Houlihan Lokey’s TeamFocused on Construction & Real Estate Tech

**Construction & Real Estate Tech**

- **Vik Pandit**
  - Director
  - TMT
  - New York

- **Dan Dresner**
  - Vice President
  - TMT
  - New York

- **Prashant Kalantri**
  - Associate
  - TMT
  - New York

- **Andy Kim**
  - Financial Analyst
  - TMT
  - San Francisco

- **Craig Muir**
  - Managing Director
  - Data & Analytics
  - New York

**TMT Senior Team**

- **Rob Louv**
  - Managing Director
  - and Co-Head, TMT
  - San Francisco

- **Andy Morrow**
  - Managing Director
  - Financial Sponsors
  - Los Angeles

- **Scott Kolbrenner**
  - Managing Director
  - Engineering & Construction
  - Los Angeles

- **Elena Stratigakes**
  - Associate
  - Business Services
  - Los Angeles

**Financial Sponsors Coverage**

**Engineering & Construction**

**Extensive Transaction Experience With Deep Sector Knowledge**

- *Selected transactions were executed by Houlihan Lokey professionals while at other firms acquired by Houlihan Lokey or by professionals from a Houlihan Lokey joint venture company. Tombstones included herein represent transactions closed from 2006 forward.*
Houlihan Lokey is the trusted advisor to more top decision-makers than any other independent global investment bank

- 1,300+ Employees
- 23 Offices Globally
- ~$1 Billion+ in Revenue
- ~$3 Billion+ Market Cap

Corporate Finance

<table>
<thead>
<tr>
<th>2019 M&amp;A Advisory Rankings</th>
<th>Advisor</th>
<th>Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>All U.S. Transactions</td>
<td>Houlihan Lokey</td>
<td>184</td>
</tr>
<tr>
<td>2</td>
<td>Goldman Sachs &amp; Co</td>
<td>167</td>
</tr>
<tr>
<td>3</td>
<td>JP Morgan</td>
<td>141</td>
</tr>
<tr>
<td>4</td>
<td>Morgan Stanley</td>
<td>122</td>
</tr>
<tr>
<td>5</td>
<td>Evercore Partners</td>
<td>112</td>
</tr>
</tbody>
</table>

Source: Refinitiv (formerly known as Thomson Reuters)

No. 1 U.S. M&A Advisor
Top 10 Global M&A Advisor
Leading Capital Markets Advisor

Financial Restructuring

<table>
<thead>
<tr>
<th>2019 Global Distressed Debt &amp; Bankruptcy Restructuring Rankings</th>
<th>Advisor</th>
<th>Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Houlihan Lokey</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>2 PJT Partners Inc</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>3 Moelis &amp; Co</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>4 Lazard</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>5 AlixPartners</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

Source: Refinitiv (formerly known as Thomson Reuters)

No. 1 Global Restructuring Advisor
1,000+ Transactions Completed Valued at More Than $2.5 Trillion Collectively

Technology, Media & Telecom

<table>
<thead>
<tr>
<th>2014 to 2019 M&amp;A Advisory Rankings</th>
<th>Advisor</th>
<th>Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Technology, Media, Entertainment &amp; Telecom Transactions Under $1 Billion</td>
<td>Houlihan Lokey</td>
<td>198</td>
</tr>
<tr>
<td>2 Goldman Sachs &amp; Co</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>3 Raymond James Financial Inc</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>4 Morgan Stanley</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>5 Evercore Partners</td>
<td>144</td>
<td></td>
</tr>
</tbody>
</table>

Source: Refinitiv (formerly known as Thomson Reuters)

No. 1 M&A Advisor for U.S. TMET Transactions Under $1 Billion Over the Past Six Years
27 Completed Transactions in 2019

Financial and Valuation Advisory

<table>
<thead>
<tr>
<th>2000 to 2019 Global M&amp;A Fairness Advisory Rankings</th>
<th>Advisor</th>
<th>Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Houlihan Lokey</td>
<td>1,057</td>
<td></td>
</tr>
<tr>
<td>2 JP Morgan</td>
<td>929</td>
<td></td>
</tr>
<tr>
<td>3 Duff &amp; Phelps</td>
<td>734</td>
<td></td>
</tr>
<tr>
<td>4 Morgan Stanley</td>
<td>621</td>
<td></td>
</tr>
<tr>
<td>5 Bank of America Merrill Lynch</td>
<td>612</td>
<td></td>
</tr>
</tbody>
</table>

Source: Refinitiv (formerly known as Thomson Reuters).

