Northwestern University

Volume IV: Appendices

Studies and Action Programs on the Law Enforcement Equipment R&D System

4. APPENDICES

The following documents are included in these appendices:

1. Data Analysis Instruments:
   a) For Issues:
      1) The Producer Research, Development and Engineering Process
      2) Marketing
      3) Information Transfer and Dissemination
      4) Need Identification
      5) Cooperation Between Users
      6) Funding and Budgeting
      7) The Acquisition Process
      8) Installation, Utilization, Maintenance and Assessment
   b) For Products:
      1) Product Information
2. Interview Instruments:
   a) Main Study:
      1) For Producers
      2) For Users
   b) Pilot Study:
      1) For Producers
      2) For Users
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      } one only given as sample.
   c) Interview Instrument for Patrolmen
3. Miscellaneous Items:
   a) Definition of Innovation
   b) Letter of Introduction
   c) Instructions to Interviewers
4. Vita:
   Michael Radnor

FRAMEWORK OF ANALYSIS FOR THE R, D & E PROCESS

General Statement of Issue

The R, D & E process refers to the technical innovation process in producer organizations, i.e., research, development, and engineering. Producers vary greatly in their ability and willingness to develop new products for the law enforcement field. Understanding these factors and the problems producers encounter in developing new equipment for L.E. users are necessary to develop policies designed to improve the equipment innovation process.

Sub-Issues

The R, D & E process in companies producing for the L.E. market can usefully be considered from the following perspectives:

1) Willingness to produce L.E. products
2) Ability to produce L.E. products
3) Funding for L.E. products
4) Project selection for new L.E. products
5) Specifications utilized in designing L.E. products
6) Problems encountered
7) Future plans

Sub-Issue #1: Willingness to Produce

Willingness to produce refers to the extent to which producers commit resources, i.e., manpower, funds, equipment, to develop and produce new products for the L.E. market.

Method of Analysis

1) Identify any competitive product lines in which the producer would like to get involved. (Response to PII 3)

TYPE FIRM	COMPETITIVE PRODUCT LINE
List ↓	Describe ↓

Comments:

2) To what extent is the producer willing to invest in R & D (response to PII 5, 6).

Willingness to invest in L.E. R & D

Type Firm	Low			High		
	Comparison with other fields (check one)					
	Lower	Same	Higher	Lower	Same	Higher
List ↓						

Comments:

Sub-Issue #2: Ability to Produce

Ability to produce refers to the capability of L.E. producers to identify, design, develop and produce new L.E. products.

Method of Analysis

1) Identify the extent to which R & D is common to L.E. and other fields (response to PII 7).

Type Firm	Extent of Common Effort			
	Major - Regular	Minor - Regular	Occasional	None

Comments:

2) Type R & D capabilities:

Type of Firm	Expertise of Staff	Org. Structure of R & D	Extent of Facilities
List ↓	Describe ↓	Describe ↓	Describe ↓

Comments:

3) Identify type, amount and, if possible, the approximate effort that went into developing the product a) at the outset and b) as an ongoing process (responses to PVII 2).

	Amount of Effort					
	Outset			Ongoing Process		
Type of Firm	Low	Intermediate	High	Low	Intermediate	High

Comments:

Sub-Issue #3: Funding

Funding refers to financial assistance received from external agencies for the purpose of developing new L.E. equipment.

Method of Analysis

Indicate sources of external funding assistance.

	Source of Fund*				
Type of Firm	State	Federal	Association	Other	How Fund Obtained

*(Check source(s), indicate amount if possible)

Sub-Issue #4: R, D & E Project Selection Criteria

R, D & E project selection criteria refer to the decision premises utilized by producers to choose projects that will lead to new products for the L.E. market.

Method of Analysis

1) Identify R, D & E project selection criteria utilized to evaluate

feasibility of product research (response to PVI 1) and decision participants (response to PVI 2).

Type of Firm	Decision Participant					Selection Criteria							
	Top management	R & D mgr.	Marketing mgr.	Production	Other:	Estimated R & D costs	Estimated production costs	Estimated marketability	Estimated market potential	Estimated development risks	Length of innovation cycle	Other	Other
List ↓													

Comments:

Sub-Issue #5: Product Design Specifications

Product design specifications refer to the design parameters for new L.E. products. This includes both specifications developed by the producer and those required by state and federal agencies.

Method of Analysis

1) Identify how performance specifications were developed for products (response to PVIII 2).

Type of Firm	Method of Developing Standards
List ↓	Describe ↓

Comments:

2) Utilization of state and federal standards in product design (response to PVIII 4) or controlling production (response to PVIII 5).

Type of Firm	Standards for Product Development		Standards for Controlling Production	
	State	Federal	State	Federal
List	Describe	Describe	Describe	Describe
↓	↓	↓	↓	↓

Comments:

Sub-Issue #6: Problems Encountered in Producing New L.E. Products

Problems encountered in producing new L.E. products refers to constraints on the innovation process and barriers encountered in efforts to produce new products. This knowledge will help pinpoint efforts to make the L.E. equipment innovation process more efficient.

Method of Analysis

1) Identify recurrent problems encountered during the R, D & E for new products (response to VII 4).

	Type Firm							
Problem Encountered	Large firm L.E. Div. 250		Large firm L.E. Div. 250-1000		Large firm L.E. Div. 1000 +		Small firm L.E. only	Small firm L.E. +
List								
↓								

Sub-Issue #7: Future Plans for Producing L.E. Products

Future plans for making L.E. products is self-explanatory. It is important to know the extent to which producers have plans to continue and expand efforts to develop L.E. products. This knowledge is important in determining the need for and type of incentives for L.E. equipment producers.

Method of Analysis

1) Identify scopes of future plans with respect to present product line (response to PIII 4, and/or PIII 3). Cite individual cases, identifying type of producer.

Framework of Analysis for Marketing

General Statement of Issue

The marketing analysis of innovative law enforcement equipment consists of three major sections, namely,

A - Market characteristics

B - Manner of distribution

C - Selling procedures

and will be done on each product type considered.

The market characteristics include the size of the market, competition or competitiveness of the market and the use of the product under consideration in other applications. The market is also characterized by the attractiveness of this market to both produce and sell products for this end use.

The manner of distribution will include not only direct sales and the necessary qualifications for the salesmen servicing this market, but all other means of distribution, such as catalog sales, manufacturer's representatives and the use of distributors.

The section on selling procedures will explore the allocation of marketing resources to reach the law enforcement market. The need for demonstrations, technical service and problems unique to serving the law enforcement field will be highlighted.

Sub-Issues

A - MARKET CHARACTERISTICS

1. Is the law enforcement field an attractive market for one's product? Are other markets more attractive or easier to sell to? Is it large enough for the necessary marketing effort that may be required to reach this market?

2. Is the law enforcement market very competitive? Are some areas of this market more competitive than others? Is it dependent upon the type of product you market?

3. What are the restraints imposed on the user which may restrict the selling of this product in other markets or for other applications?

B - MANNER OF DISTRIBUTION - Sub-issues

1. Are direct sales by a manufacturer's own sales force the main channel of marketing law enforcement equipment?

2. If not, what other means are utilized to sell products to this field.

3. Do salesmen have to be highly qualified in order to sell law enforcement equipment?

C - SELLING PROCEDURES - Sub-issues

1. How does the producer allocate his marketing resources for this product.

2. If the product is advertised, what types of media are used.

3. Are demonstrations an integral and vital part of the marketing process? Are trade shows utilized to expand the potential audience for these demonstrations?

4. Is the product line of law enforcement equipment illustrated in catalogs, brochures or other direct-mail media?

5. Is technical service a vital and necessary function if one is to market this product for law enforcement applications?

6. Do products need to meet user specifications?

7. What are the major marketing problems that one encounters when dealing with L.E. agencies?
   Does one usually have to submit a bid in order to obtain this business?

Method of Analysis - A. MARKET CHARACTERISTICS

(Producer Questionnaire)

PRODUCT PROFILE (IV-7,8; IV-6; V-2, X-2, 3, 6)

Type of Product

	Body Armor	Voice I.D.	Vehical Locator	Weapons Detectives	L.L. Photog. & Serveil.	Holsters	Non lethal Weapons	Portable Transceivers	Building Design	Court Recording
STOCK ITEM										
SPECIAL ORDER										
TOTAL SIZE OF MKT.										
% USED IN LE FIELD										
OTHER MAJOR MARKETS										

(Producer Questionnaire)

Incentive to enter the market (II-3,4,9,12; III-3; V-1,5; X-9; II-2,10)

MARKET OPPORTUNITIES FOR
(PRODUCT)

INCENTIVES	SIZE OF MANUFACTURER SMALL	MEDIUM	LARGE
Hight Profit Margin			
Low Overhead			
High Volume			
Ease of Sales			
Other Products that might be produced-(list)			

(Producer Questionnaire)
(IV-6 X-2,6)

MARKET SIZE
(PRODUCT LISTING)

SIZE OF MARKET $Value_____/#Units_____

Manufacturers (Listing) % Share of Market (Expected?)

1.

2.

3.

4.

5.

6.

(Producer Questionnaire)
(II-11,)

COMPETITIVENESS OF MARKET

	DEGREE		
Products	Low	Medium	High
Body Armor			
Voice Identification			
Vehicle Locators			
Weapons Detection			
(Etc.)			

(Producer Questionnaire)
(XIII-8.9)

TIME-EXPERIENCE OF COMPETITION

	SIZE OF MANUFACTURER					
	SMALL		MEDIUM		LARGE	
COMPETITION EXPERIENCE	INIT.	LATER	INIT.	LATER	INIT.	LATER
BODY ARMOR						
VOICE IDENTIFICATION						
VEHICLE LOCATORS						
WEAPONS DETECTION						
(ETC)						

NOTE: INITIAL & CURRENT MARKET CHART TO FOLLOW

METHOD OF ANALYSIS - B. MANNER OF DISTRIBUTION

(Producer Questionnaire)
(II-13, III-7)

MANNER OF DISTRIBUTION FOR
(PRODUCT)

	SIZE OF MANUFACTURER								
	SMALL			MEDIUM			LARGE		
METHODS	HIGH	MED.	LOW	HIGH	MED.	LOW	HIGH	MED	LOW
DIRECT SALES									
CATALOGS									
MANUFACTURERS REP.									
DISTRIBUTORS									
OTHER									

(Producer Questionnaire)
(IV-13, 14; X-1,5,8)

INITIAL & CURRENT MARKET

PRODUCT	INITIAL OR CURRENT	LARGE METRO	SMALLER TOWNS	LARGE SUB.	SMALL URBAN & SUBURBS	RURAL	STATE	SPECIAL	COURTS	PRISONS	PRIVATE	RESTRICTIONS ON USE
BODY ARMOR	I											
	C											
VOICE IDENTIFICATION	I											
	C											
VEHICLE LOCATORS	I											
	C											
WEAPONS DETECTORS	I											
	C											
(ETC.)												

(Producer Questionnaire)
(II-13; III 8,9)

DIRECT SALES CHARACTERISTICS FOR (PRODUCT) (INTRODUCTORY STAGES)

	G		
	Small	Med	Large
A Number of Men in Field			
Qualifications (list 5)			
Young			
College Ed.			
Experience			
Etc.			

(Producer Questionnaire)
(II-13; III 8,9)

DIRECT SALES CHARACTERISTICS FOR
(PRODUCT)
(FULL SCALE PRODUCTION)

	SIZE OF MFG.		
	Small	Med	Large
Av. No. of Salesmen			
Qualifications (list)			
Young			
College Ed.			
Experience			
Etc.			
Demonstrations Required			

METHOD OF ANALYSIS C. SELLING PROCEDURES

(Producer Questionnaire)
(XI-1)

ALLOCATION OF MARKETING RESOURCES FOR
(PRODUCT)
(INTRODUCTORY STAGES)

	SIZE OF MFG.		
	SMALL	MED	LARGE
ADVERTISING			
CATALOGS			
DEMONSTRATION/DISPLAY			
DISTRIBUTORS			

NOTE: REPEAT SAME FOR FULL SCALE MFG.

(Producer Questionnaire)
(XI-2)

ADVERTISING MEDIA EMPLOYED FOR
(PRODUCT)

MANUFACTURER	AD AGENCY	MEDIA USED			AD THEME
		POLICE GASSETTE	NLEJ	NAPC	
(LIST MFG.)					
(LIST MFG.)					
LIST (ETC.)					

NOTE: Listing of media will be dependent upon media most often cited - May need to be enlarged or restricted to 5 publications.

(Producer Questionnaire)
(III-10; IV-9; XIII-5;
XI-2; XII-1,2,3; XIII-10)

SELLING PROCEDURES FOR
(PRODUCT)
BY END USE

	LARGE METRO	SMALLER TOWNS	LARGE SUB.	SMALL URBAN & SUB.	RURAL	STATE	SPECIAL	COURTS	PRISONS	PRIVATE
TECHNICAL SERVICE										
PRODUCT SPEC-IFICATIONS										
SELLING BY BID										
SPECIFIC PROB-LEMS (SPECIFY)										

ISSUE - INFORMATION TRANSFER

Boundaries included under issue include:

1. Communications from producer to user
2. Other information sources by which user learns about what is being produced
3. Communication from user to producer
4. Communication between users

Overlap may possibly occur with the following issues -

a) Marketing

b) Sharing

Subissues

1. What types of information is the producer typically making readily available to potential users? (product line, standards, certification status, list of previous purchasers in law enforcement, instruction manual, service manual)

2. What types of information are not satisfactorily available?

3. By what sources do users typically learn of the availability of innovative equipment? (conventions, published journals, mail, salesmen, other users)

4. Which sources are considered most credible?

5. To what extent do users communicate to producer either about needs, standards, or results from use?

6. Do producers try to encourage such feedback from the L.E. consumer?

7. How extensively do users communicate with other users regarding the acquisition of innovative equipment or the actual results?

8. What are the typical patterns of user-to-user communication?

9. By what process does this communication occur? (Which types initiate communication? Is it informally or formally?)

10. Do users communicate with other users outside of L.E.?

11. Do users and producers have similar views regarding problems and needs with respect to information transfer?

Policy Questions

1. How can producers better communicate with users?
2. How can users better communicate with each other?
3. How can users better communicate with producers?
4. What role, if any, should the government play in the transfer of information?
5. Is there a need for a national clearinghouse for information?
6. Can there be a system by which local users cooperate in the assessment of information about products?

