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The "State of Technical Debt 2021":

What Engineers Think about Technical Debt and Its Impact on Team
Morale, Velocity, and Customer Experience.

July 2021

The pressure has never been greater on engineering teams: to move from legacy to modern infrastructure, to reduce inefficiencies, and create products which build customer satisfaction and increase revenue. Engineering teams are under a huge pressure to build and break fast, and many lack time to fix and clean up their codebase. In such situations, technical debt quickly builds up, resulting in a downturn in engineering productivity and significant costs to an organisation.

This study surveyed 200+ engineers, engineering leads, and CTOs to reveal the impact of technical debt on developer morale, velocity, and customer experience, and empower engineers to make decisions using the data.

The survey revealed that:

52%

of engineers believe that technical debt negatively impacts their team's morale.

Over

60%

of engineers think that tech debt causes bugs, outages, and slows down the development process.

58%

of companies still have no process to manage technical debt. Despite the fact that engineers are convinced about the negative impact of technical debt on the business.

65%

of engineers report that backends contain the most amount of technical debt in the codebase.

66%

of engineers believe the team would ship up to 100% faster if they had a process for technical debt.

Another

15%

think that they would be 200% more productive if they had a process for technical debt.

What is the impact of tech debt on your company?

It's causing bugs, erros, outages, and other quality issues

65.7%

It's slowing the pace of development

63%

It's impacting the engineering team's morale

52%

Other

10%

Technical debt is destroying developer morale

Technical debt causes bugs, outages, quality issues and slows down the development process. But the impact of tech debt is far greater than that.

Employee morale is one of the most difficult things to manage, especially now that companies are switching to long-term remote work solutions. The survey reveals that technical debt is actually a major driver of decreasing morale. Developers often feel like they are forced to prioritise new features over vital maintenance work that could improve their experience and velocity and this is taking a significant toll.

Developers spend 1 day a week dealing with technical debt

While companies want to ship faster and increase productivity, Engineering teams are spending significant time dealing with technical debt. The average time spent on overall maintenance work and legacy systems is 33%. Of which, more than 50% is spent solely on technical debt. This means that the average engineer spends 6 hours per week (roughly 1 day) dealing with technical debt.

Developers spend ~1 day a week dealing with technical debt
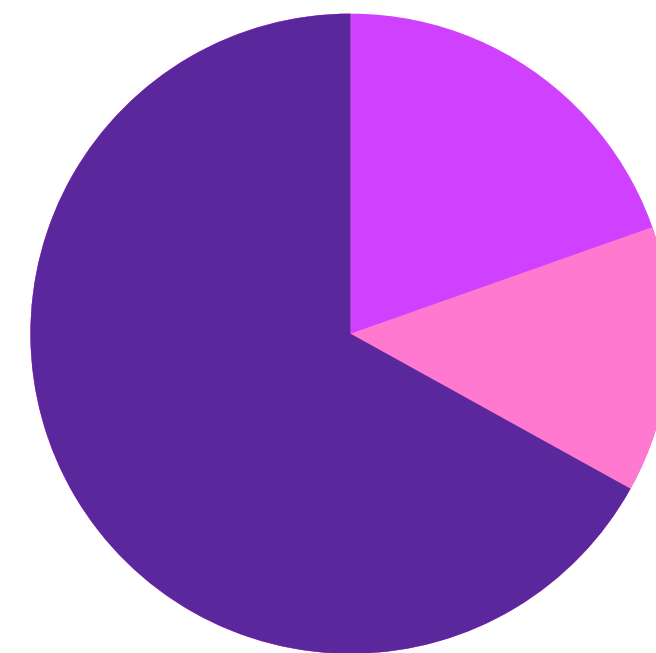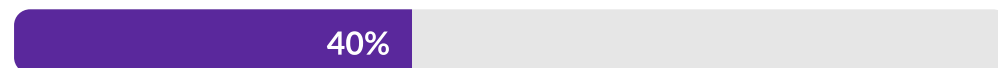

40-hour workweek

7 hours
Technical debt

6 hours
Other maintenance work
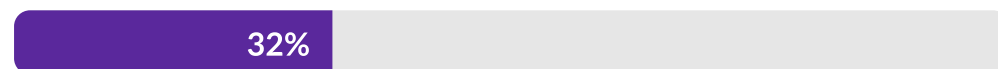
Which parts of your systems have more tech debt?
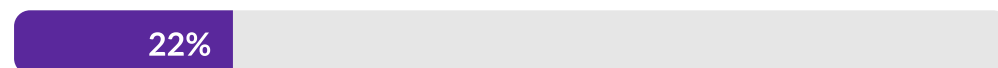
Server-side controllers/logic

61%

Browser app/website

40%

Infrastructure

32%

Data models/ORM

22%

## Backends contain the most amount of technical debt

61% of engineering team members claim that most of the technical debt lives in the backend, specifically, in web server endpoints. Company apps/websites and general infrastructure are also parts of the codebase that accumulate a large amount of technical debt. The findings suggest that companies could dramatically increase their productivity by paying down tech debt in these areas of their codebase.

