



WIPO TOOL ON THE FINANCING OF INTELLECTUAL PROPERTY-BASED MOBILE APPS

2021

TABLE OF CONTENTS

1. INTRODUCTION	3
2. THE WORLD OF MOBILE APPS: EXISTENCE AND CLASSIFICATION	5
<i>2.1 The mobile app ecosystem</i>	5
<i>2.2 Typology of apps</i>	7
3. MOBILE APP BUSINESS MODELS	10
4. FINANCING OPPORTUNITIES AND CHALLENGES	12
<i>4.1 Sources of capital and potential investors</i>	12
<i>4.2 Fundraising challenges</i>	15
<i>4.3 Key terms and conditions in financing agreements (term sheets)</i>	15
<i>4.4 Managing investors and potential exits</i>	18
5. LEVERAGING IP TO FUND MOBILE APPS	20
<i>5.1 Introduction</i>	20
<i>5.2 IP elements in mobile apps</i>	20
<i>5.3 Commercialization models</i>	26
5.3.1 Commercialization by the IP owner	26
5.3.2 Assignment	27
5.3.3 Partnership or joint ventures	27
5.3.4 Licensing	28
<i>5.4 Most notable IP elements for upstream and downstream commercialization</i>	30
5.4.1 Fundraising (upstream)	30
5.4.2 Downstream	32
6. FUNDRAISING SHORTCUTS AND CHECKLIST FOR SUCCESS	34
7. CONCLUSION	36
8. USEFUL LINKS AND RESOURCES	37
8. ABOUT THE AUTHORS	39

1. INTRODUCTION

Statistics from 2019 indicate that 90 per cent of the time spent on mobile phones is dedicated to mobile apps.¹ Mobile apps have significant value, not only as tools to support advertising or affiliate marketing, but also as independent revenue-generating tools. In 2020, the annual gross revenue from the Apple App Store was \$72.3 billion² and from the Google Play Store it was nearly \$40 billion.³ The economy of mobile apps is evidently lucrative, and it is expected to increase further. Consequently, the mobile app industry is proving to be highly profitable for developers and businesses. The downside of the app development process is that it is extremely costly. Expenses include hiring an app developer, operational overhead, marketing and user acquisition as well as various other expenses related to starting a business. As a result, those wishing to build apps are increasingly seeking financing assistance in order to bring their app to the market.

Currently, there are not many tools available that provide app developers with various funding options as the app progresses through the different stages of development. An unfortunate consequence is that app developers are not aware of all these possibilities. In particular, what often goes unnoticed is that several elements of mobile apps are protected by a plethora of intellectual property (IP) rights. IP can and should serve as an important mechanism to secure financing. Therefore, this tool aims to address the interplay between the typology, existing business models and IP surrounding mobile apps in order to provide guidance for successful financing strategies. Its use therefore extends not only to app developers and app developer associations but also to companies developing mobile apps.

We have compiled the relevant information into five core chapters, each of which addresses issues that are important to the financing process. Chapter 1 gives the reader an understanding of the key players in the mobile app ecosystem and how they interact with each other. It also examines the types of apps available by category on the iStore and the Google Play Store. Chapter 2 looks at the business models that mobile app developers may want to use when considering the best approach to generate revenue from their application. Chapter 3 looks at funding opportunities and the challenges that app developers may face. In particular, it describes the different phases of the app development cycle and the corresponding funding

¹ "US Time Spent with Mobile 2019 - Insider Intelligence Trends, Forecasts & Statistics", www.emarketer.com, July 17, 2021.

² Apple App Store Revenue 2020, Statista, www.statista.com, accessed July 17, 2021.

³ Google Play: Annual Revenue 2020, Statista, www.statista.com, accessed July 17, 2021.

sources in each phase. Chapter 4, the most important part of this tool, covers the various IP rights that can be used as a mechanism to secure funding. In this chapter, readers are also introduced to the elements of IP that play a role in the various commercialization models. The tool concludes with “Fundraising Shortcuts and a Checklist for Success”, which we believe will be a useful guide to ensure that application developers are in the best position to create a funding strategy.

Since apps can be run on a range of operating systems and distributed across app stores, their applicability is broad. However, this tool focuses specifically on the mobile app market. Mobile apps can be created for commercial or non-commercial purposes. The former refers to apps that seek to generate income by providing information and/or conducting transactions, while the latter merely provides information for non-profit purposes.⁴ The scope of this tool includes both purposes. There are numerous studies on the mobile revolution and on mobile apps in particular. This document builds on the existing research and is intended to be used as a practical tool in assisting businesses with examples and guidance for financing an app.

⁴ Zhenwei Qiang, Christine and others, "Mobile Applications for Agriculture and Rural Development", ICT Sector Unit, World Bank, www.openknowledge.worldbank.org, 2012, 96226.

2. THE WORLD OF MOBILE APPS: EXISTENCE AND CLASSIFICATION

2.1 The mobile app ecosystem

The 'mobile app ecosystem' refers to the key players that interact and shape the app industry. The app development process will most likely involve all of these stakeholders, therefore any business seeking to build an app should be familiar with the ecosystem at the outset. The most basic building block and key player in the app ecosystem is a platform (operating system). Platforms are defined as "software architecture [serving] as a foundation or base for other programs or applications [...] It usually includes security features – procedural and software rules that mobile apps must comply with to use the platform."⁵ Another important player is the application (app), which is a "standardized piece of software that runs on a computing platform" such as a mobile device.⁶ Because iOS and Android possess over 90 per cent of the mobile systems market share worldwide,⁷ together they constitute a duopoly. This creates a structural challenge for app developers because the type of app created is largely limited to iOS and Android platforms.

Once an app is created to run on a particular platform, it needs to be accessible for individuals on their devices. This is the role of the app stores. App stores are online marketplaces where users can download purchased or free apps to their devices.⁸ Google Play and the Apple App Store are currently the two largest app stores. Over the last six years, the total number of app downloads on Google Play and the Apple App Store increased from 15.9 billion to 46.6 billion.⁹ When deciding which app store is preferable, developers will want to consider the potential of the platform for future growth and to determine which will best address their audience. Additionally, the value of an app store for developers is dependent on a variety of factors such as the submission process, the levels of certification/quality control it enforces over published apps, flexibility in pricing mechanisms and promotion and revenue-generating capacity.¹⁰

⁵ Ibid 30.

⁶ "The App Economy", Volume 230, OECD Digital Economy Papers, 230 8, www.oecd-ilibrary.org, 2013, accessed July 16, 2021.

⁷ "Mobile OS Market Share 2021", Statista, www.statista.com, accessed August 12, 2021.

⁸ "The App Economy", No. 6, 19.

⁹ "Combined App Store & Google Play App Downloads 2021", Statista, www.statista.com, accessed July 16, 2021.

¹⁰ "The App Economy", No. 6, 19.

Even though app stores are still the most popular channels of distribution, not all apps are tied to app stores. Whether or not they are is largely dependent on the type of app that is developed. The benefits of placing an app on an app store include uniformity in approval procedures and processing times and access to a large consumer base and to well-known, trusted payment mechanisms.

