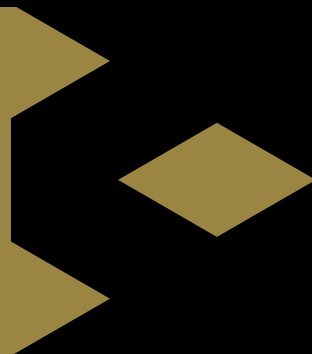


THE STATE OF TECHNOLOGY

AEC FIRMS

2019



EXECUTIVE REPORT



ABSTRACT

This study explored mobile device preferences, software, file storage, technology challenges and project information challenges of professionals working in architectural, engineering and construction (AEC) firms. Additionally, respondents were asked whether their firm had been named in a legal dispute including the recency in which this event occurred. The research subjects are followers of Construction Dive, Construction Executive and Hanley Wood publications, websites and newsletters, or have expressed interest in AEC technology, or are a confirmed AEC professional serving the construction design industry.

The data collected revealed demographics and software application ecosystems by type of firm. Due to the ease with which one can investigate software applications using the internet, this resource will further accelerate the process through its reveal of the top six AEC software applications and software ecosystems by type of firm. Additionally, knowing whether one's technology or project information management challenges are unique or shared among a population of one's peers may elevate initiatives as actionable and in need of resolution.

Data was gathered using quantitative research methodology.

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INTRODUCTION TO THE RESEARCH

Newforma Inc., founded in 2004 and pioneers of the Project Information Management software category, developed and launched this survey instrument leveraging multiple industry outlets, which include *Construction Dive*, *Construction Executive* and *Hanley Wood* publications, and a database of 220k AEC professionals. The validity of this research is founded on the principle of giving the general population of AEC professionals in the construction and design space an opportunity to participate in the survey.

Research participants were provided a direct link into the survey in paid advertising or in a direct email marketing campaign. Respondents who completed the survey were promised a free digital copy of this executive report.

The research methodology resulted in 1,154 respondents throughout the United States. Quantitative research methodology was used, and multiple choice questions were asked. The data points as percentages presented in this publication have been rounded to present as a whole number. In survey questions where more than six answer choices were identified and selected by respondents, the report includes the top six answer choices. A minimum of 100 survey completions were sought. To further validate results and bolster greater confidence the data is an accurate reflection of the national population, the research team left the survey open beyond the initial respondent goal. The survey closed with 873 completions.



THOUGHT LEADERSHIP: THE SEARCH FOR SYNERGY

The technology ecosystem of A/E/C organizations is as varied and disparate as the industry itself. Yet, each of these organizations face some common issues. How often do we bemoan the inability to connect applications, collaborate and share information with project team members, and handle administrative workloads?

The purpose of this survey is to put some context to those concerns, to gain an accurate understanding of the true state of technology in our industry and the top issues faced by the majority. That understanding provides the foundation for actionable resolution to technology-enabled problem areas. Survey questions ranged from types of software applications—email, construction specification, ERP, time/billing, viewing/marking, collaboration, design and construction management software solutions—to the use of mobile solutions and data storage. Respondents also identified the top technology challenges, which ranged from maintaining and preserving an audit trail and time spent on administrative tasks to sharing files and documents with team members, connecting with project team members, and working productively in the field.

An analysis of technology put in place relative to challenges provides a powerful framework for firm improvement.

For instance, one of the interesting survey results was the high use of smartphones in the field (not laptops). With the prevalence of smartphones in the field, a ready hypothesis is that companies should place a higher priority focus on the deployment of software applications with mobile apps that connect project teams to power collaboration and streamline project workflows. This may also result in the ancillary yet critical aspect

of decreasing administrative workload when one returns to the office from the field.

The study revealed administrative workload, project workflows, sharing files with project team members and maintaining and preserving an audit trail are among a collection of the leading technology and PIM challenges that plague the AEC profession. Of interesting note, although the findings indicate your firm is 21 to 31 percent likely to be named in a legal dispute, being further exposed to risk may hinge on your firm's ability to overcome some of the leading challenges (i.e. maintaining and preserving an audit trail).

Managing the volume of email around any given project may be fueling some of the pain and administrative workload realized by organizations. Nearly one-third of the respondents indicated they are challenged to manage the high volume of emails that go out on any given day related to a project. This pain is further amplified when you consider 80 percent of AEC professionals are not using email management software therefore cannot easily or quickly index, search, and view all emails and attachments related to a project.

It's easy to conclude resolving the leading technology and PIM challenges would significantly impact a firm's ability to out-perform competitors who are also likely to suffer these challenges.

Finally, respondents identified the top six AEC software applications their firm relies on the most, resulting in a high-level picture of arguably the most valued A/E/C software ecosystem. Read on... 📖

2019 TOP 6 AEC SOFTWARE APPLICATIONS

Respondents were asked to identify the top six AEC software applications their firm relies on most. Of note, the highest voted applications fall into four software categories.

DESIGN AND DRAFT	PROJECT INFORMATION MANAGEMENT	PDF MARK-UP AND REVIEW	BUILDING INFORMATION MANAGEMENT
AUTODESK AUTOCAD	NEWFORMA PROJECT CENTER	BLUEBEAM STUDIO	AUTODESK REVIT
SKETCHUP			AUTODESK BIM





DEMOGRAPHICS

Respondents were asked to identify the job title that best described them and the type of firm they work for. Respondents who identified their firm as architectural, engineering, or multi-discipline design were asked how many full-time employees their firm employed (*Question 3*). All other respondents were asked to report the size of their company based on annual contract value of their projects (*Question 4*).



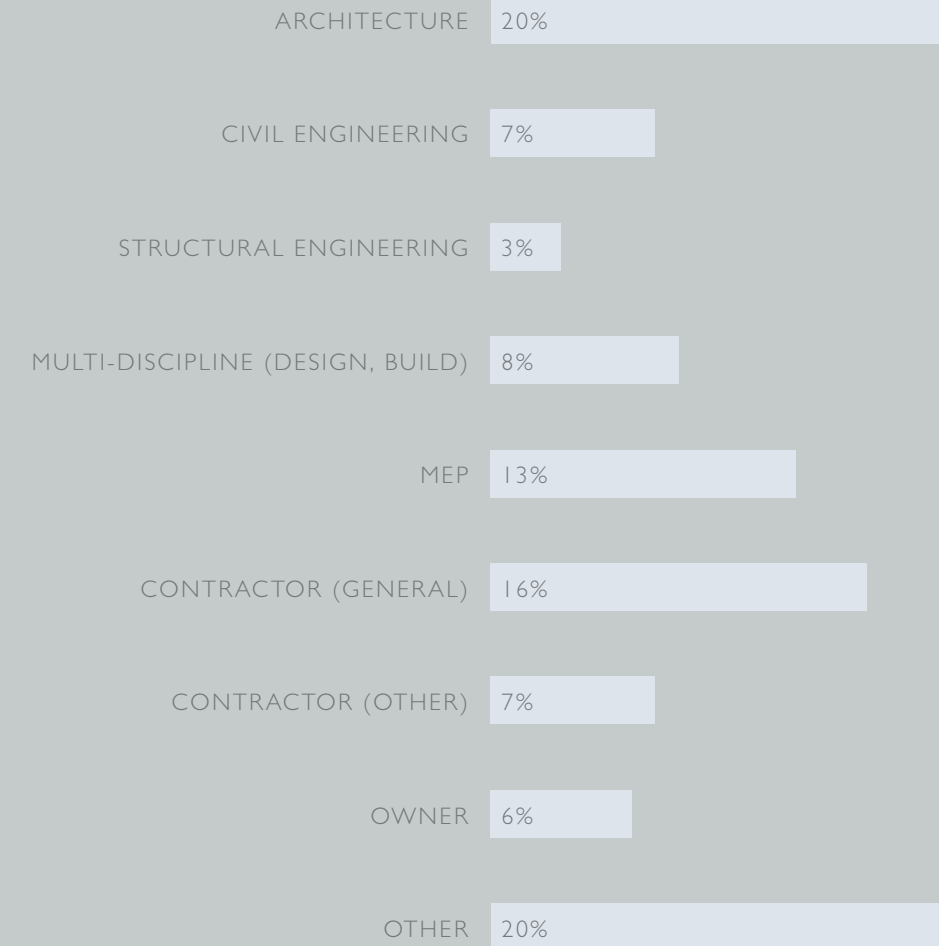
What job title best describes you?

JOB TITLE



What type of organization do you work for?

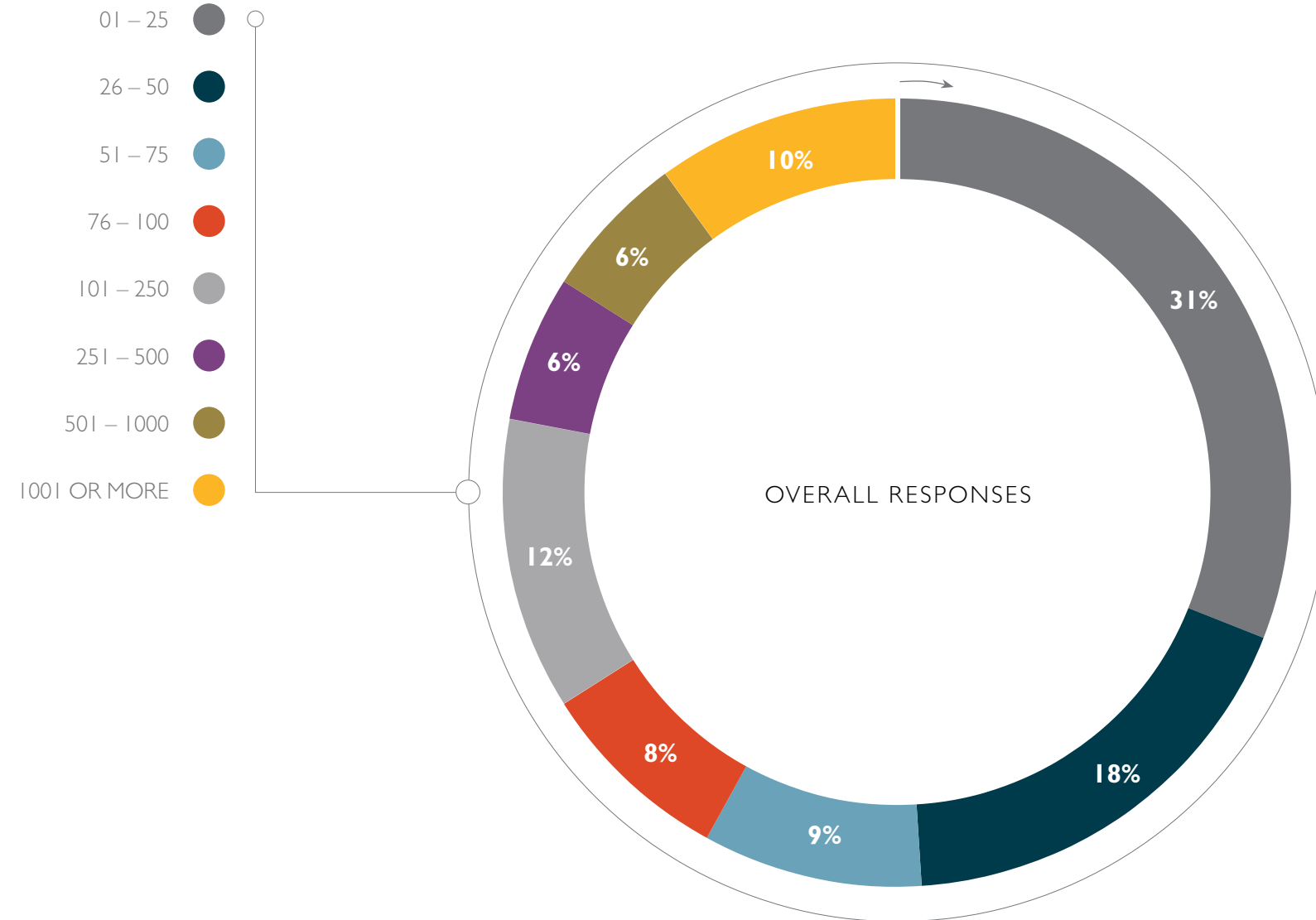
TYPE OF ORGANIZATION



FULL-TIME EMPLOYEES

Identify how many full-time employees your firm has worldwide

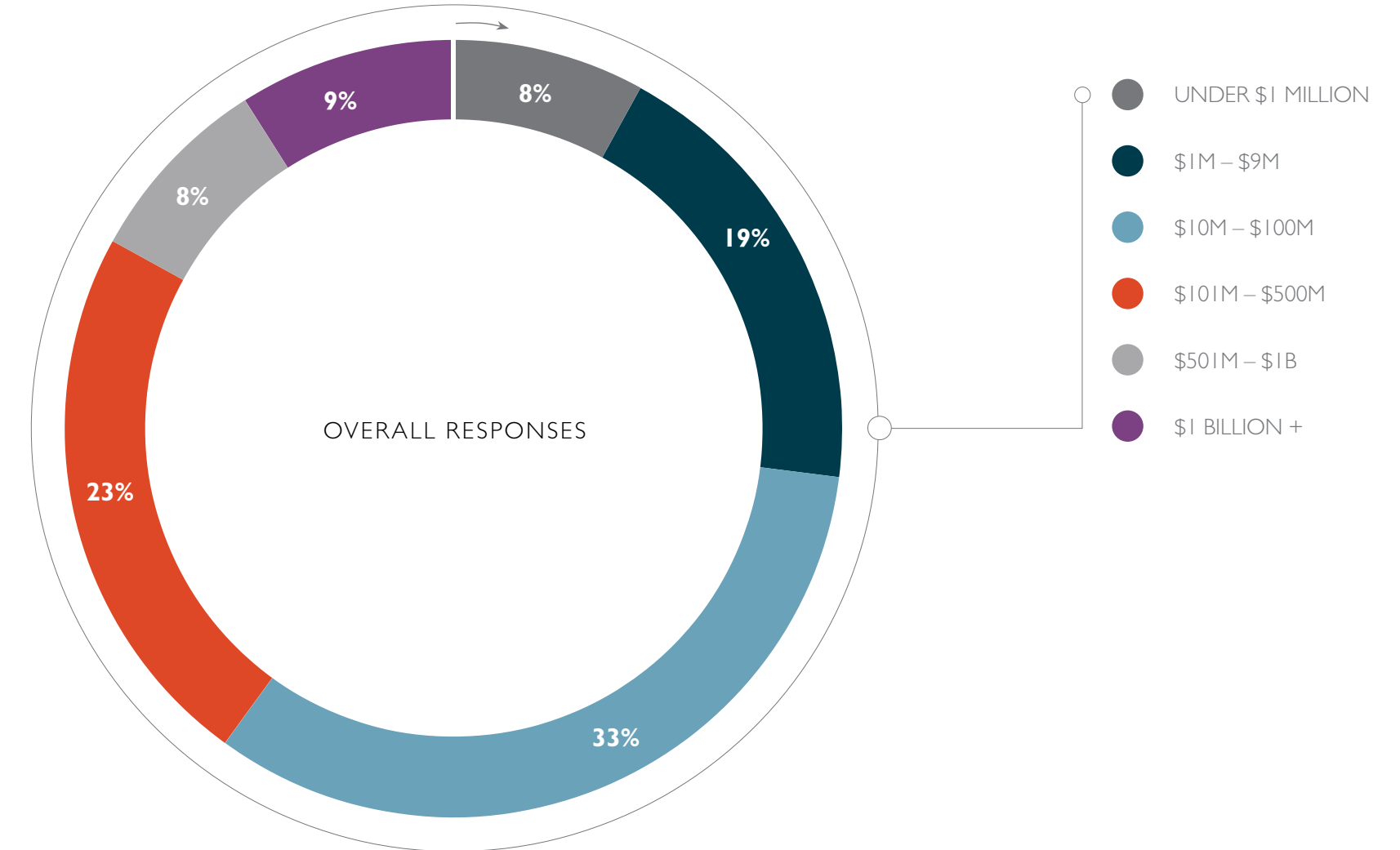
Respondents who identified their firm as architectural, engineering, or multi-discipline design were asked how many full-time employees their firm employed.



Identify the size of your company by the annual construction value of your projects.

Respondents who did not identify their firm as architectural, engineering, or multi-discipline design were asked the size of their firm based on the annual construction value of their projects.

