A proposal plan to develop standard formal recruitment procedures for Project Interface

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APPROVED FOR THE DEPARTMENT OF MEXICAN AMERICAN GRADUATE STUDIES

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Humberto Hayo
Mauricio Horcas
A Proposal Plan to Develop
Standard Formal Recruitment Procedures for Project Interface

A Project
Presented to the Department of
Mexican-American Graduate Studies (ISSPA)
San Jose State University

Prepared in Partial Fulfillment of
the Requirements for the degree of
Master of Arts

Prepared by:
VÍCTOR GARZA
May 10, 1977
DEDICATION

A special dedication to my family, Ángeles, Cynthia, Víctor Gerardo, and Leticia for their unlimited patience, understanding, and support in assisting me to make this endeavor a reality. Words can be but mere symbols of expression of the boundless gratitude I owe such a beautiful family.

To my wife, Ángeles, a very special love and appreciation for her sacrifices and endearance during these very trying times. In truth, it is you my dear, who has experienced the pain and given me the spiritual courage and support to complete this project.
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I'd like to thank the following people for their assistance in making the final completion of this project possible:

Dr. Félix García, Jr.; Professor José Carrasco; Mr. Humberto Garza; and Mr. Mauro Chávez.
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INTRODUCTION

The need for supervised implementation of procedures relative to recruitment of prospective clientele is indicated by increased non-positive terminations at Project Interface, located in Santa Clara County, California. Project Interface is a state funded employment and training program specifically geared to offer manpower services to recently released ex-offenders. The program is in need of standard formalized recruitment procedures.

The recruiter is responsible for the recruitment of prospective clientele, but does not maintain standard formalized recruitment procedures by which to accomplish this function.

The development of standard formalized recruitment procedures could establish a systematic format by which to recruit prospective clientele and could be a significant determinant in increasing positive terminations and program success.

Introduction to the Problem

In generating the Project Plan, the project planner dealt with an interplay of detriments and benefits to formulate the following conflict:

Benefit: Why are formalized recruitment procedures necessary for recruiting potential clientele?

Detriment: Why does Project Interface use informal recruitment procedures?

Conflict: Why are informal recruitment procedures used in Project Interface when formalized recruitment procedures are essential in identifying potential clientele for program?
In summary, to reduce the non-positive terminations of the program, these two essential organizing principles were stated:

(1) Formalized recruitment procedures serves as a means for recruitment and selection of potential Project Interface clientele.

(2) Recruitment and selection of potential Project Interface clientele serves as a means for minimizing the rate of non-positive terminations.

Statement of the Problem

The problem of the project is to develop a proposal plan to formalize recruitment procedures to systematically recruit and to select clients for Project Interface.

The major step in the solution of the problem was to design a planning subsystem in the form of a research project consisting of the following:

(1) Work Breakdown Structure.

(2) Work Flow.

(3) Time Estimation.

(4) Schedule and Resource Allocation.

(5) Cost and Budget Estimation.
Purpose of the Project

Specifically speaking, the purpose of the project plan was to formulate a planning subsystem to design, to develop, and to implement a plan to standardize formal recruitment procedures to systematically recruit and select clients for Project Interface.

For example, by standardizing formal recruitment procedures, a new staff member could follow the systematize procedures and successfully recruit and select desirable clients for Project Interface.

Importance of the Project

One of the important means of achieving program success is the recruitment of clients who have the potential for completing Project Interface objectives.

In the project, successful recruitment denotes identification of desirable, marginal, and undesirable characteristics of each potential client. Furthermore, the non-positive terminations have an important impact on the success rate of the program and its clientele. Moreover, the effectiveness of Project Interface will insure continuous funding for the program.

Delimitation of the Project

The target group that the project planner addresses himself to in this project is the ex-offender:

(1) Who was recently released (30 days or less) from correctional institutions or from a community based facility.

(2) Who was subject to judicial, correctional, or probationary process, adults/18 years old to 65, and who are being paroled into Santa Clara County in the state of California.
DEFINITION OF TERMS

For the purpose of this project only, under the condition that all of these terms are related to the delivery of manpower services, such as recruiting, counseling, job placement, etc., the following terms are defined as general and operational definitions.

The general definition reveals the context used for daily general operating purposes at Project Interface.

The operational definition reveals the context used in specific operating purposes and specific conceptual project plans. These operational definitions were formulated by the project planner by extracting and by combining essential elements from the general definitions and the review of literature.

