February 7, 2019

Neil Benedict-Neil@xres.io
Barry Cohen-Barry@xres.io
Charles Wyman-Charles@xres.io

Introduction

This report presents observations about Dfinity, a Palo Alto and Swiss based company that has raised over $100 million of capital and intends to build a decentralized public cloud among other products and services that the firm claims will be less expensive alternatives to private platforms such as Azure, Google Cloud, AWS, and others. This report can be characterized as a high-level review based solely on readily available information from public sources. **XResearch did not have access to any proprietary information, offering documents, management interviews, node testing, code reviews, or any other non-public information.**

Exhibit 1

Dfinity Summary Information

Project Name	Dfinity	**Telegram subs**	48,791
Project Type	Independent Protocol	**Twitter subs**	32,400
Symbol	DFN	**Reddit subs**	6,900
Price	$5.92 / $10.08	**GitHub Repositories**	42
Market Value	$2.8 Bln / $4.8 Bln	**Location**	Zug / Palo Alto
Tokens O/S (Est.)	473,300,971	**VC backed**	Yes
Live	No / Testnet	**Funding Size**	$167MM

Summary

Dfinity markets itself as a major disrupter in the multibillion-dollar cloud space and in other areas such as commercial banking, payments, and decentralized application development. The company's efforts to create a decentralized public randomness beacon would have a profound impact on the market.

The company appears to be well-funded, has an elite technology team, and is backed by some of the most sophisticated and successful investors in the technology space. The implementation of technology provides a robust backbone for their blockchain network. These foundational elements are a key for potential success.

 Please see important disclaimers and analyst certifications on the last page of this report. Consensus forward estimates are used in analysis; past performance is not indicative of future results.

Dfinity is a newer entrant into a highly competitive protocol development space with what appears to be limited market engagement at the application-layer level. No notable applications have been deployed yet that would validate the project's claims.

At the present time, EOS and Hyperledger Fabric are faster than Dfinity based on published performance statistics. Regardless of the level of demand for decentralized cloud computing, the performance of Dfinity would have to improve for the network to challenge other providers. In addition, the cost-savings of the core use-case remains unproven versus other cloud providers such as Amazon Web Services and Google Cloud.

Exhibit 2

Summary Selected Peer Group Data

11/20/19	Dfinity	Ethereum	EOS	Stellar	NEM	XRP
Block Time *(seconds)*	3-5	10-20	0.5	~ 5	60	4
TPS	X	15	3,000	1,000	4,000	1,500
# of Nodes	X	12,321	21/300*	64/291	499	950
Mkt Cap		$13,472MM	$3,351MM	$3,689MM	$729MM	$17,484MM
Daily Volume	N/A	$2,167MM	$775MM	$88MM	$9MM	$708MM
Token Price		$130	$3.69	$0.19	$0.08	$0.40

Competitors not included in the summary table that offer decentralized virtual machines, cloud computing, and file storage include NEO, Cardano, Ethereum Classic, Tezos (Filecoin), Qtum, Lisk, Siacoin, Golem, Sonm, and Komodo, which have already moved into the top 100 cryptocurrencies globally by market capitalization. Dfinity has targeted a market that is highly saturated and intensely competitive with limited barriers to entry at a point in time when distributed virtual machines have not yet begun to replace traditional networks and systems.

While the Dfinity team is world class and their addressable markets are substantial, the company faces intense competition from other new entrants and traditional providers in the blockchain space. Several innovative concepts that DFN is working on could become highly accretive to valuation, but the absence of a clearly defined revenue model and differentiated competitive advantage represents a significant risk to the future returns of the project.

