7

Establishing user requirements

JEFF COOKE

There are several ways to go about establishing user requirements. One could just ask the users because they should know what they need - right? Or, one could just tell them, after all, system analyst/managers are the ones with the requisite knowledge of information systems and the charter to define what their system should do - right? Isn't it really only a sprinkling of computers, spread sheet software and database? How difficult can that be, its done all the time these days. Just hook them up, provide some training and voila' we're in business. Well .... not quite.

Recent experience suggests that both of these approaches end in catastrophic failure. First of all, in spite of our training or self education in "systems" methods and techniques, each scenario is different to various degrees. A 200 bed hospital is certainly different than, say, a 50 bed hospital. What about the neighbourhood or small town surgery? Surely their needs and requirements will be different. In fact, aren't needs and requirements the same thing?

Objective

Getting slightly more serious now, the primary goal and responsibility of the leader of a systems development team is to establish a formal process and manage this process toward a successful conclusion. What this chapter is all about is to overview a proven process, or methodology, which works.

To start with, one needs to carefully establish the difference between NEEDS and REQUIREMENTS. Then, some tools are 'needed'. (The 'requirement' which partially satisfies this need are some forms to collect data and information). Also 'needed' is a structured methodology (the 'requirements' of which are described herein) which supports the collection of meaningful data through an interview technique. These forms are then collated, grouped, and prioritised into need categories. Once the top half dozen or so need groupings have been identified, then and only then are we in a position to establish user requirements.

The methods for establishing user requirements which are believed to be most useful have a basis in project management, software development, and system specification "standards" developed over some time by consulting firms, government agencies, and prestigious companies. These methods are regularly applied with various degrees of success. The material to follow is an integrated compilation of many different methods which have been applied and modified by experience gained in actual industry practice over many years.

Although exposure here is necessarily brief, it is sufficient to get one on the way toward delivering quality results on-time and within budget.

Terms and definitions

Before continuing, some definitions are in order:

AS-IS - The existing system or enterprise at the time of initial analysis. The current "state" of the system, warts and all.

Cost drivers - All of the financial factors influencing the enterprise. Examples include, but are not limited to, expense items e.g. surgical supplies, revenue, profit, capital, endowments, and labor.

Enterprise - The management, staff, buildings, infrastructure, support facilities, operations, all working in concert to provide cost effective and quality health service to the community. However, the degree of quality and cost effectiveness may vary considerably from enterprise to enterprise.

Income drivers - Financial factors, including funding formulae, occasions of service etc., which determine revenues.

Information - Data which have been organised to support the enterprise to function in an integrated manner, such as: schedules, reports, policies and directives, budgets, etc.

Information resource management (IRM) - The processing, organisation, and management of information associated with all functions effecting the quality of operations of the enterprise.

IS - Information Systems

NAD (Needs Analysis Document) - The NAD is utilised 1) as a record of system "NEEDS" and 2) as an analysis tool to determine system REQUIREMENTS. Based upon the objectives stated in the SD, the TO-BE system requirements will be determined. These NEEDS will address improvements to functions that are partially performed, incorrectly performed, or non-existing functions that should be performed. The NAD collects and presents these functional NEEDS.

Needs - Needs are associated with the AS-IS environment problems and voids. They are a very necessary part of the methodology by defining the baseline from which all improvements are measured for determination of effectiveness. They provide the primary input for establishing and defining user requirements.

Needs analysis - The process for identifying the AS-IS NEEDS.

NISF - Needs Identification Survey Form

Requirements - Identified characteristics, procedures, or specific improvements which satisfy a need previously identified in the Needs Analysis. It is important to understand that a

requirement defines the degree of improvement necessary to satisfy a need and does not identify specific equipment or details.

RDR (Requirements Definition Report) - The RDR is based on the NAD and documents the requirements. It collects and presents alternative requirements and is linked to the needs in an easily traceable way.

