Liquidity Network

Blockchain Payments for Everyone

Liquidity Exchange

Non-Custodial Off Blockchain Exchange



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01

Liquidity Ecosystem



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01 Liquidity Ecosystem

Liquidity Network and Exchange

The **Liquidity Network**

is a non-custodial, financial intermediary offering payment and exchange services.

The web wallet can be accessed under https://wallet.liquidity.network while the mobile applications for Android and iOS are also available.

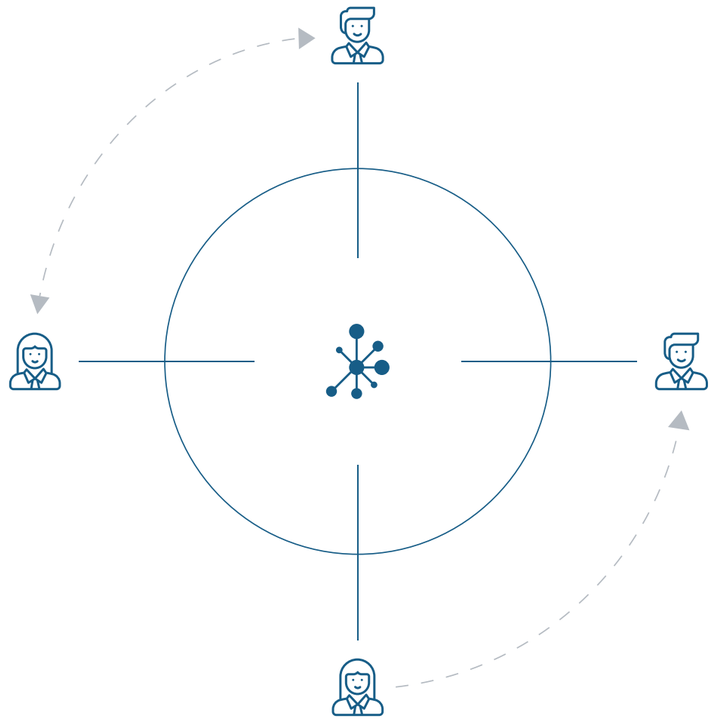
The Liquidity.Network supports millions of users securely, reducing transaction costs significantly and enabling the mainstream adoption of blockchain.

The Liquidity Ecosystem stems from a symbiosis between our two novel academic innovations: the Liquidity Hub NOCUST and REVIVE.

The **Liquidity Exchange**

is a non-custodial off-chain exchange build on top of the Liquidity Network.

The Liquidity Exchange is designed to not hold any funds (non-custodial), while performing atomic swaps off-chain. As such the exchange is resistant to blockchain congestion and excessive transaction fees. Scalable to centralized exchange throughput and beyond.



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01 Liquidity Ecosystem

Scalable, Instant, Secure, Easy

1

Enabling Micro-payments and Small Value Transfer (SVT)

Negligible transaction costs.

2

Instant Payments and Exchange

Send and exchange crypto instantly. No waiting time.

3

No rigid locked funds

Allocated funds, can be used to pay any other member of the Liquidity Network.

4

Simplicity

Simple design, avoiding complex routing.

5

Transparency

Liquidity Network actions are auditable.

6

Privacy

Enhanced transaction privacy.

7

Security

Payments are secured by the blockchain.

8

No Custodian

Payments and Exchanges are secured by the blockchain. Funds owned by the user at any point.

9

Flexible Fees

Fees paid by either the sender or the recipient.

10

Generic

Built on Ethereum. Portable to any smart contract blockchain.

11

Peer Reviewed Research

Papers published in the biggest academic IT Security conference (CCS 2017).

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02

Novelty

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02 Novelty

Novel Payment Features

1

The Liquidity Network allows any member of a payment hub, to pay any other member of a payment hub at zero transaction fees.

2

The Liquidity Network offers instant and off-chain channel establishment - no prior crypto needed.

3

The Liquidity Network operates with simple routing designs, avoiding complex routing topologies.

Novel Exchange Features

1

The Liquidity Exchange performs instant off-chain swaps without holding user funds, and is resistant to excessive on-chain transaction fees.

2

The Liquidity Exchange can still operate under blockchain congestion, provides a more stable and professional service level.

3

Off-chain swaps are instantenous and can reach trading speeds of traditional centralized exchanges.

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03

Architecture



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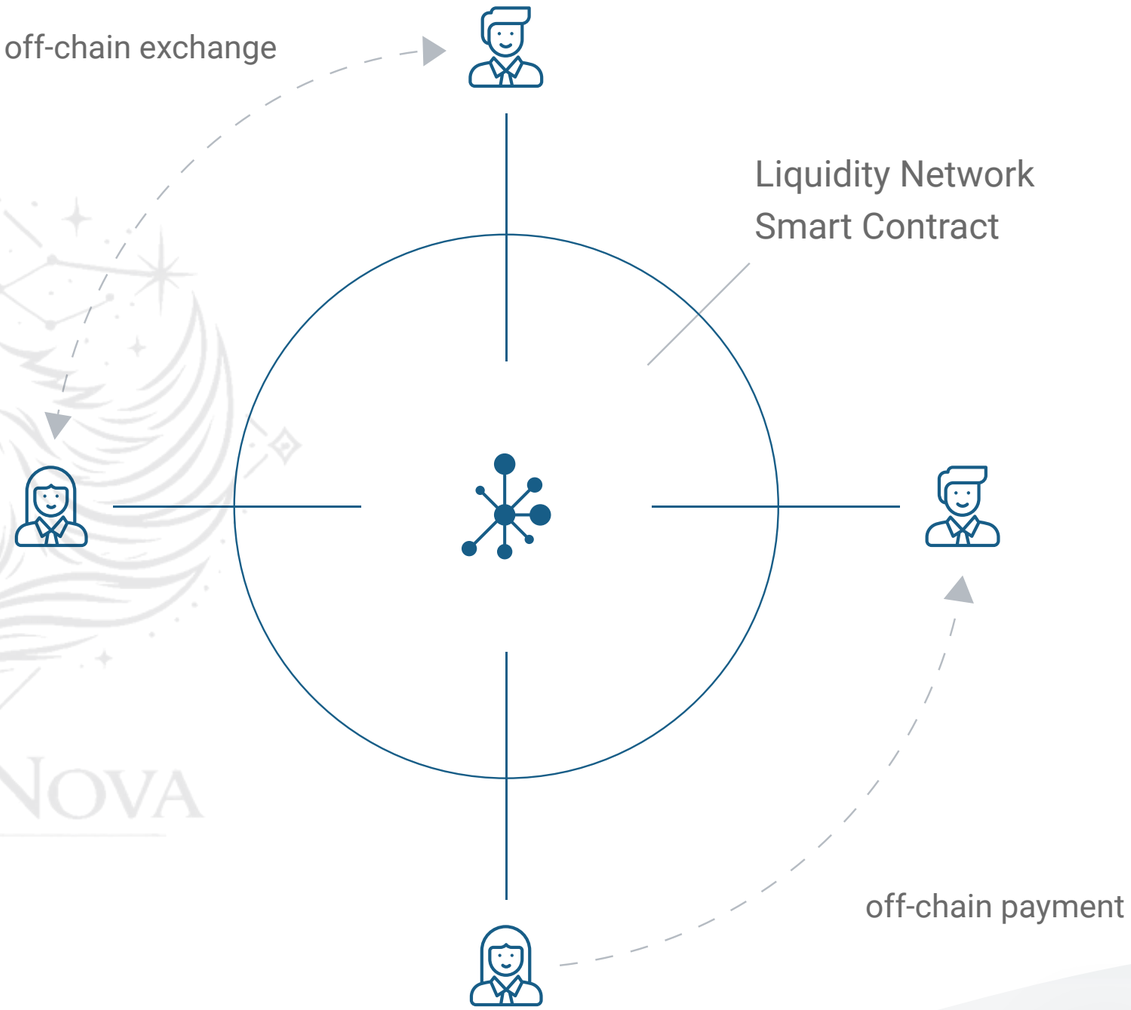
Architecture

