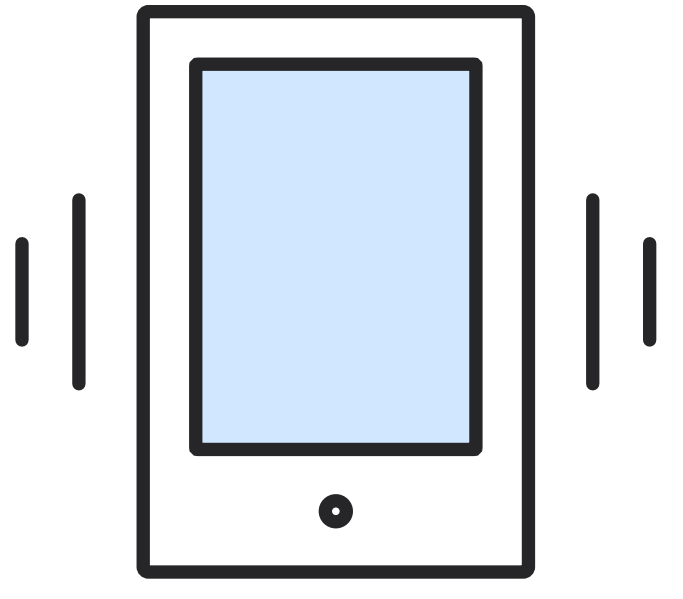


# APPLICATION DESIGN & DEVELOPMENT:

In-House?  
Outsource?  
Crowdsource?





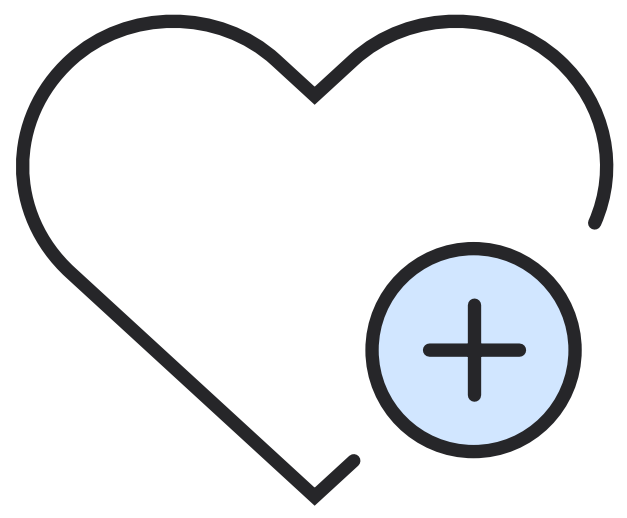
*When you consider that Americans devote [more time to their smartphones](#) than they do television, it's clear why so many businesses view mobile apps as a great way to boost sales and increase engagement. The mobile app industry is expected to [exceed \\$100 billion](#) in the next few years, and [businesses of all sizes](#) are either already profiting from commercial apps or planning to do so in the near future.*

*While it can pave the way for substantial financial growth, app development is a significant undertaking that involves ideation, design, coding, testing, and and continuous support through updates. When business owners choose to go forward with a concept, they are faced with the choice of whether to develop internally, or consider an outsourcing option involving a contractor, freelancer, agency, or crowdsourcing model.*

*With so much to consider, it's important for companies to carefully weigh the merits and challenges of each option in order to choose the right approach for their application design and development projects.*







## How to Make an App Your Users Will Love

App development can be a complicated endeavor, requiring diverse skill sets. It isn't just the complexity of an app that determines the difficulty; it's also the vision for the final product. Creating a functional mobile app prototype is one project; developing a multi-platform, bug-free, consumer-ready app is another.

There are several stages of app development, including research and planning, assessment of technical feasibility, and prototyping. Upon completion of these initial stages, the project tends to become even more complex. After developing a functional proof-of-concept model to test and refine a concept, the real work begins. Specialized knowledge is needed for refining the UX, developing the code, and completing quality assurance (QA) test cycles.

