

Token Engineering *Community*

Trent McConaghy
@trentmc0
Ocean Protocol

**“Show me the incentive
and I will show you the outcome.”**

-Charlie Munger

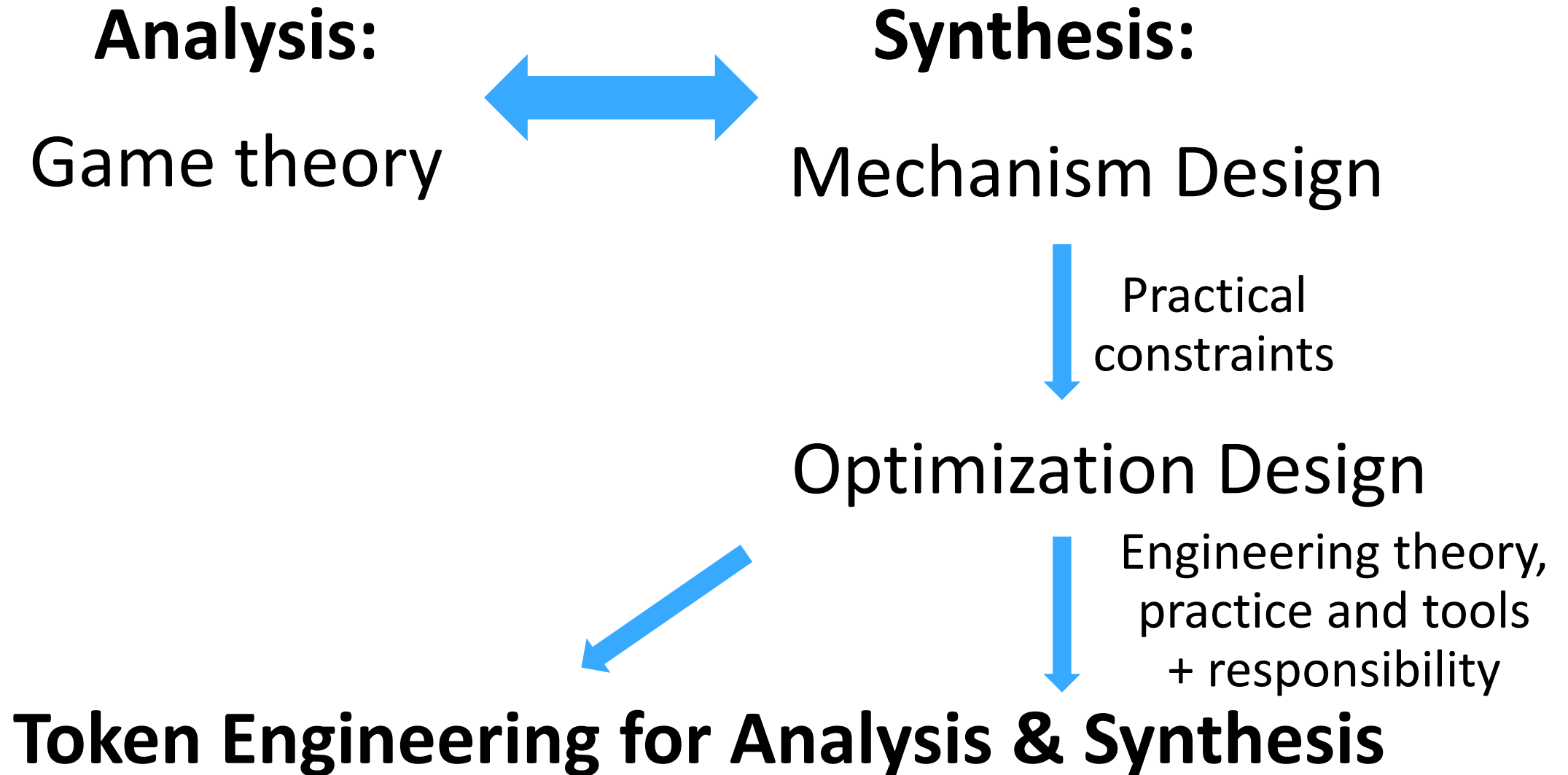


“Incentive Machine”

Get people to do stuff
By rewarding with tokens

Design of Tokenized Ecosystems

From Mechanism Design to *Token Engineering*



Engineering



is the creative application of science,
mathematical methods, and empirical
evidence

to the innovation, design, construction,
operation and maintenance

of structures, machines, materials, devices,
systems, processes, and organizations.

