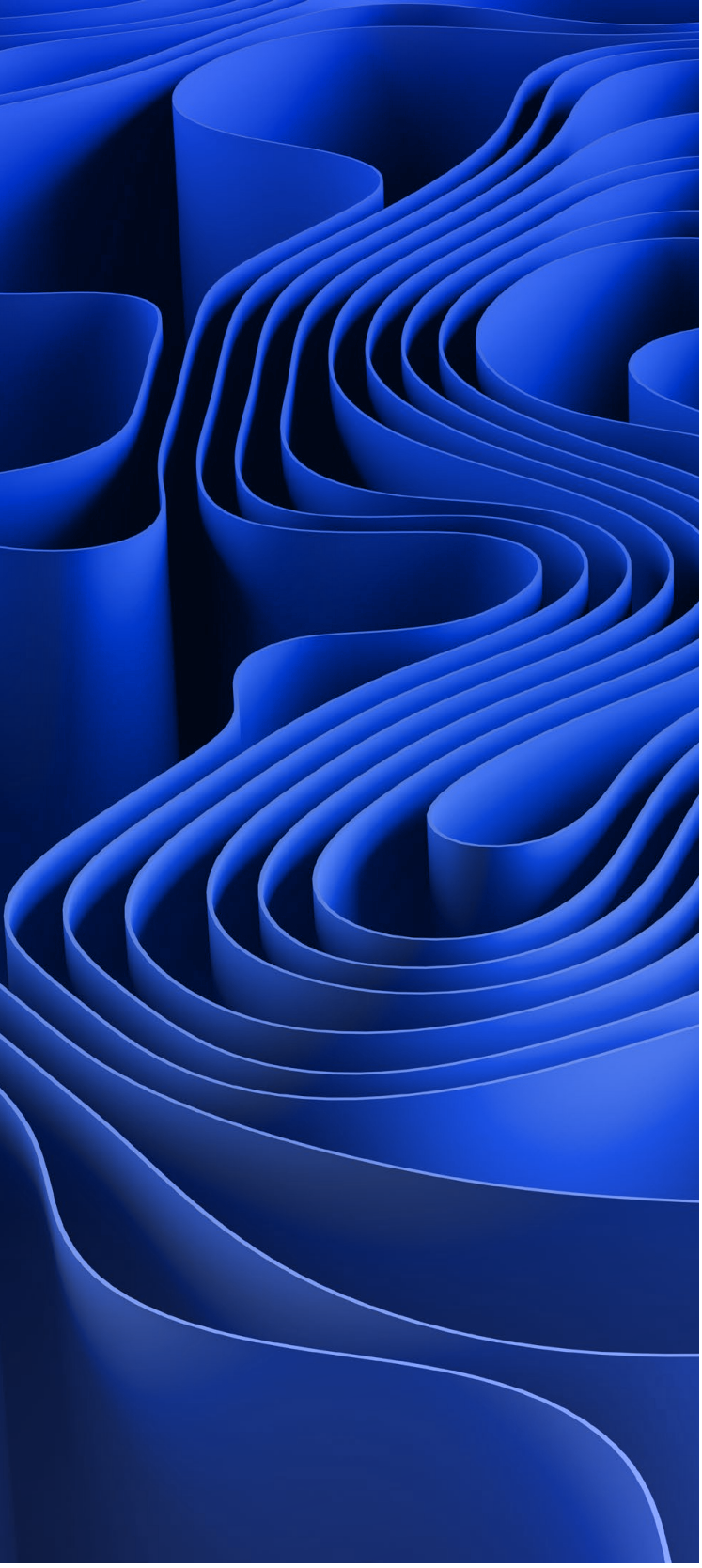
R&D Innovation Performance Study

EXECUTIVE SUMMARY

2024

TechLink



Introduction

TechLink is the authorized national technology transfer partnership intermediary for the U.S. Department of Defense (DOD) and the Department of Veterans Affairs (VA). We work with companies to find commercial potential in technologies developed in DOD and VA labs. TechLink facilitates partnerships that connect private industry with these labs for technology licensing and joint R&D opportunities across virtually all technology fields.

Since 1999, TechLink has brokered over 2,000 agreements between DOD and VA labs and businesses of all sizes. These agreements have generated close to $3.2 billion in direct sales of products and services. Our team of experienced technology transfer professionals help improve outcomes for companies navigating DOD and VA technology transfer opportunities, and our services come at no cost to companies.

In working with industry innovators, TechLink recognized a need for R&D practice and performance benchmarks; business executives want to know how their peers and competitors are innovating. In July 2022, **TechLink completed its inaugural R&D Innovation Performance Study**, designed to understand how today's companies are navigating R&D and innovation, and to, ultimately, help company leaders assess the health of their organizations' innovation efforts. The study, conducted by The MPI Group, received responses from 152 U.S. executives across a range of industries and company sizes.

Data from the Study is presented in five sections:

1. Innovation Profile: Plans and structures for innovation (page 4).

2. Innovation Strategy and Challenges: Innovation strategy and focus of R&D (page 8).

3. Innovation Collaboration: R&D work pursued with outside entities (page 11).

4. Innovation Practices and Performances: Best practices and performance outcomes (page 19).

5. Study Participants: Demographic data on study participants (page 26).

Read on to learn how your company's innovation capabilities measure up.

Austin Leach, PhD, CLP
Associate Director
TechLink

KEY FINDINGS

This year's study found companies more willing to look beyond their own resources for innovation ideas and support. Other key findings include:

Innovation challenges

Companies' R&D efforts are challenged by budget constraints, lack of leadership commitment, and lack of innovation skills/ experience.

R&D outcomes

A high percentage of development projects don't turn into sales to customers, resulting in wasted time and resources that negatively impact top and bottom lines.

Government collaboration

More than half of companies have collaborated with a government lab in the past two years, but some cite challenges in navigating the federal landscape.

Applicable government technologies

Many technologies emerging from government labs are applicable to companies' development interests, including IT hardware, artificial intelligence, and software.

Innovation Profile

Nearly three-quarters of companies have more than 5% of their full-time employees working in R&D/product development functions (Figure 1), and 35% of companies invest more than 10% of revenues into R&D/product development (Figure 2). Both findings are comparable to the 2022 study.

One-third of R&D staff are always dedicated to new product development work vs. sustaining activities (e.g., product iterations); 52% are frequently dedicated, 14% are occasionally dedicated, and 1% are never dedicated.

Figure 1. Approximate percentage of full-time employees in the R&D/product development function

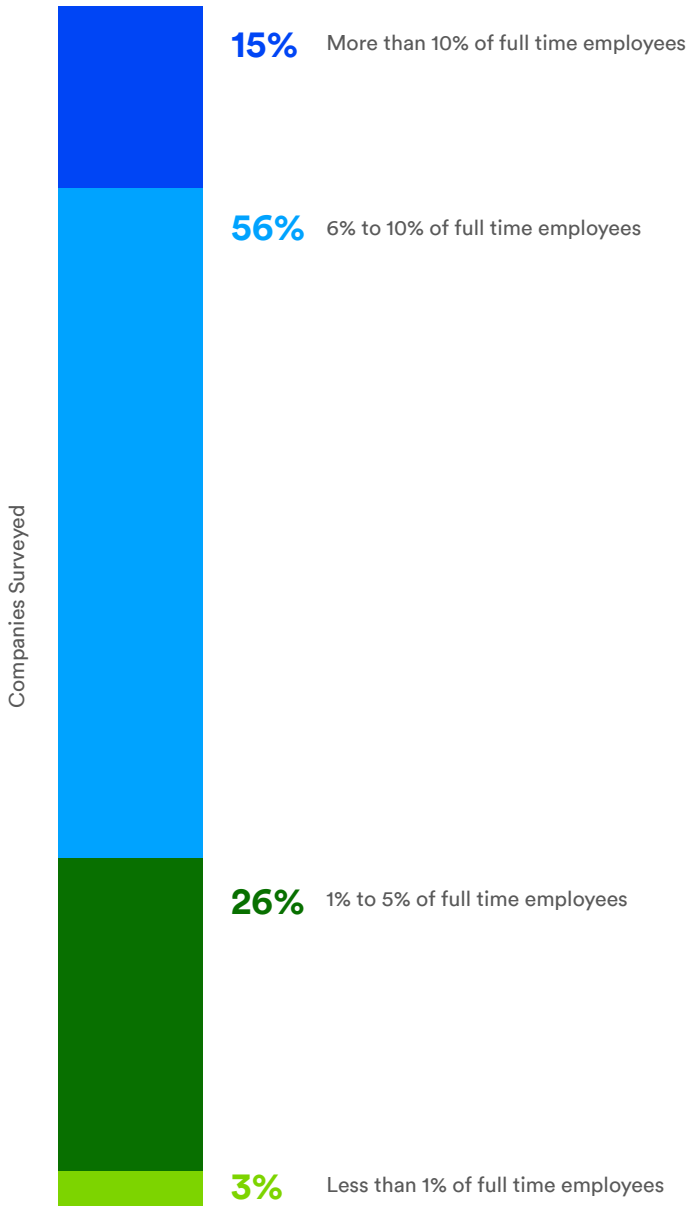
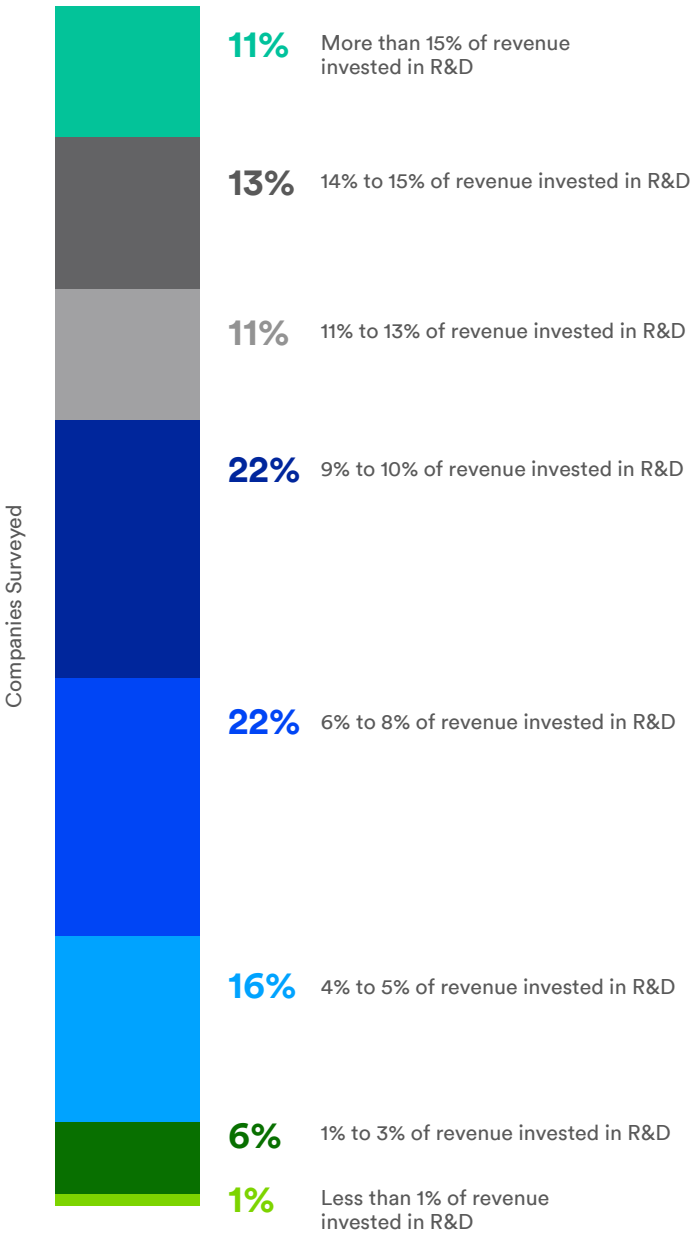


Figure 2. Approximate investment in R&D/product development



A majority of companies (55%) have 15 or fewer product families (Figure 3), and most companies (83%) seek to increase the number of product SKUs they offer in the next three years (Figure 4).