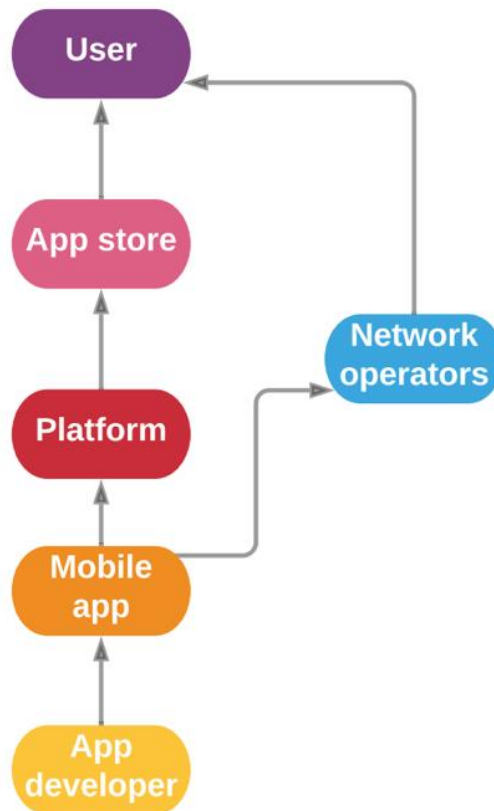
At this point, an explanation has been provided on how platforms, apps and app stores interact to form the foundation of the app ecosystem. However, there are also other players who perform an equally important role. Application developers are responsible for developing and modifying source code for software applications to build apps. The Apple and Google operating systems rely on third-party app developers putting the apps on the app store, and they are subsequently charged 30 per cent of the revenue generated from the sales of the apps. Once the app is developed and placed on an app store, users install and engage with the app. Based on factors such as the number of downloads, it is the users who ultimately determine the overall success and economic value of an app. Finally, the app ecosystem also includes mobile network operators which supply the networks to support apps. Most apps require internet connectivity to function; consequently, mobile network operators are seen as fundamental players in the app ecosystem. Network operators dominate the app ecosystem in developing countries.¹¹ They are seen as the 'gatekeepers' for apps available on their systems because they supply the networks that support the apps and charge a revenue fee for transactions generated through these apps.¹² In developed countries, mobile operators now assume a secondary role as data carriers.¹³

¹¹ Qiang and others, No. 4.

¹² "The App Economy", No. 6, 27.

¹³ Qiang and others, No. 4, 28.

Figure 1: Mobile app ecosystem



2.2 Typology of apps

It is crucial that app developers understand the factors associated with development costs so that the project's budget can be set and funding can be secured from an early stage. The process of app development begins with consideration of the type of app that will be created. App typology can be divided into 'functionality' and 'subject matter'. Dividing apps into categories according to their subject matter is useful in order to determine the user base, the concentration of apps existing in each category and the competition. This categorization will therefore be a relevant consideration when it comes to successful monetization. As of June 2021, the most popular apps on the Apple app store are classified according to the following categories: games, business, education, lifestyle, utilities, entertainment, food and drink,

travel, health, fitness, productivity, shopping, finance, books, social networking, music, sports, photo and video, medical, reference, news.¹⁴

Where functionality is concerned, apps can be classified into three categories: native, web and hybrid. Native apps are developed for a specific operating system.¹⁵ While the benefit lies in faster and more efficient functionality, an app designed to function solely on one platform means multiple apps will have to be created for various platforms in order to reach a larger target audience, which inevitably raises the costs.¹⁶ Native apps require the most substantial investment and developers should be cognizant of this fact. Hybrid mobile apps can be installed on devices but run through web browsers. In other words, they are web apps, but with the look and feel of native apps.¹⁷ There are several reasons to choose this type of app, one being that they are not tied to the app store or a particular operating system and hence there is no need to create multiple apps. Building these apps is also a quicker and more economical process, allowing businesses to save on resources and time. The downside of choosing apps with this functionality is that they are not as fast or as reliable as native apps. Web apps are not standalone apps; they are essentially websites that adapt the user interface to a device and do not need to be downloaded.¹⁸ The drawback of these apps is that they are dependent on the browser used on the device. Nonetheless, this option is popular for many businesses as they will incur lower development costs by not having to customize the app to one platform. Maintenance is also easier because it does not have to be done through the app store.

Another aspect of functionality that will become relevant to development costs, and therefore to funding, is the static or dynamic architecture of an app. Apps providing static content are downloaded once, do not rely on an online server connection and do not require updates, making them less expensive to build.¹⁹ In contrast, dynamic apps require frequent updates in order to access new features and rely on an online server or database. With more features and complexity, an app developer can expect increased development costs with dynamic apps.

¹⁴ "Most Popular Apple App Store Categories in June 2021, by Share of Available Apps", *www.statista.com*, June 2021, accessed July 16, 2021.

¹⁵ Jobe, William, "Native Apps Vs. Mobile Web Apps", 2013, 7, *International Journal of Interactive Mobile Technologies*, 28.

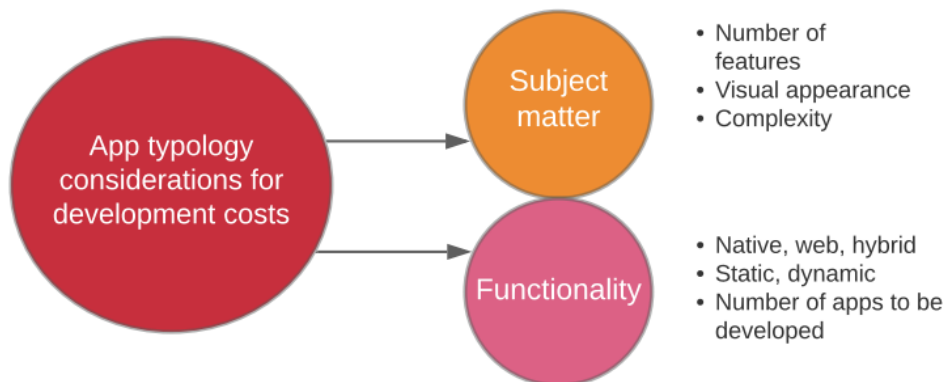
¹⁶ *Ibid.*

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ Wang, Haoyu, Li, Hao and Guo, Yao, "Understanding the Evolution of Mobile App Ecosystems: A Longitudinal Measurement Study of Google Play", *WWW '19: The World Wide Web Conference*, ACM Press, 2019, *www.dl.acm.org*, accessed 6 August 2021.

Figure 2: App typology and development costs



3. MOBILE APP BUSINESS MODELS

According to a report by the World Bank on mobile applications in the context of rural and agricultural development, 'business models' refers to systems used to 'create, deliver and capture value'.²⁰ Once a mobile app has been developed, sufficient revenue needs to be secured. Each business operating within its own individual context will want to follow a particular monetization strategy depending on its needs. The available business models will also differ depending on the app typology.

First, there are paid apps. The business model behind paid apps consists of selling an app for a fixed price. Developers obtain revenues from the sale of an app placed on the app store minus a transaction fee, which is generally 30 per cent of the purchase price.²¹ The success of this model is dependent on the subject matter of the app. Games for children, for example, will be better suited to this model than any of the other models listed below. Some app developers might choose to create free apps. In fact, most apps are made available on app stores for free download. As of July 2021, 96.9 per cent of all Android apps and 92.9 per cent of iOS apps were available for free.²² Developers choosing to utilize this model will most likely generate revenue through the various other business models.

In-app advertising is one way in which developers using a free app business model can generate revenue. Advertising formats on apps vary and can include interstitial, banner, video, native or text advertising. There are also different models used for in-app advertising. The three main metrics for in-app advertising should be noted. First, developers may want to follow the 'cost-per-click' model (CPC) where advertisers pay depending on how many users or visitors click on the advertisement. Second is the 'cost-per-mile' model (CPM), in which payment from advertisers is determined on the basis of every one thousand views. Third is the 'cost-per-action' model (CPA), in which the app developer gets paid the basis of users taking action. Another option is to provide in-app purchasing, where developers receive revenue from the in-app purchase minus a transaction fee of 30 per cent. This is a fundamental source of revenue for developers which includes allowing users to purchase items, subscriptions, points or upgrades.²³ Freemium is also a monetization model falling under the

²⁰ Qiang and others, No. 4.

²¹ "The App Economy", No. 6, 22.

