Mobile App Development

A introduction for small businesses

What We'll Cover in this Guide

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- Different types of apps
- Purpose and benefit of apps
- App stores

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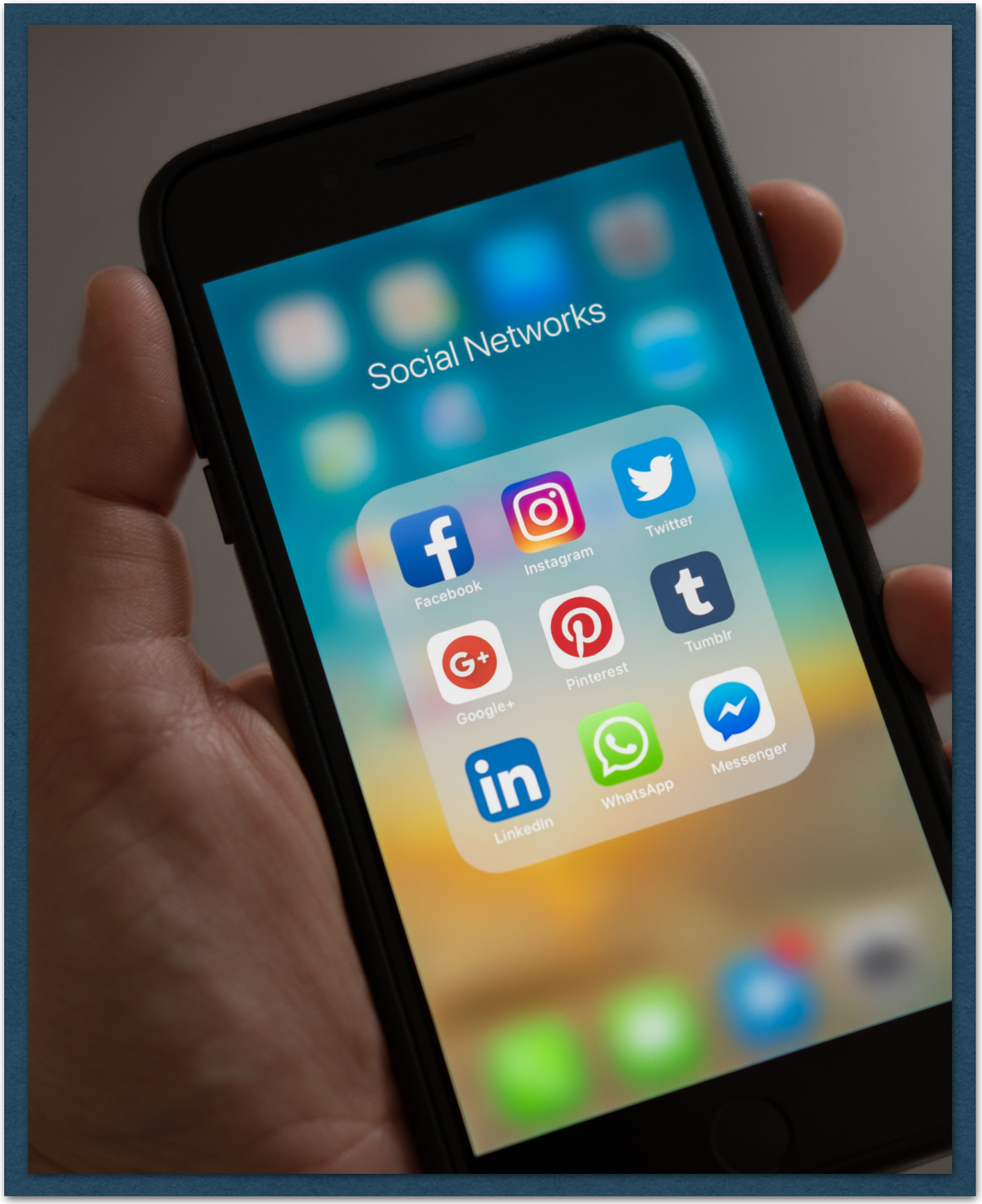
1 Introduction: What is an app?

Mobile App, Defined

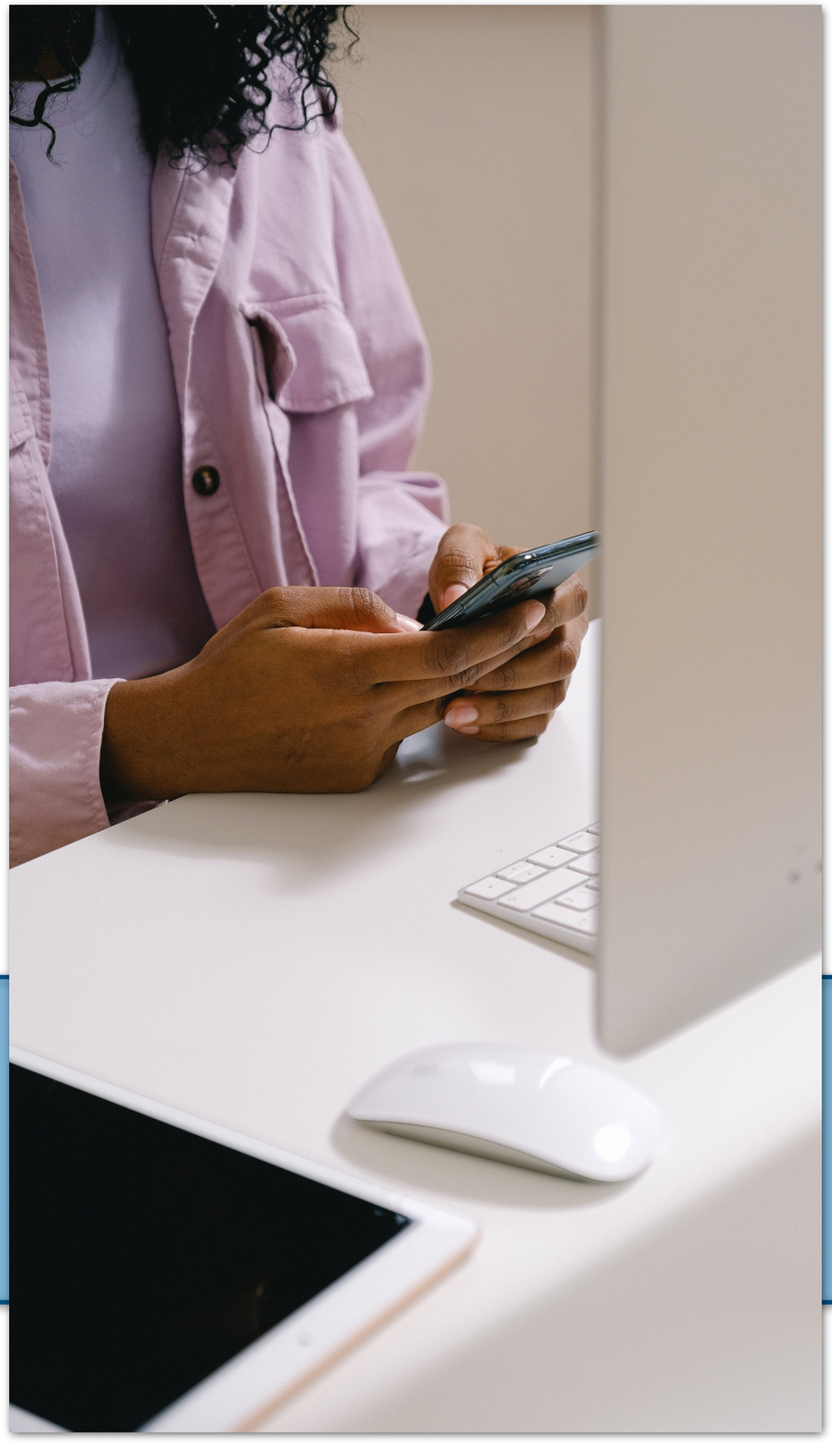
The word "app" is an abbreviation for “application", which refers to software that either comes pre-installed on your device or is installed by you. The term app is usually used to describe mobile apps or small software programs that run on websites.

Another term for application is "program," although this word is often associated with larger software such as Quickbooks or Microsoft Word.

Some apps run on your device locally and others through a web browser. They can be found on various devices including computers, smartphones, tablets, smart TVs, and smartwatches. Some apps require an internet connection to function, while others do not.



2 Introduction: The different types of apps



Different Types of Apps

There are three main types of apps: Desktop, Web, and Mobile.

