HARBOR

ver 1. 2

Harbor White Paper

Introduction

Currently, software distribution is dominated by a few centralized platforms operated by biggest IT companies. Harbor challenges this system. Our objective is to make Harbor become a decentralized applications store not bound to any platform by utilizing blockchain technology.

Harbor Token solves many problems with cryptocurrencies like high barriers to entry, severe fluctuations in value, and complex procedures. It also offers services like payment cancellation and refund to make cryptocurrency more accessible and convenient. In the long run, Harbor also aims to support developers to easily design new valuable services utilizing Ethereum blockchain technology and DApp.
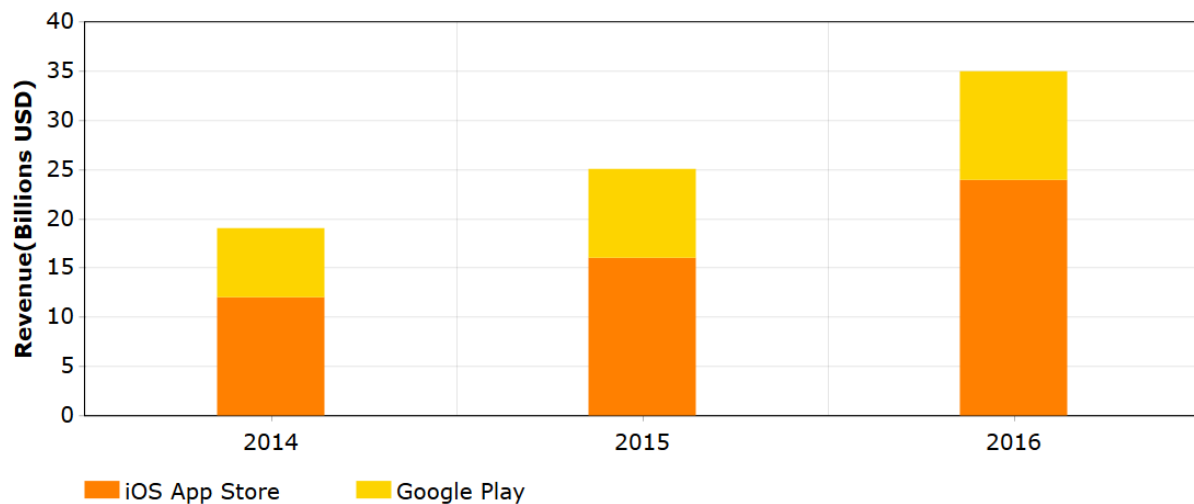
Those who involve early will have first-mover advantage. The more people join Harbor platform, the higher exchange value Harbor Token will have. It will lead to increased monetary value of Harbor Token, which in turn increases seller's income. This will motivate more people to join Harbor platform. We hope that Harbor will grow fast through this virtuous circle and draw many developer companies and independent developers, and be profitable for all participants.

Background

Software distribution market

Software distribution, especially its mobile sector, is a fast growing market. App Store and Google Play Store made $35b revenue in 2016.
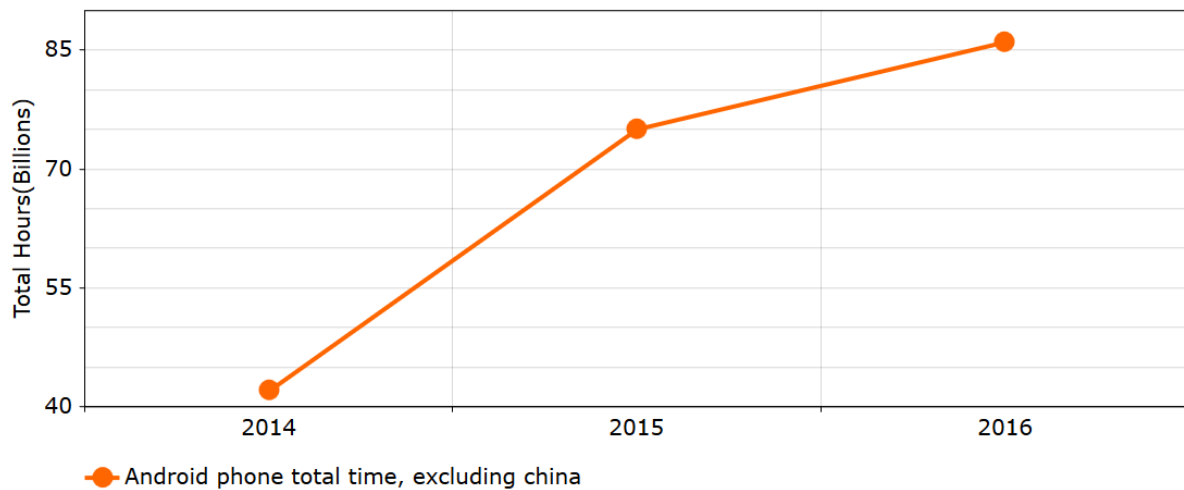
Worldwide App Store Revenue

