Digital Thrivers & **the Digitally Unequipped**

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COVID-19 is going to sort design practices into two categories – the Digital Thrivers and the Digitally Unequipped. Where will you land? Observations about this massive disruption from DIALOG's Director of Technology (CTO) Roberta Kowalishin

Design Intelligence (DI): How was DIALOG ready and able to get all 600 DIALOG employees working from home successfully, securely, and supported by your tecÚology team in less than a day?

Roberta Kowalishin (RK): Innovation is a core value – we experiment with many modern solutions and continue to do so. Fortunately, we were well-positioned to work remotely before the pandemic forced it upon us. Two thirds of our employees are equipped with laptops while all others can access their equipment remotely with virtual desktops that include several choices of modern collaboration tools, automated tools to monitor infrastructure and update employee workstations, and additional solutions that better secure our users and infrastructure. A culture of rapid adaptation is needed in this new normal.

DI: Thank goodness your leadership and tech team invested in a "Business Continuity / Disaster Recovery plan", right?

RK: Not at all. There's been a lot of talk about resilience especially in the technology world – both in our own personal and social health as well as that which is related to our tecÚology. Maybe some firms had more robust plans than we did but predicting for a pandemic response was not a scenario in our business continuity plan (BCP) or disaster recovery plan (DRP). I'll wager that it wasn't in many other tech group's plans either. Instead of spending a lot of time documenting a traditional BC/DR plan, we focused on modernizing our infrastructure to make it more accessible remotely, moved to multiple cloud providers (providing instant resilience) and reduced our own data center footprint.

We will be rethinking how we approach Business Continuity and Disaster Recovery planning in the future (and I expect my peers will as well). This pandemic has proven that a cloud first strategy and modern IT Infrastructure with solutions from several vendor clouds (For example Microsoft, Amazon,

Google, Oracle) and tecÚology that lets users work from anywhere played the most important role in our ability to shift in a day to 100% to work from home.

DI: Yikes, 600 remote studios – everyone working at home. Aren't you worried about cybersecurity?

RK: Sure, we are. Many new threats and scams are using coronavirus as a reason to communicate including plenty of coronavirus email phishing scams and invitations from unknown "helpful vendors". We've been beefing up security layers of "defense in depth" for several years now. We remain vigilant and aware that risks always exist. That's all I'm going to say on that topic.

DI: – Seriously, how can design practices work with customers and do design without the help of tecÚology in the short term? They can't. And what about the long term if employees or clients prefer remote work or COVID forces additional rounds of stay-at-home? We all know a new normal is being defined right now.

RK: Clients will migrate towards designers who are easy to work with, who can work flexibly, and who have easy-to-use solutions. We have a solid base of tecÚology solutions, but we can't stop innovating and learning about what this new normal will need.

On the journey to understanding remote work – internally and with clients, the winners will be the early adopters who continue to pay attention to the people, processes and tecÚology solutions that enable remote design and collaboration. This means cloud-based solutions that can be remotely managed, in 3rd party data centers with security controls and redundant network connections.

We know that some firms are still struggling with tecÚology solutions that can't be accessed remotely, with little or no gateway connections to other internet or cloud systems for collaboration, connection, design, documents and shared BIM models. It's not too late to get going on this, but it's may be a lot harder to find tecÚology resources, partners, vendors, experts to help right now. We're all in this together and I'd welcome connections with peers who need help or to discuss approaches.

DI: Reframing the new normal - what are you learning about the humans and wellbeing in our community by working remotely with all this new tecÚology?

RK: A few years ago, DIALOG invested in a joint research project with the Conference Board of Canada, which yielded the Community Wellbeing Framework - a values-based design thinking framework for improving the health outcomes of architectural design

projects. Our rationale was simple: given the proliferation of research into the relationship between spatial design and health, design work needed an easy-to-use set of guardrails to shore up the results we wished to produce. In the same way this framework sets boundary conditions at the front end of design, it can also be used as a measurement tool once a design project is complete and in use by occupants. DIALOG's Community Wellbeing Framework (CWF) is different from certification-driven checklists like LEED and WELL because it defines health along well-defined metrics of social, economic, political, cultural, and environmental wellness.

In our first few weeks of working from home, DIALOG's Leader of Social Research and Strategy recognized an opportunity for DIALOG to measure the wellbeing of its 600+ employees during this time when they'd all become designers of their own workplaces. Using these ideas as basis as the work from home experiment continues, we can generate data in the indicator categories established by the Community Wellbeing Framework and learn a lot about supporting employees working from home. This data driven research is needed to understand how to evolve shared, studio workplace environments in the new normal to support our own employees, clients and create healthy,

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resilient spaces in the future.

