

# COMMERCIAL REAL ESTATE TECHNOLOGY TRENDS 2018

Original Research from BOMA International  
and Building Engines





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# Foreword

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## from the BOMA International Technology Committee

Commercial real estate (CRE) professionals are struggling to adapt to the technology change that is occurring within the CRE industry. There is a sense that many CRE professionals are overwhelmed at the pace of this change and the proliferation of new technology solutions.

To address this, BOMA's Technology Committee commissioned this research, conducted in partnership with Building Engines, to answer the following questions:

- > How effectively are CRE professionals using property operations technology?
- > How are highly effective organizations using technology differently than others?
- > What feature gaps exist in current CRE technology solutions?
- > What do industry professionals expect for the future of CRE technology?

This report summarizes the results of this research effort, revealing the attitudes, characteristics, and practices that distinguish technologically effective CRE organizations from their peers.



# Introduction

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## Welcome to BOMA International's 2018 report on Commercial Real Estate Technology Trends, conducted in partnership with Building Engines.

We are grateful and proud that more than 600 individual CRE professionals contributed their insight to this research, which is a testament to the timeliness and importance of the topic. Their participation has enabled us to understand much more about current attitudes and perceptions of CRE-oriented technology, as well as the opportunities ahead for our industry.

Successfully deploying technology is increasingly vital to achieving the CRE industry's core mission of delivering asset value. Accordingly, this research

sought to summarize the current state of CRE technology, including how CRE organizations are getting the most out of technology in the midst of rapid change.

For any CRE professional wrestling with technology, this report **offers some great advice, including:**

- > Keep an open mind to the benefits of technology
- > Seek technology partners and solutions who prioritize integration and collaboration with other services
- > Mind the importance of broad adoption and deep use to reap benefits fully

CRE professionals are under ever-increasing pressure to meet tenant expectations, reduce operating costs, and work each day with a sense of control and confidence. On behalf of the BOMA International Technology Committee, we hope this report aids that effort.

Yours,

### **Rob Brierley**

Chief Elected Officer,  
BOMA International SVP & Shareholder,  
Real Estate Management Services,  
Colliers International

### **Phil Mobley**

Vice Chair,  
BOMA International Technology Committee  
Head of Research, Building Engines

# Overview of 8 KEY FINDINGS:

## Note:

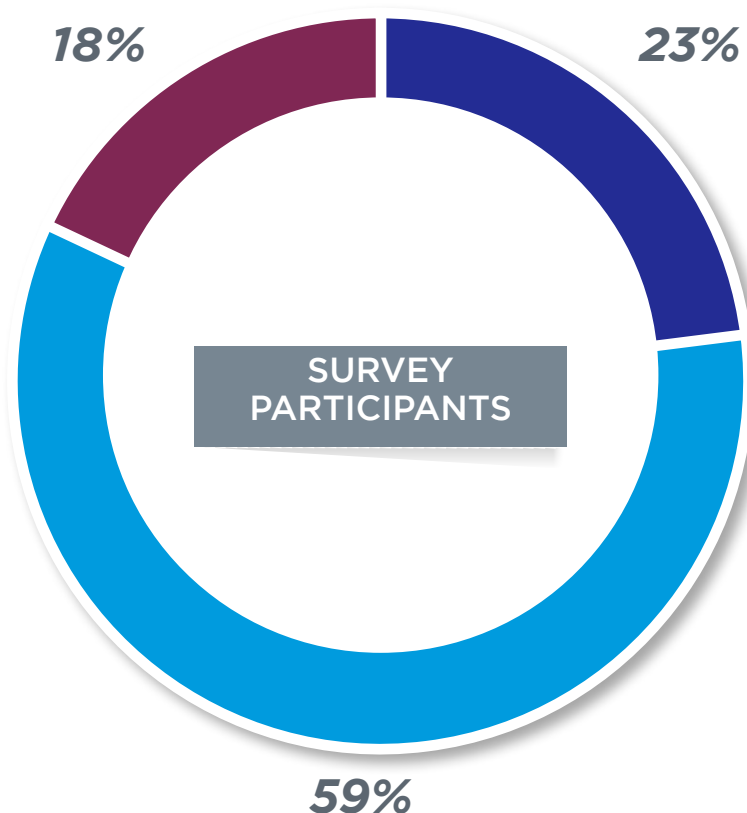
Survey participants were asked to rate their own effectiveness in several categories relating to technology selection and use in commercial real estate (CRE).

This self-evaluation produced a segmentation of our findings into three groups:

**Achievers** (23 percent of respondents): Property professionals who are ahead of the curve when it comes to adopting technology and deploying it strategically.

**Maintainers** (59 percent of respondents): Property professionals who are keeping pace with changes in technology, but aren't early adopters.

**Trailers** (18 percent of respondents): Property professionals who are lagging industry averages when it comes to technology adoption rates and results.



See the “Analytical Framework” section for a full explanation of this methodology.



## > Key Findings: (summarized)

1. Owners and asset managers stand to profit most from technology solutions that better address the breadth and strategic perspective of their roles.
2. Early adoption is crucial for technology effectiveness in CRE: Achievers are **4x more likely** than Trailers to try new solutions as soon as they are available
3. Achievers spend appropriately on technology; Trailers tend to under-invest in tools that would help them operate better:
  - > Nearly **6 in 10** Achievers have “technology” as one or more budget line items, compared to fewer than **4 in 10** Trailers.
  - > Achievers are approximately **30 percent more likely** than Trailers to pay directly for technology rather than passing the cost through.
4. Achievers have different priorities when purchasing technology than Trailers:
  - > Achievers place higher priority on customer service and brand image in their technology purchase decisions; Trailers are more focused on cost and time savings.
  - > Achievers plan to zero in on information security and look into solving new business problems in the next 12 months; many Trailers will still be attempting to justify new investment in technology during that time.
5. Achievers are the *least* likely to select technology solutions at the property level.
  - > Mandated solutions (from corporate or building owners) are **20 percent more likely** to be “highly effective” than solutions selected at the property level.
  - > Achievers are nearly **3x more likely** than Trailers to use consultants in the technology purchase process.
6. Achievers deploy “highly effective” solutions for more than half of operational functions, and they do so **4x as frequently** as Trailers.
  - > Achievers support nearly **2x as many** functions with integrated, multi-function technology solutions as do Trailers.
  - > Integrated, multi-function solutions are rated as “highly effective” **2x as often** as stand-alone systems (and **1.5x more often** than proprietary/in-house systems).
7. Time and resource constraints are the largest obstacle to replacing underperforming CRE technology solutions.
8. **More than half** of CRE professionals expect artificial intelligence/machine learning and drone technologies to have a significant or profound impact on the future of the industry.



# Complete Findings

## > Segment Profiles

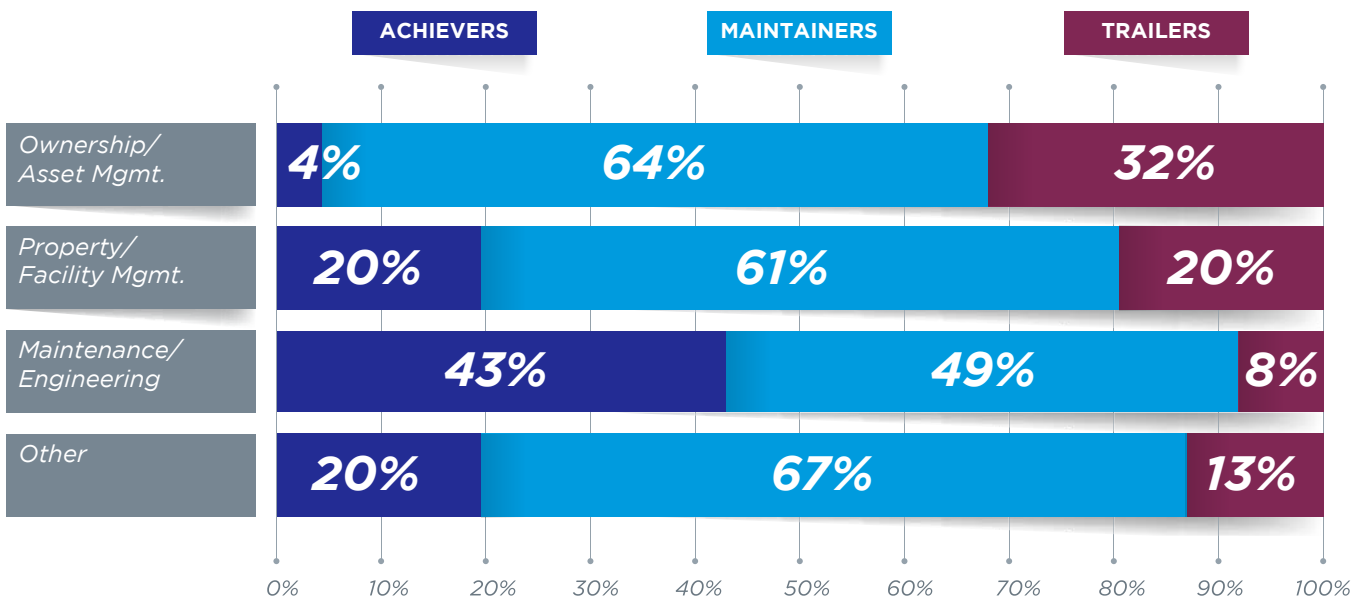
### Takeaway #1:

Owners and asset managers stand to profit most from technology solutions that better address the breadth and strategic perspective of their roles.

Only 4 percent of owners and asset managers consider themselves highly effective technology users.

Only 4 percent of CRE owners and asset managers identify as Achievers, compared to 20 percent of property/facility managers and 43 percent of professionals in maintenance/engineering roles. This demonstrates that owners and asset managers have the most ground to make up as it relates to CRE technology maturity.

Technology Effectiveness by Role



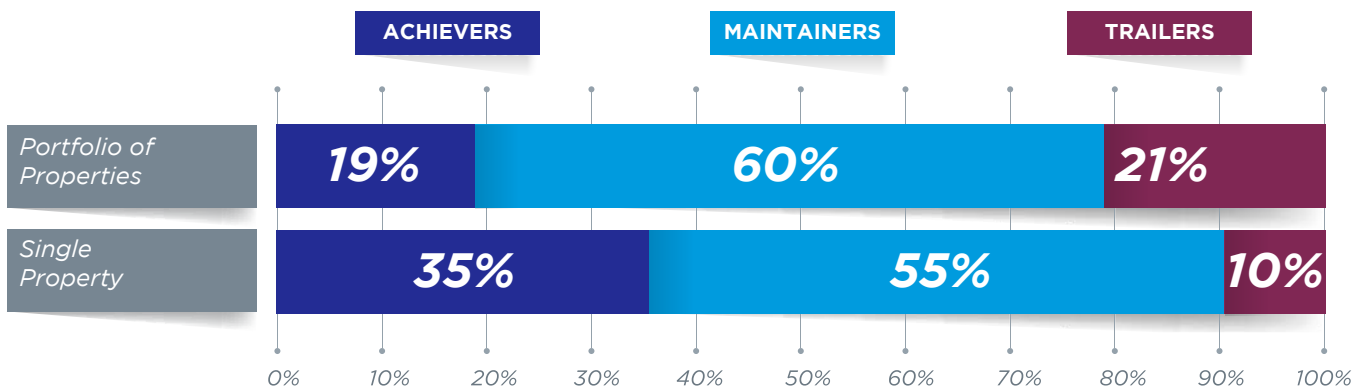
This self-reported difference may be due to the more executive nature of these roles. Because owners and asset managers see into more facets of CRE operations, they are better positioned to observe gaps in technology effectiveness across the value chain.

Another factor could be the historical lack of technology solutions available to support asset management. Whereas solutions have long existed to serve maintenance and engineering professionals, asset management has been difficult for technology providers to serve effectively. This is doubtless due in part to the broader perspective these professionals have on what technology ought to do.

The opportunity, then, is shared between owners/asset managers and technology providers to develop and implement solutions that aggregate and deliver the kind of data-driven output the role demands from technology: Strategic guidance that moves beyond mere day-to-day efficiency and leads to opportunities to accelerate value through CRE operations.

## Single properties currently fare better with technology than portfolios.

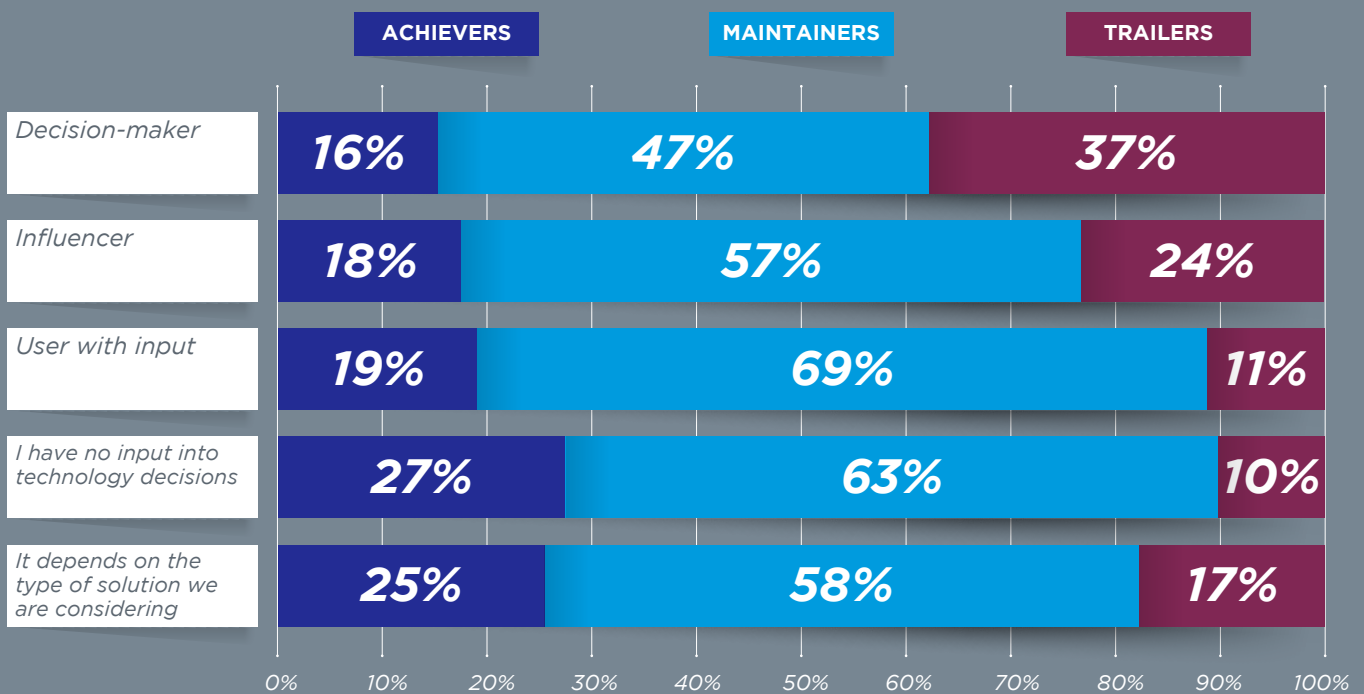
Technology Effectiveness by Responsibility



To date, CRE technology has been fairly successful in supporting operations at single properties; it has not been as good at adding value to portfolios of assets. Deploying mature solutions that drive effectiveness across multiple properties represents a major opportunity for both vendors and practitioners.

# Decision-makers lack confidence in their tech capabilities.

Technology Effectiveness by Decision-Making Authority



CRE professionals who make or influence purchasing choices for technology solutions tend to rate themselves lower in overall technology effectiveness. As with other more senior professionals, their perceptions of technology requirements and their relatively high exposure to multiple solutions may be factors.

