

PARADIGM SHIFT:

Technology's
Impact on CRE



Developed in conjunction with:

ALM Real Estate Media Group

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Foreword



“ Shifting demographics have always affected real estate, but the significance and speed of

technological change is dramatically changing real estate at an unprecedented rate.”

— **Joe Derhake, PE | CEO,**
Partner Engineering and
Science, Inc.

Technology is evolving, and it’s having a profound impact on the Commercial Real Estate (CRE) industry: transforming the way we use, build, assess and transact real estate assets.

Technological developments are making buildings smarter, increasing the accuracy and detail of the data we collect during the due diligence stage, and improving the way we manage this throughout property ownership. Our buildings and societies are also becoming increasingly networked, with highly anticipated and fast-evolving trends and technologies like the Internet of Things and 5G making it possible to collect, analyze and share huge amounts of data almost instantaneously. This is changing the way we view and approach risks and opportunities, while enabling better, more efficient decisions and investment processes.

Technology is also changing demand for, and therefore the value proposition of, product types across the CRE landscape. Market forces are increasingly driving investments in technology. Tenants and investors are demanding upgrades in IT, MEP and energy efficiency and, as a result, greener and smarter buildings yield better tenant attraction/retention, lower operating costs and demand higher rental rates.

To gain a fuller understanding of the role technology plays in the commercial real estate space, Partner Engineering and Science, Inc. and GlobeSt.com are continuing to delve into the thinking and expectations of industry leaders with a new, comprehensive survey about how technology will change and add value to CRE assets and practices.

In this survey, we asked the people who have a front seat to decision-making processes relating to the acquisition, financing, leasing and development of commercial real estate, to help us identify game-changing technological developments, where they will have the biggest impact and which, if any, product

Foreword

“Market forces are increasingly driving investments in technology: tenants and investors are demanding upgrades in IT, MEP and energy efficiency and, as a result, greener and smarter buildings yield better tenant attraction/retention, lower operating costs and higher rental rates.”

types would be negatively affected. We asked them for their insights into how these might drive opportunities for adaptive reuse projects and how they are changing the way transactions take place.

The survey showed that, despite having a “late adopter” reputation, the CRE industry is very aware of the impact and value of technological developments and the immediate need to adapt in order to stay relevant and profitable. Read on for some insightful and surprising results!

—**Steve Lubetkin**
Custom Content Editor
GlobeSt.com



Executive Summary

With this survey, Partner Engineering and Science, Inc. and GlobeSt.com probe deeper into the impact of technological developments by exploring the thoughts and expectations of industry leaders about the new risks and opportunities that technology presents in the commercial real estate space. Brokers and owners each represented more than a quarter of respondents, with developers and investors also making up a significant proportion of survey participants. We asked these industry players for their insights on how technology will impact three broad categories: how it changes demand across the commercial real estate space; how it may add value to commercial assets; and how it influences the transaction process.

Looking at demand, a third of the survey respondents recognize the link between technology and building obsolescence. The impact that trends like online shopping and telecommuting have had on demands for retail and office space is well documented, and this was clearly reflected in the survey results. More than 50% of respondents reported these product types as most exposed to becoming functionally or economically obsolete as a result of technological developments. However, the evolving demand and requirements for healthcare facilities as a result of digital medicine developments was also identified by 20% of respondents. A quarter of those polled believe that obsolete buildings can be put to

KEY FINDINGS

- Greatest ROI is expected from HVAC optimization and retrofitting; followed by LED lighting and controls technologies.
- Mobile technologies, “big data” and the “Internet of Things” are game-changers.
- Technologies offer the most value during pre-loan and pre-acquisition stages, in tenant attraction and management efforts and throughout facility management.
- Retail and office property types are most exposed to economic or functional obsolescence.
- Key drivers for adaptive reuse are demographic changes and gentrification.
- Mobile tools for sale/acquisition/lease-up will have the greatest impact on how CRE transactions take place; collaborative and/or file-sharing tools came in second.

different, possibly higher, uses through targeted upgrades or adaptive reuse projects.

Despite the identification of building obsolescence as a risk, survey participants overwhelmingly believe that technology will be a value creator. Predictably, three quarters of the survey respondents say mobile technologies, “big data” and the increased interconnectedness that this trend facilitates will result in a positive transformation throughout the industry. Mobile and cloud-based tools are having a profound impact on the way transactions take place by improving the collection, management and review of data, and by enhancing the ability to collaborate and share this information with all stakeholders. About two fifths of respondents expect the use of collaboration tools and file sharing to become important in the way sales, leases and acquisitions are completed.

The ability to extract and analyze an increased amount of more detailed data about markets and the operation of individual assets is yielding more efficient decisions and investment processes. Importantly, it also allows for better managed and operated assets through improved facility management and capital planning. Millennials demand more efficiently operated, lower-impact assets. They also expect assets to support their ever-increasing demand for connectivity and data performance everywhere. In this way, technology is creating more marketable and

valuable assets. As previously suspected, close to half of the survey's respondents cited wireless technology as one of the most critical value-add opportunities in commercial real estate.

When it comes to adding value to assets, energy optimization is seen as the greatest benefit that technology will deliver to the industry. Respondents recognize that better operated buildings will yield higher returns, and that investing in technologies to improve energy efficiency has the potential to significantly increase the marketability and value of commercial real estate assets. More than half of respondents believe that such energy improvements will come from retrofitting HVAC systems and adding more efficient LED lights and control technologies. Survey respondents also see building automation as a key driver of ROI. Participants expect a fairly rapid, 3 to 4-year payback on investments in energy optimization improvements. As a result, the vast majority of respondents cited energy efficiency and renewable energy when asked about the most promising technology investment.