Figure 3. Product lines/families in product portfolio

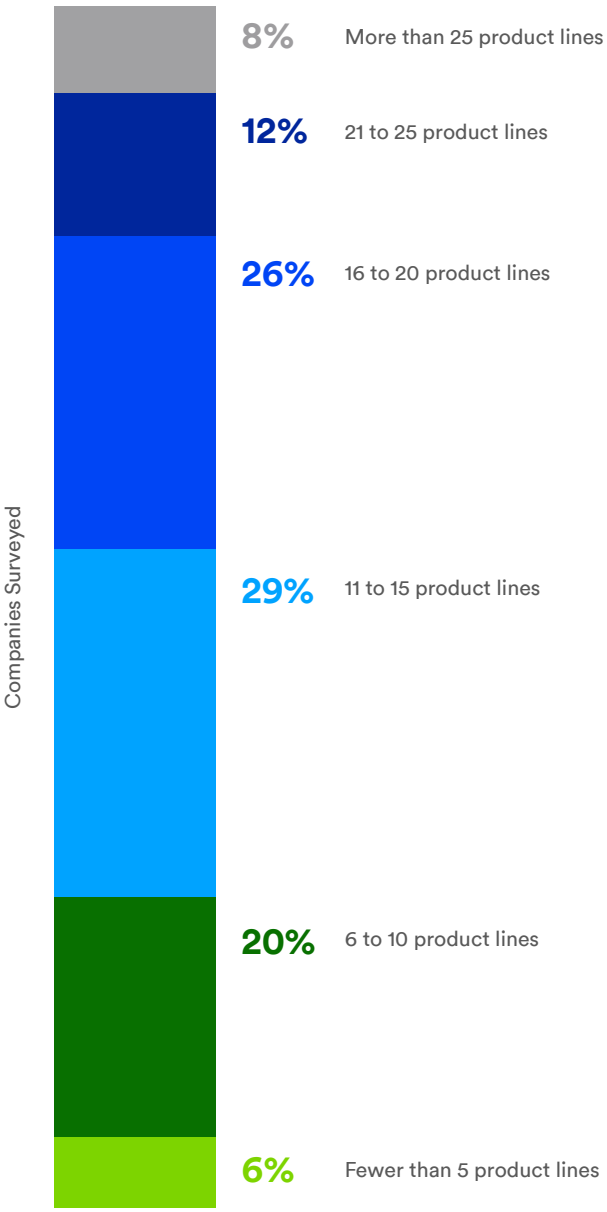
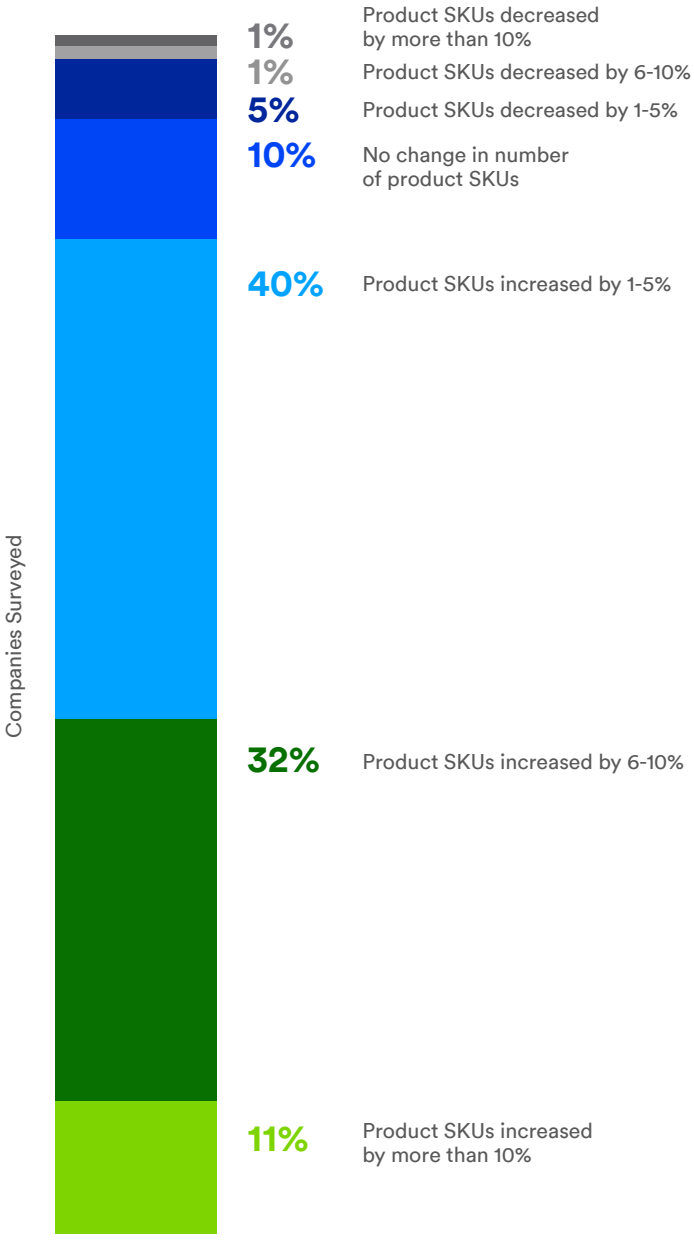


Figure 4. Change in number of product SKUs in next three years



R&D time, resources, and investments are evenly distributed across R&D development processes, with ideation topping the list (16% average) (Figure 5). About half of companies report that R&D processes are primarily internal (not outsourced) (Figure 6).

Most companies report that their approach to innovation is competitive within their industries: innovation leader (41% of companies), innovation competitor (40%), innovation adequate (16%) , innovation catchup (3%), no innovation (1%).

Figure 5. Approximate percentage of R&D/product development time, resources, and investments by process

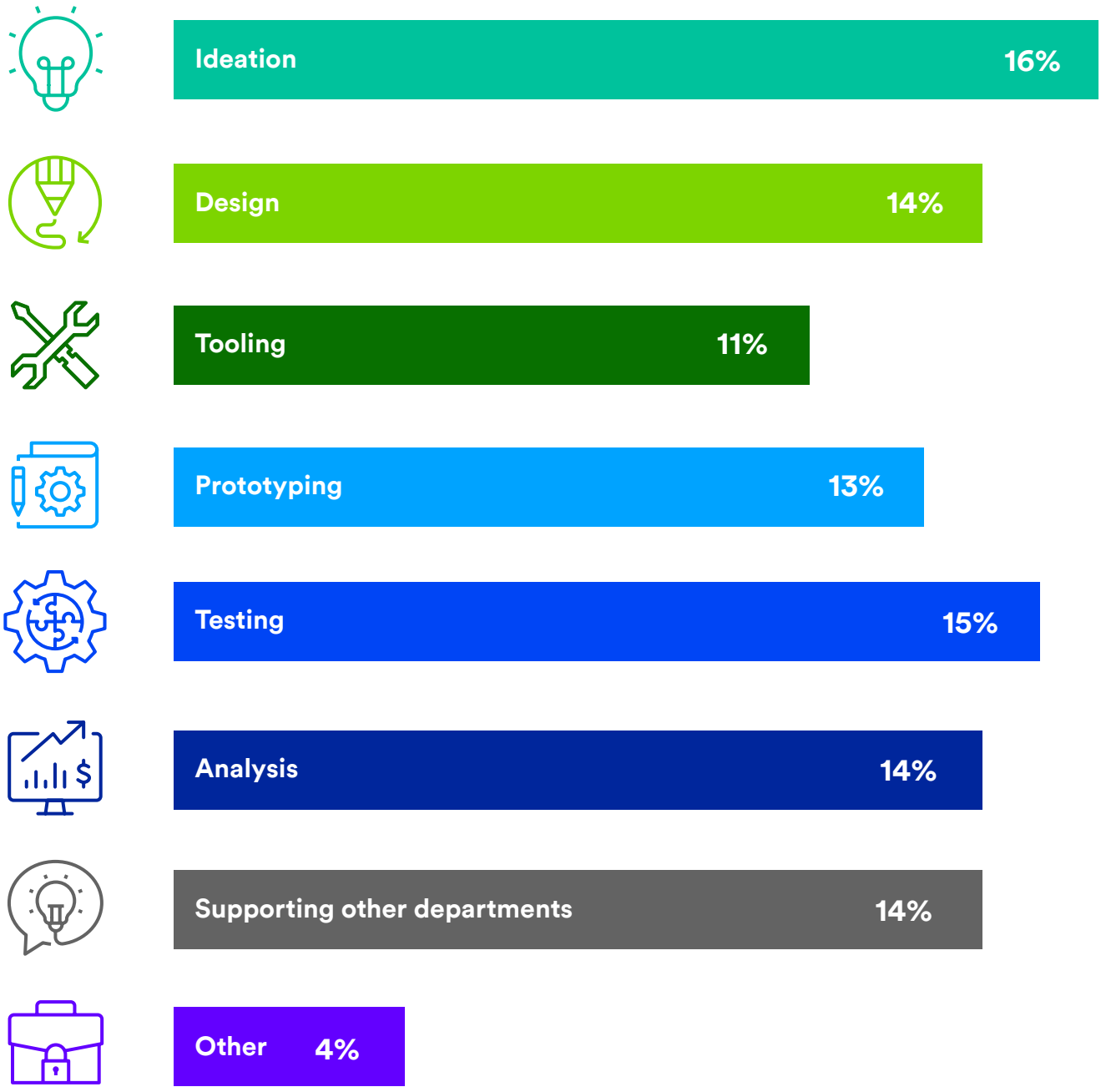
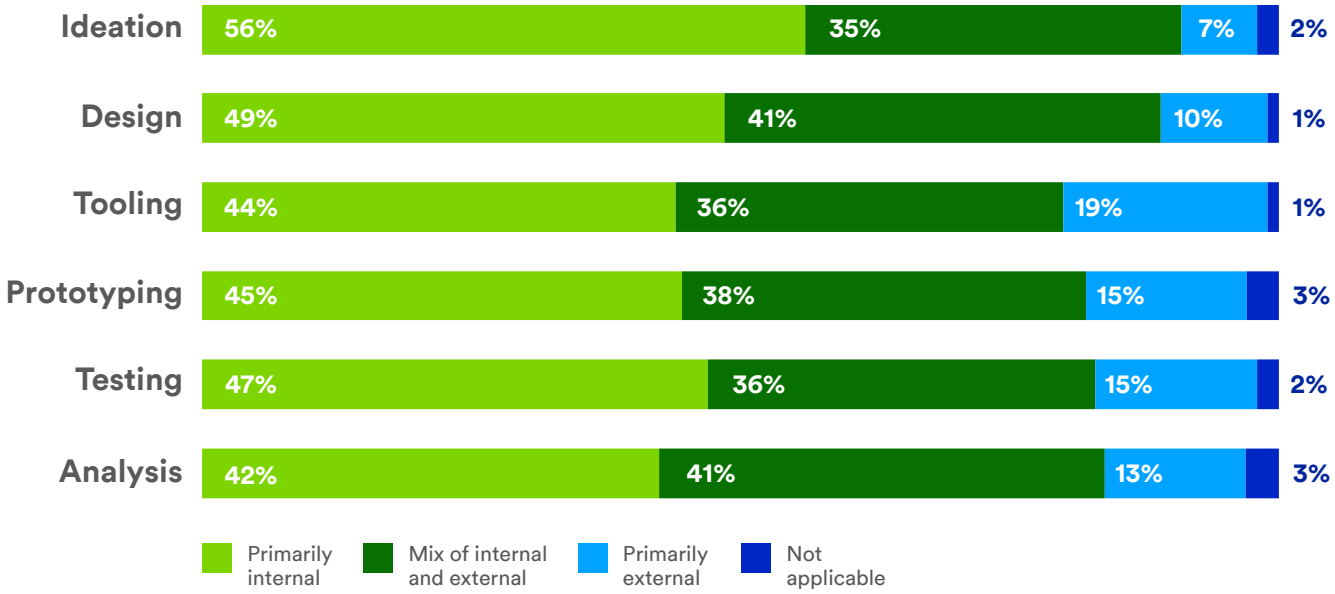


Figure 6. Processes performed internally or externally

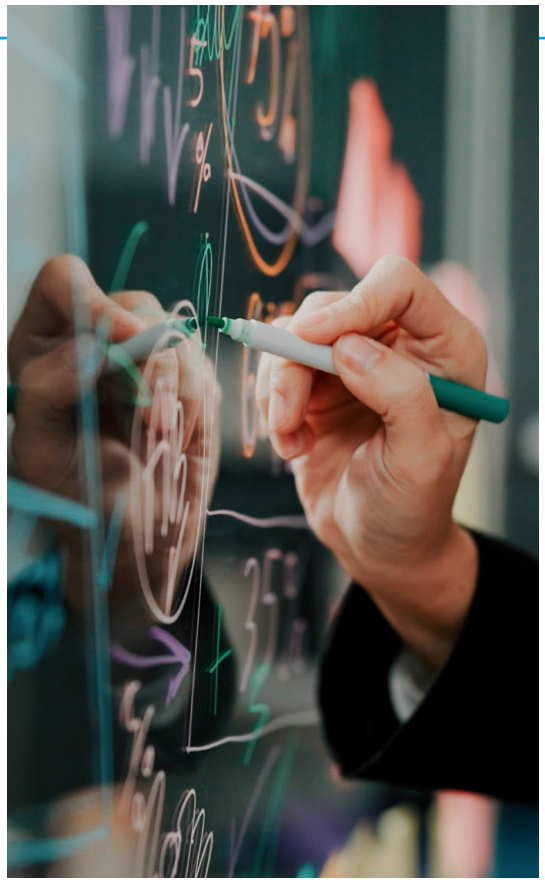


TECHLINK TIPS

Ideation is the start of the innovation process. The likelihood of ideation success increases with the number of new product and service ideas generated. Dozens to hundreds of ideas are typically required to launch a successful new product — driving leaders to seek new ideation sources from inside and outside the organization. R&D collaboration helps teams generate and vet innovative ideas.

Not reaching beyond your own company for ideas? Establish best practices to form rewarding innovation partnerships.

Learn how government labs can spark new product development.

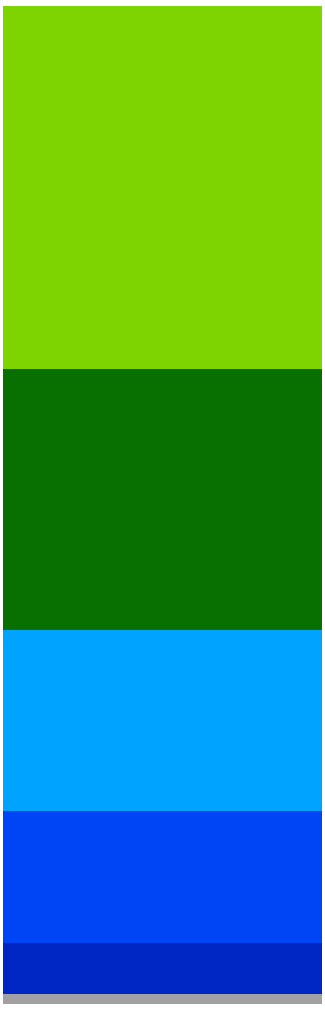


Innovation Strategy and Challenges

Insights from any department or employee can have a profound impact on the development of new goods and services. Yet the TechLink 2024 R&D Innovation Performance Study finds that few companies engage their entire organization in R&D efforts. Only 26% of companies have deployed innovation strategies and goals that address all corporate departments, and 19% of companies don't have an innovation strategy at all (Figure 7).

