to-patient connectivity.

In the post-COVID investment landscape, responsible growth with strong unit economics and a rational path to profitability replace the approach of driving growth at all costs. While some cash burn is acceptable, especially in earlier stage companies, it can no longer be tolerated indefinitely. As a leading indicator of private market activity, pharma-facing HCIT businesses are generally trading at a multiple premium in the public markets relative to their provider- and payer-facing counterparts, suggesting strong positive market sentiment toward pharma IT as we move further into 2024.

Alexander Despo
Director – Life Sciences and HealthTech

Generative AI Goes Mainstream

In late 2022, Generative AI made big waves within the broader tech landscape as it was introduced to the public domain with the release of OpenAI's ChatGPT. ChatGPT reached an estimated 100 million users in just 2 months, making it the fastest-growing consumer application in history. 2022 also saw the beginnings of unprecedented employment growth in the field of Generative AI and, according to McKinsey & Co., it became the fastest-growing field of employment with more than 600,000 job postings.

Through 2023, several major players in the technology industry released their own Generative AI solutions – Meta LLaMA, Microsoft Kosmos, Salesforce Einstein GPT, Anthropic Claude, Google Bard and more – targeting a spectrum of use cases across various data domains, including text, code, image, audio and video. Applications for Generative AI have been identified across many sectors and initial adoption appears promising, as a considerable proportion of knowledge workers already have experimented with Generative AI tools.

Example use cases for Generative AI across select verticals include:

Customer Experience: Boosts customer service productivity and improves the overall customer experience via customer service chatbots, proactive outreach and preventative solutions

Supply Chain: Enhances demand forecasting, production planning, risk management, supplier management, sourcing, logistics network design and last-mile dynamic route optimization

Back-Office Operations: Automates workflows, reduces friction and lowers/eliminates the need for outsourcing, resulting in processes that are faster, cheaper and more accurate

High Tech Industries: Accelerates common developer tasks by reducing human requirements for code generation, documentation and refactoring, and other high-complexity tasks

Infrastructure & DevOps: Proactively monitors infrastructure, detects abnormalities and implements corrective actions prior to escalation

Industrials & Manufacturing: Speeds up production processes through generative design optimized for specific goals and constraints

Pharma & Medical Products: Accelerates drug discovery and design, optimizes clinical trial planning and execution, automates document processing and patient screening, and improves on-demand, personal care

Investment Flows Freely into Generative AI – But Cautions Emerge

While the participants in the broader 2023 technology fundraising market navigated numerous headwinds, ranging from greater inflation, rising interest rates, recession fears and geopolitical events, Generative AI startups witnessed a tremendous influx of capital, with $25 billion invested across 475+ companies. Much of this investment came from large corporations (Alphabet, Microsoft, Nvidia and Amazon) that will see significant additional benefits from the intensive cloud computing needs of Generative AI applications; however, more than 1,300 venture capital investors also have made bets in the space. While many investments were in smaller-scale startups, there also were notable multi-billion dollar valuations for companies including OpenAI, Anthropic, Hugging Face, Inflection and Cohere.

A slowdown in deal activity in the fourth quarter of 2023 suggests that many investors made their Generative AI bets earlier in the year, and that their appetite has begun to decrease as the initial wave of Generative AI subsides. Some believe that investors now have entered into a "trough of disillusionment" as they watch their investments struggle to map innovative technology to real-world applications and use cases.

In addition, industry-wide concerns have emerged regarding:

Inaccuracy: Some users have raised concerns about the accuracy of Generative AI outputs, especially in critical applications. To combat these concerns, a "Human in the Loop" is still required to verify outputs in many cases.

Cybersecurity: The increasing reliance on Generative AI has raised meaningful cybersecurity concerns, as potential vulnerabilities and client confidentiality come to the forefront.

Regulatory Compliance: Generative AI's rapid integration into enterprise workflows has led to concerns regarding regulatory compliance, prompting a closer examination of ethical and legal implications for bias, copyright and other potential liabilities.

As is the case when any new technology enters the mainstream, today's investor landscape represents a full spectrum when it comes to the depth of knowledge in the Generative AI space. On one end of the spectrum, investors' knowledge remains nascent, and many appear to have made bets on hot new startups simply out of fear of missing out on the Generative AI wave. On the other end of the spectrum, well-schooled investors have clearly defined their theses and elicited AI insider expertise to support their investing activities; this list includes Sequoia Capital, Khosla Ventures, Madrona Venture Group and Coatue Management, each of which made more than 5 Generative AI-related investments during 2023.

McKinsey & Co. estimates that Generative AI will be a $400 billion market by 2027 and a $1.3 trillion market by 2032, boasting a CAGR of 42% from 2022 to 2032. As this market continues to explode in size, and in relevance to the technology industry and broader landscape, investors will focus on opportunities to deploy significant capital in well-run, high-potential companies. To be successful in the long run, however, these investors must operate with more characteristic levels of deal scrutiny, returning to detailed diligence of potential investment targets and market opportunities. They also must ensure alignment with their well-thought out investment theses for the space and confirm the application of Generative AI solutions to large scale, real-life use cases.