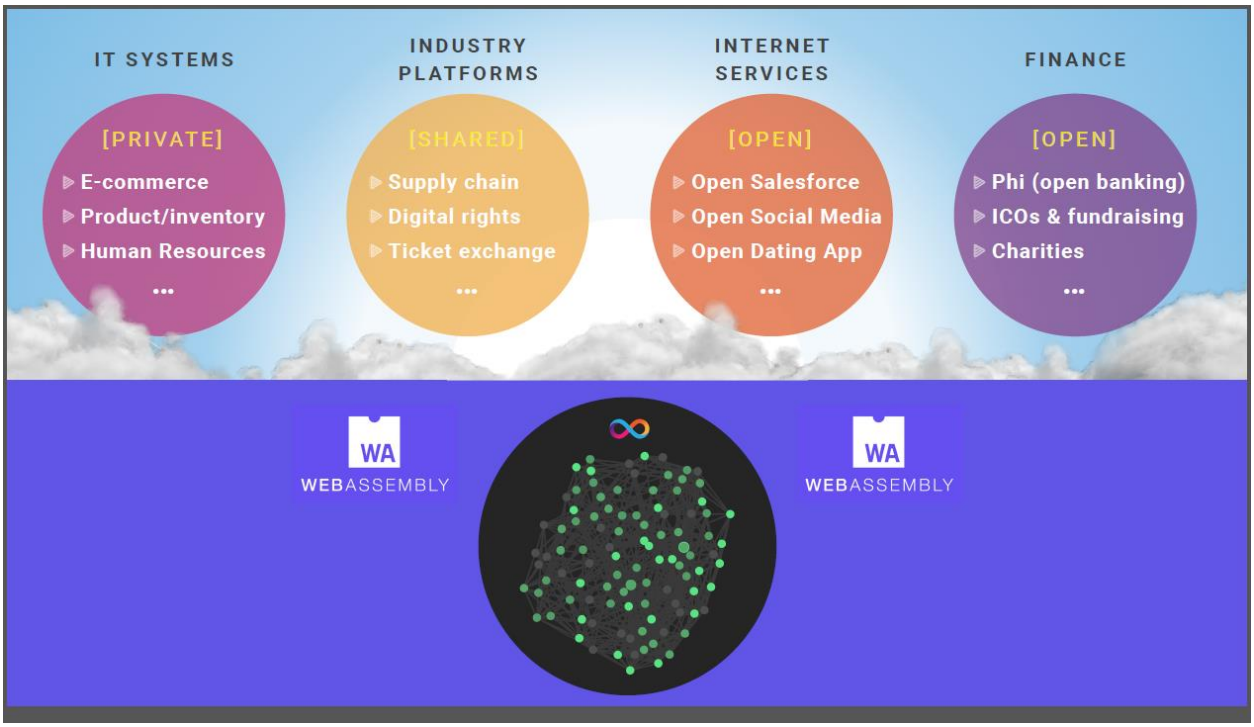
Services & Products

Dfinity is proposing to create a highly scalable, decentralized cloud computing network by providing a distributed virtual machine that appears to rival Ethereum. In addition, the network would serve as a platform to enter other markets, as indicated in the list below.

1. Global decentralized computer via a virtual machine
2. Decentralized application (Dapp) platform
3. Cloud services business (Google, Microsoft, Amazon, etc.)
4. Public decentralized randomness generator (beacon)
5. Financial services for commercial banking and payments
6. A crypto fiat currency
7. A portable code base for pre-existing Ethereum Dapp's
8. A staking model
9. An artificial intelligence overlay that heals the network, accessible to human intervention

Exhibit 3

Dfinity Services & Products



Source: Dfinity.

Technology

The Dfinity blockchain network runs on a proprietary, but as far as we can tell unpatented, consensus protocol, which would be accessible to competitors (Ethereum or EOS) to copy the same model from open source.

The protocol spans four layers with the driving mechanism being the decentralized randomness beacon. We have no insight on the current stage of development or timing of implementation of this critical component of the technology's security.

Decentralized randomness generation is an application with a broad range of real-world use cases. The consensus protocol, as described in the whitepaper, relies on a random selection of block producers from a pool of eligible parties, which incorporate permissioning, proof-of-stake or other requirement to ensure the nodes in the pool are genuine. Then, if using proof-of-stake, the protocol must solve for the nothing-at-stake problem.

Generation of verifiable randomness followed by selection criteria around randomness is a massive improvement over existing proof-of-stake models. Other blockchain networks with proof-of-stake consensus have issues of collusion in block producer selection.

The Dfinity model executes the selection of the next block producer and the notarization committee using the output from the random beacon, which mitigates the risk of collusion and centralization. Further, the application of the randomness function makes false or hidden chains impractical and costly. This is a major improvement during the early stages of a slow adoption cycle when individual users can represent most of the computing power on the network.

An identity layer, based on a minimum staking and software client requirement, will create identifiable nodes that can act as block producers. From this pool the users can interact pseudo anonymously, while being identified to the network as a specific machine. A program to issue autonomous identity solutions represents a significant market opportunity.

The whitepaper does not describe the proposed staking mechanisms for nodes or clients to become eligible for selection within the context of the random beacon selection rounds. Despite its focus on the protocol, the whitepaper does not describe the process for enforcing the proof-of-stake penalties. The "nothing at stake" problem is not entirely solved by the random beacon, but it does create an environment where bad behavior will likely be discovered more quickly.

At the functional level, proof-of-stake is less expensive to run and theoretically provides a greater penalty for misbehavior. In practice, the existence of a penalty mechanism increases the risk of an attack on the network which means user control of the private key does not guarantee control of their funds. For example, Bitcoin requires users to prove they expended work in advance of mining a new block and that cost is incurred whether they win the reward or not. The proof-of-stake system requires block producers to post tokens as collateral and then, if selected, they generate a new block. Other than posting the collateral and ignoring price risk, the user incurs no computational cost. A network that imposes a cost on users for bad behavior must have the functionality to take user funds. This is antithetical to the purpose of a decentralized system.

The Dfinity network may need separate structures for staking and private holdings of the DFN token to ensure security of funds. For example, Ethereum has not implemented proof-of-stake, perhaps because the proof function is vastly easier to implement than the penalty function. Users can either control their own funds or the network can hold functions to take those funds. The two conditions cannot coexist.

Another example of the difficulty of implementing proof-of-stake is private key recovery. That Bitcoin is lost forever when someone loses a wallet without a backup seed is actually one of its advantages: no one can seize or hack another's funds for any reason including recovery.

The notary layer is a method for circumventing the traditional user preference for waiting for multiple block confirmations before considering transactions to be finalized. Exchanges may still require confirmation in excess of the estimated two blocks before notarization, since they are the most vulnerable to a double-spending attack.

For basic users the notary function should provide enough security for daily usage, but comparable levels of trust already exist on Ethereum under the current proof-of-work regime: it would be far too costly for a miner to run a hidden chain to double spend against retail users over a material duration.

Dfinity states that finality occurs at the time of the transaction on their network. It is our interpretation that Dfinity's reference to "not final" blocks on competitive platforms is meant to apply in a theoretical double-spending attack scenario. Attackers holding greater than 51% of the network hash power cannot move funds they never owned, which is why stolen, or lost funds can never be recovered. To put the described Dfinity advantage in context: a one-hour 51% attack on Ethereum would require massive upfront hardware costs as well as approximately $360,000 for one hour of control. The best-case scenario for the attacker is that they can spend funds against large counterparties and then reverse the transaction. In other words, basic users of Ethereum can accept funds after executing a smart contract in 10-20 seconds with almost zero risk.

