

# TIZIANO CONTORNO

## Chief Artificial Intelligence Architect (Solo Builder)

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## PROFESSIONAL SUMMARY

26 years spanning enterprise infrastructure and AI systems. Career progression: Unix/Linux administration (1999-2007), solution architecture and virtualization (2007-2016), Kubernetes and cloud-native platforms (2016-2022), AI systems development (2021-present).

Solo builder combining infrastructure operations depth with AI application development. Technical specialist for mission-critical platforms across European telecommunications, banking, and government institutions (NATO, eu-LISA). Transitioned to AI systems in 2021, self-taught Python through LLM-assisted learning. Built entire platform through AI-assisted development.

Current work: AI agent orchestration platform with event-sourced architecture and governance, e-commerce RAG system with multi-space vector search, real-time voice AI with telephony integration, multi-provider LLM gateway. First production rollout in progress (Q1 2026). Infrastructure background ensures production-ready systems with proper observability, streaming architecture, and operational discipline.

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## TECHNICAL EXPERTISE

### AI & Machine Learning

**Platform & Orchestration:** Agent orchestration with event-sourced architecture, approval workflows, and governance. Multi-agent systems with manager→specialist delegation, handoffs, and bounded parallelism. Model Context Protocol (MCP) server development and hosting. Agents SDK for multi-provider routing.

**RAG & Vector Search:** Built systems using pgvector (PostgreSQL), Qdrant, Milvus. Multi-space vector architectures for specialized semantic search (health, ingredients, beauty, guides). HNSW indexing, embedding strategies, query refinement. 100,000+ product catalog with real-time streaming chat.

**Voice AI & Telephony:** LiveKit VoicePipelineAgent with Asterisk/SIP integration. STT/TTS pipelines (Deepgram, ElevenLabs, Cartesia), voice activity detection, telephony operations (call transfer, multi-language support). Built for telemonitoring support applications.

**LLM Integration:** OpenAI (Responses API, Realtime API), Anthropic, Google Gemini, xAI, Ollama. Multi-provider gateways with whitelabeled architecture. Streaming-first design (SSE, WebSocket). OAuth 1.0a/2.0 for platform integrations (Magento, enterprise APIs).

**Infrastructure:** Nvidia Triton Inference Server, Metal/Core ML acceleration for Apple Silicon, model quantization, privacy-first local deployments.

### Backend Development

Python with type safety (Pydantic, basedpyright), FastAPI with async patterns (asyncio, httpx, asyncpg). PostgreSQL optimization, WebSocket/SSE streaming, OAuth 1.0a/2.0. Testing with pytest using real APIs, no mocking. Quality tools: Ruff, complexity analysis, unified gates.

Built through AI-assisted development with infrastructure-grade discipline: evidence-based integration, full type coverage, automated quality gates. Development standards prioritize type safety, explicit error handling, and production readiness.

## Frontend Development

Vue 3 Composition API, React 19, Next.js 15, TypeScript. Build tools: Vite, pnpm workspaces, Turbopack. Tailwind CSS v4, shadcn-vue/shadcn-ui, Radix UI primitives. Real-time patterns with WebSocket and SSE.

## Infrastructure & Cloud Native

Kubernetes production clusters including NFV-capable deployments for telecommunications. OpenShift (3.11, 4.x) at enterprise scale. AWS, GCP, IBM Cloud, Hetzner, OpenStack.

Infrastructure as code: Terraform, Ansible, CloudFormation, GitOps. Monitoring: Prometheus, Grafana, ELK Stack, custom metrics.

Operating systems: 26 years with Linux (RHEL, Ubuntu, SUSE), 15 years with UNIX (HP-UX, Solaris, AIX). Virtualization: VMware, KVM, Oracle VM.

Networking: Istio/OpenShift Service Mesh, Kafka/Event Streams, Calico, Flannel. Disaster recovery architecture design.

