

# ***Purchasing and Supply Software***

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## **I. What is Purchasing and Supply.**

Trade was from the dawn of civilization a major factor in the welfare of most societies. It started from the early ages with the caravans , was revolutionized in the 19 th century with the addition of steam powered trains and today is dominated by merchant fleets. Humans are now able to transport goods around the globe in vast quantities. Given the fact that a merchant ship has to voyage for quite some time to meet its destination, a feat of this magnitude requires effort, coordination and precise planning when it comes to provisions, engine spares , medical supplies and every need and luxury the crew can be provided with.

This exact issue promoted the need for modern marine business to develop the branch of Purchasing and Supply that is responsible of computerizing the number of goods, supplies and spares on a ship, to ensure the necessary quantities and the unceasing flow of them onboard. A huge market has also emerged in the form of contractors along with

information systems to support the maritime business.

*(\* for the convenience of this academic exercise Purchasing and Supply will be mentioned abbreviated as P&S).*

The importance of P&S for merchant fleets is of great significance to maritime business and of high priority. The supplies occupy a great percentage of the running costs of ships and even a fractional delay can have a great impact on the reliability and to an extend the profitability of the business. Coordination among other branches or between experts onboard such as the engineering, logistics, catering, maintenance are crucial for the most efficient results. Nowadays with the revolution in technology, high speed communications and well organized IT departments, the digital age has once again revolutionized global commerce. The above processes mutated and are no longer labor intensive or time consuming. Delivery times have dropped from days to hours in some cases and has helped to reduce operating costs and boost customer service.

More specifically the P&S department can improve customer experience and employer status. With the scope of having prepared and ordered all the essentials the crew and the vessel may need, in place to the next port of destination the company can guarantee less delay times and faster deliveries to their customers. This boosts the overall image and credibility of the company to the market and will attract new potential customers. With a high credibility in the business it is also easier to be dealt as a trustworthy and solid employer, with the ability not only to maintain a highly specialized and capable personnel but also appeal to experts from the competition, providing a smoother work cycle and security for the corporations' workload, with the desirable effect of increased profits.

Furthermore, P&S is in the position to order the provisions and spare parts needed, from a contractor near the location of the next port of destination. This will ensure that those goods are delivered on time and with the minimum cost of transport fees. In addition if there are more than one contractors available it will evaluate the expenses and conclude to the best acquisition value, reducing the running costs of the vessel.

## **II. How does P&S work as a process.**

The principle of the process is straightforward and simple. The experts involved into handling and dealing with the provisions have to keep track of every item into their

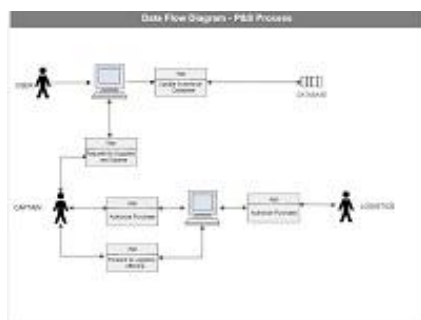
inventory. Whether it is food, drinkable water or any other necessity of alimentation nature, they are strictly updating their respective database of what they use. This provides the knowledge of what item is potentially or critically low in quantities onboard and needs to be resupplied presently. The same idea goes with medical personnel, mechanical, IT and communication engineers concerning the spare parts needed. Their expertise can guarantee when a critical component needs replacement due to fatigue of this exact unit or a restock of a specific gear due to the potential risk of unexpected failure of that unit during a voyage.

Having in mind that all the inventorial databases are updated and correct, a printed request is issued to the captain of the vessel with the items that are crucial for restock. Depending on the policy of the corporation, either the captain will have the right to acknowledge and proceed with the order, or simply forward the request to the logistics department offshore. The latter procedure in the previous decades was not an easy task with the low speed communications, high cost or the complete lack of satellite services in the day. Thankfully nowadays there are systems that provide this kind of service efficiently and a number of them will be presented later on this exercise.

With the order placed, the goods need to be present at the specified location. Upon arrival the vessel's captain along with required experts, need to inspect the relevance

of the units ordered compared to the units delivered, in concern of quantity and preferred quality. The process is complete when the inventorial databases are once again updated and the desirable number of goods are onboard.

It can clearly be observed that the process of P&S in maritime, follows the three basic steps of the general market. In the first step we can see the stage of preparation, followed by the implementation of the purchase and lastly the quality control of the delivered goods. The last two steps even if they are a great part of the process it is crucial to pinpoint the significance of the first step.



