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Technology Vision 2023 for Biopharma

Merging atoms and bits

The foundations of digital innovation redefine boundaries in biopharma

A defining moment for biopharma: working in human+machine mode

We work and live within interlinked realities: physical and digital. The interconnection grows more pervasive as technology and science thrive – creating new, radical possibilities across the biopharma value chain. Working in human+machine mode, industry innovation is surging. Scientists, patients, healthcare professionals (HCPs) and business leaders are driving it, powered by four technology trends.

In **Accenture's Technology Vision 2023 for Biopharma,** we explore how these four trends – *Our forever frontier, Generalizing AI, Your data, my data, our data and Digital identity* – are guiding different ways of working, operating, innovating, collaborating and growing.

We believe the time has come to further blur the lines and welcome the next wave of innovation and business transformation in biopharma.

Four Technology Trends 2023

In this report, we explore specific implications for the biopharma industry.

First, the convergence of science and intelligent technology is creating a step change in the speed of biopharma innovation. Robust computing power, increasingly advanced techniques and the explosion of digitized data are creating opportunities to generate new insights and treatments faster. In silico science is booming – experiments are moving from wet labs to computers – allowing for experimentation that was once impossible in a physical setting. To help drive new, sustainable growth amid competition, major industry players are signing collaborations and investing in AI companies across the ecosystem.

Second, Generalizing AI, spurred on by foundation models and large language models (LLMs), is becoming essential for companies to prosper. The volume of information required to solve the unmet needs of patients around the world means biopharma leaders will need to lean on AI advancements like Generative AI (GenAI). This new dimension of human-AI collaboration means most workers will use one or more GenAI copilots in daily activities. Our analysis shows that an average of nearly 40% of biopharma work hours will be impacted by GenAI.

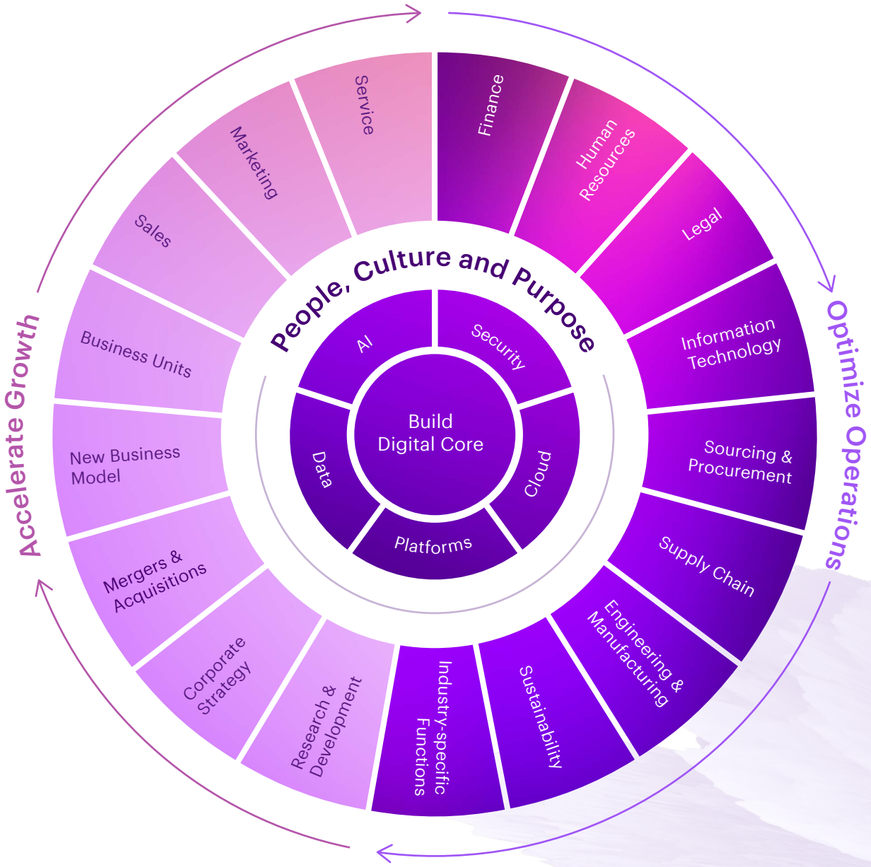
Third, data has become the lifeblood of innovation – transforming research and development (R&D) and powering faster, smarter decision making. The vast proliferation of data generated by technological and scientific advances offers immense possibilities – including better patient experiences and improved health outcomes across markets globally. There are untapped opportunities for stronger collaboration and data sharing throughout the broader ecosystem.

Fourth, digital identity is the quiet catalyst of this next era of innovation. Digital identities will enable secure data sharing, seamless application of AI and new and better science – supporting patient-driven, precision therapy discovery with greater speed. It's therefore no surprise that 92% of biopharma executives agree that their organizations need more systematic ways to manage emerging technology responsibly.

Rapidly evolving intelligent technology and scientific innovation call for Total Enterprise Reinvention* fueled by a strong digital core.

This affects the entire biopharma value chain – including R&D portfolio, operations, talent, commercialization, ecosystem partnering and competitive positioning. To remain competitive, biopharma companies will need to adopt a strategy of continuous enterprise reinvention and build their digital core.

A strong digital core is required to profitably grow the heart of the enterprise and capture new growth. It includes business-critical and differentiated functional platforms that support essential business processes. It also includes interoperable, non-functional components that form the backbone of an organization's technology foundations, such as, data, AI, cloud and security. This year's top technology trends highlight the most critical, non-functional components needed for a strong digital core.



Source: Accenture

* Total Enterprise Reinvention is a deliberate strategy that aims to set a New Performance Frontier for companies and, in most cases, the industries in which they operate. Centered around a strong digital core, Total Enterprise Reinvention helps drive growth and optimize operations.

Contents

Our forever frontier

The big bang of computing and science

The big picture for biopharma

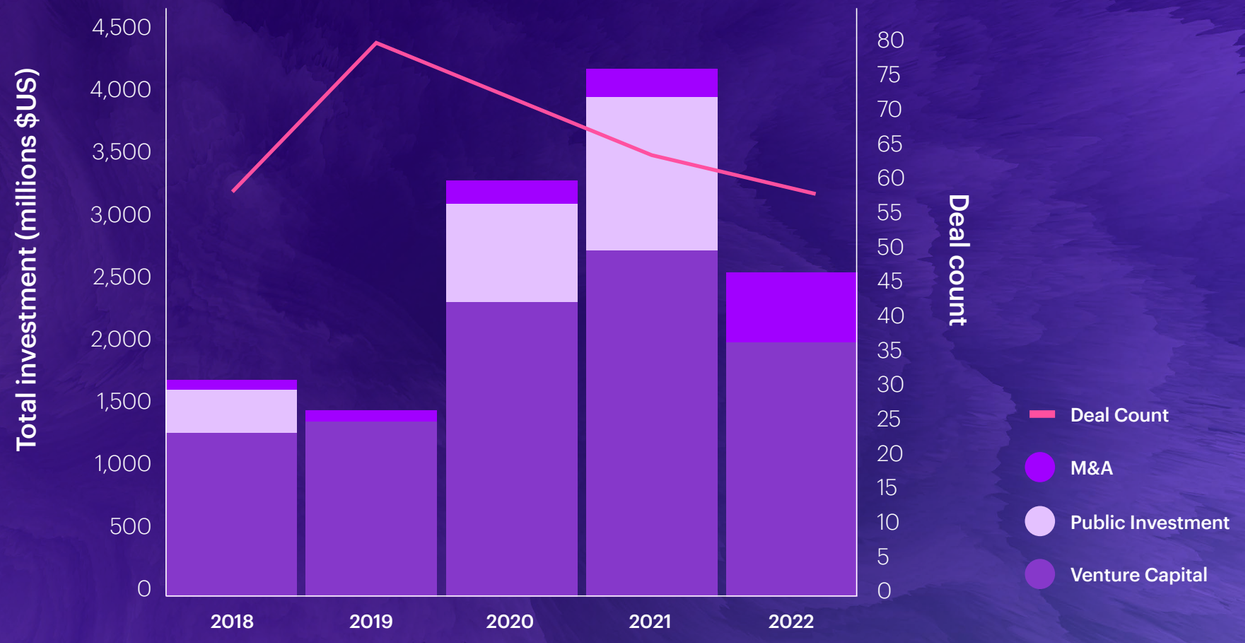
The science and tech convergence is bringing forth a step change in the speed of innovation and further enabling New Science.[3]

93% of biopharma executives describe the speed of innovation the industry is experiencing due to advancements in science tech as either accelerated or unprecedented.

