John W. Lainhart IV
Inspector General

Office of Inspector General
U.S. House of Representatives
Washington, DC 20515–9990

MEMORANDUM

TO: Scot M. Faulkner
Chief Administrative Officer

FROM: John W. Lainhart IV
Inspector General

DATE: July 18, 1995

SUBJECT: Audit Report - The Management And Control Of The House's Information Systems Operations Should Be Improved To Better Meet Members' Needs (Report No. 95-CAO-19)

This is our final report on the performance audit of the House's Information Systems Operations. The objective of the audit was to assess opportunities to improve efficiency and service delivery of House information systems activities. In this report, we identified problems associated with the management and control of the House's Information Systems Operations and made recommendations for corrective actions.

In response to our June 28, 1995 draft report, your office fully concurred with our findings and recommendations. The formal management response provided by your office is incorporated in this final report and included in their entirety as an appendix. The corrective actions taken and planned by your office are appropriate and, when fully implemented, should adequately respond to the recommendations.

We appreciate your office's positive response and concurrence with the recommendations, and the courtesy and cooperation extended to us by your staff. If you have any questions or require additional information regarding this report, please call me or Craig W. Silverthorne at (202) 226-1250.

cc: Speaker of the House
Majority Leader of the House
Minority Leader of the House
Chairman, Committee on House Oversight
Ranking Minority Member, Committee on House Oversight
Members, Committee on House Oversight

THE MANAGEMENT AND CONTROL OF THE HOUSE'S INFORMATION SYSTEMS OPERATIONS SHOULD BE IMPROVED TO BETTER MEET MEMBERS' NEEDS

REPORT NO. 95-CAO-19
July 18, 1995

RESULTS IN BRIEF

CONCLUSIONS

The House of Representatives (House) top management did not exercise adequate leadership and oversight over the application of information technology. In addition, House-wide goals and technology strategies were never established to meet the identified goals of common Member requirements. As a result, Member requirements were not channeled, documented, prioritized, or managed by a formal process to establish and drive House Information Systems (HIS) priorities. The lack of an Information Resources Management (IRM) executive steering committee to set common goals and strategic direction for meeting these goals resulted in multiple technology solutions to multiple Member goals.

The organizational structure of HIS had multiple groups performing similar functions resulting in organizational redundancies, inefficient use of resources, and inappropriate segregation of duties. These inefficient and ineffective uses of House resources occurred because quality assurance functions were not defined within the current organizational structure and the Change Control Administrator position was vacant. Furthermore, the Security Officer position was not adequately staffed or positioned within HIS to be effective.

HIS did not comply with the mandates of the House Employees Classification Act (2 U.S.C. 291 et seq.). Lacking or poor documentation, coupled with the complexity of multiple payroll adjustments per employee, a unique merit based pay scale, and retroactive payroll adjustments makes it difficult to accurately track employee performance or pay, and justify merit pay increases. In addition to these salary related personnel problems, HIS does not maintain an overall training plan that is based on House-wide goals and objectives.

For both internal and external customers of HIS' mainframe, the rates used for billing purposes were not updated in five years. Additionally, formal documented policies and procedures regarding the user chargeback process, including the Budget Office's role in rate development, rate updates, and competitiveness surveys did not exist. Furthermore, even if the rates were correct the way costs were allocated resulted in HIS internal customers being charged a lower rate than external customers.

HIS supported older and duplicate technologies resulting in inefficiencies and increased costs. Three examples of this situation were: (1) two Wide Area Networks (WANs) were supported to provide connectivity with Member district offices; (2) three backbone networks[1] were supported to provide House-wide connectivity; and (3) three Digital Equipment Company VAX (DEC/VAX) computers that were not used but had not been excessed. No plans were in place for the efficient phase out of these older duplicate technologies.

House offices received the same services, such as training and technical support, from HIS and private vendors, resulting in duplication of effort and inefficient use of resources. Consequently, confusion and frustration occurred on the part of House office staff since it was unclear as to who should be called to correct a problem or to get needed training. Support relationships between HIS and vendors were not clearly defined. Additionally, although House office staff are satisfied with HIS information technology training classes, many were not aware of the classes or did not have time to attend.

RECOMMENDATIONS

We recommend that the Chief Administrative Officer develop proposals, for the approval by the Committee on House Over House Oversight, to: (1) establish a charter for an information resources management (IRM) executive steering committee, chaired by a representative from the Committee on House Oversight, with representatives from Members, committees, House Officers, and House Information Resources (HIR); (2) develop and implement a comprehensive strategic information systems plan for the House including a formal process to identify, document, channel, analyze, prioritize, and manage a core set of common Member requirements; (3) reorganize HIS to include (a) a consolidated and streamlined systems development division or integration group, (b) an independent Quality Assurance function, and (c) Change Control Administrator position; (4) migrate HIS employees from the unique HIS merit-based pay scale to the House Employees Schedule, and enforce personnel policies mandated by the House Employees Position Classification Act (2 U.S.C. 291 et seq.), including documentation of periodic employee performance reviews; (5) develop and implement chargeback rates that reflect current processing costs; (6) establish policies and detailed procedures covering the maintenance, administration, and documentation of equitable chargeback rates and billing processes for internal and external customers; (7) develop a plan to replace older technologies and eliminate duplicate technologies; (8) clearly define the roles and responsibilities of the HIS support functions versus vendor support functions and eliminate duplication of effort; (9) implement a plan for notifying House offices of the content and schedule of training class offerings; and (10) provide additional forms of training, such as computer based training (CBT), that are available upon demand to House offices.

[1]Backbone networks interconnect office LANs.

We also recommend that the Chief Administrative Officer to identify and document critical processes and develop a comprehensive training program for House Information Resources (HIR) employees to build the knowledge base of the critical processes that support Member needs and services.

