Codility

Engaging Developers at work

Insights for building and retaining strong engineering teams

2019

Prologue

Dear Readers,

In today's world, every company becomes a tech company. At Codility, we are observing the urgency that companies across all industries are experiencing around a need to build stronger engineering teams.

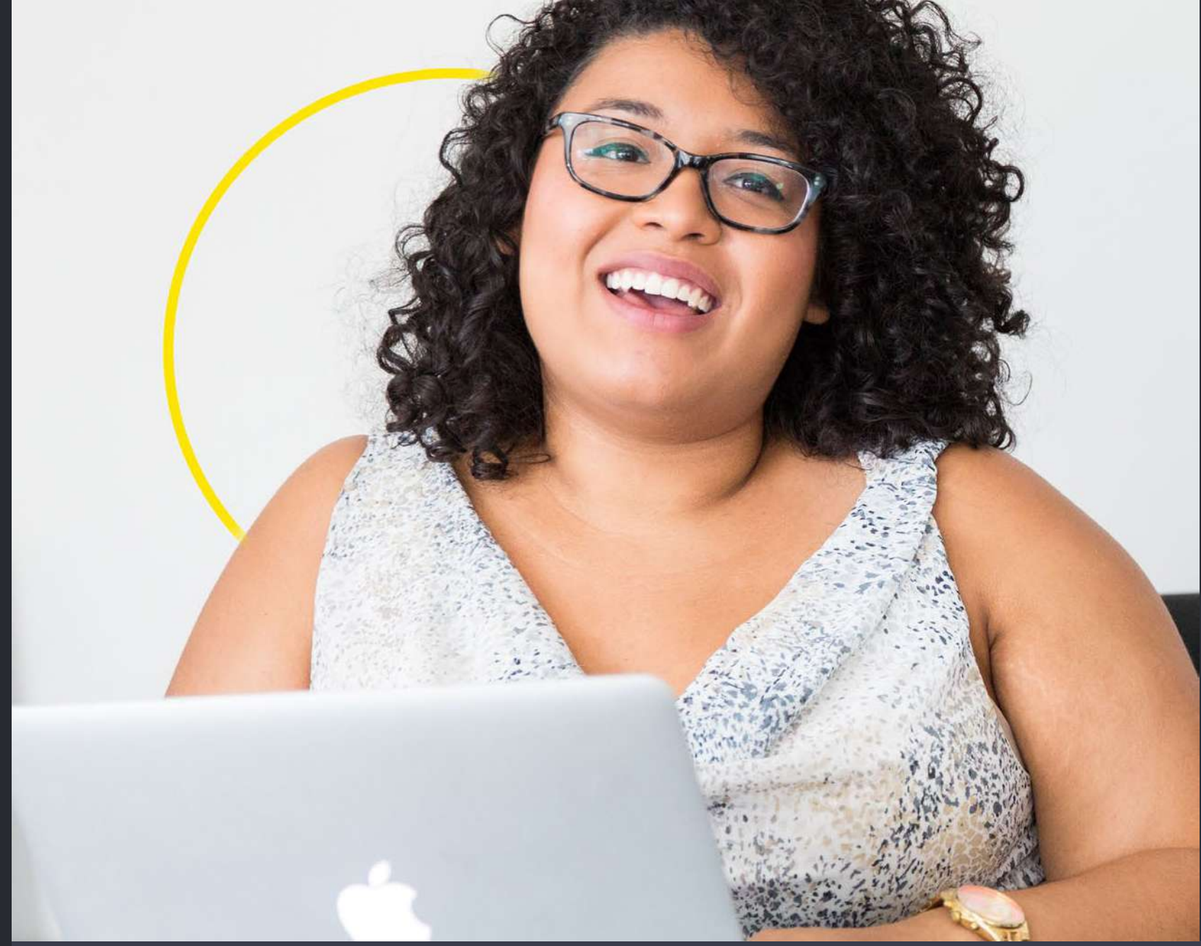
In our 2018 report, we surveyed thousands of developers on their experiences with the tech recruitment process, both as candidates and hiring managers.

This year, we focused on how developers like to work. Do they prefer to work remotely or in the office? Do they test first and what is the impact? Is becoming an Engineering Manager the ultimate goal? If so, do developers know how to get there? Finally, we asked: what makes a great work culture?

We hope that our insights will be useful to you.

Natalia Panowicz
CEO of Codility

Contents



Methodology

Global online survey conducted in August 2019. A total of 2,004 responses were collected. The data was similar for compared geographical regions — and the questions that had visible discrepancies have been weighed to represent the population based on the Evans Data Global Developer Report.

The results have been tested for statistical significance using a 95% confidence level. Due to roundings in the data, some graphs may not sum up to 100%. To gain more insights or to discuss the methodology, please contact research@codility.com.

Developers thrive in flexible work environments

The trend towards more flexible work schedules and arrangements continues to grow, and it's no different for engineering teams. Sixty-one percent of developers who work remotely want to continue doing so — and 46% of those working in a traditional office today said they'd like to work remotely in the future. This is something employers adopting remote work practices will be able to capitalize on, with more developers open to considering remote roles.

Remote work and performance:

Our research suggests that no matter if teams work in a distributed or centralized office they feel fairly similarly. This is extended by research Google completed on their own remote teams showing no difference in the effectiveness, performance ratings, or promotion frequency between the distributed and in-office teams.

Remote work and retention:

Stack Overflow's Developer Report shows a correlation between remote work and job satisfaction. The highest job satisfaction ratings come from developers who work remotely full-time. There are multiple reasons behind this: greater flexibility in work schedules enables more control over work-life balance, helps save on commute time, and limits overall distractions. Having the option to work remotely impacts whether or not a developer is happy with their current job. In other words — it may even influence their choice on whether to stay with their current employer.

