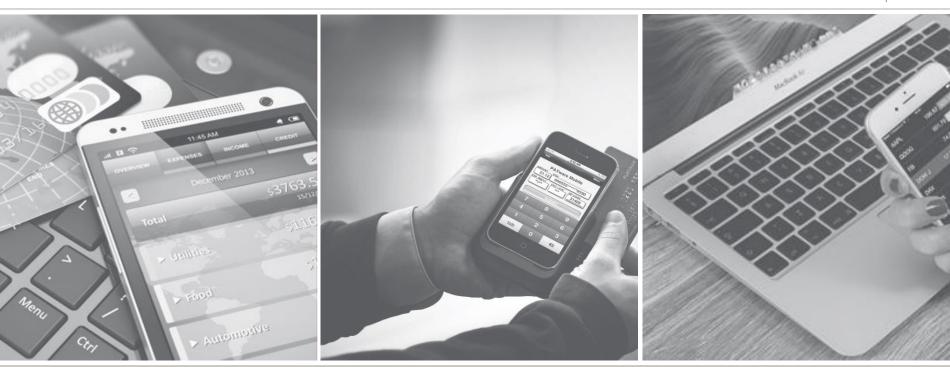


FINANCIAL TECHNOLOGY SECTOR REVIEW

TECHNOLOGY, MEDIA & TELECOM GROUP | Q4 2017



www.harriswilliams.com

Investment banking services are provided by Harris Williams LLC and Solebury Capital LLC, registered broker-dealers and members of FINRA and SIPC, and Harris Williams & Co. Ltd, which is a private limited company incorporated under English law with its registered office at 5th Floor, 6 St. Andrew Street, London EC4A 3AE, UK, registered with the Registrar of Companies for England and Wales (registration number 07078852). Harris Williams & Co. Ltd is authorized and regulated by the Financial Conduct Authority. Harris Williams & Co. is a trade name under which Harris Williams & Co. Ltd conduct business.

HARRIS WILLIAMS & CO. OVERVIEW

HARRIS WILLIAMS & CO. ("HW&CO.") GLOBAL ADVISORY PLATFORM

KEY FACTS

- 25+ year history with over 130 closed transactions in the last 24 months
- Approximately 260 professionals across eight offices in the U.S. and Europe
- Strategic relationships in India and China
- 10 industry groups



HW&CO. TECHNOLOGY, MEDIA & TELECOM ("TMT") GROUP FOCUS AREAS

SOFTWARE / SAAS

- Enterprise Software
- Data and Analytics
- Data Center and Managed Services

Infrastructure and

- Security Software
- IT and Tech-Fnabled Services

INTERNET & DIGITAL MEDIA

- Consumer Internet
- Digital Media and Content

eCommerce and Retail

- Mobile
- Online Marketing

TMT VERTICAL FOCUS AREAS

- Education Technology
- Engineered Solutions Software
- Fintech
- Healthcare IT
- Human Capital Management
- Member Management and Non-Profit
- Professional Services
- Supply Chain and Logistics Technology

KEY CONTACTS

FINTECH

- Tyler Dewing Managing Director tdewing@harriswilliams.com +1 (617) 654-2133
- Scott Reinia Vice President sreinig@harriswilliams.com +1 (617) 654-2113

UNITED STATES

- Jeff Bistrong Managing Director jbistrong@harriswilliams.com +1 (617) 654-2102
- Mike Wilkins Managing Director mwilkins@harriswilliams.com +1 (415) 217-3411
- Sam Hendler Managing Director shendler@harriswilliams.com +1 (617) 654-2117

EUROPE

■ Thierry Monjauze Manaaina Director tmonjauze@harriswilliams.com +44 (0) 20 7518 8901

SELECT RECENT HW&CO. TMT TRANSACTIONS











THOMA BRAVO





prospitalia







has been acquired by

Undisclosed Strategic Buyer







has been acquired by





has been acquired by



Ministry Brands has been acquired by







HW&Co. FINANCIAL TECHNOLOGY (FINTECH) TAXONOMY

HW&Co.'s fintech practice is focused on companies with software and technology core to their value proposition and market position.







SELECT HW&CO. FINANCIAL TECHNOLOGY TRANSACTIONS



Integrated Saas, insurance, and payments solutions for residential and commercial property managers



PARTNERS

Enterprise communication lifecycle solutions to manage assets and expenses



SaaS-based employee benefits management technology provider



Youth sports management software and integrated payments solutions



Integrated payments and member management solutions for faith-based and non-profit organizations



SaaS solutions that automate data collection, bookkeeping, and accounting processes for SMBs



Integrated SaaS and payment solutions for health clubs and fitness centers



SaaS solutions that enable grants, giving, and financial management for the nonprofit community

blackbaud

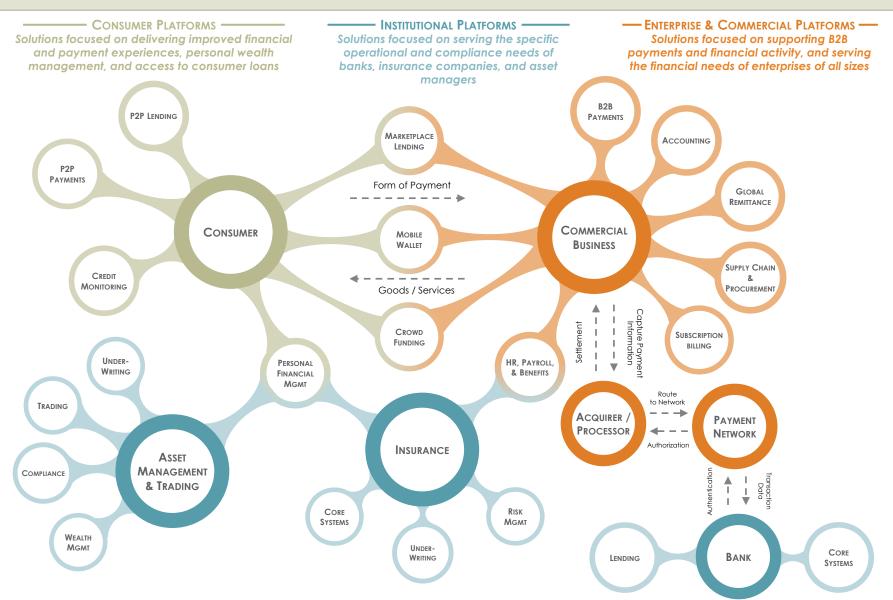


Data-driven marketing and analytics tools to the automotive industry





HARRIS WILLIAMS & CO. FINTECH ECOSYSTEM



^{*} Dotted lines represent the typical flow of payment transactions.



