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BEST PRACTICE

DEFINING YOUR NEEDS OF A NEW COMPUTER SYSTEM

DEFINING WHAT YOU WANT

Once a decision to computerise has been taken, the first major step is to define what the company wants from the system. In all cases this should be done by creating some form of written document which potential software suppliers, either internal or external, can respond to. However, the content of this document will of course vary tremendously depending upon the scope and content of the areas in the computer project. The normal name given to a medium to complex document is a Definition Of Requirements, frequently abbreviated to a DOR (or Statement of Requirements, SOR, in the USA),. Before showing you how to create one we will discuss what it is for and why one should be created, given that some DOR's can be time consuming and expensive to develop.

1. Objectives Of Defining Your Requirements

The primary objective of defining what you want, whether it is via a simple checklist or a complex Definition of Requirements, is the same, and that is to help make sure you buy the right system which matches your needs. The level of expenditure to achieve this should be cost effective to you and to do that it should bear some relationship to the importance of the system to your company and the likely level of investment in the total system. Put simply, there is little cost effectiveness in spending tens of thousands of pounds in defining your needs if the system cost is measured in hundreds and it is not critical to your business. But the reverse is also true, if the investment you are likely to make in the system is measured in hundreds of thousands of pounds and the system is critical to your business then investing in a comprehensive DOR which protects your investment and your business is frequently crucial to success. So what risks do you run if you do not protect your investment? According to a recent survey into the European textile industry over half of all textile companies who responded said they had experienced computer project failures in the past and this proportion only altered slightly when analysed against company size. Clearly, whether you are a large company or a small one, there can be a substantial risk of wasting your entire investment.

To protect your investment you need to:-

Minimise the risk of failure - You need to make sure you buy the right software, running on the right hardware with the right skills to make sure you can maximise the benefits the system can give you.

If you are considering packaged software, you need to identify the software package which is the best fit to your company's specific needs.

Ensure that all potential IT suppliers are bidding against the same criteria.

Identify potential software problem areas per supplier.

Identify cost per functionality to measure the cost effectiveness of complex areas of modified software.

Reduce the total cost of implementation by identifying clearly what is required thereby avoiding wasted expenditure.

The need to cover the areas above becomes clear if you consider the dangers to you in finding and installing the right system. These dangers include:-

Failure – If the system is a failure you could lose your investment and the time taken for it to collapse is time lost in the race against your competitors. Both can cause serious problems to your business.

Spiralling costs – If you have not specified the software functions accurately substantial and expensive modifications to the system may be required.

Wrong hardware – The hardware used must be adequate to support the system in the manner you wish to use it. To do this it must meet the demands of your business seasonal peaks plus any expansion or growth plans of the business. The main measure of performance is the response times of the software.

Supplier that goes bankrupt - If the software supplier goes bankrupt it is not always possible to find another supplier who will take over the installation. In cases like this the investment made in the system is at risk.

Poor support – To obtain a smooth installation of the system it is important that adequate support is available to your company when you need it.

Alienation of users – After the system is installed the people who will determine the success of the system are your end users. It is important that they are fully involved in the selection and implementation of the system so that the potential benefits of the system are achieved.

Lack of direction – Any new system should computerise the company as it wishes to operate in the future. If the requirements of users and departments are not co-ordinated effectively, there is a risk of obtaining ineffective software and an ineffective plan on how it should be used. A DOR is an opportunity to build a cohesive and co-ordinated IT plan.

By contrast to the above a good Definition of Requirements provides an essential tool in the following areas:

- Cost

A good Definition of Requirements enables you to obtain comparable costs from potential suppliers reducing the risks of increased costs later on due to gaps or misunderstandings with the chosen supplier. This is an essential element in implementing the system on specification, on time and on budget.

- Getting the right system

This is a basic requirement of the project but in many cases the decision making process can be clouded by opinions rather than facts. The DOR provides the basis for factual evaluation of the merits of each potential supplier and system. This is extremely important. At the time of making a decision each department within your company may prefer a different system, the one which normally works best for their department. The objective of the project is however to purchase the best system for the company and in many cases this will mean buying a system which does not perform best for all departments. In these cases the department who is not getting the best system for them needs to understand precisely why they are being asked to make sacrifices. A factual DOR enables this to take place without prejudicing support for making the project a success.

