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AREAS FOR LMS PRINCIPLES(U) BATTELLE COLUMBUS LABS OH  
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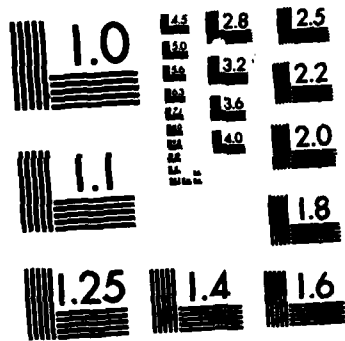


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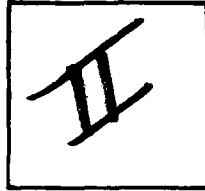


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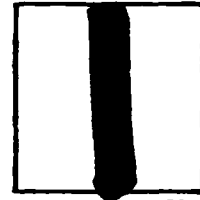
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INVENTORY

Areas for LMS Principles

DOCUMENT IDENTIFICATION

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May 15, 1980

ADA 124178

Mr. Coye Bridges, XRBF  
DCS/Plans and Programs  
Air Force Logistics Command  
Wright-Patterson AFB, OH 45433

Dear Coye:

Enclosed is the list of "Areas for LMS Principles" which is deliverable under Task 6(a) of Contract No. F33600-80-C-0414.

Please let Bill Evans or me know if there is any change in our plan to get together for discussions on Wednesday, May 28 at your office,

Sincerely,

J. Douglas Hill  
Research Leader  
Defense Systems & Technology Section

JDH:eah

Enc.

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## TASK 6A: DEVELOP A LIST OF "AREAS FOR LMS PRINCIPLES"

This document presents those areas which will be used to derive LMS principles. The actual set of principles will be developed in Task 6B. The principles presented here are indicative of the types of principles to be derived. They are examples used to clarify the process and to demonstrate the intended output of Task 6B. The principles derived from Task 6B will, in turn, determine the reference frame in which LMS requirements will be developed. The principles should be sufficiently well defined to form boundaries or constraints to the development of information systems, be they automated, manual, or some combination thereof. They should focus the development effort on the aspects of the system that are most critical from the user's perspective.

The areas presented in this document are, in turn, derived from a framework involving Air Force doctrine, logistics doctrine, management science, and information science. A description of this framework precedes the presentation of the areas and example principles.

### Discussion

Webster defines principle as "a comprehensive and fundamental law, doctrine or assumption". There are comprehensive and fundamental laws that underlie every system. These laws or principles should be understood from the outset of a system design so that the design effort will be aligned with the principles. By understanding these principles, the principles themselves can be used to focus the design effort and insure that the resultant system conforms to the fundamentals. In the case of Logistics Management Systems, there is a set of principles that are rooted in the basic principles of logistics. Logistics principles, in turn, are founded on basic defense or military principles. The source of doctrine for the Air Force is Air Force Manual 1-2, Air Force Doctrine. It explains the fundamental principles of use of air power and lays out the fundamentals of logistics. It calls for the economy of resource, the support of forces engaged in combat and the maintenance of effective peacetime systems.

Air Force doctrine is supplemented by logistics doctrine which covers wholesale and retail logistics. AFLC doctrine defines the basic principles of wholesale logistics. The execution of these principles requires a set of activities and a set of management systems to control the activities. The set of management activities is by definition the set of Logistics Management Systems.

The development of any system is guided and constrained by the basic principles under which the system will operate. Systems designed without regard to these principles are likely to fail, or as a minimum, fall short of the designer's expectations. In the case of an LMS, the principles that govern are related to what the system does and the environment in which it does what it does rather than physical principles, such as would be found in an engineering design. LMS principles, when identified, will provide useful insights to those who would define LMS requirements. As requirements are identified, they will be evaluated in terms of the LMS principles.

#### A Framework for Deriving LMS Principles

The principles that govern LMS development can be derived by examining the major elements that come together in Logistics Management. They are:

- Logistics doctrine, which is derived from Air Force doctrine. This source provides insights into what the logistics system must do to perform its role in the Air Force.
- Management principles, the basic rules that govern management of complex systems. These principles are found in accepted texts and the teachings of effective managers. They involve such principles as span of control, delegation of authority, and so forth.
- Principles that govern the day-to-day operations of logistics. These include what it takes to get the job of logistics done.

