

## Slide 1 – Title Page (Amaravati Quantum Valley Hackathon 2025)

Niharika (Opening hook):

“Good morning judges. Imagine thousands of delivery vehicles on the road—each taking suboptimal routes. That means wasted fuel, higher costs, and delayed deliveries. Our solution: Quantum Path Planning for Delivery Vehicles. We are Team Hexaholics.”

Ansari (Bridge):

“Our idea is simple yet ambitious—use quantum computing to optimize delivery routes faster and more efficiently than classical methods.”

## Slide 2 – Proposed Solution

Niharika:

“We encode the Vehicle Routing Problem into a QUBO model—essentially turning delivery routing into a form quantum computers understand. Then, we use QAOA—Quantum Approximate Optimization Algorithm—to search for efficient delivery paths.”

Ansari:

“And this directly reduces delivery time, fuel consumption, and costs. It’s a scalable approach—meaning as delivery networks grow, our system grows with them.”

## Slide 3 – Technical Approach

Niharika (Technical Depth):

“Our workflow starts with delivery data—locations, fleet size, and traffic constraints. We preprocess this data, build a distance matrix, and apply clustering to reduce complexity.

Next, we encode the Vehicle Routing Problem as a QUBO and apply QAOA using Qiskit and PennyLane on quantum simulators. Finally, we benchmark against classical solvers like Google OR-Tools.”

(Optional Quick Analogy if audience looks confused):

“Think of it like searching for the fastest route across many possible maps at once—quantum parallelism helps us do that faster.”

## Slide 4 – Feasibility & Viability

Ansari (Balanced Realism):

“Quantum hardware today has limitations—scalability and noise. But we address this with hybrid models: classical preprocessing + quantum optimization.

Niharika:

Our prototype solves small-scale routing efficiently, and as quantum hardware improves, so will our solution. It’s a gradual but impactful path forward.”

## Slide 5 – Impact & Benefits

Niharika (Storytelling):

“Think of the impact: Logistics companies save fuel and money. Customers get faster, more reliable deliveries. Society benefits from lower emissions and less congestion.

In short: social, environmental, and economic benefits—making logistics smarter and greener.”

Ansari (Vision):

“And this is just the beginning. Our work lays the foundation for achieving true quantum advantage in real-world logistics—an edge classical methods can’t sustain forever.”

## Slide 6 – Research & References

Ansari (Closing):

“Our approach is backed by Qiskit optimization research, OR-Tools for benchmarking, and cutting-edge quantum algorithms like QAOA.

Niharika: We are Hexaholics—and with quantum-powered path planning, we believe the future of logistics can be faster, greener, and smarter.”

Niharika (Final Note):

“Thank you. We’re happy to take your questions.”