Office work and job satisfaction:

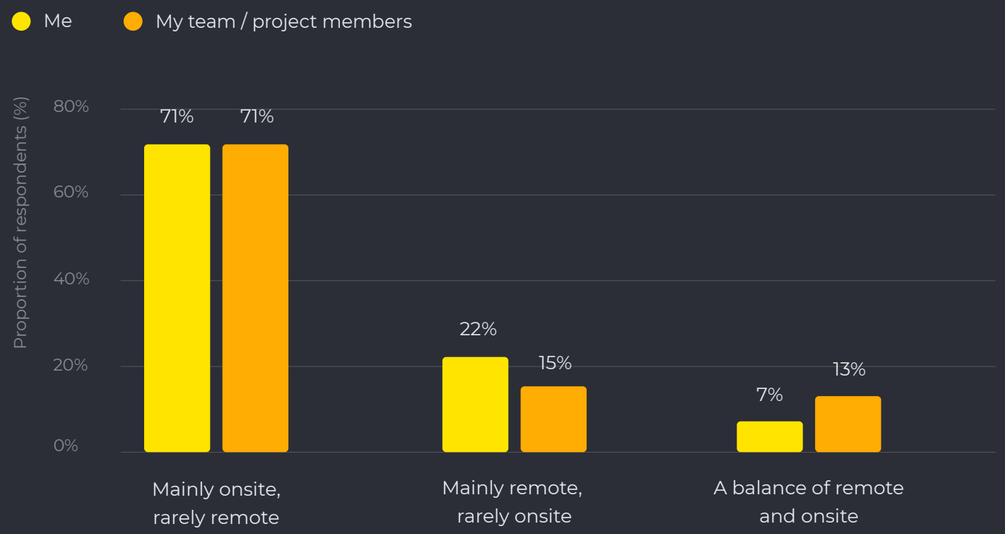
Engineers working in an office are more likely to declare a lack of decision-making when it comes to their work, which is a concern for those seeking autonomy. One hypothesis is that while in the office, developers observe how decisions are being made, and in the case of low transparency, may feel more acutely that decision-making power is out of their hands.

KEY OBSERVATION

Remote developers more often have a sense of success and impact at work.

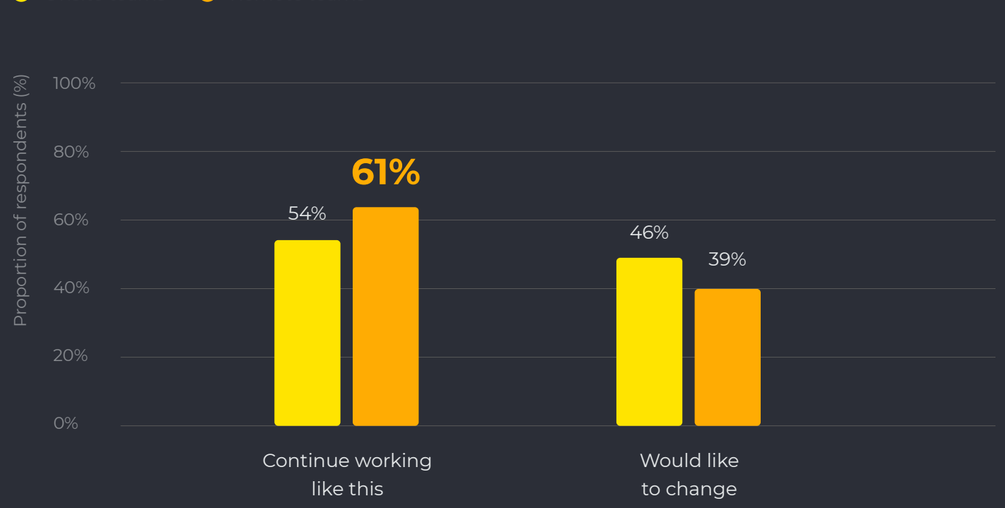
Teams are homogenous in how they work

Where do you work?



Remote teams enjoy working this way

In the future, how would you like to work?



Developers stay sharp with digital learning tools

Developers are continuous learners — 90% admit to learning a language, framework or a tool outside of their formal education.* However, this does not necessarily mean attending formal courses. Eighty-six percent of engineers rely on online learning sources. In fact, only 13% of developers use both online and offline sources like conferences, meetups, and books.

Learning and retention:

Developers consistently declare that having access to professional growth opportunities is one of the top three factors that they consider when choosing a job. At the same time, 30% of devs said that their employers don't support them in improving their professional skills. This discrepancy might be one of the reasons behind the significant drop in job satisfaction that can become apparent about a year after joining a company.

Supporting developers at work:

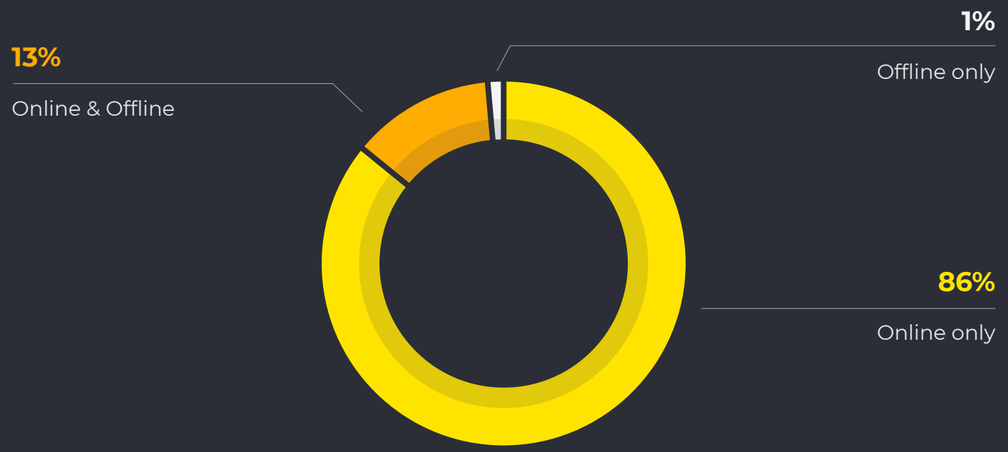
The most common practice for employers who do support professional development is providing employees with a growth budget. Following positive work culture, professional growth is the top factor distinguishing a dream employer regardless of brand. Employers need to clearly communicate the value of growth — and validate this by providing resources.

