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|  | Page 1 |
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|  | BIG CENTERED TOP HEADER: Smart contracts & the real world |
|  | 智能合约与现实世界 |
|  | HEADER PAGE 1: Enabling secure I/O into smart contracts & interoperability between blockchains  使智能合约能够用上保险安全的I / O，并且启动区块链之间的互通性 |
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|  | Smart contracts provide the ability to execute tamper-proof digital agreements which are considered highly secure and highly reliable. In order to maintain a contract's overall reliability, the inputs and outputs the contract relies upon also need to be secure. Chainlink provides reliable and secure end-to-end connections to external data.  智能合约提供了为具有高度安全和高度可靠特质的防篡改性数字协议/合同能够被有效执行的能力。 为了维护这些数字协议/合同的整体可靠性，它们所依赖的输入和输出数据也必须是安全可靠的。 Chainlink为采集外部数据提供了可靠和安全的端到端连接。 |
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|  | Overview 概述 |
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|  | Historically, blockchains on which smart contracts run cannot support native communication with external systems, and the potential smart contracts provide have been throttled by their inability to connect to off-chain data, events and payments. |
|  | 从历史上看，运行智能合约的区块链无法支持自我与外部系统的通信。 而潜在的智能合约提供者由于无法与链下数据，事件和支付信息直接连接而限制了他们的可行性。 |
|  | Today, the solution to this problem is to introduce a new functionality, called an 'ORACLE', that provides connectivity to the outside world. However, oracles to-date are centralized services, meaning any smart contract using such services has a single point of failure, which nullifies any benefits gained from the decentralized nature of smart contracts.  今天，解决此问题的方法是引入一种称为“ ORACLE”的新功能，该功能可提供与外界的连接。 但是，到目前为止，oracle都是集中式服务，这意味着使用此类服务的任何智能合约都被单点故障所限制，从本质上限制了智能合约作为一个具有分散服务功能的意义。 |
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|  | To fill this gap, Chainlink (token sale in '17, launched in '19) was developed by SmartContract.com (founded in '14) as the first decentralized oracle framework that can provide external data to smart contracts on any blockchain. As a result, the security and determinism of smart contracts can be combined with the knowledge and breadth of real-world external events. Chainlink provides your smart contract with access to any external data needed to connect your smart contract with.  为了填补这一空白，由SmartContract.com（成立于14年）开发的Chainlink（于17年发行代币，于19年推出）是第一个可以向任何区块链上的智能合约提供外部数据的分散式Oracle框架。 这样一来，智能合约的安全性和确定性终于可以与现实世界中的外部事件广度的相结合。 Chainlink为智能合约提供了收集合约所需的任何外部数据的能力。 |
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|  | You'll see Chainlink references in articles both as https://chain.link & <https://smartcontract.com> |
|  | 您可以在https://chain.link和https://smartcontract.com的文章中看到Chainlink的参考资料。 |
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|  | What Chainlink has to offer （Chainlink提供的服务） |
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|  | Smart contracts require middleware to connect them to real-world data. Importantly, this data will trigger a contract’s outcome, thus creating the need for data inputs with high reliability and accuracy.  智能合约需要中间件才能连接到真实世界种的数据。 重要的是，这些数据将会直接影响到智能合约所产生的结果，所以保证数据输入的可靠性和准确性非常关键。 |
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|  | No matter if you are a startup or a large enterprise, Chainlink as decentralized oracle middleware, can provide your smart contract with provably secure access to external data feeds, \*APIs and payments. |
|  | 无论您是初创企业还是大型企业，Chainlink作为一个分散型的Oracle中间件，都可以为您的智能合约提供可靠的对外部数据源，\* API和支付信息。 |
|  | Any developer can quickly build and launch their own Chainlink to sell any API to smart contracts while the data provider sells their API through their usual interface business as usual. By creating a new Chainlink as a developer, you’ll be paid by making something thousands of smart contracts will rely on. |
|  | 任何开发人员都可以快速构建并启动自己的Chainlink并且将任何API出售给智能合约，而数据提供商则通过照常的常规接口业务出售其API。 通过做为一个创建了新的Chainlink的开发人员，您将可以通过为成千上万的智能合约提供其所依赖的服务而获得报酬。 |
|  | Larger enterprises can partner with Chainlink to offer existing APIs for purchase by smart contracts. Quickly and easily sell your company’s data and any of your other APIs using Chainlink. Provide countless smart contracts with the ability to purchase your services directly. |
|  | 大型企业可以与Chainlink合作来提供其现有的API去卖给智能合约。 使用Chainlink可以快速轻松地出售其公司的数据和其他任何API。 为无数智能合约提供来向您直接购买服务的能力。 |
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|  | Partners & clients合作伙伴和客户 |
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|  | - 30+ Price Feeds on Ethereum Mainnet utilized by 14+ DeFi projects in production.  以太坊主网上的30多个价格反馈用在了14个DeFi项目上 |
|  | - 100+ integrations including Polkadot, Tezos, Synthetix, Aave, Openlaw, Web3 and more.  100多个集成，包括Polkadot，Tezos，Synthetix，Aave，Openlaw，Web3等等。 |
|  | - Partnered with large enterprises such as Google, Oracle, SWIFT and more.  与Google，Oracle，SWIFT等大型企业合作。 |
|  | - Available in many development frameworks, specifically Truffle which is the most popular by far.  在许多开发框架中都可用，特别是到目前为止最受欢迎的Truffle。 |
|  | - Chainlink alongside with Intel, Microsoft, IBM and others are developing "Hyperledger Avalon" allowing secure off-chain computations using TEE’s like Intel SGX.  Chainlink与Intel，Microsoft，IBM和其他公司一起正在开发 “Hyperledger Avalon”，以允许使用TEE（如Intel SGX）进行安全的链外计算。 |
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|  | FULL LIST of platforms, integrations, frameworks, clients & partnerships https://chainlinkecosystem.com |
