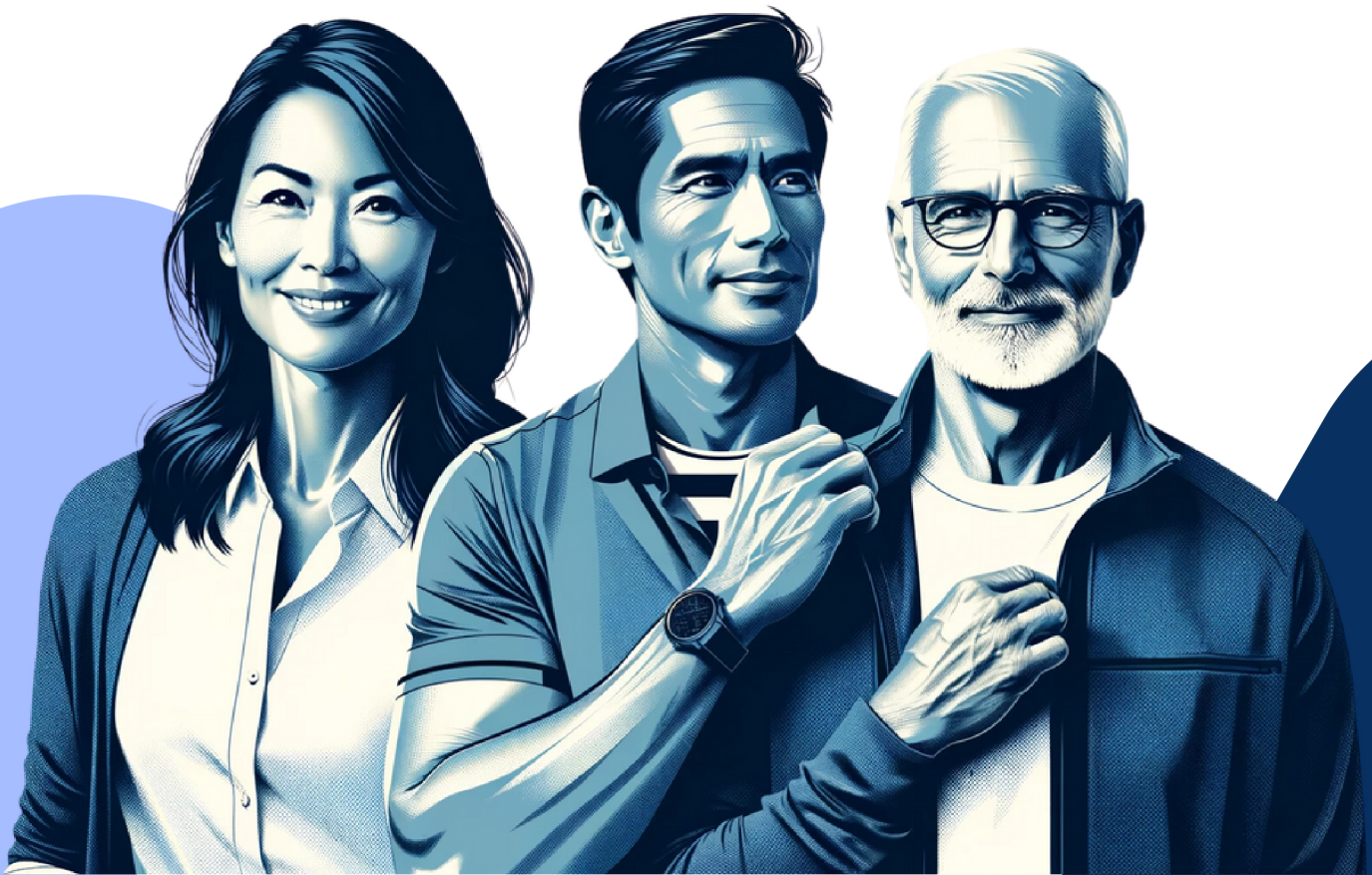




The CEO's Guide to Hiring a CTO



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Table of Contents:

Part 1: Overview.....	2
 What is Technology Leadership?.....	2
 What types of Organizations Engage Technology Leadership?.....	3
 What is a CTO?.....	4
 What is a CTO's role within the C-Suite?.....	5
 Who does a CTO report to?.....	6
 What kind of companies need a CTO?.....	7
 What are the key responsibilities of a CTO?.....	9
 What are the key attributes of a successful CTO?.....	15
 What are some alternative titles for the Chief Technology Officer (CTO) role?.....	17
Part 2: How Does a CTO Add Value?.....	20
 What are the most pressing challenges that hiring a CTO solves?.....	20
 What are the top 3 priorities of a CTO?.....	26
Part 3: How Does a CEO Select a CTO?.....	29
 What type of organizational situations drive the need for a CTO?.....	29
 What experience, spend, and availability are required?.....	33
 Experience.....	33
 Spend.....	35
 Availability.....	36
 What are the hiring approach options?.....	37
 Executive Search - Search to Own.....	38
 Leadership-as-a-Service - Access over Ownership.....	38
 How does the CEO make a final selection for a CTO?.....	40
 Choosing Executive Search.....	40
 Choosing Technology Leadership-as-a-Service.....	42
 Combining Technology Leadership-as-a-Service and Executive Search.....	45

Part 1: Overview

Technology leadership is pivotal in driving organizations forward by strategically planning, implementing, and managing technology resources. It encompasses using technical knowledge, tools, systems, and processes to foster innovation, achieve organizational goals, and maintain a competitive edge in the marketplace.

Technology Leaders, often part of the executive team supporting the CEO, oversee the investment in and utilization of technology. This article aims to explore:

- the concept of technology leadership,
- the technology consumer and technology creator organization types,
- the technology leadership roles appropriate for each type of organization, and
- the key roles that comprise technology leadership, including the Chief Information Officer (CIO), Chief Technology Officer (CTO), and Chief Information Security Officer (CISO).

What is Technology Leadership?

Technology, in the context of technology leadership, refers to using technical knowledge, tools, systems, and processes to create, develop, and manage innovative solutions that drive an organization or industry forward. *Technology Leadership* is an executive role that encompasses the strategic planning, implementation, and management of technology resources (both human and financial) to achieve organizational goals, foster innovation, and maintain a competitive edge in the marketplace.

Technology Leadership, then, is a subcategory of executive leadership primarily concerned with an organization's investment in and use of technology to further an

organization's goals. Whether that organization primarily buys and implements technology for its own use or is a technology company that primarily creates technology products and services for other organizations to use, both usually have technology leaders overseeing these functions. Often confused with the executive leadership *of a technology company* (e.g., the CEO of a software company), technology leadership in this context is most often part of the leadership team that supports the CEO and is a peer to other functional leaders (CFO, CMO, CHRO, GC, etc.).

The definition of technology leadership is further narrowed to those leaders responsible for leading technology and report organizationally to a non-technology leader (most often the CEO or Division President, etc., but can be a functional leader such as the CFO in smaller companies). This would generally exclude direct reports of a technology leader unless the role achieves such significance that it often has alternative (e.g., "dotted line") reporting to a non-technology leader, as is the case for the Chief Information Security Officer (CISO) who often has dual reporting relationships to a CIO/CTO and Legal, Internal Audit, or the Board of Directors. Also excluded would be consulting professionals whose clients are technology leaders and their organizations but themselves do not have authority and responsibility over the human and financial technology resources of those organizations.

What types of Organizations Engage Technology Leadership?

Technology use in organizations has become so ubiquitous that all types of organizations in all industries use Technology Leadership to effect the "strategic planning, implementation, and management of technology resources (both human and financial) to achieve organizational goals, foster innovation, and maintain a competitive edge in the marketplace." However, to better understand technology leadership, all organizations using technology leadership can be assigned to one of two broad categories:

1. **Technology Consumer** - Those organizations that primarily *consume* technology to produce their revenue, and
2. **Technology Creator** - Those organizations that primarily *create* technology to produce their revenue.

Technology Consumers heavily depend on Technology Creators for innovation and transformation - spending the bulk of \$4 trillion annually to compensate Technology Creators for all technology products and services (datacenter, software, devices, services, communications). This is not to say that Technology Consumers don't, at times, create technology or that Technology Creators don't use technology created by others. But, as the categories suggest, the key differentiator is whether the primary source of revenue (e.g., greater than 50%) is derived from *selling technology to other organizations* or derived from selling other products and services (banking, auto, construction, etc.) that benefit from consuming technology created by others.

Defining the two broad categories of organizations that engage in technology leadership is useful in understanding the *roles* that comprise technology leadership.

What is a CTO?

The CTO is the most senior technology executive reporting to a non-technology executive in a Technology Creator organization that is laser-focused and purpose-built, top to bottom, to create great technology products for their Technology Consumer (in B2C, the Consumer; in B2B, usually the CIO). As Marc Andreessen famously predicted in a 2006 blog post entitled "Why Software is Eating the World"¹, the evolution of software has created a tidal wave of new, highly profitable, and valuable technology companies where the CTO role oversees product development.

