HOW (and how not) TO BUY A LABORATORY INFORMATION MANAGEMENT SYSTEM
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1. **INTRODUCTION**

This LIMS Selection Guide aims to help anyone considering the purchase of a new or replacement Laboratory Information Management System (LIMS). It is intended to give some hard "inside" information that will help keep you on track, avoid some of the pitfalls and get your company the system that it needs.

**Target audience**

This document is written as a guide for those looking for a system to handle anything from simple sample tracking applications for a small laboratory through to a full function LIMS for a global operation. It will be particularly useful for decision makers, project managers, laboratory managers and IT personnel.

**When to use this guide**

Use this guide from the day on which you start thinking of a new system, up to and even beyond the time of placing the order for a new system. This might be a few months or a few years. If your company already has a system which does all that you want then this document may still be of interest as it will provide information on the latest technology and features available today. If you have bought a system that is less than successful, it might help to identify where things went wrong.

**Outline**

This document covers three main phases of a project.

1) **Searching for and buying a system** - covers the process of considering, choosing and buying a system.

2) **Planning for the new arrival** - covers some practical issues such as planning for the implementation, scheduling of training courses, data population and possibly data transfer from an existing system.

3) **System options** - outlines the different options for systems and software, each with details of the vendor’s responsibilities and your own.
2. WHY DO WE NEED A LIMS?

Get the most senior people in the organisation to identify the potential benefits of a LIMS. This benefit list will vary from company to company but ultimately it will be the basis of the cost justification which is one of the more challenging aspects of a LIMS project.

Benefits should not be restricted to improvements in laboratory based functions as a LIMS is potentially a business management tool if the correct one is purchased.

To help with the identification of benefits consider the following list and then select the items most appropriate to your own organisation and then add a few more specific to your company with the assistance of laboratory staff and other personnel who will see some positive impact following the implementation of a LIMS. Remember that the benefits that are quantifiable are those that will help the case for the investment in a system.

Example Benefits

- Reduce/eliminate the need for paper and laboratory notebooks.
- Speed up the retrieval of information – database searching is massively quicker than searching through filing cabinets.
- Fast production of regular laboratory reports which can be used to identify the workload by person, by instrument, by test, by customer etc. It can also include other data such as laboratory costs, data trends, outstanding work and sample turnaround times. The report, once designed, can be produced in one or two minutes each month and can hugely improve the understanding of the laboratory activities and the planning process e.g. when do I need a new instrument (and the trend justification is already included in the report).
- Eliminate duplication of effort e.g. sample registration for each department handling a sample.
- Simplify and standardise laboratory service requests from other departments and/or external customers. This leads to a more efficient client interface and reduced internal delays.
- Encourage clients to register their own samples, monitor sample status and search for approved results using a web interface to the LIMS. This saves laboratory time and provides a more modern efficient service to the customer. Make sure that the chosen LIMS can safely segregate the data for each customer.
- Monitor time delays from sample registration to sample receipt to sample testing to sample reporting thus quickly identifying bottlenecks.
- Tests are allocated to a sample automatically in a routine laboratory environment according to a defined set of parameters.
- Improve the sample numbering schemes. Use multiple schemes in parallel if it suits the operation of the laboratory e.g. different numbers for each site in a global operation or different numbers for sample types such as raw materials and finished products.
- Eliminate transcription of data where possible. This is helped by the linking of high sample throughput instruments/systems to the LIMS for direct capture of data. More sophisticated links will be bi-directional allowing the transfer of a sample list to the instrument/system.
- Introduce intuitive, easy to use work-flows. These can be designed to match all work-flows used in the laboratory. A key issue here is that the chosen system should allow new work-flows to be added easily without dependence on the vendor. Additionally the screens designed for each work-flow should not have optional fields or greyed-out items on a menu. They should be designed for the job resulting in a more user friendly and relevant environment for each user of the system irrespective of their authority and responsibility.
- Track the location of each sample and each sample movement to effectively create a chain of custody. This is imperative for some applications such as forensics and stability studies but it is highly useful for most applications. The location of each sample is known at any given time and this can be identified using bar-code technology if required.
• Include all laboratory calculations within the LIMS apart from those performed by systems linked to chromatographs where calibration curves are used, for example. The chosen system must allow a user to easily specify calculations in terms similar to those used in the Standard Operating Procedure (SOP) for the test. There are still LIMS being sold today that require programming to include relatively simple calculations. Make sure you ask the vendor how calculations are added and that you personally check this functionality.