MANAGEMENT RESPONSE

On July 11, 1995, the Office of the CAO generally concurred with the findings and recommendations in this report. As indicated in the response, the Committee on House Oversight has established a "Working Group on Computers," chaired by Congressman Ehlers, to provide strategic direction. The CAO explained that the restructuring of HIR will include the formulation and maintenance of a strategic information systems plan for the House, the consolidation of system development activities into a single organizational unit, and the consolidation of the training function into a single organizational unit within the Client Services group. Additionally, the CAO intends to: (1) place all HIR employees under the House Employees Schedule with mandated periodic employee performance reviews; (2) identify and document critical processes by October 1995; (3) have HIR review its accounting procedures with a view toward establishing accurate costs and a review of "charge back" rates; (4) strongly encourage Members to migrate from the Sprint private line network to the MCI frame relay service and from the ASN and Ethernet backbones to the FDDI network; (5) develop procurement procedures for computer-related equipment that will differentiate the support role of vendors and that of HIR staff; and (6) as part of the Office 2000 concept, rely on alternative forms of training such as Computer Based Training and multi-media.

OFFICE OF INSPECTOR GENERAL COMMENTS

The CAO's completed, current, and planned actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations.

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I. INTRODUCTION

Background

House Information Systems' (HIS[1]) mission is to "satisfy the requirements for information, information technology, and related computer service of the Members, committees and staff of the U.S. House of Representatives." HIS is the major provider of information technology services to the House and is responsible for the technical infrastructure and other services. It helps to shape the House information technology infrastructure by matching office needs with vendor and custom developed products and services.

The House information systems environment consists of a wide range of technologies:

- IBM mainframe;
- Mainframe communications to terminals;
- Local area networks (LANs);
- Wide area networks (WANs[2])
- Internet[3] access;
- Microcomputers; and
- Minicomputers.

HIS provides varying levels of support for each of these technologies. Office level systems within the House environment are not under the direct control of HIS and, therefore, are independent with respect to adherence to HIS standards and guidelines. These office-level systems include LANs, stand-alone personal computers, and other departmental systems. These systems may reside in Member (Washington, D.C. and district), committee, or other House

[1]On June 14, 1995, HIS was renamed by the Committee on House Oversight and is now House Information Resources (HIR).

[2]Wide area networks (WANs) are communication networks that cover a wide geographic area, as opposed to a local area network (LAN), which is contained within a building or complex.

[3]The Internet is a large international network that connects many computer systems, providing network services, including e-mail, remote terminal sessions, and multi-media services such as the world-wide web.

offices, and are supported by outside vendors who install and maintain the office-level systems. HIS or internal office personnel also maintain these office-level systems.

During the audit period, HIS was organized into the following 6 divisions: Administrative Systems; Communication Services; Computer Center; Customer Services Group; Information Services; and Customer Applications Group. As of June 14, 1995, HIS was reorganized by the Committee on House Oversight into the following 4 divisions: Client Service; Communications; Operations; and Integration.

In addition, on June 14, 1995, the Committee on House Oversight approved the OFFICE 2000 project. The goal of OFFICE 2000 is to help Members and committees increase productivity and efficiency through a focused application of technology. OFFICE 2000 represents an overall technical infrastructure and strategy that integrates all databases, computers, networks, and vendor services throughout the House information systems environment.

Objectives, Scope, And Methodology

The audits conducted as part of the overall assessment of the House included a comprehensive review of HIS operations and the House information systems environment. The objective of this audit was to assess opportunities to improve efficiency and service delivery of House information systems activities. The scope of this audit included a review of HIS plans and budgets, standards, policies and procedures, organizational structure, and personnel management and training practices.

The scope of this audit included reviews of the following areas:

- Information resources management/strategic planning;
- Planning, budgeting, and managing;
- Data center operation standards, policies and procedures;
- User billing procedures;
- Organizational structure and segregation of duties;
- Personnel management and training practices;
- Quality assurance;
- Data center operations; and

- Hardware, software, network and communications infrastructure utilization.

Our findings focus on audit areas in which our initial risk assessment was moderate or high. Areas with a low risk assessment were not considered for detailed testing. This was the case in the Data Center Operations area, where the following items were reviewed and found to be of low risk:

- Computer operations, including supervision and review;
- Input/output scheduling;
- Problem management;
- Hardware acquisition, preventive maintenance and capacity management; and
- System software selection and maintenance.

We conducted our review in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States. Our review of HIS was based on the organizational structure, plans, standards, policies, and procedures in place as of December 31, 1994. Our field work for this review was performed during February through May 1995. In conducting our review we performed the following specific tasks:

- Gathered documentation and conducted interviews.
- Identified business objectives and control techniques consistent with sound information system management, operations, and security standards based on current industry standards.
- Gained an understanding of the internal control environment surrounding the HIS operations and House information systems environment.
- Assessed the risks surrounding the HIS operations and House information system environments and developed a test matrix based on this assessment.
- Executed the steps outlined in the test matrix and updated the risk assessment based on the results of testing.

We also applied information systems audit guidelines used at Federal Government and private industry computer installations in managing and controlling the design, development, and modification of computer systems. These guidelines and standards are described in government and private industry publications, such as:

- National Institute of Standards and Technology (NIST) - Federal Information Processing Standards (FIPS) Publications

- NIST Special Publication 500-153 - *Guide to Auditing for Controls and Security: A System Development Life Cycle Approach*

- Office of Management and Budget (OMB) Circulars:
  - A-25, User Charges
  - A-76, Performance of Commercial Activities
  - A-127, Financial Management Systems
  - A-130, Management of Federal Information Resources
  - A-134, Financial Accounting Principals and Standards

- Institute of Internal Auditors - Systems Auditability and Control (SAC) Report

- Information Systems Audit and Control Foundation - Computerized Information Systems (CIS) Audit Manual

- Price Waterhouse LLP Systems Management Methodology (SMM), Strategic Information Systems Planning, System Development, Package Implementation, Information Systems Risk Management and Disaster Contingency Planning modules

Although the House is not mandated to comply with the standards used in our review, they represent sound practices that other government agencies and private industry follow.

