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Mayfield CXO Network: IT Priorities and Return to Work 2022-2023

What's Next?

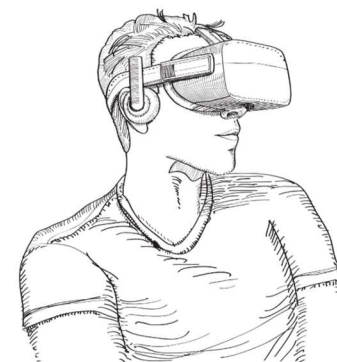
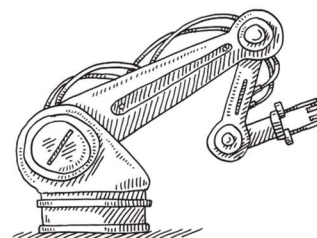
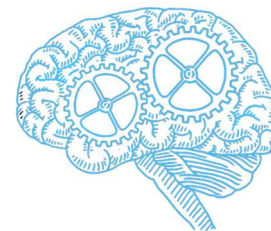
It's been almost three years since the start of the pandemic, and at this point, we're well past its zenith. Businesses have begun to finalize their strategy around the nebulous "future of work" topic - updated working environments, creating new business models for the new consumer, and bracing for a down market.

Going into 2023, we kicked off our perennial report to get input from our CXO Innovation Network on these challenges and more. This year we've gained insight from **over 225 organizations** on how they're thinking about hybrid working models, IT priorities, talent, budget, and more. Thank you again to those of you who participated.

The Mayfield CXO Network is made up of 2,000+ CIOs, CISOs, CTOs, CFOs, CMOs, CROs, Chief Sustainability Officers, and CHROs from companies around the globe (ranging from 3M to Williams Sonoma!) who participate in meetings, forums and events with Mayfield to learn about emerging trends and technology. We believe the process of peers learning from one another with the added input of a venture capital perspective is an ideal way to share insights and best practices. Our core belief is to thoughtfully serve this community as a resource, and to provide useful and timely information that benefits our CXO Network members directly in their own roles as leaders.

We learn from your input we and hope we've gathered peer feedback in a way that is useful to your team in 2023 and beyond.

-Gamiel & Shelby



Key Overall Takeaways

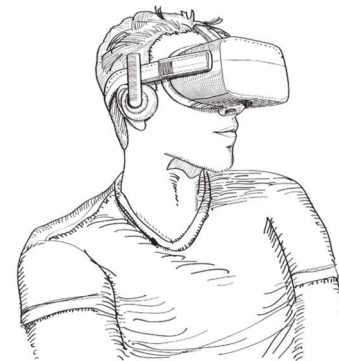
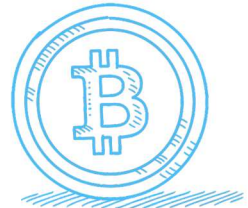
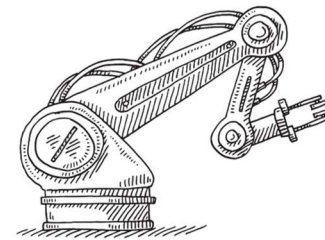
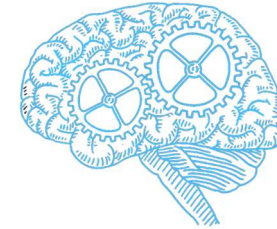
97% of our network will offer **hybrid or remote**

48% surveyed offer **>50% remote 3+ days per week**

31% believe that **developers, UX, and QA are the most in-demand talent** (a minimal lead over data engineering and cyber, at 30 and 27% respectively)

62% **expect larger budgets**, top spend priorities are analytics/visualization (79%), AI/ML tooling (72%), collaboration tooling (68%), trust and privacy (68%), and breach detection (67%)

74% **are using at least 50% startup IT** (as opposed to legacy spend)



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Return to Work

What are the prevailing trends?



Return to Work

97% Surveyed Offer Hybrid or Remote

As the pandemic began to wind down, looming labor shortages continued to empower employee choice. With cuts now happening in tech and other sectors, some c-suite executives have begun to re-evaluate policy around hybrid and remote work, despite employees preferring approaches that focus on productivity and autonomy. There's a real bifurcation happening here with some leadership calling for an in-office culture as the most effective way to move forward, with others abandoning the model entirely, believing the future lies elsewhere. In the short run, companies embracing remote and hybrid may have an advantage in recruiting and retaining talent, but it's still unclear how that will play out over the next several years, and if a deep recession will cause more companies to re-evaluate their policies. **Our network weighed in with 97% of respondents offering at least some form of hybrid or remote, up from 78% a year ago**, when we last surveyed this audience.

Now that the dust has started to settle, has your company formalized a new return to office strategy that defines who can work remotely (for employees that can work remotely) and how offices will be used? How is the future of work being defined at your company?



Choice Hybrid

Employees choose which days to come into the office, and which days to stay remote. This leaves decision-making up to individual teams. **Up** from 40% in our last survey (1 yr ago), a 25% increase in adoption



Structured Hybrid

Employees will return to the office a limited number of days per week. Unlike choice, hybrid is guaranteed to contain an in-office component and the days are set. **Down** from 38% in our last survey (1 yr ago), a 16% decrease in adoption



Remote Priority

100% remote for all employees, excepting those that are required onsite due to the nature of their roles. **Up** from 6% on our last survey (1 yr ago), a 150% increase in adoption



Back to the Office

Goal is to have the majority onsite with very little remote. **Down** to 3% from our last survey (1 yr ago), where 12% of respondents were bullish on a complete return to office, a 75% decrease in adoption

Return to Work

48% Surveyed Offer >50% Remote 3+ Days

We got a lot of feedback on our return to office questions including best practices (plus what *wasn't* working). A few themes that really stood out were:


- **Trust is Key** - Trusting teams to self-manage and determine how much in-person collaboration is necessary has enabled larger organizations to avoid one-size-fits-all solutions that may be cumbersome for some types of employees but not others
- **Purpose-Driven In-Office Days** - Regardless of what strategy a company is employing, it's critical that in-office days are purpose-driven and collaborative - otherwise teams are losing productivity, and simultaneously, employee satisfaction
- **Diverse Talent Depends on Hybrid Availability** - Firms adopting a more rigid stance on in-office policy will lose out on diverse talent including women and minorities
- **The Recession Could Make Waves** - Some companies are waiting to see how the recession reveals itself. If it's a light one, many will continue remote. If it's deep, there could be a pendulum swing back to the office.

Has your company formalized a new return to office strategy that defines who can work remotely and how offices will be used?

 **48%** - >50% will be working remote at least 3 days per week in 2023 and beyond

 **30%** - 20-50% will be working remote at least 3 days per week in 2023 and beyond

 **15%** - 10-20% will be working remote at least 3 days per week in 2023 and beyond

 **7%** - <10% will be working remote at least 3 days per week in 2023 and beyond

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Remote Work Shortcomings

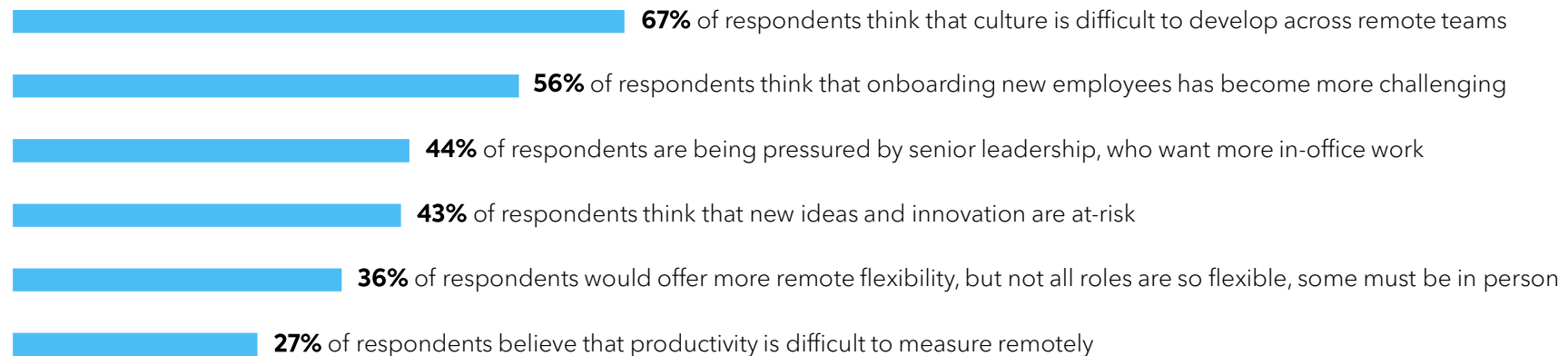
Where are the gaps?

Remote Work Shortcomings

Where Are the Human Gaps?