¹ <https://a16z.com/2011/08/20/why-software-is-eating-the-world/>

Further, creating and adopting cloud-based computing platforms have enabled Software-as-a-Service (SaaS) - the most common business model for delivering software. As Technology Consumers spend more on Cloud (Infrastructure-as-a-Service) and SaaS, the importance of the CTO as the primary leader responsible for product development and overseeing product operations has earned the CTO role a distinction as one of three primary technology leadership roles (CIO, CTO, CISO). While there are similarities between the CIO and CTO, defining them as separate roles in the context of Technology Consumer and Technology Creator organizations is a significant contribution to understanding the role of technology leadership in organizations.

What is a CTO's role within the C-Suite?

The C-suite operates one level below an organization's Board of Directors. As the most influential and important group of leaders within an organization, its primary role is to ensure that the firm stays true to its established mission, vision, values, goals, plans, and policies needed to be profitable by satisfying its core customers' most pressing needs. Since the primary role of the CTO is to drive the systems, strategies, staff, and structure needed to deliver the products and services sold by the organization, a CTO has an integral role in collaborating with other leaders such as the CEO, CFO, COO, CPO, CMO, CISO, and others to achieve the goals and objectives of the organization.

The CTO's Role

Develops & delivers the products sold by the organization

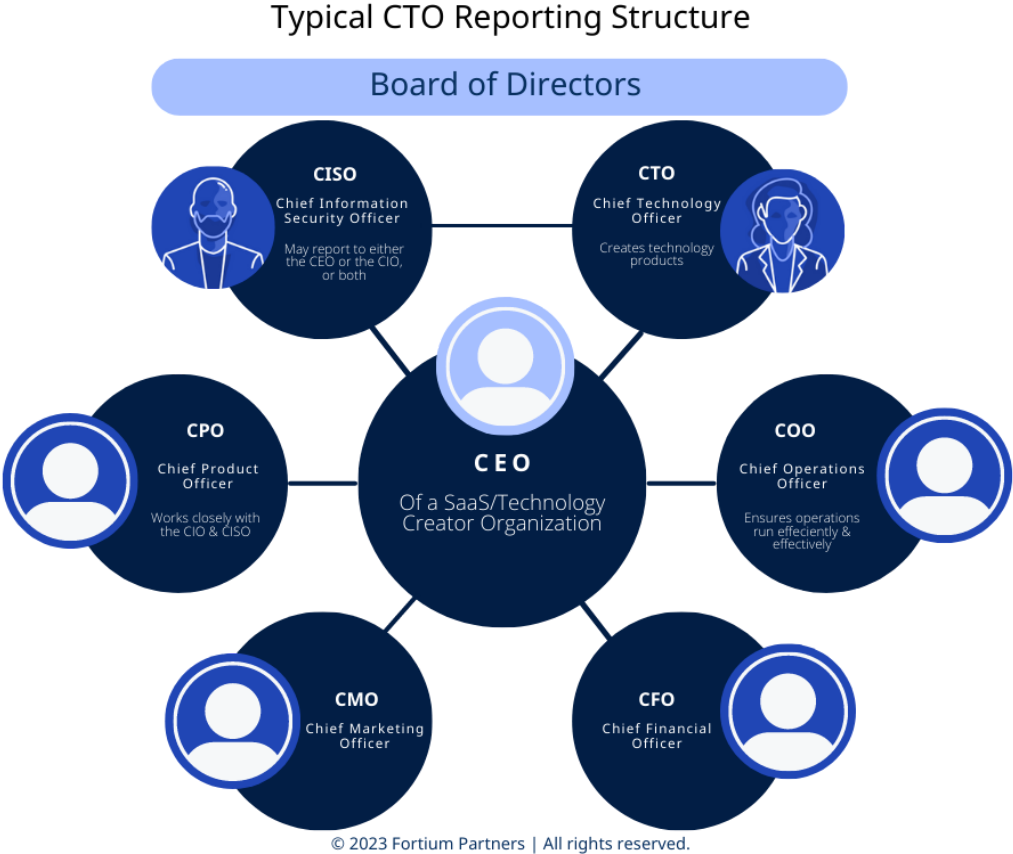


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Who does a CTO report to?

As we've defined the CTO role in a Technology Creator (e.g., a SaaS company) as the primary technology leader responsible for building the organization's primary revenue driver, the CTO almost always reports to the CEO and is a peer to other members of the C-Suite. In addition to the CTO's role in building and deploying the revenue engine, the CEO often leans on the CTO, along with the Chief Product Officer, to build a business case for and rationalize the product roadmap, future sources of revenue, and spending. Finally, the CTO and the CTO's team defend against revenue threats from security or production issues. Having the CTO report anywhere other than the CEO is a strong signal that either the CTO is not a senior executive worthy of the title or there is

something unusual about the structure of the organization (e.g., the CEO is primarily a visionary and has delegated all operational authority to the President or COO).



What kind of companies need a CTO?

Most companies achieve innovation through software, and commercial software companies provide the vast majority of software. Technology Creators, such as SaaS companies, *need* a CTO. The complexities of building a commercial software product are too great and too broad to risk not having the input and oversight of a competent and experienced CTO. The good news is that most modern software companies of size, say over \$5-10M in revenue, *do* have a CTO overseeing the development of the product.

If a SaaS company does not have a CTO, it is usually due to one of three reasons:

- 1) **The Founder or Co-Founder is the CTO.** Otherwise known as a Technical Founder or Co-Founder, they may have other titles such as CEO, Co-CEO, Chief Product Officer, or COO. When this is the case, these other general management titles obscure the fact that the company has an embedded CTO. Often, these CTOs-in-disguise are much better CTOs than whatever other role their titles might suggest. If the company continues to grow, takes on new investors, and/or brings in an experienced CEO, the CTO will usually take on their appropriate title as CTO to allow the company's leadership to evolve. Interestingly, the Technical Founder is often most passionate about the initial product vision and finds the early stages of building and taking a product to market the most rewarding. It is not uncommon for the company's early Founder/CTO to lose interest or be found inadequate in the increasing management and strategy responsibility of the CTO role as it grows.
- 2) **The Founder is not technical; there is no Technical Co-Founder** or an individual or small team without CTO oversight built the early product. While this approach may be sufficient to get a product to market or achieve product-market fit, the non-technical Founder often manages the increasing complexities of a commercial software product without the necessary skills and experience. Common medium- to long-term implications include:
 - a) Rising development costs without associated increases in features or mounting quality problems,
 - b) Software developers have built the product "into a corner" where poor technical decisions make progress increasingly difficult and more expensive, resulting in claims that the product needs to be rebuilt "from scratch,"
 - c) The early developer or developers become intransigent, disagreeing with the decisions made by the Founder, Board, or investors and put the company at risk by refusing to comply or even engaging in subversive activities.

- 3) **The Founder or CEO is unaware or doesn't agree that the company needs a technology leader on the senior leadership team.** The technology leader may be capable and experienced. Still, they are not in a senior leadership role - often reporting to the CFO, Sales, or some other non-technical role that reports to the CEO. This approach may work in the early years, most common in Founder-led or bootstrapped software companies. Still, as the company grows, it will result in dysfunctional behaviors, such as:
- a) The technology leader (e.g., Director of Software Development, VP of Software Engineering, etc.) is effectively limited to tactical execution without input into product strategy or the ability to influence key decisions in Product Management, Finance, Sales, or Marketing. The result is (technical debt, new features without a proper foundation, and the lack of sales blamed on the product instead of Sales)
 - b) "Software culture" never really develops. The organization can't recruit the best developers, doesn't pay them well, and is unable to keep the product current so that the best developers want to work on it.
 - c) Technical innovation stalls as, ironically, the only "CTO" that would remain in a CTO role that doesn't report to the CEO may not be a CTO at all.

These three scenarios illustrate the importance of clearly and authoritatively defining the CTO role, its place in Technology Creators, and its relationship with Technology Consumers. Buyers of commercial software are increasingly outsourcing innovation and regulatory compliance to Technology Creators and expect them to have strong leadership at all levels, especially over product development. Such a company without a CTO, as we've defined here, puts its customers at risk and should be a warning sign for existing and future customers.

What are the key responsibilities of a CTO?

We learned above that the CTO is the most senior technology executive reporting to a non-technology executive in a Technology Creator organization. Yet what does the CTO actually do?

- **Strategy Participation:** The CTO assumes a C-Suite role with shared responsibility for company strategy, product strategy, and market decisions; participates in executive team meetings and board meetings. The CTO is involved with any merger or acquisition discussions.
- **Implementation Oversight:** While Product Management is responsible for defining product features and, often, what they will look like (e.g., the “What”), the CTO is responsible for how those features are implemented (e.g., the “How”), including the architecture and technologies involved to build them.
- **Talent Management:** The CTO is responsible for all the talent resources that report up to the role, including those responsible for software development, quality assurance, software build and deployment, security, process/Agile, and production infrastructure support.
- **Process Management:** The CTO collaborates with Product Management throughout the development process, playing a crucial role in estimating feature requests, prioritizing tasks for each iteration, and ensuring the successful delivery of committed features. Process metrics measure progress, evaluating the output compared to the initial commitments, the team's velocity in accomplishing work within a specific timeframe, and the quality of the deliverables. Moreover, the CTO is responsible for safeguarding the team's commitments, effectively managing shifting priorities, scope changes, unforeseen tasks, complexity underestimations, ambiguously defined requirements, and stakeholder disruptions.

