TRANSMITTAL LETTER **DATE: 17 August 2017**

HAMMOCK HELICOPTER SDN BHD – HAMMOCK DATABASE USER AND ADMINISTRATOR HANDBOOK – ISSUE 1 REV 0.

Enclosed herewith is HAMMOCK HELICOPTER SDN BHD (HH) DATABASE HANDBOOK Issue 1 Revision 0 printed in its entirety. This issue supersedes the previous Issue

This document is the

HAMMOCK DATABASE

USER AND ADMINISTRATOR HANDBOOK

For

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0.01 RECORD OF REVISIONS

COPY NO: _____ MANUAL HOLDER: _____

This record of revisions shall be retained in this HANDBOOK. Revisions shall be inserted to replace the superseded pages in this document with the revision date, insertion date and name of person incorporating the revision annotated in the appropriate block below.

REV NO	REVISION DATE	INSERTION DATE	INSERTED BY (NAME IN BLK)	REV NO	REVISION DATE	INSERTION DATE	INSERTED BY (NAME IN BLK)

0.02 LIST OF EFFECTIVE PAGES

Table of Content

0.03 PURPOSE OF EXPOSITION

Hammock database is a web tool which will be used to improve project and stock management. This manual will provide information about the Hammock Helicopter Database application such as its usage, development and license.

These informations will allow the user to handle and improve the interface.

For more information, refer to the contact part at the end of this book. About administrator access please refer to the administrator documents.

0.04 CONDITION OF USE

This Handbook is the property of Hammock the Helicopter SDN BHD (HH). It is not to be copied or communicated in part or as a whole to any person not employed by the company without the express written consent of the Accountable Manager or System Administrator.

This tool is provided by Victor ROUQUETTE - licensed under *GNU GPLv3* - for Hammock Helicopter usage in accordance with the author Victor ROUQUETTE and GPL License (see end of this document).

The Handbook is not intended to conflict with or to override the author's rights and license. The purpose of this Handbook is to help the user to correctly handle this tool.

PART 1 - OVERVIEW

1.01 PURPOSE OF THE APPLICATION

Hammock database is a web tool used to improve project and stock management. This tool is provided and developed by Victor ROUQUETTE for Hammock Helicopter. For more information about administrator access please refer to the administrator documents.

What can be done with the Hammock Database? Managing the progress of the projects and its different aspects. The main parts of this application are the Project Management, Stock Management, personnel Management and Documentation. The administrator has access to an administrator interface to manage the user access. For more access information please refer to the current developer and use the host access (currently the application is hosted by 1and1 service).

This part will cover the main functionalities which will be further explained in other sections. The aim of this first section is to give an overview on what can be done with this tool. The following sections will explain the usage instructions with a usage scenario and the application structure for whoever would want to improve it.

1.02 PROJECT

This is the most important part and the core of the software. Every action done in other parts can have consequences on this part. This part is articulated around 3 important times for the project: creation and editing of the project by desktop users, editing of the progress by hangar users and the ending of the project by the administrator.

From this part, you will be able to edit different documents about the project such as the Scope of Work, Work Order, Engineer Request Voucher (ERV) and Part Issue Form (PIF). The documents will be automatically generated under excel format (.xlsx) based on the information previously provided by the users.

First, the office users must create the project in the database. Some essential information is required to create the project. Without it, a new project cannot be created (that will be developed in TO DO: Complete). Afterwards it can be modified and information can be added to the project, work orders and tasks. Office users are responsible of the coherency of the provided documents and information about the project.

When the Work Orders are available on a project, the hangar users can work on it and create the ERV. The Work Order rows (tasks) have to be completed with information about perform and released date. When the ERV is generated, the hangar users can see if the required parts are available. The office user has to authorize to use of the parts. The authorization information is displayed with the part information in ERV window.

A progress bar will show the progress done on the Work Orders Tasks. When the progress bar reach 100%, at the end of the project, the administrator will be able to close the project and print the end documents. The main information about the classified project will be stored and can be printed again even after the program has been closed. To work on the same helicopter after the project has been closed, a new project must be created (a closed project cannot be reopened).

1.03 STOCK

This part of the software gives access to the stock (stock and available stock) and allows different action such as receiving stock, editing the stock or ordering parts). This part can only be accessed by office users and administrators. The hangar user can only have access to the general view of the stock.

The users can search for specific parts and know their status (used or not) and their quantity in stock. All parts are followed with their ARC and PO corresponding files.

The edit action allows to modify the information about a part in the stock. The users are responsible for coherence of the information entered in the database.

The two most important parts of the stock management are the Receiving action and Order action. The Receiving action allows the user to add received parts to the stock with all the information about them. The user is responsible for the coherence of this information.

Order action is the most important action in stock management. In this part, the user can see the required parts for all project and order them. This allows the user to generate a Request for Quotation (RFQ, TO DO: check with SQL Software) and after it has been requested, a Purchase Order (PO). The parts will then arrive in the Receive section and will have to be confirmed to be added to the stock.

1.04 MANAGEMENT

This part of the software allows access to the records of works and creates extra DAILY work from projects tasks. The Administrator can manage records and Begin/Close work for any user.

This part also provides calendar views for projects and users.

The main purpose of this part is to provide the user with a view of the worktime for each task in the system.

1.05 DOCUMENTATION

This part is used by desktop users and administrators to manage the documentation/manuals about aircrafts. This part of the database references all the sub tasks and parts with their reference number which will be used in Work Orders.

Work Orders on an aircraft are created by referring to the aircraft type and all its manuals. The function of this part will be described in next chapter.

The figure below (*Figure 1*) shows the global documentation hierarchy that can be referred to.

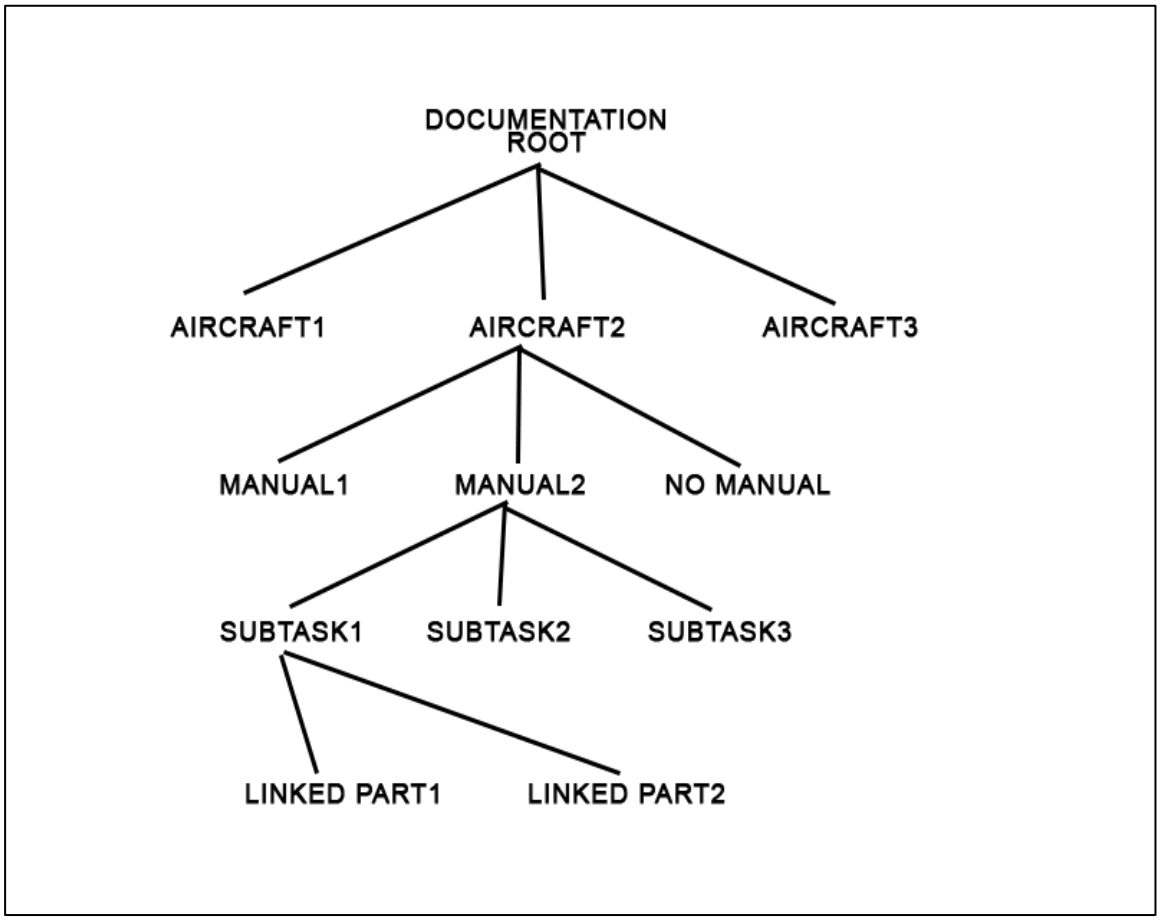

Figure 1 - Documentation Hierarchy

PART 2 - USAGE

2.01 HOME

This is the home page of the interface. Basic options can be accessed through it.

- **Account**: for all modifications related to the account or current status.
- **PN References**: to search all cross references for a part number from *partslogistics.com* website.
- **Calendar**: to access one's own recorded work (as level 1, 2 user) and all other recorded calendars (as level 3, 4 user).

In addition to these features, the user can access the summary of their current job (as level 1, 2, 3 and 4) and an overview of all current jobs (as level 3, 4) and close it.

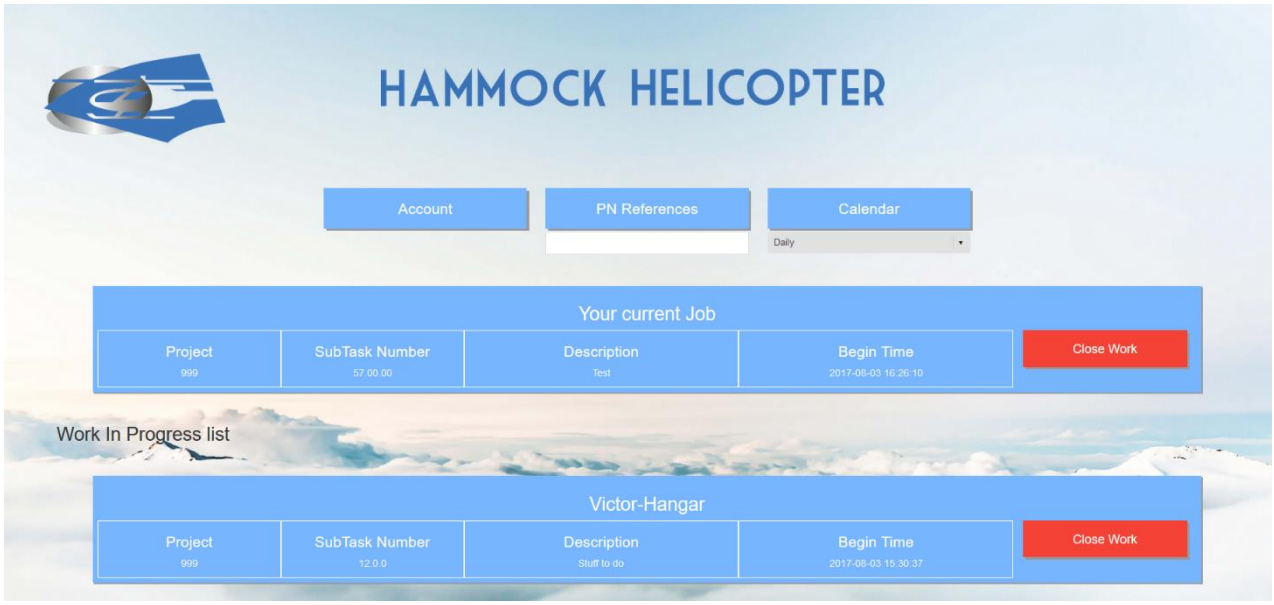

Figure 2 - Home Inteface

2.02 ACCOUNTS

2.02.01 Login

When arriving on the main page, the user must login. If the user doesn't have a login or account or the password has been forgotten, an administrator has to be contacted.

2.02.02 Change Password

On the sidebar menu, an option to change the personal password is available.

2.02.03 Account Management

On the sidebar menu, the administrator has access the account management interface (Account Admin) to manage all the account access such as creating new users, setting user information, deleting users and managing user access.

,Different levels of action are available depending on the user level:

1- View: Have access to views on project.

2- Hangar: Have access to views on project and ERV / WO edition.

3- Office: All access except account management.

4- Administrator: higher level, To all access

2.02.04 Logout

On the sidebar menu, a logout option is available.

2.03 PROJECT

2.03.01 Create Project

On the project choice page, below the project list, the user has access to the “New Project” button. The project information on the form page will have to be completed before being sent. The following information is required: Project-Name, Customer-Name, Helicopter-Type and Engine1-type. Helicopter and Engine types must be already created in the documentation part before use and have to be added to begin the project.

2.03.02 Project Global Interface

Different possibilities are available when choosing a specific project depending on the user access. As Office User, all the documents of the project can be edited and viewed. As Hangar User, all documents can be viewed and only ERV’s can be edited to ask for new parts. To create a new set of documents (Scope of Work, Work Order, ERC, PIF) the user has to click on “new” on the drop-button. The open date of the document will have to be entered and the name will be automatically generated.

