

AUTOMATION AND DIGITIZATION OF COMMERCIAL LAUNDRIES

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PROBLEM DEFINITION

- Manual intake, handwritten labels, phone-call-based status updates → bottlenecks
- Time lost with phone calls
- Errors, lost items, slow handovers;
- High delays/errors during peak season(eg. Christmas period)
- No real-time visibility for customers or staff

OBJECTIVES

- Digitize intake and identification (QR Codes)
- Digitize Customers Orders to be Online (not in Agendas)
- Customer self-service with OTP login and live tracking
- Pickup/Delivery with optimized routes and reliable ETAs

State of the Art

Kalsero

- Auto pricing/invoicing, 'Ready' SMS
- Gaps: manual routing;
- No customer visibility

TotalCarpet

- Optimizes route order;
- Gaps: fixed routes (no real-time recalibration)
- No live tracking; single SMS ETA only

Zarpet

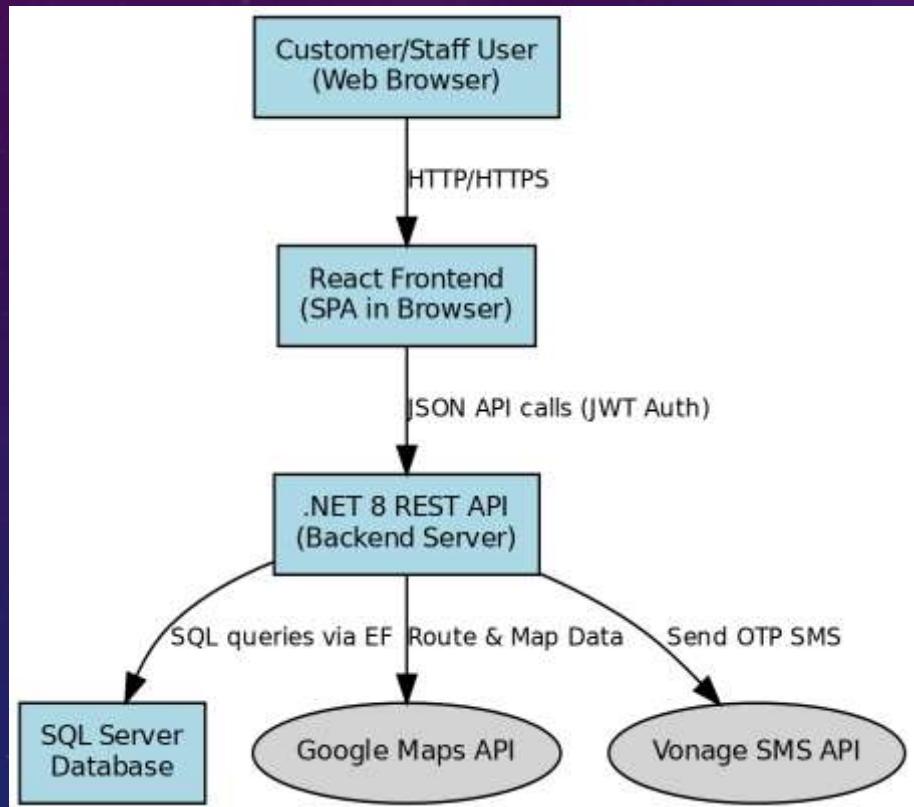
- Customer status via SMS link;
- Gaps: **Appears limited to basic routing**; no evidence of traffic-aware ETAs or mid-route updates

Common Gaps Observed

- No dynamic re-optimization
- No live driver tracking or updating ETAs
- Scheduling, Order management still rely on calls

