

# **SAVE PROCEEDINGS**

# **1974**

**CONFERENCE**

**NORTH CENTRAL REGION**



**SOCIETY OF AMERICAN VALUE ENGINEERS  
DETROIT METROPOLITAN CHAPTER**



ORGANIZATION ANALYSIS MADE EASY

BY

THEODORE C. FOWLER  
CONSULTANT, PRODUCT PLANNING  
ARLINGTON HEIGHTS, ILLINOIS

AND

BRIAN HIGGINS  
INDUSTRIAL ENGINEERING MANAGER  
CHICAGO, ILLINOIS

## ABSTRACT

The world's largest corporation has 811,000 employees. The Fortune 500th has 542.

A prime concern of the top managers of both of these companies, in fact of any organization is simply, "are all these people working toward my company's objectives?"

Functional Administrative Technique (F.A.T.) helps to resolve this concern by presenting to the top manager a comprehensive image of his payroll in terms of people, functions, and costs.

Hierarchies being what they are, feel that when the organization has "people" problems, usually embark upon a program of "communication and motivation,"

COMMUNICATE the company objectives  
to the employees  
MOTIVATE the employees to work  
toward these objectives.

Now, unfortunately, both communication and motivation are abstract concepts; and by the time Employee Relations, Information Systems, the Union, and the company psychologist have implemented their plans, the top manager is left with his prime concern not completely solved, and the payroll is even fatter.

This is not surprising. They are facing the nearly incomprehensible problem of analyzing a complete company payroll.

Does it really make sense to analyze a whole payroll? It might appear more useful to concentrate on the cost of direct labor in specific company products.

Indeed, throughout business and industry, cost reduction of labor operations, products, systems, and procedures is a firmly established way of life.

## TWO COURSES FOR MANAGEMENT

Rising prices and material shortages leave managers only two options: Increase prices or seek more economical designs. Either approach can damage a product or service in the marketplace. A price increase saddles the product

with an immediate competitive disadvantage. A design change all too often results in unforeseen changes in customer acceptance.

A design change, further, attacks only direct labor which represents less than 10% of the cost of most products.

By comparison, Standard and Poors reports that total labor cost, that is, TOTAL COMPANY PAYROLL, is typically 30% of total product sales. No other single homogeneous product cost element even approaches these proportions.

Is it possible to develop a single integrated technique for attacking this massive target?

Restating the question creatively in terms of George M. Prince's "Synectics", we have a wish:

WISH: "Develop a method to provide managers with a comprehensive and comprehensible image of their payroll in terms of people, functions, and costs."

The comprehensive part is easy. For years the computer people have been developing ever-more-comprehensive Management Information Systems (M.I.S.). The comprehensible part is tougher. As the M.I.S. grows in complexity, its output reports make greater use of condensation and shorthand. Few top managers can or should spend the time to fully comprehend their M.I.S.

## VALUE ANALYSIS

The challenge, then, is to present the complex people-function-cost data in a form which can be quickly assimilated by a busy top manager.

Value Analysis provides us with just such a system. It is called FUNCTION-COST and it presents a complete and easily understood image of anything in terms of parts, functions, and costs. A complete Value Analysis effort, of course, involves far more than simple FUNCTION-COST. It is essentially a unique problem viewpoint being at the same time both fundamental and creative. A trained Value Analyst, operating with a well-structured low-key program typically returns five times his salary to the bottom line.

### FUNCTIONAL ADMINISTRATIVE TECHNIQUE (F.A.T.)

Value analysis, however, functions well only where a whole organization has been converted to its use. The relatively simple FUNCTION-COST technique costs little and requires very little training.

When FUNCTION-COST is applied to an organization, the process is called FUNCTIONAL ADMINISTRATIVE TECHNIQUE (F.A.T.) It is a four-step process:

- Step 1 "F.A.S.T. Diagram" the organization
- Step 2 List all employees and their salaries
- Step 3 Define the portion of each employee's time applied to each of the functions
- Step 4 Calculate the annual cost of each function

The F.A.S.T. Diagram presents the functions performed by the organization in a "tree-chart" form. Its basis is a format logic based on cause and consequence.

Figure 1 is the F.A.S.T. Diagram of a typical industrial organization. Note that it contains a verb-noun statement of every function performed by any employee from the president to the stock clerk.

