

district0x

district0x Network

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A cooperative of decentralized marketplaces and communities.
Powered by Ethereum, Aragon, and IPFS.

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Abstract

In this paper, we offer an overview of the district0x Network, a collective of decentralized marketplaces and communities, hereafter referred to as districts.

Districts exist as decentralized entities, built upon a standard open source framework comprised of Ethereum smart contracts and front-end libraries, hereafter referred to as d0xINFRA.

d0xINFRA provides districts with core functionalities that are necessary to operate an online marketplace or community. Namely, the ability for users to post listings, filter and search through listings, rank peers and amass reputation, and send invoices and collect payments. The d0xINFRA framework is designed to be open and extendable, allowing districts to be customized and granted additional functionality through the use of auxiliary modules.

We also introduce the district0x Network Token in order to facilitate open participation and coordination across the network while providing protections from malicious actors. The district0x Network Token is a multi-utility token which is required for application to the district0x Network, utilized in an incentivized voting game to dictate access to a suite of ancillary services exclusive to network members, used to signal support or disapproval for proposals made by network participants, and which can be staked to deposit pools to mint tokens providing district-specific rights on third-party platforms.



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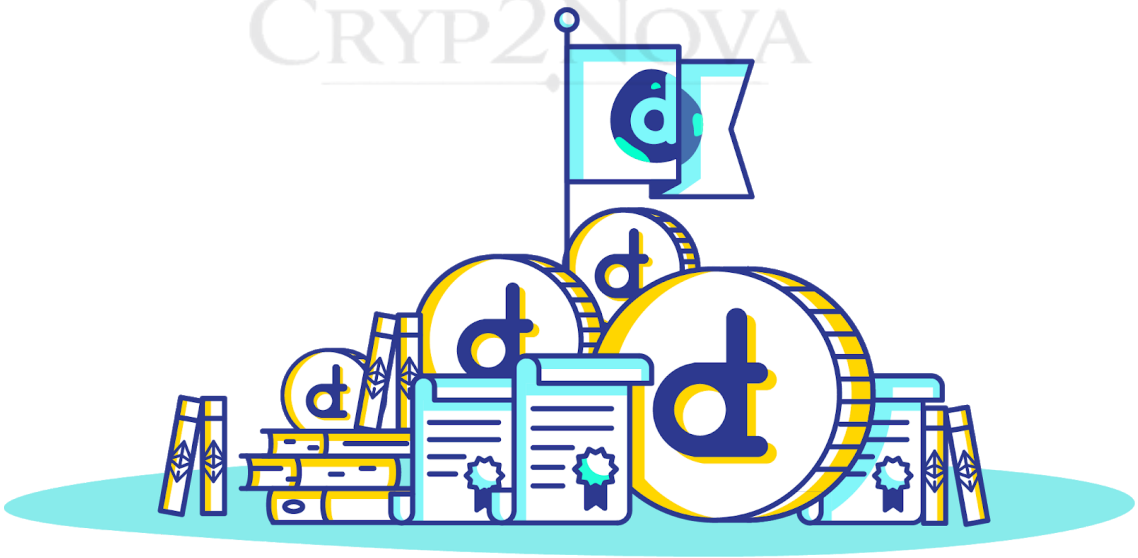
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Introduction

In recent years, the economic powers of decentralization have materialized. Uber has disintermediated transportation and achieved a valuation of $69B[1]. Airbnb has made similar disruptions in the lodging sector, giving them a value of $31B[2] by most recent measures. Entrenched conglomerates are being uprooted by upstarts who realize that value is in the network effect of their users, rather than the cost of physical assets they own or expend.

While customers of these services have enjoyed lower prices and better user experiences relative to those available in the past, they are still subject to higher costs than they would be without for-profit third-parties extracting fees and they have little say over the evolution of these platforms. Despite business models relying upon sustaining massive user bases that allow them to operate at scale, users have no means of participating in the value creation reaped from their use of these centrally controlled platforms. Until recent advancements in trustless network design, network participants had few reliable means for self-organizing without a centralized party.

The advent and subsequent development of the Ethereum protocol has opened the door for experimentation in decentralized organizational structures and the distribution of governance rights to a network's participants. Projects such as Aragon, Boardroom, Colony, and Giveth are actively working to harness the powers of Ethereum for these purposes, building platforms that enable non-technical users to create and administrate decentralized organizations. These tools allow for new means of group coordination through economic incentives, making it possible to disintermediate marketplaces and communities and to allocate voting rights to their participants. In short, citizens of the internet can now build and control the platforms they frequent every day.

Utilizing the aforementioned technologies, the district0x Network will facilitate the operation and governance of marketplaces and communities as decentralized entities. The district0x Network will enable the recreation of many of the internet's most popular applications and services while eliminating rent-seeking and the relinquishment of decisions and personal data to third-parties.

