

```
mirror_object to mirror_mod.mirror_object
operation == "MIRROR_X":
mirror_mod.use_x = True
mirror_mod.use_y = False
mirror_mod.use_z = False
operation == "MIRROR_Y":
mirror_mod.use_x = False
mirror_mod.use_y = True
mirror_mod.use_z = False
operation == "MIRROR_Z":
mirror_mod.use_x = False
mirror_mod.use_y = False
mirror_mod.use_z = True

selection at the end -add
mirror_ob.select=1
modifier_ob.select=1
context.scene.objects.active
("Selected" + str(modifier_ob.name))
mirror_ob.select = 0
bpy.context.selected_objects[0].name
data.objects[one.name].select

print("please select exactly one mirror")

OPERATOR CLASSES -----

def mirror(modifier):
    the selected mirror is
    mirror_x"
```

2023 SOFTWARE MARKET UPDATE

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Firm Overview



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About Blue River

Founded in 2002, Blue River Financial Group is a middle market merger and acquisition advisory firm headquartered in Bloomfield Hills, MI. It assists corporations, private equity groups and individuals in the sale and acquisition of businesses, and has completed assignments in multiple business segments. With over 20 years of experience spanning across 50 global industries, Blue River provides a suite of services to middle market clients including corporate development, private equity support, valuations and transaction consulting, placing a premium on relationship-centered transaction counsel and client focus.

Our Services

- [Buy Side M&A Advisory Services](#)
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M&A INSIGHT

By: Kyle Rutz
Director

M&A Activity In The SaaS Space

As we reflect on 2023, the SaaS sector continues to stand out for its dynamic evolution and technological advancements. This period underscored the industry's strategic pivot towards leveraging cutting-edge technologies such as AI/ML, and the cloud, marking a significant leap towards more innovative and customer-centric solutions. The year also witnessed transformative M&A activities, illustrating the sector's resilience and strategic foresight amidst a rapidly changing digital landscape.

Throughout the last year, the SaaS sector's M&A landscape was notably shaped by economic recovery challenges, including a spike in business-lending interest rates from approximately 4.5% to nearly 10%, and valuation complexities for companies with significant investments in operations. These hurdles contributed to a more cautious M&A market. However, as expectations mount for a rebound in deal volume and valuations in the second half of 2024, driven by potential interest rate cuts, SaaS companies are increasingly leveraging experienced M&A advisors to navigate these challenges.

In response to the economic environment, deal structures have evolved, with a shift towards equity considerations, earnout, and rollover structures as alternatives to upfront cash payments. This adaptation, alongside the downturn in private company valuations and a strategic focus on financial sustainability, is steering the sector towards innovative exit strategies. These include a rise in M&A activity as an alternative to lukewarm IPO performances, setting a resilient and strategic course for the industry's future growth and consolidation.

Several key trends have emerged in the M&A landscape:

- **Integration of AI / ML Technologies:** Throughout the year, there was a pronounced focus on incorporating AI and ML into SaaS offerings. Companies actively pursued acquisitions to strengthen their technological foundations and respond to the increasing demand for intelligent, efficient software solutions. A prime example was Databricks' acquisition of MosaicML for US\$1.3 billion in July 2023, which highlighted the strategic shift towards embedding generative AI capabilities into SaaS platforms, setting a new standard for innovation within the industry.
- **Enhanced Focus on Cybersecurity:** As cloud-based services become more prevalent, cybersecurity has emerged as a critical pillar for SaaS companies. With cybercrime costs predicted to reach US\$13.8 trillion by 2028, the importance of protecting digital assets and customer data has never been more paramount. A notable example in the space includes Thales' acquisition of Imperva in December 2023, underline the paramount importance of safeguarding digital assets and customer information globally in today's interconnected ecosystem.
- **Rise of Vertical SaaS:** Demand for vertical SaaS solutions, designed for specific industries, is growing. Strategic acquisitions in sectors like healthcare, finance, and manufacturing are enhancing service offerings. A prime example is Vista's acquisition of Duck Creek for \$2.6 billion in March 2023, emphasizing the value of industry-specific SaaS solutions in areas such as insurance.

Heading into 2024, the SaaS industry's path is paved with ongoing technological integration and strategic acquisitions, with firms leveraging AI, ML, and cloud technologies to drive growth and diversification. These strategic moves, aimed at enhancing product offerings and customer experiences, underscore the sector's commitment to innovation and its pivotal role in digital transformation.

M&A INSIGHT

By: Kyle Rutz
Director

Private equity firms, equipped with a record amount of dry powder from a slower M&A year, are now poised to fuel the SaaS landscape with fresh investments. This capital surplus signals a strong confidence in the sector's potential, promising to catalyze the development of new, innovative SaaS companies and further propel the industry's evolution.