- **Product Sustainability:** In addition to meeting the functional requirements defined by the Product Management team, the CTO and their team are responsible for ensuring the product's long-term sustainability through strategic refactoring, minimizing technical debt, and prioritizing critical non-functional aspects such as scalability, performance, security, reliability, and interoperability. The ultimate responsibility of the CTO's team is to ensure the comprehensive well-being of the product throughout its entire lifespan.
- **Infrastructure Management:** As the production environment, i.e., the cloud infrastructure the product runs on, becomes an essential set of non-functional features, the CTO and their team are responsible for ensuring optimal performance, scalability, and security. Timely incident management and post-incident reviews are crucial tasks to facilitate the consistent availability and reliability of the product.
- **Intellectual Property Guardianship:** As guardians of vital intellectual property, the CTO and their team oversee many responsibilities relating to a company's source code, including version control, code review, secure coding practices, access control, and compliance with company and regulatory controls. The CTO is critical in ensuring the protection and integrity of a software company's most valuable assets.
- **Business Leadership:** The CTO is an all-encompassing role encompassing business leadership beyond technical expertise. They have to be ready to lend support to their peers, ranging from Product Management to Marketing, Sales, and Customer Support, to brainstorm feasibility, discuss the technology with potential clients, identify key selling points from a technological standpoint, troubleshoot customer issues, apportion the budget for and optimize technology investments, and scope out new markets for the company's products. The CTO will likely consider exploring potential acquisitions to facilitate entry into new markets.

Responsibilities of a CTO



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While the CTO holds a crucial and diverse role, it is equally important to outline certain responsibilities that should fall outside their purview. The list provided below is not exhaustive but serves as an illustration of the range of responsibilities that a Chief Technology Officer (CTO) may be assigned but could be problematic:

- **Product Management** - While it's not unusual for a CTO to take on Product Management responsibilities (sometimes titled Chief Product and Technology Officer or CPTO), especially in smaller startups, as a company grows, it usually makes sense to separate these roles to ensure that each gets the attention and expertise it deserves. Each role has its own responsibilities, and trying to fulfill both can lead to a lack of focus and potentially suboptimal outcomes for each. The CTO/Product Manager may tend to overfocus on non-functional features and reduce technical debt, while Product Management might advocate for prioritizing

new features or improving the user experience. This tension can lead to better decisions that balance technology and product needs.

- **Customer Demos** - While there are some good reasons a CTO may be involved in customer demos, especially in the early stages of the company, it is a best practice for SaaS companies to invest in Sales or Solution Engineering as part of the Sales team to manage customer demos.
- **User Interface and User Experience Design:** Product Management and the CTO's team are equally responsible for the customer's experience with the product. However, Product Management is better suited to conceptualize the user experience to implement the intended features. Meanwhile, Product Development, led by the CTO, is responsible for bringing to life the design provided by Product Management. This separation of responsibilities allows each group to contribute their best skills.
- **Contributions to Production Source Code:** A CTO needs to stay connected with the technical aspects of the company's work, including exploring new tools, languages, and coding techniques, and may include conducting proofs of concept that can inform and inspire the development team. However, the CTO must have the time and focus to handle their strategic and managerial responsibilities. A CTO with production coding responsibilities may also indicate the presence of a CTO without the seniority the company truly needs or an over-dependence on full-time leadership.
- **Traditional CIO Responsibilities:** Software companies have the same internal technology needs as non-software companies, including end-user computing provisioning and support, non-production infrastructure such as a company's internal servers and network, and non-production applications such as accounting and HR solutions. It's common in smaller software companies to assume all technology-related responsibilities should fall under the CTO. But this is often not the best and highest use of the CTO's skills and attention. In the early stages, the combination of a virtual or fractional CIO plus a Managed Services Provider (MSP) can fill this role. Evaluating the need for a full-time Chief

Information Officer (CIO) and internal technology resources may be beneficial as the company expands.

- **Traditional CISO Responsibilities:** Similar to the software company's CIO responsibilities, it's also common for the CTO to assume the Chief Information Security Officer (CISO) responsibilities. Again, the CTO often has enough knowledge and experience to assume these responsibilities, but this is not ideal. The CISO role has a completely different set of complexities that change quickly and require constant focus to mitigate risk to Technology Creators and Consumers. The CTO has a completely full set of responsibilities that do not lend themselves well to being a security expert on top of everything else. If the company is small, combining a virtual or fractional CISO with a Management Security Services Provider (MSSP) can fill this role. As the company grows, more resources may be available for a full-time CISO and team.
- **Customer Support** - In most SaaS companies, the Customer Support function typically does not directly report to the CTO. Instead, it often falls under the purview of a Head of Customer Support, a Customer Success Manager, or a similar role. These positions, in turn, may report to the COO, head of Professional Services, CCO, or sometimes directly to the CEO. The CTO and their team, focused on product building and improvement, may unintentionally underestimate the significance of providing exceptional customer service for every customer interaction, even for simpler issues. Customer service professionals with a genuine passion for providing exceptional customer experiences are ideally suited for direct engagement with the CTO's team and Product Management. They can help research, prioritize, and consolidate customer questions and issues, ensuring an efficient flow of work to the Product Development team.
- **Target Industry Expert** - While it may be tempting to expect the CTO to be an expert in the industry served by a SaaS product, such as healthcare for medical practice management software or manufacturing for an ERP specific to manufacturing companies, the core responsibilities, and attributes of a successful CTO pertain to the software industry itself, rather than any one particular target

industry. The CTO role, applied across multiple industries in their career, is highly specialized and requires significant dedication to achieve and maintain. While experience in the target industry could certainly be advantageous, a CTO who is too specialized in this regard may have limited their career potential. For example, a CTO with extensive target industry experience might be less versatile than a more well-rounded CTO who has kept pace with the latest developments across multiple industries.

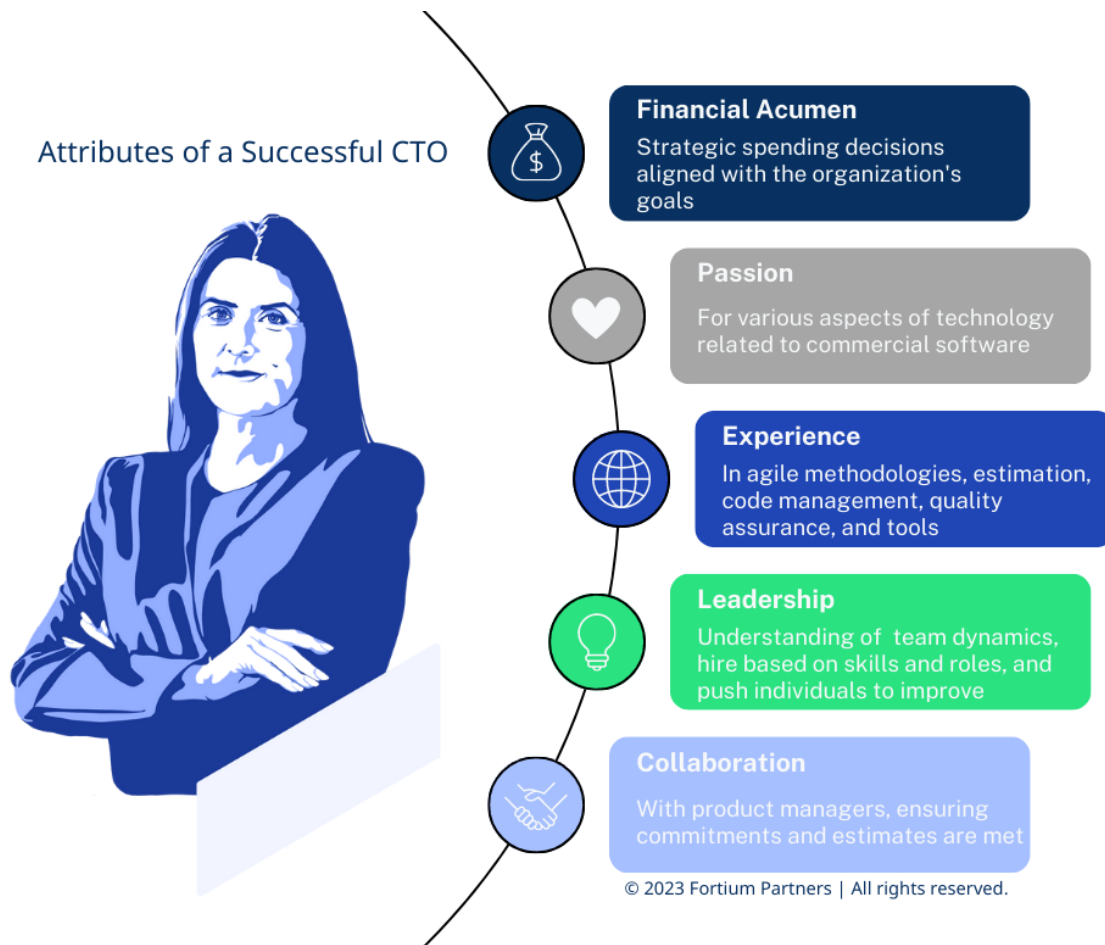
What are the key attributes of a successful CTO?

