



Ecosystem Value Flows

TMG1 Course, **S5L**, May 2021 edition



Check-ins

pending questions

Agenda for today

Check-ins & pending questions

- **Where it goes from here**

- What will you do with the value flows diagrams
- Follow up activities
 - Computer-aided design (CAD) study groups
 - Co-design TMG2: CAD & Experiment-driven Development

- **Outlook: The Practice**

- Operationalizing Token Model Generation: Co-creation & Iterative improvements
- The System Modelling the System
 - **Governance w/ Marina**
 - **Legal Engineering Design w/ Esen**

Debrief & questions, as needed

Close in ~2hrs





Where it goes from here

From Token Engineering Design to Simulations to SW Engineering

Common Visual Language

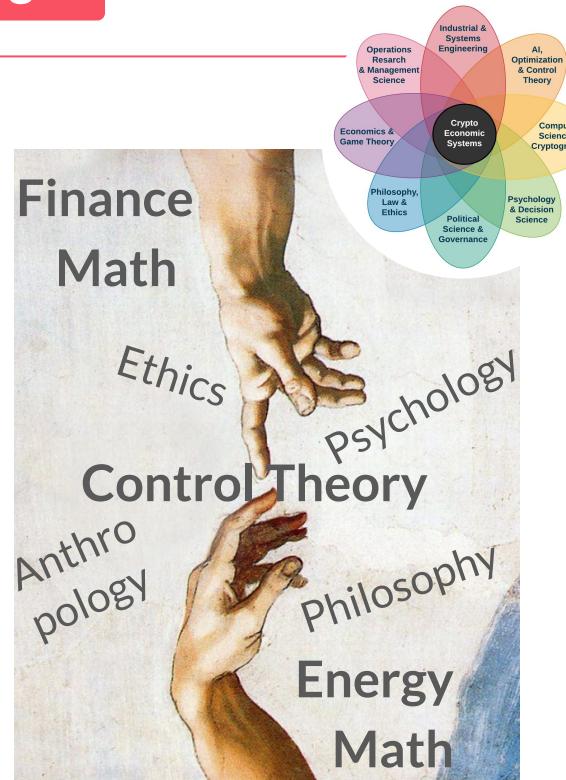
continuous refinements

Ecosystem Members



Token Engineer

Requirements engineering
Modeling & Simulation
 (Game / Scientific Computing)



Token Engineer



Software Engineer

Primitives & patterns
Architecture & SecDevOps
 Audits & Bounties

source: [Token Engineering Applied, NonCon 2020](#)

Scientific : Data-driven Modelling & Simulation

[cadCAD](#) by BlockScience,
Dr. Michael Zargham & Team

- System Design and
- Agent-Based Modelling

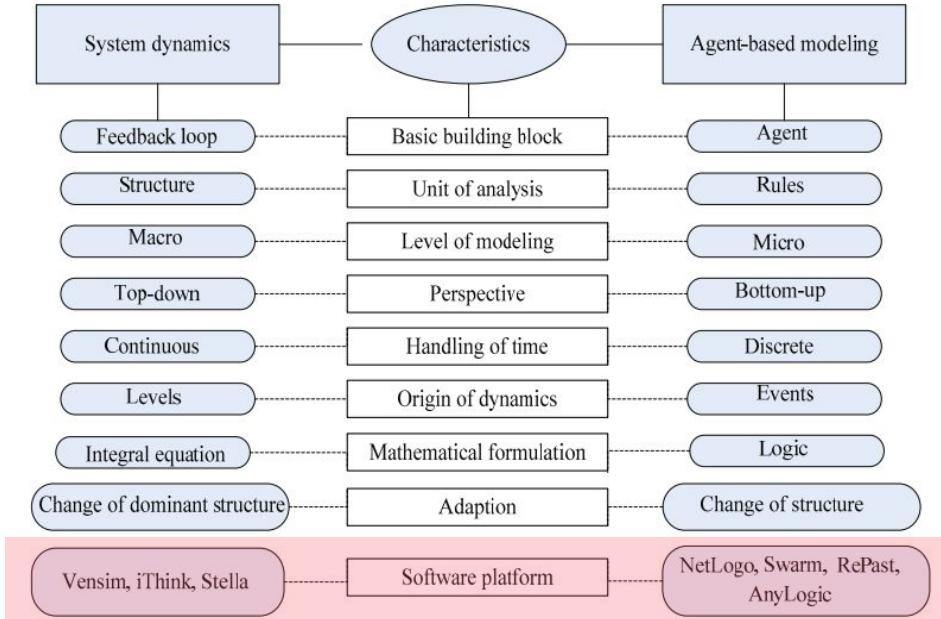
in Python, i.e. couple
with your data pipeline