SD (Scoping Document) - The SD is the foundation document for the entire effort. It is based on, and congruent with, the enterprise strategic plan and its contained mission statement. We can think of the SD as a contractual requirement, which states the purpose for and general results expected from the improvement analysis effort. It focuses our activity on a specific area of interest and establishes the boundary of what we hope to achieve. For example, a statement which requires us to "identify and perform a complete review of all current operational deficiencies" is a project of far greater scope than one which says "identify the ways and means to establish a computerised patient record system".

SSR (System Specification Report) - The SSR should contain sufficient detail such that the characteristics of 1) function, 2) performance, 3) physical, and 4) logical interface may be produced to facilitate vendor bid inquiry packages, including vendor software availability surveys. System implementation planning is conducted to establish the transition to the Construct and Integrate Solution Phase. The SSR, developed during and a deliverable from the Preliminary and Detailed Design Step of Phase II, is beyond the scope of this chapter. It is included only to complete the picture of the entire system development life cycle as represented in Figure 7.1.

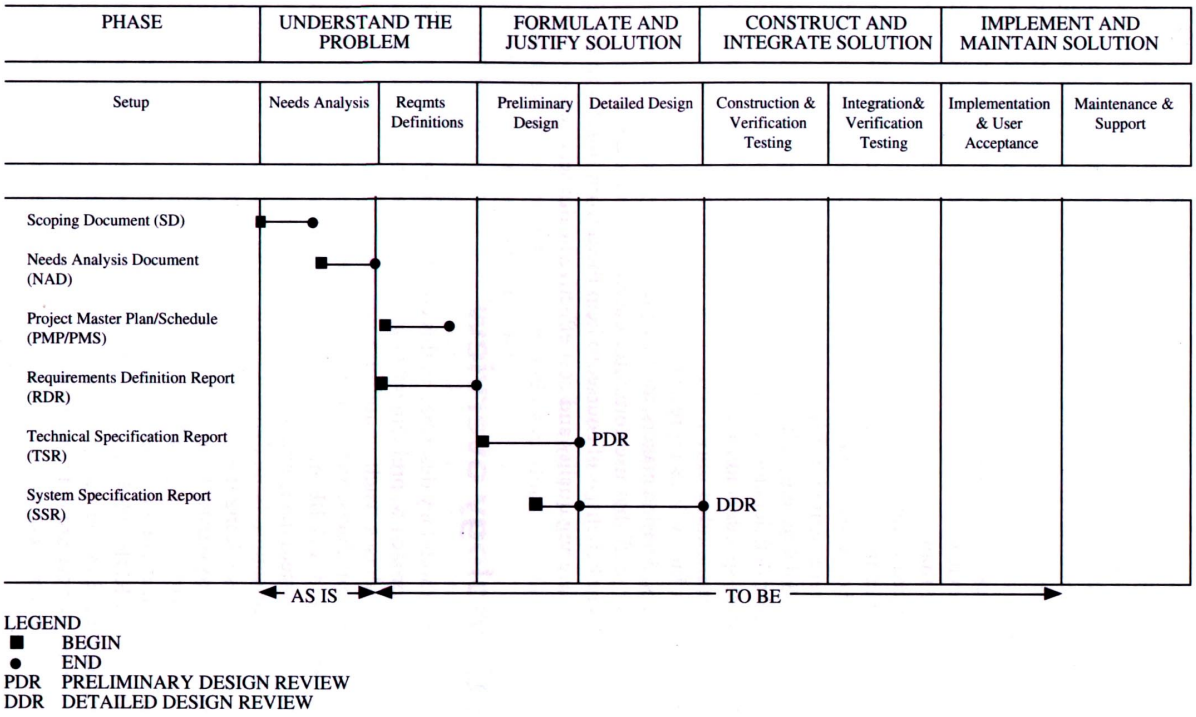

Figure 7.1 System development life cycle (Documentation schedule)

TO-BE - The AS-IS system with its enhancements and improvements applied which correct deficiencies identified in the Needs Analysis.