Despite conventional wisdom, the role of CTO does *not* vary considerably from one software company to the next. What does vary is the size, stage, and available technology spend of the company, any specific outcomes the CTO is charged with accomplishing, and, in the case of a CTO who is not full-time, the amount of time available to dedicate to the company. However, several key attributes are generally important for success in the CTO role:

- Considerable experience in software development as a career path - Successful CTOs often begin their careers as software developers. Still, their ambition surpasses individual creation and shifts towards building great products and successful software companies with and through others.
- Achieving and staying in a CTO role - Apart from creating software companies as a Technical Founder or Co-Founder or becoming a SaaS CEO, successful CTOs tend to remain in a CTO role once they attain it. Changing career directions, such as moving to a software developer or CIO role, working for companies that are not software or software-enabled, working for a consulting company, or even starting a custom software development company, may indicate a less-focused CTO career path.
- Having stature and gravitas, demonstrating conviction and articulation, is crucial when presenting to the Board of Directors and investors. It is also important to represent the company in investor due diligence, customer due diligence, and security audits and participate as an equal on the senior leadership team.

Professionalism, effective communication, and polished presentation skills are key.

- A passion for all aspects of technology related to commercial software, including understanding source code, infrastructure, performance/scaling, front-end/back-end domains, application programming interfaces (APIs), current architectural trends, tools, etc.
- A passion for the commercial software industry and a keen understanding of what makes a software company successful (e.g., key financial and sales metrics).
- An exceptional understanding of the software development process, including Agile, estimation, agile metrics and KPIs, code management, check-in management, code review, quality assurance, common development tool chains, leading vendors/products in the space,
- A leader and mentor of people involved in the development of the company's product; understanding their roles and skills enough to hire. A leader who is unafraid to push people to be better and willing to move people out who are not healthy for the team or company.
- A command of the tradeoffs of various product development staffing strategies, including onsite, remote, local, nearshore, offshore, and outsourced.
- Exceptional understanding of the role of Product management and yielding to its responsibility for the "what" of the product (including UI/UX), being accountable for commitments made regarding feature development and availability (meeting estimates),
- Demonstrates competence and authority to protect the product and team from influence and distraction from commitments.
- Financial acuity, a command of the appropriate technology spend across the company given its size, industry, growth plans, etc.



What are some alternative titles for the Chief Technology Officer (CTO) role?

The preceding sections provide a comprehensive overview of the core aspects of the CTO position. However, some use alternative titles to designate this role, such as:

- Chief Information Officer (CIO) - this is probably the most common alternative title for the Chief Technology Officer. In this series, we have described the difference between these two roles as related to the types of organizations they serve. The CIO primarily serves organizations that are Technology Consumers (with less than 50% of their revenues derived from the sale of information technology). In comparison, the CTO serves primarily Technology Creators (with more than 50% of their revenues derived from the sale of information

technology). We advocate for consistently defining these roles differently to clarify recruiting and hiring decisions.

- Vice President (VP) of Software Engineering - the VP of software engineering title is closely related to the CTO and usually reports to the CTO. Many smaller software companies may only have a VP of software engineering, especially when the company has a technical cofounder filling the CTO role. While the CTO focuses on the broader technology strategy, innovation, and cross-department collaboration, the VP of Software Engineering focuses more on the day-to-day management of the software engineering function, including team leadership, execution, and technical expertise. There may be multiple VP of software engineering roles in larger software companies.
- Lead Developer - a Lead Developer is a hands-on development role, often with additional team leadership responsibilities. CEOs of very small software companies often look to combine the CTO and lead developer roles for cost savings. As mentioned above, a CTO may continue to develop software for continuing education or proofs of concept but does not typically have a hands-on development role. Consider a virtual or fractional CTO to augment a lead developer role rather than combine them.
- Technical Co-Founder - adding *Technical* to the Co-Founder title usually indicates that one of the co-founders is taking on the role of CTO within an organization. In these cases, combining both roles as Technical Co-Founder and CTO would be typical. The *other* co-founder(s) assume non-technical roles like CEO, Chief Product Officer, etc.
- Chief Product Officer (CPO) or Product Manager - senior product management roles such as CPO or Product Manager may subsume the CTO role, especially if the CPO is a founder or is particularly technical and combining the titles is done for efficiency. As mentioned above, separating these roles is recommended to allow each to focus on their unique abilities and champion different aspects of the product.
- Chief Scientist - While both roles require a deep understanding of technology and science, they focus on different areas. The Chief Scientist is more concerned

with scientific research and understanding the latest developments in the field. The CTO focuses on using technology to drive the company's business goals. Software companies in highly technical domains such as artificial intelligence, machine learning, and quantum computing are more likely to have a Chief Scientist. It is common for the Chief Scientist to report to the CTO.

Similarly, some use the CTO title for other roles:

- Chief Information Officer (CIO) - the CIO is most appropriately used as the most senior executive responsible for technology in an organization that is primarily a Technology Consumer. Using the CTO role in these types of organizations leads to confusion about the nature of the role and the person who holds it.
- Vice President (or similar) of Infrastructure - indicating the most senior individual in an organization responsible for computing infrastructure (desktop computers, servers, network, data center, etc.). The VP of Infrastructure role is highly technical, focused mostly on hardware (or software specifically within Infrastructure-as-a-Service), and often reports to the CIO in a Technology Consumer organization or the CTO in a Technology Creator organization.
- Vice President (or similar) of Software Development (in a Technology Consumer) - Software development as a function is not limited to Technology Creators. The VP of Software Development in a Technology Consumer organization leads the software development function to build software for internal use only (e.g., not for sale) and usually reports to a CIO. While the individual responsible for software development in a Technology Creator may use the VP of Software Development title, it is more typical to use the VP of Software Engineering.
- Senior Sales or Solution Engineer in a Professional Services or Custom Software Development Organization - some professional services firms or custom software development organizations prefer the title of CTO for individuals who primarily represent the sales/business development function, engaging with prospects and clients (typically in Technology Consumer organizations) to propose technology solutions. While these individuals possess technical expertise and may have previously held the CTO title, using the CTO designation in this manner can

create confusion during recruitment and hiring processes. In reality, the typical buyer of these services is often the CTO (or their team) in a Technology Creator organization or the CIO (or their team) in a Technology Consumer organization. To minimize confusion and promote clarity, we suggest using titles such as Sales Consultant or Solution Engineer when referring to these positions.

Part 2: How Does a CTO Add Value?

What are the most pressing challenges that hiring a CTO solves?

The CTO is the primary product delivery executive in a Technology Creator* organization who leads all aspects of building and offering a SaaS product. Hiring a CTO is essential to the success of the product and the organization. The following sections cover a wide, but not exhaustive, variety of challenges that a CTO solves as part of their role.

- **Provide Leadership for the engineering organization:** The CTO leads and is accountable for all personnel and activities involving product development, quality assurance, build and deployment, and often a portion of product support.
- **Get the relationship with Product Management right**
 - As mentioned earlier, Product Management is responsible for defining the features of the product (the “What”) while the CTO’s team is responsible for how the features are implemented and building subsequent iterations of the product. Product Management, often under the leadership of the Chief Product Officer and the CTO, works closely to ensure that the product that is built is the product that will win in the market. The synergy and dependence of these two roles is vitally important to the SaaS

company such that it's very difficult for the CTO to succeed without a great relationship with Product Management.

- Product Management juggles competing priorities and a roadmap of features that always outstrips the available resources to complete. A history of prioritizing well and executing with precision gives Product Management confidence that what gets prioritized gets done.
- **Bridge business needs and technical solutions:** The bridge is not just the expected translation between non-technical people and engineers, but between what - and how - a product is being built and the near- and long-term strategy of the business. The CTO must deeply understand the business plan, its nuances, and how things work under the hood to ensure all the parts are aligned. A business-savvy CTO ensures the product is well-architected, will scale, and will meet compliance requirements.
- **Ensure company resources are appropriately deployed and optimized.** In a SaaS company, software development (and related production expenses) carry the highest cost of any function. The CTO ensures that spend isn't wasted. Aligning agile processes, the right people in the right places, and using the right tools, the CTO works to get the most out of all product development spend.
- **Get the toolchain right:** The toolchain in SaaS organizations refers to the set of software tools and technologies used throughout the process of developing, deploying, maintaining, and scaling SaaS applications. These tools help in various stages like coding, testing, integration, deployment, monitoring, and management. The CTO, with the help of their team, chooses the right tools and technologies to impact cost, scalability, and security positively. Each tool in the SaaS toolchain plays a critical role in ensuring efficient development cycles, high-quality software, smooth deployment, and effective management of the SaaS product.
- **Get the process right:** Closely linked to getting the toolchain right, getting the development process right is essential to delivering consistent, high-quality product increments. The CTO will insist on an Agile process that includes strong collaboration with Product Management to define and

communicate features but also goes beyond development to include source code management, code review, testing, deployment, and ongoing management of the production environment. A process that cannot accommodate the development, testing, and release of a new feature or fix to a known issue *at any time* is considered a Severity 1 issue that must be addressed as the highest priority.