Engineering Responsibility



Engineering has

Theory,
Practice,
Tools,
Responsibility



- Electrons : Electrical Engineering
- Tokens : Token Engineering

Science \leftrightarrow Engineering

- **Engineering** is about building things that work.
- **Science** is about contributing new knowledge.
- They're complementary.

Therefore **token engineering** is complementary to the science of cryptoeconomics / **token economics**.

Token Design

1. **Formulate the problem.** Objectives, constraints, design space.
2. **Try existing building blocks.** If needed, try different formulations or blocks.
3. **Design new block?** Only if needed!

Example: Ocean

Key Question	1	2	3	4	5	6
For priced data: incentive for supplying more? Referring?	✗	≈	✓	≈	≈	✓
For priced data: good spam prevention?	≈	✓	✓	✓	✓	✓
For free data: incentive for supplying more? Referring?	✗	≈	✗	✓	✓	✓
For free data: good spam prevention?	≈	✓	≈	✓	≈	✓
Does token give higher marginal value to users of the network, vs external investors? Eg Does return on capital increase as stake increases?	✓	✓	✓	✓	✓	✓
Are people incentivized to run keepers?	≈	≈	✓	✓	✓	✓
It simple? Is onboarding low-friction? Where possible, do we use incentives/crypto rather than legal recourse?	✓	✓	≈	≈	✓	✓

Token Verification

1. Human-based

- Share docs / whitepaper, get feedback
- Role-playing in a group game
- Card games. Think MTG

2. Software-based

- Simulation
- Verification

3. Economic

- Release the software / network with ever-increasing skin-in-the-game
- Bounties++ over time
- Testnets with value
- ..

