



PHOTON

Whitepaper v2

Photon: In-Game Cryptocurrency

- It Pays to Play -

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Abstract

Photon(PHO) is an open source, multi-platform cryptocurrency, created and released in 2014 by Cinnamon Carter and BlueDragon747.

It is a well-established coin operating on a stable network.

It can be “Merge Mined” with the multi-crypto BlakeStream “6-coin family” consisting of: Photon, Blakecoin, BlakeBitcoin, Electron, Universal Molecule and Lithium.

This group of coins utilizes blockchain technology to enhance user experience in the video gaming industry, including but not limited to: storage, security and transfer of funds between game titles and platforms for developers, publishers and gamers.

Photon integrates with, enhances, and bridges the important gap between gaming and the new, untapped, underutilized world of cryptocurrency. The facilitation of micro-payments using cryptocurrency within the game and across the entire platform is Photon’s primary use case.

Decentralized, Open Source, Crypto
Currency since 2014



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Introduction

The video gaming industry is a booming multi-billion dollar market that is projected to grow by +8.2% to reach revenues of \$143.5 billion in [2020](#).

This industry is also just beginning to recognize digital currency as a major opportunity. Coinciding with this ongoing growth in gaming, is the explosive emergence and visibility of digital currency in 2018. Although the adoption is still in its infancy, there is sufficient early adopter [awareness](#) to move forward with the integration of cryptocurrency with in-game purchases. Photon is positioned to serve as a pivotal in-game payment option to maximize the convergence of these influential technologies.

Photon, created and released in 2014 by Cinnamon Carter and BlueDragon747, is a well-established coin operating on a stable network and is, by no means, a new invention.

The intended use cases of the coin Photon are many, and can be expanded upon, but the future vision for the coin is best summarized as an in-game currency and can specifically be broken into the points below :

- 1) Its use as a micro-payments currency within the BlakeStream, along with the other 5 BlakeStream coins.
- 2) Its use as a native in-game currency in the upcoming Battlegrip, Legend of Blake RPG, and [Blakezone](#) . A massive-multiplayer gaming platform-created by the PHO developers
- 3) Its use as an added mod in multiple online video games as an in-game currency where permissible and legal.
- 4) Its use as an in-game currency in industry wide mobile gaming.
- 5) Its use as a digital content purchasing method for the Free to Play(F2P) type of games.

With the crypto market [soaring](#) and attracting millions of new investors, and users, the concept of using cryptocurrency in games is now gaining momentum. The team behind Photon has spent four years developing this technology to harness this momentum and place it at the forefront of the gaming industry.

The advantage that Photon has above all of the coins, (and the many, no-value tokens currently trying to enter the video game space), is that its developers are also avid game developers. They produce games which are specifically created to incorporate Photon and the rest of the BlakeStream coins.



Photon is an excellent coin used for both: digital content purchasing, and as a general in-game currency, making it the perfect coin for F2P type of games that are right now capturing a growing segment of the market.

It's only going to keep growing as quality smartphones become more accessible, and more consumers look to their smartphones for gaming. In the US alone, 180.4 million consumers played games on their mobile phones in 2016, representing 56% of the population and a whopping 70% of all mobile phone users, according to estimates from eMarketer (<http://www.businessinsider.com>). The use in mobile gaming for Photon, will start to happen with the integration and development of our native games through platforms like itch.io. and The Blakezone main portal.

Itch.io is an open marketplace for digital creators with a focus on independent video games. It's a platform that enables anyone to sell the content they've created and to be in charge of how it's done. Developers set the price, run sales, design their pages and interact with fans directly-building communities centered around their creations.

Overall, itch.io is great space for indie game developers to grow their fan/user base. Blakezone is on the cutting edge of all available technology and marketing models. Photon's integration within the Blakezone games will have the best avenues, and technology available, to reach this massive global marketplace.

