Introduction to Credit Risk Analytics and the BIRD Score

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Bird.Money

Advanced DeFi Analytics
Delivered On-Chain

Contents

Discover Bird.Money

The Bird Mission

Driving DeFi Product Development

Bird.Money is empowering next-generation DeFi product development by delivering cutting-edge machine learning analytics to smart contracts, lending protocols, launchpads and other DeFi platforms through the decentralized Bird Analytics Oracle. By data mining on- and off-chain information to develop wallet-level predictive analytics models, Bird is enabling DeFi protocols to individualize financial products, services and user interactions.

Rich, precise and timely prediction products lie at the heart of innovations such as under-collateralized lending, positioning Bird and its first-of-its-kind DeFi credit score as a vital catalyst in the evolution of DeFi. With the Bird Lending Platform and Analytics Oracle live on both the Ethereum and Binance Smart Chain networks, as well as multiple production platforms integrated with the Bird Analytics API, the evolution has begun.

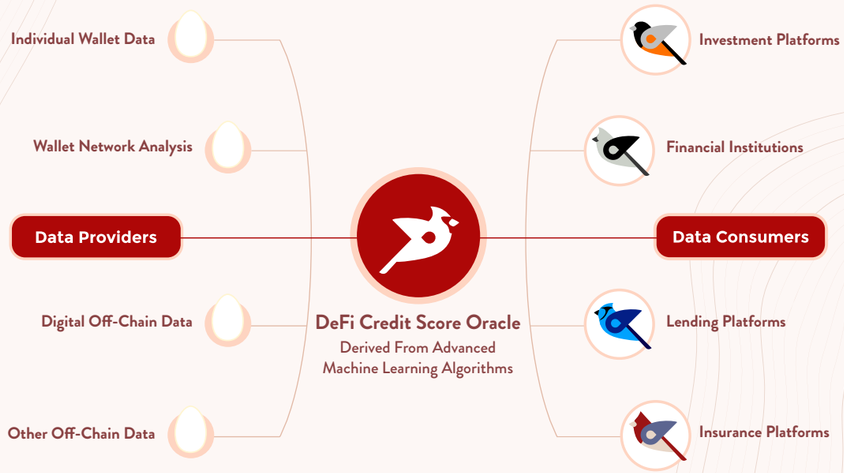


Figure 1. The Bird analytics oracle serves as a secure delivery mechanism for Bird's analytics products

Market Opportunity

Developing New Products to Attract New Customers

Lending protocols such as Compound, AAVE and MakerDAO have fueled DeFi's exponential growth, despite offering essentially one identical product to every borrower: a fixed-ratio collateralized debt position. For most borrowers, this relegates the use of DeFi lending to esoteric trading objectives like hedging and leveraging, leaving few options for those with more mainstream capital needs. However, reducing or varying collateral ratios to reach new customer segments requires distinguishing trusted borrowers from all of the rest. The BIRD Score, or Blockchain Individualized Risk of Default Score, does just that.

Despite these shortcomings, DeFi has grown exponentially in the past 12 months, with total value locked in smart contracts exceeding $88B and total DeFi borrowing topping $15B, according to data from DeFiPulse and GlassNode. However, according to data from GlassNode and Dune Analytics, only about 2% of all non-zero Ethereum wallet addresses have ever interacted with any DeFi protocol and an even smaller portion (0.2%) have ever interacted with the lending platforms AAVE, MakerDao or Compound. With over 58M non-zero Ethereum wallet addresses, significant near-term market potential exists for innovators that design products tailored to the needs of these customers because they've already overcome the hurdle of adopting cryptocurrency in general. What's more, mainstream borrowers have begun to embrace the benefits of digital personal loans, as the share of FinTech loans has grown from near 0% to over 50% in just 10 years, according to data from Experian.

This suggests that the nearly 200,000 daily personal loan borrowers worldwide reported by TransUnion and Research & Markets represent further market opportunity given the advantages of DeFi lending. And finally, for the untold number of individuals living in underserved or ununserved markets, where access to capital can have the greatest possible impact, DeFi may in fact be the only viable lending solution.

As DeFi evolves to produce a wider array of products, new customer segments will adopt cryptocurrency and Bird.Money is positioned at the center of this innovation.