- Helps to avoid misunderstand between SME and supplier in a changing world.

This is important in two contexts. Firstly you need to be sure that each potential supplier you are considering is fully aware of what is expected of him in all areas of his involvement. Then once you have selected a system and implementation has commenced you will be initiating a process of change. As part of this process your users will become more knowledgeable about how computers can make them more efficient and they will think of enhancements to the system which was not contained in the DOR. An effective implementation needs to allow for this positive process and decisions will need to be made in assessing the benefits of any system enhancements.

- User confidence in success

This can become more important and frequently more difficult to achieve with larger projects. In the case of small stand alone projects the users should be able to see progress as their needs are defined, systems are evaluated and their system selected in a fairly quick way. In the case of large corporate projects it is important that users see project progress even though the progress may be comparatively slow. The DOR is clear evidence that the views of the users are important to the company and that they continue to “own” the new system.

- Helps SME evolve its requirements to become more efficient.

In depth involvement of end users is a crucial element of a good DOR. As will be discussed more fully later, the creation of a DOR should stimulate users at all levels into thinking how their jobs could be made easier and more efficient. This should be seen as the start of a continuing process at all levels. At Director and Managerial level the DOR can provide assistance in developing and sustaining a framework for a cohesive managerial team with common objectives across all departments. As the process moves through the stages of system selection and implementation, this positive outlook for change should be continually nurtured and developed.

- Helps to identify what is cost effective and what is not.

If the DOR is structured in such a way as to enable software costs per function to be identified, it is then possible to identify the cost effectiveness of non essential functions. This is particularly useful in the case of "wish list" or non essential functions which require software modifications to fulfill.

- Contractual

It is increasingly common for a DOR to become an integral part of the contract with a supplier. The basic reason for this is that a good Definition Of Requirements should provide an accurate basis of the suppliers obligations. In addition, many companies are recognising the fact that a suppliers normal contractual terms are heavily biased in favour of the supplier. The frequent response to this is a contract based upon the principle that the suppliers obligations are to provide a working system which meets your needs as defined in the DOR with the onus to supply such a system resting firmly with the supplier.

2. Preparing to Define Your Requirements

First of all you need to assess the skills or types of expertise needed to define the needs of the company accurately against your internal expertise levels to determine if you have the right blend of skills available within your company. The blend of skills required will relate to the areas you are trying to computerise, for example to computerise furniture production functions will require furniture and IT expertise. Match the type of skills available to you with the types of skills you need and then make sure that you make arrangements to fill any gaps you have. When going through this process you should also include other factors such as overall workload and any requirement you may have for experienced staff. At the end of this process you should have a framework to launch the project which provides you with the right skills, the right experience and the right availability. Make sure you are confident that the plan you have drawn up is going to work.

So, by now you should have decided:-

- What areas you wish to computerise

- The approximate approach you wish to take in terms of defining your needs.
- Your expertise requirements and availability to fulfill the approach.

3. How to Define Your Requirements

The areas you should include are contained in the Checklist below so that as you progress through them they can be ticked off.

Definition of Requirements Checklist

Information You Need to Give To Potential Suppliers	**Explanatory Notes**	**Tick When Complete**
Background	A brief description of your company, what it does or makes and what your objectives are of the new system	
Description of Tasks The Software Must Fulfill	This description must be in sufficient detail to enable the potential software supplier to understand what software he must supply. A frequent problem is lack of detail in the software description. A useful check is to compare the description of the main elements of the system you require, eg sales order, production order etc, with any ISO9000 (or BS5750) documentation showing the stages each element goes through. If any relevant stages are missing in the software description, these should be added.	
Training Needs	The number of staff in each department who will need training in the new system and if the training needs to take place outside normal working hours to accommodate normal work in the implementation.	
Commercial Framework	If you wish to obtain fixed price contracts from potential suppliers, this must be clearly stated.	
Information on Existing Hardware.	This should be a description of any relevant existing hardware together with its software.	

