

SmartCred

ETH SF

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“Fair” Isaac Corporation - FICO scores

- Can fairness be achieved without transparency?
- Can transparency be achieved without decentralization?

Sample FICO® Scoring Model Example: Partial Model

FICO

Category	Characteristic	Attributes	Points
Payment History	Number of months since the most recent derogatory public record	No public record	75
		0 – 5	10
		6 – 11	15
		12 – 23	25
		24+	55
Outstanding Debt	Average balance on revolving trades	No revolving trades	30
		0	55
		1 – 99	85
		100 – 499	50
		500 – 749	40
		750 – 999	25
Credit History Length	Number of months in file	1000 or more	15
		Below 12	12
		12 – 23	35
		24 – 47	60
		48 or more	75
Pursuit of New Credit	Number of inquiries in last 6 mos.	0	70
		1	60
		2	45
		3	25
		4+	20
Credit Mix	Number of bankcard trade lines	0	15
		1	25
		2	50
		3	60
		4+	50

Motivation

Transparency: Current rating system is a black box

Fairness: Application of algorithms is unregulated

Decentralization: three major credit rating companies handle all the data

Comparative Market Advantage

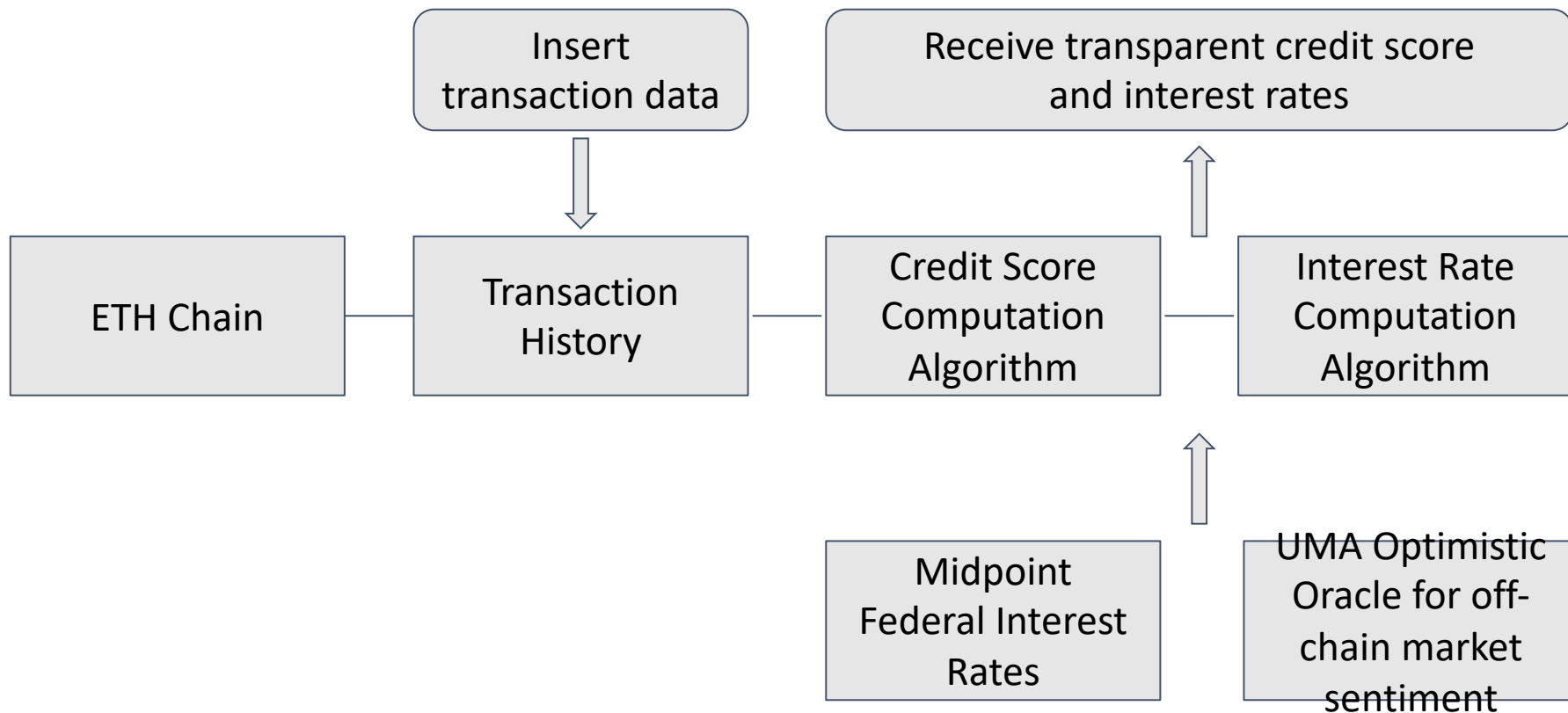
Existing Solutions: on-chain data first

- [CreDA](#)
- [Cred Protocol](#)
- Other reputation mechanisms, e.g. Degen score

Focus on leveraging existing off-chain data: win-win

- Incentives for institutional lenders (e.g. banks) to buy in
 - Grow trust among user base, better reputation
 - Opportunities for better risk modeling from open ledger
 - More complex modeling possible based on real-time aggregated data

Smart Cred Flow Chart



Implementation

Product: Smart contract for credit scoring and interest rate computation

- Deployed on the Goerli test network

Components:

- User transaction history (per-wallet)
- Global market data (integrated from outside the chain)
- Real-time pricing information with verification

Demo

Midpoint

- Used to access aggregated market info through HTTP calls
- Access the most recent interest rates from the treasury website
- Update offered rates on a regular basis

Request

Define the endpoint, parameters, and authorization for the request your midpoint will make. [Learn more](#) →

GET

https://api.fiscaldata.treasury.gov/services/api/fiscal_service/v2/accounting

Query Parameters

fields

avg_interest_rate_amt

filter

record_fiscal_year:{{arv_time}}

Authorization

Add Header +

Body

```
{,
{
  "avg_interest_rate_amt": "0.140"
},
{
  "avg_interest_rate_amt": "0.145"
},
{
  "avg_interest_rate_amt": "0.185"
},
}
```

3.

Extract response variables

Response Variables

interest_rate

0.185

UMA

- Used to obtain and verify user-provided information pertaining to market trends
 - Verifiability for claims that can't be easily accessed through recurring HTTP calls
 - Can indicate market sentiment as well

Name	Type	Data
Request	bytes	0x029390258d93c31050febd8517a41b60c271dd3dd0efcfb50c203bac7d4d48d
requester	address	0x5C91CD43290A261CD2DbEa28CFBb4E1FC159144E
identifier	bytes32	YES_OR_NO_QUERY
request timestamp	uint256	Nov. 06 2022 1:11:24 AM PDT (1667722284)
ancillaryData	string	Q:Is the unemployment rate higher among youths than it was one week ago?



**Verifiably true
advertising for lenders:
comparatively better
rates can be certified
by the contract**



**Connect 1:1 wallet to
anonymized individual
identity, linked with
off-chain identity**



**Distributing loan
financing among
lenders to manage risk
in a globally optimal
way**



**Encoding guarantor
relationships and
stakes directly in the
contract**

E.g. Group of guarantors can
finance part of the loan at a
lower rate than institutional
lender, who gets paid first

Beyond