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The Pitfalls and Best Practices for Design Professionals Emerging from the Pandemic

I. The Impact of Remote Work on Design Professionals

In March 2020, work changed dramatically for professionals across all industries, including the face of modern architecture and engineering practice. Almost two years later, businesses are left to contemplate what the new normal will look like. With the uncertainty of the pandemic, many employees abruptly stopped physically going into the office and had to pivot to remote work within days.

Quickly they adapted and adjusted to new methods of interaction with clients and colleagues. In-person interaction became almost obsolete and for design professionals who traditionally enjoy a culture of frequent client contact and collaboration, flexibility and adaptability proved key to maintaining relationships and keeping their businesses afloat.

The virtual world became the real world for businesses hoping to thrive through the pandemic. Is this virtual work world the new normal? What are best practices for architects, engineers and other design professionals moving forward as we emerge on the other side of the pandemic?

A. Remote Work and Virtual Collaboration are Here to Stay.

As the world emerges from the COVID-19 pandemic, architects, engineers, and other design professionals are operating in a whole new world. It's a world where remote work and virtual collaboration are here to stay. Although the culture of design firms has traditionally relied to a large degree on inter-personal collaboration and discussion, 72% of firms have turned to remote full-time or nearly full-time work for their employees out of necessity during the pandemic.ⁱ

A survey completed by Harvard Business School revealed that more than 80% of its respondents hoped that the work from home model would continue after the resolution of the pandemic.ⁱⁱ Many feel that the nature of work has shifted permanently and will not return to the pre-pandemic "normal." Only about 18% responded that they would like to go back to the office full-time. "In a post-vaccine future, a building's occupants cannot presume face-to-face contact with their peers, so we need to create office spaces that accommodate communications and technology without sacrificing intimacy and immediacy."ⁱⁱⁱ

Although many architecture and engineering firms embraced technology to an extent during pre-pandemic times, the COVID-19 pandemic catapulted firms that were either lagging or had yet to fully transition workflow to operate in a wholly remote environment. As the world weathered and adapted to the new virtual world during the pandemic, many businesses discovered new opportunities for collaboration. Architects and engineers employed interactive design visualization to overcome the physical barriers that prevented them from enjoying workstation conversations used to exchange ideas in the past. Now gaming and XR technologies enhance and even replace traditional workflows. This virtual workplace has surprisingly provided unexpected benefits such as more "immersive collaboration opportunities, expense savings from the reduction of travel and site visits, streamlined management on complex projects." ^{iv}

The use of digital twins is also quickly transforming the design world. Digital twins are digital representations of structures that track and analyze all manner of actual performance data. Owners and designers can access a wide variety of design possibilities and options in this way. Easy access to comparative analyses of other building prototypes makes the design for projects more encompassing and thorough.

Aspects of quality control in the design process have also been positively impacted. Resources such as Bluebeam, which operates a PDF markup and collaboration tool improved the ability of remote workers and clients to effectively coordinate their efforts on design projects. It has also improved upon and streamlined workflows. In fact, many argue that remote work has improved not only productivity, but also morale among design professionals. ^v

B. The Impact of Remote Work on Interpersonal Relationships at the Workplace

Remote work does have its downside. Most notably, are the irreplaceable opportunities that in person interactions present for mentorship and other professional development between office peers. In the practice of architecture and engineering specifically, the knowledge and advice passed from more senior employees to those more junior is invaluable in the development of skills and knowledge as they progress in their careers. Although it is possible to mimic these relationships remotely, much of the authenticity is lost in a virtual environment.

In a study conducted by Mancinin Duffy, several main findings were revealed about remote work:

- The most senior as well as the most junior of employees are the most likely to prefer in-office work. Senior staff relies on the collaboration and planning often accomplished in team meetings to maintain the progress of projects. Junior employees often require more supervision and guidance that is harder to accomplish in the virtual format.
- Mid-career employees prefer at homework to in office employment. They found that mid-level employees are more productive and efficient working from home.
- The decrease in silos between department and levels within the organization is key to fostering and developing important relationships necessary to keep then business working at top notch levels. ^{vi}

II. New Emphasis on Green Building and Sustainability

A. The Post-Pandemic World has an Increased Demand for Adaptable and Eco-Friendly Living Spaces

Another clear trend in the world of design and construction as we emerge from the pandemic, is the increased demand for more adaptable and eco-friendly living spaces. Delivering solutions for sustainability to clients is more crucial than ever. Historically, the primary function of a home, or buildings in general, was to provide protection from the elements and predatory animals. In modern times, the focus is also on the protection of society from disease and viruses. The pandemic has forced the world to face the fact that it is vulnerable to nature and the uncertainty it potentially poses to our way of life. Architectural and engineering design will certainly reflect this shift in focus going forward in both the commercial and non-commercial landscapes.

Almost 80% of architects report that clients are showing increased interest in buildings that address issues of occupant health and safety.^{vii} This trend follows historical models of how other public health emergencies affected architecture emphases in the past. The renovation of Paris after the cholera pandemic in the 1800s attempted to rid the city of overcrowded neighborhoods and converted them into wider streets and more open space. Another example is New York at the turn of the century when it enacted the Tenement Act of 1901 which mandated that all new buildings have outward-facing windows and proper ventilation. This was done in the aftermath of the smallpox outbreak.^{viii} Many developments in architecture have come about as the world learns how to prevent and minimize the effects of disease among the population.

