

stripe

The Developer Coefficient

Software engineering efficiency and its
\$3 trillion impact on global GDP

SEPTEMBER 2018



A decade since the global financial crisis, companies increasingly face challenges beyond scarcity of capital. As technology fracks into every aspect of the world economy, software engineers are becoming one of the world's most precious resources.

While businesses today face myriad issues—security vulnerabilities, trade tariffs, complex government regulations, increased global competition—how they deploy their developers may be the most overlooked factor impacting their future success. Developers act as force-multipliers, and if used effectively, have the collective potential to raise global GDP by \$3 trillion over the next ten years.

While many people posit that lack of developers is the primary problem, this study—which surveyed thousands of C-level executives and developers across six different countries—found that businesses need to better leverage their *existing* software engineering talent if they want to move faster, build new products, and tap into new and emerging trends.

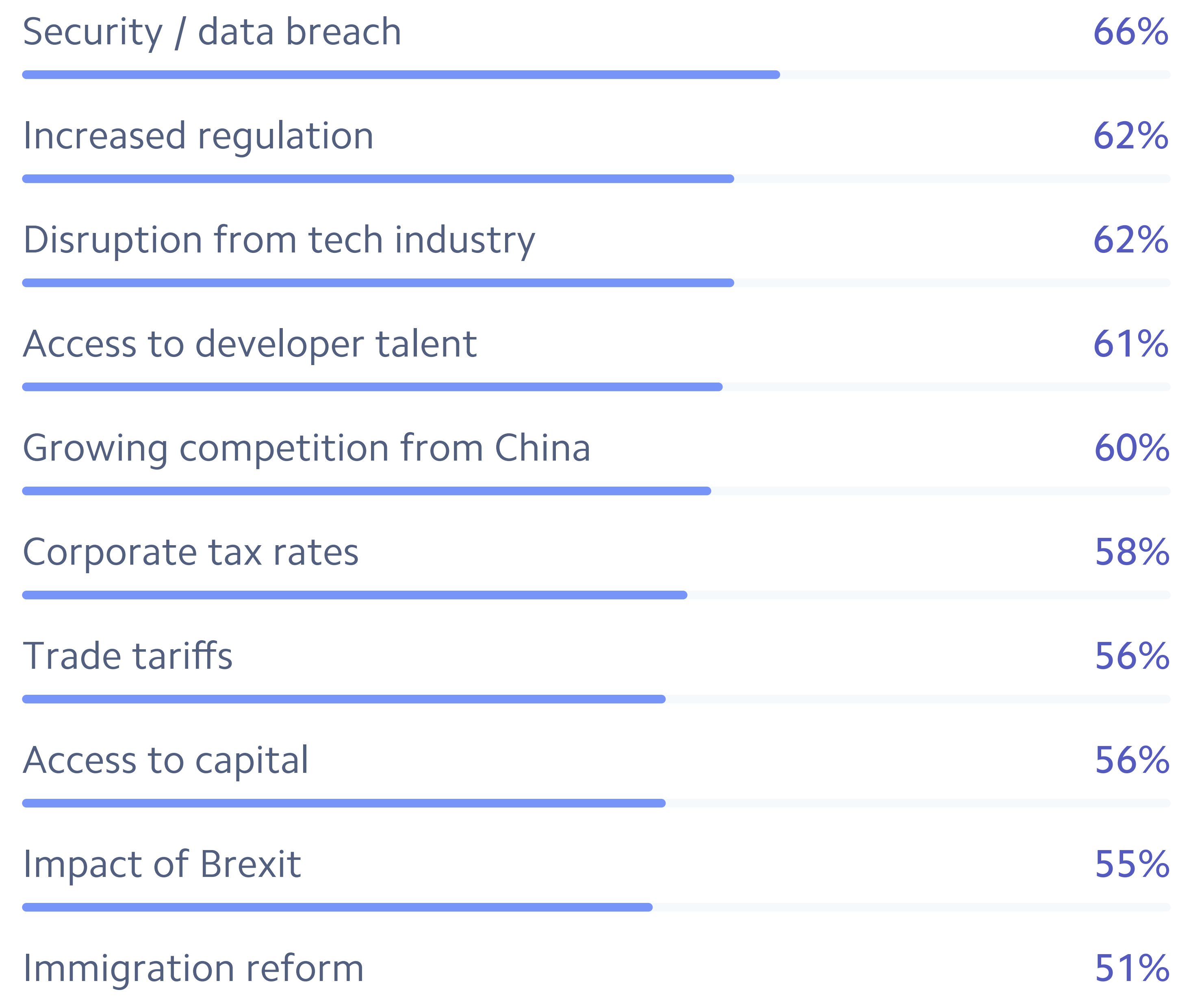


Access to developers is a bigger threat to success than access to capital

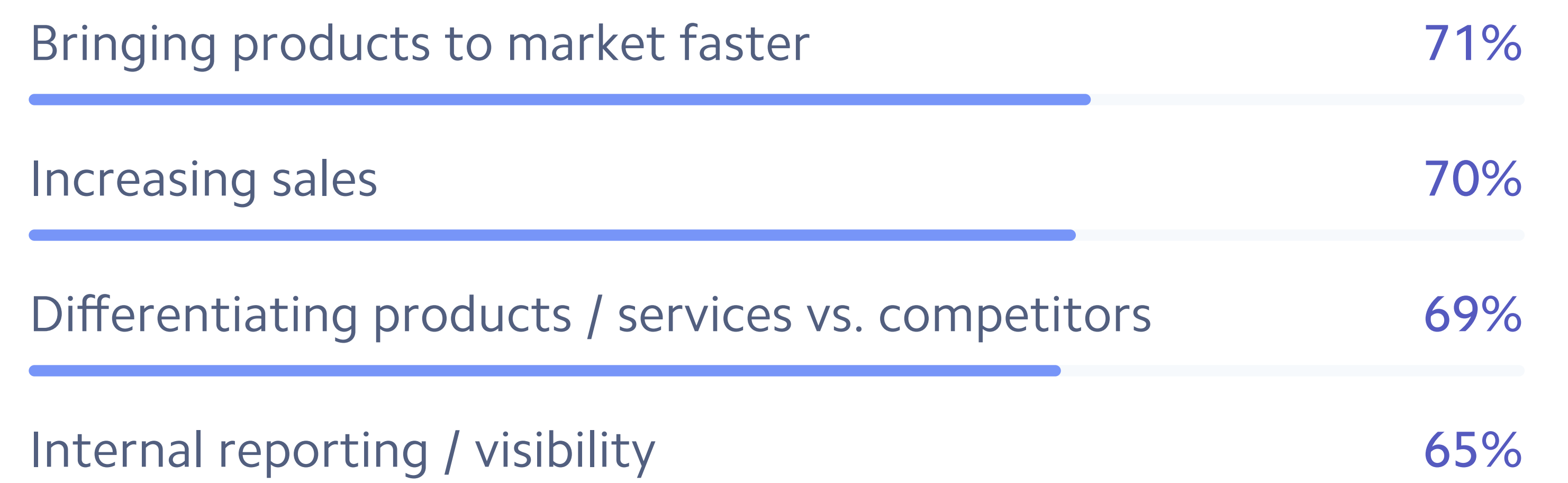
Senior executives report that the lack of developer talent is one of the biggest potential threats to their businesses. In fact, they now worry about access to developers more than they worry about access to capital, immigration concerns, and other challenges. Despite the number of developers increasing year-over-year at most companies, developers working on the right things can accelerate a company's move into new markets or product areas and help companies differentiate themselves at disproportionate rates. This underscores the most important point about developers as force-multipliers: It's not just how many devs companies have; it's also how they're being leveraged.