## > Approaches to CRE Technology

### Takeaway #2:

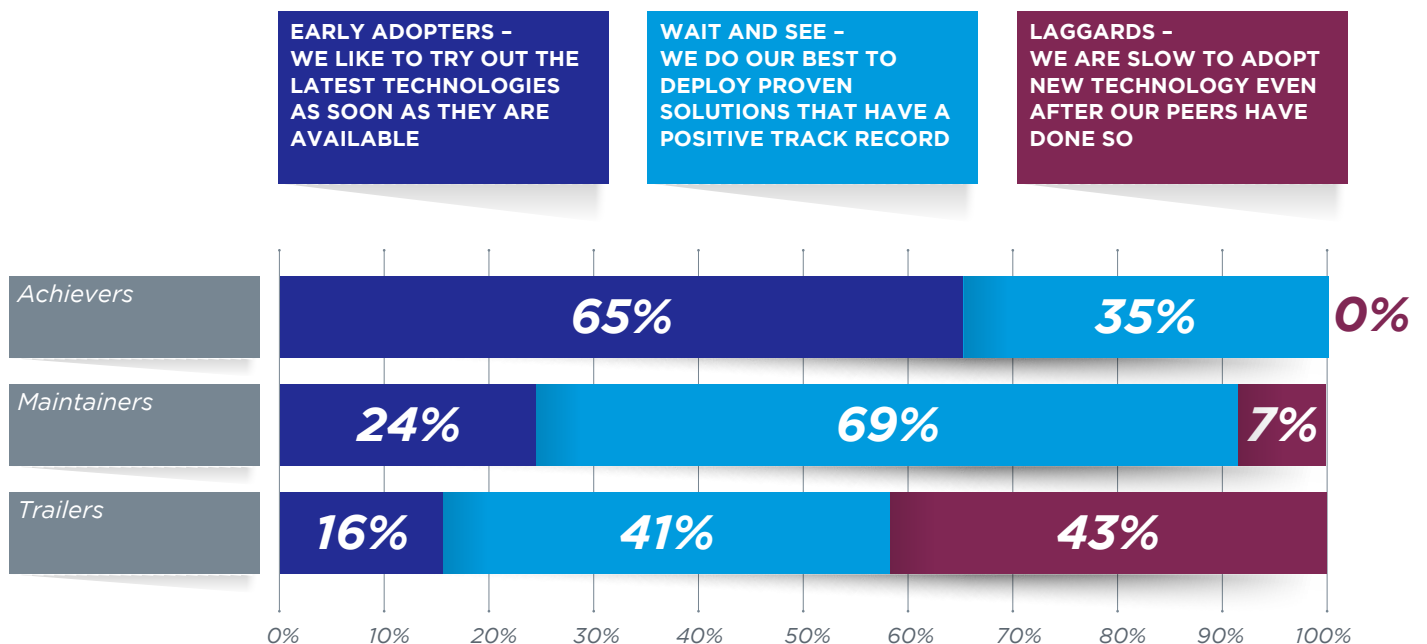
Early adoption is crucial for technology effectiveness in CRE.

65 percent of Achievers try the latest technology as soon as it is available.

The Achiever group is overwhelmingly comprised of “early adopters” (65 percent)—those who try out the latest

technologies as soon as they are available. The majority of Maintainers take a “wait and see” approach, doing their best to deploy proven solutions that have a positive track record. Very few of either are behind the adoption curve. This strongly suggests that early adoption is crucial for technology effectiveness in CRE.

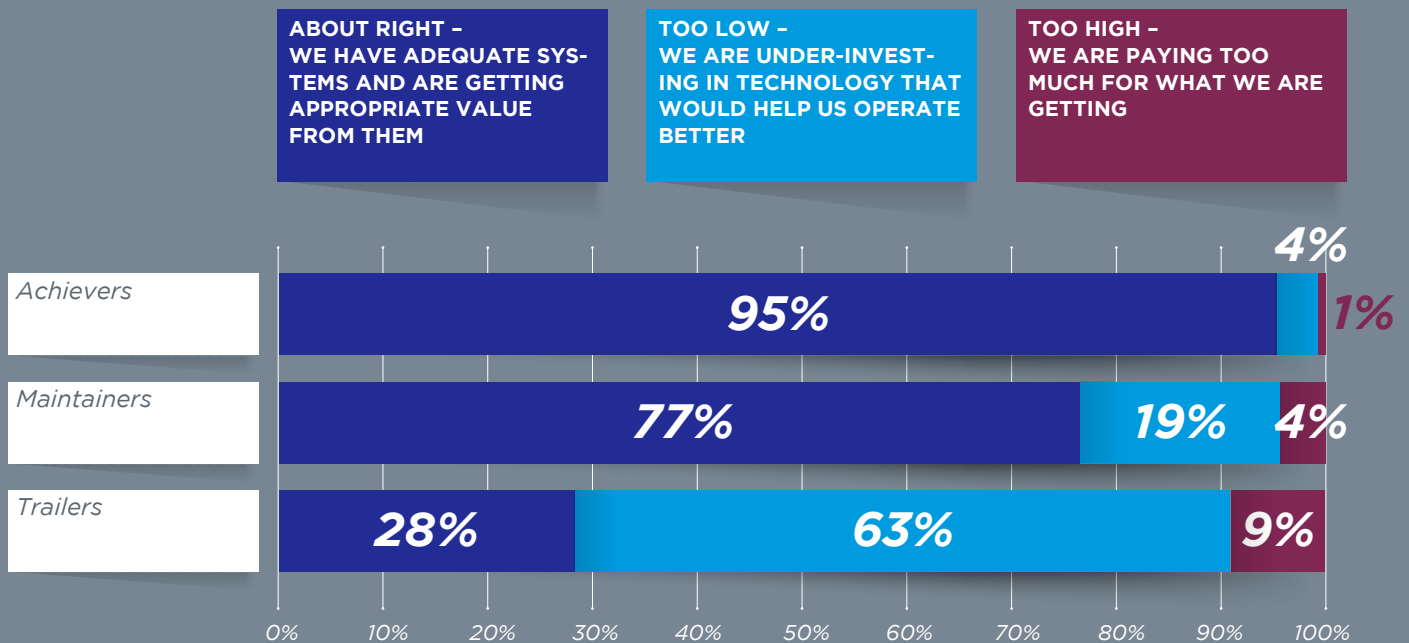
### General Organizational Approach to Technology



### Takeaway #3:

Achievers spend appropriately on technology; Trailers tend to under-invest in tools that would help them operate better.

### Technology Spend Self-Assessment

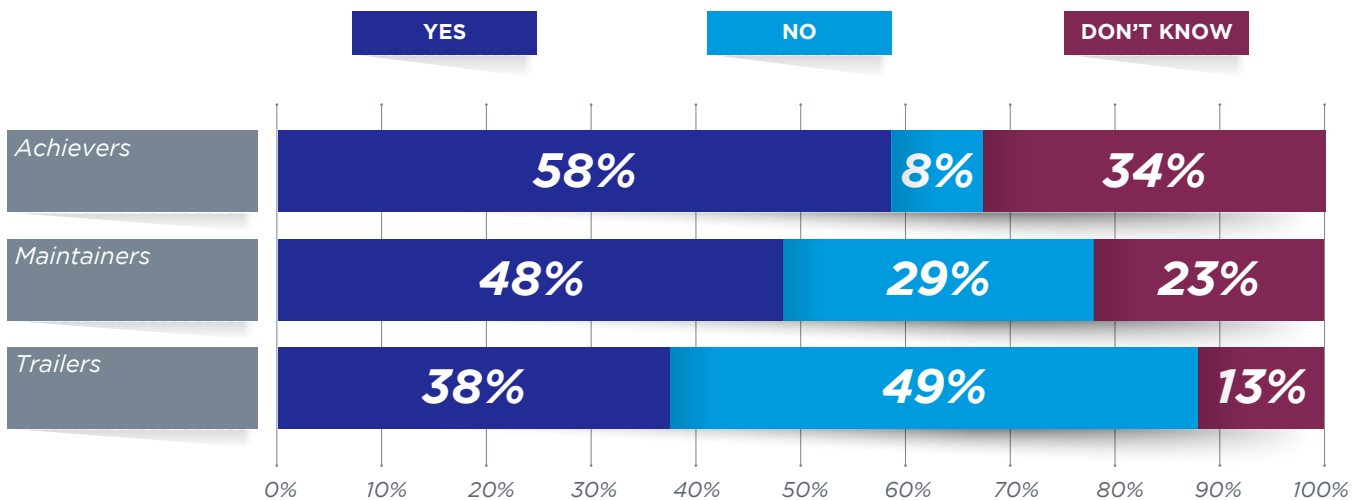


63 percent of Trailers feel they are under-investing in technology that would help them operate better.

Nearly all Achievers (95 percent) and most Maintainers (77 percent) are investing appropriately (“about right”), while most Trailers think they spend too little (63 percent). All companies today are under pressure to do more with less, but Achievers, by definition, have adopted technologies that help them operate more effectively. So while they are willing to spend, they also select well, which is why they are “getting appropriate value” from their systems.

# Nearly 6 in 10 Achievers have “technology” as one or more budget line items, compared to fewer than 4 in 10 Trailers.

Technology Budget Line Item

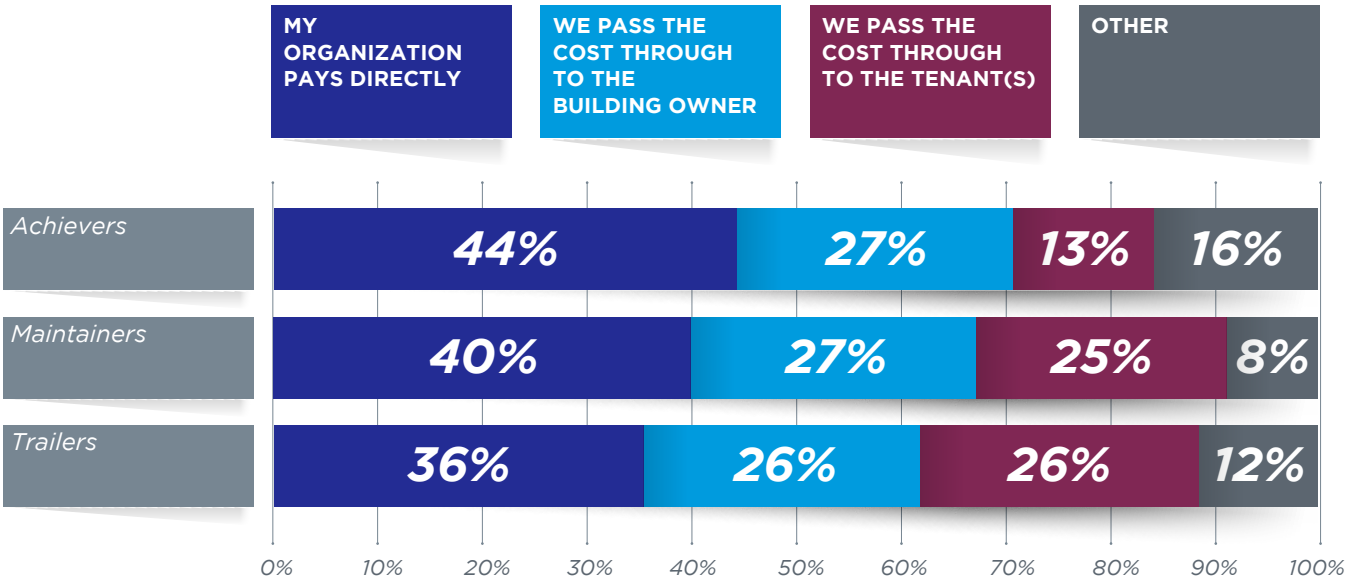


A strong majority of Achievers (58 percent) dedicates at least one budgetary line item to technology. Technology-forward organizations have decided that the competitive value they realize from operational tools and systems is worth the investment.



**Achievers are approximately 30 percent more likely than Trailers to pay directly for technology rather than passing the cost through.**

Technology Payment Model



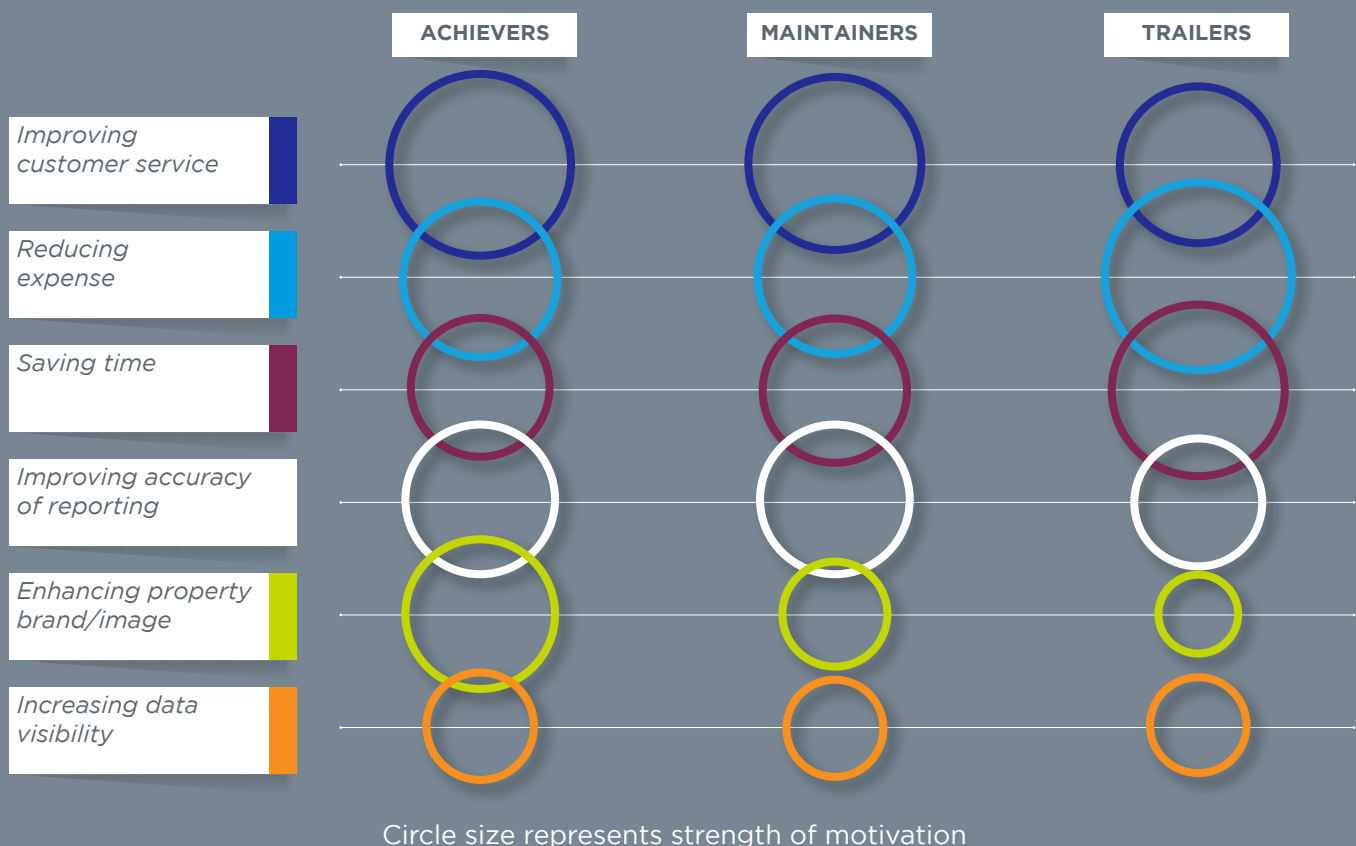
Achievers are also most likely to pay for technology solutions themselves rather than passing the cost along to tenants: 44 percent of Achievers pay directly, versus only 36 percent of Trailers.

### Takeaway #4:

Achievers have different priorities when purchasing technology than Trailers.

Achievers place higher priority on customer service and brand image in their technology purchase decisions; Trailers are more focused on cost and time savings.