COMPANY SIZE





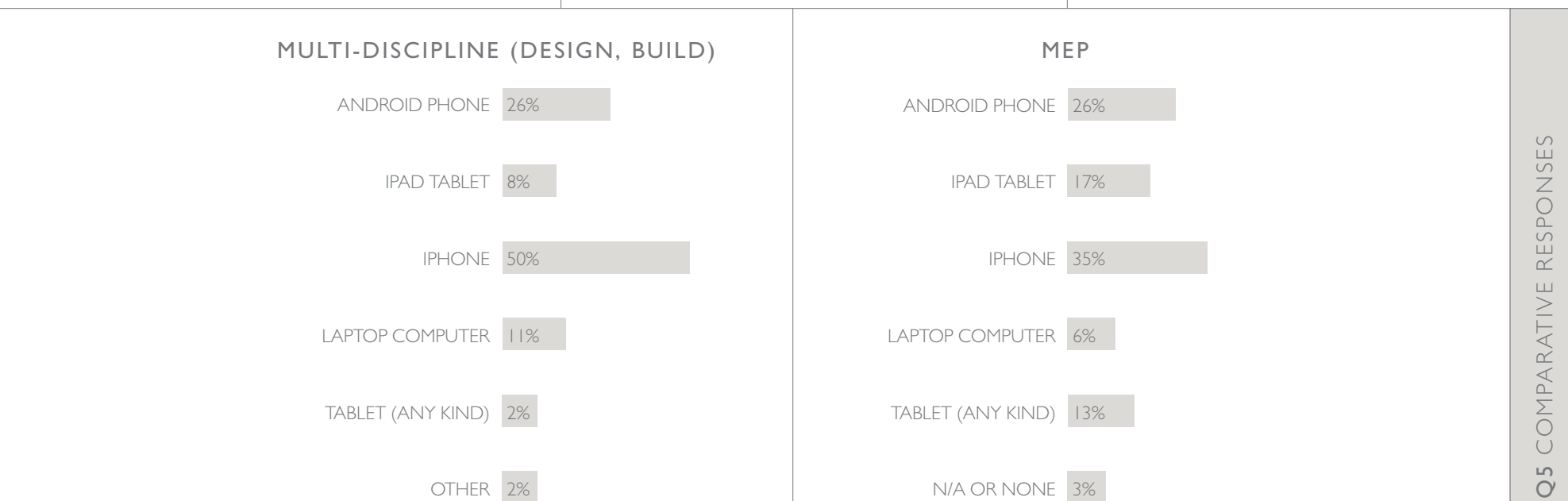
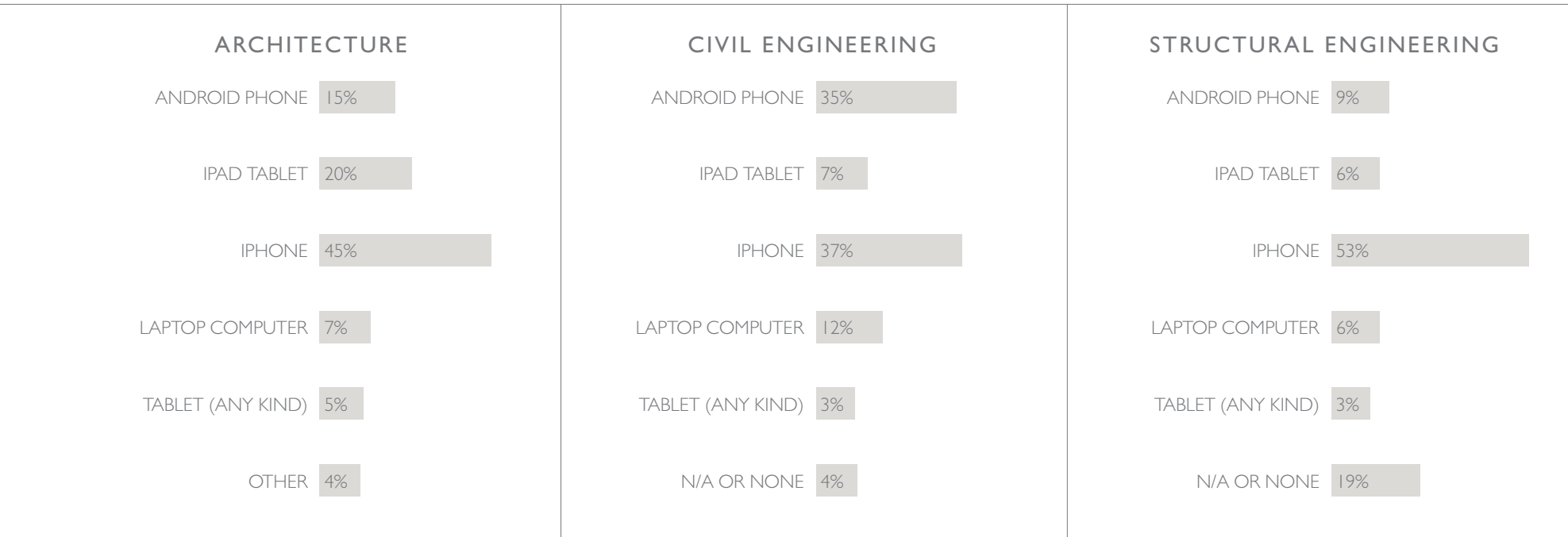
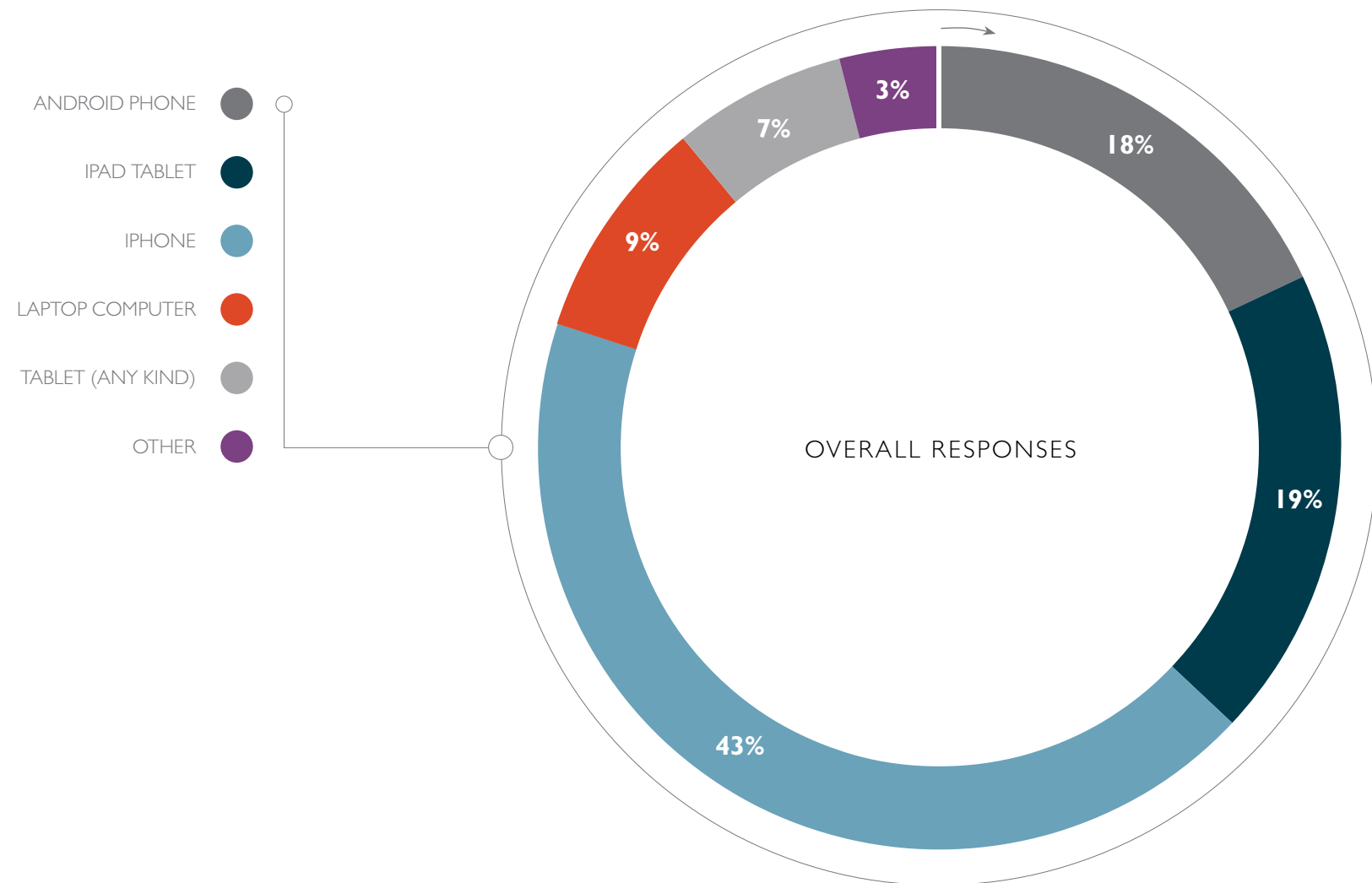
MOBILE DEVICES, SOFTWARE AND FILE STORAGE

The researchers gathered information about respondents' mobile device preferences when in the field, software applications, and file storage practices to reveal software ecosystems and file storage practices by type of firm.

MOBILE DEVICES

Identify the most common mobile devices used by staff in the field

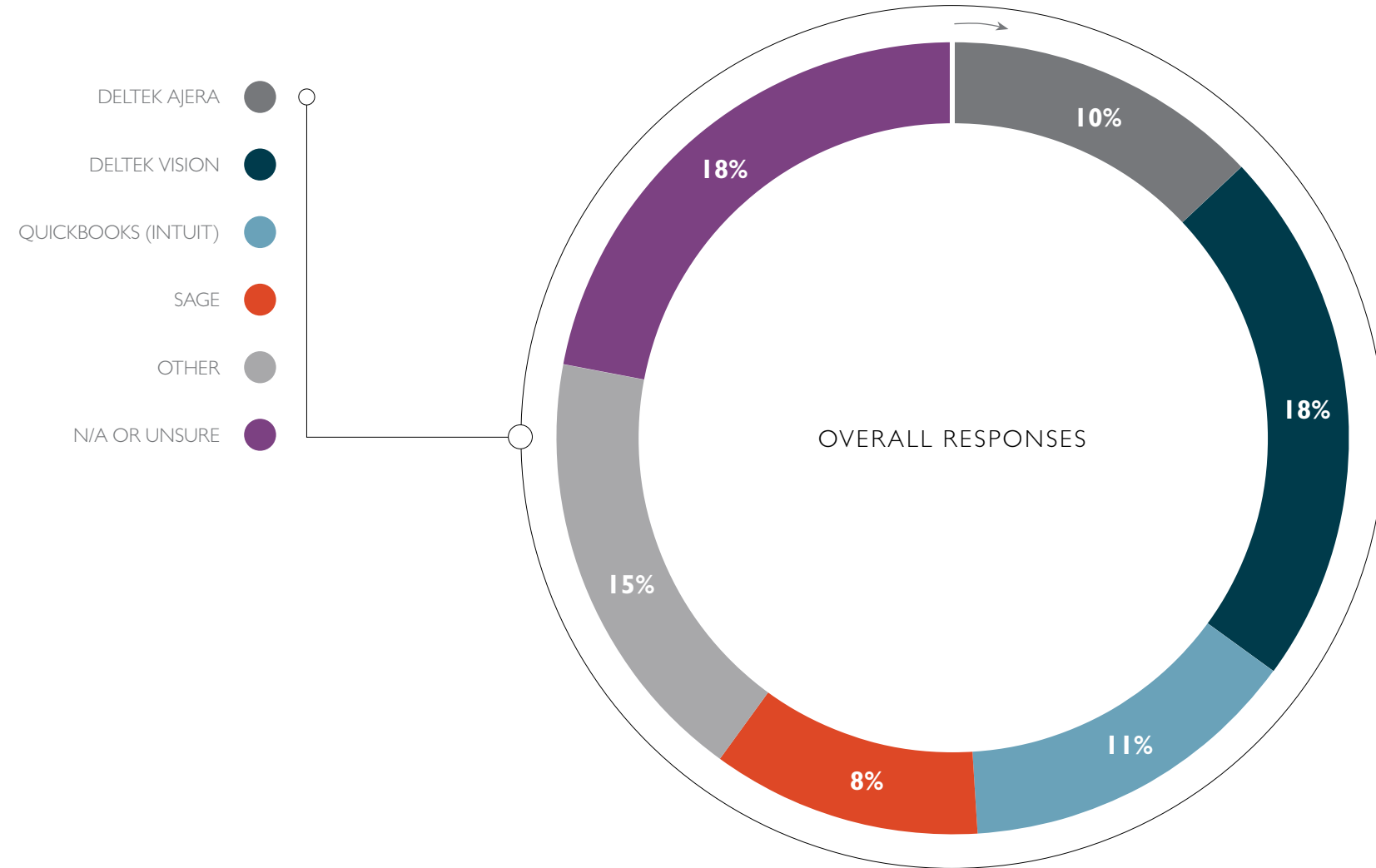
Sixty-one percent of all respondents are using their smartphone in the field, while only 26 percent use an iPad or tablet. Notably, only nine percent of AEC professionals use laptops in the field.



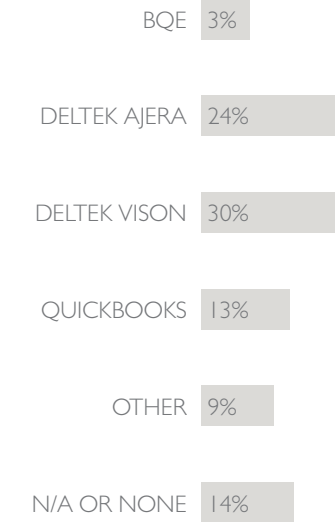
Identify your firm's time and billing software

TIME AND BILLING SOFTWARE

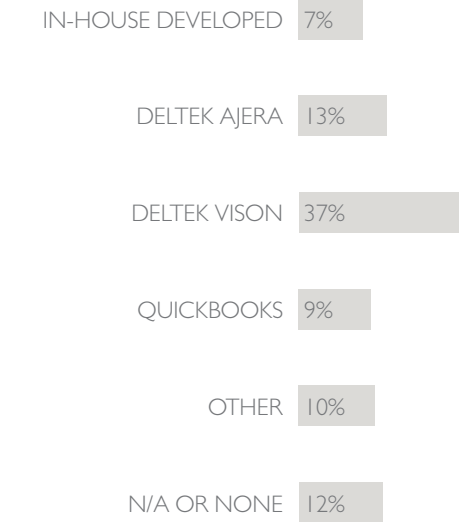
Deltek Vision (18%) and QuickBooks (11%) are the most common time and billing software applications. The list of "Other" software applications is extensive; this may be an indicator AEC professionals find any application acceptable or have not found any application superior to others.