C-Level Executives

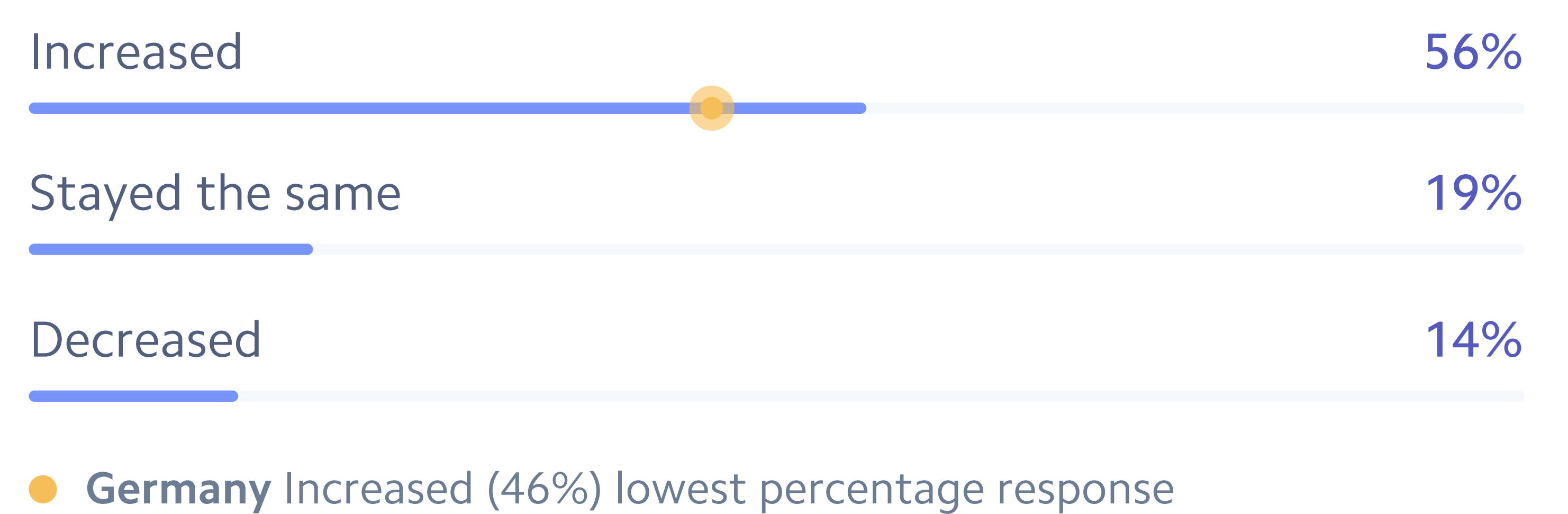
How threatening are the following factors to the success of your business? (somewhat/very)



How much of an impact can developers have to help your company with each of the following challenges? (moderate/major)



How has the number of developers/software engineers changed in the following year?



How much of a priority is it for upper management to increase the productivity of its developers?



HOW \$3 TRILLION IN GDP IMPACT ADDS UP

Sources: Evans Data Corp., CIA Factbook, Stripe research

18 million	Estimated developers in the world
\$17,000	Global GDP per capita
\$51,000	GDP per developer
\$918 billion	Aggregate GDP of developers globally
31.6%	Efficiency loss of developers (from survey)
~\$300 billion	Global GDP loss from developer inefficiency annually

‘Bad code’ costs companies \$85 billion annually

While it’s a priority for senior executives to increase the productivity of their developers, the average developer spends more than 17 hours a week dealing with maintenance issues, such as debugging and refactoring. In addition, they spend approximately four hours a week on “bad code,” which equates to nearly \$85 billion worldwide in opportunity cost lost annually, according to Stripe’s calculations on average developer salary by country. Nearly two-thirds of developers agree that this is “excessive” and believe that clear prioritization, responsibilities, and long-term product goals would improve their own productivity.

