

Ascentage

Market Update

Technology for the Built Environment

September 2023



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Built Environment Overview

Companies Featured and Solutions Explored

Featured Companies



Inclusion Criteria

Ascentage Advisors is a leading corporate development and M&A advisory firm addressing the strategic and tactical business needs of growth-stage technology companies serving the built environment. With a 20+ year track record and international coverage, Ascentage's domain expertise spans across design, construction, infrastructure, asset and energy management.

Ascentage's comprehensive knowledge of the market is built on consistent strategic dialogue with boards and executives at both emerging players and established incumbents, as well as regular ideation with global investors with a vested interest in the market.

For 2023, our annual update provides a broad overview of this vibrant ecosystem. In addition, we've chosen to spotlight three key areas with exceptional growth and investor interest:

- Preconstruction
- Infrastructure
- Construction Automation

Referenced Solutions

- | | | | | |
|---|--|---|--|--|
| ✓ Building Information Modeling (BIM) | ✓ Geospatial Information Systems (GIS) | ✓ Project management/collaboration | ✓ Sustainable/new materials, including 3D printing | ✓ ERP, supply chain and payments |
| ✓ Mobile field supervision and service management | ✓ Project planning, estimating, scheduling bidding and budgeting | ✓ Pre-fabrication, modular and offsite construction | ✓ Reality capture: IoT, lidar, and photogrammetry | ✓ Facility, energy and infrastructure asset management |

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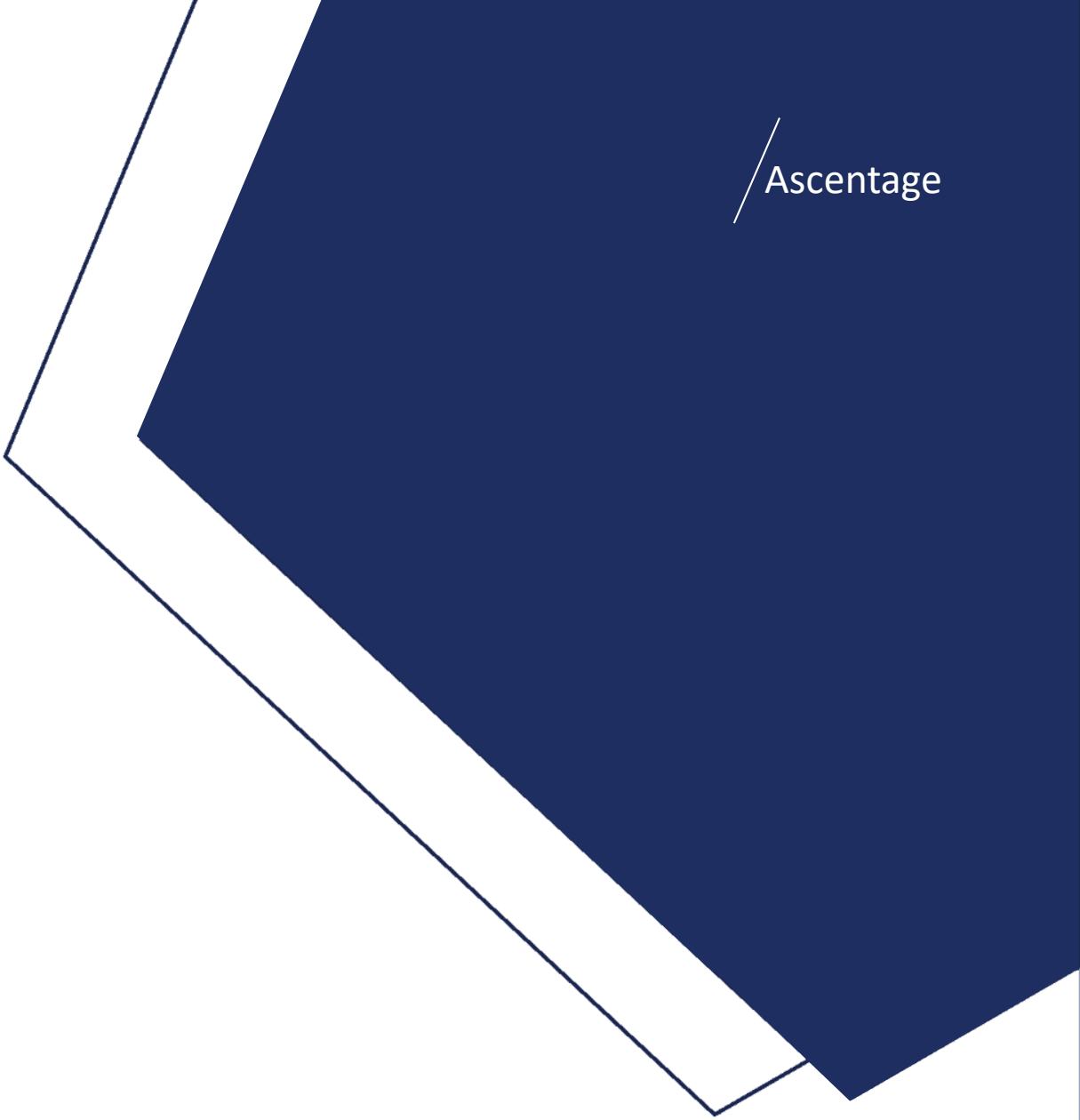
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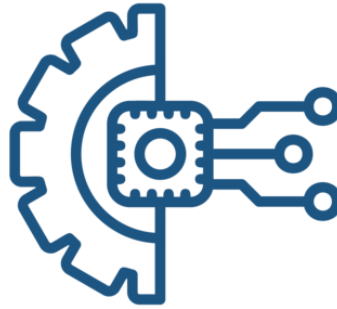
I.



Industry Trends

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Artificial Intelligence solutions including machine learning and computer vision, bring predictive insights and alternatives generation to expert-centric processes, promising improvements in cost, quality and safety

These technologies are being applied across the spectrum of the built environment, including:

- Generative design
- Advanced scheduling and progress tracking
- Construction safety management
- Predictive asset maintenance

Automation in the form of robotics and industrialized construction solutions

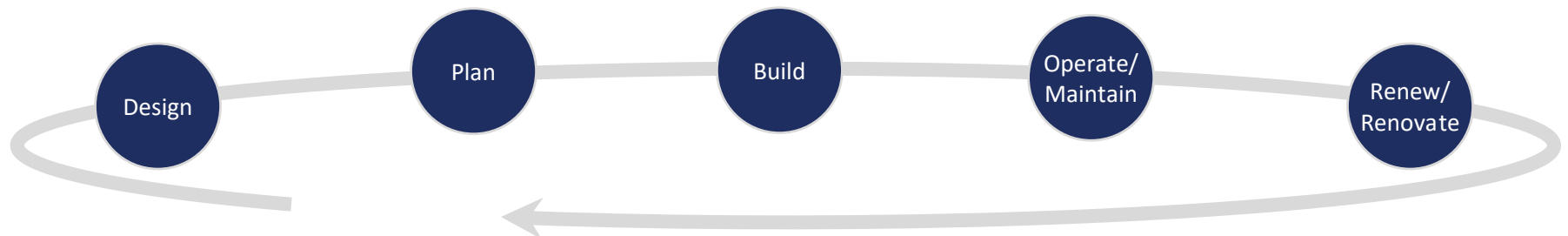
Robotics, drones and autonomous heavy equipment promise increased productivity, enhanced safety and reduced costs.

Off-site production, pre-fabrication and modular building technologies reduce costs, increase quality and speed construction

These technologies drive ever greater benefits in an industry plagued by skilled labor shortages.

Asset Management solutions which improve the operational performance of new and existing built assets, leveraging a combination of digital twin technologies, IoT sensors and advanced software:

- Building and facilities management
- Occupant experience solutions
- Energy management, carbon reduction and ESG reporting
- Horizontal infrastructure solutions for transportation, utilities and oil & gas

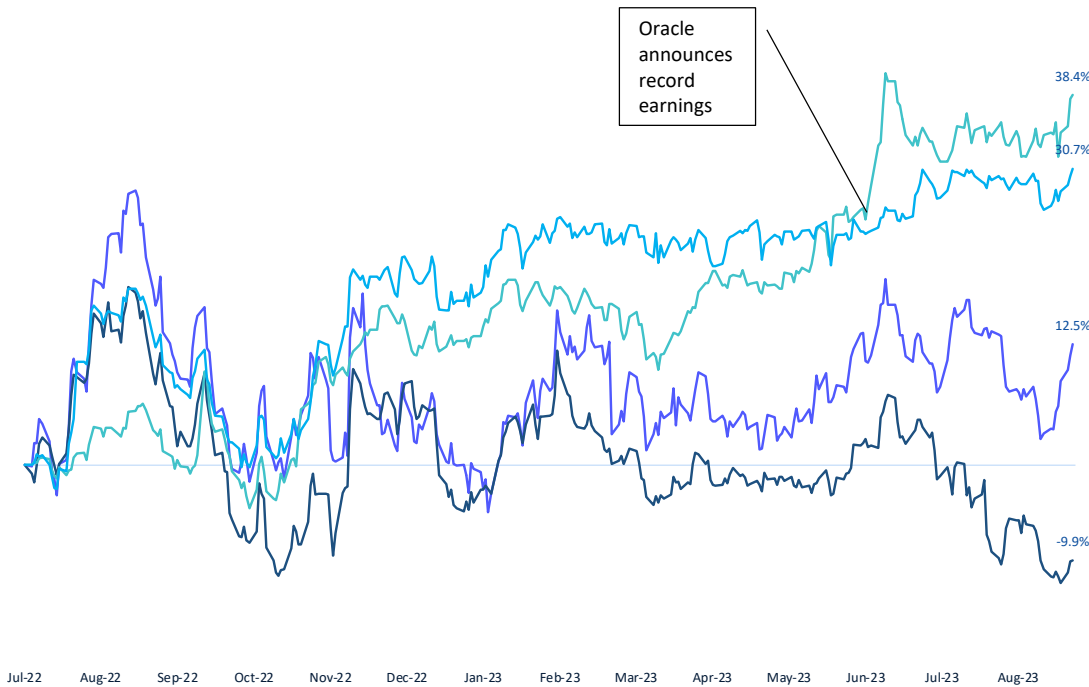


Valuation Environment

Improving Public Market Valuations Bode Well

Public Company Forward Revenue Valuation Trending

EV / NTM Revenue Multiple Valuation Benchmark (July 1, 2022 – August 31, 2023)



















Index Group	Multiple Growth	Avg. EV / CY23E Rev.	CY23E Rev. Growth
Design/Construction	12.5%	10.1x	14.4%
GIS/Hardware	-9.9%	2.8x	3.3%
Industrial Technology	30.7%	5.8x	8.8%
ERP/Horizontal	38.4%	5.2x	7.8%

Group	Companies
Design / Construction	AUTODESK, Bentley, NEMETSCHKE GROUP, PROCORE
GIS/ Hardware	FARO, HEXAGON, TOPCON, Trimble
Industrial Technology	FORTIVE, ROPER, Schneider Electric
ERP/ Horizontal	IBM, ORACLE, sage

Strategic Activity – Select Transactions (1 of 2)

Serial Acquirers Continue to Invest in Built Environment Solutions ...

