ethereum

vienna

Deep dive into Maker

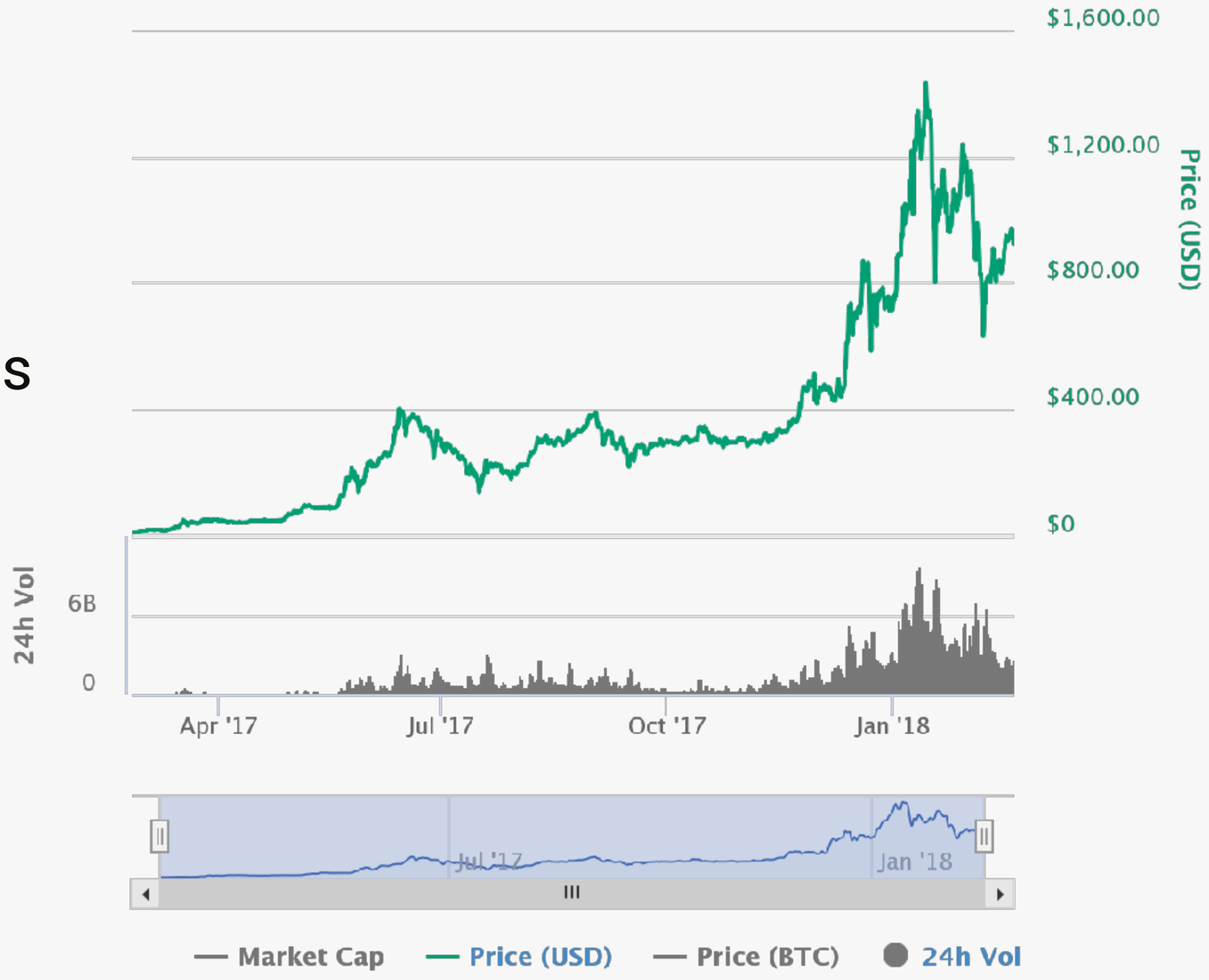
February 22nd 2018

Problem

ETH etc. very unstable

Centralised stable tokens have issues

see the current TETHER situation



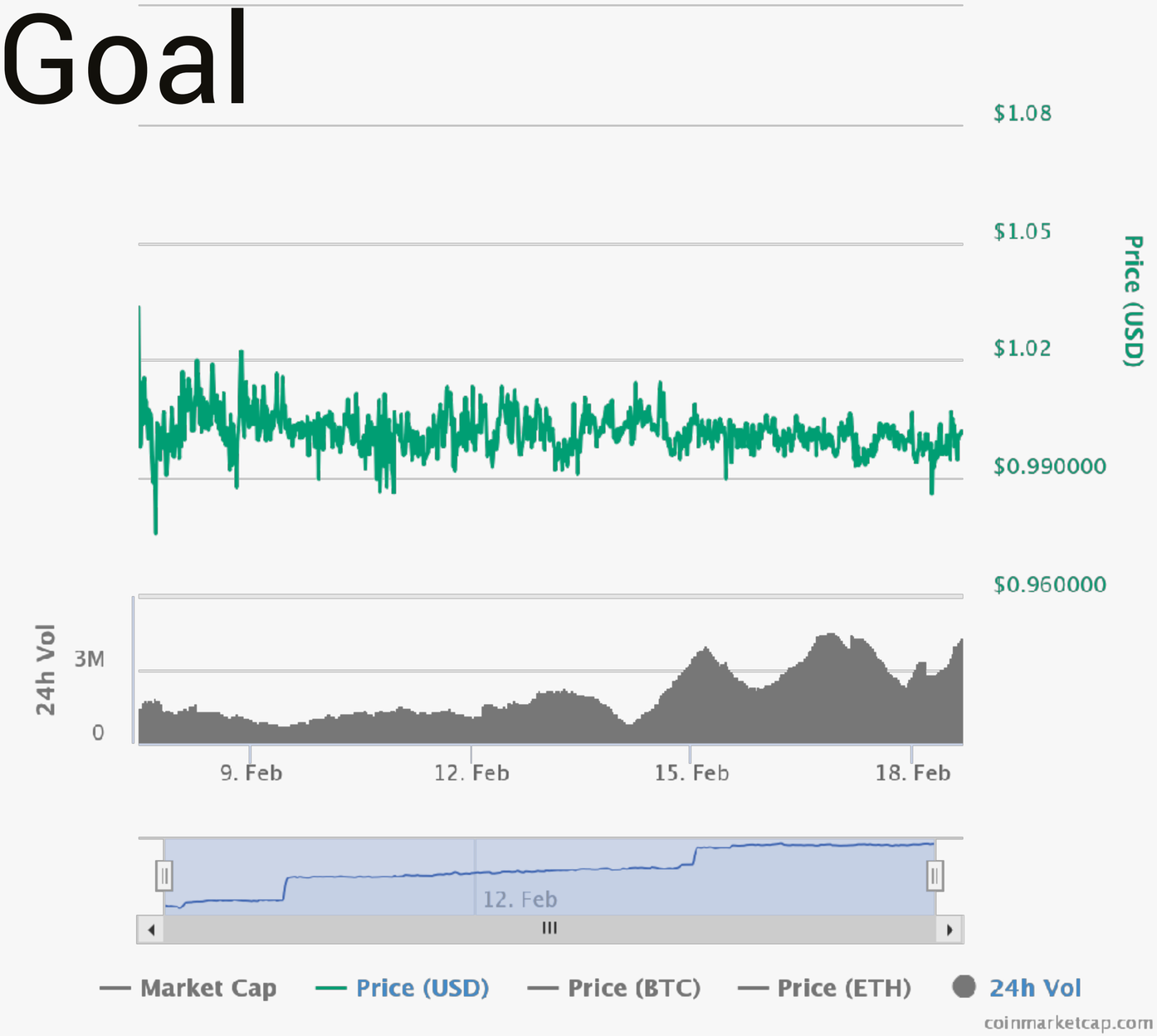
Goal

Have an ERC-20 token

Supposed to remain stable

- in the medium term

Avoid having a central issuer



MakerDAO

MakerDAO is the *governance* system of the Maker platform

It's token MKR is used for

- voting on risk parameters
- paying fees in the Maker system
- automatic recapitalization