Developers

Approximately, how many hours on average do developers at your company work each week?

41.1 hours

Mean (all countries)

● 39.6 hours

Mean in **France** (lowest)

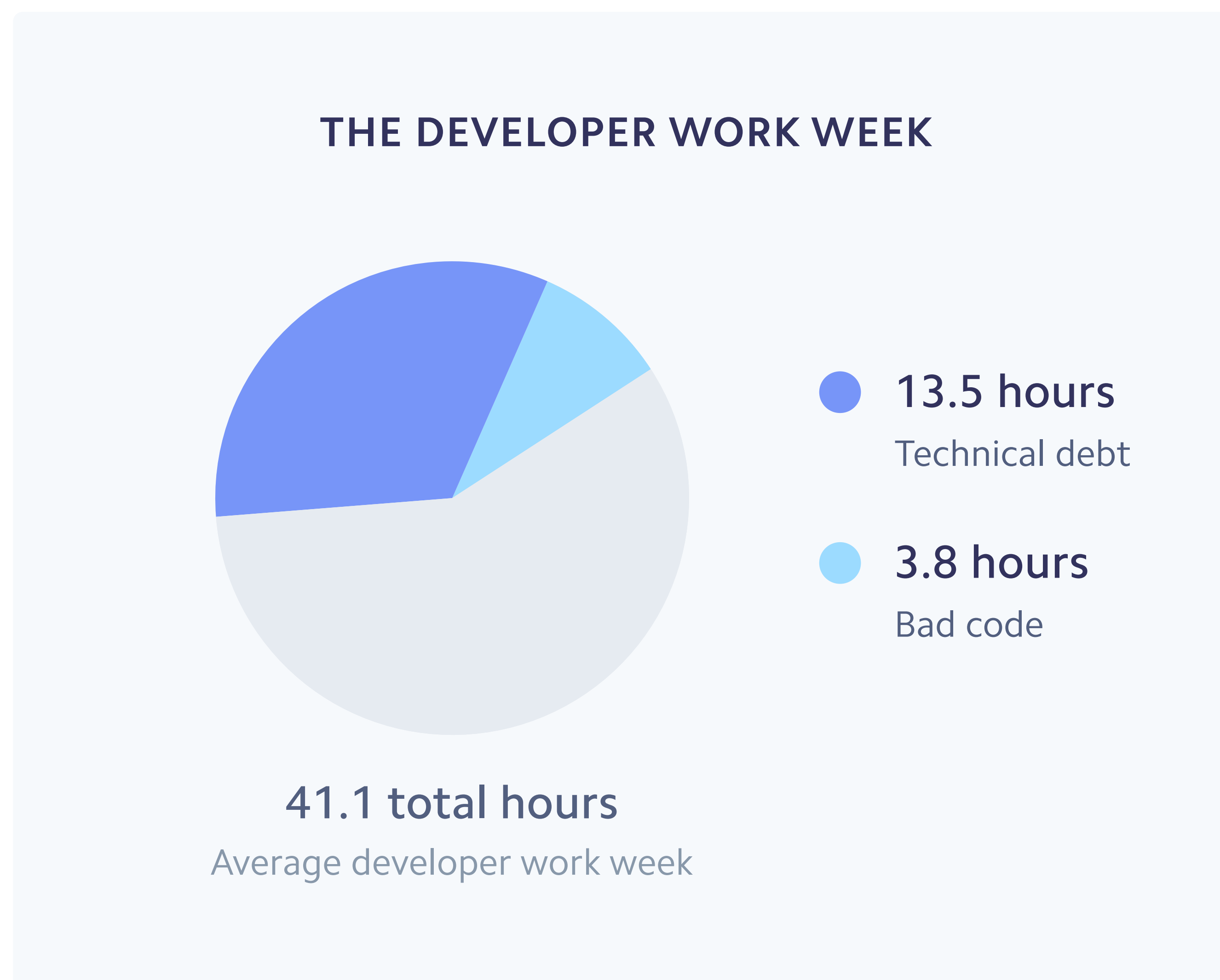
Developers

How many hours per week do you estimate developers at your company waste on maintenance (i.e. dealing with bad code / errors, debugging, refactoring, modifying)?

17.3 hours ● 20.9 hours
 Mean (all countries) Mean in **France** (highest)

How many hours each week do you think the average developer at your company spends on addressing "technical debt?"

13.5 hours
 Mean

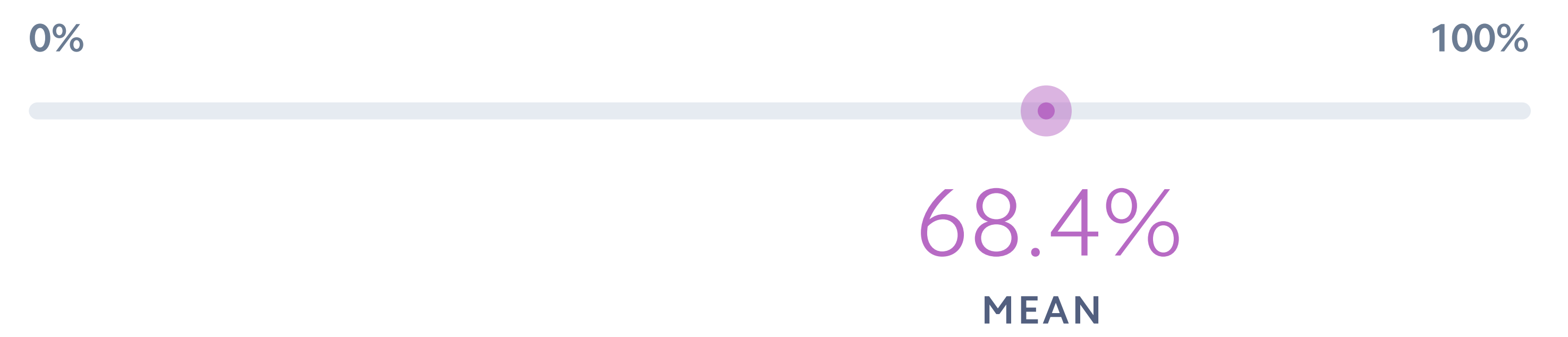


How much do you agree or disagree with the following statement? "The amount of time developers at my company spend on bad code is excessive."

