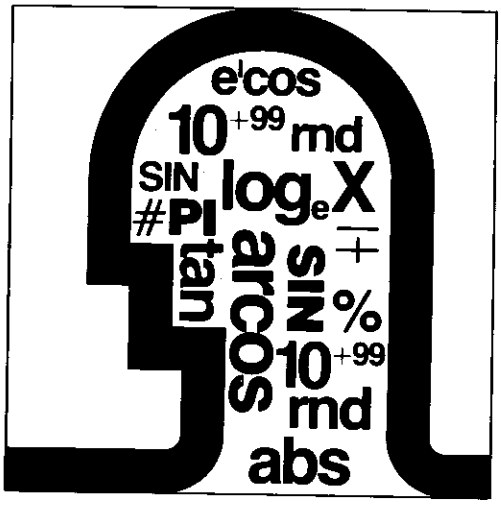
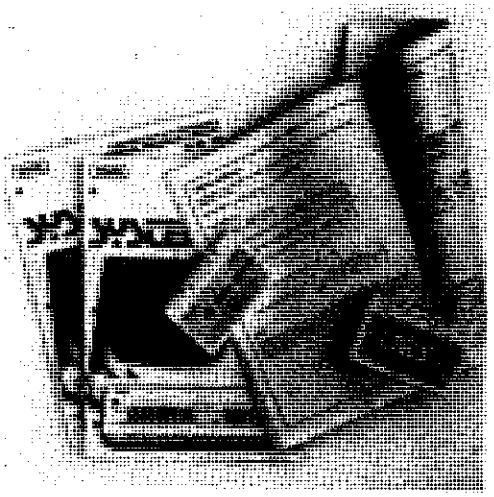
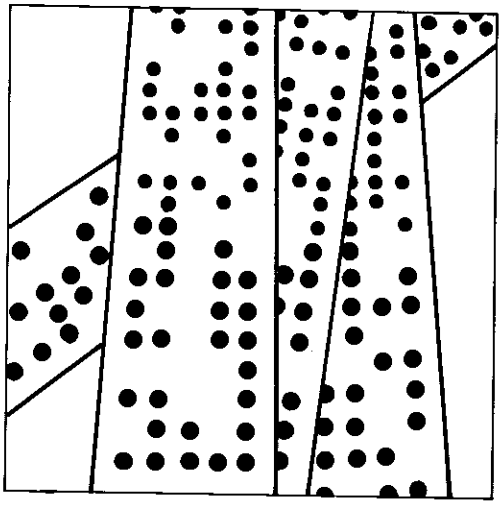
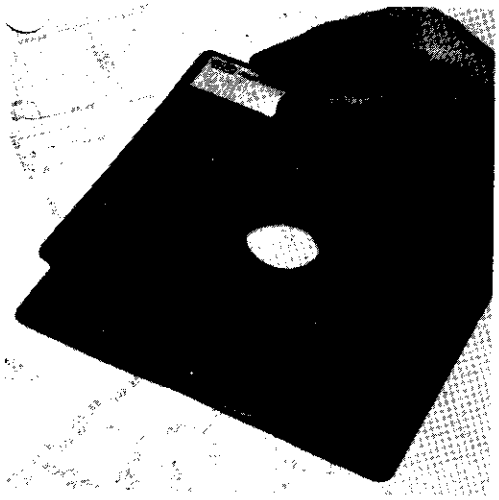
Software Consultant Handbook

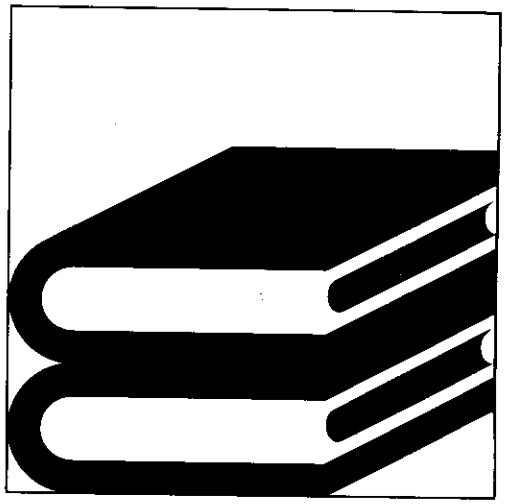
Wang Computer Systems

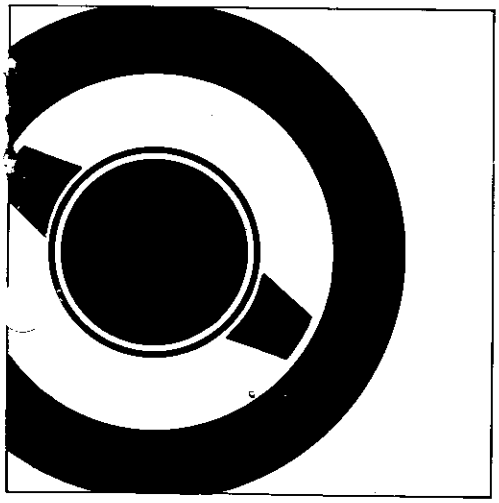


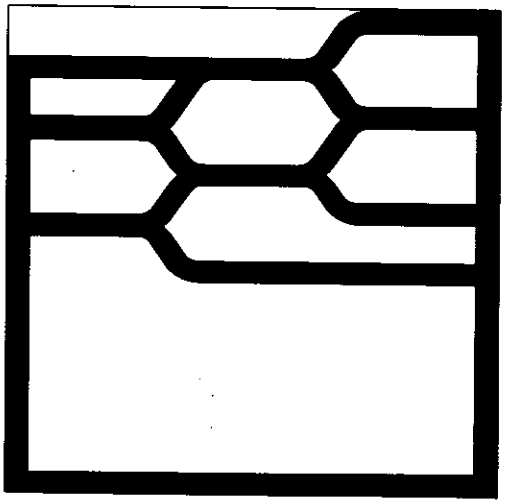


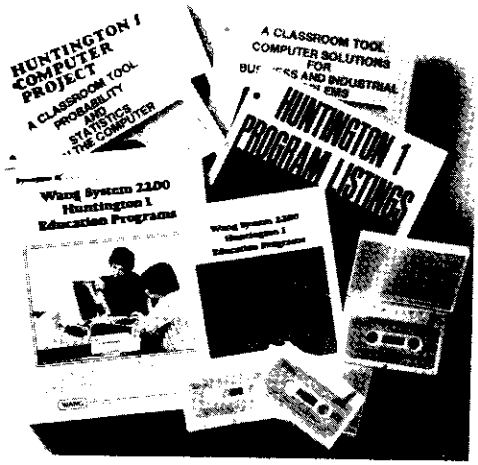












SOFTWARE
CONSULTANT HANDBOOK

WANG LABORATORIES, INC.
ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851, TEL. (617) 851 4111, TWX 710 343-6769, TELEX 94-7421

PREFACE

As I read the proofs of this handbook, several thoughts occur to me that I would like to share with you, its readers. This document represents the first formalized step into the arena of computer system sales jointly by Wang Laboratories, Inc. and independent software consultants. Many of our policies, both expressed and implied, are still in their formative stages and are based on limited, albeit solid, experience. The policies conveyed in this document will be revised repeatedly in the months to come. I encourage you to participate in this process of change by your comments and by your example. For our part, my colleagues and I will monitor this program closely and constantly to seek out and eliminate inequities and impracticalities wherever they occur.

I would like to express my appreciation to the dozens of people, both here at Tewksbury and in the field, whose thoughtful commentary and unqualified support have made this task a pleasurable and rewarding one for me. I recognize, as I am sure you all do, that publishing this manual was an easy beginning. The difficult part will be making it work in practice, and this will only be possible through your efforts and with your cooperation.

Tewksbury, Massachusetts
May 30, 1975

FOREWORD

For several years now, independent software suppliers have been an integral part of Wang Laboratories' Marketing Strategy. More and more with each passing year this network of independent Consultants grows, both in numbers and in importance to Wang Laboratories. In the past, liaison with and direction of this all-important resource was considered the responsibility of local Sales Management exclusively.

We now recognize the desirability and necessity of uniform centralized support and direction of software resources. It is hoped that this document will supply a coherent, comprehensive picture of the corporation's posture with regard to system sales and independent software suppliers. The intent is to present material suitable for instruction and interpretation as well as to promulgate standard procedures. It should be noted that these standards have been designed as guidelines and are intended for judicious application rather than blind adoption. Allowances must be made for local conditions and variances in personal business styles.

It is our belief that adherence to the spirit of these standards will result in greater profitability and higher levels of satisfaction for those consultants who are or become associated with Wang Laboratories. Much of what is discussed in the following pages will be difficult to put into practice and there are many pitfalls to be avoided. We hope that this document will serve to chart a course of cooperative action among Software Consultants and Wang Laboratories; with a spirit of mutual respect and support we look forward to a period of growing opportunities for us all.

TABLE OF CONTENTS

SECTION I: INTRODUCTION

The Small Business Computer System Market

The small business computer system market is already large and is growing rapidly. Its size and diversification guarantees that significant risks will be encountered by those attempting to penetrate this market successfully. The customers in this market are generally first time computer users who possess little or no EDP skills and must rely totally on the advice and counsel of computer manufacturers and Software Consultants in the selection, design, installation and operation of their small business computer systems. This document defines procedures and provides tools to enable Software Consultants to minimize their risks and maximize their profits in servicing the small business computer system market.

The Role Of The Software Consultant

Even though two-thirds to three-quarters of the total investment in a small business computer system is in the hardware, it is the software which generally determines the success or failure of the entire system. The customer is not normally concerned with instruction cycle times or memory sizes. He is concerned only that the system perform the functions for which it is intended in the most efficient and simplest manner. When considering the purchase of a system, the software proposal is a major influence on the customer's decision to purchase. In determining the customer's level of satisfaction with the system, once again the software is a crucial factor. No manufacturer of small business computers has ever successfully provided "turnkey" applications for large numbers of end users. In every instance, manufacturers have relied on independent software consultants or on their own programmers and analysts in the field to provide the particular application software required by customers.

Wang Laboratories, Inc. relies heavily on independent Software Consultants for the design, programming and installation of its small business computers. Software Consultants play a key role in virtually every aspect of our system business, beginning with pre-sale qualification of prospects, the preparation of software proposals and cooperating with the Wang salesmen in closing the sale right on through the installation, warranty and maintenance of the software system. The relationship between Wang Laboratories and independent Software Consultants can be likened to that between a manufacturer of fine clothing and independent tailors. Each working alone can provide a product or service to its customers, but the two working together can provide a product which fits better and costs less. It is this synergistic effect which maximizes the cost effectiveness of the product while at the same time increasing profits and enhancing customer satisfaction.

