

Plan for 1965-1969

I. Summary

A. Recommendation. In order for the Agency to meet the requirements for the next 5-8 years for data processing, intelligence data synthesis, information and document retrieval, varied scientific computation, real time service, remote inquiry, and remote display capability, all under fail-soft conditions, OCS must acquire a doubled module IBM 360/67 in early 1967. This system--third generation in hardware and in software--offers additional required features such as reliability, modular expandibility, flexibility, and the most economical throughput cost in the computer market. Its software conceptually pushes the state of the art and is a quantum advance over any previous software systems. A systematic and orderly transition to this system is feasible and OCS has the technical skills in the computational state of the art to effect this transition and to give the Agency this system.

The planning for the 5-7 year period has been outlined, detailed implementation procedures have been written for the 1965-1967 period. Technical studies and tasks have commenced and are on schedule. This recommendation offers a plan which is the best for the Agency, technically and economically, and also fits the most recent directives of the B. O. B. .

B. Problem Statement and Objectives of Study. The OCS

Computing System Evaluation Task Team had the following objectives:

- 1. Analysis of Present Systems**
- 2. Analysis of Workload growth**
 - a. 1965-1967**
 - b. 1967-1969**
- 3. Analysis of load growth in relation to throughput and turnaround time on present systems.**
- 4. Determination of requirements for upgrading system (if any).**
- 5. First pass hardware study to determine available competitive systems which possibly could meet Agency requirements.**
- 6. Second pass of detailed hardware evaluation of selected possible systems.**
- 7. Comparative evaluation of final round hardware/software in relation to Agency growth and special requirements.**
- 8. Tentative selection of final system, and then thoroughly detailed study of all hardware/software features of selected system.**
- 9. Planning and its feasibility for transition to new system.**

- a. **Budgetary considerations.**
- b. **Retraining of Technical Personnel.**
- c. **Reprogramming Problems**
 - (1) **Manpower/cost.**
 - (2) **Software Conversion Aids**
 - (3) **Policy implementation of standards to ease burden.**
- d. **System Software Transition**
- e. **Physical Transition**
 - (1) **Logistics**
 - (2) **Delivery Dates**
 - (3) **Space reallocation**
- 10. **Documentation of study**
- 11. **Recommendations to Management**

C. Justification for System Updating

1. Computer processing volume requirements will quadruple (very conservative minimum) in the next 5 years. Several proposed scientific intelligence collection systems with as yet undetermined volume requirements probably will increase these figures significantly.

2. In order to meet operational requirements of technical intelligence collection, minimum turnaround time and real-time will become strict requirements of the proposed system.

3. Information access requirements for real-time command decisions will require extensive data files on direct access storage devices and on-line remote query and answer and display capability.

4. Operational requirements for technical collection impose fail-soft parameters.

5. The present systems cannot be expanded to handle the volume load without prohibitive space and cost increases.

6. No standard modifications are possible to the present systems to give the required remote and real-time capabilities.

7. The IBM 360/67 will answer all Agency requirements.

8. The IBM 360/67 is superior to any other computer in its performance capability on the Agency's job mix.

9. The systems software being implemented for the IBM 360/67 is superior to that of any other competitive software.

10. The data management software being implemented for the IBM 360/67 is greatly superior to that of any other.

11. The IBM 360/67 hardware, being of solid logic technology, is the state of the art and has a reliability expectancy better or equal to any other; also, its doubled modules further enhance this reliability probability.

12. The IBM 360/67 is modular and can expand for either a larger percentage of computing or of data handling.

13. The IBM 360/67 is flexible; it includes the highest level of multiplexing and I/O control in the market. It can absorb an ever increasing number and variety of remote and peripheral devices with a minimum of interference with on-going processing.

14. Conversion aids available with the IBM 360/67 minimize the transfer of jobs from the present equipment.

15. Manpower requirements are minimal to operate the IBM 360/67 much less manpower is required per throughput unit than on present equipment.

16. The IBM 360/67 is the state of the art and will be an inspiration to Agency technical skill.

17. The IBM 360/67 has a common language for all programmers, thus providing previously unattainable cross-transferring of programming skills.

18. For a 60% increase (\$100,000 to \$160,000 lease per month) The Agency can attain up to 12 times the computer processing power it has had. Moreover, at least 4 times present capability will be required over the next 5 year period. This 60% increase is by far the most economical computing cost which can be found to meet requirements.

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30 March 1971

MEMORANDUM FOR: Chief, Operations Division, OCS

SUBJECT : Selection of Vendor for LCS

1. Based on a comparative evaluation of Large Core Storage (LCS) systems represented by Ampex Corp., Data Products (Core Memories, Inc.), Fabri-tek, Inc., and IBM, I recommend that OPS should contract to lease one million bytes of AMPEX storage at [REDACTED] per month beginning 15 May 1971 and a second million bytes at the same rate to be delivered in August 1971.

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2. All vendors considered can supply LCS at approximately the same price. Other factors, however, are of significance and dictate the choice of Ampex as the sole source of a unit which will satisfy the requirements of OCS.

3. The accompanying table lists the comparisons between major contenders. (IBM was excluded from consideration because the 8 μ sec access time was much slower than the other vendors.) Fabri-tek was eliminated first because of speed, rental price, physical width, and cooling required. The physical characteristics and prices of Ampex and Data Products are similar and the decision to buy Ampex was based mostly on my estimation of the reliability of the units and time required to install a new unit or to repair an installed unit. The Ampex LCS has a spare 128K module which is maintained (powered up) in the unit. A fault in the memory can be localized to a particular module by a diagnostic program wired into the unit. The faulty module can then be replaced by the spare module in 10-15 minutes (by OPS personnel if necessary). Ampex has by far the most units installed on 360/65's in exactly the same configuration as proposed for the Agency. This factor weighed heavily against Data Products and Fabri-tek. Minor considerations, but worthy of note, are that Ampex seemed most able to deliver and install

a unit before June 1971 and that Ampex will reimburse the Agency for the 8080 Adapter [REDACTED] which IBM must install on the CPU to support LCS.

STATINTL

[REDACTED]

Acting Chief
Advanced Projects Staff, OCS

Attachment