# EMERCOIN

## WHITEPAPER

Emercoin is an emerging leader in secure,
distributed blockchain business services.
Offering some of the most innovative,real-world
solutions, the Emercoin Blockchain is the premier public
blockchain for secure, decentralized business operations.

Emercoin - blockchain platform for many services.
All-in-one.

# EMERCOIN WHITE PAPER

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Emercoin is an emerging leader in secure, distributed blockchain business services. With many companies using Emercoin technology, there is a core Emercoin team that maintains and develops services for the public Emercoin Blockchain, which uses the Emercoin cryptocurrency (EMC) to perform a variety of services. Offering some of the most innovative, real-world solutions, the Emercoin Blockchain is the premier public blockchain for secure, decentralized business operations.

The first-ever digital currency, Bitcoin brought a paradigm shift that soon transcended the world of financial services. Ingenious in design and unbeatable in security, it made companies try to create software that would execute on top of its blockchain to bring decentralization to their own projects. But writing on top of Bitcoin's blockchain turned out to be a drag: Imagine writing an entire book using only 1's and 0's. Just like such binary code, Bitcoin is good at what it does — but adding extra features is just not something it was designed for. Now meet Emercoin. Based on Bitcoin's original code, it inherits the same security and reliability, but adds flexibility through a number of innovative additions.

The Emercoin Blockchain has its own currency, Emercoins (EMC). To use any of the services listed above, you would use tiny fractions of EMC. What sets Emercoin apart from other service blockchains is that Emercoin has pioneered a groundbreaking data organization system that allows for these services to utilize valuable data without needing immense amounts of storage space and complicated coding languages. To buy Emercoin, you must have compatible wallet software. Visit our site for wallet links, as well as links to cryptocurrency exchanges that sell Emercoin.

## FLEXIBILITY
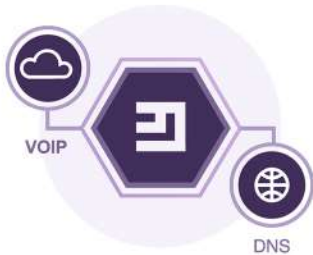
Emercoin's Name-Value Storage is a simple yet powerful concept that allows you to store arbitrary data within the blockchain. This has already allowed a range of distributed services, from a decentralized.

## RELIABILITY

Although Emercoin supports traditional PoW mining and merged mining with Bitcoin, its main mechanism is Proof-of-Stake mining. Thise liminates the "arm's race" for mining capacity — simply holding Emercoin guarantees a 6% per annum return.

## SECURITY

Emercoin will never sacrifice security for flexibility. Unlike "smart" contracts, which have already caused multi-million scams and security compromisingin the past, Emercoin's NVS logic is not Turing-complete and cannot be used to write malicious code.

# MEET THE EMERCOIN TEAM

**Eugene Shumilov | Founder and CEO**

A proponent of distributed computing and open source projects, he is sure that the Emercoin blockchain will provide a stable, transparent and reliable environment for business and individual projects.

**Oleg Khovayko | CTO of Emercoin | Cryptography and Financial Expert**

Has a strong background in the realm of finance and specializes in the technical aspects of blockchains and cryptography.

**Kostiantyn Bigus | MD of Emercoin**

Working in IT industry as a business and investment manager over 8 years. Managed international projects with Fortune 500 companies. Building and scaling business in CIS and Asia markets.

**Stan Polozov | Blockchain Implementation Specialist**

An accomplished career in the technology industry. Provides insight into how Emercoin can be integrated with existing architecture.

**Eugene Merenkov | Senior Software Engineer**

Focuses on improving Emercoin's currency and blockchain offerings through the testing and development of new technology.

**Mikhail Voevodskiy | Integration Architect and co-founder EmerSchool**

Spreads information about Emercoin products and technologies. Emercoin products integrator.

## Bill Tai | Founder, ACTAI Global

World renowned venture capitalist, Bill originally trained as a chip designer and joined LSI Logic, a seminal Silicon Valley startup formed by the CEO of Fairchild Semiconductor after earning a BSEE with Honors from University of Illinois.

After completing a MBA at Harvard, he was issued badge #A001 at TSMC, now among the most valuable tech companies in the world. He has been a venture capitalist since 1991 and today is the Chairman of Treasure Data, a Board Member of Bitfury and Voxer.

Bill was Founding Chairman and CEO of iAsiaWorks (IPO via Goldman Sachs & Morgan Stanley) and Founding Chairman of IPinfusion. He has served as Board Director of 7 publicly listed companies that grew from startups he funded at their formative stages. He serves on the World Economic Forum's Technology Pioneer Committee and is an Adjunct Professor of Innovation at Curtin University.

## George Kikvadze| Vice Chairman, Bitfury Group

George is the Vice Chairman of The BitFury Group, the world's leading Blockchain infrastructure provider and transaction processing company. He is also a member of the Advisory Committee of GCF, a $6 billion private equity partnership.

George has worked for York Capital Management, AFK Sistema and Morgan Stanley. He obtained his MBA at Wharton School, University of Pennsylvania, and his MA at Johns Hopkins School of Advanced International Studies. George is a member of Europe One YPO Club.

**Marc van der Chijs | Founder, First Block Capital**

Founder and Director of First Block Capital, Canada's first fully registered investment firm that invests in crypto assets. He has been in active in the blockchain space since early 2013 as partner in venture capital firm CrossPacific Capital and has been working full time on crypto projects since late 2016.

He started his career at automotive multinational Daimler in the mid-1990s in several financial controling positions.In 2004 he co-founded China's largest online video site Tudou.com, that was listed on the NASDAQ in 2011 and later taken private by Alibaba in a multi-billion dollar deal.