Source: app aninie 2016 retrospective

Software application market has become huge and competition is severe, so now it requires high marketing cost and large investment to enter the market. Harbor's role is to lower the barriers to entry to software application market. Harbor platform is operated by blockchain system, so people can sell and buy software without paying commission to platform provider. And those who join Harbor early will enjoy first-mover advantage, which will give them competitive edge on marketing.

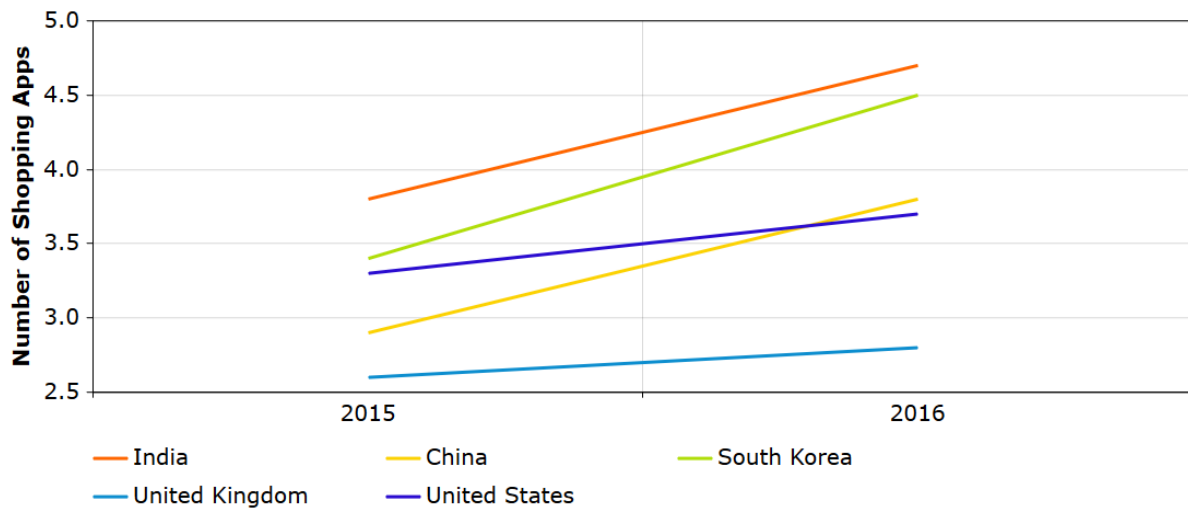## Payment market combined with software distribution

Software is now being used everywhere; whether it be daily life, work, industry, etc. And it didn't only lead to the growth of software distribution market, but also payment market (both online and offline) which is necessary for monetary transactions in distribution.
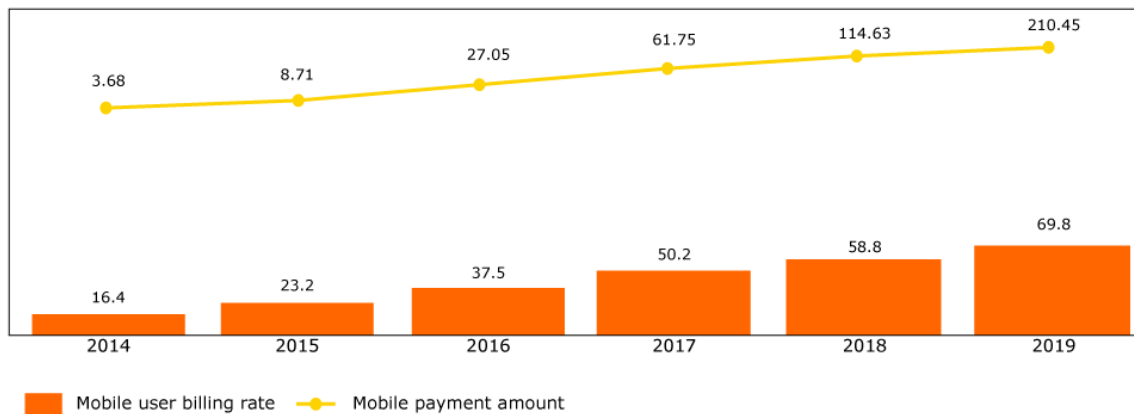
Worldwide Total Time Spent in Apps