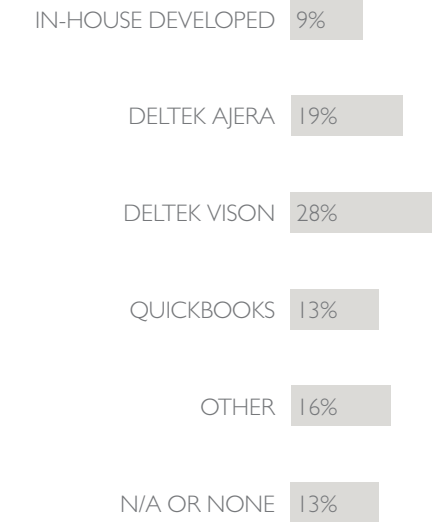
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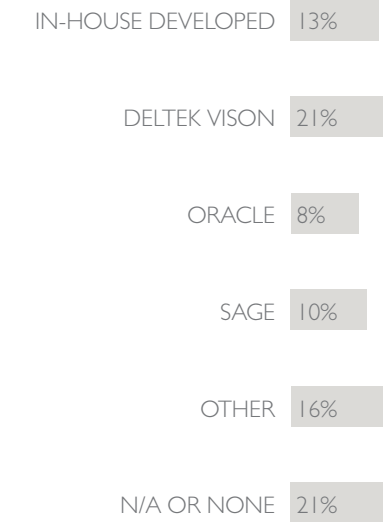
CIVIL ENGINEERING



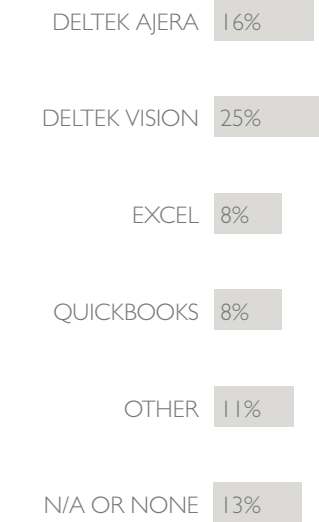
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



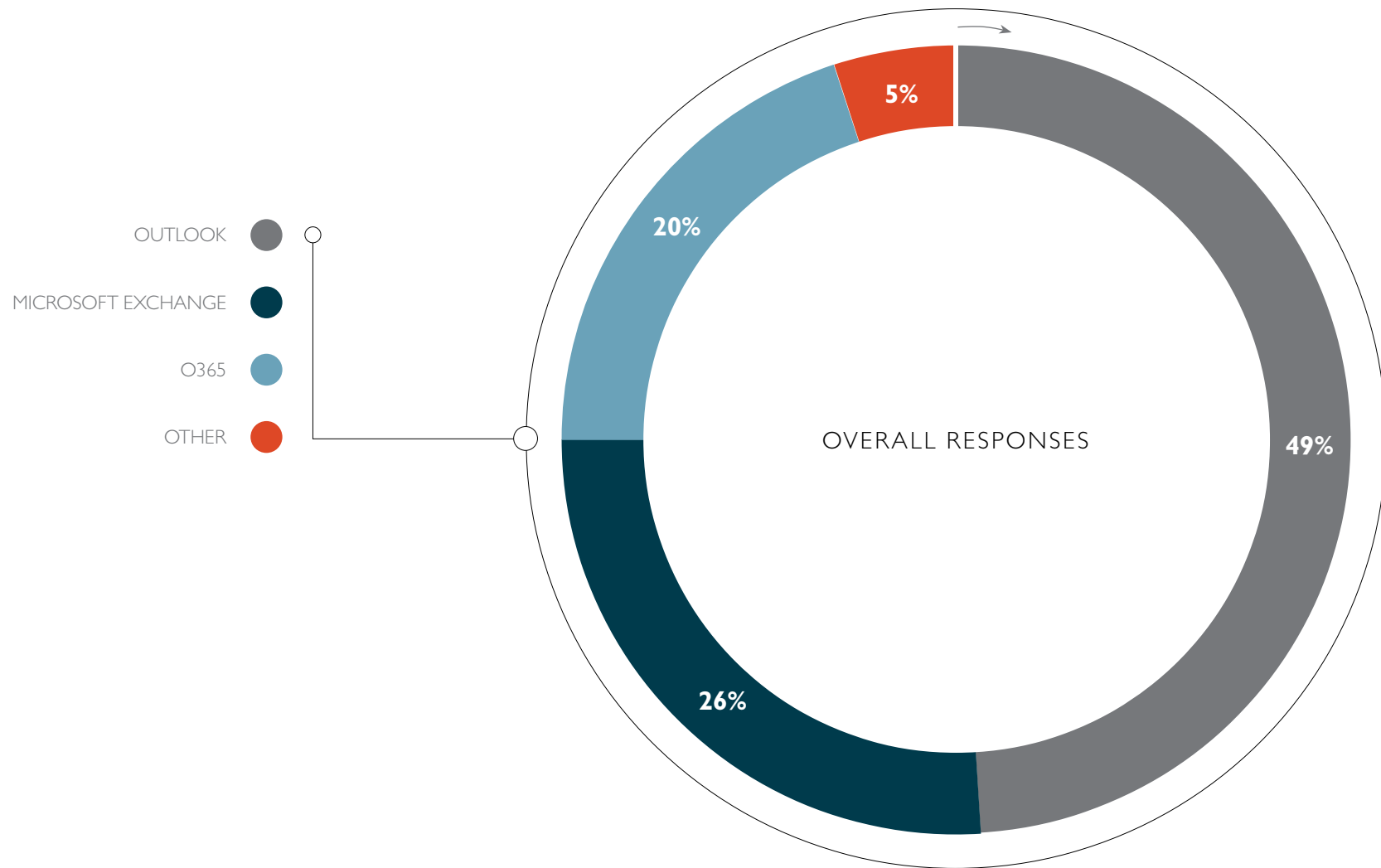
MEP



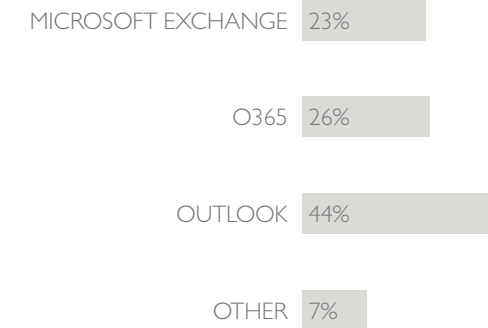
EMAIL SOFTWARE

Identify your firm's email software

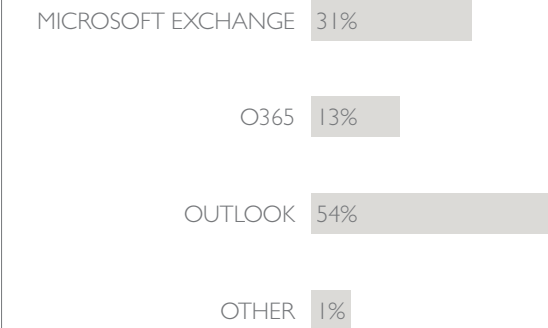
Microsoft email offerings dominate the AEC profession and own 95% of the market.



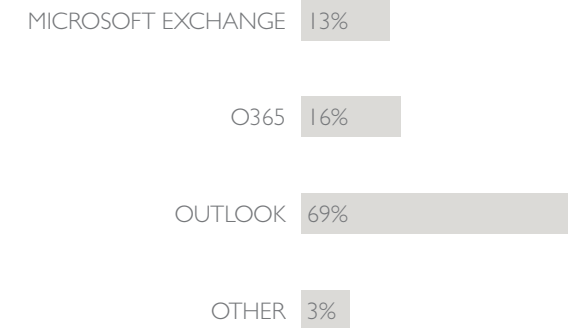
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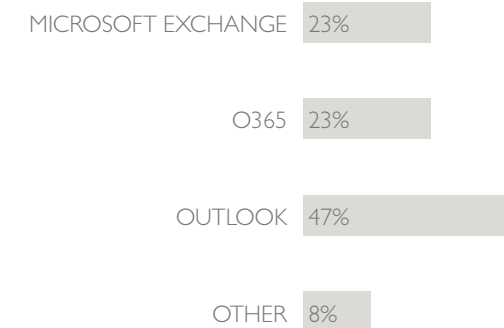
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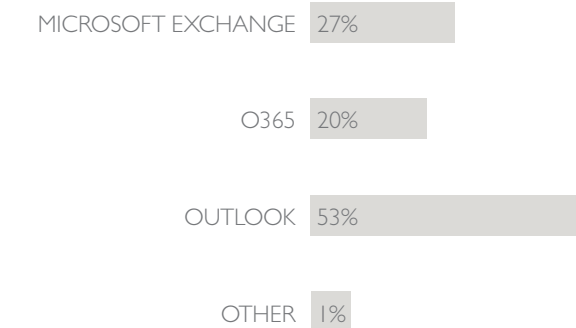
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



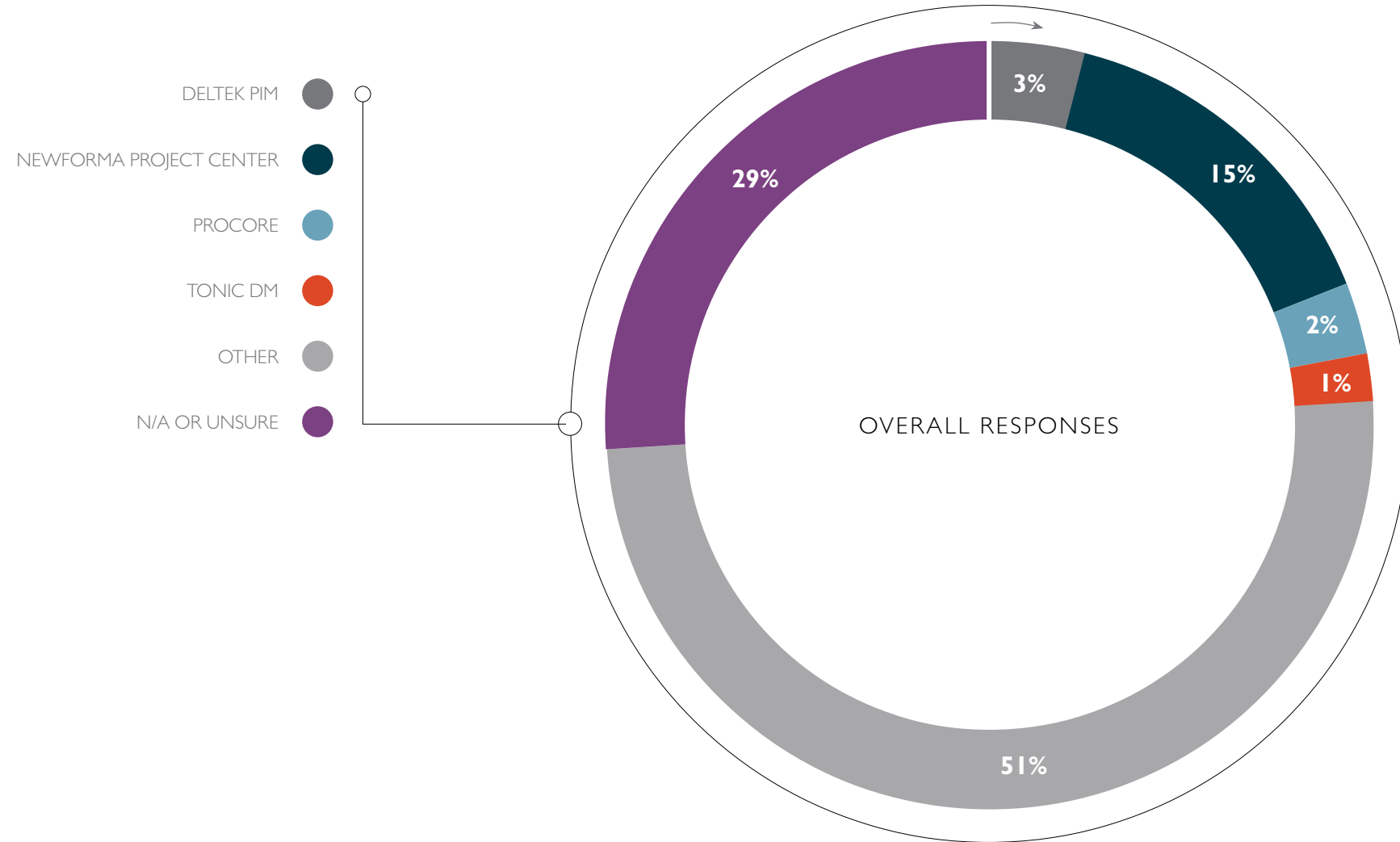
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Identify your firm's email management software

The majority of firms indicating "Other" as their answer identified using Outlook and/or a combination of Outlook Add-ins from various vendors as their solution.

EMAIL MANAGEMENT SOFTWARE



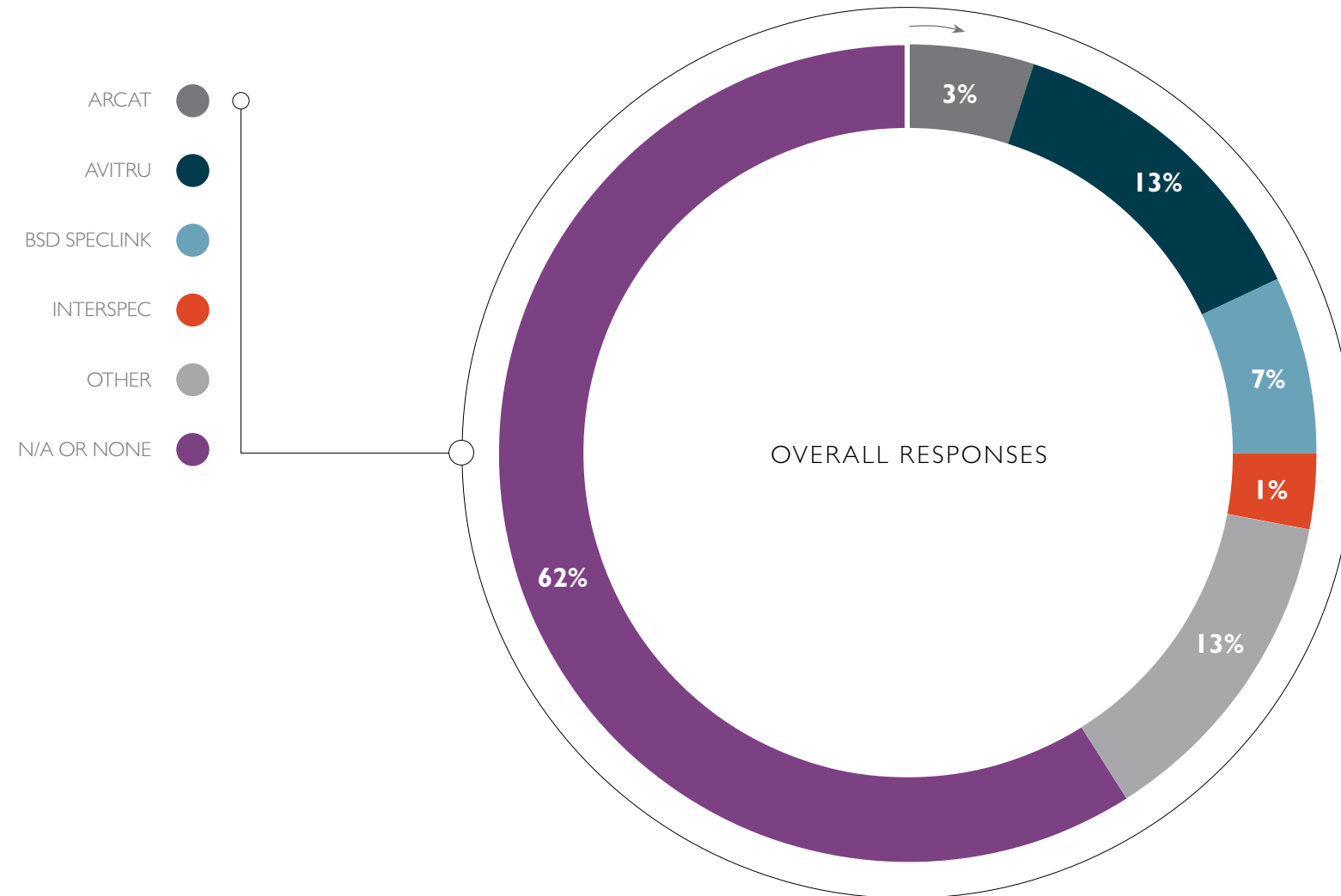
LEADING AEC EMAIL MANAGEMENT SOFTWARE PROVIDERS



CONSTRUCTION SPECIFICATION SOFTWARE

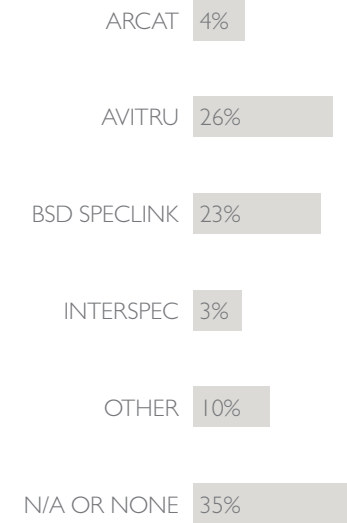
Identify your firm's construction specification software

Sixty-two percent of respondents are not using construction specification software. Avitru (13%), recently acquired by Deltek, leads this category, followed by BDS Speclink (7%).