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Engineers believe the team would ship up to 100% faster if they had a process for technical debt

More than half of respondents claim that their companies do not deal with technical debt well, highlighting that the divide between engineers and leadership is widening rather than closing. Engineers are clearly convinced that technical debt is the primary reason for productivity losses, however, they seem to be struggling to make it a priority.

Yet, making the case for technical debt could help engineers ship up to 100% faster. As much as 66% of Engineers believe the team would ship up to 100% faster if they had a process for technical debt. Another 15% think they would be 200% more productive. Only 2% of engineers believe that having technical debt under control would make no difference for their team velocity.

How much faster would you ship if the company had tech debt under control?
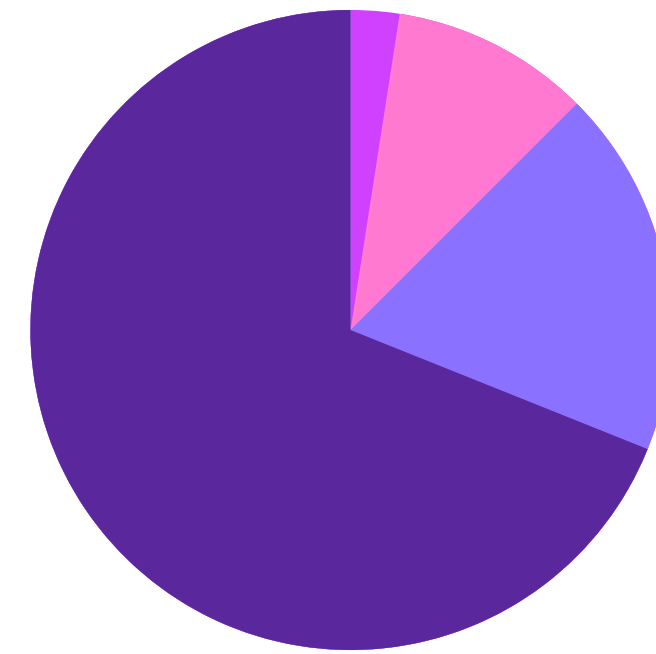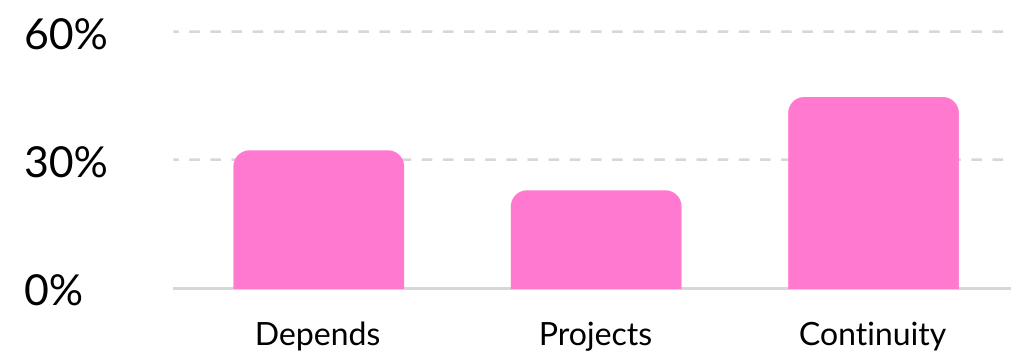

- Up to 100%
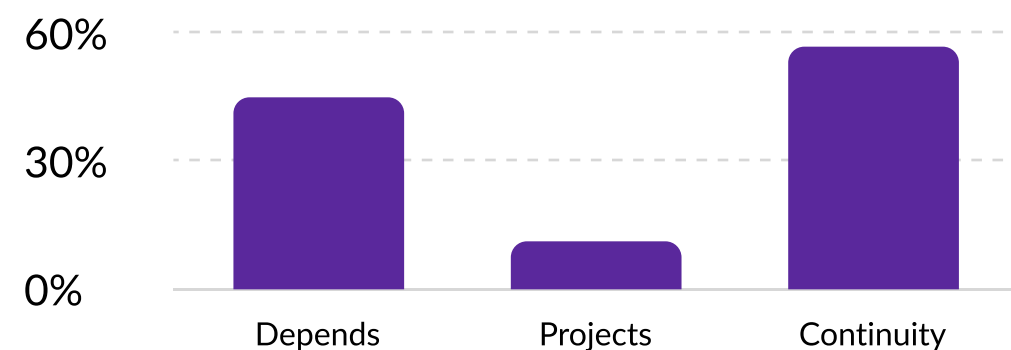- Up to 200%
- More than 200%
- It would not make any difference

Do you do maintenance work continously or on a project basis?

Startups and mid-sized companies

Large companies

## Most big engineering teams deal with maintenance work continuously

Companies with 100+ engineering teams are more likely to spend time doing maintenance work continuously. Small and medium-sized businesses prefer to deal with it on a project basis.