Definition Of A System

A small business computer system is defined as one in which a hardware system and one or more software application systems are combined to provide a solution to an end user's problem. The end user is usually an organization with sales between one and ten million dollars per year and typically with between 10 and 300 employees. The hardware system must contain at least one mass storage device which the application systems use as permanent storage for one or more master files or data bases. The most typical system is one which automates the end user's business accounting functions, for example, Invoicing, Accounts Receivable, Payroll, etc. However, certain systems may be more specifically tailored to the specialized aspects of individual businesses, for example, Order Entry, Job Cost Estimating, Production Planning, or Materials Requirements.

Throughout this document certain terms and phrases relating to computer systems and system implementation projects are used. To avoid any possibility of misunderstanding due to the various accepted definitions of the terms and phrases, a glossary of system business terms is included as Appendix H.

SECTION II: WANG LABORATORIES SOFTWARE CONSULTANT NETWORK

Consultant Qualifications

Currently, the Wang Laboratories Software Consultant network consists of over two-hundred firms. Each of these were selected by a Wang Laboratories District Sales Manager based on the following qualifications and criteria:

1. Technical Competence

   A demonstrated high level of technical competence and a proven understanding of system business.

2. Business Competence And History

   Evidence of business skill and of sufficient financial strength to assure permanence as well as a demonstrated history of profitable operation.

3. Prior Accomplishments

   A record of having successfully undertaken and implemented several system installations to the satisfaction of the clients.

4. Attitude

   A positive attitude toward working with Wang Laboratories, Inc. to achieve the common goal of successful system installations. Willingness to follow the spirit of the Standard Wang System Management Procedures including completeness of system proposals, project progress reporting, systems acceptance criteria and implementation schedules; and desire to cooperate with all Wang Laboratories' personnel.

The Associated Software Consultant

Wang Laboratories, Inc. recognizes two classifications of Software Consultants, the first of which is an Associated Software Consultant. This classification in most cases is regarded as preparatory to becoming a Contract Software Consultant (see below). However, in certain cases, a Software Consultant may be classified at his request as an Associated Software Consultant on a permanent basis. This classification is evidenced by the completion of a Consultant Profile Form (Appendix A) and by a simple letter agreement between the Wang District Sales Manager and the Software Consultant. The letter is suitable for the Consultant to use as a reference in dealing with customers in that it states that the consultant's qualifications and competence have been evaluated by Wang Laboratories and found adequate for the purpose of designing and implementing application systems for our customers. Furthermore, the letter clearly states that the Consultant is an independent businessman and that neither the Consultant nor Wang Laboratories are responsible to any third parties for the acts or omissions of the other.

The Associated Software Consultant (continued)

An Associated Software Consultant is entitled to receive the Home Office produced Software Consultant's Newsletter as well as other technical publications. In addition, the Associated Software Consultant has access to the Technical Information Center in Tewksbury. The only restriction placed on Associated Software Consultants as a class is that they will not be considered as possible subcontractors for a system sale in which Wang Laboratories is assuming system responsibility.

The Contract Software Consultant

A Contract Software Consultant is an Associated Software Consultant who has worked satisfactorily with Wang and who has agreed to sign Wang Laboratories' Standard Consulting Agreement (Appendix B). The Contract Software Consultant will be considered as a possible subcontractor for systems responsibility sales and will be recommended for other system sales in his area of competence. The Standard Consulting Agreement is largely self-explanatory. It has an initial term of one year and is renewable from year to year and cancellable by either party upon thirty (30) days written notice.

Consultant Relations Guidelines

In their dealings with Software Consultants, Wang Laboratories, Inc. personnel adhere to the following guidelines:

1. Wang Laboratories does not pay commissions on hardware sales to Software Consultants.

2. Wang Laboratories' employees are not permitted nor do they expect to be paid commissions or any other monies or considerations relating to software sales by Software Consultants.

3. It is standard Wang Laboratories policy that the cost of the use of development hardware configurations should be borne directly by the Software Consultant and passed on indirectly as overhead to the customers of the Software Consultant. However, special arrangements may be made from time to time when Wang Laboratories is assuming system responsibility for an entire installation.

4. Software Consultants should adhere to Wang Laboratories' Standard Project Management Procedures as described in this document and must perform all services in a professional and workmanlike manner.

5. Whenever possible, the proprietary interest in any software developed for Wang Laboratories' hardware, should reside with the Software Consultant or with Wang Laboratories or both. In almost no event should proprietary interest be vested in a customer.

SECTION III: WANG LABORATORIES CONSULTANT SUPPORT PROGRAM

Introduction

The Consultant Support Program has four major components as described below. By far the most important and valuable of these is the WLI District System Analyst. At this writing, not every sales district has the services of an analyst, but it is hoped that this situation will be remedied in the future. The balance of the support program is already in full operation, however, we hope to expand and enhance the entire program to keep pace with the expansion of our system business.

The WLI District Systems Analyst

The District Systems Analyst is a senior technical person who understands the problems of Data Processing Systems and their implementation. His duties are approximately evenly divided between three general areas: those tasks which are for the benefit of Wang Laboratories, those tasks which are for the benefit of the Software Consultants, and those tasks which are of mutual benefit.

In the first area, the Analyst acts as a technical advisor to the District Sales Manager in the general area of system sales, and in particular in Software Consultant selection and performance evaluation. He also provides training to our salespeople in systems business and answers technical questions for all Wang Laboratories' field personnel as well as for our customers. In addition, he reports to the Home Office on applications which are of general national interest and on problems encountered which may be solved by Home Office technical or systems support.

In the second area, the Analyst provides technical support to the Software Consultants in the district. He may help them organize and present proposals and provide them with information about related applications in other areas which may be of use to the Software Consultant in the implementation of current projects. He also keeps track of available resources and backlogs for all Software Consultants in the district to help smooth their workload and provide an even rate of controlled growth.

In the area of mutual benefit, the Analyst performs the greater part of the task of technical pre-sale qualification of customers. This function, if properly executed, will generally produce a high rate of proposal acceptance with a very low rate of order cancellations. Once a proposal has been accepted, the Analyst monitors project progress and employs his knowledge and the resources at his disposal to help maintain project schedules. He also attempts to serve the difficult but essential function of an honest broker between the customer and the Software Consultant, obtaining the confidence of both in his fairness, in order to smooth the operation of a systems project from inception to satisfactory installation. Since the customer is generally a first-time user, this function is necessary to protect the customer's interests from his own naivete. It should be noted however that this does not relieve the Software Consultant of his responsibility to protect the customer as well.

The Home Office Technical Information Center

The Tech Center is organized and staffed to provide prompt and correct answers to technical questions relating to Wang Laboratories hardware, general utility programs and selected system utility programs. The Technical Information Center is designed primarily to respond to questions from Wang Laboratories' personnel (Salesmen, District Managers and District Systems Analysts). Therefore Software Consultants should always first attempt to direct their questions to the District Systems Analyst wherever possible. The Center can be reached by calling (617) 851-4111 and asking for the "Tech Center".

Note: The Technical Information Center cannot and will not answer questions relating to pricing or to policies.

The Home Office Systems Group

The Home Office Systems Group is organized to support Software Consultants, District Sales Managers, and District Systems Analysts in their efforts to sell and install business computer systems. On a weekly basis, the Systems Group reviews all new system business accounts and attempts to identify potential problem accounts. Certain of these accounts are selected for more detailed examination, and in these cases, copies of proposals and contracts are requested from the field. Systems responsibility accounts are automatically selected for detailed examination. If deficiencies in the proposal and/or the contract cannot be corrected by the Wang District Manager, the Software Consultant and the customer, then the Systems Group may recommend that the order not be accepted. The Home Office Systems Group provides direct support to the Wang District Manager and District Systems Analyst by providing answers to questions relating to system business and aiding in the selection of new Software Consultants and in performance evaluations of existing Software Consultants.

The Software Consultant Liaison Program is administered by the Systems Group. This program includes production and distribution of a Software Consultant Newsletter, the dissemination of technical information, and the maintenance of a Software Systems Information Service for Software Consultants. In addition, the Home Office Systems Group is responsible for coordinating the activities of all parties involved in the very occasional problem account.

The Field Service Organization

The Field Service Organization is trained and equipped to provide our customers with trouble-free uninterrupted use of our hardware. Software Consultants as customers or as users of customer's equipment also benefit from the high quality of service provided by this organization. During the program development phase of a system installation, Field Service will make every effort to keep the development hardware operational. However, in the unlikely event that excessive hardware failure is a major contributing factor to delays in software development schedules, Wang Laboratories District Sales and Service Managers should be informed immediately in writing. This will facilitate early identification of problems so that a mutually satisfactory solution can be obtained as soon as possible. Wang Laboratories, Inc. cannot and will not assume responsibility for lost time due to hardware malfunction.

During the installation and software warranty phases, a high degree of cooperation between Software Consultants and local Wang Service Representatives is required to resolve problems involving questionable failures quickly. All such failures should be coordinated through the District Sales Manager or the District Systems Analyst.

Under no circumstances will Wang Laboratories permit Software Consultants to dictate corporate policy relating to service of Wang Laboratories customer' hardware. We do, however, recognize that on occasion there may be a legitimate difference of opinion between local service personnel and Software Consultants. In these cases Software Consultants are urged to exercise an alternative option in the form of a letter to the Area Service Manager with a copy to the Home Office Technical Operations Manager detailing the nature and substance of the complaint. We assure all Software Consultants that any such letter will receive immediate attention.

SECTION IV: WANG LABORATORIES STANDARD SYSTEM BUSINESS PLAN

Introduction

The goal of this Standard System Business Plan is to increase the profitability of system sales, both for Wang Laboratories and for the Software Consultants involved, while at the same time reducing the risk of failure for all parties. If this plan is applied with understanding of the underlying concepts, not only will the system business be more profitable, but there will be more of it - since the references given by satisfied customers can assist in closing additional system sales. An overall view of the activities described in this section is shown in Figure 1.

Pre-Sale Activities

Wang Laboratories salesmen generally are not trained as Computer Systems Analysts and not every Wang Laboratories sales office has available to it the services of a District Systems Analyst. For these reasons Software Consultants are frequently called upon to help salesmen pre-qualify potential system business prospects. This involvement benefits both Wang Laboratories and the Software Consultant in that it helps both avoid the difficult, unprofitable account. However, a Consultant's involvement in technical pre-qualification activities must be coordinated with the Wang Laboratories' District Manager or District Systems Analyst to insure that the consultant's marketing efforts remain at a productive level. Excessive pre-qualification activities on the part of a Software Consultant can result in unacceptably high marketing expense and/or severely impact current schedules. On the other hand, inadequate marketing activities on his part will result in reduced future business. Achieving an optimum ratio of marketing expense to gross revenue is one of the real benefits of working closely with a company like Wang Laboratories.