No surprise that in fact many of our team members really like the remote work environment and don't want to return to a studio. Others miss the camaraderie. I sense guarded optimism as one of my colleagues noted "I'm optimistic. I think coming out the other end of this change we will see some incredible developments and innovation. I am hopeful that the positives will eventually outshine the negatives and we'll move into the 2020's a revivified culture locally and globally. There's no going back 100% to the way it was. The effects of this period of history will be a prominent thread in the tapestry of human history."

DI: How is it possible to support employees when they are at home and our Tech team can't just walk up to their desk and troubleshoot?

RK: TecÚology support on any platform has moved well beyond needing IT support to "touch" broken things. We've focused on automating how we make remote changes to software, solutions and tools our employees need, from their workstations, laptops, and virtual desktops. We're continuing to experiment in this area, especially on how we can depend more on cloud-based solutions – and strong dependence on tools in the cloud.

DI: Don't you need more tech people to support a remote work-from-home company?

RK: No, we haven't increased staffing at all. Our overarching approach has been and continues to be continuous improvement and how to right-size the tech team to scale with our operations. We have been proactive by focusing on building a diverse team that's coupled with putting people with the right skill set in the right positions. This approach has really paid off.

One area we underestimated as we were ramping up to work fully remotely, was the need to the one-stop-shop publishing and training hub: in the matter of days, we quickly produced helpful hints, user and training guides. We also began to offer video training sessions and continue to iterate support tools - our team now offers weekly emails and drop-in training – this week we focused on advanced video and webinar functionality.

DI: Are your existing video platforms flexible and robust enough to keep you connected with employees and clients all day?

RK: Yes, we are working 100% remotely using video but this is not enough. How does working remotely make us different from the design firm down the street, or across the country? Video collaboration

is now table stakes for any organization. It's become a commodity and required to do business - whether you're using Zoom, MS Teams Video, Skype, Blue Jeans (now Verizon), Cisco WebEx or others. We're big fans of Zoom and have been amazed at their agility to scale from 30M to 300M customers in a month while recently upgrading security. As an alternative, we also have Microsoft Teams video available for clients with different needs, and we can connect to any other platform our clients use.

At DIALOG, we recently conducted what would have been a two and a half day in-person all partners retreat via Zoom. While we had to schedule ample breaks, the platform enabled us to collaborate with our leaders and external guests in a seamless way.

DI: Looking to the future - what other kinds of solutions besides video are needed?

RK: Whatever we do with clients (in a meeting or within a physical space), must also be available online. We continue to experiment with a variety of new tools like whiteboarding, polling, breakouts, webinars, Q&A, sharing models, marking up drawing and designs for different meeting formats and design goal outcomes. In addition to our internal meetings, we're running multi-day client and stakeholder workshops using online whiteboards, panel discussions and company-wide updates and polls to keep projects moving forward.

We've learned in a very short amount of time that productive virtual meeting design takes time. It requires significant planning and a thorough testing of tecÚology solutions. I recommend starting with your desired outcome to determine what tecÚology solution will meet your goals. Sometimes the simplest tecÚology solution (like marking up a document or using a basic whiteboard) is all that's needed. A word to the wise: don't overcomplicate things or overwhelm clients or your company with advanced tools where they aren't really needed or tested well - especially in larger group or with novice users.

DI: But designers, clients, investors, owners, tenants need to walk around spaces, imagine, survey, inspect. How's this going to work if you can't visit a site?

RK: Even before COVID, the pressure for efficiency and quality in design-build and remotely visiting sites at all stages of

projects was growing. COVID is making the need for remote site work even more essential and accelerating the adoption of new solutions. Laser scanners, sensors, robotics, drones, robots and construction tools that used to be a novelty are moving rapidly into construction sites. Our 360 cameras are loaned out to super users in each studio location as we work from home, and they have been in constant demand by project teams to capture site information and allow remote clients and project teams access and collaboration. Sites visits are done virtually on Zoom calls with everyone being able to see conditions. Why have another person on-site when a drone or pre-programmed robot can wander the site and capture updates and conditions? We are also using immersive VR headsets and AR solutions for walkthroughs and expect especially as prices drop this will continue to grow quickly.

Although automated camera equipped drones patrolling a site is a significant change to the way our industry has worked, we need to start simply – increasing laser scans and remote work and partnering with construction companies who have tools like IoT (sensor) based devices to monitor progress and on-site conditions. We expect that governments (city inspectors) will start to demand more use of remote solutions as well so that they can playback (and store) the assembly of a project to ensure things were done correctly. This is a challenge that unionized workforce might not appreciate at first, but in time we expect to see everyone adapt – first perhaps for COVID reasons, but also driven by efficiency.