It's clear based on these survey results, that our network, at least, is trending towards more remote work. And it's not just us, LendingTree did a US-wide survey in both October 2021 and 2022 where they found that the percentage of people who've worked from home has remained relatively stable over the past year. 29.1% of Americans worked from home in October 2022, compared with 29.5% in October 2021 – a 1.2% year-over-year dip.¹ Similar trends can be seen in many other reports – including Stanford professor Nick Bloom's research. He found that the average number of days worked from home per employee has been holding steady at ~2.35 over the last year.² Since it seems like the hybrid working model is starting to become table stakes, we thought it would be useful to ask our participants what issues they're seeing around this new mode of working and where the gaps exist today. We started with a few pre-populated answers, but many participants provided helpful color here as well.

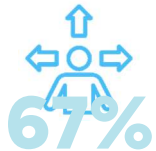
Remote Work Shortcomings: What are the issues you're seeing around this new model, or return to work (if there wasn't a change)?



Remote Work Shortcomings

The Top 4 Human Gaps

Remote work, particularly maintaining company culture, can be a huge challenge. Many managers struggle to stay connected and engaged with their teams in a virtual setting. Communication can become stunted and cross-functionally nonexistent. Whatever may have existed prior is reduced to lonely and disconnected individuals behind screens. Yet, many organizations are experiencing the opposite: employees thriving under flexible work, evolved management styles, and broader, more diverse, talent pools. It's becoming increasingly clear that forward-looking corporate cultures will be able to maintain a hybrid workforce on a permanent basis, but many challenges still must be addressed – not just in terms of technology, but also leadership. The top four discussed by our network were:



Culture is Difficult to Develop

- Employees can feel more disconnected in a remote environment
- It's more challenging for individuals to meet a broader cross-section of colleagues
- Personal connections and casual interactions suffer unless thoughtfully planned for



Onboarding New Employees is Harder

- Development of junior resources is tough
- It's harder to instill company culture and shadow someone in a virtual environment
- It's easier to maintain old relationships online than it is to build new ones



Pressure from Senior Leadership

- Some firms have a big push from the c-suite to see more people in-office



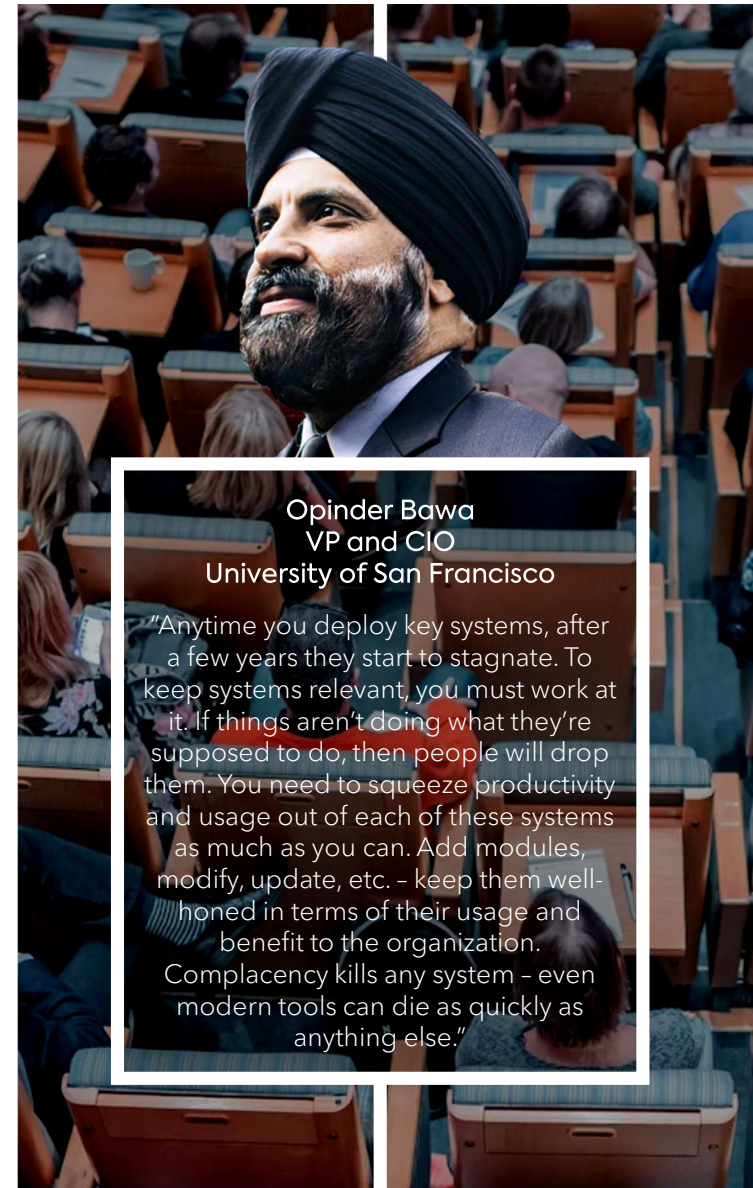
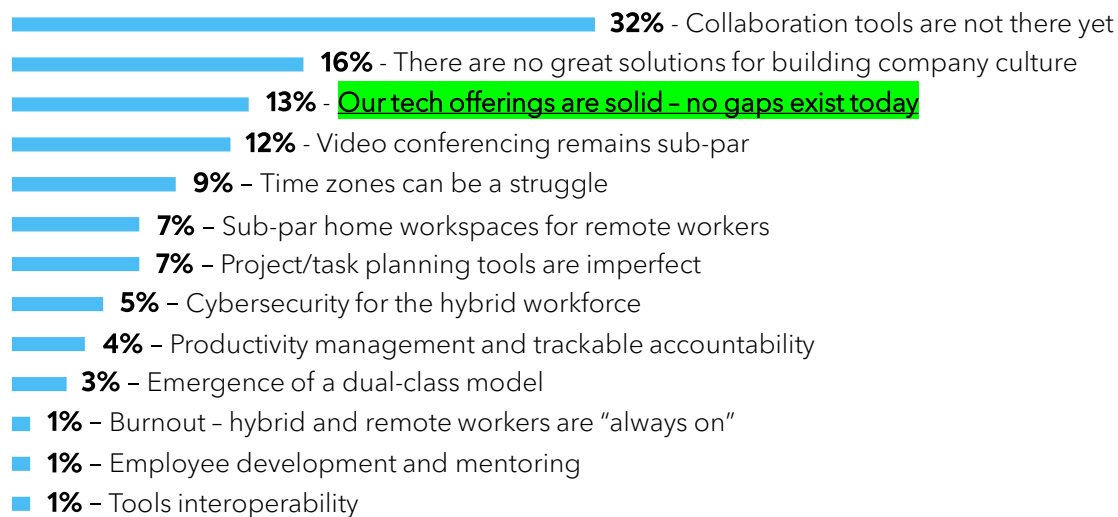
Innovation is Tough

- Cross-team collaboration and problem solving is down
- Virtual collaboration and whiteboarding tools are not there yet
- It's easier to freestyle in-person than in a virtual setting

Remote Work Shortcomings

Where Are the Tech Gaps?

Remote and hybrid work have most certainly been bolstered by improvements in digital technology over the last 2-4 years. Yet today, gaps still exist that can hinder productivity, collaboration, and human cohesion. Where are the areas that technology is missing today? We asked our network to chime in free-form to get an idea of what is currently top-of-mind for our participants:



Opinder Bawa
VP and CIO
University of San Francisco

"Anytime you deploy key systems, after a few years they start to stagnate. To keep systems relevant, you must work at it. If things aren't doing what they're supposed to do, then people will drop them. You need to squeeze productivity and usage out of each of these systems as much as you can. Add modules, modify, update, etc. – keep them well-honed in terms of their usage and benefit to the organization. Complacency kills any system – even modern tools can die as quickly as anything else."

Remote Work Shortcomings

Collaboration Tools

Collaboration tools were far and away the number one gap that came out of this free-form question, with almost one-third of respondents writing it in. One of the biggest pitfalls we've heard about with collaboration tools in general are struggles around adoption, rather than the tech: Is everyone using the tool (including management)? Does everyone understand how to use it? Is the tool's usage subsequently enabling effective collaboration? A collaboration tool won't necessarily transform a team into great communicators – there's a human element here as well ("a fool with a tool is still a fool"). Still – the options today are not without flaws. Here were some of the core complaints from participants:

1. **Choppy transitions** – Tools today make it difficult to transition seamlessly from having a conversation to activities like sketching, brainstorming, or whiteboarding
2. **Tools today have a very high learning curve** – They also cost a lot and suffer from warring user preferences or disengagement
3. **Whiteboarding and visual design still falls short** – Even with newcomers on the scene like Miro – it's not quite the same as the in-person experience. This may hurt innovation/ideation as well as brainstorming, contributing to teams still needing some kind of in-office involvement
4. **Leadership is not interested in learning new tools** – This can lead to a disconnect between management and employees in a remote environment. As one anonymous participant put it:

"We've had global operations from the start, and remote work is only perceived as an issue from higher up as they think people need to be "seen." Our leaders need more training and experience in effectively using the collaboration tools we have at our disposal to engage remote workers in activities such as brainstorming."