Total Hours(Billions)

85

70

55

40

2014   2015   2016

● Android phone total time, excluding china

Average Number of Shopping Apps Installed Per User

Number of Shopping Apps

5.0

4.5

4.0

3.5

3.0

2.5

2015   2016

— India   — China   — South Korea

— United Kingdom   — United States

Payment market has been growing fast. And even freeware make use of payment through in-app purchase feature. E-market is also an growth factor. In 2019, the total number of people using mobile payment is anticipated to be twice as big as that in 2016 and three times as big as that in 2015.

Predictions on mobile payment market in North America

Source : eMarketer(2015.12), 'Trends for 2016: Six Predictions for What Will Happen'

In traditional application market, platform provider takes away certain percentage of payment as commission. In contrast, Harbor platform is commision free, and as such, expected to grow fast in application distribution payment and various other services like mobile shopping or video streaming which also depends heavily on payment system.

We need a lot of resources to develop native software with the same functionality for all mobile (Android, iOS) and desktop (Windows, macOS, Linux) platforms . Web Apps and cross-platform development tools (Electron, Ionic, Xamarin, Unity) support multiple platforms on mobile and desktop devices and also provide uniform UX/UI across them, which also results in cost competitiveness. We expect that Harbor Store will have advantage in this cross-platform environment, as it will support multiple platforms.

Core functions

Software marketplace using cryptocurrency

Harbor platform supports various licensing policy, which will give sellers a chance to determine the most effective policy for their customers. Payments can be performed in many ways by Harbor Token to enhance conveniency. Harbor will authenticate license through Ethereum blockchain network. It will support various licensing policies and process authentication through blockchain.

Possible licensing policies of Harbor are described below.

License Policy

Permanent license

Single payment allows permanent usage.

Volume license

The maximum number of authentications is predetermined. This is effective against multiple users trying to share a single license.

Per-device license

The maximum number of devices on which the software can be installed concurrently is predetermined.

Time period license

The time period for which the license is valid is predetermined. This can be set with various options: monthly, quarterly, annually, etc.

Consumable license

One time ticket for predetermined service. This type of license can be bought and possessed in number.

Free license

Using software under free license does not require payment.

Payment method

Many people find the procedure needed to buy cryptocurrency too complex, which makes barriers to entry to cryptocurrency. To overcome this, Harbor platform suggests various payment methods as shown below. Sellers can sell their products with prices based on real money (dollar), and all transactions are paid with Harbor Token. Sellers will receive Harbor Token for their products and can convert it to real money as needed.

The reason we consider various methods for payment is to cover potential circumstances that may occur in individual countries with regard to legal restrictions on payment method and connections with banks and credit card companies.

Ordinary payment

Consumer pays by transferring Harbor Token from his wallet to seller's smart contract address for sales.

Procedural payment

Consumer can buy Harbor Token or Harbor Gift Card first, and then buy products with them.

Combined payment

Consumer can buy products and Harbor Token (and/or Harbor Gift Card) at the same time with credit card or cash transfer. This is processed automatically with product purchase, and remaining amount (after paying for products) is sent to his wallet.

Harbor Store payment

Consumer can have a wallet connected to his Harbor Store account which can be used for payment. This can be used only in Harbor platform, and transfer to outer system is restricted. Using this method, consumer can pay simply by entering payment code of his account.

Subscription with automatic renewal

This method is only for those with Harbor platform account. Monthly, quarterly, annual payment is available.

Payment cancellation and refund process

Many countries have laws to grant consumer's right to cancel payment and demand refund in appropriate situations. But payment conducted with cryptocurrency is, by its nature, hard to revert. To support these functions, seller should be able to locate information for the relevant payment and make a reverse payment to the consumer.

This might sound simple, but the background process and maintenance system needed to support those functions are complex and expensive. Harbor platform will natively support these kind of backend processes, which will save seller's efforts to develop and maintain the system and also simplify consumer's payment procedure and method.

Integrity authentication

Client software cannot be free from hacking and unauthorized modification. By properly authenticating integrity, Harbor prevents modification and ensure security. Blockchain technology, integrity authentication and electronic authentication technology will be used to achieve this. In addition, seller should make contract for each and every new version of their software.

For a given software product, a DApp for product authentication should be published when it is first released to create whole application management contract or default application contract. Afterward, authentication procedure will be performed for every new distributions. And for client side, authentication will be executed intermittently and also before every important process like payment.

Expanded functions

Harbor will serve as an application marketplace based on blockchain, and it will enable developers to utilize blockchain technology easily by expanding Harbor services. And it will provide an easy access to cryptocurrency for consumers and offer services to help them use it for payment.

As such, Harbor platform has great potential. And we are considering numerous possible services which will expand Harbor's core functions. Some of them are listed below.

Harbor Store Wallet

Customers using Harbor platform can either use his own wallet or Harbor Store Wallet connected to his Harbor account. Harbor Store Wallet can only be used in Harbor Store. It makes payment easier for consumer, and lowers the barriers to entry for new users of cryptocurrency. Functions to enhance security, like restricting the amount of transaction, are also supported.

Personal account based on blockchain and support for social engine

A wallet in cryptocurrency system can also be an personal account information, which serves as a powerful authentication method. This will provide anonymity and reliability needed by services like social networking.

SDKs based on blockchain and new services combined with finance

Various auxiliary functions like data storage based on blockchain, peer-to-peer network utilizing account information, and notification will help expand Harbor services. Harbor can support development of new business models combined with finance which produces or rewards in monetary terms.

Assurance of transactions

When a transaction occurs in Harbor platform, the details of it are represented as a smart contract and archived in blockchain network. And that information serves to assure the fact that the transaction initiated, proceeded, and finished in certain way. To make development of transactions of assets easy, Harbor will provide a templated smart contract which will function similar to Escrow.

Defending against security threats with Agent

Agent is an extra security system which detects and blocks potential security threats. It helps us protect customers' information and software from security attacks.
Building upon this core functionality, Agent will enable Harbor Store Wallet users to use simple payment methods like pattern lock or cell phone authentication. Functions like restricting the amount of transfer will also be provided to enhance accessibility and security.

Support for advertisement provider

Offering software to consumers for free and making money with ads set up in the software is very common these days. Functions to link with advertisement provider in software can be profitable for all parties (software publisher, advertiser, and consumer), which is the reason we chose this as one of the expanded services.

Support for digital content sales

Digital assets (image, video, and audio files) and information assets (news, data, statistics) are also valuable contents and can be sold in Harbor marketplace.

Advantages of Harbor platform

Application marketplace based on blockchain network

Harbor is a decentralized software distribution platform powered by blockchain technology. It decouples distribution and sale, which enables various methods to distribute software.

Softwares can be distributed through Harbor Store or other traditional platforms like App Store, Google Play Store, and Steam. But it can also be distributed through web pages, blogs, and social networking sites.

Synergy with cryptocurrency economy

Software sellers who enter Harbor platform early in the beginning can expect capital income when the value of Harbor Token rises. This will motivate early entrance to Harbor platform and facilitate virtuous circle in Harbor platform ecosystem. As a business model which utilizes cryptocurrency as payment method, Harbor can contribute to virtual currency market as well as software distribution.

Decentralized application store supporting multiple platforms

Harbor is an application store supporting multiple platforms. Sellers using Harbor can launch and sell their software using any of major platforms like Android, iOS, Windows, and macOS, which will greatly reduce development and maintenance cost.

Security and authentication software using blockchain technology

In the long run, Harbor aims to facilitate developing security and authentication software or DApp which utilizes blockchain technology by developing SDKs for each platform.

Reliable account

Wallet used for buying software in Harbor platform is an account information by itself, which makes it a viable payment method. It is also an anonymous and reliable account. And it has a great potential to be expanded as an account based DApp service.

Revitalizing open source projects and a business model for independent developers

Numerous open source projects are staying in development stage without having a chance to market themselves, due to high barriers to entry. Harbor platform will revitalize these stagnated projects by providing them simple and economic ways to enter market.

Advantages in business-to-business software application

Harbor has certain advantages in business-to-business software application. One can distribute software in multiple platforms with low cost using Harbor platform. Furthermore, Harbor can offer many security related features like archiving crucial information on the blockchain network, using blockchain network as authentication process, enhancing client security by utilizing integrity authentication function and other security functions inherently supported by Harbor platform.

Invigoration of fintech and payment market

Harbor platform, unlike traditional software marketplaces, is a software distribution channel without commision. Therefore it can serve as payment system for other services and products as well as software. And it has many advantages for sellers, like transparency of cryptocurrency, ease of transfer, liberty from foreign currency control.

Major development stages

As the most broad view of developing plan, we consider the variety of environments Harbor can be used in. At early stage, Harbor can be used in only a few environments, but more will be covered as the development goes on.

Stage 1. Support for web based cross-platform

Example: Web server, Electron, Ionic, node.js

These are the weapon of choice for many companies as they are the easiest ways to develop cross-platform application. Harbor will support node.js based web server and web based client service.

Stage2. Support for other native libraries

Example: Android (Java), iOS (Objective-C), Windows (C#), macOS (Objective-C)

Harbor will support native libraries optimized for mobile and desktop environments.

Stage3. Support for major cross-platform game engines

Example: Unity, Unreal Engine

One of the biggest sectors of software application is game. Many game engines are supporting cross-platform in a sense that game software can be run in many OS environments. But actually, due to other issues like market size, payment, and accessibility, not many games support multiple platforms.

Harbor will support common game engines like Unity and Unreal Engine, so that game developers can easily distribute their games in multiple platform.

Project Workflow

Step 1. Developing core system

- Developing Harbor platform and Harbor Store.
- Providing Javascript SDK for web based cross-platform development.

Step 2. Support for various native libraries

- Developing native SDKs for C#, Java, C, Objective-C.
- The order of development for each language will be determined later based upon market circumstances and internal priority in the project.

Step 3. Security and auditing

- In this step, most resources will be used to make Harbor more secure.
- Developing security functions and Agent to defend against threats.
- Auditing by external security experts to analyze weak points.

Step 4. Developing expanded functions

- New functions based on blockchain technology will be added to Harbor. (personal account service, data storage service, etc)
- These expanded functions will be supported by API.

Step 5. Improving accessibility

- Relieving Harbor users from the inconvenience of cryptocurrency needed for payment.
- Among the features which will be developed in this step are Harbor wallet, Harbor Gift Card, payment with credit card.

Step 6. Support for game platform

- Major cross-platform game engine like Unity and Unreal Engine are being considered now.

- Plug-ins will be developed to make it easy for independent game developers to join Harbor platform.
- Aiming to provide persistent motivation for game developers to join Harbor by offering them more profitability, more users, and functional support such as fair competition which is enforced by blockchain technology.

Step7. Support for developers and building Harbor ecosystem

- Services for sellers in Harbor platform.
- Wide scope of services are being considered. Potential sellers will be supported by Harbor from as early as developing stage. Marketing activities will also be supported by Harbor.
- These supports will motivate new developers to join Harbor, which will further innervate it.

Budget

Development 50%

As an IT organization seeking to explore the outermost edge of cryptocurrency technology, our first priority in resource allocation will be software development. Primary resources will be used to hire, equip, and support developing team to design and implement Harbor platform as intended.

Security 15%

Security of the product is very important. We will assure the reliability of the system by introducing new technologies, consulting security experts, and fulfilling external auditing before release.

Marketing 10%

Letting everybody know about our platform is as important as developing it. We will utilize various channels of communication to inform developers of our platform and motivate them to join it.

Operations 15%

Resources allocated to sustainable growth and expansion of the organization is an investment for the future of Harbor.

Legal expenses

Legal support is definitely necessary, as Harbor will operate globally. Monetary value and legal status of cryptocurrency is different from country to country. Payment systems to enable customers to pay easily with credit card or transfer, buy gift card or combined products should comply with local laws. The same goes for payment cancellation and refund policies. We also plan to offer sellers guideline about licensing policies, responsibilities, and regulations in order to prevent unintended violation of laws and duties.

Team

We are recruiting more people, and expect to accelerate development through ICO.

Junghan, Kim / Developer & Team Leader

Kim has more than a decade of experience as a software developer in web, mobile, and games. He has been running mobile platform startup for 3 years as CEO and has experience in investment attraction.

Currently, he is leading the planning and development of the software marketplace through the Ethereum network.

Giung, Nam / Developer

Nam has worked as a developer for 8 years and has experience in Big Data and cloud services.

Jinhyoung, Jeon / Developer

Jun has 10 years of experience as a developer and has experience in designing and developing systems (SI / BI) for government agencies and corporations.

Yonggoo, Lee / Developer

Jun has 15 years of experience as a developer and has experience in designing and developing systems (SI / BI) for government agencies and corporations.