

Keeping futures open.

xCO — Expanding Civilizational Optionality. A capital platform for existential option formation: organizing capital around futures that are not yet priced and not yet contracted — where the value is still there to be created, and the institutions that will hold it are still being built. An invitation to partners, not a closed pathway.

XCO

Register	Proposal deck – strategy and capital architecture.
Provenance	Synthesised from Dark Matter Labs' xCO corpus (~170 documents, 2024-2026). An interpretation, not an official document.
Reading	Use ↓ / ↑ or scroll · download as PDF (26pp, A4 landscape)
Visual identity	Dusk tritone only: shadow, midtone, highlight.

- 01 / The world
- 05 / The opening
- 07 / The proposition
- 10 / The machinery
- 16 / Proof & plan
- 22 / The team
- 23 / The ask

We are facing a planetary-scale collapse of option-space. The primary scarcity is viable futures.

In 2010, fires in Russia halted fertilizer exports, spiked global food prices, and fed riots in sixty cities that became the Arab Spring. A shock in one system had come out somewhere else entirely — and nobody owned the chain in between.

It is running again now. Roughly **a third of global fertilizer trade moves through the Strait of Hormuz**; the 2026 Middle East conflict interrupted it, Iran stopped ammonia production and Qatar suspended urea and sulfur. Fertilizer becomes food cost, food cost becomes export bans — Kazakh wheat flour, Indonesian palm oil — and import-dependent buyers pay first. UK food-inflation forecasts for the year were revised from around 3% to **9% or more**. Insurance markets, meanwhile, are already retreating from whole geographies.

3.5 bn	£2.52 tn	47 °C	~490,000
PEOPLE WHOSE WATER CYCLE IS REGULATED BY HIMALAYAN GLACIERS IN TERMINAL RETREAT — ACROSS THREE NUCLEAR POWERS	OF LONDON HOUSING (3.8 M HOMES) AT CLIMATE RISK OF QUESTIONABLE INSURABILITY	MADRID SUMMER PEAKS, ALREADY — HEADING FOR 47-50 °C	HEAT DEATHS PER YEAR GLOBALLY, AND RISING

Figures as stated in the Dark Matter Labs source documents; see the provenance note on the final slide.

Optionality is spent before harm is visible. A coastal town becomes uninsurable long before any flood arrives.

The deepest risk is not any single catastrophe but the compression of optionality — the shrinking of adaptive freedom itself. It is lost three ways:

NARROWING

The gradual, often invisible closing-down of viable options as systems become more coupled, more fragile, more locked-in.

RUPTURE

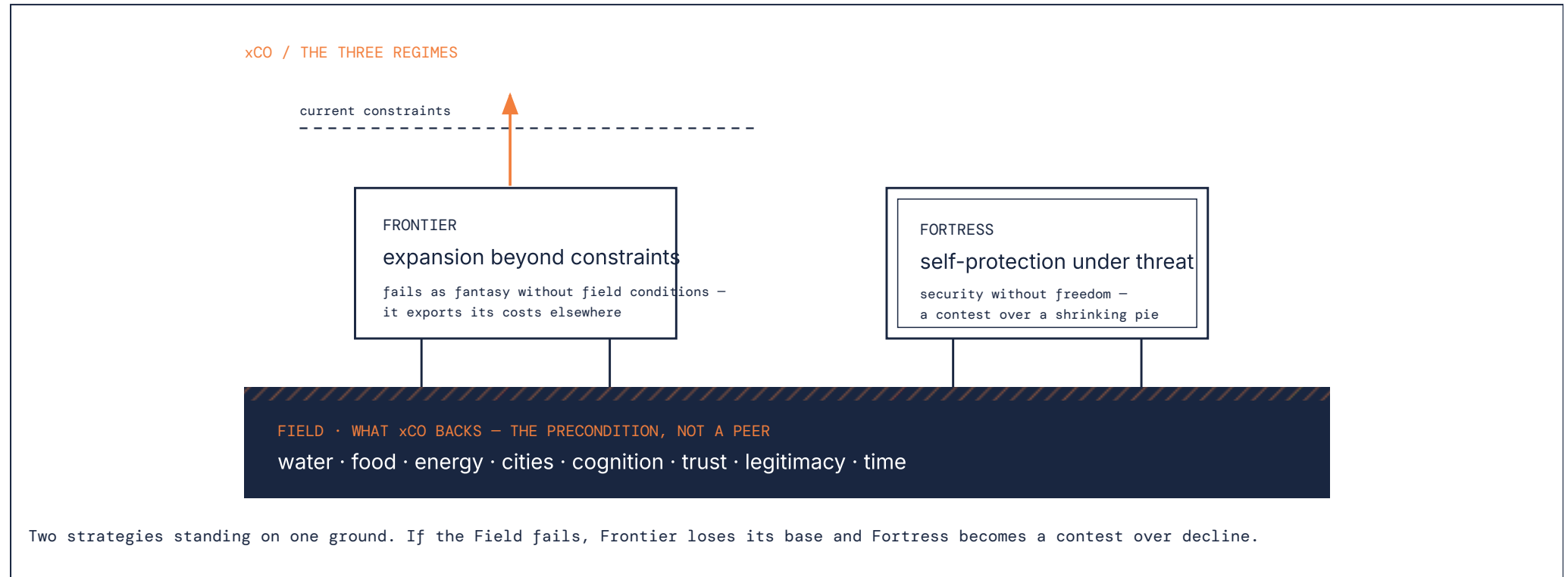
The sudden foreclosure of futures when a system breaks — tipping points, cascade failures, collapse.