|  | 平台，集成，框架，客户和合作伙伴的完整列表https://chainlinkecosystem.com |
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|  | Use cases |
|  | 用例 |
|  | Access to external data enables an entirely new wave of functionality for smart contracts. Connected smart contracts have limitless potential covering a wide variety of industries: |
|  | 能够对外部数据进行自由的采集为智能合约开启了一系列的全新功能。 互联智能合约具有无限潜力，涉及广泛的行业： |
|  | - Money and Finance货币与金融 |
|  | - Payments付款方式 |
|  | - Insurance 保险 |
|  | - Supply chain 供应链 |
|  | - Government 政府 |
|  | - Enterprise Systems 企业系统 |
|  | - Authorization and Identity 授权和身份 |
|  | - Utilities 公用事业 |
|  | - Gambling 赌博 |
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|  | Essentially, almost any of the visionary use cases people came up with when being enthusiastic about Ethereum depend on data that is unavailable to blockchains. To name a few examples: derivatives of real-world commodities on smart contracts (Google prototype), auto-rebalancing portfolio based on traditional trading indicators such as RSI and EMA, market-sentiment or even the network difficulty of Bitcoin, automatic insurance payout when a flight arrives late, triggering generic banking transfers based on smart contract outcomes, different types of lending products without middlemens based on overcollaterization or boni-score, bridgeing cloud infrastructure to smart contracts and more. |
|  | 本质上，人们对以太坊充满热情时想到的几乎所有有远见的用例都取决于区块链无法获得的数据。 仅举几例：智能合约上的现实世界商品的衍生产品（Google样机），基于传统交易指标（例如RSI和EMA）的自动重新平衡投资组合，市场情绪，甚至比特币的网络难度，当一个航班晚点到达时的自动保险支付，触发基于智能合约结果的通用银行转账，没有中间商的不同类型的贷款产品，将云基础架构连接到智能合约， 等等。 |
|  | A HIGHLY RECOMMENDED READ ABOUT USE CASES: 44 ways to improve your smart contract |
|  | 强烈建议阅读的使用案例：改善智能合约的44种方法 |
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|  | \* I/O stands for Input/Output. In the blockchain context the inputs that will enter into the smart contracts and the outcomes from the execution of the smart contracts triggered by those inputs.  I/O代表输入/输出。 在区块链环境中，I/O代表即将输入智能合约的输入以及这些输入触发的智能合约的执行结果。 |
|  | \* An API allows programs communicate with another. TradingView uses a Binance API to fetch price/volume data to display it on their own site. Uber was built using payments, GPS, SMS and KYC APIs.  一个API允许程序与另一个进行沟通。 TradingView使用Binance API来获取价格/交易量数据，以将其显示在自己的网站上。 Uber构建于使用付款，GPS，SMS和KYC API。 |
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|  | HEADER PAGE 2: Feeding decentralized blockchains with centralized data feeds is pointless  向分散的区块链馈送集中式数据是毫无意义的 |
|  | Chainlink provides decentralized, reliable & tamper-proof I/O on ANY blockchain |
|  | Chainlink在任何区块链上提供分散，可靠和防篡改的I/O |
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|  | Achieving decentralization |
|  | 实现分散化 |
|  | Is it really possible to achieve truth in a world where you can’t trust your souces? Chainlink achieves this by being a NETWORK of oracles. Requested data is delivered by multiple oracles run by different independent node operators, using mutiple data source APIs, that are incentivized to provide proper data. |
|  | 在信息源不能被完全信任的世界中，真的有可能保证真实性吗？ Chainlink通过Oracle网络实现这个目的。通过Chainlink所请求的数据是由多个独立的节点操作员使用多个数据源API传递的，它们通过激励提供正确的数据。 |
|  | By selecting several nodes and data sources, you provably increase the chances of getting a highly probable truth. Using Threshold Signatures, nodes will aggregate their responses off-chain in order to reach an agreement before the final data point is sent to the smart contract on-chain. Furthermore, nodes are selected by reputation and previous performance. Hence, you ensure the smart contract’s security not only by selecting a high number of nodes, but also by selecting highly reputable nodes to feed data. You can see an step-by-step example on how Chainlink works in page 3. See also Chainlink market |
|  | 通过选择几个节点和数据源，可以极大的增加真实性的几率。 使用阈值签名，节点将在链外汇总其回应，以便在将最终数据点发送到链上智能合约之前达成协议。 此外，节点选择将根据于本节点的信誉和先前的工作表现。 因此，智能合约安全性的保证不仅来自于选择大量节点，而且还来自于要选择信誉良好的节点来馈送数据。 您可以在第3页中看到有关Chainlink工作原理的分步示例。 |
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|  | LINK token utility |
|  | LINK代币效用 |
|  | The LINK token is used as payment and collateral to maintain the network security and incentives of the overall network. The token will be used for: |
|  | LINK代币用于作为支付品和抵押品，以维护整个网络的网络安全性和激励措施。 该代币将用于： |
|  | Paying node operators for delivering off-chain data to smart contracts.  付费于节点运营商，用于向智能合约交付链下数据的费用。 |
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|  | Node operators use LINK as collateral (stake) when required by contract creators in order to ensure they will behave correctly. Malicious or non-responsive nodes will have their collateral slashed & reduced reputation as a punishment. |
|  | 节点操作员将用LINK代币用作抵押品以满足合同创建者的要求，去确保其节点工作正确。 恶意或无响应的节点将被削减其抵押物并降低声誉，以作为惩罚。 |
|  | LINK is an ERC20 token with the ERC677 standard on top. ERC677 was developed specifically for Chainlink and integrated into Ethereum. It adds the TransferAndCall capability enabling payment & data retrieval within a single transaction.  LINK代币是具有ERC677标准的ERC20代币。 ERC677是专门为Chainlink开发的，并已集成到以太坊。 它增加了TransferAndCall功能，可在单次交易中进行付款和数据检索。 |
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|  | LINK is an Ethereum token but in the worst case scenario, it can be transfered to any blockchain platform. Chainlink is not limited to just Ethereum. |
|  | LINK是一个以太坊代币，但在最坏的情况下，它可以转移到任何区块链平台上。 Chainlink代币不仅限于以太坊。 |
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|  | Chainlink Token Distribution |
|  | Chainlink代币分配 |
|  | There is a fixed quantity of LINK tokens: 1000M  固定数量的LINK代币：10亿 |