Off-chain Hub

The design of the Liquidity Network and Exchange is centered around the notion of universal hubs. As such, a user that is joining a hub, can transact his funds with any other member of the hub, instantly, off-chain and therefore at significantly lower costs than regular on-chain transactions.

The hub architecture is novel because funds are no longer locked between only two users, but accessible to thousands of other users on the same hub. At the same time, the funds are secured by the blockchain, other users can't steal other user's allocated funds.

Lightning technology is *not* appropriate to build a hub, because the hub would need to open an excessive amount of payment channels. More details can be found on our Stanford BPASE Talk.



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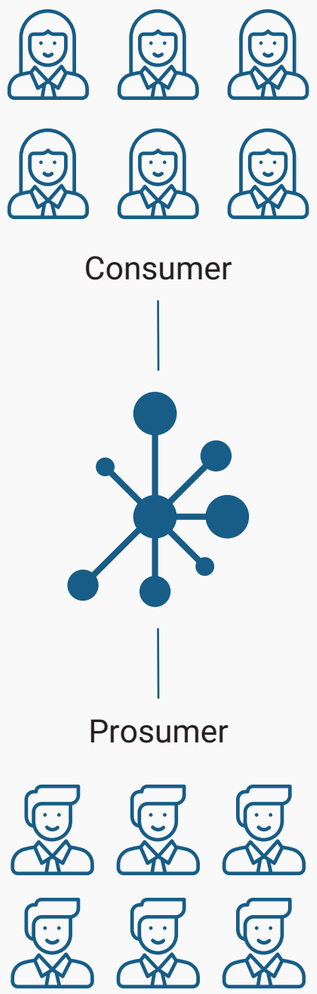
Architecture advantages

The Liquidity Ecosystem is currently implemented for Ethereum and enables millions of users and payment processors to exchange crypto.

Because the Liquidity Network is built upon the Ethereum blockchain, it benefits from the existing development and research community.

With its novel design, the Liquidity Network architecture solves several pressing pain points of existing payment channel designs:

- No rigid locked funds
- Simple design and routing
- Free and instant channel establishment
- Non-custodial off-chain swaps



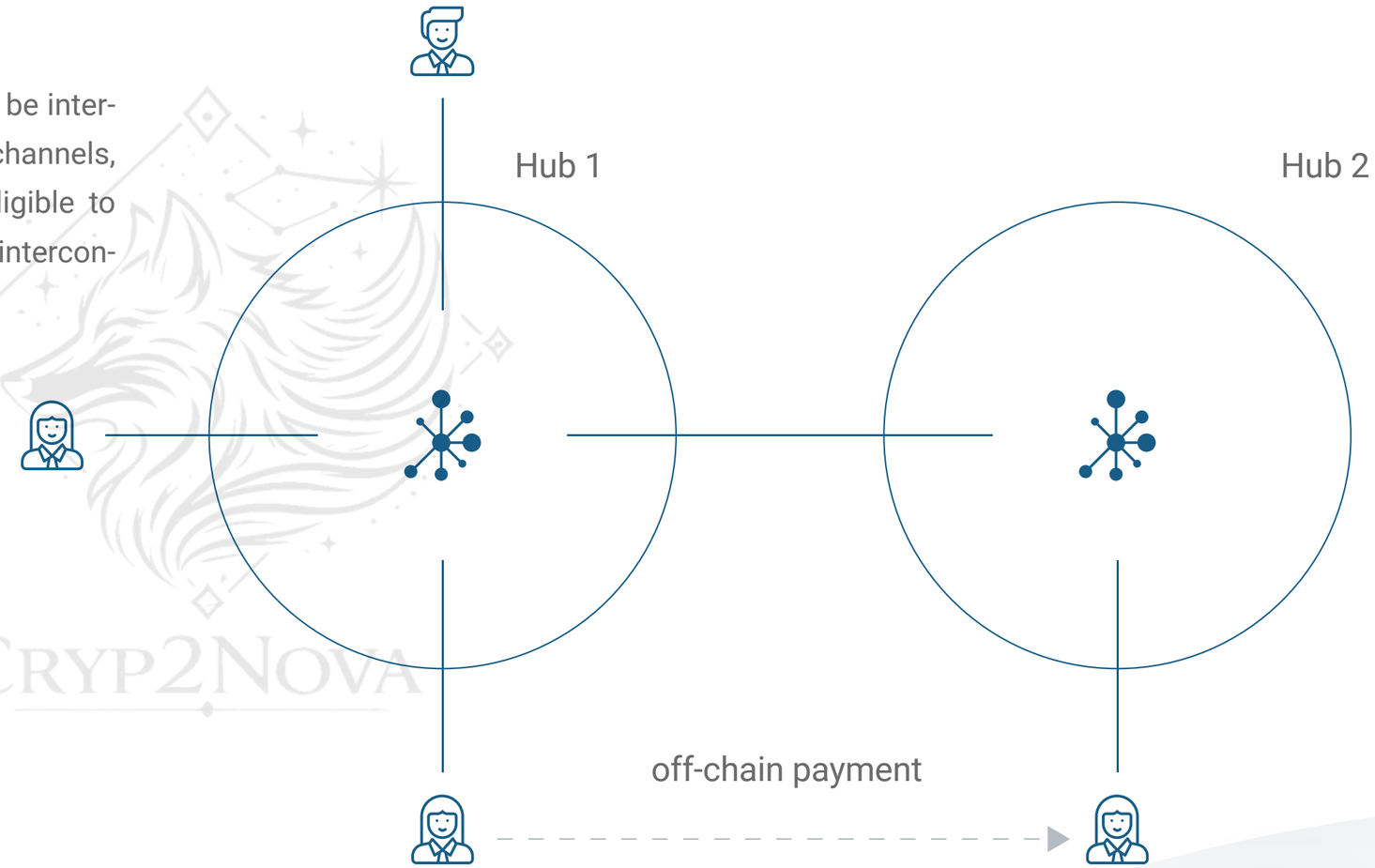
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Network of Hubs

Interconnected Hubs

Multiple Liquidity Network payment hubs can be interconnected. Similar to traditional payment channels, two users of different payment hubs are eligible to perform off-chain payments across different interconnected payment hubs.



