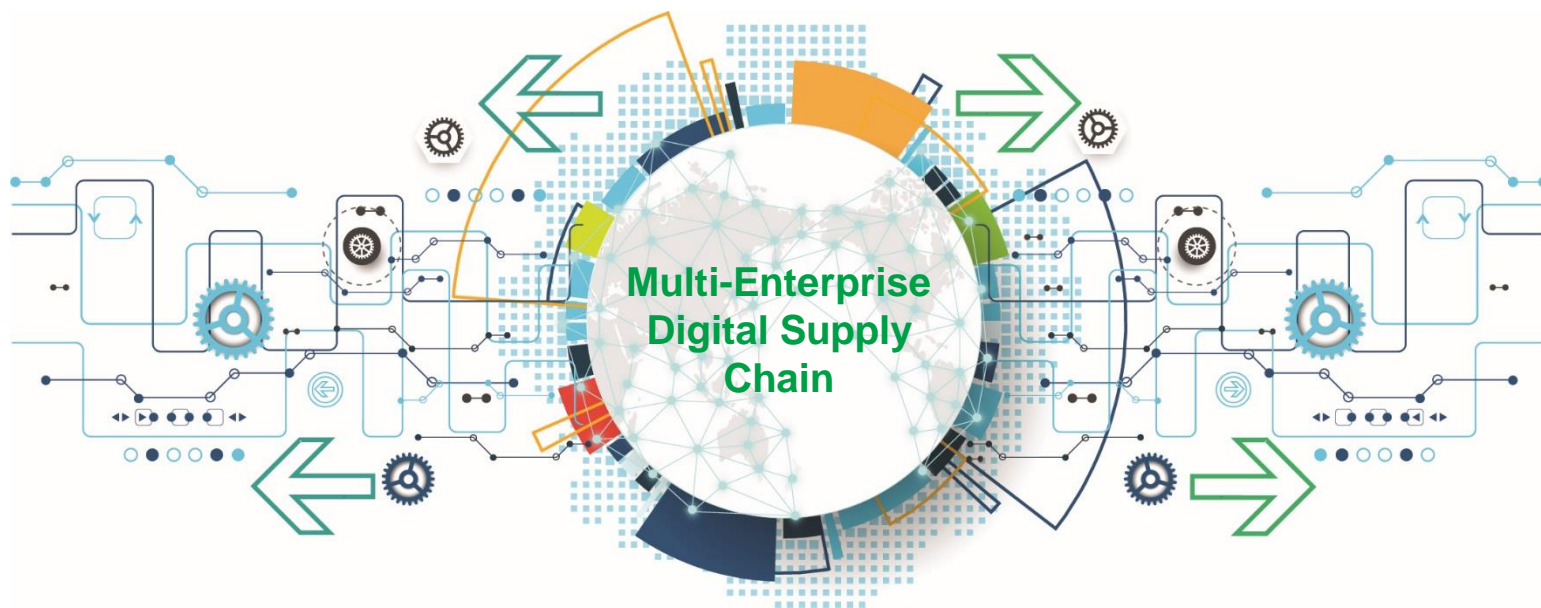


May 2019
INSIGHTS



Multi-Enterprise Digital Networks: The Future of Supply Chain

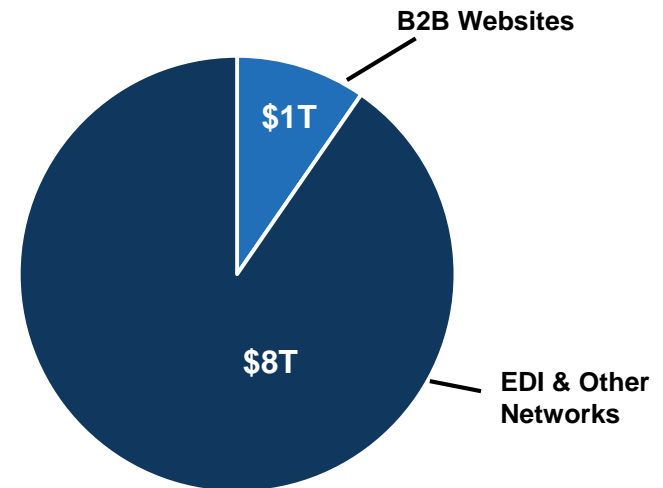
Bob Renner, Partner
Ben Howe, CEO
Fred Joseph, Partner
Markus Salolainen, Partner

Massive \$9T Market on Cusp of Digital Transformation

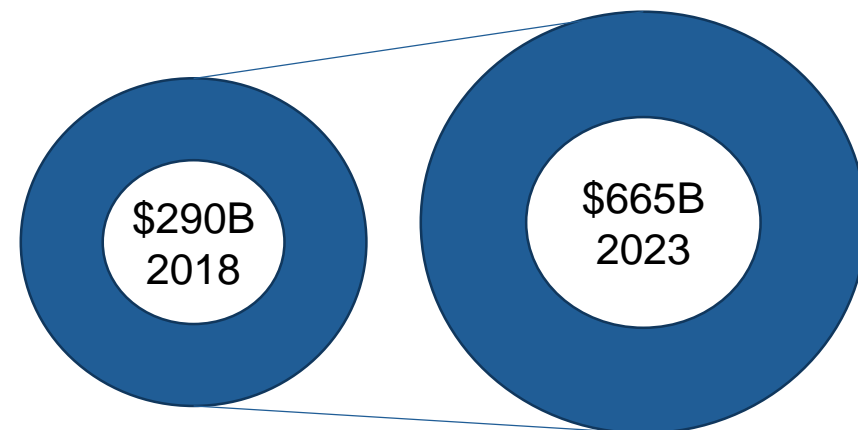


- At the core of the \$9T B2B e-Commerce ecosystem are the business networks which facilitate the transaction, fulfillment, transportation and final delivery of goods and services through the supply chain
- These electronic networks first emerged over 20 years ago, but are now being transformed again
- The \$290B Digital Transformation wallet is the rocket fuel that can accelerate the next chapter Supply Chain innovation
 - › *This is similar to Supply Chain automation initiatives of the early 2000s, fueled by Enterprise Resource Planning (ERP) efforts*
- The convergence of Digital initiatives with other emerging technologies, such as IoT, is ushering in a new Multi-Enterprise Digital Supply Chain (“MDSC”)
- Scale-based vendors with a complete offering (Network, Supply Chain Applications and Analytics) are well positioned
- Valuations for MDSC software companies can be particularly complex due to the broad range of enabling solutions and service they must cover

US B2B e-Commerce Sales (\$T)



Digital Transformation Market (\$B)





Gartner defines MDSC as a network of trading partners that need to “coordinate business processes” that extend across multiple enterprises

- *“Networks are not new, but with companies focusing more on having end-to-end (E2E) processes include their external trading partners, **these networks are increasing in importance and value,**” concludes Gartner*
- *The first generation of systems emerged more than 20 years ago. These systems mainly used electronic data interchange for data transmission between trading partners. Emerging technologies such as **IoT and Blockchain** are dramatically changing Supply Chain Networks*

IDC defines MDSC as any platform that facilitates the exchange of information and/or transactions among disparate parties pertaining to the supply chain or processes

- *According to an IDC survey, 90% of companies are participating in at least one multi-enterprise supply chain network, with two-thirds of those participating in more than one*
- ***By 2020, 50% of large manufacturing firms will have begun shifting their supply chain from enterprise centric to network centric applications,** driving potential productivity gains of 2 percentage points, according to IDC*

Internet of Things (IoT): brings real-time response to next generation Supply Chain Networks

- *With recent estimates of **28 billion IoT connected devices worldwide by 2021,** IoT will challenge supply chains to open up to new business model and operational possibilities*

Blockchain: automation and standard data today, open, distributed supply chains tomorrow

- *Blockchain is encouraging a trend toward more and more business occurring over collaborative, multi-enterprise value chains. Blockchain may act as a single data format for all partners in an ecosystem*



*“The **Network** is the glue in the Multi-Enterprise Digital Supply Chain”*

Supply Chain Networks

- The Global Supply Chain Network is the foundation for the secure and reliable flow of information between participants in today’s complex, interdependent supply chains.
- Over the years this has evolved from basic asynchronous communications such as sending EDI messages to more tightly coupled real-time networks with distributed processing choreography and integration with Cloud-based applications.
- This has transformed this capability from a “mission critical commodity” (low cost EDI) to the critical link to all forms of value-added data. In other words, the integration network is the foundation of all Digital Transformation initiatives.

**Data
Management
/ Analytics**

**Supply Chain
Applications**



**Supply Chain
Networks**

**Data
Management
/ Analytics**

Supply Chain Applications

- Supply Chain Applications: In the modern Supply Chain the location and purpose of applications are changing to meet the needs of data driven businesses.
- Most of these applications are still intended to help with supply chain decision support through increased transparency and optimization automation.
- However, the delivery of this business logic is increasingly embedded in Supply Chain Networks and both a user and / or contributor to Data Lakes with separate analytic tooling.
- In summary, Supply Chain Applications, stand alone or embedded, codify business logic and rules necessary to create or make use of raw Supply Chain data needed to run a business

“Applications bring tangible business value to the digital Supply Chain”



“Supply Chain Data is the ultimate tool for innovation and competitive advantage”

Data Management / Analytics

- Most IT budgets in manufacturing and distribution-heavy industries still center on Enterprise Applications (Oracle, SAP, etc.).
- Data artifacts produced by these applications are quickly becoming one of many sources for business enabling data and often not the most important as this data is inward looking and constrained by the business logic in Enterprise Applications.
- Data defined from the perspective of the Multi-Enterprise Supply Chain is distributed and cross domain. When analyzed it provides classic views used for supply chain optimization but also cross domain data can give rise to powerful insights for innovation and business transformation.

Supply Chain Networks

Supply Chain Applications

Company Landscape by Market Segment



Supply Chain Networks

DISCLAIMER: This is only a representative list and may not include all relevant companies. If your company is not on the list and would like to be added for future publications, kindly shoot us a note at brenner@agcpartners.com and we would be happy to consider adding.

Indicates operating subsidiary



Data Management
/ Analytics

Supply Chain
Applications

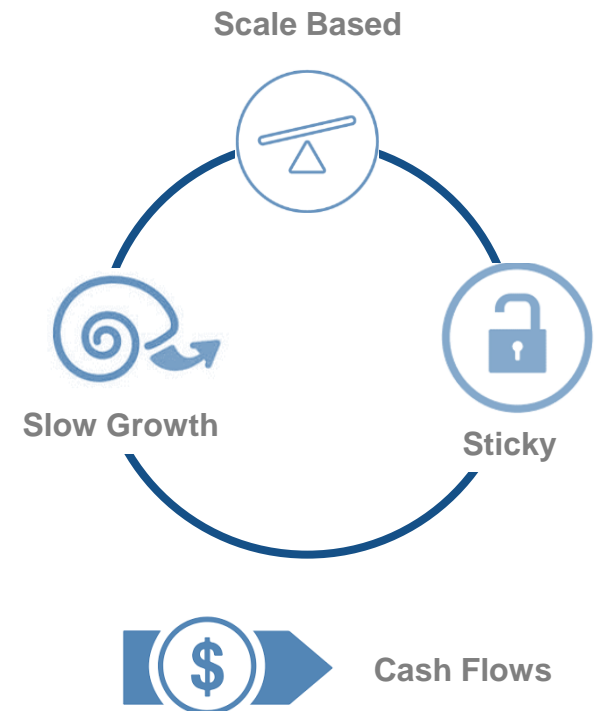


Key Vendor Attributes:

- These companies offer capabilities that are foundational and upon which a company's supply chain strategy is built.
- For sophisticated networks and eco-systems these capabilities can take a very long time to establish and stabilize.
- Interestingly, this is often not due to the underlying technology but rather the process coordination needed across all of the participating businesses in the supply chain.
- Once established and operating properly, these relationships and solutions tend to stand the test of time.

Key Financial Attributes

- Organic Growth: Implementation times (including coordination across multiple enterprises) can limit/slow growth
- Profitability: Strong operating leverage, benefit on the bottom line from scale and amortization of fixed costs across a large recurring revenue base. Can have lower GM than other pure SaaS or Cloud businesses.
- Customer/Revenue Retention: Businesses are sticky with typically greater than 95% retention rates due in part to the switching costs and risk.



