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ATTACHMENT III

INFORMATION SYSTEMS REPORT

April 1981 to February 1983

St. Paul Ramsey
medical Center

ARTHUR ANDERSEN & Co.

801 NICOLLET MALL, SUITE 1200
MINNEAPOLIS, MINNESOTA 55402
(612) 332-1111

March 11, 1983

Mr. David Gitch
St. Paul-Ramsey Medical Center
640 Jackson Street
St. Paul, Minnesota 55101

Dear Mr. Gitch:

This letter provides an executive summary of the key findings of both the Long-Range Information Systems Planning and Vendor Selection projects completed at St. Paul-Ramsey Medical Center (SPRMC) during the last 22 months. The letter is organized into the following sections:

Information Planning Project - Objectives and Results

Strategic Planning at Hospital
Shared Systems - Objectives and Results

Vendor Selection Project - Objectives and Results

Implementation Strategy - Components

Information Planning Project (April, 1981-April, 1982)

The Information Planning Project had three primary objectives. First, to relate the information requirements of management to major systems requirements, the systems development environment, and the manpower and equipment requirements for a five year planning period. Second, to evaluate the overall efficiency and effectiveness of the current data processing approach used by St. Paul-Ramsey Medical Center. Third, to develop an integrated operation strategy for implementing the required systems.

The Information Planning Project was performed in conjunction with a Strategic Business Planning project to identify the role Hospital Shared Systems (HSS) might continue to play in providing data processing services to SPRMC and

other HSS member hospitals (approximately 20 major hospitals). It was known that most regional shared data processing centers across the nation, similar to HSS, had been dissolved or reorganized due to competition from software vendors capitalizing on recent technical improvements in hardware and health care application software. With this newer technology, hospitals have the opportunity to support proven, more cost effective and controlled data processing services in an in-house environment. Thus, the underlying objective of the Strategic Planning phase was to determine the real viability of HSS providing any services in the future.

Initiated in April 1981, the formal Information Planning process involved over 250 workdays of effort by the combined SPRMC and Arthur Andersen & Co. project team. Over 45 SPRMC personnel were involved in this process. Gillette Children's Hospital and RCA were also involved to evaluate the feasibility of meeting their information processing objectives. A formal report was issued in April 1982. The major results were:

- An SPRMC Management Advisory Committee was formed to monitor Data Processing activity.

- Information needs were established throughout the entire hospital.

- Current application systems were analyzed relative to those information needs.

- Application systems available in the market today provide significant functional improvements over the current systems.

- New application systems were identified and prioritized based on specific benefit/cost criteria.

- It was determined that new financial application systems must be implemented no later than May 1984 because of the phase-down of the Hospital Shared Systems organization. (See results of Strategic Planning later in this letter.) These applications included:

Patient Accounting
Admissions
General Ledger
Accounts Payable
Payroll/Personnel
Materials Management
Fixed Assets

- Patient Care ancillary systems used by physicians, nurses and other health care professionals were highly prioritized overall. It was determined that any long-term implementation strategy must allow for migration to such patient care systems.

- The data processing environment established when first converting to the new financial systems must be upgradable to and consistent with the technical environment necessary to support the patient care applications.

- Application system implementation projects were identified and five year costs and benefits were estimated and compared to current costs.

- It was estimated that state-of-the-art on-line in-house financial systems could be implemented at less than the five year projected data processing costs associated with SPRMC current shared data processing providers. This was true even considering the one-time costs of conversion. Ongoing costs after implementation would be significantly less with this new approach.

- A software vendor selection process would be initiated to identify the specific software vendors most compatible with the SPRMC health care environment.

- The ability of the application software to meet SPRMC's requirements would be the primary criteria for selecting the vendors. The hardware chosen would be based on requirements of the best software vendor.

At the same time, Arthur Andersen & Co. was performing similar Information Planning projects for several other major area hospitals including:

United Hospitals, Inc.
Children's Hospital Incorporated
Abbott-Northwestern Hospital
Metropolitan Medical Center
Immanuel-St. Joseph's Hospital
St. Ansgar Hospital

Strategic Planning Project (April, 1981-April, 1982)

This project was performed concurrent with the Information Planning Project. Its objective was to determine if HSS could continue to provide cost effective services to member hospitals. Arthur Andersen & Co. assisted in this project with HSS, while key member hospital participants performed a steering committee function providing direction and decision making. The major results of this project were:

- HSS could no longer provide cost effective and timely service to its member hospitals when compared to other alternatives.

- Patient Care systems were identified as highest priority at most hospitals and HSS did not provide such systems.

- There were no shared organizations in the country which provided Patient Care systems on a shared basis. Such systems could only be supported in-house.

- HSS's current financial applications provided less function than most financial software packages more recently developed.

- Because of increased local competition of hospitals in general there was little incentive to share data processing particularly if it was more expensive.

- Given the above, the HSS Board agreed to phase down Hospital Shared Systems by converting to other alternatives prior to May 1984. At this point all major HSS hospitals began their vendor selection processes to determine the data processing approach that best fit their unique requirements.

Vendor Selection Process (May, 1982-December, 1982)

The SPRMC vendor selection process began in May 1982 and was completed in December 1982. Again, a joint project team of AA&Co. and SPRMC personnel was formed. Over 300 workdays were spent in this effort. The major findings in this process were:

- Over 70 financial and patient care systems vendors were reviewed. The software vendors for the financial applications would be:
  - Patient Accounting (Whittaker)
  - Admissions/Registration (Whittaker)
  - General Ledger (MSA)
  - Accounts Payable (MSA)
  - Materials Management (MSA)
  - Payroll/Personnel (MSA)
  - Fixed Assets (MSA)

- All patient care applications could be provided by Technicon. These applications were clearly superior to any others evaluated particularly in terms of the number of hospitals users similar to SPRMC.

- All the above systems operate on IBM 4300 equipment and are proven application packages in hospitals the size of SPRMC.

- Nationally known shared processing vendors were also included in the study. All were more expensive and provided less flexibility than the alternative chosen.

- SPRMC management would not seek final approvals to begin to install patient care related applications until completion of the financial systems conversion effort.

- Total five year costs for the new financial systems including one-time conversion costs and site preparation costs would be less than the current costs associated with Hospital Shared Systems, MCSI and Datapoint. This includes consideration for both implementation assistance and for additional in-house support personnel required by SPRMC (5 computer operators, 4 analysts, 1 systems programmer, 1 data processing manager).

- Because major HSS hospitals are phasing to new systems more rapidly than originally planned, the time frame for completion of the financial systems conversion was moved to December 31, 1983.

- The above time frame is consistent with that of other major HSS hospitals. Most are planning conversions at the end of their next fiscal year or the 1983 calendar year. These hospitals include:

  Abbott-Northwestern Hospital
  United Hospitals, Inc.
  Children's Hospital Incorporated
  Metropolitan Medical Center
  Immanuel-St. Joseph's Hospital
  St. Ansgar Hospital
  Waconia Ridgeview Hospital
  St. Francis Hospital

  Arthur Andersen & Co. has been involved with all the above hospitals during the planning process.

- Given that the above hospitals represent 73% of the total revenue for HSS, if the conversion time frames are met by these hospitals there will be significantly less support from HSS for hospitals not converted by year end.

- Once approval of the above direction by the SPRMC Commission was obtained, a design and implementation project was initiated on January 3, 1983 to convert to new financial applications by the end of 1983.

Information Strategy for 1983

The following are the major components of SPRMC's information strategy for 1983 to convert all current financial applications to in-house systems:

- Add 11 more data processing personnel including
  1 Data Processing Manager (ASAP)
  4 Analysts (ASAP)
  5 Computer Operators (by August)
  1 Systems Programmer (by May)

- Continue to use outside assistance as required in converting to the new financial applications within the 1983 time frame.

- Purchase and install required IBM equipment by May 1, 1983.

- Purchase MSA and Whittaker software packages by February 1, 1983 to initiate training process.

- Complete physical site preparations by May 1, 1983 to accommodate new equipment.

- Complete the design installation of financial applications indicated below:

Application Area	Conversion Date
General Ledger	10-01-83
Accounts Payable	10-01-83
Property Ledger	11-01-83
Admissions	12-01-83
Patient Accounting	12-01-83
Payroll/Personnel	01-01-84

- The total impact on SPRMC 1983 budget would be:

Hardware	$ 850,000
Software	650,000
People and one-time conversion costs	1,000,000
Contingency	250,000
Total	$2,750,000

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There are several formal documents that have been generated for SPRMC during the above processes which support the findings described in this letter.

Very truly yours,

ARTHUR ANDERSEN & CO.

By Thomas G. Grudnowski
Thomas G. Grudnowski

St. Paul-Ramsey Medical Center

640 Jackson Street Saint Paul, Minnesota 55101 (612) 221-3456

M E M O R A N D U M

TO: Mr. Harry Moberg, Chairman
Saint Paul-Ramsey Medical Center Commission

FROM: Mr. Richard A. Culbertson
Senior Associate Director

DATE: February 23, 1983

RE: Development of Electronic Data Processing System
At St. Paul-Ramsey Medical Center

On February 7, the Finance/Personnel Committee of the Ramsey County Board of Commissioners voted to defer any action on proposed positions for electronic data processing operations at St. Paul-Ramsey Medical Center. The action was taken on the basis that the joint study process between St. Paul-Ramsey Medical Center and the Ramsey County Board of Commissioners was not yet complete; and the intention of Ramsey County to engage a consultant to review Ramsey County data processing activities in their entirety. In addressing this problem, we believe it is best to review, for the benefit of the Commission, the decision-making process which has been undertaken from the commencement of the Arthur Andersen study of the hospital shared systems program and our own data processing needs in 1981 to the present. Our current data processing support (including financial systems, patient accounting, and inpatient billing and payroll/personnel systems) is due to terminate on May 31, 1984. Consequently, there is some urgency in addressing and resolving this issue.

In reviewing material for this meeting, we are including a summary of the project to date which has been adapted from the waiver request submitted to the Metropolitan Health Board. In addition, we are also including a memorandum prepared by Mr. McClary outlining the detrimental effects which may result from extension delay in the implementation of a data processing system at the medical center. Finally, we are also attaching a listing of the dates and meetings at which reports were presented on this matter and commission actions taken leading up to the decision of December 29, 1982 by the Medical Center Commission to endorse the acquisition of appropriate computer facilities and software and personnel to implement a system at St. Paul-Ramsey Medical Center.