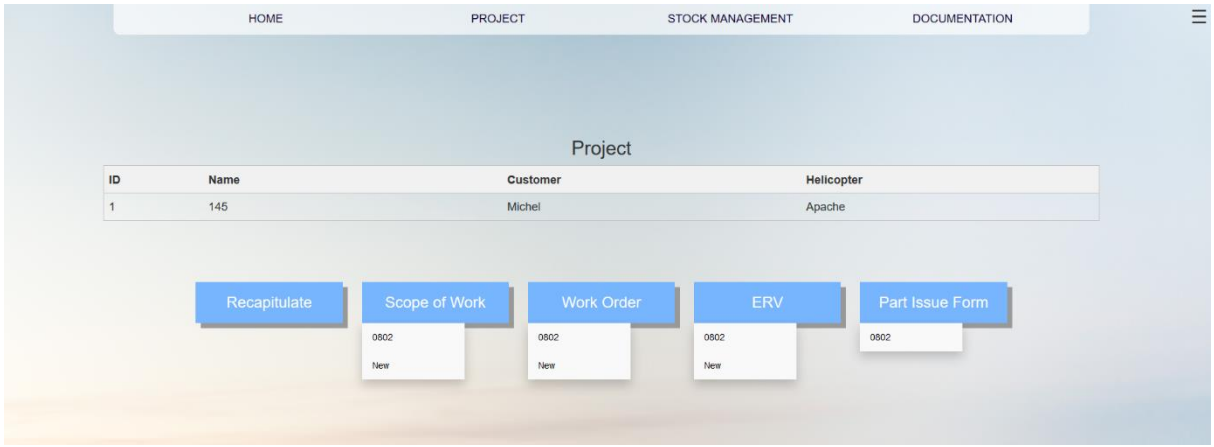

Figure 3 - Project Interface

2.03.03 Project Summary

- **Levels access: 1, 2 (view), 3, 4.**

The Summary give access to the project summary. General information about the project can be changed with the correct permission/access by pushing the button on the right of the row a first time to begin modification and a second time to validate it.

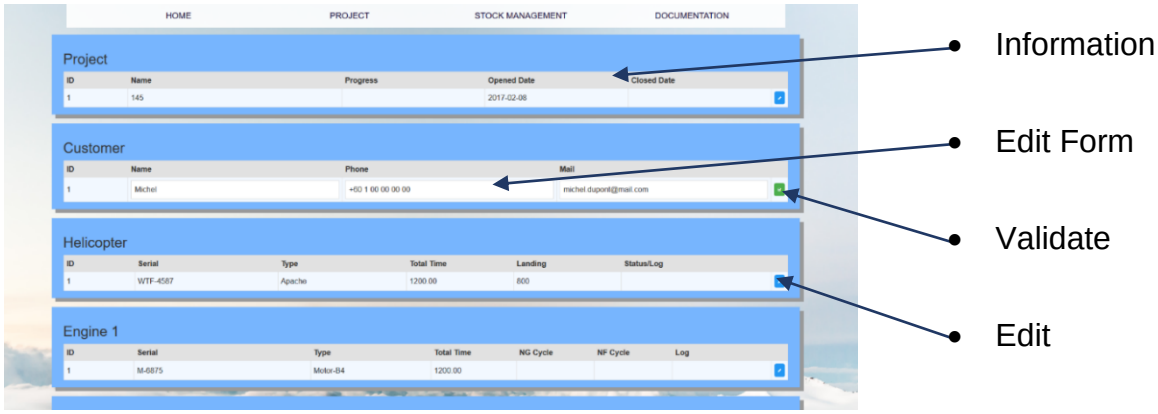

Figure 4 - Project Summary Interface

2.03.04 Scope of Work (SOW)

- **Levels access: 3, 4.**

This page gives a general view of the selected Scope of Work. The content can be managed and tasks can be Added/Edited/Deleted.

General Information:	Row Information:
➢ Scope of Work name	➢ Sub Task Number/Index
➢ Project name	➢ ATA Reference (Link)
➢ Customer name	➢ **Reference**
➢ Aircraft type	➢ **Description (from manual)**
➢ Serial number	➢ Date **Approved/**Completed

To add a task, the corresponding manual has to be created for the corresponding aircraft in “Documentation”. A task can be selected if it already exists in the manual or a new sub task can be created and will be store in manual’s information for future use.

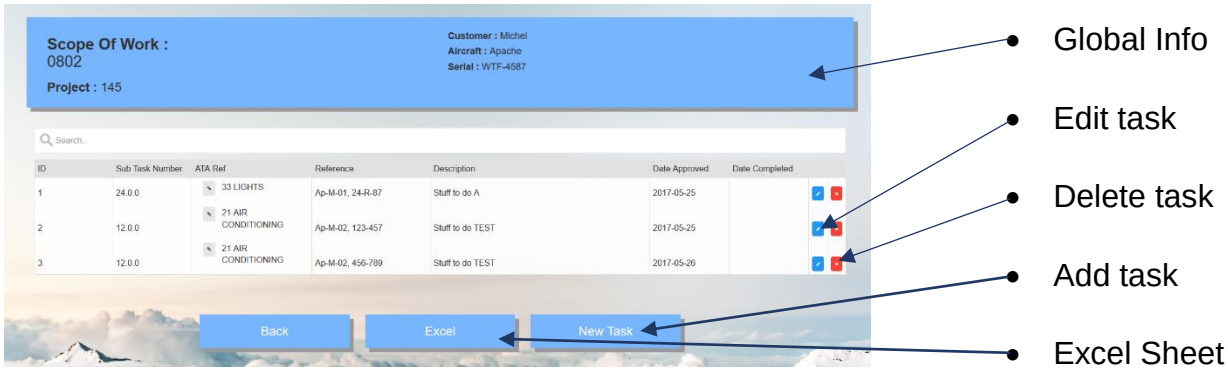

Figure 5 - Scope Of Work Interface

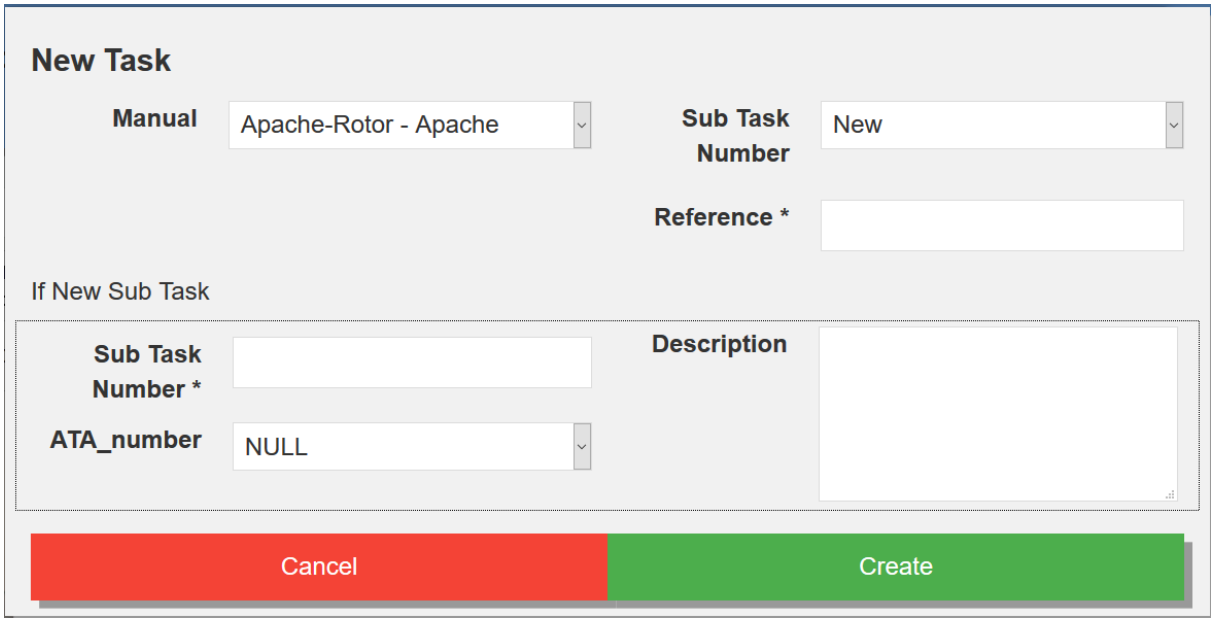

Figure 6 - New Task SOW Form

In this part of the project, only the approved date and the reference can be approved. The task will be automatically added to the Work Order as a corresponding sub-task as soon as the approved date has been filled.

2.03.05 Work Order (WO)

- **Level access: 1(view), 2(partial edit), 3, 4.**

This Page provides a general view of selected Work Order. the content can be managed and tasks can be **Added/Edited/Delete**. The approved tasks in SOW will be added in the WO too. A task added in the WO will not appear in the SOW.

General Information:

- Work Order name
- Project name
- Customer name
- Aircraft type name
- Serial number
- Date Open/Closed

Row Information:

- Sub Task Number/Index
- Manual Reference
- **References**
- **Defect/Required Work**
- **Rectification**
- **Removed/Installed Parts**
- **Performed (user/date)**
- **Released (user/date)**

When Defect/Required Work and Rectification are edited, a reference system to link the final render information with the Project / Sub Task information can be used. The help button in general information will provide information about usage.

Reference Help: To add references between the information of a row and information about a project the references below can be added.
It will automatically update the row information in case of an update on one of those references.

- **%R[n]%** - Reference P/S number 'n' (Cf references of subtask)
- **%PI[n]%** - Part install number 'n' (Cf installed parts of subtask)
- **%PR[n]%** - Part removed number 'n' (Cf removed parts of subtask)
- **%DOC%** - Document Name
- **%M%** - Reference Manual
- **%H%** - Helicopter Serial Number
- **%P%** - Project Name
- **%E1%** - Engine 1 Serial
- **%E2%** - Engine 2 Serial

Please use ;; to separate elements in:

- Secondary references
- Removed Parts
- Installed Parts

2.03.05.1 View Level 2

The WO view for Hangar (level 2) accounts. **Edit** only.

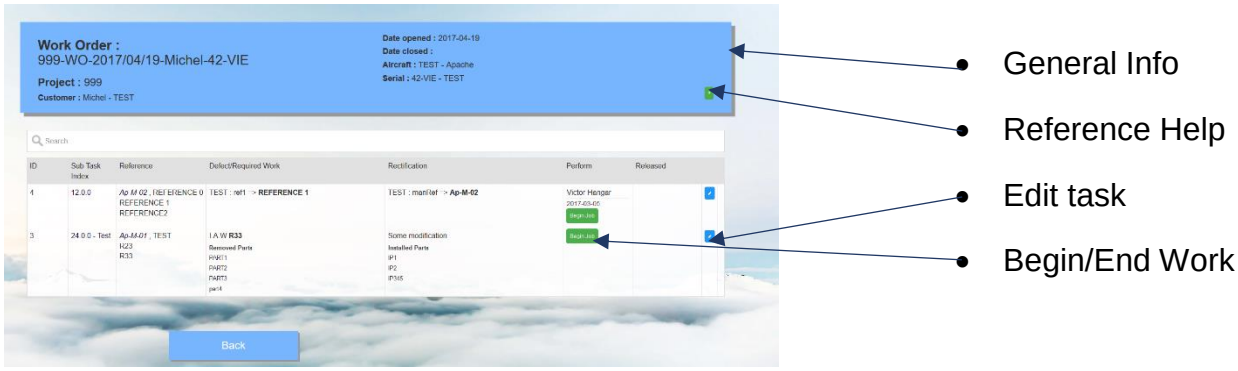

Figure 7 - Work Order Interface 1

Only Sub Task information can be edited and the perform date added. The system will calculate the total work time when the user sets the beginning and end of the task.

2.03.05.2 View Level 3, 4

The WO view for Office and Admin (level 3, 4) accounts. **Add/Edit/Delete.**

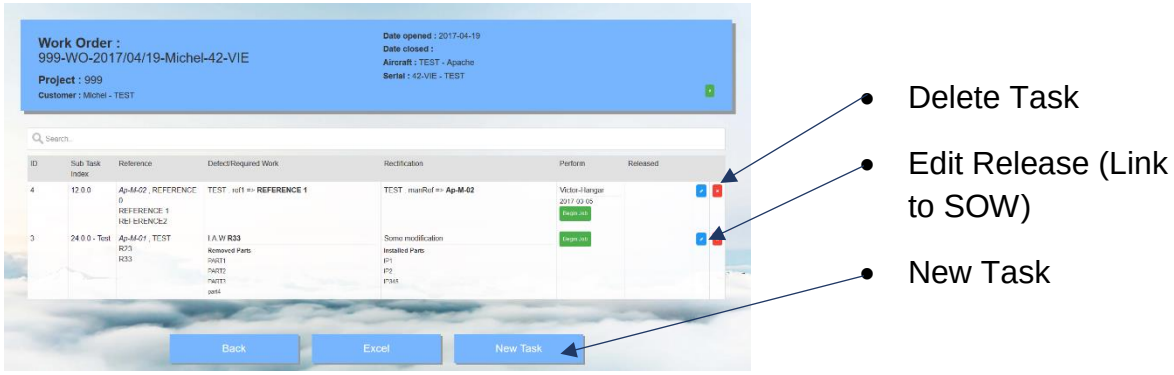

Figure 8 - Work Order Interface 2

A releaser (only User with a validate Certificate Number can be a releaser) can be chosen for the task. WO can be exported in Excel format. Tasks can be Added or Deleted.