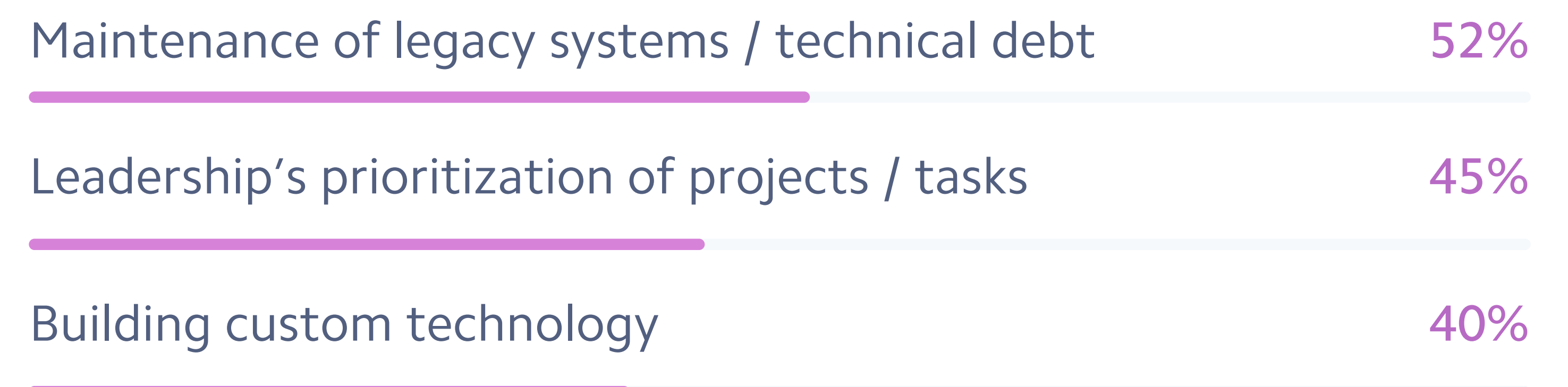
59% ● 70%
 Strongly / somewhat agree (all countries) Strongly / somewhat agree in **Singapore** (highest)

Developers

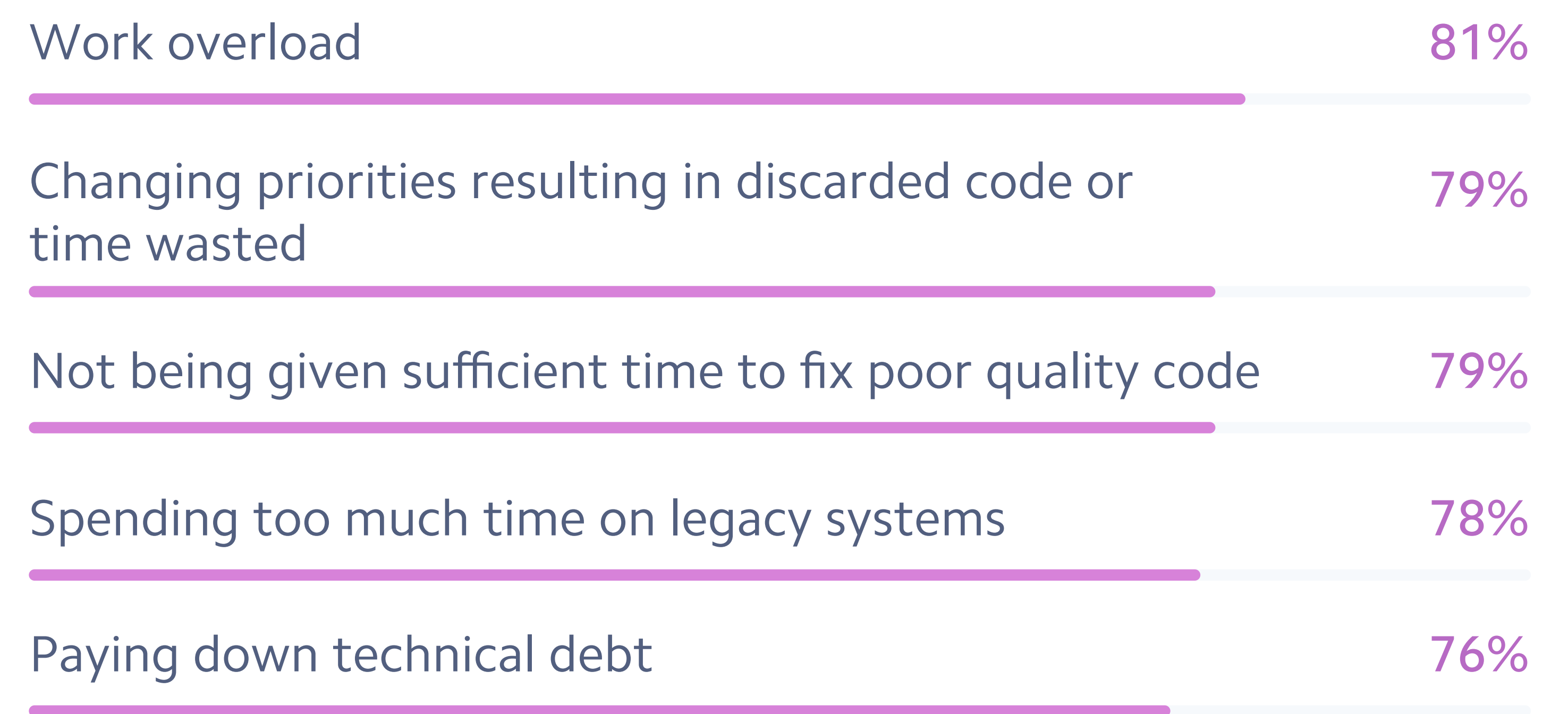
In your opinion, as a whole, how productive are developers at your company? Consider 100% being perfectly productive and 0% being completely unproductive.