He is a big believer that blockchain technology will completely change every aspect of business over the next couple of years and wants to actively support teams that put technology first.

**Morio Kurosaki | President IT FARM | Emercoin Ambassador Japan**

Mr. Kurosaki started his business carrier at Intel Japan, and then founded Aisys Corporation in 1988. The company has been supporting Silicon Valley start-ups in entering Japanese market. To incubate startup companies, he provides hands-on support on all phases of establishing operations such as strategic partnerships, local management hiring, business development, etc.

In 1999, he founded IT-Farm as one of very few hands-on type venture capital in Japan. Through all his carrier, he has built an incomparable network in both Japanese IT industries and executives in Silicon Valley.

**Alex Petrov | CSO, Bitfury Group**

With over 35 years in IT, Alex Petrov has the expertise in both hardware and software solutions. He has expertise in high-load systems optimization, databases, big-data analysis, data networking and communications on a large scale.

He is a former IT security auditor, with specialties in business processes optimizations and crisis management. His track record includes the launch of new successful businesses and global consumer brands.

He has been leading high-performance teams to enable fast and reliable transactions in world-renown cryptocurrencies, creating the ground for future growth with the Bitfury Group. Alex will be responsible for overseeing technical advisory efforts for Emercoin.

**Tareq Al-Memari | Abu Dhabi Pensions Fund | Emercoin Ambassador MENA**

Portfolio Manager, MBA graduate, currently working towards the CFA accreditation, with over 5 years of experience in Financial Market, specializing in Portfolio Management, Investment analysis and FX market.

**Gabriel Abed | Founder, Bitt | Emercoin Ambassador Carribean**

Carribean, is recognized as a leading Caribbean authority on digital currencies, math based protocols and blockchain technology.

The Barbados-based entrepreneur is internationally-acknowledged as a pioneer in the digital currency evolution, having led the movement of Central Bank issued Cryptocurrencies and frontiered discussions on the subject of 'Blockchain Technology' at the Caribbean Development Bank, the International Monetary Fund and World Bank, the United Nations, the Commonwealth Secretariat, multiple

Gabriel's entrepreneurial mindset has allowed him to explore other avenues in the technology space founding new companies such as Digital Asset Fund amongst others. The Digital Asset Fund, or DAF, is the first Fund in the world to be focused on math based protocols.

**Eun Chul Lee | Emercoin Ambassador Korea**

18 years of IT manager experience as a country manager for various Silicon Valley companies including WindRiverSystem, IP Infusion, Treasure Data and Clustrix and have experience as founder of two companies SiliconValleyTech, and IntelRa.

Lee has extensive experience and knowledge in laying down the company's technical foundation for Marketing in Korea with specialty in embedded system, mobile telecommunication, IP Network & Network Security and Big Data Market. His past career as successful sportsman, he was 5 times Olympian in Rifle Shooting Events with Gold medal (50m 60shot Prone Event) in Barcelona Olympic in 1992 & World Champion (50m 3 position Event) in Moscow World shooting championship in 1990.

**Marc Taverner | Emercoin Ambassador North America & Europe**

Marc Taverner is head of business development at Bitfury Group. He brings 18 years of experience working with market leading, global technology companies to Bitfury. He is also the founder of a successful modem distribution company.

Marc has held sales leadership roles with many leading technology companies, including the world's largest provider of unified communications services and market leaders in educational technology solutions.

Marc received his BA Hons in European Business Studies from Brunel University, UK and Ecole supérieure de Commerce de Clermont-Ferrand, France.

Coca-Cola and the US State Department plane jointly use a blockchain platform to set up a reliable register of employees and labor agreements.

Insurer Beazley has partnered with three companies to build a blockchain-based registry that will manage insurance for crisis situations such as mass shootings. The registry is created with Risk Cooperative, a Washington, D.C.-based speciality insurance broker that develops Lloyd's of London-backed programs, and Amsterdam-based Bitfury Group, a blockchain technology firm.
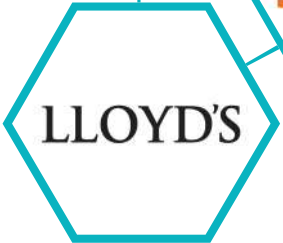
Deloitte Consensus is an Emercoin-based document management project used by Deloitte's Ukrainian office. The Ukrainian branch of Deloitte has by itself integrated their product DocSensuswith Emercoin blockchain to legalize powers of attorneys and other documents.

The decision to support and invest in the Emercoin Blockchain will enable Bitfury, the world's leading full-service blockchain technology company, to expand the scope of future applications it designs.

Blockchain Engine offers a suite of tools to create applications and services based off of the Emercoin blockchain. Not only is it simple to install, configure, and integrate with any project, but also widely available. Blockchain Engine is offered within the Microsoft Azure platform where it can be deployed using CentOS or Ubuntu in the cloud. It can be managed with the easy to use JSON-RPC as well as a web interface. Blockchain Engine is a functional and robust, yet simple to use system for designing applications. It contains an expansive suite of tools that can be used to create an entirely new project, or to improve upon an existing application already in operation.

A ICO project aggregator that uses password-less authentication via EmerSSL for itself and its listed ICO projects to enhance security.

A decentralized real estate and utilities company.

A free OAth2/Emer-based service that allows almost any website to use passwordless authentication via EmerSSL.

A company that enables users to record videos and notarize their creation time using Emercoin technology.

