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How Remote Collaboration Can Help Your Design Firm Achieve Success

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Learning Objectives

- Identify factors that add friction to the remote collaboration process in design firms
- Explain why remote work can be so difficult for CAD drafters and designers
- Discover potential roadblocks that can impede your way to remote collaboration success
- Apply an IT perspective to determine necessities for your design staff to work anywhere in the world

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Description

We all realize that the world has changed incredibly since 2019. Industries where crowded conference room and noisy drafting bullpens were once the norm are now dealing with remote workers as commonplace. Even with the "return to office" movement, more and more staff wish to work from home. So how does a design firm survive when the new world is so very different? I will discuss my own experience as an IT manager and how we made the change to remote work seemingly overnight. More importantly, I will share how our firm is not only surviving, but also thriving with remote work as the pandemic evolves. Join me for a specific recipe of tools, practices, and patience that has proven successful as times change in the real world.

Speaker(s)

Curt Moreno is a freelance content creator and public speaker for clients such as the Autodesk, Inc.; Hewlett-Packard; and other corporations, large and small. He has a long-time member of the CAD community, having been a member of the board of directors for Autodesk User Group International (AUGI), the Autodesk University advisory board, and an award-winning Autodesk University speaker. He has written and spoken on topics revolving around the CAD profession, management issues, IT, presentation topics, and customer relations for more than past 10 years, and he hopes to broaden his reach. Moreno currently lives in Houston where he is the IT Manager for a Texas-based engineering firm. He is a public speaker and trainer and enjoys spending time with his dogs. Visit his site at www.kungfumanager.com or follow him on Reddit as KungFuManager.

Introduction

The Story So Far …

In order for any organization to thrive it must achieve a certain level of productivity. We've all heard the old saying "Time is money." This tired old dog gets dragged out thousands of times a week around the world. But, taken at face value, the true meaning of this adage can be overlooked as it is not actually about "time" or "money" but rather productivity. And in today's world productivity is inextricably linked to collaboration. It is our goal to improve productivity through collaboration in this modern hybrid workplace.

First, let's discuss the meaning of "collaboration," since too often we aim for collaboration without understanding why we seek collaboration.

Collaboration

We've all been told that we should aspire to collaborate in all our work-related efforts. And there is no doubt that "collaboration" is a much-preferred choice to any alternative. But, exactly what does "collaboration" do for us?

First, and sadly foremost, modern management tells us that we should collaborate for no better reason than "… that is what businesses do." If you are in business then you collaborate, or at least they try to collaborate. But "because that is what we've always done" is not a very good reason.

Perhaps this approach is why collaboration is such a hurdle for some many companies to overcome. Without understanding "why," can you ever fully embrace "how"?'' Especially when there are so many better and more valid reasons to choose collaboration.

When an organization increases their levels of collaboration it gets the ancillary benefit of improved communication. This is a huge boon since we all know that communication is the very foundation of innovation and growth for any organization. In addition, greater communication leads to a greater degrees of organization flexibility and an increased potential for learning through peer training and mentoring.

For the sake of our discussion, the most important benefit of increasing the level of collaboration in any organization is the inevitable increase in productivity levels for staff members. When collaborating, problems are discovered and resolved sooner, and workloads are more evenly distributed.

All of this while raising the level of engagement for staff members to new heights. Studies have shown that engagement is key to not only production, but also job satisfaction and staff retention.

The Recent Evolution Collaboration

As we all know, in recent years so much has changed in what we thought was "the normal workplace." One day we were all working away in the office, meeting face to face, and bumping

into one another in the hallways. All of these things were the elements conducive to productivity in the world we knew. Then suddenly we were scattered to the winds. The halls were empty, and the desks were dusty, but the business show had to go on. Productivity had to be rescued from the traumatic change, and it was.

In the midst all the confusion people who had once been in the office were now working from a variety of places. Instead of meeting in the conference room we were working on reports from the coffee shop and having meetings over services like Zoom and Teams, from our living rooms. And an odd thing began to happen, in surprising number of places, employers reported increases in productivity.