Client—in Manpower Planning For Local Labor Markets (1974, p. 314), denoted an individual using the services of an agency.

Operationally speaking, for the purpose of the project plan, Client denoted persons enrolled in a manpower program, receiving a stipend allowance, and awaiting job placement.

Continuous Funding—denoted the completion of contractual obligations as specified by The Title I Comprehensive Manpower Plan For The Fiscal Year. (1977).

Operationally speaking, for the purpose of the project plan, Continuous Funding denoted a constraint for the operation of the Project. For example, the state (California) had an agreement to fund Project Interface for one (1) year and a second year on an optional basis. The process that the state took in the funding for the second year was that they (state) waited until the end of the first fiscal year's contract to audit the pro-
gram. While the state is auditing the program and has not reached a decision on funding for the second fiscal year, 1977, the program has seriously been damaged by inferior recruitment, selection, job development, and job placement. Fortunately, the program has continued to exist through other funds for five (5) months.

Direct Placement—in Management Information System, Santa Clara Valley Manpower Board (1976, p. 2), denoted a participant who is placed in unsubsidized employment without receiving any services from the program.

Operationally speaking, for the purpose of the project plan, Direct Placement denotes a client who is job placed but did not receive a stipend for training compensation.

Formal—in Men Who Manage (1959, p. 237), denoted the use of explicit procedures to bar entry of undesirables.

Operationally speaking, for the purpose of the project plan, Formal denoted the establishment of explicit criteria by which to accept or reject prospective clientele.

Formal Recruitment Procedures—denoted the use of explicit procedures with specific objectives and a definite purpose for action.

Operationally speaking, for the purpose of the project plan, Formal Recruitment Procedures denoted the use of explicit procedures to assure systematize method of selecting and screening potential clientele.

Indirect Placement—in Management Information System, Santa Clara Valley Manpower Board (1966, p. 2), denoted a participant who is job placed in unsubsidized employment after receiving services and/or training from program.

Operationally speaking, for the purpose of the project plan, Indirect Placement denoted a client who is job placed in unsubsidized employment after receiving a minimum of two (2) weeks of vocational training services and a stipend for training compensation.
Non-Positive Termination—in Management Information System, Santa Clara Valley Manpower Board (1976, p. 3), denoted a participant who leaves the program for other than those listed under "placement or other positive termination, such as:

1. Laid Off
2. Health, Pregnancy
3. Transportation problems
4. Moved from area, refused to continue
5. Cannot locate
6. Administrative separation
7. Family care.

Operationally speaking, for the purpose of the project plan, Non-Positive Termination denoted a client who was not job placed within sixty (60) days after being put on job search. For example, when a client completes a training course, he or she automatically goes on job search and they need to be job placed within sixty (60) days or become a non-positive termination.

Placement—in Manpower Planning For Local Labor Markets (1974 p. 322), denoted the placing of persons on a job by an educational or employment agency.

Operationally speaking, for the purpose of the project plan, Placement denoted positive termination of a client who has successfully been hired into unsubsidized employment. For example, once an individual found on his or her own initiative, by referral of a subgrantee agency, or prime sponsor.

Planning Subsystem as utilized by Mauro Chávez in his project/thesis titled, "A Plan to Assess Leverage Points of Quadrant Units," (1975, p. 9),
denoted the component parts of Desmond Cook's model system for the planning and controlling of projects. The planning component provided the data and information base to be used by project operations. In its operational framework, the Planning Subsystem consisted of the following:

1. Project definition (Work breakdown structure).
2. Work Flow.
3. Time Estimation.
5. Cost and Budget Estimation.

Prime Sponsor--in Management Information System, Santa Clara Valley Manpower Board (1976, p. 7), "shall mean a unit of government, combinations of units of government, or a rural Concentrated Employment Program grantee, as set forth in 95.3, which has entered into a grant with the Department to provide comprehensive manpower services under Title I of the Act."

Operationally speaking, for the purpose of the project plan, Prime Sponsor denoted a funding control board made up of local (city and county) officials within Santa Clara County. The purpose of the control board is to approve, to reject, to increase, to cut-back, or to discontinue funding on existing or new manpower programs. Funds are funneled into the Prime Sponsor from the federal level for local manpower programs at the discretion of local officials.

Procedures--in The Power of Professional Management (1971, p. 81), denoted the use of delegation and control.