### Technology Purchase Motivations

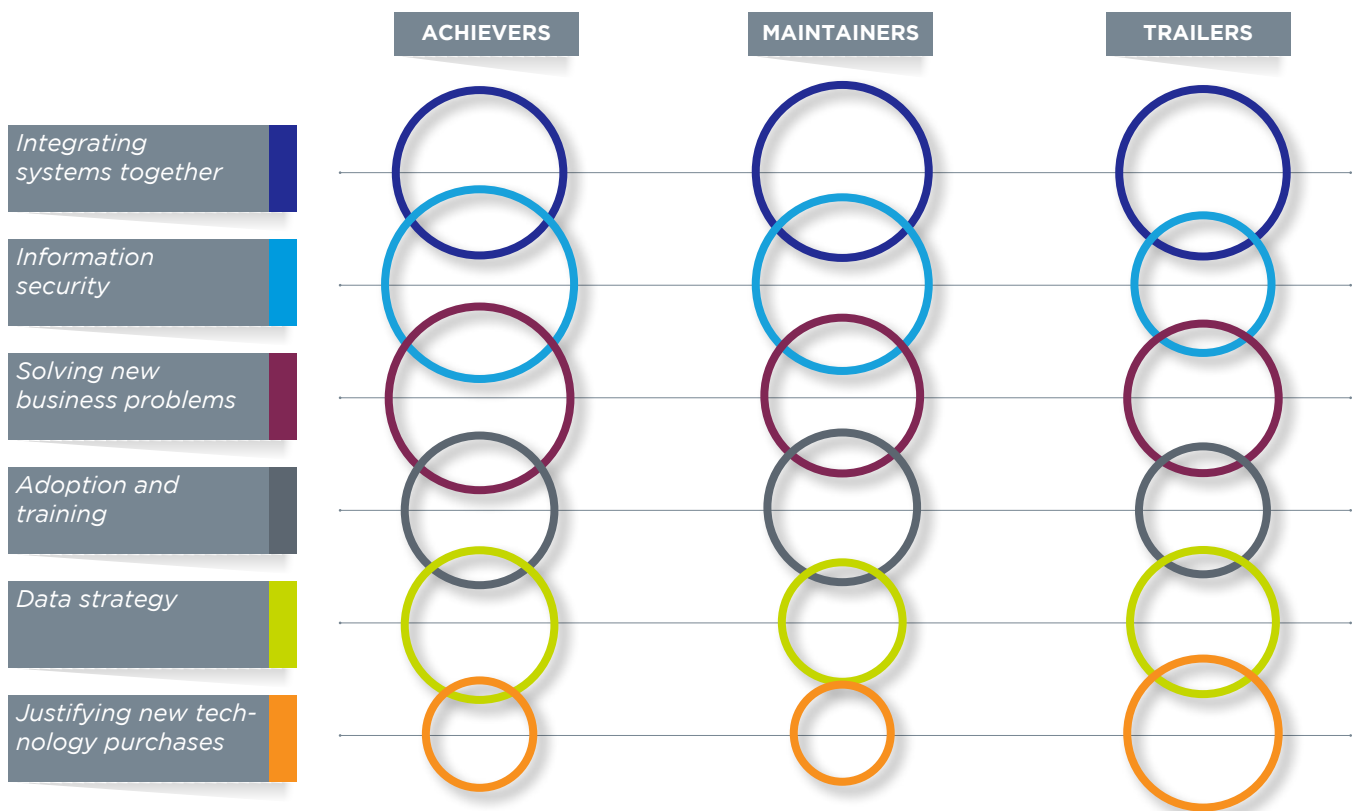


Achievers know that technology directly affects customer service and brand image.

What CRE professionals look for when they make purchase decisions varies by their level of effectiveness. Reducing expense and saving time are classic technology purchase motivators, so it makes sense that these would be a high priority for all respondents. But Achievers are able to move beyond these table stakes to benefits that separate them from others in the market.

**Achievers will be zeroing in on information security and looking to solve new business problems in the next 12 months; many Trailers will still be attempting to justify new investment in technology during that time.**

### 12 Month Technology Priorities



Circle size represents strength of priority

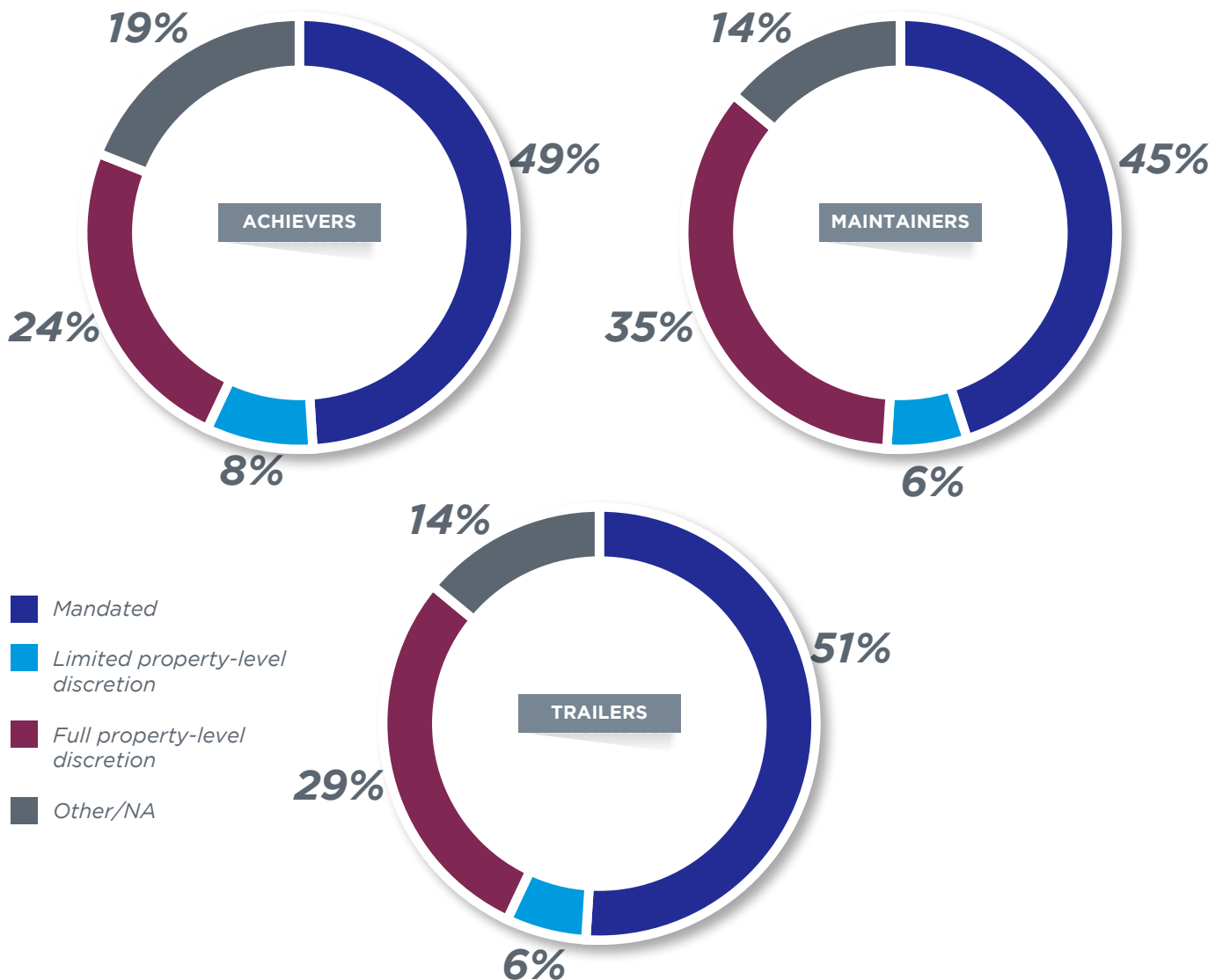
Technologically effective CRE organizations have gained enough bandwidth to focus on securing their information and attacking new business problems—a clear first-mover advantage. Many more Trailers, on the other hand, still find themselves making the business case for more basic investment in technology.

## > Current Technology Use

### Takeaway #5:

Achievers are the least likely to select technology solutions at the property level.

Selection Method for ALL Tech-enabled Functions

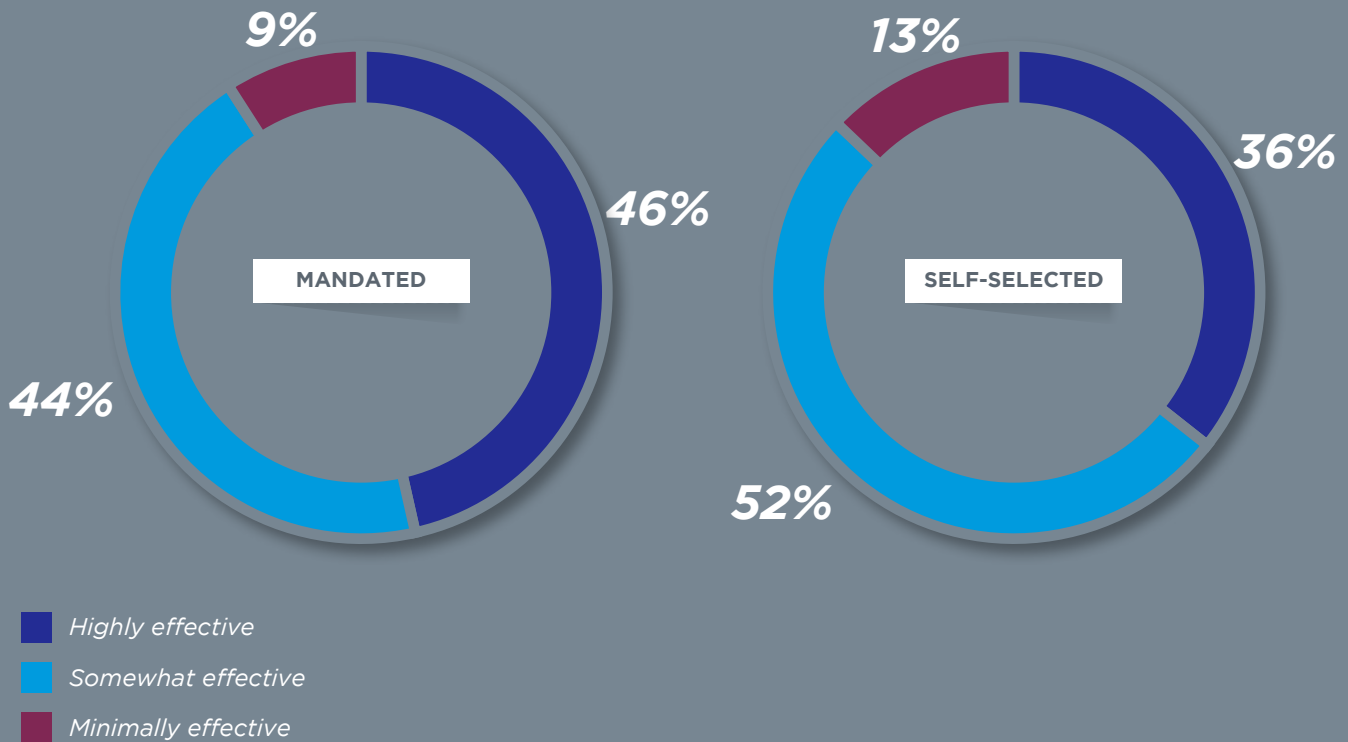


Only 24 percent of Achievers' technology solutions are selected with full discretion at the property level, compared to 35 percent of Maintainers' solutions. Interestingly, Trailers are also more likely than Maintainers to elevate purchase decisions above the property level; however, Achievers are able to combine an understanding of the portfolio-wide impact technology may have with a well-honed knack for choosing tools well.

**Mandated solutions (from company or building owners) are 20 percent more likely to be “highly effective” than self-selected solutions.**

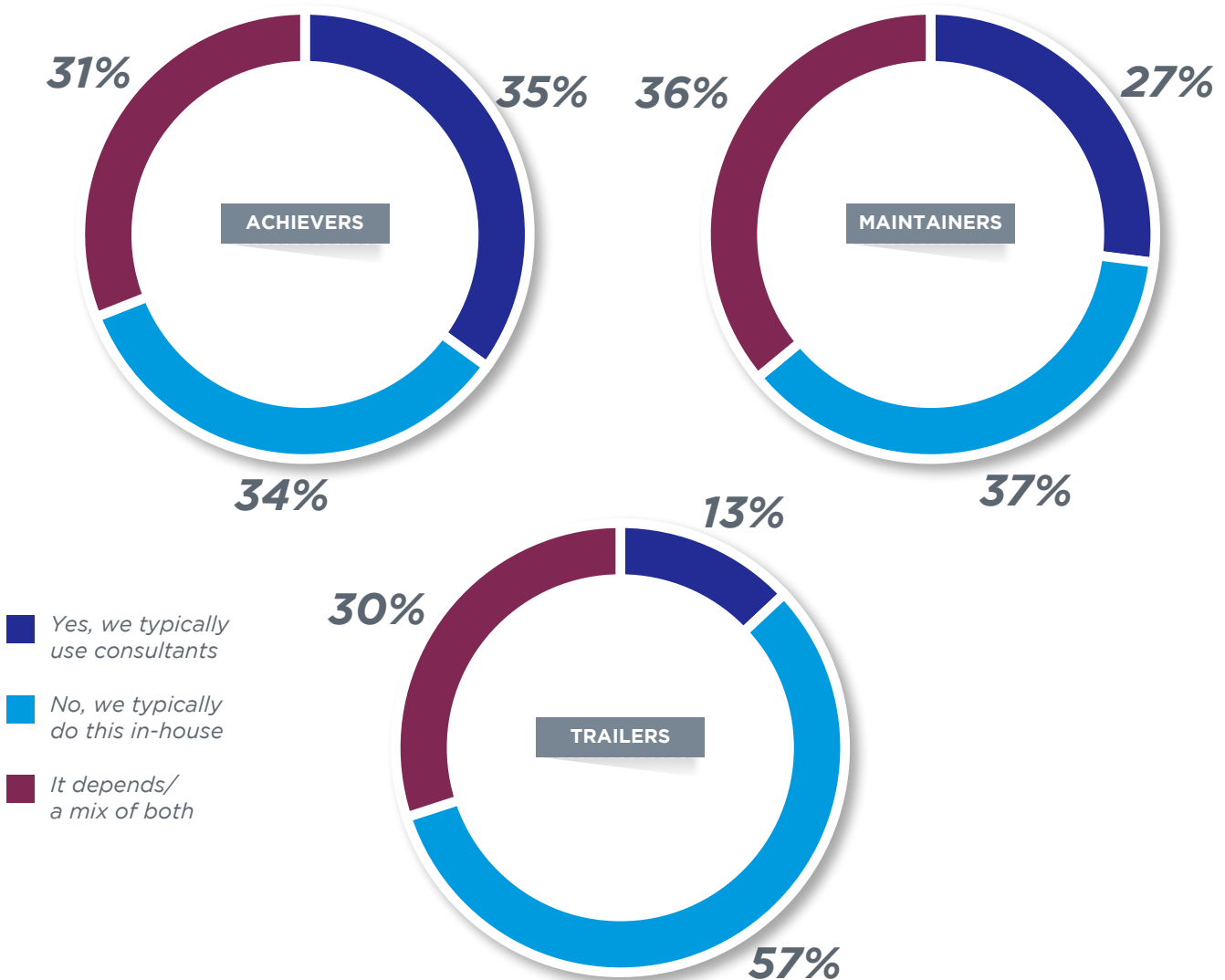
On average, those with the perspective of an entire portfolio’s business objectives and functional operations tend to make better decisions when it comes to selecting CRE technology: Solutions mandated from the company or building owner are 20 percent more likely to be rated “highly effective.”