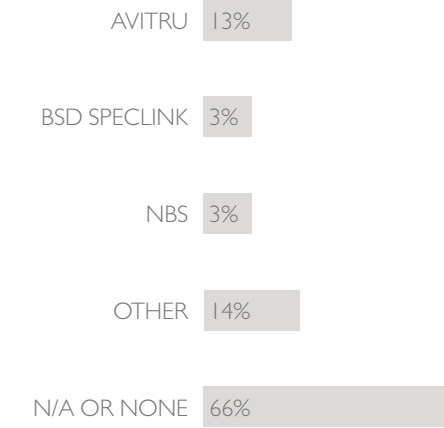


- ARCAT
- AVITRU
- BSD SPECLINK
- INTERSPEC
- OTHER
- N/A OR NONE

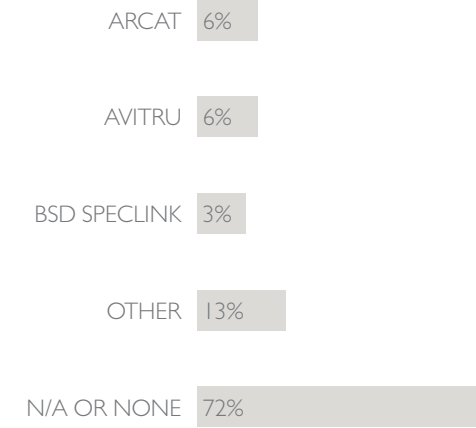
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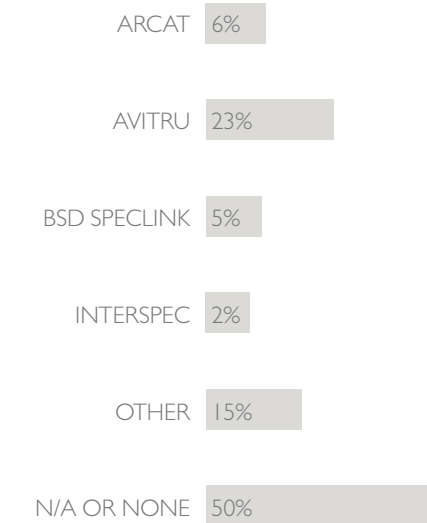
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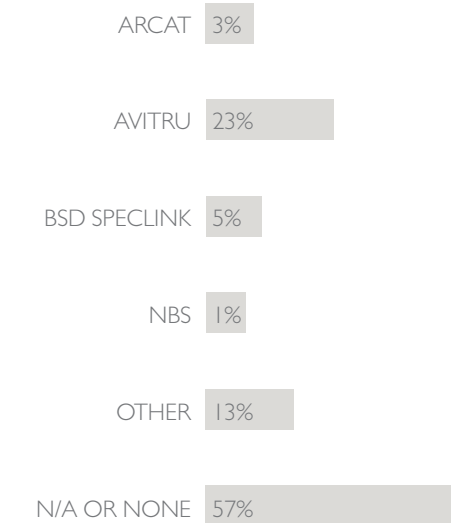
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



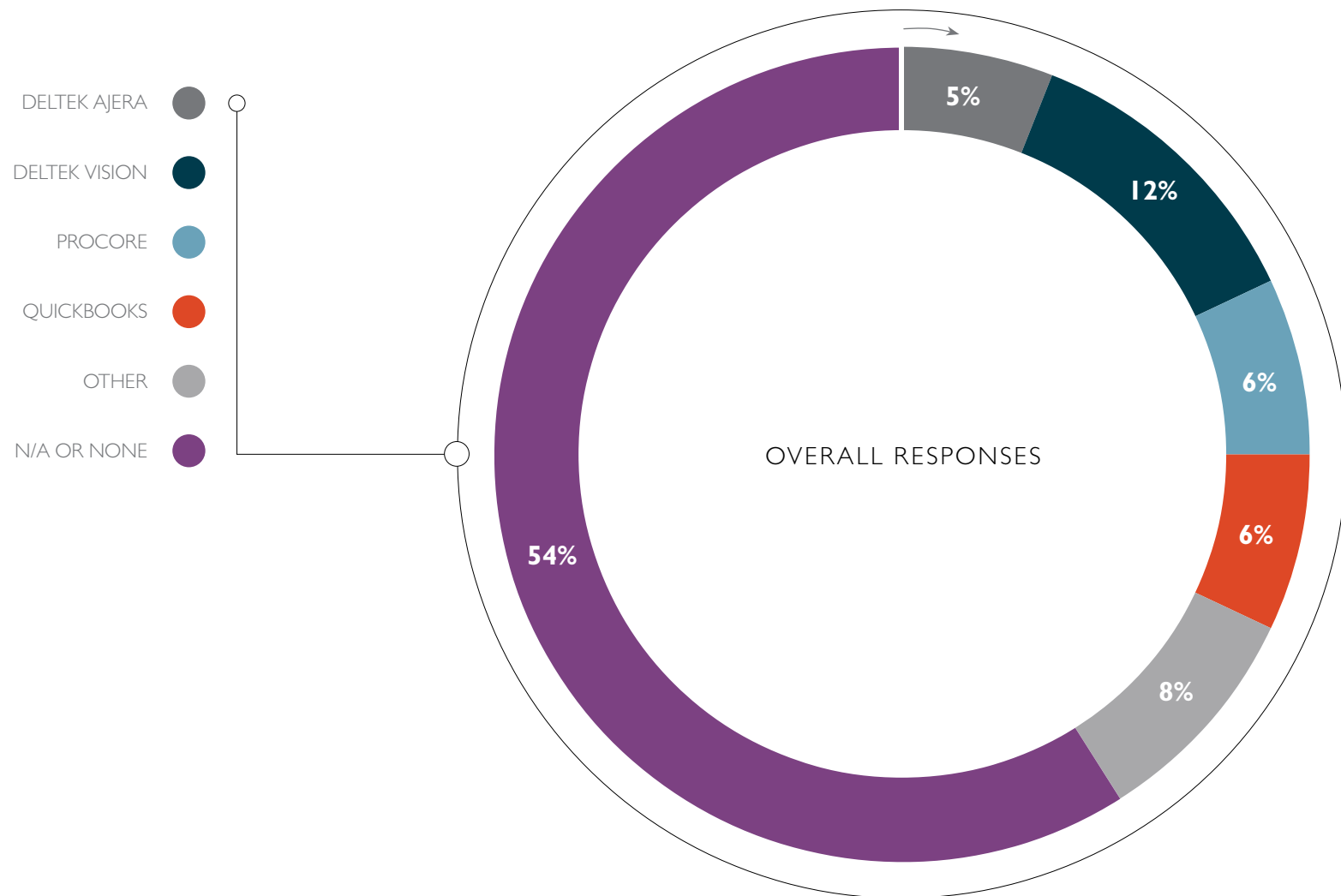
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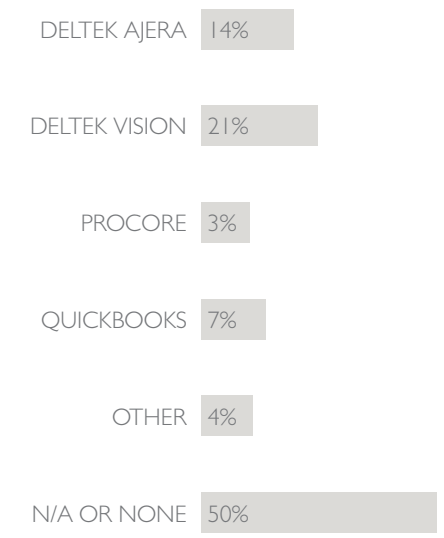
ERP SOFTWARE

Identify your firm's ERP software

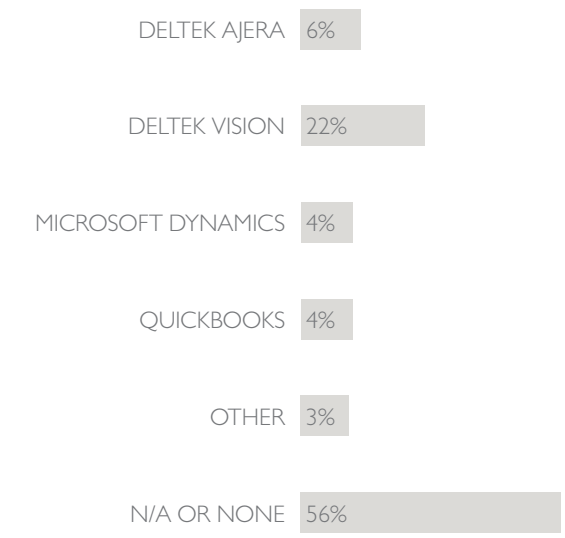
Deltek (17%) leads this software category. Firm's are just as likely to use QuickBooks (6%) as Procore (6%).



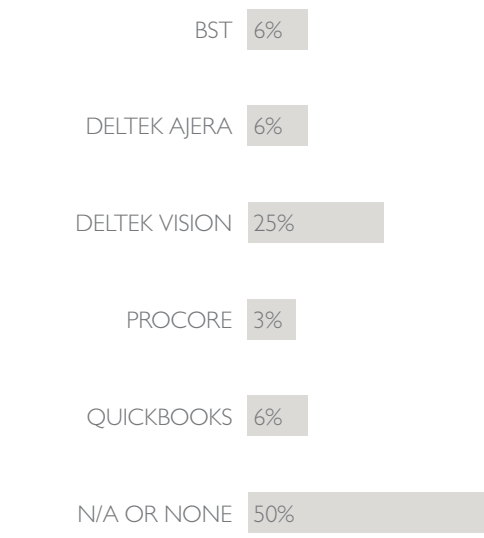
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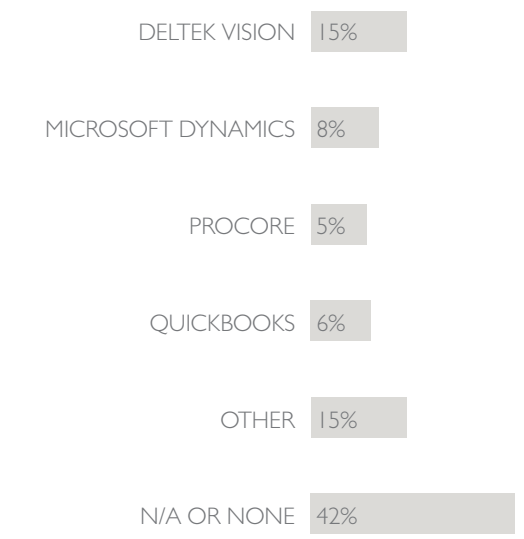
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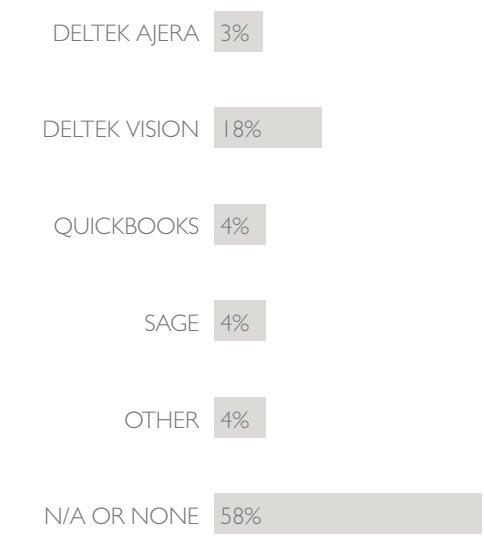
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



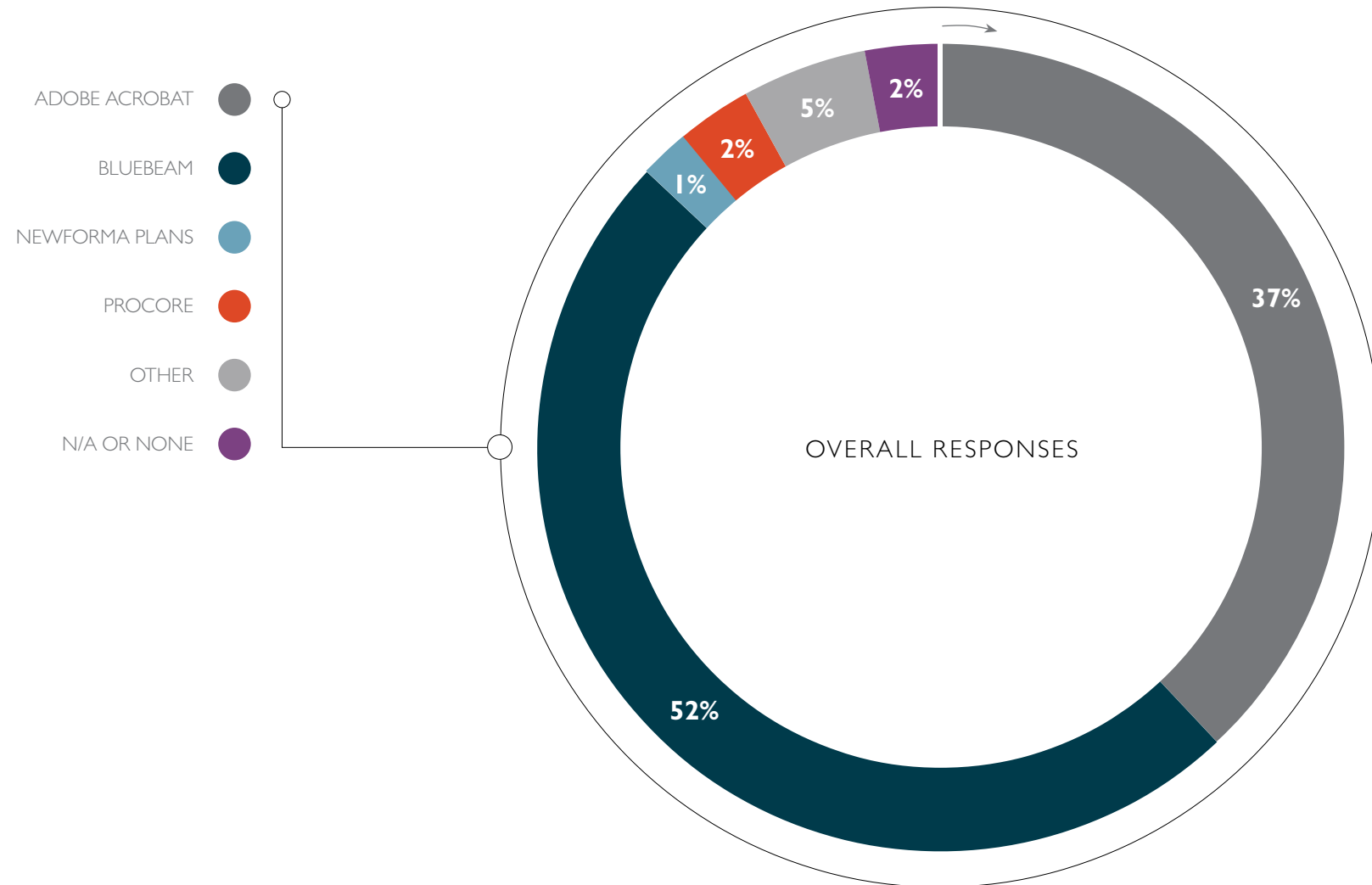
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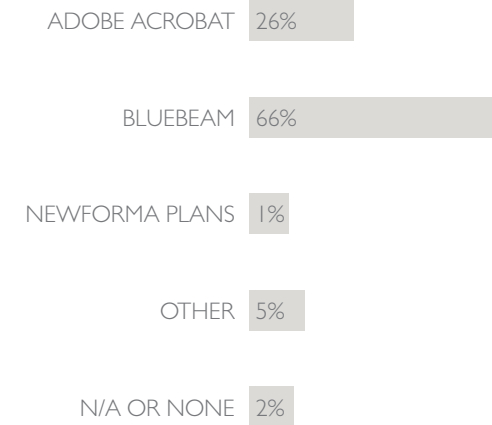
PDF MARK-UP AND REVIEW SOFTWARE

Identify your firm's PDF mark-up and review software

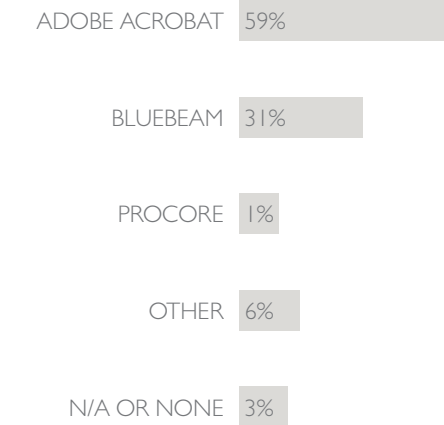
Bluebeam (52%) leads in this software category, followed by Adobe Acrobat (37%).