TSR (Technical Specification Report) - The TSR is the transition document from system requirements definition (the RDR) to system design and forms the foundation for the remainder of the development process. The TSR, developed during and a deliverable from the Preliminary Design Step of Phase II, is beyond the scope of this chapter. It is included only to complete the picture of the entire system development life cycle as represented in Figure 7.1.

Users - In the context of this chapter, USERS are managers, decision makers, medical practitioners, employees, and other health sector staff that use computer based information systems to their benefit. Their benefit, is of course, to help them work smarter rather than harder in delivering quality and cost effective health services.

Methodology overview

The proven methodology described in this chapter is simply the first phase of a structured approach to problem solving. Note again Figure 7.1, which a) describes four phases, each containing two steps, b) superimposes major documentation products, and c) superimposes a functional time-line mapped to the AS-IS and TO-BE models. It is a generic description which can be used for most system development, i.e. improvement projects of any size with very little modification. Note that this chapter concentrates on understanding the problem. In so doing the reward is documentation of the NEEDS as well as the REQUIREMENTS to satisfy those NEEDS. Necessarily then, the remainder of our focus in this chapter is only on Phase I of Figure 7.1.

At this point it is recommended that the reader review the definitions of the SD, NAD, RDR, TSR, and SSR. Each of these documents or reports is clearly identified in Figure 7.1 as outputs of a four phase program. It is re-emphasised that we are only focussing on the "understand the problem" phase with its two major steps of performing a Needs Analysis and the Requirements Definition.

Phase I - understand the problem

This first phase consists of two steps. These are:

- Needs Analysis Step
- Requirements Definition Step

Needs analysis step

The SD is updated during the Needs Analysis Step and the NAD is produced. The SD deals primarily with understanding the existing AS-IS system environment. The NAD is the transition document to the improved TO-BE system environment and identifies system NEEDS.

Requirements definition step

This is the second step in the Understand the Problem Phase of our systems development activity. The document produced at the completion of this step is called the RDR. Utilising the NAD, the transition to the RDR is achieved. The RDR contains requirement categories derived from the NAD which 1) describes and views the system in terms of specific system requirements definition, and 2) provide sufficient criteria to enable system conceptual design,

test and subsequent system evaluation. The RDR provides decomposition of requirements in sufficient detail to enable subsequent conceptual design. The RDR is not expressed in terms of solutions, but rather is expressed in details of functional performance, physical and interface characteristics.

Establish the systems development team and project scope

Let's think about this title a minute. Why is it called the Systems Development Team? First of all, we may not intend to literally develop anything! But to be complete, refer back to Figure 7.1. It makes sense to formulate a team which is broad enough to see the whole project to completion. The membership of the team can always be modified as appropriate, but for now, lets think in terms of a core or cadre of key players. For project continuity it is better that the same core follow the whole exercise through all four phases to its successful conclusion.

So ... who should these players be? Keep the number low. Include one individual from top management. After all, if top management is not involved, then they will not be committed. Without top management support and commitment the effort is most likely headed toward failure. Better save one's energies for something else.

Next, depending on the projected scope, i.e. size of the development effort, the team requires key USERS. (By scope I mean functionally. That is, how many major functional areas do we intend our system development to include?)

And finally, someone from our information systems (IS) functional area. If we don't have an IS functional area as such, surely at least one individual can be identified with the appropriate experience, training, or educational background in the discipline. Typically, this individual is also the project leader, so must have appropriate organisational "stature" as well as leadership skills. Since you are reading this section of this book, it could even be yourself.

At this point a team has been formulated which is tasked to investigate the current system in order to understand the "AS-IS" state or condition. Specifically the team is to

- build a functional model
- establish user needs
- define the requirements which satisfy those identified needs.