Joan Holman
CIO
Clark Hill

"Solving collaboration is critical for organizational success in the long term. CIOs must stay on top of what's next. Even if a given org isn't using a specific technology, clients might be, and so it's important to stay on top of trends in order to provide excellent client service. Furthermore, the pandemic raised the perception of technology significantly in most organizations. At a law firm, that's not what you historically would have thought about first, but now there's new perspective around the value technology can bring to the organization. CIOs want to be a business leader with a tech focus, not just a tech leader. Tech is a tool that leaders are using to achieve business outcomes."

Remote Work Shortcomings

Collaboration Tools

So what *are* some of the new solutions our networks has currently been evaluating? These were the most popular responses:



A visual collaboration/whiteboarding platform that is designed to allow distributed teams to work effectively together. Support includes running brainstorming sessions and workshops, to planning projects and designing new products and services. <https://miro.com/>



Another collaboration and brainstorming tool with a focus on comprehensive diagrams that enable remote teams to quickly share ideas in a virtual, collaborative space. A “thinking canvas” that teams can use to organize their ideas in lists, flowcharts, frameworks, or drawings. <https://www.mural.co/>



Innovation-focused collaboration. Enables companies to run multi-team live workshops with ease - inviting participants to branded virtual studios and guiding them through a structured innovation process (+expert training and sprint coach certification). <https://sprintbase.io/>






Another collaborative innovation platform that encompasses the whole innovation lifecycle with in-depth market insights, ideation at-scale with employees, customers, and partners, and the empowerment of teams to use these ideas to improve processes and make better products. <https://www.braineet.com/>



Enables teams to easily create a database that holds the information that matters for their work, which can then be used to power the visualizations, processes, and integrations that make up a unique custom application. <https://www.airtable.com/>

Remote Work Shortcomings

Collaboration Tools (Continued)

Figma	Collaborative tool with a focus on interface design. https://www.figma.com/
 Mentimeter	Interactive presentation software that enables teams to create truly unique presentations. Uses a wide range of interactive slides to pose questions, gather feedback, and connect with the audience. https://www.mentimeter.com/
 smaply	Journey mapping software for teams to centralize and coordinate customer experience insights. https://www.smaply.com/
 loom	Simple, asynchronous video-sharing. https://www.loom.com/

Remote Work Shortcomings

No Solutions for Culture

The second most remarked-upon issue, with 16% of participants chiming in, was a lack of effective tools available for building company culture. And unlike with collaboration, where tooling was considered incomplete or poorly used, many participants cited a complete dearth of tools for culture-building, period. Today, huge gaps appear to exist in relationship building, remote offsites or social events, remote team building, and informal information sharing. Without building bridges between employees there is reduced idea exchange, mentorship opportunities, and open discussion, so figuring out how to nail this remotely – whether via process or tech – is a high priority for many companies.

Furthermore, the problem only compounds when things need to happen cross-functionally. It can still be somewhat manageable to stay connected within a small team, but having to then work with other remote teams, perhaps with time zones thrown into the mix, creates a far more apparent breakdown. The biggest gap can wind up being the most obvious: “I really want to talk to this resource and now it has to be planned” (vs. just walking over to their desk or running into them in the hallway). The collisions have gone away. Furthermore, with hybrid and remote working models, online burnout is more prevalent, leading to pushback against forced socialization.

Aside from just the tooling, more deliberate and proactive effort needs to come into play: processes that may have happened automatically (or at the very least, more naturally), including recruiting, onboarding, career development, performance reviews, collaboration, and project management may need to be re-imagined to better suit current needs.



Neil Goodrich
Chief Innovation Officer
Envista Forensics

“Something new is coming, but we haven’t quite figured it out. Pretending the old is coming back or just doing nothing isn’t going to cut it. What is the next version of the human engagement model that results in innovation, career success, cultural retention, and better business outcomes? Competing for the **next human engagement model** may be the next real long-lasting battleground.”

Remote Work Shortcomings

Culture-Building Tools

So what *are* some of the new solutions our networks has currently been evaluating? These were the most popular responses:



Learning and development automation – assisting with remote compliance, onboarding, manager training, partner training, sales training, customer education, and more. Useful tooling for remote onboarding. <https://www.loop.co/>



Slack integration for teambuilding and engagement. <https://www.donut.com/>



Peer-to-peer rewards allow managers and employees to publicly recognize each other's contributions and performance, then reward each other with bonuses or gifts. Users can create company goals and milestones, and publicly display the badges earned by employees for achieving these goals. <https://www.motivosity.com/>



Digital gift cards for employee rewards. <https://wegift.io/>



Unforgettable team-building experiences – a platform that contains a huge number of team-building, DE&I, and professional development ideas and enables companies and teams to instantly book truly memorable experiences. <https://www.withconfetti.com/>

Remote Work Shortcomings

Video Conferencing Remains Sub-Par

The third most common gap mentioned was video conferencing, with 13% of participants considering this to be a major issue. Complaints here largely fell into three primary categories:

- 1. Video and audio quality vary a lot** - Some employees may have poor internet or echo/feedback (particularly when joining from multiple devices). This leads to a poor conference experience for everyone involved, especially when it's a larger group and this happens with multiple people
- 2. Employees may disengage in a remote setting** - Many still don't want to turn on cameras or will use remote meetings as an excuse to tune out. However, this was a point of conflict in our respondents, and may not be so much of a tech issue as it is a leadership or methodology issue. If people are zoning out in meetings - perhaps there are too many or they are not needed in every meeting?
- 3. Video conferencing in a hybrid world still does not allow for democratized experiences** - The yet-to-be-solved challenge is making a hybrid conference room experience a good one for all involved

That being said, there are a lot of interesting new solutions coming to light in the video conferencing space, so this is one area we can perhaps be a little bullish on. Furthermore, business is global these days, and remote or not, companies are going to need better solutions going forward. As one respondent put it:

"The real answer is to stop thinking about remote vs. not and understand that most teams, including your ecosystem partners, are not all co-located (and yes, some may be in their homes or the other side of the planet). That means next-gen knowledge management, communications, asynchronous intelligence, and engagement all need adoption and attention. We need to think of talent as migratory in a broader sense and work on human optimization, not capital management. Motivation is what helps you win fights, and most approaches today are ill-conceived and poorly run. Mindset is the biggest issue - not technology"

Remote Work Shortcomings

Video Conferencing Tools

So what *are* some of the cutting-edge new solutions our networks has currently been evaluating? These were the most popular responses:



A noise cancelling app that removes all background noises for incoming and outgoing calls. The app works with all conferencing and recording apps out of the box. It also supports any headset and microphone (built-in, Bluetooth or USB). <https://krisp.ai/>



AI 4K webcam with smart software including color-boosting and framing. <https://getlumina.com/>



A whiteboard camera for video conferencing rooms. <https://www.logitech.com/en-us/products/video-conferencing/room-solutions/scribe.960-001332.html>



A collaborative tech company revolutionizing how the world communicates through inclusive and immersive video experiences. Built for modern organizations, the goal is to empower hybrid and remote teams with their collaborative technology and product suite. <https://owllabs.com/>



A simple and compact meeting room device for Zoom or MS Teams. It's perfect for bringing superior-quality audio and video to meetings or focus rooms for up to ten people. Neat Bar can be mounted above or below one or two monitors, and comes with Neat Pad, a dynamic touch screen, which can be used to control meetings or display room availability outside the room. <https://neat.no/>

Remote Work Shortcomings

Differing Time Zones

9% of participants brought up time zones and asynchronous work as being a major challenge today for their increasingly remote workforces. Global teams of employees may now work from different regions, or even different continents. This can become a struggle with a lack of real communication and team bonding, or collaboration at odd hours. Furthermore, proximity bias also tends to come into play with major advantages for employees tied to the home region. Some suggestions from the network on how they are countering these issues included:

- 1. Establishing a framework for teamwide meetings** - This should be based on maximum convenience and overlap
- 2. Having a smart hiring approach** - When hiring remote employees for your company's requirements, it's important to communicate the challenges of working in a remote environment with potential candidates. There needs to be transparency around the overlapping time zones, mandatory syncs with certain team members, and independent project work. This is where evaluating the soft skills of potential candidates comes in handy
- 3. Robust project management tooling** - On asynchronous teams this is practically mandatory to keeping everyone on the same page, but beyond just the tooling, there also needs to be a strong process and methodology behind its usage
- 4. Avoiding off-hours comms** - Sending messages to employees after they have signed off leads to stress, distraction, and backlog. Unless it's a core function with an extremely high priority, communication should be saved for when employees are available and on-task

Remote Work Shortcomings

Time Zone Management Tools

So what *are* some of the cutting-edge new solutions our networks has currently been evaluating? These were the most popular responses:



Clockwise optimizes teams' schedules to create more time in everyone's day - including coordination with distributed teams. <https://www.getclockwise.com/>



Time tracking software with invoicing - an easy way to track time across projects with instant reports, seamless invoicing and payments, and integrations with a broad variety of tooling. <https://www.getharvest.com/>



A slack app to help keep track of team time zones with features to easily coordinate meetings, calls, and other activities across distributed teams. <https://www.teamtimezone.com/>

Remote Work Shortcomings

Subpar Workspaces

7% of participants mentioned subpar home workstations as being a recurring issue for remote employees. Many remote and hybrid workers (especially those just entering the workforce) don't have a great place to fully concentrate on work-related tasks. This could mean a variety of things: rooms or desk setups falling short on being ergonomic and sound-isolated, or troubled internet connectivity. Matching an office set-up which may involve multiple monitors, a docking station, home network performance, etc. can be a challenge. Even years after switching to remote work, many employees are still working in make-shift home office environments that aren't suitable for maximum longer-term productivity. And this goes beyond just technology - there's also a need to help improve physical health and well-being as remote work also removes the activity levels that many had while previously commuting to their office space. Looking at both what tech as well as mental/physical health can do to productivity levels over longer periods of time is going to be crucial - many offices focus too much on the tech and not enough on the human factors.