Solution Effectiveness by Selection Method



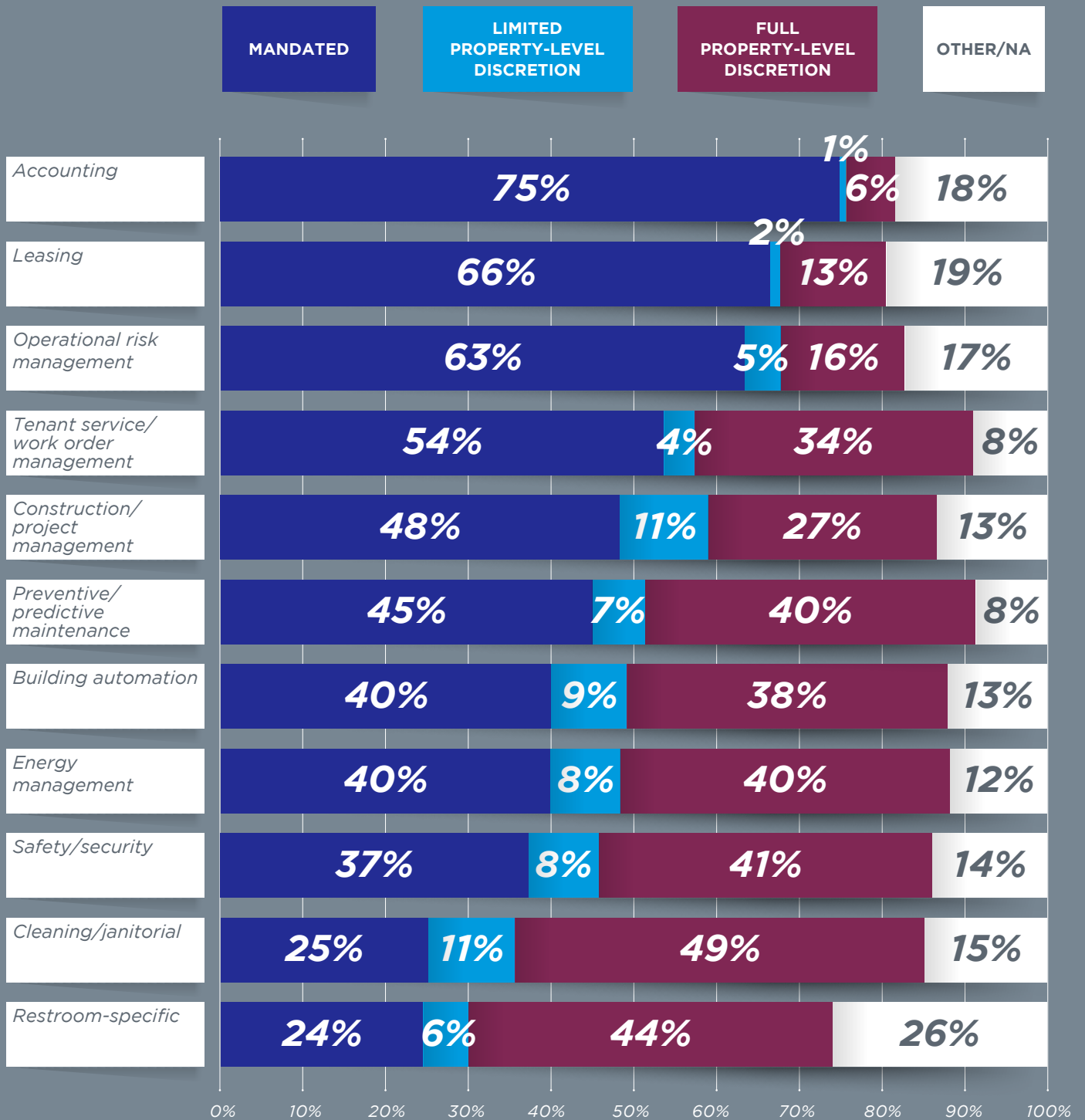
# Achievers are nearly 3x more likely than Trailers to use consultants in the technology purchase process.

Use of Consultants in Purchasing Process



Consultants play a major role in the purchase of CRE technology for a significant segment of organizations, whether helping them choose the right system or driving adoption after a purchase. Over a third (35 percent) of Achievers use consultants, compared to only 13 percent of Trailers, which may partially explain why they choose more effective solutions.

# How CRE Professionals Select Technology for Each Function:



There is a great deal of variance by function in how CRE organizations choose technology. For example, a plurality of building automation capabilities (38 percent) are selected with full discretion at the property level, while accounting systems are much more frequently mandated by a corporate office or building owner (75 percent).

## Snapshot:

### What technology is mandated by corporate offices and/or building owners



Accounting **75%**



Leasing **66%**



Operational risk management **63%**



Tenant service/work order management tools **54%**



Construction/project management **48%**



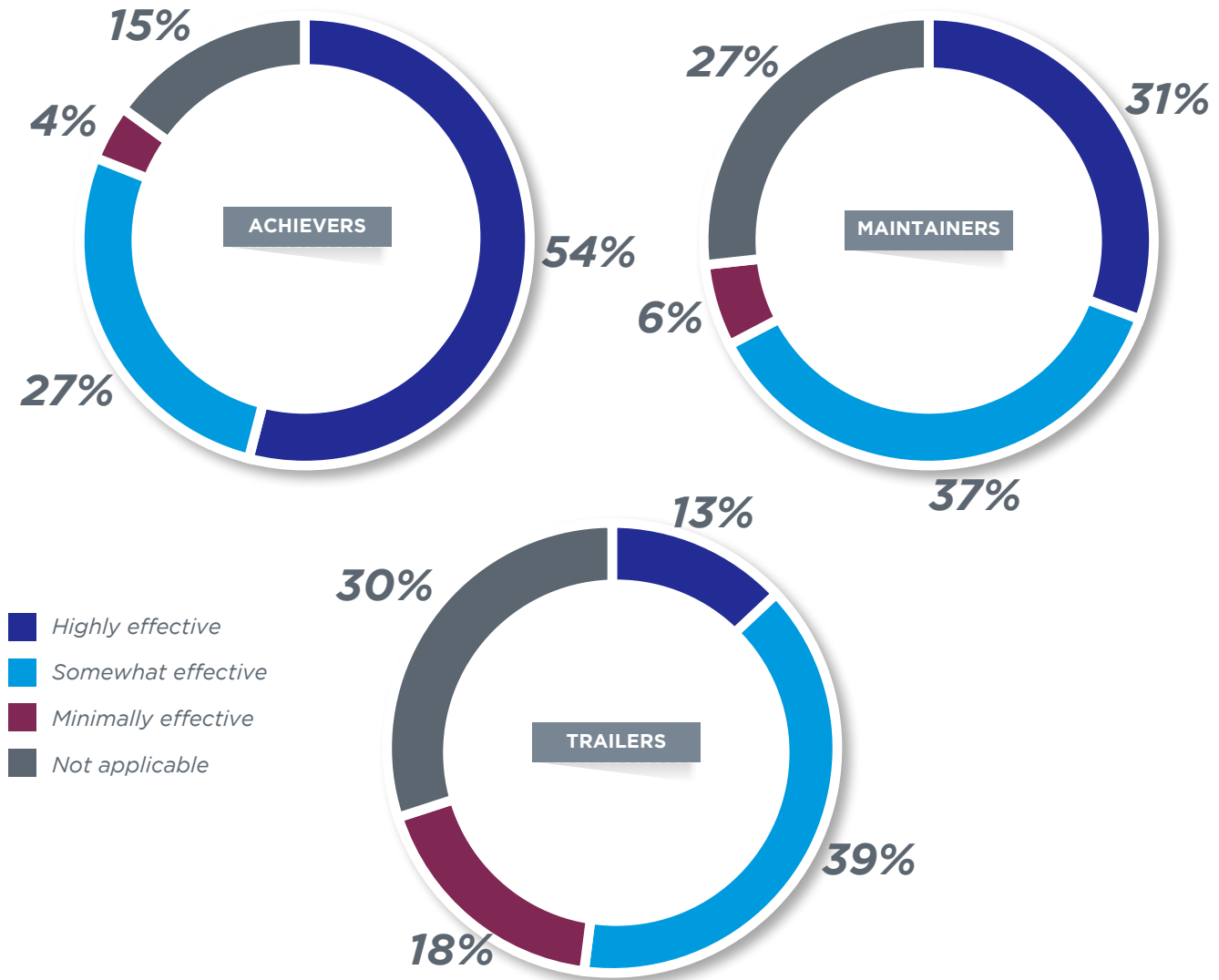
Preventive/predictive maintenance **45%**



### Takeaway #6:

Achievers deploy “highly effective” solutions for over half of operational functions,

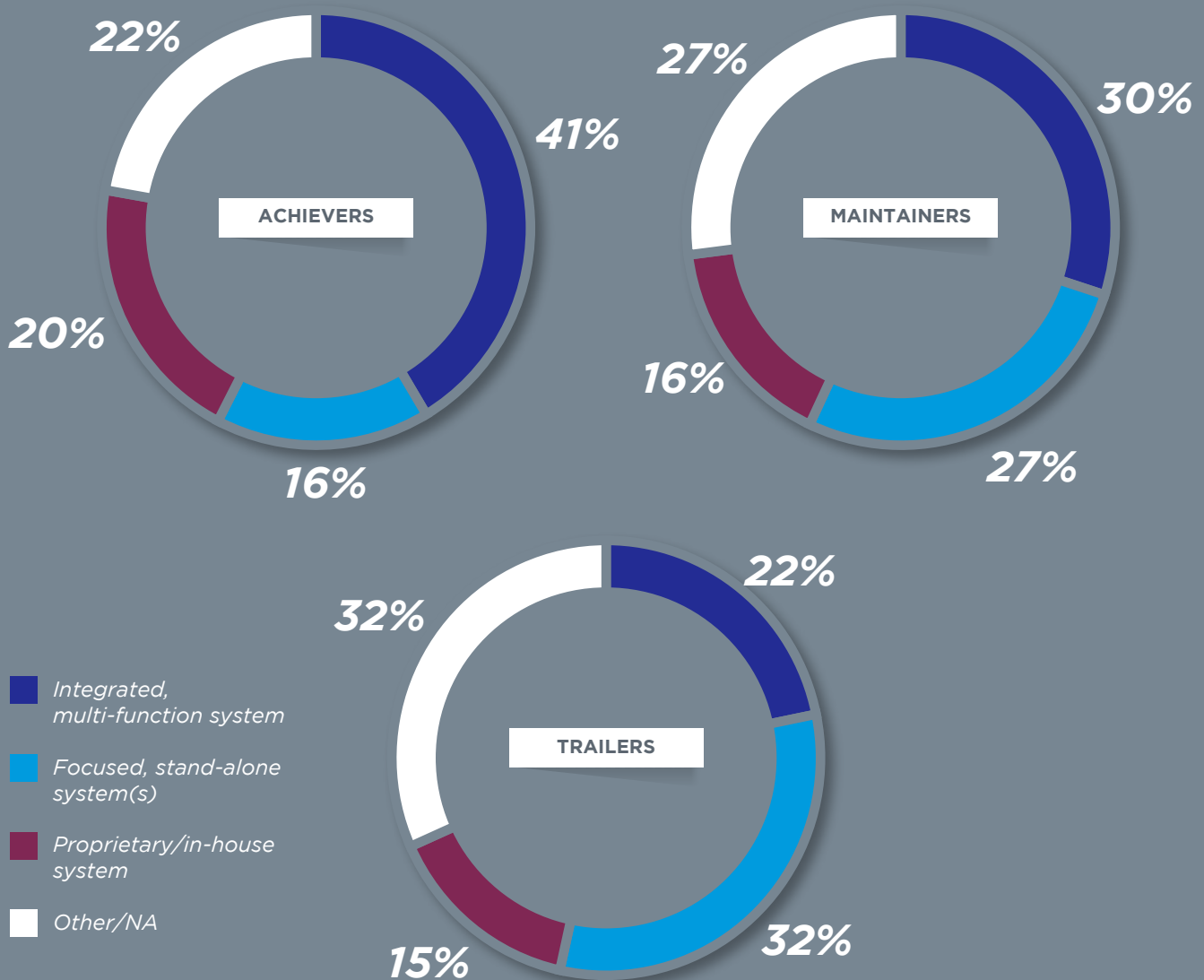
Solution Effectiveness for ALL Tech-enabled Functions



Achievers are better at choosing and implementing systems that they use both broadly across their organization and deeply within their functional areas. Over half (54 percent) of Achievers’ operational CRE functions are accomplished with a technology solution they rate as “highly effective.”

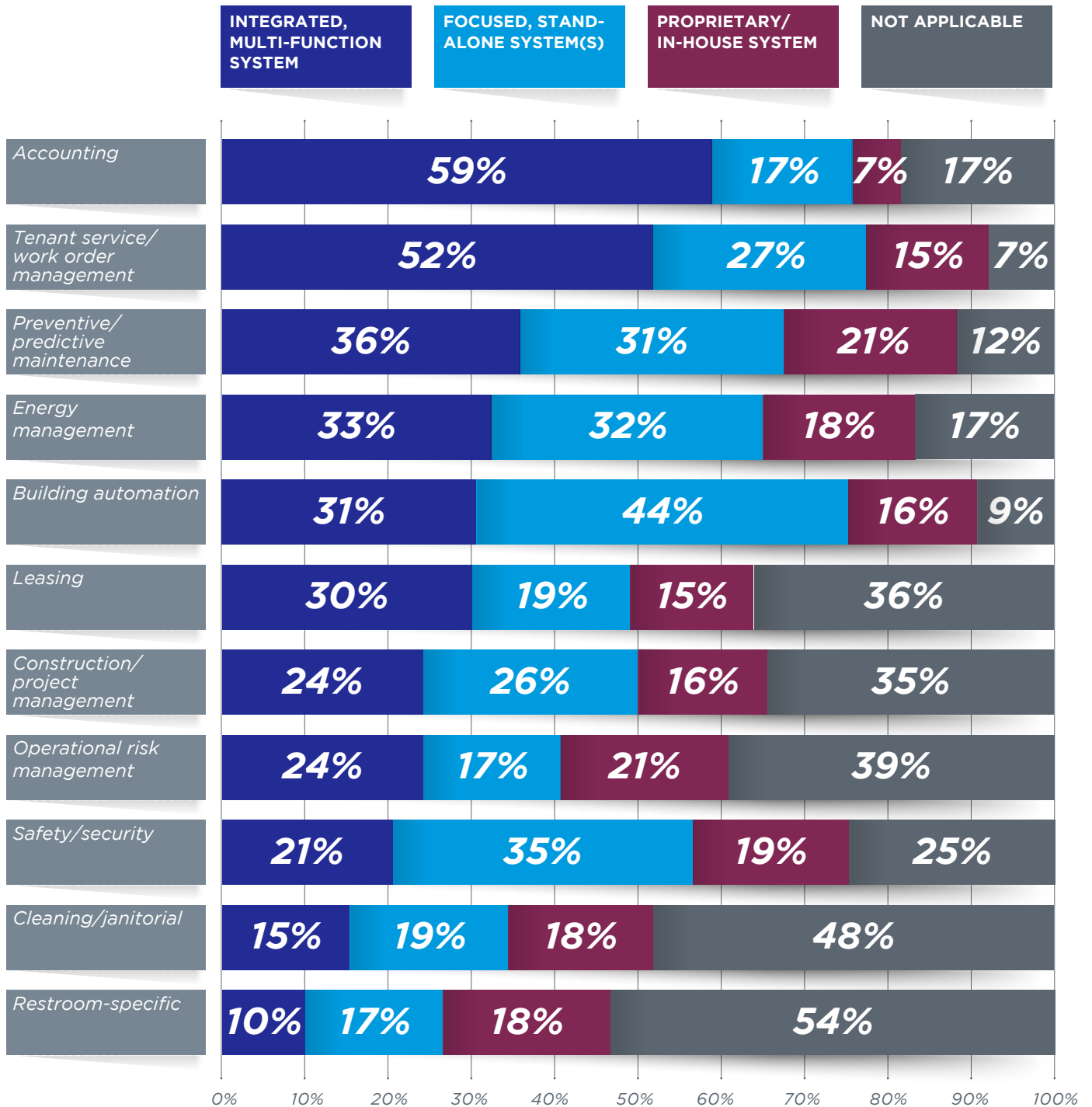
# Achievers support nearly 2x as many functions with integrated, multi-function technology solutions as do Trailers.