- Fiscal control principles. The rules by which funds are approved, made available and controlled. This area includes the criteria of regulatory and advisory groups that influence the ultimate outcome of the development effort.
- Information management principles. These are the mechanisms, techniques, policies, and procedures necessary for planning, developing, implementing, and managing information processing.

Each of the sources of principles gives rise to a distinct set of principles which may or may not be compatible. The objective of this task and that of 6B is to define these sets of principles, examine their compatibility and provide a definition of the resulting principles in LMS terms so they will be useful in defining appropriate LMS and ADP requirements.

Figure 1 defines the relationship between the various sources of principles that influence or constrain LMS development. The regions in solid blocks are sources of principles that must be examined to develop the set of LMS principles. Battelle recommends that each of these areas be examined to identify principles that apply to LMS. The result will be a set of LMS principles. The dotted lined blocks represent areas which will impact the application of LMS principles.

For example, information from a variety of sources is needed to support the management process and to perform the logistics functions. "Systems", or organized procedures, policies, techniques, and mechanisms are needed to manage this information. The techniques and/or mechanisms employed may be manual systems, automated systems, or a combination of both. In examining alternative LMS concepts, the use of ADP, word processing, telephone or conferences may be considered for each application. In each case, the principles that govern the use of the technology concerned must be applied. Although technologies are important in system development, they are not considered to be fundamental LMS principles.

