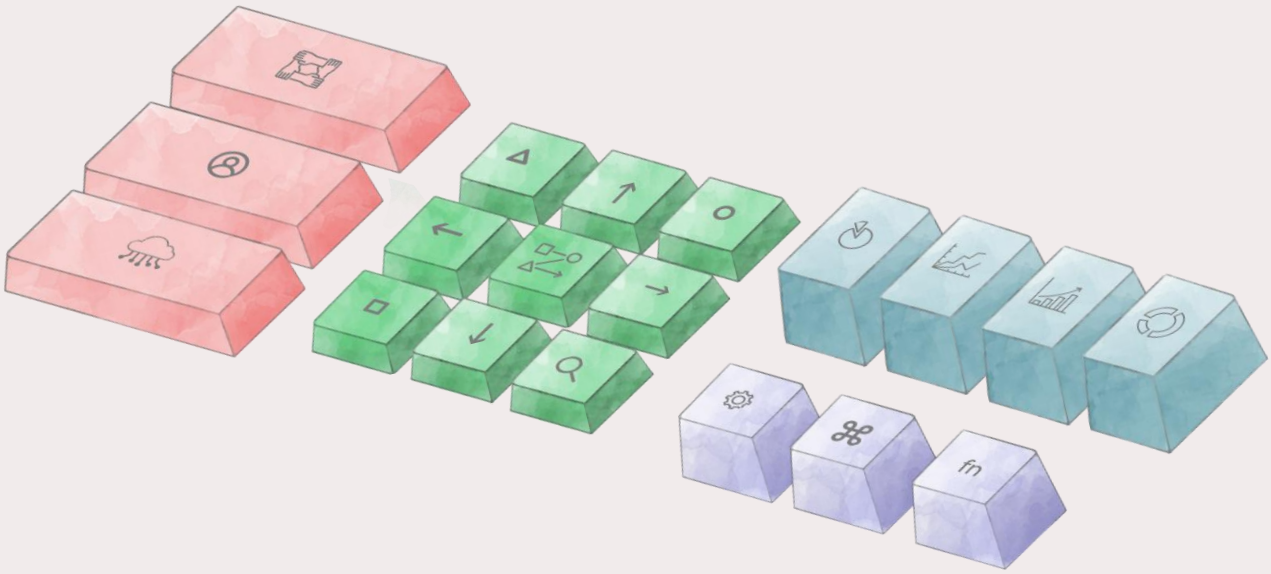
ICONIQ | Growth

The R&D Reporting Guide

Key metrics and frameworks for technology organizations to track and leverage, including templates for best-in-class reporting

Engineering Series

March 2025



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About the Research

R&D is increasingly becoming a bigger line item in total spend and **a key differentiator for companies**, yet it is often the function that organizations have the **least visibility into**. Unlike finance or sales and marketing, it is also challenging for engineering leaders to find relevant or publicly available data and insights to benchmark their engineering team performance.

In the ICONIQ Growth Engineering Series, we use **organizational data and industry perspectives to provide detailed answers to the key R&D questions** we receive from SaaS leaders[1]. Although engineering and product development are closely tied, this series is focused primarily on engineering-specific metrics and challenges. We examine topics spanning the **state of modern-day engineering orgs, developer productivity, compensation, and org structure** to share best practices and proprietary benchmarks to help you scale your engineering organization.

Explore more ICONIQ Growth research

Notes: (1) Please see Page 5 for more information on this data

What's included?

Part I: R&D Reporting Best Practices

Best practices for designing and operationalizing your engineering reporting engine based on learnings and perspectives from the ICONIQ Growth portfolio and network[1].

Part II: The R&D Metrics Guide

Includes definitions, calculations, and frameworks for key metrics, and best practices for operationalizing the engineering organization. Throughout this guide, preferred formulas are included; however, there are multiple ways to calculate various KPIs and other methods may be more relevant for your specific engineering organization or business model.

Companion Templates

ICONIQ Growth templates that can be leveraged to track and report on these metrics, and illustrative examples of best-in-class reporting:

R&D Board Slides	"Must-have" product and engineering board deck slides

Who's this for?

This resource is made **primarily for software companies**. However, most of the metrics, frameworks, best practices, and templates included are **widely applicable** across other technology business models. The metrics, frameworks, and templates in this guide will be most useful for CEOs and heads of engineering and product teams.

How do I use it?

This guide is meant to help companies of all sizes in building out their engineering reporting motion. The templates included can be **leveraged for internal reporting** and the frameworks and best practices can help engineering organizations **refine and scale their engineering operations**.

Although engineering and product development are closely tied, this guide will be **primarily focused on engineering specific updates and challenges.**

Notes: (1) For a complete list of ICONIQ Growth portfolio companies, please see the Appendix

Data Sources

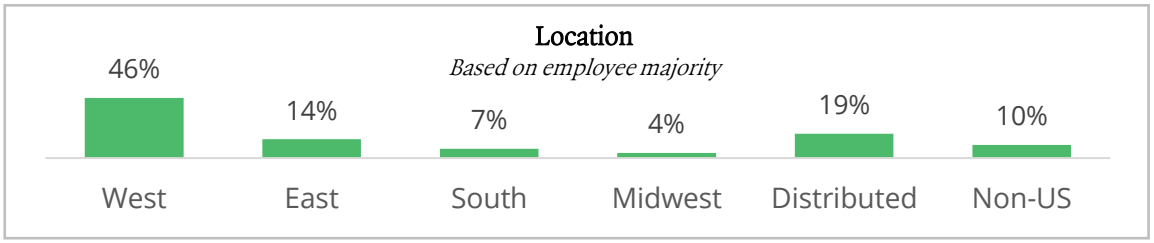
Throughout this guide, we include relevant benchmarks denoted by this marker:

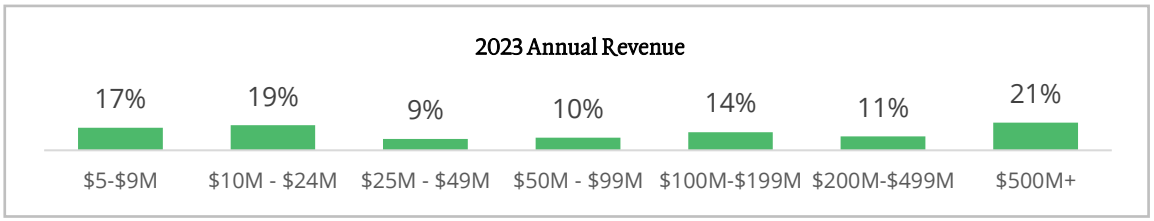
ICONIQ Growth Insights

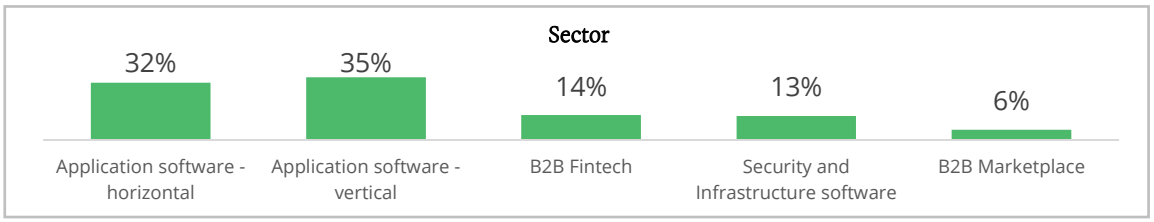
All engineering benchmarks shown summarize data from a December 2023 survey of **200 engineering executives at B2B SaaS companies, including founders, CTOs, and VPs of Engineering.**

