Architects & Technology in the Pandemic Era

Architizer and Z by HP are pleased to present the results of a survey of AEC professionals, revealing how they are leveraging technology to facilitate their work in a world impacted by COVID-19.

- # Where are architects working?

- # What tools are they using?
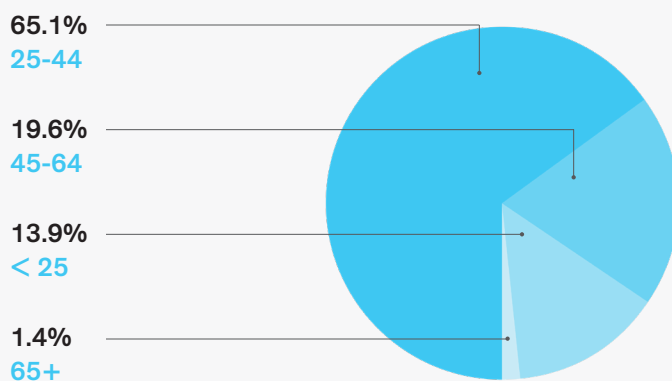
- # What software are they using?

Architizer recently conducted a survey asking architects and other AEC professionals how they use technology today. We discovered a few emerging trends:

- The world is working remotely - and architects are too!
- The importance of communication and collaboration tools have skyrocketed as consequence.
- With hardware, mobility matters - there has been a huge shift in preference from desktop to mobile workstations and laptops in the past five years.
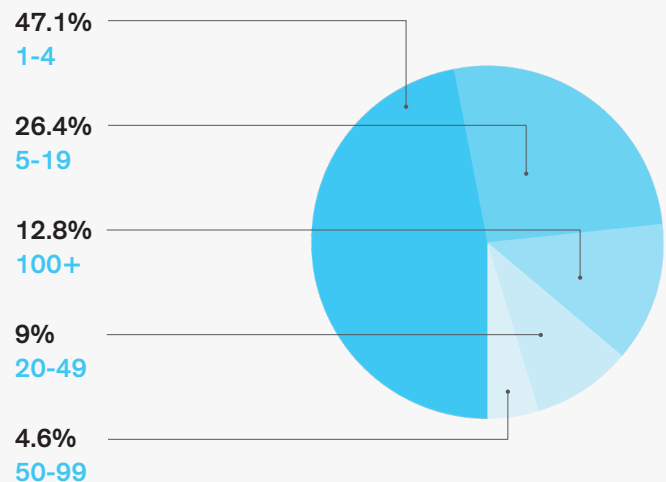
About the Survey Participants

The typical respondent for the survey was a young- to middle-aged AEC professional working in a small team of less than 20. With an average age of less than 40, the majority of these designers have grown up with technology, and are accustomed to using a range of hardware and software to get their work done.

Age Group

65.1%
25-44

19.6%
45-64

13.9%
< 25

1.4%
65+

*The majority of respondents came from the US, but we had respondents from more than 70 countries.

Firm/Company Size

47.1%
1-4

26.4%
5-19

12.8%
100+

9%
20-49

4.6%
50-99

Small firms typically have greater flexibility to change the nature and location of their work environment in response to the pandemic. At the same time, the architects and designers within these small teams typically wear many hats and are responsible for a wide array of tasks, meaning that dynamism and adaptability is critical to their success.

Out of Office: Working Remotely in 2020

The shift away from conventional offices was already occurring. The pandemic is speeding this evolution up.

Architecture has come a long way since the time of drawing boards, T-squares, and dividers. How do contemporary firms deploy software and hardware solutions in an increasingly competitive market, when superior workflow is measured in minutes and pixels? Architizer's survey reveals that the use of technology in architectural offices is as multifaceted as the creative work itself.

With almost 80% of AEC professionals currently working remotely, the COVID-19 pandemic has undoubtedly transformed how the profession practices, with the both design processes and team communication now being conducted digitally. However, this is not a new phenomenon for all designers: More than 28% of architects say they worked remotely even before 2020, indicating that a shift from towards online collaboration and a fully digital workflow was already well underway before the pandemic closed offices around the globe.