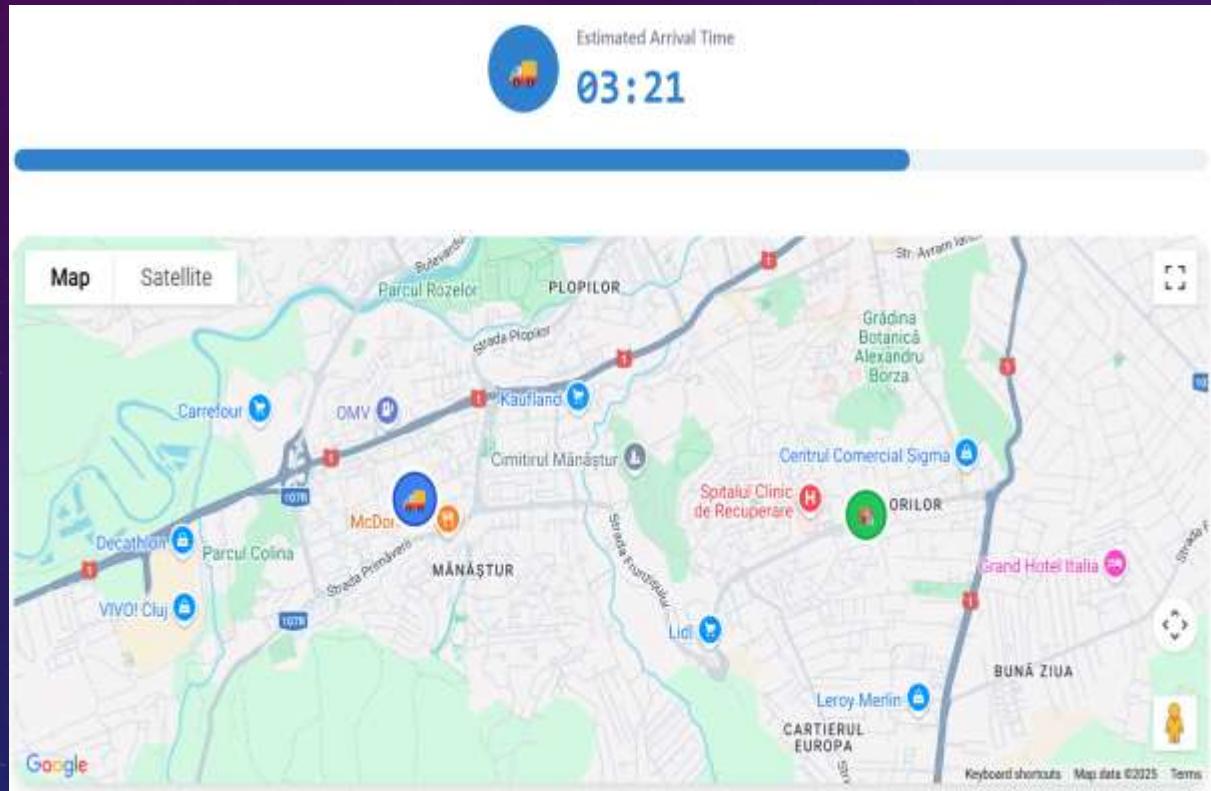
Summary based on vendor materials and observed workflows.

SYSTEM OVERVIEW



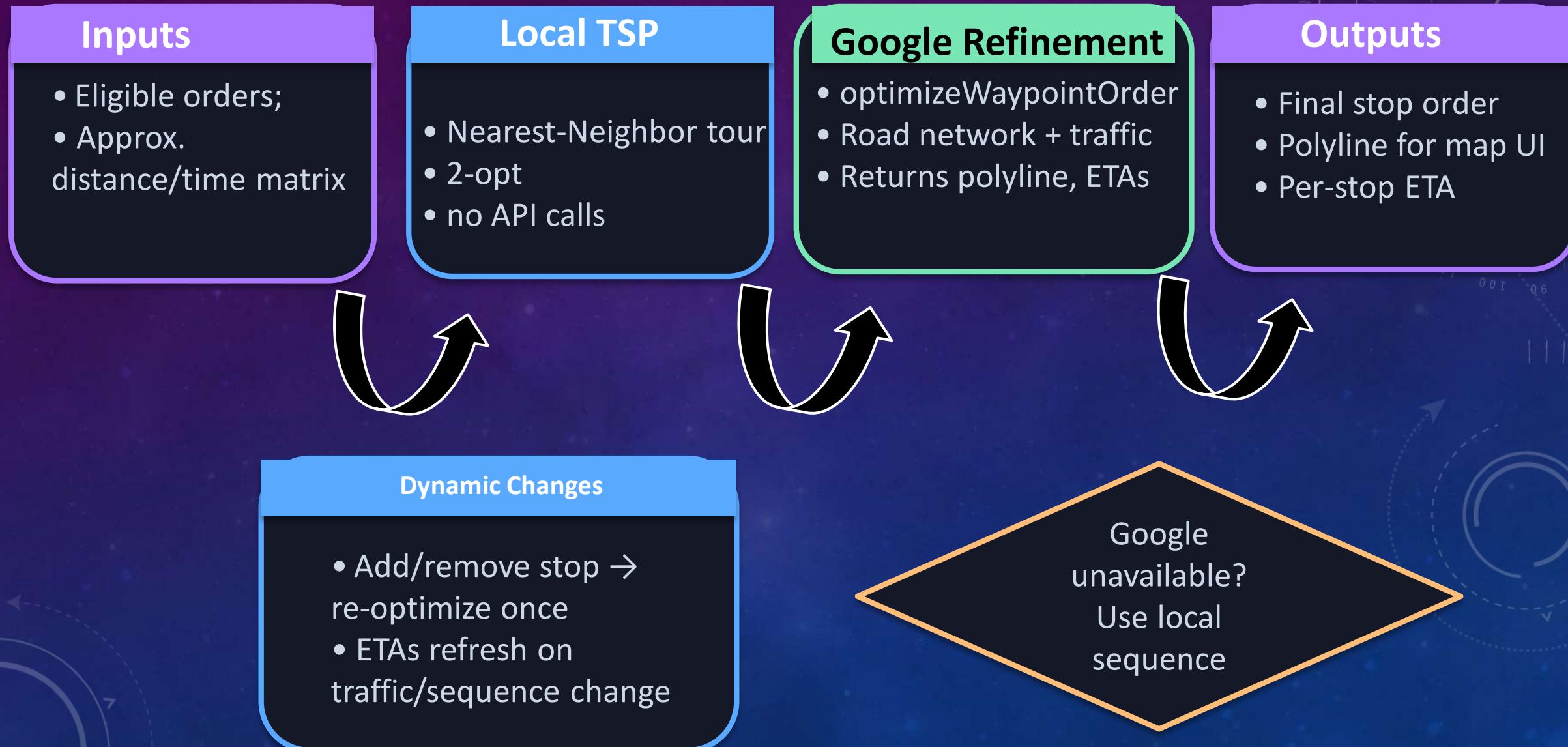
- Frontend: React
- Backend : .NET 8 REST API
- Database: SQL Server
- Google Maps APIs
- Vonage SMS API
- Roles: Customer , Staff , Driver, Admin