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|  | - 350M were sold at token sale (fundrasing and initial distribution of tokens).  在代币初筹中售出了3亿5千万代币。 |
|  | - 350M for incentivizing node operators through subsidies (solves chicken or egg problem of bootstrapping a new network).  3亿5千万代币用于通过补贴激励节点运营商（解决了引导新网络的先有鸡还是先有蛋的问题）。 |
|  | - 300M to SmartContract Chainlink Ltd (for continued development so they don’t take fees). |
|  | 3亿代币转让给SmartContract Chainlink Ltd（用于持续开发，这样一来他们无需付费）。 |
|  | Why not just use ETH instead of LINK?  为什么不使用以太坊而是LINK？ |
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|  | There are several reasons to use LINK over ETH:  使用LINK而不是以太坊有几个原因： |
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|  | - Ties the incentives of node operators together with the health of the overall Chainlink network.  将节点运营商的激励与整个Chainlink网络的良好联系在一起。 |
|  | - Isolates the security and economic bandwidth (staked LINK) from external factors outside the control of Chainlink stakeholders.  将安全性和带宽的经济性（抵押品为LINK）与Chainlink抵押者无法控制的外部因素隔离。 |
|  | - If a major network attack occured, LINK collateral then becomes worthless hurting the attacker, this is not true with an unrelated asset (ETH).  如果发生了重大的网络攻击，则LINK抵押品将毫无价值， 直接的伤害攻击者。 但是如果用了无关资产（比如以太坊）则这个不成立。 |
|  | - Stablecoins wouldn’t work either as they are either backed by fiat & thus censorable or rely upon oracles to function.  稳定币将无法满足要求，因为它们要么受到法令的限制并因此而受到审查，要么依靠Oracle发挥作用。 |
|  | - Growing demand for LINK combined with a shrinking supply (due to staking) creates a positive feedback loop where the increased adoption boosts the price of LINK, thus increasing economic bandwidth and enabling more adoption to be supported.  对LINK代币的需求不断增长，加上供应减少（由于抵押），形成了一个积极的反馈环，在这种情况下，采用率的提高会提高LINK代币的价格，从而增加经济带宽并支持更多的采用率。 |
|  | - Chainlink is blockchain agnostic & needs a token than can be easily bridged between blockchains.  Chainlink与区块链无关，并且需要代币才能轻松在区块链之间进行桥接。 |
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|  | If LINK is an ERC token, works only with Ethereum?  如果LINK是ERC代币，那么它仅适用于以太坊吗？ |
|  |  |
|  | No, ANY blockchain can easily write an external adapter to call Chainlink. See next section.  不，任何区块链都可以轻松编写一个外部适配器来调用Chainlink。 请参阅下一节。 |
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|  | Blockchain agnostic  不可知的区块链 |
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|  | Chainlink supports ANY blockchain. LINK was created as an Ethereum token but the Chainlink network can serve data to any platform.  Chainlink支持任何区块链。 LINK是作为以太坊代币创建的，但是Chainlink网络可以将数据提供给任何平台。 |
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|  | There are two ways to integrate Chainlink:  集成Chainlink的方法有两种： |
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|  | 1. Any developer can create a simple external adapter enabling any blockchain to request and receive external data from Chainlink nodes. Through this, LINK payments and staking collateral is still performed on Ethereum.  任何开发人员都可以创建一个简单的外部适配器，使任何区块链都可以从Chainlink节点请求和接收外部数据。 通过这种方式，LINK付款和抵押仍然在以太坊上执行。 |
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|  | 2. The LINK token can be bridged to another blockchain through LockDeposit contract enabling native LINK payment and staking support on any blockchain enabling applications outside of Ethereum to request data without the need for routing through Ethereum.  通过LockDeposit合同可以将LINK代币桥接到另一个区块链，从而实现本机LINK支付，并在任何区块链上获得支持，从而使以太坊外部的应用程序可以请求数据，而无需通过以太坊。 |
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|  | Deploying Chainlink contracts in a new blockchain and bridging the token is a more complex process requiring cross-chain transaction support and therefore some simple data requests are likely still to be funneled through Ethereum for simplicity. |
|  | 在新的区块链中部署Chainlink合同并链接代币是一个复杂的过程，需要跨链交易支持，因此，为简便起见，一些简单的数据请求可能仍会通过以太坊进行传输。 |
|  | Blockchains supported by Chainlink:  Chainlink支持的区块链： |
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|  | - Ethereum以太坊 |
|  | - Bitcoin比特币 |
|  | - Polkadot 波卡 |
|  | - Kava/Cosmos |
|  | - Hedera Hashgraph |
|  | - Tezos |
|  | - Zilliqa |
|  | - Any EVM-enabled blockchain 任何支持EVM的区块链 |
|  | - Many more 还有很多 |
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|  | Customizing data & security自定义数据和安全性 |
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|  | Chainlink’s flexibility largely comes from the "Service Agreement" (SA) model: Any developer can connect to or build an oracle network that fits their exact needs.  Chainlink的灵活性很大程度上来自“服务协议”（SA）模型：任何开发人员都可以连接或构建满足其确切需求的Oracle网络。 |
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|  | Customization of a wide range of parameters: 定制各种参数 |
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|  | - Selection and number of nodes 节点选择和节点数 |
|  | - Selection and number of data sources数据源的选择和数量 |
|  | - LINK Node Payment amounts LINK节点付款金额 |
|  | - LINK Collateral requirements LINK代币抵押要求 |
|  | - Minimum reputation requirements 最低声誉要求 |
|  | - Slashing conditions 削减条件 |
|  | - Node certification 节点认证 |
|  | - Threshold Signatures阈值签名 |
|  | - TEEs ( See below “What is a TEE?” ) 下面有解释TEE是什么 |
|  | - Mixicles 混合物 |
|  |  |
|  | Node Reputation/Ranking\*: Chainlink nodes have a ’reputation’ factor. Chainlink clients will be able to require a minimum level of reputation for all the nodes. Node Reputation depends on these factors: |
|  | 节点信誉/排名\*：Chainlink节点具有“声誉”因素。 Chainlink客户端将能够要求所有节点的信誉级别达到最低。 节点信誉取决于以下因素： |
|  | - Node availability (uptime) 节点可用性（正常运行时间） |