In all cases, a prospect has been pre-screened by the Wang Laboratories' salesman, District System Analyst, and/or District Manager prior to the initial call by the Software Consultant. By varying the duration and depth of this pre-screening process, the Software Consultant's pre-sale activities can be modulated to a productive level.

During initial calls, the Software Consultant should attempt to elicit as much information as possible from the prospect and should take copious notes. In the event that a prospect is qualified and a proposal is solicited, these notes can form the basis for a great part of the proposal. Furthermore, if a proposal is properly written, it will represent a significant part of the total analysis required to produce detail specifications. The more work that is done in the pre-proposal and the proposal phase, the less work there is to be done later, and the less chance there is of misunderstandings arising between the customer and the Software Consultant.

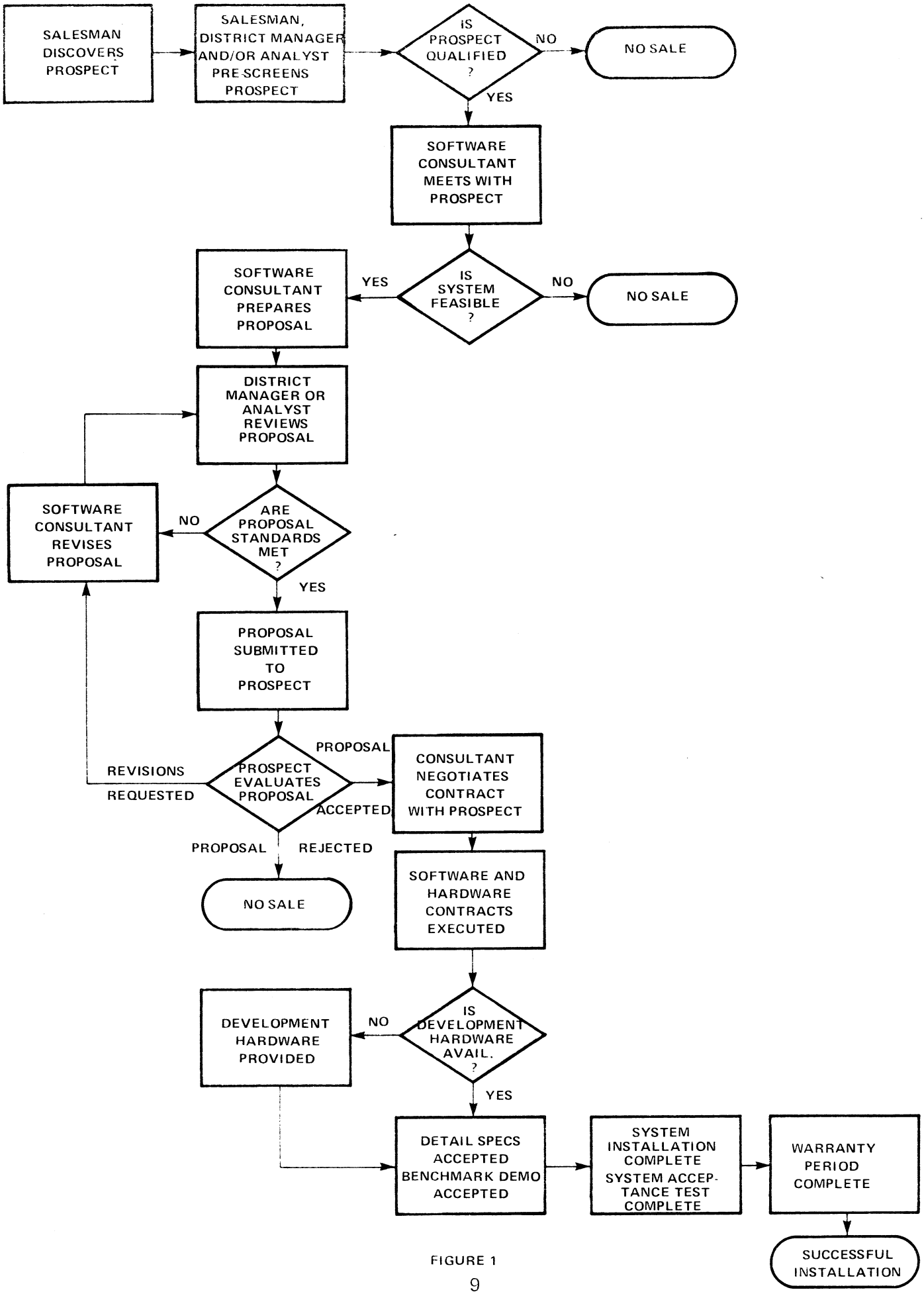

SALESMAN DISCOVERS PROSPECT
SALESMAN, DISTRICT MANAGER AND/OR ANALYST PRE-SCREENS PROSPECT
IS PROSPECT QUALIFIED ?
NO
NO SALE
YES
SOFTWARE CONSULTANT MEETS WITH PROSPECT
IS SYSTEM FEASIBLE ?
YES
NO
NO SALE
SOFTWARE CONSULTANT PREPARES PROPOSAL
DISTRICT MANAGER OR ANALYST REVIEWS PROPOSAL
ARE PROPOSAL STANDARDS MET ?
NO
SOFTWARE CONSULTANT REVISES PROPOSAL
YES
PROPOSAL SUBMITTED TO PROSPECT
PROSPECT EVALUATES PROPOSAL
REVISIONS REQUESTED
PROPOSAL ACCEPTED
CONSULTANT NEGOTIATES CONTRACT WITH PROSPECT
PROPOSAL REJECTED
NO SALE
SOFTWARE AND HARDWARE CONTRACTS EXECUTED
IS DEVELOPMENT HARDWARE AVAIL. ?
NO
DEVELOPMENT HARDWARE PROVIDED
YES
DETAIL SPECS ACCEPTED BENCHMARK DEMO ACCEPTED
SYSTEM INSTALLATION COMPLETE SYSTEM ACCEPTANCE TEST COMPLETE
WARRANTY PERIOD COMPLETE
SUCCESSFUL INSTALLATION

FIGURE 1

In the initial pre-sale situation, every attempt should be made to sell simply; i.e., to sell the customer the smallest unit of application software which can justify the purchase of the entire system. However, care should be taken to insure that the hardware configuration is adequate for or can be expanded to meet the customer's future application requirements. If this is done, the customer will have an operational system in the minimum amount of time and both Wang Laboratories and the Software Consultant will have faster acceptance of the system and more prompter payment for their services. In addition, future follow-on applications can be sold incrementally to an existing customer base and can be scheduled to smooth the Software Consultant's occasionally erratic workload.

Preparing The Proposal

The proposal is the first concrete physical evidence that a system sale is in process. A proposal should be prepared only after a prospect has been thoroughly qualified by the salesman, by the Wang District Systems Analyst and by the Software Consultant. Proposals are expensive and time-consuming to produce and should not be prepared unless the prospect is genuinely interested in purchasing a small business computer system. The purpose of a proposal is threefold.

Firstly, it is a sales-closing tool to convince the prospect of the desirability of purchasing a small business computer system.

Secondly, it is a complete and accurate technical definition of the software system to be provided and,

Thirdly, it is the basis for the negotiation of a final software development contract, since it contains the proposed software price and the terms and conditions for the development of the software.

It should be remembered that the system definitions contained in a proposal will be a part of ongoing documentation and therefore should be concise, explicit and void of all generalities. Although the responsibility for the preparation of the proposal rests with the Software Consultant, it is to the mutual benefit of all parties that the proposal meet or exceed the minimum criteria set forth in this document. To this end, all proposals should be reviewed as completely as possible by the Wang District Manager and/or the District Systems Analyst before submission to the prospect. This process will protect both the customer and the Software Consultant from the consequences of open-ended or incomplete system definitions. A good proposal contains seven sections and one or two appendices as shown in outline form in Appendix C. Although the preparation of this type of proposal may at first appear to involve a great deal of work, fully 80% of the proposal can be constructed from standard text. A sample proposal prepared from the standard outline is included as Appendix D.

Preparing The Proposal (continued)

Occasionally, the preparation of a proposal may involve inordinately high levels of effort on the part of a Software Consultant, particularly when the proposed system is sophisticated and complex (Note: This situation should not occur if the sale is targeted to the simplest key applications as recommended above). In these cases, it is reasonable to ask the customer to pay for the proposal in the form of a feasibility study. This approach should be taken only when the following guidelines are met:

1. The proposal is in fact a legitimate feasibility study and as such has intrinsic value to the customer.

2. The price for the proposal accurately represents the actual cost of preparing it.

3. The amount paid by the customer for the proposal is applicable to the price of the software if the proposal is accepted.

The Software Development Contract

This contract is the result of negotiations between the Software Consultant and the customer pursuant to the customer's acceptance of a proposal submitted by the Consultant. The contract incorporates the proposal within it and defines any changes or replacements to the terms and conditions contained in the proposal. Basically, the contract describes the schedule and cost and conditions for the implementation and warranty of the proposed system and grants to the customer a perpetual non-exclusive license to use the system subsequent to its implementation. A sample of such a contract is included as Appendix E. A Software Consultant would be well-advised to consult with an attorney regarding this or any other Software Development Contract.

The Development Hardware System

The process of completing a successful system sale requires that a development hardware configuration be made available for the development of the customer's application programs. Obviously the most convenient and efficient method of obtaining a development hardware configuration is for the Software Consultant to purchase, lease or rent his own equipment and pass these costs on to his customers. However, in some cases and for various reasons, this approach may not be feasible. In these cases, at the discretion of the District Sales Manager, subject to normal sales management approval, the customer's equipment may be used by the Software Consultant as a development hardware configuration at a nominal charge.

Before a price is quoted to a customer for a software development project, the availability and cost of a development hardware configuration should be determined and the cost, if any, should be included in the proposal to the customer.

The tasks of organizing and managing a Software Development Project are among the most difficult and least understood aspects of systems business. Not surprisingly, however, they constitute the most important and crucial functions to be performed during the implementation of a system business project. It is through these processes that errors and omissions in the proposal and in the general systems specifications can be detected. If these errors are detected and corrected in a timely fashion, the project will usually be completed successfully and within the time and cost restraints imposed by the contract. Conversely, if these errors are not detected and not corrected, then the project will fall apart and never be completed.

The management of a software development project is an interactive, chronological process involving seven phases, each of which is described in the paragraphs which follow.

1. Detail Specifications

This is probably the most crucial phase of a software development project. It is during this phase that the final definition of the application system to be delivered to the customer is produced and accepted by the customer. Both the software proposal and the development contract refer to the detailed specifications as the legal definition of what the customer is to receive. Detail specifications are produced by the software consultant working closely with the customer.