CUSTOMER ROUTE TRACKING / ETA

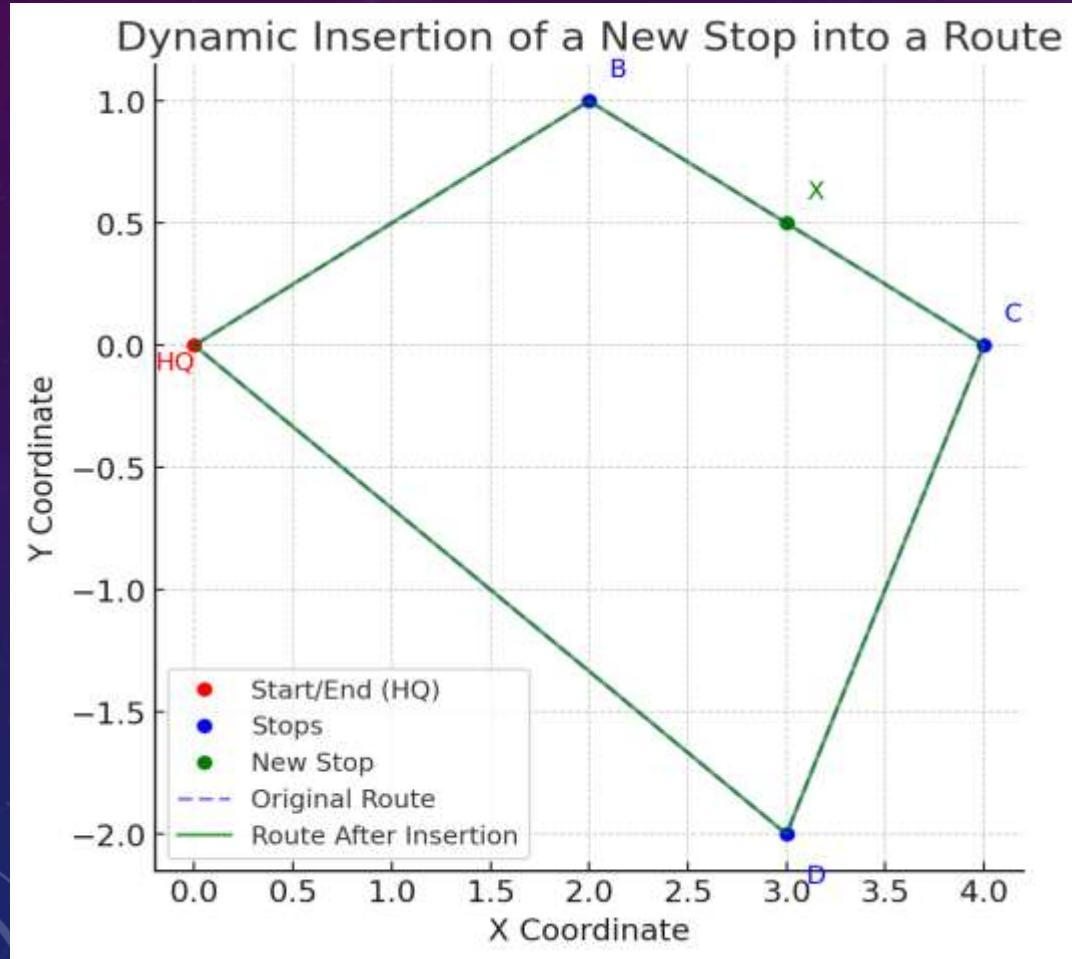


- Driver location updates every 5 seconds
- Live ETA
- Privacy: customer sees only their stop