KEY OBSERVATION

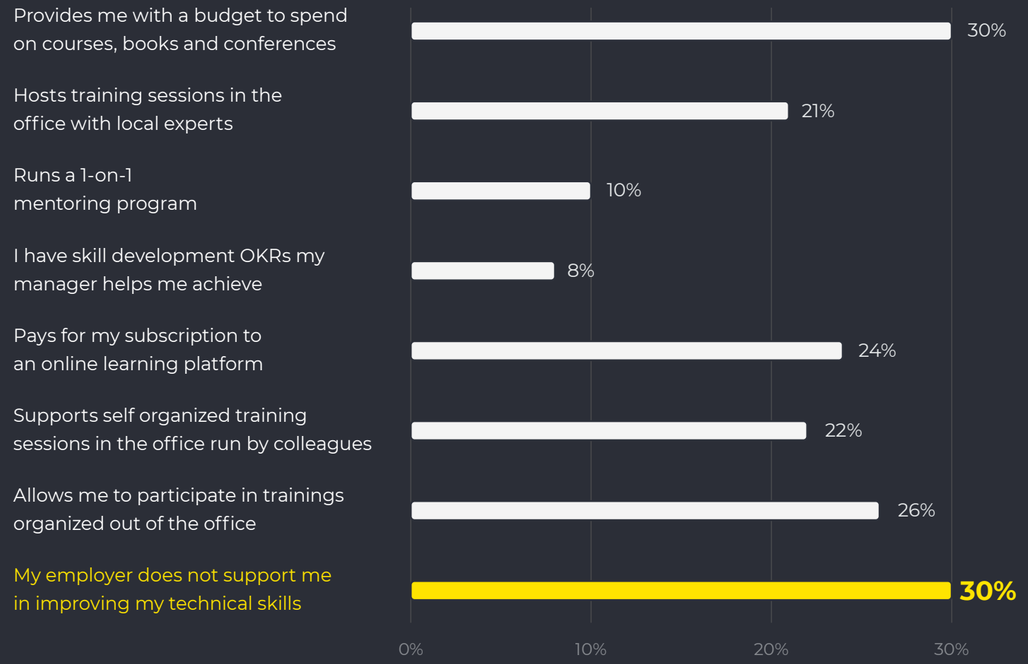
Developers want to stay on top of their game and they need their company's help to keep their skills sharp.

*Stack Overflow 2018 Developer Report

Percentage of devs that learn online vs. offline



Percentage* of employers offering professional support



*Participants could select more than one answer so the sum will not add up to 100%

63% of developers don’t know how to get promoted

Developers today have many duties apart from programming. From helping their teammates solve technical problems (71%) to running 1-on-1 meetings (30%) and organizing trainings and workshops (22%). Despite their changing roles, most developers do not have clarity on what they need to do to get promoted.

The desired path:

It’s no surprise that 81% of developers, regardless of seniority, are interested in becoming Engineering Managers in the future. Interestingly, this number is even higher amongst developers who practice Pair Programming (90%). This might be a reflection of the skills developed naturally while practicing this coding methodology — communicating, articulating requirements, coaching, and passing knowledge to teammates. These, as shown in the following pages of this report, are part of the essential skills of a great Engineering Manager.

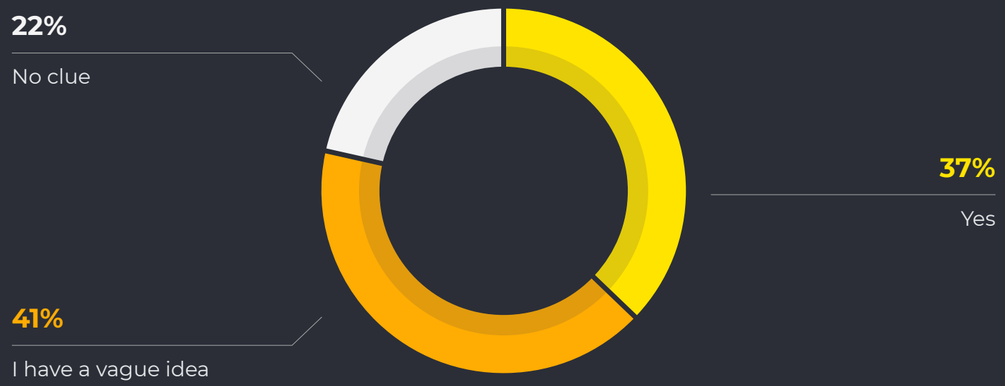
Career paths and retention:

Without an understanding of what the promotion path to manager looks like, developers may look for opportunities elsewhere in order to grow. Additionally, those who have clarity on their promotion path, report feeling a sense of success at work more frequently. This may be because they have a stronger definition of what success means. It’s an even greater issue for female developers who more often than men aren’t fully aware of their promotion requirements.

KEY OBSERVATION

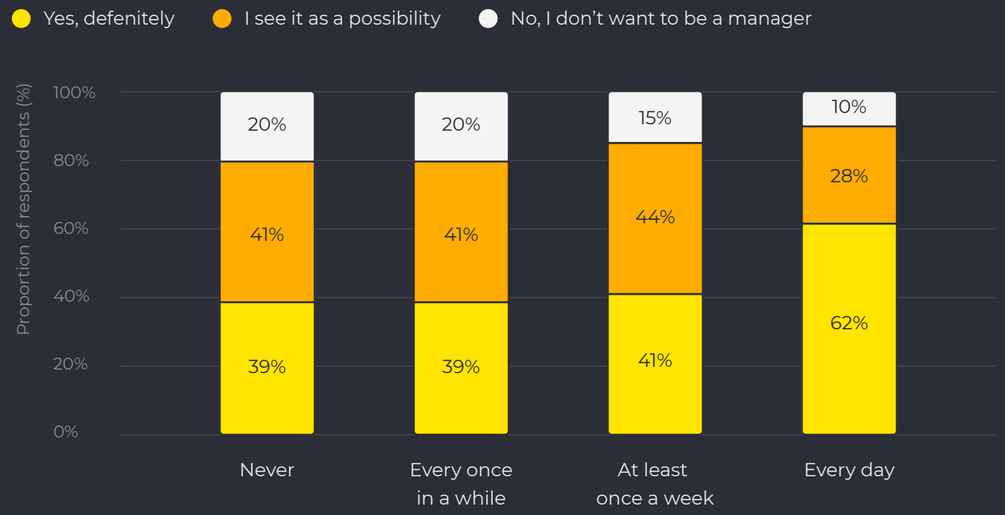
Feeling a sense of success is higher among devs who are aware of their promotion path.