²² "Distribution of Free and Paid IOS Apps 2021", www.statista.com, March 2021, accessed July 16, 2021.

²³ "The App Economy", No. 6.

category of in-app purchasing. It involves starting with a free basic version with limited features and then upgrading to a paid version with more functionality.²⁴

Other categories of business models include those that are subscription-based. The underlying idea is that subscriptions renew until they are cancelled by the user or expire after a period of time, thus creating a recurrent revenue-generating model. Examples include the Financial Times app and Dropbox. Apps can also be provided for free but generate revenue by promoting the sale of primary physical products or services related to the developer.²⁵ This is known as the promotion of non-digital goods. The resale of user data collected by apps is another separate but increasingly important business model. This data is extremely valuable as it can be sold for a variety of purposes. Targeted advertising is perhaps the most popular use for user data, but there are also other interests in consumer information generated from mobile apps. In Kenya, for example, companies selling fast-moving consumer goods, banks, microinsurance companies and agricultural cooperatives can use this data to conduct market research and surveys. In return, the app developers will receive payment for this service. Governments seeking to understand the behaviour of citizens will also become a particular target for this model of revenue generation. Finally, for apps that provide information services, it is common to generate revenue through a share in SMS charges.²⁶ An example of this in Kenya is the app Kazi560, which is a platform connecting job searchers to employers.²⁷

The abovementioned business models are not mutually exclusive and developers may choose to combine two models to maximize revenue. An app could therefore charge users a price for its initial download and then provide in-app purchase options for additional revenue. Whichever business model developers utilize, they should be mindful of choosing the one which is the most lucrative and which also covers the 30 per cent commission paid to the platform(s) for transactions. Another consideration is the market in which the developer seeks to launch the app. In order to fully cover the global market, depending on the type of app, hundreds of variants of a single app might need to be created. This includes various operating systems, different languages, different processor speeds and different screen sizes. Overall, it is clear that there is an interplay of factors to consider when it comes to planning a successful monetization strategy, which are all relevant to developers seeking financing opportunities.

²⁴ Ibid 22.

²⁵ Ibid 24.

²⁶ Qiang and others, No. 4, 39.

²⁷ Ibid.

4. FINANCING OPPORTUNITIES AND CHALLENGES

4.1 Sources of capital and potential investors

As discussed in the previous chapter, the cost of an app can vary depending on the type of app and the complexity of its functionality. Once the cost has been determined, the next and most important consideration is how to secure funding. Despite the existence of (1) data on available funding options, and (2) associations and alliances such as the Mobile App Developers Association, the Association of Software Professionals, the Professional Developers Association and The App Association, there are currently no standardized approaches to obtaining mobile app funding, nor is there any definitive structure. There are however resources available from sector-specific reports such World Bank reports,²⁸ global platforms such as Crowdsourcing Week²⁹ and non-profit organizations such as MassChallenge³⁰ that provide useful guidance on financing and mobile apps. Based on this information it is possible to formulate a working model for app financing based on both the app development stages and the funding stages. This will help to identify the sources of funding available as the app evolves from an idea towards a fully-fledged and marketable product.

The app development life cycle consists of three main stages: conception, development and commercialization.³¹ As the app develops, different funding options will become available. The conception stage starts with an idea, and the developers will determine their target audience, app functionality, technical requirements, limitations and investment. Once this has been ascertained, developers will move to designing the app. The next stage is development, when developers utilize programming language and software architecture to create the app. After an app has been developed, it will be distributed to the public, usually via app stores. Commercialization is the final stage in the app development process and from thereon developers will focus on monitoring and enforcement strategies to prevent the app from being copied. There are also several funding stages that any start-up will go through.

²⁸ For example, see "The App Economy", No. 6; Qiang and others, No. 4.

²⁹ "How to Get Funding For an App", Crowdsourcing Week, www.crowdsourcingweek.com, April 18, 2018, accessed August 16, 2021.

³⁰ Richards, Robbie, "5-Step Guide to Get Your App Funded in 2020", MassChallenge, www.masschallenge.org, January 9, 2020.

³¹ "The Role of Intellectual Property Rights in the Development And Commercialization of Mobile Applications", WIPO, www.wipo.int, 2021, accessed August 24, 2021.

Fundraising stages

Pre-seed

At the pre-seed stage, the app is merely an idea. It might be a beta or prototype, but in most cases there will not be any tangible product. Funding is necessary at this stage to provide the capital necessary to create a minimum viable product, do research about whether the app will be able to generate an income, refine the business model and pay the co-founders and employees. Funding sources include self-funding, friends and family, business partners and grants, especially government grants. Start-up accelerators are also an option to provide partnerships, mentoring and funding. Start-ups or companies wanting to develop new apps have to apply to accelerator programmes in which a limited number of applicants are accepted. Developers should be mindful of the fact that most accelerators will take a portion of the company's total equity. Especially at the early stages of the app development life cycle, companies should attempt to strike a balance between securing enough funding to continue with development and not giving away too much equity.

Seed

Seed funding is necessary to grow and refine the app idea, in order to ensure that it is close to being market ready. More particularly, funding at this stage will help to determine market compatibility and additional app features, and to pay start-up operational costs. Because the app is still in its conception phase, there is a high amount of risk and as such, many investors will not be willing to provide funding at such an early stage. A potential funding option is financing provided by angel investors, who buy equity in small businesses and start-ups at early stages of development. This equity can give the company the financial investment necessary for developing the product. In addition, the company will look for proper strategies related to income and return on investment. Another option is crowdfunding. Crowdfunding entails raising small amounts of capital from a large number of individuals who usually get no stake in the business. This is commonly referred to as 'donation-based funding'. Another form of crowdfunding is 'reward-based funding', which involves donors receiving certain rewards such as early access to a beta platform or lifetime access to premium features. 'Equity crowdfunding' is also an option for start-ups to sell small percentages of equity to investors, but the owner still maintains control over the app idea.

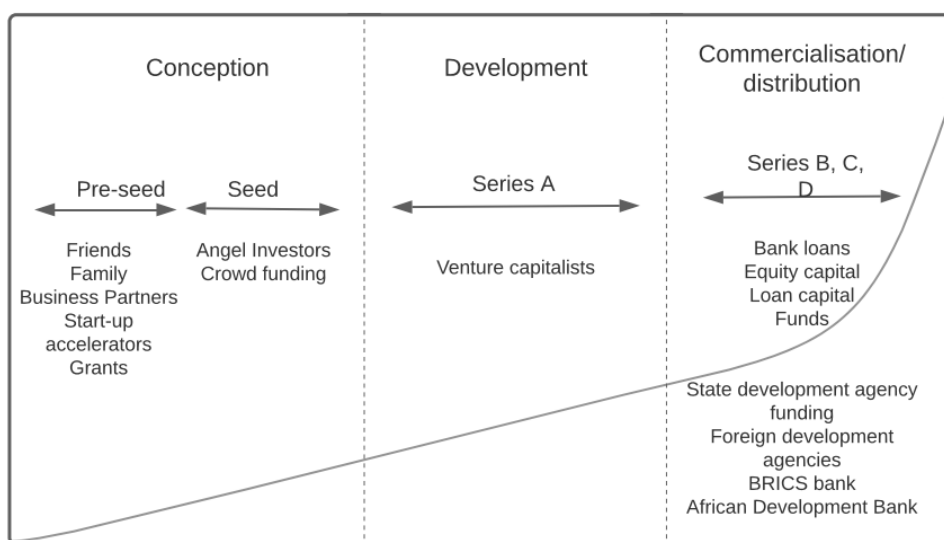
Series A

This phase comes into the picture when the app has been developed and there is a strong likelihood that the proof of concept and product-market fit of the app will be validated. Funding is necessary to scale up the product and contribute to branding and marketing. The main source of funding is from venture capitalists. Venture capitalist funding largely comes from companies, foundations and organizations. They will expect a rapid return on investment and consequently, developers might be required to make modifications to the app, its growth or revenue model in order to meet these expectations.