We also performed benchmarking analysis by evaluating HIS plans and budgets with the Senate Computer Center and leading information technology industry surveys including:

- Gartner Group's Strategic Analysis Report, November 18, 1994, and

- Computer Economics', 1994 Information Systems Spending: An Analysis of Trends and Strategies.

Internal Controls

This review evaluated internal controls related to:

- Planning, budgeting and managing House information systems, including standards, policies, and procedures; organizational structure, responsibilities, and segregation of duties;

- Data center operations, including management of hardware and software, change and problem management, and user billing and chargeback; and

- Economy, efficiency, and effectiveness of HIS operations.

This report discusses internal control weaknesses we identified related to: (1) executive oversight and involvement (see Finding A); (2) organizational structure (see Finding B); (3) personnel polices (see Finding C); (4) the use chargeback process (see Finding D); (5) phase-out of older or duplicate technologies (see Finding E); and (6) technical support (see Finding F).

Prior Audit Coverage

As part of a comprehensive review of HIS operations, we are preparing a series of reports addressing weaknesses associated with the House Information Systems environment. The results of three completed projects are summarized below:

Internet Security Weaknesses (Report No. 95-CAO-03): This report noted serious weaknesses surrounding access to the House network and Member office systems via the Internet through external agencies on CapNet[4]. The report identified the capability for unauthorized individuals to access Member systems and read mail in a Member's correspondence management system. For example, we were able to read a Member's mail and other data, and send an e-mail message to the Inspector General's office posing as that Member. In this case we exploited a "back door" into the House network, and, thereby, Member offices, and easily and effectively bypassed the HIS firewall[5] installed to protect the HIS "front door" into the network. The report contained nine recommendations to correct the internal control weaknesses and to prevent recurrence. HIS agreed to correct the deficiencies we identified and is taking actions to correct them.

Proposed New Financial Management System Will Not Meet the House's Needs And Should Be Terminated (Report No. 95-CAO-02): This review evaluated the functional adequacy of the proposed FMS and the system development life cycle procedures that were utilized in the development of the system. The report recommended that the system be terminated and also made recommendations to improve the systems development practices within HIS as well as provide better management oversight. The Chief Administrative Officer agreed to terminate the new FMS and to make the management improvements recommended, and is taking actions to correct the deficiencies identified.

[4]CapNet is the internal network connecting the various Legislative Branch agencies, including the House.

[5]A firewall is a combination of computer hardware and software designed to control the flow of information between an organization's internal systems and systems outside the organization.

Information Systems Security Weaknesses (Report No. 95-CAO-01): This report noted serious weaknesses surrounding remote dial-in access to House office-level systems. The report identified the capability for unauthorized individuals to access member systems and read mail in a Member's correspondence management system. The report also identified the capability to change outgoing correspondence in a Member's system to alter the position of the Member on a sensitive issue. Collectively, these weaknesses highlight the risks associated with dial-in access and the need for improved security to reduce the risk of access to sensitive House computer resources by unauthorized individuals. The report contained seven recommendations to correct the internal control weaknesses and to prevent recurrence. HIS agreed to correct the deficiencies we identified and is taking actions to correct them.

II. FINDINGS AND RECOMMENDATIONS

Finding A: Executive Oversight And Involvement Is Needed To Establish House-wide Goals And Technology Strategies

House top management did not exercise adequate leadership and oversight over the application of information technology. In addition, House-wide goals and technology strategies were never established to meet the identified goals of common Member requirements. As a result, Member requirements were not channeled, documented, prioritized, or managed by a formal process to establish and drive HIS priorities. The lack of an Information Resources Management (IRM) executive steering committee to set common goals and strategic direction for meeting these goals resulted in multiple technology solutions to multiple Member goals.

Generally accepted government and private industry practices include an executive level steering committee and the development and implementation of a strategic information systems plan. This plan:

- Defines the information system strategy;
- Defines information system target applications;
- Determines business and information requirements via a formal configuration management process;
- Defines a transition plan (e.g., sunset list) for replacement of non-standard or outdated technologies; and
- Provides a realistic and measurable implementation plan.

Given the importance of information technology in today's environment, top management needs to take a strong and active leadership role in developing roles and strategies relative to this activity. Two key responses to the U.S. House of Representatives Customer Satisfaction Survey, illustrated below, indicated that the value of information technology to the House is high today and is expected to be even more important in the future.

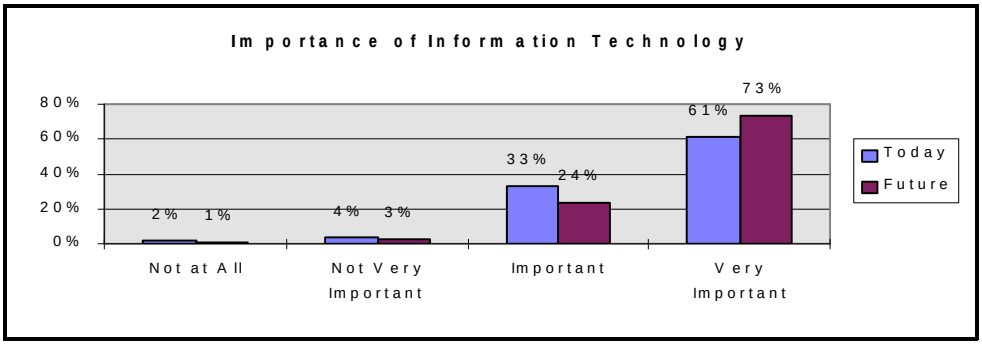

Figure 1: House Survey Respondents View Of The Importance Of Information Technology

HIS strategic plans were not based on documented House-wide goals and objectives. House-wide goals and objectives should be based on common Member requirements, however a comprehensive and definitive set of core or House-wide requirements did not exist. HIS' system requirements were defined by individual Member offices. However, Member system support requests were not channeled, documented, prioritized, or managed by a formal process to establish House-wide goals and drive House and HIS priorities. Instead, requests were prioritized based on the Member requesting the support. HIS perceived and supported each House Member as separate and distinct chief executive officers, which resulted in:

- Increased risks of systems that did not meet common user requirements;
- Strategic plans which lacked performance measures, and remained in draft form without being finalized;
- Increased development and support costs; and
- Inefficient use of HIS resources.