## Methodologies & Practices

Site Reliability Engineering (SLO/SLI definition, incident response). DevOps, Agile (Scrum, Kanban), ITIL v3. Streaming-first design, configuration externalization, evidence-based documentation. Development philosophy emphasizes type safety, explicit error handling, and production readiness.

## Industry Experience

Telecommunications (TIM, SKY Italia), Financial Services (Banca Intesa San Paolo), Government (eu-LISA, SIAE), Postal Services (Poste Italiane), Transportation (Ferrovie dello Stato), Manufacturing (Lafarge Cement), Gaming (Codere), Insurance (ConTe.it).

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## CAREER PROGRESSION

**1999-2007: System Administration Foundation** Linux, HP-UX, and Solaris administration. High-availability clustering (HP ServiceGuard, Veritas Cluster). OS installation, patching, security hardening. Datacenter operations, 24/7 on-call support.

**2007-2016: Solution Architecture Era** Solution architecture for European enterprises. Disaster recovery design, datacenter consolidation projects across multiple countries. System hardening, security compliance. Virtualization adoption (Oracle VM, VMware). Technical specialist working with teams across Italy, France, Germany, India. ITIL process implementation.

**2016-2019: Cloud-Native Transformation** Kubernetes adoption in enterprise environments. NFV-capable cluster design for telecommunications (5G infrastructure). Monolithic-to-microservices migrations. DevOps practice establishment, automation expansion.

**2019-2022: Site Reliability Engineering** OpenShift platform management at scale. Security-cleared environments (NATO, eu-LISA European institutions). Infrastructure-as-code advancement. Production observability systems.

**2021-Present: AI Systems & Platform Engineering** Transitioned to AI while maintaining infrastructure expertise. Built multi-tenant agent orchestration platforms with governance and approvals, production RAG systems with multi-space vector search, real-time voice AI with telephony integration, multi-provider gateways. Developed frameworks for AI-assisted development and multi-agent orchestration. Combined 22 years of infrastructure operations discipline with modern AI capabilities.

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## PROFESSIONAL EXPERIENCE

### Chief Artificial Intelligence Architect (Solo Builder)

**Value-Shore** | Belgrade, Serbia | *January 2025 – Present*

Solo builder developing AI platform from ground up through AI-assisted development. Combines infrastructure operations discipline with modern AI capabilities. Work spans agent orchestration platform, AI-powered applications, and development frameworks. First production rollout in progress (Q1 2026).

**Smooth Operator Platform** — AI agent orchestration platform with multi-tenant architecture. Event-sourced architecture with append-only Event Store for deterministic replay and audit. Multi-agent workflow engine supporting manager→specialist delegation, handoffs, agent-as-tool composition, bounded parallelism. Governance layer with approval workflows for high-risk operations, policy-based tool execution, role-based access control. Platform components: Operator Console (engine management, workflow composition, stream inspector, usage dashboards), Customer Portal (tenant-scoped API keys and usage), Python SDK + CLI, embeddable chat widget. Provider abstraction via whitelabeled engines—zero OpenAI/Anthropic/Google exposure at API edge. Streaming-first design with SSE; sync responses aggregate same event stream. Token-based billing with cost controls (budgets, quotas, engine defaults). Quality loop with eval sets, regression runs, red-teaming, pass/fail gates pre-publish. Built on FastAPI, PostgreSQL, Agents SDK (MultiProvider + LiteLLM for routing). Platform under active development.

**E-commerce Intelligence Chatbot** — Production deployment for health and wellness operation in Balkans. MCP server with multi-space vector architecture (health conditions, ingredients, beauty concerns, guides) across 100,000+ products. FastMCP + FastAPI, pgvector HNSW indexes, real-time streaming chat. Magento OAuth integration, admin dashboard, conversation tracking, Serbian character preservation. First production rollout Q1 2026.