UNEVEN CONCENTRATION

Adaptive freedom doesn't shrink evenly. It concentrates in some hands, places and institutions while draining from others.

Because the loss runs ahead of the harm, the window to act closes early — and it closes while a decision still exists.

Under pressure, civilization reallocates into three regimes. Two are strategies. The third is the ground they stand on.



Field value is invisible until it is damaged — so it is systematically under-priced. That mispricing is the opening: it is why the most valuable positions are available before anyone is bidding for them.

The operating doctrine: *fund field before spectacle*.

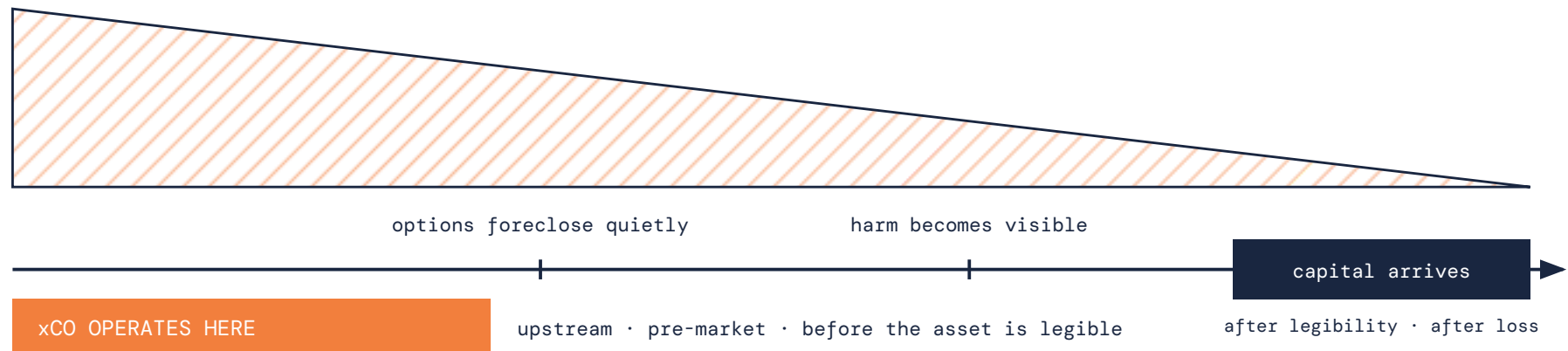
In a regime of cascading, degenerative volatility, the scarcest and most valuable thing is not any particular asset — it is the *room to manoeuvre*: the range of viable futures still reachable.