Definity states that their Blockchain Nervous System (BNS) forces updates of software in such a way to make hard forks impossible. However, in the process a potential security problem is created. The BNS runs on "Neurons" which are described as both artificial intelligence and as human controlled nodes that vote, according to Dfinity's CEO's Medium post.

This forced update poses a potentially massive security problem. The reason contentious forks are possible on other networks is that nodes on the network can simply refuse an update if they do not agree with it or if the update is assessed to be dangerous.

In Dfinity's model, a group can vote and push a mandatory update to all software clients. The threat surface is twofold: first, corruption of the voting nodes and second, an attacker can gain control of the voting nodes and update the whole network with malicious code. This circumstance is impossible on Ethereum.

Additionally, Dfinity's application of neural networks with multiple layers (deep learning) to operate the network is computationally expensive. Neural networks learn based on the data provided and are most commonly used for classification tasks like image recognition. This raises the question of what data the nervous system will receive and what is its objective function.

Dfinity is attempting to differentiate itself by providing code that enables pre-existing Ethereum Dapp's to seamlessly migrate to Dfinity's network. The claim that slow network speeds, scale issues, and finality are preventing Da[p developers from gaining traction does not appear to be supported by the data. Actual Dapp usage with native currency is close to zero. Dfinity, in effect, is attempting to use a clean platform and new currency to drive adoption of Dapp's to their network.

The infinite scalability claimed by the company remains to be proven. Management suggests that they are building a strict uniform architecture for nodes with specific roles: when a new user joins, the aggregate computational power of the virtual machine increases to exceed the maximum computational power allowed to the nodes at any moment in time.

We believe that most users do not want to run a full node that is contributing computational capacity to the network due to expense, but in the Dfinity model they would be required to do so. Alternatively, they would have some priority function. Neither the full node nor the priority function solutions would solve the scaling issue.

We were unable to find from the whitepaper, website, or other commentary any estimates of transactions per second or any other measure of throughput. We believe it would be unlikely that the network could scale infinitely.

Competition

Out of the multitude of companies that compete in the markets served by Dfinity's current and prospective service and product offerings, we have selected a smaller group that we believe is a sample and relevant to Dfinity's current business model.

Of the publicly traded decentralized blockchain projects, we believe EOS is probably the strongest competitor. EOS is currently faster, its mainnet is live, and the project is not only well-funded, but includes a pool of VC capital committed to investing in startups to expand the EOS ecosystem. The VC arm of EOS creates a strong incentive for new application-level use-cases to develop on EOS. One major criticism of EOS is the perception that there is voting collusion in selecting block producers. If EOS were to implement anything like a random beacon function, this criticism would no longer apply.

Competitors to Dfinitiy's claims for speed and scalability in the enterprise space are permissioned networks like Hyperledger Fabric. Hyperledger Fabric (IBM) is not in the summary comparison table

above because each blockchain implementation on Hyperledger can be customized to the needs of the users. Major companies already trust Oracle, IBM, banks, etc. with their data and are willing to extend this vendor trust to the nodes on the network. As such, scale and latency can be optimized which then may diminish the perceived need of enterprises to switch vendors. The ability of Dfinity to crack the enterprise market is likely to be very costly and long.

Filecoin has been building out their own solution looking to undermine traditional cloud computing services like Amazon's AWS and Google. Filecoin aims to gain competitive advantage by removing perceived excess margins being generated by established cloud providers. While Filecoin appears to be a Dapp, Filecoin resides on IPFS, an independent protocol layer built by the same team that originated Filecoin (which is also a competitor to Dfinity). Filecoin appears to be well funded with approximately $250 million raised during 2017. Other competitors to Fliecoin include Sia and Storj.

Nervos Network is a Chinese project which appears to be targeting similar solutions that Dfinity is targeting.

Competition to Dfinity can be expected from major firms. Microsoft is believed to be working on similar projects and speculation abounds on Amazon's recent public disclosures on blockchain. At a recent AWS reinvent 2018 event, Amazon announced two blockchain related offerings: Amazon Quantum Ledger Database (QLDB) and Amazon Managed Blockchain. This is on top of several patents and partnerships which pre-date these developments. QLDB uses journals that can track data changes within the unchangeable ledger. Amazon's product (QLDB) utilizes a serverless environment which should allow for significant scaling as compared to most public blockchain projects. Obviously, this has significant advantages when targeting the enterprise market.

The various markets targeted by Dfinity include many well financed and formidable competitors. We have no visibility on Dfinity's go-to-market strategy or its efficacy.

Valuation

The current funding structure and anticipated public capital raise from an additional token sale is said to be enough to fund the enterprise for several years. Questions remain about sustainability of the enterprise without an external revenue model. The absence of a revenue model makes it difficult for an investor to judge the risk of the project running out of money.

The strength and size of the team is a design and development advantage, but likely brings with it a substantial burn rate based on employee compensation and benefits. Additionally, the company operates multiple facilities in high cost locations. The combination of these and other operating expenses will exert ongoing financial pressures.

Methods employed by market participants when evaluating digital assets include applying Total Addressable Market (TAM) as a methodology or NVT or Network Value to Transaction which is often cited as a P/E ratio for crypto assets.

Another approach is to apply a macroeconomic theory called the Equation of Exchange which is used to ascribe value to a currency within an economic utilization model MV=PQ. Price is equal to the total transaction value divided the product of the money supply and velocity of exchange P= T/(M x V).

We used both the Equation of Exchange and NVT approaches in conjunction with each other, not because we agree with the design, but because they help highlight issues worthy of consideration in view of the implied valuation of Dfinity and the stated goals of the project. We have also included two separate TAM methodologies, specific assumptions for which can be found in the appendix. Major differences in valuation result from adjustments in terminal values of the Dapps that could reside on Dfinity's network.