80% of Architects are currently working remotely.
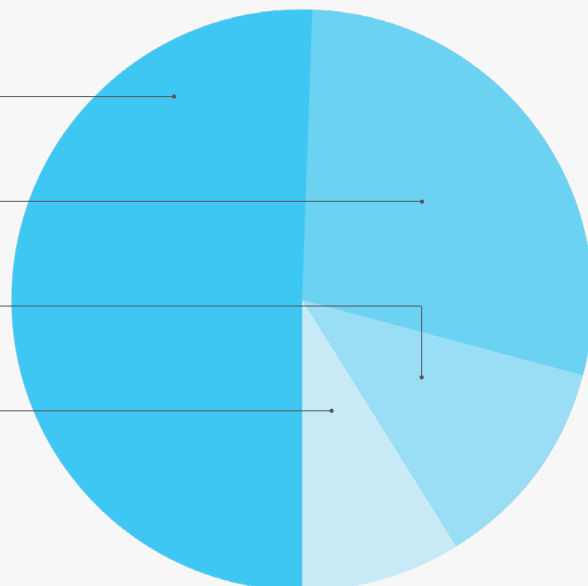More than 25% of architects were working remotely prior to 2020.

Are you working remotely?

50.7%
Yes, but only since the COVID-19 outbreak

28.6%
Yes, since before 2020

12%
No, but some of my team members are

8.7%
No

Remote Working: Benefits and Challenges

Architects are working from home — and loving it!

For architects, the biggest advantages of remote working pertains to flexibility to select and customize their personal working environment, as well as the time saved by no longer having to commute to and from the office. The vast majority of respondents cited benefits that relate to an improved work-life balance — flexible working location and hours, proximity to family and a broader sense of freedom were among the most common selections.

On the flip side, it has proven challenging for many to keep a clear separation between work and home life. 1 in 3 respondents selected this as their greatest challenge in relation to remote working, signalling the need for more well defined home offices with clear boundaries, physical or otherwise. The second most common challenge in this area pertained to communication with colleagues, with 17.7% of respondents missing the benefits of in-person collaboration.
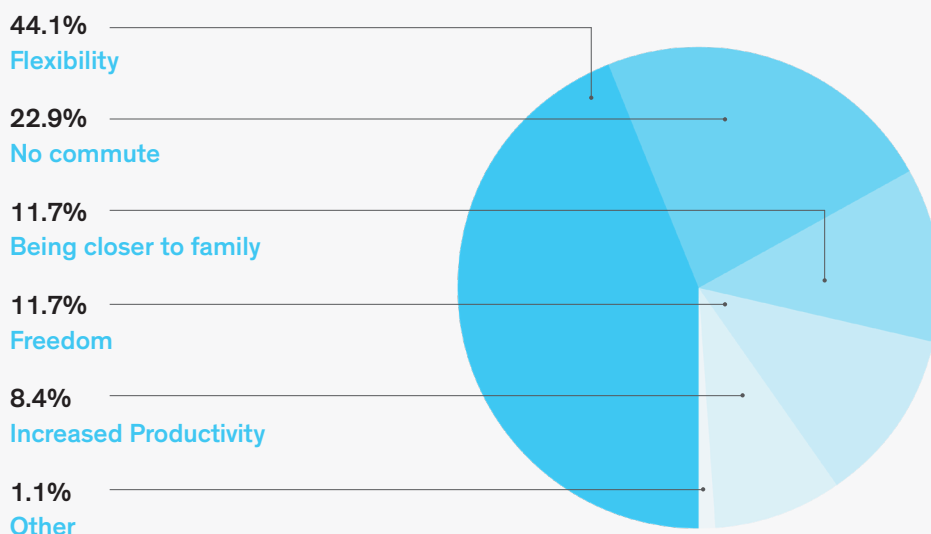
Despite these challenges, the remote working experience has proven overwhelmingly positive for architects. One of the most significant findings in the survey relates to respondents' preference to continue working away from the office, even after the pandemic has subsided.

Almost half of all respondents (46.3%) expressed a desire to continue working from home indefinitely, with only 1 in 8 (13.9%) sure that they would like to return to the workplace.

Key Benefits
Architects cite flexibiilty, saved commute time, and prozimity to family as advantages of remote work:

What do you like best about remote work?