Photon will be used for Blakezone games and as mods for several top AAA online video games. Throughout the years, the developers have made steady progress towards the goals outlined above, developing a merge-mined Blake Stream family of coins and integrating all of these together in the same video game environment. That development and integration was well ahead of its time as a concept established in 2014, but it's being delivered right now to the market that is ready for this revolutionary concept.

The merge mining with the other Blakecoins is still to this day a rare occurrence within the crypto scene. The use of the cryptocurrency in video games combined with mining while playing has been possible since it was released in 2014. These concepts are cutting edge and yet, until now, not fully utilized within the gaming industry. This potential is a goldmine for current and future investors and game designers.

Optimized for In-Game transactions



Photon's Niche

From a practical application use and case standpoint, the developers have included Photon as an in-game currency and reward for a series of video games. This includes the much-anticipated BlakeZone games and have also been integrated with many top AAA online video games.

The integration of Photon both in and out of gaming is more than promising for the future, especially given the ever-expanding multi-billion dollar video game market. With this in mind, whilst taking into consideration the independent nature of the development of this suite of games, there is potential to reach a wide audience of gamers in the future. The development and beta testing of games will continue throughout 2018.

Based on the Blake-256 algorithm and a child to its parent coin Blakecoin, Photon is a critical member of the BlakeStream of coins. Its specifications allow for the transaction of volume approximately 3.3x that of Bitcoin while maintaining the similar type of security as shared by Bitcoin. Together with an ease of mining, Photon(PHO) has been regarded as and has the reputation of a miner's coin, because it can be merge mined with five other coins. This means all six coins can be mined simultaneously. Considering Photon had no ICO or pre-mine, this makes Photon very inviting from a mining standpoint and makes it stand out from the crowd within the cryptocurrency field.

Although it is a child of Blakecoin, Photon is not fixed and can still be mined individually, giving it the flexibility of POW and AuxPOW mining. Photon's independence is a significant differentiator from sidechain-derived coins. Sidechains have inherent dependence on their respective parent chains to function properly. Photon is independent combined with being fast and flexible in its security. This gives Photon an edge as a perfect candidate for inter and intra-chain atomic swaps that can be developed for it in the near future.

The use of cryptocurrency as in-game currency is a concept that is gaining noteworthy momentum currently as outlined above. There have been high-profile ICO's in this space, which is a definitive confirmation of the validity of this use case. What makes the potential greater for Photon as an in-game currency is how it works in collaboration with other member coins from the BlakeStream, specifically;

Photon - Blakecoin - BlakeBitcoin - Electron - Universal Molecule - Lithium

For detailed information on these merge-mined coins and how they interact with each other and Photon, please visit [Blake coin mining](#)



Digital Renderings

Gold, Silver, Bronze, Copper, Keys or Gems

For those familiar with video games, it is not uncommon for there to be several different stores of value active within a gaming environment. For example, there might be digital renderings of gold, silver, bronze, copper, keys or gems, all of which have different purposes and values.

The BlakeStream family of coin serves a similar purpose. More specifically, Photon has been designed to be the go-to in-game currency to purchase of the ammunition, which is critical to any FPS.



