

Public Blockchain & B2B

Decentralizing the Financial Supply Chain

GOTO Berlin 2018

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Centrifuge, San Francisco & Berlin





Blockchain. What is it?





Blockchain. What is it?

A decentralized database (+ VM) with append only, no update, no delete run by a permission less, open P2P network.



Censorship resistant Unstoppable Trustless
No Single-Point-of-Failure Immutability

Slow Expensive Inefficient
Limited Scalability & Privacy





Smart Contracts

code is law



```
contract Puzzle{
    address public owner;
    bool public locked;
    uint public reward;
    bytes32 public diff;
    bytes public solution;

    function Puzzle() //constructor{
        owner = msg.sender;
        reward = msg.value;
        locked = false;
        diff = bytes32(11111); //pre-defined difficulty
    }

    function(){ //main code, runs at every invocation
        if (msg.sender == owner){ //update reward
            if (locked)
                throw;
            owner.send(reward);
            reward = msg.value;
        }
        else
            if (msg.data.length > 0){ //submit a solution
                if (locked) throw;
                if (sha256(msg.data) < diff){
                    msg.sender.send(reward); //send reward
                    solution = msg.data;
                    locked = true;
                }
            }
    }
}
```



Vitalik Non-giver of Ether ✓

@VitalikButerin

Following

Replying to @CleanApp @cryptoecongames and 4 others

To be clear, at this point I quite regret adopting the term "smart contracts". I should have called them something more boring and technical, perhaps something like "persistent scripts".

10:21 AM - 13 Oct 2018



Vlad Zamfir @VladZamfir · Oct 13

Replying to @VitalikButerin @CleanApp and 4 others

I like "stored procedures"

But I for one don't regret the terminology, it has been a great learning opportunity for everyone 😊



The Financial Supply Chain





What's there today?

<https://unbounded.network>

Mainly on **permissioned** or **consortium** projects, where a single-source-of-truth or a real-time immutable audit trail/log is useful

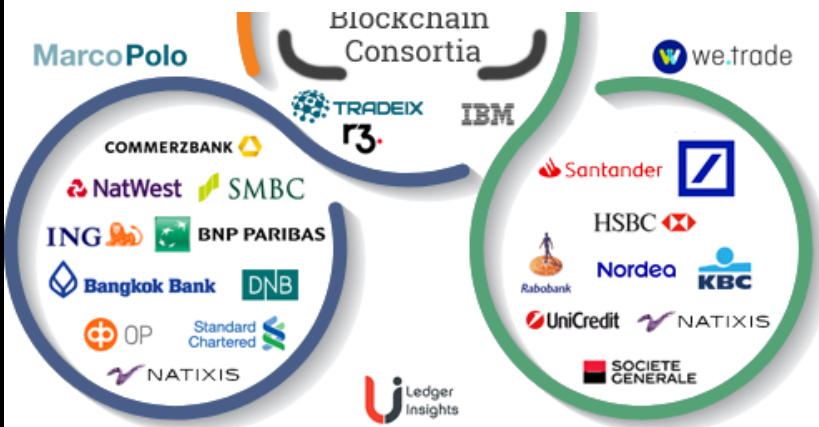
"Obviously the fact that Maersk is driving this is both a really good thing and a worrying thing because they are such a big player in the industry. As you can imagine that's going to be a factor."

TRADELENS

Walmart

IBM brings Walmart

"It's not rocket science to guess what all Maersk's competitors said about joining this initiative."



IBM and Maersk Struggle to Sign Partners to Shipping Blockchain

<https://www.coindesk.com/ibm-blockchain-maersk-shipping-struggling>



Suppliers to apply blockchain to the food supply chain to improve food safety and ingredient transparency.

Blockchain can help brands track sources of contamination far more quickly, reducing the impact of compromised foods.



Blockchain and B2B?

Today, financial services and B2B is a world of fragmented processes, applications and providers

Data is stored in silos, either on premise or in the cloud

It is nearly impossible to access and combine data across those silos and build applications using it

This can change with blockchain ...



Centrifuging the Financial Supply Chain

Single source of truth for all; consensus on changes and statuses

One standard, without unnecessary intermediary, no single point of failure, remaining data ownership and sovereignty

Open platform for (d)apps, services and trade

Digital business identities

E-Invoicing without Invoicing

Tokenizing of Invoices and other Financial Supply Chain assets

Mapping the world's financial supply chain



Road Blocks

or why it will not happen tomorrow

Existing infrastructure

Legal restrictions

New and unproven

Technology not yet ready for prime time to solve known issues as speed, transaction costs, data privacy and scalability

