



**Designing the Future:
Priorities in Technology Investment**

DesignIntelligence®
Quarterly

Designing the Future: Priorities in Technology Investment

Our clients hire us for creativity and ideas that improve the way people work, live, and interact. Design decisions affect every component of the environments we invent through the creative process, whether it's the massing of a building, the façade, the landscape, the interior, the overall structure the mechanical or electrical energy efficiency, air quality, or people's happiness and well-being. But where and how much investment in technology is needed in a world where disruption and innovation are dramatically impacting the built environment? DIALOG has a high-level framework that helps us categorize our technology investments and evaluate where and when to invest as an integrated design practice.

ROBERTA KOWALISHIN

At DIALOG, we've created a framework for defining technology value and innovation that helps us evaluate and drive innovation across what we call "plumbing," "process," and "product." By plumbing, or what is sometimes called the 4th utility, we mean core infrastructure—compute, store and network hardware. Process describes the software and programs like computation, collaboration and computer-based, data-rich solutions for design. And lastly is the product, or the technologies and data we embed in the built environments we create. Great technology plumbing is table stakes to innovate at the leading edge. I believe what's more important now is to make sure our technology resources and priorities are focused on our design processes and our built product. Through innovation in our own firm's technology plumbing, especially moving technology infrastructure to the cloud, we are freeing up resources to focus on design processes and the technology that's needed for our clients' built products.

With this framework in mind, we consider the current needs of our designers, engineers, business developers and clients. For example:

- As a designer, I need to be able to perform rapid analysis on my design at an early stage so I can better understand the environmental and performance factors influencing the project.
- As a business developer, I need to be able to show and have my client's experience our designs through visuals that demonstrate our ability and expertise to deliver high-performance buildings.
- As a client and owner, I want to equip my designers with my latest facility data, so they can design with knowledge and insight into the performance metrics affecting operations.

Like most of the industry, we are heavily invested in the design *process* and technologies from basic BIM content, templates, objects and scripting to computational and generative research, design and collaborative workflows. Together, these tools allow us to rapidly generate and evaluate building performance throughout our designs.

At the same time, immersive 3D visualization allows us to engage our customers in new ways where we can be creative,

playful and fun with technologies the same way we do with paper and pen. It's not hard to see the huge possibilities for creativity and imagination in design that is orders of magnitude cheaper than building something and then figuring out it doesn't work. While the potential of immersive 3D visualization is huge, a caution to consider is that the technology itself is still evolving and less mature than many other technologies already disrupting the design and construction industry. We are currently building capacity at DIALOG but are being thoughtful to ensure we make the right level of investment in immersive technologies in our workflows.



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There is a natural tension between efficiency and design in our *process*. We must remember we're designers first; once we decide on a direction, getting the design into production naturally requires more focus and more efficiency. Digital project delivery is very important to make us and our industry more efficient, but it is also commoditizing our workflow. As designers, becoming more efficient gives us back time to focus on answering big design questions. It's important to remember that tools that build walls and doors faster bring overall efficiency to our clients and projects

but may not make us more strategic or better designers. We focus on a balance of investments across tools for efficiency and tools that transform design processes. This is an important conversation related to technology investment that each firm needs to engage in.

Data is being generated everywhere across process and built product technologies. In our design processes, we start by asking the question: What data can and should be measured across the lifecycle of our work in the design, construct, operate, and experience phases? What data do we have or want to get so that we can measure what will feed the design process? As designers, we can better focus on designing for optimal experiences when we set goals for a specific project at the outset. Whether it's sustainability or occupant well-being for example, how can we measure the experience in terms of wellness? How can we measure accessibility? How can we measure density, tranquility, lingering, mobility and any other goals for a place or space? What options do we have in building performance? How can landscape architects, interior designers, and mechanical or structural engineers push out an optimized design that simultaneously captures data to support a carbon-neutral goal? Can we also help the team better understand construction trade-offs that may need to be made in materials selection? Can we use this information to discover how it could be modified to fulfill the goal (or a future goal) in a different way? We believe we can.

