



# Cross-chain Swaps and Beyond with 1inch

Tanner Moore

# Overview

- Classic Swap - AMM/PMM aggregation

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- 1inch Fusion - intent-based swaps

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- 1inch Fusion+ - cross-chain swaps

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- Classic Swap - AMM/PMM aggregation
- 1inch Fusion - intent-based swaps
- 1inch Fusion+ - cross-chain swaps
- Integrating these into your project

# From hackathon to leading DeFi project



BUIDL 2019  
at ETH New York

**3M+**  
Total users

**\$55B+**  
Total available liquidity

**\$500B+**  
Total volume

**~38%**  
Aggregation market  
share



# Swapping with 1inch

# Supported Chains



Ethereum



BNB Chain



Polygon



Optimism



Arbitrum



Base



Avalanche



Gnosis Chain



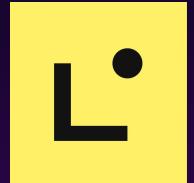
zkSync Era



Sonic



Unichain



Linea

# Fusion/Fusion+



Ethereum



BNB Chain



Polygon



Optimism



Arbitrum



Base



Avalanche



Gnosis Chain



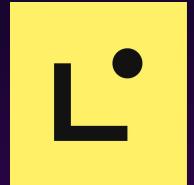
zkSync Era



Sonic



Unichain



Linea

# Fusion



Solana

# Classic Swap

## Classic Swap

- Sources swap liquidity from all popular protocols

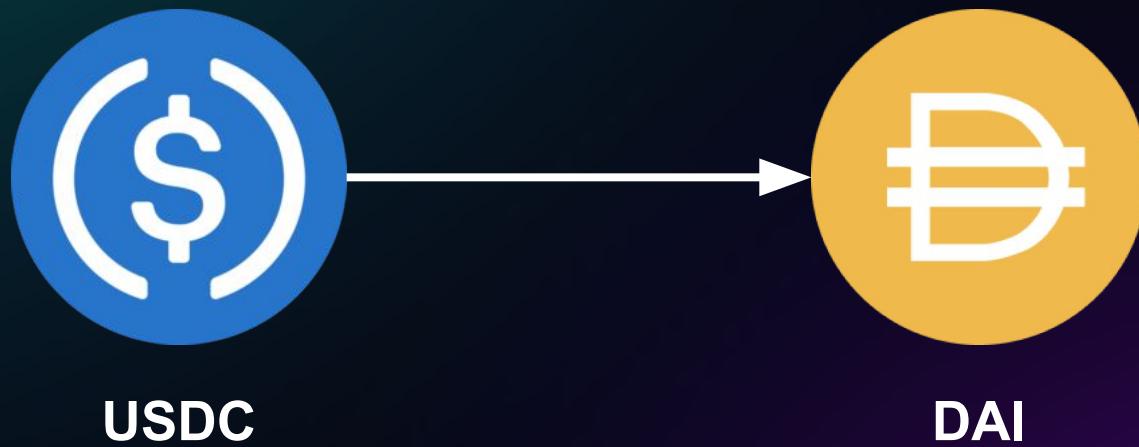
## Classic Swap

- Sources swap liquidity from all popular protocols
- Combines these protocols to optimize swap output

## Classic Swap

- Sources swap liquidity from all popular protocols
- Combines these protocols to optimize swap output
- Executes all swaps in a single transaction