Unfortunately, participants didn't have a lot of suggestions in this category but a few ideas we've seen include:

- 1. Stand up adjustable desks** - These don't need to be expensive, there are varieties that convert a regular desk into a "stand-up" version with no motor (for example Vivo's adjustable stand-up converter)
- 2. Ensuring that employees are using ergonomic chairs** - Many chairs do not offer the support needed to keep employees comfortable and well-positioned
- 3. Laptop Stands** - Useful for both posture relief and heat management
- 4. Surge Power Strips** - Useful for keeping power at a safe level and protecting several expensive pieces of hardware at once
- 5. Noise-Cancelling Headphones** - Eliminating distractions is a priority for most work from home employees - and these take care of the noise element
- 6. Printer-Scanner** - Even for employees that work with digital products, there are teams where even they may need to work with paperwork and documents

Remote Work Shortcomings

Project Mgmt Tooling

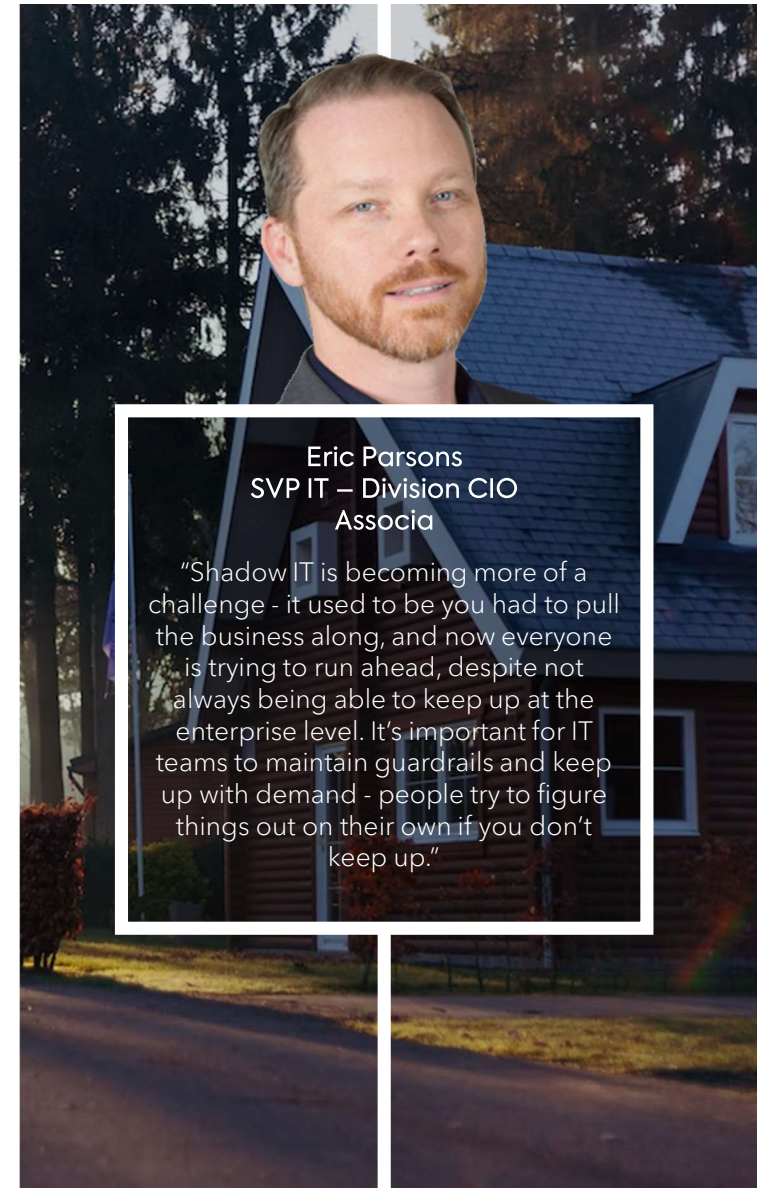
7% of participants mentioned having to deal with subpar or insufficient project and task planning tools. This has created gaps around productivity and accountability tracking, as well as creating friction with interconnected projects.

This is a bit contentious though: similar to team collaboration, project management is as much about process as it is about technology, and poor leadership can sink even very useful software.

Modern tools tend to excel at updates, rapport building, and managing goals, but are often complex or expensive, with methodologies falling apart when the team itself hasn't been well trained on how to use them effectively. Furthermore, on some platforms, security control can also be a challenge - with restricted project data requiring a closer look at access management. The largest initial hurdle seems to be consistent adoption of these new technologies, as opposed to the technologies themselves, which ultimately comes down to issues with remote management. As one respondent put it:

"The gaps for remote work are not in the technology, but the ability for staff to use the technology effectively. Where employees could fall back on direct interactions to overcome lackluster computer skills in the past, these employees are now falling behind while working remotely."

Shadow IT is also a struggle here - this is an area that can easily get out of hand with teams using their own free tools, or smaller suites, resulting in a broader lack of continuity across the organization.



Eric Parsons
SVP IT – Division CIO
Associa

"Shadow IT is becoming more of a challenge - it used to be you had to pull the business along, and now everyone is trying to run ahead, despite not always being able to keep up at the enterprise level. It's important for IT teams to maintain guardrails and keep up with demand - people try to figure things out on their own if you don't keep up."

Remote Work Shortcomings

Project Management Tooling

So what *are* some of the cutting-edge new solutions our networks has currently been evaluating? Below are the most popular responses from our survey participants (Jira and Confluence were the most-mentioned but as they are not particularly new tools, they are not highlighted below):



A cloud-based platform that allows users to create their own applications and project management software. It's a work OS that provides teams with no-code building blocks so that they can better shape their own workflows. <https://monday.com/>



Meeting management software – a tool to help enable productive team meetings and meaningful 1:1s, build collaborative meeting agendas, record decisions, and keep each other accountable. <https://fellow.app/>



Mission control for remote teams – connecting distributed teams to their work and each other with daily check-ins, real-time data, and live dashboards. <https://statushero.com/>



A roadmapping tool and lighter-weight Jira, better suited for smaller organizations. <https://www.aha.io/>

Remote Work Shortcomings

Other Interesting Tools

These tools were mentioned several times in responses, but don't fall into any of the clear-cut gaps:



Hybrid work software to enable the coordination of people, space, and time (desk booking, room booking, team coordination, visitor management, etc.). <https://kadence.co/>



Creation of hardware environments that allow remote teams to access and manage complete systems. <https://www.realvnc.com/en/>

Remote Work Shortcomings

Honorable Mentions



Cybersecurity

It's an ongoing struggle to adapt to changes in security for hybrid and remote workers. Concerns around ransomware, file sharing, unsecured wireless, and personal devices are all top of mind



Dual Class Model

Personnel with more "face-time" tend to advance more rapidly than their remote counterparts, creating a kind of dual-class employment that can impact women and diverse employees the most heavily



Tooling Interoperability

Many tools today (ranging from project management to less overarching functions) struggle to connect seamlessly into useful workflows



Employee Development

Helping employees grow and develop in their careers is top of mind for many firms given the war for talent as this increases productivity and improves retention



Burnout

Hybrid and remote workers are "always on" which drives higher stress levels and turnover



Hiring and Onboarding

Remote onboarding remains a challenge - how can new remote employees get the full experience? (particularly younger hires who need more guidance)

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Budget and Hiring 2023 Forecasts

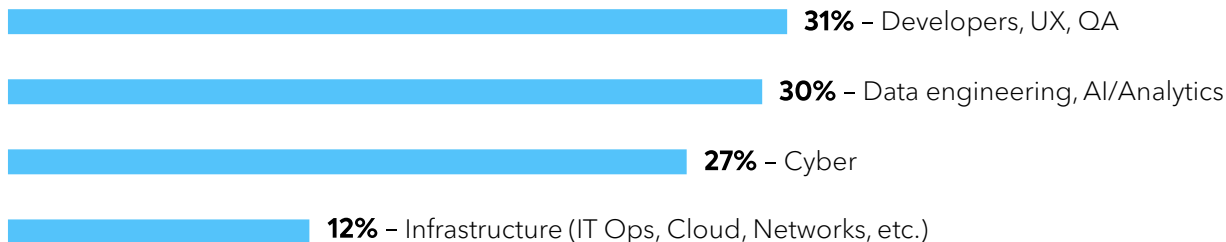


Let's Talk About Talent

It's nothing new that companies are facing talent shortages in technology-oriented roles. The pandemic dramatically accelerated the need for the digitization of both internal and line of business functions, and as traditional industries have begun to embrace this new paradigm, there simply haven't been enough workers to go around. This has been further exacerbated by pandemic burnout, and deep pockets in the Bay Area. In 2022, KPMG surveyed over 2,000 technology executives³ and found that a lack of talent is the number one obstacle preventing the adoption of digital technologies.