Acquirer	Target	Date	Target Description	Comments and Observations
 AUTODESK	 UNIFI	Mar 23	<ul style="list-style-type: none"> BIM content lifecycle solutions 	<ul style="list-style-type: none"> Solution for organizing, accessing and managing content in Revit, Civil 3D, Plant 3D and other design tools
 Bentley	 blynCSY	Aug 23	<ul style="list-style-type: none"> AI computer vision solution for assessing road conditions 	<ul style="list-style-type: none"> To be integrated with infrastructure asset solutions
	 EasyPower <small>Power made easy.</small>	Feb 23	<ul style="list-style-type: none"> Design and analysis tools for electrical engineering 	<ul style="list-style-type: none"> Follows 2022 acquisition of Power Line Systems and integrates with power distribution and other infrastructure engineering solutions
	 MINERVA INTELLIGENCE	Dec 22	<ul style="list-style-type: none"> Geology division of AI climate risk platform 	<ul style="list-style-type: none"> Mining solution to be integrated with Seequent – acquired in 2021
	 eagle.io	July 22	<ul style="list-style-type: none"> IoT solution for environmental monitoring 	<ul style="list-style-type: none"> Complements earlier IoT acquisitions of Sensemetrics and Vista Data Vision
 FARO	 SiteScape	Dec 22	<ul style="list-style-type: none"> iOS powered LiDAR 3D scanning solution 	<ul style="list-style-type: none"> Reality capture targeted toward AEC and O&M markets
	 GeoSLAM	Sept 22	<ul style="list-style-type: none"> Mobile simultaneous localization and mapping (SLAM) software solution 	<ul style="list-style-type: none"> \$45M acquisition complements existing photo and laser data capture solutions
 HEXAGON	 HARD-LINE	July 23	<ul style="list-style-type: none"> Mine safety, automation and underground management solution 	<ul style="list-style-type: none"> Enhances mining-specific technology stack
	 Projectmates	Jan 23	<ul style="list-style-type: none"> Construction program management 	<ul style="list-style-type: none"> Owner-focused solution complements HxGN SmartBuild, used primarily by GCs
	 LocLab <small>THE DIGITAL TWIN COMPANY</small>	Oct 22	<ul style="list-style-type: none"> 3D digital twin content creation consulting firm 	<ul style="list-style-type: none"> Fits with existing reality capture and design software solutions
	 AVVIR	Oct 22	<ul style="list-style-type: none"> AI computer vision solution for construction 	<ul style="list-style-type: none"> Fits with BricsCAD and other BIM tools, as well as OxBlue camera solution acquired in 2021
	 iConstruct	Sept 22	<ul style="list-style-type: none"> BIM software solution 	<ul style="list-style-type: none"> Continuation of Digital Twin strategies































Strategic Activity – Select Transactions (2 of 2)

... Leading to Record-Breaking Year in Terms of Number of Acquisitions

Acquirer	Target	Date	Target Description	Comments and Observations
 ORACLE	 NEWMETRIX	Dec 22	<ul style="list-style-type: none"> AI/computer vision solution for construct 	<ul style="list-style-type: none"> Brings AI team and capabilities to Oracle construction
	 Corecon technologies	May 23	<ul style="list-style-type: none"> Construction management solution 	<ul style="list-style-type: none"> Forward integration by construction ERP market leader into operational software
		Oct 22	<ul style="list-style-type: none"> Carbon accounting software 	<ul style="list-style-type: none"> Targeted toward efforts of SMBs to measure and reduce carbon footprint
		July 23	<ul style="list-style-type: none"> International consulting and project development firm focused on sustainability 	<ul style="list-style-type: none"> Acquisition from Atos consulting – integrated with Schneider’s sustainability consulting division
		Jan 23	<ul style="list-style-type: none"> Industrial software solutions 	<ul style="list-style-type: none"> Completion of all shares in formerly UK-listed firm
		Sept 22	<ul style="list-style-type: none"> Vegetation management solution for electrical utilities 	<ul style="list-style-type: none"> Acquisition and integration of startup funded by SE Ventures
		July 23	<ul style="list-style-type: none"> Wireless technology solutions 	<ul style="list-style-type: none"> Integration with high-accuracy positioning systems for industrial and energy applications
		Mar 23	<ul style="list-style-type: none"> Data and systems integration solutions for construction 	<ul style="list-style-type: none"> Acquisition of Bentley’s share in former JV
		Apr 23	<ul style="list-style-type: none"> Transportation/supply chain management solution 	<ul style="list-style-type: none"> \$2.0B acquisition represents new line of business for Trimble
		Jan 23	<ul style="list-style-type: none"> Software integration platform for AEC industry 	<ul style="list-style-type: none"> Provides Trimble Construction One customers with access to integration, data mapping and automation options
		Sept 22	<ul style="list-style-type: none"> Estimating and operational solution for heavy civil construction 	<ul style="list-style-type: none"> Expands Trimble portfolio in civil/infrastructure vertical

Select Construct Tech M&A Transactions

Private Equity Firms Play Increased Role in Ecosystem



























Investor	Acquirer	Target	Date	Target Description	Comments and Observations
			July 23	<ul style="list-style-type: none"> E-learning solution for AEC sector 	<ul style="list-style-type: none"> Consolidation of e-learning platform focused on architects, engineers and contractors (i)
			July 23	<ul style="list-style-type: none"> Construction ERP solution 	<ul style="list-style-type: none"> To be integrated with OnTrack tool management and Fieldwire field management (later acquired in 2021)
			July 23	<ul style="list-style-type: none"> Facility management solution for HVAC and electrical contractors 	<ul style="list-style-type: none"> Bolt-on acquisition follows \$93M fundraising led by Fika and Next 47 (Siemens) in May 2023
			June 23	<ul style="list-style-type: none"> Construction asset and workforce management solutions 	<ul style="list-style-type: none"> Follows LBO by Summa Equity in 2019
			May 23	<ul style="list-style-type: none"> Construction time and attendance solution 	<ul style="list-style-type: none"> Acquisition of long-standing player by construction ERP solution
			Apr 23	<ul style="list-style-type: none"> Project information management solution 	<ul style="list-style-type: none"> Acquisition by Ethos from Battery Ventures, which acquired Newforma in 2017
			Feb 23	<ul style="list-style-type: none"> Jobsite access control and construction workforce management 	<ul style="list-style-type: none"> Acquisition follows 2020 acquisition of Biosite; note that CrewSight acquired from Trimble
			Feb 23	<ul style="list-style-type: none"> Field/service operations solution (fka Key2Act) 	<ul style="list-style-type: none"> Acquisitions by buy and hold software conglomerate from LLR private equity
			Feb 23	<ul style="list-style-type: none"> Design and construction document management solution 	<ul style="list-style-type: none"> Integrated with Cmap project management solution
			Jan 23	<ul style="list-style-type: none"> Robotic concrete solutions 	<ul style="list-style-type: none"> Product line extension by leading autonomous construction equipment firm
			Dec 22	<ul style="list-style-type: none"> Geospatial mapping solutions 	<ul style="list-style-type: none"> \$700M public to private LBO of Australian market leader
			Dec 22	<ul style="list-style-type: none"> Construction project management platform 	<ul style="list-style-type: none"> Combination of project management and horizontal ERP solution

(i) Ascentage advised transaction

Sources: Pitchbook, LinkedIn, company websites, press releases

Select Construct Tech Investor Activity

Strong Re-ignition of Venture Activity Beginning in Late Spring 2023

Lead Investor	Target	Date	Target Description	Deal Type	Amount Raised ⁽ⁱ⁾	Pre-Money Valuation ⁽ⁱ⁾	Amount Raised To-Date ⁽ⁱ⁾
		Aug 23	Construction reality capture solution	Series A	n/a	n/a	n/a
		July 23	Construction workforce management solution	Later Stage	\$7.0	n/a	\$43.3
		July 23	Green concrete solution – reduces carbon content	Series F	\$80.0	n/a	\$91.2
		July 23	Construction workforce management solution	Seed	\$9.9	\$15.0	\$9.9
		July 23	Construction staffing solution	Seed	\$8.5	\$10.0	\$8.5
		June 23	Generative design platform solution	Series A	\$5.5	\$10.0	\$8.3
		June 23	Construction change order solution (fka ExTracker)	Series A	\$5.5	\$28.0	\$14.3
		June 23	Construction logistics platform solution	Series B	\$42.0	\$120.0	\$50.8
		May 23	Platform solution to manage compliance to government building codes	Series A	\$3.5	\$30.0	\$7.6
		May 23	Sustainability data management platform for real estate	Series D	\$93.0	\$340.0	\$193.6
		May 23	Construction logistics software solution	Seed	\$2.0	\$4.0	\$2.1
		May 23	Sustainability tracking solution for construction supply chain	Series A	\$7.9	n/a	\$11.6
		Apr 23	AI reality capture construction management solution	Series B	\$10.0	\$52.5	\$23.9