Related Questions

On producer questionnaire

II - 13	P to U	how
III - 2i	possibly U to P	feedback on performance
III - 7	P to U	how
V - 3	U to P	need
XI 1	P to U	how
XIII 4	P to U	how

On user questionnaire

1 - 10	U to U	who, how
1 - 11	P⟷U	how
II - 11	U to U	
III - 4	U to U	
V 1	general	
V 3	general	
V 4	"	
V - 19c	"	
V 20e	U to P or U	

Analysis - Producer Questionnaire

II - 13 Producer to User

Type of marketing method relied upon by producers

Direct Sales	Catalog Sales	Magazine Advertising	Convention Exhibits	Free Samples	State Other

III - 7 Same analysis - only product-specific

Direct Sales	Catalog Sales	Magazine ad.	Conv. exhibits	Free Samples	Others

V - 3 Communication from user to producer

a) need communication

need did get communicated from L.E.	need did not get communicated from L.E.

b) method of communication

personal contact	convention	written report

c) communication initiated by

users	producer	government or third party

XI - 1 Producer to user

Same analysis as II 13 and III 7

XIII - 4 Producer to user

What information is communicated besides product line?

Standards	IACP certification	list of other buyers	instruction manual	service manual

III - 2i Indicate whether any changes in product line resulted from communication of information from user

no changes made	changes not based on feedback from users	changes based on feedback from users

Analysis - User Questionnaire

1 - 10 A. Do you communicate with other users

Type	YES	NO
Large police		
Suburban police		
Small police		
Other L.E. user		

B. Who communicate to:

Smaller user	larger user	similar user

C. How communicate:

informally	formal meetings	part of institutionalized arrangement for cooperation

1 - 11 Attendance at police equipment trade shows

Yes	No

2 - 11 A-B open-ended

advantages of sharing information _____

disadvantages " " " " _____

C. Do you share

Yes	No

III 4

	Yes	No
large PD		
suburban PD		
small PD		
other L.E. user		
other non-L.E. user		

V - 1 How did you hear about product

Salesman _____

Magazine _____

Trade Show _____

Mailing _____

Other L.E. user _____

Other non-L.E. user _____

V - 3 Sources of additional information

	Salesmen	Magazines	Trade Show	Mailing	Other User	Producer
Used						
Most useful						

V - 4 Type of information that led to consideration

a) Knowledge of existance of product _____

b) Knowledge of reputation of product _____

c) Knowledge of acquisition by other user _____

d) " " " results found by other user _____

V - 19c General -

V - 20e

a) Is information shared with producers? Yes No

b) Is information shared with other users? Yes No

ISSUE - NEED IDENTIFICATION

Statement

In general, this issue is concerned with the relationship between equipment availability and identification (or salience) of a need for the equipment. The analysis of the user data is slightly different from the analysis of producer data, but the basic question is whether equipment availability made the need salient or whether the need became salient for other reasons and, in turn, led to either search or research for the equipment. Schematically, the issue can be described as below:

Sub-issues

1. For which type products does user need seem to precede (or induce) search for equipment (alternative 1). For which products does equipment availability seem to make user need salient (alternative 2).

2. Which types of user agencies seem to become aware of operational needs before equipment is available? Which seem to react to equipment availability?

3. How do producers of different products become aware of user needs?

4. How do different types of users become aware of their needs?

5. Which types of users communicate needs to producers? Which do not? To which producers? How?

6. Which type producers respond to user needs by researching? Which do not? Why not?

TABLE I

How do producers become aware of user needs? (Producer Questionnaire - III - 2, Iv - 8, V - 1, 2, 3, XIII - 6, 7, XIV - 2, 5, 6)

Producer name	Product	How Become Aware?

TABLE II

(User Questionnaire - I - 3, III - 3, IV - 6, 7, V - 1, 2, VI - 3, 4, 7)

User Name	How become aware of their needs?		
	need - search (alternative 1) (brief description)	availability - need salience (alternative 2) (brief description)	Product involved

TABLE III

(Producer Questionnaire III - 6, V - 1, 3, II - 2, XIII - 7)

User Name	Communicates needs to producer (yes or no) (if yes, identify producer and product)	How Communicate Needs?

TABLE IV

(Producer Questionnaire III - 3, 5, 6, II - 4, IV - 8, V - 1, 4, 5, XIII - 10, XIV - 2, 5, 6)

Producer Name	Product	Researchs users needs as made known (yes or no)	If no, why not

ISSUE - COOPERATION BETWEEN USERS

Statement

The issue is concerned with acts of cooperations, as distinct from communications, between user law enforcement agencies relating to any element of the process by which equipment is marketed to law enforcement. Such a process includes the elements of need identification, test, evaluation, specification, purchasing, funding, installation, training, and utilization.

Acts of cooperation may be related to any one or to several of these system elements and it is important to know which are susceptible to cooperative action and which are not.

It is also important to know what the different mechanisms of cooperation are. For example, cooperation could be conducted between autonomous agencies on a more-or-less contract basis, or it could be conducted through a third party, perhaps a supra-agency.

Sub-issues

1. How do the communication patterns compare to the cooperation patterns? How many agencies communicate regularly and yet do not cooperate? What types of agencies are these?

2. What are the distinguishing features of those agencies that do cooperate?

3. What types of equipment do the agencies cooperate on?

4. What types of action does the cooperation involve, i.e., funding, purchasing, specification, use, etc.?

5. What are the mechanisms by which cooperation takes place? Which are more effective?

6. What conditions or influences promoted cooperation in the first place? What reinforcements? What problems had to be overcome?

Questions Specifically Concerned with this Issue

User: I - 10, 12, 13
II - 8, 11
III - 4

Compile the information given in these questions in the following tables.

Table I

Names of agencies reporting informal communication (I-10, II-11, III-4)	Names of agencies reporting formal communications (I-10, II-11, III-4)	Names of agencies reporting cooperative acquisition* (I-12, II-8)		Cooperative use** (I-13, II-8)	
		Agency	Equipment Type	Agency	Equipment Type

*For this table, acquisition refers to any action leading to acquisition, including funding, test, evaluation, specification, purchasing or need identification

**For this table, use refers to any action involving use, uncluding installation, training, utilization, and evaluation.

Table II - Mechanisms of Cooperative Action

Identify the organization, association, or group through which cooperation takes place.

Name of Assoc. (I-12, II-8d, e)	Name of Reporting Agency	Nature of Cooperation			Effectiveness of Cooperation (Hi - Med - Low)
		Acquis. Only	Use Only	Both	

Table III

Describe the incentives and problems involved in cooperative action.

Incentives (II-8a)

Reporting Agency - Incentive

Problems (II - 8b)

Reporting Agency - Problem

Implications (II - 8f)

Reporting Agency - Implication

Funding & Budgeting

General Statement of Issue

The issue is concerned with the availability of funds from various agencies for the development of new innovative law enforcement equipment as well as the availability of funds from both internal and external sources for the purchase of such equipment. The analysis of the producer data will convey the availability of such funds and their source. A statement will include how funds were actually obtained.

The analysis of the User data will reveal the actual mechanism as well as the source of outside funds to acquire innovative equipment. It is important to determine the flexibility of the budgets procedure set up by the user and to determine what constraints may be imposed on his using outside funds as well as the mechanism he had to employ to acquire this assistance.

Sub Issues

1. How much money was spent in the past year on acquiring innovative equipment?

2. For what type of product does the user seek outside funding in order that it may be acquired?

3. What kind of constraints, limitations, procedural mechanisms or other considerations must be evaluated before outside funding is acquired.

4. Is funding normally for the fiscal year in question or does funding span a period of years?

5. Is the budgeting procedure of the user so rigid, that is is necessary to delay the purchase of new innovative equipment until the subsequent year.

FUNDING AND BUDGETING

Producer Questionnaire

VII Research and Development

5. Were you able to obtain any external funding assistance for the development of this product? How was this fund obtained?
   (a) from the state (specify)
   (b) federal means (specify)
   (c) trade or professional association (specify)

User Questionnaire

I - 4 Approximately how much has your agency spent in the past year on acquiring innovative equipment?

I - 5 Are you allowed to apply for external funds? What constraints apply? (e.g., willingness to apply for L.E.A.A. funds for innovative equipment.)

I - 6 How much flexibility is there in your budget procedure to obtain new or improved equipment?

I - 9 Specifically comment on the bidding procedure.

III 9 How much flexibility is there in your budget procedure to obtain new or improved equipment?

V 11 Describe the funding procedure.
   (a) When was the money for purchasing this equipment obtained?
   (b) What other sources were considered?
   (c) What problems were encountered?
   (d) How was it budgeted -
      1) Special funds
      2) Which years

(Funding and Budgeting, cont.) Producer Questionnaire VII - 5

	External Funding - Name of Product (Name of Producer of Transceivers)								
External Funding (Yes or No)	Yes	No	Yes	No	No	No	No	Yes	Yes
Source-Federal	NILECJ	-							
(spec.)State	-	-	Fla St. Police						
Local	-	-	Tampa Police						
Professional Trade Association	NAPC								
	(D. each for each Product)								

Proposition - Most producers do not receive external funding to aid them in the development of L.E. equipment.

User Questionnaire I - 4

Amount spent on innovative equipment in past year -

	Large Metro	Large Suburban	Small Sub.	Rural	State	Courts	Private	Other
Over one million								
500,000								
100,000								
50,000								
25,000								
10,000								
5,000								
1,000								

Funding Procedure - By Product User Questionnaire V-11, I-5, I-9

	Large Metro	Towns	Suburban	Rural	State	Courts	Prisons
Source of Funds							
Regular budget							
Special							
Yrs. budgeted							
Other Sources Considered (list)							
Problems encountered (comment)							

Flexibility of Budget - General USER QUESTIONNAIRE III-9, I-6

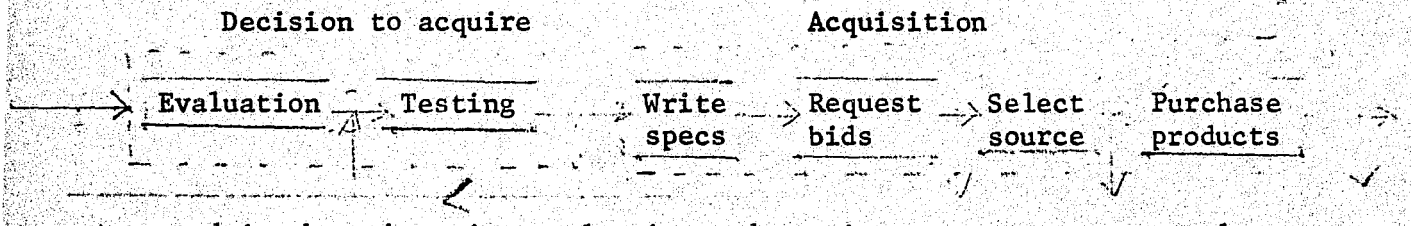
	High	Medium	Low	None
Metro				
Large Sub.				
Small Sub.				
Rural				
State				
Courts				
Prisons				

FRAMEWORK OF ANALYSIS FOR THE ACQUISITION PROCESS*

General Statement of Issue

The acquisition process is broadly defined to include evaluation, testing, bidding, selection of a source and equipment, and purchasing. That is, with the exception of funding and budgeting, the steps taken after there is sufficient interest on the part of the user to initiate an active search for a certain type of equipment until a specific model is acquired from a product. These steps are not employed by all users as outlined in this study and when followed they vary considerably in timing, priority, and formality of the procedures used.

The acquisition process can be considered in two major steps: 1) events leading to a decision to acquire a given type of equipment, and 2) subsequent events leading to the selection and acquisition of an actual piece of equipment.



As noted in the schematic, evaluation and testing may occur at several subsequent points in the acquisition process depending on such factors as the size of the purchase, its newness, riskiness, and departmental policies.

Sub-Issues

The acquisition process can be considered from several perspectives. The following are considered relevant in this study:

1. Mechanisms and arrangements for acquisition.
2. Events prompting action to acquire new equipment.
3. Role of key user personnel in the acquisition process.
4. Role of local politics in the acquisition process.
5. New product selection criteria.
6. Problems encountered in the acquisition process.

*Note: Make separate analyses for each type of equipment.

Sub-Issue #1: Mechanisms and Arrangements for Acquiring New Equipment

It is important to identify basic approaches to the acquisition process employed by different types of users. The acquisition process varies considerably among users and especially effective (and ineffective) procedural arrangements should be better known.

Method of Analysis

1. Identify the extent to which formal procedures are utilized in the various steps of the acquisition process by user type.

STEPS	QUESTIONNAIRE REFERENCE*	Large metro	Smaller towns	Large suburban	Small urban & suburb	Rural	State	Special Courts	Prisons	Private
Evaluation (General)	UV 5, 6, 7									
Testing (General)	UV 8, PIX 1, 5									
Writing specifications	UV 12 d, e, f									
Request for bids	UI 9, UV 12a									
Evaluation (Specific)	UV 9									
Testing (Specific)	UV 8, PIX 1, 5									
Selection of equipment	UV 9, 12 g, h									
Purchasing	UIII 7									
Evaluation	UV 12 b, c, 20, 21, 22									
Other										

* U = User questionnaire, P = Producer questionnaire

** Group users by user typology

2. Evaluation: In the questionnaire the process of evaluation prior to acquisition was not analyzed as a separate step. However, note any comments that may describe this process at any point in the interview in particular, under UV 5, 6, 8f. In each case identify user type and number, and the product evaluated.

3. Testing

a. Summarize testing information on the following table:

Responses to UV 8	Large metro	Smaller towns	Large suburban	Small urban & suburbs	Rural	State	Special	Courts	Prisons	Private
(a) When - lab or field										
(b) Who participated										
(c) Who conducted tests										
(d) What producers equipment was included										
(e) What models were tested										
(f) Standards utilized										
(g) Other tests										
(h) Results										

b. Note any difference in the testing process associated with user type. Identify user type and product.

c. Note any especially effective (or ineffective) testing arrangements.

4. Writing specifications

a. Note any significant comments with respect to writing specifications. Indicate user type and product. (See UV 12 d, e).

b. Note any especially effective (or ineffective) arrangements for writing specifications.