[1] https://www.recode.net/2017/5/25/15686886/ride-hail-valuation-investment-uber-didi-lyft
[2] https://www.wsj.com/articles/airbnb-valued-at-31-billion-after-new-funding-round-1489086240

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Districts

The district0x Network is comprised of districts. Districts are markets and communities that exist as decentralized entities built upon the d0xINFRA framework.

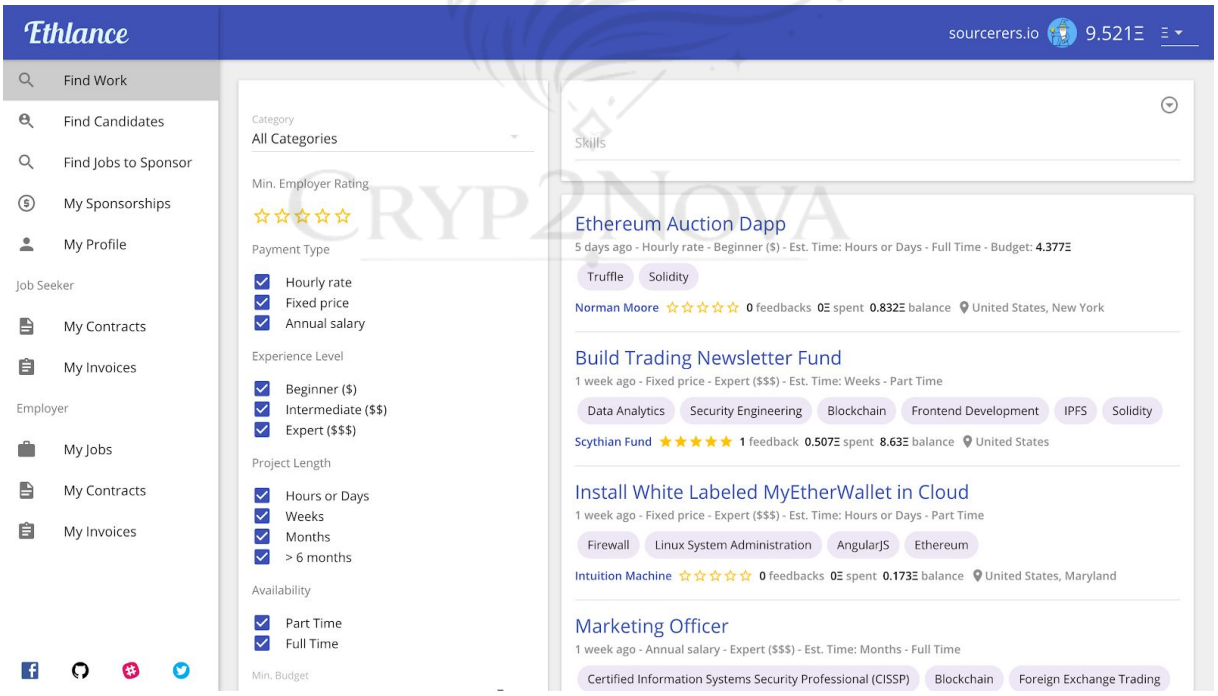
At the core of every district are components necessary to operate a marketplace or bulletin board application. All districts provide the following baseline functionalities:

- Posting and listings
- Search and filtering
- Ranking and reputation
- Payments and invoicing

These capabilities are tied together and made accessible to users via list, thumbnail, and gallery-style user interfaces, popularized by online services such as Craigslist and Reddit.

Ethlance

Launched on the Ethereum MainNet in January 2017, Ethlance is a freelance job market and the first district of the district0x Network.



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Ethlance allows users to create an employer/employee profile, list and apply for open positions, rank and provide feedback for employers/employees, and to send/receive invoices. Ethlance does not charge any service fees, and users pay only the necessary cost of gas to broadcast their profiles, posts, messages, feedback, and invoices to the Ethereum network.

Ethlance's code is completely open-source at github.com/district0x/ethlance. Ethlance's front-end source files are written in Clojurescript and served via IPFS. Ethlance's backend logic is governed by 14 smart contracts deployed on the Ethereum MainNet (Appendix A).

Since its launch, over 410 users have created a profile and more than 190 open positions have been listed. Projects such as Status, Aragon, Colony, WeTrust, Rex, JAAK, and Giveth are amongst those currently hiring via Ethlance.

As the original district, Ethlance serves as an experimental sandbox for the creation and refinement of the d0xINFRA framework and will be developed in perpetuity alongside other districts deployed by the district0x team.

Name Bazaar

The second district to be deployed to the district0x Network will be Name Bazaar, a peer-to-peer marketplace for the exchange of names registered via the Ethereum Name Service. Name Bazaar intends to provide an easily discoverable registry of ENS names that have been made available for purchase by their owners.

