



The End of Documentation

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A Better Way for Developers and Engineers
to Preserve and Share Knowledge

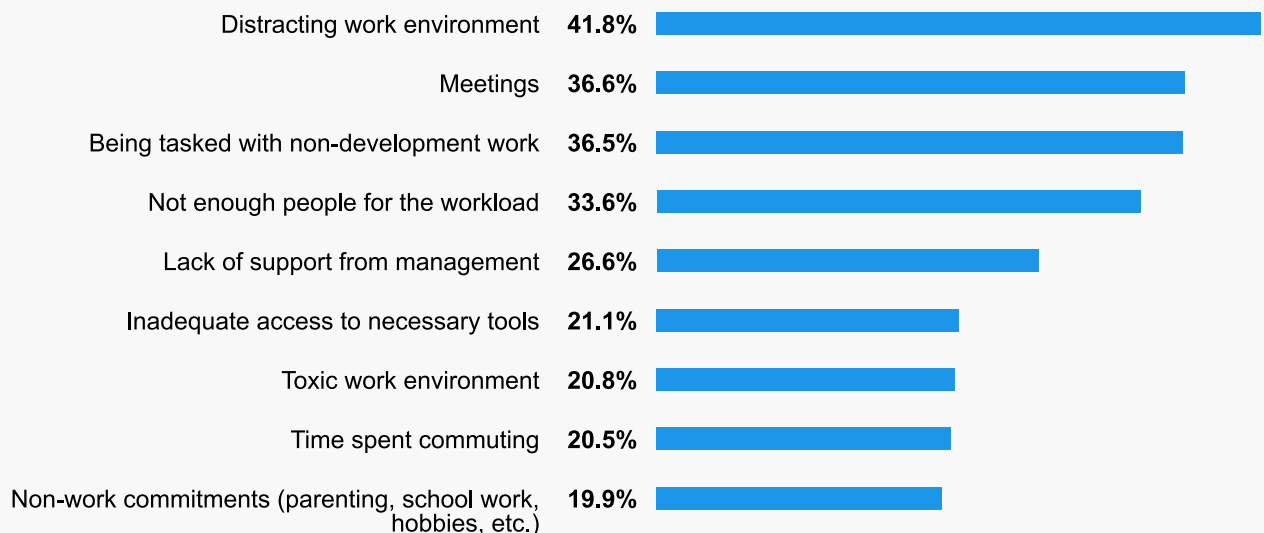


Introduction

When software developers are trying to share knowledge within their organization, there are two principle methods most teams fall back on: documentation and conversation. Conversation can happen face to face, over email, or in chat apps. Documentation takes the form of notes left in the code, lengthy written records and company wikis.

Both of these approaches, however, have serious drawbacks. In our latest [developer survey](#), which collected answers from over 90,000 active programmers, respondents felt the greatest challenge to productivity was a distracting work environment. Developers are seeking solid chunks of time in which they can dive deep into focused work, ideally finding their way to a flow state. And as [academic research](#) on the daily lives of programmers over the last two decades has shown, the most common breaks from writing code are for meeting with colleagues, reviewing documentation and answering instant messages.

Greatest challenges to productivity



68,141 responses Stack Overflow Developer Survey 2019

Check the receipts

Expensify is an example of what these problems look like in the real world

At Expensify, a fast growing Silicon Valley startup focused on simplifying the process of collecting receipts and filing for reimbursements, both of these pain points were present. To help onboard new hires, the team created a wealth of documentation, but it wasn't easily accessible. "Our documentation at Expensify has been...fairly terrible in the past," said software engineer John Lee. "People would rather talk to someone with more knowledge than to go search through all these pages of documentation we wrote."



Expensify aims to simplify the process of collecting receipts and filing for reimbursements

Expensify prides itself on being a flat organization. Engineers can come in and choose what they want to work on every day, which means there is a constant dialog between coworkers trying to understand one another's code. That involves lots of face to face conversation, email chains, chat rooms, and direct messages. "People ask questions on GitHub and Slack, and those can get lost," said Nikki Wines, a software engineer.

The person assigned to write documentation has to guess at the information that will be most useful to future employees. There isn't a great way to know if you've written too little, or too much. And it is often difficult for colleagues with questions to search through and find what they are looking for.

Conversely, chatting in real time doesn't preserve the answer and ends up creating a repetitive time suck for more experienced team members.