- digital-mostly systems like Filecoin
- “traditional” Cyber-physical systems
like smart microgrids



source: [Token Engineering Applied, NonCon 2020](#)

Traditional simulation tools are silo'd ...



cadCAD enables combination of both paradigms, hence:

- human-in-the-loop
- environmental-in-the-loop
- economics-in-the-loop
- macro-micro → meso

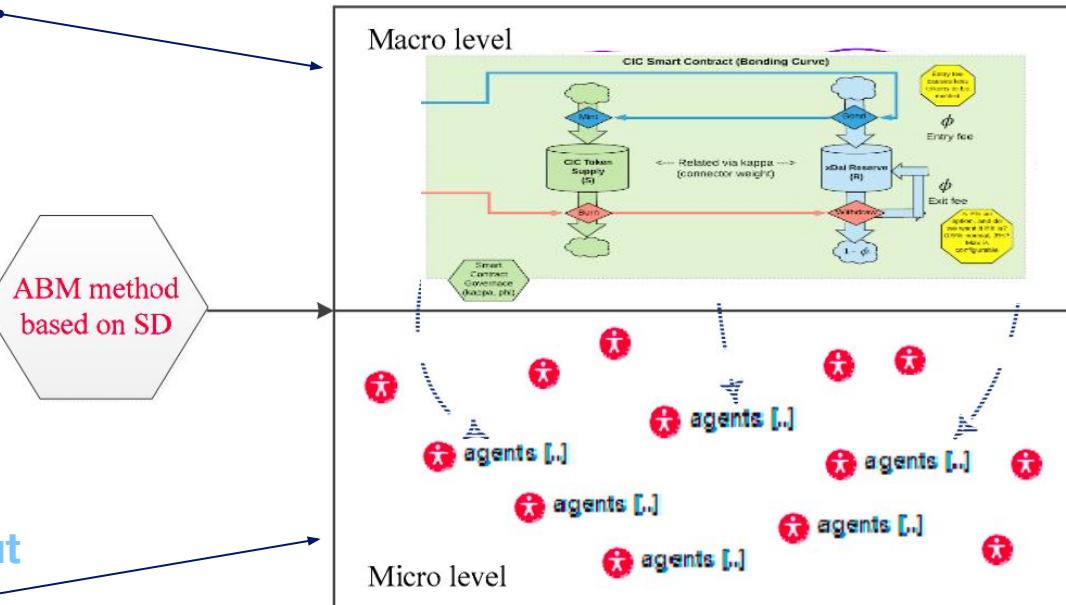
Img source: [MDPI](#)

System Dynamics (SD) and Agent-based Modeling (ABM)

Valueflow diagram

Encodes assumptions and design decisions,
describes system dynamics

A certain number
of objects on the
macro level inside
which agents are
modeled at the
micro level



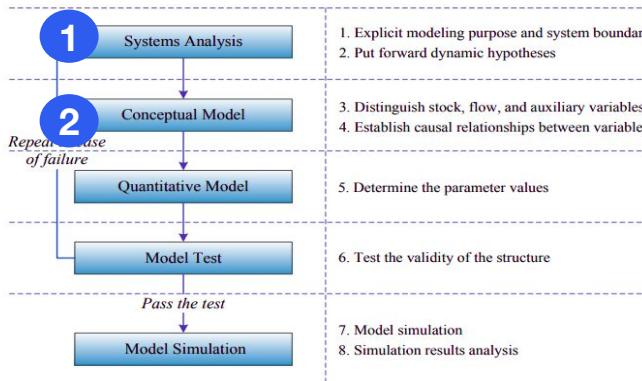
Assumptions & Data about
participant behavior

Source: [MDPI](#)