Missing standards

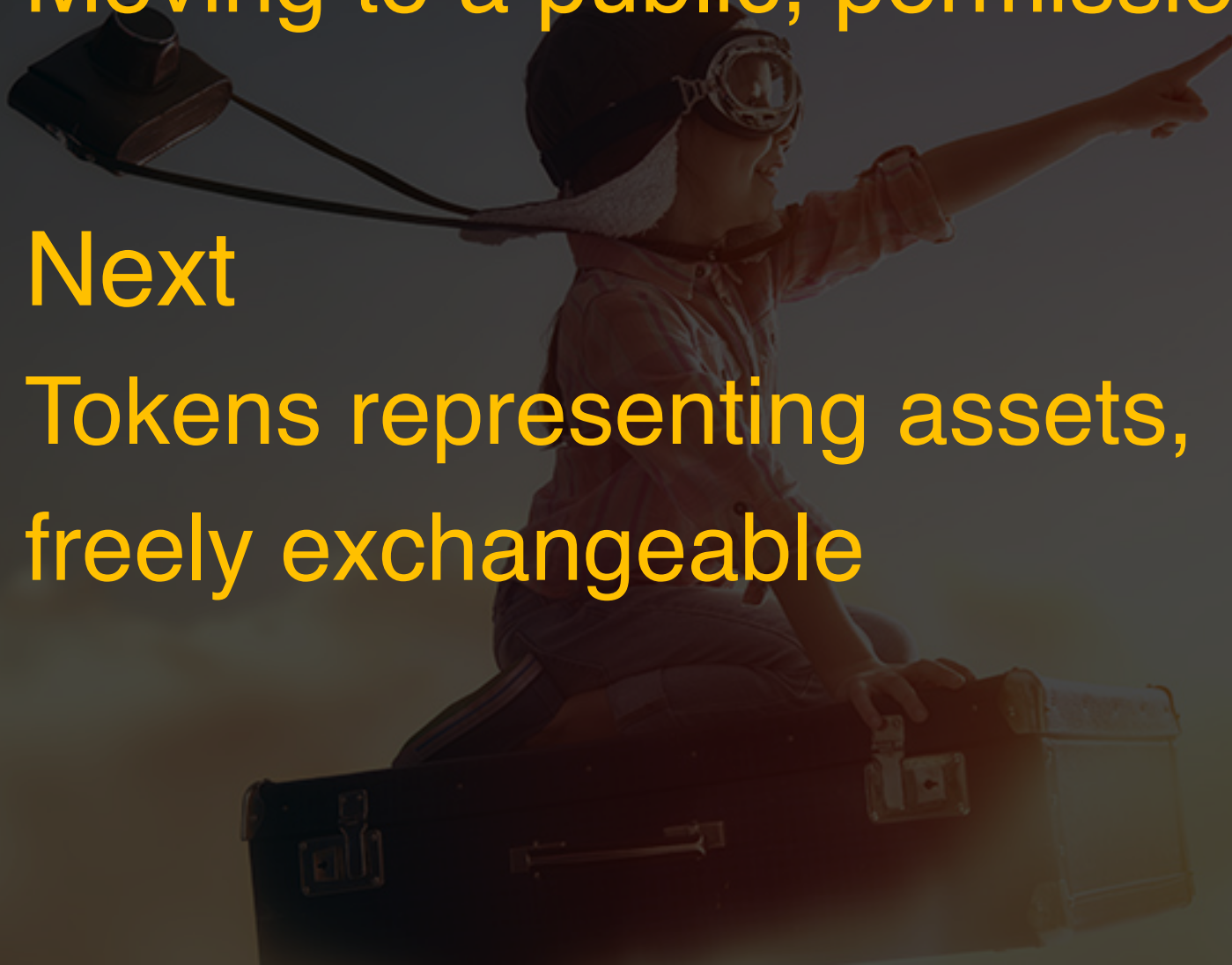


Happening

Moving to a public, permission-less environment

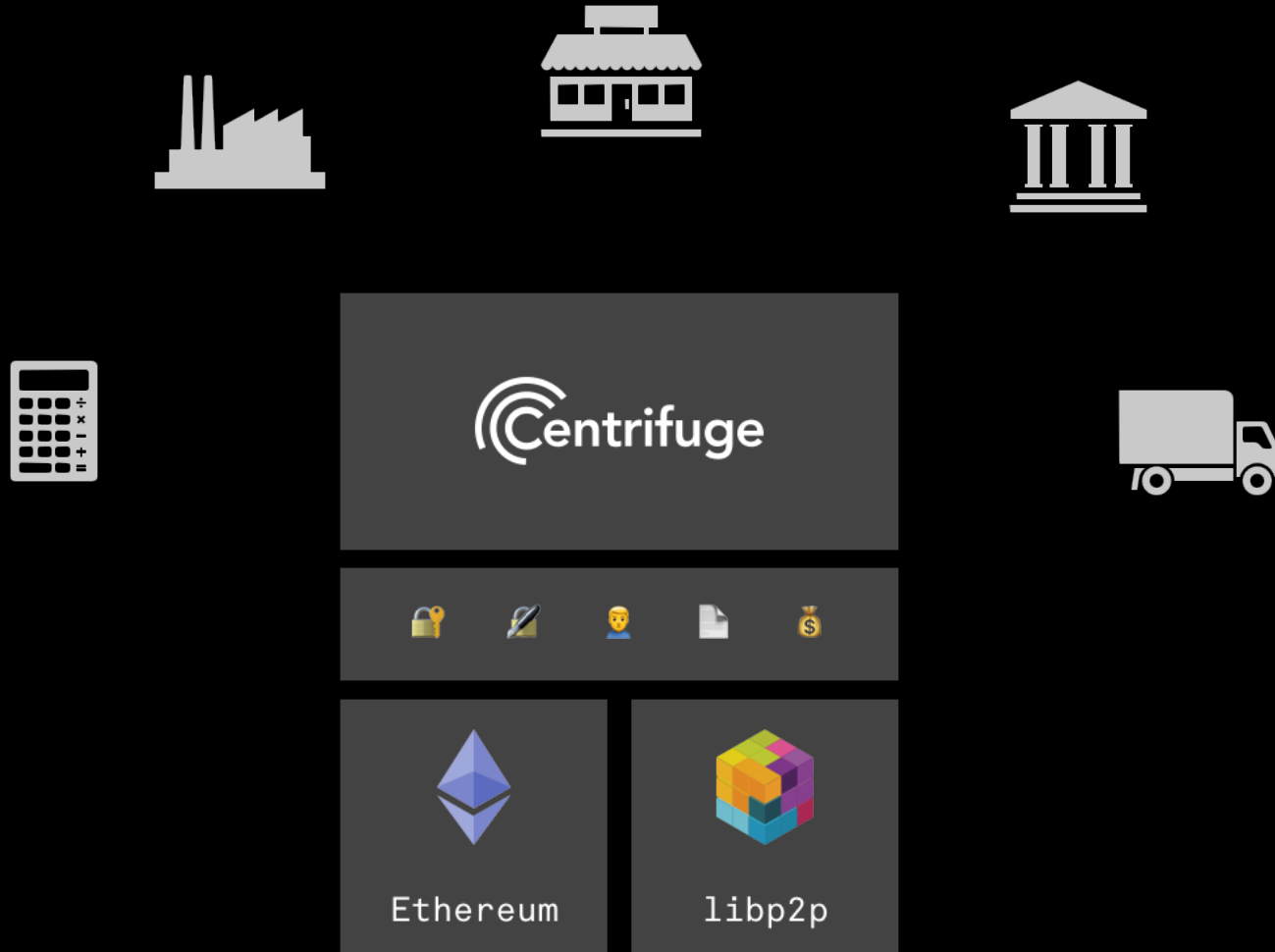
Next

Tokens representing assets,
freely exchangeable





A B2B Layer to Ethereum



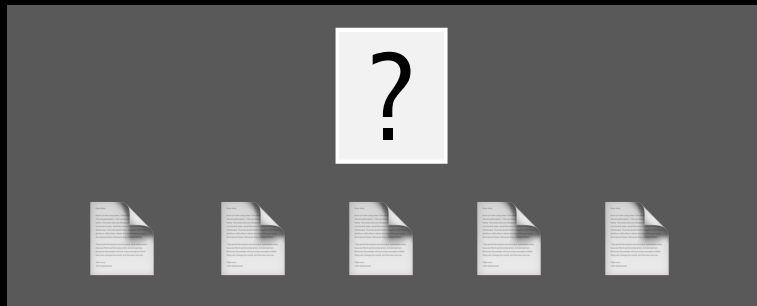


Centrifuge's Two Layered Approach



