

TOP --- DECK

- Maintenance Plan -
Memory Leaks

Table of Contents

Distribution Fees	3
Developer Fees	4
Update Fees	4
Testing Fees	6
Marketing Fees	6
Total Costs	7

Maintaining Top Deck

An iOS Mobile Game App

The average cost of maintaining an app is roughly 20% of the initial cost to develop the app.¹ For an iOS app specifically, costs to maintain an app include the cost of developers, yearly cost of keeping an app on the app store, and the cost of using any additional features offered by apple including Game Center, incorporating in game transactions, and adding an initial price to the game itself. Most of the costs are included in the product deployment but some do have a costs associated with maintenance. Maintaining Top Deck will require distribution fees, the cost of hiring a development team, fees associated with product updates, testing, marketing, and legal fees.

Distribution Fees

To distribute an iOS app on the Apple App Store, a yearly fee is required. This fee is \$99 per year.² Included within this service is XCode developer tools, beta release features, developer forums, bug reports, and advanced app capabilities such as Game Center and In App Purchases (some of which require additional fees to use). In its current state, Top Deck uses no additional features (In-App Purchasing, servers, etc) and thus the only cost associated with the distribution of the app is the developer account annual fee.



Advanced App Capabilities

Get access to cutting-edge Apple technologies that help you create compelling and engaging user experiences.

- CloudKit
- Game Center
- Wallet
- Apple Pay
- In-App Purchase
- Maps
- Keychain Sharing
- App Groups
- Data Protection
- HomeKit
- HealthKit
- Wireless Accessory Configuration
- Personal VPN
- Inter-App Audio
- Background Modes
- Associated Domains

Retrieved from: <https://developer.apple.com/programs/whats-included/>

Total Estimated Cost: \$99

Developer Fees

In order to fix bugs, update, and improve Top Deck, developers are a necessity. An average developer team size of three will be used in order to maintain the app and output all updates required to keep the app running properly and not only keep but draw in new users. iOS app developers are responsible for designing and planning software (including UI features), coding, testing, and preparing submissions for launch. The average pay of an iOS developer is \$150/hr.⁶ The total cost will be dependent on the hours required to create and launch each update.

Total Estimated Cost: \$450/hr (dependent on updates)

Update Fees

Maintenance requires updating Top Deck in order to keep users playing. These updates include adding new features, expanding on features that currently exist, and bug fixes / stability improvements. Not all features will be rolled out in one update, rather they will be spread out between multiple updates for an industry average of one update per month (for smaller apps).⁸ The amount of time required for these updates is approximately 10 hours per update for an average sized development team.⁹ These updates will include:

- Additional Player Classes
- Game Center Functionality
 - Saving User Data (decks)
 - Online Matchmaking
 - Send/ Receive Game Requests
- Additional cards for drafting
- Sound Effects + Music
- UI Changes
- Custom Game Modes
- Additional Animations
- Interactive Tutorial



Retrieved from:
http://logos.wikia.com/wiki/Game_Center

Game Center capabilities give a game access to Apple's social gaming network. It "enables your users to track their best scores on a leaderboard, compare their achievements, invite friends to play a game, and start a multiplayer game through auto-matching."³ This feature, and other back end additions, are currently included in the cost of a developer account and the cost of the development team. Updates requiring additional fees to incorporate include adding sound effects and graphic design of assets for additional card and player class design.

The average cost of a graphic designer is \$45 / hour.⁴ The average amount of time required to develop a card or a class image is three hours based on the cards and classes designed for the initial launch. With a two class and 15 card update per year, the graphic design hours needed for expanding class and card selection is 51 hours. Therefore, \$2300 is budgeted for the development and design of assets.



Sound effects and music which do not appear at launch will require funds to incorporate in a future update. The costs are divided into two sub categories: soundtrack and sound effects.