The development of these specifications is an interactive process and may involve several meetings between the software consultant and the customer. When the detail specifications have been completed, they should be reviewed by the District Manager and/or the District Systems Analyst for completeness, feasibility and compatibilty with the proposal and software development contract. Any discrepancies or omissions should be resolved before the specifications are presented to the customer. In the event that there are significant discrepancies between the detailed specifications and the proposal involving a change in hardware configuration or in scope or effort required for the entire project, renegotiation of the software development contract or the hardware contract (EPA) may be required. Should this be the case, the customer must be informed at the earliest possible moment of the potential changes in scope and offered the choice, if possible, of completing the system under the original time and cost estimates or renegotiating the software development contract.

When the detail system specifications have been completed, they should be presented to the customer for his review and acceptance. Customer review and acceptance of detail specifications should not generally take longer than one week. The acceptance by the customer

of the detail specifications marks the beginning of the program development phase. The customer must be made cognizant of the fact that he is responsible for any mis-information supplied by him and incorporated into the detail specifications. During the detail specification phase, the project monitor should insure that a development hardware system will be available immediately following the completion of the detail specifications.

2. Program Development

The program development phase involves the coding, debugging and unit testing of the individual programs and modules within the application system (s) defined by the detail specifications. The customer's involvement during this phase is minimal and is generally restricted to the review and approval of output reports produced by individual program modules. Any changes requested by the customer during this phase should be minor and generally should not require renegotiation of the software development contract. The program development phase is complete when all programs have been coded, debugged and unit tested. Except for informal customer sign-off on report formats, no customer acceptance is required during this phase.

3. Benchmark

The benchmark phase involves the execution of all the programs together as a system using the accumulated unit test data from the program development phase. The purpose of the benchmark is to demonstrate to the customer and to the Wang District Manager or District Systems Analyst the readiness of the software application system for installation on the customer's premises. The Wang Laboratories' District Manager or District Systems Analyst should observe a preliminary benchmark prior to the demonstration to the customer and be present when the customer is given the formal benchmark. When the customer has observed and accepted the benchmark demonstration the system installation phase may begin.

4. Installation

This phase involves the loading and cataloging of the application system programs on the customer's hardware and the training of the customer's personnel to operate the system. The installation phase is completed when the customer's personnel can execute the benchmark demonstration and produce results equivalent to those produced in the original benchmark demonstration.

5. Acceptance Test

The acceptance test phase may begin as soon as the installation phase is complete. Responsibility for the preparation of data and the execution of the application programs during acceptance tests rests wholly with the customer. The acceptance test data should consist of a sample data base of approximately 5% of the anticipated volume of the production data base and sample transactions also consisting of approximately 5% of the anticipated volume of the production transactions. The contract should define the time-frame for the completion of the acceptance test by the customer. The purpose of the acceptance test is to demonstrate that the specifications as defined in the detailed system specifications are accurately met by the application programs and that the system documentation is accurate and conforms in every respect to what was contracted for. When this is done, the customer must give written acceptance of the combined hardware/software system. It is at this point that the software warranty period begins.

6. Conversion

The conversion phase involves the entering of the customer's data base into the system by the customer's personnel. When the data base has been entered and verified, live production may commence.

NOTE: The acceptance test phase and conversion phase should not overlap. However, in the event that they do, the running of live production data is defined by the contract to constitute final system acceptance.

7. Warranty

The warranty period begins when the customer accepts the combined software/hardware system in writing or when the customer begins to use the system in live production mode, whichever occurs first. The warranty period extends for a period of time, usually 90 days, as defined in the software development contract. During this period, it is imperative that customer problems be handled quickly and responsively by the software consultant in order to provide a high level of customer satisfaction.

To permit Wang Laboratories' field personnel to effectively and efficiently monitor systems business software projects, certain tools and procedures must be employed. By far the most important and informative of these tools is the Project Progress Report (Appendix F). These reports should be submitted to the Wang Laboratories District Manager or District Systems Analyst on a biweekly basis. They will give the Wang District Manager a good overall indication of the Consultant status on all projects both in the pre- and post-sale phases, thereby enabling him to refer new business to those Consultants who currently have available resources.

The Progress Report should be prepared as shown in the example in APPENDIX F. When the contract is signed, the system can be broken down into sub-system units for reporting purposes and the estimated dates for all units and the total system entered on the form. If in any reporting period an estimated date is changed, it should be footnoted as shown and explained in the "Remarks" Section. Whenever a phase is shown as 100% complete, the corresponding date should be altered if necessary to represent the actual date of completion. Note that a clever consultant, can, by judicious use of pencil, eraser and duplicating machine, avoid filling out an entire Progress Report for each reporting period.

There are many pitfalls in the process of project monitoring of which one should be wary. Perhaps the greatest single cause of software project failure is the reliance upon unwritten (verbal) communication. Every meeting, every conversation should be documented thoroughly and placed in the project folder. Whenever a project is in trouble, everyone involved attempts to blame someone else. To rely on personal recollections of dates, places and statements is to invite disaster. In particular, whenever there are changes, however minor, to the detail specifications, they must be written down and approved by both the software consultant and the customer. In addition, the software vendor should be encouraged to maintain a log of machine time usage and in particular of lost time due to machine unavailability. Another major problem area involves system throughput. When the proposal and the contract were negotiated, certain estimates were included as to system throughput. As each program is completed, timing tests should be run to determine whether or not these estimates were reasonable. If throughput problems are detected early enough in the project, minor changes in system design or in programming technique will alleviate them simply and easily and generally in a manner that is transparent to the customer. However, if throughput problems are not detected until the benchmark milestone, the remedial action which must be taken is often quite expensive and time-consuming and involves customer awareness of the problem.

APPENDIX A:

SOFTWARE CONSULTANT PROFILE FORM

Consultant Profile Form

COMPANY NAME: _____

STREET: _____

CITY, STATE, ZIP: _____

PHONE: _____

DATE: ____/____/____
MM DD YY

WANG LABORATORIES, INC. USE ONLY:

CLASSIFICATION _____ DATE RECEIVED ____/____/____
MM DD YY

ADO # _____

CONSULTANT # _____

WANG

PROPRIETARY PACKAGES

1. NAME: _____
   NO. INSTALLED: _____
   ABSTRACT:

2. NAME: _____
   NO. INSTALLED: _____
   ABSTRACT:

3. NAME: _____
   NO. INSTALLED: _____
   ABSTRACT:

AREAS OF GREATEST APPLICATION EXPERIENCE (not included above)

1. _____

2. _____

3. _____

4. _____

TYPE OF BUSINESS
(check one)

☐ PRIVATE CORPORATION
☐ PUBLIC CORPORATION
☐ PARTNERSHIP
☐ SOLE PROPRIETORSHIP

TOTAL NO. OF OFFICES:_____
(list 4) CITY, STATE

1. _____
2. _____
3. _____
4. _____

GEOGRAPHICAL AREA COVERED

_____

LIST OFFICERS:

NAME TITLE

1. _____
2. _____
3. _____
4. _____

LIST DIRECTORS:

NAME TITLE

1. _____
2. _____
3. _____
4. _____

SALES

LAST FISCAL YEAR $_____ (PERIOD FROM_____ TO _____)
PERCENT FROM CONTRACT PROGRAMMING AND CONSULTING_____%

PERSONNEL

(LIST KEY PEOPLE IN EACH AREA AND ATTACH RESUMES)

MANAGEMENT:

1. _____
2. _____
3. _____

TOTAL NO. OF OTHERS:_____

COMPUTER SYSTEM ANALYSTS:

1. _____
2. _____
3. _____
4. _____
5. _____

TOTAL NO. OF OTHERS:_____

COMPUTER PROGRAMMERS:

1. _____
2. _____
3. _____
4. _____
5. _____

TOTAL NO. OF OTHERS:_____

TOTAL NO. OF EMPLOYEES: _____

COMPUTER EQUIPMENT ON PREMISES

MFGR #	CONFIGURATION	MFGR #	CONFIGURATION

CUSTOMER REFERENCES (list Wang customers first)

1. CUST. NAME: _____
   STREET _____
   CITY, STATE _____
   PHONE: _____
   NAME OF CONTACT: _____
   APPLICATION NAME: _____
   HARDWARE USED: _____
   DATE INSTALLED: _____

2. CUST. NAME: _____
   STREET _____
   CITY, STATE _____
   PHONE: _____
   NAME OF CONTACT: _____
   APPLICATION NAME: _____
   HARDWARE USED: _____
   DATE INSTALLED: _____

3. CUST. NAME: _____
   STREET _____
   CITY, STATE _____
   PHONE: _____
   NAME OF CONTACT: _____
   APPLICATION NAME: _____
   HARDWARE USED: _____
   DATE INSTALLED: _____

4. CUST. NAME: _____
   STREET _____
   CITY, STATE _____
   PHONE: _____
   NAME OF CONTACT: _____
   APPLICATION NAME: _____
   HARDWARE USED: _____
   DATE INSTALLED: _____

5. CUST. NAME: _____
   STREET _____
   CITY, STATE _____
   PHONE: _____
   NAME OF CONTACT: _____
   APPLICATION NAME: _____
   HARDWARE USED: _____
   DATE INSTALLED: _____

PLEASE ATTACH FOLLOWING DOCUMENTS:

1. Latest statement of financial condition
2. Billing rate sheet
3. Sales brochures
4. Resumes of key personnel

_____
(Name of principal contact – Title)

ADDITIONAL COMMENTS:

WANG LABORATORIES, INC. USE ONLY:

WANG LABORATORIES, INC.
836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

Printed in U.S.A.
700-3429
5-75-5C

APPENDIX B:

CONTRACT SOFTWARE CONSULTANT CONSULTING AGREEMENT

CONTRACT SOFTWARE CONSULTANT-CONSULTING AGREEMENT

Agreement made as of this _____ day of _____ by and between Wang Laboratories, Inc. ("WLI") having its principal place of business at 836 North Street, Tewksbury, Massachusetts and _____ _____ ("Vendor") having its principal place of business at _____

WHEREAS, WLI wishes its customers to obtain certain systems analysis, programming, and/or installation services of professional and workmanlike quality; and

WHEREAS, Vendor is desirous of obtaining the support of WLI in providing said services to its customers in conjunction with WLI hardware;

NOW, THEREFORE, the parties hereto in consideration of the promises and covenants contained herein and other good and valuable consideration hereby agree as follows:

I. **SCOPE**
This agreement sets forth standards of performance for Vendor's services relating to computer systems supplied by WLI ("Services").

This agreement shall not prevent Vendor or its subsidiaries from performing the same or similar services for others nor does it restrict WLI from entering into the same or similar agreements with other Vendors in the same or similar businesses. Also it does not prohibit additional specific agreements between WLI and Vendor.

It is understood and agreed that Vendor is an independent contractor, that both WLI and Vendor engage in the operation of their respective businesses and neither WLI nor Vendor is or shall be considered to be the agent of the other for any purpose whatsoever. Neither party is authorized to enter into any contract or assume any obligation for the other and nothing in this agreement shall be construed to establish a relationship as co-partners or joint venturers.