|  | - Correctness of responses回应的正确性 |
|  | - Average time to respond平均回应时间 |
|  | - Total number of assigned requests被分配的请求总数 |
|  | - Total number of completed requests已完成的请求总数 |
|  | - Total number of accepted requests接受的请求总数 |
|  | - Amount of penalty payments罚款金额 |
|  | - Amount of LINK held (staked) 持有的LINK代币数量（抵押） |
|  |  |
|  | Network usage网络使用 |
|  |  |
|  | Growth of Chainlink related smart contracts is indicates increased network utility & developer interest.  Chainlink相关智能合约的增长表明网络实用程序和开发人员的兴趣增强。 |
|  | (Image) |
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|  | Page 3 |
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|  | HEADER PAGE 3: Permissioned or permissionless, public or private, all blockchains and DLT need a trustworthy oracle to be truly useful  允许或不允许，公共或私有，所有区块链和DLT都需要一个值得信赖的oracle 或预言机才能真正有用 |
|  |  |
|  | - First mover advantage先发优势 |
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|  | - First decentralized oracle framework. 第一个分散的oracle框架。 |
|  | - Long-standing connections to industry leaders (Swift, Google, & Oracle), leading research consultants (Gartner & Capgemini) & enterprise consortiums (IC3, EEA, Baseline protocol & Hyperledger).  与行业领导者（Swift，Google和Oracle），技术领先的研究顾问（Gartner和Capgemini）以及企业联盟（IC3，EEA，Baseline协议和Hyperledger）建立了长期联系。 |
|  | - Network effects: Chainlink’s large number of clients, nodes & data sources attracts usage.  网络效应：Chainlink的大量客户端，节点和数据源吸引了使用。 |
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|  | - Competitors竞争者 |
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|  | - Direct: Alternative decentralized oracles which have little or no usage, inflexible and rigid customizability, have not yet reached critical mass, or is a homebrew and propritary oracle solution. This includes Tellor, Witnet, Compound's OOS, Maker's OSM and Doracle from iExec (integrated with Chainlink) & Band.  直接的竞争者：其它的分散性oracle只有很少使用或没有使用，可定制性僵化，尚未达到临界质量，或者是自制的专用Oracle解决方案。 其中包括iExec的Doracle（与Chainlink集成）和Band，Tellor，Witnet，Compound OOS，Maker OSM。 |
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|  | - Indirect: Centralized oracles like Provable (partnered with Chainlink) and Rhombus.  间接的竞争者：集中式的Oracle例如Provable（与Chainlink合作）和Rhombus。 |
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|  | New competitors will emerge and struggle to achieve marketshare since they will lack the large selection of nodes and data sources, subsidized oracle networks, time-tested security, first movers advantage and network effects.  新的竞争者为争夺市场份额而挣扎， 因为他们缺乏节点和数据源的大量选择，缺少补贴，缺少经过时间考验的安全性，缺少了先发优势和网络效应。 |
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|  | \*Note about competitors & ’Coinbase oracle’: Although Coinbase being a big and reputable actor in this space, the service they provide is a price feed (not general oracle) and the results are not being written on chain. Therfore it cannot be considered a blockchain oracle nor competitor in the Oracle space.  \*关于竞争对手和 “Coinbase oracle”的注意事项：尽管Coinbase在这个领域是一个重要的知名参与者，但他们提供的服务只是价格馈送（而不是一般的oracle），而且结果并未写在链上。 因此，不能将其视为Oracle领域的区块链Oracle或竞争对手。 |
|  |  |
|  | - Strong community强大的社区 |
|  |  |
|  | - The Chainlink community is one of the largest, best educated, most creative communities in the crypto space, renowned for its meme art and comradery.  Chainlink社区是加密货币空间中规模最大，教育程度最高，最具创造力的社区之一，以其搞笑图和成员之间的友谊而著称。 |
|  | - Official discord & gitter to reach the team.  通过官方discord 和gitter直接联系到团队。 |
|  | - An official Chainlink community advocate program already exists in multiple cities and continents around the world. City list here.  一个正式的Chainlink社区倡导者计划已经在全球多个城市和大洲存在。 城市清单在此。 |
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|  | - Team 团队 |
|  |  |
|  | 25+ people team 团队已有25人以上 |
|  | 6 advisors, amongst them: 6位顾问，其中： |
|  | - Tom Gonser (Docusign founder). （Docusign创始人）。 |
|  | - Ari Juels (formalized Proof of Work; RSA chief scientist; IC3 co-founder)  正式化了Proof of Work； RSA首席科学家； IC3联合创始人） |
|  | - Evan Cheng (Facebook R&D Dir & LLVM author at Apple) Facebook研发总监和LLVM， 苹果公司作者 |
|  | - Hudson Jameson (Ethereum Foundation) 以太坊基金会） |
|  | - Andrew Miller (Consensus researcher) Consensus研究员） |
|  |  |
|  | Currently, 11 open positions.目前，有11个职位空缺。 |
|  | No hype from the team, only professionalism.团队没有炒作，只有专业精神。 |
|  |  |
|  | Open source & audited开源和审核 |
|  |  |
|  | - Code is open source (here). 代码是开源的（此处）。 |
|  | - Development publicly traceable (here). 可公开追踪的开发（此处）。 |
|  | - Bug bounty program (here) 错误赏金计划（此处） |
|  | - 4 independent audits: 4次独立审核： |
|  | - 3 on main contracts (here). 3在主要合同上（此处）。 |
|  | - 1 on Aggregator contract (here). 1在聚合器合同上（此处）。 |
|  | - 1 on Mixicles (in progress). 1个在Mixicles上（进行中）。 |
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|  | SECONDARY HEADER PAGE 3: A glance at the tech behind Chainlink ：一览Chainlink背后的技术 |
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|  | Together these innovative pieces of technology provide the most advanced oracle solution to date  这些创新技术共同提供了迄今为止最先进的oracle解决方案 |
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|  | 1. Privacy & auditability: Mixicles 隐私和可审核性：混音 |
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|  | Mixicles is essentially a mixer that uses external oracles to enable on-chain privacy for public blockchain smart contracts. The contract is split into two parts, where the sensitive data and business logic is kept off-chain with private settlement on-chain. Mixicles enable:  Mixicles本质上是一个混合器，它使用外部oracles或预言机为公共区块链智能合约启用了链上隐私。 合同分为两个部分，敏感数据和业务逻辑保持脱链状态，而私人结算在链上。 混合启用了： |