The highest percentage of new products and services introduced in the past three years (31%) were routine (i.e., offerings that leverage existing technical competencies and business models) (Figure 8). Routine products and services accounted for 40% of new products in the 2022 study, indicating that companies may now be seeking competitive advantage in the form of disruptive, radical, and architectural releases.

Figure 7. Innovation strategy and goals



36% Innovation strategy and goals deployed and address R&D/ product development and some other corporate departments

26% Innovation strategy and goals deployed and address all corporate departments

18% Innovation strategy and goals deployed and address only R&D/product development

13% Innovation strategy and goals are in development

5% Plan to develop an innovation strategy and goals

1% No innovation strategy and goals and no plans to develop

Figure 8. Types of new products and services introduced in the past three years

Routine 31%

Leverages existing technical competencies and business model

Disruptive 24%

Leverages existing technical competencies but requires new business model

Radical 22%

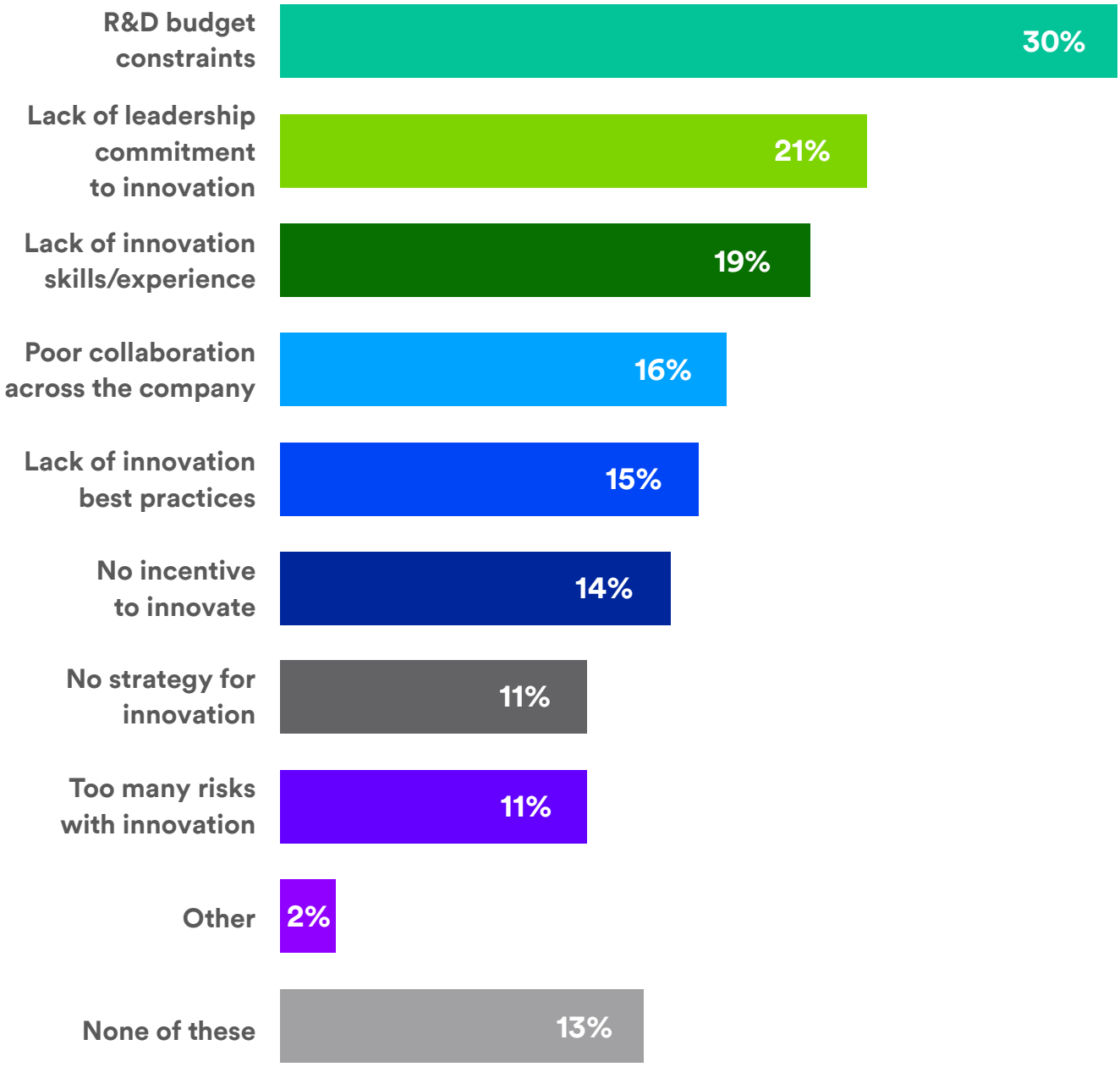
Leverages existing business model but requires new technical competencies

Architectural 23%

Requires new business model and new technical competencies

New products and services offer opportunities for companies to differentiate themselves from competitors and generate new revenues and profits. But in pursuing those opportunities, R&D departments face an array of challenges, including budget constraints — reported by 30% of companies (Figure 9).

Figure 9. Challenges prohibiting company from being more innovative *(Multiple responses permitted)*



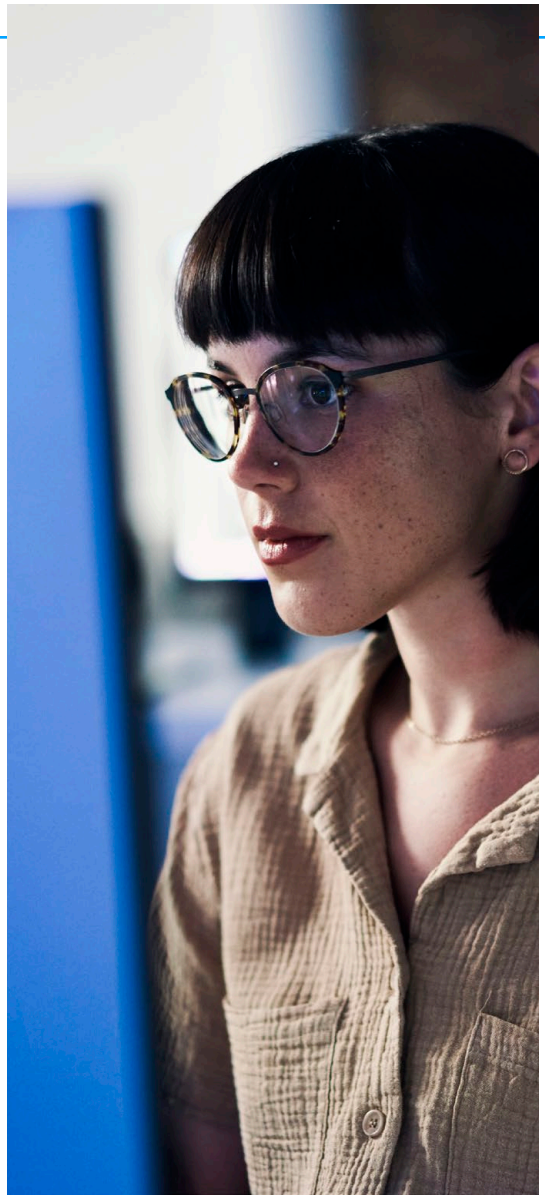
TECHLINK TIPS

New product and service development is the lifeblood of growth — and survival. But R&D requires a strategy to engage both internal employees and departments and external partners. Not all great ideas reside in the minds of engineers. The next great idea can come from customer interactions with sales staff, production workers who dream of a better device, or suppliers as familiar with your company as you are.

Establish a strategy that includes specific targets and processes to engage non-R&D staff in ideation:

- Launch an idea-suggestion system that rewards employees.
- Universities and government laboratories are excellent sources for R&D inspiration.
- Solicit feedback on ideas and prototypes through customer surveys.

Read more expert tips to turn your business into an R&D leader.



Innovation Collaboration

Many companies look to external partners to close innovation competency gaps. External partners can provide ideas, skills, and/or technologies to develop new products. Companies are most likely to frequently collaborate with consultants, customers, and industry associations (Figure 10). The percentage of companies citing frequent collaboration with many entities rose sharply between 2022 to 2024:

- Government laboratories: 20% to 38%
- Consultants: 27% to 42%
- Peer companies: 24% to 39%
- Colleges and universities: 22% to 35%
- Industry associations: 32% to 40%

More than half (57%) of companies that frequently collaborate with government labs are described as innovation leaders, vs. just 39% that occasionally collaborate and 18% that rarely or never collaborate with labs. The rise in companies frequently collaborating with government labs highlights the appeal in transferring federally developed technologies to the private sector for commercial applications.

Companies are most likely to find sparks for innovation from customers, industry associations, and R&D employees. The percentage finding inspiration in government laboratories rose from 9% in 2022 to 29% in 2024 (Figure 11).

Figure 10. Collaboration to develop new products and services or technologies for products and services