The straightforward process of "costing" the F.A.S.T. Diagram is essentially a process of listing, allocating, and posting payroll cost elements.

#### COMPUTER OR HAND CALCULATOR?

With an organization of 5 to 10 employees, the process of costing the F.A.S.T. Diagram can be conveniently performed by hand. The computer is necessary, however, when the organization has 20 or more employees.

A computer printout of step 2 in the form of an indented "Bill-of-Employees", is shown in figure 2 on the following page.

The allocation of annual salaries to the functions being performed is the third step of the F.A.T. process.

One useful method for collecting this data is the worksheet shown in figure 3.

The process of combining the data from steps 1, 2, and 3 to define each of the FUNCTION-COSTS of the organization is shown schematically in figure 4.

This process is a relatively simple hand calculator job for an organization with 10 or so employees. It becomes prohibitively unwieldy with a larger organization. See figure 5.

Excerpts from the three F.A.T. computer printouts are shown in figures 6, 7, and 8. These reports are the usable output of the Functional Administrative Technique.

The top manager's concern as stated at the outset of this paper is "are all these people working toward my company's objectives?" With these three reports at his fingertips, he is uniquely prepared to respond to this question.

From report #1 he can learn at a glance how each of his employees is allocating his effort.

Report #2 presents the annual payroll cost in terms of the functions it performs.

Report #3 is an expanded version of report #2. Below each Function-Cost are listed all employees who contribute to it.

#### WISH FULFILLED

In a full Value Analysis program, the preparation of a Function-Cost structure is just the first step. It is always followed by a rigorous set of four formal steps: Analysis, Innovation, Syntheses, and Implementation.

In F.A.T., all the rigor is left to the top manager who uses the Function-Cost data. He must, of course, perform the equivalent of the four steps, but he is free to use his own methods. F.A.T. simply starts him off with unparalleled Cost-Function visibility.

We have fulfilled the Synectics "wish". We have "developed a method to provide top managers with a comprehensive and comprehensible image of their payroll in terms of people, functions, and costs."

#### MANY USES

Let's examine a simple case of the power of F.A.T. Reference to figure 8 reveals that the function "develop new ideas" costs the company \$47,000/year. The number of contributors to this function is actually 18. The figure 8 excerpt shows seven of them.

The core of this group consists of four R&D people; one engineer and three technicians. Now, one might expect that this function, "Develop new ideas", is the very reason for existence of an R&D group. In fact, summing of the percentage column reveals that only 48% of the effort of these four men is being applied to their prime function. Effectively, the company has only the equivalent of two full-time men "developing new ideas".

This may be a surprise or it may simply verify a previous conviction. It may result in a shift in assignment, a reduction in staff, or perhaps even the addition of another R&D man.

Whatever the decision, it will be based upon the top manager's new knowledge of the true potential of his human resources.