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Why the Liquidity Network is not Centralized

How to define (de-)centralization:

(1) Who owns the funds?

(2) How redundant is a system?

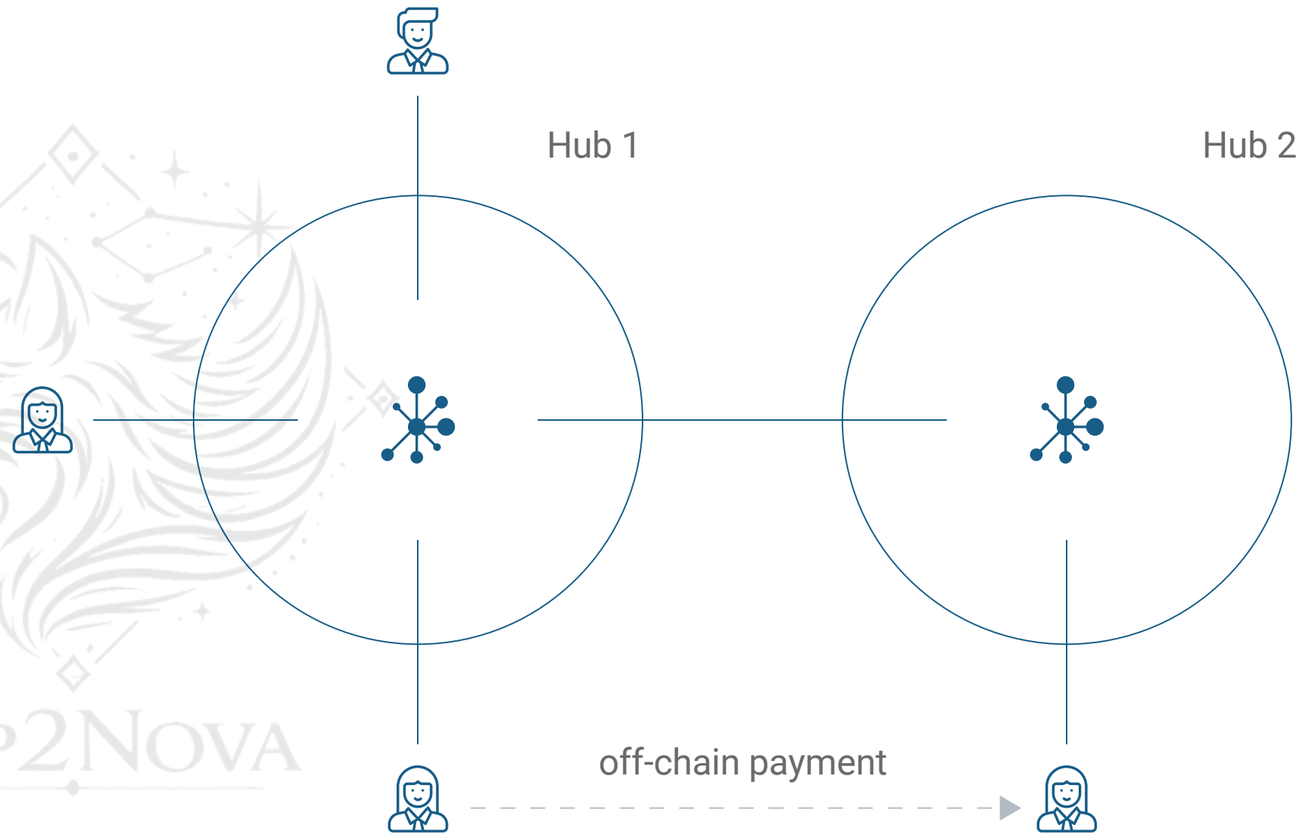
(3) Can a central entity censor?

Regarding Liquidity we have the following properties:

1. A user owns at any time its funds (with the private key). Not the hub operator, or any other entity can “steal“ the users funds. A hub is not a bank nor a custodian.

2. Liquidity is designed such that many hubs can be interconnected in a network of hubs to provide redundancy, similar to a network of Lightning peers.

3. A hub can choose to not forward payments. If that were to happen, the user can simply remove his funds from the hub’s smart contract, which the hub operator cannot prevent. The user would then join another hub.



The Liquidity Network is designed to become a redundant and decentralized network of hubs.

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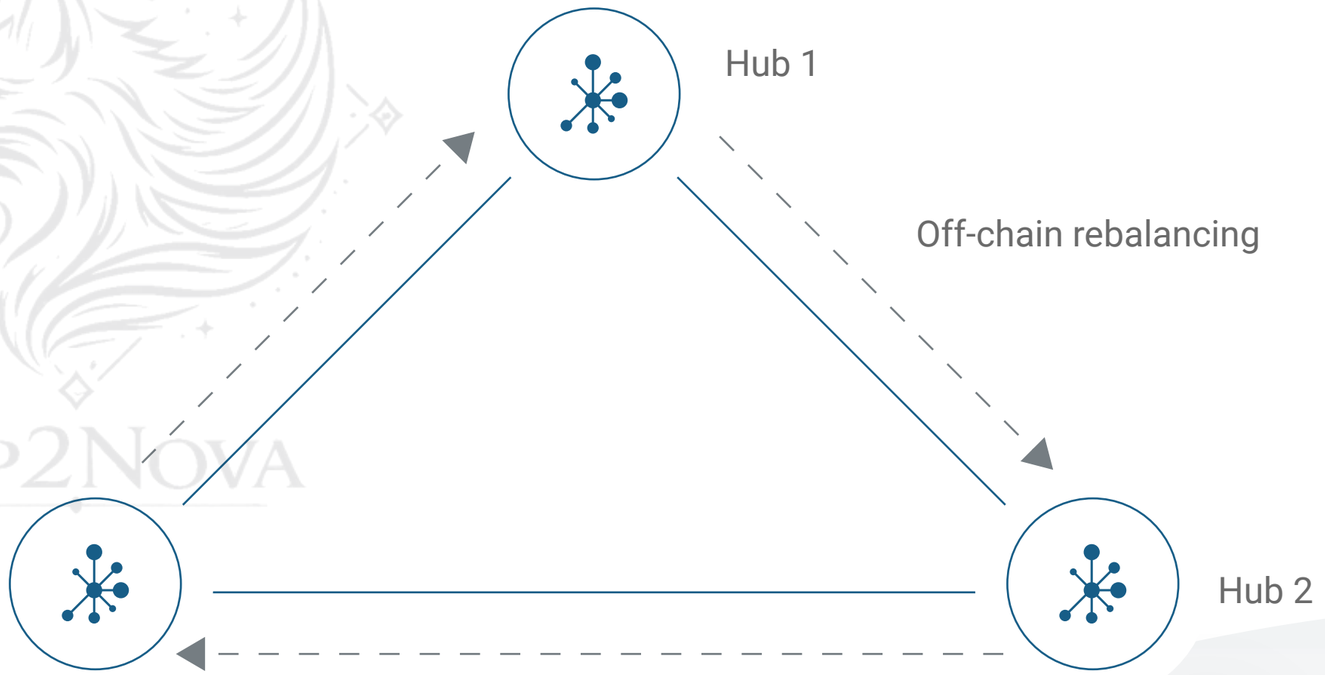
REVIVE

Rebalancing payment channels securely off-chain, applies to the hubs.

