

ÜÜRITURG: A REAL-TIME RENTAL MARKET AGGREGATOR FOR TARTU

Hashim Ali | Muhammad Haris Irfan
Institute of Computer Science, University of Tartu



UNIVERSITY OF TARTU

Abstract

Finding a rental apartment in Tartu requires students and residents to manually check multiple listing portals (KV.ee, City24, and Rendin) several times a day, with no way to track prices or be notified of new matches. We present Üüriturg, a cloud-deployed system that automatically aggregates all Tartu rental listings every 6 hours, removes duplicates, visualises data on an interactive map, and delivers instant email alerts when a matching listing appears. The system is built on 4 Spring Boot microservices behind an API Gateway, deployed via Docker Compose on the University of Tartu HPC infrastructure, and is publicly accessible at uuriturg.cs.ut.ee.

Motivation & Problem

The Challenge

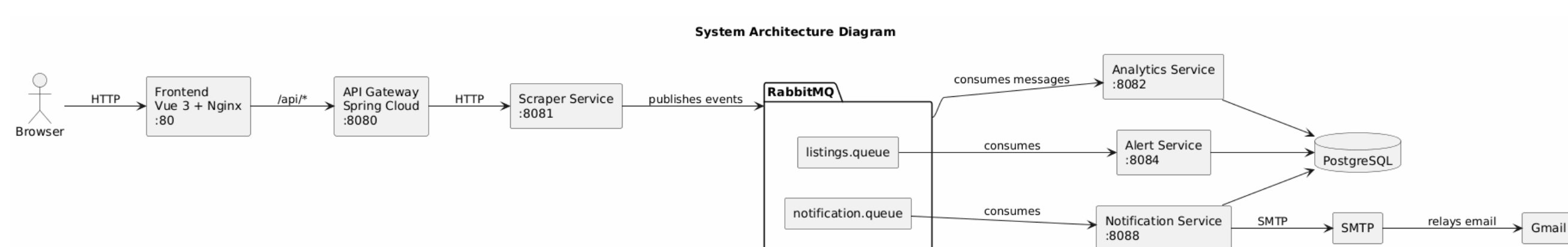
Tartu's rental market is fragmented across three portals. Affordable listings, particularly near the university, disappear within hours of posting. There is no centralised tool for:

- Comparing prices across portals in one view
- Tracking rent trends by neighbourhood over time
- Receiving automatic alerts without repeatedly checking manually

Target Users

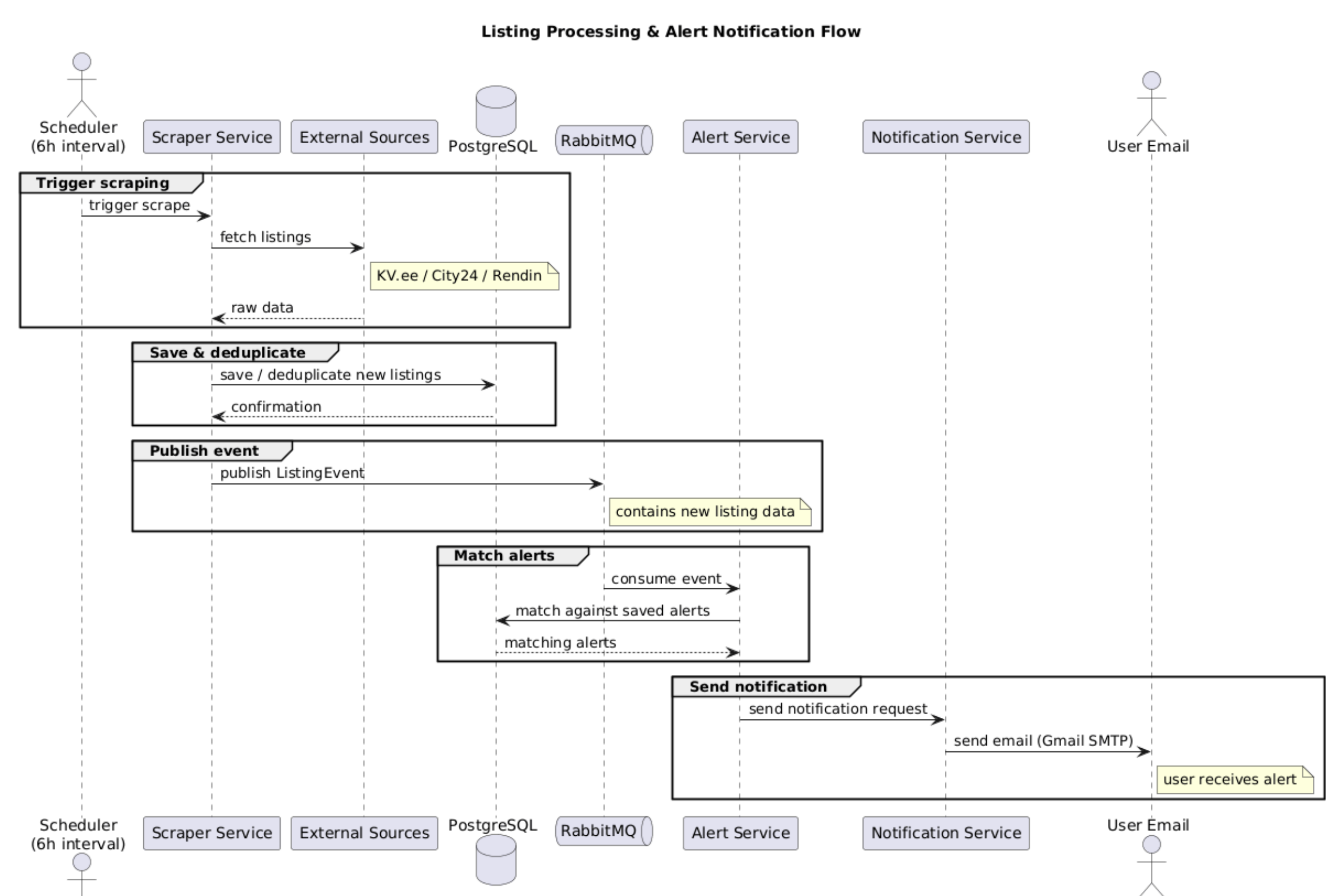
International and domestic students at the University of Tartu, new residents relocating to Tartu, and anyone seeking affordable housing in a competitive rental market.

