23-217
November 3, 2023

interviewing.io: Reinventing Technical Hiring

Pierre Azoulay, Cate Reavis, and Ping King

> *The sad truth is that if you don't look good on paper and you're applying to a company that has a strong brand, unless you know someone in the company, the odds of you getting an interview are very slim.*[1]
>
> – Aline Lerner, interviewing.io Founder and CEO

When Aline Lerner ended her call with a senior recruiter from Snap Inc. in early 2020, she knew that she would have to make some major decisions. It was the second significant deal the MIT alum had negotiated on behalf of interviewing.io (IIO), a company she founded in 2015, that had fallen through in a matter of weeks. With IIO's service, software engineers could practice technical interviews anonymously, for free, with interviewers from "Big Tech." The San Francisco-based company made money from companies who wanted to get introduced to those engineers scoring in the top decile (so-called "top performers") during their practice interviews. (See **Exhibit 1**.)

Aline's motivation for starting IIO stemmed from a conviction acquired through years of experience both as a software engineer and a recruiter: the hiring process for software engineers was fundamentally broken. Hiring involved the combined efforts of recruiters—most of whom had little to no technical expertise—and engineering team members who found themselves dragged away from coding duties to perform technical interviews. It was a perfect storm: recruiters and human resource (HR) personnel ended up relying too much on status cues and pedigree to elevate some candidates over others, while engineers devoted countless hours vetting the technical aptitude of candidates who stood little chance of being hired.

Not only was the hiring process inefficient, it was also far from meritocratic. Software engineers who didn't come from big-name schools or didn't hold a computer science degree had a hard time getting

This case was prepared by Professor Pierre Azoulay, Cate Reavis, Associate Director of Curriculum Development, and Ping King, MBA Class of 2024.

noticed, and companies ended up chasing the same narrow slice of the available talent pool (**Exhibit 2**). Moreover, according to an experiment Aline had run, pursuing pedigreed candidates wasn't a good strategy for employers, because résumé credentials were poor predictors of on-the-job performance.[2]

Aline had started a blog about the hiring process which she titled "Make Technical Recruiting Suck Less." Many of her posts ended up on *Hacker News*, a social news website dedicated to computer science and entrepreneurship. In one blog post, she wrote, "If I'm a good engineer, it should be easy for me to talk to a hiring manager at a company I might be interested in, at a time of my choosing. But that's simply not possible today."[3]

Aline had launched IIO hoping it would help fix the process inefficiencies in hiring software professionals. As an engineer herself, she had little patience for vague moral exhortations and endless debates about fairness. The company's statement of values she had crafted read:

> *...If we want companies to adopt a fairer way of doing things, we can't just raise our arms and wave them about and yell about how the world should be fair. We have to make it something they are incentivized to do. Therefore, it's our duty to make hiring cheaper, faster, and better, and get our customers to do the right thing in the process!*

In describing what she hoped IIO would bring to the crowded technical recruiting marketplace, Aline emphasized her commitment to make the process more candidate-driven. She focused on enabling interactions between engineers on both sides of the interviewing table so that they could "be smart together":

> *For us, the most important interaction that happens during a job search is a candidate talking to a peer or a hiring manager and having this really organic high-signal conversation about the actual work, about the company, the roadmap, and all of these things that you need to talk about with a domain expert in order to uncover whether there is a good match.*

Another commitment was to never operate like a recruiting agency, but rather as a true digital platform. Unlike many other companies in the space, IIO did not hire recruiters in order to place its candidates. In an implicit dig at her competition, Aline stated,

> *Of course we're going to need to hire engineers, and product people, and some account management and customer support people, but we're never going to hire recruiters or talent managers, or talent advocates, or what have you. We want our platform to do the unglamorous work, so that the conversation between the candidate and the company can take center stage once we have done our job.*

In less than five years after the company's launch, almost 20% of Bay Area engineers had set up an account with IIO. The company had hosted over 37,000 mock interviews. Nearly 100 software engineers had been hired after being introduced to companies on IIO, 40% of whom were categorized

as "nontraditional," namely women, people of color, or those from working class backgrounds.[4] Hundreds more had found positions through other channels following their rounds of interview practice on IIO. After raising a seed round in 2017, the company's annual run rate at the end of 2019 was approximately $2M.

Yet, ominous storm clouds were forming. In early 2020, a mysterious and highly contagious illness was spreading quickly, particularly on the U.S. East and West Coasts. Companies were starting to get nervous and beginning to pull back on their hiring plans.

With companies' hiring plans in a holding pattern, Aline had to find a new revenue stream, and fast. One idea was to start charging engineers who came to the platform to practice technical interviews. But, in Aline's mind this was hardly an ideal solution. The platform's free offering for software engineers had become part of the company's credo. In fact, IIO's motto was "It's free and always will be."[5] Aline worried that charging engineers would destroy the small but vibrant community she had created over the past five years. Without engineers, she had no company. But without an alternative revenue stream, IIO's future was in jeopardy.

Software Engineer Recruitment: Industry Overview

Software engineer recruitment in the U.S. was a huge market. In 2018, there were 3 million software engineers in the country, of whom roughly 300,000 were located in the Bay area.[6] IIO data suggested that senior candidates (those with between four and eight years of experience) accounted for approximately 45% of the labor market, "intermediates" (those with two or three years of experience) for 25%, "juniors" (those with less than two years of experience) for another 25%, and new graduates, 5%.[i] On average, engineers switched jobs once every 2.5 years, and 80% of these moves occurred without referral from a current employee.[7] According to Aline, the "Big Tech" companies, led by FAANG (Facebook, Amazon, Apple, Netflix, and Google), comprised 80% of hiring activity.[ii] One software engineer who had had stints at Microsoft, Amazon, and Google provided a few reasons why software engineers job hopped so much:

- Because they can: The demand for good software engineers is high.
- Grass is greener: You know how to do your job, but there is some new "hot company" or technology grabbing your attention.

[i] Software engineers with more than eight years of experience tended to be employed as managers (as opposed to individual contributors) or as self-employed consultants. A rarefied few engineers often went with titles such as "staff engineer" or "senior fellow," but only superstar academics could be hired from the outside to fill these positions. Late bloomers in the field were hard to place in "big tech" or startup firms, in part because ageism was a factor in the hiring process.

[ii] The boundaries of "Big Tech" were somewhat ill-defined. The term referred to the companies that made up FAANG (Facebook, Amazon, Apple, Netflix, and Google) and about a dozen "FAANG-adjacent" companies such as Uber, Airbnb, Dropbox, etc. Microsoft was curiously omitted from the FAANG acronym, but had obvious FAANG-like status. What these employers had in common was that they were large players on the demand side of the software engineering labor market and offered the highest compensation packages in the industry.

- Lack of recognition: Companies pay higher rates to get new talent often at the expense of existing talent.
- Higher rewards: People generally get a raise when they change jobs. Those who stay in one spot earn less than those who move.[8]

Pay varied widely by company, a company's location, and the software engineer's level of experience. In Silicon Valley, a senior engineer could earn an annual base salary of $150,000 to $200,000, and even more at a FAANG company ($200,000-$300,000). Bonuses and stock options could increase compensation even further (**Exhibits 3a** and **3b**).

While many industry observers believed there was a shortage of software engineers in the U.S., the truth was more complicated. In 2018, for example, there were 43 tech applicants per hire versus 21 non-tech applicants per hire.[9] Employers perceived a shortage of "qualified" talent, those with the skills and technical expertise to work with emerging technologies such as blockchain, machine learning, or cybersecurity.[10]

While memory of the great recession had started to fade, recruiting industry veterans pointed out that recruiting was a bellwether occupation: Demand went up as companies expanded hiring in good times and typically fell drastically as employers froze hiring or laid off workers in a bust.[11]

The Hiring Journey

The labor market for software engineers was plagued by search and transaction frictions. It was hard to know when candidates were looking for a new position. No universally accepted credentialing method existed, so companies needed to technically vet candidates prior to hiring. Standardized tests were not a solution because senior candidates, who were always in high demand, did not need them to generate job offers. Meaningful interview data was fragmented across companies and applicant tracking systems (ATS). In the absence of high-fidelity talent signals, companies hired armies of recruiters who repeatedly reached out to the same candidates. Without domain expertise, these intermediaries could not effectively source or filter candidates. As a result, the process was protracted and inefficient.

During the hiring process, job seekers interacted with hiring managers, in-house engineers conducting interviews, and recruiters. Inside a company, the hiring manager, almost always an engineer, was the project team leader with an open position to fill. Recruiters either worked for the firm's HR department, or an external agency paid by the company to source candidates. Interviewers were engineers who took time off from their coding duties to evaluate candidates.

Interviews played a key role at every stage of the process. If a candidate's credentials and experience survived a résumé screen and generally fit the position requirements, they would have an interview with a recruiter.[12] The goal of this interaction—conducted on the phone and lasting from 45 minutes to one hour—was both to further assess the candidate's suitability for the role (based on the job description provided by the hiring manager) and start "selling" the position and the employer to the candidate.

If the candidate expressed interest in exploring the opportunity further and the recruiter believed there was a good fit, the next step would be to participate in a technical interview. This typically consisted of live, synchronous coding challenges over the course of an hour. In some cases, the hiring manager or one of their direct reports conducted the interview. More frequently, the candidate was matched to an interviewer who was independent of the hiring team and unaware of the open position's requirements. (**Exhibit 4** features a forum post by a highly frustrated software engineer.)

If the candidate's coding skills met or exceeded the hiring bar, the company invited them for an onsite visit, typically a day-long series of interviews where they got to meet their potential co-workers and learn more about what the job would entail. An onsite visit might include discussions focused on practical challenges faced by the hiring team, but more typically consisted of yet more technical interviews, sometimes complemented by a system design round (e.g., a candidate might be asked to draw on a white board the sketch of a software architecture for a Twitter clone). If deemed successful, the visit could culminate in a job offer, but "closing out" the candidate might well necessitate further rounds of negotiations.

Company Pain Points. The recruitment process was often grueling for both candidates and hiring companies. For companies, relationships between hiring managers—often the head of an engineering team—and in-house recruiters could become contentious. As Aline noted, "…the hiring manager's always disappointed by how the recruiter's not getting them enough candidates, and the recruiter is always angry at the hiring manager for not prioritizing interviews and for not being responsive about candidate feedback."

Recruiters didn't speak the same language as engineers and weren't always able to give a candidate a realistic sense of what the position and role entailed.[13] As Aline wrote in a blog post, "Because recruiters are, generally speaking, not technical, instead of relying on some internal barometer for competence, they have to rely on quickly identifiable attributes that function as a proxy for aptitude," such as where a candidate went to school or a prior experience with a FAANG company.[14] The more atypical the candidate profile (such as that of autodidacts without computer science degrees), the higher the likelihood they would be weeded out very early in the process.

The presence of third-party recruiters complicated the process further. Their interactions with the hiring company were typically filtered by the HR team, without opportunities to engage the hiring manager in direct dialog. Aline explained that in-house recruiters were reluctant to admit they leaned too much on outside recruiters, lest their budget be jeopardized in the future. They could also grow frustrated with the mismatch between the profile of candidates they needed and the profiles proposed by an outside agency.

According to industry data, it could take between 40 and 80 days to make a hire (**Exhibit 5**), although for the type of experienced candidates sought by IIO, it took 75 days on average. The hiring process

unfolded in five distinct phases—sourcing/résumé screen, recruiter call, technical screen, onsite visit, offer—with the probability of success increasing after a candidate cleared each phase. Two thirds of hiring costs were incurred "at the top of the funnel," including résumé screen, recruiter call, and technical screen. Though firms spent more hours with each candidate "at the bottom of the funnel" (onsite, offer generation, and close out), the significantly reduced number of candidates in the later stages implied more modest costs. (**Exhibit 6** provides a rudimentary model for the typical outbound hire, i.e., one where the company's HR staff reaches out to potential candidates.)

On average, an employer would need to source 450 candidates to generate one accepted offer, translating to expenditures of approximately $40,000 per hire, assuming a $100 hour rate for the in-house recruiter and a $150 value for an hour devoted to hiring by an engineer.[15]

Candidate Pain Points. Senior engineers tended to be skeptical of recruiters. They were constantly bombarded with job hopping opportunities. As Aline explained, "If you're an engineer and you open your LinkedIn messages, you're just going to see a wall of spam. And most of it will not be relevant to you." As a result, one recruiter claimed that "a lot of good engineers don't want to be found."

The technical interview process, during which companies got a sense of a candidate's skill level, was angst-inducing for most candidates, especially (and somewhat ironically) senior ones. Candidates went into technical interviews uncertain about what they might be asked. Historically, interviews had focused on solving general brain teasers such as "How many golf balls would fit into a Boeing 747?", but these had fallen out of favor after Google showed that a candidate's ease with solving these problems did not predict meaningful metrics of job performance. Others focused on knowledge of a specific programming language. Amazon, for example, looked for engineers who knew Microsoft C# and Java, whereas Google looked for those who had experience with Linux and Java Script.[16]

Increasingly, the mainstream approach to interviewing focused on solving algorithmic problems, a mainstay of the computer science college curriculum, although many in the engineering world remained unconvinced that this skill correlated with creativity or productivity. A software engineer who got a job at Google through IIO, explained: "What they ask you doesn't align with what is actually being asked of you on the job…You're solving a brain teaser instead of doing an assembly line task." Aline added: "You can be an exceptional engineer and do very, very poorly in these interviews if you're rusty. And that doesn't seem fair, right? Like, if you've earned your stripes and you're good at what you do, why should you have to study for a test?"