identities, anchors, tokens

public · global consensus · on-chain standards

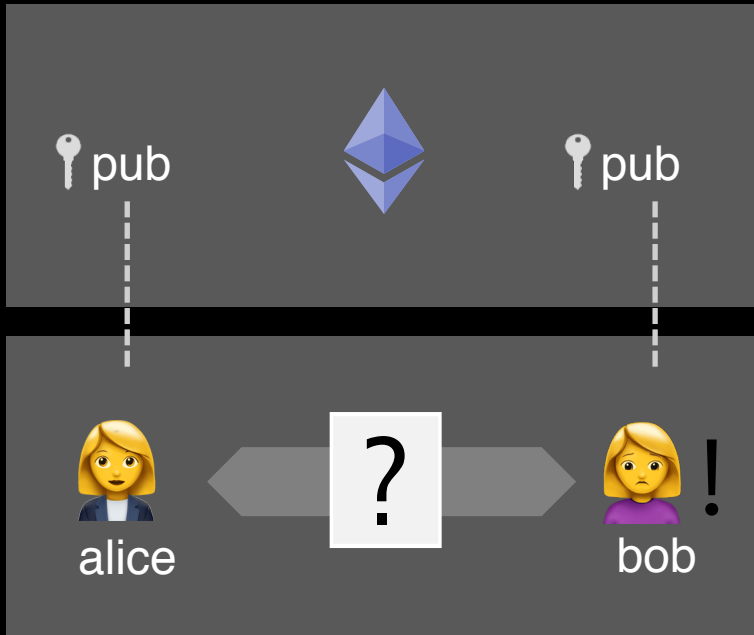


p2p data channels

private · scalable



P2P Data Channels



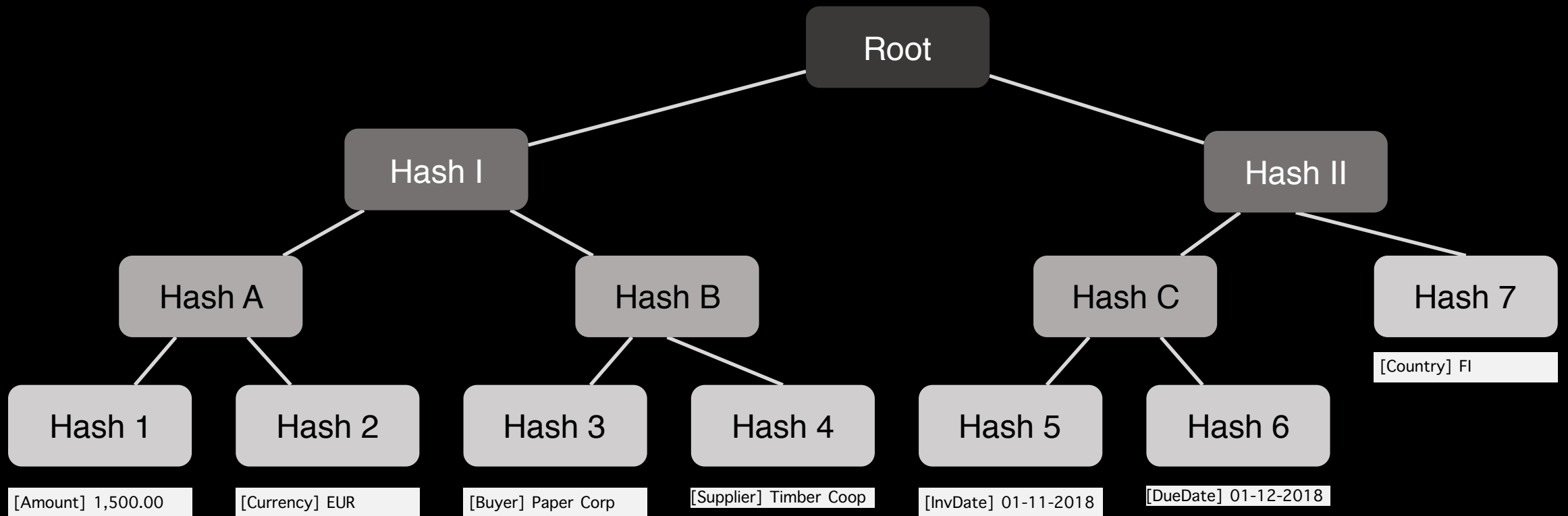
authentication, consensus and
single-source-of-truth with anchors

data travels on a private
p2p channel