It is important to note that St. Paul-Ramsey is not unique in undertaking this process. United, Children's, St. John's, and Bethesda Hospitals in St. Paul are all undergoing similar conversions from the hospital shared system. In fact, the eminent decisions of St. John's and Bethesda to leave the system forced the member

hospitals as a group to conclude that maintaining a system was neither economical nor in the best interests of the member institutions from the perspective of services provided. The analysis undertaken and documented in the Arthur Andersen study has shown that large shared computer systems are no longer economically viable in the current marketplace given the tremendous advances in computer technology. These advances have more than offset the potential costs involved in acquiring EDP staff and purchasing software to operate the programs, resulting in the projected net savings per patient day which is included in this document. In addition, the medical center is also placed in a position to be able to enter into patient care systems for additional applications outlined in the Arthur Andersen plan in the future as technologies in patient care become more economical.

As noted previously, the present status of our request for three new position classifications in the electronic data processing area has been deferred by the Finance/Personnel Committee of the Ramsey County Board of Commissioners. This deferral is linked to the progress of two separate and distinct studies, one of which is underway and the other of which is contemplated. The first is the joint study between the Medical Center Commission and Ramsey County, with a projected completion date reported in the St. Paul Pioneer Press of June. The second is to be undertaken administratively by Ramsey County to review its current data processing operations (in which SPRMC does not currently participate), with no deadline yet provided. Based on the experience of Arthur Andersen in evaluating the medical center's data processing needs, an eight to nine month process would not be unusual for our activities to be restricted by completion of this proposed study.

The basic dilemma faced by the medical center is that our current data processing agreements will cease in May 1984, and action must be taken to replace that system. The recommendations of the Arthur Andersen report have been adopted by the commission, and action has proceeded swiftly given the short time frame we have to accomplish major structural alterations since that time. An example of the magnitude of the problem we face is the fact that an excess of 17,000 bills are generated monthly for in & outpatients at this medical center, and for this and other aspects of the fiscal health of the medical center we are totally dependent upon automated systems.

Thank you for yours and the commission's consideration of this material in its deliberations.

RAC:jm

Description of Project

In April of 1982 St. Paul-Ramsey Medical Center, with assistance from Arthur Anderson & Co., completed a five year systems plan. This systems plan defined the information processing needs of SPRMC over the next five years and outlined the approximate effort and costs required to meet those needs. The major conclusions of the systems planning process were:

- Because of the phasedown of Hospital Shared Systems (HSS) it will be necessary to replace the financial systems currently provided by HSS with systems from another vendor. The conversion from HSS to new financial systems should be done as soon as possible.

  Although SPRMC's current in-house ADT (Admission, Discharge, Transfer) system (supported on Datapoint equipment) offers adequate functionality, it is not feasible to use the current system as the basis for a complete patient care system which will provide functions related to ADT, order entry, results reporting, results retention, ancillary department processing, etc. The current ADT system should be replaced with a system that can be integrated with a patient care system.

  On-going operational costs of a data processing department and one time and annual recurring costs for each application systems were estimated. It was concluded that the HSS, MCSI (Outpatient Billing and AR) and Datapoint ADT systems (external vendors where services are currently purchased by SPRMC) could be replaced and maintained at a cost equal to or lower than the amounts currently paid to HSS, MCSI and Datapoint over a five year period. Replacement of these systems could also provide a significant improvement in the level of functions and features provided to users of the systems. Implementation and maintenance of a patient care system will require substantial increases in data processing spending because many functions which are currently manual will be automated.

  An integrated data base system strategy for both financial and patient care systems will provide the best automation tool for the professionals at SPRMC and will best serve to provide the benefits of automation. In evaluating system alternatives, software selections should take precedence over hardware selection. The use of proven software packages is recommended and alternatives available in the marketplace should be evaluated as part of the decision process in acquiring new systems.

  The first step required in order to implement the Systems Plan is the selection and installation of new financial systems as described in the first paragraph of this letter.

Estimated Capital Expenditure

The total capital expenditures for the installation of the information systems is $2,480,000. This is comprised of the following costs:

Hardware (IBM 4341)	$ 850,000
Software (M.S.A. and Medicus)	630,000
Construction Costs	200,000
Consultant Installation Costs	800,000
	2,480.000

Anticipated Impact on Average Patient Charge

As demonstrated below the average annual cost will actually be less than the current cost of E.D.P. systems at St. Paul-Ramsey Medical Center. It must be brought out, however, that during the initial installation year of 1983 and during a portion of 1984 additional costs of approximately $477,000 will occur due to the necessity to overlap systems until the entire installation is complete. This $477,000 will more than be recovered over the next 5 years by the savings in average cost per patient day. ($.72 x 148,000 x 5 years = $532,800) As a result of the above analysis there will be no increase to the average charge to the patient.

Current E.D.P. Systems Costs:

Personnel Budget	$ 240,000
Shared Systems (HSS, MCSI)	690,000
Equipment Rental & Others	220,000
	$ 1,150,000
Adjusted Patient Days	÷ 148,031
Average Cost Per Patient Day of Current System	$ 7.77

Proposed E.D.P. Systems Costs:

Personnel Budget	$ 520,000
Maintenance of Hardware/Software	130,000
Equipment Rental	40,000
Depreciation of Capital Expenditures ($2,480,000 ÷ 7)	354,286
	$1,044.286
Adjusted Patient Days	÷ 148.031
Average Cost Per Patient Day of Proposed System	$ 7.05
Net Savings Per Patient Day	$ .72

All acute care hospitals in the metropolitan area provide financial systems of the type which will be installed at St. Paul-Ramsey Medical Center. However, as the feasibility study to assess the continuation of the hospital shared systems venture demonstrated, the economics of hospital financial data processing favor dispersion of these programs to individual hospitals rather than a consolidated or shared program such as we have participated in for the last thirteen years. It should be noted that United Hospitals, Bethesda Hospital, and St. John's Hospital in St. Paul are presently undertaking the same study with similar potential conclusions to ours. As noted in the response to question 5, the reduction in hardware and software charges to institutions for these installations has resulted in the potential for economies to patients which would previously not be possible.

In addition, it is anticipated by on-site location this equipment in operation that transaction time will be reduced, and greater efficiencies will thus be attained in such functions as billing and general ledger preparation.

St. Paul Dispatch
8B ☆ Tuesday, Feb. 22, 1983

Ex-welfare chief county finalist

By George Beran
Staff Writer

Arthur Noot, former state welfare commissioner, was added to the list of contenders today for appointment as Ramsey County executive director.

Noot's name was added to the five finalists after James Hiniker, former state administration commissioner, dropped from conten-

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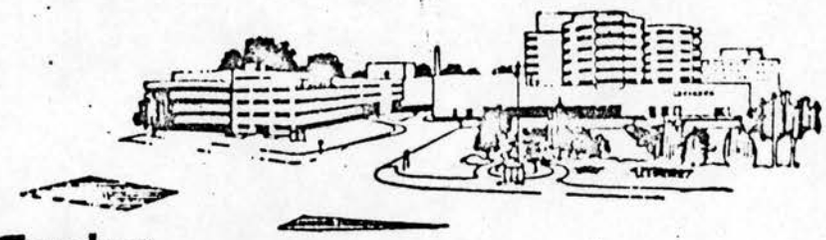
Version 3
March 18, 2019



St. Paul-Ramsey Medical Center

640 Jackson Street Saint Paul, Minnesota 55101 (612) 221-3456

M E M O R A N D U M

TO: David W. Gitch
Executive Director

FROM: Jack A. McClary
Associate Director

DATE: February 14, 1983

SUBJECT: Effect of Delay on Data Processing Development

Ramsey County Finance Committee today tabled the Medical Center request for three positions needed as part of implementation of the new Main-Frame Computer Center. They recommended referral of this issue to the Joint Study Committee. They also requested delay in implementation of our Data Center Development.

Following is an assessment of our implementation process and the effects of delay in any board decision needed to continue our current schedule.

1. We have completed our contract with Management Science of America (M.S.A.) for financial systems software. Documentation has been delivered and we have paid 60% of the contract price. Analytical work to adapt these systems has started. We need three additional analysts which are in process of recruitment. Civil Service is willing to continue this recruiting effort.

2. Whittaker-Medicus, Inc. (Medi-Pac) software contract for A.D.T. and patient accounting and billing is being developed. Proposed contract will be presented to our Finance Committee on Wednesday, February 16, 1983. A delay in this contract would delay adaption processes, and would block training of our personnel currently scheduled for March 7 - 11.

3. We are proposing to the Remodeling Committee on February 15 that they authorize bidding for site preparation, with work to begin late in March or the first of April with completion scheduled by May 1, 1983. A delay in this commitment would prevent installation of equipment planned for delivery during the first week of May.

4. We have given a letter of intent to I.B..M. dated February 4, 1983. On the basis of this letter, they have allocated output from their factories. We must complete a contract to purchase and/or lease

the equipment listed in our letter. If this contract is not executed by the end of March, we stand to lose our production dates. There is a ninety (90) day lead time from date of letter of intent to delivery date, thus revocation of our current letter would insert at least a ninety (90) day delay. Such a delay would imperil our ability to be ready by the time we had intended to convert from Hospital Shared System (H.S.S.) Service.

5. Civil Service has authorized use of established job descriptions for one senior computer operator, three computer operators and one trainee operator. Those positions will be needed when the computer is installed. Recruitment will be delayed only if equipment installation is deferred.

6. The County's delay in authorizing the three requested positions will complicate but not block our progress. It will delay promotion for our selected program head, but his service on an acting basis can be continued. The systems software programmer will be needed when the equipment arrives. Although this skill can be contracted at about three times the cost of employment, it is far better for continuity to initially employ such an individual rather than utilize contract services. The systems development manager position is needed now - any delay in employment of this technical specialist will increase consultant time requirement and affect our progress in adaption of software.

7. We attach our planned timetable. Any delay in this phasing will compress schedules at the end of 1983 and push our work into 1984 with impact on our change-over expectations.