We conducted our analysis of valuation for Dfinity under three scenarios as outlined below.

- **Scenario #1** - Uses current Bitcoin (BTC) annualized network transaction volumes, but at velocity levels just below those of Ethereum. Given the current velocity of Ethereum of 8.7x per annum, we calculate an implied price based on a velocity of 7x to 8x.
- **Scenario #2** - Uses Ethereum transaction volumes and velocity rates. For all the networks we calculated annualized volumes based on daily median transaction volumes. While the choice of median values should help simplify the data used, we need to recognize the skew that exists within the data set. Since the primary use case for Ethereum has been the funding of ICOs, a reasonable assumption would be that significant activity could be ascribed to the bull run periods of the fourth quarter of 2017 and the first quarter of 2018.
- **Scenario #3** – Based on a blended methodology using protocol network comparables. We included NEO and PIVX in our comparable group, since, like Dfinity, they utilize a Proof-of-Stake consensus protocol mechanism.

Exhibit 4

Selected Publicly Traded Network Comparables

	Bitcoin	Ethereum	EOS	NEO[1]	PIVX[1]	Average
NVT	115.8x	49.0x	39.1x	46.2x	128.5x	75.7x
Velocity	3.7x	8.7x	16.4x	16.5x	4.9x	10.0x
Median Daily Volume ($millions)	$795	$899	$143	$960	$1	$387
Annualized Volume ($millions)	$290,117	$328,260	$52,027	$35,043	$530	$141,195

1. Both NEO & PIVX use Proof-of-Stake (PoS) as their consensus mechanism.

Our choices on time, discount rates, and current prices are based on the following assumptions.

- Early stage venture capital discount ranges are wide but tend to fall between 30% to 70%. In our analysis we erred on the low end of that spectrum.
- Duration to annual transaction volumes are based on Ethereum's 2.5 years from launch, which we rounded up to 10 years since the network went public (BTC is actually 9) and then applied an average of those two time frames.
- Prices used to calculate returns are based on the implied private market value per token of $5.92 based on estimated values of the capital stack. The estimate of $10.08 is based on the calculated public futures market price observable on Tokok.

Returns by valuation scenario are summarized in exhibit 5 below.

Exhibit 5

Projected Returns by Valuation Scenario

		2.5 Years			5.25 Years			10 Years		
PV Scenarios	**FV**	**25.00%**	**30.00%**	**40.00%**	**25.00%**	**30.00%**	**40.00%**	**25.00%**	**30.00%**	**40.00%**
Scenario #1	$85.49	$48.94	$44.36	$36.86	$26.49	$21.56	$14.61	$9.18	$6.20	$2.96
Scenario #2	$78.01	$44.66	$40.49	$33.64	$24.18	$19.68	$13.34	$8.38	$5.66	$2.70
Scenario #3	$31.91	$18.27	$16.56	$13.76	$9.89	$8.05	$5.46	$3.43	$2.32	$1.10
Return on $5.92 Valuation:										
Scenario #1		726.6%	649.4%	522.7%	347.5%	264.2%	146.8%	55.1%	4.7%	-50.1%
Scenario #2		654.4%	583.9%	468.2%	308.4%	232.4%	125.3%	41.5%	-4.4%	-54.4%
Scenario #3		208.6%	179.8%	132.5%	67.1%	36.0%	-7.8%	-42.1%	-60.9%	-81.4%
Return on $8.62 Valuation:										
Scenario #1		385.5%	340.1%	265.7%	162.8%	113.9%	45.0%	-8.9%	-38.5%	-70.7%
Scenario #2		343.0%	301.7%	233.7%	139.8%	95.2%	32.3%	-16.9%	-43.9%	-73.2%
Scenario #3		81.2%	64.3%	36.5%	-1.9%	-20.1%	-45.9%	-66.0%	-77.0%	-89.1%

We have also prepared a valuation for Dfinity based on total addressable market. Detailed assumptions for the calculations from our model below are provided in detail in the appendix.

Exhibit 6

Projected Returns by Total Addressable Market

Discount	Target Price		Hybrid TAM		TAM	
Rate	Hybrid TAM	TAM	$5.92	$10.08	$5.92	$10.08
20%	$43.90	$16.86	642%	336%	185%	67%
25%	$33.10	$11.47	459%	228%	94%	14%
30%	$25.90	$7.88	338%	157%	33%	-22%
35%	$20.76	$5.32	251%	106%	-10%	-47%
40%	$16.90	$3.39	185%	68%	-43%	-66%

Despite substantial addressable markets, the company's world class management and sponsors face intense competition within the blockchain space from new entrants and traditional providers. Several of the more innovative concepts that DFN is developing could be highly accretive to valuation, but the absence of a clearly defined revenue model and differentiated competitive advantage represents a significant risk to the future success of the project.

Even with the assumption of success over a short period of time, discount rates could still be expected to be in the 40% range or more for these types of projects. At these rates, forward rates of return might not appear to justify longer term ownership implied by the quoted Tokok price. Nevertheless, this market is highly speculative, and other buyers may have a different interpretation of the competitive landscape and implied valuation.

 Please see important disclaimers and analyst certifications on the last page of this report. Consensus forward estimates are used in analysis; past performance is not indicative of future results.

Appendix

Staking Model

The following review represents our purely speculative view of Dfinity's staking process based on what limited information we were able to glean from public sources.

Staking is the process by which users deposit or escrow a given amount of coinage within the network for some potential yield on those staked tokens.