II. **PERSONNEL**
During the term hereof, Vendor hereby agrees not to hire, employ or engage the services of any employee, marketing representative, or salesman of WLI or pay any such person any compensation, remuneration or other amounts of any kind whatsoever.

During the term hereof, WLI hereby agrees not to hire, employ or engage the services of any employee of Vendor or pay any such person any compensation, remuneration, or other amounts of any kind whatsoever.

III. **PERFORMANCE**
Vendor hereby agrees to adhere to the procedures and guidelines set forth in the document entitled "Wang Software Consultant Handbook" a copy of which is attached hereto as Exhibit A and by this reference is made a part hereof.

Vendor shall perform all Services in a professional and workmanlike manner and in accordance with the standards, forms, procedures and techniques established from time to time by WLI for its personnel or outside Vendors.

Approximately every two weeks or as designated from time-to-time by WLI, Vendor shall furnish to the appropriate WLI District Manager a Project Progress Report, such report to be in such form and detail as WLI may reasonably request, indicating the current status of all projects.

IV. Vendor agrees to warrant that any system, program, module, specification, or accompanying documentation prepared or designed by Vendor for WLI's customers shall be error-free during the warranty period. This warranty period shall begin on the date the program or application is accepted by WLI's customer and shall extend for a period of at least sixty (60) days. Vendor's obligation under this warranty shall be to correct the software or documentation so as to conform to system specifications.

V. **WLI SUPPORT**
WLI will supply Vendor with reasonably available documentation and/or programs in systems which have been designed by WLI when such documentation and programs are applicable to the Vendor for system design and implementation.

WLI will supply Vendor with reasonable access to appropriate technical information through WLI's Home Office Technical Information Center. It is the Vendor's responsibility to bring to the attention of the appropriate Wang Laboratories District Manager in writing any failure of WLI to furnish support when such failure could impact schedules. Vendor agrees to maintain an accurate and complete log of all computer time used in the development of software systems for WLI customers.

VI. **OWNERSHIP**
If, at any time, Vendor shall have on his premises and/or its possession any items of hardware or software manufactured, developed or owned by WLI and furnished to Vendor by or on behalf of WLI including but not limited to data processing systems, terminals, disk cartridges or software data materials, Vendor shall hold all such items free from any and all risk of loss, damage, liens, garnishments, attachments of any kind whatsoever and at all times recognize that ownership is in WLI and that such hardware or software items shall be used exclusively on behalf of WLI under the terms of this agreement. Title to any items will pass to Vendor only upon full payment to WLI of the purchase price for such items. If WLI requests, Vendor agrees to sign any reasonable agreement WLI may require to perfect WLI's interest in the equipment.

VII. **CONFIDENTIALITY**
Except to the extent necessary to enable Vendor's employees or agents to perform their duties under this contract, Vendor agrees to protect from disclosure to any person, firm or corporation any non-public information acquired from WLI in the performance of this agreement.

VIII. **ASSIGNMENT**
Vendor may not assign this agreement or any part thereof or any rights or obligations hereunder without the prior written consent of WLI. Any attempted assignment without WLI's prior approval will render this contract null and void.

WLI may not assign this agreement or any part hereof or any right or obligation hereunder without the prior written consent of Vendor.

IX. **TERM**
This agreement shall continue in full force and effect for a period of one year from the date hereof and from year-to-year thereafter unless either party shall give the other party written notice of termination at least thirty (30) days prior to the end of any one-year period.

X. **GENERAL**
This agreement contains the entire understanding of the parties hereto with respect to the subject matter contained herein. If interpretation of this contract is required in a Court of Law, the statutes and codes of the Commonwealth of Massachusetts will govern, and the Vendor hereby submits to the exclusive jurisdiction of the Massachusetts Courts in the event an interpretation is required or a dispute arises.

The various headings in this agreement are inserted for convenience only and shall not affect the interpretation of this agreement or any part thereof.

In witness whereof, the parties have executed this agreement on the date first above written.

WANG LABORATORIES, INC. (SEAL) (SEAL)

(Signing Officer) _____ (Signing Officer) _____

(Title) _____ (Title) _____

(Date) _____ (Date) _____

EXHIBIT A TO CONSULTING AGREEMENT

WANG SOFTWARE CONSULTANT'S HANDBOOK

Publication Number 700-3648 5-75-5C

(A copy has previously been furnished to Vendor)

Printed in U.S.A.
700-3648
6-75-5C

APPENDIX C:

OUTLINE OF STANDARD PROPOSAL

I. INTRODUCTION

This section introduces the proposal and explains the circumstances which lead to its existence.

II. CURRENT SYSTEM

A brief description of the current (manual or otherwise) system which the proposed system is to replace.

III. PROPOSED SYSTEM

A thorough description of the proposed system including at least:

A. Overall System Description
B. Hardware Configuration
C. File Descriptions
D. Report Descriptions
E. Transaction Contents and Volumes
F. Backup Procedures
G. Documentation
H. Training

IV. DEVELOPMENT PLAN

A detailed outline of the project plan including, but not limited to:

A. Detail Specification Development
B. Detail Specification Acceptance
C. Program Development Strategy
D. Benchmark Demonstration Content
E. Benchmark Demonstration Acceptance Criteria
F. System Installation Process Description
G. Acceptance Test Definition and Criteria
H. Conversion Procedures and Responsibility
I. Warranty Service Policy

V. COSTS AND SCHEDULES

This section should include the total cost of the proposed software together with a payment schedule keyed to three or four of the following project milestones:

A. Signing of Contract (Acceptance of Proposal)
B. Acceptance of Detail Specifications
C. Acceptance of Benchmark Demonstration
D. Completion of Acceptance Test
E. Completion of Warranty Period

V. COSTS AND SCHEDULES (continued)

Note: Each of the above milestones should be qualified with a specific date or with a period of elapsed time from the preceding milestone.

VI. TERMS AND CONDITIONS

This section contains the various clauses to be discussed and negotiated prior to their inclusion in a final contract.

VII. QUALIFICATIONS OF VENDOR

Sales-oriented material regarding Wang's and vendor's qualifications to implement the proposed system.

APPENDIX A: RESUMES OF VENDOR'S KEY PERSONNEL

APPENDIX B: (IF APPLICABLE) SCHEDULE OF VENDOR'S TIME AND MATERIALS RATES

APPENDIX D:

SAMPLE PROPOSAL

A PROPOSAL TO DEVELOP AN

INVOICING AND ACCOUNTS RECEIVABLE SYSTEM

FOR

THE ABC COMPANY, INC.

Prepared for:	The ABC Company, Inc. P. O. Box 1627 Anytown, Any State, 11111
Prepared by:	The XYZ Software Company, Inc. One thousand Main Street Anytown, Any State, 11111
Date:	February 14, 1975
Proposal Number:	PR0001

TABLE OF CONTENTS

I: Introduction

In February of 1975 staff members of the XYZ Software Company, Inc. (XYZ) met with representatives of the ABC Company, Inc. (ABC) and discussed some of the problems ABC is now facing in the collection, manipulation, processing, and reporting of its accounting information. It quickly became apparent that ABC's current problem relates to their substantial growth rate and is compounded by the piecemeal development of existing manual accounting systems.

XYZ suggested that a solution to these problems could be reached by means of an integrated EDP System, implemented on a Wang Laboratories, Inc. computer which would perform various processing functions and which would obtain its data from a common data base. Such a system would not only solve existing problems, but also be sufficiently expandable to handle the anticipated future growth and/or diversification of ABC.

Since such an integrated system would represent a sizable investment in terms of both time and money, careful planning and design must precede its installation. This proposal outlines the necessary steps for the successful installation of the proposed system.

II: Current System

ABC's current invoicing and accounts receivable system is a manual ledger card system. Orders are taken by salesmen, either in person or over the telephone and are handwritten onto order forms. A copy of the order form is sent to the shipping department where the order is assembled and the actual quantities shipped are indicated on the order form. The order form is then returned to the invoicing clerk, who manually types the invoice, pricing the individual line items,

II: Current System (continued)

computing the discounts and the total invoice amount. One copy of the invoice is returned to the shipping department for enclosure with the order. A second copy of the invoice is permanently filed by invoice number and the third copy is given to the bookkeeper for posting to the ledger card. Ledger cards for ABC's 600 customers are kept alphabetically in a tub file. The bookkeeper posts the invoice number, date and amount to the customer's ledger card and at month end copies of all ledger cards containing outstanding balances are mailed to the customers. As customer payments are received, they also are posted by the bookkeeper to the customer's ledger card. No attempt is made to allocate payments to a specific invoice or invoices.

ABC advised they have three major problems with the current system. First, errors in the posting of invoices as well as payments are excessive and result in an inordinately high level of customer complaints. Secondly, the customer complaints result in disputed invoices which together with the complete absence of any receivables management reports, results in an unacceptably long collection cycle for ABC's receivables. Thirdly, the current system provides no sales analysis reports whatever, thus preventing ABC from effectively evaluating its sales people, its product lines and its discount policy.

III: Proposed System

A. Overall system description

The proposed ABC invoicing and accounts receivable system is based on a Wang Laboratories, Inc. computer (Model WCS-30) and incorporates application software modules to automate the invoicing, accounts receivable, and sales analysis requirements of ABC. A five million character random access disk memory is employed for the storage of system files. Transaction data entry

A. Overall system description (continued)

as well as file inquiry functions are implemented using a combined keyboard/cathode ray tube display. Functions to be performed by the system will include the production of invoices and packing slips, the posting of invoice information to an accounts receivable open item file, the production of customer statements, posting of customer payments and the production of an accounts receivable aged trial balance. In addition, a sales by salesman report will be produced on a monthly basis to facilitate the computation of salesmen's commissions.

B. Hardware configuration

The hardware configuration for the proposed system to be provided by Wang Laboratories, Inc. will consist of the following:

1. CPU with 16K random access memory.

2. Combined keyboard/CRT executive display station.

3. High speed dot matrix printer.

4. Five megabyte, random access disk memory.

5. .25 megabyte random access flexible disk memory.

C. File descriptions

The proposed system contains three master files; a customer master file, an open item file and a sales analysis by salesman file. Each of the three files is described below:

C. File descriptions (continued)

1. Customer master file.

This file contains one record per customer, one record per block. The file is organized by customer identification number and is indexed to allow random retrieval on individual customer records. Each record contains the following fields: customer identification number, customer name, customer address, customer tax location code, discount class, credit status, salesman number, service charge code, service charge rates, date of last payment, date of last other transaction, fixed amount billed, current balance, telephone number.

2. Open item file.

The open item file contains five types of records; on account transactions, on account summary records, payments, invoices and account balance records. The open item file is organized by customer number and indexed by customer number. Data contained in this file by record type is as follows:

a. On account transaction.

