



State of Ethics and Trust in Technology

Annual report

First edition

Foreword

Technology can foster a more productive and prosperous society when people can trust it—and when people and institutions apply it in ethical ways. However, the use of advanced technologies has outcomes that can have a negative impact on people and erode shared values. Decision-makers must be intentional in identifying, understanding, and optimizing its effects, and hold themselves to ongoing accountability after integration of technology in order for trust and ethics to continue to be front and center for the organization.

To answer this need, Deloitte has launched the Technology Trust Ethics (TTE) initiative, a dedicated program within its own organization—serving as the focal point of our commitment to champion leading ethical technology techniques, in part by applying a standard of intentionality to our own technologies, processes, and people, but also by helping those efforts take root across society.

Deloitte is advancing this issue as a broadly realized social and institutional priority so that more people can enjoy the equitable benefits of a tech-savvy world. Having identified trustworthy and ethical technology as a challenge the world needs to address, Deloitte is embracing it as a central pillar of its own purpose-based mission. This is a society-wide challenge for which we are convening specialists from across all industries and sectors to advance a broad consensus.

The social and technical implications of this topic are closely meshed, so the ways we address it should be based on a multi-disciplinary understanding of human nature and human values that harnesses the power of differing perspectives.

The development and commercialization of artificial intelligence (AI), blockchain, quantum computing, augmented and virtual reality (AR/VR), robotics, and more are increasing at an exponential rate. And so, we must ask, how do we protect our businesses, our citizens, and the global community from ethical disasters of emerging technologies? Given the pace at which these technologies are being developed and commercialized, we must be proactive in infusing trust and ethics into technology design, development, and use.

While there isn't a simple answer for building trust and ethics into the use of technology, the first step is fostering awareness

The authors wish to thank the following colleagues for their contributions to this report: Anuleka Ellan Saroja, Candela Kechkian, Danielle Sutton, and Stuthi Parameshwara Rao.



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What's inside

01

Executive summary

4

02

Introduction

6

03

Defining emerging technology

8

04

Ethical implications of emerging technology

9

05

The importance of establishing ethical principles for emerging tech

11

06

The evolution of trustworthy and ethical technology principles

14

07

Identifying trustworthy and ethical emerging technology principles

18

08

Establishing standards of trust and ethics

23

09

Promoting trust and ethics in technology: the path forward

33

Executive summary

Emerging technologies are currently developing faster than most governing ethical principles to mitigate potential misuses and harms can be implemented. Ethical breaches can enact significant damage to a company's reputation, make organizations vulnerable to legal and risk ramifications, and lead to loss of morale and turnover amongst employees—all of which would likely have negative effects on profitability and consumer trust. While governmental regulatory bodies, academia, industry groups, and standards organizations work to define ethical principles for emerging technology categories like blockchain and digital reality, it is critical that companies take the lead in proactively defining a set of ethical principles specific to their own products and values. Companies should also

work to implement these principles, both within the organization and in collaboration with the larger technology ecosystem. Taking the lead on defining and establishing a strong ethical culture can position companies to be trustworthy and ethical leaders in the emerging technology space.

This annual report defines emerging technologies, identifies key trustworthy and ethical standards, explains different approaches to operationalizing standards, and encourages near-term action.

Throughout the report, we present the results of a study conducted to gain perspective on how ethical principles are currently being applied to emerging technologies. Our research began by conducting qualitative interviews with 19 industry specialists. Based on these interviews, we then created a 51-question survey which was distributed to 1,794 business and technical professionals (across 8 industries) who are actively involved in either developing, managing, or consuming emerging technologies. The survey addressed the types of emerging technology being leveraged, ethical standards being applied when building and using technology, and approaches to codifying these ethical principles across the organization. It also provided free-form opportunities to share additional insights.

Taking the lead on defining and establishing a strong ethical culture can position companies to be trustworthy and ethical leaders in the emerging technology space.



01

02

03

04

05

06

07

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The “move fast and break things” era of entrepreneurial disruption may be over.¹ However, when it comes to applying ethical frameworks and leading practices to contemporary emerging technologies, the new motto seems to be “move fast and keep up.”



Introduction

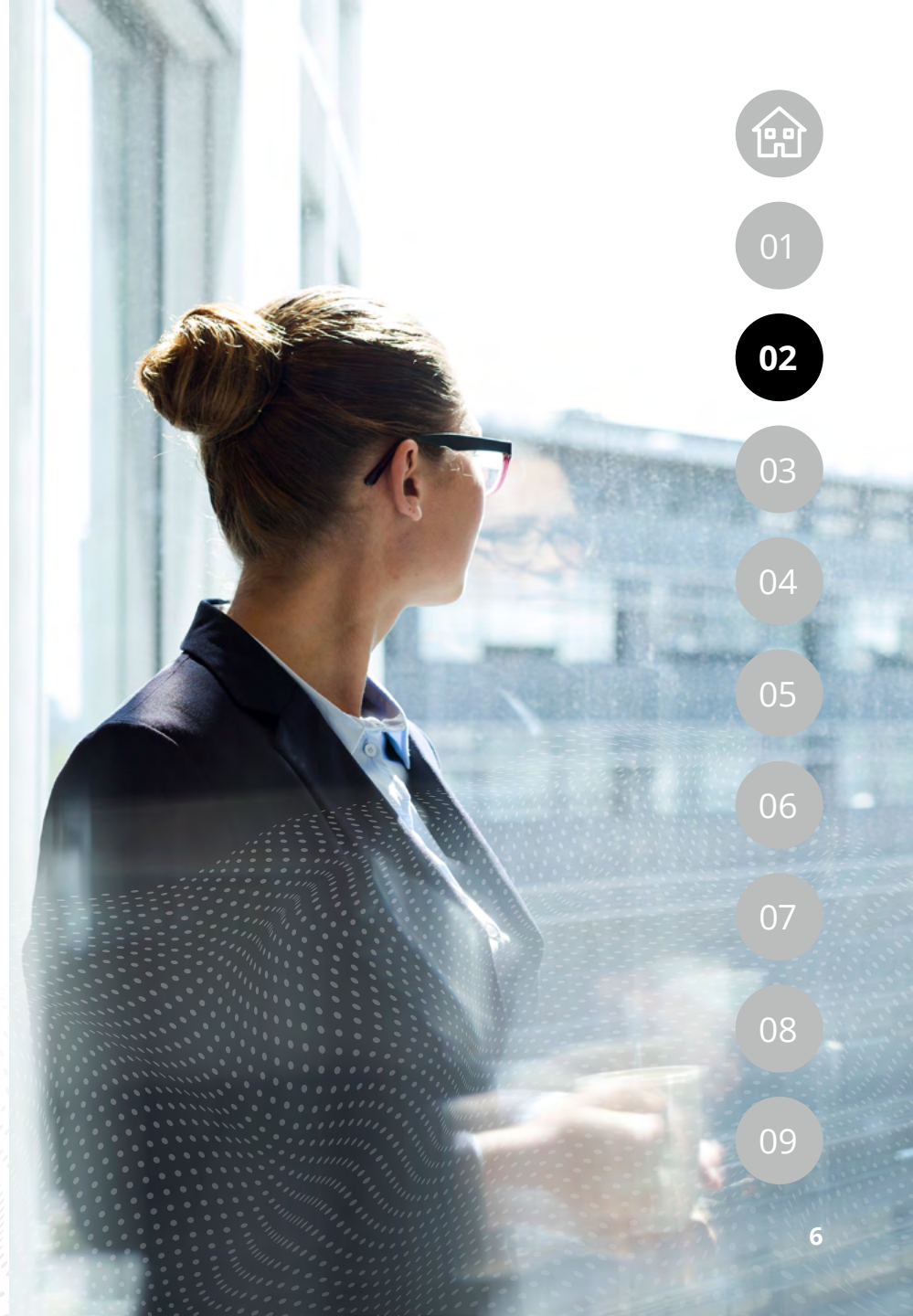
The “move fast and break things” era of entrepreneurial disruption may be over.¹ However, when it comes to applying ethical frameworks and leading practices to contemporary emerging technologies, the new motto seems to be “move fast and keep up.”

