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Application of system modeling on information system of an industrial company

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Abstract
Because the systemic model of any organization is organized by matching an operating system and a decision system through an information system, the implementation of the information system and the effectiveness of its exploitability is an unavoidable operation. Indeed, its modeling allows us to have a tool of analysis and assistance in decision-making. The purpose of this paper is to present an application of a system approach based on the OOPP method for modeling an information system of an industrial company.

Keywords: System modeling, Information System, OOPP method

1. Introduction

The information system is defined in relation to control system, and operating system [1]. Its main role is the linking of these two systems on the one hand and the environment with the company on the other (Fig 1). As a result, the fulfillment of the mission of each of these two systems depends closely on its characteristics: reliability, consistency, scalability and integrity [2, 3].
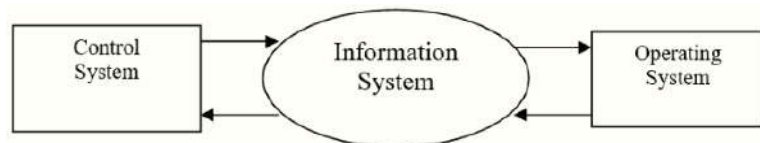

Fig 1: Global system scheme

Information has now become the strategic weapon; its lifespan has become very short. So the system must be reliable and fast, which effectively justifies the importance of the computer tool.

Thus, the performance of a production or service structure as complex as it is, it depends particularly on the performance of its information system. Indeed, the implementation of an information system of an industrial company and the efficiency of its usability is an unavoidable operation. It allows the constraints of measurement and collection of information to be adapted to those of processing and exploitation [4-6]. The modeling of such an information system allows us to have a tool for analysis and decision-making assistance.

In this paper, we propose an application of a system approach based on the use of the Oriented Objective Project Planning (OOPP method) for modeling an information system of an industrial company.

2. Presentation of the OOPP Method

In Tunisia, the OOPP method (Fig 2) is widely used in cooperation projects with Germany, Canada or Belgium. It was recently used to plan upgrade projects such as Vocational Training and Employment (MANFORME) or the environment or for certain Agri-food sectors. It has also been used to restructure various private and public companies and has been adopted to plan and implement the Tunis 2001 Mediterranean Games Organizing Project. It was also adopted by the Council of the Order of Engineers to initiate and continue the common reflection on the training of the engineer [7-9].

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The two key steps in the development of the restructuring strategy are:

- The Project Planning Scheme (PPS), which consists of establishing a comprehensive diagnosis of the situation by developing a Problem Tree using logic Causal.
- The Business Planning Scheme (SPA) which, according to "means-end" logic, results to be achieved by developing a Tree of Goals.

These steps are in fact a prerequisite for any implementation of the Project that requires a Monitoring and Evaluation System (SSE).

To the causal logic of problem analysis, it is matched with "means-end" logic to develop the tree of objectives.
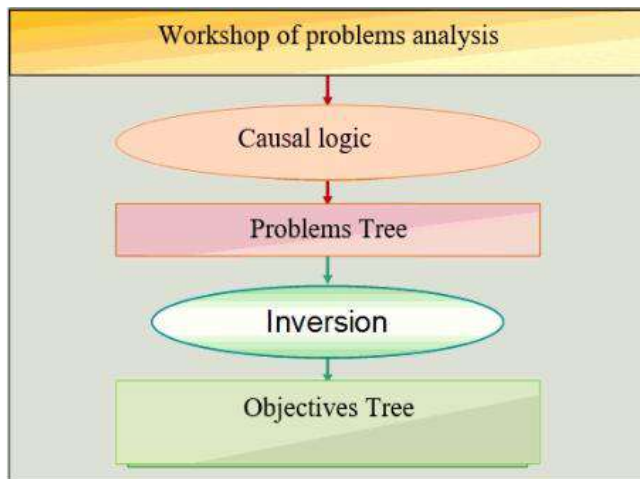

Fig 2: OOPP method

The OOPP method constitutes a tool of a global systemic

modeling enabling to analyze a complex situation by a hierarchically decomposition until reaching an elementary level allowing an operational planning. This method, widely used in the planning of complex projects, involves many operators and partners [10-12].

3. Results of modeling of an information system

Due to the complexity and sensitivity of the modeling adopted from the information system will use the OOPP method [13, 14], which is a global systemic modeling tool to analyze a complex situation by breaking it down from and reducing it to basic situations leading to basic operational planning. This method, widely Due to the complexity and sensitivity of the modeling adopted from the information system will use the OOPP method [15, 16], which is a global systemic modeling tool to analyze a complex situation by breaking it down from and reducing it to basic situations leading to basic operational planning [17, 18].

The development of specific objectives (OS) in results in intermediate results, activities, under activities, tasks and under tasks.

The model presented on the figure (Fig.3) illustrates four specific objectives for achieving the overall objective (OG): The Information System of a grain storage silo implemented.

The specific objectives identified are:

- **OS1:** Measurement and collection of information assured.
- **OS2:** Transmission of the information assured.
- **OS3:** Treatment and exploitation of the information assured.
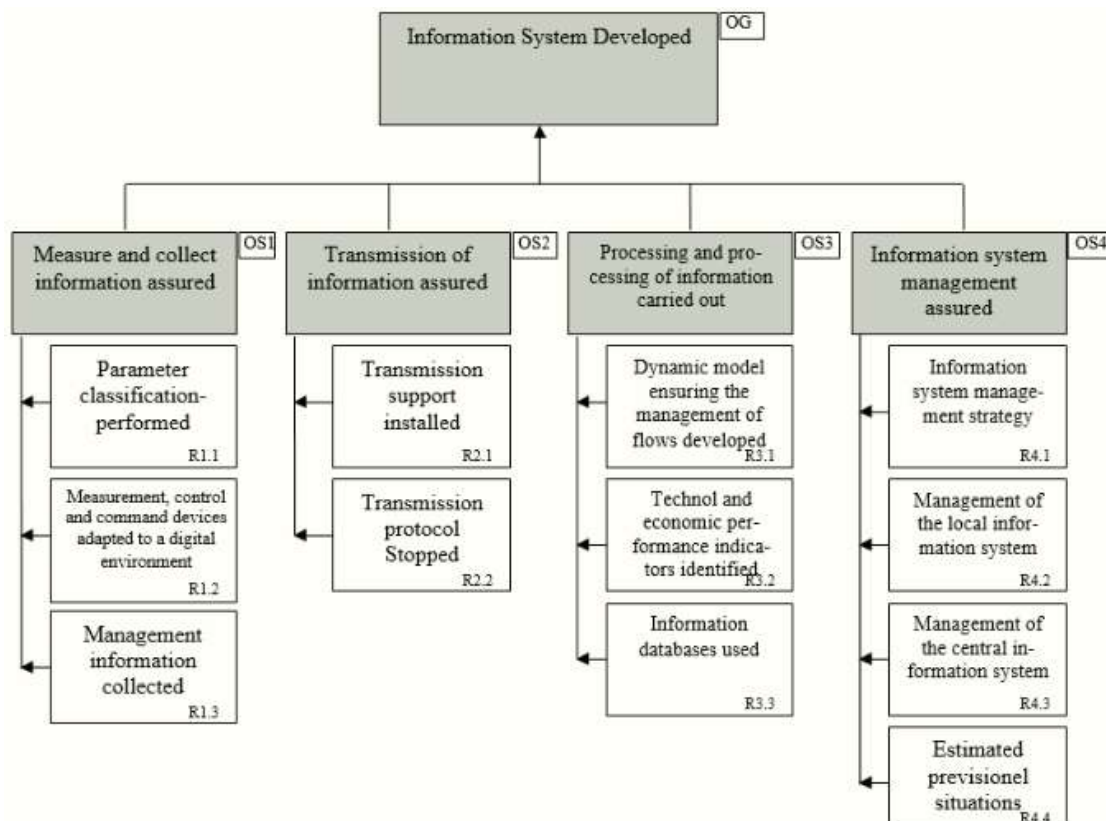- **OS4:** Management of the system of information assured.

Fig 3: OOPP model of an Information System development

The system method used for the analysis of the activities of a production system is the OOPP method for the specifications of the equipment of the production system [19, 20].

The OOPP method is based on a structuring gait and is hierarchized. Once identification of the OG of the project that one intends to analyze, we determine the Specific Objectives to reach previously and, according to the same logic, one specifies the lower levels.

The model presented (TABLE) illustrates eight specific objectives (OS) to achieve the global objective (OG): Information System of a production system defined.

The Specific Objectives identified are:
- **OS1:** Management of the Information System.
- **OS2:** Security of the Information System.
- **OS3:** Circulation of the information.
- **OS4:** Appropriate information media.
- **OS5:** Analysis of effective information.
- **OS6:** Efficient information processing.
- **OS7:** Archive information.

OS8: Characterization (properties/elements) of the information.

Table 1: OOPP model of Information System of a production system

No	Code	Activity
1	OG	Information System of the production system defined
2	OS1	Management of the Information System assured
3	R1.1	Improvement of the Information System assured
4	R1.2	Assessment of the Information System assured
5	R1.3	Control of the Information System assured
6	R1.4	Maintenance of the Information System assured
7	R1.5	Functioning of the Information System assured
8	OS2	Security of the Information System assured
9	R2.1	Security of the information assured
10	R2.2	Confidentiality of the information assured
11	OS3	Circulation of the information assured
12	R3.1	Implementation of a secure information flow circuit assured
13	R3.2	Availability of timely information assured
14	OS4	Appropriate information media assured
15	R4.1	Operation of information media assured
16	R4.2	Conviviality of supports assured
17	R4.3	Availibility of supports assured
18	R4.4	Supports of the information identified
19	OS5	Analysis of effective information assured
20	R5.1	Actions of Improvement proposed
21	R5.2	Causes of failure identified
22	R5.3	Failures detected
23	R5.4	Information traited interpreted
24	OS6	Efficient information processing assured
25	R6.1	Efficiency of the treatment system assured
26	R6.2	Information enregistred
27	R6.3	Information collected
28	OS7	Archive information assured
29	R7.1	Security of archived information assured
30	R7.2	Locations of archival information identified
31	R7.3	Supports of archival information identified
32	R7.4	Duration of archival information determined
33	R7.5	Archival information identified
34	OS8	Characterization (properties / elements) of the information assured
35	R8.1	Information need identified
36	R8.2	Information source defined
37	R8.3	Destinations for the information defined

Conclusion

The Oriented Objective Project Planning model was developed to analyze the information system of an industrial company by breaking it down in a hierarchical manner and bringing it back to basic situations leading to operational planning. The validation of the model was done with the production managers.

The methodology adopted by its participative nature and systemic also leaning on a large discussion of the documentary resources (proceeding, internet, specialized magazines) a variety of innovating actions have been proposed.

Starting from this study of the application of the system approach on an information system of an industrial company presented in this paper, we will extend the analysis and modeling methodology on the basis of different methods and languages.

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