Civilizational optionality is the **number, quality, resilience, accessibility and reversibility of viable future pathways**. Civilizations fail not from a lack of projects, but when the ability to choose collapses into forced closure. Protecting and expanding that ability is enlightened self-interest, not charity.

Capital arrives only after an opportunity has become legible — after the asset is standardized, or the loss has occurred.

xCO / THE CLOSING WINDOW

OPTION SPACE — the range of viable futures



The deeper failure is *temporal insolvency* — capital runs on months-to-years horizons while survival risks run on decades, over-hedged for price volatility and almost blind to continuity. So it under-prices what the early zone requires: sensing, option preservation, shared learning, many-to-many contracting, facility origination.

The scarce asset is not only money. It is the capacity to organize agency before systemic uncertainty becomes conventional loss.

Markets always expand into what they fail to price. That mispricing is the opening this proposal takes.

What's missing is not the project. It is the pre-market terrain: capabilities, contracts, financing forms and institutions that don't yet exist.

Cascading discontinuities reveal not only threats but absences — missing capabilities, missing contracts, missing financing forms, missing institutions, missing instruments. A failure in one layer becomes a financing gap; a financing gap becomes a governance gap; a governance gap becomes a capability gap; a capability gap becomes an existential pathway. No isolated actor or conventional project finance can close this: it takes multi-party agreement, risk pooling, structured facilities and local capability.

And the deepest demand in a volatile world is demand for non-events — homes that do not flood, cities that stay livable, grids that hold. That demand is real and enormous, but diffuse, illegible and uncontractible until someone builds the **capability infrastructure** — the people, institutions, tools, governance and financial architecture — that makes a problem space collectively governable.

xCO converts unpriced existential uncertainty into structured participation.



xCO is not a risk-management fund, a resilience wrapper, or a venture studio. It is a capital platform that works **before** conventional markets can see the asset, before public systems can define the mandate, and before private capital can price the opportunity — organizing the pre-market terrain where pathways first become visible as options, and making them legible, contractible, financeable, participatory and learnable.

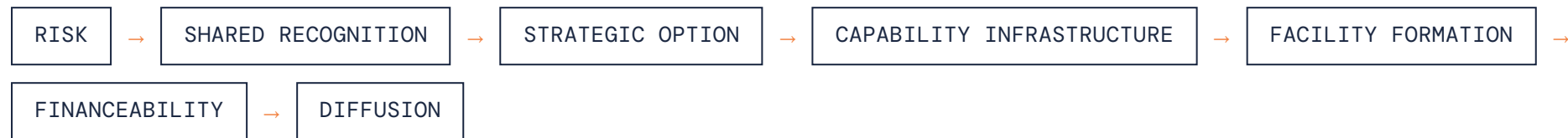
Risk is not removed from the strategy; it is repositioned. **Risk is the signal environment. Options are the product. Capabilities are the execution layer. Facilities are the financial expression. Learning is the compounding asset.**

From abstract existential risk to an investable portfolio of response.

Three things, built to work as one:



Each allocation moves through a staged conversion — risk becomes an option, an option becomes capability, capability becomes a financeable facility:



We invest as a **developmental partner, not an owner**: we take stewardship rights — first participation, learning, convening, the right to intervene protectively — rather than control rights. The capital is denominated in risk reduced, options preserved, capability built and learning diffused, and may not return at all.

One test governs every move: **a valid xCO position leaves capability behind**. Cooling a city in a way that concentrates power is a failure even if the temperature falls — so hard seawalls, fossil-powered cooling, militarised borders and surveillance-led crisis management do not qualify, however much measured risk they remove.

What this excludes is xCO's own upstream capital only — not the journey. Conventional venture, project finance and unstructured grants are the wrong instruments for pre-market formation; they are the right instruments *downstream*, once a facility exists. The next slide shows where each kind of capital docks.

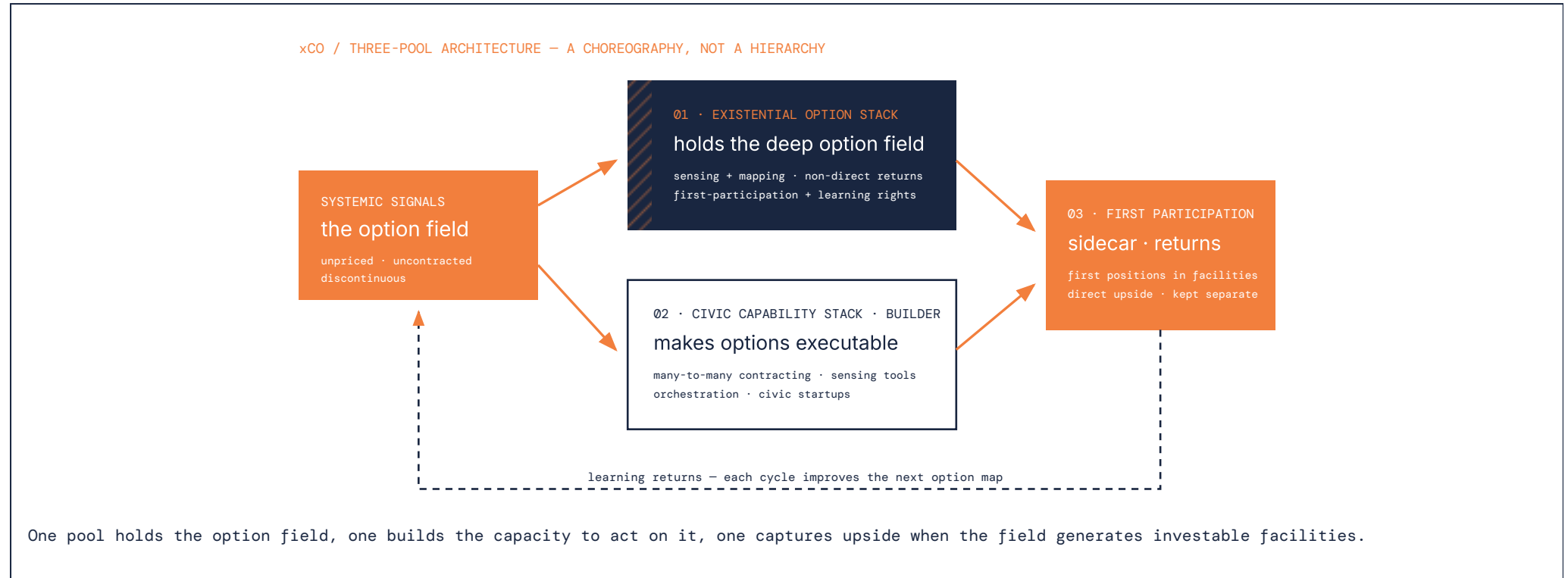
Different capital docks at different points. The journey opens a window for each.

The pre-market terrain is not a philanthropy-only pitch — it is the first docking point in a sequence that ends in institutionally investable facilities. Every kind of capital has a place in it; what changes is *where* it enters and what it is paid in.

OPTION FORMATION	a shared risk is sensed, recognised and named as an option	developmental & philanthropic capital, strategic risk-holders — non-returnable in practice; first-participation and learning rights attach here
CAPABILITY & DEAL CONSTRUCTION	the capability is built and the deal constructed — the ~50K → 5–10M envelope	catalytic & patient capital — capability returns and option value
FACILITY SEEDING	financeability — the +10M seed	first-participation capital alongside xCO's own seed — direct return, higher risk
DEPLOYMENT & DIFFUSION	formed facilities, at scale	institutional capital — insurers, pensions, DFIs, project finance and venture dock here, into facilities, not into the upstream work

The exclusions on the previous slide bound xCO's *own* upstream allocations. They are not a judgement on downstream instruments — a formed facility should be conventionally investable, and if it never becomes so, we have not finished the work. The discipline that holds across every dock: **optionality capture must not become optionality enclosure** — every claim on the value created must be legitimate, proportionate, transparent and contestable.

Under the capital pool sit three coordinated pools. A choreography, not a hierarchy.



The demand–capability coupling runs through the first two pools: demand makes futures selectable, capability makes them deliverable — *optionality emerges in the coupling*. A single blended fund would force incompatible return logics into one vehicle; the separation is what keeps each honest.

Exstitutions — organising forms beyond institutions and startups.

Cascading problems are owned by no one, so capability infrastructure needs an organising form that can coordinate many actors around a shared problem *before* anyone has formal authority over it. An exstitution is unbounded, multi-actor and continuously re-computing: it organises a community of fate — everyone exposed to the same risk — through many-to-many, machine-assisted agreements and a commitment engine that makes coordination survive when conditions worsen. Two guardrails hold throughout: **non-capture** — no participant can redefine beneficiaries, mandates or rules — and **pickup-ready** — every form is built to be adopted by cities, states, development banks and insurers, not imposed on them.

The claim: **the exstitution is to existential options what the startup was to the internet economy** — the discovery vehicle for a new class of value.

The unusual asset is the right to learn before markets price the field.

xCO creates value before a direct return is visible — sensing, pathway mapping, capability diagnosis, facility design. Without rights, that early capital would subsidise the platform's opportunity flow while being excluded from the facilities it makes possible. Two rights prevent that:

FIRST PARTICIPATION RIGHTS

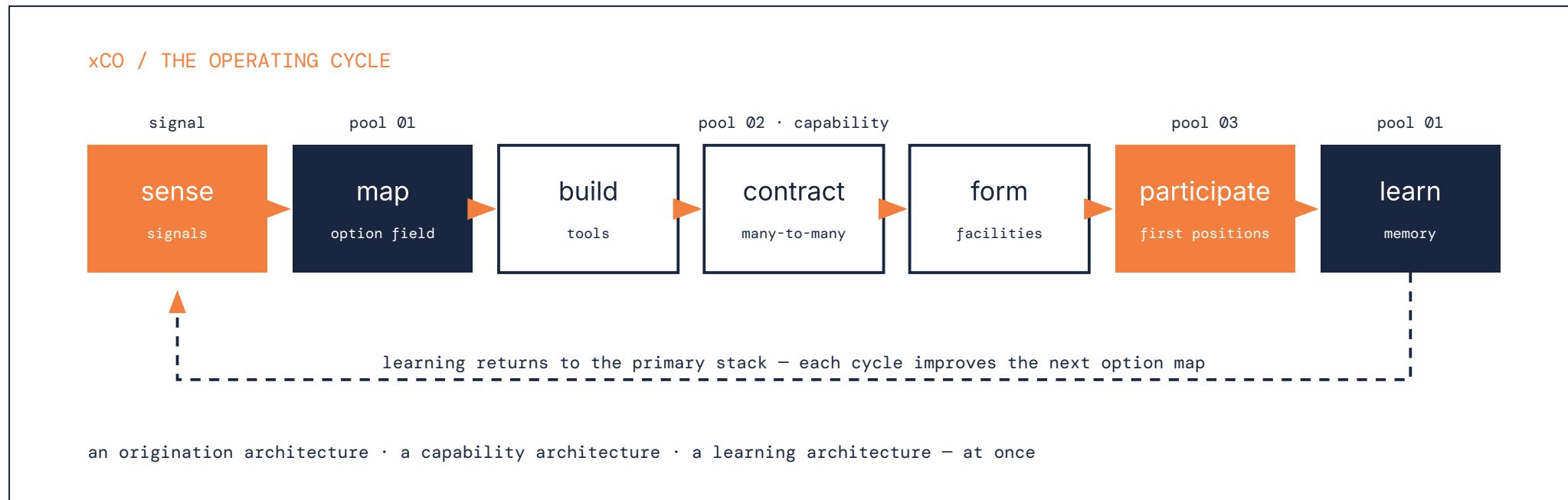
Priority access to eligible opportunities, facilities, instruments and ventures generated through the platform — capital that helps originate the option field stays connected to its economic expression.

LEARNING PARTICIPATION RIGHTS

A claim on the platform's learning capital: risk intelligence, pattern recognition, institutional memory, capability diagnostics — the compounding asset each cycle produces.

This is the structural answer to the mandate's hardest joint — the handoff to later capital. Rights keep early option formation connected to later facility participation, so the stewardship capital is never stranded by its own success.

A fund allocates into assets. xCO creates the conditions under which assets become possible.



Sequence discipline: signals are not assets. Options are not yet facilities. Capabilities are not always companies. Facilities are not always sidecar-eligible. Learning must return to the primary stack.

Three returns, not one blended story.

EXISTENTIAL OPTION RETURN	the primary stack	measured as Optionality Returns : pathway expansion, collapse avoidance, adaptive capacity, capability creation, legitimacy — value in option-space, with financial continuity as one medium, not the protagonist
CAPABILITY RETURN	the builder stack	tools, protocols, contracting systems, sensing infrastructure and financial orchestration that make options executable — plus selected venture or protocol-level upside
FINANCIAL RETURN	the sidecar	direct upside from first positions in platform-originated facilities and ventures — higher risk, early formation exposure

The platform becomes credible because each pool is honest about what kind of value it is designed to produce. The method that prices the first return is field-level investing — pricing field capacity and probability shift, not single assets. **Field-level investing is the method. xCO is the mission.**

Continuity finance: what the platform originates, and what the sidecar participates in.

Extend Value-at-Risk to **Total Value-at-Risk** — the exposure of the whole capital stock, physical, ecological and institutional, to cascading failure — and a new facility family becomes writable: resilience bonds, continuity swaps, parametric civic covers, continuity-linked insurance notes, cooling bonds, and trigger-based pre-funded packages that release *before* an emergency appeal. Insurance evolves from an annual pay-to-play service into temporal underwriting: multi-decade commitments that force honest pricing and direct investment into prevention. Then a loop closes — verified hedging lowers volatility, which lowers the cost of capital, and **stability begins to compound**.

Continuity is not moral virtue; it is the next rational basis of value
— the only asset on which all others depend.

From existential risk to an investable portfolio of response. Five domains, each anchored by live options already underway.

The structure is the same one the public portfolio uses: a **domain** names the risk, a **position** is a pathway of response within it, and an **option** is a concrete intervention in a real place, with a status.

01 · PLANETARY BREAKDOWN	biodiversity preservation, cryosphere stabilisation, marine regeneration	Amazon Optionality Trust · Santiago · Antarctic · North Sea
02 · FAILING TERRITORIES	bioregional regeneration, regenerative agriculture, nutritional sovereignty	Findhorn · Tayside · Muga Valley
03 · UNLIVEABLE CITIES	urban cooling, zero-extraction built environment, three-degree neighbourhoods	Madrid Cooling Coalition · Copenhagen · Birmingham
04 · AUTHORITARIAN FUTURES	civic resilience, legal power & accountability, democratic capacity	Heart Power portfolio (UK) · democracy bond
05 · CRISIS OF BEING HUMAN	human-machine futures, lifelong capability, care, cognitive & media security	cultural systems · the Medici Fund

Live now: the **Madrid Cooling Coalition**, **Findhorn**, and **XO Copenhagen**. In development or scoped: Santiago, the Oceans Continuity Studio, Tirol, Muga Valley, Bangladesh (the solar-mangrove bond), Dartmoor and the African Monetary Lab. **Diffusion potential governs site selection, not urgency alone** — proof that can travel is worth more than proof that stays local. The concrete goal is the *entry point*; the real product is systemic capability; the horizon is civilizational optionality.

The live portfolio, with each option's current status, is maintained at optionality.darkmatterlabs.org.

The Madrid Cooling Coalition.

Delivered through **MOAHR** — the Madrid Outcome Accelerator for Heat Resilience, the first institution xCO seeded.

47–50 °C

PROJECTED EXTREME-HEAT PEAKS BY 2100
(+7 °C)

~7.5 °C

THE COOLING GOAL — THE PORTFOLIO'S
STATED ENTRY POINT

8 → 37

HEATWAVE DAYS PER YEAR, ON CURRENT
TRAJECTORY

3.5 m+

INHABITANTS WHOSE CITY MUST STAY
LIVABLE AND INVESTABLE

Heat puts value at risk for every actor in the city — real estate, health, insurers, utilities, government, citizens — yet no one can act at system level alone. MOAHR is the permanent orchestration layer of a multi-actor **Cooling Coalition**: it offers each actor a different incentive to act, absorbs risk by providing continuity, and opens investable vehicles such as cooling bonds. Every stakeholder exits better: insurers see lower claims, real estate protects value, the municipality keeps its tax base, government caps sovereign risk.

The Santiago Continuity Facility.

One coupled equation: **heat + fire + cryosphere loss + aquifer stress + energy peak + inequality** → **continuity risk**. Six pressures that every institution in the city currently manages separately, priced and held as one field.

-40%	~90 m	7+1
PROJECTED MAIPO BASIN FLOW BY 2070 – THE ANDEAN WATER TOWER ABOVE THE CITY IS FAILING	PEOPLE SERVED BY ANDEAN WATER TOWERS REGION-WIDE	PORTFOLIOS – CRYOSPHERE, AQUIFER, THERMAL COMMONS, FIRE & SMOKE, ENERGY, CIVIC AUTONOMY, SENSING – PLUS AN OPTION DISCIPLINE

The Santiago Continuity Facility invests in the place-continuity field, not in any single asset: eight organs — risk observatory, continuity balance sheet, risk pool, capital pool, outcome contracting, accelerator network, civic autonomy layer, diffusion lab — running one loop:



Beneficiaries pay in as a hard rule: **no contribution, no recognised risk benefit**. Atmospheric intervention is held research-only until attribution, safety, liability and consent tests pass. What travels is the architecture, not the asset list: **proof in place — diffusion by architecture**.

The Oceans Continuity Studio.

The ocean is load-bearing infrastructure for modern civilisation — energy, data cables, food, climate regulation — governed in fragments. Three structural failures compound: **governance is fragmented** across sectors and stops at national jurisdiction; **verification is thin**, so disputes over ecological fact escalate into political ones; and **finance is built for short horizons** and cannot price ecological integrity.

DATA SWIM Index · Multispecies Data Observatory · North Sea Risk Clinics — making marine systems legible enough to argue about.	SOVEREIGNTY Multispecies Diplomacy Project · Doggerland and Whales litigation funds — standing for systems that have none.	GOVERNANCE Bioregional Governance Hub · Transnational Whales Trust — the bodies that can actually hold a decision.	FINANCE Bioregional Financing Facility · Whale Reserve & Development Bank — long-horizon capital priced to ecological integrity.
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Four options: the **North Sea / Doggerlands** pilot (with the Embassy of the North Sea, the Doggerland Foundation, Katapult Ocean and the Bioregional Weaving Lab), **Whale Nation** in active development, and the **Antarctic Sovereignty Initiative** and **Baltic Sea** emerging. Exposure across the eight keystone marine systems runs from ~7 million to ~1 billion people.

A venture studio, not a fund: it builds the missing governance bodies, legal instruments, data infrastructure and financing facilities directly. Full framework: [oceans-portfolio](#).

Prove the grammar before claiming scale.

0-12 MONTHS	maps, taxonomy, proof-field design — including the 12-month Santiago design programme
YEARS 1-2	first demonstrators live (Madrid, Santiago)
YEARS 2-5	facility launch (the fund's stated raise targets: first ~£25 m, then £100 m+)
YEARS 5-10	diffusion by architecture — technology passports to Andean, Mediterranean, Himalayan and fire–water regions

Throughout, one governance duty dominates: **hold the boundary between stewardship and upside**. The primary stack must not become a disguised sidecar; the capability stack must not become a generic venture sleeve; the sidecar must not override the existential mandate. Eligibility, conflicts, and learning-capital rules are named workstreams of the design phase, not afterthoughts.

The programme keeps its own failure register. So does this deck.

- **The non-financial returns are named, not yet measured.** Optionality Returns and "non-direct existential returns" have components but no settled measurement instrument. Until one exists, they risk being a narrative wrapper on ordinary spending.
- **The structure is a design, not a vehicle.** The platform paper marks legal terms, capital amounts, rights mechanics, sidecar mandate, fees, carry, concentration limits and conflict rules as "to be documented" — this deck inherits every one of those open items.
- **The stewardship—upside boundary is the central risk.** A platform that both stewards an option field and runs a returns sidecar on its own origination flow is exposed to self-dealing by construction; the separation rules are the answer on paper, with no track record yet. The sidecar's candour also sits in tension with the corpus's non-extractive framing.
- **The handoff is narrowed, not closed.** Rights and the sidecar connect early capital to the facilities it originates — but the large-scale takeout capital that scales a facility remains outside xCO's control.
- **The proof fields are young, and the corpus holds opposing poles.** Madrid was seeded in 2026; Santiago is a design programme. Cautious and bold stances on atmospheric intervention coexist across the corpus; some figures are illustrative worked examples.

The capability to hold this already exists — and has been practising for fifteen years.

xCO is authored and stewarded from inside **Dark Matter Labs**, which has spent fifteen years building the institutional, legal and financial forms that this portfolio now needs at scale.

CORE TEAM Indy Johar — co-founder, Dark Matter Labs; thesis and doctrine. Malik Lakoubay — co-lead, capital architecture and partnerships. Robyn Bennett — co-lead, portfolio formation.	OPTIONS TEAM The people who build and hold each option in place — option leads across Madrid, Santiago, the Oceans studio and the bioregional portfolio, working alongside local institutions rather than for them.	CAPABILITIES & SUPPORT Shared functions too costly for any single option to recreate: risk modelling and sensing, legal and instrument design, deal construction, verification and learning.
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Beyond the team, an **advisory layer** of allocators, practitioners, lawyers and institutional partners tests the architecture against the standards it will have to meet — and the relationship architecture is deliberately plural: a precision network for technical truth, a legitimacy council, a builder circle and a capital stewards network, each activated rather than permanent.

Full team, roles and profiles: optionality.darkmatterlabs.org.

Each call activates a different form of agency.

CALL 01 · EXISTENTIAL OPTION CAPITAL Hold the option field: pathway sensing, option mapping, learning capital — with first-participation and learning rights. The capacity to hold uncertainty.	CALL 02 · CIVIC CAPABILITY CAPITAL Build the machinery: many-to-many contracting, sensing tools, coordination protocols, financial orchestration, civic startups. The capacity to make options executable.	CALL 03 · FIRST PARTICIPATION CAPITAL Take first positions in platform-originated facilities and ventures — direct financial return, higher risk. The capacity to back what the platform makes investable.
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Two asks are on the table now, at two levels:

EXISTENTIAL CAPITAL, AT XCO LEVEL	Into the platform itself — the capital constitution, the cascade intelligence, and the capacity to form options before any of them is bankable. Call 01, and what makes the rest possible.
OPTIONS ALLOCATION, AT PLACE LEVEL	Each an <i>option</i>, not a project. Madrid — cooling a city, through the Madrid Cooling Coalition. Santiago — cascade stabilisation, beginning with the 12-month Cascade Stabilisation Design Programme. RZ Studio — bioregioning.

To xCO a field is to expand the futures it can still hold. xCO does not buy optionality — xCO expands it.

xCO is incubated at **Dark Matter Labs** – an international non-profit of 70+ people across five offices, fifteen years into redesigning urban, financial and institutional architectures for systemic risk. Contacts (per the xCO programme's 2026 orientation brief): indy@, robyn@ and malik@darkmatterlabs.org.

ProvenanceThis deck is a synthesis generated from Indy's working wiki of ~170 Dark Matter Labs source documents (2024-2026) – chiefly the xCO Capital Platform concept paper (existential option formation, June 2026), the xCO concept paper & core term sheet, the xCO argument journey, the xCO flagship deck, the five-domain portfolio synthesis, the Santiago facility paper, the programme's 2026 core thesis and orientation brief, the capability-fund papers, the Compression of Optionality and Optionality Cascades papers, The Accelerating Under-Hedge, and the MOAHR one-pager. It is an interpretation, not an official Dark Matter Labs document, and not an offer or solicitation of securities; all platform terms remain subject to documentation. Styled with the [xCO design system](#). See also the [corpus overview](#) and [synthesis](#), or return to the [site index](#).

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#FFFFFF. Styled after the xCO embedded-paper family.

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