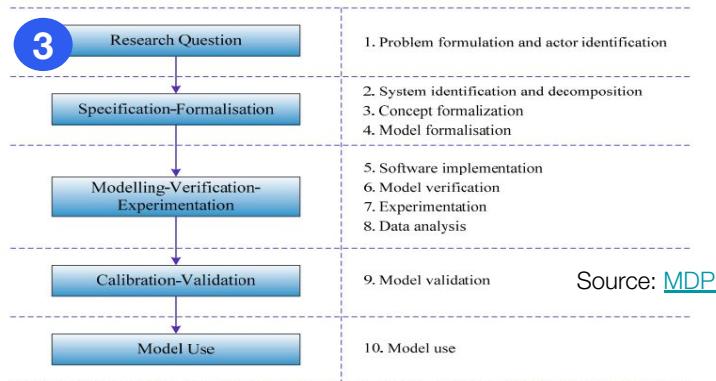
You got all you need

- 1 Ecosystem Purpose, Rainbow Canvas, Governance Questions, Stakeholder Stories 2/2, ...
- 2 Colored Stakeholder Matrix, Stakeholder Stories 1/2, valueflow diagrams, ...

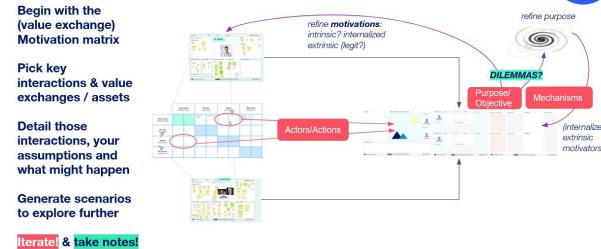
System Dynamics modeling process



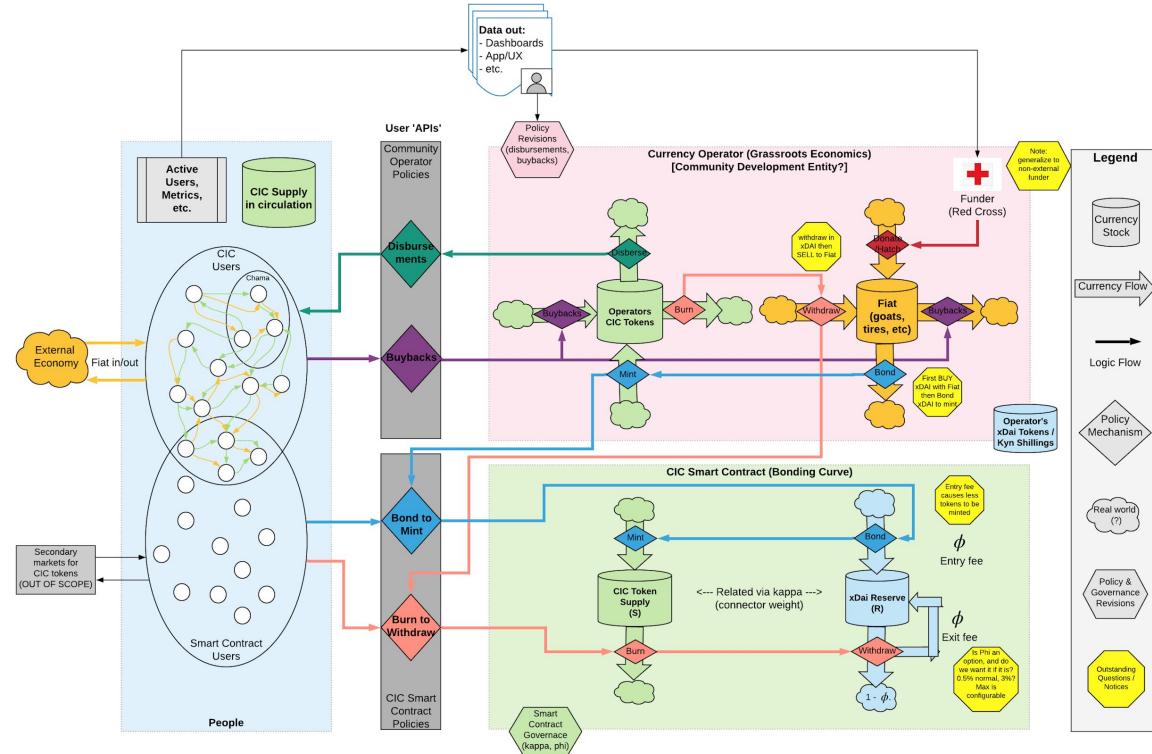
Agent-based modeling process



Make use of Stakeholder Stories



Example: Valueflow diagram of Community Inclusion Currencies



Initiated by Grassroots Economics;
First iterations w/ BlockScience
funded by Red Cross

