Timothy J. O'Brien

Fractional CTO/CIO | Private & Enterprise AI Architect | Data, Security and Compliance

Helping organizations adopt AI without giving up control of their data, intellectual property, security or costs.

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PROFESSIONAL SUMMARY

Co-Founder and Chief Technologist of White Rock Future Tech, a firm that helps businesses, government agencies and nonprofits put AI to work on their own data, running on equipment they own (where appropriate). Technology executive, software architect and database engineer with decades of enterprise work across healthcare, hospitality, finance, telecommunications, manufacturing and agriculture. Has built for startups and established companies alike: employee #4 at CogniTech, programming the front end of Sharkware, and for AT&T, architect and Windows client-side Project Manager on the $10M+ Rhapsody workflow program, plus more than a dozen affiliated websites. Has led technical teams of up to 35 people, directed HIPAA compliance programs for hospital networks and managed multi-million-dollar programs.

Since February 2026, has led the build of a complete offline repair and diagnostic platform. It is in use on White Rock Farm, has been used to diagnose and repair equipment at a winery on Long Island, NY, and is available to other Monarch owners. AI coding agents wrote the code under written rules; every change passed automated tests and human review before it was kept. White Rock Future Tech uses the same approach for clients and keeps their data in-house. Engagements start with a free 30-minute consultation and a fixed-scope written proposal; clients own the code and data delivered.

SELECTED OUTCOMES

- Kept a discontinued electric tractor in service after its maker shut down, with an offline platform that reads the machine, diagnoses faults, records the repair and hands it to the office for invoicing.
- Directed HIPAA Privacy and Security compliance for 12+ hospitals and a 600+ bed healthcare network, reporting to C-level executives and Boards of Directors.
- Cut the CFO's monthly accounting closing procedures from 10 days to 3 for a 45-hotel portfolio by rebuilding its SQL databases and code.
- Architected AT&T's Worldnet Alliance Marketing platform, giving a national sales force real-time customer and prospect analytics.

CORE COMPETENCIES

Generative AI: large language models (LLMs), agentic AI, multi-agent systems, retrieval-augmented generation (RAG), embeddings and vector search, prompt engineering, AI governance, ROI and total-cost analysis, stakeholder and board reporting

Private and self-hosted AI: Local large language models on in-house hardware; offline retrieval (RAG) over company documents with vector search; document AI pipelines that catalog and enrich large archives; designs that keep client data off third-party clouds

AI-assisted software delivery: Directing multi-agent AI coding workflows end to end; written governance rules for AI coding agents; automated guardrails that block unsafe agent actions; logging each AI tool error and adding a check so it does not happen again; mutation testing to prove AI-written checks actually catch errors

AI security, privacy and IP: Securing AI data in transit (private endpoints, tunnels, egress control); protecting business IP from public AI tools; encryption at rest (AES-256-GCM, Argon2id key wrapping, in-memory-only decryption), so company data stays unreadable even if a device is stolen; audit trails

AI strategy and economics: Vendor comparison of AI assistants and agents; total cost of local AI hardware versus hosted subscriptions; realistic project scoping, fractional CTO/CIO and AI advisory

Data foundation for AI: Normalized (3NF) schema design, stored-procedure data gateways, versioned migrations, ETL, data cleanup and reconciliation across conflicting sources

TECHNICAL SKILLS

Languages and frameworks: Python, SQL, C#, JavaScript, C/C++, PySide6/Qt, FastAPI, HTML/CSS

Databases: MariaDB, MySQL, SQL Server (administration and architecture), PostgreSQL, Oracle, Sybase

Data and ETL: Stored procedures, SSIS, SSRS, ETL pipelines, database migration, data modeling (ERWin)

Web and platforms: WordPress (block themes, security headers, content security policy), REST/JSON, Docker, Linux, Windows Server, VMware, Active Directory

Embedded and vehicle data: Reverse engineering for repair, clean-room rebuilds of protected tools, CAN bus capture and decode (Vector XL, DBC files), Windows 11 and Ubuntu cross-platform tools

Method: Agile, Scrum, Waterfall, UML, SDLC, GAP analysis, HIPAA/SOX compliance, test-first delivery

PROFESSIONAL EXPERIENCE

White Rock Future Tech LLC | Co-Founder and Chief Technologist

Leesburg, FL and Little Compton, RI | 01/2026 - Present | www.wrfuturetech.com

- Co-founded an AI consultancy offering private AI knowledge assistants, custom AI-enabled applications, self-hosted workflow automation and agents, data and database architecture, and fractional CTO/CIO advisory.
- Built and launched the firm's website with a hardened security posture (enforced content security policy, HSTS, blocked legacy attack surfaces) and a red-team security review.
- Wrote and published the firm's solution papers on AI cost, privacy, security and intellectual property (see Publications).

Key project: MKV Offline Repair Platform *(WR Farm Tech LLC) | Co-Founder and CTO / Architect and AI Development Lead | 02/2026 - Present*

- When the tractor maker went out of business, built the software that keeps the farm's Monarch MK-V electric tractor running and repairable. The maker stopped responding to customers around the end of 2025 and shut down in April 2026. The replacement is a single offline product that reads the tractor, diagnoses faults, records the repair and hands it to the office for invoicing.
- Led the reverse engineering for repair (Right to Repair): rebuilt the encrypted factory service tool clean-room from files the maker shipped in clear text, with no copy protection bypassed, and built a virtual tractor simulator so changes are tested without risking a working machine.
- Directed AI coding agents across four applications (repair platform, field diagnostic interface, CAN capture tool, desktop shell) under a written engineering rulebook, including a rule that live working tractors are read-only. Every change passed automated tests and human review before it was kept.
- Designed an equipment-agnostic service database covering diagnostics, repairs, parts and invoicing, and reconciled three conflicting sources into one catalog of 373 fault codes.
- Built security in from the start: the application reaches the database only through one audited entry point, each user has a separate limited account, every action is logged with the device that made it, and the protected catalogs are encrypted per technician and decrypted in memory only.
- Set up an offline AI search over the platform's technical library, running only on local hardware.
- Proved the AI-written code with automated tests, mutation testing and a running log of AI tool mistakes, each fixed with a lasting check so the agents do not repeat it.

Technologies: Python, PySide6, MariaDB, local LLMs, CAN bus

Independent Consultant

Leesburg, FL | 01/2011 - 12/2025

- Delivered BI dashboards and financial forecasting tools for small business clients.
- Architected and maintained a full-stack service management platform (Python, FastAPI, MariaDB, Qt front end).
- Put business logic and security rules in the database itself (a stored-procedure layer), so every application follows the same rules.
- Automated system monitoring, backup verification and alerting.

2010: Sabbatical. **2009:** Contract SQL Administrator (confidential client).

Hospitality Management Company | Corporate Director of Information Technology

Raleigh, NC | 2007 - 2008

- Ran IT for a 45-property hotel portfolio across the continental US; directed a $1M+ IT budget.
- Cut the monthly accounting closing procedures from 10 days to 3 for the CFO and accounting department with a total revamp of the SQL database structures and code across 10+ production SQL Server databases, with zero downtime.
- Standardized 70+ workflows, replacing manual processes.
- Brought third-party vendor data and ownership company financials into one reporting system (SSIS/SSRS ETL pipelines).
- Put disaster recovery procedures and Active Directory security policies in place; trained General Managers on IT systems and security.

Hospital Compliance Consultants LLC | Founder and Managing Partner
Bald Head Island, NC | 2001 - 2006

- Founded an IT consultancy serving 12+ hospitals and a 600+ bed healthcare network.
- Directed HIPAA Privacy and Security compliance programs; performed GAP analysis and readiness assessments.
- Managed concurrent implementations across skilled nursing facilities, rural clinics and physician practices (3,000+ workforce members).
- Delivered C-level and Board of Directors reporting on compliance posture and remediation timelines.

SunLink Healthcare | Sr. Solutions Architect / Business Consultant
Atlanta, GA | 2001 - 2002 | contract through Hospital Compliance Consultants LLC

- Architected distributed web-based client/server solutions for Fortune 500 healthcare clients.
- Designed logical and physical SQL database schemas and middleware integrations for WAN, LAN and wireless environments.
- Delivered SOWs and RFPs and negotiated contracts at the C-suite level; presented findings to the Board of Directors monthly.

CogniTech Corp. | Architect and Front-End Programmer (Employee #4)
Atlanta, GA | 1992 - 1995

- Architected and programmed the front end of Sharkware from its start, one of the early Windows contact managers (CRM), built around author Harvey Mackay's sales method.

O'Brien Enterprises Inc. | Founder / President and CEO
Remote / Atlanta, GA | 1984 - 2015 | ran alongside the roles above

- Project engagements for Bell Laboratories, IBM, Nabisco, IFF, CSX, Chemical Bank and Electronic Tabulating Company, and for government clients: the Office of the Vice President of the United States, the US Air Force, the US Department of Justice and the NY State Police.
- Founded O'Brien Interactive (web consulting) and HomeSites.Net (real estate SaaS).
- Architected the AT&T Worldnet Alliance Marketing platform, giving a national sales force real-time customer and prospect analytics, and built and managed more than a dozen affiliated websites for AT&T.
- Ran a 4M+ record SQL Server database behind online validation and referral payments.
- Project Manager and Architect for the Windows client of AT&T's Rhapsody, a $10M+ program begun in 1989 and the first workflow system built for Windows and its integrated applications (released March 1991), with a UNIX SQL back end and C/C++ API libraries.

Earlier consulting roles: CSX Lines, University Healthcare, Olsonite Corporation, Guilford Performance Textiles, @Prime Inc and Empowered Solutions Group; details on request.

PUBLICATIONS

Solution papers and case studies at www.wrfuturetech.com/publications/

- *A Comparison Of Agents*: ChatGPT, Claude, Copilot, Gemini and a private agent compared on cost, ease of starting and risk.
- *Securing AI Data In Transit*: practical steps to keep AI traffic private, with named vendors.
- *What You May Not Know About Intellectual Property And AI*: what happens to business data typed into online AI tools, and how to protect it.
- *Local AI Workstation Or AI Subscription?*: three-year cost comparison with a hybrid recommendation.
- Case studies: *The MKV Project* and *White Rock Farm Website Makeover* (a 2017 site rebuilt to current standards in days with AI).

EDUCATION

- Dutchess Community College (SUNY Dutchess), Poughkeepsie, NY: Computer Science coursework (1.5 years), GPA 3.8. Left college and an IBM intern operator position in Poughkeepsie to join the personal computer industry as it was forming.

AFFILIATIONS AND INDUSTRIES

- Project Management Institute (PMI), Member. Industries: Insurance, Banking, Telecommunications, Healthcare, Hospitality, Financial/Accounting, Construction, Manufacturing, Agriculture, Networking and Security, Federal Government, Commercial Software Development