# Classic Swap



# Classic Swap



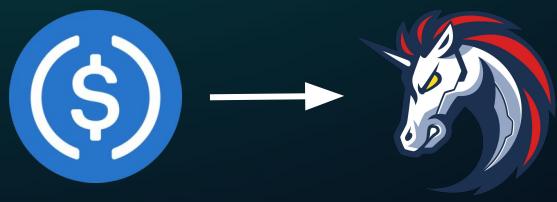
# Classic Swap



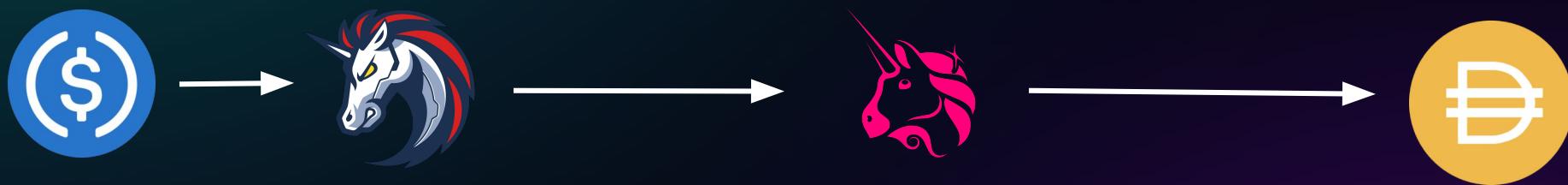
# Classic Swap



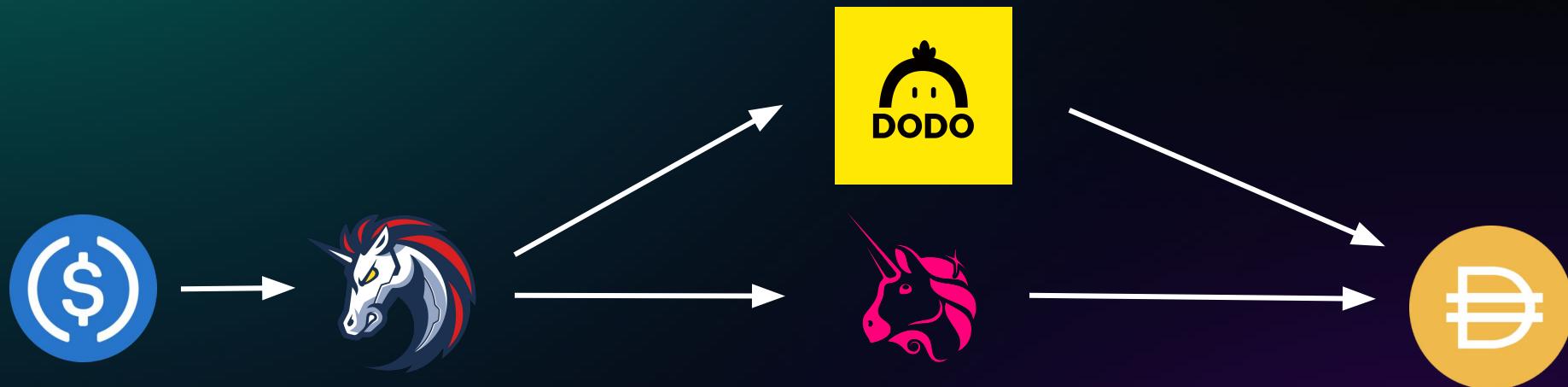
# Classic Swap



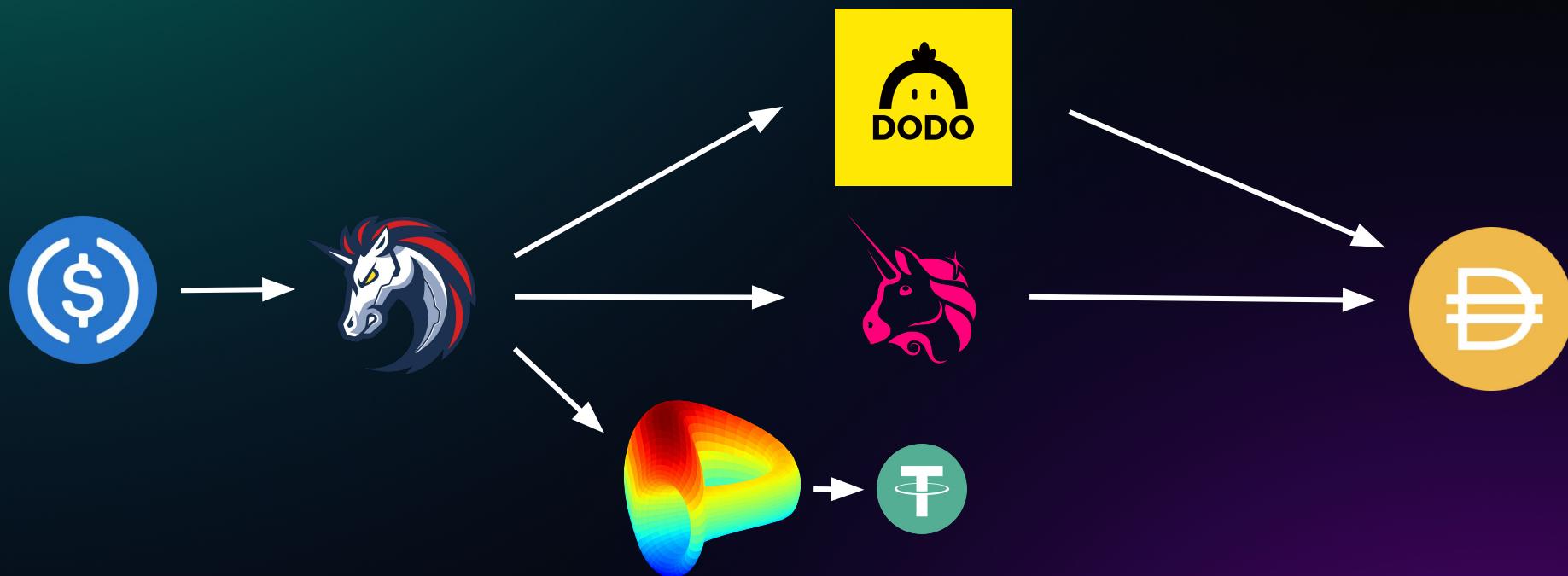
# Classic Swap



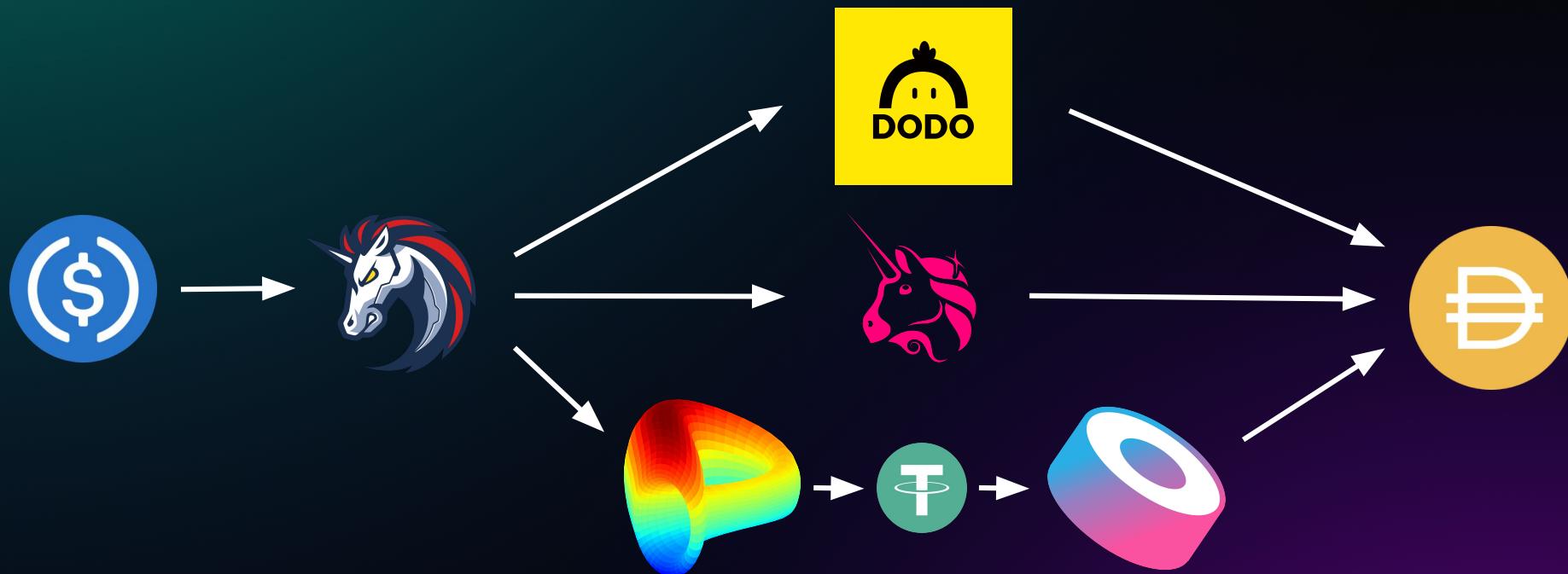
# Classic Swap



# Classic Swap



# Classic Swap



# Classic Swap



VS



# Classic Swap



# Classic Swap



**205,555 gas**



# Classic Swap



**205,555 gas**



**175,055 gas**

# Classic Swap



205,555 gas



✓ 175,055 gas

# 1inch Fusion

# 1inch Fusion

- User submits a swap request with signature

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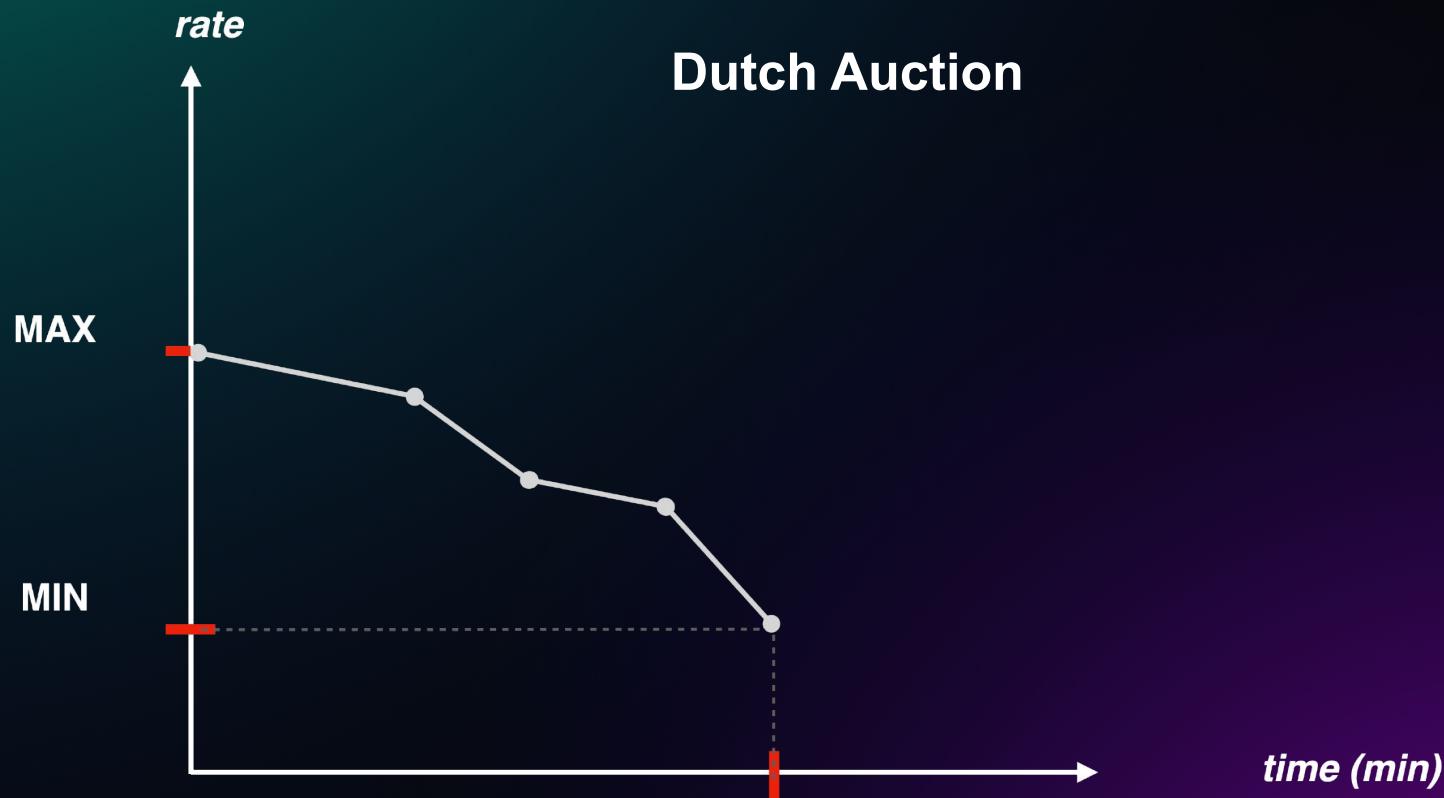
# 1inch Fusion

- User submits a swap request with signature
- Dutch auction is created for the swap
- Resolvers asynchronously compete to fill it
- Users are protected from MEV by design
- Gasless transaction for users

