Business Plan & Product Roadmap

Climate Risk Insurance System (Decision Platform for Underwriting, Accumulation, Reinsurance, and Governance)

Executive Summary

Climate volatility is translating into underwriting volatility: higher loss ratio dispersion, faster portfolio drift, more expensive reinsurance, and greater scrutiny from regulators and rating agencies. Many carriers are still operating with workflows built around backward-looking experience and static catastrophe assumptions—tools that were not designed for non-stationary hazard, secondary perils, or continuous portfolio steering.

We are building a climate risk decision platform for insurers that connects climate and hazard signals to the decisions executives must defend: **risk selection, pricing adequacy, accumulation controls, reinsurance optimization, and regulatory capital governance.** The system produces decision-grade metrics at the location, account, portfolio, and treaty level—**with transparent drivers, uncertainty bounds, and a complete audit trail.**

Why we win: we are not “another cat model.” We are the **operating layer** that makes risk analytics usable and governable across underwriting, cat management, actuarial, risk, and compliance—integrating existing vendor models and internal experience rather than forcing a rip-and-replace.

The Problem (in insurer terms)

Carriers are being penalized—financially and regulatorily—for relying on risk views that are increasingly misaligned with reality.

1) Rate adequacy is harder to sustain

- Historical loss experience is less predictive in multiple regions/perils.

- Pricing teams are forced to defend indications that regulators and internal stakeholders increasingly challenge.

- Underpricing concentrates silently until it surfaces in **loss ratio deterioration** and adverse development.

2) Adverse selection is accelerating

- Risk signals are not evenly distributed across the market.

- Carriers using lagging approaches disproportionately attract higher-risk business at “average” rates, driving **loss ratio skew** and churn.

- Portfolio drift occurs faster than quarterly monitoring cycles can detect.

3) Accumulation risk is under-managed

- Accumulation tooling is often static, coarse, and dependent on single-model outputs.

- Correlated perils and event clustering create concentration exposures that standard controls miss.

- The result is avoidable tail exposure and volatility in **PML/TVaR** and **earnings-at-risk**.

4) Reinsurance basis risk and cost are increasing

- Reinsurance repricing is forcing carriers to justify attachment points and structures with clearer analytics.

- Program design is often driven by incomplete or inconsistent views of tail drivers, weakening negotiating leverage.

- Treaties can underperform expectations when risk drivers shift.

5) Governance and regulatory pressure is rising

- Regulators and rating agencies expect climate scenario analysis, model governance, and defensible assumptions.

- Many carriers cannot show clear lineage from **data → assumptions → output → underwriting action.**
- Model risk management processes are becoming a gating factor for adoption and change.

Why This Must Exist Now

Climate non-stationarity has moved into the operating model

This is no longer a research question. It is showing up in pricing volatility, loss ratio dispersion, reinsurance cost, and capital planning uncertainty.

Regulators are converging on higher expectations

Scenario analysis, documentation, and governance standards are becoming baseline requirements—especially for larger carriers and those operating under risk-based capital and solvency regimes.

Capital and reinsurance markets demand transparency

As protection becomes more expensive, the ability to explain tail drivers—and to quantify uncertainty credibly—is a negotiating advantage and a board-level requirement.

The Solution

What we deliver

A single platform that produces **decision outputs** insurers can act on and defend:

1. **Underwriting Decision Support**
    - Loss cost and tail metrics at location/account level
    - Drivers and explanations (what changed and why)
    - Rules/referrals integration and underwriter-facing audit notes

2. **Portfolio Steering and Accumulation Management**
    - Real-time accumulation views by peril/region/segment
    - Correlation-aware concentration analytics and threshold alerts
    - Portfolio drift monitoring as the book changes, not just quarterly
3. **Reinsurance and Capital Analytics**
    - Portfolio-level AAL/PML/TVaR with sensitivity analysis
    - Treaty structure impact analysis (attachments, limits, retentions)
    - Decision support for program design and renewal strategy
4. **Governance and Regulatory Readiness**
    - Versioned assumptions and reproducible results
    - Scenario analysis outputs with clear documentation
    - Controls designed for model risk review, audit, and regulatory inquiry

What makes this differentiated versus traditional CAT models and vendors

Traditional CAT models are primarily modeling engines. They generate outputs, but they do not solve the enterprise decision and governance problem.

We differentiate through four design choices:

- **Decision-first outputs:** we translate risk into underwriting and capital decisions (rate adequacy, accumulation thresholds, treaty performance), not just hazard maps and model tables.
- **Model-agnostic integration:** we ingest and reconcile vendor model outputs, internal experience, and climate/hazard signals—so carriers avoid dependence on a single black box.
- **Continuous portfolio steering:** risk is treated as a live operating signal, not an annual/quarterly model refresh.

- **Governance as core product:** audit trails, versioning, approvals, and reproducibility are built-in—reducing friction with actuarial sign-off, compliance, and regulators.

Why incumbents cannot easily replicate this

Incumbents can add overlays, but replicating a **decision system** requires:

- Workflow integration across underwriting, cat, actuarial, risk, and compliance (not just modeling)
- A governance layer that supports approvals, versioning, and reproducibility at enterprise scale
- Carrier-specific calibration and operationalization without becoming a bespoke services shop
- Product incentives aligned to transparency and defensibility, not opaque model dependency

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Product Overview (what it is)

An enterprise SaaS platform with API-first integration, designed for regulated insurance environments.

Inputs

- Exposure data (locations, values, terms), policy/portfolio data
- Claims/loss data where available
- Climate and hazard datasets
- Optional third-party CAT model outputs and event catalogs

Outputs

- Decision-grade underwriting metrics and explanations

- Accumulation dashboards and threshold alerts
- Treaty and capital impact analytics
- Governance artifacts: assumptions registry, versioned runs, audit logs, scenario reporting

Deployment and controls

- Role-based access control, audit logging, segregation of duties
- Repeatable runs and change control suitable for model risk governance
- Configurable to carrier workflows rather than forcing process change

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Product Roadmap (phased with commercial rationale)

Phase 1 — Data & Exposure Foundation (make results trustworthy)

What we build

- Exposure ingestion, normalization, geocoding/quality scoring
- Core hazard overlays and baseline risk segmentation
- Portfolio rollups for concentration visibility

Why it matters commercially

- Exposure quality is the bottleneck in every underwriting and portfolio decision.
- This phase reduces operational drag and builds trust in the platform outputs.

Business outcomes

- Faster triage and fewer data exceptions
- More reliable accumulation visibility

- Reduced manual reconciliation across teams

Phase 2 — Underwriting Decision Engine (improve risk selection and pricing discipline)

What we build

- Location/account loss cost and tail metrics aligned to underwriting workflows
- Explainable drivers and sensitivity views for decision justification
- Referral rules and underwriting notes with audit trail

Why it matters commercially

- Underwriting decisions drive loss ratio and adverse selection outcomes.
- Explainability accelerates adoption and supports governance for pricing and appetite.

Business outcomes

- Improved rate adequacy and selection discipline
- Reduced adverse selection and portfolio drift
- Clearer rationale for approvals and exceptions

Phase 3 — Portfolio & Reinsurance Optimization (control volatility and spend)

What we build

- Correlation-aware accumulation analytics across perils and regions
- Treaty impact analysis (structure sensitivity, attachment/limit trade-offs)

- Portfolio steering tools tied to risk appetite and thresholds

Why it matters commercially

- This phase links analytics to executive levers: volatility control and reinsurance efficiency.
- Strengthens renewal strategy with transparent drivers and scenario comparisons.

Business outcomes

- Better control of tail exposure concentrations
- Improved reinsurance purchasing decisions and negotiation posture
- Clear linkage between underwriting appetite and portfolio risk profile

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Phase 4 — Governance & Regulatory Readiness (make it defensible at enterprise scale)

What we build

- Assumptions registry, versioning, approval workflows, reproducible runs
- Scenario analysis tooling aligned to regulatory expectations
- Audit-ready reporting packages and controls

Why it matters commercially

- Governance is the gate to enterprise deployment and expanded use.
- Reduces organizational and regulatory friction to changing models and assumptions.

Business outcomes

- Faster internal approvals and smoother audits

- Reduced model risk management friction
- Regulator-credible scenario and governance reporting

Technical Credibility (tight, decision-relevant)

We combine established catastrophe and actuarial concepts with modern governance and operational analytics:

- **Reproducibility:** every output is traceable to data versions, assumptions, and configurations.
- **Calibration capability:** supports carrier-specific adjustment using internal claims/loss experience where available, without treating the result as a black box.
- **Uncertainty and sensitivity:** delivers ranges and driver decomposition to support defensible decisions, not single-number certainty.
- **Enterprise security and controls:** designed for regulated financial institutions (audit logs, access control, segregation of duties).

This is not “AI replacing actuarial.” It is a controlled system that makes risk analytics operational, explainable, and governable.

Business Model & Revenue Model (enterprise-aligned)

We monetize as enterprise SaaS with implementation support designed to accelerate time-to-value.

1) Annual platform subscription (core)

Priced by:

- **Modules:** Underwriting, Accumulation/Portfolio, Reinsurance/Capital, Governance/Regulatory
- **Scale factors:** number of regions/perils, portfolio size, and integration scope

This aligns with how carriers budget and procure platforms.

2) Usage-based components (selective, predictable)

For compute-intensive activities where it is natural to meter:

- Scenario runs, treaty simulations, or high-frequency portfolio updates
  Designed with caps/tiers so finance teams can budget reliably.

3) Implementation and integration (one-time or capped)

- Exposure onboarding, workflow integration, governance configuration
  Deliberately structured so services do not become the core business model.

Go-to-Market (enterprise reality, disciplined execution)

Target buyers

- **Primary buyers:** CUO / Head of Underwriting, Head of Cat Risk, CRO (varies by carrier)
- **Economic buyer:** CRO/CFO depending on whether the initial wedge is underwriting performance or capital/reinsurance efficiency
- **Key stakeholders:** actuarial, portfolio management, compliance/model risk, IT/security

Entry strategy (land-and-expand)

Start with a defined wedge that delivers measurable operational and risk outcomes:

- One line of business, one region, or a defined peril set
  Then expand to reinsurance/capital and governance as value is proven and adoption grows.

Success is defined by decision improvement and governance acceptance—not dashboards deployed.

Risks and How We Address Them

- **Data quality variability:** explicit data quality scoring, completeness thresholds, and exception handling built into workflows.

- **Governance and model risk friction:** reproducibility, documentation outputs, and approval workflows designed from the beginning.

- **Adoption risk:** explainability and integration into underwriting decisions and referrals, not parallel analytics.

- **Security/compliance:** enterprise security baseline and audit logging aligned to insurer requirements.