At the completion of Phase I, the team is in a position to present its findings to top management with rough estimates of costs. Then, dependent upon cost, schedule, feasibility, and estimated benefits and the team's recommendations, appropriate decisions can be made to determine what will be focused on for Phase II.

Develop a functional model

A functional model is very easy to produce. A simple box diagram listing the functional areas for a typical health service organisation is presented as an illustration in Figure 7.2. This is based on a manufacturing model and was chosen in order to show that we must concentrate on functionality, not organisational structure. Notice that each of the nodes (boxes) is uniquely identified, e.g. A2, A21, etc. The super node id for A21 is A2. Likewise one sub

node id for A46 is A463, and so on. This is so that we can tie our results from the needs analysis exercise back to the model. By functionally modelling the entire enterprise, (down to what ever level of detail we wish), we are assured of not missing any needs.

Determine the Needs

While developing the functional model, we determine the scope of the interview process. In other words, is this to be a complete needs analysis across the entire enterprise, or are we going to focus on a particular area? Figure 7.2 shows the functional model expanded in the two areas of 're-engineer business processes' (node A2) and 'provide health services' (node A5).

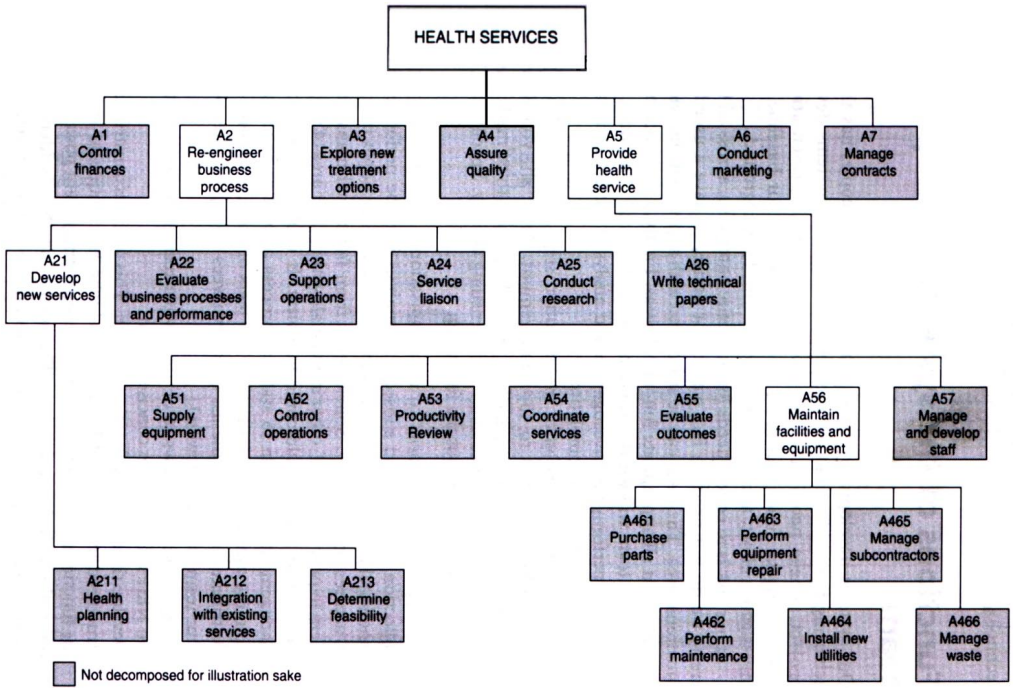

Figure 7.2 Functional model

The methodology of performing the needs analysis will be outlined in another section.

Define the requirements

Once we have completed the analysis of needs, we are then in a position to define various alternatives which have the potential to satisfy those needs. These alternatives

- may suggest a simple change in policy or procedure;
- the application of some form of advanced technology, or;
- a change in personnel capability.

Obviously advanced technology can include, but may not be limited to, computer hardware and software. However, it is important to realise that there may be numerous alternative requirements which do not embrace technology.