- **Get the product architecture right:** While technical product managers from Product Management may play a role in defining technical features that impact product architecture, the CTO and their team own responsibility for ensuring that product architecture supports the needs of the business to scale efficiently, perform in production, meet compliance requirements, and allow for rapid deployment of new features.
- **Get product security right:** Even the best SaaS companies will fail if security is not woven into every part of the process and the product. World-class CTOs ensure that Development, Security, and Operations (DevSecOps) have integrated security checks and practices at every step of the software development and deployment process. Aside from the obvious benefit of keeping revenue flowing and customers protected, embedding security into the DNA of software development and deployment processes ensures that security considerations are an integral part of the development lifecycle from the outset rather than being an isolated phase. The result is more secure products, faster deployment cycles, and better alignment between security and business objectives.
- **Build the right team:** The most talented people in software want to work with the best SaaS companies. A talented and inspirational CTO is a SaaS company's best recruiting tool for the best product development people. Further, product development teams who respect and trust the CTO attract other high-performing engineering team members to the company. On the contrary, a SaaS company without a strong CTO will struggle to attract and retain the talent they need to succeed.

- **Define what “Done” means:** While it may sound simple, the Definition of Done (DoD) for product teams, a clear and agreed-upon list of criteria that a product, feature, or task must meet to be considered complete, is often poorly defined and leads to inconsistent work quality and not meeting customer expectations. Key elements of the Definition of Done include standards for code completion, code review and quality processes, expectations for unit, integration, performance, security and user acceptance testing, documentation, compliance, and many more. The CTO knows the tremendous risks that a lack of DoD brings to the SaaS company and ensures that estimates include the full scope of “Done.”
- **Set appropriate expectations with key stakeholders:**
 - Product Development - high expectations for product quality, meeting estimates, and consistently achieving the definition of “done” are prerequisites for a CTO’s success. Compromising in these areas will create a chain reaction of failure to meet internal and external expectations and drag the entire company down.
 - CEO and Board - A world-class CTO knows what their organization can accomplish. Allowing expectations to exceed capabilities will result in frustration and conflict. Business-savvy CTOs will balance pushing their teams to greatness while setting appropriate expectations with the CEO and Board.
 - Product Management - There are *always* more features than the capacity to deliver them. Product Management, in some respects, is rewarded by casting a vision beyond the capacity to deliver. Earning trust from Product Management by consistently delivering on commitments allows the CTO to set appropriate expectations to ensure the vision communicated to the market is achievable.
 - Sales - One of the most damaging traps for SaaS companies is allowing sales cycles to define the roadmap. While Sales input is valuable for understanding customer needs and market demands, there are pitfalls such as a short-term focus over a longer-term vision,

neglecting technical debt, ignoring broader market trends, over-serving a particular customer segment, and overpromising to meet the timeline of the sales cycle. An accomplished CTO has the experience and relational skills to position Product Management as the owner of the product roadmap and support them as they gather input from Sales.

- **Address technical debt:** Technical debt results from repeated short-term development decisions (e.g., shortcuts) over more elegant and sustainable solutions that require less rework over time. Like financial debt, if technical debt isn't "paid down" by modernizing every aspect of the product and infrastructure over time, the burden will cause innovation to slow to a crawl as each new feature or fix takes more time. Most experienced CTOs have lived this reality and are committed to dedicating a portion of development time to address technical debt ("refactoring") and are less likely to allow short-term decisions in the first place.
- **Get infrastructure right:** With the advent of cloud computing and modern DevOps practices in the late 2000s, computing infrastructure (what SaaS software "runs on") has experienced a complete revolution, with SaaS companies managing infrastructure in the same way as software code is managed ("Infrastructure as code"). Modern CTOs are astute with respect to SaaS cost and performance metrics and ensure their teams "build" virtual infrastructure with every release that reproduces itself at higher demand and reduces itself with lower demand - aligning costs with revenue and conserving where possible.
- **Respond to urgent events in the midst of commitments:** Normal product planning maximizes the available capacity of the team and leaves no room for unexpected events. A SaaS organization dealing with a high amount of technical debt or immature processes will tend to have more unplanned interruptions, causing them to miss commitments or overestimate individual features and fixes to account for the interruptions. The CTO will advocate that issues causing frequent interruptions be part of the planned work to bring accurate estimating back in line. Further, the CTO will ensure that the

process and tools facilitate quick release and minimal downtime to reduce the impact on prior commitments.

* To read more about the difference between Technology Creator vs. Technology Consumer organizations, read the following sections at the introduction of this ebook:

- *What is Technology Leadership?*
- *What Types of Organizations Engage Technology Leadership?*



What are the top 3 priorities of a CTO?

The goal of many articles about executive priorities is to highlight the latest trends and technologies and convince executives that priorities change frequently (curiously, every January). Readers must rush to various publications (and their advertisers) to find out what they should focus on now. As in “The CEO’s Guide to Hiring a CIO,” the CTO’s top 3 priorities remain consistent through changes in technology and business climate across time. Because a main driver toward having a CTO is a single-industry (Commercial Software/SaaS) role, there are two foundational pre-requisites a CTO must accomplish before turning to other priorities:

- **A thorough understanding of the SaaS business model:** Unlike the CIO and CISO, the CTO is exclusively focused on the commercial software industry, and most commercial software companies are SaaS companies. Therefore, beyond mastering the technical aspects of the CTO role, an expert understanding of the SaaS business model is critical to leading well as a CTO.
- **A stable, scalable, and secure production environment:** A perfect SaaS product is ultimately useless if not hosted in a stable, scalable, secure production environment. The best CTOs will treat the production environment as an integral set of product features and treat any lack of production stability, scalability, or security as the highest priority requirement over any functional product features.

Having established these foundational pre-requisites, the top 3 priorities for the CTO are:

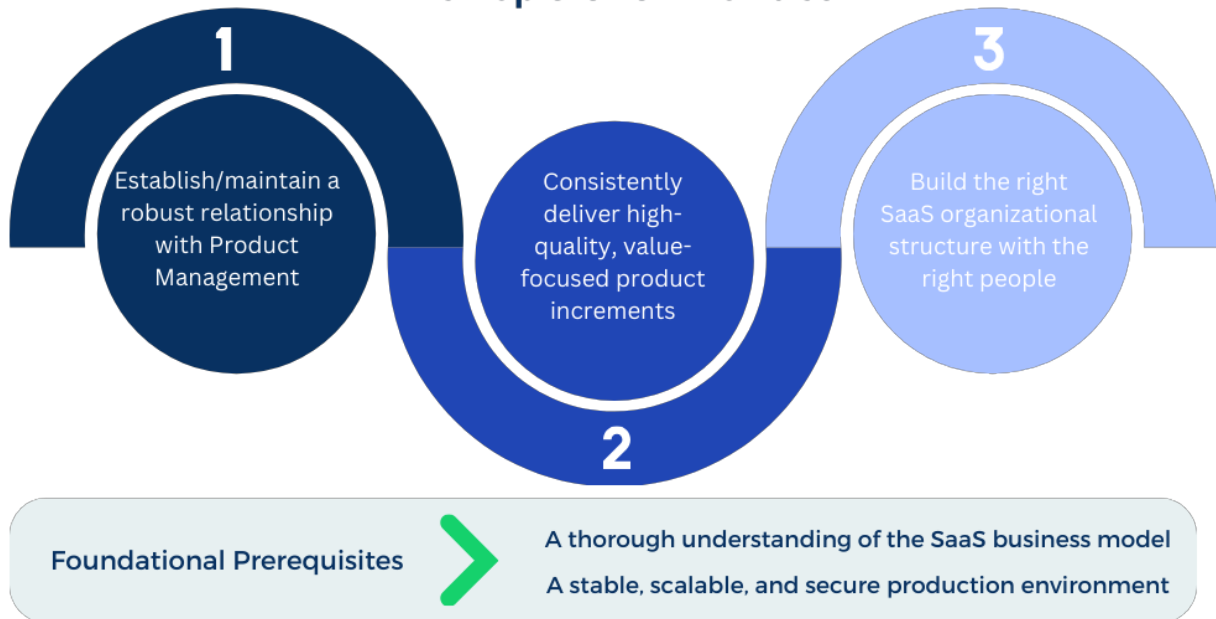
- **Establish and maintain a healthy and robust relationship with Product Management:** As mentioned above, the relationship between the Chief Product Officer (CPO) and their team and the CTO and their team must be characterized by mutual respect, effective communication, trust, and

collaboration. Product Management is charged with defining the right product. The wrong product, though perfectly produced by the CTO's team, will ultimately fail. The right product, imperfectly built, will fail. The success of the CPO and CTO are intertwined.