CASE STUDY: PROPERTY BRANDS



INSURANCE



HW&Co.'s TMT Group advised Property Brands on the acquisition by Insight Venture Partners.



a portfolio company of



has been acquired by



- Property Brands is a leading provider of nextgeneration property management software that enables residential and commercial property streamline everythina manaaers to prospecting and leasing to site and corporate operations
- The Company's broad product suite consists of bestin-class SaaS property management solutions and ancillary real estate services including insurance, application screening and background checks. and payment processing
- Property Brands serves a rapidly expanding customer base across the single-family, multi-family, student housing, HOA and condominium, and commercial real estate markets
- Headquartered in Knoxville, TN, Property Brands has acquired and integrated 11 leading technology companies since inception its in 2015

RELEVANT SECTORS:

- √ SaaS
- ✓ Fintech
- ✓ Insurance
- ✓ Payment Processina

HW&CO. DEAL CONTACTS

Jeff Bistrona

Managina Director jbistrong@harriswilliams.com Office: (617) 654-2102

Tyler Dewing

Managina Director tdewing@harriswilliams.com

Office: (617) 654-2133

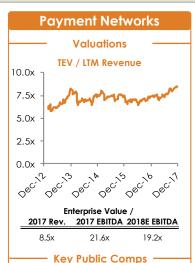
Andy Leed

Vice President aleed@harriswilliams.com

Office: (617) 654-2107



ENTERPRISE & COMMERCIAL MARKET OBSERVATIONS¹



VISA







Transaction Spotlight

December 19, 2017



Kasısto

Capital Raise: \$18M

Observations

- Rapid global migration to digital payment technologies is accelerating transaction volumes, particularly in emerging economies, to the benefit of payment networks that facilitate new payment ecosystems
- The pace of change and innovation is driving an increased focus on delivering frictionless and secure transaction processing capabilities across industries and geographies

In The News

2017's Big Payment Breakthroughs



---- Key Public Comps













- Transaction Spotlight

December 18, 2017





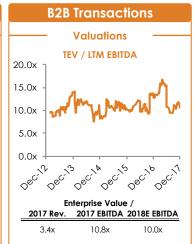
Enterprise Value: \$1.05B

Observations

- The role of traditional payment processors and merchant acquirers continues to rapidly evolve as transactions become increasingly digitized and companies seek to offer safe and convenient processing across an increasingly diverse set of channels
- Software vendors with integrated payment capabilities continue to disrupt traditional merchant acquirers by directly forging merchant relationships, enabling them to offer more seamless payment processing while capturing corresponding fees

In The News

For ISVs, An Integrated Approach
To Integrated Payments



Key Public Comps —



OPENTEXT



- Transaction Spotlight -

October 10, 2017



J.P.Morgan TEMASEK

Capital Raise:\$100M

Observations

- With U.S. B2B payment volume expected to reach over \$23 trillion by 2020, businesses are increasingly relying on innovative technology solutions to improve operational efficiencies through streamlined payment processes
- As digitization increases across B2B payment networks, emerging solutions are beginning to offer end-to-end digital enterprise payments with improved visibility, compliance, and control

In The News

Blockchain in Cross-Border Payments and Other Things IBM is Looking at in 2018



Moody's Experian







October 5, 2017





Enterprise Value: N/A

Observations

- Continued proliferation of data is enabling executives to make informed, timely, and cost-effective decisions by leveraging technology-enabled analytics solutions
- In light of recent and highly publicized security breaches at major corporations, data and analytics vendors are facing heightened consumer and regulatory scrutiny around data privacy and protection

In The News

After Equifax, Boards Rethink
Cybersecurity

Payroll & Benefits Valuations TEV / LTM EBITDA 50.0x 40.0x 30.0x 20.0x 10.0x Enterprise Value / 2017 Rev. 2017 EBITDA 2018E EBITDA 7.2x 24.9x 20.8x

Key Public Comps

WageWorks PAYCHEX Paylocity





- Transaction Spotlight

November 15, 2017





Enterprise Value: N/A

Observations

- As large and small enterprises continue to adopt SaaS-based core HR, payroll, and benefit solutions, companies are now refining their focus on cloud-based tools that further enhance HR capabilities through integration with team management, assessments, and data-driven recruiting solutions
- Acquisition activity remains strong as large incumbents seek to keep disruptors at boy by incorporating new functionality outside core HR applications through the acquisition of point solutions

In The News

Instant Pay Mobile Apps Useful in Recruitment, Retention



INSTITUTIONAL AND CONSUMER MARKET OBSERVATIONS¹



Bottomline jack henry Technologies.

ORACLE! FINANCIAL SERVICES

Transaction Spotlight

December 5, 2017





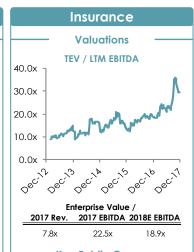
Enterprise Value: N/A

Observations

- Strong consumer appetite for unbundled and digital-native banking solutions and services continues to force traditional financial institutions to innovate or lose market share
- Legacy banks are at a crossroads where they must choose to either build and launch digital solutions that may cannibalize their traditional business lines, acquire emerging challengers to maintain a competitive advantage, or partner to expand their product offering

In The News

The Top Tech Priorities for Banks in 2018



Key Public Comps

Guidewire SAPIENS

- Transaction Spotliaht

October 23, 2017

Shift

Accel Technology GENERAL @ CATALYST

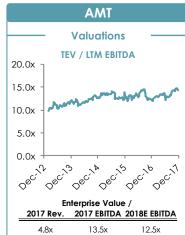
Capital Raise: \$28M

Observations

- Insurers continue to increase investment in data and analytics offerings to better underwrite risk through improved insight into customer behavior, and automation to more efficiently process claims
- New technology platforms focused on user experiences continue to drive customer acquisition costs down and disrupt broker-driven business models
- Software has given rise to new verticalspecific insurance models, putting increased pressure on traditional providers

In The News

Amazon Considers Entering Insurtech Market



Key Public Comps







- Transaction Spotliaht September 7, 2017

ISS



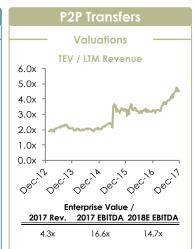
Enterprise Value: \$720M

Observations

- Asset managers continue to adopt software applications to modernize service offerings, enhance client engagement through better communication tools, and attract digitally-focused customers
- Facing competition and fee compression from digital-first roboadvising platforms, traditional AMT providers are now adopting hybrid advisory models, or a combination of automated and professional advice, to attract and retain clients

In The News

JPMorgan Chase Powers Up Robo-Adviser for Fintech Race



Key Public Comps





Transaction Spotlight

December 7, 2017







Capital Raise: \$40M

Observations

- Peer-to-peer payments, particularly those facilitated through mobile channels, have experienced accelerating growth as consumer preferences continue to shift toward digital solutions
- The growing demand for peer-to-peer transfers has attracted a variety of new entrants ranging from nimble startups to large financial institutions, all in an effort to monetize scaling volumes and enhance user experience

In The News

Fintech Startups Seek to Shake Up Money-Transfer Industry

Marketplace Lending **Valuations** Price / Book Value 7.5x 5.0x 2.5x 0.0x2017 Book Value 2018E Book Value 1.7x 1.5x

Key Public Comps

!!!!LendingClub OnDeck>

Transaction Spotlight

November 9, 2017





Capital Raise: \$220M

Observations

- Alternative lenders are increasinaly shifting away from high risk and unprofitable marketplace funding models toward more traditional balance sheet lending approaches
- P2P lending platforms continue to face competition from traditional lenders with low costs of capital and are frequently turning to partnerships, diversified funding sources, and adding new products to fuel growth
- Industry specific platforms continue to garner interest from consumers, but are still maturing

In The News

High-Tech Lenders Target the Decades-Old Store Credit Card



SELECT FINTECH M&A TRANSACTIONS¹

Announced: December 18, 2017



CAYAN

Ent. Value: \$1.1B Revenue: NA

EV / Revenue: NA EV / EBITDA: NA

TSYS's acquisition of Cayan

- Cayan is a payment processing company focused on integrated payment solutions and merchant acquiring
- The Company provides technology-led acquiring services to over 70,000 merchants and 100+ integrated partners primarily within the small and medium-sized merchant landscape
- The acquisition of Cayan's unified commerce solutions will strengthen TSYS' competitive position by offering a broader set of value-added merchant products and services

