

Unity Technologies: The Story Behind Game Development Industry

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***Abstract**--The demand of creative games and high-quality game development engine is increasing throughout the years, especially when gaming industry grow very fast in recent years. This paper shown the abstract timeline of Unity Technologies, where the company start up until year 2019. The founders, David Helgason, Nicholas Francis, and Joachim Ante are inspired to innovate a game development engine for more people to create games easily. Topics reviewed including background, business strategy and key success factors of Unity Technologies. Besides, this case study analyzed its current challenges and provided possible recommendation for Unity Technologies.*

***Key words**--Differentiation, Gaming, Innovation, Programming.*

I. INTRODUCTION

Unity Technologies is a technology company whose headquarter is in San Francisco, California. Unity Technologies was founded in 2004 and has since risen to become one of the most popular game development engines used today. Its game engine is one of the most broadly used real-time 3D game development platform in the world.

Unity game engine, the main product of Unity Technologies, is a toolset uses C# programming language to build rich, interactive 2D, 3D, VR and AR games. Currently, 34% of the top free mobile games are made by Unity. Popular games built using Unity are “Pokémon Go,” “Cuphead,” and “Hollow Knight”.[23] Unity is well-known for its fast prototyping capabilities and large number of publishing targets. [1]

Unity makes income through the development and sale of game development software and different associated platforms. Unity mainly derives income by subscriptions of its game development platform. It additionally derives revenue under individual sales contracts and the sale of assets on its online asset store and video games on Steam (games download store).[2]

Unity’s largest competitor is Epic Games, a game development company which based in America and famous for its successful Gears of War series of games and Unreal Engine technology. [3]

Since there are only limited knowledge about how Unity technologies become successful in the world, this report is aimed to increase the understanding of its background and key success factors. Besides, there are also some challenges and recommendations for the prospects of Unity Technologies.

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II. BACKGROUND OF UNITY TECHNOLOGIES

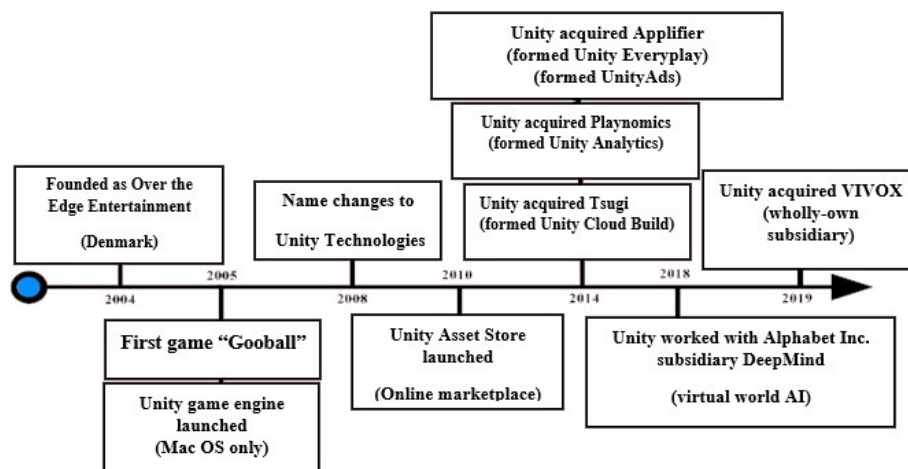


Figure 1: Development of Unity Technologies (Popular Timeline, 2019) (Haas.J, 2014)

2004, David Helgason, Nicholas Francis, and Joachim Ante has founded Over the Edge Entertainment (OTEE) in Denmark with the purpose of developing a game engine and that could be low priced fee and used by, and effectively democratizing the games development industry. [2]

Gooball, its first game created with their new engine, was published in March 2005 by Ambrosia Software. It was commercially failed but it created a good opportunity to tear apart their new engine to find bugs, get rid of annoyances, and fix the interface earlier before its official release. In June 2005, initial 1.0 of Unity Engine has launched. Most users are hobbyists and independent11 developers. However, this version of Unity only can be run on Mac OS X to build projects. [1]

In 2008, Over the Edge Entertainment has officially changed its name to Unity Technologies. Unity Technologies released the first version of Unity with Windows support (Unity 2.5) at the 2009 Game Developers Conference. [1] Followed by year 2010, the Unity Asset Store launched. It is an online marketplace for game developers to make transactions of project assets, such as characters, environment, art, animation which may be used in creating high quality games. [4]