In the past decade, semi-autonomous vehicles went from achieving street legal status to being ubiquitous and affordable,² the demand now outpacing supply. Cryptocurrencies have exploded onto the scene, first generating tremendous wealth, and then plunging to unforeseen lows that erased trillions. And, once a far-fetched science

fiction construct, the metaverse is now a domain where virtual real estate properties have sold for more than \$4M USD.³

Companies striving to ride the cutting edge are competing to gain benefits from emerging technologies like improved customer experience, operational efficiencies, and newly enabled use-cases. But these technologies are often being developed at such breakneck speeds that few companies are pausing to consider the ethical implications. With great power comes great responsibility.⁴ And with unprecedented opportunities, the promise of emerging technologies comes with the potential for their misuse.

Companies striving to ride the cutting edge are competing to gain benefits from emerging technologies like improved customer experience, operational efficiencies, and newly enabled use-cases.



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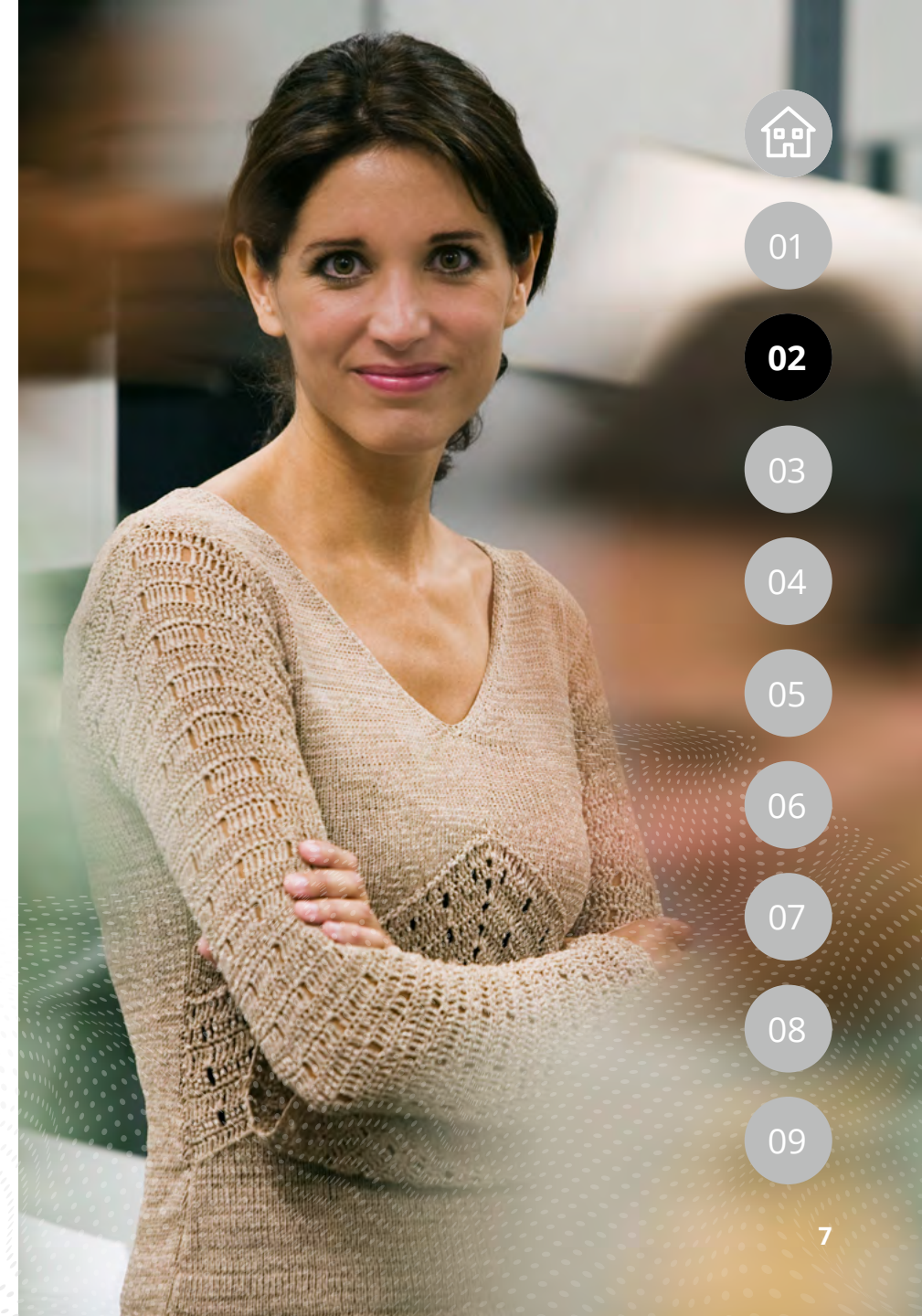
Introduction

For more evolved emerging technologies, such as AI, groups like government regulators, academia, industry groups, and standards associations have created policies and frameworks to guide conscientious development. But for nascent emerging technologies, these groups have either not yet started or are still in the process of defining standards. Though the delay has many causes, most significant among them are the difficulty and cost of creating nuanced standards for complex technologies that are constantly evolving.

As the creators and users of emerging technologies, it is critical that companies take the lead in developing ethical frameworks, standards, and leading practices for emerging technologies. Doing so may not only enable companies to avoid potential misuses and negative retribution but could also position them as competitive and socially responsible businesses.

As the first edition of the TTE Annual Report, the purpose of this work is to capture the evolving current state of emerging technology and reveal opportunities for companies to proactively shape their business and contribute to a sustainable technology future.

As the creators and users of emerging technologies, it is critical that companies take the lead in developing ethical frameworks, standards, and leading practices for emerging technologies.



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02

03

04

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06

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08

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Defining emerging technology

“Emerging tech” refers to digitally enabled tools representing new and significant developments within a particular field.⁵ While AI is included within emerging technology, this report focuses on less-realized opportunities across different applications.⁵ The technologies were grouped into the following categories:



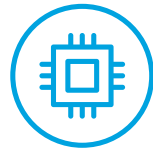
Cognitive Technologies

Including AI, machine learning (ML), neural networks, bots, natural language processing, neural nets, etc.



Ambient Experiences

Including AI/ML-assisted wearables, voice assistants, in-environment devices, etc.



Quantum Computing

Including quantum simulation, quantum linear algebra for AI/ML, quantum optimization and search, quantum factorization, etc.



Digital Reality

Including AR/VR, mixed reality, voice interfaces, speech recognition, ambient computing, 360° video, immersive technologies, computer vision, etc.



Distributed Ledger Technology

Including blockchain, crypto, non-fungible tokens (NFTs), etc.



Autonomous Vehicles

Including automotive, aerials, maritime, etc.



Robotics

Including robotic process automation, agile mobile robots, etc.

These emerging technologies are already being leveraged and are under rapid development. Developers and consumers are both excited about the potential inherent in these technological advancements and wary of the risks of unintended consequences.



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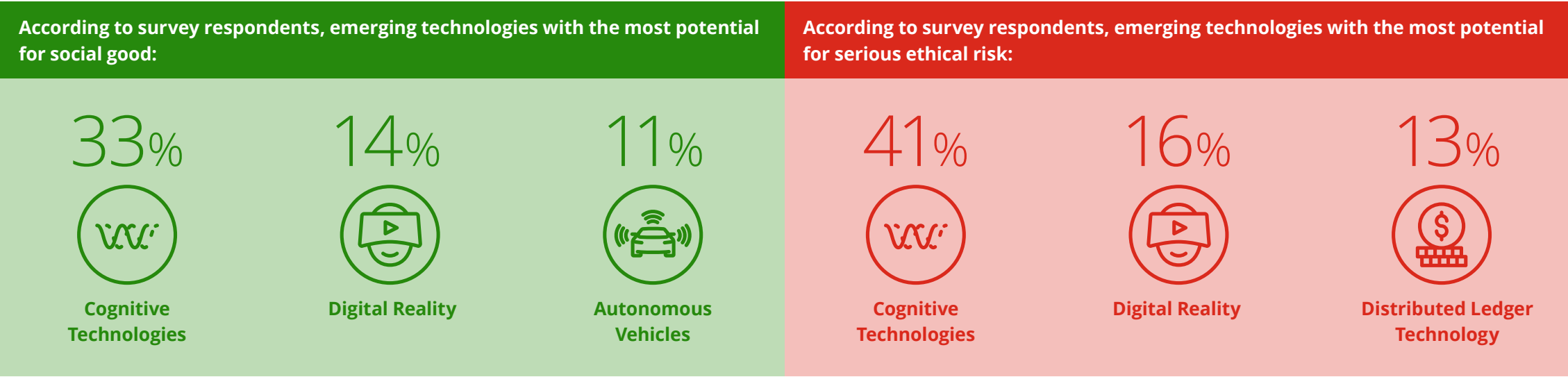
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Ethical implications of emerging technology

With our survey, we wanted to understand who is developing emerging technologies, how they are currently using them, or planning to use them, and what the implications could be on society. Through the specialist interviews and broader survey, we gained insight into these use cases.