Towards a Token Engineering *Community*

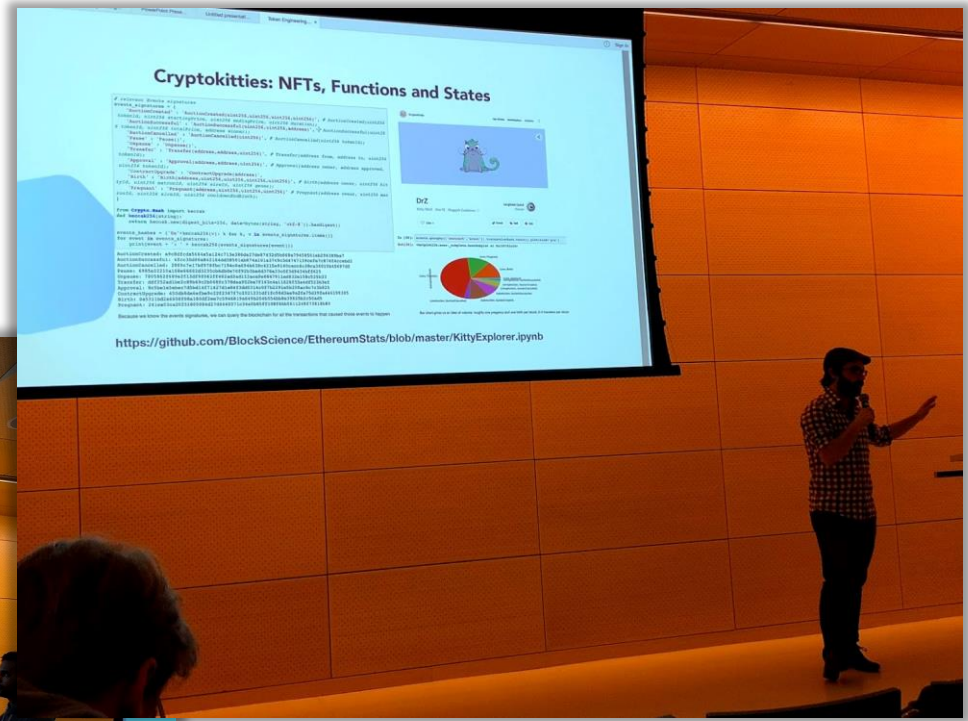
TE → TE Community

- A pleasant surprise to me: “Token Engineering” resonated with a *lot* of people
- And many new connections for me.
- Many amazing conversations.
- **A collective realization: we need to share knowledge, to learn from each other!**