Series B, C and D

Once the app has been developed, it will most likely be placed on the app store for users to download. This means that the business has begun to scale up, has demonstrated profitability and can generate revenue. More funding is still required in order to secure long-term profitability, sustainability, expansion, and potentially to allow the company to go public through a listing on the stock exchange. Once the app is generating revenue the business has 'de-risked', and its ability to access different sources of funding increases. Bank loans are a common form of securing finance at this stage. Banks will provide financing on credit subject to security. Other sources of financing include private investors who provide equity ('equity capital') and buy shares, or finance the business in the form of 'loan capital'. Funds especially set up for the telecoms sector, but which fall under the category of private investors, are an important consideration. There is also state development agency funding, which refers to government-backed businesses with a mandate to get infrastructure business up and running. Foreign development agencies are another option, and companies in developing countries can potentially secure funding from the New Development Bank (formerly the BRICS Development Bank), as well as the African Development Bank.

Figure 3: Funding options at different stages of the app development cycle



4.2 Fundraising challenges

Despite the various options available to app developers when it comes to securing funding, the process is often difficult. A few specific challenges have been highlighted in the previous paragraph, however, app developers also face some broader challenges. First, securing funding is time-consuming and requires a lot of effort from the developers, who will often be focused on refining the idea. Second, as indicated, developers may lose control of a significant portion of their business when they issue equity; this needs to be managed according to the needs of the business. Third, many developers are not aware of the plethora of funding options that exist at different stages of development. All these considerations should be factored into the financing strategy in order to successfully secure funding from investors.

4.3 Key terms and conditions in financing agreements (term sheets)

An important element of the financing process is the 'term sheet'. This term refers to a non-binding agreement setting out the material terms and conditions of the potential investment agreement between the entity seeking financing and the investor. It serves as a basis for future legally binding agreements and minimizes the risk of a misunderstanding between the parties. Term sheets will constitute a valuable and recurring part of the financing process and should not be overlooked. Since the availability and type of financing varies at each stage of the app

development cycle, the specific clauses in terms sheets can vary slightly. Term sheets provided for loans will also differ slightly from those for issuing equity. The common terms a company can expect to see in a term sheet have been highlighted in the figures below.

Loan term sheet – bank, development agency, private individuals or funds

Standard terms	Explanation
<i>Offer from financier to the company</i>	The financier stipulates that they are willing to provide capital on certain terms.
<i>Amount</i>	How much the financier is willing to provide.
<i>Duration</i>	The term of the loan.
<i>Repayment terms/dates</i>	When the loan must be paid back and if it includes interest or only capital. Interest is always a factor of risk, therefore the higher the risk, the higher the interest charged. Because we are dealing with mobile apps, there is probably no track record of how well it will do and therefore the interest will be high.
<i>Interest rate</i>	
<i>Securities</i>	In an app situation, there are no fixed assets. Since IP will most likely be the only asset that the company has, they may be asked to assign all the IP that they own in the app to the financier. They may also be asked for more security such as ceding the future cash flows, share portfolios or other investments.

Term sheet for issuing equity – Angel investor or venture capitalist investor

Term sheets do not only refer to loans. A company can also sell shares and in doing so, it will indicate that it is looking to raise a certain amount in equity share capital, as opposed to loan capital. In this case, it is the company who sends the term sheet to the investors.

Standard terms	Explanation
<i>Issuer</i>	Parties include the investor(s) and the issuer of shares, i.e. the company developing the app.
<i>Investment amount</i>	The amount the investor is providing in exchange for shares in the company.
<i>Securities</i>	<p>This is where the type of shares and round of financing will be indicated. The two primary types of securities (stock) are common and preferred. Additionally, there can be different classes of common stock, such as class A and class B. Venture investments are typically issued in preferred stock which are more senior than regular equity, i.e. common stocks. App developers should have a basic understanding of this difference because preferential shareholders have a stronger claim to a company's assets upon liquidation and are entitled to a fixed amount of dividend to be paid before other share classes. Preferred shareholders also have no voting rights.</p>
<i>Valuation of the company</i>	<p>A company's valuation determines the percentage of the company that the investors will own. It is expressed in terms of pre-money and post-money values.</p> <p>Pre-money valuation – valuation of the company before the investment, i.e. the present value of the company.</p> <p>Post-money valuation – valuation of the company after the investment, i.e. after the equity capital.</p>
<i>Number of shares</i>	Number of shares the investors will obtain in exchange for their investment.
<i>Price per share</i>	The amount that is offered by the company for each share.
<i>Dividends</i>	The additional return that accrues to preferred stockholders over time. This is usually expressed as a percentage.

<i>Liquidation</i>	How the proceeds from the sale of the company will be distributed upon liquidation.
--------------------	---

<i>Voting rights</i>	Rights of shareholders to vote on matters of corporate policy. This clause will point out how voting rights are divided across different types of stock.
----------------------	--

<i>Milestones/closing date</i>	Indication of a target date for the completion of all negotiations.
--------------------------------	---

4.4 Managing investors and potential exits

Once the company developing an app has secured the necessary funding, it is important to have knowledge on how to manage the investors. This is useful for companies developing apps because they cannot deal with requests for information from investors to executives on a daily basis. One option for managing investors is to send a monthly or quarterly newsletter in which the company provides the necessary updates related to the company. Companies should check their national law, but often company law requires shareholders to be provided with half-year and end-of-year audited results. Additionally, they will most likely be required to hold an annual general meeting in which anyone holding shares can participate. An agenda must be followed and the Executive is required to report on the affairs of the company as well as to answer questions put forward by the investors. A fundamental communication tool for managing investors is a website: anything that happens can be uploaded and investors can access all the information they require.

The investors will also want to know when they can sell their shares and leave, or if the app developer has taken a loan, when it will be repaid. These are referred to as 'potential exits'. In fact, even before they provide financing, most investors will want to be informed of their possible options for exiting. Therefore, this needs to be a managed process. If the app developer is a private company and the shareholders want to sell their shares, they have to offer them to the other investors. The company has the possibility of saying that it will do a valuation of the company in a year's time, for example, and the investor can then offer their shares to other investors in the company who may wish to buy them. Another option is for the company to give an assurance that at a certain point in time it will be listed on the stock

exchange, known as an initial public offering. When the company is listed on the stock exchange it ceases to be a private company, there is a public market for the shares and it can be offered for sale on the public market. The term sheet should reflect these exit strategies. At the angel investor stage there is normally no exit. At the venture capitalist stage, the term sheet will often reflect the fact that within five years there will be a guarantee that the company will go public, otherwise the company will buy back their shares. Alternatively the company will guarantee another method whereby investors can sell their shares if they no longer wish to be part of the company.

5. LEVERAGING IP TO FUND MOBILE APPS

5.1 Introduction

Up until now, the multitude of funding sources available at the different app development stages has been discussed. This chapter will address how IP can be used as a valuable mechanism to secure funding. This is worth considering in a financing strategy, as it may be the case that the IP behind the app is more valuable than the app itself. There are various forms of IP that can exist in a mobile app and these will be dealt with briefly in order to facilitate an understanding of the available options when it comes to financing. For an in-depth analysis of how IP interfaces with mobile apps, please consult the WIPO study entitled “The Role of Intellectual Property Rights in the Development and Commercialization of Mobile Applications”.