- **Consistently deliver high-quality, value-focused product increments on a streamlined development and delivery platform:** The less friction a feature encounters from definition by Product Management to development and release to the customer by Product Development, the higher the chance of success for the SaaS product and company. This is the essential job, the manufacturing process or supply chain, of a SaaS company. The CTO will iterate on this process until all unnecessary steps are removed and all remaining steps are automated. The CTO's ultimate goal is that the most simple of changes should move securely from source code management to production (with the ability to unrelease or roll back the feature) within minutes, any time of day, every day, without exception.
- **Build the right SaaS organizational structure and populate it with the right people:** In small SaaS companies, people will wear many hats and take on multiple roles and responsibilities, but the essential jobs must still be done. As the SaaS company grows, individuals become more specialized, and multiple people will focus on more detailed aspects of the same responsibilities. The CTO ensures that all Product Development responsibilities are covered by the organizational structure, regardless of size, and that the best people the company can afford and attract fill those seats. However, the Product Development organization can't succeed if the rest of the organizational structure isn't properly defined and staffed. The experienced CTO will contribute at the executive level to ensure that the remaining business functions are properly organized and staffed, including:
 - Product Management (including User Interface Design and Experience)
 - Sales (including Sales Engineering)
 - Marketing (including Product Marketing)

- Customer Success and Support (and, if the company provides implementation and customization services, Professional Services)
- Operations and Human Resources
- Finance and Accounting (including subscription billing)
- Security and Internal Technology (Production tools and infrastructure is the CTO's responsibility; internal technology should be led by a full- or part-time CIO, and security and compliance should be led by a full- or part-time CISO)
- Legal and Compliance

The Top 3 CTO Priorities



Part 3: How Does a CEO Select a CTO?

What type of organizational situations drive the need for a CTO?

We've established two CTO prerequisites from above:

1. The CTO is a single-industry (Commercial Software/SaaS) technology leadership role, and
2. The CTO is the primary product delivery executive in a Technology Creator organization leading all aspects of building and offering a SaaS product.

So, *every commercial software or SaaS company needs a CTO in a full-time, part-time, or advisory role.* Additionally, there are a few situations where a SaaS company should consider a change in the CTO role:

- **Rapid company growth:** The needs of a small, early-stage SaaS company vary greatly from the needs of a large or rapidly growing SaaS company. In the early years, fewer people do many jobs that often require individuals with a broad skillset but perhaps not as deeply skilled at each discipline. The early-stage CTO is particularly adept at leading the small SaaS company to develop good habits, avoid poor decisions, and take a hands-on approach to managing the output of a small team. Rapid growth and the demands of a large SaaS company require very deep technical skills across many disciplines in the organization, with a CTO who has experience leading large teams or during rapid growth. Often, the CTO that got the company to the growth stage is not the right CTO to take the company to the next level.
- **Re-architecting or re-platforming an existing software product:** It's not unusual for a software product to reach a point where significant changes in

the underlying platform or architecture are needed - possibly due to very high technical debt, poor architecture and development decisions or simply a change in the prevailing technologies in the market. Often, in these situations, the individual who contributed to the current state, whether in the CTO role or not, has insufficient experience in understanding the many technical, organizational, and change management tasks required to keep the current product operating in production while building and deploying the new product in parallel. A CTO with experience in larger SaaS companies who has led teams through similar transitions may be needed to take the primary CTO role, oversee the development of the newly architected product, or advise the incumbent CTO through the transition.

- **Changing product delivery models from on-premise to SaaS:**
On-premise delivery models differ from SaaS delivery models so significantly that, in many respects, they should be considered two different companies. The approach to changing product delivery models from on-premise to SaaS alone easily justifies an entire book. While an experienced SaaS CTO should be capable of transitioning from an on-premise to a SaaS delivery model, it would be a significant risk for a company to trust a CTO without SaaS experience to lead such a transition.
- **Inconsistent delivery of value from Product Development to the business:** While it's rarely acceptable to allow a business function to deliver value to the business inconsistently, it is especially unacceptable if that business function is supplying the company's primary revenue-generating product. Such is the case with the Product Development function in a SaaS company. Recall that it is the job of Product Management to define the product that must be delivered, and it is the job of Product Development to deliver it. If the CTO cannot deliver consistently, the perspective of a new CTO is required as a replacement or, at a minimum, in an advisory capacity to help the incumbent CTO and the company understand the underlying causes for the inability to deliver.

- **The CTO role is combined with another role:** The importance of the CTO role and the technical abilities of a CTO in a software company often lead the CTO to take on more responsibilities to exert greater control over their ability to succeed in delivering the product. The most common examples include the CTO taking on Product Management, Sales Engineering (customer qualification and demos), Security, and Customer Support. While it may make sense for the CTO to cover these roles in early-stage companies or temporarily while the role is vacant, it is a red flag if the CTO continues to serve in these roles long-term as the company grows.
- **The CEO is performing the CTO role:** It is very common for the technical founder and CEO of early-stage SaaS companies to assume the CTO role. However, as the company grows, this individual will either delegate the CTO role and remain the CEO or vacate the CEO role. Aside from the obvious challenge of having the capacity to do both roles, a number of dysfunctional behaviors will persist if the CEO remains in the CTO seat:
 - The CEO/CTO exerts undue influence over Product Management (or keeps Product Management entirely) often prioritizing technical features at the expense of input gained from Sales, customers, or competitors
 - The CEO/CTO spends too much time on Product at the expense of supporting the rest of the organization and spending time in front of customers
 - The CEO/CTO may tolerate poor performance in Product Development while holding all other functions to a higher standard.
- **The CTO does not report to the CEO:** If the CTO and their team report anywhere other than the CEO, the SaaS company is setting itself up for failure. The most common outcome is the SaaS company's inability to hire and retain a world-class CTO; the best CTOs will see this as a significant red flag. The CTO that the company *can* hire in this situation will almost certainly be less effective due to a host of direct and indirect consequences:
 - Difficulty attracting top SaaS technology talent

- Difficulty building or maintaining a competitive product
- Production issues due to insufficient investment in retiring technical debt and a stable production infrastructure
- Low customer satisfaction and churn due to slow/late release of features and inadequate response to product issues
- Internal frustration between Product Development and other functions due to poor delivery performance by Product Development
- Poor financial performance as a result of all of these combined



What experience, spend, and availability are required?

With an understanding of what is driving the need for a new CTO, a CEO must consider the following:

- What CTO experience does the organization require? ,
- What can the organization afford to spend for that experience? & What can the organization afford to spend for the technology function as a whole? and
- What type of candidate availability is required?

Experience

For an executive role like a CTO, there are three dimensions of relevant experience. The quality and quantity needed for each type of experience will vary between organizations and are at least partially dependent on what is driving the need for a new CTO.

- **Overall Work Experience** includes the total number of years of relevant work experience, the type of work experience, the scope of roles served, and the amount and extent of executive and Board-level interaction. Significant for the CTO role is the number, duration, and scope of CTO roles, including the size of the organization (revenue and people), size of the Product Development organization (people), amount of technology spend responsibility, time in the role, and the reporting relationship for the role. Referencing the discussion of the CTO role above, the CTO generally reports to the CEO. If the CTO reports to another technology leader, it may be a divisional CTO role or a direct report of the CTO and not considered a CTO role. Consulting roles that serve or advise CTOs or CEOs about the CTO's effectiveness are generally not considered time *in* the CTO role.
- **SaaS Industry Experience** includes relevant work experience for other SaaS companies. Experience in the CTO role is best, but SaaS experience in non-CTO and consulting roles is also valuable. While as much as 80% of the

knowledge and experience a CIO or CISO needs to succeed is not specific to a given industry and, when required, can be learned relatively quickly, SaaS industry experience for a CTO is essential. However, experience in a particular industry within SaaS - such as products targeting Healthcare, Fintech, Retail, etc. - is not essential as the majority of the industry experience required for a CTO to be successful is specific to software and the SaaS delivery model, not the target market of the product. Finally, leadership of the software development function, likely reporting to a CIO, in organizations that are primarily Technology Consumers is similar to, but not sufficient alone, as a qualification for a SaaS CTO role.

- **Software Product Development Experience** includes relevant work experience in several areas:
 - *Software development*, including writing, testing, deploying, and supporting code for a commercial software company
 - *SaaS Infrastructure*, including physical and virtual compute infrastructure, networking, security, logging and log management, capacity, and performance management, monitoring and incident response, and cost management
 - *Development and Security Operations (DevOps and DevSecOps)*, including source code management, test management, continuous integration and deployment, embedding security best practices in all phases of development, and monitoring/response for security threats
 - *Compliance*, including understanding the relevant compliance frameworks, the practical application of the framework and requirements to a given company and product, and working with customers and auditors to explain and defend the company's security posture.