1st TE event Berlin, Apr 2, 2018



1st TE Global Gathering NYC, May 13, 2018





QTAQANDU

Q LEMBAL

Diagram illustrating the QTAQANDU process flow:

```

    graph LR
        A[A] --> B[B]
        B --> C[C]
        C --> D[D]
        D --> E[E]
        E --> F[F]
        F --> G[G]
        G --> H[H]
        H --> I[I]
        I --> J[J]
        J --> K[K]
        K --> L[L]
        L --> M[M]
        M --> N[N]
        N --> O[O]
        O --> P[P]
        P --> Q[Q]
        Q --> R[R]
        R --> S[S]
        S --> T[T]
        T --> U[U]
        U --> V[V]
        V --> W[W]
        W --> X[X]
        X --> Y[Y]
        Y --> Z[Z]
        Z --> AA[AA]
        AA --> AB[AB]
        AB --> AC[AC]
        AC --> AD[AD]
        AD --> AE[AE]
        AE --> AF[AF]
        AF --> AG[AG]
        AG --> AH[AH]
        AH --> AI[AI]
        AI --> AJ[AJ]
        AJ --> AK[AK]
        AK --> AL[AL]
        AL --> AM[AM]
        AM --> AN[AN]
        AN --> AO[AO]
        AO --> AP[AP]
        AP --> AQ[AQ]
        AQ --> AR[AR]
        AR --> AS[AS]
        AS --> AT[AT]
        AT --> AU[AU]
        AU --> AV[AV]
        AV --> AW[AW]
        AW --> AX[AX]
        AX --> AY[AY]
        AY --> AZ[AZ]
        AZ --> BA[BA]
        BA --> BB[BB]
        BB --> BC[BC]
        BC --> BD[BD]
        BD --> BE[BE]
        BE --> BF[BF]
        BF --> BG[BG]
        BG --> BH[BH]
        BH --> BI[BI]
        BI --> BJ[BJ]
        BJ --> BK[BK]
        BK --> BL[BL]
        BL --> BM[BM]
        BM --> BN[BN]
        BN --> BO[BO]
        BO --> BP[BP]
        BP --> BQ[BQ]
        BQ --> BR[BR]
        BR --> BS[BS]
        BS --> BT[BT]
        BT --> BU[BU]
        BU --> BV[BV]
        BV --> BW[BW]
        BW --> BX[BX]
        BX --> BY[BY]
        BY --> BZ[BZ]
        BZ --> CA[CA]
        CA --> CB[CB]
        CB --> CC[CC]
        CC --> CD[CD]
        CD --> CE[CE]
        CE --> CF[CF]
        CF --> CG[CG]
        CG --> CH[CH]
        CH --> CI[CI]
        CI --> CJ[CJ]
        CJ --> CK[CK]
        CK --> CL[CL]
        CL --> CM[CM]
        CM --> CN[CN]
        CN --> CO[CO]
        CO --> CP[CP]
        CP --> CQ[CQ]
        CQ --> CR[CR]
        CR --> CS[CS]
        CS --> CT[CT]
        CT --> CU[CU]
        CU --> CV[CV]
        CV --> CW[CW]
        CW --> CX[CX]
        CX --> CY[CY]
        CY --> CZ[CZ]
        CZ --> DA[DA]
        DA --> DB[DB]
        DB --> DC[DC]
        DC --> DD[DD]
        DD --> DE[DE]
        DE --> DF[DF]
        DF --> DG[DG]
        DG --> DH[DH]
        DH --> DI[DI]
        DI --> DJ[DJ]
        DJ --> DK[DK]
        DK --> DL[DL]
        DL --> DM[DM]
        DM --> DN[DN]
        DN --> DO[DO]
        DO --> DP[DP]
        DP --> DQ[DQ]
        DQ --> DR[DR]
        DR --> DS[DS]
        DS --> DT[DT]
        DT --> DU[DU]
        DU --> DV[DV]
        DV --> DW[DW]
        DW --> DX[DX]
        DX --> DY[DY]
        DY --> DZ[DZ]
        DZ --> EA[EA]
        EA --> EB[EB]
        EB --> EC[EC]
        EC --> ED[ED]
        ED --> EE[EE]
        EE --> EF[EF]
        EF --> EG[EG]
        EG --> EH[EH]
        EH --> EI[EI]
        EI --> EJ[EJ]
        EJ --> EK[EK]
        EK --> EL[EL]
        EL --> EM[EM]
        EM --> EN[EN]
        EN --> EO[EO]
        EO --> EP[EP]
        EP --> EQ[EQ]
        EQ --> ER[ER]
        ER --> ES[ES]
        ES --> ET[ET]
        ET --> EU[EU]
        EU --> EV[EV]
        EV --> EW[EW]
        EW --> EX[EX]
        EX --> EY[EY]
        EY --> EZ[EZ]
        EZ --> FA[FA]
        FA --> FB[FB]
        FB --> FC[FC]
        FC --> FD[FD]
        FD --> FE[FE]
        FE --> FF[FF]
        FF --> FG[FG]
        FG --> FH[FH]
        FH --> FI[FI]
        FI --> FJ[FJ]
        FJ --> FK[FK]
        FK --> FL[FL]
        FL --> FM[FM]
        FM --> FN[FN]
        FN --> FO[FO]
        FO --> FP[FP]
        FP --> FQ[FQ]
        FQ --> FR[FR]
        FR --> FS[FS]
        FS --> FT[FT]
        FT --> FU[FU]
        FU --> FV[FV]
        FV --> FW[FW]