What's required is a solution that borrows from the best of both worlds: a system that offers just-in time answers to employees questions in a conversational style, then identifies the best responses and preserves them in an easily searchable database that offers an intuitive way for future versions of that question to easily surface the best information.

Documentation is a consistent pain point

Q&A offers a powerful solution that can evolve over time

In 2016, The Flex Company [launched with eight employees](#) that shared the common goal of creating life-changing period products for women. Since then, Flex has raised \$3.5 million in funding and established itself as one of the leading innovators in the health and wellness space. As Flex evolved over the last few years, the need for a more sophisticated and organized approach to software development became abundantly clear to its leadership team.

The Challenges: Inconsistent and disorganized documentation

Morgan Jones joined Flex as its Director of Engineering in 2018. Even though the department was small, Morgan knew that one of her top priorities upon accepting the job was to improve team-wide collaboration. “We relied on a few different products for document sharing,” Morgan says. “But because there were so many different sources of truth, we didn’t have a very coherent approach to documentation—and as a result, a lot of historical context was lost.”

The challenge of finding an effective documentation platform has followed Morgan throughout her career. “As a manager, the concept of living documentation is something that has occupied me for quite some time,” says Morgan. “For a long time, I didn’t think there were many ways to do it even remotely well.”





I've worked at places where so much information is locked up in people's heads or people who've left the company. Stack Overflow for Teams gives me confidence that we'll have all the historical context we need to hit our future engineering goals.

Morgan Jones
Director of Engineering
at Flex

The Solution: A platform that Flex's developers were already familiar with

Because of her familiarity with Stack Overflow, Morgan says that she was immediately intrigued by the possibility of Teams. "Because it's so interactive, a private version of Stack Overflow immediately felt like the best way to approach documentation," she says. "And because most developers are already comfortable with the platform, I figured it wouldn't be an uphill battle to convince them that Teams was the right solution."

After Flex implemented Stack Overflow for Teams, Morgan tells us that it paid immediate dividends. She tells us that information that had been considered lost was suddenly documented, organized, and easily accessible. As a result of this initial success, Morgan says the next logical step was to make Teams an even bigger part of the software development process at Flex.

"Because we work with so many contractors, we've made it a requirement to answer relevant questions on Stack Overflow for Teams before marking a project as 'complete'," says Morgan. "This addition to our process enables us to capture all of the important details before we move on to something else."

The Results: A new definition of the term "legacy code"

Morgan and the team at Flex have already seen short and long-term benefits of using Stack Overflow for Teams. "We recently had an engineer leave for an extended break during the holiday season, and Teams was instrumental in making sure we had proper coverage," Morgan says. "Instead of peppering him with questions before he left, I was able to write them down and get his answers documented by him, which was really helpful for both of us."

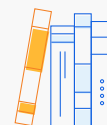
Morgan also feels that Stack Overflow will have a long-lasting effect on more than just Flex's approach to documentation. "We're a startup, so I'm starting this now as something that hopefully will continue to pay dividends for a very long time," she says. "I've worked at places where so much information is locked up in people's heads or people who've left the company. Stack Overflow for Teams gives me confidence that we'll have all the historical context we need to hit our future engineering goals."

Pick the right tool for the job

Build your **knowledge
community**.



Support **asynchronous
communication**



Optimize to generate
archival quality content.

Question & Answer

The Stack Overflow Solution

How do you measure the productivity of a software development team? You could track the lines of codes written each day or tally up the number of new features being launched each quarter. Perhaps, if you were feeling picky, you would prefer to examine a ratio of updates pushed live to the new bugs introduced by accident along the way.

Well, if you were to ask the programmers what tools they rely on every day, one name would come up almost universally: Stack Overflow. The world's largest public question and answer website for software development has become the go to resource for anyone stuck while writing code.

The legendary game developer and CTO John Carmak [once quipped that](#):



Stack Overflow has probably added billions of dollars of value to the world in increased programmer productivity.

John Carmak

Academic studies into this idea have produced some interesting results. Stack Overflow activity [correlates positively](#) with participation and commit rates on GitHub. And the tweets speak for themselves.



Beth Anderson
@betandr

Stack Overflow is offline for maintenance. Coding productivity slows. Coffee machines are turned on.



Kieren Searle
@MrKieren

"Stack Overflow is offline for maintenance". No more work getting done today then...