Number of users for new system and output devices and types.		
Any relevant hardware policy within your company.		
Preliminary Schedule	This should specify any time constraints you may have and indicate how soon you want the system up and running and when you wish to start	
Transaction Volumes	This indicates the approximate workload expected of the new hardware. It is normally expressed by stating the number of relevant documents the system will have to handle over a given time period eg number of sales orders per week. WARNING: The figures you quote must be those experienced at the height of any seasonal variations. These can be several times the average.	
Information You Need To Obtain From Potential Suppliers		
Authors or agents	Some software suppliers write their own software whilst others act as agents for software developed by another company. You should identify which.	
Expertise	In the case of a software house acting as an agent, their support expertise may not be in the same area as the software they offer. You should identify the areas of expertise support.	
Customer base	How many customers do they have, both overall and for the particular system they have to offer you.	
Implementation	How many implementation staff do they have.	
Background	How long have they been in business and their turnover. You should also ask for their last set of statement of accounts to check stability.	
Costs	Obviously you need to know all the costs associated with any software	

	you are being offered. It is advisable for you to ask for the costs to be broken down as follows:	
Packaged software	The cost of unmodified standard packaged software.	
Modification costs	The cost to modify standard packaged programmes to meet your specific needs.	
Bespoke software costs	Costs of completely new software required to meet your needs.	
Other software costs	Costs of software needed other than those specified above to meet your needs. Eg operating system etc..	
Hardware	The hardware costs broken down into major components.	
Implementation	This is the cost of help you will need from the software supplier to implement the system in your company. It normally Consists of a number of man days at a specified cost per day.	
Training	This is the cost from the software supplier to train your staff in using the system.	
Maintenance	This is the on-going maintenance costs to you once the system is fully installed. These costs can be substantial so it is important they are identified.	
Facilities	Does the supplier have the facilities necessary to carry out training courses at the suppliers premises.	
Hardware description		
Software description		
Phasing	Availability dates of the system being offered in conjunction with any phasing required.	

If any of the above areas are NOT included, you should be clear in your own mind why.

4.Defining Your Software Needs

This is the most important section of the DOR and if this is wrong you may buy the wrong system and waste your entire investment. It is critically important that this section is accurate.
The first objective to bear in mind is that a new system should cater for your company needs both now and for the future.

It should not be limited to the way your company conducts business today. So the first thing you need to do is to identify what your company needs for the future are. This should be done on the following levels:-

1. Corporate strategy.

You need to identify your company's business strategy for the next three to five years if there is one. If there is no formal strategy in place you will need to identify the corporate needs of each department covered by the project.

2. The Corporate IT Strategy

The corporate needs identified in stage 1 should then be converted into an IT strategy which identifies the types of systems you need to support your corporate strategy. This can then act as a framework for the software needs of the DOR.

3. User Needs

This section deals with the software needs of your end users for the areas covered by your strategy.
Stages 1 and 3 will be carried primarily via interviews and the processes required are as follows:

3.1 Information gathering – The objective of this process is to obtain information relevant to the tasks covered by the project. In the early stages it is important that you are perceived as a problem solver. This is best achieved by encouraging the free flow of information to you with the minimum of constraints. In addition you need to stimulate the user into thinking about how their job or function can be improved. This process should not be rushed or attempted in one interview. The user must be given time to think without excessive time constraints. As can be seen the success or otherwise of this stage will depend heavily on your skills as a listener. If you have never conducted interviews before for this process, here are some guidelines to help you:-

- Prepare well before each interview
- Conduct the interview at the users normal place of work if possible
- Make sure you have enough time for the interview, do not rush it or truncate it unless you absolutely have to.
- During the interview ask questions and listen attentively to the interviewee.
- Ask for clarifications if necessary.
- Ask about the problems the user has as well as what they do.

- Always use concise and simple questions.
- Stimulate the user into thinking how his or her job could be made more efficient.
- Never dominate the discussion.

Some useful questions for consideration when interviewing are:-

- What are the biggest problems you have performing your job. (Discuss and where possible suggest solutions? The user may already have identified the best solution, but not been able to put it into action. If you do have someone with some IT knowledge this can be very useful as they may be able to suggest solutions that are not automatically apparent to the non-IT literate among us.)
- What parts of your job are the most time consuming?.
- What parts of the current system (computer or paper) do you think are the best – could not be improved upon?
- What improvements would give the maximum benefit to you?.
- What information do you currently receive – how could this be improved? (Timing, content, layout)?
- What information do you not currently receive but would be useful?