# What is a Fusion dutch auction?

# What is a Resolver?

# 1inch Fusion

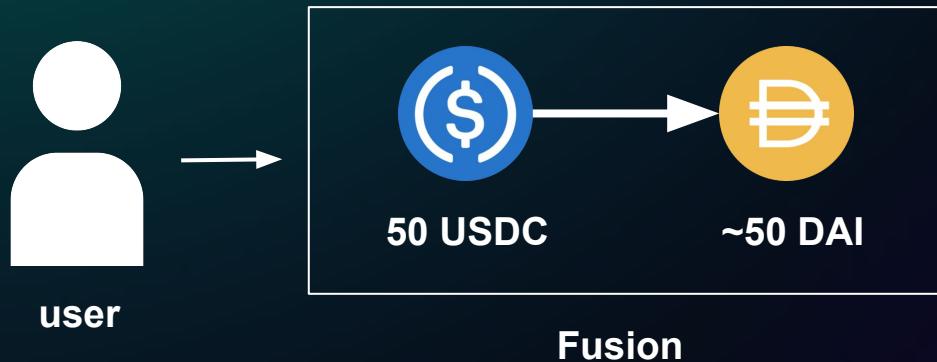


# 1inch Fusion



user

# 1inch Fusion



# 1inch Fusion



# 1inch Fusion

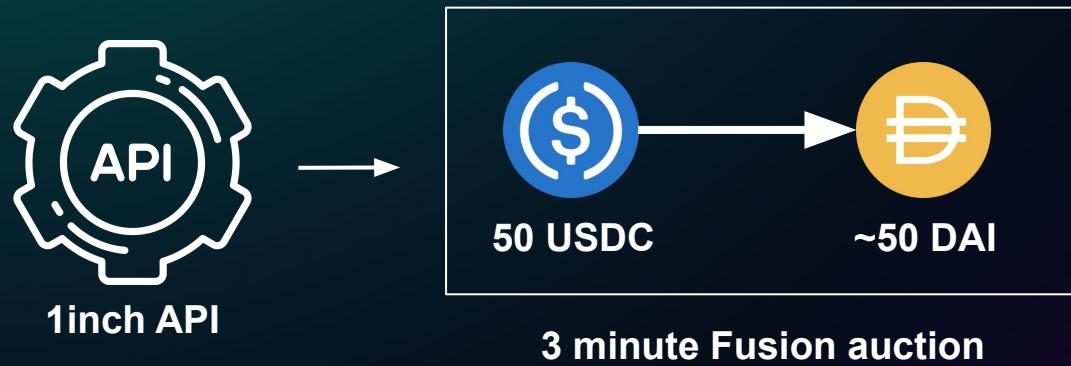


# 1inch Fusion

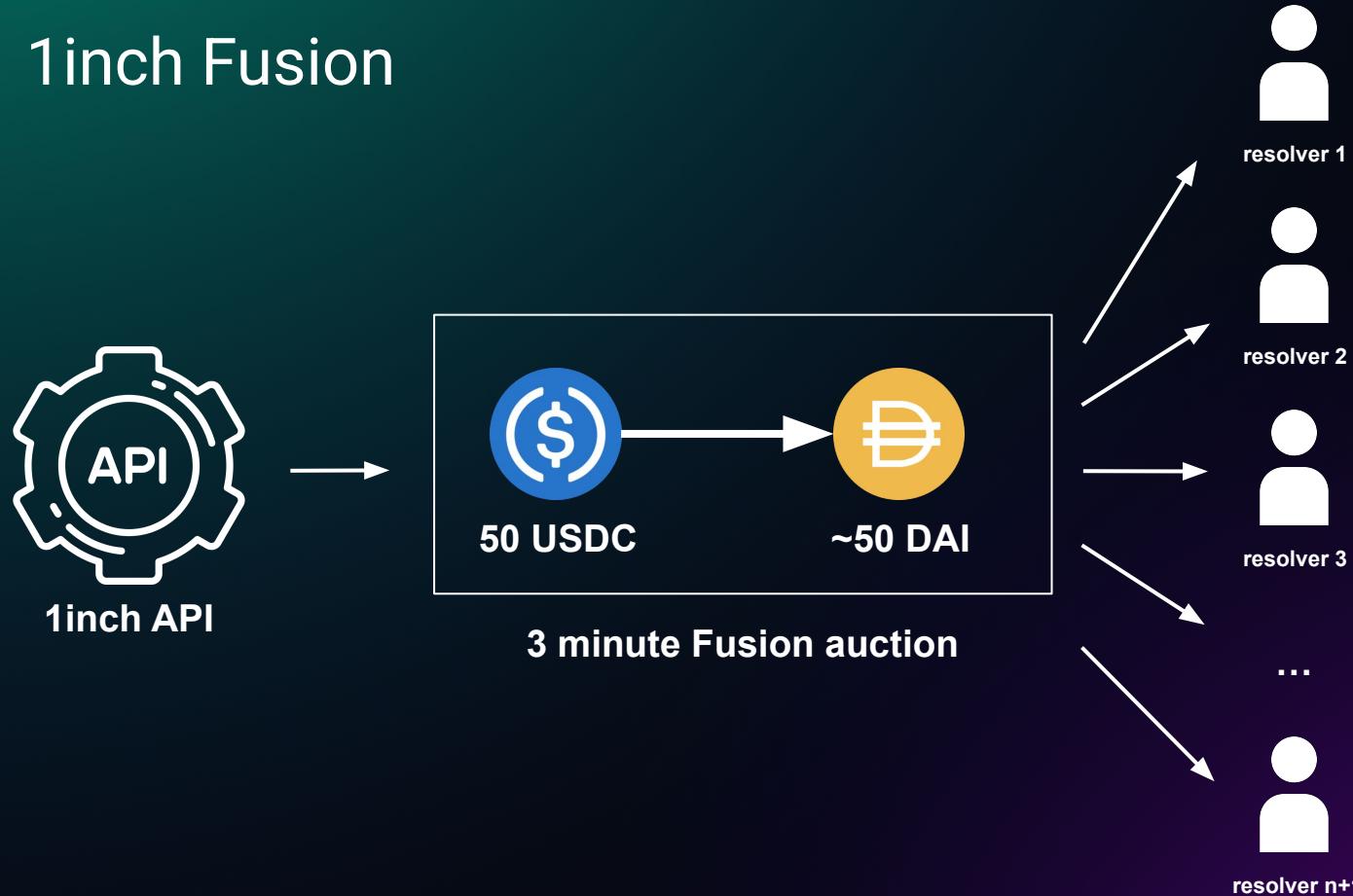


1inch API

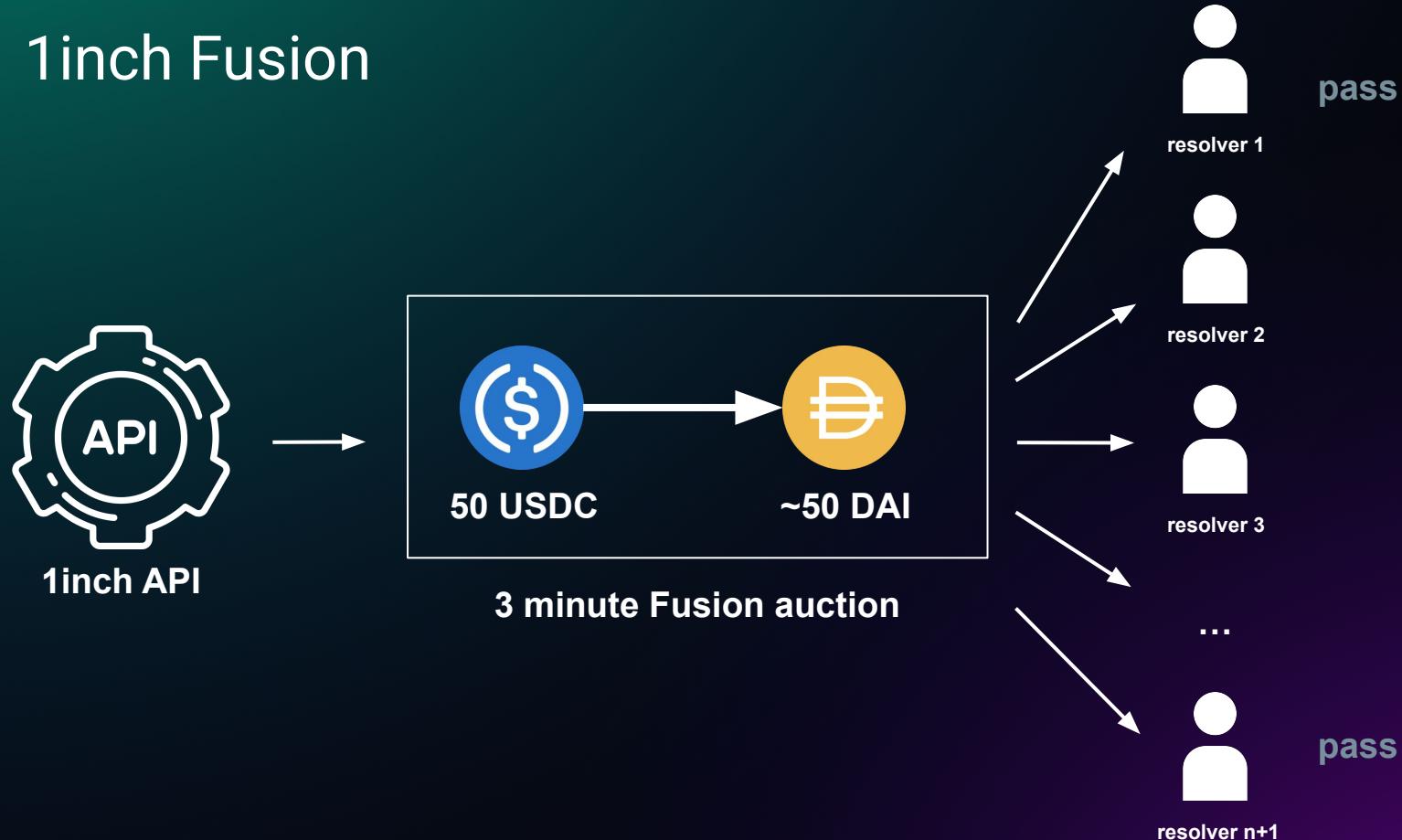
# 1inch Fusion



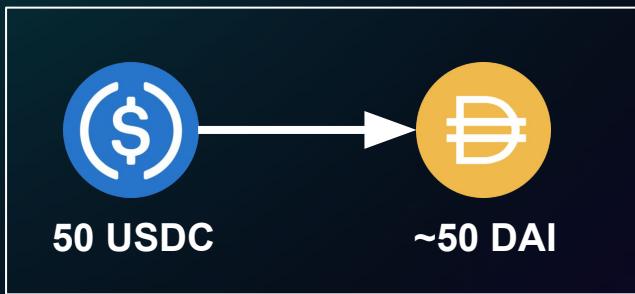
# 1inch Fusion



# 1inch Fusion



# 1inch Fusion



3 minute Fusion auction



resolver 1

pass



resolver 2

pass



resolver 3

execute

...

