

GLOBAL SRE PULSE 2022



sumo logic

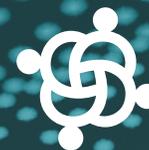


StackState



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THE STATE OF SRE ADOPTION,
DEPLOYMENT AND AUTOMATION



DevOps Institute

EXECUTIVE SUMMARY

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IT Leaders today are facing daunting challenges including shrinking budgets, continuous firefighting modes, an explosion of events from the ever-increasing complex business technology ecosystem and the continuous effort to increase velocity and reliability of infrastructure, applications and services. Also, the drive toward digital services has forced these leaders to adopt new operating models such as Site Reliability Engineering (SRE). Site Reliability Engineering is defined as “an engineering discipline devoted to helping an organization sustainably achieve the 'appropriate level of reliability' in their systems, services and products.”¹

The practice of SRE has risen to a must-have engineering practice for enterprises seeking to accelerate digital transformations or reengineer their interfaces to digital-first. As enterprises are implementing SRE in their respective teams by developing and adjusting the best practices introduced by Google, the operating model continuously gains attention from decision makers within IT and the business.

This report summarizes DevOps Institute’s first-ever Global SRE Pulse community research project into the current state of SRE. Our survey of over 460 SRE leaders and practitioners from both midsize and large enterprises provides a snapshot of the state, practices, health, activities and automation adoption across the globe. Our findings show that the SRE operating model is well established, leveraging different team topologies and has achieved a mature stage in several enterprises. To address the complex technology stacks, and aid teams with continuous improvement around reliability to support the ever-increasing needs of their business ecosystems, SRE must be seen as an engineering function within the different areas it reports into such as IT operations, development or other areas within IT.

HOW SRE CAN HELP ORGANIZATIONS ACCELERATE DIGITAL TRANSFORMATION

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KEY FINDING

More than half of our survey respondents who have adopted SRE perceived their company as leaders across customer experience and the quality and speed of innovation across different products, offerings, processes or services. Continuously improving customer experience and the speed of innovation requires attention for digital transformations or digital-first to succeed. While the adoption of SRE might not be the only contributor of such great results, it played a big part.

- ☀️ Customer experience, quality and speed of innovation are important for successful digital transformations. When asked how they would describe their company today compared to their competitors across customer experience, quality of products, offerings, processes and services and innovation, we found the following: 52% would describe their company as being a leader.
- ☀️ Faster, better, more reliable and cost-effective applications and services can most likely be attributed to leveraging SRE. IT enterprise and midmarket organizations have gone through a seismic transformation, driven in part by COVID-19, continuous technology innovations and the ongoing business demands for better, faster, more reliable and cost-effective applications and services to lift employee and customer experience. IT leaders had to focus on continuous improvement and adjust existing IT operating models to meet these demands.
- ☀️ SRE has taken root in many organizations, and the adoption of SRE will continue. Sixty-two percent (62%)^A of our survey respondents have adopted some level of SRE. While SRE alone might not have been responsible for achieving meaningful progress, it certainly contributed towards these enterprises being viewed as leaders from within their organization (see Figure 1).

SRE IS DELIVERING SIGNIFICANT VALUE, BUT SOME CHALLENGES ARE IMMINENT

KEY FINDING

The adoption of SRE can be seen as a response to the increasing recognition of the unique challenges of operating and managing complex systems at scale and the demands for reliable applications and services across organizations. Enterprises increasingly understand that to continuously improve their customer and employee experience, while managing technology, process and talent debt, they must update their existing operational practice to satisfy the demands from the digital business. The SRE operating model improves the health and reliability of applications and services and directly improves customer and employee experience.

While over 62% of respondents say their organizations are leveraging SRE within their company today (see Figure 1) the survey findings show that organizations are at a variety of states in their SRE adoption. Nineteen percent (19%) are leveraging SRE across the entire organization, 55% have adopted SRE within specific teams, products or services, 23% are piloting SRE and 1% indicated that their SRE experience had failed (see Figure 2).

FIGURE 1
GREAT ADOPTION OF SRE ACROSS THE GLOBE

Report that their organizations are leveraging SRE today.



FIGURE 2
ENTERPRISES ARE LEVERAGING SRE DIFFERENTLY

What is the current state of SRE in your entire IT organization?
1% tried SRE, but it did not work and 2% selected Other.



Our research shows that enterprises are facing a range of challenges as they are trying to implement SRE. Not surprisingly, skill shortage is a key challenge across all global organizations.

- ☀️ **The biggest challenge is finding the right skills for SRE to work.** Eighty-five percent (85%) of survey respondents cite the lack of staff with the necessary skills as their biggest challenge when implementing SRE. Additional challenges include “value of SRE is not understood,” “don’t have time to implement SRE,” “lack of tools in place” and “lack of management support.” Respectively, 71%, 53%, 55%, 44% of respondents cite these five challenges experienced while adopting SRE in their organizations (see Figure 3). When analyzing the challenges across the different company sizes, there were no significant differences.

“SREs are in high demand, and it’s not just traditional technology companies that want them. Any business that delivers digital products for their customers has a stake in ensuring reliability, stability and incremental improvements.”

DHEERAJ NAYAL

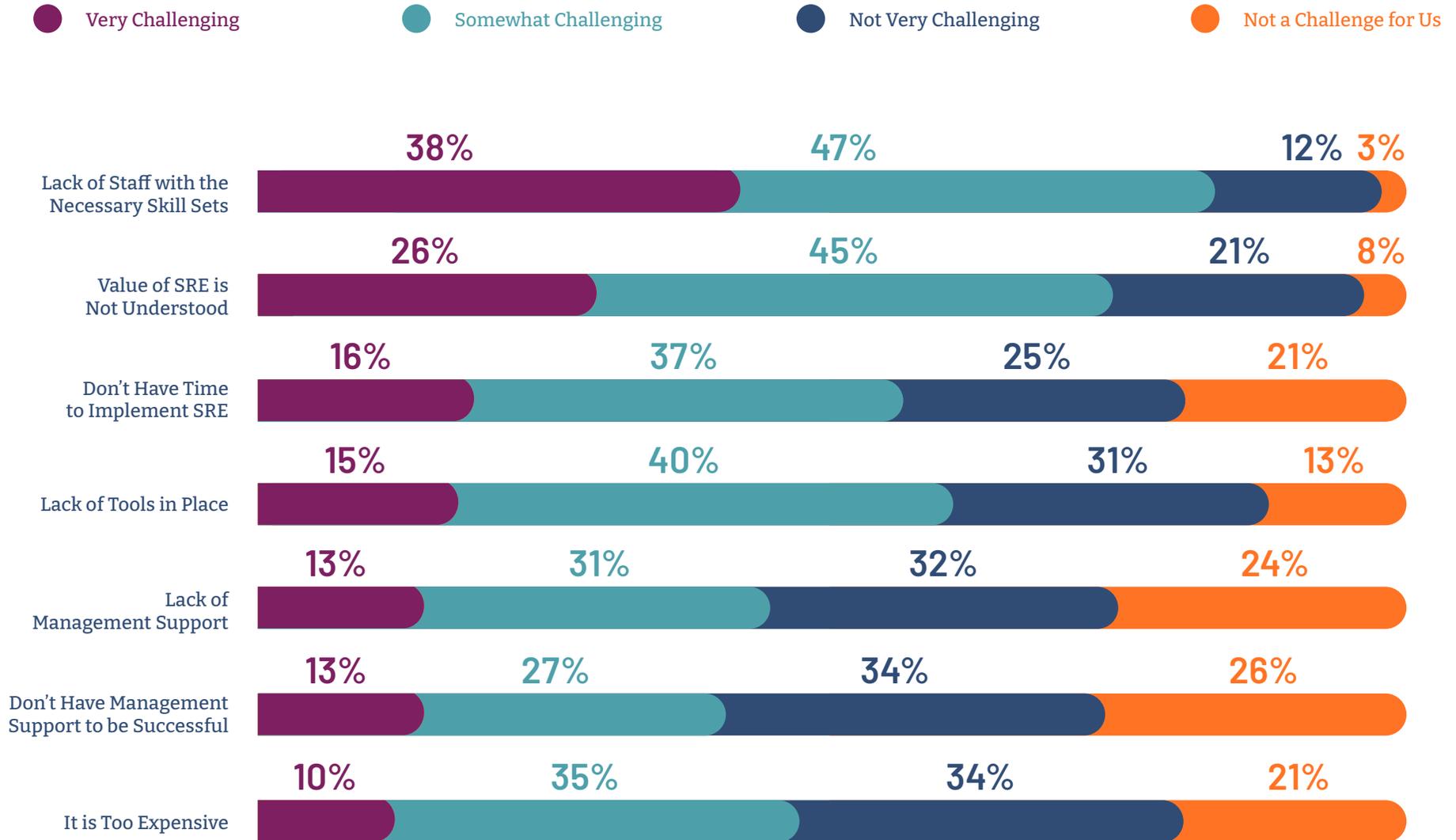
Business Development Manager
(APAC), DevOps Institute