But with heavy tech layoffs in the last several months, the paradigm appears to be shifting back towards a more employer-dominated market (with potential opportunities for employers to snag higher quality talent at a discount - particularly those who are open-minded about location). We asked the network in what roles hiring has been the most difficult - and the responses were fairly mixed - indicating that the shortage is broad, and many different roles have been impacted. A number of comments were also made to this effect - that hiring has remained hit or miss and higher salaries have been needed across the board.

Talent and skilling continues to be a problem - What areas are the most in-demand?



Eric Schvimmer
CTO
Bloomberg Media

"Staffing remains the highest pain to solve, but there's some optimism that opportunities are arising to staff up, like '08-'09, when it was possible to build enduring teams for the future. What's crucial though is making employees and developers happy in their jobs (and making their jobs easier) so that they can focus on the work and not on the things that distract them. Removing that friction is about both productivity as well as retention. If you're more productive it benefits the business. The little things really add up and that's what helps you retain people. You don't want to lose people as fast as you put them in."



Sathish Muthukrishnan
Chief Information, Data and Digital Officer
Ally

"Everyone in the organization need to think like an owner. It is no longer a handful of people at the top deciding what needs to be done and asking the rest of the organization to execute. It can funnel all the way down to a single person defining a part of a user experience. They need to understand how their piece adds value to the overall equation and contributes to the goals of the organization. For example, consider someone building a FAQ page – they need context: How can that page lead to converting a prospect exploring a product offering? How can this behavior then fit into the company's intelligence engine?

One way to approach this is to ensure that everyone across the organization understands what the overall strategy is. It must live in everyday actions at everyone's desk. It needs to be translated by the leaders to the board (and also to the colleague starting right out of school). Any presentations - whether that's a townhall, a business review, or a board meeting – must start with the strategy, connect to the discussion topic, and continue to emphasize and educate. Teammates should start presentations the same way and be able to articulate both how they are advancing as well as contributing to business success. Colleagues need to own things and feel that they have in some way contributed to the success of the overall strategy.





Consider your needle movers: Identify the top 10 high impactful initiatives, which are outcomes of the strategy, that will progress the organization this year. Track them and show progress. Connecting the dots this way and constantly communicating progress will convert strategy into successful execution."

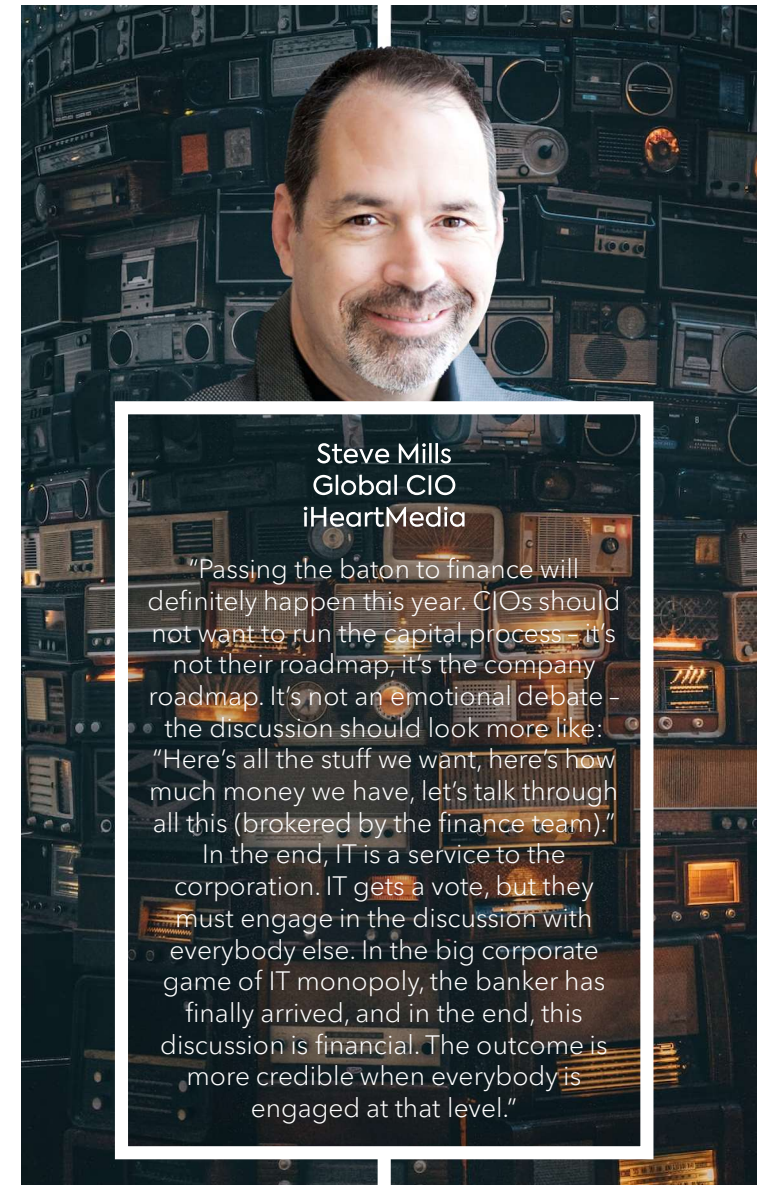
Let's Talk About Budget

From our informal interviews as well as the data below, our network is generally in agreement with Gartner⁴: enterprise IT spending may not be heavily impacted by a potential recession, as CFOs and line of business still want to increase spending on digital business initiatives. So despite some of the negativity out there, we're seeing a slight increase (or at least steady) spending from our network participants. "Economic turbulence will change the context for technology investments, increasing spending in some areas and accelerating declines in others, but it's not projected to materially impact the overall level of enterprise tech spend."⁴

We've been hearing that this is the "Year of the CFO" - there will be more scrutiny on budgets to ensure that new spending has impact on productivity, digital transformation, and top-line revenue. While two-thirds of the network anticipate a modest increase in budget, there's a bit less optimism than in our 2021-2022 survey. Only 22% expect budgets to increase by 5% or more, a 55% decrease from EOY 2021, while those who expected a budget reduction increased over 100% to almost one in ten of our respondents. Furthermore, several respondents noted that inflation is driving up costs, so it's only natural that spend would increase as a result.

According to Gartner's latest data, worldwide IT spending is projected to total \$4.6 trillion in 2023, an increase of 5.1% from 2022. Do you agree with this outlook? Which of the following statements do you feel best defines your plans for 2023?:

-  **22% - Bullish**, expect our budget to grow 5%+ next year. **Down** from 49% last yr
-  **40%** - Lukewarm, expect our budget to grow, but <5%. **Up** from 25% last yr
-  **29%** - **Flat**, expect our budget to grow, but not quite 5%. **Up** from 12% last yr
-  **9%** - **Lower**, aggressive cost cutting will reduce overall IT spending. **Up** from 4% last yr



Steve Mills
Global CIO
iHeartMedia

"Passing the baton to finance will definitely happen this year. CIOs should not want to run the capital process - it's not their roadmap, it's the company roadmap. It's not an emotional debate - the discussion should look more like: "Here's all the stuff we want, here's how much money we have, let's talk through all this (brokered by the finance team)."