DeFi has grown exponentially in the past 12 months, with total value locked in smart contracts exceeding $88B despite only 2% of ETH wallets ever interacting with DeFi.[1]

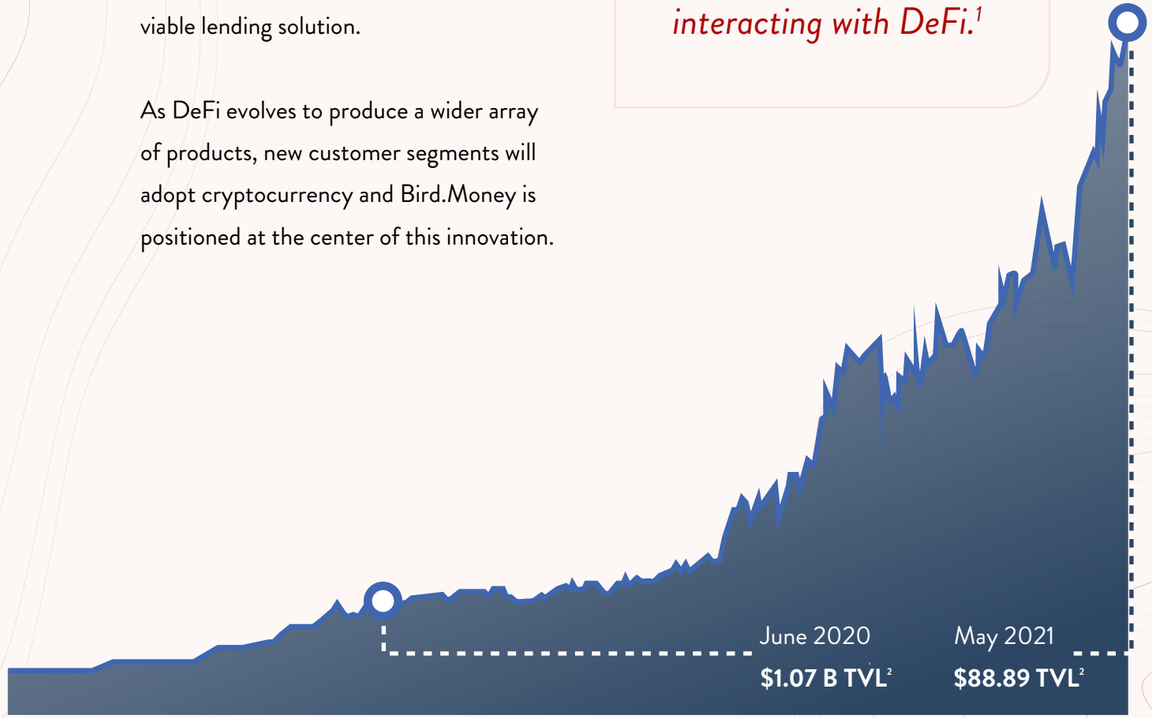


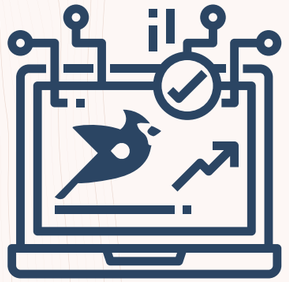
Figure 2. The exponential rise of DeFi TVL has occurred without lending products designed for the average person

The BIRD Score

A First-of-its-Kind DeFi Prediction Model

The Blockchain Individualized Risk of Default score, or BIRD score, is a machine-learning derived prediction product that captures the unique credit risk characteristics of a given wallet address. Protocols that incorporate the BIRD score will be empowered to tailor their financial products to each customer, including varying the collateral requirements for a DeFi loan. However, for lending protocols to decrease collateral requirements while still maintaining safe liquidity levels, the score must accurately reflect whether a borrower is likely to repay their loan. That's what makes Bird's methodology so important.

Several projects have set out to build an on-chain credit score, but nearly all of them rely upon a far less accurate method to create the formula for their score: human judgement. To understand what this means, let's break a credit score down into its two main parts, which are attributes and weights. Attributes could include things like the age of a wallet or prior loan repayment history. Weights are nothing more than numbers assigned to each of these attributes, that when combined together, create the score. How these weights are set determines the accuracy, and therefore usefulness, of the score in predicting risk. So, while the competition is setting their weights based on their intuition, Bird developers will be hard at work building cutting edge statistical models, such as deep learning artificial neural networks, to set the weights used in the BIRD score. Risk is complex and this complexity is better captured by mathematics than human judgement alone.



