

From Hype to Reality: Engineering Purpose-Built AI for Water Management

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Who is Trinnex?

Trinnex is an industry leader in developing powerful, off-the-shelf applications, custom software solutions, and premium digital services. We are digital specialists with water and engineering expertise.

CDM Smith is a global privately-owned engineering and construction firm providing legendary client service and smart solutions in water, environment, transportation, energy, and facilities.

**CDM
Smith**

trinnex

Trinnex was established as a wholly owned subsidiary of CDM Smith in 2021 to form a team solely focused on developing digital solutions for water utilities.



About Trinnex

Our team has decades of domain knowledge, data-science expertise, and a commitment to technical software excellence.

Our impact protects public health by removing lead in drinking water, limiting sewerage pollution, streamlining water quality compliance, and simplifying utility operations.

Four main areas of business

Digital Consulting

Trinnex provides **digital consulting services** that help our clients maximize their digital initiatives through assessments, planning, and execution partnership.

Commercial Software

Trinnex develops **commercial Software-as-a-Service (SaaS)** that efficiently solves persistent challenges by putting our customers' data to work for them.

Asset & Geospatial Intelligence

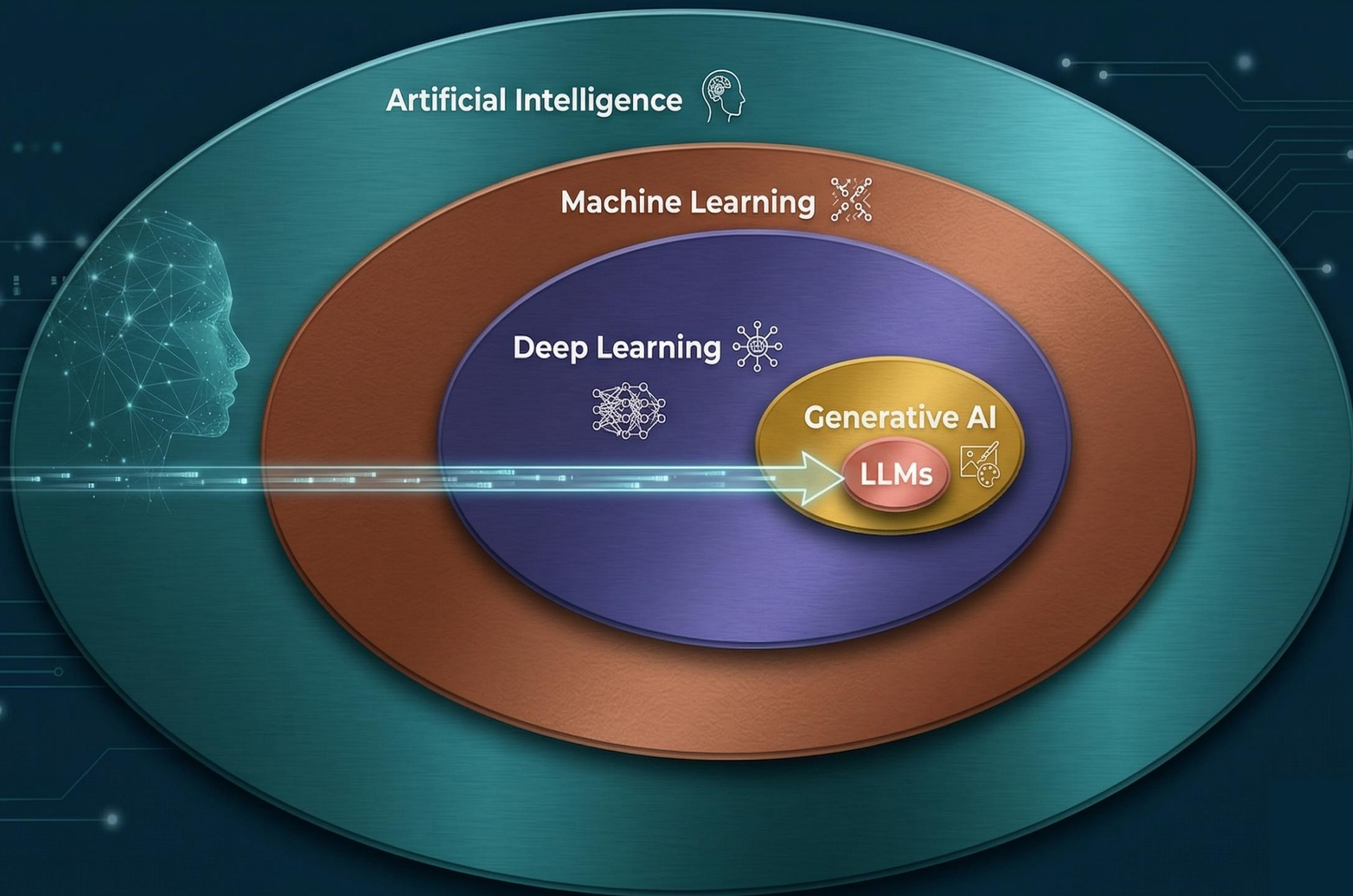
Trinnex delivers **lifecycle asset planning, asset intelligence, and geospatial solutions** that help utilities reduce risk, improve reliability, and make smarter investment decisions.