No. 1 Global M&A Fairness Opinion Advisor Over the Past 20 Years
1,000+ Annual Valuation Engagements

The Construction & Real Estate Tech team maintains a positive industry outlook for 2020. The team looks forward to having in-depth discussions with interested parties.
Table of Contents

1. Construction Technology Landscape  
2. Real Estate Technology Landscape  
3. M&A / Valuation Trends  

Page  
4  
15  
25
CONSTRUCTION TECHNOLOGY LANDSCAPE
U.S. Construction Investment: Macro Trends

A Dynamic and Growing Sector That Accounts for 13% of Global GDP

Global GDP ($ trillions)

- $74.0 billion for 87.2% of global GDP
- $9.5 trillion for 12.8% of global GDP

Construction Industry Spending ($ trillions)

- 2014: $9.5 trillion
- 2025: $14.0 trillion

Commentary

- The construction industry is a growing and dynamic sector
- ~$10 trillion per year spent on the buildings, infrastructure, and industrial installations that are the backbone of the global economy

Productivity Lags Other Sectors...

Global Productivity Growth Trends

Real gross value added per hour worked by persons engaged (2005 $; Index 100=1995)

- Construction: 1.0%
- Total Economy: 2.7%
- Manufacturing: 3.8%

Commentary

- Sector’s annual productivity growth has increased only 1% over the past 20 years
- Primary reasons for the lower productivity:
  - Increasing project and site complexities
  - Extensive regulation, land fragmentation, and the cyclical nature of public investment
  - Opaque and highly fragmented
  - Industry underinvests in digitization and innovation
  - Poor project management and execution

...Primarily From Specialized Construction Trades

Construction Productivity by Subsector (value added per employee, indexed total sector = 100, 2013)

- Total: $100
- Building: $104, 23%
- Civil: $119, 21%
- Industrial: $124, 4%
- Specialized: $79, 52%

Sources: FMI, 2017; World Bank; IHS Markit; ISSA; McKinsey Global Institute Analysis; OECD; GGCD-10; BEA; BLS; Rosstat

(1) Based on a sample of 41 countries that generate 95% of global GDP
**Construction Is One of the Least Digitized Sectors**

**IT Spend by Industry**

<table>
<thead>
<tr>
<th>Industry</th>
<th>IT Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Publishing &amp; Internet Services</td>
<td>6.7%</td>
</tr>
<tr>
<td>Banking &amp; Financial Services</td>
<td>6.3%</td>
</tr>
<tr>
<td>Media &amp; Entertainment</td>
<td>5.0%</td>
</tr>
<tr>
<td>Education</td>
<td>4.7%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>4.2%</td>
</tr>
<tr>
<td>Professional Services</td>
<td>4.2%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>3.8%</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>3.2%</td>
</tr>
<tr>
<td>Insurance</td>
<td>3.2%</td>
</tr>
<tr>
<td>Utilities</td>
<td>2.8%</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.6%</td>
</tr>
<tr>
<td>Industrial Electronics &amp; Electrical Equipment</td>
<td>2.5%</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>1.9%</td>
</tr>
<tr>
<td>Industrial Manufacturing</td>
<td>1.7%</td>
</tr>
<tr>
<td>Retail &amp; Wholesale</td>
<td>1.5%</td>
</tr>
<tr>
<td>Food &amp; Beverage Processing</td>
<td>1.3%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.3%</td>
</tr>
<tr>
<td>Energy</td>
<td>1.1%</td>
</tr>
<tr>
<td>Construction, Materials &amp; Natural Resources</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

>50% OF CONSTRUCTION FIRMS SPEND <1% OF REVENUE ON IT

**Reasons for Low IT Spend**

- **Massive and Complex Ecosystem**
  - Collaboration, integration/interoperability, IoT, mobile capabilities, virtuous effect

- **Complex Projects: Unique Services-based Requirements**
  - Collaboration features, integration, and interoperability—technology can be used across jobs and applications on a modular basis

- **Unique Technology Requirements**
  - Significant upgrades over the past 20 years—mobile and collaboration features proliferating the market; tech delivering tangible ROI

- **Difficulty Leveraging Technology Across Assets**
  - IoT, cloud technology, sensors, big data, mobile capabilities

- **Cash Flow Pressure / ROI Focused**
  - Low upfront cost of cloud computing, low maintenance and implementation requirements, minimal incremental investment

- **Older Generation of Decision-makers**
  - Younger, tech-savvy generation beginning to influence—50% of workers below the age of 44

**Source:**
(1) Gartner, 2014
**Investment Themes in Construction Tech**

**Investment**

Investment in construction tech has doubled in the past decade(1)

($ billions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment ($ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$9</td>
</tr>
<tr>
<td>2018</td>
<td>$18</td>
</tr>
</tbody>
</table>

Commentary

- Backed by early-stage VCs, early technologies are delivering on their promise
- Trend is expected to continue as newer technologies are launched that address multiple use cases and further drive digitization in the sector

**Asset Lifecycle**

Within the asset lifecycle, the construction phase garners the greatest investment

Commentary

- Three key phases in asset lifecycle: preconstruction, construction, and operations/maintenance
- Investment arises for each phase:
  - Preconstruction: labor and equipment marketplaces; a fragmented solution space with regionally focused players
  - Construction back office: mature solution space; M&A with strategic or private equity