This potential has made private and public biopharma players take notice. In the past five years, total investment in AI-mediated drug discovery has experienced a CAGR of 8%, peaking in 2021, primarily due to large IPOs, and then declining in 2022. Nevertheless, 2022 closed with a total of $2.5 billion investment in AI-mediated drug discovery.[4] *See figure 1.*

Figure 1

Total investement in AI-powered drug discovery start-ups grew by $840 million in the past five years



Source: PitchBook | Accenture Research 2023

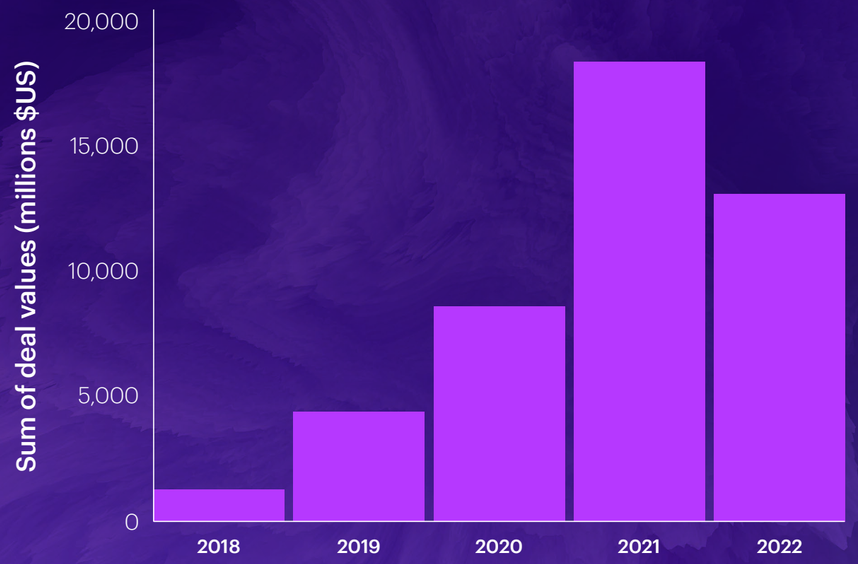
Biopharma players are signing collaborations and investing in the infrastructure they need to participate. Through collaborations, biopharma has invested over $1 billion in upfront payments in the last five years. The potential value of these investments is estimated at $45 billion.[5] *See Figure 2.*

The biggest deal value is with Recursion company, which in December 2021 entered into a $12 billion-worth collaboration and license agreement with Roche and Genentech. Both companies will use Recursion's operating system to identify novel targets and advance medicines more rapidly in 40 programs that include key areas of neuroscience and oncology. Each project values more than $300 million in potential milestone-based payments and royalties.[6] This extensive collaboration shows the growing importance of AI/ML-enabled drug discovery and development.

Figure 2

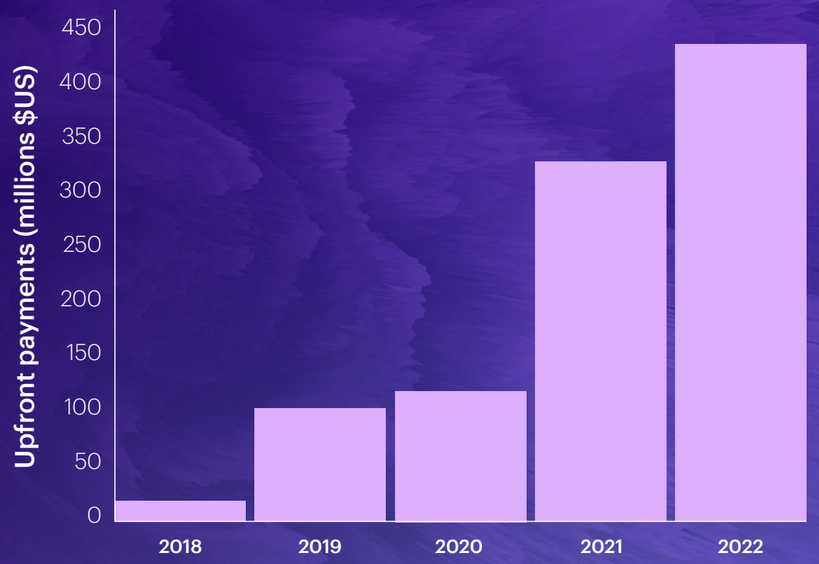
In the last fives years, biopharma has entered in collaborations with AI companies which are estimated to be worth more than $45 billion

Biopharma partnerships with AI companies: Sum of deal values



Source: Global Data, Biomedtracker | Accenture Research 2023

Biopharma partnerships with AI companies: Upfront payments



Source: Global Data, Biomedtracker | Accenture Research 2023

The technology

The technology is already having a real-world impact. For example, Absci[7] has created and validated de novo antibodies entirely by computer using zero-shot GenAI. Zero-shot GenAI is the process of designing antibodies to bind to specific targets without using any training data and producing antibody designs that are not found in existing databases.

GenAI saves the time and cost associated with lead optimization in a wet lab (fast cycle times to validate antibodies in a wet lab remain crucial). Zero-shot GenAI not only improves development speed, but the antibodies discovered have higher likelihood of real-world success since optimal parameters are used in their design.

In fact, GenAI-based antibody binders are being observed with higher naturalness scores than known therapeutic antibodies and antibodies found in humans and animals.

In silico science is the practice of performing scientific experimentation on computers or via computer simulation instead of physical experiments (e.g., in a wetlab – in vitro, or in a living organism – in vivo). Given the explosion of digitized data (e.g., genomics, electronic health records), the reduction in the costs of computing power, and advanced computational techniques to generate insights, it is now possible to do much of what was done in physical experiments in silico – cheaper and faster.

In silico science requires a specific set of capabilities. Biopharma and health research organizations must invest in the right data and technology for their R&D organizations.

- **Real-world data** is needed to enable precision medicine and the delivery of human-ready molecules. This includes electronic health records, 'omics data (e.g., genomics, transcriptomics, proteomics), clinical trial results and systems biology.
- **Biocuration and data management** is needed to allow fast access to high-quality, analytics-ready data – extracting it from complex internal and external silos and curating it to help ensure interoperability, re-usability, data lineage and maximum value for predictions and insights.
- **Technology and platforms** offer a customizable and flexible infrastructure to rapidly innovate and run custom analytics at speed and scale. The right tools and assets (e.g., domain-specific knowledge graphs) are needed to enable scientists to discover new knowledge through the prediction of novel associations between biological components, resulting in smarter, more targeted therapeutics.

The implications

Computing and science have implications in three main areas of biopharma.

Tech and data

Legacy data is messy. Years of clinical research data spread across different resources makes it difficult to analyze and apply AI/ML techniques. Moreover, extensive input data is expensive and hard to get. Getting access usually exceeds the company's internal resources and can create complex ethical concerns. To solve for this, companies need a data strategy that informs their overall business and ecosystem strategy. This strategy should anchor to consistent standards and metrics and include data management and governance practices. Additionally, companies should leverage digital platforms available through ecosystem partners, such as cloud AI services customized for protein structure and biomolecular property predictions, and digital twin platforms, to allow scientists to collaborate by looking at 3D molecule structures.