SUBSECTOR



PAYMENT PROCESSING



COMPLIANCE & **ANALYTICS**



DATA & ANALYTICS



PAYMENT PROCESSING



PAYMENT PROCESSING

Announced: December 5, 2017





Ent. Value: NA Revenue: NA

EV / Revenue: NA EV / EBITDA: NA

H.I.G. Capital's acquisition of Velocity Solutions

- Velocity Solutions offers software and technology-enabled solutions to banks, credit unions, and insurers to drive revenue, ensure compliance, and manage risk
- The Company's solutions are centered around deposited account activity and transactional trends. servicing over 25 million consumers and business owners
- H.I.G. expects to bolster Velocity's product offering by investing in product development and adding solutions that meet the evolving needs of its clients

Announced: November 22, 2017



dealogic

Ent. Value: NA Revenue: NA

EV / Revenue: NA FV / FRITDA: NA

ION Investment Group's majority investment in Dealogic

- Dealogic is a provider of a SaaS-based financial content and analytics platform connecting banks and investors
- The Company partners with hundreds of firms worldwide, including the top 50 investment banks, providing integrated content, analytics, and technology that helps clients throughout all stages of the deal process
- Ion's investment is expected to accelerate the digitization and automation of capital markets workflows and improve communications and interactions amongst financial institutions, investors, and issuer communities

Announced: October 20, 2017





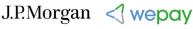
Ent. Value: \$760M Revenue: NA

EV / Revenue: NA EV / EBITDA: NA

First Data's acquisition of BluePay

- BluePay is a provider of technology-enabled payment processing solutions for merchants in the U.S. and Canada
- The Company processes approximately \$19 billion of annual volume for more than 77,000 merchants and is integrated into more than 450 software platforms
- Following First Data's recent acquisition of CardConnect, First Data will be able to further enhance its service offerings to joint venture and strategic alliances, and BluePay's highly integrated solutions will complement and benefit from CardConnect's merchant and partner management tools

Announced: October 17, 2017



Ent. Value: \$220M Revenue: \$57.8M

EV / Revenue: 3.8x EV / EBITDA: NA

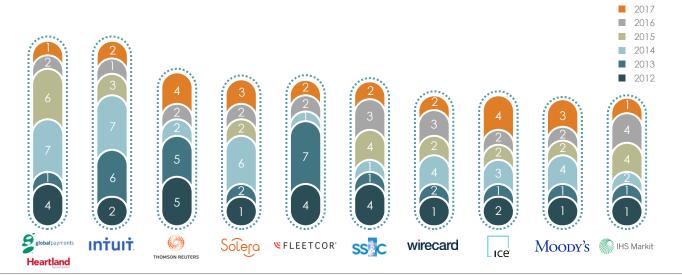
J.P. Morgan's acquisition of WePay

- WePay is a provider of integrated payments solutions for SaaS and crowdfunding platforms
- The Company's technology leverages APIs to deliver simplified customer onboarding and activation of payments functionality
- The acquisition represents J.P. Morgan's first sizable acquisition of a financial-technology company with plans to roll out WePay's technology to J.P. Morgan's 4 million small-business customers

FINTECH ACQUISITION ACTIVITY

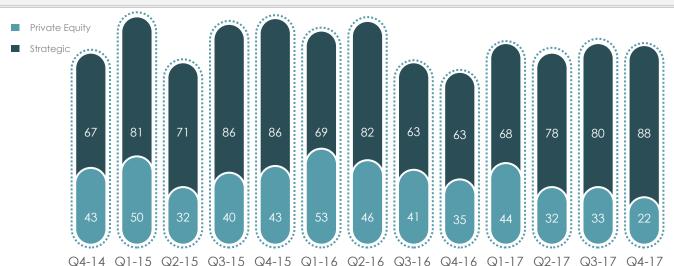
MOST ACTIVE STRATEGIC ACQUIRERS OF FINTECH ASSETS BY VOLUME⁴

- The 10 most active strategic fintech consolidators have acquired over 161 companies since 2012.
- In 2017 this group has completed 24 acquisitions, on pace with 2016 levels of activity.
- Thomson Reuters and ICE had particularly active years, with each company completing four acquisitions in 2017, while IHS Markit and Global Payments' activity slowed, though each completed transformative acquisitions in automotiveMastermind, and Active Networks, respectively.



GLOBAL FINANCIAL SOFTWARE M&A ACTIVITY⁴

- Across financial software, there were 110 M&A transactions closed in 4Q 2017, with private equity transactions representing 20% of total deal volume.
- Strategic acquirers continue to seek innovative software solutions at a pace consistent with prior quarters, a steady trend that is underpinned by large, established vendors aiming to augment their capabilities to limit disintermediation, expand digital functionality, and drive internal operational efficiencies.

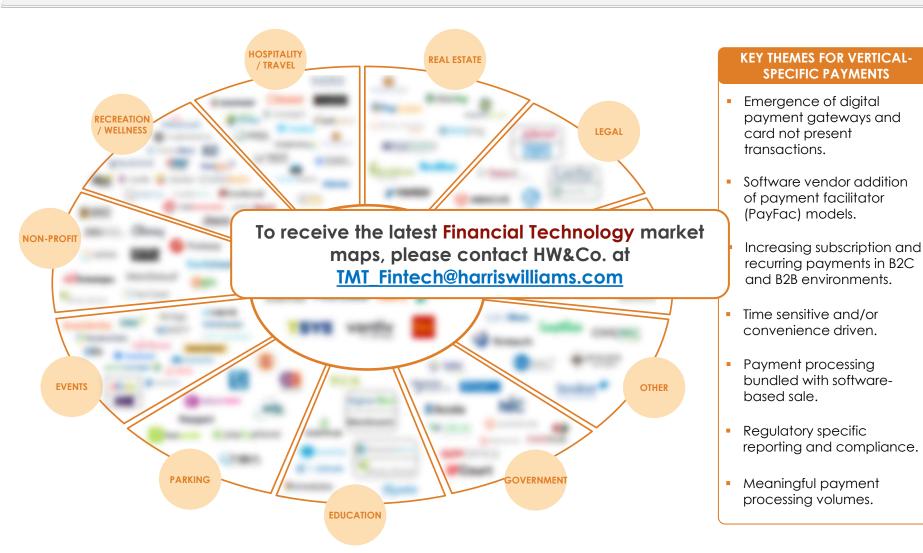


ENTERPRISE & COMMERCIAL SOLUTIONS - LANDSCAPE

REPRESENTATIVE ENTERPRISE & COMMERCIAL SOLUTION PROVIDERS Other E&C Financial Software **Payments B2B Transactions Payment Processing & Networks Payment Networks** Transfers & Remittance **Data & Compliance Procurement & Supply Chain Traditional Payment Processors** Real Estate & Leasing To receive the latest Financial Technology market maps, please contact HW&Co. at TMT Fintech@harriswilliams.com MB Marketplace Lending Payment Gateways / ISOs **Subscription Billing / RCM Accounting & Tax** HR / Payroll / Benefits **Vertical Specific Payments** See Next Page for Vertical Payments Market Map Detail

VERTICAL SPECIFIC PAYMENTS SOLUTIONS - LANDSCAPE

REPRESENTATIVE VERTICALLY-FOCUSED INTEGRATED SAAS AND PAYMENTS PROVIDERS



Note: Logos are representative of vertical participants and not comprehensive.

