

Trent Carter

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Online resume: <https://www.trentcarter.com> · True Synthesis Inc: <https://truesynthesisai.com/>

VerdictIDE: <https://verdictide.com> · L3Harris: <https://www.l3harris.com>

PROFESSIONAL SUMMARY

30-year staff-level engineer and architect with a track record of shipping production systems across AI, cloud, distributed networking, and aerospace. Founder and Chief AI Architect of True Synthesis Inc, where I built VerdictIDE -- a 5-tier hierarchical multi-agent orchestration platform integrating 14+ LLM providers, with enterprise budget governance, semantic validation, and a programmer-pool parallelism model. Concurrently Lead Cloud Architect at L3Harris, where I led an end-to-end AWS GovCloud migration of a LEO satellite ground system and standardized IaC across multi-VPC mission networks under STIG. Earlier: F-35 avionics IV&V architect; VP of Engineering at two companies (multi-million-dollar budgets, 48+ shipped iOS apps with millions of users); 10 years of wireless systems work at Conexant / Harris Semiconductor on 802.11 a/b/g/n. Looking for a Staff or Principal role driving large-scale AI infrastructure, multi-agent systems, or production ML platforms inside a Mag-7 AI organization.

TECHNICAL CORE

AI / ML Platforms. Multi-agent orchestration, LLM serving, RAG-at-scale, agentic coding harnesses, model evaluation, vector retrieval (Mamba / SSM, embeddings, FAISS), distillation / LoRA, edge / mobile inference

Cloud & Distributed Systems. AWS GovCloud (VPC design, Transit Gateway, PrivateLink, IAM, S3, EC2), Kubernetes-style orchestration, Podman / Docker, multi-VPC mission networks, high-availability, zero-downtime migration patterns

Languages & Tooling. Python 3.11, TypeScript, C/C++, SQL; PyTorch, Hugging Face, SQLite; Git, Ansible, Terraform; CI/CD; STIG-hardened RHEL 8/9 and Oracle Linux

Networking & Embedded. TCP/IP, VLAN segmentation, SATCOM, 802.11 a/b/g/n, WiMAX 802.16e, ARINC 429 / 628 / 717, geofencing, RF systems

PROFESSIONAL EXPERIENCE

True Synthesis Inc (DBA: Verdict / VerdictIDE) · Indialantic, FL · March 2025 – Present

Founder & Chief AI Architect, True Synthesis Inc (Verdict)

Founded True Synthesis Inc to design and build VerdictIDE, an AI coding harness and orchestration platform for multi-agent software engineering. Sole architect of the platform, the agent skills layer, and the Latent Vector Model research stack that backs it.

- Designed a 5-tier hierarchical multi-agent orchestration platform integrating 14+ LLM providers, with enterprise budget governance, semantic validation (Echo-Loop), and a programmer-pool parallelism model.
- Authored the **co-op** coordination skill -- a Python-mediated, SQLite-indexed substrate that holds multi-agent coordination overhead under 5% of total token usage via cursor-based deltas, claims, bounded live threads, and structured handoffs.
- Built the Latent Vector Model (LVM) research stack: vector-native retrieval, Mamba/SSM-style sequence models, Semantic GPS coordinate encoding, and a vecRAG pipeline. Documented in 90+ research papers.
- Stood up production infrastructure end-to-end: trentcarter.com (Next.js 16 / Vercel), verdictide.com, truesynthesisai.com, public whitepaper library, Gmail / SMTP, scheduled job-search agent, and a Flask + React analytics dashboard backed by SQLite.

VerdictIDE -- product detail

- **What it is.** A multi-agent coding harness comparable to Claude Code and OpenAI Codex, but built around an explicit orchestration kernel rather than a single conversational loop.
- **Architecture.** Hierarchical orchestrator dispatching to specialist agents (planner, coder, reviewer, tester, documenter); coordination via the co-op skill; retrieval via LVM + vecRAG; pluggable model routing across Anthropic, OpenAI, local Ollama, and other backends.
- **Governance.** Per-tenant budget caps, semantic validation between stages (Echo-Loop), and audit-grade event logs mirrored to disk for post-hoc review.
- **Traction.** Public site at verdictide.com, open-published research library at trentcarter.com/whitepapers, and a working agent fleet driving real internal workflows including the nightly job-search pipeline.

L3Harris Technologies - Melbourne, FL - January 2022 – Present

Lead Cloud Architect & AI Integration Lead -- Government Satellite Program

- Architect for two LEO satellite ground systems spanning hardware, OS, virtualization, network, and routing/firewall layers; primary technical interface to the Naval Research Lab for the NEBULA / NOVA architecture.
- Led end-to-end migration of legacy ground systems from on-prem hardware racks to AWS GovCloud, designing for high-availability LEO constellation management and zero-downtime ground-to-cloud (G2C) transition.
- Built an LLM orchestration framework that automates the engineering Digital Thread, linking Level 1-4 requirements to software test plans. Achieved a 5x velocity improvement on traceability work and 100% verification coverage on audited segments.
- Standardized provisioning with Ansible, Python, and Terraform across RHEL 8/9 and Oracle Linux fleets under strict STIG compliance, across multi-VPC management and mission networks.
- Owned virtualization of key SWCs including Telemetry, Tracking and Control (TT&C), Mission Data Processing (MDP), SV Navigation (SCN), and Mission Planning & Scheduling.

L3Harris Technologies - Melbourne, FL - April 2020 – January 2022

Software Integration & Test Engineering Lead and Architect -- F-35 Program (SAS BU)

- Architect of the F-35 SOF/Qualification Integration System; led a multi-discipline software team responsible for IV&V of flight-critical avionics software.
- Designed and maintained the software integration portion of the system responsible for direct requirements verification and support of internal firmware for the F-35 avionics suite.
- Built advanced testing protocols for Safety-of-Flight activities, ensuring qualification met stringent aerospace performance and safety requirements.

Thales Avionics - Melbourne, FL - September 2019 – April 2020

Project Design Authority / Systems Architect -- Iridium Certus

- End-to-end technical authority for the Iridium Certus avionics system: AISD, PIESD, in-flight entertainment, connectivity, and ground systems.
- Led project sizing (SOW, WBS/OBS) and technical coordination across all engineering disciplines; primary technical interface to OEMs (Airbus, Boeing) and connectivity providers.
- Authored SSS, SRS, Design Validations, CONOPS, and the Compliance Matrix under DAL-D / DAL-E and DO-178C standards.

Thales Avionics - Melbourne, FL - March 2016 – September 2019

Engineering Manager / Integration, Verification & Validation Manager

- Owned all IV&V resources and activities for complex In-Flight Entertainment and SATCOM programs; managed strategy, hiring, and delivery across the IV&V WBS.
- Architected aircraft network systems including Geofencing, SATCOM, WLAN, ARINC 429 / 628 / 717, and TCP/IP over VLAN segmentation for isolation and security.

- Acted as Work Package Manager, owning short- and long-term integration schedules and the supporting Systems Integration Lab (SIL) infrastructure.

EARLIER CAREER

iBox Printers, Inc. · Palm Bay, FL · January 2014 – January 2016 · VP of Engineering

Managed a \$1M R&D budget and led electrical, mechanical, chemical, and test engineering teams; owned cost management, regulatory compliance, capital planning, and proposal support.

BahnTech Corporation · Melbourne, FL · May 2009 – January 2014 · VP of Engineering

Architected and shipped 48+ iPhone / iPod applications serving millions of users; managed a multi-million-dollar engineering budget and ran yearly financial milestones for software and hardware.

Sequans Communications · Cupertino, CA · March 2007 – September 2009 · Field Applications Engineering Manager, North America

Led customer software / hardware integration and interoperability for WiMAX 802.16e products across the Americas; managed a team of wireless applications and systems engineers.

Conexant (formerly Harris Semiconductor / Intersil) · Melbourne, FL · March 1997 – March 2007 · Senior Wireless Systems Engineering Manager

Architected complex wireless networks for 802.11 a/b/g/n protocols, radios, and security testing; primary engineering contact and trainer for the global Field Applications Engineering team; created wireless test tooling and SMAC code for WiFi.

NCR / AT&T (NCR), Fleet Mortgage Group · Columbia, SC · March 1990 – March 1997 · Senior Systems Manager / Systems Engineer / LAN Administrator

Led teams of systems engineers managing Windows NT enterprise LAN/WAN environments at scale (1,200+ clients); taught internal TCP/IP courses.

SELECTED WHITEPAPERS & RESEARCH

co-op: A Low-Token Coordination Layer for Multi-Agent Coding Harnesses

Production-oriented coordination substrate for multi-agent coding systems. SQLite operational store + file-mirrored audit artifacts; cursor-based deltas, hot-state summaries, bounded live threads, and structured handoffs.

https://www.trentcarter.com/whitepapers/whitepaper_co_op_agent_coordination_skill

SAIN: Specialized AI Networks for Mobile and Edge Deployment

Decomposes a 600-700B frontier model into a 1B always-on assistant plus hot-swappable 5B domain specialists -- 8 GB GPU RAM target, ~97% cloud cost reduction, ~10x throughput improvement vs. monolithic serving.

<https://www.trentcarter.com/whitepapers/sain-ai-specialists>

Overcoming Theoretical Limitations in Embedding-Based Retrieval for Large-Scale Neural Search Platforms

Builds on recent DeepMind results on single-vector embedding limits and proposes a Task-Modifier-Concept-Domain (TMCD) integration over Mamba backbones for production RAG at billions-of-vectors scale.

<https://www.trentcarter.com/whitepapers/overcoming-theoretical-limitations-in-embedding-based-retrieval>

Full library: <https://www.trentcarter.com/whitepapers>

EDUCATION

University of South Carolina · Physics / Mathematics · 1987 – 1990

LINKS

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