PROPOSALS FOR COMPUTERIZED SYSTEMS

MINIMUM REQUIREMENTS

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1. Executive Summary

This report describes the form and content for any proposals for computerized systems which are to be submitted to the Comité du Développement de l'Informatique of the Comité de Régie of Douglas Hospital. In addition to its potential use as a guide to writers of such proposals, it can also serve as an outline for members of the Comité to use in verifying the completeness of submitted proposals.

2. Introduction

This document has been prepared in response to a request from the Comité du Développement de l'Informatique of the Comité de Régie of Douglas Hospital. It outlines the contents of proposals for computerized systems, specifying what such proposals should contain in order to be evaluated by the Comité du Développement de l'Informatique.

In order to be considered acceptable, the proposal for any project involving computers must demonstrate, by a cost-benefit analysis, that the proposed system will be self-financing; that is, its benefits in monetary terms must outweigh the costs within a period of five years or less.

In addition, the proposal should demonstrate that the chosen solution is superior to alternative solutions; in general, the comparison would be made on the basis of relative costs vs. benefits. However, less tangible benefits or benefits which are difficult to quantify in a monetary way, such as ease of use, security and confidentiality, or acceptability to users, should also be taken into account.

Proposals must contain the following information:

1. a statement of the problem
2. descriptions of different possible solutions
3. a feasibility study for each possible solution
4. cost/benefit analyses for each solution
5. comparison of the results of the cost/benefit analyses
6. description of how the proposed solution could be funded.

Each of these items is described in further detail below. It is recommended that the headings used in this document be used also in any proposals.

3. Requirements for Computer Systems Proposals

3.1 PROBLEM STATEMENT

This is a concise statement of the problem to which solutions are being proposed. It includes the following:

3.1.1 description of existing system

3.1.1.1 systems analysis

This analysis includes descriptions of the information and its flow, as well as the operations on the information. The forms and procedures need to be detailed, as well as data on the amount of information, frequency of changes in the information, frequency of processing, and so on.

3.1.1.2 costs and benefits

A description of the costs of the existing system, including labour, supplies, etc., as well as the known benefits.

3.1.1.3 shortcomings and deficiencies

Examples include excessive costs, inefficiencies, high error rates, slowness, too much paper, inefficient use of staff, complexity, and dislike of task by staff.

3.1.2 rationale for proposal

a summary of why it is necessary to seek alternative solutions. Included could be information about measures that other institutions have take to deal with similar situations.

3.2 PROPOSED SOLUTIONS

3.2.1 alternative solutions

In general, the proposal should describe several alternative solutions, and provide enough information about each alternative to permit meaningful comparisons to be made. Three possible alternatives should be considered as basic; various modifications or options to these three can also be included. The three basic solutions are:

3.2.1.1 no computer

Many organizations have discovered that a good systems analysis of a particular problem area will lead to ways to correct inefficiencies, etc., by rationalizing forms, paper flow, and procedures, without incurring the expense of computer hardware and software.

3.2.1.2 centralized computer

This solution utilizes the hospital's existing centralized computer system, together with terminals and other peripherals.

3.2.1.3 distributed computers

This solution is based on the use of personal computers or intelligent workstations, which may or may not be connected together in a Local Area Network (LAN).

3.2.2 description of alternatives

For each possible alternative solution, a description using the following headings should be included in the proposal:

3.2.2.1 overall description

An overview of the possible alternative solution.

3.2.2.2 users

A list of individuals (usually by job title or description) who will either enter information, process it, use the information, or supervise.

3.2.2.3 user transactions

A list of the transactions (interactions with the system) that each user will engage in. For each transaction, a description which includes the type of activity and the amount of data, is necessary (for example, a "patient registration" transaction by a clerk could involve 400 keystrokes on average, filling in an "on-screen" form, based on information obtained by face-to-face questioning of a patient or relative.

3.2.2.4 hardware

Hardware should include computers, peripherals, cabling, special environments (eg raised floors, fire extinguishers, air conditioners), furniture (computer desks, cabinets for disk packs, tapes, etc.).