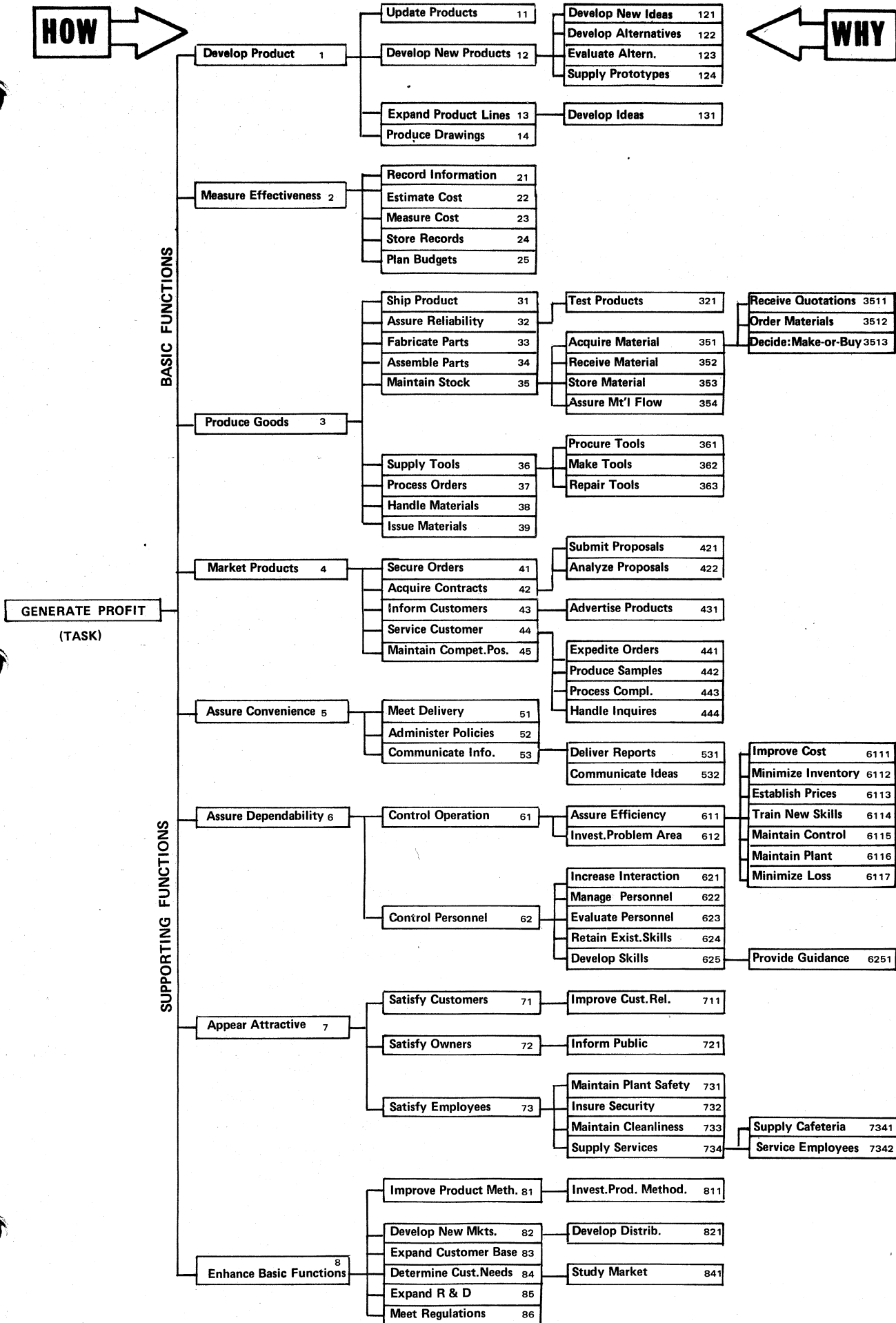


FIGURE 1  
PRELIMINARY F.A.S.T. DIAGRAM - XYZ DIVISION

BILL OF EMPLOYEES		XYZ DIVISION		PAGE 1
LEVEL	PG-LINE	DEPT.	EMPLOYEE	SALARY*
1	1-010	XYZ DIVISION	TOTAL	3,081,290
.2	1-020		PRES. - JOHN DELANO	42,000
.2	1-030		SECY. - LENA KELLER	8,700
.2	1-040	MANUFACTURING		1,828,057
..3	1-050		MFG. MGR. - DON KRAFT	28,650
..3	1-060		SECY. - SARA MASTERS	8,520
..3	1-070	IND'L. ENGG.		64,890
...4	1-080		CH. IE - FRANK ANDREWS	17,425
...4	1-090		IE - BILL WILLIAMS	13,650
...4	1-100		IE - LARRY KING	12,865
...4	1-110		IE - TOM LONG	13,450
...4	1-120		SECY. - PAT LONSON	7,500
..3	1-130	MFG. ENGG.		69,325
...4	1-140		ME MGR. - DAVE LEE	17,250
...4	1-150		LIAS. ENGR. - BILL DAVIS	13,450
...4	1-160		TOOL DES. - CARL MOSER	14,150
...4	1-170		DFTSMAN - ALEX PACK	12,125
...4	1-180		DFTSMAN - OTTO RUFF	12,350

Figure 2

F.A.T. Bill-Of-Employees (Excerpt)

\*Salary figures are generally privileged. They are entered directly into the computer from secure files, output reports are directed to the top manager only.

FUNCTION-COST ALLOCATION WORKSHEET		
NAME	<u>Tony Alonso</u>	TITLE <u>R &amp; D Engineer</u>
FUNCTIONS	AVERAGE HOURS/WEEK	%
<u>Develop New Ideas (121)</u>	<u>9.3</u>	<u>23.25</u>
<u>Develop Alternatives (122)</u>	<u>3.8</u>	<u>9.50</u>
<u>Evaluate Alternatives (123)</u>	<u>2.6</u>	<u>6.50</u>
<u>Supply Prototypes (124)</u>	<u>5.2</u>	<u>13.00</u>
<u>Develop Ideas (131)</u>	<u>4.2</u>	<u>10.50</u>
<u>Expand R &amp; D (85)</u>	<u>7.3</u>	<u>18.25</u>
<u>Produce Drawings (14)</u>	<u>2.8</u>	<u>7.00</u>
<u>Communicate Ideas (512)</u>	<u>1.0</u>	<u>2.50</u>
<u>Manage Personnel (622)</u>	<u>3.8</u>	<u>9.50</u>
	<u>Total</u>	<u>40</u>
		<u>100.00</u>

Figure 3

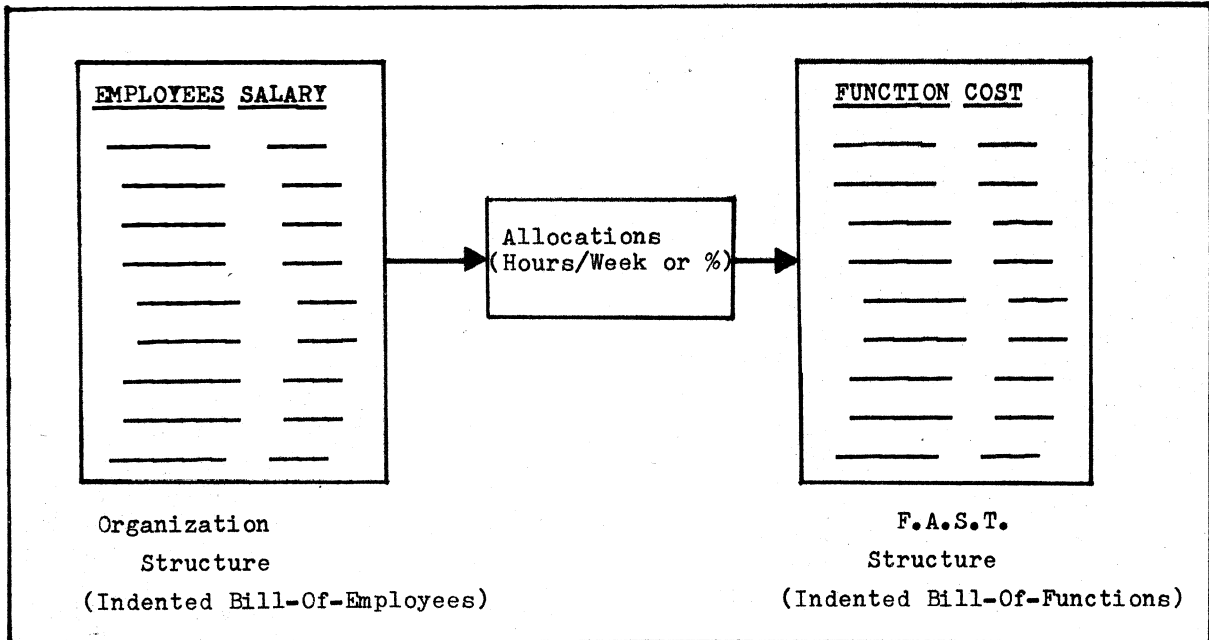


Figure 4

F.A.T. Data Flow

EMPLOYEES	AVE. NO. OF ALLOCATIONS PER EMPLOYEE	NUMBER OF FUNCTIONS	NUMBER OF FUNCTION-COST ELEMENTS TO CALCULATE		
			MULTIPLICATIONS	ADDITIONS	TOTAL
10	10	100	100	100	200
200	10	100	2000	2000	4000