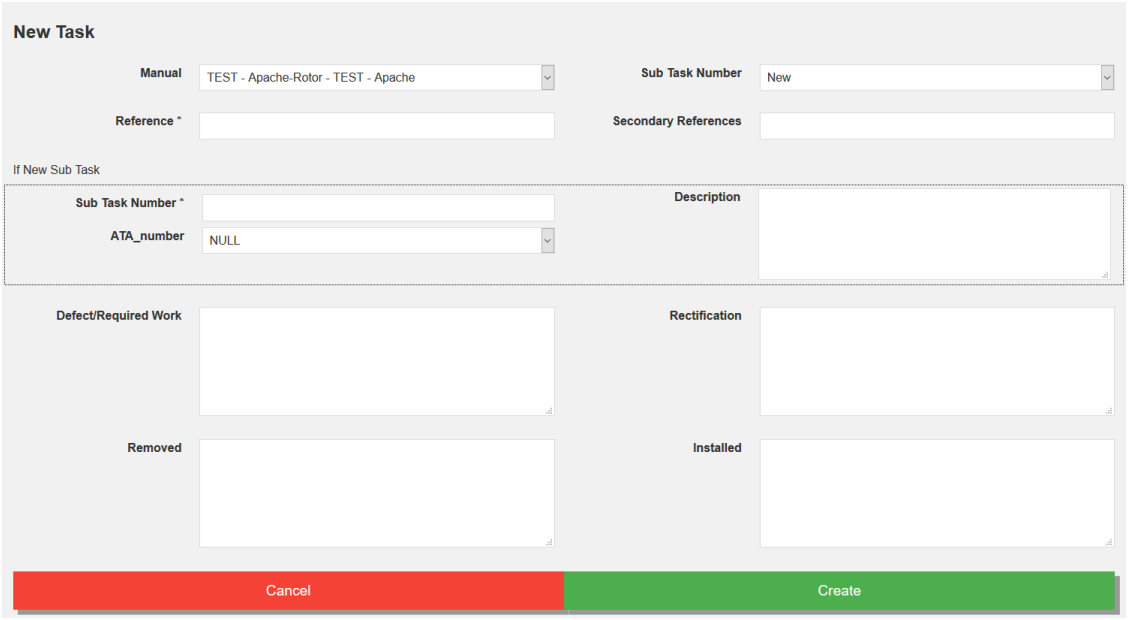

Figure 9 - New Task WO Form

A new generic subtask can be created in the manual if the subtask doesn't exist already.

2.03.06 Engineer Request Voucher (ERV)

- **Level access: 1 (view), 2 (partial add/edit/delete), 3, 4**.

This Page provides a general view of selected ERVs. The content can be managed: a part can be Added/Edited/Assigned/Deleted for each corresponding work order sub tasks. A part from the stock to the requested part (???) can be assigned or a Request for Quotation / Purchase Order document can be edited to order new parts after having added a part to a sub task.

General Information:

- Work Order name
- Project name
- Customer name
- Aircraft type name
- Aircraft's serial number

Row Information:

- **Sub Task Number/Index**
- ATA Reference (link)
- **Part Number / Alt PN**
- Location / Description
- **IPC**
- **Ask By / Requested Date**
- **Qty Requested /** Delivered
- **Stock Available (Part / PO)**

When a row is edited, in addition to editing information, a part from the stock can assign to the required project part (It will update the Quantity Delivered automatically). If the PO line is grey, the part from stock can't be assigned because the part has not yet been received.

2.03.06.1 View Level 2

The ERV view for Hangar (Level 2) accounts. **Partial Add/Edit/Delete** Only.

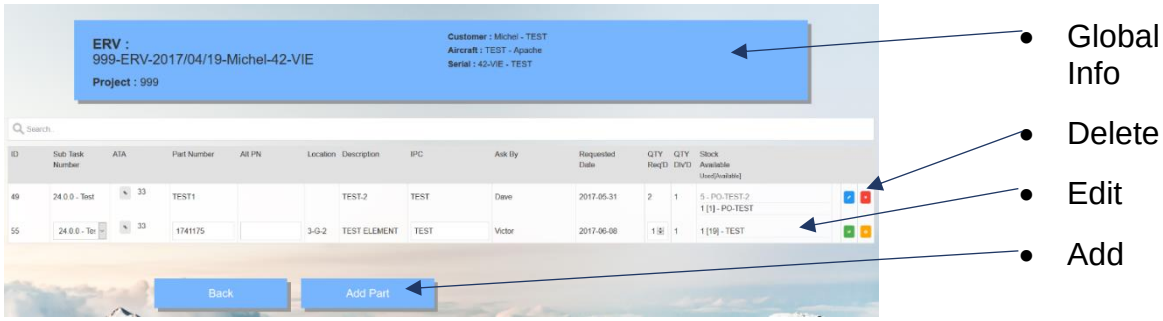

Figure 10 - Engineer Request Voucher Interface 1

A part can be requested to be added or deleted for a subtask if the part is not yet validated by an Office user. After validation, the hangar user can no longer do any modification on the part. The PO can only be done by an office user or an administrator.

2.03.06.2 View Level 3, 4

The ERV view for Office and Administration (Level 3, 4) accounts. **Add/Edit/Delete.**

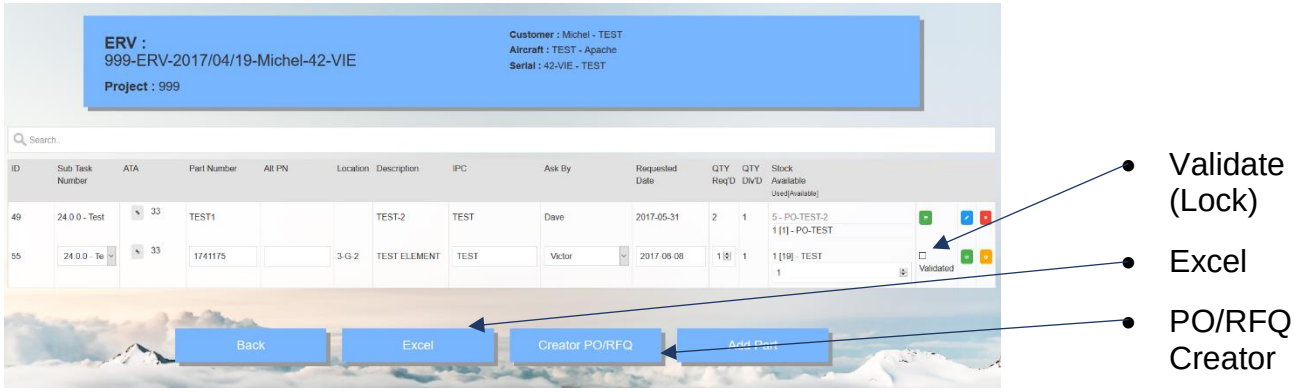

Figure 11 - Engineer Request Voucher Interface 2

A row can be locked. You can also **assign a** part from PO to requested Part(???). If the part is not available in stock, Request for Quotation or Purchase Order documents to order the part can be **created**. The shopping-cart? button is used to launch the PO/RFQ Creator if it's not launched and add the requested part's part number in the creator. For PO/RFQ Creator usage, refer to **Order** chapter in **Stock Management.**

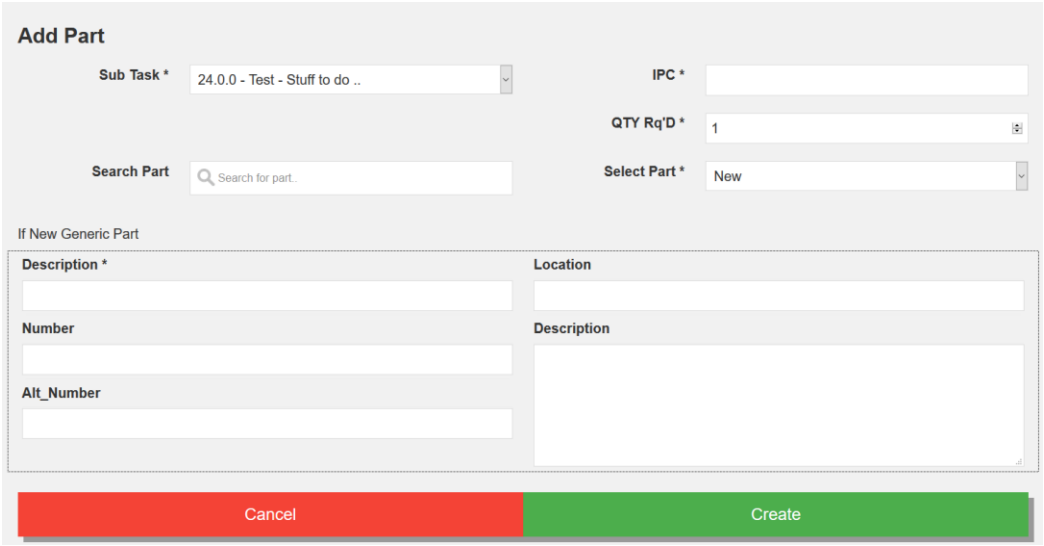

Figure 12 - New Part ERV Form

a new generic part can be created if the part number doesn't already exist.

2.03.07 Part Issue Form (PIF)

- **Level access: 3, 4**.

This Page provides a general view of selected PIF.the contentcan be managed, only the quantities can be edited out if the final quantity used doesn't correspond to the requested quantity(???). This page is mainly used to export the PIF Excel document.

General Information:

- Work Order name
- Project name
- Customer name
- Aircraft type name
- Serial number

Row Information:

- Sub Task Number/Index
- Description
- Part Number
- Location / Description
- IPC
- ARC
- PO
- Date Out
- Qty Required / **Out**
- Price Unit / Amount
- Currency

all the information can be checked on the PIF before exporting it with the Excel Button.

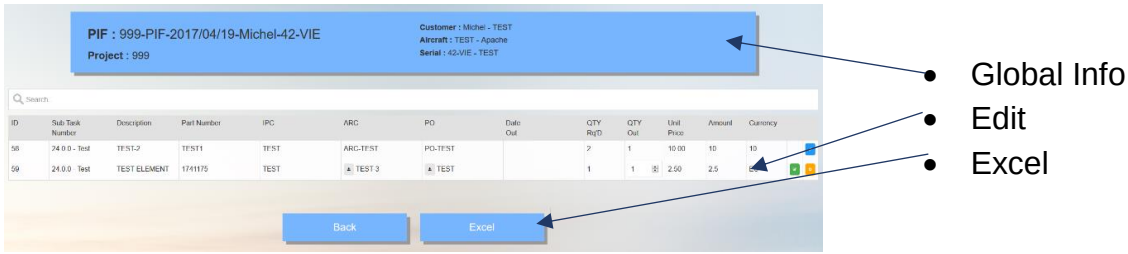

Figure 13 - Part Issue Form Interface

2.03.08 Archive

- **Level access: 4.**

This Page allows to attach related documents (SOW, WO, ERV, PIF) to a project and close it when all the documents are archived. When a WO is selected, all files (SOW, WO, ERV, PIF, Parts PO, Parts ARC) get linked to the used parts. After having downloaded the documents the work order from the project can be remove. All parts from this project are ultimately removed from the Stock. When all the WO are archived the project can be closed and removed from the system.

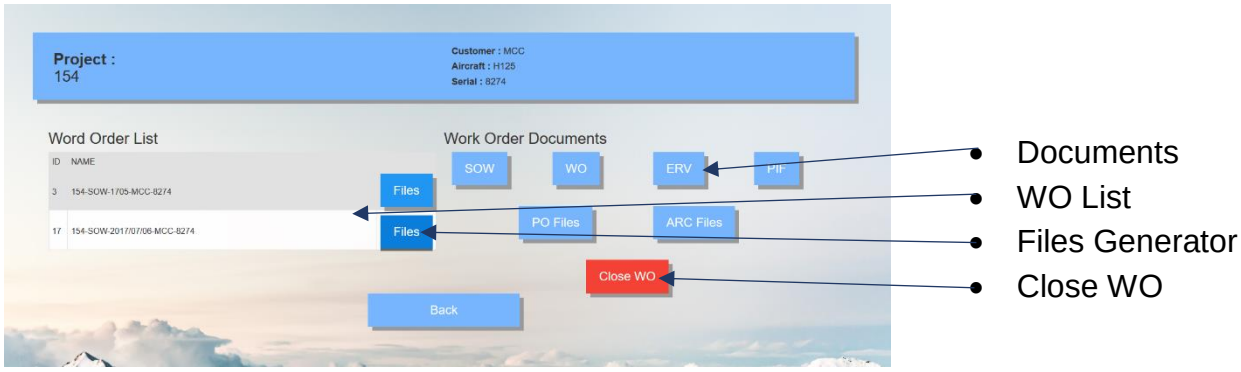

Figure 14 - Archive Interface

2.04 STOCK

2.04.01 Stock Global Interface

This page allows access to all available options to manage stock, **Order/Edit/Remove** Parts and manage stock related informations, **Part References/Vendors.**

The different menus are:

- Receive
- Edit Info
- Available Stock
- Stock
- Order
- Vendors

2.04.02 Parts Info

- **Level access: 3, 4.**

This Page provides a general view of parts information.information can be managed, two part numbers can be linked and parts information from the system can be **Created/Edited/Deleted**. A part reference cannot be removed if it is used somewhere else in the system.

Global Information:	Row Information:
➢ None	➢ **Part Number** ➢ **Location** ➢ **Description** ➢ **Note**

"**;;**" notation must be used to separate used part numbers and locations for a specific part. Two parts cannot be reference with the same part number. An error will be returned. If you try to create a reference to a part with an existing part number, the two parts will be merge into one.