FIGURE 3

THE SRE JOURNEY FACES MANY CHALLENGES

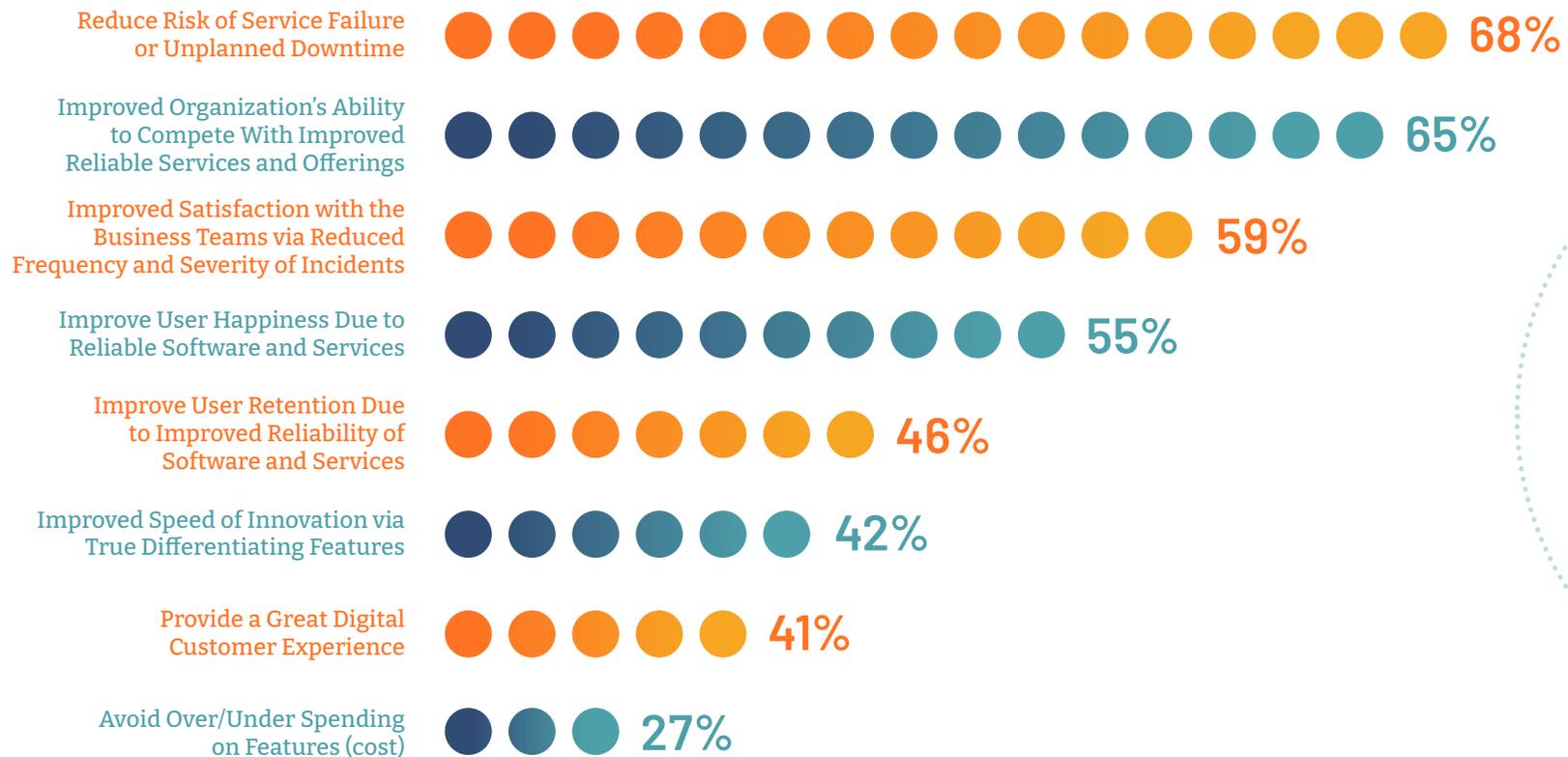
Which challenges have you (or your team) experienced while implementing SRE as an operating model?



Improving customer and employee experience via improved health and reliability of services and applications is a significant challenge. Many organizations when asked about the top three goals for implementing SRE cited “reduce service failure and unplanned downtime”, “improve an organization’s ability to compete with improved reliable services and offerings” and “to improve satisfaction with business teams via reduced frequency and severity of incidents.” The reality is that improving the health and reliability of services and applications is a significant challenge in environments that are only using rudimentary monitoring (see Figure 4).

FIGURE 4
TOP REASONS TO ADOPT SRE

What are the top reasons your organization has adopted SRE? (select all that apply)



THE SRE DEPLOYMENT LANDSCAPE

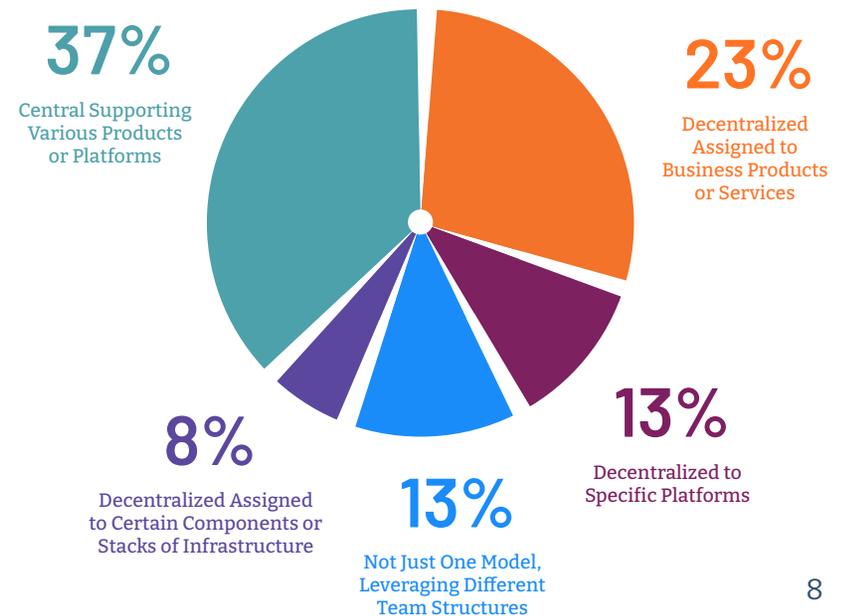
KEY FINDING

Organizations that are using SRE to improve IT operations, business operations and customer experience are focusing on System of Engagements first, are mostly organized as a central team, and have a healthy incident management process.

- ❁ SRE is critical for digital transformation and is leveraged in both running the business and serving customers. There are different applications used to operate a business: 1. System of record (SOR) are enterprise-level applications that run the business (financials, manufacturing, CRM, HR) and 2. Systems of engagement (SOE) are user-focused applications that are designed to equip and enable customers, partners and employees with the tools they need to interact with the business. In the age of digital interactions, organizations are reallocating more resources than ever before to improve their systems of engagement to meet the needs, goals and ambitions of their customers. When we asked our survey respondents about where SRE is leveraged today (the software your company builds or the set of services SRE teams interact with) we found that 42% said they leveraged SRE for their SOR and 56% for their SOE.
- ❁ There is no standard way to organize SRE. Probing for how SRE teams are organized we found that 37% are organized in a team supporting various products or platforms and 23% are organized as a decentralized team which is assigned to business products or services. Thirteen percent (13%) of survey respondents' cite that they are not just leveraging one model but are applying different team structures (see Figure 5).

FIGURE 5
DIFFERENT SRE TEAM TOPOLOGIES

Which of the following structure BEST describes the SRE model in use at your company today?



“The trend towards centralization is not surprising, since so much of the value of SRE is in creating environments, structures and processes to support highly reliable systems. Because these teams operate in an Agile way, they capture feedback and learn from their operations in order to optimize reliability over time. While centralizing that function provides economies of scale to accelerate learning and optimize operations, it’s clear that there will always be ‘snowflakes’ where an alternative is required.”

SAM FELL

VP, Observability Product
Marketing, Sumo Logic



☀️ The largest share of SRE teams report into IT operations. When asked “Where does your SRE team (or you as an SRE) report into?” 30% cited that they report into IT operations, 22% said they are part of a separate team, 18% report into application design and development, 18% report into IT infrastructure and 3% cited that they report into IT security. This may account for the fact that enterprises are actively hiring Operations Engineers according to [DevOps Institute’s Upskilling IT 2022 report](#).¹⁷

☀️ Incident management is healthy across the surveyed organizations. While outages are less frequent than they used to be, they happen. According to the [Uptime Institute](#)¹⁴, “High outage rates haven’t changed significantly. One in five organizations report experiencing a ‘serious’ or ‘severe’ outage (involving significant financial losses, reputational damage, compliance breaches and in some severe cases, loss of life) in the past three years, marking a slight upward trend in the prevalence of major outages.” Healthy incident management allows management allows a team to respond to an incident in a structured way, with a clear line of command, designated roles and solid communication within and across the team. Today much of the incident management process is automated to support a productive and efficient resolution or remedy when disaster strikes. More than 70% of our survey respondents today state that their incident management process is well-designed with a solid alert handling process.

“Some organizations are opting for a single, central team of SREs, sometimes replacing their traditional IT Operations team and updating their ITSM practices with SRE approaches. Others are embedding SRE in their multifunctional, autonomous product oriented teams. The organizational design doesn’t matter - as long as the SRE outcomes for availability and customer experience are attained.”

HELEN BEAL

Chief Ambassador,
DevOps Institute



“Create a single platform for incident, problem and change, giving us unprecedented visibility of incidents, planning activities and service reviews. These capabilities enabled Flight Centre to align more closely with ITIL benchmarks for service management and create a platform for future improvement.”²”

HENRY DO

Delivery Manager, ITSM,
Flight Centre

“Incident processes may be in place, but it’s even more important to know you have an actual incident as quickly as possible and to swiftly determine root cause. Organizations that are the most mature in their observability implementation – what we call AIOps-driven observability – are 2.5x more likely to determine the root cause of an issue in five minutes or less than their peers who are doing just basic monitoring. They are also twice as likely to become aware of an incident in under five minutes than their less-observability-mature peers. Evolving to AIOps-driven observability can even enable an organization to catch the anomalies that matter before they cause an issue.”