With REVIVE, we present the first solution that allows an arbitrary set of users in a payment channel network to securely rebalance their channels, according to the preferences of the channel owners. Except in the case of disputes (similar to conventional payment channels), our solution does not require onchain transactions and therefore increases the scalability of existing blockchains. In our security analysis, we show that an honest participant cannot lose any of its funds while rebalancing.

REVIVE is integral part of the Liquidity Network and allows different hubs to rebalance their respective balances.

REVIVE has been published in a Tier 1 Academic IT-Security conference (CCS'17).



Khalil and Gervais, https://eprint.iacr.org/2017/823.pdf

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04

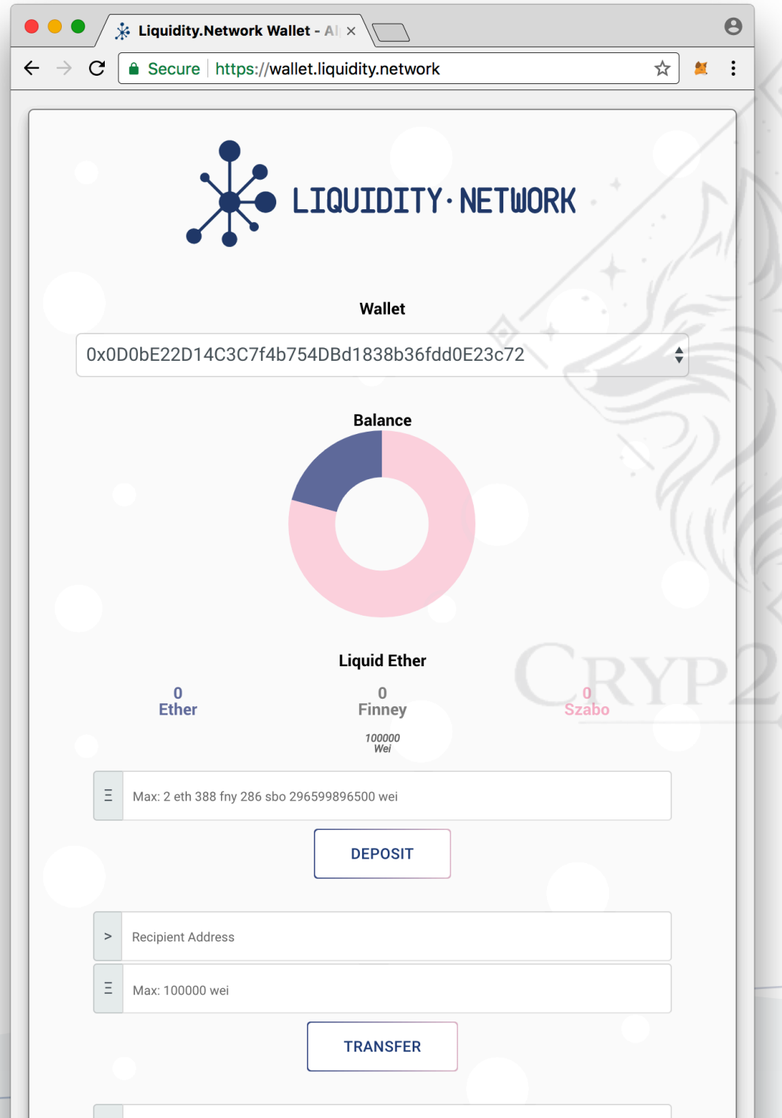
Product

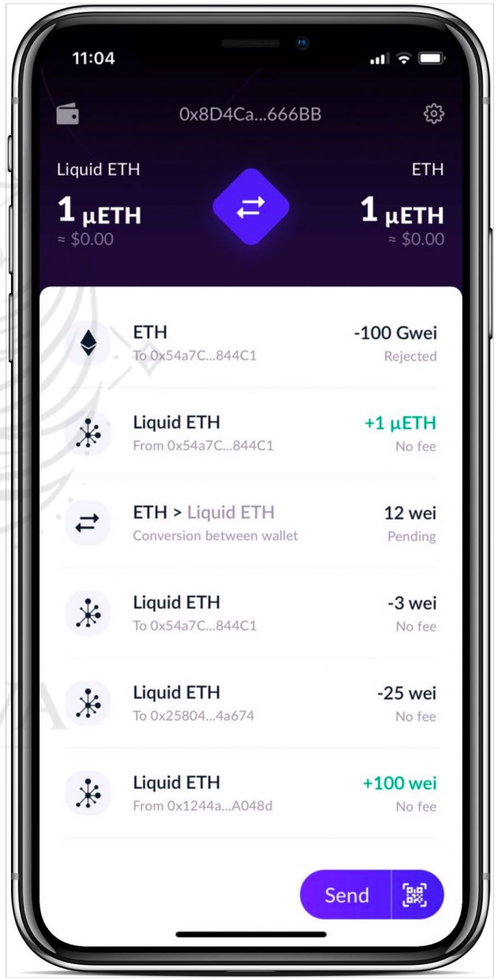


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Web and Mobile Wallet





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05

Killer Applications



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05 Killer Applications

Airdrop powered by Liquidity

Airdrops are a popular community building tool

- ✓ Airdropping tokens to millions of users
- ✓ No transaction costs
- ✓ No custodian required
- ✓ Instant and fast drop enabled
- ✓ No security problems through private key leakage
- ✓ Receiver can instantly forward drops to friends to multiply the network effect
- ✓ New engagement possibilities: possibility to send multiple drops, different amounts, no extra cost

The current market offers airdrop solutions, which we believe are not in the spirit of decentralization and open blockchains. Airdrop powered by Liquidity Network solves the following problems.

