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Nizam ERP Case Study

Multi-Tenant Enterprise Platform for Saudi Construction

Live Production: www.nizam-erp.com

Tech Stack: NestJS · TypeScript · PostgreSQL · Docker · Nx Monorepo · Linux / SystemD

1. Overview

Nizam ERP is a comprehensive, Arabic-first enterprise resource planning system built specifically for the Saudi Arabian construction sector. Unlike global systems that treat regional compliance as an afterthought, this platform is engineered from the database layer up to handle complex financial, HR, and payroll workflows under strict regulatory requirements.

2. The Architectural Challenge & Solution

Enterprise clients demand absolute data sovereignty. To solve this, the architecture relies on a strict Database-per-Tenant isolation model. Each client operates on a dedicated PostgreSQL database instance, eliminating the risk of cross-tenant data leaks and ensuring full regulatory compliance.

3. Key Engineering Highlights

- **Saudi Regulatory Compliance as a Feature:** Native support for ZATCA e-invoicing, GOSI social insurance, WPS/Mudad wage protection, and Saudi Labor Law is built directly into the system's core architecture.
- **Declarative Reporting Engine:** Dozens of bespoke, hard-coded API endpoints were replaced with a single declarative report registry. Complex reports are defined purely as data configurations with universal multi-select filters and automated Arabic-name resolution, cutting development time for new reports from days to minutes.
- **Production Data Integrity:** The Transactional Outbox pattern guarantees reliable event delivery across financial modules, and GIN / trigram indexes maintain fast full-text search across massive enterprise datasets.
- **RTL-Native by Design:** The system natively handles right-to-left (RTL) logic, Arabic data collation, and pixel-capture rendering to preserve complex Arabic typography in exported financial statements.