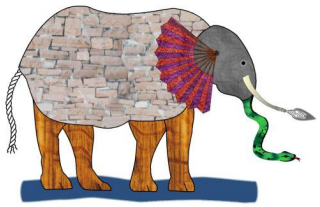
Editorial Input from Jessica

Get Started:

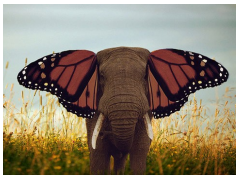
1. Make a copy to according Chapter folder, leave the template for reference
2. Absorb the main points for your chapter from the book outline here
    a. book a sparring session with Jess/Sebnem
3. Collect main content of chapter outline in short bullet points first
    a. book a sparring session with Jess/Sebnem
4. Discuss with the others.

The Purpose of A Hitchhiker's Guide to Token Engineering



The 1st Edition is mainly for everyone else in the community, who is trying to get a sense of the elephant, just like you! Especially the digital edition is for the token engineering community: Curate and collect "what we know," the common sense. Don't hesitate to form and refine it in discourse with others.

The writing should be accessible to the diverse community that token engineering needs! Plain english and engaging: get those links to other disciplines, as well as anecdotes, interviews, memes, and depictions to get the point across: This isn't your regular elephant!



Keep in mind that most of the revenues to feed back into the reserve of TWL will come from the print ("hardcopy"): Make it as accessible as possible for all sorts of engineers (software, social, financial, legal, domain) as well as practitioners from the domains in Ch.2. We want to speak to people who want tokenization in their networks as well as people who have the right background(s) to become token engineers.

Let's help them make that jump exciting, and the landing smooth and refreshing ;)

CHAPTER TEMPLATE

GENERAL NOTES:

- MAXIMUM 20-30 pages per chapter; "book" length around 300 pp.
- Multiple audiences; accessible description goes a long way (engaging)
- Each section should feel complete so that if the reader only reads this section, it feels complete

- Chapter Conclusion transitions, prepares the next (bigger/detailed) topic of next one
- Make the first and last sentence of the Chapter resonate
- Make notes where to include memes, stories, interviews, which?
- Font-size: 11
- Arial black
- Citations - link URL to source of citations, Mark citations with “quotes” - do not overdo verbatim “citation” except in Glossary; do add your reflections (discuss with the others!)
- “the tone” will be edited for each publishing round wrt audience, yet reread “purpose” above.

Chapter Introduction:

1. What is the Chapter about?
2. Why is the topic important?

   a. Benefits of addressing this topic, being aware of it

   b. Consequences if not

   c. What are the evidence to support these points: examples, case studies, statistics, expert opinions, personal experience, anecdote and memes
3. Outline of the Chapter including bullet points (ideal is 3-5, can have sub-bullets underneath) -- ***EACH BULLET POINT IS REPRESENTED AS A SUBTITLE FOR EACH SECTION***

Chapter Body: For each (3-5 max) subtopic:

1. What is the subtopic about?
2. Why is this important?

   a. Benefits of addressing this topic, being aware of it

   b. Consequences if not

   c. What are the evidence to support these points: examples, case studies, statistics, expert opinions, personal experience, anecdote and memes
3. How can the readers take action, step-wise process, or guide.

Chapter Conclusion:

1. What did the reader learn?
2. What should they do next?
3. Glossary or reference notes or pointing to deeper detail

OUTLINE

CHAPTER 1. Introduction

Leads: based on Cryptoeconomics Foundation by Shermin, Z, Angela

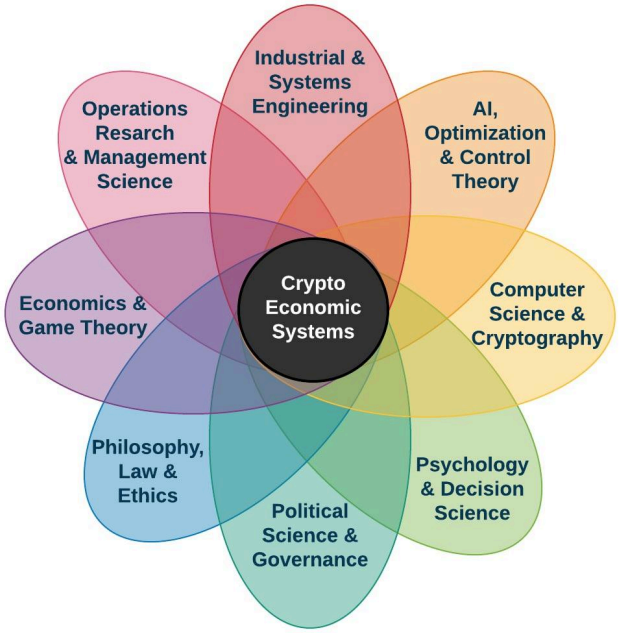
Contributors/Editors: Jessica

- Transdisciplinary perspective on Token Engineering
- Token as system state: representation of value, algorithmic policies computed on DLTs
- “Policy is a statement of intent implemented as protocol”, global coordination games for resource allocation
- Layered networks: physical, financial, social - complex adaptive dynamic systems
- Why Token engineering
- Token engineering - the process (from Angela’s Intro course) and layers
- Why engineering ethics: (embedded) software engineering, financial engineering, legal engineering, social engineering (programmable institutions of the 21st century, community in new form)
- Conclusion: Shift from Product-Based Thinking to Systems-Thinking (Jessica), How we move onto open ecosystems of individuals and organizations, stop thinking like a VC.

CHAPTER 2. Transdisciplinary Art of Token Engineering

Leads: Shermin

Contribute: Zargham



All disciplines provide a different lense on same topic:
Coordination, Resource Allocation
Highlights of the most important model(s), tool(s) from each discipline
Language barriers, common language, visual diagrams
Processes
Token Engineering Practice (Sebnem)

CHAPTER 3. Cryptoeconomic Patterns and Application Domains

Leads: Vasily, Sebnem, Review Anish

Contributors/Editors: Jessica

- Recap from Ch1+2: Representation of Value (for different types of value), in the hands of the token engineer (make explicit) vs in the eye of the beholder (valuate); Policies as incentivizing/reinforcing, directing value flows as complex adaptive interaction of code ← human ← environment
- Ongoing exercise on how to dissect a list of projects such that we can identify and showcase patterns that can be reused meaningfully & practically:
    - Coin ~= Token(plain); Programmable value ~= {Token(attributes/metadata), Token(policies)}
    - Attributes/Metadata: fungible, e.g. crypto-commodities (money, shares,vouchers); non-fungible (Immutable Data), e.g. Cryptokitties
        - metadata compositions: re-fungible, mix (composable, multitoken), e.g. programmable art remix, virtual game assets (Bea |DADA)

    - Policies: (from market mechanisms (economic) to programmable governance, etc. xref chp7)
        - staking (human policy action ~= signalling, governance/voting, e.g. all “Governance Tokens” BAL, SUSHI, UNI, HNY, CSTK; securing (staking on network, e.g. Algo, Tezos; staking on node, e.g. REN, BAND)
            - discrete
        - bonding (algorithmic policy action ~=exchange, automated market making)
    - Compositions
        - listing + staking: Token Curated Registries (first live adChain, which flatlined, Messari, prepping mainnet Foam, riffing off adChain; evolution and migrations Ocean v1->v2 TCR -> clans, v3: Data tokens capturing versatility of programmable value in Data Economy)
        - tokens(plain) + bonding: decentralized exchanges Etherdelta, Uniswap, Balancer (multidimensional), Bancor; (conceptual still curation markets)
        - token(plain) + staking: QV/QF, CV/CF(?), decentralized decision making/signalling
        - token(plain) + staking + bonding: Community Inclusion Currencies (Kenya, Potluck experiments)
        - no more complex compositions yet live, but conceptual / experimental: e.g. token(attributed) + staking + token(plain) + bonding: Augmented Bonding Curve (TE Commons! Commons Stack 1st field test), SourceCred implementations (e.g. MetaGame SEEDs)
    - Conclusion: programmable mechanisms for price discovery and valuation; many conceptual branches, but implementations only financialized.
- Decomposing Token Networks: decompose 3-5 Token networks (incl. how they evolved, e.g. Balancer had no governance token in V1, Ocean evolved)
- How to design experiments for applying patterns and compositions safely?
- Conclusion: Explain current version of template at time of publishing, and invite in participating extending the library
- Glossary & link to library
- Excursion: What is missing to apply these patterns on non-monetary values? In non-digital-only value networks? Is it realistic or sole ideology?