Functions of the systems development team

Our systems development team, tasked with achieving the 'understand the problem' phase of our systems development project consists of 4 - 5 people. These people include 1) top management representation; 2) users representing all functional areas to be included in our baseline or 'AS-IS' investigative effort, and 3) a leader, typically with IS background.

If our task is to collect needs for the entire enterprise, across all functional areas, we do not need, in fact we do not desire, to have a user from each functional area. Surely the team can be structured with appropriate individuals who can represent all appropriate functional areas. The reason for this is twofold. Firstly, experience has proved that a small team will get the job done more efficiently. Secondly, if it takes too long (in my experience large teams lose functionality) to perform the investigation and analysis, project enthusiasm can wane and jeopardise its completion.

An encapsulated version of the execution steps, which is also a project plan, is to be presented to top management. After all, you want their endorsement for the project, preferably promulgated to the entire organisation in advance of the ensuing activity. Specifically, lay out a schedule for and accomplish the following:

- Put together a short brief to all organisational managers stating that a collection of needs and subsequent analysis is to be performed in each functional area. This brief structures your activity and also states the goals your team hopes to achieve. Don't forget that you will be soliciting needs from functional managers who are also to provide the names of other individuals within their area of responsibility whom your team should/could interview. It is also the responsibility of management to explain to staff the process as well as benefits expected from the exercise in order to allay any fears or misconceptions.
- Distribute and assign the list of interviewees from item 1 above to appropriate members of your team (the interviewers).
- Complete the interviews (6 or 7 a day per team member is about right) and transfer to the NISF's (Figure 7.3) in concise format.
- Develop the enterprise functional model. This model is constructed through structured interviews of key personnel who have requisite knowledge of the functional areas. This begins at the top management position and flows down through the enterprise. The section on 'Needs Identification'to follow presents the basic interview technique and associated questions which are asked. Needs are also collected and later included on the NISF.

Author: Date: Project: Revised:		Working	Reader date	
		Draft		
		Recommended		
		Publication		
Sub node ID number: Sub node function title:		Source: Organisation:		
Problem:		Need: Encompassing need category title:		
Cost drivers:		Human Factor considerations (positive & negative):		
Benefits tangible:		Benefits intangible:		
Super node ID:	Super node function title:		Need sequence number:	

Figure 7.3 Needs identification survey form

Note that interview comments should be documented, sent back to the interviewee for validation or correction, used for model creation, then filed for audit trail. Note also that subsequent analysis (see also sections on 'Needs Cross Reference' and 'Needs Prioritisation') of the AS-IS functional model should result in:

- identification of redundant or overlapping functions;
- functions that should be performed but are not;
- possible incorrect emphasis on particular functions; and
- identification of functional interdependence deficiencies.

- Present the functional model to management for endorsement of correctness and authenticity. Re-work the model as required until it is endorsed officially.
- Collate and categorise the NISF's. Determine the most pressing needs. (Try to limit your focus to a manageable set, say half a dozen.)
- Develop and produce the NAD.
- Analyse the needs categories and apply alternate requirements which satisfy the needs groupings. Develop and produce the RDR.
- Brief top management and offer recommendations for Phase II.

Needs determination

Needs are associated with the AS-IS environment problems and voids. They are defined to establish a basis for improvements and provide the primary input for defining the TO-BE system. (The complete TO-BE system is not described in this document.) The determination of needs includes, but is not limited to, background information about the need and what problems are involved. The needs definition also looks at human factors, cost drivers (so we can get a handle on potential cost savings), and benefits (both tangible and intangible.)

Human factors considers what type of people issues are associated if the need is addressed. Cost drivers and benefits are associated with the costs that drove the need assessment and further identifies what could/should be improved. From the determination of the costs we can estimate expected savings associated with meeting the needs with appropriate requirement alternatives.