Staking serves several purposes. The most often discussed is the network integrity or security that staking provides. This is self-evident in all forms of Proof-of-Stake (POS) blockchain validation models. Proof-of-Stake algorithms achieve consensus by requiring users to stake an amount of their tokens to have a chance of being selected to validate blocks of transactions and be rewarded for doing so. The requirement to post a stake limits the ability of bad actors to be validators in the network. These models have some unresolved flaws such as randomness, yield construction, and potential node costs.

Staking has a direct impact on the number of tokens freely tradable for use on the network. The amount of staked coinage required, the modified duration of the escrowed coins, the required clearing yield, and the beta on the escrowed coins will effectively shrink the available level of tokens in the system. This will increase the demand function in price discovery (scarcity value), but it lowers valuation by increasing velocity. Higher token velocity equals lower token values.

Currently there are an estimated 53% of Genesis block tokens available. Most staking models use 50% of coinage outstanding for staking purposes and create a payable model of around 4%-10%. Management's discussion of their staking process raises the question of whether the model will be based on dollar staking or number of tokens and how the yield translates to a net return to stakers. An allocation of 50% of Genesis block tokens to staking implies a low percentage of tokens for sale during the public ICO. This raises the possibility that process has been structured to create temporary scarcity and thereby boost valuation at issuance.

With an informed view on staking and vesting schedules, our analysis could estimate some level of trading volume and apply velocity multiples to calculate an implied value for the tokens based on velocity.

Analysis of Capital Stack

Our estimate of the size of the Genesis Tokens was gleaned from a variety of sources. The first calculation is based on the seed round having a 30 DFN (Dfinity) to 1 CHF (Swiss Franc) conversion ratio. Based on this ratio and the $4 million capital raise, we estimate that 117 million tokens were distributed to seed investors. From public comments by management, we learned that seed investors received a guaranteed

non-dilutive 24.72% of the Genesis Block, which equates to 473.3 million total Genesis Block Tokens. While other sources put the Genesis token count at 469.2 million, the difference is not material at less than a 1%.

The current capital structure builds in gains for earlier investors. When the tokens become available for public trading, there will likely be investors who choose to capture unrealized gains and sell their holdings, which can be expected to depress market valuation. The only offset for this would be massive adoption of the network exceeding that of Ethereum, the most popular virtual machine cryptocurrency. At its peak, Ethereum only achieved 20K nodes.

Exhibit 7

Dfinity Estimated Capital Stack

ROUND	TIME	CAPITAL RAISED	GENESIS BLOCK PERCENTAGE OWNERSHIP	IMPLIED VALUATION AT ROUND	GENESIS BLOCK TOKENS PER TRANCHE
Contributor Allocation	N/A	$0	9.50%	$0	44,963,592
Seed Investors	Feb. 2017	$4,000,000	24.72%	$16,181,230	117,000,000
Strategic Investors	Feb. 2018	$61,000,000	6.84%	$891,812,865	32,373,786
Pre-Sale Investors	Aug. 2018	$102,000,000	4.75%	$2,147,368,421	22,481,796
Airdrop to Supporters	May 2018	$35,000,000	1.25%	$2,800,000,000	5,916,262
Undistributed Tokens			52.94%		250,565,534
Totals for Contributors		$167,000,000	47.06%		222,735,437
Total - Project			100.00%		473,300,971

The yellow space is left blank, because Dfinity raised the initial $4 million in seed funds mostly in Bitcoin and Ethereum just before the bull run in 2017. The average closing price of Ethereum was $12.37 in February 2017 versus an average fourth quarter price of $435, a 35x difference. There is some commentary that Dfinity sold out with a $40 million gain, but we have no confirmation of that fact. We also have no view on the tax status of the raise or post-distributed capita due to the Swiss domicile of the company and their claim to be a research enterprise. The Swiss have generally allowed negotiated tax structures in the past, so a favorable tax status is not out of the question.

Vesting is another significant consideration, since there are embedded gains in the capital stack based on the value implied from the Airdrop round and the future price that is posted in small volume trades on exchanges like Tokok.

The implied private market price is the Airdrop valuation divided by the estimated total tokens outstanding. The implied public prices are calculated from the trades on Tokok, which is an ETH based pricing exchange. To calculate the dollar price of DFN, we divide the quoted price in ETH by the current

dollar price of Ether. Pricing in the model was done at an ETH price of $102 and a DFN price of 0.0984 ETH which equals $10.08 / DFN.

Exhibit 8

Calculation of Implied Value of DFN Tokens

ROUND	GENESIS BLOCK TOKENS PER TRANCHE	IMPLIED PRIVATE MARKET VALUE	INVESTMENT RETURN PER TRANCHE PRIVATE	IMPLIED PUBLIC MARKET VALUE	INVESTMENT RETURN PER TRANCHE PUBLIC
Contributor Allocation	44,963,592	$266,000,000	N/A	$453,414,303	N/A
Seed Investors	117,000,000	$692,160,000	173.0x	$1,179,831,744	295.0x
Strategic Investors	32,373,786	$191,520,000	3.1x	$326,458,298	5.4x
Pre-Sale Investors	22,481,796	$133,000,000	1.3x	$226,707,152	2.2x
Airdrop to Supporters	5,916,262	$35,000,000	1.0x	$59,659,777	1.7x
Undistributed Tokens	250,565,534	$1,482,320,000		$2,526,710,863	
Totals for Contributors	222,735,437	$1,317,680,000	7.9x	$2,246,071,274	13.4x
Total - Project	473,300,971	$2,800,000,000		$4,772,782,137	
		$5.92		$10.08	

Valuation Considerations

A critical reference point to remember is that a higher velocity of exchange results in a lower price value.

As a baseline for comparison, this is the long-term velocity of the U.S. M2 money supply has ranged from 1.8x in 1960 to a high of 2.2x in the late 1990's and fallen to a low of 1.42 near where it currently resides.