44.1%
Flexibility

22.9%
No commute

11.7%
Being closer to family

11.7%
Freedom
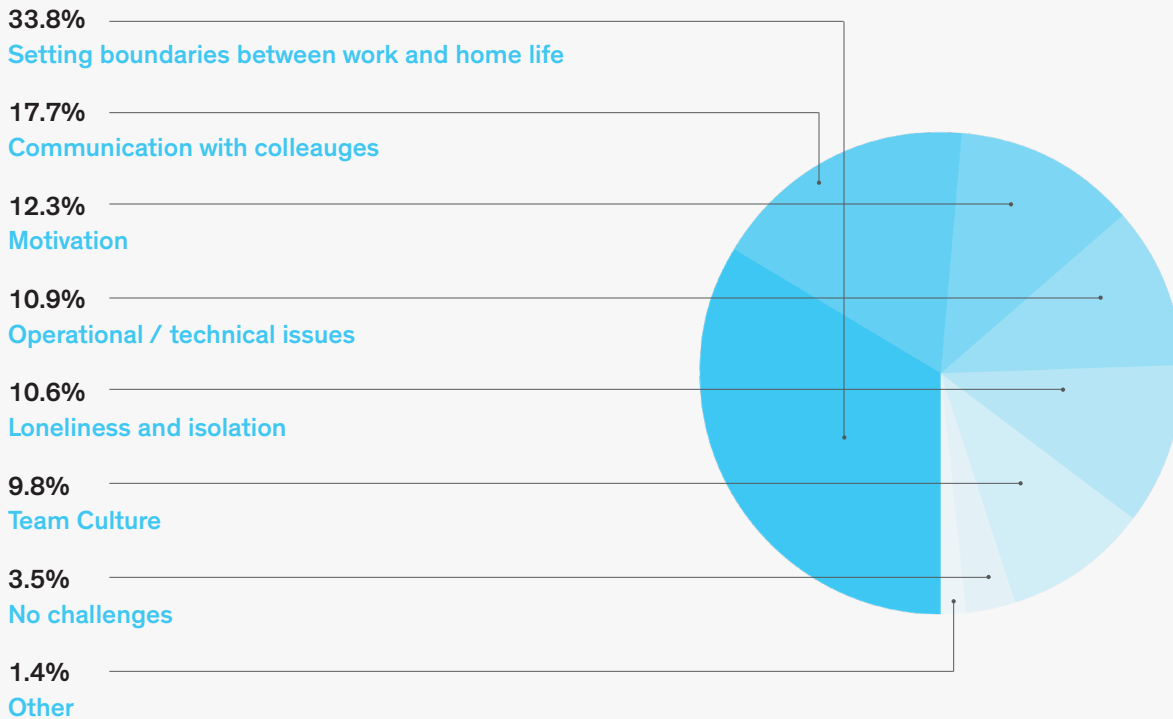
8.4%
Increased Productivity

1.1%
Other

Most AEC professionals cited softer considerations on what might improve remote work .

The number one area they would like greater help with is **time management**.

Key Challenges
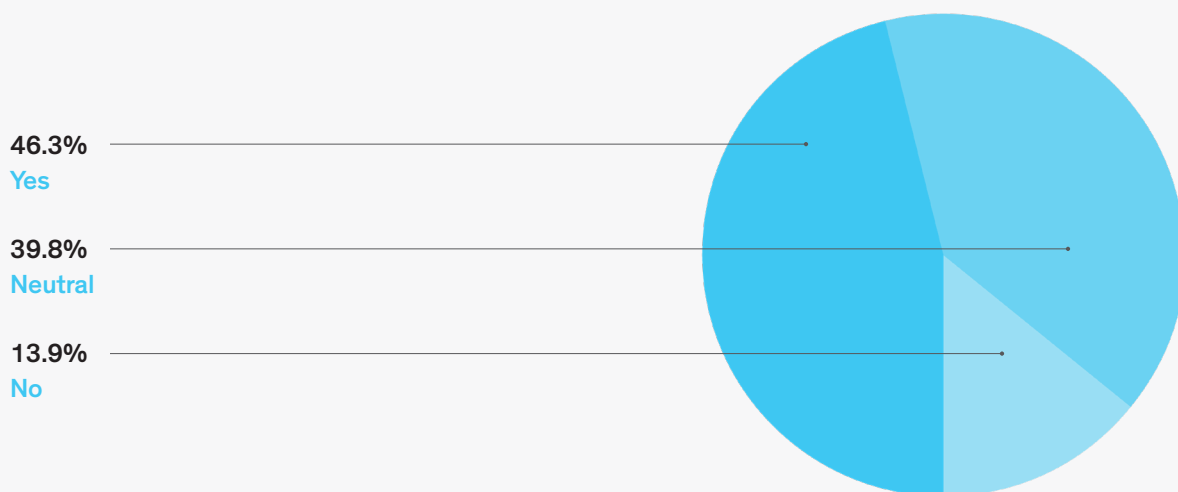Setting Boundaries between work and home.