## TECHNICAL OVERVIEW

Emercoin is a blockchain platform supporting a wide range of distributed trusted services. Distinctive features include high reliability, robustness and 3-in-one hybrid mining (PoW+MergedMining+PoS). Currently, the Emercoin platform already runs the network security servicesEmerSSL/EmerSSH, decentralized domain system EmerDNS, an anti-counterfeit solution EmerDPO, VOIP solution ENUMer, as well as several other bundled blockchain services. At the heart of many of these innovations is the Emercoin NVS which allows for the arbitrary storage of name->value pairs on the blockchain.

## EMERCOIN SECURITY PRINCIPLES

Inheriting all the security advantages of bitcoin, Emercoin uses peer-to-peer technology to operate without a centralized authority. Transaction verification and currency issuance is carried out collectively by the network through consensus. All records are completely decentralized and uncensorable and cannot be altered, revoked or suspended by any authority.

While blockchains are secure by design, the possibility of 51% attacks exist where an entity controls more than half of the network hashing power.

But with PoW and PoS working in tandem, the Emercoin blockchain possesses an enhanced degree of security. A 51% attack on Emercoin would require someone having both a minimum of 51% of the network hashpower and at least 51% of the total coin supply in their possession. Such an attack on the Emercoin blockchain would be a self destructive move by the attacker since they would simultaneously be damaging the network and devaluing their own massive coin holdings.

Now that Emercoin is merge-mined with Bitcoin, it benefits from a significant portion of the mining power of the Bitcoin network.

Technically a 51% attack on Emercoin would have been possible before merge-mining began but it would have been a fruitless move that required spending a large sum of money to perform, and only someone with several million dollars to waste and a serious grudge against the Emer blockchain would have had the means to do it.