For non-pedigreed candidates (those without a computer science degree from an elite school such as MIT, Stanford, or Carnegie Mellon, or without a degree in computer science at all), the recruitment process was particularly difficult. The same was true for women and minorities. A lot of weight was put on résumés, which meant that all companies often ended up chasing a narrow slice of the talent pool.[17] Aline recalled an episode that stuck in her mind:

> *There is one startup that I actually worked with that I won't name, but actually gave me a handy slide to make my life easier. It said: 'You're a recruiter. You work for us. Here is a flowchart. Did they go to this school? No, they didn't. Okay, then do not pass go—do not collect $100. F**k you, we're not taking this candidate.'*[18]

Submitting a résumé for an open position felt like "sending it into a black hole," explained Mike Mroczka, who was one of IIO's interviewers. "And if you get a recruiter call, they're probably going to be laid off, fired, or just quit from burnout before you're through the interview process, which, by the way, is anywhere between a month to probably closer to three months if you include team matching."

Upon completion of a technical interview, job seekers typically did not receive any feedback. They only learned they did well if they were called back for an onsite visit. This absence of feedback was typically justified on legal grounds.[19,20] As a consequence, the interviewing process provided very little value to engineers who found themselves "dinged" during the early stages.

Competitors

The technical recruiting industry was fragmented and maintaining profitability tended to be elusive for most players. Employers were not willing to pay intermediaries to acquire junior engineers, and acquiring senior engineers was expensive since they had ample bargaining power. The typical firm in the industry was a staffing agency, but, in the recent past, new players relying on technology to source or vet candidates had appeared. Neither candidates nor employers felt a sense of loyalty to any specific tool or service. In particular, employers used many agencies concurrently and interchangeably.

According to Aline, the technical hiring industry could be broken down into three distinct groups (**Exhibit 7**). One group of firms primarily focused on sourcing candidates. A second group of players focused on vetting the technical skills of candidates. The third group provided software tools useful to orchestrate the hiring process. As Aline explained, companies that IIO competed with differed in how they approached credentialing, the methods to identify talent (and whether they provided value to candidates), and the degree of autonomy granted to candidates (i.e., talking to the companies they were interested in).

Most of IIO's interview practice competitors were online coding sites like LeetCode, CodeSignal, Codility, and HackerRank.[iii] This approach lacked the key element present in technical interviews: an actual human being leading the interview. "A lot of people may not realize how much their coding abilities are reduced when someone is watching and when they have to narrate their process and when there's a ticking timer," an ex-Google engineer noted.

[iii] LeetCode, for instance, charged engineers $160 a year for a subscription to its premium content.

Some of the larger and more relevant competitors included:

LinkedIn Talent Solutions, which accounted for 60% of LinkedIn's revenues,[21] was arguably the most popular service enabling the search for talent at scale. A recruiter could narrow their search by using fields such as school, degree, company experience, or using key words such as "machine learning" or "C#". But there was no way to validate the self-reported aptitudes of candidates.

Hired.com (formerly DeveloperAuction) was another important player in the space. In its early days, Hired operated as a talent auctioneer: companies could bid on candidates, who then got to see the company's offer before accepting or declining an interview. Companies were supposed to honor their highest offer to a particular candidate. Meanwhile, candidates were not required to accept the highest offer (or any offer). Companies paid Hired a fee, and Hired paid signing bonuses to candidates upon offer acceptance. Hired's approach often resulted in companies bidding on a small group of candidates from elite schools. Many of these job seekers were more interested in increasing their compensation at their current employer than accepting a job offer on the platform.[22]

AngelList Talent was a subsidiary of AngelList (a website where startups could raise money from angel investors). Candidates could apply to any company on AngelList, but didn't vet candidates or help match them to the companies they were interested in. The website was akin to LinkedIn's Talent Solutions, although it focused job searches at early-stage startups.

Triplebyte was perhaps IIO's most direct competitor. The Y combinator startup didn't rely on pedigree as a way of identifying talent. Rather, the company had designed a two-part exam that promised a high-fidelity screen such that those who performed well could be introduced to any Y combinator company for an onsite interview. The first step was an asynchronous and "adaptive" coding quiz: machine learning helped tailor the test as it was being taken, to highlight and drill into specific skills. Those who did well on the first part were eligible for a lengthy technical interview with a Triplebyte contract engineer. Triplebyte raised $35 million in 2019 and used much of this investment to hire talent advocates to help match engineers on the platform with hiring companies.[23]

Karat offered companies looking for tech talent something different than the aforementioned. Karat didn't source talent. Rather, it helped companies identify the best candidates within the pool their recruiters had sourced. Companies outsourced their first- and final-round technical interviews to Karat, sending potential candidate names and résumés for a specific position and the technical question they wanted asked. Karat conducted the interview and provided companies with a rubric scoring system. Like IIO, Karat interviewers were not employees, but rather independent contractors. Unlike IIO, the platform had only two sides: companies needing to fill positions and interviewers. In 2019, the company raised $28 million in a Series B round.

Exhibit 8 provides more information on hiring competitors.

In addition, there were several "mom and pop interviewing shops" (typically operated by self-employed coaches), especially in hiring hubs such as Silicon Valley/San Francisco, New York, and Boston. These firms' value proposition often boiled down to the pedigree and experience of their individual owners. They did not guarantee that candidates would be placed in a job.

interviewing.io

When Aline graduated from MIT with a degree in brain and cognitive science (Course 9), she knew she needed a break from academia. In a radical career turn, she spent three years working as a cook in several restaurants in New York City and San Francisco. Toiling in professional kitchens taught her a lot about recruiting, and what she learned made an impression. When it came to hiring kitchen talent, she was struck by the fact that there was no résumé requirement: "You show up and bring your knives and they throw you into the thick of it."[24]

From the restaurant world, Aline returned to her engineering roots and spent four years as an application developer for a SaaS company. From there, she made her way to the technical recruitment industry. After getting some experience, she ended up leading technical recruiting at TrialPay, an alternative ecommerce payment system company, and then Udacity, an online learning platform, where, in addition to sourcing talent, she also conducted first-round technical interviews. With several years leading technical recruiting under her belt, she launched her own technical recruitment firm where she worked with in-house recruitment teams to source talent. Before sending résumés of potential candidates to in-house recruitment teams, she had candidates complete a mock technical interview with her first. As an engineer, she was better equipped to evaluate technical skills than the typical recruiter.

However, despite her recruiting experience and engineering background, Aline had a hard time getting companies to look at her candidates. She was convinced that "Big Tech" was overlooking talented engineers because they weren't from the right schools or didn't have the right degrees. One of Aline's most popular blog posts claimed that "résumés suck" (at accurately identifying technical talent).[25] "Some of the best engineers I've ever worked with have dropped out of community college, or high school," she wrote, and added, "These are people who are really gritty, and bootstrapped themselves."[26] (See **Exhibit 9** for an example of Aline ranting about the hiring process.)

A vision for a fairer and more efficient process for technical interviewing and hiring started to form in Aline's mind, with three core principles: (1) anonymizing the interview process; (2) bypassing the recruiter screen, and (3) using in-house engineering time wisely in the hiring process.

Anonymity. Aline reasoned anonymity would enable her to "sneak" in the people that were talented rather than those who merely looked talented. She speculated that anonymity would help less traditional candidates (including, but not limited to women and minorities) and leave less chance for biases to

creep into the process. The challenge would be to get companies to agree to interview candidates "sight unseen."

Right-sizing recruiters. The second core principle was empowering hiring managers by enabling early and direct communication with candidates and eliminating the activities undertaken by recruiters at the top of the funnel. Aline was not "anti-recruiter." Rather, her industry experience convinced her that their effort early in the process was wasted or misdirected. A recruiter's value was at the bottom of the hiring funnel, especially the close-out stage which followed a formal job offer. Aline speculated that recruiters might be reluctant to relinquish power and oversight over the entire process. But the misallocation of effort was not exactly a secret in the HR world.

Protecting in-house engineers' time. Interviewing diverted engineers from value-creating activities for their employers, and yet Aline was convinced that only human engineers could validate a candidate's technical aptitude. The challenge was to create an environment where engineers' time devoted to hiring was spent talking to candidates that had already been technically vetted, so that interviewers could concentrate on getting a feel for the candidate and talking about what the actual work was like on the team making the hire. Aline also noted that relatively few engineers truly enjoyed conducting interviews. Even fewer were skilled interviewers.

Testing the Concept

In July 2014, Aline began testing a service where engineers could practice technical interviewing anonymously, and for free, with an interviewer with "Big Tech" experience, allowing her to identify the highest-performing individuals and introduce them to companies looking to hire software engineering talent.

Her first hurdle was drawing in engineers to practice technical interviews. In addition to word of mouth, her blog helped spread the word. She also posted on *Hacker News* promising "Free, anonymous interview practice with engineers from top companies." (See **Exhibit 10**.) The post went viral.[27] Over the next 36 hours, 7,000 people signed up. Within a few weeks Aline e-mailed a subset of those who signed up saying IIO would be doing its first beta round of interviews. Aline recruited five friends, all engineers, to be interviewers. The small group of engineers/interviewees and interviewers met on certain nights to practice. The engineers were matched with an interviewer on a first come, first serve basis. During the practice session, they were given algorithmic questions to solve as a way to test their problem-solving skills and ability to write efficient code. Neither the interviewer nor the engineer were on camera. (In these early days their voices were not yet modulated to disguise gender, although this would soon change.)

While engineers and interviewers practiced technical interviewing, Aline began introducing IIO's hiring concept to companies she had relationships with from her previous recruiting jobs. Aline was confident that companies would be willing to give the platform a try. "In 2014, companies were

competing for talent like crazy," she recalled. "It was such a hair-on-fire problem that I didn't think they would mind if the process changed. I had a hypothesis that based on how desperate they were, anonymity wouldn't be enough of a friction point to keep them out." During these early days, the few interested companies were not yet paying for IIO's service. A few employers were testing out the platform, validating IIO's ability to surface talented candidates.

Aline would give a tour of the platform to hiring managers, engineers who conducted in-house interviews, and in-house recruiters explaining the rationale behind the candidate's anonymity and how anonymity was maintained. She explained how the top performers from the interview practice sessions could choose to be introduced to companies. She wanted everyone involved in the hiring process to understand and trust IIO's model. During these sessions, she reassured the attendees that despite the anonymity built into the process, they would be able to build rapport with engineers.

As part of her sales pitch, Aline painted the following picture for companies:

> *I'd say, 'Look, I have this platform, it's really weird. Like, it's really, really weird. You're going to talk to randos on the internet, but I promise they're smart. The engineers are practicing, we're storing their performance, we're adjusting it for interview strictness, we're aggregating it, right? You have to believe that that's better than the mess you're in.' And they'd be like, 'Yeah, okay, that kind of makes sense.' I'd say, 'Why don't you talk to four people? It's going to be blind. The reason that it's blind is because for a lot of our candidates, if you saw their résumé, you would not talk to them. And I don't want you to be biased going into the call. So just talk to four. Worst case scenario is you lose four hours, but more likely you're going to gain a really powerful new sourcing channel.'*

In selling the idea, Aline spent a lot of time with hiring managers, explaining the problem from the company's perspective, sharing with them a simplified version of the solution she was offering (**Exhibit 11**). She knew it was critical to get direct buy-in from the hiring manager, first. "I didn't want them to try to advocate for this internally until they actually believed in it," she explained. "I didn't want them using any of their political capital on something they didn't test…Hiring managers know what they want and generally they want smart people. But how do you actually explain to someone that's not technical what a smart person is? Recruiters aren't incentivized to take risks. They're not the ones with the hair-on-fire problem." Because Aline spoke the same language as many hiring managers she could ask them directly, "What do you actually want?"

Living on savings from her previous job, that first year she built the interviewing.io prototype with a friend. The company was officially incorporated in March 2015, and raised a $700,000 pre-seed round in July of that same year.[iv] In December, the San Francisco-based startup Mattermark became IIO's first paying customer.

[iv] In Aline's words: *"Having that pre-seed funding let us build the practice community without having to instantly get employer revenue."*

The original team included Aline and her cofounder Andy Marsh. Aline put together a group of interviewers drawn from her network, which included her cofounder and her then-partner, for the engineers who wanted to practice. She herself spent many hours as an interviewer during this period.

To her surprise, Aline discovered that even though the service she offered engineers was free, finding engineers in senior roles wanting to practice interviewing was not easy. "We had to beg, borrow, and steal to get senior engineers. It wasn't a no brainer," she said. The possibility of getting hired was not emphasized, lest it create in the minds of the software engineering audience that IIO was just the latest "hiring scam" in an industry that had experienced more than its fair share. Most who showed up weren't looking for a job, but wanted to practice interviews and see how they stacked up if they did start looking. "It really felt like a community," Aline said. Later, engineers joined the platform with more serious goals in mind. Online ads would contribute to the growth in registered users, but the best form of advertising was when Aline's blog posts rose to the top of *Hacker News*. Engineer registration would invariably spike in the wake of the attention (and controversy) her posts generated.

Evolving to a Three-Sided Marketplace

One of the first big changes to IIO's model came in 2016, just after the company completed its $3 million seed round. For the company to scale, both Aline and IIO's investors agreed the platform needed a larger supply of interviewers and that they would have to be paid.