**Count of Companies by Use Cases(2)**

Increasing consolidation under the backdrop of a fragmented ecosystem

<table>
<thead>
<tr>
<th>Use Cases</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Use Cases</td>
<td>649</td>
</tr>
<tr>
<td>2 Use Cases</td>
<td>581</td>
</tr>
<tr>
<td>3 Use Cases</td>
<td>409</td>
</tr>
<tr>
<td>4 Use Cases</td>
<td>286</td>
</tr>
<tr>
<td>5 Use Cases</td>
<td>169</td>
</tr>
<tr>
<td>6 Use Cases</td>
<td>101</td>
</tr>
<tr>
<td>7 Use Cases</td>
<td>56</td>
</tr>
<tr>
<td>8 Use Cases</td>
<td>4</td>
</tr>
<tr>
<td>9 Use Cases</td>
<td>27</td>
</tr>
<tr>
<td>10 use Cases</td>
<td>14</td>
</tr>
<tr>
<td>11 Use Cases</td>
<td>34</td>
</tr>
</tbody>
</table>

Commentary

- Most construction tech companies are still addressing only one or two use cases
- The need for integration to deliver multiple use cases is a significant “friction cost” for construction tech adopters

---


(2) “Use case” refers to a business need
Huge Growth Opportunity for Construction Tech

Construction Software Market Sizing

- Total Construction Spend: $1.3TN
- Average IT Spend in Related Industries: 1.5%–2.0%
- IT Market: $20B–$26B
- Average Software Spend of IT Spend: 29%
- Construction Tech: $6B–$8B

2020 Key Growth Drivers and Trends

<table>
<thead>
<tr>
<th>Digital technologies are changing the way many E&amp;C companies operate</th>
<th>Increasing cost pressures are driving E&amp;C companies to better plan and execute projects</th>
<th>U.S. infrastructure opportunities could require new partnership models, project structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Disruptive technologies such as cloud, mobile, and big data have the potential to provide the efficiency, productivity, and safety breakthroughs the industry has sought for decades</td>
<td>▪ Technology and real-time data enable schedulers to make better informed decisions around scheduling labor, materials</td>
<td>▪ 2020 will likely see the launch of overdue US infrastructure upgrade initiatives</td>
</tr>
<tr>
<td>▪ Automation will help relieve current talent shortage</td>
<td></td>
<td>▪ Repairing/upgrading the current U.S. infrastructure is expected to cost ~$4 trillion by 2025</td>
</tr>
</tbody>
</table>

Growth in Construction Tech Market

<table>
<thead>
<tr>
<th>2019</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+$725M

Sources:
(1) Federal Reserve Bank of St. Louis (2020)
(2) Deloitte (2018)
(3) Spiceworks
(4) Deloitte
(5) TechNavio
Insurance Technology Market Update

Preconstruction

**Estimating**
Automate and improve the accuracy of bid estimates

**Construction Relationship Management**
Provide a dashboard for the business development pipeline

**Market Intelligence**
Gather and analyze information from past projects and competitor performance

**Marketplace**
Create a platform for stakeholders to prequalify, evaluate, and select partners

Construction

**Design Management**
- Visualize drawings and 3D models on site, mobile platforms
- Update blueprints in the field with markups, annotations

**Scheduling**
- Create, assign, and prioritize tasks in real time
- Track progress online
- Immediately deliver work plan and schedule

**Materials Management**
- Identify, track, and locate materials across the supply chain

**Field Productivity**
- Track crew deployment in real time
- Manage project staffing across skilled trades
- Track on-site productivity at the trade and worker levels

**Equipment Management**
- Track and manage construction equipment fleet

**Quality Control**
- Inspect remote sites through pictures and tags shared through app
- Update and track live punch lists across projects to expedite project closure

**Contract Management**
- Update and track contract-compliance checklist
- Update records for all client and contractor communication regarding contract terms
- Track vendor prequalification and liens

**Performance Dashboard**
- Monitor project progress and performance
- Provide automated dashboards from field data
- Generate manpower updates and view past reports

**Document Management**
- Upload and distribute documents
- Search all projects across phases
- Share information across sites

**Safety**
- Track and report safety incidents across the job site
- Alert workers on safety procedures and provide tips live

**ERP Systems**

**Operations and Management**

**Work-order management**

**Remote monitoring of building systems**

**Predictive analytics for system management**

**Mid to small project management**

**Asset management**
With an ongoing record of facility performance and maintenance backlog

Construction Tech Is a Highly Fragmented Sector

Established use cases are grouped into three clusters: on-site execution, digital collaboration, and back-office and adjacencies. Emerging constellations of “connected” solutions are emerging around established use cases.

More than half of the 2,400+ companies in the construction technology sector are addressing a particular niche in the market, creating an environment ripe for consolidation.