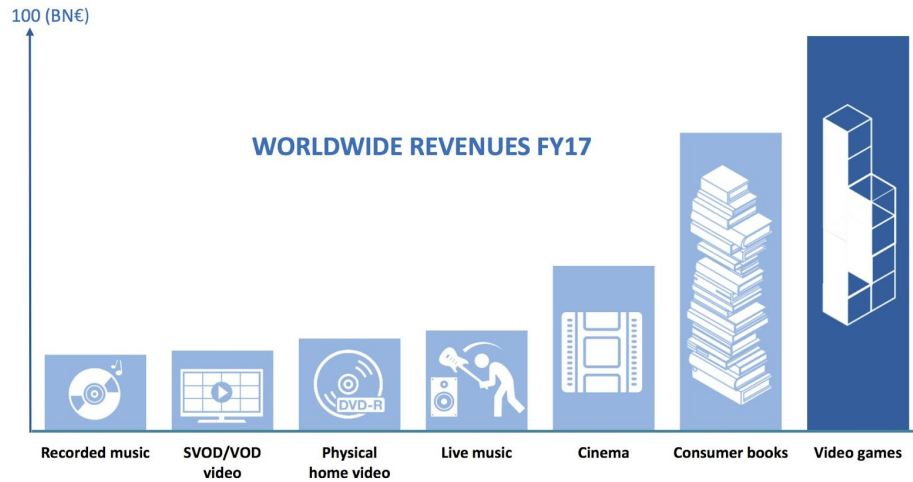


Industry and Market Overview

General Overview

According to Ubisoft report from 2017, the largest growing entertainment segment is the video game industry. It is expected to grow at a rate of 50% between 2017 and 2021, that is from 114 billion USD to 170 billion USD respectively.

VIDEO GAME IS THE LARGEST SEGMENT IN ENTERTAINMENT

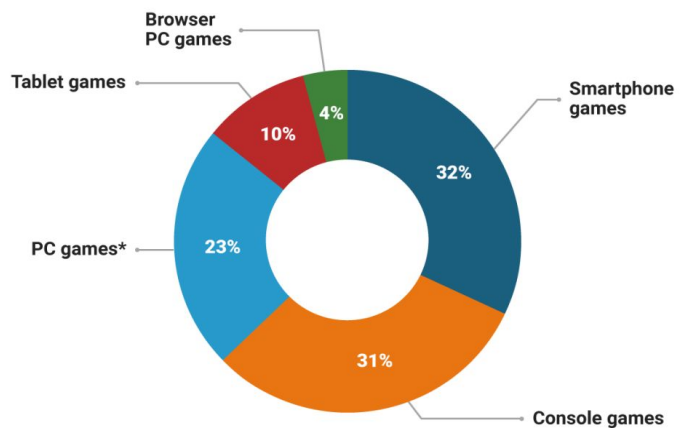


Source: Ubisoft estimates based on NPD, GfK, App Annie, Mc Kinsey, PwC, Goldman Sachs

Source: Ubisoft 2017 report

As reported by Newzoo, video game revenue is expected to have a compound annual growth rate of 6.2% through the year 2020. Although revenue share is projected to continue its shift towards smartphone based games during this timeframe, global growth remains robust with key growth in the APAC region in particular.

GAME INDUSTRY GLOBAL REVENUES IN 2017



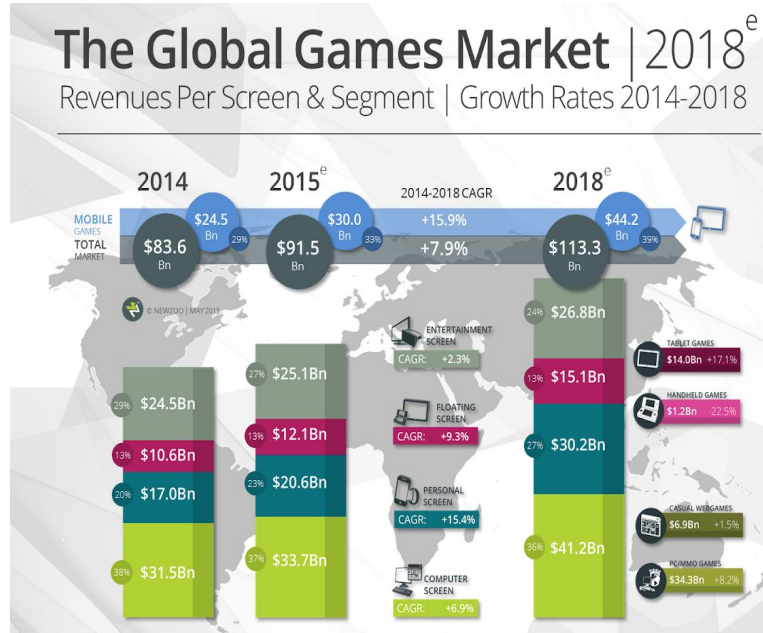
* Boxed/downloaded
SOURCE: Newzoo

statista | BUSINESS INSIDER

Source: [Business insider](#)