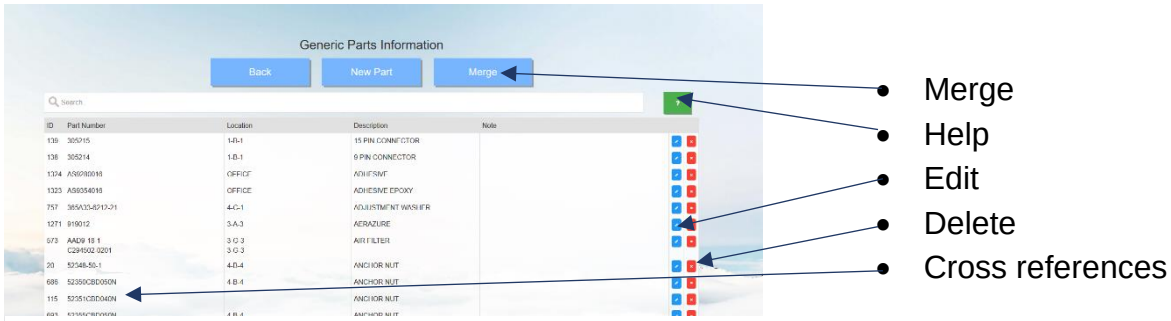

Figure 15 - Parts Info Interface

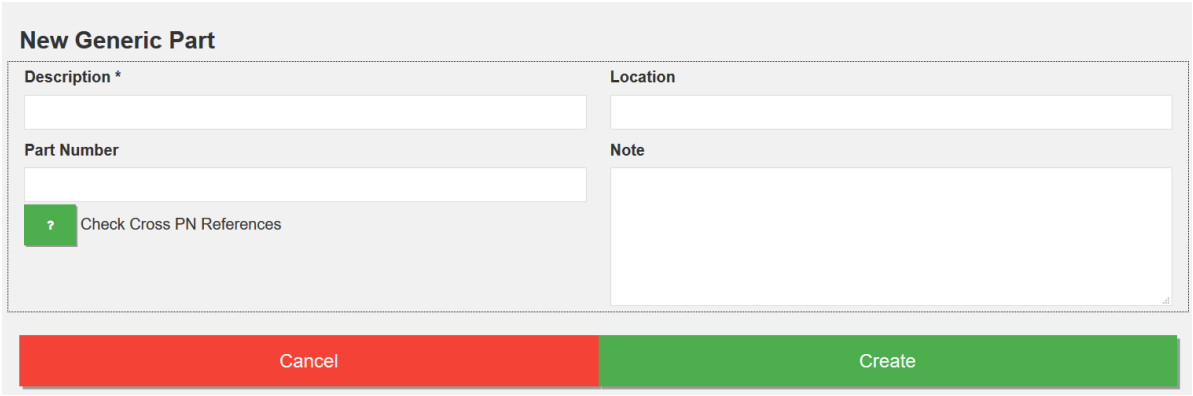

Figure 16 - New Generic Part Form

a new generic part can be created here. In addition to this, cross references and NSN from part logistic can be checked when a new generic part is created.

If two references refer to the same part, the merge form can be used to merges two parts in one with all references. The modification will be shared with the system (be available to everyone?).

2.04.03 Receive

This page, allows access to all ordered and? not received stock. an ordered part can be **Added/Edited/Removeed/Received**. To receive a part, the receive box needs to be checked and the received datehas to be written.

General Information:

- None

Row Information:

- Part Number **(Index)**
- **Serial**
- Description
- Location
- **Quantity**
- **ARC**
- **PO**
- **Unit Price**
- **Currency**
- **Vendor**

The index corresponds to the position of chosen part number in the part number list for this part. The index begins at 0.”**;;**” notation must be used to separate used part

numbers and locations for a specific part. When a PO and order parts are created, they will be placed in this section.

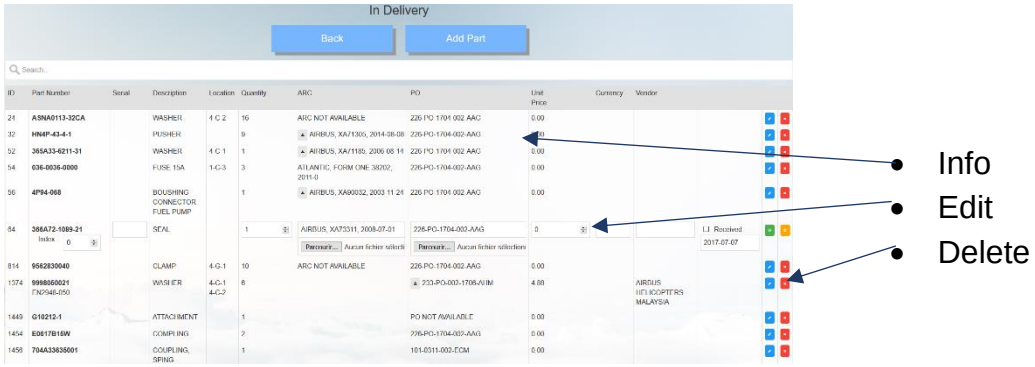

Figure 17 - Receive Interface

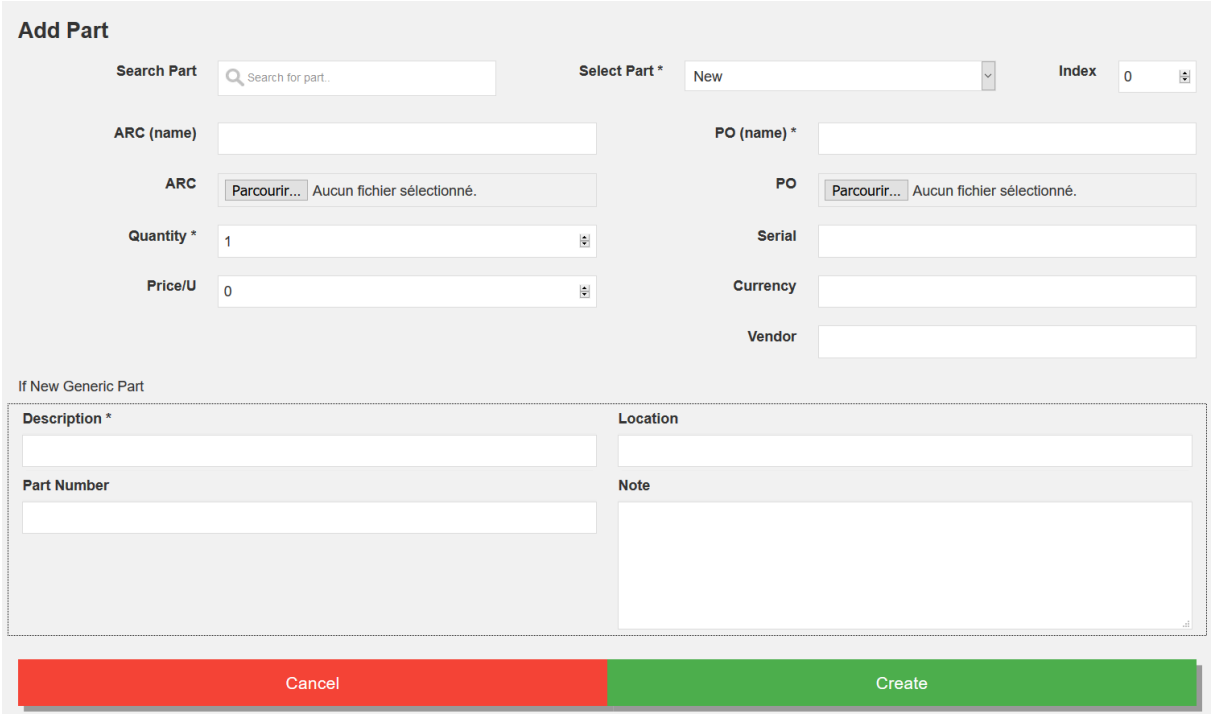

Figure 18 - New Ordered Part Form

a new generic part can be created if the part number doesn't exist already.

2.04.04 Stock

- **Level access: 3, 4.**

This page, allows access to all stock. A part can be **Edited/Removed**. This page shows all stocked and used parts in current projects:

QTY = NOT USED + USED IN CURRENT PROJECT.

Parts are removed from this stock only when the project request is archived (?).

General Information:

- None

Row Information:

- Part Number **(Index)**
- Location
- **Serial**
- Description
- **QTY**
- **ARC**
- **PO**
- **Date RCV'd**
- **EXP Date**
- **UNIT Price**
- **Currency**

The Receive section must be used to add parts in this section.

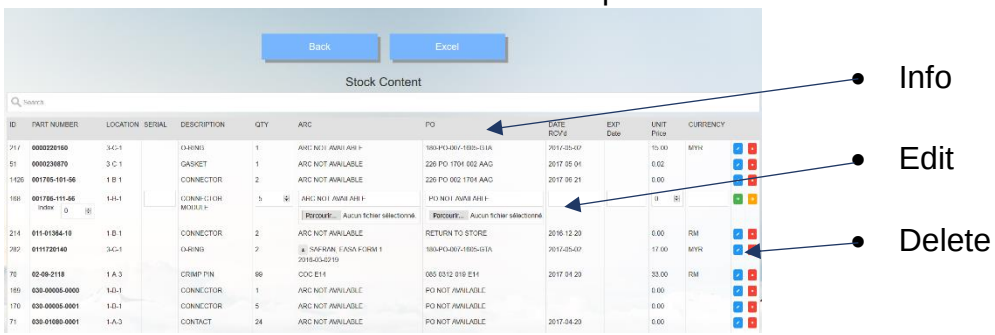

Figure 19 - Stock Interface

2.04.05 Stock Available

- **Level access: 1, 2 (view), 3, 4.**

This page allows access to all available stock (which is not used in projects parts). A part can be **Edited/Removed (3, 4)**. This page is similar to the Stock page.

POSSESSED = NOT USED + USED IN CURRENT PROJECT.

AVAILABLE = NOT USE.

2.04.06 Vendors

- **Level access: 3, 4.**

This page allows access to the vendors list. It is the list of all the vendors that can be used to edit the PO and RFQ (View next part). A vendor can be **Edited/Removeed/Created**.

General Information:

- None

Row Information:

- **Name**
- **Address**
- **City**
- **Country**
- **Phone**
- **Mail**
- **Contact**

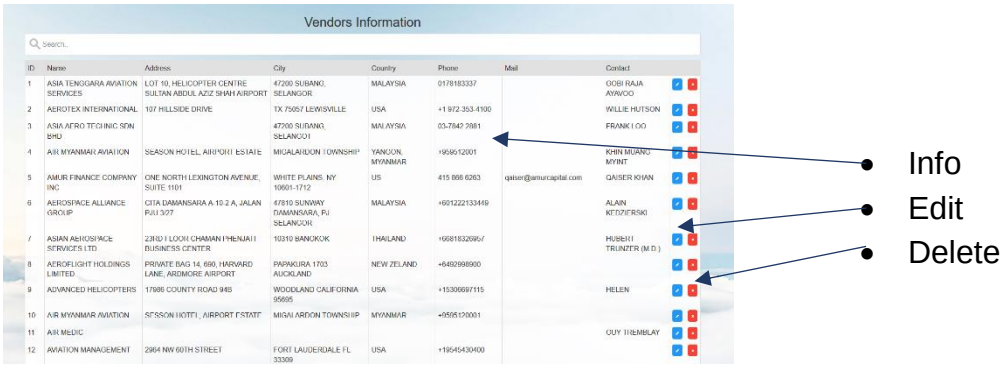

Figure 20 - Vendors Interface

And the form to add a new vendor.

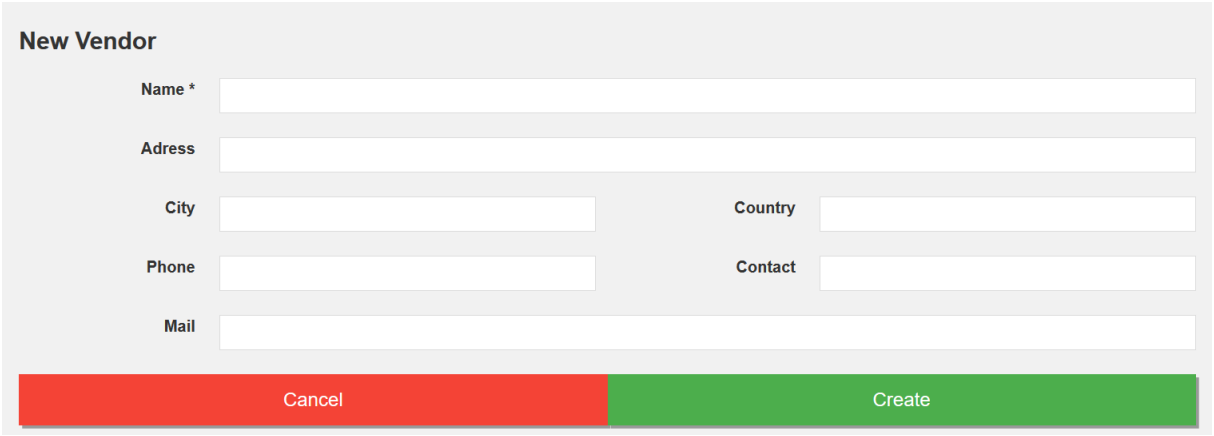

Figure 21 - New Vendor Form

2.04.07 Order

- **Level access: 3, 4**

This part is one of the most important part of the stock management. It allows the user to create Purchase Order (PO) or Request For Quotation (RFQ) with the data of system. This interface is also available in ERV part for projects. It will work on the same way in ERV.

The PO/RFQ creator is separated in two important part, header and content. Each part has to be filled correctly in oeder to have a correct PO or RFQ document.

2.04.07.1 Header

The header contains all the important information about the document that is being created.

General Information:	Row Information:
➢ Search System	➢ SubTask Number ➢ **Description** ➢ **Total Hours** ➢ **Current Performers** ➢ **Performers**

The “Add in receive” option and select a type PO for the document, then the parts you will put in PO will be added to receive part of stock system with the link to the PO file as PO data(???).

the “Edit Vendor info” option, then the vendor will be edited with vendors modifications in system(???).

this information can be changed in the excel document on the interface.

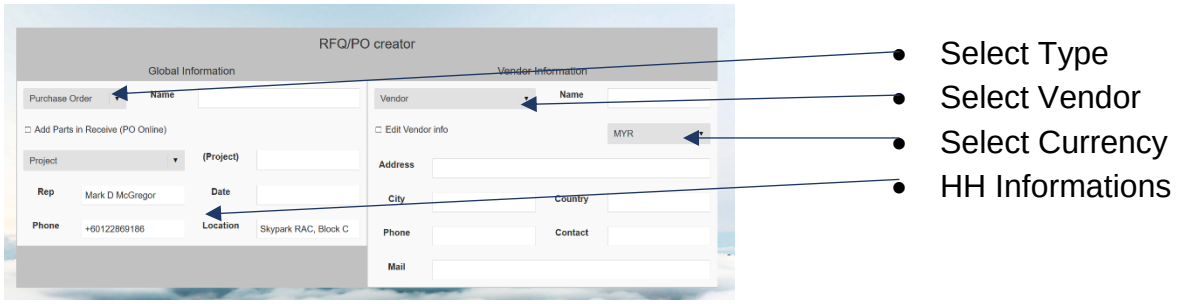

Figure 22 - Order Interface Header

2.04.07.2 Content

The content contains all the parts informations that you want to order.