The survey brought to light an interesting point: as buildings and societies become increasingly networked, the risk and impact of security vulnerabilities intensifies, and will therefore demand greater attention to data protection and security. The survey clearly indicated that technology is expected to add enormous value to the CRE industry and that the benefits far outweigh any negative implications. But, as technologies continue to evolve at a rapid pace, it is critical that the CRE industry stays ahead of market demands, applications and security risks relating to new technologies to ensure their investments deliver rather than disrupt returns!



“Continuous energy commissioning, persistent building optimization, and real time utility benchmarking

are some of the most significant value-add opportunities facilitated by technological developments in the CRE space.”

— **Tony Liou** | President,
Partner Energy

Methodology

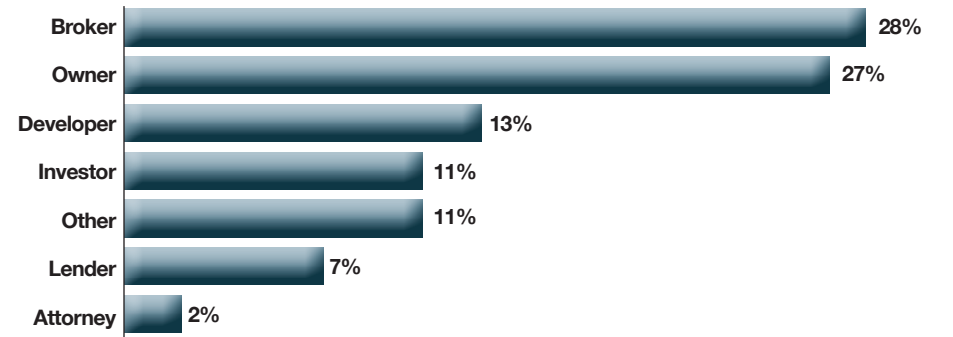
On behalf of Partner Engineering and Science, Inc., ALM Marketing Services undertook an online reader survey in July 2015 to gain insight into how technology is changing the CRE landscape and how it will add value to the industry in the future.

The survey population is comprised of a subset of subscribers and customers drawn from ALM's proprietary database of commercial real estate professionals. A drawing for three \$100 gift cards was offered as an incentive for participation. The survey was available to respondents from July 9 to July 23, 2015.

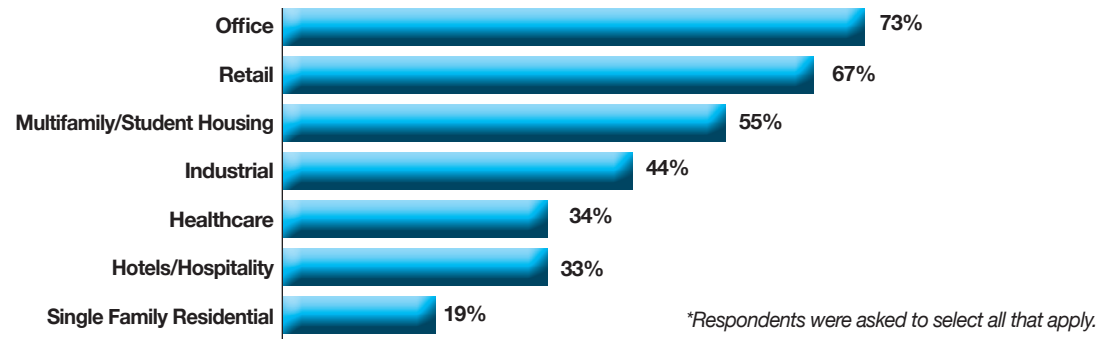
The survey aimed to:

- Identify the next game-changing technological developments and their impact on the sector.
- Pinpoint the biggest impacts technologies will have on demand and the product types that will be most negatively impacted.
- Identify the drivers for adaptive reuse opportunities.
- Understand how technology will add value to the industry, particularly through improved operation and marketability of assets, and in the way CRE transactions take place and business decisions are made.
- Determine which technological developments are expected to yield the greatest ROI.

Respondent's Primary Function



Respondent's Sector(s) of Activity*



Respondent Profile

Of the 150 respondents who identified their primary function, the largest groups were brokers (28%) and owners (27%), followed by developers (13%) and investors (11%). Others included title professionals (11%), lenders (7%) and attorneys (2%). Dominant areas of activity for respondents are office (73%), retail (67%) and multifamily/student housing (55%). These are followed by industrial (44%), healthcare (34%), hotels/hospitality (33%) and single-family residential (19%). (Respondents were asked to select all sectors that applied to their situation.) Overall some 166 individuals responded to some or all of the questions in the survey.



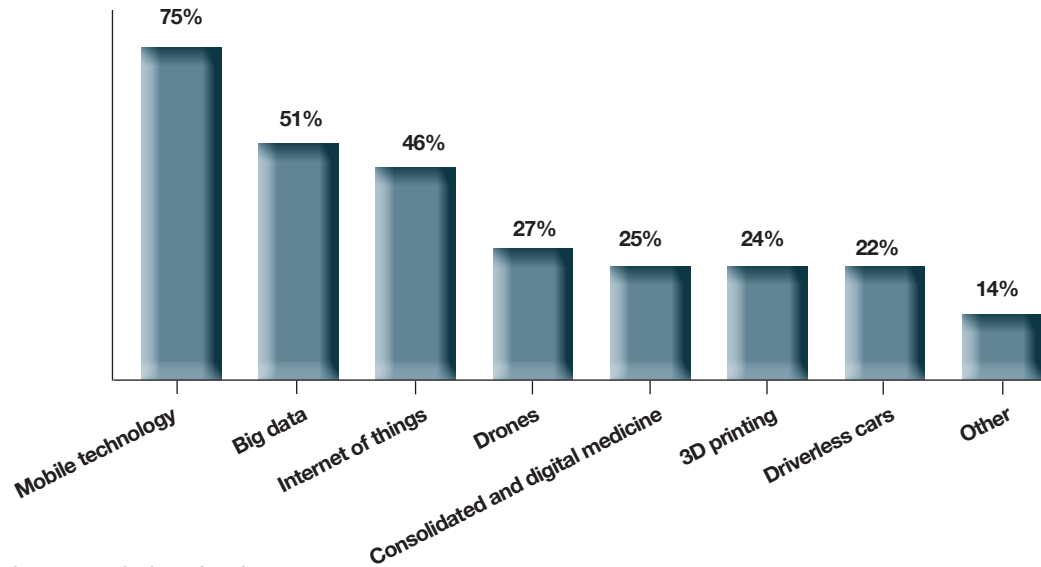
How Technology is Changing the CRE Landscape