There's no way around it — app development requires UX design and technical expertise that can be hard to find, and basic developer skills may not be enough to create a commercial app. With this in mind, businesses are confronted with two options: find, recruit, and invest in a skilled team of in-house developers, or outsource the project to an external freelancer or off-site team of developers.

## In-House vs. Outsourcing

Whether it's cost, time constraints, resources, or security concerns, there are a variety of factors to consider when deciding whether to outsource an app or build in-house. Historically, the key driver to outsourcing has been cost savings. While this can be an especially compelling value proposition, there are times when a company may prefer to incur extra costs to keep a project within its walls.

This decision is usually dependent on specific factors unique to an individual project, company, or industry. There are advantages and disadvantages to outsourcing and in-house development, with some having significance to certain businesses, and less importance to others.

Since it's almost impossible to walk back a poor choice, it's best to understand the benefits and risks of both options prior to making a decision.





# Considerations for In-House

## Take Inventory Of Your Team And Their Workload

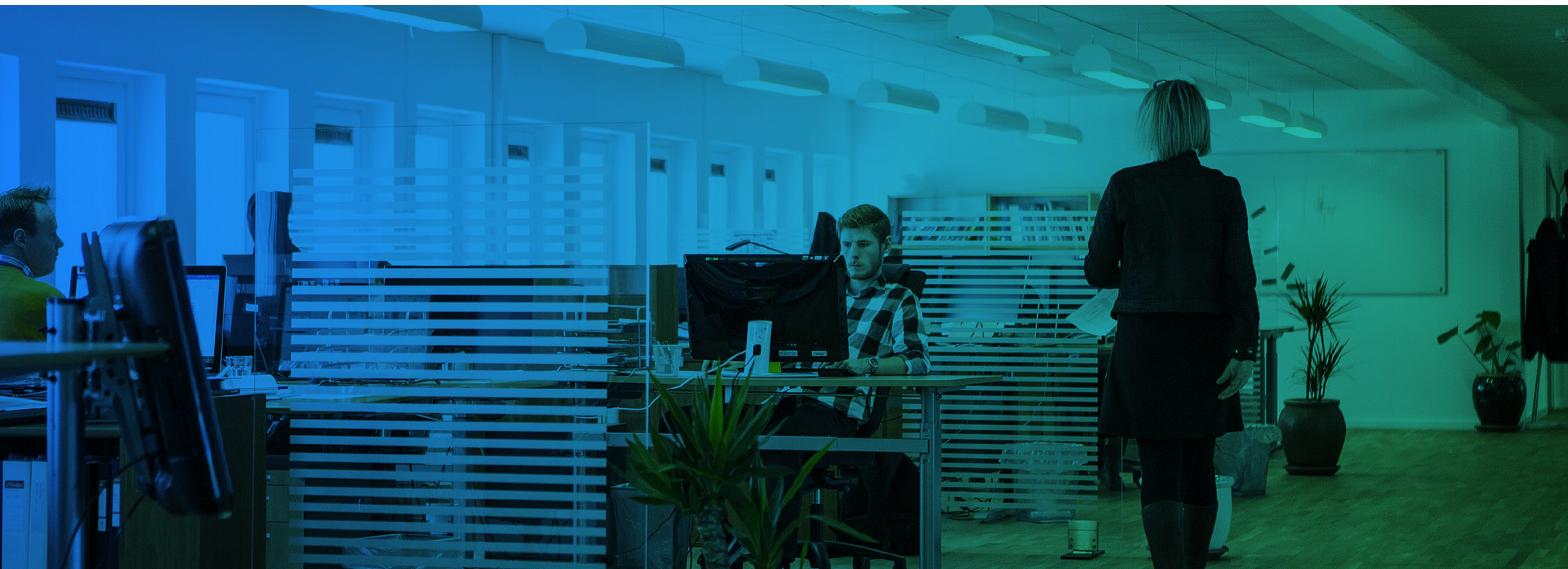
How many people does your team have? What are their current obligations? What are their specialties? If you have team members who are being underutilized and have a skill set that is compatible with your new project, those same resources may satisfy the needs of the project. If you have a limited team that is currently working overtime to meet the day-to tasks your organization requires, it will likely be more difficult to use the embedded resources.