Functional Solution Type by Peer Group



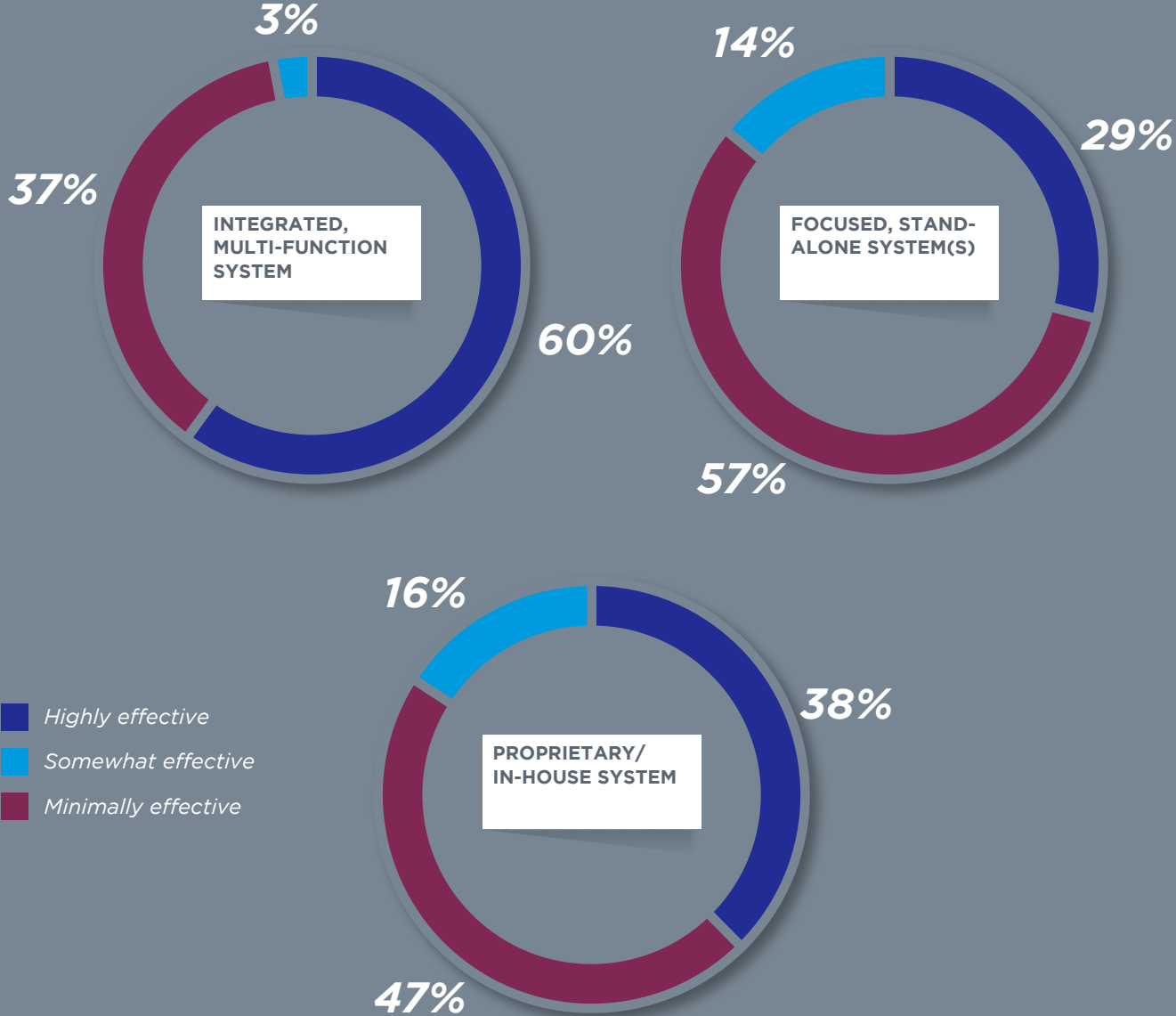
Achievers prefer to use systems that do more than one thing: They enable nearly twice as many functions as Trailers with integrated, multi-function technology solutions.

## System type by function:



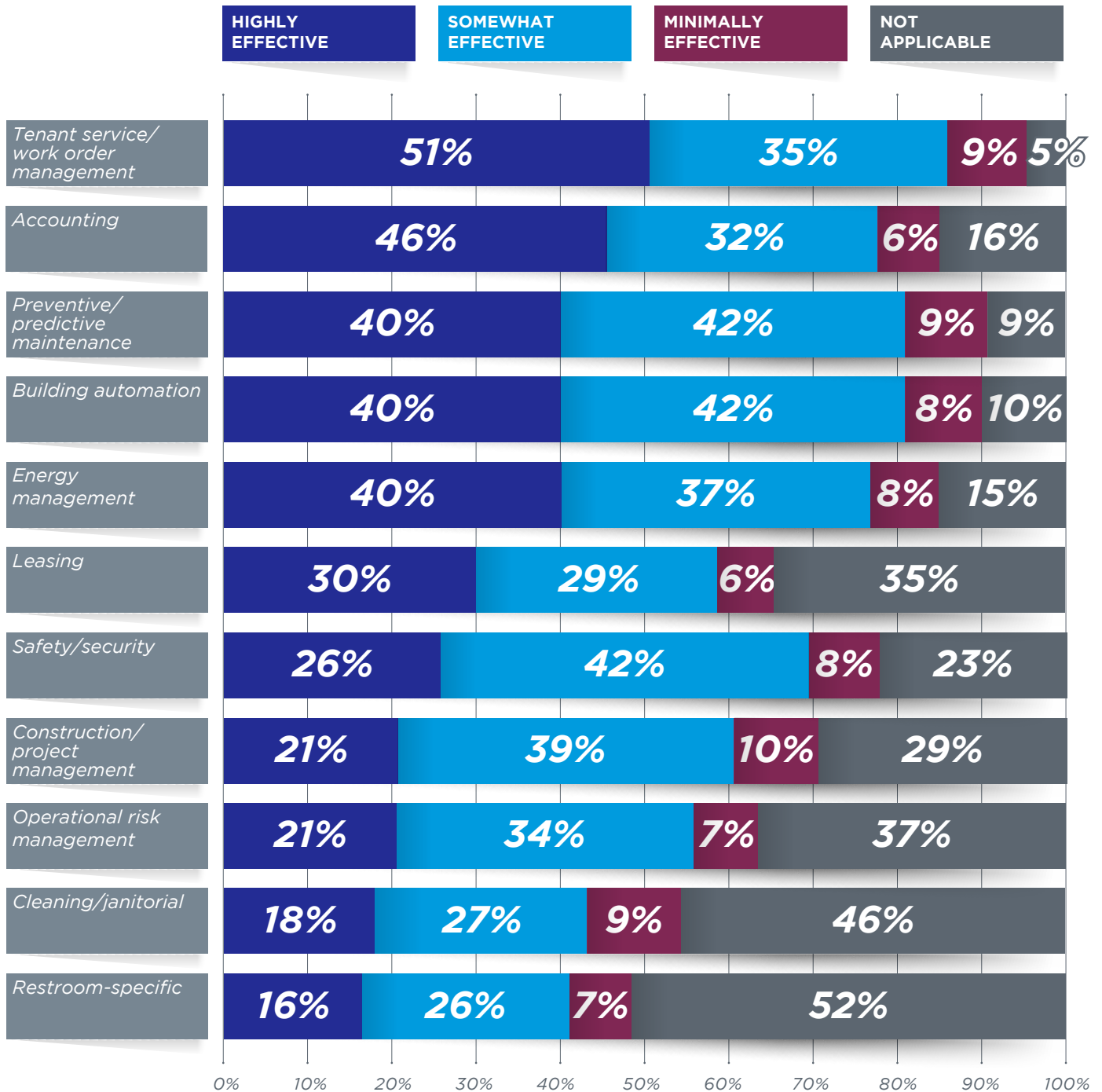
**Integrated, multi-function solutions are rated as “highly effective” 2x as often as stand-alone systems (and 1.5x more often than proprietary/in-house systems).**

Solution Effectiveness by System Type



Respondents rated integrated, multi-function solutions as “highly effective” more than twice as often as stand-alone systems, and 1.5x more often than proprietary or in-house systems.

## Solution effectiveness by function:

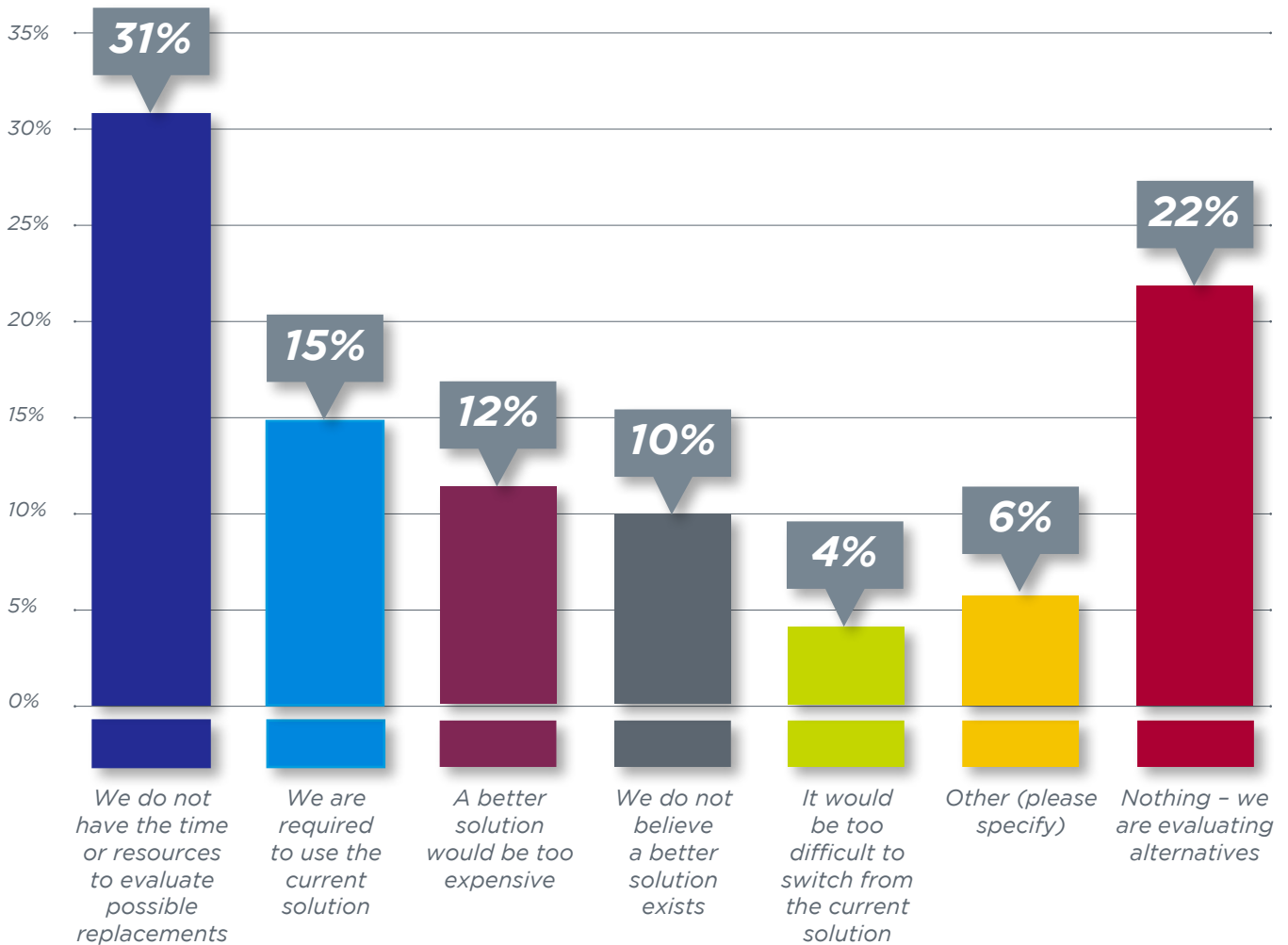


Respondents were happiest with their tenant service and work order management solutions, accounting systems, preventive/predictive maintenance solutions, and building automation systems, rating them “highly effective” at least 40 percent of the time.

### Takeaway #7:

Time and resource constraints are the largest obstacle to replacing

#### Primary Barriers to Replacing Minimally Effective Solutions



Where respondents indicated that they have a “minimally effective” solution in place for a given function, a follow-up question asked the primary barrier to replacing the solution with a better one. Nearly a third (31 percent) indicated that a lack of time and resources available to evaluate possible replacements is the main reason an ineffective solution remains in place. Another 15 percent stated they are required to use their current solution. Only 22 percent are currently evaluating alternatives.

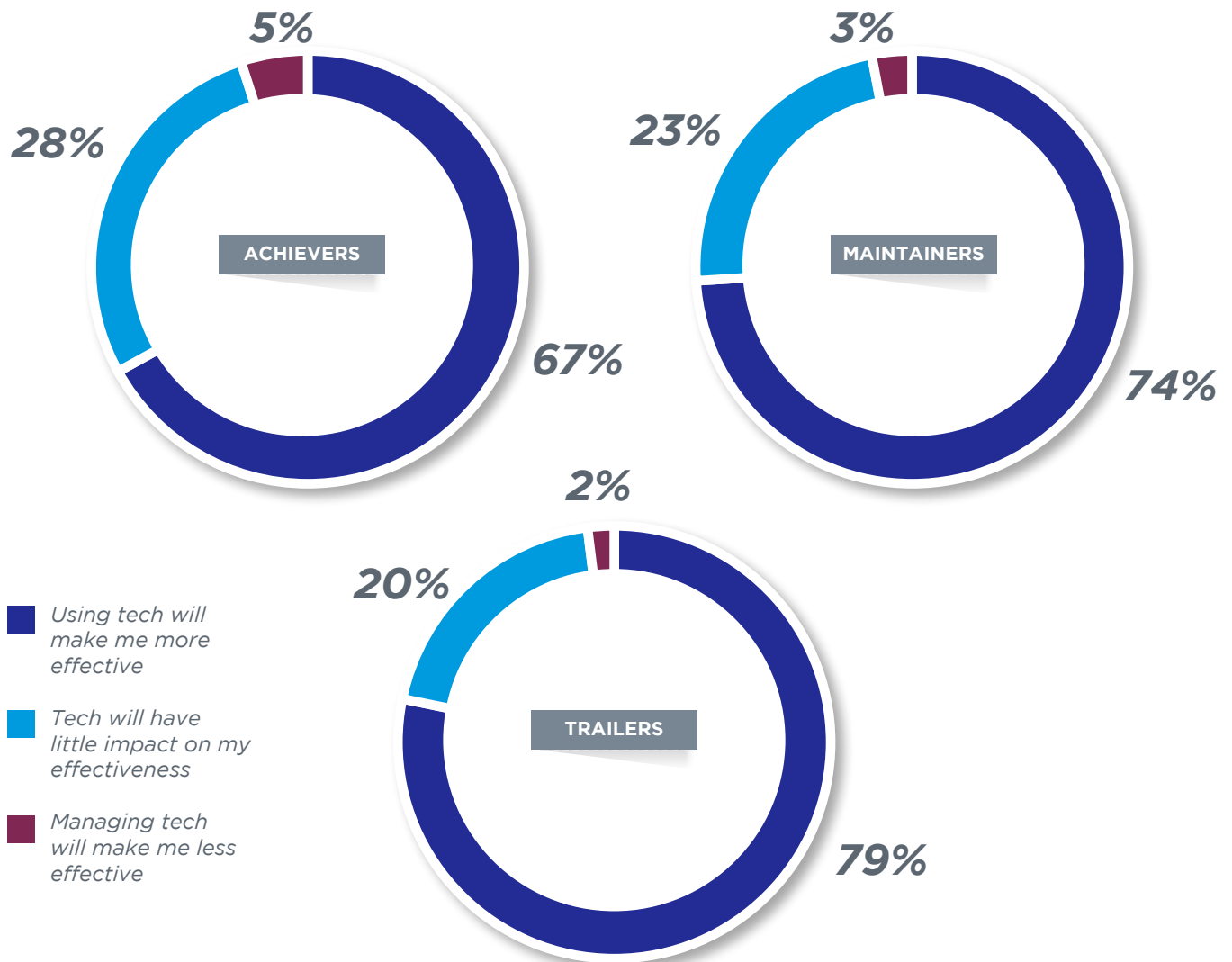


## > Views on the Future of CRE

### Personal technology use:

The vast majority of CRE professionals believe that using technology will make them more effective at a personal level.