Survey respondents for this report felt that the emerging technologies with the most potential for social good are cognitive technologies (33%), digital reality (14%), and autonomous vehicles (11%). Conversely, they also identified cognitive technologies (41%), digital reality (16%), and distributed ledger technology (13%) as the technologies with the most potential for serious ethical risk.

Industry leaders shared current and potential benefits and misuses of these technologies (see Figure 1 for a subset of responses).



Potential benefits and misuses

Figure 1: Benefits and misuses

	Benefits	Misuses
Current	<ul style="list-style-type: none">• Democratization of financial investing can give everyday people access to global financial markets• Blockchain/DLT tracking allows sustainable sourcing of conflict minerals from developing nations• Drones can deliver just-in-time emergency medicine• AI can help reduce repetitive tasks for workers, freeing them up for more creative pursuits	<ul style="list-style-type: none">• Repressive nation-states have used computer vision to discriminate against certain populations• Personal data from wearable devices can be sold for advertising/marketing purposes• AI models can handle bias inappropriately
Potential	<ul style="list-style-type: none">• Quantum computing could help stop human trafficking• Unmanned aerial vehicles (UAVs) could revamp transportation (e.g., aerial ridesharing, delivery drones, and cargo delivery)• Social media could decentralize to an NFT-based network that steers away from current industry leaders	<ul style="list-style-type: none">• Illicit content (e.g., doxxing information) could be posted on the blockchain in a permanently immutable, public format• Bad actors in the metaverse could regenerate as new identities and continue unethical behavior• Quantum cryptography could fail to keep up with quantum computing, creating insecurity in blockchain and crypto value



01

02

03

04

05

06

07

08

09

The importance of establishing ethical principles for emerging tech



01

02

03

04

05

06

07

08

09

Emerging technologies promise a plethora of benefits: not simply in the form of competitive advantages to companies, but also as enhanced consumer products and experiences. However, companies that offer emerging technology products and services should keep ethical considerations top of mind if they want to ensure near- and long-term value. Companies that ignore or downplay the ethical issues associated with emerging technology risk multiple forms of damage:



Reputational damage

A good business reputation can help maximize sales, attract quality employees, and avoid government scrutiny. Ethical missteps often leave hard-to-remove smudges on a company's reputation. For instance, the US Treasury Department placed investment restrictions on a Chinese drone manufacturer due to its roles in facilitating human rights abuses against China's Uyghur Muslims in Xinjiang and other ethnic and religious minorities.⁷



Legal damage

As the spate of high-profile lawsuits against technology companies in the last few years suggests, negative impact on society resulting from failures of emerging technology can leave companies vulnerable to litigation. To take one example, a cryptocurrency lending company used unethical, Ponzi scheme-like practices to support growth and profitability. After the 2022 crypto market crash and a run on the account owner's funds, the company filed for bankruptcy and is facing class action securities lawsuits.⁸ Consumers are often left hesitant to engage with similar technologies given these outcomes.



Employee churn

Employees highly value transparency and ethical conduct: one in three workers has left a job due to ethical concerns.⁹ Considering that employee turnover costs can be as much as 25% to 200% of an employee's compensation, it is unnecessarily costly to have employees resign due to ethical issues.¹⁰



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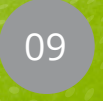
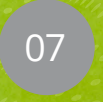
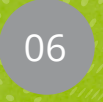
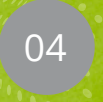
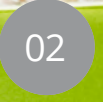
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The importance of establishing ethical principles for emerging tech

Each type of damage typically leads to reduction of company profitability. One estimate puts the cost of mitigations and fines owing to ethical missteps by technology companies in recent years at \$70B USD.¹¹

Conversely, when companies apply clear trustworthy and ethical principles to their technology use cases, the resultant transparency can foster consumer trust in the company and in the product. To avoid adverse and costly effects from neglect of ethical standards, companies should be more proactive than ever when it comes to developing and implementing ethical principles for emerging technologies.



The evolution of trustworthy and ethical technology principles

The first step to instilling trustworthy and ethical behaviors should be to understand the approaches companies may take to do so. Respondents indicated that their companies define and meet ethical principles in four different ways:

27%

1. Meeting compliance and regulatory standards

(Percentage of survey respondents said that their company took this approach)

This approach focuses on operating within external, mandatory guidelines and regulatory frameworks that may or may not align with company values and practices.

29%

2. Following company culture

(Percentage of survey respondents said that their company took this approach)

This approach embeds ethics within company culture, defined as the sum of a company's formal and informal systems, behaviors, and values.

27%

3. Following standards of conduct

(Percentage of survey respondents said that their company took this approach)

Standards of conduct are more formally defined guiding pillars that govern the professional responsibilities of those affiliated with a company.

16%

4. Defining specific ethical standards

(Percentage of survey respondents said that their company took this approach)

In this approach, companies set ethical principles specific to the organization and the products and services developed and used. Such principles include transparency, fairness, security, accountability, etc.



01

02

03

04

05

06

07

08

09

The evolution of trustworthy and ethical technology principles

Approach 4, in which companies define specific ethical standards according to the organizational context and the products and services they deliver, can be critical, and yet is the most overlooked of the four. Although this paper covers emerging technology holistically, these technologies are vastly different and require specific governance and principles.

Of all the categories of emerging technology, currently the category of cognitive technologies offers the most developed set of specific trustworthy and ethical principles; perhaps because cognitive technologies are the most established of the emerging technology categories and also the ones survey respondents perceived as having the most potential for serious ethical risk. The Data & Trust Alliance's Algorithmic Bias Safeguards for Workforce¹² and Responsible Data & AI Diligence for M&A¹³ are good examples of industry leaders working together to define standards, internal policies,

and procedures. Governmental regulations like the European Union's General Data Protection Regulation's (GDPR) privacy and security laws aim to protect against personal data and privacy of citizens.¹⁴ Likewise, within academia, comprehensive AI ethics guidelines are widely available. For instance, the Berkman Klein Harvard report compared 36 prominent documents on AI principles and extracted eight key principles to establish a fieldwide consensus on how to maximize the benefits and minimize the harms of AI.¹⁵ Furthermore, the international standards association IEEE is developing a set of professional standards governing ethical principles of cognitive technologies. For example, one of these standards, the IEEE P7003 – Algorithmic Bias Considerations, provides individuals and organizations creating algorithmic systems with a development framework to avoid unintended, unjustified, and inappropriately differential outcomes for users.¹⁶

