



ELEMENTS FROM SHUTTERSTOCK

the office of the **FUTURE** is here

Technology is making offices happier and more productive places,
and changing how contractors design and build them

+
by **STEVEN YODER**

Technology is changing the work world so fast that it's hardly accurate to talk about a single tech revolution anymore. Instead, creative innovation is taking several paths simultaneously, whether in virtual reality, drones, robotics, geomapping or the Internet of Things. And those changes are altering the way workplaces get designed, built and used.

"Traditionally, workers were out there using measuring tape running off a wall," says Tom Cardenas, president at California Surveying and Drafting Supply. But now a plumber or engineer doesn't have to take out a tape — instead, they load up the building plan on a field computer and take along robotic "total stations" (layout instruments on tripods) that direct the trades-person to the precise locations where features like pillars and doorways should go. "You used to be able to layout only 50-100 of those points in a day. Now that's easily 600 or more," Cardenas says.

That's not all: a few robotic bricklayers are working alongside humans to reduce the physical demands, and robotic loaders

and self-driving trucks are being deployed in a few places.

New technology is changing how new workspaces get built and how building designers conceive of their creations. Increasingly, office environments are designed to better promote health, keep workers comfortable and make collaboration easier. And all three are saving companies money while boosting productivity.

Layout tools haven't just changed for plumbers and engineers — architects are using new equipment to get far more accurate measurements, faster. At Corporate Design Group, a commercial interior design firm in Roseville, technicians use a laser measuring system to walk around a building and produce accurate digital layouts and photo documentation of as-built space, says Design Director Christine Horton.

"We're drawing it as we're measuring it," Horton says. That means they can measure 10,000-20,000 square feet in a day, send the data off to their AutoCAD center and "typically in a couple of days the

"WE'RE MOVING AWAY FROM PEOPLE HAVING SPECIFIC SPACES THAT THEY CALL THEIR OWN, I.E.: OFFICES OR CUBICLES. WE'RE DESIGNING SPACES THAT ALLOW FOR PEOPLE TO COME TO WORK AND OPERATE AND WORK WITHIN ANY AREA WITHIN THE BUILDING."

- Ken Hurst, president, Valley Communications

layout is back," she says — in half the time previously required.

Because the system has the latest Building Owners and Managers Association measurement standards built in, it captures rentable space that's often missed in layouts, like patios and rooftop decks,

Horton says. That's why CDS' laser-system drawings typically result in a 3-5 percent gain in rentable square footage, according to the company.

Hi-tech wearables have also come to the construction industry. One smart helmet puts work instructions, a video recorder, object recognition tools and 3D mapping right on the visor. Safety vests with integrated GPS alert workers when they're entering danger zones on a site and let managers capture their locations to identify logistical problems.

BETTER COMFORT = LOWER OVERHEAD

The trends in office design have also shifted in response to technology. In an age when more people prefer to work from their kitchen table, it might seem odd to revive the office as a mecca of contentment. But that's exactly what Christopher Wilson is after. A senior principal and practice lead

Borges ARCHITECTURAL GROUP
borgesarch.com 916.782.7200

creating spaces where people come to life

at the Sacramento office of architecture firm Stantec, Wilson says his goal on every project is for employees to say, "I love my job. I'm not sure why, but I do." Wilson wants that underlying reason to be that the employees office is a place where they feel healthy and comfortable.

Picture this: As you approach your office building in the morning, you use your phone to get your workspace ready. An app turns on a seat warmer in your desk chair along with a foot warmer mat and adjusts the room temperature, all before you get there.

Those thermal tools can make a huge difference in a building's energy costs, according to UC Berkeley's Center for the Built Environment. In surveys of workers, most report finding their thermal environment — heat, cold, humidity and so forth — uncomfortable, despite the massive sums spent on heating and cooling in commercial buildings. CBE has been testing "thermal comfort systems" that give individual workers the power to control the two most critical elements: cooling the head and providing warmth to the feet. With individuals controlling their own temperature with relatively small, low-wattage devices, the building's mechanical systems can run at lower settings. One CBE study found a system like that can save as much as 40 percent in energy costs, making a strong case for ROI of these features. All of that isn't off in some distant future — Wilson has clients whose offices have those features now.

Some of Wilson's clients have also installed — for those in non-window offices — light bulbs that change color to mimic the sun's own color shifts throughout the day. Why? Light cues our biological clocks, which tell us when to wake, eat and sleep. When our office light matches those circadian rhythms, we have more energy during the day and sleep better at night. A 2010 report from the City, University of London's Centre for Performance at Work cites several studies suggesting that lighting influences workers' cognitive performance, problem-solving abilities and health.