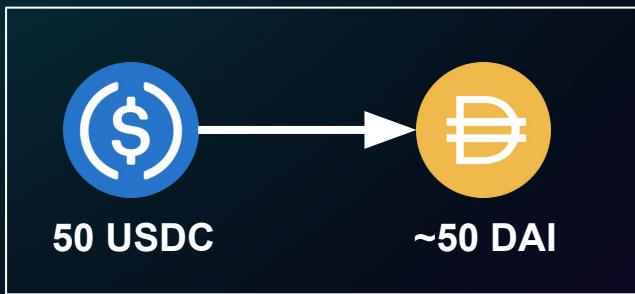


resolver n+1

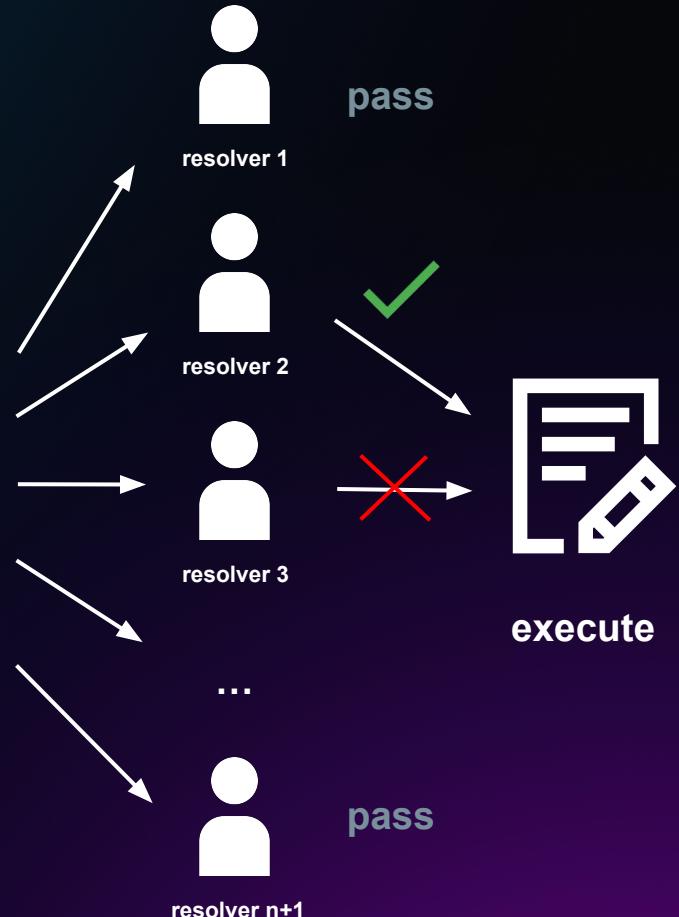
pass



# 1inch Fusion



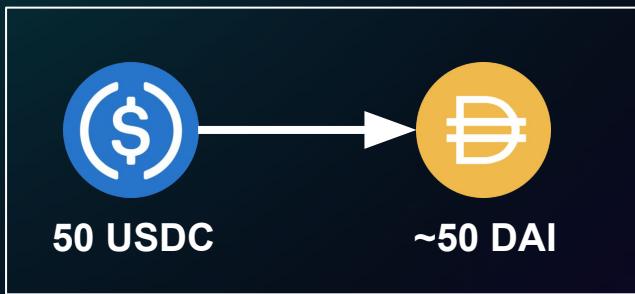
3 minute Fusion auction



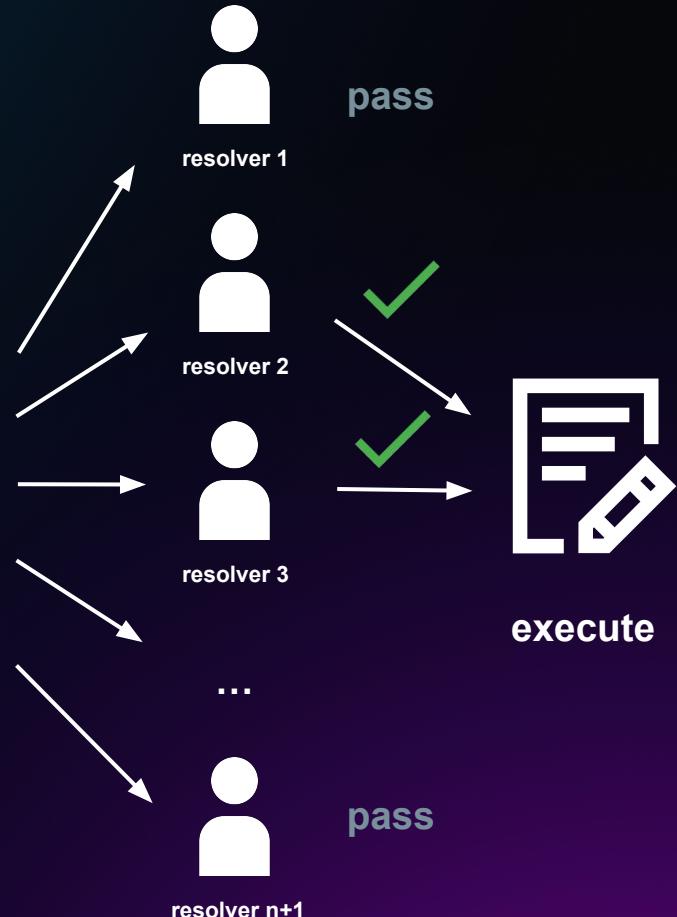
# 1inch Fusion



1inch API



3 minute Fusion auction



pass

resolver 1



resolver 2



resolver 3

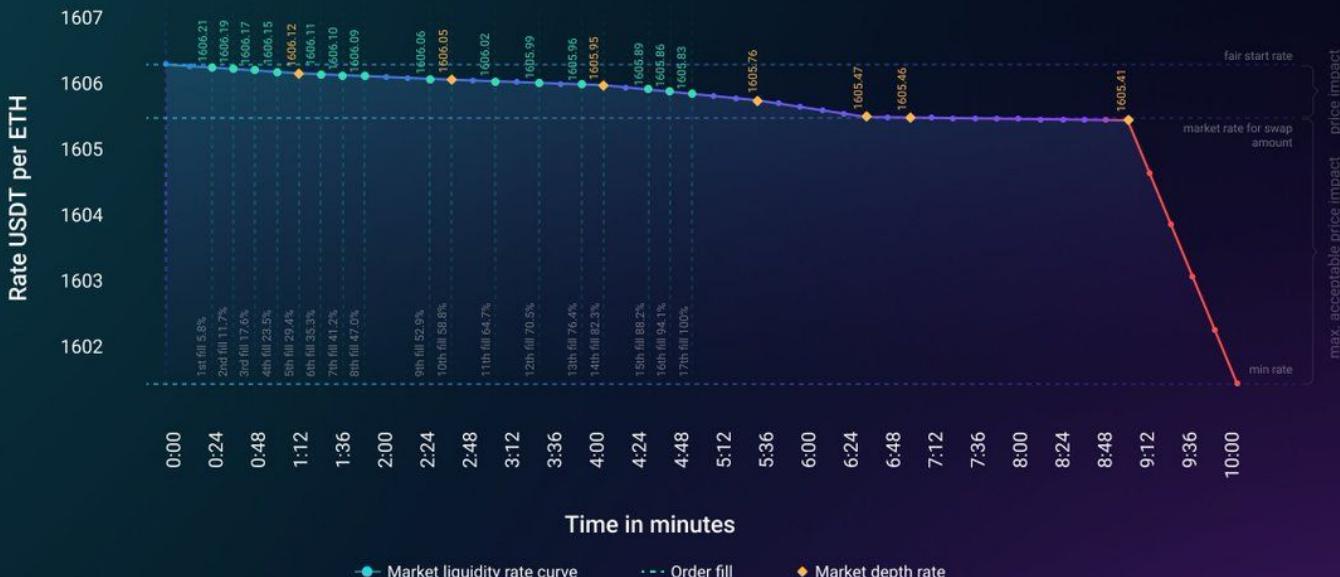
execute

pass

resolver n+1

# 1inch Fusion

## 3700 WETH to USDT Fusion swap

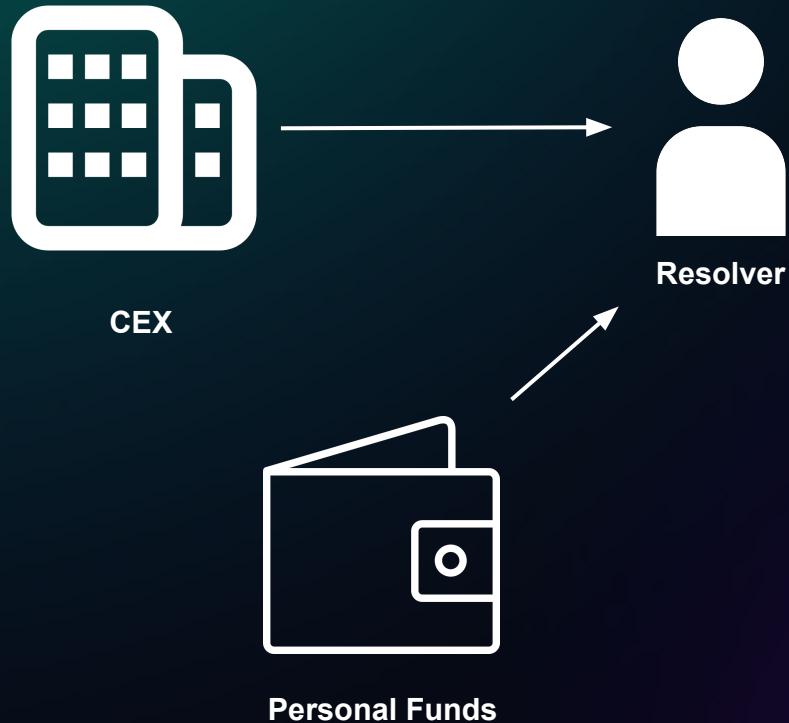


# Where do resolvers get liquidity?

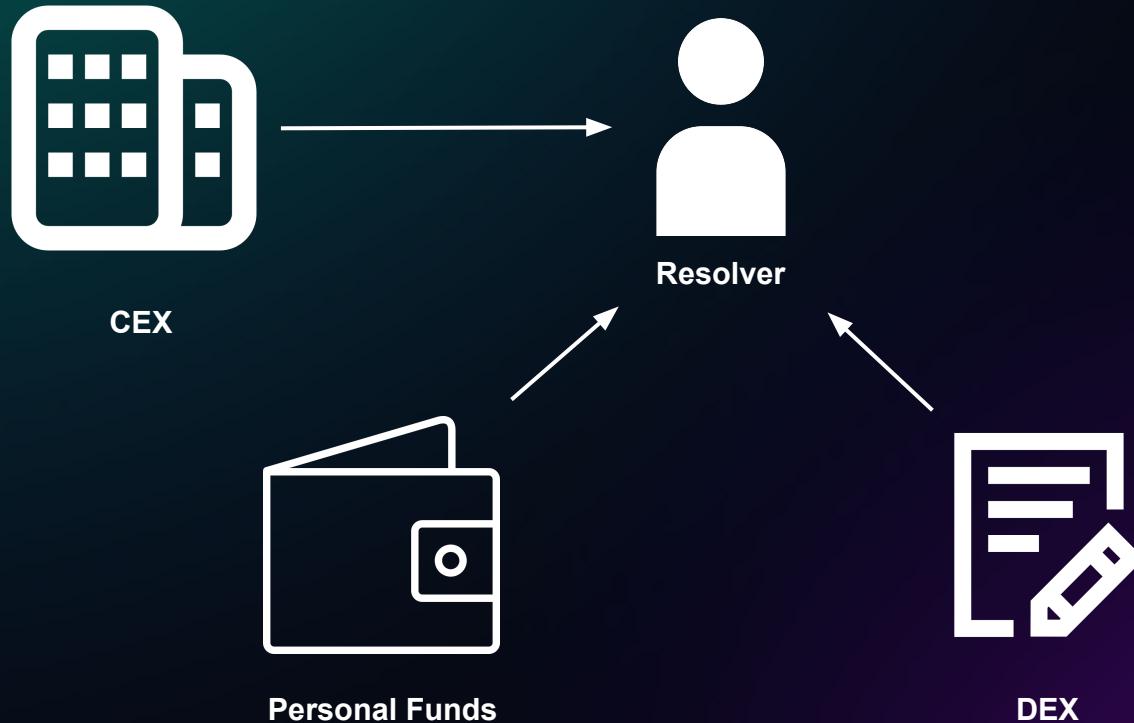
# 1inch Fusion



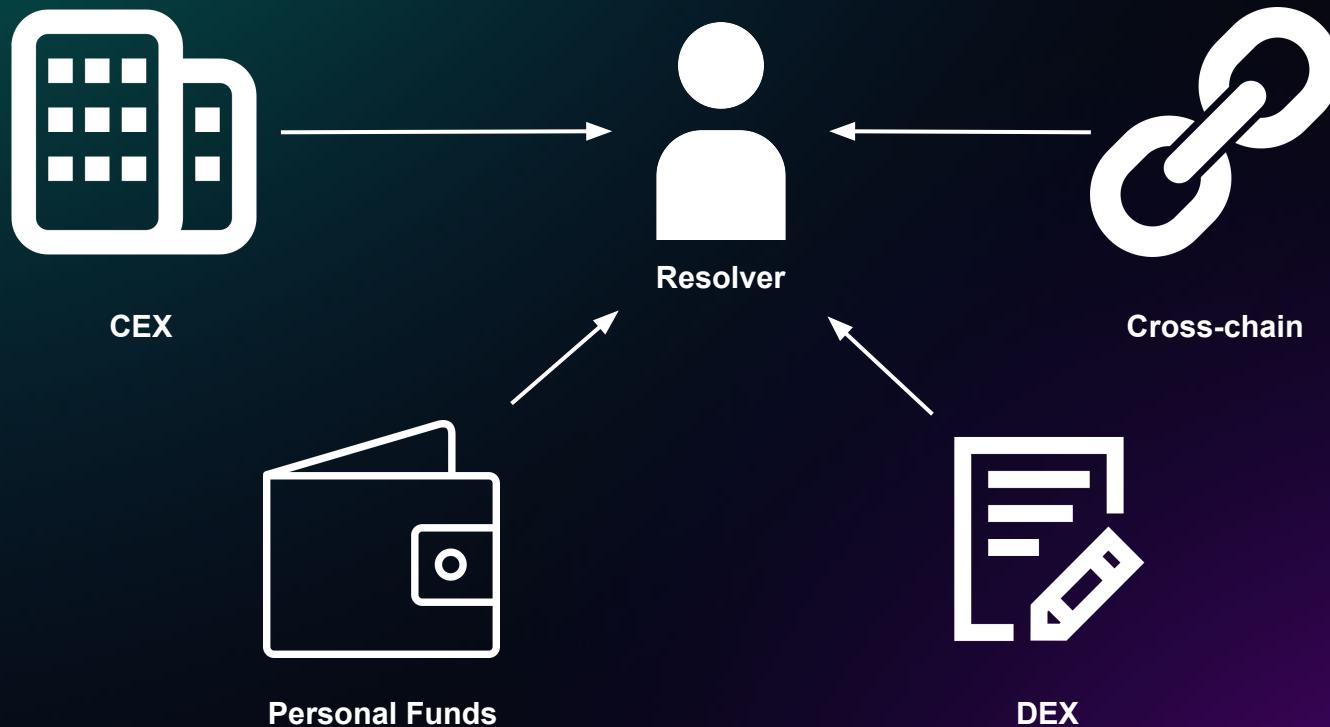
# 1inch Fusion



# 1inch Fusion



# 1inch Fusion



# 1inch Fusion+

# What matters to users for cross-chain swaps?

What matters to users for cross-chain swaps?

Good swap rates

What matters to users for cross-chain swaps?

Good swap rates

Simple UX

What matters to users for cross-chain swaps?

Good swap rates

Simple UX

Trustlessness

# Hashed Timelock Contracts

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  - o Require some secret 's' to unlock the funds

# Hashed Timelock Contracts

- Smart contracts that hold funds
  - o Require some secret 's' to unlock the funds
  - o Will expire after a set amount of time

# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+

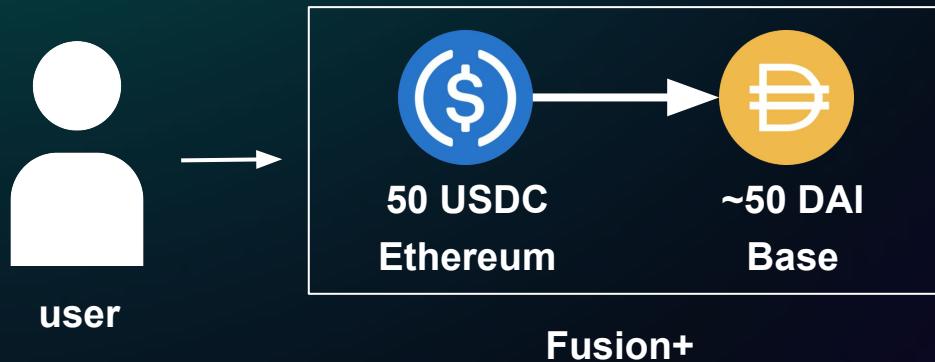


# 1inch Fusion+



user

# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+

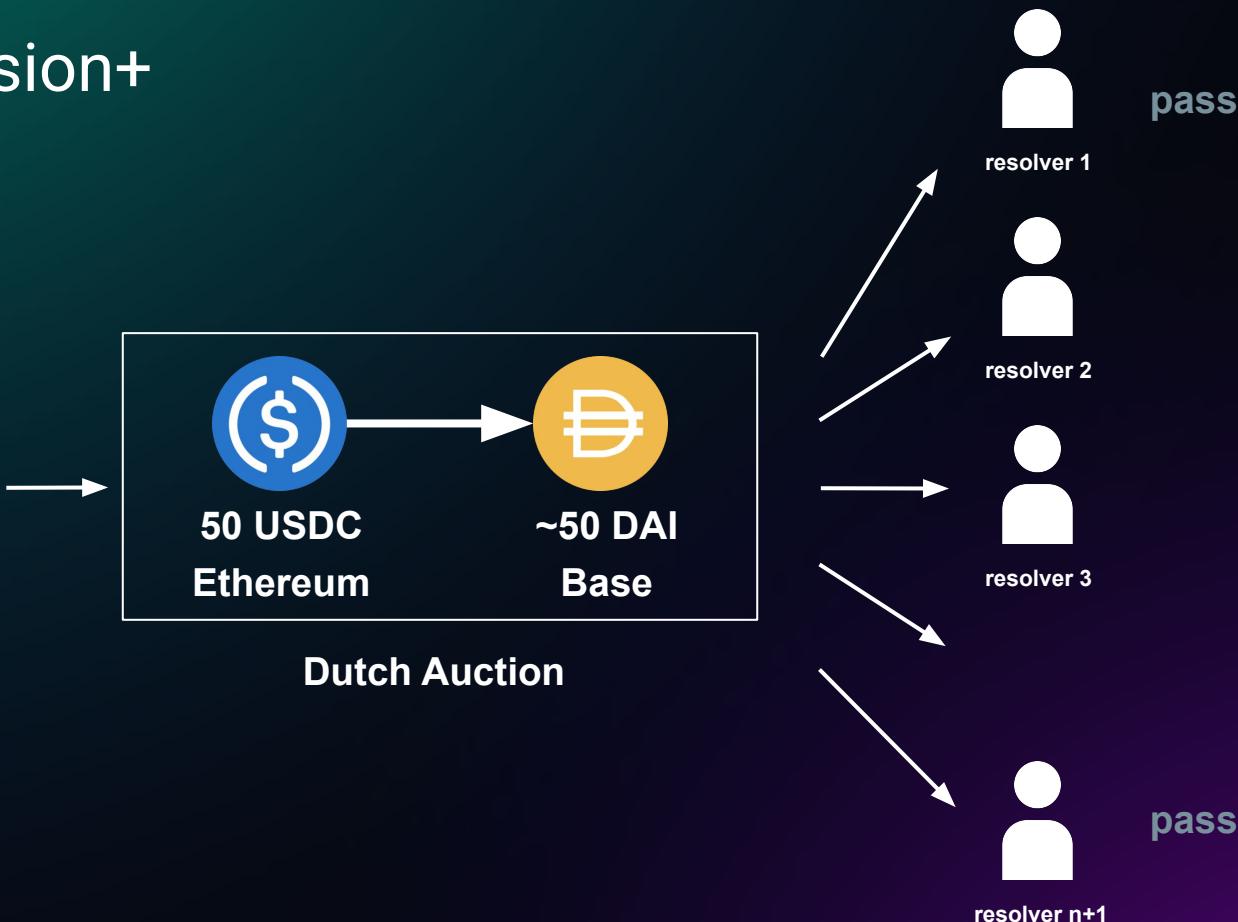


1inch API

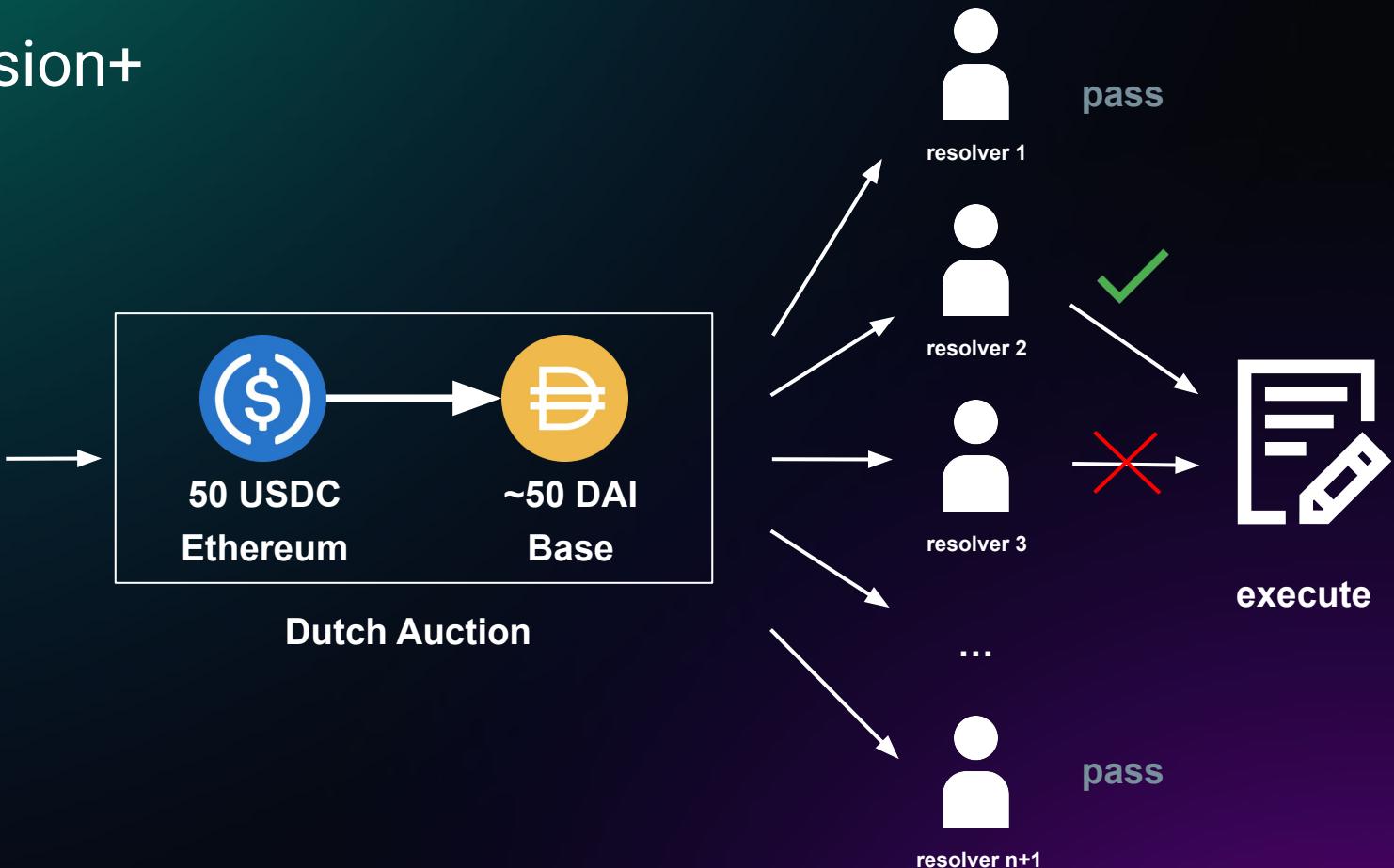
# 1inch Fusion+



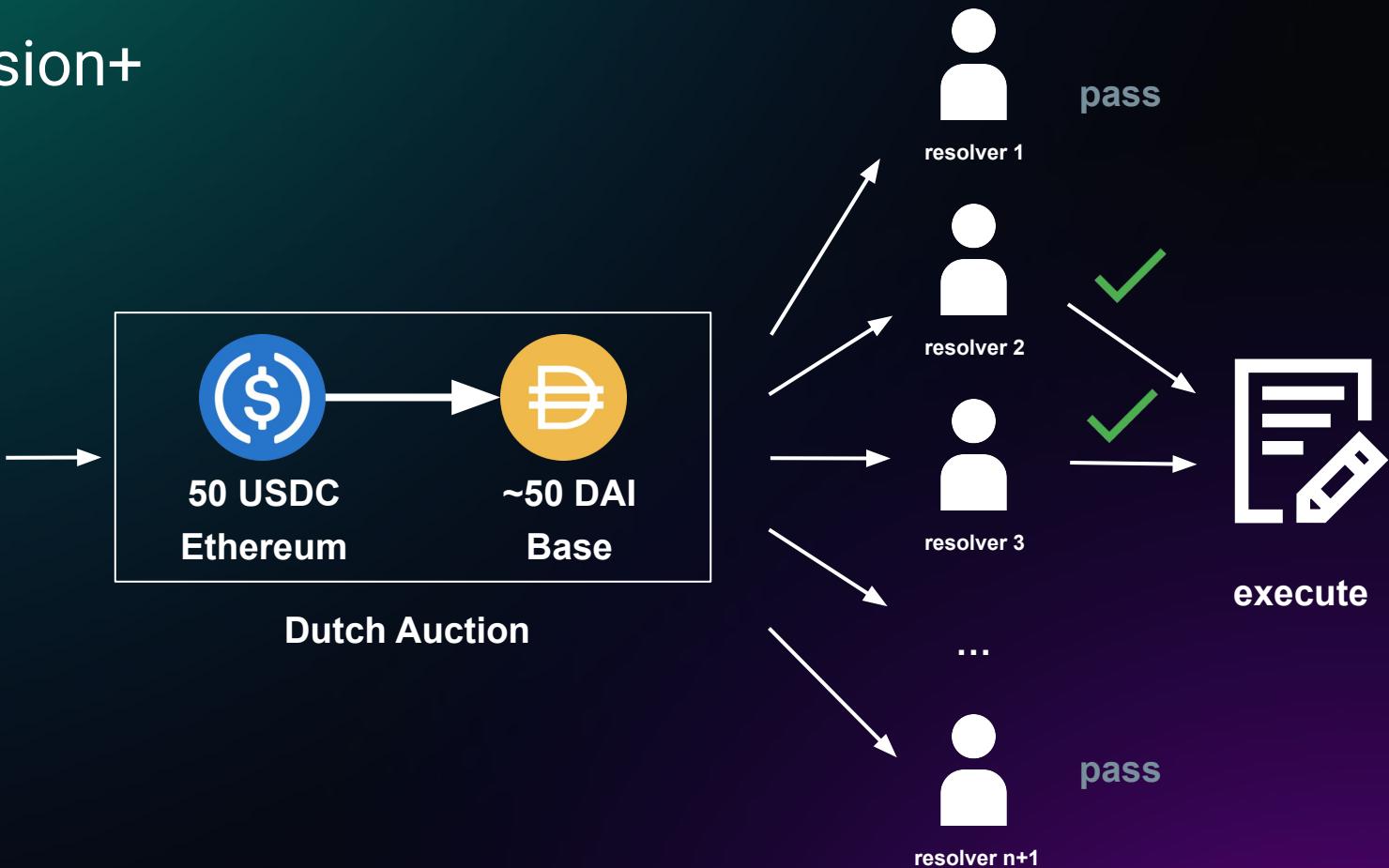
# 1inch Fusion+



# 1inch Fusion+



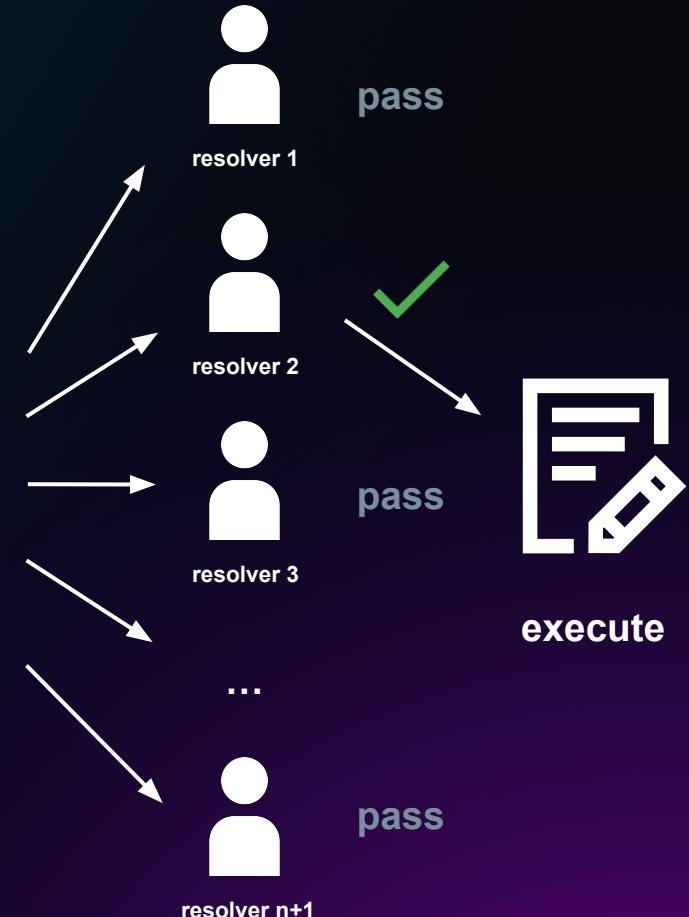
# 1inch Fusion+



# 1inch Fusion+



Dutch Auction

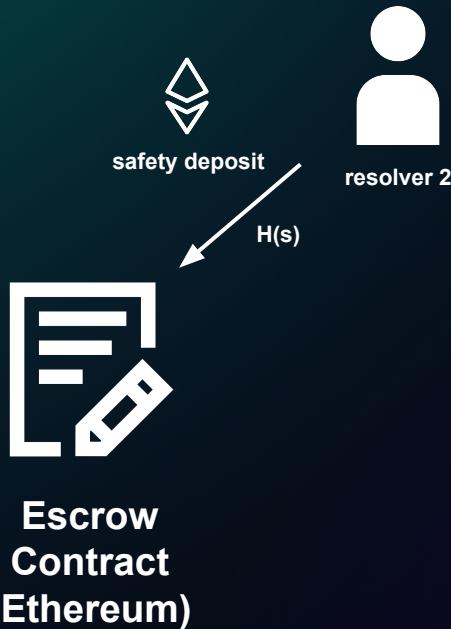


# 1inch Fusion+

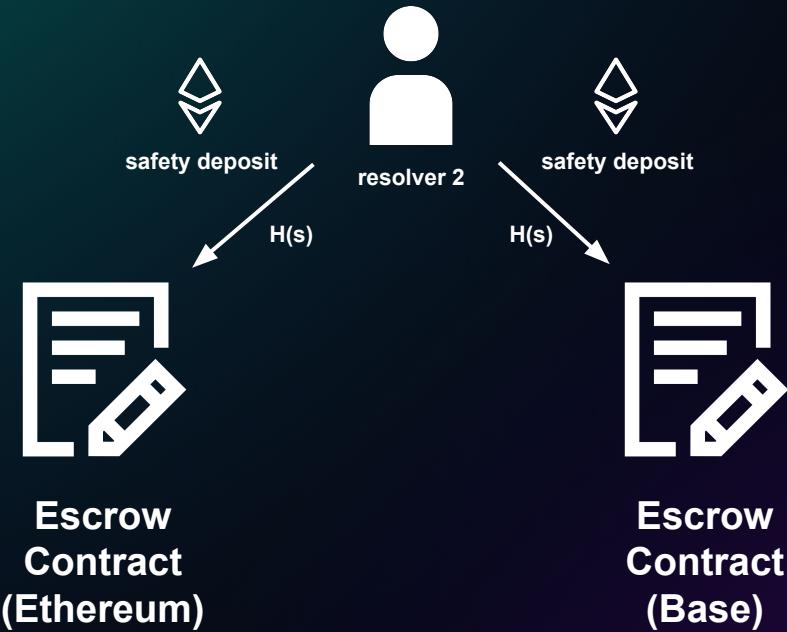


resolver 2

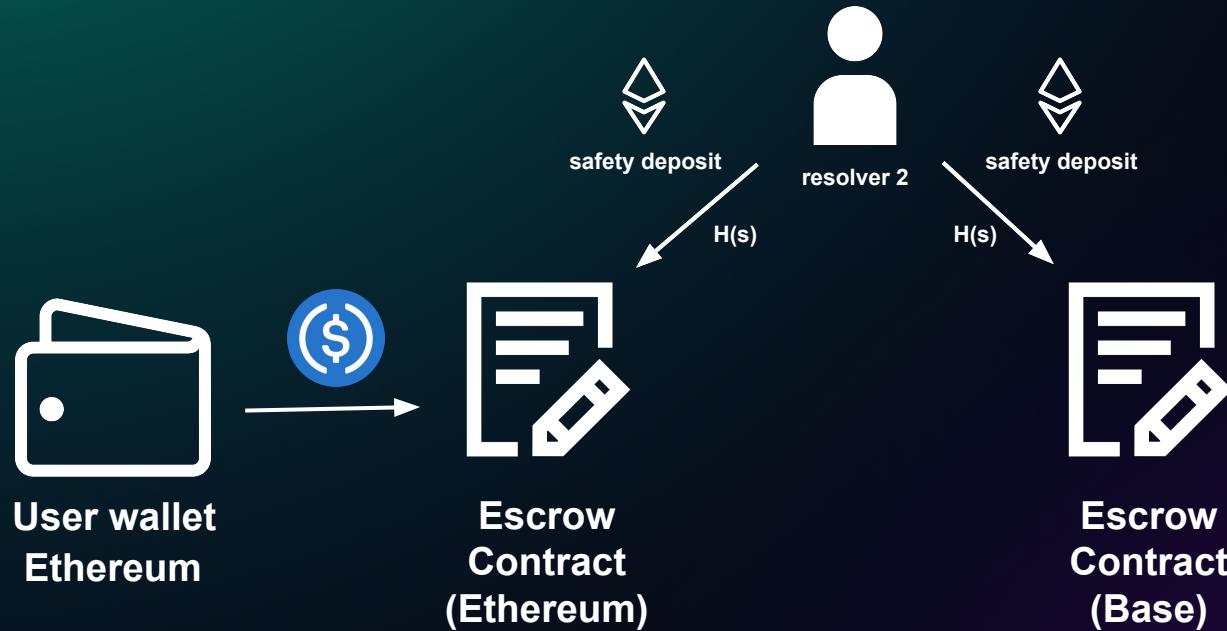
# 1inch Fusion+



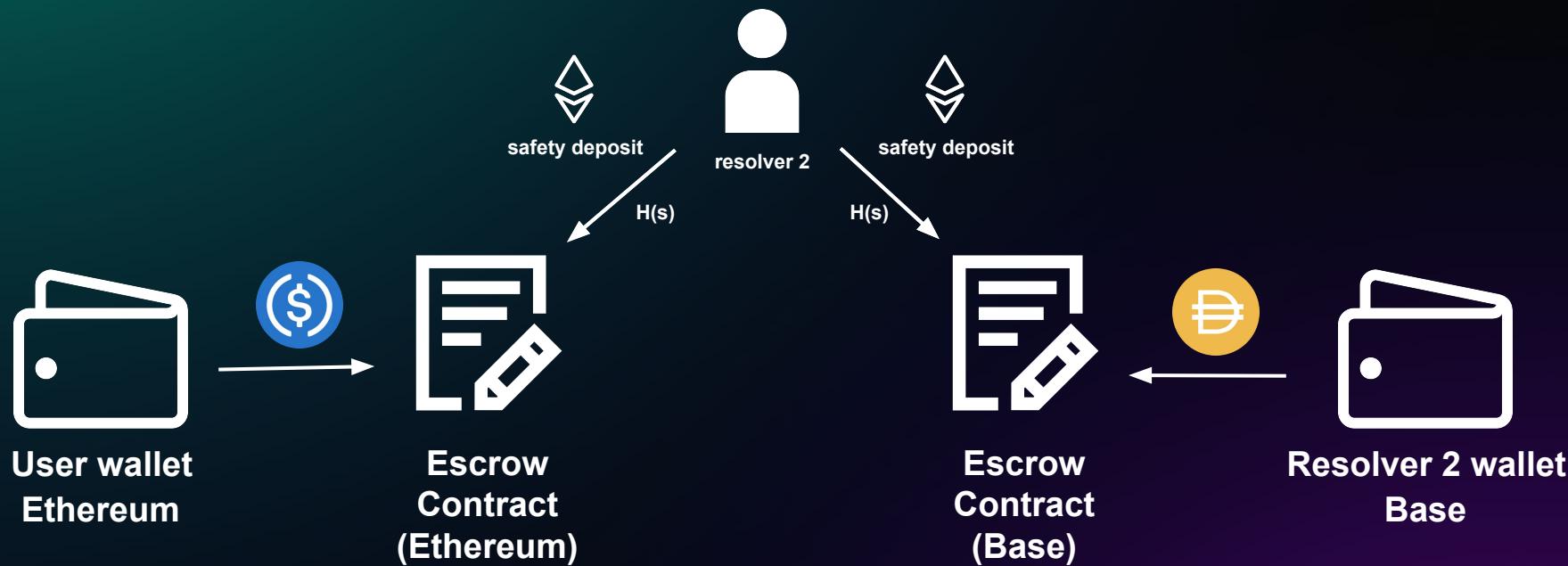
# 1inch Fusion+



# 1inch Fusion+



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# 1inch Fusion+



**Relayer**

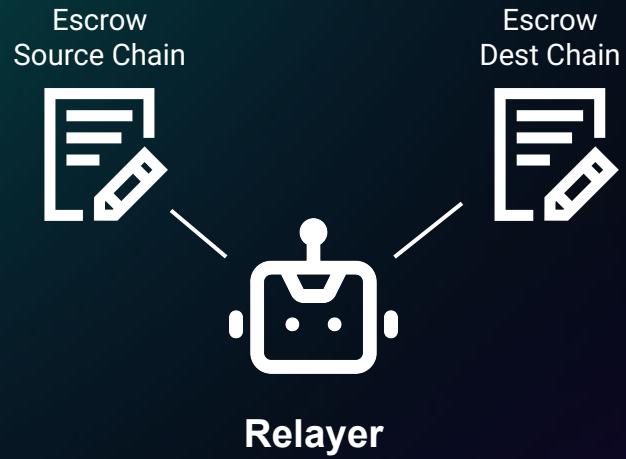
# 1inch Fusion+

Escrow  
Source Chain



**Relayer**

# 1inch Fusion+



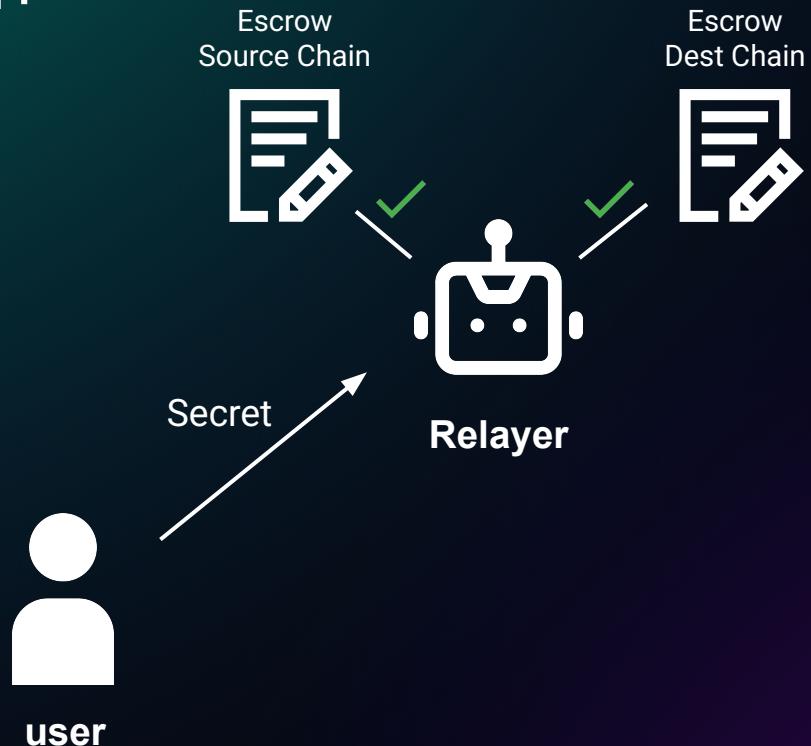
# 1inch Fusion+



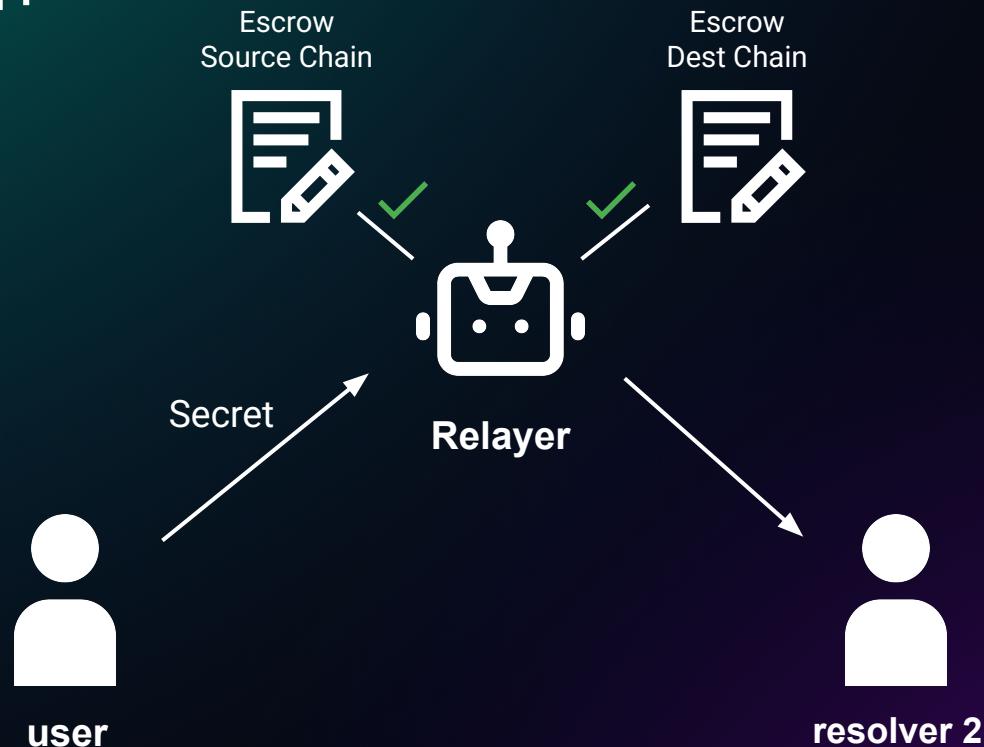
# 1inch Fusion+



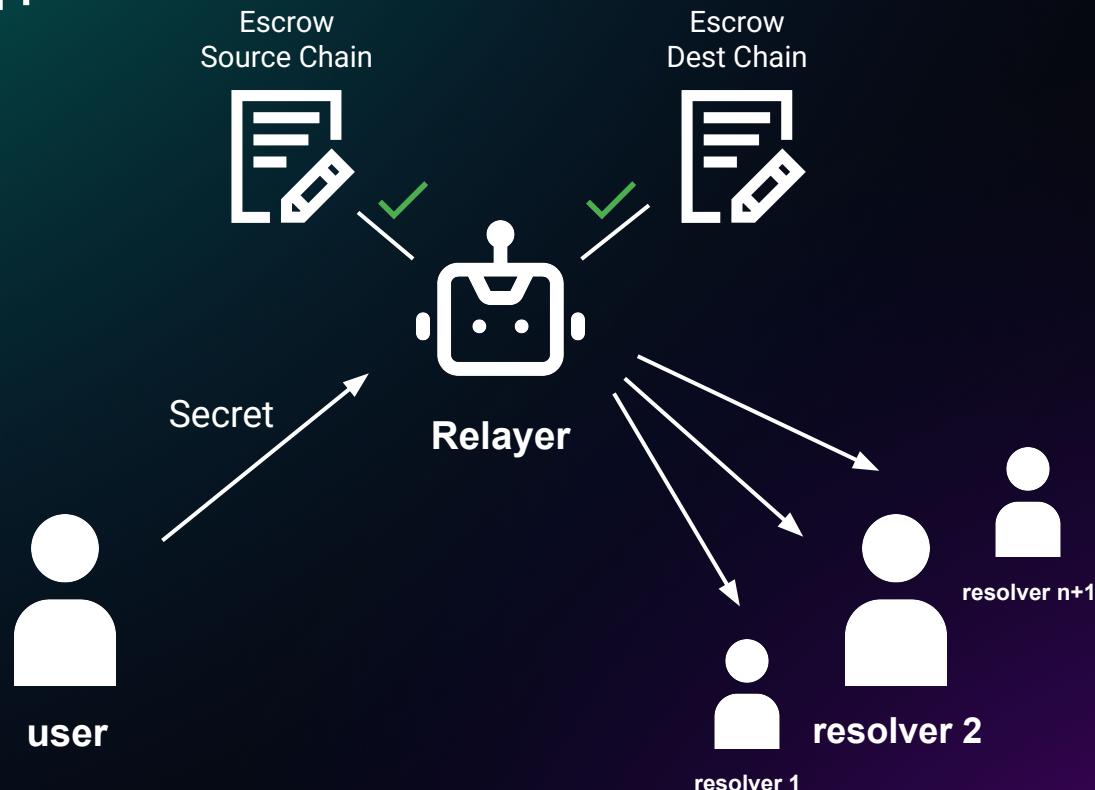
# 1inch Fusion+



# 1inch Fusion+



# 1inch Fusion+



Not limited to just EVM

# Limit Order Protocol

# Limit Order

- Taker Fee - Flexible fee available to send to anyone
- CLOB - Mention this
- Supports Permit2
- ERC-1155 ERC-721

How do I integrate 1inch into my project

# How do I integrate swaps into my project

- Developer Portal

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- Developer Portal
- 1inch SDKs

# Developer Portal

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- Official hub for integrating 1inch into your projects

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  - 1inch API access keys

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  - Documentation for swap APIs (and more)

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  - Documentation for swap APIs (and more)
  - Examples

portal.1inch.dev

# Developer Portal

 1inch | DEV PORTAL

Docs

?

Sign In

Sign In

Sign in with Google

Sign in with GitHub