Which of the following do you believe is hindering developer productivity at your company?



How much of a negative impact does each of the following have on your personal morale?



THE ECONOMIC IMPACT OF 'BAD CODE'

41.1	Average hours per developer workweek
17.3	Average hours spent by developers on bad code, debugging, refactoring, modifying
13.5	Average hours spent on technical debt
3.8	Average hours spent on bad code
9.25%	Percent productivity loss from bad code
~\$85 billion	Global GDP loss from developer time spent on bad code annually

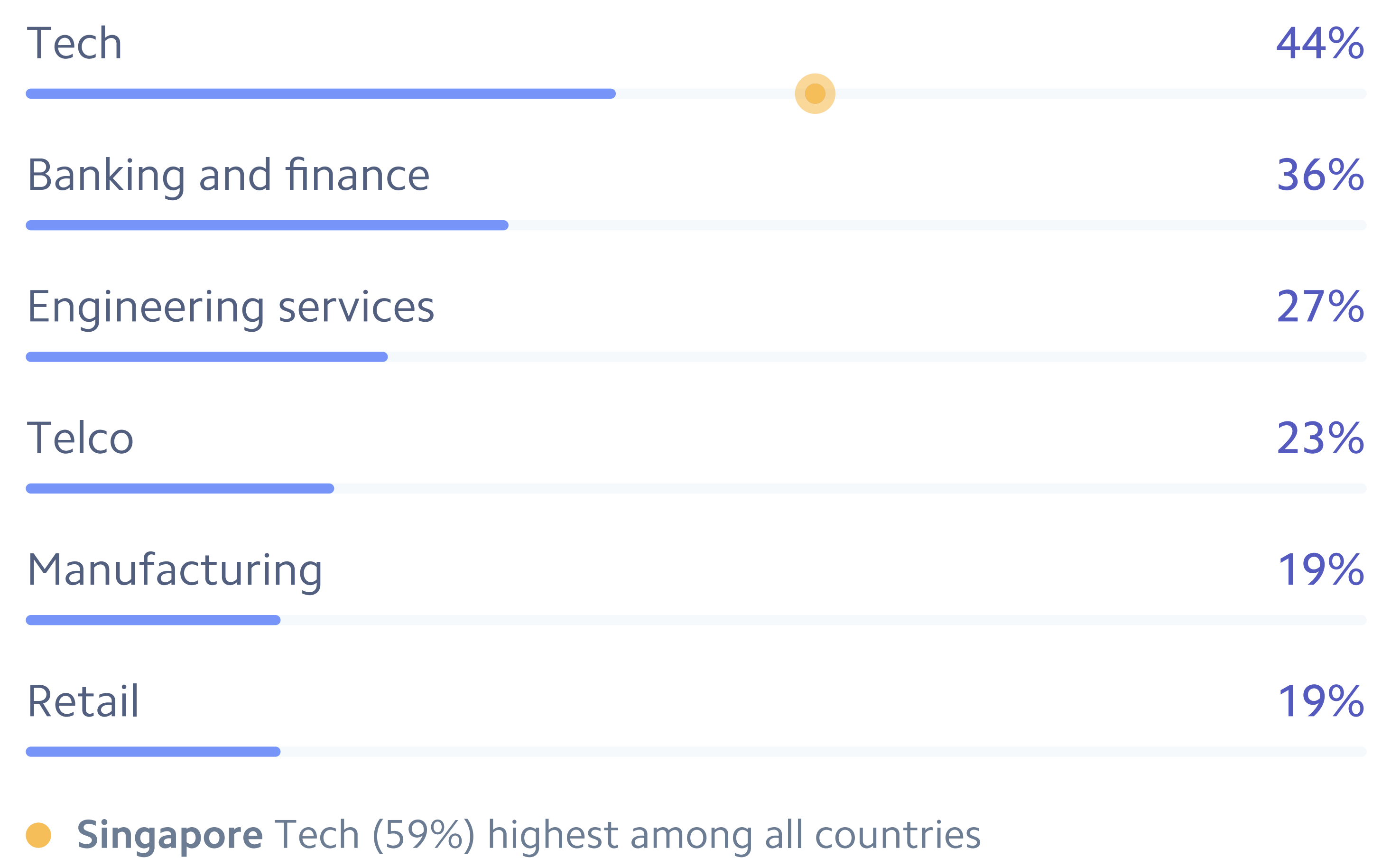
Sources: Evans Data Corp., CIA Factbook, Stripe research

