

Bifrost

The sovereign substrate for healthcare intelligence.

the bridge holds

Bifrost is a sovereign substrate: the layer beneath healthcare applications that lets frontier AI reason over regulated clinical data without that data ever leaving the perimeter the patient consented to. Operated by 3verest across AU, UK, DE, EU, CA, and US. Built upon by healthcare providers and the software vendors that equip them. Engineered for the institutions that cannot trade sovereignty for capability.

01 / THE CATEGORY

Healthcare needs a substrate. *Bifrost is the first.*

For three decades the healthcare technology stack has had two layers. Applications, owned by clinical software vendors and the institutions that buy from them. Infrastructure, owned by hyperscalers, regional clouds, and on-premises operators. Between those two layers there is a gap — and frontier AI lives inside it.

CAT / 01.1

The architectural pattern

A substrate is a deliberately incomplete layer. Applications complete it from above; infrastructure carries it from below. The substrate's job is to make a specific capability available to applications while abstracting away the parts that are too dangerous, too regulated, or too operationally heavy for each application to solve alone. PostgreSQL is a database substrate. Kubernetes is an orchestration substrate. The healthcare industry has been waiting for an intelligence one.

CAT / 01.2

Why consumer AI cannot occupy the gap

A consumer-facing model trained on the open web cannot answer the questions a hospital's risk officer is required to answer in writing. Which jurisdiction the inference ran in. Which keys decrypted the index. Which model version drafted the response. Where the prompt logs are held, and for how long. How the institution proves no patient identifier leaked. A public AI gateway has no architectural surface to address any of those questions. It was never built to.

CAT / 01.3

What Bifrost is, in one paragraph

Bifrost is a curated catalogue of frontier open-weight models, fused with per-tenant retrieval over the institution's own clinical corpus, operated inside dedicated inference environments in the customer's jurisdiction, under customer-managed keys, with an evidence chain that records every model version, every prompt, every retrieved citation, and every output. 3verest operates the substrate. The customer builds the application on top.

The substrate is the thing underneath. Bifrost is the substrate underneath healthcare AI.

02 / THE SUBSTRATE

Three layers. *One bridge.*

The substrate is composed of three layers. Each answers one architectural question. An application addresses a single inference interface; the substrate resolves the rest.

PL / 02.1

The model layer

A curated catalogue of frontier open-weight models, selected and validated for healthcare workloads. The current revision includes Llama 3.x, DeepSeek, Qwen 2.5, MedGemma, pathology and radiology vision specialists, and clinical text and biomedical embedders. Models are pen-tested before entry, version-pinned in production, lifecycle-governed quarterly, and never silently updated. The application addresses a logical model identifier; the substrate resolves it to a versioned, attested set of weights.

Adding a model is harder than removing one.

PL / 02.2

The context layer

Per-tenant retrieval over the customer's clinical corpus, fused with the model inside the perimeter. Hybrid retrieval over notes, imaging reports, lab trends, medication history, prior radiology, pathology, and care plans. Knowledge graphs linked to SNOMED, RxNorm, LOINC, and ICD-10. Embeddings encrypted at rest under tenant-held keys. Every claim in a model output is grounded in a document the institution itself produced.

AI without context is limited. AI without provenance is inadmissible.