Organization and culture

There will be a continued scarcity of talent at the intersection of science and technology. What's more, science and technology convergence requires cross-disciplinary teams to work together. However, the culture, cadence and language of science and engineering are vastly different. Science tech companies should prepare to effectively manage a potential culture clash. Biopharma needs people with entrepreneurial skills, drive and credibility to lead cross-disciplinary teams, incubate and mobilize breakthrough innovations. To attract, develop and retain this talent, companies must position themselves as talent destinations. They should create a plan to intentionally nurture the skills of their existing workforce and create well-defined, rewarding career paths.

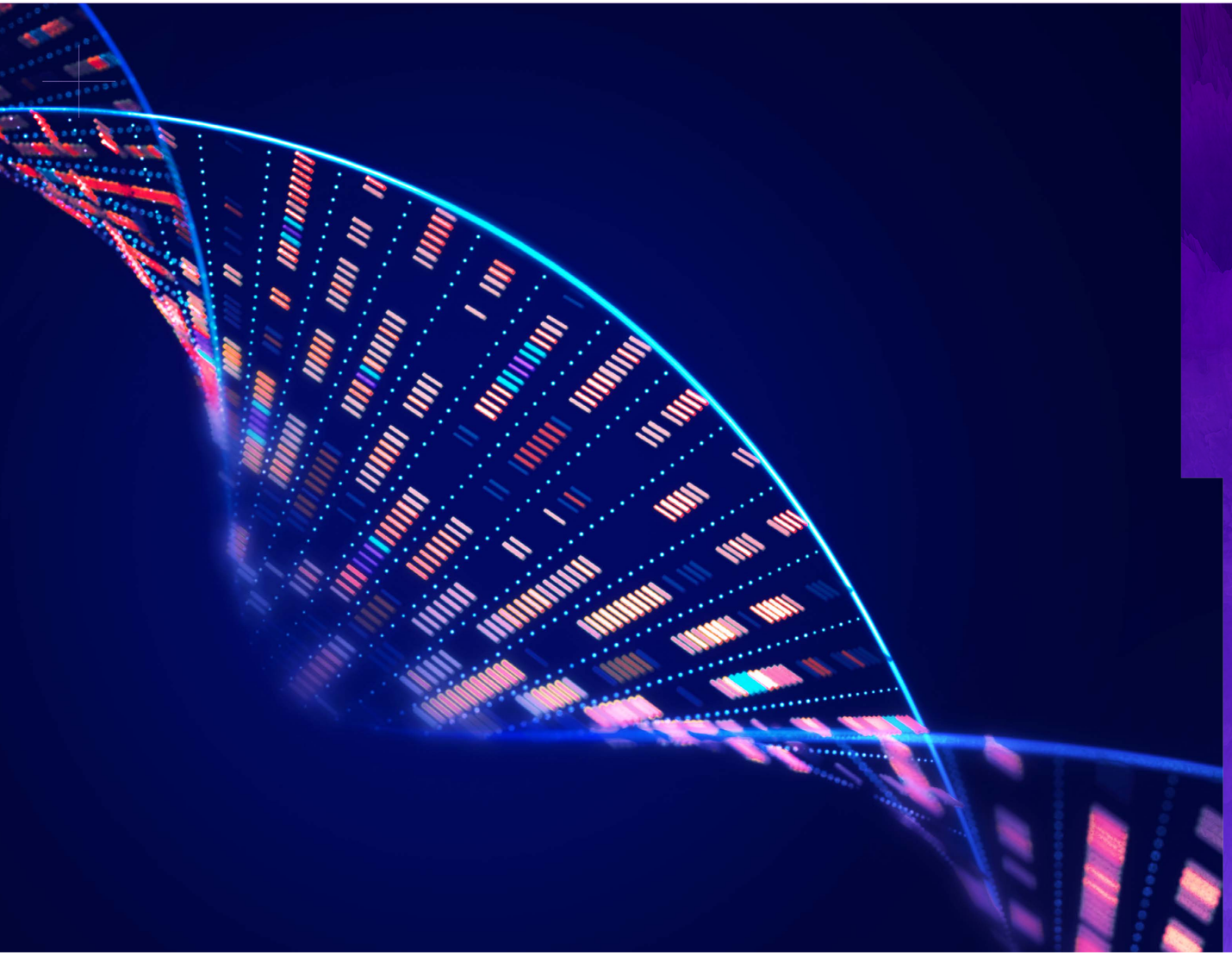
Strategy

While biopharma companies have invested in AI-mediated drug discovery collaborations in the past few years, they generally focus on a specific therapeutic area or a small part of their portfolio. Investing in and enabling in silico science must have a strongly articulated business rationale to attract C-suite sponsorship and investment beyond the pilot and scale to the full portfolio.

A healthy, collaborative ecosystem is vital for data sharing between biopharma companies, academic institutions, start-ups and large tech companies to help accelerate R&D. Decentralized approaches for secure, collaborative data use, and tools like blockchain help with data sourcing, verifying findings and protecting intellectual property. We discuss more on data transparency and data sharing in our forthcoming section: *Your data, my data, our data.*

Generalizing AI

The radical edges and possibilities of intelligence



The big picture for biopharma

Generative AI (GenAI) is already having a profound impact on biopharma, prompting reinvention across the value chain.

The future of the industry reimagined with GenAI means identifying better candidates, bringing higher quality products to market faster and maximizing sales and patient experience, all with greater equity and sustainability. For example, GenAI is being used to design antibodies in silico, predict protein structures, generate digital marketing content and improve production planning.

AI-driven innovations are urging companies to continue building capabilities. For example, Phrasee[8] helps marketing teams generate and improve their marketing content to maximize returns. Novo Nordisk leverages the solution to optimize its diabetic email marketing campaign to customers, which delivered an uplift in open rates. GenAI is being applied to enable smarter clinical protocol design. Yseop[9] has a long-term commercial and investment agreement with Eli Lilly to expedite the regulatory approval process – using GenAI to create reports including clinical study reports (CSR), patient narratives for regulatory submissions. GenAI has the potential to maintain a live tracking of the risk on any product, facility or company – effectively engineering a real time, always on posture. Whether a manufacturer's supplier is getting an FDA Form 483,[10] change of manufacturing site or a change in management, GenAI will be able to maintain 24/7 vigilance revolutionizing the regulatory bodies risk-based inspection methods.

For functions like finance and contact centers, many biopharma companies are engaged in cross-industry GenAI pilots. For example, Microsoft Viva Learning and SAP SuccessFactors will allow employees to use natural language queries to create personalized learning recommendations.[11] As employee courses are completed, reports will automatically be generated for an organization-wide, up-to-date view of the skills landscape.

98% of biopharma executives agree that advancements like GPT-4 GenAI are ushering in a new era of enterprise intelligence and are either very or extremely inspired by new capabilities.

The technology

GenAI is revolutionary because it is broadly trained across a data modality, or multiple modalities like language and image, rather than on a specific task.

GenAI can learn to complete new tasks within these data types with minimal or no extra training. There are many foundational models and applications depending on the content, such as OpenAI's GPT for text, Dall-E for image. *See figure 3.*

It's vital to select the right model for your task, while evaluating the potential of frequently launched new models. There are more than 70 models widely adopted, and the number is rapidly growing.[12] The biopharma executives we surveyed unanimously agreed that AI-powered software and services will significantly augment their organizational innovation in the next three to five years. However, it is critical to strike a balance between where they themselves innovate versus where they rely on major players to create models that are synonymous across the industry.

LLMs have been increasing 10x per year

As LLMs improve, advances flow to downstream tasks and multi-modal models. These are models that can take multiple different input modalities (e.g., image, text, audio), and produce outputs of different modalities.

Figure 3

Source: Accenture analysis of foundation models and applications.

The implications

GenAI is disrupting work as we know it by introducing a new dimension of human-AI collaboration in which most workers will have a “copilot.”

To realize the benefits of new value creation, companies must begin to rethink workforce models, craft new roles and create plans to build future-skilled talent.

Biopharma executives anticipate a range of benefits from increased use of AI foundation models, including faster decision-making (70%), enhanced customer experiences (63%), better internal and external communications (60%), and accelerated innovation (55%).