Some organizations are growing their in-house capabilities and can accurately project enough work to necessitate more full-time employees; but it can be expensive to find, hire, and retain an in-demand technical resource. There is no one right answer for every organization, but these considerations apply to each.

## Industry Knowledge

In-house development can be a viable solution when projects demand detailed industry knowledge or deep familiarity with a customer. Since agencies and freelancers typically work on a wide variety of development projects — for a wide array of businesses — they aren't always capable of bringing this degree of knowledge to the table.

Despite these challenges, there are outsourcing options that can meet these needs. Systems integrators typically offer industry-specific consulting and delivery services, and in some cases also offer additional models such as crowdsourcing. If managers decide to go off-site with a project that demands strong industry insight, it's a good idea to choose a service that provides access to a diverse talent pool, while also offering expert quality control to ensure that a finished product aligns with their vision.





## Control

When app development projects are completed in-house, managers can physically supervise projects with a high degree of control. This has the benefit of ensuring the project is on schedule, while affording opportunities to make changes or alter deadlines on the spot, depending on problems that might arise.

If oversight and control are especially important for a particular business or project, managers can still elect to go off-site, as long as they leverage an outsourcing model that includes a project manager. Ideally, this should be an application development expert who can work closely with the customer team to monitor and report on progress, while also providing insight and recommendations.

## Security

Business owners don't always feel comfortable outsourcing sensitive projects to agencies, contractors, or freelancers working without security oversight. As long as a company has robust security protocols in place for internal development, it may prefer to assign application development projects to in-house staff.

It's important to remember, however, that this does not insulate the project from potential security issues. Most data and software security breaches are the result of something unintentional, and employees can always inadvertently introduce malware or backdoors into a system.

If a business owner or manager chooses to outsource a sensitive project, it's critical to ensure that the service utilizes effective [security protocols](#). For example, crowdsourcing offers the benefit of project “atomization,” wherein different developers tackle different parts of a project, with no single person having access to the whole. In this way, crowdsourcing can offer greater security than in-house development.





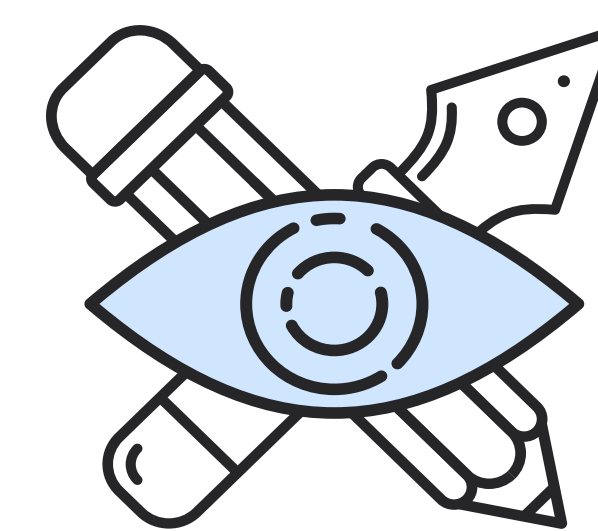
# Why Outsource?