5. Request for bids

a. Were competitive bids required (UV 12a)

PRODUCT _____

User type	YES	NO
Large metro		
Smaller towns		
Large suburban		
Small urban & suburb		
Rural		
State		
Special		
Courts		
Prisons		
Private		

b. Comment on any significant features of the bidding process (see UI 9).

6. Evaluation: Note any comments on the evaluation process when it occurred after bidding and prior to purchasing. Identify type of user and product.

7. Testing: Note any comment on the testing process when it occurred after bidding and prior to purchasing. Identify type of user and product.

8. Selection of equipment: Note any arrangements for selecting equipment. Identify type of user and product (see UV 12g).

9. Purchasing

   a. Briefly describe any effective features of the purchasing procedures noted by various user types (UI 7, UIII 7).

   b. Note any procedural difficulties encountered in the purchasing process and noted by the various user types (UI 7, UIII 7).

10. Evaluation

   a. For various user types note the following information regarding evaluation after purchasing:

Responses to UV 20 \ Type of user	Large metro	Smaller towns	Large suburban	Small urban & suburb	Rural	State	Special	Courts	Prisons	Private
a) Was there an evaluation — YES										
NO										
b) Is this evaluation standard procedure — YES										
NO										
c) Is evaluation required — YES										
NO										
d) Participants										
e) How was evaluation utilized										
1)										
2)										
3)										
4)										

b. Note any significant new comments on the evaluation process (see especially UV 21, 22 in addition to UV 20).

Sub-Issue #2: Events Prompting Action to Acquire Equipment

At some point in the search process for new equipment events will lead to a provisional decision to consider acquiring (or a decision to actually acquire) a certain type of equipment. Knowing these events will improve our understanding of the decision process and possibly our ability to influence it.

Method of Analysis:

List events listed under UV 4 (or elsewhere in the user questionnaire) which led to the decision to acquire a given type of equipment.

Sub-Issue #3: Role of Key Personnel in the Acquisition Process

By knowing the role of key personnel in the acquisition process, we will be in a better position to supply information, train personnel, provide outside assistance, and to suggest changes in the procedural arrangements or activities of participants in the decision process.

Method of Analysis

1. Role in acquisition process

Role in acquisition process / Questionnaire response		Administrator			Technical specialist			Purchasing		
		L	I	H	L	I	H	L	I	H
Participate in decision to investigate acquisition	UV 5									
Write specifications	UV 12d									
Approve specifications	UV 12e									
Recommend acquisition	UI 7a, UV 9a									
Approve recommendation to acquire	UI 7b, UV 9b									
Purchasing	UI 8 a-e									
Other										

2. Comment on any salient activities of key personnel in the acquisition process noted in the above tabulation.

Sub-Issue #4: Role of Local Politics in the Acquisition Process

The decision to acquire new equipment is not a simply technical decision. There are often constraints on the decision process due to local governmental or political influences, especially on major pieces of equipment. The nature and extent of these influences must be known to fully understand and improve the acquisition process.

Method of Analysis

1. Note influence of local politics and environment on the purchasing process.

Degree of Influence on Purchasing

	Local Politics			Local Environment		
User type	Low	Inter-mediate	High	Low	Inter-mediate	High
Large metro						
Smaller towns						
Large suburban						
Small urban & suburbs						
Rural						
State						
Special						
Courts						
Prisons						

2. Note any interviewee comments made on the nature or extent of influence on the acquisition process. Identify user type and product.

Sub-Issue #5: New Product Selection Criteria

Several factors figure in the decision to acquire new technology. These vary with the type of product and for a given product selection criteria may vary among user types.

1. Identify selection criteria by user types (UV 12g).

Product _____

User types / Purchasing criteria	Large metro	Smaller towns	Large suburban	Small urban & suburb	Rural	State	Special Courts	Prisons	Private
(Responses to UV 12g) a) Cost of equipment									
b) Reputation of supplier or manufacturer									
c) Expected results of use of equipment									
d) Availability of standards of performance for equip.									
e) Availability of testimony from other users									
f) Public visibility of the product									
g) Budget situation of focal organization									
h) Not clear what criteria are									
i) Other _____									
(Responses to UV 12b) Did users prefer specific model — YES									
NO									
(Responses to UV 12a) Did users receive the model they wanted — YES									
NO									

2. Note any significant user comments on the equipment selection process. Identify type and user.

Sub-Issue #6: Problems Encountered in the Acquisition Process

The nature and incidence of problems encountered in the acquisition process must be identified in order to develop more effective acquisition procedures.

Method of Analysis: List problems encountered as they are found in questionnaires in the following table and then note their frequency of occurrence by user type (see UIII 8, UV 10a, PXII 1, 3).

Problem Encountered \ User type	Large metro	Smaller towns	Large suburban	Small urban & suburb	Rural	State	Special	Courts	Prison	Private
User										
Complex procedures										
Delays										
Duplication of effort										
Lack of trained personnel										
Producer										

ISSUE - INSTALLATION, UTILIZATION, MAINTENANCE, & ASSESSMENT

This issue focuses upon what happens to an innovative piece of equipment after it has been purchased by a user. Not all users find that newly acquired equipment measures up to expectations. Certain factors are analyzed in this section which appear to have a significant effect upon whether or not the potential of a piece of innovative equipment is realized by its purchaser.

Subissues

1. To what extent is the inability of L.E. users to effectively utilize existing products a serious problem in the law enforcement R & D innovation process?

2. To what extent are L.E. users technically unprepared and too poorly trained to utilize the innovative equipment properly?

3. To what extent is resistance to change a threat to effective utilization of innovative equipment purchased by a user?

4. To what extent is equipment maintenance a serious problem in law enforcement?

Analysis - Producer Questionnaire

II 5 Product type _____

Number of producers who feel that the lack of adequate equipment is more serious problem _____

Number of producers who feel that inability of L.E. agencies to effectively utilize available equipment is more serious problem _____

II 10

(a) Number of producers who indicate instance in which L.E. user has failed to use a product in line effectively _____

(b) Main reason presented as responsible for poor utilization:

attitudes of actual users	opinions of top administration	user skills	trainability of users	participation of actual user in planning & acquisition	politics	public opinion	union interference	other

XIII - 1

(a) Repeat only for product rather than whole line

XIII - 3

Repeat only for product on list rather than with reference to total product line

XIII - 2

Identify measures taken by producer to handle serious problem of effective utilization by purchaser.

XIII - 4

Information provided by producer to aid in utilization process. Number of producers who indicate:

(a) Manuals

Instruction manual _____

Training manual _____

Service manual _____

No manual _____

XIII - 5

(b) Technical Assistance

(i) instruction
always _____
when requested _____
not at all _____

(ii) training
always _____
when requested _____
not at all _____

(iii) service
always _____
when requested _____
not at all _____

XIII - 12

Effect of product on operating procedures of user -
Number of producers which indicate:

no effect _____
some effect but of little consequence _____
has a major effect _____

XIII - 7

General user satisfaction with product - number who indicate:

a) high level of satisfaction _____
b) moderate " " " " _____
c) low " " " " _____

Number who indicate need for modifications because of utilization problems _____

Indicate utilization problem encountered, if any, which precipitated need for modification.

IV - 9

Number of producers who indicate that maintenance is an important issue for product line _____

Number of producers who indicate that maintenance is not a very important issue for product line _____

II - 2g-1 General Evaluation

Indicate number of instances in which producers experienced failures or problems with product line created by difficulty with effective utilization by users _____

Identify what the problems were which had developed.

Analysis - User Questionnaire

III - 10

Receptivity of rank and file users to innovative equipment - Number of users answering:

	User Size		
Receptivity	Large	Medium	Small
High			
Moderate			
Low			

IV - 7

Number of users which had to replace product because of inability to utilize effectively:

Large User	Medium User	Small User

What were reasons:

skills of users	attitudes of users	difficult technical product	public opinion	union resistance	inadequate training	etc.

V - 10b

Number of instances in which legal problems develop with respect to product utilization: _____ Explain instance:

V - 13

	Large user	Medium user	Small user
a) # of problems encountered with installation			
b) Problems encountered in preparing personnel for use i) understanding & information			
ii) skill training			
c) Problems due to necessary changes in organizational structure			

V - 14

Number of users who reported producer participation in introduction of new equipment _____

Number of users who reported no producer participation _____

V - 15

Attitude of user personnel toward introduction of product:

highly favorable _____

moderately " " _____

feeling unfavorable _____

V - 16

a) Number of users experiencing operational problems _____

b) Explain nature of problems

V - 17

Number of users reporting maintenance problems _____

Number of users reporting no maintenance problems _____

V - 18

Availability of maintenance and service from producer:

Number of users who do have available from producer _____

Number of users who do not _____

II - 19a

Open question on recommendations regarding training.

V - 20 Assessment

a) Number of users who did assessment of equipment after put into use _____

Number of users who did not assess _____

For those users who performed an assessment:

b) Was this a standard organizational procedure?

i) Number who indicate yes _____

ii) Number who indicate no _____

c) Was an assessment required by an external source?

i) Number who indicate yes _____

ii) Indicate by whom _____

d) Persons participating in assessment:

i) internal personnel (positions)

ii) external personnel (positions, organizations)

e) Use of evaluation:

for internal purposes only	_____
given to other users	_____
given to producer	_____
given to both users and producers	_____
published	_____

Questions to be Considered

1. Is improper utilization a serious problem?

2. Should training programs be made available to prepare persons technically for use of innovative products?

3. Do many users need exposure to behavioral science techniques to help reduce the occurrence of resistance to change by actual users?

4. Do producers provide as much assistance as necessary and possible to users with respect to effective utilization of a product once purchased?

5. Is maintenance a serious problem and to what extent should it be taken into more careful consideration during acquisition?

6. Are assessments being conducted as widely as they should be?

7. Is the information from assessments being fed back to producers and being made available to other users as frequently as it should be?

1. PRODUCT INFORMATION

The objective will be to summarize the following type of information for each of our ten product areas: What is and has been recently available in the market, who are the producers - identifying main and secondary sources (by share of market, if possible), what do the products cost, what is the products' function in L.E., who uses the product (by type of user and by function), is the product being well or poorly used, what do L.E. people feel they need in this product area, what changes are taking place in the product (type of, rate of, source of), what do producers have coming along? Be concise, summarize. In some cases the data required is a brief summary of materials developed for other sections - e.g., from the Marketing section.

1.1 Products and Sources

Fill in the following table as far as you are able. Do not be concerned if there are considerable gaps in the columns and rows. The sources of the data are shown in each column (P - Producers, U - Users questionnaires. Remember that it is vital that we be able to describe what is most commonly available, what is new and what has been tried. Note that we have a section at the end of this Product Information review on product change so in this section you do not need to elaborate on models that were tried and dropped. Stay with present and recent models.

Product Name and/or Type (Show model # where relevant	Product Features	Price Levels	Producer	Comments
If there are several categories of this product set up the table to reflect this. Be sure to include both best-selling and most recent models.	Be concise in the table- if necessary add appended back-up materials to elaborate	Give $ amount where possible, price breaks, special deals, etc. At least try to indicate High-Medium-Low range	Give names. Add as much as you can on share of market, type of firm - size, years in this market, do they license, other business they are in, quality, etc. If needed add separate narrative notes.	Add anything else you find that seems pertinent
PIV 1 UII 1(a), UIV 2, UV 22, UVI 1,2 Literature Product Summaries	PIV 2, 5 UIV 2, UVI 2 Literature Product Summaries	PIV 4 U IV 4 U VI 2 Literature Product Summaries This data should be based on a heavily summarized version of materials in the Marketing Section	PIII 2(a), 2 P III 2 (d) PIV 2, 3, 5, 11 UIV 3, 8 UV 22 UVI 1, 2 Literature Prod. Summ. Summarized data from Marketing	

1.2 Product Use and Importance

a) How is the product used?

(i) Purpose of Product

Write a short narrative statement describing the use to which this product is placed in L.E. Describe which L.E. functions it is used in. If the product can be used in more than one way describe each purpose. There may be some systematic pattern to these usage characteristics - e.g., small users use it differently than large ones. If any such pattern can be observed indicate what this is (even if only generally) and show evidence. Where you have them add (as appended material) one or two short cases (vignettes) describing use. Particularly do this if there are any cases of unusual (good, bad, special) usuage.

Data Sources: UII, 3, 4. Literature, Product Summaries

(ii) Quality of Usage

Write narrative statement of the problems that are being encountered in the use of this product, if any. Cite typical examples with reasons for good use, misuse, inability to use, who tends to be a good or bad user. If feasible try to set up a table along the following lines:

Type of problem	By whom encountered	Reasons	Possible solutions Observed	Possible solutions Proposed	Comment

If possible, give quantitative breakdowns (e.g., frequency a type of situation occurs with whom.

Data Sources: PIII 5, 10, UII 7, UV 21, UVI 2
Some of the data may be derived by summarizing the Utilization section.

(iii) Product Requirements

What do users and producers feel is needed in this area in terms of the product. Is what is presently available adequate or are changes or even radically new products being proposed?

Write a narrative statement. If different types of user (or producer) are proposing different things indicate this difference.

Data Sources: PIII 6, UII 5, 6, UV 1.1, 1.5, UVI 2
Literature

b) Who are the users?

(i) By user type

Give frequency and patterns of usage e.g.,

Type of User	Proportion Using	Typical Number Used e.g., say 1 or 2 or many or 1 per man, etc.
Data Sources 3 UII 1(a)(b)(c)(d) UIV 2	ditto	UIV 1

(ii) Replacement

How often is this product replaced during normal life and why (breakage, obsolencence, maintenance). Giver average life and range (quantified if you have it - at least give an idea). Comment on any differences across users (e.g., large users may use more and replace more often than small ones).

Data Sources: UIV 5, 6, 7

1.3 Product Market

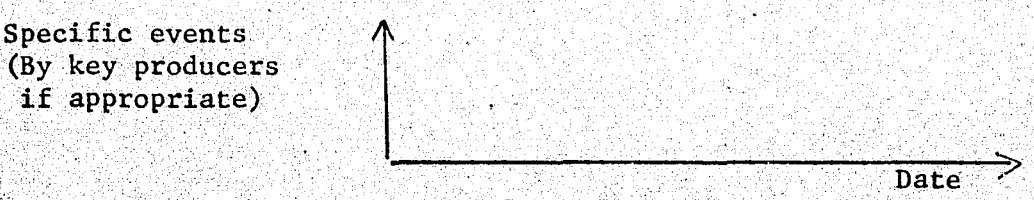
There is of course a whole section on marketing. Here we are only concerned with the question of whether the product is unique to L.E. or whether it is also used in other markets - perhaps in a somewhat modified form. Write a narrative statement. Comment on relative importance of the L.E. segment if more than one market is involved. What are these other markets (show proportions if possible, e.g., L.E. 25%, fire and other local government 30%, commercial (explain) 40%, etc.) If this varies by producer and/or has changed one time give details, e.g.:

Producer	L.E. Share	Other Main Markets	Changed over time from/to	Comments

Data Sources: The Section on Marketing, PIII 2(e), Literature

1.4 Changes in State of the Art

What changes have appeared in the product since it was introduced. Write a narrative history complete with dates and details. Write one or two short casettes on specific product histories. Pay particular attention to failure cases. If possible lay out on a time chart.



Give your overall evaluation of whether the product is changing radically, slowly, not at all. If relevant differentiate between product sub-classes.

Give a general statement on what is going on in R & D for this product.

Data Sources: Product histories (producer and user), PIII 4, Literature

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NILECJ Project NORTHWESTERN UNIVERSITY Evanston, Illinois 60201

Organization_____ Interviewee_____
(name) (title)

Organization Location_____ Interviewer_____ Date_____

I. COMPANY FEATURES

For questions 1 and 2 include sufficient detail to permit identification of divisions of; 1) total corporation 2) corporate L.E. effort and 3) this division

1. Organizational Structure

(Organization charts are preferred but if not available, include narrative description)

2. Specific Dimensions (in reference to the company, the division and the L.E. effort)

a. sales
b. number of employees
c. geographical market area(s)
d. major product line

II. YOUR L.E. EFFORT

1. In general terms describe your product lines in law enforcement
Include such characteristics as:
a. type of equipment (reference NILECJ Typology)
b. price class/range (obtain actual figures of possible)
c. target market(s), (type of agency, size, etc.)

2. Are there other L.E. products you could make but don't? Explain.

3. Are ther any competitive product lines in which you would like to get involved? Specify and discuss.

4. What are your future plans with regard to your present product lines?

5. To what extent is your company willing to invest in law enforcement R&D?

6. How does this amount of effort compare with R&D conducted for other market areas you are involved in?

7. To what extent in R&D common to L.E. and other market areas are you involved in?

8. What R&D capacities do you have?
a. expertise of staff b. organization structure of R&D c. extent of facilities

9. Is L.E. an attractive market to do business in?

10. How does the L.E. differ from other markets you are in?

11. How competitive is the L.E. market with respect to your product lines?

12. What problems would new companies encounter in trying to enter the L.E. market?

13. What market method do you rely on most for your L.E. product line?
(eg., direct sales, direct catalog sales, manufacturers' reps, advertising, exhibits and deminstrations)

III. PRODUCT LINE GENERAL INFORMATION

Note: The interview thus far has covered
1. company characteristics
2. company involvement in L.E.
3. general information about L.E. products

You now select the particular product line or lines and become more specific. Keep in mind that a product line is now selected for discussion, not a specific product.
Eg. A company may make holsters, badges, utility belts, and gloves - all for L.E.. Up until now you have been discussing all of these generally. This section (III) is now concerned only with one of these product lines - for example holsters and utility belts. If more than one product is appropriate, this section (III) must be repeated for each appropriate product line.

1. Product line selected for discussion

2. Give a brief history of this product line (10-15 minutes). Such a history should include as many of the following points as possible. (These are not specific questions, but rather a guide for interviewers to keep the discussion on track)

   a. when was the product first introduced to any market?
      1) by you
      2) by other companies (who were they)
   b. what problems were encountered during initial R&D?
   c. what market was it?
   d. when was product line first introduced to L.E.?
   e. why was it introduced to L.E. market as compared with alternative markets?
   f. what are the characteristics of the initial L.E. user of this product?
      1) type of agency
      2) geographical area
      3) size of agency
      4) function within agency
      5) position within agency
   g. how has it been received?
   h. when were significant changes made in the product line?
   i. why were they made? how did the changes come about?
   j. what was the reaction of the competitors?
   k. what failures has the company had in the history of this product line?
   l. what failures have competitors had?

3. What are your future plans with regard to your present product line?

4. Is the state-of-the-art in R&D in this product line changing radically, slowly, or not at all?

5. Is the current situation of this product line one of not having adequate equipment available or one of L.E. agencies not using available equipment?

6. What types of equipment are needed by L.E. in this product line?

7. What marketing methods do you rely on most for this product line?

   a. direct sales - own field sales force
   b. direct catalog sales
   c. manufacturers' reps
   d. advertising
   e. exhibits and demonstrations

8. How many salesmen handle the product line?

   a. when you introduced the product
   b. full-scale

9. What qualifications are most important for salesmen to have?

   a. when you introduced the product
   b. full-scale

10. Have you encountered any instances in which a user has pruchased this product line but did not effectively utilize it? What were the problems? Discuss.

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IV. PRODUCT PROFILE

Note: In the preceeding section, the discussion about product line should have elicited sufficient information to identify the main selling and latest significant variations in the product line. For example, in the utility belt product line, their best seller and latest significant variation may have been an adjustable holster/utility belt that can be used for 2 or 3 different guns. This section (IV) is now concerned with either the current main seller or the latest product in the product line. Where these are not the same product, repeat such that you obtain data on at least one main seller and one recently introduced product. Also, if there have been significant failure experiences in the recent history of the product line, this section (IV) should be repeated for at least one such experience (not all questions will be appropriate - be selective but thorough).

If the preceeding section indicated that there is considerable effort directed at development or introduction of a new significant change, this section should be repeated for each such case (again not all questions will be appropriate - be selective but thorough). Use your discretion on how much detail you can obtain. At least one description should be full and as many and as much as you can obtain for the others. Keep in mind that when you expect to interview more than one person you can obtain part of the data from each.

1. a. Product name selected for discussion
   b. Nature of product (main seller, latest product, failure in development, etc.)
   c. General discription (type, function)
   d. Model names and numbers (all, or as many as feasible or the models included within this product description)

2. Describe the variation among models of this product
   a. as made by you
   b. as made by your competitors

3. Who are your major competitors in this product?

4. Price range of this product (high, medium, low - comment on differences in quality and quantity)

5. How does your product compare with the best selling competitive product?

6. Estimated share of the market of your product.

7. Is the product sold for the most part as a stock item or made up to special order? (Include as stock items minor variations to basic common components)

8. If sold as "specials", give general description of variations and reasons. Is there any pattern to the vatiation? What problems does this variation cause? Do your competitors face the same situation? Discuss any differences.

9. Is the maintainability an important issue for this product? Rank your product with the leading competitive models for ease of maintainability.
   most easily maintained to least easily maintained
   (note: all may rate as being very good on this criterion and we recognize that the difference may be small)

10. What are the key factors in product maintenance?

11. Is the product patented or licensed? Give dates.

12. How important a role do you feel this product plays in law enforcement?

    a. practically b. potentially

13. How widely is it or could it be used? (by type of agency and function within agency)

14. Is this product essentially used by itself or is it used in close conjunction with other equipment?

    Are there any compatability problems?

V. NEED/OPPORTUNITY IDENTIFICATION AND GENERATION (in more detail than given in history)

1. What were the circumstances first leading to identifying opportunities for this particular product? (when, where, who and how)

2. If the product was developed for an area other than law enforcement, what area was that?
   a. what led to seeing a law enforcement application for this product?
   b. what law enforcement need was the product seen as filling?

3. If the need for the product was communicated from the law enfoecement field, how was it communicated? What was the need?
   a. personal contact with the potential user (position and nature of his relationship to contact)
   b. literature (specify)
   c. conferences, conventions
   d. other

4. What was the initial company reaction to the need?
   a. receptive to the new idea
   b. accidental pickup on the new idea
   c. institutional receptivity, eg., committee for considering new ideas

5. What incentive did the company see for marketing this product in the L.E. effort?

VI. PROJECT EVALUATION AND SELECTION

1. What criteria were used to evaluate the feasibility of research involving this product?
   a. estimated R&D costs
   b. estimated production costs
   c. estimated marketability
   d. estimated market potential
   e. estimated development risks
   f. length of innovation cycle
   g. other

2. Who participated in the decision to select this product concept as an R&D project?

3. When was the selection decision made?

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VII. RESEARCH AND DEVELOPMENT

1. What was the starting date of the research project that produced this product?

2. Identify the type, amount, and if possible the approximate effort that went into developing the product.

   a. at the outset
   b. as an on-going process

3. Identify the range of information sources utilized during the R&D process.

4. What problems were encountered during R&D?

5. Were you able to obtain any external funding assistance for the development of this product? How was this funding obtained?

   a. from the state (specify)
   b. federal means (specify)
   c. trade or professional associations (specify)

VIII. PRODUCT DESIGN AND ENGINEERING

1. When did the product design and engineering start?

2. How were the performance specifications developed for this product?

3. Identify information sources utilized during the product design and the engineering stages.

4. Were any federal or state standards utilized in product design?

5. Are there any state or federal regulations which control the production of this product? What are they?

   a. state
   b. federal

IX. TESTING PROCEDURES

1. When did pilot field testing begin?

2. Did you enlist the cooperation of any users to test and/or try out this product?

3. If so, identify the user organization if possible. If not, please indicate the type of organizations. How did you select these organizations?

4. What is the extent of user particiaption in these tests and/or try out arrangements?

   a. with regard to cost
   b. with regard to tests

5. If the user organizations were not used, how was pilot testing accomplished?

6. What standards were utilized and developed in testing this product?

X. MARKET CONSIDERATIONS

1. What are the characteristics of the L.E. agencies you sold this product to during introductory marketing? (type of agency; eg.,police, courts, prisons; geographical area; size of agency; function within the agency; position of person within the agency to whom you had to sell the product)

2. What was your estimate of sales of this product in law enforcement before introduction?

3. What was your estimate of sales of this product in other fields before introduction?

4. When did full-scale marketing of the product begin?

5. What are the characteristics of the agencies you are selling to now?
(type: police, courts, prisons; geographical area; size; function; position)

6. What is the current estimate of sales of this product in law enforcement?

7. What is your current estimate of sales of this product in other fields?

8. Do any regulations exist - that you know of - that may regulate the marketing of this product? What are they?

9. Is it economically feasible for you to sell this product only to law enforcement?

XI. MARKETING STRATEGIES

1. How did you allocate your marketing resources to the following marketing channels in the introductory and full-scale marketing stages?
   a. advertising
   b. direct catalogue sales
   c. demonstration/display
   d. distributors

2. For each of the following, comment on when you first introduced the product and when you began full-scale marketing.
   a. what agency handled the advertising
   b. where were ads placed
   c. may we have copies of your ads
   d. what point about the product were you trying to make the strongest in your ads?
   e. how many salesmen did you employ
   f. what qualifications were most important for salesmen to have

XII. USER ACQUISITION PROCESS

1. Does a user bidding process present any problems to you in marketing this product? Specify.

2. Do user specifications present problems to you in marketing this product? Specify.

3. Do the user purchasing procedures present any problems in marketing this product? Specify.

   (eg., time intervals involved in budgeting and approvals, identifying decision points, establishing contact points. etc.)

Producer Questionnaire

XIII. UTILIZATION

1. Have you encountered any instances in which a user had purchased your product but did not effectively use it? What were the problems?
2. What effective measures have been developed to deal with these problems?
3. Discuss the importance of each of the following factors for effective use of this product, and rate them high, medium, and low accordingly.
   a. attitudes of actual users
   b. opinions of top administrators
   c. skills of users
   d. trainability of users
   e. flexibility of users
   f. involvement of actual users in selection
   g. politics
   h. public opinion
   i. involvement of the union
4. Which of the following types of information do you regularly supply to users? (append copies if available)
   a. list of product standards
   b. indication of IACP certification
   c. list of previous purchasers
   d. equipment instruction manual
   e. training manual
   f. service manual
   g. other (specify)
5. What sort of technical assistance do you typically provide to users? (service made available; training and instruction, service) and under what circumstances (when; regularly or if requested, etc.)
6. Have you made any product modifications since this product was introduced? What were they?
7. Discuss the users' satisfaction with its performance? Did they suggest any modifications or adjustments?
8. Did you experience any competition with this product in the introductory stages?
9. Did other manufacturers come out later with similar products or with dissimilar products which would do the same job as your product? What were the products? Who were the producers?
10. Did any of your early contacts (potential users) feel that you had a worthwhile idea, but they could not utilize or adapt it to their needs? If so, why did they feel they could not utilize the the product? Did you attempt to make modifications to your product to satisfy their needs?
    Why or why not? (market too restrictive, cost prohibitive, etc.)
11. Is any significant alteration of the associated equipment required?
12. Are the operating procedures of the user affected by the introduction of this product? How much?

XIV. CLOSING QUESTIONS

1. How important do you think innovative equipment is or could be in law enforcement?

2. What do you think would help get innovative equipment into the law enforcement field?

3. Are there other persons you could direct me to who would be helpful for me to talk to?

4. Who are some of your customers?

5. Can you think of any topics that should have been covered which were left out?

6. Do you have any suggestions or recommendations on how to improve any of the steps in the generation, production, transfer and utilization of law enforcement equipment?

User Questionnaire

NILECJ Project NORTHWESTERN UNIVERSITY Evanston, Illinois 60201

Organization_____ Interviewee_____
(name) (title)

Organization Location_____ Interviewer_____ Date_____

Note: This interview will concern itself with equipment

I. GENERAL AGENCY FEATURES - asked of chief administrator (eg.,police chief, warden, etc.)

1. Describe your organization in terms of:
   a. size - number of members
   b. size - geographic area
   c. size of annual budget
2. Organization structure
   (chief administrator, title, whom does he report to, administrative staff titles)

   Organization of other sub-units (districts, precincts, etc.)
3. Do you have any unusual law enforcement situations for which special equipment is needed?
4. Approximately how much has your agency spent in the past year on acquiring innovative equipment?
5. Are you allowed to apply for external funds? What constraints apply? (eg., willingness to apply for L.E.A.A. funds for innovative equipment)
6. How much flexibility is there in your budget procedure to obtain new or improved equipment?

   (interviewer note: 1) determine how soon ie. budgeting period; 2) extent of deviation from current budget allocations)
7. Briefly describe your purchasing and approval procedures.
   a. who recommended the acquisition
   b. who had to approve of this recommendation
8. How much influence in new equipment purchasing do the following have?
   a. administrative staff
   b. technical staff
   c. purchasing
   d. local politics
   e. local environment
9. Specifically comment on the bidding procedure.
10. Do you communicate with other police departments to compare new ideas or experiences with innovative equipment? Which ones and how?
11. Do you attend any police equipment trade shows? How often?
12. What type of arrangements do you have with other organizations for jointly purchasing L.E. equipment?
13. Do you share L.E. equipment with other organizations? (discuss failures and successes)

NOTE: Now show the list of equipment types and fill out part II for each product type as time permits. Be sure to include;
1) who knows about history of product and
2) who is the product specialist

II. Product Profile - general information - asked of heads of departments, rank and file users, and equipment specialists

Note: First show the interviewee the list of equipment types, then fill out section two for each peice of equipment to the extent feasible. If you're short on time concentrate at first on those pieces of equipment that the organization has that are relatively rare (eg., voice ID, vehicle locator) following the priority list.

1. Interviewer:

   Classify the equipment types on the equipment list as follows;

   a. Equipment currently in use

   b. Consider using

      1) did not acquire

      2) still considering

   c. Did not consider using

   d. We used it, but discontinued use

2. Who in the organization used it? Specify by department.
3. If you don't use the product, how do you achieve its objective without it?
4. What particular benefits do you derive from the product?
5. Describe the type of product you would like to have (features, realistic price, etc.)
6. What innovations in these product areas do you see a need for?
7. If you don't have them, why not?
8. Are you cooperating with other organizations in the introduction or utilization of this equipment?
   (note:seek such information such as the following)

   a. incentives to cooperate

   b. specific problems

   c. opportunities

   d. with whom

   e. specific mechanisms and arrangements

   f. implications

9. Who in your organization is an expert in this product?
10. Who knows the history of this product?
11. Do you share information on new products with other organizations or departments?

    a. when is this advantageous

    b. when is it disadvantageous to do this

    c. do you keep others informed of innovative product acquisition

III. DEPARTMENT FEATURES

1. Describe your department in terms of:
   (ask only if information is not already available)
   a. size - number of members
   b. size of annual budget

2. Organization structure

3. Does this department have any unusual situations for which special equipment is needed?

4. Do you communicate with other police departments to compare new ideas or experiences with innovative equipment? Which ones and how?

5. Do you attend any police equipment trade shows?

FOR PURCHASING ONLY:

6. Approximately how much has your department spent in the past year on acquiring innovative equipment?

7. Briefly describe your purchasing procedure.

8. What problems does your department have in acquiring new or improved equipment?

9. How much flexibility is there in your budget procedure to obtain new or improved equipment?

10. Are the rank and file users of law enforcement within your department generally receptive to innovative products?

FOR R&D ONLY:

11. Could you give us a list of R&D projects currently in progress. How much of your R&D effort is equipment oriented? (note: computer software not included)

12. What R&D capabilities do you have? Comment in terms of:
    a. expertise of staff
    b. organization structure

IV. PRODUCT USE HISTORY - Describe in terms of:

1. How many of the product do you have?
2. Identify the model and features.
3. Who are the manufacturers?
4. What was the approximate cost involved?
5. How long have you had it/them?
6. What did it replace?
7. What was the reason for replacement?
8. Have you purchased this product from other manufacturers? Who and when?

Heading

Note: the following questions pertain to the most widely used model of each equipment type.

1. When did you first become aware of this particular type product? What circumstances prompted this awareness?

(note: attempt to determine whether the need prompted a further search or knowledge of the product led to consideration)

interviewer: here are some suggestions to facilitate your line of questioning;
   1. Were you dissatisfied with the current equipment?
   2. Did this dissatisfaction prompt you to look for new or improved equipment?
   3. Did you hear about the equipment and decide it might be appropriate for your organization?
   4. How did you hear about this product?
   5. What were the attractive features that caught your interest?
   6. How formal were the procedures that identified the need for new or improved equipment?

2. What led you to consider this type of product more seriously?

3. Did your organization initiate a search for additional information about this type of product?
   a. When did you initiate this search?
   b. What information sources did you utilize?
   c. Which source proved most useful?
   d. Which producers were contacted (or which producers contacted you)?
   e. What is your procedure for conducting this information search?

4. Can you identify the events or information that prompted you to consider acquiring this type of equipment?

5. Who participated in the decision to investigate the possibility of acquisition? (note: find out about informal and formal investigation)

6. Which producer(s) did you consider for evaluation of their product?

7. What were the results of the evaluation (eg., did you make a decision to purchase the product or forget it)?

8. Did you test the product while considering its' acquisition?
   a. where - lab or field?
   b. who participated?
   c. who conducted the tests?
   d. what producers' equipment was included in the test (did you have to purchase the product to make the test)?
   e. what models were tested?
   f. how did they compare?
   g. what standards were used in the test?
   h. what other tests were utilized?
   i. what were the results of the tests?

User Questionnaire

9. Describe the procedure for approving the product.
(note: seek information such as the following)

a. who recommended acquisition?

b. who had to approve of this recommendation (were there any extenuating circumstances)

c. on what scale (pilot, distributive, total)?

10. Were there any legal uses or problems with respect to:

a. acquisition of the product

b. utilization of the product

11. Describe the funding procedure
(note: seek information such as the following)

a. when was the money for purchasing this equipment obtained?

b. what other sources were considered?

c. what problems were encountered?

d. how was it budgeted?

1) special funds

2) which years

e. what operating expenses are involved?

12. Consider the following with respect to purchasing:

a. were competitive bids requested?

b. did you prefer a specific make and model?

c. did you receive the model you wanted?

d. who in the organization wrote the specs?

e. did the specs need to be approved? by whom?

f. did purchasing alter?

g. what were purchasing criteria?

1) cost of equipment

2) reputation of supplier or manufacturer

3) expected results of use of the equipment

4) availability of standards of performance for equipment

5) availability of testimony from other users

6) public visibility of the product

7) budget situation of focal organization

8) not really clear what criteria are

9) other

h. who made the tradeoffs?

i. how flexible were they?

13. What problems were encountered in the following processes?

a. installation

b. personnel preparation

1) demonstration

2) information dissemination

3) training

c. changes in organization structure

V. (con't)

14. Did the producer participate in these activities?
15. What was the reaction of organization personnel to the introduction of this product?
16. What kinds of operational problems are you having with the product, if any?
17. What maintenance pronlems, if any, are you experiencing with the product (or do you anticipate)?
18. What maintenance (or other services) does the producer provide?
19. Do you have suggestions or recommendations to improve any of the steps in the generation, production, transfer, and utilization of this product?
    a. identification of need
    b. funding
    c. information service
    d. training
    e. cooperation among users
20. ASSESSMENT OF UTILIZATION AND BENEFITS OF THE EQUIPMENT
    (seek information such as the following)
    a. has there been any evaluation? what was it?
    b. is this type of product evaluation by your own organization standard procedure?
    c. were you required to do the evaluation, if yes, by whom?
    d. who participated in the evaluation?
    e. how was that evaluation to be used in your organization? by other organizations?
21. Would you buy this product again? If not, why?
22. If you were making the selection now, which would you choose (if any) among existing products?

VI. CLOSING QUESTIONS

Compare with competitive models (that he knows of prior to interview). Ask for any competitive products that the respondent can think of, then show the list of models and manufacturers (keep the list of products that he mentioned without list, and with list, separate).

1. Are you familiar with the product? (for each competitive product) If yes,

2. What can you tell me about its features, prices, problems, advantages.
   (note to interviewer: rate your perception of familiarity high, medium or low; seek information such as the following in very general, comparative terms)

   a. how closely do each of these come to your ideal? describe the desired product.

   b. how confident are you that each of these performs as specified (indicate why).

   c. why do you not have or use each of these products?

3. How important do you think innovative equipment is or could be in law enforcement?

4. What do you think would help get innovative equipment into the law enforcement field?

5. Are there other persons you could direct me to who would be helpful for me to talk to?

6. Can you think of any topics that should bave been covered which were left out?

Northwestern University Graduate School of Management Organization Behavior
Evanston, Illinois 60201

Study of R&D Systems for Law Enforcement Equipment

Supported by: National Institute for Law Enforcement and Criminal Justice

Interview Schedule for Agencies

Producing Law Enforcement Equipment (Abbreviated Form)

Northwestern University
Graduate School of Management
Evanston, Illinois 60201
(P/P1 2/74)

;anization_____ Interviewee_____ (4-1)
(name) (title) GENERAL INFORMATION

cation_____ Interviewer_____ Date_____

QUESTIONS ON THIS PAGE ARE TO BE ASKED ONLY ONCE OF AN ORGANIZATION

(A.) GENERAL INFORMATION

AI1. Organization parameters and product case data.

FIELD QUESTIONS

AQ1. Obtain information that will enable you to draw an organization chart of the company, indicating:

Divisions of the organization

Their relative size

$ Volume sales per each unit

Number of members

AQ2. Describe your product line in law enforcement equipment. (Collect any printed materials). Show interviewee the appropriate sheets from the equipment typology, and have him describe the products in the following terms:

Cost Range

Technical Content

Life Span of Products

User Target Markets

(Record answers on the equipment sheet, and include with interview final report)

anization_____ Interviewee_____ (A-2)
(name) (title)
cation_____ Interviewer_____ Date_____ GENERAL INFORMATION

AQ3.

What are your future plans with regard to your present equipment line and any other lines you may be considering?

Are there any product lines you competitors are involved in which you would like to involve yourself in? What are they?

AQ4. Considering you law enforcement equipment project portfolio, what % of it falls into the following categories?

	NOW	5 YEARS AGO	5 YEARS HENCE
SUPPORT:			
EXPANSION:			
EXPLORATORY:			

(SUPPORT: Customer service, major and minor improvements in current product, factory service.

EXPANSION R&D: Work on new products not currently made there, applied work leading to a new product based on well understood state of the art, work on ideas leading to well defined product not currently available.

EXPLORATORY R&D: Work on radically new product area not currently made anywhere and not having a well defined state of the art, work in a field of current or potential interest not immediately related to any product)

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

AQ4. Cont'd

What explains any changes?

How does this compare with your competitors?

AQ5. Since we are primarily concerned with the use of innovative equipment in law enforcement, can you describe some examples of innovative equipment that have been developed by your organization over the past 5 years?

Product Still In Use:	Product Discontinued:	Date Established	Date Terminated

AQ6. Is law enforcement research and development in your field an area of radical change in the state of the art?

Actually?

Potentially?

AQ7. What are the other fields, besides the law enforcement field, in which you work?

How does the law enforcement field differ from these other fields?

What is the relative size of the law enforcement field compared to the other fields in which you work?

anization_____ Interviewee_____
(name) (title)

cation_____ Interviewer_____ Date_____

B

ADEQUACY OF CURRENT EQUIPMENT

BQ1. Are there currently any major problems with law enforcment equipment that is available, both generally and in your field particularly?

Generally:

In your particular field:

BQ2. To what extent are the problems with current law enforcement equipment ones of not using the available equipment or ones of not having adequate equipment available?

BQ3. What new types of equipment are needed?

BQ4. In general, how can present equipment in your field be improved?

anization_____ Interviewee_____ C
(name) (title)
RATE OF DEVELOPMENT OF NEW EQUIPMENT

cation_____ Interviewer_____ Date_____

CQ1. How fast and how well are products being developed for your market?

Product Type	Is Rate of Development in your area High/ Medium / Low	How well are these products received?	Prime Developing Companies	Are they useful developments?

anization_____ Interviewee_____ (D-1)
(name) (title)
EQUIPMENT NEED IDENTIFICATION

cation_____ Interviewer_____ Date_____

DQ1. For your organization, where do most ideas for innovative equipment come form?

Equipment Type	In-House R&D - Marketing	Police Depts.	Sales Reps	Periodicals	Profess'l Conferences	Consultants

DQ2. Is this the way it ought to be? Are there any problem areas?

DQ3. Which of these sources would you say are the most reliable, i.e. usually have ideas that are worthwhile?

ganization_____ Interviewee_____ EQUIPMENT NEED IDENTIFICATION
(name) (title)

ɔcation_____ Interviewer_____ Date_____

DQ4. Who should be responsible for identifying law enforcement equipment needs?

DQ5. How does your organization generate new product ideas?

DQ6. Are the law enforcement associations and their magazines (IACP) useful and knowledgeable in your field to your and/or your eventual customers?

DQ7. Do you communicate with users regarding equipment needs? If yes, describe the method and frequency. If not, why not?

DQ8. Do you receive and/or solicit feedback on new products from users? How?

_anization_____ Interviewee_____ EQUIPMENT NEED IDENTIFICATION
(name) (title)

ocation_____ Interviewer_____ Date_____

DQ9. How do you keep up with a) what other companies are doing in the law enforcement field and b) new products that appear or are tried out?

a) What other companies are doing:

b) New products that appear and are tried out:

DQ10. How fast and how reliable are these sources of information?

DQ11. Do you attend any police equipment trade shows? Who else attends?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

EQ1. How much flexibility in terms of facilities, personnel, etc. do you have to significantly broaden or diversify your product line?

(EQ2) What would help you to do a better job of producing new equipment?

EQ3. What expertise, facilities and ability to test your product in the field do you have, in working on the development of equipment for the law enforcement market?

EQ4. Some companies do all their R&D work, while others make use of external R&D facilities. Do you do all your R&D in-house or do you subcontract projects out to other organizations? Who?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

EQ5. To what extent do political factors and the ways in which equipment is purchased affect your decision to develop new law enforcement equipment?

ganization_____ Interviewee_____ F
(name) (title) WILLINGNESS TO PRODUCE EQUIPMENT

ocation_____ Interviewer_____ Date_____

FQ1. To what extent is your company willing to invest in law enforcement R&D?

FQ2. How does this compare with other areas in which you work?

FQ3. To what extent is the R&D common among areas?

FQ4. How much of an incentive is there to innovate in law enforcement equipment?

FQ5. What would increase the incentive?

FQ6. What limits the incentive?

anization_____ Interviewee_____ MARKET G-1
(name) (title) ANALYSIS

cation_____ Interviewer_____ Date_____

GQ1. What barriers, problems and opportunities are in the law enforcement market?

GQ2. Can you generally sell stock equipment or are there local conditions which make major modifications and/or special models necessary?

Equipment Type	Stock and/or Modifications	Type of and Reason for Modifications	Comments

GQ3. Do users generally request or see arneed for the design of special equipment for local requirements? Which users are least and most sensitive in this regard? How necessary are these modifications?

LEAST	MOST	NECESSITY

GQ4. What problems does this demand for special designs create for you?

ganization_____ Interviewee_____ (name) (title)

ocation_____ Interviewer_____ Date_____

GQ5. How much do you modify your product to meet individual user requirements and preferences?

GQ6. To what extent are your law enforcement products and extension of and/or a modification of products developed for other sectors?

What are the other fields in which you work, that are related product-wise to law enforcement field?

GQ7. How important is it you you, in terms of profitability and innovation, to be able to combine your law enforcement equipment with equipment you sell in other markets? Give details.

GQ8. Are there any people you compete with who only make equipment for the law enforcement agencies? How viable is it to operate just for the law enforcement market?

ganization_____ Interviewee_____ MARKET ANALYSIS G-3
(name) (title)

ocation_____ Interviewer_____ Date_____

GQ9. How competitive is the law enforcement market with respect to your product line?

GQ10. Is there any competition on an innovation basis between firms?

GQ11. What problems would new companies trying to enter the law enforcement equipment field encounter?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

HQ1. What are the barriers to your developing the kind of law enforcement equipment users want and/or need?

HQ2. Are there problems in getting your R&D personnel to respond to the practical needs of law enforcement agencies? If yes, why do you believe this to be so?

HQ3. Does a user bidding process present any problems to you as a producer?

HQ4. How do you go about establishing new products in the market?

HQ5. What advertising media do you use?

HQ6. Does the organization ever lease new or innovative equipment? When? Why? (show the detailed typology)

Equipment	When Leased	Why

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

HQ7. What type of salesmen do you employ for the law enforcement and criminal justice market? How many salesmen cover the law enforcement market?

Number of salesmen covering the field_____

Skills Experience

HQ8. What problems do you encounter in implementing new products with users?

HQ9. What type of technical assistance do you offer to users?

HQ10. What type of field service and equipment maintenance services do you offer to users?

rganization_____ Interviewee_____
(name) (title)
Location_____ Interviewer_____ Date_____

I

FACTORS IMPEDE/FACILITATE INNOVATION BY USI

FIELD QUESTIONS

IQ1. Organization structure and operating systems often act to help or impede the utilization of equipment innovations, depending on the situation. In your opinion, what factors in the law enforcement agencies impede the use and acceptance of your product?

a) where equipment purchase decisions are made

b) the way operating systems work (i.e. amount of computerization, mechanization, etc.)

c) extent of departmental specialization

d) size of operation

e) others (list)

Comment on the ability to change the organization structure and operating systems.

IQ2. To what extent has the level of skills in the user organization (technical, administrative know-how, number of people available, consultants) either assisted or served as a barrier to the utilization of your new equipment?

IQ3. To what extent are there sufficient and competent consultants in the field to assiste user organizations in the utilization of equipment in your field?

ganization_____ Interviewee_____ (J) STANDARDS
(name) (title)

ocation_____ Interviewer_____ Date_____

JQ1. There are numerous potential sources of standards which could be or are being used to regulate equipment for law enforcement use. Some of these are more or less acceptable to the manufacturers and users of law enforcement equipment, and are likely to be more or less useful to them. In each of the equipment areas, as appropriate, indicate which sources of standards you are currently using, other relevant sources of which you are aware, and sources which you would be most receptive to as an appropriate agency for setting standards.

Equipment Type	Present Source	Others You Are Aware Of	Most Appropriate Source

JQ2. Is there a need to increase the incentive to use law enforcement equipment standards? If so, in what areas?

JQ3. To what degree are you involved in developing test standards?

JQ4. How important are standards in developing innovative equipment?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

(K)
FUNDING

KQ1. Do you think there are sufficient funds available to user organizations for the purchase of new innovative law enforcement equipment?

KQ2. Are there any incentive programs or special funds for encouraging the development of innovative law enforcement equipment? Describe in some detail the structure of such programs on the source of and procedure for disbursing such funds.

KQ4. Have you received funds from any external source? If so, indicate details.

Source	Date	Funding Level	#of Proposals Written	Purpose	Comments	Funds Rec'd Not Rec'd

KQ5. Is there a need to change current funding policies and procedures for new law enforcement equipment?

KQ6. Can you suggest any changes in current funding procedures?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

L
GOVERNMENT
REGULATIONS

LQ1. Are new laws and regulations needed for development of law enforcement equipment?

LQ2. How much impact are laws and regulations having on the development of law enforcement equipment?

LQ3. Do you feel there is a need for some law enforcement government agency to identify, evaluate and specify potential products for the law enforcement system?

LQ4. Should this information be disseminated to industrial firms in each major equipment category?

ganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

(M-1)
ROLE OF LE AGENCIES & SATISFACTIO WITH PERFOR- MANCE

MQ1. What effect do federal agencies like Law Enforcement Assistance Administration and its National Institute for Law Enforcement and Criminal Justice have on the following:

a) the information you can get about the innovative equipment (availability, use and needs)

b) standards of performance for innovative equipment

c) regulations that encourage or restrict the use of innovative equipment

d) other (list)

MQ2. What effect do the state agencies like the department of law enforcement and the state planning agency have on these categories?

a) the information you can get about innovative equipment (availability, use and need)

b) regulations that encourage or restrict the use of innovative equipment

c) standards of performance for innovative equipment

d) other (list)

rganization_____ Interviewee_____
(name) (title)

ocation_____ Interviewer_____ Date_____

(M-2)
ROLE OF LE AGENCIES & SATISFACTION WITH PERFOR-MANCE

MQ3. What is your opinion of government agencies in the law enforcement R&D process

a) State

b) Federal

MQ4. Should there be more national Law Enforcement R&D centers?

ganization_____ Interviewee_____ N
(name) (title) CLOSING QUESTIONS

ocation_____ Interviewer_____ Date_____

NQ1. How important do you think innovative equipment is or could be in law enforcement?

NQ2. What do you think would help get innovative equipment into the law enforcement field in general?

NQ3. Are there other persons you could direct me to who you think would be helpful for me to talk to? Please Specify.

Thank you for your help. When we review this interview we may require some clarifications. Can we call you if necessary, and possibly have a later follow-up meeting with you?

NORTHWESTERN UNIVERSITY
GRADUATE SCHOOL OF MANAGEMENT
NATHANIEL LEVERONE HALL
EVANSTON, ILLINOIS 60201

National Study of the Equipment R&D System Supporting the

Law Enforcement Field

funded by a grant from the

National Institute for Law Enforcement and Criminal Justice of LEAA

This questionnaire is concerned with the use of innovative equipment by police departments. It is especially important for us to have the officer's perception of equipment use in the departments. The information you can supply will be very valuable to us and very much appreciated. We therefore hope you will be willing to take the time to fill out this questionnaire.

It is possible that we would want to conduct interviews with several officers during your stay here at the Institute. Such interviews would probably last about half an hour. If you would be willing to be interviewed, probably on Wednesday or Thursday, November 6th or 7th, indicate your willingness on the last page of the questionnaire.

Should you have any questions, please contact the office of:

Michael Radnor

Professor and Chairman

Organization Behavior Department

Organization_____ Interviewee_____

Location_____ Title_____

Date_____

I. Agency Description

1. Describe your law enforcement agency in terms of:

a) number of members -- uniformed_____

-- civilian_____

b) geographic area covered -- square miles _____

--general description (check appropriate items)

__ flat

__ compressed

__ spread out

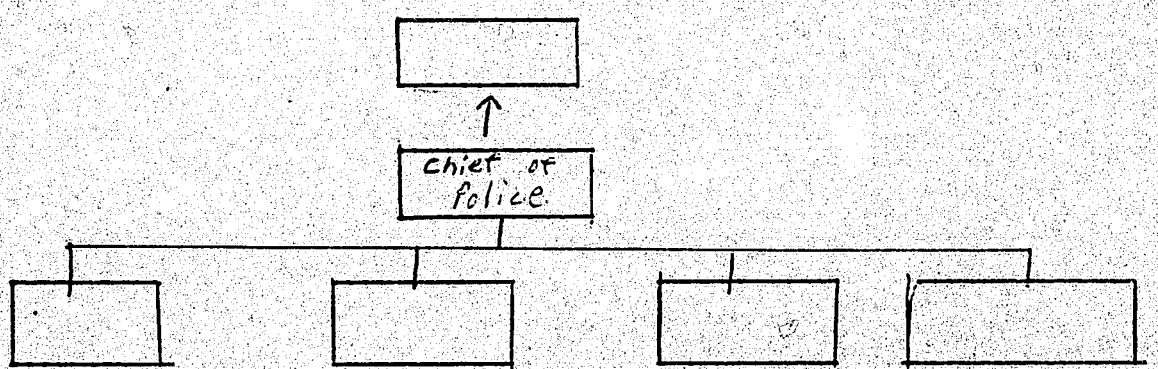
__ hilly

__ many high buildings

__ few high buildings

c) size of annual budget of department (if known)_____

2. Organization Structure (fill in the titles and ranks in the chart below.



3. Do you have any unusual law enforcement situations for which special equipment is needed?

10. Do you, or other officers, communicate with other police departments to compare new ideas or experiences with innovative equipment? (Innovative means new to your department - not such things as replacement vehicles.)

If so, with whom_____

how often_____

how_____

13. Does your department share in the use of any equipment with other agencies? _____

If so, with whom _____

what equipment _____

how is it shared _____

THIS SECTION PERTAINS TO BODY ARMOR (Please check ✓)

A. Equipment now in use _____

B. Considered but rejected _____

C. Have used, but discontinued _____

We are interested in Body Armor your department has had experience with, has used and discontinued using, and uses now.

Manufacturer and Model _____

II.-2. Who in your organization used it _____

4. What benefits do you derive from its use _____

_____

V-8. Did your department conduct any tests of the Body Armor before purchasing and putting it into full use? _____

Please describe as many details of such tests as possible.

_____

_____

_____

_____

V-13. What problems were encountered---

a) in introducing the Body Armor into full use _____

_____

b) in preparing personnel for using it (training, informing, demonstrating, etc.) _____

_____

V-14. Tell us anything you know about how much the Body Armor manufacturer participated in---

a) installation/introduction _____

_____

b) personnel preparation _____

_____

V-15. What was the general reaction of department personnel to the introduction of the Body Armor? _____

_____

V-16. What kinds of operational problems are you having (or did you have) with this Body Armor?_____

_____

V-20.a) Has there been any evaluation of the use of Body Armor in the department?_____

What was it_____

_____

b)Is this evaluation a standard practice for your department?

_____

d)Who participated in the evaluation_____

_____

e)Do you know what happened as a result of the evaluation_____

_____

V-21. Would you recommend buying this equipment again?_____

Why or why not?_____

V-22. Would you choose another product over this one?_____

Which? Why? _____

_____

THIS SECTION PERTAINS TO HOLSTERS (Please check ✓)

A. Equipment now in use_____

B. Considered but rejected_____

C. Have used, but discontinued_____

We are interested in Holsters your department has had experience with, has used and discontinued using, and uses now.

Manufacturer and Model_____

II-2. Who in your organization used it_____

4. What benefits do you derive from its use_____

_____

V-8. Did your department conduct any tests of the Holsters before purchasing and putting them into full use?_____

Please describe as many details of such tests as possible.

_____

_____

_____

_____

V-13.What problems were encountered

a)in introducing the Holsters into full use_____

_____

b)in preparing personnel for using them (training, informing, demonstrating, etc.)_____

_____

V-14. Tell us anything you know about how much the Holster manufacturer participated in

a)introduction_____

_____

b)personnel preparation_____

_____

V-15. What was the general reaction of department personnel to the introduction of the Holsters?_____

_____

V-16. What kinds of operational problems are you having (or did you have) with the Holsters?_____

_____

V-20.a)Has there been any evaluation of the use of Holsters in the department?_____

What was it_____

_____

b)Is this evaluation a standard practice for your department?

_____

d)Who participated in the evaluation_____

_____

e)Do you know what happened as a result of the evaluation_____

_____

V-21. Would you recommend buying this equipment again?_____

Why or why not?_____

V-22. Would you choose another product over this one?_____

Which? Why? _____

_____

THIS SECTION PERTAINS TO NON-LETHAL EQUIPMENT (Please check ✓)

A. Equipment now in use_____

B. Considered but rejected_____

C. Have used, but discontinued_____

We are interested in Non-lethal equipment your department has had experience with, has used and discontinued using, and uses now.

Manufacturer and Model_____

II-2. Who in your organization used the non-lethal equipment_____

_____

4. What benefits do you derive from its use_____

_____

V-8. Did your department conduct any tests of the non-lethal equipment before purchasing and putting it into full use?_____

Please describe as many details of such tests as possible.

_____

_____

_____

_____

V-13. What problems were encountered

a)in introducing the equipment into full use_____

_____

b)in preparing personnel for using it (training, informing, demonstrating, etc.)_____

_____

V-14. Tell us anything you know about how much the non-lethal manufacturer participated in

a)installation/introduction_____

_____

b)personnel preparation_____

_____

V-15. What was the general reaction of department personnel to the introduction of the non-lethal equipment?_____

_____

V-16. What kinds of operational problems are you having (or did you have) with the non-lethal equipment?_____

_____

V-18. What services does the manufacturer provide?_____

_____

V-20.a) Has there been any evaluation of the use of non-lethal equipment in the department?_____

What was it_____

_____

b)Is this evaluation a standard practice for your department?

_____

d)Who participated in the evaluation_____

_____

e)Do you know what happened as a result of the evaluation_____

_____

V-21. Would you recommend buying this equipment again?_____

Why or why not?_____

V-22. Would you choose another product over this one?_____

Which? Why?_____

_____

This section is not specific to any particular equipment but is concerned with the overall issue of innovative equipment in general.

VI-3. How important do you think innovative equipment is or could be in law enforcement?_____

_____

_____

4. What do you think would help get innovative equipment into the law enforcement field?_____

_____

_____

6. If you would like to comment on an important topic we seem to have missed, please do so here._____

_____

_____

Would you be willing to be interviewed by one of our staff?_____

THANK YOU FOR YOUR COOPERATION. YOUR PERSONAL AND PROFESSIONAL VIEWPOINTS ARE VERY PERTINENT AND MUCH APPRECIATED.

Organization Behavior Graduate School of Management Northwestern University
Evanston, Illinois 60201
Study of R&D Systems for Law Enforcement Equipment
Supported by: National Institute for Law Enforcement and Criminal Justice

INNOVATION

We are concerned in this study with innovation in Equipment for Law Enforcement. Primarily we are interested in the following types of innovations:

Innovations

1 (a) Equipment and products that are not, to your knowledge being normally*used anywhere at this time

(and)

1 (b) Equipment and products that are not, to your knowledge, being normally used anywhere in similar law enforcement organizations at this time.

Adopted Innovations

2. Equipment and products that are normally being used elswhere in law enforcement organizations similar to your own, but are not currently being used by your organization.

In addition we recognize and will sometimes be interested in one other category of improved equipment

Modifications

3. Adoption and improvement of equipment and products currently in normal use by your organization

We are generally not concerned with the acquisition of more (or only slightly modified - from a true functional viewpoint) products and equipment of types you already normally use.

*Normally here excludes experimental use

NORTHWESTERN UNIVERSITY
GRADUATE SCHOOL OF MANAGEMENT
NATHANIEL LEVERONE HALL
EVANSTON, ILLINOIS 60201

Dear

We are engaged in an important national study of the equipment R&D system supporting the law enforcement field. The study, funded by a grant from the National Institute for Law Enforcement and Criminal Justice of LEAA, investigates a diversity of law enforcement agencies including police departments, courts, corrective institutions and special agencies. We would like to elicit your cooperation.

The object of the study is to obtain an in-depth understanding of how the equipment R&D system operates at all points from the user to the commercial firms and R&D laboratories. Special attention is being placed on information flow, technology transfer, and federal and local policies and programs that influence the R&D processes. We are also examining the recent NILECJ attempts to improve the flow of R&D based equipment to the Law Enforcement agencies. The output of the study should be a set of recommendations to improve the flow of specific types of products into the field as well as general policy recommendations.

We would like to interview one or two people in your organization who would be able to provide some information on these topics as they apply to your situation. These interviews will not be unduly time-consuming and you and your people will find considerable areas of interest in what we are doing across the country. Also we want to make it clear that all information from such interviews will be kept strictly confidential.

One of our researchers will call you in a day or two to see if a preliminary, non-committing interview can be arranged with you or with someone you would designate to obtain some initial data.

Thank you for your cooperation.

Sincerely,

M. Radnor

Michael Radnor
Professor and Chairman
Organization Behavior Department

GENERAL INSTRUCTIONS TO THE INTERVIEWER

Setting up the interview;

You are to make the initial phone contact yourselves to set up your appointments.

If it feels comfortable, ask the unitial contact person on the phone whom you should try to see; i.e. Chief of police, R&D head, Warden, Division head etc..

The Questionnaire;

1. Before the interviewes, read the questionnaire and make sure you understand the question.
2. The question should be seen as guidelines for your operating benefit. Use your judgement as to how to ask the questions. Where appropriate, feel free to add new questions and make modifications in wording, but be sure all the information is covered.
3. When recording the interview, be sure to use our numbering and lettering system (this will enable us to keep our analysis straight).
4. Throughout the interview, ask about both positive and negative aspects; i.e.,
   - successes and failures
   - helpful things and hindering things related to any aspect of the product

The Interviews;

1. Try to make the interview more of a conversation than a question and answer period. At the beginning, explatin briefly our purpose.
2. Watch your time. You may need to keep the interview on track.
3. We are concerned with EQUIPMENT innovation only. You should stay away from discussing other forms of innovation (eg., changes in administration of criminal justice, organization, and personal issues) except as these relate directly to equipment.
4. If the interviewee begins to seek information from you, offer to Xerox a copy of any of our material which are relevant. (This is both a service and a way to keep from getting sidetracked).
5. Tape recorders are not to be used.

Other notes;

1. If possible, al ays go to the police department in the town of the interview.
2. Make any not that you think we ought to know about the interview (process).
3. After the interview, make any notes about the organization which appear important.
4. Do you think they would be agreeable to eur coming back later for a follow-up if necessary?
5. Per R&D departments;
   Give a general description of the R&D layout, the ranks of the R&D cfficers, and an observation of attitudes within the R&D department.

This list was formed because of the relatively rare occurance of some of our equipment types. Try to get information on those products appearing at the top of the list and then work towards the bottom. Don't get into the position where you get information applicable only to products 7 and 8; seek a balance. The priority list follows:

1. Voice I.D.
2. Non-lethal weapons
3. Vehicle locators
4. Low-light photography and surveillance equipment
5. Weapons detectors
6. Body armor
7. Portable transceivers
8. Holsters and Utility belts

For special users (eg. courts and prisons) remember our other two equipment types are stenotype-audiotype (court recording systems) and building design for courts and prisons.

When seeing a functional head (eg.,head of patrol, investigation, etc.) seek only information on those products which that particular department uses.

Patrol Department

non-lethal weapons
low-light surveillance
body armor
portable transceivers
holsters/utility belts

Rescue Department

body armor
portable transceivers
holsters/utility belts

Riot Control Department

non-lethal weapons
body armor
portable transceivers
holsters/utility belts

Lab Investigation Departments

voice I.D.
weapons detection

Surveillance: Crime deterrence

low-light photography and surveillance
weapons detectors
portable transceivers

Co-ordination (base station to field)

vehicle locators

Traffic Control and monitoring → portable transceivers
holsters/utility belts

December 1973

Michael Radnor

Married
2 children

797 Willow Road
Winnetka, Illinois 60093
Area Code 312 #446-5279

Professor and Chairman of the
Organization Behavior Department,
Graduate School of Management
and Professor of Education,
School of Education, Director of the
Interdisciplinary Center for Studies
of Science and Technology

Organization Behavior Dept.
Leverone Hall
Northwestern University
Evanston, Illinois 60201
Area Code 312 #492-3470

Education:

1. Graduate

   a. Ph.D. 1964 Northwestern University, Evanston, Illinois, Department of Industrial Engineering and Management Sciences (Major in Organization Behavior).

   b. Diploma for the One Year Graduate Course in Business Administration, London School of Economics, University of London, 1955-1956.

   c. D.I.C. (Diploma of Imperial College), in Production Engineering at Imperial College, University of London, 1955-1957 (Equivalent to Master's Degree).

2. Undergraduate

   a. B.S. (Honors) Engineering London Mechanical Engineering at the Imperial College of Science and Technology, University of London, 1953-1956.

   b. A.C.G.I. (Associate of the City and Guilds of London Institute) in Mechanical Engineering, 1955.

Special Training Course

Work Study Course, Imperial Chemical Industries (I.C.I.), 1956.

Previous Professional Experience:

Vice President and General Manager, the Tann Controls Company, Division Tann Corporation, Detroit, Michigan.

Senior Manufacturing Engineer, Line Supervisor, Westinghouse Corporation, Small Motor Division, Lima, Ohio.

Assistant to the Work's Manager, C.A.V. Ltd., (Lucas) London, England.

Production Engineer, Bedek Aircraft, Lud, Israel.

Honors and Fellowships:

a. Honors Degree, London University

b. Alpha Pi Mu, Industrial Engineering Honor Society

c. Sigma Xi Science Honor Society

d. Walter C. Murphy Research Fellowship, Northwestern University, 1961-63.

e. Irwin Foundation Fellowship for Final Year Ph.D. Candidates in Business, Economics, or Social Sciences, 1963-64. One of eight awarded in the United States.

Teaching Activities:

Courses taught at Northwestern University:

Graduate School of Management

M.M.

Organization Behavior (D-30)
Organization and Leadership of the Enterprise (D-32)
Business Policy and Administrative Action (D-52)
Intercultural Aspects of International Management (D-56)
Management of Professionals (D-58)

Ph.D.

Introduction to Organization Behavior (D-04)
Behavior in Organizational Systems (D-25-1)
Organizations in the Environments (D-25-2)
Empirical Research in Organization Behavior:
Methods and Practices (D-26)

Industrial Engineering and Management Sciences

Undergraduate

Introduction to Industrial Engineering (C-10)
Introduction to Organization Theory (C-40)

Courses and Programs Developed:

Developed the Ph.D. program in Organization Behavior in the School of Management. Introduced the advanced (D-25-1 and D-25-2) organization theory sequence (in cooperation with Professor Harold Guetzkow -- Psychology, Sociology, and Political Science Departments), and the D-26 empirical research course. Introduced introductory D-04 course as a joint offering between School of Management, Industrial Engineering, and Management Sciences Department and the School of Education.

Designed and implemented the Organization Behavior program and major at the Master's level.

Arranged for cooperative program with Industrial Engineering and Management Sciences Department (with Professor Albert H. Rubenstein) and the cross listing of courses. Through these arrangements, the university-wide multi-disciplinary program in Organization Behavior in the Management School was created.

Introduced the E-20 series of advanced Ph.D. seminars in Organization Behavior.

Designed the new course on the Management of Professionals (D-58).

Advisor (program and dissertation) to Organization Behavior doctoral students (24) to date.

Dissertations Supervised:

1968

John A. Bonge
Organizational Response to Technological Innovation.

1970

P. Michael Maher
An Experimental Computer Based Project Selection System for a Research and Development Organization.

Husang Mazaheri
An Investigation of Critical Requirements for Change Agents in Rural Iran.

David A. Tansik
Influences of Organizational Goal Structures on the Selection and Implementation of Management Science Projects.

R. Patrick Forster
The Evaluation and Control of American Research and Development Laboratories in Europe.

1972

Marvin Bartell
Values, Interpersonal Relations, Performance of Problem Solving Groups in Organizations.

Alden S. Bean
Management Science - Client Relationships: Studies of Linking Mechanisms.

Terrence Connolly
The Effects of Uncertainty on a Diffuse Decision Process.

Eliezer Fuchs
The Policy Formulation Process in Macro-Level Governmental Decisions: "The Decision to Reform the Postal System in U.S.A."

Rodney D. Neal
A Study of the Effects of Various Procedural Methods for Integrating OR/MS Activities in Large Industrial Concerns.

William W. Notz
A Juxtaposition of Three Social-Psychologically Based Theories of Organization Behavior through Natural Field Experimentation.

Barry Staw
The Attitudinal and Behavioral Consequences of Changing Major Organizational Inducements: A Natural Field Experiment.

1973

Juan A. Bustillo
Managerial Technology, Visibility of Consequences and Organizational Efficiency.

Robert A. Cooke
Collective Decision Structures and Processes in Educational Organizations.

Harold Dolenga
An Analytical Case Study of the Policy Formation Process (Postal Reform and Reorganization).

Giorgio Inzerilli
Professional-Client Relationships in Organizations.

Barbara Peters
Communication Patterns, Task Characteristics, and Career Patterns of Scientists.

John R. Schermerhorn, Jr.
Determinants of Interorganizational Cooperation: Theoretical Synthesis and an Empirical Study of Hospital Administrator Felt Needs to Cooperate.

Publications and Papers:

"Some Organizational Experiences in Applying Advanced Production Management Technologies" (with Rodney Neal) submitted to the Journal of the Academy of Management, 1974

"Implications of Alternative Institutional Arrangements for Implementation of Analysis" (with Albert Rubenstein and David Tansik), to appear in Systems Planning and Design: Case Studies in Modelling, Optimization, and Evaluation, Richard de Neufville and David H. Marks (eds.), Prentice-Hall, 1974.

"Top Management Support for Management Science" (with Alden S. Bean), to appear in Omega, the International Journal of Management Science, Vol. 1, No. 6, 1973.

"Organizational Structure and the Implementation of OR/MS Projects" (with Alden S. Bean, Rodney Neal, and David Tansik). Working paper presented at the OR/MS Implementation conference in Pittsburgh, Pa., November 15, 1973.

"The Transfer of Management Technologies to Developing Countries," working paper presented at the National Defence University, Tehran, Iran, July, 1973.

"Towards a Theory of Comparative Management Science," working paper presented at TIMS XX International Meeting, the Institute of Management Science, Tel Aviv, Israel, June 1973.

"Some Organizational Design Perspectives for OR/MS Activities" (with Alden S. Bean, Rodney Neal, and David Tansik). Working paper presented at the 43rd National ORSA meeting at Milwaukee, Wisconsin, May, 1973.

"The Progress of Management Science Activities in Large U.S. Industrial Corporations" (with Rodney Neal), Operations Research, March-April, 1973.

"The Relationship Between Formal Procedures for Pursuing OR/MS Activities and OR/MS Group Success" (with Rodney Neal), Operations Research, March-April, 1973.

"Research and Education Studies in the NASA - Northwestern Management School Programs," progress report to the National Aeronautics and Space Administration, Washington, D.C., January, 1973.

Interorganizational Decision Making (Co-edited with Matthew Tuite and Roger Chisholm), Aldine Press, Chicago, Illinois, 1972.

"Shifting Patterns of Success and Failure of Management Science in Industry" in "Through a Glass Darkly," Halbrecht et al., Management Sciences. Interfaces, Vol. 2, No. 4, August, 1972.

"Residuals Treatment Decision Making" (with Leslie Roos). Working paper presented at the Institute of Management Sciences, Houston, Texas, April, 1972.

"Trends in the Integration of Management Science Activities in the Federal Civilian Agencies" (with Dave Tansik and Michael White). Working paper presented at the Institute of Management Sciences, Houston, Texas, April, 1972.

"A Model Program for the Development of Educational Administration Leadership," working paper presented at the American Educational Research Association Annual Meeting, Chicago, Illinois, April, 1972.

"An R and D Training and Development Model for Educational Systems," working paper presented at the 41st National Meeting of the Operations Research Society, New Orleans, Louisiana, April, 1972.

"Management Science in Japan," working paper presented at the Academy of Management conference in South Bend, Indiana, April, 1972.

"An Organization Theory Perspective on PPBS Development," Public Administration Review, November-December, 1971.

"Management Sciences and Policy Sciences," Policy Sciences, No. 2, 1971.

"Strategies for Institutionalizing Change Interventions in Organizations," working paper presented at the XVIIth International Congress of Applied Psychology, Liege, Belgium, July 1971.