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Jamie Cummings – *Vice President, AI Technologies*

Supply Chain Technology in the Post-COVID Era

A Reckoning in 2023

Global supply chains continue to undergo significant changes, with supply chain management and related technologies now recognized as the backbone of many businesses. The economic slowdown caused by the early stages of COVID was followed by an exponential increase in demand for a wide range of goods, resulting in severe congestion and shipping delays. This exposure of critical weaknesses in many enterprises' supply chains led to massive capital deployment into emerging supply chain and logistics technologies: supply chain-related companies raised an estimated $50B+ in seed through growth capital from 2018 through end of 2022. During this period, businesses with revenue models having direct correlation to rising freight costs (e.g., digital freight brokerages, marketplaces) saw exponential growth, and supply chain management + logistics software providers also benefited from a tremendous uptick in IT spending aimed at driving greater supply chain efficiency and durability.

Beginning in mid-2022, a more balanced supply/demand environment and resulting economic slowdown, coupled with the tightening of global monetary policies to combat rising inflation, have contributed to a cooling off in supply chain investment activity – in 2023, total U.S. funding for supply chain startups was ~$1B, less than 20% of the total raised in the 2022. Strong unit economics and product-market fit are more critical than ever, prompting some reshuffling in the market in 2023. Transfix, a once high-flying digital freight marketplace, saw its valuation slashed by 60% in July, while Convoy, a digital freight broker valued at $3.7B in April 2022, ceased operations altogether in October.

These examples serve as a reminder that, although the importance of investing in and deploying improved supply chain solutions is undeniable, so is ensuring the development of sustainable business models. We believe similar negative outcomes are in store during 2024, as cash runway dries up for some companies that raised substantial funding in 2021 and 2022. However, these developments will pave the way for the emergence of true industry winners; companies that remain agile and responsive to changing market dynamics while showcasing sustainable growth and healthy unit economics will remain successful – despite the turbulent market environment.

Elements of Winning Supply Chain Solutions

Sourcing, planning, and execution activities must operate as a continuous, cohesive process within supply chain management, with data playing a pivotal role in all three. Providing the source of truth via a single pane of glass is the holy grail of supply chain, but simply offering visibility is not enough. Solutions that use AI and advanced algorithms to anticipate potential problems (predictive analytics) and provide resolutions (prescriptive analytics) are ever more important.

As magnified by the pandemic, omnichannel supply chain management is critical, as companies need to consolidate supply and demand across every channel – from the supplier source itself, containers on ships to the ports and terminals, warehouses/yards, distribution centers, retailers and ultimately to the end consumer. If one channel is disrupted, an omnichannel approach allows companies to “anticipate, sense and respond” as necessary to avoid disruptions across the overall supply chain. Multi-enterprise supply chain business network (MESCBN) providers such as One Network, E2Open, Infor and Nulogy are examples of leaders solving this challenge today.

Tightly coupling supply chain planning with execution and transport also holds significant value. Industry leaders like Kinaxis, o9, Adexa and ThroughPut.AI provide comprehensive planning tools for the demand, supply and execution side, utilizing AI+ML to create digital twins of the entire supply chain. This enables constraint-based, end-to-end optimization planning and execution. Such architecture predicts what is needed, where and when it can be built based on supplier resource availability (i.e. the “planning”), and how and when it can be delivered using the most cost-effective method (i.e. the “execution”). This approach minimizes blind spots associated with stitching together disparate planning systems.

Real-time transportation visibility remains crucial as well. Leaders such as project44, FourKites, Shippeo and Descartes Macropoint have revolutionized a software-first approach to visibility, ingesting real-time data from core systems such as transportation management systems (TMS), driver signals and electronic logging devices (ELD), automatic identification systems (AIS) and other direct data feeds from carriers and logistics service providers. Hardware/IoT visibility players also remain quite relevant, particularly for the transport of high-value goods such as pharmaceuticals and specialty manufacturing parts. A device-agnostic approach, for both hardware and software, is critical for visibility platforms, improving data accessibility regardless of the method or device. This approach, notably adopted by Overhaul, has proven to be a successful strategy fostering true interoperability across numerous systems and devices.

Data is king in supply chain, with the underlying source of truth for data coming from core documents. These include bills of ladings (BOLs), proofs of delivery (PODs), freight invoices, shipping labels, customs declaration forms, packing lists, purchase orders (POs), etc. Workflow automation and B2B integration startups such as Expedock, Super.AI and Chain.IO provide the data layer and middleware for multiple points of integration and document ingestion – from both the carrier and the shipper. Freight payments and FinTech platforms also introduce a unique perspective. Entities like PayCargo and Advent eModal, which handle critical documents pertaining to invoicing and payments, offer distinctive first-mile visibility on inbound shipments directly from suppliers. Lifecycle management platforms, such as Gnosis Freight, directly ingest source data from shipping documents, BOLs and freight invoices, and establish direct integrations with all constituents, including ocean terminals. Capturing source documents closest to the source of truth provides invaluable insights, enabling significantly more accurate predictive and prescriptive analytical capabilities.