ENTERPRISE & COMMERCIAL SOLUTIONS - TRADING COMPARABLES

VALUATION1

As of December 31, 2017 (\$ in millions)

Fintech			Enterprise	Market	% of 52	1-Year Stock	3-Year Stock		Growth	2017 EBITDA		Enterprise			Price /
Sub-Vertical	Company	<u>Ticker</u>	Value	Capitalization	Week High	Performance	<u>Performance</u>	2017	2018E	Margin	2017 Rev.	2018E Rev.	2017 EBITDA	2018E EBITDA	Earning
) for a		¢000 500	#0F0 740		ayments 44.197	72.07	20.70	0.07	70.407	15.0	10.7	01.0	10.1	40.0
	Visa	V	\$282,502	\$252,748	99.2%	46.1%	73.9%	33.7%	9.8%	70.4%	15.0x	13.7x	21.3x	19.1x	42.2x
Payment Networks	Mastercard	MA	\$159,173	\$157,960	97.9%	46.6%	75.7%	28.7%	12.8%	58.3%	12.8x	11.3x	22.0x	19.2x	35.2x
Networks	American Express	AXP	\$112,524	\$86,201	98.8%	34.1%	6.7%	(4.0%)	6.2%	NA	3.4x	3.2x	NA	NA	19.1x
	Discov er Financial Services	DFS	\$41,306	\$27,951	98.9%	6.7%	17.5%	(0.8%)	7.3%	NA	4.2x	3.9x	NA	NA	13.2x
	First Data Corporation	FDC	\$36,859	\$8,028	86.9%	17.8%	NA	4.9%	5.0%	25.4%	3.1x	2.9x	12.1x	11.2x	22.0x
	Alliance Data Systems	ADS	\$33,674	\$14,005	95.2%	10.9%	(11.4%)	20.5%	10.6%	25.4%	4.3x	3.9x	17.1x	14.9x	26.9x
	Cielo	CIEL3-BR	\$21,647	\$19,264	84.0%	(0.7%)	(21.8%)	5.5%	5.2%	45.1%	6.2x	5.9x	13.7x	12.9x	15.9x
Payment Processing	Global Payments	GPN	\$19,814	\$15,952	95.6%	44.4%	148.3%	NA	13.4%	33.0%	5.6x	5.0x	17.0x	14.6x	71.6x
rioccissing	Vantiv	VNTV	\$16,693	\$11,955	96.5%	23.4%	116.8%	(33.4%)	9.3%	48.0%	7.9x	7.2x	16.4x	15.0x	50.7x
	Total System Services	TSS	\$17,255	\$14,540	98.2%	61.3%	132.9%	21.5%	6.0%	35.2%	5.1x	4.8x	14.5x	13.4x	35.0x
	Euronet Worldwide	EEFT	\$4,270	\$4,439	83.4%	16.3%	53.5%	27.1%	10.7%	18.4%	1.9x	1.7x	10.3x	8.9x	22.3x
Payments Med	ian		\$33,674	\$15,952	96.5%	23.4%	63.7%	13.0%	9.3%	35.2%	5.1x	4.8x	16.4x	14.6x	26.9x
					B2B 1	ransaction									
Transfer/Remit	Western Union	WU	\$11,346	\$8,731	83.7%	(12.5%)	6.1%	(0.0%)	1.6%	25.1%	2.1x	2.0x	8.3x	8.5x	41.3x
	Open Text Corporation	OTEX-CA	\$11,894	\$9,429	99.3%	15.4%	22.3%	38.7%	11.5%	35.1%	4.7x	4.2x	13.4x	11.5x	59.3x
elnvoicing, EDI. RCM	Basware	BAS 1 V-FI	\$845	\$821	100.0%	49.0%	14.8%	12.8%	7.7%	1.1%	4.7x	4.4x	NM	64.0x	NA
EDI, KCM	Cass Information Systems	CASS-US	\$482	\$715	85.8%	(13.0%)	20.2%	NA	NA	NA	NA	NA	NA	NA	27.6x
B2B Transactio	· · · · · · · · · · · · · · · · · · ·		\$6,095	\$4,776	92.5%	1.5%	17.5%	12.8%	7.7%	25.1%	4.7x	4.2x	10.8x	11.5x	41.3x
			, 2, 2 . 2	, , ,								-			
					Finan	cial Softwa	' 0								
	Automatic Data Processina	ADP	\$51,804	\$51,973	96.2%	14.0%	40.6%	13.8%	6.7%	21.2%	4.0x	3.8x	19.1x	17.6x	29.8x
	Automatic Data Processing														
	Paychex	PAYX	\$24,399	\$24,453	96.7%	11.8%	47.5%	14.4%	6.2%	43.4%	7.5x	7.0x	17.2x	16.1x	29.7x
Payroll & Benefits	Ultimate Software Group	ULTI	\$6,586	\$6,520	93.5%	19.7%	48.6%	51.1%	19.1%	23.0%	7.1x	5.9x	30.7x	24.1x	225.0x
bellellis	Paylocity Holding	PCTY	\$2,478	\$2,477	87.4%	57.1%	80.6%	78.8%	22.7%	19.5%	7.4x	6.0x	37.9x	29.2x	262.0x
	WageWorks	WAGE	\$1,848	\$2,461	77.0%	(14.5%)	(4.0%)	43.8%	9.5%	30.4%	3.8x	3.5x	12.6x	11.1x	53.0x
	Paycom Software	PAYC-US	\$4,697	\$4,680	93.3%	76.6%	205.1%	92.3%	25.6%	30.7%	10.9x	8.7x	35.4x	28.2x	75.8x
	Thomson Reuters	TRI	\$38,026	\$31,116	89.7%	(0.4%)	8.1%	(7.1%)	2.6%	30.0%	3.4x	3.3x	11.2x	10.7x	30.2x
	Moody's	MCO	\$33,514	\$28,208	95.9%	56.6%	54.1%	17.6%	10.0%	47.7%	8.2x	7.4x	17.2x	15.5x	53.3x
Data &	Experian	EXPN-GB	\$23,984	\$20,356	100.0%	13.8%	30.5%	(1.2%)	6.2%	35.0%	5.3x	5.0x	15.0x	14.2x	23.4x
Compliance	Equifax	EFX	\$16,772	\$14,160	80.2%	(0.3%)	45.8%	25.7%	2.6%	36.8%	5.0x	4.9x	13.6x	13.8x	26.7x
	TransUnion	TRU	\$12,602	\$10,024	96.8%	77.7%	NA	27.1%	8.9%	38.6%	6.6x	6.0x	17.0x	15.2x	42.3x
	Dun & Bradstreet	DNB	\$5,672	\$4,376	94.3%	(2.4%)	(2.1%)	7.3%	2.7%	28.2%	3.2x	3.1x	11.4x	11.0x	22.3x
Fleet	FleetCor Technologies	FLT	\$21,414	\$17,234	98.9%	36.0%	29.4%	31.8%	13.1%	56.1%	9.5x	8.4x	17.0x	15.0x	32.7x
Payments	WEX	WEX	\$8,285	\$6,060	99.3%	26.6%	42.8%	45.2%	12.0%	40.9%	6.7x	6.0x	16.3x	14.5x	71.0x
Financial Softw	vare Median		\$14,687	\$12,092	95.1%	16.8%	42.8%	26.4%	9.2%	32.9%	6.6x	5.9x	17.0x	15.1x	37.5x