Recruiting interviewers proved less difficult than expected. Building on the foundation of Aline's "friends and family," former interview practice users often reappeared on the platform as interviewers. Aline recalled instances where a company whose hiring managers were initially skeptical of IIO's technical screen process dispatched engineers to participate as interviewers on the platform. Not only did these engineers convince their employer there was value in IIO as a hiring channel, many also stayed on as interviewers in a personal capacity.

Engineers needed to satisfy a few important requirements to join the platform as interviewers. They had to have at least four years of software engineering experience, including a recent stint at a FAANG or FAANG-adjacent company. They also needed to have conducted at least 20 interviews on behalf of their current or former employer. With these requirements met, in the early years Aline would speak by phone to every potential interviewer before onboarding them. She would ask them things like, what had they built in their previous job? Did their duties include candidate interviewing? Why did they want to become a "professional" interviewer? Said Aline: "I wanted to see if these people were passionate about it, and I wanted to see if they were the kinds of people that would create a good candidate experience." At that stage, IIO did not see the need for an elaborate performance appraisal system for interviewers. Since the service was free, engineers were quite forgiving.

During her initial conversation with potential interviewers, Aline emphasized that they had two main objectives: First, they needed to create a great candidate experience by providing specific, constructive, and actionable feedback. Second, they needed to vet people effectively. If interviewers were too lenient when bestowing the "top performer" label, companies would fail to convert these introductions to onsites and offers and would quickly lose interest in IIO's value proposition. Conversely, too high a bar would result in a deficit of candidates which would also frustrate companies (**Exhibit 12**).

After the conversation with Aline, those wanting to join the platform as an interviewer had to complete two probationary interviews. All interviews were recorded so that IIO's team could review interviewers' probationary rounds to ensure they were a fit. Once they passed the probationary rounds, interviewers were then paid per interview.

Within a few months of ramping up IIO's supply of interviewers, the company had a few hundred ready to get to work. Besides the compensation (approximately $100 per interview), interviewers were drawn to the platform for a variety of reasons. As one IIO interviewer noted, some liked teaching. Others wanted to help elevate engineers who had been excluded from the "in" crowd, while others felt a moral imperative to "give back" by helping people who were in a position they were in five or ten years earlier. Yet others were ex-FAANG employees trying their hand at entrepreneurship and in need of a stable source of income as they bootstrapped.

By 2017, IIO was referring to itself as a three-sided marketplace in pitch decks. On the surface, the platform's three sides appeared to be mutually reinforcing: 53% of interviewers started on the platform as engineers wanting to practice interviewing; 19% of companies came from interviewer referrals and 26% of companies came from engineer referrals; and 15% of engineers came from customer companies. Because participants on all three sides of the platform were engineers, they could move seamlessly between sides, playing different roles at different points in their careers.

Interviewing.io's Platform Core

Technology

IIO's platform included in-house built dashboards combined with various off-the-shelf tools. Twilio powered the audio and recording portions of the sessions and disguised voices. CoderPad was an established technical interview tool, and Awwapp was a whiteboarding tool that engineers could use to diagram software architecture choices during a practice session. The feedback and rating systems used by both engineers and interviewers were developed in-house, as was the scheduling engine.

Service

The interviews provided by IIO assessed candidates' grasp of the fundamentals of algorithms and data structures, knowledge deemed essential for software engineers working on back-end challenges.[v] To this mainstream offering, IIO had recently added an interview designed to evaluate system design skills.[vi] The company did not believe it could accurately assess candidates' suitability for taking on engineering management roles. Nor was it well suited to match job seekers with interviewers possessing specialized knowledge (e.g., a natural language processing engineer looking to work on high-volume search with a specialty in Asian languages).

IIO's interviews stood out from most of the competition in that they were synchronous, interactive, and not standardized. The synchronous and interactive aspect allowed IIO to differentiate itself from software tools such as LeetCode and HackerRank, which many of IIO's users also used to refresh their skills. By leaving each interviewer to adjust the content and focus of the interview, IIO also stood out from better financed and larger competitors such as Triplebyte, which had invested heavily in the design and validation of a standardized test. IIO's interviewers also provided detailed and timely feedback to engineers.

The Engineer Side

Once engineers created an account and logged on to IIO's web site, they entered the scheduling part of the platform (**Exhibit 13**). Engineers would receive a confirmation e-mail and the scheduled session would appear on their calendar.

Engineers typically got a different interviewer each time they signed up for a practice session. Neither interviewer nor engineer knew one another's name, gender, race, age, or educational background. Each was given a gender-neutral animal name and their voices were disguised.[28] Engineers and interviewers had the option of unmasking their true identity at the end of an interview session, but this only happened by mutual consent. Nonetheless, many interviewers and engineers had found unmasking an expedient way to enlarge their professional network. All interviews were recorded and were accessible for engineers, interviewers, and IIO staff to review at any time.

On the scheduled day and time of the interview practice session, the engineer and interviewer were brought into a coding environment powered by CoderPad. After brief introductions, the interviewer would give the engineer a live coding challenge to solve (**Exhibit 14**). The engineer talked through

[v] Most software systems consist of two parts: the front end, which users experience, and the back end, which comprises the invisible structure making the front end possible. For example, in the case of a smartphone application, front-end developers design the visual aspects of websites for users to interact with, including colors, layout, and fonts. Back-end developers create the invisible structure that helps websites function properly. Back-end developers have a different technical skillset and make higher salaries than front-end developers.

[vi] A systems engineer deals with the overall management of software engineering projects during their life cycle. They focus not only on software, but also hardware requirements and process engineering.

their solution aloud. The interviewer would interject from time to time to redirect the engineer, without offering answers.

IIO collected data from the practice interview sessions which enabled it to surface "top performers"—those who scored in the top 10% in at least two and typically three practice interviews. Top performers received an email from Aline congratulating them on their performance and informing them that they now qualified for company introductions (**Exhibit 15**). They could then access a page where they could book anonymous interviews with companies they were interested in (**Exhibit 16**). For many, being introduced to companies came as a surprise. They thought of IIO as a place where software engineers could practice technical interviews, not as a job placement service.

Once registered, the time engineers spent active on the platform depended on how much they wanted to practice for practice's sake or if they were job hunting. IIO data showed that 60% to 70% of users that were active on the platform at one point in time (either to practice or look for a job) and left their accounts dormant became active again within three years.

Since employers were not willing to pay much for sourcing or vetting junior candidates, IIO had used its "still in beta" status to keep junior engineers on a perpetual wait list. Keeping the experience requirement implicit and seemingly temporary (rather than making it a formal rule) helped ward off junior engineers without excluding them permanently. Aline was convinced that IIO's candidate "sweet spot" was a mid-to-senior level individual contributor, rather than a junior engineer or someone seeking an engineering management role (**Exhibit 17**).

The Interviewer Side

Once interviewers were vetted and had passed the probationary round, they began to receive requests from engineers who wanted to set up practice sessions. Upon completion of the interview, interviewers offered fairly detailed, polite, and blunt feedback and performance rating to engineers (**Exhibit 18**). In turn, engineers rated interviewers based on engagement: were the problems they asked interviewees to solve relevant? Were they deemed helpful as they guided candidates towards a solution? And, hypothetically, would the candidate like to have them as a colleague? (See **Exhibit 19** for an example of an engineer rating an interviewer.) Interviewers receiving low scores from job seekers found their ability to schedule interviews "throttled," in Aline's words. In rare instances of consistently low scores, interviewers were asked to leave the platform.

With few exceptions, IIO paid interviewers a flat rate of approximately $100 per interview. By late 2019, more than 1,000 interviewers had been active on the platform since launch (**Exhibit 20**), while 100 had been active during the last quarter of 2019. The distribution of interviews per interviewer was skewed (**Exhibit 21**). For a small minority, moonlighting on IIO had become a reliable source of extra income, or even a second career.

Twenty percent of paid interviewers referred their employer to IIO. Of these, 42% became customers. By attracting interviewers who worked for prominent companies, IIO had effectively acquired an effective and targeted sales team.

The Company Side

According to Aline, companies using IIO could lower the average hiring time from 75 to 21 days and cut hiring expenditures by a factor of two or three. This could be achieved by chopping off the top of the hiring funnel, so that a company's involvement began with the technical screen of already-vetted candidates. According to IIO's data, this screen resulted in an onsite invitation rate of 55% to 90%, far higher than the industry standard of 20% to 25% for companies with a high technical bar and a robust funnel. Lyft, an early customer, had conducted an internal audit comparing hiring rates across channels. Their data suggested an overall hiring rate (excluding the sourcing step) of 7.5% for IIO-sourced candidates, which compared very favorably with the rate for the outbound and agency channels (**Exhibits 22a** and **22b**).

Recruiters still played a role in the hiring process with IIO. After successfully completing the anonymous interview with the company, if the hiring manager wanted to proceed to an onsite visit, the candidate, now unmasked, was given a clear contact point inside the company, typically an HR recruiter. The HR screen was short and to the point, and designed to eliminate candidates that were not good "cultural fits." In rare cases, upon getting further details about the position, candidates withdrew from consideration. However, 90% of the candidates who passed the technical screen typically proceeded to the next stage: the onsite visit.

As a result, even though recruiters did not vet résumés or help candidates get a foot in the door, they remained pivotal actors until a hire was made. Therefore, it was important for IIO to get HR on board with its model even though there wasn't that much for them to do on the platform. To "sell" IIO to skeptical HR staff, Aline believed that honesty was the best policy:

> *When I was a recruiter, I hated doing the first-round call, because you're doing so much selling, and you're investing up to an hour of your time. And you know that 75% of the people that you've talked to are going to get cut when they get to the technical round. Not only is it a time suck, but emotionally, you kind of get attached to these people, and you're rooting for them, and then you know that they're not going to make it.*
>
> *And we said, 'Look, this way you're freed up to invest more in candidates that are actually successful in the technical realm and [you're freed up to] close them, because the further down the funnel somebody is, the more valuable they are to you…And that is a pretty effective pitch. It's not perfect. Because they're still like, 'You're cutting us out.' And you know, we are cutting them out. I don't know what to say to that.*

Through trial and error, IIO had developed crude rules of thumb for its ideal customer, but these were open to interpretation. Early-stage companies could be a good fit, but founders looking to hire their first employees were often looking for intangible traits that IIO's interviewers could not screen for. In addition, many of these firms had not acquired a reputation on the labor market yet, making it difficult to attract interest from IIO's top performers. Since some of these companies ultimately became successful, onboarding them too early could sour them on the IIO experience they could benefit from at a later stage. But these were always judgment calls. Popular fields or mission-driven companies could attract senior candidate interest. In Aline's words: "Sometimes we gamble."

On the other end of the spectrum, mature companies (e.g., series C, D, or post-IPO), which operated with more robust HR processes (along with an HR bureaucracy), sometimes perceived IIO as a threat. In many cases, it took pressure from hiring managers, or an enlightened head of recruiting, to seal the deal with companies that had gone past their B round of venture funding. Even with sympathetic HR recruiters, not every mid-size company was a good fit. To be receptive to IIO's value proposition, they needed to have in place a structured and standardized interview process. This was not a universal practice. Some companies believed it was more useful to ask candidates to present in detail their past projects rather than to assess their problem-solving skills. Whether or not such interviews provided a better signal of talent and fit, the fact remained that IIO's interviews could not reliably predict a candidate's success during onsite visits for companies with idiosyncratic interviewing norms.

Pricing

Since its launch, IIO had used two pricing formats, without ever believing it had found the perfect pricing architecture. Importantly, there was no price sheet; every new customer required a bespoke negotiation. Aline acknowledged that IIO was very flexible with pricing: "We change it on a whim." But she did not see a clear way to standardize pricing given the heterogeneity that prevailed among IIO's customer base, in particular a company's age and whether it already had robust HR processes in place. In addition, as market conditions changed (e.g., when the economy was in a recession) so did the perceived urgency of the hiring challenge, which impacted how much companies were willing to pay for vetted candidates.

The first pricing model was based on Aline's experience as a recruiter. Outside recruiters typically worked on contingency, with a typical fee equal to 25% of the hired engineer's first year base salary.[vii] Using a contingency fee model made it easier for companies to compare IIO with hiring alternatives. Because she wanted IIO to be perceived as less expensive than third-party recruiters, Aline settled on a minimum fee of $15,000 per hire, at par with the typical fee in hiring downturns, and well below the more typical $30,000 fee which was the norm in 2016.[viii] For good measure, she added a money back

[vii] These fees ranged from 15% to 30%, depending on the tightness of the labor market and the specialized nature of the hire.

[viii] The typical base salary range for an experienced engineer during this period was $100,000-150,000 per year.

guarantee whereby the fee would be refunded if the hired engineer voluntarily left the firm within six months.

With a discount relative to outside HR recruiters, IIO's pricing made it enticing to experiment with a service whose attributes perplexed many—including the insistence that the introduction of a potential hire be anonymous and that the first contact be made with the hiring manager rather than with someone from HR.

As the company grew, however, the contingency pricing model created challenges as it made revenue accrual very lumpy. Sometimes, companies would "ghost" candidates after the introduction, and IIO would not get paid because the engineer would secure an alternative offer instead of waiting for IIO's customer to make up its mind. As Aline was trying to raise IIO's seed round in 2017, pricing became a focal point of discussion with investors, and in 2018 the company started to move to a subscription model. The typical subscription contract had an annual value of approximately $150,000 (with a range of $40,000 to $360,000) and entitled the customer to 10 interviews per month. At roughly $1,500 per interview with a vetted candidate, Aline believed that customers would recognize this option as still far cheaper than relying on outside recruiters. Furthermore, IIO would avoid bearing the risk of its customers' HR inefficiencies.