Technology companies pose the biggest threat across industries

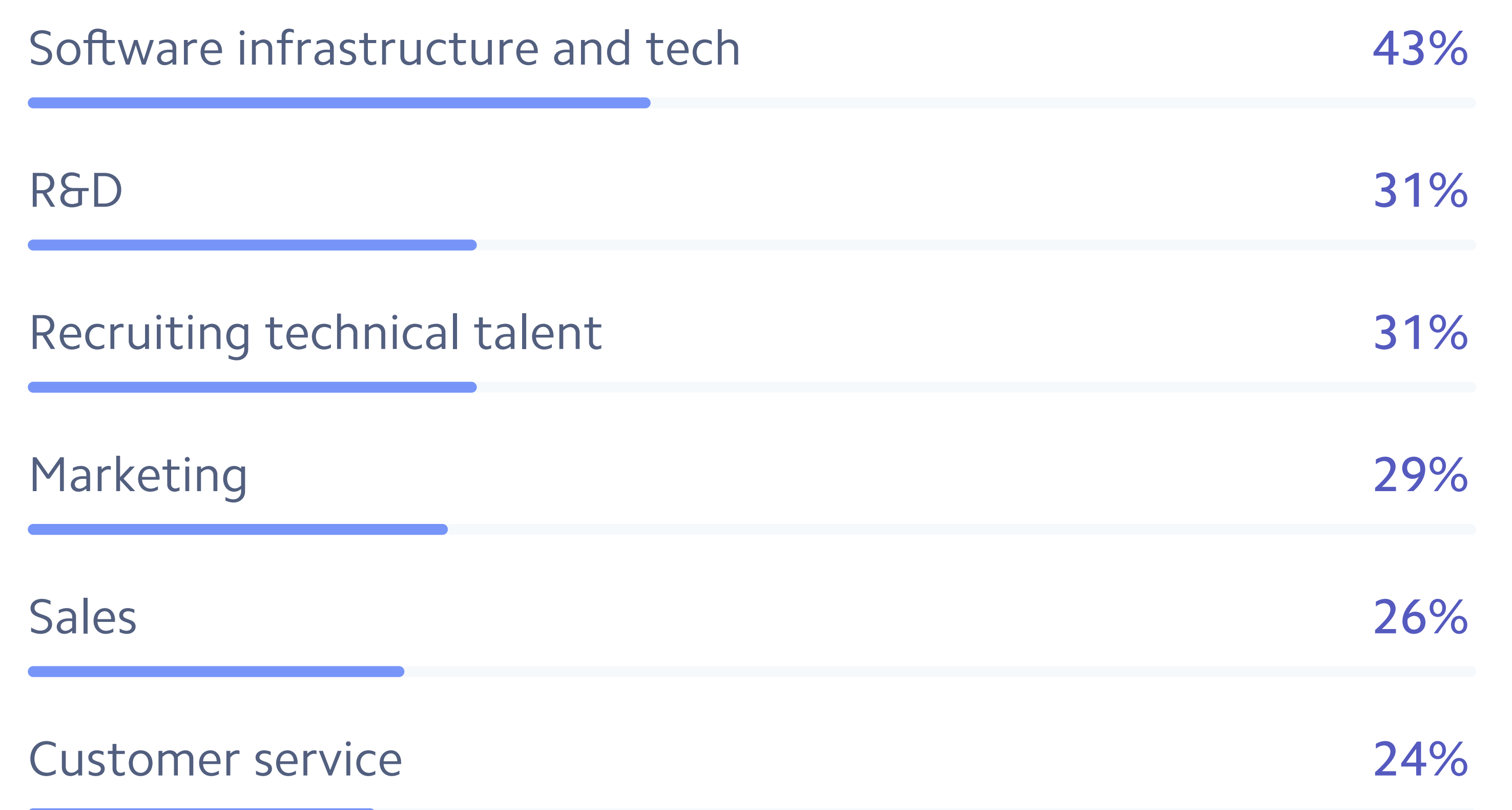
Senior executives feel the threat of tech industry competitors most acutely, which is why they're prioritizing investments in infrastructure, R&D, and recruiting over the next five years. Both developers and C-level execs agree that artificial intelligence, Internet of Things, and API services are having the biggest impact on their businesses today, with ML, virtual assistants, and blockchain likely to be impactful in the next 10 years. Senior executives are more optimistic than developers that their companies will be ready to tap into to these trends, however, with developers worried about not having the right technology infrastructure and skilled employees.

C-Level Executives

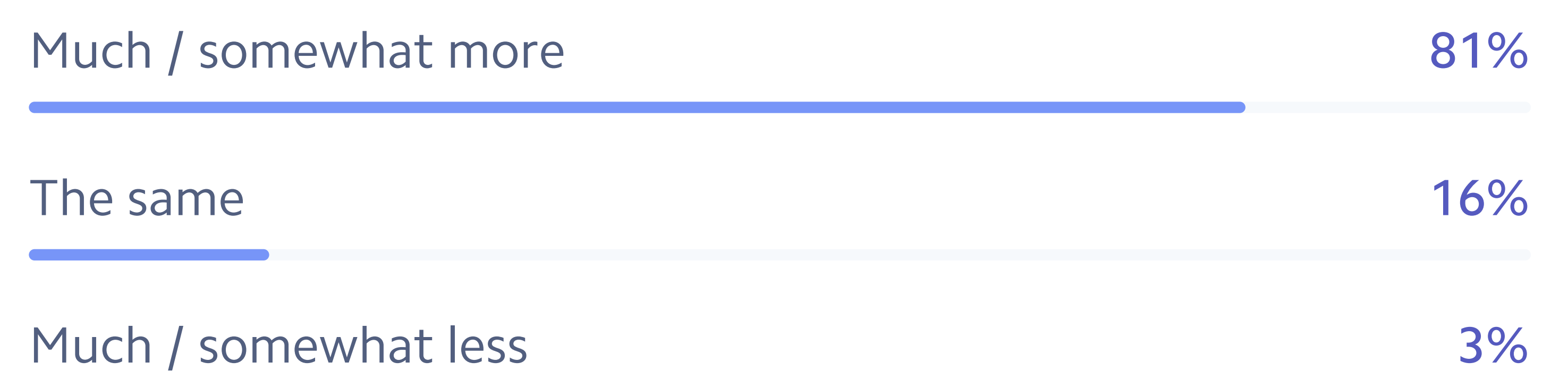
Companies in which of the following industries pose the greatest competitive threat to your business?



What are the top three areas your company plans to increase investment in the next 5 years?