## Cost

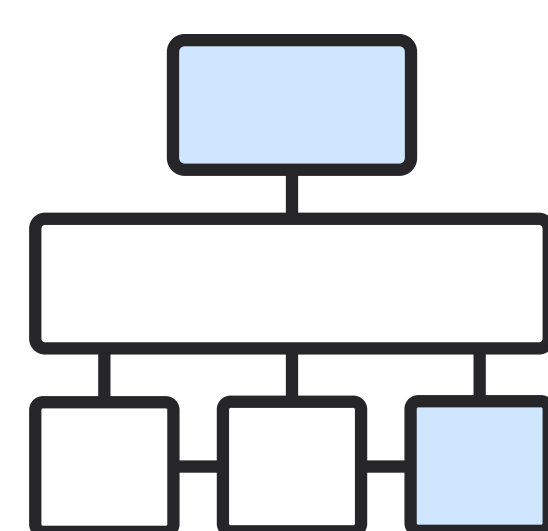
It takes considerable time and resources to find, recruit, vet, and onboard a qualified, cohesive in-house team of designers and developers. According to the Society of Human Resource Management, the average business spends thousands of dollars securing just one new hire. There's also the consideration of competitive salaries, benefits, vacation time, and bonuses for every member of a team, which may include some or all of the following (salaries according to [Indeed](#)):



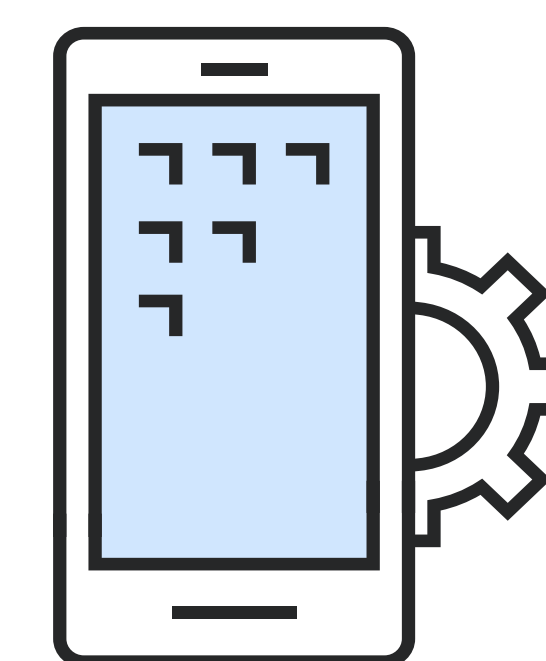
**Mobile App Developer:**  
\$80,000–\$100,000



**Mobile App Designer:**  
\$60,000–\$90,000



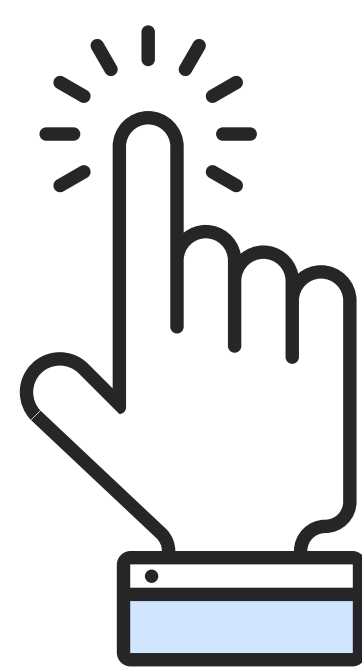
**Product Manager:**  
\$51,000–\$121,000



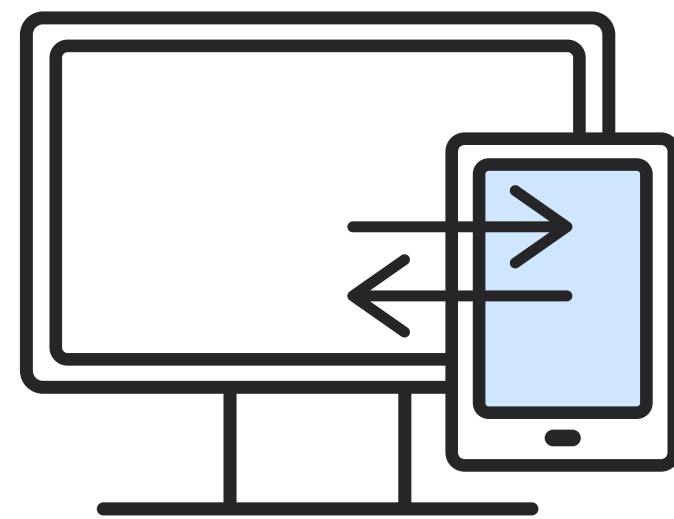
**Senior iOS Developer:**  
\$21,000–\$61,000 (*Part-time Contract*)