Custom Solutions

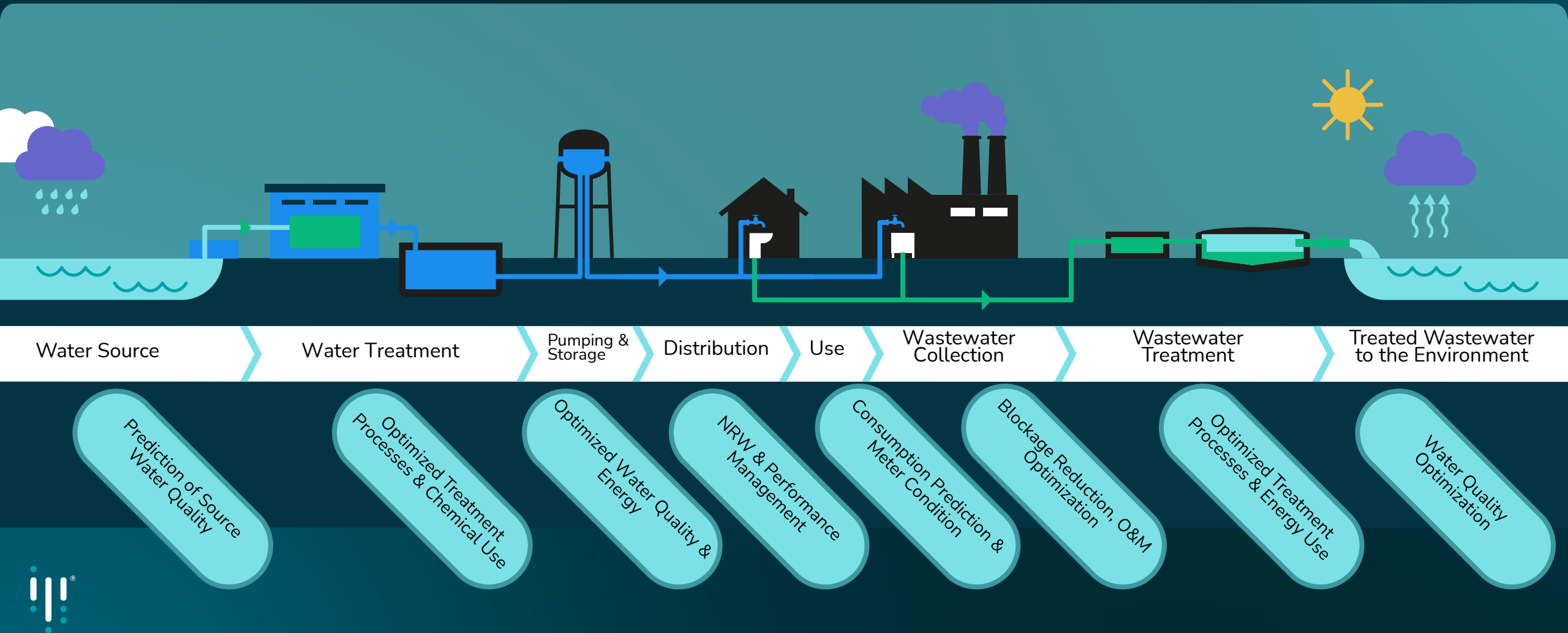
Trinnex builds **custom solutions, digital twins and data platforms** that help infrastructure teams work smarter, and provide trusted insights so you move faster, make better decisions, and stay ready for what's next.



ChatGPT, Gemini,
Claude



• Use of Artificial Intelligence in Water



The Gap Between AI Hype and Water Utility Reality



The Hype

- "AI will transform water utilities overnight"
- Generic LLMs applied to operational decisions
- Vendor promises outpacing utility readiness
- No clear path from pilot to production



The Reality

- Purpose-built AI outperforms general tools in water ops
- Success requires data readiness before deployment
- User trust is earned through explainability
- The water industry's unique challenges demand specific solutions

What “Purpose-Built” Really Means



Data Quality

Water-domain AI lives or dies on data. Sensor calibration, SCADA integration, and data governance must come first — before any model is trained.



Interpretability

Operators and regulators must understand why the AI made a recommendation. Black-box models erode trust. Explainable outputs are non-negotiable.



Operational Integration

AI that lives outside existing workflows doesn't get used. Purpose-built means embedded into the tools operators already rely on daily.



The Digital Journey



Core principles

- Plan with a roadmap
- Identify resources & roadblocks
- Develop *specific* business cases & ROI
- Extract **value** each step along the way



AI Readiness Planning

Case Study from North Carolina



Phase 1 Foundation & Goals

- Identify and engage stakeholders
- Prioritize strategic AI objectives
- Align with organizational mission in goal-setting workshops.

Phase 2 Current State Analysis

- Conduct digital maturity evaluation
- Analyze current digital systems, CIS, cybersecurity, and existing AI projects.

Phase 3 Path Definition & Prioritization

- Outline steps for AI deployment
- Determine technology investments
- Prioritize initiatives based on cost, impact on goals, efficiency, and customer service

Phase 4 AI Roadmap Development

- Phased AI Roadmap
- Strategic plan of quick wins with long-term goals
- Recommended roles and responsibilities
- Timelines with metrics for tracking

● AI Case Study: raini

The Problem

- U.S. water utilities are facing a "Silver Tsunami"—the loss of critical institutional memory as veteran operators retire .
- Simultaneously, vital operational data remains trapped in disconnected silos: SCADA telemetry, GIS maps, IoT sensors, and thousands of pages of physical O&M manuals.
- Legacy software acts only as a System of Record, requiring humans to manually aggregate data to make high-stakes decisions.



Document Chat

Instant natural language answers grounded in your specific standard operating procedures and manuals.



Data Analytics

Perform complex queries against SCADA and water quality data without needing SQL or BI tools.

Raini is “purpose-built”



Isolation

Sovereign data boundaries that prevent institutional knowledge from leaking into public training sets.



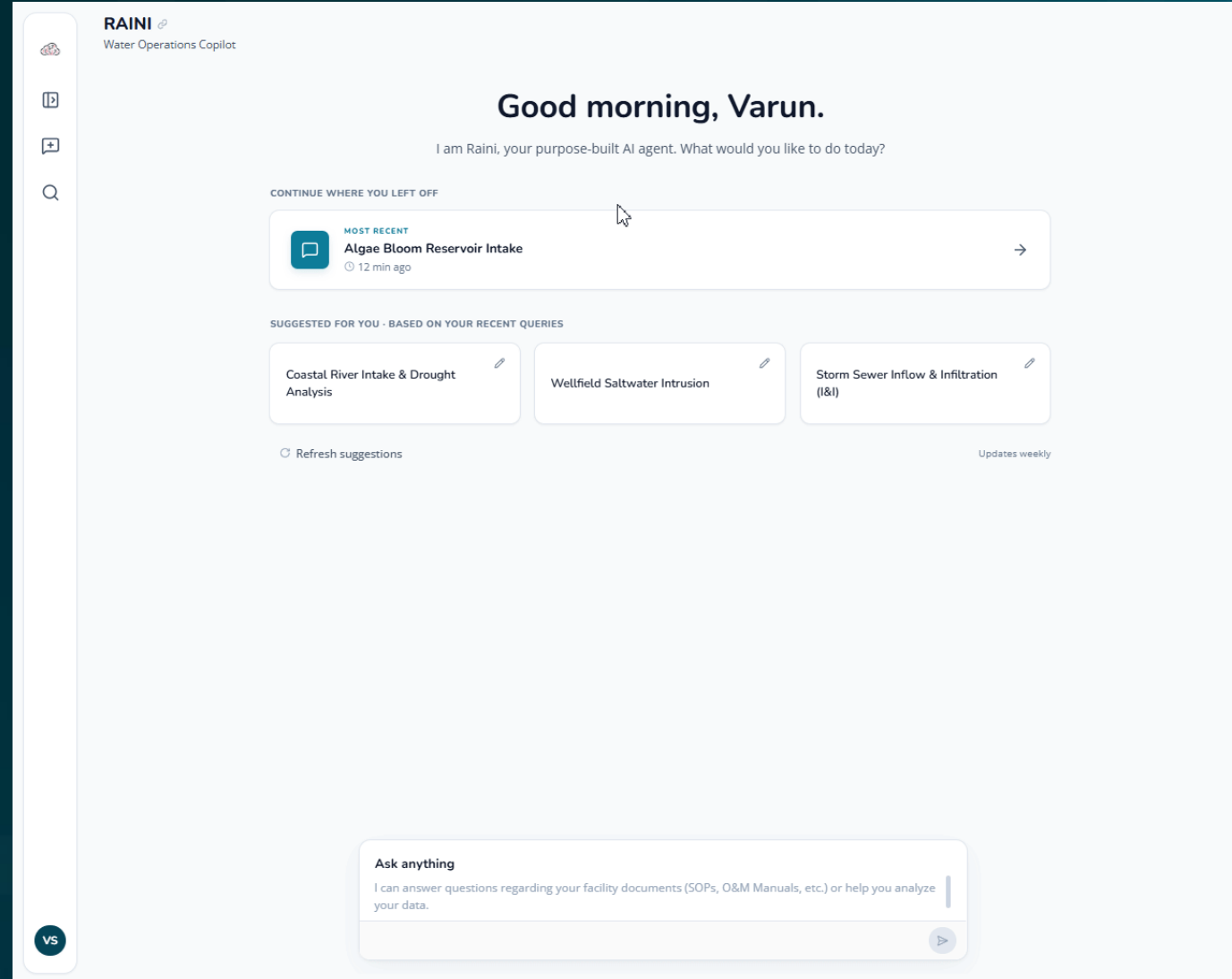
Transparency

Every response cites its primary source. All responses strictly use utility knowledge



Control

Strict human-in-the-loop guardrails ensuring AI assists, but humans always execute.



Takeaways

1 Assess Before You Build

Understand your data maturity, workflow gaps, and governance needs before selecting any AI tool. A readiness assessment is not overhead — it's risk management.

2 Start Narrow, Prove Value

Pick one high-impact, well-scoped use case. Demonstrate measurable results. Then scale. Broad deployments without proof points fail and set AI adoption back.

3 Purpose-Built Beats Plug-and-Play

Generic AI won't understand your SCADA data, your SOPs, or your regulatory environment. Invest in solutions engineered for water operations.