What is your #1 challenge with remote work?

33.8%
Setting boundaries between work and home life

17.7%
Communication with colleauges

12.3%
Motivation

10.9%
Operational / technical issues

10.6%
Loneliness and isolation

9.8%
Team Culture

3.5%
No challenges

1.4%
Other

Desire to keep working remotely
Only about 1 in 8 AEC professionals want to go back to the office.

Do you want to keep working remotely even after the pandemic?

46.3%
Yes

39.8%
Neutral

13.9%
No

Remote Working: The Essential Tools

AEC professionals want to take the best of the office home with them. Communication and collaboration tools are now vital.

Technological performance is key to the success of architects working from home, with 77.9% naming a powerful computer or laptop as an essential tool. Besides an ergonomic work chair, architects also cited displays as vital to their workflow, with a large number of respondents naming either large or dual monitors among hardware they regard as essential. It appears that architects are aiming to replicate the technological advantages of the office environment at home, as far as possible.
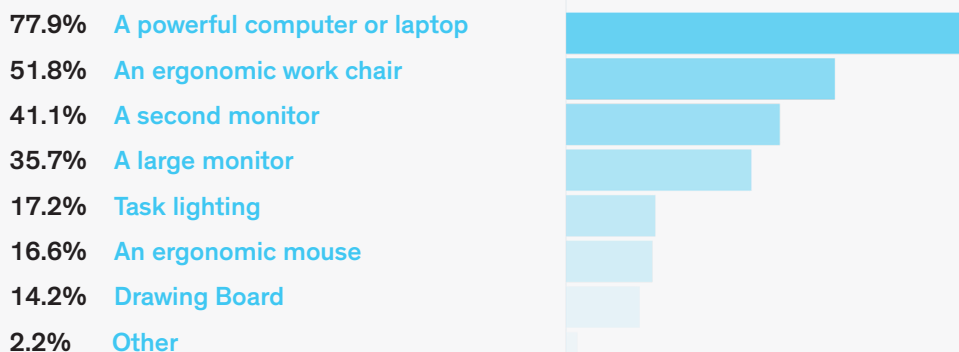
In terms of software, communication tools have risen hugely in significance since the beginning of the pandemic. A huge 87% of respondents cited communication applications such as Zoom and Skype as being among the most essential software in 2020, placing them above even the most ubiquitous design applications, such as Revit. As architects attempt to mitigate the loss of face time with their colleagues, collaboration tools such as Microsoft Teams, Slack and Discord have also risen markedly in importance.

Another interesting insight surfaced by the survey responses was just how common it is for architects to connect back to their office remotely. 57% of respondents stated that they utilize the cloud to connect back to company servers when working at home. If remote working becomes a permanent part of life for architects, the concept of a central server for all company work may need to be reevaluated.

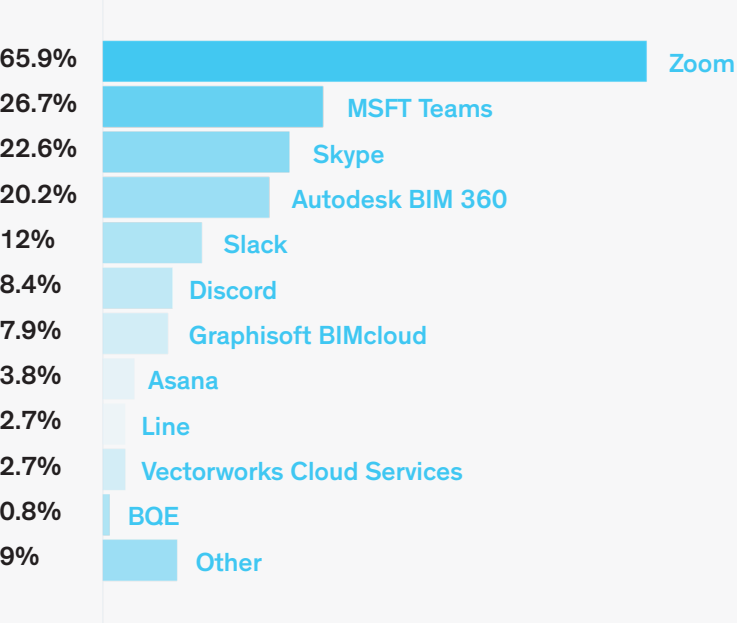**Preferred Hardware**
The most essential tool is a powerful computer.