Several projects have set out to build an on-chain credit score, but nearly all of them rely upon a far less accurate method to create the formula for their score: human judgement. Bird is using cutting-edge machine learning to truly quantify risk.

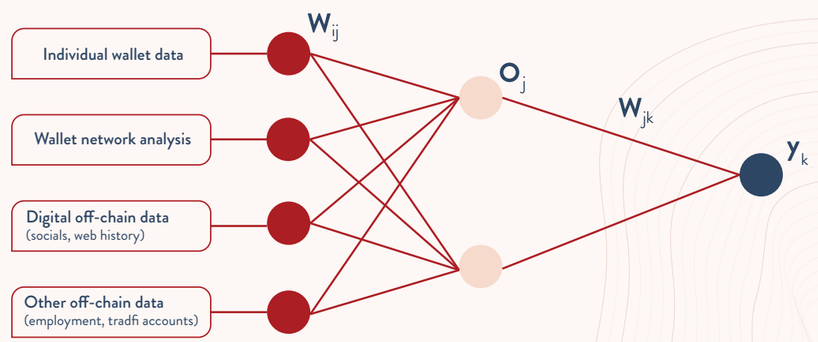


Figure 3. Diagram of an artificial neural network machine learning model to quantify DeFi credit risk.

Adverse Selection

The Consequence of Poor Scoring Models

For any lender, crypto or otherwise, the distinction between intuitive and statistical models is vitally important, which is why traditional creditors have relied upon statistical credit scoring models for nearly a century. For any one lender to issue loans profitably, the terms of the loan offer must account for the chance that it won't be repaid. This is commonly known as defaulting on a loan. However, when multiple lenders compete, the consequences of mispriced loans are intensified by a phenomenon known as adverse selection. Simply put, a lender that uses an inferior credit score is likely to underprice high-risk borrowers and overprice low-risk borrowers. Since each borrower will likely choose the lowest priced loan, this lender will be left with a portfolio skewed towards high-risk accounts that are less likely to repay their loans, resulting in defaults which could threaten the lender's solvency.

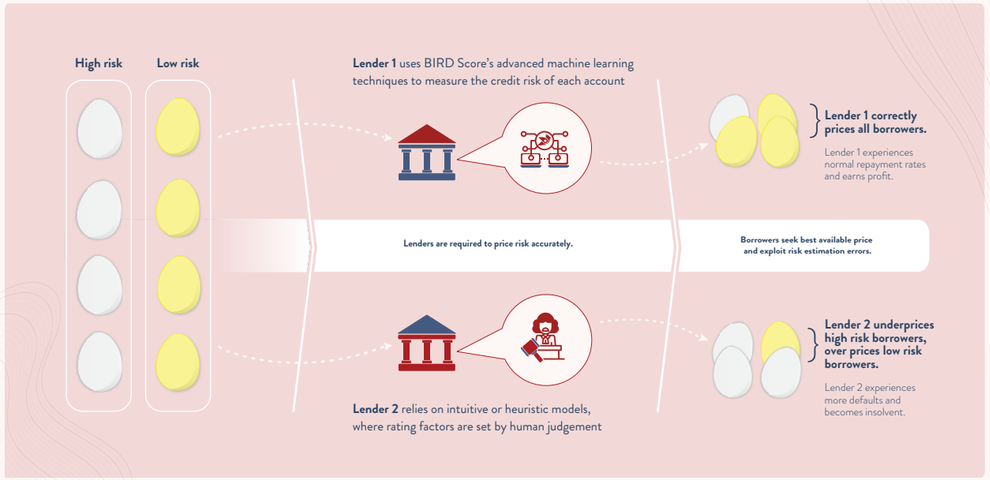


Figure 4. Eliminating adverse selection is vital to lending profitability. Machine learning more accurately prices risk than models based on human judgement.

