Queue Cure '26 — Thought Process Sheet

Architecture Decision

Chose Firebase Realtime Database over Socket.io because the app is hosted on Vercel (serverless) which doesn't support persistent WebSocket servers. Firebase onValue() listeners give identical real-time sync behavior.

ETA Computation

Not hardcoded. Server tracks a rolling average of actual completed consultations. Formula: remainingForCurrent + (position × rollingAvg). Accuracy improves throughout the day as more real data accumulates.

Concurrency Handling

Used Firebase runTransaction() for callNext() — atomic read-modify-write prevents two receptionists dequeuing the same patient simultaneously.

Edge Cases Handled

1. Call Next on empty queue → toast error, no crash
2. Double-click Call Next → transaction rejects duplicate
3. Patient display reconnects → Firebase auto-syncs full state
4. Priority patient added → inserted at front of waiting list
5. Skip currently serving → auto triggers callNext()
6. Queue reset mid-session → all screens clear instantly