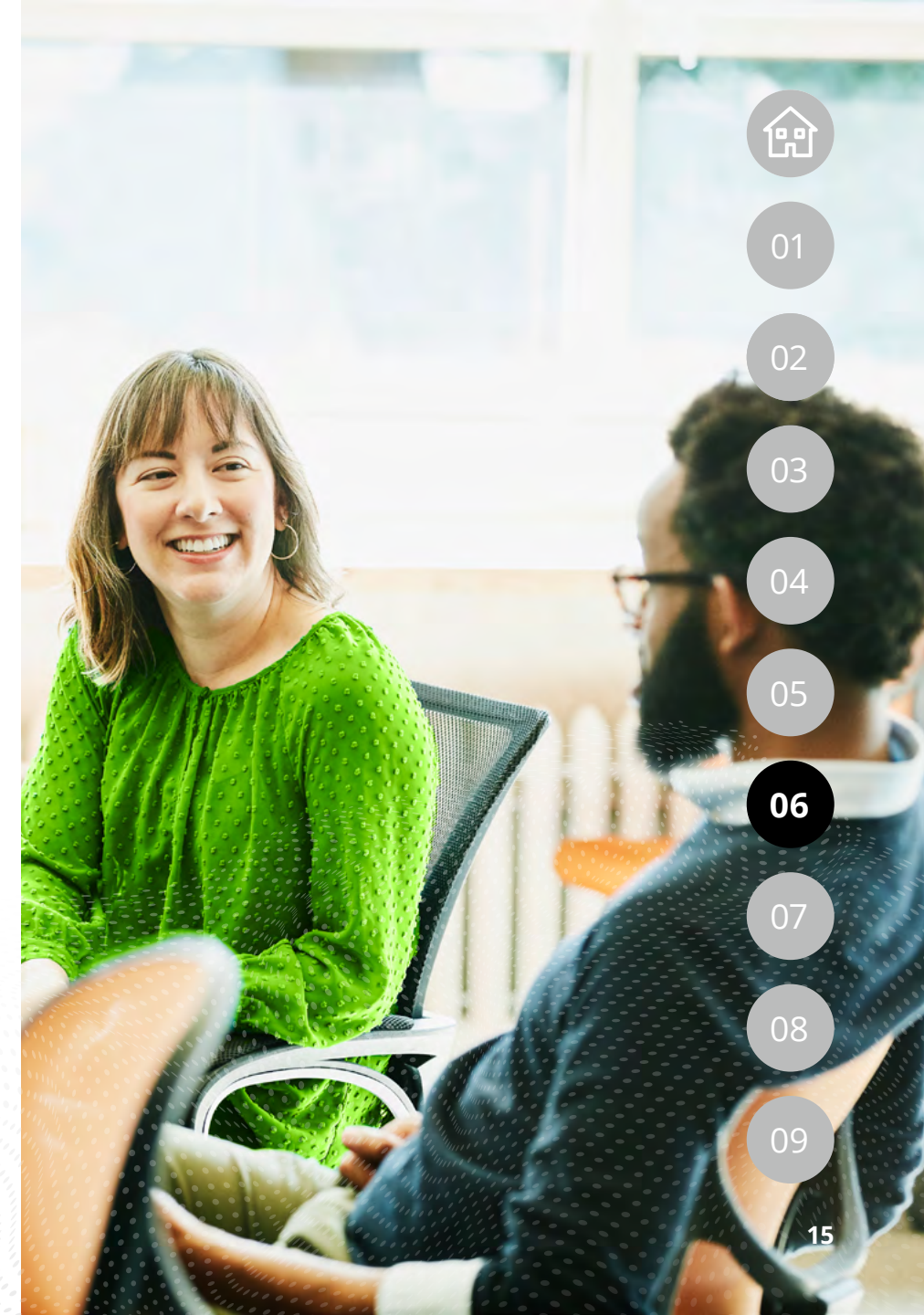
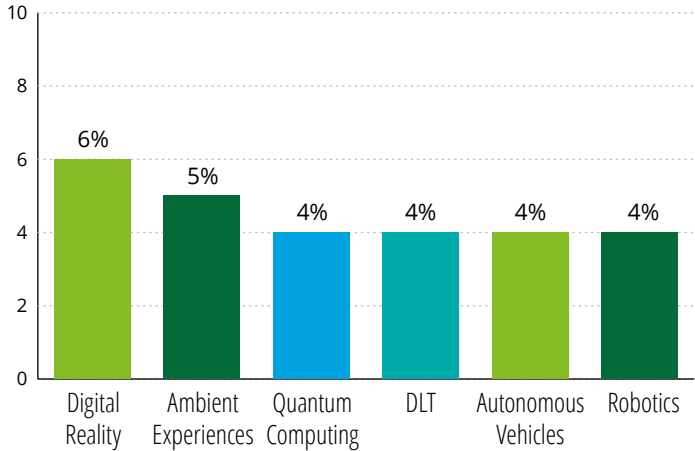


Figure 2: Companies with ethical standards for emerging technologies (aside from cognitive technologies)
(Percentage)



However, with the exception of those operating in the cognitive technology realm, most companies lack trustworthy and ethical principles specific to emerging technology. 87% of survey respondents said that, with the exception of cognitive technologies, they do not have or are unsure if they have specific ethical principles governing emerging technology (Figure 2).

The problem is that we cannot apply trustworthy and ethical principles from one emerging technology category (like cognitive technologies) to another category (like distributed ledger technology) because the same set of principles often simply doesn't apply to every category.

For instance, a respondent from one major company that develops blockchain technology said that the company did not yet have specific ethical principles governing the use of blockchain. Rather, the company loosely applies existing AI/ML ethical principles to blockchain technology. The challenge with this approach is that unlike most AI/ML, blockchain is inherently immutable. Thus, for instance, if illicit content were to be introduced to the blockchain, owing to blockchain's technical characteristics, an ethical principle of AI like "user safety" would not be met. This company executive acknowledged this shortcoming but did not have a solution to mitigate the very real repercussions.

87% of survey respondents said that, with the exception of cognitive technologies, they do not have or are unsure if they have specific ethical principles governing emerging technology.



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The evolution of trustworthy and ethical technology principles

Even for companies who have broad, overarching trustworthy and ethical principles for emerging technology, only 47% of respondents update those principles at least annually. Given that technologies change and develop so rapidly, it's possible that those same principles could soon no longer be applicable to the products and services they're meant to govern.

As it stands, many companies that use emerging technologies tend to focus more on technical requirements and minimum compliance than on robust ethical considerations aimed at maximizing the benefit of these technologies and minimizing the harms. However, given the widely acknowledged ethical risks posed by all categories of emerging technologies, companies that develop these products and services have the opportunity to be the drivers in building ethical safeguards.

Even for companies who have broad, overarching trustworthy and ethical principles for emerging technology, only 47% of respondents update those principles at least annually.



Identifying trustworthy and ethical technology principles

Until standards and policies governing all categories of emerging technologies are developed by relevant regulatory agencies, academia, and standards organizations, companies should take it upon themselves to create their own set of specific ethical technology principles. Company leadership should develop these principles in conjunction with the actual teams completing the work. These principles can serve as guideposts to structure ethical debates internally and to communicate the organization's and products' ethos externally. They should be readily available, ingrained into company culture, and frequently reviewed and updated.

So, how do we start thinking about developing trustworthy and ethical principles for emerging tech? We might start with the seven-part framework published by Deloitte's Technology Trust Ethics group.¹⁷ The framework, which currently includes twenty-six subdimensions, can serve as an effective first step in diagnosing the ethical health of technologies while maintaining consumer privacy and abiding by relevant policies (see Figure 3). It is continuously reviewed to ensure newly emerging ethical concerns are properly captured.

Qualitative interviews with industry leaders brought forth additional ethical principles that may govern emerging technologies, such as Value Adding and Adaptable. These have been incorporated into the framework's subdimensions.

Until standards and policies governing all categories of emerging technologies are developed by relevant regulatory agencies, academia, and standards organizations, companies should take it upon themselves to create their own set of specific ethical technology principles.



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Trustworthy and Ethical principles of emerging technologies

The principles are ordered by their relative importance to survey respondents:



Safe and secure

The technology is protected from risks that may cause individual and / or collective physical, emotional, environmental, and/ or digital harm.



Private

User privacy is respected, and data is not used or stored beyond its intended and stated use and duration; users are able to opt-in / out of sharing their data.



Responsible

The technology is created and operated in a socially responsible manner.



Robust and reliable

The technology produces consistent and accurate outputs, withstands errors, and recovers quickly from unforeseen disruptions and misuse.



Transparent and explainable

Users understand how technology is being leveraged, particularly in making decisions; these decisions are easy to understand, auditable, and open to inspection.



Accountable

Policies are in place to determine who is responsible for the decisions made or derived with the use of technology.



Fair and impartial

The technology is designed and operated inclusively in an aim for equitable application, access, and outcomes.

These principles can serve as guideposts to structure ethical debates internally and to communicate the organization's and products' ethos externally.



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08

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Our framework

Figure 3: Deloitte's Technology Trust Ethics framework

Our framework can serve as an effective first step in diagnosing the ethical health of technologies while maintaining consumer privacy and abiding by relevant policies.