Credit Attribute Data

Getting off the Chain

All models are only as good as the data upon which they are based. While there are a plethora of powerful signals that can be gleaned from the blockchain, Bird is designing an architecture that is capable of also incorporating off-chain data sources. By establishing pipelines that extend past blockchain networks, Bird's analytical processes will capture risk characteristics that more holistically represent borrower behavior and financial responsibility. Not only does this position the BIRD Score to outperform other blockchain credit scores, but it will also allow Bird to design products that can complement traditional financial credit scoring. Furthermore, because borrowing behaviors can be predictive of other financial activities, this robust data architecture will facilitate rapid development of other useful DeFi prediction products. For example, models that predict investor behaviors and can be integrated with project launchpads are already being actively researched.

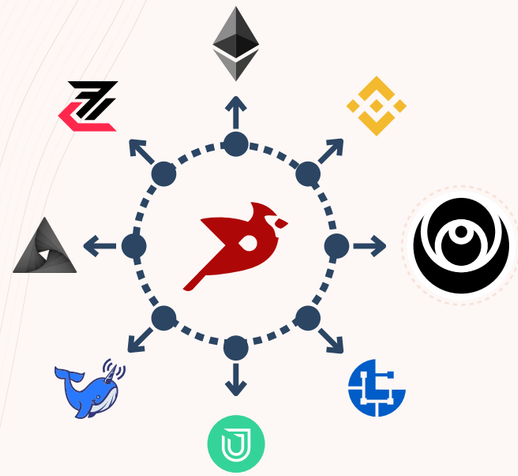


Figure 5. Bird operates on multiple networks and is already integrated into multiple production platforms.

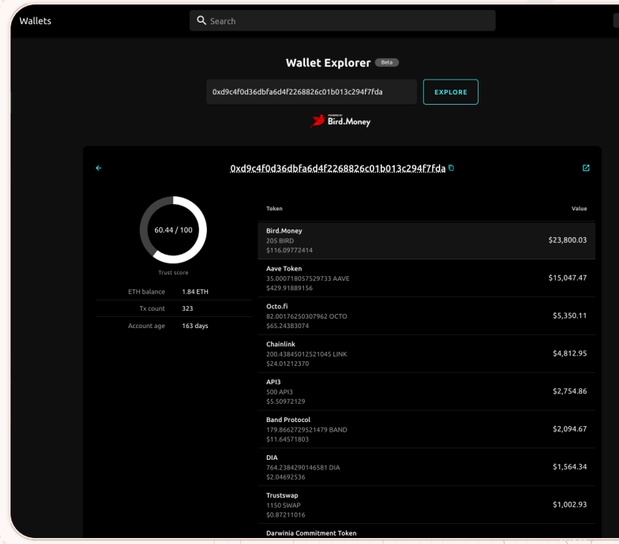


Figure 6. MoonTools wallet explorer dapp powered by the Bird.Money API

The history that blockchains inherently preserve make on-chain sources a natural starting point for Bird's data curation efforts. A record of a given wallet's borrowing performance, balances and transactions can easily be fed into BIRD Score models, but using network analysis will also allow inclusion of features from other wallets that this wallet has interacted with. Through partnerships with other projects, certain potentially exciting off-chain sources are also immediately within reach, such as social media and web browsing history. And finally, as tools for accessing and verifying other off-chain information evolve, attributes such as traditional banking activity or employment status can be incorporated. Given the pace at which new data sources are being created in our daily lives, the sky is truly the limit when envisioning the potential of Bird.Money's prediction products.

By establishing pipelines that extend past blockchain networks, Bird's analytical processes will capture risk characteristics that more holistically represent borrower behavior and financial responsibility.

DAO Governance

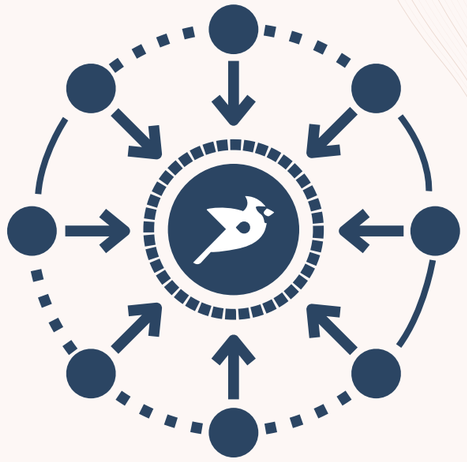
Learning from the Mistakes of Traditional Finance

The decision to grant credit can have real and profound effects on people's lives, and if mishandled, the data these decisions are based on can be devastatingly weaponized by bad actors. Despite these facts, traditional finance has done little to evolve its operational governance procedures. Stated plainly, consumers have essentially no influence over the decisions credit bureaus make. Little has been done to address this despite the fact that credit bureaus have repeatedly suffered extensive data breaches and are of the most frequently cited institutions for consumer affairs regulators. All of that will change with the Bird DAO.