Now, finally, we are beginning to "return to normal." More specifically, some of us are returning to the office while others are choosing to remain in a remote work situation. And once again, collaboration and productivity are at the heart of the quest to make this new "hybrid workplace."

The Hybrid Workplace

Make no mistake, the transition from fully remote, quarantined, workforces to a hybrid situation is not an easy matter. Every organization and its management are struggling to find the correct balance of freedom and presence. Older schools of thought want to return to a fully in-office presence while staff members want to hold on to their new work-life balance.

Normally increased productivity level would be enough to justify a remote situation. But productivity relies on the collaboration of entire teams. And when there is a mix of situation, natural forces can interfere with collaboration. Where we all once met in person or at an agreed time on Teams, now this mix can be actually detrimental to collaboration.

The Good News

Though this new normal has new hurdles, they are not impossible to master. Rest assured that we are going to be examining the exact tools that have proven to create a successful hybrid workplace that can maintain the increased productivity level some have seen in quarantine.

The solution revolves around three concepts in the areas of:
- Secure Access
- Asset Availability
- Communication

Addressing these three areas of interest we can break down the hurdles facing any team creating or attempting to expand a hybrid workplace.

Secure Access

First and foremost, in order to have a productive work environment that involves remote staff members one must address security. As we know, network security is a constant concern and one that can prove quite costly. It takes money and experience to secure a network in the best of circumstances.

In a traditional scenario, a network team works to keep all outside access restricted to the bare minimum in order to secure the network. While this is a task, it has a narrower mission: keep bad guys out. Since the entire staff population was in-office at their desks, this goal was straightforward. However, in a hybrid workplace, the goals are much less defined. Now we have staff members in the office who need to collaborate with staff members outside of the office. This means the mission of the network team changes to "keep the bad guys out / let the good guys in."

The security of your network is an upmost imperative. Simply put, there are too many bad actors in the world, wondering the internet looking for points of vulnerability to exploit. And the methods they use are nearly endless. The difficult truth is that a network team has to repel 100% of attacks on the network. That can easily equate to 100s of malicious attempts to access the network each month and the support team has to have tools in place to repel each attack.

The bad guys? They only have to be lucky once to get into your network.

There are numerous products and services on the market that an organization can invest in to secure a network. But in the effort to build a collaborative and productive hybrid workforce we need to concentrate on secure access. But keep in mind, the solution offered here is by no means all it takes to secure a network! The topic we are discussing is merely securing the access. Bad actors have many other attack vectors, and you should consult with your team and management to determine the best, overall network security that works for you.

The Secure Connection

Secure access to your network is the key to keeping the bad actors out while letting the good actors in. In order to achieve this, one must think like a bad actor: "What is the easiest way to get into a network?"

Oftentimes the easiest means to get into a network is to observe the traffic between a remote point and the main network. In this position a bad actor has any number of attacks they can choose from. They can steal data right out of the stream. They can capture passwords. Or, and maybe the easiest, they can just right the connection right into the network along with the legitimate traffic. All of this is possible under normal circumstances because internet traffic travels publicly through third-party servers on its way to the organization network.

In order to prevent this aspect of attack and create a secure access means we must protect the traffic between points. This is accomplished with two pieces of equipment:

- Office-Based Firewall – creates an encrypted virtual private network between locations to prevent bad actors from observing or hijacking data
- Secure Access Point – creates an account-based means of allowing users a connection point to the network from which they can access other assets based on account permissions

My Recommendation

Choosing security devices can be very complicated. Even the most experienced IT staff can soon find themselves reeling from the options. So, I would like to recommend to you my brand of choice, SonicWall.

SonicWall offers a wide range of network security tools. Specifically, I have had greats success with employing a mix of their products as follows
- Office-Based Firewall (Corporate Office): NSA2650 firewall
- Office-Based Firewall (Satellite Office): TZ600 firewall
- Secure Access Point: SMA500

These devices offer far more features than just VPN and secure access options. These features can be activated by individual licensing which makes the SonicWall solutions as affordable or varied as your budget allows.