# TECH TREE

MORE INFO
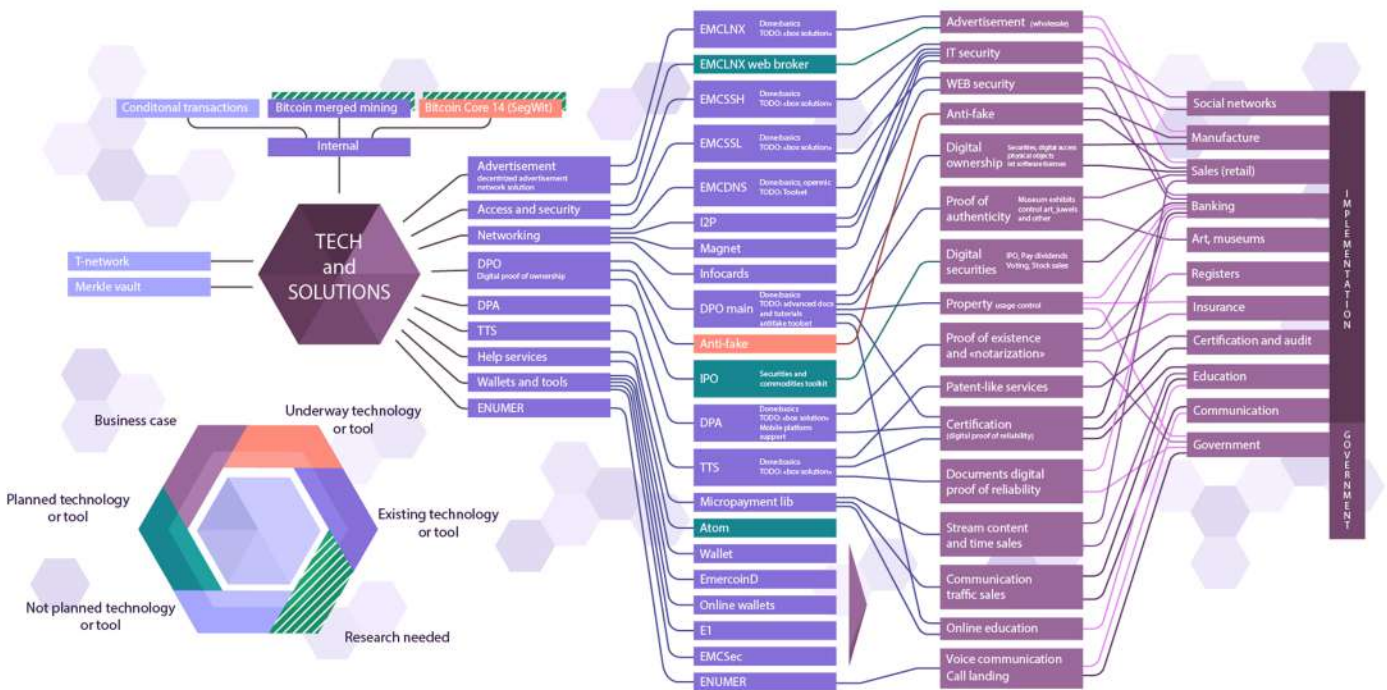
# TECHNICAL SOLUTIONS

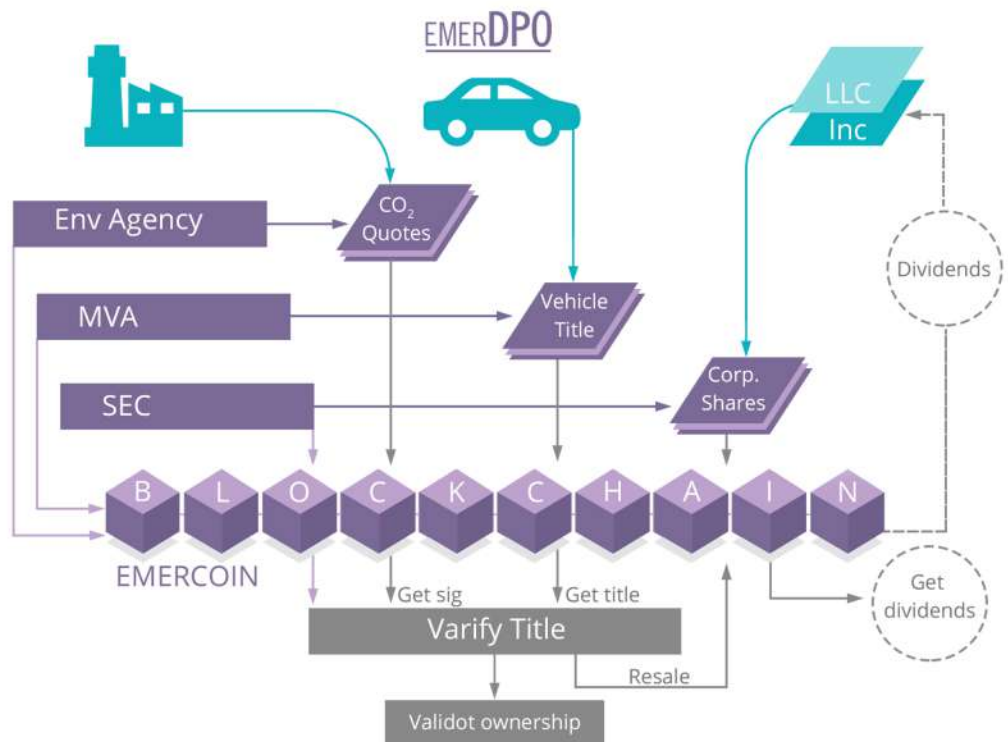Emercoin's blockchain supports a variety of business operations and services.

## EmerDPO

A decentralized ledger of ownership certificates, it can be used across all industries where you can't entrust the management of ownership data to a single authority.

From land titles to software licenses to vehicle registration data, EmerDPO will keep you assured that whenever something becomes yours, it will stay yours.

EmerDPO is a decentralized solution for digitally validating the ownership or authenticity of both physical and digital goods and services using the Emercoin blockchain. EmerDPO operates under the "dpo" service abbreviation in the Emercoin NVS.

Before blockchain, validating ownership was a drag in many areas: software licenses and subscriptions, land titles, art and jewelry ownership, vehicle registrations, and more. Authenticating ownership via written records is burdensome and opens up the possibility of fraud, counterfeiting, and even theft.

With the Emercoin blockchain, the ownership of physical and digital goods can now be immutably assigned to their respective owners.

For more information about verifying item authenticity and ownership with EmerDPO, visit emcdpo.info.

## EmerTTS

Trusted Timestamp is an upcoming feature of EmerNVS. It automatically applies the current timestamp to any record added to the Emercoin blockchain. The blockchain network checks whether the timestamp is correct and rejects attempts to upload records with a timestamp differing from the current network time by more than ±2 hours. The timestamp trust, just like the transaction trust, is generated by aggregated efforts of Emercoin miners. To retrieve the timestamp, use the "name_show" command, which returns the record's Unix time in the "time" field.

## EmerDNS

Completely decentralized, EmerDNS is safe from any kind of censorship. No other user can modify your record — only the record creator can manipulate its content.

EmerDNS websites can be easily resolved with the help of several browser extensions, by using OpenNIC servers, or via proxies.

EmerDNS is a decentralized domain name system supporting the full range of DNS records. EmerDNS operates under the "dns" service abbreviation in the Emercoin NVS.

Thanks to Emercoin's secure and distributed blockchain, domain name records are completely decentralized and uncensorable. They cannot be altered, revoked, or suspended by any authority. Only the record owner, i.e. the one who controls the private key to the associated payment address, can modify or transfer it to another owner. These actions can be performed using the
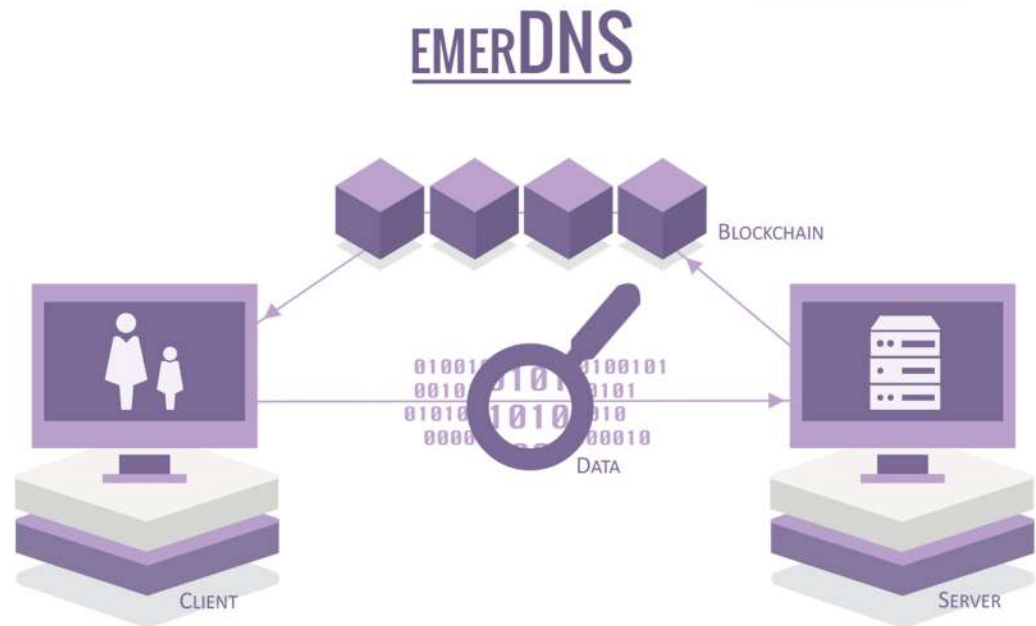


## ENUMER

ENUMER is a great way to experience and provide free VoIP services. But its centralized architecture makes it prone to denial of services due to high server load.