ROUTING – HYBRID ALGORITHM



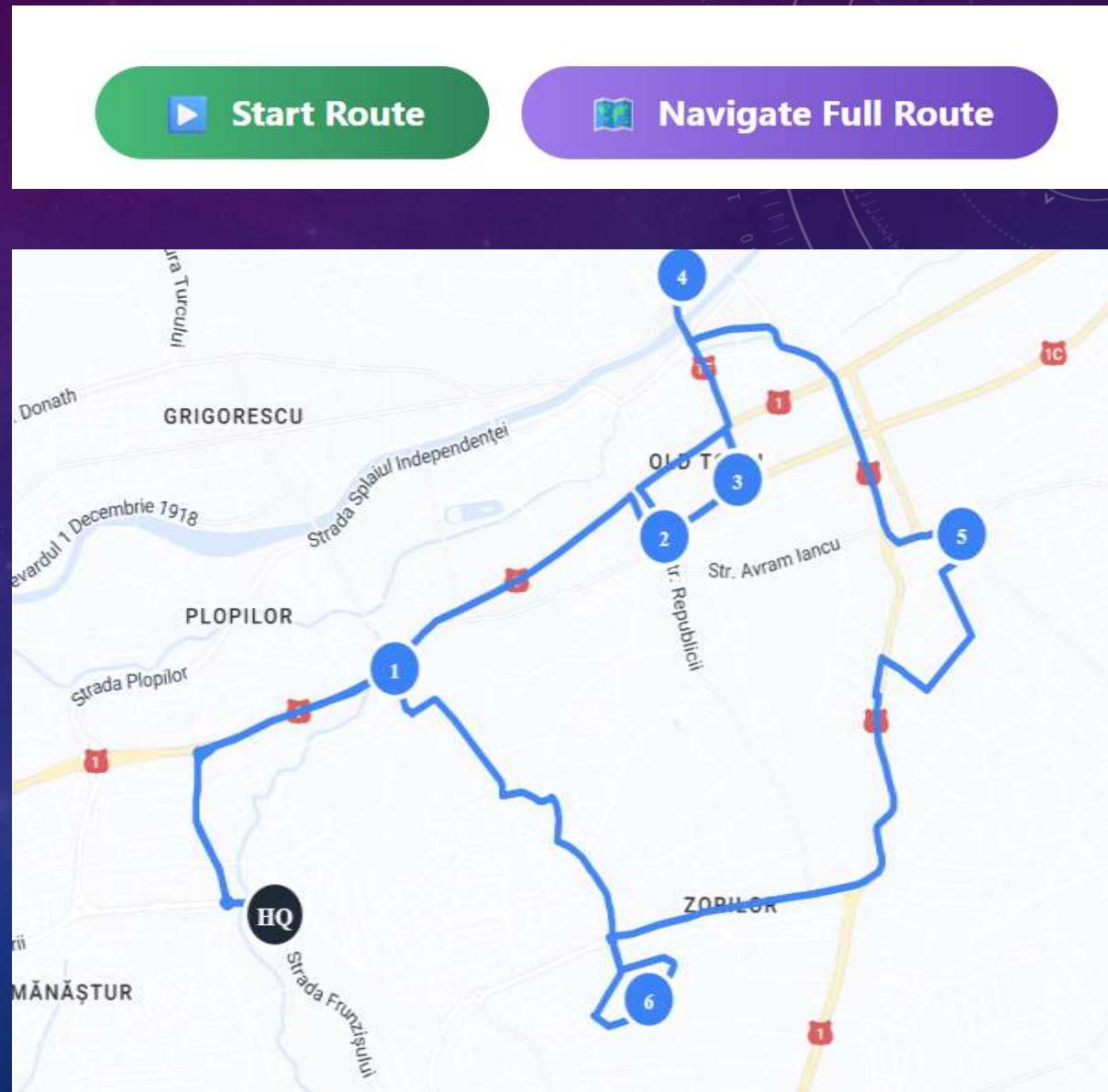
DYNAMIC ROUTE RECONFIGURATION



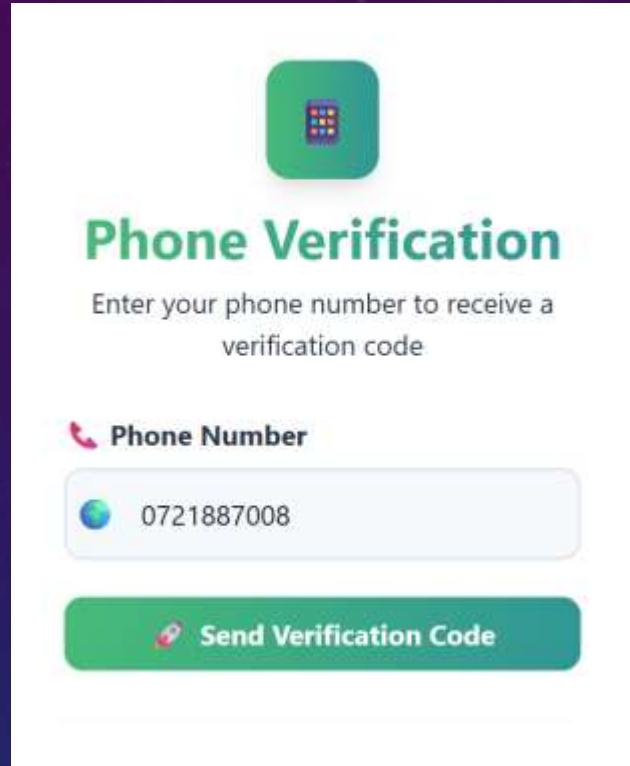
- Add/remove stops → frontend re-optimizes waypoints order
- ETAs refresh on traffic or sequence changes
- Driver app updates stop list

DRIVER APP

- Optimized route
- Start Route -> Start tracking+ETAs
- Add/Remove orders --> reorder stop sequence