ANDREAS PRINS

Vice President of Product,
StackState



“I believe both Reliability and Security are important facets of “product quality,” so I’m not surprised to see security concerns make their way into this survey. However, I am surprised that the number is only 3% and would expect see that number rise in the future. In my experience, companies that encourage more collaboration between Dev/Sec/Ops teams are eliminating data and process silos that create better outcomes for their employees and their customers.”

SAM FELL

VP, Observability Product
Marketing, Sumo Logic



- ☀️ **Managing pager load and on-call schedule to protect fatiguing.** The reality of being on-call is that it can be a daunting and disruptive experience for team members. Finding the right balance of coverage, scalability and quality of life for the team is an ongoing challenge. When we probed about how our survey takers manage their on-call schedule and pager loads, 66% cite that they ensure that their on-call schedule remains flexible for their team members and 64% cite they actively balance their pager load.
- ☀️ **SRE is not just leveraged for cloud-native and SaaS companies.** Two pieces of compelling evidence suggest that SRE is leveraged across a broad range of ecosystems. First, a quick job search on Glassdoor shows SRE openings across a variety of companies that are not cloud-native or SaaS companies (e.g., Caterpillar and Charles Schwab). Second, 50% of our survey respondents are leveraging SRE practices within their hybrid (on-premise/cloud) ecosystem.

“For many organizations, hybrid cloud is a fact of life. We tend to view this as a side effect of legacy - which it can be - but it is also a significant trend. For the years leading up to and including 2019, business consistently reported that hybrid represented around 50% of their strategy, in 2020 this shot up to a staggering 83%. Bringing workloads back on-premises, or into private cloud is now such a significant trend, it has its own term “repatriation”. So what does this mean for SRE? If the private cloud mimics public, then there will be many parallels, if it doesn’t, then it can represent a challenge to the SRE. In this case I would offer three pieces of advice. Firstly look beyond the SRE Handbook and determine if alternative practices can be used to augment the processes. Secondly, favor vendors and products that also support hybrid infrastructure, this will simply matters greatly. Third, try to create an abstraction layer between your management layer and the infrastructure. Just because you’re managing hybrid infrastructure, it doesn’t necessarily have to feel that way.”

RICHARD WHITEHEAD

Chief Evangelist,
Moogsoft Inc.



EMERGING TRENDS IN SRE IMPLEMENTATIONS

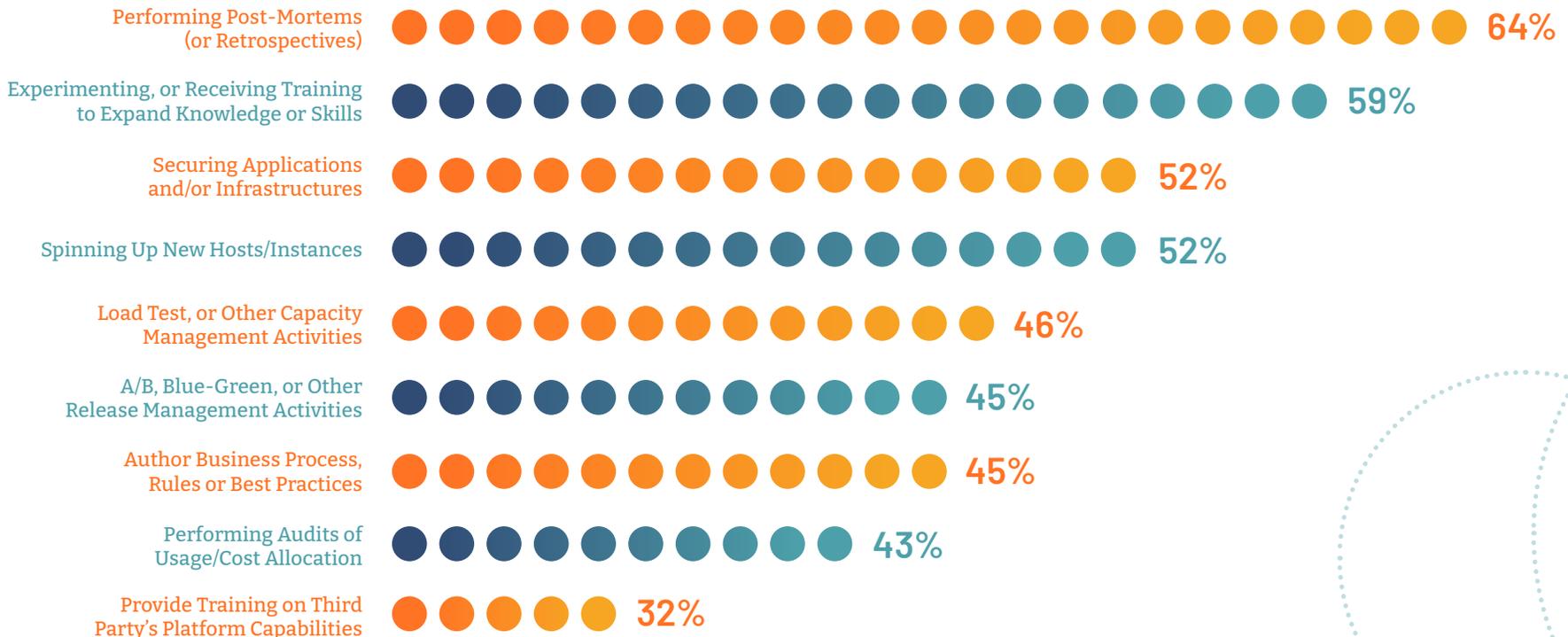
KEY FINDING

While some activities are essential for the SRE operating model, and certifications and training are front and center, the adoption of chaos engineering is just at the beginning.

☀️ A diverse set of activities keeps the SRE job balanced between Dev and Ops work. The daily task for an SRE is to continuously improve the reliability of systems and help with troubleshooting tactical problems. As shown in the following Figure 6.1, SREs spend time on IT infrastructure and operations-related work such as performing retrospectives, spinning up new hosts/instances and performing release management activities. In their operations work, they address customer issues and are on call. Since the applications that they oversee are expected to be highly automated and self-healing, the engineers have time to experiment or develop processes and best practices.

FIGURE 6.1
SRE ACTIVITIES

Please select which activities are part of your (or your team's) SRE job? (select all that apply)



- ☀️ **The usage of key principles of SRE is solid.** Our research shows that practicing no blame philosophy, conducting retrospectives and providing feedback are among the top three activities used by either one or more SRE teams everywhere or in several teams.
- ☀️ **The implementation of observability tools and techniques is still siloed.** Ninety-six percent (96%) of survey respondents cited that they have implemented some level of observability tools and techniques today. While SREs have been looking for new approaches to meet the growing complexity requirements, the challenge still lies in applying the tools and techniques across domains, data silos and teams (see Figure 6.2).
- ☀️ **Some SRE teams are ahead in leveraging observability tools and techniques everywhere.** Twenty-nine percent (29%) indicate they leverage the tools and techniques everywhere. The goal of observability is to improve digital business service performance. This is only possible if it is used everywhere as it must provide insight into all aspects across a hybrid-cloud ecosystem. The vast amount of telemetry data (metrics, traces, histograms, logs, events) collected from a diverse set of data sources—cloud applications and services, infrastructures, Kubernetes, etc. must be analyzed together to see impacts or issues. Additionally, observability allows the contextual insight to be shared across development, IT operations and business issues enabling teams to come together to uncover new insights essential for every business – digital or non-digital.

“A centralized IT Ops team is still the primary place observability sits. Central SRE teams are on the rise, because the realization is that we need to codify best practices and distribute that knowledge out to decentralized teams. However, it’s impossible to put observability into every decentralized team – it’s a knowledge scaling issue. Observability is a new skill and implementing it is hard work, like any other major implementation. Companies need to be strategic, decide how observability adds business value for them, set KPIs to match business goals and figure out what makes the most sense for them in ownership of the observability function.”



