

Strategic Planning In Small MIS Shops
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Strategic Planning, what is it, why is so much attention being paid to it these days, why should it be done, and assuming that it should be done, how does one go about it? All very good questions that don't have obvious answers but need to be understood by every MIS manager; especially in small shops where resources are extremely limited.

What Is Strategic Planning?

This paper does not pretend to be the definitive explanation of the topic, but rather to highlight the experiences of one small shop that has gone through the exercise. The state of the literature on strategic planning for MIS outlines a massive project covering every conceivable aspect of systems, lasting well over a year, employing several dedicated people, and having a considerable price tag. The results of this process is a document of considerable weight and volume. Every detail of future systems would be explained, and a considerable amount of the initial design work for these future systems might well be included. Detailed forecasts of the expected volume of transactions going through the systems may be outlined along with pages of explanations for the volume changes. While this may be possible (even reasonable) for a large installation (say Ford Motors), the concept is laughable in a small shop of say 5 people. The small HP3000 shop normally consists of 1 to 6 people and is completely buried already, the thought of adding something of this magnitude is simply not within reason. Faced with this situation, we undertook the task of developing a workable strategic plan. However before we could begin the process, we had to develop the methodology that would be used. This is a description of that methodology and some of the reasoning that went into it. For the small shop it is very important to plan, perhaps even more important than for large installations, since we as small entities are more sensitive to change. But we must also consider the very limited resources available to us and keep the amount invested in the planning process in perspective. Because of this our effort will by definition be much smaller and of less detail. The crux of the issue is to develop realistic expectations of the planning process and to resist the desire to develop an all encompassing document that is all things to all people.

Define exactly what you expect the process to produce and focus on the activities that will address those goals, and stick to them. In my opinion, realistic expectations are developing an outline of what the upper management of your company (or division) expects the environment to be for the next several years, and what are the types of systems required to support that environment. Any more detail, and the level of confidence drops quickly.

Why Plan?

If you are considering the development of a Strategic Plan, I assume that you are aware of the reasons planning is important. Perhaps you are here because your boss has told you that you are going to develop a plan. Which ever is true, a quick review of the major reasons that I see for planning is in order.

- 1) Businesses change over time, as do the systems requirements of the business, while installed software stays perfectly constant without human intervention.
- 2) Non-trivial computer systems take a considerable length of time to develop and install. This may include definition, design, selection, coding, training, etc. Whether you create or purchase the software, it is not an overnight project.
- 3) All resources are finite, and we want to make the best possible use of them. If we can avoid spending valuable resources on short term needs in favor of addressing needs that will be with us for a longer period of time, we have probably gotten more value for those resources. Likewise if we address the most important needs of our users first, we develop credibility with management and that has several benefits.
- 4) By having a better understanding where we are headed we minimize "mid-course corrections". This saves valuable time and effort and gives the appearance that we know what we're doing.
- 5) We generate enthusiasm and user buy-in when they understand the direction systems are taking. Even if they don't totally agree with the direction, they will be more cooperative if they at least know what is going to happen. There are more reasons why a Strategic plan should be developed, but as MIS professionals, you should already understand them and if you don't there is plenty of published material on the subject.

Purpose of the MIS Plan

- 1) The MIS plan should provide an overview of the state of the current systems and how they got where they are. This historical perspective may not add value to the future plans, but will provide good background understanding for why we are planning now and some of the problems that can be avoided by planning.
- 2) The plan should provide insights into the direction of MIS both from a broad general perspective as well as some of the specific needs that are identified. And a general time frame for when these changes should be in place.
- 3) You need to measure how far you currently are from where you want or expect to be. This provides a basis for priority setting and resource allocation. It also prepares management for the requests you are going to make and gives them a measure of how reasonable and realistic the plan.
- 4) Finally once the target is established and you understand how far away you are from that target, you can outline what is needed to move toward your goals and how quickly you can expect to get there.

