DARB

هاكاثون الصّنَاعة
Industrial Hackathon

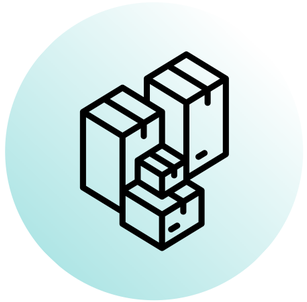
DARB SOULTIONS

INTRODUCTION

Darb’ Team visited Kinza’s Factory to investigate more about the problem we received, but we discovered more issues regarding the supply chain sector that **reduces efficiency** and **increases operational costs**.

During our visit to Kinza, we uncovered several key challenges they are currently grappling with.

The following problem roots from:



Unorganized Loading Practices

Inefficient Transport Strategy

Manual Process Management

Cargo Theft

Cargo theft losses

$41,000,000,000

In the world

Source

Global supply chain disruptions have impacted

97%

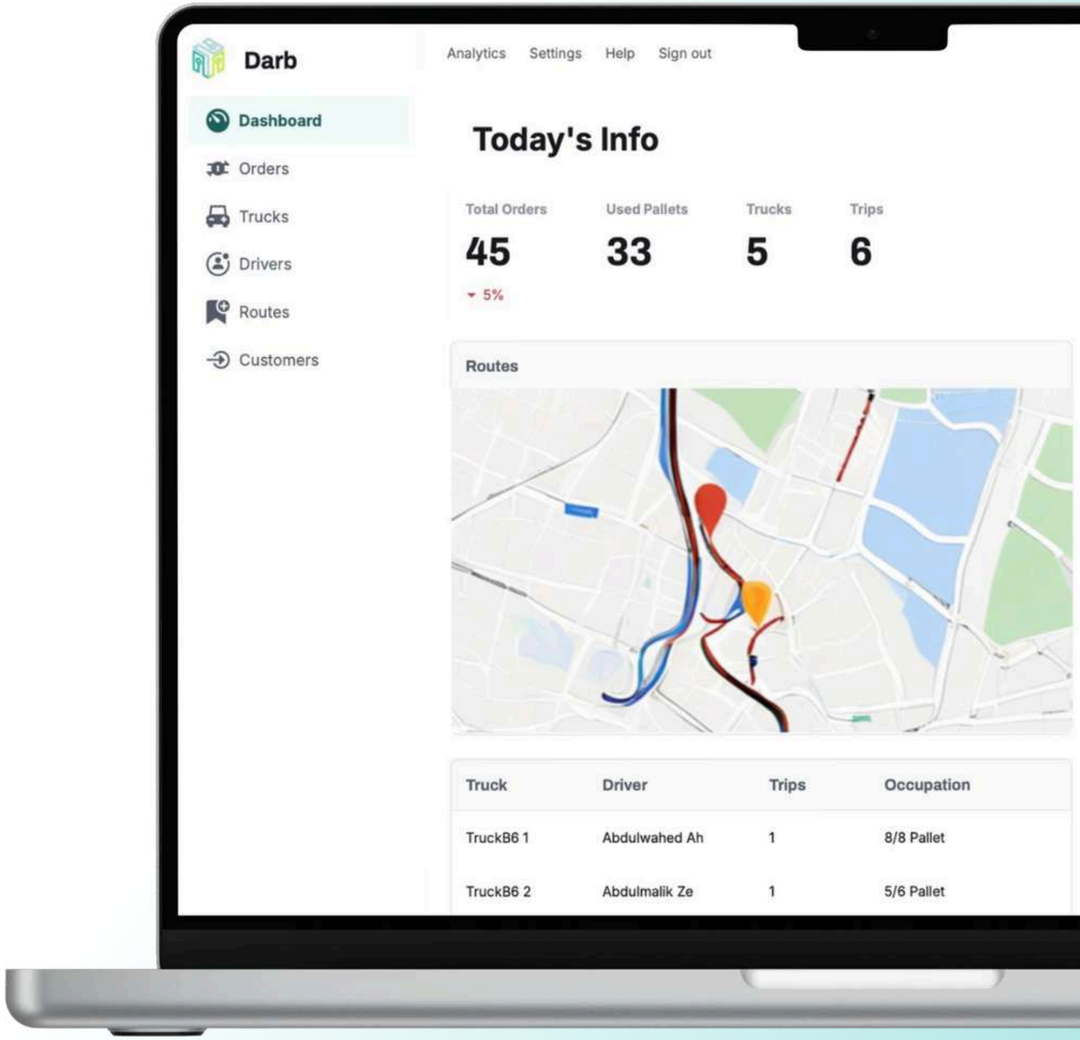
of companies

Source

How do we solve these challenges?