        FW --> FX[FX]
        FX --> FY[FY]
        FY --> FZ[FZ]
        FZ --> GA[GA]
        GA --> GB[GB]
        GB --> GC[GC]
        GC --> GD[GD]
        GD --> GE[GE]
        GE --> GF[GF]
        GF --> GG[GG]
        GG --> GH[GH]
        GH --> GI[GI]
        GI --> GJ[GJ]
        GJ --> GK[GK]
        GK --> GL[GL]
        GL --> GM[GM]
        GM --> GN[GN]
        GN --> GO[GO]
        GO --> GP[GP]
        GP --> GQ[GQ]
        GQ --> GR[GR]
        GR --> GS[GS]
        GS --> GT[GT]
        GT --> GU[GU]
        GU --> GV[GV]
        GV --> GW[GW]
        GW --> GX[GX]
        GX --> GY[GY]
        GY --> GZ[GZ]
        GZ --> HA[HA]
        HA --> HB[HB]
        HB --> HC[HC]
        HC --> HD[HD]
        HD --> HE[HE]
        HE --> HF[HF]
        HF --> HG[HG]
        HG --> HH[HH]
        HH --> HI[HI]
        HI --> HJ[HJ]
        HJ --> HK[HK]
        HK --> HL[HL]
        HL --> HM[HM]
        HM --> HN[HN]
        HN --> HO[HO]
        HO --> HP[HP]
        HP --> HQ[HQ]
        HQ --> HR[HR]
        HR --> HS[HS]
        HS --> HT[HT]
        HT --> HU[HU]
        HU --> HV[HV]
        HV --> HW[HW]
        HW --> HX[HX]
        HX --> HY[HY]
        HY --> HZ[HZ]
        HZ --> IA[IA]
        IA --> IB[IB]
        IB --> IC[IC]
        IC --> ID[ID]
        ID --> IE[IE]
        IE --> IF[IF]
        IF --> IG[IG]
        IG --> IH[IH]
        IH --> II[II]
        II --> IJ[IJ]
        IJ --> IK[IK]
        IK --> IL[IL]
        IL --> IM[IM]
        IM --> IN[IN]
        IN --> IO[IO]
        IO --> IP[IP]
        IP --> IQ[IQ]
        IQ --> IR[IR]
        IR --> IS[IS]
        IS --> IT[IT]
        IT --> IU[IU]
        IU --> IV[IV]
        IV --> IW[IW]
        IW --> IX[IX]
        IX --> IY[IY]
        IY --> IZ[IZ]
        IZ --> JA[JA]
        JA --> JB[JB]
        JB --> JC[JC]
        JC --> JD[JD]
        JD --> JE[JE]
        JE --> JF[JF]
        JF --> JG[JG]
        JG --> JH[JH]
        JH --> JI[JI]
        JI --> JJ[JJ]
        JJ --> JK[JK]
        JK --> JL[JL]
        JL --> JM[JM]
        JM --> JN[JN]
        JN --> JO[JO]
        JO --> JP[JP]
        JP --> JQ[JQ]
        JQ --> JR[JR]
        JR --> JS[JS]
        JS --> JT[JT]
        JT --> JU[JU]
        JU --> JV[JV]
        JV --> JW[JW]
        JW --> JX[JX]
        JX --> JY[JY]
        JY --> JZ[JZ]
        JZ --> KA[KA]
        KA --> KB[KB]
        KB --> KC[KC]
        KC --> KD[KD]
        KD --> KE[KE]
        KE --> KF[KF]
        KF --> KG[KG]
        KG --> KH[KH]
        KH --> KI[KI]
        KI --> KJ[KJ]
        KJ --> KK[KK]
        KK --> KL[KL]
        KL --> KM[KM]
        KM --> KN[KN]
        KN --> KO[KO]
        KO --> KP[KP]
        KP --> KQ[KQ]
        KQ --> KR[KR]
        KR --> KS[KS]
        KS --> KT[KT]
        KT --> KU[KU]
        KU --> KV[KV]
        KV --> KW[KW]
        KW --> KX[KX]
        KX --> KY[KY]
        KY --> KZ[KZ]
        KZ --> LA[LA]
        LA --> LB[LB]
        LB --> LC[LC]
        LC --> LD[LD]
        LD --> LE[LE]
        LE --> LF[LF]
        LF --> LG[LG]
        LG --> LH[LH]
        LH --> LI[LI]
        LI --> LJ[LJ]
        LJ --> LK[LK]
        LK --> LL[LL]
        LL --> LM[LM]
        LM --> LN[LN]
        LN --> LO[LO]
        LO --> LP[LP]
        LP --> LQ[LQ]
        LQ --> LR[LR]
        LR --> LS[LS]
        LS --> LT[LT]
        LT --> LU[LU]
        LU --> LV[LV]
        LV --> LW[LW]
        LW --> LX[LX]
        LX --> LY[LY]
        LY --> LZ[LZ]
        LZ --> MA[MA]
        MA --> MB[MB]
        MB --> MC[MC]
        MC --> MD[MD]
        MD --> ME[ME]
        ME --> MF[MF]
        MF --> MG[MG]
        MG --> MH[MH]
        MH --> MI[MI]
        MI --> MJ[MJ]
        MJ --> MK[MK]
        MK --> ML[ML]
        ML --> MM[MM]
        MM --> MN[MN]
        MN --> MO[MO]
        MO --> MP[MP]
        MP --> MQ[MQ]
        MQ --> MR[MR]
        MR --> MS[MS]
        MS --> MT[MT]
        MT --> MU[MU]
        MU --> MV[MV]
        MV --> MW[MW]
        MW --> MX[MX
```