8. Potential risks of delay:

   a. We have invested considerable resources early in 1983 to expedite this project. Delay will interrupt our rate of progress and may cause duplicate effort to restart the process.

   b. Our contract with H.S.S. has a three to six month cancellation clause. We lack any firm commitment on their part to sustain services through April of 1984. Thus our current plans are geared to possible change-over by January, 1984, if necessary. H.S.S. may not be able to continue services considering that several local hospitals are planning to discontinue use of their support. These include:

      Metropolitan Medical Center
      Abbott Northwestern
      Bethesda
      St. John's
      United/Childrens
      Immanuel St. Joseph's
      St. Ansgard
      St. Francis
      Waconia-Ridgeview

   c. Delay will increase our consulting costs.

d. Delay will increase competition for resources of the software venders. Currently we are first in line.

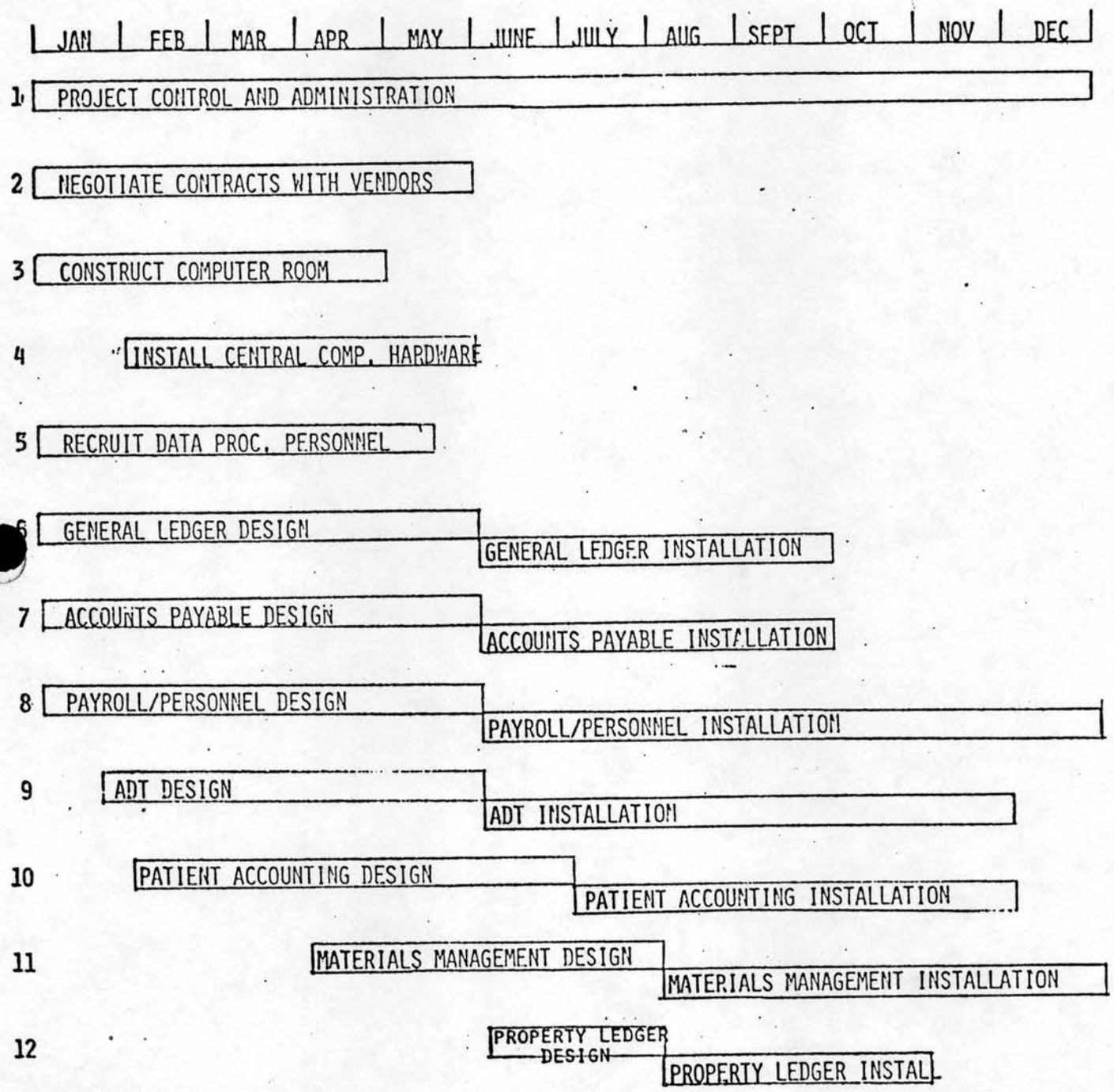
e. Delay will reduce selectivity for data processing skills since other hospitals will have "creamed" the available talent.

JMc:mr
Attachment
c.c. Richard Culbertson

ST. PAUL-RAMSEY MEDICAL CENTER

PLANNED TIMETABLE FOR CONVERSION OF FINANCIAL SYSTEMS

1983



DATES

Finance/ Personnel	Commission	Description:
2-81	4-29-81	Approved proposal from Arthur Andersen & Co. to do an analysis of the Medical Center's data processing needs.
April 1982		Information Systems Plan presented by Arthur Andersen & Co.
5-19-82	5-26-82	Resolution to discontinue the Hospital Shared Systems Service effective May 31, 1984, contingent upon the other member hospitals also signing the Resolution.
6-23-82	6-30-82	Approve Arthur Andersen & Co. as consultant for vendor selection process.
11-17-82	12-1-82	Revision to Blue Cross/Blue Shield agreement for withdrawal of various large user hospitals from the Hospital Shared System Corporation
12-22-82	12-29-82	Approve recommendations concerning the data processing vendor selection project:

1. Approval of overall Task Force approach and recommendations:

   General Accounting - M.S.A.
   Patient Accounting - Medicus
   ADT - Medicus

2. Decision on timing of patient care implementation -- defer for one year.

3. Approval to recruit EDP Manager and staff.

4. Approval to purchase IBM 4341 and peripherals.

5. Approval to begin design projects on all financial systems and ADT.
   - Purchase M.S.A. software before year end in order to take advantage of $80,000 discount.
   - Negotiate contract with choice of Medicus or Technicon.
   - Contract for outside assistance on design projects.

6. Approval to start computer room construction.

7. Approval of 1983 budget modifications:

Hardware	$850,000
Software	630,000
People (consultation & additional staff)	1,000,000
10% Contingency	248,060
	$2,728,069

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ARTHUR ANDERSEN & CO.

801 NICOLLET MALL, SUITE 1200
MINNEAPOLIS, MINNESOTA 55402
(612) 332-1111

March 16, 1981

Mr. James J. Amireault
Director
Hospital Shared Systems
Blue Cross and Blue Shield
of Minnesota
3535 Blue Cross Road
Saint Paul, Minnesota 55165

Dear Mr. Amireault:

We are pleased to submit this letter which expands the scope of our original proposal to assist Hospital Shared Systems (HSS) in the development of a long range business plan. As you requested, this letter provides additional information relating to:

- Our revised work-days and fees for completing the HSS Business Plan without the participation of HSS personnel as indicated in our original proposal.

- Our estimated work-days and fees for completing individual Data Processing Systems Plans for HSS user hospitals.

Project Work-Days and Fees

We propose to develop the HSS Long Range Business Plan and Systems Plans for all PAC A Hospitals for a fixed fee of $215,000 plus actual out-of-pocket expenses. The fee distribution to HSS and PAC A Hospitals would be as follows: HSS - $70,000; hospitals over 450 beds - $19,000; hospitals between 250 and 400 beds - $12,000; hospitals between 100 and 200 beds - $7,000. Of course, the total fees would be determined by the actual number of participants of PAC A Hospitals. As shown in Exhibit I we have reallocated the work-days on the Project Summary Barchart to eliminate HSS participation. It is important to note the scope of the business planning process and associated project work-days were not reduced. We have also shown the portion of the original work-days which would actually be spent in HSS hospitals determining system requirements. We then added

the additional work-days required to complete individual Data Processing System Plans for each of your PAC A hospitals. As we discussed, our original proposal did contain system planning tasks as viewed from a hospital's perspective. We now understand, however, that your user hospitals desire the option of completing independent systems plans which they can use internally to support their future data processing direction.

The following tables summarize the required work-days for the Business Plan and the individual hospital Systems Plans. Note that 120 days of work contained in our original proposal related to Systems Planning tasks for the PAC A Hospitals.

Total Project Work-Days

	HSS	PAC A Hospitals	Total Work-Days
Work-days in original Business Planning Proposal	170	120	290
Additional Days to complete PAC A Hospital Systems Plans	-	185	185
Total Work-Days	170	305	475

Project Work-Days By Hospital

Total PAC A Hospitals		Work-Days	
Beds	Number	Per Hospital	Total
Over 450	5	40	200
250-450	3	25	75
100-250	2	15	30
Total	10		305

Project Fee Distribution

	PAC A Hospitals	Fees Per Hospital	Total
HSS	-	-	$ 70,000
Hospital Beds			
Over 450	5	$ 19,000	95,000
250-450	3	12,000	36,000
100-250	2	7,000	14,000
Total	10		$215,000

If a PAC A Hospital does not require an individual Systems Plan, the amounts indicated above should be used to reduce our fees accordingly. We would be prepared to begin this project on April 1, 1981 with completion within six months.

Our Approach to Hospital Systems Planning

The work performed in a Hospital Systems Planning project can be divided into ten distinct but interrelated work segments.

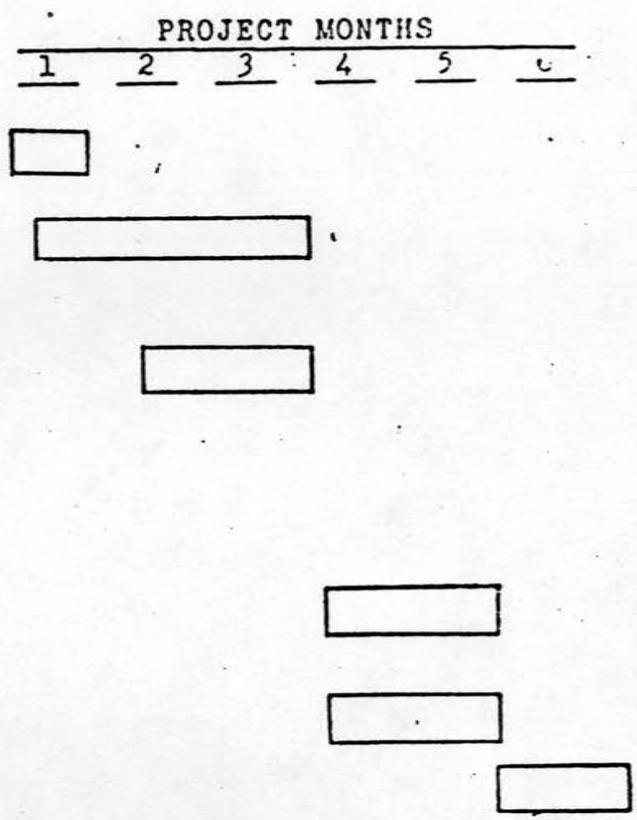
1. Organize the project.
2. Determine the business objectives.
3. Evaluate the present status.
4. Determine the information requirements.
5. Prepare the systems project documentation.
6. Outline the hardware and software strategy.
7. Define the organization strategy.
8. Draft the systems plan.
9. Define work plans for priority projects.
10. Obtain Hospital Management Advisory Committee approval.