Composition of the MIS Plan

I. Introduction/Narrative Summary

In order to provide a basis for the plan a brief historical recap of the current set of systems is included to help define where we are today. Trends are discussed as well as the reasons for the major decisions that have been made. the purpose is not to justify or condemn, but to provide better understanding of why we are where we are. The next section covers where we want to go in very general terms. This is the visionary portion of the plan, my chance to gaze into the crystal ball and present my vision of what MIS should be and the role it should play in the business. Included in this are the type of resources required to support that vision, people, hardware, software, business commitment, etc. All of the requirements may not exist, but I can describe what I need anyway. A review of the current role of MIS is include to compare and contrast the current environment with my vision of the future. Next a review of the MIS organization. Describing how we are organized, the equipment currently in place and a recap of the departments strengths and weaknesses. Finally a brief comparison with other MIS departments in organizations similar to ours. Size

of staff, machine capacity, services performed, and budget as a percent of sales comparisons provide a relative measure of our performance.

II. Existing Systems Profile

For each system, a narrative is created covering in detail the basic function of the system, state of the code, documentation, user understanding, MIS understanding. Also discussed are the things the system does well and the areas that the system doesn't address or that it addresses poorly, including major known bugs or omissions. A general description of the backlog of change requests for the system provides a basis for management to judge the validity of our assessment of the system. We then recap the expected impact of these changes in terms of cost, time, stability and probability of success. Ideally your business has or will develop a Strategic Plan for the entire business, if so you will be able to use that plan as input to the MIS plan and build from it. If not then portions of that general business plan must be developed either explicitly or implicitly in order to proceed further.

III. Comparison of Existing and Future Operating Environments

For each functional area of the business a projection of the future environment is required if we are to understand and project the information and systems requirements. This projection must be that of the functional manager, it is not required that he/she actually create it, but he/she must agree with it and be willing to sign his name to it. The purpose of this projection is to compare the current environment with that of the future and to understand the impact of the changes on the information needs of the business and the ability of the current systems to meet those needs. Each functional area is divided into the processes that compose it. For example Marketing might be broken into the following subcategories: Promotion & Advertising, Sales, Market Research, and Market Planning. For each of these areas, a profile is created listing the important attributes, a description of the current environment and the expected future environment (see form #1). The information on this form is strictly business oriented, it should be completed by the users and not consider systems at all. If a Strategic Plan already exists, or is being developed in conjunction with the MIS plan, this should be a part of that plan. If not, you must develop it at this point in the process, since the rest of the plan builds upon it. The next step in the process identifies the important "information systems" used in the operation of the business. These systems are not necessarily computer systems, but rather the way information of

collected arranged or used. Systems could be defined as processes or functions (ie. Master Scheduling, Purchasing, etc), or along the lines of the current computer software packages if that is felt appropriate. The important thing here is not the way "information systems" are defined, but the listing and explanation of the critical factors that impact these systems and the informational nature of these critical factors. The intent here is to highlight the type of information that is needed to support the future business environment. Form #2 is one method of ferreting out this information. Each critical factor is then described according to how it is impacted by the seven information characteristics listed across the top of the form. Any factor listed must, by definition, relate to at least one of these characteristics. It may relate to more than one, but seldom to all of them. These descriptions are then the basis for evaluating current systems and any alternative systems or designs (see forms #3 & #4). Because these factors are "critical" and they are impacted by certain information characteristics, they are the obvious basis for analysis and comparison of alternative systems. Of course there will be other criteria in the selection process such as cost, complexity, support available, interconnectivity with other systems, etc.; but this list of critical factors and the informational requirements will be a vital part of the requirements definition. In our case a proposed replacement system had already been identified and we focused our attention on that alternative. The process being that if that alternative didn't sufficiently meet the users needs, then we would start from scratch to evaluate other systems. It should be noted here that the outcome of completing form #3 could be that the current systems satisfactorily meet the needs of the enterprise. In fact this conclusion would be expected where systems had been recently replaced. This would not mean that the exercise was wasted effort, but rather that those involved in the planning process had verified that business needs were being met. Businesses periodically examine the market segments they participate in to insure that they are in the correct ones, and should likewise examine their systems to insure that they are appropriate and providing the required information. It is critical that users complete these forms. The MIS staff should assist to insure that a proper level of detail is included and that the descriptions are measurable and quantifiable, however in order for there to be a meaningful result the users must "own" the information that comes from the exercise. In my experience, the generation of the forms used in the project is very important. The format of the information gathering must assist in the extraction of the information required to construct the plan or you will find it very difficult to communicate your goals to all involved parties. The forms should lead the users