ENTERPRISE & COMMERCIAL SOLUTIONS - TRANSACTION ACTIVITY

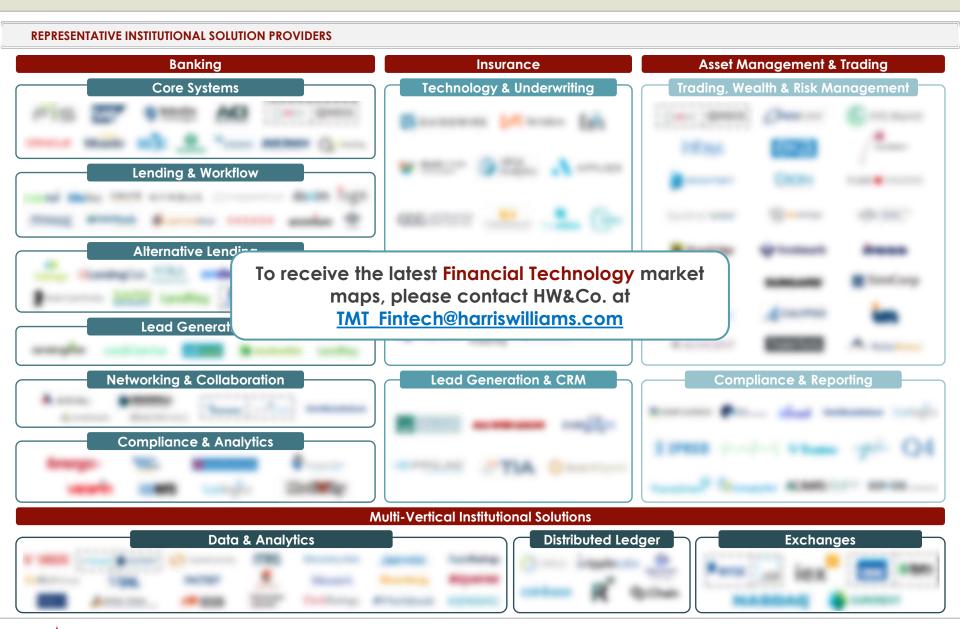
SELECT RECENT M&A TRANSACTIONS¹

Announced Date	Target/Issuer	Buyer	Description	Enterprise Value (\$m)
Pending	Property Brands	Insight Venture Partners	$Provider\ of\ integrated\ rental\ payments\ and\ property\ management\ software.$	NA
12/18/2017	Cayan	Total System Services	Provider of secure payment processing solutions and merchant account services.	\$1,050
11/30/2017	Capturepoint	Togetherwork (Aquiline)	Provider of integrated registration management software.	NA
11/29/2017	BravoSolution	JAGGAER	Provider of strategic eProcurement and sourcing solutions.	\$218
11/20/2017	Ariett Business Solutions	AvidXchange	Provider of cloud-based purchase and expense software.	NA
11/17/2017	Qvidian Corp.	Upland Software	Provider of cloud-based RFP and sales proposal automation software.	\$50
11/15/2017	Inov a Payroll	Tritium	Provider of online payroll and human resources software and services.	NA
11/08/2017	ABC Financial Services	Thoma Bravo	Provider of health club and gym management software.	NA
10/27/2017	Payline Data Services	Synergy Commerce	Provider of e-commerce and retail payment processing solutions.	NA
10/20/2017	BluePay	First Data	Provider of technology-enabled credit card processing services.	\$760
10/17/2017	WePay	JPMorgan	Provider of an online payment platform to accept and process instant payments.	\$220
10/05/2017	Fiscal Reps	Sovos Compliance	Provider of insurance premium tax compliance and indirect tax management services.	NA
10/01/2017	JustGiving	Blackbaud	Provider of an online charity fundraising platform.	\$127
09/28/2017	Presto Sports	Clubessential	Provider of web-based software solutions for college athletics departments.	NA
09/26/2017	Nets	Hellman & Friedman	Provider of digital payment technology and services.	NA

SELECT RECENT PRIVATE PLACEMENT TRANSACTIONS⁴

Announced Date	Target/Issuer	Investor(s)	Description	New Money (\$m)
12/20/2017	Passport	Bain Capital Ventures	Provider of parking, transportation, and transit management solutions.	\$43
12/19/2017	Kasisto	Mastercard	Provider of virtual personal assistant solutions for mobile banking.	\$18
12/12/2017	CrossBorder Solutions	Kennet Partners	Provider of corporate tax software and services.	\$6
12/07/2017	Dosh	Goodwater	Provider of a reward monetization platform.	\$5
11/29/2017	Simplus	EPIC, SalesForce Ventures	Provider of Salesforce quote-to-cash implementations solutions.	\$9
11/16/2017	PayStand	BlueRun Ventures	Provider of B2B enterprise payment processing solutions.	\$6
11/15/2017	Goji	Hudson Capital Management	Provider on an online platform for home and auto insurance distribution.	\$15
11/14/2017	Built Technologies	Index Ventures	Provider of construction management software to simplify loan management.	\$21
11/09/2017	TIS	83North	Provider of cloud-based solutions for managing corporate payments and cash flows.	\$12
11/02/2017	Fattmerchant	Fulcrum Equity Partners	Provider of omni-channel integrated payment tools.	\$6
10/23/2017	Nested (Property Sale Services)	Global Founders Capital	Provider of an online platform offering property sale services.	\$36*
10/12/2017	CoverWallet	Foundation Capital, Union Square	Provider of an online insurance management platform.	\$19
10/10/2017	Bill.com	Temasek / JPMorgan	Provider of cash flow management software.	\$100
10/04/2017	Roofstock	Canvas Ventures	Provider of an online marketplace for rental home investing,	\$35
09/28/2017	Bill4Time	Alpine Investors	Provider of cloud-based time and billing software.	NA

INSTITUTIONAL SOLUTIONS - LANDSCAPE



INSTITUTIONAL SOLUTIONS - TRADING COMPARABLES

VALUATION1

As of December 31, 2017 (\$ in millions)