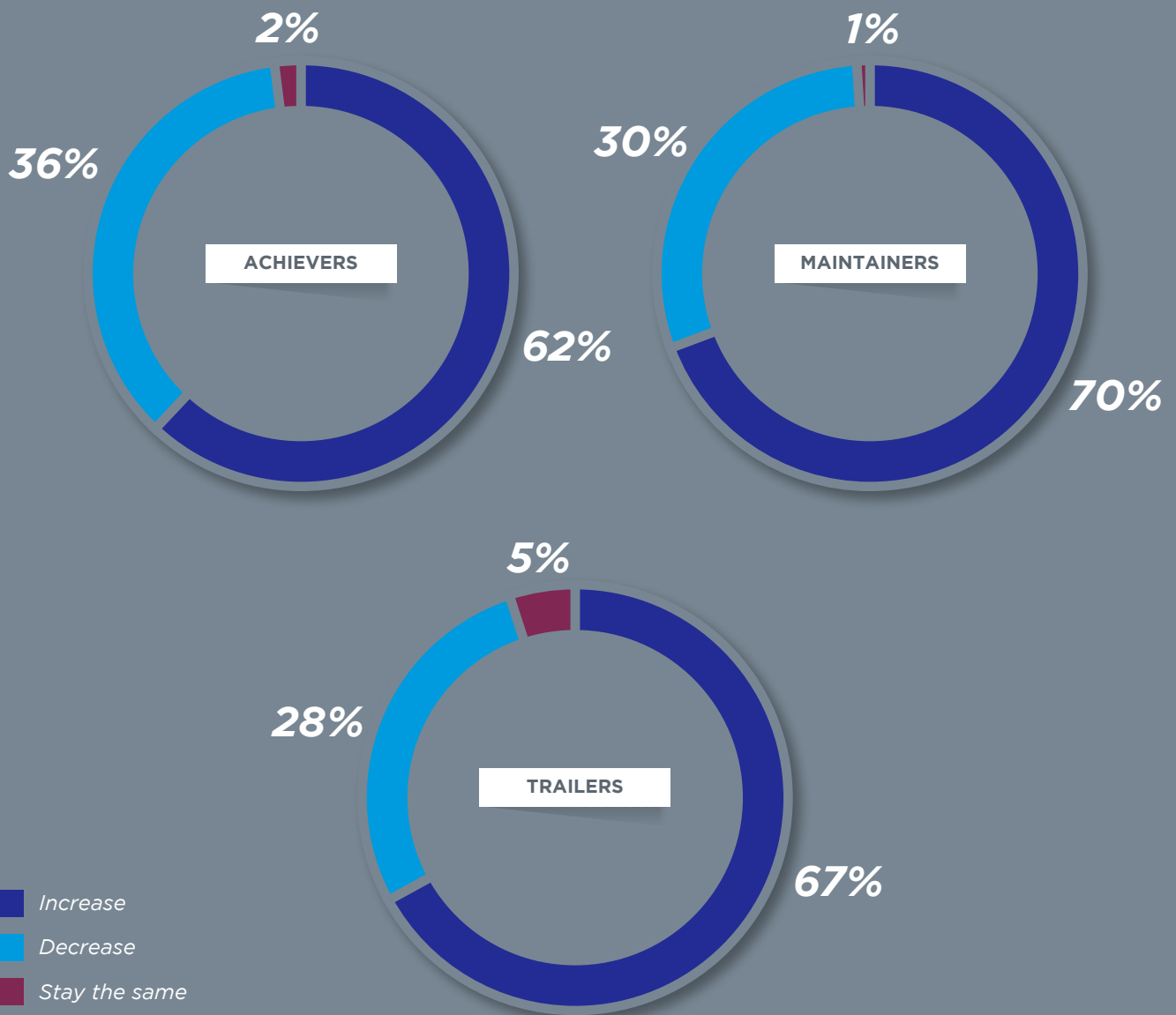
12-month Technology Use Expectations - Personal Effectiveness





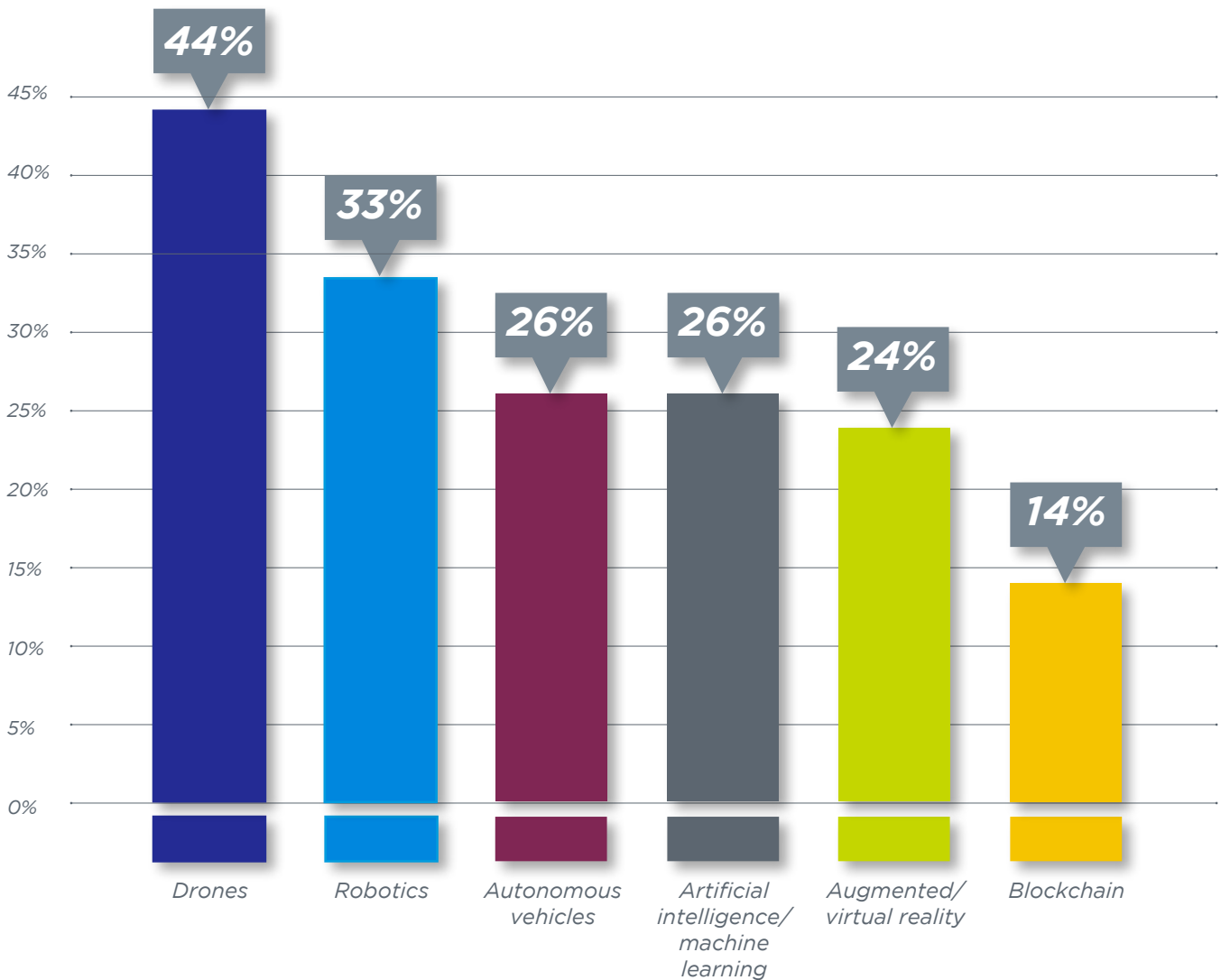
Over the course of the next 12 months, most CRE professionals expect to increase the number of systems they use personally.

### 12-month Technology Use Expectations - Number of Systems Used Personally



## Awareness of cutting-edge technology:

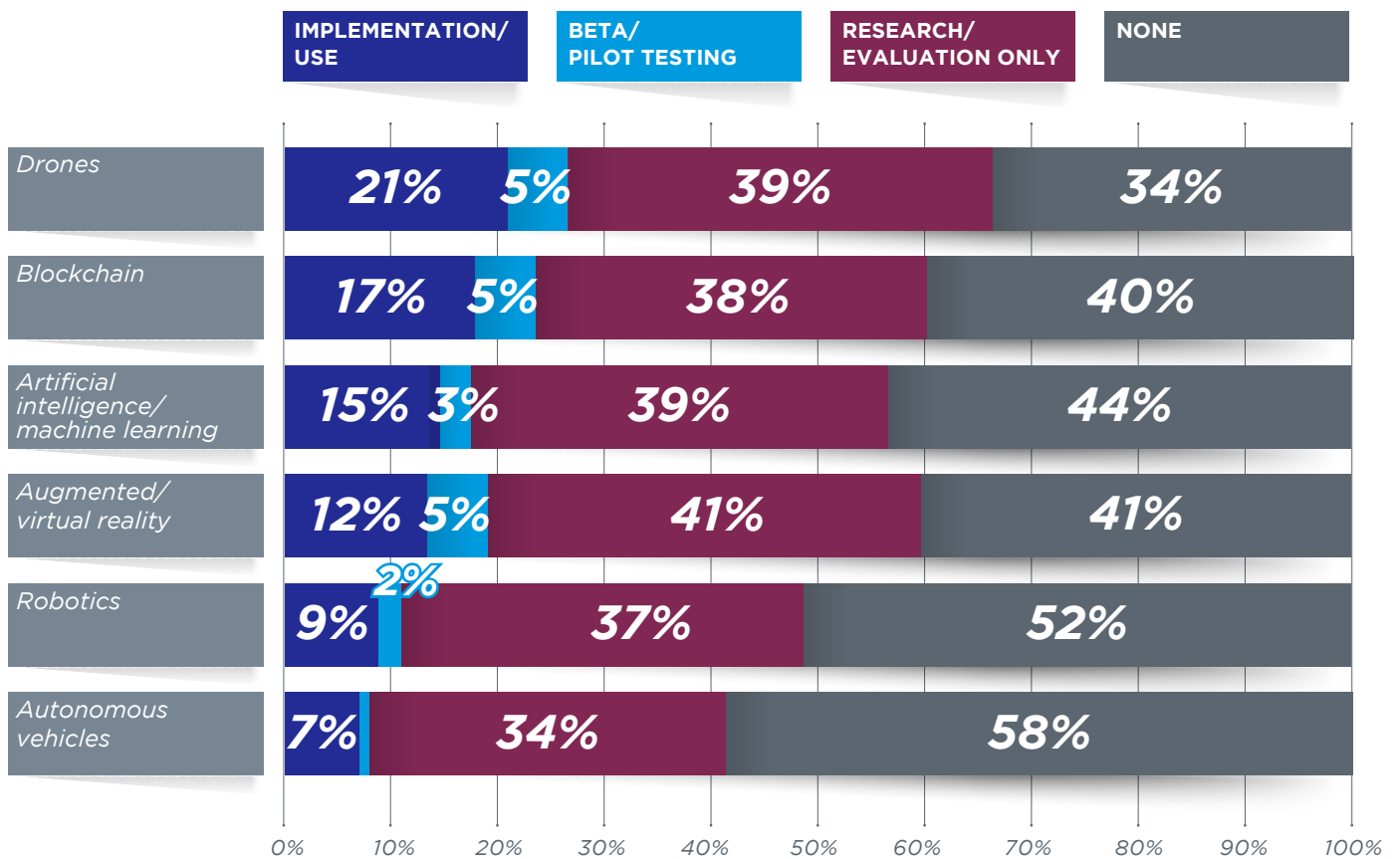
Awareness of CRE-oriented Product/Solution Using Emerging Technology



## Experience with cutting-edge technology:

Emerging technology remains enigmatic to most CRE professionals. Drone technology is the most well known, but even here less than half (44 percent) are aware of an existing CRE-oriented solution using this technology. Of these, only about a quarter (26 percent) have direct experience with any such solution.

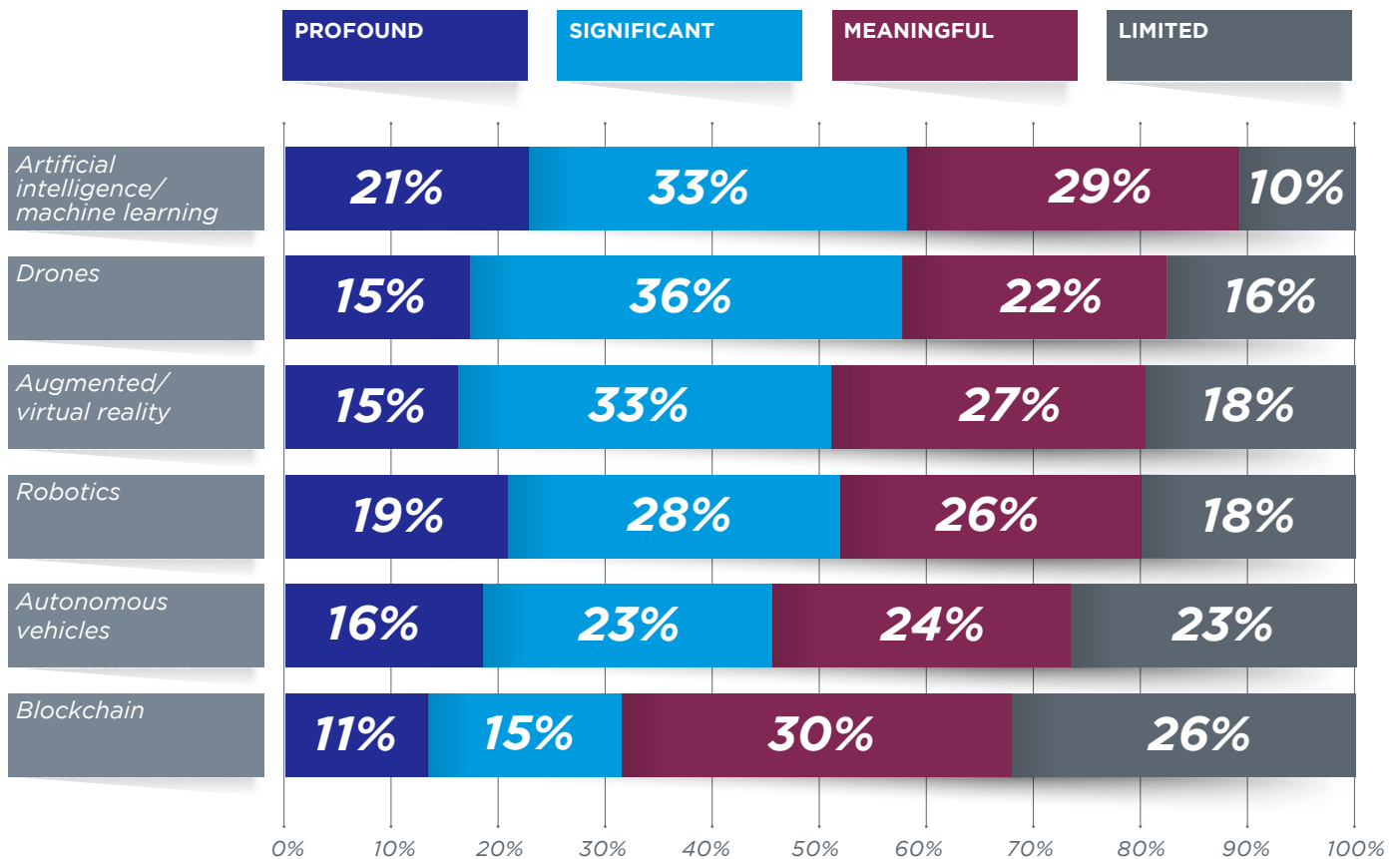
Experience with Emerging Technologies (Among “Aware”)



### Takeaway #8:

More than half of CRE professionals expect artificial intelligence/machine learning and drone technologies to have a significant or profound impact on the future of the industry.

Expected Impact on Future of CRE



And yet, the promise of emerging technologies is intriguing: a majority (51 percent) of CRE professionals anticipate drones will have a significant or profound impact on the industry. An even greater proportion (54 percent) expects the same of Artificial Intelligence and Machine Learning. Given the amount of data generated by today's leading property operations tools, this type of data science bears the potential to make sense of patterns, uncover hidden insights, and give CRE executives a continued, sustained advantage over their competition.





# Conclusion

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The volume of technology solutions available to CRE professionals is tremendous, and new entrants are emerging at a faster pace than ever. To succeed in this environment, highly effective CRE organizations behave differently than their peers in how they approach, select, and adopt technology. For CRE professionals seeking to develop a more technologically mature organization, the findings in this report provide a few clear guidelines.