Sources: Pitchbook, corporate websites, press releases

(i) \$ in millions

Spotlight – Preconstruction (1 of 2)













Increasing Number of PE-, Venture- and Founder-Backed Firms










Targeting Long-Standing Strategies

	Bid Management/ Prequalification	Estimating/ Quantity Takeoff	Scheduling/ Modeling and Simulation
<p>Publicly Listed Incumbents</p> <p>Desktop or client-server solutions, and/or prior acquisitions by major player</p>	<p>Soliciting, receiving and aggregating estimates for scopes of work, and qualifying subcontractors</p>	<p>Assessing the scope of labor, materials, equipment, schedule duration and overall costs</p>	<p>Analyzing and coordinating project activities</p>
<p>PE-Backed Insurgents</p> <p>Mixed technologies</p>			
<p>Contractor-Backed</p>			
<p>Emergent/Growth Technologies</p> <p>Privately held SaaS solutions, often leveraging AI</p>			

Spotlight – Preconstruction (2 of 2)

Strong Investment and M&A Activity in Preconstruction Solutions

Lead Investor	Target	Date	Target Description	Deal Type	Amount Raised ⁽ⁱ⁾	Pre-Money Valuation ⁽ⁱ⁾	Amount Raised To-Date ⁽ⁱ⁾
	TRUEBUILT	May 23	Construction bid management solution	Seed	\$4.0	\$10.0	\$4.0
EURAZEO	 SWAPP	May 23	AI construction planning/scheduling solution	Series A	\$11.5	n/a	\$21.3
 SORENSEN	 planera	May 23	Construction planning/scheduling solution	Seed	\$5.3	\$14.0	\$5.3
 VANEDGE CAPITAL	 ALICE TECHNOLOGIES	Apr 23	AI construction planning/scheduling solution	Series B	\$47.0	\$81.2	\$69.0
 Florida Funders	 TOGALAI	Mar 23	AI preconstruction solution	Early Stage	\$5.0	\$45.0	\$5.4
 SignalFire	 Join	June 22	Pre-construction collaboration solution	Series A	\$16.0	\$64.0	\$28.2
 INSIGHT PARTNERS	 Outbuild	June 22	Construction planning/scheduling solution (fka Proplanner and Ipsum)	Seed	\$2.2	\$10.0	\$3.8
Avenir	 cosuno	Feb 22	Construction bid management solution	Series B	\$30.0	\$120.0	\$45.2

Investor	Acquirer	Target	Date	Target Description	Comments and Observations
	 BYGGFAKTA GROUP	 Pantera Global Technology	Apr 23	Construction bid management solution	Acquisition by European construction info conglomerate – part of US entry strategy
	 Trimble	 B2W	Sept 22	Estimating and operational solution for heavy civil construction	Expands Trimble portfolio in civil/infrastructure vertical
	 AUTODESK	 ProEst	Dec 21	Construction estimating and digital takeoff solution	Part of Autodesk Construction Cloud design/construction integration strategy
 THOMABRAVO	 FOUNDATION	 estimating EDGE	Dec 21	Estimating software for general contractors and subcontractors	Part of construction roll-up strategy – see acquisition of AboutTime in March 2023

Sources: Pitchbook, corporate websites, press releases

(i) \$ in millions



















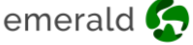







Spotlight – Infrastructure (1 of 2)

Emerging Landscape of Horizontal, Vertical and Point Solutions to Address Growing Global Opportunities

	Transportation Road and Rail Tunnels and Bridges	Power Renewable, T&D	Telecom	Water and Sewer	Oil and Gas
Design Engineer GIS/location + reality capture + software	 	 			
Construct Productivity via integrated software solutions					
Operate/ Maintain IoT monitoring and inspection		 		 	

Spotlight – Infrastructure (2 of 2)

Strong Interest from Strategic and Financial Investors in Infrastructure Solutions


Lead Investor	Target	Date	Target Description	Deal Type	Amount Raised ⁽ⁱ⁾	Pre-Money Valuation ⁽ⁱ⁾	Amount Raised To-Date ⁽ⁱ⁾
 AUTODESK	 Transcend	Aug 23	Generative design solution for infrastructure	Series B	\$20.0	n/a	\$33.2
 INSIGHT PARTNERS	 Wint	Aug 23	AI water management solution	Series C	\$35.0	n/a	\$50.0
 B OF W RIVER CAPITAL	 VITRUI	July 23	Project management solution for infrastructure (aka Fresnel Software)	LBO/Recap	n/a	n/a	n/a
 RESOLVE	 VETRO	Mar 23	Planning, operations and network management solution for fiber operators	Series B	\$7.0	n/a	\$22.8
 GoPoint Ventures	 Buzz Solutions	Dec 22	AI power transmission and distribution line solution	Seed	\$3.3	\$18	\$5.8
 Oalixis	 Opti	Oct 22	Stormwater management solution – acquired by German plumbing components conglomerate	M&A	n/a	n/a	n/a
 ENERGIZE VENTURES	 SITETRACKER	Sept 22	Construction project and asset management solution for infrastructure	Series D	\$96.5	\$320.0	\$207.5
 groundbreak VENTURES	 AIRWORKS	July 22	Data extraction and mapping of aerial data	Series A	\$6.0	n/a	\$11.1
 PINE BROOK	 transect	Mar 22	Environmental due diligence solution	Series A	\$7.6	\$25.0	\$13.1
 emerald	 SewerAI	Mar 22	AI inspection and analysis of sewer systems	Series A	\$6.0	\$20.0	\$9.5
 Bentley	 Unearth	Oct 21	Location-based construction field management solution	Late Stage	n/a	n/a	\$14.5
 ENERGIZE VENTURES	 Urbint	Aug 21	AI risk management solution for utilities	Series C	\$60.0	\$180.0	\$105.0
 FIFTH WALL	 Assignar	May 21	Construction management solution focus on civil	Series B	\$20.0	\$90.0	\$30.7

Sources: Pitchbook, corporate websites, press releases

(i) \$ in millions


























Spotlight – Construction Automation (1 of 3)

Construction Automation Solutions Taking Numerous Forms from Robotics to Drones to Autonomous Vehicles to Offsite/Modular

	Inspection/QA and Layout	Onsite Construction	Offsite Construction
Vertical Construction/ Buildings	   <p>Robotics and Reality Capture</p>    	    <p>Robotics</p>    	          <p>Robotic Enabled Modular Construction and 3D Printing</p>        
Horizontal Construction/ infrastructure	   <p>Drones and Drone-Enabled Software</p>    	  <p>Autonomous Vehicles and Robotics</p>  	

Spotlight – Construction Automation (2 of 3)

Significant Funding at All Levels Continues to Flow Into Construction Robotics, Drones and Autonomous Construction Equipment Plays

























Lead Investor	Target	Date	Target Description	Deal Type	Amount Raised ⁽ⁱ⁾	Pre-Money Valuation ⁽ⁱ⁾	Amount Raised To-Date ⁽ⁱ⁾
 emerald	 TinyMobileRobots®	July 23	▪ Infrastructure layout robotic solution	Late Stage	\$7.4	n/a	\$10.4
 Energy Innovation Capital	 SafeAI®	May 23	▪ Autonomy solutions for construction equipment	Series B	\$68.0	n/a	\$134.0
 DiamondStream PARTNERS	 wingtra	Mar 23	▪ VTL drone solution	Series B	\$21.9	\$128.7	\$51.9
 Tribeca VENTURE PARTNERS	 ToggleRobotics™	Feb 23	▪ Robotics and automation solutions for rebar	Series A	\$27.7	n/a	\$14.7
 Zacua Ventures	 RAISE ROBOTICS	Jan 23	▪ Construction robotics startup	Seed	\$2.2	n/a	\$2.2
 FIFTH WALL	 KEWAZO	Jan 23	▪ Robotic hoists for scaffolding	Series A	\$10.0	n/a	\$19.0
 LOWERCARBON CAPITAL	 um urban machine	Dec 22	▪ Robotic demolition solution	Seed	\$5.6	n/a	\$7.2
 UP.PARTNERS	 Teleo 	June 22	▪ Autonomy solutions for construction equipment	Series A	\$12.0	\$32.0	\$12.2
 TRIPLEPOINT VENTURE GROWTH	 CANVAS	Aug 22	▪ Construction robotics for drywall	Debt	\$6.5	n/a	\$23.7
 SCALE	 DUSTY ROBOTICS	May 22	▪ Robotics solution for interior layouts	Series B	\$45.5	\$204.5	\$69.2
 TIGERGLOBAL	 BUILT ROBOTICS	Apr 22	▪ Autonomy solutions for construction equipment	Series C	\$64.0	\$300.0	\$112.0
 BRICK & MORTAR VENTURES	 RUGGED ROBOTICS	Mar 22	▪ Robotics solution for interior layouts	Series A	\$9.4	\$32.1	\$11.9

Sources: Pitchbook, Capital IQ, corporate websites, press releases

(i) \$ in millions

Spotlight – Construction Automation (3 of 3)

Investments in Modular Solutions from Diverse Investors at Significantly Higher Valuation Levels

Lead Investor	Target	Date	Target Description	Deal Type	Amount Raised ⁽ⁱ⁾	Pre-Money Valuation ⁽ⁱ⁾	Amount Raised To-Date ⁽ⁱ⁾
		July 23	Multi-family solution – acquired by non-profit foundation	M&A	n/a		
		Apr 23	Modular residential solution	Late Stage	\$95.8		\$231.0
		Mar 23	Robotic solution for offsite residential construction	Seed	n/a	n/a	\$6.5
		Feb 23	Temporary/modular solutions – acquired by publicly listed rental company	M&A	\$400.0		
		Feb 23	Modular residential solution	Crowd	\$4.9	\$3,360.0	\$114.1
		Jan 23	Modular residential solution	Series B	\$107.0		\$235.4
		Dec 22	Modular residential solution	Series C	\$42.0	\$157.0	\$93.1
		July 22	Modular commercial solution	Series A	\$50.0	\$150.0	\$50.0
		July 22	Modular commercial/residential solution	Early Stage	\$50.2	\$1,550.0	\$148.8
		Feb 22	3D printing solution for residential housing	Series B	\$392.0	\$1,600.0	\$443.0
		Feb 22	Modular residential solution	Series D	\$400.0	\$600.0	\$646.5
		Feb 22	3D printing solution for residential housing	Series B	\$50.0		\$112.2

Sources: Pitchbook, corporate websites, press releases

(i) \$ in millions



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II.