Inadequate strategic planning and limited executive oversight of information systems activities were clearly evident in the following examples, in which developing systems internally and supporting multiple platforms forced the House to incur unnecessary expenses and maintain overlapping technologies and technical expertise:

- Multiple electronic mail (e-mail) - The House procured, implemented, and currently supports 11 separate e-mail systems. This multiple e-mail system environment results in (1) the need to support and maintain 11 software packages instead of one with common functionality; (2) the need for a special automated switch to link the different e-mail

correspondence protocols [6]; and (3) the loss of e-mail encryption capability to protect Member correspondence from unauthorized disclosure.

- Multiple Correspondence Management and Information Search Systems - There were 11 correspondence management systems (HIS' MICROMIN[7], and ten vendor packages) and two information search and retrieval applications (Integrated Systems and Information Services (ISIS) and Member Information Network (MIN) -- both designed by HIS). Services similar to those provided in ISIS and MIN were also available through outside providers such as LEXIS/NEXIS and Legislate, however, a formal alternatives analysis was not performed to determine if they met House needs.

These deficiencies were primarily attributable to the lack of an executive level IRM executive steering committee with representatives from all user groups. The user groups would have been responsible for the development and implementation of a comprehensive IRM strategic plan for the House.

Recommendations

We recommend that the Chief Administrative Officer prepare proposals, for approval by the Committee on House Oversight, to:

1. Establish a charter for an IRM executive steering committee, chaired by a representative from the Committee on House Oversight, with representatives from Members, committees, House Officers, and HIR.

2. Develop and implement comprehensive strategic information systems plan for the House,
including a formal process to identify, document, channel, analyze, prioritize, and manage a core set of common Member requirements.

Management Response

On July 11, 1995, the Office of the Chief Administrative Officer (CAO) fully concurred with this finding and recommendations (see Appendix). As indicated in the response, the Committee on House Oversight has established a "Working Group on Computers," chaired by Congressman Ehlers, to provide strategic direction. Additionally, the response indicated that the restructuring of HIR has, among its priorities, both the formulation and maintenance of a

[6]Protocols are the rules governing transmitting and receiving of data.

[7]MICROMIN is an in-house developed correspondence management system.

strategic information systems plan for the House. This will include mechanisms for review and prioritization of all aspects of House information technology requirements by the CAO and the Committee on House Oversight. An initial version of the plan will be completed by December 31, 1995, with the review mechanism implemented by September 30, 1995.

Office of Inspector General Comments

The CAO's action related to Recommendation 1 is responsive to the issues we identified and satisfies the intent of our recommendation. Therefore, we consider this recommendation closed. In addition, the CAO's planned actions for Recommendation 2 are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendation.

Finding B: The HIS Organizational Structure Should Be Optimized To Improve Efficient Use Of Resources

The organizational structure of HIS had multiple groups performing similar functions resulting in organizational redundancies, inefficient use of resources, and inappropriate segregation of duties. These inefficient and ineffective uses of House resources occurred because quality assurance functions were not defined within the current organizational structure and the Change Control Administrator position was vacant. Furthermore, the Security Officer position was not adequately staffed or positioned within HIS to be effective.

Three separate systems development divisions were maintained within HIS

System development was performed by Administrative Systems, Custom Applications Group, and Information Resource Systems divisions. Each division used different informal system development techniques, and each group hired staff with similar skills that could be shared. Effects of this structure included:

- Hierarchical system development organizations that each hired skilled resources that could be more effectively shared if they were in one group;
- Segregation of incompatible duties was not clearly defined nor applied;
- A single structured system development methodology was not used, resulting in increased overhead, training costs, and difficulties with the sharing of staff across groups; and
- Coordination among the system development groups was more difficult.

In order to improve coordination, increase efficiency, and decrease costs, the three system development divisions need to consolidate into one division.

Lack of an independent quality assurance function results in a higher risk of systems that do not meet House needs and produce erroneous results

Generally accepted government and private industry standards recognize that an effective independent quality assurance function can aid in the development of systems that operate effectively and accurately. A quality assurance function includes responsibility for all the processes, standards, testing, and other means used to ensure quality software and systems.

A quality assurance function was not defined within the current organizational structure resulting in a lack of control over system development and maintenance activities. No quality assurance staff was responsible for ensuring that user needs were met, users were satisfied with

the quality of support services, and adequate internal controls were incorporated in new or modified systems. Also, no configuration management function was in place and responsible for identifying, categorizing, prioritizing, authorizing, and managing support requirements to meet House-wide goals and objectives.

The absence of a quality assurance function could result in an increased potential for inefficient use of HIS resources and a greater risk of developing systems that are not properly tested, contain errors, and do not accurately satisfy user needs. Nevertheless, HIS and House policies currently do not include the requirement for a formal, independent quality assurance function.

Lack of a Change Control Administrator results in a higher risk of unauthorized changes to systems

Generally accepted government and private industry practices include the requirements for a Change Control Administrator and the development of formal standards, policies, and procedures to ensure proper segregation of duties surrounding the program change control process.

The Change Control Administrator position was vacant during the audit period and no one had been reassigned to that position. In addition, the following specific weaknesses were identified:

- Emergency changes were not consistently scheduled or announced;
- Many ad hoc requests for system changes were filled without following an established change control process;
- Changes did not consistently require procedures detailing steps to be taken to return the system to its prior state in the event of a processing problem resulting from the change (i.e., backout procedures);
- System and user documentation were not regularly updated;
- Administrative Systems change management techniques appeared to be ineffective in managing the implementation of program changes into the production processing environment; and
- No centralized change management standards, policies, and procedures for implementing either application or operating system program changes were followed.