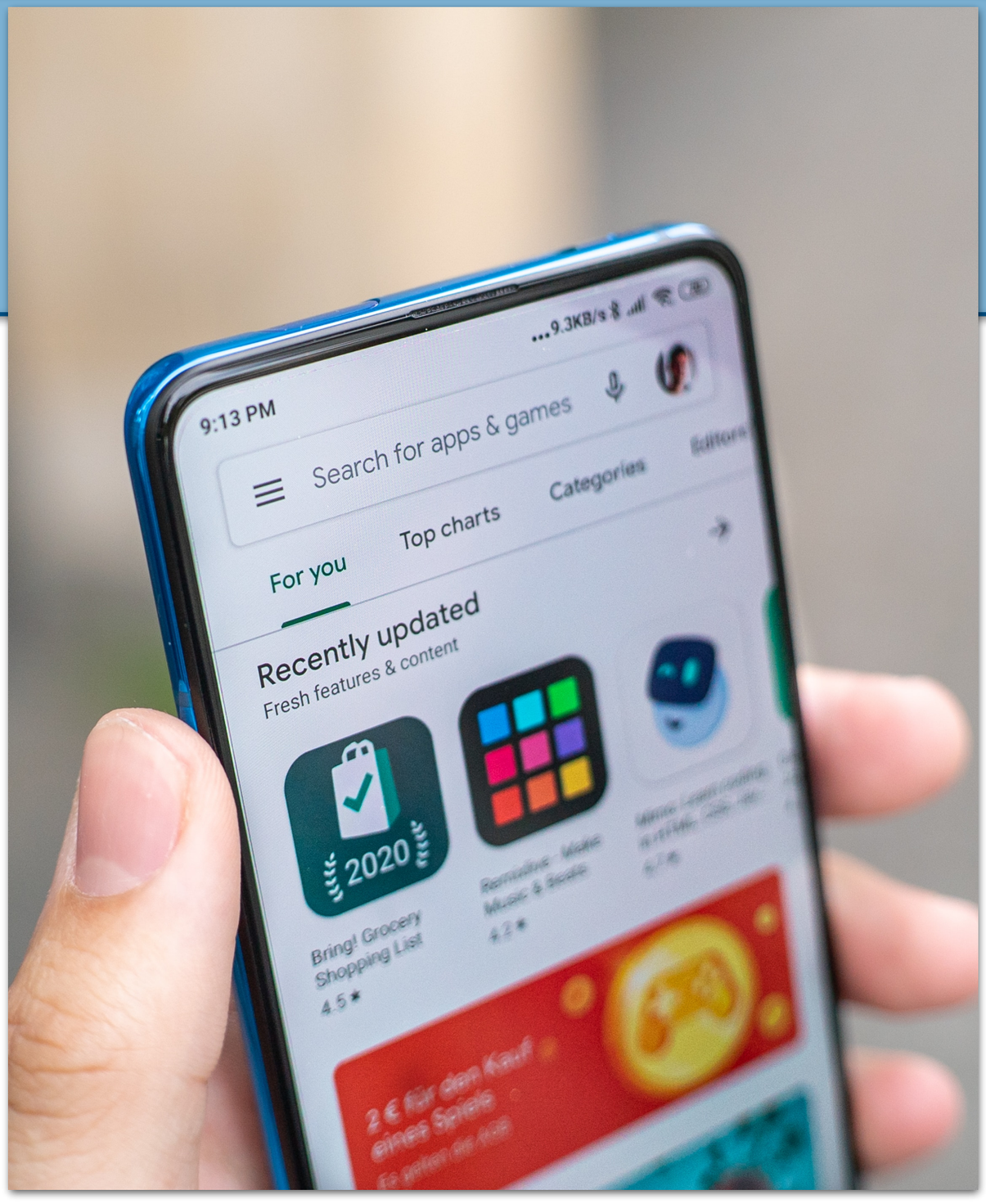
- **Desktop apps** are designed for computers with mouse and keyboard input, offering a more feature-rich experience on a larger display.
- **Web apps** are accessed through a web browser, leveraging the power of internet connectivity for sharing and collaboration. Like desktop apps, web apps are designed to work best with a large display.
- **Mobile apps** are created for smartphones and touch screens, offering a simplified, easy-to-use version. As mobile devices become larger and more powerful, mobile apps can perform all the same functionally as their desktop version, using a different interface and input method.

Some apps are available on multiple platforms, while others may only be accessible on one or two. For instance, Quickbooks can be installed on a desktop, as a mobile app, and through their website, while Gmail can only be accessed via their website or mobile app.

3 Introduction: Purposes and benefits of apps

Some businesses only exist as apps, like Uber, and other businesses develop apps to enhance their existing services, like clothing stores. Not every small and medium-sized business needs a mobile app, but it can bring added value in the right circumstances. Here are some of the typical advantages a business app can offer:

- Creates easy **customer engagement and communication**.
- Boosts **marketing and promotional efforts** since customers must actively download the app. This provides valuable leads for a business's marketing reach. Marketing teams can track app usage and target users based on their actions in the app.
- Offers a **platform for subscription-based services**.
- **Improves the shopping experience** for customers.
- **Enhances brand visibility** and reputation through push notifications.
- Generates income from **in-app purchases and ads**.
- Provides **data mining opportunities** for sales, marketing trends, and strategy analysis.



Introduction: Infrastructure to support an app

It's important for small business owners and entrepreneurs to understand that building and launching an app is just the beginning. A successful app-driven business may require more than just a well-designed piece of software. It often requires traditional business operations to support it, including legal teams, HR, customer service support, and physical locations.

While an app can automate various processes and eliminate the need for a physical storefront, it cannot replace the importance of human input and expertise. For instance, legal and HR teams are vital in ensuring compliance with regulations and safeguarding the company from potential risks. Customer service teams are needed to address user concerns, gather feedback, and build long-lasting relationships with your customers. These human-driven aspects of your business cannot be replaced by technology alone and are key to the overall success of your app and the growth of your company.

Depending on the nature of your business, there may be a need for physical locations, too. For example, if your app-driven business involves selling physical products, you might need logistics and warehousing facilities to store and manage your inventory. Additionally, businesses that provide services like repairs, installations, or consultations may require physical spaces for employees to work from or meet with clients.

While mobile apps can greatly enhance your business's capabilities, it is essential to recognize the human and physical resources needed to support the app and to ensure long-term success and sustainability.

5 Introduction: The app stores

An App Store is a digital marketplace where app developers publish their creations for customers to download or buy. It offers a range of both free and paid, pre-screened apps suitable for use on various devices. Users can easily browse, buy, install, and keep their apps up to date through their device's app store. The major mobile OS providers, such as Google, Microsoft, and Apple, all have their own app stores.

The smartphone market is dominated by two main platforms: Apple's iOS and Google's Android.

iOS powers Apple devices, such as the iPhone, while Android is used by both Google devices and other smart devices. Both companies have individual app publishing and vetting processes that ensure the apps in their stores are safe, reliable, and meet quality standards for their users.

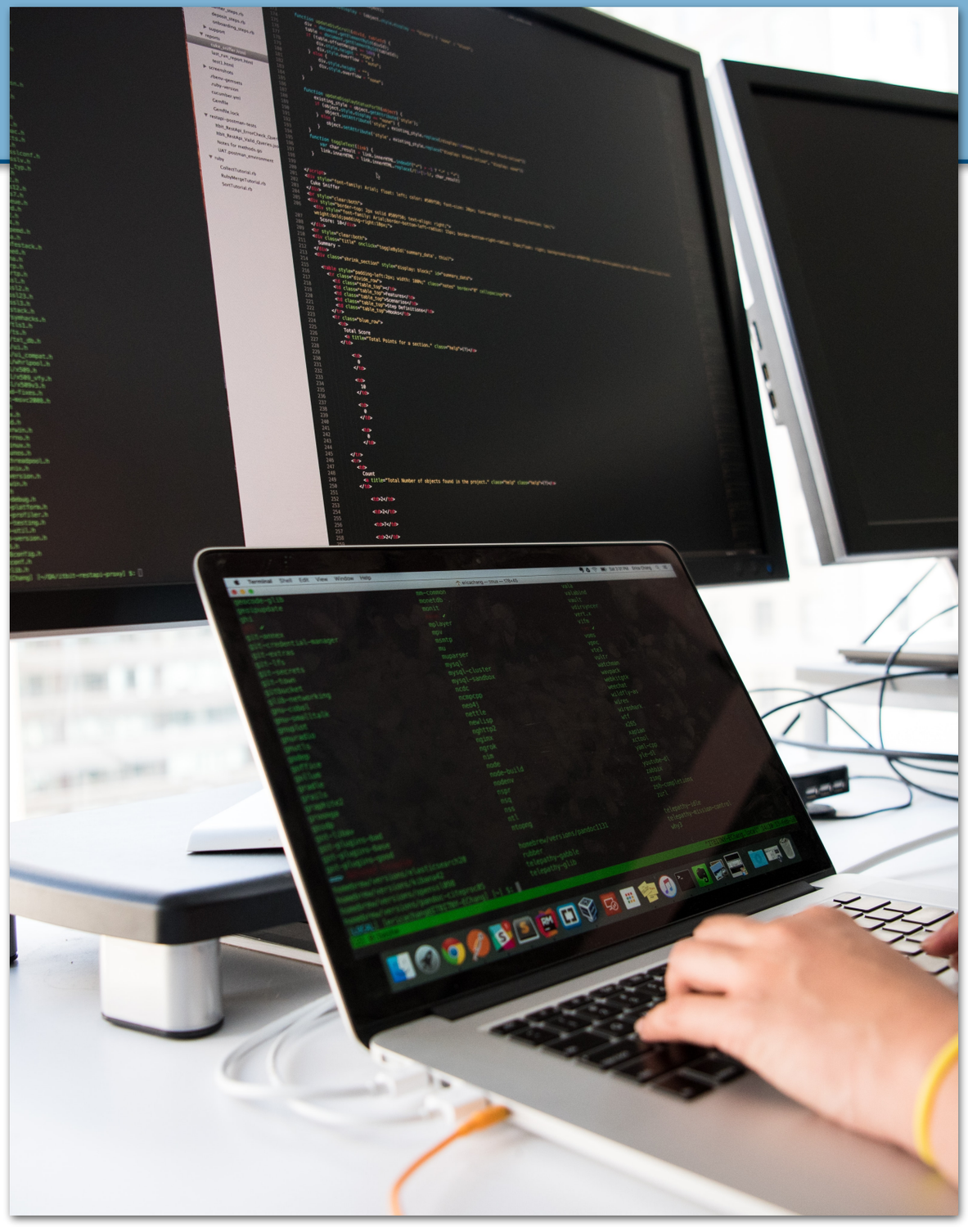
There are costs associated with publishing an app. Most app stores charge an initial fee, then a reoccurring yearly fee. The app store will likely also take a percentage of revenue from each in-app purchase a user makes.

