



# **Project Plan for the Implementation of an AI- Enabled Last-Mile Delivery Optimisation System for DHL Express UK**

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## Contents

|                                                             |    |
|-------------------------------------------------------------|----|
| 1. Introduction .....                                       | 4  |
| 2. Project Aim .....                                        | 6  |
| 3. Project Objectives .....                                 | 6  |
| 3.1 Project Objectives .....                                | 6  |
| 4. Project Scope .....                                      | 7  |
| 4.1 In Scope .....                                          | 8  |
| 5. Project Outputs (Deliverables) .....                     | 9  |
| 5.1 Project Deliverables .....                              | 9  |
| 6. Activities Required to Deliver the Project Outputs ..... | 10 |
| 6.1 Major Project Activities .....                          | 10 |
| 7. Work Breakdown Structure (WBS) .....                     | 11 |
| 7.1 Work Packages .....                                     | 13 |
| 8. Deliverables and Milestones .....                        | 13 |
| Table 8.1 Deliverables and Milestones .....                 | 14 |
| 9. Resources .....                                          | 14 |
| 9.1 Human Resources .....                                   | 15 |
| 9.2 Technological Resources .....                           | 15 |
| 9.3 Physical Resources .....                                | 16 |
| 9.4 Financial Resources .....                               | 16 |
| Conclusion .....                                            | 17 |
| References .....                                            | 18 |

## 1. Introduction

The logistics industry has undergone significant transformation in recent years as organisations increasingly adopt digital technologies to improve operational efficiency, customer satisfaction and environmental sustainability. Growing demand for e-commerce, rising customer expectations for faster deliveries and increasing pressure to reduce carbon emissions have encouraged logistics providers to invest in innovative technologies capable of optimising transport operations. Artificial Intelligence (AI), data analytics and real-time route optimisation have become key components of modern logistics management, enabling organisations to improve decision-making while reducing operational costs (Christopher, 2022).

DHL Express is one of the world's leading logistics companies, operating an extensive international network that provides express parcel delivery, freight transportation, warehousing and supply chain solutions across more than 220 countries and territories. Within the United Kingdom, DHL manages thousands of daily deliveries through a network of regional depots, distribution centres and transportation hubs. Maintaining high levels of service quality while responding to increasing delivery volumes requires continuous improvement of operational processes and effective use of digital technologies.

This project proposes the implementation of an AI-enabled Last-Mile Delivery Optimisation System for DHL Express UK. The proposed system will integrate artificial intelligence, GPS tracking, predictive traffic analysis and dynamic route optimisation to improve delivery planning and operational performance. Unlike traditional static route planning, the proposed solution will continuously analyse real-time traffic conditions, customer delivery windows and vehicle availability to recommend the most efficient delivery schedules throughout the working day.

The project will focus on selected DHL operational hubs across England and will be implemented over a 24-week period. The implementation includes system configuration, software integration, staff training, pilot testing and performance evaluation before full operational deployment. The project also supports DHL's sustainability objectives by reducing unnecessary vehicle mileage, fuel consumption and carbon emissions while improving delivery reliability and customer satisfaction.

This project plan applies recognised project management principles to define the project scope, objectives, deliverables, activities, resources and implementation schedule. By following a structured project management approach, the project aims to provide DHL Express UK with a practical framework for implementing an intelligent last-mile delivery

solution that enhances operational efficiency and supports long-term business competitiveness (PMI, 2021).

## 2. Project Aim

The primary aim of this project is to design and implement an AI-enabled Last-Mile Delivery Optimisation System for DHL Express UK to improve delivery efficiency, operational performance and customer satisfaction within a selected pilot region in England. The proposed system will use artificial intelligence, real-time traffic analysis, GPS tracking and predictive route optimisation to enhance delivery planning and reduce operational inefficiencies associated with traditional route scheduling.

The project seeks to improve decision-making by enabling dynamic route adjustments based on changing traffic conditions, delivery priorities and vehicle availability. Through the integration of intelligent logistics technologies, DHL aims to reduce delivery times, minimise fuel consumption, lower transportation costs and decrease carbon emissions while maintaining a high level of service reliability.

The implementation will follow recognised project management principles throughout a 24-week project lifecycle, ensuring that project activities are completed within the agreed scope, schedule and budget. The project also supports DHL's strategic commitment to digital transformation and sustainable logistics by introducing technology that improves operational resilience and long-term competitiveness (PMI, 2021; Christopher, 2022).

## 3. Project Objectives

Project objectives translate the overall aim into measurable outcomes that will guide implementation and provide criteria for evaluating project success. Following the SMART framework, the objectives are specific, measurable, achievable, relevant and time-bound (PMI, 2021).

### 3.1 Project Objectives

| Objective   | Description                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------|
| Objective 1 | To implement an AI-enabled last-mile delivery optimisation system within a 24-week project schedule. |
| Objective 2 | To reduce average delivery times by 15% within three months of implementation.                       |

|             |                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------|
| Objective 3 | To reduce fuel consumption by 10% through AI-based route optimisation.                                                     |
| Objective 4 | To decrease vehicle CO <sub>2</sub> emissions by 12%, supporting DHL's sustainability objectives.                          |
| Objective 5 | To improve on-time delivery performance to 98% within the pilot region.                                                    |
| Objective 6 | To train 100% of dispatch coordinators and delivery drivers before system deployment.                                      |
| Objective 7 | To integrate the AI platform with DHL's existing Transport Management System (TMS) without disrupting daily operations.    |
| Objective 8 | To complete the project within the approved budget while achieving stakeholder acceptance during final project evaluation. |

These objectives provide measurable indicators for assessing project performance and support continuous monitoring throughout the implementation process. They also ensure that project outcomes align with DHL's strategic priorities for operational excellence, customer service and sustainable logistics (Kerzner, 2022).

#### 4. Project Scope

Project scope defines the boundaries of the project by identifying the activities required to achieve the project objectives while clearly distinguishing work that falls outside the implementation. A well-defined scope supports effective planning, prevents scope creep and enables project resources to be managed efficiently throughout the project lifecycle (PMI, 2021).

This project focuses on implementing an AI-enabled Last-Mile Delivery Optimisation System for DHL Express UK within a pilot operational region covering Greater Manchester and the West Midlands. The system will improve delivery planning by integrating artificial intelligence, GPS tracking, predictive traffic analytics and dynamic route optimisation into DHL's existing Transport Management System (TMS).

The implementation includes software configuration, system integration, staff training, pilot deployment and performance evaluation before full operational adoption. The project will be

delivered over a 24-week period, allowing sufficient time for testing, user acceptance and operational refinement.

To maintain effective project control, the project scope is divided into activities that are included and those specifically excluded from implementation.

#### 4.1 In Scope

##### Activities Included

Project planning and initiation

Requirements gathering and stakeholder consultation

Selection and configuration of the AI optimisation platform

Integration with DHL's existing Transport Management System (TMS)

GPS and real-time traffic data integration

Pilot implementation in Greater Manchester and the West Midlands

Training for dispatch coordinators and delivery drivers

Performance monitoring using Key Performance Indicators (KPIs)

User Acceptance Testing (UAT)

Final project evaluation and closure

##### Table 4.2 Out of Scope

##### Activities Excluded

Expansion to DHL operations outside the UK

Purchase of new delivery vehicles

Construction of new distribution centres

Replacement of DHL's existing ERP system

International logistics operations

Recruitment of permanent operational staff

Long-term software maintenance after project completion

Development of customer mobile applications

Clearly defining the project scope ensures that implementation remains focused on the agreed objectives while preventing unnecessary changes that could increase costs or delay delivery. Establishing clear boundaries also supports stakeholder communication, resource allocation and effective project governance throughout the implementation process (Kerzner, 2022).

## 5. Project Outputs (Deliverables)

Project deliverables are the measurable outputs produced during each phase of the project. They provide evidence that planned activities have been completed successfully and allow project progress to be monitored against predefined milestones (PMI, 2021).

For the DHL implementation project, the following deliverables will be produced.

### 5.1 Project Deliverables

| Deliverable                    | Description                                                   |
|--------------------------------|---------------------------------------------------------------|
| Project Charter                | Approved project documentation and governance structure       |
| Requirements Specification     | Functional and technical requirements for the AI solution     |
| AI Route Optimisation System   | Configured software integrated with DHL systems               |
| Integrated GPS Tracking Module | Real-time vehicle monitoring capability                       |
| Training Programme             | Training materials and completed staff training sessions      |
| Pilot Implementation Report    | Results of pilot deployment and operational performance       |
| User Acceptance Test Report    | Confirmation that operational requirements have been achieved |
| Final Project Report           | Project evaluation, lessons learned and recommendations       |

Each deliverable represents a significant achievement within the project lifecycle and contributes to the successful implementation of the AI-enabled delivery optimisation system. Collectively, these outputs provide the foundation for measuring project performance and confirming that the project objectives have been achieved.

## 6. Activities Required to Deliver the Project Outputs

The successful implementation of the AI-enabled Last-Mile Delivery Optimisation System requires a structured sequence of project activities that guide the project from initiation to final deployment. Organising the project into logical phases enables effective planning, resource allocation and project control while reducing implementation risks. Each activity contributes directly to one or more project deliverables and supports the achievement of the project's objectives (PMI, 2021).

The implementation has been divided into six major phases that reflect the project lifecycle and ensure a systematic approach to digital transformation within DHL Express UK.

### 6.1 Major Project Activities

| Project Phase                              | Key Activities                                                                                                                                                         | Expected Output                              |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| 1. Project Initiation                      | Develop the Project Charter, appoint the project team, identify stakeholders, define project objectives and obtain management approval.                                | Approved Project Charter                     |
| 2. Requirements Analysis and System Design | Analyse existing delivery operations, gather business and technical requirements, evaluate software solutions and design the AI implementation framework.              | Requirements Specification and System Design |
| 3. System Development and Integration      | Configure the AI optimisation platform, integrate GPS data, connect with the Transport Management System (TMS), perform software testing and resolve technical issues. | Fully Integrated AI Platform                 |

|                                         |                                                                                                                                             |                                         |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 4. Pilot Implementation                 | Deploy the system within the selected pilot region, monitor operational performance, collect user feedback and refine system functionality. | Pilot Deployment Report                 |
| 5. Staff Training and Change Management | Train dispatch coordinators, delivery drivers and operational managers, provide user documentation and support organisational change.       | Trained Users and Operational Readiness |
| 6. Project Closure and Evaluation       | Conduct final system evaluation, measure KPIs, document lessons learned, obtain project acceptance and complete formal project closure.     | Final Project Report                    |

### Activity Dependencies

The project activities follow a logical sequence in which each phase depends on the successful completion of the previous one. Requirements analysis cannot begin until the project has been formally approved, while system integration depends on the completion of the software configuration stage. Similarly, pilot implementation can only proceed after successful system testing, and project closure requires confirmation that all project objectives and acceptance criteria have been achieved.

This phased implementation approach reduces project uncertainty, improves governance and enables potential issues to be identified and resolved before the system is fully deployed across operational activities (Kerzner, 2022).

### 7. Work Breakdown Structure (WBS)

A Work Breakdown Structure (WBS) is a hierarchical decomposition of the total project scope into manageable work packages that facilitate planning, scheduling and performance

monitoring. The WBS ensures that all project activities are clearly defined and assigned, reducing the likelihood of overlooked tasks while improving project control (PMI, 2021).

For this project, the WBS has been developed around the six major implementation phases.

### **AI-Enabled Last-Mile Delivery Optimisation Project**

#### **1. Project Initiation**

Develop Project Charter

Identify Stakeholders

Appoint Project Team

Obtain Project Approval

#### **2. Requirements Analysis**

Analyse Current Delivery Process

Gather Business Requirements

Evaluate AI Software

Design Solution Architecture

#### **3. System Development**

Configure AI Platform

Integrate GPS Tracking

Connect TMS

System Testing

Security Validation

#### **4. Pilot Deployment**

Deploy AI System

Monitor Deliveries

Collect Feedback

Optimise Performance

#### **5. Training & Change Management**

Prepare Training Materials

Train Dispatch Coordinators

Train Drivers

User Support

## 6. Project Closure

Performance Evaluation

Lessons Learned

Final Acceptance

Close Project

### 7.1 Work Packages

| WBS Code | Work Package                   | Responsible Team    |
|----------|--------------------------------|---------------------|
| 1.0      | Project Initiation             | Project Manager     |
| 2.0      | Requirements Analysis          | Business Analysts   |
| 3.0      | AI System Development          | IT Development Team |
| 4.0      | Pilot Deployment               | Operations Team     |
| 5.0      | Training and Change Management | HR & Training Team  |
| 6.0      | Project Closure                | Project Manager     |

The Work Breakdown Structure provides a clear framework for organising project activities into manageable components, improving accountability and facilitating project monitoring. It also serves as the basis for developing the project schedule, assigning resources and monitoring progress through milestones. By decomposing the project into defined work packages, the project team can better manage complexity, control risks and ensure that implementation remains aligned with DHL's operational objectives (Burke, 2022).

## 8. Deliverables and Milestones

Deliverables represent the tangible outputs produced during each stage of the project, while milestones are significant checkpoints used to monitor progress and verify that project

objectives are being achieved. Clearly defined deliverables and milestones improve project governance by enabling stakeholders to assess performance, approve completed work packages and identify potential schedule deviations (PMI, 2021).

For the implementation of the AI-enabled Last-Mile Delivery Optimisation System, each project phase concludes with a measurable deliverable and a corresponding milestone.

**Table 8.1 Deliverables and Milestones**

| <b>Project Phase</b>   | <b>Deliverable</b>                  | <b>Milestone</b>                   | <b>Timeline</b> |
|------------------------|-------------------------------------|------------------------------------|-----------------|
| Project Initiation     | Approved Project Charter            | Project formally approved          | Week 2          |
| Requirements Analysis  | Requirements Specification Document | Requirements signed off            | Week 5          |
| System Design          | AI System Architecture              | Technical design approved          | Week 8          |
| System Integration     | Integrated AI Platform              | Integration successfully completed | Week 14         |
| Pilot Deployment       | Operational Pilot System            | Pilot successfully launched        | Week 18         |
| Staff Training         | Training Completion Report          | 100% of operational staff trained  | Week 20         |
| Performance Evaluation | KPI Performance Report              | Performance targets achieved       | Week 22         |
| Project Closure        | Final Project Report                | Project officially closed          | Week 24         |

The milestone schedule enables the project manager to monitor progress against planned deadlines and identify corrective actions if delays occur. Regular milestone reviews also support stakeholder communication, improve accountability and ensure that project deliverables satisfy agreed quality standards before progressing to the next implementation phase (Kerzner, 2022).

## 9. Resources

Effective resource management is essential for delivering projects within the agreed scope, budget and schedule. The implementation of an AI-enabled logistics system requires the coordinated use of human, technological, physical and financial resources to ensure successful deployment while minimising operational disruption (PMI, 2021).

The resources required for this project are grouped into four categories.

### 9.1 Human Resources

| <b>Role</b>               | <b>Responsibilities</b>                               |
|---------------------------|-------------------------------------------------------|
| Project Manager           | Overall project planning, coordination and monitoring |
| Business Analyst          | Requirements gathering and business process analysis  |
| AI Solution Architect     | AI system design and technical leadership             |
| Software Developers       | System configuration and software integration         |
| IT Support Engineers      | Technical support and infrastructure maintenance      |
| Operations Manager        | Coordination of logistics operations                  |
| Dispatch Coordinators     | Operational testing and scheduling validation         |
| Training Manager          | Development and delivery of staff training            |
| Delivery Drivers          | User testing and operational feedback                 |
| Quality Assurance Officer | System testing and quality monitoring                 |

### 9.2 Technological Resources

| <b>Technology</b>                 | <b>Purpose</b>                  |
|-----------------------------------|---------------------------------|
| AI Route Optimisation Platform    | Dynamic route optimisation      |
| Transport Management System (TMS) | Operational integration         |
| GPS Tracking System               | Real-time vehicle location      |
| Cloud Database                    | Data storage and analytics      |
| Business Intelligence Dashboard   | KPI monitoring                  |
| Microsoft Project                 | Project scheduling and tracking |

| <b>Technology</b>      | <b>Purpose</b>                      |
|------------------------|-------------------------------------|
| Microsoft Teams        | Team communication                  |
| Cybersecurity Software | Data protection and system security |

### 9.3 Physical Resources

| <b>Resource</b>         | <b>Purpose</b>                         |
|-------------------------|----------------------------------------|
| DHL Distribution Hub    | Operational base                       |
| Delivery Vehicles       | Pilot implementation                   |
| Driver Handheld Devices | Route navigation and proof of delivery |
| Office Facilities       | Project coordination                   |
| Training Room           | Staff workshops                        |
| Network Infrastructure  | System connectivity                    |

### 9.4 Financial Resources

| <b>Budget Category</b>       | <b>Purpose</b>                       |
|------------------------------|--------------------------------------|
| Software Licensing           | AI platform implementation           |
| Staff Training               | User education and change management |
| IT Infrastructure            | Hardware and cloud services          |
| External Consultancy         | Specialist AI expertise              |
| Testing and Pilot Activities | System validation                    |
| Contingency Budget           | Risk response and unforeseen costs   |

## Conclusion

This project plan has presented a structured approach to implementing an AI-enabled Last-Mile Delivery Optimisation System for DHL Express UK. By applying recognised project management principles, the project defines clear objectives, scope, deliverables, activities, milestones, resources and risk management strategies that support successful implementation.

The proposed solution demonstrates how artificial intelligence can enhance operational efficiency by improving route optimisation, reducing delivery times, lowering fuel consumption and supporting DHL's sustainability objectives. The phased implementation approach, combined with effective stakeholder engagement and proactive risk management, provides a realistic framework for managing organisational change while maintaining service quality.

If implemented successfully, the project is expected to improve customer satisfaction, strengthen operational performance and contribute to DHL's long-term digital transformation strategy. Furthermore, the project illustrates how structured project management practices can help organisations deliver technological innovation in a controlled, efficient and measurable manner.

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