From thermal tools to lighting and beyond, building owners may be overwhelmed by the number of proprietary systems available to them, but Valley Communications President Ken Hurst, the tech partner for the Golden 1 Center and the Sacramento Kings corporate offices, suggests that simplicity is coming in the form of smart buildings. "The introduction of the Internet of Things is allowing all of those different systems to communicate and share the data points that they pull into application based Internet of Things programs that are pennies on the dollar in cost, but create the ability for a building to tell its owner or its occupants exactly what's happening to it before it happens," Hurst says.

THE QUIET OPEN OFFICE

New tools are also offering staff the opportunity for easier collaboration on projects. Huge flat-screen monitors on conference-room walls let team members share the contents of their laptops with a roomful of people. Special paint turns entire walls

Which Tech Upgrades Are Worth the Investment?

When existing tools consume staff time that a business could be using elsewhere, it might be time to consider an upgrade. With all of the options, how do business owners decide which investments are worth it? Essentially, it comes down to a hard-nosed look at return on investment.

Tom Cardenas, president at California Surveying and Drafting Supply, says contractors should be skeptical of the lure of higher-tech equipment just because it seems cutting edge. "Customers don't necessarily need all of the bells and whistles," he says. Contractors should evaluate whether a new product is worth the money by assessing how long jobs take using the existing equipment and how much less time they'll take with the new tools.

Many calculators — such as one by the nonprofit Idealware — are out there to help. All generally focus on comparing the cost of doing nothing against the cost and returns on the technology investment. The cost includes the price of the hardware and software, the cost of staff time to get the new system or tool up and running, the outlays for any outside consulting that will be needed, projected ongoing support costs and so forth. The returns usually come in the form of higher revenues or reduced costs. Business owners should calculate how long it will take for the returns to pay for the cost. Staff who use the existing technology should be involved in making the calculations to ensure both more realistic estimates and staff buy-in on the decision.

into dry-erase boards. New versions of smart glasses are popping up that let office workers seamlessly record, say, the contents of a conference presentation to send to their team back at the office.

With laptops, Wi-Fi and ever-less paper, new design layouts are fostering mobility around the office. "We're moving away from people having specific spaces that they call their own, ie: offices or cubicles. We're designing spaces that allow for people to come to work and operate and work within any area within the building," Hurst says, who put the concept into practice at the Kings corporate offices through 17 next-generation wireless access points which allow for uninterrupted service as employees move through the office. "These spaces allow you to move untethered, meaning no cables, to work with those who you must work with, in an environment that is open."

Mobility and better health is a recurrent theme in new office tech. No wonder

— a landmark 2010 study found that companies' medical costs fall by more than \$3 for every \$1 spent on workplace wellness programs. That's why companies are going beyond exercise program incentives to get workers out of their chairs. It's not just height-adjustable desks — adjustable conference tables let people have a 10-minute stand-up meeting, says Horton. Some of Wilson's clients now have walking workstations in conference rooms that let people move during discussions. Those are increasingly replacing pool tables and ping-pong tables for meetings, which are more distracting, he says.

But flexible floor plans don't work without enough privacy. "You need the furnishings to support that," says Horton — for example, movable walls and sound-absorbing partitions. "If you have the right sound absorption material between two spaces, you can have a call center on one side and a private meeting space on the other," she says.

And workers can get privacy for phone calls even with a fairly open floor plan if they're using sound-absorbing furniture — think high-backed lounge chairs that feel more like cubicles. Sound-absorbing print art on the walls and partitions also keep noise from bouncing around, Horton says. To get privacy in glass offices, staff use push-button controls to tint otherwise clear smart glass windows.

All of those represent investments in a company's human capital. As technology makes work sites and workplaces ever more interesting, Monday morning dread may become something like CDs and phone booths — an antiquated concept for future generations to study. ■

Steven Yoder writes about business, real estate and criminal justice. His work has appeared in The Fiscal Times, Salon, The American Prospect and elsewhere. On Twitter @syodertweet and at stevenyoder.net.



WITH SO MUCH COMPETITION, LET US HELP YOU STAND OUT

**Mention ad for
25% off all
In-House
printing services**
Expires April 30, 2018



With 3 locations in greater Sacramento and the fastest, most advanced full color wide-format printers, Century Graphics provides its clients with unsurpassed service and quality at the guaranteed lowest prices.



CENTURY GRAPHICS

Window & Fleet Graphics | Signage | Vehicle Wraps | Banners | Custom Wallpaper and More!

El Dorado Hills 916.941.1895 | Roseville 916.788.8400 | Sacramento 916.344.0232