Note: Size of bubble represents number of companies per use case
Construction Software Landscape: Representative Companies

BIM Analysis Tools
- ekotrope
- RECONSTRUCT

BIM Authoring Tools
- cadline

BIM Collaboration
- Autodesk
- Unifi
- Avolve
- Trimble
- Procore

BIM Conceptual Modeling
- ALICE technologies
- Trelligence

BIM Object Libraries
- Architizer™
- ARETE
- MODULAR

Building Code Search Platform
- UpCodes

Construction BI and Reporting Platform
- B2W Software
- anterra

Construction Permit Data Platform
- PERMIT ZONE

Construction Materials Tracking
- Earthwave Technologies
- POSDATA

Construction Tools and Equipment Tracking
- eSUB construction software
- Danaher
- Wynne
- Trapeze
- TeleTracking
- Asset Panda

Construction Workforce Tracking
- Boomr

Construction Project Data Analytics
- UPTAKE
- VERNOX LABS
- PILLAR
- RHUMBIX

Construction Project Data Analytics
- UPTAKE
- VERNOX LABS
- PILLAR
- RHUMBIX
Construction Software Landscape: Representative Companies (cont.)

Construction Accounting and Job Costing Software
- Construction Accounting
- Job Costing Software
  - quickbooks
  - sage 100
  - sage 300
  - sap
  - Viewpoint

Construction Bid Management Software
- Bidracer
- Builder Apprentice
- bidrag
- Construction Pro
- Construction Pro
- Konstant
- Procore
- Smartbid
- Viewpoint

Construction CRM
- P6
- Powerproject
- Procore
- Reali
- Project
- Smartsheet
- Sixsense
- Touchplan
- Viewpoint

Construction Document Management
- Crelan Imaging
- Unearth

Construction ERP
- Promis
- contractERp

Construction Estimation
- Coconino
- Trimble
- Quick BID
- Estimator
- Quick BID
- ProEst
- Quick BID
- Winest
- Viewpoint

Takeoff Software
- Autodesk
- Autodesk
- Estimator
- Quick BID
- ProEst
- Quick BID
- Viewpoint

Construction Field Management Software
- Costential
- MoCA
- Touchplan

Construction Payment Platform
- FLEETCOR
- zlien
- Texture
- Oracle
- Built

Construction Program and Portfolio Management
- Procore

Construction Project Management Suite
- Gameplan
- Redteam
- Aurigo
- Buildtrend
- Coconstruct

Construction Quality and Safety Management
- Ownerinsite
- BIMAX
- Rhumbix
- Peachtree
- Ownerinsite
- BIMAX
- Helix
- gocanvas
- CaviTech
- CoConstruct

Construction Workflow Management
- BPLogix
- Procore
- Browz
- Hevrett
- Oracle
- Autotem

Contractor Prequalification Software
- Procore
- Browz
- Avetta
- Textura
- BuildingConnected
- Oracle
Construction Software Landscape: Representative Companies (cont.)

**Project Scheduling Software**

- Cosential
- Microsoft Dynamics CRM
- Outlook
- Pipeline Deals
- Salesforce

**File Storage and Collaboration Software**

- Amazon S3
- Box
- Citrix ShareFile
- Dropbox
- Egnyte
- Evernote
- Google Drive
- HighTail
- Microsoft Azure
- OneDrive
- Procore
- SharePoint
- Salesforce Files
# M&A and Partnerships in Construction Tech

## Fragmentation of Technology Offerings

- Most companies are engaging solutions that address a very specific, narrow application rather than more integrated solutions.
- This fragmentation is a challenge for construction companies that want to engage with technology solutions.
- Companies are exploring the potential to consolidate solutions that address multiple use cases.

## Larger Software Players Focusing on an Integrated Software Portfolio, Seeking to Be a “One-Stop Shop” for Core Needs in Construction Tech

- Existing software companies are acquiring more targeted startups in order to offer an integrated software solution, usually across multiple asset classes.

## Some Companies Seeking to Build Asset-Class-Specific Solutions (e.g., Industrial Construction-Specific Solutions)

- Some vertically integrated contractors are incorporating (by developing, acquiring, or partnering with) the full set of hardware and software solutions for a given asset class.
# Real Estate Market: Overview and Trends

Composed of three large segments—commercial, multifamily residential, and single-family residential—all currently experiencing favorable secular trends.