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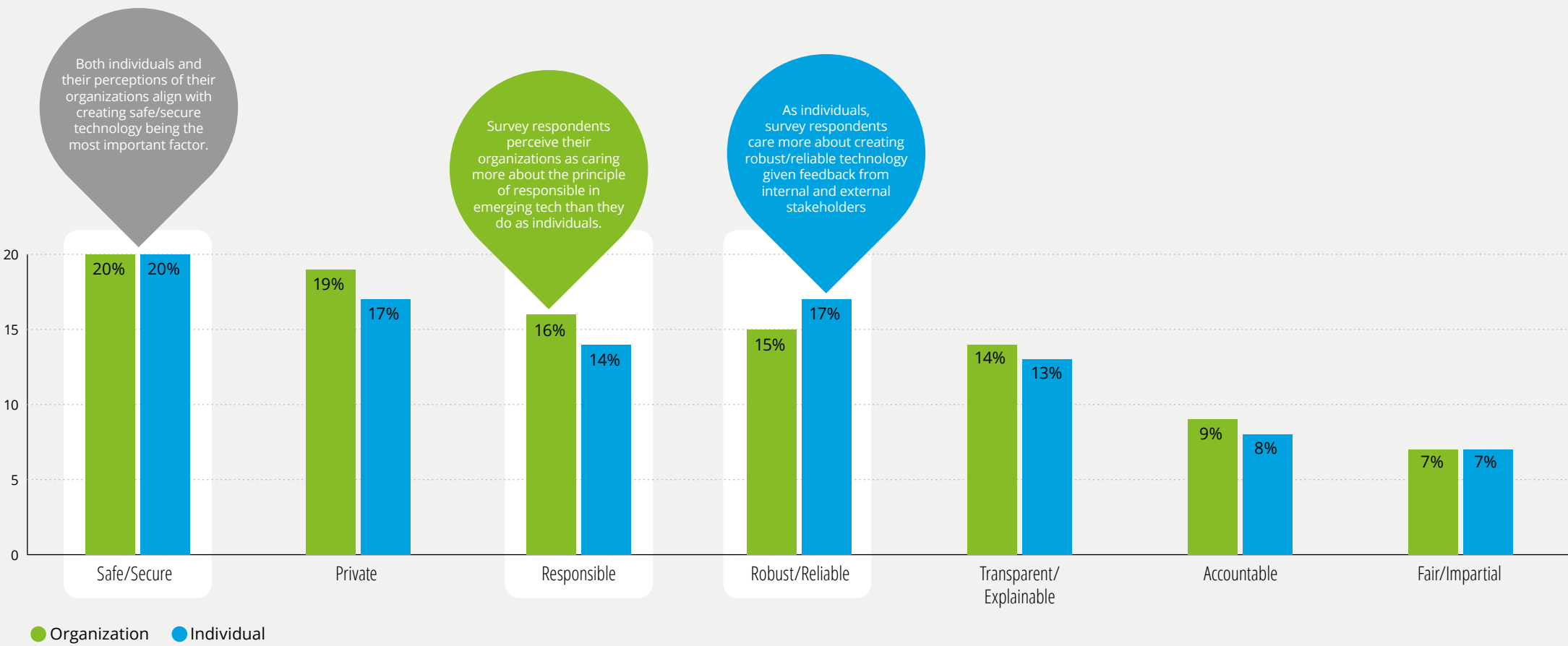
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Ethical principles' importance to the organization vs. individual

Survey respondents ranked each ethical principle based on both the perceived importance to their organization and the importance to themselves.

Figure 4: Ethical principles' importance to the organization vs individual
(Percentage)



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Key takeaways

These data points highlight a few key takeaways:

1

Companies and employees should align on trustworthy and ethical principles

A mismatch of these principles can lead to employee confusion and a lack of strong ethical beliefs, potentially resulting in the deliberate ignorance of those stated principles. These principles should be co-created by companies and employees in an open and flexible spirit to ensure adoption. If a company claims they value diversity, for example, but their employees either don't see the value of that principle or don't see the company enacting it effectively, employees may not embrace that principle. They may not change their hiring habits or check their biases. As a result, that company could fail to achieve the immense value diversity can bring, given that companies with a diverse workforce are 35% more likely to experience greater financial returns than their respective non-diverse counterparts.¹⁸

2

Companies need to understand how employee and consumer principles change.

When new principles emerge, companies need to understand why this is happening and appropriately incorporate or at least acknowledge these changes. If not, the company risks displeasing its employees and alienating consumers, both of which can lead to decreased profitability.¹⁹

These principles should be co-created by companies and employees in an open and flexible spirit to ensure adoption.

Of course, while these sets of principles provide a good foundation for technology governance, they don't cover every possible scenario or type of emerging technology. For maximum effectiveness, companies can use these examples as a starting point to generate a set of trustworthy and ethical principles unique to their own emerging technology products and services.



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Establishing standards of trust and ethics

Establishing a set of trustworthy and ethical principles specific to a company's emerging technology products and services is not enough on its own. No matter how well articulated they are, unless these principles are appropriately promoted through every level of a company and embedded in everyday operations, they will remain merely decorative. To establish a robust ethical culture, companies should foster conversations across the organization, with various private and governmental stakeholders, and with academia and standards organizations.



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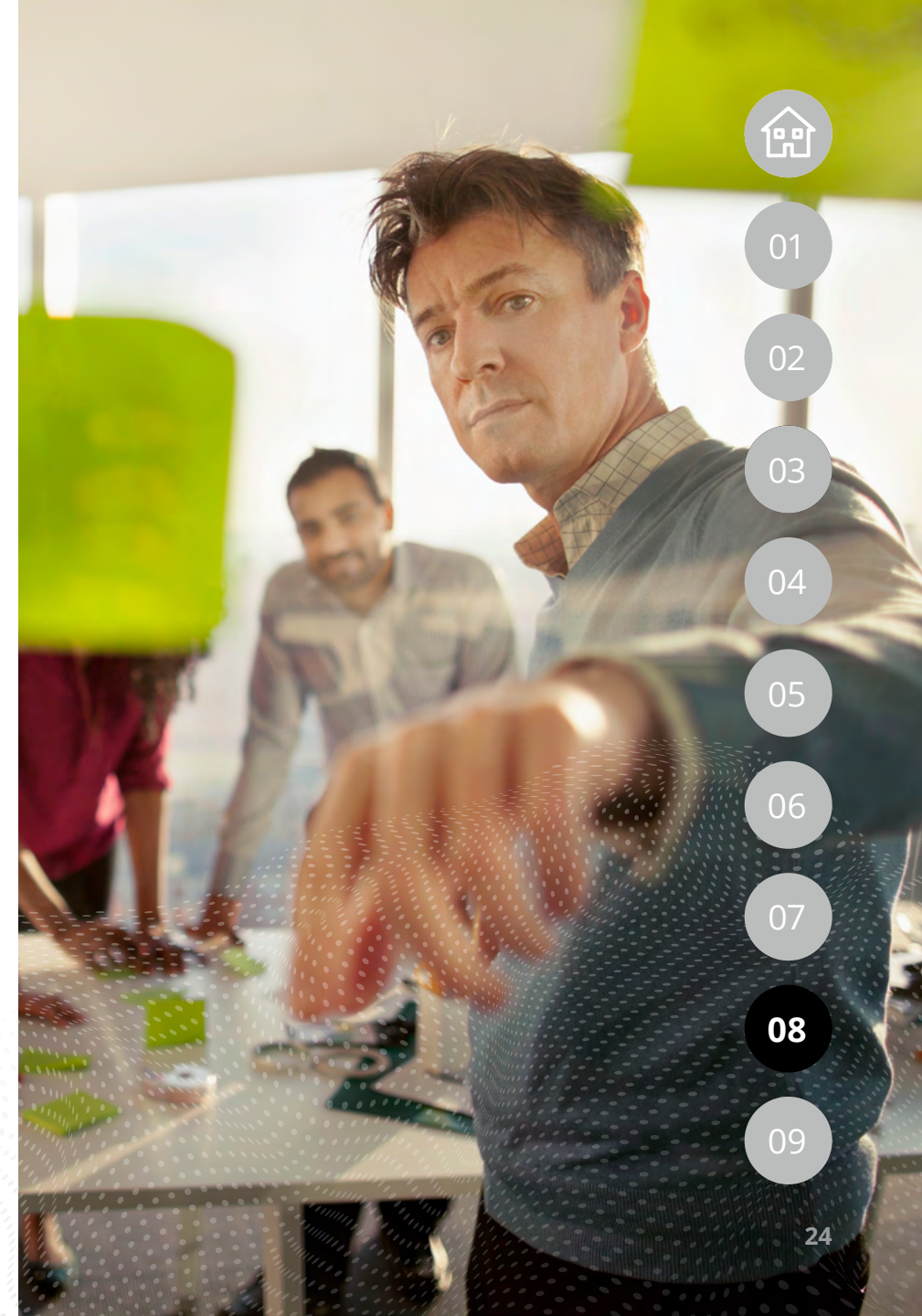
Promoting trustworthy and ethical standards within organizations

Companies currently promote ethical standards throughout the organization in a variety of ways:

A **common taxonomy** of ethical concepts pertinent to one's company or industry can be critical. The taxonomy should be defined and established during the principle-setting phase so that everyone in the company is speaking the same language when it comes to ethical principles in emerging technology. Most respondents affirmed that a common taxonomy for ethical principles exists at their company; however, 16% of respondents said that there was no common taxonomy across most levels and groups.