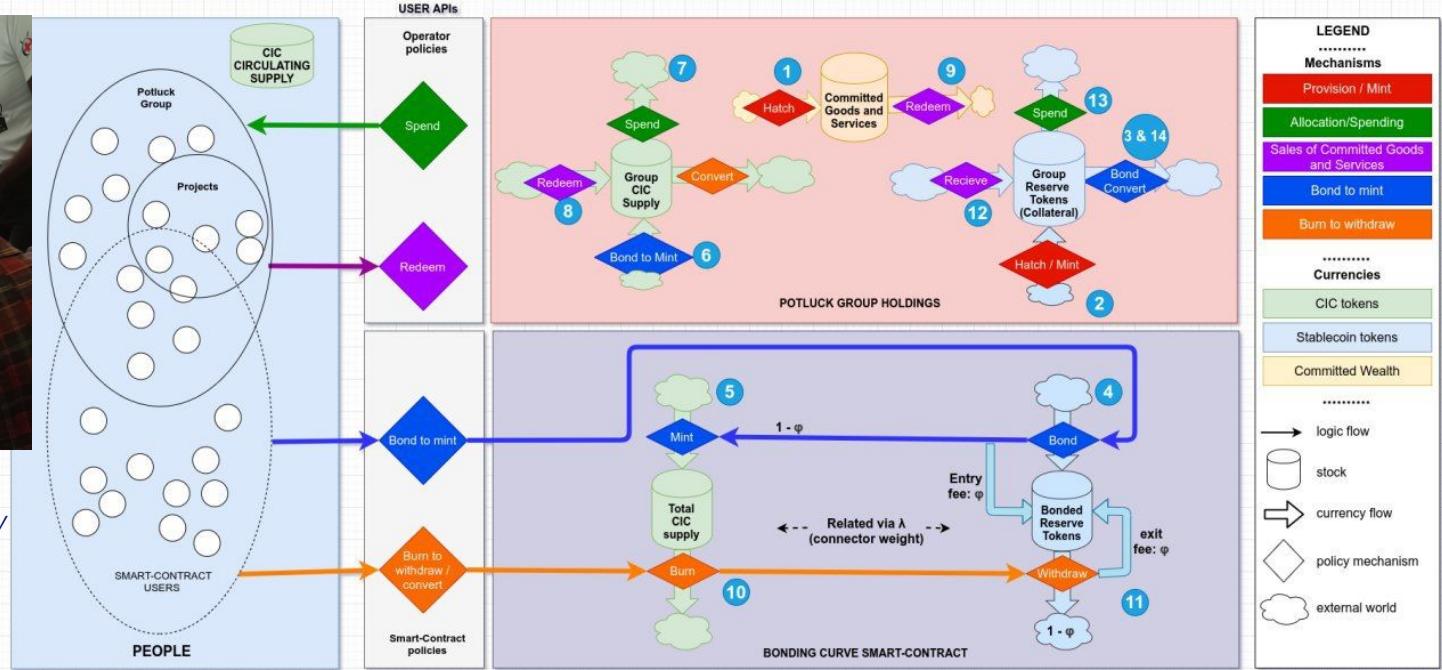
Example: Community Update Community Inclusion Currencies

Understanding & Participation



"bondometer" Community Inclusion Currencies Game, [Grassroots Economics](#) Video & Article