<table>
<thead>
<tr>
<th>Property Types</th>
<th>Commercial</th>
<th>Residential</th>
<th>Single-Family Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Office space, retail, manufacturing parks, warehouses, medical, hospitality, etc.</td>
<td>Apartment buildings, town houses, managed communities, military, student, senior</td>
<td>Owner-occupied, rental properties</td>
</tr>
</tbody>
</table>

**Market Sizing**

| (Assets) | ~$15 trillion | ~$25 trillion, including single-family | ~$25 trillion, including multifamily |

**Representative Vendors**

- BXP
- CBRE
- AvalonBay Communities
- Essex Property Trust, Inc.
- Invitation Homes
- Century
- ColonyStarwood
- Realogy
- HFF
- RE/MAX

**Software Needs**

- Automation of complex lease calculations
- Common area maintenance (CAM) expenses
- Building operations management
- Increased cybersecurity
- Apartment listing services
- CRM functionality
- Online resident application process
- Compliance solutions
- Brokerage management
- Listing services
- Mortgage/financing management
- Short-term rental solutions

---

U.S. real estate represents $40 trillion in cumulative assets.

---

(1) Source: National Association of Realtors, REIS Research
# Real Estate Market: Overview and Trends (cont.)

## Real Estate Market Players

### Commercial

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Investor</td>
<td>Investors that specialize in the acquisition, repositioning, development, and management of commercial property, sometimes through joint-venture investments</td>
</tr>
<tr>
<td>Commercial Agent</td>
<td>Represents tenants or lessees by finding, selecting, and negotiating new space for client businesses</td>
</tr>
<tr>
<td>Property Manager</td>
<td>Manages and oversees operations of individual properties, including marketing, leasing, tenant management, maintenance, rent collection, and bill payment</td>
</tr>
</tbody>
</table>

### Residential

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Agent</td>
<td>Represents single-family homes or units within a multifamily property</td>
</tr>
<tr>
<td>Residential Investor</td>
<td>Invests in ownership of homes or multifamily units; often the purchaser lives in one segment of the multiplex, creating a residence as well as an investment property</td>
</tr>
<tr>
<td>Purchaser</td>
<td>Owner who purchases for individual use, most often to provide housing for family use</td>
</tr>
</tbody>
</table>
Commercial Real Estate Market Rebounding Since the Recession in 2008-2009

- Since the 2009 recession, the CRE sector has shown strong growth driven by strong lease demand and corresponding investment in new properties
- Property price indices (PPIs) indicate strong gains in commercial valuations
- Even though the market has largely regained momentum lost from the recession, challenges remain as organizations look to manage properties more efficiently—from a leasing, tenant management, and maintenance perspective—and increasingly look to leverage both proprietary and market data

Sources: National Association of Realtors; REIS Research; Green Street Advisors; 2015 American Community Survey 1-Year Estimates; U.S. Census Bureau; CBRE; Harvard JCHS; S&P CoreLogic; Statista

(1) Index of U.S. commercial property values that captures the prices at which commercial real estate transactions are currently being negotiated and contracted
Residential Real Estate Is Experiencing Higher Completion Rates With Increasing Occupancy Rates/Lower Vacancy Rates

- U.S. rental market is seeing strong demand and high occupancy rates driven by:
  - Demographic shifts driving decreasing homeownership
  - Stabilizing unemployment rates driving higher incomes and providing more individuals with means to rent
  - Population growth in the U.S.
  - Rental demand and steady increases in average rental prices is incentivizing investment in multifamily units via net new construction

Sources: National Association of Realtors; REIS Research; Green Street Advisors; 2015 American Community Survey 1-Year Estimates; U.S. Census Bureau; CBRE; Harvard JCHS; S&P CoreLogic; Statista
Real Estate Market Opportunities (cont.)

### Single-Family Residential

<table>
<thead>
<tr>
<th>Home Sales by Unit Count (millions) and Case-Shiller Index</th>
<th>Homeownership Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trends</strong></td>
<td><strong>2014</strong></td>
</tr>
<tr>
<td>New Home Sales</td>
<td>400</td>
</tr>
<tr>
<td>Case-Shiller</td>
<td>100</td>
</tr>
</tbody>
</table>

**Commentary**

- **New Single-Family Home Sales and Case-Shiller Index Up**
  - Increased demand for rental units
  - While home purchases are increasing, the homeownership rate decreased 12 consecutive years through 2016 and has only begun to tick back up in 2017 and 2018
  - Single-family rentals are growing at a faster pace than any other portion of the housing market

**Sources:** National Association of Realtors; REIS Research; Green Street Advisors; 2015 American Community Survey 1-Year Estimates; U.S. Census Bureau; CBRE; Harvard JCHS; S&P CoreLogic; Statista
## Real Estate Software Market Trends

### I. Digitization of the Real Estate Sector
- The real estate sector has generally been slow to adopt technology—largely a paper and spreadsheet-based industry with a long tail of legacy solutions

### II. Fragmented Market—Consolidation Producing Suite Solutions
- The market is now served by a large number of point solutions that address specific constituencies and pain points
- A number of vendors have been aggressively consolidating the sector in an effort to build out comprehensive solution suites

### III. Proprietary and Siloed Data
- Vast quantities of data; however, data is largely siloed in a myriad of point solutions
- Lack of an industry-standard data format, which makes data exchange/integration difficult

