

TRACKING SALES, INSTALLATION, AND AFTER-SALES SERVICE ACTIVITIES THROUGH PROJECTS.

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Abstract: *Companies that sell, install and service equipment need a plan for the activities they undertake. Since these activities are carried out in a certain order and are undertaken by different people, it is necessary to improve the information flows within the company and achieve the most effective management of the relationship with the client. This paper is a case study on the need to use planning in activity of a company that sells products that need to be assembled and installed at clients also needs to carry out their maintenance during the warranty and post-warranty period.*

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JEL Classification: L86

1. Introduction

Companies that sell, install and service equipment need a plan for the activities they undertake. Since these activities are carried out in a certain order and are undertaken by different people, it is necessary to improve the information flows within the company and achieve the most effective management of the relationship with the client.

A **project** is any undertaking, carried out individually or collaboratively and possibly involving research or design, that is carefully [planned](#) to achieve a particular goal. (Dictionary, 2023)

In [project management](#), a **task** is an activity that needs to be accomplished within a defined period of time or by a [deadline](#) to work towards work-related goals. It is a small essential piece of a job that serves as a means to differentiate various components of a project. (Task (project management), 2023)

2. Purposes of the Study and Research Methods

This paper will present a case study. During this research we analyzed the practical situation within a company regarding the need to use planning for its activities.

The following objectives have been defined for the IT solution:

- creation of offers with the help of the computer system
- the realization of the contract
- planning installation activities and their follow-up
- planning maintenance activities and their follow-up

Discussions were also held with the users of the IT solution, which led to the appearance of some concept changes during the implementation.

3. Requirements analysis and concept realization

At the company level, all the products we sell are defined in the product catalog. Some of these are goods, others are consumables that are used in the assembly process, others are services that are provided for the different clients.

For each product you can define an internal code, a name, an interpretation from an accounting point of view as well as a unit of measurement.

3.1. Stock management units of the company

These products will be used in the management of the company. Since we are interested in a strict record of these products, the decision was to create several stock management units with precise goals, as can be seen in the following figure.

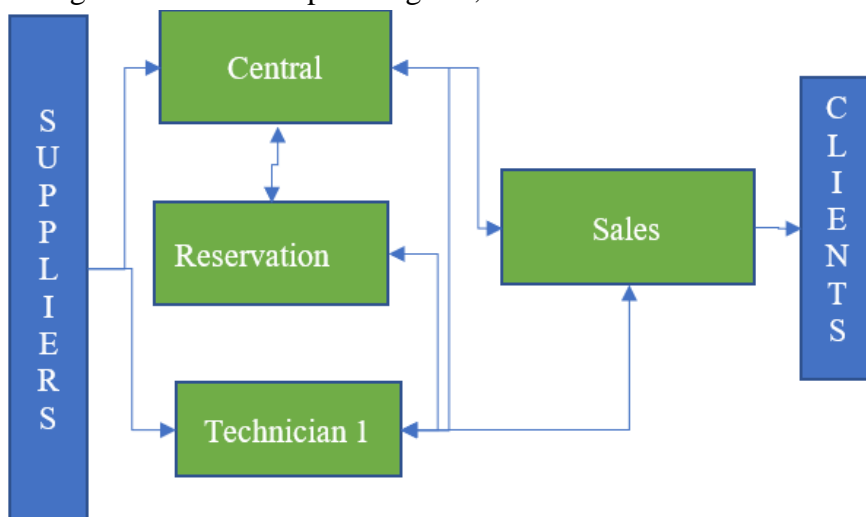


Fig.1 Stock management units of the company

Thus, **Central** management unit was created with the role of highlighting all the storable products of the company from the central warehouse. Entries in this management are made on the basis of purchases from suppliers, on the basis of receipts made as a result of transfers from other management units to this one, by recording surplus inventory or by recording some transformations. The exits from this management are recorded through transfers to other stock management units, through consumption vouchers, through transformations or inventory. A direct sale to the customer is not made from the warehouse management. From the warehouse management, the products will be transferred to the Reservation, Technicians and Sales stock management units.

Another necessary stock management unit is **Reservation** which helps us to reserve some products for various clients. The products will arrive here by making a transfer from the Central stock management unit to the Reservation. The products will leave here also by making a transfer to others stock management units.

Another necessary stock management unit is Technician. For each technician, an individual stock management unit will be created, so the stock of existing products can be seen at any time. This management will also help the technician to see what products he has in stock as well as the management to see the exact location of a product. Entries in this management are made by transfer from other stock management units or based on the Invoice from the Supplier and Reception in the Invoice Base. Removal from management is done by drawing up the Technical Data Sheet or by operating supplier cancellation and receipt invoices. From the Technician, the sale will not be made. The products left in stock after a job can be used for future jobs.

Sales stock management unit is used to prepare sales to customers. The supply in the Sales management is carried out on the basis of transfer from the Central or from the Technicians' stock management units. The realization of the sale when it refers to a technical sheet requires the realization of the supply first, and then the drawing up of the invoice. In certain situations, the invoice will have to be drawn up on the basis of the contract and close by downloading the technical sheet of a technician. Invoicing in other situations can only be done for existing products on the technical sheet that are not specified in the contract. The realization of the sale of consumables, accessories requires the drawing up of a direct invoice, based on a supply made in advance by the Central management.

3.2. Documents used in relation with clients

The client's offer is the stage preceding contracting. By making an offer to the customer, the product stock will not be affected in any way. Offer can be or not accepted by the client. The client's non-acceptance of the offer may be followed by a stage of negotiation or termination of the relationship with him.

Based on the accepted offers, contracts will be drawn up with the clients. These contracts may contain one or more contractual stages that can be classified into sales, purchase or maintenance stages. A contractual stage can contain several products.

Based on the contract, the jobs that need to be performed will be defined. For a job we need to know some elements such as: The company to which belongs, the contact person, the equipment that goes into this work, the address where this job will be carried out. Job will have a status such as started, in progress, suspended or completed.

Following the comparative analysis between the work, contract and tender, the following arguments were brought forward that are the basis of the differentiation between them for the case studied, namely:

- The offer can be partially accepted and the contract covers only what is accepted by the client
- Between the contract and the work there is a many-to-many relationship because a work can cover several contracts, or for the fulfillment of a contract several works are needed, therefore the work cannot be a contract either
- A product on the offer can be modified at the level of the contract into another product. There may be differences between the contract and the offer, therefore the contract is not the offer.

The invoice is the document through which the effective sale of the system or the services provided under the contract is carried out. An invoice can cover a contractual stage. Also, an invoice can be drawn up with existing products in different contractual stages. There is also a many-to-many dependency between the invoice and the contract.

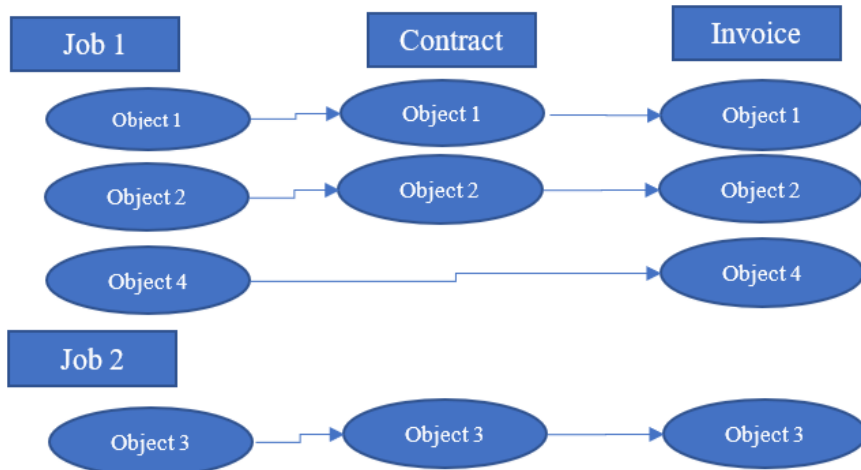


Fig.2 Evidence of links between work, contract and invoicing

3.3. Planning

Planning of installation, assembly or overhaul activities, aims to track their completion, records of personnel who participated, participates or will participate in the completion of a work, as well as tracking the degree of workload on the existing technicians within the company.

The decision was made to open a new project for each client. We can say that the connection between the client and the project will be one to one. Since a client can have several locations, within the project one location will be created for each location where a customer is intervened. Each location has its associated physical address. Within a location there may be several systems installed, so each system will be defined as belonging to a location. For each system, several types of work will be carried out over time, such as installation, maintenance, repair, dismantling, relocation or other types of work.

In order to define and classify the activities more easily, it was decided to create a prototype according to which each activity of a project will be classified. This model can be seen in figure 3. In figure 4 the actual project can be seen.

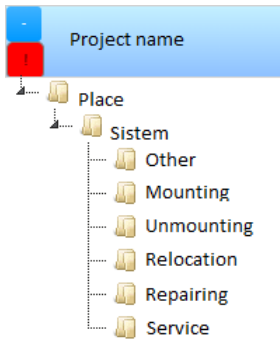


Fig.3 Project model structure



Fig. 4 Project definition

Having these informational attributes related to an activity, an interface was created used to define or modify them, as can be seen in fig. 5. For each job we can define a deadline for start and end. We can also see actual starting date and actual final date for this activity.

Job

Job Name:

Object:

Budgeted amount: Without planning

Amount spent:

Deadline start date:

Deadline end date:

Beginning date:

End date:

Warning period:

Information:

Responsible:

Supervisor:

Without warning:

Activity Type:

Not started

Working

Suspended

Finalized

Fig. 5 Defining a job

For each job we will define one or more tasks. Each task will have one or more people involved in that, and will have a time period defined. Every task has to be allocated to one job. The total amount of time spent for tasks associated to one job

will give us the total time spent for that particular job. Also based on these tasks different reports can be defined. The interface which was created based on client requirements can be seen in fig. 6.

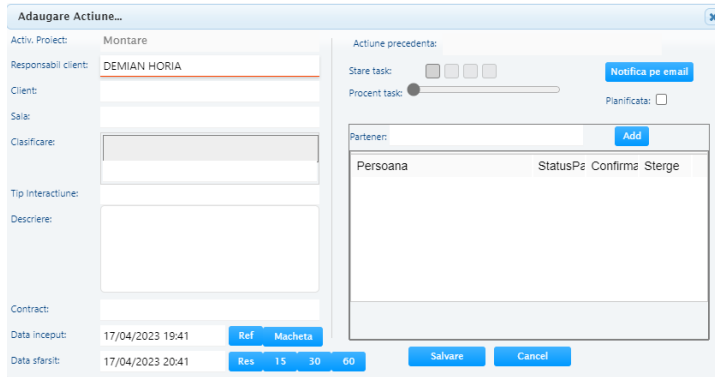


Fig. 6 – Definning task

Tasks can be **planned tasks** which actions will be made in the future, or can be **normal tasks** that was made. Based on these type of task we can see which tasks are planned in a specific period of time, for a particular client and which technician has to do that task.



Fig 7 – reporting of jobs and tasks which has to be done during a period of time

Conclusion

A change of the information flow between each department of the company was necessary to be done.

A relation has to be made between offers and contracts, between contracts and activities planning and between contracts and invoicing. So we can say that the contract is the central point of these types of activities.

Evidence with the help of projects, activities and actions is the basis of resource planning.

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