The capture of market share by smartphone based games can, in part, be attributed to the widely adopted and highly successful free-to-play (F2P) model with in-game purchase option. This has fueled speculation that platforms losing market share to smartphones, such as consoles, may well integrate in-game purchases to capitalize on this trend. Regardless of the dominant platform, it is evident the in-game purchase model is attracting consumers in ever increasing numbers.



Source: Newzoo

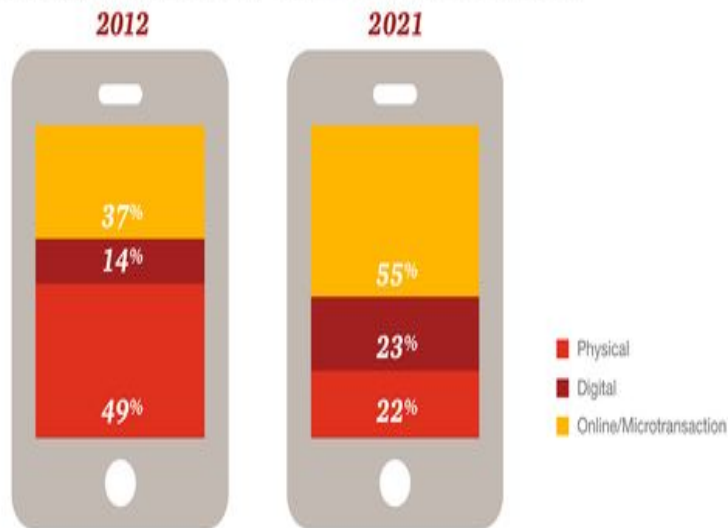
Games: Market by sector

PC and Massively Multiplayer Games (MMO)

The real story in the PC segment of traditional gaming continues to be the consistent growth of the massive online/microtransaction market, which is expected to grow at 6.8% CAGR and reach US\$27.4bn by 2021. This business model benefits from having true global appeal compared to digital game stores, and it embraces all PC owners rather than just the small segment with powerful gaming PCs and higher spending power.

The make-up of traditional gaming revenue has been transformed

Traditional gaming revenue by sub-sector (%), 2012 vs 2021



Source: Global entertainment and media outlook 2017-2021, PwC, Ovum



PC games, also known as computer games or personal computer games, are video games played on a personal computer rather than a dedicated video game console. Their defining characteristics include more diverse and user determined gaming hardware and software, and a generally greater capacity in input, processing, and video output. PC games are sold predominantly through the Internet, with buyers downloading their new purchase directly to their computer.

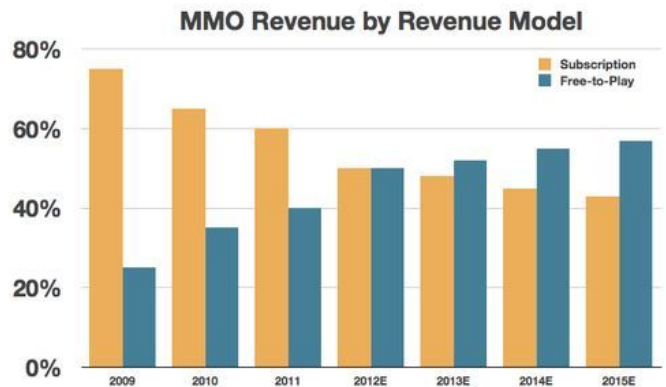
This approach allows smaller independent developers to compete with large publisher-backed games and avoids the speed and capacity limits of the optical discs which most other gaming platforms rely on.