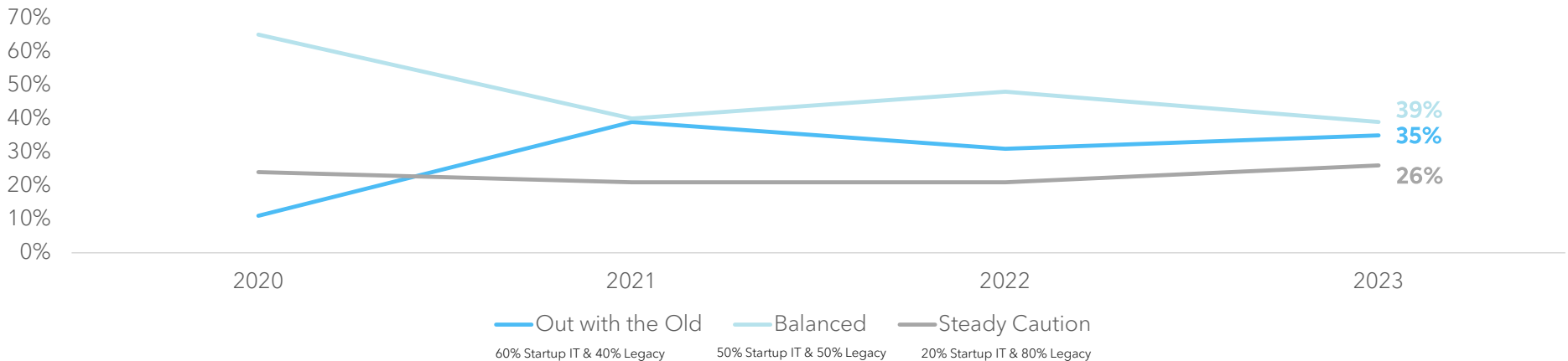
In the end, IT is a service to the corporation. IT gets a vote, but they must engage in the discussion with everybody else. In the big corporate game of IT monopoly, the banker has finally arrived, and in the end, this discussion is financial. The outcome is more credible when everybody is engaged at that level."

Budget Allocation: Legacy vs. Next-Gen

Every year we ask about budget allocation on our survey: more specifically, how much teams plan to spend on legacy vs. next-gen. And in the last couple of years after the jolt caused by the pandemic, responses have been somewhat steady. Entering 2020, it was clear that companies were not particularly focused on adopting new technology, which was of course upended in 2021, with an over 300% increase in “leaders” (from 11% to 39%). And over the last few years, responses have seemed to hold somewhat steady, with about three-quarters of the network either leaning in heavily on startup technology or at least taking a balanced approach, with the last quarter lagging behind.

One thing that many participants did comment on was their desire to continue moving to the cloud (and deriving value from that transition) – citing increased flexibility and scalability, security and reliability, or in some cases, cost savings on account of being able to more easily meet changing demands.

Cloud-First, Digital Transformation and AI/Automation have continued accelerating at an incredible pace in 2022, changing the proportion of legacy IT vs. startups in most IT environments. What is the right balance going forward of time, staff and budget that should be allocated?



2023 Budget by Category

Security



Breach Detection

Increase 67%
No Change 32%
Decrease 1%



Trust and Privacy

Increase 68%
No Change 31%
Decrease 1%



Anti-Ransomware

Increase 54%
No Change 45%
Decrease 1%



DevSecOps

Increase 55%
No Change 43%
Decrease 2%



MSSP

Increase 23%
No Change 73%
Decrease 4%

Business Apps



Collaboration

Increase 68%
No Change 30%
Decrease 2%



Finance and Ops

Increase 34%
No Change 62%
Decrease 4%



Sales Productivity

Increase 48%
No Change 48%
Decrease 4%



HR/Talent

Increase 46%
No Change 48%
Decrease 6%



IT Ops and Dev

Increase 55%
No Change 41%
Decrease 4%

Hardware



PCs/Laptops

Increase 22%
No Change 67%
Decrease 11%



Printers

Increase 3%
No Change 50%
Decrease 47%



Servers

Increase 17%
No Change 49%
Decrease 34%



Networking

Increase 42%
No Change 45%
Decrease 13%



Storage

Increase 52%
No Change 37%
Decrease 11%

Cloud



Public Cloud

Increase 74%
No Change 23%
Decrease 3%



Colo Hosting

Increase 17%
No Change 53%
Decrease 30%



Private/Hybrid

Increase 37%
No Change 43%
Decrease 20%

Data



Database

Increase 50%
No Change 45%
Decrease 5%



Analytics/Visualization

Increase 79%
No Change 20%
Decrease 1%



AI/ML Tools

Increase 72%
No Change 27%
Decrease 1%

Services



Consulting

Increase 31%
No Change 56%
Decrease 15%



Managed Services

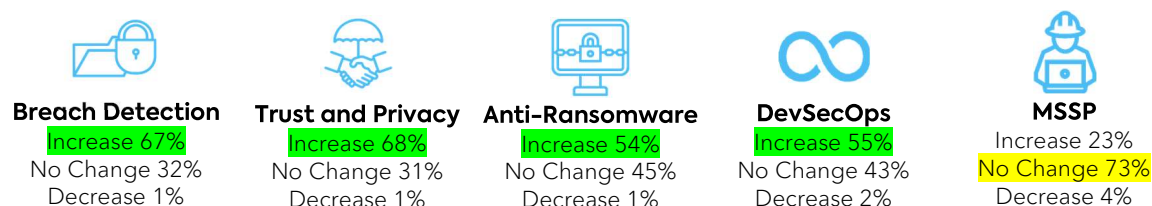
Increase 45%
No Change 50%
Decrease 5%



Contractors

Increase 36%
No Change 42%
Decrease 22%

2023 Budget – Security



Security is still a core concern for most organizations, and the responses we received reflect that. IBM estimated that the cost of an average data breach is \$9.44M for companies located in the United States, and that 40% of that cost is incurred more than a year after the breach occurs. Additionally, ransomware grew 41% YoY³ from 2021 to 2022 and took almost 50 days longer to identify and contain.⁵ Furthermore, because these breaches happen on account of a variety of behaviors – including phishing, email compromise, 3rd party software vulnerabilities, stolen credentials, or malicious insiders – protecting from these kinds of breaches is *hard*. And while the cloud has been considered more secure historically, 45% of breaches took place there in 2022 – it's not necessarily a safe-haven.

So, it's no surprise at all that security is one of the areas our network is most bullish on – particularly around breach detection and trust/privacy. Large corporations are still predicted to bear the brunt of cyberattacks in 2023⁶, with financial institutions, government, healthcare, and education also in the running as major targets. Many breaches are being driven by a weak global economy motivating cybercrime – typically in the form of the theft of personal data. Furthermore, politicians are often late to the party on prioritizing enforcement or prosecution of cybercrime, for fear of becoming targets themselves. As the situation doesn't look likely to improve in the near future, companies will need to remain vigilant on this front. Automated security integrated with workflow management will be a key theme here – as it's impossible for teams of human beings to keep up with today's landscape.



Alex Beigelman
CEO, Beigelman Risk Advisors
Chairman of the Board, The National Cybersecurity Society

"The chances of a sophisticated attacker getting into even the most sophisticated target companies (and then staying there to do whatever evil thing they're trying to do) are not that low. The risk is not so much the attacks you detect, but the ones you are not aware of, where the bad guys have been inside for months. In the current geopolitical climate, that risk is substantially elevated, especially for top banks and industrials.

It's common knowledge that attack surfaces are increasing. For instance, a bank might introduce a new mechanism for check deposit. This service wasn't available even just a few years ago for many banks. And now, it's another mechanism through which their applications can be breached (or even the bank itself). During and post-pandemic we've been driving fast towards digital innovation, and as we move towards more self-service capabilities, automation, and activities on mobile devices (whether that's customer facing or internal), we are not always paying attention as an industry to what that is doing to the attack surface, either our customers' or our own. And people go for features because the business wants a particular capability built and people build it. But no one is asking if that's secure, or what is the risk profile of that thing we're trying to do?

We're expanding the attack surface faster than our cyber resources can keep up with – and companies are going to need to:

1. Consider the security ramifications of these things and actually do something about them
2. Implement security capabilities inside the organization capable of aggregating all the various sources: apps, user activity, infrastructure, etc. – and be able to find anomalous activity across the board (not just within a single system). It can be done, but it is complex and expensive and very few organizations are at the right level of capability today
3. Internally compartmentalize the systems – In many companies once you get past the front door and you're inside, you can go pretty much anywhere, from a security POV it's an open network. If you compartmentalized that network, it would be harder for bad actors to navigate from an innocuous point and move around. The best current way of doing that is to move to the public cloud: this is perhaps counterintuitive, but the reason why is that the public cloud is by nature compartmentalized. It provides you with very fine-grained controls to do things which you can't in a practical sense do internally (not that it would be impossible, it's just not very practical). You can achieve that compartmentalization more quickly, easily, and sustainably than you can in your own shop."

2023 Budget – Cloud



Public Cloud

Increase 74%

No Change 23%

Decrease 3%



Colo Hosting

Increase 17%

No Change 53%

Decrease 30%



Private/Hybrid

Increase 37%

No Change 43%

Decrease 20%

Gartner predicts that worldwide end-user spending on public cloud services is forecasted to grow 20.7% to total \$591.8 billion in 2023, up from \$490.3 billion in 2022. This is higher than the 18.8% growth forecast for 2022.⁷ But Sid Nag, VP Analyst at Gartner thinks that “current inflationary pressures and macroeconomic conditions are having a push and pull effect on cloud spending...and organizations can only spend what they have. Cloud spending could decrease if overall IT budgets shrink, given that cloud continues to be the largest chunk of IT spend and proportionate budget growth.”

Cloud migration is not likely to slow down despite the costs and organizations will need to ensure that they are properly refactoring applications and data to ensure a lower cost transition. Moving operations to the cloud reduces capital expenditures by extending cash outlays over a subscription term. Once applications and workloads move to the cloud, it's uncommon for a business to repatriate, except in unusual circumstances. Our network seems to broadly agree, with three-quarters of respondents planning to continue increasing their spend in public cloud.