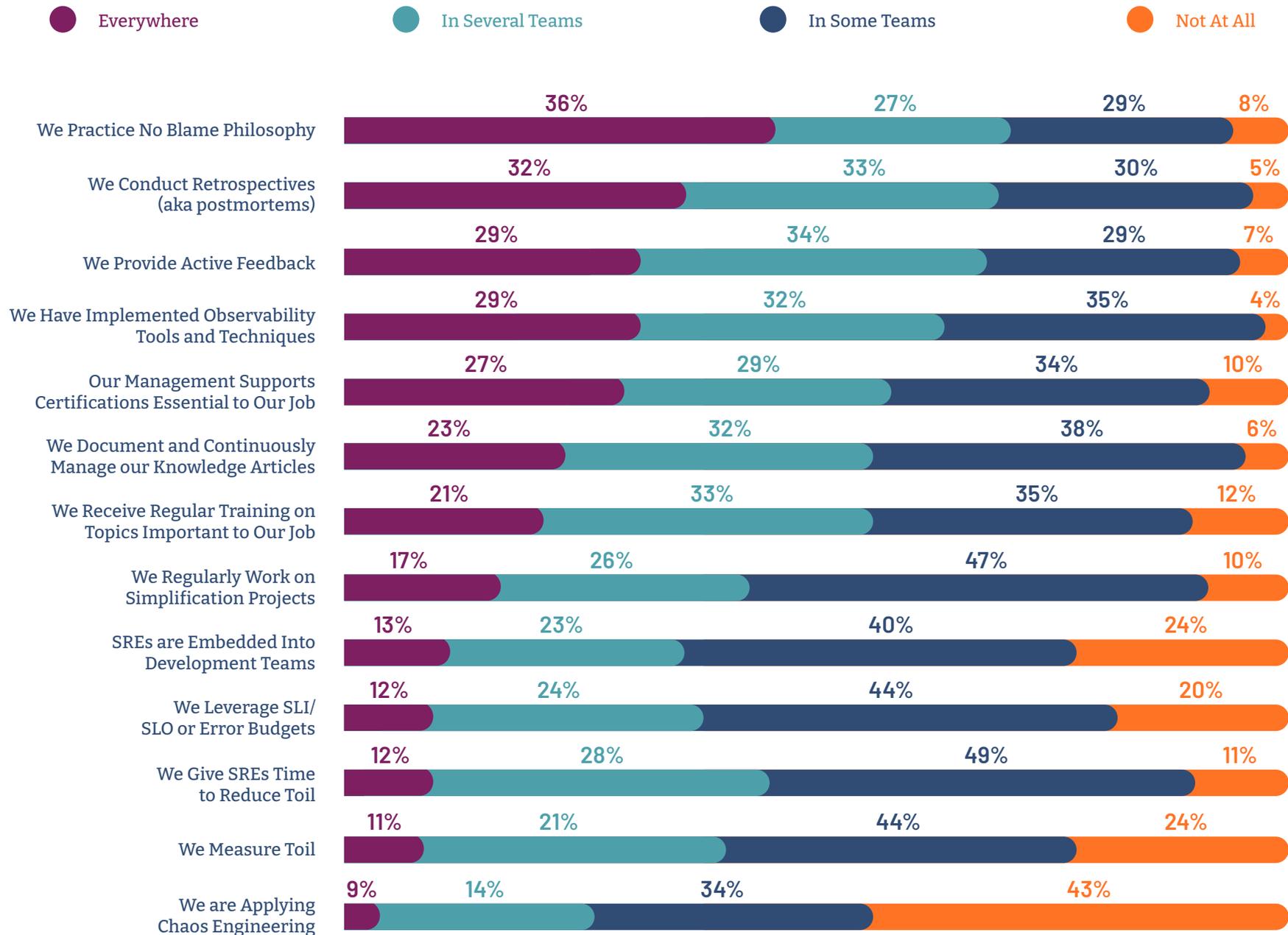
ANDREAS PRINS

Vice President of Product,
StackState

FIGURE 6.2

SRE PRACTICES LEVERAGED TODAY

Which of the SRE practices do you leverage today?



- ☀️ **Chaos engineering is not yet where we think it is.** Forty-three percent (43%) say they are not applying Chaos Engineering, a methodology which was made popular by [Netflix](#)³ in 2011.
- ☀️ **Certifications are supported by management.** Ninety percent (90%) say that their management team supports certifications which are essential for the job of an SRE.
- ☀️ **Training is part of the job.** A large 89% of survey respondents cite that they receive regular training on topics important to their job.

“Outages happen - this is the premise of Chaos Engineering. Software systems are super complex today. We can no longer expect to test our way out of production problems. Chaos Engineering provides a new roadmap for maintaining healthy systems.”



TRACY RAGAN

CEO,
DeployHub

“Training must be part of every SRE’s job since they are tasked with proactively reducing toil in order to improve reliability. Time for and access to training is essential to ensure that SREs are equipped with the knowledge and ability they need to be successful.”



JAYNE GROLL

CEO,
DevOps Institute

THE SRE CULTURE AND HEALTH LANDSCAPE

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KEY FINDING

Implementing SRE is a journey and requires all-day, everyday commitment. Working in a SRE team is a rewarding experience with a great opportunity for individuals to re-energize their career, be part of and belong to a new engineering practice, learn new things, make a difference and improve compensation.

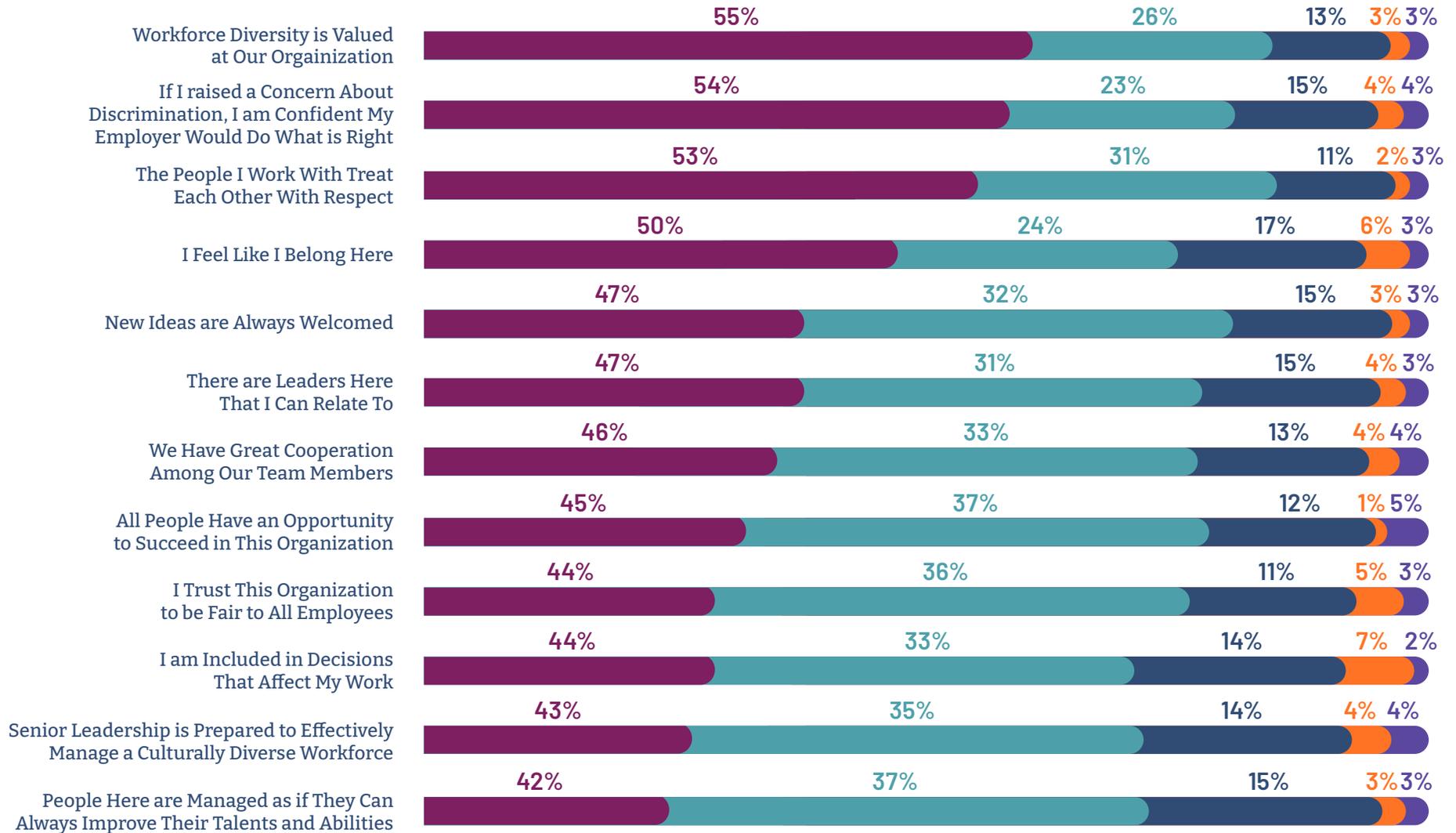
- The data shows that within SRE teams, individuals are respected and there is a good sense of belonging. From different leadership philosophies, we know that building strong, collaborative and focused teams at all levels of an organization is important for its ongoing success. In this first SRE Pulse, we asked respondents to rate a variety of statements related to their SRE team as we wanted to understand the general health and diversity of SRE teams (see Figure 7).
- SRE energizes individuals and aligns them with the business. Career disruptions or changes are helpful to get energized. When we asked our survey participants what leads them to a SRE role, we found a variety of exciting details. First, over 50% of respondents agreed that they had expanded their skills and capabilities. Second, 44% strongly agree that they are more engaged and excited about their job. Third, 36% strongly agree that they are more valued as a team member and finally, 34% of survey respondents feel more valued and appreciated (see Figure 8).

FIGURE 7

SRE AS A MODEL TO SHAPE A DIVERSE, HEALTHY, RESPECTFUL AND SAFE CULTURE

How do the following statements apply to your SRE team today?

● Strongly Agree
 ● Somewhat Agree
 ● Neither Agree Nor Disagree
 ● Somewhat Disagree
 ● Strongly Disagree



“Adopting the SRE culture and building effective SRE teams are the biggest challenges in your technology transformation journey. As the tagging around SRE and the topologies are confusing, acceptance of SRE as being pivotal for Technology and Operational resilience is widely acknowledged in the industry. SREs are coders, SREs are problem solvers and they are curious people who help development and operational teams to architect better, deploy seamlessly and automate relentlessly. They have a systematic approach and look at the implications of operational wisdom when creating software and at the same time bring developmental skills in running operations. SREs live in the confluence of development, deployment, observability and operations and firmly believe that operational resilience will not magically happen at the end when in Ops, it is by impacting every aspect of the product or services lifecycle.”