MMO Gaming

A massively multiplayer online game (**MMOG**, or more commonly, **MMO**) is an online game with large numbers of players,(typically from hundreds to thousands), on the same server. MMOs usually feature a huge, persistent open world, although some games differ. These games can be found for most network-capable platforms, including the personal computer, video game console, or smartphones and other mobile devices.

F2P totals 60% MMO rev by 2015E

Subscription-based MMO income declining to half as F2P rises.



Source:[Superdata](#)

MMOs can enable players to cooperate and compete with each other on a large scale, and sometimes to interact meaningfully with people around the world. They include a variety of gameplay types, representing many video game genres.

The next few years will see even more impressive growth for the game industry, according to new research from industry analysts. The industry as a whole is expected to reach a value of over \$230 billion by 2022, and PC gaming is expected to be one of the biggest drivers of that growth - though mostly via hardware and online game services rather than traditional sales.



Photon’s original use case was to be used in BlakeZone MMO games that are being developed right now. The development will continue through 2018 with BlakeZone game release expected mid summer with Photon being natively integrated from the start.

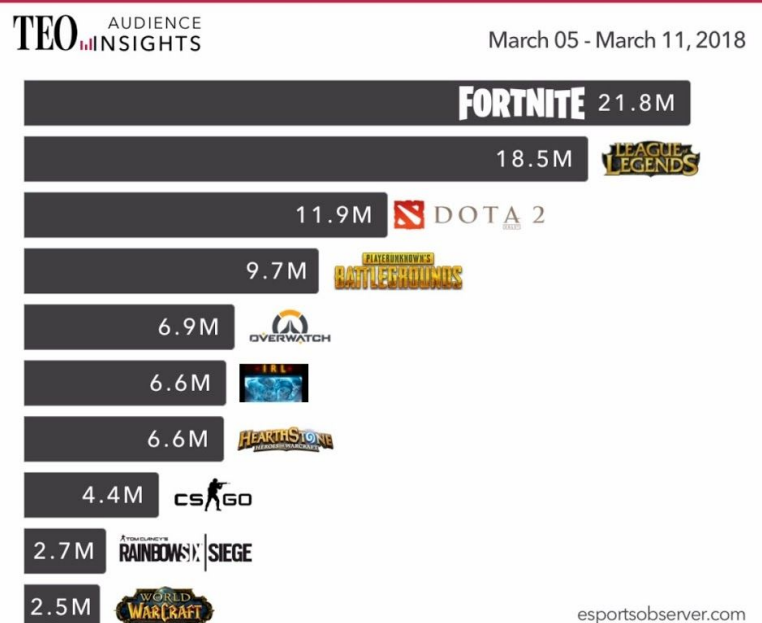
Battle Royale

One of the largest and fastest growing gaming sectors is Battle Royale gaming.

A battle royale game is a video game genre that blends the survival, exploration and scavenging elements of a survival game with last man standing gameplay.

Battle royale games challenge a large number of players, starting with minimal equipment, to search for weapons and armor and eliminate other opponents all while avoiding being trapped outside of a shrinking "safe area", with the winner being the last competitor in the game.

The name for the genre is taken from the 2000 Japanese film *Battle Royale*. Large scale battle royale games have seen record breaking numbers in the past few years. In fact, Valve’s MOBA Dota 2 had the highest number of concurrent players with over 3 million in December 2017. This sector has unlimited potential for growth and integration-and that’s exactly where Photon comes into play when used as in-game and intra game currency: as per kill payment, purchase of skins (customized in-game items), and purchase of weapons and ammunition.



Source: [Esports Observer](#)



Mobile Gaming

Mobile gaming will generate \$46.1 billion this year, or 42% of all global game revenues. More than three-quarters of this, or \$35.3 billion, will come from smartphone gaming, with tablet games accounting for the remaining \$10.8 billion. Tablet unit sales have plummeted over the years, but with 280 million tablets used actively, the segment contributes significantly to the success of mobile games.