By late 2019, the transition away from contingency fees was well under way, although they still accounted for approximately 20% of revenues. Customer churn was high regardless of pricing format. In part, the high churn rate reflected the fact that most customers were startups, and startups often failed. Companies also left the platform because they did not draw much candidate interest, either because their "brand" was not established enough, or they hired in geographies unattractive to IIO candidates. High churn was undesirable since Aline estimated the cost of customer acquisition to be around $5,000 (for contingency customers) and $20,000 (for subscription customers). Yet, informal conversations with companies who left the platform did not point to a particular set of frustrations with IIO's service. Aline had come to accept that companies' hiring patterns were in a constant state of flux owing to forces far beyond her control.

The Crisis

After her difficult call with the Snap team, Aline started furiously typing the all the questions she needed answers to. First, should IIO start charging engineers for practice interviews? Merely contemplating such a change was terrifying. Aline suspected that if IIO started charging engineers, a lot of them would leave the platform. She mused:

> *Because we had a lot of people that were there just for the fun of the community, right? It's like, 'let me get online, solve some problems with somebody on the internet,' and then […] people would make friends, they'd play video games afterwards. It was this vibe of […] 'let's all get better together as a community,' and I was really worried about what introducing money to that dynamic would do.*

Up to this point, IIO had attracted engineers that had not even started their job search, but were curious to learn how they "stacked up" and were drawn to the rich feedback provided by interviewers. Aline added:

> *What would happen to this upper crust of really good engineers who don't need practice, and are just curious and there aren't that many of them, but they were the ones that, you know, we would place at companies pre-2020, and then the company would be like, 'Wow, that's the best hire I've ever made, how did you find this person?'*

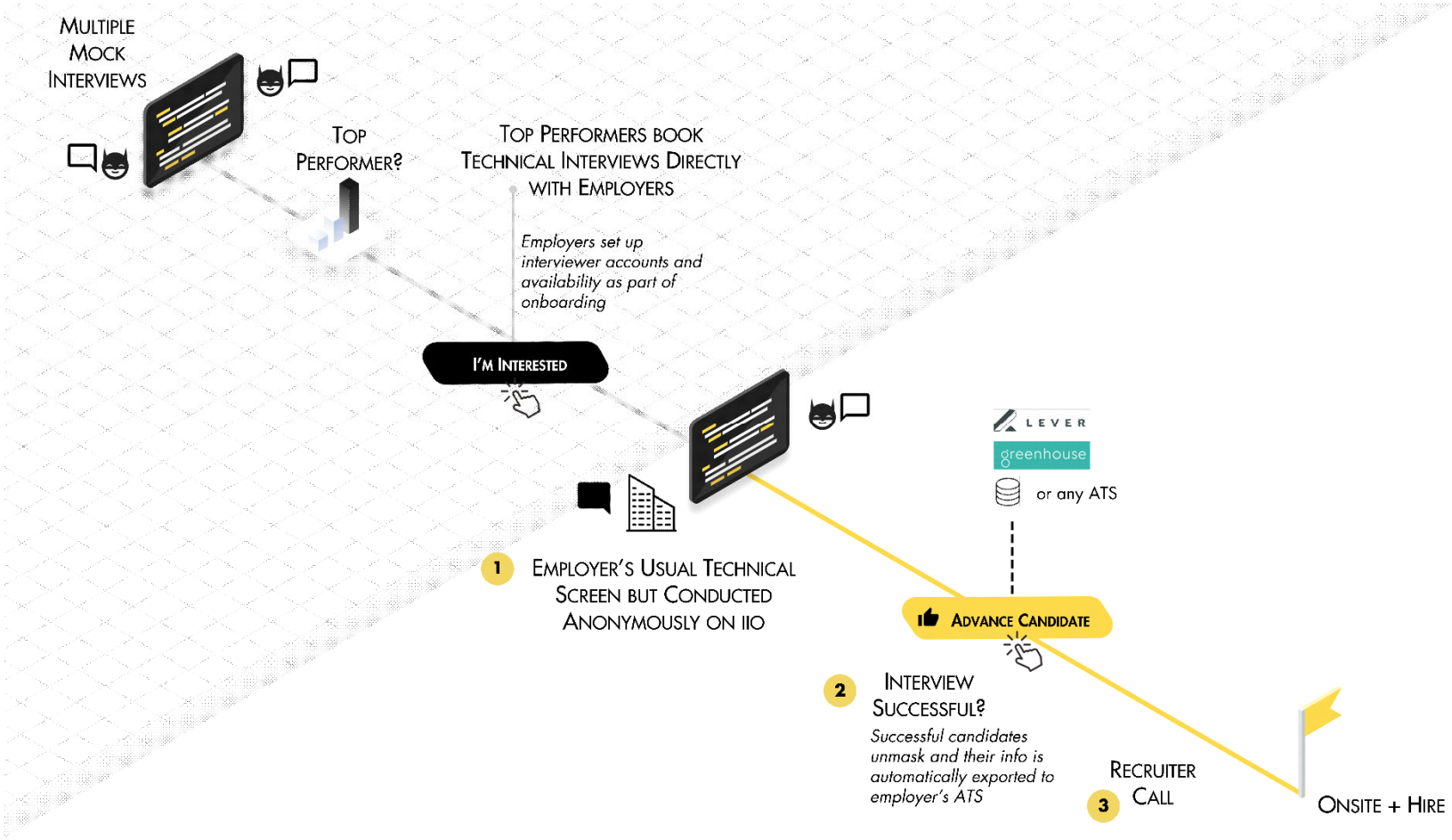
According to IIO's onboarding survey, in 2019, 40% of new users were actively interviewing, 18% had an onsite visit scheduled with a company, 3% already had an offer in hand, 35% were not even looking yet, and 3% were thinking of starting a search, but had not yet talked with any company. What would happen to the engagement of the 38% of users who were still early in their hiring journey? Would those willing and able to pay be interested in interviewing with IIO's customer base, which did not include the FAANG companies—at least not yet?

Despite these misgivings, no other untapped revenue source readily came to mind, and Aline surmised that IIO's current customers would not be interested in paying for a one-year subscription amidst a pandemic that had all but frozen hiring. With her back seemingly against the wall, if she decided to go ahead, how much should the company charge engineers? Should all engineers, no matter their level of experience, pay the same price? What about those who wouldn't be able to afford to pay for practice? How did these decisions impinge on her desire to make hiring fairer and democratize access to hiring by elite firms?

What else about the platform would have to change if IIO started charging engineers? Would the company need to change how it vetted and rated the performance of its interviewers? Should IIO expand the type of interviews it offered? Should it stick to its policy of preventing junior engineers to join? Should it revisit the pricing architecture on the company side of the platform?

There were lots of questions. Aline wondered where to start.

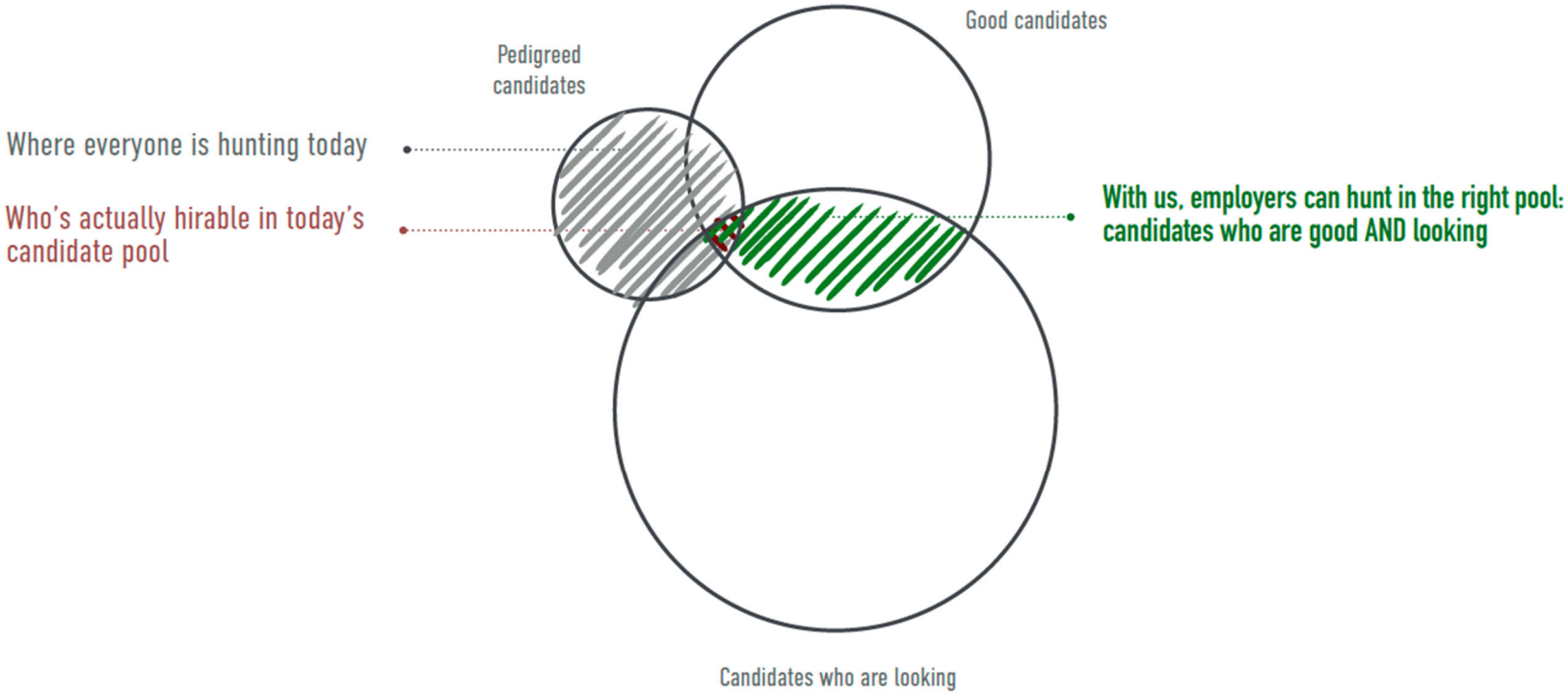
Exhibit 1 interviewing.io's Platform Core



Notes:
ATS stands for Applicant Tracking System, a software application that manages the recruiting process, from job posting to completed hire.

Source: interviewing.io.

Exhibit 2 Aline's demonstration of who's being hunted vs. who's good and available



Source: interviewing.io.

Exhibit 3a Compensation Data for Software Engineers by Company Funding Status, 2020-2021

		All	Seed Funding	Post Series A	Post Series B	Post Series C	Post Series D
Base Salary	Average	$165,073	$150,635	$161,990	$163,115	$163,790	$171,499
	10th Percentile	$135,000	$120,000	$135,000	$138,250	$132,500	$140,000
	25th Percentile	$150,000	$135,000	$145,000	$150,000	$146,060	$152,000
	50th Percentile	$164,300	$150,000	$160,000	$160,000	$162,400	$170,000
	75th Percentile	$180,000	$165,000	$175,000	$175,000	$180,000	$187,749
	90th Percentile	$195,000	$180,000	$190,000	$190,000	$194,220	$205,000
Incentive Pay	Average	$23,225	$32,415	$19,480	$14,175	$21,139	$47,679
	10th Percentile	$7,000	$6,950	$5,648	$5,788	$7,398	$8,500
	25th Percentile	$12,000	$10,000	$10,000	$10,000	$15,000	$14,000
	50th Percentile	$16,000	$13,750	$16,000	$14,560	$17,900	$18,975
	75th Percentile	$20,000	$25,000	$19,000	$17,270	$21,250	$41,250
	90th Percentile	$31,500	$144,000	$26,000	$20,690	$34,875	$167,181
Total Equity Gross Value	Average	$280,572	$174,702	$229,869	$289,814	$230,296	$374,091
	10th Percentile	$36,896	$24,119	$31,636	$38,672	$38,242	$54,330
	25th Percentile	$70,364	$56,342	$56,588	$70,822	$64,259	$99,361
	50th Percentile	$145,682	$112,246	$114,021	$147,925	$129,600	$204,397
	75th Percentile	$295,390	$203,804	$244,804	$289,068	$217,723	$400,968
	90th Percentile	$573,234	$444,238	$451,164	$645,249	$437,584	$825,435

Notes:
Includes data for software engineers level 3-5, corresponding to an average of 4-8 years of experience, across all industries in the San Francisco Bay Area. Incentive pay could denote commissions, performance-based bonuses, sign-on bonuses, etc.

Source: Adapted from OptionImpact compensation data from March 2020 to March 2021. Data retrieved March 2021.

Exhibit 3b Total Compensation Data for FAANG Software Engineers by Seniority, 2020

Seniority Level	35th Percentile	50th Percentile	65th Percentile
Level 1	$163,415	$171,559	$179,896
Level 2	$217,630	$235,181	$250,088
Level 3	$296,603	$316,353	$338,730
Level 4	$406,933	$438,770	$473,887
Level 5	$560,352	$652,889	$888,947

Notes:

- Includes data for software engineers working at Facebook, Amazon, Apple, Netflix, and Google in the San Francisco Bay Area. Compensation amounts are inclusive of incentive pay.
- The "level" terminology above did not match perfectly with the nomenclature used by IIO to segment the market (see page 3). "Level 1" engineers are typically junior-level software engineers with 0-3 years of experience; "Level 2" engineers are typically titled senior software engineers with 3-5 years of experience; "Level 3" engineers may be titled "staff engineer"; marks the start of managerial responsibilities with typical minimum of 5 years of experience; "Level 4" engineers may be titled "senior staff engineer" with typically 7-8 years of experience; "Level 5" engineers may be titled "principal engineers" with 8+ years of experience.

