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## USING METHODS AND APPROACHES IN IS PLANNING AND REQUIREMENTS ANALYSIS

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**ABSTRACT:** After a presentation of different methods and approaches used to enhance participation in Information System (IS) planning and requirements analysis, we present the Logical Framework Approach (LFA) also referred to as Objectives Oriented Project Planning (OOPP) and how to refine it into TeamUP. In fact, the OOPP method constitutes a tool of a global systemic modelling enabling to analysis a complex situation by a hierarchically decomposition until reaching an elementary level allowing an operational planning. Some applications of the OOPP method in Tunisia are presented.

**KEYWORDS:** Strategic Planning, OOPP method, Problem tree, Objective tree

### ❖ INTRODUCTION

The purpose of this paper is to introduce the different methods and approaches used to enhance participation in Information System (IS) planning and requirements analysis. We review some methods and approaches here because we think them to be fairly representative of the general kinds of methods and approaches in use. The methods include Delphi, focus groups, Structured Analysis Design Technique (SADT), multiple criteria decision-making (MCDM), and total quality management (TQM) and the approaches include Future Search, Open space, SWOT (Strengths, Weaknesses, Opportunities and Threats) and ZOPP/OOPP/LFA. These different approaches are in use to define the strategic objectives.

The objective of the Delphi method [1] is to acquire and aggregate knowledge from multiple experts so that participants can find a consensus solution to a problem.

A second distinct method is focus groups (or focused group interviews) [2]. This method relies on team or group dynamics to generate as many ideas as possible. Focus groups been used for decades by marketing researchers to understand customer product preferences

MCDM [3] views requirements gathering and analysis as a problem requiring individual interviews. Analysts using MCDM focus primarily on analysis of the collected data to reveal users' requirements, rather than on resolving or negotiating ambiguities. The objective is to find an optimal solution for the problem of conflicting values and objectives, where the problem is modeled as a set of quantitative values requiring optimization.

TQM is a way to include the customer in development process, to improve product quality. In a TQM project, data gathering for customers needs, i.e., requirements elicitation may be done with QFD [4].

The SADT method [5] represent attempts to apply the concept of focus groups specifically to information systems planning, eliciting data from groups of stakeholders or organizational teams. They are characterized by their use of predetermined roles for group/team members and the use of graphically structured diagrams. SADT enables capturing of a proposed system's functions and data flows among the functions.

The approaches of strategic planning have some principles in common: a belief that the future can be changed and is not pre-destined and a belief that the whole system, which is all significant stakeholders, should be involved in the process of defining the desired future.

The approaches differ in several ways and each has its strengths and weaknesses. For example, the focus on present problems and problem analysis found in the LFA (Logical Framework Approach) [6] can lead to groups getting bogged down in the negative feelings of persistent problems or in trying to

apportion blame for the problems to a particular part of the organization. This is often not conducive to resolving the situation. However, there are occasions where it is vital to identify the cause of a problem if a cure for that problem is to be found.

In practice, combinations of these approaches may be used. For example, the initial step might be a future search conference to define the strategic objectives. The second step might be to use part of the LFA approach to examine alternative strategies to achieve those objectives and to produce the detailed plans and to test their validity.

Future search is a structured planning meeting that makes possible actions once thought beyond reach in large, diverse groups. These include projects and programs based on new forms of cooperation devised by participants. This approach is popular in non-business communities. In Future search the emphasis is to "leap forward" in time to identify the desired future condition and work back to find ways to reach that situation.

Open space was a precursor to Future search. It is far less structured than most other methods. There is no preset agenda other than the topic previously agreed to and the time allotted to the meeting. There are no planned panel discussions and no plenary sessions. The agenda is created through the facilitator inviting everyone present to nominate issues that he or she feels strongly about and is prepared to take responsibility for.

The approach SWOT is popular in business environments. It seeks to identify what the organization is currently doing well (Strengths), what it is not doing well (Weaknesses), what market conditions can be exploited to advantage (Opportunities) and what factors, internal and external can derail the organization's efforts (Threats).

This paper can be loosely divided into three parts. First, we present the strategic planning, and we present the issues involved in defining the strategic objectives. In order to deal with these issues, we present the case study of the Logical Framework Approach (LFA). The last section concludes the article, presenting likely some attempts to refine the LFA approach.

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#### ❖ PRESENTATION OF STRATEGIC PLANNING

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Strategic, or long term planning, is an attempt to shape the future. This implies that some vision of the desired future is has to be formulated. Strategic planning therefore starts by seeking to define this vision [6]. The current approach to strategic planning assumes that it will be a collaborative process, rather than one person deciding what the vision and goals should be. The strategic plan will define a small number, usually less than ten, of strategic objectives, which, if they are met will result in achieving the goal of the group or organization.