Do developers know how to get promoted?



Use of pair programming vs. desire to become a manager

Would you consider taking a manager role in the future?



How often do you use Pair Programming?

It’s the people skills that make an Engineering Manager great

Technical expertise isn’t the only component of a strong engineering team.

Developers tend to have stronger expectations towards Engineering Managers’ people skills than their technical abilities. Characteristics which define a great Engineering Manager include: they are good at giving feedback, are consistently supportive, and act as a coach or mentor to those in their teams.

Improving team performance:

Similar findings were discovered by Google* when researching what makes a manager great. The results showed that people skills and the feeling of empowerment given to the team is what made the best managers stand out. Building training programs for managers around those skills allowed Google to increase satisfaction among their teams, reduce turnover, and improve performance.

Invest in people skills development:

More than junior developers, senior developers care about having supportive managers who are always there for the team and who can connect them with the wider business. This might be because the more senior a developer is, the greater their responsibilities and number of stakeholders

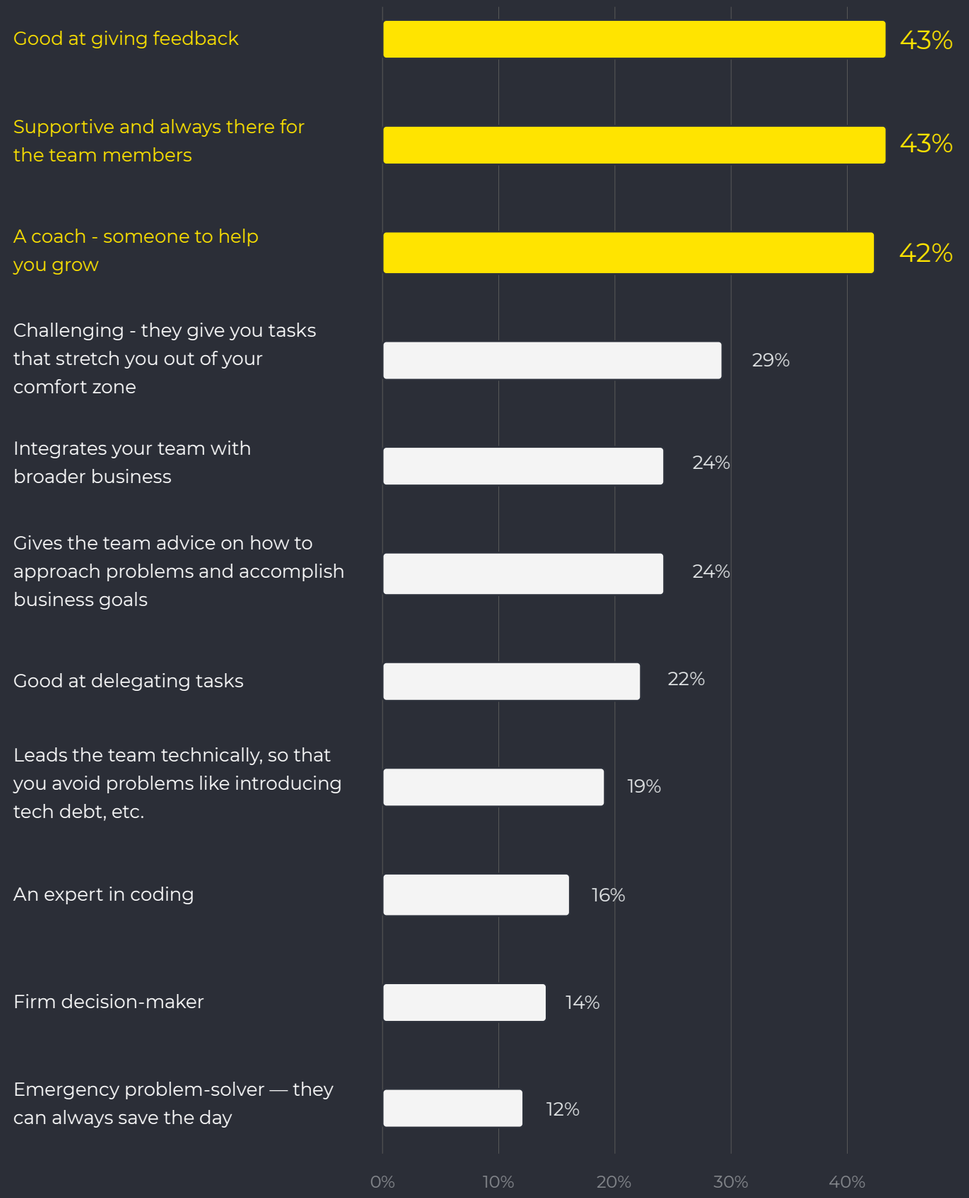
they interact with. While taking a more senior role is desired, it also brings additional stress and risk, and can make you want to have somebody in your corner at all times. Senior developers expect their Engineering Managers to support them in business-related discussions and help them be more effective.

KEY OBSERVATION

The development of strong people skills is a good indicator of an individual’s capacity to grow and contribute to the team as a leader.

*Project Oxygen by Google

Top qualities of an engineering manager



Each responded could select more than one answer; the answers do not sum up to 100%

A dream employer has a strong work culture

For developers, work culture is the most important factor when choosing an employer, followed by professional growth opportunities and staying up-to-date with the latest technology.

Brand and culture:

When asked about their dream employer, developers highlighted Google, Amazon, Microsoft, Apple, and Facebook. What's common for these employers is how well each have defined and continue to uphold their unique brand, company culture, and innovation.

Data from Stack Overflow's Developer Report shows the top priorities when considering jobs. For example, developers who identify with gender minorities in tech might rank company culture as their highest concern when assessing a new job, and are also more likely to say that diversity is a top concern.