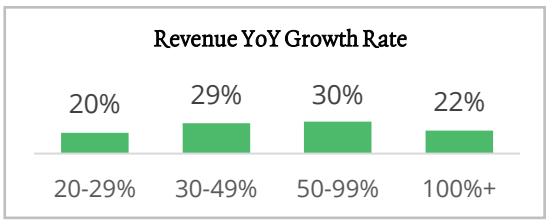
Data from Engineering Leaders

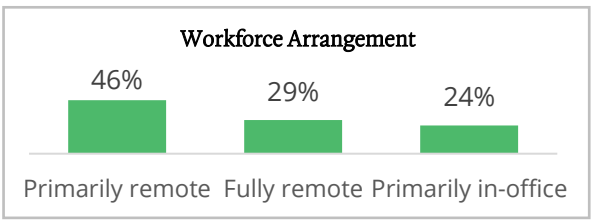
Firmographics







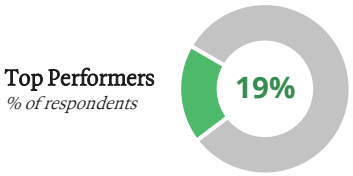




Methodology

In this series, select companies are referred to as "top performers" because they meet the following criteria

- **Scale**: Annual Recurring Revenue (ARR) > $10M
- **Growth**: 2023 YoY ARR growth >50%
- **Retention**: Annual net dollar retention 120%+



Notes: This data was collected anonymously by an external survey. Survey responses include some but not all ICONIQ Growth portfolio companies as well as companies not part of ICONIQ Growth's portfolio. For a complete list of ICONIQ Growth companies, please see the Appendix.

Industry Perspectives

Throughout this guide, we also weave in perspectives, insights, and best practices from **engineering executives in the ICONIQ Growth B2B SaaS portfolio and network**. Certain industry perspectives have been anonymized to protect company-level information.

Perspectives were gathered via interviews with the following collaborators:

1Password

Pedro Canahuati
Chief Technology Officer

BetterUp

Amol Kher
VP Engineering

DevRev

Manoj Agarwal
Co-founder, President

DRATA

Daniel Marashlian
Co-founder, Chief Technology Officer

DX

Abi Noda
CEO and Co-Founder

ezcater

Erin DeCesare
Chief Technology Officer

recharge

Joseph Mosby
Director of Engineering

UNITE US

Raffaelle Breaks
Chief Product and Technology Officer

virtru

Dana Morris
SVP, Product & Engineering

Wealthsimple

Diederik van Liere
Chief Technology Officer

WRITER

Waseem AlShikh
Co-founder, Chief Technology Officer

And additional insights from the ICONIQ Growth Technical Advisory Board

Aditya Agarwal
Former CTO at Dropbox

Formerly: Co-founder at Cove, Director of Product Engineering at Meta

Dropbox Meta

Anantha Kancherla
VP ADAS at General Motors

Formerly: Head of AI Platform at Meta, VP Engineering at Lyft Level 5

gm Meta lyft

Matt Eccleston
Former VP Growth at Dropbox

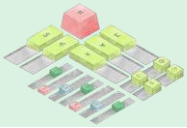
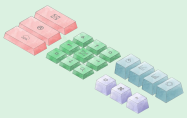
Formerly: Chief Architect at VMware

Dropbox vmware

Related Materials

This guide is one in a series of ICONIQ Growth engineering reports. Benchmarks for many of the KPIs and metrics included in this guide are displayed in these materials and other ICONIQ Growth content, which will be linked throughout this report whenever relevant.

Access the full Engineering Series

The State of Engineering 	• The future of engineering • DevOps maturity • Developer experience • Impact of AI
Product Leadership **Engineering Leadership** 	• Hiring your next Head of Product • Hiring your next Head of Engineering
Building Engineering and Product Teams 	• Org structure and make-up of R&D teams • Typical headcount ratios • Diversity in engineering
Compensation & Incentives 	• Career paths • Total cash compensation for R&D roles • Performance evaluation
The R&D Reporting Guide 	• Developer productivity • Capacity allocation • Key metrics to report on for various audiences
Companion Template **Engineering Board Slides**	

It is also important to note that product and engineering reporting should not operate in a silo and is very much intertwined with other functional updates. Please feel free to reference our other reporting guides to support finance and GTM updates.

The GTM Reporting Guide

The SaaS Glossary

PART 1

Reporting Best Practices

The Metric Map

A framework for organizing a company's universe of data

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Reporting Should Reflect Scale

Key questions will change as an organization grows

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Tracking Developer Productivity

Defining developer productivity and best practices for tracking and reporting on it

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The Essential R&D Scorecard

The essential metrics every R&D organization should be reporting on

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The Essential R&D Board Deck Slides

Updates & metrics that should be included in board materials at any scale

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Click here to skip to Part 2: The R&D Metrics Guide

Why do I need this?

R&D is increasingly becoming a bigger line item in OpEx and a key differentiator for companies. However, unlike Finance or GTM updates, we have noticed there is **not a standardized approach to reporting** on engineering updates and **how these tie to overall business outcomes**.

Matt Eccleston
ICONIQ Growth
Technical Advisory Board

Formerly VP Growth at Dropbox, Chief Architect at VMware

Dropbox vmware

The number one thing I spend time with engineering leaders on is not engineering, it's how engineering interfaces with the rest of the company.

Many engineering leaders are accustomed to focusing solely on engineering tasks. However, as the company grows, they need to figure out how to communicate and coordinate with sales, finance, support, marketing, and the Board.

If you have to negotiate with other parts of the company, you need to understand their language and how they think about the business.

This guide can be used to frame **engineering updates for various forums, such as engineering quarterly reviews, annual planning, or Board updates.** While the reporting structure and focus will obviously vary based on the stage each company is at, we believe consistent quarterly reporting of key engineering metrics are extremely beneficial to **management, the Board of Directors, and the engineering teams** themselves for any companies **spending more than $10M annually on R&D**.

While these metrics are intended to solicit discussion around key topics like engineering spend, headcount, and efficiency, we also believe that just having quarterly reporting will **force engineering teams to be more introspective as they prepare these metrics each quarter**. Rather than tracking every metric under the sun, it is more important to get into a **recurring motion of looking at and understanding longitudinal data**.

Through more structured and consistent reporting, we hope this guide will **facilitate thoughtful conversations to build a more productive and happy engineering organization** (often your most expensive asset).

The Metric Map

We believe designing a metric map is one of the most important steps to achieving reporting excellence in any organization. **A metric map is a framework for organizing a company's universe of data**. To create this, identify all the key metrics the engineering team should track, who those metrics should be accessible to, and how often these metrics are reviewed by or shared with that audience.