Amongst available options, owners will be able to choose to open customized auctions or list their names for sale at fixed prices. Sellers will have the option of setting their prices in ETH or any ERC20 token.

Name Bazaar will also allow for the trading of subdomains, enabling the exchange of usernames in decentralized applications such as Status and organization names in the Aragon Network Company Registry.

Meme Factory

Inspired by the work of Simon de la Rouviere and his Curation Markets design, the third district to be deployed to the district0x Network is Meme Factory. Meme Factory will allow users to mint their own tokenized memes and offer them for sale immediately.

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Meme Factory will provide an interface for the creation of provably rare digital assets on the Ethereum blockchain which can be immediately posted to a bulletin board-style marketplace for exchange.

Tokenizing and posting a meme to Meme Factory will resemble the process of creating a new post on Reddit. Minting a tokenized meme will resemble the process of upvoting. The number of tokens in existence for a particular meme at any given time will act as the ranking mechanism, resembling the number of upvotes a post has received. These functions will be tied together with a Curation Market model, with the cost of minting and the rates at which one can redeem their memes governed by a scaling pricing curve.

Future Districts

Following the launch of Meme Factory, the district0x team intends to continue to introduce new districts to the district0x Network. The district0x Network makes use of an open proposal process, allowing all community members to submit ideas for new districts via the district0x GitHub.

The district0x Network Token offers a means for network participants to signal which districts they would like to see built and deployed to the network next, enabling holders to coordinate around ideas which will add the most utility. Signaling is currently facilitated via the District Proposal Voting dApp, a customized implementation of CarbonVote.

District Creation Platform

The district0x Network will ultimately be comprised of global marketplaces and hyperlocal communities alike. The district creation platform will provide users with an easy to use interface to design and deploy their own districts to the district0x Network.

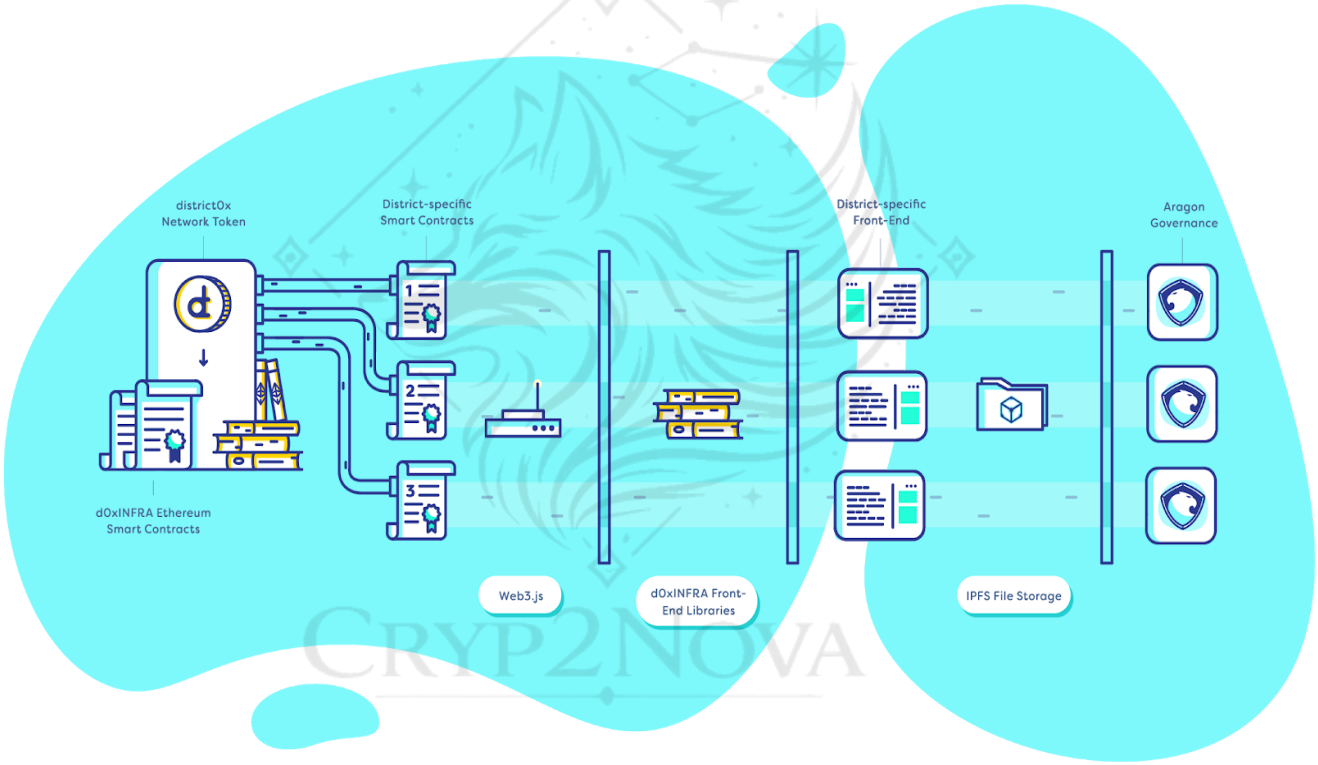
The district creation platform will provide a way to customize the parameters of the smart contracts powering a district and will offer numerous UI options to support a wide variety of markets and communities. The district creation interface will feature an auxiliary module directory, similar to the Apple App Store, to allow for the easy discovery of plugins that extend the functionality and utility of districts.