System Architecture



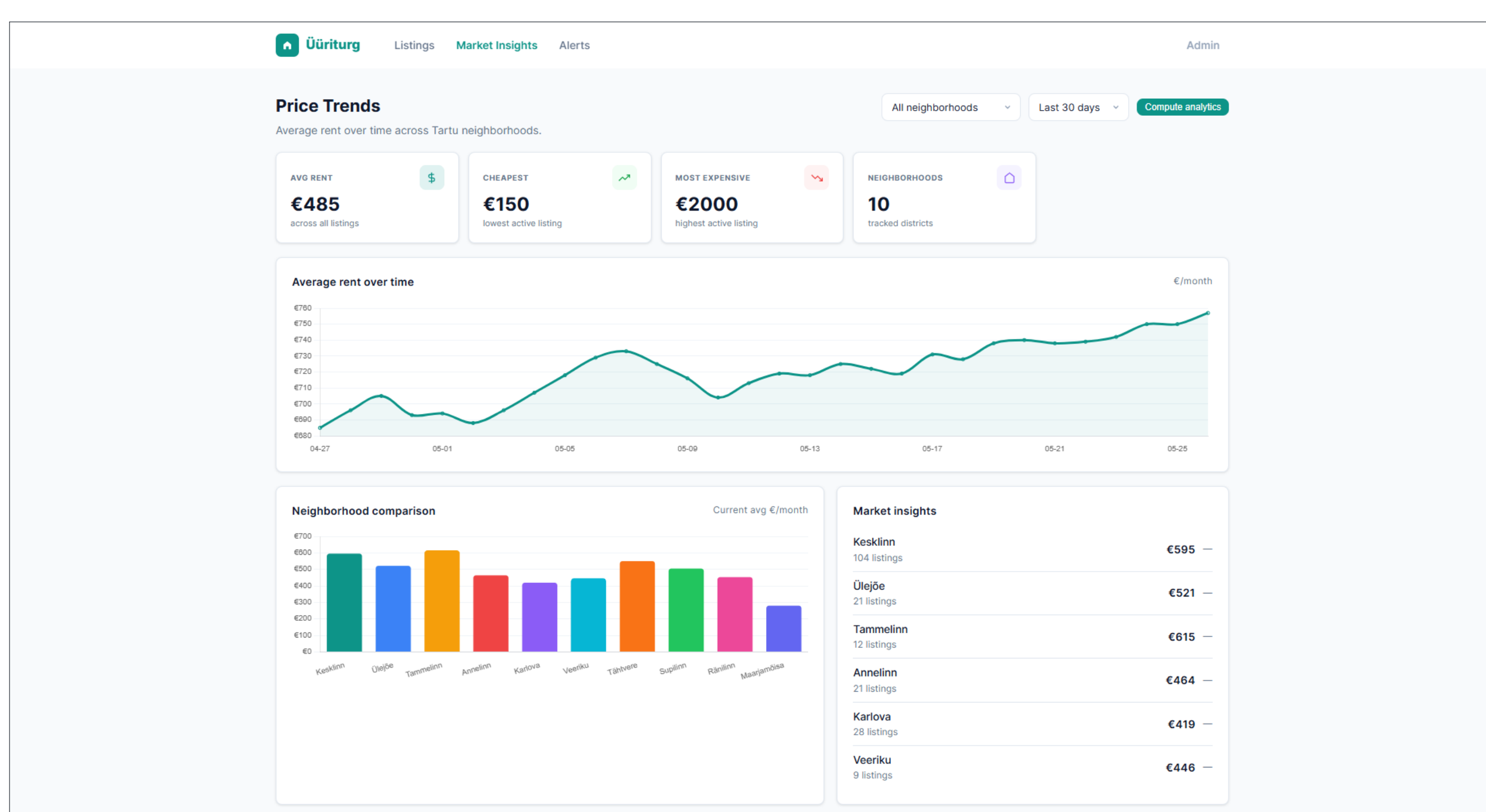
4 domain microservices, each with its own PostgreSQL schema. Synchronous communication via REST through the API Gateway; asynchronous new-listing events via RabbitMQ. Circuit breakers (Resilience4j) prevent cascading failures.

Listing Processing & Data Flow



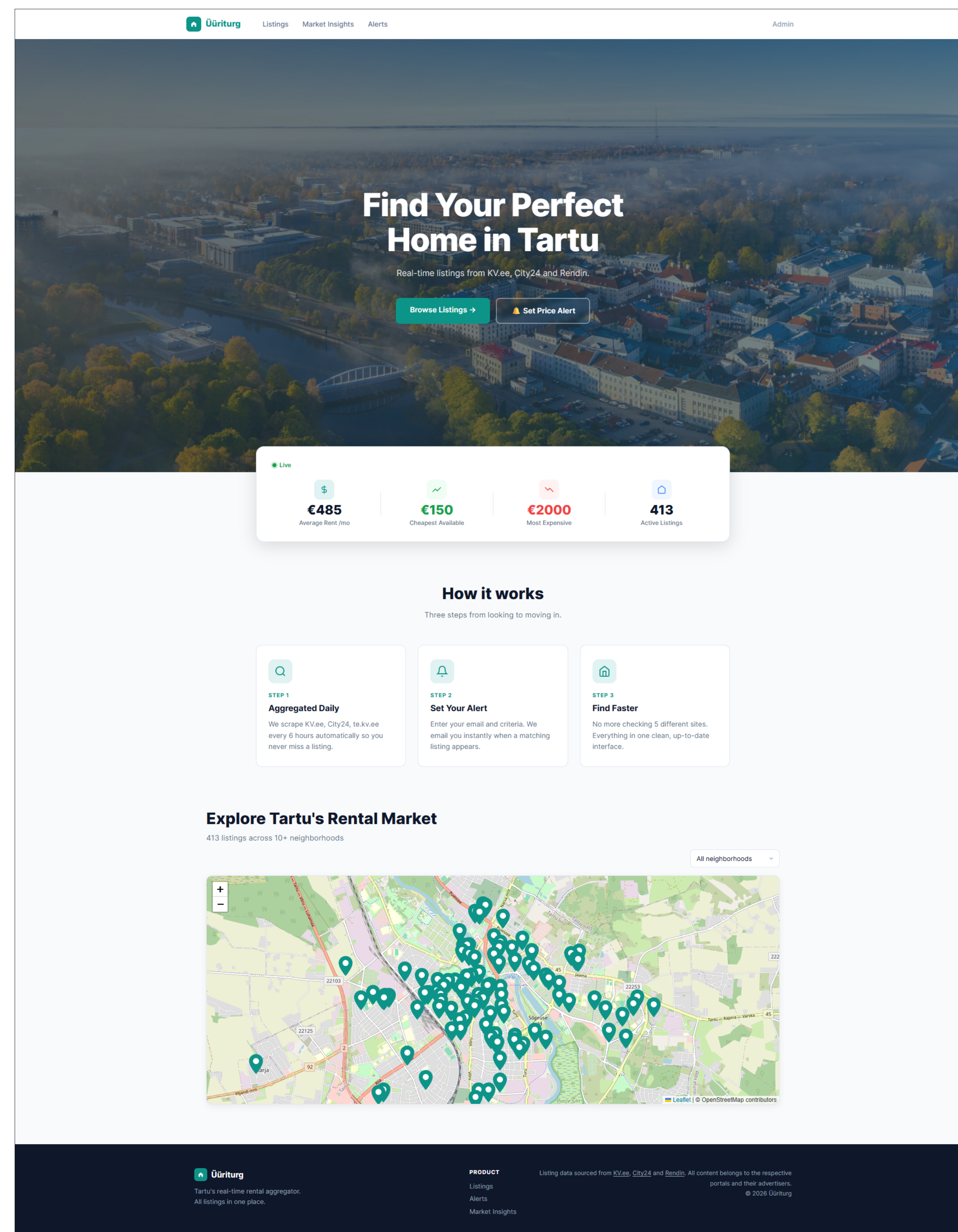
Automated pipeline: scraping → deduplication → event bus → alert matching → email notification.

Market Insights Dashboard

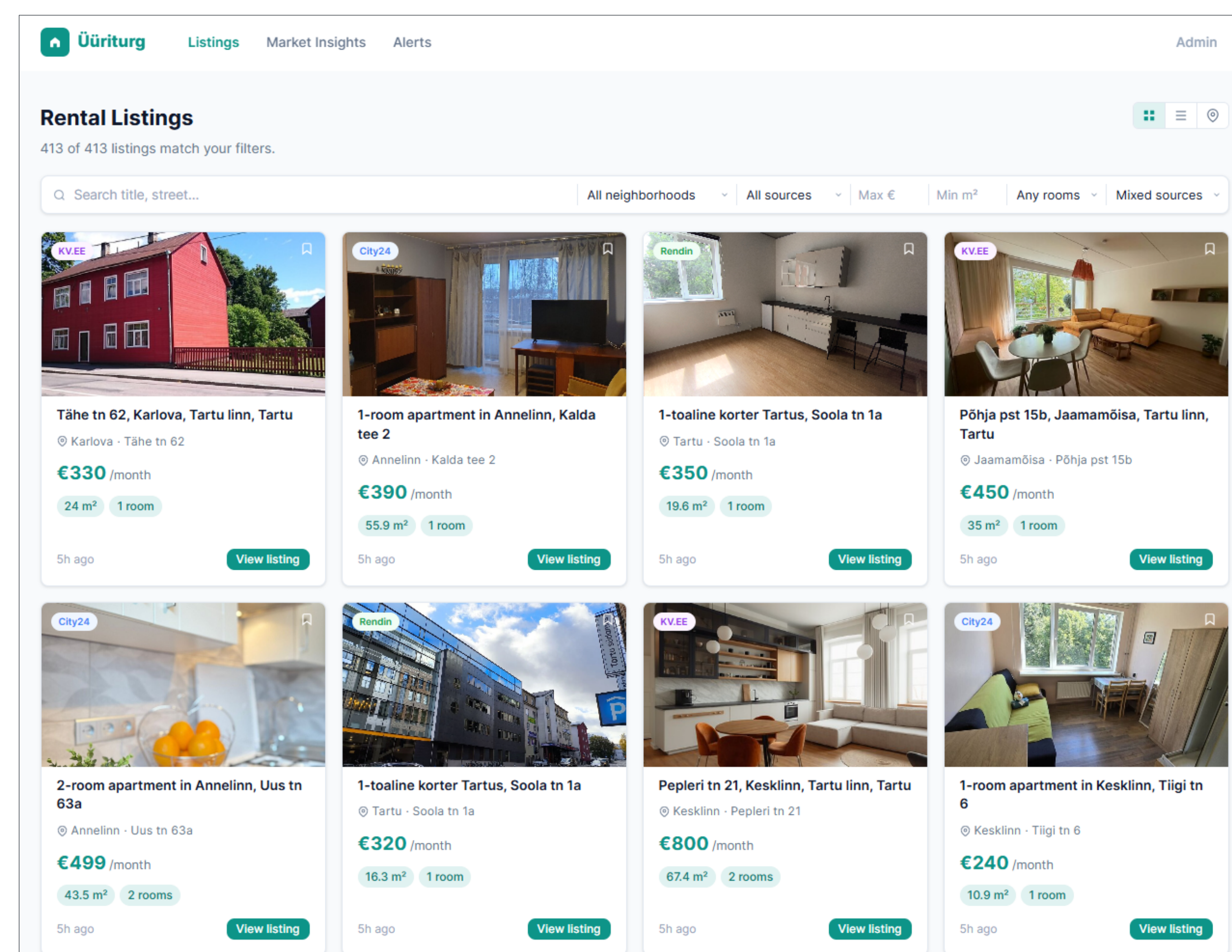


Price trend line chart, neighbourhood bar comparison, and per-district average rents across 10 districts

Application Screenshots



Landing page: live market stats (413 listings, 485 avg/mo, 150 to 2000 range) with Tartu aerial view and interactive map



Listings page: source-badged cards (KV.ee, City24, Rendin) with neighbourhood, price, and size filters

Key Results

- 413 active listings aggregated live from 3 portals (May 2026)
- Average rent in Tartu: 485/month across all neighbourhoods
- Kesklinn most expensive (avg 595) and Annelinn most affordable (avg 464)
- Price range: 150 to 2000/month (short-stay listings filtered automatically)
- 10 neighbourhoods tracked with daily average price snapshots
- Email alerts delivered in under 30 seconds of a new listing event
- Circuit breakers prevent cascading failures when one portal is unreachable