Organizations plan strategically with a number of expectations for example:

- ❖ To increase their probability of survival.
- ❖ To improve their competitive position.
- ❖ To increase their market share.
- ❖ To plan mergers and acquisitions.
- ❖ To help the organization better manage the effects of external forces.
- ❖ To motivate key people within the organization.
- ❖ To plan a quantum leap to a new phase of company growth.
- ❖ To plan for renewal and to consider to a new direction for the organization.

The planning process is the sequence of steps the group go through to produce the plan [7]. For example:

- ❖ Articulate the core values of the planning group.
- ❖ Develop a mission statement.
- ❖ Develop a vision statement.
- ❖ Determine the strategic objectives.
- ❖ Define the main activities and responsibilities.
- ❖ Disseminate and implement the plan.
- ❖ Monitor results and amend the plan as required.

The essential features of a process are:

- ❖ There are several steps; each step will involve a number of activities.
- ❖ All steps must be executed.
- ❖ The steps must be executed in the correct order.
- ❖ If the order is incorrect, or if any step is compromised, all following steps of the process will be compromised.

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#### ❖ LOGICAL FRAMEWORK APPROACH (LFA)

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The Logical Framework Approach (LFA), also referred to as Objectives Oriented Project Planning (OOPP) and in German as Ziel Orientierte Projek Planung (ZOPP) [8][9][10] is a structured meeting

process. This approach seeks to identify the major current problems using cause-effect analysis and search for the best strategy to alleviate those identified problems.

The two terms Logical Framework (Logframe) and the LFA are sometimes confused. The LogFrame is a document; the LFA is a project design methodology.

The logical framework document is a 4 column by 4 row matrix. The cells of the matrix contain text that succinctly describes the most important features of a project. If the correct process was used to develop the content of the logframe, the document will reveal the quality of the design and make flaws readily apparent.

We might note that one common misuse of the logframe is to design the project first and attempt to "fill in" the logical framework matrix as an after thought. This defeats the whole purpose of the logical framework and the design methodology.

There is a logical connection between the cells of the matrix. The logic that connects the cells in the left most columns is referred to as the vertical logic; the logic that connects the remaining three columns is referred to as the horizontal logic. The vertical logic is the hierarchy of objectives of the project. The horizontal logic is rather more involved. For a given level of objective (equivalent to a horizontal row of cells) the horizontal logic describes:

- ❖ How the achievement of the objective will be measured or verified.
- ❖ How this information will be obtained.
- ❖ What are the external factors that could prevent the project manager and staff from achieving the next level objective?

#### ❖ DESIGN METHODOLOGY OF LFA

The design methodology of LFA is a rigorous process, which if used as intended by the creators will impose a logical discipline on the project design team [11]. If the process is used with integrity the result will be a high quality project design. The method is not without its limitations, but most of these can be avoided with careful use of ancillary techniques. Many things can go wrong in the implementation phase of a project, but if the design is flawed, implementation starts with a severe handicap.

The first few steps of LFA are [12][13]: situation analysis; stakeholder analysis; problems analysis.

The document of "Situation Analysis" describes the situation surrounding the problem. The source could be a feasibility study, a pre-appraisal report, or be a compilation done specifically for the project design workshop. Typically, the document describes the problem situation in detail, identifies the stakeholders and describes the effects of the problems on them.

The stage of "Stakeholder or Participation Analysis" is an analysis of the people, groups, or organizations that may influence or be influenced by the problem or a potential solution to the problem. This is the first step to understanding the problem. We might say, without people or interest groups there would be no problem. So to understand the problem, we must first understand the stakeholders. The objectives of this step are to reveal and discuss the interest and expectations of persons and groups that are important to the success of the project.

If there is no agreement between participants on the statement of the problem, it is unlikely there will be agreement on the solution. This stage of "Problem Analysis" therefore seeks to get consensus on the detailed aspects of the problem [8].

The first procedure in problem analysis is brainstorming. All participants are invited to write their problem ideas on small cards. The participants may write as many cards as they wish. The participants group the cards or look for cause-effect relationship between the themes on the cards by arranging the cards to form a problem tree (Fig.1).

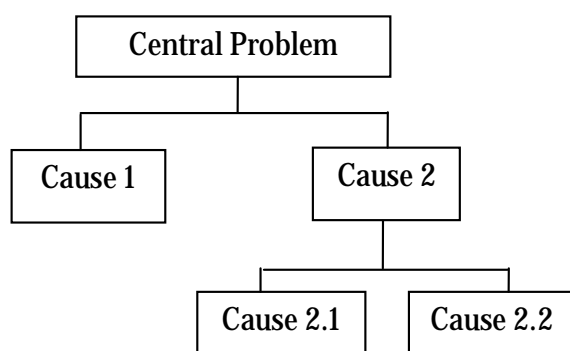


Figure 1. Problem tree

In the step of "Objectives Analysis" the problem statements are converted into objective statements and if possible into an objective tree (Fig.2). Just as the problem tree shows cause-effect relationships, the objective tree shows means-end relationships [14] [15]. The means-end

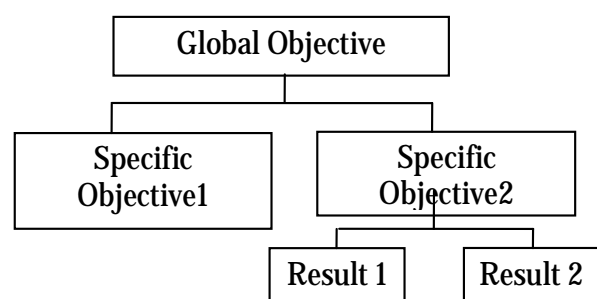


Figure 2. Objective tree

relationships show the means by which the project can achieve the desired ends or future desirable conditions. Frequently there are many possible areas that could be the focus of an "intervention" or development project. The next step addresses those choices.

The objective tree usually shows the large number of possible strategies or means-end links that could contribute to a solution to the problem. Since there will be a limit to the resources that can be applied to the project, it is necessary for the participants to examine these alternatives and select the most promising strategy. This step is called "**Alternatives Analysis**". After selection of the decision criteria, these are applied in order to select one or more means-end chains to become the set of objectives that will form the project strategy.

After defining the objectives and specifying how they will be measured (OVIs) and where and how that information will be found (MOVs) we get to the detailed planning phase: "**Activities Planning**". We determine what activities are required to achieve each objective. It is tempting to say; always start at the situation analysis stage, and from there determine who are the stakeholders.

#### ❖ LOGICAL FRAMEWORK DOCUMENT

The Logical Framework as a document (Table 1) is deceptively simple. There are 16 cells in a 4 column by 4 row matrix. To provide the text in the cells of the logframe (sometimes called the project matrix) the project designers are asked to address and answer a number of questions which, on the surface seem self evident. However, articulating the answers to these apparently self evident questions exposes many unstated assumptions and hypotheses.

The process of examining these unstated beliefs should cause them to be questioned more closely during the design of the project. This examination often reveals that the assumptions and hypotheses are often questionable. If we test these assumptions and hypotheses and return the results of our work to the project design, we should produce a higher quality design [16][17].

The term Narrative Summary used to describe the text that "narrates" the objectives. It could have been given the title "Hierarchy of Objectives", but this might be misleading because the bottom cell in the column is a summary of the activities.

The Objectively Verifiable Indicators (OVIs) are the measures, direct or indirect that will verify to what extent the objectives have been fulfilled. The term "objectively" implies that if these should be specified in a way that is independent of possible bias of the observer.

The Means of Verification (MOVs) are statements that specify source of the information for the measurements or verification specified in the indicators column. For example, will statistics from an external source be used for the verification or will project resources be used to gather the statistics.

The External Factors (Assumptions) are important events, conditions, or decisions which are necessarily outside the control of the project, but which must remain favorable for the project objective to be attained. The implication here is the design team has an obligation to consider what might derail their efforts and to plan responsibly to reduce that risk of "derailment".

The Development Objective is the higher level objective that the project is expected to contribute to. The addition of the word "contribute" implies that this project alone is not expected to achieve the development objective. Other project's immediate objectives are expected to also contribute.

The Immediate Objective is the effect which is expected to be achieved as the result of the project delivering the planned outputs. There is a tendency for this to be expressed in terms of the "change in behavior" of a group, or institution and the project outputs are expected to facilitate this change.

The Outputs are the "deliverables" the tangible results that the project management team should be able to guarantee delivering. The objective statements should specify the group or organization that will benefit. Outputs are delivered, usually on a certain date or dates.

The Activities have to be undertaken by the project to produce the outputs. The activities take time to perform. The Inputs are the resources that the project "consumes" in the course of undertaking the activities. Typically they will be human resources, money, materials, equipment, and time.

The "Vertical Logic" is the reasoning which connects the three levels of objectives in the matrix; the outputs, the purpose, and the goal. For example achievement of all the output level objectives should lead to achieving the purpose. Each of these links between the objectives is connected by hypotheses.

Table 1. Logical framework document

Narrative Summary	OVIs	MOVs	External Factors (Assumptions)
Development Objective			
Immediate Objective			
Outputs (Results)			
Activities	Inputs		

The "Horizontal Logic" has similar features to the vertical logic. In this case, the links between the levels of objectives are the items in the External Factors column. For example, if the project is successful in implementing all of the planned activities, we ask ourselves, what circumstances or decisions (outside the project's control) could prevent the delivery of the project outputs.

#### ❖ REFINING THE LFA INTO TEAMUP

The LFA approach has become the standard for International development project design. Team Technologies expert staff assisted in the original method development and has continued to refine the approach into TeamUP: the team-based Logical Framework method. In fact, Team Technologies has worked with numerous international aid organizations to implement its Project Cycle Management method organization-wide based upon the LFA.

TeamUP developed in the late 1980s by the World Bank's World Bank Institute and Team Technologies, uses the basic ZOPP method and then expands it. TeamUP assumes that the past and future are two different sources on which to draw when designing and implementing project related events [18].

ZOPP, mainly concerned with anticipating and avoiding problem situations, looks to the past to understand the present. TeamUP, concerned with problems and opportunities, looks to the past and the future to understand the possibilities that offer themselves to the present. Furthermore, TeamUP adds depth to basic problem identification and design features by encouraging teams to anticipate implementation arrangements and inform the quality of their designs with these realities.

TeamUP's twelve steps are arranged so that earlier steps help a team build identity and later steps help them take action [19][20]. These twelve basic steps are: Opening round; Clarify representation ; Set norms; Identify client; Review history; Define mission; Define deliverables and assumptions; Clarify work plan; Define roles and responsibilities; Define learning system; Establish budget; Implement and improve.

The latest software from Team Technologies, integrates the most popular, proven set of tools for international development planning and implementation into an easy-to-use, windows based software application supporting program portfolios and their associated project. The modules of the software include Program and Project Information, Stakeholder Analysis, Trees Analysis, Program and Project Structure, Conflict Analysis, Logical Framework, Schedule, Performance Tracker, Performance Budget.

#### ❖ USING THE OOPP METHOD IN TUNISIA

The OOPP method, widely used in the planning of complex projects, involves many operators and partners. In Tunisia, The OOPP method was used in Development projects financed by bilateral or multilateral co-operation mechanism (with Germany, Belgium, Canada, World bank,...), in upgrading different structures (Training and Employment through MANFORME project, Organization of the Tunis Mediterranean Games 2001,...) and in restructuring private and public enterprises.

An effort has been provided in order to bring improvements to this method [21]. This is how the OOPP method has been spread and a new MISDIP denomination (Method of Specification, Development and Implementation of Project) was adopted. The MISDIP method adopts the OOPP analysis and the complete it to specify the system of organization, to specify the system of information, and to contribute to its development and implementation.

In order to specify this information, information matrix (Fig.3) associated to OOPP analysis was defined enabling the determining of the relations between the activities or between the concerned structures identify the information sources, determine the manner in which the information is exploited [21].

In addition of the information matrix of the new MISDIP method as well as the different tools developed, the development of the organization chart constitutes an essential stage. Indeed, variants of the organization chart are elaborated according to the strategy of the enterprise while taking account of the hierarchy of entities and the balancing of stations according to their complexity. These variants constitute a tool the decision making.

N°	Code	Activity	If <sub>1</sub>	If <sub>2</sub>	If <sub>3</sub>	If <sub>4</sub>	If <sub>5</sub>	If <sub>6</sub>	If <sub>7</sub>	If <sub>8</sub>	If <sub>n</sub>
1		A <sub>1</sub>	0	0	1	1					
2		A <sub>2</sub>		0	0		1	0			
3		A <sub>3</sub>	1	0	0	0		0	0	1	
4		A <sub>n</sub>									

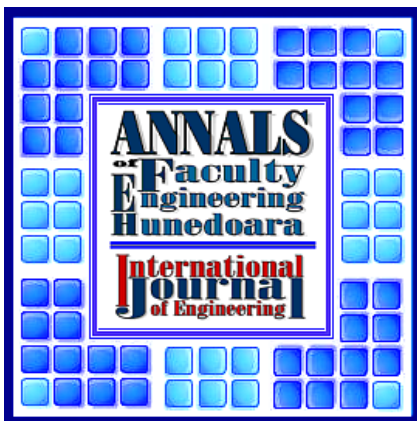
Figure 3. Information matrix associated to the OOPP analysis

## ❖ CONCLUSION

In this paper, we presented different methods and approaches used to enhance participation in IS planning and requirements analysis and the different approaches in use to define the strategic objectives. Many attempts are presented in order to refine the LFA approach. The methods LFA and TeamUP are described and commented and some applications of the OOPP method in Tunisia are presented.

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