UX Viable Token Model



Example: Valueflow diagram of DADA / Invisible Economy

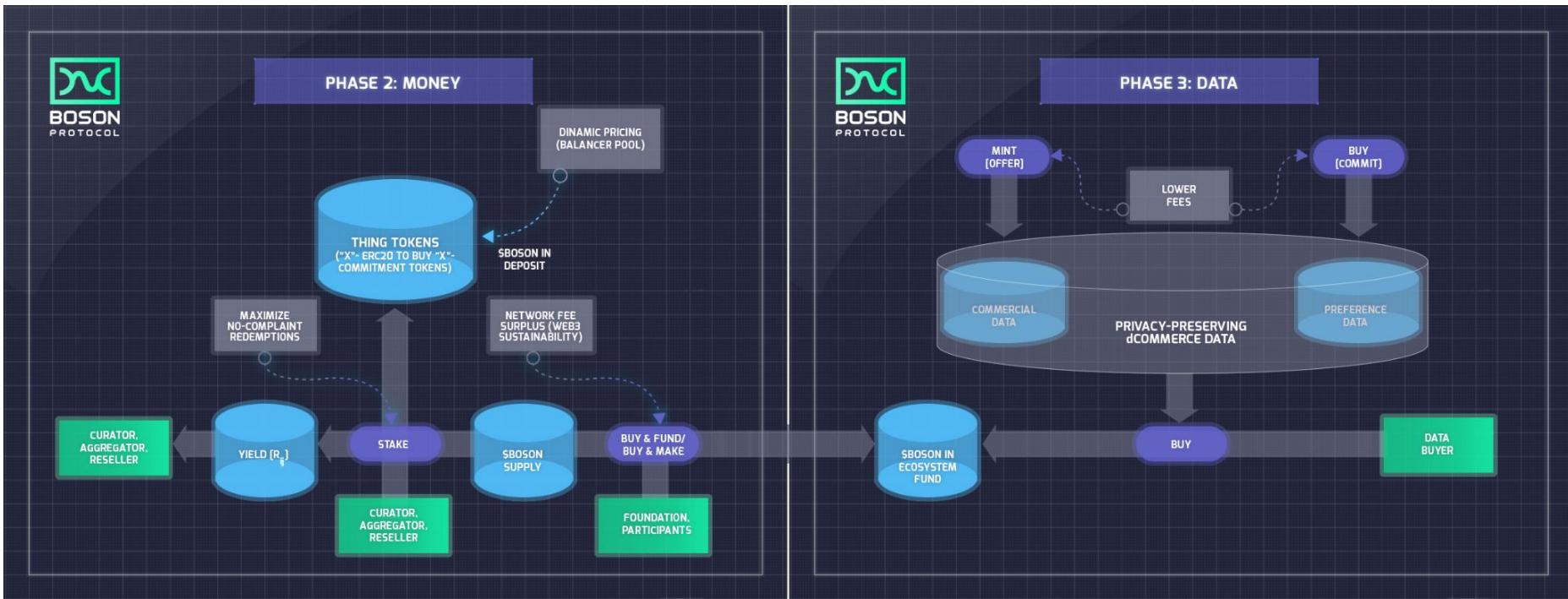
Sensemaking Sessions

RxC Invisible Economy all videos

Da Da - 1/67



Example: Valueflow diagram of Boson / Things Economy



Warning!

Cutting edge & work in progress

Adapted
Stock & flow
diagrams

"I use the stock and flow concept as an anchor and that part is pretty formal but I adapt around the edges to capture what i need to inform the transition from ideation to formal models.

It's helpful but it's hard to teach people to "do what feels right"

- Michael Zargham

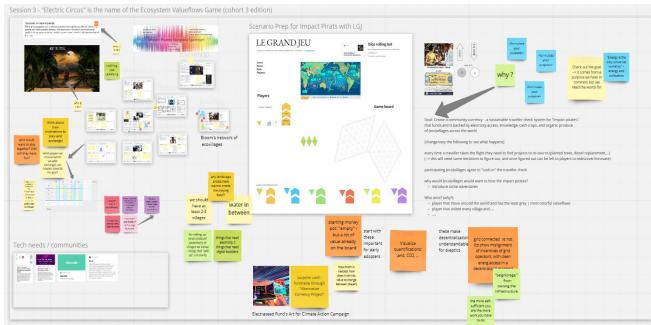
For the moment that transition is a craft

Token Engineers learn and hone that craft

Models are useful reductions. ***"Reductions can be abused by taking them out of their useful context"***

UP NEXT: Peer Learning & Mutual Support

Impact Pirates ... proto-instance of
Electric Circus, the Game-based Learning
version of Ecosystem Value Flows course



Game-based prototyping sessions of Impact Pirates in [TE](#)
[#game-design](#)

Support [TEC Proposal](#) for Electric Circus and/or Impact Pirates
[Gitcoin grant](#)

dCommerce Ecosystem ... digital-to-physical
[creative economy](#) value flows sessions:

- books
- fashion
- art

Join our Community Discord Server!