One key area of research already underway is aimed at developing strategies to ensure that governance remains inclusive while also guarding against concentrations of voting power, a tension that is mediated only by token price in most DAOs that exist today. A low price promotes inclusion, but may allow the wealthy undue influence over voting, and vice versa. For this reason, a portion of Bird's governance tokens will be emitted as incentives for users to perform actions vital to the platform's viability, such as participating in the oracle network and the various steps required to ensure network data are accurate.

The Bird DAO will foster the type of relationship between credit analytics providers and credit consumers that solves many of these problems. Everything from model structure to the price of Bird's products can be guided by individuals that are properly incentivized to balance the interests of lenders and borrowers. To be clear, the practical application of a DAO is still in its infancy, so control will only be ceded to the DAO gradually as the community's understanding of this exciting, new business structure grows.

BIRD token holders vote on changes and upgrades to the Bird analytics protocol. Everything from model structure to the price of access to Bird products.



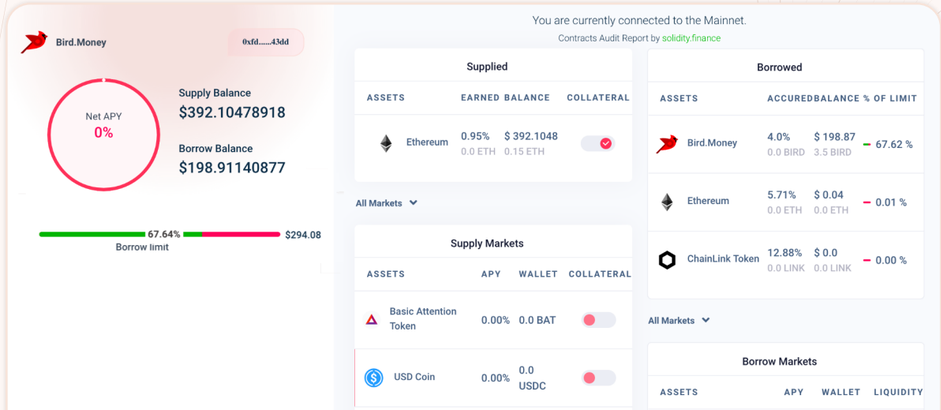
The Bird Lending Dapp

A Sandbox for Bird's Researchers

The Bird.Money team understands that trustless, undercollateralized lending will require rapid cycles of research, development and deployment of scoring models and loan structures that allow lenders to safely issue loans that are attractive to consumers. For that reason, Bird has released a fully-functioning lending dapp on both Ethereum and Binance Smart Chain. The platform has been live since Q1:2021 and operates much the same way as other lending protocols, such as Compound or AAVE: users connect through a secure Web3.0 interface and select from many different assets to either borrow from or provide liquidity to. That said, aside from an R&D sandbox, this effectively provides Bird's researchers proving grounds to demonstrate the efficacy of these innovations to other lending protocols.

Perhaps the most significant structure that traditional credit markets actually got right is the separation of credit scoring from lending. Most credit bureaus do not also offer loans directly to consumers, which eliminates the potential for anti-competitive features to be hidden inside complex architecture where they're unlikely to be uncovered. This design principle is foundational to Bird's strategy and explains why the lending dapp is framed in this way (i.e., as "proving grounds"). Bird.Money is positioned to compete on credit analytics through its BIRD Score, not credit issuance through its lending dapp.

Figure 7. The Bird lending dapp is live on both the Ethereum Network and Binance Smart Chain.