*fig.1 DFD-P&S Process.*

### **III. How does P&S work as a department.**

The remit of P&S as a department can be described in abridgement as follows. It carries out regular price quotes, with delivery times, cost of the goods, SLA's (*Service Level Agreement*) and KPI's (*Key Performance Indicators*) of potential contractors in mind. Taken into account all the factors that define a solvent partner-contractor, it forwards

the process to the legal department of the company for contract authorship. Additionally P&S is responsible to follow the market's trends in technology and processes to boost its functionality and to keep track of the competition's strategic agreements. Is always in constant communication with other departments and receives feedback and concerns from the personnel onboard, regarding unwanted drop of quality or breach in a SLA from a partner. P&S is also expected to pressure contractors for better deals. All of the above has to be achieved in a worldwide level.

### **IV. Software and Digital solutions available.**

As stated previously, there are numerous contractors to back up the needs for the maritime business. The following are some examples of software and digital solutions the industry uses.

#### **a) Benefit Software.**



For over two-decades, Benefit Software has been supplying the Greek and International shipping industry with applications, known for their exceptional levels of security,

transparency, accuracy and controllability. The company holds hundreds of loyal clients worldwide who trust their products and services, which are considered to be functional and financially efficient integrated systems. Two of the modules available are the Stores & Provisions Module and Spare Parts Module that help to handle external procurement for stores and provisions. The modules will electronically transmit data between the vessel, office and vendor and monitors all the deliveries and payments to vendors. The functionalities of the modules are unprecedented. Both are document oriented systems that help you base your supply cycle on the requisition list and manage the Inventory procedure. They will help you monitor the item's stock control, check invoices and search for requisitions using a wide plethora of criteria. They have a smart unit conversion system to measure and compare the local unit standard with the vendor's one. They make it easy to view libraries of provisions and spare parts from various suppliers and will compare the prices of each unit between the suppliers. This gives the opportunity to make a split order from more than one supplier if the price from one unit is lower than the one from a second or a third supplier. Cost - wise, they also compare consumption rates among vessels to avoid overconsumption or illicit orders. They will automatically proceed with an order if the unit is pre-categorized as crucial or of high importance to avoid human negligence. Also the modules will update the office's database with details of vessel

requisition and supplier's quotation. The modules can co-function with a number of other modules. Benefit can provide such as the Budgeting, Planned Maintenance System (abbreviated as PMS), Documents Register, Accounts Payable, Financial Management & Control (abbreviated as FMC) and Documents Workflow modules.

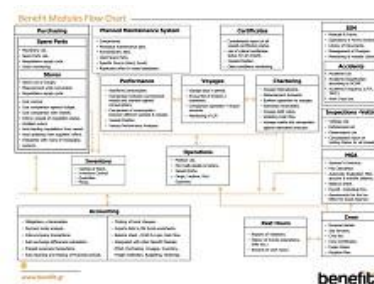


fig.2 Benefit Modules.

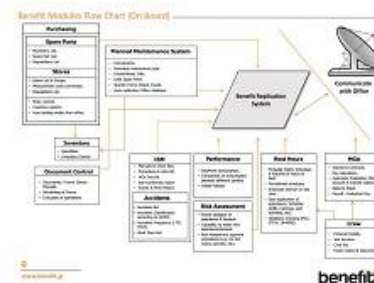


fig.3 Benefit Flow Chart On Board.

## **b) Danaos Software.**



Danaos Corporation and its majority shareholders have a long history of operating and investing in

**ONBOARDING WEB ENTERPRISE SUITE**

**ONBOARDING SIGHT MANAGEMENT**

- 1. Planned Maintenance System
- 2. Sighting System (Procurement)
- 3. Crew Management & MCA
- 4. Vessel Operations
- 5. GSA & Document Management
- 6. Risk Assessment
- 7. Vessel Performance Efficiency

**FINANCIAL SUITE**

- 1. Marine Accounting + MIS
- 2. Budgeting
- 3. Exchange Rates
- 4. Fuel KiloLitre
- 5. Marine Cargo Manage
- 6. Financial Documents Controller

**SHIP MANAGEMENT SUITE**

- 1. Planned Maintenance System (PMIS)
- 2. Sighting System (Procurement)
- 3. Vessel Operations
- 4. Risk + Document Management
- 5. Risk Assessment
- 6. Vessel Performance/Efficiency
- 7. Record Book
- 8. TMSA
- 9. KPIs

**COMMERCIAL SUITE**

- 1. Vessel Information
- 2. Port Operations/IOI
- 3. Booking
- 4. Freight & Fuel
- 5. Letterhead/Document
- 6. Emission Calculator
- 7. Vessel Scheduling
- 8. Bunkers Trading Dashboard