|  |  |
|  | - Keeping private the contract business logic & the external oracle data & final payee result.  加密合同业务逻辑和外部oracle数据，以及最终收款人结果。 |
|  | - Financial contracts are private to the public but auditable to regulators. 金融合同对公众是保密的，但可以由监管机构审核。 |
|  | - Blockchain agnosticism & can be used in enterprise blockchains as well. 区块链不可知论者＆也可以在企业区块链中使用。 |
|  | - A new generation of privacy preserving & scalable DeFi instruments.  新一代的隐私保护和可扩展DeFi工具。 |
|  |  |
|  | Mixicles are currently under audit. Highly recommended article here.  Mixicles目前正在审核中。 强烈推荐这里的文章。 |
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|  | 2. Low cost & scalable: Threshold Signatures 低成本且可扩展：阈值签名 |
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|  | Threshold signatures (TS) are being implemented in Chainlink which allows nodes to batch their responses off-chain substantially reducing transaction costs (gas) while minimizing the effects of blockchain network congestion.  阈值签名（TS）正在Chainlink中实现，这使节点可以在链外批量处理其回应，从而在最大程度降低区块链网络拥塞影响的同时降低交易成本（gas）。 |
|  |  |
|  | How can this be achieved? Threshold Signatures pave the way to solving the oracle dilemma: One wants hundreds, thousands, even tens of thousands of witnesses to agree on a data point but that is expensive due to the growing amount of transactions needed.  如何做到这一点？ 阈值签名为解决Oracle难题铺平了道路：人们希望上百，上千，甚至成千上万的证人就数据点达成共识，但由于所需的交易量不断增加，因此成本很高。 |
|  |  |
|  | TS enable oracles to talk to each other off-chain, agree on an observation, aggregate a single signature proving group observation and then respond to the original data request using only a single on-chain transaction.  TS使oracle可以在链下彼此对话，在某个观察上达成一致，聚集单个签名以来证明组观察，然后仅使用单个链上交易来响应原始数据请求。 |
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|  | 3. Trusted Computation Framework可信任的计算框架 |
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|  | The Trusted Compute Framework (TCF) is way for enterprises to use trusted execution environments (\*TEEs) to secure off-chain computations to be used by on-chain contracts. Chainlink ensures that the data being delivered is encrypted and tamperproof end to end.  可信性计算框架（TCF）是允许企业使用可信执行环境（\* TEE）来保护链上合同要使用的链外计算的一种方式。 Chainlink确保传送的数据经过加密和端到端防篡改。 |
|  |  |
|  | Typically computation takes place on-chain and is very expensive. TCF instead allows contracts to shift complex computations from on-chain to off-chain systems (on-premise or in cloud VM’s) and once finished post the results back on-chain all while keeping verification and attestation verification properties.  通常，计算是在链上进行的，而且非常昂贵。 相反，TCF允许合同将复杂的计算从链上系统转移到链外系统（本地或云VM中），完成后将结果重新发布到链上，同时保留验证和证明验证属性。 |
|  |  |
|  | Chainlink is part of the "Hyperledger Avalon Trusted Compute Framework" amongst Intel, IBM, Microsoft, Alibaba Cloud and Banco Santander.  Chainlink是英特尔，IBM，微软，阿里巴巴云和桑坦德银行之间“超级账本Avalon可信性计算框架”的一部分。 |
|  | See Intel Press Release & Article. 请参阅英特尔新闻稿和文章。 |
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|  | 4. Staking Collateral (Direct skin in game) 抵押品（直接参与于游戏中） |
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|  | In short, staking is when nodes delivering data to a smart contract stake a predetermined amount of LINK as collateral.  简而言之，放样是指在数据传输到智能合约的节点时抵押预定量的LINK代币作为抵押。 |
|  |  |
|  | In the case nodes fail to deliver a reliable data point, provides it in an untimely manner, or doesn't deliver data at all, they are penalized by getting their LINK collateral slashed hurting nodes financially.  如果节点无法交付可靠的数据点，比如不能及时的提供数据点或根本不交付数据，则可以通过大幅削减其LINK抵押物来惩罚节点，从而对节点造成经济损失。 |
|  |  |
|  | When nodes instead provide a reliable, timely data point to an oracle assignment, they are paid a fee in LINK. They can withdraw the fees and keep their collateral or withdraw partially/totally their collateral too.Malicious or non-responsive nodes will have their collateral slashed & their reputation will be reduced as a punishment too.  当节点能够提供可靠，及时的oracle的数据点时，本节点可以收取LINK代币作为报酬。 他们可以提取费用而保留其抵押品，或者也可以部分/全部提取抵押品。恶意或无响应节点将被削减其抵押品，其声誉也将因此而受到惩罚。 |
|  |  |
|  | This is how the Chainlink network incentivizes honest behaviour and penalizes malicious behavior of nodes.  这就是Chainlink网络激励诚实行为并惩罚节点恶意行为的方式。 |
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|  | Page 4 |
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|  | HEADER PAGE 4: Chainlink does not compete with any blockchain platforms, it improves them  Chainlink不会与任何区块链平台竞争，它会改善它们 |
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|  | DeFi & Chainlink  去中心化金融和Chainlink |
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|  | DeFi (Decentralized Finance) is currently one of the fastest growing sectors in the decentralized ecosystem. DeFi consists not only of decentralized exchanges but also lending platforms and derivatives that run in a fully decentralized and trustless manner.  DeFi（去中心化金融）目前是去中心化生态系统中增长最快的板块之一。 DeFi不仅包括去中心化交易所，还包括以完全去中心化和不用委托的方式运行的借贷平台和衍生产品。 |
|  |  |
|  | Open finance is not about creating a new system from scratch, it’s about democratizing the existing system and making it more equitable using open protocols and transparent data. Traditional finance system has some drawbacks like slow cross-border remittances, high fees, censhorship/discrimination ("you can’t invest on unless you own 1M$), banks can freeze funds or even like in the financial crisis could crash banks.  开放财务并不是要从头开始创建新系统，而是要使现有系统民主化，并使用开放协议和透明数据使其更加公平。 传统的金融系统有一些缺点，例如跨境汇款速度慢，手续费高，审查制度/歧视性（“除非拥有100万美元，否则您就无法投资”），银行可以冻结资金，甚至像在金融危机中银行可能就崩溃了。 |