The output of this activity is the NAD, which is a record of system "needs", and is an analysis tool to determine system requirements. Based upon the objectives stated in the SD, the TO-BE system needs will be determined. These needs will address improvements to functions that are partially performed, incorrectly performed, or non-existing functions that should be performed.

Needs identification (and functional model development)

The structured interview allows us to develop the functional model and simultaneously identify needs. From the AS-IS functional model we are able to specify and uniquely identify all functional areas of the enterprise which the SD has defined. Each of these areas will have specific individuals which we interview using structured interview techniques. Structured in the sense that a template of typical questions which we want to ask each interviewee might include the following:

- What occupied most of your time in the last week, month, and quarter?
- Describe the functions which you perform, or have direct authority over.
- What prevents/enables you from/to accomplish your tasks?
- What objectives are you measured against?
- With no restrictions on resources, what would you obtain to help ensure the completion of your tasks?

These questions, and you are free to add or delete as appropriate, should be standardised for the whole team. Otherwise your analysis basis could be different.

Note that the NISF provides for the model sub and super node identification as well as the name and organisational affiliation of the individual interviewed. The sub or super node is NOT the interviewee's organisation. Remember, we are developing a functional, not verifying an organisational, model.

It is recommended that the NISF be filled out from your rough notes upon the completion of the interview. This allows your full concentration on the information content of the interviewee response. Then, later, but before you forget the intent of your notes, allow yourself sufficient 'replay' time to formulate a tight response and develop a concise and informative data collection instrument. Don't forget that the team is to interview appropriate representation of the entire enterprise, from top management down.

Recapitulating the key informational content of the NISF:

- Model sub-node id number and function title
- Source of the information, i.e. the interviewee and their organisation
- Problem (as the interviewee sees it)
- Need Identification (as the interviewee sees it)

- Encompassing need category title (determined later and explained in the following section)
- Cost drivers
- Positive & negative human factors
- Benefits (if corrected), tangible/intangible
- Model super-node id number & functional title
- Need sequence number

Needs Classification

The data gathered via the interview process, including the interaction with experts, management, and other enterprise knowledgeable associates, has been used to determine the AS-IS needs. Each of these needs and a) their associated benefits such as real cost savings, b) intangible issues, c) human factors, etc. is on a separate NISF. We must now classify or group the large number of needs into a few, say 6 or 8, encompassing categories.

The key to successfully grouping our needs is to succinctly and carefully choose the words representing a needs category title. This deliberate and consistent choice of words categorising the needs provides the basis for addressing several needs with a systems approach for determining requirements. The needs listed may be identified as residing in more than one needs category indicating the scope or breath of a specific need. The functional model node, along with an encompassing need category title, provide the information to specify a functional area of the enterprise. The sequential need number is required to provide traceability back to the original needs identification survey form (NISF).

Needs Cross Reference

Basically at this point we have lots of data (NISF's) which can be spread-sheet or database organised by simply sorting in the following useful ways:

- Each problem and its respective need are outlined on a single form. The entire set of NISF's can be placed in numerical order as they are obtained by sorting on their unique sequence number. This provides an easy way to identify a particular need and trace its source.
- We can sort by sub-node id number, and, ...
- by super node id number.
- Once we have accomplished the above sorts we are in a position to analyse and determine meaningful groupings which can be identified by 6 or 8 encompassing need category titles (see Figure 7.3). We can then develop a...
- needs category titles table, sorted by needs category title. It is this table which can be analysed for tightening up the needs groupings.

Other needs categories beyond those portrayed in Figure 7.4 might include a) facilities and equipment, b) information availability, c) housekeeping, or d) staff training. Again, the idea is to sort on the needs category titles in order to see the needs patterns evolve. As this evolution continues, we can ultimately re-classify all of our NISF's into a more manageable grouping of say, 6 - 8 all inclusive categories which will focus our attention on the most pressing problems. Figure 7.4 displays one generic and extremely basic example of what a needs cross reference table might look like:

SPECIFIC NEEDS/PROBLEMS			NEEDS CATEGORIES		
Seq No.	Needs Title	Model Functional Node	Operations	Information Resource Management	Other

Figure 7.4 Needs cross reference Example 1

- Other useful sorts can be accomplished in order to help us analyse the data in order to put us in a position of being able to prioritise our needs.