Kelly Vaughn
@kvilly

I am:

- ☐ single
- ☐ in a relationship
- ☐ married
- ☒ looking for the answer on Stack Overflow



Dev Humor
@ctrl_c

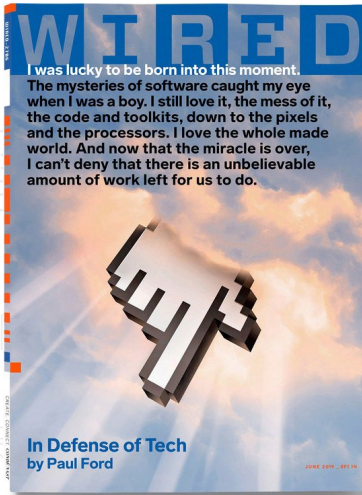
Stack Overflow is for everyone



YARIO
@y4iro

#Stackoverflow #Graduate #ISC bit.ly/2Wt6zkK





Wired, June 2019

Stack Overflow is the collective knowledge of tens of millions of coders gathered in one place. The community votes on the best questions and answers, a crowdsourcing technique that ensures the best information bubbles to the top. And when a new bug or framework throws a glitch in the system, contributors are quick to edit and update this ever evolving encyclopedia.

Once upon a time, this kind of organization happened through email lists and FAQs. “In the late 1990s I was terrified of mailing lists. For years the best way to learn a piece of software—especially some undocumented, open sourced thing you had to use to make websites—was to join its community and subscribe to its mailing lists, tracking the bugs and new releases,” wrote Paul Ford in a [cover story for Wired](#). “Everything was a work in progress. Books couldn’t help you. There was no GitHub or Stack Overflow.”

This still leaves your development team with one major challenge. They can turn to Stack Overflow for lots of things, but there is also a lot of information that needs to stay private and protected within your organization. What happens when coders have a question they can’t ask in public?

Three years ago, in an effort to try and solve this problem, we launched a private version of Stack Overflow. The response was universal: when it comes to building a robust knowledge base for your development team, our private Q&A service is a vast improvement on existing wikis, documentation, and ephemeral communications. Since then, over 1,500 companies have signed on to bring Stack Overflow into their organizations, including some of the world’s largest players in technology, finance, and media.



Every CTO I’ve shown this to has also understood the value of the product immediately. It’s far better than a wiki, which takes time to write, makes guesses about what people will need to know, and gets stale over time.

J.J. Fliegelman, CTO at WayUp

At Expensify, Stack Overflow has become an everyday tool. “I don’t have to go through the hassle of finding someone who knows the answer, figuring out if they’re available or online, and then talking to them. That conversation has already happened on Stack Overflow,” said Brandon Meeks, a software engineer. “Any programmer knows how to use Stack Overflow, so to have it applied to a single code base is just that much more valuable.” Developers across the company estimated they were saving between two and three hours a week that had previously been devoted to hunting down knowledge.

The world’s collective coding intelligence solved the problem for anyone who can access the internet and ask a question. Now you can do the same thing within your own company.

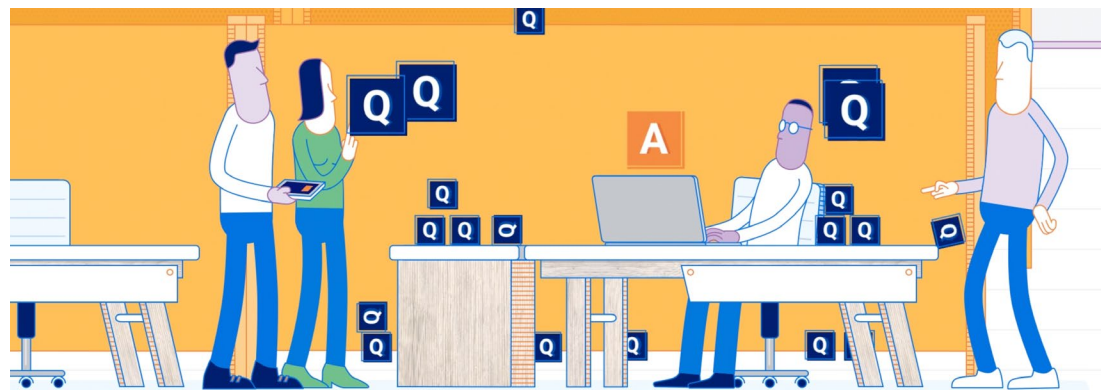
Connecting employees and ideas across your organization

Innersourcing taps into knowledge already spread throughout your company

One of the hardest things about creating great documentation is that the author has no idea what other people know and what they don't. Same goes for throwing a question in chat or email: if you're new to a large organization, how do you know who the best person is to ask? What's needed is a centralized space for Q&A that can reach across departmental silos to ensure the best information gets out of people's heads and into an easily searchable database.