## Feel the power of the 1inch APIs

Unlock the full potential of DeFi with the 1inch APIs



# Developer Portal

 **1inch DEV PORTAL**   [Dashboard](#)   [Application](#)   [Stats](#)   [Docs](#)   [Get Enterprise](#)   [?](#)   [⚙️](#)   

## Welcome to the 1inch Dev Portal!

Test 1 RPS

**API access**

API Key  
\*\*\*\*\*JeYl

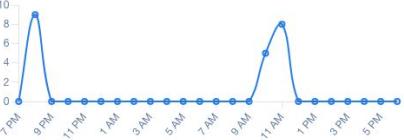
Endpoint  
<https://api.1inch.dev>

**24h requests**



● Success   ● Error

**Requests**



Time	Requests
7 PM	0
8 PM	8
9 PM	0
10 PM	0
11 PM	0
1 AM	0
2 AM	0
3 AM	0
4 AM	0
5 AM	0
6 AM	0
7 AM	0
8 AM	0
9 AM	0
10 AM	0
11 AM	7
12 PM	0
1 PM	0
2 PM	0
3 PM	0
4 PM	0
5 PM	0

### Product Updates

**Fusion released!**

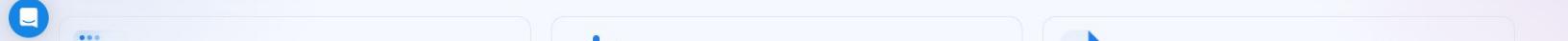
From now on, #FusionMode can be integrated externally, allowing to enjoy its benefits, such as gasless transactions, MEV protection and access to liquidity from the entire market.

[Read more](#)

**New APIs added to the 1inch Developer Portal**

Now, developers can use the advantages of the 1inch Traces API, 1inch NFT API and 1inch Gas Price API.

[Read more](#)



# Developer Portal

The screenshot shows the 1inch Developer Portal interface. At the top, there is a navigation bar with the 1inch logo, "DEV PORTAL", and links for "Dashboard", "Application", "Stats", "Docs", "Get Enterprise", and user profile icons.

The main content area has a sidebar on the left containing a search bar and a list of API categories: "Authentication", "Swap API", "Orderbook API", "Fusion API", "History API", "Traces API", "Portfolio API", "Balance API", "Gas Price API", "Spot Price API", "Token API", "NFT API", and "Transaction Gateway API".

The main content area is titled "Authentication". It contains text explaining that the API uses API keys for authentication and provides instructions for using an Authorization: Bearer header. A code snippet for a curl command is shown:

```
curl -X 'GET' \
  'https://api.1inch.dev/swap/v5.2/1/tokens' \
  -H 'accept: application/json' \
  -H 'Authorization: Bearer YOUR-API-KEY'
```