3.2.2.5 software

This should include software purchased off-the-shelf, existing software which can be modified, or software to be specially developed (whether in-house or by outside organizations).

3.3 FEASIBILITY STUDIES

For each possible alternative, feasibility analyses should verify that the proposed solution is technically possible, that hardware and/or software is either available or can be developed in a reasonable length of time, and that the capacity of existing or proposed hardware or software is sufficient for the task, given the demands that will be placed on it in the future (other applications to be developed, future growth in number of users or amount of data, etc.)

3.4 COST-BENEFIT ANALYSES

Ideally, this information would be presented in side-by-side columns, one column for each of the possible alternative solutions, using the following headings. To allow comparisons, the time base used in calculations must be the same for all alternatives.

Whenever an alternative solution calls for the use of pre-existing hardware or software, or is to be "piggy-backed" onto another system, or will require in-house manpower for development, installation, training, etc., the "opportunity cost" (ie the value of the hardware, software, or manpower if it were to be used for something other than this particular alternative) should be given. For example, if systems development is to be done by an in-house programmer, the opportunity cost represents what the hospital might earn if that programmer were contracted out to outside organizations for the same number of hours.

3.4.1 costs

3.4.1.1 systems analysis
Meeting with the potential users of the system, to determine what information needs to be processed, what reports will be needed, etc.

3.4.1.2 systems design
Development of the system's specifications, and obtaining the the users' approval .

3.4.1.3 production of user manuals
The complete cycle of writing, distributing, obtaining feedback, and revising the manuals which will be used by the system's end-users .

3.4.1.4 hardware costs
Direct costs for hardware (see above) as well as opportunity costs for using existing hardware or equipment purchased primarily for other needs.

3.4.1.5 software costs
As for hardware.

3.4.1.6 hardware and software procurement costs
Includes both in-house costs and consultants' fees for activities such as writing specifications, analyzing bids, participating in tests, etc.

3.4.1.7 systems development
Includes costs of designing, coding, testing, and documenting software, or for modifying existing or off-the-shelf software.

3.4.1.8 installation and testing
In addition to direct costs, other costs such as downtime of other software or hardware systems during installation or maintenance, should be costed in.

3.4.1.9 user training
This should include not only initial training of users at the time of system installation, but also retraining whenever another phase is installed. Initial training of new workers (due to employee turnover, etc.) should also be taken into account, as should time lost due to training activities, system downtime, and lower employee productivity during on-the-job learning.

3.4.1.10 maintenance
Includes scheduled (preventive) maintenance, replacement costs, software upgrades, and maintenance contracts for hardware and software. Downtime for maintenance and repairs, or for software upgrades, should also be costed in.

3.4.1.11 supplies and other recurring costs
Printer ribbons, paper, forms, storage media, costs of archival storage, periodic inspections, etc.

3.4.1.12 opportunity costs
Opportunity costs not already included under hardware or software, above. For example, the cost of using money which would otherwise earn interest.

3.4.2 benefits

3.4.2.1 time savings
Effected either by reduction in staff, or by freeing up staff time to engage in other activities.

3.4.2.2 savings in materials and supplies
Reduction in paper, forms, copies, carbons, etc.

3.4.2.3 increases in efficiency
For example, if one-time data entry results in a reduction of errors, or the time spent in looking for and correcting errors.

3.5 COMPARISON OF ALTERNATIVES

Over a given time period, the costs and benefits for each possible alternative should be calculated and totaled so that each alternative can be directly compared with the others.

3.6 PROPOSED FUNDING

Sources of funds (as well as the necessary approvals to obtain funds) should be detailed for each alternative. For cases where hardware, software, or manpower which is available in-house, or which has had prior approval or funding, this information is vital in deciding on the best alternative.

3.7 RECOMMENDATIONS OF PROPOSAL

The proposal should conclude by recommending that one of the possible alternatives be adopted, based on comparison of costs and benefits (whether expressed in monetary or other quantitative terms, or in qualitative fashion), and on the ease of obtaining approvals and funding.

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