- ✗ 1. Airdrop through a custodian (not good, a wallet provider holds the user's private keys, like a bank).
- ✗ 2. Airdrop by sending the private keys to the users (not good, the airdrop provider is still custodian).
- ✗ 3. Making millions of on-chain transactions, expensive, slow, spamming the blockchain, not scalable



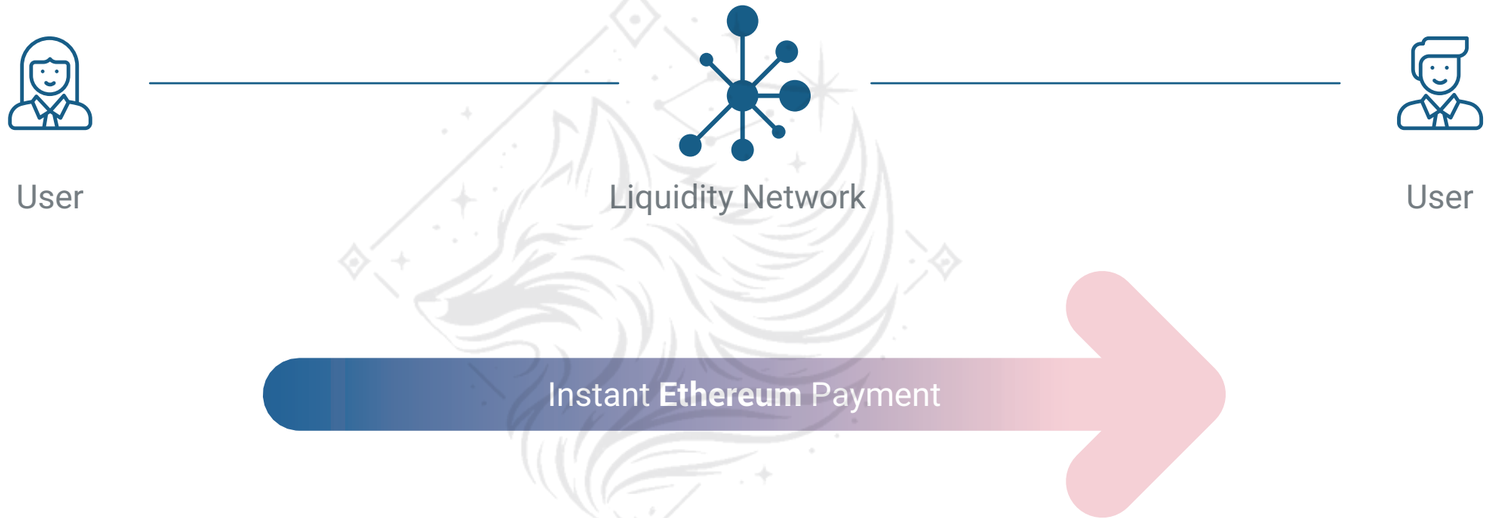
Try an Airdrop through Liquidity?