DARB SOULTIONS

An AI-powered platform allows businesses to improve, automate, oversee, and simplify their supply chain operations, with government supervision to ensure safety.



ADDED VALUE

Enhanced Fleet Management

Territory and Route Optimization

Truck Sharing Between Factories

Reduce Last Mile Costs

IMPACT

Economic Growth

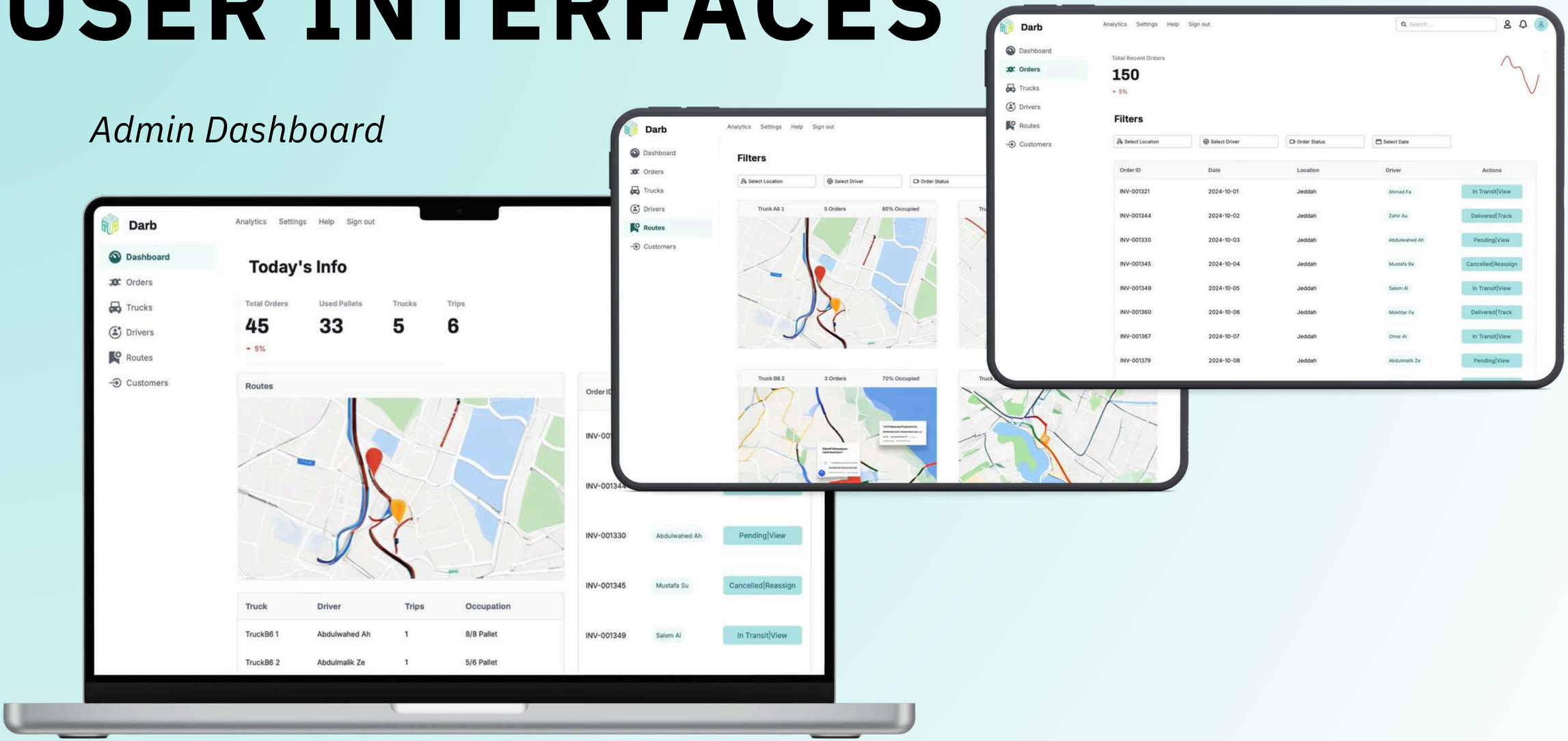
Sustainable Enviroments

National Security

Collaborative Opportunities

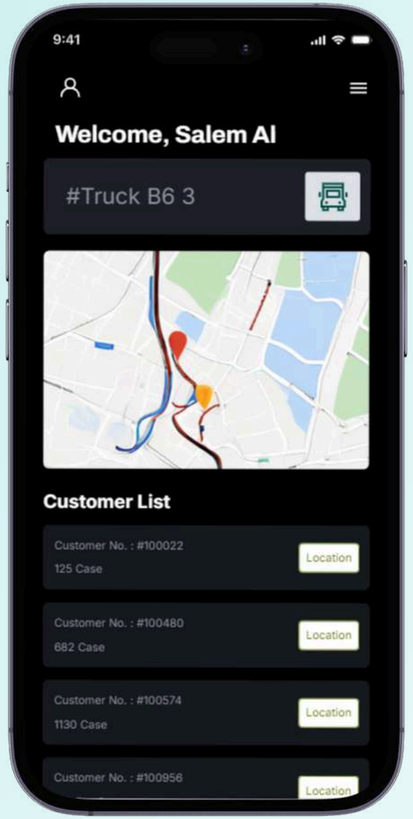
USER INTERFACES

Admin Dashboard



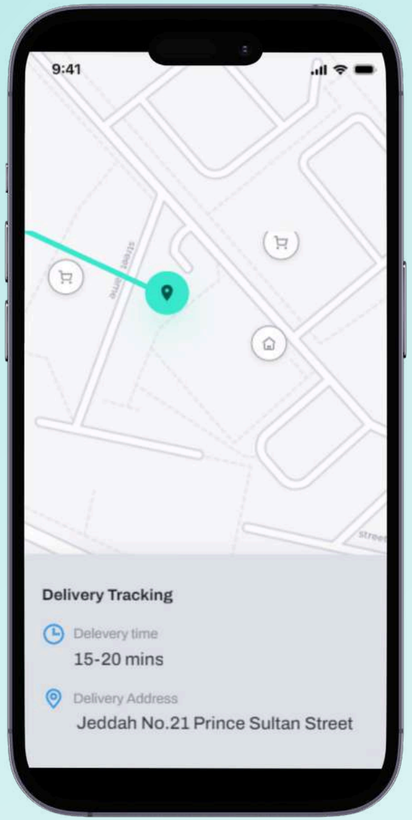