**WMS**

**WMS Big Data Analytics**

**INTEGRATION - CASE MGMT**

- 1. Info@GATE

**TRAINING & SUPPORT & EFFICIENCY**

- 1. SEAROUTES

**HQ OFFICE**

The most essential module of the Management Suite would be the Danaos Supply module. It consists of 3 sub modules: the Spares sub module, the Stores sub module and the Provisions sub module. Each one has been optimized for the specific task and reporting requirements. Sparesmodule is integrated with the PMS and all modules are integrated with the Marine Accounting and Management Information System. Danaos Supply has been conceived to minimize cost through complete supply cycle (supply chain) support, efficient evaluation of requisitions, comparison of quotations,

## Spare Parts

### Spare Parts Control System

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**Store Control Module** is specially designed for stores supply for shipping companies. It supports departmental

division and provides automation of the complete supply cycle (Requisition-Quotation-Order-Delivery-Invoice) without data transcription in any intermediate stage. It optimizes supply quantity and supplier selection process. Informs supply department with pending requisitions per department, critical stores requirements, requisition progress and pending quotations, orders, deliveries, invoices. Deliveries per department for time periods, historic prices. Also it evaluates quantity requirements with automatic unit conversion. Complete inventory with evaluation and informs management with moving average cash-flow requirements, covering last six months and projecting next six. The correct management of onboard supplies, including spare parts, hardware, safety equipment and more is a difficult, yet crucial task. This task is issued with a barcode application. The software is fully synchronized with the Danaos Green Supply Chain Management Modules in order to ensure consistency between actual inventories and the information contained in clients' corporate database. The barcode software assigns a unique code to each item in the Danaos Supply Module and produces unique barcode labels for each item. For safety reasons it keeps a complete log of which users have performed which task. During inventory it displays item descriptions on the handheld barcode scanner in order to ensure that the correct item has been scanned and gives users the option to scan each item or to scan the item once and then enter the quantity manually.

Furthermore it performs a validation between the scanned items and the database entries in order to ensure consistency and synchronizes inventory data with vessel databases and then sends it back to the headquarters database through synchronization.

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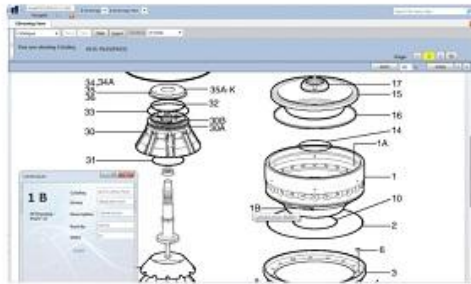
fig.6Danaos Stores module.

**Provisions Control Module** is specially designed for provisions supply and follow up for shipping companies. The module provides automation of the complete supply cycle. Requisition, quotation, order, delivery, invoice, without data transcription on any intermediate stage. It permits grouping per item/category and automatic substitution and optimizes supply quantities, supplier selection, order allocation and automatic ordering in accordance with model orders. Information to supply department with pending requisitions critical supply dates, pending quotations, orders, deliveries. Deliveries for time period, historic prices and actual/reference consumption analysis per item/group. Informs management with actual/reference cost analysis daily. Shifting period cash-flow requirements covering last six months and projecting next six. The entire function of creating



the Supply Cycle system, including but not limited to, stores and provisions catalogue creations and Machinery Spare parts catalogues can be outsourced to Danaos.

Provisions Control System



*fig.7 Danaos Provisions module.*

### **c) DNV-GL Software.**



DNV-GL is an international accredited registrar and classification society in Norway. It derived from the merger of Det Norske Veritas and Germanischer Lloyd. Before the merging both DNV and GL, independently acquired several companies from various sectors that have contributed expertise across several industries. They provide services such as technical assessment, certifications, risk management and software development. Their main software solution for maritime business is Shipmanager. The software covers various needs within technical, operational and compliance, with solutions that meets the markets needs. One of which is the procurement. Again this comes as a module within

the Shipmanager suite that supports purchasing departments and allows to streamline the complete scope of maritime procurement activities for all spares, services, stores and consumables and other items.

Improved information management ensures that crew and office are working with the same information, and always know the status of requisitioned items. It allows fast processing of procurement data with high usability and fleet wide management reporting which comes as an optional. As any of the other systems it provides the ability to purchase and manage any type of goods , provisions or spares the vessel may need and with the help of the Shipmanager Technical module it can issue and process requisitions. One can perform requests for quotations from various suppliers compare them and finally issue an order. It helps track the orders made, from warehouses until final delivery and also issue supplier performance assessments. The software can keep complete stock control over the inventorial database, along with important attributes such as value , stock history, date of removal or addition of a unit and monitor consumption of crucial items such as provisions, chemicals and fuel.

### **d) SES Software.**



The software solution for the industry from SES separates the spare parts from the commission and supplies .

Both the systems are invaluable tools that help the procurement department in everyday activities for the supply of spare parts. It covers a wide range, from the production of shipboard or offshore requirements with the placement of the order and beyond, until delivery to the ship. It allows quick and easy creation of requirements, supplier assignment, price entry, self-assessment and inventory and inventory control. The user is informed of spare parts that are rare or in surplus quantity and can compare the total or per-line values on-line, monitor the outstanding claims, orders and partial deliveries. It also helps control inventory from ship or warehouse with many extra features. The software is easy to maintain while at the same time the possibilities of the system are not violated or weakened. Feature like the system can customize the application for spare parts along with pictures, drawings or scanned documents as attachments to it. The parts are differentiated and distinguished for better management and the requirements are defined, finalized and grouped. It checks the inventorial database of every ship and provides audit evidence for managerial control. Vendors can receive the assignment orders depending on requirements. The system also provides a supplier rating and classifies all items from a vendor or differentiate between vendors for a wider selection of the best quality, faster delivery and low costs. It also grants the ability to

issue an order directly from the claim and include all details about the vendor, dealer and broker as well as the delivery date, the port and the ship's EDF in the order reference. It is also easy to keep track of claims and pending orders and provides with information concerning the surplus and deficit per order. It will automatically convert from imperial to metric system and vice versa when needed. Lastly it connects with SES Maintenance and the SES Service systems.

#### **e)Ulysses Systems Software.**



Ulysses Systems specializes in Maritime solution software. Their premier product is Task Assistant. When it comes to spare parts and procurement the software simplifies the buying process and automates many of the semi-automatic processes that contribute to the high cost of buying orders, thus helping to minimize costs. It provides predefined roles, tasks and flows required to run and manage the procurement process. The software assigns hierarchically the responsibilities the user should have, giving more importance to spare parts and supplies storage. Also someone can apply for a specific bid and obtain the requisite through electronic ship supplies. It keeps records of the deliveries and informs about the current status of the claims, orders and stocks. It links the invoices issued with the purchase orders and produces



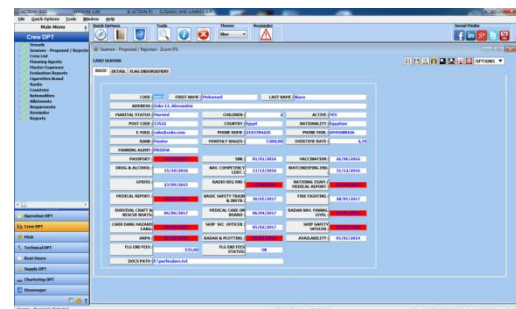
accounting reports, forgiven periods and unpaid commissions. It also provides transparency in requirements and order status both at the vessel and at the headquarters, and consolidation with foreseen maintenance applications that provides a coherent picture of the inventory of spare parts. Lastly it integrates with accounting systems and has the ability to connect to sites such as e-Procurement using MTML.

#### **f) ActionPC Seas Software.**



Action-Pc was founded in 2006 and since 1995 its founders have been employed in computing either as programmers / computer or IT field. The company is today a reliable choice in the field of integrated computing solutions in Greece. The company has turned its interest to shipping. Manning the department with qualified staff, it created the program "Action Seas" in order to improve business processes at every level and give shipping companies the possibility of accurately controlling their fleet and thus maximizing profit and growth. The software covers everything that concerns the operation of a shipping company and management of any vessel / fleet. More specifically the supply system is designed to improve business performance and maximize profit. It covers the entire supply chain for each ship. It supports the supply of spare parts, lubricants, chemicals,

paints, food, services and other items. It keeps track of all deliveries and payments to suppliers and other outstanding issues scheduled to deliver OB (on board) to the next port or at any time. It speeds up the process and focuses on cost reduction. This program informs about the deck, the cabins, the supplies in the warehouse .It gathers and organizes consumable medicines and any other accessory or equipment is on board. Ship's stock canbe organized at times with relevant reports related to this and the consumptions that have been made.It keeps lists for each individual regarding consumption, suppliers, the tax framework and the work generally done on the ship.



*fig.8ActionSeas interface.*

## **V. Conclusion and future development.**

IT and modern network architectures have given a boost in every business work cycle and it is more than obvious that the maritime business has benefited. The P&S as a department and as process have been revolutionized. As the technology pushes forward and communications costs degrade we can expect in the near future that the architecture of data

storing and accessing of the P&S related data, will channel through a cloud service always accessible by the vessel or the headquarters. This can be achieved with the necessary data space required through the use of a data room. To the front-end, through numerous revisions the manufacturers could simplify the layout of the systems to maximize user controllability and functionality. Lastly in a more collective manner a standard for P&S information system could be discussed and promoted between vendors and suppliers.

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