One option that does add to cost, but is, in my opinion, critical to continued productivity is to deploy these devices in High Availability. This means that each device has a back device that is ready to automatically take over should the primary device fail. Though such an occurrence is rare, the cost of lost production easily justifies the added expense.

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Asset Availability

Equally important to connecting your remote staff to the network is making sure they have access to project files that are necessary to their work. These could be anything from Word files to PowerPoint decks, databases, or CAD files. Whatever form it takes, this information is vital to your staff being able to do their jobs. For our discussion we will collectively refer to this information as "assets."

Imagine how long the management of your organization will continue a hybrid workplace if remote workers cannot access the information they need. Probably not too long. You might say "well fine, make everyone come to the office and let's just be done with it." But the reality is that a good portion of your staff realizes the value they hold and may choose to leave rather than return to a 100% office-based job. That brings up a whole other business issue of retention that we will not get into.

Examining Availability

The problem of asset availability existed long before the hybrid workplace. All over the world businesses have had multiple office locations with staff trying to collaborate. However, they often found that the data they required was located on a server in another office with no simple

way to access it. In this sense, these organizations have been remote or hybrid for decades and did not know it.

They faced challenges of data that was siloed in locations or being hoarded by certain coworkers. In whatever case, the information that was needed was not available when it was needed. This often led to complaints that inter-office (bow remote) collaboration added to much time and overhead to a project. "It's just easier if I do it myself" is the common mantra. But this leads to very poor efficiency and makes collaboration between locations impossible.
Sadly, it does not take too many projects with low or negative project margins for management to cave and end inter-office collaboration. That was often an option because each location had staff that could handle the project. Unfortunately, that often-meant overtaxing staff with excessive overtime. We've all seen it and we've seen it for years because corporate cultures are slow to change.

Until a few years ago there were no real solutions to this issue. No matter what you did with the data it was going to be out of reach of someone, overwritten by someone, or duplicated by someone. That is until a new solution came to market.

The answer, on the surface, is quite simple: We just need to make all of the data available to all of the organization all of the time. Problem solved. The execution of that idea is considerably harder to both understand and execute.

Enter the Cloud
In today's office environment we now have the infinite power and storage space of the "cloud." It might seem magical but remember, all the "cloud" is, in reality, is another server located somewhere in the world. That's it. But that server has the ability to be accessible to whoever has the rights to its data.

What does this mean for organizations? Well, if we take all of project-related data and push it into the cloud now we have created something new. We have taken data from various servers at various locations and consolidated it all into one, canonical data structure. All of the data now is in one place. There is no need to worry that any staff member who has permission cannot access the needed data. It's all in the cloud.

Of course, that is a vast oversimplification of the matter. And the process of copying data to a cloud host is quite time consuming. Luckily the vendor and solution I recommend will help you. And that is great because pushing data into the cloud isn't enough.

Let's Get Nerdy
The truth is that this is a complex mechanism. Far too complex to fully illustrate in this paper, so I will do my best to give you the 50k foot view so you can decide if this is worth exploring.

The reason that pushing data to the cloud is not enough is that it only solves the availability issue. We also need to address the issue of overwriting data and actually being able to work with data once it is accessed.

Both of these problems are solved with what is best referred as a "filer." The filer is a physical or virtual device that acts as a middle agent when data is accessed. By deploying a filer at each remote office location (not remote work homes) data is easily accessible. When a file is opened for the first it is accessed from the cloud and delivered to the requesting workstation. During that delivery the filer keeps a local copy of the data.

In addition, delivering the data, the filer informs all other filers and the cloud copy that the file (data) is open and passes a network-wide file lock. This prevents anyone else from opening an editable copy of that file, just as it would on a normal local server.
As the file is worked on and saves are made, those actions do not actually return to the cloud. They return to the filer. The filer examines the changes made and transmits the changes, and only the changes, to the cloud copy. This saves data by several orders of magnitude because changes are usually measured in kilobytes if not bytes, so they transmit very quickly.

This is especially important for CAD files or large graphic files. Without the filer solution staff members will complain of "slow file opening" or "CAD software locking up." This often leads to requests for new, faster, and more expensive hardware. In reality none of this is true.