Featured Companies

Featured Companies

Leading Built Environment Strategic Players

Profile

News & Notes



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	San Francisco, CA
Employees:	13,500
Website:	www.autodesk.com
Ownership Status:	Public (NAS:ADSK)
Acquisitions Since 2018:	15
TTM Revenue:	\$5,104
Dry Powder:	\$5,213

Why Construction AI, Autodesk Forma and Emerging Intelligent Tools Are Not Skynet
May 2023

Autodesk Acquires Cloud Software Solution UNIFI
March 2023

Autodesk and Epic Games to Deliver Real-Time, Immersive Design Capabilities to Customers
September 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Exton, Pennsylvania
Employees:	5,000
Website:	www.bentley.com
Ownership Status:	Public (NAS:BSY)
Acquisitions Since 2018:	27
TTM Revenue:	\$1,166
Dry Powder:	\$156

Bentley Systems Announces Strategic Agreement with Worldsensing
March 2023

Bentley Systems Founder Keith Bentley to Retire
March 2023

Bentley Systems Launches 'Phase 2' of the Infrastructure Metaverse
November 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Redlands, California
Employees:	5,000
Website:	www.esri.com
Ownership Status:	Private
Acquisitions Since 2018:	5
TTM Revenue:	n/a
Dry Powder:	n/a

Esri Introduces ArcGIS Reality Digital Twin Software
February 2023

NASA/Esri Agreement Enhances Use of NASA Geospatial Data
January 2023

Mapping Giant Esri Moves Further Into Design-Construction Space
July 2022

Featured Companies

Leading Built Environment Strategic Players

Profile



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Lake Mary, Florida
Employees:	1,900
Website:	www.faro.com
Ownership Status:	Public (NAS:FARO)
Acquisitions Since 2018:	7
TTM Revenue:	\$362
Dry Powder:	\$397

News & Notes

FARO Technologies Appoints Peter Lau as President and Chief Executive Officer
June 2023

FARO Acquires SiteScape, a Leader in LiDAR Based Scanning Software
December 2022

FARO Acquires Mobile Scanning Market Leader, GeoSLAM
September 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Everett, Washington
Employees:	18,000
Website:	www.fortive.com
Ownership Status:	Public (NYS:FTV)
Acquisitions Since 2018:	8
TTM Revenue:	\$5,973
Dry Powder:	\$6,452

ServiceChannel Partners with Accruent to Deliver Integrated Real Estate and Facilities Management Solution
June 2023

Fortive Said to Have Bid \$60 a Share for National Instruments
April 2023

RealWear Acquires Genba AI from Fortive
June 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Stockholm, Sweden
Employees:	24,000
Website:	www.hexagon.com
Ownership Status:	Public (STO:HEXA B)
Acquisitions Since 2018:	39
TTM Revenue:	\$5,618
Dry Powder:	\$7,289

Hexagon Acquires Canadian Automation Company Hard-Line
July 2023

Hexagon, Sony Semiconductor Solutions Partner on Reality Capture
June 2023

Hexagon Acquires ProjectMates
January 2023

Featured Companies

Leading Built Environment Strategic Players

Profile



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	New York, New York
Employees:	288,000
Website:	www.ibm.com
Ownership Status:	Public (NYSE:IBM)
Acquisitions Since 2018:	40
TTM Revenue:	\$60,525
Dry Powder:	\$20,049

News & Notes

IBM Sells The Weather Company Assets to Francisco Partners <small>August 2023</small>
EY and IBM Collaborate to Address Complex ESG Challenges <small>March 2023</small>
IBM Journey to More Sustainable Facilities: IBM As Client Zero <small>December 2022</small>



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Munich, Germany
Employees:	3,500
Website:	www.nemetschek.com
Ownership Status:	Public (ETR:NEM)
Acquisitions Since 2018:	2
TTM Revenue:	\$856
Dry Powder:	\$1,473

Vectorworks Connection to NVIDIA Omniverse Expands Designers' Opportunities in the Metaverse <small>March 2023</small>
Nemetschek Group: Strategic Start-Up Investment in Construction Project Analytics Provider SmartPM <small>February 2023</small>
Digitizing Construction Sites: Nemetschek Group invests in Robotic Start-Up KEWAZO <small>January 2023</small>



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ ERP

Headquarters:	Austin, Texas
Employees:	210,000
Website:	www.oracle.com
Ownership Status:	Public (NYS:ORCL)
Acquisitions Since 2018:	24
TTM Revenue:	\$49,954
Dry Powder:	\$25,126

Oracle's Pioneering Test Labs Aim to Solve Some of Real Estate's Biggest Problems <small>February 2023</small>
Oracle Buys Newmetrix to Integrate AI Tech Into Cloud Platform <small>December 2022</small>
Oracle Enhances Smart Construction Platform with New Analytics Capabilities <small>July 2022</small>

Featured Companies

Leading Built Environment Strategic Players

Profile



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Carpinteria, California
Employees:	3,500
Website:	www.procure.com
Ownership Status:	Public (NYS:PCOR)
Acquisitions Since 2018:	8
TTM Revenue:	\$831
Dry Powder:	\$1,114

News & Notes

CLMA Labor Market Analyzer Tools Integrated with Procure
July 2023

Procure Launches Construction Insurance Brokerage to Empower Builders
March 2023

xxx Procure Expands Digital Twin Partnerships Through Integration with Willow
October 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Sarasota, Florida
Employees:	16,000
Website:	www.ropertech.com
Ownership Status:	Public (NAS:ROP)
Acquisitions Since 2018:	7
TTM Revenue:	\$5,782
Dry Powder:	\$8,243

Roper Technologies Announces Move to NASDAQ
June 2023

Roper Technologies to Acquire Frontline Education
August 2022

Roper Technologies to Sell majority Stake in its Industrial Businesses to CD&R
June 2022



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Newcastle, England
Employees:	11,500
Website:	www.sage.com
Ownership Status:	Public (LON:SGE)
Acquisitions Since 2018:	12
TTM Revenue:	\$2,528
Dry Powder:	\$1,949

AWS and Sage Expand Partnership
June 2023

Sage Streamlines Workflows for SMBs in Construction Industry With Corecon Acquisition
May 2023

Sage Acquires Spheric to Help SMBs Measure and Cut Their Carbon Emissions
October 2022

Featured Companies

Leading Built Environment Strategic Players

Profile



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Paris, France
Employees:	160,000
Website:	www.se.com
Ownership Status:	Public (PAR:SU)
Acquisitions Since 2018:	19
TTM Revenue:	\$37,389
Dry Powder:	\$31,217

News & Notes

Schneider Makes Bid Acquires Atos Group's EcoAct Sustainability Consultancy
July 2023

Schneider Electric Launches Nex-Gen Eco-Structure Building Operation Solution
April 2023

Schneider Completes Acquisition of Aveva
January 2023



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Tokyo, Japan
Employees:	5,500
Website:	www.topcon.co.jp
Ownership Status:	Public (TKS:7732)
Acquisitions Since 2018:	5
TTM Revenue:	\$1,590
Dry Powder:	\$1,656

Topcon Acquires Finnish Radio Solutions Leader Satel
July 2023

Topcon Announces Strategic Investment in DDK Positioning
April 2023

Topcon Acquires Digital Construction Works
March 2023



Geospatial Information Systems (GIS)	Construction Technologies	Energy and Asset Management
Design Technologies		Financials/ERP

Headquarters:	Westminster, Colorado
Employees:	11,500
Website:	www.trimble.com
Ownership Status:	Public (NAS:TRMB)
Acquisitions Since 2018:	16
TTM Revenue:	\$3,650
Dry Powder:	\$1,381

Trimble Constructing Solar Array Project at Colorado Headquarters
June 2023

Trimble Advances Reality Capture with the New X9 3D Laser Scanner
May 2023

Trimble Introduces an All-In-One System for On-Machine Excavator Guidance and Site Surveying
March 2023