B. COVID-19 Increased Demand for Business Owners and Homeowners Looking to Utilize Touch-Free Operations.

The COVID pandemic has already begun changing the way developers and owners look at the space. Architects and other design professionals predict businesses and residential homeowners will demand more:

- Automated products that do not require physical touch to operate such as faucets and paper towel dispensers.
- Shared surfaces are also likely to be used more minimally.

Design elements normally used for healthcare spaces are becoming more commonplace in buildings and homes outside of the healthcare arena, such as:

- Built-in hand sanitizing stations
- Improved ventilation and access to sunlight

- Use of building materials that improve hygiene such as antibacterial surfaces and easy-to-clean products.

Working from home has also resulted in designers rethinking the domestic space. Privacy, sound control, and adaptable space has become crucial in recent months. Demand for movable walls and convertible spaces is key to this trend as well as increased demand for modular construction and lightweight architecture. ^{ix}

C. Automation is Enhancing the Client Experience

Automation is illustrative of how technology has allowed architects and engineers to adapt quickly to the new normal. ^x Moreover, automation is changing processes and offering new possibilities in the world of architecture and engineering. From remotely controlled robots used to complete dangerous construction site tasks to laser-scanning an elevator design for a building project, automation is a tool that is increasingly becoming the norm. Design professionals and their clients can engage in 3D walkthroughs, which can help clients further refine their vision for the project and identify potential areas for value engineering. Labor and supply chain concerns, which have been a source of extensive and problematic delays during the pandemic, can also be solved at least to some extent using automation. Automation can account for designing around any supply shortages of materials or skilled workers.

III. The Need for Increased Cybersecurity for Design Professionals

A. Larger Businesses Previously Utilized Robust Cybersecurity Protocols, but the Pandemic Increased Remote Work for Smaller Businesses, which Must Now Also Obtain Heightened Security.

While most larger business enterprises utilized robust cybersecurity protocols pre-pandemic, smaller design professional firms were likely less conscious of cyber-threats due to the limited number of employees that all worked from a central office. With the abrupt shift to remote work, even the smallest of design firms need to enhance security measures if their employees are logging in from personal devices at home. Businesses need to be more cognizant than ever about the threat of cyber-attacks. Cyber-attacks could potentially expose sensitive data including private or sensitive information about their business operations. If a firm has government clients, the possibility of a breach raises even greater reason for concern. Many government clients as well as businesses now require firms to have a cybersecurity plan in place. These measures include requiring vendors they utilize to also have a plan in place to protect their information should an attack take place.

With digital tools in architectural and engineering firms becoming increasingly connected to the cloud, design professionals need to reevaluate and make appropriate updates to their cybersecurity plans and policies. It is a constant balancing act between enjoying the ability to share and collaborate freely while still maintaining safety and security of the information. Companies can reduce their risk by requiring employees and clients to set strong passwords, using two factor authentication.

IV. Best Practices in the New Remote World

A. Embracing the Flexibility Associated with Hybrid and Remote Work is Key.

- Design professionals should be prepared to offer a variety of working environments including more flexibility for those who wish to continue working from home at least part-time to others who prefer being in the office. Accommodating client preferences in this regard will also prove paramount to successful business practices moving forward.
- Focus on ensuring clear lines of communication with project teams working in remote or hybrid environments.
- Create opportunities for peer relationships and professional development that may have dwindled or become obsolete during the pandemic.
- Capitalize and grow in the areas of sustainable and green building trends. Be prepared to adapt to the new demand for altered office and domestic spaces as we emerge from the pandemic.
- Capitalize on automation.
- Revisit your cybersecurity programs and protocols to ensure that your business is sufficiently protected.

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ⁱ Gustafon, Michael. January 4, 2022. "6 Trends in Architecture, Engineering and Construction to Look for in 2022." www.redshift.autodesk.com/architecture-trends

ⁱⁱ March 25, 2021, "HBS Online Survey Shows Most Professionals Have Excelled While Working From Home." <https://online.hbs.edu/blog/post/future-of-work>

ⁱⁱⁱ Neely, Tsedal. *Remote Work Revolution: Succeeding From Anywhere* New York; Harper Business, 2021.

^{iv} Gustafon, Michael. January 4, 2022. "6 Trends in Architecture, Engineering and Construction to Look for in 2022." www.redshift.autodesk.com/architecture-trends

^v Id.

^{vi} Ahmad, Farah. "Has Remote Work Changed the Architecture Profession for Good?" <https://www.architectmagazine.com/practice/has-remote-work-changed-the-architecture-profession-for-good>

^{vii} Tinder, Matt. June 22, 2021. "New report shed light on impact of pandemic on architecture." <https://www.aia.org/press-releases/6411239-new-report-sheds-light-on-impact-of-pandemic>

^{viii} Id.

^{ix} Id.

^x Gustafon, Michael. January 4, 2022. "6 Trends in Architecture, Engineering and Construction to Look for in 2022." www.redshift.autodesk.com/architecture-trends