Community

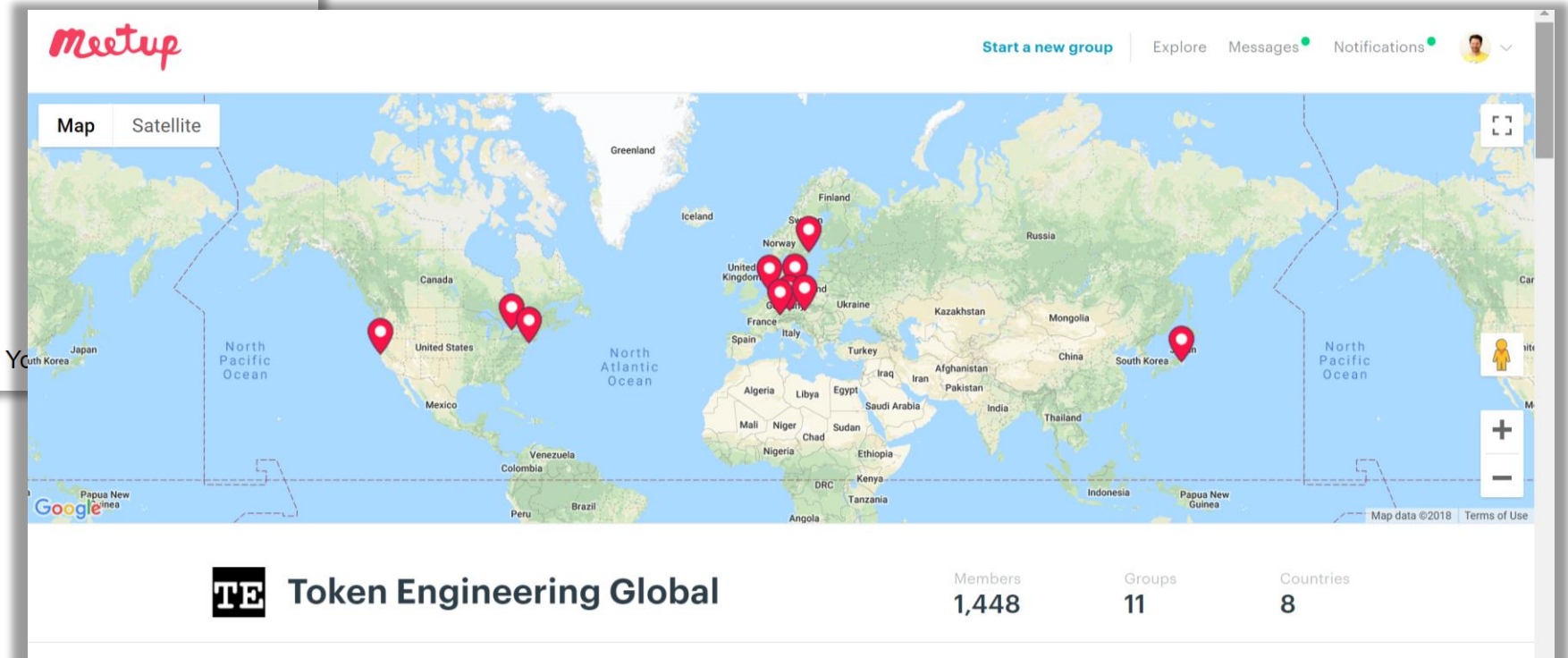
Community: Events, Related Communities, more.