Needs Prioritisation

Once we have sorted and cross referenced all our needs in meaningful ways, our attention can be focussed on prioritisation. We determine what is most important to improving the enterprise. Perhaps it is patient service, cost containment, labor efficiency, process streamlining, etc. It all depends on our mission. Since our NISF's contain data regarding potential tangible and intangible benefits, we can quantify costs and benefits by needs categories. In other words, in order to establish a prioritised list of needs it may be necessary to establish estimates of the potential benefits for each of the 6 to 8 (encompassing) needs categories.

Whatever reasons may be driving our analysis, the needs are prioritised to determine which encompassing need categories should take precedence over others in the implementation of the TO-BE system.

The next step is to look at the methodology of determining requirements.

NODE		NEEDS CATEGORIES			
Number	Function	Opns	IRM	Facilities	Training
		1,17,21	2,43		
A21	Develop New Service				
A22	Evaluate Bus. Process				
Super Node A2		Functional Title Re Engineer Business Processes			

Figure 7.5 Needs cross reference Example 2

Requirements definition

This is the second step in the Understand the Problem Phase of the Project Life Cycle. One document, the RDR, is produced at the completion of this step. Utilising the NAD, the transition to the RDR is achieved. The RDR contains requirement categories derived from the NAD which:

- describes and views the TO-BE developed system in terms of specific system requirements definition, and
- provides sufficient criteria to enable system preliminary and detailed design.
- Stated another way, the RDR provides decomposition of requirements in sufficient detail to enable subsequent solution formulation and justification. The RDR is not expressed in terms of solutions, but rather is expressed in details of functional, performance, physical and interface characteristics.

The RDR is used:

- to present needs in a form that first identifies a system, and then presents a more detailed view of a specific system by listing functional characteristics;
- as an initial basis for first generalising system costs and then supporting system cost estimates;
- to serve as a tool for determining that all major TO-BE system functional improvements have been addressed, and;
- to provide sufficient criteria to enable the Formulate and Justify Solution Phase of our system development.

The requirements result from an assessment of needs in terms of categories with the added insight of determining how much of an improvement should take place to overcome the needs. Furthermore, the determination of System Requirements is the initial statement of major requirements for the TO-BE system expressed in terms that can elucidate solutions.

The methodology

The approach is to essentially translate each grouping of needs categories from the NAD in terms of characteristics. This process utilises lists to present a grouping or categorisation of needs at a top level and then further decompose each category to a finer grained level of characterisation. The output of this process is a requirements list which contains sufficient supporting data to permit an understanding of the requirements. These requirements will provide a basis to develop a design that is responsive to the needs of the enterprise.

Requirements will state what should be done, not how it should be done. Statements of ‘how’ are to be accomplished in Phase II, which addresses the preliminary and detailed design steps of the TO-BE system and is documented with the PDR and the SSR instruments. The requirements are mapped to the needs categories, and at the more detailed level of needs breakdown categorisation, to the specific need statements from which they originated. One need may stimulate several requirements; one requirement may encompass several needs; or a need may equal a requirement. It is this case, usually when analysing a process, procedure, or

function, which causes the confusion in terms differentiating the meaning of a need vs a function.

Requirements definition based on need categories

At this point it is probably best to look at an example. Our goal is to provide a list of system level requirements that will be further detailed in future documents (the TSR and the SSR) of the TO-BE system. To accomplish our current goal, our format should present each of the major needs categories as a list of summarised needs statements within which each of the NISF's fell. A list of requirements is then presented for each needs statement. The presentation of these requirements retains the same prioritisation of the need categories already determined. For example, from Figure 7.4 we had the needs categories of Operations and Information Resource Management. (Note that in an actual enterprise we would have strived for and achieved about 6 - 8 categories. Here we will only work with one to illustrate the process.)