In conclusion, the resilience, adaptability, and strategic foresight seen in the SaaS industry's M&A actions over the past year reaffirm its position as a driving force for digital transformation. The strategic acquisitions and technological advancements undertaken are indicative of a broader vision that will continue to influence the industry's direction for years to come.



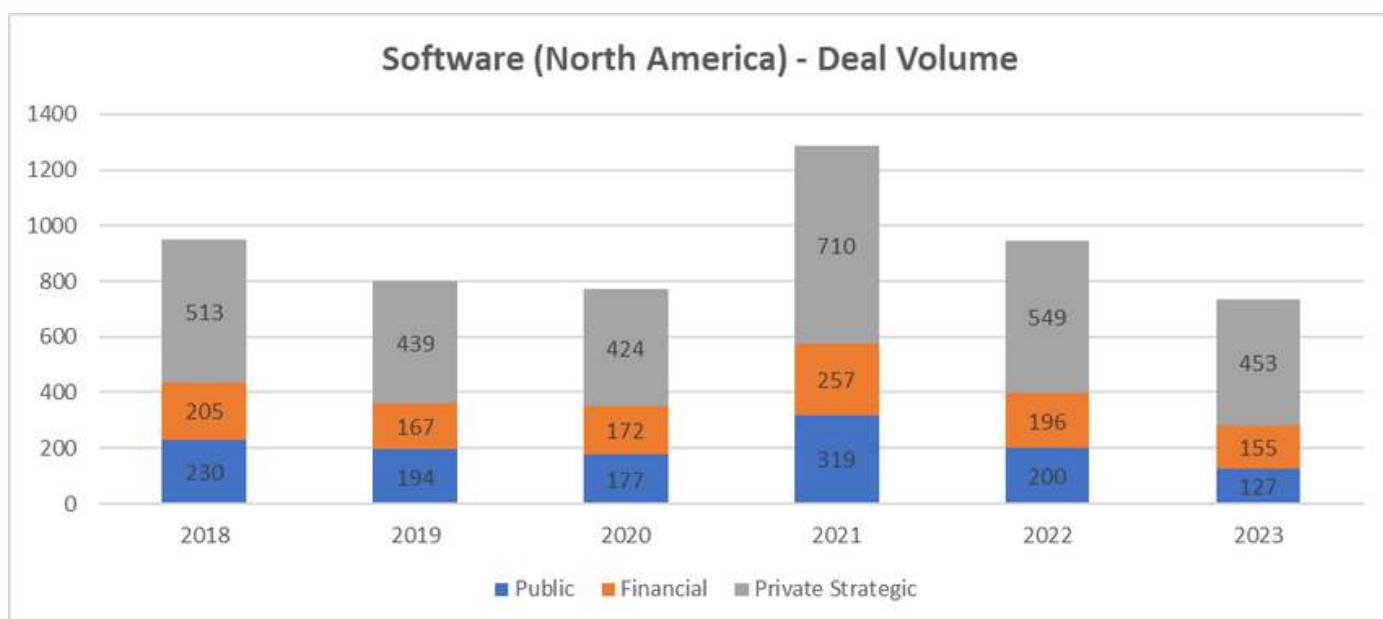
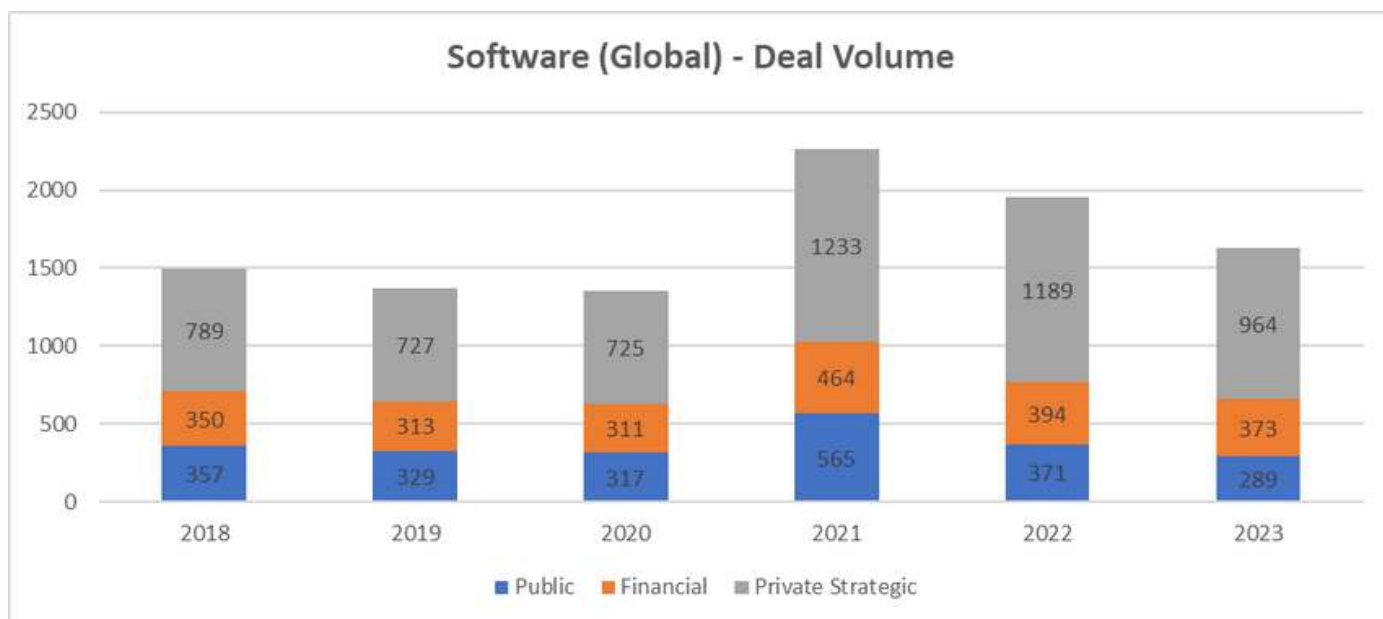
[Kyle Rutz](#) leads Blue River's Software Competency, leveraging his extensive expertise in the Technology and Software space. At Blue River, Kyle has played pivotal roles, including project leadership and M&A advisory, contributing to the expansion of the firm's buy-side practice through numerous acquisition strategies. Before joining Blue River, he supported several SaaS-focused, private equity, and venture capital-backed portfolio companies. Kyle holds a B.A. in Humanities and Pre-law from Michigan State University, alongside an MBA from Northwood University's DeVos Graduate School in Midland, MI.

