

The Developer Coefficient

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





THE DEVELOPER COEFFICIENT

stripe

- 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.

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

Security / data breach	66%
Increased regulation	62%
Disruption from tech industry	62%
Access to developer talent	61%
Growing competition from China	60%
Corporate tax rates	58%
Trade tariffs	56%
Access to capital	56%
Impact of Brexit	55%
Immigration reform	51%
Bringing products to market faster	71%
Increasing sales	70%
Differentiating products / services vs. competitors	<mark>69</mark> %
Internal reporting / visibility	65%

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?

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HOW \$3 TRILLION IN **GDP IMPACT ADDS UP**

18 million Estimated developers in the world

\$17,000 Global GDP per capita

\$51,000 GDP per developer

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

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

41.1 hours • 39.6 hours



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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)?

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

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

13.5 hours

Mean

THE DEVELOPER WORK WEEK







Bad code

41.1 total hours

Average developer work week

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%

Strongly / somewhat agree (all countries)

• 70%

Strongly / somewhat



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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 haliava is hindaring davalange

Maintenance of legacy systems / technical debt

52%

believe is nindering developer
productivity at your company?

How much of a negative impact	V
does each of the following have	
	C

on your personal morale?

Leadership's prioritization of projects / tasks	45%
Building custom technology	40%
Work overload	81%
Changing priorities resulting in discarded code or time wasted	79%
Not being given sufficient time to fix poor quality code	79%
Spending too much time on legacy systems	78%
Paying down technical debt	76%

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

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Sources: Evans Data Corp.,

CIA Factbook, Stripe research



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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

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

Tech	44%
Banking and finance	36%
Engineering services	27%
Telco	23%
Manufacturing	19%
Retail	19%

• **Singapore** Tech (59%) highest among all countries

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

Software infrastructure and tech	43%
R&D	31%
Recruiting technical talent	31%
Marketing	29%
Sales	26%
Customer service	24%

Compared to now, how much of a core competency will software

Much / somewhat more	81%
	1(0/

development need to be 10

years from now?

The same

Much / somewhat less

3%

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Developers

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

AI	Developers 28%	C-Suite 34%
IoT	25%	28%
SDS	24%	25%
API-based services	22%	15%

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

confident not confident

across all countries)

AI		41%	41%
IoT		24%	27%
Virtual assistants		18%	21%
Blockchain		_	20%
ML		20%	_
83%	17%	• 30%	
Verv / somewhat	Not verv /	Germany	(highest

trends?

Developers

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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?

77%	23%
Very / somewhat	Not very /
confident	not confident

We're too slow to react to tech trends	44%
We don't have enough skilled employees	42%
Leadership doesn't prioritize technology	36%





33%

prioritize long-term growth

We don't have the tech infrastructure to support it



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METHODOLOGY

Stripe partnered with Harris Poll to survey developers, technical leaders and C-level executives about their organizations' business challenges, software development practices, and

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.

future investments to determine the

role that developer productivity plays

in their success—and the growth of

worldwide GDP overall.