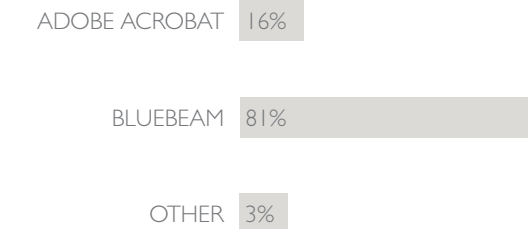
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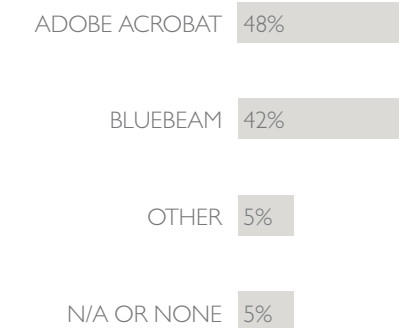
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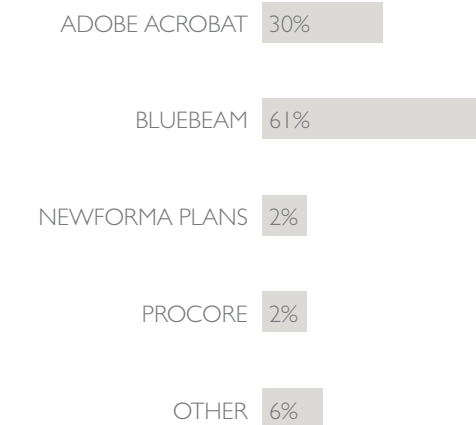
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



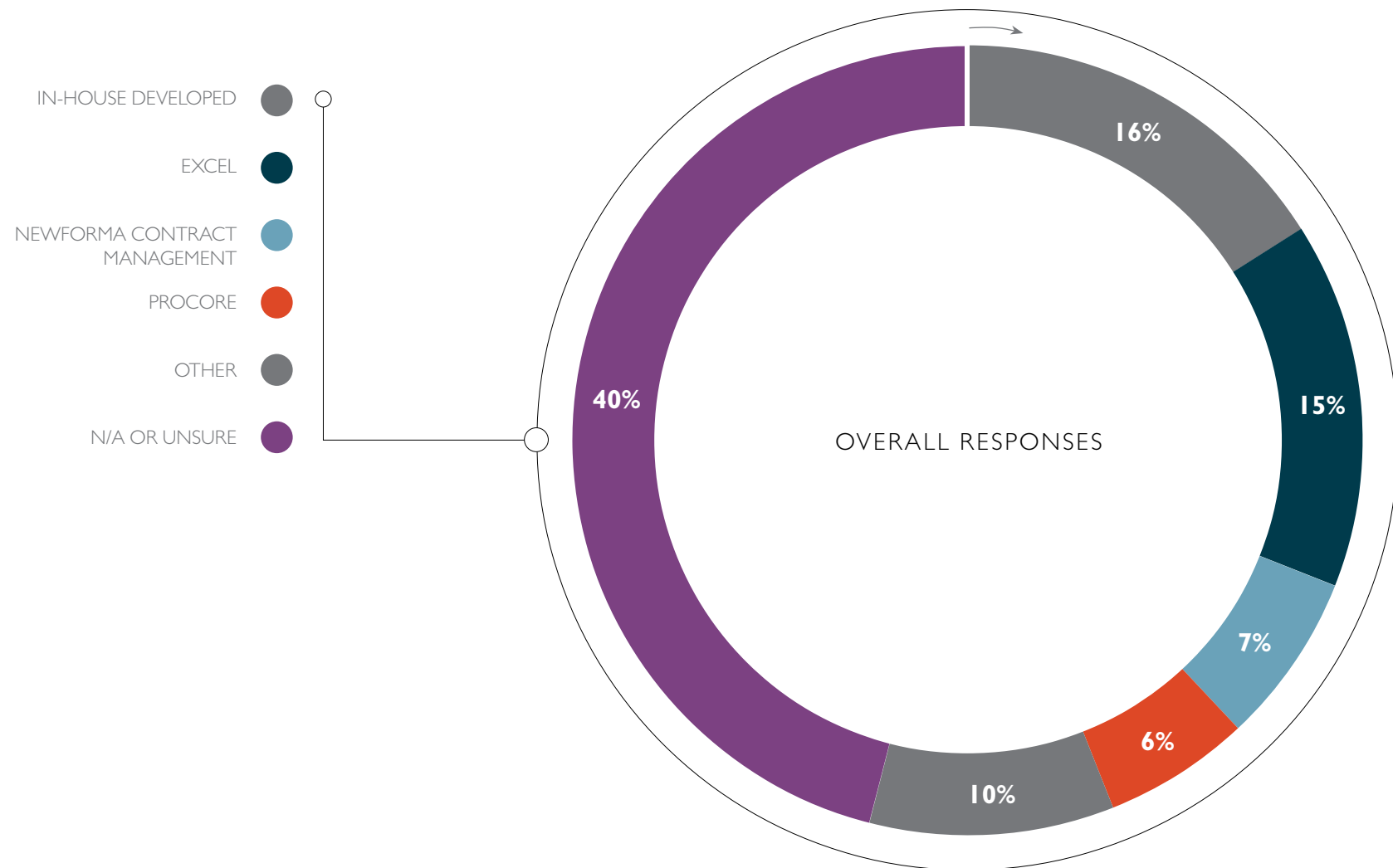
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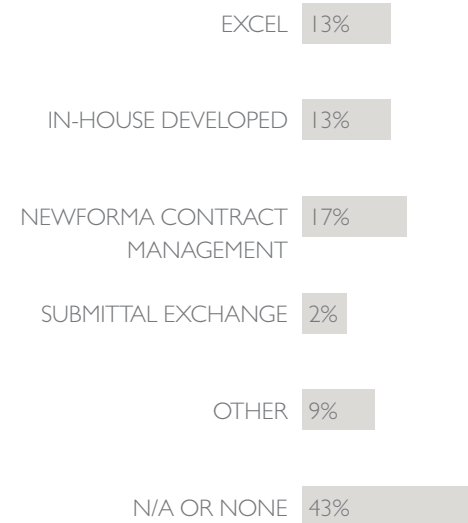
CONTRACT MANAGEMENT SOFTWARE

Identify your firm's contract management software

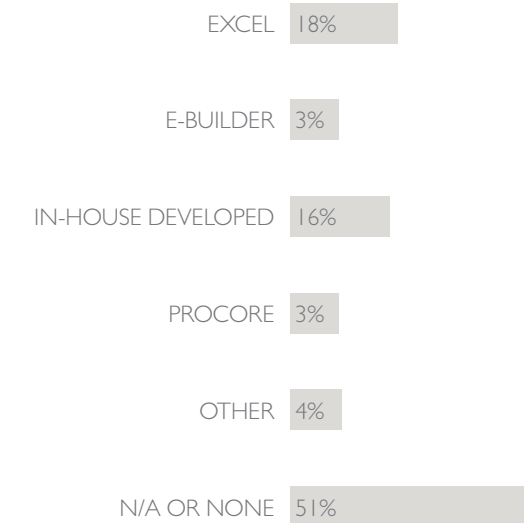
Sixteen percent of respondents use in-house developed solutions for contract management and 15 percent use Excel. Newforma Project Center Contract Management owns seven percent of the market share, followed by Procore (6%).



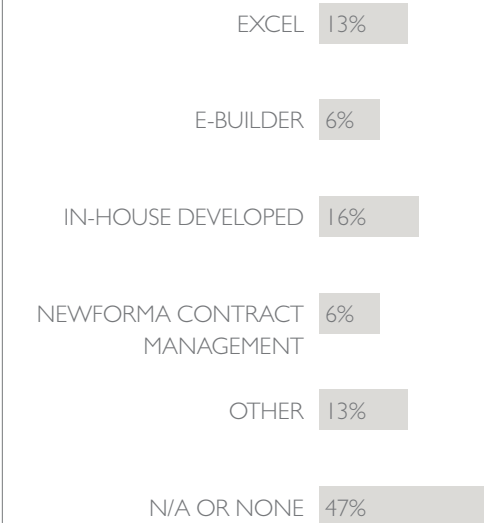
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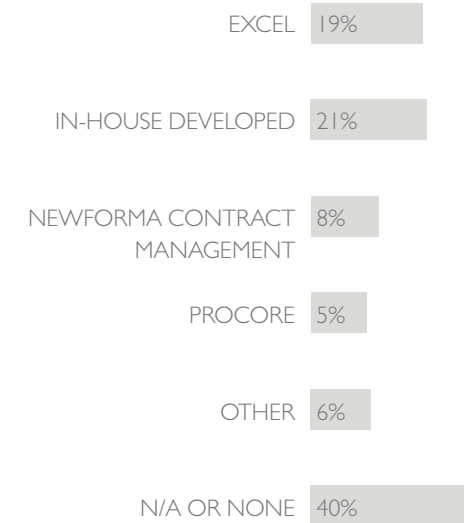
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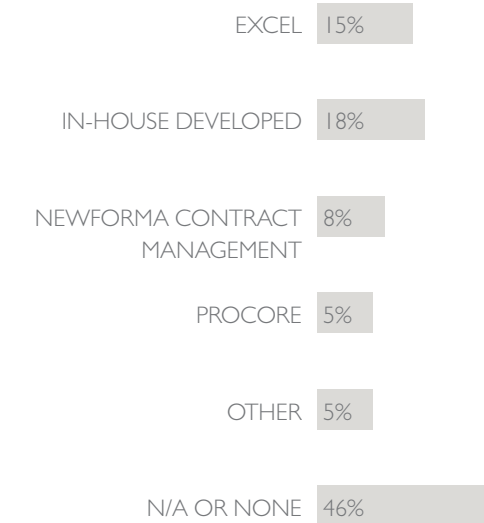
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MULTI-DISCIPLINE (DESIGN, BUILD)



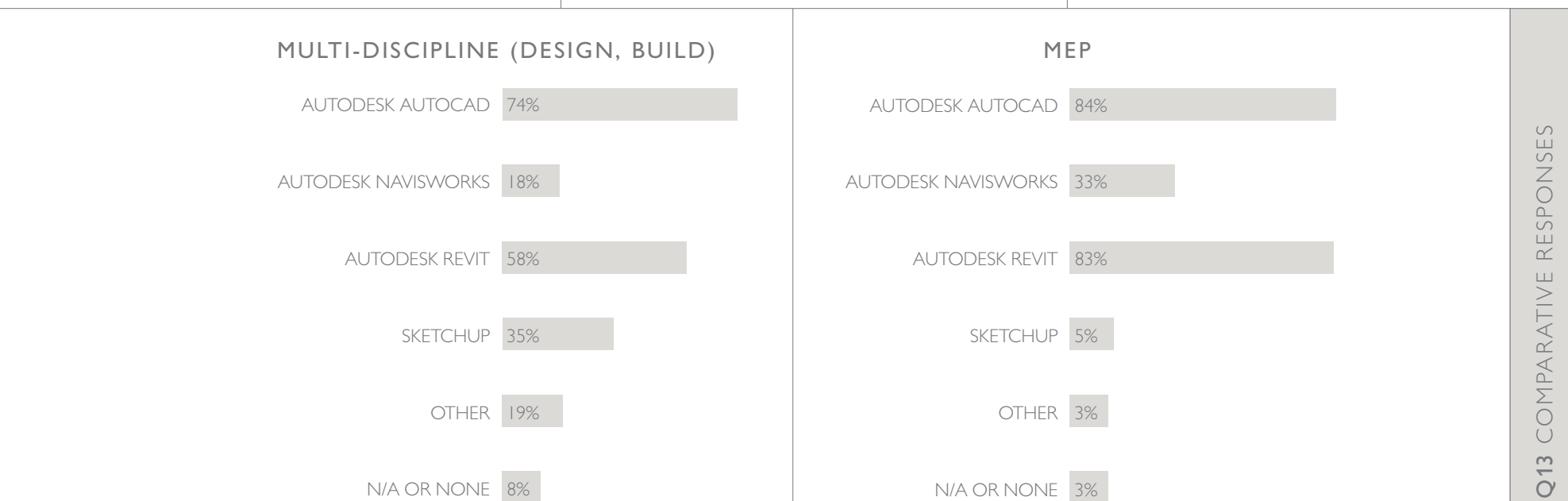
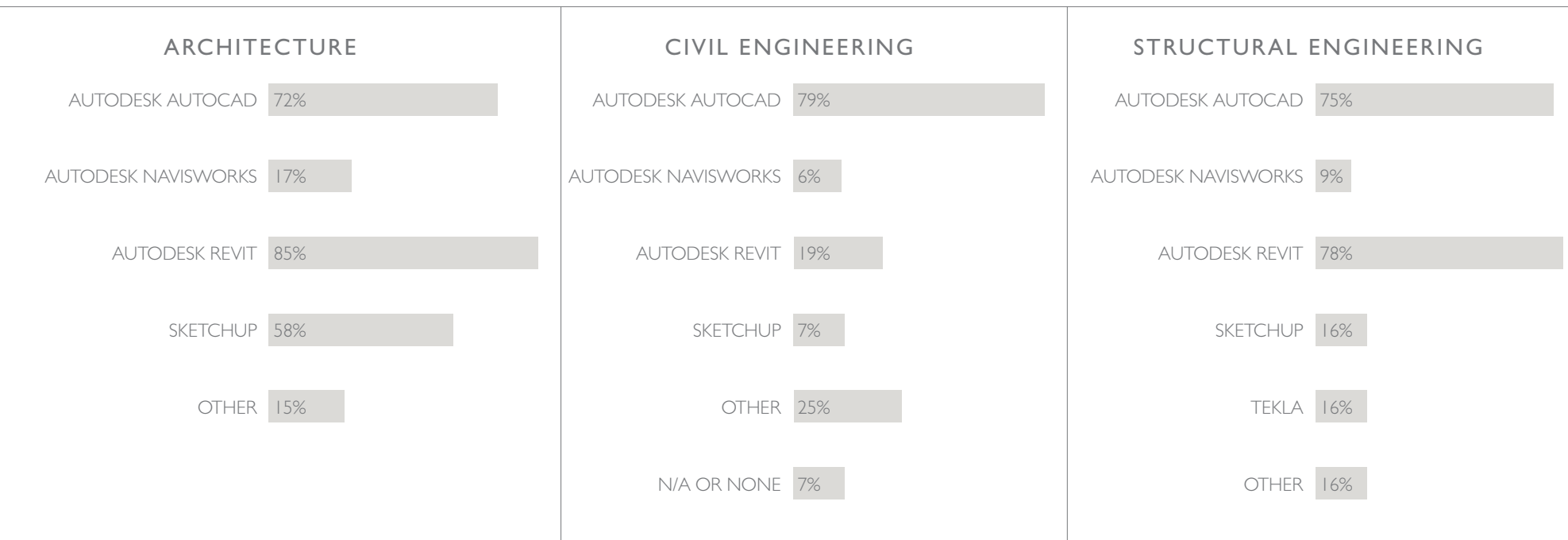
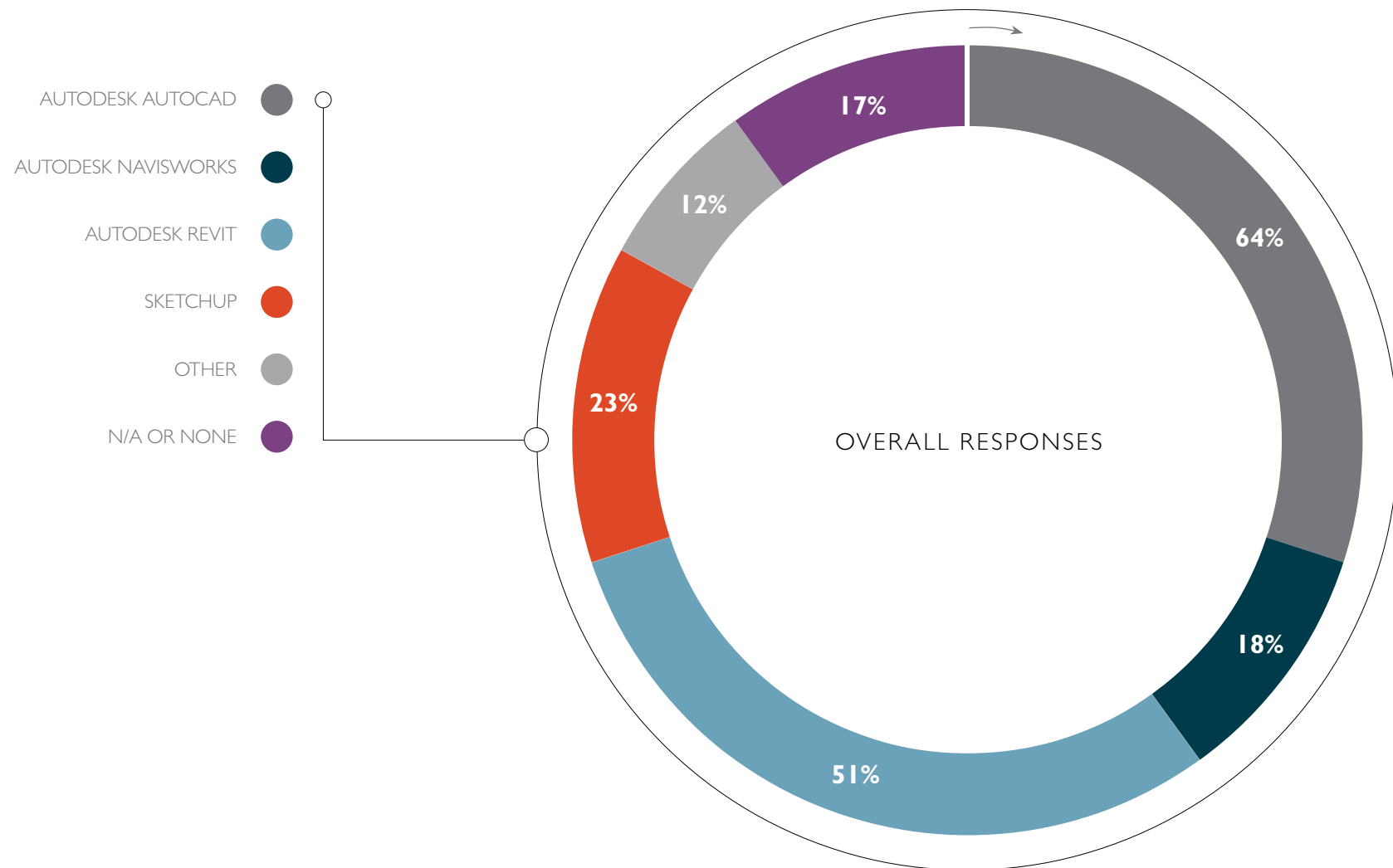
MEP