Fintech			Enterprise	Market	% of 52	1-Year Stock	3-Year Stock	Revenue	e Growth	2017 EBITDA		Enterpris	e Value /		Price /
Sub-Vertical	Company	Ticker	Value	Capitalization	Week High	<u>Performance</u>	Performance	2017	2018E	Margin	2017 Rev.			A 2018E EBITDA	Earnings
						Banking									
	Fidelity National Information Services	FIS	\$40,107	\$31,414	97.3%	24.4%	51.3%	39.0%	0.5%	33.3%	4.4x	4.4x	13.1x	12.5x	58.1x
	Fiserv	FISV	\$32,913	\$27,327	98.3%	23.4%	84.8%	8.4%	5.8%	36.0%	5.8x	5.5x	16.0x	15.0x	31.1x
	Jack Henry & Associates	JKHY	\$8,977	\$9,033	97.6%	31.7%	88.2%	11.8%	7.4%	35.4%	6.2x	5.8x	17.5x	16.5x	36.9x
Core	Temenos Group	TEMN-CH	\$9,503	\$9,088	95.0%	83.9%	259.0%	34.1%	12.8%	37.3%	13.1x	11.6x	35.0x	30.1x	66.7x
Systems	CoreLogic	CLGX	\$5,580	\$3,807	93.7%	25.5%	46.3%	21.0%	1.8%	25.6%	3.0x	3.0x	11.8x	11.3x	42.8x
	Oracle Financial Services	532466-IN	\$5,185	\$5,458	98.5%	39.2%	20.5%	16.6%	9.0%	41.4%	7.1x	6.5x	17.1x	15.6x	27.6x
	ACI Worldwide	ACIW	\$3,341	\$2,688	90.7%	24.9%	12.4%	(2.5%)	3.6%	24.9%	3.3x	3.2x	13.2x	12.2x	68.7x
	Q2 Holdings	QTWO	\$1,433	\$1,536	83.1%	27.7%	95.6%	78.2%	23.9%	5.2%	7.4x	6.0x	NM	71.4x	NA
	Bottomline Technologies	EPAY	\$1,367	\$1,404	95.1%	38.6%	37.2%	7.7%	8.4%	23.3%	3.8x	3.5x	16.2x	14.9x	NA
Banking Media	ın		\$5,383	\$4,632	95.1%	27.7%	51.3%	16.6%	7.4%	33.3%	5.8x	5.5x	16.1x	15.0x	42.8x
					l.	nsurance									
	Cuid quira Saftuara	GWRE	\$5,022	\$5,596	88.9%	50.5%	46.7%	44.7%	21.1%	21.5%	0.00	7.24	41 1v	39.5x	2/5 24
Technology &	Guidewire Software		•								8.9x	7.3x	41.1x		265.2x
Underwriting	Ebix	EBIX	\$2,769	\$2,493	96.8%	38.9%	366.5%	33.8%	20.0%	34.6%	7.8x	6.5x	22.5x	18.9x	25.6x
	Sapiens International	SPNS	\$573	\$567	74.5%	(19.7%)	56.3%	47.2%	12.7%	10.4%	2.1x	1.9x	20.2x	12.4x	576.0x
Insurance Medi	Ian		\$2,769	\$2,493	88.9%	38.9%	56.3%	44.7%	20.0%	21.5%	7.8x	6.5x	22.5x	18.9x	265.2x
				А	sset Mana	agement &	Trading								
	RELX	REL-GB	\$54,718	\$25,020	99.1%	31.4%	37.2%	10.6%	3.9%	34.6%	5.4x	5.2x	15.7x	15.0x	27.4x
	Thomson Reuters	TRI-CA	\$38,026	\$31,116	89.7%	(0.4%)	8.1%	(7.1%)	2.6%	30.0%	3.4x	3.3x	11.2x	10.7x	30.2x
	Moody's	мсо	\$33,514	\$28,208	95.9%	56.6%	54.1%	17.6%	10.0%	47.7%	8.2x	7.4x	17.2x	15.5x	53.3x
	MSCI	MSCI	\$12,903	\$11,396	96.9%	60.6%	166.7%	18.0%	10.5%	52.0%	10.2x	9.2x	19.6x	17.2x	37.8x
Data &	SS&C Technologies	SSNC	\$10,710	\$8,333	95.2%	41.5%	38.4%	67.5%	5.8%	40.9%	6.4x	6.0x	15.6x	14.1x	38.6x
Analytics	FactSet Research Systems	FDS	\$7,970	\$7,539	93.0%	17.9%	37.0%	20.9%	9.0%	33.4%	6.3x	5.8x	18.9x	17.1x	29.6x
	Dun & Bradstreet	DNB	\$5,672	\$4,376	94.3%	(2.4%)	(2.1%)	7.3%	2.7%	28.2%	3.2x	3.1x	11.4x	11.0x	22.3x
	Fair Isaac Corporation	FICO	\$5,439	\$4,594	95.8%	28.5%	111.9%	11.6%	6.6%	27.4%	5.7x	5.4x	20.9x	19.6x	38.5x
	DST Systems	DST	\$4,328	\$3,738	98.4%	15.9%	31.9%	(29.3%)	8.9%	21.3%	2.2x	2.0x	10.2x	9.0x	9.3x
	Broadridge Financial Solutions	BR	\$11,855	\$10,557	98.0%	36.6%	96.1%	50.1%	3.5%	18.3%	2.8x	2.7x	15.4x	14.0x	31.6x
AMT	Fidessa group	FDSA-GB	\$1,239	\$10,337	98.7%	21.1%	(8.1%)	5.4%	0.8%	22.8%	2.6x	2.7x 2.6x	13.4x 11.4x	14.0x	25.1x
Asset Manages		1D3A-GB	\$10,710	\$8,333	95.9%	28.5%	37.2%	11.6%	5.8%	30.0%	5.4x	5.2x	15.6x	14.1x	30.2x
Asset Mundgen	ment & Trading Median		\$10,710	ఫ 0,ააა	73.7%	20.3%	31.2%	11.0%	3.0 %	30.0%	3.4X	3. 2 X	15.0%	14.1X	3U.∠X

INSTITUTIONAL SOLUTIONS - TRANSACTION ACTIVITY

SELECT RECENT M&A TRANSACTIONS¹

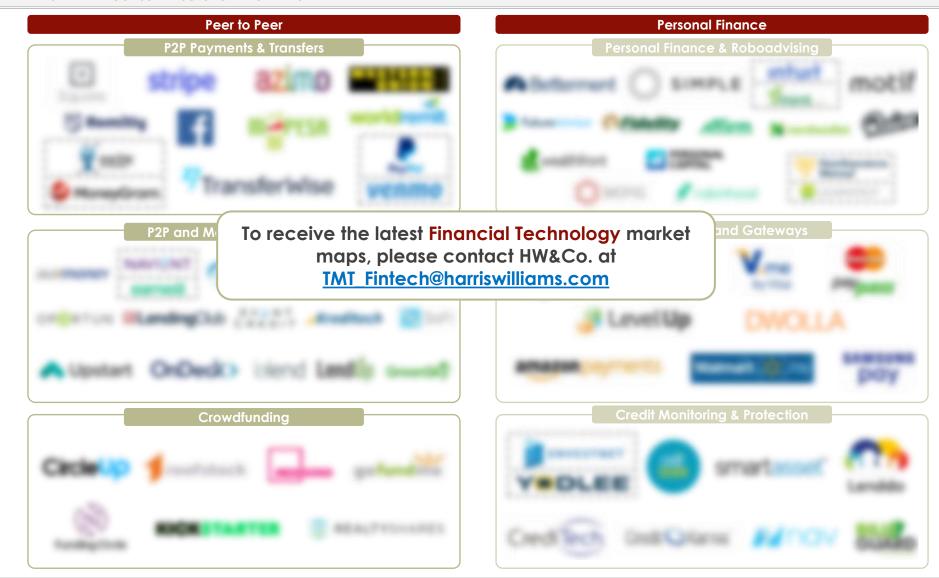
Announced Date	Target/Issuer	Buyer	Description	Enterprise Value (\$m)
12/05/2017	Velocity Solutions	H.I.G. Capital	Provider of revenue enhancement solutions to financial institutions.	NA
11/29/2017	Ensenta	Jack Henry & Associates	Provider of cloud-based solutions for mobile and online payments and deposits.	NA
11/22/2017	Dealogic (Holdings)	ION Investment Group	Provider of a SaaS-based financial content and analytics platform.	NA
11/02/2017	Holdingsinsight	Dynamo Software	Provider of portfolio investments data capture and reporting services.	NA
10/31/2017	Modestspark LLC	SS&CTechnologies	Provider of a digital service platform for financial advisors & wealth management firms.	NA
10/24/2017	GTreasury	Mainsail Partners	Provider of integrated treasury management systems.	NA
10/02/2017	Dynamo Software	Francisco Partners Management	Provider of cloud-based customer relationship management solutions.	NA
09/07/2017	Institutional Shareholder Services	Genstar Capital	Provider of corporate governance and responsible investment solutions.	\$720
09/05/2017	eVestment Alliance	Nasdaq	Provider of a data and analytics platform for institutional investors.	\$705
08/31/2017	Velocify	Ellie Mae	Provider of sales software for mortgage providers.	\$128
08/21/2017	Sequel Business Solutions	Verisk Analytics	Provider of commercial and specialty insurance software.	\$321
08/21/2017	Dovetail Systems	Fiserv	Provider of payment processing systems for banks.	NA
06/28/2017	LoyaltyExpress	New Capital Partners	Provider of marketing automation and cloud-based CRM solutions for banks.	NA
06/27/2017	Cachematrix Holdings	BlackRock	Provider of SaaS cash management and liquidity solutions for financial institutions.	NA
05/30/2017	Comergence Compliance Monitoring	Optimal Blue	Provider of compliance and risk software for mortgage lenders.	NA