More than 3000 holders (according to Maker)

Dai

Dai is the current Stablecoin with a target price of 1$ (USD)

Unlike the final Dai

- it only has a single collateral type: PETH
- does not use MKR as a recapitalization source
- does not use an auction mechanism

Many features of the Maker platform are currently turned off

CDPs

Dai is borrowed into existence

The borrower needs to create a **collateralized debt position** (CDP)

This CDP has to be overcollateralized (150%)

Example: 150$ of PETH in CDP allows the borrowing of 100$ DAI

Should a CDP become **undercollateralized** it gets **liquidated (bite)**

CDP Lifecycle (Standard)

1. Create a CDP
2. Put collateral into the CDP
3. Generate ("draw") Dai
   - This creates a debt in Dai
   - Asset is now locked until debt is repaid
4. Pay down debt
   - Generated Dai + Stability Fee in MKR
5. Collateral can now be withdrawn

Liquidation

If the value of the collateral drops below the liquidation ration

- the system takes control of the collateral
- collateral is then sold for Dai to cover the bad the debt
    - currently done by the boom / bust mechanism
    - will be done by an auction mechanism in final Dai

If the debt cannot be covered in full

- new PETH is minted and sold off (currently)
- new MKR is minted and sold off (planned)

WETH and PETH

The current collateral is **PETH** ("Pooled ETH")

WETH ("gem") is simply an ERC-20 ETH wrapper

PETH ("skr") is a claim to a part of the WETH

This peg begins at 1:1, but changes over time when there is bad debt

The ration between WETH and PETH is called *per*

WETH can be converted to PETH ("join") or the other way around ("exit")

Keepers

Independent (automated) actor that is incentivized by profit opportunities

Not a privileged role (anybody can do this)

They are supposed to be incentivized to

- participate in debt auctions in case of liquidations
- sell Dai if the market price is above the target price
- buy Dai if the market price is below the target price

Target Rate & Target Price

The **target price** is the price DAI is supposed to have

It is used to

- calculate the collateral-to-debt ratio of a CDP
- determine the value of collateral assets Dai (in case of settlement)

The target price can change over time by the **target rate**

The target rate is automatically adjusted by the **Target Rate Feedback Mechanism**

Target Rate & Target Price

The TRFM is supposed to incentivise holding or borrowing Dai

If the market price of Dai is below the target price, the target rate increases

If the market price of Dai is above the target price, the target rate decreases

This is supposed to push the market price towards the target price

The sensitivity parameter (currently set to 0) scales this

"Central" Actors

MakerDAO

The MKR holders can vote on risk parameters

There is a security delay in the vote

Example risk parameters (per CDP type)

- Debt ceiling (currently 50m$ for PETH) / Liquidation ratio
- Stability Fee / Penalty Ratio (goes to buy and burn PETH)
- Price oracle
- Sensitivity parameter for the TRFM
- Price feed sensitivity

Oracles

There is supposed to be a set of oracles for price information

Chosen by MKR holders

Up to 50% of oracles can be dishonest

Currently centralised (?)

Global Settlers

Dai includes a shutdown mechanism (global settlement / top)

This can be initialised by group called **global settlers**

They are selected by the MKR holders

Once global settlement is active price information is frozen

Everybody can close their CDPs

Whitepaper

The **Dai Whitepaper** gives a high-level overview of the current iteration

Does not go too much into the details

Uses "normal" terminology

Purple Paper

The **Purple Paper** is a formal description of the system

It is written in Text + Haskell

It uses a lot of custom terminology

Certain aspects are very incomplete (auctions etc.)

Code

The **DAI Code** uses the same terminology as the purple paper

Code mostly undocumented (there is a DEVELOPING.md file that helps)

Consists of several contracts

Familiarise yourself with the purple paper terminology first

=> Otherwise you will be completely lost!

Core Components

vox, the target price feed

tub, the CDP store

tap, the liquidation engine

top, the global settlement engine

CODE

All informations about our events at

https://www.meetup.com/Ethereum-Vienna

All available slides and materials at

https://github.com/ethereum-vienna-meetup