Steve Heilenman
CIO
Benefix

“Everything is kind of cyclical in general. When I first started in IT – there were the dumb terminals and you needed timeshare with the big mainframe computer. Then, everything got pushed down to the desktop with self-servicing and gave all the computing power back to the individual. Now you’re seeing this huge shift to the cloud. But in theory it’s really just the old dumb terminal again and the big mainframe (positioned somewhere different), although obviously the technical complexity and number of components have changed a lot.”



Kevin McMahon
CIO and Deputy COO
Cadence Bank

"It's the year of the CFO, so a lot of time is being spent building out metrics around what it takes to achieve certain growth milestones in order to get support from finance for budget and modernization initiatives.


It's no secret that since the advent of COVID, many companies have been extremely focused on how to bring digital capability to the customers – with everyone spending a lot of time and energy on their front-end user experience. However, in many cases, back-end operations can wind up a little bit neglected as a part of that process.

When the front-end and back-end are not aligned, the pressure tends to get applied to ops people who must then deliver at the speed and expectation of the digital platforms that were put in place. Humans are asked to process paper as fast as their systems up front are taking in information or providing service of some sort – and the end result can be a bit of a mess. This is why people say things like 'let's put in robotics, BPM, or a CRM.' It's a struggle on the operations side to try and keep up with the front-end digital products. You'll have ops people logging into many different systems to do fairly basic things, and then there are giant reports of exceptions.


Efficiency in the back-office also relies on a digital overhaul, one which is complementary to but separate from the front-end. Companies need to keep doing the front-end work, but they also need to figure out how to ensure the quality of that customer experience exists in all steps of their processes. The back-end may feel like infrastructure, or plumbing, because it's not flashy or immediate, but it's an extremely difficult challenge that does need to be dealt with.

The realization of truly full end to end automation across the client-facing/self-service front-end and the operational back-end is eye-opening. It creates a real opportunity to transform the business. Gains in efficiency and quality not only lead to expense savings but will also increase client and employee satisfaction which is key to retaining customers and team members. Transformation can't just be on focused areas - it's an enterprise-wide task in which IT orgs must avoid siloed systems and processes. And in doing so, it's possible to achieve fundamental improvements in how a business operates."

2023 Budget – Business Apps



Collaboration
Increase 68%
No Change 30%
Decrease 2%




Finance and Ops
Increase 34%
No Change 62%
Decrease 4%



Sales Productivity
Increase 48%
No Change 48%
Decrease 4%



HR/Talent
Increase 46%
No Change 48%
Decrease 6%



IT Ops and Dev
Increase 55%
No Change 41%
Decrease 4%

Based on our survey responses, we're seeing a little bit of a mix on the business applications side. While the signal to continue improving collaboration apps remains strong (in light of the rise of hybrid work), other areas seem a little weaker. Furthermore, organizations are starting to notice that hyperscalers and B2B applications have a lot of hidden costs ranging from implementation to maintenance that are not always being fully considered in today's models. Without the urgent imperative to transform the business overnight in order to survive the pandemic, it's more likely that organizations will be focused primarily on only their immediate needs – and will rationalize other expenditures more closely.

George Kurian, CEO at NetApp, said in an S&P transcript that customers are increasing their budget scrutiny, with higher-level deal approvals needed, longer selling cycles, and smaller deal sizes.⁸ Furthermore, Amit Walia, CEO of Informatica, on an October 26 earnings call mentioned that "Cloud adoption remains healthy, [but] customers have become more measured in how they purchase." While deals are still closing, "new deals are being inspected with more scrutiny."⁸

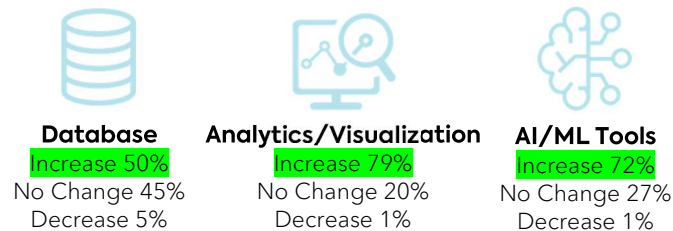
This cutback is likely a bit overdue. Companies didn't need to look super closely at their budgets over the last two years and now they're pulling back and starting to think that maybe they don't have to spend quite as much money and can dedupe, streamline, and standardize some of their business application and cloud expenditures.



Shyam Bhojwani
Director of Business
Technology & Cyber Security
Workato

"Spend is getting done differently in this market and the key is business value – What business value is this product/project adding to the team, department or the whole organization? If you're looking to purchase a SaaS product you must be able to showcase the value in terms of productivity, delivery, execution, costs and overall efficiency. And you must be able to speak the language the business understands, without getting into technical/implementation details. This will be key for the next 12-18 months."

2023 Budget – Data



Analytics/Visualization and AI/ML tooling were the two categories our network was the most bullish on. This is no surprise given that 95% of enterprises claim that their inability to understand and manage unstructured data is holding them back.⁹ The volume of data made available to enterprise continues to grow all the time with the increase of various data-driven and intelligent tools like AI systems and IoT devices. The velocity of data is growing too, with experts estimating that we generate around 2.5 quintillion bytes of data per day.

This is where analytics and AI come into play – there is no way to keep up with modern streams of data without modern tooling to manage that data, interpret it, and get it in front of the right people. A few trends we’ve been hearing about include:

- 1. Augmented Analytics** - Using AI and ML to assist with data preparation and insights in order to augment how business users explore and analyze data in analytics and BI platforms. It’s now capable of automating many aspects of data science, ML, and AI model development, management and deployment
- 2. Data Mesh** - Much in the same way that software engineering teams transitioned from monolithic applications to microservice architectures, the data mesh is, in many ways, the data platform version of microservices. As first defined by Zhamak Dehghani, a data mesh is a type of data platform architecture that embraces the ubiquity of data in the enterprise by leveraging a domain-oriented, self-serve design
- 3. Data Ops And Observability** - An agile, process-oriented methodology for developing and delivering analytics. It brings together DevOps teams with data engineers and data scientists to provide the tools, processes, and organizational structures to support the data-focused enterprise. The fundamental goal is to deliver new insights, faster, and provide an observability framework to monitor data health and usability by reducing data downtime



Vijay Panati
Deputy CIO
Los Angeles County Probation

"There has been talk of a greater need for innovation and getting back to pre-COVID. While there is always a need for innovation, it is important to remember that 2019 is gone, and never coming back. The aftermath of Covid has completely changed perspectives and the way companies do business. The expectations of what CIOs must do to run their operations and drive value has changed. As an example, teleworking and WFH is now the norm, even for folks not in IT, and many reject positions not allowing them such flexibility. It will be very interesting to see how the next 3-5 years play out for the industry as a whole. We are ushering in a new era of change, innovation, and expectations.

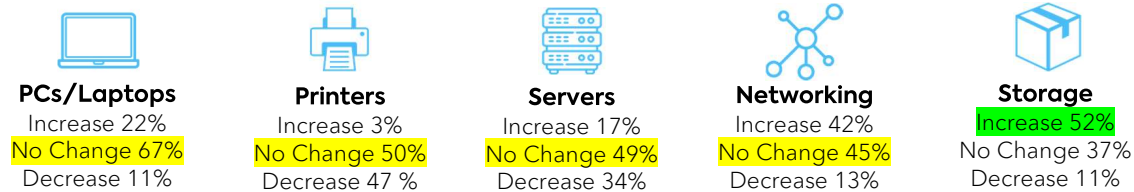
Think of expectations. Back in the early days of search engines, people were ok, even happy, with waiting a couple of seconds before seeing the results of a query. Now, if the response isn't in the millisecond range, folks move on to the next application offering them such a quick turnaround. Talk about changing expectations!

The focus for many organizations is going to be even more on workflow management than ever before. Given the success of hybrid work, everyone is re-thinking the way they are doing workflows with an emphasis on security, automation, and an all-digital paradigm. While workflow management and innovation were always important, COVID really brought it to the forefront and forced everyone to adapt almost instantaneously. There are still enormous constraints around resources and budget, but many industries have optimized and done better on this front even if their short-term financial results don't necessarily speak to it.

With increased mobility and much deserved power in employee's hands, it is interesting to see the issue of staff acquisition and retention centering on more than just pay or title. Employees now expect their employer to be aligned with their personal value systems. People want to work not just for money but even more for organizations which share the same core societal belief systems. This is a good change.

In the end, for an organization to thrive in the new environment, they need to ensure excellence in the three core pillars of Customer Experience, Employee Experience, and Sustainability."