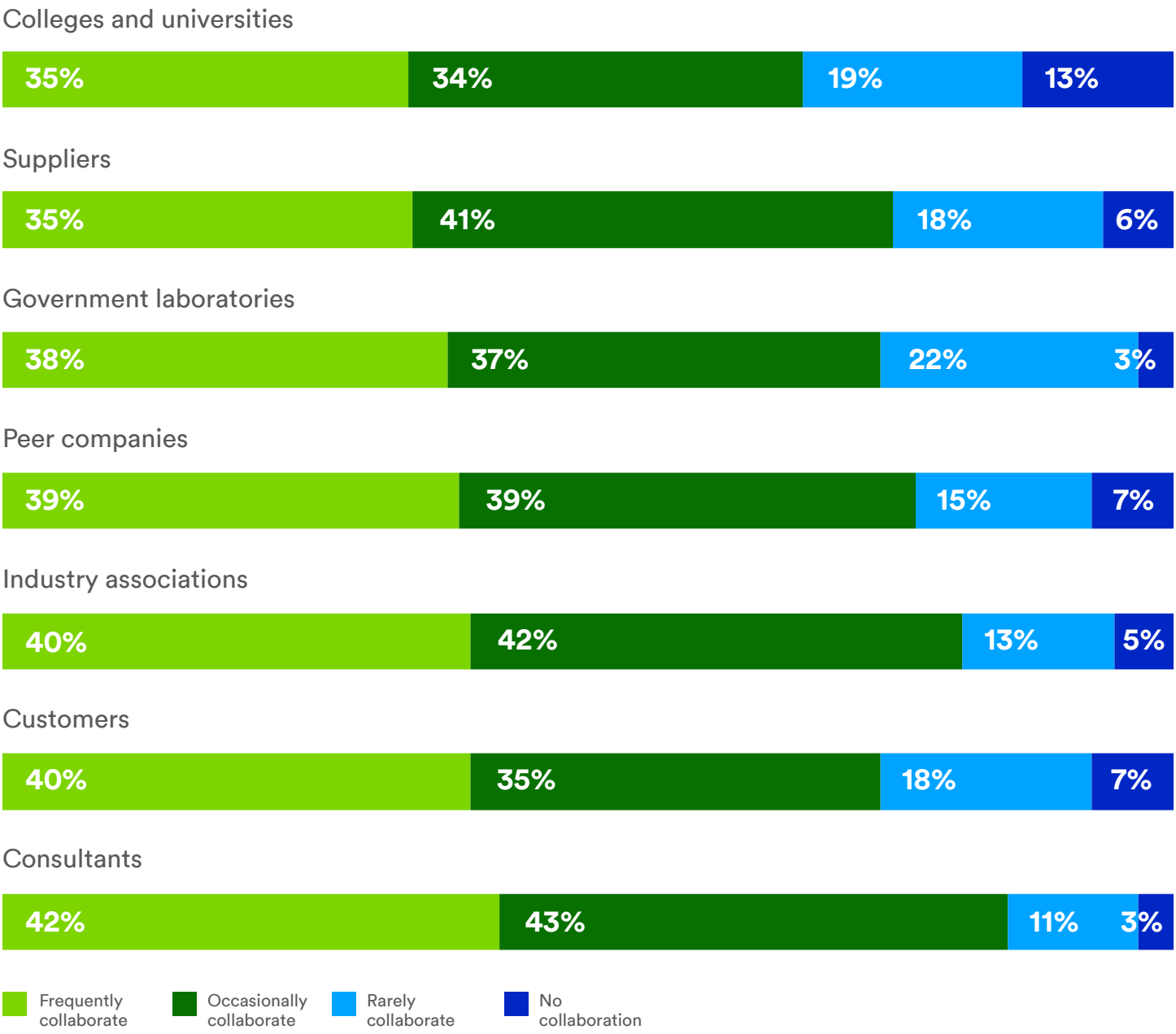


Figure 11. Sparks for innovation *(Multiple responses permitted)*

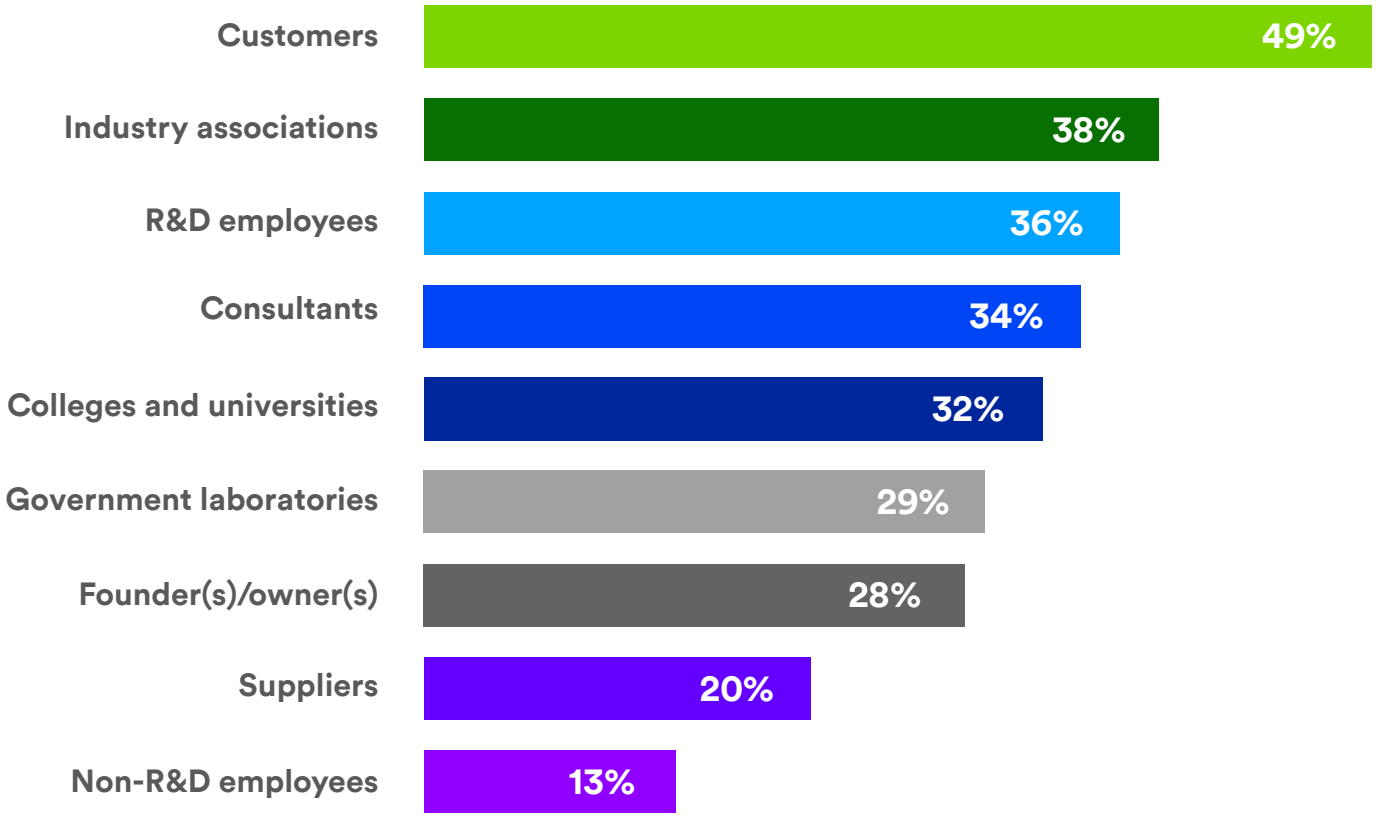
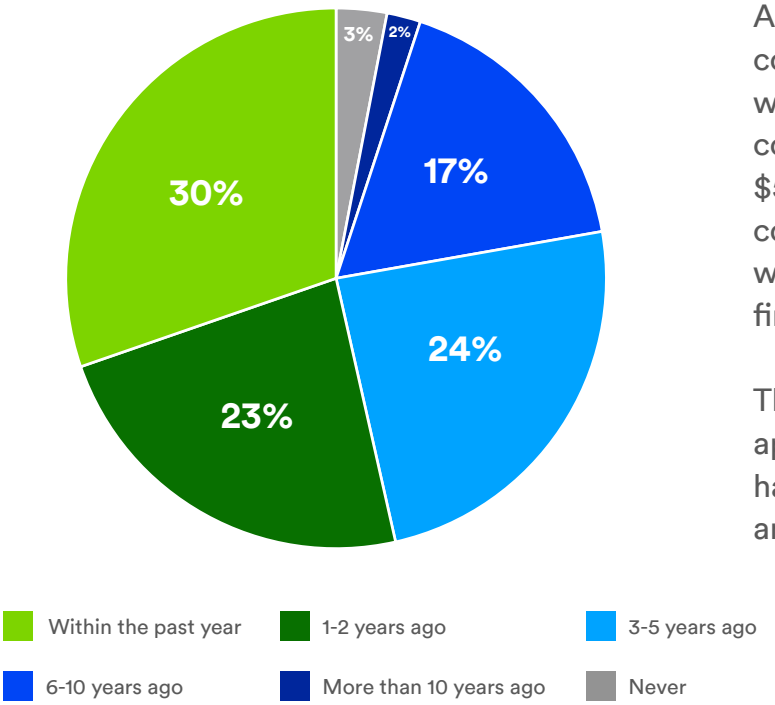


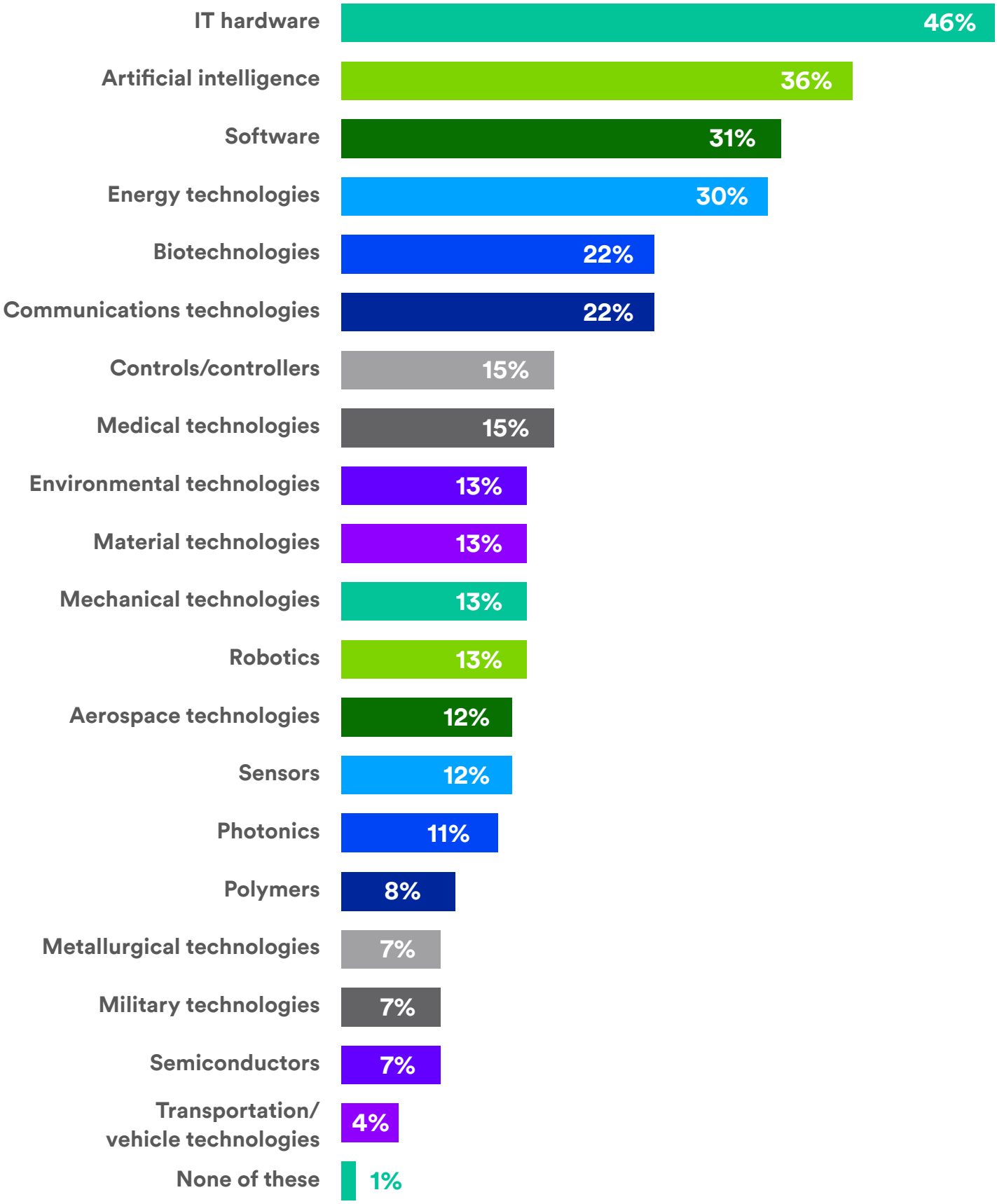
Figure 12. Most recent collaboration with a government laboratory



Approximately half of companies have collaborated with a government laboratory within the past two years (Figure 12). Larger companies (annual revenues of more than $50 million) were more likely than smaller companies to collaborate with government labs within the past year — 38% vs. 26%. But smaller firms can also rely on labs to close R&D gaps.

The federal technologies most likely to be applicable to companies' R&D efforts are IT hardware, artificial intelligence, software, and energy technologies (Figure 13).

Figure 13. Most applicable government lab technologies to company R&D efforts *(Multiple responses permitted)*



Nearly all companies have used license agreements where an organization grants intellectual property rights to another organization to develop new products and services. Approximately one-quarter of companies use license agreements for more than 10% of products and services (Figure 14). Many companies have formed license agreements with multiple non-government and government organizations over the past three years (Figures 15 and 16).

Figure 14. Percentage of new products and services that incorporate technologies developed via a licensing agreement

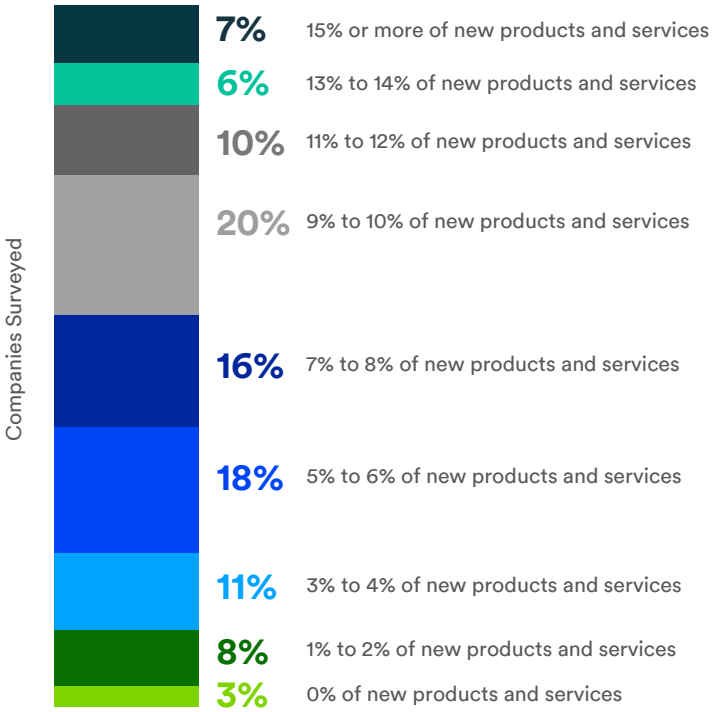


Figure 15. Number of non-government organizations from which technologies licensed in past three years

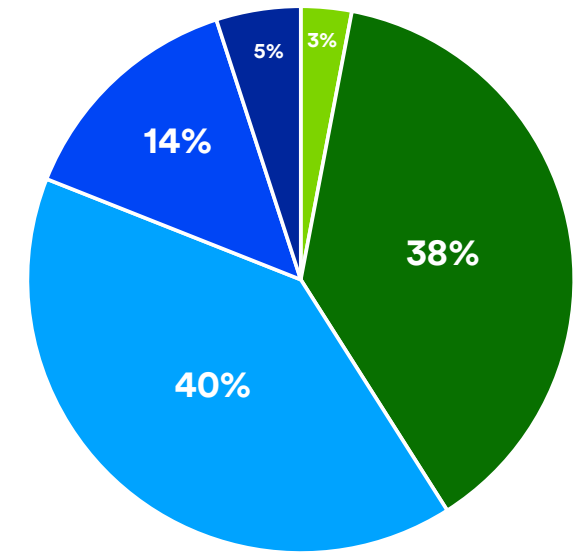
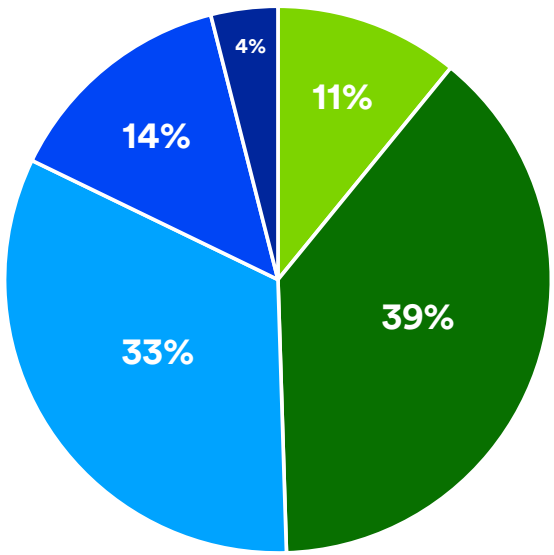
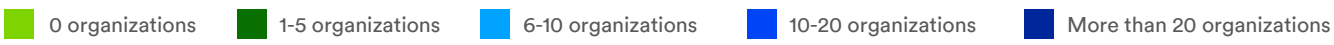


Figure 16. Number of government organizations from which technologies were licensed in past three years





Most companies have used a Cooperative Research and Development Agreement (CRADA) to develop new products and services. CRADAs between federal agencies and businesses are the foundation of collaborative R&D partnerships. Approximately one-fifth of companies use CRADAs for more than 10% of products and services (Figure 17). Many companies have signed CRADAs with multiple government organizations over the past three years (Figure 18).