As with industry experience, functional experience relevant to a given organization is almost always positive but can be overused. CEOs may be tempted to screen for CTO candidates with specific functional experience (e.g., Java, PHP development language,

or Azure cloud) but may overly restrict the candidate pool when that experience may be more appropriate for the CTO's direct reports (or an outsourced relationship). Specific functional experience may be more relevant to smaller or early-stage software companies but generalized experience (e.g., a different development language or another cloud vendor) is likely sufficient considering other capabilities of the candidate.

Spend

The discussion of *spend* regarding the CTO role has two components: how much an organization spends for the CTO role (*technology leadership spend*) and how much the CTO spends on products, services, and people within the CTO's organization as a whole (*technology spend*). It is too simplistic to assume that *more spend* is always better or required, and there are nuances to *spend* that play a role in selecting a CTO.

- **Technology Leadership Spend** - What an organization can afford or is willing to pay for the CTO role can significantly impact the CTO they can attract. It can also signal how the organization perceives the CTO role. While it is instinctive for most organizations to default to full-time employment, CEOs should be aware of alternative approaches to solving for technology leadership that offer on-demand, as-a-service models providing full-time, part-time, short-term, and long-term engagement that maximize experience within the three dimensions discussed above. The right amount of technology leadership spend is that amount of money that will attract the most experienced leader the organization can afford - including through fractional and interim assignments.
- **Technology Spend** - The spend level available to the CTO is perhaps their most important lever in achieving what is required to succeed in the role. It is not, however, always *more* spend that is the right amount of spend to allow a CTO to be successful. The right amount of technology spend is **the least amount of money possible to achieve an objective measure of success within the**

context of financials (revenue and profitability), **complexity** (people and physical locations), **industry, appetite for risk, and innovation posture**.

One of the hallmark capabilities of a world-class CTO is helping an organization align its expectations of technology outcomes with its capacity to invest in, support, and assimilate those outcomes. Similarly, unrealistic expectations of technology outcomes in this regard contribute to higher failure and turnover in the CTO role. Often, an assessment by a highly qualified technology leader can help set realistic expectations in preparation for hiring a CTO.

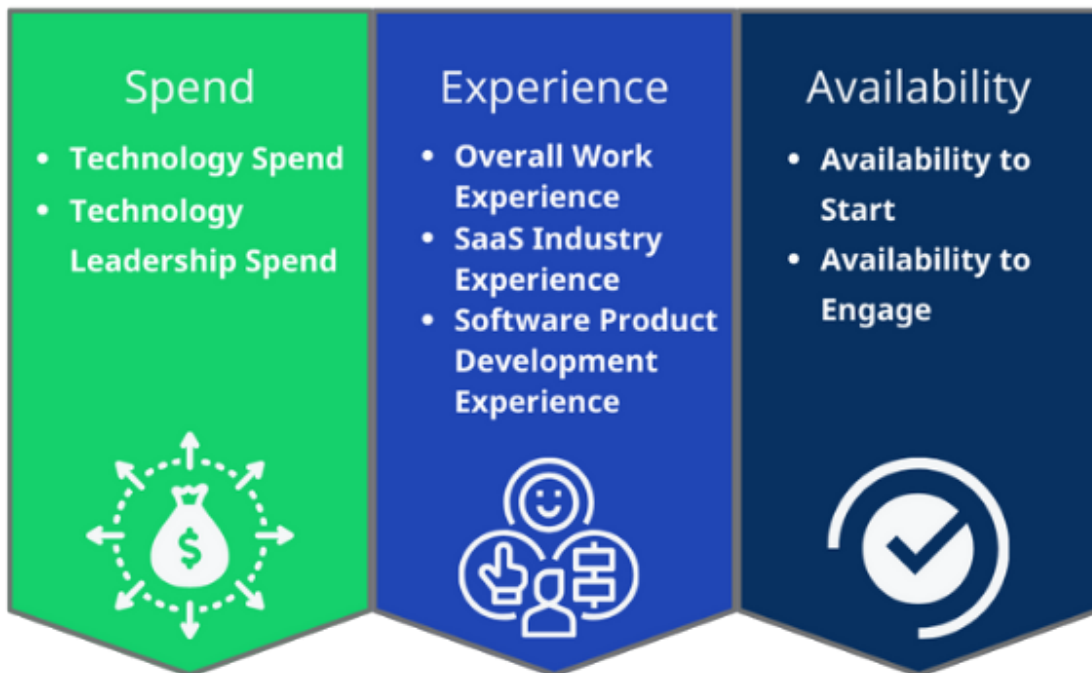
Availability

An organization's needs driving the hiring of a CTO may impact the number of possible candidates based on their availability in two areas:

- **Availability to start** - Most searches at the executive level can take 6-9 months. If the organization has strong secondary leadership in place or engineers an orderly transition with the existing technology leader, a 6–9-month search may not be an issue. However, if a prolonged CTO vacancy will disrupt the organization, put the continuity of technology initiatives at risk, or prevent the organization from pursuing impactful new technology initiatives, a 6- to 9-month search may pose a big problem. An interim (full-time) or fractional (part-time) CTO is the best option when near-immediate availability is needed. An added benefit of the interim and fractional CTO relationship with no long-term commitment is that there is often less resistance to getting started quickly. In contrast, the perceived need for greater due diligence for a "permanent" role will cause the organization and the candidate to move more slowly.
- **Availability to engage in a variety of ways** - In addition to the immediacy of availability, the organization may need the availability for a candidate to engage

in ways beyond traditional full-time employment. Not every CTO is interested in, comfortable with, or qualified for fractional or interim roles. CTO candidates with more experience, greater financial stability, higher risk tolerance, and an entrepreneurial spirit may be more appropriate for interim or fractional roles.

CTO Requirements



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What are the hiring approach options?

The previous two sections encouraged CEOs to think holistically about the organizational need driving the selection of a new CTO and reflect on the required experience, spend, and availability before selecting a hiring approach. While executive search remains the most familiar hiring approach, knowing all options empowers CEOs to make the best choice for their organization's short- and longer-term needs. This

section reviews the Executive Search and Leadership-as-a-Service approaches to finding a CTO.

Executive Search - Search to Own

Retained executive search firms take a consultative approach to understand an organization considering a search to fill an executive role. The consulting process ensures that each client receives their full attention to craft search priorities and a search strategy that considers their unique needs for the role and the leader. A reputable firm will often understand the organization's culture, explore the reasons for the vacancy or new role, and become aware of any HR guidelines for the candidate. They may also develop insight into the personalities, work styles, and preferences of the CEO and the intended role's peers and spend time crafting a detailed job description and candidate profile specific to the client's organization. Successive interviews and feedback lead to selecting a preferred candidate who, hopefully, accepts the offer and transitions into the new role as a full-time employee.

Larger search firms have specialized practices for specific roles, and some search firms specialize entirely in roles within a particular domain, such as Finance, Technology, Human Resources, etc. Fees for retained executive search services typically amount to one-third (33%) of the candidate's first-year cash compensation, including the base salary, signing bonus, and any other projected bonuses. The fee is paid in equal installments upon the start of the search, 60 days into the search, and following a candidate's acceptance of an offer. For a CTO, this acquisition cost amounts to approximately 7% of cash compensation over the average tenure of 4.6 years (as of 2019). It does not include the cost of equity compensation, benefits, severance, and ongoing employment costs. The time to conduct a search varies but averages between 3 to 9 months from the start of the search to the candidate's start date, during which the client is usually without leadership in the role.

Leadership-as-a-Service - Access over Ownership

Leadership-as-a-Service (LaaS) is a managed service that allows an organization to engage vetted, world-class executive leaders in as little as a few days to 2 weeks.

Technology Leadership-as-a-Service (TLaaS) is the LaaS concept applied exclusively to the CIO, CTO, and CISO roles.

In most cases, executives of firms offering Leadership-as-a-Service have decades of experience *in* the role they are offering. Combined with the tens or hundreds of executives serving their clients in those roles, they are also experts *on* the role.

Role-based expertise and a ready supply of available executives can dramatically reduce the time needed to fill a vacancy or apply senior talent to an important initiative. Technology leaders in a TLaaS model enjoy association with tens or hundreds of other technology leaders incentivized to help one another serve clients in ways that no single technology leader can achieve alone - employed or not.

TLaaS may be appropriate when an objective review of the organizational needs, required experience, spend, and availability allows for a CTO in an interim or fractional role. TLaaS may also offer a CTO in a situational leadership capacity to facilitate an important initiative such as an assessment, transformation, or consolidation for a specific outcome.

- Fractional CTOs engage for 1-2, 2-3, or 3-4 days/week, and the relationship is generally open-ended - continuing as long as the arrangement works for both the client and the leader.
- Interim CTO roles are full-time and generally assumed to end when a full-time, employed CTO is found - usually through executive search. Hybrid models allow a fractional or interim leader to be an employee of the client without requiring a long-term commitment while remaining connected to the larger community of technology leaders. Finally, most Leadership-as-a-Service firms offer a path to becoming a full-time employee of the client for a placement fee.