5.2 IP elements in mobile apps

Patents

Patents are available in all fields of technology provided that they are new and involve an inventive step.³² Patentable subject matter can vary across jurisdictions. In the context of mobile apps, the software and functionality might be patentable. In terms of functionality, the novelty aspect requires that there is something “more than just causing a computer to execute a number of software demands.”³³ In several jurisdictions, it is a requirement that the functionality has a technical effect over and above that which is happening on the screen of the device. The scope of protection for software-implemented inventions varies across jurisdictions, and therefore it is necessary to consult national law when seeking protection. Where software is patentable, the criteria of novelty and inventive step are particularly relevant. The software must also provide a solution to a technical problem.

³² Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed on April 15, 1994.

³³ “WIPO Handbook on Key Contracts for Mobile Applications – A Developer’s Perspective”, WIPO, www.wipo.int, October 2020, accessed September 13, 2021.

Copyright

Copyright is the most relevant to the mobile app market. In essence, it provides a right granted to the creator of an original work for a limited period of time. The two overarching requirements for copyright to subsist are creativity and originality, but the standard for originality varies across jurisdictions. The subject matter extends to the fruit of creative labour and also includes, *inter alia*, technology such as manuals, software, databases, technical drawings and architecture. In the context of mobile apps, it should be noted that this is not an exhaustive list. Therefore, it is conceivable that one work may have various types of copyright, which is especially true when it comes to mobile apps. First, the computer code, text, manuals and FAQs can be protected as literary works. Second, the music and sound effects can fall under musical works and/or sound recordings. Third, artistic works identified within the app include the photos, the images and the artwork.

According to the Berne Convention for the Protection of Literary and Artistic Works, which is the key international instrument for copyright, the duration of the right runs for the lifetime of the author plus fifty years. Registration is not a condition for protection. As an owner, you can dispose of your work in any manner you see fit, including lending, charging for rental and allowing others to publish your work. This is usually done through licensing. In addition to economic rights, there are also moral rights such as the right of attribution and the right to prevent a work from being treated in a way that is prejudicial to the author (integrity). This is relevant for app developers because as the author, they own the copyright for all of these elements. This means that the developer can sell or license this work.

Data, Databases and Trade Secrets

The monetization of data is a popular business model, especially for start-ups. 'Data' is any type of information contained in a database. This extends to works subject to copyright protection and non-protected elements such as facts and figures. A 'database' is a collection of information organized in a way that is easily accessible, managed and updated. There is no legal protection for data as such, and it does not fall neatly within the existing IP categories. Raw data is not protected by copyright because it is just information considered to be fact, which does not fall within the subject matter of copyright. However, if the data is not raw data such as metadata, which concerns information about information, then it can be protected by a trusted platform model, or by other legal tools such as clickwrap agreements. Additionally, data can be protected by trade secrets. Trade secrets are not IP *per se* but they nevertheless

provide a framework for protecting the unlawful access of data where steps have been taken to keep the information confidential.

Databases are protected independently from data. Copyright protects databases to a certain extent, and in some jurisdictions such as the European Union (EU), there is *sui generis* database protection. This protection is provided in cases where there has been “qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents of the database.” According to the EU Database Directive, databases obtain protection if they are original in the sense that the selection and arrangement of the contents constitutes the author’s own intellectual creation. Data is a valuable asset for app developers as it indicates who the customers are while simultaneously functioning as a valuation marker for the app. The collection of data can make the app more valuable. Because data is not an IP right in and of itself, it is vital for app developers to obtain protection for this resource in other ways. This will depend on the country in which the developer wishes to obtain protection. The most common ways to protect the data are through trade secrets and contracts.

In cases where app developers are engaged in the processing of personal data, issues surrounding privacy and data protection need to be addressed. The risk of security and privacy breaches are compounded by fact that mobile devices have access to a variety of data and sensors including microphones, cameras and GPD receivers. As a result, it is imperative that app developers comply with data protection principles as encapsulated in the General Data Protection Regulation (GDPR) for the EU. The GDPR applies to any mobile app that processes and collects personal data of EU citizens. Processing and collecting data could take place in situations such as processing financial transactions, obtaining email addresses when users sign up for the app or transmitting data to other apps. Regardless of whether the app developer operates from within or outside of the EU, if the app operates has users based in the EU, it has to comply with the regulatory framework; failure to do so results in fines.

Accordingly, it is suggested that app developers have data privacy policies in place that cover whether and how their data is shared, stored and deleted, as well as what data is collected and the methods used. For example, the GDPR requires that app developers obtain informed consent before collecting data. This means that at the very least, the user needs to be made aware of the identity of the controller and the purposes for which the data will be used. Furthermore, users are granted additional rights to control the use of their data even after permission is obtained for its use. These include, *inter alia*, the right to revoke previously

granted consent, the right to access data upon request and the right to restrict use of data. These rights need to be mentioned in the privacy policy of the mobile app in order to inform users. Outside of the EU, data protection legislation varies and app developers should take note of these requirements when seeking protection in their own jurisdictions.

Trademark

Although they are not as prevalent in licensing practices as the other forms of IP, trademarks are still relevant for app developers to consider. National law may differ when it comes to protecting trademarks but, generally speaking, practices are harmonized. The subject matter of a trademark extends to any sign that distinguishes goods or services of one undertaking from those of others, and which is capable of being represented graphically. Examples of trademarks include words, figurative elements and shapes displayed on surface, three-dimensional representations, colour marks, marks comprising sounds, holograms and moving images. In order to obtain registration, the mark must be distinctive and cannot have a technical character or be the result of the shape or nature of the goods. The right obtained by trademark is extensive, as it allows the right holder to prevent unauthorized use of the mark in the course of trade for identical or similar signs related to identical or similar goods where such practices would result in a likelihood of confusion. App developers should be aware of the possibility of registering a variety of elements within the app as trademarks. These include the name of the app, the logo, icons, distinctive images, characters and slogans.³⁴ When a trademark is associated with a successful product, thus in turn creating a recognized brand, this can be a valuable asset for a company.³⁵

Designs

Design rights sit at the interface between copyright, patent and trademarks. The protection provided is for aesthetic designs. In order to obtain protection, designs do not need to be functional or artistic, but are required to be new and original. When it comes to app development, design protection can be obtained for certain software elements such as web designs, picture models, typefaces, fonts, icons and logos. There is no need for distinctiveness or innovation, and designs can be registered or unregistered. Additionally, there is a possibility for cumulative protection with other rights. This makes design rights attractive as an additional

³⁴ "WIPO Handbook on Key Contracts for Mobile Applications – A Developer's Perspective", WIPO, www.wipo.int, October 2020, No. 34, p. 11.

³⁵ *Ibid* p.11.

layer of securing protection and adding further value to the app. The scope of design rights is not harmonized worldwide, and therefore developers should seek guidance about the possibility of registering design elements in certain countries.³⁶

Key IP considerations for mobile apps

IP	Key considerations
Database	<ul style="list-style-type: none"> • Does the app collect data from its users? If so, how big is the database? • How are the app developers protecting the database? • Does the <i>sui generis</i> database right exist in the jurisdiction in which protection is sought? What are the requirements for protection? In the EU there needs to be a substantial investment in obtaining, verifying or presenting the contents. • Copyright. In the EU the selection and arrangement of data must constitute the author's own intellectual creation.
Patent	<ul style="list-style-type: none"> • Protection of the underlying software. • Is there patent protection available for the algorithms in the app, i.e. does the jurisdiction in which protection is sought provide patent protection for computer-implemented inventions? • Has patent protection been applied for? In which countries?
Copyright	<ul style="list-style-type: none"> • Protects the graphical user interface, software codes and other written and creative materials such as instructional guides, videos, video guides, marketing literature, etc. • Requirements: whether it is a written or artistic work, creativity, originality, and fixation (in some jurisdictions).
Trademark	<ul style="list-style-type: none"> • Protects the product's name, slogan and logos. • Requirements: distinctive signs without technical character, or the result due to the nature or shape of goods.

³⁶ Ibid.