SELECT RECENT PRIVATE PLACEMENT TRANSACTIONS⁴

Announced Date	Target/Issuer	Investor(s)	Description	New Money (\$m)
12/14/2017	Simility	Accel, PayPal	Provider of adaptive fraud prevention solutions.	\$18
12/13/2017	INSIKT	Grupo Coppel, First Mark Capital	Provider of white-label credit and loan management platform.	\$50
12/06/2017	BitPay	Aquiline Capital Partners	Provider of a blockchain payments technology platform.	\$30
12/04/2017	Elsen	Accomplice	Provider of a PaaS-based trading platform.	\$2
11/16/2017	Gainfully, Inc.	MassMutual Ventures	Provider of an online marketing platform for financial professionals.	\$3
11/15/2017	Health IQ Insurance Services	Andreessen Horowitz	Provider of life insurance services for health conscious individuals.	\$35
10/23/2017	Shift Technology	Accel, General Catalyst	Provider of a data security platform to improve insurance claims processes.	\$28
10/11/2017	eShares	Menlo Ventures, Social Capital	Provider of capitlization table management and valuation software.	\$42
09/27/2017	LendKey	North Atlantic Capital, DFJ, Updata	Provider of cloud-based lending solutions for financial institutions.	NA
09/11/2017	Applied Systems	Stone Point Capital	Provider of cloud-based insurance systems management and automation software.	NA
08/11/2017	Coinbase	Battery Ventures	Provider of a digital currency platform for bitcoin transactions	\$108
08/08/2017	Guideline	Felicis	Provider of 401(k) software solutions for SMBs.	\$15
08/02/2017	PeerlQ	Heast; TransUnion	Provider of data and analytics for marketplace lending securitization.	\$12
07/27/2017	Star Compliance	Luminate Capital	Provider of enterprise compliance and regulatory software.	NA
07/12/2017	Bestow	New Enterprise Associate	Provider of on-demand life insurance platform.	\$3

CONSUMER SOLUTIONS - LANDSCAPE

REPRESENTATIVE CONSUMER SOLUTION PROVIDERS



CONSUMER SOLUTIONS - TRADING COMPARABLES

VALUATION1

As of December 31, 2017 (\$ in millions)

Tilliecii			Lillerpinse	Marker	/0 OI J2	1-1 Gui Siock	J- I Edi Siock	Kevelloe	GIOWIII	ZOI/ LDIIDA		Lillerpiis	= value /	/	THCC/
Sub-Vertical	Company	Ticker	Value	Capitalization	Week High	Performance	Performance	2017	2018E	Margin	2017 Rev.	2018E Rev.	2017 EBITDA	2018E EBITDA	Earnings
						er to Peer									
	PayPal	PYPL	\$85,116	\$88,485	92.7%	86.5%	NA	43.1%	18.6%	26.2%	6.6x	5.5x	25.0x	20.9x	57.1x
P2P Transfers	Western Union	WU	\$11,346	\$8,731	83.7%	(12.5%)	6.1%	(0.0%)	1.6%	25.1%	2.1x	2.0x	8.3x	8.5x	41.3x
121 Hansiers	Square	SQ	\$12,777	\$9,321	70.0%	154.4%	NA	(23.6%)	31.7%	14.0%	13.2x	10.0x	94.0x	51.9x	NA
	Green Dot Corporation	GDOT	\$2,482	\$3,062	91.5%	155.9%	194.1%	27.2%	11.8%	22.9%	2.8x	2.5x	12.3x	10.5x	43.7x
Marketplace	LendingClub	LC	\$1,004	\$1,713	60.9%	(21.3%)	(83.7%)	(41.2%)	20.3%	7.6%	1.7x	1.5x	23.0x	12.0x	NA
Lending	On Deck Capital	ONDK	\$1,025	\$423	90.3%	24.0%	(74.4%)	37.5%	11.2%	1.5%	2.9x	2.6x	NM	34.2x	NA
Peer to Peer M	Nedian		\$2,482	\$3,062	83.7%	24.0%	6.1%	11.8%	11.8%	17.2%	2.8x	2.5x	17.7x	12.0x	42.5x

				Perso	onal Finar	nce & Mob	ile Wallets								
Personal Fin.	Intuit	INTU	\$40,490	\$40,336	97.7%	37.7%	71.1%	20.4%	9.9%	37.9%	7.5x	6.8x	19.8x	17.9x	42.4x
	Apple	AAPL	\$930,243	\$860,882	95.5%	46.1%	53.3%	3.6%	14.5%	31.3%	3.9x	3.4x	12.4x	10.7x	18.4x
Mobile	Microsoft	MSFT	\$617,403	\$659,906	97.8%	37.7%	84.2%	15.8%	8.9%	39.5%	6.1x	5.6x	15.4x	13.8x	29.1x
Wallets	Amazon.com	AMZN	\$596,594	\$563,535	96.4%	56.0%	276.8%	65.4%	28.7%	10.7%	3.4x	2.6x	31.4x	23.0x	296.8x
	Facebook	FB	\$483,327	\$420,821	95.8%	53.4%	126.2%	124.4%	33.2%	65.4%	12.0x	9.0x	18.4x	14.9x	34.2x
Personal Finan	nce & Mobile Wallet Median		\$596,594	\$563,535	96.4%	46.1%	84.2%	20.4%	14.5%	37.9%	6.1x	5.6x	18.4x	14.9x	34.2x

CONSUMER SOLUTIONS - TRANSACTION ACTIVITY

SELECT RECENT M&A TRANSACTIONS¹

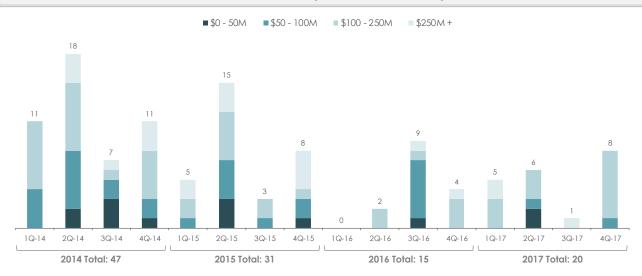
Announced Date	Target/Issuer	Buyer	Description	Enterprise Value (\$m)
11/14/2017	Jwaala	Alogent Corp.	Provider of online banking services.	NA
11/13/2017	Credit Shop	Varde Partners	Provider of personal loans to consumers.	NA
11/07/2017	Vault Investments	Acorns Grow	Provider of a digital investing platform for small business retirement plans.	NA
10/16/2017	Trigger Finance	Circle Internet Financial	Provider of a mobile investing platform.	NA
10/05/2017	Wealthify	Aviva Plc	Provider of online investment advisory services.	NA
10/04/2017	Earnest	Navient Corp.	Provider of merit-based loan services.	\$155
08/30/2017	CashStar	Blackhawk Network	Provider of a cloud-based digital gift card marketplace.	\$175
03/29/2017	GiveForward	YouCaring	Provider of an online fundraising platform.	NA
03/27/2017	Fit Pay	NXT-ID	Provider of a contactless payments platform for wearables and IoT devices.	NA
03/01/2017	OrderAhead	Square	Provider of a mobile application for on-demand delivery of food.	NA
02/22/2017	Tilt.com	Airbnb	Provider of a social crowdfunding platform.	\$62
02/01/2017	ZenBanx Holding	Social Finance	Provider of an international, multi-currency mobile banking platform.	\$100
01/30/2017	UniRush	Green Dot	Provider of prepaid debit card solutions.	\$151
12/13/2016	AFJC	Credit Karma	Provider of online individual tax filing services.	NA
11/20/2016	LifeLock	Symantec	Provider of theft identity protection services.	\$2,096