Figure 17. Percentage of new products and services that incorporate technologies developed via a CRADA

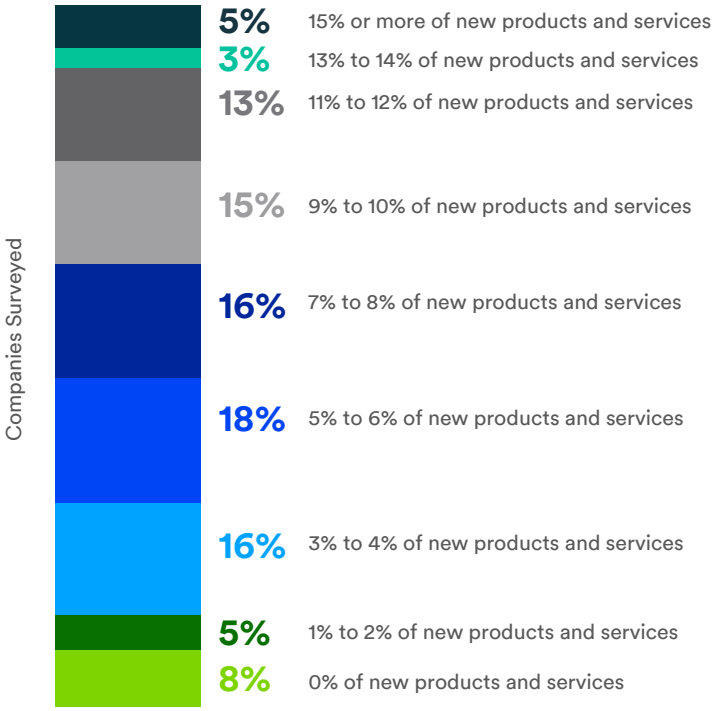


Figure 18. Number of government laboratories with which CRADAs were formed

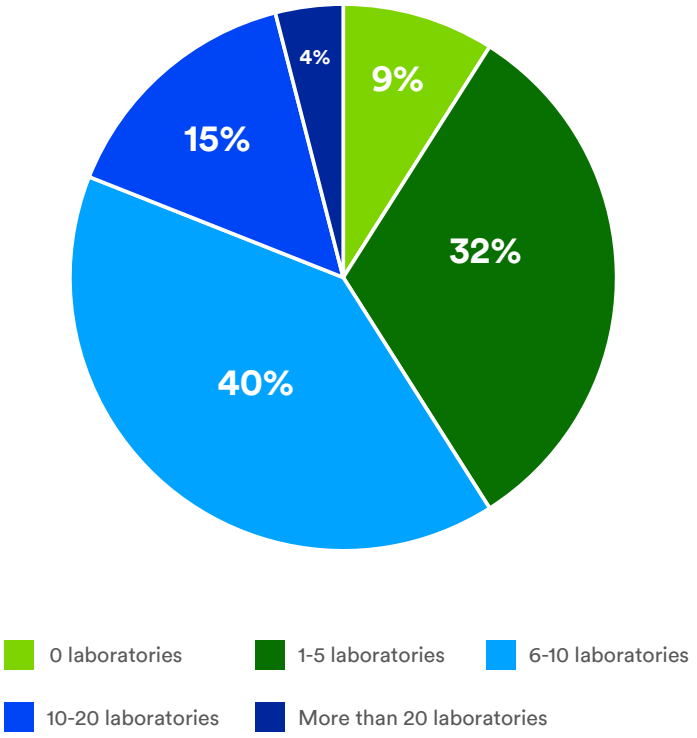


Figure 19. Challenges when collaborating with — or trying to collaborate with — government laboratories
(Multiple responses permitted)

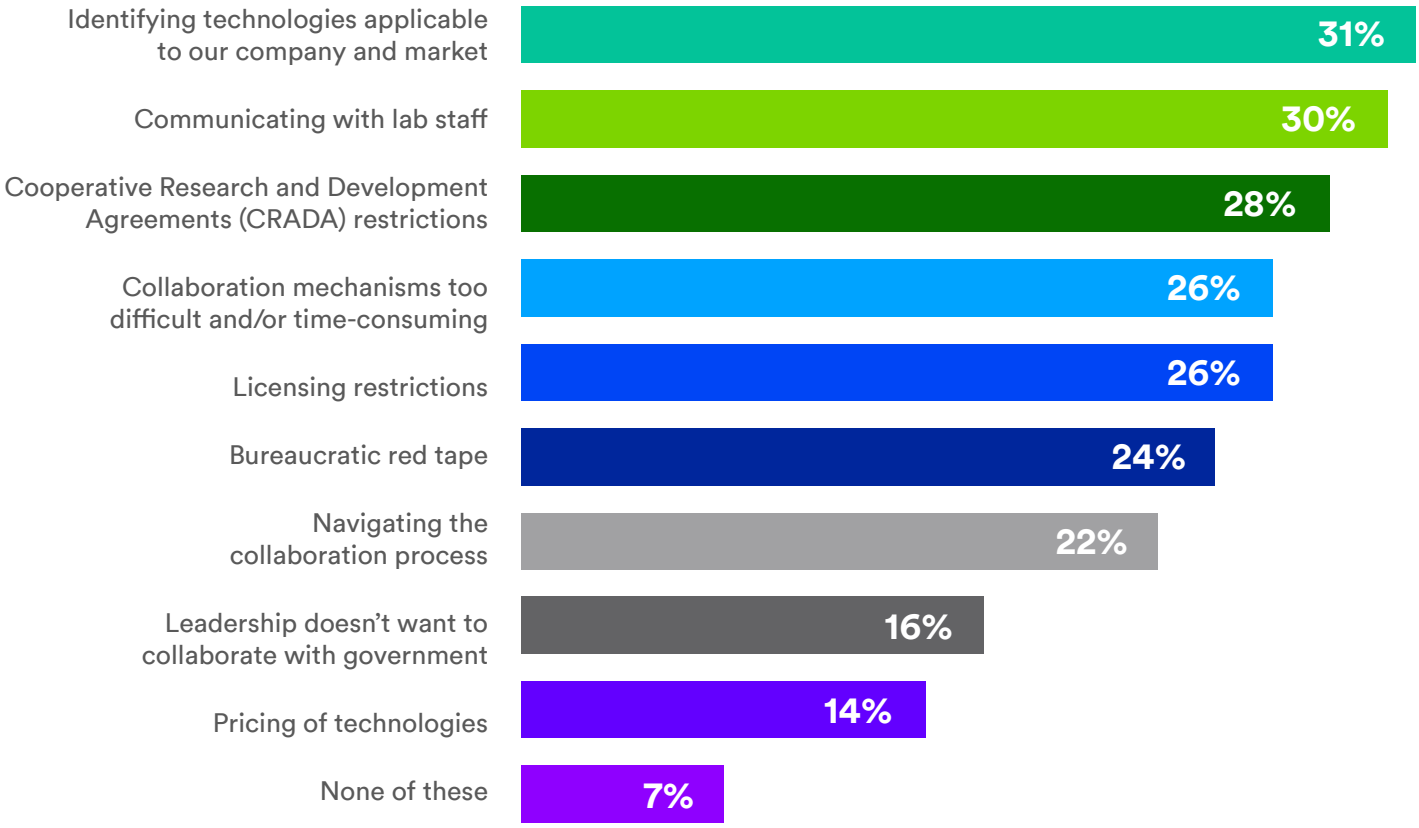
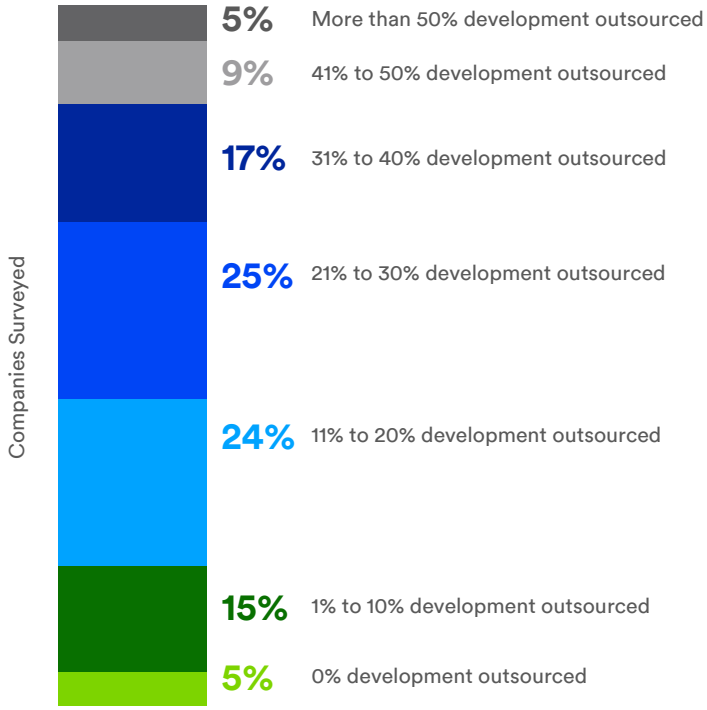


Figure 20. Percentage of product- and service-development contracted externally/outsourced



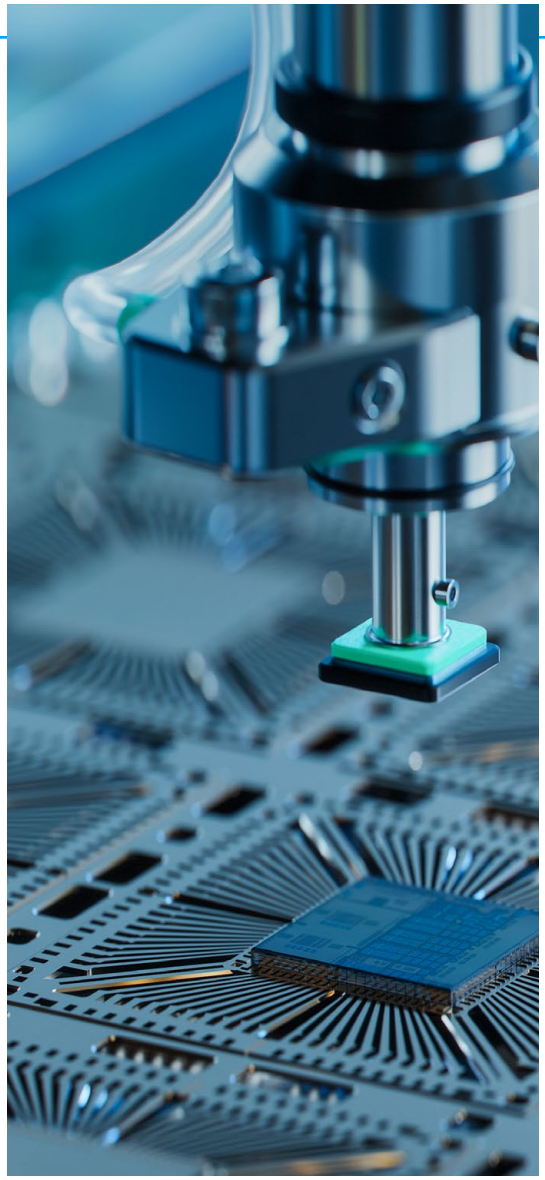
The top challenge for companies working with government laboratories via license agreements and CRADAs is identifying technologies applicable to their company and market (Figure 19). The frequency of collaboration with a government lab did not equate to fewer challenges. Some challenges, however, could be minimized by working with a tech transfer intermediary to identify inventions emerging from federal labs — and to explore these ideas with the original government researchers.

Most companies outsource at least some R&D work (Figure 20). A majority outsource more than 20% of product- and service-development work.

TECHLINK TIPS

Collaborating with federal labs can be a great way to fill R&D competency gaps and find your company's next great idea. But, as the data shows, working with a federal lab isn't always easy. A trusted technology transfer intermediary can help. An intermediary - like TechLink - can help bridge the gap between your company's interest in a federally developed technology and actually working with an inventor on joint R&D or securing rights to commercialize and sell a government invention.

Learn how we assist companies — free of charge — as they bring new products and services to market.



Innovation Practices and Performances

Successful innovation requires a rigorous, well-managed process to generate a continuous stream of ideas for new products and services. Yet many companies don't deploy common ideation best practices. Brainstorming is most extensively used by companies to generate new product or service ideas, but other practices receive less attention (Figure 21). Significant increases, however, were seen in the percentage of companies extensively using the following ideation practices:

- Collaboration with suppliers (53% in 2024 vs. 32% in 2022)
- Benchmarking (57% vs. 38%)
- Blue ocean strategy (37% vs. 18%)

The top ideation practices used extensively varies among companies by revenue size:

- $50 million or less: brainstorming (56% of smaller companies extensively use), collaboration with suppliers (53%), and analysis of product data (52%).
- More than $50 million: benchmarking (74% of larger companies extensively use), brainstorming (62%), and open innovation (59%).

Companies described as innovation leaders were more likely to extensively use all ideation methods, most notably:

- Open innovation: 74% of innovation leaders vs. 38% of other companies.
- Analysis of product data: 71% of innovation leaders vs. 41% of other companies.
- Reverse engineering: 53% of innovation leaders vs. 23% of other companies.
- Customer focus groups: 57% of innovation leaders vs. 29% of other companies.
- Blue ocean strategy: 53% of innovation leaders vs. 26% of other companies.
- Customer personas: 53% of innovation leaders vs. 32% of other companies.