As mentioned above, Photon will be integrated into mobile games through the use of itch.io and Blakezone gaming/development platforms.

The console gaming segment performed better than expected in 2016 thanks to console manufacturers, publishers, and consumers embracing of a variety of digital business models. Microsoft and Sony generated more than \$14 billion in combined revenues from first-party games, third-party game fees, and subscription revenues. In 2017, we expect console gaming to generate a total of \$33.5 billion in revenues worldwide, of which 65.8% digital.

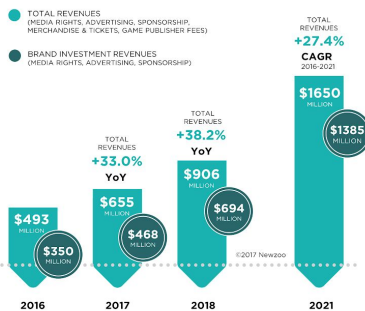
eSports

eSports are the “sport” of the new millennials. eSports represent a multi billion dollar industry-From multiplayer online games to high payout professional tournaments--eSports are big business, and the scope of eSports is not limited to active participation. Live viewing is one of the most rapidly growing sectors.

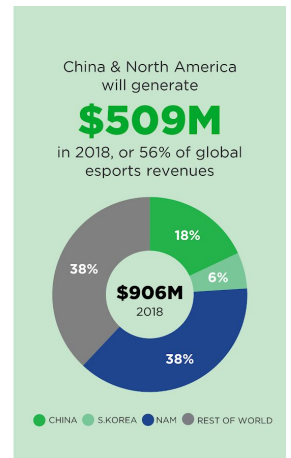


ESPORTS REVENUE GROWTH

GLOBAL | FOR 2016, 2017, 2018, 2021



©Newzoo | 2018 Global Esports Market Report



Source [Newzoo](#)



First person shooter game Counter Strike: Global Offensive is one of the most popular eSports. Its Major Championships are a chance for fans to see which team can claim to be the best in the world. It stands on a par with the League of Legends World Championships and the DOTA 2 International as one of the most prestigious annual eSports events. "It's like a World Cup for Counter Strike fans, they come round once or twice a year and you can never expect what's going to happen". CS:GO is one of the first games that Photon got integrated with and it did extremely well.

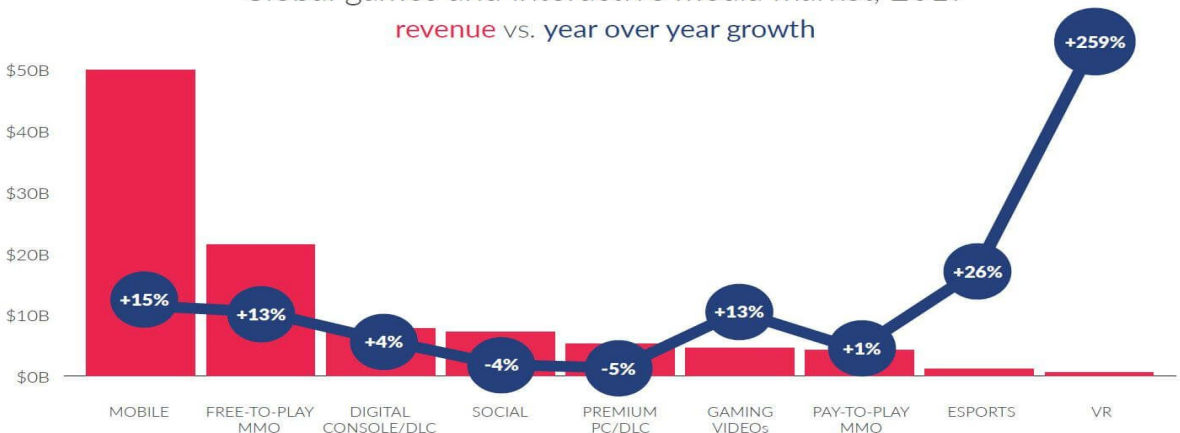
The development of "eSports" As Olympic sport