USER INTERFACES

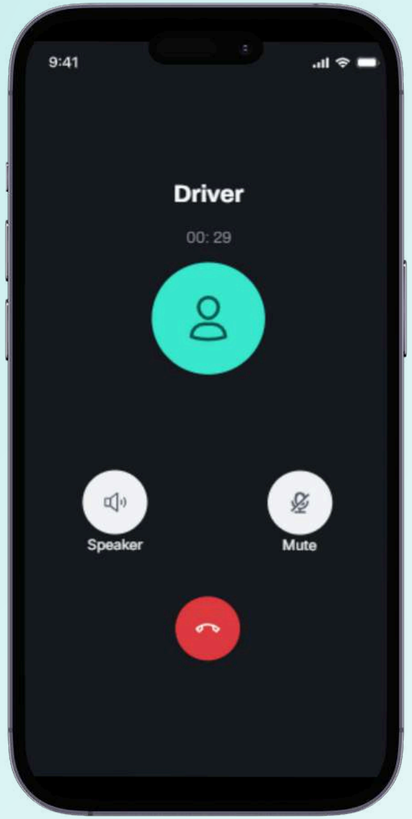
Truck Driver Interface

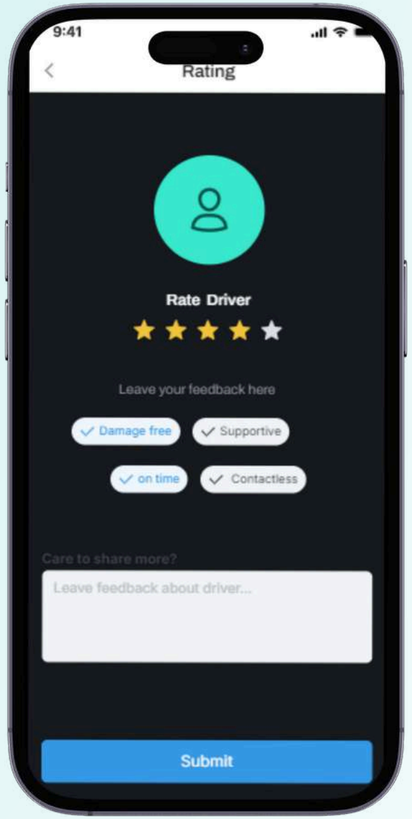


USER INTERFACES

Truck Driver Interface







MODEL

```
grid_search = GridSearchCV(RandomForestRegressor(random_state=42), param_grid, cv=5, scoring='neg_mean_squared_error')
grid_search.fit(X_train, y_train)
best_model = grid_search.best_estimator_
y_pred = best_model.predict(X_test)
mse = mean_squared_error(y_test, y_pred)
print("Mean Squared Error after tuning:", mse )
accuracy = 1 / (1 + mse)
print("Accuracy based on MSE:", accuracy )
```

```
Mean Squared Error after tuning: 0.08332500000000165
Accuracy based on MSE: 0.923084023723258
```

Model Link

MODEL

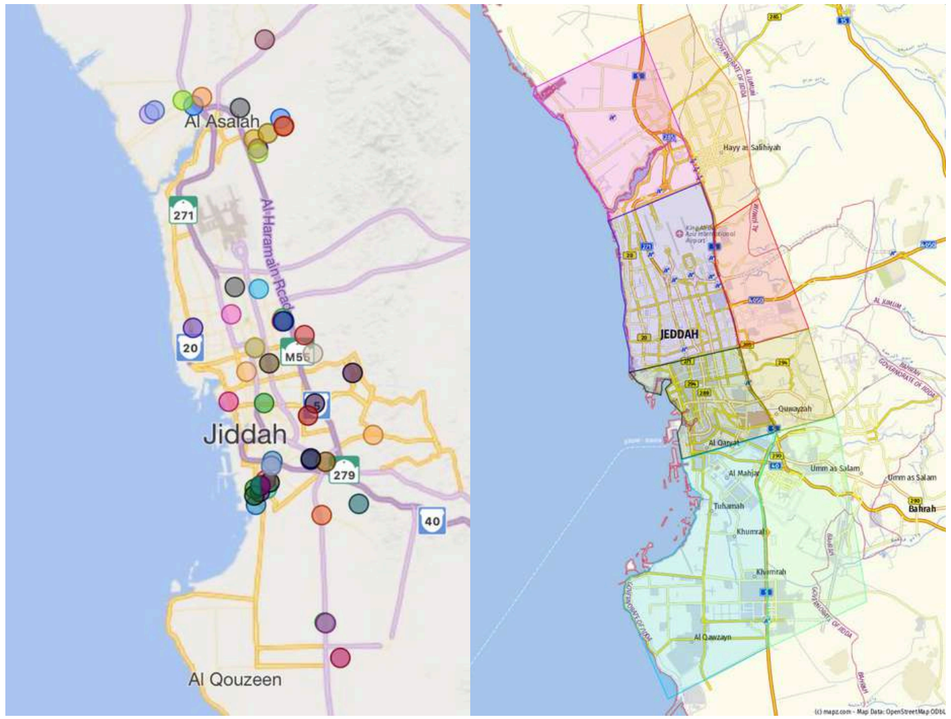
The AI Model was built based on the data analytics phase, and the supposed result is a model that:

1. Cluster customers into groups based on their location.
2. Assign trucks based on capacity, possible number of trips, and order quantity.
3. Plan an optimized route for trucks.
4. Calculate the utilized capacity of each truck; to address any wasted spaces or trips.

Model Link

DATA ANALYTICS

After customer locations visualization, we sectioned Jeddah to 8 Zones (No. of Trucks).



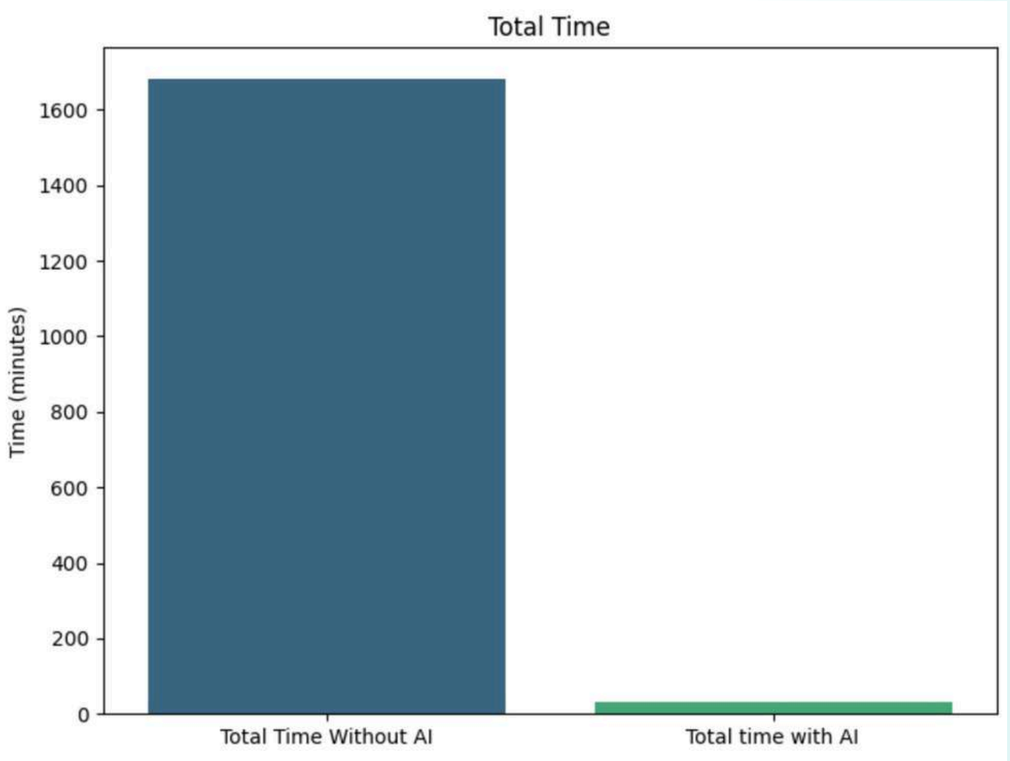
For further details, Click here

DATA ANALYTICS

The AI Model results indicate that the number of trips is reduced by 57%, and the total operational time is reduced by 98.21%.

Number of trip	Total number of trip	%
9	14	64%

Number of Pallets	Total Number of Pallets	%
56	90	62%



For further details, Click here

DARB TECHNOLOGIES & TOOLS

Front-End

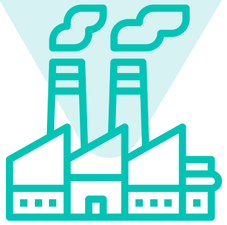
Back-End

AI Algorithms & Technologies

CUSTOMER SEGEMENTS

Government entities

Delivery apps



Manufacturing entities

MARKET COMPETITORS

	Share Truck Capacity Utilization	AI Planning for Last Mile Delivery	Government Supervision	Enhance Security
DARB	✓	✓	✓	✓
Shipsy		✓		✓

DARB TEAM

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Eng. Meshari Almeghawli
Supply chain specialist

Taif AlHarthi
Data analyst

Tahani AlHarazi
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Joud Sayadi
Data analyst