Define work culture:

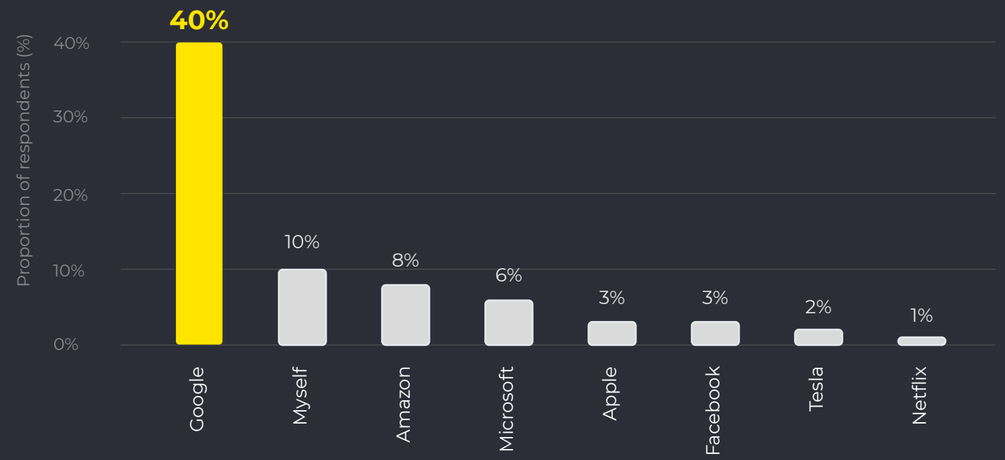
Although the meaning of a good work culture is different for each individual, it typically concerns the people that you work with, the environment that you work in, and the resources that you have access to. In collecting responses from developers, it became apparent that a good work environment is one that facilitates learning and development.

KEY OBSERVATION

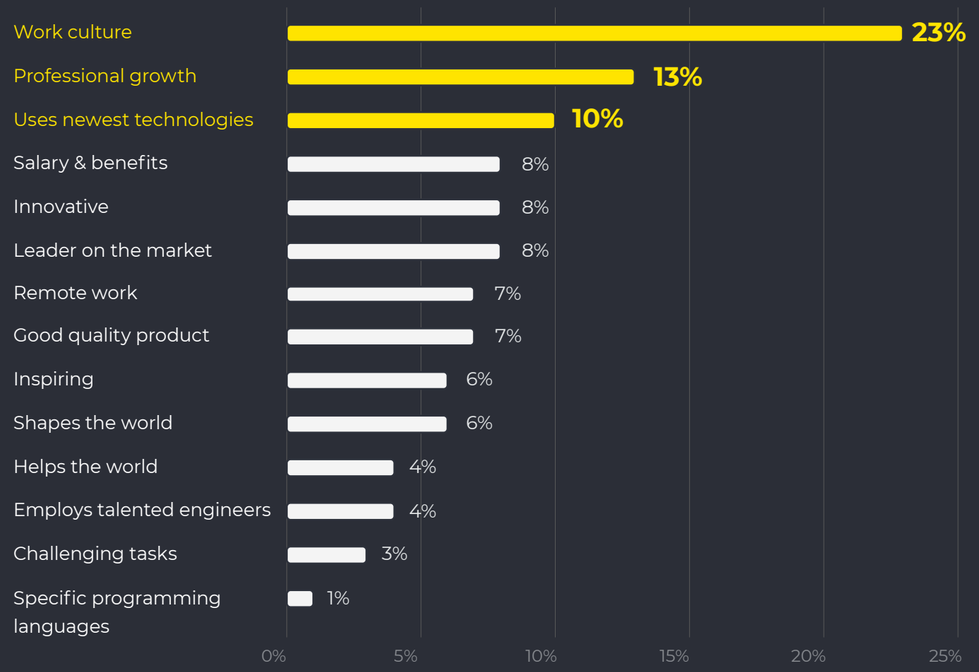
The top factors that define dream employers are centered around positive work environment and professional growth.

Most common "dream employers" mentioned by developers

If you could choose your dream employer, who would it be?



Most important factors of a dream employer



Devs answer:
How do you define work culture?

“A company with good, talented, and egoless people who work together towards a common goal.”

“A company that does something meaningful and has an atmosphere where you can flourish and accomplish great things.”

“Anyone who desires to be in a comfortable environment, **LEARN** and **GROW**, have free time for life after work, and have their successes gratified. An employer who you can **LEARN** from and who facilitates employee feedback both in product development and organizational improvements.”

“Probably a smallish company that doesn't have excessive processes, offers reasonable autonomy and a relaxed environment, and has remote or part-time options.”

“A company that’s stable, recognizes engineers as their most valuable resource, has plenty of opportunities to **LEARN** new things, has a sense of humor, and who also knows how to laugh at themselves.”

“A company with a great reputation about how it cares about employees and technology.”

“A company where all knowledge to be obtained is available. One can **GROW** and develop as a person and developer. A company that’s known for treating their employees with care.”

“Working in a company where my bosses treat me well and where I can **LEARN** and **GROW** — that’s my dream.”

“It would be a company focused on quality over delivery time — and who respects employees’ time by letting them spend flexible hours on work so they can perform well in the company and meet personal achievements.”

The longer the commute, the higher the salary expectation

Developers who commute more than an hour to work expect to be paid 25% more on average.

All seniority levels recognize there are costs associated with a long commute. Whether it's spending hours a day in traffic or the cost to operations when traffic prevents people from arriving on time, commutes can result in a decrease in quality of life at the individual, family, and corporate levels.

Work-life balance:

About 27% of programmers would never consider a job that would require a long commute regardless of the financial compensation. Growing evidence shows that length of commute can negatively impact productivity, job satisfaction, and overall well-being.