Product Delivery

The Bird Analytics Oracle, Dashboard and API

Providing other protocols with a variety of robust access points to Bird's analytics products has been a mission-critical objective from the outset. An initial version of the Bird API was released in Q1:2021 and has been incorporated into multiple decentralized applications as part of formally executed partnership agreements. Development of Bird's decentralized Analytics Oracle is also underway, with substantial progress having been made towards submitting code to third-party audit. In an effort to promote Bird's core values of transparency and accessibility, a Web3.0 dashboard that displays various credit factors associated with a user's connected wallet is also live.

The heart of Bird's analytics ecosystem is the decentralized Analytics Oracle, which relies on innovative delivery mechanisms to provide other protocols with equally innovative DeFi analytics products. By providing a trusted source for off-chain data through a mutli-node oracle consensus model, DeFi protocols will enjoy easy access to high-value data ranging from Bird's proprietary prediction products (e.g., the BIRD Score) to timely macro (e.g., global market shocks) and micro (e.g., employment status changes) real-world events. Advancements specific to consumer DeFi lending intended to promote mainstream adoption are also in development, such as deploying zero-knowledge proofs to mitigate data leakage when users seek credit from next-gen lending platforms and devising novel token economics to allow for far more competitive and ethical pricing models than what exists in traditional credit reporting markets today.