Operationally speaking, for the purpose of the project plan, Procedures denoted the forms of delegation and control with specific objectives and a definite purpose for action as formulated by standards to assure uniform compliance within the organization.
Recruitment—in Manpower Planning For Local Labor Markets (1974, p. 322), denoted going out into the community to offer manpower services to clients, rather than waiting for clients to come into an office.

Operationally speaking, for the purpose of the project plan, Recruitment denoted going to correctional institutions, or a community base facility to explain, offer, and consult about manpower services to potential clientele.

Selection—in A Decade of Manpower Development and Training (1973, p. 92), denoted that all programs are expected to serve all disadvantaged applicants.

Operationally speaking, for the purpose of the project plan, Selection denoted the use of formal criteria to systematize the process when screening applicants.

Success—in National Industrial Conference Board, Inc., (1969, p. 12), denoted that a program is measured by the retention rate and productivity of employees.

Operationally speaking, for the purpose of the project plan, Success denoted the efficient job placement of clients enrolled in the program in unsubsidized employment after receiving services and/or training.
ANALYTICAL DEFINITIONS

The following functional propositions were used to symbolize the relationship between functions of project terms. The key for translating analytical statements into symbols was:

a. f = function
b. R = related (or relation)

Analytical Statement

The function of standard formal recruitment procedures is related to the function of selecting desirable clients for Project Interface.

(1) Translation of analytical statement into symbols:
   a. SFRPPI = Standard formal recruitment procedures for Project Interface.
   b. SDC = Selecting desirable clients.

(2) Analytical formula:
   \( f(SFRPPI) \rightarrow f(SDC) \) or \( FRPPI \rightarrow SOC \rightarrow PTPI \)

Analytical Statement

The function of selecting desirable clients is related to the function of positive terminations for Project Interface.

(1) Translation of analytical statement into symbols:
   a. SDC = Selecting desirable clients
   b. PTPI = positive terminations for Project Interface.

(2) Analytical Formula:
   \( f(SDC) \rightarrow f(PTPI) \) or \( SDC \rightarrow PTPI \)

Analytical Statement

The function of positive terminations in Project Interface is related to the function of program success.
(1) Translation of analytical statement into symbols:
   a. PTPI = positive terminations for Project Interface.
   b. PS = program success

(2) Analytical Formula:
   \[ f(PTPI) \leq f(PS) \text{ or } PTPI \not\leq PS \]

Analytical Statement

The function of program success is related to the function of continuous funding.

(1) Translation of analytical statement into symbols:
   a. PS = program success
   b. CF = continuous funding

(2) Analytical Formula:
   \[ f(PS) \leq f(CF) \text{ or } PS \not\leq CF \]

Analytical Statement

The function of standard formal recruitment procedures is related to the function of positive terminations for Project Interface.

(1) Translation of analytical statement into symbols:
   a. SFRP = Standard Formal Recruitment Procedures.
   b. PTPI = positive terminations for Project Interface.

(2) Analytical Formula:
   \[ f(SFRP) \leq f(PTPI) \text{ or } SFRP \not\leq PTPI \]
RESEARCH QUESTIONS

From the analytical statements, the following research questions were formulated:

(1) What is the relationship between formalized recruitment procedures for Project Interface and selecting desirable clients?

(2) What is the relationship between the selection of desirable clients and positive terminations for Project Interface?

(3) What is the relationship between positive terminations in Project Interface and program success?

(4) What is the relationship between program success and continuous funding?

(5) What is the relationship between standard formal recruitment procedures and positive terminations for Project Interface?
HYPOTHESES

From the research questions the following qualitative hypotheses were formulated:

(1) There is a functional relationship between standard, recruitment procedures for Project Interface and the selection of desirable clients.

(2) There is a functional relationship between the selection of desirable clients and positive terminations for Project Interface.

(3) There is a functional relationship between positive terminations for Project Interface and program success.

(4) There is a functional relationship between program success and continuous funding.

(5) There is a functional relationship between standard formal recruitment procedures and positive terminations for Project Interface.
CHAPTER II

REVIEW OF LITERATURE

In researching literature relative to the project plan, the project planner found a limited variety of literature actually explaining and/or defining terms used within manpower programs such as Project Interface. The majority of literature encountered by the project planner relative to manpower programs were actually statistical, theoretical, and operational comparisons of successful and unsuccessful manpower programs.