Get in touch under

https://airdrops.liquidity.network

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Use case — Money transfer



Support for ERC-20 token transfers e.g. stable coins

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05 Killer Applications

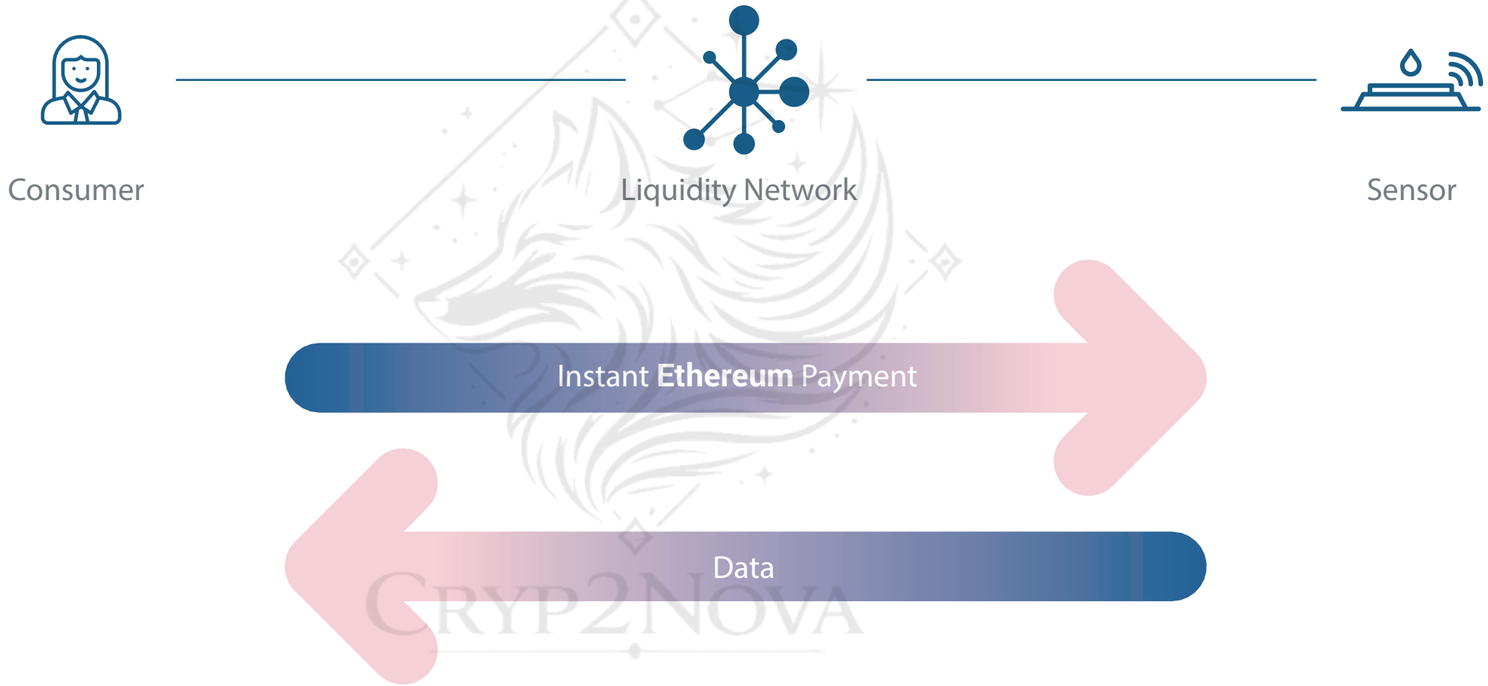
Use case — Purchase



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05 Killer Applications

Use case — IoT Sensors

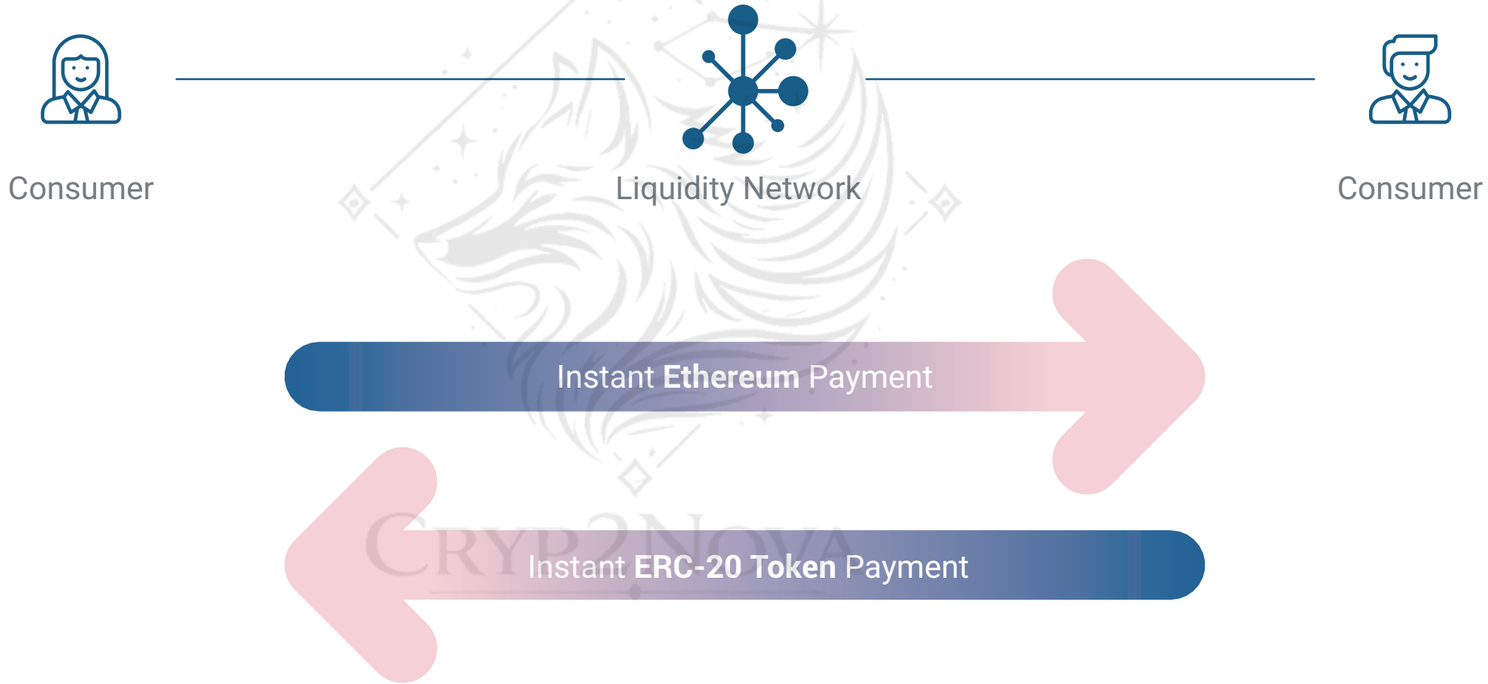


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05 Killer Applications

Non-Custudial Off-Chain Exchange

Planned for Q3 2018



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06

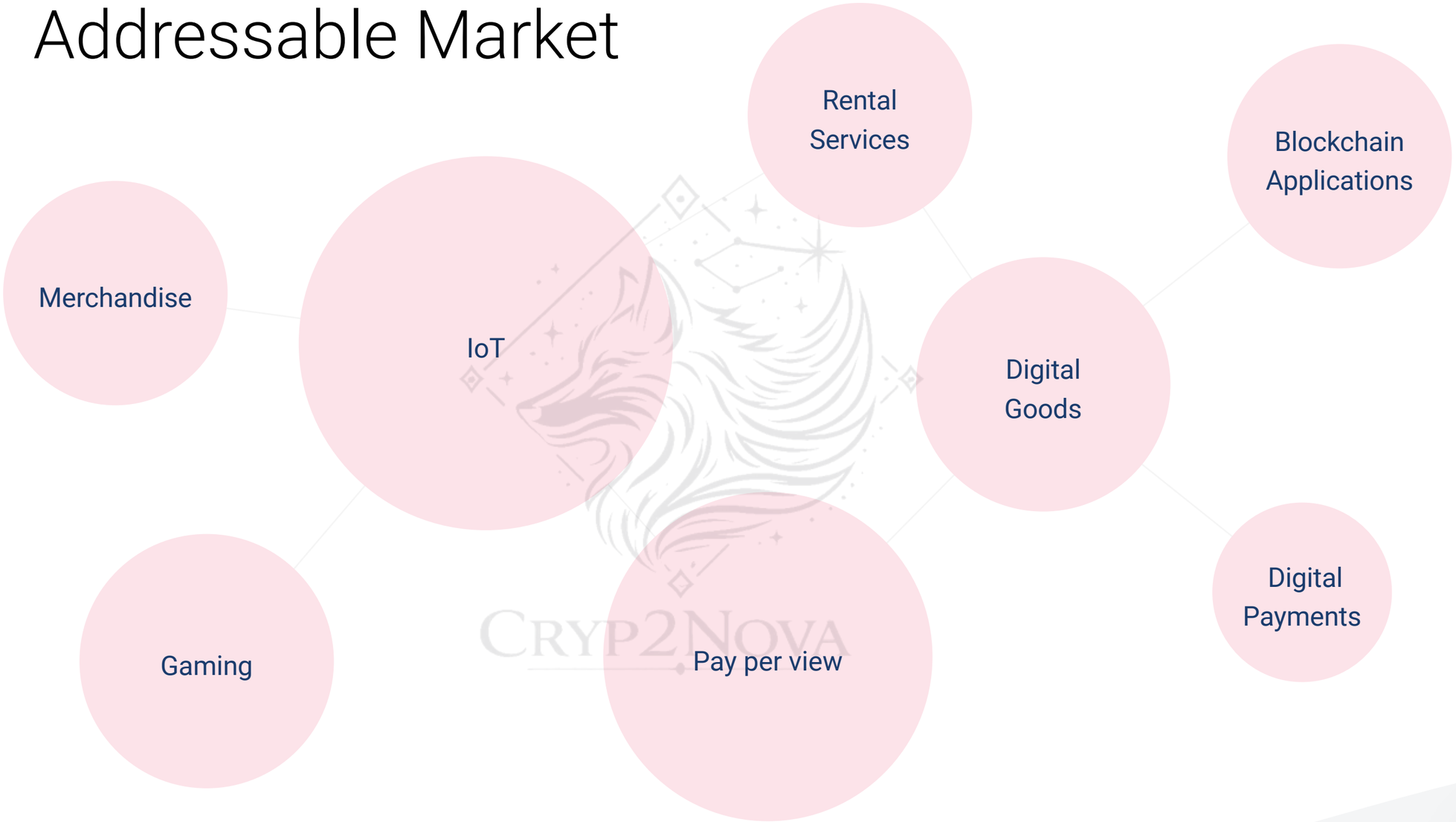
Market

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Addressable Market



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Comparison to other payment solutions

	Liquidity Network	Traditional Banks	Online Banks	Blockchain
Scalability	++	+	+	- -
Speed	++	- -	o	-
Fund Control	Decentralized	Centralized	Centralized	Decentralized
Security	Cryptographic majority voting	Trust based	Trust based	Cryptographic majority voting
Accessibility	+	+	+	-
Fees	++	o	o	- -

- - - o + + +

worse better

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Comparison to other off-chain solutions

	Liquidity Network	Raiden	Lightning	COMIT
Blockchain Support	Ethereum, Bitcoin (with RSK), others	Ethereum, Bitcoin (with RSK)	Bitcoin	Ethereum, Bitcoin (with RSK)
Prototype	✓	✓	✓	✗
No rigid funds locked	✓	✗	✗	✗
Free off-chain Registration	✓	✗	✗	✗
Users in funds control	✓	✓	✓	✓
Easy Routing	✓	✗	✗	✗
Token Support	✓	✓	✗	?
Ether support	✓	✗	BTC	?
Open Platform	✓	✓	✓	✓
Secured by blockchain	✓	✓	✓	✓
Mobile Application	✓	✗	✓ (only unidi-rectional)	✗

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Comparison to other exchanges



	Marketplace	NYSE	Kraken	DEX	Liquidity Exchange
Fast Trading	✗	✓	✓	✗	✓
High Volume	✗	✓	✓	✓	✓
User controlled funds	✓	✗	✗	✓	✓
Blockchain Congestion Resilient	NA	NA	NA	✗	✓
Transaction Fee Independent	NA	NA	NA	✗	✓

Marketplaces have experienced many evolutions. Starting with traditional physical marketplaces, moving towards more professional settings such as the New York Stock Exchange.