IMC is a leading technology driven trading firm active on over 100 exchanges and trading platforms across the world. Across offices, teams of technologists and traders work together to design and develop the software, hardware, networks and algorithms that drive their strategies and make them one of the world's leading liquidity providers.

At IMC, developers are split between three different offices — Chicago, Amsterdam and Sydney. For many years, the engineering team at IMC used a combination of internal and external tools for knowledge management. However, these different tools were disjointed. As a result, IMC's developers often had trouble knowing where to ask a question or find information about a problem that had previously been solved.



IMC is one of the world's leading liquidity providers.

“We had been looking for a decent shared knowledge system for as long as I can remember. Just like most companies out there, we have quite a bit of tribal knowledge about our systems but it's spread across many different forms,” explains Tyler McDougall, Development Team Lead at IMC. “Stack Overflow speaks for itself. Everybody knows about it, everybody uses it, everybody wants it, and this is what we wanted.”

One of the early success stories that really convinced the team at IMC to adopt the product was a question from a trader in Sydney who asked why a particular API query was slowing down his work. After a couple back and forths with a developer in Chicago, he figured out that he was selecting a date range that was too wide and was able to resolve the issue to get the results in under a second. Before Stack Overflow for Enterprise there was little chance they would have discovered that someone in Chicago has the answer to a question from someone in Sydney.

Building and engaging the community

Find dedicated evangelists and leverage new hires

After selecting developer moderators and developing a baseline of questions and answers, Tyler started to drive engagement on the platform by introducing it to people that just joined the organization. He would show all the new software engineers at the company how IMC uses Stack Overflow for Enterprise so they were actively searching and asking questions within the first couple of days on the job.

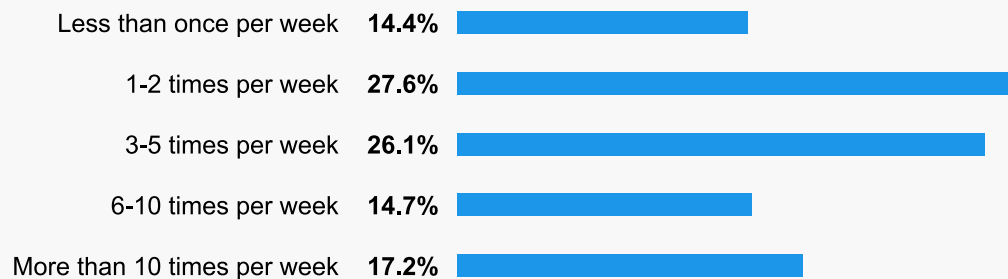


You can improve the overall efficiency and the health of the people onboarding in the organization with something like this.

Tyler McDougall Development Team Lead at IMC


“If I were to join an organization this is exactly what I would want. It’s intimidating when you first join a company - you don’t want to feel stupid for asking what might feel like obvious questions. But if there was a place where you could vet them beforehand, that would be perfect. You can improve the overall efficiency and the health of the people onboarding in the organization with something like this,” explains Tyler.

Comparing Stack Overflow to Other Resources



Over three-fourths of respondents say that using Stack Overflow is faster for solving coding problems than using other resources.

Stack Overflow Developer Survey 2019



Engagement is the mark of a healthy community and ensures quality and quantity of content remains high. To help spark that engagement, Tyler's team started sending a weekly digest to their developers. The email digest listed the top users, top questions, reference tags, direct links, and calls to action. This gave developers visibility into what kinds of questions were being asked, what needed to be answered and reminded them to visit the platform on a regular basis.



How Much Time Does Stack Overflow Save Developers?



When asked to compare the last time they solved a problem using Stack Overflow and the last time they used another resource, about 40% of developers say they save 30 minutes or more, and three-quarters of developers agree that they save more than 11 minutes. Combined with the previous results, we can estimate that, conservatively, Stack Overflow saves 30 to 90 minutes of time per developer per week.