Top App Stores	Google Play Store	Apple App Store
Cost to Publish	$25 one-time	$99 per year
Transaction Fees	30% On all purchases. Drops to 15% after 1 year.	15% On all purchases
Number of Apps (2022)	3.5+ million	1.5+ million

While the two platforms have similarities, developing apps for iOS and Android requires using different development tools.

6 How apps are built

Mobile app development is the process of designing and coding software for smartphones, tablets, and other mobile devices.



App development is similar to other software development, but with the added ability to leverage the native features of a mobile device, such as the GPS, Bluetooth, camera, microphone, and other built-in functions.

There are many platforms apps can be built for, but the majority of mobile apps are developed for either Apple or Android devices, since these platforms hold a significant share of the global market.

There are also several different app development frameworks to choose from and we will cover them later in this guide.

You may choose to hire professional software developers to build your app or do it yourself. Software platforms called app builders provide no-code app development, allowing inexperienced individuals to build their own apps. We discuss app builders in the next section.

7 Development methods

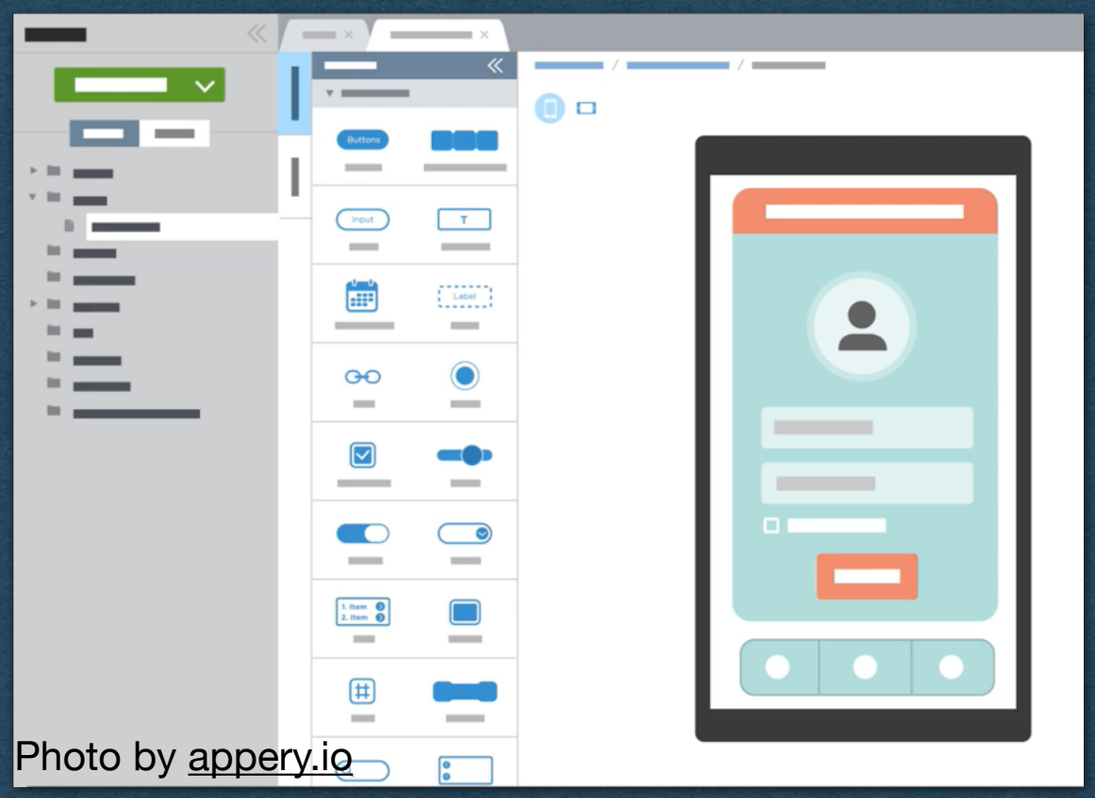


Photo by appery.io

Businesses used to purchase pre-made software or they relied on hiring developers to build custom software.

Nowadays, there are alternative options available called "app builders." App builders are user-friendly and beginner-friendly platforms, allowing you to create apps without any coding.

Some startups first use an inexpensive app builder to get their simple app idea off the ground and running. Later, if the app is proven successful, they hire a developer to improve and enhance the app.

In the next few pages we will outline the differences between hiring **professional developers** and utilizing a **do-it-yourself app builder**.

	App Builder	Custom Code
Development Time	Typically Days	Months to years
Cost	Inexpensive	Expensive
Customization	Generally Limited	Limitless
Development Time	Maintenance and support depend on app builder	Regular maintenance is required
Portability to Other Platforms	Not Portable	Fully portable

8 Development methods: hiring a developer

Hiring A Developer to Build your App

Building a mobile app can be costly, which is why it's crucial to choose the right app developer. The right choice can save you time, money and deliver an app that boosts your business. Your options are between hiring a development team/company or a freelance developer.

A development team is a better fit for complex, data-intensive, and security-sensitive apps or those that need quick fixes and technical support. Simple to moderately complex apps are better suited for individual developers.

Freelance developers are abundant, and since they can work remotely, you can hire local, national, or even international freelance developers. You should plan to do plenty of research on all your options to ensure you select someone who can meet your needs. Use job boards or freelancer websites, such as Indeed, Upwork, Craigslist, or Toptal. Filter options based on your desired location, price, experience level, and services offered.

There are also many development companies all over the world to choose from. Software development companies usually cost more than a single developer, but they can provide a team of developers, more robust customer service, and additional services you might need. In Portland, ME, some options include Portland Webworks, Big Room Studios, Fabric Portland and more.

Working with a software developer or coding an app yourself offers maximum customization. Many developers and companies also offer additional services like branding, design, ongoing maintenance, app store publishing assistance, and marketing. However, hiring a developer is usually costly.

✓ Pros

- You have full customization of how you want the app to look, feel, and function.
- Developers may offer design and branding services.
- More admin control than low-code and no-code.
- Some developers provide monitoring services to ensure the app remains functional and bug-free.

✗ Cons

- May require more time to build and update the app.
- High technical skills required.
- Costs are greater than low-code and no-code.
- Dependent on others to execute your vision.

9 Development methods: using an app builder

Using a DYI App Builder to Build Your App

App builders enable you to create and personalize your own app. They come in two forms: low-code and no-code. Low-code builders simplify the amount and complexity of code required, while no-code builders eliminate the need for code altogether. Many app builders offer both low-code and no-code options within a single platform.

App builders typically feature drag-and-drop capabilities, app templates, visual tools, process flows and more. They are ideal for small businesses, entrepreneurs, and individuals who need to build an app quickly and without technical expertise.

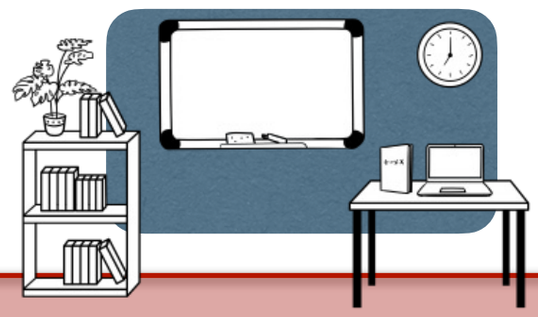
There are many app builders available, so plan to research the features, functionalities, and price of a few options before choosing. Look for demo videos that showcase the platform's features. Below are some popular app-builders.

✓ Pros

- Cheaper than development firms.
- You have control of the app you are building from start to finish.
- You can modify or update your app without waiting for developers.
- You do not need programming skills to build a decent app.
- You may be able to publish your app more quickly.
- You will not have to think about the placement of elements in your app as app builders have templates and architecture.