Source: Adapted from levels.fyi compensation portal for 2023 year-to-date. Data retrieved September 2023. CPI adjustment applied to generate estimated salaries in early 2020.

Exhibit 4 Hacker news comment on inefficiencies in the interviewing process

Hacker News new | past | comments | ask | show | jobs | submit

▲ JPKab on July 2, 2014 | root | parent | next [–]

I recently was flown to Austin for an interview. The entire reason I was brought down was because of Python ML projects on Github. The technical interview consisted of nothing, and I mean NOTHING but super advanced SQL questions. (over the phone, I had specifically stated I hadn't used SQL in years) My expectation was that I'd be interviewed using Python and asked to perform ML related tasks.

When I mentioned that I thought that the purpose of me being brought there was to add an ML dimension to the team, which was far too data analysis (using SQL and some R)focused and with no Python expertise, I was given a blank stare.

Then it hit me: the guys interviewing me didn't know how to do any of the stuff I had been brought down (by higher ups who weren't in the room) to do, so they weren't evaluating me on it. They evaluated me on what THEY knew. It's the equivalent of Peyton Manning being asked to evaluate a linebacker, and demanding that the linebacker throw passes downfield.

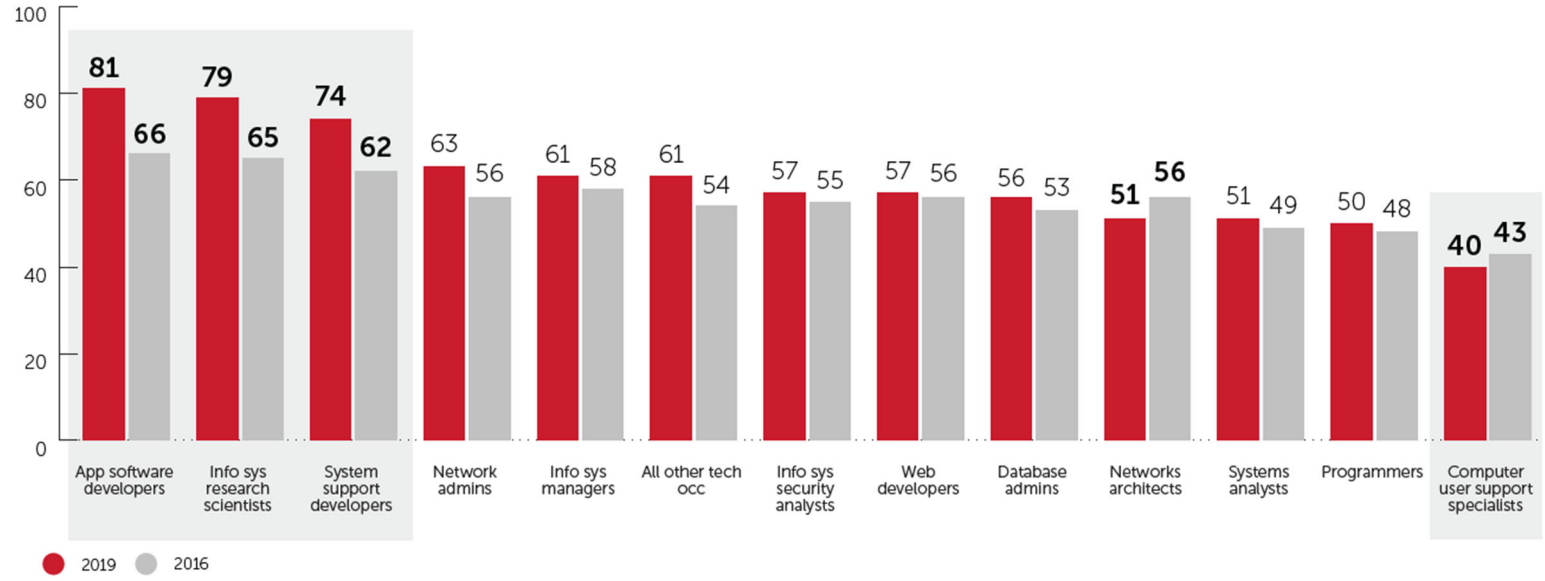
The highlight was when one of the guys (typical pony-tail neck-beard type) pointed out that an alluvial flow diagram in my portfolio of data visualization projects wasn't "Tufte-esque". (It was a gross misinterpretation of Edward Tufte's commandments on his part, but am I really going to get in an argument with the guy interviewing me?)

It was clear that the guys in the room wanted someone who knew what they did and thought like they did. A brilliant recipe for getting a homogenous team with no diversity in skills.

What an epic fucking waste of time. The best part? The company only has 150 employees, and a recruiter just contacted me for a position on another team that uses Python. She was unaware of the fact that I was there a month ago. I told her that they should have thought about that when they flew me down the first fucking time.

Source: https://news.ycombinator.com/item?id=7978075.

Exhibit 5 Time to Fill Technical Positions (in days)



Source: Keyur Ajmera, Adam Feigenbaum, et. al., "Hiring Tech Talent for CIOs and CTOs," iCIMS, 2019 (https://cdn31.icims.com/icims3/prod/pdf/misc/2019-Benchmark-on-Hiring-Tech-Talent.pdf, accessed August 18, 2023).

Exhibit 6 Traditional Outbound Hiring Effort per Hire

	Conversion Rate	# Candidates at Phase Start	# Candidates at Phase End	HR Time/ candidate	Eng. Time/ candidate
Sourcing	10%	450	45	0.5	0.0
Recruiter Call	80%	45	36	1.0	0.0
Tech Screen	25%	36	9	0.0	1.0
Onsite	33%	9	3	1.0	5.0
Offer	33%	3	1	1.0	1.0
Hire		1		1.0	2.0

Value of Sourcer Time	$75
Value of Recruiter Time	$100
Shadow Value of Eng. Time:	$150
Eng. Time Multiplier	1.5

Hiring Rate 2.20%

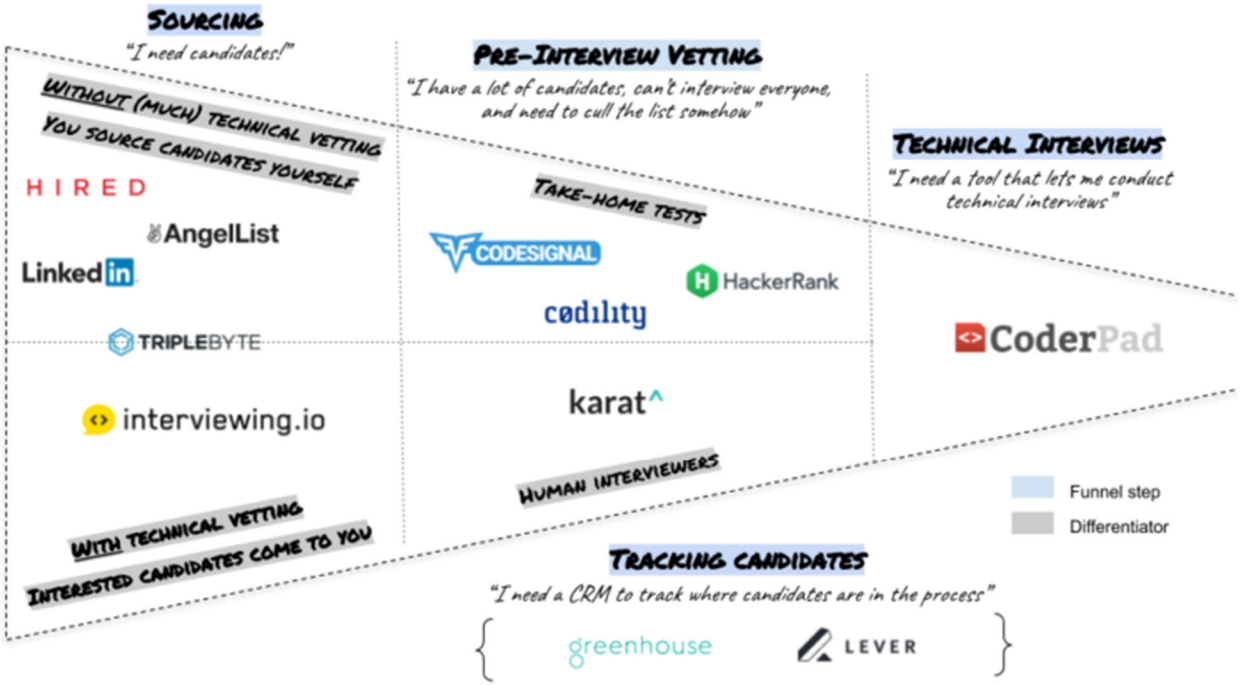
(excluding sourcing step)

Notes:

- An outbound hire is one where the company reaches out to candidates whose profiles potentially fit the job description to see if they might be interested in joining.
- Hours at the sourcing stage include both résumé screening and reaching out to candidates by email or on LinkedIn, and awaiting their response. Candidates may not respond or be in the market for a new position.
- Hours at the recruiter screen stage correspond to phone calls to further gauge candidate interest, confirming the potential fit between position requirements and the candidate's background. This may involve preemptively selling both the position and the company to the candidate.
- Hours at the tech screen stage correspond to a technical interview conducted online with the hiring manager (or one of their direct reports) present.
- Hours at the onsite visit stage are computed as 5 hours of interviewing with engineers, as well as interfacing with HR.
- Hours at the offer stage correspond to the time needed to debrief the onsites and verify references to make a final decision on which candidate should be offered a job.
- Hours at the hire stage correspond to the time needed to sweet-talk the candidate and convincing him/her to accept the offer, and completing the initial administrative steps for onboarding.
- Eng. Time multiplier is accounting for the ramp up and down time between interviews, i.e., the cost of interrupting someone from writing code and the cost of them getting back into a flow state.

Source: Adapted from Lever's 2019 Talent Benchmarks Report: Key Metrics to Transform Your Hiring, p. 21 (https://www.lever.co/resources/2019-talent-benchmarks-report-key-metrics-to-transform-your-hiring/, accessed September 29, 2023); case writers' research.

Exhibit 7 Aline Lerner's unbundled guide to hiring tools



Source: Aline Lerner's Blog [https://blog.alineAline.com/the-unvarnished-unbundled-guide-to-hiring-tools/]

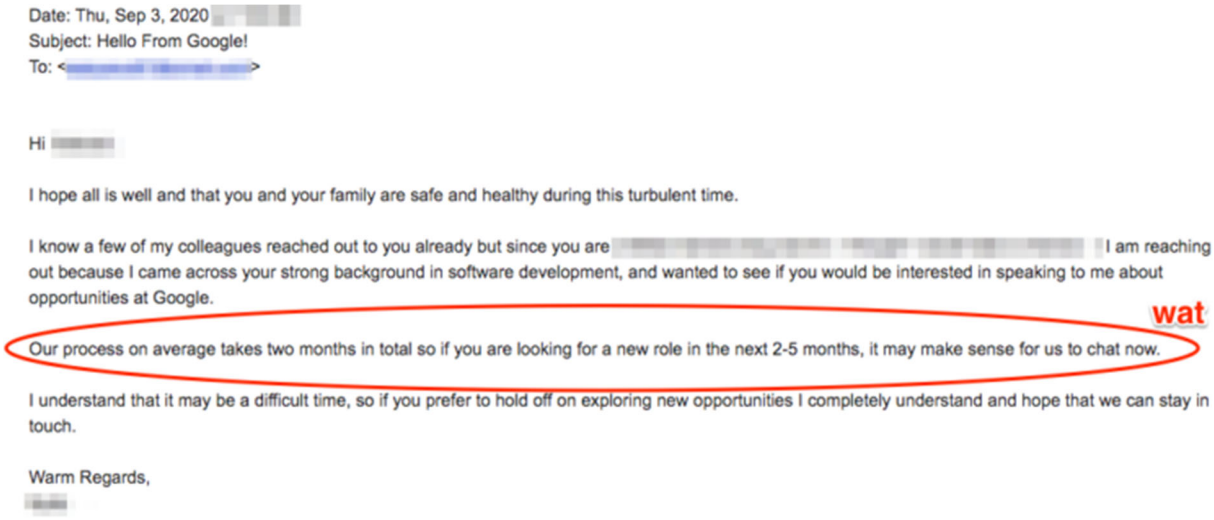
Exhibit 8 Competitor Profiles

	Hired	**Triplebyte**	**Karat**	**interviewing.io**
Date Founded	2012	2015	2015	2015
Cofounders	Allan Grant, Douglas Feirstein, Matt Mickiewicz	Ammon Bartram, Guillaume Luccisano, Harjeet Taggar	Jeffrey Spector, Mohit Bhende, Will Kim	Aline Lerner, Andrew Marsh
Nb. of Employees	101-250	51-100	251-500	10
Nb. of Founding Rounds	6	4	3	3
$ Raised to Date (in millions)	$132.7	$48.1	$41.6	$5.0
Date of Last Round	June 20, 2018	April 11, 2019	May 15, 2019	October 1, 2019
Type or Last Round	Series D	Series B	Series B	Seed
Estimated Revenue Range	$10-50M	$1-10M	$10-20M	$1-3M
Website	www.hired.com	www.triplebyte.com	www.karat.io	www.interviewing.io

Source: Crunchbase.com; Case writers.