Contains account number, check number, allowance given, term discount taken, amount paid, transaction code, and date of transaction.

b. On account summary.

Contains account number, payment balance, aging date.

C. File descriptions (continued)

c. Payments and adjustments.

Contains account number, invoice number, check number, allowance given, term discount taken, amount paid, transaction code and date of transaction.

d. Invoice.

Contains account number, invoice number, date of invoice, invoice amount, amount paid, status code, and invoice date.

e. Account balance.

Contains account number, balance due, unpaid service charge, balance due over 30 days, balance due over 60 days, balance due over 90 days, aging date.

3. Salesman's master file.

The salesman's master file is organized by salesman number and indexed by salesman number. One record is maintained for each salesman containing the following information. Salesman number, salesman name, this year's gross sales for each of 12 months, this year's returns for each of 12 months, last year's gross sales for each of 12 months, last years returns for each of 12 months.

D. Report descriptions

The proposed system produces six major reports; invoices and packing slips, an invoice register, a customer listing, customer statements, an aged trial balance and a sales analysis by salesman report.

D. Report descriptions (continued)

1. Invoices and packing slip.

Invoices and packing slips are produced simultaneously. The packing slip being a carbon of the invoice with the dollar amounts masked out. The invoice shows sold to name and address, shipped to name and address, customer purchase order number, customer ID, terms, ship via, salesman number, invoice date and invoice number. For each line item on the invoice the part number, quantity, description, unit price, discount amount and net amount are shown. At the foot of the invoice the sales tax amount, freight, invoice discount amount and invoice total are shown.

2. The invoice register.

The invoice register is produced daily and for each invoice number the following fields are printed: customer number, customer name, invoice total and sales tax amount.

3. Customer listing.

The customer listing is produced on request. It is a complete listing of all customers on the master file in sequence by customer number. Customer name, address, salesman number, tax location code, credit status and balance due are printed for each customer.

4. Customer statements.

Customer statements are produced monthly and show the following information: statement date, account number, customer name, address and a complete list of all transactions showing for each transaction, transaction date,

D. Report descriptions (continued)

invoice number, description, charges, credits, balance. At the bottom of the customer statement the balance due is shown as current, 31 to 60 days, 61 to 90 days and over 90 days.

5. Aged trial balance.

The aged trial balance is produced monthly in order by customer number and shows the following information for customer: customer name, date, invoice number, current amount, 31 to 60 day amount, 61 to 90 day amount, over 90 day amount, total due. Service charges and credits applied are shown separately.

6. Salesman sales analysis report.

This report is produced monthly or for any designated period and shows for each salesman, the salesman number, the salesman's name, gross sales this year, return this year, net this year, gross sales last year, returns last year, and net last year.

E. Transaction content and volume.

The proposed invoicing and accounts receivable system has three major types of transactions: invoices, payments, and adjustments and file maintenance.

1. Invoices.

Between 30 and 40 invoices are produced each day. For each invoice the following information is entered: customer

E. Transaction content and volume (continued)

number, shipping address (if different from billing address), part number, description, price, discount percent.

2. Payments.

Between five and ten payments are entered each day. For each payment the following information is entered by the operator: invoice number, check number and amount.

3. Adjustment and file maintenance.

The volume of these transactions is unpredictable, but small. The information entered depends on the nature of the transaction and usually involves changes to the customer master file or the correction of invoices and other open receivable items.

F. Back-up procedures

The proposed system will use the standard Wang Laboratories, Inc. disk security back-up system. This system involves the creation of generations of files on a cyclical basis so that machine or operator error at any point can be corrected by returning to an earlier generation of the same file and reentering the transactions from the point in time when that generation was created.

G. Documentation

The following documentation will be supplied with proposed system.

1. Detail specifications (see Section IV).

C. Documentation (continued)

2. Detailed operating instructions.

This operator's manual will provide instructions for the correct execution of every program in the system. Possible error situations will be explained and the recommended remedial action outlined.

3. Program listing.

Listings of the source version of all programs in the invoicing and accounts receivable system will be provided.

H. Training

XYZ will provide training to ABC's personnel in the use and operation of the system during the system installation phase. See Section IV below. This training will involve up to one man week of effort on the part of XYZ. If ABC desires, additional training will be provided at XYZ's current time and materials consulting rates (See Appendix B).

IV: Development Plan

A. Detail specification development

After a careful analysis of ABC's requirements, XYZ will develop detail system specifications. XYZ will submit these specifications to ABC for review. Within two weeks after XYZ has submitted detail system specifications, XYZ and ABC will participate in a joint design review. At this review, ABC may suggest any minor modifcations deemed necessary and XYZ will

A. Detail specification development (continued)

incorporate these within the detail system specifications provided they do not significantly alter the scope of the effort.

B. Detail specification acceptance.

After ABC has reviewed the detail system's specifications and XYZ has incorporated any additional minor modifications desired, ABC will formally accept the detail specifications as a firm definition of the system to be delivered.

C. Program development strategy

Upon final acceptance of the detail system specifications, XYZ will submit to ABC a detailed schedule for the completion of each program and for the performance of individual program testing. ABC may use these schedules to measure progress and to develop schedules for the installation of its computer system and the conversion of its data for use by the new system. XYZ will develop BASIC programs from the detail system specifications as approved and accepted by ABC. These programs will be developed and tested by XYZ on its own facilities. All programs will conform to good programming practice and will be operative on the hardware configuration defined in Section III.

D. Benchmark demonstration content

The benchmark demonstration will consist of representative files and transactions developed by XYZ for the purpose of testing the individual programs during the program development stage. These transactions and master files will be reviewed by ABC and will be

D. Benchmark demonstration content (continued)

either accepted or rejected based upon the adequacy and accuracy of the material. Upon acceptance, this material will constitute the test data for the benchmark demonstration.

E. Benchmark demonstration acceptance criteria

Once the benchmark demonstration data has been approved by ABC and the programs have been unit tested to the satisfaction of XYZ, a benchmark demonstration will be performed on XYZ's premises using the approved data. The benchmark demonstration will be successful if the data is processed correctly as defined by the detailed system's specifications.

F. System installation process

When the benchmark demonstration has been completed successfully, the system will be installed on ABC's premises and ABC's personnel will be trained in the use and operation of the system. When ABC's personnel are able to run the bench-mark demonstration without assistance from XYZ, the installation process will be complete.

G. Acceptance test definition and criteria

The acceptance test will be performed on ABC's computer by ABC's personnel with the assistance of XYZ. The data to be used in acceptance test will consist of representative master files of not more than 5% of the full production volume and representative transactions also of not more than 5% of production volumes. The acceptance test is intended to demonstrate for both ABC and XYZ

G. Acceptance test definition and criteria (continued)

that the programs will perform in a production environment and that they meet all the system requirements as defined in the detailed system specifications. When the acceptance test is complete and the results have been approved by ABC, the programs will be considered to be accepted. The program warranty period will begin at that time.

H. Conversion procedures and responsibility

Responsibility for the conversion of ABC's current ledger card files will rest with ABC. The conversion will involve entering the customer name and address information into the new system from the ledger cards and, by adjustments, posting the customer opening balances to the open item file. Since no salesman sales analysis data has been kept under the old system, no conversion will be required.

I. Warranty service policy.

Any system problems which are encountered during the warranty period will be documented on a formal program comment report (to be supplied by XYZ) and submitted to XYZ for resolution. XYZ will reply to all such reports in a reasonable time and, where applicable, submit program corrections to ABC.

V: Cost and Schedules

XYZ proposes to implement the items specified in this proposal for a firm fixed fee of $10,000 subject to the terms and conditions stated in this proposal. The following payment schedule is stipulated:

V: Cost and Schedules (continued)

1. One payment of $1,000 upon execution of a software development contract.

2. One payment of $2,000 upon acceptance by ABC of the detail system specifications (approximately 40 days after execution of the software development contract).

3. One payment of $4,000 upon acceptance by ABC of the benchmark demonstration (approximately 60 days after acceptance of the detail system specifications).

4. One payment of $2,000 upon acceptance by ABC of the final system acceptance test (approximately 24 days after acceptance of the benchmark demonstration).

5. One payment of $1,000 upon the completion of the warranty period (60 days after system acceptance).

VI: Terms and Conditions

The following terms and conditions will be included in a software development contract between XYZ and ABC in the event that this proposal is accepted by ABC.

A. ABC will receive a the perpetual non-exclusive right to use the software developed. The software may not be used by unrelated third parties. ABC may not sell, lease, transfer, assign, or license the software to a third party without prior written permission from an officer of XYZ.

VI: Terms and Conditions (continued)

B. Should the detail system specifications differ significantly from the effort described in this proposal, the price of the program may be subject to evaluation and renegotiation. If XYZ determines that the detail specifications cannot reasonably be satisfied by its software or the specified computer system, then XYZ at its option may terminate the agreement. In the event of such termination, XYZ will be entitled to retain the payment received from ABC in the amount of $1,000, this amount being consideration for providing the detailed system specifications.

C. XYZ warrants that the software will perform as specified in the proposal and modified by the detailed system specifications accepted by ABC. This warranty shall terminate 60 days after the earlier of (1) acceptance of the system software by ABC or (2) ABC's first use of this software system in live production. XYZ's obligation under this warranty shall be the to correct the software to perform as so specified. In no event shall either party be responsible for incidental or consequential damages as a result of system failure. XYZ shall indemnify ABC against liability arising from any and all claims which may be exerted against ABC for patent, copyright, or other proprietary right infringement as a result of ABC's use of the proposed software system. THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

D. XYZ agrees to hold all data received from ABC confidential and to use all reasonable efforts to protect said data from use for any purpose other than the design, programming and installation of the software system contemplated by this proposal.

VI: Terms and Conditions (continued)

E. Although Wang Laboratories, Inc. hardware will be used, Wang Laboratories, Inc. is not a party to nor is bound by the terms of this agreement. Only after the purchase or lease of hardware will Wang Laboratories, Inc. be responsible to ABC and then only as stated on its standard Equipment Purchase or Lease Agreements.

VII: Qualifications of XYZ

Founded in the late 1960's as a professional consulting organization, XYZ has since become the largest computer consulting and service firm in the area. This dynamic growth is the result of our dedication to the successful utilization of sound business practices and effective communications. As a full service organization, XYZ offers computer system design and programming services, software development services, and general EDP consulting services. We at XYZ rely extensively on our background as the computer consulting firm in this area with the most direct experience in the design and implementation of commercial EDP systems. This in-depth experience, coupled with the individual expertise of the professional staff members who will participate in the proposed project, uniquely qualifies us to undertake this project for ABC. Our primary interest is in designing and implementing computer programs. For this reason, the selection of staff members is inherent in XYZ's ability to create a product. XYZ hires only professionals with strong academic training, sound experience and a demonstrated inclination towards independent and imaginative work, thus gathering a staff of people who have an average of five years of computer programming background who are able to communicate with both the client and the machine and who are concerned with building reputations as competent, professional programmers. All staff members

VII: Qualifications of XYZ (continued)

can call on technical and administrative back-up whenever needed, but XYZ's basic mode of operation is to assign a person or a team to a project with substantial independent responsibility for producing a product of which he and XYZ can be proud. This philosophy has resulted in a company which today derives over 85% of its business from renewals and referrals.