Not so with ENUMER.

Deployed over the EmerDNS infrastructure, it is extremely fast due to local query resolution and is infinitely scalable.

And, unlike what had already happened to its centralized counterpart, it won't let you down if the central authority collapses. Because, well, there is none.

ENUMER is a system for supporting ENUMER telephone records on Emercoin's blockchain, stored under the "ENUMER" service abbreviation in the EmerNVS.

ENUMER, orE.164 Number to URI Mapping, translates telephone numbers into IP addresses, for use by SIP Proxies, VoIP gateways, and other specialized telephony systems.
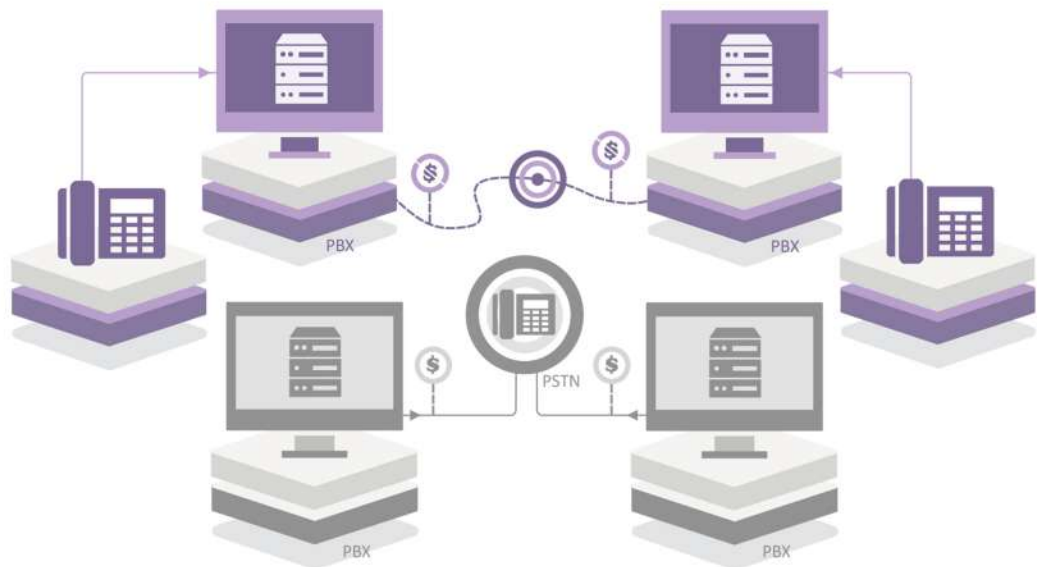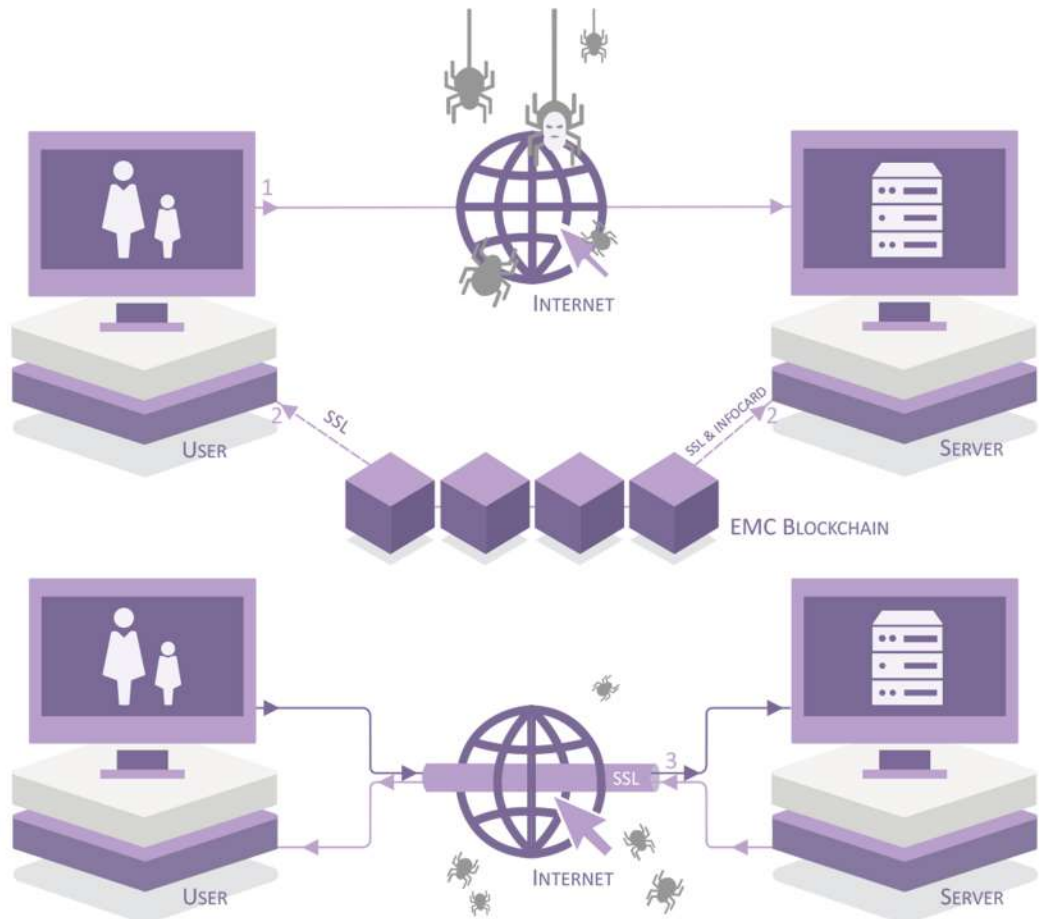


## EmerSSL

A totally decentralized infrastructure of SSL certificates, it makes man-in-the-middle attacks impossible. And it's WAY cheaper than doing it with a central CA.