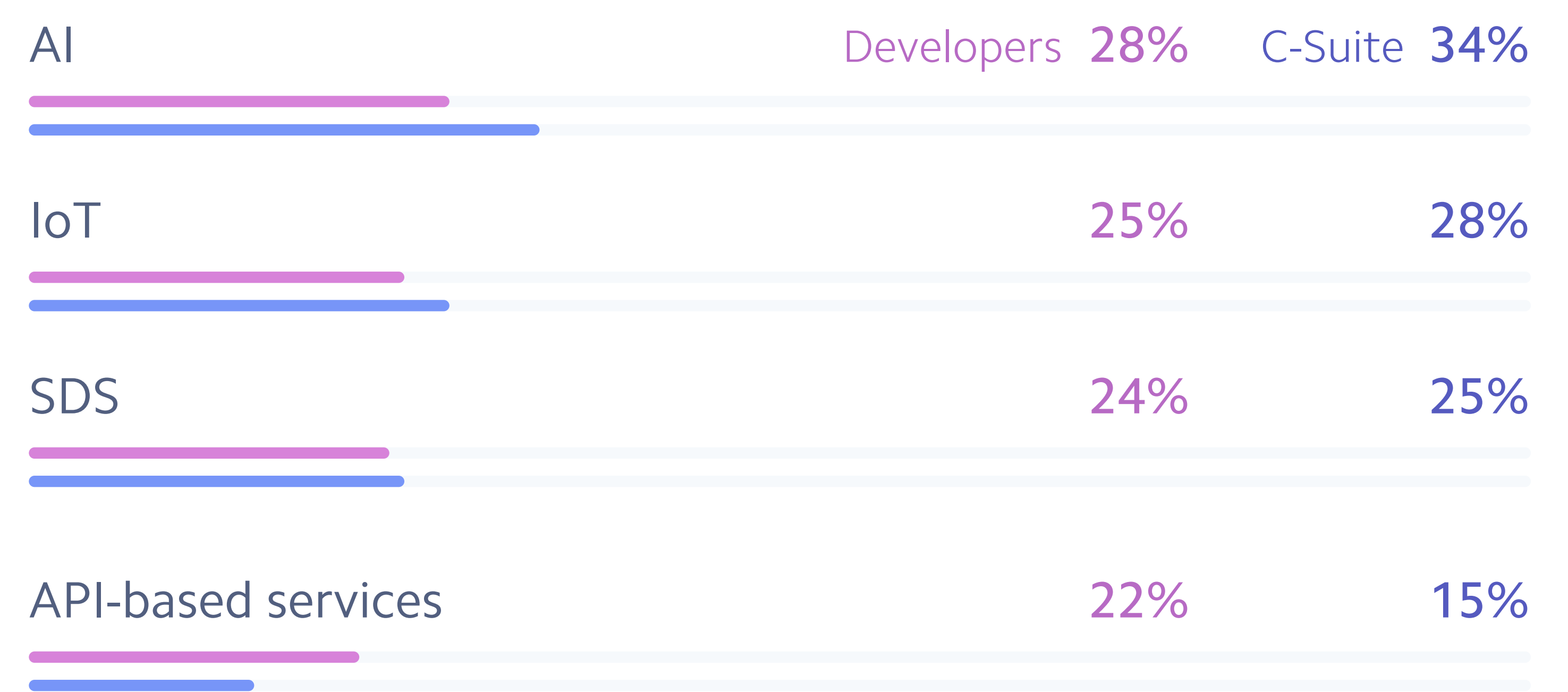


Compared to now, how much of a core competency will software development need to be 10 years from now?