The reality is that when accessing a file there is a literal limit to how quickly data will be delivered. In a situation where data is requested from a server in the same office, this speed limit seems nonexistent for spreadsheets and text files. Boom it is open. However, even in the office some CAD files can take a while to open.

Now, remember that there is a limit to how fast data can travel. That speed constraint is called "latency" and is measured in milliseconds and normally averages around 20ms. When a computer accesses a file, it does so in a series of operations that sequentially send the data from the server to the workstation. The larger the file, the more operations.

For example:
If a file requires 15,000 operations to fully transmit all file data to a workstation (completely reasonable number BTW) and the latency on the connection is 20ms then we can expect the complete transmission to take 300,000ms, or 5 minutes.

Now, imagine that because of distance, traffic, poor connection speeds, or about 100 other different factors the latency is higher. A "poor" connection can easily have a 100ms latency. Now that same file would take approximately 25 minutes to open.

That is why the methodology of the filer acting as both a local hoarder and go between is so important. Latency from the workstation to the filer is minimal, so you will get the exact same experience that you would if the file was housed on the local server. And, on the back end, in order to not consume bandwidth and speed updates, the filer only send the bits that have changed in the file back to the central file data structure so that it can remain up to date.

But the filer does one more thing. Recall that the local filer has a copy of every recently opened file. And we are working to collaborate, are we not? So, let's assume that more than one office is working on the same project. And we have already learned that the filer passes a network-wide lock to prevent duplication of work. But it also updates local copies of files to the latest

version wherever they are in the network. This ensures that no matter who opens the file, or where they are, they will always get the latest and greatest version!

If that all seems complicated, that is because even this simplified explanation is complicated. Don't feel overwhelmed! The vendor will help you.

My Recommendation

Finding the solution, I recommend took months of reviewing the market offerings and vetting information. We knew that at a minimum we need improved access, eliminate duplicated effort, and a vendor that could be our partner and not just take our check. In the end we went with Panzura, and I feel very confident in recommending to anyone.

Like many vendors, Panzura offers a wide variety of products and services. For our discussion we are focusing on Panzura CloudFS.

My organization was able to collect all project data from 10 silos. We then were able to push all that data to Azure's cloud storage. For the first time in our company's history, to create a single data structure of project information that was available to every staff member. This single action eliminates any question of "which is valid" or "which version is current"? And, of course, we were able to all but eliminate duplicate and overwritten work.

Minor Caveats

At the time of this writing, Panzura has not yet released its work from home module. This piece of software is expected to be installed on remote workstations (at employee's homes or company laptops) and act as a filer for the individual. This important release will bring all the benefits of the filer and is expected to by 2023.

Until then, because of the lack of a filer, remote workers will need to access the in-office filers by remote access. This can cause delays in working with CAD files and it may be necessary to use locally copied version of DWGs for best results until the work from home module is available.

I can tell you that in my experience the added latency or need to copy files has been a small speed bump that has not impeded our collaborative efforts. Though we are looking forward to the new module.

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Communications

This final aspect of creating and supporting a hybrid workflow should be no surprise to anyone who has ever worked in an office. It is both the aspect that is easiest to understand and the hardest to execute. Naturally I am talking about "communication."

There is no shortage of experts that are ready to stand on a mountain and cast down their tenets on how to better communicate in the workplace. Some of them are better than others, but all agree that the greater the degree of communication in an organization, the better the collaboration and productivity. And that really does just seem like common sense, doesn't it?

Of course, "easy to understand" and "easy to execute" are two different things. And communication is not easy. If it were easy there would be a whole bunch of consultants (including myself) out of work!

And that was all before things changed! Back in the "good old days" when we would just walk down the hall and sit in the conference room together. Just imagine how difficult some organizations are finding it communicate in a hybrid workplace!

Thankfully, and unsurprisingly, there are dozens and dozens of tools that offer to help you communicate better. Some are free, some are not. Some are quite effective; some are less so. And while there is no harm in trying them all out, it does take time. Trust me, I think I've used them all. Before I give my recommendations for what I think are some great tools to better equip your organization to communicate, let's touch on culture.