The project planner, however, succeeded in encountering literature relative to the primary essential elements within the project plan.

According to William McNair Fox, (1963, p. 183), procedures are developed for the purpose of implementing objectives and for the formulation of standards by which one can benefit greatly from the experiences and theories of others.

Ruston S. Davar (1966, p. 118), however, stated that a standard procedure must be the result of adequate research and planning to serve a definite purpose and that some procedures need to be reviewed from time to time to meet the changing circumstances.

George S. Dively, (1971, p. 81), stated that standard procedures are forms both of delegation and of Control, on the other hand, William McNair Fox, (1963, pp. 182-183), revealed that a procedure is a specific prescription for action which is most useful for assuring uniform compliance throughout the organization.

According to Ernest Dale and L. C. Michelorn, (1966, p. 13), a combination of methods can be used for the selection of candidates and not rely too heavily on the basis of test results.
Rustom S. Daver, (1966 p. 312), however, states that the most valid and reliable test in the world could be of limited value if your selection ratio is very low and that genuine selection takes place when you have several candidates to choose among.

William McNair Fox, (1963 pp. 272-273), on the other hand, states that the selection criteria for screening applicants be formal so that all the personnel department use the same criteria in the selection process.

According to Melville Dalton, (1959 p. 237), states that besides providing correct communication channels and fixing responsibility, formal is the one sure avenue of exchange between enemies in the organization.

According to Garth L. Mangum and John Walsh, (1973 p. 75), skill centers and multi-occupational centers suffer from an insecure financial base and that all federally funded manpower programs, Skill Centers are subject to year-to-year appropriations and are affected by changing federal priorities in the funding of manpower programs.

According to the National Industrial Conference Board, Inc., (1969, p. 10), the success of any program is measured by the retention rate and productivity of your employees.

According to Manpower Planning for Local Labor Markets, (1974, p. 242), the visible or oral presentation to attract a planned target group of potential clients to manpower services.

According to Garth L. Mangum and John Walsh, (1973, pp. 33-34), for institutional trainees, "termination" could mean that a training-related or other job was secured.
SUMMARY

In researching the review of literature there was a diverse opinion of what standard procedures are and their purpose. According to William McNair Fox, procedures are the formulation of standards, whereas, Ruston S. Davar states that a standard procedure must be the result of research and planning. Dively states that standard procedures serve the purpose both of delegation and of control. On the other hand, William McNair Fox, states that a procedure is a specific prescription for action. Ernest Dale and L. C. Michelorn states that procedures are useful for the selection of candidates, whereas, William McNair Fox states that selection criteria be formal, while Melville Dalton states that formal is an avenue of exchange of correct communication between enemies in the same organization.
CHAPTER III

PLANNING THE PROJECT

In the preceding chapters the problem was stated, hypotheses were formulated and the literature was reviewed. The succeeding section employed Desmond Cook's project management model for the development of the planning and control subsystems for future implementation of the project.

Project Model

The major steps used to develop the planning subsystem included the following component parts:

1. Project definition or work breakdown structure;
2. Project work flow and graphical representation;
3. Project time estimation;
4. Project schedule and resource allocation plan activities;
5. Project cost estimation and budget preparation for proposed work.

PROJECT DEFINITION

The function of the Project Definition is to establish the boundaries of the project. The first step being a mission statement which contains the major goal of the project and a recognition of limits and constraints important to the project. The total effort is then subdivided into further sub-objectives which represent the major work units needed to accomplish the overall objective. These subsystems or objectives are further divided into a more detailed statement of work. The process of subdivision continuing to successively lower levels.
The boundaries of this project were established by developing a hierarchically ordered structure of the priority sub-objectives of the project plan, which reflect work that has to be accomplished to reach the overall goal of the project, of maximized positive terminations.

Statement of the Mission

Given the stated "delimitations of the project," to design, implement, and evaluate a program plan which will establish managerial procedures and administrative rules, to ensure the objective of the effective and efficient attainment of the priority goals of the project plan related to program success.

Definition of System Concepts

Workbreakdown Structure. In Cook's project model, workbreakdown structure denoted the product of the project definition phase. The workbreakdown structure defines the project tasks, or work to be performed, and establishes a relationship between the tasks and the major project objectives. The workbreakdown structure also established the framework for the scheduling and control of the project. It functions to establish a framework for summarizing the schedule and cost status of the project at progressively higher levels of management (see figure 1).