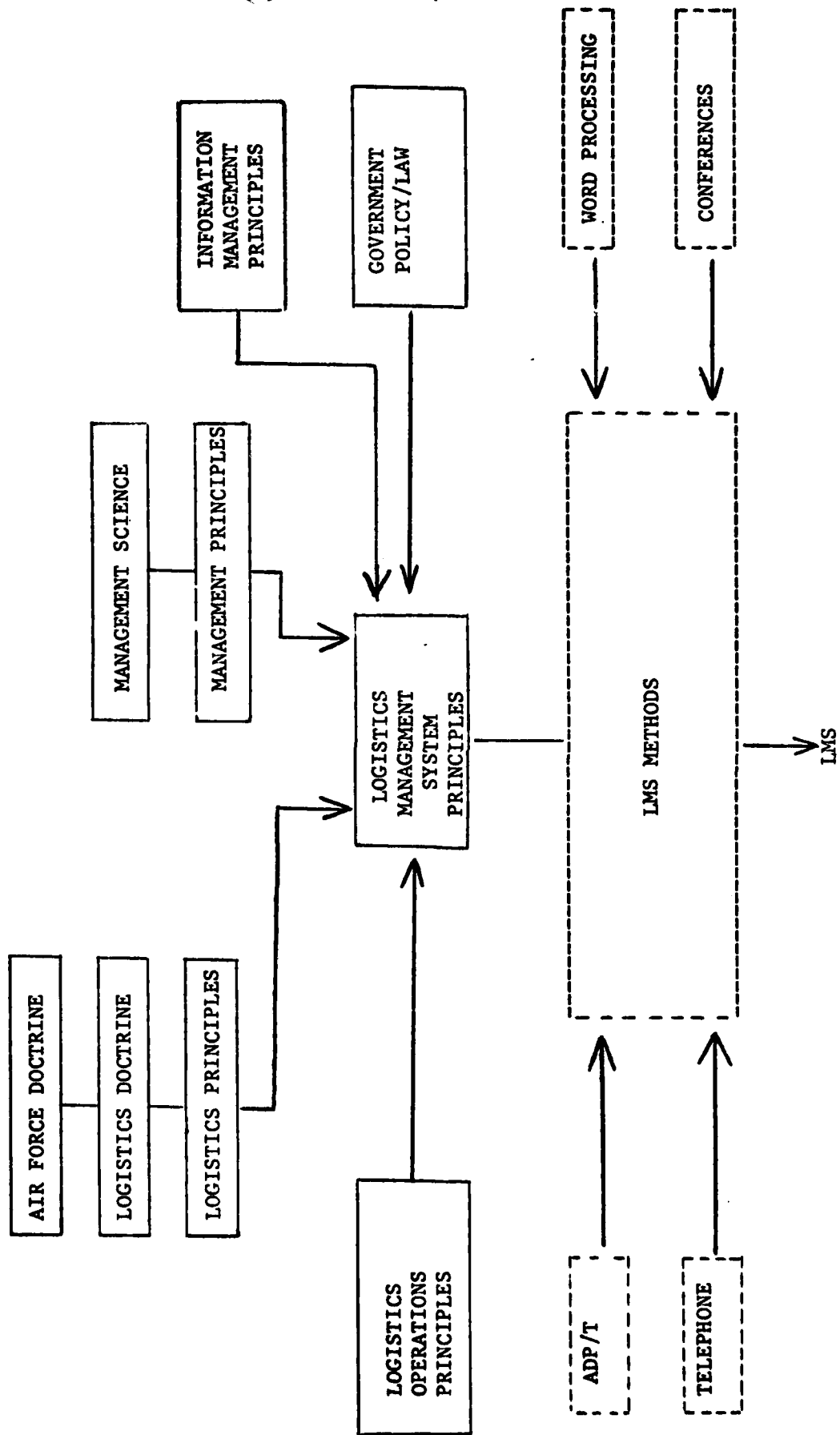


FIGURE 1. RELATIONSHIP BETWEEN SOURCES OF LMS PRINCIPLES

### Areas and Example Principles

The areas and associated principles given here are derived from those considerations which affect system development of any type--manual or automated--plus areas solely related to ADP. The term "area" is used loosely and denotes a "category" which encompasses a set of issues, problems or constraints. These issues, problems, and constraints affecting systems development can be used to postulate a set of principles or guidelines to be followed in formulating system requirements.

<u>Area</u>	<u>Principles</u>
<ul style="list-style-type: none"> <li>● <b>Organizational Considerations</b> <ul style="list-style-type: none"> <li>- Structure</li> <li>- Mission</li> <li>- Legal Constraints</li> <li>- Policy Constraints</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Systems should function within the framework of existing organizational structures, yet be capable of adjusting to structural change.</li> <li>● Systems exist to support organizational missions and functions, and should complement mission activities--not detract from them.</li> <li>● Systems must be designed, and must perform functions, consonant with organizational, legal, and policy considerations.</li> </ul>
<ul style="list-style-type: none"> <li>● <b>Human Factors Considerations</b></li> </ul>	<ul style="list-style-type: none"> <li>● Systems should be designed in such a way as to not require extraneous activities of users.</li> <li>● Systems should be easy to understand and be as compatible as possible with <del>with</del> the user working environment.</li> </ul>
<ul style="list-style-type: none"> <li>● <b>Privacy and Security/ Access Control</b></li> </ul>	<ul style="list-style-type: none"> <li>● Systems must be compatible with, and should support, any necessary security requirements.</li> <li>● Systems should provide access control mechanisms consistent with security requirements, organizational policy, management requirements, and general need-to-know requirements.</li> </ul>

AreaPrinciples

- **Other Agency Interactions**
  - **Management Control Considerations**
  - **Impact of Systems on Mission Performance**
  - **Relationships Among Systems**
  - **Requirements for Systems to Change Across Time**
  - **Resource Allocation**
  - **Systems Design Considerations**
- Systems should support necessary interactions between and among agencies and organizational units.
  - Planning, developing, implementing, and operating systems should occur within the framework of well-defined policies, procedures, and mechanisms for managing information.
  - Systems technology may provide an opportunity for "streamlining" and improving job performance. This possibility should be explored as part of systems development.
  - Systems development must recognize and explicitly state the relationships between manual and automated systems, automated and automated systems, and manual and manual systems.
  - Information needs change across time, thus systems should incorporate designs which are as flexible as possible.
  - System capabilities and system operation should be consistent with the resources available and should make the most efficient use of those resources as possible.
  - Systems must be designed such that
    - user information needs are satisfied
    - systems are compatible with the functioning of the organization
    - state-of-the-art technology is used to its full potential within the constraints of the organization.

END