CHAPTER 4. Token Model Generation

Leads: Sebnem

- Recap why token networks are complex, adaptive, dynamic systems; why they need engineering

- How can we generate new business and financial models that are suitable for complex adaptive dynamic systems, what are previous options and why do they suck
- Improvement over state of the art in business modeling: design thinking mixed with systems thinking and engineering design, validated assumptions in simulations: games with stakeholders involved (co-creation) and/or computer simulations
- Overview of Token Model Generation: Ecosystem Value Flows specification, Computer-aided Token Design with examples of Modeling and Simulation in Games (Le Grand Jeu, MetaGame quests) and in Python (cadCAD examples), Engineering Ethics: Is the design legit?
- Governance, co-creation and participatory decision making
- Practical insights on how to embed existing cryptoeconomic pattern(s) in token model, how to adapt
- Conclusion: Token model is a good input for next steps in token engineering: system architecture, implementation decisions, validation and verification predeployment
- Big fat glossary on modeling & simulation for Token Engineering
- Library of tools for specific modeling and simulation tasks (Crowd++)

CHAPTER 5. Privacy Preserving and Participatory Architectures

Leads: Sebnem, Anish, incl. Trent's (recent) publications

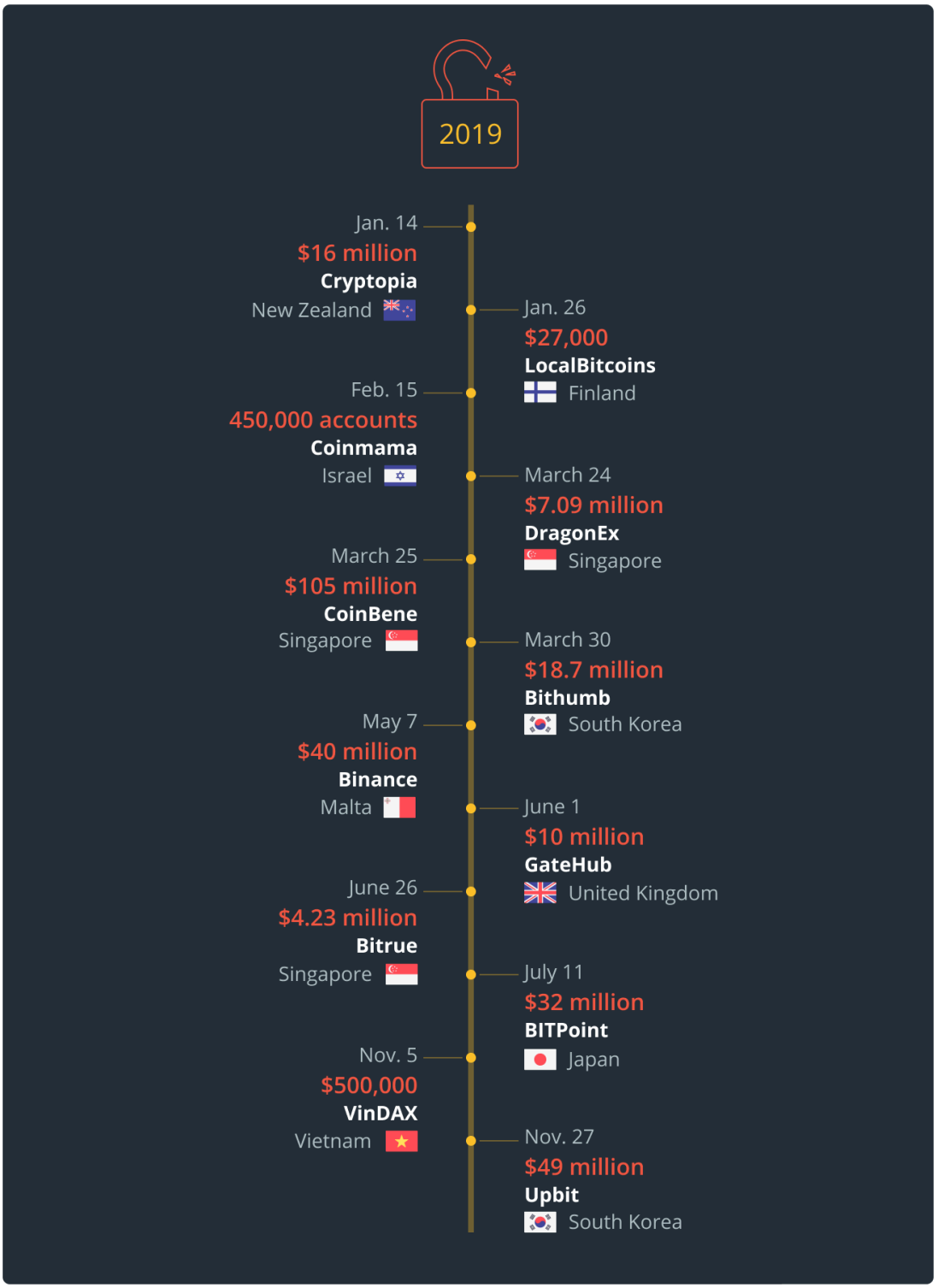
- So, you got a token model...it's great for simulations and co-creation, but then what?
- The Stakeholder Stories (aided by user stories for UI & design) inform the diagrams that software developers use (e.g. activity/sequence diagrams).
- Participatory network and interfaces to platforms, devices, blockchain
- The computer simulation and model are a much better specification for smart contract creators than other forms of documentation. Failure modes enable designing experiments and test networks that pay off (so you don't need to test in prod ;))
- Blurred lines: The Strategy technology connection, a trend since the 80s culminates in token networks, decisions influence information architecture and vice versa
- NEW: Experiments in Token Networks are the New Agile (how to style like Ch.4)
- Data model in these participatory architectures contrasted at different levels to state of the art platform architectures:
    - Identity, sovereign identity is single sign on come true, but in the hand of the user; solutions for keeping keys safe
    - ID layer? sybil ← affects governance
    - On-/Off-chain: Data, static, dynamic; personal, application/interaction
    - Coupling system data with system model (Digital Twin)
    - The Oracle Problem, current solutions and alternatives (Crowd++), e.g. Chainlink , Hierarchy of oracles
- Where should we put it? Computations, data analysis, application logic

    - The Naked Participant: B2B clear economic argument, B2C current “hostage” situation, TE to solve for this tragedy of commons
    - Current solutions and alternatives (Crowd++); e.g. Ocean, federated learning: OpenMined
- Trade-offs (economic argument, tech maturity argument, i.e. technically viable and economically wise)
    - security vs. costs (e.g. how migration to xDAI, L1 governance & L2 security)
    - transparent participatory networks vs. privacy of the individual: Protocol level privacy characteristics, permissionless, pseudonymous, participation requires (wasteful) security, limits to privacy on a radically transparent network
    - computation to data, data to computation: keep data secure, keep the model secure
    - current solutions and alternatives (Crowd++); e.g. Truebit
- Engineering principle: Make trade-offs transparent; and other trade-off strategies
- Trade-offs in implementation affect Token Model, prepare for redesign/adaptations:
    - On scale-ability and scaling trust
    - Identity vs. Authentication Question, trade-offs in consensus mechanisms (sybil attacks, security margins?)
    - compliance (eg Bank Secrecy Act) add real-world red tape to implementation
- Usability in Participatory Networks becomes an education problem:
    - Enabling participation != ability to participate,
    - “it’s not my revolution if I can’t dance”
- Full-fledged Frameworks enabling participation whilst preserving privacy and their maturity level, applied examples, and about composability
    - current solutions and alternatives (Crowd++), e.g. Ocean
    - financial sandbox for experimentation (Singapore, Wyoming, ???)
- Conclusion: how to define architecture fit for purpose? How to rally a decentralized team for building it? How to build community-first?