- <https://discord.gg/xRYUjB4m>

All new channels, we're getting started

- Digital-to-Physical
 - TE Books
 - Games
 - Art
 - Fashion
- dCommerce
 - DAO
 - token-engineering
 - dCommerce-innovation
 - MetaFactory x Boson



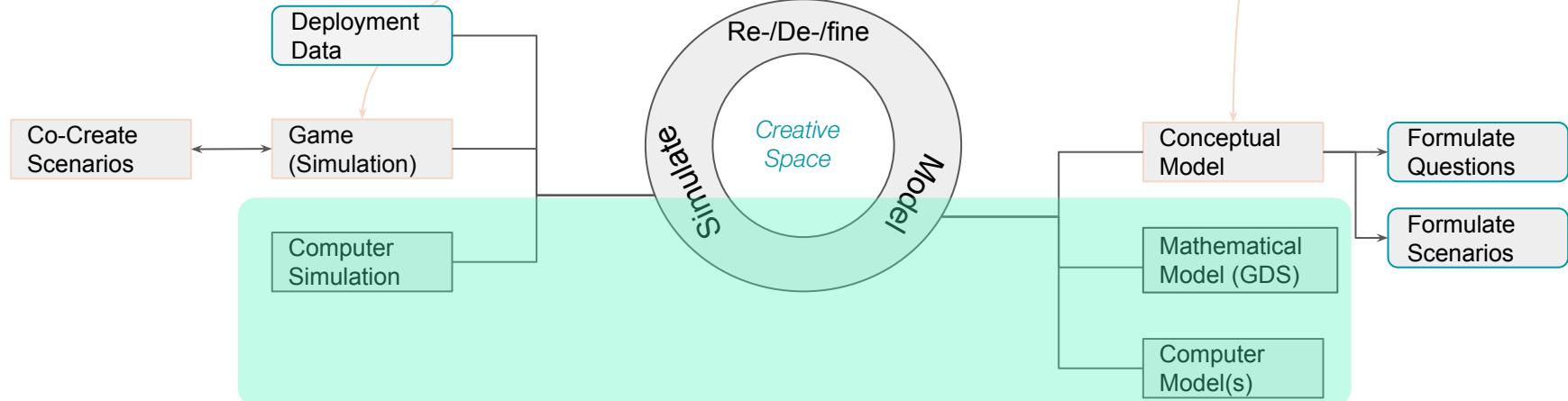
[DIGITAL-TO-PHYSICAL](#) in dCommerce server
Engineering dCommerce [Intro courses lined up in TE](#)

UP NEXT: Experiment-driven Development

TMG1: Ecosystem Value Flows

TMG2: Computer-aided Design & Experiment-driven Development

"We instinctively add on new features and fixes. Why don't we subtract?"



UP NEXT: cadCAD study group

1. The iterative process

- a. identify optimization goal(s) = outcome(s)
- b. define and adapt token primitives, combine, generate/capture new patterns

2. Model w/ cadCAD

- a. state variables: describe system
- b. state update function
- c. policy functions: description of logic
 - i. user policies
 - ii. internal system control policies
 - iii. exogenous policies
- d. partial state update blocks

3. Simulate w/ cadCAD

- a. Parameter sweeps
- b. Monte Carlo runs

System dynamics & agent-based



cadCAD Complete Foundations Bootcamp

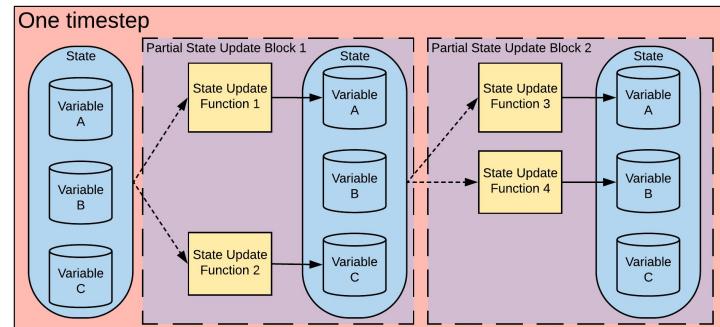
The most comprehensive cadCAD beginner course on the web.
If you're new to cadCAD, your journey starts here.