Here's an example of a metric map framework for an engineering organization:

Shared more often / Shared less often

Internal stakeholders / External stakeholders

Audience	Description	Metrics shared *Select examples*
Leadership	All the information a **company or team leader regularly reviews or have access to**. This often includes employee-level information that would be shared with the relevant employee, but would not be shared with a broader audience	The universe of metrics tracked at a company, including: • Employee performance, engagement, compensation • Lead time metrics across teams • Sprint velocity • ROI of engineering initiatives
Team	Information typically shared with **employees in a team or group setting**. Some of this information, such as employee performance, would not normally be shared with a broader audience.	• # incidents or defects • Lead time metrics (e.g., review time, pickup time) • Code coverage • % of code delivered vs committed
Company-wide	Information typically shared with the **entire employee base** in settings such as an **all-hands meeting** or company-wide report	• Product and customer adoption metrics • Upcoming releases • % roadmap shipped on time • Cost of poor quality
Board of Directors	Information typically shared during **Board of Director meetings**. Of course, additional information can be shared upon request	• Product roadmap • R&D spend (people, infrastructure) • Engineering allocation • Development blockers
Shareholders	Information that would be shared with **company shareholders**	*Based on shareholders rights* – e.g., annual financial statements, product roadmap, user metrics
Public	For a public company, information that would be shared in **public filings**	*Based on SEC guidelines* – e.g., quarterly and annual financial statements with select R&D KPIs[1]

1 See SaaS key metrics disclosed upon IPO and ongoing after IPO in the ICONIQ Analytics Path to IPO report

Reporting Should Reflect Scale

We believe investing in the operational infrastructure to support reporting rigor is important at all stages. However, companies face different challenges as they scale, and we believe reporting should reflect this by placing **emphasis on different types of key questions and additional metrics at each stage of growth.**

Below summarizes guidance for the types of key questions we typically emphasize at different stages of growth. **While all these questions and metrics are important throughout the company lifecycle, some may deserve particular focus at a certain scale:**

Company Size	Emphasized Questions	Example Metrics
Early **<50 engineers** *Finding product-market fit*	Emphasis is primarily on: • What are our signals of **product market fit**? • How is our **ideal customer profile** evolving and how does our **product address their needs**? • How can we **prepare our architecture to handle future growth**? • What is our short and long-term **product roadmap**? • How do we **attract top engineering talent**?	Product adoption rate User growth rate Net promoter score % delivered vs committed Deployment frequency R&D headcount
Early Growth **50-100 engineers** *Scaling the product and engineering organization*	Start putting more emphasis on: • What **new features or products** do we need to build? • How should we **structure teams to optimize collaboration** and efficiency? • How do we **refine DevOps practices to improve efficiency**? • Do we have the **right infrastructure, tools, and technology** in place to support continued scale? • How do we **retain our top engineering talent**?	*All metrics in previous stage, plus:* R&D as a % of revenue Cycle time Team ratios (e.g., engineer to manager, engineer to QA, etc.) Headcount attrition Mean time to recovery Code coverage Service uptime
Growth **100+ engineers** *Focus on assessing and improving developer experience*	Start putting more emphasis on: • How do we **align the engineering strategy with business objectives**? • What **metrics should we use to track engineering effectiveness**? • How do **we manage tech debt and increase time spent on high-priority investments**? • How do we build and **maintain a cohesive engineering culture** at scale?	*All metrics in previous stage, plus:* % roadmap shipped on time Developer satisfaction Developer Experience Index % time spent on new capabilities % time spent on KTLO Cost of poor quality Revenue per engineer R&D OpEx per R&D FTE

Tracking Developer Productivity

Over the past few years, we have seen different **variations of frameworks like DORA, SPACE, and DevEx all with the aim of measuring engineering productivity**. However, we found each framework to be **missing critical components** and wished that there was a comprehensive framework that **combined business impact, development velocity, performance and reliability, and developer effectiveness**.

Created by the authors of DevEx and SPACE, the DX Core 4 framework is a unified framework for measuring developer productivity and includes four dimensions: **speed, effectiveness, quality, and business impact**. We believe this framework provides a focused set of metrics that **work effectively at any sized organization** and allows organizations to **get immediate, actionable insights into productivity questions**.

The DX Core 4

	Speed	Effectiveness	Quality	Impact
Key Metric	• Diffs per engineer* (PRs or MRs) *Not at individual level	• Developer Experience Index (DXI) Measure of key engineering performance drivers, developed by DX	• Change failure rate	• % of time spent on new capabilities
Secondary Metrics	• Lead time • Deployment frequency • Perceived rate of delivery	• Time to 10th PR • Ease of delivery • Regrettable attrition	• Failed deployment recovery time • Perceived software quality • Operational health and security metrics	• Initial progress and ROI • Revenue per Engineer* • R&D as % of revenue* * Only at organizational level

Read More

Source: DX Core 4

The Essential Engineering Scorecard

We believe there is not 1 single metric that encompasses developer productivity. Instead, it is important for leaders to monitor **different leading and lagging indicators of engineering performance** across factors like business impact, performance, developer effectiveness, and team health & culture. And rather than point in time reporting, it is essential to **monitor the performance of these indicators over time**.

Include an Engineering Scorecard in board updates, with quarterly and annual details on actuals and progress vs. plan. Rather than tracking every metric under the sun, it is more important to get into the cadence of regularly monitoring and reporting on these metrics over time. For example, **start with 1-2 metrics from each category** of the DX Core 4 framework.

Illustrative example with randomized data[1]

		PRIOR QTR	THIS QTR	THIS YEAR		
		ACTUAL	ACTUAL	LATEST FCAST	ANNUAL PLAN	STATUS
Speed	PRs per Engineer	3.5/week	3.3/week	3.4/week	3.6/week	*At risk*
	Lead Time	70 hours	60 hours	65 hours	60 hours	*At risk*
	% Delivered vs Committed	70%	80%	80%	85%	*On track*
Effectiveness	DXI	60	57	58	60	*At risk*
	Ease of Delivery	8/10	7/10	8/10	8/10	*On track*
	Regrettable Attrition	2.5%	5%	5%	5%	*On track*
Quality	Change Failure Rate	2%	3.5%	3.5%	3%	*At risk*
	Mean Time to Recover	8 hours	7 hours	7 hours	7 hours	*On track*
Impact	% of Time Spent on New Capabilities	60%	50%	50%	45%	*On track*
	Revenue per Engineer	$200K	$225K	$250K	$250K	*On track*
	R&D as a % of Revenue	60%	50%	50%	45%	*At risk*

1 The R&D scorecard is illustrative and not a proxy for independent management decisions (not a benchmark for best in class)

The Essential R&D Board Slides

Regardless of scale, there are some updates and metrics that we believe should typically be included in the R&D section of a board deck, if relevant to a company's business model.

Download the ICONIQ Growth Engineering Board Slides Template

1. **Product Roadmap** — Short-term and long-term roadmap of product enhancements
2. **New Product or Feature Spotlight** — Spotlight on any upcoming products or features
3. **Product Adoption Metrics** — Summary of adoption metrics (e.g., MAUs, NPS, etc.)
4. **R&D Scorecard** — Update on north star and other key engineering KPIs
5. **Capacity Allocation** — Resource allocation across KTLO and elective investments
6. **12-month Forward Org Chart** — View of R&D org structure, leadership, and gaps
7. **Open Leadership Positions** — Summary of open leadership positions, hiring plan, and expertise gaps
8. **Team Update & Headcount Planning** — Longitudinal view of key roles and hiring plan
9. **Developer Satisfaction** — Longitudinal view of developer satisfaction and friction points
10. **Development Bottlenecks** — Summary of development bottlenecks and remediation plan

PART 2

R&D Metrics

Rather than tracking every single metric, we believe it is most helpful to identify 1-2 metrics across each of these categories to set a baseline and understand trends and longitudinal health over time

Key Questions to understand	Example Metrics to track	Page #
How does our work contribute to overall business outcomes and success?	• R&D OpEx as a % of Revenue • Revenue / Engineer • Revenue / Infrastructure Cost • R&D OpEx per R&D FTE • % delivered vs committed • % time spent on new capabilities • % roadmap shipped on time	*16-20*
Have we built a product that attracts and retains customers?	• Product adoption rate • Net promoter score • Customer effort score	*21-22*
Is what we're shipping high-quality and reliable?	• Cost of poor quality • Code coverage • # critical defects • # defects	*23*
Are developers set up with the right tools and processes to minimize friction and efficiently complete work?	• Developer Experience Index (DXI) • Ease of delivery • PR to Release time • Time spent on code review • DORA metrics • Developer satisfaction	*24-26*
Are developers fulfilled and happy? Is the organization effectively set up to support developers and enable collaboration?	• Developer satisfaction • Attrition rate • Key headcount ratios	*27-30*

R&D Investment

We believe one of the most important responsibilities of engineering leadership is to serve as the steward of the engineering budget and clearly communicate how engineering investments map back to business value when interfacing with the rest of the organization.