It is unlikely that a computer system will be able to solve all of the problems highlighted, but it may be possible to make improvements by changing procedures, personnel etc.

3.2 Analysis of data gathered. If you have successfully achieved the first stage you will have information which needs to be analysed. Firstly you must separate out information which is relevant to the project and information which is not. It is the sign of a good listener that you may have data which is not relevant. Relevant data can be split into procedural and functional. Procedural data deals with the flow of data and how it is used. Functional data deals with items of data used together with what it is used for and how. From analysing the data you should start to get a picture of how the company should operate in the future at all levels and in the case of inter departmental projects, how the various departments wish to interact in the future based upon the greater accessibility and accuracy of information provided by a new system. At this point you may need to consider the creation of two documents, a DOR as originally planned, and a second new document which looks at the procedural changes required in the company to make maximum use of the new system. This second document should provide a stimulant for change but be flexible enough to encompass evolving procedural changes. So all being well you should have ideas which need to be checked and discussed further. This leads on to the next stage which is to evolve and qualify the information you have and any conclusions you may have reached.

3.3 Evolution and Qualification. In this stage you will evolve the ideas and information given to you in the first set of interviews. But in addition to this, the users should be able to inform you more fully of ideas they have had which can make their jobs easier. If one or two of them are having difficulty try and ask a few probing questions together with suggestions.

3.4 Reanalysis and Reiteration. You then need to analyse the new information you have and rediscuss until you have reached a consensus with the end users over the functions they need to operate in the future. In addition you should have some form of consensus regarding procedural changes needed within the company.

When upgrading or changing an existing computer system particular attention should be paid to areas where information is added by hand, and occurrences of double data entry, as these are indicators of pitfalls in the current system.

5. Format of the DOR

Now you have reached a milestone, you can start to write the DOR.
A Definition of Requirements can be written in many formats and these range from large chunks of text describing what is required to segmented functional operated documents. Before deciding which is the most appropriate format for you, think about the information you want from the supplier. As a general rule text options only tend to work well if your requirements can be easily met by any supplier, the project is small and if you have no need for costs per software functions. In medium to large projects a segmented functional approach tends to provide more valuable information back from the supplier and can save time and money in preventing the need to ask for additional information. Whichever format you choose, do not forget to ask the supplier to identify how he intends to satisfy your software needs, by packaged, modified or new software. Obviously one of the objectives is to obtain information from the supplier so these sections should be structured as a questionnaire.

6. Writing the DOR

Earlier we discussed a DOR Checklist. Work your way though this using the areas which are relevant to your project. The most complex area will almost certainly be the description of the software requirements. This should be written in a logical way and broken down into the application software areas you need such as:-

Sales Order Processing
Production Control
Stock Control
Work-In-Progress
Purchasing
Material Requirements Planning
Capacity Requirements Planning
Financial Systems
CAD
Machine Related Systems

Interfaces

When writing it always remember that the reader may know nothing about your company or industry other than that contained in your document so he must be able to understand what the software functions needed are solely from the DOR. An example of a segmented DOR broken down into functions is shown in Appendix 1.

After spending many hours writing you have now finished, or you think you have. If you have not written a DOR before there is a probability that you have used assumptions on the furniture industry and/or knowledge of your company when writing. So you next need to check it. If you have not used internal company documents when writing the DOR, go through your functional description and compare it with ISO9000 or BS5750 documentation making sure that all the major stages of each element (sales order, purchase order etc) are covered in a logical sequence. If you do not have such documents available check each area with a relevant end user. Include relevant internal documents as Appendices to the final DOR.

When the DOR has been checked and you are happy that it is an accurate description of what you need then you can move onto the next stage.

When you have completed the first draft you can check this against potential solutions. Provided you do not limit your requirements by the limitations of any individual system, this can be a useful exercise as you can often pinch some good ideas that you would not otherwise have known about, for example:

Sales order processing systems - used in conjunction with a compatible telephone system have the facility to bring up on screen the callers account details as the member of sales department picks-up the telephone. This can make you appear very efficient, save time and improve customer service. Another thing to bear in mind with SOP systems is the importance of speed. Very pretty graphical screens appear wonderful but are not always the fastest for quick data entry and if the hardware is not quick enough sometimes operators can type faster than the system can cope with so where possible get an end user to test the systems you are considering to make sure that it will work for you. This will also help to involve the end users in the decision making process and prepare the way for change.