• Time, date and operator i.d. stamping of all data and result entries leading to improved traceability and adherence to enhanced quality procedures. This in turn leads to regulatory compliance and more comfortable audits where appropriate.

• Increased laboratory productivity – higher sample throughput and reduced turnaround times whilst maintaining quality compliance. This is, in part, due to reduced workload through elimination of data duplication and data transcription.

• On-line access to existing documentation such as SOP’s including test methods, equipment SOP’s and general quality procedures.

• All data inputs can be checked against expected values e.g. test results can be compared against limits with a warning presented instantly; alphanumeric entries can be checked against an expected format and non-complying entries can be stopped.

• On line statistical analysis can be immediately generated from entered test results. SPC charts can be created with indications warning that a process is moving to an out-of-control situation, for example.

• Management of staff training records down to the detail such as who is allowed to perform a test method. This can be extended to prevent a user from doing a test if he/she is not trained. This level of detail is not included in corporate level training management systems. If the correct system selection is made the training module could be used as a corporate system and hence the cost of the LIMS could be shared with other departments.

• Management of instrument calibration, maintenance and electrical safety ensures that the data produced by the laboratory is valid. This can also be extended to prevent the use of an instrument if it does not comply with the check requirements. Again choosing the correct system allows the extension of a calibration system company wide thus spreading the cost load.

• Immediate management access to all data, reports, statistics etc. can be provided as appropriate.

• Improve the presentation of management reports and customer reports so that they become a recognisable quality product supplied by the laboratory. Graphics such as pie-charts and trend graphs can used to enhance the presentation and make it more understandable.

• Immediate notification of a significant event e.g. a test has failed specification limits; a raw material is passed for use. This can have significant cost benefits.

• A non-hierarchical security system will ensure that users are restricted to their own area of responsibility as defined by the quality procedures.

• The cost of performing tests can be monitored and a price list can be included for work done for other departments and/or external customers. In this way a profit and loss account can be created.

• Integrate the LIMS with other software packages used by the company. Maximise the electronic transfer of data and minimise data transcription but only where it is relevant.

• Standardise codes across laboratories e.g. product codes.

• Ensure that the selected LIMS provides for phased and evolutionary changes over time thus extending the useful life of the system and maximising the return on investment as well as protecting historical data.
• Introduce resource planning techniques to optimise, for example, the use of staff and instruments.

Once the list of benefits has been created this should be converted to a requirements document that specifies the features and functionality required in order to realise the benefits identified as targets. In addition, inputs from laboratory staff and others likely to benefit from the implementation of a LIMS should be encouraged. These inputs can be used in the requirements document which will eventually be sent to a number of suppliers as part of the purchasing process. Conflicting requirements will need to be resolved but they will identify how your people view their responsibilities and even give an indication as to who is enthusiastic about a new LIMS. Typically there will be LIMS champions and LIMS sceptics and people who dislike change. It is good to know this information at the beginning of a LIMS project.
3. SETTING OUT YOUR REQUIREMENTS

Writing a Requirements Document

The key issue is that the requirements document only represents a snapshot in time. What you really want is a system that not only satisfies your current user requirements but is flexible enough to be good in 5 years time, in 10 years time and so on. This protects your investment and your data. Surprisingly perhaps there are very few LIMS available to-day that are designed to protect your investment over the long term. Consequently a requirements document should include the need for future flexibility without the need for vendor dependence or the need to employ external consultants and/or programmers to maintain the relevance of the system. Consider the following diagram:

A checklist should cover the basic areas that you want, as well as any features specific to your organisation. It should cover what you want the system to do now and in the foreseeable future. Get a clear idea of the initial number of concurrent users, and the likely expansion over the next five years. With this information you will be able to get a ballpark idea of costs.

Be brief. Avoid verbose specifications. If there is a report or a document you must have, produce it from the old system (or type it in a word processor) and that is the best specification. Details can come later, after a first round of demonstrations.

Avoid using qualitative words like "integrated", "complete", "user-friendly", "flexible", "comprehensive", "quick" and "rapid". Every system claims to be all of these. If you must use these words, qualify and quantify them.

Be flexible. If you rigidly specify features you might miss out on a system with new features, which makes it all irrelevant. Be ready to adapt after a first round of demonstrations.