**Voice AI Telephony** — Real-time voice AI agent for telemonitoring support. LiveKit VoicePipelineAgent with Asterisk/SIP telephony integration. STT/TTS pipelines (Deepgram, ElevenLabs, Cartesia), voice activity detection, call transfer, multi-language support. Proof-of-concept and platform integration development.

**Infrastructure & SDKs** — LICOSA multi-provider gateway: unified SDK across OpenAI, Anthropic, Google, xAI, Ollama with whitelabeled architecture and zero provider exposure in public APIs. MCP server hosting platform with OAuth 2.0. AI-RGAP local-first RAG system with MLX embeddings for Apple Silicon privacy-first deployments.

**Development Practices** — Built entirely through AI-assisted development with infrastructure-grade discipline. Methodology emphasizes evidence-based integration (inspect library internals, cite actual behavior), full type coverage (basedpyright strict, zero type ignores), automated quality gates (Ruff, complexity analysis, test coverage). Core principles: minimalism, explicit structure, orthogonal design. Multi-agent orchestration patterns with manager→specialist delegation, state management, system prompts, handoff protocols. FastAPI vertical slice patterns. Development standards for Python and JavaScript/TypeScript prioritizing type safety, explicit error handling, and production readiness.

**Technologies:** Python, FastAPI, Vue 3, TypeScript, PostgreSQL, pgvector, Agents SDK, MCP, OpenAI, Anthropic, Google Gemini, Ollama, Qdrant, Milvus, LiveKit, Asterisk, SIP, Deepgram, ElevenLabs, OAuth

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### OpenShift DevOps & Site Reliability Engineer

**IBM** (contractor for eu-LISA) | Strasbourg, France | *October 2022 – December 2024*

OpenShift and Kubernetes specialist for eu-LISA (European Union Agency for operational management of large-scale IT systems). Operated Europe's largest sandboxed OpenShift 4.x installation in high-security environment. 500-server migrations, Ansible automation, storage troubleshooting. GitOps deployment pipelines. Kafka, gRPC, Istio operations. Worked with European security teams on compliance and audit. 24/7 on-call support. Technical documentation.

**Technologies:** OpenShift 4, Kubernetes, Ansible, Prometheus, Grafana, GitLab CI, Terraform, Linux (RHEL 8), Python

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## **Freelance Consultant, Solution Architect, and Educator**

**Self-Employed** | Worldwide Remote | *September 2021 – September 2022*

**AI Transition Period** — Shifted focus from infrastructure to AI systems while consulting across multiple domains. This period established foundation for current AI platform work.

AI systems: Built full-stack application with local LLM deployment and vector database (Nvidia Triton Inference Server, Ollama, Milvus, FastAPI, Svelte). Explored RAG architectures, embedding strategies, model serving infrastructure. Established patterns later applied in current platform work.

Architecture & migration: Advised on monolithic-to-microservices transitions, open-source architecture decisions, production system design. Applied infrastructure operations experience to emerging AI deployment challenges.

Blockchain & education: Solidity consulting for smart contracts, DeFi protocols, NFT platforms (Ethereum, Web3.js). Teaching and training services in software architecture and development.

**Technologies:** Python, FastAPI, Svelte, Nvidia Triton, Ollama, Milvus, Solidity, Ethereum, Web3.js

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## **Senior Site Reliability Engineer**

**ITDM Srl** | Rome, Italy | *December 2019 – September 2021*

OpenShift and Kubernetes specialist providing system engineering and infrastructure services across multiple client engagements and internal projects. Red Hat enterprise platform expertise with focus on operations, delivery, and change management.

**Poste Italiane** (December 2019 – June 2020): OpenShift specialist for Italy's national postal service (130,000+ employees). Administered OpenShift 3.11 and 4.x clusters (production and non-production). Backup automations, monitoring and alerting (Prometheus, Grafana, ELK). Platform operations automation and deployments. Worked with application teams on containerization. Capacity planning, resource optimization. Incident response, root cause analysis.