As you can see in the chart on the next page, Ethereum has trades at dramatically higher levels, ranging from a high of 130x to a low of 20x, orders of magnitude above M2 velocity in the US.

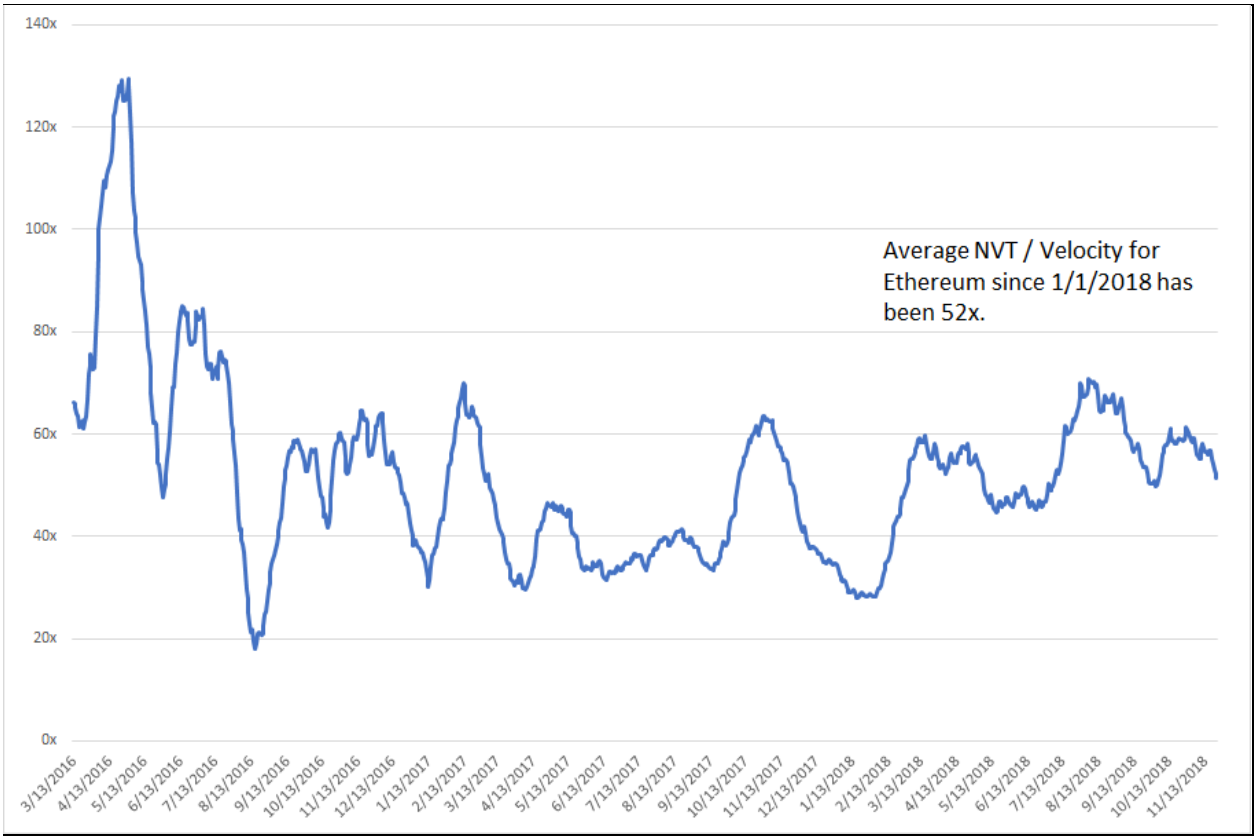
We used a 30-day moving average (MA) to smooth out the volatility, but Ethereum's velocity was significantly higher in the earlier stages of market development. We show the results from the period when Ethereum reached a valuation of $1 billion as a benchmark for the current valuation of Dfinity, which trades between $2.8 billion and $4.1 billion.

The overwhelming level of transaction value that is purely speculative with no real commercial value within the digital asset sector, however, raises the specter that the markets have massively overvalued many the publicly traded utility projects, including the larger protocols. It is also important to understand that velocity is the inverse of NVT since Velocity = 365/NVT.

Exhibit 9

Ethereum NVT 30-day Moving Average

9



To complete our analysis, we applied the Equation of Exchange to build a matrix of valuations implied by annual transaction volume and estimated velocity rates. Calculations in the table below are based on a fully diluted tokens outstanding of 470 million coins.