Part row Information:

- *Search (to find part)*
- **Select Part Number** (or New)
- IPC
- **Quantity**
- Price

If new part :

- **Description**
- **Part Numbers**
- Location

In this part, a row can be **added/edited/removed** with part to add in document content.

If the “New” option is chosen in the Part Number selector then informations for the new part created will have to be filled. This information will only be add if “Add in receive” is checked.

In add you can add IPC and Price for parts. The quantity is required to validate.

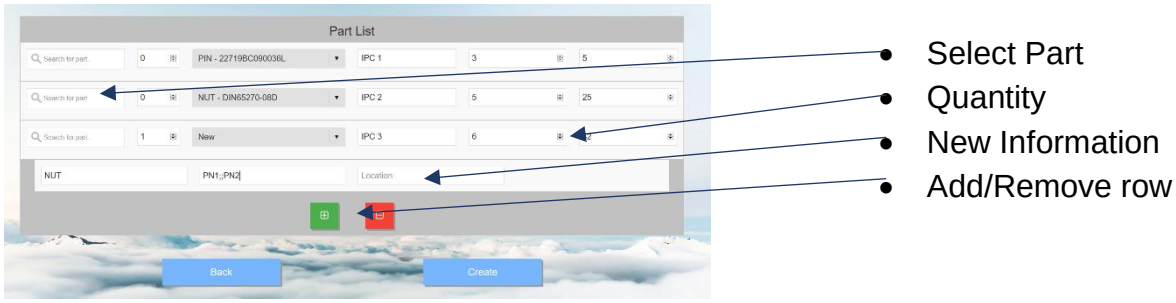

Figure 23 - Order Interface Content

the document with the specified parameters can be created and downloaded.

2.05 MANAGEMENT

2.05.01 Management Global Interface

- **Level access: 1 (view), 2 (partial add/edit/delete), 3, 4**.

this page allows access to all available options to manage personnel and tasks, **Begin/Edit/Close** Work and manage related information. To allow someone to begin or close a work/task? A record has to be created (By Office and Admin users).

Part row Information:	If new part :
➢ *Search System*	➢ **Description** ➢ **Part Numbers** ➢ Location

Also, you have a general view on all the registered work. If you are an officer or administrator you have access to all works/tasks? and personnel. Hangar users only have access to their own current/registered works/tasks.

works can be filtered with different options, ALL/CURRENT/DAILY/PROJECT (Project Name). It allows you to have a better view on important elements. Text can also be added to the research.

2.05.01.1 View Level 1, 2

the works/tasks that can be seencan be begun or stopped. **When a work is started it has to be closed when completed**. This system allows to register the time taken on each works/tasks?.

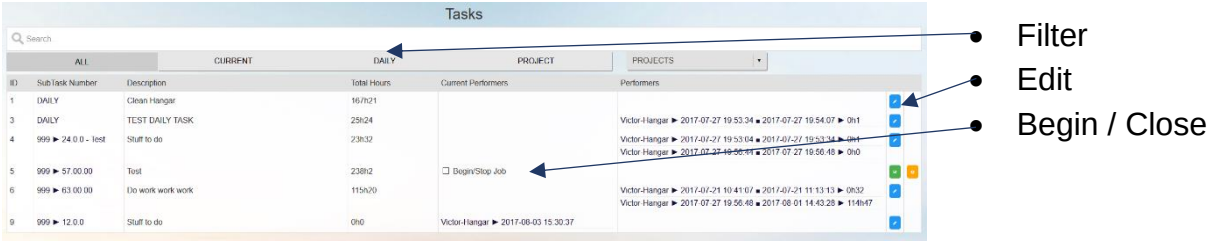

Figure 24 - Management Interface 1

2.05.01.2 View Level 3, 4

The work done can be seen and managed. Workers can be added/removed for each work. A project record can be added for tasks project tasks or from a DAILY task that has to be created first?.

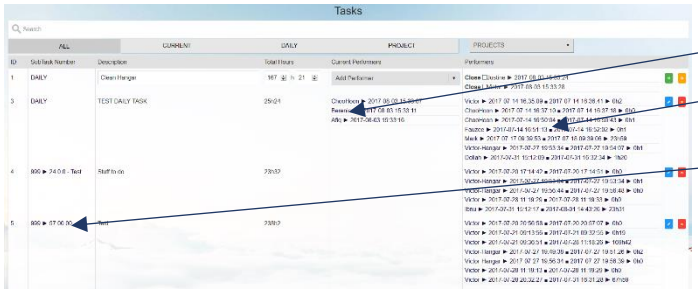

Figure 25 - Management Interface 2

a record can be added with its corresponding form.

Figure 26 - New Record Form

2.05.02 User Calendar

- **Level access: 1, 2 (partial), 3, 4**.

Level 1 or 2 user will only have access to their personal calendar. Level 3 or 4 have access to all user calendars.

It provides a global view of user's recorded works per month. For more information on one specific day,the mouse has to be hovered over the desired day.

No modifications can be done on this part. Records can only be edited on the global management interface.

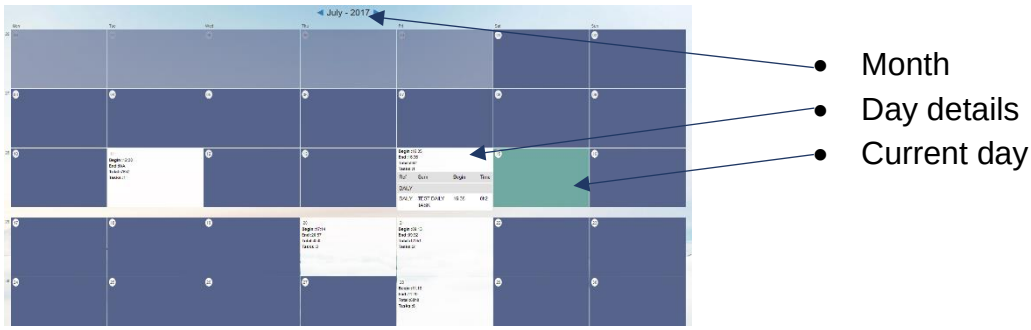

Figure 27 - User Calendar Interface

2.05.03 Project Calendar

- **Level access: 3, 4**

It provides a global view of projects recorded works per month(???). For more information on one specific day, the mouse has to be hovered over the desired day.

No modifications can be done on this part. Records can only be edited on the global management interface.

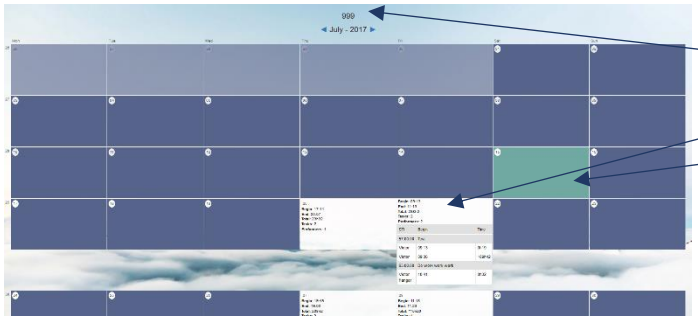

Figure 28 - Project Calendar Interface

2.06 DOCUMENTATION

2.06.01 Aircrafts

- **Level access 1, 2(view), 3, 4**

This page provides a global view of all registered aircraft (Helicopters and Engines) in the system. aircrafts can be **Added/Edited/Deleted**. to access to the manual list related to a specific aircraft a row has to be clicked (Next Chapter). Before creating a project, the reference of the aircraft has to be created in this part.

Global Information :	Row Informations:
➢ None	➢ **Name** ➢ **Constructor** ➢ **Type** ➢ **File**

Figure 29 - Aircraft Interface

Level 3, 4 users can create, edit and remove aircrafts. To remove an aircraft all related manuals have to be removed first.

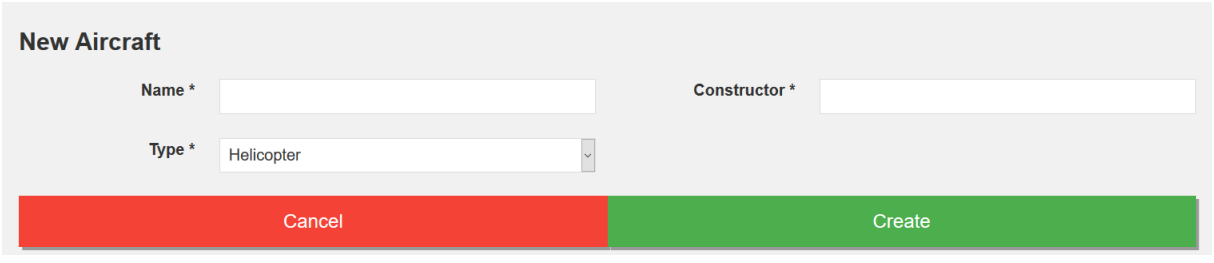

Figure 30 - New Aircraft Form

2.06.02 Manuals

- **Level access 1, 2(view), 3, 4**

This page provides a general view of all registered manuals for this aircraft. The manuals can be **Added/Edited/Delete**. a row has to be clicked in order to access the

subtask lists related to a specific manual (Next Chapter). Before creating a subtask in SOW or WO, the reference of the manual has to be created in this part.

General Information:

- Aircraft
- Constructor
- Type

Row Information:

- **Name**
- **Reference**
- **Description**
- **File**

the “NO MANUAL” can be used If a subtasks is not linked to any manual of this section.

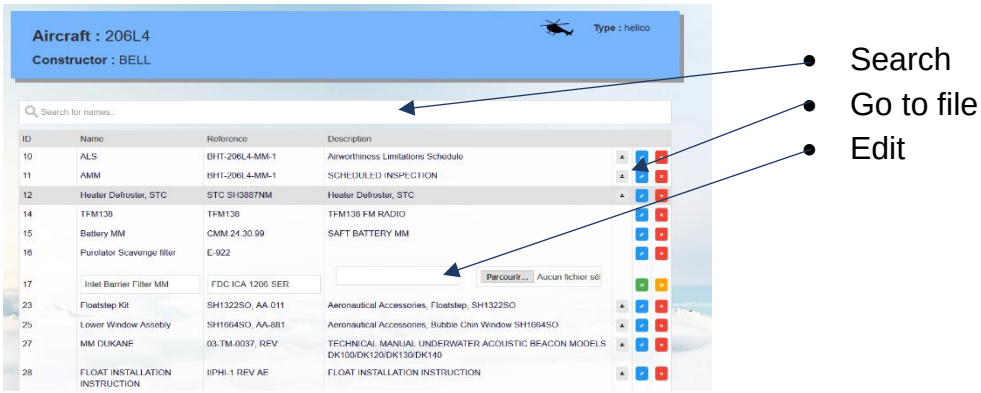

Figure 31 - Manual Interface

Level 3, 4 users can create, edit and remove manuals. To remove a manual, all related subtasks need to removed first. The file size limit is 10MB.

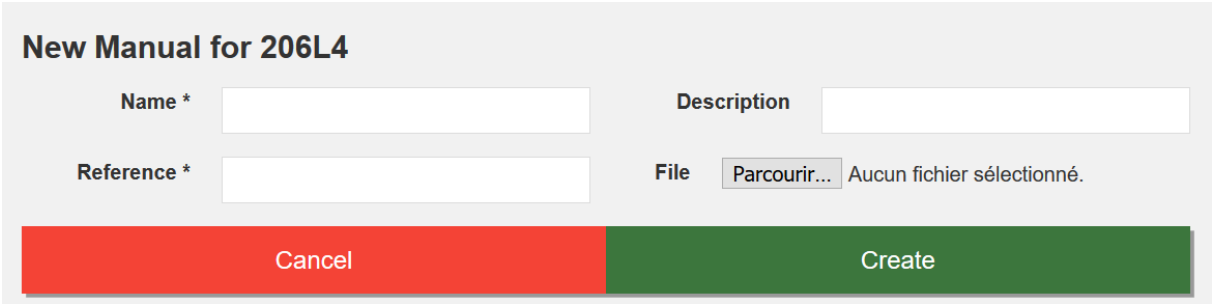

Figure 32 - New Manual Form

2.06.03 Subtasks

- **Level access 1, 2(view), 3, 4**

This page provides a global view of all registered subtasks for this manual. Subtasks can be **Added/Edited/Deleted**. A row has to be clicked in order to edit the linked parts list related to a specific subtask (Next Chapter).

Global Information are :	Row Information are :
➢ Manual ➢ Aircraft ➢ Constructor ➢ Type ➢ File	➢ **Number** ➢ **Description**

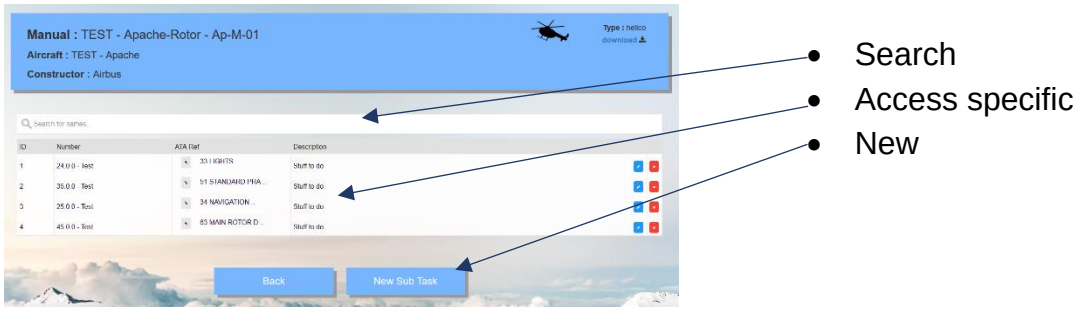

Figure 33 - Subtask Interface

Level 3, 4 users can create, edit and remove subtasks. To remove a subtask, all related linked parts need to be removed first.