## FIRST

Highly effective organizations are not afraid to explore the latest solutions. They adopt early and often, seeking out new ways to impact their businesses. And they are looking past the immediate benefits of efficiency, toward serving customers and solving new problems.

## SECOND

These high-performing organizations make a commitment to choosing the best solutions. They budget for technology and are willing to invest in order to receive benefits. They also regularly employ consultants in the selection process and take the lead in purchasing technology with a strategic perspective in view.

## THIRD

The CRE organizations that use technology the best understand that selection is only half the battle. They focus on securing broad adoption across their teams and deep use of the feature sets of the technology they deploy. They also consider how systems integrate together, as well as how best to exploit the data output their solutions yield.

Achieving technology effectiveness is not easy, especially in an industry experiencing such rapid disruption. But, as the findings in this report show, there is a roadmap for organizations wishing to get more out of the technology that helps them operate their buildings. With so many new solutions arising to meet so many unmet needs, the opportunities are bigger than ever.





# Research methodology

## > Survey:

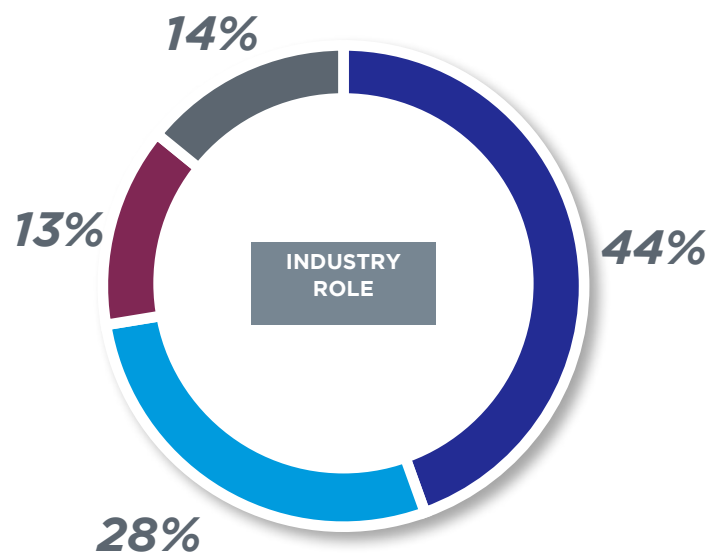
The CRE Technology Effectiveness Survey launched on 2/7/2018 and remained open until 2/20/2018. During this time, BOMA International and Building Engines both promoted participation among their respective constituents.

All participants were guaranteed that their individual responses would remain confidential. They were also promised that they would be among the first to see the results of the survey. The survey received over 600 valid responses.

## > Respondent profile:

### Role breakdown:

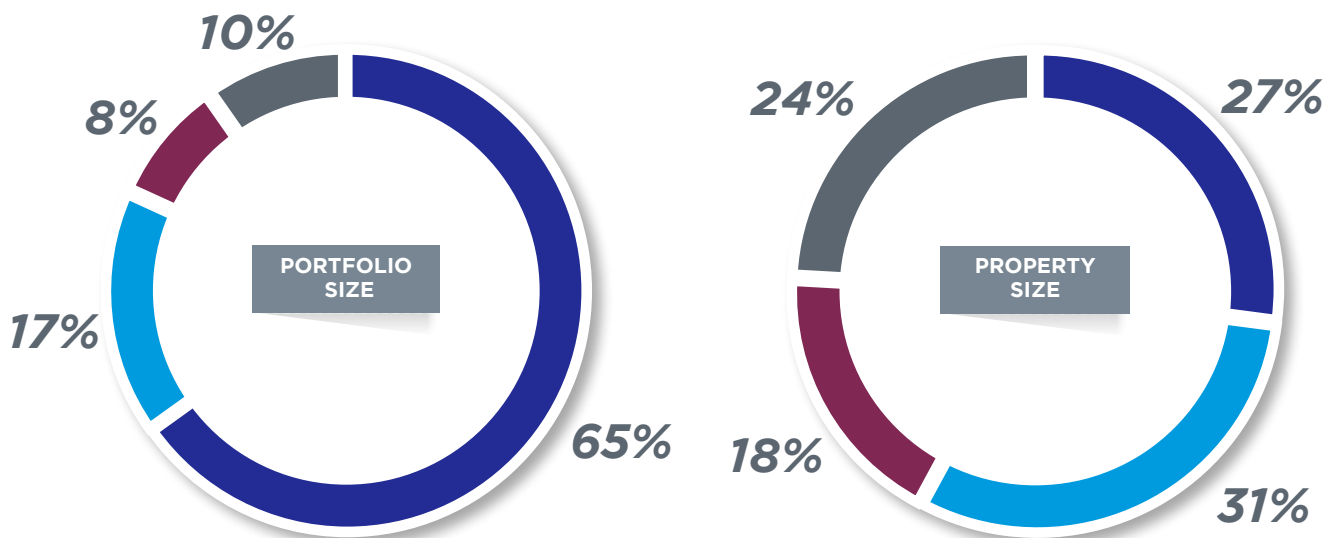
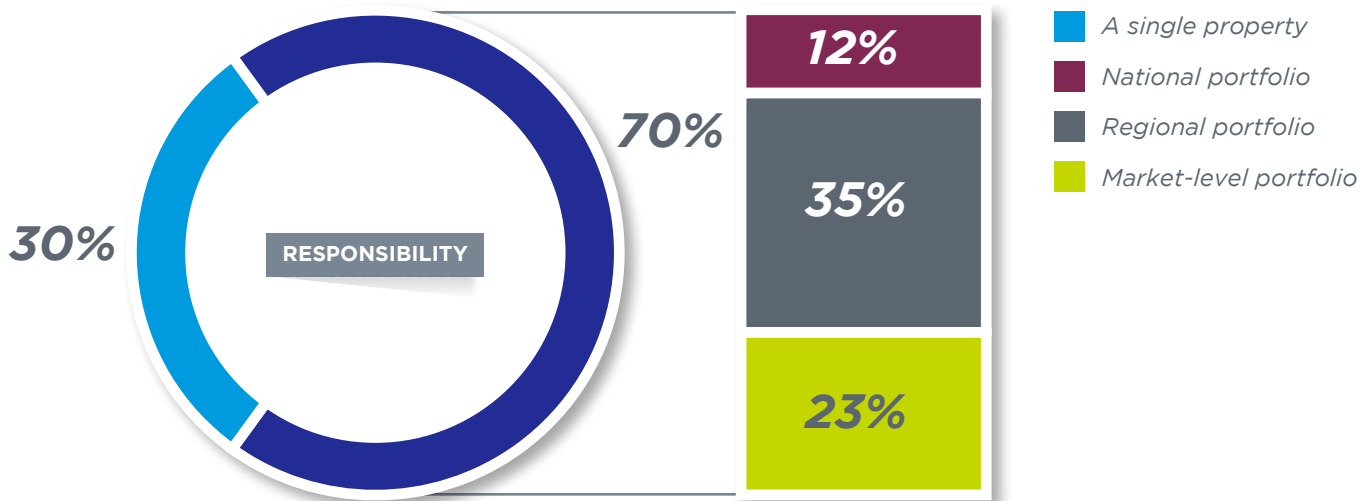
- > **44 percent** are in direct property/facility management roles
- > **28 percent** are in a maintenance/engineering role
- > **13 percent** are in a building ownership or asset management role
- > **14 percent** are in some other role within the CRE industry



- *Property/Facility Management*
- *Maintenance/Engineering*
- *Building Ownership/Asset Management*
- *Other*

## Responsibility breakdown:

- > **30 percent** of respondents represented single-property assets
- > **70 percent** represented a portfolio of multiple properties
  - 12 percent national (Nationwide portfolio of buildings)
  - 35 percent regional (e.g. the Northeast)
  - 23 percent market-level (e.g. Boston or Cambridge)



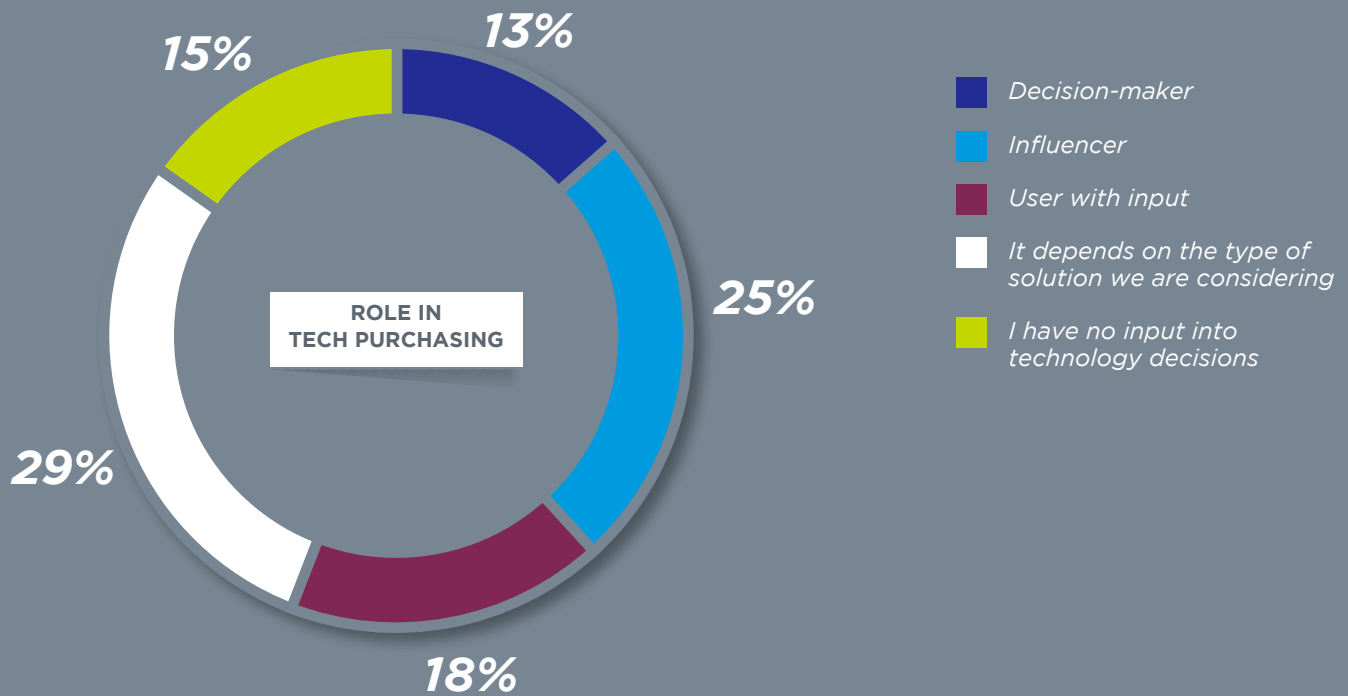
- Under 5 million sq. ft.
- 5-10 million sq. ft.
- 10-20 million sq. ft.
- Over 20 million sq. ft.

- Under 250 thousand sq. ft.
- 250-500 thousand sq. ft.
- 500-750 thousand sq. ft.
- Over 750 thousand sq. ft.

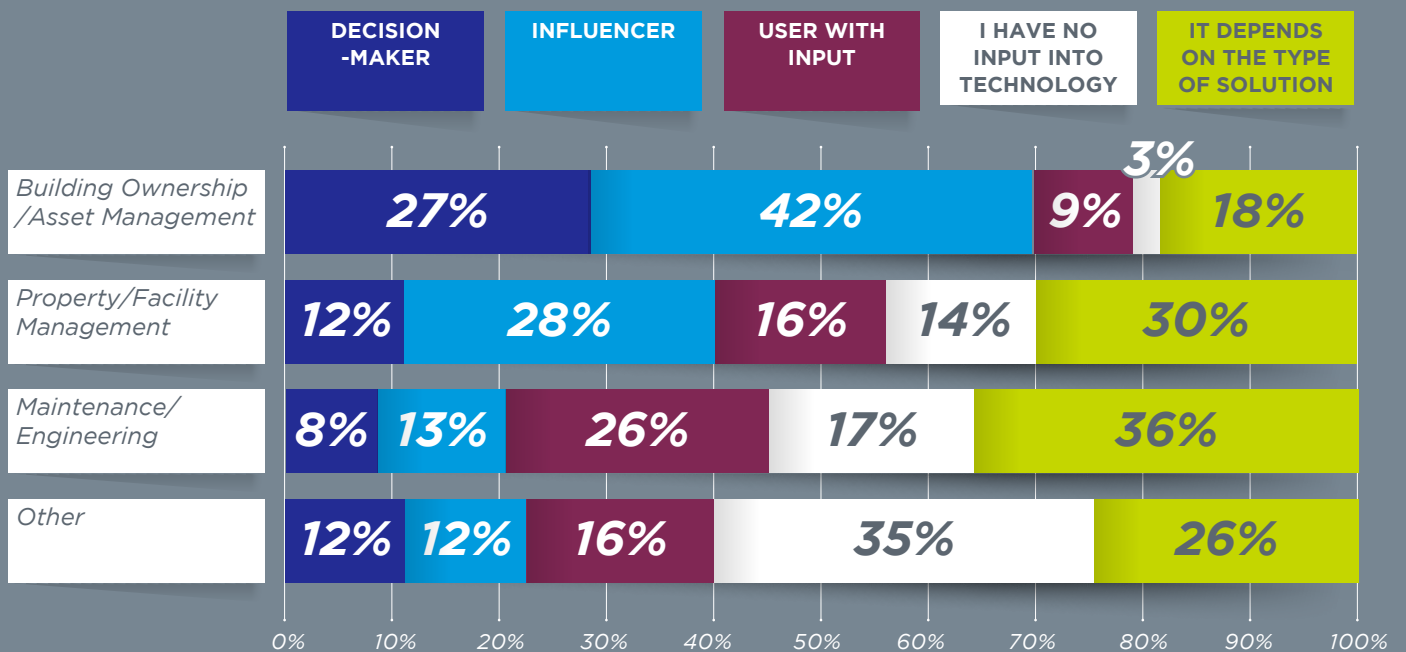
(for those who manage portfolios)

(for those who serve single properties)