Exhibit 10

Velocity Analysis of Implied Valuations

Supply (M)	470,000,000									
Current Annualized Volume	$0									
					Velocity					
Annual Transaction Volume	1	2	3	5	6	7	8	9	10	15
$5,000,000,000	$10.64	$5.32	$3.55	$2.13	$1.77	$1.52	$1.33	$1.18	$1.06	$0.71
10,000,000,000	$21.28	$10.64	$7.09	$4.26	$3.55	$3.04	$2.66	$2.36	$2.13	$1.42
15,000,000,000	$31.91	$15.96	$10.64	$6.38	$5.32	$4.56	$3.99	$3.55	$3.19	$2.13
20,000,000,000	$42.55	$21.28	$14.18	$8.51	$7.09	$6.08	$5.32	$4.73	$4.26	$2.84
25,000,000,000	$53.19	$26.60	$17.73	$10.64	$8.87	$7.60	$6.65	$5.91	$5.32	$3.55
30,000,000,000	$63.83	$31.91	$21.28	$12.77	$10.64	$9.12	$7.98	$7.09	$6.38	$4.26
35,000,000,000	$74.47	$37.23	$24.82	$14.89	$12.41	$10.64	$9.31	$8.27	$7.45	$4.96
40,000,000,000	$85.11	$42.55	$28.37	$17.02	$14.18	$12.16	$10.64	$9.46	$8.51	$5.67
45,000,000,000	$95.74	$47.87	$31.91	$19.15	$15.96	$13.68	$11.97	$10.64	$9.57	$6.38
50,000,000,000	$106.38	$53.19	$35.46	$21.28	$17.73	$15.20	$13.30	$11.82	$10.64	$7.09
60,000,000,000	$127.66	$63.83	$42.55	$25.53	$21.28	$18.24	$15.96	$14.18	$12.77	$8.51
70,000,000,000	$148.94	$74.47	$49.65	$29.79	$24.82	$21.28	$18.62	$16.55	$14.89	$9.93
80,000,000,000	$170.21	$85.11	$56.74	$34.04	$28.37	$24.32	$21.28	$18.91	$17.02	$11.35
90,000,000,000	$191.49	$95.74	$63.83	$38.30	$31.91	$27.36	$23.94	$21.28	$19.15	$12.77
100,000,000,000	$212.77	$106.38	$70.92	$42.55	$35.46	$30.40	$26.60	$23.64	$21.28	$14.18
150,000,000,000	$319.15	$159.57	$106.38	$63.83	$53.19	$45.59	$39.89	$35.46	$31.91	$21.28
200,000,000,000	$425.53	$212.77	$141.84	$85.11	$70.92	$60.79	$53.19	$47.28	$42.55	$28.37
300,000,000,000	$638.30	$319.15	$212.77	$127.66	$106.38	$91.19	$79.79	$70.92	$63.83	$42.55
330,000,000,000	$702.13	$351.06	$234.04	$140.43	$117.02	$100.30	$87.77	$78.01	$70.21	$46.81
400,000,000,000	$851.06	$425.53	$283.69	$170.21	$141.84	$121.58	$106.38	$94.56	$85.11	$56.74
500,000,000,000	$1,063.83	$531.91	$354.61	$212.77	$177.30	$151.98	$132.98	$118.20	$106.38	$70.92
600,000,000,000	$1,276.60	$638.30	$425.53	$255.32	$212.77	$182.37	$159.57	$141.84	$127.66	$85.11
700,000,000,000	$1,489.36	$744.68	$496.45	$297.87	$248.23	$212.77	$186.17	$165.48	$148.94	$99.29
800,000,000,000	$1,702.13	$851.06	$567.38	$340.43	$283.69	$243.16	$212.77	$189.13	$170.21	$113.48
900,000,000,000	$1,914.89	$957.45	$638.30	$382.98	$319.15	$273.56	$239.36	$212.77	$191.49	$127.66
1,000,000,000,000	$2,127.66	$1,063.83	$709.22	$425.53	$354.61	$303.95	$265.96	$236.41	$212.77	$141.84
1,500,000,000,000	$3,191.49	$1,595.74	$1,063.83	$638.30	$531.91	$455.93	$398.94	$354.61	$319.15	$212.77

The red section is the area that would imply Dfinity is overvalued based on the current price as shown on the Tokok exchange. However, we need to compare Dfinity based on current protocol networks valuation and discount back those assumptions, which we summarize in the body of the report.

On the following page we have charted trading values and volumes of DFN on the Tokok exchange since September and compared the implied valuation versus Ethereum over the same time period.

Exhibit 11

DFN Price & Volume *(Sep-Dec 2018)*

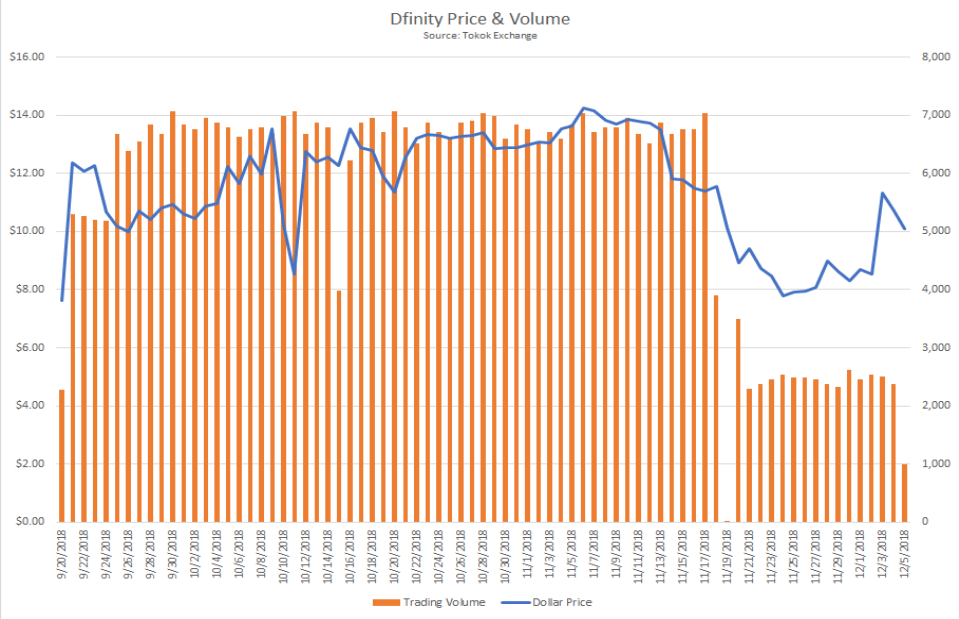
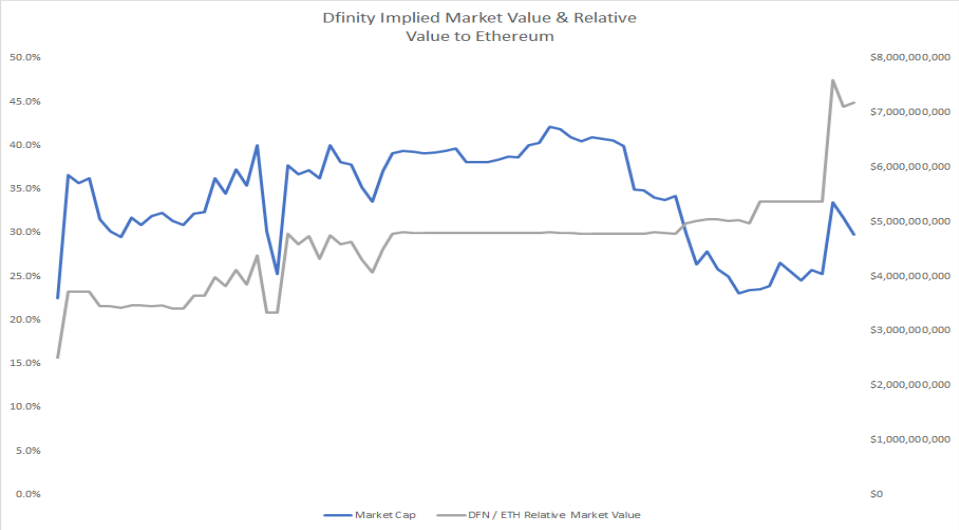