Credit Control – the features required by credit control overlap with both finance for bad debts, and sales for chasing customer payment (invoices/statements) and putting accounts on 'stop'. These facilities are often included as part of the sales order processing system.

Buying – Depending upon the scale of your business and the suitability you may wish to consider a MRP – materials resource planning system. These systems enable you to automatically generate orders for items as required. The main drawback is the level of data input that is required as the system must know every time an item is used so it can be deducted from the available stock and when the minimum re-order level is reached a purchase order can be raised. Dependant upon your business and the type of manufacturing you do (if applicable) this system may be ideal in theory but unmanageable in reality. As a rule of thumb the more expensive the items you produce are, and therefore the more expensive the component parts the more likely it is that the investment in time and software will be beneficial. However, if you make relatively low cost items then the cost of data entry and software may outweigh the benefits.

Stock Control - One area to pay particular attention to is stock control if you have both fabric and component items. Fabric rolls are recorded by batch and piece number, while most items only need the batch number. If you need to record this information for both then you should check to make sure that the systems you are considering will cope effectively with two levels of control.

Work–In–Progress – The tracking of work-in-progress can often involve the integration of data capture systems and a main computer system. There is a huge array of factory floor data capture devices available today which can link directly into your main system, and others which have to be programmed separately and linked. If you are looking at investing in a very comprehensive software system that requires a lot of data input it is often essential that the data entry is as automated as possible by using such devices, otherwise you can find that you are having to fill-in lots of information. A good indicator for such circumstances is if the vendor offers you every report under the sun out of the system, then you have probably had to put every piece of information imaginable into the system.

Finance – many software packages offer excellent financial systems as the computer industry was born from the needs of the banks and finance houses. Though this may delight your finance director, look carefully at other areas, especially manufacturing which seem to frequently be the weak spot if this is the case. Finance packages normally contain nominal, general, sales and purchase ledgers. If you have no computer system then you will find that to computerise your ledgers you will need to allocate codes to all the different items that you purchase so that you can easily find out what costs have been incurred in which areas.

Payroll – these facilities are not always available or come as additional options. If you have a complicated shift pattern, payment system or incentive schemes then you will need to explain in detail exactly how they work. Sometimes specialist payroll systems have to be bought and integrated in which case the level system integration should be detailed so that the vendor can include the integration cost in the price. Integrating different vendor's software can often be an expensive process so it is usually best avoided where possible.

Personnel - systems are usually a database for storing all staff related information. The company must be of a certain size to justify the cost of the software.

Product Development – if you have a research and development section, and especially if this is an International function then you may well want to look at product development systems. The modules that come as part of an all inclusive system are quite limited in their capabilities, however for the furniture industry there are a multitude of specialist packages on the market, some of which already have links to many of the major suppliers of MRP systems. If you use a lot of graphics and especially if you have designers working in one country and manufacturing in another then you are probably going to need to look at the specialist systems. As always bear in mind what links you require, what links are available and any hidden costs.

Management Information - The information you require the system to provide you with e.g. reports is also another good way of making sure that you get what you want. For each business area make a list of the reports you require. This will then ensure that the vendor makes sure that the system offers the facility to collect the necessary data to provide you with the information that you require.

Hardware Description – Make sure that you ask that the hardware is capable of being expanded to meet any Corporate Strategic needs you have for future growth. Also bear in mind that if your project is a success, and success has to be planned for, your users will become more demanding of the software and this in itself normally requires the capability for expansion.

<u>Appendix 1</u>

Extracts From an Example of a Segmented Weaving Definition of Requirements.

Software System Description

Your response should be structured in such a way as to allow easy cross reference to the software described. A copy should be taken and used to identify how the individual functions are to be met. This should be done by inserting the appropriate letter in the bracket against each function using the following codes:-

Standard packaged software function	S
Modified package function	M
Function requiring new or bespoke software	B

The copy should then be returned with the Supplier Questionnaire section as part of your proposal. The proposal should contain the cost of all modifications and bespoke software.