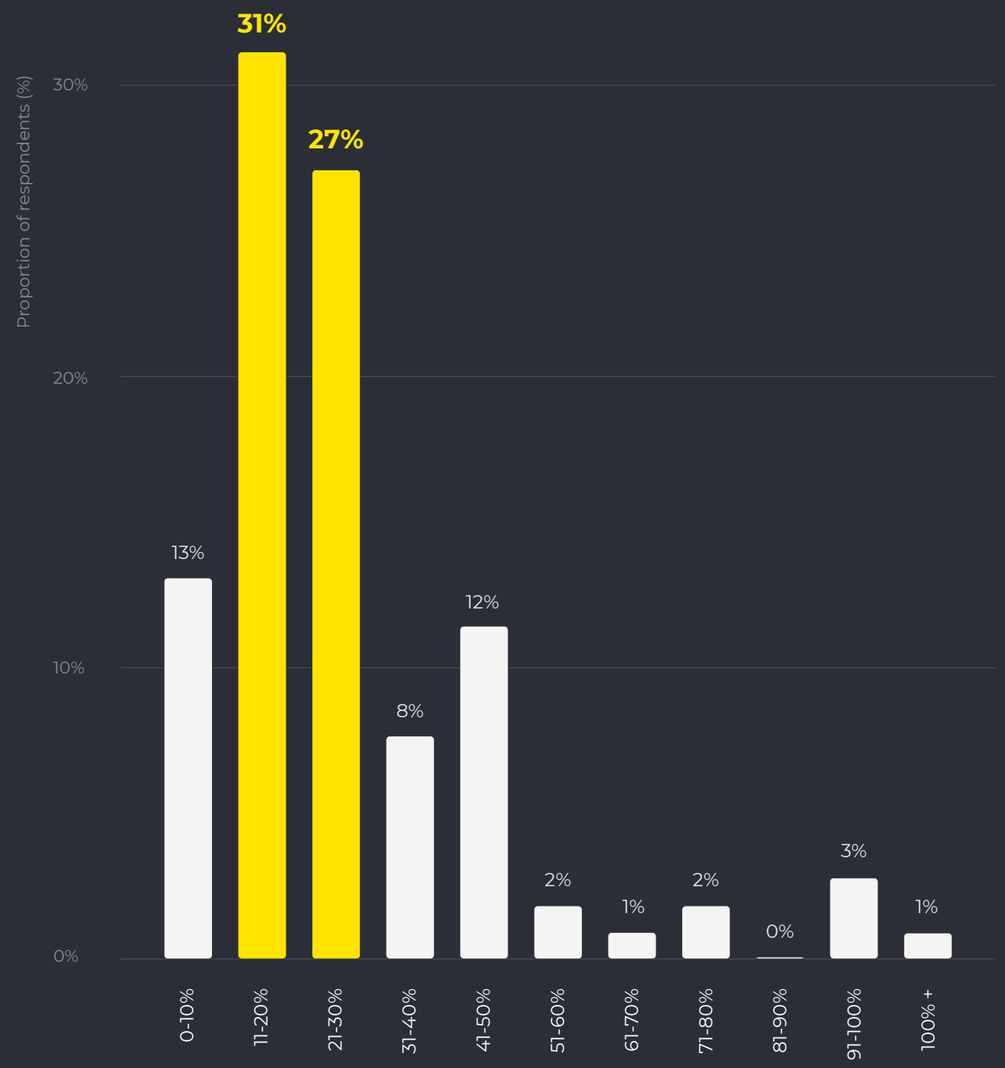
Female developers expect an even higher compensation for a long commute (about 30%). A possible hypothesis is that longer commutes are more disruptive to the cultural roles that women are sometimes expected to fill.

KEY OBSERVATION

Commute is an important factor when evaluating a potential employer, along with the brand and promotion path.

Increase (%) devs need to get paid to accept a long commute

Question asked: Imagine you've received two job offers, A and B. Offer A pays more but requires a longer commute. Offer B pays less, but has a shorter commute. Apart from salary and commute time, the offers are equal in all other ways. How much higher does Offer A's salary need to be for you take it?



78% of developers feel a sense of success at work weekly

Using test driven development (TDD) and pair programming makes the every day feeling of success even more frequent for a majority of developers.

Eighty-five percent of developers working in TDD experience a sense of success at least once a week. Though there's no correlation in our research, we found that 73% of developers who pair program every day feel a sense of success at least once a week.

Remote work and sense of success:

Engineers who mainly work remotely declare a sense of success every day more frequently than those working in an office. This might indicate that it's easier to focus, due to fewer distractions, or that there's more motivation to show progress. It may also put teams who are concerned about remote work at ease by showing that they can deliver actual value to the company.

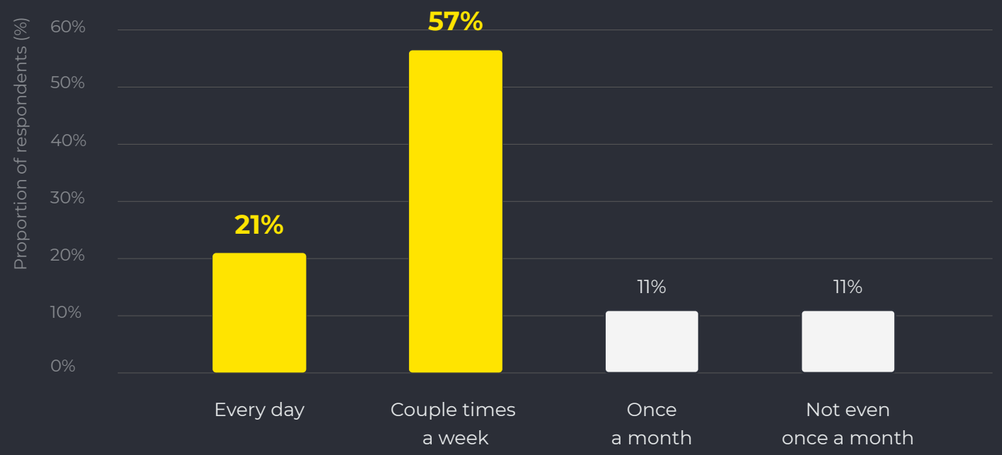
Sense of success and awareness of promotion path:

Among developers who experience sense of success daily, a majority (58%) are also aware of their promotion path. This combination may contribute to significantly higher job satisfaction. It also creates a strong contrast with the engineers who less often experience a sense of success (<once a month) — among these developers, only 24% are aware of their promotion path.