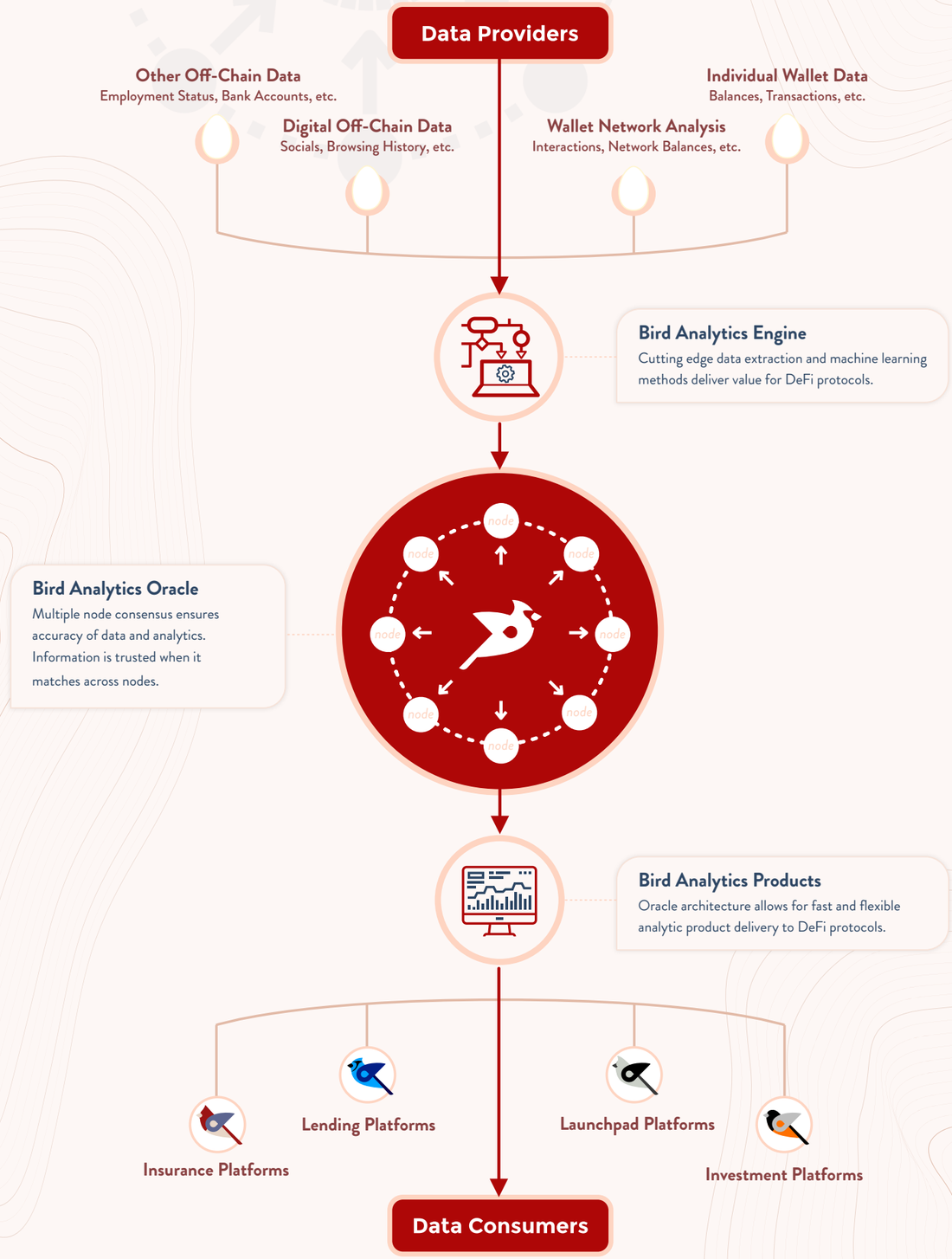


Figure 8. The Analytics Oracle connects our partners to Bird's products in a secure, decentralized framework

Financials

Revenue Overview and Token Performance

Like many traditional tech companies that derive revenue from analytics products, Bird.Money's financial performance is based on creating useful predictions and datasets that others can depend on. However, unlike traditional tech companies, Bird.Money doesn't create these analytical products at the expense of its users. In fact, the Bird governance model expressly includes users in the decisions that may affect them. By fostering a reciprocal—rather than extractive—relationship, Bird.Money is positioned for market success throughout the adoption lifecycle DLT is expected to undergo over the coming years.

These principles are especially relevant to understand Bird.Money's earnings potential because its products are designed to drive innovations in DeFi and capture new audiences. Bird.Money's analytics will allow lenders to individualize their products and services, facilitating the creation of a wider array of lending products in order to attract a larger, more varied customer base. These audiences represent substantial profit opportunities for Bird.Money and its partners. For example, according to data from GlassNode and Dune Analytics, of the 58M ETH wallets with a non-zero balance, only 0.2% have ever interacted with the Compound, AAVE or MakerDAO lending protocols. The addressable market is even larger for non-crypto users as nearly 200,000 consumer personal loans are issued globally every day, each of which carries overhead costs that DeFi lending protocols have largely eliminated. One of these costs is a fee paid for a credit score, which averages about $20 per request according to the U.S. firm Fair Isaac Corporation.

Data consumers will purchase tokens in order to access Bird.Money's analytics products, thereby allowing the market and not a single credit bureau to determine their value. Even if we assume a far lower cost-per-score of $5 (compared to $20) and capture rates of 0.5% to 10% of both the crypto and mainstream borrower segments described above, the near-term profit potential is extremely compelling.

Bird.Money's analytics architecture can also be used to produce other valuable DeFi prediction products to support non-lending applications. The growth of decentralized fundraising that's led to the rise of launchpads can also benefit greatly from Bird.Money's analytics. For example, allowing projects to tailor investment terms based on the likelihood an investor will behave in ways that support the project in the future by providing market liquidity or staking their tokens. Other token distribution methods, such as airdrops, could follow a similar approach and ensure their tokens go to wallets that give the project the best chance of a success in its early stages. Whether it be lending analytics or launchpad analytics, cutting-edge predictions based on data, propel the Bird.Money token cycle and portend a bright future for Bird.Money.

Based on the BIRD token performance since its launch in November 2020, it's clear that the Bird community sees this potential clearly. A vibrant following has emerged organically around the core ideas and values that Bird brings to DeFi as demonstrated by the amazing support the market has provided.