Anchors

root hash of a Merkle tree

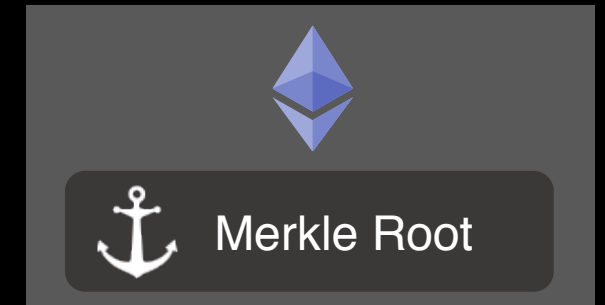
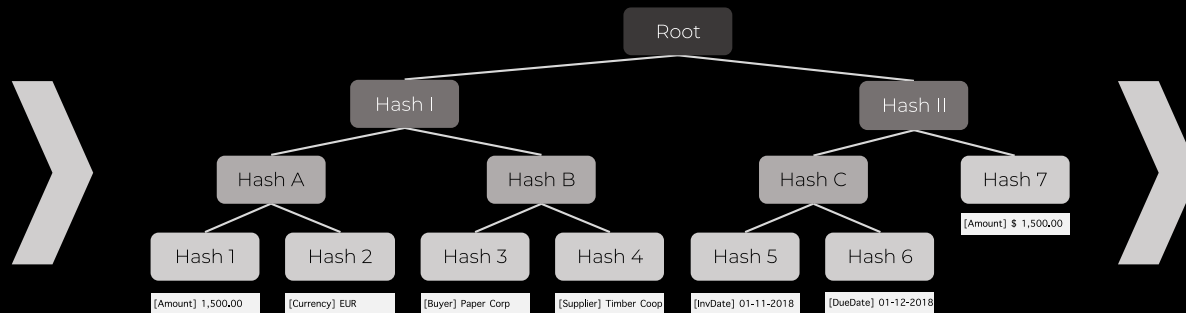




Precise-Proofs

public single-source-of-truth on element level

[Amount] 1,500.00
[Currency] USD
[Buyer] Paper Corp
[Supplier] Timber Coop
[InvDate] 01-11-2018
[DueDate] 01-12-2018
[Country] FI
...