Overview of Procedures

A sales order normally starts life as an enquiry from a customer. This normally Takes the form of a “When can you deliver “n” pieces of “x” cloth and at what price?” This is then logged by the company and delivery lead times together with raw material prices which, for cloth production, are predominantly yarns, are calculated by Production Control.

The calculations performed by Production Control are to calculate the raw material requirements of the order and to check these against physical stock and any yarn contracts in progress. If a requirement is found where no physical stock or yarn contract exists then either another yarn contract or order is negotiated with a supplier. These orders or contracts then give prices of raw materials and delivery dates. These delivery dates are then used to add onto production lead times and the current forward load to generate estimated delivery dates to customers.

This information is then passed back to sales who, in turn, relay it back to the customer adding on appropriate profit margins. Price lists are available and are used for certain cloths or fabrics. Once a delivery date and price has been agreed with the customer a draft confirmation document is generated which is then checked for credit cover. Once the credit has been approved and the details are checked the draft confirmation is converted to an approved order.

This order can take a number of forms:

- A standard order for a stated number of pieces of a particular cloth with no connection to any existing order.
- An order to buy a stated number of pieces, either form or approximate, of a piece-dyed or yarn-dyed type cloth where the details will be specified later.
- A colouring instruction which identifies the number of pieces from a previously placed unspecified contract which are to be delivered by a certain date.
- Support, pattern or other sundry orders.

The sales order confirmation is then converted to a mill order where there is a requirement to manufacture the fabric. The mill orders contain the warp number and fell by date, which is the date the warp will finish at loom. Once the mill order is planned into production, production will commence at the appropriate time. Pieces are then woven from the warp number with yarn issues, both warp and weft, being made against the warp number.

The pieces of fabric then go through a number of processes depending upon the type of cloth. Many of these processes will be carried out at a commission or sub-contract processor. The decision to send pieces to outside commissioners can be governed by the fluctuations in production and therefore needs to be flexible. After passing through the relevant production processes the pieces then go to final inspection where quality information is added to the piece documentation. The pieces are then ready for despatch and several despatched may be associated with an order and the pieces contained in any despatch need to be held.

1. General Requirements

The three primary product sets the system will have to deal with are cloth quality; cloth quality, design, shade; and finally yarn. The data required to be held against each are as shown below:

1.1 Cloth Quality

Quality code
Description
Dye marker

Cloth type
Minimum grey weight
Maximum grey weight
Minimum finished weight
Maximum finished weight
New cloth quality marker
Standard pay length
Standard gain/loss
Mending/perch grade. ( )

1.2 Cloth Quality, Design Shade
Finished length
Finished width
Number of ground ends plus extras
Number of ground ends
Ground spaces
Number of edge ends plus extras
Number of edge ends
Edge spaces
Total ends plus extras
Total ends
Total spaces
Burling category
Picks per inch
Reed width
Bradford sett
Standard piece length
Standard number of picks
Standard warp weight
Standard weft weight
Total number of warp ends plus extras
Total number of warp ends
Start on first end number
Pattern including extras end number
Pattern excluding extras end number
Loom outside
Sley outside
Sley name
Number of shafts
Draft number
Peg plan number
Date written
Name selvedge number
Product type
Salesman
Source

Basic unit of measure
Alternative unit of measure
Conversion factor between basic and alternative
Cloth classification
Warp construction number
Weft construction number ( )

1.3 Yarn
Product type
Yarn quality
Yarn count
Yarn shade
Twist direction
Yarn description
Source
Basic unit of measure
Alternative unit of measure
Conversion factor between basic and alternative
Buyer
Salesman
Count convention
Yarn classification
Target yield %
Condition % ( )

1.4 Other information which needs to be linked to the cloth quality, design, shade are:

1.4.1 Name selvedge linked via the name selvedge number. This contains the weaving structure of the relevant selvedge. A quality design shade can be woven with a variety of different named selvedges. ( )

1.4.2 Peg Plan Number. This will contain the drafting arrangement for the yarn through the loom. A quality design shade will have one peg plan number. ( )

1.4.3 Warp Construction. This is the warp construction. A quality, design, shade will have one warp construction. ( )

1.4.4 Weft Construction. This is the weft construction for the fabric. A quality, design, shade will have one weft construction. ( )