The specific tasks to be executed in performing the activities of each segment are described in Exhibit II. Note that the time to complete the first five work segments were included in our original proposal for all PAC A Hospitals. Accordingly, even if a PAC A Hospital did not desire a total Systems Plan, at least the requirements portion of the plan would be a deliverable to the hospital.

EXHIBIT

HOSPITAL SHARED SYSTEMS
PROJECT SUMMARY BARCHART

SEGMENT	TOTAL DAYS ORIGINAL	TOTAL DAYS ADDITIONAL
1. Organization	14	-
2. Environmental Analysis and Forecast	120	185*
3. Internal Analysis and Position Assessment	31	-
Phase I Totals	165	185
4. Objectives and Goals Development	15	-
5. Strategy Development	85	-
6. Plan Development	25	-
Phase II Totals	125	0
Project Totals	290	185



*Assumes all PAC A Hospitals. See Tables in the letter which presents the work-days by hospital size.

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EXHIBIT II

SYSTEMS PLANNING
SEGMENTS OF WORK

1. Organize the Project

A successful systems planning project requires senior management commitment to and involvement in the systems project, and a properly trained and oriented project team. The organization segment ensures that these prerequisites are met before the major work of the project begins.

The major products of this segment are:

1. Management Advisory Committee charter, a directive governing the efforts of the Management Advisory Committee.
2. Work program, an outline and description of all systems planning tasks to be performed and their outputs.

2. Determine the Business Objectives

In the Business Objectives segment, the systems planning team acquires an understanding of the hospital's business environment and plans. Analyses of performance strengths and weaknesses are conducted, and business strategies are discussed in interviews with senior management. The implications for current and future information requirements is assessed, and the objectives for the information processing services department are defined.

The major products of this segment are:

1. A summary of business objectives and strategies including their systems implications.
2. A statement of objectives and responsibilities for the information processing services department.
3. A framework of criteria for evaluating the priority of systems development projects.

3. Evaluate the Present Status

The hospital's current information processing environment must be understood before recommendations for future actions can be formulated. Reviews of current systems, computer operations, information processing services department processes and personnel skills are therefore conducted.

SYSTEMS PLANNING
SEGMENTS OF WORK

3. Evaluate the Present Status (continued)

The major products of this segment are:

1. Inventory of present systems.
2. Profiles of existing systems.
3. Assessment of data processing capability.
4. Benefit assessment.

4. Determine the Information Requirements

Determining the hospital's information needs is the most important activity of the Systems Planning phase. In the Information Needs segment, interviews are conducted with selected personnel in the various business units, functions and locations of the hospital. The information requirements identified provide the basis for defining the types of information systems required for effective operation of the business. Detail information on existing operational financial and patient care systems obtained by our firmwide Health Care software research groups will provide a framework to guide the interview process. At the completion of this segment, the project team has an understanding of the information requirements of the hospital, including a clear definition of those that are most critical to the achievement of the hospital's business objectives.

The major products of this segment are:

1. Information schematics for each functional area and operating division of the company.
2. Going-in positions for potential systems.
3. Write-ups of each interview.
4. Summaries of outside industry, functional and planning experience.
5. A summary of the functional requirements and information needs of management.

5. Prepare the Systems Projects Documentation

The overall strategy that will guide the systems development efforts for the hospital is defined in the Systems Projects Documentation segment. This strategy identifies the major types of systems required by the hospital and the overall approach to be used in obtaining or developing the systems. The systems strategy focuses on the approach to be followed for the implementation of application systems, and provides direction for the formulation of strategies related to hardware, software and the organization of the

SYSTEMS PLANNING
SEGMENTS OF WORK

5. Prepare the Systems Projects Documentation (continued)

information processing services department. This step would be performed after HSS strategies have been established so a hospital could determine how well HSS strategies meet hospital needs.

Another major product of the Systems Projects Documentation segment is a series of application systems project descriptions. The project descriptions describe the scope, approach and staffing recommended for the development of each required application system. The project descriptions also include estimates of the costs, benefits and overall economics of each system.

The application systems projects defined in this step represent the major product of the systems plan. The project descriptions directly affect the requirements to be satisfied by the subsequently defined hardware, software and organization strategies.

The major products of this segment are:

1. Systems groups data models (data schematics) by functional area.
2. Systems schematics by functional area.
3. Strategy statement for application systems development.
4. Project descriptions.
5. Approximate development costs for each proposed system.
6. Tangible and intangible benefits for each proposed system.
7. Summary economic evaluation for each proposed system.

6. Outline the Hardware and Software Strategies

Based on the objectives for the information processing services department, the overall systems strategy and the systems project descriptions, the hospital's future hardware and software requirements can be determined. These requirements are assessed in view of the available technology. Overall strategies for hardware and software are formulated, and a plan for migrating from the current to the proposed technological environment is developed. Finally, project descriptions are written to accomplish further definition of these strategies and to support the transition to the proposed environment.

SYSTEMS PLANNING
SEGMENTS OF WORK

6. Outline the Hardware and Software Strategies (continued)

The major products of this segment are:

1. Information Processing Industry Trends Assessment outlines the trends in the industry and the alternatives available.
2. The Overall Hardware Strategy summarizes the requirements by type of equipment, communications location and size and recommends a tentative hardware environment.
3. The Overall Hardware Migration Strategy shows the various steps necessary to migrate to the new strategy environment. The migration strategy is finalized at the time the overall system priorities and plan are finalized.
4. The Overall Software Strategy summarizes the software requirements of supporting the hardware and systems strategies.
5. A migration plan shows the steps necessary for implementing the software strategy.
6. Project descriptions summarize the projects related to the hardware and software strategies.

7. Define the Organization Strategy

A systems plan cannot be effectively implemented without a properly staffed, structured and prepared information processing services department. Elements of the information processing services department that must be addressed in the systems plan include the organization structure, skill requirements and the processes by which the department will operate.

The major products of this segment are:

1. A definition of the role, responsibilities and structure of each major function within the recommended information processing services department.
2. A personnel plan for the information processing services department.
3. The definition of projects to support the information processing services department.

8. Draft the Systems Plan

The sequence of application systems development projects is established in the Systems Plan segment. An

8. Draft the Systems Plan (continued)

overall implementation program that integrates these projects with the requirements of the hardware, software and organization strategies is developed, and a preliminary systems plan report is drafted. The framework for assigning priorities to systems development projects was defined in the Business Objectives segment. It is used in the Systems Plan segment during the preparation of the systems plan report to ensure that projects are assigned their proper priority.

The major products of this segment are:

1. The systems plan. The most important product of this segment is the systems plan. The plan includes organizational considerations, systems project descriptions, projections of operating costs for the information processing services department, hardware and software strategies, maintenance strategy, and the implementation strategy.
2. Management Advisory Committee presentation. The material included in the systems plan is also used in the final presentation to the Management Advisory Committee.

9. Define Plans for Priority Projects

The next phases of development for priority application systems from the system plan are defined in more detail in this segment. Application software alternatives are evaluated and a work plan for the implementation phase is developed for each high priority project.

The major products of this segment are:

1. Project descriptions. Project descriptions provide a definition of the scope and objective of the proposed systems projects.
2. Application software assessment memorandum. The application software assessment memorandum indicates the applicability of software packages to satisfy the functional requirements of the proposed system.
3. Systems design project work plans.
4. Barchart summary. The barchart summary provides management with an illustration of the timetable required in subsequent phases of project development.

EXHIBIT II

SYSTEMS PLANNING

SEGMENTS OF WORK

10. Obtain Management Advisory Committee Approval

The findings and recommendations of the systems plan are presented to the Hospital's "Management Advisory Committee" for approval in the Management Review and Approval segment. The presentation is usually accomplished in two stages: the preliminary systems plan report, and a formal presentation.

After each member of the Management Advisory Committee reads the preliminary version of the systems plan report, a formal presentation is conducted during a meeting of the entire committee. This presentation stresses the key elements of the plan, and the first steps required to implement the plan. After the committee's approval has been obtained, the final version of the systems plan is prepared and published.

St. Paul-Ramsey Medical Center

640 Jackson Street Saint Paul, Minnesota 55101 (612) 221-3456

M E M O R A N D U M

TO: Mrs. Patricia Durkin, Chairperson
Finance/Personnel Committee

FROM: Mr. Richard A. Culbertson
Senior Associate Director

DATE: June 23, 1982

SUBJECT: Recommendations of Consultant for Phase Two of Information Systems Project: Vendor Selection.

On Wednesday, June 23, the Management Advisory Committee of the Medical Center Information Systems Project met to consider the responses to a request for proposal for consulting services for vendors. These vendors were Arthur Andersen & Company, Peat, Marwick, Mitchell, Inc., Touche-Ross, Inc., and Compucare, Inc. Executive summaries of each proposal were distributed to members of the group, as well as a summary sheet outlining high points of each proposal (see attachment to this memorandum). After discussion, the Committee accepted the following recommendation set forth by Mr. Culbertson and Mr. McClary:

To recommend to the Finance/Personnel Committee that Arthur Andersen & Company be retained as consultants for the vendor selection process for new financial and patient care information systems subject to the following conditions:

1. Limitation of cost of the study (excluding out-of-pocket expenditures) to $44,000 as cited in the Arthur Andersen June 17 proposal.

2. Specific assignment of Mr. Grudnowski and Ms. Tobison to the St. Paul-Ramsey project.

3. Agreement to submit on a periodic and detailed basis statement of out-of-pocket expenditures which are presently excluded from the contract price.