Current token performance

Max ITD token price appreciation of 200x

Over $1M average daily trading volume

Over $3M Uniswap liquidity

Over 14% of circ. supply staked by users

Multiple CEX listings complete

Cross-chain launch (ETH, BSC) with bridge

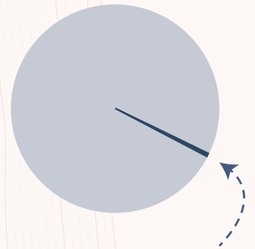
Token price since inception

Uniswap liquidity since inception

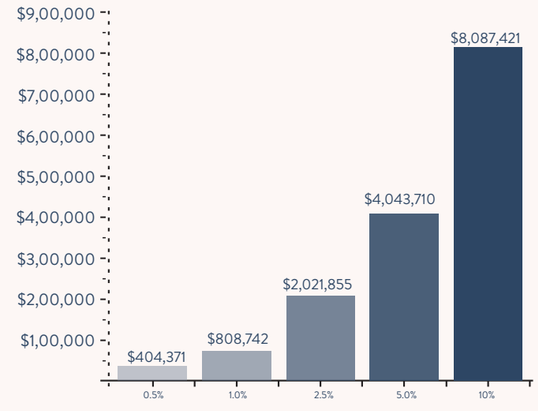
1 "Fintech Marketplace Trends Report" published by Experian on September 24, 2019
2 Data Retrieved from Dune Analytics May 10, 2021
3 "DeFi Uncovered: The State of DeFi" published by Glassnode on May 12, 2021
3 "Consumer Credit Origination, Balance and Delinquency Trends: Q1 2020" published by Transunion on June 5, 2020

Crypto Addressable Market Forecast (1-2 yrs)

New lending products and ease-of-use improvements will foster greater adoption amongst non-DeFi crypto customers, who can be converted more easily as they are already involved in crypto.

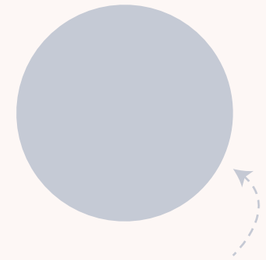


0.2% of 58M ETH wallets ever interacted with DeFi lending.[2,3]

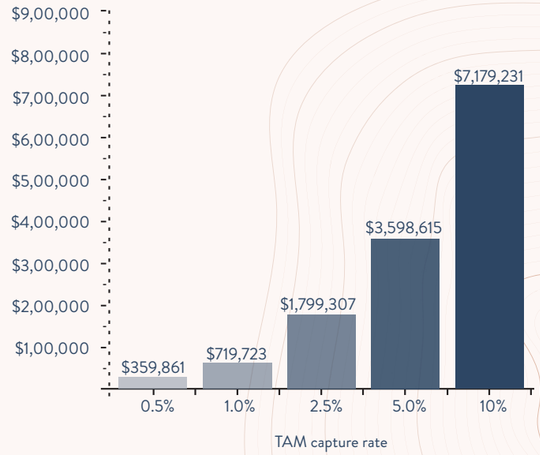


Mainstream Addressable Market Forecast (3-5 yrs)

FinTech's have increased market share from 0% to nearly 50%[1] compared to traditional banks in consumer lending, confirming interest in new loan products and platforms potentially including DeFi.



0% of 197,000 global personal loans issued on defi.[4]



The Bird Nest

Experienced, Innovative Leadership Team

Alex

Engineer and researcher with a PhD in Biomedical Engineering from the University College London. Former research coordinator for the University College London's Centre for Blockchain Technologies with 10 years of experience in cryptocurrency ranging from business development to protocol design.

Daniel

Data scientist and economist with over 15 years experience. Former Biotech CTO, Econometrics Director at a Fortune 100 FinTech, and Senior Analyst at Google, with additional specialties in risk classification for FinTech. 5 years of experience in blockchain software, hardware, investing and business development.

Zazu (anon)

Software developer and product designer with 15 years experience in FinTech, SaaS and mobile platform solutions. Specialties include money remittance, e-commerce and enterprise-grade architecture design. 5 years of experience in blockchain software, investing and business development.

Luciano

Strategist and marketer with over 20 years of experience in branding, growth, UX, operations management and team leadership. Specializes in breakthrough adoption and new market penetration for technology start-ups. 2 years of experience in blockchain investing and business development.

Simba (anon)

Engineer and academic researcher with 15 years experience in FinTech, data science and digital forensics. Former lead developer for defense contractors, technology startups and cryptography research. 10 years of experience in cryptography and 5 years of experience in blockchain.

Support Staff

11 developers

4 designers

3 community managers

1 staff writer

Disclaimer

The information shared in this document is not all-encompassing or comprehensive and does not in any way intend to create or put into implicit effect any elements of a contractual relationship. The primary purpose of this document is to provide potential investors and community members with pertinent information to enable a thorough analysis of the project and an informed decision. Prior to participation or engagement of any kind, we encourage a careful review of this document. Certain statements, estimates, and financial information featured in this document take into consideration certain known and unknown risks that may cause the estimated results to differ factually and substantially from forward-looking statements expressed in this document.

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