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d0xINFRA

d0xINFRA is an open source framework comprised of Ethereum smart contracts and front-end libraries that govern the deployment of new districts to the network and provide their baseline functionalities.

Each district's backend logic will be controlled by a combination of d0xINFRA contracts shared by all districts on the network and a set of district-specific contracts. Similarly, for the front-end, districts will share reusable components where possible, primarily 'under-the-hood' front-end logic, while still allowing for broad visual UI diversity.



The district0x Network seeks to be home to a vast array of markets and communities. In accordance with this vision, d0xINFRA has been designed as an open and extendable modular system that allows districts to implement unique features and enhanced functionality via the plug-in of auxiliary modules (covered in the following section).

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Auxiliary Modules

To allow for the development and deployment of new features, functionality, and revenue generating mechanisms to districts, districts can be customized and extended through the use of auxiliary modules.

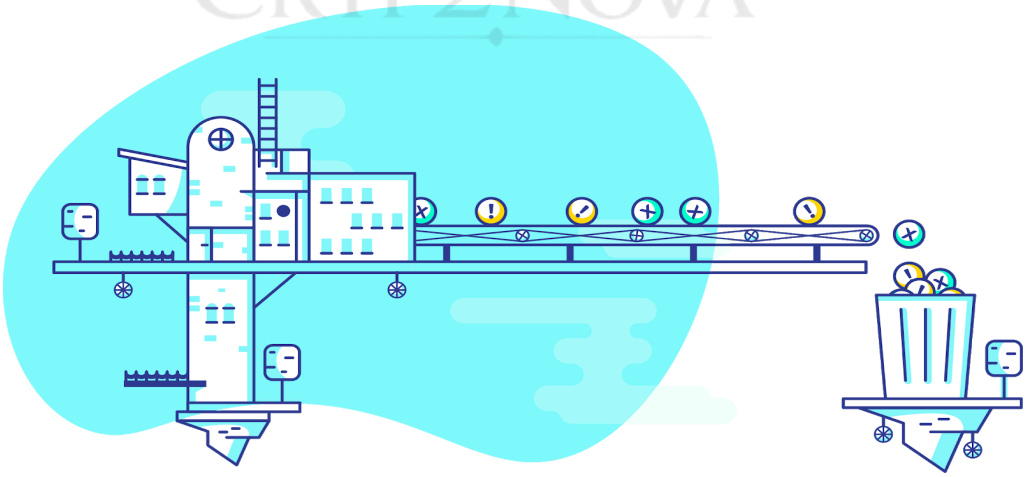
An example of an auxiliary module that could potentially generate revenue for a district, is one which provides a mechanism for users to bid on premium placement of their listings, similar to Google AdWords.

Another example of a potential revenue generating auxiliary module, is one which allows for the optional insurance of proposals on the platform. One could imagine a third-party service deploying a module to offer financial guarantees on arrangements between users of the platform in exchange for a fee.

An example of an auxiliary module that can enhance the user experience of a district is a moderation mechanism that allows for the flagging and takedown of spam, malicious links, or explicit content.

Districts will decide on a district by district basis what auxiliary modules are implemented via their governance processes.

Third parties are encouraged to develop and contribute auxiliary modules to district0x. They are incentivized to do so via the ability to charge districts fees for usage rights.



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Governance by Aragon

Launched in 2017, Aragon is an operating system for decentralized entities. The Aragon platform provides an easy to use interface for creating, administering, and governing virtual entities.

Aragon allows for user-friendly management of the basic components of an entity such as voting right distribution, role assignments, and accounting. The behavior of an Aragon entity can be customized by changing its bylaws.

The creation of a district on the district0x Network will trigger the creation of a deposit pool and corresponding entity on the Aragon Network. Through the district0x Network Token staking interface, token holders can stake their tokens to deposit pools to mint tokens which represent voting rights in district-specific Aragon entities, via which all of the district's governance activities will occur.

Voting rights can be used to partake in the processes that determine the characteristics of a district ranging from its design, to its functionality, to its accepted code of conduct, to the integrations it utilizes, and beyond.