"Implementation in Operations Research and R and D: In Government and Business Organizations" (with Albert H. Rubenstein and David Tansik). Operations Research, November-December, 1970.

"OR on OR" in Journal of the Operations Research Society of Japan, 1970.

"Operations Research on Operations Research," in OR69, Tavistock Press, London, 1970 (Editor J.R. Lawrence). Working group report in Proceedings of Fifth Conference of International Federation of Operations Research Societies, Venice, Italy, June, 1969.

"Production Control Models -- A Skeptical Viewpoint" (with R.E. Machol and M.F. Tuite). Working paper presented at the international IFORS Conference on Production Control Algorithms, Karlovy Vary Czechoslovakia, September, 1970.

"Production Control Algorithms -- A Systems Viewpoint" (with R.E. Machol and M.F. Tuite). Working paper presented at the international IFORS Conference on Production Control Algorithms, Karlovy Vary, Czechoslovakia, September, 1970.

"Operations Researchers and Organization Theorists: Mutual Contributions to Understanding" (with Ralph Thelwell). Working paper presented at the 36th National Meeting of the Operations Research Society of America, Miami Beach, Florida, November, 1969.

"Negotiating Behavior in Government Business Contractual Relations," working paper presented at the joint meeting of the Operations Research Societies of America and Israel, Tel Aviv, Israel, July, 1969.

"In-House Research on the Management of R and D in Government Agencies" (with William L. Williams), IEEE Transactions in Engineering Management, Vol. EM-16, No. 2, May 1969.

"Stages and Indices of the Evolution of Management Science in Organizations and their Environment," working paper presented at the XVIth International Meeting of the Institute of Management Sciences, New York City, New York, March, 1969.

"An Overview of U.S. Government Experience with Management Science, a Survey Report on 40 Government Agencies," working paper presented at the joint Northwestern University-WORC/ASPA Conference, Washington, D.C., December, 1968.

"Integration and Utilization of Management Science Activities in Organizations," Operational Research Quarterly, Vol. 19, No. 2 (June, 1968), 25 pp. This paper has also appeared in translation in the Journal of the Operations Research Society of Japan, 1970.

"The Administration of Very Large, High Technology Programs," a semi-annual report on a research project supported by the National Aeronautics and Space Administration, 1968.

"Some Organizational Factors Related to the Effectiveness of Management Science Groups in Industry" (with A.H. Rubenstein et al.), Management Science, April, 1967.

"Control of R and D by Top Managers in 48 Very Large Companies," in Operational Research and the Social Sciences. Editor J.R. Lawrence, Tavistock Press, London, 1966.

"Examples of Successful and Unsuccessful Improvement Functions and Operations Within Large Organizations," working paper presented at the Symposium on the Management of Improvement, Georgia Institute of Technology, Atlanta, Georgia, October-November, 1966.

"The Control of Research and Development by Top Managers of Large Decentralized Companies," Ph.D. Dissertation. Northwestern University, Department of Industrial Engineering, 1964.

"A Critical Evaluation of the Field of Engineering Economy," Journal of the Institute of Industrial Engineering, May-June, 1964.

"Top Management's Role in Research Planning in Large Decentralized Companies," Proceedings of Third Conference of International Federation of Operations Research Societies, Oslo, Norway, July, 1963, (with A.H. Rubenstein) English U. Press, London, 1964, pp. 505-519.

Review of: Behavior and Organizations: O and M and the Small Group, by R.T. Golembiewski, Rand McNally, 1962. For: The Quarterly Review of Economics and Business, Vol. 2, No. 4, November, 1962.

Grants Received (Principal Investigator):

1973 National Institute for Law Enforcement and Criminal Justice (NILECJ) for study of R and D system for Law Enforcement, $100,000 for one year.

1973 New NASA grant for study of NASA and its Laboratories in a Changing Environment, $63,500 for one year.

1972 National Science Foundation grant (with G. Zaltman) for the study of the Institutionalization of Science, $114,000.

1970 Office of Advanced Research and Technology (NASA) for Studies on Communication Patterns, $39,000.

1970 Second renewal of NASA grant at $71,500.

1969 Renewal of NASA grant at $100,000.

1968 Booz, Allen, and Hamilton Foundation for studies on the Adoption and Diffusion of Operations Research/Management Sciences in Business and Government: U.S. and Overseas, $20,000.

1968 National Aeronautics and Space Administration for studies in R and D Administration, initial grant of $200,000.

1967 Intersocietal Studies Council, Northwestern University (with A.H. Rubenstein) for support of Overseas Studies on the Integration and Organization of Management Science, $23,000.

Research Activities:

1. Integration and utilization of management science activities in business and government, U.S. and overseas. A study of the institutionalization of innovations.

   Completed:

   Survey of 100 large U.S. corporations (250 interviews). Survey of 40 civilian Federal Agencies (150 interviews).

   In Progress:

   In-depth studies in U.S. business and government organizations. Cooperative studies with 21 overseas and 7 U.S. universities on management science activities in each country. Ten Ph.D. dissertations are being directed or have been completed in this area.

   Four (D.A. Tansik, 1970, A. Bean, 1972, R. Neal, 1972, and J. Bustillo, 1973) dissertations have been completed, and two (M.J. White and F. Spurgat) are well advanced.

2. Management of research and development.

   Completed:

   Study of the organization and management of R and D activities in 200 large decentralized companies.

   Project Selection in R and D (Dissertation, P.M. Maher, completed 1970).

   U.S. R & D laboratories in Europe (Dissertation, P. Forster, completed 1970).

   Decision Making Communication Systems among Scientists in R and D Organizations (Dissertation, T. Connolly, completed 1972).

   The Effects of Value Systems on Research Productivity (Dissertation, M. Bartell, completed 1972).

   Three dissertations are under way.

3. Sociology of Science -- studies of the institutionalization of science, specifically the relationship between science technologies and the conduct of science.

Completed:

Study of communication patterns amongst high energy physicists (Dissertation, B. Peters, 1973).

In Progress: (In cooperation with G. Zaltman)

Study of the effect of increasing scale of facilities on the conduct of high energy physics research. Study supported by the National Science Foundation. Three dissertations are under way.

4. Studies of top level government policy making process.

Completed:

Major study of the decision to reform the U.S. Post Office (Dissertation, E. Fuchs, 1972 and H. Dolenga, 1973)

In Progress:

Volume on Policy Making Processes.

Volume on the Post Office Reform case study.

5. NASA-supported program of research on the Management of Research and Development Organizations.

Principal Investigator on continuing research program in the following areas:

a) Project Management
   Birth and Death Cycles of Projects
   Development and Use of GREMEX Project Management Simulation

b) Information Systems
   Design Studies
   Acceptance and Resistance of New Information Systems

c) Scientist-Programmer Relations (Dissertation, G. Inzerilli, 1973).

d) Support Services and the Organization of Research (Dissertation, R. Butler, 1973).

e) The Development of Management Analysis and Science Activities in Government

f) Management of Human Resources in R and D Organizations

6. LEAA-supported study of the R and D System for Law Enforcement.

Principal Investigator on study of total R and D production and delivery system.

Professional Activities:

1973 Presented paper at "The Implementation of OR/MS Models: Theory, Research and Application," a research conference, Pittsburgh, Pa., November, 1973.

- Presented paper at "Algorithms for Production Control and Production Scheduling, II" conference, Karlovy Vary, Czechoslovakia, September, 1973.

- Presented paper at the National Defense University, Tehran, Iran, July, 1973. Gave series of talks at the Executive Institute of the University of Tehran, July, 1973.

- Chaired session, presented paper at "TIMS XX," the international meeting of the Institute of Management Sciences, Tel Aviv, Israel, June, 1973.

- Presented paper at the 43rd National Meeting of the Operations Research Society of America, Milwaukee, Wis., May, 1973.

- Appointed as an editor for Journal of American Institute of Decision Sciences.

1972 Chaired session at joint TIMS/ORSA conference, Atlantic City, New Jersey, November, 1972, on "Why OR Groups Fail in Industry or Government."

- Organized Staffed Program for American Hospital Association, Institute on Hospital Pharmacy Administration, October, 1972, presenting 2 sessions.

- Reviewer for Office of Education and National Institute of Education of R and D Programs.

- Chaired a session on "OR on OR" and was a panel member on "Designing Educational Systems" at the International Federation of Operations Research Societies meeting in Dublin, Ireland, August, 1972.

- Presented paper at the Academy of Management (Midwest Region) meeting, South Bend, Indiana, April, 1972.

- Presented paper at the Operations Research Society 41st National Meeting in New Orleans, Louisiana, April, 1972.

- Presented paper at the American Educational Research Association Annual Meeting in Chicago, Illinois, April, 1972.

- Presented two papers, The Institute of Management Sciences, Houston, Texas, April, 1972.

1971 Presented paper, Joint National Conference on Major Systems, Anaheim, California, October, 1971.

- Presented paper and was panelist, XIIth American Meeting of the Institute of Management Sciences, Detroit, Michigan, September, 1971.

- Presented paper, XVIIth International Congress of Applied Psychology, Liege, Belgium, July, 1971.

1970 Presented invited paper at the American Academy for the Advancement of Science Annual Meeting at a Symposium, "Policy Sciences: A New Supradiscipline and its Implications," Chicago, Illinois, December, 1970.

- Moderator of panel at Northwestern Graduate School of Management's Fall Management Conference, November, 1970.

- Consultant to Symposium of American Accounting Association on "Behavioral Science Research in Accounting," New Orleans, Louisiana, October, 1970.

- Co-author of two keynote papers presented at international IFORS conference on Production Control Algorithms, Karlovy Vary, Czechoslovakia, September, 1970.

- Member of two panels at NATO conference on Education and Training on Operational Research, Istanbul, Turkey, September, 1970.

- Session Chairman, International Conference of the Institute of Management Sciences, London, England, June, 1970. (Presented paper, received NSF Travel Grant for this meeting.)

1969 Session Chairman, 36th National Meeting Operations Research Society of America, Miami Beach, Florida, November, 1969; presented paper.

- Chaired 2nd Joint Northwestern-WORC/ASPA conference on "Management Science in the Federal Civilian Agencies," Washington, D.C., September, 1969.

- Appointed Chairman, Organizational Behavior and Industrial Relations Departments, September, 1969.

- Gave papers at public lectures in New Delhi, India; Tokyo, Japan; and Osaka, Japan (July-August, 1969).

- Presented invited paper at the Joint Meeting of Operations Research Societies of America and Israel, Tel Aviv, Israel, July, 1969.

- Session Chairman, Fifth Meeting of the International Federation of Operations Research Societies (IFORS), Venice, Italy, June, 1969.

- Presented paper, chaired session, XVIth International Meeting of the Institute of Management Sciences, New York City, New York, March. 1969.

- Conference co-ordinator: "Interorganizational Decision Making" (part of NASA-supported research program in administration) at Northwestern University, February, 1969.

1968 Program chairman for joint Northwestern University-WORC/ASPA Conference on Management Science in Federal Civilian Government, Washington, D.C.

- Operations Research Society of America (ORSA) National Meeting, Philadelphia, Pa. (invited paper).

- Second Symposium on the Management of Improvement, Georgia Institute of Technology (paper).

- Conference and Program Chairman for International Conference on the Study of Operations Research and the Management Sciences, Northwestern University (also delivered a paper).

- Civil Service Commission (Midwest Region) (lecture).

- Graduate Business Alumni Association, Northwestern University (paper).

1967 Public lecture at the Technical University of Norway, Trondheim, Norway, on "The Integration of Management Science Activities in Organizations."

- Northwestern University School of Business, Continental Bank Executive Training Program (lecturer).

- Graduate Business Alumni Association, Northwestern University, Program on Research (paper).

- Civil Service Commission Executive Seminar, Washington, D.C. (series of talks).

- WORC/ASPA (Washington Operations Research Council and American Society of Public Administration) meeting, Washington, D.C. (talk).

- Organized International Program of Cooperative Studies on the Management Sciences in 20 countries (to date) and edited the Program Newsletter. Visited 9 European countries to aid cooperating Universities in establishing their programs.

- Field Study Methods Training Program for NASA and other government management research personnel, Northwestern University (Associate Director and lecturer).

- XIVth International Meeting of the Institute of Management Sciences, Mexico City, Mexico (presented paper and chaired COLRAD session).

1966 Training Program for Department of Defense personnel on Project Hindsight study (Associate Director and lecturer).

- Symposium on the Management of Improvement, Georgia Institute of Technology (paper).

- Conference on In-House Management Research in Government, Northwestern University (Associate Director of Conference and presented talk).

- Northwestern University Technological Institute Industry Day (talk and panel member).

- Northwestern University School of Business Fall Management Conference (panel organizer and chairman).

- Sigma Xi Science Honor Fraternity, Chicago chapter (talk).

- British Operational Research Society Annual Meeting, Reading University, England (invited paper; received grant from Office of Naval Research in connection with this meeting).

1965 Civil Service Commission Executive Seminar on the Application of the Behavioral Sciences, University of Chicago (talk).

- American Society of Mechanical Engineers and American Society of Metals Conference on the Economics of Research and Development (paper).

- The Institute of Management Sciences XIIth International Meeting, Vienna, Austria (invited paper).

1964 Northwestern University School of Business Fall Management Conference (panel member).

- International Conference on Operations Research and the Social Sciences, Cambridge University, England (invited paper).

1963 International Federation of Operations Research Societies, 3rd conference, Oslo, Norway (invited paper).

Consulting Activities: (1964 to date)

With:

- Allied Chemical Corporation, New York and New Jersey
- American Oil Company, Chicago, Illinois
- Babcock and Wilcox, New York and Ohio
- Boise Cascade, Chicago, Illinois
- Clarin Manufacturing Company, Chicago, Illinois
- Hughes Aircraft Corporation, California
- Illinois Bronze Corporation, Lake Zurich, Illinois
- Industrial Plastics Corporation, Elkhart, Indiana
- Intercraft Industries, Chicago, Illinois
- Jet Propulsion Laboratory (of California Institute of Technology), Pasadena, California
- Nibot Corporation, Chicago, Illinois
- Remington Electric Division of Sperry Rand Corporation, Bridgeport, Connecticut
- Waltham Watch Company, Chicago, Illinois

Areas:

- Human Resource Development Programs
- Introduction of New Management Methods
- Management of Professional Personnel
- Organization Development and Planning
- R and D Management Programs
- Top Policy Making