A Culture of Communication

For thousands of years people have worked together, in the same space. We met, discussed, and built together. It was all very physical, but more importantly, it was the only option. Today technology offers us so very many ways to communicate. Today we do not have to be together to build the digital equivalent of the Great Pyramids. Teams dispersed across the globe can work together to produce amazing things.

As long as they communicate.

Maybe it is instinct that pushes us, as we move apart, to fill the gaps that open between us with technology. Chat apps. Photo apps. Video sharing. They are all great, but they are technology. And while technology can certainly help, technology does not equal communication.

Communication is not a technological issue; it is a cultural one. And the fluidity of communication in an organization depends on its culture. Some cultures shepherd and nurture communication while some do not. And even when one is of an organization communicates well, there is no guarantee that the entire organization communicates well.

So, it is necessary to make an escalate the effort to communicate, both in office and remotely. We have to take that extra step to reach out, often by using technology. And we must realize that communication will become more asynchronous as our teams become more remote.

My Recommendations

Messaging
Since nearly every organization uses Microsoft software you are most likely familiar with Microsoft Office (or O365) and have heard of Teams. I have found Teams to be an excellent option for preferred communication. Offering text, video, screen, and file sharing Teams is pretty much a one-stop shop of communication. Teams is included with most Office 365 licenses and even offers VoIP options.

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VoIP
Regardless of how technologically advanced our offices become, I think there will always be a place for the trusty telephone, when it comes to doing business. Hey, it's worked for nearly 150 years! There is just something about being able to hear vocal inflections that elevate our communications in a way that text alone cannot match.

So, for Voice of IP services, I am glad to recommend 8x8 Global Cloud Communications. We have found that the service is both well priced and delivers reliable service. The service requires no special phone lines or internet service. Any connection to the internet will suffice. And with apps for both mobile and desktop options of how you can make a call is generous.

While I cannot name names, I will tell you that upon switching services we saw a very considerable amount of savings while having precisely 2 system outages in the past 24 months. Both of which were brief.

Minor Caveats
As previously stated, I believe that most organizations will find savings by moving to 8x8. However, any change in phone services will require the transfer of office numbers. I will not lie to you, this "porting" process is both time consuming and tedious. So much so that I would have to say that anything less than a 20% savings would not be worth my going through the process again.

Yeah, it's that bad. And it's true of whoever you decide to go with as your VoIP vendor.

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Late Breaking Thoughts

As you know, this handout was late in being made available to attendees, and for that I am very sorry. However, just prior to upload an event of such importance happened that I felt it necessary to include.

Our hybrid workplace has worked very well for over two years with hardly any issues. However, recently our network was compromised. It served as an urgent reminder that no configuration of remote access, or even onsite access, is fool proof.

There was a great deal of consideration as to what information could be made available as an example. In the end I am able to say that a staff member had their network credentials compromised through a phishing attack. That being a plain old bit of SPAM that was clicked, and information entered in the heat of the moment.

Following the compromise our bad actors used the account to spread ransomware to a list of our clients. Embarrassingly enough we had a number of clients reach out to us. By that point we had identified the issue and had deactivated the user account.

The point of this passage being that you cannot assume that your work is done once your remote users are working away happily. Network security, especially for public-facing services, cannot be ignored.

In our case we were able to review access logs to first identify the point of intrusion and then remedy the situation. In addition, log examination led us to determine that issue was in fact resolved. Had we needed to, we had the option to involve out endpoint security provider, but we determined that would not be necessary.

Conclusion

We started with a very difficult task that involved a new concept that is not widely understood. The transformation from what "used to be" when all of our staff was 100% in the office to the "new normal" of a hybrid workplace is a hard journey. But it is definitely one that is within in the reach of any organization, provided they have the right tools.

The reason I developed this session was because I hate "informational sessions" that suggest the "type of tools you need" but do not tell you what you need. I hope this list of vetted tools that have taken me to success is of use to you and your organization.