At the bottom right of the main content area, there are "Next" and "Introduction >" buttons.

Use the hackathon signup link

# 1inch SDKs

# 1inch SDKs

- Multiple SDKs to simplify interacting with our APIs

# 1inch SDKs

- Multiple SDKs to simplify interacting with our APIs
- Written in Typescript/Golang

Frontend 1inch API Requests require a proxy

# 1inch API Requests

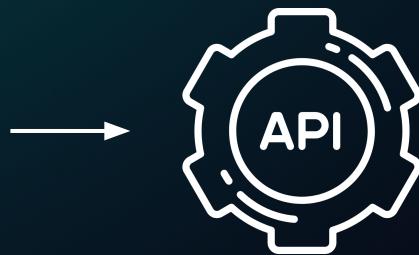


Frontend

# 1inch API Requests

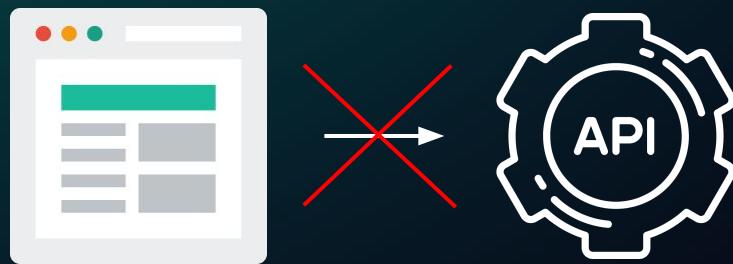


Frontend



1inch API

# 1inch API Requests



Frontend

1inch API

# 1inch API Requests



Frontend

# 1inch API Requests



# 1inch API Requests



# 1inch API Requests



# 1inch API Requests

- [github.com/Tanz0rz/1inch-vercel-proxy](https://github.com/Tanz0rz/1inch-vercel-proxy)

# 1inch API Requests

- [github.com/Tanz0rz/1inch-vercel-proxy](https://github.com/Tanz0rz/1inch-vercel-proxy)
- Cloud-hosted Proxy for all 1inch API requests

# 1inch API Requests

The screenshot shows a Vercel project's README page. The title is "1inch Vercel Proxy". Below it, a sub-section titled "Why use a proxy with the 1inch API?" explains that non-proxied 1inch API requests from a web browser will always throw a CORS error due to security measures. A "Setup" section provides instructions for deploying the proxy to Vercel, mentioning the creation of a Hobby account and the configuration of environment variables like `API_AUTH_TOKEN`. The "Usage" section details how to get the proxy's address and update API calls.

**1inch Vercel Proxy**

This is a simple proxy for the 1inch API that can be deployed to a free [Vercel](#) account.

### Why use a proxy with the 1inch API?

Non-proxied 1inch API requests from a web browser will **always** throw a CORS error. This is done to keep 1inch API keys off of frontends where nefarious users can extract them while listening to network calls. By executing 1inch API requests on a separate backend, the API key is no longer living in the same environment as the users.

### Setup

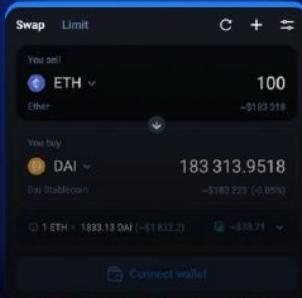