Looking Ahead

Abundant opportunities remain in the supply chain landscape, with investors and strategic players eager to deploy capital in the space – albeit at reduced levels from the peak of 2021. Lessons learned from the pandemic remain highly relevant today, namely the importance of contingency planning, flexibility and visibility throughout all levels of the supply chain network, from raw materials at the suppliers to delivered products. Comprehensive solutions addressing enhanced transparency, improved collaboration across stakeholders, increased digitization and optimized sourcing strategies to shorten supply lines will continue to see healthy unit economics, attract meaningful investment and emerge as winners.

Wesley Or
Associate, Supply Chain Technology

Our Experts

Carter McClelland
Chairman and Co-Founder
carter.mcclelland@usadvisors.com
212-376-1750

50+ years of investment banking and advisory experience on Wall Street, including Morgan Stanley, Deutsche Bank and Bank of America

Ted Smith
President and Co-Founder
ted.smith@usadvisors.com
415-501-8007

30+ years of technology investment banking and advisory experience at Morgan Stanley, Deutsche Bank and Credit Suisse

Mike Meyer
Chief Executive Officer
Head of Capital Markets
michael.meyer@usadvisors.com
212-376-1725

30+ years of Leveraged Finance, Global Credit and Fixed Income with Morgan Stanley, RBC Capital Markets and Bank of America

Wayne Kawarabayashi
Chief Operating Officer
Head of Mergers & Acquisitions
wayne.kawarabayashi@usadvisors.com
212-376-1730

28+ years of technology investment banking and advisory experience at Barclays and Lehman Brothers

Devon Ritch
Partner, Mergers & Acquisitions
devon.ritch@usadvisors.com
415-501-8040

19+ years of technology investment banking and advisory experience at RBC Capital Markets; practiced M&A law as an Associate at Wilson Sonsini Goodrich & Rosati

Andrew Atherton
Partner, Software
andrew.atherton@usadvisors.com
415-501-8022

19+ years of technology investment banking and principal investing experience at RBC Capital Markets, Goldman Sachs and Raymond James

Dean Riskas
Vice Chairman
dean.riskas@usadvisors.com
415-501-8080

35+ year track record providing or privately placing debt and equity financing; former President, North America, of TriplePoint Capital

Phillip Kim
Managing Director,
Merger & Acquisitions
phillip.kim@usadvisors.com
212-376-1777

18+ years of technology investment banking and advisory experience at Greenhill & Co., Lehman Brothers and Deutsche Banc Alex. Brown

Emily Anderson
Managing Director,
Head of Sponsor Coverage
emily.anderson@usadvisors.com
212-376-1760

18+ years of transaction advisory experience at CODE Advisors, Goldman Sachs and Ernst & Young

Will Andereck
Managing Director, Software
william.andereck@usadvisors.com
415-501-8023

13+ years of technology investment banking and advisory experience at Union Square Advisors focused on the enterprise software sector

Todd Holman
Managing Director, Internet & Digital Media
todd.holman@usadvisors.com
415-501-8025

13+ years of technology investment banking and advisory experience at RBC Capital Markets

Michael Moore
Managing Director, Capital Markets
michael.moore@usadvisors.com
212-376-1740

16+ years of Leveraged Finance experience primarily focused on the technology and consumer industry verticals at Citigroup

Zeke Navar
Managing Director, Head of HealthTech
zeke.navar@usadvisors.com
415-501-8030

25+ years of investment banking experience at Crosstree Capital, JMP Securities, H2C and GCA Savvian (d.b.a., Houlihan Lokey)

Jono Peters
Director, Capital Markets
jono.peters@usadvisors.com
212-376-1724

8+ years of Leveraged Finance experience at Citigroup; served as an Artillery Officer in the United States Marine Corps, completing one combat tour in Afghanistan

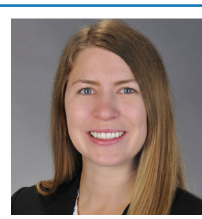
Tyler Graham
Director, Industrial and Construction Software
tyler.graham@usadvisors.com
415.501.8042

12+ years of investment banking and advisory experience at Deutsche Bank and Cambridge Associates

Alexander Despo
Director, Life Sciences and HealthTech
alexander.despo@usadvisors.com
415-501-8021

10+ years of investment banking experience at Crosstree Capital, Jefferies and Houlihan Lokey

Jamie Cummings
Vice President, AI Technologies
jamie.cummings@usadvisors.com
415-501-8048



8+ years of investment banking, corporate development, and engineering experience at FMI Capital Advisors, Gates Corporation and Siemens

Wesley Or
Associate, Supply Chain Technologies
wesley.or@usadvisors.com
415-501-8026

7+ years of investment banking and corporate development experience at Canaccord Genuity, project44, ARM and TIBCO Software / Vista Equity Partners

New York Office

1350 Avenue of the Americas
Suite 700
New York, NY 10019

212.376.1700

San Francisco Office

1 Embarcadero Center
Suite 950
San Francisco, CA 94111

415.501.8000

www.usadvisors.com