R&D as a % of Revenue

Measures how much R&D operating expenses a company is spending in relation to their total revenue, which is an important signal of ROI.

$$\frac{R\&D\ OpEx}{Total\ Revenue} * 100$$

ICONIQ Growth Insights

R&D spend typically comprises ~30-40% of revenue for mature companies. Please reference our Growth & Efficiency series for more detail on benchmarks by stage.

> **Engineering can feel like a mysterious black box. Engineering leaders need to clearly articulate engineering priorities, both the leverage points and inefficiencies, and communicate the ROI to the CEO and CFO to build empathy and shared understanding.**
>
> Matt Eccleston, ICONIQ Growth Technical Advisory Board

Infrastructure as a % of Revenue

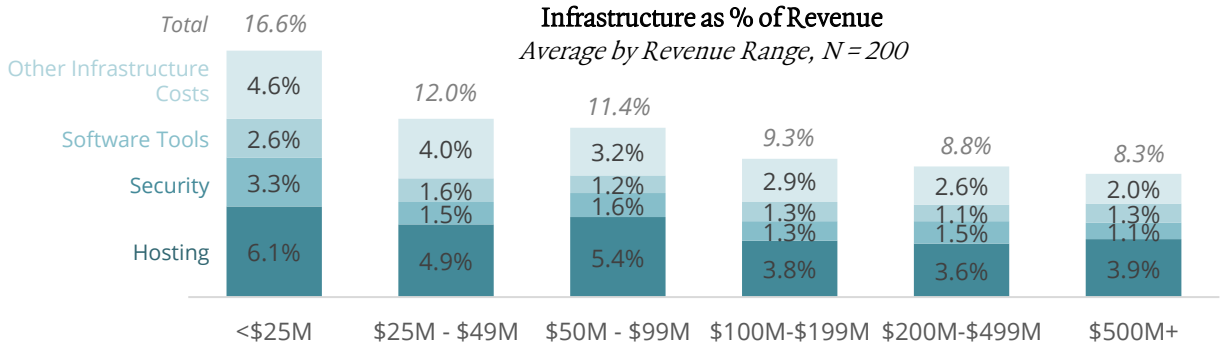
Tracking infrastructure spend becomes increasingly important as companies scale and prioritize investments that should ideally be yielding future leverage for the company (e.g., automation, AI, etc.).

This metric measures the ratio between how much revenue companies are generating vs. how much is spent on infrastructure, including costs like hosting, GPUs, and R&D tools and technology.

$$\frac{Infrastructure\ Costs}{Total\ Revenue} * 100$$

ICONIQ Growth Insights

On average, infrastructure costs typically comprise 7-15% of total revenue depending on the company's scale.

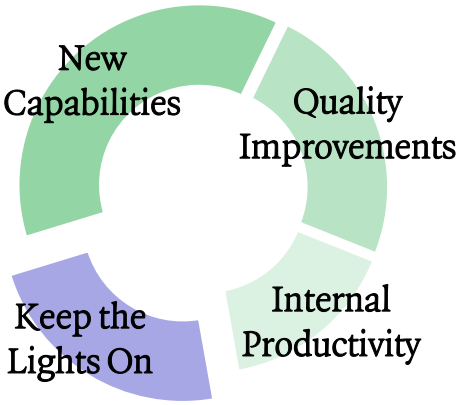


Source: ICONIQ Growth Engineering Survey (December 2023) and Perspectives from engineering executives in the ICONIQ Growth B2B SaaS portfolio and network

Communicating R&D Investments

As an engineering organization grows, different types of questions and challenges start to emerge around the **investments in time and people the organization is making**.

It's critical to have a framework in place that allows the company to think about productivity and **prioritize engineering investments in a way that makes sense for engineering internally and is also understandable for the rest of the business**. We believe the below framework helps engineering leaders categorize and track engineering investment.



You can read more about the framework here

Keep the Lights On (KTLO)

The minimum tasks required to maintain the current level of service in the eyes of our customers

For example:
- Maintaining current security posture
- Maintaining current levels of service uptime
- Service and ticket monitoring & troubleshooting
- Addressing functional defects reported by customers
- Regular or routine internal procedures
- Staying up to date with external dependencies
- Browsers, libraries, platforms, web services, partner changes, hardware, etc.

Elective Investments

New Capabilities
- Adding a new product
- Adding a new feature or sub-feature
- Supporting a new platform or partner application

Quality Improvements
- Customer requested improvements
- Better performance and/or utilization
- Iterations to improve adoption, retention, and quality
- Improved product reliability or security

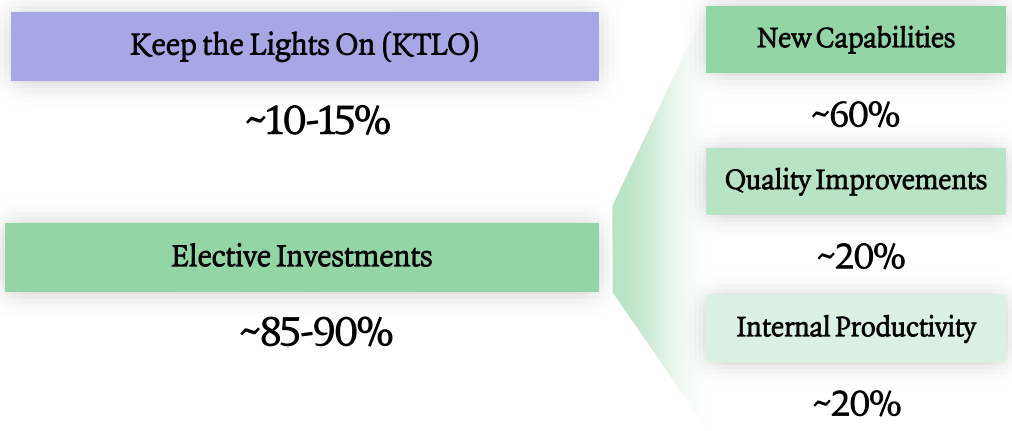
Internal Productivity
- Better developer tooling
- Testing automation
- Code restructuring and re-architecture
- Work to reduce size of *KTLO* bucket in the future

Communicating R&D Investments

This framework **focuses the conversation on the levers and choices the business truly has**, by categorizing engineering allocation into 4 key buckets: New Capabilities, Quality Improvements, Internal Productivity, and Keep the Lights On (KTLO).

We believe the general rule of thumb is to **limit time spent on KTLO activities to 10-15% of your total time and utilize the remainder of your time on elective investments.**

ICONIQ Growth Rule of Thumb



Within elective investments, we generally see companies aim to maximize the time spent on building new capabilities. However, it is natural for these ratios to change as products mature and companies will need to spend more time on quality improvements and internal productivity.