PL / 02.3

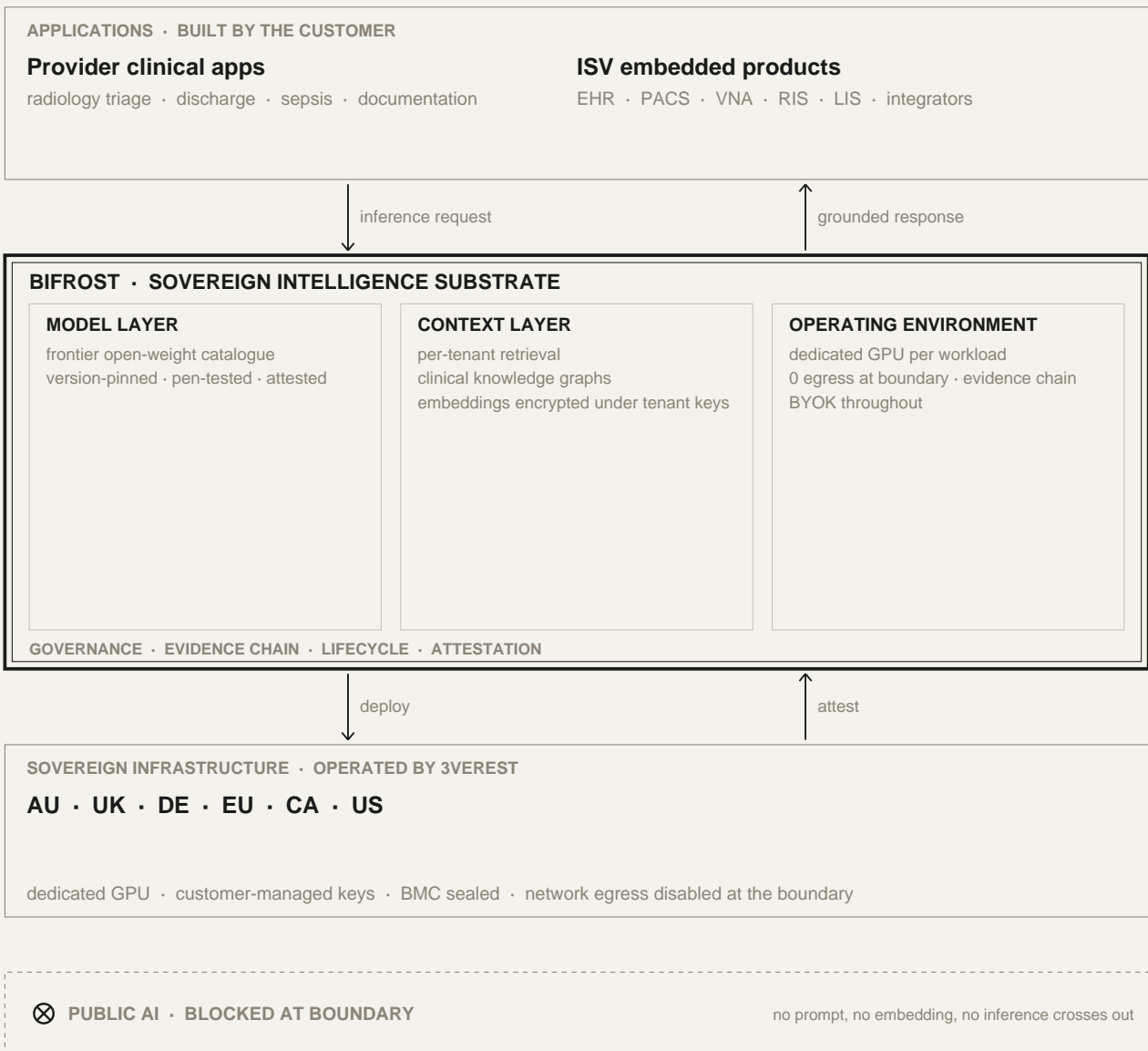
The operating environment

Dedicated inference environments inside sovereign points of presence across AU, UK, DE, EU, CA, and US. Right-sized GPU capacity per workload, confidential compute paths where required, customer-managed keys throughout, and network egress disabled at the boundary by default. 3verest operates the substrate — deployment, lifecycle, model catalogue, compliance evidence, observability. The customer operates the application on top.

The bridge holds wherever it is built.

The substrate, *in plan view*.

Applications sit above. Sovereign infrastructure carries below. Bifrost is the layer that joins them — and the layer that keeps the data, the keys, the models, and the inference inside the perimeter the institution governs. The diagram below is the substrate as architecture: what each layer owns, what crosses the boundary between them, and what is blocked at the edge.



Four sovereignties. *One perimeter.*

Sovereignty is often discussed as a single property. In a substrate it decomposes into four distinct guarantees, each engineered separately and observed independently. A platform that delivers three out of four does not deliver sovereignty. It delivers an exposure surface.

SOV / 04.1

Data sovereignty

The clinical corpus stays inside the jurisdiction that produced it. Retrievals, embeddings, prompts, and responses inherit that residency. No telemetry path, no diagnostic export, no analytics pipeline crosses the boundary. The substrate is engineered with egress disabled at the boundary, not egress monitored across it. The distinction matters under audit.

SOV / 04.2

Key sovereignty

Encryption keys are held by the customer's KMS or HSM. The substrate operator does not hold them. Inference environments attest the keys they are using; a compromised operator cannot silently substitute. Bring-your-own-key is not a feature flag here. It is the only operating mode.

SOV / 04.3

Model sovereignty

The model the customer is using today is the model the customer was using yesterday, unless the customer authorised the change. Version pinning is enforced by attestation. Quarterly catalogue refreshes are opt-in, not pushed. The model layer is governed as configuration, not delivered as a managed service that mutates underneath the application.