Exhibit 12

DFN Implied Market Value vs Ethereum



 Please see important disclaimers and analyst certifications on the last page of this report. Consensus forward estimates are used in analysis; past performance is not indicative of future results.

Assumptions for Addressable Market Model

- All returns are calculated from the visible price on Tokok Exchange
- Estimated tokens outstanding are 473,300,970
- Coin inflation 1% per annum
- Smart contract structure
    - 5% of token escrowed (adoption rate), 30% of adoption by 2023, 80% by 2028
    - Staking rate 30% by 2020 and 50% by 2021 with 50% maximum thereafter
- Three addressable markets:
    - Revenues of top 20 internet companies growing at 12% a year for next 10 years and 7% a year thereafter, Dfinity achieving a 20% penetration rate of these revenues with 35% of that target reached by 2023 and 95% of the target reached by 2028.
    - Global Cross-Border Payments market. Here again Dfinity achieving a 20% penetration rate with 40% of that target by 2023 and 95% by 2028. The market itself growing at 4%.
    - Decentralized Application capital (Dapp) raises market. We took a $7 billion starting point and grew annualized capital raise at 12% per annum.
- Within the Hybrid TAM model (only) we project a terminal value of the Dapp's that reside on Dfinity's network. The logic behind this additional step is that theory is the sum value of Dapp's residing on a network should not exceed the value of the network (protocol) they reside on.
- The velocity assumption is 8x a year which is less than the current estimate velocity of Ethereum at 8.7x per annum.
- Discount rate 20% - 40%.

Important Disclosures

The information and opinions in this research were prepared by Xresearch, LLC ("XResearch"). For valuation methodology and risks on the company referenced in this research report please email charles@xres.io or barry@xres.io .

Analyst Certification

The analysts responsible for this research, Neil Benedict, Barry Cohen, and Charles Wyman, hereby certifies that his views about the companies and the securities discussed in this report are accurately expressed and that he has not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report. Charles Wyman is a research analyst.

Disclaimer

Although the information contained herein has been obtained from sources XResearch believes to be reliable, its accuracy and completeness cannot be guaranteed. This correspondence is for informational purposes only and under no circumstances is it to be construed as an offer to sell, or a solicitation to buy, any security. At various times we may have positions in and effect transactions in securities referred to herein. Any recommendation contained in this correspondence may not be appropriate for all investors. The recipient must independently evaluate any investment including the tax, legal, accounting and credit aspects of any transaction. Instruments and trading strategies of the type described herein may involve a high degree of risk, and the value of such instruments may be highly volatile and may be adversely affected by the absence of a market to provide liquidity. Additional information is available upon request.

This document may contain information obtained from third parties. Reproduction and distribution of third-party content in any form is prohibited except with the prior written permission of the related third party. Third party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. Third party content providers give no express or implied warranties, including, but not limited to, any warranties of merchantability or fitness for a particular purpose or use. Third party content providers shall not be liable for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including lost income or profits and opportunity costs) in connection with any use of their content, including ratings.

Risks to our thesis includes deterioration in the macro environment, regulatory uncertainty, project & technological failure, loss of key personnel or failure to hire key personnel, financial distress, lack of market acceptance, increased competition, pricing pressure, and potential for acquisitions or dispositions, and any and all other potential risks associated with early stage technology investing. We were also not able to interview senior management, early stage investors, team members, or vendors. We were also constrained by not having the ability to run any of the code base or act as a full node.

Our valuation outcomes are derived solely from publicly available information. While nascent valuation frameworks exist in the blockchain asset class, they are not yet proven models, nor do they enjoy widespread acceptance. As such valuations assumption, end-user assumptions, terminal values, utilization rates, velocity assumptions and all other key model inputs are subject to significant error factors, and readers should consider them fully.

The development of blockchain networks is highly competitive. No single project has proven out their end user market to date. The technology is still evolving, and much of it is unlicensed open sourced models. As such we see the industry as extremely speculative from an investment perspective.

For information pertaining to XResearch please visit our website at www.xres.io. This is not a solicitation to promote or participate in XResearch or our tokens.

A non-distributable private research report from XResearch.

 Please see important disclaimers and analyst certifications on the last page of this report. Consensus forward estimates are used in analysis; past performance is not indicative of future results.