TE Local Meetup Groups

(The actual meetup.com pages will typically have the most up-to-date info)

- [Meetup: TE Berlin](#)
- [Meetup: TE Munich](#)
- [Meetup: TE Toronto](#)
- [Meetup: TE London](#)
- [Meetup: TE Zurich/Zug](#)
- [Meetup: TE Tokyo](#)
- [Meetup: TE NYC](#)
- [Meetup: TE Amsterdam](#)
- [Meetup: TE Stockholm](#)
- [TE San Francisco](#)
- [TE Vancouver](#)

Wanna start your own TE meetup? Please do! :) You



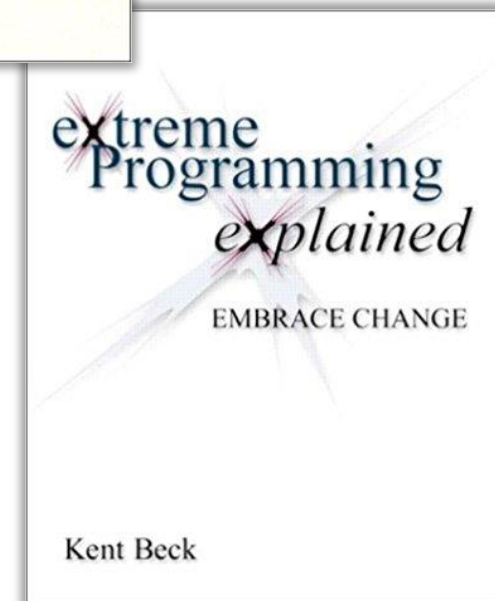
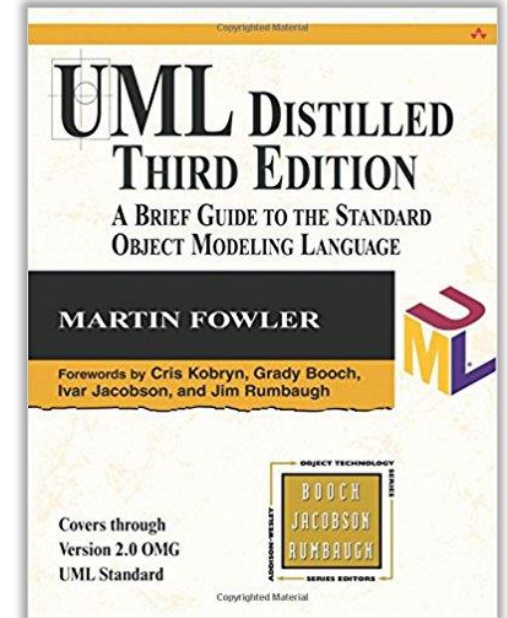
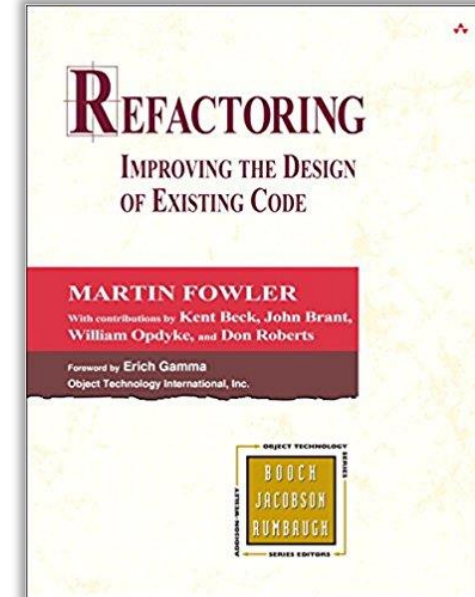
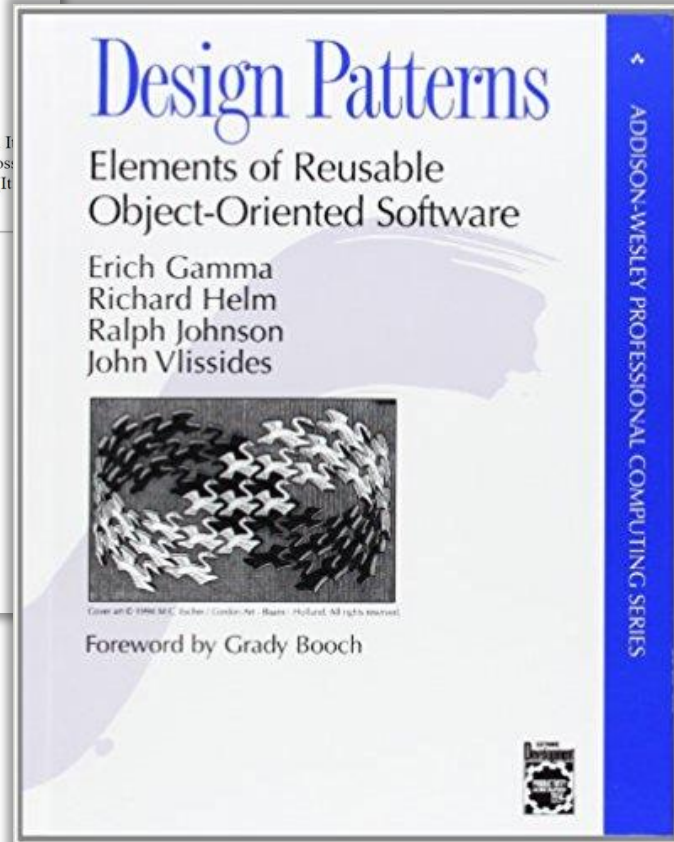
Mission of the TE Community