... will turn into a Three Layers



identities, anchors, tokens

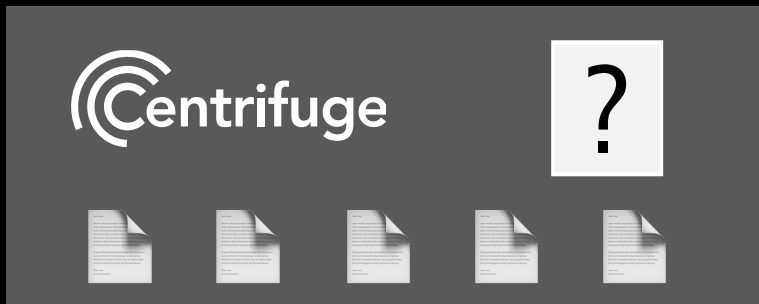
public · global consensus · on-chain standards



side chain



public · own consensus · low cost & scaling transactions



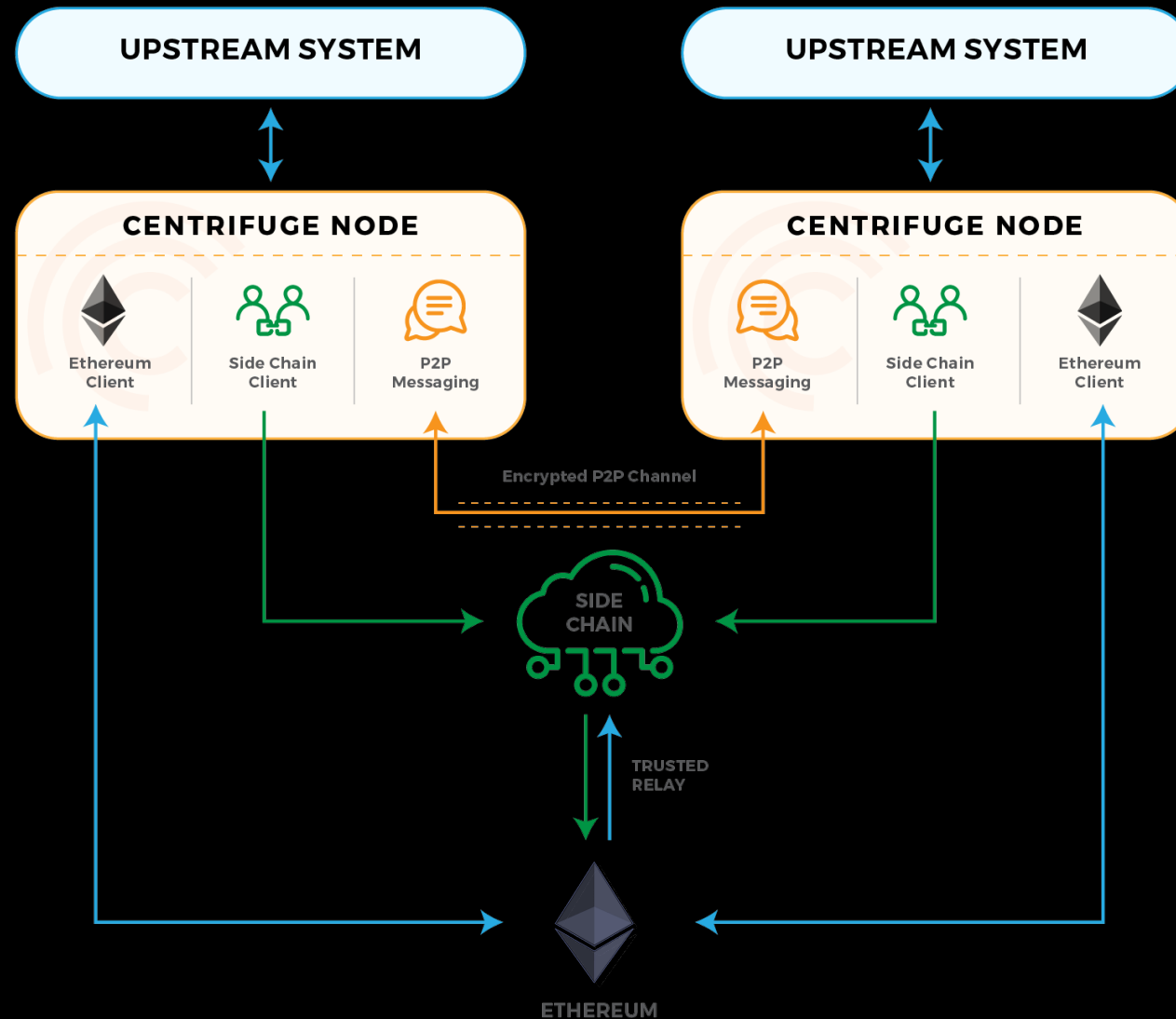
p2p data channels



private · scalable

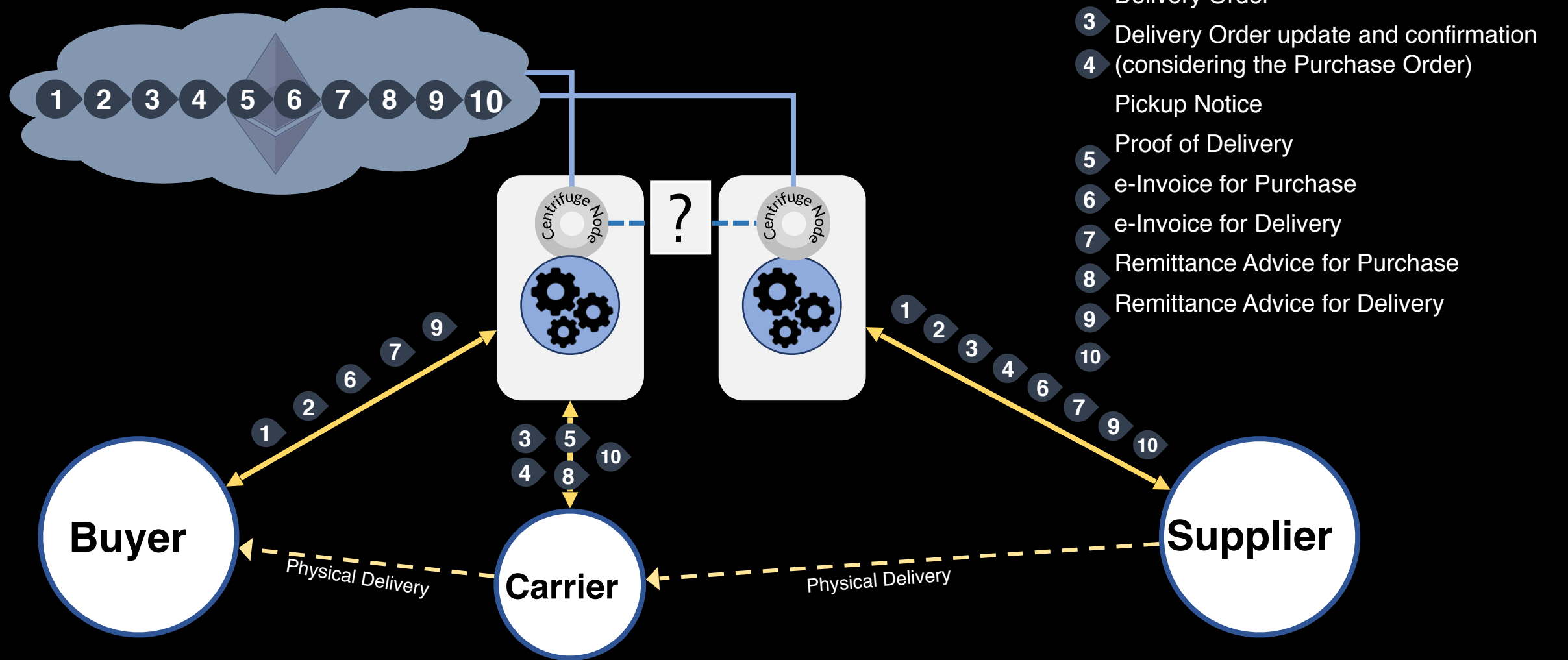


... will Turn into a Three Layers





A Network for Networks





Tokenizing Assets