The Olympic Summit discussed the rapid development of what are called "eSports", and the current involvement of various Olympic Movement stakeholders. The Summit agreed that:

- "eSports" are showing strong growth, especially within the youth demographic across different countries, and can provide a platform for engagement with the Olympic Movement.
- Competitive "eSports" could be considered as a sporting activity, and the players involved prepare and train with an intensity which may be comparable to athletes in traditional sports.
- In order to be recognised by the IOC as a sport, the content of "eSports" must not infringe on the Olympic values. The Summit asked the IOC together with GAISF in a dialogue with the gaming industry and players to explore this area further and to come back to the Olympic Movement stakeholders in due course.

Global games and interactive media market, 2017

revenue vs. year over year growth





Esports players have seen some outrageous payouts in the last five years alone. While the overall size of a prize pool doesn't determine the prestige of an event, it is—for obvious reasons—one of the major things players use to determine whether they'll show up.



TOP 5 TOURNAMENT PAYOUTS:

- 1) The International 7 - \$24.6 million
- 2) The 2016 *League of Legends* World Championship - \$5 million
- 3) The *Dota 2* Asia Championship - \$3 million
- 4) The *Dota 2* Valve Majors - \$3 million
- 5) The 2015 *Smite* World Championship - \$2.6 million

Overall largest prize pools

- 1) The International 7 - \$24.6 million
- 2) The International 6 - \$20.4 million
- 3) The International 5 - \$18.4 million
- 4) The International 4 - \$10.9 million
- 5) 2016 *League of Legends* World Championship - \$5 million
- 6) 2017 *League of Legends* World Championship - \$4.9 million
- 7) 2015 *Dota 2* Asia Championship - \$3 million
- 8) The *Dota 2* Majors - \$3 million
- 9) The International 3 - \$2.8 million
- 10) 2016 *Smite* World Championship - \$2.6 million



Mining

Pooled and Merged Mining

Mining Photon in AuxPow:

MergeMining Photon along with the other Blakestream coins in AuxPow has many advantages over traditional PoW mining. As the hash rate is not divided between the coins but applied fully across all chains with virtually no impact on the hash rate of the other Pow/AuxPoW coins. The blake256r8 algorithm is small, fast & power efficient. Making it suitable for running alongside other applications (i.e: gaming) with little to no noticeable performance issues.

The BlakeStream PoW/AuxPow is not limited to just six coins; there is room in the mergemine to support many more blockchains thus creating secure blockchains & an energy efficient mining community, All Blakestream coins can be mergemined using CPU, GPU, FPGA or ASIC.

Mining the Blakestream PoW/AuxPoW requires nothing extra from the miner but yields great rewards.

Current block reward for the BlakeStream

COIN	REWARD	REWARD DYNAMICS
PHO	32768	No reduction of block reward + inflation (sqrt of (difficulty * block height))
BLC	25	No reduction of block reward + inflation (sqrt of (difficulty * block height))
BBTC	3.125	Block reward halve every 210,000 blocks
ELT	5	No further reduction of block reward
LIT	6	reduction will cut in half each year until 1 LIT per block
UMO	2	2 UMO when difficulty is stable or down, 0.1 UMO when difficulty increases

Since all solved blocks may or may not be accepted by the individual blockchains also as hash rate and difficulty fluctuate there is no easy way to calculate mining rewards other than just mining on the pools for set period of time.

Pooled mining is where many miners contribute to the generation of a block, and then split the block reward according to the percentage of shares submitted. Pooled mining reduces the variance of mining reward for the miner.

Merged mining allows a miner to mine more than one blockchain at the same time. The benefit is that every share the miner submits goes towards the total hash rate of all blockchains in the merge and as a result they are all more secure.