Figure 21. Methods used to generate new product or service ideas

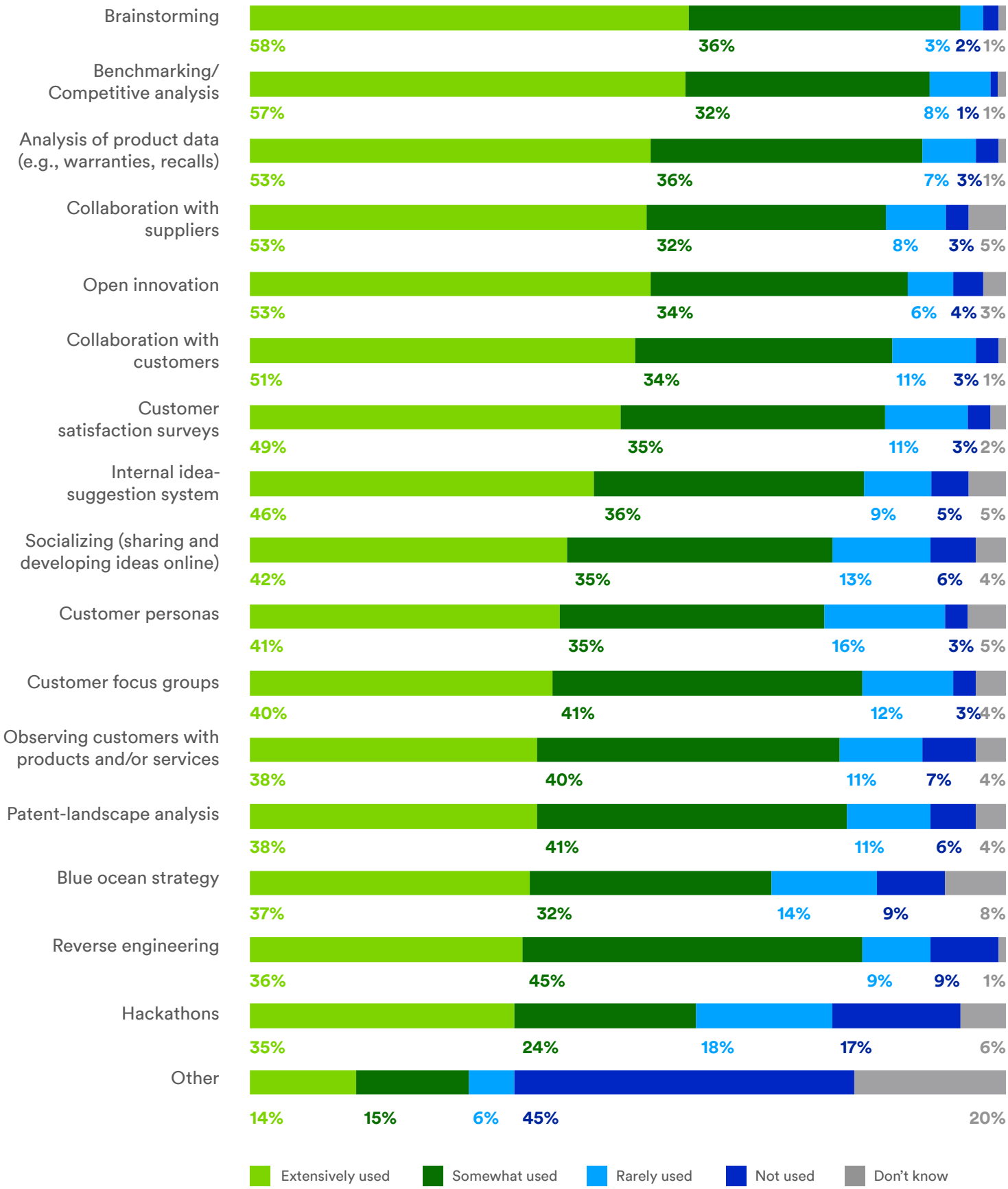
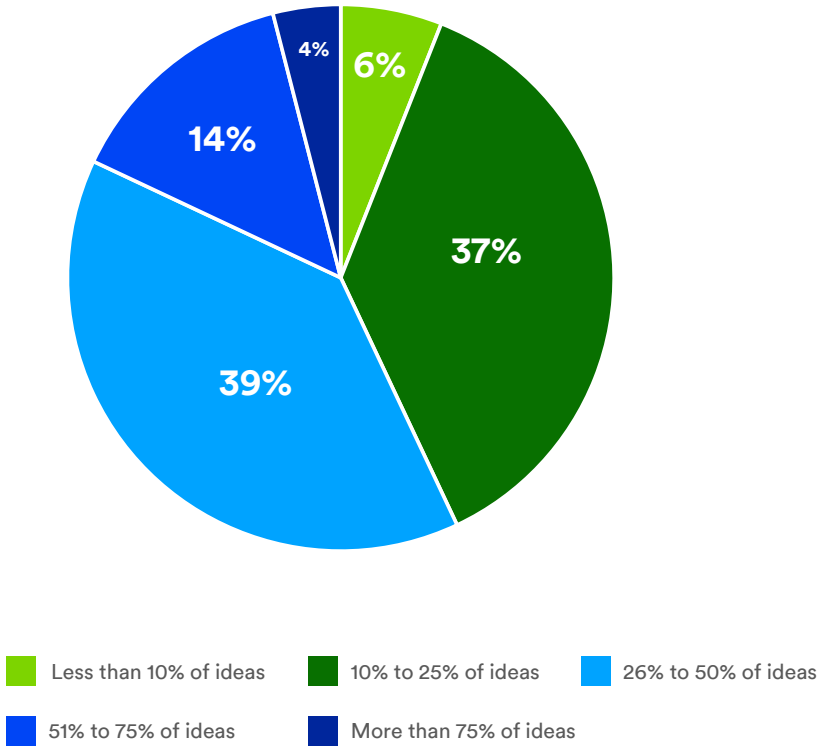


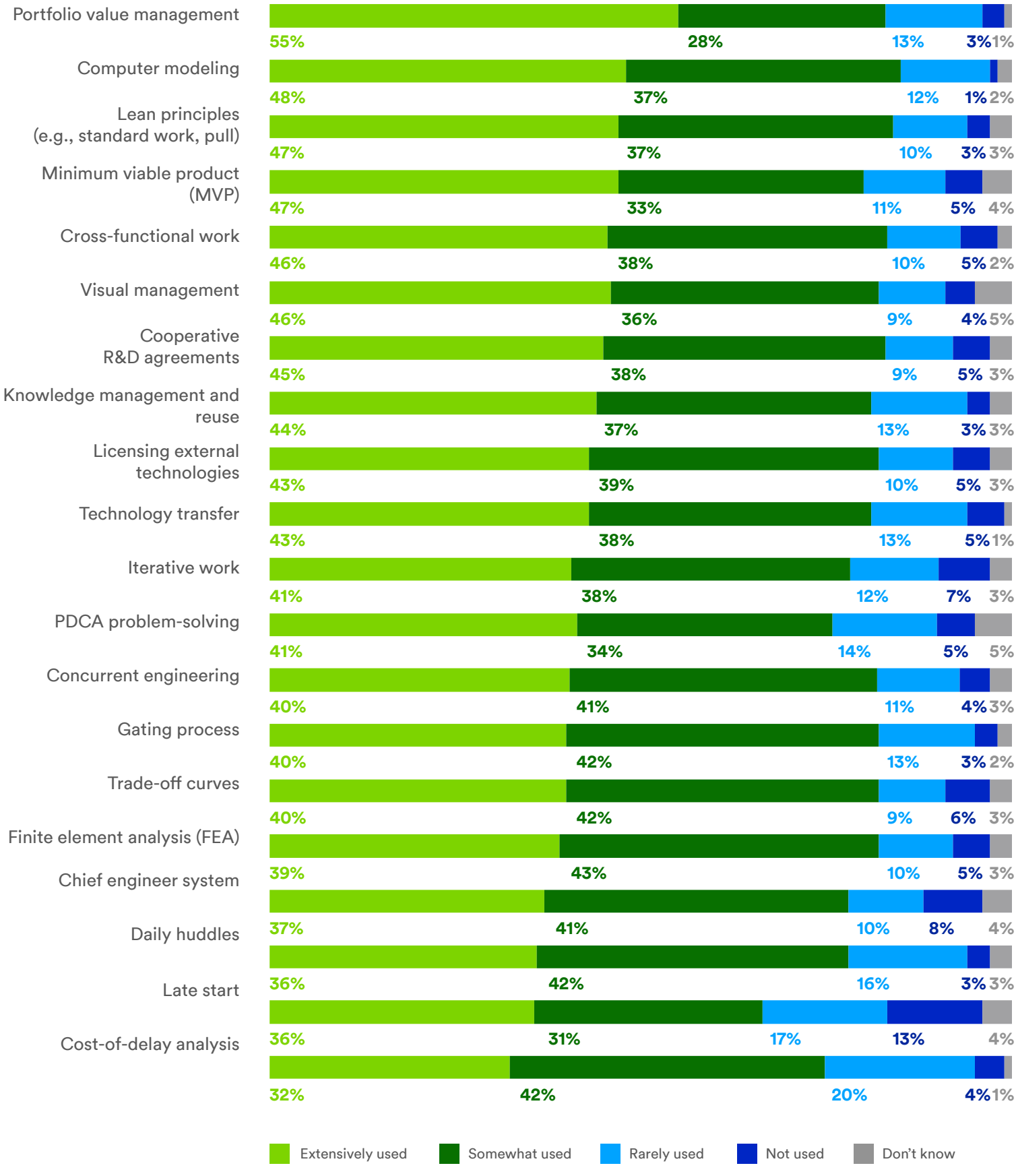
Figure 22. Percentage of new product or service ideas that become budgeted projects



Once companies commit to an idea, they need a development process that efficiently delivers high-quality products and services. Many development best practices are under used (Figure 23), but significant increases were seen in the percentage of companies extensively using:

- Portfolio value management (55% in 2024 vs. 29% in 2022)
- Minimum viable product (47% vs. 27%)
- Gating process (40% vs. 24%)
- Licensing external technologies (43% vs. 33%)
- Technology transfer (43% vs. 33%)

Figure 23. Principles and practices used to develop new products or services



Many companies are challenged to deliver acceptable R&D performances:

- Projects turn into sales: Approximately three-quarters of companies report that 50% or fewer new product- and service-development projects result in sales to customers (Figure 24).
- Hit sales targets: More than half of companies report that 50% or fewer projects achieve projected sales targets (Figure 25).
- Lead to new ideas and/or technical competencies: Approximately three-quarters of companies report that 50% or fewer projects lead to new ideas and/or technical skills that can be used to create new products and services (Figure 26).
- Sales from recent launches: Almost half of companies report that 10% or less of company sales are from new products and services introduced in the past 12 months (Figure 27).
- Time to market: About quarter of companies take more than one year to develop a new product or service (Figure 28).

Innovation leaders were more likely to outperform other companies on all R&D performance measures. For example, 68% of innovation leaders generated more than 10% of sales from products and services introduced in the past 12 months vs. just 51% of other companies.

Figure 24. Percentage of new product- and service-development projects that result in sales

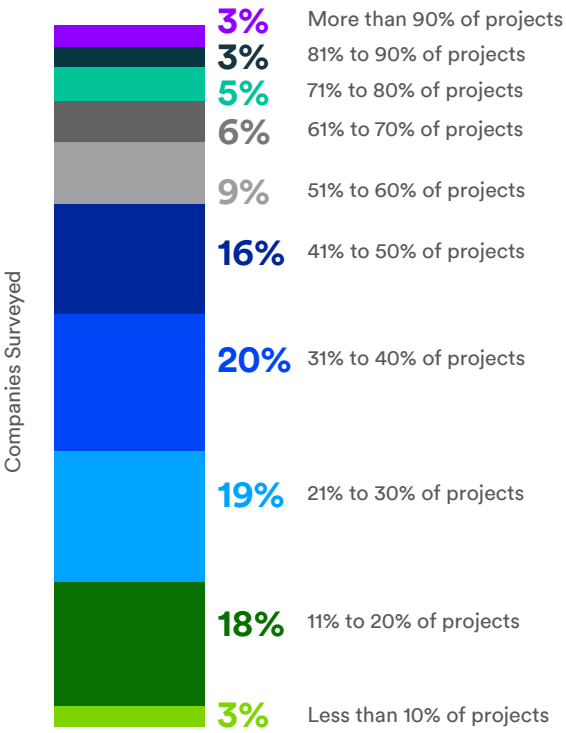


Figure 25. Percentage of new product- and service-development projects that achieve sales targets

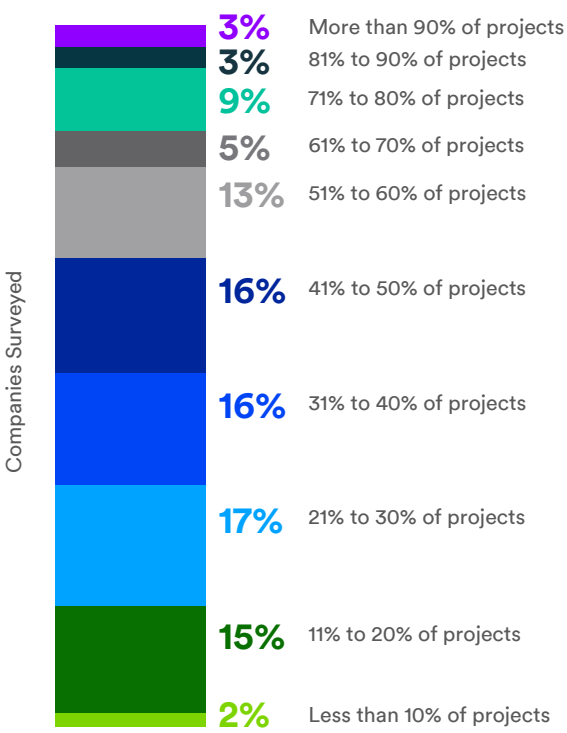


Figure 26. Percentage of new product- and service-development projects that result in new ideas and/or technical competencies that can be used for additional products and services