Public Companies

Technology for the Built Environment

Company(1)	Share Price 8/31/23	% 52-Wk High	Market Cap	Enterprise Value	Revenue Metrics ⁽²⁾			Profitability Margins ⁽²⁾		EV / Revenue		EV / EBITDA ⁽³⁾		Dry Powder(4)	TTM Acqs.
					CY 22A	CY 23E	Growth	TTM GM	TTM EBITDA	CY 22A	CY 23E	CY 22A	CY 23E		
Design / Construction															
Autodesk	\$221.94	95.0%	\$47,443	\$48,035	\$5,005	\$5,432	8.5%	90.4%	22.0%	9.6	8.8	46.8	23.3	\$5,086	1
Bentley Systems	\$49.91	90.1%	\$14,722	\$16,322	\$1,099	\$1,230	11.9%	78.1%	25.5%	14.9	13.3	41.2	39.8	\$147	3
Nemetschek Group	\$69.66	86.3%	\$8,046	\$7,981	\$843	\$897	6.4%	57.8%	28.9%	9.5	8.9	20.0	30.4	\$1,473	
Procore	\$67.55	87.9%	\$9,618	\$9,095	\$720	\$923	28.2%	80.6%	(24.9%)	12.6	9.8			\$1,114	
Design / Construction Mean		89.8%	\$19,957	\$20,358	\$1,917	\$2,120	13.8%	76.8%	12.9%	11.6	10.2	36.0	31.1	\$1,955	2.0
Design / Construction Median		89.0%	\$12,170	\$12,708	\$971	\$1,077	10.2%	79.4%	23.8%	11.1	9.4	41.2	30.4	\$1,294	2.0
GIS / Hardware															
Faro	\$15.86	43.2%	\$301	\$302	\$346	\$350	1.3%	46.2%	(10.0%)	0.9	0.9			\$397	2
Hexagon	\$9.03	71.9%	\$24,292	\$28,476	\$5,426	\$5,860	8.0%	65.7%	34.7%	5.2	4.9	19.5	13.0	\$7,289	7
Topcon	\$12.02	79.4%	\$1,266	\$1,614	\$1,586	\$1,551	(2.2%)	52.2%		1.0	1.0	6.4		\$1,578	2
Trimble	\$54.79	85.0%	\$13,606	\$16,669	\$3,676	\$3,875	5.4%	59.8%	20.1%	4.5	4.3	16.7	16.7	\$1,381	4
GIS / Hardware Mean		69.9%	\$9,866	\$11,765	\$2,758	\$2,909	3.1%	56.0%	15.0%	2.9	2.8	14.2	14.9	\$2,661	3.8
GIS / Hardware Median		75.7%	\$7,436	\$9,141	\$2,631	\$2,713	3.4%	56.0%	20.1%	2.8	2.7	14.2	14.9	\$1,480	3.0
Industrial Technology															
Fortive	\$78.85	98.7%	\$27,757	\$30,028	\$5,826	\$6,098	4.7%	58.5%	25.3%	5.2	4.9	19.1	18.1	\$6,452	
Roper	\$499.06	98.9%	\$53,255	\$58,458	\$5,372	\$6,077	13.1%	69.7%	40.9%	10.9	9.6	24.6	23.7	\$8,243	2
Schneider Electric	\$173.31	94.6%	\$97,202	\$111,704	\$35,933	\$39,100	8.8%	41.5%	19.9%	3.1	2.9	13.8	13.7	\$1,217	4
Industrial Technology Mean		97.4%	\$59,405	\$66,730	\$15,710	\$17,091	8.9%	56.5%	28.7%	6.4	5.8	19.2	18.5	\$7,348	3.0
Industrial Technology Median		98.7%	\$53,255	\$58,458	\$5,826	\$6,098	8.8%	58.5%	25.3%	5.2	4.9	19.1	18.1	\$7,348	3.0
ERP / Horizontal															
IBM	\$146.83	95.8%	\$133,763	\$177,839	\$60,530	\$62,213	2.8%	54.6%	11.9%	2.9	2.9	34.0	11.8	\$20,049	10
Oracle	\$120.39	94.4%	\$326,770	\$407,547	\$46,073	\$51,958	12.8%	72.8%	36.9%	8.8	7.8	23.1	16.3	\$25,126	2
The Sage Group	\$12.34	99.0%	\$12,670	\$13,525		\$2,796		93.0%	19.9%		4.8		19.6	\$1,949	3
ERP / Horizontal Mean		96.4%	\$157,734	\$199,637	\$53,302	\$38,989	7.8%	73.5%	22.9%	5.9	5.2	28.6	15.9	\$15,708	5.0
ERP / Horizontal Median		95.8%	\$133,763	\$177,839	\$53,302	\$51,958	7.8%	72.8%	19.9%	5.9	4.8	28.6	16.3	\$20,049	3.0
Built Environment Mean		87.2%	\$55,051	\$66,257	\$13,264	\$13,454	8.4%	65.8%	19.3%	6.9	6.1	24.1	20.6	\$6,176	3.6
Built Environment Median		92.3%	\$19,507	\$22,573	\$5,005	\$4,654	8.0%	62.8%	22.0%	5.2	4.9	20.0	18.1	\$1,949	3.0

(1) Currency normalized to USD, on share price date

(2) Wall Street consensus estimates

(3) EV / Revenue and EV / EBITDA multiples in excess of 50.0x or less than 0.0x are considered not meaningful

(4) Dry Powder - greater of:

[(125% of Revenue less Debt) + (50% of Cash & C.E.) + (20% of Mkt. Cap.)], or

[(6x EBITDA less Debt) + (50% of Cash & C.E.) + 20% of Mkt. Cap.]

III.



Comparable Transactions

/ Ascentage

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms



		(\$ in Millions)		Target Overview			Transaction Statistics			
		Announced	Target	Description	Estimated Revenue	Estimated EBITDA	Deal Value	Deal Value / Revenue	Estimated EBITDA	
Autodesk	Oracle									
		Autodesk							Total Disclosed M&A Deal Value: \$2.5 Billion	
Bentley	Procore	Mar-23	Unifi Labs	BIM content solutions	n/a	n/a	n/a	n/a	n/a	
		Mar-22	The Wild	VR/AR collaboration platform	n/a	n/a	n/a	n/a	n/a	
		Feb-22	Prodsmart	Computer integrated manufacturing software	n/a	n/a	n/a	n/a	n/a	
		Jan-22	Moxion	Digital media platform for filmmaking process	n/a	n/a	n/a	n/a	n/a	
		Dec-21	ProEst	Construction estimating and digital takeoff software	n/a	n/a	n/a	n/a	n/a	
		Nov-21	Tangent Labs	Production software pipeline tool for artists and studios	n/a	n/a	n/a	n/a	n/a	
		Sep-21	iOFFICE	Workplace experience and asset mgmt. software	n/a	n/a	n/a	n/a	n/a	
ESRI	Roper	May-21	Upchain	Cloud product lifecycle mgmt.	n/a	n/a	\$139.8	n/a	n/a	
		Mar-21	Innovyze	Business analytics and performance monitoring software	n/a	n/a	\$1,038.3	n/a	n/a	
		Nov-20	Spacemaker	Generative design for real estate project sites	n/a	n/a	\$252.0	n/a	n/a	
		Oct-20	CAMplete Solutions	Processing and verification software for manufacturing	n/a	n/a	n/a	n/a	n/a	
		Aug-20	Pype	Construction data ingestion	n/a	n/a	n/a	n/a	n/a	
Faro	Sage	Jan-19	BuildingConnected	Preconstruction planning solutions	n/a	n/a	\$253.2	n/a	n/a	
		Nov-18	PlanGrid	Digital blueprint solutions	\$100.0	n/a	\$777.6	7.8x	n/a	
		Jul-18	Assemble Systems (1)	BIM solutions for construction mgmt.	Confidential	Confidential	Confidential	Confidential	Confidential	
		Bentley							Total Disclosed M&A Deal Value: \$1.8 Billion	
		Aug-23	Blyncsy	Traffic management analytics solution	n/a	n/a	n/a	n/a	n/a	
Fortive	Schneider Electric	Feb-23	Easy Power	Design and analysis software for electrical engineering	n/a	n/a	n/a	n/a	n/a	
		Dec-22	Minerva	AI solution for 3D modeling of drilling/mining	n/a	n/a	\$0.8	n/a	n/a	
		Jul-22	Eagle.io	IoT platform solution	n/a	n/a	n/a	n/a	n/a	
		Apr-22	ADINA	Finite element analysis software	n/a	n/a	n/a	n/a	n/a	
		Nov-21	Power Line Systems	Structural and geometric design software for electric power lines	\$40.0	n/a	\$725.0	18.1x	n/a	
		Jun-21	Seequent	3D geological modeling and visual data software	\$83.0	n/a	\$1,050.0	12.7x	n/a	
Hexagon	Topcon	Jun-21	SPIDA Software	Utility engineering and business processes software	n/a	n/a	n/a	n/a	n/a	
		May-21	Sensemetrics	Centralized sensor data software	n/a	n/a	n/a	n/a	n/a	
		Apr-21	Vista Data Vision	Instrumentation data monitoring and mgmt. software	n/a	n/a	n/a	n/a	n/a	
		Apr-21	INRO Consultants	Mobility simulation and modeling for transport sector	n/a	n/a	n/a	n/a	n/a	
		Feb-21	E7	Field-based construction delivery solutions	n/a	n/a	n/a	n/a	n/a	
		Jul-20	Cohesive Solutions	IBM Maximo reseller	n/a	n/a	n/a	n/a	n/a	
IBM	Trimble	Jun-20	Notevault	Voice-based field automation application	n/a	n/a	n/a	n/a	n/a	
		Mar-20	GroupBC	Document and information mgmt. tools	n/a	n/a	n/a	n/a	n/a	
		Oct-19	Citilabs	Mobile analytics platform	n/a	n/a	n/a	n/a	n/a	
		Oct-19	Orbit GeoSpatial Technologies	Geospatial 3D mapping software	n/a	n/a	n/a	n/a	n/a	
		May-19	Keynetix	Geotechnical data mgmt. software	n/a	n/a	n/a	n/a	n/a	
		Mar-19	Digital Water Works	Water digital twin solution	n/a	n/a	n/a	n/a	n/a	
Nemetschek		Feb-19	SignCAD Systems	Traffic sign design software	n/a	n/a	n/a	n/a	n/a	
		Nov-18	Alworx	Machine learning and IoT technologies	n/a	n/a	n/a	n/a	n/a	
		Nov-18	ACE Enterrpise	Mobile solution for industrial EAM	n/a	n/a	n/a	n/a	n/a	
		Oct-18	Agency9	Advanced digital twin modelling	n/a	n/a	n/a	n/a	n/a	
		Oct-18	Legion	Pedestrian simulation software	n/a	n/a	n/a	n/a	n/a	
		Jun-18	Synchro Software	4D building information modelling	n/a	n/a	n/a	n/a	n/a	
		Apr-18	Plaxis	Geotechnical software tools	n/a	n/a	n/a	n/a	n/a	
		Apr-18	SoilVision Systems	Software database for geotechnical engineers	n/a	n/a	n/a	n/a	n/a	