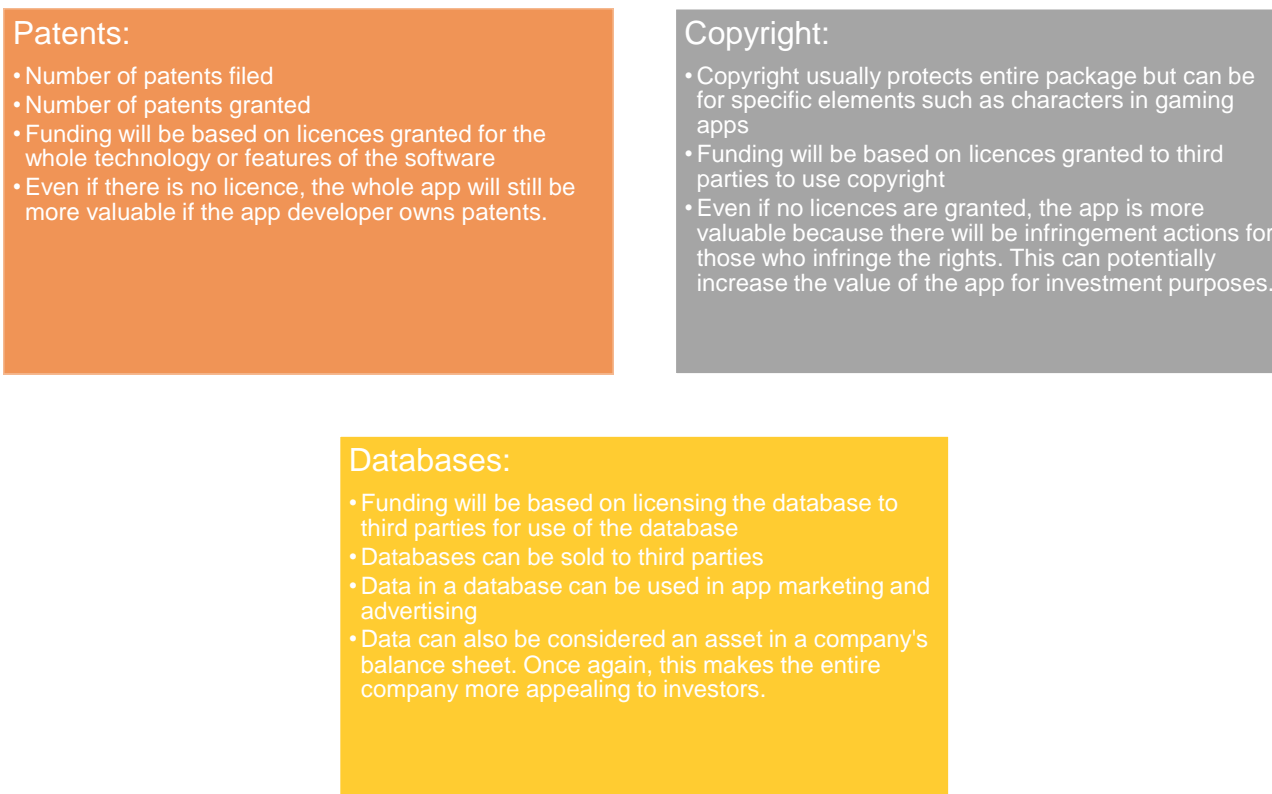
- Design
- Protects web designs picture models, typefaces, fonts, icons and logos.
 - Requirements: novelty and originality.

- Know-how and trade secrets
- Is there know-how required for the use of the technology?
 - How are the app developers protecting that know-how?
 - Are there any trade secrets? What mechanisms are in place to protect the trade secrets? For example, are the employees trained to handle the confidential information? Do they know that it is confidential? Does the company make use of non-disclosure forms when engaging with business partners, customers and other third parties privy to confidential information?

Uber case study

Uber is a prime example of the use of an extensive IP portfolio to protect and increase the value of many elements in the app. Uber in the US has a trademarked word and device mark. This means that the Uber logo and some features of that logo represented in its mobile app are protected. As mentioned, copyright does not require formal registration for protection to arise. Because of this, creative materials including the graphical user interface and the underlying source code will receive automatic copyright protection. Patents form an important part of the IP portfolio because they translate into a valuable intangible asset which in turn creates a substantial amount of negotiating power in business situations. This is particularly the case when funding is sought. Patents are granted for the functionality related to the use of the software. The Uber mobile app has a feature for the aggregation of cabs and on-demand consumption of transportation services, and they have filed for patent protection for this technology (see US Patent Application US 20140221025 A1).

Figure 4: Funding considerations based on key IP rights for mobile apps



5.3 Commercialization models

'Commercialization' refers to "the process of turning products and services into a commercially viable value."³⁷ In the context of IP, commercialization involves bringing IP to the market in order to generate a profit. Factors that will impact commercialization include business objectives, the type of IP and existing economic and intellectual resources. App developers should also be aware of the multiple existing models for commercialization. The four commercialization models that will be addressed below are: (1) commercialization by the IP owner; (2) assignment; (3) licensing; and (4) joint ventures or partnerships.

5.3.1 Commercialization by the IP owner

When companies take on the role of commercialization on their own, the owner invests, develops, manufactures and markets the product throughout the entire chain. There are

³⁷ "Your Guide to IP Commercialisation", European IPR Helpdesk, accessed at <https://aineetonansainta.fi/wp-content/uploads/2019/05/EU-IPR-Guide-Commercialisation-EN.pdf>.

several reasons why a company may wish to carry out commercialization on its own. These include already having sufficient capacity to carry out marketing; not having enough capacity to carry out or build a partnership; hesitance to share information with third parties; and not wanting to create possible competitors or to spend time and money building partnerships.³⁸ The advantage is that the owner has full control and therefore is the sole individual who can enjoy the profits. Few entities are able to take all profits from start to finish, and if they can, their competitive advantage may well be lower compared to other partners.

5.3.2 Assignment

Assignment entails an outright transfer of IP rights from the company (the assignor) to a third party (the assignee). The assignee then becomes the new owner of the IP rights. This will take place if the company does not have sufficient resources for commercialization, for example in terms of finance, human resources or marketing.³⁹ Another reason for undertaking an assignment is if the company wishes to realize an immediate cash flow from the IP as an asset. The assignment process entails extensive negotiations and confidential information will need to be exchanged between the parties. In light of this, it is recommended that a non-disclosure agreement be signed so that the company is able to protect its information from being disclosed for purposes other than negotiation or due diligence.

5.3.3 Partnership or joint ventures

At times, it will be difficult for a small company to license its technology to a big company as the product may not be mature enough. A potential solution is to form a joint venture. In the case of a joint venture, the IP owner works together with a financial investor (such as a hedge fund, private equity firm, or venture capitalist) to develop the product in order to bring in a more strategic type of investor further down the line. This is usually done by creating a spin-off company that is owned equally by all the parties and holds the exclusive licence to the IP. When the parties get to the stage at which they wish to bring in a larger company, then the product can be scaled up. The board of directors and management is recreated and the level of partnership is increased in order to take the technology upstream and build a product. These joint ventures create a framework to put the technology together and bring it to the market.

³⁸ "Your Guide to IP Commercialisation", European IPR Helpdesk, accessed at <https://aineetonansainta.fi/wp-content/uploads/2019/05/EU-IPR-Guide-Commercialisation-EN.pdf>.

³⁹ Ibid.

It is important to note that with a joint venture or a partnership, notwithstanding the fact that the company remains the owner of the IP, ownership of the company will most likely be diluted because investors will obtain shares. There may be situations in which the investor company wants a certain percentage of return on their investment, and so it is also possible to create a joint venture or other arrangement establishing the percentage of return and the use of IP by other collaborating companies.

