FORMULA SHEET · V3.1.2 LETTERS · NOT A MARKET SPEC

The math that runs

Access economy. No transfer rail. Reputation never enters the mint. Public copy: records, meters, till sparks — not tokens. Where the Codex already has a number, that number is used.

01 XP — standing, not a pile you spend

$$XP = R \times F \times \Delta S \times (w \cdot E) \times \log(1 / T_s)$$

Canonical mint, *packages/xp-formula*, v3.1.2. You do not spend it. You do not list it. The mesh reads it when it asks whether you have been closing loops. Most people never see the raw value.

SYMBOL	MEANING
R	**Rarity.** Action-class scarcity / base difficulty. Property of the loop, not the actor. Range [0.1, 10]. Not reputation. Not risk.
F	**Frequency-of-decay.** Repeating this action class pays less. 1.0 the first time. An open loop does not mint — that is the confirm, not F.
ΔS	**Verified entropy reduction.** Must be strictly greater than 0. A proxy we fine-tune as data arrives. Not a promised constant for “mowing a lawn.”
w · E	**Weight vector dotted with effort / eight-domain vector.** Lawn vs ride vs ozone. The glass of water lives here: desert vs stream is a different coupled system.
T_s	**Timestamp decay** in (0, 1], typically $\exp(-\lambda\Delta t)$. $\log(1/T_s)$ stops slam-shut farming. Harder rooms are R and w · E, not a “system temperature.”

Reputation belongs in vote weight and in CT’s ρ. It never enters this line. That was the v3.1.2 patch. Do not put it back.

01b XP leak — already in the Codex

$$XP_{remaining}(n) = XP_{settled} \times 0.99^n$$

n is months of remaining-balance decay at about 1% per month. Half-life ≈ 69 months (~5.8 years). A mint from twenty years ago is dust. That is the anti-pension. Late huge ΔS still matters. Sitting does not.

ELAPSED	WHAT IS LEFT OF THAT MINT
~1 year	≈ 89% still there
~5.8 years	Half-life. ≈ 50%
~8 years	≈ 38%
~20 years	≈ 9%
~30 years	≈ 2.7% — dust of the original mint

02 CT — local contribution that feeds L

$$CT = C \times F \times \rho \times \Delta S_{local} \times E$$

SYMBOL	MEANING
C	**Capability** of the contributor. Not the room. The room is the DFAO id.
F	**Frequency-of-decay** — same letter, same job as XP. Do not fork it into "closure."
ρ	**Reputation density.** This is where reputation is allowed. Never in XP.
ΔS_{local}	Entropy reduction that actually moved in this DFAO. Not a new quantity. Same ΔS, scoped to the room.
E	Eight-domain weighting / essentiality for this room. Governance-adjustable.

CT is store-scoped. Sam's Club CT does not pay the laundromat. XP is the passport. CT is how this particular door treats you. No transfer function. Local leak is a DFAO knob. Parent bounds keep a child from minting infinite local glory.

> **Working lock.** CT is not the old tradable chip. If a house wants a faster leak or a slower one, they tune it locally. That does not rewrite anyone else's XP.

03 L and EP — the only spend

$$L \in [0, 1] \qquad EP = XP \times L$$

L starts at 0 with a house and climbs on local CT, showing up, and not going idle. It is live rank against that house's current load, not a lifetime grade. Only a thin slice sits near 1. Everyone else is climbing. 1 is ugly to hold on purpose: if too many wallets sit there the merchant is a shrine.

EP is Emergent Product. Minted at the register from current XP and current L, then burned in the same transaction. Nothing accumulates as a coupon book. The house maps that product onto the fiat line with a published coefficient. Both edges accept. Cash cannot mint XP.

> **Till rule.** Do not use price × (1 − L) as the till. That drops XP. A high-L nobody and a high-XP regular then look the same, which is the capture CT vs XP was split to prevent. One mapping per DFAO. Publish it.

The letters are EP. Emergent Product. Not Emergence Points. Not Epistemic Proof — that is a proof-layer token, letter collision, does not buy milk.