through the process and force them to provide the required focus on business issues and information requirements. Another tool to help and guide the users is to create a "straw man" list of business attributes, information systems and critical factors for each of the areas. This list should not be cast in stone, but should provide "food of thought" for the users, seeds to start their thought process. As the future information needs of the various areas are assembled, the cost of meeting the needs and the impact of not meeting these needs must be understood, along with the relative importance of the needs in order for management to make correct resource allocation decisions.

IV. Plans to Meet Future Needs

Once the future needs of the business have been identified, quantified, and ranked, a plan to meet those needs must be developed. This may include the selection process for new software, a list of modifications to current software, and an installation/project plan. Project management skills and tools play a very important role in this section of the plan. It is not critical that the actual details of the process be included in the plan, rather that the process that will be used is defined and understood so that management can buy off on it. This section will also include the sequence of projects to be undertaken. This will reduce the "mid-course corrections" caused by misunderstood priorities and increase the confidence level in the plan since management has reviewed and "blessed" it. This is the place to address the hardware required to make the software plan possible. Where possible, link hardware needs with specific projects, to reflect the true cost of various alternatives and projects. Keep in mind that hardware requirements are usually a step function and seldom follow a smooth curve. Form #5 is one method of presenting the action items required to "fill the Gaps" between the current state of systems and the state required to meet the future needs of the organization.

Human Resources Planning

As a part of your plan be sure to address the people portion of your department. This is your greatest asset and deserves attention just like your software and hardware. Succession planning, career development and professional training are all part of a complete Human Resources Planning effort (see form #6). Personnel planning is important for several reasons. Much time and money has been invested in your programming and operations staff to get them to their current level of understanding of your systems, by failing to provide an effective career plan for these employees you

risk losing them and having to reinvest in training their replacement. This retraining effort also has opportunity costs associated with it in addition to the cost of the training; that being the value of the projects that cannot be undertaken while this training is taking place. These costs can very often be avoided with good career planning. Remember too that happy employees are more willing to work the long odd hours often required in our profession and are always more productive than unhappy ones. By developing your staff and expanding the knowledge base of each employee you also reduce your exposure in the event that an employee does leave. By having several people who can perform each job or support each system, you have designed in back up for everyone and you improve the quality of systems because interactions and interfaces are better understood by everyone.

In order to assist in your understanding the forms and give you a starting point, I have enclosed excerpts from our finished plan. These examples show what we considered to be an appropriate level of detail and some of the major points we are concerned with. I have also included a copy of our planning outline and organizational structure used in the development of the overall Strategic Plan.

As stated at the beginning, this paper is not designed to be an exhaustive study in the art of Strategic Planning, but rather to reflect some of the insights gained by performing it in a small shop environment. All portions will not be applicable to every installation, but the general requirements and approaches I feel are common through all companies. Feel free to use the forms and modify them to best serve your needs.

BUSINESS ENVIRONMENT

Today vs. Future

Functional Area	<input type="text"/>
Department	<input type="text"/>

Strategic Planning

0080 - 8

Business Attribute	Today	Future (5 Years)

GAP ANALYSIS

Information Needs vs. Current SystemFunctional
Area

Department

Information/Functional Requirement

Ability of Current System to Provide

Strategic Planning

0080 - 10

GAP ANALYSIS

Information Needs vs Proposed System

Strategic Planning

Functional
Area

Department

Information/Functional RequirementAbility of ASK System to Provide

0080 - 11

GAP ANALYSIS --- _____ FUNCTION

FUNCTIONAL
STRATEGIESSTATE
REQUIRED

CURRENT GAPS

ACTION REQUIRED
TO FILL GAPS

Strategic Planning

0080 - 12

FORM #6

Are assumptions upon which the strategic plans are based realistic regarding human resource requirements?

Over time, what skills will become obsolete, change in nature, or be eliminated?

For what functional skills/positions are we likely to encounter a shortage of qualified candidates in the marketplace, now or in the future?

Do the present managers within the function have adequate technical/managerial skills to meet the strategic changes occurring at RSD?

What are the principal H/R obstacles to achieving the function's strategic objectives?

Are age patterns in the organization imbalanced, suggesting high future attrition or career path blockage?

Is there adequate or excessive turnover in any group, at any particular level?

Is there a proper balance (staff mix) of managerial, professional, technical, and support staff within the function?

What are the most significant skill deficiencies within the function organization? How will such gaps be addressed?

FORM #6 (continued)

Are the organization and structure and staffing of the function appropriate for the achievement of strategic objectives?

To what extent will qualifications for existing positions change in light of strategic plans? How will such changes be addressed?

Do the strategic plans/objectives call for projects or processes that have no precedent at RSD? What are the implications for staffing requirements? Design of the present function organization?

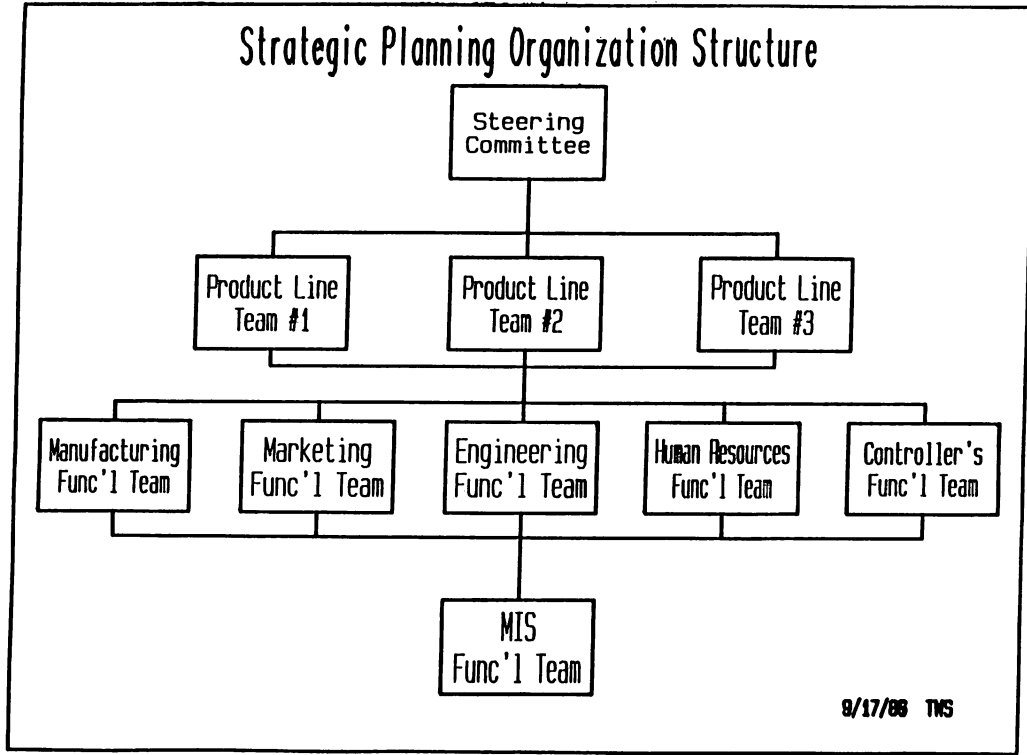
Which positions, if not filled, will have the most detrimental effect on achieving the function's objectives?

What impact would a product line de-emphasis or discontinuance have on the responsibilities of the function staff?

Presentation Outline

- Purpose of Planning
- Organization of the Planning Exercise
- Planning Output Results/Format
- Details of the MIS Planning Effort

9/17/86 TWS



9/17/88 TWS

Details of MIS Planning Effort

- o Basic Assumptions/Requirements
- o Information Needs Derived from Functional Plans
- o GAPS Identified & Analyzed
- o GAP Analysis Form Generated
- o Specific System Reviewed for Fit
- o Comparison of Current System to Candidate System
- o Specific Recommendations Made
- o Rough Time-Line Created
- o Implementation Structure

3/17/86 TWS

Basic Assumptions & Requirements

- o Designed for HP3000, not a retro-fit
- o Vendor expected to be in business 5 years from now
- o At least 100 installations of the product
- o Complete MRPII package
- o Integrated system linking all major business sections sharing common data
- o Profitable company
- o Regular release schedule of product enhancements
- o Customer inputs used to select and prioritize enhancements to product
- o Good record of customer support

2/17/86 TWS

Definition of Future Requirements

Marketing

- o Sales
- o Promotion & Advertising
- o Market Research & Analysis
- o Competitor Tracking

Finance

- o General Accounting
- o Payroll
- o Cost Accounting / Analysis
- o Financial Reporting / Forecasting
- o Investment Analysis
- o Auditing
- o Planning / Budgeting

Human Resources

- o Compensation
- o Benefits
- o Recruiting
- o Training / Development
- o Counseling
- o Organizational Development

9/17/86 TWS

Definition of Future Requirements

Operations

- o Materials
- o Production Planning
- o Production Method / Organization
- o Resource Usage Tracking
- o Quality Assurance Measurement
- o Workforce Composition
- o Product Structure

Engineering

- o Product Conception
- o Project Management
- o Product Design
- o Technology Auditing
- o Technology Development
- o Product Documentation
- o Prototype Production

MIS

- o Source Code Tracking
- o Asset Tracking
- o Project Management
- o Resource Usage Measurement
- o Cost Allocation
- o Production Scheduling
- o Tape Library Management

3/17/86 TWS

Functional Area**CONTROLLER'S**

Department

COST-ACCOUNTING

<u>Information System</u> (Not Computers)	<u>Critical Factor That Drives or Impacts the Information System</u>	<u>Timeliness</u> How Quickly Updated & Available	<u>Detail Level</u>	<u>Information Commonality</u> Some Data Across User Groups & Which Groups	<u>Arrangement</u> Indexes, Sorted Order	<u>Time Horizon</u> How Much History Is Required	<u>Accessibility</u> Who Can Access Data	<u>Accuracy</u> How Critical Is Absolute Accuracy
Measurement of manufacturing cost ↓	Use of repetitive manufacturing work flow	Next day analysis of cost input and production output	By defined work centers or process steps for labor and indirect costs	Labor input common with payroll system	By assembly within work center	12 months rolling	Accounting, production supervisors and managers, material control systems	I/O must balance to payroll system, inventory control systems
	Number of assemblies	Monthly summaries one day following last shipping day	By part number/assembly type for materials Costs collected in process "buckets" rather than J.O.s	Materials input and production output with material control	By model families			

GAP ANALYSIS

Information Needs vs. Current System

Functional Area	CONTROLLER'S
Department	COST ACCOUNTING

Information/Functional Requirement	Ability of Current System to Provide
<p>I. Measurement of Manufacturing Costs</p> <p>A. Use of repetitive manufacturing work flow</p> <p>1. Next day analysis of cost input and production output</p> <p>2. Monthly summaries one day following last shipping day</p> <p>3. Data defined by work centers or process steps for labor and indirect costs</p> <p>4. Monthly summaries by part-number/assembly type for materials</p> <p>5. Collect costs in process "buckets" rather than JOs</p>	<p>o Transactions for labor, A/P and inventory movement collected weekly</p> <p>o JOCS is a weekly batch process system</p> <p>o Due to labor processing at corporate, we receive the labor files 2 working days after last shipping day. JOCS weekly and monthly processing done on 3rd working day with reports available the morning of the 4th working day</p> <p>o OP codes available but not currently used in JOCS</p> <p>o Current MacPac/JOCS interface reports by JO. Modification of existing program may allow reporting as desired</p> <p>o Costs must be collected through JOs on JOCS</p>

GAP ANALYSIS

Information Needs vs. Current System

Functional Area CONTROLLER'S

Department COST
ACCOUNTING

Information/Functional Requirement	Ability of Current System to Provide
6. Labor input common with payroll system	o Labor is currently collected via our timecard entry/payroll system
7. Material input and production common with material control	o Multiple system interfaces are used to collect inventory movement transactions for processing within JOCS
8. Data arrangement by assembly within work center	o Primary data arrangement is by JO w/OP code as secondary for labor
9. Historical data - 12 mos. rolling	o JOCS provides a cumulative history report through the year. At year end history files are archived to tape and purged off the system. With modifications could provide 12 months rolling. (JOCS year, June - May)
10. Data accessible to accounting, production supervisor and managers, and material control	o Multiple copies of reports are currently distributed
11. Material and labor transactions must balance to the payroll and inventory control systems	o Interface systems, currently in place, do not provide 100% accuracy
8. Number of Assemblies	
1. Ability to group common assembly for averaging of cost data	o Blocks of JO numbers are assigned for each product line. Within the block assignment to assembly/model numbers is random

Change in Information Needs
Due to
Changes in Business Environment

Functional
Area

MIS

Department

Information System (Not Computers)	Critical Factor That Drives or Impacts the Information System	<u>Timeliness</u> How Quickly Updated & Available	<u>Detail Level</u>	<u>Information Commonality</u> Same Data Across User Groups & Which Groups	<u>Arrangement</u> Indexes, Sorted Order	<u>Time Horizon</u> How Much History is Required	<u>Accessibility</u> Who Can Access Data	<u>Accuracy</u> How Critical is Absolute Accuracy
o Project cost tracking	Labor cost reporting	Weekly batch on demand reports	By resource	Payroll, HR	Project, resource	Forever back	MIS and project leader	±5%
	Number of projects	Periodic on demand	All aspects of projects		Project, category, user group	Forever back 1 yr. future	MIS only	Not critical
o Project planning	Number of projects, size/complexity of projects	On demand, in real-time	All aspects of project and tasks and resources		Resource, task, dependencies	Length of project	MIS and project leader	
o Hardware resource usage	Number of jobs Number of sessions Hardware capacity	Auto update Auto update Auto update	At job/session level to track trends		By: Job user/ acct. resource	2 yrs. min.	MIS only	±5%, more if known and explained
o Asset tracking system	Number of assets	Monthly updates		Gen. acct./FA, receiving	Asset number Asset type		MIS/facilities/ gen. acct.-FA	Absolute
	Frequency of asset moves	Daily input, weekly updates		GA/FA - facilities			MIS/facilities	Absolute

GAP ANALYSIS

Information Needs vs. Current SystemFunctional
Area

MIS

Department

Information/Functional RequirementAbility of Current System to Provide

Project cost tracking

- o Timely reports not available
- o JOCs system cumbersome and not well suited for detailed project reporting

Project planning

- o Available on PC only

Hardware resource usage

- o Current software meets 75% of needs
- o Not as flexible as needed
- o All requirements can be met with current software if enhanced

Asset tracking system

- o Current system does not provide timely or reliable information
- o All maintenance tracking done manually
- o All PCs manually tracked due to no "category" or "group" feature in current asset system
- o Current system tracks at a high level so components have no visibility
- o Transfer of assets is cumbersome and time consuming
- o No "assigned-to" feature for tracking loanable assets

Production scheduling

- o All done completely manually

Tape tracking

- o All done completely manually

Source code tracking

- o All done completely manually

Office supply charge-back

- o Issues manually logged and totalled
- o Manual JVs created to transfer costs

ws/DZ/TWS/gapanal.18

FUNCTIONAL GAP ANALYSIS -- MIS FUNCTION

Functional Strategies	State Required	Current Gaps	Action Required to Fill Gaps
o Focus MIS efforts on unique LSD business issues	o Adaptable vendor supported software that provides basic transaction processing and is modifiable to meet unique LSD needs. MIS free to address LSD unique needs and opportunities.	o Patchwork software used only by Spectra-Physics. o Unsound, unclear transactional software. o MIS resources dedicated to maintaining unsound software. o Software difficult and risky to modify. o Some software impossible to modify.	o Install software. o Provide additional business training to MIS staff through involvement in professional groups such as APICS, NAA, etc. o Develop software in-house to augment system for specific division needs.
o Provide integrated systems that match business methods and are: - Flexible - Shared information - Timely - Accurate - Appropriate	o Usable information available as needed. o Software that cleanly links all parts of the business. o Software that supports: - State-of-the-art mfg. methods (JIT, etc.). - Option ready products. - Market development/analysis. - Sales order and service tracking. - Repetitive costing. - Real-time decision making. - Project management. - Product restructuring. - Asset management.	o Not timely. o Requires manipulation. o Not complete. o Redundant/conflicting data. o Messy/unreliable interfaces. o Multiple entry of same data. o JO based only. o No configurations flexibility/efficiency. o Non-existent. o Inadequate/manual. o Non-existent/manual. o Fragmented/inadequate. o Fragmented/inadequate. o Manual/awkward. o Inadequate/manual.	o Department managers determine specific information requirements. o Install and other systems as required. o Install and integrate additional systems as required. o Install software modules: - Accounts Payable. - Quality. - with options entry. - Examine when released. o Reconfigure BOMs to modular o Evaluate IFPS and FCS, choose one. o Evaluate o Link marketing PC database to

FUNCTIONAL GAP ANALYSIS -- MIS FUNCTION

Functional Strategies	State Required	Current Gaps	Action Required to Fill Gaps
<ul style="list-style-type: none"> o Eliminate manual data exchange between LSD and other SP entities o Selective use of office automation to increase efficiency o Automate computer operations to reduce headcount growth rate o Be able to meet computing needs if normal computing resources disrupted 	<ul style="list-style-type: none"> o Automatic exchange of data between LSD and other S-P entities. Direct data access capability. File transfer capability. o Adequate access to personal computers based upon usage. Centralized in-house expertise in both hardware and software. o Networked computing resources to facilitate data transfer and exchange. o Flexible automatic program scheduling software. o Risks identified and evaluated. o Recovery options identified and evaluated. o Plan of action ready. 	<ul style="list-style-type: none"> o Mail and Fax only. o Hard copy must be produced. o Telephone used extensively. o Limited file transfer. o Fragmented knowledge, no central point. o Problems and needs handled reactively, not proactively o Inadequate access in some areas. o Mainly stand-alone PCs requiring redundant data entry. o None installed. o All risks not known. o Options unexplored. o No plan in place. 	<ul style="list-style-type: none"> o Evaluate use of o Develop and install fixed asset tracking system. o Evaluate inventory tracking/analysis and develop additions as required. o HP mail installed. o Users trained on HP mail and file transfer function. o Installed to replace SOPS/BARS. o MIS trained on HP mail support and trouble-shooting. o Identify specific resource to be focus point. o Develop in-house resource to keep current on trends and technology. o Provide more general use computers. o Develop comprehensive networking strategy. o Examine available software and select best fit. o Train Operations staff and install software. o Develop comprehensive disaster recovery plan.

Rated on a scale of 0 - 5 where:
 where : 0 = doesn't provide
 5 = perfect match to needs

<u>Current</u>	Systems match-up	<u>Future</u>
MACPAC		
JPCS		
SOPS/BARS		
FGI		

GAPs to be filled by: additional systems ie. Fixed Asset
Project Mgmt
(?)
(?)

0080 - 28