5.3.4 Licensing

In the context of mobile apps, licensing refers to an agreement between the app developer (the licensor) and a third party (the licensee) in which the former grants the latter permission to use its IP. Small tech companies, such as mobile app developers, can reach out to larger companies for the purposes of facilitating an agreement whereby the larger company uses the technology in exchange for royalties or income. This is referred to as 'licensing out'. Where licensing is concerned, multiple streams can exist: general licensing of an app that relies on copyright or designs, licensing of an app or technology in the app that has patented algorithms, and licensing of databases.

The ability to license a patent in a mobile app will largely depend on whether the algorithm is patentable in a particular country and whether the app developer has been granted the patent. The IP can be used to protect the app itself or some platform technology that is patented into other apps. Thus, the licensing options cover licensing of the app or the technology within the app. The Global Innovation Policy Center recently released a report entitled "U.S. Chamber 2021 International IP Index".⁴⁰ The report includes the patentability of computer-implemented inventions with country specifics. For example, Kenya and the Philippines score fairly low when it comes to providing patent protection for computer-implemented inventions. Nevertheless, this form of protection is provided in their law and, in theory, app developers can patent the algorithm underlying a mobile app in these countries. This increases the value of the app and makes licensing a more appealing option.

A similar situation is applied in the realm of copyright. However, developers should note that some countries have stronger copyright protection than others. For example, if one runs a comparison using the International IP Index scores for Kenya and the Philippines, it becomes clear that Kenya has a marginally stronger level of copyright protection. In contrast to

⁴⁰ "U.S. Chamber 2021 International IP Index", Global Innovation Policy Center, www.theglobalipcenter.com, accessed September 13, 2021.

developed economies, these countries have a comparatively weak score. Stronger copyright protection means that the existence of copyrighted elements in mobile apps significantly increases the value of the app and, consequently, the willingness of potential licensees to engage in licensing.

Licensing agreement key terms

A licensing deal is a binding contract, and there are several elements to consider when concluding an agreement of this type. The first consideration is the subject matter, including examination of what the app developer is trying to commercialize, what the IP is, and how the IP is protected. It is also important to take the accompanying IP into consideration. For example, when a patent is licensed, the relevant know-how will also have to be licensed, otherwise exploitation will not be possible. Other necessary information to include will cover use specifications, technical descriptions, the patent number, the name of the invention, the trademark and the related standards. The next consideration that should be included is the geographical scope and field of use. This should include information on where and how the licensee will be able to use the technology, and whether they are able to use the technology in any manner or whether there is a limitation in respect of certain markets or geographical areas. Importantly, the agreement will also cover the manner in which the licensee is obliged to protect the IP when using the licence. This might include non-disclosure clauses, commitments to refrain from making illegal copies of the subject matter protected by the IP or obligations not to use and abuse such rights.

Parties will also need to consider the financial terms of the licence and to what extent the licensor will obtain revenues during the upstream and downstream phases once the product has been translated into technology in the market. The amount, type and terms of payment will need to be defined clearly. It is also important at the outset to determine when the royalties will be received. Royalties are generally based on a percentage of the quantity sold or profits made, or there can be a fixed amount of royalties received based on each product unit sold. Thus, the more developed the technology is, the more likely it is that the licensor will obtain greater royalties. In the upstream phase, royalties will generally be structured in terms of 5 to 10 per cent of the product launched in the market. The licensor may also wish to define a minimum royalty amount in case no revenues are generated. There will need to be an oversight mechanism to ensure that the products sold are translated into generated income. When the technology is still being developed, there will most likely be a milestone payment upon signature, with payments increasing thereafter as each milestone is reached.

Other provisions dealt with in a licensing agreement include the following:

- **Term of the agreement:** commencement, termination and duration of the contract. Considerations of the expiration date of the IP, the market and the economic life span of the IP must be taken into account.
- **The right to sublicense:** there should be a provision dealing with the licensee's right to grant sublicences to third parties. There are various considerations that should be considered in this clause. These include whether the licensee is entitled to select the sublicensee or whether this is subject to the approval of the licensor; whether there are established conditions that must appear in the sublicense agreement; and the state of affairs upon termination of the sublicense.
- **Warranties:** assurances provided by the parties for different facts, for example, the risk of technology defects.
- **Improvements:** improvements generally play the largest role in the licensing of patented technology. It is a common to have a provision that entitles both parties to make improvements by means of further research or developing know-how related to the licensed technology. In such a case, 'mirror rights' are generally provided to both parties, i.e. each party retains ownership of the improvements but grants rights to the other party.
- **Infringing acts:** the situation governing infringing acts committed against the licensed IP.
- **Governing law and the settlement of disputes:** the law that will govern any potential disputes and mechanisms to settle such disputes, e.g. alternate dispute mechanisms or the court system.
- **Registration of the contract:** in some countries parties will be required to register the licence at the patent office.

5.4 Most notable IP elements for upstream and downstream commercialization

5.4.1 Fundraising (upstream)

The different stages within a supply chain are often referred to as 'upstream' and 'downstream'. The 'upstream' phase is when efforts are made to bring technology to the

market. During this phase, no product has been developed but rather an app or an idea that can be developed towards a product. In order to proceed to commercialization, it is necessary to obtain funding. IP can be a useful tool in the process of obtaining fundraising because, for many tech startups, IP may be the only valuable asset they own at the early stages of development. IP can facilitate the granting of high-risk investments from angel investors and venture capitalists.⁴¹ Financiers such as banks may also take into account IP assets as collateral when determining whether to grant a loan, although this is not a widespread practice. In such a case, the financier will hold the IP right as security for repayment of the loan. Investors will certainly take into account the IP when deciding whether or not to invest in a company, as securing IP can be a costly and time-consuming procedure. Securing IP protection signals to investors that a company believes in its future success and that it takes its own development and growth seriously. As a result, part of the investment decision will take into account the value of the IP as an asset and how the app development company seeks to protect this IP. The IP management strategy can also function as a good indicator of the company's potential.

The elements that are critical to commercialization in the upstream are as follows:

- Maturity of the invention: how mature is the invention technology and know-how? If it is in its early stages, as is the case for many start-ups, it will require more research before it is ready to use.
- Time to market: how quickly can the company bring the product to the market? It might be the case that there needs to be testing, trials, configurations and applications, which could take a month or up to a few years.
- Complexity of the app: is the technology easy or difficult to use? Is it easy for other organizations to copy? Does the use of the invention require expertise and know-how that is only possessed by the company?

⁴¹ "Securing Financing with IP Assets", WIPO, www.wipo.int, accessed September 13, 2021.

- Dedicated or more extensive use: to what extent is this a dedicated technology for a specific use? Alternatively, is the technology more of a platform in the sense that it can be channelled into different uses?

Checklist for leveraging IP during fundraising

- ✓ Identify the various elements of the app that can be protected by IP. Examples include copyright, trademark and design, patent, database and know-how.
- ✓ Key questions that should be asked include: does the app create extensive databases? Is database protection required? Are there different types of encryptions? Do you need patent protection for algorithms? Do you have copyrights for the graphical user interface? What is the value of your know-how? Do you need to do cross-licensing?
- ✓ Complete the necessary formalities if required.
- ✓ Consider registering trade names, trademarks or logos of the app at the early stage of development.
- ✓ Document which rights have been registered (if any) and prioritize the rights that have the most value.
- ✓ Utilize IP in the financing strategy to indicate the increased value of the technology either through existing or prospective IP protection. An extensive IP management strategy might be useful here.