Needs category: operations

Problem Statement: "This needs category emphasises that deficiencies exist with policies and procedures regarding the internal functions and communication between departments of patient scheduling, planning, and support."

Five (5) needs statements encompass the Operations needs category and are summarised to indicate the direct mapping to the original NISF.

Needs Statement	Needs Sequence No
1) To provide adequate and timely patient information in the wards.	3,6,16,101
2) Provide sufficient surgery procedure planning which raises the utilization level of facilities and staff.	121,130
3) Provide for timely communication between administration, surgery scheduling, and patient billing.	11,14,76,83,104, 112,127
4) Provide for periodic staff training.	
5) Reduce excessive time spent in determining patient drug therapy requirements	3,151,170 1,16,124

Figure 7.6 Summary of operations needs statements

Now, let us focus on need statements 1 and 2 above and map our requirements to them:

Needs Statement 1: To provide adequate and timely patient information in the wards.

Requirements:

- Implementation of automated computer based information workstations that allow access to all systems which provide patient details, therapy requirements, procedure schedules, test results at the nursing station.

- Eliminate the shift control log. This function will be compensated for by the computer based workstations.
- Institute the procedure that doctors provide appropriate level of detail to the computer based information system regarding the outcome of their daily rounds.

Needs Statement 2: Provide sufficient surgery procedure planning which raises the utilisation level of facilities and staff.

Requirements:

- Ensure the currency of process and procedure instructions.
- Group like surgery procedure categories to reduce facility set-up and turn-around times.
- Coordinate facilities availability to account for specific support staff skills and availability.

We continue in this manner until all need categories and associated NISF's have been accounted for. The output documentation of this exercise is the RDR.

This concludes the presentation of a methodology which establishes user requirements. Hopefully the reader finds the material useful and applicable to their needs. However, we can see that there is much remaining work to be accomplished in implementing a system, training users, and monitoring the system for further improvements. With this thought in mind, the last section of this chapter will accomplish closure of the systems development project life cycle as presented in this chapter.

Closure

Referring again to Figure 7.1 we see that the next phase of the systems development project life cycle is the Formulate and Justify Solution Phase. This second phase consists of the two steps 1) Preliminary Design culminating in the TSR, and, 2) Detailed Design culminating in the SSR. Both of these documents deal with the TO-BE development effort.

Technical specification report (TSR)

The Preliminary Design Step is documented with the TSR, which is written at a conceptual level to define how the system requirements (as detailed in the RDR) will be satisfied. The Preliminary Design Review (PDR) is conducted during this step.

The TSR is the transition document from the system requirements definition design and forms the foundation for the remainder of the development process. The TSR documents the TO-BE conceptual system design by addressing how each requirement definition stated in the RDR will be satisfied and incorporated with the existing system. The TSR is not a document from which items will be directly constructed, but rather it is a design strategy document from which subsequent detail design will be based. It conceptualises how the system requirements will be satisfied by providing a preliminary design to include system characteristics of 1) system architecture/hierarchy, 2) communications/networks/data flows, 3) information processing, and so on.

System specification report (SSR)

This is the second step in the Formulate and Justify Solution Phase. The SSR is produced during this step. The SSR contains sufficient detail such that vendor bid packages may be produced. The Detailed Design or Critical Design Review (DDR) is conducted during this step, concluding this phase.

The SSR contains sufficient detail such that the characteristics of 1) function, 2) performance, 3) physical and logical interface may be produced to facilitate vendor bid inquiry packages including vendor software availability surveys. System implementation planning is also conducted during this step to establish the transition to the Construct and Integrate Solution Phase of the Project Life Cycle.

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