And it's so easy to use: Generate your private certificate once, and enjoy passwordless — and secure — access to selected websites for years.

EmerSSL is a system for passwordless website authentication that uses the Emercoin blockchain as a decentralized and trusted store of hash sums for client SSL certificates. Certificates can be generated by users on their own computers, without any central authority, and quickly replaced as needed. This makes the system effective for both scheduled updates and rapid recalls of compromised certificates.

EmerSSL enables the complete decentralization of the system. In other words, there is no single entity controlling the authentication, unlike systems such as Kerberos, OpenID, TeddyID, and the like. Thus, EmerSSL cannot suffer a system-wide service disruption whether due to technical failure or through a malicious attack on the servers. Neither can a user's account be globally suspended at the whim of a single authority.

Associated with the EmerSSL technology is EmerSSL InfoCard — a "business card" system that complements EmerSSL's passwordless logins with website form autocompletion based on the data residing on the Emercoin blockchain.

## EmerLNX

EmerLNX is a peer-to-peer text-based advertisement link exchange network based on a per-click payment model. EmerLNX operates under the "lnx" service abbreviation in the EmerNVS.

Unfortunately the EmerLNX project is temporarily frozen until it can be further developed.

There are 3 roles in the EmerLNX system:

• **Buyer** : Advertises their website using the EmerLNX network. They pay a small amount of funds for each Visitor referred to their site by the EmerLNX network.

• **Host** : Displays EmerLNX advertisements on their website. When a Visitor clicks an ad, the Host sends this Visitor to the Buyer's website and receives payment from the Buyer for this visit.

• **Visitor** : An ordinary web-user who clicks on an advertisement on the Host's website and arrives at the Buyer's website.

In the EmerLNX system, a Buyer directly pays each Host for each Visitor. There is no central agent to set a minimum price, allowed words, etc, and there is no participation fee or commission. All payments go directly from the Buyers to Hosts, without the involvement of any intermediate agent.

An EmerLNX participant can be a Buyer and Host at the same time, i.e. they can show advertising links on their website, and also purchase traffic (visits) from the EmerLNX network. Hence, they can pay other participants to attract visitors to their site, while earning money for sending visitors to other sites.

EmerLNX runs on the Emercoin cryptocurrency and uses it in two ways:

• It uses Emercoin (EMC as the payment unit for pay-per-click actions.

• It uses the EmerNVS as distributed storage for advertising contracts.

## EmerSSH

Through its decentralized nature, EmerSSH makes it impossible for anyone to obtain root certificate keys and thus decrypt the data being transmitted.

EmerSSH can be seamlessly bridged with OpenSSH, giving you flexibility in addition to security.

EmerSSH is a system for managing Public Key Infrastructures (PKI) and Access Control Lists (ACL) using the Emercoin blockchain.

EmerSSH can be bridged to OpenSSH, providing a comfortable, safe, and flexible way to log in to multiple servers via SSH. In this case,OpenSSH is configured to refer to the emcssh utility, which queries the Emercoin blockchain and retrieves SSH credentials during the authentication process.

With EmerSSH, users can manage their own public keys by submitting and modifying records in the Emercoin blockchain via the GUI or command line. Similarly, admins can manage user groups for their services that may contain references to other groups as well as individual users — allowing for the creation of recursive authentication trees.

EmerSSH operates under the "ssh" service abbreviation in the Emercoin NVS.
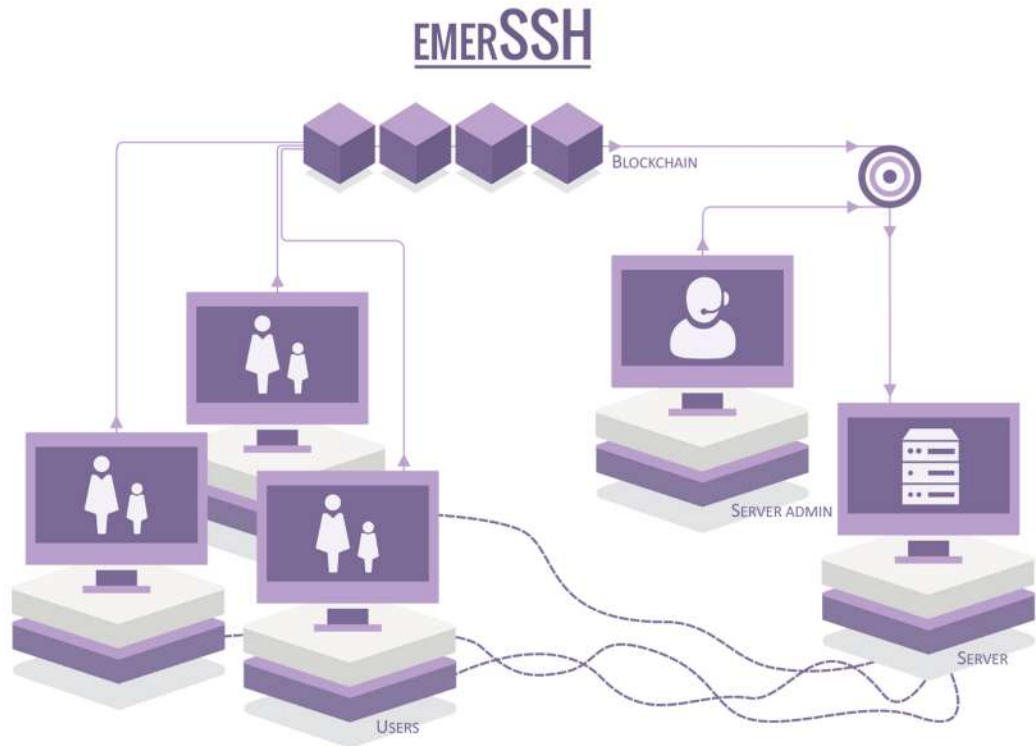