What hardware have you found essential when working remotely?

77.9%	A powerful computer or laptop
51.8%	An ergonomic work chair
41.1%	A second monitor
35.7%	A large monitor
17.2%	Task lighting
16.6%	An ergonomic mouse
14.2%	Drawing Board
2.2%	Other

Preferred Software
87% of AEC professionals cite video meeting tools like Zoom and Skype as the most essential software.

What software have you found essential when working remotely?

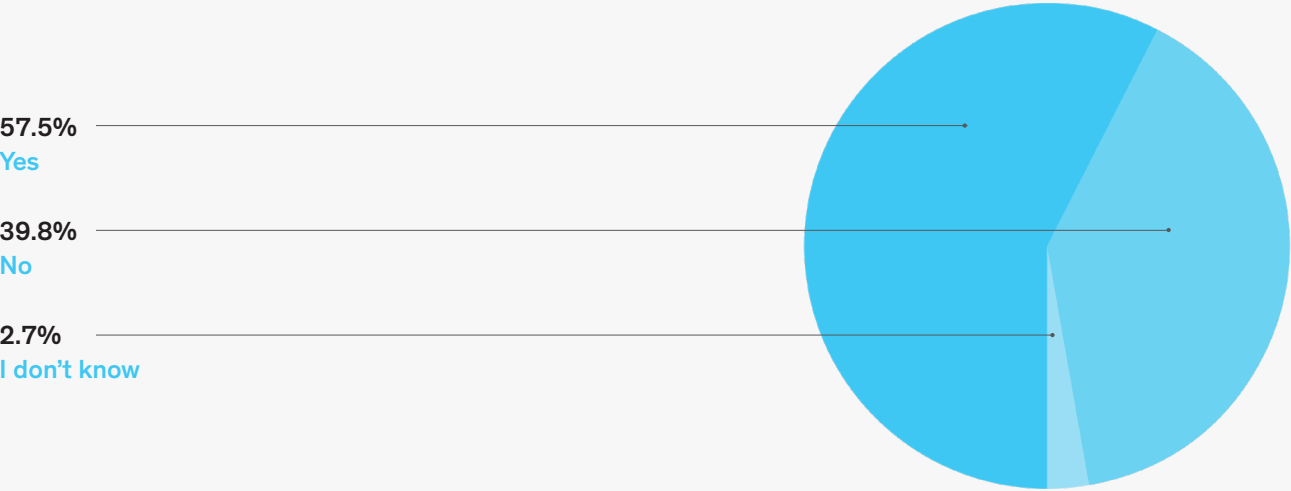|	
65.9%	Zoom
26.7%	MSFT Teams
22.6%	Skype
20.2%	Autodesk BIM 360
12%	Slack
8.4%	Discord
7.9%	Graphisoft BIMcloud
3.8%	Asana
2.7%	Line
2.7%	Vectorworks Cloud Services
0.8%	BQE
9%	Other

What NEW tools have architects taken on in order to work remotely?

Most cited new tools are collaboration tools like **Zoom** and **MSFT Teams**.

The majority of AEC professionals are connecting back to the office remotely.

Do you use remote access (cloud) technology to connect to your primary work computer from another computer?

57.5%
Yes

39.8%
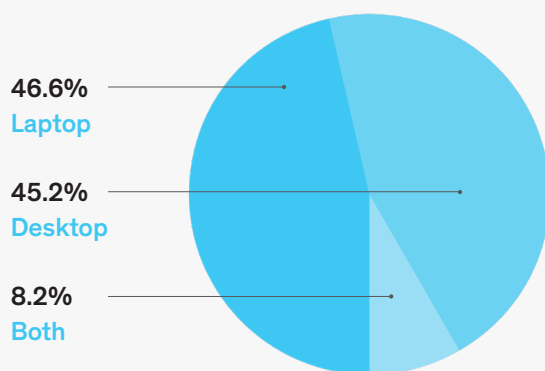No

2.7%
I don't know

Hardware: Key Findings

The computer of choice in 2020 is mobile.