DESIGN SOFTWARE

Identify your firm's design software applications

Respondents were asked to select all design software applications their firm uses. SketchUp (23%), formerly Google Sketchup, owns a significant piece of the market share. With respondents selecting all applications that apply, it is not abundantly clear whether SketchUp is used exclusively or independent of other applications.

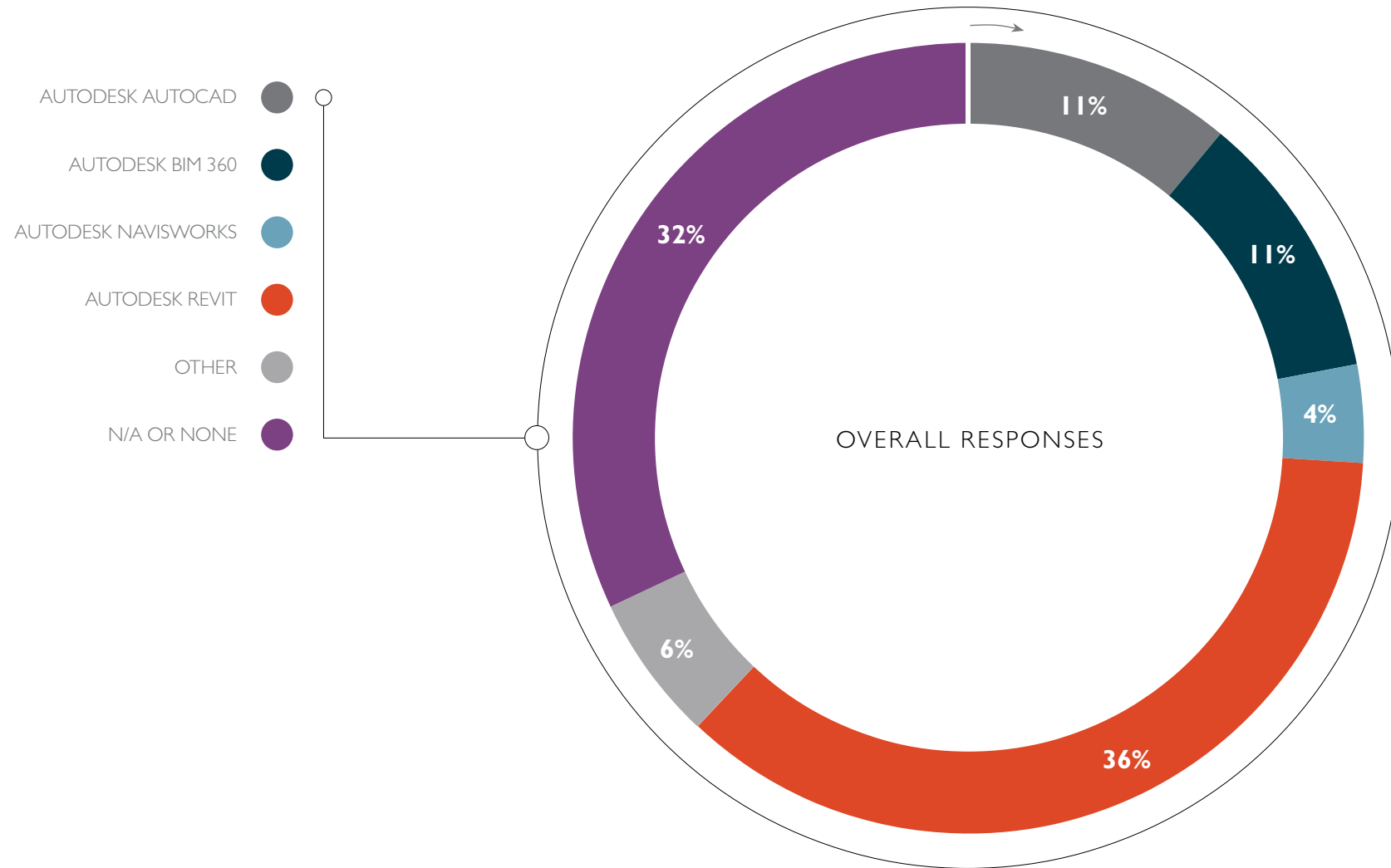


Q13 COMPARATIVE RESPONSES

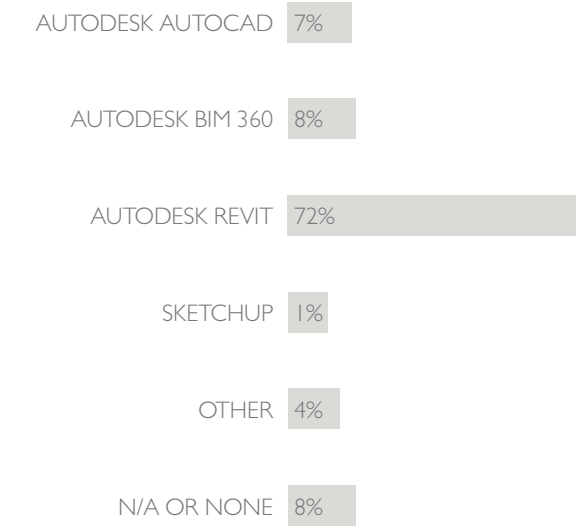
BIM SOFTWARE

Identify your firm's BIM software application

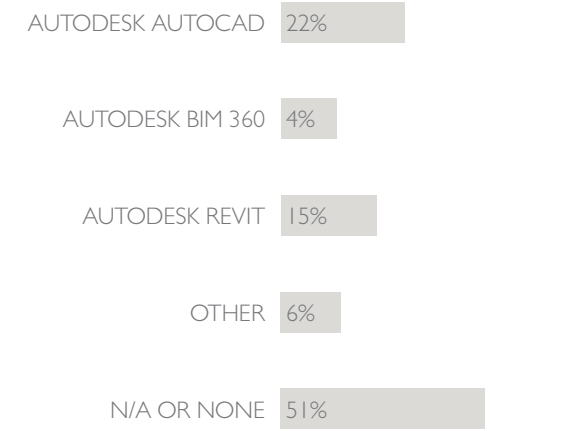
Autodesk Revit (36%) leads this software category. Autodesk applications account for 62 percent of the market share.



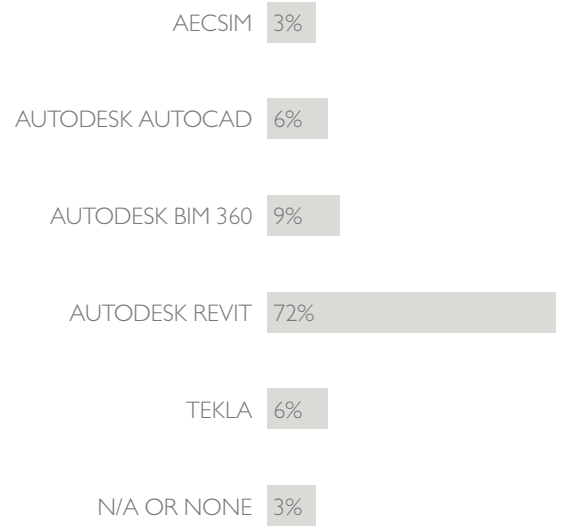
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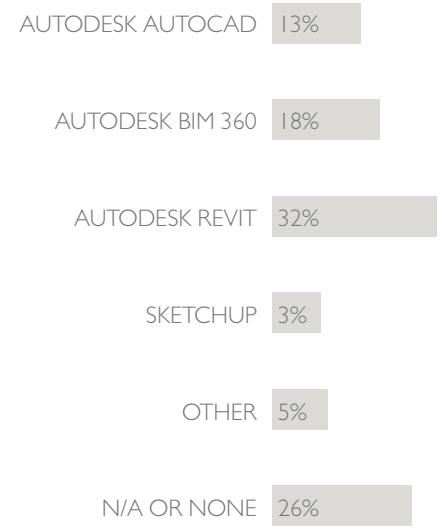
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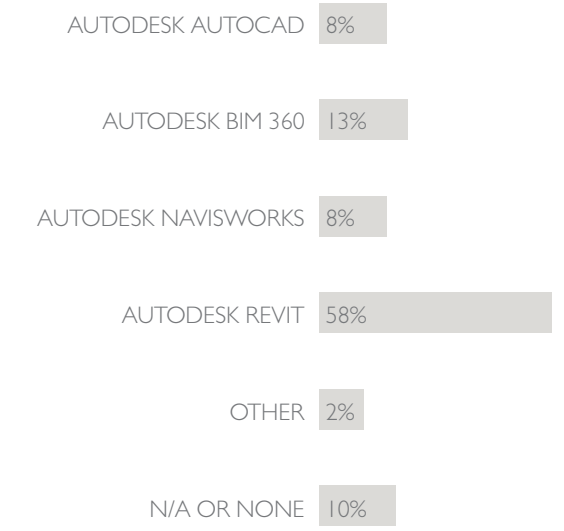
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



MEP

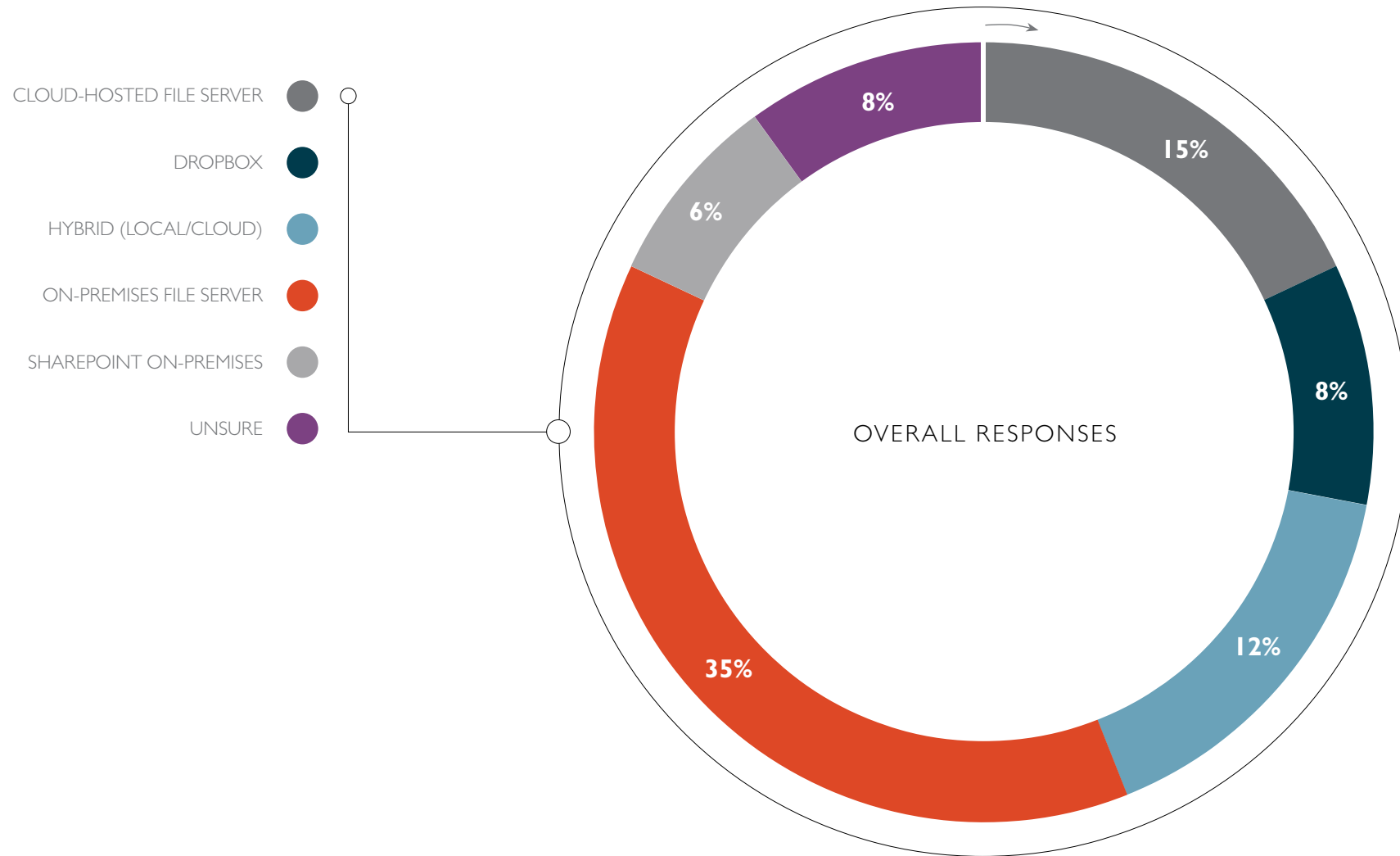


Q14 COMPARATIVE RESPONSES

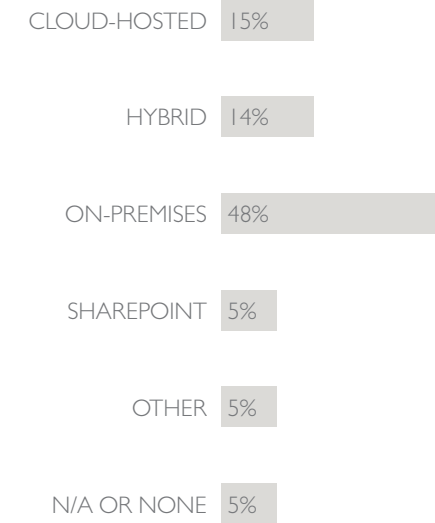
Identify where your firm stores project files

PROJECT FILE STORAGE

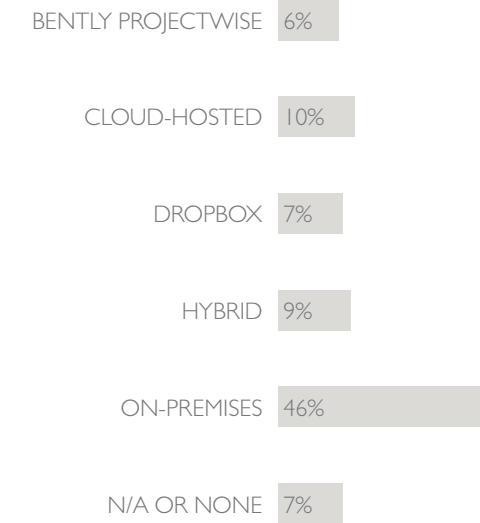
Beyond storing files using an on-premises file server, there is no dominant single methodology for storing project files.