Bottom Line: *At scale, these businesses often are great for leveraged deals due to their strong and predictable cash flows.*



Key Vendor Attributes:

- As one would expect, the closer vendors get to the business itself the more specialized and the more industry focused the solutions become. This is the case for Supply Chain Applications.
- Multi-Enterprise Supply Chain networks often have a strong focus on one or more industry. Good examples include SPS Commerce, Exostar, Elemica and ANX (acquired by OpenText).

Key Financial Attributes

- As these application vendors specialize they tend to increase their value within a certain addressable market but also narrow their TAM to that market.
- Markets such as Healthcare and Retail are excellent areas to specialize as they are large, complex and cost focused (supply chain optimization is appealing).
- More horizontal solutions, where they exist, center on processes directly or indirectly related to an efficient supply chain such as quote-to-cash, inventory management and transportation / logistics.
- Most of these applications are delivered as a Cloud or Private Cloud offering and due to the specialization may have better price elasticity on the upper end of the solution pricing range .
- As network vendors continue to add scale they naturally follow a vertical solution path similar to ERP vendors allowing them to add more value to their clients and drill deeper in to industry specific needs.

Bottom Line: *SaaS Supply Chain applications enhance Network offerings and can exhibit gross margin and grow profiles that exceed typical stand alone Network offerings*



Key Vendor Attributes:

- Companies offering Data Management solutions including data capture, data profiling and data normalization (collectively thought of as pre-processing) often benefit by being part of the core Supply Chain Network infrastructure.
- There are simple and practical reasons for this ranging from compliance in regulated industries to sheer volumes of data being collected by way of the network.
- Over the past several years there has been a clear trend for data management companies to add supply chain integration (network) capabilities and for larger Supply Chain Network companies to acquire or build data management capabilities and add this as an enhanced data reporting feature of those networks

Key Financial Attributes

- Within this space, while reporting continues to become more embedded in both Supply Chain Applications and Networks, data analytics continues to have stand alone value.
- This is an area of significant innovation and niche use cases.
- As such these companies continue (for the time being) to innovate and thrive outside an increasingly consolidated Multi-Enterprise Supply Chain vendor landscape.

Bottom Line: *These solutions often can have stand alone utility and can be portable beyond Supply Chain “use cases”. Growth potential and velocity is high as on-boarding time is comparatively low*

Market Segments & Value Matrix



	Supply Chain Network	Supply Chain Reporting / Analytics	Supply Chain Apps (SaaS)	Digital Transformation	MDSC
Market Size					
Growth Rate					
Quality of Revenue					
Retention	High	Moderate	Moderate	N/A	High
Recurring %	High	Moderate	High	Low (Project Based)	High
Profitability Profile					
Valuation				N/A	



Defining the Total Addressable Market (TAM) for the Multi-Enterprise Digital Supply Chain market can be challenging due in part to it being more of an umbrella concept at this stage. It's composition can vary based on the criteria used by market researchers.

That said, there are some generally accepted capabilities that are foundational and have well defined market boundaries:

- › **The Network.** The intersection between classic B2B transactional networks and Supply Chain use cases. This is a large, global and relatively mature market. A small but growing component of the next generation Supply Chain network includes IoT capabilities, which is often considered a feature of more generalized B2B Network capabilities.
- › **The Data.** Data Management, Reporting and Analytics applied to Supply Chain visibility and optimization. Although these are emerging market segments, Artificial Intelligence (AI) and some aspects of Blockchain feature prominently in this category (Blockchain spans all three).
- › **The Supply Chain Applications.** As it relates specifically to Multi-Enterprise Supply Chain use cases, these applications increasingly include purpose built, multi-tenant Cloud applications for coordination and collaboration across all aspects of the Digital Supply Chain. Examples include logistics, tracking, VMI, ATP/CTP, contracts management, etc.





Impact on Mature / Proven Supply Chain Market through disruptive forces

- In this mature market, growth rates can be gated by the span of Supply Chain eco-systems, supplier / customer churn and other “end point” dynamics of the supply chain participants. In other words, the natural market growth is approximated by underlying fundamentals of the businesses they enable.
- The sweeping effects of Digital Transformation initiatives, as well as specific disruptive technologies (such as IoT), are acting to accelerate the “natural growth” rates of supply chain solutions and services.
- This ubiquitous movement toward modernization and data driven processes (e.g. Digital Transformation) spans not only supply chain but many other areas and business processes.

Market Growth = Steady State growth + impact of Digital Transformation

- › Network Capabilities size and estimated CAGR: \$4B growing at 7.5%
- › Data Management / Analytics size and estimated CAGR: \$3B growing at 16%
- › Supply Chain Applications size and estimated CAGR: \$12B growing at 14%

Market Catalyst: *The Global Digital Transformation Market is expected to exceed more than US\$462 billion by 2024 and will grow at a CAGR of more than 18.5% in the given forecast period.*



- As classic Supply Chains continue to evolve, striking the right balance between an ever expanding connected ecosystem and business imperatives of time compression and cost optimization, can be a daunting task.
- In order to mitigate these seemingly irreconcilable forces of complexity and efficiency brought on by a federated Supply Chain system, technology vendors are reinventing their offerings to address the new normal.
- Vendor offerings in this space often span multiple domains and industry verticals to converge siloed solutions into a unified Supply Chain enabling platform.
- Simply put, overwhelmed businesses are steering away from “best of breed” to more comprehensive Multi-Enterprise Supply Chain Networks in an attempt to keep up
- Not surprisingly, some believe digital transformation holds the key to tackling deep-seated Supply Chain challenges. In other words Digital Transformation investments will become the catalyst for visionary business leaders to reinvent the Digital Supply Chain.

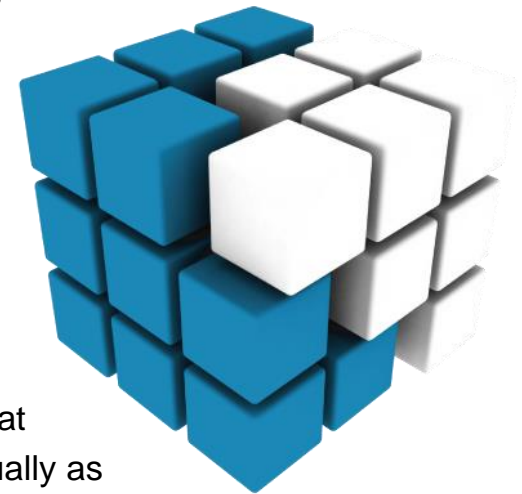
By 2000, most Global 1000 companies had installed Enterprise Resource Planning systems. This created a step function improvement in data accuracy and availability and the need for a more integrated and sophisticated Supply Chain Network.

Digital Transformation initiatives are doing the same thing in 2019.

The digital transformation market size is expected to grow from USD 290.0 billion in 2018 to USD 665.0 billion by 2023



- The delivery vehicle for next generation Digital Supply Chain capabilities is increasingly a **uniform platform approach**, benefiting scale players on the vendor landscape.
- Industry Analysts have coined multiple umbrella terms to describe this transformation, for example; “Multi-Enterprise Supply Chain Networks” or the “Digital Supply Chain”.
- This market dynamic is producing a convergence across three main capabilities that are required for a comprehensive Multi-Enterprise Supply Chain Network capability:
 - › Network: Global network reach with high availability
 - › Data: On demand data access and associated analytics
 - › Apps: Supply chain applications that produce / refine data artifacts
- It is increasingly critical for scale-based vendors to have a complete solution that addresses all three of these solution areas, delivered as a single platform. Equally as important, niche vendors need to find a platform partner to deliver their value proposition



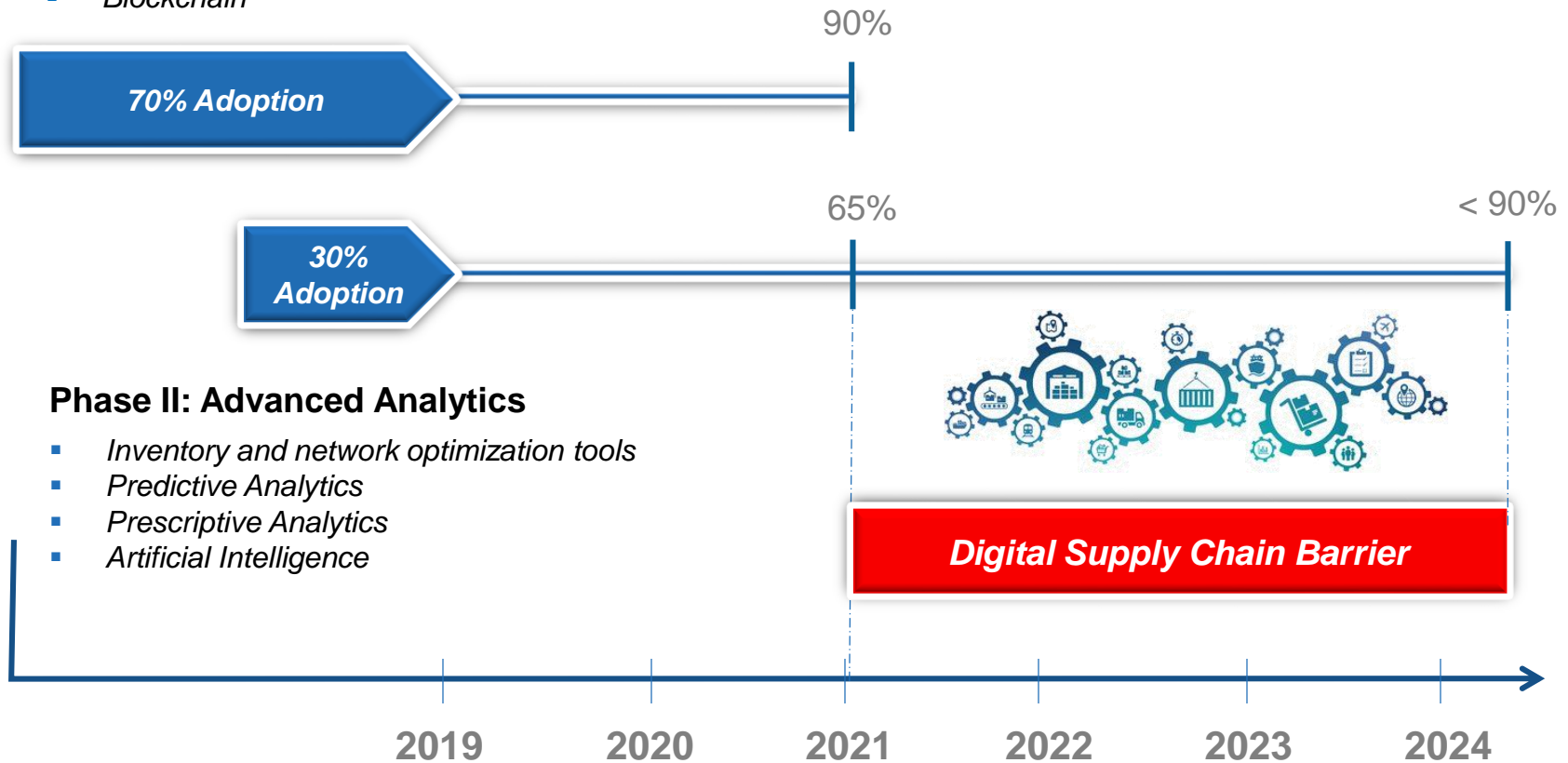
MDSC platforms are being assembled through “buy” and “build” approaches, creating a dynamic M&A market for Supply Chain technology companies that excel in any one or more of these dimensions.

Digital Adoption Timeline – Phase I & II



Phase I: Digital Connectivity

- *Cloud Computing & Storage*
- *Sensors & Automatic ID*
- *Internet of Things (IoT)*
- *Blockchain*



Phase II: Advanced Analytics

- *Inventory and network optimization tools*
- *Predictive Analytics*
- *Prescriptive Analytics*
- *Artificial Intelligence*



Digital Supply Chain Barrier

Traditional + Non-Traditional Competitors

- Having survived the onslaught of globalization, suppliers must now contend with uberization
- Disruptive business models using data at the core of their innovation (e.g. Uber as a logistics company) have ratcheted up the competitive pressure, and the need to adopt digital models of their own

Customer Expectations

- Tech savvy customers are increasingly demanding real-time, low cost goods and services (“thank you Amazon”).
- This cultural phenomenon now permeates B2B markets. It is no longer just the consumer that expects on-demand delivery.

Speed & Volume of Data

- Traditional supply chain management techniques are simply getting overwhelmed

Technology Obsolescence:

- Technology fundamentally changes every 10 years.
- Supply Chain solutions can no longer simply be enhanced with “dot” releases of their software.
- Digital Transformation has become a strategic imperative at many large enterprises, with supply chain modernization often at the center of those initiatives

Top Company Challenges (3 of the top 5)



Customer Demands for Lower Pricing
(56% reported)



Customer Demands for Faster
Response Times (54% reported)



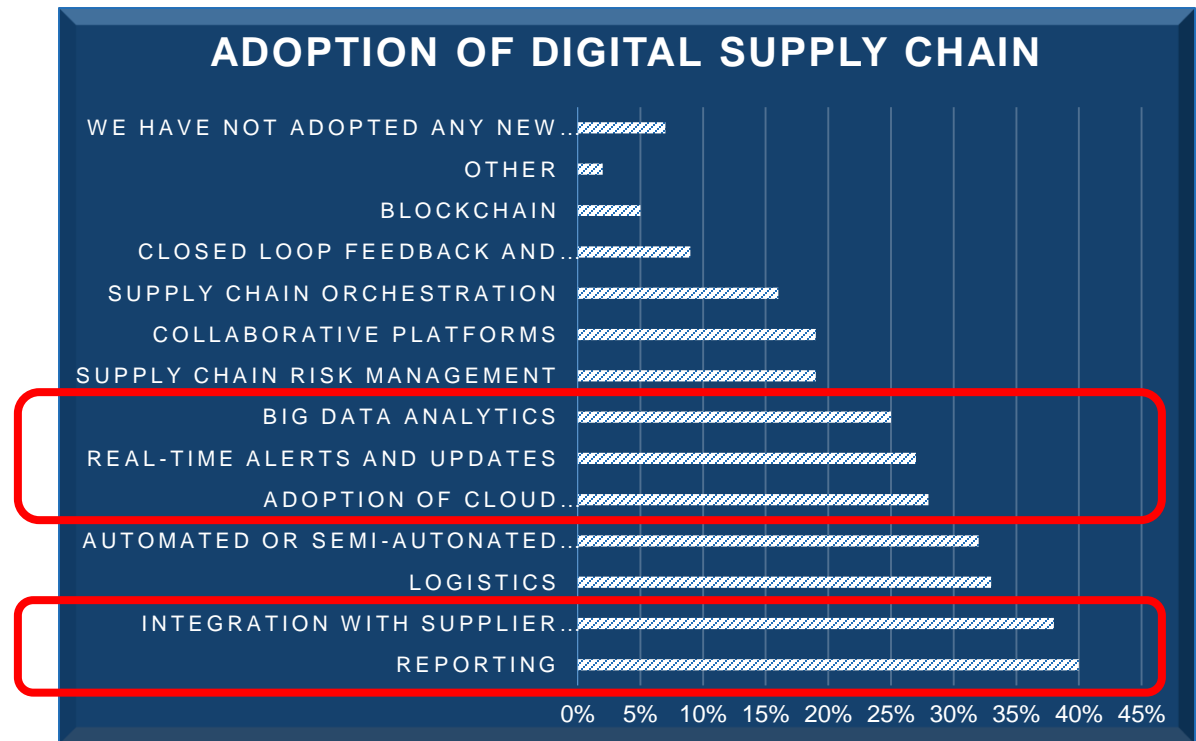
Increased Competitive Intensity
(53% reported)



Leading Indicators:

Adoption rates indicate a strong willingness to invest in core MDSC technology. Specifically, building out or modernizing integration networks and adding various forms of reporting and analytics.

At the same time penetration rates remain relatively modest suggesting that MDSC vendors may have significant opportunity to increase their “share of wallet” in accounts already adopting Digital Supply Chain solutions.



JB

Willingness to Invest: In a recent survey conducted by Jabil, 93 percent of companies have adopted new technology in their supply chain that impacts their business in some way.

Sound Bites of the “New Digital Supply Chain”



By 2020, IDC projects that 30% of G2000 companies will have allocated capital budget equal to at least 10% of revenue to fuel their digital strategies

There is a distinct power shift taking place in the global product economy.

In the coming decade, digitized operations are going to be the marker of the most successful businesses.

Companies are concerned with disruption and competitive threats coming from digitization.

"This shift toward capital funding is an important one as business executives come to recognize digital transformation as a long-term investment. This commitment to funding Digital Transformation will continue to drive spending well into the next decade." – Shawn Fitzgerald, Director of Research, Digital Transformation Strategies





Artificial Intelligence (AI)

AI presupposes the availability of sufficient data and is most valuable when this data is heterogeneous and appears to be uncorrelated. In other words, AI can add value where preset analytic and reporting tooling is inefficient or ineffective. Specifically, in large data sets without highly structured data both AI and data exploration techniques can yield meaningful insights from complex supply chain data.

Blockchain:

Whereas governing and coordinating multi-party contracts is a basis for Blockchain technology in a supply chain management context, compliance and non-repudiation is a dominant use case for highly controlled industries.

Modern Networks (IoT and API-based integration)

As previously mentioned, traditional Supply Chain Networks suffer from the inherent weaknesses of “store and forward” batch processing and “asynchronous transaction” formats (like EDI). The limitations here are principally two-fold, (i) the timeliness of the information is inconsistent and even when operating as designed often lags behind the optimal thresholds for making decisions related to a specific sourcing for an order, tendering choice, or even volume based rebates, and (ii):

- Internet of Things (IoT): *The advantage of IoT technology embedded in end points, as well as intermediate steps in the Supply Chain all for concise and timely information to be sent in the form of events or signals to provide early detection and warning before it is too late to act. Further, the collection of these signals over time can provide patterns of inefficient behavior that can lead to systemic changes and step function improvements in efficiency.*
- API-based integration: *Although far from a new approach to integrating enterprise systems, with the proliferation of Cloud-based supply chain applications and increased network bandwidth, this approach has become a popular wide area network integration solution. The benefits in some cases include faster integration setup and modification times and better real-time interfacing between interdependent applications.*



- First and foremost, the reason why many of the vendors that are appearing in the landscape for Multi-Enterprise Supply Chain Networks are not new names is that there is a substantial embedded base of technology in operation today.
- These systems and networks are mission critical, 7x24x365 solutions that have been codified (or calcified), within core business processes.
 - › Without these solutions and services, no one would be paid for their goods, shipments would be stuck on loading docks, inventories would be unknown, etc.
- So although some technology challenges do exist, change and risk management, as well as cost are by far the biggest impediments to adoption.
- The most significant technology challenges are proving to be either:
 - I. Compliance and security risks introduced with a more transparent and responsive supply chain, and
 - II. The disparity in technological capabilities and sophistication across all actors within a distributed supply chain, necessitating a one-size-fits –all set of standards, policies and governance



Embedded legacy technology and the rise of “Zero Trust” security models can slow adoption. Expect to see “parallel” solutions such as Event Networks being deployed to gain quick MDSC wins.

Case Study #1: Xiaomi



Business Challenge



From 2013 to 2014, the number of units Xiaomi shipped in China grew 186 percent, while its total worldwide shipments grew 224 percent but in 2015 business slumped.

Shortly after tasting success, Xiaomi experienced ups and downs as it competed against major brands like Apple and Huawei in an increasingly saturated Chinese market.

According to a recent Accenture report, 80% of companies are concerned with competitive threats resulting from digital disruption in the supply chain industry.


Customer: On April 6, 2015, the Guinness World Record for the most smartphones sold in 24 hours was broken. Setting the record at 2.1 million units was Xiaomi—the world's third highest valued startup (following Uber and Didi Chuxiang, Uber's Chinese equivalent). Currently valued at \$46 billion with \$1.4 billion in funding, Xiaomi took the Chinese smartphone market by storm in 2010 when it was founded by Chinese entrepreneur Lei Jun.

Solution: Xiaomi's ecosystem of suppliers and reliable manufacturing partners is intimately tethered to the company's strict policy of demand-driven manufacturing, designed to keep the company's inventory and up-front production costs as low as possible.

Results: Xiaomi's finely-tuned supply chain is the cornerstone upon which Lei Jun will continue building his mobile device empire.

"We've always been considering entering the U.S. market. We plan to start entering the market by end 2018, or by early 2019," said CEO Lei Jun to the Wall Street Journal.



Vendor Profile	Aera Business Challenge
<p>Aera leverages artificial intelligence, machine learning, natural language processing, data and enterprise domain expertise to deliver real-time cognitive automation at cloud scale.</p> <p>Aera, which received \$50 million in venture funding in 2017, says its software allows supply chain employees to see a real-time view of global supply and demand activity.</p>	<p>Mitigate supply shortages, predict spikes in demand and bottlenecks with about 100 products related to fertility drugs.</p> <p>Improve efficiencies and effectiveness of high demand / skilled supply chain planning resources.</p> 
<p>Customer: German pharmaceuticals firm's health-care division plans to deploy artificial intelligence and predictive analytics throughout its entire supply chain by the end of 2019.</p>	
<p>Solution: In the fertility drug-related pilot test that Merck has been conducting since April, 10 2018 supply chain planners get detailed alerts via automated phone messages every morning about supply shortages and spikes in demand. The system currently offers suggestions, based on real-time demand data, such as whether to increase inventory, start production or identify a replacement product across 100 fertility drug products globally.</p>	
<p>Results: The division's 100 supply chain planners using the technology, which will have implications to their job functions. The goal is eventually to have the retrained supply chain employees make more accurate decisions about how to better position inventory, in order to guarantee supply for patients more effectively.</p>	


Case Study #3: BluJay



Vendor Profile	Business Challenge
<p>BluJay empowers you to optimize your company's future in the global economy.</p> <p>Their solutions are essential to helping companies improve efficiencies, minimize risk, and capitalize on opportunities for profitable growth.</p>	<p>Overcome typical problems accompanying an in-house solution such as; high annual license fees; increasing maintenance and support costs; the need for in-house expertise.</p> <p>Extend the use of electronic trading to the wider supplier community – Maximize electronic trading to streamline operations and become more efficient</p>
<p>Customer: Heineken is the number-one brewer in Europe and the third-largest brewer in the world by volume. With a long and proud history as an independent global brewer, Heineken is the leading cider and beer producer in the UK and the name behind iconic drinks brands such as Strongbow, Bulmers, Foster's, Kronenbourg 1664, and Desperados, as well as a full range of specialty brands. Heineken has operations in over 70 countries and more than 85,000 employees across the globe.</p>	
<p>Solution: With a single, hosted solution for all EDI transactions, Heineken was able to expand their electronic trading community, and improve visibility and control over all transactions.</p>	
<p>Results: Heineken UK Ltd now transacts 130,000 files annually with over 65 customers in the retail, wholesale, food services, and hospitality industries as well as with logistics providers. Additionally, the vast majority of Heineken's suppliers are now conducting their transactions electronically through MessageBroker Web, with 1,400 suppliers transacting more than 75,000 orders and invoices each year.</p>	

Case Study #4: High Jump



Vendor Profile	Business Challenge
<p>HighJump, integrates proven solutions for the warehouse, transportation and logistics ecosystem with emerging technologies.</p> <p>Leveraging advanced cloud technology HighJump helps their customers to achieve greater efficiency, uncover actionable insights from their supply chain.</p> 	<p>Dollar Shave Club's viral video created unanticipated demand and the company was not ready to fulfill thousands of orders that appeared within the first 48 hours. The company started fulfilling those orders in a garage, then moved to a small third-party logistics (3PL) provider and later to a larger 3PL.</p> <p>At one point, the eCommerce business had 200 percent year-over-year growth, and it continues to add new customers at a healthy rate today.</p>
<p>Customer: Dollar Shave Club offers a subscription-based service that sends members several razor blades per month for just a couple dollars. Success came all at once for Dollar Shave Club. In 2012, co-founder Michael Dubin recorded a hilarious video ad that immediately became a YouTube sensation.</p>	
<p>Solution: The company initially implemented HighJump WMS in the cloud at its California warehouse, which sends out 25,000-30,000 orders per day. About eight months later, it opened a second distribution center in Columbus, Ohio that ships about twice that volume every day – 60,000-75,000 orders.</p>	
<p>Results: Since Dollar Shave Club sells an inexpensive product at a reduced price, it has slim margins and must pay close attention to fulfillment costs. Units per hour increased with HighJump WMS, which allows the company to push more shipments out the door every day.</p> <p>Every order that arrives is now shipped the same day – no small feat for a company that fulfills so many orders – and something that was not always possible before. At the same time, order accuracy has improved, so there are fewer returns and customers remain loyal.</p>	

Publicly Traded MDSC Vendors



(\$ in millions)

Company	Market Data					Operating Data								
	Enterprise Value	EV / Revenue		EV / EBITDA		Revenue		EBITDA		Revenue Growth			LQ Gross Margin	EBITDA Margin
		2018A	2019E	2018A	2019E	2018A	2019E	2018A	2019E	17A/16A	18E/17A	19E/18E		
OpenText	\$12,814	4.5x	4.3x	15.1x	11.3x	\$2,843	\$2,965	\$847	\$1,132	34%	8%	4%	73%	30%
Alteryx	\$5,365	21.2x	14.9x	NM	NM	254	360	\$34	39	53%	93%	42%	89%	ND
Descartes	\$3,126	11.4x	9.5x	34.8x	26.5x	\$275	\$328	\$90	\$118	17%	16%	19%	73%	33%
SPS Commerce	\$1,657	6.7x	6.0x	42.0x	25.1x	\$248	\$276	\$39	\$66	14%	13%	11%	68%	16%
Upland Software	\$1,508	10.1x	7.4x	43.7x	20.2x	\$150	\$204	\$34	\$75	31%	53%	36%	70%	23%
Comarch	\$394	1.1x	1.0x	10.5x	6.8x	365	393	\$37	57	21%	13%	7%	24%	ND
Amber Road	\$388	4.6x	4.3x	NM	56.0x	\$85	\$90	-\$9	\$7	8%	8%	5%	57%	(10%)
Axway Software	\$304	0.9x	1.0x	7.6x	10.1x	325	316	\$40	30	13%	(10%)	(3%)	28%	ND
MEDIAN	\$2,392	8.4x	6.7x	34.8x	20.2x	\$264	\$344	\$38	\$70	26%	14%	15%	71%	26%

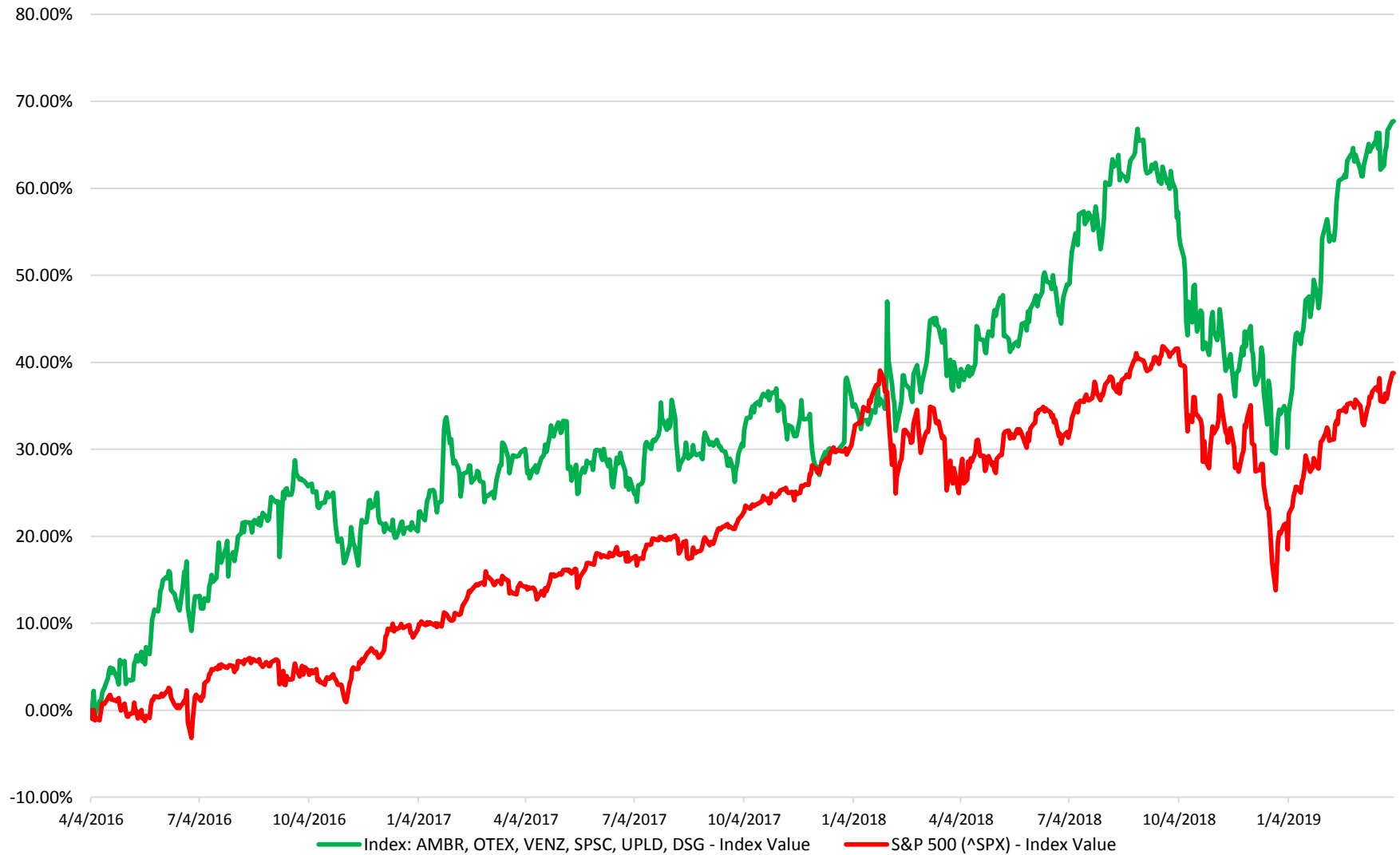
Notes:

All values based on closing stock prices on May 20, 2019

EV calculated as Equity Value plus total debt, minority interest (at book value unless otherwise noted) and preferred stock, less cash & equivalents

Future values based on Wall Street consensus estimates

Publicly Traded MDSC Vendors



Strong Buyer Base for MDSC Companies



- As this market matures, strategic buyers are executing on both scale based “roll up” strategies and gap filling technology purchases.
- Not surprisingly, M&A “roll up” activities are often initiated by Supply Chain Networks and larger application vendors who already have significant customer coverage and scale
- Key areas for “Buy versus Build” are expected to include IoT and event driven Supply Chain solutions that extend the reach of Network providers and enhance their scale-based economics.
- Supply Chain Application vendors are positioned to be either buyers or sellers, either adding complementary application functionality or backing into network and data management extensions.
- As a broad shift, strategic buyers continue to actively facilitate convergence through M&A efforts between Data Management and Network capabilities as it relates to the Digital Supply Chain.



Strong Buyer Base for MDSC Companies



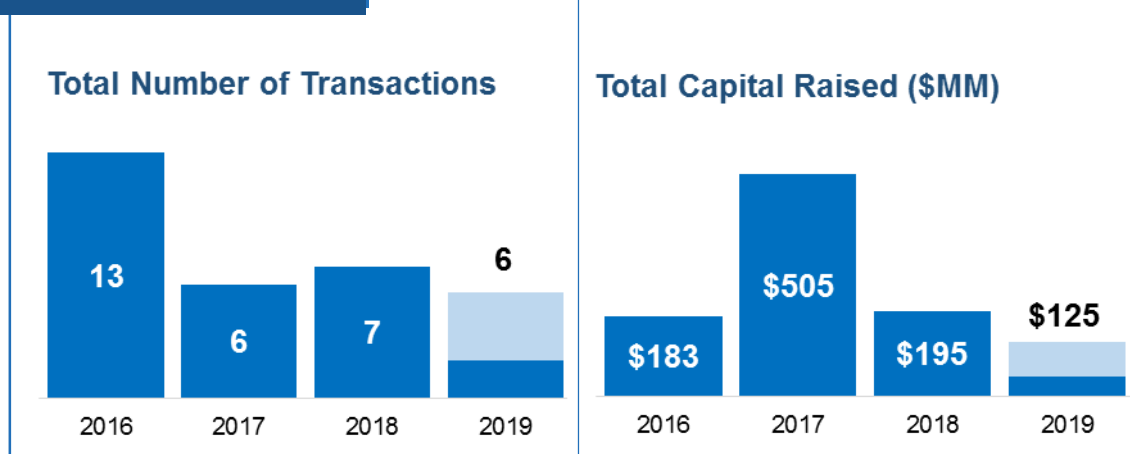
- There is “something to like” in the structure and velocity of the Multi-Enterprise Digital Supply Chain for a wide range of Financial Sponsors. From capital efficiency / leverage to growth.
- For example, Network businesses, albeit challenged at times with organic growth, have proven to be highly profitable with scale, sticky and a consistent cash generators. Purpose build Supply Chain SaaS Apps can exhibit attractive GM profiles and hyper growth.
- Digital Transformation initiatives and emerging technologies like IoT should boost the growth profile for many of these recurring revenue businesses for at least the next 3-5 years as well
- Growth investors should continue to find many opportunities in purpose build SaaS-based Supply Chain Applications and Data Analytics companies. These business also have natural exit options to scale-based Network and Application vendors.



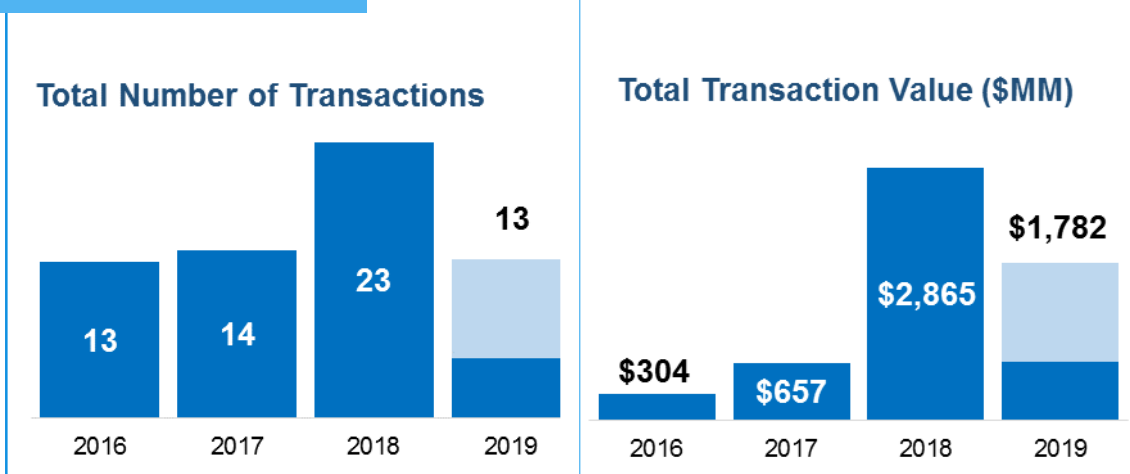
Transaction Activity Summary



Private Placements*



M&A Transactions*



Highlights & Takeaways

- Mature market that is in transition due to emerging technologies (such as IoT) and competitive forces driving companies to further automate their Supply Chain.
- Although private placement totals dipped in 2018, the total number of MDSC transactions is increasing in recent years.
- The total market size has significantly increased over the past few years (M&A transaction likely did not decrease as most transactions values are undisclosed).

Drivers of Acquisition and Investment


















- As firms aim to reduce costs, find relevant information in massive amounts of data, and create more fluid supply chains, there is increased demand for MESC technology.
- Transaction values and quantities will continue to increase for MDSC technology as MDSC's are driven by advancements in artificial intelligence and machine learning.

* 2019 values represent annualized totals

Source: Capital IQ, 451 Research, Crunchbase




















Top M&A Deals (2015 – 2019 YTD)



Date	Target	Acquirer	Size (\$M)	EV / Rev Multiple	Target Business Description	Deal Rationale
Oct-18	 Rocket	 BainCapital PRIVATE EQUITY	\$2,000	4.4x	Provides systems management, application lifecycle management and business process management software for businesses running IBM mainframes and System i servers.	Expands data infrastructure product footprint to include those that run on IBM Z, IBM i, and MultiValue application platforms.
Mar-18	 CommerceHub	 GTCR	1,100	9.9x	Provides cloud-based e-commerce fulfillment and marketing solutions for large retailers, consumer brands, and marketplaces.	GTCR will contribute its expertise to help the CommerceHub team continue to grow its platform of tech-enabled e-commerce solutions for retailers and suppliers.
Aug-15	 GT NEXUS	 infor	675	5.x	Develops and operates a cloud supply chain platform that is used by companies to monitor and orchestrate global supply chains.	Improves Infor's offering to enhance customer visibility into supply chains to manage production and monitor goods in transit and at rest.
Dec-18	 IQMS Manufacturing ERP	 DASSAULT SYSTEMES	425	7.6x	Develops and delivers enterprise resource planning (ERP) software and manufacturing execution systems for repetitive, process, and discrete manufacturing industries.	Dassault will integrate IQMS's solutions into a cloud platform to provide manufacturers with a more affordable system for operations collaboration, manufacturing efficiency and business agility.
May-19	 Amber Road POWERING GLOBAL TRADE®	 E2OPEN®	425	4.8x	Provides cloudNDbased supply chain collaboration platform that optimizes product life cycle and supply chain processes for private label brands, retailers, and trading partners.	E2open envisions a solution suite with accelerated innovation to connect, streamline, and operate all aspects of global sourcing, manufacturing, logistics, distribution, trade and compliance, resulting in immediate benefits for all stakeholders.
Jun-15	 LIAISON®	 OPENTEXT	310	ND	Provides data management and integration solutions to integrate, transform, harmonize, manage, and secure critical business data on-premise or in the cloud.	Further enhances OpenText's offerings in digital ecosystem and business-to-business integration solutions, application-to-application integration and master data management capabilities.
Feb-15	 E2OPEN®	 INSIGHT VENTURE PARTNERS	250	3.2x	Provides solutions for supply chain management.	Insight will contribute its software expertise to further expand or advance E2Open's solutions suite, customer pipeline and strategic goals.
Jan-19	 VISUAL COMPLIANCE	 DESCARTES	249	8.3x	Provides foreign trade compliance software for businesses. Software helps companies comply with government trade regulations.	Compliments Descartes MK Data denied parties screening business and Global Logistics Network.
May-16	 LEANLOGISTICS®	 BLU JAY® SOLUTIONS	115	ND	Provides SaaS transportation management system (TMS) applications and supply chain services	Leanlogistics' cloud-based transportation management platform will help accelerate Blu Jay's already growth through leveraging their extensive European and Asian networks.
Aug-17	 MACROPOINT	 DESCARTES	107	8.5x	Develops and provides a global freight visibility platform for shippers, transportation brokers, and third-party logistics companies.	The combined entity is expected to further consolidate market share and deliver even value to the logistics and supply chain community.











Most Active Acquirers (2015 – 2019 YTD)



Acquirer	Number of Acquisitions	Notable Transaction	Representative Acquisitions
 DESCARTES™	 13	Jul-15 - MKData Services, \$83.5M	MKData Services, PinPoint GPS Solutions, Certain Assets of Velocity MailMacroPoint, PCSTrac, Z-Firm, Datamyne, 4Solutions Pty, Appterra
 E2OPEN™	 8	May-19 - Amber Road - \$425M	Amber Road, INTTRA Inc, Cloud Logistics, Entomo, Zyme Solutions, Steelw edge, Terra Technology, EMNS Inc.
OPENTEXT	 5	Oct-18 - Acquired Liaison Technologies, \$310M	Liaison Technologies, Hightail, Covisint Corporation, ANXeBusiness, Daegis
 BLU JAY™ SOLUTIONS	 5	May-16 - LeanLogistics, \$115M	LeanLogistics, Grosvenor International Systems, ERA SYSTEM s.r.l., CSF Solutions, Blackbay
 upland	 3	Nov-17 - Qvidian, \$50M	Qvidian Corporation, EPM Live, Ultriva
 Llamasoft® <i>Supply Chain By Design</i>	 2	Apr 15 - LogicTools (IBM division)	Barloworld (software division), LogicTools
 EPICOR®	 2	Feb-15 - Insite Software	DOT NET IT Ltd, Insite Software Solutions
 aptos®	 2	Jul-17 - TXT Retail, \$98.98M	TXT Retail, BT Expedite Limited
 SPS COMMERCE	 2	Dec-18 - Assets of CovalentWorks, \$23M	All Assets of CovalentWorks Corporation, EDIAdmin
 SUPPLYON	 2	Jan-17 - Newtron AG, ND	Newtron AG, EURO-LOG AG












Top Financings (2015 – 2019 YTD)



Date	Company	Size (\$M)	Sector	Investors	Series	Description
Aug-17	 BLU JAY™ SOLUTIONS	\$500	Networks & Applications	BlueBay Asset Management; TPG Specialty Lending Europe	Growth	Develops and offers supply chain software and services to retailers, distributors, freight forwarders, manufacturers, and logistics service providers.
May-18	 tracelink	93	Networks	Goldman Sachs; Vulcan Capital; Georgian Partners; Volition Capital; Willett Advisors; F-Prime Capital	Series D	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Nov-16	 tracelink	52	Networks	Goldman Sachs; FirstMark Capital; Volition Capital; F-Prime Capital	Series C	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Sep-15	 LLamasoft®	50	Applications & Analytics	Goldman Sachs	Series B	Develops supply chain design and analysis software and solutions.
Oct-18	 project44	45	Networks	Insight Venture; Sapphire Ventures; Emergence Capital; OpenView Venture; Chicago Ventures; Eight Partners; Pritzker Group; Omidyar Technology	Venture	Provides cloud-based visibility platform for shippers and third-party logistics firms.
Jul-15	 IQMS Manufacturing ERP	39	Applications & Analytics	Technology Crossover Ventures; Banneker Partners	Series B	Develops supply chain design and analysis software and solutions.
Apr-18	 project44	35	Networks	Emergence Capital; Omidyar Network; OpenView Venture; Chicago Ventures; Eight Partners; Pritzker Group	Venture	Provides cloud-based visibility platform for shippers and third-party logistics firms.
Apr-19	 SIGHT MACHINE	29	Analytics	LS Corp.; Mercury Fund; O'Reilly AlphaTech Ventures; Jump Capital; E.ON Strategic Co-Investments	Series C	Develops a manufacturing analytics platform.
Feb-15	 tracelink	20	Networks	FirstMark Capital; Fidelity Biosciences; Volition Capital	Series B	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Mar-16	 SIGHT MACHINE	20	Analytics	Mercury Fund; O'Reilly; IA Ventures; Huron River Venture; Jump Capital; GE Ventures; Orfin Ventures; Pritzker Group; Two Roads Group	Series B	Develops a manufacturing analytics platform.






Top Funded Companies



Company	Total Funding (\$M)	Sector	Lead / Majority Investors	Business Description
 BLU JAY™ SOLUTIONS	\$500	Networks & Applications	BlueBay Asset Management (Services) Ltd; TPG Specialty Lending Europe	Develops and offers supply chain software and services to retailers, distributors, freight forwarders, manufacturers, and logistics service providers.
 E2OPEN™	238	Networks, Applications & Analytics	Insight Venture Partners	Provides solutions for supply chain management.
 tracelink	170	Networks	Goldman Sachs Group; FirstMark Capital; Vulcan Capital; Georgian Partners LP; Volition Capital; Willett Advisors; F-Prime Capital Partners	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
 Rocket®	96	Applications	Bain Capital Private Equity	Provides systems management, application lifecycle management and business process management software for businesses running IBM mainframes and System i servers.
 Llamasoft®	56	Applications & Analytics	Goldman Sachs Group, Merchant Banking Division	Develops supply chain design and analysis software and solutions.
 Brightpearl	51	Networks & Analytics	MMC Ventures Ltd; Cipio Partners; Notion Capital Partners LLP	Provides cloud-based inventory management and ERP software for retailers worldwide.
 elementum	49	Analytics	Fontinalis Partners, LLC	Develops applications for supply chain management.
 JAGGAER	48	Networks & Applications	Accel-KKR LLC	Develops cloud-based business automation software solutions for spend management.
 Avetta	35	Analytics	Long Ridge Equity Partners; Norwest Venture Partners; Technology Crossover Ventures; Welsh, Carson, Anderson & Stowe	Develops a SaaS based software for managing suppliers, contractors, and vendors.
 One Network Enterprises™	35	Networks & Analytics	Transcend Partners	One Network Enterprises, Inc. develops the Real Time Value Network, a multi-party cloud platform that provides supply chain solutions for organizations worldwide.
 SIGHT MACHINE	31	Analytics	DNX Ventures; E.ON Strategic; eLab Ventures; FundersClub; FundersClub, Investment Arm; GE Ventures; Huron River Venture; IA Ventures; Jump Capital; Mercury Fund	Sight Machine Inc. develops a manufacturing analytics platform.

Most Active Investors (2015 – 2019 YTD)



Investor	Number of Investments	Investments
CHICAGO VENTURES	3	Project44 (Series A), Project44 (Series B), Project44 (Series C)
FIRSTMARK 	3	TraceLink (Series B), TraceLink, Inc. (Series C), TraceLink, Inc. (Series D),
	3	TraceLink (Series B), TraceLink, Inc. (Series C), TraceLink, Inc. (Series D),
VOLITION CAPITAL	3	TraceLink (Series B), TraceLink, Inc. (Series C), TraceLink, Inc. (Series D),
 EMERGENCE	3	IQMS (Series B), Project44 (Series A), Project44 (Series B)
Pritzker Group VENTURE CAPITAL	3	Sight Machine (Series B), Project 44 (Series B), Project44 (Series C)
OATV	3	Sight Machine (Series A), Sight Machine (Series B), Sight Machine (Series C)
F-PRIME CAPITAL PARTNERS	2	TraceLink, Inc. (Series C), TraceLink, Inc. (Series D)
 HURON RIVER VENTURES	2	Sight Machine, Inc. (Venture), Sight Machine, Inc. (Series B)
 IA VENTURES	2	Sight Machine, Inc. (Venture), Sight Machine, Inc. (Series B)



Mergers & Acquisitions 2015 – YTD 2019



Date	Target	Acquirer	Size (\$M)	Rev (\$M)	EV / Rev	Target Description
Mar-19	EMNS Inc.	Elemica	ND	ND	ND	Develops Internet based supplier quality management application and softwareNDasNDaNDservice(SaaS).
Mar-19	Streamdata.io	Axway Software	ND	ND	ND	Operates a real-time cache proxy that allows users to poll JSON REST APIs and push updates to clients.
Feb-19	Browz	Avetta	ND	ND	ND	Provides supplier qualification and management solutions.
Jan-19	Visual Compliance	Descartes Systems	249	\$30	8.3x	Provides foreign trade compliance software for businesses. Software helps companies comply with government trade regulations.
Dec-18	CovalentWorks	SPS Commerce	23	ND	ND	Provides specialized webNDbased (cloud) Electronic Data Interchange software and services.
Dec-18	IQMS	Descartes Systems	425	ND	7.6x	Delivers enterprise resource planning (ERP) software and manufacturing execution systems for repetitive, process, and discrete manufacturing industries.
Dec-18	GateHouse Logistics	Project44	ND	ND	ND	Provides tracking solutions to the transportation industry.
Dec-18	DiCentral GmbH	DiCentral Corporation	ND	ND	ND	Develops applications for windows phone and windows.
Oct-18	Liaison Technologies	Open Text	368	ND	ND	Provides data management and integration solutions to integrate, transform, harmonize, manage, and secure critical business data onNDpremise or in the cloud.
Oct-18	Omnify Software	Arena Solutions	ND	ND	ND	Provides businessNDready product lifecycle and change management solutions to manufacturers in the electronics, mechanical, medical, and defense industries.
Oct-18	INTTRA Inc.	E2open	ND	\$60	ND	Provides cloudNDbased software applications to improve performance of container shipping lifecycle for shippers and carriers.
Oct-18	ERA SYSTEM s.r.l.	BluJay Solutions	ND	ND	ND	Develops SPNDUNO, a webNDbased management software for freight forwarders and forwarders in Italy.
Oct-18	Rocket Software	Bain Capital Private Equity	2,000	ND	4.4x	Provides systems management, application lifecycle management and business process management software for businesses running IBM mainframes and System i servers.
Oct-18	EDIAdmin	SPS Commerce	9	ND	ND	Develops a supply chain integration software.

M&A Transactions (Cont'd)



Date	Target	Acquirer	Size (\$M)	Rev (\$M)	EV / Rev	Target Description
Oct-18	H&S Custom S.r.l.	Tesi SpA	ND	ND	ND	Designs and develops logistics and point of sale software.
Oct-18	Cloud Logistics	E2open	ND	ND	ND	Offers cloudNDbased Transportation Management System (TMS) for logistics and supply chain industries.
Sep-18	Fundi Software Pty	Rocket Software	ND	ND	ND	Operates as a software product development company in Australia.
Aug-18	PinPoint GPS Solutions Inc.	Descartes Systems	14	ND	ND	Manufactures GPS fleet tracking and mobile workforce management devices.
Aug-18	Grosvenor International Systems	BluJay Solutions	ND	ND	ND	Provides customs duty management software and solutions.
Jun-18	Certain Assets of Velocity Mail	Descartes Systems	26	ND	ND	Ooffers mail and parcel shipment scanning and tracking platform to air carriers.
Jun-18	LOCOM Software GmbH	AXIT GmbH	ND	ND	ND	Develops software solutions and provides consulting services for logistics and supply chain management.
Apr-18	CSF Solutions GmbH	BluJay Solutions	ND	ND	ND	Focuses on the maintenance, development, and support of foreign trade and compliance solutions.
Feb-18	EURONDLOG AG	SupplyOn AG	ND	ND	ND	EURONDLOG AG provides information technology (IT) services to shippers and logistics service providers.
Feb-18	Hightail	Open Text	ND	ND	ND	Provides cloud services and software for file sharing and creative collaboration.
Jan-18	Birch Worldwide and Entomo	E2open	ND	ND	ND	Provides software solutions for channel data management.
Jan-18	Kenandy	The Danville Group	ND	ND	ND	Provides cloud enterprise resource planning solutions for enterprises in the United States and internationally.
Nov-17	Qvidian Corporation	Upland Software	50	ND	ND	Provides a proposal automation solution tool
Nov-17	Zyme Solutions	E2open	ND	ND	ND	Provides channel data solutions for technology companies worldwide.

M&A Transactions (Cont'd)



Date	Target	Acquirer	Size (\$M)	Rev (\$M)	EV / Rev	Target Description
Sep-17	Datalliance	True Commerce	ND	ND	ND	Provides software as a service vendor managed inventory solutions to suppliers and their customers, such as distributors, retailers, OEMs, or product end users across various industries.
Aug-17	MacroPoint	Descartes Systems	107	\$13	8.5x	Develops and provides a global freight visibility platform for shippers, transportation brokers, and thirdNDparty logistics companies.
Aug-17	ROC IT Systems	TraceLink	ND	ND	ND	Develops and offers intelligent edge data capture solutions for serialized assets in the supply chain.
Jul-17	TXT Retail	Aptos	99	\$42	2.4x	Develops merchandise lifecycle management software solutions for the retail industry.
Jun-17	Covisint Corporation	Open Text	69	\$70	1.0x	Provides an open enterprise class cloud platform worldwide.
Jun-17	PCSTrac	Descartes Systems	12	ND	ND	Develops inventory control and management solutions for the retail distribution industry.
May-17	ZNDFirm	Descartes Systems	17	ND	ND	Develops and offers parcel shipping software.
May-17	LLamasoft	TPG Capital	ND	ND	ND	Develops supply chain design and analysis software and solutions.
Mar-18	CommerceHub, Inc.	GTCR, LLC; Sycamore Partners		ND	9.9x	CommerceHub, Inc., together with its subsidiaries, provides cloudNDbased eNDcommerce fulfillment and marketing solutions for large retailers, consumer brands, and marketplaces primarily in the United States and Canada.
Aug-15	GT Nexus, Inc.	Infor (US), Inc.		ND	5.0x	GT Nexus, Inc. develops and operates a cloud supply chain platform that is used by companies to monitor and orchestrate global supply chains.
Apr-17	Blackbay	BluJay Solutions	ND	ND	ND	Designs and develops mobility enabled solutions for the transport and logistics industry.
Feb-17	Syncplicity	Axway Software	ND	ND	ND	A cloud-based file sharing and collaboration solution for businesses and individuals.
Feb-17	Steelwedge Software	E2open	ND	ND	ND	Pprovides cloudNDbased integrated business planning solutions and services to organizations in the United States and internationally.
Jan-17	newtron AG	SupplyOn AG	ND	ND	ND	Provides process optimization and automation solutions.

M&A Transactions (Cont'd)



Date	Target	Acquirer	Size (\$M)	Rev (\$M)	EV / Rev	Target Description
Dec-16	Datamyne	Descartes Systems	53	ND	ND	Provides a searchable database covering the import/export trade of the Americas, Asia, Africa, and the European Union.
Nov-16	4Solutions Pty .	Descartes Systems	3	ND	ND	Develops cloud based eNDcommerce software solutions.
Oct-16	Appterra	Descartes Systems	7	ND	ND	Provides cloud integration solutions and supply chain management solutions that simplify integration, automate business processes, and enhance collaboration and visibility between trading partners.
Sep-16	BT Expedite Limited	Aptos	ND	ND	ND	Provides business transformation information technology solutions for retailers.
Jul-16	Epicor Software	KKR & Co.	ND	ND	ND	Provides enterprise application software and services to manufacturing, distribution, retail, and services sectors.
Jun-16	Orchestro	E2open	ND	ND	ND	Develops a SoftwareNDasNDaNDService based demand signal management platform for consumer packaged goods companies.
Jun-16	Elemica	Thoma Bravo	ND	ND	ND	Provides supply chain operating network solutions for the process industries.
Jun-16	DOT NET IT	Epicor Software	ND	ND	ND	Provides enterprise resource planning (ERP) software consulting, IT, and infrastructure services worldwide.
May-16	LeanLogistics	BluJay Solutions	115	ND	ND	Provides SaaS transportation management system (TMS) applications and supply chain services.
Apr-16	pixi* Software GmbH	Descartes Systems	11	ND	ND	Develops software solutions and applications for InternetNDbased distance selling businesses.
Apr-16	ANXeBusiness Corp.	Open Text	104	ND	ND	Provides managed security, compliance, and connectivity solutions in the United States.
Mar-16	EPM Live	Upland Software	12	ND	ND	Operates as a work management platform for delivering projects in organizations.
Mar-16	Terra Technology	E2open	ND	ND	ND	Develops supply chain software solutions.
Nov-15	Oz Development	Descartes Systems	30	ND	ND	Develops cloud integration solutions that streamline eNDcommerce, warehouse, and shipping processes.

M&A Transactions (Cont'd)



Date	Target	Acquirer	Size (\$M)	TTM Rev	EV / Rev	Target Description
Nov-15	Ultriva	Upland Software	7	ND	ND	Provides cloud based supply chain solutions for manufacturing companies worldwide.
Nov-15	Barloworld (Assets)	LLamasoft	ND	ND	ND	Develops supply chain software applications and technology.
Oct-15	Daegis Inc.	Open Text	21	\$24	0.9x	Delivers offerings for information governance, application migration, data management, and application development worldwide.
Jul-15	BearWare Inc.	Descartes Systems	11	ND	ND	Provides freight tracking and related solutions for specialty retail shippers.
Jul-15	MK Data Services	Descartes Systems	84	ND	ND	Provides cloudNDbased bulk customer screening services and solutions to companies and organizations.
Apr-15	Have AnotherRound Apps	Satellite Logistics Group	ND	ND	ND	Develops and offers integrated mobile, back office, and cloudNDbased software solutions for the beverage industry.
Apr-15	LogicTools	LLamasoft	ND	ND	ND	Develops supply chain planning software.
Mar-15	AXIT GmbH	Siemens Logistics & Airport Solutions	ND	ND	11.2x	Provides cloudNDbased IT solutions to manage crossNDcompany logistics processes.
Mar-15	Amber Road	Amber Road	32	ND	ND	Provides cloudNDbased supply chain collaboration platform that optimizes product life cycle and supply chain processes for private label brands, retailers, and trading partners.
Feb-15	Insite Software Solutions	Epicor Software Corporation	ND	ND	ND	Provider of B2B eCommerce architected for enterprise organizations in manufacturing, distribution and retail.
Feb-15	E2open	Insight Venture Partners	250	ND	3.2x	Provides solutions for supply chain management.
MEDIAN:			\$31	\$36	5.0x	
AVERAGE:			\$150	\$40	5.7x	



Private Placements 2015 – YTD 2019

Private Placement Transactions



Date	Target	Round	Size (\$M)	Investors	Target Description
Apr-19	Sight Machine	Series C	29	LS Corp. ; Mercury Fund; O'Reilly AhaTech Ventures; Jump Capital; E.ON Strategic CoNDInvestments	Develops a manufacturing analytics platform.
Jan-19	Nexiot AG	Series B	15	SMV AG; SVC AG	Provides an endNDtoNDend solution for the global supply chain.
Oct-18	Project44	Venture	45	Insight Venture ; Sapphire Venture; Emergence Capital; OpenView Venture; Chicago Ventures; Eight Partners; Pritzker Group; Omidyar Technology	Provides cloudNDbased visibility platform for shippers and thirdNDparty logistics firms.
Jul-18	Brightpearl Limited	Growth	15	MMC Ventures ; Cipio Partners; Notion Capital Partners	Provides cloudNDbased inventory management and ERP software for retailers worldwide.
Jun-18	Rootstock Software	Growth	ND	ND	Provides cloud ERP manufacturing, distribution, and supply chain solutions on the Salesforce platform for manufacturers and distributors.
May-18	TraceLink	Series D	93	Goldman Sachs; FirstMark Capital; Vulcan Capital; Georgian Partners Growth ; Volition Capital ; Willett Advisors ; FNDPrime Capital Partners	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Apr-18	Project44	Venture	35	Emergence Capital; Omidyar; OpenView Venture; Chicago Ventures; Eight Partners; Pritzker Group	Provides cloudNDbased visibility platform for shippers and thirdNDparty logistics firms.
Mar-18	Avetta	Venture	ND	Norwest Venture Partners; Technology Crossover Ventures; Welsh, Carson, Anderson & Stowe	Develops a SaaS based software for managing suppliers, contractors, and vendors.
Feb-18	Rootstock Software	Series C	7	ND	Provides cloud ERP manufacturing, distribution, and supply chain solutions on the Salesforce platform for manufacturers and distributors.
Dec-17	Sight Machine	Growth	ND	ND	Develops a manufacturing analytics platform.
Sep-17	BluJay Solutions	Growth	ND	Temasek Holdings (Private) Limited	Develops and offers supply chain software and services to retailers, distributors, freight forwarders, manufacturers, and logistics service providers.
Sep-17	Venzee Technologies	PIPE	2	ND	Offers a cloudNDbased platform for suppliers and manufactures in various industries to share product information and inventory updates in realNDtime with retailers.
Aug-17	Arena Solutions	Growth	ND	JMI Management	Develops cloudNDbased product lifecycle management (PLM) and supply chain software solutions for engineering and manufacturing companies.
Aug-17	BluJay Solutions	Growth	500	BlueBay Asset Management (Services) ; TPG Specialty Lending Europe	Offers supply chain software and services to retailers, distributors, freight forwarders, manufacturers, and logistics service providers.

Source: Capital IQ, Crunchbase

Private Placement Transactions (Cont'd)



Date	Target	Round	Size (\$M)	Investors	Target Description
Apr-17	Venzee Technologies	PIPE	3	ND	Offers a cloudNDbased platform for suppliers and manufactures in various industries to share product information and inventory updates in realNDtime with retailers.
Nov-16	TraceLink	Series C	52	Goldman Sachs Group, Merchant Banking Division; FirstMark Capital, ; Volition Capital ; FNDPrime Capital Partners	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Oct-16	Rocket Software	Debt	50	ND	Provides systems management, application lifecycle management and business process management software for businesses running IBM mainframes and System i servers.
Oct-16	E2open	Growth	ND	ND	Provides solutions for supply chain management.
Oct-16	DiCentral Corporation	Series A	15	Kayne Anderson Capital Advisors, L.P.	DiCentral Corporation provides electronic data interchange (EDI) software and service solutions.
Sep-16	Venzee Technologies	Venture	0	ND	Offers a cloudNDbased platform for suppliers and manufactures in various industries to share product information and inventory updates in realNDtime with retailers.
Sep-16	Project44	Series A	11	Emergence Capital Partners; SVB Silicon Valley Bank, Investment Arm; Chicago Ventures	Provides cloudNDbased visibility platform for shippers and thirdNDparty logistics firms.
Sep-16	MP Objects BV	Growth	10	Udata Partners	Provides SoftwareNDasNDaNDService (SaaS) for supply chain orchestration for companies in the United States, EMEA, and APAC.
Aug-16	Rootstock Software	Series B	1	ND	Provides cloud ERP manufacturing, distribution, and supply chain solutions on the Salesforce platform for manufacturers and distributors.
Jul-16	Nulogy Corporation	Growth	14	Tola Capital	Provides a cloudNDbased contract packaging software solution for supply chain operations.
Jul-16	Bamboo Rose	Growth	ND	McCarthy Partners Management	Provides a digital B2B marketplace for product and supply chain management that enables retailers and suppliers to discover markets worldwide.
Jun-16	Elementum SCM	Venture	ND	Fontinalis Partners	Develops applications for supply chain management.
Mar-16	Sight Machine	Series B	20	Mercury Fund; O'Reilly; IA Ventures; Huron River Venture; Jump Capital; GE Ventures; Orfin Ventures; Pritzker Group; Two Roads Group	Develops a manufacturing analytics platform.
Jan-16	Brightpearl Limited	Series C	11	MMC Ventures ; Eden Ventures (UK) .; Notion Capital Partners	Provides cloudNDbased inventory management and ERP software for retailers worldwide.

Private Placement Transactions (Cont'd)



Date	Target	Round	Size (\$M)	Investors	Target Description
Dec-15	Aptos	Venture	ND	Apax Partners	Operates a singular commerce platform that enables retail enterprises to deliver omniNDchannel shopping experiences to customers.
Sep-15	LLamasoft	Series B	50	Goldman Sachs Group, Merchant Banking Division	Develops supply chain design and analysis software and solutions.
Jul-15	IQMS Inc.	Series B	39	Technology Crossover Ventures; Banneker Partners	Develops and delivers enterprise resource planning (ERP) software and manufacturing execution systems for repetitive, process, and discrete manufacturing industries.
Feb-15	TraceLink	Series B	20	FirstMark Capital, ; Fidelity Biosciences; Volition Capital	Develops and offers track and trace network solution for connecting the life sciences supply chain and eliminating counterfeit prescription drugs.
Jan-15	Sight Machine	Venture	5	Mercury Fund; O'Reilly Ventures; IA Ventures; Huron River Venture Partners; eLab Ventures; FundersClub Inc., Investment Arm; Orfin Ventures	Develops a manufacturing analytics platform.
			MEDIAN:	\$15	
			AVERAGE:	\$43	



About AGC Partners

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AGC's Dedicated MDSC Team



Bob Renner
Partner

- Bob is a Partner at AGC Partners in the Company's Atlanta Office
- Prior to joining AGC, Bob was a Co-Founder, President, and CEO of Liaison Technologies, a Merck GHI funded data integration & management company, before successfully exiting to OpenText in December 2018.
- During his 17 years at Liaison, Bob successfully executed over 11 strategic acquisitions. Bob also played a key role as the Company's first employee helping it raise approximately \$200M in funding
- Before Liaison, Bob was the head of Electronic Commerce for Georgia-Pacific Corp., one of the world's largest forest products companies
- Bob holds an MBA from Emory University and a B.S. in Electrical Engineering from California State University (Fullerton)



Benjamin Howe
Co-Founder, CEO

- Ben is a co-founder and the CEO of AGC Partners
- In 30+ years as an investment banker, Ben has completed more than 300 transactions
- Prior to AGC, he served as Managing Director, Head of M&A and Executive Committee Member at SG Cowen Securities, and prior to that served as Head of Technology Investment Banking for the East Coast and Europe at Montgomery Securities
- He serves as co-chairman of Excel Academy, which has four charter schools in East Boston, and served on the board of Portsmouth Abbey and the advisory board of Trinity College
- He holds a B.A. in Economics from Trinity College and an M.S. in Accounting from The Stern School of Business at NYU



Fred Joseph
Partner

- Prior to AGC, Fred spent 7 years at Cowen & Co., and held positions at J.P. Morgan and Smith Barney
- Fred was a founding member of Beechtree Capital, a middle market leveraged buyout firm
- With more than 120 completed transactions in his 25 plus years in the industry, Fred has raised public and private capital for both early stage and late stage corporations in the technology and healthcare sectors
- The majority of Fred's work has been in Mergers & Acquisitions, where, cumulatively, he has executed in excess of \$7 billion in transactions
- Fred holds a B.A. from Swarthmore College and an M.B.A. from Columbia University



Markus Sololainen
Partner

- Markus has over 25 years of experience in Investment Banking and Venture Capital focused in Mobility and Software
- Markus started his career in TMT Investment Banking with UBS and HSBC
- After working as a Principal at BlueRun Ventures and a General Partner at Nokia Growth Partners, Markus joined Arma Partners where he was Senior Managing Director.
- Most recently Markus was a Managing Director at GrowthPoint Technology Partners
- Markus holds an M.Sc. in Economics from the London School of Economics

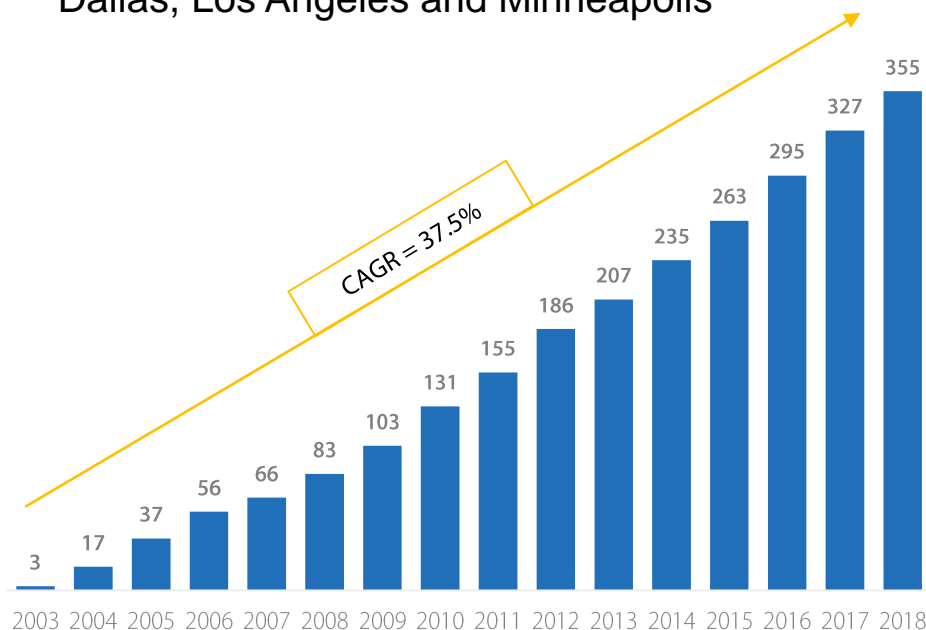
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Tech M&A Rankings, 2014 - 2018

451 Research®

- Technology M&A and Growth Equity focus – Enterprise values between \$50M and \$500M
- High transaction volume fuels deep market knowledge and extensive contacts – over 55 engagements
- Headquartered in Boston with offices in Silicon Valley, New York, London, Chicago, Dallas, Los Angeles and Minneapolis



AGC's Total Deal Count

Source: 451 Research

TOP DEALMAKERS

	Firm	# Trans.
1.	Morgan Stanley	179
2.	Raymond James	150
3.	William Blair	150
4.	Houlihan Lokey	129
5.	J.P. Morgan Securities	124
6.	AGC Partners	120
7.	Evercore Partners	119
8.	GCA Advisors	117
9.	Goldman Sachs	113
10.	Jefferies	92
11.	Lazard	79
12.	Petsky Prunier	79
13.	Mooreland Partners	78
14.	DCS Advisory	77
15.	Pagemill Duff & Phelps	74
16.	Bank of America Merrill Lynch	73
17.	Robert W. Baird	70
18.	Qatalyst Partners	69
19.	Arma Partners	68
20.	GP Bullhound	68
21.	KeyBanc Capital Markets	62
22.	Credit Suisse Securities	60
23.	Stifel, Nicolaus & Company	60
24.	Needham & Company	59
25.	Barclays Capital	53

18 Highly Experienced Partners, Sector-Focused



SOFTWARE

BI / Analytics
CRM
ECM
ERP / Supply Chain
FinTech / Payments
HCIT / Life Sciences
HCM
IT Services
Marketing / Sales-Automation
Technical Software

Vertical SaaS
Automotive
Building / Engineering
Education
Healthcare
Legal
Public Sector
Real Estate
Retail
Travel & Leisure



Fred Joseph



Jon Guido



Ben Howe



**Dennis
Rourke**



**Hugh
Hoffman**



Doug Hurst



**Elena
Marcus**



**Mike
Parker**



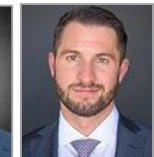
Greg Roth



**Markus
Salolainen**



**Charlie
Schopp**



**Tristan
Snyder**

SECURITY

Cybersecurity
Advanced Threat Defense
CASB
Endpoint
Identity Access Management
Network

Security Orchestration
Security Services
Threat Intelligence
User Behavior Analytics
Vulnerability
IOT / SCADA



**Maria Lewis
Kussmaul**



Ben Howe



Joe Dews



**Russ
Workman**



Eric Davis



Fred Joseph

DIGITAL MEDIA & INTERNET

AdTech
Consumer
E-Commerce
Food Tech
Gaming

Internet
Mobile
Social
Virtual Reality / Augmented
Reality



Jon Guido



**Linda
Gridley**



**Elena
Marcus**



**Mike
Parker**



**Tristan
Snyder**



**Sean
Tucker**

INFRASTRUCTURE

Big Data
Cloud Computing
Communications Infrastructure
Data Center
Energy & Industrial Tech

Internet of Things
Mobility Solutions
Semiconductors
Smart Cities
Storage



Rob Buxton



**Markus
Salolainen**



Joe Dews



**Bob
Renner**



Fred Joseph



Doug Hurst

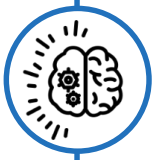
Common Characteristics of an AGC Banking Team



Deal making athletes – conditioned through “high reps” of deal flow and transaction experience



Aggressive value drivers – generating high revenue multiples over 6x, with rapid closing and cleanest deal terms



Sector expertise equivalent to that of a top research analyst allowing us to masterfully position clients’ stories in a credible and compelling light



Creative problem solvers who are part-Houdini and part-therapist that can anticipate bumps in the road and adjust accordingly