AEC professionals are split almost exactly 50/50 between primarily using a laptop or a desktop. This is a big shift over the past five years: In Architizer's previous survey on technology in the architectural profession, 80% of architects were primarily using desktop computers.
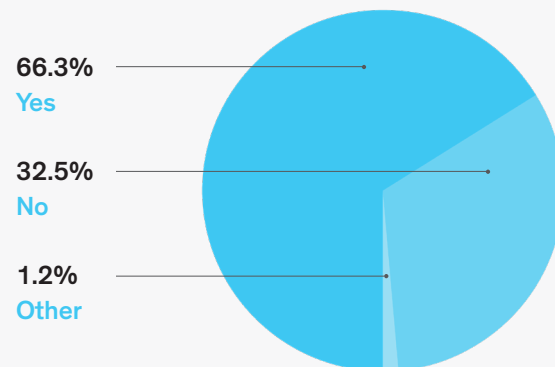
Furthermore, two thirds of respondents that said their primary computer was desktop also stated that they use a laptop or mobile workstation as a secondary device. This means a total of 76% of respondents utilize a mobile computer in some form to get their work done in 2020. We can speculate that this shift in preference is down to one or a combination of the following reasons:

- **Reduced need to compromise:** Mobile workstations now provide power equivalent to a desktop, with all the advantages of a laptop.
- **Mobility at home:** People working remotely during the pandemic require greater flexibility to move between spaces while working (to provide space for family members, or seek a quiet space for certain tasks)
- **An uncertain future:** Some architects may be waiting to see whether they will be required to return to the office before purchasing a desktop computer for a more permanent home office.

Is your primary work computer a desktop or mobile (laptop) computer?

46.6%
Laptop

45.2%
Desktop

8.2%
Both

Do you have a mobile computer (laptop) as a secondary computer?

66.3%
Yes

32.5%
No

1.2%
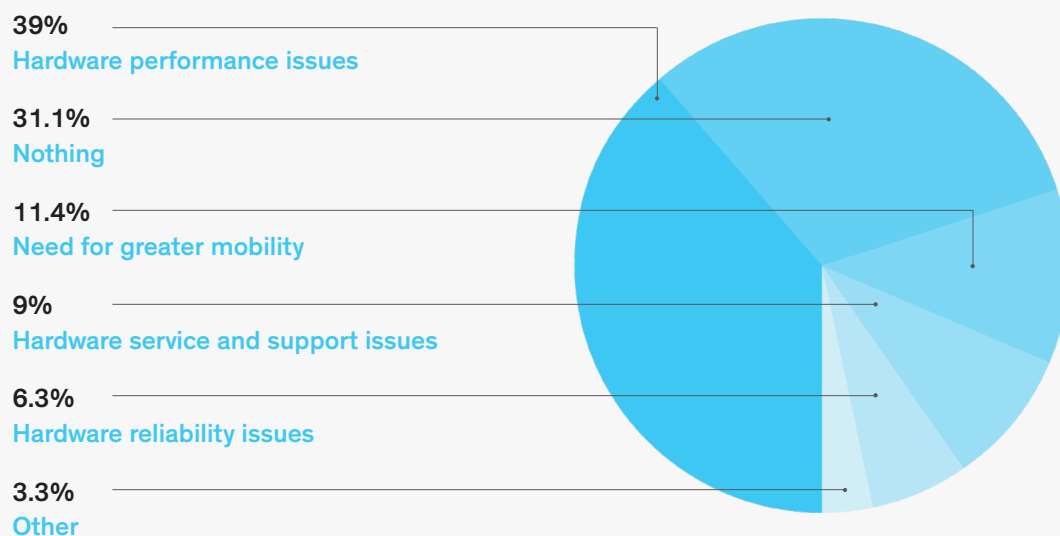Other

Software: Key Findings

In contemporary practice, power Is everything.

When asked to describe their ideal computer architects overwhelmingly described a power-ful, portable computer able to handle their visualization needs. While AEC professionals now require their computers to render 3D models and process complex algorithms for generative design, they are less willing to tie themselves to a desk in an office, and technology must continue to be developed to meet their evolving needs.