Aragon entities created for districts will come preconfigured with a suggested set of bylaws and parameters, but district participants can vote to change these as they see fit.



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The District Registry

The District Registry is a decentrally maintained district whitelist, storing the credentials of districts which have been granted access to the district0x Network. The presence of a district in the District Registry signifies that the district has been accredited by district0x Network Token holders as non-malicious and value-additive to the district0x Network.

Inclusion in the District Registry grants a district access to a suite of ancillary services exclusive to members of the district0x Network. Registered districts are also eligible for inclusion in the district0x Network Token staking interface, whereby token holders can stake their DNT to a district's deposit pool to mint voting rights in the respective district's Aragon entity.

A user interface will allow token holders to submit new district proposals to the District Registry, challenge proposals, and vote for or against proposals in any ongoing voting period. Additionally, token holders can vote to alter parameters for the District Registry at large through the same interface.

Proposals and Deposits

To seek placement in the District Registry, authors of qualifying district proposals must submit a deposit of district0x Network Tokens along with their completed proposal to the District Registry's application pool. This application will remain idle until the challenge period passes.

If no challenge is raised during this period, the district will be included in the District Registry and the initial deposit will be transferred to the district's deposit pool on behalf of the applicant, assigning the initial voting rights in the corresponding Aragon entity to the applicant. Additionally, before any challenge occurs, the author may choose to withdraw their application, reclaiming their deposit and forfeiting their chance for inclusion in the District Registry until a later application is made. Applicants may apply for placement in the District Registry as frequently as desired.

Challenges

At any point during or after the challenge period, any district0x Network Token holder may choose to challenge a listing's inclusion within the District Registry by sending an equivalent deposit amount to the application pool. This initiates a voting period, during

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which DNT holders across the network may vote in favor or against the inclusion of the proposal in the District Registry. Votes are weighted according to a user's DNT balance, and are partially locked in a commit-reveal process inspired by Colony's voting system.

If at the end of the voting period, vote counts are weighted in favor of inclusion to the District Registry, the application succeeds and the challenger's deposit is forfeited. Likewise, if vote counts are weighted against inclusion to the Registry, the application is rejected, and the applicant's deposit is forfeited.

In both cases, a portion of the forfeited deposit gets distributed as a reward to voters on the winning side of the vote in proportion with their vote size, and the depositor of the winning side has their deposit returned. Voters from both sides never have funds at stake, and will have their voting tokens returned to them in full regardless of the outcome of the challenge. Applicants and challengers stand to lose their deposit from losing the vote, while voters only stand to gain from participation.

Parameterization

All numeric parameters of the District Registry are flexible, and can themselves be voted on for change through the propose-and-challenge process described above. The district0x team will define the initial parameter values and will stake the initial deposits required for these parameters. The parameter set is as follows:

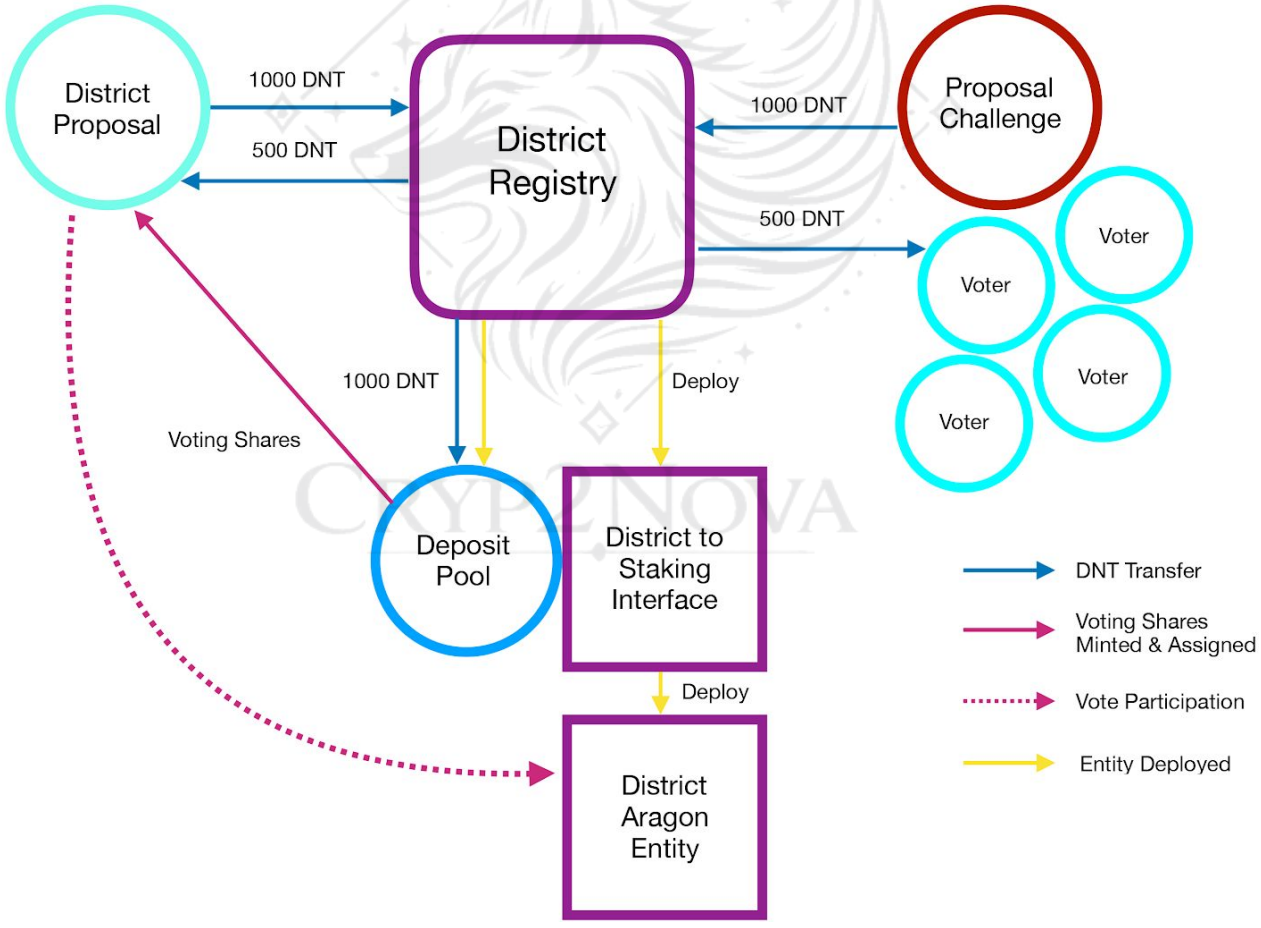
- Required Deposit - The number of district0x Network Tokens needed to submit an application to the Registry.
- Challenge Period Length - The amount of time (measured in blocks) that an application must remain idle for challenge before automatic inclusion in the Registry.
- Voting Period Length - The amount of time (measured in blocks) that a challenge will remain open for voting commits from token holders.
- Reveal Period Length - The amount of time (measured in blocks) during which committed votes can be revealed for a particular challenge.
- Required Vote Share Ratio - The ratio [0 - 1] of committed AND revealed tokens in a vote required to *uphold* an application's place in the District Registry. A higher number implies a higher bar of acceptance to the Registry.
- Awarded Ratio - The ratio [0 - 1] of forfeited deposits in a challenge that gets rewarded to the winning depositor. A higher number is more rewarding for the depositor, a lower number is more rewarding for voters.

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The district0x team will affix the initial parameter set to the following values:

- Required Deposit - 1,000 DNT
- Challenge Period Length - 24,200 blocks (about one week)
- Voting Period Length - 24,200 blocks
- Reveal Period Length - 7,000 blocks (about 48 hours)
- Required Vote Share Ratio - .5 (A simple majority decides to accept/reject applications)
- Awarded Ratio - .5 (A challenger needs 66.7% confidence in success to justify a challenge)

The graphic below illustrates the flow of value between network participants in the event of a proposal being challenged and granted access to the network after a voting period.



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district0x Network Token

To facilitate open participation and coordination across the network while providing protections from malicious actors we introduce the district0x Network Token (DNT). The district0x Network Token is a multi-utility ERC20 token providing holders with both network wide governance utility and a means of gaining access to district-specific voting rights.

Network Governance Utility

The district0x Network Token is used for interaction with the District Registry and to govern various aspects of the district0x Network at large.

Currently, district0x Network Token holders can utilize their DNT to signal for which districts they would like the district0x team to build and deploy next to the district0x Network. Token holders also have the ability to signal their support or disapproval for proposals made by network participants via the district0x Feedback Dapp.

Gradually, additional district0x Network-wide governance utility will be introduced to the district0x Network Token, experimenting with different capabilities and allowing time for testing and refinement before committing to permanent designs for implementation.

Before the current district0x Network roadmap will be considered complete, governance of the network at large will be turned over entirely to district0x Network Token holders.

District-Specific Governance Utility

The district0x Network Token can be staked to deposit pools to mint tokens providing district-specific voting rights in corresponding Aragon entities. These voting rights allow holders to directly participate in the governance of districts on the network.

Upon staking DNT to a district's deposit pool, participants will receive tokenized voting rights in the respective district's Aragon entity, which they will retain for the duration of the time their tokens remained staked. The rate at which voting rights are dispensed will be governed by a sliding pricing curve with the amount of DNT required to stake to mint 1 voting right increasing as a district's deposit pool grows.