Top-down leadership communication

A strong ethical company culture starts from the top. In this model, ethical standards of the organization are promoted from the C-suite throughout the company. 79% of respondents say that their company's ethical standards are shared by their leadership, while far fewer see them as shared by mid-level managers (11%) and individual employees (5%). 5% of respondents claim their company's ethical standards are not shared at all throughout their organization. What's more, survey results indicate that when leaders promote ethical standards, those within the organization largely adopt them. An average of 89% of survey respondents buy into executive messaging on ethics, though the numbers differ by generation.



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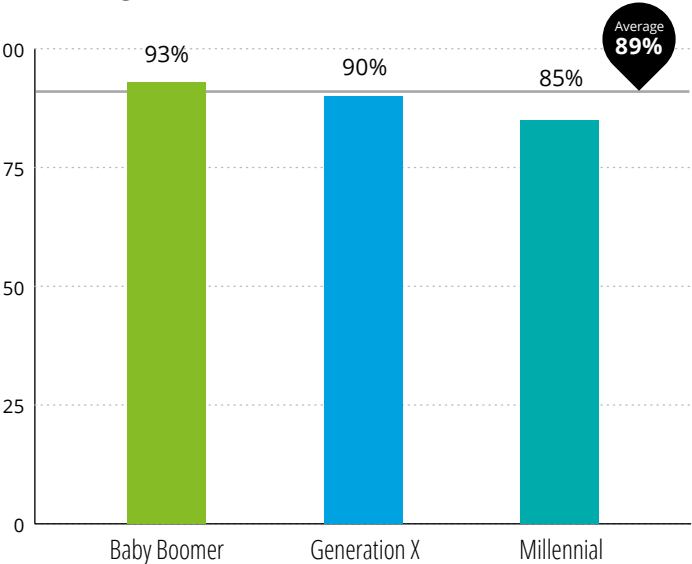
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Figure 5: Generational buy-in to leadership messaging
(Percentage)



As shown, respondents’ organizations’ buy-in decreases from Baby Boomers down to Millennials (see Figure 5). This declining trend in generations presents a need for companies to rethink their top-down leadership communication approach.

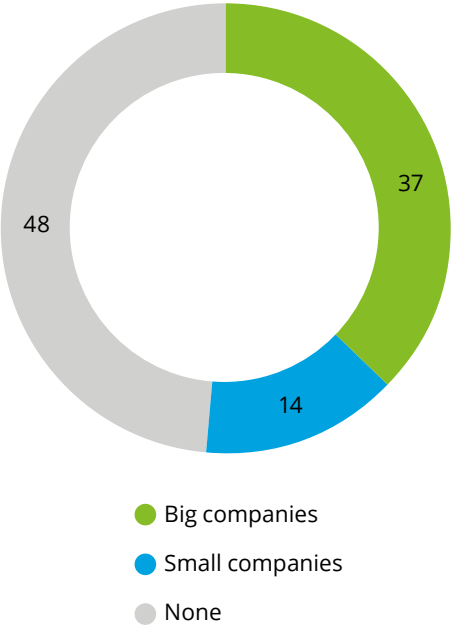
Based on survey responses, **ethics review boards and technology review boards** for existing and new technology are perhaps the most common method for identifying ethical concerns. For maximum effectiveness, ethical reviews should be **embedded in all phases** of the technology lifecycle. 79% of respondents say that their companies have technology review boards. However, only 40% have a review board and/or process to review ethical standards for all **in-production and existing** technology. 48% of respondents have a review board and/or process for reviewing ethical standards for all proposed new technology. When developing emerging technologies, **both** technical and ethical reviews should be conducted.



To understand ethical concerns with emerging technology, companies might conduct **user outreach** through means like focus groups, direct interviews, anonymous surveys, and/or in-field observation. Currently, only 33% of respondents use diverse focus groups to identify potential ethical issues with emerging technology.



Figure 6: Companies with Chief Ethics Officer (or similar role)
(Percentage)



Ethics owners (Chief Ethics Officer or similar role)

Some companies assign oversight of the ethical standards of the organization to an individual or office who is empowered to drive change. However, to be effective, this role and office needs to be sufficiently empowered, with executive buy-in, adequate team size and budget, and accountability for if, and when, problems arise. Larger companies (>\$1B in revenue) are more likely than smaller companies to have a Chief Ethics Officer or equivalent (see Figure 6).

Notably, 68% of respondents at companies with a Chief Ethics Officer or similar role believe having that role endows individual employees with more responsibility for ethical decision making. And the majority (86%) of respondents at companies with a Chief Ethics Officer believe that the role is appropriately empowered to drive ethical behavior throughout the company.

While most companies may have a Chief Ethics Officer, it is important to consider whether these individuals are familiar enough with emerging tech to establish and promote these technologies' ethical standards. Chief Ethics Officers today are mostly concerned with addressing the traditional ethical issues associated with human behavior, however, it is imperative for them to also consider the ethical behavior of emerging technologies.

Notably, 68% of respondents at companies with a Chief Ethics Officer or similar role believe having that role endows individual employees with more responsibility for ethical decision making.



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Establishing standards of trust and ethics

Sharing leading practices across the organization

Open routes of communication in companies around the establishment of ethical standards enable colleagues to share ethical lessons learned, ideate solutions to novel problems, and create rapport and relationships amongst colleagues so that future problems can be analyzed and solved in real-time. It's a popular method; 64% of individuals surveyed said their companies share leading practices across the organization to identify potential ethical issues. Common leading practice avenues include Scrum of Scrums, sprint retrospectives, highlighting ethical decisions via newsletters, and open-dialogue town halls. These sessions should be a safe space for cross-functional colleagues to identify, report, and address ethical concerns. Companies who share leading practices can create valuable opportunities for improving ethical behavior.



01

02

03

04

05

06

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Trust- and ethics-based KPIs and incentives

Building trust and ethics into job performance reviews can be an effective way to ensure attention and accountability to trustworthy and ethical practices in day-to-day operations. Only 32% of surveyed organizations use ethics-based KPIs during performance reviews. Example KPIs include:

KPIs for encouraged behavior

- ✓ Workplace ethical judgment and decision-making rating (rated by supervisors on a 1–5 scale)
- ✓ Collaborative approach measurement
- ✓ Distribution of user types served
- ✓ Number of proactive actions proposed to improve ethics handling
- ✓ Trust and perception employee rating
- ✓ Number of ethics lessons learned

KPIs for discouraged behavior

- ✓ Number of ethical issues relating to one’s product
- ✓ Ethical non-conformance within the project/group

Respondents who use ethics-based KPIs said that 81% of incidents reported were handled appropriately, showing that tracking these KPIs can help lead to effective identification and, therefore, mitigation.



Establishing standards of trust and ethics

Ethics training is another common method for embedding and sharing ethical principles throughout a company. Ethics training might include **ethical role-playing** to enact potential scenarios and build employee “muscle memory” for situations where ethical issues surface. One industry specialist on drone technology said that “hands-on learning in ethical dilemmas and training is actually a very valuable way to get people to think outside the box, particularly in this space, because we have an inherent human bias.” Only 30% of surveyed organizations currently provide ethical role-playing training.