Work Flow. In Cook's project model, work flow denoted a work plan portraying in graphical manner the interrelationships and inter-dependency of tasks necessary to accomplish the objectives in the project definition.

Network. In Cook's project model, network denoted a graphical representation of interrelated tasks or activities that must be accomplished to reach the intermediate and final objectives of the project.
PROJECT PLAN FOR FORMALIZING STANDARD RECRUITMENT PROCEDURES WORKBREAKDOWN STRUCTURE

1. Formalize Standard Recruitment Procedures
2. Formalize Program Criteria
3. Establish Outreach Procedures
4. Contact Potential Clientele
5. Program Acceptance of Potential Clientele
6. Collect Data to Establish Criteria
7. Development of Criteria Guides for Recruitment
8. Contact Correctional Institutions
9. Set-up Informational Visitation
10. Obtain Authorization for Inmate Contact
11. Identify Potential Clientele
12. Establish Inmate Visitation Clearance
13. Collection of Enrollment Information
14. Assessment of Enrollment Information
15. Acceptance/Rejection of Potential Clientele
16. Inform Potential Clientele of Program Acceptance/Rejection

Figure 1
Time estimation. In Cook's project model, time estimation denoted the development of a time frame for the total project and the individual activities and events within the project. In this subsystem the most common terms used were:

1. **Earliest Event Time**: This term denoted the earliest expected time an event was completed and was further obtained by moving forward while adding activity time estimates along the various pathways in the network. This estimate was designated by the symbol \( TE \). (see figure 2)

2. **Time Optimistic (TO)**: This term denotes the minimal time in which an activity of the conceptual project plan would be accomplished based on the assumption that everything will go well (see figure 2)

3. **Time Pessimistic (TP)**: This term denotes the maximum time in which an activity of the conceptual project plan would be accomplished under the most adverse conditions (see figure 2)

4. **Time Realistic (TR)**: This term denotes the actual time in which an activity of the conceptual project plan would be accomplished under normal circumstances, and includes some success and failure in carrying out the activity (see figure 2)

Scheduling. In Cook's project model, scheduling denoted the translation of the developed plan into a time table, showing the calendar dates for the start and completion of work (see figure 6)

Resource allocation. In Cook's project model, resource allocation denoted the translation of the accepted work flow into a schedule by the assignment of resources necessary for accomplishing the planned activities. Establishing the needed resource requirements for each activity and the total project
# Tabular Description for Time Estimation of Activities for the Project Plan

## Activities

<table>
<thead>
<tr>
<th>Code</th>
<th>Activities</th>
<th>Preceded by</th>
<th>Succeeded by</th>
<th>to</th>
<th>tr</th>
<th>tp</th>
<th>te</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Interview recruiters to collect information to establish guides for standardized recruitment procedures</td>
<td>C</td>
<td></td>
<td>3.5</td>
<td>5.5</td>
<td>8.0</td>
<td>5.58</td>
</tr>
<tr>
<td>B</td>
<td>Contact correctional institutions</td>
<td>D</td>
<td></td>
<td>3.25</td>
<td>5.0</td>
<td>7.50</td>
<td>5.13</td>
</tr>
<tr>
<td>C</td>
<td>Develop criteria guides for standardized recruitment procedures</td>
<td>A</td>
<td>F</td>
<td>12.0</td>
<td>16.0</td>
<td>20.0</td>
<td>16</td>
</tr>
<tr>
<td>D</td>
<td>Set-up informational visitation</td>
<td>B</td>
<td>E</td>
<td>8.0</td>
<td>10.0</td>
<td>14.0</td>
<td>10.33</td>
</tr>
<tr>
<td>E</td>
<td>Obtain authorization for inmate contact</td>
<td>D</td>
<td>F</td>
<td>.08</td>
<td>.13</td>
<td>.25</td>
<td>.14</td>
</tr>
<tr>
<td>F</td>
<td>Identify potential clientele</td>
<td>C, E</td>
<td>G</td>
<td>.05</td>
<td>.08</td>
<td>.12</td>
<td>.08</td>
</tr>
<tr>
<td>G</td>
<td>Establish inmate visitation clearance</td>
<td>F</td>
<td>H</td>
<td>.33</td>
<td>.42</td>
<td>.50</td>
<td>.42</td>
</tr>
<tr>
<td>H</td>
<td>Collect enrollment information</td>
<td>G</td>
<td>I</td>
<td>.25</td>
<td>.37</td>
<td>.50</td>
<td>.36</td>
</tr>
<tr>
<td>I</td>
<td>Assess enrollment information</td>
<td>H</td>
<td>J</td>
<td>.28</td>
<td>.32</td>
<td>.38</td>
<td>.32</td>
</tr>
<tr>
<td>J</td>
<td>Accept/Reject potential clientele</td>
<td>I</td>
<td>K</td>
<td>.05</td>
<td>.08</td>
<td>.12</td>
<td>.08</td>
</tr>
<tr>
<td>K</td>
<td>Inform potential clientele of program acceptance/rejection</td>
<td>J</td>
<td>L</td>
<td>.08</td>
<td>.13</td>
<td>.25</td>
<td>.14</td>
</tr>
<tr>
<td>L</td>
<td>Project Plan for standardized recruitment procedures completed</td>
<td>K</td>
<td></td>
<td>27</td>
<td>38</td>
<td>.51</td>
<td>38</td>
</tr>
</tbody>
</table>

**KEY:**
- .25 = 15 Minutes
- .50 = 30 Minutes
- .75 = 45 Minutes
- 1.0 = 1 Hour

**KEY:**
- o = optimistic
- r = realistic
- p = pessimistic
- e = estimated

**FORMULA:**

\[
(1)to + 4tr + (1)tp = \text{te}
\]

\[
\frac{6}
\]

Figure 2
is a necessary prerequisite for budget preparation. Resource allocation generally refers to personnel needs (see figure 7).

Cost estimation and budget preparation. In Cook's project model, cost estimation and budget preparation denoted the management plan for operating and financing the project during a specific time period. It is a predetermined detailed plan of action developed and distributed as a guide to current operations, and used as a partial standard for evaluating performance. In this subsystem, the most common terms used were:

1. **Direct costs**: This term denoted those costs that were directly traced to or associated with a particular activity or task in the project.

2. **Work packages**: This term denoted the individual components of the workbreakdown structure.

**WORK FLOW**

The function of the work flow is to develop a graphical representation (flow graph) of the logical sequence of the activities and events necessary to accomplish the objectives identified in the project definition (see figure 3).

**Rules for Work Flow Plan**

The project definition was used as the primary basis for network construction by using a backward approach to move from a general to a specific case. This was done by identifying the major end items and working backwards to reach the eventual starting point.

The type of network used in the project was the event-oriented network. In the event oriented network, the primary concern is the occurrence of events. Moreover, the identification of events and the order of their occurrence made use of the PERT method (see figure 3).
Definition of Symbols and explanation

- Activities. Activities are the individual tasks or jobs which must be done to reach an objective. An activity represents both the time and work effort needed to accomplish an objective. Activities may represent a process, a task, a period of waiting, mental or physical work, a constraint, or a combination of these things. The accomplishment of an activity should represent the accomplishment of a task in the total hierarchy of work outlined in the project definition.

- Events. Events represent points of accomplishment in the network. Consequently, they do not consume either time or resources. An event usually represents the start or end of an activity. An event either exists or does not exist, since it must represent a clearly definable point of occurrence. Events are labeled with terms such as "start" or "complete", "begin" or "end", or any other set of words that denotes the initiation or completion of work.

- Milestone Event. A milestone event is a special event which represents the accomplishment of a major piece of work such as the accomplishment of a work package or a major objective.

- Critical Path. The critical path represents the most time consuming pathway in the network.

- Activity Time Estimate. Represents the time estimate for each activity.
WORK FLOW PERT CHART

KEY:  
- - - - - > = Critical Path Activities

--- --- > = Activities

○ = Events

□ = Milestone Events

TE = Time Estimate

* (Refer to figure 2)

Figure 3
TIME ESTIMATION

The function of the time estimation is to provide information regarding estimated total project completion time. The development of a time frame for the total project and the individual activities and events within the project.

This was done by providing information regarding the estimated individual activity time, total project completion time, the earliest and latest completion time.

Pre-planning Rules and Procedures

One of the principal rules in the starting point for time estimation involved the accessibility of work packages and activities in the project. Furthermore, a well defined and logically arranged work flow plan served as a valid basis for calculating the time estimates. In this project, the time estimates were calculated within the work flow primarily on a random basis. According to Cook (1971, p.109), this procedure prevents "individuals from adjusting their estimates for activities which come later in the project because of estimates made for tasks that come earlier."

Moreover, since this project was of long duration, the rule was not to provide details in the network to secure time estimates. Cook, for example, recommended that a project work unit could move through each succeeding work phase and provide additional details in the network as the work progressed.

Earliest Event Time

The calculation of the earliest expected event time for the project, which was designated by the symbol TE to distinguish it from the activity time estimate (te), was obtained by moving from left to right in the net-
work, adding the activity time estimates along the various pathways.

The project network showing calculations of earliest event time can be illustrated as follows:

![Project Network Diagram](image)

- **te** = Time Estimate
- **Key:** [Critical Path Activities](#)
- **= Activities**
- **= Events**
- **= Milestone Events**

**Figure 4**
HISTOGRAM MANPOWER LEVEL CONCEPT

Key: = Staff Load Capacity Criterion

Figure 5
SCHEDULING AND RESOURCE ALLOCATION

Given the condition of a set starting date, the function of this section is to establish a schedule for the project by translating the planned schedule derived from the time estimation into specific calendar dates for the initiation and completion of work compatible with resource availability and other known or stated constraints.

The planned schedule, which is generated as an output of the scheduling process, enables the program director to judge event progress and forecast a date of completion.

Additionally, the concept of resource allocation is closely associated with the concept of scheduling. Once the work flow or plan is accepted, it is translated into a schedule by the assignment of resources (personnel) which will accomplish the planned activities.
Key: 1-3 = Schedule Operating Days

= Critical Path

= Non Critical Path

Figure 6
### TABULAR DESCRIPTION OF EVENTS, MANPOWER AND RESOURCES

<table>
<thead>
<tr>
<th>Activities</th>
<th>Persons</th>
<th>Manpower Hours</th>
<th>Personnel Cost</th>
<th>Rent and Utilities</th>
<th>Supplies</th>
<th>Communication</th>
<th>Travel Local</th>
<th>Printing + Advertising</th>
<th>Total</th>
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<td>11.18</td>
<td>21.75</td>
<td>10.54</td>
<td>828.94</td>
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</table>

**KEY:**
- **1 Staff = Project Director**
  - Year Salary = $17,000.00
  - Hour Rate = $8.17
- **1 Staff = Recruiter Counselor**
  - Year Salary = $9,500.00
  - Hour Rate = $4.57
- **1 Staff = Counselor**
  - Year Salary = $12,000.00
  - Hour Rate = $5.77
- **1 Staff = Job Developer**
  - Year Salary = $12,000.00
  - Hour Rate = $5.77
- **1 Staff = Clerical**
  - Year Salary = $7,500.00
  - Hour Rate = $3.61

*Refer to the following page for key categories:

1. Rent and Utilities
2. Supplies
3. Communication
4. Travel Local
5. Printing and Advertising

Figure 7
Rent and Utilities

Key: $5,040.00  rent and utilities per year
     840.00  rent and utilities per staff per year
     .40  rent and utilities cost per hour per person

Supplies

Key: $900.00  supplies per year
     150.00  supplies cost per staff per year
     .07  supplies cost per hour per person

Communication

Key: $2,100.00  communication cost per year
     350.00  communication cost per staff per year
     .17  communication cost per hour per person

Travel-Local

Key: $4,160.00  travel-local cost per year
     693.33  travel-local cost per staff per year
     .33  travel-local cost per hour per person

Printing and Advertising

Key: $2,025.00  printing and advertising cost per year
     337.50  printing and advertising cost per person per year
     .16  printing and advertising cost per hour per person
Project Interface
489 South Almaden Avenue
San Jose, California
95110

BUDGET SUMMARY

1. Project Title: Project Interface
2. Funding Agency: Santa Clara Valley Employment and Training Board
3. Total Time: 38.58 hours
4. Dates:
   From July 11, 1977 to July 13, 1977

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<th>Category</th>
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<th>Project Interface Contribution</th>
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<td>2. Rent and Utilities</td>
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<td>4. Communication</td>
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<td>5. Travel Local</td>
<td>21.75</td>
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</tr>
<tr>
<td>6. Printing and Advertising</td>
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<tr>
<td><strong>TOTAL COSTS</strong></td>
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Figure 7.1
COST ESTIMATION/BUDGET PREPARATION

The function of the cost estimation/budget preparation is to generate cost estimates and a budget or future expenditure plan which provides for the necessary funds needed to accomplish the program as outlined and established, and to provide a basis for future decisions as well as control of current expenditures.

An Administrative Approach to Budgeting

With the development of project management systems for the planning and controlling of time in research and development projects, attempts to integrate both time and cost were begun. The integration of cost resulted in a new method of budgeting. The essential feature of the new budgeting procedure is the shift in emphasis from inputs to outputs. The relation of cost to work to be accomplished is now heavily emphasized.

The basic vehicle in the planning and controlling of costs becomes the project definition or work breakdown structure. The work breakdown structure identifies several major components of work leading to the accomplishment of the final objective. Each of these major components is further divided into components called work packages. Direct costs are charged only to work packages. This procedure is related to direct costs, and there remains the question of indirect costs. Several methods can be used to handle indirect costs. The method used in this project was that of determining the direct cost figure and then adding a fixed percentage for indirect costs. Although the work package is the basic costing unit, the indirect cost may be totally attributed to the entire project. A more detailed budget is further prepared by identifying the work package and indicating the type of personnel required for the work, using a
rate figure for their services and the amount of time they are needed. These two items are multiplied to secure a total cost figure.

A major advantage of the work package and activity costing method lies in its development of an enumerative cost model. Various costs are directly related to specific activities and periods of time. This permits the integration of time-cost relationships in control reports, and gives the project manager a clearer picture of the project's status. The work package costing method also breaks a complex project into units which are easier to visualize.

The estimates of hours and wages required to accomplish the work packages are based on the author's own judgements as developed from his own observations and experience and are not a result of any scientific study or data analysis, but rather are very subjective estimates. For actual application, the author recommends that expert or specialized consultation be sought in determining verifiable and proven estimates of time and cost needed to carry out the work packages.
## Summarization of Work Package Cost Estimates

For Total Project Cost

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<tr>
<td></td>
<td>3.87</td>
</tr>
<tr>
<td></td>
<td>.51</td>
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</tbody>
</table>

* (See figure 1 for work package identification)

Figure 8
Implementation of Action

The function of this subsystem is to provide a means of implementing administrative decisions, revising plans, and developing modified data/information base.

Once the administrator has decided upon a course of action, it must be communicated to the staff and other members involved in the project. Necessary adjustments should be made in the project definition, work flow, schedules and resource allocation as well as budget.

Finally, management should institute follow-up procedures to ensure that the decision has been incorporated and the necessary adjustments have been made.
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CHAPTER IV

SUMMARY AND CONCLUSIONS

This summary reviews the principal points in the preceding chapters and also presents the project planner's recommendations together with suggestions for future implementation and evaluation of the project plan while in actual operation.

The purpose of the project plan was to design, develop, and conduct a research study of operating principals relative to standard formal recruitment procedures for Project Interface.

The major steps employed were Cook's Project Management model to develop a planning subsystem composed of a:

1. Project Definition.
2. Work Flow.
3. Project Time Estimate.
5. Project Cost Estimate.

These components served a function in the planning subsystem as follows:

1. The project definition developed an order structure of major and subordinate objectives which provided the work to be accomplished by the project administrator.

2. The work flow developed a graphical representation of the sequence of activities and events necessary to accomplish the objectives established in the project definition.

3. The time estimation subsystem provided a time frame for the individual activities and events in the project. In this project the
planning calendar showed total project completion time to three (3) days.

4. The scheduling and resource allocation plan served to establish the project schedule which was transformed into specific calendar dates. Furthermore, an estimate of resource availability was made as well as the resource time required to complete each activity of the project.

5. The specific total cost estimate for each work package as well as the total cost estimate for the total project.

PERT procedures were employed to plan major activities and events in the project plan.

In conclusion, the planning system described in the project plan served as the date and information base for operations in the control subsystem.

RECOMMENDATIONS

In order to implement the project plan, a control subsystem must be developed to generate effective standards or criteria against which actual performance can be evaluated.

Secondly, a monitoring procedure must be developed in order to compare performance to the evaluation standards established by the planning component. In doing so, evaluation reports to the project administration would be essential in measuring and reporting on actual operating performance. For example such reports would give the project administration necessary information on the present status of the project in terms of time, cost and performance. Furthermore, the control system would identify any deviation from the plans, thus causing the project administration to take corrective actions.