**Other Engagements** (June 2020 – September 2021): OpenShift and Kubernetes system engineering for multiple clients and internal projects. Infrastructure design, Red Hat platform operations, cluster administration, automation development.

**Technologies:** OpenShift 3.11/4.x, Kubernetes, Docker, Prometheus, Grafana, ELK Stack, Jenkins, Ansible, Python, Bash

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## **Kubernetes Specialist**

**DB Services Srl / TIM** | Rome, Italy | *June 2019 – November 2019*

Designed and implemented Kubernetes cluster with NFV capabilities for TIM (Telecom Italia Mobile). Architected production cluster for telco workloads. Implemented NFV infrastructure for 5G network functions. Integrated with existing datacenter infrastructure. Security policies and network segmentation.

**Technologies:** Kubernetes, Docker, SR-IOV, Calico, Helm, Prometheus, Linux (Ubuntu)

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## Technical Advisor

**DB Services Srl / TIM** | Rome, Italy | *June 2018 – November 2019*

Advised on “FlyTogether” project migrating monolithic applications to OpenShift microservices. Assessed architecture, identified decomposition strategy. Designed microservices architecture aligned with business capabilities. Technology stack recommendations, integration patterns. Guided development teams through refactoring and containerization. Established CI/CD pipelines, deployment automation.

**Technologies:** OpenShift, Kubernetes, Docker, Spring Boot, PostgreSQL, Redis, Kafka, Jenkins

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## Systems Engineer

**DB Services Srl / ConTe.it** | Rome, Italy | *February 2017 – February 2018*

Oracle VM migration and architecture design. Monitoring and patch management solutions. Infrastructure provisioning automation with Terraform and Ansible.

**Technologies:** Oracle VM, Terraform, Ansible, Linux

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## System Engineer

**DB Services Srl / Codere** | Rome, Italy | *February 2016 – November 2019*

*(Concurrent with other consulting engagements 2017-2019 below)*

Administered Solaris, Linux, and Veritas cluster systems for gaming platform. Infrastructure assessment and optimization. Monitoring and performance tuning. Operational task automation.

**Technologies:** Solaris, Linux, Veritas Cluster Server, VMware, Nagios, Ansible

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## Solution Architect, System Engineer & Technical Advisor

**DB Services Srl / SKY Italia** | Rome, Italy | *August 2013 – January 2016*

Solution architecture and systems engineering for broadcast/media infrastructure. Oracle VM administration, disaster recovery planning. Red Hat OS and cluster engineering. System hardening, security compliance. High-availability infrastructure for broadcast systems. Security compliance certifications.

**Technologies:** Oracle VM, Red Hat Enterprise Linux, Veritas Cluster Server, VMware

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## Solution Architect & System Engineer

**ASYSTEL SpA** | Milan, Italy | *March 2012 – August 2013*

Designed and implemented ASTERISK VoIP telephony solutions. Architected VoIP infrastructure for telecommunications. Call routing, IVR systems, telephony integrations. SIP trunk configurations, voice gateway architectures. IT operations and infrastructure management.

This VoIP work preceded current real-time voice AI systems (LiveKit + Asterisk/SIP, 2024-2025) by twelve years.

**Technologies:** ASTERISK, VoIP, SIP, Linux

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## **Solution Architect & System Engineer**

**HCL Technologies LTD / Lafarge Cement** | EMEA | *May 2011 – March 2012*

Datacenter consolidation across European locations. Migrated hundreds of servers and applications across data centers in Italy, France, Germany. Worked with multinational teams across four countries. HP-UX architecture design. HP Serviceguard cluster configuration.

**Technologies:** HP-UX, HP Serviceguard, VMware

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## **Solution Architect & System Engineer**

**HCL Italia / SKY Italia** | Rome, Italy | *November 2010 – May 2011*

UNIX on-site specialist. Worked with offshore team on infrastructure operations. Solution architecture for broadcast infrastructure.

**Technologies:** Solaris, HP-UX, Linux

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## **Solution Architect & System Engineer**

**REPLY (Atlas) / SKY Italia** | Rome, Italy | *May 2008 – November 2010*

Architecture design and implementation on Solaris, Linux, HP-UX systems. System engineering for broadcast infrastructure. ITIL process implementation and compliance. High-availability solutions.

**Technologies:** Solaris, Linux, HP-UX, VMware

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## **Solution Architect & System Engineer**

**JNET 2000 / Banca Intesa San Paolo, SIAE, Ferrovie Italiane** | Rome, Italy | *January 2008 – March 2008*

Solution architecture for banking, copyright management, railway sectors. Built disaster recovery site for Oracle RAC. LDAP servers for enterprise authentication. High-availability Linux clusters. Infrastructure for national railway ticketing system supporting millions of daily transactions.

**Technologies:** Oracle RAC, LDAP, Linux clustering (Pacemaker)

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## **System Administrator**

**TIM** | Rome, Italy | *May 2007 – December 2007*

Managed HP-UX, Solaris, Linux systems for telecommunications infrastructure. Cluster configuration and maintenance. OS patching, updates. System performance monitoring and tuning.

**Technologies:** HP-UX, Solaris, Linux, HP Serviceguard

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## **Linux, HP-UX, and Solaris Cluster Administrator**

**Harpa Italia srl** | Rome, Italy | *April 1999 – April 2007*

Progressed from Linux administration to managing HP-UX and Solaris clusters. Administered Linux (Red Hat, SUSE), HP-UX, Solaris in production. Configured and maintained high-availability clusters (HP ServiceGuard, Veritas Cluster). OS installation, patching, security hardening. Backup and recovery procedures. Storage management (SAN, NAS). 24/7 on-call support. Automation scripts.

**Technologies:** Linux (Red Hat, SUSE), HP-UX 11.x, Solaris 8/9/10, HP ServiceGuard, Veritas Cluster Server, Oracle Database, Apache, Sendmail, NFS, Samba, Shell scripting

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## EDUCATION & CERTIFICATIONS

### Education

**Bachelor of Applied Science in Artificial Intelligence** (*In Progress*) IU International University of Applied Sciences | Remote | Expected 2026 Focus: Machine learning, deep learning, NLP, computer vision, AI ethics

**IBM Introduction to Artificial Intelligence (AI)** | December 2023

**High School Diploma** | Italy

### Certifications

- Red Hat Certified System Administrator (RHCSA) | Red Hat | Cert. ID 200-121-739 | August 2020 (expired September 2023)
  - Confluent Fundamentals for Apache Kafka | Confluent | January 2021
  - ITIL v3 Foundation | EXIN | 2009
  - HP-UX CSA (Certified Systems Administrator) | Hewlett-Packard | 2006
  - Microsoft Certified Professional MCP Windows 2000 Server | Microsoft | 2000
  - NATO Windows NT System Administration | Spawar Systems - San Diego | 1999
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## TECHNICAL PHILOSOPHY

Systems should be simple, clear, and production-ready. Code follows idiomatic patterns, handles errors explicitly, prioritizes developer experience.

Quality is measured in clarity, maintainability, and operational excellence.

KISS principle. Explicit over implicit. No mocking in tests. Real APIs, real reliability. Type safety with full hints and Pydantic validation. Unified quality gates: linting, type checking, complexity analysis.

Technology evolves. Relevance comes from mastering fundamentals and embracing change. From Unix to AI, the constant is learning.

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## LANGUAGES

- Italian: Native
  - English: Fluent (professional working proficiency)
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## PERSONAL INTERESTS

Mathematics (calculus, statistics, linear algebra), game design (published two-player board game), videogames, philosophy, astronautics, Baroque and Romantic music, chess (former Italian Chess Federation)

member), karting (former Italian Karting Federation member), photography (astrophotography and landscape).

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*Last Updated: October 2025*

**References available upon request**