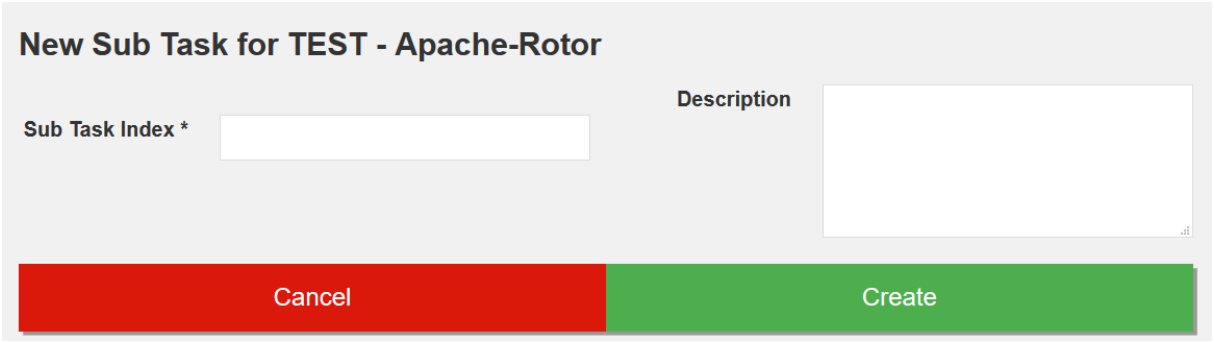

Figure 34 - New Subtask Form

2.06.04 Linked Parts

- **Level access 1, 2(view), 3, 4**

This page provides a global view of all linked parts for this subtask. Links can be **Added/Edited/Deleted**.

Global Information are :	Row Information are :
➢ Sub Task	➢ **Number**
➢ Manual	➢ **Location**
➢ Aircraft	➢ **Description**
➢ Constructor	➢ **IPC**
➢ Type	➢ **Qty**
➢ File	
➢ Description	

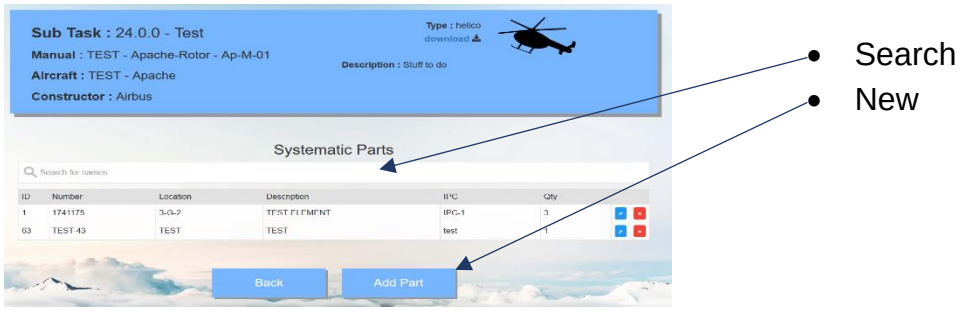

Figure 35 - Linked Parts Interface

As a level 3, 4 user you can create, edit and remove links.

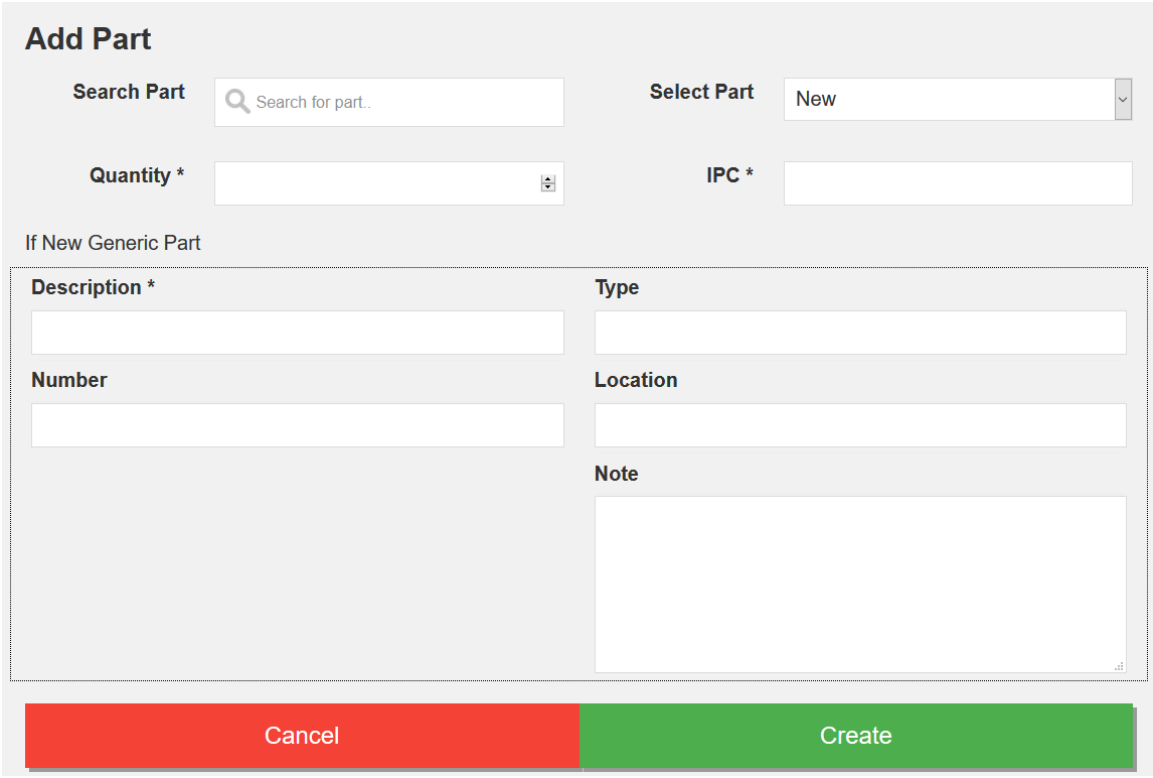

Figure 36 - New Linked Parts Form

PART 3 - EXAMPLES

3.01 OVERVIEW

Different cases of use of the system are available to the user (depending on their position) in this part. This Overview provides a global view of the company process linked to the database interface.

3.01.01 Documents

3.01.01.1 RFQ

Request for Quotation. Quotation request for the parts constructor.

3.01.01.2 PO

Purchase Order for parts.

3.01.01.3 Scope of Works

First summary of the tasks that must be done on the Helicopter. Need to be approved by the customer.

3.01.01.4 Work Orders

Steps that must be done by the technical team for the specific project. It contains all subtask references.

3.01.01.5 ERV

Engineering Request Voucher. All parts and their references which must be use in the work orders.

3.01.01.6 PIF

Part Issue Form. Summary of the work that had been done on the Helicopter.

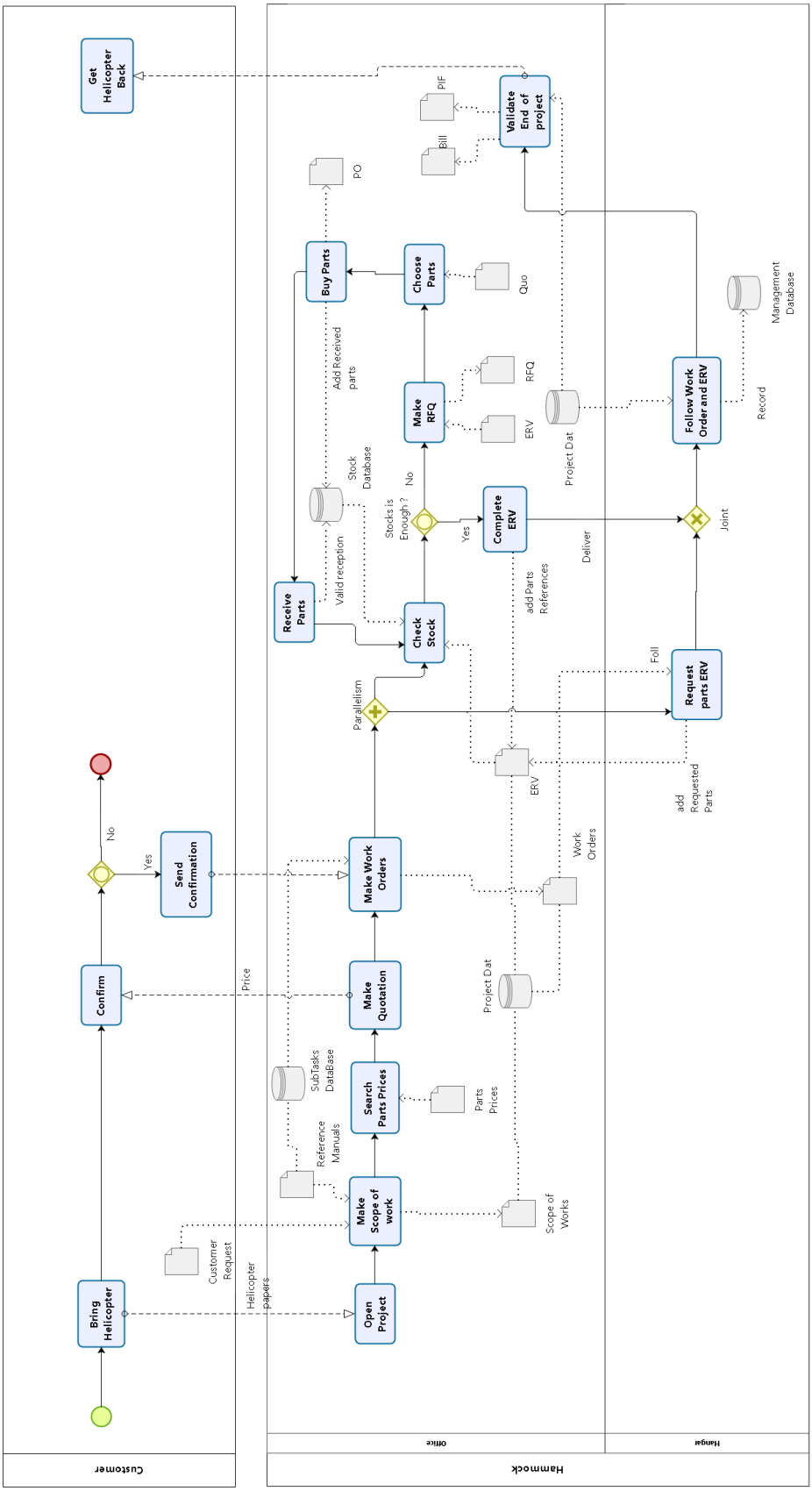

Figure 37 - BPMN

3.02 HANGAR USER

As a Hangar user (level 2), this part will provide an example of use. This example will take place in a simulation of a real project.

It will show how to work on a job and create requests for it. Examples of use of side features of the system are available as well.

3.02.01 Request for a job

From time to time, the user will have to work on a task that doesn't exist in the system. The planning engineer has to add the subtask in the corresponding Work Order before the user is allowed to work on it. Please refer to the request for job process in the MOE document of the Company.

3.02.02 Work on a job (Record Work time)

The system provides different options to work on jobs: work time recording and document and information editing. All the documents and information will be managed in the PROJECT part. For the work time, MANAGEMENT, PROJECT and HOME (To close job) interfaces can be managed by the user. A user can only work on one task at a time.

Different options are available When the user needs to work on a job, specific subtask or daily job.

3.02.02.1 From HOME

The user can only view and close his current job.

3.02.02.2 From MANAGEMENT

In the MANAGEMENT part of the system, the user can begin/stop to work on one of the current available jobs. Some jobs from the work orders won't appear if no one requested to work on it. In this case, refer to *subchapter*.

To work on DAILY jobs the user can only start them from this interface.

The user will have access to his own calendar for an overview of all his work time by clicking on his name.

3.02.02.3 From PROJECT

The user can access the specific work order and choose the specific part that has to be worked on. The user has to press the corresponding button to begin or stop a work time.

3.02.03 Edit a task

To edit information on a task when the task already exists in the system, the user has to go to the corresponding work order and edit as it is explained in PROJECT part of

this document. The user can add a date to the task and will therefore become the performer. When you do that, it means that the task is finished.

3.02.04 In case of defect Job

The defects on a part of a current job can be specified in Defect/Required Work and Rectification. The *reference helper* can be used in these parts of the work order.

If the job doesn't exist or if a new entry has to be created for this case, please refer to the request for job process in the MOE document of the Company.

3.02.05 Request for parts

When the user plans to work on a task in the work order (physical intervention, search for parts, read documentation), please remember to tell the system that you are working on this task. The search for parts is a part of the job.

To request a part for the current job has two cases.

Systematic: The part is a systematic part for this subtask. So, the system will remember this part for this subtask for the next time you will need it.

Discrepancy: If, for any reason, the part is a discrepancy part, the system will not remember this part for the next time. (A part of the row will appear with red color)

In each case the corresponding IPC for this part in the manual and the references of the part will have to be found. If the part doesn't exist already it can be created.

When the form is filled, the requested part will be marked in yellow, which means that the part has not yet been delivered.

3.02.06 Get Parts

The office is responsible for the part that will be delivered. The user can check if the part he has requested has been delivered. If the row for the part is marked in white that means the part is already delivered. If it is not, please referring to the person in charge of delivered.

3.02.07 Check if parts are in stock

The available stock can be seen in the STOCK part.