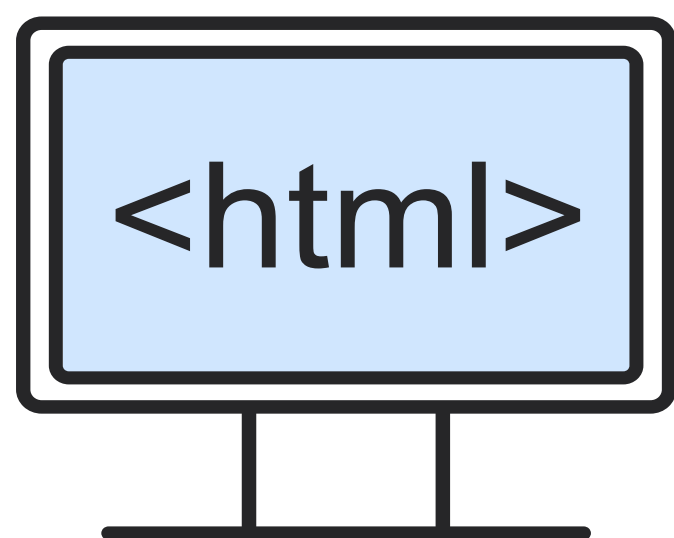
For more complicated projects, a business may need an even larger team, consisting of:



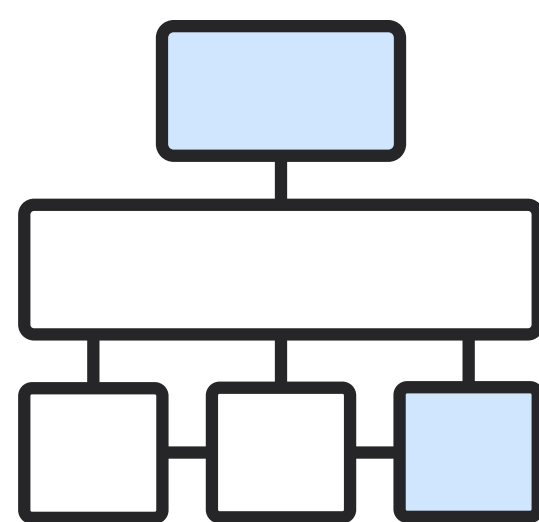
**Mobile App Developer:**  
\$80,000 to \$100,000



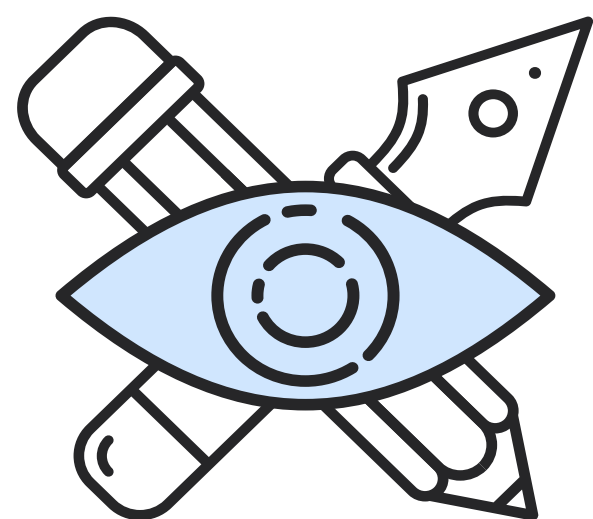
**Lead UX Designer:**  
\$86,000 to \$120,000