APPENDIX A:

RESUMES

TOM THUMB

BS Electrical Engineering, 1965, Massachusettes Institute of Technology.

As group leader of the Commercial System's Group at XYZ, Mr. Thumb is responsbile for both the financial and the productive aspects of consulting and programming projects. He contributes materially to efforts undertaken by this group in feasibility studies, system design and program implementation. He is skilled in managing machine and personnel resources effectively and evaluating the quality of his groups accomplishments.

Mr. Thumb's commercial experience includes the design and continuing implemtation of a massive property record system for a major utility company, which contains a number of subsystems integrated through data base and reporting features. As project leader, he managed the implementation and interfacing of these systems with existing automated procedures.

Mr. Thumb helped to organize and control the implementation of a large order entry, inventory control and sales analysis system for a manufacturer of electronics systems. The system provides management with reports specific and timely enough to be truly useful.

Mr. Thumb has also applied his commercial experience in several financial data systems, including a bound portfolio analysis system for a large banking corporation and a substantial improvement to a generalized payroll system. He has worked as a systems analyst on the development of a facilities management system for a large Boston bank.

SUSAN QUEUE

BS Mathematics, 1965, Manga Cum Laude, Jackson College of Tufts University.

As a project leader at XYZ, Ms. Queue has concentrated on the analysis and design of complete data processing systems for commercial environments. Using her extensive background in conducting feasibility studies and in carrying out the implementation of conceptual designs. As an experienced analyst, she can communicate effectively with a client to understand his particular needs and recommend appropriate solutions.

For a large manufacturer of medical instruments, Ms. Queue conducted the initial feasibility study and then led the implementation of the resulting design, a modular information and production control system. In addition to controlling both manufacturing and management aspects of the production line the system handles the internal and external financial work of the company.

Ms. Queue designed and implemented a custom-tailored bill of material system for a diversified manufacturing company which has one division working on a consulting basis. In addition to the information control functions, the system contains a general ledger subsystem to handle the costing functions. It uses a special file management system to combine the common and disparate elements of the various sections. The modularity of the system enables it to run on a stand-alone basis on a small computer and also integrated to run on a larger machine.

Ms. Queue also analyzed and designed a system for order entry and bill of materials handling for a manufacturing electronics firm. Adapting the standard IBM bill of material system to the client's requirements. The system performs inventory analysis, cost analysis, and production control.

APPENDIX B:

SCHEDULE OF TIME AND MATERIAL RATES

XYZ Computer Services, Inc.

Schedule of hourly rates, effective February 1, 1975

Principle	- $35.00
Supervisor Analyst	- $30.00
Senior Systems Analyst	- $28.00
Systems Analyst	- $24.00
Programmer Analyst	- $20.00
Senior Programmer	- $18.00
Programmer	- $16.00

APPENDIX E:

SAMPLE CONTRACT

SOFTWARE DEVELOPMENT CONTRACT
AND
PROGRAM LICENSE AGREEMENT

This contract, dated February 18, 1975 between the XYZ Software Company Inc., 1000 Main Street, Anytown, Anystate 11111 (XYZ) and the ABC Company Inc., P. O. Box 1627, Anytown, Anystate 11111 (ABC) represents agreement of the parties as follows:

XYZ will provide system design, programming, and installation services in accordance with proposal number PR0001 dated February 14, 1975, a copy of which is attached hereto and made a part hereof. In the event of a conflict between the proposal and this contract and/or the detailed systems specifications (Paragraph 4) this contract and/or the detailed specifications shall supersede the proposal. In the event of a conflict between this contract and the detailed specifications, the detailed specifications shall supersede this contract.

In consideration of the above, ABC will pay XYZ $10,000 in accordance with Paragraph 16 below.

ADDITIONAL TERMS AND CONDITIONS

The services and materials to be provided by XYZ and the consideration therefore under this agreement are subject to the following terms and conditions:

1. XYZ hereby grants to ABC the perpetual nonexclusive right to use the software developed pursuant to this contract. XYZ hereby agrees that ABC's use of the software may involve the preparation of data and reports for ABC and for other affiliated and related organizations and this use by ABC is authorized hereby, provided that the processing is done by ABC's personnel on ABC's computers or temporary substitute computers. The software may not be used by third parties. XYZ hereby agrees to permit ABC to make copies of the software for backup purposes and for multiple computers within ABC's premises. ABC hereby agrees not to remove from any copies of the source version of the software any statements appearing therein concerning copyrights and proprietary rights. ABC further agrees to take such other reasonable steps as XYZ may request from time to time in order to protect XYZ's rights and ABC's rights in the software, provided however that these steps will not require ABC to affix labels or statements to any external document. ABC may not sell, lease, transfer, assign or license the software to a third party without prior written permission from an officer of XYZ.

2. ABC agrees to designate one person acceptable to XYZ to represent ABC and help coordinate ABC's personnel during the design, development, installation and warranty period of the software. Any delays caused by ABC shall be added to the time limits specified in Paragraphs 4 and 6 below.

3. The computer system hardware required for this contract will be furnished by Wang Laboratories, Inc. All system hardware is listed in detail on page 5 of the attached proposal. Although Wang Laboratories, Inc. hardware will be used, Wang Laboratories, Inc., is not a party to nor is it bound by the terms of this agreement. Only after the purchase or lease of its hardware will Wang Laboratories, Inc. be responsible to ABC and then only as stated in its standard Equipment Purchase or Lease Agreements.

4. Within 30 days after the date of this contract, XYZ shall deliver to ABC the detailed system specifications which shall include all input data requirements, the processing flow charts and file layouts, all output report formats, and estimated run times.

5. Should the detailed specifications differ significantly from the system contemplated by the proposal, the price of the program may be subject to evaluation and renegotiation. ABC agrees to review the detailed system specifications supplied them by XYZ and give written acknowledgment within 10 days of its acceptance. After ABC has given such written acknowledgment, the detail specifications shall constitute the standard which the system shall satisfy. If at this time XYZ determines that the detailed specifications cannot be accomplished by its software or the specified computer system, then XYZ, at its option, may terminate this agreement. In the event of such termination, XYZ will retain up to $1,000, as consideration for providing the detailed system specifications. All other payments received will be refunded to ABC.

6. Within 60 days after approval of the detailed system specifications by ABC, XYZ will give a "benchmark" demonstration of the completed software on the hardware at XYZ's location.

7. Upon successful execution of the benchmark as defined in the proposal, ABC will give XYZ its written acceptance of the benchmark within 5 days. The proposal by XYZ defines benchmark acceptance criteria except to the extent that such criteria is modified in the detailed specifications approved by ABC.

8. ABC agrees to give XYZ sufficient working space during normal business hours so that XYZ may install the software system. Installation will be considered complete when ABC's personnel are able to successfully run the benchmark demonstration (paragraph 6) with results equivalent to those produced during the actual benchmark demonstration.

9. ABC agrees to provide sufficient personnel to enter its acceptance test data onto the computer system within 14 days.

10. ABC will give XYZ written acceptance within 10 days after successful completion of the acceptance test run at ABC's facilities during which all of the specifications as defined in the detailed system specifications and approved by ABC are accurately met.

11. XYZ warrants that the software will perform as specified in the proposal and modified by the detailed system specifications accepted by ABC for 60 days after the earlier of (1) acceptance of the system software by ABC (Paragraph 10) or (2) ABC's first use of the software system in live production. XYZ's obligation under this warranty shall be to correct the software to perform as so specified. If correction is required during the warranty period, ABC shall provide written notice thereof to XYZ. XYZ will, within 10 days of receipt of written notice, make the necessary corrections. In no event shall either party hereto be responsible for incidental or consequential damages as a result of system failure. Unless approved in writing by XYZ, any tampering with the software by ABC shall render this warranty null and void. XYZ shall indemnify ABC against liability arising from any and all claims which may be exerted against ABC for patent, copyright, or other proprietary right infringement as a result of ABC's use of this software system. THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

12. XYZ agrees to hold all data received from ABC confidential and to use all reasonable efforts to protect said data from use for any purpose other than the design, programming and installation of the software system contemplated by this agreement.

13. ABC agrees to comply with and conform to all local, municipal, state, and federal laws relating to the operation of the software and to pay any costs and expenses occasioned by or involving the use of the software including any sales or use taxes.

14. ABC agrees to confine the use of the software to those of its employees who are directly concerned with the software and to advise all persons who deal with the software that it contains confidential information which is not to be disclosed to any other persons and that the copying of the software by any means is prohibited except in accordance with Paragraph 1 hereof. ABC agrees that it will not provide or make available any of the software to any other persons without consent in writing by an officer of XYZ.

15. ABC shall not unreasonably withhold those approvals required above nor shall ABC cause unreasonable delays in providing documents or other information required by XYZ to complete any part of this agreement.

16. Payment to XYZ shall be made in accordance with the following schedule. Payments made hereunder may be made by ABC or any third party lessor acceptable to XYZ.

$1,000 upon signing of contract,
$2,000 upon acceptance of detail specifications,
$4,000 upon successful benchmark demonstration,
$2,000 upon final system acceptance,
$1,000 at time of warranty expiration.

17. This agreement and the specified attachment constitute the entire agreement between XYZ and ABC and all promises, representations, understandings and agreements with respect to the subject matter hereof, and inducements to the making of this agreement relied upon by either ABC or XYZ have been expressed herein.

18. Neither this agreement nor any interest therein may be assigned by ABC except with XYZ's prior written consent. No party shall be liable for delay in performance hereunder due to causes beyond his control including but not limited to acts of God, fires, strikes, acts of war, or intervention by any government authority, but any such failure shall be remedied as soon as reasonably possible. This agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts.

19. The parties hereto agree that any dispute arising hereunder which the parties are unable to settle between themselves shall be submitted to arbitration by the American Arbitration Association and the parties agree to be bound by the decision of the arbitrator.

The above agreement has been read in its entirety and executed by authorized representatives of the parties hereto.

ABC COMPANY INC.

TITLE_____

DATE_____

XYZ COMPANY INC.

TITLE_____

DATE_____

APPENDIX F:

SAMPLE PROGRESS REPORT

PROJECT PROGRESS REPORT

DATE 3/18/75 (MM DD YY)

CONSULTANT'S NAME XYZ SOFTWARE CO.