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|  | The business model for the DeFi sector require 100% secure and accurate price feeds of all assets (90%+ of DeFi requires oracles). In DeFi, as in finance in general, security, reliability and reputability are all equally paramount for profitability. See this highly recommended article from team about DEFI.  DeFi板块的业务模型要求所有资产能够拥有100％安全，准确的价格信息（超过90％的DeFi需要oracles或预言机）。 在DeFi中，就像在一般情况下的金融系统，安全性，可靠性和信誉度对于获利同样重要。 请参阅团队强烈推荐的有关DEFI的文章。 |
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|  | Chainlink is currently providing the reference data for 36 assets or pairs like EUR/USD. Those price feeds are already being used by Synthetix (top #2 locked USD value), Aave(top #5), Ampleforth and under study by dy/dx (top #7). Data from: defipulse.com, exploring.link , reference ETH/USD, list of all feeds provided  Chainlink当前正在提供36种资产或货币对的参考数据，例如EUR / USD。 这些价格供稿已被Synthetix（排名第二的锁定美元价值），Aave（排名第五的锁定），Ampleforth和dy / dx（排名第七的）正在使用。 数据来自：defipulse.com，exploring.link，参考ETH / USD，提供的所有供稿列表 |
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|  | TOTAL VALUE SECURED  保证的总价值 |
|  | in 1st May 2020  在2020年5月1日 |
|  | 158 M$ |
|  | 1.58亿美元 |
|  | Synthetix: Synthetic assets $100M  Synthetix：Synthetix资产 1亿美元 |
|  | Aave: Lend & Borrow $40M  Aave：借出和借入 4千万美元 |
|  | DMM: Real World Assets $8M  DMM：真实世界资产 8百万美元 |
|  | Ampleforth: Commodity Money $5M  Ampleforth：商品货币 5百万美元 |
|  | Loopring: DEX Protocol $3M  Loopring：DEX协议 3百万美元 |
|  | BZX: DEX Protocol $2M  BZX：DEX协议 2百万美元 |
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|  | SECONDARY HEADER PAGE 4: Chainlink and the standarization process  Chainlink和标准化过程 |
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|  | Chainlink is involved in several initiatives in order to harmonize and standarize blockchain technologies  Chainlink参与了多项计划，以协调和标准化区块链技术 |
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|  | 1. Enterprise Ethereum Alliance & Chainlink |
|  | 企业以太坊联盟和Chainlink |
|  | The Enterprise Ethereum Alliance (EEA) is a member-driven standards organization whose charter is to develop open, blockchain specifications that drive harmonization and interoperability for businesses and consumers worldwide. Chainlink has been in the EEA since 2017 alongside with very well known enterprises. In January 2020, EEA created the Mainnet Integration for Enterprises ’EMINENT’ taskforce, spearheaded by Chainlink and others.  企业以太坊联盟（EEA）是一个成员驱动的标准组织，其章程旨在制定开放的区块链规范，以推动全球企业和消费者的协调与互操作性。 自2017年以来，Chainlink与知名企业一起进入欧洲经济区。 2020年1月，EEA成立了由Chainlink等领导的集成主网“ EMINENT”任务组。 |
|  |  |
|  | The focus of this working group is to build open source available reference implementations and guidelines for Ethereum mainnet integration with enterprise "systems of record". In other words, the goal is to achieve an standard which allows connecting business backends (CRMs & ERPs) to Ethereum mainnet. |
|  | 该工作组的重点是为以太坊主网与企业“记录系统”集成构建开放源代码可用的参考实现和指南。 换句话说，目标是实现一个允许将业务后端（CRM和ERP）连接到以太坊主网的标准。 |
|  | 2. Baseline protocol & Chainlink基  准协议和Chainlink |
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|  | Baseline protocol, presented on March 2020 by big four Ernst & Young in collaboration with Microsoft, Consensys, AMD, Chainlink and others is a open source initiative that combines advances in cryptography, blockchain and open standards to deliver secure & private business processes at low cost via the public Ethereum Mainnet. The protocol will provide a common framework to enterprises that enable confidential and complex collaboration between them without leaving any sensitive data on-chain. See press release here.  由四大安永会计师事务所（Ernst＆Young）与微软，Consensys，AMD，Chainlink和其他公司合作于2020年3月提出的基准协议是一项开源计划，结合了密码学，区块链和开放标准方面的先进技术，通过以太坊公共主网以低成本提供了安全的私有业务流程。 该协议将为企业提供一个通用框架，使企业之间能够进行机密而复杂的协作，而无需在链上保留任何敏感数据。 请参阅此处的新闻稿。 |
|  |  |
|  | 3. Hyperledger Avalon & Chainlink  Hyperledger Avalon和Chainlink |
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|  | In October 2019, Hyperledger introduced Hyperledger Avalon. It is a ledger independent implementation of the Trusted Compute Framework. It aims to shift in a secure manner the on-chain processing to off-chain (Cloud). Avalon is designed to mitigate the drawbacks of on-chain computation (scalability & confidentitality). It offloads the chain, increasing performance while still keeping integrity and attestation. Chainlink alongside with other partners such as IBM, Oracle, Microsoft and others is working on the Avalon specification. Intel Press Release  在2019年10月，Hyperledger推出了Hyperledger Avalon。 它是独立账本在可信计算框架上的实现。 它旨在以安全的方式将链上处理转移到链外（云）。 Avalon旨在缓解链上计算的缺点（可伸缩性和置信度）。 它减轻了链的负担，提高了性能，同时仍保持完整性和认证。 Chainlink与其他合作伙伴（例如IBM，Oracle，Microsoft等）正在制定Avalon规范。 英特尔新闻稿 |
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|  | \* What is TEE? A trusted execution environment (TEE) is a highly secure, hardware based isolated computational space in modern CPUs, allowing for the execution of private and attested computations, inaccessible to applications, the operating system, virtual machine manager, or even the computer’s operator.  什么是TEE？ 可信执行环境（TEE）是现代CPU中基于硬件的高度安全，隔离的计算空间，允许执行私有和经过验证的计算，而应用程序，操作系统，虚拟机管理器甚至计算机操作员都无法访问这些计算空间。 |
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|  | HEADER PAGE 5: Some interesting highlights  一些有趣的亮点 |
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|  | - Chainlink has long been member of IC3, the leading academic research initiative for DLT and cofounded by Ari Juels. IC3 Members alongside Chainlink are JPMorgan, Microsoft, Cisco, Siemens, Intel.  Chainlink长期以来一直是IC3的成员，IC3是DLT的领先学术研究计划，由Ari Juels共同创立。 与Chainlink并存的IC3成员是摩根大通，微软，思科，西门子，英特尔。 |