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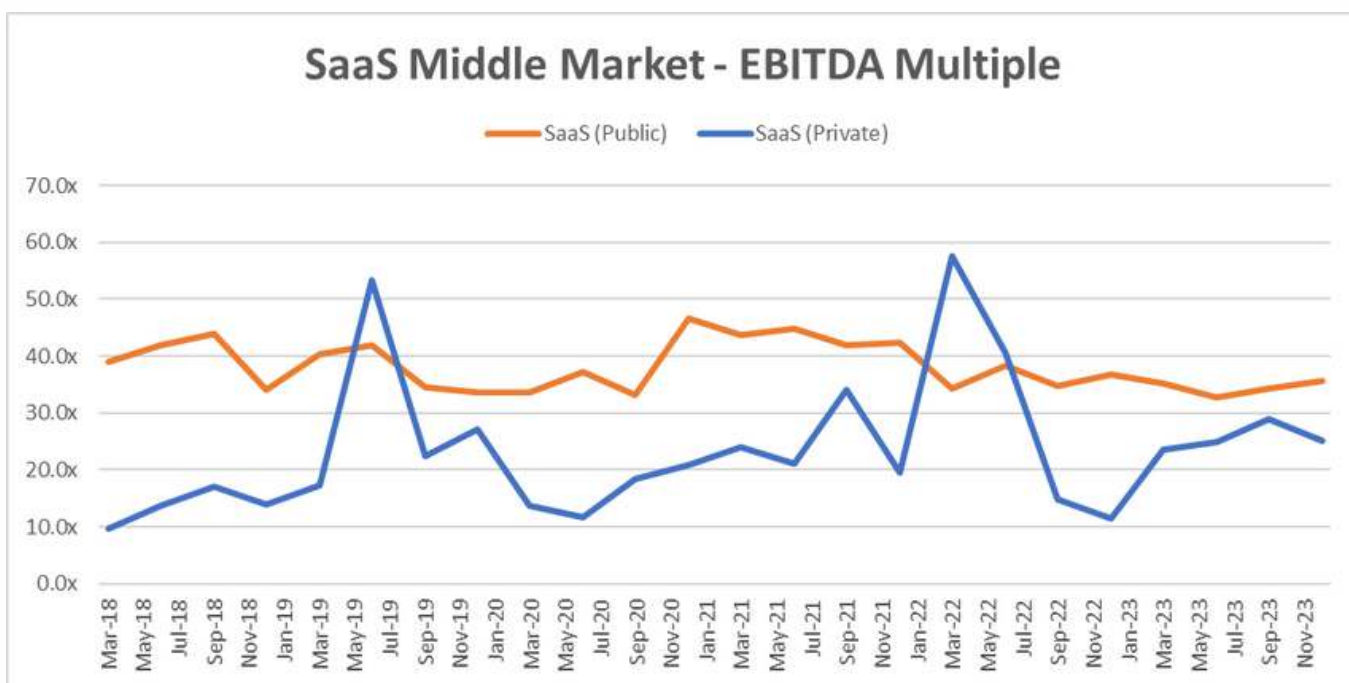
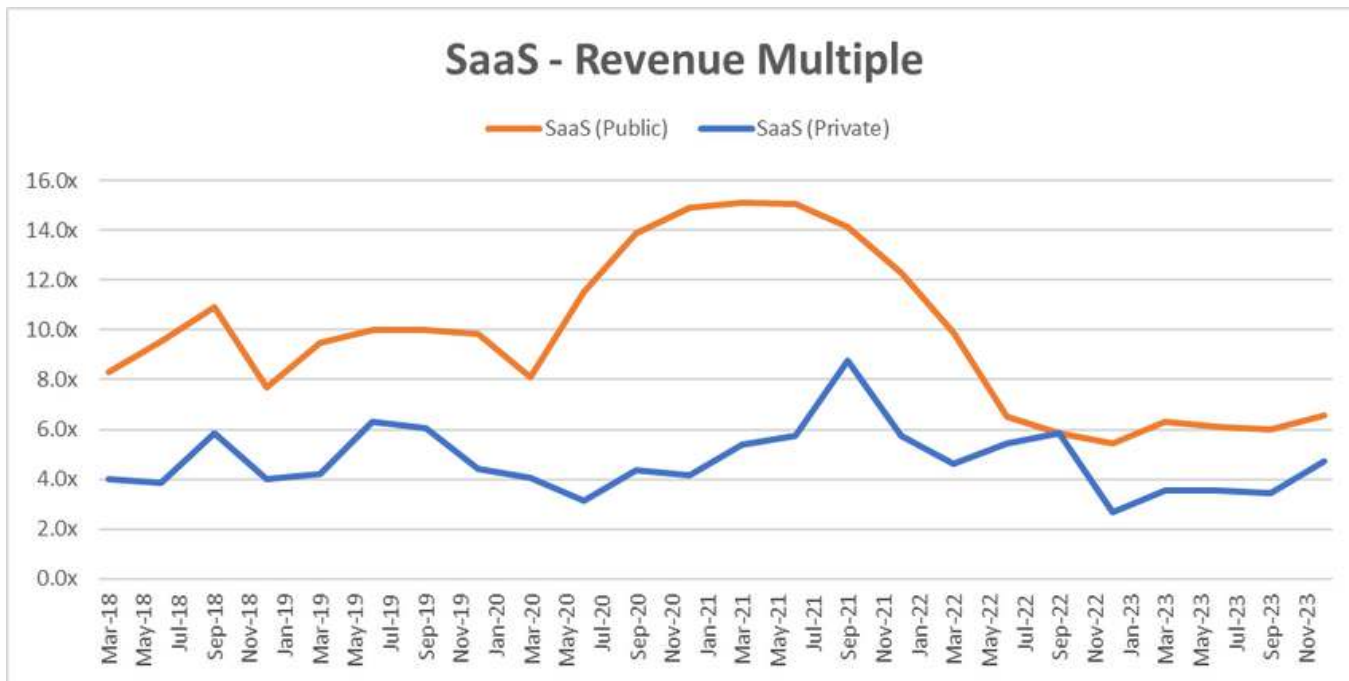
2023 Software Market Performance