The biggest way to prevent issues on-site is to remove on-site construction altogether, building in factories and off-site facilities where implementation of sanitary processes and solutions improves the wellbeing of workers and the quality of the product (and isn't subject to weather or other environmental delays). Imagine bringing teams from crowded messy construction sites into manufacturing construction indoors. So, we expect to see the new normal drive integrated modular and pre-fabrication more deeply with bespoke design that we are known for and a further acceleration of the adoption of off-site and modular construction into our industry.

DI: Our industry is heavy on paper drawings and stamped approvals, so now what?

RK: Welcome to the future! First, we're pleased to see even less paper (with less access to printers) during this pandemic, and virtual 2D drawings that can be marked up with real-time collaborative virtual markup tools like Bluebeam. We've seen more requests for training and access to digital signature solutions that

Welcome to the future!

were already in place for certified professional to digitally approve digital documents in the jurisdictions we work.

Longer term, we are anxious to address the issue identified by Thornton Tomasetti's CTO Rob Otani who estimates 34% of project cost today is "flattening" 3D models into 2D drawings. Maybe this first step of moving to more digital drawings and e-signatures that eliminate or greatly reduce paper will encourage more of our industry to ask how we can move toward clients and permitting authorities expecting 3D vs. 2D models. Some of our work today already involves more advanced BIM and 3D models and visualizations for clients. We are already working with industry groups and governments to innovate in this area and eventually eliminate 2D drawings with new 3D standards.

DI: Video chats, online whiteboards, polling tools and virtual walkthroughs are great, but is this Radical disruption? Is this what will sort the Digital Thrivers from the Digitally Unequipped?

RK: Not completely. Our Work from Home tecÚologies just let us do our work remotely and prove that our industry can and is innovating and introducing tecÚologies faster. It's about time.

But, as the pace of tecÚology accelerates relentlessly and as our design industry gains agility with change, the push to innovate even faster will continue. Design automation especially of repetitive design tasks – mechanical, electrical, structural design will continue to grow. DIALOG is already innovating building our Green Toolkit and Green Tracker tools that generate, store and use data from early stage design to provide more information to designers and clients about a project's viability. Our Green Tracker solution collects and automatically submits AIA2030 challenge data to the AIA and we are exploring making this tool publicly accessible to the industry in the next few months. Our Green Toolkit uses and generates data from public and our own private modeling and machine learning to assess architecture - engineering design tradeoffs. Longer term we plan to add tools for other disciplines to other metrics earlier (like total lifecycle costs, carbon embodiment, risk metrics) and drive more collaboration and workflows in the way we work across disciplines. That is Radical Disruption – coming within a few years to our world. COVID-19 is just preparing this generation's workforce to adopt tecÚology even more rapidly than ever. Even small projects to "get in the game" with new ways of tecÚology will pay off as the push to innovate in our industry accelerates.

DI: So, what's on the other side of COVID-19?

RK: The better we get with tecÚology, the more our clients will expect efficiency and quality. They will expect us to continue to do more with less; always looking for more automation and better quality. Billions of dollars are being invested in automated design workflows, construction, fabrication, modular and other innovations in our industry. Now that we've proven we can adapt to this new normal, the pandemic will put even more cost pressure on design efficiencies – driving automation in our workflows from early stage design through construction.

In many ways, COVID-19 is tecÚology's chance to shine and prove the investments we've made over many years have been worth it. Unfortunately, it seems that pandemics and disasters (like a few hurricanes and floods early in my career) are a silver lining for innovation and rapid acceptance of new tecÚology. In this sense, a pandemic can be a catalyst for innovation.

I remembered one of my favorite colleagues who wandered by my (studio) desk a few months back and commented "Roberta, I'm tired of the pace of tecÚology change" and I thought to myself "How do you think I feel?"

And that relentless beat never stops.

Roberta Kowalishin is Chief Technology Officer at DIALOG, a design practice with studios across San Francisco, Vancouver, Calgary, Edmonton, and Toronto.DIALOG's work includes designing for community wellbeing and urban vibrancy, health and wellness, transportation, education, arts and culture, residential, retail and commercial, as well as mixed-use solutions. Roberta brings out of the box thinking and technology experience to the AEC having previously in consumer news media as the CIO of NY-based Hearst Newspapers, and in cybersecurity and records management as director of privacy and forensics practices for PricewaterhouseCoopers. Roberta was also VP of technology at CapRock Communications, a venture-backed satellite network service. She uses her vast experience from other industries to help us learn and adapt to new and disruptive technologies.

Roberta holds an MBA from MIT, a BCom in Economics from McGill, and Harvard's graduate certificate in Cybersecurity as well as the CISSP (Certified Information Systems Security Professional) credential. She has been cited as a next-generation CIO by the Wall Street Journal and has been quoted in Business Week, Wall Street and Technology, and Information Week.