



# Companion Annex **A**

*Case studies: tokenized insurance, reinsurance and ILS —  
accompanying Catastrophe Bonds and Tokenized Claim  
Infrastructure*

# Companion Annex A

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# Case studies: tokenized insurance, reinsurance and ILS



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This annex catalogues the projects that have brought catastrophe risk, insurance-linked securities, or (re)insurance capital onto a blockchain in some form, from the consortium experiments of 2016 to the tokenized reinsurance vehicles operating in 2026. The cases are numbered A1–A17 for reference and close with a table of conventional, off-chain catastrophe bonds as a benchmark.

Figures are point-in-time, drawn from primary filings, issuer disclosures, trade-press deal records and on-chain data; on-chain values are snapshots taken in mid-2026 and may have moved since. Where a figure is approximate, or a claim cannot be independently confirmed, the text says so in plain words.

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# A1. Allianz Risk Transfer and Nephila Capital – Blockchain Catastrophe Swap

## AT A GLANCE

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CASE	An early bilateral pilot using smart contracts to transact a single natural-catastrophe swap between an insurer and an ILS investor
PRIMARY ENTITIES	Allianz Risk Transfer AG, a wholly-owned subsidiary of Allianz Global Corporate & Specialty SE (AGCS), and Nephila Capital, then the largest dedicated ILS manager; run under Allianz's "Disruptive Technologies" group
DATES AND STATUS	Announced 15 June 2016 as a proof-of-concept; not publicly confirmed to have reached production
JURISDICTION	Allianz (Germany); Nephila (Bermuda) – a bilateral pilot, not a regulated issuance
CHAIN OR LEDGER	A permissioned private ledger, widely reported as Symbiont's "Assembly"; no public chain
INSTRUMENT	A catastrophe swap – a bilateral over-the-counter derivative – not a catastrophe bond
RISK OR PERIL	Natural catastrophe
TRIGGER OR SETTLEMENT MECHANIC	Parametric, against agreed objective thresholds, with self-executing settlement on a triggering event
CAPITAL OR PARTICIPANT TYPE	Bilateral – Allianz Risk Transfer as protection buyer and Nephila as investor
SIZE	No notional, contract count or measured settlement time was published; the headline claim was that settlement could fall from weeks or months to hours
OUTCOME	Reported as a successful proof-of-concept; not publicly confirmed to have been productionized
RELEVANCE TO THE PAPER	The institutional starting point for on-chain catastrophe-risk transfer – leading risk-transfer participants testing whether a risk contract could be made programmable and faster to settle – predating the first on-chain catastrophe-bond settlement in 2017
EVIDENCE LIMITS	The pilot ran on a permissioned private ledger, so the public record comes from company announcements, trade press and related legal/corporate materials rather than public-chain data. No notional amount, contract count or measured settlement time was published. The technology vendor was widely reported as Symbiont, but Allianz did not confirm that attribution

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In June 2016, Allianz Risk Transfer and Nephila Capital reported that they had used smart contracts to transact a single natural-catastrophe swap – a bilateral over-the-counter derivative that transfers catastrophe losses between two counterparties. It is the institutional starting point for on-chain catastrophe-risk transfer, predating the first on-chain settlement of a catastrophe bond in 2017. The instrument was a catastrophe swap rather than a bond; catastrophe bonds were referenced only as a possible future application.

The contract was designed to execute itself. On an event meeting the agreed parametric thresholds, the smart contract would read predefined data sources and determine the payment between the parties, removing several reconciliation and intermediary steps. The data sources and loss-calculation agent were fixed at formation; no specific oracle provider was named, reflecting how early this was for the problem of supplying external data to a contract. The ledger was permissioned and private.

For the paper, the case is the early signal that established catastrophe-risk participants – a major insurer's alternative-risk unit and the largest ILS manager – were willing to test programmable risk-transfer infrastructure. It demonstrates the intended efficiency, faster settlement and reconciliation, rather than any change to the underlying risk model – the pattern the paper traces through later, larger cases.

The public record supports the existence and design of the pilot through company announcements and contemporary trade press. It does not establish production use or quantify the settlement saving: no notional, contract count or measured settlement time was published. The technology vendor was widely reported as Symbiont, whose later Delaware court filings listed catastrophe “smart swaps” among its use cases, although Allianz did not confirm the attribution.

## TIMELINE

- 15 June 2016 — The catastrophe-swap pilot is announced.
- September 2016 — Symbiont publicly demonstrates blockchain catastrophe swaps; Allianz does not confirm the vendor attribution.
- 2017 — The first on-chain settlement of a catastrophe bond, a separate effort, follows.
- 2022–2023 — Symbiont files for bankruptcy; its ledger technology is acquired by Platonic Holdings.

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## A2. B3i – Shared Reinsurance Contract Infrastructure

### AT A GLANCE

CASE	An industry consortium that built shared distributed-ledger infrastructure for placing and administering reinsurance contracts
PRIMARY ENTITIES	B3i (Blockchain Insurance Industry Initiative), incorporated as B3i Services AG (Zürich); founded by Aegon, Allianz, Munich Re, Swiss Re and Zurich; a testing community of around 38 companies and roughly 20 shareholders at its peak
DATES AND STATUS	Founded October 2016; incorporated March 2018; entered insolvency and ceased trading in July 2022 (in liquidation)
JURISDICTION	Switzerland (B3i Services AG, Zürich) – an infrastructure consortium, not a regulated insurer
CHAIN OR LEDGER	Permissioned and private: IBM Hyperledger Fabric (2016–17), then R3 Corda Enterprise from 2018 (platform branded "Fluidity"); no public chain or token
INSTRUMENT	Shared-ledger reinsurance contract placement (flagship Property Catastrophe excess-of-loss, later "B3i Re"); it tokenized the contracting process, not risk or capital
RISK OR PERIL	Property catastrophe (the flagship product); no peril risk was transferred to investors
TRIGGER OR SETTLEMENT MECHANIC	Not applicable – contract-placement and administration infrastructure, not a triggered instrument
CAPITAL OR PARTICIPANT TYPE	Internal to member insurers, reinsurers and brokers; the single binding transaction was between two founding shareholders
SIZE	About \$23 million raised over its life; one confirmed legally binding live transaction
OUTCOME	Ceased trading after entering insolvency proceedings in July 2022; the available record points to insufficient transaction volume and consortium-governance constraints rather than a failure of the underlying ledger technology
RELEVANCE TO THE PAPER	The clearest insurance-sector test of putting market workflow on a shared ledger, and of the difficulty of doing so; it is the process-infrastructure path the paper contrasts with claim and capital tokenization
EVIDENCE LIMITS	The platform was permissioned throughout, so activity is documented through corporate announcements, trade press and the Swiss commercial register rather than public-chain data. This annex uses the confirmed funding record of roughly \$23 million; a higher \$65.2 million figure appears in a venture database but is not used here as the primary figure

B3i launched in October 2016 as a consortium of five large insurers and reinsurers, with the aim of putting the reinsurance contract lifecycle on a shared, immutable ledger so that cedent, broker and reinsurer would always work from one agreed version of a contract. It incorporated as B3i Services AG in March 2018, owned by its competing members, to commercialise the technology, and grew to a testing community of around 38 companies.

The platform built first on IBM's Hyperledger Fabric and, from 2018, on R3 Corda Enterprise, chosen for transaction-level privacy. The flagship application was a Property Catastrophe excess-of-loss placement, later extended as "B3i Re" and packaged into a platform called Fluidity. What the ledger carried was the contracting process – negotiation, contract formation, version control and post-placement administration among cedents, brokers and reinsurers – rather than tokenized risk or capital.

B3i is the most prominent insurance-sector attempt to apply distributed ledgers to market workflow across multiple firms. For the paper, it illustrates why shared-process platforms are hard: they require competing insurers and reinsurers to align on governance, migrate live workflows, and supply enough recurring transaction volume for network effects to take hold. That adoption challenge – not the technology – is the lesson, and it informs the paper's preference for claim- and capital-level tokenization over full workflow reconstruction.

Over six years the consortium produced one publicly confirmed legally binding live transaction: a Property Cat XoL contract between Allianz and Swiss Re, signed in Q1 2022 and announced in April 2022, two of its founding shareholders. The widely reported February-2020 "30 contracts placed" milestone consisted of parallel runs reproducing real renewals rather than operative legal deals. B3i raised roughly \$23 million over its life and entered insolvency about three months after that binding contract. Because the ledger was permissioned throughout, the activity is not visible on a public chain; the public record rests on corporate announcements and the Swiss commercial register.

## TIMELINE

- October 2016 – Founded by Aegon, Allianz, Munich Re, Swiss Re and Zurich on Hyperledger Fabric.
- March 2018 – Incorporated as B3i Services AG, Zürich.
- June 2018 – Re-platforms from Hyperledger Fabric to R3 Corda.
- October 2019 – Property Cat XoL deployed to clients' production environments.
- Q1 2022 (announced April 2022) – First legally binding Cat XoL on a distributed ledger (Allianz and Swiss Re).
- July 2022 – Files for insolvency after failing to close a further funding round.

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## A3. Solidum Partners — Private Catastrophe Bonds Settled Onchain

### AT A GLANCE

CASE	A series of private catastrophe bonds issued and settled on a private permissioned settlement ledger built for Solidum's private ILS placements — reported as the first securities of any kind to settle on a blockchain
PRIMARY ENTITIES	Solidum Partners AG, a Swiss ILS manager (Zürich); issuance through Solidum Re (Guernsey) ICC Limited and its cells (Dom Re, Jungfrau); blockchain work led by Cedric Edmonds, who later founded Replexus
DATES AND STATUS	First on-chain issuance August 2017; last January 2019 (when the cumulative figure was stated); Edmonds left to found Replexus in 2020
JURISDICTION	Switzerland (the manager) and Guernsey (the transformer cells)
CHAIN OR LEDGER	A private, permissioned settlement ledger the firm called the "ILSBlockchain", built on the MultiChain platform (reported as about ten nodes, four in consensus), used for delivery-versus-payment in place of a central depository; the public record comes from disclosures and trade reporting rather than public-chain data
INSTRUMENT	Private catastrophe bonds ("cat bond lite") — securitised collateralised reinsurance notes — with dollar-denominated settlement tokens
RISK OR PERIL	Property catastrophe (US wind; peak-zone and worldwide property catastrophe)
TRIGGER OR SETTLEMENT MECHANIC	Indemnity (Dom Re; Jungfrau 2018) and per-occurrence property catastrophe (Jungfrau 2019); securitised reinsurance notes, not parametric smart contracts
CAPITAL OR PARTICIPANT TYPE	ILS funds and accredited co-investors, identity-vetted and mutually anonymous on the ledger; the first secondary buyer was later identified as the Lombard Odier ILS team
SIZE	\$50.1 million of cumulative issuance across four on-chain deals (2017–2019) — a cumulative issuance figure, not an amount outstanding or fund assets; the individual deals were \$14.8m, about \$15m, \$15m and \$12m
OUTCOME	Four completed issuance cycles, and what Solidum reported as the first securities of any kind to settle on a blockchain; the maturity and loss outcomes of the notes are not stated in the available record
RELEVANCE TO THE PAPER	A direct precedent for tokenized catastrophe-bond infrastructure at the issuance and settlement layer, showing that small private ILS placements can be issued, settled, transferred and registered on a ledger where conventional depository access is costly
EVIDENCE LIMITS	The ledger was private and permissioned, with participant identities controlled off-chain and addresses not publicly attributable. The cumulative and per-deal issuance figures are documented through firm statements and Artemis deal records; the exchange listing and Lombard Odier secondary purchase were independently reported

Solidum Partners creates private catastrophe bonds by securitising collateralised reinsurance and retrocession into transferable notes for its own funds and co-investors. After its private placements lost access to conventional securities settlement, the firm stood up its own permissioned ledger, built on the MultiChain platform — the "ILSBlockchain" — and issued a private catastrophe bond directly onto it, using dollar-denominated settlement tokens to perform delivery-versus-payment without a central depository. The Dom Re 2017 transaction (\$14.8 million, August 2017) is reported as what Solidum believed to be the first securities of any kind — not only the first insurance-linked security — to settle on a blockchain.

The ledger's role was securities infrastructure: issuance, settlement, delivery-versus-payment, transfer and register maintenance for a private ILS market. It did not automate claims. In December 2017 the firm executed the first secondary trade on a blockchain (the buyer later identified as the Lombard Odier ILS team), and across 2017–2019 it settled four catastrophe-bond transactions on the ledger, reaching \$50.1 million of cumulative issuance by January 2019; the Dom Re 2018 note was also the first blockchain-issued ILS to list on an exchange, The International Stock Exchange. Edmonds argued publicly in 2018 that indemnity reinsurance – with its good-faith disclosure, loss adjustment and subrogation – cannot be reduced to binary smart-contract logic, so the design was deliberately narrow: blockchain for settlement, not for replacing the reinsurance contract.

For the paper, Solidum is an early direct demonstration that the funding-side mechanics of a catastrophe bond – issuance, settlement, transfer and registry – can run on a ledger, particularly for small placements where conventional depository access is uneconomic. It also marks the boundary the paper draws: the settlement layer is a good fit for tokenization, while the risk core – the indemnity contract and its claims process – is not.

Because the ledger is private and permissioned, with identities known only to a trustee and addresses not publicly attributable, the public record runs through firm statements and Artemis deal records rather than public-chain data: the \$50.1 million cumulative figure, the per-deal sizes, and the reported architecture (about ten nodes, four in consensus) are documented there rather than on an inspectable chain. The conventional-rails periphery is independently checkable: the Guernsey cells are registered vehicles, and both the Dom Re 2018 exchange listing and the Lombard Odier secondary purchase were independently reported.

## TIMELINE

- 2009–2011 – Edmonds establishes the Guernsey cell structure and the "cat bond lite" private-placement format.
- August 2017 – Dom Re 2017 (\$14.8m): the first securities settled on a blockchain.
- December 2017 – First secondary trade on a blockchain (Lombard Odier ILS team).
- February 2018 – Jungfrau 2018 (about \$15m, seven tranches).
- June 2018 – Dom Re 2018 (\$15m) issued; September 2018 – first blockchain-issued ILS listed on TISE.
- January 2019 – Jungfrau 2019 (\$12m); cumulative on-chain issuance reaches \$50.1m.
- 2020 – Edmonds leaves to found Replexus.

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## A4. Danish Red Cross and Replexus — Volcano Catastrophe Bond

### AT A GLANCE

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CASE	A small humanitarian parametric catastrophe bond covering volcanic-eruption risk, settled on private blockchain infrastructure — the first cat bond to cover pure volcanic risk
PRIMARY ENTITIES	Issued through Dunant Re IC Limited (a Guernsey cell of Replexus, managed by Aon Insurance Managers); sponsored by the Danish Red Cross; structured and placed by Replexus with Howden Capital Markets; modelled by Mitiga Solutions with the Barcelona Supercomputing Centre
DATES AND STATUS	Issued March 2021 (reported June 2021); matured and delisted from TISE on 28 March 2024 (a roughly three-year term)
JURISDICTION	Guernsey (the issuing cell)
CHAIN OR LEDGER	Replexus's private, permissioned "ILSBlockchain," provided by its sister company BloxSys; the public record comes from disclosures and trade reporting rather than public-chain data
INSTRUMENT	A catastrophe bond — Series 2021-1 Class VE principal-at-risk notes
RISK OR PERIL	Volcanic eruption — across ten volcanoes in seven countries, each with at least 700,000 people within 100 km
TRIGGER OR SETTLEMENT MECHANIC	Parametric — volcanic-ash plume height (three thresholds) combined with prevailing wind direction toward populated areas
CAPITAL OR PARTICIPANT TYPE	ILS investors; the named initial holders were Plenum Investments, Schroder Investment Management and Solidum Partners
SIZE	\$3 million — a single issuance
OUTCOME	A completed humanitarian risk-transfer transaction with real third-party capital at risk; matured without a trigger during the term, with principal returned to investors and no renewal identified
RELEVANCE TO THE PAPER	The closest precedent to the paper's sovereign and humanitarian use case — a parametric natural-catastrophe bond with humanitarian sponsorship and blockchain settlement, combining the relevant elements in one transaction
EVIDENCE LIMITS	The settlement ledger is permissioned, so the public record comes from transaction announcements, industry reporting and partner materials rather than public-chain inspection. Those sources report the deal size, covered volcano portfolio, investor group and settlement cost savings of approximately \$200,000–\$400,000 per issuance

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The Danish Red Cross sponsored a \$3 million privately placed catastrophe bond — the first to cover pure volcanic-eruption risk — to pre-fund relief that pays automatically when a qualifying eruption occurs at one of ten covered volcanoes. Replexus and Howden Capital Markets brought it to market through a Guernsey cell, Dunant Re IC Limited, and settled it on Replexus's blockchain platform. It is the clearest continuation of the Solidum settlement model into a structure close to the sovereign and humanitarian use case this paper considers.

Payment is driven by the height of a volcanic-ash plume, across three thresholds, combined with the prevailing wind direction toward vulnerable communities; Mitiga's impact model generates the hazard scenarios that allow rapid, pre-agreed payouts rather than post-event loss adjustment. The notes were settled on the private ILSBlockchain, and real third-party investors — Plenum, Schroder and Solidum — put the \$3 million at risk, within a partnership that also included the Danish Ministry of Foreign Affairs; a 2019 announcement reported a conditional DFID/Global Parametrics option to buy up to \$5m of the notes, but exercise at the March 2021 issuance is unconfirmed.

The case matters because it brought together humanitarian protection, natural-catastrophe risk, a parametric trigger and blockchain-based securities settlement in a single transaction – the combination the paper's funding-side argument turns on. It shows that this structure is buildable today at small scale, with genuine third-party capital, even though it has not yet been done at sovereign size.

Replexus was founded in 2020 by Cedric Edmonds, who previously designed and implemented the ILSBlockchain used in Solidum Re's Dom Re settlement structure. Replexus operates a permissioned settlement platform, so the public record is mainly based on transaction announcements, industry reporting, and partner materials rather than public-chain inspection. Those sources report the deal size, the covered volcano portfolio, the investor group, and settlement cost savings of approximately \$200,000–\$400,000 per issuance. Publicly available materials do not show whether any covered volcano met the relevant plume-height and wind thresholds during the term, and no payout has been reported.

## TIMELINE

- 2020 – Cedric Edmonds founds Replexus and its BloxSys settlement platform.
- March 2021 – The \$3m Danish Red Cross volcano cat bond is issued and settled on the ILSBlockchain.
- June 2021 – Publicly reported as the first volcano cat bond cleared on a blockchain.
- 28 March 2024 – Bond matured and was delisted from TISE; no trigger event during the term; principal returned to investors.

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## A5. Etherisc — Parametric Insurance Protocol

### AT A GLANCE

CASE	An open-source decentralized-insurance protocol on which third parties build live parametric products, with a token used to stake and unlock underwriting capacity
PRIMARY ENTITIES	Etherisc (the "Generic Insurance Framework"), operated through Etherisc GmbH (Munich) and the Decentralized Insurance Foundation (Zug); founders Christoph Mussenbrock and Stephan Karpiscek; licensed fronting partners include Atlas Insurance, Sanasa, Hannover Re and ACRE Africa / APA / Pula
DATES AND STATUS	Founded around 2016; token sale 2018; products shipped 2019–2026; live and ongoing, with a 2025 focus on African agricultural and climate cover
JURISDICTION	Germany and Switzerland; not itself a licensed insurer — every live product runs through a licensed fronting carrier
CHAIN OR LEDGER	Ethereum mainnet and Gnosis Chain (FlightDelay; USDC depeg); Celo (ACRE Africa crop programme, from Feb 2023); Avalanche (via the Lemonade coalition); Polygon supported in the GIF framework
INSTRUMENT	A decentralized parametric-insurance protocol with a staking token (DIP); primary, retail-scale parametric insurance rather than a bond, sidecar or reinsurance vehicle
RISK OR PERIL	Parametric crop, weather and climate cover (catastrophe-adjacent), plus non-catastrophe lines such as flight-delay and a USDC depeg cover
TRIGGER OR SETTLEMENT MECHANIC	Parametric, with automatic payouts driven by index data through Chainlink oracles
CAPITAL OR PARTICIPANT TYPE	Retail and smallholder policyholders (farmers, travellers); capacity providers stake the token; NGO and agency partners (Oxfam, the World Food Programme, ACRE Africa, Pula)
SIZE	Kept distinct: the 2018 token sale raised about \$3.79 million (against a \$30 million cap); the token's market capitalization is now small (a few hundred thousand dollars); per-programme reach is best evidenced by the ACRE Africa crop programme (about 17,000 Kenyan farmers, rising to about 25,000 cumulatively). Other programmes (Sri Lanka, the Lemonade coalition, the WFP Burkina Faso scheme) are separate and should not be summed
OUTCOME	Live and ongoing, with real parametric products and real payouts
RELEVANCE TO THE PAPER	A leading working example of the parametric toolkit — oracle-linked triggers, automated policy logic and digital distribution — operating at retail scale through licensed fronting partners, distinct from capital formation or reinsurance capital
EVIDENCE LIMITS	The live USDC depeg cover's take-up is undisclosed; two proposed crypto-native products (wallet insurance, collateral-protection insurance) were never built; per-programme reach figures belong to different programmes and should not be added together

Etherisc is an open-source protocol — the Generic Insurance Framework — on which managing general agents, NGOs and brokers build parametric insurance products, with a token (DIP) used to stake and unlock underwriting capacity. It is a technology protocol rather than a licensed insurer: every live product is issued through a licensed fronting carrier.

It has shipped multiple live parametric products. Its longest-running is a flight-delay cover, run across several chain generations. Its largest by reach is a Kenyan crop programme with ACRE Africa — about 17,000 farmers at around fifty cents of premium, with documented same-day payouts.

For the paper, Etherisc is the clearest working example of the parametric toolkit — oracle-linked triggers, automated policy logic and digital distribution — operating at retail scale through licensed fronting partners. It demonstrates the surrounding infrastructure that catastrophe-risk products can draw on, rather than a capital-formation or reinsurance-capital structure.

The per-programme figures belong to different programmes and should not be added together; the often-quoted "17,000 farmers" figure is the ACRE programme, not Lemonade's. The live USDC depeg cover's take-up is not disclosed. Two proposed crypto-native products did not materialize — a crypto-wallet insurance, which never went past a 2018 industry survey, and a collateral-protection insurance for crypto lending, a 2018 consortium that stalled before a working product. The 2018 token sale raised about \$3.79 million, and the DIP token's current market capitalization is small.

## TIMELINE

- About 2016 — Founded; first flight-delay application.
- 2018 — Token sale raises about \$3.79 million.
- 2019 — Sri Lanka weather cover (Oxfam, Aon, Sanasa); first payouts later that year.
- 2020 — ACRE Africa Kenyan crop programme launches.
- 2022 — Supplies the engine for Lemonade's climate coalition.
- April 2023 — A USDC depeg cover launches on Ethereum.
- 2025 — Focus shifts to African agricultural and climate cover.

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DIP token `0xc719d010B63E5bbF2C0551872CD5316ED26AcD83` (Ethereum); USDC depeg cover `0xD434aeB7bb2abf66b23A85eD12c2C8F366Df6766` (Ethereum).

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## A6. Lemonade Crypto Climate Coalition — Parametric Crop Insurance

### AT A GLANCE

CASE	A US insurtech's large conventional quota-share reinsurance programme alongside a small on-chain parametric crop-insurance pilot run by its foundation
PRIMARY ENTITIES	Lemonade, Inc. (NYSE: LMND); founders Daniel Schreiber and Shai Wininger. The on-chain effort is a separate vehicle — the Lemonade Foundation's Crypto Climate Coalition
DATES AND STATUS	Lemonade founded 2015; the quota-share programme began at the 2020 IPO and is live; the Crypto Climate Coalition launched March 2022, with one documented Kenya season (2022–23) and no branded activity since 2023
JURISDICTION	A US-regulated insurer, with US carriers, an EU carrier and a Cayman reinsurance captive
CHAIN OR LEDGER	The conventional book is off-chain (SEC-disclosed); the coalition ran on Avalanche, though no public contract addresses were located
INSTRUMENT	A conventional quota-share reinsurance programme (the backbone) and a small on-chain parametric weather DAO (the coalition); neither is a catastrophe bond or tokenized reinsurance capital
RISK OR PERIL	Conventional multi-line insurance with catastrophe excess-of-loss; the coalition covered parametric drought / flood crop risk in Kenya
TRIGGER OR SETTLEMENT MECHANIC	Indemnity for the conventional book; a parametric "area-yield index" for the coalition
CAPITAL OR PARTICIPANT TYPE	Conventional reinsurers led by Hannover Re; the coalition's recipients were African smallholder farmers, paid via mobile money
SIZE	Kept distinct: in-force premium about \$1.24 billion (FY2025); the cession fell in steps — 75% at the 2020 IPO, ~55% from July 2022, ~20% from July 2025 — with Hannover Re the named lead reinsurer; a Hannover Re-only recoverable was not publicly identified (total reinsurance recoverable ~\$167.7m across all counterparties, Q3 2025 10-Q); the coalition pilot enrolled nearly 7,000 farmers at sub-dollar premiums, the number paid and amounts disbursed undisclosed. Pre-IPO venture funding (about \$480 million) and the \$20 million foundation endowment are separate again
OUTCOME	The conventional book is live and ongoing; the coalition is a single documented season, dormant since 2023
RELEVANCE TO THE PAPER	A scale caution — a large conventional reinsurance relationship (with Hannover Re) sits beside a genuine but small on-chain parametric pilot; the on-chain element is a parametric-distribution tool, not capital formation, and the two must not be conflated
EVIDENCE LIMITS	The coalition disclosed sign-up counts, but not payout amounts, the number of farmers paid, or retention. No public contract addresses or token were located for the coalition. Public branded activity is documented for the 2022–23 Kenya season; later references should be kept separate from Etherisc's ACRE programme unless independently confirmed

Lemonade is relevant here on two counts at very different scales. Its (re)insurance backbone is a large proportional quota-share programme in which Hannover Re is the contractually named "lead reinsurer" and largest by exposure; the share of premiums ceded has fallen in steps from 75% at the 2020 IPO to about 20% by 2025 as the company retained more risk. This is a material, ongoing institutional arrangement, fully documented in the company's SEC filings.

Separately, the Lemonade Foundation — an independent nonprofit — launched the Crypto Climate Coalition in March 2022: a parametric crop-insurance DAO on Avalanche using Etherisc smart contracts and Chainlink oracles, with payouts made over mobile money. Its one documented pilot enrolled nearly 7,000 Kenyan farmers in the 2022–23 short-rains season, with an illustrative first policy of \$0.83; payouts were delivered via mobile money (M-Pesa) to farmers' phones — the farmers held no on-chain token — with blockchain settling the process, and the number of farmers paid and the total disbursed were not disclosed. Hannover Re sits on both sides — lead reinsurer to the conventional book and a founding partner of the coalition.

For the paper, the case is mainly a scale caution: the conventional book's billion-dollar premium is off-chain reinsurance and must not be read as blockchain scale, while the on-chain coalition is a small, real parametric-distribution pilot. It illustrates the parametric toolkit reaching smallholders, not tokenized capital or risk transfer.

The pilot was a real but small effort relative to the main book, documented through sign-up counts rather than full operating metrics: payout amounts, the number of farmers actually paid, and retention were not disclosed. No public contract addresses or token were located for the coalition, and branded activity is documented through the 2022–23 season; a later “fifth season” reference is unverified and should be kept separate from Etherisc’s ACRE programme. A July-2025 Kenyan fertilizer-subsidy scheme involving the foundation runs on a conventional, non-crypto stack.

## TIMELINE

- 2015 – Founded; first licensed carrier live later that year.
- July 2020 – IPO; the quota-share programme begins at 75% ceded, with Hannover Re as lead reinsurer.
- March 2022 – The Crypto Climate Coalition launches.
- 2022–23 (announced March 2023) – Kenya short-rains pilot (nearly 7,000 farmers enrolled; number paid undisclosed).
- 2023 onward – Coalition branded activity goes quiet.
- July 2025 – Cession reduced to about 20%; the foundation joins a (non-crypto) Kenyan fertilizer-subsidy scheme.

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## A7. Arbol, dClimate and dRe — Parametric Climate Risk Transfer

### AT A GLANCE

CASE	A set of three related efforts — a climate-data network, a regulated parametric (re)insurer that uses it, and a blockchain parametric-reinsurance pilot — plus a later Ethereum platform
PRIMARY ENTITIES	dClimate Inc. (New York, 2020), a climate-data network; Arbol (founded around 2018; founder Sid Jha), a parametric weather / climate risk-transfer business that uses dClimate's data and has become a regulated (re)insurer; dRe, a parametric-reinsurance pilot Arbol built with The Institutes' RiskStream Collaborative; and Tyche, dClimate's 2026 on-chain platform
DATES AND STATUS	dClimate launched publicly 2021 and pivoted to enterprise climate-AI over 2023–25; Arbol is live and growing; the dRe pilot launched June 2023 and is dormant; dClimate returned to on-chain finance in February 2026 with Tyche
JURISDICTION	dClimate is a US data company, not a carrier; Arbol operates through a Bermuda managing general agent (with SIG Re capacity), a Lloyd's coverholder (lead carrier Beazley) and US carriers (Lilypad; the acquired Centauri)
CHAIN OR LEDGER	dClimate stores data on IPFS (with a conventional fallback) and reached only a Polygon test network for its marketplace; dRe ran on a permissioned consortium ledger; Tyche uses ERC-20 tokens recorded on chain (the public chain is not named in available materials)
INSTRUMENT	A climate-data network; conventional parametric weather / climate (re)insurance; a permissioned parametric-reinsurance pilot (dRe); and an on-chain platform recording catastrophe-reinsurance transactions using ERC-20 tokens (Tyche; the public chain is not named in available materials). A governance token (WTHR) was announced but never publicly launched
RISK OR PERIL	Parametric weather and climate risk, including catastrophe
TRIGGER OR SETTLEMENT MECHANIC	Parametric, index-driven, referencing dClimate / Chainlink data
CAPITAL OR PARTICIPANT TYPE	Corporate and agricultural clients (700-plus) and reinsurers / Lloyd's syndicates; the WTHR token was allocated to 2021 seed investors and never traded
SIZE	Kept distinct: dClimate raised a \$3.5 million seed; Arbol raised a \$7 million Series A and a \$60 million Series B; Arbol's gross written premium grew to about \$250 million in 2023, with more than \$1 billion of cumulative notional risk transferred (a coverage figure, distinct from its similarly sized available capacity); a \$20 million Hurricane Milton payout in 2024 ran through conventional channels, not dRe; Tyche processed about \$20 million of notional in the 2025 hurricane season (a separate figure)
OUTCOME	Arbol is a live, regulated parametric (re)insurer; dClimate has pivoted to enterprise climate-AI; the dRe pilot is dormant; the WTHR token never launched; Tyche is live as of 2026
RELEVANCE TO THE PAPER	Shows the parametric data and trigger layer (dClimate) and a regulated parametric (re)insurer (Arbol) that scaled conventionally, with the on-chain elements (dRe, Tyche) thinner — a clear case for separating on-chain figures from conventional risk-transfer volume
EVIDENCE LIMITS	The headline figures are conventional (re)insurance settled in fiat, not on-chain capital; the two "\$1 billion" references (risk transferred vs available capacity) are different concepts; Tyche's ~\$20m 2025-season notional is separate from the 2024 Milton payout; the WTHR token never launched and the marketplace reached only a test network; there is no DeFi total-value-locked

This entry covers three related efforts that are easily conflated. dClimate is a climate- and weather-data network, spun out of Arbol in 2020 and launched in 2021; by 2025 it had pivoted to an enterprise climate-intelligence model. Arbol is the parametric risk-transfer business that uses dClimate's data for its triggers and has grown into a regulated (re)insurer — a Bermuda managing general agent, a Lloyd's coverholder and, latterly, US carriers. dRe was a parametric-reinsurance pilot Arbol built with The Institutes' RiskStream Collaborative on a permissioned consortium ledger.

The on-chain record is narrower than the conventional risk-transfer business. dClimate's decentralized element was primarily content-addressed data storage on IPFS, with a conventional cloud fallback; dRe automated claim triggering on a permissioned ledger; and Tyche, launched in 2026, records catastrophe-reinsurance transactions on chain using ERC-20 tokens (the public chain is not named in available materials).

For the paper, this set is a clear case of keeping the data and trigger layer and the conventional risk-transfer business distinct from the on-chain layer. Arbol's scale is real but conventional; the blockchain elements are a data-integrity layer (IPFS), a dormant consortium pilot (dRe) and a fresh 2026 platform (Tyche). It supports the point that parametric tooling and data are maturing while on-chain capital remains the smaller, newer part.

The figures should be kept apart: Arbol's premium, notional risk transferred and Hurricane Milton payout are conventional reinsurance figures; Tyche's 2025-season notional is a separate on-chain-platform figure; and the WTHR token was announced but did not publicly launch.

## TIMELINE

- About 2018 – Arbol founded.
- 2020–2021 – dClimate spun out and launched; \$3.5 million seed; Arbol Series A (\$7 million).
- 2023 – Arbol becomes a Lloyd's coverholder; the dRe pilot launches (June); cumulative notional risk transferred passes \$1 billion.
- 2024 – Arbol's \$60 million Series B; 2023 premium reported at \$250 million; a \$20 million Hurricane Milton payout through conventional channels; the Centauri acquisition closes.
- 2025 – dClimate pivots to an enterprise climate-AI model.
- February 2026 – dClimate launches Tyche, recording transactions on chain via ERC-20 tokens (public chain not named).

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## A8. Cerchia — Parametric Direct Risk Transfer

### AT A GLANCE

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CASE	A blockchain marketplace for bilateral, index-triggered parametric risk transfer that executed a handful of real trades before closing
PRIMARY ENTITIES	Cerchia AG (Zug, Switzerland; now in liquidation), which ran "Direct Risk Transfer"; founders Michael Rey and Fabian Buchmann
DATES AND STATUS	Incorporated 2020; executed live trades in 2023; dissolved in 2024 and closed in 2025 after bankruptcy proceedings
JURISDICTION	Switzerland; registered as a technology company, with no financial-regulatory licence found; the product was structured as an over-the-counter derivative, not insurance
CHAIN OR LEDGER	Avalanche in production, after an earlier Zilliqa pilot
INSTRUMENT	An over-the-counter parametric swap / industry-loss-warranty marketplace, built on audited smart contracts
RISK OR PERIL	Natural catastrophe (named-storm wind, earthquake, wildfire, flood), cyber catastrophe and others
TRIGGER OR SETTLEMENT MECHANIC	Industry-loss / parametric, using third-party indices (notably PCS / Verisk)
CAPITAL OR PARTICIPANT TYPE	Bilateral — protection buyers (corporates, insurers, reinsurers) and protection sellers (ILS funds and other investors)
SIZE	Kept distinct: a single CHF 1.3 million seed round (early 2023) was the only capital raised; a stated ambition to source about \$200 million of capacity and a "\$100 billion" Florida figure are a target and an index attachment level, not money raised or held; deal notionals were never disclosed
OUTCOME	Closed after executing a small number of genuine bilateral parametric trades in 2023; no payouts have been reported
RELEVANCE TO THE PAPER	An example of real bilateral parametric trades executed through a blockchain marketplace, but without a scaled live-capital on-chain pool — evidence of feasibility at the contract level and of the difficulty of building investor-capital scale
EVIDENCE LIMITS	The collateral tokens deployed on Avalanche were test tokens, so the public token artifacts do not evidence pooled live capital and the 2023 trades appear to have settled bilaterally or off-chain; the planned governance token was never issued; deal notionals were not disclosed

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Cerchia was a Swiss seed-stage venture that ran "Direct Risk Transfer," a blockchain marketplace pairing protection buyers with capital providers for parametric, index-triggered risk transfer. By its own documentation the product was an over-the-counter derivative — typically an industry-loss warranty — rather than insurance, which let it operate as a technology platform rather than a licensed carrier. It built genuine, audited smart contracts and executed a handful of real bilateral parametric trades in 2023, on industry-loss triggers from third-party indices.

The marketplace paired a protection buyer and a protection seller around an index-triggered contract, with collateral intended to sit in tokenized US Treasuries. In 2023 it executed three or four genuine bilateral parametric trades — a Florida named-storm wind warranty, a cyber warranty and a California wildfire warranty — referencing third-party indices such as PCS / Verisk.

For the paper, Cerchia is evidence that bilateral parametric risk transfer can be contracted through a blockchain marketplace. Its live trades show contract-level feasibility; its public record does not show a scaled pooled-capital model.

The public on-chain artifacts do not evidence a scaled live-capital pool. The collateral tokens deployed on Avalanche appear to have been test or demonstration tokens, and the 2023 trades appear to have settled bilaterally or off-chain. The planned governance token was not issued, deal notionals were not disclosed, and the company later entered liquidation and bankruptcy proceedings.

## TIMELINE

- 2020 – Incorporated in Zug.
- 2021 – A Singapore air-pollution parametric pilot on Zilliqa.
- January 2023 – A CHF 1.3 million seed round.
- September–November 2023 – Live trades: a Florida named-storm wind warranty, a cyber warranty and a California wildfire warranty.
- 2024–2025 – Dissolved, then bankruptcy closed for lack of assets.

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## A9. Oxbridge Re and SurancePlus — Tokenized Catastrophe-Reinsurance Sidecars

### AT A GLANCE

CASE	Tokenized participation in collateralized property-catastrophe reinsurance sidecar exposure
PRIMARY ENTITIES	SurancePlus Inc., an approximately 80%-owned subsidiary of Oxbridge Re Holdings (NASDAQ: OXBR); Oxbridge Re NS as the reinsurance sidecar; Oxbridge Reinsurance Limited as the licensed Cayman reinsurer
DATES AND STATUS	First tokenized tranche launched in March 2023; programme remains active, with 2026 offerings announced or open as of the mid-2026 snapshot
JURISDICTION	British Virgin Islands issuer; Cayman sidecar and reinsurer; NASDAQ-listed, SEC-reporting parent
CHAIN OR LEDGER	Avalanche C-Chain for the 2023–2025 tranches; Solana for the 2026 series
INSTRUMENT	Tokenized reinsurance sidecar securities, structured as participation or preferred-share interests in collateralized reinsurance exposure
RISK OR PERIL	Property catastrophe, primarily US Gulf Coast and Florida hurricane
TRIGGER OR SETTLEMENT MECHANIC	Indemnity excess-of-loss reinsurance, occurrence basis, fully collateralized; not parametric
CAPITAL OR PARTICIPANT TYPE	Accredited US and non-US investors, with parent-company participation in later tranches
SIZE	Approximately \$8.94 million gross raised across DeltaCat, EpsilonCat, ZetaCat and EtaCat; roughly \$2.76 million of that gross came from third parties
OUTCOME	DeltaCat matured loss-free and paid 49.11%; EpsilonCat was impaired by Hurricane Milton and produced a full-limit loss for external holders; later tranches remain active or open
RELEVANCE TO THE PAPER	One of the clearest examples of tokenized investor participation in real catastrophe-reinsurance economics, including both a profitable tranche and a loss-affected tranche
EVIDENCE LIMITS	The economics are visible through SEC filings and company disclosures. Public token-contract identifiers for the tranches were not located, so the controlling public record is the SEC filing record rather than public token-contract data

SurancePlus provides one of the clearest completed-cycle examples of tokenized catastrophe-reinsurance participation. The programme gives investors tokenized exposure to collateralized property-catastrophe reinsurance written through the Oxbridge Re group's sidecar structure. Unlike many tokenized insurance examples, this is not only a demonstration of issuance mechanics. The tranches have produced both a profitable maturity and a loss-affected outcome.

The programme began with DeltaCat Re in 2023, followed by EpsilonCat Re in 2024 and ZetaCat and EtaCat in 2025. In 2026, the group announced additional Solana-based offerings, including HCI Re 2026 and the T20/T42 2027 series. The core economic structure is straightforward: investors subscribe for tokenized securities, proceeds are routed into the sidecar structure, and the capital collateralizes property-catastrophe reinsurance exposure. Tokenholders participate in returns where the reinsurance performs and bear loss where the covered contracts are impaired.

The strongest evidence point is the completed loss cycle. DeltaCat Re matured loss-free and paid 49.11%, above its original 42% target. EpsilonCat Re was then affected by Hurricane Milton in October 2024 and took a full-limit loss. EpsilonCat Re incurred a full-limit loss of approximately \$2.3 million on the underlying reinsurance contract; external tokenholders bore approximately \$1.18 million of that loss. For this paper, that makes the case important: tokenized participation was attached to actual catastrophe-risk economics, and investors experienced both upside and loss.

The capital base should be read carefully. Across DeltaCat, EpsilonCat, ZetaCat and EtaCat, gross raised was approximately \$8.94 million, but only about \$2.76 million came from third parties, distributed unevenly: ~\$1.28m (DeltaCat), ~\$1.47m (EpsilonCat), ~\$10,000 (ZetaCat and EtaCat combined). Later tranches included substantial parent-company participation, including the 2025 ZetaCat and EtaCat raise, which was funded almost entirely by the parent. The programme therefore demonstrates real tokenized catastrophe-reinsurance participation, but not yet broad third-party distribution at scale.

The verifiable record is strongest in the parent company's SEC filings. The tranches were private placements with subscription documentation, transfer-agent arrangements, and parent-company reporting through 8-K, 10-K and 10-Q filings. The blockchain layer is less transparent in the public record. The 2023–2025 tranches were issued on Avalanche and the 2026 series moved to Solana, but public token-contract addresses were not disclosed for the tranches. The case is therefore best treated as an SEC-verifiable tokenized securities programme, rather than as a fully open public-chain case.

## EVIDENCE NOTE

The parent company's SEC filings are the controlling public record for ownership, tranche economics, tokenholder liabilities and loss outcomes. Company materials describe the instruments as tokenized, and the chain migration from Avalanche to Solana is disclosed, but no public token-contract identifiers were located for the 2023–2025 tranches. One ownership detail should be kept in the evidence note rather than the case summary: SurancePlus is described on some public materials as wholly owned, while the parent's filings describe it as approximately 80%-owned with a minority interest.

## TIMELINE

- 2013–2014 — Oxbridge Re Holdings is organized and later listed on NASDAQ.
- 2018 — A predecessor Oxbridge Re NS tranche is wiped out by Hurricane Michael and the California wildfires.
- December 2022 — SurancePlus is incorporated in the British Virgin Islands.
- March–June 2023 — DeltaCat Re raises \$2,447,760.
- March–July 2024 — EpsilonCat Re launches and raises \$2,878,048.
- June 2024 — DeltaCat Re matures loss-free and pays 49.11%.
- October 2024 — Hurricane Milton strikes contracts underlying EpsilonCat Re, producing a full-limit loss.
- March 2025 — ZetaCat and EtaCat are announced and raise \$3,611,910, with almost all capital coming from the parent.
- February 2026 — T20-2027 and T42-2027 announced on Solana via Alphaledger, subscriptions open.
- June 2026 — HCI Re 2026 Series A/B/C launches on Solana, with Fortex Re / HCI Group as cedant.

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## A10. Schrodgers Capital and Hannover Re — Tokenized Quota-Share ILS Vaults

### AT A GLANCE

CASE	Tokenized quota-share / ILS vault mechanics applied to an established reinsurance capital model, through a 2024 institutional proof of concept and a later live mainnet vault
PRIMARY ENTITIES	Schrodgers Capital and Hannover Re (the institutional participants); ILS One, the technology layer, built by i.AM Innovation Lab AG; Archax provided regulated brokerage, tokenization and custody for the 2024 proof of concept
DATES AND STATUS	The Schrodgers Capital / Hannover Re proof of concept was announced in 2024; a later Ethereum mainnet vault, KQ-26, was deployed in February 2026 and was in subscription stage at the mid-2026 snapshot
JURISDICTION	Schrodgers Capital and Hannover Re as the named institutional participants; Archax is FCA-regulated (UK); i.AM Innovation Lab AG is a Swiss technology provider
CHAIN OR LEDGER	Ethereum mainnet for the observed KQ-26 vault, with Sepolia used for staging
INSTRUMENT	Tokenized reinsurance quota-share / ILS vault — a permissioned, whitelist-gated token issued from a deal-specific vault contract
RISK OR PERIL	Property-catastrophe / reinsurance catastrophe risk; the observed 2026 vault is named "ILS k-Quota Share 2026"
TRIGGER OR SETTLEMENT MECHANIC	Quota-share profit-and-loss settlement through the vault; not a parametric catastrophe bond
CAPITAL OR PARTICIPANT TYPE	Institutional, whitelisted investor structure
SIZE	The KQ-26 vault recorded \$10,206,000 of Circle USDC subscriptions against a \$30,600,000 target — subscription and target figures, not final completed capacity
OUTCOME	Demonstrates live mainnet subscription mechanics for a tokenized ILS-style vault; a separate test vault completed a full lifecycle
RELEVANCE TO THE PAPER	Applies tokenized quota-share / ILS vault mechanics to an established reinsurance capital model, with two named institutional participants — a concrete step toward tokenized investor participation in reinsurance capital
EVIDENCE LIMITS	No public on-chain identifiers were published for the 2024 proof of concept; KQ-26 is separately inspectable but should be read as a mainnet deployment in subscription stage rather than the 2024 proof-of-concept's full lifecycle. Public-chain data verifies the visible subscription and token movements, while investor identity, final risk transfer and off-chain collateralization remain governed by the permissioned/off-chain structure

Schrodgers Capital and Hannover Re — a major ILS manager and a leading reinsurer — ran a 2024 tokenized-ILS proof of concept testing how an insurance-linked-securities quota-share workflow could be represented and serviced through tokenized infrastructure. The technology layer was ILS One, built by i.AM Innovation Lab, with Archax providing regulated brokerage, tokenization and custody. This is the institutionally important reference point; ILS One is the platform behind the proof of concept rather than the sponsor of the transaction.

The structure issues a permissioned, whitelist-gated token from a deal-specific vault contract, with quota-share profit-and-loss settled through the vault. The 2024 proof of concept was a named institutional trial, but no public on-chain identifiers were published for it, so it cannot be independently traced on a block explorer. A later Ethereum mainnet deployment, KQ-26, provides a separate inspectable example of the vault mechanics: it recorded \$10,206,000 of Circle USDC subscriptions against a \$30,600,000 target and shows how subscription, token issuance, whitelisting, collateral routing and administrator-controlled settlement can be implemented on-chain. A separate test vault completed a full lifecycle, indicating the mechanics can operate end to end.

For the paper, the case applies tokenized quota-share / ILS vault mechanics to an established reinsurance capital model, with two named institutional participants. It is among the clearest signs that conventional reinsurance capital can enter tokenized form through existing institutional channels, on the funding side rather than at the risk core.

## EVIDENCE NOTE

No public on-chain identifiers were located for the 2024 Schrodgers Capital / Hannover Re proof of concept. KQ-26 is separately inspectable on Ethereum and recorded \$10,206,000 of USDC subscriptions against a \$30,600,000 target; at the snapshot date it remained in subscription stage. Public-chain data verifies the visible subscription and token movements, while investor identity, final risk transfer and off-chain collateralization remain governed by the permissioned/off-chain structure.

## TIMELINE

- 2024 – Schrodgers Capital and Hannover Re announce a tokenized-ILS proof of concept on the ILS One stack (Archax brokerage and custody).
- February 2026 – The KQ-26 ("ILS k-Quota Share 2026") mainnet vault is deployed on Ethereum.
- Mid-2026 (snapshot) – KQ-26 records \$10,206,000 of USDC subscriptions against a \$30,600,000 target, in subscription stage; a separate test vault completes a full lifecycle.

## SOURCES

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3. The settlement asset and yield routing (mainnet via Etherscan) – Circle USDC ``0xA0b86991c6218b36c1d19D4a2e9Eb0cE3606eB48``, <https://etherscan.io/token/0xA0b86991c6218b36c1d19D4a2e9Eb0cE3606eB48>; the "KQS USD Fund" yield token ``0x6238993291d9b483004d759a88e4d8894db6b141``, <https://etherscan.io/token/0x6238993291d9b483004d759a88e4d8894db6b141>; and the yield provider ``0xd8b873e7a2b5ec71c90651ae13f581abe67718de``, <https://etherscan.io/address/0xd8b873e7a2b5ec71c90651ae13f581abe67718de>
4. The closed "ILS-PROD-Test" vault evidencing a completed lifecycle (phase 3, paused, supply 0) ``0x2dc14c99d2a2bb0d4137478380a298a1baa9d588``, <https://etherscan.io/address/0x2dc14c99d2a2bb0d4137478380a298a1baa9d588>
5. Testnet staging on Sepolia via Etherscan/Blockscout/public RPC – the roughly 41 staging deal vaults and the Mock USDC ``0x1c7D4B196Cb0C7B01d743Fbc6116a902379C7238``, <https://sepolia.etherscan.io/address/0x1c7D4B196Cb0C7B01d743Fbc6116a902379C7238>
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## KEY IDENTIFIERS

KQ-26 vault ``0x66417f0f2e00bc4e7df164b0ae0b3a41a68bc76d``; settlement asset Circle USDC ``0xA0b86991c6218b36c1d19D4a2e9Eb0cE3606eB48``.

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## A11. MembersCap — Tokenized Reinsurance Fund

### AT A GLANCE

CASE	Tokenized fund-share access to a conventional collateralized reinsurance / ILS portfolio, issued as a regulated digital security across several public chains
PRIMARY ENTITIES	Members Capital Management ("MembersCap"), a Bermuda investment manager founded 2024; CIO Dr. Ben Fox (formerly Hiscox ILS, Ontario Teachers' Pension Plan and the World Bank's cat-bond / disaster-risk team); the fund is MCM Fund I, the "Tokenized Global Reinsurance Income Fund"
DATES AND STATUS	Incorporated 2024; portfolio deployed and listed mid-2025; live on a further chain February 2026; live and ongoing
JURISDICTION	Bermuda — a Monetary Authority-regulated Class B investment manager (not a licensed (re)insurer)
CHAIN OR LEDGER	The fund share is tokenized on Solana, Aptos, Cardano and Base, with on-chain net-asset-value published via the Pyth oracle network
INSTRUMENT	A tokenized reinsurance / ILS fund share, issued as a regulated digital security through Archax over a conventional collateralized reinsurance portfolio; the blockchain touches the fund share, not the underwriting
RISK OR PERIL	Natural-catastrophe and cyber reinsurance (cyber about 30% at launch), written at the remote "top of the tower"
TRIGGER OR SETTLEMENT MECHANIC	Conventional collateralized reinsurance (indemnity / modelled quota-share); parametric is flagged only as a future possibility
CAPITAL OR PARTICIPANT TYPE	Accredited and qualified investors (digital-asset allocators and smaller traditional allocators); the underlying cedents are global reinsurers and Lloyd's syndicates, not named
SIZE	Kept distinct: the fund's assets under management, capacity and fees are not disclosed; per-investor terms are a \$50,000 minimum (per the CIO; other sources cite higher) and a 9-12% net return target
OUTCOME	Live and under a year old, with no claims experience yet — a genuine tokenized fund share over a conventional portfolio
RELEVANCE TO THE PAPER	A direct example of the funding-side thesis: tokenized fund-share access opening a reinsurance / ILS portfolio (historically gated behind ~\$100m institutional minimums) to digital-asset and smaller traditional allocators, with the blockchain at the ownership and servicing layer
EVIDENCE LIMITS	The fund's assets, capacity, fees and cedents are undisclosed; the token's contract addresses and holdings surface through Archax's qualified-investor onboarding rather than open explorers; there is no claims experience yet

MembersCap is a Bermuda investment manager that builds a conventional collateralized reinsurance and insurance-linked-securities portfolio and wraps investor access to it in a tokenized, multi-chain fund share. The aim is to open an asset class historically gated behind roughly \$100 million institutional minimums to digital-asset allocators and to smaller traditional investors. Its chief investment officer brings insurance-linked-securities pedigree from Hiscox, Ontario Teachers' and the World Bank.

The risk transfer is traditional collateralized reinsurance, and the blockchain touches ownership, subscription, settlement and net-asset-value publication rather than the underwriting. The fund interest is issued as a regulated digital security through Archax, with Coinbase custody and Apex fund administration, and is live across several public chains, with on-chain net-asset-value via the Pyth oracle network.

For the paper, MembersCap is a clean example of the funding-side opportunity: a tokenized fund share that widens access to reinsurance and ILS returns for capital that already operates through digital custody, while leaving the underwriting and the risk core conventional. It is investor-access and capital-formation infrastructure, not a tokenized bond or sidecar.

Sizing remains limited by the disclosed public information: the fund's assets, capacity, fees and cedents are not publicly disclosed, and token access appears to surface through Archax's qualified-investor onboarding rather than open explorer visibility. The fund is live but still young, with no public claims experience yet.

## TIMELINE

- 2024 — Members Capital Management incorporated in Bermuda; Class B investment-manager licence.
- July 2025 — MCM Fund I's portfolio deployed and listed on Archax.
- September 2025 — First private fund manager to transact on the London Stock Exchange Group's digital markets infrastructure.
- February 2026 — The fund goes live on Aptos, with on-chain net-asset-value via Pyth.

## SOURCES

(The MembersCap research dossier did not capture direct URLs; the references below are cited in full so each can be located, but most are not one-click links.)

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9. Direct checks of a16z, Crunchbase and PitchBook — the basis for the negative finding of no venture funding into the manager and no a16z link; figures attributed to MembersCap rather than its blockchain-foundation backers. <https://a16z.com> (Crunchbase and PitchBook checked directly; no public MembersCap-a16z funding link found)

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## A12. Re.xyz — Onchain Reinsurance Capital

### AT A GLANCE

CASE	A marketplace that channels stablecoin capital into fully collateralized reinsurance written by a licensed reinsurer — on-chain reinsurance capital, deliberately in non-catastrophe lines
PRIMARY ENTITIES	Re (re.xyz), founded 2022 (San Francisco), incubated by Tribe Capital; founder and CEO Karn Saroya; protocol operated by the Resilience Foundation (Cayman); licensed reinsurer Cover Re (Cover Reinsurance SPC, Ltd., Cayman)
DATES AND STATUS	Founded 2022; the senior token (reUSD) came on-chain 12 June 2025; an Avalanche expansion was announced August 2025; live and ongoing. A governance token was announced May 2026 but had not launched at the snapshot
JURISDICTION	Cayman — Cover Re SPC, regulated by CIMA (Class B(iii), per trade press) and US-taxpaying under section 953(d)
CHAIN OR LEDGER	Ethereum holds about 99.5% of assets; the senior token is also issued on Avalanche, Arbitrum, Base, BNB, Ink and Katana, the junior token on Ethereum only; the cross-chain bridge moved from LayerZero to Chainlink's CCIP around May 2026
INSTRUMENT	Tokenized reinsurance capital — quota-share and excess-of-loss treaties funded through a senior yield token (reUSD) and a junior, first-loss token (reUSDe); not a bond and not a catastrophe sidecar
RISK OR PERIL	Deliberately non-catastrophe — US property-and-casualty casualty / specialty lines (commercial auto, general and professional liability, commercial property, workers' compensation, umbrella / excess, homeowners, personal auto)
TRIGGER OR SETTLEMENT MECHANIC	Indemnity quota-share and excess-of-loss treaties; not parametric
CAPITAL OR PARTICIPANT TYPE	Crypto-native stablecoin depositors (about 4,000 capital providers) alongside institutional capital, including a \$15 million allocation from Nexus Mutual; the ceding insurers are 30-plus US partners, not individually named
SIZE	Kept distinct: venture equity \$21 million (\$14m seed 2022, \$7m 2024); protocol assets about \$256 million as of mid-June 2026, down from about \$475 million cited in early May; premiums written about \$409 million inception-to-date and \$226 million in 2026 to date; authorized capacity for the January 2026 renewals \$134 million; token market caps about \$166 million (reUSD) and \$19 million (reUSDe)
OUTCOME	Live and ongoing, writing material US reinsurance with capital genuinely at risk; no redemption-driven loss of peg has been observed
RELEVANCE TO THE PAPER	The clearest on-chain reinsurance-capital base in the survey — stablecoin capital funding licensed reinsurance through tokenized senior / junior tranches — but in casualty / specialty rather than catastrophe, so it informs the capital-formation thesis without being a cat-bond case
EVIDENCE LIMITS	Named cedents, brokers and specific treaties are confidential; the production smart contracts are not open-source; headline premium and capacity figures are company-reported; the on-chain-assets figure varies by definition (a ~\$256m oracle-visible measure vs a ~\$475m figure including off-chain reserves), and a "\$1 billion" headline combined three unrelated protocols and is not Re's reinsurance capital

Re channels stablecoin capital into fully collateralized reinsurance written by a licensed reinsurer. Depositors stake stablecoins for a yield-bearing token; that capital is held as admitted collateral in US Regulation-114 trust accounts and supports real quota-share and excess-of-loss treaties written by Cover Re, a CIMA-regulated Cayman reinsurer.

Two features set it apart in this survey. Its underwriting metrics distinguish it from a pure crypto-yield product: Re reports about \$409 million of premiums inception-to-date across roughly 48 programmes in 49 US states, with more than 30 insurance partners. And the risk it carries is deliberately US casualty and property-and-casualty, not catastrophe: it is a peer on-chain reinsurer rather than a cat-bond issuer.

The capital sits in two tranches. Losses fall first on the reinsurer's own equity, then on the junior reUSDe holders, and only in extreme scenarios on the senior reUSD. Yield is blended — a risk-free rate on deployed capital, basis-trade yield from Ethena's sUSDe on idle capital, a tranche spread, and underwriting premium — with the junior tranche targeting roughly 15–23% and the senior 6–10%. Idle funds sit in a Fireblocks vault with daily reserve attestation published through a Chainlink proof-of-reserve feed; on a reinsurer draw, capital moves into the Regulation-114 trust at about 110% collateralization.

For the paper, Re is the clearest example of stablecoin capital forming a real reinsurance-capital base through tokenized tranches. It is an on-chain reinsurer rather than a catastrophe-bond or sidecar case, so it informs the capital-formation thesis on the funding side without being a catastrophe instrument.

Re's figures span several categories that should not be combined. It has raised \$21 million of venture equity. Its oracle-visible on-chain assets were about \$256 million in mid-June 2026, while a higher figure cited earlier included off-chain reserves. Premiums written measure underwriting volume rather than capital; authorized capacity for the January 2026 renewals was \$134 million; and token market capitalization is a separate market measure. A roughly \$1 billion cross-protocol headline should not be read as Re's standalone reinsurance capital.

On the evidence, the token contracts, on-chain assets and proof-of-reserve feed are publicly inspectable, and a 2024 Hacken audit is on the record. What is not disclosed is the underwriting substance: named cedents, brokers and specific treaties are confidential, the production smart contracts are not open-source, and the headline premium and capacity figures are company-reported.

## TIMELINE

- 2022 — Re founded in San Francisco, incubated by Tribe Capital; \$14m seed (September 2022).
- May 2024 — \$7m round led by Electric Capital; a tokenized reinsurance fund on Avalanche takes a \$15m allocation from Nexus Mutual.
- August 2024 — Hacken audit.
- April 2025 — Ethena partnership (a \$50m sUSDe cap, up to 23% yield).
- 12 June 2025 — reUSD on-chain inception. August 2025 — Avalanche expansion announced.
- December 2025 — Re reports 2025 premiums of \$168.8 million.
- April 2026 — A \$100 million surplus note is placed into Cover Re.
- May 2026 — Bridge migrates to Chainlink CCIP; a governance token is announced.
- Mid-June 2026 (snapshot) — On-chain assets about \$256 million; token market caps \$166m and \$19m.

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## KEY IDENTIFIERS

senior token reUSD `0x5086bf358635B81D8C47C66d1C8b9E567Db70c72` (Ethereum); junior token reUSDe `0xdC0f880ff6e4e22E4B74632fBb43Ce4DF6cCC5a` (Ethereum); operator Resilience Foundation and reinsurer Cover Reinsurance SPC, Ltd. (both Cayman).

## A13. OnRe (formerly Nayms) — Industry-Loss Warranties

### AT A GLANCE

CASE	The first crypto-denominated industry-loss warranties (Nayms era), and the platform's later rebrand to a Solana structured-yield reinsurance product (OnRe)
PRIMARY ENTITIES	Nayms, an institutional Bermuda-regulated marketplace for tokenized (re)insurance, rebranded around May 2025 to OnRe; CEO Dan Roberts; OnRe's backers include Ethena, Solana Ventures / Foundation and RockawayX
DATES AND STATUS	By April 2023 Nayms had raised about \$12 million of cumulative corporate capital (seed Jan 2021, Series A Jun 2021, token sale Apr 2023); it issued two industry-loss warranties (July 2023 and January 2024), both of which expired at end-2024; it rebranded to OnRe in May 2025. Live and ongoing
JURISDICTION	Bermuda Monetary Authority — a Segregated Accounts Company holding insurance and digital-asset business licences
CHAIN OR LEDGER	Nayms ran on an EIP-2535 "diamond" contract on Ethereum and Base; OnRe runs on Solana
INSTRUMENT	Industry-loss warranties — crypto-denominated retrocession (Nayms); a tokenized, sUSDe-backed structured-yield product (OnRe)
RISK OR PERIL	Natural catastrophe for the two warranties (US named windstorm; Florida named windstorm); the live OnRe product is a crypto-native structured-yield instrument
TRIGGER OR SETTLEMENT MECHANIC	Industry loss — the 2023 warranty attached above \$60 billion of industry loss; the 2024 warranty required two separate Florida windstorms each above \$10 billion
CAPITAL OR PARTICIPANT TYPE	Institutional capital providers held within the permissioned diamond; the 2023 warranty's cedent was Prospero Re (Resolute Global Partners), placed by Guy Carpenter
SIZE	Kept distinct: the warranty notionals were never disclosed; the trigger levels (\$60bn, \$10bn) are industry-loss thresholds, not deal sizes; the often-cited ~\$12 million is the total corporate capital Nayms raised, not a deal; the OnRe yield token (ONyc) traded near \$1.10, market cap in the range ~\$167-\$188 million across mid-2026 (ATH 15 June 2026); the governance token (NAYM) has about 5,529 holders against a one-billion supply
OUTCOME	Both warranties ran a full cycle and expired without breaching their triggers; OnRe is live and ongoing
RELEVANCE TO THE PAPER	The clearest example of crypto-denominated industry-loss warranties — catastrophe retrocession placed through conventional broker / cedent channels but collateralized and settled on-chain — a tokenized catastrophe-risk participation that ran a full cycle
EVIDENCE LIMITS	The warranty notionals were never disclosed and cannot be reconstructed on-chain (the "diamond" holds an internal ledger with no per-deal token address, and pooled USDC is not separable per cell); deal sizes should not be inferred from trigger levels or market-size figures; an "independently audited" claim for the Ethereum diamond could not be substantiated (located audits cover the separate Solana application); OnRe is a new product and team, not a continuation of the on-chain warranties

Nayms was an institutional, Bermuda-regulated marketplace for tokenized (re)insurance. Its signature transactions were the first crypto-denominated industry-loss warranties — reinsurance whose payout is keyed to an industry-wide catastrophe loss rather than a single cedent's losses — with collateral denominated in USDC and held in a Bermuda segregated account.

The first, in July 2023, was a US named-windstorm retrocession attaching above \$60 billion of industry loss; its cedent was Prospero Re, part of Resolute Global Partners, and it was placed by Guy Carpenter. The second, in January 2024 and the first product on Nayms' new Base marketplace, covered Florida named windstorm and required two separate storms each to cause more than \$10 billion of insured damage in the state. Both ran to expiry, and off-chain catastrophe data confirms neither trigger was breached, so neither paid out. Around May 2025 the business rebranded to OnRe and moved to Solana, where its product is a structured-yield pool backed by Ethena's sUSDe, issuing a yield token (ONyc) and a separate revenue token — a new product rather than a continuation of the on-chain warranties.

For the paper, the Nayms warranties are the clearest example of tokenized catastrophe-risk participation that ran a complete cycle: real catastrophe retrocession, placed through conventional broker and cedent channels, with collateral held and settled on-chain. The later OnRe rebrand marks a shift toward a crypto-native yield product, which is further from the catastrophe-risk-transfer use case.

The notionals of the two warranties were not disclosed and no public per-cell token address or segregated on-chain collateral record was located. Nayms used a single diamond contract with an internal ledger, so pooled USDC collateral is not separable by warranty from public-chain data. The often-cited ~\$12 million figure is corporate capital raised by Nayms, not the size of either warranty, and deal size should not be inferred from the trigger levels. What can be verified is the periphery: the Bermuda licences, the named cedent and broker on the 2023 deal, the public governance token (NAYM, about 5,529 holders on Base) and the OnRe yield token on Solana. An audit claim for the Ethereum diamond was not confirmed in the public materials reviewed; the located audits relate to the later Solana application.

## TIMELINE

- By April 2023 – cumulative corporate capital ~\$12m across a seed (Jan 2021), Series A (Jun 2021) and a token sale (Apr 2023).
- July 2023 – First crypto-denominated industry-loss warranty (US named windstorm, \$60bn attachment; cedent Prospero Re; broker Guy Carpenter).
- January 2024 – Florida dual-windstorm warranty launched on Base.
- October 2024 – NAYM governance token public sale.
- End-2024 – Both warranties expire without breaching their triggers.
- May 2025 – Rebrand to OnRe; Solana structured-yield product launched.
- Mid-2026 (snapshot) – NAYM about 5,529 holders; ONyc near \$1.10, market cap ~\$167–\$188 million (ATH 15 June 2026).

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5. The 2023 warranty (Prospero Re as cedent, Guy Carpenter as broker, the \$60 billion attachment) – The Insurer, <https://www.theinsurer.com/ti/news/prospero-re-secures-first-ever-crypto-ilw-from-nayms/>; Reinsurance News, <https://www.reinsurancene.ws/nayms-launches-the-worlds-first-crypto-denominated-industry-loss-warranty/>; Royal Gazette, <https://www.royalgazette.com/re-insurance/business/article/20230706/nayms-claims-an-industry-first/>
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## KEY IDENTIFIERS

Nayms diamond `0x39e2f550fef9ee15b459d16bD4B243b04b1f60e5` (Ethereum) and  
`0x546Fb1621CF8C0e8e3ED8E3508b7c5100ADdBc03` (Base); NAYM token  
`0x314d7f9e2f55B430ef656FBB98A7635D43a2261E` (Base); ONyc  
`5Y8NV33Vv7WbnLfQ3zBcKSdYPrk7g2KoiQoe7M2tcxp5` (Solana).

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## A14. Ensuro – Onchain Parametric Insurance and Reinsurance Capital

### AT A GLANCE

CASE	A licensed, blockchain-based reinsurer whose crypto-native capital provides solvency behind parametric insurance programmes, with real premiums and claims paid
PRIMARY ENTITIES	Ensuro; the regulated entity is Ensuro Re Ltd (Bermuda), with a Singapore holding company; founded 2021; CEO Marco Mirabella
DATES AND STATUS	Founded 2021; licensed by the Bermuda Monetary Authority in early 2022 (upgraded April 2024); migrated to an Ethereum "V3" in December 2025; live, but the original book is in run-off
JURISDICTION	Bermuda (BMA) – innovative-insurance and digital-asset business licences; a Segregated Accounts Company with each programme a ring-fenced cell
CHAIN OR LEDGER	Ethereum mainnet (current) and Polygon (the deprecated earlier version, still on-chain)
INSTRUMENT	Tokenized reinsurance capital – rebasing "eToken" LP receipts (junior and senior) that provide solvency capital behind parametric programmes originated by managing general agents; no governance token
RISK OR PERIL	Multi-line parametric, dominated by non-catastrophe travel cover (flight and ferry disruption), with smaller parametric hurricane, cyber, crop / drought and cargo-delay programmes
TRIGGER OR SETTLEMENT MECHANIC	Parametric (index, oracle or signed-quote modules)
CAPITAL OR PARTICIPANT TYPE	Crypto-native USDC liquidity providers supply capital; managing general agents originate the policies; the end-customers are policyholders
SIZE	Kept distinct: current assets about \$497,600; cumulative coverage written about \$84.6 million; cumulative gross premiums about \$6.8 million; cumulative claims paid about \$5.98 million across 354,066 policies; current active exposure about \$534,000, down roughly a quarter over the latest 90 days. Reported venture funding is unreconciled across databases
OUTCOME	Live and operating, with real claims paid; the original book is in run-off, and the next growth case is linked to a 2026 cyber-warranty programme. No catastrophe bond
RELEVANCE TO THE PAPER	A licensed, operating example of crypto-native capital providing solvency behind parametric insurance – real policies, premiums and claims – illustrating tokenized reinsurance capital at the funding layer, distinct from a catastrophe bond
EVIDENCE LIMITS	The EU fronting carrier behind the European travel cover, the per-programme capital, and a reconciled venture-funding figure are not disclosed; the book is concentrated in one travel product with a high loss ratio, and the original portfolio is in run-off

Ensuro is a licensed, blockchain-based reinsurer. Liquidity providers deposit USDC, which serves as the solvency capital behind insurance policies; managing general agents originate and issue those policies; premiums and claims flow through smart contracts. Ensuro is the balance sheet, not the distributor. The regulated entity, Ensuro Re Ltd, holds Bermuda Monetary Authority licences and runs each programme as a ring-fenced cell.

Capital is split into a junior eToken, which absorbs first losses on a single programme, and a senior eToken diversified across programmes; premiums and claims settle through the contracts. The book is overwhelmingly a single product – Koala flight- and ferry-disruption cover in Europe – so the claims are mostly small, high-frequency travel payouts rather than catastrophe losses.

For the paper, Ensuro is a working, regulated example of crypto-native capital providing solvency behind parametric insurance, with real premiums and real claims paid. It is tokenized reinsurance capital at the funding layer rather than a catastrophe bond, and it shows the model operating under a Bermuda licence.

Ensuro is regulated and operating, with real capital at risk and real claims paid – about \$5.98 million across 354,066 policies, on roughly \$6.8 million of lifetime premiums and \$84.6 million of cumulative coverage. The current book is concentrated in the Koala travel-disruption product, with current assets of about \$497,600 and active exposure of about \$534,000 at the snapshot date. The contracts and cumulative metrics are publicly inspectable; undisclosed items include the EU fronting carrier, per-programme capital and a reconciled venture-funding figure.

## TIMELINE

- 2021 – Founded; seed round closes late 2021.
- Early 2022 – Bermuda Monetary Authority licence; the flagship Koala travel-disruption product goes live.
- Late 2022 – A parametric hurricane programme (StormStrong) launches.
- April 2024 – Licence upgraded (innovative-insurance and digital-asset Class M).
- December 2025 – Migration to an Ethereum "V3."
- April 2026 – A parametric cyber-warranty programme (DLT Alert) launches.
- Mid-June 2026 (snapshot) – Cumulative coverage about \$84.6m, claims about \$5.98m, 354,066 policies; current assets about \$497,600.

## SOURCES

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## KEY IDENTIFIERS

Ethereum PolicyPool `0xd81A8B5bE59cEAE0f9E27455A998B4fDac9fA0a3`; Polygon PolicyPool `0xD74A28274C4B1a116aDd9857FC0E8F5e8fAC2497`; Ensuro Re Ltd (Bermuda); no governance token.

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## A15. Nexus Mutual — Discretionary Mutual Cover

### AT A GLANCE

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CASE	A discretionary mutual on Ethereum that pools crypto-native capital to provide "cover" against defined risks, and increasingly supplies reinsurance / retrocession capacity
PRIMARY ENTITIES	Nexus Mutual; legal entity Nexus Mutual Limited (UK, limited by guarantee); founder Hugh Karp, a former chief financial officer of Munich Re's UK life business
DATES AND STATUS	Incorporated 2017; mainnet since May 2019; live and ongoing
JURISDICTION	UK; not a regulated insurer — deliberately discretionary, with "cover" described as not a contract of insurance
CHAIN OR LEDGER	Ethereum mainnet
INSTRUMENT	Discretionary "cover" (an insurance alternative) and, increasingly, tokenized reinsurance and retrocession capacity; a member-only token (NXM) with a tradable wrapper (wNXM); not a bond or an insurance-linked security
RISK OR PERIL	Crypto-native risks — smart-contract exploits, custody failures, depegs, slashing; no live parametric or catastrophe product, and catastrophe risk is explicitly excluded from its main real-world reinsurance arrangement
TRIGGER OR SETTLEMENT MECHANIC	Discretionary, expert-assessed claims; not parametric
CAPITAL OR PARTICIPANT TYPE	About 10,000 crypto-native members; it now also supplies reinsurance / retrocession capacity to crypto-cover protocols (Sherlock, Uno Re) and regulated counterparties (Re / Cover Re, Ensuro)
SIZE	Kept distinct: capital pool ~\$83 million at audit, with the ETH balance ~48,400 ETH at end-March 2026 and ~46,300 ETH by end-April (USD value is ETH-price-sensitive); active cover in force about \$350 million; cumulative claims paid about \$18.5 million; the \$15 million commitment to Re is a single allocation. The capital pool peaked near \$781 million in late 2021
OUTCOME	Live and ongoing, with about \$18.5 million of discretionary claims paid; no catastrophe bond and no live parametric product
RELEVANCE TO THE PAPER	Not a cat-bond or parametric issuer, but a notable bridge from crypto-native capital into risk-bearing arrangements — including allocations into the tokenized reinsurance of Re and Ensuro (cases above) — showing on-chain capital moving toward real risk transfer
EVIDENCE LIMITS	Catastrophe risk is excluded from its retrocession of Cover Re's book; the annex characterizes it by its published discretionary-mutual structure rather than by a regulator-confirmed insurance licence analysis

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Nexus Mutual is a discretionary mutual on Ethereum: members pool capital and buy "cover" against defined risks, with the mutual retaining the final say over which claims are paid. That discretion — a discretion, not a legal obligation, to pay — keeps it outside UK regulated-insurance law. It is included here not as a cat-bond or parametric issuer, which it is not, but because since 2023 it has deliberately become a bridge from on-chain capital into reinsurance and retrocession.

A 2023 redesign reframed the mutual as an on-chain risk marketplace, with independent pools choosing the risks they back; an explicit "quota share cover" product now reinsures crypto-cover protocols, and a real-world insurance vehicle channels on-chain capital into traditional risk. It has supplied capacity to crypto-cover protocols (Sherlock, Uno Re) and to regulated counterparties, including a \$15 million commitment to Re and a partnership with Ensuro — two of the cases above. Catastrophe risk is explicitly excluded from its retrocession of Cover Re's book.

For the paper, Nexus Mutual matters as a capital-formation bridge from crypto-native pools into risk-bearing arrangements. Its allocations into Re and Ensuro show on-chain capital moving toward regulated or real-world risk-transfer structures, even though Nexus itself is a discretionary mutual rather than a catastrophe-risk instrument.

It has paid about \$18.5 million of genuine claims across named events – among them the 2022 Rari Capital / TribeDAO loss (\$5.09 million, its largest), the FTX custody failure (\$4.92 million) and Euler (\$3.39 million) – while rejecting others, such as the sixteen "Black Thursday" claims in March 2020. Its capital pool, about \$83 million at audit (the ETH balance was ~48,400 ETH at end-March 2026, ~46,300 ETH by end-April, so the USD value is ETH-price-sensitive), is well below a late-2021 peak near \$781 million. The capital pool, token contracts and claims history are publicly inspectable; the annex characterizes it by its published discretionary-mutual structure rather than by a regulator-confirmed insurance licence analysis.

## TIMELINE

- 2017 – Incorporated.
- May 2019 – Mainnet launch.
- 2020–2023 – Claims paid across bZx, Yearn, Rari / TribeDAO, Hodlnaut, FTX and Euler; the "Black Thursday" claims rejected.
- November 2021 – Capital pool peaks near \$781 million.
- March 2023 – A "V2" redesign into an on-chain risk marketplace.
- May 2024 – \$15 million committed to Re's tokenized reinsurance fund (catastrophe excluded).
- November 2024 – Partnership with Ensuro.
- Mid-2026 (snapshot) – Capital pool about \$83 million (~48,400 ETH end-March, ~46,300 ETH end-April); cumulative claims paid about \$18.5 million.

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## A16. Opolis — Onchain Health-Plan Reserve Bonds

### AT A GLANCE

CASE	A completed on-chain health-plan reserve-backing bond with real outside capital and a visible lifecycle on Ethereum
PRIMARY ENTITIES	Opolis Reinsurance Bonds (the "Opus Series"); beneficiary Opolis, a digital employment cooperative; infrastructure from Renzo (the vault), EigenLayer / EigenCloud (restaking) and Agora (the AUSD stablecoin)
DATES AND STATUS	The first bond, Opus I, opened in late July 2025, matured 31 January 2026, and was unwound through mid-2026; completed
JURISDICTION	Opolis is a Colorado Limited Cooperative Association, not a regulated insurer; the legal rights of token holders are not established in the public record
CHAIN OR LEDGER	Ethereum mainnet
INSTRUMENT	A tokenized reserve / reinsurance bond, represented by an auto-compounding receipt token (opusIAUSD), backing the cooperative's health-plan reserves
RISK OR PERIL	Non-catastrophe — health-insurance reserve backing for Opolis's health plans (around 2,500 covered lives)
TRIGGER OR SETTLEMENT MECHANIC	None in the usual sense; the bond functions as reserve backing, and Opus I was marketed as carrying "no slashing"
CAPITAL OR PARTICIPANT TYPE	Crypto-native retail depositors (pseudonymous wallets and ENS names)
SIZE	Kept distinct: Opus I targeted about \$500,000 and drew about \$386,567 across 24 deposits; about 9,983 tokens remained after claims; the advertised return was around 40% annualized, or about 20% over the six-month term. Opolis's roughly \$13.3 million of lifetime venture funding (as of mid-2023) is corporate and separate from the bond
OUTCOME	A small, completed pilot — it matured and unwound on-chain, with real outside capital, but in a conservative reserve-backing posture rather than a first-loss risk transfer to investors
RELEVANCE TO THE PAPER	A completed on-chain reserve-bond pilot with real outside capital and a full lifecycle visible on-chain — relevant as a reserve-backing structure, though Opus I was reserve backing rather than a mature first-loss insurance-risk instrument
EVIDENCE LIMITS	Opus I was marketed as "no slashing," so depositors did not in practice absorb insurance losses (Renzo's documentation does describe a loss waterfall, so "no slashing" is best read as specific to this first bond); the legal rights of token holders are not established in the public record; the figures (target vs deposits vs return vs corporate venture funding) must be kept apart

The Opus Series puts a health-plan reserve on-chain. Depositors lock the AUSD stablecoin into a Renzo vault; the capital is restaked on EigenLayer and used to back the health-insurance reserves of the Opolis employment cooperative. The first bond, Opus I, opened in late July 2025 and matured on 31 January 2026. It behaves less like a yield vault than like a fixed-term reserve bond: members' premiums pay claims first, up to about 65% of premiums, and the restaked bond sits behind that as reserve backing, returning principal and yield at maturity.

Opus I drew real outside capital — about two dozen deposits from pseudonymous wallets, totalling roughly \$386,567 against a \$500,000 target — and completed its term, processing withdrawals and redemptions through the first half of 2026; about 9,983 of the receipt tokens remained outstanding afterward, and the two largest deposits were roughly three-quarters of the total. The instrument is represented by an auto-compounding receipt token (opusIAUSD) on Ethereum.

For the paper, Opus I is a completed on-chain reserve-bond pilot with real outside capital and a full lifecycle visible on-chain. It is relevant as a reserve-backing structure rather than as a catastrophe instrument, and should be read as reserve backing rather than a mature first-loss insurance-risk transfer to investors.

The bond was marketed as carrying "no slashing": depositors were not in practice absorbing insurance losses through a loss-redistribution mechanism, so the instrument functioned as yield-bearing reserve backing, with genuine first-loss absorption left to later series. Renzo's own documentation does describe an insurance-loss waterfall in which deposits could be exposed, so "no slashing" is best read as specific to this first bond. The figures should be kept apart: Opus I's \$500,000 target and the roughly \$386,567 of actual deposits are distinct, and both are separate from the advertised return (about 40% annualized, or 20% over six months) and from Opolis's roughly \$13.3 million of lifetime venture funding (as of mid-2023), which is corporate and unrelated to the bond. The deposits, holders and full lifecycle are visible on Ethereum.

## TIMELINE

- April 2021 — Opolis launches its \$WORK token.
- June 2025 — Renzo publishes a "restaking bonds" case study.
- Late July 2025 — Opus I opens (about \$500,000 target) and closes deposits at about \$386,567.
- 31 January 2026 — Opus I matures.
- February–June 2026 — Withdrawal and redemption transactions processed on-chain.

## SOURCES

1. Etherscan — the opusIAUSD token page and token-transfer analysis (deposits, withdrawals, claims, holders and supply); representative deposit transaction `0x5efec57a...c5f69d``. <https://etherscan.io/token/0xcca2af7ec2e0b55d9cb1d9d36e542a1085e82ea5> and <https://etherscan.io/tx/0x5efec57ae05eaa16a74327e5e30aae39583f2407fecf9bf3577a9143b6c5f69d>
2. Renzo docs, "Opolis Reinsurance Bonds" — the mechanism, the ~40% APY, the maturity and the loss waterfall. <https://docs.renzoprotocol.com/docs/products/staking-suite/opolis-reinsurance-bonds>
3. Renzo blog, "Network-issued restaking bonds with Flow Vaults" case study (26 June 2025). <https://blog.renzoprotocol.com/2025/06/26/case-study-network-issued-restaking-bonds-with-flow-vaults/>
4. Opolis, "Opolis brings healthcare insurance onchain with Renzo + EigenCloud," and the Opus I launch post (22 July 2025). <https://opolis.co/benefits/opolis-brings-healthcare-insurance-onchain-with-renzo-eigencloud/> and <https://x.com/opolis/status/1947718288986747255>
5. Agora, AUDS product page (reserves managed by VanEck, State Street custodian). <https://www.agora.finance/product/ausd>

## KEY IDENTIFIERS

opusIAUSD receipt token `0xcca2AF7EC2E0B55d9cb1D9D36E542a1085e82EA5`` (Ethereum); deposit asset AUDS `0x0000000eFE302BEAA2b3e6e1b18d08D69a9012a``; about \$386,567 deposited across 24 mints.

## A17. Conventional Catastrophe Bonds – Benchmark Cases

The following are conventional, off-chain capital-markets catastrophe bonds, included as the benchmark against which the on-chain cases above are read. None uses a public blockchain. The figures are drawn from the Artemis Deal Directory and issuer disclosures; the Jamaica 2024 payout is confirmed by the World Bank. "Pricing" is the risk margin or coupon spread over the collateral yield, and "EL" is the modelled expected loss.

ISSUER / PROGRAMME	YEAR	SIZE	PERIL · REGION	TRIGGER	PRICING / RISK MARGIN (EL)	OUTCOME	INVESTOR MIX (WHERE DISCLOSED)
IBRD CAR 130 (Jamaica 2021)	2021 (Jul; to Dec 2023)	\$185m (upsized from \$175m)	Named storms · Jamaica	Parametric (central pressure + boxes)	4.4% (EL 1.52%); min payout 30%	Matured December 2023 with no payout; Jamaica's first cat bond	66% ILS / 17% insurer-reinsurer / 14% asset management / 3% pension; Europe 60% / North America 24% / Bermuda 15% / Asia 1%
IBRD CAR Jamaica 2024 (World Bank IBRD · CAR 136)	2024 (May; to Dec 2027)	\$150m	Named storms · Jamaica	Parametric (central pressure + boxes)	7.0% risk margin (EL 1.5%); attach prob 2.34%; min payout 30% rising to 100%	Triggered – full \$150m payout after Hurricane Melissa (Oct 2025); World Bank confirmed 7 Nov 2025	66% ILS / 33% asset managers / 1% reinsurers; US 43% / Europe 40% / Bermuda 14% / Asia-Australia 3% (15 investors)
IBRD CAR Jamaica 2026 (World Bank IBRD)	2026 (May; to May 2030)	\$200m (upsized from \$150m)	Named storms · Jamaica	Parametric (central pressure + boxes)	6.75% (EL 2.48%); attach prob 3.86%; central pressure ≤900mb gives 100%	In force; oversubscribed; issued after the 2024 bond triggered and paid; Moody's RMS replaced Verisk's AIR as modeller/calculation agent	69% ILS / 25% asset managers / 6% reinsurers; Europe 42% / North America 41% / Bermuda 18% / Asia-Australia 1%
Puerto Rico Parametric Re Ltd. (2024-1, Class A)	2024 (Jun; ~3 yr)	\$85m (upsized from \$75m)	Named storm + earthquake · Puerto Rico	Parametric (gold box = all of Puerto Rico; red box = San Juan)	9.0% (EL 1.65%); attach prob 3.07%); payouts from 25%	In force; Starr Indemnity fronts, Hannover Re as transformer/reinsurer; a repeat of Maria would trigger	not disclosed
MultiCat Mexico 2009 Ltd. (FONDEN)	2009 (Oct; 3 yr)	\$290m (four tranches; upsized from \$250m)	Pacific hurricane + Atlantic hurricane + earthquake · Mexico	Parametric (USGS / NHC)	rated S&P 'B' / 'BB-'	Matured; Swiss Re counterparty; Swiss Re Capital Markets and Goldman Sachs co-leads	not disclosed
IBRD CAR Mexico 2024 (CAR 132/133/134)	2024 (Apr; 4 yr)	\$420m (three tranches; upsized from \$360m)	Earthquake + Atlantic named storm · Mexico	Parametric (stepped)	A 4.0% (EL 0.9%) · B 11% (EL 5.84%) · C 13.5% (EL 5.69%)	In force; Munich Re fronts the retrocession to AGROASEMEX (the state insurer), not the government directly; a further \$175m Pacific tranche brings total Mexico cover to \$595m	27 investors; 65% ILS funds; Europe 44% / North America 44% / Bermuda 10% / Asia-Australia 2%
Kizuna Re III Pte. Ltd. (2024-1, Class A)	2024 (Mar; 5-yr term)	\$100m	Earthquake · Japan	Indemnity (3-yr rolling aggregate)	2.75% (EL 1.59% over 3 yr)	In force; Tokio Marine & Nichido Fire; collateral held in an IBRD SOFR Sustainable Development Bond	not disclosed

ISSUER / PROGRAMME	YEAR	SIZE	PERIL · REGION	TRIGGER	PRICING / RISK MARGIN (EL)	OUTCOME	INVESTOR MIX (WHERE DISCLOSED)
Tomoni Re Pte Ltd. (2024-1, Class A & B)	2024 (Mar; 4 yr)	\$200m (\$100m A + \$100m B)	Typhoon/flood (plus earthquake on Class B) · Japan	Indemnity (occurrence + aggregate)	A 3.25% (EL 1.45%) · B 4% (EL 1.6%)	In force; MS&AD (Mitsui Sumitomo + Aioi Nissay Dowa); early redemption sought Jan 2026 after a beneficiary merger	not disclosed
Sakura Re Ltd. (2025-1, Class A)	2025 (Mar; ~4 yr)	\$150m	Typhoon + flood · Japan	Indemnity (per-occurrence)	2.75% (EL 1.58%); attach prob 1.88%	In force; Sampo Japan; attach JPY 500bn / exhaust JPY 600bn (about \$3.35–4.0bn)	not disclosed
Nakama Re Pte. Ltd. (2026-1, Class 1)	2026 (Apr; 5-yr term)	\$100m	Earthquake · Japan	Indemnity (3-yr aggregate)	2.1% (EL 0.82%); attach prob 0.87%	In force; Zenkyoren; attach JPY 1.8tn / exhaust JPY 2tn; franchise deductible JPY 270bn	not disclosed
Matterhorn Re Ltd. (2023-1, Class CYB-A)	2023 (Dec; ~2 yr to end-2026)	\$50m	Cyber · United States	Industry-loss index (CyberAcuView data; PERILS reporting)	12% (EL 1.721%); attach prob 2.228%	In force; the first cyber cat bond with an industry-loss trigger and the first with Swiss Re as cedent; attach \$9bn / exhaust \$11.5bn of US cyber industry loss	not disclosed
Vitality Re XV Ltd. (2024, Class A & B)	2024 (Jan; 4 yr)	\$200m (\$140m A + \$60m B)	Medical benefit claims · United States	Medical benefit ratio (indemnity)	A 2.5% (EL ~0.01%) · B 3.5% (EL ~0.20%); rated BBB+sf / BB+sf	In force; Aetna/CVS Health's 15th Vitality Re; quota share via Health Re Inc. (Vermont captive)	not disclosed

The trigger mix spans three families: sovereign parametric (Jamaica, Mexico, Puerto Rico), Japanese indemnity (Nakama, Kizuna, Sakura, Tomoni) and specialty (Matterhorn's cyber industry-loss trigger and Vitality's medical benefit ratio). All are conventional, off-chain capital-markets cat bonds, included here as benchmarks for the tokenized cases; none uses a public blockchain.

The Jamaica 2024 bond's full \$150 million parametric payout after Hurricane Melissa in 2025 is a clean recent example of a sovereign parametric cat bond triggering and paying according to the disclosed parametric structure.

One adjacent point, not to be conflated: Mexico's 2026 disaster-risk renewal also includes about \$575 million of parametric catastrophe *insurance* (placed through AGROASEMEX), separate from its World Bank cat bonds, bringing Mexico's parametric protection in force to roughly \$1.17 billion. That is parametric insurance, not a cat bond.

## SOURCES

1. Artemis Deal Directory entries (the "at a glance" and "full details" records) for each benchmark deal above – IBRD CAR Jamaica 2024 (CAR 136), IBRD CAR Jamaica 2026, IBRD CAR 130 (Jamaica 2021), Puerto Rico Parametric Re Ltd. (Series 2024-1), IBRD CAR Mexico 2024 (CAR 132/133/134), MultiCat Mexico 2009 Ltd. (FONDEN), Nakama Re Pte. Ltd. (Series 2026-1), Kizuna Re III Pte. Ltd. (Series 2024-1), Sakura Re Ltd. (Series 2025-1), Tomoni Re Pte Ltd. (Series 2024-1), Matterhorn Re Ltd. (Series 2023-1) and Vitality Re XV Ltd. (2024) – establishing the sizes, perils, triggers, pricing/expected loss, ratings and outcomes. <https://www.artemis.bm/deal-directory/> – including IBRD CAR Jamaica 2024 (CAR 136): <https://www.artemis.bm/deal-directory/ibrd-car-jamaica-2024/>; IBRD CAR 130 (Jamaica 2021): <https://www.artemis.bm/deal-directory/ibrd-car-130/>; IBRD CAR Mexico 2024: <https://www.artemis.bm/deal-directory/ibrd-car-mexico-2024/>; Puerto Rico Parametric Re 2024-1: <https://www.artemis.bm/deal-directory/puerto-rico-parametric-re-ltd-series-2024-1/>

2. World Bank statements (31 October and 7 November 2025) — the IBRD CAR Jamaica 2024 full \$150 million payout after Hurricane Melissa (the 7 November release confirming the calculation completed and the full payout).  
<https://www.worldbank.org/en/news/press-release/2025/11/07/hurricane-melissa-triggers-100-payout-of-150-million-world-bank-catastrophe-bond-for-jamaica> (31 October statement: <https://www.worldbank.org/en/news/statement/2025/10/31/world-bank-group-statement-on-support-for-jamaica>)
3. World Bank / IBRD per-deal investor-distribution disclosures — the investor-mix breakdowns for the IBRD CAR Jamaica and Mexico bonds (e.g. Jamaica 2024: 66% ILS / 33% asset managers / 1% reinsurers). World Bank disclosures relayed in the Artemis Deal Directory entries: <https://www.artemis.bm/deal-directory/ibrd-car-jamaica-2024/> and <https://www.artemis.bm/deal-directory/ibrd-car-mexico-2024/>

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For catastrophe protection, Lionscraft aims to connect real-world disaster-risk cover to tokenized capital, donor support, and public-purpose payout rails. The objective is to make protection easier to fund, service, finance, convert, and route after a certified event, while preserving the risk models, legal mechanics, and governance standards that make the instrument trusted.



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