Global Software M&A activity in 2023 experienced a decrease from the heights of the previous two years, yet it displayed an uptrend compared to the years 2018 through 2020. Deal volume in North America receded to below the levels observed during and before the COVID-19 pandemic (2018-2022).



Public vs Private Software Comps

The following chart shows a 6-year comparison of average multiples for sectors associated with the Software industry. This view presents both public and private multiples for reference. The private sector numbers are calculated based on quarterly M&A transactions for past 6 years for Software companies.



Data Sources: GF Data, S&P Capital IQ, Pitchbook Data

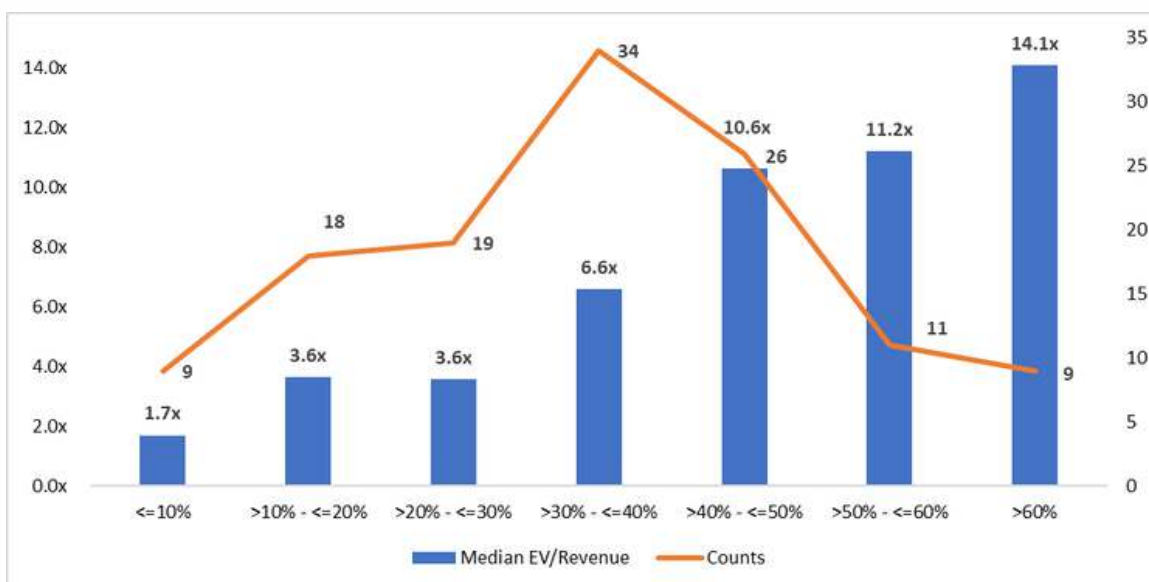
Public Financial Data

The following list shows the performance of the Software industry across 10 industry sub-segments, used to calculate our public IA valuation index.

Public Company	LTM Performance	Last 3 Year Performance	EV / Revenue 2023E	EV / EBITDA 2023E	P/E 2023E
Analytics & Data Management	45.89%	-18.65%	6.1X	27.4X	41.6X
Communications & Collaboration	17.52%	-68.10%	3.6X	13.4X	17.0X
Dev Ops & IT Management	77.50%	6.56%	9.5X	43.6X	59.9X
ERP & Supply Chain	31.88%	54.45%	8.4X	37.9X	58.7X
Financial Applications	18.42%	-11.92%	7.2X	36.9X	43.1X
Human Capital Management	23.97%	-8.12%	6.9X	20.8X	49.5X
Sales & Marketing	78.53%	14.64%	6.4X	26.4X	33.1X
Security	99.28%	19.30%	9.1X	42.2X	59.2X
Vertically Focused	28.38%	-27.21%	5.3X	24.1X	32.4X
Other SaaS	84.02%	-27.89%	4.9X	21.0X	31.1X
AVERAGE:	50.54%	-6.69%	6.7X	29.4X	42.5X
MEDIAN:	31.88%	-8.12%	6.7X	26.9X	42.4X

Rule of 40

This section presents revenue multiples for public companies with different Rule of 40 performance. (Rule of 40 is defined as revenue growth percentage + EBITDA margin).



Source: S&P Capital IQ

By: **Brook Critchfield**
Partner at Plymouth Growth

Who Took My Punchbowl?



For roughly a decade, software companies (or those masquerading as such) enjoyed unfettered access to cheap and limitless venture capital dollars. Then, propelled by the pandemic tech-boom, a promise of high growth and unlimited TAMs, investors tripped over themselves to deploy more and more money at higher and higher valuations. At the peak of the frenzy, companies semi-routinely IPO'd at billion dollar valuations despite having never posted a dollar of revenue.

According to AGC Partners, public SaaS valuations in January 2020 stood at roughly 12x trailing revenues, skyrocketed to 22x in January 2021, and have today round-tripped it back to historical norms as a result of tightening monetary policy and dramatically-increased interest rates.

By: **Brook Critchfield**
Partner at Plymouth Growth

Moving Goalposts and Founder Whiplash

The mortality of even the most well-funded tech-darlings has been on full display since the unfolding of this correction. In fact, according to Pitchbook and the New York Times, “approximately 3,200 private venture-backed companies around the world have gone out of business” in 2023. These companies had also raised over \$27 billion in venture funding. And this phenomenon isn’t just concentrated in small or early-stage companies, but extends to many of the largest and most well-funded darlings (brilliantly coined, the “Unicorpse”) of the coastal venture scene – including Convoy (\$1BN+ raised), WeWork (once valued at \$47BN), or Quibi (\$1.8BN raised to make 10 minute sitcoms – really?).