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Participants are free to exit a district at any time, so long as they do not have votes cast in an open vote, by un-staking their district0x Network Tokens. If a participant has cast votes in an open vote, they are free to exit the district as soon as the voting period closes.

Voting rights are immediately forfeited and retired upon the un-staking of DNT from a district. After being un-staked, DNT can immediately be staked to other districts. The frequency and duration of voting periods for a given district are defined in their respective bylaws.

Unless specified in the bylaws of a district, there are no restrictions on the percentage of a district's voting rights that a participant can acquire and possess at any given time.



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district0x Network Token Distribution

The district0x Genesis Contract minted 1,000,000,000 district0x Network Tokens.

The district0x Genesis Contract has allocated the minted district0x Network Tokens as follows:

- 600,000,000 = Distributed to participants in Contribution Period v0.1
- 140,000,000 = Reserved for potential Contribution Period v0.2
- 40,000,000 = Reserved for potential Contribution Period v0.3
- 200,000,000 = Distributed to Founders (vest over the course of 2 years)
- 15,000,000 = Distributed to Advisors (vest over the course of 2 years)
- 5,000,000 = Distributed to Early Contributors (vest over the course of 6 months)

DNT tokens minted for allocation to founders, advisors, and early contributors are subject to a vesting schedule. Founder and advisor tokens are allocated over a 24-month vesting period, with a 6-month cliff. Early contributor tokens are allocated over a 6-month vesting period, with a 3-month cliff.

Contribution Period v0.1

Contribution Period v0.1 began on July 18th, 2017 and ended on August 1st, 2017. During this time, a total of 43,169 ETH of contributions were received. Within 24 hours of the end of the event, 600,000,000 district0x Network Tokens were divided and distributed to the participants.

Contribution Periods v0.2 and v0.3

A total of 180,000,000 district0x Network Tokens have been reserved to ensure the continued efforts of the district0x Network, in the event that additional contributions are needed to fulfill the district0x Network roadmap.

Contribution Periods v0.2 and v0.3 are subject to occur only after both the completion of the key milestones cited on the district0x roadmap (outlined in the following section) and 18 months have passed since the previous Contribution Period. Contribution Periods v0.2 and v0.3 will not occur if additional funding is not necessary to complete the project's remaining roadmap items.

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Roadmap

Prior to potential Contribution Period v0.2

- Deploy d0xINFRA
- Migrate Ethlance to d0xINFRA
- Deploy Name Bazaar to district0x Network
- Deploy Meme Factory to district0x Network
- Deploy the District Registry

Prior to potential Contribution Period v0.3

- Enable district extendability via auxiliary modules
- Deploy auxiliary module directory
- Deploy 5 additional districts to district0x Network
- Deploy district0x Network Token staking interface

Following potential Contribution Period v0.3

- Deploy district creation interface
- Deploy district0x Network directory
- Complete handover of governance of the district0x Network to district0x Network Token holders



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Projected Use of Contributions

Contributions received during Contribution Period v0.1 will be used exclusively for the development and expansion of the district0x Network.

Development Expenses

Contributions allocated for development expenses will be utilized to cover costs associated with the refinement of d0xINFRA, the deployment of new districts to the district0x Network, the creation of auxiliary modules, improvements to districts developed in-house, security audits, and the launch of the district creation platform.

Operational Expenses

Contributions allocated for operational expenses will cover any costs associated with accounting, business development, community management, education, people operations, recruiting, support, and any other administrative tasks.

Marketing Expenses

Contributions allocated for marketing expenses will cover any costs associated with the promotion of the district0x Network, districts on the district0x Network, the d0xINFRA framework, and the district0x Power Plant.

Legal Expenses

Contributions allocated for legal expenses will cover any legal costs associated with the establishment and operation of District0x Ltd., the establishment and operation of entities selected as service providers by the district0x Network, and any unforeseen legal costs necessary to resolve matters that could pose a threat to the district0x Network.

The district0x Power Plant

Inspired by the Slack Fund, the district0x team will seek to establish an entity to support the expansion of the district0x Network, advance the infrastructure upon which it is built, foster the emergence of a developer ecosystem, and back the efforts of partner projects that offer opportunities for interoperability.

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Management of Contributions

As an Ethereum-based project, the long-term viability and utility of the district0x Network is directly correlated to the continued development of the Ethereum protocol and growth of its user base. Given such, after hedging 2 years worth of runway into a stable coin, we intend to pay all wages to team members in ETH, to pay all possible expenses with ETH, and to hold all idle funds in ETH in a multisig wallet indefinitely.

Understanding that the price of ETH relative to fiat currencies can be highly volatile, we have left the door open to additional contribution periods in the event that further funding becomes necessary for the completion of the district0x Network roadmap due to a sustained decline in ETH/USD prices.