3.02.08 Look for alternative part numbers

Alternative part numbers and cross reference can be found on the HOME page in the corresponding part section. It will get the information from *Partlogistic* and display all the references that have been found.

3.03 OFFICE USER

An Office user (level 3 or 4), will have access to most of the sections of the interface. This part shows examples on how to use the interface.

All the information from the hangar user part is valid for this part as well.

3.03.01 Create Documentation for a project

First, the aircraft has to be created in order to begin and create a new project in the documentation part.

The *first view* sets the aircraft in the system. The engine(s) and the helicopter type for the project have to be created. Afterwards, the references of the manual that will be needed for the project have to be added to be able to create a subtask. The system will automatically create a NO MANUAL entry.

The user can manage all the documentation from this part. The subtasks will be created directly in the PROJECT part.

3.03.02 Create a project

After the aircraft for the project has been set, a project can be created. If an aircraft doesn't exist, refer to the section above.

In the PROJECT part on the home page, a new project can be created in the project creation interface. Care has to be taken on which aircraft has been linked to the project as it cannot be changed later on.

The specific project home page will appear with a set of possibilities to manage it.

3.03.03 Edit global project information

On the specific project page, the user will have access to the *summary*. It will provide a set of information about the project. From this page, the global project information can be edited.

3.03.04 Create a set of documents

When the user clicks on SOW, OW or ERV on the specific project page, new options will appear. New linked documents can be linked for the project.

3.03.05 Begin project with work tasks

Now that the project is created and all the required documents are ready for work, the first step is to create and fill a scope of work. Refer to the corresponding part (*Scope of Work (SOW)*).

The SOW can be downloaded in Excel format. After the task is validated, a date can be set. To setup these tasks or add new ones the user will have to go to the work

order. In the work order, the validated tasks can be seen in the scope of work. A new task can be created from this page but it will not appear in the scope of work.

If the system knows this task, it will automatically add the parts in the ERV.

3.03.06 Deliver part in ERV

The parts requested by a user in the ERV have to be delivered from the stock and will be marked in yellow until they have been set as delivered. To set a part as being delivered, the user has to edit and add the number of the PO. (*Engineer Request Voucher (ERV)*)

A sticker will have to be printed and should come with the part that will be sent to the Hangar in a box.

3.03.07 Print sticker to deliver parts

the files: “Excel Sticker” and “Doc Sticker” have to be downloaded from the ERV interface. The user will now have a word document for the design and an Excel document for the data that will have to be linked with each other to allow to print the stickers information related to this excel.

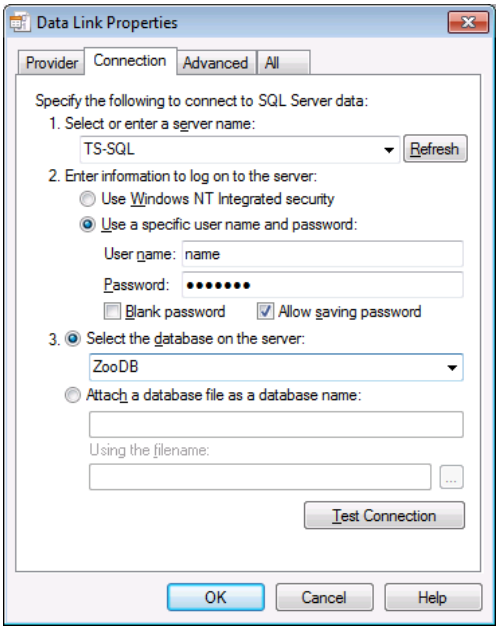

Figure 38 - Data Link Properties

To make the link the user will have to fill this window to allow the word document to find the excel document.

The only part that needs to be filled is:

- **Select or enter a server name**

By adding the path of excel file in the Computer.

Ex: **C:\Users\Victor\Desktop\Data.xlsx**

Now print the stickers can be printed with the correct data and the part can be delivered.

3.03.08 Create a RFQ or a PO

In the ERV section, some parts could not be available in stock. In this case, a Request for Quotation and a Purchase Order will have to be done to order parts. It can be done from *Order* part in STOCK or from the *Engineer Request Voucher (ERV)* part in PROJECT.

When a Purchase Order is created, the parts that have to be received in the *Receive* part can be added in the stock. The parts will be visible as ordered parts in the ERV.

3.03.09 When parts are ordered

When the parts have been ordered, they can be seen in the *Receive* part of STOCK. The user has to go to this section to receive the parts. When a part is received, the certificate has to be scanned and added it in the stock information. A part is check received, it will be added to the Stock and it will be ready to deliver for a project.

3.03.10 Manage work hours

The project is set up and the parts are delivered. The user can now manage work hours for himself or another user. all the current works can be closed from the HOME page.

A work time can be registered as explained in the hangar user part.

An office user can add DAILY tasks, close task records and open a task record. DAILY tasks will be useful in case there is a task outside of a project.

3.03.11 Add information to documentation

In documentation, you have 4 layers of information for aircrafts.

- *Aircrafts*
- *Manuals* (per aircraft)
- *Sub Tasks* (per manual)
- *Linked parts* (per sub tasks)

Aircrafts and manuals can only be created from this part of the website. Subtasks can be created from other parts of the website, like the work order or the scope of work. In documentation, linked parts can be added by the user or can be done automatically by the system when parts are added/edited/removed in the ERVs.

3.04 ADMIN USER

3.04.01 Close and archive a work order

When a task has been completed and closed in the work order, all the related documents get attached to it. To close a document the user has to go to the archive f the project space and select the row of work that has to be closed. All related files can be downloaded by clicking on “files” before closing it. When a project is closed, all the parts used and the work order from the project will be removed and cannot be recovered.

All ARC and PO get linked to a WO / ERV

To get all related ARC and PO files to a work order. The user must go in the archive part of the project, select the work order and click on files button. The option to download all related files will be available.

3.04.02 Close and archive a project

To close a project and remove it from the system the user has to go to the archive part of the project. The corresponding work orders must be chosen to download all the files and have an overview of the project that is being closed.

When all the work orders are closed, the close project button will appear and the user will be able to close the project.

PART 4 - DEVELOPMENT

4.01 OVERVIEW

This part is related to the development of the software. It provides a set of knowledge about architecture to understand how the interface is built. It also provides the user with knowledge about more specific parts.

This part doesn’t contain the details of the code, for that, the user will have to go to corresponding part of the system and code files. This part is a global overview of the website architecture.

4.02 ARCHITECTURE

This part is for someone who would like to edit, improve or extend the application. This will be general view of the system's architecture. The purpose is to give enough informations to continue the development or edit the actual code.

For specific informations on code's parts refer to the system's documentation with code.

4.02.01 Architecture of main features

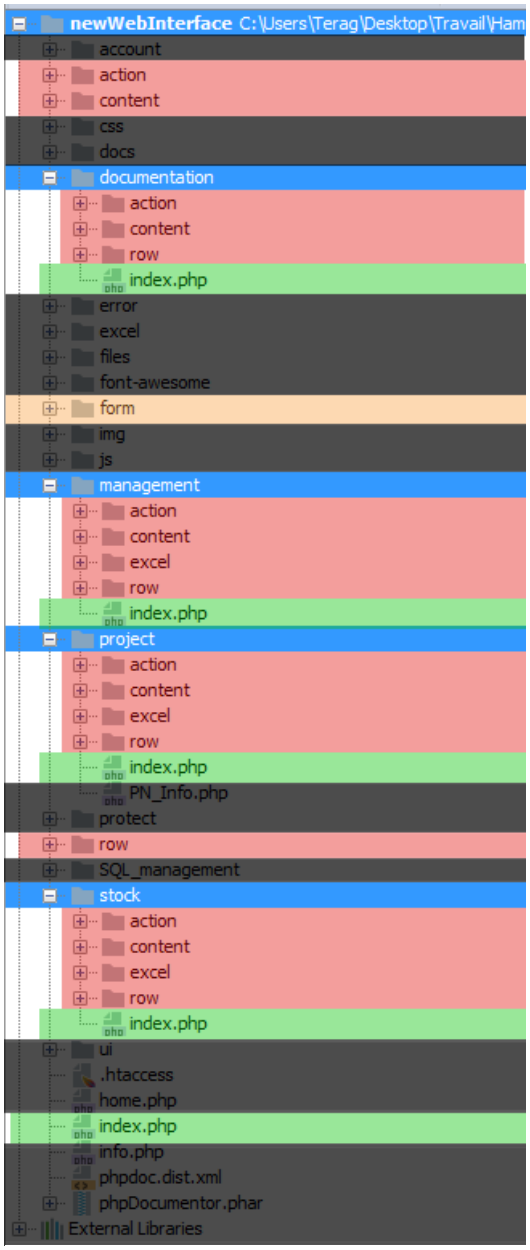

Figure 39 - Files Organisation 1

The global architecture is built around the four main parts of the software and the root directory.

Blue Folder are the main parts:

- Root
- Documentation
- Management
- Project
- Stock

portal only.

Red folders are sub folders of parts.

- Action
- Content
- Excel (Optional)
- Row (Optional)

The application works on an MCV model with two files for each view. **Action** for model and controller and **Content** for view. Files in both folders must have the same name. All these folders are protected by htaccess

Green Files are Index of blue folders. All access will go through its to check connection and redirect to root index if needed. For each view, it will include the **Action** file then the **Content** file.

Otherwise, it will include the default view files of the part. The user requests the view by file name in variable **$_GET['page'].**

For root folder, the home file has the function of index. An index is used for connection.

Form folder contains all forms content as modal to be display on views.

4.02.01.1 Action

Example of Project part to illustrate the usage of sub folders.

```php
<?php
session_start();
//Create and set var '$UserConnected' to true or false
include('../account/checkConnection.php');

/*HTML Content is send if user is connected*/
if($UserConnected) {

    unset($_SESSION['error']);

    //Include action file to manage forms
    if (isset($_GET['page'])) {
        $currentPage = $_GET['page'];
        /*...*/
        $possibilities = array('specificProject', 'recapitulate',

        if (in_array($currentPage, $possibilities)) {
            if (isset($_GET['excel'])) {
                include('excel/' . $currentPage . '.php');
                exit();
            } else {
                include('action/' . $currentPage . '.php');
            }
        } else {
            include('action/projectHome.php');
        }
    } else {
        include('action/projectHome.php');
    }
}
```

Figure 40 - Code Index Action

- First, the script checks if user is connected. If yes it continues, otherwise, the user is redirected to login page.
- The script gets the environment variable $_GET[‘page’] to know which view is required by user.
- It compares with available view array and include the corresponding file from action folder if it is existing or include the default view file from action folder

It is important to remember that action part is only to manage request and data. POST request and data can be managed. It is not recommended to put html answer in if it doesn’t answer to an Ajax request.

4.02.01.2 Content

After the action file include, if everything goes well the content file of the view will be included.

```
<!DOCTYPE html>
<html lang="en">

<head>
    <?php include("../ui/head_default.php"); ?>
</head>

<body>

<!------------------------------ Navigation/Sidebar ---
<?php
$current_choice = 'project';
include("../ui/sidebar.php"); ?>

<!------------------------------ Top Menu -------------
<?php include("../ui/topmenu.php"); ?>

<!------------------------------ Content --------------
<?php
if(isset($currentPage) AND isset($possibilities)) {
    if (in_array($currentPage, $possibilities)) {
        include('content/' . $currentPage . '.php');
    } else {
        include('content/projectHome.php');
    }
} else {
    include('content/projectHome.php');
}
?>

<!------------------------------ Footer ---------------
<?php include("../ui/footer.php"); ?>

</body>

</html>
```

Figure 41 - Code Index Content

Here all the UI parts of the view (its described in another part) and the corresponding content file are included. In the content file, the view can be managed to send and create the html.

For the html head and menu refer to PHP files in UI folder in root directory. If there is a need to include a form modal, files from “/form” directory can be included.

4.02.01.3 Row

As system works with table, in each row there has to be the included code from the corresponding file in row folder. It allows to answer to POST requests from AJAX only with the row's code. For more information about AJAX requests and ROW structure, refer to the corresponding documentation of the code.

4.02.01.4 Excel

As system needs to provide Excel files. In some parts a script to answer AJAX requests for Excel can be used. The script allows to create the xlsx file and send the link to it to the user. Afterwards it can be downloaded from the corresponding folder.

4.02.02 Architecture of modules

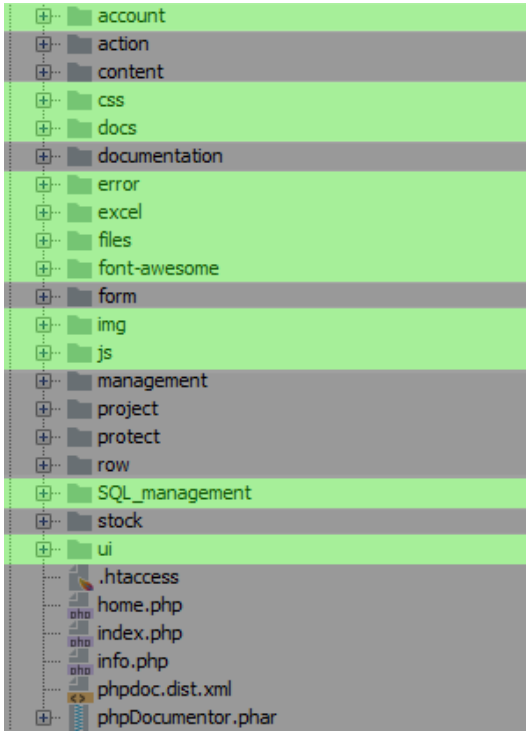

Figure 42 - File Organisation 2

The global architecture is built with different modules to support side functionalities. All these folders are protected by htaccess. You can add or improve functionalities in these parts.