A lack of an adequately staffed change management function and change management procedures could result in inappropriate or unauthorized programs being introduced into the

production environment, thus increasing the risk of unauthorized access, modification, or deletion of sensitive system resources.

HIS Security Office was not adequately positioned within the House's organizational structure and was inadequately staffed

Generally accepted government and private industry practices call for the data security officer to be placed at an appropriate level within the organizational structure to ensure that the position has the authority to enforce all applicable standards, policies, and procedures for both mainframe operations and office-level systems.

HIS did not have an appropriately placed and adequately staffed centralized data security function, headed by an experienced data security officer, to assist in formulating, coordinating, and administering data security standards, policies, and procedures across the House. The data security function was staffed by one individual with limited experience.

This issue is being addressed in a separate report, entitled, *House Computer Systems are Vulnerable to Unauthorized Access, Modification, and Destruction*, and therefore no recommendation is included in this report dealing with this issue.

Recommendations

We recommend that the Chief Administrative Officer develop a proposal for a reorganization of HIS, for approval by the Committee on House Oversight, to:

- Consolidate and streamline systems development into one system development division or integration group;

- Implement an independent quality assurance function; and

- Staff the Change Control Administrator position.

Management Response

On July 11, 1995, the office of the Chief Administrative Officer (CAO) fully concurred with this finding and recommendation (see Appendix). As indicated in the response, the reorganization of HIR was approved by the Committee on House Oversight on June 14, 1995 and the consolidation of system development activities into a single organizational unit was accomplished with the restructuring of HIR in July 1995. The quality assurance and change control recommendations will be implemented in October 1995.

Office of Inspector General Comments

The CAO's current and planned actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations.

Finding C: HIS Personnel Policies Concerning Merit Pay And Training And Development Were Lacking

HIS did not comply with the mandates of the House Employees Classification Act (2 U.S.C. 291 et seq.). Lacking or poor documentation, coupled with the complexity of multiple payroll adjustments per employee, a unique merit based pay scale, and retroactive payroll adjustments made it difficult to accurately track employee performance or pay, and justify merit pay increases. In addition to these salary related personnel problems, HIS did not maintain an overall training plan that is based on House-wide goals and objectives.

Policies for merit pay were not consistently applied or adequately documented

HIS did not comply with the mandates of the House Employees Classification Act (2 U.S.C. 291 et seq.) because it was not required to. As a result HIS personnel policies were not consistently enforced resulting in merit pay salary increases that were not adequately documented or justified in employee personnel files. In addition, inadequate employee training and development, as well as poor documentation, exposed HIS to the risk of loss of key technical knowledge in the event of employee turnover.

The HIS Personnel Office has operated autonomously from other personnel organizations within the House. HIS employees received merit pay increases with little or no supporting documentation. HIS employee duties, contributions and levels of performance achieved are not consistently identified or documented in HIS personnel files. Compliance with performance documentation requirements has not been enforced. Lacking or poor documentation, coupled with the complexity of multiple payroll adjustments per employee, a unique merit based pay scale, and retroactive payroll adjustments, makes it difficult to accurately track employee pay and justify merit pay increases.

For Fiscal Year (FY) 1994, HIS staff salary costs, expressed as a percentage of HIS' total budget, are significantly higher than both public and private industry standard information technology salary costs. HIS' salary costs (excluding benefits, training and travel) represented 66 percent of HIS' total budget, while the same costs surveyed from over 294 government agencies and private sector companies range from 31 percent to 40 percent, as illustrated in Figure 2.

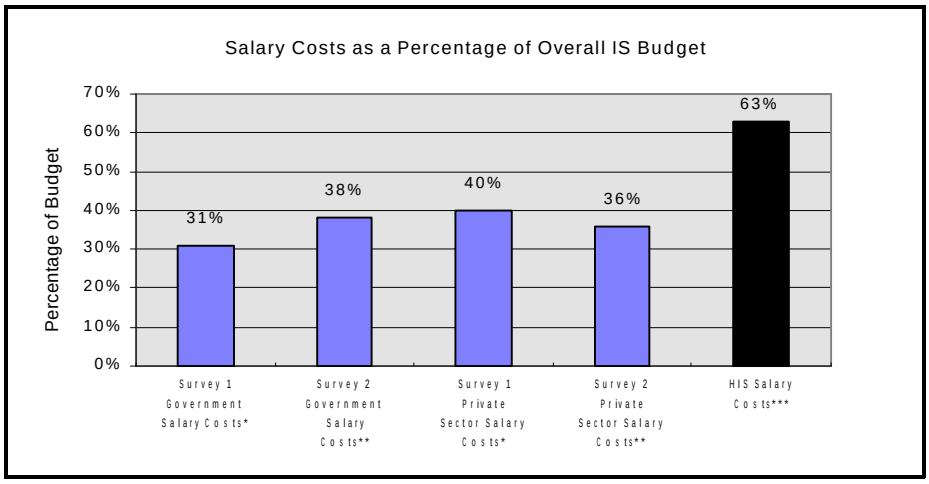

Figure 2: HIS Salary Costs Compared With Two National Surveys

* Gartner Group Survey 1994, Strategic Analysis Report

** Computer Economics, 1994 Information Systems Spending: An Analysis of Trends and Strategies

*** Fiscal Year 1994 Actual Figure derived from the HIS Summary Report by Object Class/Division, as of 9/30/94

Furthermore, average HIS salary costs (i.e., total salary cost divided by the number of employees) exceeds the average Senate Computer Center salary cost by $6,934 per employee as illustrated in Figure 3.