04 CAT — Category, skill credential

$$\text{CAT}_{\text{level}}(\text{domain}) \text{ climbs at 10, 30, 90, 270 confirmed loops}$$

Same rungs from folding shirts to closing a case. The instrument gets nastier. The curve does not. A title like doctor is a late skin: CAT level in a lane plus an issuer the mesh already treats as real. Nobody types the title into a box. Credentials do not steer the XP mint.

Rungs are a working lock — not yet in packages/credentials. CAT is Category, a skill record. Capability is C in the CT formula. Mentorship is not +0.1 CAT.

Issuance. Peers already holding CAT in that domain sign and stake IT and local CT. If the stamp was vapor, their IT and local CT take the hit. Patients do not mint the credential. They keep L alive by not opening a complaint loop.

05 IT — Influence Token, governance weight

$$\text{IT}_{\text{remaining}}(n) \approx \text{IT} \times (0.95)^{n} \quad n = \text{idle months}$$

About 5% a month if you vanish. Codex provisional. IT is how hard your voice hits a vote. Not Insight Token. Not bought. Not listed. Staking a CAT issuance is putting this weight, and local CT, on the claim. Obscure private labor still mints XP. It does not mint the same IT unless influence is the job.

06 Lane — matcher, not a seventh bag

$$\text{key} = (\text{DID, lane, CAT level, settled count, issuer})$$

A composite key. Not a product. Not a mint. **Domain** is the eight entropy instruments — a protocol enum. **Lane** is the skill specialization. CAT lives on a lane. Claiming a lane is a signed vertex, contestable. Not a dropdown. Not a Domain Coin.

DT is retired as a bag. Old copy said Domain Token or Decay Token. Expertise is CAT-per-lane. The leak is already on XP. If the letter survives it is only as this unique claim record.

07 Complaint → SignalFlow → loop

$$\text{complaint} = \text{OPEN claim on the DAG, not a star rating}$$

A complaint opens a loop. SignalFlow routes it to people already CAT-cleared in that domain. The other edge settles, or the credential takes a provisional burn in the window. Same machine as a laundromat no-show. Heavier instrument at the top. There is no validator class. Validation is a task. Do not stand up a separate review economy.

08 Bootstrap — scale the same object

Start with rooms where a lie is cheap: tills, folds, inventory. Shadow DFAOs do not stamp network-wide titles. High CAT waits for an issuer the mesh trusts — later, a hospital or school that is itself a DFAO. Parent DFAO caps what a child may certify. Two-phase mint on the stamp. The low-end math is person × domain × CAT × local L. The high end is the same object with a harder ΔS instrument and a veto. No second economy for doctors.

09 Object inventory

OBJECT	KIND	JOB
XP	Meter	Global standing. Ledger proxy of ΔS. You do not spend it. Leaks ~1%/mo of remaining.
CT	Meter	This-door contribution. Feeds L. Not purchased with XP.
L	Meter	Local rank in [0, 1]. Live against house load. Not a collectible.
EP	Till spark	XP × L, born and burned in the sale. Not a coupon book.
CAT	Record	Skill credential in a lane. Unique. (DID, lane, level, issuer). Does not steer XP mint.
IT	Meter	Vote / stake weight. Idle leak ~5%/mo. Not Insight Token.
Domain	Enum	Eight entropy instruments. Not minted. Not a dropdown.
Lane	Record field	Skill specialization. Claim is a signed vertex, contestable.
DT	Retired bag	Old copy said Domain Token or Decay Token. Expertise is CAT. Leak is already on XP. Do not mint a Domain Coin.

10 Open knobs — still not nailed

- Exact CT leak per DFAO.
- House coefficient that maps EP onto the fiat line. Publish one mapping. Do not also run price × (1 – L).
- How many wallets may sit near L = 1 in a given house.
- CAT recert window at the top rungs.

Those are parameters. They are not a reason to grow a seventh bag.

Source of the mint: packages/xp-formula · canonical v3.1.2
Tokens as lived on the ledger: Codex v2.1 · extropyengine.com
github.com/00ranman/extropy-engine
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