SELECT RECENT PRIVATE PLACEMENT TRANSACTIONS⁴

Announced Date	Target/Issuer	Investor(s)	Description	New Money (\$m)
12/11/2017	BitGo	Valor Equity	Provider of a mulit-signature secure digital wallet.	\$43
12/11/2017	Affirm	GIC, Khosla Ventures, Lightspeed Ventures	Provider of instant loans for online purchases.	\$200
12/07/2017	WorldRemit	LeapFrog, TCV, Accel	Provider of an online digital money transfer platform.	\$40
12/05/2017	Earny	Mayfield	Provider of automated price drop protection and cash back solutions.	\$9
12/05/2017	Swift Prepaid Solutions	Bain Capital Ventures, Silversmith Capital	Provider of prepaid services for global incentive and reward programs.	NA
11/09/2017	WeLab	Alibaba	Provider of marketplace mobile lending services.	\$220
11/09/2017	Broker Genius	Volition Capital	Provider of a dynamic pricing technology platform for the secondary ticket market.	\$15
11/06/2017	Monzo	Goodwater Capital, Stripe	Provider of mobile-only banking services.	\$93
11/02/2017	TransferWise	Old Mutual, IVP, Mitsui	Provider of a money transferring platform to send money abroad.	\$280
10/31/2017	Remitly	PayU, Stripes Group	Provider of a mobile payment platform to send money to peers electronically.	\$115
10/25/2017	Credit Sesame	Menlo Ventures	Provider of an online credit and loan management platform.	\$42
10/24/2017	Jiko	Upfront Ventures	Provider of a private computational banking system.	\$8
10/10/2017	Visor	Obvious Ventures, Social Capital	Provider of an online tax filing and advisory service.	\$7
09/28/2017	Feidee	KKR	Provider of mobile applications for personal financial management.	\$200
09/27/2017	Chime	Cathay Capital	Provider of mobile-first banking solutions.	\$18

SUMMARY OF TECHNOLOGY IPOS

RECENT U.S. TECHNOLOGY IPO ACTIVITY (BY OFFERING SIZE)1

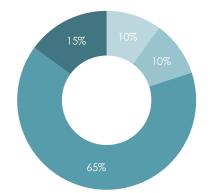


- Technology IPOs rebounded in 4Q 2017 after the underperformance of Snap and Blue Apron in 3Q 2017, which caused many potential IPO candidates to re-evaluate timing.
- As the stock market completes one of its best years in history, driven largely by outperforming technology stocks, both technology startups and unicorns are increasingly viewing the public markets as a potentially interesting source of liquidity.
- Notable technology companies such as Spotify and Dropbox, both who have already filed for an IPO, will test the IPO markets in 2018.

OFFERING SIZE AT IPO (LTM) 1

(All tech IPOs over the last 12 months)

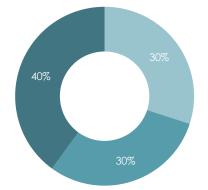




MARKET CAP AT IPO (LTM) 1

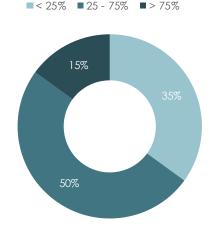
(All tech IPOs over the last 12 months)





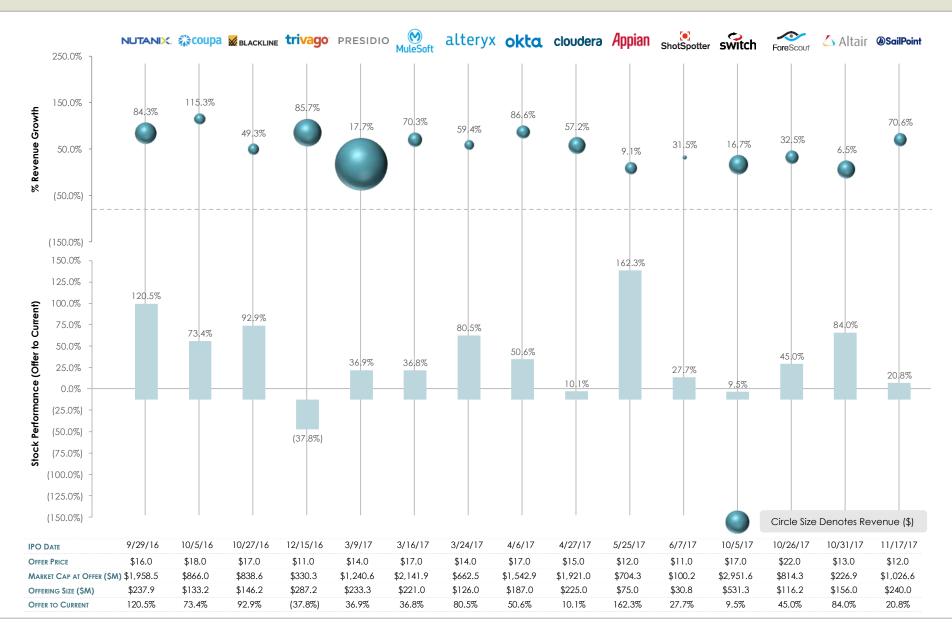
REVENUE GROWTH (1YR PRIOR TO IPO) 1

(All tech IPOs over the last 12 months)





KEY PERFORMANCE METRICS FOR RECENT SOFTWARE IPOS¹



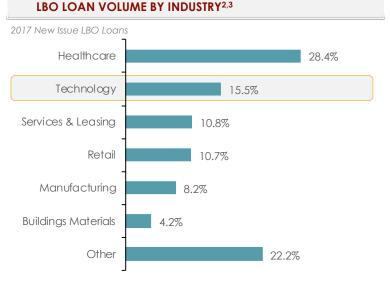
DEBT MARKET OVERVIEW

- Median middle market LBO loan multiples in 2017 increased slightly to 5.5x leverage.
- Middle market LBO loan volume decreased to \$1.1 billion in 4Q 2017, bringing total volume in 2017 to \$6.8 billion.



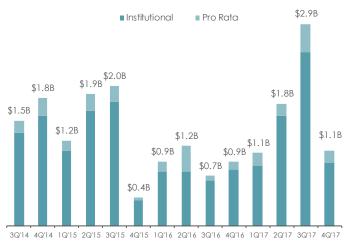


Median LBO debt percentages increased slightly to 53% of total purchase price in 2017.



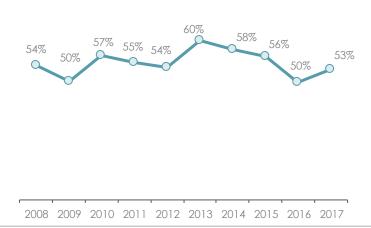
MIDDLE MARKET LBO VOLUME BY QUARTER^{2,3}

Defined as Issuers with EBITDA of \$50 Million or Less



MEDIAN LBO DEBT PERCENTAGES⁴

Percentage of Total Purchase Price





SELECT HW&CO. TMT TRANSACTIONS









































































































































































































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HARRIS WILLIAMS & CO. OFFICE LOCATIONS

UNITED STATES

Boston

One International Place Suite 2620 Boston, Massachusetts 02110 Phone: +1 (617) 482-7501

Cleveland

1900 East 9th Street 20th Floor Cleveland, Ohio 44114 Phone: +1 (216) 689-2400

Minneapolis

222 South 9th Street Suite 3350 Minneapolis, Minnesota 55402 Phone: +1 (612) 359-2700

Richmond (Headquarters)

1001 Haxall Point 9th Floor Richmond, Virginia 23219 Phone: +1 (804) 648-0072

San Francisco

575 Market Street 31st Floor San Francisco, California 94105 Phone: +1 (415) 288-4260

Washington, D.C.

800 17th St. NW 2nd Floor Washington, D.C. 20006 Phone: +1 202-207-2300

EUROPE

Frankfurt

Bockenheimer Landstrasse 33-35 60325 Frankfurt Germany

Phone: +49 069 3650638 00

London

63 Brook Street London W1K 4HS, England Phone: +44 (0) 20 7518 8900

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SOURCES

- 1. FactSet.
- 2. PNC Capital Markets.
- 3. S&P LCD stats.
- 4. PitchBook.

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