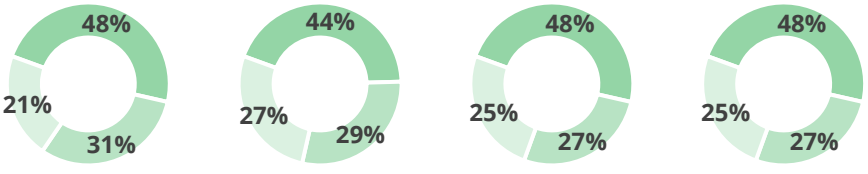
During meetings, discuss engineering allocation across these key buckets for the **prior quarter, current quarter, and next two to three quarters.**

Engineering Board Slides

Sample Reporting

	Last Quarter	Current Quarter	Next Quarter	Next 2-3 Quarters
New Capabilities	Launched Product B	Adding X features	Adding X features	Supporting partner application
Quality Improvements	Worked on improvements for enterprise Customer B	Key improvements for customers	Iterations to improve customer adoption	Improved product reliability + security
Internal Productivity	Framework upgrades	Better developer tooling	Better developer tooling	Testing automation
Elective Investments	80%	80%	80%	85%
KTLO	20%	20%	20%	15%

Elective Investments
Engineer Allocations



See the ICONIQ Growth SaaS Glossary for more information All examples are illustrative and may not be relevant for all companies.

Planning and Delivery Efficacy

We believe one of the most important responsibilities of engineering leadership is to serve as the steward of the engineering budget and clearly communicate how engineering investments map back to business value when interfacing with the rest of the organization.

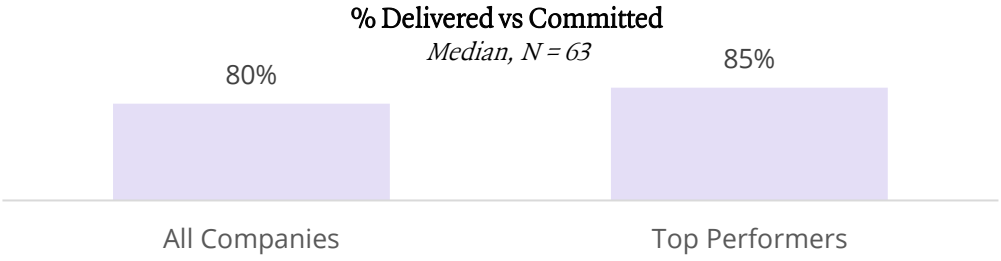
% Delivered vs committed

Effective engineering organizations are able to close the gap between what was delivered vs originally planned. Tracking how much work (usually in the form of story points or some other measurement of code) was delivered vs committed can allow organizations to get better visibility into any friction points in the planning and delivery process.

$$\frac{Story\ Points\ Delivered}{Story\ Points\ Committed} * 100$$

ICONIQ Growth Insights

On average, engineering organizations deliver 80% of their committed code / story points[1], with top performing organizations having slightly better planning and delivery accuracy.



Time spent on new capabilities

Where possible, engineering organizations want to maximize the amount of time and resources spent on building or augmenting new capabilities vs. KTLO/toil. This metric measures how much time (usually in the form of employee or time allocation) is spent on building new capabilities (new products or new features / sub-features).

$$\frac{Time\ \ Spent\ on\ New\ Capabilities}{Total\ Time\ in\ Period} * 100$$

ICONIQ Growth Insights

On average, engineering organizations are spending 35-50% of their time on building new capabilities each quarter[1].

% Roadmap shipped on time

Measures how much work (usually in the form of features or some other measurement of code) was shipped on time vs originally planned in the roadmap.

$$\frac{Features\ Shipped\ on\ Time}{Features\ Planned\ in\ Roadmap} * 100$$

ICONIQ Growth Insights

On average, engineering organizations ship 75% of their planned roadmap on time each quarter[1].

Notes: (1) ICONIQ Growth Engineering Survey (December 2023)

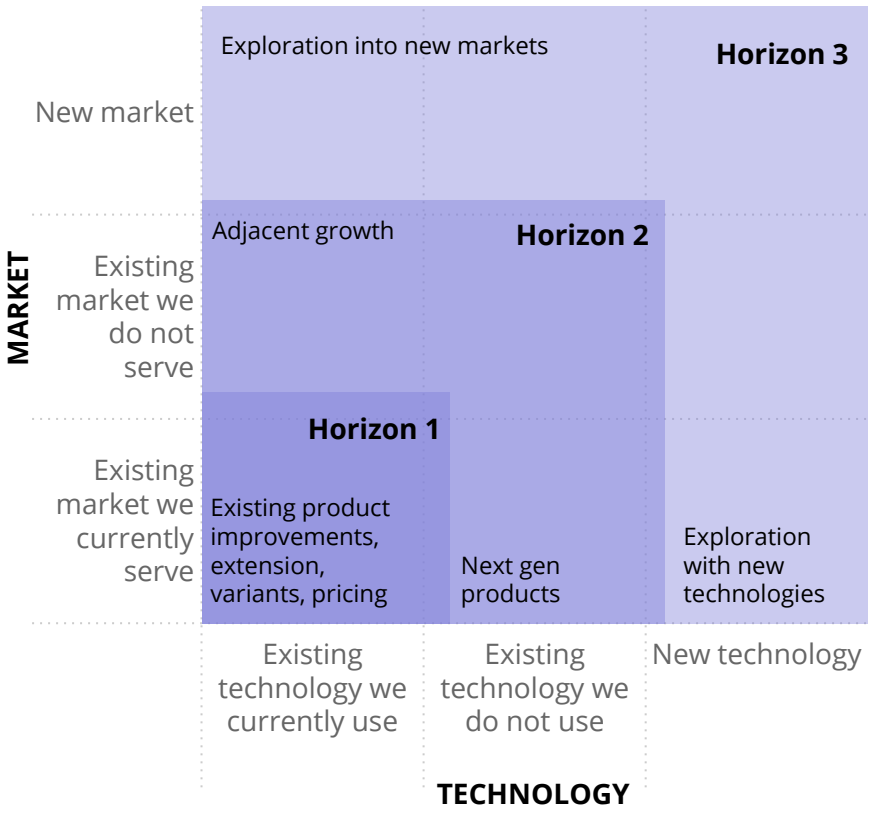
Presenting The Product Roadmap

A well-prepared product roadmap not only communicates the planned initiatives and goals but also **fosters trust and secures buy-in from organizational stakeholders and the Board**. Even the process of preparing a time-boxed roadmap can enable technology leaders to have **critical discussions with cross-functional teams around expectations, priorities, and resourcing needs**.

> **Deadlines are not always bad and can force conversations around prioritization. We consolidate all asks from cross-functional teams (sales, marketing, etc.) in a roadmap document aligned to a monthly and quarterly release schedule shared across the organization. This drives shared understanding and negotiation of different priorities across the org.**
> VP Engineering | Growth Stage ($100M+ ARR), Operations & Workflow Company

While not always feasible, we generally see best-in-class product reporting include a **view of upcoming product and feature releases for the next 12 months, in addition to a longer-term future view**.

Prioritizing Investments in New Products or Features



One helpful framework to prioritize and communicate investments in new products or features / sub-features is the 3 Horizons model. As companies grow, it can be difficult to keep innovating at the same pace and companies will have to make trade-offs when evaluating new growth opportunities.