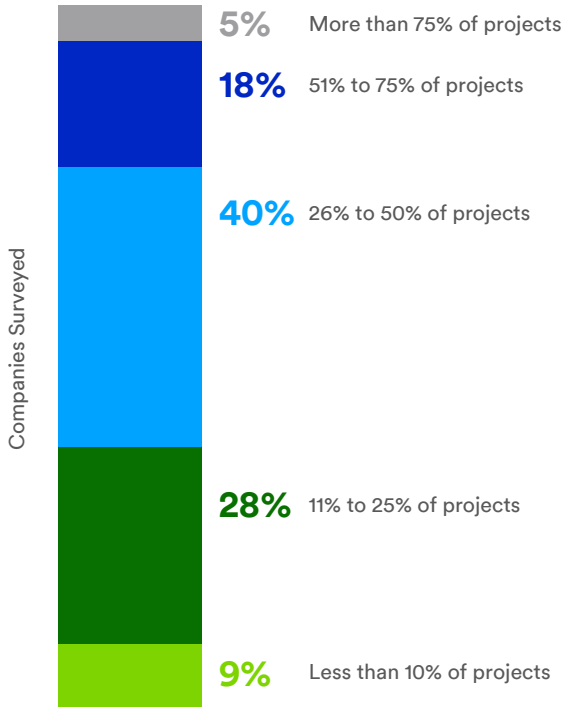


Figure 27. Percentage of annual sales derived from new products and services introduced in past 12 months

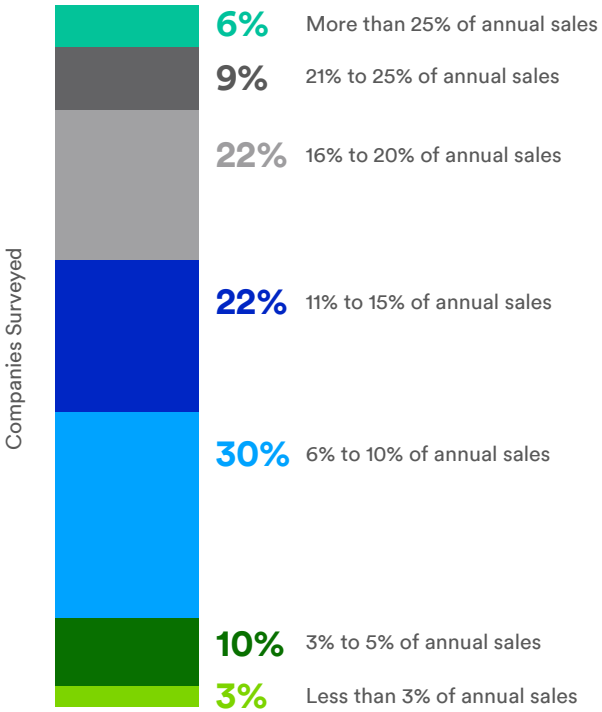
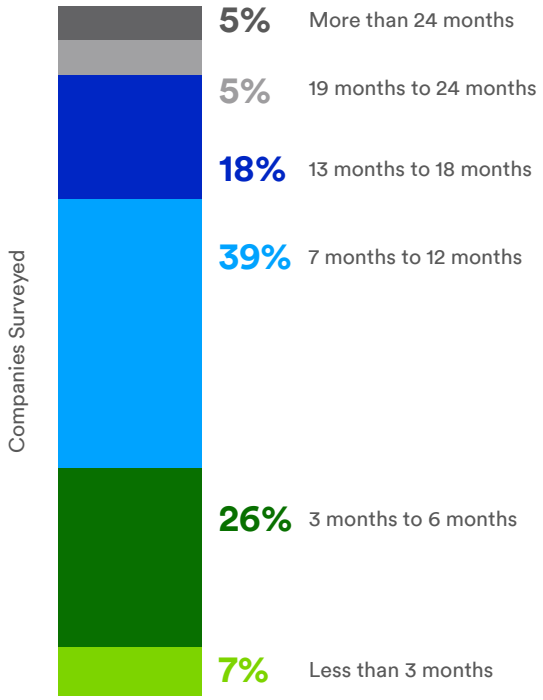


Figure 28. Time to develop new product or service ideation to sale



The effectiveness of a company's overall R&D process significantly impacts customer retention, new customer acquisition, and the bottom line:

- Customer retention: Some 42% of companies retain 70% of their customers or fewer (Figure 29).
- New customers: One-quarter of companies added 20% or fewer customers in the past three years (Figure 30).
- Net profit margin: Some 21% of companies did not make a profit in the past year (Figure 31).

Figure 29. Customer retention

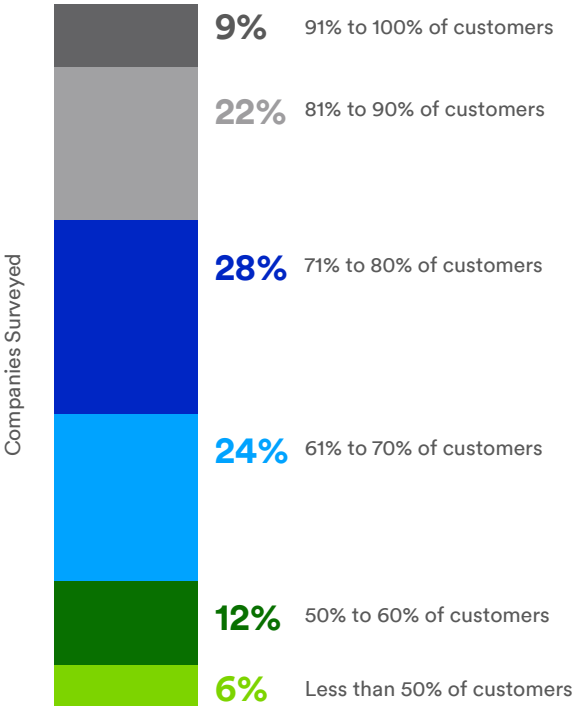


Figure 30. Percentage of customers that are new compared to three years ago

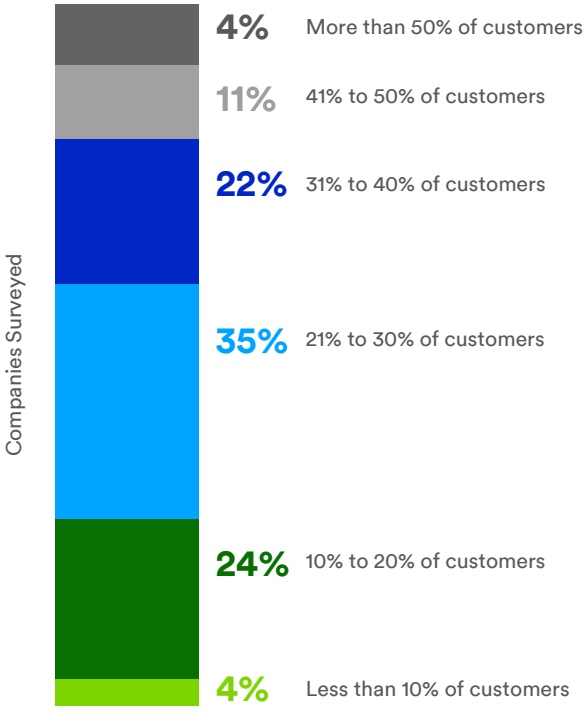
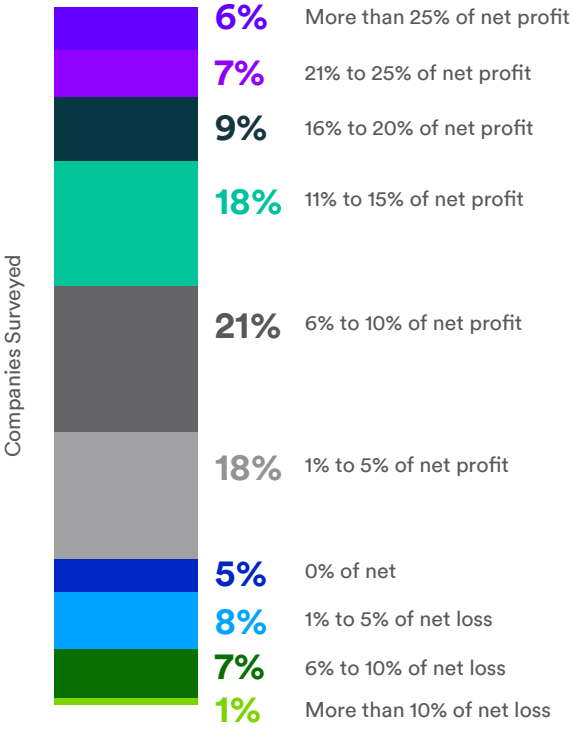


Figure 31. Net profit margin in past year



Study Participants

The TechLink 2024 R&D Innovation Performance Study collected demographic information on participants and their companies (Figures 32-38).