### IV. Adoption of Mobile Solutions
- Demand for mobile-enabled products is driving the adoption of more modern solutions

### V. Individual/Owner Empowerment
- Listing sites provide tools for discovery and research when buying, and short-term rental platforms have allowed individual property owners to rent directly to other individuals without having to go through an agency
- The emergence of investment/crowdfunding platforms for individuals provides opportunity to invest in properties once out of the realm of possibility
# Real Estate Software Market Overview and Trends

## Underlying Industry Trends

| **Improving property fundamentals** | Robust recovery of the real estate market in commercial, multifamily residential, and single family. Rental rates and occupancy rates are the highest since 1997, and new single-family home sales are up 99% since the low in 2011 |
| **Shifting preference toward renting vs. owning** | Residential rental unit construction is at its highest since 2004 |
| **Heightened awareness of the value of property management software solutions in real estate** | Software solutions driving efficiency and readily apparent ROI—SaaS solutions eliminate the large upfront investment cost for real estate operators |
| **Increased demand for more sophisticated financial solutions** | Need to reduce labor and administrative costs while increasing productivity as the market consolidates |
| **Demand for integrated suite solutions** | Property managers and investors increasingly want one “system of record” for all data, with software solutions that span the full tenant, building, and investor lifecycle |

## Resulting Effect

- **Strong fundamentals increasing the number of properties that need to be managed and encouraging investment**
- **Efficiency demands driving increasing real estate software penetration**
- **Market leaders actively consolidating to build out comprehensive suite solutions**
Fragmented Commercial and Multifamily Market

Key:
- MF and Commercial
- MF-Focused
- Commercial-Focused

**Marketing & Sourcing**
- (MF) CRM / Lead Management
  - RentDynamics
- (CM) Marketing
  - LeaseLabs
  - buildout

**Tenant Management**
- (MF) Leasing & Renewals
  - REthink
- (CM) Tenant Management
  - StarRez

**Facilities Management & Integrated Workplace Management**
- Suites
- Lease Management
- Space Management
- Maintenance Management
- Sustainability & Energy Management

**Revenue Management**
- (CM) Financials
  - QBO
- (MF) Investment Management
  - Juniper Square

**Back Office**
- Revenue Management
  - duetto
- Financials
  - Intacct
- Investment Management
  - ARGUS

**Data & Analytics**
- duetto
- QuickBooks

**BIM**
- Intacct
- QuickBooks

**Lending & Appraisal**
- ARGUS

**Construction**
- aconex
- Bentley

**Source:**
(1) Shea & Company
### Fragmented Commercial and Multifamily Market (cont.)

- **Key:**
  - MF and Commercial
  - MF-Focused
  - Commercial-Focused

#### Brokerage Management

<table>
<thead>
<tr>
<th>CRM/Lead Management</th>
<th>ILS</th>
<th>Marketing &amp; Sourcing</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contactually</td>
<td>realtor.com, RentPath, Top Producer, zurple</td>
<td>COMPASS, REDFIN, triplemint.</td>
<td>HomeLight™, BOSTONLOGIC, inc.</td>
</tr>
</tbody>
</table>

#### Marketing & Sourcing

- Software-Enabled Brokerage
  - Compass, Redfin, triplemint.

#### Marketing

- Boomtown!, BOSTONLOGIC, inc.

#### Key:

- **MF** and Commercial
- MF-Focused
- Commercial-Focused

#### Showings

<table>
<thead>
<tr>
<th>Showing Management</th>
<th>Virtual Showings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showingtime</td>
<td>GeoCV, HouseLens, matterport</td>
</tr>
</tbody>
</table>

#### Transaction Management

<table>
<thead>
<tr>
<th>Transaction Management</th>
<th>Accounting/Commission Management</th>
<th>Suites</th>
</tr>
</thead>
<tbody>
<tr>
<td>DocuSign, broker.com, BROKER INT, dotloop, instanet, SKYSLOPE, zipLogix</td>
<td>quickbooks, Emphasys, LANTX</td>
<td>Lone Wolf Technology Co.</td>
</tr>
</tbody>
</table>

#### Back Office

<table>
<thead>
<tr>
<th>Back Office</th>
<th>Title &amp; Closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILS Software-enabled Brokerage</td>
<td>JetClosing</td>
</tr>
</tbody>
</table>

#### Investing/Crowdfunding

<table>
<thead>
<tr>
<th>Investing/Crowdfunding</th>
</tr>
</thead>
<tbody>
<tr>
<td>PeerStreet, RealtyShares</td>
</tr>
</tbody>
</table>

#### Data & Analytics

<table>
<thead>
<tr>
<th>Data &amp; Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoreLogic, RedVision, RealScout</td>
</tr>
</tbody>
</table>

#### Mortgage & Lending

<table>
<thead>
<tr>
<th>Mortgage &amp; Lending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altisource, Blend, Cloudvirga, Encompass, FNC, Optimalblue, Roofstify, Sبدو, SoFi</td>
</tr>
</tbody>
</table>