KEY OBSERVATION

Structure engineering teams to be agile, collaborative, and communicative to improve individuals' perceived sense of success.

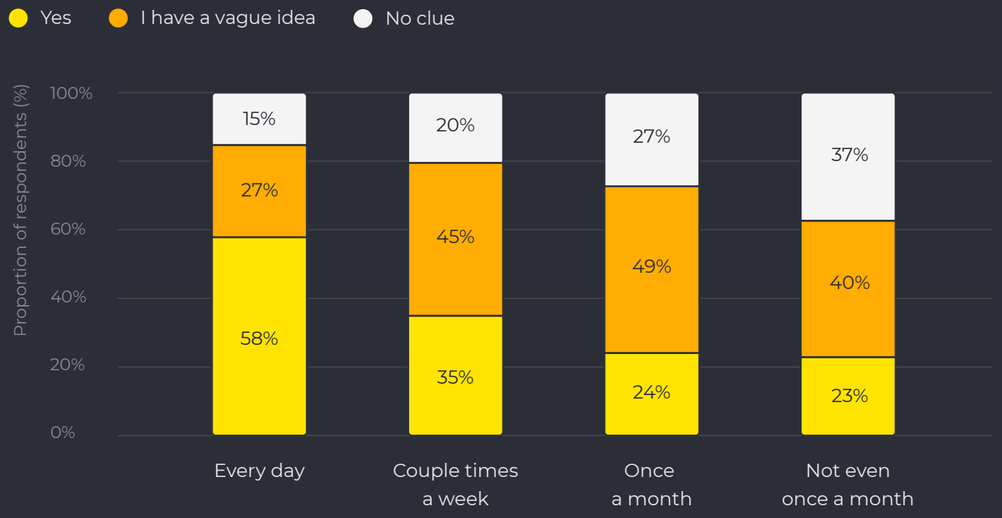
How often developers feel a sense of success



How often do you feel a sense of success at work?

Sense of success vs. awareness of promotion path

Do you know what you need to do to get promoted?



How often do you feel a sense of success at work?

TDD contributes to high-performing engineering teams

Although TDD is not widely used, 53% of developers who experience a sense of success daily are also developers working in TDD.

Developers who test after tend to experience a sense of success less often. One explanation might be that if code is immediately tested by previously developed tests, it will instantly pass or fail. If it fails, you can easily improve the code based on a quick feedback loop. If it passes, the “green light” often prompts positive reinforcement.

Another explanation might be that tests developed first enable easy code improvements even after some time has passed, which generates the feeling of safety for teams when going back to older pieces of code.

Remote teams and TDD:

No testing happens most often in remote teams and is more typical for smaller teams (<3 developers). Anyone can adopt TDD as it is not specific to any industry or company size.

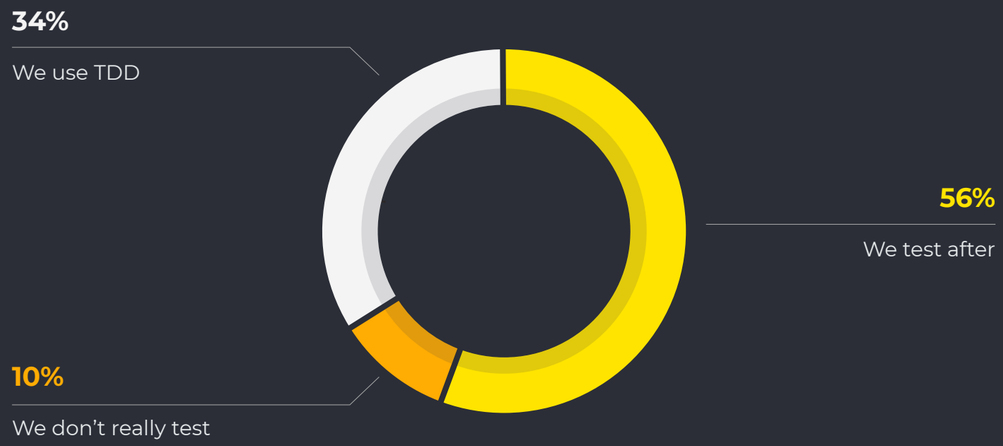
TDD means faster delivery:

Most developers (51%) believe that their teams deliver new ideas to implementation within a week. At the same time, teams that work in TDD seem to deliver faster than those that don’t.

KEY OBSERVATION

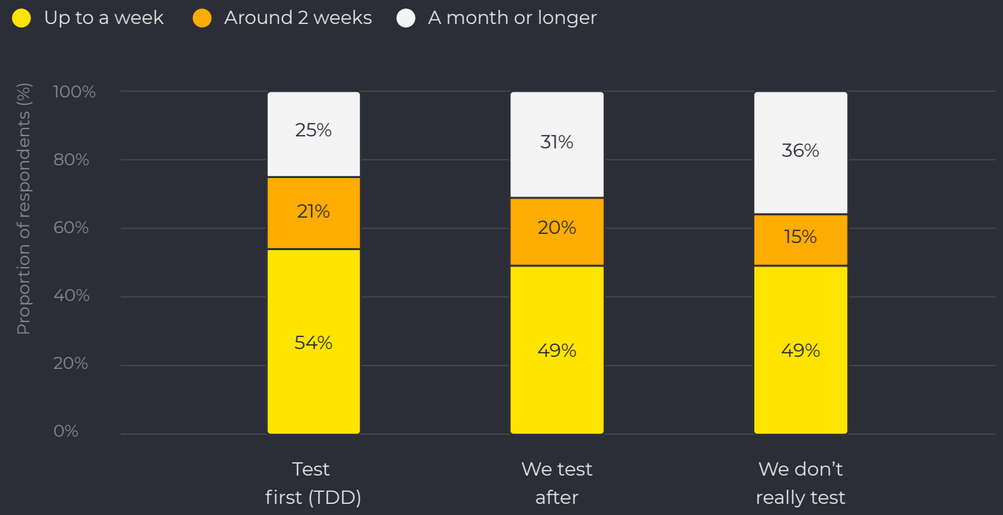
Even though testing first appears more challenging, it seems to enable faster idea implementation as a result of a quicker feedback loop.