A huge 91% of respondents cited architectural visualization and rendering as part of their workflow. This result indicates that architects are increasingly creating their own visualizations rather than hiring the services of a dedicated rendering studio. This may be down to practical or economic reasons, but may also be due to the fact that the architects' own hardware and software is now capable of producing the high-end results they and their clients require.
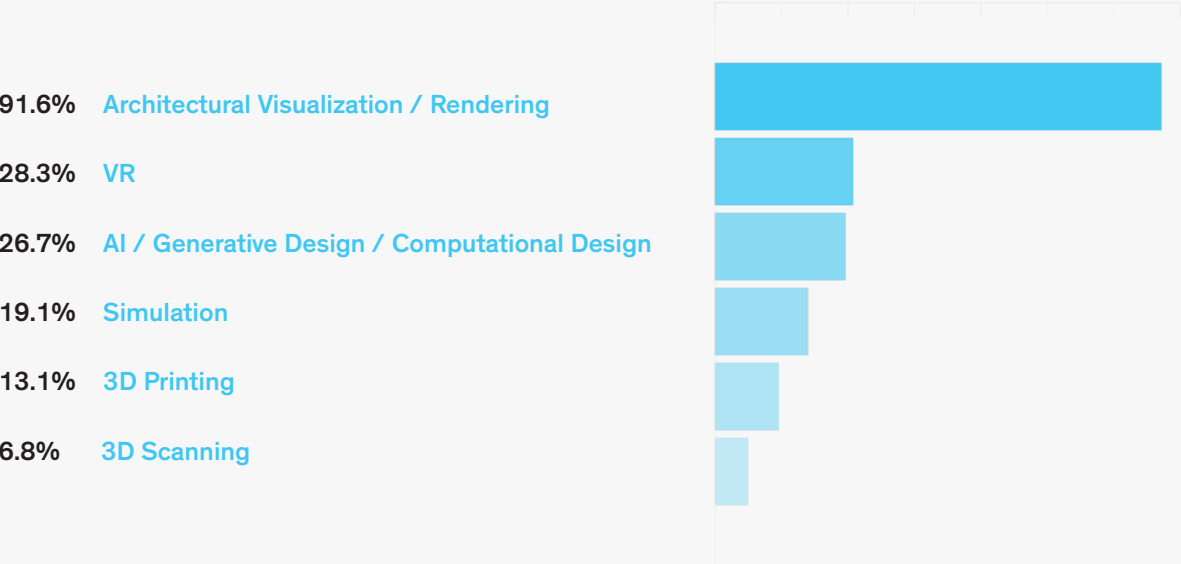
Other technologies being increasingly adopted by the industry include virtual reality (VR) and generative design, which were cited by 28% and 26% of correspondents respectively.

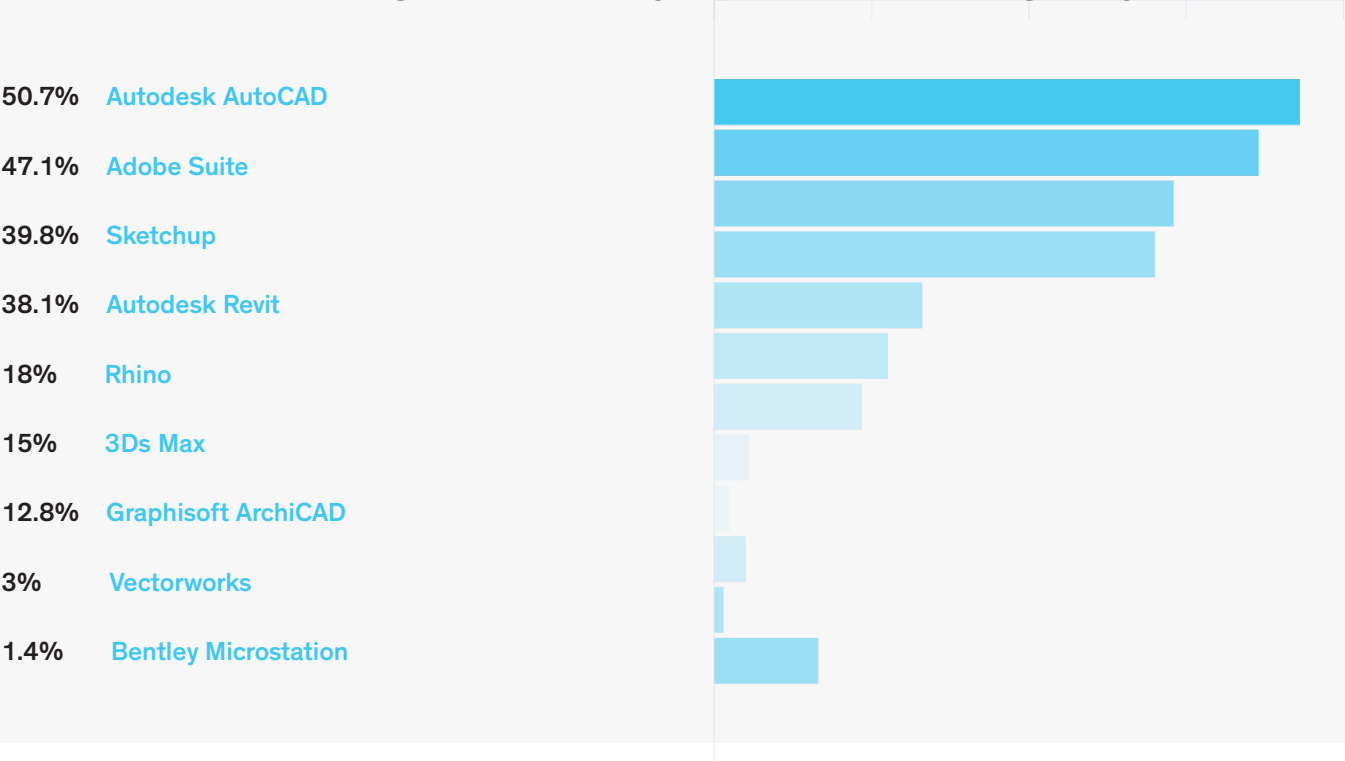**What's you biggest headache with your primary work computer?**

39%
Hardware performance issues

31.1%
Nothing

11.4%
Need for greater mobility

9%
Hardware service and support issues

6.3%
Hardware reliability issues

3.3%
Other

Overwhelmingly, AEC professionals are using technology to facilitate visualization and rendering.

Which of these activities are part of your workflow?

91.6%	Architectural Visualization / Rendering
28.3%	VR
26.7%	AI / Generative Design / Computational Design
19.1%	Simulation
13.1%	3D Printing
6.8%	3D Scanning

The most used architectural software is still Autodesk.

Which of the following software do you use the most regularly?

50.7%	Autodesk AutoCAD
47.1%	Adobe Suite
39.8%	Sketchup
38.1%	Autodesk Revit
18%	Rhino
15%	3Ds Max
12.8%	Graphisoft ArchiCAD
3%	Vectorworks
1.4%	Bentley Microstation

Conclusion

The biggest takeaway from this year's Architecture + Technology survey is that, while 2020 is no normal year, the working conditions it has necessitated might become the "new normal". While the pandemic forced AEC professionals to adopt new hardware and software for remote working whether they liked it or not, the profession has been pleasantly surprised by the outcome. This has led many in practice to re-examine their workflow and work-life priorities for the long-term.

With 86% of respondents either neutral or positive on the question of whether they would like to continue working remotely, it appears that the profession is at a crossroads. Current working conditions have served to quicken a shift that was already occurring across multiple industries.

People are moving from a world where they travel to work at stationary desks to one that grants them the freedom and mobility to work wherever it is quiet, comfortable and safe.
With the rise in collaborative tools and apps for ease of communication, this shift is more easily facilitated in architecture than most professions. For this reason, mobile workstations — balancing immense processing power with the lightweight and compact qualities of a laptop — look likely to become the standard hardware for the profession.

Whatever the post-pandemic world looks like, one thing is clear — the practice of architecture, engineering and construction will continue to advance with the help of powerful, mobile technology and innovative software solutions.

About Architizer

Architizer is the premier online destination for design professionals to explore the world's best architecture and interiors and discover the products and people behind them. Launched in 2009, the site has rapidly become the world's largest platform for architecture and design.

Architizer also publishes a must-read blog covering industry news and honors the best architecture, spaces, and products annually with the A+Awards program.

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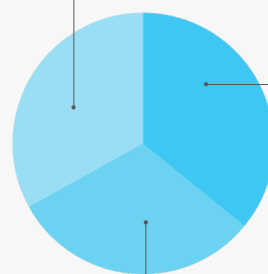**193,800+**
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Average Project Budget

Projects Uploaded

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Institutional

36%
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31%
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1,960,000+
Monthly Site Visits (Sessions)

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