Green Folders are the folders of functionalities:

- **account** - scripts related to (Login / Change Password / Check Connection)
- **css** – Stylesheets
- **docs** - Documentation, for developer
- **error** - Error 404 page
- **excel –** module to generate excel and pdf
- **files –** Part to stock file. Protected to external access by redirection to a php script to check connection
- **font-awesome –** Library
- **img –** images
- **js –** Javascript
- **SQL_management –** PHP scripts/functions related to form and database
- **Ui –** Related to UI like sidebar, menu or footer.

4.02.02.1 Account

- **ChangePassword**

This script is used to change a user's password by a POST request.

- **checkConnection**

Include this file to check if user is connected and set $UserConnected to true or false and $lvl_access of user. session_start() has to be used before including this file.

- **Login**

This script to login an user by a POST request.

- **logout**

This script to logout a user by a POST request

4.02.02.2 CSS

- **Bootstrap**

Library bootstrap: *http://getbootstrap.com/*

License: *https://github.com/twbs/bootstrap/blob/v4-dev/LICENSE*

- **Common_stylesheet**

Global stylesheet for website

4.02.02.3 Docs

Documentation of website's code. Access code for area :

-Login: **hammock**

-Password: **borneo225**

4.02.02.4 Error

Error pages as error 404.

4.02.02.5 Excel

Libraries for exportation to excel and pdf format:

- **mpdf:** libraries to convert excel to pdf with PHPExcel

Library: *https://github.com/mpdf/mpdf*

License: *https://github.com/mpdf/mpdf/blob/development/LICENSE.txt*

- **tcpdf:** libraries to convert excel to pdf with PHPExcel

Library: *https://github.com/tecnickcom/tcpdf*

License: *https://github.com/tecnickcom/TCPDF/blob/master/LICENSE.TXT*

- **PHPExcel:** libraries to manage Excel files

Library: *https://github.com/PHPOffice/PHPExcel*

License: *https://github.com/PHPOffice/PHPExcel/blob/1.8/license.md*

4.02.02.6 Files

All the stocked files of the website are in this section. Connection to the website is required to get access to one of these files. htaccess allows to redirect to index.php

to check if user is connected and send him the requested file. As far, only four formats are available:

- Excel: xlsx
- PDF: pdf
- ZIP: zip
- DOCX: docx

4.02.02.7 Font-awesome

This library is used for icon in website.

Library: *http://fontawesome.io/*

License: *http://fontawesome.io/license/*

4.02.02.8 IMG

Folder used to stock images. Background, icons … Images come from Hammock Helicopter or Public Domain.

4.02.02.9 JS

Folder used to stock javascript files.

- **File_creator**

Script used to create and fill dynamically form for document. Used for PO and RFQ creation.

- **JQuery files**

Library: *https://jquery.com/*

License: *https://jquery.org/license/*

- **Bootstrap**

CF: previous part

- **Functions.js**

All the function in JavaScript used in website and developed for it.

4.02.02.10 SQL_Management

For the following files, please refer to documentation in docs part of website.

- **SQL files**

These files contain all the SQL architecture and Queries. all the SQL files have to be Executed in a database in order to make it linkable with the PHP code.

- **Connection / data_getters / file_manager / form**

All these files are used to manage interactions with database. (Cf: documentation)

- **Calendar**

Module to manage the display of calendar. (Cf: documentation)

4.02.02.11 UI

The UI folder contains all the files those provide an interface to display on each page. (Cf: documentation)

- **Head_default**

The default <head> for each page of the website

- **Topmenu**

Top menu of website. It is displayed on medium and large display.

- **Sidebar**

Sidebar menu, displayed on small display.

- **Modal_warning**

Modal to display error messages. Can be displayed with function display_modal()

- **Modal_PNRef**

Modal for Part Number cross references module. See the corresponding part of code in documentation.

- **Footer**

Footer to display on each part of the website.

4.02.03 Architecture of Network

Provides an overview of the network exchange. This part will not be fully detailed. As a developer, basic knowledge is required to fully understand it.

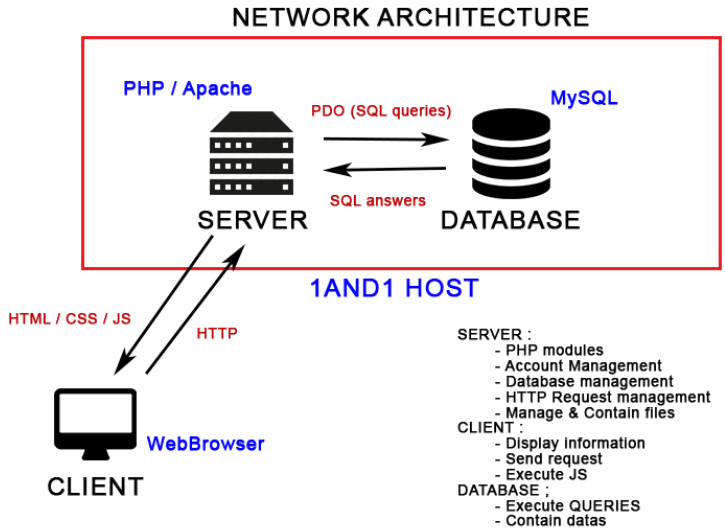

Figure 43 - Network Architecture

All the data sent to Server with POST are systematically checked before to be add in files or be sent to database.1And1 forbids the communication with database that doesn't come from Server. To use SQL query directly PHPMyAdmin interface has to be used.

4.02.04 Database Architecture

For more information refer to the following address: [redacted]

- **T_FILE**

Provides information about files. As name, path, format, etc...

- **T_GENERIC_AIRCRAFT**

Provides global information about aircrafts. Two types of aircraft: "engine" and "helico". Permits to link information about a helicopter in a project and manual for an helicopter.

- **T_MANUAL**

Provides global information about manual linked to a generic aircraft. Linked to T_FILE for the manual pdf. Can only accept pdf manuals smaller than 10MB.

- **T_GENERIC_SUB_TASK**

Provides global information about the subtasks than can be found in linked manual.

- **T_GENERIC_PART**

Provides global information about a part and its references.

Can have different part numbers and one location for each part number for this part. Separate numbers and locations with ";;" symbol.

- **T_LINK_GP_GST**

This table makes link between generic part and a generic sub task with some sub information. That permits to automatically add parts references in ERV when subtask is created in Work Order.

- **T_USER**

Table of user that can connect and work on the application. For information about user, please check corresponding part.

- **T_CUSTOMER**

global information about a customer for a project

- **T_ENGINE**

Information about engine linked to a helicopter. A part of the information for engine come from generic aircraft. Permits to get corresponding manuals easily.

- **T_HELICOPTER**

Information about a helicopter for a project. A part of information come from T_ENGINE (for engine 1 and 2) and T_GENERIC_AIRCRAFT (to link with corresponding manuals)

- **T_PROJECT**

Make the link between all the elements of project: Customer, Helicopter

- **T_WORK_ORDER**

Provides information for work order. Work order corresponds to the nod for SOW, WO, ERV and PIF. The view of linked data will make the different between the documents.

- **T_SUB_TASK**

One of the most important part. Contains all information about a sub task, the link to the generic sub task for information and T_WORK_ORDER.
You have the link to the performer and releaser of sub task.

ST_IN_SOW: “yes” or “no”. Permits to know if the subtask will appear in scope of work.

ST_APPROVED_DATE: date of approbation for subtask. Makes it appears in WO.

TO DO: Some columns are not yet use. Its available for some futur improvements of the interface.

- **T_STOCK**

Information about all part in stock. A part of information come from T_GENERIC_PART.

- **T_PROJECT_PART**

Information about a requested part for a subtask in ERV.

- **T_LINK_PP_S**

Link between T_PROJECT_PART and T_STOCK. This is created in ERV to deliver part from stock. It will lock the quantity of the part for this project.

- **T_LOG**

Table of log for queries

- **T_VENDOR**

Information about a vendor to make RFQ and PO.

- **T_RECORDED_WORK**

A recorded work linked to a sub task or corresponding to a daily task. Used as a nod to record information about users' work.

- **T_USER_WORK**

Information about a work done by a user. It is link to a recorded work.

4.02.04.1 Database UML

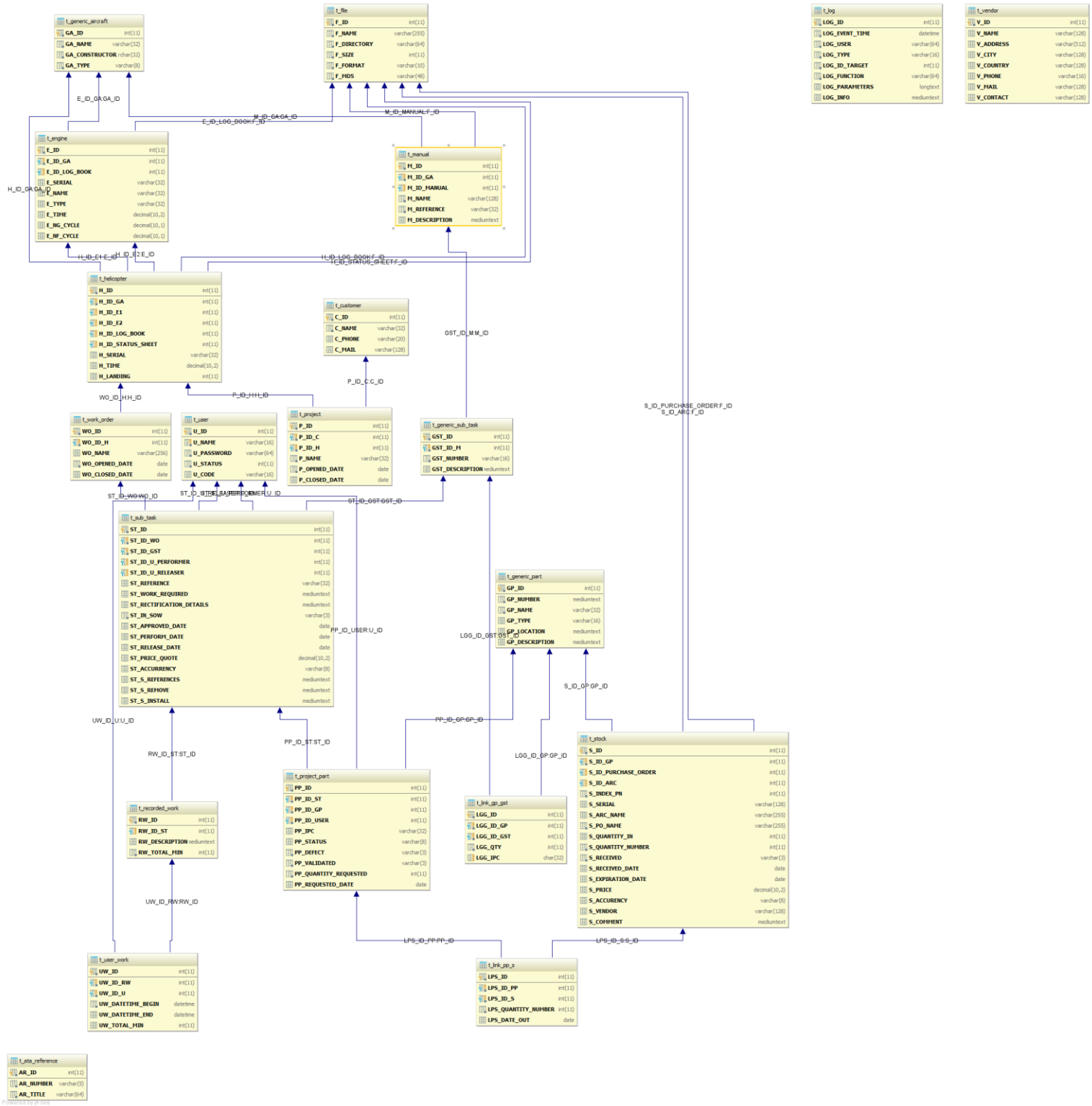

Figure 44 - Database Architecture

4.03 DOCUMENTATION

4.03.01 PHP

For PHP documentation, refer to docs part of website. [redacted] :

- Login: [redacted]
- Password: [redacted]

4.03.02 SQL

For SQL documentation, read comments in .sql files in SQL_Management part of source files.

4.03.03 JavaScript, HTML, CSS

For Javascript documentation, please read comments corresponding to javascript functions in code. Only functions coded and designed specifically for the system have the guarantee to be well commented.

For HTML/CSS please read the code and take it as an example to build the new views.

4.03.04 Apache configuration

1And1 doesn't allow to configurated directly the apache server. You can use htaccess in folders to provide configuration. As far, htaccess files provide a protection for certain area of website and reroot http request to https for all the website.

PART 5 - ANNEXES

5.01 LICENSE

5.01.01 Modules Licenses

Please refer to the *modules architecture* section of this document.

5.01.02 General License GPLv3

This software is developed by **Victor ROUQUETTE** and provided under **GPLv3** License. You can access to the complete text from the footer of the website.

You can download the software here: *https://github.com/Terag/Hammock-Database*

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Version 3, 29 June 2007

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5.02 SERVER ACCESS

5.02.01 1And1

These are the information to login on 1And1 ([redacted].

- **Login:** [redacted]
- **Password:** [redacted]

5.02.02 Website

These are the information to login to website for development ([redacted]):

- **Login:** [redacted]
- **Password:** [redacted]

5.03 CONTACT

5.03.01 Hammock Helicopter

- **Website:** *http://www.hammockheli.com*
- **Phone:** +6012-286-9186
- **Mail:** *mark@hammockheli.com*
- **Address:** **Hammock Helicopter Sdn Bhd**
  Skypark RAC Block C,
  Jalan Riyal 3U/36,
  Bukit Jelutong, Industrial Park,
  40150 Shah Alam,
  Selangor Darul Ehsan,
  Malaysia

5.03.02 Developer

This manual and the related software was written by Victor ROUQUETTE on February to August 2017 for Hammock Helicopter Sdn Bhd.

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- **GitHub:** *https://github.com/terag*
- **Mail:** *victor@rouquette.me*