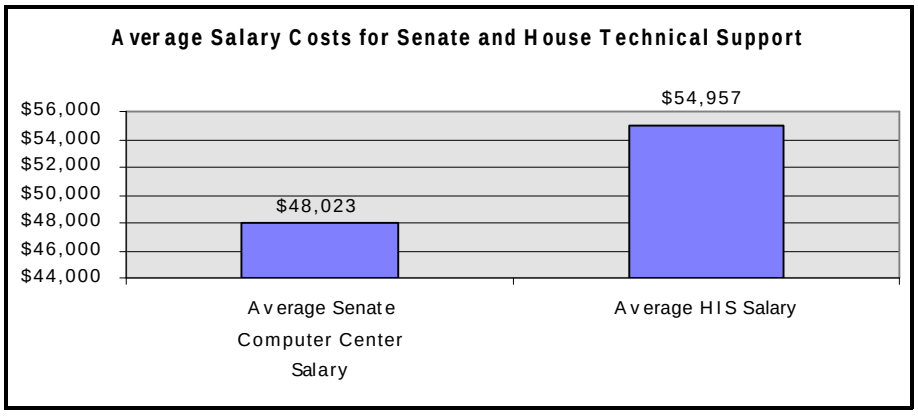

Figure 3: HIS Average Employee Salary Compared To The Senate Computer Center

Training and development of HIS personnel did not adequately address cross-training needs

Generally accepted government and private industry practices include documentation of critical application functions, evaluation of staff positions to determine critical roles, development of a comprehensive training program based on defined strategic and tactical plans, and the identification of specific cross-training goals and objectives for each critical position, with performance measures.

HIS system knowledge is poorly documented, concentrated in HIS' senior technical staff, and primarily gained through on-the-job training. Furthermore, formal cross-training is not performed.

HIS staff training is decentralized within each HIS division. While cross-training is encouraged informally, no formal process is in place to cross-train employees within HIS. Furthermore, this decentralization allows each division to determine its own standards, policies, and procedures for system documentation. (See Report No. *95-CAO-20 - The House Needs to Develop a Structured Approach For Managing and Controlling System Development Life Cycle Activities of its Computer Systems*).

Failure to provide adequate training and development, especially when poor system documentation exists, may result in increased costs and risks from employee turnover. Turnover within key technical staff positions can potentially result in a disproportionate organizational loss in technical expertise, significantly impacting HIS' ability to satisfactorily support House Members. Additionally, there is a risk of greater system down time and slower customer response times. Furthermore, maintenance and training costs are higher.

Recommendations

We recommend that the Chief Administrative Officer develop a proposal, for approval by the Committee on House Oversight, to:

1. Migrate HIS employees from the unique HIS merit-based pay scale to the House Employees Schedule and enforce personnel policies mandated by the House Employees Position Classification Act (2 U.S.C. 291 et seq.), including documentation of periodic employee performance reviews.

We also recommend that the Chief Administrative Officer:

2. Identify and document critical processes and develop a comprehensive training program for HIR employees to build the knowledge base of the critical processes that support Member needs and services.

Management Response

On July 11, 1995, the Office of the Chief Administrative Officer fully concurred with this finding and recommendations (see Appendix). As indicated in the response, the CAO has moved all HIR employees to the House Employees Schedule and mandated documentation of periodic employee performance reviews. Additionally, the CAO indicated that identification and documentation of critical processes is underway and is expected to be complete by the end of October 1995, with a comprehensive staff training program for FY 1996.

Office of Inspector General Comments

The CAO's action related to Recommendation 1 is responsive to the issues we identified and satisfies the intent of our recommendation. Therefore, we consider this recommendation closed. Furthermore, the CAO's current and planned actions related to Recommendation 2 are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendation.

Finding D: Formal Policies And Procedures Regarding The User Chargeback Process Did Not Exist

For both internal and external customers of HIS' mainframe, the rates used for billing purposes were not updated in five years. Additionally, formal documented policies and procedures regarding the user chargeback process, including the Budget Office's role in rate development, rate updates, and competitiveness surveys did not exist. Furthermore, even if the rates were correct, the way costs were allocated resulted in HIS internal customers being charged a lower rate than external customers.

The current chargeback system did not accurately represent data processing costs. Internal HIS customers were charged a rate based upon costs including personnel time, but this rate did not include employee benefits. Furthermore, this rate was not updated in five years. However, the rate billed to external customers did include benefits. Additionally, the rates that external customers were charged were based on rates charged by competing organizations and were not based on the actual costs to run HIS operations. One individual within HIS was responsible for developing and maintaining the chargeback model. Furthermore, the model and procedures for maintaining the model were not formally documented.

Not having a rate structure based on current actual costs could result in strategic decisions regarding needed capacity and operational direction being made incorrectly. Assigning the responsibility for maintaining the model to one individual, coupled with the lack of documentation, could potentially result in a loss of knowledge, significantly impacting HIS' ability to accurately maintain the model.

Government and private sector generally accepted information systems standards recognize that documentation of the chargeback and billing process for users should be current and maintained to reflect a trail of information regarding rate development, rate updates, and the administration procedures of the process. Additionally, the chargeback cost to users should be the actual cost of the processing resource being utilized by the user.

Recommendations

We recommend that the Chief Administrative Officer prepare proposals, for approval by the Committee on House Oversight, to:

1. Develop and implement chargeback rates that reflect current processing costs.

2. Establish policies and detailed procedures covering the maintenance, administration, and documentation of equitable chargeback rates and billing processes for internal and external customers.

Management Response

On July 1, 1995, the Office of the Chief Administrative Officer fully concurred with this finding and recommendations (see Appendix). As indicated in the response, HIR will review its accounting procedures with a view toward establishing accurate costs for all aspects of its operations by December 1, 1995. Additionally, the CAO stated that "charge back" rates are not intended to precisely reflect costs, but rather a price orientation to generate revenues to underwrite services. However, the rates will be reviewed against the results of the study of HIR accounting procedures to assure they are equitable.

Office of Inspector General Comments

The CAO's current and planned actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations.