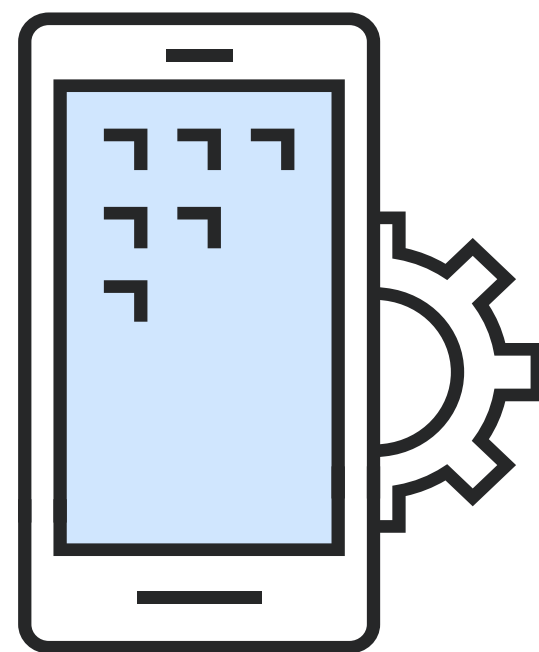
**Backend Developer:**  
\$86,000 To \$100,000



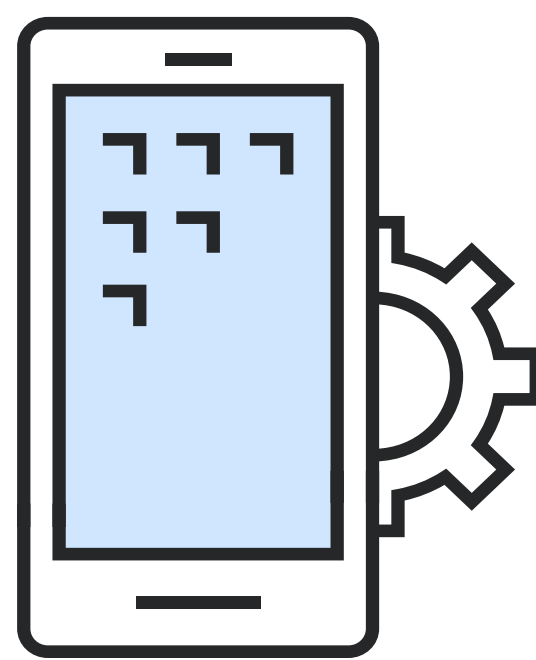
**Product Manager:**  
\$51,000 To \$121,000



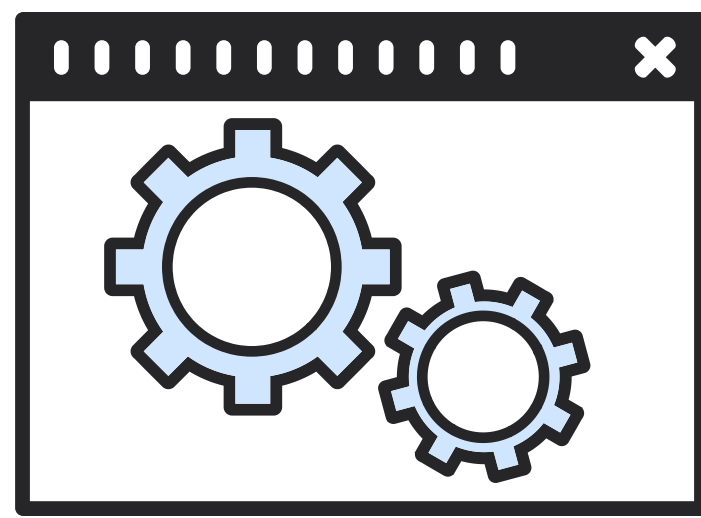
**Mobile App Designer:**  
\$30,000 To \$90,000