Auxiliary Proof-of-Work a.k.a "AuxPOW", is the way that merged mining can exist; it is the relationship between two blockchains for one to trust the other's work as their own and accept AuxPOW blocks. As such, Photon and the other Blake coins will never be Proof of Stake (POS).



Specifications

- Coin Type: PoW/AuXPoW
- Algorithm: Blake256r8
- Block Reward: 32768 + inflation
(Square root of (difficulty * block height))
- No reduction of block reward
- Cap in pace to reduce difficulty jumps upward
- Block Target Time: 3 minutes
- Retarget: 20 blocks
- Total Coins: 90,000,000,000
- Block Maturity: 120

Technical Information

Photon was created with the fast and light Blake-256 algorithm. Blake-256 (optimized) is faster than Scrypt, SHA-256D and Keccak. The algorithm was written as a candidate for SHA-3 and has a reduced round function to 8 rounds, aka Blake256r8.

Advantages and Design

- Simplicity of the algorithm
- Interface for hashing with a salt
- Can be merge mined with Blake ecosystem coins

Performance

- Fast both software and hardware
- Parallelism and throughput are trade-off for hardware implementation
- Simple speed/confidence trade-off with the tunable number of rounds

Security

- Based on an intensively analyzed component (ChaCha)
- Resistant to generic second-preimage attacks
- Resistant to side-channel attacks
- Resistant to length-extension



Why Photon beats others coins in the long run:

- The Blake256r8 algorithm is fast and energy efficient vs other algorithms
- The reward for mining Photon does not decrease over time
- The transaction throughput vs Bitcoin is roughly 3.3x
- There are no restrictions on any platform as Photon does not include artificial “security” or “resistance” that reduce mining hash rate and power efficiency

For complete details, specifications and links for:

- Wallets- <https://blakecoin.org/software/>
- Mining pools- <https://blakecoin.org/merged-mining/>
- Exchanges and Blakecoin/Photon project- <https://blakecoin.org/about-blakecoin/>

Summary

Photon is the ultimate "micropayment" currency game coin. It is designed to work seamlessly across the BlakeZone web portal. Photon works in tandem with the remaining family of Blake coins. Note, there is zero competition amidst any coins kin to the Blake group. Photon coin must also be acknowledged for its distinct use cases. The coin is being traded, exchanged, and distributed in prevailing games such as Fortnite, CSGO, and TF2. The multi-use, multi-coin advantage puts Photon, and thus the entire BlakeStream, at the head of this roaring contemporary race, that is, the race to win the hearts and minds of gamers who are enthusiastic about cryptocurrency and express major passion towards the entertainment /gaming industry.

Decentralizing gaming payments
since 2014



Project Team

Much like Satoshi Nakamoto has maintained his anonymity, developers Cinnamon_Carter and BlueDragon747, although deeply dedicated to supporting Photon and the other BlakeCoins, have chosen to maintain their anonymity and privacy, as well. So much so, in the wake of the wave of suspicious actors now permeating crypto, they have defended their right to avoid the spotlight and focus on what they enjoy most: developing wonderful technologies and releasing them to the world.

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The acquisition, utilization and storage of Photon coins involves various risks, such as but not limited to the non-implementation of Photon as an in-game crypto currency, exchange availability and hacker attack related losses. It is incumbent upon any user of Photon to examine the risks, costs and benefits of Photon prior to usage. Potential users should consult with an independent legal and/or financial advisor to ensure a clear understanding of these risks.

Due to potential regulatory scrutiny and compliance requirements, the future of Photon and other crypto currencies is currently unknown. Photon users acknowledge new regulations may negatively impact Photon and cause direct or indirect losses and damages. Photon users also acknowledge that Photon's developers and affiliates shall not be held liable should such circumstances occur.

References

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- * <https://bitcoin.stackexchange.com/questions/273/how-does-merged-mining-work>
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- * <https://newzoo.com>
- * <https://www.superdataresearch.com>
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