Finding E: Plans Did Not Exist For The Efficient Phase Out Of Older Or Duplicate Technologies

HIS supported older and duplicate technologies resulting in inefficiencies and increased costs. Three examples of this situation were:

- Two WANs were supported to provide connectivity with Member district offices;
- Three backbone networks[8] were supported to provide House-wide connectivity; and
- Three Digital Equipment Company VAX (DEC/VAX) computers that were not used but had not been excessed.

No plans were in place for the efficient phase out of these older duplicate technologies.

Government and private industry practices for technology management include the development and implementation of plans for the orderly migration of older technologies to new technologies and for the operation, administration, and support of information resources in an efficient and cost effective manner that avoids overlap and duplication of effort.

Use of two technologies for Member district office WANs resulted in slower communications and additional costs of, at least, $432,000

Telecommunications Services provided two WANs for Member office connectivity. These WANs consisted of MCI's frame relay[9], used by 130 Members, and Sprint private line networks, used by 180 Members. Because Members were not required to upgrade their systems to reflect current technology, Telecommunications Services was required to provide connectivity for both existing technologies.

Inefficiencies existed relating to the staff and additional operational costs of supporting two WANs. Furthermore, Members paid more per month for slower speed connections by not upgrading their systems to current technologies. For example, a 9.6 kilobits per second (kbps) Sprint private line costs $700/month, while a 56 kbps MCI frame relay costs $500/month[10].

[8]Backbone networks interconnect office LANs.

[9]Frame relay is a high-speed transmission technology for moving data between distant office computers and the Members' Washington, D.C. office.

[10]MCI and Sprint offer competitive services at competitive prices. The prices cited are for services currently being offered to the House. No comparison of available services from either company was made.

Therefore, the 180 Members using the Sprint private lines paid an additional $200 per line. As a result, the House incurred an additional cost of $36,000 per month or $432,000 per year.

Telecommunications Services supported three backbone networks with no plans to migrate to one backbone network

The House had three separate backbone networks for campus-wide House office connectivity. Only 50 offices used the Asynchronous Services Network (ASN)[11] or Ethernet[12] backbone networks while the remaining offices used the higher capacity Fiber Distributed Data Interface (FDDI)[13] backbone network. The higher capacity capabilities provided by FDDI are needed to support applications such as multimedia and video conferencing.

Although HIS management believed that the ASN and Ethernet backbones would be phased out in two to three years, no plan was in place to ensure the orderly migration from these backbone networks to the FDDI backbone network.

Failure to adequately plan for the removal of the networks could result in additional operational costs and duplication of effort related to the management and maintenance of three separate networks.

Three DEC/VAX computer systems were in use and needed to be phased out

HIS did not confirm the operational status of three DEC/VAX computers. Two were believed by HIS management to not be in use and a third was believed to be functioning as a backup for a network support system, but was essentially unused.

We were told by management that most of these DEC/VAX computers were to be phased out; however, no plan had been developed for the migration or removal of these three DEC/VAX systems. Additionally, no documented configuration for these systems existed; HIS management did not have a complete understanding of what these computers were currently used for; and an assessment of the impact of disconnection had not been performed.

Failure to understand the use of systems may lead to an inappropriate use of resources, and failure to adequately plan for the phase out of obsolete equipment increases operational, administrative, and support costs.

[11]Asynchronous Services Network (ASN) is a local area network technology for offices that transport data between computers.

[12]Ethernet is a local area network technology for offices that transport data between computers.

[13]Fiber Distributed Data Interface (FDDI) is a high speed fiber optic transmission technology.

Recommendations

We recommend that the Chief Administrative Officer develop a plan, for approval by the Committee on House Oversight, to replace older and duplicate technologies, including:

- Migrating the remaining Members from the Sprint private line network to the MCI frame relay network;
- Migrating to one backbone network technology; and
- Disposing of unused DEC/VAX equipment.

Management Response

On July 11, 1995, the Office of the CAO fully concurred with this finding and recommendation (see Appendix). As indicated in the response, Members are strongly encouraged to migrate from the Sprint private line network to the MCI frame relay service and from the ASN and Ethernet backbones to the FDDI network. While considerable progress has been made in achieving the migration, completion of the transition on a mandated schedule cannot be forced since financial outlays on the part of Members are required. The three VAX systems will be excessed by the first quarter of FY 1996.

Office of Inspector General Comments

The CAO's current and planned actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations.

Finding F: Technical Support Provided To Member Offices Needs To Be Better Defined And Coordinated

House offices received the same services, such as training and technical support, from HIS and private vendors, resulting in duplication of effort and inefficient use of resources. Consequently, confusion and frustration occurred on the part of House office staff since it was unclear as to who should be called to correct a problem or to get needed training. Support relationships between HIS and vendors were not clearly defined. Additionally, although House office staff are satisfied with HIS information technology training classes, many were not aware of the classes or did not have time to attend.

Relationships between HIS and vendors directly supporting House offices were not well defined

Offices contract with outside vendors for systems and support services. However, offices using outside vendors still had the option to contact HIS in the event of a problem or support need, even though a fee is paid to the outside vendor for this service. Consequently, as problems occurred, offices had difficulty identifying which responsible party follows the problem through to resolution. This issue of "problem ownership" has resulted in:

- Duplication of effort;
- Inefficient use of resources;
- Confusion and frustration in meeting Member, Committee and other office requests; and
- Frequent situations where HIS provides support to Member offices that should be provided by the respective vendor.

Support relationships between HIS and vendors were not clearly defined. Because these roles were not adequately defined, HIS was expected to respond to requests from Member, Committee, and other offices to provide support. From the U.S. House of Representatives Customer Satisfaction Survey, we found that the House was generally satisfied with the technical support services from both HIS and outside vendors, as is summarized in the following chart. Therefore, the "problem ownership" issue was not based on quality of support services, but on confusion over roles and responsibilities.

