



CitizenApp

CitizenApp · Citizen Management Platform

Full-Stack Production Deploy · Cloud-Native · ID Encrypted

Uğur Aslım · May 2026

v5.0.2 · LIVE

Technology Stack

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Modern, cloud-native, production-ready architecture



FRONTEND

React 19

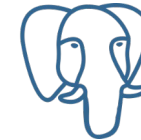
TypeScript 6 · Vite 8 · Tailwind



BACKEND

FastAPI

Python 3.14 · SQLAlchemy



DATABASE

PostgreSQL 16

Neon · Frankfurt · Pooled



CACHE

Valkey/Redis

Token blacklist · Sessions



CONTAINER

Docker

Multi-stage · Non-root



HOSTING

**Render +
Vercel**

Auto-deploy · Edge CDN

All European infrastructure · Low latency · Free tier start

What Was Built?

Feature list & production validation



Citizen CRUD

Fully functional record management



Search & Filtering

ID, full name, pagination



Export: CSV / XLSX / PDF

Masked & plain · Column selection (?cols=...)



Audit Log

30+ event types · IP logging · filtered · CSV export



2FA / TOTP

QR + Authenticator + recovery codes

107

Backend tests (pytest)

5/5

Production smoke tests passed

30+

Audit log event types

100%

RBAC (3 roles) + GDPR-equivalent compliant

Security & Compliance

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Production-grade defense layers



ID Encryption

Fernet symmetric encryption, no plaintext in DB



JWT + Refresh Token

Access 15min, refresh 30 days, rotation pattern



2FA (TOTP)

Authenticator + recovery codes + sliding session



Audit Log

Login/logout/2FA — IP address + all sensitive operations tracked



CORS Hardening

Single domain whitelist · AUTH_REGISTER_OPEN=false



RBAC (3 Roles)

admin · operator · viewer · require_role() factory

Production Access

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Connection links & demo credentials



FRONTEND (Vercel)

<https://vatandas-react.vercel.app>

React + Vite · Edge CDN · Auto HTTPS



BACKEND API (Render)

<https://vatandas-backend.onrender.com>

FastAPI · Docker · /docs Swagger UI



SOURCE CODE (GitHub)

github.com/uaslim-create/vatandas_react

Main branch · Auto-deploy · 107 test green



DEMO LOGIN

USERNAME

demo_admin

PASSWORD

DemoP@ss2026!

2FA ACTIVE

Authenticator app required (TOTP)

⚠ *Render free tier:
first request ~50s*

Python Backend Architecture

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Python 3.14 · FastAPI · SQLAlchemy · 107 pytest test green



PYTHON

3.14

107

Backend Tests

32+

API Endpoint

10

DB Migration

~85%

Coverage



FastAPI

Async REST API · OpenAPI · Pydantic v2



SQLAlchemy 2.0

ORM · Type-safe · Alembic migrations



pytest

107 test · Fixtures · Coverage reports



Auth Stack

python-jose · passlib · bcrypt · pyotp



Infrastructure

Pydantic Settings · Redis · structlog

All backend Python — uvicorn workers · Docker multi-stage · non-root user

Cloud Management Panels

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Database, backend, frontend management interfaces



DATABASE

Neon Postgres

console.neon.tech

SQL editor · Branching · Backup · Connection pooler · Monitoring

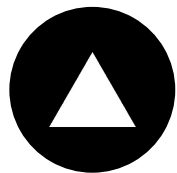


BACKEND HOSTING

Render Dashboard

dashboard.render.com

Logs · Env vars · Redis · Deploy history · Shell access



FRONTEND HOSTING

Vercel Dashboard

vercel.com/dashboard

Deployments · Analytics · Custom domain · Edge logs



API DOCUMENTATION

Swagger UI

vatandas-backend.onrender.com/docs

Auto-generated · Live test · All endpoints · OpenAPI 3.0

Access: Login with GitHub SSO · All panels accessible with a single account

Deploy Journey

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Production deploy süreci — engineering decisions & lessons

VENDOR PIVOT: UPSTASH → RENDER REDIS

1

Before: Upstash Free Tier

Global Redis, quick setup, familiar solution

TRIED

2

Issue #1: Python 3.14 SSL

VERIFY_X509_STRICT regression → TLS cert reject

FIX ATTEMPT 1

3

Issue #2: Connection Drops

Render → Upstash Global tier connection instability

FIX ATTEMPT 2-5

4

Solution: Render Internal Redis

Valkey 8 · Frankfurt · fromService env wiring

PRODUCTION
READY

ENGINEERING LESSONS



Vendor Pivot Awareness

Switch to alternative instead of endless debugging



TLS/SSL Awareness

Know Python version regressions



Provider Symmetry

Keep backend and cache in the same region



Production Patterns

Keepalive · health_check · timeouts



OpenAPI Introspection

/openapi.json for schema discovery

~5 hours debugging · 5+ fix attempts · 1 pragmatic pivot · 0 prod downtime

v4.0.0 — New Features

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May 2026 · AI + Stripe Billing + Data Quality Tools · Full English UI

AI Features (Claude Haiku)

AI Daily Briefing — Aggregate stats → Claude 3-4 sentence admin briefing · daily digest
Smart Import Validation — CSV column auto-mapping · tc / name / dob / gender headers
AI Duplicate Merge — Per-pair suggestion · confidence + reasoning · TC masked before AI
AI Chat DB Query — Safe SELECT query generated + executed live · LIMIT 100 · tenant isolated
AI Chat with Data — Floating chat widget · answers data questions from aggregate stats
Natural Language Reports — NL query → SQL filter → preview table → CSV/TSV export

Stripe Billing (Live & Tested)

Free \$0 · 100 AI credits · 1,000 records
Pro \$29/mo · 1,000 AI credits · 50,000 records
Enterprise \$99/mo · 10,000 AI credits · unlimited records
Stripe Checkout + Customer Portal + Webhooks all working

Data Quality Tools

Enhanced Duplicate Detection — name + DOB + gender composite score
Anomaly Detection Tab — future DOBs, pre-1900, missing gender/DOB, digits in names
Name Normalization Tab — mehmed→Mehmet, ayse→Ayşe · Preview + Apply All

Full English UI

All Turkish strings removed from the entire application
UI labels, error messages, placeholders — all English
Billing page shows AI credit balance + plan details

AI Features — 8× Claude Haiku

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8 AI-powered features · Credit-metered · Per-tenant · claude-haiku-4-5

1 CSV Column Mapping

Auto-maps CSV headers to tc / name / dob / gender

2 Natural Language Search

"males born in 1990" → SQL filters + AI explanation box

3 Anomaly Detection

Data quality scan + AI-generated 2-3 sentence summary

4 AI Daily Briefing

Admin aggregate stats → Claude 3-4 sentence briefing · daily digest

5 AI Duplicate Merge

Per-pair merge suggestion · confidence + reasoning · TC masked

6 Natural Language Reports

NL query → SQL filter → preview table → CSV/TSV export

7 AI Chat with Data

Floating violet chat widget · answers questions from aggregate stats

8 AI Chat DB Query

Claude generates safe SELECT · executed live · LIMIT 100 · tenant isolated

Call Flow

User query

- ↓ FastAPI endpoint
- ↓ Check AI credits (deduct 1)
- ↓ Claude Haiku API call
- ↓ Structured result + explanation

Model

claude-haiku-4-5

Fast · Cheap · Accurate for structured tasks

Coming Next

Streaming chat responses · pgvector semantic dedup · Email billing alerts

Thank You

Thank you for your time

CONTACT

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GITHUB

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