This proxy will contain your personal Dev Portal API key, so it must be deployed and configured manually. Luckily, Vercel makes this incredibly simple:

- Create a free [Hobby](#) account on [vercel.com](#)
- When creating a new project, select [Import Third-Party Git Repository](#)
- Paste in the [.git](#) link to this repository
- Once the project is imported, you will need to change two settings before anything will work:
  - First, go to [Settings -> Environment Variables](#) and add a new environment variable with a key of `API_AUTH_TOKEN` and a value of your Dev Portal API token, then press [Save](#)
  - Second, go to [Settings -> Deployment Protection](#) and disable [Vercel Authentication](#), then press [Save](#). This is required for unauthenticated requests to reach the server

### Usage

- On the main [Project](#) tab, in the [Product Deployment](#) section, get your proxy's address in the [Domains](#) section. It will look something like this: `my-1inch-vercel-proxy.vercel.app`
- All 1inch REST API calls should now be using your new Vercel proxy address instead of the standard `api.1inch.dev` address.
  - Example: `https://api.1inch.dev/orderbook/v4.0/1/count` becomes `https://my-1inch-vercel-proxy.vercel.app/orderbook/v4.0/1/count`

## Spot Price API



## Balances API



## Token API



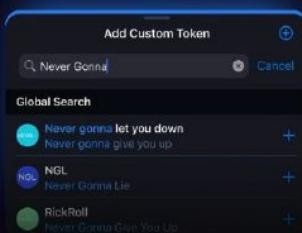
## Rating List



## Uniswap Token List

The interface shows the addition of a custom token. The token address is 0x8d5e6c0468bc62d939ed9b68d32bc62e49870b1. It includes fields for Token Address, Token Icon, Token Symbol, Token Name, Token Decimals, and Token Safety.

## Text search



# Bounties

# Bounties

- Non-EVM extensions for 1inch Cross-chain Swap (Fusion+) - (\$12,000)

# Bounties

- Non-EVM extensions for 1inch Cross-chain Swap (Fusion+) - (\$12,000)
- Extend Limit Order Protocol - (\$6,500)

# Bounties

- Non-EVM extensions for 1inch Cross-chain Swap (Fusion+) - (\$12,000)
- Extend Limit Order Protocol - (\$6,500)
- Utilize 1inch APIs - (\$1,500)

Thank You

portal.1inch.dev

# Links

[hackathon.1inch.community](https://hackathon.1inch.community)