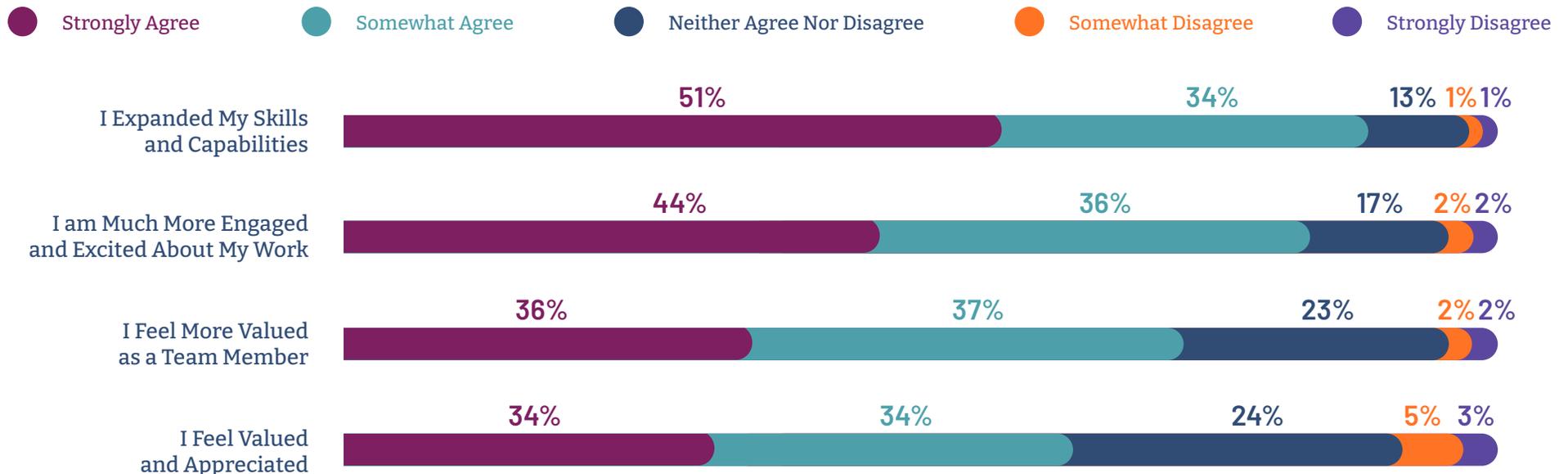
SHIVAGAMI GUGAN

Group Chief Technology Officer, IDC Technologies, Inc.



FIGURE 8
SRE ENERGIZES INDIVIDUALS AND CAN ACCELERATE CAREERS

What effects did the shift to a SRE role have for you?



- ☀️ **SRE pays more.** Besides being energized, the compensation within SRE is higher. Fifty-two percent (52%) of our survey respondents indicated that they agree (strongly, or somewhat) that their compensation has improved. Market data from [Robert Half¹⁵](#) shows a significant difference in compensation across the different roles such as system engineers, system administrators and site reliability engineers (see Figure 9).

FIGURE 9
SRE COMPENSATION IS HIGHER THAN IN OTHER IT OPERATION ROLES

TITLE	SALARY RANGE IN USD
System Engineer	\$92,750 – 133,750
System Administrator	\$72,500 – 106,500
Site Reliability Engineer	\$103,250 – 154,856

Source: <https://www.roberthalf.com/salary-guide/national-trends>⁴

- ☀️ **The duration of on-call time is good.** On-call duration and engineering time should be balanced. While SREs should not spend more than 25% of their time on-call, another 25% of their time should be spent on other types of operational, non-project work. The on-call quantity of our survey respondents is good as 51% state that they spend 25% or less on-call.
- ☀️ **Time spent on development is OK but should get better as the SRE practice gets more established.** Development work is novel. It produces new products and services, is guided by a strategy and helps to continuously innovate within and across an organization and its ecosystem. It is frequently creative and innovative, taking a design-driven approach to solving a problem. While 42% of our survey respondents state that they spend 50% or more on development, 58% said they spend less than 50% on development.

“On-call work doesn’t have to suck. Leveraging tools that present all the relevant information on-hand and available when an incident occurs, with suggestions on next steps, can help make the more terrifying moments a little less terrifying.”

SAM FELL

VP, Observability Product
Marketing, Sumo Logic



SRE BEST PRACTICES

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KEY FINDING

Organizations are tracking and managing toil. The biggest source of toil is process issues and new releases. Metrics such as SLAs, SLOs and SLIs are somewhat of a mixed landscape and still cause challenges for implementing and managing them.

- Ensuring the reliability of an organization's systems is more important than ever. Reliable applications, service and systems ultimately ensure that a company can continuously deliver its products or services to its customers. While SRE quickly gained popularity, the implementation of reliability engineering was more of a nice-to-have for many organizations. The real urgency was brought on by the COVID-19 crisis as digital offerings became essential for companies when customers moved to online channels. According to a [McKinsey Global Survey¹⁶](#), executives state that they have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by three to four years. The share of digital or digitally enabled products in their portfolios has accelerated by seven years.
- Tracking and managing toil with SRE principles is promising. We asked our survey respondents if they measure toil and a surprising 66% of them measure toil in some or several teams and 11% indicated that they measure toil everywhere.

TOIL is defined as work that is manual, repetitive, automatable, tactical, devoid of enduring value and that scales linearly as a service grows.

ENGINEERING is defined as the creative and innovative work that requires human judgement, has enduring value and can be leveraged by others.⁵

☀️ **Process issues are the most common source of toil.** While eliminating toil across computing resources is one focus area, eliminating toil across different processes is another topic for SREs to focus on. We found that 27% of our survey takers cite that business process issues are their number one source of toil. Process examples could be the onboarding of users or the interaction with customers. While some of these are difficult to eliminate, there are significant improvements possible through automation.

☀️ **Another major source of toil is new releases.** When your business is digital, revenue flows thanks to the value your software provides. Development work that hasn't been shipped to production yet is not producing any value; however, iterating and releasing software too quickly can also cause problems. Nineteen percent (19%) of our survey takers cite "application release" as their number one source of toil (see Figure 10).

"Microservices architecture is the new norm, which means toil is the new norm too. Managing toil will only get worse with manual thresholds and rules-based approaches, but its impact can be mitigated with AI/ML and the ability to act autonomously on an SRE's behalf."

SURESH MATHEW

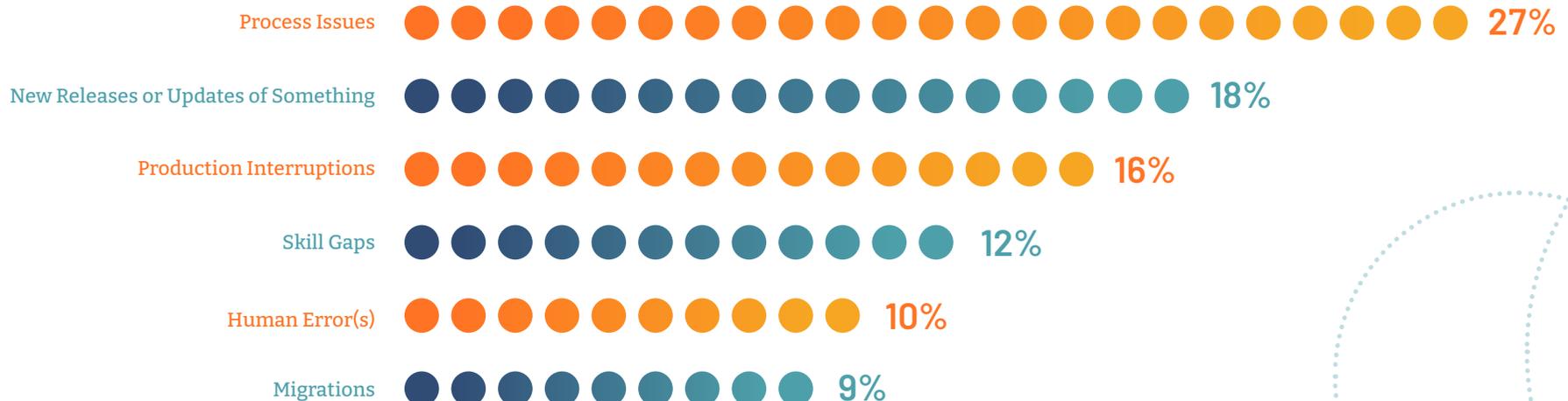
Founder & CEO, Sedai



FIGURE 10

PROCESS ISSUES AND NEW RELEASES ARE THE BIGGEST SOURCE OF TOIL

What is the No. 1 source of toil within your organization? (Please select only one)