To understand the impact on the workforce, Accenture analyzed occupation-level data from the US Bureau of Labor Statistics and O*NET. First, language-intensive tasks were identified, and their transformation potential assessed based on interpersonal collaboration, complex reasoning or expert validation needed. This information was then combined with employment data to determine the portion of worked time that could be transformed by the technology. According to this analysis, on average, almost 40% of biopharma work hours will be impacted by GenAI. Our analysis shows which roles biopharma companies can automate vs. augment with GenAI. *See figure 4.*

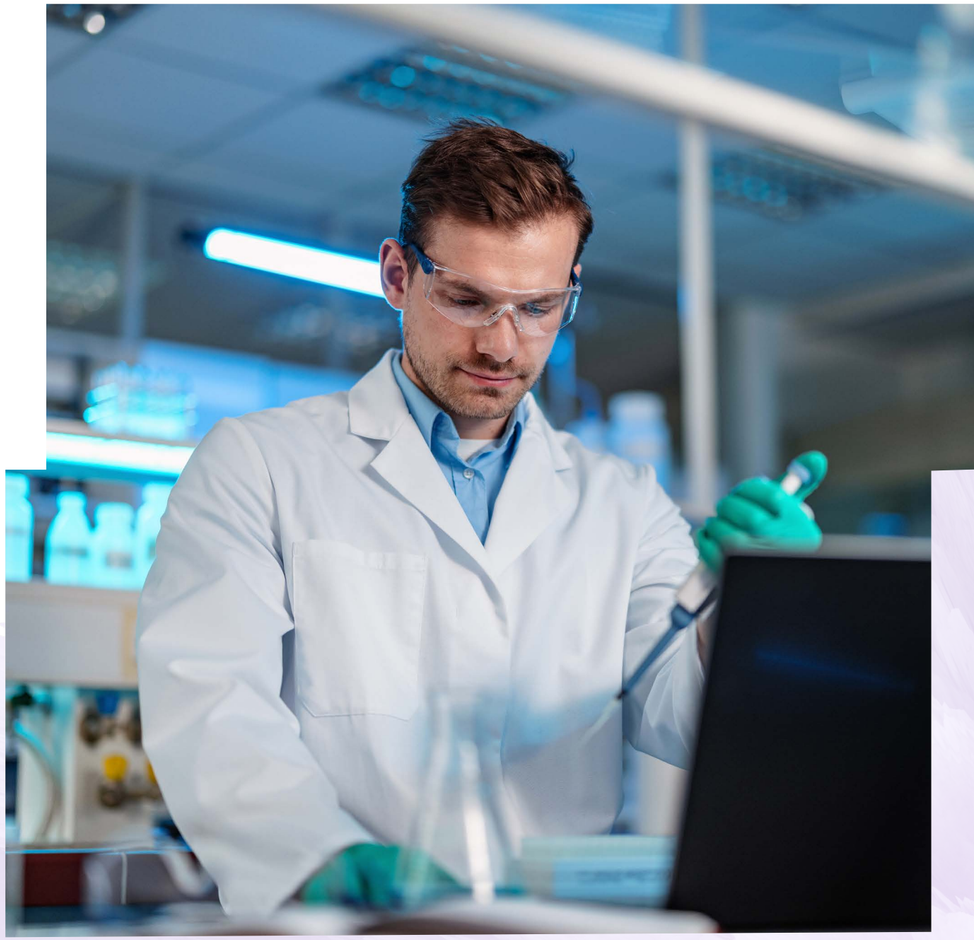
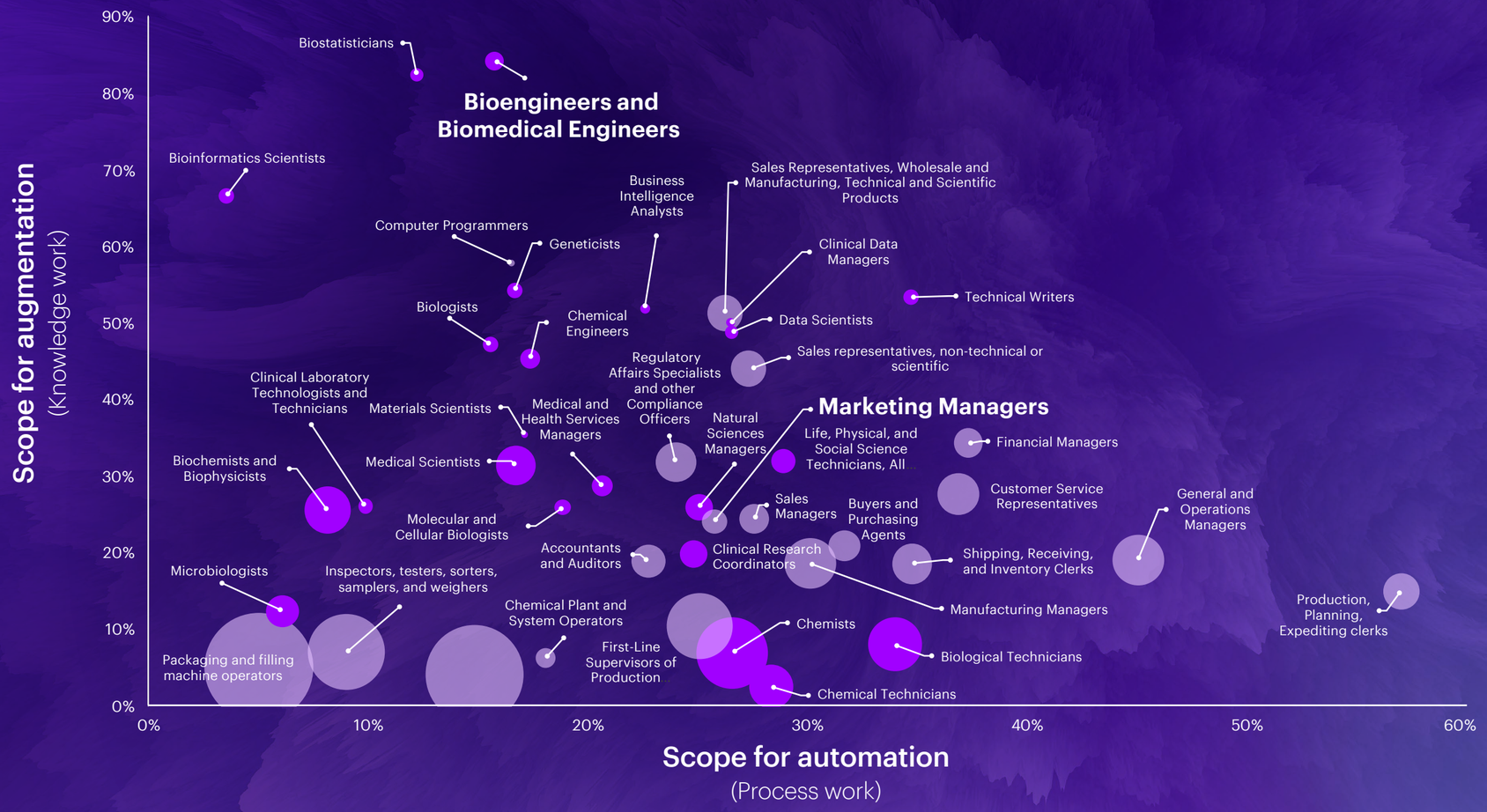


Figure 4

Industry specific roles show a higher potential for augmentation while other roles show a higher potential for automation

Exposure to Generative AI by role

Percentage of working time by role



25k
10k
5k

Bubble size: Number of employees in US
Not exhaustive

Workforce type

- **Industry Specific**
- **General**

Source: Accenture research. Refer to the About GenAI Impact on the US Workforce Analysis

For example, the tasks of **biomedical engineers** show high potential for augmentation but still require significant human involvement compared to the tasks of **marketing managers** (which are substantially transformed by GenAI and require less human input).

At the same time, GenAI raises important questions about responsible use of AI.[13] When AI is designed and put into practice within an ethical framework, it accelerates the potential for responsible collaborative intelligence, where human ingenuity converges with intelligent technology. Without a robust security strategy, GenAI poses a heightened risk of compromise. First among these is copyright infringement and plagiarism, which happens when GenAI tools bring together content from the internet. Intellectual property and privacy can also be infringed when GenAI tools use data submissions to train new models.