5.4.2 Downstream

IP also plays a role in the downstream phase of commercialization as it emphasizes the added value of the app through copyright and any data collected or technology embedded. Because of this, app developers can secure a stream of licensing revenues. For example, when it comes to downloading the app on Google Play or the Apple App Store, IP is relevant because this is where royalties can be secured through licences. The process of downloading software involves the signing of a licence agreement. Without signing the agreement, the software cannot be obtained. It is also possible to secure multiple licences to use the app from various entities. In such a case, the company developing the app will have to manage these licences in terms of permission and use via the app. This requires extensive negotiations.

Licensing negotiation considerations:

- ✓ What is the business reason for negotiating the licence?
- ✓ What is the best result that can be obtained?
- ✓ What is the outcome that should be avoided?
- ✓ What leverage do you and the licensee have? Consider the relevant IP available in the mobile app here.
- ✓ What are the positions of both parties with regards to key issues?
 - Who owns the IP?
 - Who owns the modifications and data?
- ✓ What are the upper and lower limits for both parties?
- ✓ Which aspects could be subject to a compromise?

IP for successful commercialization: Shazam case study

Shazam is a mobile app that allows you to identify music and television shows. In 2005, Shazam Entertainment sold its patent and various other IP in its portfolio to a third party. Through a worldwide licence it retains exclusive rights to the telecommunications sector. The benefit of this IP transfer was that it provided the company with working capital to fund accelerated product development and international expansion, enabling the company to provide its customers with increasingly sophisticated services and solutions.

6. FUNDRAISING SHORTCUTS AND CHECKLIST FOR SUCCESS

Most important aspects of funding	Elements
Creating a minimum viable product	This refers to the most basic version of your app that is released onto the marketplace for the purposes of validation and as a demo for alpha testers. It does not need to be high quality and there are smaller business offering affordable services in less time. For funding purposes, it plays a vital role in showing investors the product idea at an early stage and therefore increases the likelihood of securing funding.
Collecting funding from early adopters	App developers can offer beta features to early-stage adopters, and in this way, financing can be secured through discount rate subscriptions, donations or crowdfunding.
Preparing the financing strategy	<ul style="list-style-type: none"> (a) Determining the type of funding needed based on the stage of development; (b) Identifying a list of potential investors/financiers; (c) Preparing a pitch for investors that includes the app name and logo; contact information; a clear visual explanation of the concept; information on what problem the app can solve; market size metrics; key competitors and available competitive metrics; product features and their benefits; the business model; basic financials including the burn rate, amount

of investment needed and revenue projection; and finally, the intended use for the money;

- (d) Utilizing IP as a means to leverage financing.

7. CONCLUSION

The mobile app ecosystem is comprised of various players that interact to make the app industry function. There are also various business models that app developers can choose to pursue once a product is launched. However, even prior to the launching of an app, there are several hurdles that app developers face. One of the most significant difficulties is how to secure funding in order to move the app from its conception stage to commercialization. From categories such as lifestyle, education, fitness and social network to gaming, apps have become an indispensable part of our lives. This has led to increased competition and market barriers for smaller app developers, who often fall by the wayside. This also makes funding increasingly difficult to obtain. The available funding options vary depending on each stage of the app development process. For example, as discussed, in the conception stage where the app is merely an idea, the funding options are more limited than later down the line when there is a tangible product that can be presented to investors in a pitch meeting. Because of this, it is important that individual app developers and companies developing apps are aware of the different pathways to accessing financing in order to successfully develop their product.

Existing IP rights can be beneficial when it comes to securing financing, and can also be used to protect various elements of mobile apps. Copyright, patents and trade secrets are the most common, but as we have indicated, trademark and design can also form part of an IP portfolio. Not only does IP enhance the value of the app, it also signals to investors that the app developer is serious about the prospects of its success, to the extent that they are willing to invest in IP protection. This is how IP plays a role at the fundraising stage. However, as discussed, even after the app has been launched on the app store, IP relevance cannot be overlooked. For example, income can be secured through a continuous stream of licences that provide the app developer with royalties. Other monetization strategies involving IP include an outright sale of the IP (assignment), creating partnerships or joint ventures, or commercialization of the IP by the app developer on their own. Each model depends on the needs and resources of the app developer. What is clear is that most apps have some IP attached to them and, at the early stages of development, this can prove to be a valuable intangible asset, especially when it comes to fundraising from investors.

8. USEFUL LINKS AND RESOURCES

The mobile app ecosystem

"The App Economy", Vol. 230 (2013), OECD Digital Economy Papers, www.oecd-ilibrary.org/science-and-technology/the-app-economy_5k3ttftlv95k-en, accessed July 16, 2021.

Qiang, Christine Zhenwei and others, "Mobile Applications for Agriculture and Rural Development", ICT Sector Unit World Bank, 2012, www.openknowledge.worldbank.org/handle/10986/21892.

Financing opportunities and challenges

<https://masschallenge.org/article/app-funding>

IP and mobile apps

On valuing IP assets:
www.wipo.int/sme/en/value_ip_assets/

On IP financing in general:
www.wipo.int/wipo_magazine/en/2008/05/article_0002.html

Guidance on IP financing:
www.wipo.int/wipo_magazine/en/2008/05/article_0002.html

Securing financing with IP assets:
www.wipo.int/sme/en/securing_financing/

An overview of the IP rights throughout the life cycle of a mobile app:
www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/wipo_handbook_key_contracts_mobile_apps.pdf

The International IP Index:
www.theglobalipcenter.com/wp-content/uploads/2021/03/GIPC_IPIndex2021_FullReport_v3.pdf

A handbook on IP commercialization:
www.aanzfta.asean.org/uploads/2020/12/IPPEA-FINAL-HANDBOOK-ON-IP-COMMERCIALISATION.pdf

The IP toolbox for mobile app developers:
https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/wipo_ip_toolbox_mobile_apps.pdf

The role of IP rights in the development and commercialization of mobile applications:
https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/wipo_ips_mobile_apps.pdf

On IP and mobile applications:
https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/ip_and_mobile_applications_study.pdf

A scoping study on the availability and use of IP tools to protect mobile applications in three beneficiary countries, namely, Kenya, Trinidad and Tobago and the Philippines:

https://www.wipo.int/export/sites/www/ip-development/en/agenda/pdf/scoping_study_mobile_apps.pdf

Privacy in mobile apps: Guidance for app developers:

<https://ico.org.uk/media/for-organisations/documents/1596/privacy-in-mobile-apps-dp-guidance.pdf>

Statistics

"Apple App Store Revenue 2020 | Statista", www.statista.com/statistics/296226/annual-apple-app-store-revenue/, accessed July 17, 2021.

"Google Play: Annual Revenue 2020 | Statista" www.statista.com/statistics/444476/google-play-annual-revenue/, accessed July 17, 2021.

"US Time Spent with Mobile 2019 - Insider Intelligence Trends, Forecasts & Statistics", www.emarketer.com/content/us-time-spent-with-mobile-2019, accessed July 17, 2021.

8. ABOUT THE AUTHORS

Meir Perez Pugatch

Meir Perez Pugatch is an Intellectual Property Law and Knowledge Management (IPKM) Professor of Valorization, Entrepreneurship and Management at the University of Maastricht in the Netherlands, and a Professor at the School of Public Health, University of Haifa in Israel, in which he has acted as the Chair of the Health Management Division since 2019. Professor Pugatch is also the Managing Director of Pugatch Consilium, a boutique consultancy that provides evidence-based research, analysis and intelligence on the fastest-growing sectors of the knowledge economy. He specializes in innovation strategies, organizational entrepreneurship, IP management, pharmacoeconomics, pricing and reimbursement, and the management of public health systems. He is the author and editor of an extensive number of publications and serves as a referee and editorial board member of numerous peer review journals.

Emily Elphick

Emily Elphick is an IPKM alumna of the University of Maastricht in the Netherlands. She also holds an Bachelor of Laws and Bachelor of Arts degree from the University of Cape Town, South Africa. She is currently a research assistant for various projects.