When thinking about new opportunities, the 3 Horizons model posits that companies should aim to target ~70% of their time and resources on Horizon 1, ~20% on Horizon 2, and ~10% on Horizon 3 opportunities (however, this may vary based on your scale / stage of growth).

ICONIQ | Growth

Source: Perspectives from engineering executives in the ICONIQ Growth B2B SaaS portfolio and network

Product Usage & Adoption Metrics

Tracking product usage and adoption metrics can allow product and engineering teams to get insight into **key business outcomes such as customer health and retention**, in addition to any **product or customer adoption gaps**.

Active User Rate

Measures the proportion of users that are active users (hit a minimum activation threshold on a daily, weekly, or monthly basis) out of the total user pool of a specific customer:

Daily active user (DAU) rate %	$\frac{\#\ daily\ active\ users\ for\ X\ customer}{Total\ users\ for\ X\ customer} * 100$
Monthly active user (MAU) rate %	$\frac{\#\ monthly\ active\ users\ for\ X\ customer}{Total\ users\ for\ X\ customer} * 100$

Adoption Rate

Measures the portion of users that have adopted a new feature or product. This metric is most useful in the first ~12 months after releasing a new product (or activating a new product or feature for a specific customer)

Daily or monthly active users can be used, and this can also apply at the feature-level

$$\frac{New\ monthly\ active\ users\ for\ X\ customer}{Total\ signups\ for\ X\ customer} * 100$$

Stickiness Rate

(%) Measures how well the product is retaining active users

$$\frac{Daily\ active\ users\ for\ X\ customer}{Monthly\ active\ users\ for\ X\ customer} * 100$$

User Retention Rate

Measures the retention of users at a given customer

$$1 + \frac{Customer\ X\ users\ at\ EOP - users\ deactivated\ in\ period}{Customer\ X\ number\ of\ users\ at\ BOP} * 100$$

User Growth Rate

(%) Measures how quickly and consistently a customer's user base is growing. This can be measured on a monthly, quarterly, and/or annual basis

$$\frac{Customer\ X\ users\ at\ EOP}{Customr\ X\ users\ at\ BOP} * 100$$

Customer Health Metrics

While we believe product usage and adoption metrics are the strongest leading indicators of customer health, churn, and retention, various customer satisfaction metrics should also be tracked. These can **provide supplemental insight into how the user and customer experience an organization's product and services**.

Time to Implement vs. Goal	Compares the time it took to implement a customer to the expected or promised implementation timeline	$\frac{\text{Days until implemented for X customer}}{\text{Expected days until implemented for X customer}} * 100$
Customer Penetration Rate	Compares the number of users signed up from a specific customer to the total addressable user pool at that customer	$\frac{\text{\# users signed up from customer X}}{\text{Total \# addressable users at customer X}} * 100$
Net Promoter Score NPS	Measures the likelihood of a user to recommend the product to another potential user	*% of promoters at company X - % of detractors at company X*
Customer Effort Score CES	Measures the ease with which a customer interacts with a specific product, service, or support experience (based on a likert scale)	$\frac{\text{\# of agree responses from customer X}}{\text{Total \# responses from customer X}} * 100$
Customer Satisfaction CSAT	Best used for measuring a customer's satisfaction with a company's support or service offerings, rather than overall customer health	$\frac{\text{\# satisfied users at customer X}}{\text{total users scored from customer X}} * 100$

Quality and Reliability

In addition to delivering work on-time, it is equally important for engineering teams to ship products that are high-quality and reliable. The metrics included below allow teams to get visibility into leading and lagging indicators of quality.

Rework Rate

Measures the percentage of code that had to be reworked in a given period due to errors, missed requirements, or other quality factors, which is an important measure of productivity loss

$$\frac{Lines\ of\ Code\ Changed\ or\ Deleted}{Total\ Lines\ of\ Code\ Written} * 100$$

ICONIQ Growth Insights

Median rework rate is typically around 15%[1], with limited variation across company stages.

Code Coverage

Code coverage determines the percentage of code that is successfully validated in testing and is an important preventative step to improve test suite quality and minimize bugs

$$\frac{Lines\ of\ Code\ Tested}{Total\ Lines\ of\ Code} * 100$$

ICONIQ Growth Insights

Median code coverage is typically 70%[1], with top performers on average having slightly higher code coverage.

Cost of Poor Quality

Measures all costs incurred due to poor quality such as defect fixes, customer impact, rework time, and prevention costs, as a of total revenue

$$\frac{All\ Costs\ Incurred\ due\ to\ Poor\ Quality}{Total\ Revenue} * 100$$

ICONIQ Growth Insights

Median COPQ across respondents from our latest survey was 15% of total revenue[1].

Number of Critical Defects

Measures the total number of critical defects in a given time period (monthly, quarterly) or per release. In addition to critical defects, organizations should also track defects with major and moderate severity.

Service Uptime

An important measure of service reliability, this metric measures the amount of time the system and services are operational

$$\frac{Total\ Opoerational\ Time\ in\ Given\ Period}{Total\ Time\ in\ Given\ Period} * 100$$

ICONIQ Growth Insights

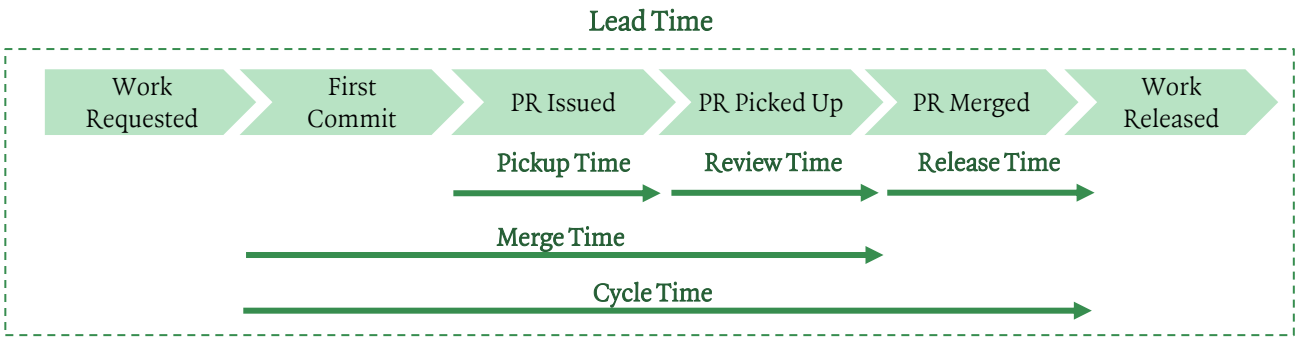
Median service uptime is typically 99.00%[1].

Notes: (1) ICONIQ Growth Engineering Survey (December 2023)

Are developers set up with the right tools and processes to minimize friction and efficiently complete work?

Lead Time Metrics

One way to understand developer effectiveness is to assess the time between key phases in the software development lifecycle. Tracking cycle time metrics longitudinally can help engineering organizations understand any friction points and improvement opportunities in the development process.



Lead Time

★ *ICONIQ Growth favored metric*[1]

Measures the time from when requirements are provided to when the work is released / deployed

Release Time – Work Requested Time

Cycle Time

★ *ICONIQ Growth favored metric*[1]

Measures the time from first commit to code deployment in production, encompassing coding time, pickup time, review time, and deploy time.