Exhibit 9 A typical rant on Aline's blog

Breaking character for a moment, a friend of mine recently got this recruiting email from Google, who has elevated gaslighting to an art form: somehow the fact that it takes two months to get through their process has become a *selling point.*



Date: Thu, Sep 3, 2020
Subject: Hello From Google!
To: <

Hi

I hope all is well and that you and your family are safe and healthy during this turbulent time.

I know a few of my colleagues reached out to you already but since you are I am reaching out because I came across your strong background in software development, and wanted to see if you would be interested in speaking to me about opportunities at Google.

wat

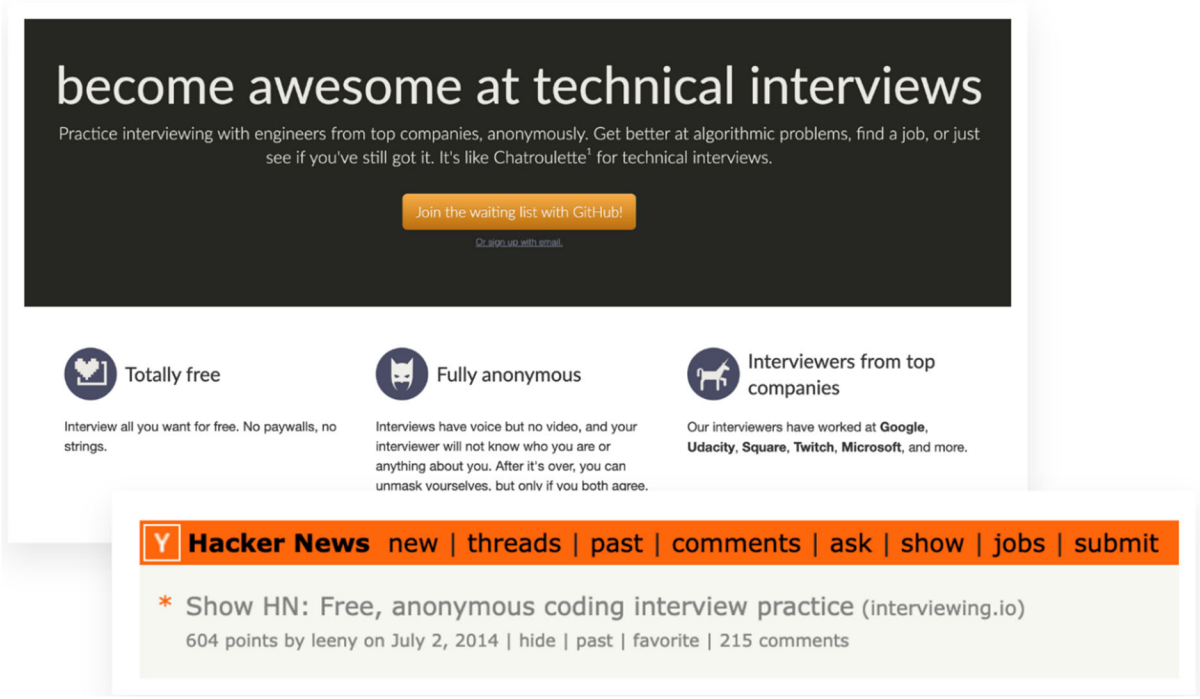
Our process on average takes two months in total so if you are looking for a new role in the next 2-5 months, it may make sense for us to chat now.

I understand that it may be a difficult time, so if you prefer to hold off on exploring new opportunities I completely understand and hope that we can stay in touch.

Warm Regards,

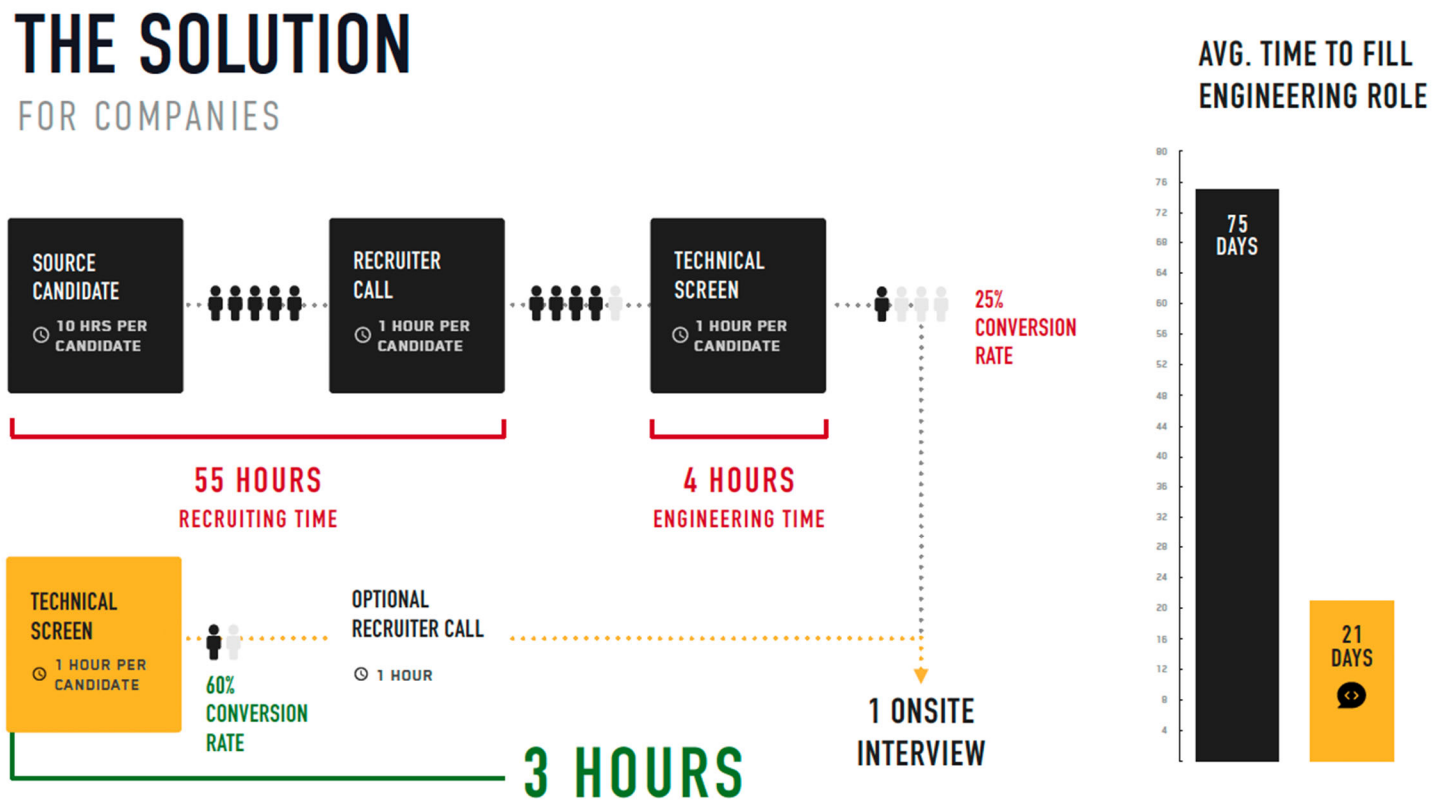
Source: Aline Lerner's blog: https://blog.alineAline.com/ive-been-an-engineer-and-a-recruiter-hiring-is-broken-heres-why-and-heres-what-it-should-be-like-instead/.

Exhibit 10 interviewing.io's Launch on Hacker News



Source: interviewing.io

Exhibit 11 interviewing.io's case for its value proposition to companies and candidates



Source: interviewing.io

Exhibit 12 Interviewers' Objectives

OBJECTIVE 1: CREATING GREAT CANDIDATE EXPERIENCE

1. Don't ask verbatim Leetcode questions
2. Set expectations, and control timing/pacing
3. Be engaged!
4. Familiarity with the problem and its associated rabbit holes/garden paths
5. Good balance of hints and letting candidate think
6. Turn the interview into a collaborative exercise where both people are free to be "smart together"
7. Give specific, constructive, and actionable feedback

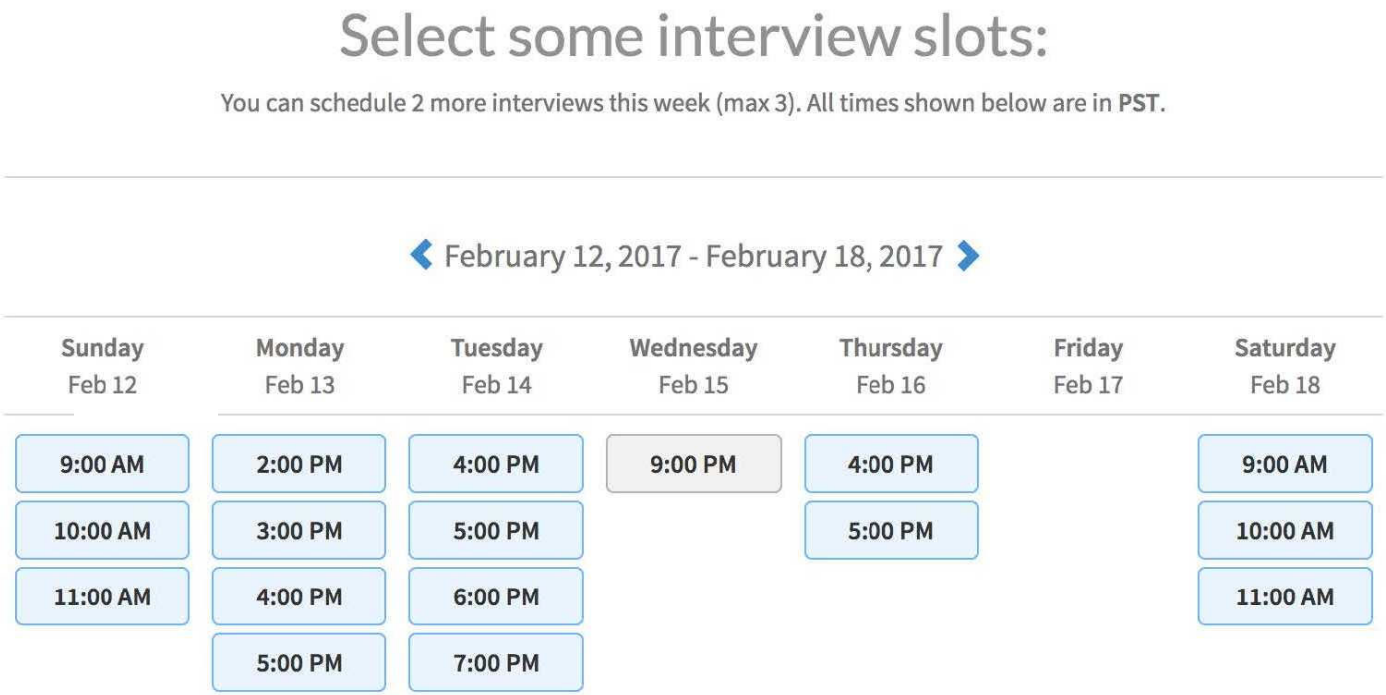
OBJECTIVE 2: VETTING PEOPLE EFFECTIVELY

- **DO:** You should use **at minimum** the same bar that you use at work.
- **DO:** Use & trust your own judgment. When you say "yes" to moving someone forward, it doesn't mean "yes" in the abstract. It means that YOU would want to hire and work with them. If you're unsure, vote no. **If you're not excited about a candidate, please don't move them forward.**
- **DO:** Use a bar commensurate with the candidate's experience level.
- **DON'T:** Don't overcorrect for a candidate's background. The bar is about the position they're interviewing for (e.g. a job at your company|commensurate with their seniority), regardless of where they've been til now.
- **DON'T:** Don't overuse 4 star ratings. When you give someone a thumbs up and all 4 stars, it means "*I want this person on my team immediately because they're amazing!*"
- **DON'T:** Please don't give out sympathy ratings. If someone has a real interview coming up and they're really not prepared, don't pad their ratings/lull them into a false sense of security. Instead, please advise them to reschedule it.

  If a candidate is woefully unprepared, in real time, transition the mock interview into a mentorship session. Please tell us you did that afterwards so we log it correctly.

Source: interviewing.io Interviewer Onboarding Deck

Exhibit 13 Interview Scheduling Site



Source: interviewing.io.

Exhibit 14 JavaScript Interview with a Google Engineer

Source: https://www.youtube.com/watch?v=10WnvBk9

Exhibit 15 Surprise Email to a "Top Performer"

From: **interviewing.io** <support@interviewing.io>
Date: Wed, Oct 2, 2019 at 7:39 PM
Subject: Congrats! You're a top performer on interviewing.io.
To: Aline Lerner <aline@interviewing.io>

Hey Aline,

Congrats, you're one of our top performers, and you've unlocked access to our exclusive job board.

With us, you...