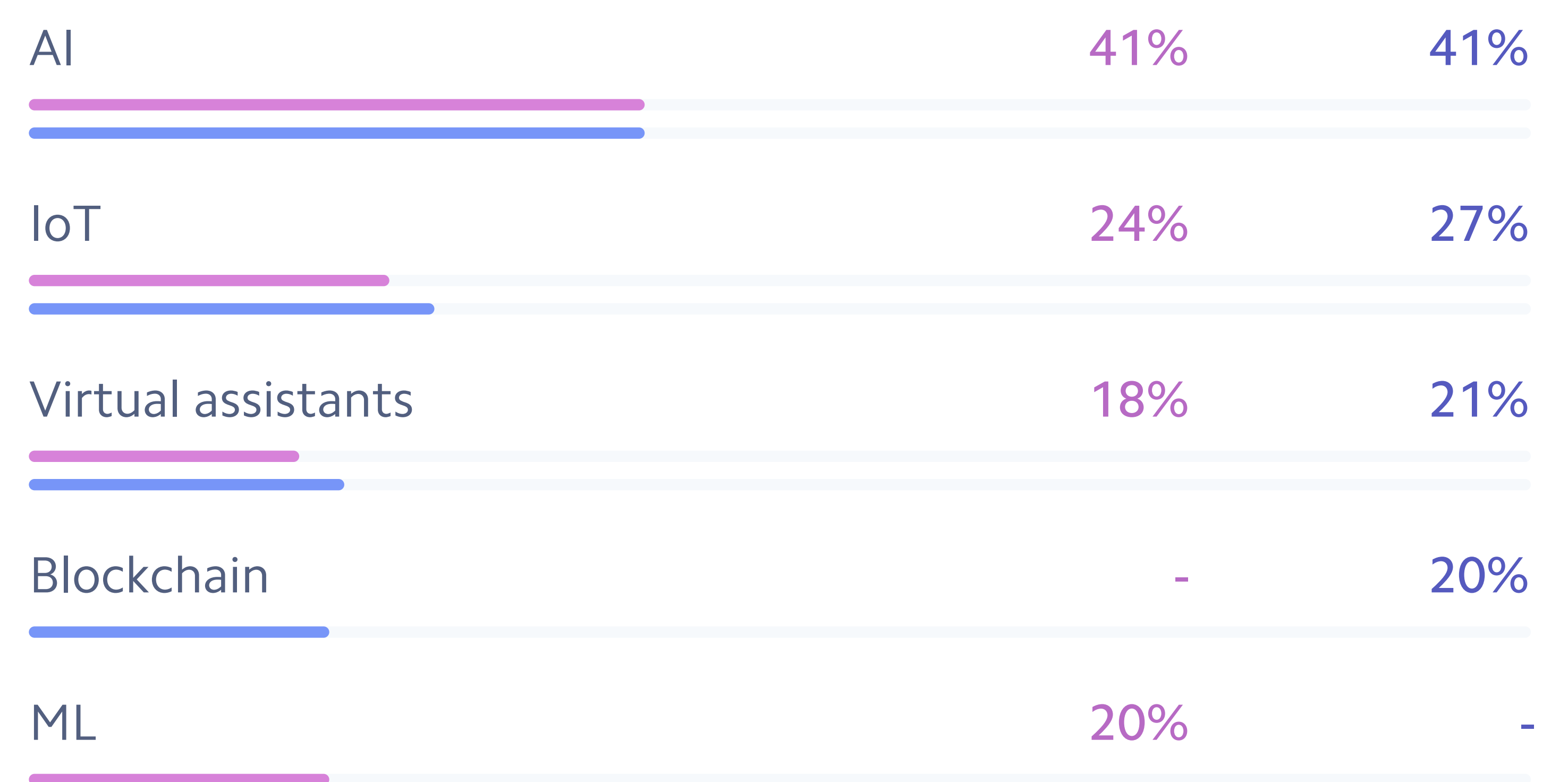


Developers
+
C-Level
Executives

Which of the following technology trends, if any, are having the greatest impact on your company today?

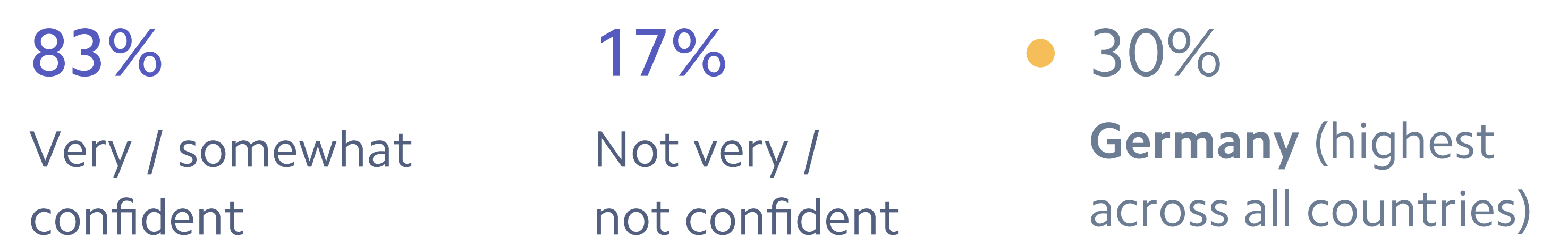


Which of the following technology trends, if any, are having the greatest impact on your company in 10 years?



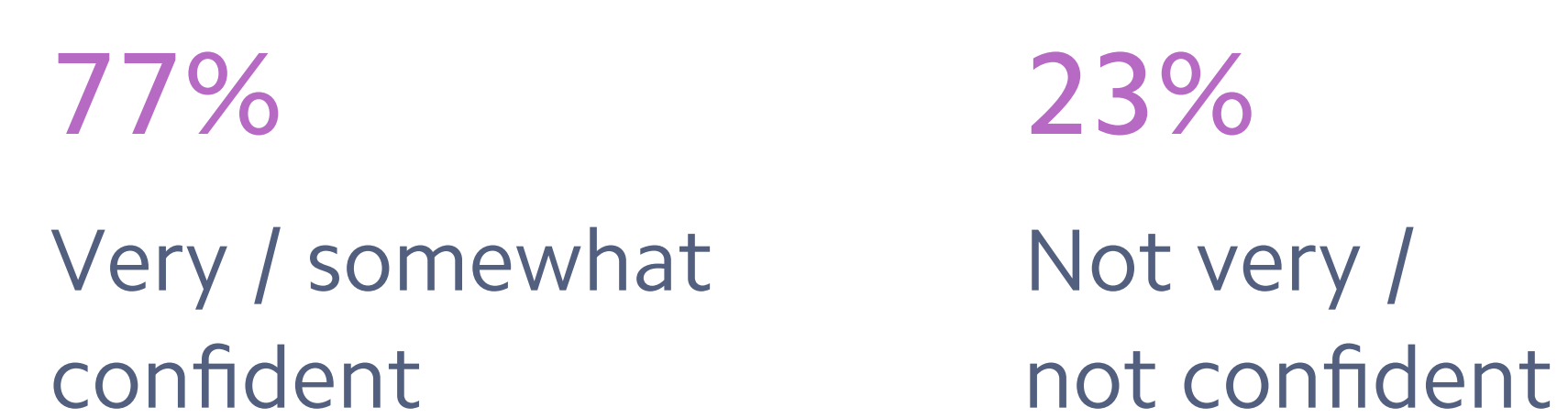
C-Level
Executives

How confident are you that your company has sufficient resources to respond to these trends?



Developers

How confident are you that your company has sufficient engineering resources to keep up with these technology trends?



Why aren't you confident that your company has sufficient engineering resources to keep up with these technology trends?



METHODOLOGY

Stripe partnered with Harris Poll to survey developers, technical leaders and C-level executives about their organizations' business challenges, software development practices, and future investments to determine the role that developer productivity plays in their success—and the growth of worldwide GDP overall.

More than 1,000 developers and more than 1,000 C-level executives in the United States, U.K., France, Germany, and Singapore participated in the study.