4. Reconciliation of the list of systems proposed for inclusion by Arthur Andersen in its June 17 letter to St. Paul-Ramsey with the priorities established by the medical center and reflected in the Information Systems Plan of April 1982.

The rationale for this recommendation is as follows:

1. Familiarity of Arthur Andersen & Company with medical center operations garnered in preparation of the April 19, 1982 Information Systems Plan under terms of a previous agreement.

2. Familiarity with installation of physician/clinic billing systems as reflected in supplementary letter of June 23.

3. Extensive experience in dealing with clients in selection of information systems in the health care field, including an extensive resource library of potential systems which might be applied to the SPR environment.

4. Retention of Arthur Andersen by several other former Hospital Shared Systems clients for the purpose of conducting their information plan study and vendor selection study. Involvement of Arthur Andersen at other local institutions may enhance the possibility of a cooperative information systems program being established with another organization.

This recommendation reflects the second phase of a four-phase total project. Phase One has been completed with the preparation of the initial Information Systems Plan, the management summary of which was distributed to the Finance/Personnel Committee in today's agenda. Phase Three will constitute the design of the system selected, and the fourth phase the installation of the total system. Thank you for your consideration of this conditional recommendation.

[illegible]:vms
Enclosure

	Arthur Andersen	Peat,Marwick,Mitchell	Touche Ross	Compucare
$	50K - 44K (if others buy) + expenses	1. 29.3 - 33.8K 2. 24-28K & expenses	42-47K (47-52K) Includes expenses	40K Excludes expen
Time	91 days (16 weeks)	1. 11-17 weeks 2. 8-10 weeks	18 weeks	Bulk completed in 12 weeks 26 week max.
Scope	Vendor selection thru pt. care	Financial Vendor selection with D. of MIS	Vendor selection 1. (Service Option) Base doesn't include patient care	Financial and Patient Care Vendor Selecti
Staff	2 Arthur Andersen staff 2 SPR FTEs	Chicago Based 5 visits Who will it be?	2 FTE 2 Part-Times (User teams)	2 primary staf supplemental staff (User te
Familiarity with current	+	-	+	-
Quality of Proposal	Does it include pt. care? M.D. Group? Sensitivity to EDP organization Priority distortion	Skimpy (by-pass rep) ← Lack of Who does ours?	Good Rep detail previous installations? Better understanding of philosophy? Sensitivity to MD billing What is info bank on vendors?	Potential vend

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AGREEMENT

This Agreement is made this _____ day of _____, 1982, by and among Blue Cross and Blue Shield of Minnesota ("BCBSM") and the ten hospitals which have executed this Agreement (the "Hospitals").

Recitals

Pursuant to requests of the Hospitals, BCBSM has developed a number of computer programs for the use and benefit of the Hospitals, which programs are more fully described in Exhibit A attached hereto and which are hereinafter called the "System".

BCBSM has entered into a separate Hospital Data Processing Agreement with each of the Hospitals (collectively, the "Prior Agreements") under which it has operated the System or portions thereof for the Hospitals (collectively, the "Services").

BCBSM desires that each of the Hospitals commit to using the Services for an additional two-year period, and the Hospitals are willing to do so subject to the terms of this Agreement.

Accordingly, the parties hereby agree as follows:

I. Agreement of Ownership.

1. In consideration of the fees paid by the Hospitals for the development of the System during the terms of the Agreements and the Hospitals' commitment to continue using the Services pursuant to this Agreement, BCBSM hereby acknowledges and agrees that notwithstanding any contrary provision of any of the Prior Agreements, BCBSM and the Hospitals own the System jointly and each shall have the unrestricted, nonexclusive right to assign or transfer its rights in and to the System to any other person or entity at any time, except that, pursuant to paragraph 3 below, BCBSM may not transfer or assign its rights in and to the System to any other person or entity prior to May 31, 1984.

2. BCBSM acknowledges that it has possession of all source codes, programs, documentation and other software for the System (the "Software"). Each of the Hospitals may at any time audit the use of the System by BCBSM in connection with the Services provided to such Hospital under this Agreement upon notice to BCBSM, but only at such times and in such manner as not to interfere with the provision of Services by BCBSM to the hospitals it services with the System. Each of the Hospitals may also, at any time, request copies of all or any part of the Software, and BCBSM shall promptly make such copies available to such Hospital, at the Hospital's expense.

3. Until May 31, 1984, BCBSM shall not modify the Software or the System in any way and shall not release possession of the Software to any person or entity other than the Hospitals,

for any reason, and shall not divulge nor allow to be divulged any data or information with respect to the Software or any codes, documentation, programs or technology embodied therein, or any documentation, drawings, descriptions, reports or other information relating thereto, without the Hospitals' prior written consent. Until May 31, 1984, BCBSM shall not sell, assign, license, franchise, sublicense or otherwise convey the System or the Software, or any duplications or modifications thereof, to any person or entity except with the prior written consent of the Hospitals. In the event BCBSM attempts to use or convey the System or the Software, or any codes, documentation, programs or technology embodied therein, or any duplication or modification thereof, in a manner contrary to the terms of this Agreement, each of the Hospitals shall have the right, in addition to any other remedies available to it, to injunctive relief enjoining such acts, it being acknowledged that other remedies may be inadequate.

4. BCBSM will defend, at its expense, any action brought against any of the Hospitals to the extent that it is based upon a claim that the Software or the System, as they now exist, infringes upon any United States copyright or patent or a claim arising out of any Service Agreement between BCBSM and any hospital and will pay all costs, damages and attorneys' fees that are finally awarded as a result of such claim, provided BCBSM receives actual written notice of any such claim promptly after it is asserted against such Hospital and, if requested by BCBSM, is given control over the defense of such claim.

II. Services.

1. Each of the Hospitals hereby severally commits to purchase, and BCBSM hereby agrees to provide, the Services until May 31, 1984, subject to the remaining provisions of this Agreement.

2. Each of the Hospitals shall reasonably comply with the instructions and procedures set out in the applicable User Manuals prepared and provided by BCBSM to such Hospital as the same may be amended by BCBSM from time to time.

3. BCBSM shall maintain and safekeep all records belonging to each of the Hospitals strictly confidential and in a manner to prevent loss or damage or unauthorized disclosure, including remote storage of recent generations of critical records and storage of volume historical records in a heat-resistent vault. BCBSM shall not disclose the records of any of the Hospitals to anyone, including to any other Hospital, without the prior written consent of such Hospital.

4. BCBSM shall promptly correct all errors in processing information for the Hospitals, but shall not be liable for any damages or costs incurred by any Hospital as a result of any processing errors.

5. For the Services, each Hospital shall pay the fees determined pursuant to Article III of this Agreement.

6. If BCBSM fails to provide the Services to the Hospitals in accordance with the terms of this Agreement, and such failure continues for five business days following written notice thereof to BCBSM, the HDPC (defined in Article III below) may terminate the Hospitals' obligations to subscribe to and pay for the Services under this Agreement and shall have no further obligations to BCBSM. Notwithstanding anything to the contrary in this Agreement, the provisions of Part I of this Agreement shall survive any termination of this Agreement.

III. Hospital Data Processing Council (HDPC); Fees.

1. Each Hospital, by entering into this Agreement, elects to be a member of HDPC for the term of this Agreement. Each Hospital shall have one vote on the HDPC. In the case of merged Hospitals, separate voting is allowable until such time as the data processing of the patient information master files are physically treated as one (1) hospital. BCBSM shall be a nonvoting member on the HDPC. All decisions to be made by the HDPC under this Agreement shall require the concurring votes of at least _____ of its voting members.

2. The HDPC shall establish two distinct categories of costs related to the System and the Services:

A. Regular Costs - Costs of operating and maintaining the System, including modifications to the System if such

costs are not classified by the HDPC as Special Costs, and of any new systems research, development, and marketing. Regular Costs shall include amounts previously designated as Systems Support Costs or Operational Costs and those designated as Research and Development Costs.

B. Special Costs - Costs of special services not offered as part of the System. (If BCBSM is required to modify, reschedule or reprocess information as a result of any Hospital's failure to comply with applicable user's manuals, the additional costs incurred by BCBSM as a result will be Special Costs to such Hospital.)

3. Each Hospital shall reimburse BCBSM for its share of all projected Regular Costs associated with providing the Services and for all Special Costs incurred at the request or for the benefit of such Hospital as follows:

A. On or before January 1, 1983, each Hospital will report to BCBSM and each of the other Hospitals the date on which it desires to discontinue using the Services. No Hospital shall discontinue using the Services prior to such date, and if any Hospital desires to continue using the Services after such date, it shall notify BCBSM and the other Hospitals at least 90 days prior to such date of its desire to do so. Such date shall not be prior to _____, 198__.

B. Prior to its discontinuing the Services, each Hospital's share of the Regular Costs shall be proportionate to the ratio of assessments paid by that Hospital for calendar year 1981 to the total assessments paid by all Hospitals for calendar year 1981. The total assessments and the amount paid by each Hospital are identified in Exhibit C.

C. Prior to January 1, 1983 and January 1, 1984, HDPC shall estimate the amount of Regular Costs expected to be incurred by BCBSM for calendar years 1983 and 1984, respectively, which shall include all employee compensation expenses (including accrual of incentive bonuses and severance pay) allocable to the Services, all payments to become due with respect to computer hardware or software leased or otherwise used in connection with the Services, and other overhead expenses. Such estimate shall be made on the assumption that each Hospital that is using the Services as of the first day of the year will continue to use the Services for the entire year. Until the termination date specified by it pursuant to paragraph B above, each Hospital shall pay at the end of each month during any calendar year a service charge equal to its proportionate share (determined pursuant to paragraph B above) of 1/12 of the Regular Costs projected for such calendar year pursuant to the preceeding sentence and all Special Costs billed to such Hospital by BCBSM for such month. If a Hospital discontinues the Services on the termination date specified by it pursuant to paragraph A above, its monthly service charge shall thereafter be reduced

by the amount of Regular Costs that BCBSM no longer incurs as a result of such Hospital's discontinuing the Services. If a Hospital does not discontinue the Services on the termination date specified by it pursuant to paragraph B above and it has given 90 days' notice of its desire not to do so, it may continue to receive the Services, but any costs incurred by BCBSM as a result of performing Services beyond such date that would not have been incurred if such Hospital had discontinued the Services on such date shall be borne exclusively by such Hospital and billed to it as a Special Cost.