|  |  |
|  | - About ISDA (International Swaps & Derivatives Association): On January 2020, BAPI was announced, a bilateral smart derivatives platform using technology such as a standard ISDA template, Ethereum, OpenLaw, Chainlink and Kaleido. It was co-developed by Carlos Matilla, Executive Director at Santander Investment Bank.  关于ISDA（国际掉期和衍生产品协会）：2020年1月， BAPI正式诞生了，这是一个使用标准ISDA模板，以太坊，OpenLaw，Chainlink和Kaleido等技术的双边智能衍生品平台。 它是由桑坦德投资银行执行董事Carlos Matilla共同开发的。 |
|  |  |
|  | - Chainlink is currently working with SWIFT, the global standard in interbank messaging. SWIFT is used by more than 11,000 financial institutions in more than 200 countries and territories, with over 32 million messages moving trillions of dollars each day.  Chainlink目前正在与银行间消息传递的全球标准SWIFT合作。 SWIFT在200多个国家和地区的11,000多家金融机构中得到使用，每天有超过3200万条消息移动数万亿美元。 |
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|  | - In January 2017, Professor Klaus Schwab, Founder and Chairman of the World Economic Forum, wrote a book called The Fourth Industrial Revolution. In this book, Schwab describes SmartContract.com as the tipping point for the "Shift in action" under "Bitcoin and the Blockchain." (See here).  2017年1月，世界经济论坛创始人兼主席克劳斯·施瓦布（Klaus Schwab）教授写了一本书，名为《第四次工业革命》。 在本书中，施瓦布将SmartContract.com描述为“比特币和区块链”下“行动的转变”的转折点。 （看这里）。 |
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|  | - Chainlink is listed US regulated exchanges Coinbase, Gemini and Kraken who offer LINK trading to New York investors. NYC financial security laws are some of the toughest in the world.  Chainlink在美国上市的受监管交易所Coinbase，Gemini和Kraken进行交易，它们为纽约投资者提供LINK代币交易。 而纽约市的金融安全法是世界上最严格的法律。 |
|  |  |
|  | - Chainlink acquired IC3's “Town Crier” oracle in order to expand the possibilities of their decentralized oracle network with native TEEs support. ( Forbes article | More info| \* What is a TEE? )  Chainlink收购了IC3的 “Town Crier” oracle，目的是在本地TEE支持下扩展其去中心化oracle网络的可能性。 （《福布斯》文章|更多信息| \*什么是TEE？） |
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|  | - Chainlink has two major marketplaces:  Chainlink有两个主要市场： |
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|  | - market.link, created by LinkPool, is a marketplace that allows anyone to list their nodes, adapters and the jobs they offer. Anyone can see this list of nodes and filter by different criteria.  由LinkPool创建的market.link是一个市场， 这个市场让任何人都可以列出其节点，适配器及其可提供的服务。 任何人都可以看到此节点列表，并可以按不同条件进行过滤。 |
|  |  |
|  | - honeycomb.market, created by CLCG, allows developers to connect their smart contracts & decentralized apps to a wide variety of high quality paid APIs using multiple high-quality vetted Chainlink nodes from operators such as Certus.One, LinkForest & Cosmostation. Testnet APIs are offered free.  由CLCG创建的honeycomb.market允许开发人员使用来自Certus.One，LinkForest和Cosmostation等运营商的多个高质量经过审查的Chainlink节点，将其智能合约和去中心化应用程序连接到各种高质量的付费API。 免费提供Testnet API。 |
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|  | - Even centralized oracles like ’Provable’ can keep their business of selling their data as usual by creating an external adapter and selling data as another available source in the Chainlink network. Hence, they both earn money selling data their regular centralized way as well as via the decentralized Chainlink network. |
|  | 甚至像“ Provable”这样的集中式Oracle也可以通过创建外部适配器并将数据作为Chainlink网络中的另一个可用来源进行数据销售，从而保持其照常销售数据的业务。 因此，他们俩都通过常规的集中式方式以及通过分散的Chainlink网络销售数据来赚钱。 |
|  | - Oracle corp will be integrating Chainlink in Q3 2020 according to the Openworld 2020 conference by Oracle. Slides here.  根据甲骨文公司在Openworld 2020年大会上的报道，甲骨文公司将在2020年第三季度整合Chainlink。 在这里滑动。 |
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|  | - This is the only remark regarding Chainlink as an investment: Chainlink has been the best performing cryptocurrency over the last 2.5 years. It's ROI is 1,700% higher than the average performing altcoin and +900% better than Bitcoin. (See here).  这是关于Chainlink作为一项投资的唯一说明：Chainlink在过去2.5年中一直是表现最好的加密货币。 它的投资回报率比平均表现好的山寨币高1,700％，比比特币高900％。 （看这里）。 |
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|  | ------------------------------------------- |
|  | Any input. Any output. Any blockchain  任何输入。 任何输出。 任何区块链 |
|  | (Here comes an image) |
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|  | HEADER PAGE 6: Blockchains already supported by Chainlink  Chainlink已经支持的区块链 |
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|  | (Here comes an image) |
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|  | SECONDARY HEADER PAGE 4: Chainlink by examples & FAQ  通过示例和常见问题解答演示Chainlink |
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|  | An example of chainlink working (with Staking)  Chainlink工作原理的一个示例（有抵押） |
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|  | 1. Bob wants trustless data for his smart contract, so he queries Chainlink.   鲍勃（Bob）需要提供非信托化的数据给他的智能合约，因此他查询Chainlink。 |
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|  | 1. Bob then requests a certain number of Chainlink nodes using a contract that specifies that they must meet at least a certain number of previous transactions, % of accuracy and demand a certain amount of LINK to be staked as a penalty payment from each individual node as a guarantee that they will fulfill their end of the contract.   然后，Bob使用合同指定一定数量的Chainlink节点，该合同规定它们必须满足至少一定数量的先前交易，准确性的百分比，并要求每个单独的节点将一定数量的LINK代币作为罚金来放样。 确保他们将履行合同的期限。 |