Technological developments are changing the value proposition of product types across the commercial real estate industry. What are the next big game-changers that are coming down the pike, and how are they expected to change the CRE landscape?

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What are the next biggest technology trends that will change demands in real estate?



*Respondents were asked to select the top 3.

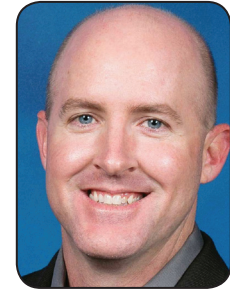
“ In demographics it's the millennials and their behaviors and preferences that will shape real estate in the future.”

— Survey respondent

“5G: THE NEXT BIG THING”

As the next development in ultra high-speed and high-capacity wireless networks, 5G will form the backbone of the society of the future. This highly efficient, low-impact technology is projected to be hundreds or even a thousand times faster than the 4G LTE that we currently use on our phones, and will play a critical part in meeting tomorrow's increasingly demanding data performance requirements. The reality of exciting developments such as driverless car technology and the concept of Smart Cities is dependent on the enhanced connectivity provided by such 5G networks.

[Click here for more information:](#)
[Blog: Will Technology Disrupt Your Return on Investment?](#)

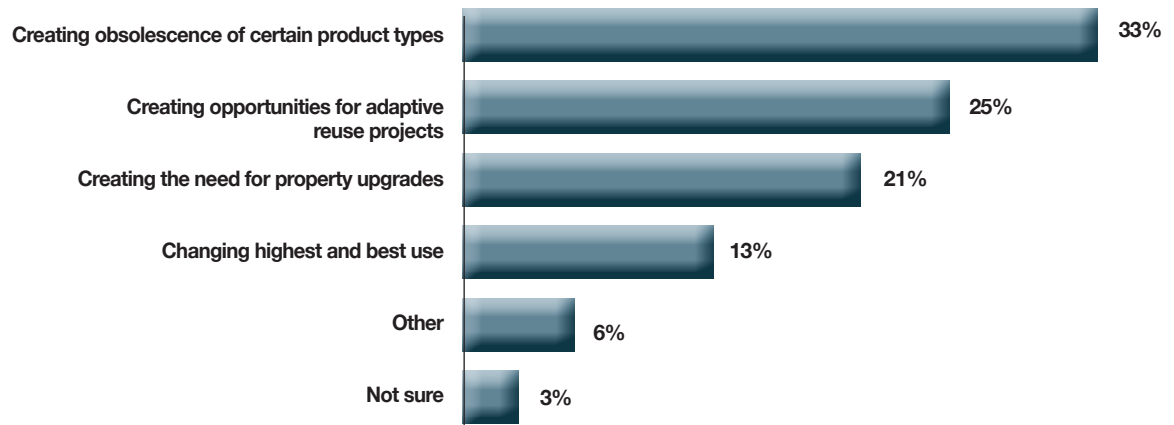


“ Connectivity is the 5th utility. It improves the marketability of your asset, and for millennials it's more important than water.”

— Michael Cunneen
Director, Partner Telecom



What's the biggest impact these technologies will have on demand in the CRE space?



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ADAPTIVE REUSE:
Capitalizing on Changing Market Demands



“ Obsolete buildings create opportunities for adaptive reuse. Repurposed buildings with character and creative use of space can be highly marketable, but the due diligence needed to confidently take on and successfully complete one of these projects is drastically different. You need a multidisciplinary team with proven experience with adaptive reuse projects to get a complete picture.”

— **Ralph Orlando, PE** | Division President, Partner Engineering and Science, Inc.



“ We're seeing greater demand to design building infrastructure that is automated, remotely controlled and takes advantage of the newest and most efficient technologies.”

— **Chris Morris, PE** | National Client Manager, Partner Engineering and Science, Inc.

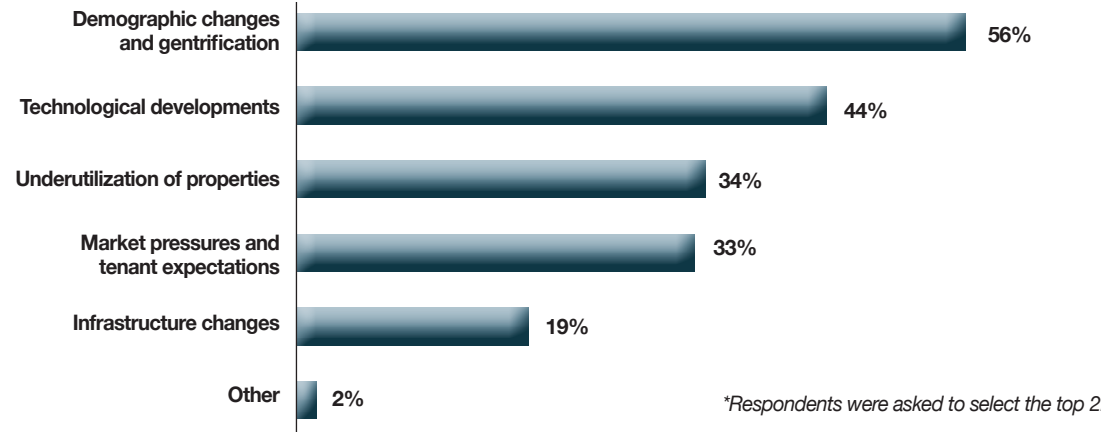
What are the key drivers for adaptive reuse opportunities?