D. BCBSM shall provide HDPC with monthly financial data to permit determination of whether the amount of the service charges paid by the Hospitals corresponds to the Regular Costs actually incurred. HDPC may increase or decrease the service charges from time to time if it deems it appropriate to do so, subject to the restrictions set forth in paragraph C above, it being the intent of the parties to this Agreement that each Hospital that discontinues the Services on the termination date designated by it pursuant to paragraph A above should be the exclusive beneficiary of the savings resulting from its discontinuing the Services (even if such savings would not have been possible without the earlier discontinuance of the Services by another Hospital or Hospitals) and that each Hospital that fails to discontinue the Services by the termination date designated by it pursuant to paragraph A above should bear the entire burden of any costs that would not have been incurred if it had discontinued the Services on such date.

E. Within 60 days following the end of each calendar year and on May 31, 1984, BCBSM shall provide an audited accounting of all Regular Costs actually incurred during such year or through May 31, 1984, as the case may be. If the total service charges paid by the Hospitals during any full calendar year exceed the Regular Costs actually incurred during such year, the HDPC shall direct BCBSM to promptly refund to each Hospital its share of such excess, determined in accordance with the provisions of paragraph D above. If, on the other hand, the total service charges paid by the Hospitals during any calendar year or through May 31, 1984 shall be less than the Regular Costs actually incurred by BCBSM during such calendar year or portion of a calendar year, as the case may be, each Hospital shall promptly remit its share of the deficiency to BCBSM, determined in accordance with the provisions of paragraph D above. If any Hospital disputes the calculation of its share of such excess or deficiency, it may request the accounting firm of Price Waterhouse to review such audit and this Agreement and make its determination of such Hospital's share of the deficiency or surplus, as the case may be, and such determination shall be final and binding on all of the parties to this Agreement. All costs and expenses incurred by Price Waterhouse in making any such determination shall be borne solely by the Hospital or Hospitals requesting such determination, regardless of the ultimate benefit or burden of such determination.

4. Charges for data transmission and other data processing equipment located on the premises of any Hospital and required

for the Services shall be paid by such Hospital directly to the lessor/vendor unless paid through BCBSM as such Hospital's agent. Charges for any Hospital's data transmission equipment, such as lines, data sets and adapters, located on BCBSM's premises shall be such Hospital's costs and shall be included as a part of Regular Costs; such charges shall be paid to lessor/vendor by BCBSM as the agent of such Hospital.

5. Costs of forms are to be included in Regular Costs with the exception of those forms that require preprinted identification for any Hospital (e.g., payroll checks, accounts payable checks, etc.). Such forms costs shall be paid to vendors by BCBSM as the agent of such Hospital and billed separately by BCBSM to Hospital.

IV. Miscellaneous.

1. This Agreement may be signed by one or more Hospitals in separate counterparts, but each counterpart shall be signed by BCBSM. This Agreement shall not become effective until each Hospital has executed and delivered a counterpart and such counterpart is executed by BCBSM. Once effective, this Agreement supersedes all Prior Agreements.

2. The waiver by any party hereto of any breach of this Agreement shall not be construed as a waiver of any preceding or succeeding breach thereof.

3. The terms and provisions of this Agreement shall be construed in accordance with the laws of the State of Minnesota.

4. This writing sets forth the entire agreement among the parties with respect to the subject matter hereof, and no modification, amendment, waiver or alteration shall be binding upon the parties unless in a writing signed by both parties.

5. This Agreement shall be binding upon and inure to the benefit of each of the parties hereto and any of their respective successors and assigns permitted under the terms of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement this _____ day of _____, 1982, but effective as of January 1, 1982.

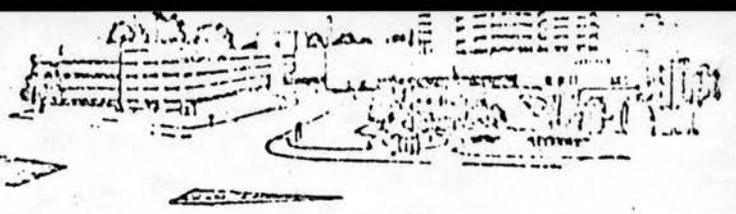
BLUE CROSS AND BLUE SHIELD
OF MINNESOTA

By _____
Its _____

_____

By _____
Its _____

[To be executed by each of the ten Hospitals]



St. Paul-Ramsey Medical Center
640 Jackson Street Saint Paul, Minnesota 55101 (612) 221-3456

M E M O R A N D U M

TO: Mrs. Patricia Durkin, Chairperson
Finance and Personnel Committee

FROM: Mr. Richard A. Culbertson
Senior Associate Director

DATE: December 16, 1982

RE: Information Systems Report

Attached to this Memorandum you will find a report representing the culmination of the vendor selection portion of the information systems replacement project. This work reflects the considerable efforts of representatives of Arthur Andersen Company and members of our information systems task force, which has been chaired by Mr. McClary. These individuals, who deserve our thanks for their efforts in this matter, include Larry Chisholm from EDP, Dave Bergh of Finance, Donna Horan of Nursing, Bernice Albrecht of Admitting, and Mark Thompson of the Laboratory.

The implications of the report are considerable, in terms of investment in institutional energies over the next several years and in terms of financial resources required to undertake the program recommended. However, it must be noted that we have no choice in regard to replacement of financial systems, as our current Hospital-Shared Systems program will terminate on May 31, 1984. We must be prepared to replace this function on or before that date if the physical well-being of the medical center is to be assured.

The attached material outlines in detail the process, and the methodology which is employed by the task force and subsequently recommended to the management advisory committee for vendor selection. We believe that this will be helpful to the members of the Finance/Personnel Committee in reviewing the chronological, detailed manner of the sequence of events which has led up to this recommendation.

In sum, the recommendations contained herein are highlighted below:

1. Establishment on an in-house basis, through use of a hospital purchased computer, of financial, patient accounting, and admission-discharge-transfer systems to replace existing services provided by Hospital Shared Systems and M.C.S.I., Incorporated.

2. Establishment of an expanded EDP/Information Systems Department at the medical center involving a substantial increase in the manpower allotted to this function to manage the new system.

3. Deferral of recommendation of the vendor for patient care systems for at least one year. However, it should be noted that the systems recommended do allow for enhancement by the addition of patient care systems in the future. At the same time, decisions made at this time may limit the choices of future patient care system providers which are compatible with the existing equipment and systems selected at this time. The committee has carefully studied these issues, and has based its recommendation not to select a patient care system at this time on the rapidly improving technology available in this area, and the potential of improved systems in the near future for patient care. In addition, it is believed that competitive forces in the spurgeoning field will result in potentially lower prices as more providers enter this market in the near future. The committee believes that the considerable expense of undertaking a patient care system committment at this time (roughly equivalent to the five year projection of 5.6 - 5.7 million dollars proposed for financial systems replacement) cannot be recommended at this time. However, the option elected for financial, patient accounting, and ADT systems should be done to preserve maximum flexibility in election of future patient care system alternatives.

Thank you in advance for your view and study of the attached report outlining the vendor selection process and its recommendation to the Finance/Personnel Committee on behalf of the management advisory commitee and the information systems task force.

RAC:jm
Attachment

ST. PAUL RAMSEY MEDICAL CENTER

DATA PROCESSING VENDOR SELECTION PROJECT SUMMARY

DECEMBER, 1982

SYSTEMS PLAN CONCLUSIONS

In April of 1982 St. Paul Ramsey Medical Center, with assistance from Arthur Anderson & Co., completed a five year systems plan. This systems plan defined the information processing needs of SPRMC over the next five years and outlined the approximate effort and costs required to meet those needs. The major conclusions of the systems planning process were:

* Because of the phasedown of Hospital Shared Systems (HSS) it will be necessary to replace the financial systems currently provided by HSS with systems from another vendor. The conversion from HSS to new financial systems should be done as soon as possible.

* Although SPRMC's current in-house ADT (Admission, Discharge, Transfer) system (supported on Datapoint equipment) offers adequate functionality, it is not feasible to use the current system as the basis for a complete patient care system which will provide functions related to ADT, order entry, results reporting, results retention, ancillary department processing, etc. The current ADT system should be replaced with a system that can be integrated with a patient care system. Implementation of a patient care system should be started during 1984 (after conversion of the financial systems).

* Ongoing operational costs of a data processing department and one time and annual recurring costs for each application systems were estimated. It was concluded that the HSS, MCSI (outpatient Billing and AR) and Datapoint ADT systems could be replaced and maintained at a cost equal to or lower than the amounts currently paid to HSS, MCSI and Datapoint over a five year period. Replacement of these systems could also provide a significant improvement in the level of functions and features provided to users of the systems. Implementation and maintenance of a patient care system will require substantial increases in data processing spending because many functions which are currently manual will be automated.

* An integrated data base system strategy for both financial and patient care systems will provide the best automation tool for the professionals at SPRMC and will best serve to provide the benefits of automation. In evaluating system alternatives, software selections should take precedence over hardware selection. The use of proven software packages is recommended and alternatives available in the marketplace should be evaluated as part of the decision process in acquiring new systems.

* The first step required in order to implement the Systems Plan is to select and install new financial systems.

VENDOR SELECTION PROJECT

In July of 1982 SPRMC began the Vendor Selection Project recommended in the Systems Plan. It was determined that the marketplace survey conducted to select financial systems would be extended to cover patient care systems as well. This decision was in keeping with the requirement that an integrated financial and patient care systems pathway be established. Even though patient care systems are not to be implemented until 1984, financial systems must be chosen with the ultimate implementation of patient care systems in mind. Arthur Anderson & Co. was again selected to assist SPRMC personnel during the vendor selection process.

VENDOR SELECTION PROCESS

The steps required to complete the vendor selection project were defined in a work program prepared by Arthur Anderson & Co. This work program served as a guiding document during the vendor selection process and consisted of seven major tasks:

1. Project Management, Organization and Administration
2. Develop General Criteria for Selection
3. Determine Functional Requirements
4. Produce Request for Proposal
5. Evaluate Vendor Proposals
6. Follow-up Evaluations and Meetings
7. Select the Vendor (s)

The activities which have taken place within each of these tasks are described on the following pages.