✗ Cons

- It is up to you to ensure your app is up-to-date and compatible with new devices and features.
- You may be limited to the features, template designs, and integrations the app builder provides.
- You may not be able edit the structure or the code of the app.
- Some app builders only support one development style or operating system (like iOS or Android).
- Some app builders provide limited technical support.



Appy Pie is a cloud-based DIY mobile app creation tool that allows users without programming skills to create an app for almost any platform and publish it. Low-code features are also available.

Price: Plans start at Free with ads and go up to $50/month for Platinum

www.appypie.com

Appery is a cloud-based mobile app builder for Android or iOS. Since it runs in the cloud, there's nothing to install or download. The catalog of plug-ins provides various pre-built functionalities to choose from if you wish.

Price: Plans start at $60/month for Pro, and $135/month for Team

www.appery.io

BiznessApps is a platform to create mobile apps for small businesses with a simple process. Pre-built features include an ordering interface, shopping carts, reviews, messages, push notifications, analytics, and more.

Price: Plans start at $99/month for a single app

www.biznessapps.com

10 App Revenue: Pricing strategies

Apps have become increasingly important to consumers which makes competition in the market fierce. To succeed in a saturated market, it's crucial to research your target audience and have a clear pricing strategy in your business plan. Below are the common pricing strategies. Some of these can be combined.

- **Free Apps.** These apps serve as an extension to a main product or service and aim to drive traffic to other revenue sources or generate income through in-app ads, rather than directly from the app itself.

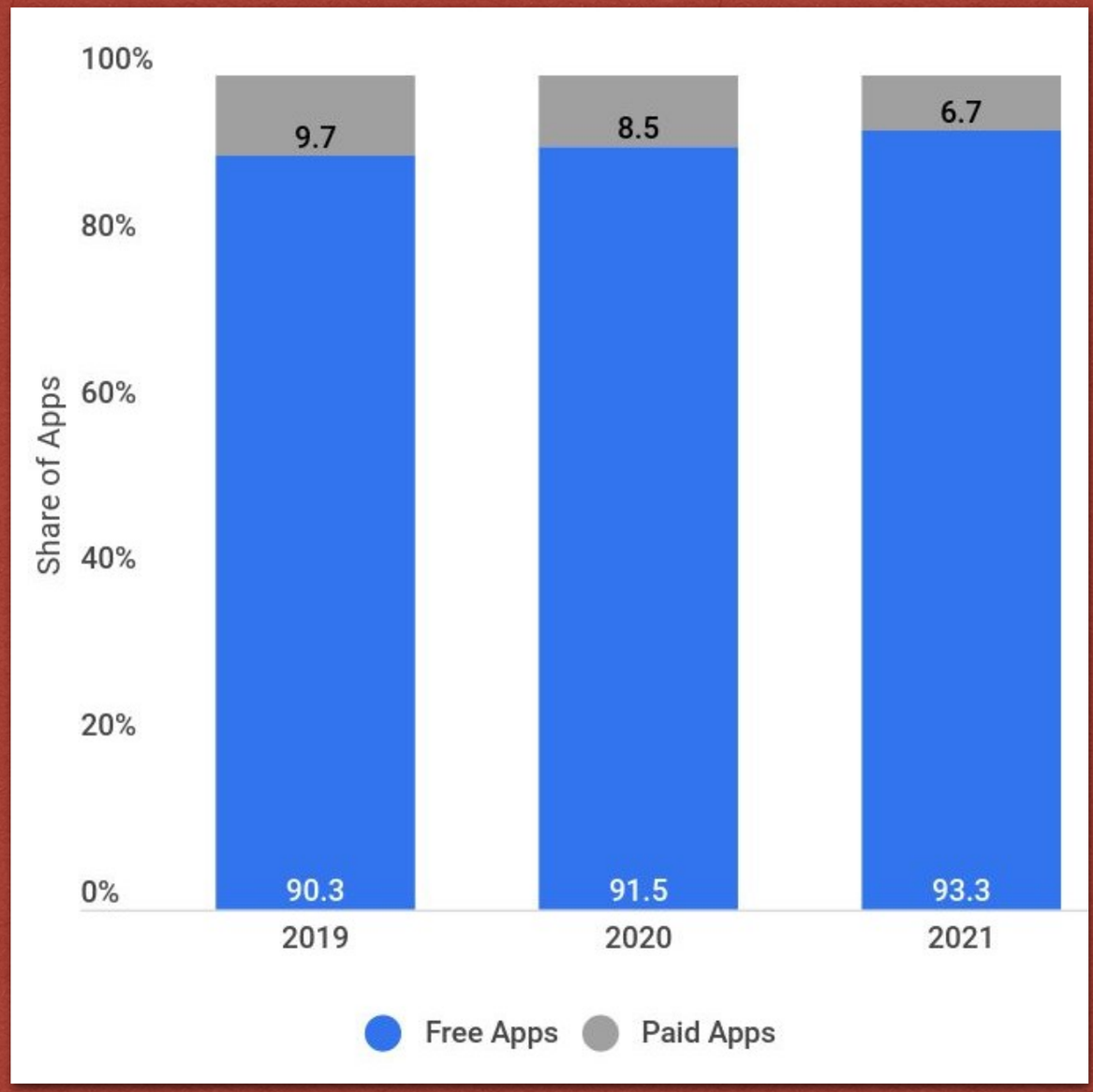
- **Freemium.** With this pricing model, the app is free to download but it has extra levels, functions, or perks that users can choose to purchase.

- **Paid.** This is the simplest pricing model. Users pay a one-time fee (usually between $0.99 to $9.99) to download and use the app. Once the user pays, they usually have lifetime access to all of the app's features.

- **Paymium.** Users pay for the app, but there are additional features that can be purchased at an additional cost.

- **Subscription.** The app is usually free to download, but users pay a recurring monthly or annual fee, potentially auto-renewing, to keep using the app or service.

Percentage of Free Apps from 2019 - 2021



Zippia. "40 Fascinating Mobile App Industry Statistics [2023]: The Success Of Mobile Apps In The U.S." Zippia.com. Oct. 19, 2022

11 In-App Revenue: Advertisement

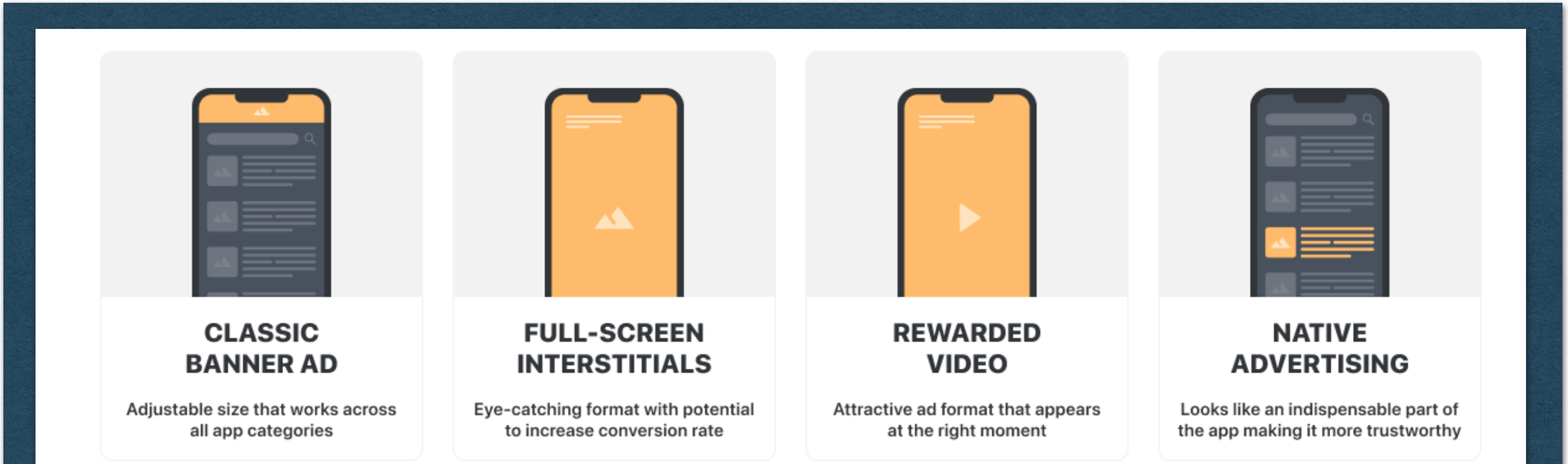
Mobile advertisement is expected to reach over $240 billion in 2023. Many free apps earn revenue from ads, with freemium apps offering premium features after a user watches certain advertisements. There are few different types of in-app ads:

Interstitial Ads are full-screen pop-up ads that appear occasionally while users interact with the app. The ads usually have a close button on a timer to ensure the user watches at least some portion of the ad.

In-App Reward Video Ads are special video ads that offer users relevant in-app rewards for viewing them. For example, a gaming app might unlock additional playable characters or new levels to users who watch video ads. The close button is usually set on a timer for the duration of the ad to ensure the entire ad is watched

Native Ads are ads that blend in with the app and promote a relevant product or another app, often as part of an affiliate marketing agreement. They are perceived as less intrusive by app users, but generate less ad revenue compared to other types.

Banner Ads are ads displayed as banners within the app's layout. They appear at the top or bottom of the screen without interfering with the main area of app interface.



Yatsuk, Svetlana. “Ad Formats in Mobile Applications.” Orangesoft, https://img.orangesoft.co/media/ads.png

12 In-App Revenue: Advertisement

The type of ads and their pricing affects the revenue you make from them. Ad pricing models usually fall into three categories, each requiring a progressively higher level of user action before the advertiser is charged. The typical ad pricing models are:

Cost per click (CPC), in which the advertiser pays only when the user clicks on the ad. This ensures that the brand only pays for ads that have been interacted with by your users.

Cost per mille (CPM), is the cost per 1,000 impressions, or user interactions. This is one of the original and most common ways of paying for mobile ads.

Cost per action (CPA), the advertiser is only charged when the user not only clicks on an ad, but also completes a designated action, such as downloading another app or signing up for a service with an email.

The higher the action required from the user, the greater the cost per click or action. However, getting users to click on an ad is not always an easy task. To maximize your revenue, choose an ad pricing model that aligns with the types of ads you can offer on your app and what your user base is likely to engage with.

The amount of revenue you generate from in-app ads depends on factors such as the ad units offered, the price model, your user base, and how lucrative your app appears to advertisers. An active user base, even if small in size, can be more valuable than a large passive user base.

How much money do apps make?

The top 200 apps on the App Store can earn more than $80,000 per day. However, this average drops significantly to $3,500 for the top 800 apps. There are an estimated 5+ million apps available on just the Apple and Google app stores which means being in the top 800 is a major feat.

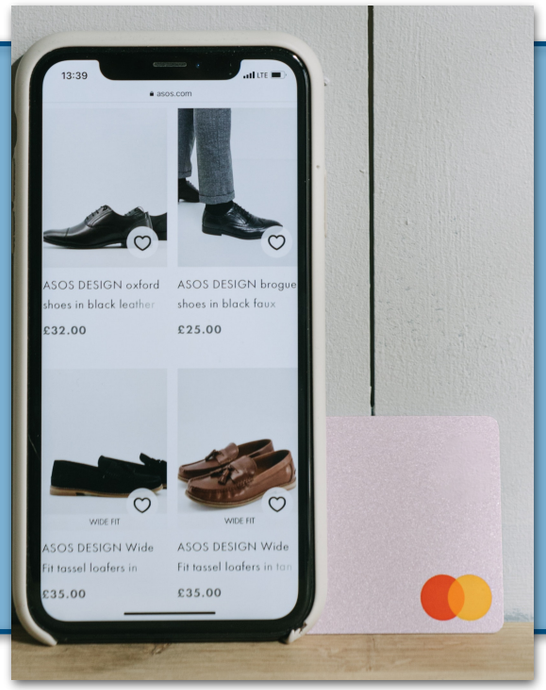
How much money do apps make per ad?

Revenue from banner ads is estimated to be about $0.10 per impression on average. Interstitial ads can make about $1-$3 per impression, while video ads can make $5-$10 per impression. Note that 20% of all apps have less than 1,000 active users and 70% have less than 1,000 downloads. This can make gaining large amounts of ad impressions difficult.

How much money do apps make per download?

The average revenue per app download varies significantly but the average is $0.60 to $1.20.

13 In-App Revenue: Other Revenue Streams



Selling Merchandise

This is a common monetization approach for eCommerce companies that prioritize product sales. They provide a free app version on the App Store and users can purchase products through it. This type of app serves as a virtual storefront.

In-app Purchases

Monetize your app by selling physical or virtual goods. These purchases can range from clothing and accessories to virtual items like extra lives or in-game currency. For best results, ensure the in-app purchases integrate seamlessly into the app experience and that users are incentivized to purchase the item.

Collecting and Selling User Data

Apps can collect vast amounts of user data on behaviors, personal interests, location, social media accounts, email addresses, app usage, etc. This data is valuable to advertisers, researchers, and marketers, and some are willing to pay for it.

The collection and sale of user data raises several ethical and legal considerations so app stores and mobile devices require apps to request explicit permission from users before tracking. Be transparent about what data you are selling and to whom. You also need to consider how you will keep user data secure.

Furthermore, collection and sale of personal data must comply with relevant privacy laws such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in the US. Be sure to research any and all laws wherever your app collects data.

14 Development Process

The **software development process** is a structured approach to development that guides app owners and developers through every step of creating software, including apps. This process helps ensure the software is developed thoughtfully, efficiently, and according to specifications. A well-crafted app often has fewer bugs and can be easily improved. Although the development phases are applicable to all types of apps, the time and effort required in each phase may increase based on the size and complexity of the app.

If you choose to hire a developer, they will perform much of the work in the technical phases but may include you when important decisions or changes need to be made. Providing a developer with clear documentation about your idea and goals at the start will help them better plan the process, estimate time and costs, and ultimately develop the app you envisioned.

Below are the common steps of app development. In the following sections, we'll briefly outline what occurs during some of these steps.

1. Define the problem or need your app will solve
2. Conduct market research to determine if there is demand for your app idea
3. Create a list of features and functionality for your app
4. Choose the platforms (iOS, Android, or both) you want to develop your app for
5. Choose a development approach (Native, Hybrid, or Cross-platform)
6. Create a visual design for your app (UI/UX)
7. Develop a Minimum Viable Product (MVP)
8. Test the MVP on various devices and with a small group of users
9. Refine your app based on user feedback
10. Launch your app on the app store(s)
11. Continuously monitor usage and update your app to improve user experience and address any bugs
12. Engage in app store optimization to increase visibility and downloads.

15 Development Process: Timeline

The time it takes to develop apps varies greatly and is influenced by several factors. Key factors include the type of app, the complexity of its features, and the development approach used. The table below depicts the average time it takes to develop simple, moderate, or complex apps. Even with the best planning, unforeseen complexities can arise during the development process and greatly impact these timelines.

	Simple Apps	Moderately Complex Apps	Complex Apps
Description	Simple apps typically have a limited number of screens (no more than 5) and don't exchange data with external databases or collect user analytics. They may require users to sign up for an account, but usually only use an email for a simple registration process.	Average apps are more complex and may have around 10 screens, a personal user account, social network authorization, integration with a server or website, and payment systems. These features may require additional development efforts to ensure private user data is secured.	Complex apps are even more advanced and might have the same capabilities as a moderate app plus additional features such as real-time synchronization, interactivity, integration with large databases, large numbers of active users, animations, AI, and more.
Examples	• A timer and stopwatch app • Notepad or diary app	• Online store • Reservation booking app	• Popular social media apps • Healthcare/Telehealth apps
Timeline	2 - 4 months	4 - 6 months	9+ months

16 Development Process: Strategize & Plan

Strategy Phase

The initial step in developing a mobile app is to create a strategy that outlines how your business can benefit from having a mobile app. This strategy should clearly define the reasons behind your decision to develop a mobile app.

During this phase, you will:

- Determine the **purpose** of your app
- Target your app's intended **audience**
- Analyze the **competition**

Analysis and Planning Phase

At this stage, your app is becoming a tangible project as you move from idea to reality. Analysis and planning start by **defining the intended use cases** and outlining the specific functional requirements.

Once you have determined the requirements for your app, create a product roadmap that outlines and prioritizes the app requirements then group them into milestones.

You can then define your app's **minimum viable product** (MVP). An MVP is a version of your app that consists of only the most crucial functionalities, prioritized for the initial launch. An MVP gets your app to the market quickly and then non-essential features and design enhancements can be released in a future app update.

When planning the development of your app, consider the **skills required** to bring your app to life. Different technologies are used for iOS and Android app development. If you intend to launch on both platforms, you or your developers should have the capability to work with both.

Be sure to **research the app store** to determine if there are similar apps available and how you might be able to improve upon them. Also verify that your app name doesn't already exist. Like domain names, app names must be unique within each app store and should not already be in use.

17 Development Process: Design

Design Phase

The design phase of mobile app development involves creating and defining the user interface (UI) and user experience (UX) aspects of the app. This includes creating wireframes and prototypes, determining the layout and structure of the app, selecting colors, typography, and other visual elements, and conducting user testing to ensure that the app is user-friendly and meets the needs of the target audience.

The goal of this phase is to create a clear and effective design that will guide the development process and ensure that the final product delivers an interactive, intuitive, and user-friendly app that meets the expectations of the stakeholders.

Data & Workflows

A workflow diagram is a visual representation of the steps, processes, and interactions that occur in a mobile app. It outlines the sequence of events, screens, and actions taken by the user within the app to complete a task or accomplish a goal. Workflow diagrams help in understanding the flow of the app, identify potential bottlenecks, and improve the overall user experience. A workflow also helps determine the data that will be displayed to users, the data it will collect, and how users interact with the finished product.

Wireframes

Mobile app designs often start with sketches on paper. Wireframes are the digital form of those sketches. A wireframe is a low-fidelity representation of an app's UX and some basic UI by defining the app's navigation flow and content placement. Wireframes are used in the early stages of app design to test and validate design concepts, before moving on to higher-fidelity prototypes or the actual development of the app.

Style Guide

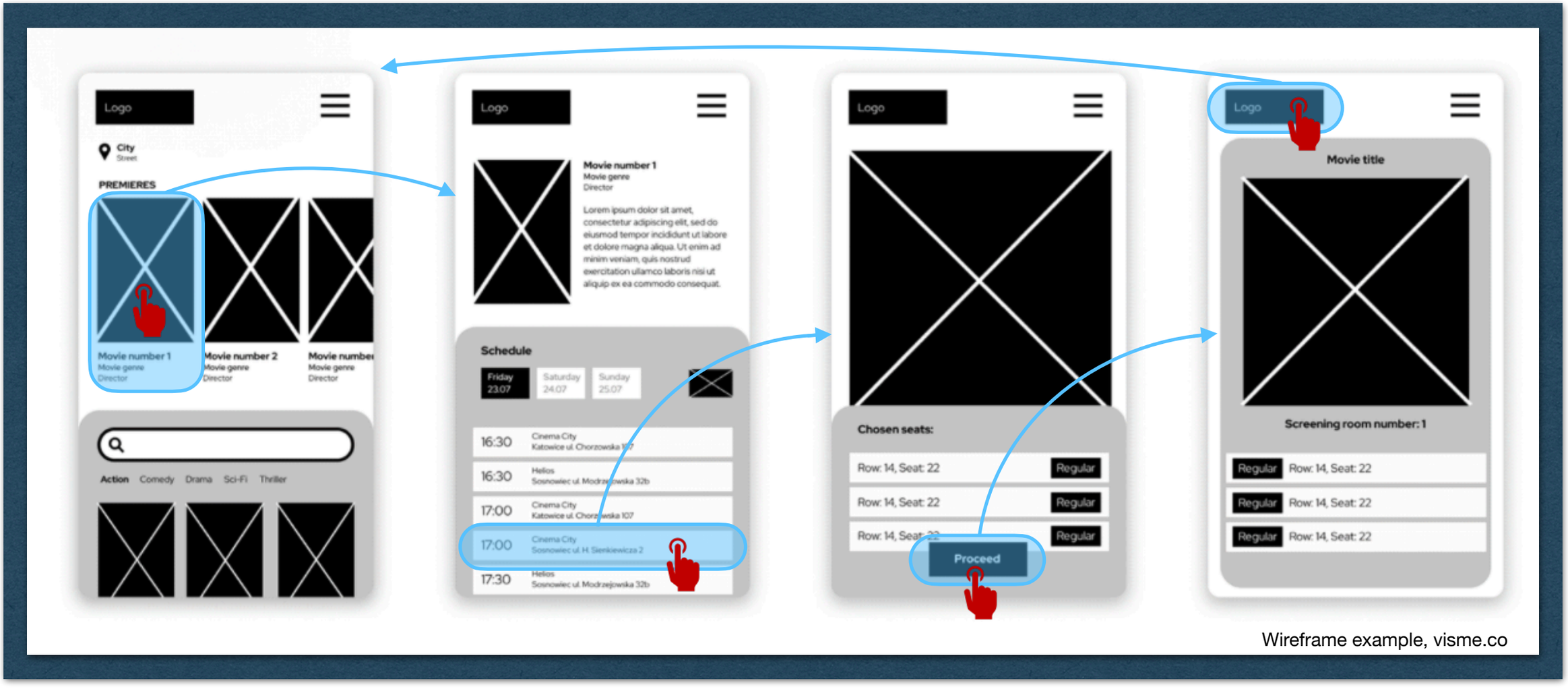
A style guide is a document that defines the design aspects of UI elements such as the typography, color palette, icons, buttons, navigation menu, etc., to ensure a consistent and cohesive look and feel throughout the app. A style guide provides guidelines and best practices for developers, designers, and other stakeholders to follow in the development and maintenance of the app.

Mockups

A mockup is a simple representation of the app's UI and is used to showcase the overall look and feel of the app, including its layout, typography, color scheme, and other visual elements. Unlike a prototype, a mockup is not interactive and does not allow users to navigate or test the app's functionality. However, it is a detailed representation of the final product and provides a visual demonstration of the app's design, making it easier to understand how the app will look and work. Mockups are typically created using tools such as Adobe Photoshop or Sketch.

Wireframe Example

Below is an example of a wireframe for a movie show time app. Notice that the diagram contains only mock data and that the image placeholders are empty. The purpose of a wireframe is to describe the layout and flow of of the app experience. The arrows between the screens indicate how they are related to each other. For example, if a user clicks on the first movie option, the user is taken to a screen describing the movie and play times.



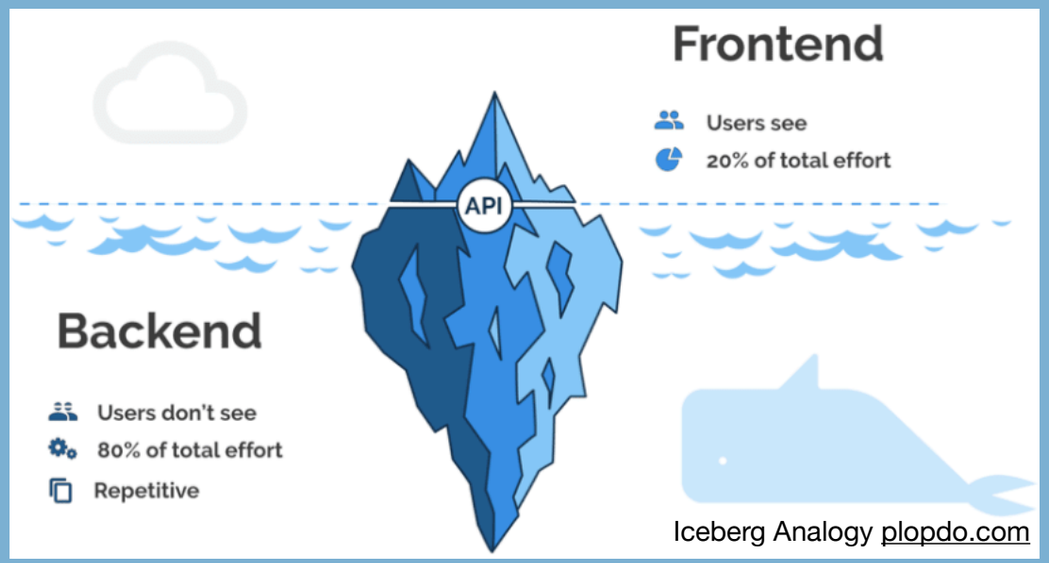
Wireframe example, visme.co

19 Development Process: Development Planning

Back-end/Server Technology: This refers to the database and server-side components necessary for app functionality. The back-end contains the code, data processing, security management, algorithms, logic, and so on. It's the "brain" of the app.

API: An Application Programming Interface (API) allows different pieces of software or websites to "talk" to each other. For example, a weather app might "talk" to the weather bureau's database via an API to get today's weather conditions. In this example, the app is only responsible for displaying data that is collected and stored by a third-party.

Front-end: This refers to the user interface. It is where users are able to use, see, and interact with the app through images, buttons, menus, content, interactive elements, and so on. It's the "face" of the app.

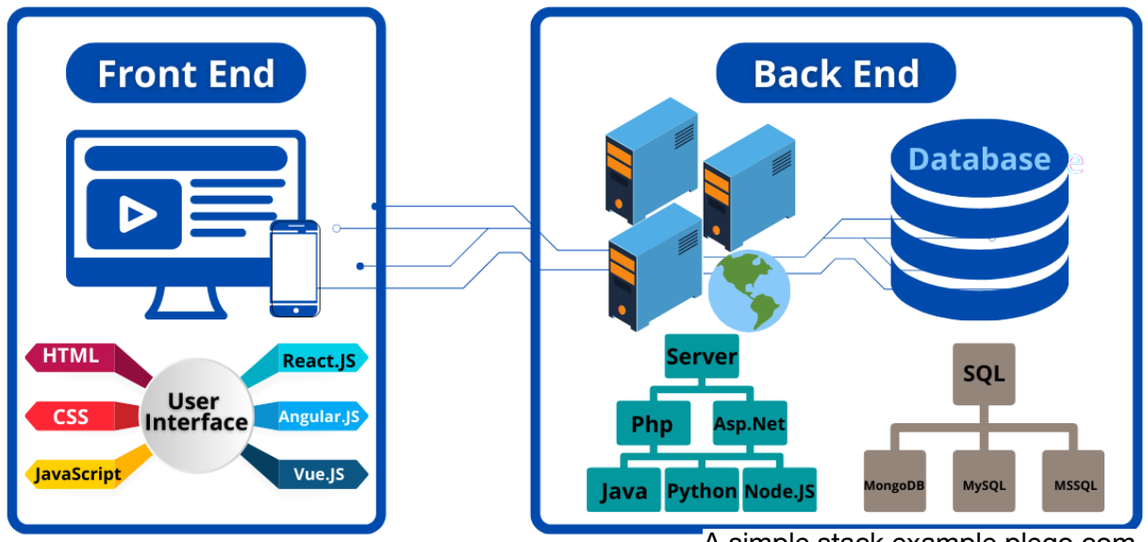


Iceberg Analogy plopdo.com

Development Phase

Now that the app's look and feel is designed, and a business roadmap is complete, the development phase begins. Prior to writing any code, you will need to:

- **Plan the apps architecture**. This is the process of creating a wholistic view of the app and how it will work. It defines the rules, techniques, processes, and patterns to develop the application.
- **Select a technology stack.** Developing software requires many different tools. The "mobile stack" is the set of all programming languages, platforms, frameworks, tools, UX/UI software, etc. that will be used to build the app.
- **Define development milestones and plan project management.** Break up the development tasks into a series of steps, called "milestones" and establish deadlines for each. Milestones help keep a project on schedule and budget - you know what needs to be done, and by what date. Milestones typically correspond to the completion of significant app functionalities or components, such as "create the log-in page" or "integrate Apple Pay into the purchase path."



A simple stack example plego.com

20 Development Process: Development

Development Approaches

When developing mobile applications, there are a few approaches to choose from. Here are the three most common types.

Native mobile apps: These are written in the platform's specific programming language and run directly on the device's operating system such as iOS or Android. They offer the best performance and user experience.

Cross-platform native mobile apps: These are written in various programming languages and frameworks, then compiled into a native app that runs on the device's operating system. They are suitable for simple mobile apps that don't require native device features and don't need to be updated frequently.

Hybrid/Web mobile apps: These are built using standard web technologies like JavaScript, CSS, and HTML5, and are packaged as app installations. They are a good choice for companies that want to convert existing web applications and have a moderate budget.

App Type	Native	Cross-Platform	Web
Performance	A+	A	B-
UI/UX	A+	A+	B
Code Reuse	✗	✓	✗
Development	The most difficult	Moderately difficult	Simplest
Development Cost	Usually most expensive	Less expensive than native because of code reuse	Least expensive
Offline Functionality	✓	✓	✗
Upgrades	Automatic/easier	Difficult because upgrades must work on multiple platforms	Easier
Tools	Xcode, AppCode, Android Studio, Atom, Android IDE, Intellij IDEA	React Native, Flutter	Django, Xamarin
Examples	Google/Apple Maps, Twitter, LinkedIn, Facebook, WhatsApp, Pinterest, Telegram	Instagram, Skype, Wix, New York Times, FireFox	Microsoft Office Online, Google Docs, Trello, Netlfix

21 Development Process: Testing

Alex Ondz/Adobe Stock (Stress Testing)

App Testing Phase

The testing phase of app development involves the evaluation of software to determine if it meets the specified requirements and works as intended. This is done through a series of methodical tests. The aim of testing is to identify any defects or bugs in the software, and to ensure that it operates reliably and efficiently.

The testing phase is an important part of the software development process, as it ensures the quality and reliability of the end product. Testing should occur often during the development process. Individual test cases, or test iterations, should focus on one or more specific aspects of an app, like user experience, security, performance, multi-device support, and so on. Below are a few high-level testing categories:

Unit testing is the testing of individual components or units of code to verify that they function as intended. Unit tests are typically written by developers and are automated.

Integration testing is the testing of how multiple units of code interact with each other. The goal of integration testing is to ensure that the interactions between the units are functioning as expected.

System testing is the testing of a complete, integrated system to verify that it meets the specified requirements and works as intended. System testing is usually performed by a separate team from the development team and often involves more complex and realistic test scenarios.

Acceptance testing is the testing that is performed to determine if the software is ready for release and meets the customer's acceptance criteria. Acceptance testing is often performed by the customer or end user and may involve testing in a real-world environment.

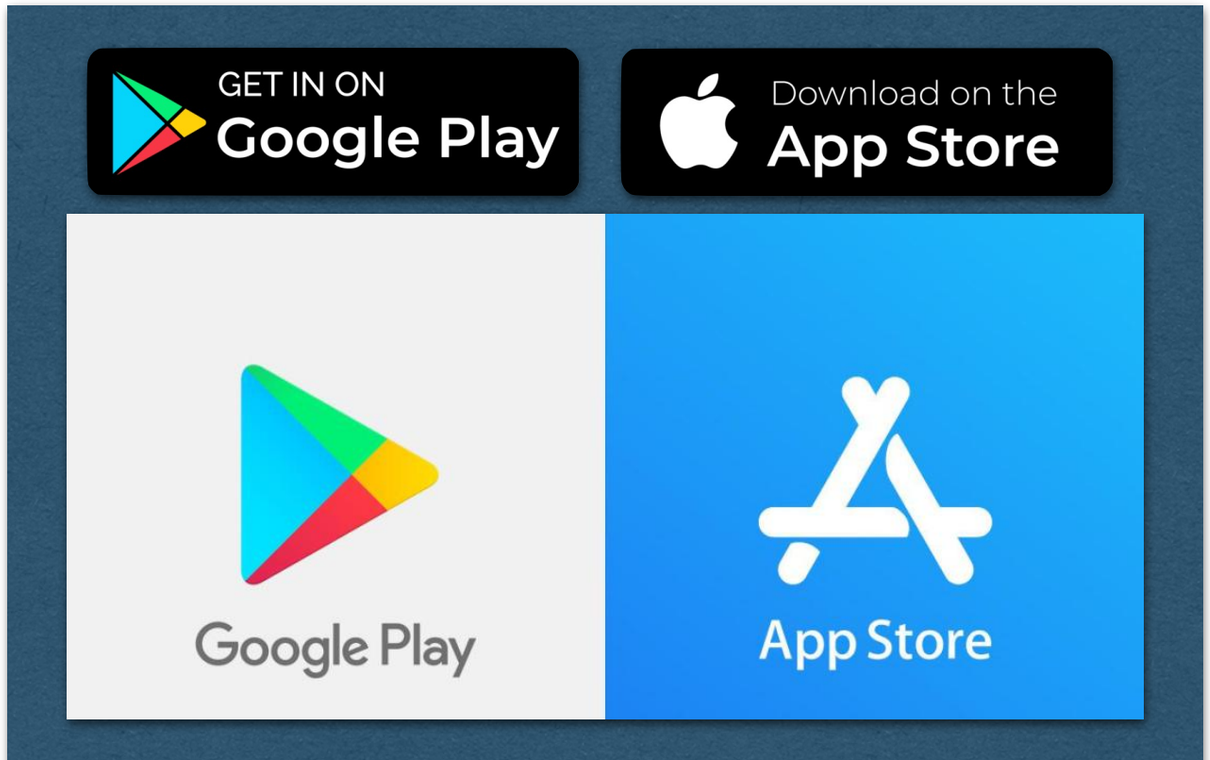
22 Development Process: Deploy

Deployment Phase

Once an app is built, tested, and approved by all stakeholders it is time to deploy it to the app stores where users can browse, download, and install the app on their devices.

The deployment process involves preparing the app for submission, including designing the app's product page, then uploading it to the stores through their respective developer's account for review. Recall that Google Play and the Apple App Store are the two most popular platforms for distributing and promoting apps. Once the app has been reviewed and approved by the app store, it will be made available to the public for download.

Each store has their own specific steps and requirements for the submission process. You can find detailed guides for their process on their website.



The general submission process:

1. Set up a developer account: To submit your app to either the Apple App Store or Google Play Store, you must first create a developer account with the relevant store.
2. Prepare your app: Make sure your app is ready for submission, including preparing the required metadata such as title, description, category, keywords, launch icon, screenshots, banner graphic, and promotional video.
3. Package the app: Package your app into a format that can be submitted to the app store. Ensure that you use a different name and bundle identifier for your app than what you used for your QA version.
4. Provide a test user account (if required): If your app requires users to log in, provide a test user account as part of the submission process.
5. Submit the app: Submit your app to the appropriate app store, either the Apple App Store or Google Play Store.
6. App store review process: After submission, your app will go through a strict review process, which may take several days. The review process checks that your app follows the app store's guidelines.
7. Rejection or approval: If your app is rejected, you will receive an explanation for the rejection. After correcting the issues, you can resubmit your app for review. If your app is approved, it will be published in the app store.

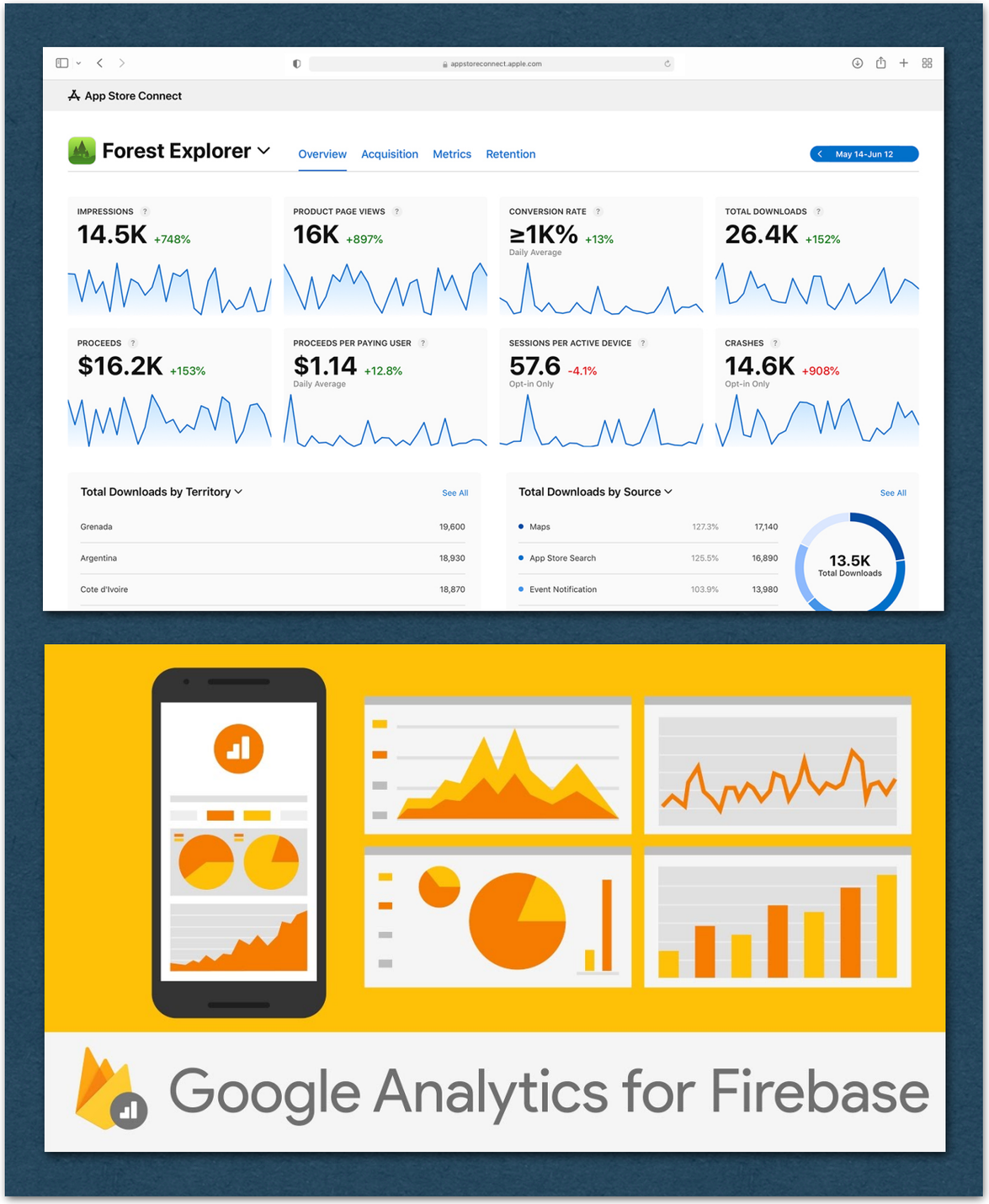
23 Development Process: Updates and Next Steps

Post-Deployment

If you've made it to this phase, your app has been accepted by the app stores and is available to the public - Congratulations! Now it's time to monitor your app and consider future updates. Monitoring and updating your mobile app after it is published is important for several reasons. It helps you:

- **Increase User Satisfaction**: Monitoring usage and feedback from users will help you identify areas for improvement and make necessary updates to keep users satisfied and engaged with your app.
- **Optimize Performance**: Tracking key performance indicators (KPIs) will give you insight into how well your app is performing and what you can do to optimize its performance.
- **Fix Bugs and Crashes**: Regularly checking for crashes and user-reported issues will help you address technical problems and prevent them from affecting user experience.
- **Remain Competitive**: Staying up-to-date with technological advancements and ensuring your app is compatible with new mobile devices and operating systems will help maintain its relevance and competitiveness in the app store.
- **Retain Users**: Providing prompt support and making regular improvements to your app will increase user retention and loyalty.

Overall, monitoring and updating your mobile app is essential for maintaining its performance, user satisfaction, and competitiveness in the app store.



Learn More

Educational Resources

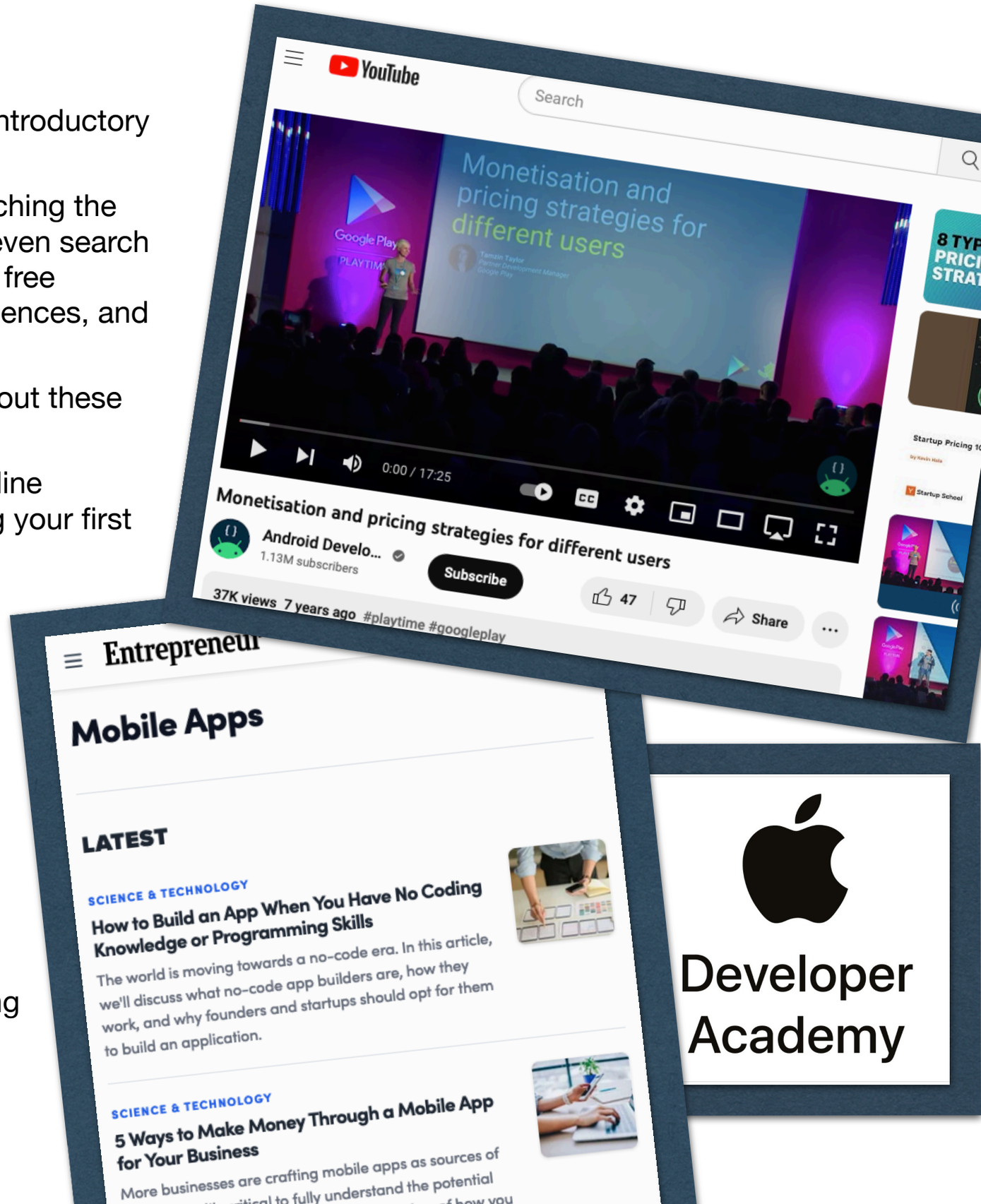
If you are interested in learning more about a topic in this introductory guide, let us know!

There are also endless resources available online. Try searching the internet for the topics that interest you the most. You can even search for any of these topics on Youtube to see videos providing free tutorials, courses, suggestions, analyses, real-world experiences, and more.

If you are interested in learning more about coding, check out these free resources:

- Google Developers Training - Offers free, self-paced, online courses on Android app development, including building your first app.
- Apple Developer - Provides free resources and tutorials for iOS app development, including the "Start Developing iOS Apps" series.
- Udacity - Offers free, self-paced courses on Android and iOS app development, as well as courses on app design and development best practices.
- Codecademy - Offers interactive lessons for learning how to build mobile apps with various programming languages, including Python and JavaScript.
- FreeCodeCamp - A non-profit that offers a comprehensive curriculum in web development, including mobile app development with React Native.

The key to success in mobile app entrepreneurship is to continuously learn and adapt to the changing market and customer needs.



Thank You!

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