Given the lack of educational resources on new and emerging technologies, likely due to their rapidly increasing rate of innovation, it’s likely that most companies currently don’t have sufficient training and tools to address their ethical risks. 72% of respondents said that they spend less than five hours per year on technology ethics training. Companies can leverage and further enhance upon existing training mechanisms and implement ethics training KPIs to encourage awareness of potential misuses of technology and the ethical considerations necessary to avoid them.

72% of respondents said that they spend less than five hours per year on technology ethics training.



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Collaborative methods for implementing ethical principles

Beyond internal measures for implementing ethical standards, companies can proactively work with external organizations to define ethical standards and potentially encourage the foundation of ethical grading and certifications.

Partnerships

Given the lack of existing governmental, industry group, academic, standards associations, and company principles for the ethical development of emerging technology, organizations should consider partnering with governmental and peer organizations to define these principles.

Currently, only 31% of the respondents surveyed said their organizations collaborate with other commercial organizations to review ethical concerns of emerging technology

Such partnerships could take as a model the Partnership on AI, with members from industry, non-profit, media, and academia, including such organizations as Google, Sony, Meta, Carnegie Mellon University, Intel, United Nations Development Program, IBM, Association for Computing Machinery, and Microsoft.²⁰

Currently, only 31% of the respondents surveyed said their organizations collaborate with other commercial organizations to review ethical concerns of emerging technology. And, although only 22% partner with governmental organizations for the same, 61% of respondents said they believe the government needs to play a larger role in setting ethical emerging technology standards.



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Establishing standards of trust and ethics

Ethics grading and certifications

In the future, both individuals and companies could rely on outside organizations to verify adherence to appropriate ethical emerging technology principles. For instance, companies may be assessed and rated by an independent third-party on their overall conformity to established ethical standards (similar to Energy Ratings Standards and other Environmental, Social, Governance (ESG) ratings). And, individuals who work with emerging technologies may obtain independent certifications that attest to their training in ethical technology. Also, similar to the Hippocratic Oath of medical professionals, technology developers would have a professional obligation to act ethically.

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Sharing and reporting trustworthy and ethical concerns

A robust culture of trust and ethics within an organization encourages the transparent sharing of ethical concerns, whether through formal or informal reporting procedures. Such transparency can help establish trust and goodwill among employees, customers, and shareholders alike by creating a company reputation of honesty and trustworthiness.

Following are some commonly used channels for both internal and external stakeholders to report ethical concerns:

Constructive confrontation amongst internal stakeholders
Most survey respondents indicated that they are comfortable having direct conversations with leadership, stakeholders, HR, and product owners. 75% of respondents said the flagging of ethical concerns is “encouraged and praised” at their companies and 25% said such flagging was “not recognized either positively or negatively.” 0% said it was “discouraged.”

Additional ethics reporting channels for internal stakeholders
Ordered by number of survey respondent votes: dedicated ethics/compliance teams, anonymous email inbox, anonymous phone hotline, anonymous web form/app, informal forums (e.g., town halls), formal forums (e.g., ethics/tech review boards), best practice communities, and personnel embedded within your team responsible for capturing ethical feedback.

Ethical reporting for external stakeholders
Only 45% of survey respondents are sure that their company offers avenues for non-employees to report ethical concerns. One industry specialist we interviewed suggested adding an “Ethics in Technology” or “Questionable Use of Our Technology” category to the organization’s Contact Us page to enable external stakeholders to report ethical concerns. Additional avenues for non-employees to report ethical concerns include toll-free hotlines, email or Web forms, public community forums, and consumer advocate departments.



Promoting trust and ethics in technology: the path forward

To conclude, companies that offer emerging technology products and services no longer have a real choice when it comes to fostering the ethical use of these technologies. Those who ignore ethical issues like the potential misuses and abuses of emerging technology could face repercussions in the form of a sullied reputation, costly legal battles, loss of employee morale and public trust, and, ultimately, damage to the bottom line. Conversely, companies who approach these issues proactively, with an eye toward establishing specific ethical principles for a company's emerging technology products and services, have much to gain. This section summarizes the basic steps companies can take, as well as the initial questions they should consider, to set themselves up to become ethical leaders in emerging technology.

1

Define how your company approaches trust and ethics.

- *Is there alignment between the company's culture, Standards of Conduct, and ethical principles, in addition to compliance/regulatory standards?*
- *If not, how could you begin to create this alignment?*

2

Select trustworthy and ethical principles relevant to your company's and your customers/clients' use of emerging technology.

- *Which ethical principles are relevant to your organization and its products/services?*
- *Which ethical principles are relevant to your customers/clients who are using your products/services?*
- *Have you had open conversations with internal and external stakeholders to validate that the chosen principles accurately reflect your goals and values?*
- *Have you had open conversations with your customers/clients to validate that the chosen principles in your products/services accurately reflect their goals and values?*

3

Embed identified trustworthy and ethical principles within your company.

- *How are ethical considerations messaged within your organization?*
- *Do you have the appropriate channels to gather feedback?*
- *Where are you seeing issues regarding the adoption of ethical considerations and how can you mitigate these issues?*

4

Consistently review and adapt principles to ensure trustworthy and ethical behavior throughout rapidly evolving technology advancements.

- *How often do you plan to review these principles?*
- *How are you staying current on the latest technological developments, both internally and externally?*
- *Are you partnering with other organizations to ensure your organization has a comprehensive view of the changing technology landscape?*



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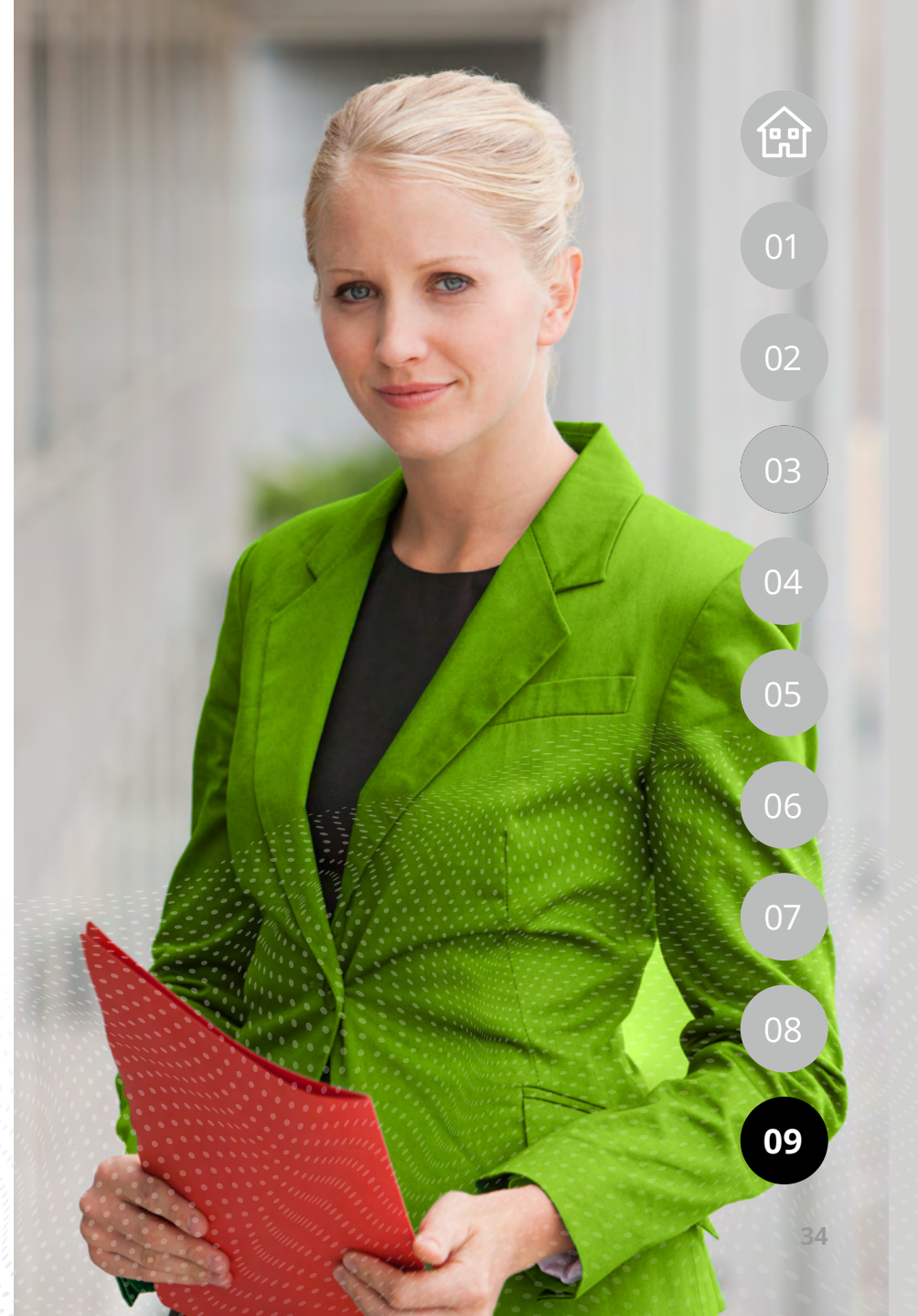
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Promoting trust and ethics in technology: the path forward

Carefully discussing and executing these steps can help position your company to be a trustworthy and ethical leader in the emerging technology space. Leverage Deloitte's Technology Trust Ethics framework (Figure 3) to assist in debating the ethical implications of emerging technology and as a guide to responsible decision-making in its design, operation, and governance.