CHAPTER 6. SecDevOps in Token Networks

Leads: Anish

Hacks on crypto exchanges in 2019



cointelegraph.com

source: ***Cointelegraph analytics***

- Emerging practices DevOps moving towards integrating Security

- Trade-offs (central pause) and approaches to validation and verification, Safety != Security through Obscurity.
- Smart contract deployment practice
- Infrastructure…
    - protocol, consensus, securing value
    - L2 governance, L1 transaction
- Static & dynamic security analysis
- Stories from the Dark Forest and limits on legal recourse (game theory), vampire mining, death-treats, Darwinian process as penetrated entities liquidate; classic blunders (original DOA hack, token death spiral, collusive miner reordering, flash play using shallow pool of Oracles, genesis-jumping or "aping" open-source FOMO-running)
- Conclusion: can existing security processes be decentralized? What does it mean for liability if we deploy incentive machines and headless firms and bankless financial institutions?

CHAPTER 7. Decentralizing Organizations

Leads: Marina

Contributions: based on Shermin's work, Cybernetics← Sebnem; Jessica ← Griff, Livia, Jeff, Z; MetaGov insights

> https://github.com/sherminvo/TokenEconomyBook/wiki/Institutional-Economics-of-Web3-Networks-%26-other-DAOs
> https://github.com/sherminvo/TokenEconomyBook/wiki/Governance-of-Web3-Networks-%26-Other-DAOs

- Decentralization as a broader trend to face fast changing environments, automation to reduce paperwork and embed processes (doacracy, holacracy etc)
- The idea of DAO: from TheDAO (past) to today's decentralization attempts (present amorphous orgs) in cryptoeconomic networks to future (functional jurisdiction?), 2-3 examples for tooling/ mgmt, https://daohaus.club/ etc.
    - Decentralization and self-sovereignty
- What's really new Computer-aided Governance, model- and data-driven optimization of organizations: commonsstack.org; tokenized incentive schemes
    - Governance is about Decision making
    - Decision making is about resources (e.g. Colony)
- Break decentralization down to practical elements
    - Types (heat map)
    - Mapping to reality
    - Today and Future
        - Risks & Opportunities
        - existing players' adoption

    - ease of use (social system in Germany, vs Venezuela)
- Conclusion: Progressive decentralization: “Autonomous” as in “Automation vs. Autonomy” - Do we have the philosophical maturity now to decide who decides? Legal implementation matters...

CHAPTER 8. Legal Engineering

Leads: Esen, Lawrence ← Fabian Framework; Bea, Cyprien practical input/questions

What is the Chapter about?

Why is the topic important?

Outline of the Chapter including bullet points:

- Survey from lead devs & founders to guide this section (what layer to focus on)

- Conclusion: Innovation in Finance, Governance, Legal inevitably leads to Unbundling of the Firm (recap from Ch. 2 Application Domains), Ch. 3 cryptoeconomic patterns, and Probabilistic framework mapped onto deterministic legal frameworks? Is this possible?

CHAPTER 9. Outlook and Resources

Leads: Sebnem, Crowd++

- Practical tips on building and bootstrap a token networks: all roads lead to Rome, setting incentives for decentralization and knowing why
- Practical tip on working in token networks: building a portfolio of intellectual investments instead of a CVs
- link to repository/libraries
    - Ch.2/Ch.3 application domains, cryptoeconomic patterns, Ch.4 tools and frameworks
    - Ch. 4 Ecosystem Value Flows canvases & courses

- Ch. 4 Tutorials for computer-aided token design, courses on Moral Philosophy framework
- ...

EPILOGUE: An Interface to Moral Philosophy for Token Engineers

Leads: Jessica

Contributions: based on Fabians Input, Sebnem

- intro to 4 assumptions, 8 paradigms ; 4 quadrants, 8 levels
- inducing consistent set of answers, compass
- onboarding leaving the duality of subject-object behind

APPENDIX. Token Model of this Book

Leads: Sebnem, Vasily, Daud's input

- started as TWL Currency Potluck with a bancor bonding curve