Unity had acquired Applifier in 2014, which is a Helsinki-based mobile service provider. Thus, Applifier's products has changed under Unity. Applifier's game replay sharing and community service used to be Everyplay, then changed to Unity Everyplay. It is created to provide developers a special way to acquire new players and increase retention for free. [5] Besides, Applifier's mobile video advertisement network changed to UnityAds. At the same year, Unity acquired Playnomics (data analysis platform) and Tsugi (continuous integration service). Unity Analytics and Unity Cloud Build has become an expansion of Unity platforms through these acquisitions.

Unity worked with Google in 2017 to develop augmented reality tools for Android devices and apps. 2018, Unity Technologies worked with Google Cloud to provide services for online game developers, also worked with Alphabet Inc. subsidiary DeepMind to develop virtual world artificial intelligence. [4]

In January 2019, Unity acquired Vivox, a cross-platform voice and text chat provider. Vivox's technology is used in many famous games such as Fortnite and League of Legends. This platform let game developers to create connected games and experiences become easier and faster. Vivox operates independently although it has become wholly owned subsidiary of Unity Technologies. [6]

III. BUSINESS STRATEGY

Focused Differentiation - Porter's Generic Strategy

Focus differentiation is aimed at the narrow market (specific market segment) that includes the creation of a product or services that is perceived throughout its industry as exclusive. The company or business unit might price a premium for its product. The company is earning above average returns in a business due to the fact that brand loyalty lowers customers' price sensitivity. [7][8]

For Unity Technologies, it provides free personal plan for basic Unity engine and premium plans with extra professional features, which cost a subscription fees of \$35 (Unity Plus) and \$125 (Unity Pro) per month. Moreover, it offers customize plans for enterprises to support the organization's creative goals. [9]Unity offers a free version for organizations that earn less than \$100K in annual revenue or that have funded less than \$100K in total. This model has made Unity predominantly widespread within the smaller workshops that cannot afford expensive gaming engines. [10]

However, once its target market is being properly served, extension to other markets might be the most effective way to expand market, and this often requires developing a new set of abilities. [11]In Unity's case, it had forecast of this problem, so it started to vertically extend its market and products. It acquired many foreign companies to expand product and market such as acquired Playnomics and come out with Unity Analytics.

Global - Bartlett and Ghoshal Corporate Growth Strategy

A global strategy aimed to maximize integration with selling standardized products. The global strategy pushes corporations to think in terms of creating products for a global marketplace and marketing them through some cooperated distribution channels. It assumes that there are no differences between countries about customer taste and preferences. [12]

Unity is based in the US, which is its main market, but the business has extended into numerous international markets across north America more broadly, Europe and Asia Pacific. [2]Its products and platforms have been used over 14 countries such as Singapore, French, UK, Korea and China. It has set up 22 offices in the 14 countries. Besides, Unity acquired foreign company in related industries as a mode of entry. For example, Unity acquired Vivox, from Massachusetts. Unity are becoming well-known in Massachusetts.

IV. KEY SUCCESS FACTORS

Devotion to innovation

Unity is concentrating on product development, especially its game engine. The team keep enhancing and increasing new features within the engine, from first release (version 1.0) to version 5.6. Two years in the past, they changed the model in line with year (Unity 2017-2019). Moreover, Unity has explored many different platforms for its users such as Unity Cloud Build and Unity Analytics.

Besides, Unity has extended its vertical expertise to include a variety of industries, along with architecture, construction, automotive, and engineering. For example, Unity's real-time solution is accelerating innovation and transforming workflows in the automotive industry. [13]

Video Gaming Market Growth

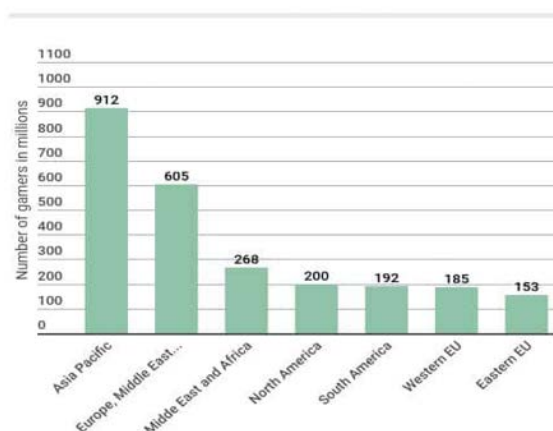


Figure 2: 2016 Recorded Number of Video Gamers in Millions (WePC, 2019)

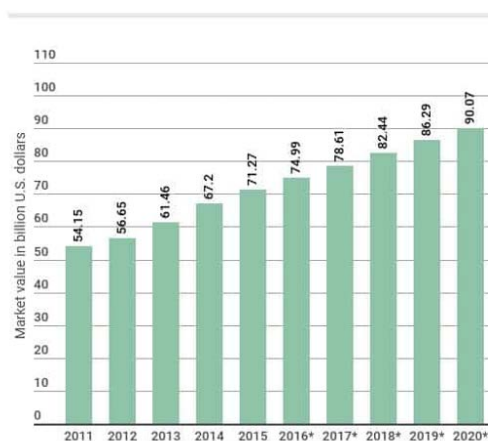


Figure 3: Global video games market value in Billion U.S. Dollars (WePC, 2019)

Video-game stocks have been on quite a tear over the last five years. The number of gamers has progressively grown in recent years, mainly when Esports came out. Newbie and professional gamers mainly compete online across several websites that provide contests for a variety of famous competitive titles.[14]Thus, Esports gamer become every game's dream occupation. This have made video games' demand increased.

With the trend of video gaming, the market needs more game developer. Thus, Unity as a game development platform provider, its market size is getting larger. In addition, Unity provide affordable, good quality, professional features of platforms for developers. Therefore, Unity is growing fast through the trends.

Fast growing through revenue model and acquisitions

Unity used to be continuous licensing its game engine to users before, but they now split its flagship products into the free personal edition and subscription-based Plus and Pro editions since year 2016. With their transfer to subscription, they can make Unity incrementally better. Their switch to subscription is vital for them to provide a strong and stable platform. [15] Moreover, subscription model can attract more hobbyist to use. This is

because hobbyist no need to pay too much for premium if they are only use it for part time job or a single task. Besides, Unity online asset store provides another source of income for it by taking 30% cut from all peer-to-peer transactions. [10]

Furthermore, the company was also growing through acquisitions, which further complex matters in terms of back-end systems. They need a new model that could help them move-to-market quickly with smart new offerings. This helped Unity to expand its market to foreign country and make Unity engine globalized.

V. CHALLENGES

competitor

Generally, there are so much similar software as Unity. Current top game engines are Unity, Unreal, Godot, and Cry engine. Unreal Engine is a set of game development tools made for 2D mobile games to console blockbusters and VR. [16]Godot is an advanced, multi-platform 2D and 3D open source game engine. CryEngine is a very powerful game engine which its source code with all features are given with no royalties, no commitments, and no license fees in return. [17]

Among the top competitors, the main competitor of Unity currently is the Unreal Engine, made by Tencent-backed Epic Games. Epic Games is a developer of game engine and video games. [18]Unreal Engine is a huge success for Epic. Crowned by the Guinness World Records as “the most successful video game engine”. Unreal Engine 3 and 4 have become two of the most popular engines for mobile games in recent years. With a comparison, Unreal have few points that are doing better than Unity as following.

Firstly, Unreal Engine 4 is completely free to use; although a pay of royalty fee of 5% on the money to make off games needed. On the contrary, Unity is only free for the basic plan.

Besides, with its code written in C++, the Unreal Engine features an excessive degree of portability and flexibility across platforms. The engine is presently on its fourth full version and has grown and modified a lot. Moreover, Unreal Engine 4 uses the Blueprint Visual Scripting technology, which allows users to create games using the Blueprint only. [19][20]It does not required users to have basic coding knowledge. It is a huge advantage for non-programmer who wants to write code and create video games.

Moreover, Unreal Engine 4 comes up with the amazing graphics and user-friendly interface, which provide a realistic touch gaming experience with features like advanced dynamic lightings. The incredible proposition of this game engine is its new particle system that can handle as many as million particles in a single scene. [21]On the contrary, Unity engine has a literally unattractive interface design compare to Unreal. This led to many beginners choose to use Unreal. This is because the interface is the first impression to the beginners.

With a strong background from Tencent, Epic games grew very fast. These are why they become a threat to Unity Technologies, especially unreal engine. Unity need to keep its competitive advantage among its competitors as the environment and trends are keep changing. The challenge is if Unity can still lead the market in the future.

Limited programming language and lack of beginner pack

Unity is only available for C# language to create games, which is a limitation for game developers. Some game developers are beginner and do not have the basics of coding, which make them not to use Unity. Unity are more flexible for creating games with coding, and it is very useful for professional or senior game

developers. However, a beginner or junior programmer who only have basic C++ language knowledge are not able to use Unity. This become an obstacle for Unity to increase their users.

Besides, a beginner is hard to finish a complete game by themselves. Unity do not have a beginner pack such as semi-finished platform to make them practice easier. Thus, Unity is difficult to use for beginners.

VI. RECOMMENDATIONS

In order to improve competency, the quality of products is very important. Innovation is important for a technology-based company so it would not let competitors go beyond it. Since every platform and product of Unity are the derivatives of its game engine, Unity should focus on optimizing its engine.

Increase types of programming language available

The largest limitation of Unity game engine is programming language. Those game developers that are only know C++ or Java will not be able to create game using Unity. Thus, Unity should have more programming language choices in order to increase its targeted market segment size. Moreover, game developers will feel more flexible to implement their idea if Unity can let them create game by mixed languages at the same time.

Increase attractiveness of user interface

With a comparison to Unreal engine, Unity has a low preference of user interface, including its design and colour while Unreal Engine 4 comes up with the incredible graphics and attractive user-friendly interface. Thus, Unity can consider about changing its interface to more fashion, attractive and easier to use. This can help to attract more users to try using Unity.

Beginner-friendly platforms

Unity can add some basic starting content such as background template or semi-finished scene as what Unreal done. This can help beginner to start their project easily and not to use so much time to create basic scenes. Moreover, Unity can also provide tutorials for beginner to create or modify the basic scenes of starting templates. When more beginner starts to use Unity, means that Unity can gain loyalty consumer more easily. This is because a beginner will more prefer to continue using the same engine when they become a professional.

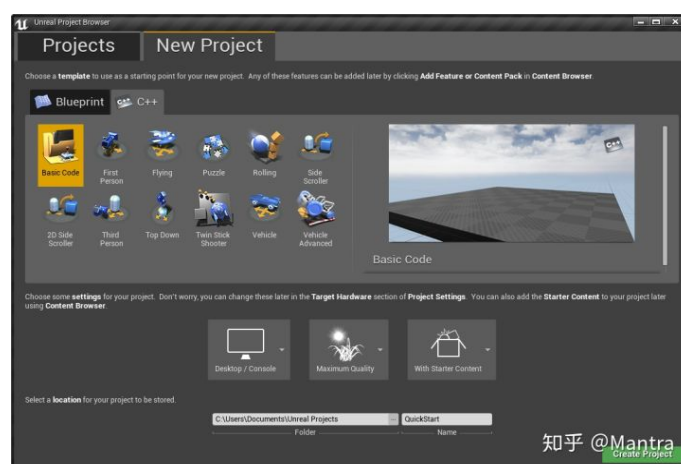


Figure 4: Unreal Starting Point Templates (Mantra,2019)

VII. CONCLUSION

Unity Technologies is a successful top technology company which growth rapidly within 15 years since founded in 2004 as Over the Edge Entertainment. It is planning to go public in early year 2020[22], which can help Unity raise fund more easily. Its main product, Unity game development engine, is the world's most widely-used real-time 3D development platform currently.

Strong strategies used by Unity such as Global Strategy, Focus Differentiation Strategy and Product Development Strategy had helped it to speed up growth in short time. Indeed, this achievement is also the delicate combination of the company' devotion to innovation, video gaming market growth and the fast growing through revenue model and acquisitions.

While Unity is successful now, a huge challenge is becoming a threat to it. Its main competitor, Unreal engine made by Epic Games is rapidly growing. Thus, the suggested solutions for Unity Technologies are to improve Unity engine, especially programming language and its interface for beginner.

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