**Senior Android Developer:**  
\$26,000 To \$66,000 (*Contract*)



**Senior iOS Developer:**  
\$24,000 to \$64,000 (*Contract*)

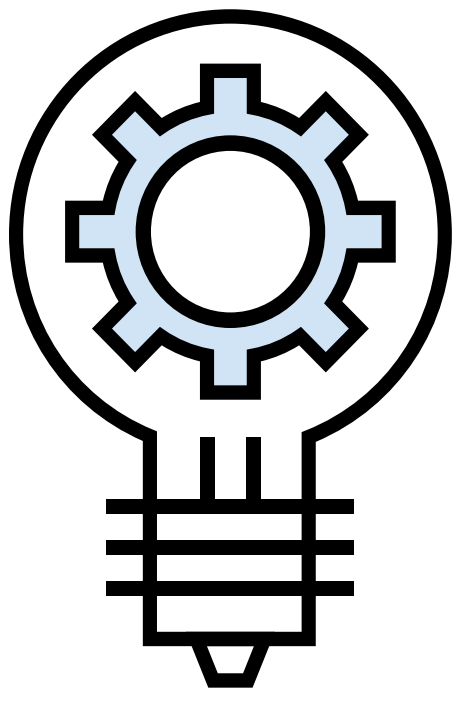


**QA Assurance Engineer:**  
\$11,000 to \$44,000 (*Contract*)

**Total Approximate Cost: \$394,000 To \$705,000**







Since businesses don't have to provide comprehensive salary and benefits packages to off-site designers and developers, they enjoy substantial savings when they outsource projects — especially when they opt for a crowdsourcing model that works on a pay-for-results basis (as opposed to paying for hours). A complete mobile app from a crowdsourcing platform such as Topcoder starts at just \$55,000.

## Diverse Capabilities

The success of in-house development is always dependent on the expertise of the on-site developer. This can place limitations on a project from the very earliest stage — from speed and quality to outside-the-box thinking. When this occurs, managers must either accept outcomes that fail to meet expectations or find an outside resource to complete a project, while still compensating the salaried in-house developer.

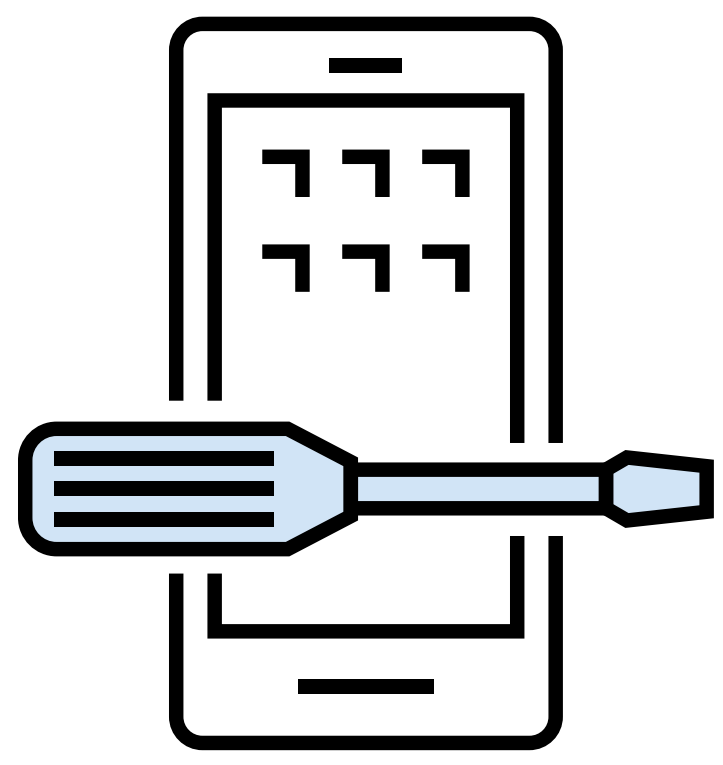
Outsourcing offers the benefit of getting people with specialized skills to work on specific phases of your application development project, and different outsourcing options approach this in different ways. Agencies assemble project teams staffed with the right talent and experience, but typically charge premium prices for their services. They can deliver high-quality work (and quickly), but that work could suffer from groupthink, given the team mentality. A pool of contract or freelance designers and developers can be sourced to complete a project, but sourcing and managing an outside team often takes a significant amount of time — and may necessitate an internal manager to oversee the project.

Crowdsourcing offers another way for business owners to leverage diverse global pools of talent. Crowdsourcing platforms provide on-demand access to a full spectrum of capabilities as well as project management services, allowing business owners to get optionality and insight into different phases of the project without being surprised at the project conclusion.

Whichever outsourcing approach a business chooses, the options can lead to greater imagination and innovation. Since outsourced developers are able to bring new ideas to a project, they are often able to uncover major innovations that would have been unlikely otherwise. (Not to mention defects, issues, and feature improvements... described below.)







## Increased Efficiency

In-house development can be significantly restricted by bandwidth issues. To complete a development project on schedule, managers must often divert human resources away from other important projects. This can lead to a reduction in productivity that can have long-reaching effects for months after the completion of an app. Outsourcing allows business owners to use their in-house employees more effectively, so there's no need to play catch-up once the app is completed.

## Testing

Mobile app testing presents a unique set of challenges not usually encountered on traditional desktop platforms. Aside from considerable fragmentation of operating systems and devices, a number of factors impact a mobile ecosystem's complexity. These include everything from interference caused by background alerts, tasks, and notifications to varying data connection speeds to device hardware, screen resolutions, and form factors.

An effective outsourcing service can provide extensive testing — both after development sprints and before releases — to ensure that an app works exactly as envisioned across every system and device. Best-practice QA utilizes blind, independent testing as well as third-party scanning tools to look for any potential vulnerabilities.

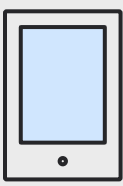
According to Forrester Research, a company's QA budget should be [at least a quarter of its development costs](#) — one of the reasons being that only [16 percent of people](#) will open a buggy app a second time. For businesses that can't afford to dedicate limited financial resources to QA, outsourcing provides a practical solution, as long as it includes third-party testing and comprehensive safeguards for QA.

Although all businesses have unique needs, they share a universal want: cost-effective solutions that deliver great ROI. When it comes to app development, outsourcing can be a highly effective and efficient solution for companies that want to minimize expenses and waste, while gaining access to diverse talent pools, optionality, and expert guidance throughout.

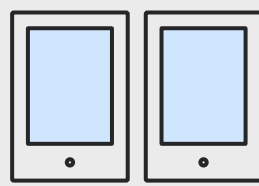




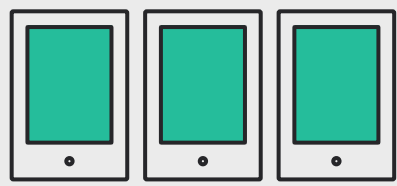
	In-House	Outsource	Crowdsource
Cost			
Time			
Resources			
Security			
Industry Knowledge			
Control			
Diverse Capabilities			
Efficiency			
Testing			



Good



Better



Best





# Next Steps for App Success

Where do you go from here? For everything from initial ideation to finished product, it's important to choose the talent model, budget, and timeline that works for you. Developing an app isn't the difficult part; developing a winning app that stands apart from the pack and keeps users engaged is the real challenge. That's where innovative UX designers, best-in-breed developers, and expert QA engineers are essential.

Topcoder can help determine if crowdsourcing is a better alternative to in-house app development — based on the project's unique requirements. Talk to a technology project expert at Topcoder, get a free consultation, and start on the path to a more successful app.

[Topcoder can help.](#)







topcoder<sup>TM</sup>