## Role in technology purchasing:

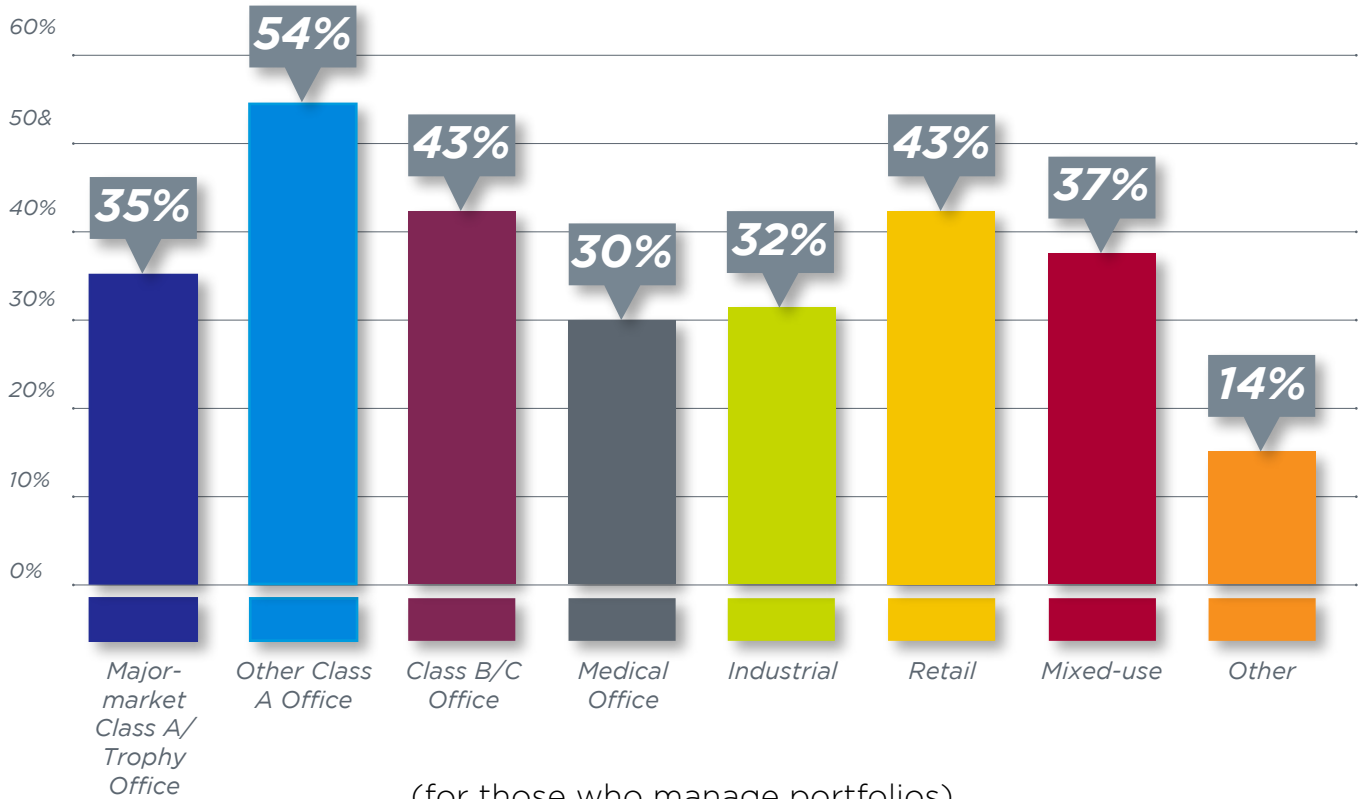


## Decision-making Authority by Industry Role

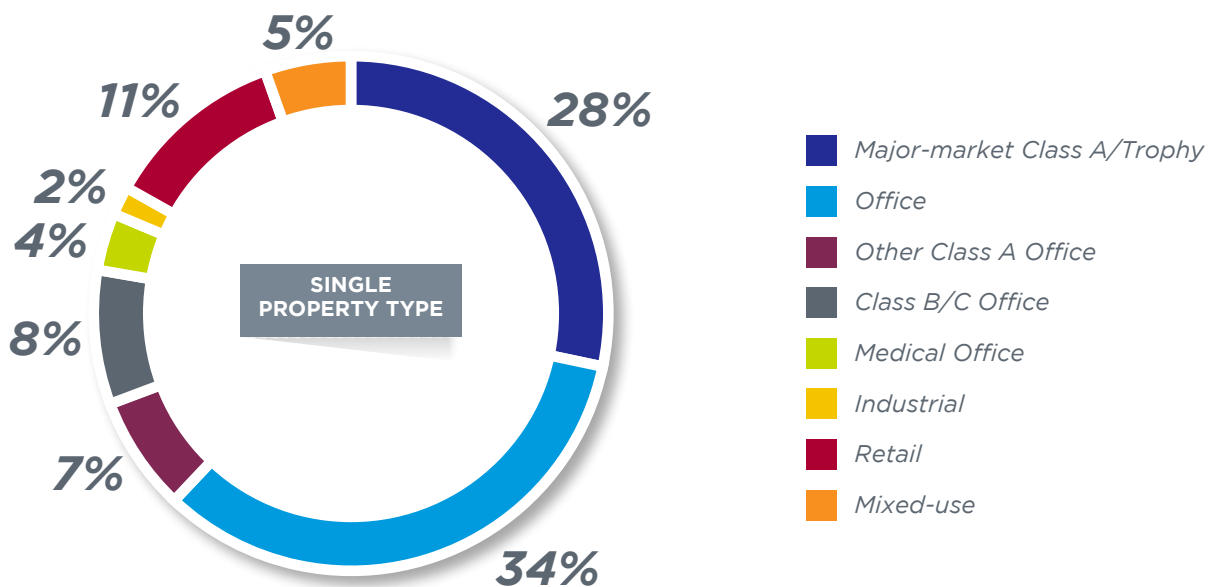


## Portfolio/property type representation:

Portfolio Property Type(s)



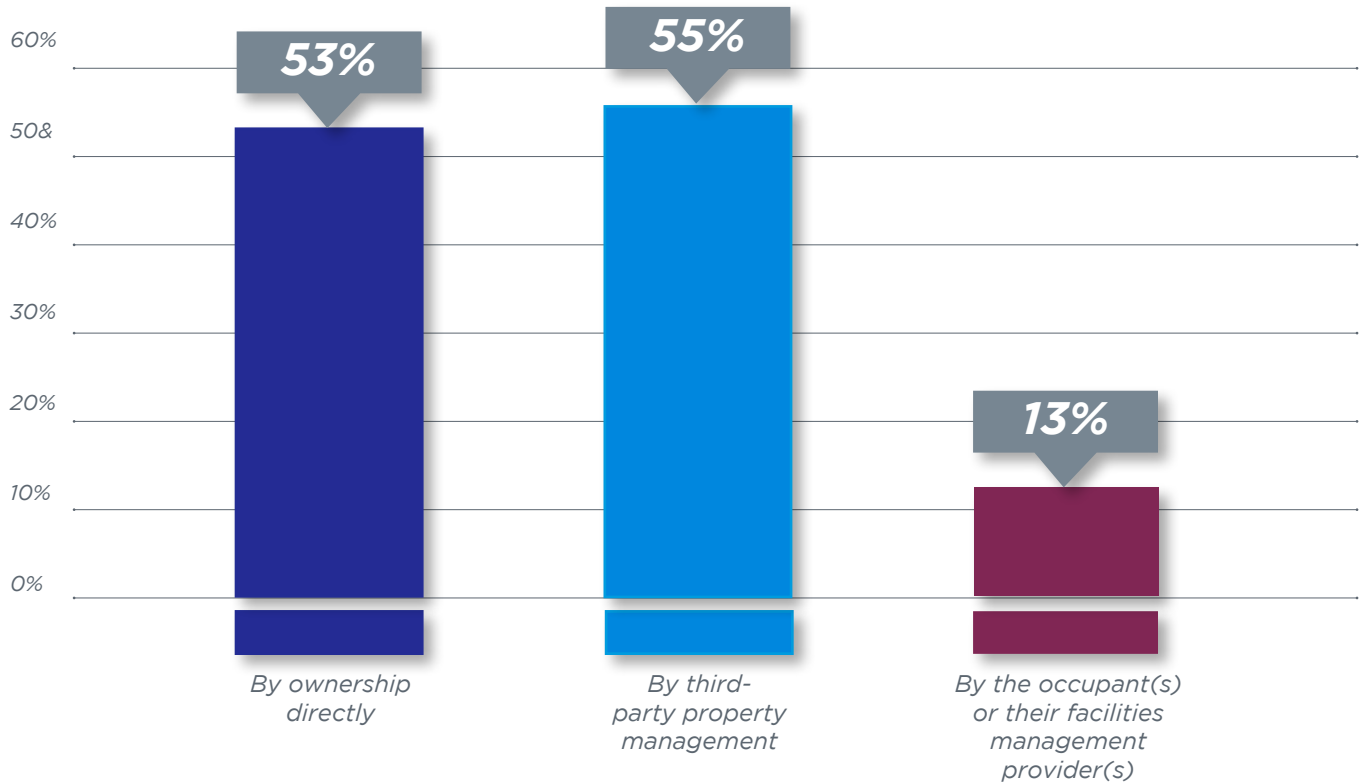
(for those who manage portfolios)



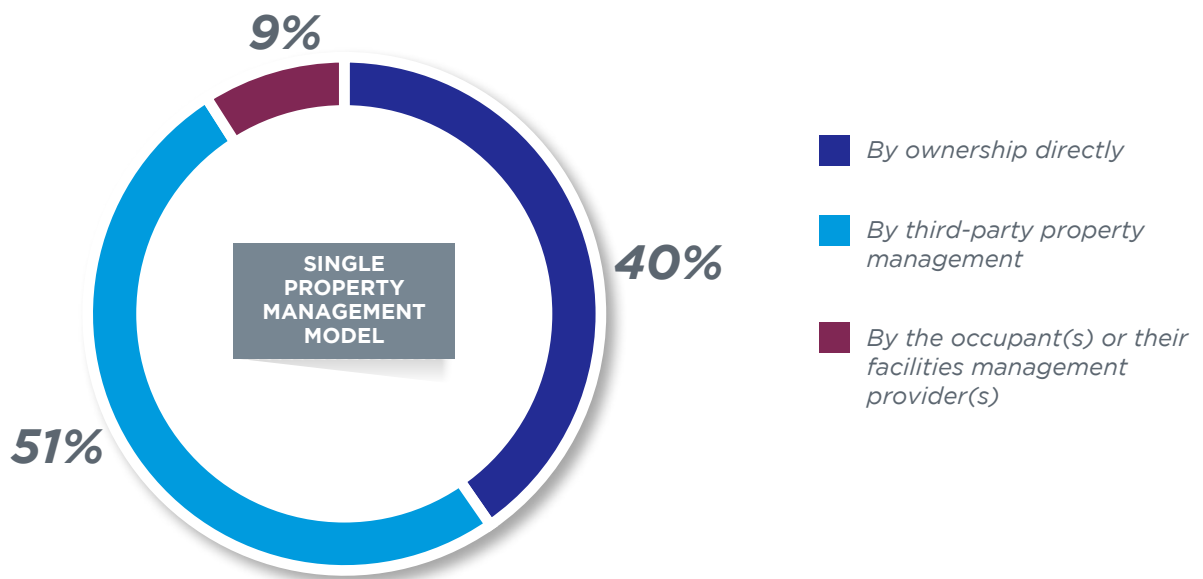
(for those who serve single properties)

## Property management model(s) used:

Portfolio Property Management Model(s)



(for those who manage portfolios)



(for those who serve single properties)

## > Analytical Framework

The *CRE Technology Effectiveness Survey*—the basis for this CRE Technology Trends Report—was used to identify the most technologically effective CRE organizations in order to understand what they do differently than others in the industry.

To achieve this, the survey employed a segmentation based on the following self-evaluation questions:

- 1. Solution Selection:** How much confidence do you have in your organization's ability to identify and implement effective technology solutions?
- 2. User Adoption:** How broad is technology adoption/compliance across your property management team(s) generally?
- 3. User Adoption:** How broad is technology adoption/compliance across your maintenance/engineering team(s) generally?
- 4. User Adoption:** How broad is technology adoption/compliance across your leasing team(s) generally?
- 5. Feature Depth:** What best describes your organization's use of the features available in the technology systems you pay for?
- 6. Data Integration:** How effective is your organization at integrating the data provided by your various systems to support business decisions?

For each of the six key questions, respondents rated their organizations on a three-point scale with options corresponding to “High,” “Medium,” and “Low” levels of effectiveness.

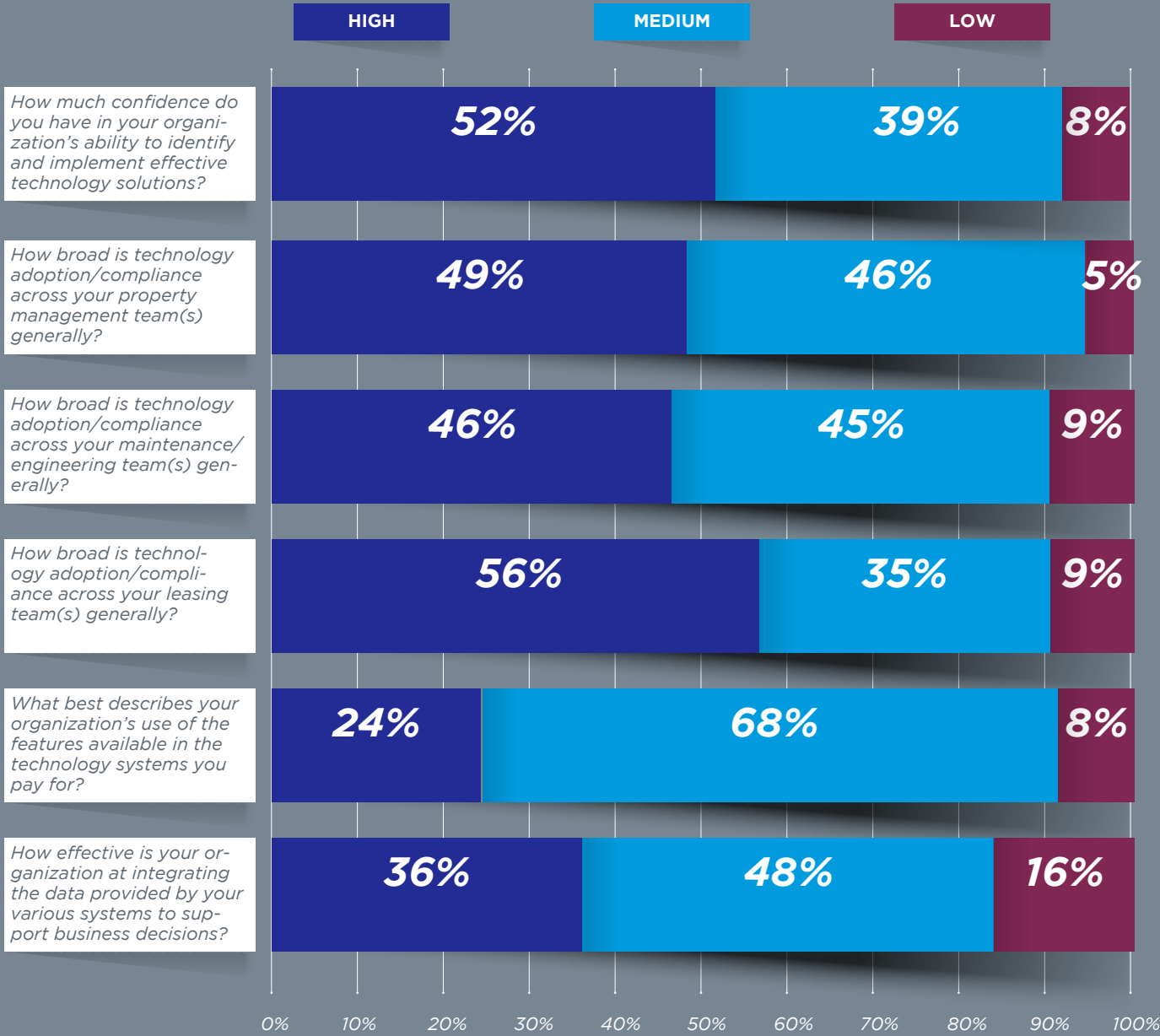
### Each response was scored as follows:

- > 2 points for each “High” response
- > 1 point for each “Medium” response
- > 0 points for each “Low” response

### Based on this scoring:

- > 23 percent of respondents amassed 11-12 points. This group is dubbed “Achievers” in this report.
- > 59 percent placed within 6-10 points. This segment is named “Maintainers.”
- > 18 percent of respondents, with fewer than 6 points, were identified as “Trailers.”

# Technology Effectiveness Self Assessment







# About Us

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## > BOMA International

The Building Owners and Managers Association (BOMA) International is a federation of 88 BOMA U.S. associations and 18 international affiliates. Founded in 1907, BOMA represents the owners and managers of all commercial property types including nearly 10.5 billion square feet of U.S. office space that supports 1.7 million jobs and contributes \$234.9 billion to the U.S. GDP. Its mission is to advance a vibrant commercial real estate industry through advocacy, influence, and knowledge.

BOMA International is a primary source of information on building management and operations, development, leasing, building operating costs, energy consumption patterns, local and national building codes, legislation, occupancy statistics, technological developments, and other industry trends.

## > Building Engines

*As a leading technology provider in the world of commercial real estate (CRE), Building Engines is at the intersection of a decades-old industry converging with today's new age of ubiquitous technology. As we work to help each CRE asset owner and manager get the most out of every square foot, understanding the role technology plays in that mission is critical.*

Building Engines delivers the CRE industry's most innovative web and mobile portfolio management platform, providing building teams with the data and insights they need to improve operational efficiency, mitigate risk, measure and improve tenant satisfaction, and make better-informed decisions.

The Building Engines integrated suite of applications supports the full range of critical building operations, including tenant engagement and retention, maintenance, management communications, and task management.

Clients of Building Engines include many of the leading public REITs, private owner/managers, and third-party management firms in the United States and Canada operating multi-tenant commercial office, medical office, retail, and industrial properties. For more information about Building Engines, please visit: [www.buildingengines.com](http://www.buildingengines.com).



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Original Research from BOMA International  
and Building Engines