While the reversion to the valuation means shouldn’t be a shock to anyone, the rapidity of this correction has been a surprise to most industry participants. It can be downright motion-sickness inducing for both public and private SaaS companies' founders, CEOs, and management teams. Even smaller, founder-led growth stage companies don’t turn from growth to profitability on a dime, so how is a founder/CEO to position his or her business for the optimal combination of valuation, survivability, and exit potential?

Avoiding the Hamster Wheel of Modern Venture Capital

There is no doubt as to the need for traditional private equity and venture capital strategies, and innovation certainly requires a leap of faith from investors. However, investor appetites are notoriously mercurial, and this grand correction has allowed for some return to sensible approaches to balancing growth and profitability. In fact, the demand from large, tech-focused private equity firms remains intense – especially for capital efficient, growth-oriented (but not fragile hyper-growth) software companies that have proven themselves ready for the big leagues. At Plymouth Growth, we specialize in helping founder-led, growth-stage SaaS companies develop themselves responsibly into ideal acquisition targets that command premium valuations regardless of the economic cycle. Our portfolio companies have consistently realized outsized financial outcomes and optionality even after the massive market corrections of 2022-2023 – an environment that has left traditional venture funds reeling and their portfolio companies in peril (or worse).

By: **Brook Critchfield**
Partner at Plymouth Growth

Our niche strategy and playbook involve closely partnering with our executive teams to maximize their Company's optionality by optimizing performance across a relatively small but critical number of metrics. These metrics are headlined by annual recurring revenue scale and growth rate, gross margin profile, net revenue retention, a clear line of sight to Rule of 40 compliance, and customer concentration. Equally important are more qualitative indicators of private equity-readiness, such as the successful implementation of an enterprise-grade accounting system, a transaction-quality CFO, and proven experience in evaluating and executing add-on acquisitions. When executed correctly, this results in a feeding frenzy among private equity acquirers.

Finally, founders must realize the lessons of prior cycles and that the high mortality of venture-backed companies ties much more closely to the cyclicity of venture funding cycles than the performance of a specific company. Simply put, what kills companies en masse is not that they have bad products or committed operational sins, but that they rely on outside funding at the wrong time in an unforgiving market cycle. This fact is core to Plymouth Growth's strategy of not allowing our portfolio companies to depend on outside funding for their survivability and ensuring that any subsequent growth funding is because it's the right decision for the Company's long-term prospects – not out of desperation.



[Brook Critchfield](#) has been a Partner at Plymouth Growth since 2017 and is involved in all aspects of the firm's investing activities, from origination to exit. He has led several successful investments in Funds IV & V including Pacejet, 3BG Supply Co., Sensei Labs, MentorcliQ, and DeckCommerce. Brook brings over 20 years of experience in finance and capital markets to Plymouth Growth's funds and portfolio companies.

Prior to Plymouth, Brook spent more than 10 years as a core member of Capital Access Funds Management in Chicago, an asset management firm focused on providing specialty investment solutions to many of the world's largest investors. Brook was heavily involved in all of the group's activities, including sourcing and reviewing investment opportunities, designing and implementing investment structures, and interacting with current and prospective clients. Previously, Brook was an Analyst with JPMorgan Chase & Co., where he performed valuation and transactional investment banking services for closely-held companies. Brook earned his BA in Economics & Management from Albion College.

Notable Private Software Transactions

Notable private transactions in the software industry for 2023 are listed below, including the investment rationale.



has acquired



Rationale: Databricks has acquired Arcion. This acquisition helps simplify and accelerate ingesting data from enterprise databases to the Databricks Lakehouse Platform. Arcion is a developer of database platform designed to offer autonomous migration and cloud-neutral database replication.

- **Date:** November 2023
- **EV:** \$100 Million
- **Subsector:** Analytics & Data Management



has acquired



Rationale: Shift4 Payments has acquired Appetize. This acquisition allows Shift 4 to build on the restaurant space and for its the sports and entertainment business. Appetize is a developer of a cloud-based point of sale software intended to manage and process digital orders.

- **Date:** October 2023
- **EV:** \$100 Million
- **Subsector:** Vertically Focused



has acquired



Rationale: BigBear.ai has acquired Pangiam. This acquisition will expand BigBear.ai's customer base and service offerings to major airlines, airports, and identity-verification companies, and significantly increase its contract portfolio with customers at the Department of Homeland Security and U.S. Customs and Border Protection. Pangiam is a developer of customized software intended to serve the federal government and commercial customers.