Music
Start Screen / Tutorial Theme
Card Drafting Theme
Game Playing Theme

Three original music sound clips will be used. The cost of creating original music is dependent on the length of the music. Two one-minute long songs and a two-minute long song will be used. The industry standard for original music is calculated by: Cost = Time * Rate (\$1000).⁵

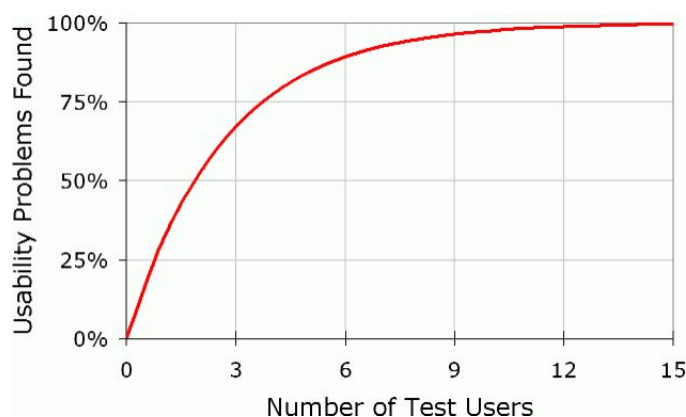
Sound Effects
Card Moving
Shuffling
Button Click
Attack Sound
Damage Sound
End Game Signifier
Special Card Events x 5

Top Deck will use various sound effects for different animations, actions, and button clicks. Only simple effects will be used and thus have an average rate of \$5 based on the current industry standard. The calculation is: Cost = Amount of Effects * Rate (\$5).⁵

Total Estimated Cost: \$4055+ \$2300+ \$54,000 = \$60,355

Testing Fees

Testing is primarily done using Unit tests which is included in the cost of the development team. Added costs for testing take the form of user testing. The recommended amount of users needed to test small projects is five user testers.¹⁰ The average pay of a game tester is \$12/hr.¹¹ The average time needed to test an update is dependent on features added. Each feature will be tested independently. In a year, ten new features will be added. Testing each feature will require three ten minute (approximate time of a game) playthroughs per tester. Based on these variables, the total amount of testing time for a single year is 25 hours.



Retrieved from: <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>

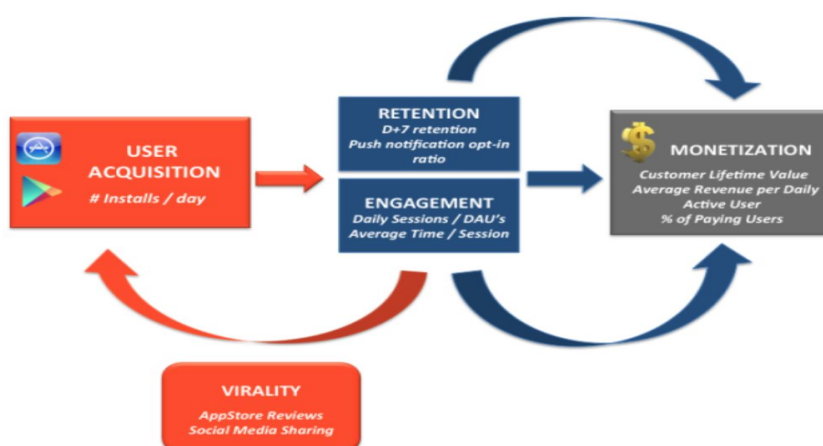
Total Estimated Cost: \$300

Marketing Fees

There are two sides to marketing a deployed product: getting the app known to the public and maintain the active user base.

After initial marketing, it is important to show the public that Top Deck is still a relevant game. Paid advertising achieves this goal. Pricing for paid advertisements is measured by the cost to generate an app install on a smart device (in Top Deck's case this would be the cost to get a person to install the app on their iOS device). This concept is known as the Cost per Install (CPI)¹³ and ranges between \$1.20 and \$1.60 per installation.¹⁴ Therefore, cost can be calculated using the amount of installations that are expected for a given advertisement campaign. The average cost of marketing a mobile game on iOS is \$30,000.¹⁸

User retention--maintaining current user base--requires additional marketing. Mobile game apps have a much shorter lifespan than any other type of app particularly due to poor user retention. User updates which provide variability to the game addresses this issue.