Figure 32. Ownership

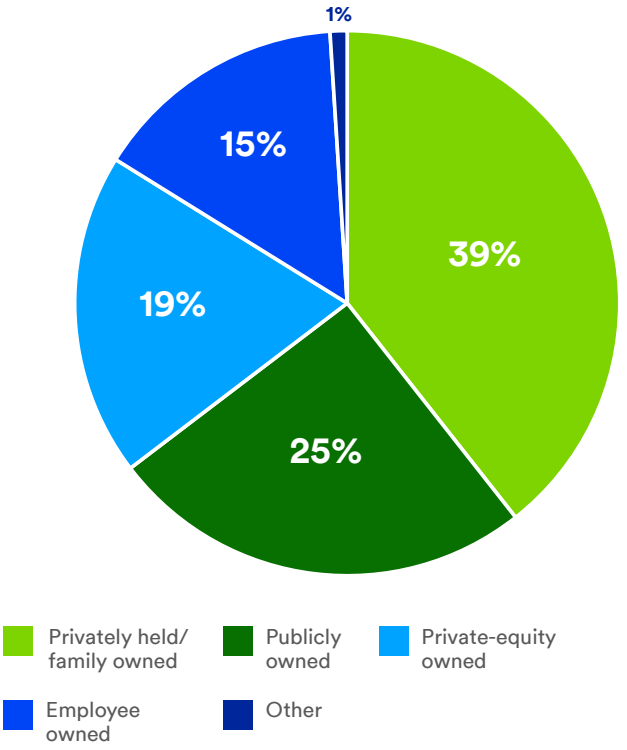


Figure 33. Executive title

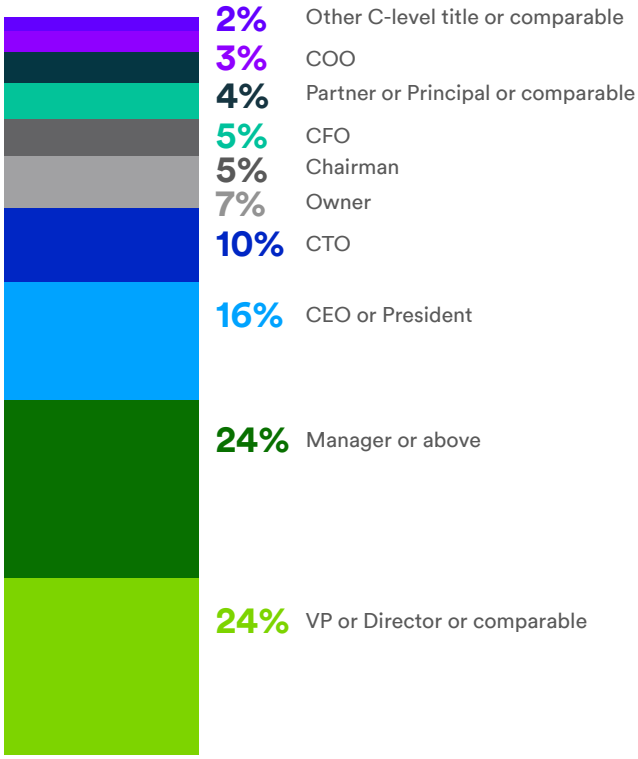


Figure 34. Function of regular involvement *(Multiple responses permitted)*

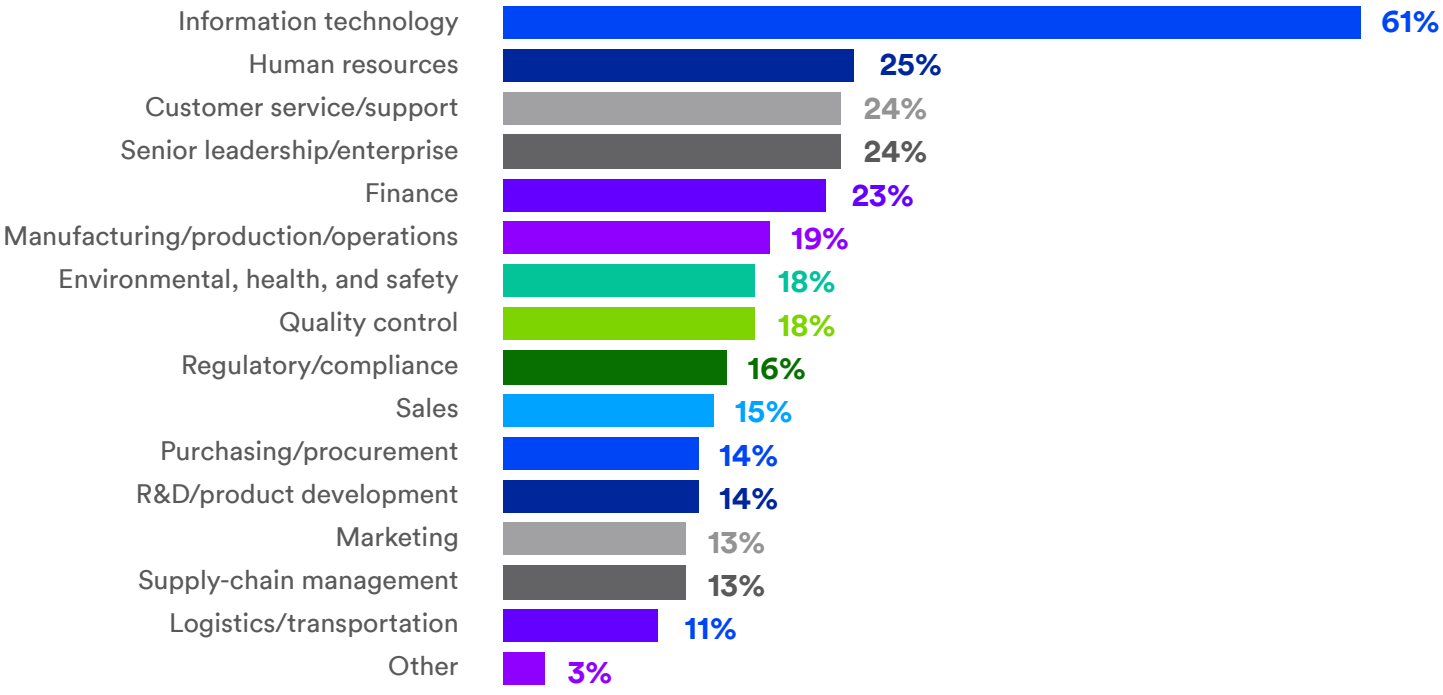
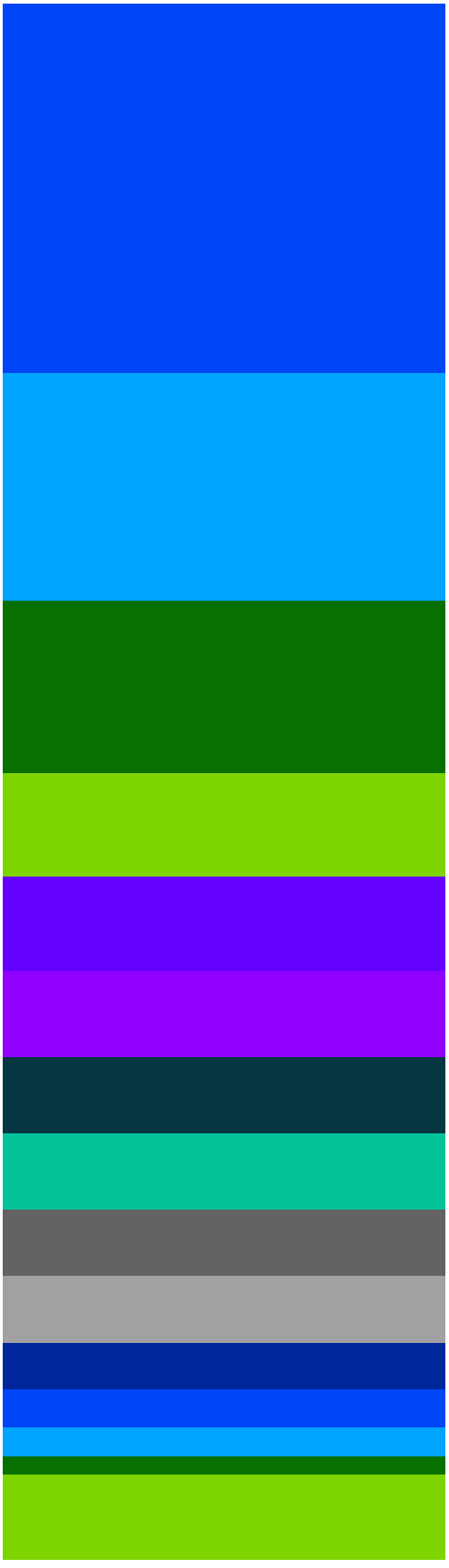


Figure 35. Primary industry *(Multiple responses permitted)*



39% **Software**

24% **Electronics/high tech**
(e.g., computers, audio/visual systems, smartphones, communications equipment)

18% **Electronic components**
(e.g., semiconductors, sensors, photonics, controls)

11% **Materials** (e.g., plastics, rubber, textiles, wood)

10% **Medical/pharmaceutical**
(e.g., drugs, medical devices)

9% **Consumer durables**
(e.g., appliances, furniture, sporting goods)

8% **Chemicals**

8% **Energy products** (e.g., conventional, solar, geothermal)

7% **Aerospace and defense**

7% **Environmental products**
(e.g., remediation, filtration, meteorological)

5% **Machinery**

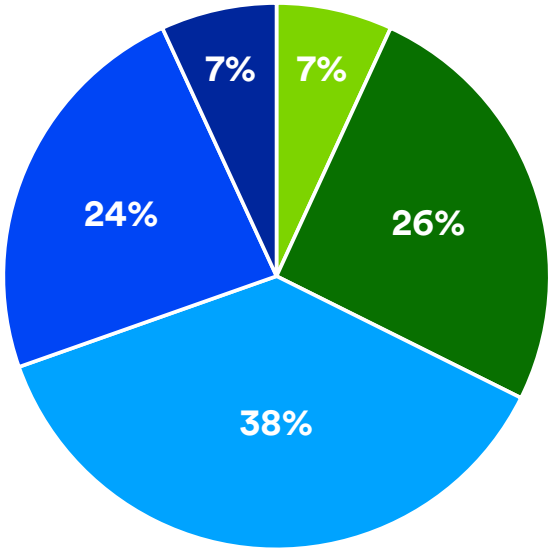
4% **Transportation** (e.g., autos, auto parts, boats, trailers)

3% **Consumer non-durables**
(e.g., food, beverages, cleaning products)

2% **Metals** (e.g., primary, fabricated)

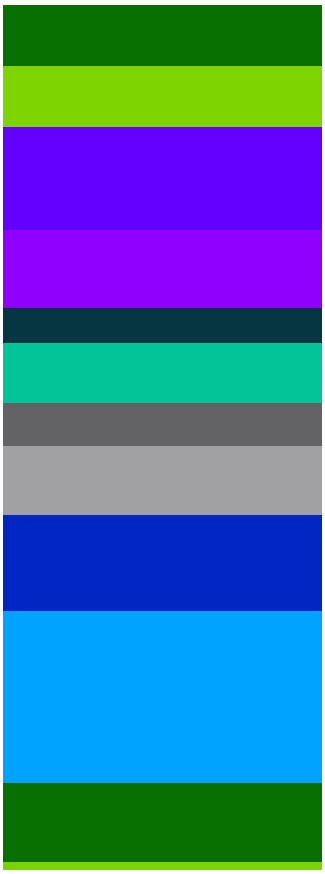
9% **Other**

Figure 36. Age of business



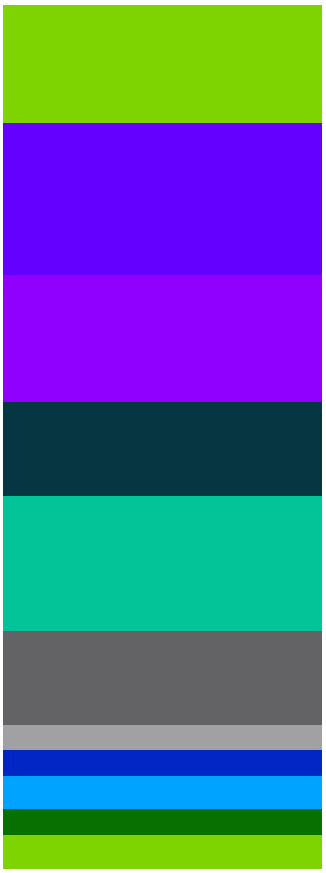
Fewer than 5 years
6 to 10 years
11 to 20 years
21 to 50 years
More than 50 years

Figure 37. Annual revenues



7%	More than $1BN
7%	$501M to $1BN
12%	$101M to $500M
9%	$51M to $100M
4%	$25M to $50M
7%	$21M to $25M
5%	$16M to $20M
8%	$11M to $15M
11%	$6M to $10M
20%	$1M to $5M
9%	Less than $1M
1%	Not yet generating revenue

Figure 38. Full-time employees



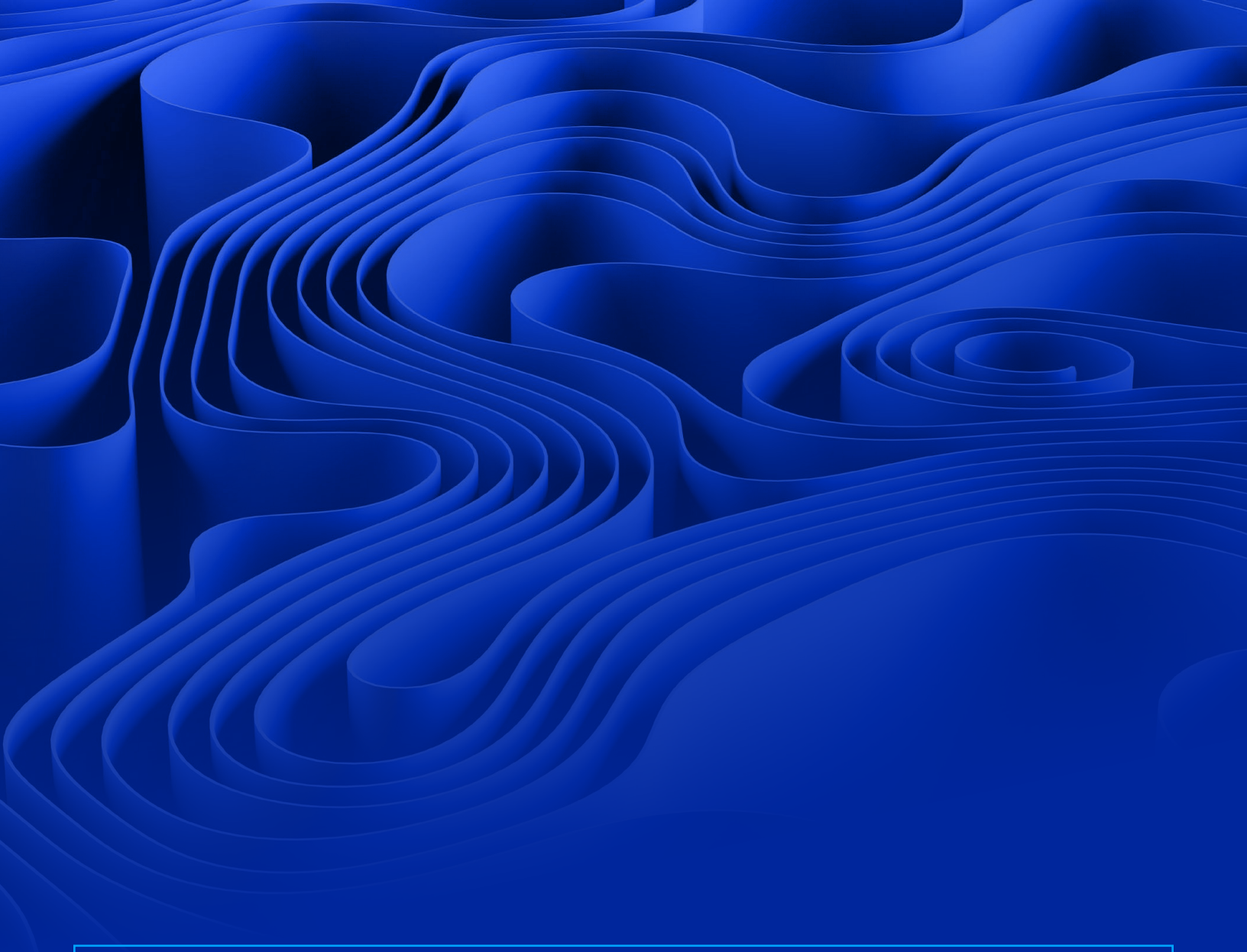
14%	More than 1,000
18%	501 to 1,000
15%	251 to 500
11%	101 to 250
16%	51 to 100
11%	26 to 50
3%	21 to 25
3%	16 to 20
4%	11 to 15
3%	6 to 10
4%	Fewer than 5

Methodology

The R&D Innovation Performance Study surveyed 152 U.S. business leaders in July and August 2024 across a range of industries, levels of experience, and types of businesses. Industries represented include aerospace and defense, high-tech electronics, manufacturing, medical and pharmaceutical, and more. Business leaders surveyed hold at least the title of manager, with 36% of respondents identifying as a member of the C-Suite and 16% identifying as an owner, partner, principal, or chairman of the board. Participants span privately held, employee-owned, private-equity owned, and publicly owned companies.

About TechLink

TechLink is the authorized national technology transfer partnership intermediary for the U.S. Department of Defense (DOD) and U.S. Veteran Affairs (VA). We are federally funded to work with companies of all sizes to find commercial potential in technologies developed in DOD and VA labs. Our team facilitates tech transfer partnerships — linking labs with private industry for technology licensing, transfer, and joint R&D across virtually all technology fields. Through technology transfer, we improve R&D speed and outcomes for companies. Visit **TechLink's technology marketplace** to explore commercialization opportunities in almost every technology category.



TECHLINKCENTER.ORG

TechLink