#### Rentals

<table>
<thead>
<tr>
<th>Rentals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbnb, HomeAway, VRBO</td>
</tr>
</tbody>
</table>

#### Insurance

<table>
<thead>
<tr>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hippo, Lemonade</td>
</tr>
</tbody>
</table>

#### Source:

- (1) Shea & Company
Public Construction and Real Estate Tech Companies Have Performed Well

### EV/2020E Revenue Multiple

<table>
<thead>
<tr>
<th>Company</th>
<th>EV/Revenue Multiple</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSYS</td>
<td>12.5x</td>
</tr>
<tr>
<td>Autodesk</td>
<td>10.1x</td>
</tr>
<tr>
<td>AVEVA</td>
<td>8.3x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>7.3x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>7.1x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>6.0x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>5.0x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>4.9x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>4.4x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>4.2x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>3.9x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>3.5x</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>2.9x</td>
</tr>
<tr>
<td>Median</td>
<td>5.0x</td>
</tr>
</tbody>
</table>

### 2019-2020E Revenue Growth

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue Growth 2019-2020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autodesk</td>
<td>21.7%</td>
</tr>
<tr>
<td>Autodesk</td>
<td>21.4%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>14.5%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>15.3%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>11.7%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>11.5%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>8.7%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>6.7%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>5.7%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>4.4%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>4.3%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>0.6%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>0.0%</td>
</tr>
<tr>
<td>Median</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

### 2020E EBITDA Margin

<table>
<thead>
<tr>
<th>Company</th>
<th>EBITDA Margin 2020E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autodesk</td>
<td>46.2%</td>
</tr>
<tr>
<td>Autodesk</td>
<td>45.5%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>36.8%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>35.8%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>35.6%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>34.6%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>34.3%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>32.9%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>30.4%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>29.6%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>27.9%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>26.0%</td>
</tr>
<tr>
<td>Autodesk RP</td>
<td>25.2%</td>
</tr>
<tr>
<td>Median</td>
<td>30.4%</td>
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</tbody>
</table>

Source: S&P Capital IQ, trading data as of 12/10/2019
M&A Is Primary Exit for Construction and Real Estate Technology Companies

M&A Summary (2012-2018)

($ in billions)

<table>
<thead>
<tr>
<th>Date</th>
<th>Acquirer</th>
<th>Target</th>
<th>Subsector</th>
<th>EV $M</th>
<th>EV/Rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/20/2019</td>
<td>office</td>
<td>Real Estate Facilities Management</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>11/13/2019</td>
<td>Enovate</td>
<td>Real Estate CRM</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>11/07/2019</td>
<td>BIM</td>
<td>Residential Property Management</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>10/16/2019</td>
<td>VTS</td>
<td>Commercial Property Search</td>
<td>NA</td>
<td>NA</td>
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</tr>
<tr>
<td>07/02/2019</td>
<td>RIB Group</td>
<td>Construction ERP</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>05/01/2019</td>
<td>Simplifi</td>
<td>Information Management</td>
<td>$335</td>
<td>NA</td>
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<tr>
<td>04/17/2019</td>
<td>Accel</td>
<td>Application Software</td>
<td>$3,700</td>
<td>7.5x</td>
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<tr>
<td>02/20/2019</td>
<td>CREW</td>
<td>Construction ERP</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>11/20/2018</td>
<td>Autodesk</td>
<td>Construction Collaboration</td>
<td>$875</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>09/25/2018</td>
<td>Procore</td>
<td>BIM and Architectural Design</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>07/31/2018</td>
<td>FORTIVE</td>
<td>Facilities Management Software</td>
<td>$2,000</td>
<td>7.4x</td>
<td></td>
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<tr>
<td>07/09/2018</td>
<td>Autodesk</td>
<td>Construction Project Management</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>07/02/2018</td>
<td>FORTIVE</td>
<td>Construction Project Management</td>
<td>$775</td>
<td>NA</td>
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<tr>
<td>05/11/2018</td>
<td>SilverLake</td>
<td>Internet Commerce</td>
<td>$3,136</td>
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<tr>
<td>04/23/2018</td>
<td>Trimble</td>
<td>Construction Inventory Management</td>
<td>$1,200</td>
<td>NA</td>
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<tr>
<td>02/02/2018</td>
<td>BIM</td>
<td>Construction Project Management</td>
<td>$485</td>
<td>9.2x</td>
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<tr>
<td>12/17/2017</td>
<td>Oracle</td>
<td>Construction Data &amp; Analytics</td>
<td>$1,200</td>
<td>9.7x</td>
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</tr>
<tr>
<td>07/12/2017</td>
<td>Viewpoint</td>
<td>Construction Inventory Management</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>04/06/2017</td>
<td>Compliance</td>
<td>Construction Project Management</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>02/10/2017</td>
<td>Synergy</td>
<td>Construction Project Management</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kognetics Research
### Construction and Real Estate Technology Activity