- **Date:** November 2023
- **EV:** \$70 Million
- **Subsector:** Security



has acquired



Rationale: Recursion Pharmaceuticals has acquired Cyclica. This acquisition bolsters chemistry and generative AI capabilities. Cyclica is a developer of a patented cloud-based predictive analytics software designed to discover safer and more effective medicines.

- **Date:** May 2023
- **EV:** \$62 Million
- **Subsector:** Analytics & Data Management

Notable Public Software Transactions

Notable public transactions in the software industry for 2023 are listed below, including the investment rationale.



has acquired



Rationale: International Business Machines has acquired StreamSets. This acquisition accelerates watsonx data ingestion capabilities and creates a leading application modernization and integration platform. StreamSets is developer of a data integration platform designed to build and run smart data pipelines.

- **Date:** December 2023
- **EV:** \$2,130 Million
- **Subsector:** Analytics & Data Management



has acquired



Rationale: Broadcom has acquired VMware. This acquisition enables Broadcom's global enterprise clients to adopt private and hybrid cloud environments while making them more secure. VMware is provider of software infrastructure and operates in segments including licenses, subscriptions and software as a service; and services.

- **Date:** November 2023
- **EV:** \$69,210 Million
- **Multiples:** EV/Revenue: 19.9x; EV/EBITDA: 5.1x
- **Subsector:** Analytics & Data Management



has acquired



Rationale: Thales Group has acquired Imperva. This acquisition will help Thales discover and protect sensitive data anywhere, manage access and secure all paths to it. Imperva is developer of data security software intended to protect data and all paths to it through all stages of digital transformation.

- **Date:** December 2023
- **EV:** \$3,600 Million
- **Multiples:** EV/Revenue: 7.2x
- **Subsector:** Security



has acquired



Rationale: Constellation Software acquired Optimal Blue. This acquisition creates incredible portfolio for Constellation Software, of independently run companies and products in the mortgage software space. Optimal Blue is an operator of an online mortgage marketplace platform catering to investors, lenders and originators.

- **Date:** September 2023
- **EV:** \$700 Million
- **Subsector:** Financial Applications



has acquired



Rationale: Atlassian has acquired Loom. This acquisition creates seamless experiences between every tool customers use to get work done, with async video being the latest in the toolbox to help unleash the potential of every team. Loom is developer of a work communication tool designed for people to get their messages through instantly shareable videos.

- **Date:** November 2023
- **EV:** \$975 Million
- **Subsector:** Security



has acquired



Rationale: International Business Machines has acquired Polar Security. This acquisition helped IBM to plan to integrate Polar Security's DSPM technology within its Guardium family of leading data security products. Polaris an operator of a security platform intended to secure new data created by research and development.

- **Date:** May 2023
- **EV:** \$60 Million
- **Subsector:** Security

Listing of Software Transactions

The section includes several highlighted transactions for 2023 in the Software industry.

Closed Date	Target Name	Acquirer	Target Description	EV (\$m)	EV/ Revenue	EV/ EBITDA
22-12-2023	LiveVox	NICE	Operates as a cloud contact-center-as-a-service (or CCaaS) platform, provides service to enterprises, business process outsourcers, and collections agencies.	\$316.6	2.2x	-
22-11-2023	VMware	Broadcom	Provider of software infrastructure and operates in segments including licenses, subscriptions, and software as a service; and services.	\$69,210.0	5.1x	19.9x
31-10-2023	Energy Exemplar	Blackstone, Vista Equity Partners	Developer of simulation and modeling software intended for energy markets based in North Adelaide, Australia.	\$1,000.0	10.0x	-
29-09-2023	The Indoor Lab	Blattner Technologies	Developer of technology platform designed to combine LiDAR analytics, proprietary perception software, artificial intelligence to provide comprehensive & advanced solutions.	\$112.0	5.60x	-
25-08-2023	Tryzens	Westbridge Capital	Provider of e-commerce consultancy services intended to help brands with digital transformation and optimization.	\$45.9	3.3x	20.5x
09-08-2023	Meltwater	Altor Equity Partners, Marlin Equity Partners	Provides social and media intelligence, examines millions of posts each day from social media platforms, blogs and news sites, and helps companies make informed decisions	\$539.1	1.2x	31.4x
31-05-2023	SurveyMonkey	STG Partners	Provider of survey software products and purpose-built solutions that enable organizations to engage with their key constituents, including their customers, employees and the markets they serve.	\$1,300.9	2.7x	-
16-05-2023	Polar Security	International Business Machines	Operator of a security platform intended to secure new data created by research and development.	\$60.0	9.4x	-
07-05-2023	Sumo Logic	Francisco Partners	Engaged in a software-as-a-service analytics platform for reliable and secure cloud-native applications.	\$1,397.9	4.7x	-