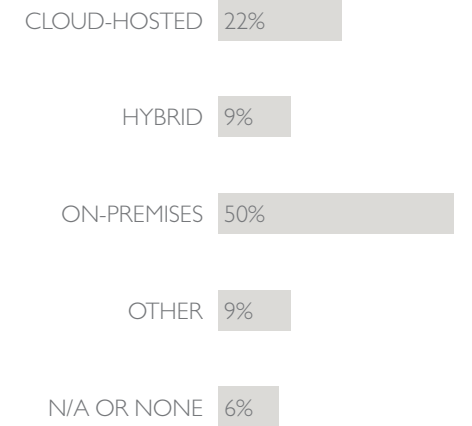
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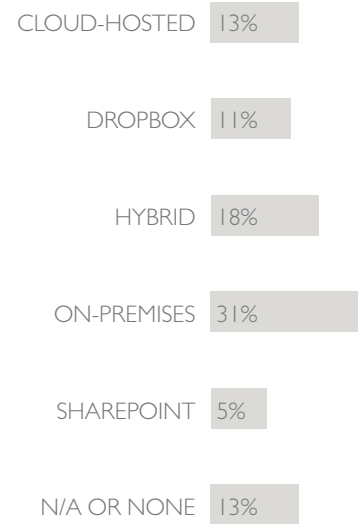
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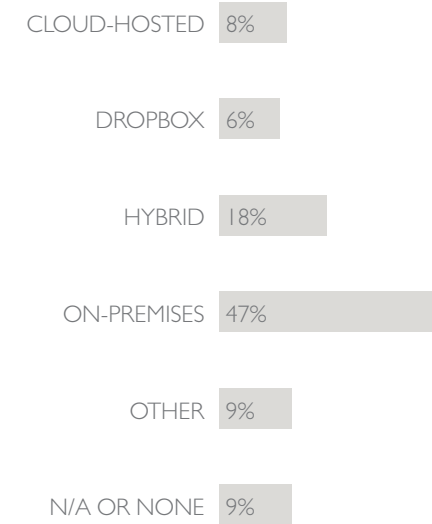
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



MEP





ADDITIONAL INSIGHTS

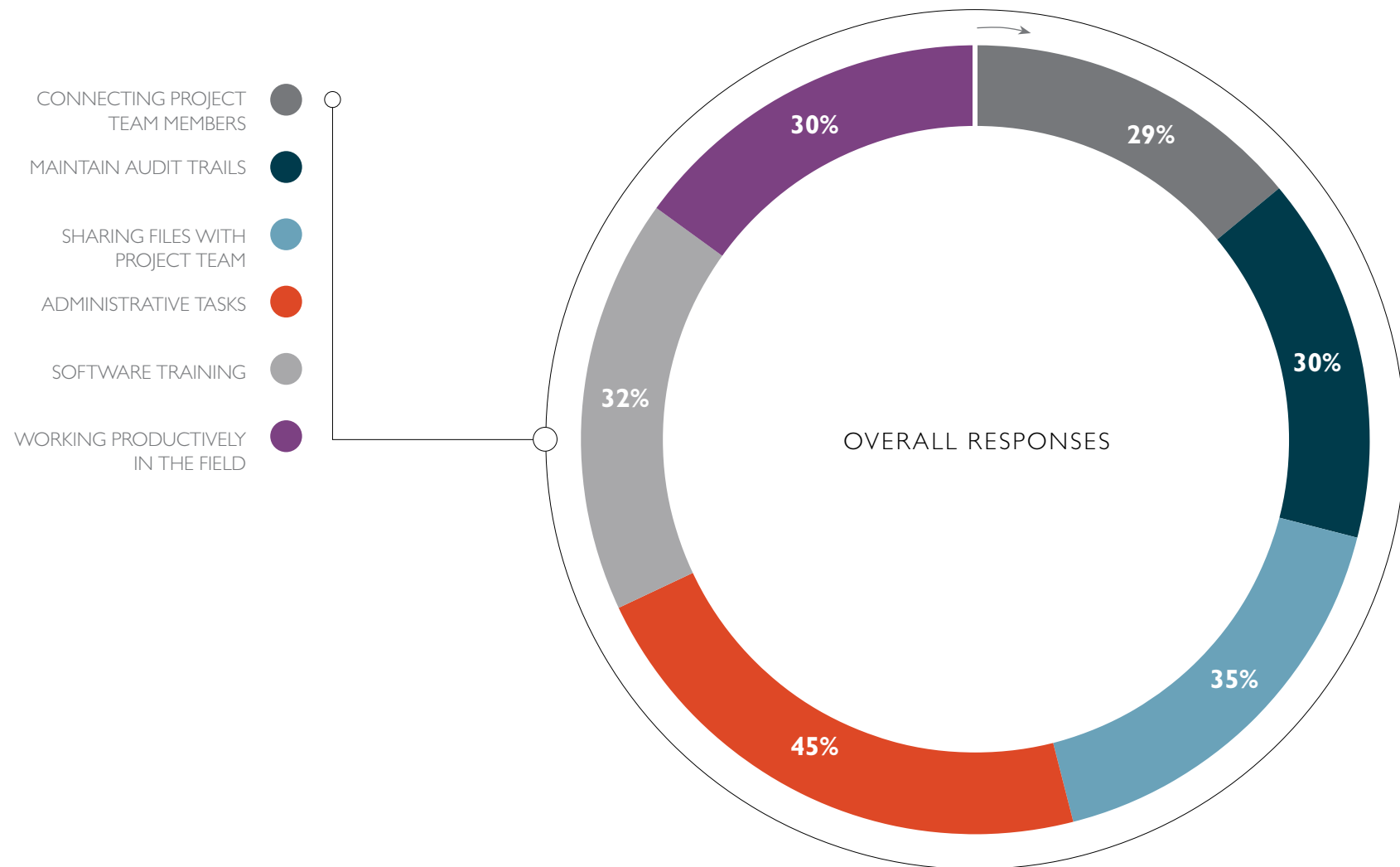
Data collected concerning the top technology and Project Information Management challenges and the likelihood of being named in a legal dispute allows AEC professionals to benchmark their firm's challenges against their peers.



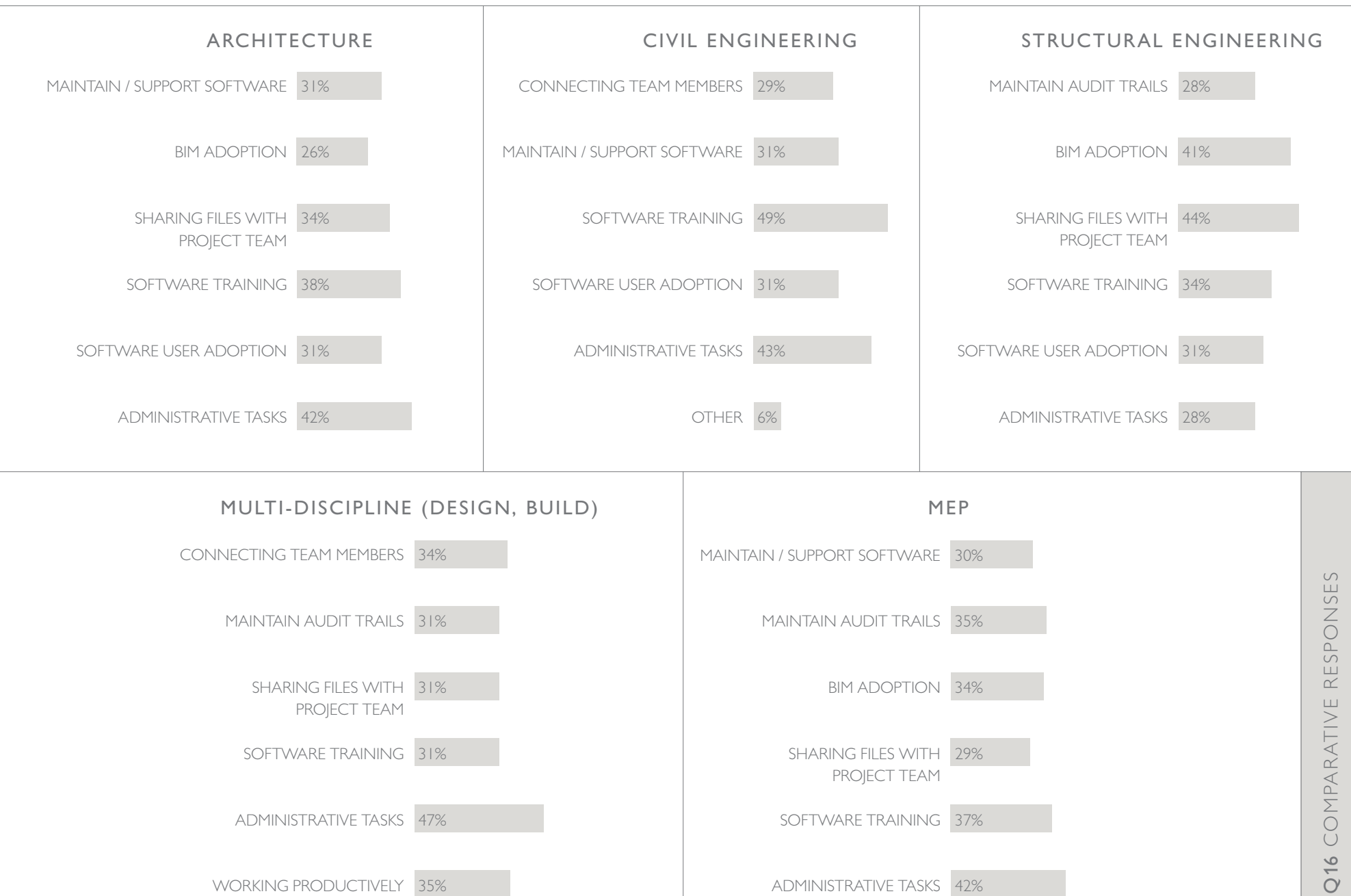
TOP TECHNOLOGY CHALLENGES

Identify your firm's top technology challenges

Administrative tasks (45%) (i.e., managing email, searching for project information and reviewing RFIs and submittals) are the leading technology challenge. Of interesting note, the next five technology challenges are separated by six percentage points—an indicator this list is inclusive of the most prevalent issues plaguing a majority of the AEC profession.



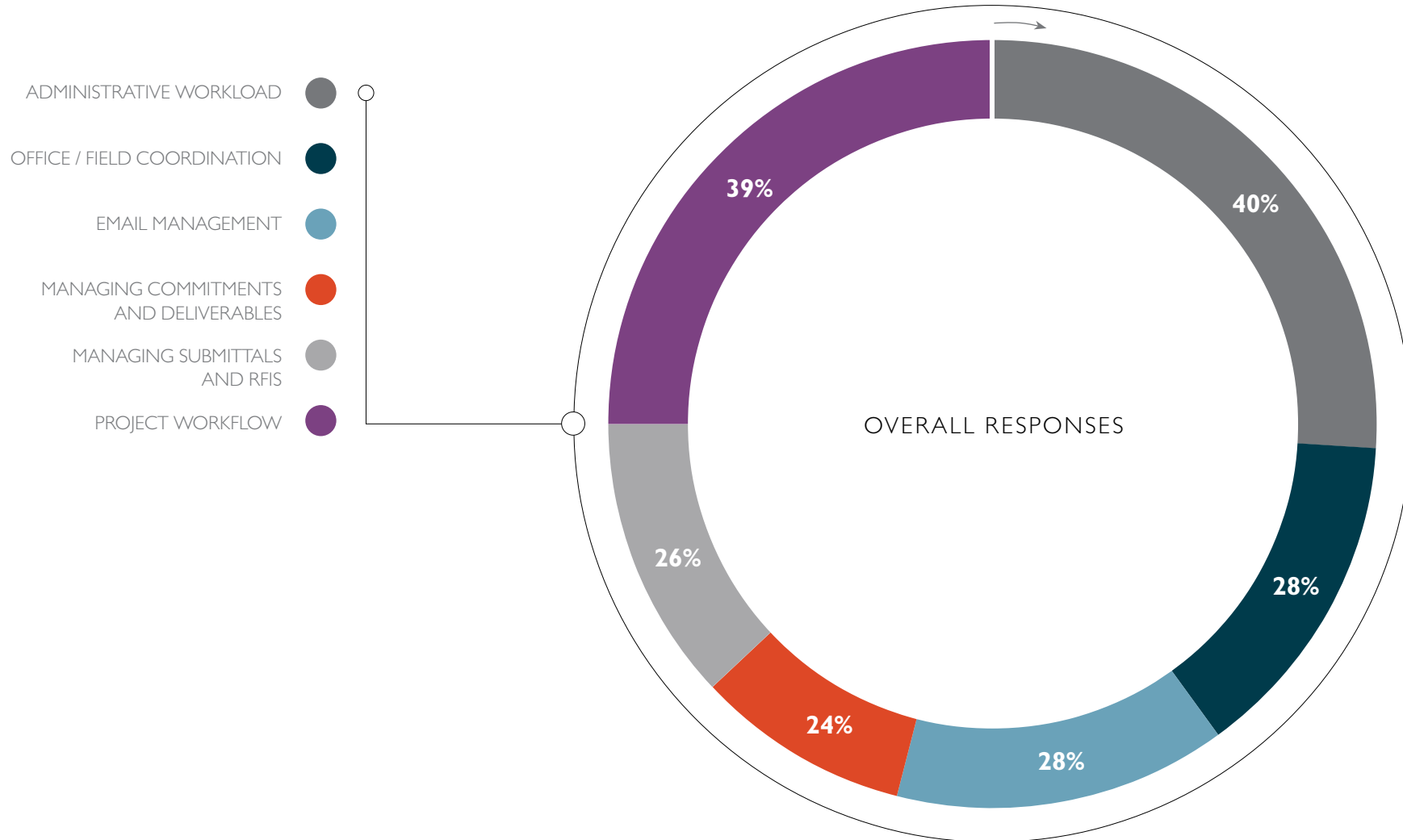
- CONNECTING PROJECT TEAM MEMBERS
- MAINTAIN AUDIT TRAILS
- SHARING FILES WITH PROJECT TEAM
- ADMINISTRATIVE TASKS
- SOFTWARE TRAINING
- WORKING PRODUCTIVELY IN THE FIELD



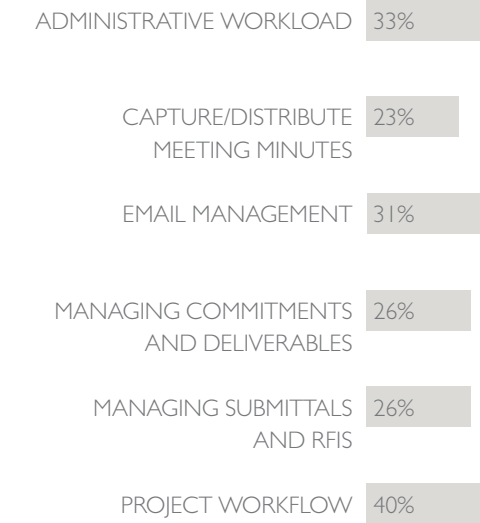
TOP PIM CHALLENGES

Identify your firm's top Project Information Management challenges

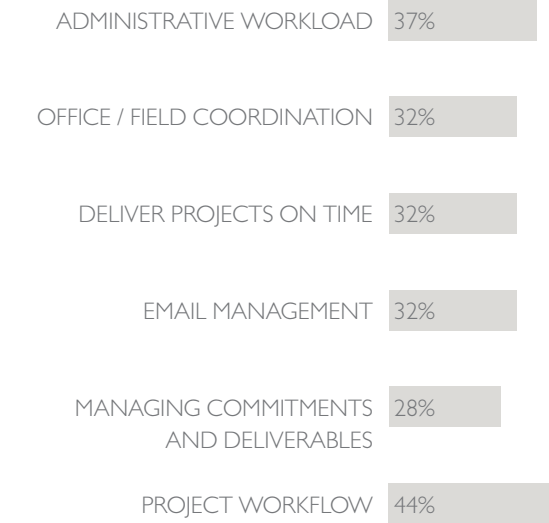
Administrative workload (40%) and project workflow (39%) are the leading PIM challenges plaguing the profession. Similar to the top technology challenges revealed in this survey, the degree of separation between the remaining four most common PIM challenges is minimal.