We have made huge advances in technology, which has been applied to many familiar everyday items. We are at a critical juncture in technology advancement. Creating an environment where the end user can rely on technology requires that the technology follow ethical principles, such as those outlined in the Technology Trust Ethics framework. Companies that are designing, developing, and deploying emerging technologies not only have an enormous responsibility to minimize harms but also an incredible opportunity to maximize the technology's positive potential. It is through our collective commitment and action that we can forge a trustworthy and ethical future.

It is through our collective commitment and action that we can forge a trustworthy and ethical future.



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About the survey

The study was conducted as follows:

- Developed initial hypotheses on the state of ethical technology principles.
- Performed secondary research to identify trends at the cross-section of trustworthiness, ethics, and emerging technology.
- Created an interview guide that led our conversations with 19 industry specialists, serving as our primary research.
- Consolidated interview findings into a key takeaways document.
- Built and executed a 51-question survey to quantitatively validate industry specialist interview findings across a statistically significant population (1,794 respondents).
- Analyzed the survey data to validate hypotheses and support the white paper's key arguments.

All survey respondents were business and technical professionals who are actively involved in either developing, consuming, or managing emerging technologies, including artificial intelligence, machine learning, blockchain, augmented reality, virtual reality, quantum computing, computer vision, robotics, and more. Respondents could be either full-time or part-time employees.

The survey represented respondents from: North America (n = 1,159), Europe (n=378), South Asia (n=110), East Asia (n=43), Oceania (n=27), South America (n=26), Middle East (n=25), Africa (n=14), Central America (n=2), and other regions (n=10).



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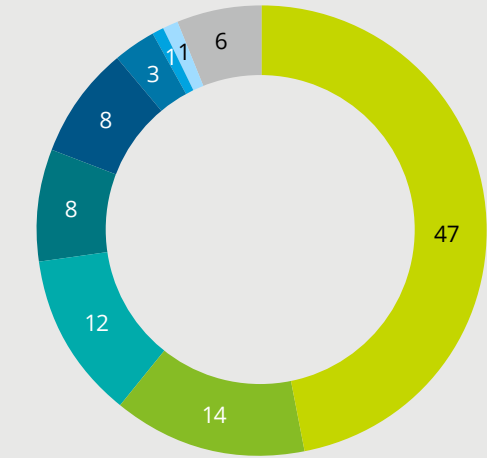
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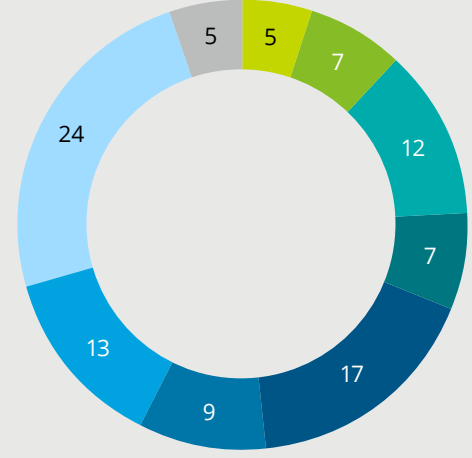
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Figure 8: Primary industry
(Percentage)



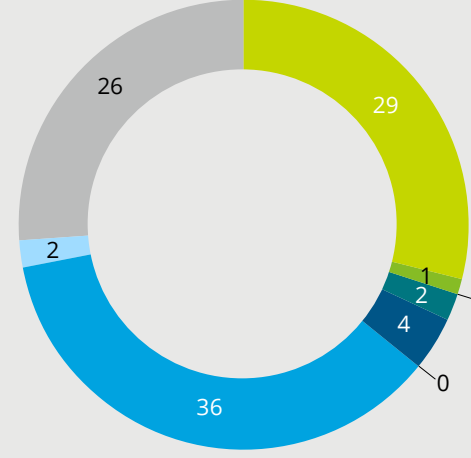
- Technology, Media & Telecommunications
- Financial Services
- Live Sciences & Health Care
- Consumer
- Energy, Resources & Industrials
- Academia
- Government & Public Services
- Non-profit
- Other

Figure 9: Annual revenue
(Percentage)



- More than \$200 billion
- \$50-\$200 billion
- \$49.9-\$10 billion
- \$9.9-\$5 billion
- \$4.9-\$1 billion
- \$500 million-\$0.9 million
- \$100-\$499 million
- Less than \$100 million
- Prefer not to answer

Figure 10: Function
(Percentage)



- Product development, R&D, Design, Testing, etc.
- Governance, Compliance, Legal, Regulatory, etc.
- Finance, Forecasting, Accounting, etc. 0%
- Operations, Sourcing, Procurement
- Sales, Marketing, Customer Service
- HR, Communications 0%
- Information Technologies
- Other
- General Management, C-Suite, Strategy, etc.



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Figure 11: Role type
(Percentage)

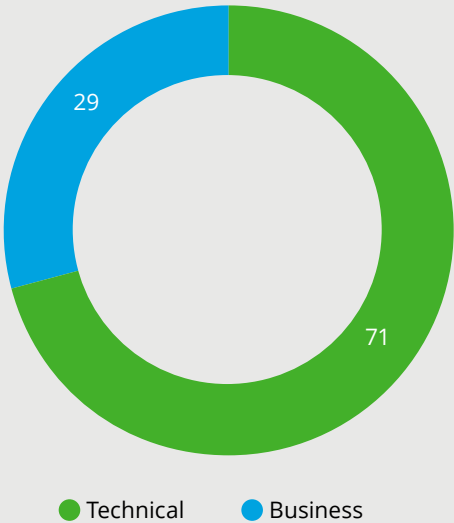
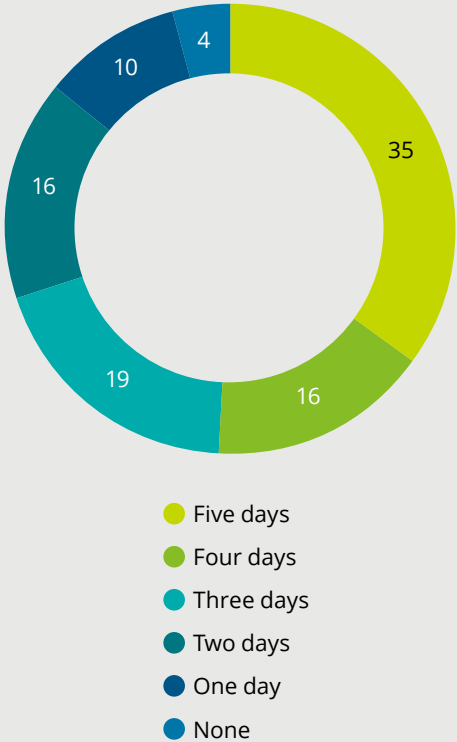


Figure 12: Workweek remote
(Percentage)



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Kwasi Mitchell serves as the Chief Purpose Officer of Deloitte. He is responsible for driving an organization-wide strategy around Deloitte’s commitments to areas including, but not limited to, diversity, equity, and inclusion; sustainability and climate change; and education and workforce development.



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Learn more about Beena at <https://beenammanath.com/>.



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