SOV / 04.4

Inference sovereignty

Every inference is logged with the model version, the retrieved citations, the prompt, the response, and the operator identity. The evidence record is held under the customer's keys, not the substrate operator's. Auditors are given a chain of custody, not a vendor's word. No prompt or response is retained by the operator for its own purposes.

The bridge does not bend. That is the only kind of bridge worth building.

05 / COMPLIANCE, EVIDENCED

Where the substrate stands. *What it commits to in writing.*

Compliance is the part of sovereignty an auditor can verify in twelve weeks. Bifrost is deployed under regional regimes whose unifying property is that the inference, the data, and the evidence all live inside the same jurisdiction. The model catalogue refresh cycle is documented; the evidence chain is delivered to the customer's audit team on request; the residency commitment is a clause in the contract, not a marketing claim.

JUR / 05.1 · JURISDICTION & FRAMEWORKS

Where Bifrost stands.

JURISDICTION	REGION	FRAMEWORKS
Australia	Sydney metro	IRAP · ISO 27001 · Privacy Act
United Kingdom	London metro	UK GDPR · NHS DSP Toolkit · ISO 27001
Germany	Frankfurt metro	BSI C5 · GDPR · ISO 27001
European Union	Amsterdam metro	GDPR · NIS2 · ISO 27001
Canada	Toronto metro	PHIPA · PIPEDA · ISO 27001
United States	Northern Virginia	HIPAA · HITRUST CSF · SOC 2

CAT / 05.2 · MODEL CATALOGUE — CURRENT REVISION

What crosses the bridge.

FRONTIER GENERAL	Llama 3.x · DeepSeek · Qwen 2.5
HEALTHCARE-TUNED	MedGemma · clinical instruction-tuned variants
IMAGING SPECIALIST	Pathology vision models · radiology vision models
EMBEDDERS	Clinical text · biomedical retrieval · multimodal

Model catalogue refreshed quarterly. Candidates are pen-tested, security-cleared, and version-pinned before they reach a workload. Adding a model is harder than removing one.

06 / WHO BUILDS ON BIFROST

Two audiences. *One substrate.*

Substrates serve applications. Two kinds of organisation build applications on Bifrost. The line between them is drawn deliberately.

AUD / 06.1

Healthcare providers

Health systems · hospital groups · integrated networks

Build clinical AI for your own staff and clinicians. Discharge summaries for the discharge team. Radiology triage for the radiology department. Sepsis early warning for the wards. The substrate is operated for you; the application is operated by you. The patient relationship and the workflow stay with the institution that owns them.

Build the application. The platform is already managed.

AUD / 06.2

Software vendors and developers

EHR · PACS · VNA · RIS · LIS · ISVs · integrators

Ship sovereign AI inside the products you sell. Embedded, co-branded, or white-labelled. The customer buys your product and inherits Bifrost's sovereignty, jurisdiction discipline, key custody, and evidence chain. You compete on workflow and clinical utility. The AI substrate is solved.

Ship the feature. The compliance came with it.

07 / IN PRACTICE

Two snapshots. *The same bridge.*

Two illustrative scenarios. In both, the model is frontier, the data is sovereign, and the perimeter holds.

VIG / 07.1 · PROVIDER

Radiology triage at a metropolitan hospital group

A 600-bed group runs Bifrost behind its existing PACS. Inbound studies are summarised, prioritised, and routed to the right radiologist queue inside ninety seconds. The model reasons over the imaging, the report history, and the referring clinician's notes — all inside the perimeter. No image, no report, no patient identifier ever leaves the building. The evidence record is held under the group's own keys.

The triage runs on frontier AI. The radiologist still owns the read.

VIG / 07.2 · SOFTWARE VENDOR

A PACS vendor ships sovereign AI inside its product

A global PACS company adds Bifrost-powered case summarisation, prior-comparison, and structured reporting to its viewer. Customers buy the PACS as they always have. The AI substrate is included; the compliance evidence is included; the jurisdiction is the customer's. The vendor competes on the workflow it has always competed on. The substrate was already solved.

The vendor competes on workflow. The platform was already solved.

ACC / 07.3 · GET ACCESS

For providers, software vendors, and integrators.

Bifrost is currently in controlled rollout. Engagement begins with a Solutions Architect conversation covering jurisdiction, workload, model fit, integration with your existing stack, and the evidence chain your audit team requires.

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