## EmerNVS

Emercoin provides a service for storing name->value pairs in its blockchain (Name-Value Storage, or NVS). The initial concept was inherited from the NameCoincryptocurrency yet while NameCoin is mostly focused on supporting decentralized domain zone *.bit in their extension, Emercoin provides a universal, extensible service to store and maintain name->value pairs without imposing a narrow specialization.

Of course, Emercoin supports distributed alternative DNS service too, and each Emercoin wallet contains a built-in simple DNS server, supporting the standard RFC1034 UDP DNS protocol.

Emercoin allocates up to 20kB for value, enough to fit public keys for most modern cryptographic applications. We consider a cryptocurrency blockchain to be an extremely reliable place to publish and maintain public keys for many cryptographic applications such as SSH/SSL certificates.
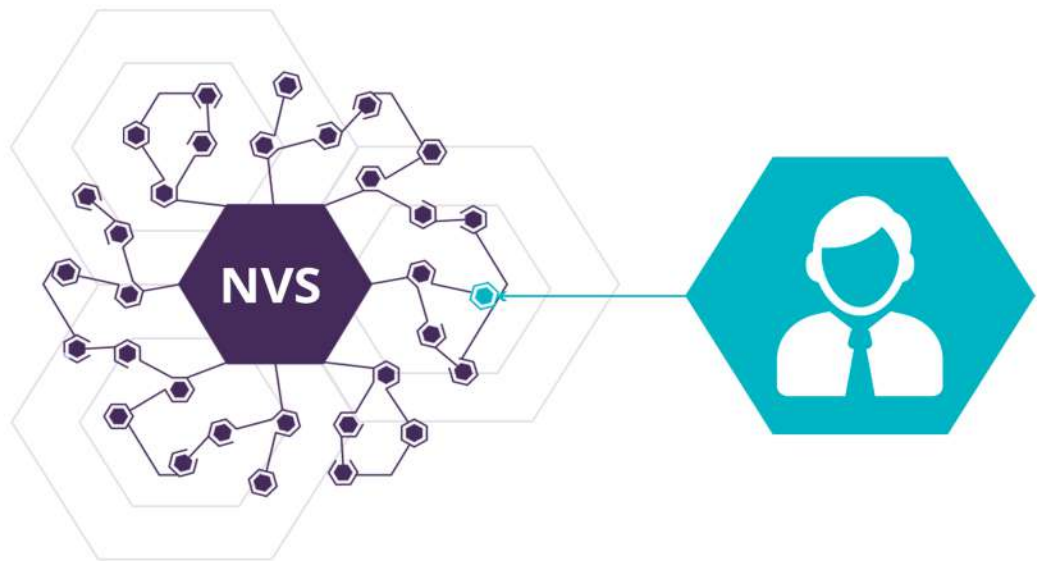


Like regular payment transactions, NVS pairs stored in the blockchain also get confirmations during block generation, and are virtually immune to being altered in a Man-In-the-Middle attack.
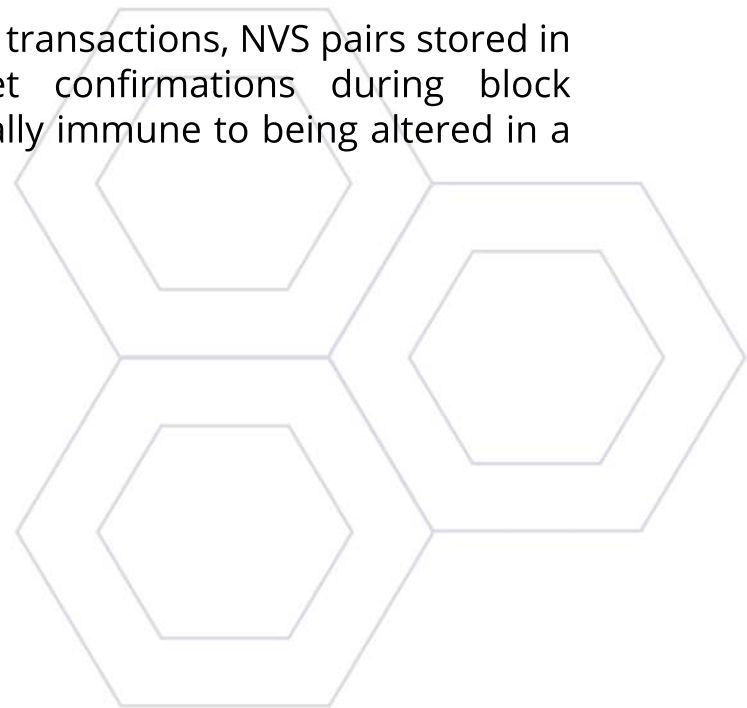
## TRUSTED DIPLOMA BY EMERCOIN

Trust is a core element in our daily lives.  In a world of digital mass communications flooded with 'fake news' it's increasingly important to know how to verify 'truth' whether it's a news story, or the credentialing of a person handling your health.  In health care, in some cases, it can be a matter of life or death if one might have accidentally chosen a 'fake doctor' as an example.