(1) Ascentage-advised transaction

NOTE: Acquisitions from Jan. 1, 2018 to present

Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms



		(\$ in Millions)		Target Overview			Transaction Statistics			
		Announced	Target	Description	Estimated Revenue	EBITDA	Deal Value	Deal Value / Estimated Revenue	EBITDA	
Autodesk	Oracle									
Bentley	Procore									
ESRI	Roper									
Faro	Sage									
Fortive	Schneider Electric									
Hexagon	Topcon									
IBM	Trimble									
Nemetschek										
		(\$ in Millions)		Target Overview			Transaction Statistics			
		Announced	Target	Description	Estimated Revenue	EBITDA	Deal Value	Deal Value / Estimated Revenue	EBITDA	
		ESRI					Total Disclosed M&A Deal Value: \$13.0 million			
		Dec-20	Zibumi	Geospatial simulations and analyses lab	n/a	n/a	n/a	n/a	n/a	
		Sep-20	nFrames	3D reconstruction software	n/a	n/a	n/a	n/a	n/a	
		Apr-19	ESRI India	Acquisition of Indian JV	n/a	n/a	13.00x	n/a	n/a	
		Feb-19	indoo.rs	Indoor positioning and navigation technology	n/a	n/a	n/a	n/a	n/a	
		Feb-18	ClearTerra	Geospatial and activity based intelligence software	n/a	n/a	n/a	n/a	n/a	
		FARO Technologies					Total Disclosed M&A Deal Value: \$114.8 million			
		Dec-22	SiteScape	3D handheld scanning solution	n/a	n/a	n/a	n/a	n/a	
		Sep-22	GeoSLAM	3D handheld scanning solution	n/a	n/a	\$45.0	n/a	n/a	
		Jun-21	HoloBuilder	AI software for construction progress documenting	\$4.0	n/a	\$33.9	8.5x	n/a	
		Aug-20	Advanced Technical Solutions	Laser technology distance measurement solutions	n/a	n/a	\$7.0	n/a	n/a	
		Jul-18	Opto-Tech	3D scanners for 3D modeling and CAD applications	\$1.2	\$0.3	\$21.7	18.1x	n/m	
		Jul-18	Lanmark Controls	Laser marking control board	n/a	n/a	\$7.3	n/a	n/a	
		Mar-18	PhotoCore	3D measurement software solutions	n/a	n/a	n/a	n/a	n/a	
		Fortive					Total Disclosed M&A Deal Value: \$8.1 Billion			
		Dec-21	Provation Software	Healthcare software for clinical productivity	n/a	n/a	\$1,425.0	n/a	n/a	
		Sep-21	TeamSense	Text-based employee management solution	n/a	n/a	n/a	n/a	n/a	
		Jul-21	Servicechannel.com	Facilities management service automation	\$70.2	n/a	\$1,200.0	17.1x	n/a	
		Nov-20	Moore and Gaserecz Global	EHS technology to extract and translate documents	n/a	n/a	n/a	n/a	n/a	
		Oct-19	Censis Technologies	Surgical asset mgmt. software	n/a	n/a	n/a	n/a	n/a	
		Apr-19	Advanced Sterilization Products	Infection prevention technologies	\$800.0	n/a	\$2,700.0	3.4x	n/a	
		Sep-18	Accruent	Enterprise content mgmt. software	\$270.0	n/a	\$2,000.0	7.4x	n/a	
		Jul-18	Gordian Group	Construction software for all stages of construction	\$130.0	n/a	\$775.0	6.0x	n/a	

NOTE: Acquisitions from Jan. 1, 2018 to present
Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms

Autodesk	Oracle	(\$ in Millions)		Target Overview			Transaction Statistics		
		Announced	Target	Description	Estimated		Deal Value	Deal Value / Estimated	
					Revenue	EBITDA	Revenue	EBITDA	
Hexagon		Total Disclosed M&A Deal Value: \$7.0 Billion							
Bentley	Procore	Jul-23	Hard-Line Solutions	Remote autonomous mining solution	n/a	n/a	n/a	n/a	n/a
		Jun-23	CADS Additive	Additive manufacturing software solution	n/a	n/a	n/a	n/a	n/a
		Jan-23	ProjectMates	Construction program management solution	n/a	n/a	n/a	n/a	n/a
		Dec-22	Qognify	Business security services	n/a	n/a	n/a	n/a	n/a
		Nov-22	LocLab Consulting	3D modeling solution	n/a	n/a	n/a	n/a	n/a
		Oct-22	Awvir	Computer vision-based construction productivity toolset	n/a	n/a	n/a	n/a	n/a
ESRI	Roper	Sep-22	iConstruct	BIM software solution	n/a	n/a	n/a	n/a	n/a
		Apr-22	Innovatia Accelerator	Workplace safety solution	n/a	n/a	n/a	n/a	n/a
		Feb-22	ETQ	EHS and compliance management software	\$75.0	\$26.3	\$1,200.0	16.0x	n/m
		Jan-22	Minnovare	Industrial drilling technology and software	n/a	n/a	n/a	n/a	n/a
		Oct-21	Infor Global Solutions	Enterprise asset mgmt. software	n/a	n/a	\$2,820.0	n/a	n/a
		Sep-21	Jovix	Material tracking software	n/a	n/a	n/a	n/a	n/a
Faro	Sage	Jul-21	Immersal	Spatial mapping and visual positioning solutions	n/a	n/a	n/a	n/a	n/a
		Apr-21	CADLM	Engineering design software	n/a	n/a	n/a	n/a	n/a
		Dec-20	OxBlue	High resolution construction camera systems	n/a	n/a	n/a	n/a	n/a
		Nov-20	PAS Global	Process safety and cybersecurity	\$39.8	n/a	n/a	n/a	n/a
		Oct-20	DP Technology	CAM software for CNC machine tools	\$39.2	n/a	n/a	n/a	n/a
		Jul-20	Tacticaware	LIDAR-based 3D surveillance software	n/a	n/a	n/a	n/a	n/a
Fortive	Schneider Electric	Mar-20	CAEfatigue	Mechanical fatigue simulation solutions	n/a	n/a	n/a	n/a	n/a
		Feb-20	Romax Technology	Electromechanical drivetrain design and simulation services	n/a	n/a	n/a	n/a	n/a
		Jan-20	COWI	Mapping and geospatial data services	\$15.8	n/a	n/a	n/a	n/a
		Jan-20	Blast Movement	Blast movement monitoring technology	\$21.4	n/a	n/a	n/a	n/a
		Jan-20	Geopraevent	Sensors and measuring technologies for navigating natural hazard	n/a	n/a	n/a	n/a	n/a
		Jan-20	Volume Graphics	Software for testing industrial computed tomograph	\$29.3	n/a	n/a	n/a	n/a
Hexagon	Topcon	Jun-19	AMendate	Generative design for additive manufacturing	n/a	n/a	n/a	n/a	n/a
		Feb-19	Thermopylae	Govt. and defense geospatial applications	\$48.0	n/a	n/a	n/a	n/a
		Jan-19	j5 International	Operational risk mgmt. software	n/a	n/a	n/a	n/a	n/a
		Jan-19	Etalon	Machine / equipment calibration solutions	n/a	n/a	n/a	n/a	n/a
		Oct-18	Bricsys	CAD software for AEC market	\$14.7	\$1.5	n/a	n/a	n/a
		Sep-18	External-Array Software	Metrology software for CMM manufacturers	n/a	n/a	n/a	n/a	n/a
IBM	Trimble	Jun-18	Geocloud (Assets)	Ski slope infrastructure measurement	n/a	n/a	n/a	n/a	n/a
		Jun-18	SPRING Technologies	Machine tool simulation and verification software	\$9.5	\$0.4	n/a	n/a	n/a
		Jun-18	AutonomouStuff	Integrated autonomous vehicle solutions	\$45.0	n/a	n/a	n/a	n/a
		May-18	Nextsense	Non-contact profile measurement and inspection	\$13.5	n/a	n/a	n/a	n/a
		Apr-18	Licom Systems	German distributor of Alphacam CAM software	n/a	n/a	n/a	n/a	n/a
		Apr-18	ProCAM Group	Italian distributor of Vero Software	n/a	n/a	n/a	n/a	n/a
Nemetschek		Mar-18	AGTEK	Construction project modeling software	n/a	n/a	n/a	n/a	n/a
		Jan-18	Plant Design Solutions	Distributor of CADWorx and Analysis software	n/a	n/a	n/a	n/a	n/a
		Jan-18	Industrial Business Solutions	Digital project completion and commissioning	n/a	n/a	n/a	n/a	n/a

NOTE: Acquisitions from Jan. 1, 2018 to present
Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms

		(\$ in Millions)		Target Overview			Transaction Statistics		
		Announced	Target	Description	Estimated		Deal Value	Deal Value / Estimated	
					Revenue	EBITDA		Revenue	EBITDA
		IBM		Total Disclosed M&A Deal Value: \$41.1 Billion					
		Jun-23	Apptio	Technology management solution	n/a	n/a	\$4,600.0	n/a	n/a
		Jun-23	Agyla.Cloud	IT consulting services	n/a	n/a	n/a	n/a	n/a
Bentley	Procore	May-23	Polar Security	Cybersecurity solution	n/a	n/a	\$60.0	n/a	n/a
		Apr-23	Ahana	Analytics platform solution	n/a	n/a	n/a	n/a	n/a
		Mar-23	NS1	Internet traffic management platform	n/a	n/a	n/a	n/a	n/a
		Feb-23	StepZen	Database connection solution	n/a	n/a	n/a	n/a	n/a
		Dec-22	Octo	IT consulting services	n/a	n/a	n/a	n/a	n/a
ESRI	Roper	Nov-22	Omnio	IoT connector solution	n/a	n/a	n/a	n/a	n/a
		Sep-22	Dialxa	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Jun-22	Databand	Database software	n/a	n/a	\$150.0	n/a	n/a
		Jun-22	Randori	Cybersecurity network management solution	n/a	n/a	n/a	n/a	n/a
		Feb-22	Neudesic	IT consulting services	n/a	n/a	n/a	n/a	n/a
Faro	Sage	Jan-22	Sentaca	IT consulting services for telecommunications industry	n/a	n/a	n/a	n/a	n/a
		Jan-22	Envizi	Carbon management platform	n/a	n/a	n/a	n/a	n/a
		Jan-22	Tricentis	Software testing toolset	n/a	n/a	n/a	n/a	n/a
		Dec-21	McD Tech Labs	AI voice recognition and processing	n/a	n/a	n/a	n/a	n/a
		Dec-21	Rego Consulting	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Nov-21	ReaQta	Cybersecurity network management solution	n/a	n/a	n/a	n/a	n/a
Fortive	Schneider Electric	Nov-21	SKiQ	IT consulting services	n/a	n/a	\$29.3	n/a	n/a
		Oct-21	Apprente	AI voice recognition and processing	n/a	n/a	n/a	n/a	n/a
		Jul-21	Boatbox Technologies	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Jul-21	Bluetab Solutions	IT consulting services	n/a	n/a	\$89.2	n/a	n/a
		Jul-21	Volta Networks	Network routing platform	n/a	n/a	n/a	n/a	n/a
		Jul-21	Waeg	IT consulting services	n/a	n/a	n/a	n/a	n/a
Hexagon	Topcon	Jun-21	Turbonomic	AI application resource management solution	n/a	n/a	\$1,830.0	n/a	n/a
		May-21	Catalogic Software ECX	Database software	n/a	n/a	n/a	n/a	n/a
		Apr-21	myInvenio	Process mining software	n/a	n/a	n/a	n/a	n/a
		Feb-21	Taos Mountain	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Jan-21	Nordcloud	IT consulting services	n/a	n/a	n/a	n/a	n/a
IBM	Trimble	Dec-20	Intana	Micro-services monitoring platform	n/a	n/a	n/a	n/a	n/a
		Dec-20	7 Summits	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Dec-20	Expertus Technologies	Digital payment technologies	n/a	n/a	n/a	n/a	n/a
		Nov-20	TruQua Enterprises	IT consulting services	n/a	n/a	n/a	n/a	n/a
		Sep-20	WDG Automation	Robotic process automation software	n/a	n/a	n/a	n/a	n/a
		Jul-20	Dock Joined	Digital payment technologies	n/a	n/a	n/a	n/a	n/a
		Jun-20	Spanugo	Cybersecurity network management solution	n/a	n/a	n/a	n/a	n/a
Nemetschek		Jun-19	Red Hat	Enterprise IT services	\$3,400.0	n/a	\$34,000.0	10.0x	n/a
		Jun-18	Oniqua MRO Analytics	Maintenance, repair, and ops analytics software	n/a	n/a	n/a	n/a	n/a
		May-18	Armanta	BI platform for enterprise infrastructure	n/a	n/a	n/a	n/a	n/a
		May-18	Mediabanca Innovation Services	IT consulting services	n/a	n/a	\$343.8	n/a	n/a

NOTE: Acquisitions from Jan. 1, 2018 to present
Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms

		(\$ in Millions)		Target Overview		Transaction Statistics				
		Announced	Target	Description	Estimated Revenue	Estimated EBITDA	Deal Value	Deal Value / Estimated Revenue	Estimated EBITDA	
Autodesk	Oracle									
		Nemetschek							Total Disclosed M&A Deal Value: \$153.7 Million	
Bentley	Procore	Jan-19	Axxerion	Software for workplace and facility automation	\$14.2	n/a	\$96.8	6.8x	n/a	
		Aug-18	Spacewell	Digital real estate, work, an facility mgmt. software	\$17.7	n/a	\$56.9	3.2x	n/a	
		Oracle							Total Disclosed M&A Deal Value: \$29.9 Billion	
		Oct-22	Newmetrix	Computer vision solution for construction safety	n/a	n/a	n/a	n/a	n/a	
		Sep-22	FOEX	Web applications solution	n/a	n/a	n/a	n/a	n/a	
		May-22	Adi Insights	Dynamic staff scheduling platform	n/a	n/a	n/a	n/a	n/a	
ESRI	Roper	Jan-22	NetSuite CPQ Verenia	Enterprise information technology software solution	n/a	n/a	n/a	n/a	n/a	
		Dec-21	Federos	Carrier-grade, digital service assurance solutions	n/a	n/a	n/a	n/a	n/a	
		Dec-21	Cerner Corporation	Healthcare IT solutions and tech-enabled services	\$5,414.5	\$1,436.5	\$28,155.2	5.2x	19.6x	
		Jun-21	Gloria Food	Online restaurant ordering solution	n/a	n/a	n/a	n/a	n/a	
		Apr-21	FarApp	e-commerce automation solution	n/a	n/a	n/a	n/a	n/a	
Faro	Sage	Dec-20	Nor1	Hospitality management platform solution	n/a	n/a	n/a	n/a	n/a	
		Oct-20	Chat Labs	Marketing, e-commerce and data management solution	n/a	n/a	n/a	n/a	n/a	
		Apr-20	Sauce Video	Video content creation and sourcing solution	n/a	n/a	n/a	n/a	n/a	
		Apr-20	LiveData Utilities	Real-time data solutions for utility companies	n/a	n/a	n/a	n/a	n/a	
		Nov-19	CrowdTwist	Cloud-based customer loyalty platform	n/a	n/a	n/a	n/a	n/a	
		Jun-19	Oxygen Systems	Netsuite cloud network in Brazil	n/a	n/a	n/a	n/a	n/a	
Fortive	Schneider Electric	Dec-18	goBalto	Cloud-based clinical management solution	n/a	n/a	n/a	n/a	n/a	
		Nov-18	Talari Networks	WAN management solution	n/a	n/a	n/a	n/a	n/a	
		Oct-18	Data Fox	Online investor research platform solution	n/a	n/a	n/a	n/a	n/a	
		Oct-18	Iridize	Customer onboarding and training	n/a	n/a	n/a	n/a	n/a	
		Jun-18	Datascience.com	Enterprise data science solution	n/a	n/a	n/a	n/a	n/a	
		May-18	Grapeshot	Advertising targeting solution	n/a	n/a	\$400.0	n/a	n/a	
		Apr-18	Vocado	SaaS financial aid management solution	n/a	n/a	\$139.0	n/a	n/a	
Hexagon	Topcon	Apr-18	Sparkline Data	Data warehouse platform solution	n/a	n/a	n/a	n/a	n/a	
		Mar-18	Dyn	Cloud-based cybersecurity solution	n/a	n/a	n/a	n/a	n/a	
		Mar-18	Aconex	Construction collaboration and doc mgmt. software	\$131.9	\$9.1	\$1,181.0	9.0x	n/m	
		Procore							Total Disclosed M&A Deal Value: \$746.5 Million	
		Oct-21	LaborChart	Cloud scheduling application for construction	n/a	n/a	\$76.2	n/a	n/a	
		Sep-21	Levelset	Lien rights management software solution	n/a	n/a	\$481.1	n/a	n/a	
		May-21	INDUS.AI	Construction Intelligence-as-a-Service software	n/a	n/a	\$24.3	n/a	n/a	
		Oct-20	Esticom	Contractor take off and estimating software	n/a	n/a	n/a	n/a	n/a	
		Jan-20	Avata Intelligence	AI and ML analytics for enterprises	n/a	n/a	\$3.8	n/a	n/a	
		Dec-19	Honest Buildings	Project mgmt. platform for construction	n/a	n/a	\$161.0	n/a	n/a	
		Aug-19	Construction BI	Data analytics and reporting solutions	n/a	n/a	n/a	n/a	n/a	
		Sep-18	Zimfly	Visual collab. platform for construction mgmt.	n/a	n/a	n/a	n/a	n/a	
		Roper							Total Disclosed M&A Deal Value: \$13.9 Billion	
		Aug-23	Syntellis Performance Solutions	Enterprise performance management software	\$185.0	\$85.0	\$1,250.0	6.8x	15.0x	
		Oct-22	Frontline Education	Cloud-based education software	n/a	n/a	\$3,740.0	n/a	n/a	
		Sep-20	Vertafore	Cloud-based insurance software	n/a	n/a	\$5,398.6	n/a	n/a	
		Jun-20	Team TSI	Healthcare data systems software	n/a	n/a	\$240.0	n/a	n/a	
		Aug-19	Internet Pipeline	Sales distribution software	\$157.5	n/a	\$1,625.0	10.3x	n/a	
		Apr-19	The Foundry Visionmongers	Computer graphics and visual effects software	\$61.0	\$21.9	\$537.0	8.8x	24.5x	
		Jun-18	PowerPlan	Asset-centric financial forecasting and monitoring	n/a	n/a	\$1,111.4	n/a	n/a	
Nemetschek										

NOTE: Acquisitions from Jan. 1, 2018 to present
Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms

		(\$ in Millions)		Target Overview			Transaction Statistics		
		Announced	Target	Description	Estimated Revenue	EBITDA	Deal Value	Deal Value / Estimated Revenue	EBITDA
Autodesk	Oracle								
Bentley	Procore								
ESRI	Roper								
Faro	Sage								
Fortive	Schneider Electric								
Hexagon	Topcon								
IBM	Trimble								
Nemetschek									
		Sage					Total Disclosed M&A Deal Value: \$0.4 Billion		
		May-23	Corecon Technologies	Constuction management solution	n/a	n/a	n/a	n/a	n/a
		Nov-22	Speherics	Carbon accounting solution	n/a	n/a	\$12.3	n/a	n/a
		Aug-22	Lockstep	AP and AR solution	n/a	n/a	n/a	n/a	n/a
		May-22	Huatuo Software	Chinese software solutions	n/a	n/a	n/a	n/a	n/a
		May-22	Futrl	Financial forecasting solution	n/a	n/a	n/a	n/a	n/a
		Apr-22	MAS Integrated Solutions	Financial solution for Roman Catholic diocese operations	n/a	n/a	n/a	n/a	n/a
		Dec-21	Brightpearl	Cloud inventory management and ERP software	n/a	n/a	\$299.0	n/a	n/a
		Oct-21	Goproposal	Pricing and data services for accountancy firms	n/a	n/a	n/a	n/a	n/a
		Mar-21	Task Sheriff	Bookkeeping software	n/a	n/a	\$17.9	n/a	n/a
		Nov-19	CakeHR	HR management software	n/a	n/a	n/a	n/a	n/a
		Sep-19	OCReX	OCR software for accounting solutions	n/a	n/a	\$51.7	n/a	n/a
		Mar-18	Budgeta	Financial planning and budgeting solution	n/a	n/a	\$11.2	n/a	n/a
		Schneider Electric					Total Disclosed M&A Deal Value: \$16.0 Billion		
		Jul-23	EcoAct	International consulting and project development	n/a	n/a	n/a	n/a	n/a
		Jan-23	Aveva	Acquisition of remaining shares in listed industrial software	n/a	n/a	\$12,400.0	n/a	n/a
		Dec-22	EBERLE Controls	HVAC control solutions - divested to management team	n/a	n/a	n/a	n/a	n/a
		Sep-22	Aplines	Vegetation management solution for electrical utilities	n/a	n/a	n/a	n/a	n/a
		Jul-22	AutoGrid	Energy internet applications	n/a	n/a	n/a	n/a	n/a
		Mar-22	EV Connect	Electric vehicle (EV) charging station solutions	n/a	n/a	n/a	n/a	n/a
		May-22	Xcelgo	3D modeling software	n/a	n/a	n/a	n/a	n/a
		Mar-22	J&K Regeltechnik	Building automation technology solutions	n/a	n/a	n/a	n/a	n/a
		Mar-22	EcoStruxture Transformer	Transformer conditon monitoring solution	n/a	n/a	n/a	n/a	n/a
		Feb-22	EnergySage	Marketplace for solar and clean energy technologies	n/a	n/a	n/a	n/a	n/a
		Jan-22	Zeigo	Climate technology platform	n/a	n/a	n/a	n/a	n/a
		May-21	Acquis Software	Water loss management software	n/a	n/a	\$3.7	n/a	n/a
		Mar-21	Uplight	Utility cloud solutions for customer intelligence	n/a	n/a	n/a	n/a	n/a
		Jan-21	DC Systems	Hybrid AC/DC microgrid distribution systems	n/a	n/a	n/a	n/a	n/a
		Nov-20	ETAP	Power system optimization and automation software	n/a	n/a	n/a	n/a	n/a
		Aug-20	Larsen andToubro (Electrical)	Electrical and automation services	n/a	n/a	\$1,870.9	n/a	n/a
		Aug-20	ProLeIT	Automation and process control software	n/a	n/a	n/a	n/a	n/a
		Jul-20	RIB Software	Construction andinfra mgmt. software	\$270.8	\$84.2	\$1,719.9	6.4x	20.4x
		Feb-19	Itris Automation Square	Platform and language independent dev tools	\$1.6	\$2.2	n/a	n/a	n/a

(1) Ascentage-advised transaction

NOTE: Acquisitions from Jan. 1, 2018 to present

Sources: Pitchbook, LinkedIn, company websites, press releases

Precedent Built Environment M&A Transactions

Public Companies and Leading Platforms



		(\$ in Millions)		Target Overview			Transaction Statistics		
		Announced	Target	Description	Estimated Revenue	EBITDA	Deal Value	Deal Value / Estimated Revenue	EBITDA
Autodesk	Oracle								
Topcon									
									Total Disclosed M&A Deal Value: n/a
Bentley	Procore	Jul-23	Satel	Manufactures wireless connectivity solutions	\$19.5	\$2.2	n/a	n/a	n/a
		Mar-23	Digital Construction Works	Formerly Topcon/Bentley JV - software integration services	n/a	n/a	n/a	n/a	n/a
		Jul-21	Visia Imaging	Manufactures ophthalmic devices	n/a	n/a	n/a	n/a	n/a
		Apr-18	Topcon Healthcare	Medical imaging software	\$0.8	n/a	n/a	n/a	n/a
		Feb-18	ClearEdge3D (1)	3D modeling software for plants and buildings	Confidential	Confidential	Confidential	Confidential	Confidential
Trimble									
									Total Disclosed M&A Deal Value: \$4.5 Billion
ESRI	Roper	Apr-23	Transporeon	Transportation/supply chain management solution	n/a	n/a	\$2,002.0	n/a	n/a
		Jan-23	Ryvlt	Software integration platform for AEC industry	n/a	n/a	n/a	n/a	n/a
		Sep-22	B2W Software	Heavy construction project management solution	n/a	n/a	\$322.1	n/a	n/a
		Sep-22	Billberry	Solution for agricultural spotspraying	n/a	n/a	n/a	n/a	n/a
		Dec-21	AgileAssets (1)	Infrastructure EAM solutions for government	Confidential	Confidential	\$237.5	Confidential	Confidential
Faro	Sage	Sep-20	MidStates VRS	Kinematic quality corrections for construction	n/a	n/a	n/a	n/a	n/a
		Jan-20	Kuebix	Transportation mgmt. systems	n/a	n/a	\$201.8	n/a	n/a
		Dec-19	AllTerra (iBase Network)	Virtual reference station network services	n/a	n/a	n/a	n/a	n/a
		Dec-19	Cansel (Can-Net Network)	VRS networks and single-base solutions	n/a	n/a	n/a	n/a	n/a
		Oct-19	Cityworks	Public asset and land mgmt. software	n/a	n/a	n/a	n/a	n/a
Fortive	Schneider Electric	Sep-19	3LOG Systems	Timber mgmt. software	n/a	n/a	n/a	n/a	n/a
		Oct-18	Veltec Solucoes Tecnologicas	Fleet mgmt. platform	n/a	n/a	n/a	n/a	n/a
		Jul-18	Viewpoint (Construction Unit)	Project mgmt. for construction industry	\$200.0	n/a	\$1,212.1	6.1x	n/a
		Apr-18	FabSuite	Steel fabrication mgmt. software	n/a	n/a	n/a	n/a	n/a
		Feb-18	e-Builder	Construction program mgmt. software	\$43.4	n/a	\$485.2	11.2x	n/a
Jan-18	Stabiplan	Design software and MEP engineering services	n/a	n/a	n/a	n/a	n/a		
Hexagon	Topcon	Total High						18.1x	24.5x
		Total Low						3.2x	15.0x
		Total Average						9.2x	19.9x
		Total Median						8.1x	20.0x
IBM	Trimble								
Nemetschek									

(1) Ascentage-advised transaction

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Sources: Pitchbook, LinkedIn, company websites, press releases

Ascentage

IV.

About Us

Ascentage is Well Positioned

Dedicated Team Combines Growth Consulting by Seasoned Industry Executives with Tenured Investment Bankers and Stalwart Transaction Execution

Business Development Consulting

and

Transaction Advisory

Product and Customer

- Customer use case(s)/value proposition
- Total available market (TAM), segment selection and market penetration strategy
- Minimum viable product (MVP) and product/market fit

Sales/Growth

- New customer development
- Pricing
- Alternative channels and strategic partnerships
- Domestic versus international markets
- Sales process and organization

Intellectual Property (IP) licensing and management

Strategy and Organization

- Strategic direction, market trends and momentum
- Corporate development and long-term planning
- Executive team building

Financial/Controls

- Modeling for budgeting and forecasting
- Financial compliance and controls, especially revenue recognition policies
- Business process and operational standards

for

Technology-Based Companies

- **Software** – SaaS through to mobility applications
- **Location-based** – GIS and LiDAR
- **Hardware** – robotics, drones and IoT sensors
- **Data** – Analytics, Artificial Intelligence
- **Solution/consulting**
























































focused on

Built Environment Buildings / Civil Infrastructure / Industrial / Energy

- **Design** – BIM, PLM and design tools
- **Build** – construction collaboration, estimating, scheduling and project management software; prefabrication/modular solutions
- **Operate/Maintain** – facility, energy and asset management

Trusted Advisor to the Built Environment

25+ Year History of Successful M&A Transactions
Supported by Depth of AEC Industry Knowledge

 Acquisition of  Learning Management Solution	 Strategic Investment by  Field Service/Construction Operations Management	 Sale to  Transportation Infra Asset Management	 Acquisition of  Learning Management Solution	 Sale to  Automated Support for Banks and Credit Unions	 Acquisition of  Construction Schedule Management	 Strategic Investment by  Engineering Visualization Toolkits
 Sale to  Cloud BIM Construction Project Management	 Sale to  3D Modeling Automated Laser Scanning	 Sale to  Collaborative Robotic Control and Simulation	 Sale to  Industrial Scale-Management Software	 Spin-off to  Autodesk VAR Business	 Sale to  Geospatial Asset Management	 Sale to  Right-of-Way Management Software
 Sale to  Network Spatial Engineering Software	 Sale to  5D Virtual Construction BIM Software	 Sale to  Cloud PL:M Search Technology	 Acquisition of  Construction Administration Software	 Sale to  Point-cloud Processing Software	 Sale to  GIS-Based Asset Management	 Sale to  Mobile Robot Software and Technology
 Sale to  Engineering Consulting	 Sale to  AE Project and Office Management	 Sale to  Cloud Interior Design Software	 Sale to  Facilities Management Software	 Sale to  Water Resource CAD Solution	 Sale to  Road and Rail Design Software	 Sale to  PDM Software Application

Our Team – Ascentage Advisors

- Ascentage Advisors provides corporate development and M&A advisory services to technology firms serving the built environment – design, build, operate, maintain
- For more than 20 years, business owners, founders and investors have turned to us for tactical and strategic leadership.
- Our team distinguishes its ability to provide compelling services to our portfolio of clients based on hard-earned domain knowledge.
- The principals are registered representatives of Pickwick Capital Partners, LLC, a member of FINRA and SIPC



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- Deal-making – negotiation and structuring
- Software industry relationships/track record



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Our Extended Team – Ascentage Group

- Ascentage Group provides business development consulting services to guide the growth, evolution and exit objectives of small to mid-sized technology companies
- We work closely with your company and strive to achieve common goals; our best relationships are long term and often continue for three or more years
- With a 'roll up your sleeves' ethic, our team works as an extension of your executive management team; we may also serve on your board of directors or advisory board when appropriate



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Sources and Notes

Data Sources

1. Pitchbook
2. LinkedIn
3. Public company releases, filings, and earnings transcripts

Company References

1. Miscellaneous company and press releases

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Helping technology companies evolve

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