The regulation of LLMs in medicine and health care, without damaging their promising progress, is vital to help ensure safety, maintain ethical standards, pre-empt unfairness and bias and protect patient privacy. Regulatory standards, such as the FDA's Good Machine Learning Practice (GMLP), will need to be modified to clearly distinguish LLMs trained for use in medical applications from those used for non-medical purposes.

Dealing with these challenges involves three key steps:

Keep it in-house: No real-time authoring of market-facing content by GenAI. Appropriate reviews and approvals needed by MLR/PRC/IRB approval needed before publication.[14]

Keep it private: No use of patient health information and proprietary data in open-source models.

Test for bias: Establish a mechanism for methodical assessment of potential bias or improper context in data and output.

Biopharma companies need to create a North Star GenAI vision and review it regularly.

Savvy leaders will already be examining talent strategies, redesigning jobs and ways of working and transforming business models. Bringing AI's promise to life in this context requires a strong action plan that aligns with IT functions. Start with a business-driven mindset, create a talent pipeline that leverages AI while defining new roles like Prompt and Linguistic Engineers. Prepare proprietary data and models to help ensure contextual AI operation and balance the AI model using a data mesh approach that enables agility. Invest in foundational GenAI architecture. Define a rigorous build-buy-partner ecosystem strategy and enhance AI governance to minimize risk.

Organizations that establish a plan for success with AI can gain a competitive edge. As a vital partner, GenAI can help biopharma companies attract and retain top talent, boost the potential of their talent, improve productivity and gain operational expenditure (OpEx) efficiencies.

Your data, my data, our data

The lifeblood of innovation

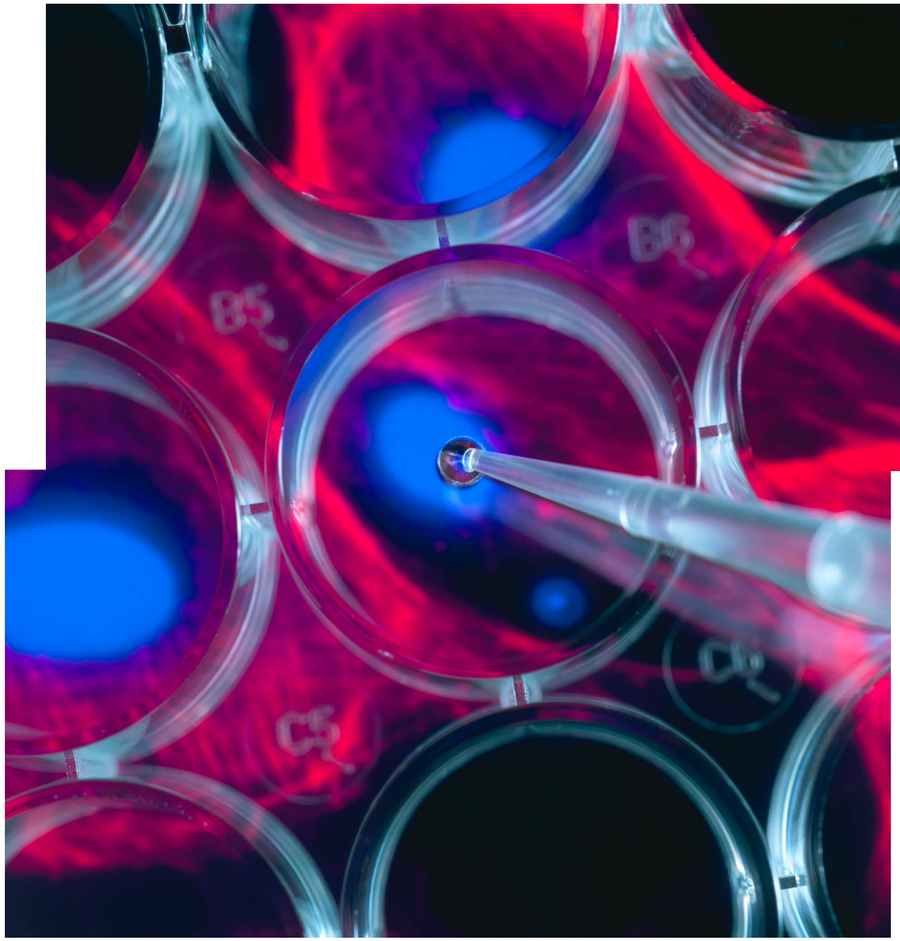
The big picture for biopharma

Data has become the lifeblood of innovation – more visibility and easier access across networks is sparking innovation, supporting the optimization of care access and contributing to improved patient outcomes.

Biopharma executives report their organizations have experienced a significant increase in volume (65%), variety (38%) and velocity (48%) of data in the past three years. And supply and demand for data among key industry players is increasing. According to our respondents, the top stakeholders exerting pressure to increase data transparency are investors and shareholders (48%), followed by customers, partners and government agencies (all 33%). Biopharma companies have the potential to earn greater ecosystem and patient trust by proactively increasing data transparency, or risk having someone else do it for them.

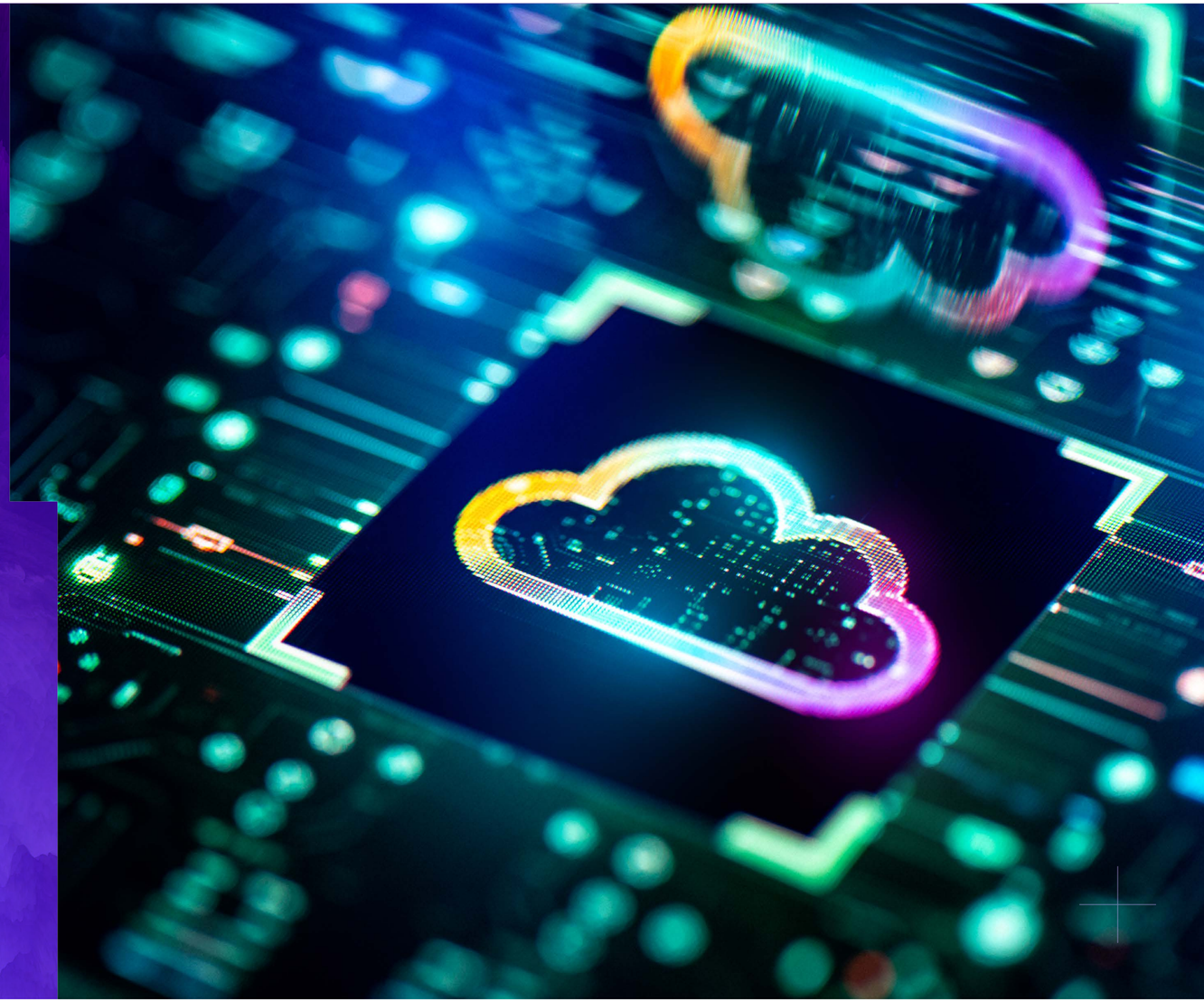
When appropriately managed and distributed, data can be transformative, especially in the realm of biopharma R&D and the broader health industry. For example, the Novartis Foundation[15] (in a partnership with Microsoft and Accenture) aims to use AI and shared data to transform cardiovascular population-wide health outcomes. Then there's MELLODDY[16] , which aims to enhance predictive machine learning models using decentralized data from 10 pharmaceutical companies (the world's largest collection of small molecules) with known biochemical or cellular activity to increase efficiencies in drug discovery – without exposing proprietary information. Such initiatives underscore the fact that shared data assets are creating tangible progress.