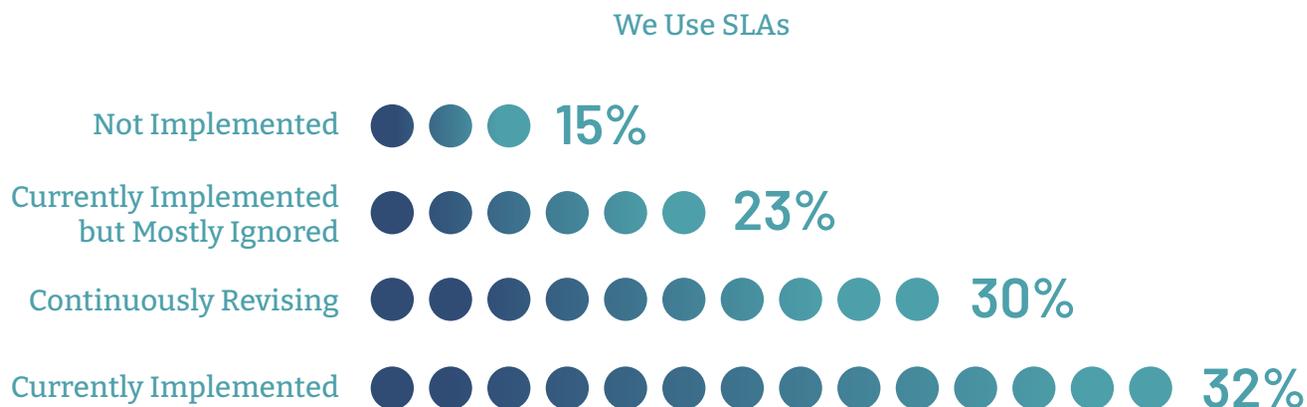


- ⚙️ **Metrics have different purposes, but they are all related.** The promises an IT team makes to their customers (users) are made via Service Level Indicators (SLIs), Service Level Objectives (SLOs) and Service Level Agreements (SLAs). Their purpose is to help align teams and set key expectations for a service’s reliability. SLIs measure the health and performance of services (e.g., user response time), the SLO is the objective the team must meet (e.g., 99.9% of users receive first byte of response in > 600ms) and the SLAs codify the agreement between the service provider and service user (e.g., “Maintain the SLO or we receive a discount on services”).
- ⚙️ **SLAs are the most adopted foundational agreement.** SLAs are adopted by 85% of our survey respondents. SLAs are essential to manage the expectations between IT and the business teams on the service expectations. For example, an SLA would promise a 99.95% uptime of a specific service or application are typical. Unfortunately, many of our survey respondents are saying that they do not have an SLO (which would be the 99.95%) or an SLI (which would be the actual measurement of the uptime) (see Figure 11a).

FIGURE 11A

SERVICE LEVEL AGREEMENTS (SLAS) ARE THE MOST ADOPTED FOUNDATIONAL AGREEMENT

Which tools or mechanisms do you use today within your SRE practice or team?

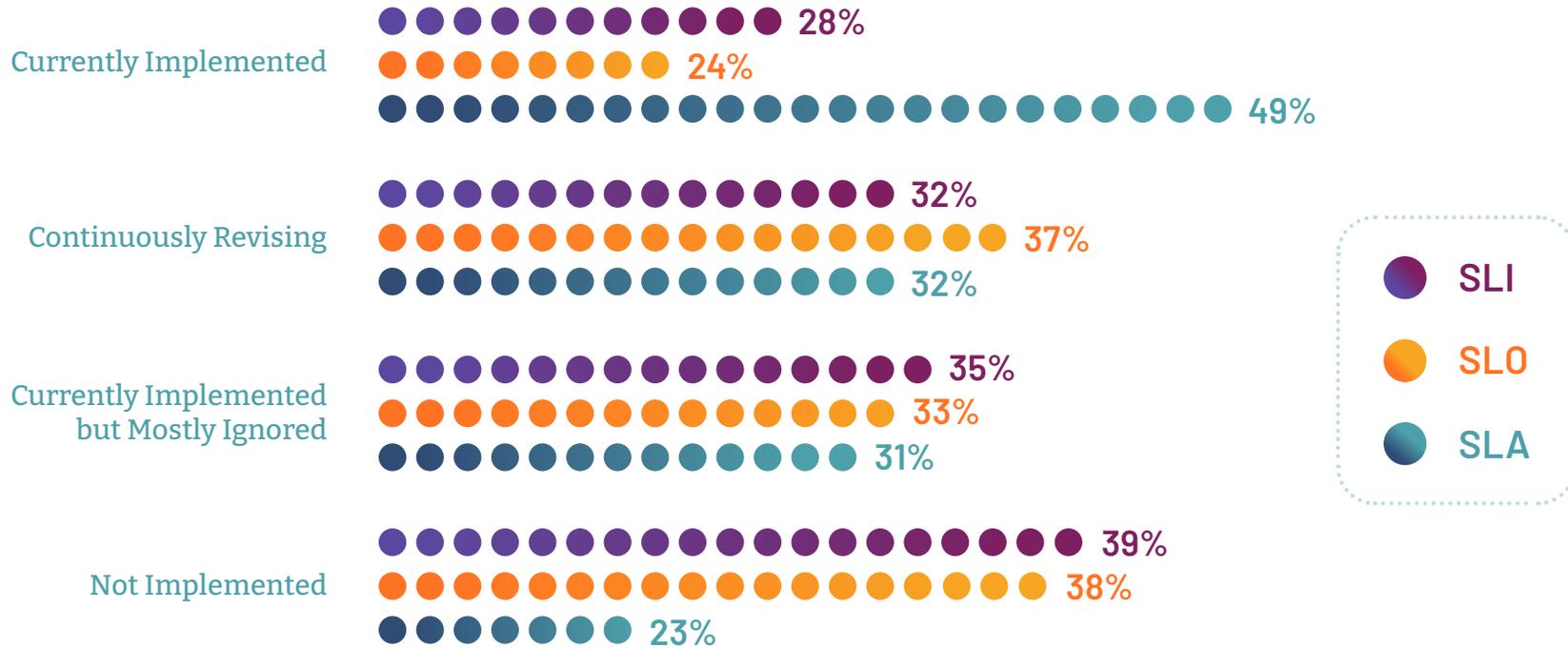


- ⚙️ **More work must be done on measuring the reliability goals of SRE teams.** SLAs, SLOs and SLIs play a central role in shaping the reliability goals that SRE teams need to meet. Our survey data indicates that there are opportunities to improve the adoption of these different metrics. Clear and realistic SLA agreements that are based on easily measurable SLOs, which are then tracking for compliance based on SLIs is what should happen. Our survey data shows that there is room for improvement across both SLOs and SLIs, greater implementation and revisioning around SLAs than SLOs and SLIs (see Figure 11B).

FIGURE 11B

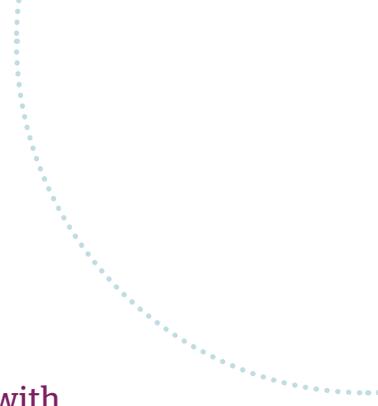
SLA, SLO, SLI ... DIFFERENT USAGE LEVELS

Which tools or mechanisms do you use today within your SRE practice or team?



☀ The challenges of implementing metrics continues. While we see some solid evidence in implementing SLAs, SLOs and SLIs, there is still evidence of these metrics either not being implemented, or even worse, implemented and ignored. The challenges are that SLAs are many times written by people who do not need to measure them and are promises but difficult to measure. Many SLOs and SLIs are often too complicated and therefore difficult to measure.

THE SRE AUTOMATION LANDSCAPE



KEY FINDING

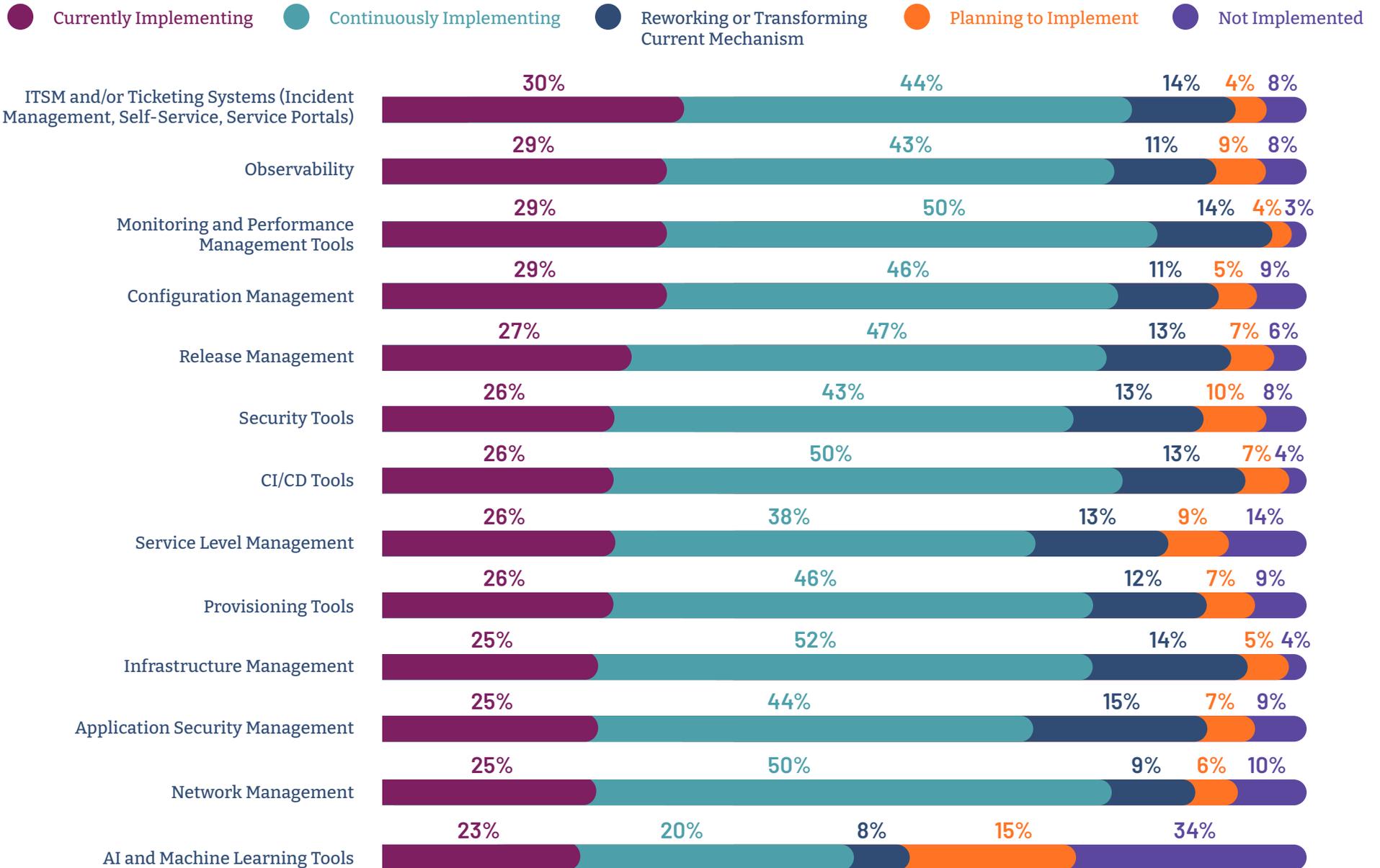
SRE teams are leveraging automation to increase the rate in which changes are absorbed. For multiple teams with varying topologies all implementing SRE across different ecosystems, intelligent automation has proven helpful to ensure the reliability, health and continuous operation of systems, applications and services. The most adopted automation tools are observability and monitoring platforms.