ACCOUNT NAME ABC COMPANY

PROPOSAL DUE DATE 01/15/75 (MM DD YY)

PROPOSAL SUBMITTED DATE 01/15/75 (MM DD YY)

CONTRACT SIGNED DATE 01/22/75 (MM DD YY)

PREPARED BY J. PROGRAMMER

SYSTEM, APPLICATION OR MODULE NAME	TOTAL NO. OF PROG.	DETAIL SPECIFICATIONS			CODING AND TESTING			INSTALL. TRAINING % COMPL	ACCEPTANCE TEST % COMPL	EST. SYSTEM ACCEPTANCE DATE	WARRANTY COMPLETION DATE
		PERCENT COMPLETE	NO. PROG. COMPLETE	EST. ACCEP. DATE	PERCENT COMPLETE	NO. PROG. COMPLETE	BENCHMARK ACCEP. DATE				
INVOICING	5	100%	5	2/15/75	65%	2	4/15/75			6/1/75	
A/R	7	100%	7	2/20/75	35%	2	(1) 4/25/75			6/1/75	
SALES ANALYSIS	3	100%	3	2/15/75	75%	2	4/15/75			6/1/75	
TOTAL SYSTEM	15	100%	15	2/20/75							

REMARKS:

(1) CHANGED FROM 4/15/75 DUE TO LATE CUSTOMER ACCEPTANCE OF A/R DETAIL SPECS

REVIEWED BY Customer Mgr

WANG LABORATORIES, INC.
836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94 7421

Printed in U.S.A.
700-3039
5-75-1M

APPENDIX G:

SAMPLE ACCEPTANCE FORMS

DETAIL SPECIFICATION ACCEPTANCE

The undersigned, pursuant to a contract dated _____ hereby acknowledges full and complete acceptance of the detail system specifications referred to in paragraph _____ of said contract as of this _____ day of _____ 19 _____ .

_____

BENCHMARK DEMONSTRATION ACCEPTANCE

The undersigned, pursuant to a contract dated _____ hereby acknowledges full and complete acceptance of the benchmark demonstration referred to in paragraph _____ of said contract as of this _____ _____ day of _____ 19 _____ .

_____

SYSTEM ACCEPTANCE

The undersigned, pursuant to a contract dated _____ hereby acknowledges full and complete acceptance of the Hardware/Software System referred to in said contract as of this _____ day of _____, 19 _____ .

This acceptance acknowledges that said system meets or exceeds the performance criteria set as a part of the referenced contract and as modified by the previously accepted Detail System Specifications.

_____

APPENDIX H:

GLOSSARY OF SYSTEM BUSINESS TERMS

1. Acceptance Test - a test of the combined hardware and application software systems performed by the end user on his own hardware at his own location with the Software Consultant in attendance. The test involves the use of representative production data and data bases. Typically, acceptance test data and data bases should involve about 5% of the total volume anticipated for the system. The acceptance test and acceptance test procedures must be defined in the contract (see 4 below). Successful completion of the acceptance test constitutes acceptance of the total system by the customer and marks the beginning of the software warranty period.

2. Applications - one or more programs comprising a software system which performs a specific function for the end user, for example, Payroll, Inventory Control, or Accounts Receivable.

3. Benchmark - a demonstration of the customer's application software performed by the Software Consultant at the Consultant's or at the manufacturer's offices to evidence the readiness of the application software for installation at the customer's location.

4. Contract - a legal document executed by a software consultant and a customer referring to the development and installation of a software application system for the customer. It is, in effect, a statement of the work to be performed for the customer. The contract references the original system proposal and contains the final terms and conditions for the development of the application software. A payment schedule and milestones are defined as is the acceptance test and acceptance test procedures and the duration of the warranty period.

5. Conversion Process - the process of converting the end user's data from its present form to a form suitable for processing by the new system. Responsibility for this conversion is generally assigned to the end user.

6. Development Hardware - a hardware system owned or rented by or consigned to the software consultant suitable for the development of application software programs. In certain cases the development hardware system may be identical to the end user's hardware system.

7. Documentation - a collection of documents relating to a software application system and containing at a minimum, operating instructions, file layouts, input specifications, output report specifications, and system and program narrative descriptions.

8. Installation Process - the process of installing a hardware and software application system on the customer's premises. The installation process is complete when the Bench-Mark, run earlier at the software consultant's location, is successfully executed by the customer's personnel on the customer's hardware at the customer's location.

9. Milestone - a clearly-defined event in the process of a software development effort used to measure project progress and to form criteria for the billing of progress payments.

10. Payment Schedule - a schedule of payments to be made by the customer to the Software Consultant upon the occurrence of certain defined milestones during the development project.

11. Project Status Report - a report prepared at least biweekly by a Software Consultant to indicate the current status of all development projects in process.

12. Proposal - A document, prepared by a Software Consultant in cooperation with Wang Laboratories defining a hardware and software application system to be delivered to an end user. The proposal must contain detailed system descriptions, cost and time for the development of the described system, a schedule of payments, statements regarding the ownership of the final system, obligations of the parties to go forward, and a description of the hardware and software maintenance terms.

13. Software Consultant - an independent organization or businessman supplying contract programming and consulting services to end users.

14. Software Maintenance - The process of correcting errors in a software application system on a continuing basis (beyond the warranty period, see #18) and also modifying programs to maintain conformity with statutory requirements (e.g., payroll withholding tax computations). This function is performed by a Software Consultant on either a fixed annual retainer or time-and-materials basis.

15. Systems Analyst - An individual whose experience and training equip him to design and manage the implementation of commercial software/hardware systems. His responsibilities include: technical sales support (consultation); feasibility analysis, application system design, and implementation; salesman, customer, and vendor education; and trouble-shooting.

16. System Responsibility - the act of assuming responsibility for the successful installation and performance of a combination hardware/application software system during the warranty period. In a case where Wang Laboratories assumes system responsibility the end user executes a single contract with Wang Laboratories for both the hardware system and the application programs.

17. System Specifications - a document included in or attached to a proposal describing an application system to be provided to an end user. System specifications are composed of the following elements:

a) narrative of overall system concept
b) hardware configurations
c) general narrative of each application
d) description of special algorithms within applications
e) input specifications
f) output specifications
g) throughput specifications
h) capacities
i) conversion techniques
j) conversion responsibilities
k) record descriptions and file sizes.

18. Warranty, Software - a guarantee provided by the software consultant that any system, program, module specification, or accompanying documentation shall be error free and shall conform in all respects to the original system specifications during the warranty period.

19. Warranty Period, Software - The period beginning with the successful completion of the acceptance test and extending for a specified period of time during which the software consultant will correct any and all errors in the application programs or documentation at no cost to the end user. (See #14 for distinction between warranty and maintenance.)

WANG COMPUTER PTY. LTD.
55 Herbert Street
St. Leonards, 2065, Australia
TELEPHONE 439-3511
Telex: 25469

WANG GESELLSCHAFT M.B.H.
Merlingengasse 7
A-1120 Vienna, Austria
TELEPHONE 85.85.33
Telex: 74640 Wang a

WANG EUROPE S.A./N.V.
250, Avenue Louise
1050 Brussels, Belgium
TELEPHONE 02/6400617
Telex: 61186

WANG DO BRASIL COMPUTADORES LTDA.
Rua Barao de Lucena No. 32
Botafogo ZC-01 20,000
Rio de Janeiro RJ, Brasil
TELEPHONE 226-4326, 266-5364
Telex: 2123296 WANG BR

WANG LABORATORIES (CANADA) LTD.
49 Valleybrook Drive
Don Mills, Ontario M3B 2S6
TELEPHONE (416) 449-2175
Telex: 069-66546

WANG FRANCE S.A.R.L.
Tour Gallieni, 1
78/80 Ave. Gallieni
93170 Bagnolet, France
TELEPHONE 33.1.3602211
Telex: 680958F

WANG PACIFIC LTD.
9th Floor, Lap Heng House
47-50 Gloucester Road
Hong Kong
TELEPHONE 5-274641
Telex: 74879 WANG HX

WANG COMPUTER LTD.
Shindaiso Building No. 5
2-10-7 Dogenzaka Shibuya-Ku
Tokyo 150, Japan
TELEPHONE (03) 464-0644
Telex: 2424909WCLTKO J

WANG NEDERLAND B.V.
Damstraat 2
Utrecht, Netherlands
(030) 93-09-47
Telex: 47579

WANG COMPUTER LTD.
302 Great North Road
Grey Lynn, Auckland
New Zealand
TELEPHONE Auckland 762-219
Telex: CAPENG 2826

WANG DE PANAMA (CPEC) S.A.
Apartado 6425
Calle 45E, No. 9N. Bella Vista
Panama 5, Panama
TELEPHONE 69-0855, 69-0857
Telex: 3282243

WANG COMPUTER PTE., LTD.
Suite 1801-1808, 18th Floor
Tunas Building, 114 Anson Road
Singapore 2, Republic of Singapore
TELEPHONE 2218044, 45, 46
Telex: RS 24160 WANGSIN

WANG COMPUTERS (SO. AFRICA) PTY. LTD.
Corner of Allen Rd. & Garden St.
Bordeaux, Transvaal
Republic of South Africa
TELEPHONE (011) 48-6123
Telex: 960-86297

WANG SKANDINAVISKA AB
Pyramidvaegen 9A
S-171 36 Solna, Sweden
TELEPHONE 08/27 27 98
Telex: 11498

WANG S.A./A.G.
Markusstrasse 20
CH-8042 Zurich 6, Switzerland
TELEPHONE 41-1-60 50 20
Telex: 59151

WANG INDUSTRIAL CO., LTD.
7 Tun Hwa South Road
Sun Start Tun Hwa Bldg.
Taipei, Taiwan
Republic of China
TELEPHONE 7522068, 7814181-3
Telex: 21713

WANG ELECTRONICS LTD.
Argyle House, 3rd Floor
Joel Street
Northwood Hills
Middlesex, HA6 1NS
TELEPHONE Northwood 28211
Telex: 923498

WANG LABORATORIES GmbH
Moselstrasse 4
6000 Frankfurt AM Main
West Germany
TELEPHONE (0611) 252061
Telex: 04-16246

DATA CENTER DIVISION
20 South Avenue
Burlington, Massachusetts 01803
TELEPHONE (617) 272-8550

WANG COMPUTER SERVICES
One Industrial Avenue
Lowell, Massachusetts 01851
TELEPHONE (617) 851-4111
TWX 710-343-6769
Telex: 94-7421

WANG INTERNATIONAL TRADE, INC.
One Industrial Avenue
Lowell, Massachusetts 01851
TELEPHONE (617) 851-4111
TWX 710-343-6769
Telex: 94-7421

WANG LABORATORIES, INC.
ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

Printed in U.S.A.
700-3651
2-77-2.5C