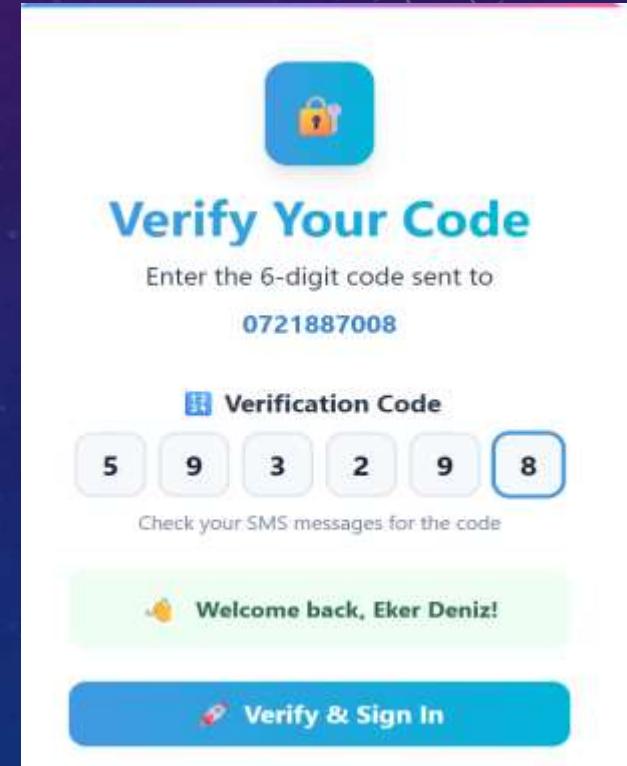


OTP VERIFICATION (CUSTOMER LOGIN)



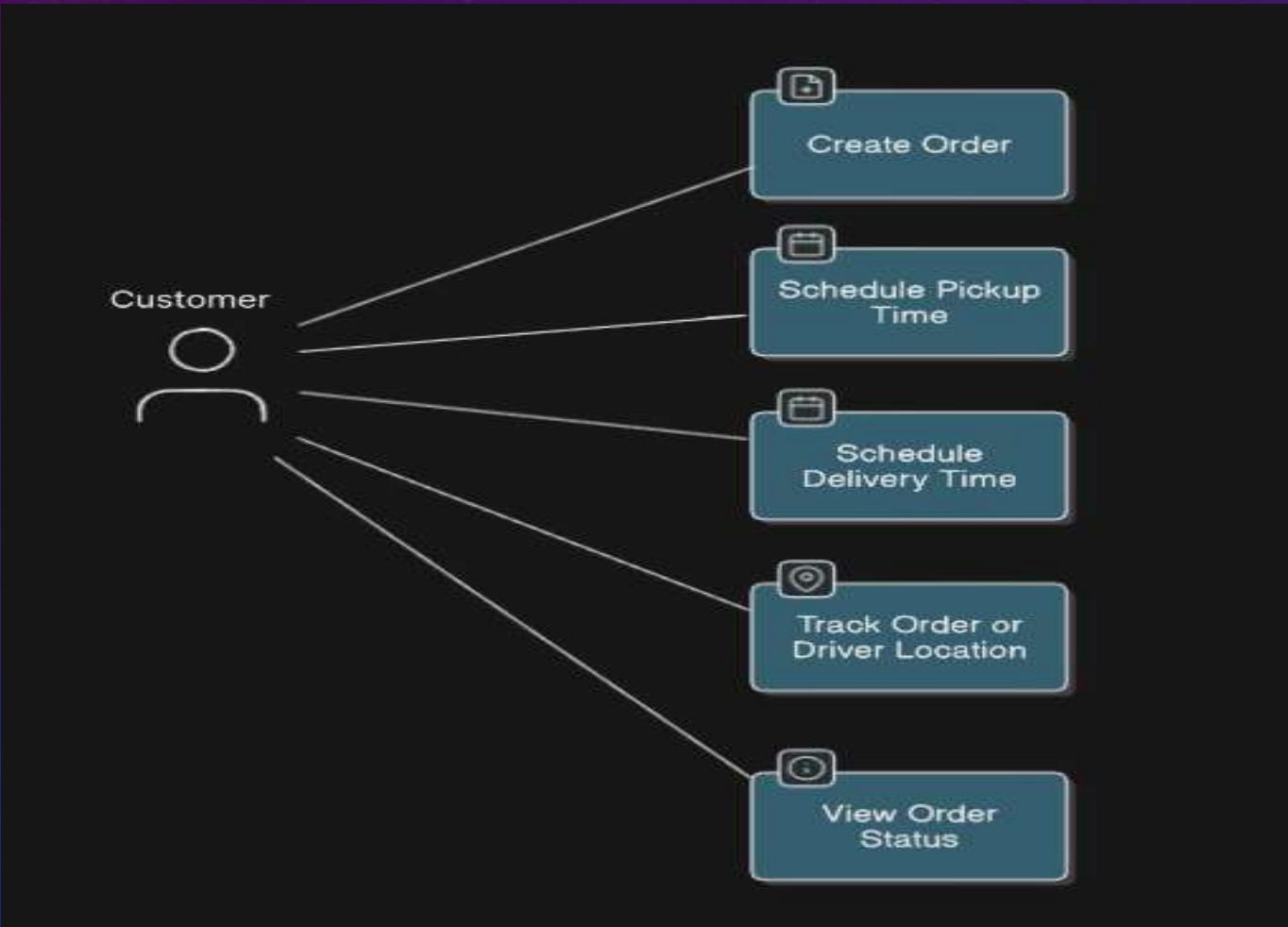
The screenshot shows a mobile application interface for phone verification. At the top, there's a green icon of a smartphone displaying a grid of squares. Below it, the text "Phone Verification" is displayed in green. A sub-instruction "Enter your phone number to receive a verification code" is shown in gray. A text input field labeled "Phone Number" contains the number "0721887008". A green button at the bottom right is labeled "Send Verification Code".

- OTP login via SMS
- Secure: rate-limited attempts

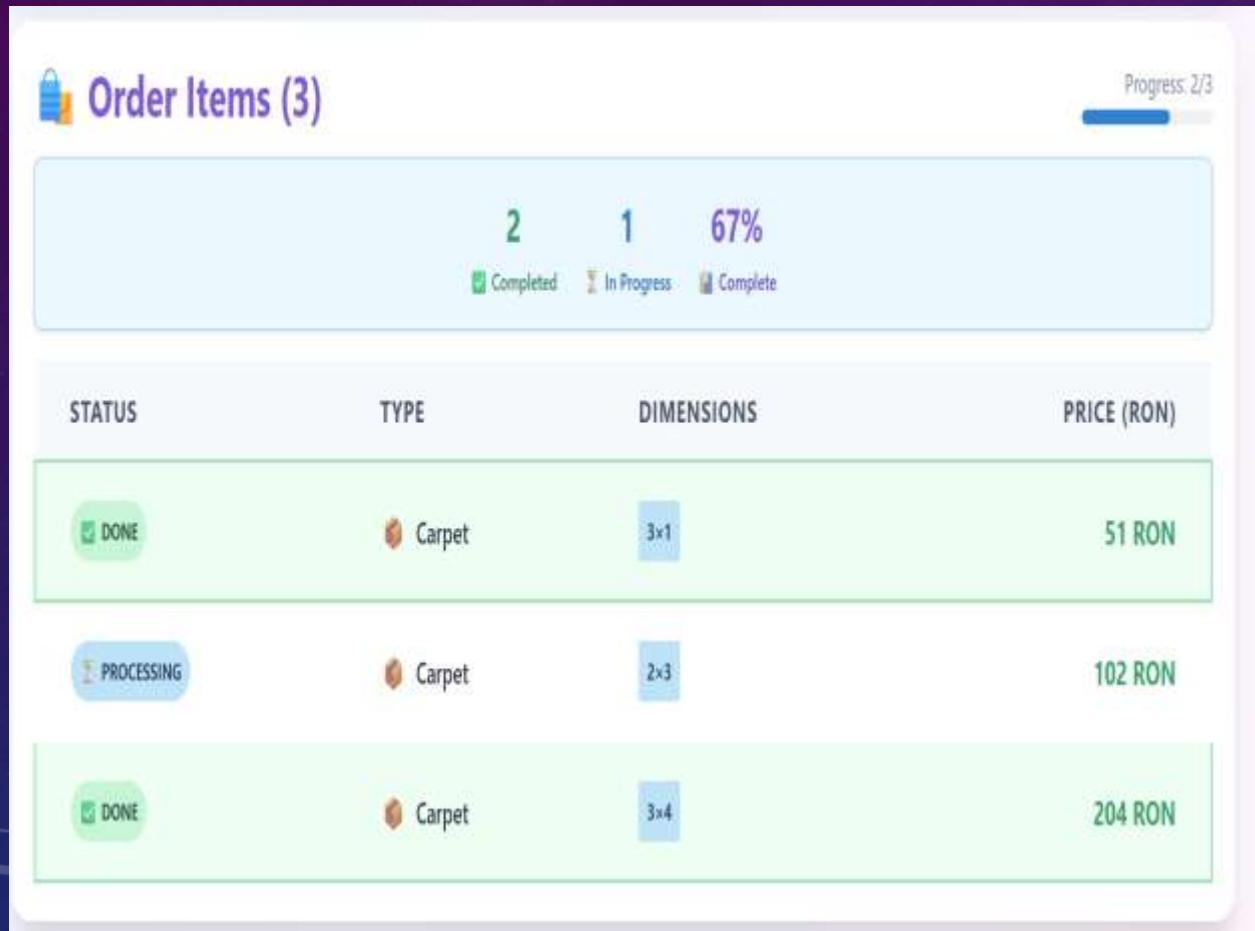


The screenshot shows a mobile application interface for verifying a code. At the top, there's a blue icon of a padlock with a keyhole. Below it, the text "Verify Your Code" is displayed in blue. A sub-instruction "Enter the 6-digit code sent to" is shown in gray, followed by the phone number "0721887008". A text input field labeled "Verification Code" contains the digits "5 9 3 2 9 8". Below the input field, a note says "Check your SMS messages for the code". A green button at the bottom right is labeled "Welcome back, Eker Deniz!". Another green button at the bottom right is labeled "Verify & Sign In".

CUSTOMER USE CASE DIAGRAM



CUSTOMER “MY ORDER ” PAGE



The image shows a digital interface for a customer's "My Order" page. At the top left, there is a shopping cart icon followed by the text "Order Items (3)". To the right, a progress bar indicates "Progress: 2/3". Below this, a summary section shows the count of completed (2), in progress (1), and total (3) items, along with a completion percentage of 67%. A legend below the summary defines the colors: green for Completed, yellow for In Progress, and grey for Complete.

STATUS	TYPE	DIMENSIONS	PRICE (RON)
Done	Carpet	3x1	51 RON
Processing	Carpet	2x3	102 RON
Done	Carpet	3x4	204 RON

- **Progress overview**
- **Per-item status**
- **Details per item:** type, dimensions, price;
- **Delivery info:** when a route starts, page shows live ETA and driver's location

ONLINE SCHEDULING FOR CUSTOMERS

Service Type *

Pickup from your location

Select Pickup Time

Choose Date

Friday, July 11

Available Time Slots for 7/11/2025

09:00 - 11:00 5 SPOTS AVAILABLE Morning slot	11:00 - 13:00 4 SPOTS AVAILABLE Selected Late morning slot
14:00 - 16:00 5 SPOTS AVAILABLE Afternoon slot	16:00 - 18:00 5 SPOTS AVAILABLE Evening slot

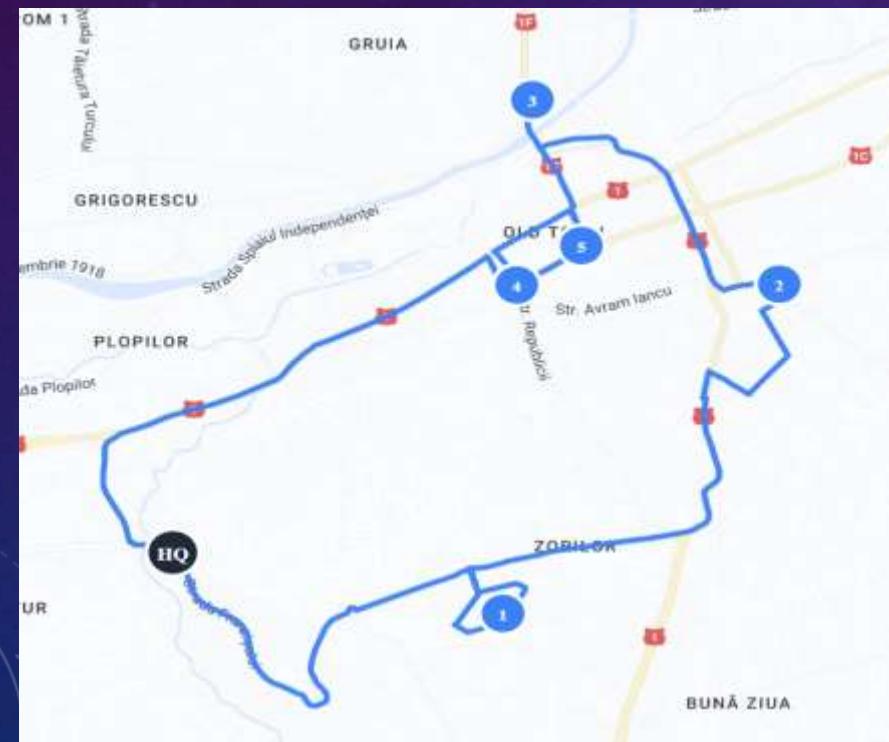
Need a different time?
Don't see a suitable time slot? You can request a custom time and we'll do our best to accommodate you.

Request Custom Time

- Choose date & time-slot
- Request Custom Time (staff approval via SMS)

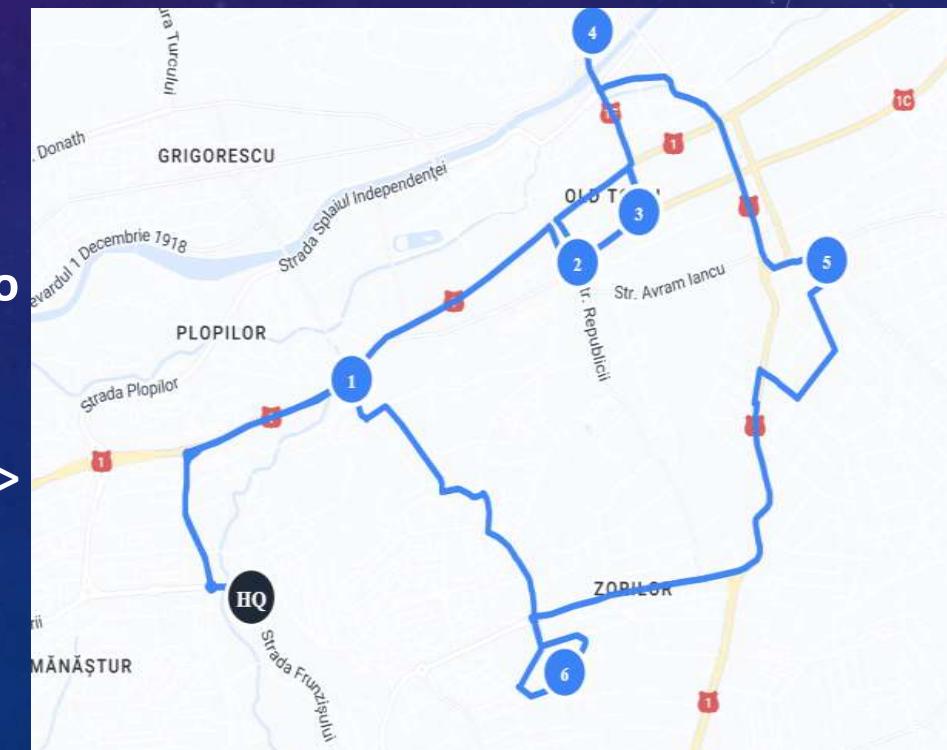
TESTING AND VERIFICATION

- Backend (Swagger): CRUD actions
- Client: map & ETA update on add/remove; OTP + SMS;



initial ->

Adding 1 order to
the existing
route->
reconfiguring ->



< 1



Infomessage >

Mesaj text + SMS
vin., 11 iul., 12:52 a.m.

Your code is **746033**

Your order #4120 was created! We'll
be in touch soon.

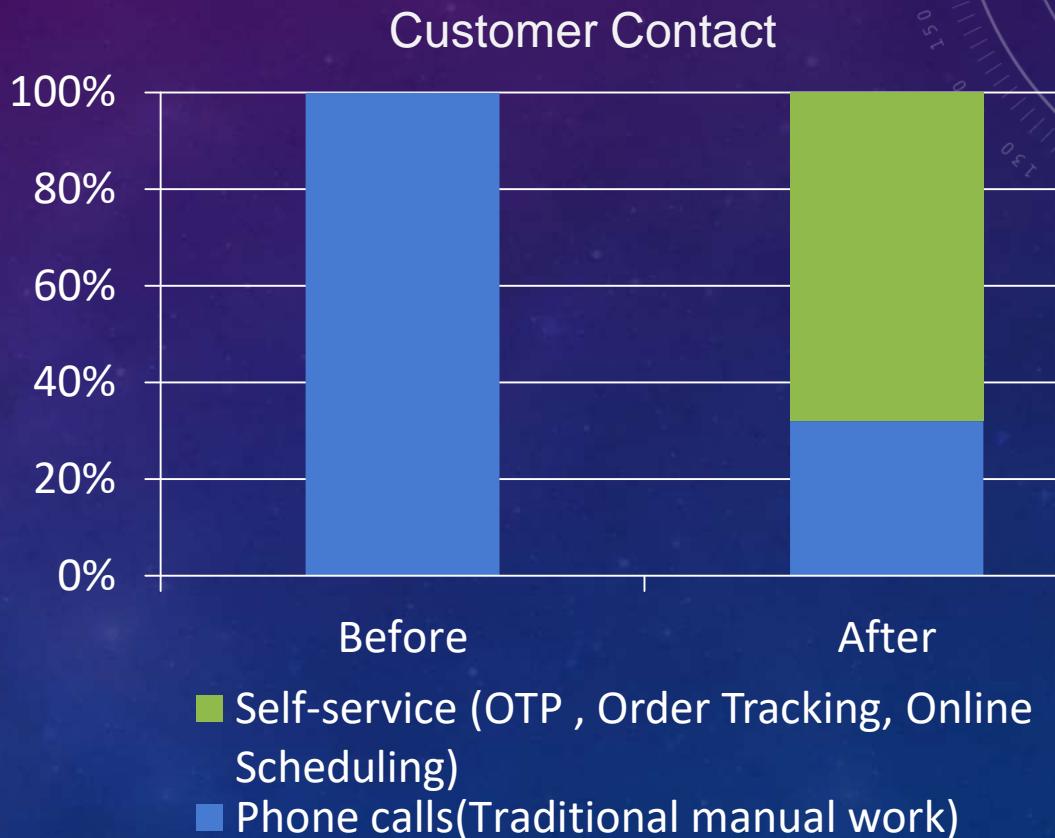
Hello Deniz Eker! Your pickup
request for Jul 14, 08:00 has been
received. We'll confirm shortly. -
Spalatorie

Great news Deniz Eker! Your pickup
is confirmed for Jul 14, 08:00. We'll
see you then! - Spalatorie

Your order #4120 is on the way! You
can track the order live here: <https://www.licentaDemo.com/my-orders/4120>

RESULTS/IMPACT

- OTP login is faster and more comfortable
- Customers check order status online (per-carpet + ETA).
- Routes are visible and trackable → fewer status calls.
- Result: less desk time, quicker handovers, happier customers.





A dark blue background featuring a large, faint circular dial with numbers from 40 to 260 around its perimeter. Several smaller, semi-transparent circular elements are scattered across the background, some containing arrows and small numbers. A dense cluster of glowing blue and white bokeh lights is visible in the lower right corner.

THANK YOU!