To grow TE into an **engineering discipline**

collectively as a community

in a decentralized, permissionless, open-source fashion that all can contribute to and all can use.

An inspiration: evolution of software engineering. C2 wiki → ✨



← → ↺

Not secure | tokenengineering.net/start

☆

...

2

G

x

📄

Jx

🔄

q

wiki

dot

site-name .wikidot.com

Share on

🐦

f

📺

👤

👤

👤

👤

👤

👤

Edi

Expert tip #3: You can format all the pages in a category using live templates

main

discuss

edit this page

view source

history

other tools

TE

navigation

[Main page](#)

[Contents](#)

[Featured content](#)

[Glossary](#)

[Random article](#)

search

Search

[About this site](#)

[Recent changes](#)

[Contact](#)

[Donate](#)

[Legal](#)

[Help](#)

toolbox

[Printable version](#)

#TokenEngineering

Contents

• [Community](#) : Events, related communities, more.

• [Building Blocks](#) : Cryptoeconomic Primitives and Higher-Level Patterns

• [Tools](#) : Simulation, Verification, Design

• [Token Engineering In Practice](#)

• [Reading Resources](#) : Learn more!

About

Welcome to the Token Engineering (TE) wiki & community! **Please join in and contribute:)** Simply [sign up](#) then click 'edit' on the bottom:)

The Challenge

Creating tokenized ecosystems is *hard*. How do we figure out what we want? How do we manifest that intent with block rewards and other cry and validate the design? How do we anticipate attacks and respond to them? How do we update the protocols? Given that these systems are responsibility for their design & deployment?

Mission

We'd love to see token ecosystem design become an engineering discipline: Token Engineering (TE). This implies a body of theory, practice, t to do this collectively as a community in a decentralized, permissionless, open-source fashion that all can contribute to and all can use.

Engineering is about building things that work; science is about contributing new knowledge. They're complementary. Therefore token enginee cryptoeconomics / token economics.

Ways to Participate

- Edit this wiki and impart your wisdom! Add blocks, tools, readings.
- Tweet with #tokenengineering hashtag
- Attend a meetup (see [Events](#)). Or: start your own!
- Subscribe to the TE mailing list:

Email Address

Subscribe

Conclusion

Towards a #TokenEngineering Community

- **Token Engineering** = Theory + practice + tools + responsibility in the creation of tokenized ecosystems.
- One framing: like an EA. We'll see other approaches today.
- **TE is a field we can all create together. Now is the time to start:)**

Ways to Participate

- Edit this wiki and impart your wisdom! Add blocks, tools, readings.
- Tweet with #tokenengineering hashtag
- Attend a meetup (see [Events](#)). Or: start your own!
- Subscribe to the TE mailing list: