Theodoros Sphikas

Project Initiation Document

Defect Portal API (Application Programme Interface)

Supervisor

Stuart Smith

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Document Purpose

The purpose of the Project Initiation Document (PID) is to define the project in a high level of detail, only the key information about the project will be required. The PID details the objectives and scope of the project and forms the contract for the project and detail the agreed deliverables. It should be agreed with the project sponsor in advance and the PID is to provide guidance and for use as the assessment for both the Research Methods module and the Work Based Project.

Document Circulation and Approval

Project Title/ Role	Name	Organisation	Date
Project Sponsor	*Ray Govier / Dave Anderson*	DPD Group	11.08.2021
Project Manager	*Theodoros Sphikas*	DPD Group	11.08.2021
VMU Manager and Liaison to the Senior Management Team (SMT)	*Danny Danks*	DPD Group	11.08.2021

Document History & Version Control

Version	Reason for Amendment	Author	Date Changed	Reviewed By	Date of review
V0.1	Document created	Theodoros Sphikas	N/A	Danny Danks	12.06.2021
V0.2	Document updated following initial review with Sponsor	Theodoros Sphikas	09.07.2021	Danny Danks	10.06.2021
V1.0	Document approved	Theodoros Sphikas	11.07.2021	Dave Anderson & SMT	12.07.2021

1 Project Definition

1.1 Project background, description and rationale

This Project Initiation Document builds on DPD Groups desire to move towards a paperless defect reporting system. This must include the ability to produce automated KPI reports of the most common breakdown categories, average repair times, repeat defects, and the ability to store and retrieve the vehicle's work history.

The Project has been approved for proof of concept by Ray Govier, Head of Engineering, DPD group UK. This document outlines the current options available, how the build and implementation will proceed, persons involved and their associated responsibilities.

DPD Group has seen the need to move forward with a digitised reporting system due to failings in the current system. These failings have been attributed to the rapid growth experienced over the past two years. This rapid growth has been a result of the change of consumer shopping habits that transpired as a result of the covid restrictions, and the amalgamation of DPD & DPD Local, which has doubled the size of the existing fleet.

These changes have resulted in an exponential increase in our sorting and delivery requirements. To put into perspective, we are now sorting over a million parcels a night between all five sorting facilities, this is the equivalent to pre-covid Christmas operation. To meet this increasing demand, we have made extensive use of external agencies and contractors to meet the increased workload. This has brought to light the inadequacy of our archaic reporting procedures, with multiple failures coming to light that need to be addressed.

As a result, this is an opportune time to move forward with a digital solution. The new reporting system will be confined to Oldbury depot for trial and proof of concept. Due to Driver and Vehicle Standards Agency regulations, the current paper reporting system, and proposed solution will need to be run concurrently for the duration of proof of concept so as not to adversely affect the businesses' o'license.

The current defect reporting procedure is a three-part paper-based system involving multiple parties. The driver must first report the defect to the transport department. A three-part carbon copy, defect sheet is then produced. It is subsequently separated, and each copy handed to the relevant departments by the driver before a repair can be completed. These are then collated on completion by administration staff and filed away as per DVSA requirements.

DVSA requires all transport operators to store the most recent three years defect and inspection repair documents for legal compliance. The current year must be at hand for spot inspection, failure to do so is a major breach of regulatory compliance and can result in a company losing its operator's license. Moving to a digital system will bring much needed improvements to archaic file structure that has been in place since the establishment of the company, and it's purchase by La Poste.

Once delivered, this software will bring significant improvements to the current defect reporting system. Successful implementation will improve the ability to monitor vehicle downtime, by providing the ability to track the vehicle repair lifecycle. The development of this new system has been required for many years; The elimination of the current paper-based system is a major step towards our Going Green 2030 promise. The senior management team (SMT) have demonstrated that they are eager to be involved and assess the viability of this project. As such the SMT have requested that a secondary management login portal be integrated. This login will allow the management team to access KPI reports and performance metrics.

The following are the high level Aims and objectives of the project

- **Aims:** To develop a digital web portal for the creation and tracking of vehicle repair lifecycle.
- **Objective 1**: To produce a digital web-based application that can be used to raise defects and track their repair progress cross site.
- **Objective 2:** To produce a secondary management portal to view and access important key metrics and KPIs.
- **Objective 3:** To be able to store and retrieve vehicle repair history as per regulatory compliance.

1.2 In Scope

Following are the specific areas of scope that will be delivered/ impacted/ changed by the project:

- Reduced vehicle downtime
- Decommissioning of a redundant paper-based system
- Ability to produce KPI reports to monitor the most common defect categories and average repair times.
- Ability to access repair history.
- A web-based system that can be accessed across multiple devices. Currently the Depot uses Microsoft for all standalone devices, and iPads for mobile work. By using a web-based JavaScript application, the program will have cross platform support.
- Training all required departments in the use of the new system.
- Training in the changes of process and workflow.

1.3 Out of Scope

Following is a detailed description of all elements that are not within the scope of the project:

- Full integration of the system will not be taking place until a successful trial has taken place and the system is approved for further development by Darek Hammond (IT Infrastructure Manager).
- Integrating a counterpart inspection portal.
- Inspection scheduling.
- Approval of regulatory authorities will not be included for the proof of concept.
- Access to Microlise API for vehicle tracking.

Note: If any off-specification changes are required and deemed to be significant and agreed upon by the Senior Management Team, a detailed change proposal will be issued with the information of the requested change and why it is required. These will have to be addressed and accommodated for.

1.4 Literature review

There were several alternative pre-existing software solutions that were considered before the decision to proceed with an in-house solution was approved. These provided the general ideas for the design, scope and features that we're to be implemented within the proposal, and whether this concept was achievable and tangible.

IBMs Maximo was the first pre-built software solution to be considered. For comparison, a look at the recent implementation of Maximo at Riyadah Airports Company (RAC), to address day-to-day operations, including their complex maintenance systems was compared.

RAC began their move towards a fully digitised management portal in January 2019. Until such time it shared a similar three-part defect reporting procedure to what is currently used within DPD. RAC are a Ground Support Equipment (GSE) provider and maintainer. As such they're equipment shared the same time sensitive turnaround and minimal downtime requirements. The manual nature of the process led to costly and frustrating communication challenges; an issue shared here at DPD. As a result, they shared the issue of defects being raised through email or on paper, and unless presented and sent to the correct shift manager, could go unseen. This results in multiple emails being sent regarding the same issue, involving far too many parties, and at times defects would remain unresolved.

Further to this, workload prioritisation becomes problematic during busy periods. All the individuals involved have varying degrees of knowledge and expertise which would result in ill-advised decisions about which issues/defects we're most urgent.

The move towards a singular platform provided more efficient real time control, and full visibility of the defects repair status. This made a drastic improvement to the daily workings of the company by allowing them to track and analyse repair history and condition of assets. This reduced paperwork by 80% and improved inspector productivity by 80%. (Figures quoted are available at https://www.ibm.com/case-studies/riyadh-airports-company/)

Although there are many benefits of using a pre-built functioning and proven software package such as Maximo for integrating defect and maintenance reporting, various issues came to light. The software was designed to be all encompassing, it was addressing multiple different industries in a single package, thus it was a great universal software package, but required an unnecessary amount of modification and tailoring to meet the companies' specific needs. The implementation at RAC took 9 months to complete with many lingering issues that took years to resolve. The software was found to be bloated with unnecessary features and information that made it awkward and impractical. After initial implementation, future edits and modifications to the software would have to be requested through a liaison at IBM. A major factor that made it an unsuitable choice was its lack of compatibility, due to pre-existing company contracts, the portable devices that we're to be provided to technicians would have to be iPads. These are currently unsupported by Maximo. As a result, this option was deemed unsuitable.

Another successful defect management portal demonstrated for use, was Kerridge Commercial Systems (KCS), Dealer Management System (DMS). This software is primarily used by Daimler Systems (Mercedes Benz). In general, this software took on a much more complete role regarding the vehicle life cycle than Maximo. KCS DMS can fully manage vehicle inspection schedules and can be integrated into our current parts system which would allow for real time stock management tracking.

The ability of KCS to record defects and parts used on the vehicle, allows technicians and supervisors to track work history and monitor repeat defects. This results in a completer and more accurate fault diagnosis. It's not uncommon in the current system for a vehicle to break down for the same fault multiple times before the issue comes to light. Currently, tracking a vehicles history involves sifting through months of paperwork to uncover the possible cause of repeat breakdowns.

KCS however had one major downfall, being a dealer management system, it wasn't designed to allow access to defects by multiple parties, with different levels of access according to their involvement in the repair life cycle. For example, a security guard to checking the registration of a vehicle at the main gate before permitting them to leave site, would have unrestricted access to the entire defect report, including the ability to close an open job as repaired. This was deemed a major compliance risk, as such KCS was deemed as an unsuitable option.

The third and final option that was considered was Magic Internet Technologies Truckfile. Truckfile has the benefit of being built specifically for fleet management. Truckfile had the advantage of being a web-based system, key factor when considering the options one that was also required in our situation. The software allows the management of job workflow with full visibility of progress with live status updates on completion. It runs completely paperless, and technicians can be allocated and scheduled jobs in advance of completion allowing for continual flow when unsupervised.

This system was the closest to meeting DPDs requirements, as it had already been accredited by DVSA. Having a fully compliant tool that stores all vehicle documentation indefinitely on a document storage system was highly desirable. However, the system came across as over complicated and it was decided that a simpler solution was preferred. Scheduling repairs was desirable but was deemed unsuitable. Future integration with our company's vehicle tracking API was also discussed with Magic Internet Technologies, however no agreement could be made and the SMT decided not to move forward with Truckfile.

After careful consideration by the Senior Management Team, taking on board all the information to hand. it was decided that a proof-of-concept idea could move forward, and an in-house solution was preferred. If the proof of concept has a successful trial, the application would be handed to our development team for integration and development. Although currently out of scope with the proof of concept, successful integration will be advanced to include digital inspection reports, link to our vehicle tracking system and automated scheduling.

1.5 Reference list

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1.6 Assumptions

Following is a detailed description of key assumptions for this project, against which the project plan has been defined.

Assumption Id	Assumption description	Impact of assumption failure	Action required to monitor assumption
AS01	A viable product will be approved and tested before peak period 2022	During peak the project will not be able to run and will be delayed till 2023	A six-month window has been provided for POC completion that must be adhered to.
AS02	All outstanding defects will be available for access by all departments	Failure to meet Regulatory Compliance.	No action to monitor. Implementation will not be carried out without this function.
AS03	KPI Reporting	This is a requirement for proof-of-concept approval.	No action to monitor. Implementation will not be carried out without this function.
AS04	No paper	Failure to meet company green initiatives.	No action to monitor. Implementation will not be carried out without this function.

AS05	Production work will be undertaken by the project Team and will make minimal demands on technical services.	Due to peak period beginning in September, technical service requests will be delayed.	Any requests need to be made with adequate time to account for probable delays.
AS06	The content will be agreed upon by the Senior Management Team	Product will not be deployed if content is not met.	Regular updates to provide liaison to SMT.

1.7 Dependencies

Dependency ID	Dependency description	Impact of dependency failure	Action to monitor dependency
DE01	Training	Unable to train relevant staff to use the defect portal.	Involve training department prior to deployment to provide information to design and approve training documentation.
DE02	Web Hosting	Inability to host the application will make the product unusable.	Keep Derek Hammond Apprised of progress.
DE03	Successful procurement of portable devices	Defects will not be actionable by technicians.	Wayne Carter to be apprised of hardware requirements.
DE04	Design Team	Will not impact the useability of the product. It won't fill the companies design/image requirements.	Not required for deployment, will keep the Design team apprised of progress.
DE05	The ability for staff to adapt to the change in procedure	Complex system and aging staff may resist the change.	Training and Hiring issue outside of my control.
DE06	Integration of digital Infrastructure	This will affect long-term sustainability.	Assist IT with integration.

1.8 Key Risks

Below are the key project risks at initiation:

Risk ID	Risk Description	Impact if risk is realised	Probability	Severity
RS01	Lack of funding to cover equipment	Lack of funding will result in the inability to provide technicians with portable devices to enter information	Low	Low
RS02	COVID Restrictions reintroduced	Will be unable to liaise with relevant departments, as they return to working from home.	Medium	High

RS03	Health issues	Will impact my ability to complete the project.	LOW	High

1.9 Key Issues

Below are the key project issues at initiation:

Issue ID	Issue Description	Issue Impact	Owner	Severity
IS01	There is a risk that this may overlap with vehicle inspection procedures	If this occurs or is requested, it will have to be rejected. It is highly likely since vehicle inspections are also subject to the archaic paper reporting style	High	Low
IS02	Technical solution does not deliver the required results	Complete a pilot test on low volume days to assess viability and resolve any issues with the working product.	Medium	Medium
IS03	Inability to train existing team members in new technology	Involve training and recruitment departments to upskill or source new team members	Medium	High

1.10 Deliverables

Project Deliverable	Description	Owner	Timeline
Project Initiation document		T.Sphikas	Pre-Approval
Monthly Progress Report		T.Sphikas	Monthly
UI Interface Design	Requires input from the design team to meet DPD image requirements.	T.Sphikas/Design Team	TBC
Technical Design Spec	All defect and repair categories to be provided by engineering specialist.	Pete Stanley	TBC
Online storage and delivery solution	Tested at programme level.	T.Sphikas	Pre-Deployment
Defect creation and recovery	Tested at programme level.	T.Sphikas	Pre-Deployment
Post Implementation Review	A PIR meeting will be held and PIR document updated and approved with the Project Sponsor, Portfolio Manager and other key stakeholders.	T.Sphikas	Pre-Deployment

Implementation Reviews	Implementation review dates will be specified after post implementation review.	T.Sphikas	TBC
Training Documentation (Engineering)	PowerPoint PDF detailing defect creation Procedure.	Training Dept	1 Week Post-Deployment
Training Documentation (Traffic/Linehall)	PowerPoint PDF detailing defect completion procedure.	Training Dept	1 Week Post-Deployment
Training Documentation (Traffic/Security)	PowerPoint PDF detailing defect completion procedure	Training Dept	1 Week Post-Deployment

2 RESEARCH ETHICS

Disclaimer Form

The following declaration should be made in cases where the researcher and the supervisor (where applicable) conclude that it is not necessary to apply for ethical approval for a specific research project.

PART A: TO BE COMPLETED BY RESEARCHER

Name of Researcher:	Theodoros Sphikas

Student/Course Details (If Applicable)		
Student ID Number:		14032192
Name of Supervisor(s)/Module Tutor:		Stuart Smith
PhD/MPhil project: ☐		
Taught Postgraduate Project/Assignment: ☐	Award Title:	FdSc Information and Communication Technology
Undergraduate Project/Assignment: ☒	Module Title:	COCS50709-Research Methods and Professional Practice

Project Title:	Design & Implementation of a Digital Web-Based Defect Reporting Portal		
Project Outline:	To build and implement a web-based solution to follow the lifecycle of a defect report.		
Give a brief description of research procedure (methods, tests etc.)	Comparison and test of three pre-built dealer management systems.		
Expected Start Date:	27.September.2021	Expected End Date:	01.May.2022

Declaration

I/We confirm that the University's Ethical Review Policy has been consulted and that all ethical issues and implications in relation to the above project have been considered. I/We confirm that ethical approval need not be sought. I/We confirm that:

The research does not involve human or animal participants	☒
The research does not present an indirect risk to non-participants (human or animal).	☒
The research does not raise ethical issues due to the potential social or environmental implications of the study.	☒
The research does not re-use previously collected personal data which is sensitive in nature, or enables the identification of individuals.	☒

Signature of Researcher:	T.Sphikas	Date:	26.08.2021
Signature(s) of Project Supervisor(s) (If applicable)		Date:	

NB: If the research departs from the protocol which provides the basis for this disclaimer then ethical review may be required and the applicant and supervisor (where applicable) should consider whether or not the disclaimer declaration remains appropriate. If it is no longer appropriate an application for ethical review **MUST** be submitted.