Overall satisfaction	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
HIS consultants	3%	11%	49%	37%
HIS field services	2%	8%	44%	47%
Outside vendors	7%	22%	56%	15%

Figure 4: Respondent Satisfaction With HIS And Vendor Services

Offices were satisfied with HIS information technology training classes, but many were not aware of the classes or did not have the time to attend

The U.S. House of Representatives Customer Satisfaction Survey provided information about HIS training classes, as summarized in the charts below. When a House staff member attended an HIS sponsored training class he or she was generally satisfied with the quality of instruction and with the quality of the course content. (See Figure 5) However, greater flexibility in class scheduling and more awareness of the classes available could result in even greater participation. (See Figure 6) One alternative would be to provide for on-demand training, such as computer based training (CBT). Additionally, HIS needs to make the House more aware of the courses offered and the schedule of classes.

HIS training effectiveness	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
Quality of instruction	2%	11%	61%	26%
Quality of course content	4%	14%	59%	23%

Figure 5: Respondent Evaluation Of HIS Effectiveness

Reasons to take more classes	More time	More subjects of interest	Improved quality of classes	Awareness of classes available	Other
Overall	54%	24%	14%	51%	13%

Figure 6: Respondent Reasons To Attend More Classes

Recommendations

We recommend that the Chief Administrative Officer develop proposals, for approval by the Committee on House Oversight, to:

1. Clearly define roles and responsibilities of the HIS support functions versus vendor support functions that eliminate confusion with respect to "problem ownership" and avoid duplication of effort.

2. Implement a plan for notifying House offices of the content and schedule of training class offerings.

3. Provide additional forms of training, such as computer based training (CBT), that are available upon demand to House offices.

Management Response

On July 11, 1995, the Office of the CAO fully concurred with this finding and recommendations (see Appendix). As indicated in the response, the CAO is in the process of developing detailed procurement procedures for computer-related equipment that will differentiate the support role of vendors and that of HIR staff. These procedures are expected to be announced no later that September 1, 1995. Additionally, HIR has consolidated the training function into a single organizational unit within the Client Services group under the restructuring. Proactive distribution of course offerings and schedules via printed material and making training schedules conveniently available on-line has been implemented. Furthermore, the CAO stated that an integral part of the Office 2000 concept is to rely on alternative forms of training such as CBT and multi-media as opposed to traditional classroom training. These additional forms of training will be made available during 1996.

Office of Inspector General Comments

The CAO's current and planned actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations.

Scot M. Faulkner
Chief Administrative Officer

Office of the
Chief Administrative Officer
U.S. House of Representatives
Washington, DC 20515–6860

MEMORANDUM

TO: Robert B. Frey III
Deputy Inspector General

FROM: Thomas J. Simon
Director of Internal Controls and Continuous Improvement

DATE: July 11, 1995

SUBJECT: Draft Audit Report - House Information Systems Operations

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We appreciate the opportunity to comment on your draft report. We deeply appreciate your efforts and are in general agreement with the findings and recommendations. Specific comments on each recommendation follow. If there are any questions or additional information required regarding this reply, please contact me at (202) 226-1854.

Finding A

Recommendation 1: The Committee on House Oversight has established a "Working Group on Computers" chaired by Congressman Ehlers to provide strategic direction.

Recommendation 2: The restructuring of HIR has, among its priorities, both the formulation and maintenance of a strategic information systems plan for the House. This will include mechanisms for review and prioritization of all aspects of House information technology requirements by the CAO and the Committee on House Oversight. An initial version of the plan will be completed by December 31, 1995. The review mechanism will be implemented by September 30, 1995.

Finding B

Recommendation: The reorganization of HIR was approved by the Committee on House Oversight on June, 14, 1995. The consolidation of system development activities into a single organizational unit has been accomplished with the restructuring of HIR in July 1995. The quality assurance and change control recommendations will be implemented in October 1995 as system maintenance and operations are fully consolidated and necessary staff vacancies are filled.

Finding C

Recommendation 1: All HIR employees have been moved to the House Employees Schedule. Documentation of periodic employee performance reviews has been mandated.

Recommendation 2: The identification and documentation of critical processes is underway and is expected to be completed by the end of October 1995. A comprehensive staff training program for FY 1996 is in the process of formulation.

Finding D

Recommendation 1: HIR will review its accounting procedures with a view toward establishing accurate costs for all aspects of its operations. This review will be completed by December 1, 1995.

Recommendation 2: The "charge back" rates are not intended to precisely reflect costs. They are used as billing rates. The underlying intent of the rates was to generate revenues to underwrite services to House offices, particularly Member and committee operations. This was in keeping with the policies of the House Administration and Appropriations committees. The Committee on House Oversight has concurred with HIR proposals to seek additional revenues from reimbursable services to federal agencies. Accordingly, the "charge back" rates should continue to have a price rather than a cost orientation. The rates will be reviewed against the results of the study discussed in Finding D, Recommendation 1 to assure they are equitable.

Finding E

Recommendation: Members are strongly encouraged to migrate from the Sprint private line network to the MCI frame relay service and from the ASN and Ethernet backbones to the FDDI network. Considerable progress has been made in achieving the migration. However, because financial outlays on the part of Members are required to effect the transition, completion of the transition on a mandated schedule cannot be forced. The three VAX systems will be excessed by the first quarter of FY 1996.

Finding F

Recommendation 1: The CAO is in the process of developing detailed procurement procedures for computer-related equipment that will differentiate the support role of vendors (i.e. "system integrators") and that of HIR staff. These procedures are expected to be announced no later than September 1, 1995.

Recommendation 2: In its recent restructuring, HIR has consolidated the training function into a single organizational unit within the Client Services group. Proactive distribution of course offerings and schedules via printed material and to making training schedules conveniently available on-line has been implemented.

Recommendation 3: An integral part of the Office 2000 concept is to rely on alternative forms of training such as Computer Based Training (CBT) and multi-media as opposed to traditional classroom training. These additional forms of training will be made available during 1996.