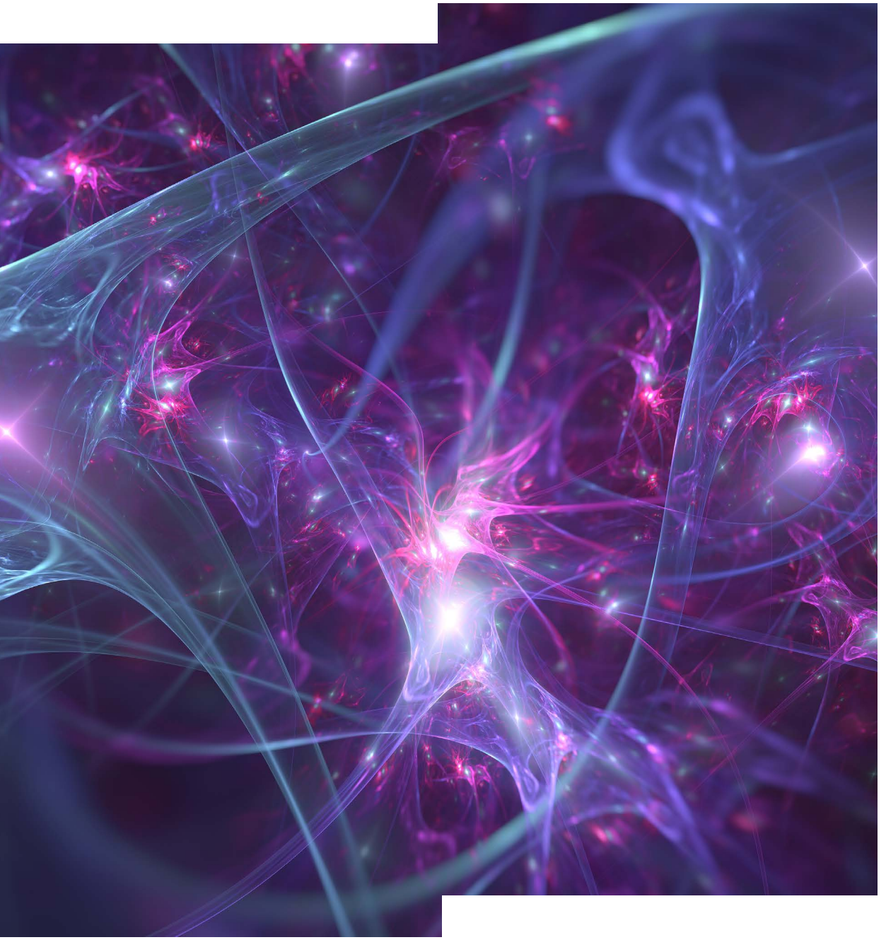
The use of combined data, while preserving data privacy, is generating faster value creation from data and AI initiatives and enabling smarter decision-making. Most biopharma executives (92%) agreed that data transparency is becoming a competitive differentiator.



The technology

Technology innovations are allowing shared data ownership that guards data privacy and security.





Federated learning facilitates collaborative learning and model-building without necessitating raw data sharing. Differential privacy, which adds statistical noise to data queries, provides robust privacy assurances while enabling valuable data analysis. Data anonymization techniques like k-anonymization and l-diversity further strengthen privacy by ensuring individuals cannot be identified within a dataset. Next in line, homomorphic encryption and secure multi-party computation allow computations on encrypted data. Synthetic data, generated to simulate real-world data, becomes valuable when original data is too sensitive to share. Blockchain technology, an immutable and traceable ledger, provides a secure and transparent infrastructure for data sharing.

These core technologies are not required as a whole, but a select combination can galvanize greater transparency and unprecedented insight for business operations.

The implications

Across the life sciences ecosystem, biopharma players are shifting their mindsets towards embracing data transparency and thinking multi-dimensionally about the value of their data.

97% of biopharma executives agreed that new data architectures and strategies are required to manage the dramatic changes to their organizations' data landscapes.

In research, federated drug discovery using vast molecule sets from multiple sources can expedite the drug discovery process. Demand forecasting powered by shared real-world data can anticipate supply chain requirements, reducing wastage. Shared data can enrich marketing strategies and sales predictions and enhance user engagement by analyzing user needs. It can inform enterprise strategy, facilitate insight exchange, enable self-service, anticipate maintenance requirements and improve risk management, laying a robust foundation for a data-driven enterprise. Patient services can be improved through clear shared data-driven workflows.

To capitalize on the potential value of data transparency and shared data ownership, biopharma leaders must reshape strategies and approaches to data management. It's not enough to have the data – you need to be set up to act on and share its insights. Nearly all biopharma executives (97%) agreed that new data architectures and strategies are required to manage the dramatic changes to their organizations' data landscapes. They indicated that emerging data management approaches, including data fabric and data mesh, will become critical in optimizing their organizations' value chains. Each have unique benefits and differences but both streamline and de-silo data architectures.