Release Time – First Commit Time

Coding Time

Measures the time from first commit to when a pull request (PR) or merge requested is created

PR Issued Time – First Commit Time

Pickup Time

Measures the time from when a pull request (PR) is created to when review begins

PR Review Start Time – PR Created Time

Review Time

Measures the time from when PR review starts to when code is merged

Code Merge Time – PR Review Start Time

Deploy Time

Measures the time from when code is merged to when it is released

Release Time – Code Merge Time

Notes: (1) Based on perspectives from engineering executives in the ICONIQ Growth B2B SaaS portfolio and network

Are developers set up with the right tools and processes to minimize friction and efficiently complete work?

DORA Metrics

DevOps Research and Assessment (DORA) are research-backed metrics that allow engineering teams to evaluate process performance and maturity. These metrics give visibility into how quickly the engineering organization reacts to changes, system stability, the average time to deploy code, and frequency of releases.

Cycle Time

Measures the time from first commit to code deployment in production, encompassing coding time, pickup time, review time, and deploy time

$$Release\ Time - First\ Commit\ Time$$

Mean Time to Recovery (MTTR)

Measures the average time it takes to recover from a product or system failure, starting from the of the outage to when the system or product becomes fully operational again

$$\frac{All\ Downtime\ in\ Given\ Period}{Number\ of\ Incidents}$$

Change Failure Rate

Measures the percentage of changes that result in unintended outcomes, such as system downtime, errors, or decreased performance. Some ways to assess change deployment failure could include if an incident gets triggered, if an automated test that runs on production fails, or if the change requires a rollback

$$\frac{Failed\ Changes}{Total\ Number\ of\ Changes} * 100$$

Deployment Frequency

Measures how often new code is deployed to production in a given time period

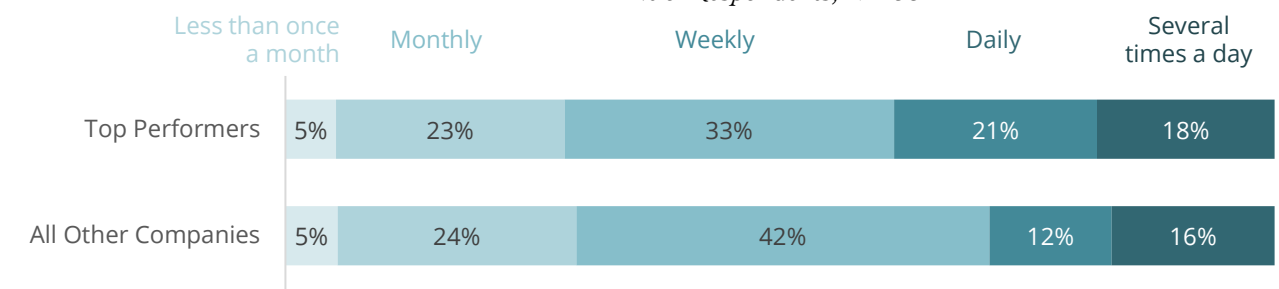
$$\frac{Number\ of\ Deployments\ to\ Production}{Unit\ of\ Time\ (Daily, Weekly, Monthly, Yearly)}$$

ICONIQ Growth Insights

The majority of top performing companies deploy to production either daily or several times a day[1].

Deployment Frequency to Production

% of Respondents, N= 198



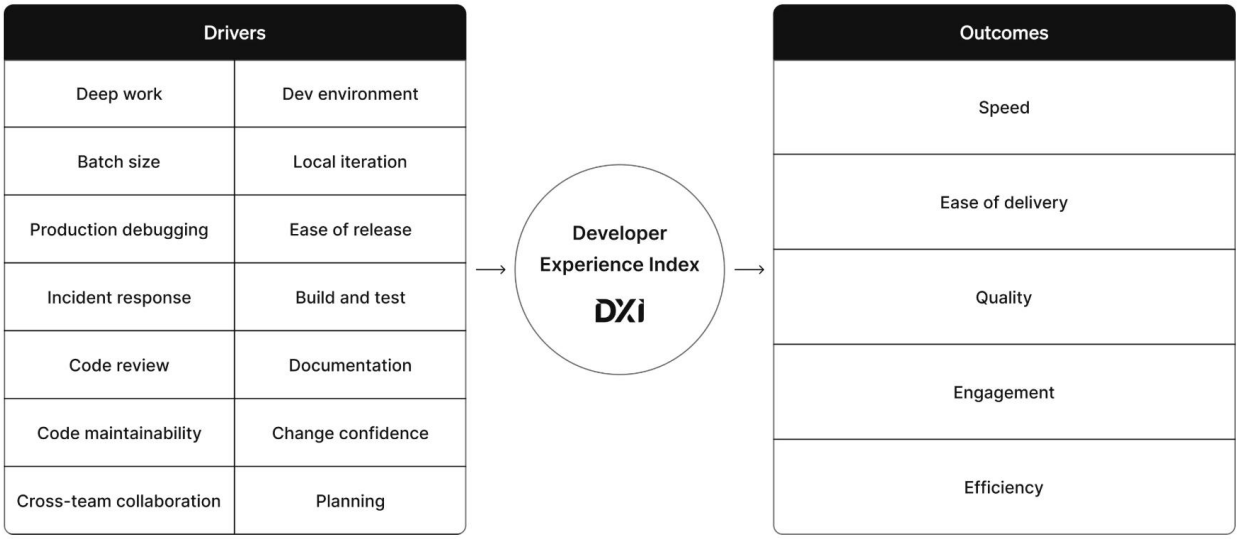
Notes: (1) ICONIQ Growth Engineering Survey (December 2023)

Are developers set up with the right tools and processes to minimize friction and efficiently complete work?

Developer Experience Index (DXI)

Created by DX, the Developer Experience Index (DXI) offers a way to enhance productivity by focusing on **removing friction for developers, enabling faster delivery and innovation**. Unlike other measures, the DXI **ties engineering effectiveness to business outcomes**, assessing actionable areas of software delivery that impact development speed, ease, and quality. Each one-point gain in DXI directly translates to measurable savings—13 minutes per week per developer, or 10 hours annually—making it the only validated metric that **links developer productivity to tangible financial impact**[1].

Figure 2: Developer Experience Index (DXI) overall model



The 14 dimensions above are **combined into a single overall DXI score**, providing a balanced and transparent indicator that is protected from the volatility of individual metrics. **Each of the 14 dimensions is also scored and tracked individually**, enabling clear understanding of specific drivers impacting performance[1].

DXI can be measured by **conducting developer surveys** or via **out-of-the-box solutions like DX's DevEx Cloud**.

The DXI: Read More

Notes: (1) DX Research: The One Number You Need to Increase ROI per Engineer
Sources: DX Research

Are developers fulfilled and happy?

Developer Satisfaction

If there is one table-stakes metric organizations should start tracking and reporting on, we believe it would be self-reported developer satisfaction. We believe this metric should be based on engineering surveys that ask key questions such as "Do you have the right tools and processes to do your work?" or "Where are you spending most of your time?" etc.

While this can feel like a fuzzy and self-reported benchmark, we believe this is a critical metric that cuts across all aspects of developer productivity. Above all, it is more important to focus on how you trend over time on this metric, rather than your current score.

If you do not already have a regular developer survey in place, you can leverage the below questions as a starting point.