#### Drawing Growth Equity

**Security Growth Equity Summary**
(2012-2018)

<table>
<thead>
<tr>
<th>Date</th>
<th>Acquirer</th>
<th>Target</th>
<th>Subsector</th>
<th>EV $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>TopHat</td>
<td>Modular Housing</td>
<td>Goldman Sachs</td>
<td>$34</td>
</tr>
<tr>
<td>2019</td>
<td>Fieldwire</td>
<td>Construction Project Management</td>
<td>$33</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>built</td>
<td>Construction Project Management</td>
<td>$31</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>Jb</td>
<td>Construction Planning</td>
<td>$4</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>SUB</td>
<td>Construction Management</td>
<td>$12</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>Procore</td>
<td>Construction Project Management</td>
<td>$75</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>View</td>
<td>Smart Building</td>
<td>SoftBank</td>
<td>$1,100</td>
</tr>
<tr>
<td>2018</td>
<td>SafetyCulture</td>
<td>Construction Data &amp; Analytics</td>
<td>$117</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>Katerra</td>
<td>Construction Marketplaces</td>
<td>$865</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>Uptake</td>
<td>Construction Project Management</td>
<td>$21</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>Uptake</td>
<td>Building Technology</td>
<td>$130</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>built</td>
<td>Construction Project Management</td>
<td>$22</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>Katerra</td>
<td>Construction Marketplaces</td>
<td>$50</td>
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</tr>
<tr>
<td>2017</td>
<td>BUILDINGCONNECTED</td>
<td>Construction Marketplaces</td>
<td>$26</td>
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<td>2017</td>
<td>10522428571</td>
<td>Construction Project Management</td>
<td>$13</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>EquipmentShare</td>
<td>BIM and Architectural Design</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>ICONIQ</td>
<td>Construction Project Management</td>
<td>$20</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>FIANL CADC</td>
<td>BIM and Architectural Design</td>
<td>$49</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>SafetyCulture</td>
<td>Construction Project Management</td>
<td>$18</td>
<td></td>
</tr>
</tbody>
</table>

**Growth Equity Volume by Round**
(2012-2017)

<table>
<thead>
<tr>
<th>Round</th>
<th>Percentage of Deals</th>
<th>Deal Size by Round</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td>$1.5</td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td>$6.2</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td>$17.0</td>
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<tr>
<td>2015</td>
<td></td>
<td></td>
<td>$38.5</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td>$157.4</td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td>$145.7</td>
</tr>
</tbody>
</table>

Source: Kognetics Research
# Notable Acquisitions in Construction and Real Estate Tech

<table>
<thead>
<tr>
<th>Date</th>
<th>Target Description</th>
<th>Enterprise Value ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/20/2019</td>
<td>Develops software solutions for asset management, work-order management, maintenance planning, preventive maintenance, and inspection</td>
<td>NA</td>
</tr>
<tr>
<td>11/13/2019</td>
<td>Offers technology maximizing marketing impact for real estate companies and agents</td>
<td>NA</td>
</tr>
<tr>
<td>11/07/2019</td>
<td>Software company providing cloud-based property management software to landlords, property management companies, self-managed condos, and HOAs</td>
<td>$580</td>
</tr>
<tr>
<td>10/06/2019</td>
<td>Cloud-based technology platform helping users manage their property portfolios</td>
<td>NA</td>
</tr>
<tr>
<td>08/26/2019</td>
<td>New tool allowing contractors to estimate, invoice, record payments, and manage projects from iPhone/iPad and the web</td>
<td>NA</td>
</tr>
<tr>
<td>08/19/2019</td>
<td>National leader in predictive marketing solutions for the real estate industry</td>
<td>NA</td>
</tr>
<tr>
<td>08/15/2019</td>
<td>Provides construction accounting and project management software for contractors</td>
<td>NA</td>
</tr>
<tr>
<td>06/20/2019</td>
<td>Provides software to manage all aspects of leads in the real estate multi-housing industry</td>
<td>NA</td>
</tr>
<tr>
<td>06/04/2019</td>
<td>Cloud-based construction management solution</td>
<td>NA</td>
</tr>
<tr>
<td>05/06/2019</td>
<td>Provides managed services and software solutions for real estate companies</td>
<td>NA</td>
</tr>
<tr>
<td>12/20/2018</td>
<td>Provides builders with cloud-based bid procurement services</td>
<td>$275</td>
</tr>
<tr>
<td>11/30/2018</td>
<td>Provides contractor management software and safety learning content</td>
<td>$225</td>
</tr>
<tr>
<td>11/20/2018</td>
<td>Cloud-based construction document collaboration platform</td>
<td>$875</td>
</tr>
</tbody>
</table>

*Source: Kognetics Research*