ARCHITECTURE



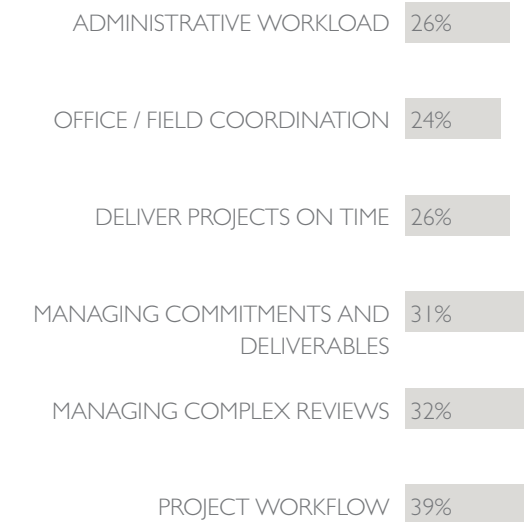
CIVIL ENGINEERING



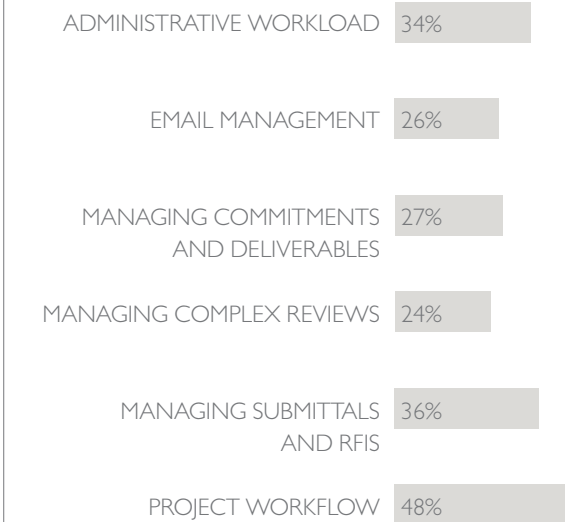
STRUCTURAL ENGINEERING



MULTI-DISCIPLINE (DESIGN, BUILD)



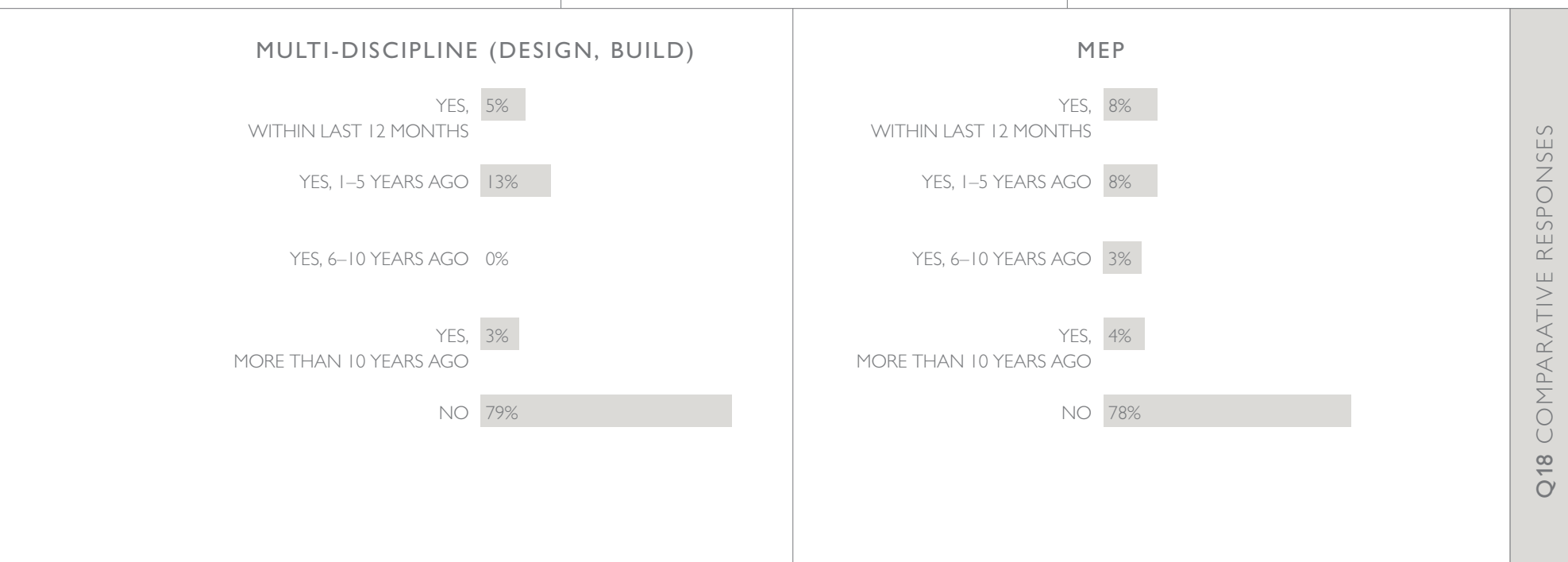
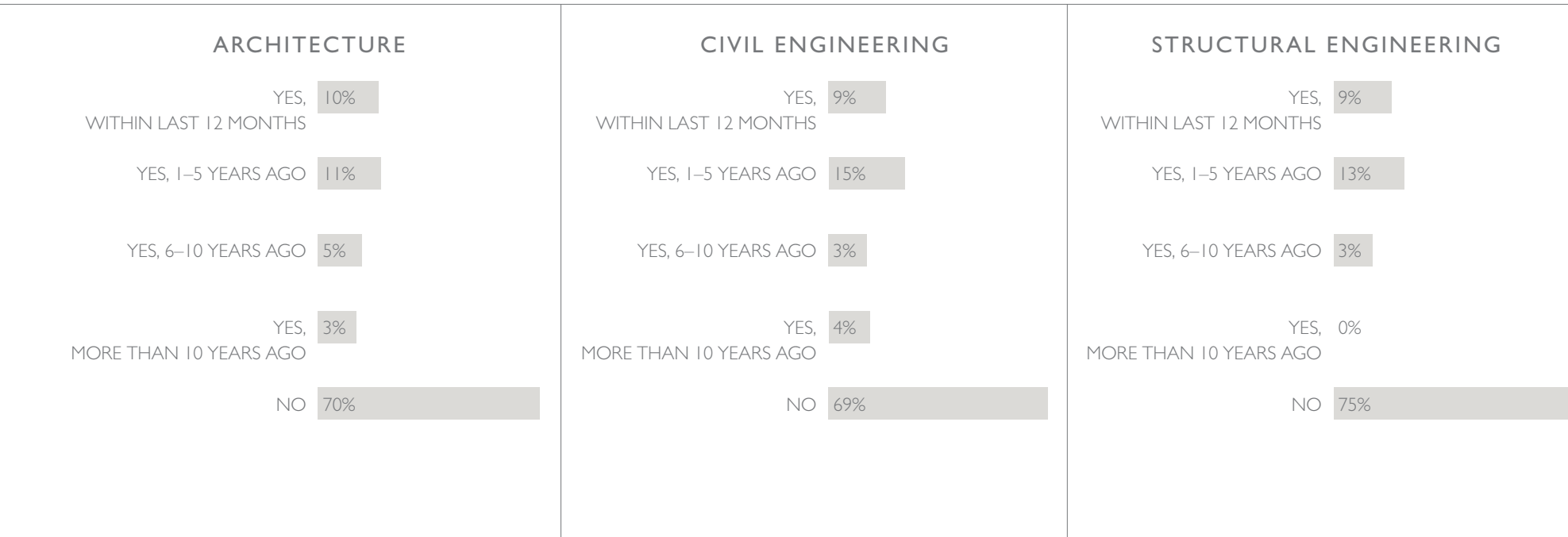
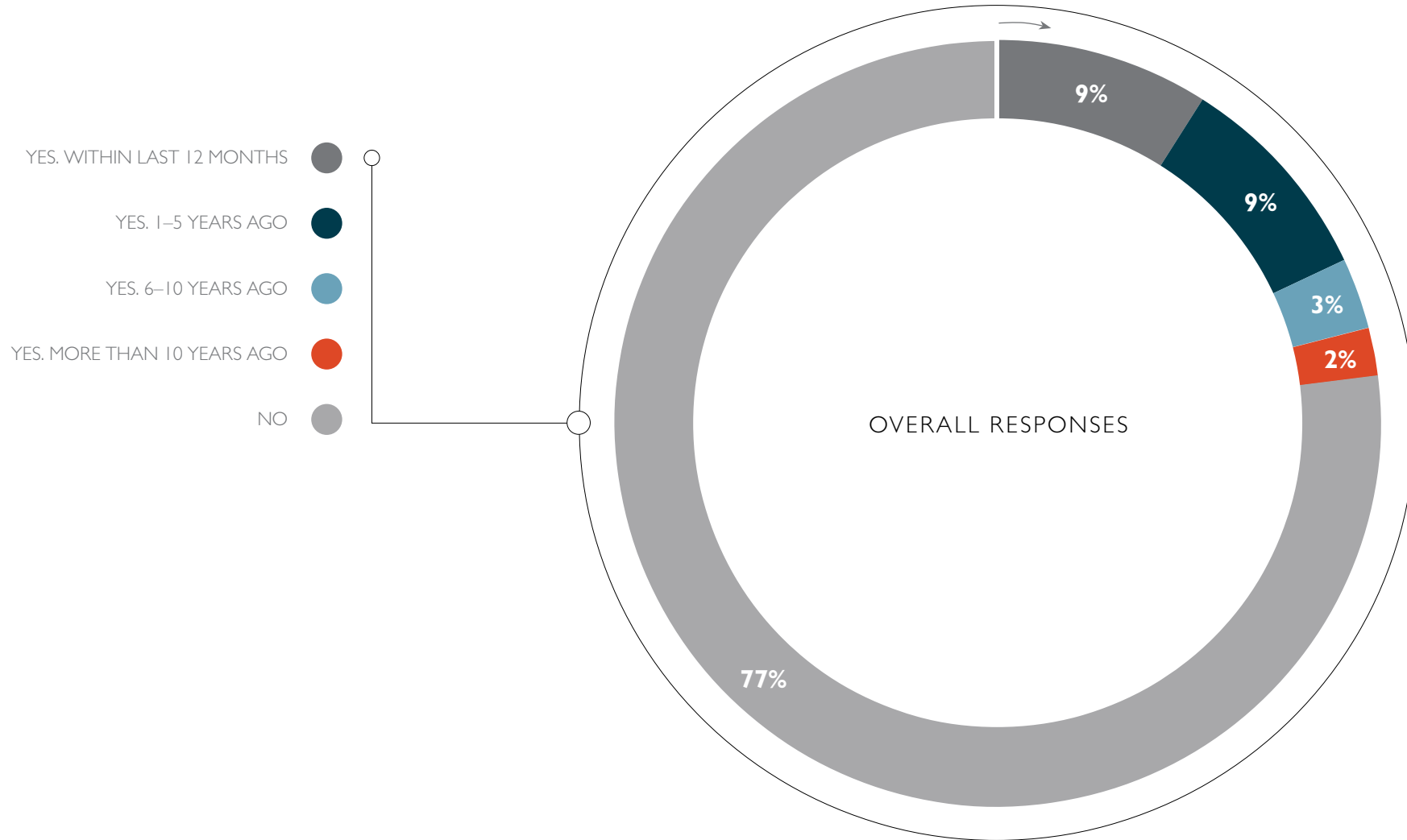
MEP

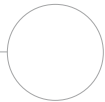
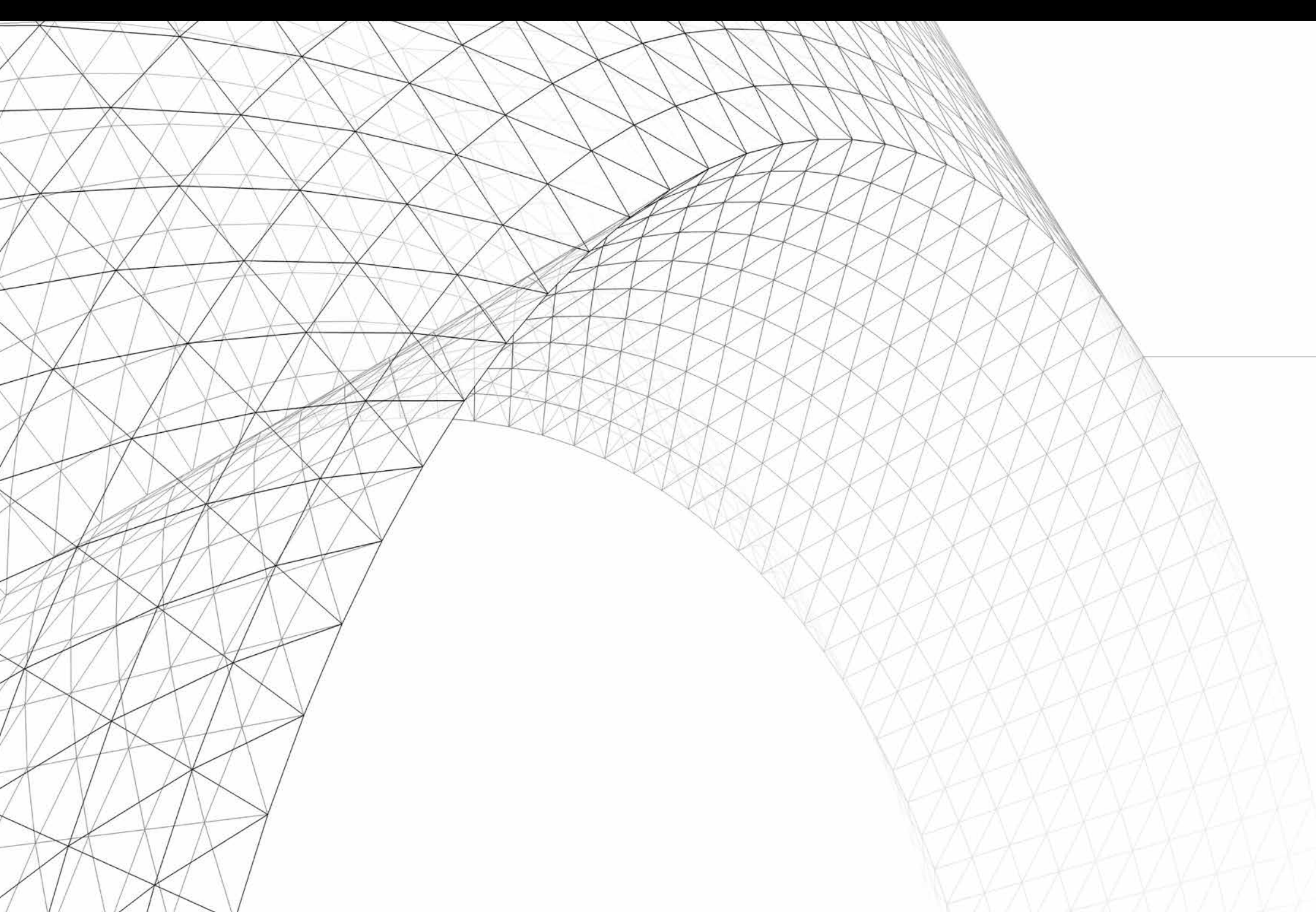


LIKELIHOOD OF A LEGAL DISPUTE

Has your firm been named in a legal dispute?

While 77 percent of respondents indicate their firm has not been named in a legal dispute, 23 percent have. If a firm is named in a legal dispute and suffers from the top technology challenges (i.e., including maintaining and preserving an audit trail (30%), administrative workload (e.g. search) (45%)) risk and costs associated with responding to litigation can increase.





“We shape our buildings; *Thereafter they shape us.*”
–Winston Churchill

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