Only recently have we experienced the appearance of cryptocurrency exchanges which experience an increasing amount of volume. User's funds, however, are trusted by the exchange operator. Examples such as Mt.Gox have shown that centralized exchanges cannot be trusted.

EtherDelta was one of the first decentralized exchanges, however suffers like all on-chain exchanges from very slow trading speed. On-chain exchanges face the risk of upcoming blockchain congestion.

Our envisioned Liquidity Exchange allows instant trades, without being custodian. User funds are secured by the blockchain, but trades are not slowed down, nor made expensive by the blockchain.

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07

People



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07 People

Team and Background

We currently count more than 10 excellent Liquids covering development, legal, marketing, public relations and business development.

The design of the Liquidity Network became possible due to more than 5 years full time blockchain experience by the team members. We have academic expertise in computer science, security, mathematics, formal methods, augmented by professional experience at world leading companies such as Intel and Facebook.

The team understood, that in order to continue to revolutionize how society trades and interacts with blockchain technology, scalability needs to be considered as a core business.

Proven

blockchain expertise —

Ph.D. in blockchain security, privacy and scalability

https://www.research-collection.ethz.ch/handle/20.500.11850/129776

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Team

07 People



Dr. Arthur Gervais

Arthur is a Lecturer (equivalent Assistant Professor) at Imperial College London and at the Lucerne University (HSLU). He completed his PhD thesis on the topic of the security, performance, and privacy of proof of work blockchains at ETH Zurich in 2016. He co-authored 8+ influential peer-reviewed scientific articles published at top-tier security conferences. Arthur holds two Master degrees from KTH Stockholm and Aalto University and a diplôme d'ingénieur from INSA de Lyon from 2012.

Co-creator of the one-click smart contract formal verification tool www.securify.ch



Rami Khalil

Rami started to program when he was 12. Now, he is about to finish his Master degree from ETH Zurich and received his Bachelor from the German University in Cairo with Highest Honors. He got the first place at the ACM Arab Collegiate Programming Contest in 2013, as well as the Honorable Mention at the world finals in Yekaterinburg and in Marrakesh of the ACM International Collegiate Programming Contest. Rami interned three times at Facebook, as well as once at Gnosis.

LiquidChain GmbH, Zurich
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Made in Switzerland

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Team

07 People



George Sedky

George is an IT security enthusiast, with research contributions in Blockchain Scalability and IoT. He's about to finish his Bachelor degree from the German University in Cairo and has over 3 years experience in software engineering, designed and implemented cyber defence tools.



Guillaume Felley

Guillaume studied at EPF Lausanne and ETH Zurich in Switzerland. He is now finishing his master degree at Imperial College London doing research in the field of Blockchain. He build TLS-N, a blockchain oracle system https://www.tls-n.org.



Thibault Meunier

Thibault is about to obtain both his Master from Imperial College London and a French Engineering diploma from ENSEEIHT. Previously at CERN, he rebuild their main front-end hosting website, entry-point for more than 14000 websites.



Janine Videva

Janine is a FinTech marketing and communication professional since 2016, well connected as former communication associate for a leading Swiss FinTech association. MSc degree in Corporate Communication from USI and a Masters in Digital Marketing.

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Team

07 People



Tony Tran

As an extrovert, Tony enjoys communications, building relationships and especially community discussions about cryptocurrency and blockchain. Before crypto, Tony worked for General Electric for 5 years though many different roles at Oil & Gas and Renewable Energy.



Imran Khan

Imran is a strategic thinker, trained with theory through a Bachelors in Business/ Leadership @ Northwestern University, and experienced through practice as Partner at zk Capital and Business Development @ Microsoft.



Mohammed Kasstawi

Mohamed's vision is to decentralize the Internet. To this end he knows how to eagerly explore and evaluate the latest projects and their viability from a business perspective. He is the founding partner of zk Capital.

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VC Participation

We've been able to attract a number of VC funds to participate in Liquidity.Network.

We can openly name Danhua Capital (DHVC), zk Capital, ZMT Capital and YouBi Capital.

We very much thank them for both, their thorough due diligence and their contribution.

Your continued support is helping our team as well as our business development substantially.

DHVC

zk CAPITAL

YouBi CAPITAL 优币资本

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08

Roadmap



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Strategy and Product Roadmap

September, 2017

Alpha Version of Liquidity.Network

Excited by REVIVE, we developed the first alpha version for Liquidity Network, and launched a private Liquidity.Network hub.

November, 2017

Public Announcement

Launch of the official Liquidity Network website, FAQ, whitepaper, engage the community and public roadmap.

December, 2017

Foster development

Based on the community feedback we adopt improvement ideas and attract talent to join the Liquidity Network development.

March, 2018

Early Bird Access, Testing

Deploy Liquidity.Network hub MVP and give early bird access. Build a strong community. Optimize the hub.

June, 2018

Public Liquidity. Network

Publish the official and stable Liquidity Network version. Include web and mobile wallets.

Q3 2018

Non-Custodial Off-Chain Exchange

Enable the Liquidity-Network to perform exchanges of ERC-20 tokens. Faster and more cost efficient trading than other decentralized solutions.

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Open to other Blockchains

Prototype Implementation ready for Ethereum and can also be deployed on ETC or Rootstock.





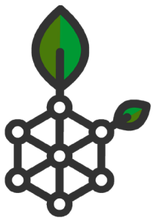
Other possible Blockchains for the Liquidity Network:

Bitcoin (through Rootstock)

Dfinity

NEO

and others





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09

LQD Token



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Token

We envision a cross-chain, off-chain payment processing ecosystem whereby hubs can compete to attract end users and merchants. Our aim is to integrate the Liquidity token within this ecosystem such that a competitive open market for secure payment processing can thrive within the network.

The personal end users of the system will be the main source of demand for usage of the network. Therefore, to facilitate the creation of this demand, **end users will not be encumbered with having to interact using LQD tokens in regular usage scenarios.**

The Token allows the holder to participate in the Liquidity Network - it is an access Token to pay for auxiliary services (e.g. channel monitoring).