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1. PROJECT MANAGEMENT, ORGANIZATION AND ADMINISTRATION

A Task Force was organized to carry out the Vendor Selection Project. Members were assigned to the Task Force from a variety of SPRMC departments. The Task Force consists of:

* Bernie Albrecht	(Credit & Collections/Admitting)
* Dave Bergh	(Accounting)
* Larry Chisholm	(Data Processing)
* Donna Horan	(Nursing)
* Jack McClary	(Administration)
* Mark Thompson	(Laboratory)
* Tom Grudnowski	(Arthur Anderson & Co. - Project Manager)
* Mike Dickoff	(Arthur Anderson & Co.)

The Task Force was appointed by the Management Advisory Committee made up of:

* Dick Culbertson	(Committee Chairman)
* Norman Allan	
* Michael Bronk	
* Dave Gitch	
* Dr. Robert Gumnit	
* Dr. Erhard Haus	
* Don Landis	
* Marlene Marschall	
* Jack McClary	
* Craig Suwinski	

The Task Force was charged with the responsibility of developing a recommendation as to which vendor's (or combination of vendors') financial systems should be selected for implementation during 1983. The responsibility of the MAC during the project was to evaluate and modify or approve the Task Force's recommendation.

The Task Force met for the first time on July 13. Meetings were held at least weekly throughout the life of the Project and weekly status reports were prepared to keep all Task Force members abreast of project developments. MAC meetings were held at key control points during the project to obtain approval of decisions critical to the vendor selection process.

2. DEVELOP GENERAL CRITERIA FOR SELECTION

During this phase of the project vendors were selected to receive Requests for Proposal (RFP) and the major criteria for evaluating vendors were established.

Arthur Anderson & Co. provided a list of approximately eighty health care software vendors. The criteria used by the Task Force to determine which vendors were to receive an RFP were:

A. The vendor must provide software for General Accounting, Patient Accounting and Patient Care

OR

The vendor has installed an interface to any of the above applications which it does not provide.

B. The vendor's systems are currently operational in 5 or more hospitals, at least one of which has more than 400 beds.

OR

The vendor's systems are currently operational in at least one teaching hospital with more than 400 beds.

Based on the best information available to SPRMC, the following vendors met all of the screening criteria:

1. Burroughs Corporation
2. Compucare, Inc.
3. Computer Synergy
4. Datacare, Inc.
5. Dynamic Control Corporation
6. EDS
7. HBO
8. Health Information Systems
9. IBM
10. Intermountain
11. McCormack & Dodge
12. McDonnell Douglas Automation Co. (McAuto)
13. Medicus/Spectra
14. Meditech
15. MSA
16. NADACOM
17. NCR
18. Pentamation
19. SMS
20. Systems Associates, Inc.
21. Technicon
22. University Computing Co.

In addition to the twenty two vendors listed above, the MAC requested that an RFP be sent to at least one vendor which specializes in Physician Billing software.

Computer Industries Corporation (CIC) was added to the vendor list to satisfy this request. In addition, Ramsey County was added to the list of vendors as a potential provider of Payroll/Personnel system processing. This addition was made at the request of the County and with the consent of the MAC.

The major criteria established by the Task Force for Evaluating vendors were:

* General Vendor Criteria - Overall vendor characteristics relating to the ability of the vendor and its systems to meet SPRMC's needs. The criteria included were:

  - Proven Systems
  - Ongoing Software Support
  - Interfaces / Integration
  - Application Flexibility
  - Custom Features
  - Implementation Support
  - Documentation
  - On-Line Features
  - Commitment to the Healthcare Market
  - Training
  - Security Features
  - Hardware Maintenance
  - Multiple Hospital Support
  - Shared vs. In-House

* Detailed Functions and Features - a list of prioritized functions and features desired within each of the following application areas:

  - Patient Accounting
  - General Ledger
  - Accounts Payable
  - Payroll
  - Property Ledger
  - Modeling and Forecasting
  - Physician Billing
  - ADT
  - Order Communications
  - Pharmacy
  - Radiology
  - Patient Classification
  - Nurse Scheduling
  - Patient Scheduling
  - Surgery Scheduling
  - Dietetics
  - Medical Records/Records Management

- Case Mix Reporting
- Materials Management
- Productivity Reporting
- Word Processing
- Marketing/Referral Analysis
- Capital Funds Development

* Hardware/Software Environment - the type of hardware and systems software required to operate the vendor's application software.

* Cost - the cost of the hardware, systems software and application software required to operate the vendor's system.

3. DETERMINE FUNCTIONAL REQUIREMENTS

During this phase of the project Task Force members worked with user personnel throughout SPRMC to define the detailed functions and features desired within each application area. A functions and features "checklist" for each of the twenty-five application areas was provided by Arthur Anderson (these "starter" checklists were developed during similar projects conducted by AA & Co. at other hospitals). Task Force and user personnel modified the checklists to reflect SPRMC's unique requirements. The current status (Automated, Manual or Not performed) and the priority (Critical, Important or Nice, but not necessary) were identified for each detailed function and feature on each application checklist. A sample page from an application system checklist is shown on the attached Exhibit A. The checklists were included in the RFP sent to vendors. Vendors were to respond to each item on the checklist by identifying whether the feature was currently available, a planned enhancement, a custom feature or not available at all. In addition, room was provided for the vendor to cross-reference its response to any reference material provided and to add any necessary clarifying comments.

A total of approximately two hundred pages of checklists were developed for the twenty-five application systems.

4. WRITE THE RFP

During this phase the Task Force developed an RFP to be sent to the qualifying vendors. In additional to the checklists described above, the RFP contained sections describing SPRMC's organization structure, Systems Plan requirements, transaction processing volumes, vendor selection timeframe, vendor selection criteria, etc.

Numerous questions relating to general vendor criteria and hardware/ software environment were included. In addition, vendors were asked to complete cost schedules describing hardware and software costs for both purchase and lease options. An outline of the RFP is shown on the attached Exhibit B.

The RFP was sent to the twenty-four qualifying vendors on August 21. A Proposer's Conference was held at SPRMC on September 1. Representatives from twelve vendors attended to ask questions relating to the RFP and to tour SPRMC's facilities.

5. EVALUATE VENDOR PROPOSALS

Vendor proposals were due at SPRMC no later than September 20. Of the twenty-four vendors requested to prepare proposals, two (Data-care and UCC) declined to prepare and one (CIC) submitted an incomplete response. These vendors were eliminated from further consideration. One vendor (Medicus/Spectra) submitted two proposals, one for their minicomputer based financial and patient care system and one for their IBM mainframe based ADT/Patient Accounting System. The twenty-two complete vendor proposals received were evaluated on the four major RFP criteria in the following manner:

* General Vendor Criteria - Each vendor's response to the questions relating to each criteria (e.g. Ongoing Software Support) was given a score which was weighted by the import-ance of the criterion. Each Task Force member was assigned responsibility for scoring one or more of the general criteria. This assured consistency in the scoring across all vendors.

* Detailed Functions and Features - Vendor responses to the application system checklists were complied by determining the percentage of "Critical" and total functions and features currently available within each vendor's systems for each application.

* Hardware/Software Environment - The required hardware and systems software configuration was determined for each vendor's systems. Each configuration was evaluated qualitatively with several technical and operational considerations in mind. These considerations included:

  - ability to share an integrated database among all applications
  - use of a standard vs. a nonstandard operating system
  - use of a single type of CPU for all applications vs. multiple types of CPUs
  - ability to increase the power of the hardware configur-ation without requiring changes in systems or applicatio software
  - etc.

* Cost - The cost of the hardware and software required to process each vendor's applications over 5 years was determined based on the vendor proposals and on a standard sized hardware configuration (i.e. specified number of terminals and remote printers). Financial systems costs were separated from patient care system costs.

The most important criteria used during the proposal evaluation process was the current availability of checklist functions and features for important applications such as Order Communications, Patient Accounting, General Ledger, etc. The Task Force felt that systems which did not provide adequate functionality should not be considered further, regardless of the vendor's performance on other criteria.

Some major observations made by the Task Force during the proposal evaluation process were:

* While seventeen proposals included patient care applications most patient care systems offered very limited functionality and/or are currently operational in less than 5 hospitals. The most complete and most proven patient care systems were proposed by Technicon and EDS.

* The difference in functionality among different financial systems was not nearly as great as the difference in functionality among different patient care systems.

* Shared financial systems costs estimates were higher than those of most in-house systems due primarily to SPRMC's large ER/Outpatient volume. Shared vendors charge on a transaction basis. A large outpatient volume dramatically increases the amount charged for statement processing and for storage of account information.

* No single vendor offers the best approach to all of SPRMC's processing needs. The approach recommended must be either a multi-vendor approach and/or must include some compromise on functionality in one or more application areas.

Based on the proposal evaluation, a small number of vendors were selected as "finalists" and were studied in detail. Most vendors were eliminated from further consideration and these vendors were put "on hold" to be studied in detail only if none of the other finalist alternatives proved acceptable. A summary of the decision on each vendor is shown below:

FINALISTS

- Technicon (Financials and Patient Care)
- Computer Synergy (Financial and Patient Care)
- MSA (All Financials except Patient Accounting; No Patient Care)
- Medicus (ADT and Patient Accounting only)

ON HOLD

- EDS (Patient Care only)
- Intermountain (Financial Systems only)
- McAuto (Financial Systems only)

ELIMINATED

- Burroughs
- CIC
- Compucare
- Datacare
- Dynamic Control
- HBO
- HIS
- IBM
- McCormack & Dodge
- Medicus/ Spectra (Data General based proposal)
- Meditech
- NADACOM
- NCR
- Pentamation
- Ramsey County
- SMS
- Systems Associates, Inc.
- UCC

Among the reaseons cited for eliminating vendors were:

* Limited functions and features in key applications
* Excessive financial system costs
* Limited number of installations of key applications
* Different types of hardware required for financial and patient care applications

The primary reasons for eliminating the shared financial systems vendors were:

* The costs of processing shared financial systems significantly exceed the hardware and software costs of in-house financial systems. Since SPRMC intends to install Patient Care systems in-house, operations personnel will be required to operate the in-house system. Relatively small incremental personnel costs are required to also operate financial systems in-house.

* The option of converting to a shared financial system now and then converting to an in-house system when SPRMC is ready to install a Patient Care system was not considered a viable option by the Task Force because:

  - this option would require two financial system conversions; this would double the required conversion costs and would double up the operational difficulties inherent in a system conversion.

  - the double conversion of financial systems might further delay the implementation of a Patient Care system.

The finalists combinations which would provide complete systems for SPRMC are shown on the attached Exhibit C. MSA, Medicus and Technicon all operate on IBM mainframe equipment. Computer Synergy operates on DEC equipment.