Fungible Tokens

Interchangeable

Uniform

Divisible

ERC-20 standard



Non-Fungible Tokens

Not interchangeable

Unique

Non-divisible

ERC-721 standard



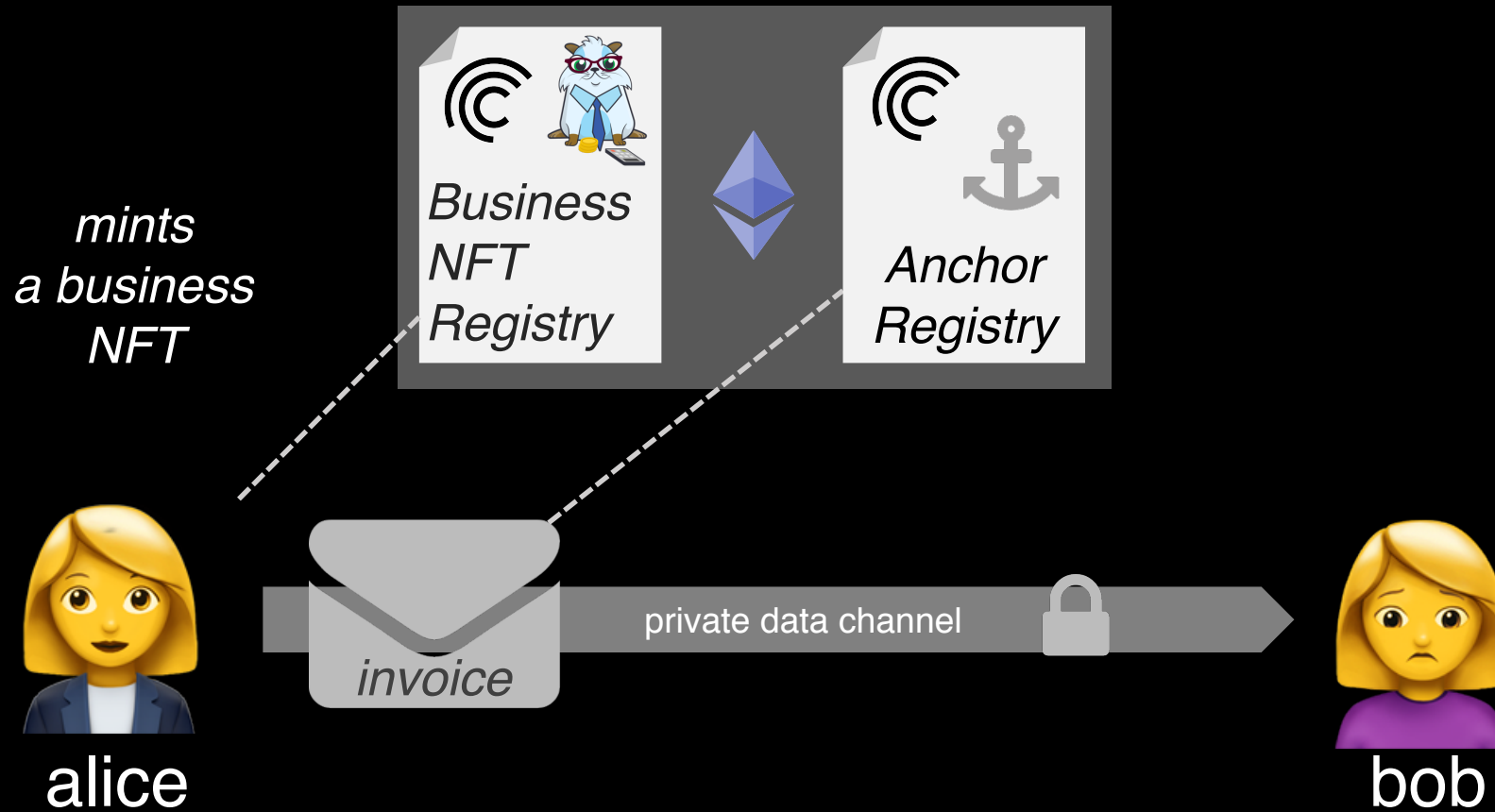


ERC-721, the Basis for *Business-NFTs*

```
function mint(  
    address _to,  
    uint256 _tokenId,  
    uint256 _anchorId,  
    bytes32 _merkleRoot,  
    string[3] _values,  
    bytes32[3] _salts,  
    bytes32[][3] _proofs  
) public  
{ ... }
```