In the event that ETH continues to appreciate vs USD and excess contributions remain upon the completion of the district0x Network roadmap, options will be explored to return ETH to district0x Network Token holders.



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Transparency Policy

As a community-centric project, we believe operational transparency is paramount. The following steps will be taken to ensure that district0x Network Token holders will have access to an adequate amount of information about the progression of the district0x Network and the usage of contributions received from supporters.

Financial Disclosures

- The multisig wallet in which contributions are held will always be publicly displayed at https://district0x.io/transparency/
- Quarterly updates on our financial position and usage of contributions will be made publicly available at https://district0x.io/transparency/

Service Provider Disclosures

- Public work profile links (LinkedIn, GitHub) for all service providers presently contracted by the district0x Network will be accessible at https://district0x.io/team/
- All wages paid to service providers presently contracted by the district0x Network will be publicly accessible from https://district0x.io/transparency/

Development Disclosures

- Bi-weekly development updates will be published to https://blog.district0x.io/
- A link to the current district0x Network roadmap will always be publicly accessible at https://district0x.io/transparency/
- A link to the district0x GitHub repository will always be publicly accessible at https://district0x.io/transparency/

Contact Information

- A link to a public district0x Network chat client (Slack, Gitter, or similar platform) will always be publicly accessible at https://district0x.io/team/
- The district0x email address will always be displayed at https://district0x.io/team/
- The email address of all district0x team members will always be displayed at https://district0x.io/team/

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Team



Matus Lestan
Co-founder - Tech Lead

Developed Ethlance as the first district. Matus is a lifelong developer with a strong passion for decentralization. Previously working as a freelance developer for 8 years, Matus is now known for pushing the Clojure-Ethereum ecosystem forward via numerous open source contributions.



Joe Urgo
Co-founder - Strategy and Operations Lead

Founder/CEO at Sourcerers, Joe is a curious explorer of decentralized business models and token-enabled governance structures. Previously Joe worked as an Operations Manager at Coinbase, a Derivatives Trader at Three Arrows Capital, and a Professional Poker Player.

Alexander Khoriaty - Project Manager
Mike Konkov - Clojurescript Developer
Filip Bielejec - Clojurescript Developer
P.J. Leimgruber - Marketing Lead
Brady McKenna - Community Manager
Farhan Shaikh - Community Manager

Advisors

Luis Cuende - Co-founder at Aragon
Carl Bennett - Co-founder at Status
Brayton Williams - Co-founder at Boost VC
Vincent Zhou - Founder at FBG Capital
Manmeet Singh - Co-founder at Blockseed Ventures

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Appendix

Appendix A

Ethlance's backend logic is governed by 14 smart contracts deployed on the Ethereum MainNet:

- EthlanceViews - 0x1f286cB2EB7AE530FD85FD6EcE2e17d4f60D8DaA
- EthlanceUser - 0x27d233fa6032e848a016092d70493b2a5f13a95f
- EthlanceMessage - 0xf94aa98bde7589719f1f08c6fb032debd0d7e9e6
- EthlanceConfig - 0xe7d8d05f8328ea5b8fba5a77d4e4172487264bda
- EthlanceContract - 0x8F24AF20ad202C77686B771AD3dBc6b1fe28dDdD
- EthlanceSponsor - 0xb9f7d3b60ec29bd73fd66428f140ed5b0e1ef6ec
- EthlanceInvoice - 0x78f1072964d7f110e06670c229794afbdce7e474
- EthlanceSearchJobs - 0x9e2f85eea233047e527039681ad84448c8926690
- EthlanceFeedback - 0x2249713725c8a4a070a61de0bdce6b1081014185
- EthlanceSponsorWallet - 0xc80d2cb06ce606395178692de07ea9da1f873aa3
- EthlanceUser2 - 0x42c3e6bf6e47ad3d6cbb0b966c44e9331e96dd3e
- EthlanceDB - 0x5371a8d8d8a86c76de935821ad1a3e9b908cfced
- EthlanceJob - 0xB9E80ce5A7CbbA0Aab685797F6585AD1f3c90028
- EthlanceSearchFreelancers - 0x43386ad7af76ca5384bc06ae0c74e230f32744ee

Appendix B

A special thanks to the following community members for their feedback and continued support of the district0x Network:

- Luis Cuende
- Carl Bennetts
- Jarrad Hope
- Steven McKie
- Jorge Izquierdo
- Jake Vartanian
- Jake Brukhman
- Max Mersch
- Simon de la Rouviere
- George Li
- Nadav Hollander
- Stephen King
- Jorge Mielgo
- Griff Green
- Phil Kurtland
- Alexander Chopan
- Alex Maslar
- Christina De Paris
- Tatu Kärki
- Chase Cole

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