In contrast to up-front fees for executive search, Leadership-as-a-Service embeds fees for the leader in the monthly cost. Fees only last as long as the leader provides the needed value and can increase or decrease in response to the natural rhythm of innovation and stability over time. Models vary, but a general rule of thumb is that Leadership-as-a-Service costs, on average, about 20% more than the base salary of an equivalent leader in a full-time role. However, the cost of a CTO for 2-3 days per week with more experience across all three dimensions without hiring risk may be similar to, or less than, the combined acquisition, ongoing, and severance cost of a full-time, employed, possibly less-experienced, CTO with the associated hiring risk.

Executive search offers a custom approach to finding a perceived perfect fit for an expected long-term role. In contrast, Leadership-as-a-Service provides a ready pool of experienced leaders for immediate engagement under flexible terms.

Executive Search vs. Leadership-as-a-Service: What's the Difference?

Search to Own	VS	Access over Ownership
Conduct an exhaustive search for 6-9 months		Immediate access to the right leader, as much as you need, for as long as you need
Pay a lot up-front		No up-front costs- pay as you go
Make a long-term commitment		No long-term commitment required
Hope you made the right decision		Minimize risk, maximize return

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How does the CEO make a final selection for a CTO?

After considering the organizational need driving the selection of a new CTO, reflecting on the required experience, spend, and availability, and reviewing the two approaches to hiring a CTO, the CEO will need to choose a hiring approach and make a final selection of a CTO. The good news is that either approach can produce equally qualified and effective CTOs. The right choice for a given organization, in a particular situation, at a given time will influence the hiring approach and final CTO selection. The Executive Search and Leadership-as-a-Service options are covered below.

Choosing Executive Search

The retained executive search model may be the obvious choice if the organization:

- feels most comfortable with a traditional search,
- the assessment of the needs, required experience, spend, and availability suggests a full-time, employed CTO is best and
- there is confidence in the organization's ability to match a candidate's capabilities with the organization's needs

Select a Search Firm

There are over 5,000 search firms in the United States and 20,000 or more worldwide, so there is no shortage of choices. The more specialized the firm, or practice within a firm, is toward the CTO role and possibly even the CTO role within a given industry, the more likely the firm will be familiar with qualified CTOs when the firm reaches out to discuss the role. Demonstrated experience completing CTO searches with references to satisfied clients is a must. The search process is long, involving many hours of discussing the role, the profile, the candidates, and the offer strategy. Finding senior leaders and associates of the firm that match the organization's values and are enjoyable to work with can make the entire process more pleasant.

Frame up the Role

The search process emphasizes crafting a specific profile that will be most successful in the role at a given organization. Great care is taken to get input from multiple sources to arrive at a composite profile representing the perfect candidate. Finding the ideal candidate is a great goal, but the CTO role is relatively static across organizations and industries at any given time. Don't get creative in defining the role. A great CTO knows how to be a CTO and is a living profile. Value candidate experience and tenure most.

Evaluate Candidates

The highest predictor of success in a CTO role is past success in a CTO role and is likely not unique to the organization. When evaluating CTO candidates, consider the following observations:

- Success in the CTO role is best reflected by the number and duration of CTO roles served. There is no substitute for experience "in the seat," and change teaches lessons. More CTO role experience is better than less CTO role experience. Place the most value on candidate experience.
- Assume leadership in prior organizations acted rationally, keeping successful CTOs longer and exiting unsuccessful CTOs sooner. Also, assume CTOs acted rationally, staying longer in circumstances where they could be successful and leaving those where they could not. There are exceptions, of course, but assuming rational behavior is a good start.
- The success of a CTO of any given organization is highly dependent on factors outside of their control. What worked in one organization at a specific time, with certain people under particular circumstances, may not work in another where all those factors are different. Adaptability is necessary to succeed anywhere, but some organizations contribute more to the failure of the CTO role than the CTO themselves. Not all such claims by candidates are excuses.

Make the Selection

The average tenure of a CTO in 2019 was 4.9 years, so the pool of available and interested candidates will be different on the next CTO search (source: Fortune, [CTOs are highly sought after, but companies struggle to retain them](#), 2/21/23). Organizations cannot eliminate all hiring risks. Select the most experienced candidate available at the time and emphasize being an organization that can contribute to CTO success and commit to early detection of, and fast response to, a poor fit (e.g., fail fast).

Choosing Technology Leadership-as-a-Service

If the analysis above fails to suggest a definite choice between Executive Search or Leadership-as-a-Service, or the potential to immediately engage a world-class, full- or part-time CTO with little hiring risk is attractive, Leadership-as-a-Service is a compelling choice.

Selecting a Technology Leadership-as-a-Service Provider

There are far fewer individuals and Leadership-as-a-Service firms offering fractional and interim CTO services than there are search firms, so finding one may prove more challenging than engaging one.

- A CEO's personal network is a good source of referrals, including other CEOs, Board members, Private Equity and Venture Capital investors, past colleagues, trusted advisors such as attorneys, CPAs, bankers, consultants, executive peer group chairs, and members, and other leadership-as-a-service providers offering finance, marketing, legal, human resources, and operations leaders. Another option is to check the major search engines for relevant terms such as "interim

CTO," "fractional CTO," or "virtual CTO" (a highly fractional advisory CTO role).

- Among the referrals or search results, value the number and breadth of individuals available to provide CTO services. A single individual can be an excellent choice if they are available and interested in the work. A larger firm with tens or hundreds of resources will provide more choice, is more likely to have experience specific to a given industry or situation, can more readily offer additional or different resources as needed, and increases the effectiveness of any given CTO through a vibrant community of fellow technology leaders. A firm with many resources indicates that its business model is attractive to the CTO and that there are enough clients to keep them as busy as they want.
- With a short list of individuals or providers, visit their website, check LinkedIn, and contact their leaders via chat or email to start the conversation. Get a feel for their experience, connections, and the quality of their online presence. A successful provider will offer education online, respond quickly, and be ready and willing to help solve the need for a CTO or advise on alternative solutions.
- An initial discussion with a leader with extensive experience helping organizations evaluate and select fractional and interim CTOs will uncover specific requirements and prompt deeper dialog about the factors that will produce the best fit among available resources.
- Based on the organization's preferences and the number of resources fitting the request, the provider presents one to three technology leaders with associated biographies and experience. Some situations may prompt a proposal covering the understanding of the situation, the approach to solving the need, and a discussion of the proposed people.

- If a proposed CTO is acceptable, an agreement between the organizations is signed. The new CTO may start as soon as the CTO and client can arrange a mutually agreeable date.

Getting Started with Technology Leadership-as-a-Service.

Most fractional and interim CTO providers will be able to get started very quickly, often providing viable candidates within hours to days and beginning within one to two weeks if speed is essential.

Leadership-as-a-Service in Action.

Once the fractional or interim CTO starts, they start doing what CTOs do - assuming responsibility and accountability to support the organization. Generally, they operate like any CTO - attending leadership and Board meetings, providing status updates, managing the technology organization, interacting with customers and vendors, and carrying out the responsibilities and priorities of the CTO role. Interim roles are full-time and expected to be available just as any executive would be. Fractional roles are part-time and expected to be available on a regular, agreed-upon schedule and as-needed on a best-efforts basis. Fees are usually invoiced monthly or twice monthly. Larger firms have sufficient resources for ongoing contact with the firm's leaders as necessary and administrative support for resolving issues and smooth operation. Fractional and interim roles can be short-term or extended for years when there is a good fit, and the organization believes the value proposition meets its needs.

As mentioned above, even if the organization has chosen Technology Leadership-as-a-Service to solve their technology leadership needs for a particular time or situation, Executive Search is often used to find a full-time employee. Most providers have good relationships with search firms and can make a referral when needed.

Combining Technology Leadership-as-a-Service and Executive Search

Executive Search and Leadership-as-a-Service are not entirely mutually exclusive. Executive search is almost always part of the interim CTO process and can be a part of the fractional CTO relationship when it's time to transition to a full-time employee. The fractional or interim CTO can be one of the most objective and qualified participants in the search:

- Having spent ample time with the CEO, Board, and peer executives, they understand what it will take for the new CTO to be successful and what the organization must do to contribute to that success.
- Based on a deep personal understanding and working knowledge of the organization's needs, they can help evaluate candidates to determine the best fit. They can also be an informed and technically adept voice to the potential candidate to help them understand the opportunity, give insight into the organization and its people, and describe any specific capabilities or approaches needed to succeed.
- If all parties agree, the fractional or interim CTO can continue to provide services through the transition to give the new CTO extra time to focus on the most critical issues or even act as a force multiplier to augment the new CTO's capabilities to tackle some important initiatives.

Even if the organization has started an executive search and has not engaged a fractional or interim CTO from a Leadership-as-a-Service provider, it's not too late! Doing so will take some pressure off the organization to make a quick decision, provide reassuring coverage for the role while the search is ongoing, and, as explained above, can contribute positively to the search and transition after selection.