54% of engineers from big engineering teams claim to do maintenance work on a regular basis while only 42% of engineers at startups and middle-sized companies do so. Engineers at smaller companies tend to deal with maintenance work on a project basis or decide depending on the project.

Engineering teams use multiple tools to manage technical projects

There is not much of a difference between startups, mid-sized companies and enterprises when it comes to the tools they use to manage technical debt. Most of the teams use Jira or other project management tools as well as code quality tools. 36% of all teams use more than 1 tool to manage their technical projects, for example, project management tools together with code quality, git analysis or a spreadsheet.

What tools do you use to manage tech debt?

- Companies with <100 engineering team
- Companies with >100 engineering team
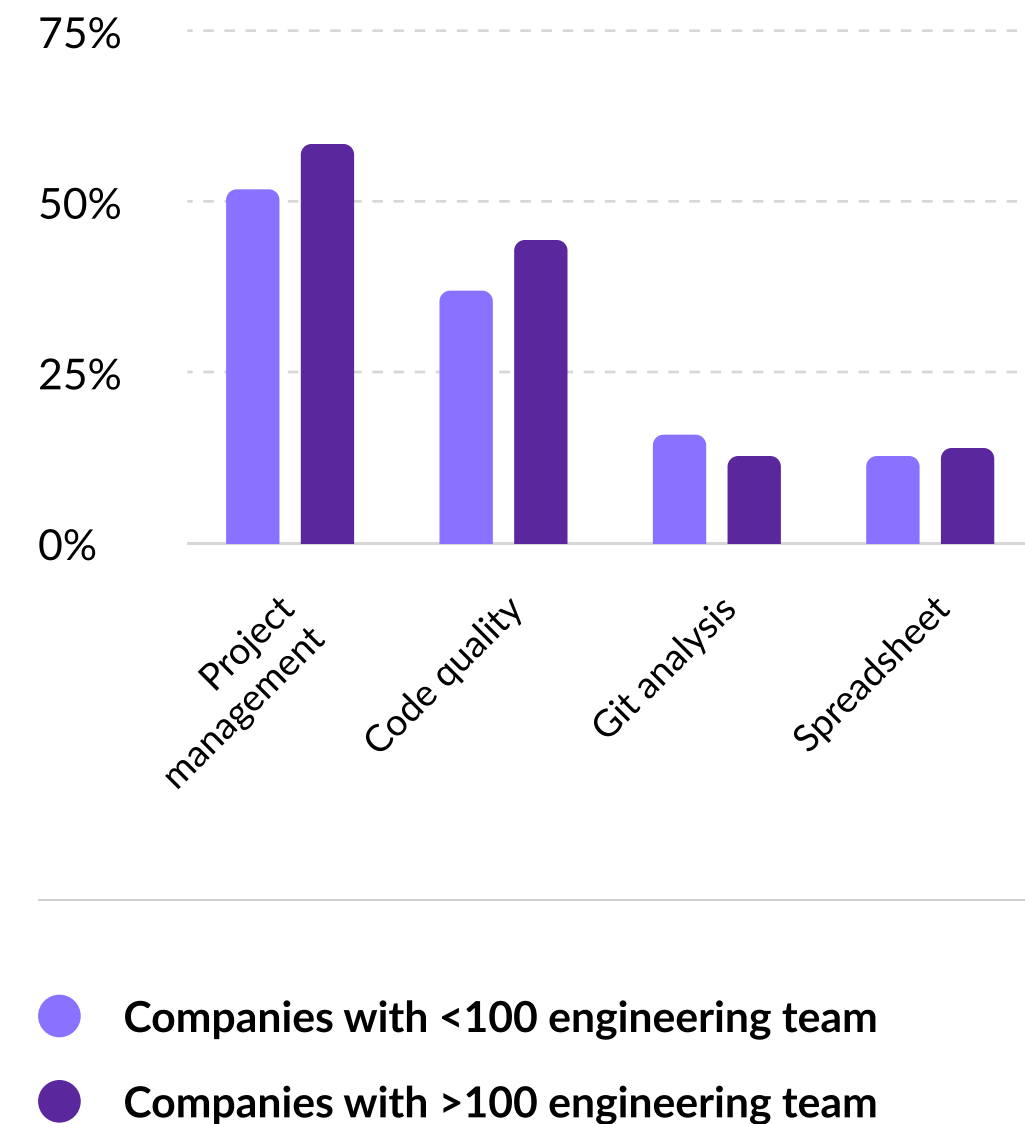
Moving forward

"Companies need to identify key pieces of tech debt that get in the way of key goals, cost countless engineering hours in productivity losses, or are the root cause for bugs and other issues that impact the customer experience.— says Alexander Omeyer, CEO and Co-founder of Stepsize. — We hope that this data will give engineers a voice and help them bring visibility into technical problems they struggle with."