Retrieved From: <https://www.apptamin.com/blog/app-marketing-strategy/>

Retention updates include the addition of push notifications and a reward system to encourage consistent play. Additional play modes and other new features assist in user retention as well. The price of user retention is covered in update costs.

Total estimated cost: \$30,000

Total Costs

The total cost of maintenance is based on a twelve update per year system. This plan calculates costs for the first year of maintenance with costs decreasing per year as major feature addition updates decrease and the necessity of marketing decreases as the average iOS game life cycle is two years with major declines after only the first two months.¹⁷

	Static Costs	Dynamic Costs
Distribution Fees	-	\$99 / year
Three member developer team fees	-	\$450/hr
Update Fees	\$60,355	-
Testing Fees	\$300	-
Marketing Fees	\$30,000	-
Total	\$90,754	99/year & \$450/hr

Resources

1. Roy Chomko.
<https://www.fiercewireless.com/developer/maintaining-app-critical-to-its-overall-success>. Accessed on 12/2/2017.
2. Apple. <https://developer.apple.com/support/compare-memberships/>. Accessed on 12/2/2017
3. Apple. <https://developer.apple.com/game-center/>. Accessed on 12/2/2017.
4. Upwork. <https://www.upwork.com/hiring/for-clients/cost-to-hire-graphic-designer/>. Accessed on 12/2/2017
5. Alexander Brandon.
https://www.gamasutra.com/view/news/200158/Some_simple_math_for_figuring_out_your_games_audio_budget.php. Accessed on 12/2/2017
6. Glassdoor Inc.
https://www.glassdoor.com/Salaries/ios-developer-salary-SRCH_KO0,13.htm. Accessed on 12/3/2017
7. Ken Yarmosh.
<https://savvyapps.com/blog/how-much-does-app-cost-massive-review-pricing-budget-considerations>. Accessed on 12/3/2017
8. Ken Yarmosh. <https://savvyapps.com/blog/how-often-should-you-update-your-app>. Accessed on 12/3/2017
9. Synapse Software.
<http://synapsesoftware.com/blog/sara-parks/how-much-maintenance-does-mobile-app-need>. Accessed on 12/3/2017
10. Jakob Nielsen.
<https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>. Accessed on 12/4/2017
11. PayScale. https://www.payscale.com/research/US/Job=Game_Tester/Hourly_Rate. Accessed on 12/4/2017

12. Sylvain Gauchet. <https://www.apptamin.com/blog/app-marketing-strategy/>. Accessed on 12/5/2017
13. Artyom Dogtiev. <http://www.mobyaffiliates.com/blog/average-cost-per-install-apps/>. Accessed on 12/5/2017
14. Smart Insights (Expert Commentator). <https://www.smartinsights.com/mobile-marketing/app-marketing/creating-a-budget-for-a-mobile-app/>. Accessed on 12/5/2017
15. Nick Bhardwaj. <https://www.quora.com/How-much-does-the-average-mobile-app-developer-spend-on-mobile-advertising-campaigns-for-iOS-and-Android-apps>. Accessed on 12/7/2017
16. Anna Washenko. <https://sproutsocial.com/insights/social-media-manager-salary/>. Accessed on 12/7/2017
17. Craig Palli, <http://www.pocketgamer.biz/comment-and-opinion/60228/the-numbers-behind-the-lifecycle-of-mobile-games/> Accessed on 12/7/2017
18. Jacky Yap. <https://e27.co/betting-on-your-app-you-better-have-a-30000-marketing-budget/>. Accessed on 12/7/2017