Tyler's team began to track user engagement and leveraged Stack Overflow's API to develop an internal dashboard where they could see who from what office, region, and role was using Stack Overflow for Enterprise. Engagement became a metric that Tyler could set goals against and share with others at the company.

To give engagement even more of a boost, Tyler's team created an integration with their internal developer Slack channel. As soon as someone asked a question on the platform, all members of the Slack channel were notified. Since implementing this integration, 95% of all questions asked on Stack Overflow for Enterprise are answered within minutes. "We don't have questions that are unanswered more than a couple minutes. It just doesn't happen. The user adoption and engagement with the platform has been very impressive."

Stack Overflow is familiar to developers

This solves one of the biggest issues with new tools: onboarding

Think of the code in your organization like plumbing in a building. If you hire a new superintendent to manage your property, they will know how plumbing works, but they won't know exactly how your plumbing works. Maybe they used a different kind of pump at their old site. They might understand how the pipes connect, but they won't know you have to kick the boiler twice on Thursday to prevent a leak from springing over the weekend.

We really liked how easy it became to find the resources we were looking for without digging through a variety of documents across countless platforms.

Nir Alfasi, Senior
Software Engineer at Hippo

Developers are in high demand. If the average programmer sticks around your organization for a year, and it takes six months to get them up to speed so they can actually start contributing code, then you're spending twice as much on your programming asset as the salary would indicate.

In 2015, Hippo Insurance launched with the mission to create more [affordable and relevant home insurance choices](#) for the modern home buyer. Today, Hippo is licensed in 15 states and covers over [\\$25 billion in property value](#), cementing its place as a leader in the insurtech industry.

Hippo's staff is split between offices in Mountain View and Austin, Texas. Since its launch, the engineering department had relied on a combination of documentation solutions. But as the team grew, Hippo's leadership team knew that it needed a more sophisticated platform for knowledge sharing.

hippo

Hippo specializes in creating more affordable and relevant home insurance.


Fortune 500 leaders use Stack Overflow for Enterprise to make their teams more efficient

20%
increase in support efficiency

A cutting-edge technology company used Stack Overflow for Enterprise to provide high-quality, searchable answers to frequently asked questions, and achieved a 20% increase in overall efficiency.

20+
people hours saved each month

A Fortune 200 financial services company transformed their support processes from a time-consuming person-to-person model to one that made Stack Overflow for Enterprise the first stop for getting help. This saved them 20+ people hours per month and centralized critical systems information.



“We had a lot of discussions about how we should do it,” says Nir Alfasi, a senior software engineer at Hippo. “Some engineers wanted to use a third-party product. Another suggestion was to just utilize the README files inside the projects themselves.”

Nir and his colleagues were all avid users of Stack Overflow’s public Q&A platform. When it discovered Stack Overflow for Teams, Hippo knew that it could be the right fit. As Hippo began implementing Stack Overflow for Teams, they were pleasantly surprised by the short learning curve. Even without a formal onboarding session, many of its developers began using Teams immediately after receiving their login credentials.

“It didn’t take long for us to start asking questions, tagging them, and pinging the people who might have the answer,” Nir says. “We really liked how easy it became to find the resources we were looking for without digging through a variety of documents across countless platforms.”

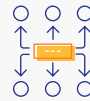
Although Hippo has only been using Teams for a short time, the platform has already made an impact on its engineers. In addition to saving its developers an incredible amount of time, Teams has also created new opportunities for domain experts to step forward and make meaningful contributions.

CASE #1

One of the Fastest-Growing Tech Startups

Client for more than 2 years

This technology company uses Stack Overflow for Enterprise to document siloed knowledge and improve collaboration among its global development teams, resulting in dramatic reductions in engineering project time. An early adopter of Stack Overflow for Enterprise, this company’s usage of the platform has resulted in explosive growth leading to exponential efficiencies.



Usage

- 9,000+ users
- 3,000+ unique visitors per month
- 700+ contributors each month
- 26,000+ questions and answers



Results*

- 285 hours per day in productivity savings
- \$524,400 every month in engineering dollars saved

The ROI of Stack Overflow

Saving your employees time and boosting productivity

Nearly every developer and IT professional in your organization visits stackoverflow.com to find quick answers to their vexing technical issues. In fact, over 50 million developers rely on Stack Overflow — and 85% of them visit Stack Overflow at least a few times per week.