2023 Budget – Hardware



Inflation and continued sluggishness in the supply chain will likely continue to weigh down hardware spending. One big change here is the rise of the laptop: they have now crested 18% of IT hardware budgets in 2022 according to Statista,¹⁰ gaining substantially, as many businesses only recently made investments in laptops for their employees, providing further evidence for an increasingly remote working environment. However, desktop spending remains strong as well, with North America lagging the most on laptop adoption (44% of employees still prefer to use a desktop¹²).

That being said, hardware spend isn't dropping imminently. In 2021 and 2022 hardware spending still comprised roughly one-third of IT budgets despite the shift to the cloud.¹¹ On-prem servers still maintain their relevance for many organizations globally with the majority of workloads still run locally, and over 90% of organizations still using on-prem servers in some capacity.

In terms of our survey, storage is the leader here – and it makes sense – it's often said that computing infrastructure is only as fast as its slowest bottleneck, which has historically been storage. Perhaps that's why organizations are increasingly using fast flash storage technologies in lieu of traditional spinning hard disk drives. And with falling prices making flash more affordable, these technologies are now far more attainable. In 2022, Spiceworks Ziff Davis (SWZD) released a report on "Hardware Trends in 2022 and Beyond" where they surveyed roughly 1,150 IT buyers in Europe and North America. They found that more than two-thirds (68%) of enterprises plan to adopt all-flash storage arrays within the next two years and that most (54%) businesses plan to use speedy NVMe storage technology in their on-premises servers by the end of 2023.¹² As businesses continue to modernize their devices and infrastructure, they'll enjoy faster performance, more efficiency, and advanced functionality, leveraging multiple vendors in a competitive environment shaped by remote work and the shift to the cloud.

2023 Budget – Services



Consulting

Increase 31%

No Change 56%

Decrease 15%



Managed Services

Increase 45%

No Change 50%

Decrease 5%



Contractors

Increase 36%

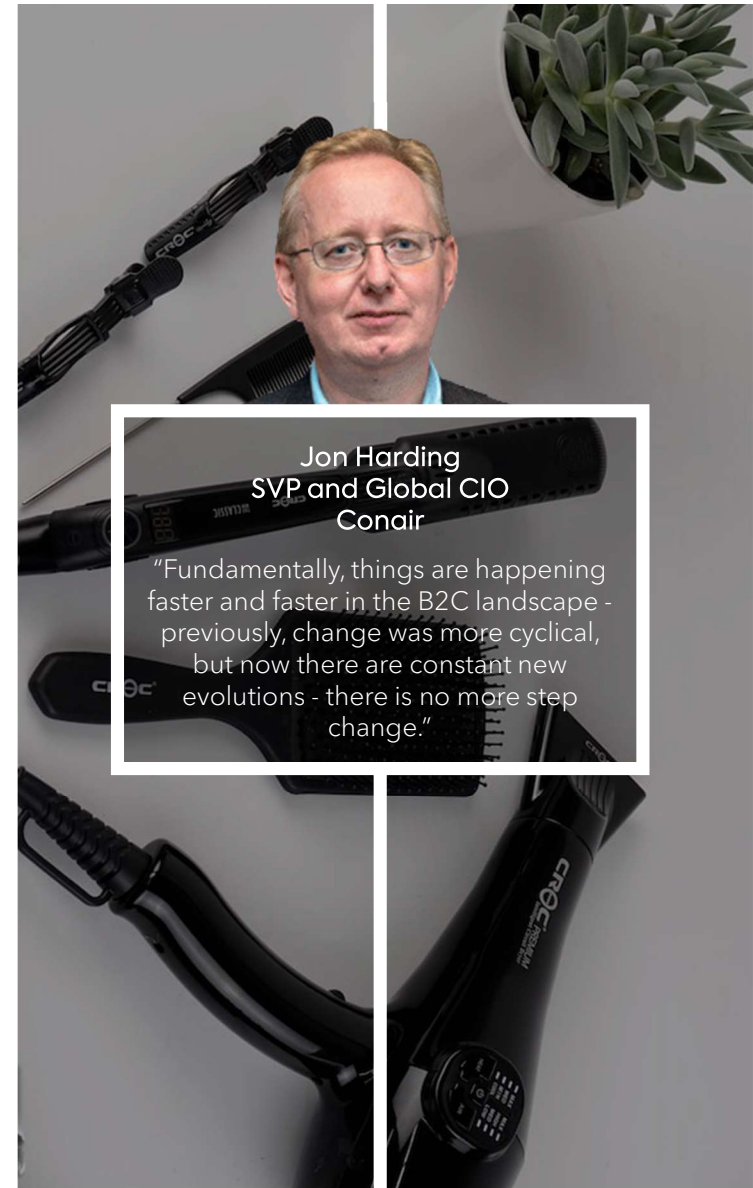
No Change 42%

Decrease 22%

MSPs have reason to be optimistic going into 2023, with the broader expectation that managed services spending may rise. Our network was fairly neutral here, but about a third of respondents did anticipate some sort of increase. The contributing factors here are more remote employees, increasing cyber attacks, and a growing demand for cloud services, with a few key trends that stand out:

- 1. IT at the Heart of Things, MSPs for the Edges** – Mission critical will always need to be handled in-house, but not necessarily for the periphery
- 2. Field Offices** – With more remote locations popping up – someone needs to set-up and maintain these distant locations. Contracts and MSPs are very useful for small sites without a full-time IT staff. Having core IT travel doesn't make much sense
- 3. One-Off Assignments** – Talent shortages or challenging deadlines are a good fit for temporary use of an MSP. One-off contracts (vs. continuous service) may become more common

On account of hybrid work, there's now a need to manage both on-prem and cloud infrastructure, and businesses are updating their environments to support employees where they're at. Additionally, after organizations spent the last couple of years modernizing at a frantic pace, many are likely now turning to these services to help them maintain their new technology stacks.



Jon Harding
SVP and Global CIO
Conair

"Fundamentally, things are happening faster and faster in the B2C landscape - previously, change was more cyclical, but now there are constant new evolutions - there is no more step change."

About Mayfield

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Please Reach Out



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- **Quarterly CIO Insight Calls** – Themed webinars on pressing topics of the day. Topics have included the CIO of the Future, Best Practices on Innovation, The Journey to Cloud Native, An Interview with the Kubernetes Founder, and most recently, CCPA and Privacy Ops
- **Emerging Market Trends Briefings** – 1:1 reviews with you and your team members on key areas of focus, with the goal of sharing possible new ideas Mayfield has seen that align to your specific use cases
- **Regional CIO Roundtables** – Regional roundtables with CIOs and other IT executives that are repeated on a semi-annual basis

Citations

1. "Rate of People Working From Home Shifts by Up to 65% in Past Year Depending on State – Here's Where It's Down (and Up)" *LendingTree*, 2022, <https://www.lendingtree.com/debt-consolidation/work-from-home-shifts-study/>
2. "Average Days Per Week Working from Home After the Pandemic Ends." *WFH Research*, 2022, <https://wfhresearch.com/>
3. "KPMG Global Tech Report 2022." *KPMG*, 2022, <https://assets.kpmg/content/dam/kpmg/xx/pdf/2022/09/kpmg-global-tech-report-2022.pdf>
4. "Gartner Forecasts Worldwide IT Spending to Grow 5.1% in 2023." *Gartner*, 2022. <https://www.gartner.com/en/newsroom/press-releases/2022-10-19-gartner-forecasts-worldwide-it-spending-to-grow-5-percent-in-2023#:~:text=Worldwide%20IT%20spending%20is%20projected,in%20response%20to%20economic%20turmoil>
5. "Cost of a data breach 2022 - A million-dollar race to detect and respond." *IBM*, 2022. <https://www.ibm.com/reports/data-breach>
6. "What to Expect for Security and Privacy in 2023." *Forbes*, 2022. <https://www.forbes.com/sites/waynerash/2022/12/31/what-to-expect-for-security-and-privacy-in-2023/?sh=7ac7632e6f1c>
7. "Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \$600 Billion in 2023." *Gartner*, 2022. <https://www.gartner.com/en/newsroom/press-releases/2022-10-31-gartner-forecasts-worldwide-public-cloud-end-user-spending-to-reach-nearly-600-billion-in-2023>

Citations

8. "IT Spending and 2023 Budgets Under Close Scrutiny." *CFO.com*, 2022. <https://www.cfo.com/technology/2022/12/it-spending-budget-cuts-2023-sales-cycles-cloud-recession/>
9. "The Ultimate List of Big Data Statistics for 2023." *Findstack*, 2022. <https://findstack.com/resources/big-data-statistics/>
10. "Top information technology (IT) hardware budget distribution in organizations in North America and Europe for 2023" *Statista*, 2022. <https://www.statista.com/statistics/544746/north-america-emea-survey-it-hardware-budget-by-type/>
11. "IT Hardware Spending Persists Despite Cloud Competition." *Redmond*, 2022. <https://redmondmag.com/articles/2022/03/14/it-hardware-spending-persists-despite-cloud-competition.aspx>
12. "Hardware Trends in 2022 and Beyond." *Spiceworks Ziff Davis*, 2022. <https://swzd.com/resources/hardware-trends-in-2022-and-beyond/>