

## **MANAGING INFORMATION IN MAINTENANCE**

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**Keywords:** maintenance, information, management, IT, PDM.

**Abstract:** Knowledge is the retention of information. As the level of information grows, so the importance of "information management" grows. In maintenance, this might include the simple recording of operational information such as log books, notes and thoughts, documentation, product structures, and planning. Increasingly it is also extending into strategic areas that underlie the entire design process, such as management information, databanks, idea banks, links to external information services and networking-based contacts under-lying the entire maintenance process and over the life cycle of the product.

### **1. INTRODUCTION**

In a very large meaning, by maintenance it understands all surveillance and monitoring activities for useful exploitation of running parameters, insurance of maintenance, retrieve and repair therefore which a product – machinery, equipment or building – is maintained on all length of its life cycle in such a way so that it can running on the optimum level of designed parameters [5]

Therefore, the maintenance objective is to preserve the product characteristics so that it can carry out the requested functions during all its life cycle. The maintenance is an important part of the product life cycle management and its main goal of is to increase the economical efficiency of the product life cycle [4].

Industrial unit is a complex production system whose operation must be ensured in optimal condition by efficient repair and maintenance of fixed assets in general and machine tools in particular. To achieve this function, the industrial units should create a specialized department in the execution of maintenance and repair. This department is a potential growth factor of production and his quality in terms of both extensively and intensively by increasing their operation time. For carrying out the maintenance activities the company should adopt a way of organizing between different existing forms. Among the criteria that to be taken into account when choosing the organizational form of the maintenance department, we can mention the following as the most important:: the size of economic unit, industrial branch, the complexity of the machine tools and equipments, the maintenance strategy to be follow, automation degree of manufacturing, control and management, the staff and worker training level etc.

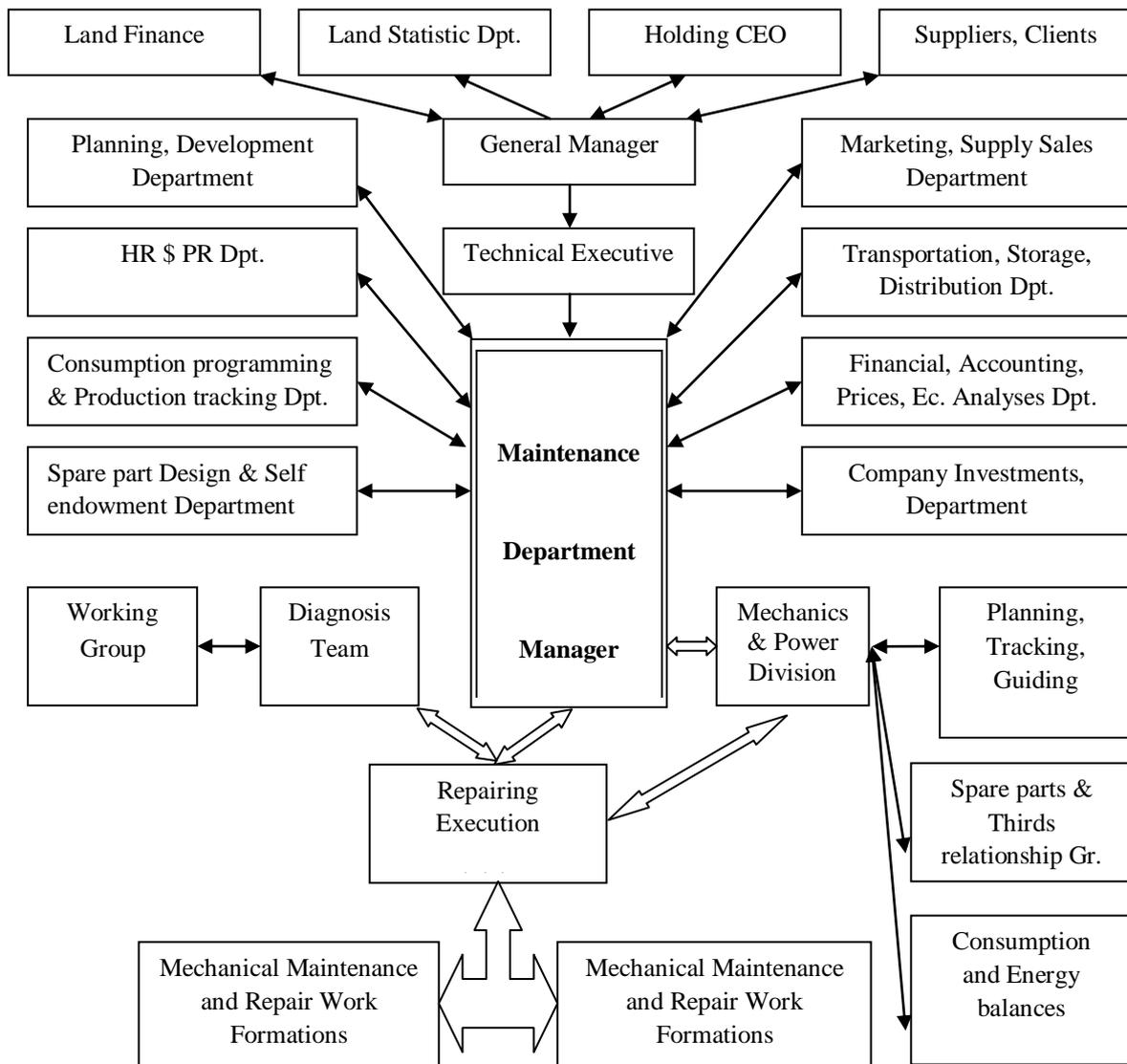
In large and medium enterprises usually was established a Maintenance Department (MD) or at least a Mechanical maintenance and repair division which is subject to the technical director or chief engineer. Mechanical maintenance department prepare loading plans machine tools available, provides tools, equipment and accessories, order the work groups, prepare repair technical documentation and a list of machinery for disposal, seeks compliance with technical standards for repairs, etc. These tasks ask functional relationships for MD with a number of management bodies of the company.

The organizational structure of an MD should manage a lot of information provided by and directed to nearly all the firm's functional departments, such as: planning-programming-division, monitoring and reporting of production sector, design and supply spare parts department, working groups in maintenance and repair machine, equipment and control devices, maintenance and repair utilities team, mechanical and energetic group etc.

## 2. MAINTENANCE INFORMATION FLOW

Generally speaking, knowledge is the retention of information. As the level of information grows, so the importance of “knowledge management” grows. In maintenance, this might include the simple recording of operational information such as log books, notes and thoughts, to the more complex organization of activities, documentation, product structures, and planning. Increasingly it is also extending into strategic areas that underlie the entire design process, such as management information, databanks, idea banks, links to external information services and networking-based contacts under-lying the entire design process and over the life cycle of the product.

Considering a specific company manufactures of consumer goods, with a classical organization, information, in terms of maintenance department function, flow by some routes as those shown by arrows in Figure 1. If information regarding the top of the representation is referred to the reports, information requests, orders etc., the lower is specifically relating to the core tasks of the MD (basic information flow is represented by double arrows).

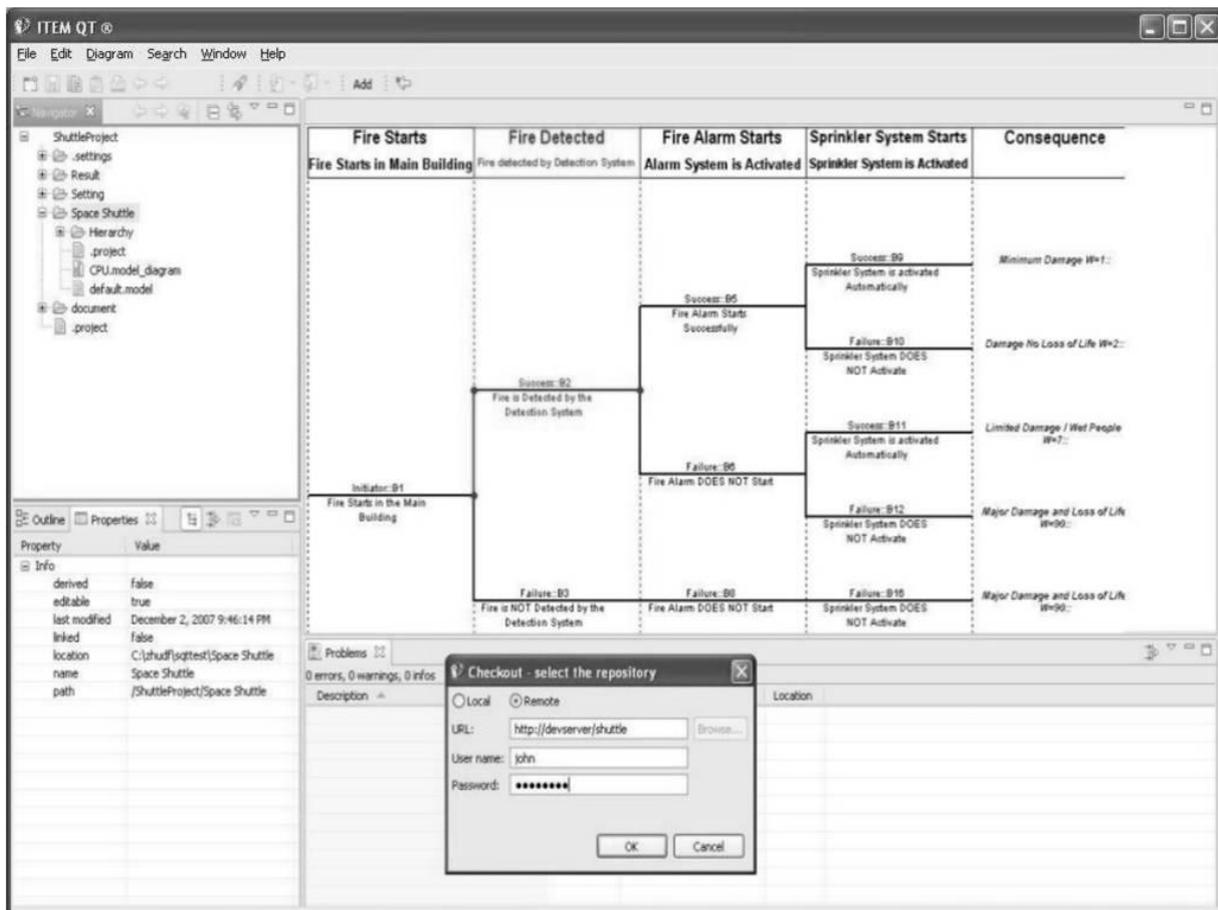


**Figure 1. Maintenance information flow;**

### 3. MAINTENANCE INFORMATION MANAGEMENT

A lot of scientific papers all over the world, have already emphasized the importance of maintenance in manufacturing systems. A large pallet of maintenance concepts, theoretically and practically training courses, guidelines and their application etc. were conceived, tested and implemented. [1], [2], [3].

The large amount of information needed to conduct the MD activity is difficult to acquire, processed, archived and forwarded in the absence of a specialized computer information management system. Information technology (IT) offers such software, however, the most simple, but legitimate general utilization, to the most complex and specific (in Figure 2 is shown an example).



**Figure 2. Window in a multi-user platform for managing maintenance and risk assesment information; [6]**

A group of such software, including helpful maintenance activity and especially their integration with all other departments in the company, are known as Product data management (PDM) systems or platforms. A PDM system comprises a storage vault, incorporating product classifications, product structure, group technology, project management, process management, termed workflow; configuration management, access management, data transportation, translation and integration. Using PDM in maintenance management helps, by one hand to reduce product life-cycle costs, environmental impact etc. and by other hand to improve product quality, conformity of product ranges to standards, security and back-up, flexibility of processes, shared, secured and managed access to data across the product development domain and along product life cycle,

improved consistency and integrity of data. This communication technology also enables controlled and information with both customers and suppliers. Catalogues of components as seen in most design rooms are replaced as engineers ask for detailed specifications, local availability and the prices of the components that they wish to consider. Orders can also be placed where mail order services are available.

Using adequate software, maintenance engineers can obtain the latest information applicable to a specific technological equipment, industrial installation, or car that work anywhere in the company or that has just arrived in a service unit needing maintenance. This includes any service bulletins for them, downloaded as the latest version from the design headquarters. When finished, an engineer indicates the work carried out, and the records in headquarters are updated so that the next engineer to work on that equipment has an 'as built' set of information to work from, specific to that machine or installation.

Operational information, such as machining or operation times, equipment failures, corrective and preventive maintenance activities which have significant effects on the production line efficiency may be available anytime and from anywhere there is a well organized and functional information system. Assessment of the operational efficiency of an automated manufacturing line with storage units by computer simulation permits one to determine various possible parameters and dependent variables which have the most significant effects on productivity. Estimation indices are obtained for such variables as the total, inherent, and imposed relative time losses due to failures and stoppages for each machine. These variables are obtained by employing failure and repair times and nominal and relative production rates for each machine.

#### **4. CONCLUSIONS**

To manage with efficiency the maintenance information and knowledge is necessary software designed to improve the effectiveness of maintenance through the use of systematic methods and plans. The primary objective of the maintenance effort is to keep equipment functioning in a safe and efficient manner. This allows production to meet production targets with minimum operating cost. All portions of a planned maintenance program interrelate and are necessary for total system effectiveness. Planned maintenance is not just a planning and scheduling function stuck on the side of a general "firefighting" type maintenance organization. It must be complete to be effective, and leaving one feature out will seriously hamper the program. The most critical components of a planned maintenance system are the following: *Work Orders, Daily Work Schedules, Daily Planning Meetings, PM Task Lists, Equipment History Files, and Backlog Control Boards*. The system is more important than what tool you use to control it or monitor progress. The best software in the world maybe will not necessarily reduce costs, but good software can be a valuable tool and can be used as part of a system.

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