Specific to health care, imagine a world where medical patients could automatically trust the diplomas on a doctors' walls.   Similarly, imagine a world where job recruiters could easily confirm that applicants had actually graduated from the colleges on their resumes. A world where you could find and share your education credentials online without fear that bad actors have altered or expunged them.

The benefits of this world would be virtually limitless. Professional services would be safer, smarter and more effective, increasing consumer confidence and business growth. Companies would avoid hiring people that represented 'fake news' about their actual skills or credentials. We would all enjoy greater confidence in an online job market that is simpler, more secure and more trusted.

We are closer to this reality than you might think, thanks to a game-changing blockchain innovation being developed by Emercoin.

The new system, called "Trusted Diploma", by Emercoin will address a global challenge among educators, businesses and graduates to certify the online accuracy and authenticity of education credentials. Around the world, due to widespread corruption and manipulation, online displays of those credentials are increasingly viewed as unreliable proof of work.



Graduates also face difficulty obtaining their records from colleges or school systems that have closed or otherwise refuse to recognize their legitimate credentials.

The problem creates major challenges for a wide range of professionals, including college admissions officers, job seekers and business recruiters. It also poses risks for the general public, which often cannot obtain certified credentials from doctors, lawyers and other professionals.

A large amount of counterfeit products flooding the market undermines the credibility of a brands. Counterfeit production reduces the sales of original products.
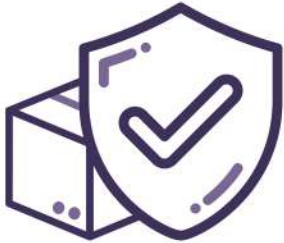
A negative opinion about the products of the brand may be formed because of substandard counterfeits. There may even arise situations where the original manufacturer is held liable for problems arising from low-quality counterfeit products.

The buyer has no way of verifying the authenticity of the product. So the buyer chooses the cheaper product or refuses to buy.

How Anti-Fake works:

**1.** After the purchase is made, the product is registered;

**2.** Afterwards, the product will be marked as being purchased;

**3.** Each copy of the product is assigned a unique number;

**4.** When scanning the barcode, the buyer can verify that the product is original and is available for sale.

The blockchain guarantees the honest work of all the participants of the system. The factory cannot produce more products than are ordered. The printing house cannot make more original labels than are ordered. The brand owners can safely outsource manufacturing and labeling. The manufacturer can irrefutably prove that a given product was (or was not) produced by them. The logistics chain is transparent, even if the product is sold to a distributor. It has been proven that the manufacturer cannot change the properties of the sold product.

As a consequence, higher trust is built on the part of the distributor and the buyer in the manufacturer.

# ROADMAP

**2013**

• Launched in December 2013 as a fork of Peercoin.

**2014**

• Added STUN IP discovery to remove usage centralized commercial service dyndns.org.
• Added Name-Values Storage - a universal trusted platform for external blockchain-based services.
• Implemented EmerDNS, a decentralized domain system that provides irrevocable domain names and robustness to the DNS infrastructure.

**2015**

• Invented and implemented blockchain-based security services.
• EmerSSH, Worldwide Public Key Infrastructure and Access Control List.
• EmerSSL, Passwordless identification and secure web-login.
• InfoCard, electronic business-card, works together with EmerSSL.
• Invented concepts of EmerDPO, EmerTTS, Magnet.
Emercoin officially appears at Livecoin.com, Cryptopia and YoBit
• Emercoin is in the list of TOP20 cryptocurrencies on Coinmarketcap

**2016**

• Emercoin officially appears at BTC38 and xBTCe
• Cooperation work with the United Nations
• Established partnership with Microsoft BaaS program and released "Blockchain Engine" MS Azure application
First real usage of EmerDPO - Kolionovo farm shares
• Transaction optimizer — preserves blockchain from unnecessary inflation
• Distributed and dynamic checkpoints

**2017**

- Emercoin included in RedHat catalog of certified programs.
- Three-in-one mining mechanism: POS + POW + MergedMining.
- Lot of core improvements, including full decentralization.
- On-the-fly exchange emercoin to other cryptos with external exchanges API (shapeshift, coinreform).
- Invented and implemented ENUMER, a blockchain-based telecommunications platform.
- Started public testnet with web-explorer.
- UnaDesk strives to decentralize the real estate and utilities markets and uses the Emer blockchain.
- Tech adoption cases with: Deloitte, eZuce, Russian Railroads, SipXcom, HashCoin, AbitSystems Emercoin officially appears at HitBTC, Indacoin, BITTREX, USDX

**2018**

**In 2018, we plan to continue implementing functionality and add new services. We will:**
- Release core wallet 0.7.0, with implemented Segwit and improved core kernel and DNS subsystem.
- Complete implementing ATOM — safe protocol to escrow-less peer-to-peer sell NVS-record (dns, land title, etc).
- Implement second generation of Lottery model payment aggregation, Randpay.

**2019-2021**
**In next three years, we plan to:**
- Improve and popularize existing services and develop new products and services.
- Integrate with Bitfury's Exonum protocol.
- Integrate with Lightning Network.
- Create our own Certification Authority (or establish a partnership with existing CA) to generate SSL certificates for WEB-sites, located in the EmerDNS.
- Develop our own browser (based on the Chromium engine) to provide a bundle of Emercoin services that are "out of the box" — with a trusted root of our CA, with transparent access to EmerDNS, and more.
- Redesign EmerLNX advertisement system for a CPA model.

# CONTACTS

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