- 7 Course Sections
- 25 HD Videos (ca. 5 hrs.)
- 12 Jupyter Notebooks
- 3 Exams/Quizzes
- 2 Educational Models
- PDF Templates
- Curated Reading List
- Capstone Project
- Exercises / Solutions
- LinkedIn Certificate



<https://www.cadcad.education/course/bootcamp>

One timestep



<https://gitcoin.co/grants/308/cadcad-computer-aided-design-for-complex-systems>



cadCAD
by BlockScience

a **differential games engine**
at its core

UP NEXT: tokenSPICE

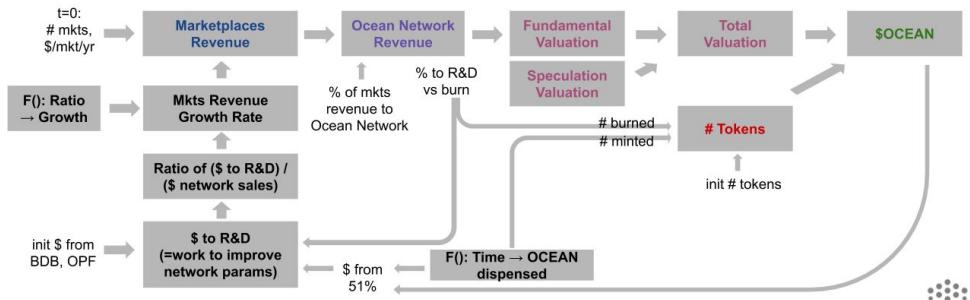
TokenSPICE simulates tokenized ecosystems using an agent-based approach.

V0.1, tuned for the Web3 Sustainability Loop.
use Python agents.

V0.2 (WIP) to model Ocean Market.
Adds EVM agents.

Key variables being modeled

- We can model Ocean revenue and \$OCEAN over time. This helps our decision-making.
 - We can model **marketplaces' revenue**. Depends on initial parameters, and \$ growth rates.
 - From that, we can model **Ocean network revenue**. Depends on % mkts revenue to Ocean network.
 - From that, we can model fundamental **valuation** of Ocean network (e.g. P/S). Can compare this to speculation-based component too.
 - We can also model **# tokens**, including effects of minting and burning
 - From valuation of Ocean network, and # tokens, we can model **\$OCEAN**





Outlook: The Practice

Token Model Generation: How to move from
product-oriented to ecosystem-oriented approach

with
co-hosts of
Ecosystem
Value Flows
course:



@Michal



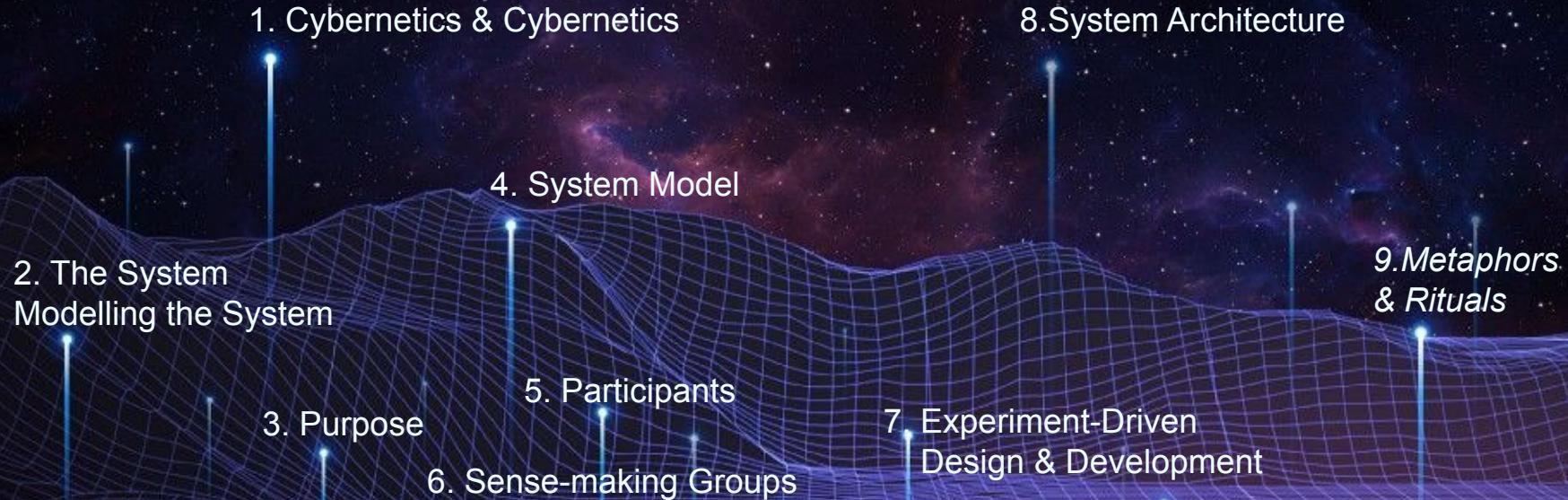
@sebnem

Token Model Generation
to create the new
socio-technical systems

Create value
Deliver value
Sustain value(s)

A diagram consisting of three large, bold, white text blocks stacked vertically: "Create value", "Deliver value", and "Sustain value(s)". Between the first two text blocks, there is a blue curved arrow pointing from "Create value" up to "Deliver value". Between the last two text blocks, there is a green curved arrow pointing from "Deliver value" up to "Sustain value(s)".

23rd April 2021 5PM CET
→ **Video Recording**



This Webinar's Focus

Token Model Generation: The Whole 9 Yards *w/Miro-board sneak peek!*

A Hitchhiker's Guide to TOKEN ENGINEERING

Community sourced

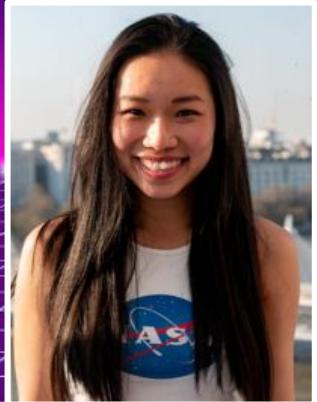
"We're building the roads, the car, figuring out how to drive and hand out drivers licences. All at the same time." [Electricm](#)



DON'T PANIC

Grab your towel!
stay tuned for what's next

THE TRANSDISCIPLINARY ART OF TOKEN ENGINEERING



@lisajytan
atsindi



@wassim
al-sindi



@sherminvo



@trentmc0

28th April 2021
→ Watch [Recording](#)

WEBINARS COMING SOON...

June 9th!

Sneak
Peak
Today

→ [subscribe](#)

- CryptoEconomic Patterns & Application Domains
- Privacy Preserving & Participatory Architectures
- Decentralizing Organizations
- Legal Engineering
- An Interface to Moral Philosophy

What's next?

Day	Date	Content	Start (CEST)	Duration
Saturday				
Friday	2021-05-07	Token Model Generation Method (TMG) Course Flow & Logistics	6:00 PM	90 min
Weekend		Videos released + optional readings		
Monday	2021-05-10	Peer Learning Session 1 (S1PL): Purpose & Participants	6:00 PM	150 min
Tuesday	2021-05-11	Play LGJ with Fredd (Game Masters version)	6:00 PM	120 min
Weekend		Videos released + optional readings		
Monday	2021-05-17	Live Session 3 (S3L): Games	6:00 PM	150 min
Tuesday	2021-05-18	Sharing Results	6:00 PM	90 min
Wednesday	2021-05-19	Play LGJ with Fredd (Game Masters version)	6:00 PM	180 min
Thursday	2021-05-20	Electric Circus (for Devs & community builders)	6:00 PM	90 min
Friday	2021-05-21	Peer Learning Session 4 (S4PL): Value Flows	6:00 PM	120 min
Weekend		Iterate + optional readings		
Monday	2021-05-24	Live Session 5 (S5L): TMG: The Practice & Governance	6:00 PM	120 min
Thursday	2021-05-27	Sharing Results	6:00 PM	90 min
Friday	2021-05-28	Final Presentations	6:00 PM	120+ min

One more results session and...

Just prep for the final presentations!





See you Thu or
Friday at
6pm CEST!

All info: [1STOPSHOP](#)

Condense your work.
That's it.