“ Shifting demographics have always affected real estate, but the significance and speed of

technological change is dramatically changing real estate at an unprecedented rate.”

— **Joe Derhake, PE | CEO,**
Partner Engineering and
Science, Inc.



Click here for more information:

[Blog: Cracking the Code on Adaptive Reuse](#)

[Blog: Is Your Adaptive Reuse Project a Good Financial Fit?](#)

THE IMPACT OF DRIVERLESS CAR TECHNOLOGY

Technologies like autonomous vehicles have potential to shift demand for various building types. For more insight on how this can create opportunities for adaptive reuse, see the resources below.



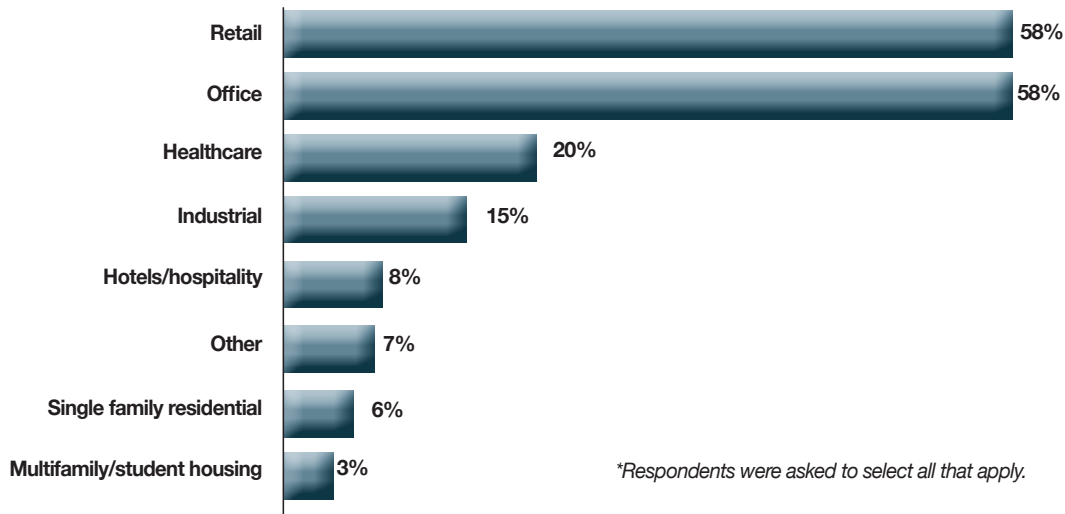
Click here for more information:

[Event Coverage: Derhake Discusses Driverless Cars' Impact on Real Estate](#)

[Article: The Risks and Opportunity of Driverless Car Technology](#)



What product types are most exposed to becoming functionally or economically obsolete?



HEALTHCARE

“ Technological advancements of telemedicine, home monitoring, virtual labs, and so many more will have a profound impact on the way we view and use traditional healthcare facilities resulting in better outcomes. The real estate industry will need to start rethinking the design and construction of new healthcare facilities and the creative adaptive reuse of existing ones accordingly.”

— **Charles S. Maggio, AIA, ASHE, NCARB**
 Managing Director, Northeast, Healthcare, CBRE

OFFICE

“ Most office inventory is over 30 years old and needs modernization to become more relevant and deliver on current IT and environment demands. The potential rent growth associated with modernized, technology-infused office is massive – in the range of 25% or higher – making the return on capital invested extremely attractive. These renovated, well-located buildings are in high demand with many of the core funds that simply don't have enough of this creative lifestyle office product in their portfolio.”

— **Kevin Shannon** | Vice Chairman/Managing Director Institutional Properties, Office, CBRE

RETAIL

“ No surprise here. Retailers are still reeling from the competitive pressures of e-commerce, but technology is also revolutionizing how brick and mortar stores are used. The smart retail centers that leverage technology to enhance the entire shopping experience will find success in the right metros.”

— **Dianne Crocker** | Principal Analyst, EDR Insights

INDUSTRIAL

“ The Amazon effect is creating a ton of demand for new high-tech distribution centers while making some older industrial buildings obsolete. In some markets these are being repurposed into creative office spaces.”

— **Joe Derhake, PE** | CEO, Partner Engineering and Science, Inc.



How technology adds value to CRE

Technology is making our buildings smarter, improving the data we collect during due diligence, and improving the way we manage assets.

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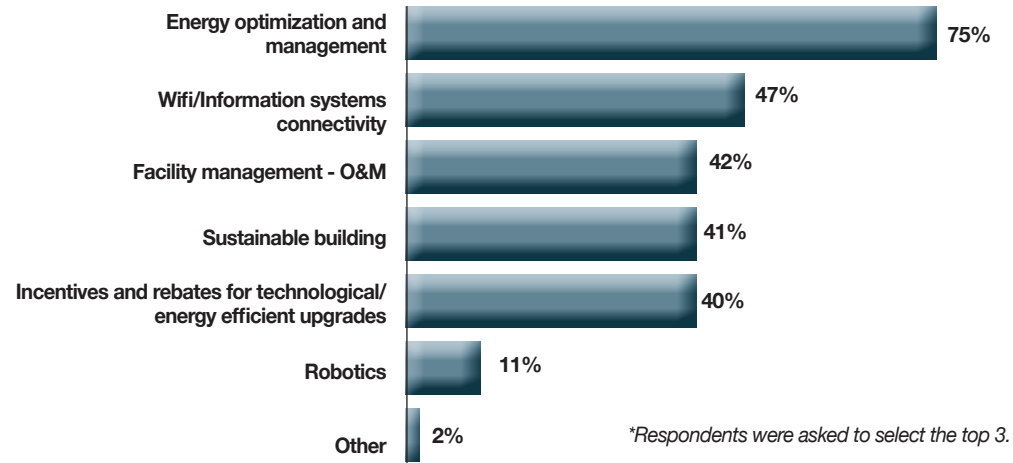
In what area of application does technology offer the greatest opportunity to add value to your investment?



“ In recent years, more and more of our clients who own and manage real estate portfolios consider

energy efficiency and sustainability an integral part of their real estate investment strategy. Many have quoted positive returns and increased asset value, the need to attract institutional capital, and environmental concerns as motivating factors for this shift.”

— **Tony Liou** | President,
Partner Energy



Click here for more information:

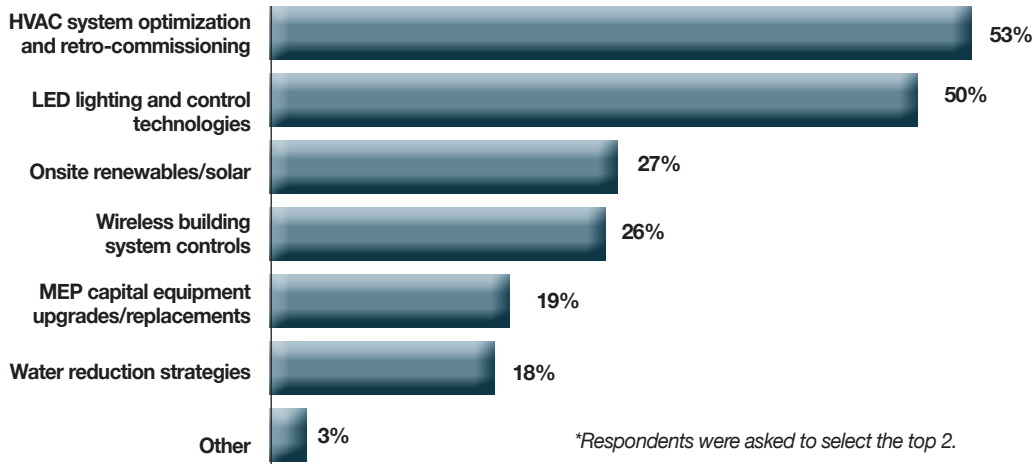
[Blog: Creating an Energy-Efficient Plan One Step at a Time](#)

[Blog: The Value of Solar to Commercial Real Estate](#)

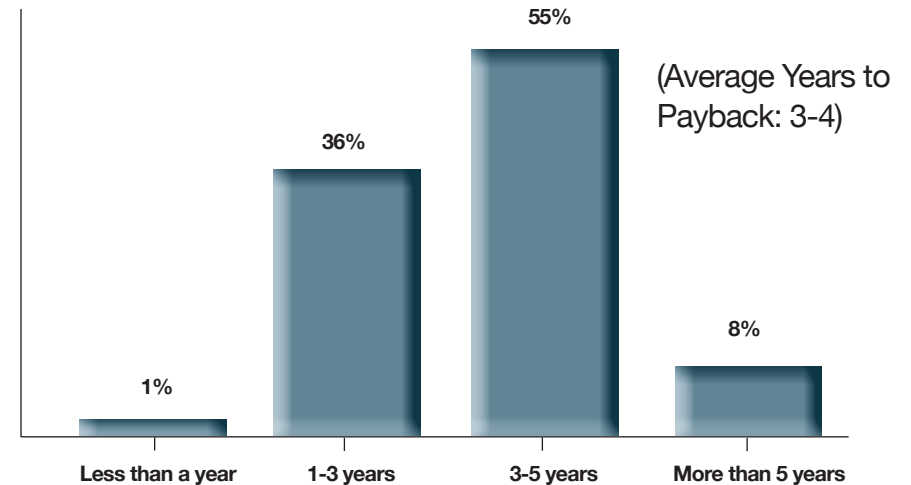
75%

of respondents said energy optimization and management technology would add most value to their investments.

In the field of energy management and efficiency/optimization, what technologies do you think will yield the greatest ROI?



What payback period do you expect from such energy optimization improvements?



“Achieving energy efficiency is a high priority for most building owners and managers but the task may seem daunting when initially considering all of the elements involved. Starting with low-cost, quick-return measures can provide the motivation to undertake more complex, higher-return endeavours.”

— Clare Broderick, PE | Principal, Partner
Engineering and Science, Inc.

Case Study:

Utilities can play a significant role supporting HVAC system optimization and retro-commissioning projects. ComEd, the utility provider in the state of IL, provides substantial incentives for retro-commissioning/building optimization projects.

Owner: Institutional Investor
Building Type: Office
Size: 900,000 SF
Client's Investment: \$41,000
Reduction in Energy: 886,000 kWh/yr

Reduction in Energy Cost: \$71,000/yr
PAYBACK: 0.6 YEARS
Incentive: ComEd subsidized over \$90k in professional services to identify, implement and confirm energy cost savings projects.



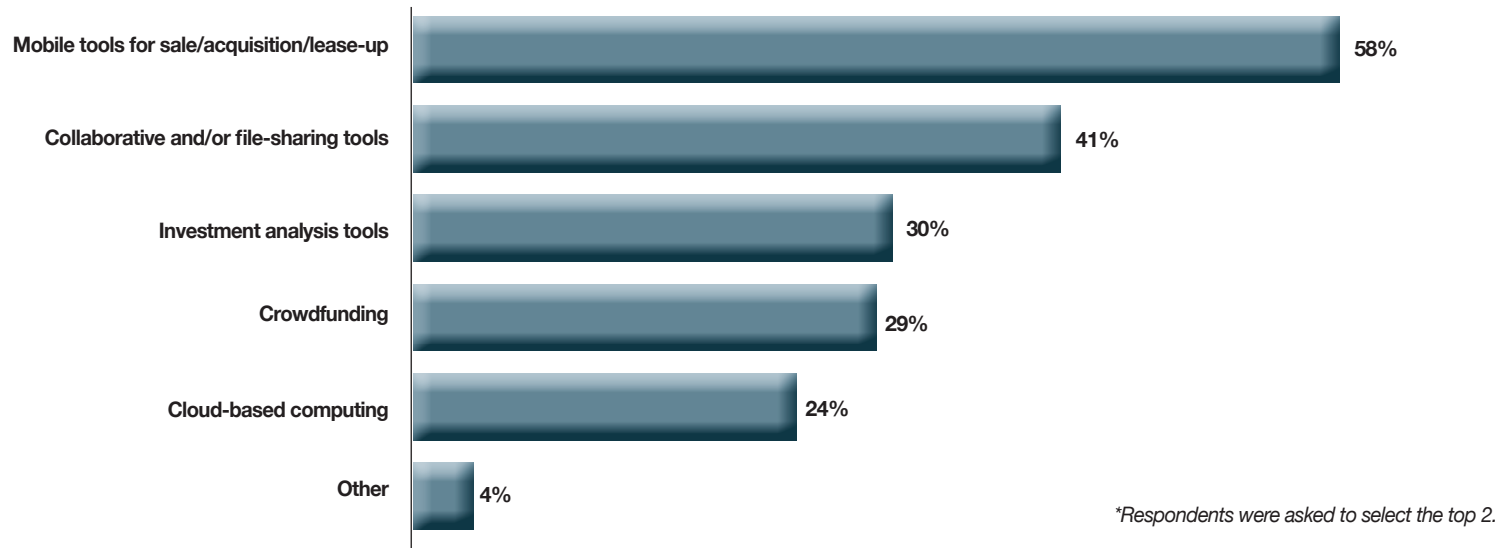
How Technology is Impacting the CRE Transaction Process

Technology is changing how we view risk and opportunities, and the way we make business decisions.

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What technologies and trends will have the biggest impact on the way CRE transactions take place?



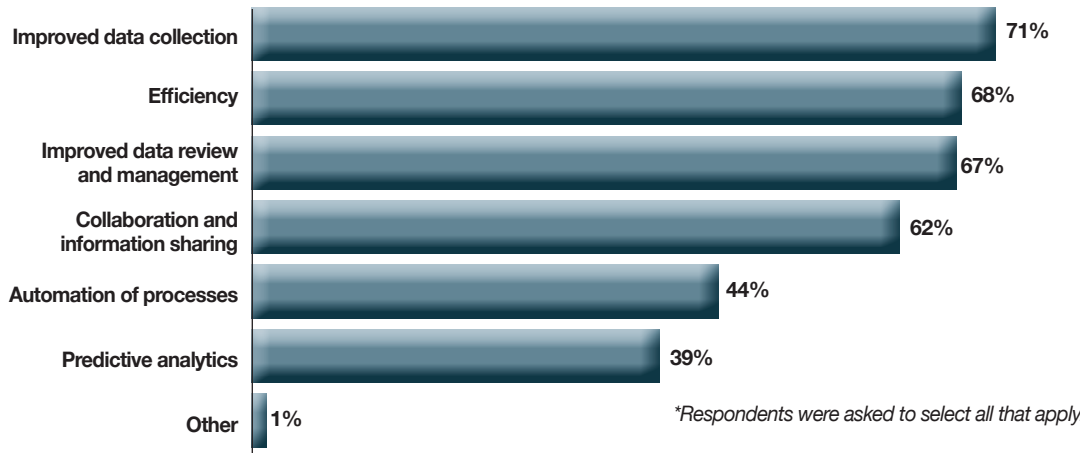
“Companies like Auction.com are making a notable impact on the way the industry transacts real estate.”

— **Arcie Propster** | Principal,
Partner Engineering and Science, Inc.

“Online marketplace platforms, ‘crowd-investing,’ and workflow tools are removing friction, broadening access, and creating efficiencies around real estate transactions and ownership. No wonder so many venture capitalists and private equity firms are injecting capital into such REtech.”

— **Rob Barber** | CEO, RealtyTrack

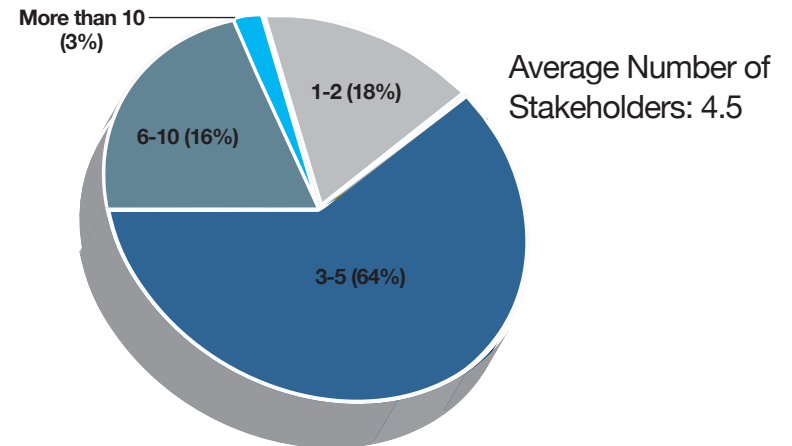
How is technology improving the way you make business decisions?



“Better collection, management and sharing of property and market data is playing a key role in the tech revolution of the CRE industry.”

— **Joe Derhake, PE** | CEO, Partner Engineering and Science, Inc.

In your average transaction, how many individual stakeholders need to see or get a copy of third-party due diligence reports?



“In a world of complex capital stacks and regulated lenders, a lot of stakeholders need to see data. Tools like SiteLynx allow for greater sharing and transparency during due diligence and beyond.”

— **Bill Tryon** | Director of Strategic Development, Partner Engineering and Science, Inc.



Click here for more information:

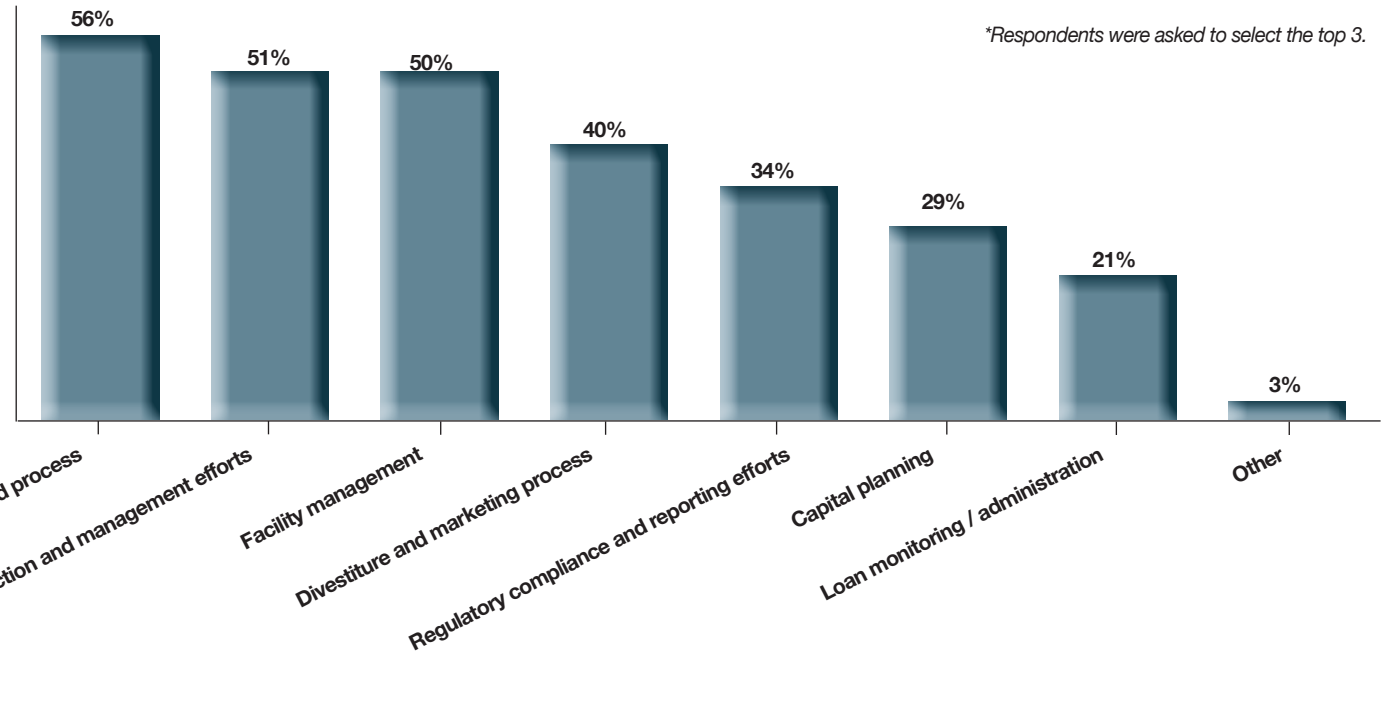
[Blog: The Value of Being Diligent in Syndicated Loans](#)

During which activities do you feel technological developments add most value?



“Lenders have a lot of ongoing compliance and reporting obligations after a loan closes. That can be very onerous without the right tools and technologies in place.”

— **Candice Bailey** | Managing Director, Integrated Risk Advisors



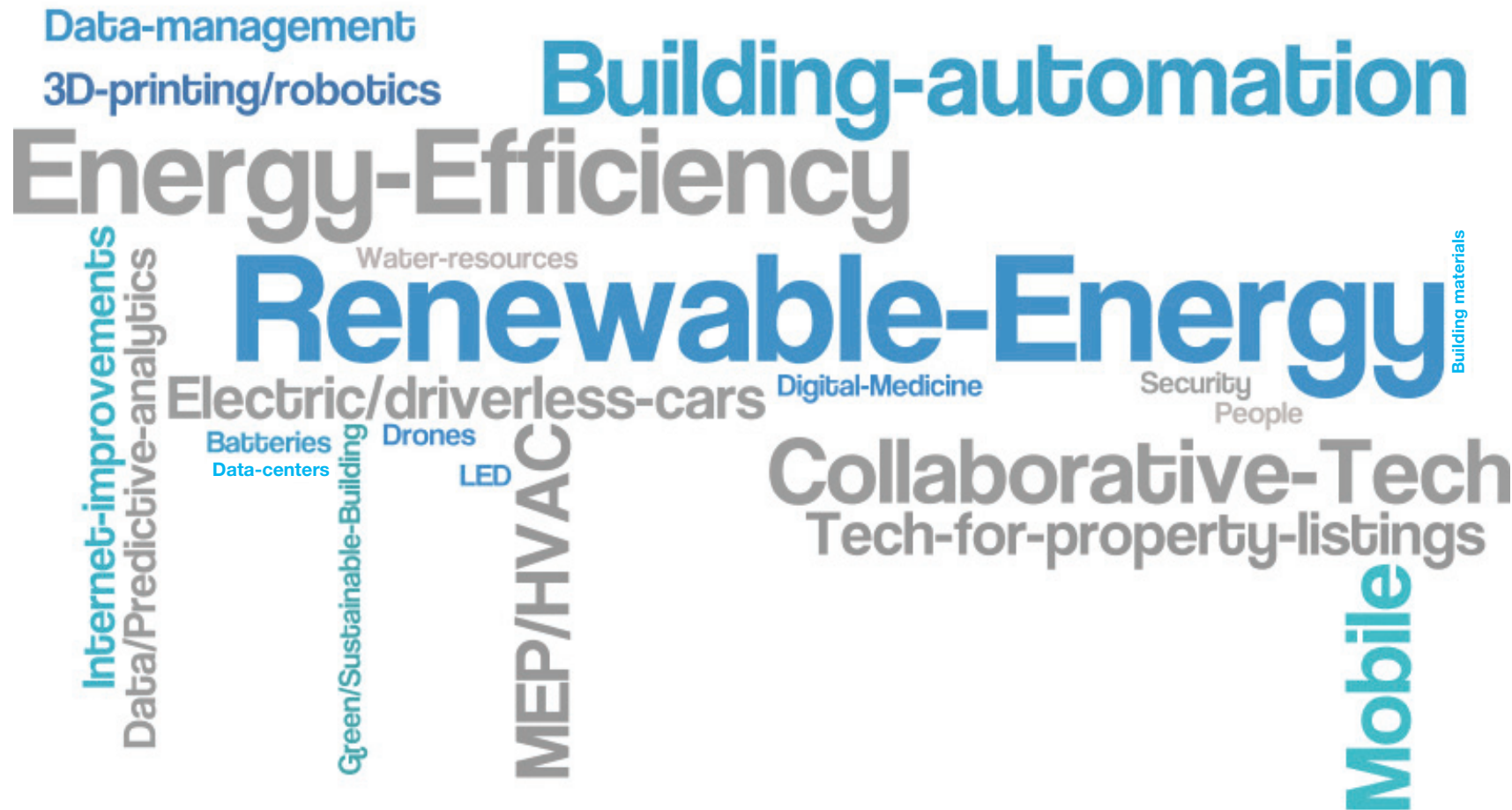
“Platforms like SiteLynx allow our reports to live and breathe beyond the published date and become a practical tool for capital budgeting and asset management. This kind of technology enables building assessment data and schedules to be continuously tracked and adjusted as needed, and provides quantifiable ROI statistics to help facility owners and managers make better real estate business decisions.”

— **Bob Geiger** | Principal, Partner Engineering and Science, Inc.



Click here for more information:
Webinar: Under Pressure - Lender Compliance in the New Regulatory Landscape
Learn About SiteLynx: www.sitelynxapp.com

Given the opportunity, what's the most promising technological development that you would invest in?



“With so many new energy technologies available to improve asset values, the biggest challenge often lies in choosing the best ones for your particular needs and goals. Great ideas, smart consultants and efficient integration of technologies is critical to getting the greatest return.”

— Clare Broderick, PE | Principal, Partner Engineering and Science, Inc.

“Despite a very broad range of responses, more than half of those surveyed said they saw most promise in technological developments that broadly fall into the categories of energy efficiency and renewables. Across all answers, respondents on average expect a return in around 3-4 years!”

— Tony Liou
President, Partner
Energy

“Blending technology talented personnel with an understanding and sense for the CRE industry principals and functions!”

— Survey
respondent



COMPANY PROFILE

PARTNER ENGINEERING AND SCIENCE, INC.

Partner Engineering and Science, Inc. (Partner) is a full-service engineering, environmental and energy consulting and design firm completing projects nationwide. Partner specializes in services to support real estate transactions, development, ownership and management. This includes Environmental Due Diligence; Subsurface Investigations and Remediation; Industrial Hygiene; Health, Safety & Compliance; Building Sciences; Energy & Sustainability Consulting; Site Civil Engineering; Construction Services; Land Surveying; and Zoning Reports. At Partner, we understand the impact of our services on our clients' business and bottom line. Our clients rely on us not only to provide trusted, objective services but also to provide solutions.

Because of this, we are your Partner.

In addition, Partner is the official Engineering Thought Leader for GlobeSt.com. Through informative webinars, educational blogs, and insightful video interviews, Partner's expert consultants and engineers regularly tackle a variety of CRE related topics including environmental and engineering due diligence.



To View The Science of Real Estate Blog, visit:
[GlobeSt.com/blogs/buildingsciences](https://www.globest.com/blogs/buildingsciences)

REFERENCE LINKS:

- [Adaptive Reuse: Capitalizing on Changing Market Demands](#)
- [Will Technology Disrupt Your Return on Investment](#)
- [Putting New Hotels in Old Buildings - What Are The Risks?](#)
- [Cracking the Code on Adaptive Reuse](#)
- [Is Your Adaptive Reuse Project a Good Financial Fit?](#)

About ALM's Real Estate Media Group



ALM, an integrated media company, is a leading provider of specialized business news and information, focused primarily on the legal and commercial real estate sectors. ALM's market-leading brands include The American Lawyer, Corporate Counsel, Insight Conferences, Law.com, Law Journal Press, LegalTech, and The National Law Journal. The Real Estate division is the leading provider of news and information for the commercial real estate industry, reaching more than 210,000 professionals across key markets, business disciplines and property sectors. REM's brands are: Real Estate Forum Magazine, the RealShare Conference Series, and GlobeSt.com.



As an expert in your chosen field you can now partner with ALM to craft, package, and deliver your exclusive critical thinking to our nationwide audience.

For more information on how to join this program,
Contact Scott Thompson at (212) 457-9743
or via email at sthompson@alm.com