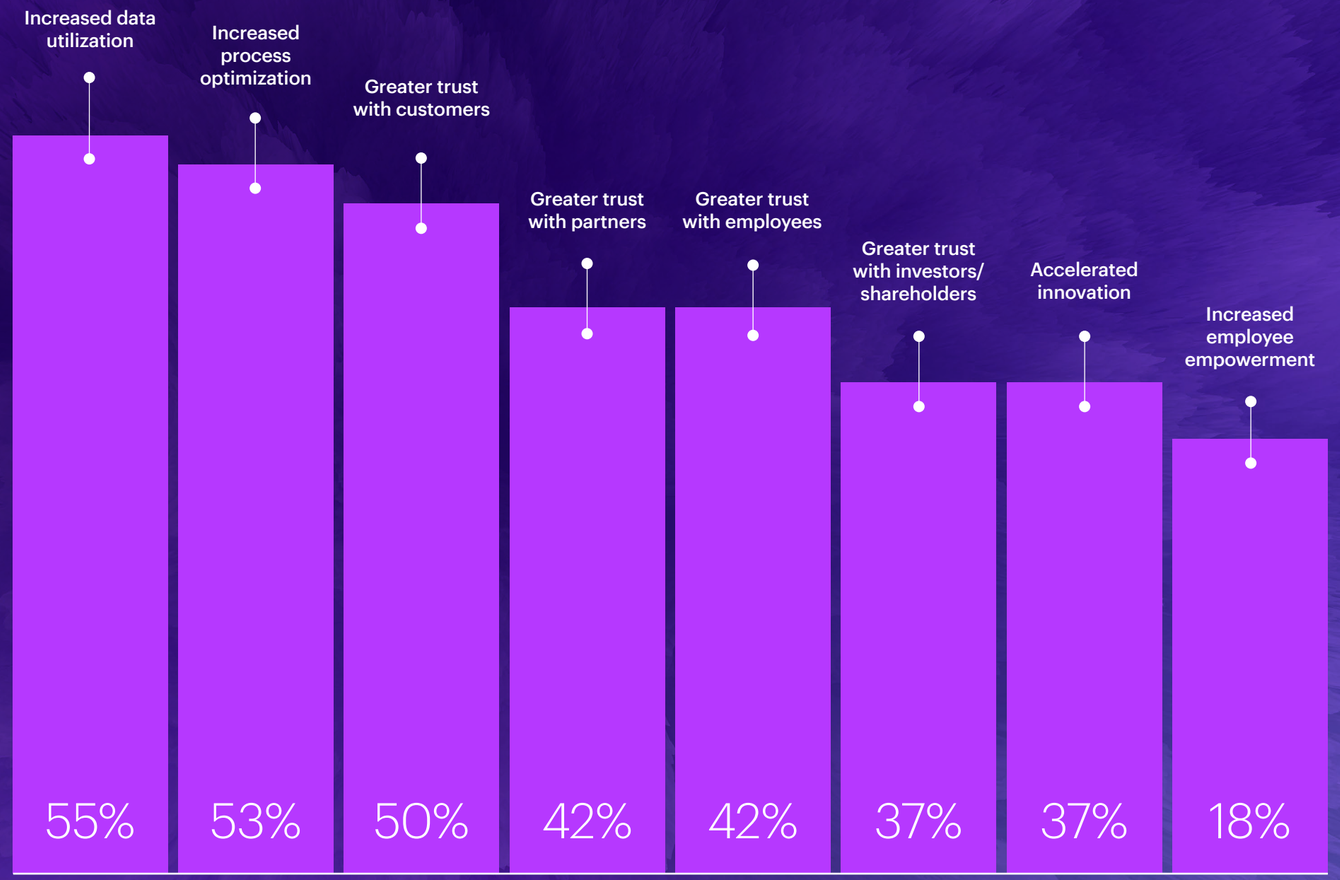
Recognition for data as the lifeblood of biopharma innovation is evident among our respondents. Over half of executives said that increased data utilization (55%) and increased process optimization (53%) are the leading benefits of increased data transparency. Additionally, they said greater trust with customers and partners are major benefits of increased data transparency. With trust as the lynchpin of ecosystem collaboration – biopharma companies should continue to advance data sharing practices. Those leaders who do so will be better positioned to derive new insights and co-innovate to create value.

Finally, employee engagement and increased employee empowerment strengthen the case further, adding a razor-sharp edge to any biopharma company's talent attraction and retention strategies. *See figure 5.*

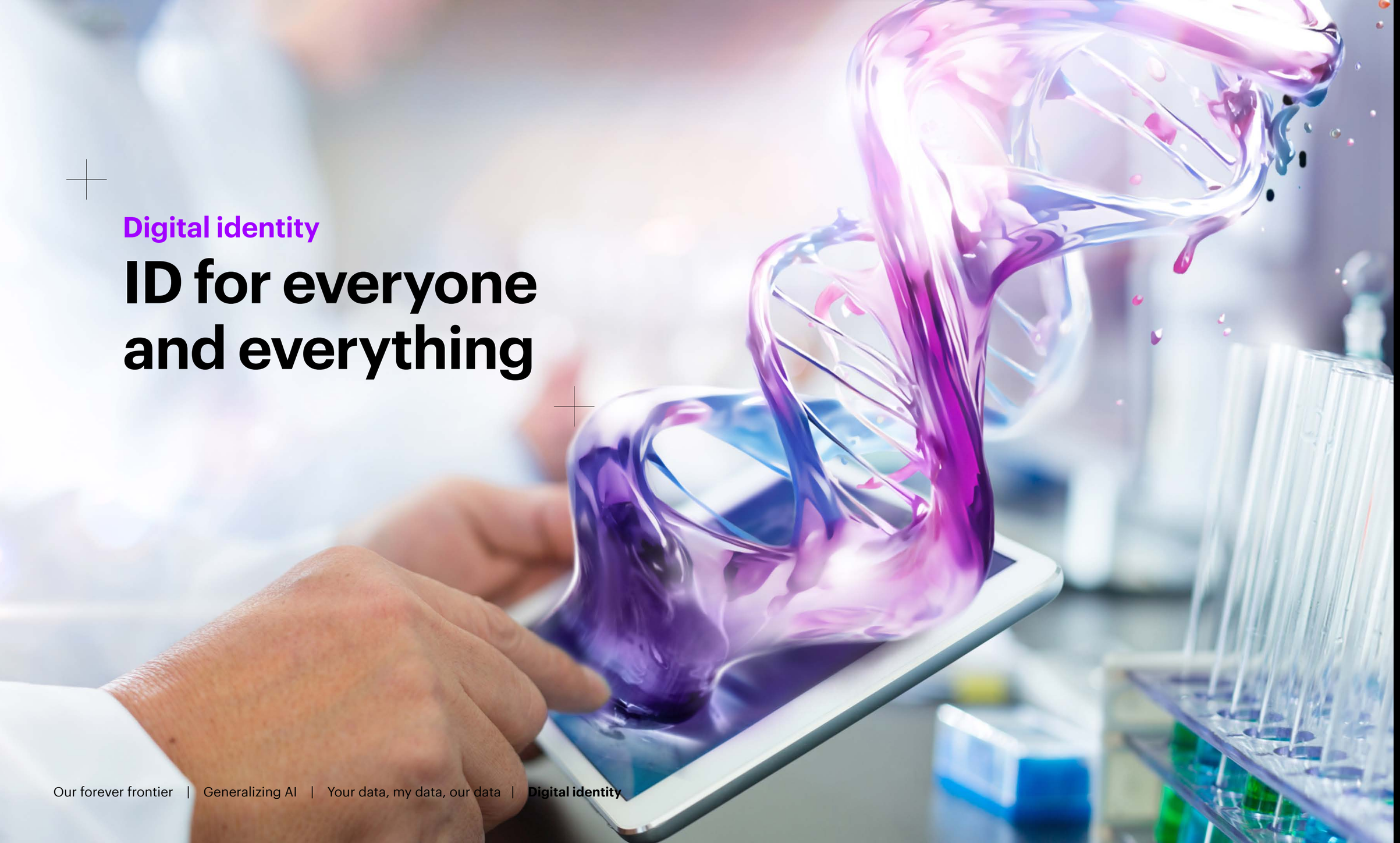
Figure 5

Biopharma executives acknowledge a multitude of benefits resulting from greater data transparency

Which of the following are benefits of increased data transparency for your organization?