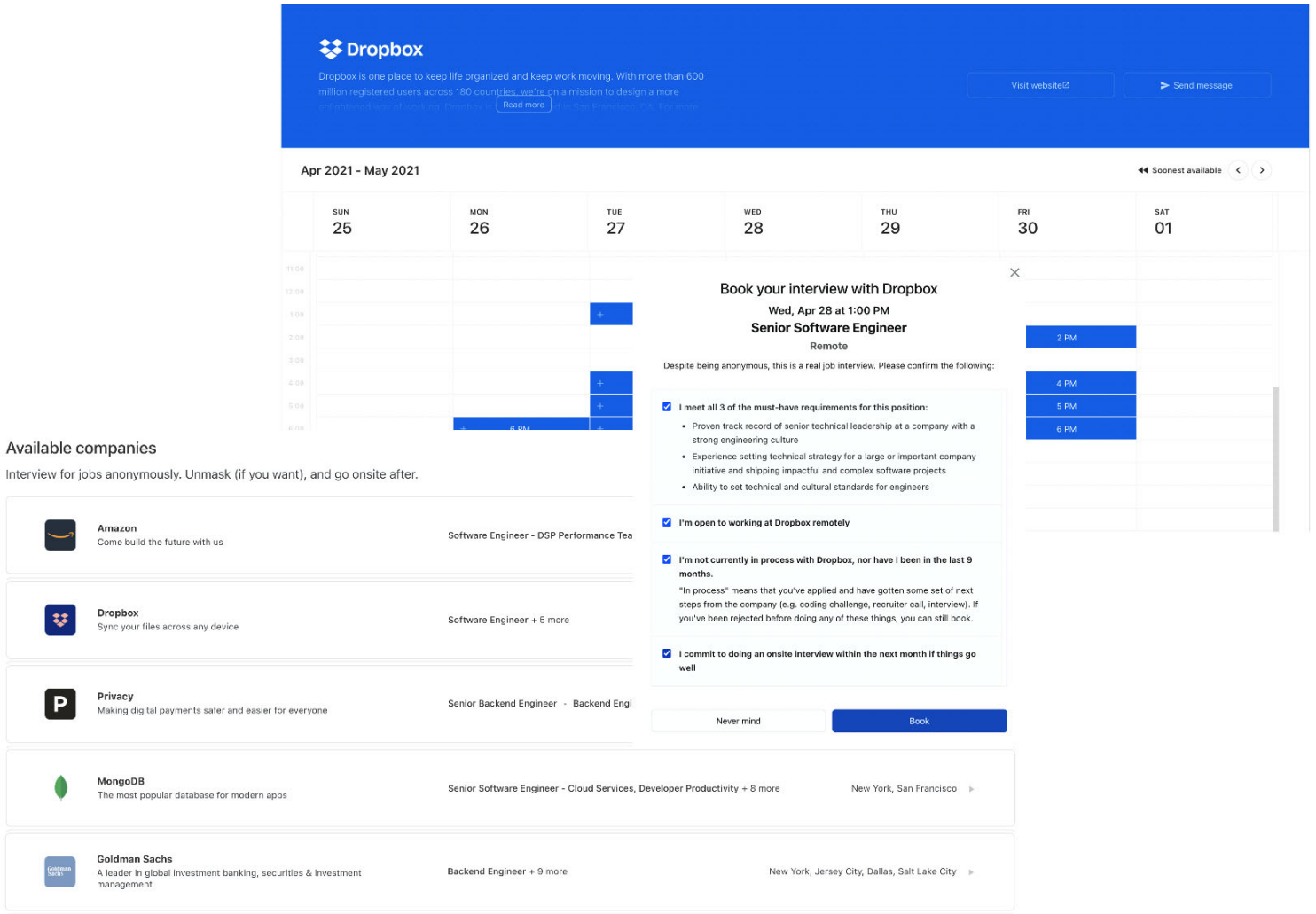
- Instantly book technical interviews with the companies you like (without any recruiter back & forth). This will save you at least 2 weeks on your job search.
- Only unmask if you do well. If you don't, the company won't know who you are.

Check out the companies hiring on interviewing.io right now!

Cheers!
-The interviewing.io team

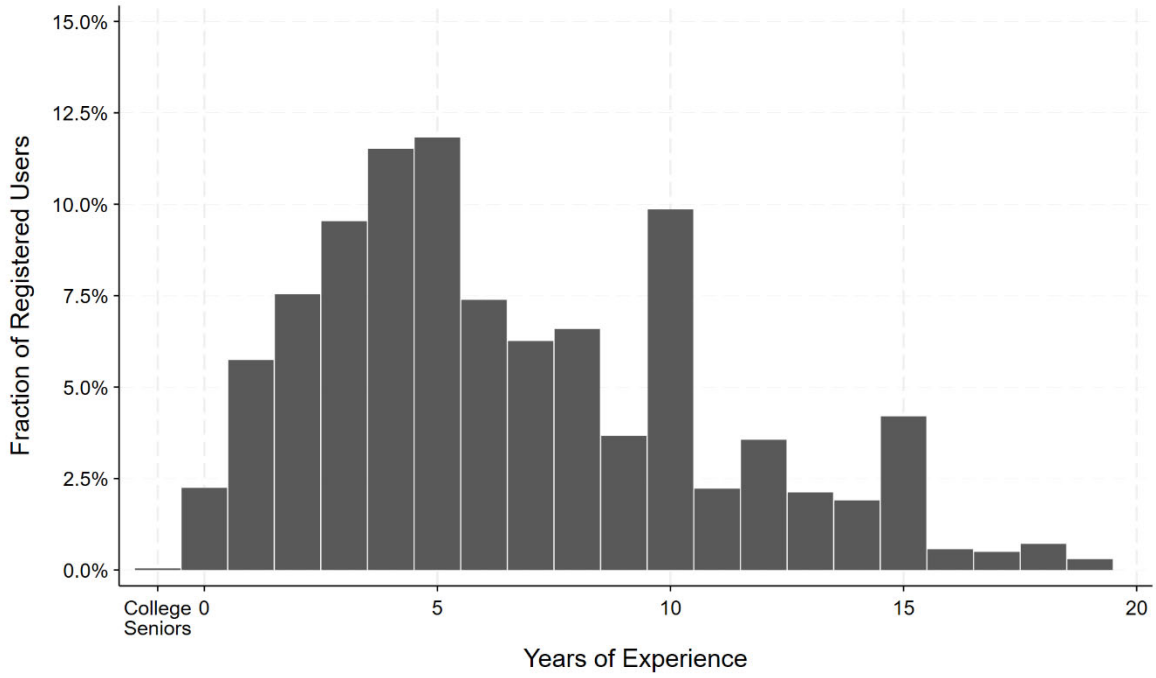
Source: interviewing.io.

Exhibit 16 Fast-Tracking Introduction to Companies for Top Performers



Source: interviewing.io

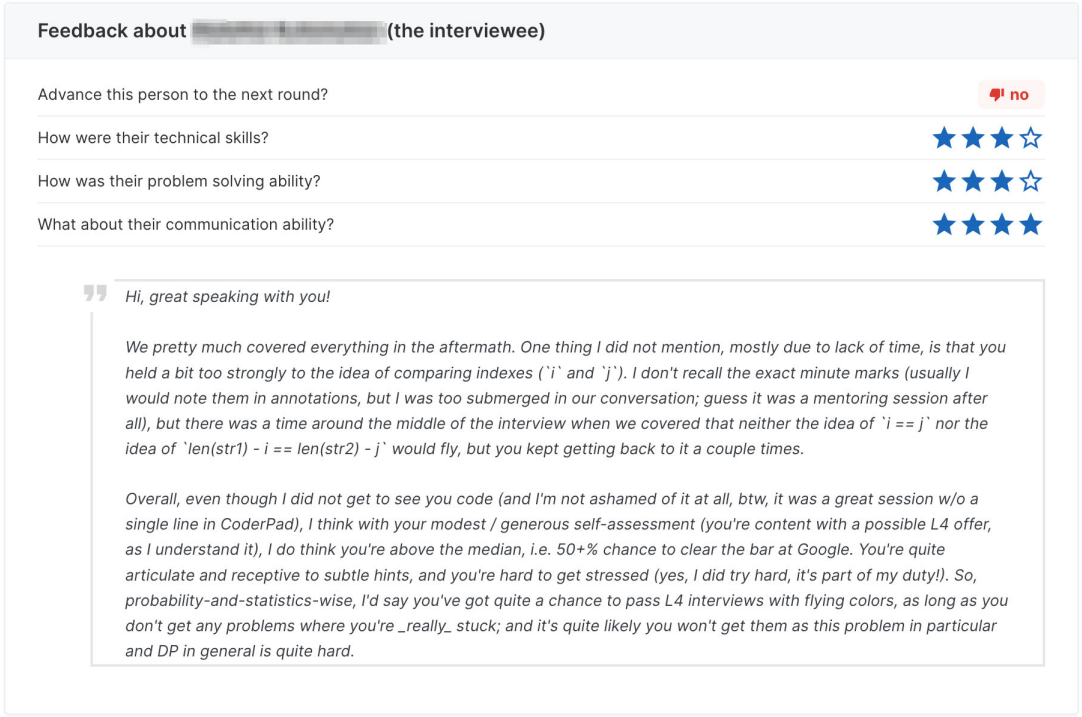
Exhibit 17 IIO Registered Users' Level of Experience



Note:
Based on 15,138 registered users in 2018 and 2019 for whom experience is known. Ninety three users (0.61% of the total) had more than 20 years of experience and are excluded from the graph. Median is 5.2 years of experience. 44% of users fall in the "placeable" age-range (between 4 and 8 years of experience).

Source: interviewing.io.

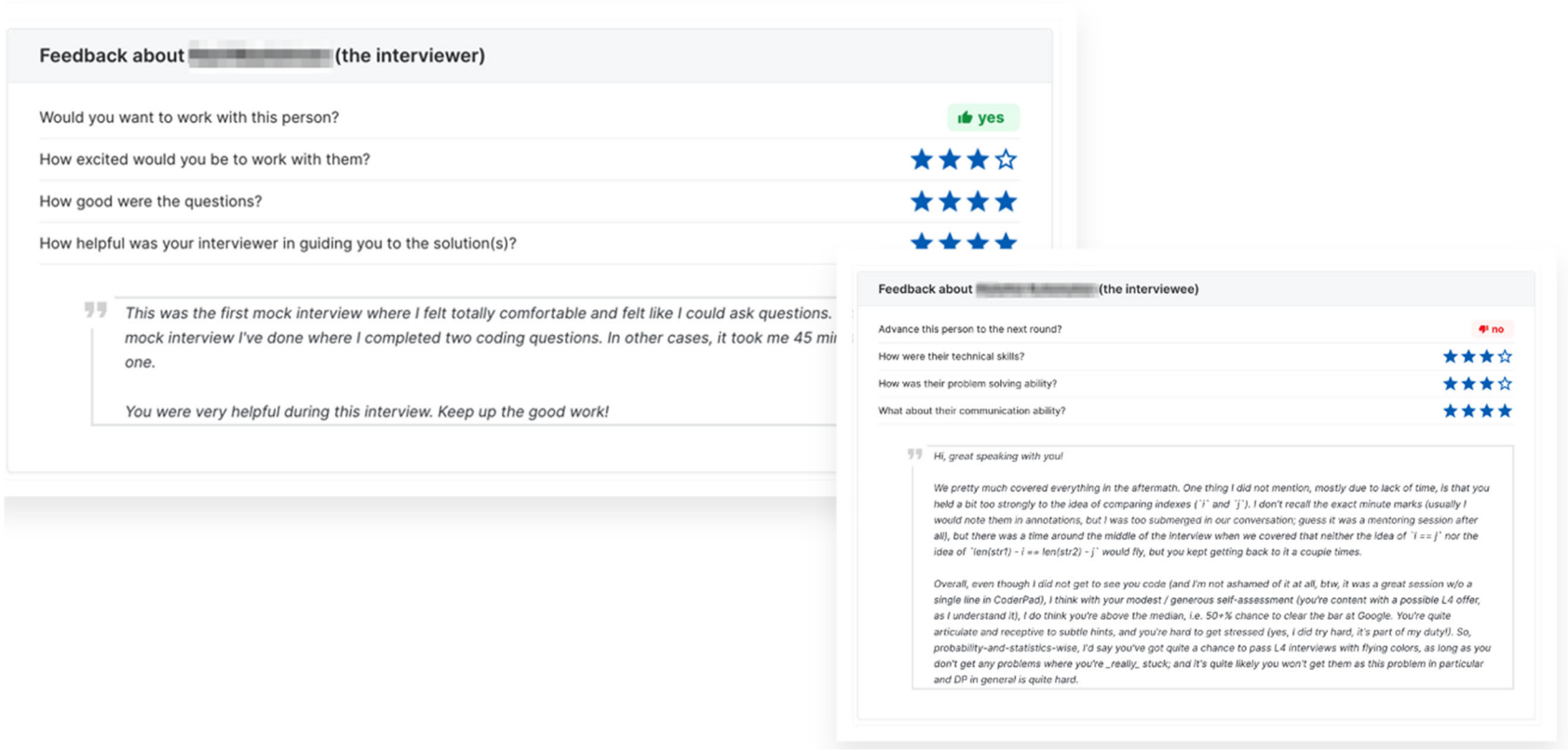
Exhibit 18 Feedback to Engineer from Interviewer



Note: "Advance this person to the next round" was a yes/no question that indicated to a candidate whether s/he would have proceeded to an onsite if that interview had been a real technical screen with a company. The proportion of "successful interviews" (those leading to a yes) hovered between 40 and 50% since the company's inception. Having two of three successful interview sessions was a necessary, but not sufficient condition to be labeled a "top performer."

Source: interviewing.io.

Exhibit 19 Feedback to Interviewer from Engineer



Source: interviewing.io.