Close relationships with the leading PEs and strategic acquirers



24 x 7 highly responsive workhorses sweating the details at every turn



Skilled negotiators – dive deep into the contract weeds and know when and how hard to push and when to give

AGC Drives Outstanding Outcomes



PE Growth Financings and Buyouts

Client	Investor / Acquirer	EV / Equity Check / Rev. Multiple
		\$1B / \$550M / 8.0x
	KLEINER PERKINS CAUFIELD BYERS	\$145M / \$69M / 5.1x
		\$100M / ND / ND
	SUMMIT EQUITY PARTNERS	ND / \$65M / ND
		\$100M / ND / ND
		ND / ND / ND
		ND / \$49M / ND
		ND / \$25M / ND
		ND / \$25M / ND

Compelling Strategic Outcomes

Client	Acquirer	EV / Rev. Multiple
		\$400M / 8.5x
		\$275M / 7.4x
		ND / ND
		\$200M / ND
		\$172M / 4.7x
		\$152M / ND
		\$90M / ND
		ND / ND
		ND / ND

Source: 451 Research



AGC is the most active SaaS focused investment bank and has unmatched experience working with the most relevant SaaS metrics

	Not Strong	Solid	Great
ARR Scale	<\$8M	\$8-20M	\$20M+
ARR 3-Year CAGR	5-20%	20-50%	50%+
Customer Retention	90%	90-95%	95%+
% Subscription	<70%	70-90%	90%+
Gross Margin	<60%	60-75%	75%+
Rule of 40%	<20%	20-40%	40%+
LTV / CAC	<3x	3-5x	5x+
ASP/Customer/Year	<\$25k	\$25k-250k	\$250k+
Avg. Contract Length	<1 year	2 years	2+ years
TAM	\$500M	\$1-2B	\$2B+
Barriers to Entry	Low	Medium	High
Representative Multiple	2-4x	4-6x	7-10x+

Continued Momentum: 47 Deals Completed in Last 18 Months



 sold to 	 financed by HERE WE GROW	 has been acquired by 	 has agreed to be sold to 	 a wholly owned subsidiary of sold to 	 divested in a sale to 	 sold to 	 financed by 	 sold to
 sold to 	 sold to 	 sold to 	 a wholly owned subsidiary of financed by 	 financed by 	 sold to 	 sold to Strategic leader in medical alert systems for home healthcare and seniors	 has joined 	 sold to
 acquired 	 sold to 	 sold to 	 sold to 	 financed by to acquire 	 sold to 	 financed by \$40 Million	 a division of sold to 	 API Business sold to
 sold to a subsidiary of 	 sold to 	 sold to a portfolio company of 	 a subsidiary of sold to 	 sold to ©Hitachi Healthcare Americas	 financed by 	 sold to a portfolio company of 	 sold to 	 sold to
 financed by 	 sold to 	 a wholly owned subsidiary of sold to a subsidiary of 	 financed by 	 sold to Booz Allen Hamilton	 sold to a portfolio company of 	 sold to a portfolio company of 	 sold to 	 financed by Glidepath Partners

Note: excludes nondisclosed transactions

AGC's Strong Bond With Technology Investors



ABRY Partners
ABS Capital Partners
Accel Partners
BESSEMER VENTURE PARTNERS
Adam...
Advent...
Andreessen Horowitz
Apax Partners
Apollo Global Management
Arrowroot Capital
Ascent Venture Partners
Audax Group
AXA Strategic Ventures
Bain Capital Ventures
Baird Capital
Balyasny Asset Management
Battery Ventures
BDC Capital
Benchmark
Bessemer V...
Blackstone
Boathouse
Bregal Sagemount
Bridgepoint Capital
Brown Brothers Harriman
BV Investment Partners
Canaan Partners
Catalyst Investors
CI Ventures
Clearlake Capital Group
ClearSky Power and Tech
Court Square Capital
Cove...
Cres...
CVC Capital Partners
Delta-v Capital
Diversis Capital
Draper Fisher Jurvetson

DST Global
Edison Partners
Elephant Partners
EGT Holdings
ESQ Capital
ESW Capital
Evolution Equity
Font4 Ventures
Formation8 Partners
Founders Fund
F-Prime Capital Partners
Francisco Partners
Front4 Ventures
Frontier Capital
FTV Capital
Fulcrum Equity Partners
General Atlantic
General Catalyst Partners
GGV Capital
GI Partners
Globespan Capital Partners
Golden Gate Capital
Goldman Sachs
Gores Group
Great Hill Partners
Greenspring Associates
Greycroft Partners
Gryphon Investors
GSV Capital
GTCR
Guggenheim Partners
Guidepost Growth Equity
Halyard Capital
HarbourVest
Hellman & Friedman
HgCapital
HIG Capital
Highland Capital Partners

THE CARLYLE GROUP
CLEARLAKE CAPITAL
GENERAL CATALYST

Huntsman Gay Global Capital
ICONIQ Capital
IDG
LONA Capital
Index Ventures
In-Q-Tel
Insight Venture Partners
Institutional Venture Partners
Investcorp Technology Partners
Investor Growth Capital
K1 Investment Management
K...
K...
KKR Growth
Kleiner, Perkins, Caulfield & Byers
LaunchCapital
Legend Capital
Level Equity
Lightspeed Venture Partners
LLP Partners
Long Ridge Equity Partners
Lovell Minnick Partners
Lumia Capital
Macquarie
Madison...
Mains...
Marin...
MassMutual Ventures
Menlo Ventures
Merck & Co.
Meritech Capital Partners
Morgan Stanley
New...
New...
NewSpring Capital
NextEquity Partners
North Atlantic Capital

JMI
K1
KKR
MARLIN EQUITY PARTNERS
NEA

Norwest Equity Partners
Norwest Venture Partners
Novacap
Oak Investment Partners
Oakley Capital
OpenView Partners
Osage University Partners
Paladin Capital Group
Pamlico Capital
Pamplona Capital
Parallax Capital Partners
Parthenon Capital Partners
Peak Equity Partners
Periscope Equity
Platinum Equity
Polaris Venture Partners
Providence Equity Partners
PWP Growth Equity Fund
QuestMark Partners
Radian Capital
Redline Capital
Redpoint Ventures
Resurgens Technology Partners
Revelstoke Capital Partners
Revolution Growth
Rho Capital Partners
Riordan, Lewis & Haden
River Cities Capital Funds
Riverside Company
Riverside Partners
Riverwood Capital
Rubicon Technology Partners
Runway Growth Credit Fund
Safeguard Scientifics
Sageview Capital
Sequoia Capital
Serent Capital
SFW Capital Partners
Silver Lake Partners

Silversmith Capital Partners
Sigma Prime
Siris Capital
SoftBank
Sorenson Capital
Spark Capital
Spectrum Equity
Spire Capital
Spring Lake Equity Partners
Staley Capital
Stripes Group
Sumner Equity Partners
SUMERU EQUITY PARTNERS
Symphony Technology Group
TA Associates
Technology Crossover Ventures
Temasek Holdings
Teneo Capital
Terra...
TPG Growth
TriplePoint Capital
True Wind Capital
Union Square
Updata Partners
Veror Capital
Venrock
Veritas Capital
Veronis Suhler Stevenson
Vista Equity Partners
Vistara Capital Partners
Volition Capital
W Capital
Warburg Pincus
Ward Capital Partners
Wavecrest Growth Partners
Welsh, Carson, Anderson & Stowe
WestView Capital

SPECTRUM EQUITY
SEIP
THOMA BRAVO
TCV
VISTA PRIVATE EQUITY

AGC Works With Over 500 Global Strategic Buyers



Accenture	CableVision	Fiserv	Johnson Controls	QinetiQ	Telefonico
Activision	Capgemini	France Telecom	Juniper Networks	Qualcomm	Tellabs
Adobe	CBS	Fujitsu	Kronos	Quest	Veracode
ADP	Check Point	Gannett	L3	Rackspace	Thales
Affinion	Cisco	GE Security	LG	Raytheon	Thomson Reuters
Akamai	Citrix Systems	Gemalto	Liberty Media	ReachLocal	TIBCO
Alcatel-Lucent	Comcast / NBC	Genband	LinkedIn	Redhat	Time Warner
Alibaba	commvault	General Dynamics	Lockheed Martin	Rediffusion	Trend Micro
Amazon	Compuware	Getty Images	Logitech	RocketHub	Trustwave
Amdocs	Constant Contact	Google	LSI	Sage	Twitter
Ancestry.com	CSC	Groupon	Manhattan Associates	SAIC	Tyco
AOL	Deloitte	GSI Commerce	Manpower	Salesforce	Ultra Electronics
Apple	Descartes	Harland Clarke	ManTech	Samsung	Unify
ASG Software	Deutsche Telekom	Harris	Mercadolibre	SAP	United Online
Assurant	Digital River	Harte-Hanks	Micro Strategy	Schneider Electric	ValueClick
AT&T	Discover	Hearst	Microsoft	Scripps	Verizon
Avast	Discovery	Hitachi	Motorola	Seagate	Viacom
Avaya	Disney	Honeywell	NEC	Siemens	Virgin Media
AVG	eBay	HP	NetApp	SingTel	Visa
BAE Systems	Electronic Arts	HTC	Netscout	SK Telecom	Vivendi
Baidu	EMC	Huawei	New / Asurion	Software AG	VMware
Barracuda Networks	Emulex	IAG	New York Times	Solarwinds	Web.com
BestBuy	Equinix	IBM	News Corp.	Sony	Webroot
Blue Coat	Ericsson	Informatica	Nokia	Sprint	Western Digital
BMC software	Experia	Infospace	Nokia Siemens Networks	SRA	Western Union
Boeing	f5	Infosys	Northrop Grumman	Staples	Wipro
Bosch Security	Facebook	Intel	NTT	Sunguard	WPP
British Sky Broadcasting	FalconStor Software	Interne	Oracle	Symantec	Xerox
Brocade	FICO	Internet Brands	Pega Systems	Synacor	Yandex
BT	First Data	Iron Mountain	Pitney Bowes	TATA	Zynga
CA		JDSU	Publicis	Tech Mahindra	
				Tekelec	

amazon



CISCO

Deloitte

Gartner

GENERAL DYNAMICS

Google

Hewlett Packard Enterprise

IBM

j2 Global

Juniper Networks

Microsoft

NTT

ORACLE

salesforce

twitter

Premier Industry Investor / Buyer Conferences



Boston
October, 2018



San Francisco
March, 2019



London
June, 2019













- Three annual conferences that showcase private companies and entrepreneurs
- 1-on-1 meeting format between CEOs and investors/buyers generates 6,000+ meetings each year
- High-caliber panel discussions featuring leading industry experts on hot topics and trends
- Hot growth companies spanning all major tech sectors, including Cloud/SaaS, FinTech, HCIT, E-Commerce, Infrastructure, IoT, Security, Mobile, and Social, regularly attend our conferences
- 1,000 professionals from leading PE / VC firms, corporate venture funds, and strategic buyers
- Boston 2018 featured 220 technology companies and 2,000 one-on-ones
- San Francisco 2019 featured 500 technology companies and 3,200 one-on-ones
- London 2019 will feature 145 technology companies and 1,000 one-on-ones

Deep Domain Sector Expertise in Over 60 Technology Sectors



	Construction Tech		Government Tech		Real Estate Tech
	Edge Computing		Next-Gen Measurement		Legal Tech
	Blockchain		Automotive Marketing Tech		Security Orchestration
	HR Tech		Augmented / Virtual Reality		eCommerce
	Smart Cities		Manufacturing Big Data		CRM Part III
	Payments		Travel Tech		Healthcare IoT
	Supply Chain		Integration		Cyber Risk Insurance
	EdTech		Machine Learning		Real-Time Analytics / IoT
	Real Time Hospital		Telematics		Connected Car Security
	Healthcare AI		Insurance Tech		HCM Vertical SaaS

	SoftBank
	Great Hill
	NEA
	TCV
	TA
	Mastercard
	Visa
	Apple
	Oracle
	Twitter

Global Expertise: 75 Cross-Border Deals in 19 Countries