- ☀ **IT automation solutions are essential.** With the hourly cost of downtime ranging from \$1 million to over \$5 million,⁶ exclusive of legal fees, penalties and other fines, availability and reliability are key aspects to ensure customer satisfaction, avoid negative impacts on customer confidence and on a company's brand. To reduce downtime and ensure ongoing services, IT automation solutions are essential. Figure 12 shows the automation tools leveraged today along their different deployment stages.

FIGURE 12

ITSM, OBSERVABILITY, AND MONITORING AND PERFORMANCE MANAGEMENT TOP THE LIST OF AUTOMATION TOOLS

What are the current automation tools leveraged within your SRE team?

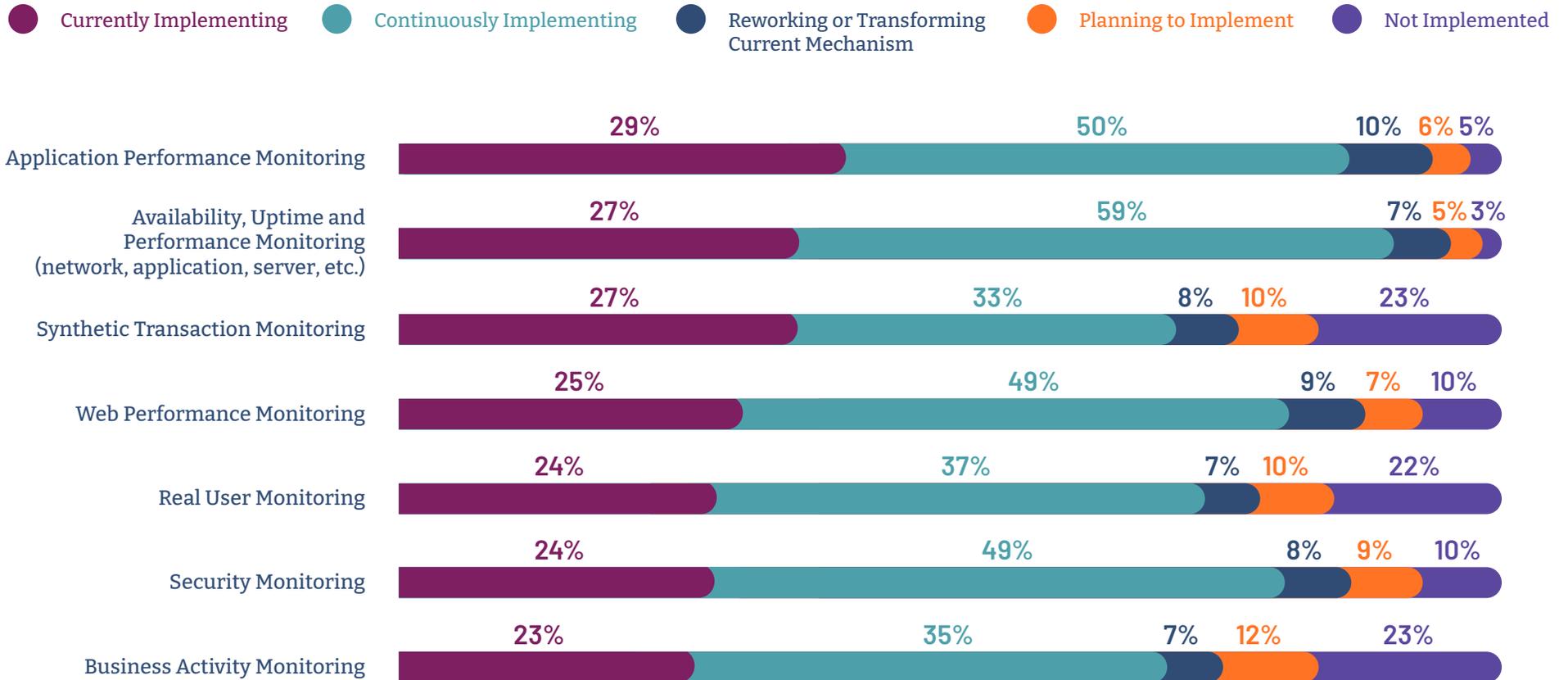


- ❁ **IT Service Management automates core processes.** Key core processes such as incidents, service requests, problems, changes and IT assets must be managed. Many of these different processes are automated through ITSM solutions. Nearly all our survey respondents are leveraging ITSM automation tools today.
- ❁ **Observability is essential to getting insights into complex architecture and software stacks.** Continuous growth and adoption of modern cloud applications have introduced additional complexities into the technology ecosystem. The old ways of monitoring and managing applications have become inefficient with many visibility gaps. Ninety-two percent (92%) of our survey respondents are at various levels of implementing some type of observability. 1) Observability is all about analytics. Machine Learning and automation to uncover/predict possible fault patterns and efficient and fast querying of massive amounts of machine data to troubleshoot the unknown unknowns. 2) OpenTelemetry is automation in its own way. It allows teams to own their collection strategy, independent of the observability/analytics vendor that they are working.
- ❁ **APM is an essential foundation for managing service or application health and performance.** Enterprises today experience many different possible performance problems and limitations. As many factors impact application performance, it's advantageous to monitor the full picture of applications in real-time so you can pinpoint the issue and respond accordingly. Monitoring shows if resources are working. The monitoring landscape currently leveraged across the SRE practice can be seen in Figure 13.

FIGURE 13

THE CLASSIC APPROACH TO MONITORING PREVAILS

Please share with us what type of monitoring your team uses?



- Automated change management can avoid unnecessary outages and human error. Some research states² that roughly 70% of outages are due to changes in a live system. This can be avoided by leveraging automation solutions that can implement progressive rollouts, quickly and accurately detect problems caused by change and roll back changes safely if problems arise. The main focus is to remove human error from the change management loop as much as possible to avoid issues.
- Ensure sufficient capacity and redundancy for future demands in the hybrid world. Demand forecasting and technology resource planning are essential to provide sufficient capacity and redundancy to ensure and provide projected future demand for resources with the required availability. Technology resource planning must include a demand forecast needs covering people, process and technology, enabling teams to optimize and balance necessary resources across the hybrid ecosystem of on-prem or cloud, on topics important to their job.

“SRE is the essential “newOps” that fulfills the goals of enterprises leveraging “DevOps” transformations to achieve improved agility, efficiency, stability, quality, security and human satisfaction - all reliably at scale. Without SRE, traditional ITOps does not keep up with the accelerated continuous deliveries enabled by DevOps. Yet DevOps practices alone only get you to production. SRE practices are essential to inform how to prepare and operate software production as a complement to modern DevOps practices.”



MARC HORNBECK
CEO, Engineering DevOps
Consulting



SRE
IS HERE
TO STAY

CONCLUSION

SRE enhances development and operations collaboration, increases IT value from the business perspective and is an essential engineering function for digital transformation. With the rise in complexity and the craze for digital transformation across global organizations, enterprises are adopting SRE for improved collaboration between development and operations and to continuously improve the reliability and health of applications and services for their customers and business partners.

As more organizations adopt hybrid technology stacks and scale their software engineering teams to support the demands of business teams and customers, SRE continues to gain attention. SRE provides a concrete model to balance the velocity of feature development with the operational reliability risks. While sometimes applied in organizations that have adopted the cultural and mindset shift towards DevOps, it is a defined engineering practice. There are two key concepts on which SRE is built upon. 1) Ensure reliable high-quality applications, services and systems and 2) collaborate and continuously automate tasks, events and processes between Dev and Ops. The following are things to remember.