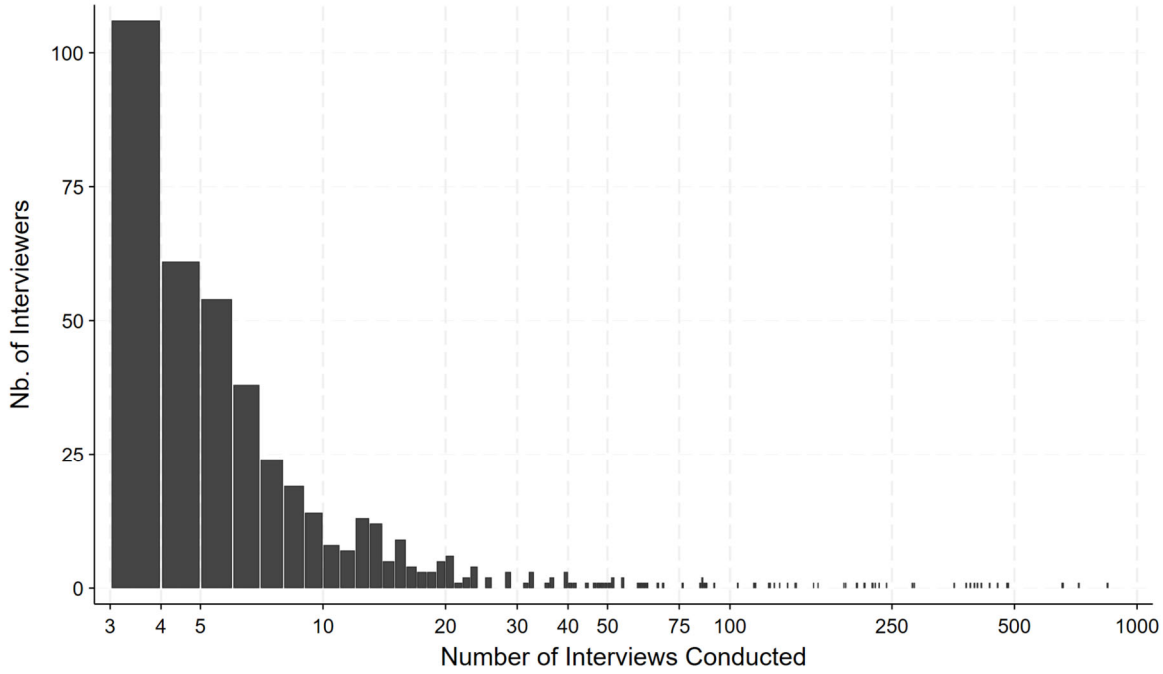
Exhibit 20 Accrual of IIO Users Over Time for All Three Platform Sides

Quarter	# Engineers	# Interviewers	# Companies	# Interviews
q1 2015	76	0	0	0
q2 2015	268	7	0	0
q3 2015	214	9	0	0
q4 2015	244	7	2	7
q1 2016	499	12	4	30
q2 2016	412	11	7	72
q3 2016	803	33	1	279
q4 2016	618	42	5	464
q1 2017	892	38	10	763
q2 2017	1,799	34	9	717
q3 2017	3,540	121	8	2,097
q4 2017	5,428	114	22	3,414
q1 2018	4,443	80	21	2,923
q2 2018	6,523	98	18	3,216
q3 2018	4,099	71	11	2,608
q4 2018	3,998	70	7	2,871
q1 2019	4,929	79	10	3,449
q2 2019	5,032	87	9	3,637
q3 2019	4,119	74	17	3,758
q4 2019	3,104	55	5	2,936
q1 2020	3,858	60	7	3,759

Notes:
Each cell in the table corresponds to the number of arrivals in a particular quarter. Note that the number of interviews is smaller than the number of engineers. Many users register but never schedule an interview. Moreover, many users join but do not complete their first interview until years later.

Source: interviewing.io

Exhibit 21 Distribution of Interviews per Interviewer



Notes:
Of the 481 interviewers ever active on the platform since inception, 100 (20.8%) had been actively interviewing during Q4 2019. Four interviewers with more than 1,000 cumulative interviews by the end of FY2019 omitted from the graph. The graph also omits interviewers who did not progress past their two probationary rounds of interviewing.

Source: interviewing.io

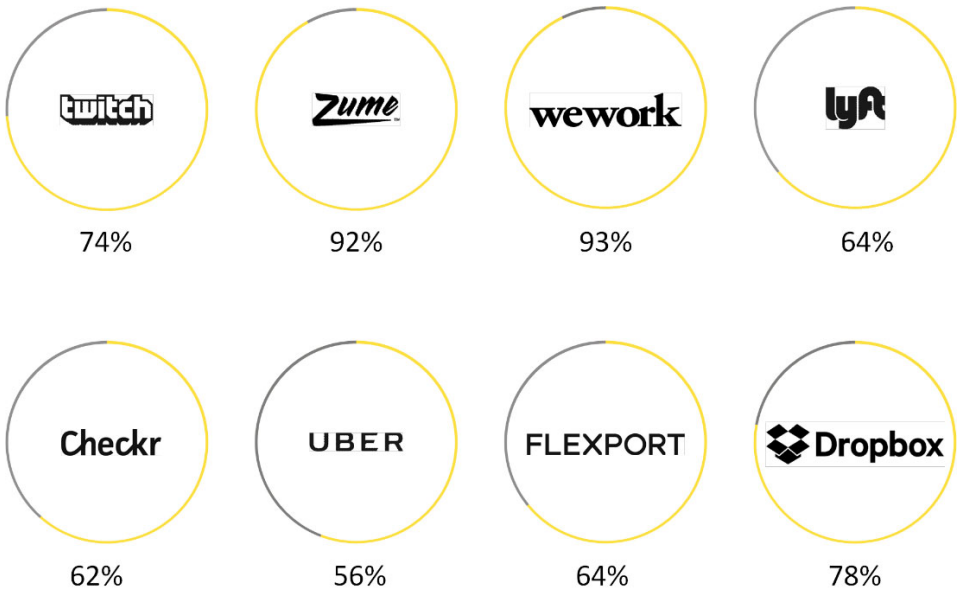
Exhibit 22a The Hiring Channel Lyft Survey

Channel	Hire Rate	% of Hiring Volume
Employee Referrals	5.8%	20%
Agencies	2.7%	5%
Outbound	2.0%	37%
Inbound	0.5%	38%
interviewing.io	7.5%	

Notes:
- Hiring rates exclude the sourcing step (see **Exhibit 4**).
- An inbound hire is one where the start of the process is a candidate sending an unsolicited résumé. An outbound hire is one initiated by the company (internal sourcing). An agency hire is one where the sourcing step is undertaken by a third-party recruiter/sourcer.

Source: Lyft; "The Little Grey Book of Recruiting Benchmarks 2016," April 2017 (https://myejstorg.files.wordpress.com/2017/04/the-little-grey-book-of-recruiting-benchmarks-2016.pdf, accessed September 18, 2023).

Exhibit 22b IIO Candidates' Success Rate in Technical Screens for Selected Company Customers



Notes:
These rates should be compared with the 25% rate for technical screens that typically follow a traditional outbound hiring process (**see Exhibit 4**).

Source: interviewing.io.

Endnotes

[1] Aline Lerner, "Silicon Valley Hiring Is Not a Meritocracy," August 21, 2013 (https://blog.alinelerner.com/silicon-valley-hiring-is-not-a-meritocracy/, accessed September 3, 2023).

[2] Aline Lerner, "Résumés Suck. Here's the Data." November 10, 2014 (https://blog.alinelerner.com/resumes-suck-heres-the-data/, accessed September 4, 2023).

[3] Aline Lerner, "I've Been an Engineer and a Recruiter. Hiring Is Broken. Here's Why," October 20, 2020 (https://blog.alinelerner.com, accessed September 4, 2023).

[4] Clare O'Connor, "Engineering Job Platform Raises $3M," *Forbes*, September 27, 2017 (https://www.forbes.com/sites/clareoconnor/2017/09/27/engineering-job-platform-raises-3m-aims-to-boost-diversity-in-tech-with-anonymized-tests/?sh=23cbbd201cad, accessed September 6, 2023).

[5] https://web.archive.org/web/20191220204042/https:/interviewing.io/, accessed October 11, 2023.

[6] Interviewing.io Pitch Deck for Series A fundraising, November 2018.

[7] "The Little Grey Book of Recruiting Benchmarks 2016," April 2017 (https://myejstorg.files.wordpress.com/2017/04/the-little-grey-book-of-recruiting-benchmarks-2016.pdf, accessed September 18, 2023).

[8] John L. Miller, "Why Do Software Engineers Change Jobs So Frequently," *Forbes*, February 6, 2018 (https://www.forbes.com/sites/quora/2018/02/06/why-do-software-engineers-change-jobs-so-frequently/?sh=6662ec3048a7, accessed September 5, 2023).

[9] Keyur Ajmera, Adam Feigenbaum, et. al., "Hiring Tech Talent for CIOs and CTOs," *iCIMS*, 2019 (https://cdn31.icims.com/icims3/prod/pdf/misc/2019-Benchmark-on-Hiring-Tech-Talent.pdf, accessed August 18, 2023).

[10] Thanh Pham, "Analyzing the Software Engineer Shortage," *Forbes*, April 13, 2021 (https://www.forbes.com/sites/forbestechcouncil/2021/04/13/analyzing-the-software-engineer-shortage/?sh=26794b0d321c, accessed August 18, 2023).

[11] Katherine Bindley, "When Layoffs Happen at Tech Companies, this Position Is the First to Go," *The Wall Street Journal*, November 29, 2022 (https://www.wsj.com/articles/silicon-valleys-talent-spotters-are-now-looking-for-jobs-11669725577, accessed October 29, 2023).

[12] Phil Lombardi, "How to Prepare for the Software Engineer Interview Process," *Indeed.com*, May 31, 2023 (https://www.indeed.com/career-advice/interviewing/software-engineer-interview, accessed September 4, 2023).

[13] Aline Lerner, "I've Been an Engineer and a Recruiter. Hiring Is Broken. Here's Why," October 20, 2020 (https://blog.alinelerner.com, accessed September 4, 2023).

[14] Aline Lerner, "Silicon Valley Hiring Is Not a Meritocracy," August 21, 2013 (https://blog.alinelerner.com/silicon-valley-hiring-is-not-a-meritocracy/, accessed September 3, 2023).

[15] Aline Lerner, "You Probably Don't Factor in Engineering Time When Calculating Cost Per Hire," April 23, 2019 (https://interviewing.io/blog/you-probably-dont-factor-in-engineering-time-when-calculating-cost-per-hire-heres-why-you-really-should, accessed September 4, 2023).

[16] Eric Morath and Lauren Weber, "Amazon, Google Poised for Race to Hire High-Tech Talent," *Wall Street Journal*, November 13, 2018 (https://www.wsj.com/articles/amazon-google-chase-software-developersbut-not-the-same-ones-1542133719, accessed September 5, 2023).

[17] Claire McDonald, "Around 65% of Tech Recruiters Say There's Bias in the Hiring Process," *ComputerWeekly*, January 19, 2022 (https://www.computerweekly.com/news/252512192/Around-65-of-tech-recruiters-say-theres-bias-in-the-hiring-process, accessed August 18, 2023).

[18] "Interviewing.io with Aline Lerner," *Software Engineering Daily*, October 19, 2017 (https://softwareengineeringdaily.com/2017/10/19/interviewing-io-with-aline-Aline/, accessed September 4, 2023).

[19] Aline Lerner, "No Engineer Has Ever Sued a Company Because of Constructive Post-Interview Feedback…" February 5, 2020 (https://interviewing.io/blog/no-engineer-has-ever-sued-a-company-because-of-constructive-post-interview-feedback-so-why-dont-employers-do-it, accessed September 4, 2023).

[20] Aline Lerner, "Why Giving Feedback Good or Bad Will Help You Hire," February 12, 2023 (https://interviewing.io/blog/why-giving-feedback-good-or-bad-will-help-you-hire, accessed September 4, 2023).

[21] "Why Talent Solutions Is the Most Valuable Division for LinkedIn," *Forbes*, November 4, 2015 (https://www.forbes.com/sites/greatspeculations/2015/11/04/why-talent-solutions-is-the-most-valuable-division-for-linkedin/?sh=687f51cf7ebc, accessed September 11, 2023).

[22] Aline Lerner, "I've Been an Engineer and a Recruiter. Hiring Is Broken. Here's Why," October 20, 2020 (https://blog.alinelerner.com, accessed September 4, 2023).

[23] Ibid.

[24] Clare O'Connor, "Engineering Job Platform Raises $3M," *Forbes*, September 27, 2017 (https://www.forbes.com/sites/clareoconnor/2017/09/27/engineering-job-platform-raises-3m-aims-to-boost-diversity-in-tech-with-anonymized-tests/?sh=23cbbd201cad, accessed September 6, 2023).

[25] Aline Lerner, "Résumés Suck. Here's the Data." November 10, 2014 (https://blog.alinelerner.com/resumes-suck-heres-the-data/, accessed September 4, 2023).

[26] Clare O'Connor, "Engineering Job Platform Raises $3M," *Forbes*, September 27, 2017 (https://www.forbes.com/sites/clareoconnor/2017/09/27/engineering-job-platform-raises-3m-aims-to-boost-diversity-in-tech-with-anonymized-tests/?sh=23cbbd201cad, accessed September 6, 2023).

[27] https://news.ycombinator.com/item?id=7978075, accessed September 5, 2023.

[28] Lydia Dishman, "This Interviewing Platform Changes Your Voice to Eliminate Unconscious Bias," *Fast Company*, May 4, 2016 (https://www.fastcompany.com/3059522/this-interviewing-platform-changes-your-voice-to-eliminate-unconscious-bias, accessed August 25, 2023).