Source: Technology Vision 2023 – Biopharma



Digital identity

ID for everyone and everything

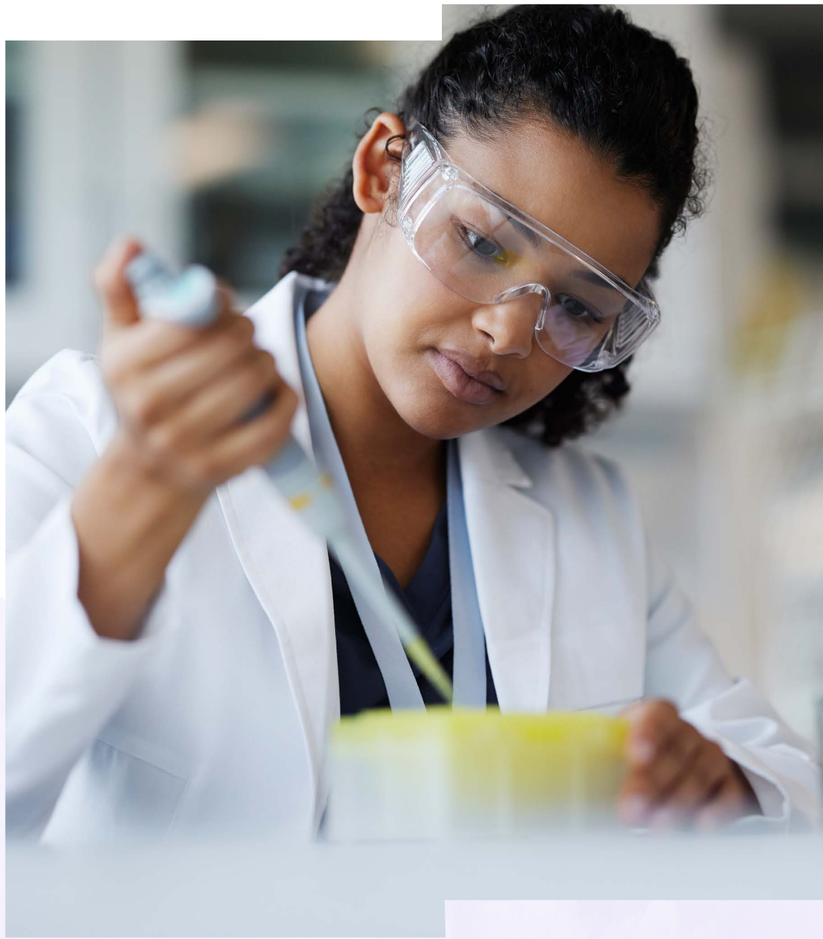
The big picture for biopharma

Digital identity[18] plays a strategic role in fostering trust for processes essential to driving innovation in biopharma.

90%

of global biopharma executives agree: digital identity isn't just a technical matter — it's a strategic business imperative.

Initially, it simply enabled controlled access. Now, it's imperative that we reboot digital identity and seamlessly assign it to individuals and objects. The trust-creating significance of this is apparent when onboarding individuals to clinical trials, monitoring personalized medicine and facilitating patient journeys. It would be difficult to complete these crucial functions without trusted identity. Additionally, it helps promote closer collaboration among industry players during early discovery phases, and presents monetization opportunities such as licensing fees, further emphasizing its value.



The technology

Many digital identity systems use centralized architectures, typically easier to deploy and build for purpose.

However, centralized architectures create concerns over a single point of failure and privacy fears over who controls the centralized platform. When asked about addressing challenges resulting from a lack of standardized digital identity, 62% of biopharma executives said their organizations' preferred strategy leans toward centralized and 53% toward partnership-led solutions. Usability, interoperability and fears over account recovery are challenges that can end up hurting adoption.

A great example of digital identity use in clinical trial onboarding for cell and gene therapy (CGT) is OCELLOS by TrakCel,[19] which allows clinicians to enroll patients in both clinical trial and commercial settings. Each CGT chain of identity is traceable and reportable in real-time, and "leaves a searchable, time-stamped audit trail." Another collaborative research example, Bioveras,[20] is using blockchain-based software to enable trusted, immutable data for collaboration between business and regulatory authorities – facilitating clinical trial management for CROs (Contract Research Organizations) and drug manufacturers.

Still, we can expect a shift toward decentralized or distributed platforms to enable innovative digital ID use cases. While harder to build for purpose, the advantages of distributed approaches include enhanced safety, security and trust.

The implications

Three fourths (75%) of biopharma executives agreed that customer identity authentication issues are negatively impacting their bottom line.

Left unaddressed, executives may find themselves lagging in a digital identity future for which they are unprepared. Without sufficient safety measures, research trials could be delayed compared to competitors.

Tokenization (the process of creating an immutable, functional identity for anything: physical, digital, unique or not and often stored on a blockchain) is a leading way that enterprises are innovating around identity. Once created, those identities can enable enterprises to trace medical technology or pharmaceuticals throughout the supply chain, enabling both patient safety and regulatory use cases. For example, Luminata CMC (Chemistry, Manufacturing and Controls)[21] decision support software allows companies to view all live analytical data via a single interface. They can query, browse and compare batches made internally or through contract organizations, reducing duplication and improving supply chain management.

The disruption from these changes to digital identity is creating a new paradigm for data and ownership. It won't just be leaders capitalizing on early opportunities and upsides – every business will be forced to think about identity and data differently. Biopharma leaders need to be asking themselves: How will we gain and earn the right to maintain access to a person's data, when they are the ones who own it?

98%

of biopharma executives indicated their organizations are innovating around digital identity via tokenization.

The current science tech convergence is creating a burning need for action

Science and technology are catalyzing innovation in biopharma, revealing unprecedented challenges, opportunities and competition. GenAI is creating new possibilities for faster decision-making and improved patient and customer experiences, but challenges around security, privacy and bias must be addressed. Reorganizing data frameworks to reflect biopharma's ecosystem reality is vital, as is developing science tech talent to meet the challenges of the collaborative new world.

Biopharma organizations that drive ecosystem collaboration, lean into secure data sharing and data transparency and embrace the power of AI with rigor will reshape industry boundaries. The increased number of partnerships between biopharma and AI companies in the last several years reflects a growing recognition of this reality.

Technology must remain front-of-mind, not as a partial solution, but as a potential partner in making the most of opportunities for innovation. Our ambition should be a step change – continuous enterprise reinvention powered by a strong digital core. Those who build that solid core will reap the benefits of the interconnected realms of atoms and bits.

About the Technology Vision

Accenture conducted a survey of 4,777 C-level executives and directors across 25 industries to understand their perspectives and use of emerging technologies across their organizations. Surveys fielded December 2022 through January 2023 across 34 countries. The biopharma industry sample consisted of 60 biopharma executives across nine countries (Brazil, Canada, China, France, Germany, India, Japan, Switzerland and the United States); respondent companies with reported revenues starting at $10 billion USD to $50 billion USD or more.

About GenAI Impact on the US Workforce analysis

This study aimed to investigate the potential impact of LLMs on various occupations in the United States. The magnitude of impact hinges on the language-based knowledge required for specific tasks. Language-dependent, standardized, routine and process-oriented tasks are prime candidates for automation through LLMs, while those necessitating greater human interaction and inputs are better suited for augmentation. The approach to Generative AI impact is considered a task-based approach. Occupation-level data were collected from both O*NET and the BLS. Within O*NET's occupation-specific information, a taxonomy of over 19,000 tasks is available as well as time spent on each task within an occupation. Researchers combined human (manual) and machine (Gen AI) classification procedures to assign numeric values to each task that would imply potential for automation.

As a first step, tasks that require intensive use of language (natural, mathematical, computational) that would be relevant to LLM features were identified. As a second step, tasks were assessed based on the use of interpersonal collaboration, complex reasoning or expert validation that they need, resulting in a final score reflecting the level of transformation potential and is used to identify tasks with potential for Automation, potential for Augmentation, Low Potential and Non-Language. The current Generative AI transformation potential labels, BLS employment, hours worked and O*NET task frequency data were combined to understand the portion of worked time that could be transformed by the technology. Occupations with high transformation potential to technology have over 50% of time share between both high potential for automation and/or high potential for augmentation.

Analysis of occupation level estimates rolled up to industry level and other relevant aggregates like functional and industry-specific workforce groups. Estimates were weighted by employment levels in the US to represent impacts to industries and functions more accurately.

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Sources

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13. Accenture was a pioneer in the responsible use of technology including the responsible use of AI in its Code of Business Ethics from 2017. Responsible AI is the practice of designing, building and deploying AI in accordance with clear principles to empower businesses, respect people, and benefit society — allowing companies to engender trust in AI and to scale AI with confidence. https://www.accenture.com/us-en/services/applied-intelligence/ai-ethics-governance

14. MLR: Medical Legal Regulatory. It typically represents the approval process involving legal and regulatory departments in the healthcare industry to ensure compliance with relevant laws and regulations. PRC: Promotional Review Committee. This committee is responsible for reviewing and approving marketing and promotional materials to ensure they meet regulatory and legal requirements. IRB: Institutional Review Board. It is an independent committee that reviews and approves research involving human subjects to protect their rights, welfare, and privacy.

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