- ☀️ **SRE is an operating model for collaboration.** The topic of collaboration has always been important, but it became very important during the pandemic, largely due to the unexpected barriers for in-person interactions. The necessary physical distancing and working from home forced teams to meet virtually. Collaboration is how people work together toward a goal and when collaboration is achieved, it invigorates and promotes creativity, trust and growth among teams. Collaborating, especially across physical distances, enables individuals to create better outcomes, optimize impact and enjoy working with and learning from other smart and talented people.
- ☀️ **SRE reduces siloes across the development and operations teams.** For organizations that have not adopted DevOps, SRE circumvents the dysfunctionality of the development and operation split.
- ☀️ **SRE achieves credibility with both the development and operation side.** SRE team members share knowledge and background with the development team members. This makes it possible for developers to build applications and services which are easier to operate and support. Additionally, SREs are operation experts with an engineering background. Some of the work a SRE does has historically been done by an IT operation individual. The added knowledge and skill of a SRE are software engineering which enables a SRE to design and implement automation with software to replace many human tasks and labor-intensive processes.
- ☀️ **SRE has significantly impacted the ability of organizations to serve and retain customers and partners.** The benefits of the SRE operating model range from improved reliability of applications and services and reduction of downtime around applications and services (with “outage” cost-avoidance) to better collaboration across development and operations (enhancing the speed of innovation around products and services.)

- **New careers are possible.** SRE also provides a great opportunity for individuals to advance their careers and enrich their work-life with a sense of belonging, ongoing learning and excitement.
- **SRE requires intelligent automation.** Our research also demonstrates that intelligent automation plays a big part in enabling SRE culture to thrive while allowing teams to maintain their SLAs.
- **The hiring challenges for SRE will continue.** Recruiting and finding SREs does compete for the same candidates as those in product development and IT operations.

In 2022, the state of SRE is encouraging. We see great recognition of the SRE function within IT and the business, with benefits to both sides. SRE creates opportunities for humans to develop and upskill and has grown into an engineering function with SRE engineer as a title and role.



DEMOGRAPHICS

The following figures will describe the demographics of the Global SRE Pulse 2022. We had a total of 460 survey respondents with distribution across the globe, across verticals and midsize and large enterprises. We also had a representation of organizations across hybrid ecosystems. Our survey respondents came from the key roles within IT organizations.

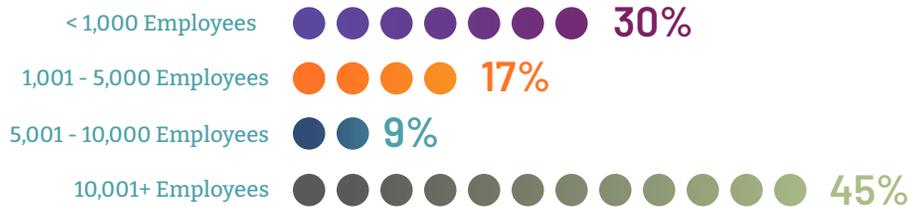
METHODOLOGY AND PARTICIPATION PROFILE

460

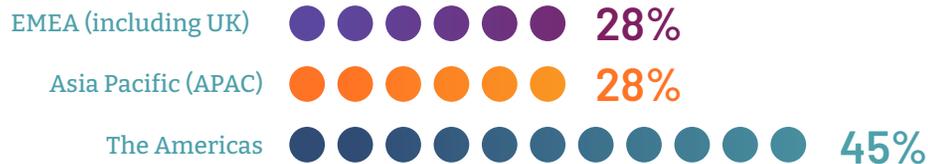
Total respondents drawn from a variety of DevOps Institute resources and sponsors

SIZE OF ORGANIZATION

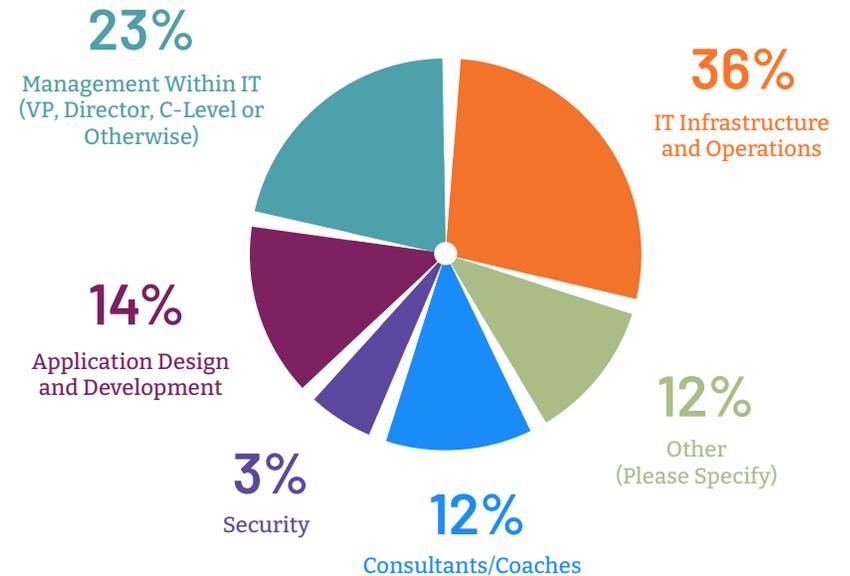
Using the best estimate, how many employees work for your company/organization worldwide



REGION



ROLES



METHODOLOGY

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The Global SRE pulse 2022 is the first report capturing the perspectives of individuals that are involved in recruiting, hiring or working within SRE. We set out to understand and get a pulse of SRE in terms of adoption, best practices, challenges and outcomes. We probed for human and automation aspects. The target population for this survey was the community of SRE practitioners, hiring managers, team leaders and other individuals who are familiar with SRE. We targeted all industry verticals and all company sizes. We promoted the survey via online promotions, social media, press releases and the DevOps Institute and sponsor networks. We designed our survey questions with input from various team members, industry experts and sponsors. We tested our survey questions extensively to ensure good constructs and we leveraged SurveyMonkey Enterprise as our survey and design instrument. We collected primary data from our survey respondents. The survey was open from March 2022 until May 2022. We received 974 responses. Of the total, 460 respondents had adopted SRE which we used as the base for our analysis.

Interviews

We also leveraged personal interviews as a complementary research method to provide additional in-depth details. The interview scripts consisted of brief but open questions. The results from the interviews are not generalizable because of the subjectivity of the data obtained. However, their flexible format contributed to a deeper explanation and understanding and allowed us to augment our report with further details.

Instrument Design

For this research, the writer designed one questionnaire script and one brief interview script. The questionnaire for the survey takers from the companies consisted of 27 closed questions related to SRE skill priorities and importance within their teams or jobs. The main part of the survey focused on the adoption, best practices, activities, outcomes and challenges within SRE. The second part included questions on the health and culture of the SRE team and individuals. The last part of the questionnaire consisted of demographic questions related to company size, region, the professional role of the participants and the IT environment.

If you have questions about our survey methodology, please contact customerservice@devopsinstitute.com.

SPONSOR PERSPECTIVE

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“Digital transformations and consumer expectations are making the reliability and security of today’s applications mission critical, and SREs are on the front lines of that effort. We are proud to partner with the DevOps Institute to raise awareness about SRE practices and help the community understand the benefits, opportunities and challenges of this new operating model.”

SAM FELL

Vice President, Observability
Product Marketing
Founding and Platinum Sponsor Sumo Logic



“Customers today, whether internal or external, expect 100% availability for the systems they use. The role of site reliability engineering coupled with effective observability solutions are two foundational aspects in ensuring reliability. We are pleased to support this important research from DevOps Institute. It will help us all understand where the industry is at, the challenges organizations are facing, and the goals they have set for forming SRE teams and implementing observability practices.”

ANDREAS PRINS

Vice President of Product,
Platinum Sponsor StackState



AUTHOR

.....



EVELINE OEHRlich

Chief Research Officer,
DevOps Institute

Eveline Oehrlich is Chief Research Officer at DevOps Institute. As former VP and Research Director at Forrester Research, Eveline led and conducted research around a variety of topics including DevOps, Digital Operational Excellence, Cognitive Intelligence and Application Performance Management for 12 years. She is the author of many research papers and thought leadership pieces and a well-known presenter and speaker. She has more than 25 years of experience in IT. Her passion is to help companies transform their IT organization, processes and tools towards high-performing teams, enabling their business partners to achieve better business results. She has helped some of the largest enterprises across the world to adopt new strategies, workflows and automation within their journey toward a digital business.

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THANK YOU



Sponsors

DevOps Institute extends a special thank you to the following partners for helping make this year's survey possible: Founding and Platinum Sponsor Sumo Logic, Platinum Sponsor StackState and Gold Sponsor Sedai.

Acknowledgments

DevOps Institute would like to thank the many people who have provided their thoughts, ideas, inputs and guidance on this year's report. This work is not possible without including and connecting with subject-matter experts, partners and friends worldwide. We are incredibly grateful to them for their willingness to share, collaborate, discuss, critique and contribute to this report. We also want to thank a few individuals who went above and beyond to help us with the survey and the publication of the report: Julia Pape, Jaida Olvera, Karen Skiles, Ingrid Sides, Christina Majic, the DevOps Institute Ambassadors and all of our sponsors. And finally, a huge thank you to all the people who have completed our survey, which is the foundation of our work.

Endnotes

SRE is credited to Benjamin Treynor Sloss, who joined Google in 2003 and was tasked with building a team to help ensure the health of Google's production systems at scale. His approach was to create an operations team with the background of a software engineer. Since then, it has transformed from a best practice model into an operating model for many other organizations.

Sixty two percent of total survey respondents said they have applied SRE today, 24% said they did not apply SRE today and 14% did not know.

GLOBAL SRE PULSE 2022

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Source Index

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