The relative costs (over 5 years) of these finalist combinations are shown in the attached Exhibit D.

6. FOLLOW-UP EVALUATIONS AND MEETINGS

Vendor demonstrations at SPRMC and site visits to current hospital users of the vendors' systems were conducted for each of the four finalists vendors. The results of these demonstrations and visits were:

Technicon - Site Visit to University of Illinois - Chicago (11/16)
- Demonstration at SPRMC (11/30)
- Site Visit to San Antonio Memorial Hospital, Upland, California (12/2)

Technicon's General Accounting systems were examined at San Antonio Community Hospital. The systems lack several functions which are present in most other systems. The budgeting and inventory control functions are particularly weak. Of even greater concern, Technicon's future direction with regard to General Accounting systems is unclear. It is possbile that Technicon will acquire new general accounting software from another vendor. Thus, the long-term viability of the current Technicon General Accounting systems is questionable.

Technicon's Patient Accounting system was examined at San Antonio Community Hospital. Technicon's base system is currently batch-oriented, with very limited on-line inquiry capabilities. SACH has added some on-line inquiry features to the base system.

Technicon is in the process of adding similar on-line features to its base system. They anticipate that these features will be ready for installation by the end of 1983. The batch processing and reporting functions within Technicon's Patient Accounting system seem to be more than adequate for SPRMC's needs.

Technicon's ADT system was examined at the University of Illinois-Chicago Hospital and during the demonstration at SPRMC. The system includes all standard inpatient and outpatient registration features. In addition, Technicon offers an Appointment Scheduling function which can be used for scheduling outpatient clinic visits. This function was not provided by the other finalist ADT systems.

Technicon's Patient Care system was examined at the University of Illinois - Chicago Hospital and during the demonstration at SPRMC. The system includes complete order entry, results reporting and results retention capabilities for all ancillary departments. The Task Force was impressed with the scope of the Order Communications functions. The ancillary department functions within the system (e.g. ancillary department scheduling, radiology film tracking, patient pharmacy profiles, etc.) are not as well developed as order communications functions, but on an overall basis Technicon's system appears to offer the most advanced Patient Care functions and features.

MSA - Demonstration at SPRMC (11/5)
- Site Visit to Michael Reese Hospital, Chicago (12/8)

MSA's General Accounting systems appear to offer more advanced functions and features than the other systems studied in detail. The systems appear to offer most of the General Ledger, Accounts Payable, Payroll/Personnel, Fixed Assets and Materials Management functions required by SPRMC. MSA's General Ledger application has been used in conjunction with both Technicons' and Medicus' Patient Accounting packages. In addition, the current versions of MSA's systems are similar enough to the versions of MSA systems currently offered by HSS to minimize the user conversion effort that will be required.

MEDICUS - Demonstration at SPRMC (12/1)
- Site Visit at Evanston Hospital (12/9)

Medicus' Patient Accounting/ADT software (MediPac) offers functions similar to Technicon's plus several on-line entry and inquiry billing and collection features and some other "special" features such as package billing and institutional billing.

MediPac has only been fully installed in two hospitals, both of which are facilities managed by Medicus. Eight other hospitals are currently installing the system.

There are currently two other hospitals considering the use of both MediPac and Technicon. The vendors have not yet agreed on how to interface the systems. It is likely that it will take another 4 to 5 months just to decide on an approach for the interface. Design and installation of the agreed upon interface will follow.

COMPUTER SYNERGY - Demonstration at SPRMC (11/3)
- Site Visit to Bryan Memorial Hospital, Lincoln, Ne. (11/11)
- Site Visit to San Francisco General Hospital (12/

Computer Synergy's General Accounting systems were examined at Bryan Memorial and SF General (Payroll only). While the systems offer most basic functions required by SPRMC, limitations include limited personnel functions and reporting, limited labor distribution reporting, and a lack of support for materials requisitions.

Computer Synergy's Patient Accounting system was examined at Bryan Memorial and SF General. The system offers most basic functions but doesn't currently include the capability to produce third party logs and demand bills.

Computer Synergy's ADT system offers most of the functions required by SPRMC (with the exception of clinic scheduling).

Computer Synergy's Patient Care system currently offers relatively limited functionality. The system is only operational at Bryan Memorial and is currently only being used to transmit Radiology, Pharmacy and EKG orders and results. An interface between a Lab system and the PC system has not been implemented yet. While entry of orders and results for other departments can to some extent be implemented through user modifications to the order entry and result screens, a significant effort will be required to develop Computer Synergy's PCS into a complete Patient Care system.

7. SELECT THE VENDOR

Based on the finalist site visits and demonstrations, the Task Force came to the following conclusions:

* Technicon's General Accounting systems should be eliminated from further consideration due to their limited functionality and the questionable long-term viability of these systems.

* It is not reasonable to assume that Medicus' Patient Accounting system and Technicon's ADT system could be successfully interfaced during 1983. The current negotiations between these vendors will probably continue into April or May of 1983.

After an interface resolution has been agreed upon, several more months will be required to design and install the interface. Therefore, the MSA (General Acct.)/ Medicus (Patient Care)/Technicon (ADT, Patient Care) combination should be eliminated.

* It is not reasonable to assume that Computer Synergy will develop its Patient Care system functions, in the foreseeable future, to the level currently offered by Technicon. At best, it appears that the Computer Synergy system will develop into an effective charge collection system with limited results reporting and retention functions. Because of the importance of a Patient Care system in SPRMC's long-range plans, Computer Synergy should be eliminated from further consideration.

These eliminations leave the following two viable alternatives:

General Acct	Patient Acct	ADT	Patient Care
MSA	TECHNICON	TECHNICON	TECHNICON
MSA	MEDICUS	MEDICUS	TECHNICON

The Task Force makes the following recommendations regarding these alternatives:

* If SPRMC intends to begin the implementation of a Patient Care system anytime during 1984, the MSA/Technicon alternative is preferred. The interfaces among all systems have already been established. This alternative would thus provide the easiest pathway to the Technicon Patient Care system.

* If SPRMC intends to delay the start of its Patient Care system inplementation until 1985 or later, the MSA/Medicus/Technicon alternative is preferred. This alternative would provide better Patient Accounting functions and features. In addition, no commitment to a Patient Care system vendor would need to be made in 1983. SPRMC could reevaluate the Patient Care system marketplace when it became ready to install the system. Other Patient Care alternatives which run on IBM equipment and may be more competitive in two years or more are Datacare, IBM's PCS and SMS' Action 2000.

  The inherent weakness in this strategy is that an interface between the Medicus ADT system and SPRMC's preferred Patient Care system will need to be developed. This development could be costly and time- consuming.

* The estimated 5 year costs for installing Technicon's Patient Care system are shown on the attached Exhibit E. These costs should aid in determining the extent to which SPRMC is ready to commit to the installation of a Patient Care systems.

PLICATION 13. ADT (ADMISSIONS)

rent tem	Priority	Functions/Features	Vendor Response	Cross Reference	Comments
		1. Admissions Registration Function			
	C	a. Admit a patient (on-line) by recording/entering the necessary patient information.		1	
	C	b. Admit a patient using prior registration/preadmission information if available.			
		c. Provide ability to:			
A	I	1. Retrieve/assign the medical record number.			
M	I	2. Assign admission patient number.			
M	I	3. Use an inpatient numbering scheme that is different from outpatient scheme.			
M	I	4. Use the preadmission number.			
A	I	d. Admit newborns using the mother's admission information.			
A	I	e. Print admission documents (i.e., registration form, consent forms, notice of admission, etc.) and arm band on demand upon admission.			
M	I	f. Prepare patient plate or interface with patient			

EXHIBIT A

EXHIBIT B

X

ST. PAUL-RAMSEY MEDICAL CENTER

REQUEST FOR PROPOSAL

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EXHIBIT C

FINALIST COMBINATIONS

	GENERAL ACCOUNTING	PATIENT ACCOUNTING	ADT	PATIENT CARE
1.	TECHNICON	TECHNICON	TECHNICON	TECHNICON
2.	MSA	TECHNICON	TECHNICON	TECHNICON
3.	MSA	MEDICUS	TECHNICON	TECHNICON
4.	MSA	MEDICUS	MEDICUS	TECHNICON
5.	COMPUTER SYNERGY	COMPUTER SYNERGY	COMPUTER SYNERGY	COMPUTER SYNERG

REPLACEMENT SYSTEM COSTS ($000s)

	HSS	TECHNICON	MSA	MSA	MSA	SYNERGY
GENERAL ACCOUNTING	HSS/MCSI	TECHNICON	TECHNICON	MEDICUS	MEDICUS	SYNERGY
PATIENT ACCOUNTING	DATAPOINT	TECHNICON	TECHNICON	TECHNICON	MEDICUS	SYNERGY
ADT						

	ONE TIME	ANNUAL	ONE TIME	ANNUAL	ONE TIME	ANNUAL	ONE TIME	ANNUAL	ONE TIME	ANNUAL	ONE TIME	ANNUAL
HARDWARE	-	900	1100	80	1100	80	1100	80	850	60	650	40
SOFTWARE	-		100	70	370	110	650	120	630	70	220	20
PEOPLE	-	250	1000	450	1000	450	1000	520	1000	520	1000	520
CONTINUATION OF DATAPOINT SYSTEMS (Pharmacy & Patient Classification)	-	-	-	40	-	40	-	40	-	40	-	40
	-	1150	2200	640	2470	680	2750	760	2480	690	1870	520
FIVE YEAR TOTAL	$5,750		$5,400		$5,870		$6,550		$5,930		$4,970	

ASSUMPTIONS:
- 75 CRTs
- 25 Remote Printers
- Ongoing People: (Conversion Costs include additional personnel)
  - 1 DP Manager
  - 1 Operations Manager
  - 6 Operators
  - 7 Keypunch
  - 3 Programmer/Analysts
  - 2 Extra Programmers for Computer Synergy or Medicus
  - 1 Clerk

EXHIBIT

TECHNICON PATIENT CARE SYSTEM COSTS ($000s)

	ONE TIME	ANNUAL
HARDWARE	$1,200	$ 70
SOFTWARE	-	135
PEOPLE	2,200	175
	$3,400	$380

FIVE YEAR COSTS: $5,300

ASSUMPTIONS: 80 Terminals
60 Printers

PEOPLE: Additional 5 Analyst/Training Personnel