ICONIQ Growth Example Developer Survey Questions

1. **The code, infrastructure, processes, and documentation here enable me to maintain a high development velocity** *(5-point scale: Strong Agree, Agree, Neutral, Disagree, Strongly Disagree)*
2. **How often do you feel highly productive in your work?** *(5-point scale: None of the time, A little of the Time, Some of the Time, Most of the Time, All of the Time)*
3. **Based on your experience in the past X months, how satisfied are you with the following areas?** *(5-point scale: Very Satisfied, Satisfied, Neutral, Dissatisfied, Very Dissatisfied)*
    a) Storage, Search, and any internal APIs
    b) Development tools: monitoring, alerts, etc.
    c) CI / Builds
    d) Running services / tests in development
    e) Creating, operating, and monitoring a service
    f) Finding and navigating code
    g) Code review process & tools
    h) Documentation and best practices
    i) Debugging, reproducing, and isolating bugs
    j) Bug triage process
    k) IDEs and their support – writing code / tests
    l) Schemas, DataViews, streaming, and batch jobs
    m) Internal tools: Github, Search, Slack, and Asana
    n) Cross-team and cross-office dependencies and planning
    o) Security systems: secrets management, egress, and ssh proxy
4. **Over the past six months, what percentage of your time at work was spent on KTLO, toil, or incident response?**
5. **What improvements would make you more productive? Anything else?**

> **We track developer sentiment every 6 months via an in-in house survey (e.g., how easy is it to develop, deploy code, etc.) to identify improvements to make the development process more effective**
> CTO| Later-Stage ($200M+) Infrastructure SaaS

Source: Perspectives from engineering executives in the ICONIQ Growth B2B SaaS portfolio and network

Developer Survey Best Practices

Interview with Abi Noda, CEO & Co-Founder of DX

DX combines both qualitative and quantitative insights into a single platform and gives leaders comprehensive visibility into developer experience. DX has spent years developing a measurement instrument with over 4M benchmark samples that is predictive of developer engagement, engineering velocity, and efficiency. If you are interested in tracking and improving developing productivity for your own organization, visit DX to learn more.

Abi Noda

CEO & Co-Founder

What do you see as a typical inflection point for engineering organizations when tracking developer experience becomes important?

Systematic tracking of developer productivity becomes important once leaders can no longer understand developer experience through informal observation. This typically occurs once an engineering organization grows beyond five teams, and then the problem only compounds as there is continued growth.

Are there any best practices you can share for companies thinking about setting up a survey for the first time?

Qualitative self-reported measures of productivity are the best place to start – they are holistic and give you the broadest coverage, while averting common challenges of normalizing and contextualizing quantitative metrics. Ultimately you need quantitative metrics as well – but leading with qualitative is what we've seen be successful, and also what companies like Google, Microsoft, Linkedin, Spotify, etc. all follow as a philosophy.

If I had to boil down my top three learnings:

1. You need 80%+ participation for there to be real value and buy-in from the organization.
2. It is critical to pre-test your survey via cognitive interviews. At DX, we do rigorous coded cognitive interviews across different roles, seniority, etc. to test for comprehension and ease of response.
3. Anonymity cuts both ways – you need anonymity to a certain degree for people to feel safe, but anonymity also reduces actionability and can breed a culture of distrust. At DX we provide anonymized scores and non-anonymous open text feedback.

Headcount Metrics

The following metrics help companies understand headcount efficiency and productivity in the engineering and product organization, which is an important component to **team planning, hiring needs, as well as overall team health.**

Revenue per R&D Employee

Measures headcount productivity by looking at the average revenue (can be either ARR or revenue) generated per R&D FTE

$$\frac{Total\ Annual\ Revenue}{Total\ R\&D\ FTEs}$$

R&D Spend per R&D Employee

Assesses headcount efficiency by looking at the average R&D spend (total R&D OpEx) per employee

$$\frac{R\&D\ OpEx}{Total\ R\&D\ FTEs}$$

ICONIQ Growth Insights

Median R&D spend per employee typically stabilizes in the $200-$250K range. Please reference our Growth & Efficiency series for more detail on benchmarks by stage and business model.

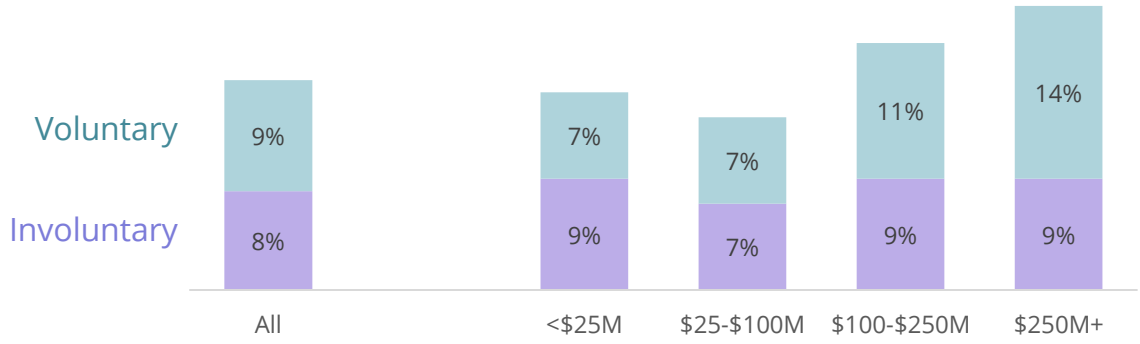
Employee Attrition

Employee attrition is generally an important measure of overall team health and satisfaction. It is important to track both voluntary and involuntary attrition with a clear understanding of employee departure reasons.

$$\frac{\#\ employees\ departed}{Average\ \#\ employees\ in\ period}$$

Average Annual Attrition Rate for IC Engineers

Average by Revenue, Excerpt from Building Engineering Teams, N=198



Source: ICONIQ Growth Engineering Survey (December 2023)

Headcount Metrics

The following metrics help companies understand headcount efficiency and productivity in the engineering and product organization, which is an important component to **team planning, hiring needs, as well as overall team health.**

Headcount Ratios

Headcount ratios between key product and engineering roles are typically a great way to **measure whether the team is growing in a scalable manner**. While helpful to look at the average across teams, it is equally important to also evaluate individual teams that may potentially be sub-optimal

Example Ratios:

Engineer to Manager	$\frac{\#\ Engineers}{\#\ Engineering\ Managers}$
Engineer to Product Manager	$\frac{\#\ Engineers}{\#\ Product\ Managers}$
Engineer to Quality Assurance	$\frac{\#\ Engineers}{\#\ QAs}$
Engineer to Design	$\frac{\#\ Engineers}{\#\ Designers}$
Engineer to Architect	$\frac{\#\ Engineers}{\#\ Architects}$

ICONIQ Growth Insights

Engineer Headcount Ratios

Average of Responses, Excerpt from Building Engineering Teams, N = 198

~ 2 FTEs

> We combine budgeting across our 4 R&D divisions to help product + eng teams prioritize what roles are actually needed (a UX designer might sometimes be more critical than an engineer)
>
> Braze CTO / Co-founder at ICONIQ Growth Engineering Summit (March 28, 2022)

1.Includes Infrastructure & Operations, DevOps, Platform Engineers, Security Ops, and Site Reliability Engineers

Source: ICONIQ Growth Engineering Survey (December 2023) and perspectives from ICONIQ Growth network

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Entrepreneurs Backing Entrepreneurs

We partner with visionaries defining the future of their industries to transform the world.

ICONIQ Growth | A global portfolio of category-defining businesses

Appendix

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These companies represent the full list of companies that ICONIQ Growth has invested in since inception through ICONIQ Strategic Partners funds as of the date these materials were published (except those subject to confidentiality obligations). Trademarks are the property of their respective owners. None of the companies illustrated have endorsed or recommended the services of ICONIQ.

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