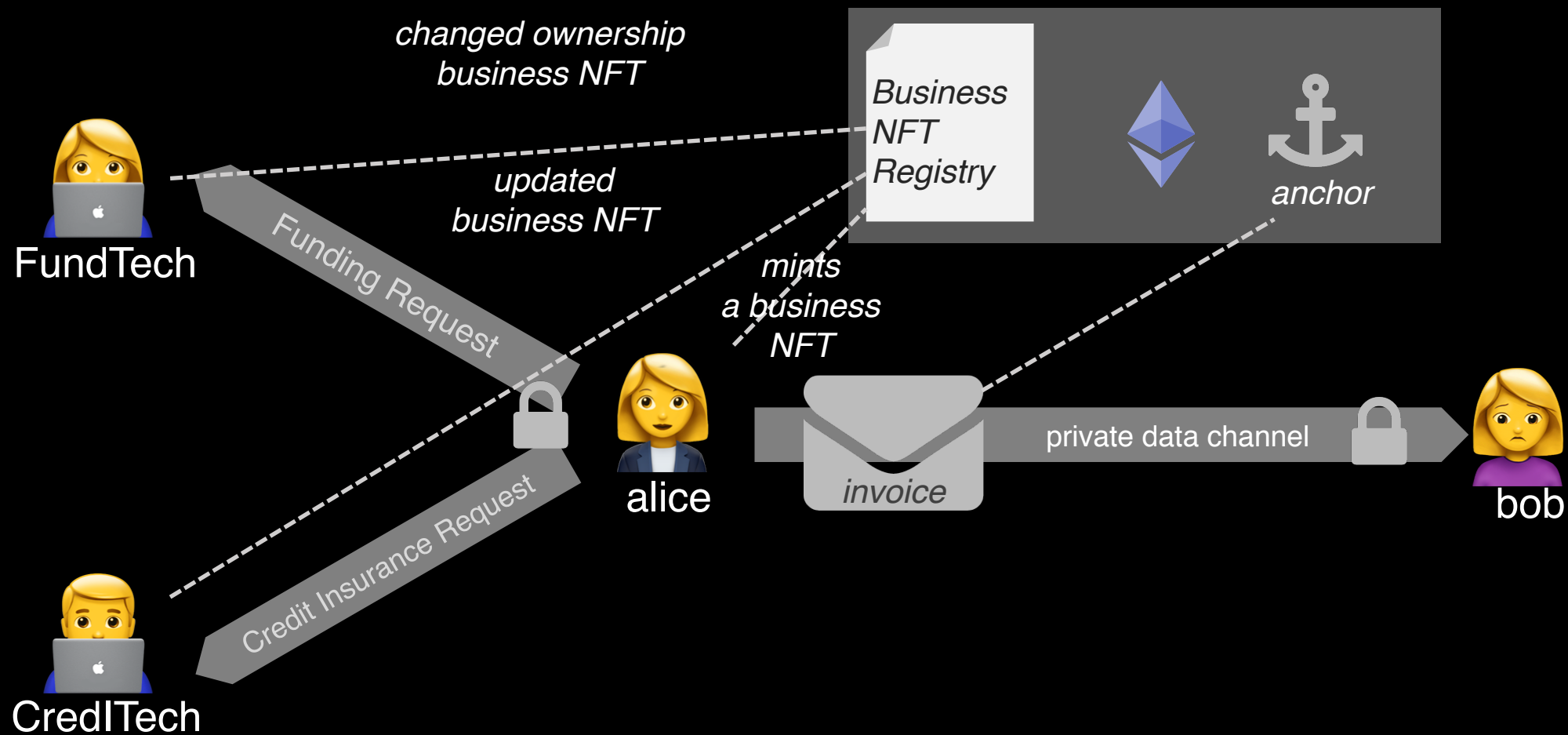


One Standard, Many Utilities





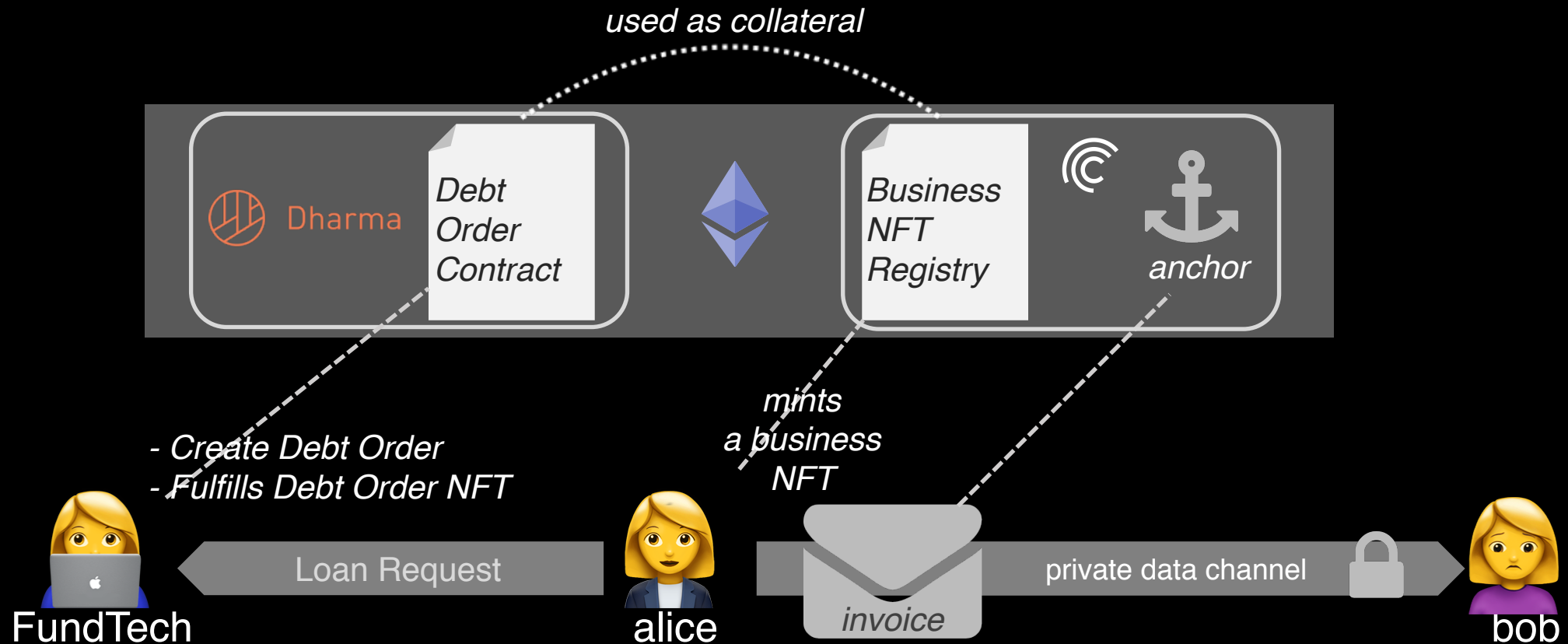
Insurance and Financing





Decentralized Financing

Business NFTs as collateral on Dharma





Resources

WP CentOS

<https://www.centrifuge.io/assets/Centrifuge%20OS%20White%20Paper.pdf>

WP business-NFTs

<https://www.centrifuge.io/assets/Privacy-Enabled%20NFTs%20Paper.pdf>

GitHub

<https://github.com/centrifuge>

<https://github.com/centrifuge/go-centrifuge>

Documentation

<http://developer.centrifuge.io/>

Slack

https://join.slack.com/t/centrifuge-io/shared_invite/enQtNDYwMzQ5ODA3ODc0LTU4ZjU0NDNkOTNhMmUwNjl2NmQ2MjRiNzA4MGIwYWViNTkxYzljODU2OTk4NzM4MjhIOTNjMDAwNWZkNzY2YWY

Medium

<https://medium.com/centrifuge>

#TokenEngineering

Workgroup Berlin

<http://tokenengineering.net/>



#DeFi. Decentralized Finance

community of Decentralized Finance Platforms

Interoperability and Open Source

Accessibility and Financial Inclusion

Financial Transparency

Building on a decentralized blockchain

Fits into the finance industry


Offers a robust developer platform

subreddit [r/defi](https://www.reddit.com/r/defi) · Telegram group t.me/de_fi



THANK YOU

Questions ?

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