Approach to testing



Approach to testing vs. time to implementation

How long does it take your team to take something from an idea to ready for implementation?



Approach to testing

Pair programming means a faster delivery

Pair programming is rarely used among developers — only 15% of developers use it at least once a week. Teams that pair program also boast faster implementation of ideas, with 60% of users declaring that they move to the implementation phase within a week.

Developers who don't pair program are also the same ones who declare not testing their code most often (73%). Among those who pair program often (at least once a week), one can notice more cases of test driven rather than test after development. This seems intuitive since these modes of work were introduced at a similar time, and often turn out to be complementary to one another.

Pair programming and sense of success:

Pair programming goes along with experiencing sense of success at work often — 45% of users that pair program daily feel sense of success on a daily basis, compared to only 17% of non-users. It could be that collaborating with others on code enables a sense of progress and knowledge sharing — and developers can overcome obstacles together.

Pair programming and people skills development:

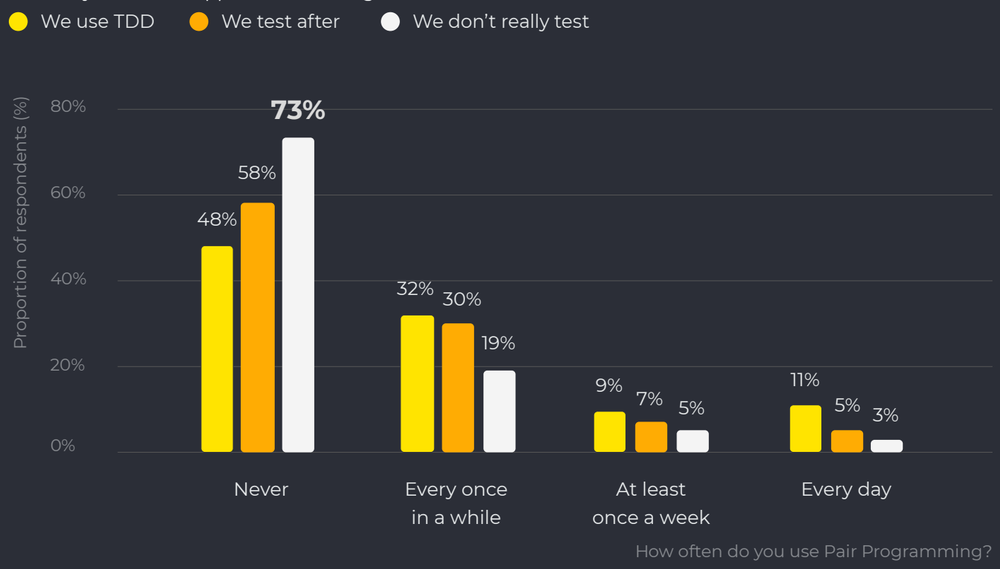
Developers who pair program are more aware of their people skills and mentoring capabilities, since they spend their time co-working and communicating with other developers, and so might more actively look for ways to become a manager or get promoted. A possible explanation is that devs that pair program already work on soft skills development, transferring knowledge, and supporting team members — which are all behaviors typical for an Engineering Manager.

KEY OBSERVATION

Pair programming has several benefits — in terms of business performance, ideas are implemented faster and for team performance, there will be improved well-being due to more frequent sense of success.

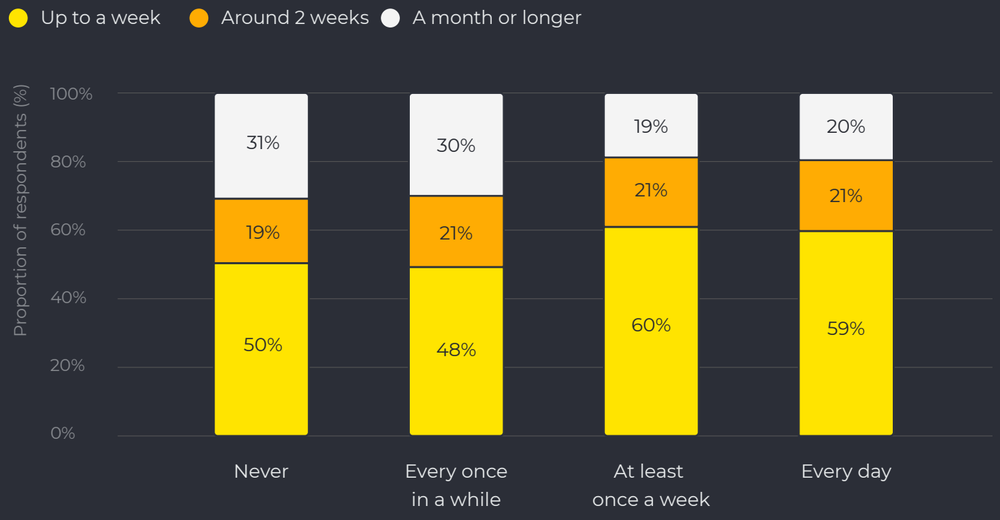
Pair programming vs. approach to testing

What is your team's approach to testing?



Pair programming vs. time to implementation

How long does it take your team to take something from an idea to ready for implementation?



Conclusions

Remote work and online learning are becoming the norm

- Remote developers more often have a sense of success and impact at work.
- Developers want to stay on top of their game and they need their company's help to keep their skills sharp.

Developers are unsure of their promotion path to Engineering Manager

- Feeling a sense of success is higher among developers who are aware of their promotion path.
- The development of strong people skills is a good indicator of an individual's capacity to grow and contribute to the team as a leader.

Dream employers are defined by strong work culture

- The top factors that define dream employers are centered around positive work environment and professional growth.
- Commute is an important factor when evaluating a potential employer, along with the brand and promotion path.

Developers that code together feel success more often

- Even though testing first appears more challenging, it seems to enable faster idea implementation as a result of a quicker feedback loop.
- Pair programming has several benefits — in terms of business performance, ideas are implemented faster and for team performance, there will be improved well-being due to more frequent sense of success.

Codility

www.codility.com/devreport

Stack Overflow 2017-2019 Developer Reports | Project Oxygen By Google | Accelerate: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations