

MEDICINE + AI + ARCHITECTURE

Dr. Ixequi Luna

Physician (MD) · CEO & CTO · Principal AI Architect
Software Project Director

I design, code and ship deterministic, auditable, sovereign AI systems for industries where a mistake costs lives, liberty or assets.

“In critical industries an AI should not look intelligent: it should be verifiable, reconstructible and humble enough to stop when it has no grounds.”

13

SOFTWARE AND AI
PRODUCTS BUILT

90+

AI ENGINES
ARCHITECTED

1,700+

HANDS-ON COMMITS
ACROSS 16 REPOSITORIES

3,208

AUTOMATED TESTS
IN CONTINUOUS INTEGRATION

95.1%

TEST COVERAGE ON
THE MOST RECENT SYSTEM

0

LANGUAGE MODELS IN
THE CLINICAL DECISION

01 Executive profile

A hard-to-replicate combination: clinical judgment, production software engineering and company leadership in one person.

Physician and surgeon (MD, BUAP), technical founder and AI architect with an active clinical practice, research indexed in PubMed/PMC/Springer Nature and 61 credentials from Johns Hopkins, Yale, KAIST, Glasgow, Rice, Northeastern, Amazon Web Services, IBM, Google and Anthropic. I lead Firmus.IA, a Delaware-incorporated sovereign-AI factory, and Medicus.IA, a FHIR R4-native health operating system live in production.

I do not supervise people who write code: I write it. I build the core of every system in Python, TypeScript and Go, define the data contracts, design the schema, set up continuous integration and hold test coverage above 90%. In twelve months I have shipped production systems across healthcare, travel, energy, e-commerce and business operations, all under the same standard: traceable rules, signed evidence and the ability to say "I don't know".

The code is public. Alongside the commercial portfolio I maintain **health-interop-lab**, a polyglot clinical interoperability platform of 34,226 lines across Java, Kotlin, Go, C# and Angular, with six green continuous-integration workflows and 71 SOC 2 controls expressed as executable checks.

Value proposition

- **Domain and code.** I understand the business from the inside and translate it into requirements, rules, tests and software controls.
- **Determinism where it matters.** I separate probabilistic language from decisions that demand reproducibility, traceability and evidence.
- **From thesis to product.** I drive architecture, development, security, validation, deployment and operations end to end, with a team or alone.
- **Sovereignty and cost.** Local inference, data jurisdiction and an open-source stack with a recurring software cost close to zero.
- **Verifiable, not declarative.** Every technical claim in this document has a repository, a decision log and a continuous-integration workflow behind it.

— Evidence of impact

Systems in production, not prototypes

PuestoYa, Medicus.IA, PendentIA and Viajare's Engine 01 serve real users today; the rest of the portfolio advances with milestones and decision logs versioned in the repository.

3,208 automated tests

PuestoYa 232 at 95.1% coverage · Medicus.IA 411 · EmpoweringBiz 956 · Viajare 1,609, with 92% global coverage and 98% on the critical core.

75% less documentation time

Medicus.IA Pilot 0: from 60 to 15 minutes per patient across 100 consultations measured in real conditions.

Verifiable determinism

A clinical engine with no language models in the decision, a 259-file SHA-256 manifest and an integrity self-test.

19.5 million pesos

Multi-currency reconciliation errors the Grupo Pakal interface never showed, found by a layer-by-layer audit that is now permanent engineering practice.

Six languages, six green pipelines

health-interop-lab: Java, Kotlin, Go, C#, Angular and policy Python, with 71 SOC 2 controls as executable checks.

Published and credentialed

Corresponding author in Cureus (Springer Nature), 2025, and 61 credentials from Johns Hopkins, Yale, KAIST, Amazon Web Services, IBM, Google and Anthropic.

Architecture audit on AWS

Yaan Technology: product, architecture and security review of a LATAM social marketplace, with a 400-point improvement programme.

Where I create the most value

Technology leadership and AI architecture in healthcare and regulated industries: Chief AI Officer, Clinical AI Lead, Head of AI, CTO, Principal AI Architect or Medical Informatics lead. Hands-on engineering of deterministic engines, FHIR R4 and HL7 v2 interoperability, patient safety by design and auditable AI governance. Open to executive roles, specialist consulting and international remote projects.

FIRMUS.IA**CEO & CTO · Principal AI Architect and Engineer****JAN 2026 – PRESENT**

Delaware, USA · global operations from Mexico · hybrid

A sovereign-AI factory for industries where a mistake compromises lives, liberty or assets. Leadership team with Pablo Graña (President) and Jorge Ruiz Escamilla (Commercial Director, former Country Director of Facebook Mexico and Central America).

- Principal architect and engineer of every AI system in the company; I set the standards for determinism, auditability, traceability and on-premise operation that the other products inherit.
- A portfolio of nine in-house products plus client systems: Medicus.IA and PendentIA in production; PuestoYa, Pakal AI CRM and EmpoweringBiz delivered and under maintenance; AgricusIA, JuricusIA, EstudicusIA, EdifikusIA, Lattixe360G and 8Sano in development, with more than 90 AI engines architected.
- Multi-tenant platform with local models (Qwen, Llama, DeepSeek, Gemma, Phi and Mistral), typed signal chains between agents, and validation frameworks with automated tests and continuous integration on GitHub.
- Public roadmap: physician pilots in September 2026, one thousand points of care in November 2026 and institutional deployment in January 2027.

MEDICUS.IA**Chief Executive · Product Architect****JAN 2026 – PRESENT**

Mexico · hybrid · medicusia.com

A health operating system with a longitudinal record, physician console, patient portal and a deterministic clinical engine built for regulatory-grade auditability.

- Clinical engine with 21 contract-governed modules, a universal safety gate and 153 routes validated against IMSS and Ministry of Health guidelines; outputs as FHIR resources (DetectedIssue, OperationOutcome and List).
- Medication-safety engine: 7,234 drug-drug pairs, 1,069 signed drug-condition contraindications (11,424 pairs) and a four-layer prescription validator grounded verbatim in Mexican health regulation; ICD-10-MX to SNOMED mapping at 89%.
- Verifiable determinism: a 259-file SHA-256 manifest with an integrity self-test; zero language models and zero network calls in the decision path.
- Production application on Next.js 15, React 19, tRPC, Drizzle and PostgreSQL; 411 tests in continuous integration, an authenticated end-to-end harness across 45 screens and an append-only clinical audit trail.
- Pilot 0: clinical documentation cut from 60 to 15 minutes per patient across 100 consultations measured in real conditions.

PUESTOYA**Principal Architect and Engineer · independent professional services****SEP 2026**

Four-company industrial group · rh.puestoya.mx · remote

An HR and payroll operating system in production, with Mexican Federal Labour Law arithmetic verified line by line, an auditable employee file and monthly per-business-unit billing. Delivered in 330 billed hours against the 1,280 a conventional team would have estimated.

- Labour-law calculation engine verified against the statute in force: severance, indemnity, seniority premium capped between one and two minimum wages (articles 485 and 486), an integration factor of 1.049315 and the post-2023 vacation table, with seven material corrections over the previous prototype, each with its own regression test.
- 232 automated tests green at 95.1% line coverage over the layer where the money lives, across eleven suites, with a gate that blocks merging below 90%.
- Nineteen screens, sixteen tables with forty-six indexes and constraints, and an audit log the database itself will not let anyone edit or delete; 42 written architecture decisions, each with its rationale and the alternative discarded.
- The whole system runs with no JavaScript: forms travel over plain HTTP and fifteen end-to-end tests prove it, so it keeps working on old hardware or an unreliable network. Median 6 ms, 99th percentile 12 ms, and zero errors under 200 concurrent brute-force attempts.
- Per-business-unit billing module with a month-end cut-off and a frozen closed period, so an issued invoice cannot change afterwards; at a scale of two hundred workers it underpins 516,000 pesos of annual revenue for the group.

YAAN TECHNOLOGY & EXPERIENCE

Technical auditor and consultant
· technical direction under discussion

2026

LATAM social travel marketplace · AWS architecture · remote

A full product, architecture and security audit of a platform combining a social network with an experiences marketplace, delivered with a technical counter-proposal and an open conversation about taking over technical direction.

- Complete review of the AWS serverless architecture: AppSync with GraphQL, Lambda in Go on ARM64, Cognito, MongoDB Atlas with Atlas Search, ECS Fargate, CloudFront and WAF, Amazon Location, Elemental MediaConvert, and Bedrock with Guardrails, Comprehend and RAG.
- A 400-point improvement programme prioritised by impact and effort, with 50 vulnerabilities documented per domain from non-intrusive reconnaissance and threat modelling.
- Delivery-chain review: CDK in Go, continuous integration over OIDC with no long-lived credentials, preview environments and deployment traceability.
- A catalogue reconciliation engine ported from Viajare, with deterministic matching rules and severity-ranked reporting, as the proof of concept for the counter-proposal.

VIAJARE

AI Systems Architect · independent professional services

APR 2026 – PRESENT

Mexico · remote · six-month build, thirteen-month support

AI Travel OS: four sovereign AI engines for the operations of a travel agency with a network of around 130 advisors, built under a professional services agreement with full transfer of ownership on completion.

- Engine 01 · AI Auditor, in production since June 2026: six deterministic reconciliation rules (payment status, dates, passenger name with accent-tolerant fuzzy matching, payment availability, total amount and hotel) against five supplier platforms read live, with an executive report by severity.
- Engine 02 · Customer service and CRM, with three of four surfaces live: an operations inbox fed by WhatsApp, a ROAS and CAC board by campaign and destination, and a mobile-first commercial pipeline for the advisor network.
- A transversal core built from scratch: unified customer identity, append-only attribution from ad spend to sale, a metrics engine with six integrity rules, dimensional permissions across eight profiles, editable catalogs and a notification center.
- 1,376 backend and 233 frontend tests, with 92% global coverage and 98% on the critical core; continuous integration across four independent jobs: static analysis (ruff, strict mypy, bandit and pip-audit), unit tests with a coverage floor, contract fuzzing against OpenAPI, and frontend.
- Zero-software-cost architecture: FastAPI, Ollama with Qwen 3, FAISS, Pydantic v2, PostgreSQL with JSONB, Redis, Prometheus, Grafana, Docker and Tailscale, all under permissive licenses.

GRUPO PAKAL

AI Architect · Pakal AI CRM

FEB – SEP 2026 · UNDER MAINTENANCE

Mexico · Pakal Energía, Perforarc, UFOOD and CRB México

A sovereign AI system and executive CRM for a multi-company industrial group, integrated directly with the ERP under one governing principle: the AI proposes, the human decides. Delivered and live; I continue on support, evolutive maintenance and monitoring.

- Five modules delivered: Ops AI (B2B quoting), CRM AI (pipeline and lead scoring), Kitchen AI (demand forecasting), Customer AI (WhatsApp Business ordering) and a role-based executive dashboard.
- Odoo integration over XML-RPC (opportunities, expenses, invoices and analytic distribution) with three explicitly separated note identities: the AI's suggestion, read-only ERP data and the salesperson's manual entry.
- Individual authentication with a role-based permission matrix, collections and receivables with portfolio aging, 30/60/90-day forecasting and multi-currency reconciliation between pesos and dollars.
- A systematic layer-by-layer audit (money, security, frontend consistency and data integrity) established as permanent practice after detecting currency errors worth 19.5 million that the interface was not surfacing.

02 Experience · Technology leadership & AI architecture

EMPOWERINGBIZ

Software Architect

MAR – SEP 2026 · UNDER
MAINTENANCE

Mexico · remote

A platform of 32 specialized, orchestrated AI engines for strategy, implementation and operations, built for senior consultants. Delivered and live; I continue on support, evolutive maintenance and monitoring.

- Multi-layer architecture with typed signals, JSON contracts, controlled failure propagation and validation at every boundary; a single authorized engine emits the final strategy.
- Fully sovereign infrastructure: FastAPI, Celery, Redis, Ollama (Qwen 3.5, Llama 4, DeepSeek R1, Gemma 3 and Phi-4), Whisper Large V3 Turbo on CUDA, FAISS with nomic-embed, Supabase and Docker Compose.
- Documented growth from 322 to more than 956 automated tests, with full continuous integration on GitHub.

03 In-house and client products

Systems designed and coded directly by me, each with its own repository, decision log and versioned roadmap.

PendientIA

IN PRODUCTION

A multi-company operations system for Firmus.IA. Next.js 15, React 19, Prisma 6 on PostgreSQL, NextAuth v5 with 12-round bcrypt and a JWT httpOnly session, validation with Zod. Five roles with strict per-workspace isolation, invitations with accept or reject, a chat-style activity log, an executive dashboard, soft deletes and an audit log capturing IP address and user agent. The super-admin is restricted to metadata for data-protection compliance.

Caro de Nardo

IN BUILD

Ultra-premium e-commerce for a handmade Tuscan perfumery in Val'Quirico, a fifty-fifty partnership with creative and technical direction under my responsibility. A monorepo pairing a bespoke Next.js storefront on Vercel with a self-hosted Medusa v2 commerce engine extended with perfumery modules. Information architecture, five user flows, the data model and the design direction were all closed before the first line of code; payments by card, OXXO, SPEI and Kueski, with order notification over WhatsApp.

8Sano

IN DEVELOPMENT

A wellness and e-commerce application built on Next.js with TypeScript and Tailwind: habit plans, tracking and evidence-based recommendations, with catalog and online sales integrated into the same experience.

Other systems

ACTIVE

Grace (web application), Viñedos El Sueño (commerce and content with an emotion detector), IA Mundial, and the Firmus.IA, Medicus.IA and ixequiluna.ai sites, all in TypeScript on Next.js with continuous deployment.

FAMILY-OWNED COMPANY,
VAL'QUIRICO

Occupational Physician

AUG 2025 – PRESENT

Val'Quirico, Tlaxcala · hybrid

General and emergency care with an occupational-health focus for a tourism, residential and workplace setting: clinical assessment, prescribing, follow-up, risk prevention, incident response and continuity of care.

PRIVATE PRACTICE

Physician

SEP 2025 – PRESENT

Puebla · hybrid

First-contact consultation, diagnosis and follow-up of common and chronic conditions; responsible prescribing, longitudinal monitoring and patient education.

NATIONAL AMBULATORY
SURGERY NETWORK ·
MEDICAL R&D COMPANY

Co-founder · COO and CTO

· Executive Director of

Research

2025 – PRESENT

Mexico

Design of the clinical-operational model and governance for a network of ambulatory surgery centers, with process standardization, regulatory alignment and a national expansion plan. In parallel, direction of research lines and coordination of a 20-physician team.

HOSPITAL GENERAL DEL SUR ·
BIOMOLECULAR DETECTION
CENTER (BUAP)

Undergraduate internship ·

Social service in medical

research

2022 – 2024

Puebla

Rotations in emergency medicine, internal medicine, surgery, obstetrics and gynecology, pediatrics and family medicine; molecular-medicine and infectious-disease protocols, biological sample analysis and scientific writing.

TRANSFERABLE CAPABILITIES

CLINICAL

Diagnosis · primary care · emergency medicine · occupational health · safe prescribing · patient education

SCIENTIFIC

Research methodology · neuroimaging · clinical analysis · scientific writing · critical review

EXECUTIVE

Leadership · product · strategy · operations · risk assessment · multidisciplinary coordination

MEDICINE

Clinical reasoning, primary care, emergency care, occupational health, patient safety and indexed medical research.

ENGINEERING

Python, TypeScript and Go; data contracts, RAG, FHIR R4, PostgreSQL, Kafka, Kubernetes, continuous integration and local models.

LEADERSHIP

Product strategy, executive leadership, organizational design, operations, AI governance and company building.

More than a hundred technologies in use inside the systems described in this document or part of my regular engineering practice. AWS, Microsoft Azure and Google Cloud in use since February 2026. In August 2026, AWS was credentialed by Amazon Web Services and the transformers, fine-tuning and deep-learning track by IBM.

LANGUAGES & TYPING

Python 3.12 · TypeScript · Go · Java 21 · Kotlin · C# (.NET 8) · JavaScript · SQL · Bash · HTML5 · CSS3 · YAML · JSON Schema · Pydantic v2 · Zod

BACKEND & APIS

FastAPI · NestJS · Node.js · AWS AppSync (GraphQL) · tRPC · REST · GraphQL · gRPC and Protocol Buffers · WebSocket · OpenAPI · SQLAlchemy · Alembic · Celery · Lambda in Go (ARM64)

FRONTEND

Next.js 15 · React 19 · React Native · Expo · Angular · Vite · advanced TypeScript · Tailwind CSS · Zustand · TanStack Query · Motion (Framer) · mobile-first design · accessibility

DATA & PERSISTENCE

PostgreSQL 16 · JSONB · MongoDB and MongoDB Atlas · Atlas Search · Prisma 6 · Drizzle ORM · Neon · Supabase · Redis · SQL views and migrations · tsvector/GIN search · compound indexes · multi-tenant modeling

AI & MACHINE LEARNING

PyTorch · Transformers · fine-tuning · RAG · FAISS · S3 Vectors · sentence-transformers · embeddings · NLP · Whisper Large V3 · Ollama · Amazon Bedrock · Qwen · Llama · DeepSeek · Mistral · Gemma · Phi

APPLIED AI ARCHITECTURE

Multi-agent orchestration · deterministic expert systems · confidence thresholds and abstention · input and output guardrails · lead scoring · demand forecasting · anomaly detection · fuzzy matching · rule engines · prompt engineering

CLOUD & INFRASTRUCTURE

AWS (AppSync, Lambda, ECS Fargate, CloudFront, S3, Cognito, SQS, EventBridge, Amazon Location, Elemental MediaConvert, Pinpoint, WAF) · Google Cloud and GKE · Microsoft Azure · Vercel · Railway · Docker · Kubernetes · Terraform · CDK in Go · Nginx · Cloudflare Tunnel · Tailscale · CUDA and RTX GPUs

DISTRIBUTED & EVENT-DRIVEN ARCHITECTURE

Microservices · event-driven architecture · Apache Kafka · Amazon SQS FIFO with deduplication · EventBridge · Google Pub/Sub · Celery and Redis · idempotency · CQRS · controlled failure propagation · work queues and dead-letter queues · distributed caching · contract versioning

TECHNICAL SKILLS

DEVOPS & DELIVERY

GitHub Actions with OIDC · multi-workflow CI/CD · infrastructure as code · preview environments · feature flags · conventional commits · automated changelog · distroless images · Workload Identity

SECURITY & COMPLIANCE

HIPAA and SOC 2 as reference frameworks with 71 controls expressed as executable checks · JWT · NextAuth and Auth.js v5 · OAuth and magic link · bcrypt · role-based access control and dimensional permissions · secrets management and rotation · rate limiting · WAF · encryption in transit and at field level · SHA-256 integrity · append-only auditing · threat modelling

BUSINESS INTEGRATIONS

Odoo over XML-RPC · WhatsApp Business Cloud API · Meta Ads · Stripe · Mercado Pago · OXXO, SPEI and Kueski · Medusa v2 · Resend · Twilio · Amazon Pinpoint · DHL, FedEx and Correos de México

TECHNICAL LEADERSHIP

Design reviews · mentorship and developer onboarding · coding standards · runbooks and operational documentation · incident management · capacity planning · client-facing workshops and executive briefings

QUALITY & OBSERVABILITY

Pytest · Vitest · Playwright · Schemathesis · JUnit · Testcontainers · test-driven development · coverage above 90% · ruff · strict mypy · bandit · pip-audit · ESLint · SonarQube · OpenTelemetry · Prometheus · Grafana · tail sampling · contract fuzzing

HEALTH INTEROPERABILITY

FHIR R4 · HL7 v2 over MLLP · EDI X12 837P · SNOMED CT · ICD-10-MX and ICD-10 · UMLS · DrugCentral · RxNorm and DailyMed · national formulary · NOM-004 · NOM-024 · pharmacovigilance

PRODUCT ENGINEERING

Systems architecture · monorepos · contract-first design · domain modeling · technical documentation · roadmaps and decision logs · code review · technical-debt management · latency budgets

AI APPLIED TO ENGINEERING

Claude Code · Cursor · GitHub Copilot · local models for development · AI-assisted test, review and documentation automation · assisted infrastructure generation

DISTRIBUTED SYSTEMS ARCHITECTURE

Multi-tenant platforms with decoupled services, work queues, typed signal chains between agents, idempotency and versioned data contracts: Medicus.IA, Viajare, EmpoweringBiz, Pakal AI and health-interop-lab.

CLOUD-NATIVE FULL-STACK DEVELOPMENT

From data schema to interface: Python with FastAPI, Go, and TypeScript with Next.js on PostgreSQL and MongoDB, containerised and shipped through continuous integration and delivery.

TECHNICAL LEADERSHIP & MENTORSHIP

Technical direction of in-house and client teams, design reviews, developer onboarding, documentation and operational runbooks; coordination of a 20-physician research team.

PERFORMANCE, RELIABILITY & OBSERVABILITY

Latency budgets, indexes and materialised views, Redis caching, OpenTelemetry traces with tail sampling, Prometheus metrics, Grafana dashboards and OpenAPI fuzzing contract tests on every push.

CLIENT BRIEFINGS & DOCUMENTATION

Discovery sessions, technical proposals, executive demos and documented handover, with full transfer of ownership at closing.

TECHNICAL REQUIREMENTS COVERAGE

LANGUAGES

Python 3.12 and TypeScript as the daily production core · Go · Java 21 · Kotlin · C# (.NET 8) · SQL · Bash · Node.js

DATA

PostgreSQL with JSONB · MongoDB and MongoDB Atlas · Redis · multi-tenant modeling · migrations, views and indexes · full-text search

CLOUD & DEVOPS

AWS · Google Cloud and GKE · Azure · Docker · Kubernetes · Terraform and CDK · GitHub Actions with OIDC · CI/CD · end-to-end observability

AI APPLIED TO ENGINEERING

Claude Code · Cursor · GitHub Copilot · local models · automation of development, testing and documentation workflows with AI

TECHNICAL STANDARDS & ENGINEERING GOVERNANCE

I define the determinism, auditability, traceability and on-premise standards inherited by the twelve products in the portfolio: contract-first design, code review, decision logs and technical-debt management.

POLYGLOT SYSTEMS & PLATFORM MIGRATION

One clinical flow solved in five languages with each one's idiomatic tooling, including gRPC stub generation and cross-service OpenTelemetry instrumentation.

HEALTHCARE COMPLIANCE & SECURITY

HIPAA and SOC 2 as reference frameworks, implemented as role-based access control, encryption in transit and at field level, secrets management, append-only auditing, SHA-256 sealing and Mexican data-protection law.

TECHNICAL AUDIT & DUE DILIGENCE

Independent review of product, architecture, security and delivery, with prioritised findings, threat modelling and a quantified improvement programme, as at Yaan Technology and Grupo Pakal.

APIS & MESSAGING

REST · GraphQL and AppSync · gRPC with Protocol Buffers · OpenAPI · WebSocket · Apache Kafka · Amazon SQS FIFO · EventBridge · Google Pub/Sub · Celery and Redis

FRONTEND

React 19 · Next.js 15 · Angular · React Native and Expo · advanced TypeScript · Tailwind CSS · accessibility and mobile-first design

HEALTH & REGULATED SECTORS

FHIR R4 · HL7 v2 over MLLP · EDI X12 837P · SNOMED CT · ICD-10 · pharmacovigilance · clinical-record system integration · HIPAA and SOC 2

06 Flagship case · Medicus.IA: clinical safety as architecture

Figures measured in the Medicus.IA and Firmus.IA repositories between July and August 2026. They describe the state of the product, not a regulatory certification.

21 CLINICAL MODULES IN PRODUCTION	153 ROUTES VALIDATED AGAINST GUIDELINES	466+ CLINICAL VIGNETTES WITH ZERO FAILURES	7,234 DRUG-DRUG PAIRS
1,069 DRUG-CONDITION CONTRAINDICATIONS	413+31 DOSING RULES AND HIGH-RISK CEILINGS	259 FILES SEALED WITH SHA-256	411 CI TESTS AND 45 E2E SCREENS

Layer A · Safety gate

Twenty universal red flags are numerically recomputed before the case is routed; an emergency unrelated to the chief complaint blocks the routine path and escalates the patient.

Layer B · Clinical modules

Twenty-one contract-governed modules on IMSS and Ministry of Health guidelines, with 153 routes and every recommendation traceable to its evidence node.

Layer C · Safe prescription

Formulary presentation checks, verbatim regulatory completeness, dose validation against a signed ruleset, and a non-blocking drug-diagnosis advisory via SNOMED (637,352 hierarchical relations).

Design principles

- Zero language models in the clinical decision: they are confined to transcription, documentation and structured extraction.
- The same input produces the same output, and every recommendation reconstructs back to the rule, guideline or legal article that produced it.
- An international core (DrugCentral, SNOMED, UMLS and FHIR) with a swappable national layer; the United States sources are already acquired.
- Medicus.IA suggests and documents; the physician keeps the judgment and signs the decision.

09 Firmus.IA portfolio

PRODUCT	STATUS	SCOPE
Medicus.IA	IN PRODUCTION	Health operating system with deterministic clinical AI, longitudinal record, medication safety and FHIR R4 interoperability.
PuestoYa	IN PRODUCTION	HR and payroll system with a Mexican labour-law engine, an immutable audit log and monthly per-business-unit billing.
PendientIA	IN PRODUCTION	Multi-company operations system: tasks, Kanban boards, search, PDF reporting and bulk import.
EmpoweringBiz	DELIVERED	Thirty-two engines for analysis, modeling, risk and strategic synthesis. Under support and maintenance.
Viajare AI Travel OS	PARTLY IN PRODUCTION	Four AI engines for booking audit, customer service, CRM and commercial-network health.
health-interop-lab	PUBLIC	Polyglot clinical interoperability platform: HL7 v2, Kafka, FHIR, gRPC, EDI X12 and SOC 2 as code.
Pakal AI CRM	DELIVERED	Sovereign AI and multi-company executive CRM with Odoo integration, collections, forecasting and WhatsApp ordering. Under support and maintenance.
Caro de Nardo · 8Sano	IN BUILD	Ultra-premium e-commerce on Medusa v2 · wellness and commerce application with habit plans.
AgricusIA · JuricusIA	COMING SOON	Predictive AI for agribusiness · contract analysis and deterministic legal reasoning.
EstudicusIA · EdifikusIA · Lattix360G	COMING SOON	Adaptive learning · real-estate analytics · marketing automation.

07 Technical case · health-interop-lab: a polyglot interoperability platform

Public repository at github.com/ixequiluna-source/health-interop-lab. It exists to demonstrate, with real code, tests and continuous integration, the technologies the rest of this document claims. Sample data is synthetic, and the compliance section demonstrates that controls can be expressed as code; it is not a SOC 2 report.

198

VERSIONED FILES

34,226

LINES OF CODE

6

CI WORKFLOWS ALL SIX GREEN

71

SOC 2 CONTROLS AS EXECUTABLE CHECKS

ONE CLINICAL FLOW, FIVE LANGUAGES

HL7 v2 ADT over MLLP → hl7-ingest (Java 21)

→ Apache Kafka → fhir-mapper (Kotlin) → MongoDB

→ patient-gateway (Go · gRPC) → console (Angular)

→ claims-edl (C# .NET 8) → Amazon SQS FIFO

all instrumented with OpenTelemetry · Terraform on GKE

SERVICE	TECHNOLOGY	ROLE
hl7-ingest	Java 21	MLLP listener that tokenises ADT, validates the MSH segment and publishes to Kafka. 2,496 lines.
fhir-mapper	Kotlin	Kafka consumer that maps to FHIR R4 and persists to MongoDB, with explicit commit semantics. 4,515 lines.
patient-gateway	Go	Read-only gRPC service over MongoDB, with graceful shutdown, keepalive and a self-healthcheck. 1,465 lines.
claims-edl	C# .NET 8	EDI X12 837P claims generator published to an SQS FIFO queue with deduplication. 5,653 lines.
console	Angular	Clinical lookup console over the gRPC gateway. 4,957 lines.
infra & policy	Terraform · K8s · Python	631 lines of Terraform on GKE, 1,155 of manifests and 410 of executable SOC 2 policy checks.

CONTINUOUS-INTEGRATION HISTORY · THE THREE FAILURES AND THEIR REAL CAUSE

OpenTelemetry collector

Validation resolves environment variables and the job did not have them, so it rejected an empty endpoint. They are passed as job-level placeholders rather than writing the endpoint into the file, because keeping it out of the artifact is the control being demonstrated.

None of the three was a business-logic failure.

Go

Stub generation, module resolution, vet, build and tests all passed. The only thing that broke was the coverage profile, because the runner lacks the tool that writes it. The profile was dropped and the race detector kept.

Kotlin

Two chained failures: the shutdown-hook signature and, after that, two tests asking the mock consumer what had been committed after the loop closed it. Closing is the correct production behaviour, so the fix was to capture every commit as it happened.

08 Engineering decisions · what is not obvious until it fails

Every decision is documented in the code itself, next to the line that implements it. This is the kind of detail that separates a system that compiles from one that can be operated inside a hospital.

01

The MSH segment is offset by one field

MSH-1 is the separator, so the header tokenises differently from every other HL7 segment. Splitting it uniformly makes the ACK cite the wrong control id, and the sender retransmits forever.

03

Requests and limits are different controls

With no limit a pod starves its neighbours; with no request it lands in BestEffort and is the first thing evicted. For an MLLP listener that means dropping a live clinical feed.

05

Hashing an identifier is not anonymising it

A hashed MRN is still a stable per-patient key and re-identifies anyone correlated against a second dataset. The trace collector *deletes* those attributes rather than transforming them.

07

Partial dates are legal in HL7

Padding "1974" to the first of January invents a date of birth from which paediatric dosing is later calculated.

09

gRPC reflection is a development convenience and a production leak

It hands the full service and message schema to any unauthenticated caller that can open a connection. It sits behind an environment variable that logs a warning when enabled.

02

An ACK is a durability promise

Returning AA before publishing the event tells the hospital an admission is safe when it was never written. The service withholds the ACK and closes the connection to force the sender's retry.

04

"At least once" means billing the same patient twice

A duplicate charge adjudicates, it does not bounce. Hence the FIFO queue and a deduplication id derived from the claim content.

06

A NetworkPolicy with no CNI to enforce it is inert YAML

That is why enabling the network plugin is not optional in the Terraform, and a test asserts that the read gateway has no egress path to Kafka.

08

Tail sampling keeps the trace you actually need

Head sampling throws away 90% of traces before knowing whether they are interesting. The collector keeps every error and every slow trace, and samples the rest at 5%.

10

A memory limiter belongs before the batcher, not after

The processor that rejects data has to run first in the pipeline; placed after the batcher it watches a queue that has already grown. That is the difference between shedding load and running out of memory.

Sixty-one verifiable credentials issued between 2016 and 2026. Individual credential identifiers are available on request and published on the LinkedIn profile.

GENERATIVE AI ENGINEERING AND LANGUAGE MODELS

IBM · **Generative AI Engineering Professional Certificate** (2026), the full programme that groups the track below

Generative AI Advanced Fine-Tuning for LLMs · Generative AI Engineering and Fine-Tuning Transformers · Generative AI Language Modeling with Transformers · Gen AI Foundational Models for NLP & Language Understanding · Generative AI and LLMs: Architecture and Data Preparation (2026)

Fundamentals of AI Agents Using RAG and LangChain · Project: Generative AI Applications with RAG and LangChain (2026)

Introduction to Deep Learning & Neural Networks with Keras · Generative AI for Data Scientists (specialization) · Generative AI: Elevate Your Data Science Career (2026)

CLOUD, DATA AND MACHINE LEARNING

Amazon Web Services · Introduction to Information Technology and AWS Cloud (2026)

IBM · Machine Learning with Python · Data Analysis with Python · Python for Data Science, AI & Development (2026)

Anthropic · Claude Code in Action (2026)

APPLIED GENERATIVE AI AND DEVELOPMENT

IBM · Building Generative AI-Powered Applications with Python · Developing AI Applications with Python and Flask · Generative AI: Prompt Engineering Basics · Generative AI: Introduction and Applications · Introduction to Artificial Intelligence (2026)

Google · AI Fundamentals · Google AI · AI for App Building · AI for Data Analysis · AI for Research and Insights · AI for Content Creation · AI for Writing and Communicating · AI for Brainstorming and Planning (2026)

USER EXPERIENCE DESIGN

Google · Foundations of User Experience (UX) Design · Start the UX Design Process: Empathize, Define, and Ideate · Build Wireframes and Low-Fidelity Prototypes (2026)

CLINICAL SOFTWARE AND MEDICAL INFORMATICS

Yale · Introduction to Medical Software (2025)

Coursera · GenAI for Healthcare Automation · Introduction to Generative AI in Healthcare (2025)

Rice University · Medical Terminology I (2026)

NEUROSCIENCE, IMAGING AND DIAGNOSTICS

Johns Hopkins · Neuroscience and Neuroimaging Specialization · Principles of fMRI 1 and 2 · Fundamental Neuroscience for Neuroimaging (2025)

KAIST · MRI Fundamentals (2025) · **Yale** · Visualizing the Living Body: Diagnostic Imaging (2025) · **University of Glasgow** · Biomedical Visualisation (2025)

HEALTHCARE MANAGEMENT, PUBLIC HEALTH AND RESEARCH

Northeastern · Analytics in Healthcare Management (2025) · **Johns Hopkins** · Introduction to Ambulatory Healthcare Management (2025)

University of Colorado · Scientific Writing for Research Grant Proposals (2025) · **PAHO/WHO** · Assistive Technology in the Americas (2025)

UNAM · Ocular Pharmacovigilance · Learning: Metacognition (2025) · **Mexican Ministry of Health** · Clinical Context of Malaria · **Universidad Industrial de Santander** · Foundations of Electrocardiography · **University of New Mexico** · Curanderismo: Traditional Healing Using Plants

CONTINUING AND COMPLEMENTARY MEDICAL EDUCATION

Universidad Anáhuac Puebla · Diploma in Occupational Medicine and Health (2025)

BUAP · International seminar on sociocultural transformations in Latin America (2024) · National Embryology Congress · Breast Cancer Symposium · Physiology Forum · National Meeting on Cell and Molecular Biology

Trinity College London · Graded Examination in Spoken English, Grade 6 with distinction (2016)

11 Research & intellectual output

INDEXED PUBLICATION (PUBMED / PMC / SPRINGER NATURE)

Luna-Mendoza I, Torres-Rasgado E, Cerón-Morales JA. *Autism Spectrum Disorder and Temporal Lobe Epilepsy in a Physician: A Self-Reported Case of Neuropsychiatric and Functional Adaptations*. Cureus. 2025;17(9):e93350. DOI 10.7759/cureus.93350 · PMID 41158905 · PMCID PMC12558430 · Corresponding author.

- Concept and design, data acquisition and interpretation, clinical-radiological correlation by magnetic resonance spectroscopy, drafting and critical revision of the manuscript.
- Grade point average of 9.6 out of 10, among the highest in my class, as reported in the article.

UNDERGRADUATE THESIS (BUAP, 2025)

Adapting the academic environment for students with Autism Spectrum Disorder. Design and validation of a replicable screening-and-intervention manual for university inclusion.

TECHNICAL ARTICLES (2026)

- *Why Deterministic AI Beats LLMs in Clinical Decision-Making*
- *Data Sovereignty: Why Your AI Should Never Leave Your Building*
- *How I Built 32 Orchestrated AIs for a Single Business Platform*

LANGUAGES

Spanish native (C2) · English professional working proficiency: Trinity College London GESE Grade 6 with distinction, technical documentation and scientific publication in English · French basic (A1)

10 Education

Benemérita Universidad Autónoma de Puebla Physician and Surgeon (MD) · thesis track	2016 – 2024
Universidad Anáhuac Puebla Diploma in Occupational Medicine and Health	2025
Biomolecular Detection Center · BUAP Social service in medical research	2023 – 2024
Hospital General del Sur Undergraduate medical internship	2022 – 2023
Centro de Estudios Visuales (CEVi) Specialization in Art History · 156 hours	2024 – 2025
BUAP Certificate in Latin American sociocultural transformations	2024

DIRECT CONTACT

Let's talk about systems that are accountable.

Available for technology leadership, clinical-AI architecture and high-impact projects in healthcare and regulated industries, in Mexico or remotely worldwide.

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github.com/ixequiluna-source
calendly.com/ixequiluna

Sources verified between August and September 2026: GitHub (ixequiluna-source), the README and ROADMAP files of medicusia-app, medicusia-ai-engines, empoweringbiz-ia, viajare-ai-travel-os, pakal-ai, pendientia-app, caro-de-nardo and health-interop-lab; the PuestoYa delivery and valuation report, folio IXL-ENT-2026-0904-3, with test and load runs from 4 and 7 September 2026; plus ixequiluna.ai, firmusia.com, medicusia.com, rh.puestoya.mx, LinkedIn and PubMed Central. Credential identifiers are available on request.