We're defining key data elements and building a foundational database that will help us on the front-end as we ask the big questions. We want to be able to benchmark our early designs against generic and specific data from the goals of the environment. Establishing upfront data goals will provide direction for our collaborators both upstream and downstream. As our foundational database grows, we expect machine learning and artificial intelligence to play an important role. Many tech solutions for building performance, energy modeling, and carbon-neutral applications are available today, though most are still standalone or only partially integrated into our workflows. We've got a roadmap to integrate and build custom design solutions into our cross-disciplinary workflows and feed design data into our foundational database.



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While we innovate across the design process, our industry is facing incredible hype around “smart” buildings, communities, and cities and implementing technology in our built *product*. Today, there’s a big gap between the “smart” vision and the reality of designing and implementing an intelligent, safe, secure and ethical smart space. Owners, facility managers and construction companies are working in parallel or even ahead of designers as they implement sensors, internet of things (IoT) and technology platforms to measure the built environment. As designers, our work now includes technology design discussions earlier in the process, so that we define “smart” technologies and guiding principles that consider technology’s role as we design a built space before it’s being constructed. As designers, we help our clients turn goals for buildings, campuses or cities into data that can be measured across the lifecycle of a project, before technology platforms are even considered. Platforms designed to collect data at the building, community and city level then provide real-time feedback on our designs. Today, we see this as the third, longer-term priority for technological investment and an important new skillset that is brought in early in our design work.

Finally, as technologists in a design practice, we have a few additional key questions and principles that guide technology investment decisions.

Should we buy vs. build technology? I think this industry is still at a point where we’re trying to decide what to buy versus build. Technology that can impact the beginning of the design process is the area that I would advocate early investment in—we use an agile approach and do short projects with rapid visible progress. It’s very expensive to build your own tools, and strategically, we aim to buy (versus build) anything that helps us with digital project delivery and managing the contract and constructions phases of work.

We’re a design practice. To navigate the technology investment priorities, it is important to stay loyal to our goals and core competencies. First and foremost, DIALOG is a design practice. We leverage technology as an enabler to our cross-disciplinary design process. Technology that helps our design come to life in a more integrated, creative, effective and efficient way for our clients and end-users is the priority.

Are we leading or bleeding edge? It’s critical that DIALOG stay connected with university research and venture funded startups driving technology innovation in design and our industry. We want to benefit from innovation as quickly as possible. However, for our size of practice and the type of work we do, we need to carefully consider how and where we get involved in research and focus on finding and applying innovation to our project work versus a pure research agenda. Great recruiting and co-op programs are also critical to bring talent, new ideas and technology to DIALOG.

Responsible innovation in a time of disruption. As technology continues to permeate our design process and built products, other industries, investors and companies, especially big technology, are jumping in. From my perspective, this means there is a learning set that’s outside what a traditional designer might do, and designers and technologists have much to learn from each other to enhance the design process. Many designers bring experience, perspective and education that considers history, art and impact to community well-being. Innovators like Sidewalk Labs and WeWork have new design approaches to built technology and our traditional work. But as Facebook and big tech-building communities online have demonstrated, technology can bring many unintended consequences. Designers have a critical role in setting goals for technology in our built environments.

Responsible technology innovation understands that cities are our future; that carbon-neutrality and environmental

sustainability are paramount for the future. Our industry and designers especially are responsible for the big questions that create design for technology in built environments. For many, technology is a new world. But if we stand by, will the tech world create platforms aligned with the goals for the built environment, public and private space and community that we imagine? We need to place our bets on technology that will not only keep our own design practice healthy, but also advance what architects and designers can do globally. We believe with the right technology investment, great design can change the world.

Roberta leads DIALOG Technology and brings a breadth of strategic technology leadership and innovation to DIALOG's changing design-build work. From information technology (the IT plumbing of our business), to design technology (our processes and automation of DIALOG's design-build work), to seamless integration of technology into DIALOG built-environment products and communities, Roberta's broad technology experience allows DIALOG to look sideways from industries that are being

disrupted by technology: consumer news media (CIO at NY-based Hearst Newspapers), cybersecurity and records management (Director in PwC's privacy and forensics practices), and venture backed satellite network services (VP, Technology at Harris CapRock Communications). Her experience, passion for community well-being, and her desire to challenge people and companies to re-invent how technology interacts with their environments and work helps DIALOG, as a design firm, simplify and create trusted solutions and new models of practice, design and customer service with collaboration across geographies, disciplines and project teams.

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