FIGURE 5

Complexity of Calculations

ALLOCATED BILL		XYZ DIVISION		PAGE 24
LEVEL	PG-LINE	DEPT.	EMPLOYEE	SALARY OR %
...4	5-200	R & D	ENGR. - TONY ALONSO	17,200
		FUNCTION		
		121	DEVELOP NEW IDEAS	23.25
		122	DEVELOP ALTERNATIVES	9.50
		123	EVALUATE ALTERNATIVES	6.50
		124	SUPPLY PROTOTYPES	13.00
		131	DEVELOP IDEAS	10.50
		85	EXPAND R & D	18.25
		14	PRODUCE DRAWINGS	7.00
		512	COMMUNICATE IDEAS	2.50
		622	MANAGE PERSONNEL	9.50
...4	5-210	R & D	TECH. - FRED JOHNSON	13,750
		FUNCTION		
		121	DEVELOP NEW IDEAS	19.50
		122	DEVELOP ALTERNATIVES	9.50
		123	EVALUATE ALTERNATIVES	10.50

Figure 6

F.A.T. Report #1-Allocated Bill-Of-Employees (Excerpt)

SUMMARY FUNCTION-COST		XYZ DIVISION	PAGE 1
FUNCTION		COST	% OF TOTAL
1	DEVELOP PRODUCTS	324,858	10.54
11	UPDATE PRODUCTS	71,348	2.32
12	DEVELOP NEW PRODUCTS	169,334	5.50
121	DEVELOP NEW IDEAS	47,060	1.53
122	DEVELOP ALTERNATIVES	15,712	0.51
123	EVALUATE ALTERNATIVES	36,487	1.18
124	SUPPLY PROTOTYPES	70,076	2.27
13	EXPAND PRODUCT LINES	14,479	0.47
131	DEVELOP IDEAS	14,479	0.47
14	PRODUCE DRAWINGS	69,697	2.26
2	MEASURE EFFECTIVENESS	155,060	5.03
21	RECORD INFORMATION	99,512	3.23
22	ESTIMATE COST	21,799	0.71
23	MEASURE COST	11,336	0.37
24	STORE RECORDS	14,508	0.47
25	PLAN BUDGETS	7,905	0.26
3	PRODUCE GOODS	1,524,307	49.47
31	SHIP PRODUCT	26,985	0.88
32	ASSURE RELIABILITY	199,083	6.46

Figure 7

F.A.T. Report #2-Function Cost Report - Summary (Excerpt)

DETAILED FUNCTION-COST		XYZ DIVISION	PAGE 2
FUNCTIONS/CONTRIBUTORS		\$/YEAR	%
121	DEVELOP NEW IDEAS	47,059	1.53
	INDUSTRIAL ENGINEERING		
1-080	CH. IE - FRANK ANDREWS	435	2.50
1-100	IE - LARRY KING	643	5.00
	MANUFACTURING ENGINEERING		
1-170	DFTSMAN - ALEX PACK	1,213	10.00
	RESEARCH & DEVELOPMENT		
5-200	ENGR. - TONY ALONSO	3,999	23.25
5-210	TECH. - FRED JOHNSON	2,681	19.50
5-220	TECH. - JOHN KRAFT	9,690	71.25
5-230	TECH. - GENE CANDELLA	10,667	78.00

Figure 8

F.A.T. Report #3-Function Cost Report-Detailed (Excerpt)

A creative manager will find that F.A.T. will provide figures of true effective manpower by function. It will permit the creation of job descriptions by function. It will even permit budgeting by function.

In the broadest sense, the top manager is relating salary dollars to company goals.

In a multi-division company, he can compare the effectiveness of the various divisions. Where a man-for-man comparison would yield

little information as to relative effectiveness, the function structure provides a "common ground" for direct comparison.

#### A TECHNIQUE FOR TOP MANAGERS

F.A.T. is not Value Analysis. It borrows from the Value Analysts only their problem identification stage. It does not pretend to create and implement the alternate approaches which are the characteristic output of a Value Analysis project.



It does, however, totally avoid the major problem of most Value Analysis programs; the "selling" of change proposals.

The alternative approaches developed as a result of a F.A.T. effort are generated and implemented by the concerned top manager himself. He uses the managerial practices and problem solving techniques with which he is most comfortable.

He need learn no new techniques. His staff collects the data and runs the program. He uses the output reports to develop solutions to his problems.

What could be simpler!