Listing of Software Transactions

Closed Date	Target Name	Acquirer	Target Description	EV (\$m)	EV/ Revenue	EV/ EBITDA
04-05-2023	Pulsic	Cadence Design Systems	Developer of electronic design automation software designed to offer production-proven floor-planning, placement, and routing design services.	\$59.9	12.7x	-
30-04-2023	Nitro Software	L Capital	Operator of a cloud-based document productivity software intended to serve real estate, healthcare, manufacturing, energy, financial service, and education industries.	\$277.7	4.2x	-
28-04-2023	Threshold Visitor Management Systems	CCL Industries	Developer of visitor management systems intended to support security protocols.	\$6.8	1.0x	3.9x
21-04-2023	Workvivo	Zoom Video Communications	Developer of an internal communication and engagement platform designed to facilitate organizational communication outside the workplace.	\$221.8	21.8x	-
14-04-2023	Belive.ai	SES-imagotag	Operator of a computer vision SaaS platform intended for frictionless operations and improved store efficiency.	\$10.8	1.9x	-
06-04-2023	Magnet Forensics	Magnet Forensics, Thoma Bravo	Developer of digital investigation software, acquires, analyzes, reports on, and manages evidence from digital sources.	\$1,170.0	11.8x	136.9x
30-03-2023	Duck Creek Technologies	CapitalG, Vista Equity Partners	Developer of core system solutions software for the property and casualty and general insurance industry.	\$2,336.1	7.5x	377.3x
29-03-2023	Sentric Music	Believe	Developer of an online music publishing platform designed to empower artists and songwriters to collect the royalties they're owed and add creative value to their songs.	\$58.7	1.1x	21.5x
24-03-2023	EVO Payments	Global Payments	Provider of payment processing services catering to small and mid-size enterprises, multinational companies and organizations across the Americas and Europe.	\$3,643.5	6.7x	23.5x
21-03-2023	IsoPlexis	PhenomeX	Developer of a single-cell detection system designed to identify patient immune responses at the single-cell level.	\$39.4	2.4x	-

Listing of Software Transactions

Closed Date	Target Name	Acquirer	Target Description	EV (\$m)	EV/ Revenue	EV/ EBITDA
27-02-2023	Coupa	Abu Dhabi Investment Authority, CapitalG, General Atlantic, Thoma Bravo	Cloud-based provider of business spending management solutions.	\$8,000.0	9.8x	-
23-02-2023	Athonet	Hewlett Packard Enterprise	Developer of a connectivity platform intended to deploy LTE and 5G wireless networks for organizations.	\$490.0	36.6x	-
22-02-2023	WideOrbit	Constellation Software, Lumine Group	Developer of an advertisement management platform intended to make it easier to buy and sell advertising.	\$1,600.0	114.3x	-
07-02-2023	MarkLogic	Progress Software	Developer of a metadata refining platform intended for government agencies, financial enterprises, insurance companies and manufacturing companies.	\$355.0	3.6x	-
24-01-2023	Benefitfocus	Voya Financial	Provider of cloud-based benefits management platform for consumers, employers, insurance carriers, and brokers.	\$514.9	2.1x	30.9x
15-01-2023	Banxa	Capital Group Private Markets	Operates as a payments service provider for the digital asset space, offers cryptocurrency gateway platform to other businesses in the industry.	\$4.4	0.1x	-
11-01-2023	UserTesting	Sunstone Partners, Thoma Bravo	Operates as a video-first, enterprise-grade software-as-a-service (SaaS) platform that enables organizations to see and hear the experiences of real people as they engage with products, designs, apps, processes, concepts, or brands.	\$1,135.4	6.1x	-
05-01-2023	Supply Vision	Descartes Systems Group	Developer of a cloud-based logistics software platform designed to offer hands-on training and implementation services to the transportation and logistics industry.	\$14.6	12.4x	-
03-01-2023	Adara	RateGain Technology	Operator of an online audience targeting platform designed to offer actionable insights to help guide business planning.	\$16.1	0.6x	-
01-01-2023	Simpliconnect	Ackroo Canada	Developer of marketing software designed to build strong loyalty programs for consumers.	\$2.0	2.0x	-



About Blue River

Founded in 2002, Blue River has built its practice around delivering experienced, systematic transactional guidance. Our deep involvement in the private capital marketplace enables us to bring ideal outcomes to owners transitioning out of ownership. We provide a suite of services including corporate development, private equity support, confidential sell-side representation, valuations and transaction consulting. Blue River places a premium on relationship-centered transaction counsel and client support.

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FINANCIAL GROUP



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