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|  | 1. Bob also sets up how much LINK is willing to pay for the data retrieval.   Bob还设置了他愿意支付多少LINK代币作为数据检索费用。 |
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|  | 1. All the Chainlink nodes which met Bob’s specifications now bid to be an oracle of his contract. Bob will then select the oracles that ask for the lowest amount of LINK as a transaction fee.   现在，所有符合Bob规格的Chainlink节点都将成为其合同的oracle或预言机。 然后，Bob将选择要求最低LINK代币金额作为交易费用的oracle或预言机。 |
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|  | 1. Bob’s selected nodes provide their data and their answers are aggregated by the aggregating contract Bob selected. Bob’s smart contract now gets this data, each node gets paid in LINK, and the penalty payments are given to all the nodes whose data did not disagree with the consensus.   Bob的选定节点提供了他们的数据，并且答案由Bob选定的汇总合同汇总。 现在，Bob的智能合约会获取此数据，并向每个节点支付LINK代币，并且会向所有数据与共识不一致的节点收取罚款。 |
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|  | 1. The honest and correct nodes now have more LINK, which they can keep for future penalty payments or they can sell it on the market.   诚实正确的节点现在拥有更多的LINK代币，它们现在可以保留这些LINK代币以用于将来的罚款支付，也可以在市场上出售。 |
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|  | Two important notes: 两个重要注意事项 |
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|  | - Once Mixicles is live (currently in audit), all this process will keep private the contract business logic & the external oracle data & final payee result while still being auditable to regulators.  一旦Mixicles生效（当前正在审核），合同业务逻辑，外部oracle数据和最终收款人结果都将会被保密，但同时仍可供监管机构审核。 |
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|  | - Once Threshold signatures are live, instead of each node writing their response on-chain (high costs, clogging network), they will reach to consensus off-chain and write results in just one transaction.  阈值签名生效后，无需每个节点在链上写入响应（高成本，网络阻塞），它们将达成链下共识，并仅在一项交易中写入结果。 |
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|  | Frequent Questions / Answers  常见问题/答案 |
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|  | Is node ranking and staking the same thing?  节点排名和抵押是否相同？ |
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|  | No, each node has a ranking (reputation) determined by their past performance. Staking is an additional metric ontop of this which is taken into account by users when choosing which nodes to request. Having more LINK available for staking increases the probability that a node will be honest, but a node’s ranking is a factor in this as well.  不，每个节点都有一个根据其过去表现确定的排名（声誉）。 抵押是此之上的附加度量标准，用户在选择要请求的节点时会考虑到该度量标准。 拥有更多可用于抵押的LINK代币可以增加节点正确性的可能性，但是节点的排名也是其中一个因素。 |
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|  | Wouldn’t holding tons of LINK automatically rank your node to the top? 持有大量LINK代币不会自动将您的节点排在首位吗？ |
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|  | No, node ranking considers multiple factors in reputation (see #3), staking LINK just one of the parameters considered alongside others.  不，节点排名考虑了声誉的多个因素（请参阅＃3），LINK代币抵押数量是与其他因素一起考虑的参数之一。 |
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|  | What are the factors considered for node ranking?  节点排名考虑哪些因素？ |
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|  | This depends on a wide variety of factors: Uptime, correctness/accuracy of responses, total number of assigned/accepted/completed/rejected requests, average time to respond, slashing history and the amount of LINK staked.  这取决于多种因素：正常运行时间，响应的正确性/准确性，已分配/已接受/已完成/已拒绝请求的总数，平均响应时间，大幅削减历史记录和抵押的LINK代币数量。 |
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|  | Is staking live? LINK代币抵押已经实现了吗？ |
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|  | No, it is likely to arrive after other major features such as mixicles & threshold signatures. Networks today are secured by a node’s reputation and the opportunity cost of losing future income if malicious. The Chainlink core team also subsidizes oracle networks with the funds raised from the token sale to ensure proper responses from nodes and ensures running a node is economically feasible in the early days of the network.  还没有，它可能会在其他主要功能（例如mixicles和阈值签名）之后出现。 如今的网络受到节点信誉和因为恶意而引起未来收入损失的机会成本的保护。 Chainlink核心团队还通过代币销售筹集的资金对oracle网络进行补贴，以确保节点的正确响应，并确保在网络的早期运行节点在经济上是可行的。 |
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|  | What are the returns on staking? 抵押有什么回报？ |
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|  | This will vary from node to node based on their node ranking (see #3), reputation, amount of staked LINK, and the volume of jobs received. The more reliable, accurate, and quick to respond a node is, the more likely they are to generate higher returns on their staked LINK due to the higher volume of jobs and higher fees that can be charged.  根据节点的等级（请参阅第3点），信誉，抵押的LINK代币数量以及收到的服务要求数量，会影响到节点之间的差异。 节点响应越可靠，准确性和敏捷性越高，工作量会越大，可收取的费用会越高，它们更有可能在所抵押的LINK代币上产生更高的回报。 |
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|  | Will there be contracts that require Zero LINK to be staked?  是否会有只需要零抵押的合同？  Yes, contracts can require any amount of LINK (including zero) to be staked (see section ’Customizing data & security in page 1’). The amount staked is just a single factor the requester can require in their service agreement. It is up to the requesters how much LINK will need to be staked for a job and it is up to the node to choose which jobs they are willing to accept.  有的，合同可以要求放任何数量的LINK代币（包括零）（请参阅第1页的“自定义数据和安全性”一节）。 抵押金额只是请求者在其服务协议中可能需要的一个因素。 由请求者决定要为一个服务作业放样多少LINK代币，并且由节点决定他们愿意接受哪些服务作业。 |