Stack Overflow for Business builds on this foundation by providing a private, secure home for your organization's questions and answers — giving your technical staff instant access to their peers' expert knowledge of your own proprietary systems, processes, and intellectual capital.



\$5,760

**Per Technical Employee,
Per Year**

\$5,670 represents average annual savings. Data taken from a existing representative Stack Overflow for Teams Enterprise customer.

4 Solutions

Average # of solutions
found per month
on Stack Overflow

90 Minutes

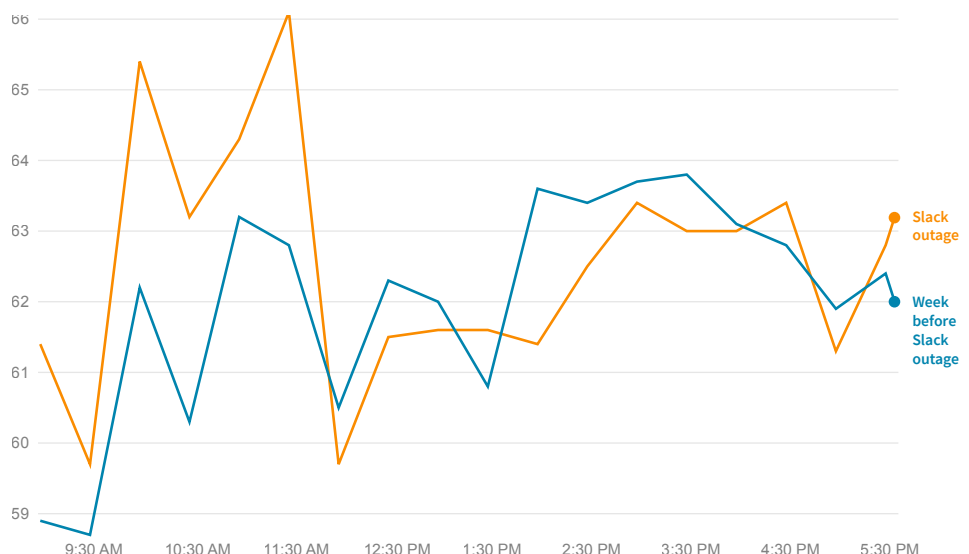
Average time saved
by finding solution on
Stack Overflow

\$80 per hour

Average fully
carried cost of a
software developer

There is an irony to what is happening with today's communication and productivity tools. They are great for real-time conversations and make it possible for employees to seamlessly transition from remote work, to mobile, to the office. And they help foster community and strengthen social bonds between colleagues. What they don't always do, however, is contribute to productivity. As a [recent article from Recode](#) noted, workers are just as likely to be spending their time in chat competing to share the funniest GIF as actually solving problems or pushing projects forward. "In other words, talk is cheap, and we're spending like crazy," wrote the author, journalist Rani Molla.

Productivity during a Slack Outage



Rescuetime via recode by Vox

Cal Newport, a computer science professor at Georgetown University, put it this way. “When I encounter a typical knowledge economy office, with its hive mind buzz of constant unstructured conversation, I don’t see a super-connected, fast-moving and agile organization — I instead see a poorly designed distributed system.”

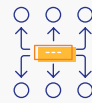
“Its greatest strength: amazing ease-of-use, is also its weakness,” wrote software programmer Alicia Liu. Because it tends to lowering the barrier to initiate a conversation, instant messaging “has the quiet capacity to exponentially increase communication overhead, resulting in much more voluminous, lower quality communication.”

CASE #2

A Fortune 100 Financial Services Company

Client for more than 1 year

This financial services company is using Stack Overflow for Enterprise to improve developer collaboration, onboard new hires, and provide internal technical support to employees. The platform was introduced to the company by one arm of their business and quickly spread throughout multiple organizations. As they continue to expand usage company-wide, this bank has rapidly become one of our largest clients.



Usage

- 15,000+ users
- 4,000+ unique visitors per month
- 600+ contributors
- 7,000+ questions and answers
- 1,000+ searches per workday



Results*

- 294 hours per day in productivity savings
- \$470,400 every month in engineering dollars saved

** Time saving calculations are based on Stack Overflow research and assumes 50% of search sessions result in finding a solution with an average time saving of 30 minutes per solution. Dollar savings are estimated based on the average fully carried cost of a developer at \$80/hour.*



To learn more, visit
stackoverflow.com/teams