1.4.5 Selvedge code. This contains the lettering and any symbols which need to be woven as part of the selvedge. A quality, design, shade could be woven with a variety of different selvedges. ( )

1.5 Product related facilities are:

1.5.1 For any product record, an “add by copy” facility must be available. ( )

1.5.2 For any product a special narrative facility should be available. ( )

1.5.3 For all manufactured products, a standard and alternative set of production routes must be held. ( )

1.5.4 The anticipated gain or loss to the product caused in production should be catered for at individual processes within a production route for a particular product. ( )

1.6 Process related facilities are:

1.6.1 For each process an expected efficiency needs to be allowed for as well as maximum and minimum warning levels for over and under utilisation. ( )

1.6.2 The quantity/time at each process within the same production route may be variable. For example, if the same production route includes warping and weaving, the time for warping will relate to the anticipated warp length whilst the weaving lead time will depend upon the time to weave a piece. ( )

1.6.3 Special instructions may need to be printed out for an individual process within a specified production route. ( )

1.6.4 The system must be capable of identifying different shift patterns by department as well a working days and holidays. ( )

1.6.5 An add process by copy facility should be available. ( )

1.7 Product keys.

1.7.1 The equivalent of the product key for cloth transactions should be quality (max 5 characters), design (maximum 6 characters), shade (maximum 5 characters). ( )

1.7.2 The equivalent of the product key for yarn transactions should be count (maximum 6 characters), quality (maximum of 5 characters), shade (maximum 5 characters). ( )

1.8 The Bill Of Material Requirements are as follows:

1.8.1 The system must be capable of handling up to 6 levels of materials. ( )

1.8.2 At each level it must be able to process constituents with different units of measure, ie metres of yarn on a warp and kilos of weft yarn. ( )

1.8.3 Within the same level the system must be able to cater for the same constituent to be fed in more than once. For example, the same yarn could be used as both warp and weft. ( )

1.8.4 The system must be able to provide materials explosions quantities which either include or exclude waste. ( )

1.8.5 The system must be able to calculate down to single levels or multi levels as defined by the user. ( )

1.8.6 The system must be capable of going down to all the purchased constituents in one transaction displaying the quantities necessary for a specified quantity of the original product. ( )

1.8.7 The system must be able to cater for "where-used" or material implosion enquiries. ( )

1.8.8 The system must be capable of replacing one product with another either in one Bill of Material or across all Bills of Materials. ( )

1.8.9 For certain product types, ie cloth quality, design, shade and pieces, particular attention should be paid to file maintenance. Files relating to these areas could be very large and the system should have some automatic file maintenance procedures. ( )

1.8.10 Emphasis should be placed on minimising the number of transactions necessary to get to the appropriate information. ( )

2. Sales Order Processing Requirements

The main business requirements for Sales Order Processing are:-

- Improved customer service
- Ability to give quick and realistic delivery dates
- Reduce the frequency of late deliveries

2.1 Multiple prices and discount structures must be available to allow different terms to be offered to different customers. ( )

2.2 It should be possible to process an enquiry or quotation in order to give sales a realistic estimate of costs and delivery lead times with the facility to cater for different order status conditions, eg enquiry, quotation, awaiting credit approval, confirmed and new cloth specification. ( )

2.3 Telephone orders may be entered on-line as received for pre-draft or prior orders. ( )

2.4 The system should provide support for two types of contract, piece-dyed and yarn-dyed with multiple call-offs. In this eventuality the call-off price and terms should default to the contract price and terms. This would typically be used where a contract was raised to supply a number of pieces of a given quality with the call-offs specifying the number of pieces within the contract which are to be dyed to a particular shade, or are to be of a certain quality, design, shade and delivered according to a specific date. ( )

2.5 The call-off order or colouring instruction will need to be linked to specific contract numbers and the balance of the contract must also be available. Yarn-dyed contracts are not regarded as firm orders whilst piece-dyed contracts are. In addition, a call-off order for yarn-dye contracts may straddle two contracts, the end of one and the beginning of another. Ideally the system should take the call-off quantity minus the remaining free pieces from the first contract and deduct the remaining balance from a second contract, if one is available. ( )

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