LiquidChain GmbH plans to operate several Liquidity Network hubs on top of the Ethereum blockchain building the foundation for instant and cheap transmission of crypto. Anyone however will be able to operate a LiquidityNetwork hub once the software is open sourced.

The LQD Token's primary purpose is to be used to access premium features in the Liquidity Network (e.g. Service Level Agreements). That is for example to guarantee a particularly high number of transactions per second, the user would need to provide a certain amount of LQD tokens to the hub provider.

Please follow our blog for more details.

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10

Regulatory Compliance



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10 Regulatory Compliancy

Licensed Finance Intermediary

Regulatory risks are perceived as one of the biggest threats to crypto based projects. That's why we go beyond the traditional best practises to ensure the long-term success of the Liquidity.Network.

We are an official member of the Financial Services Standards Association (VQF), the leading, largest, officially recognized self-regulatory organisation in Switzerland directly under the FINMA (Swiss Financial Market Supervisory Authority).

To meet regulatory compliance, we're working with one of the best law firms in Switzerland, Bratschi.

Our legal partner was recommended as one of the best in particular in the crucial field of compliance: Bilanz 2017, Top Anwaltskanzleien 2017.

Mitglied/Member of VQF

VQF Verein zur Qualitätssicherung von Finanzdienstleistungen

bratschi

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Join us !

We’re hiring! We’re in particular looking for:

- COO

- Business Development

- Marketing and Growth specialists

Get in touch under contact@liquidity.network

Telegram Community

https://t.me/liquiditynetwork

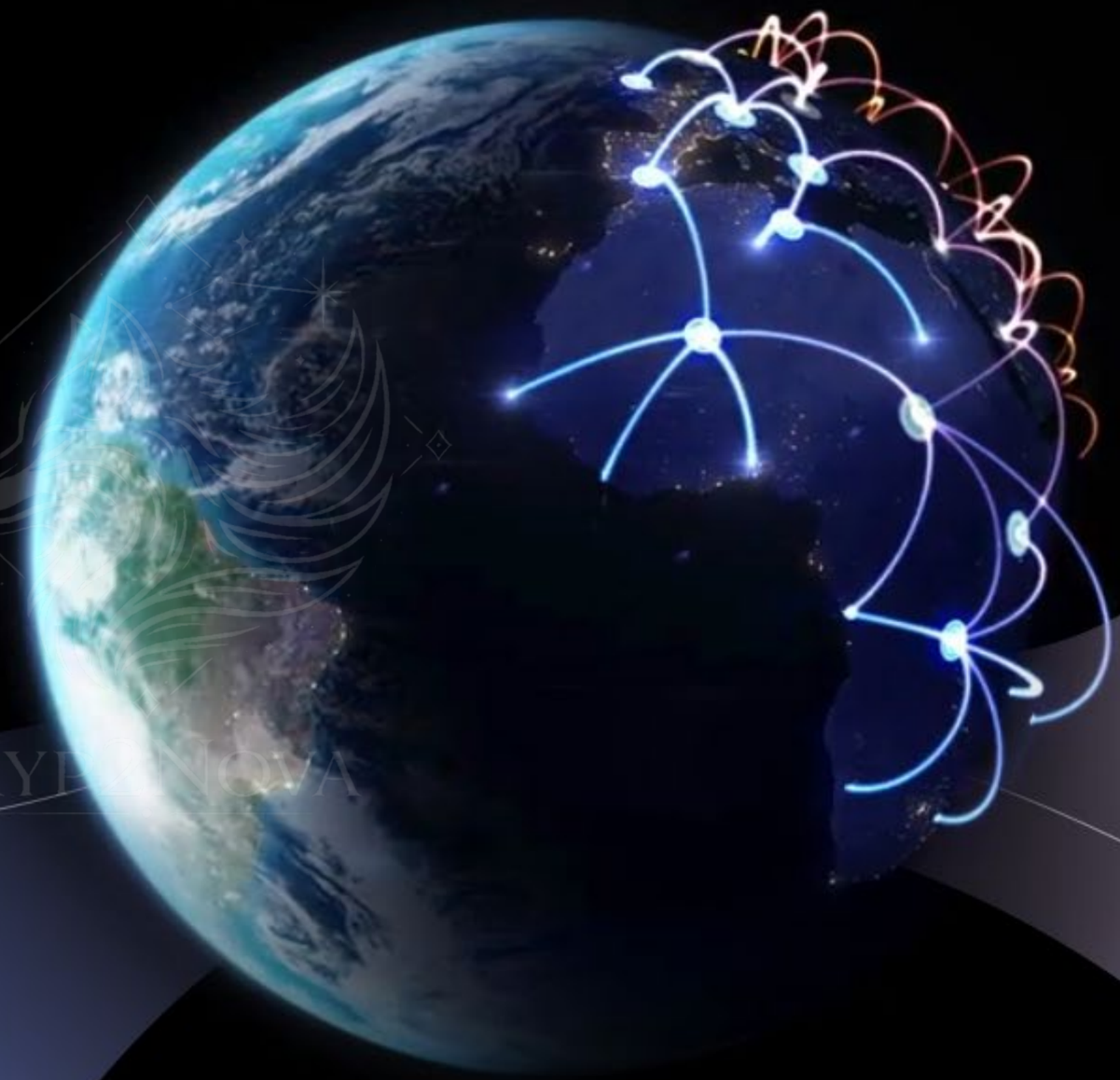
Blog

https://medium.com/@liquidity.network

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Pushing the decentralization of payment systems forward.



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Legal Disclaimer

1. The Company is invested in seeking out legal and compliance expertise to ensure that the sale of the Token are compliant with the applicable regulation insofar as there is no reliable and confirmed practice by the regulators.

2. There is no guarantee that future Token will grow in value and that the price of the Token will not decrease, including significantly, due to some unforeseen events, or events over which the developers have no control, such as unforeseen regulatory requirements which will force the Company to adjust or even stop the project or because of force majeure circumstances.

3. The Tokens will be issued on the Ethereum blockchain. Therefore, any failure or malfunctioning of the Ethereum protocol may affect the handling of the Tokens.

4. Blockchain technologies are subject to supervision and control by various regulatory bodies around the world. The future Token may fall under one or more requests or actions on their part, including but not limited to restrictions imposed on the use or possession of digital Tokens, which may slow or limit the functionality or repurchase of Tokens in the future.

5. The objectives stated are non-binding and may be changed at any time. All persons and parties involved in the Token and in the purchase of the Tokens do so at their own risk. Mentioned numbers are non-binding, and can be changed at any time.

6. Technical innovations of all kinds may pose a danger to the function of the Blockchain and related networks and systems.

7. Funds collected in fundraising are in no way insured. If they are lost or lose their value, there is no private or public insurance representative that the Purchaser can reach out to.

8. Received funds are neither earmarked nor refundable.

9. Tokens are a new technology. In addition to the risks mentioned in this document, there are therefore certain additional risks that the Company cannot foresee. These risks may manifest themselves in other forms of risk than those specified herein.

10. Last updated: 10th of June 2018.

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