Be unambiguous. clarify why you need certain special features and do not drop into computer-jargon. So do not say that you need to "connect to" or "have a common interface with" a machine tool (for example) because these are not clear words - the machine tool is "connected" to the workshop floor and it "interfaces" with the electricity supply. If the new system also stood on the floor and used the same 3-pin plugs, will that do? No, it won't. Stipulate that you want to be able...
to send a cutting list of parts from the system to the machine tool electronically and it is much clearer and less ambiguous.

Your main interest should be the software. It is easy to be diverted from this fact, because the software often represents only half of the total purchase price, or less. The software defines what you can and cannot do with the computer system. The hardware only defines if you can do it on two or two hundred terminals and if you can keep ten days of information or ten years or so. If the software is easy to use and is just right for what you want, all other considerations (the hardware, the support, etc) become much less relevant: you will need less training, less support and fewer alterations and the implementation will be easier and faster.

Consider the following guidelines when creating the requirements document:

Section 1 - Project Overview

1.1 Company overview
Provide a 1-2 page overview of your company and laboratory(ies) involved in the proposed LIMS project. Identify the key personnel involved in the selection and future operation of the LIMS.

1.2 LIMS overview
Provide a 1-2 page overview of what the LIMS project is to achieve indicating here productivity and cost saving gains are required.

1.3 Hardware and Operating System overview
Indicate the preferred hardware platform and operating system(s) give reasons. State if communication to other computer systems is (will be) required.

1.4 Database overview
Specify databases that you have a preference for.

Section 2 - LIMS Technical Requirements

2.1 Sample Registration (log-in and receipt)
Describe all the different sources from where samples are received (indicating the % contribution from each source). Estimate sample volumes/year and attempt to estimate the average number of tests performed on each sample. Try to distinguish between tests and analytical results.

Try to provide an indication of how samples submitted to the laboratory are identified e.g. by a unique number, or a combination of parameters e.g. sample batch number and date received etc. Do you require the proposed LIMS to automatically generate a sample identifying number? If so, provide examples of suitable sample numbering schemes, e.g. YYnnnnnnn where YY is the current year number and nnnnnn is a sequential number reset at the beginning of each new year.

Describe how, if appropriate, lists of tests (groups/profiles of tests) are currently assigned to samples submitted for testing. What criteria are used to select one profile of tests versus another?

Describe in general terms any other information which accompanies samples when they arrive in the laboratory which must also be entered into the proposed LIMS during sample registration.

Is there a requirement for samples to be registered in the LIMS before they are actually sampled? If so, please supply further details.

2.2 Labels
Describe if any labels are to be automatically (or manually) generated by the LIMS. Describe what information should be present on the labels. Include any barcode labeling requirements.
2.3 Worklists and Worksheets (allocation of work to analysts)

Provide details of what requirements there are for the LIMS generating worklists (screen or paper based lists of samples awaiting a particular analysis) or worksheets (screen or paper based forms indicating the work outstanding on a particular sample).

2.4 Acquiring analytical results

2.4.1 Keyboard (manual) entry

Provide brief details of how test results are generally recorded e.g. by sample (completion of all test results for a particular sample before moving to the next sample) or by test (completion of all samples for one test before moving onto the next test). Or would a spreadsheet style entry be preferable?

Indicate what checks are (should) be performed on results as they are recorded e.g. checking against limits. Give examples of some typical limit checks.

2.4.2 Automatic (on-line) entry

Provide details (name/model only) of instruments to be connected on line and indicate what interfaces are available. Indicate which are to be connected in phase 1 of the project and which are to be connected in a later phase.

2.5 Validation and approval of data

Provide details of how test data is validated (reviewed for accuracy e.g. by a senior analyst) and how test data is approved (accepted for release outside the laboratory e.g. by the Laboratory Supervisor).

Indicate what facilities are required to submit samples for re-test and for rejecting sample data.

2.6 Reporting

Indicate what reports must be generated on demand and/or automatically. Include examples if you wish but please keep in mind that the proposed LIMS should replace current laboratory reports functionally, but cosmetically they may have to be designed slightly differently. Be aware that cosmetic improvements to reports can substantially enhance company image. Specify whether reports are also to be delivered automatically or on demand to external clients via eMail or fax.

Indicate the times of the day the various reports are required to be generated.

2.7 Statistics and general calculations

Provide details of what the LIMS will be required to provide in terms of statistics and calculations. Indicate if computerised statistics packages already exist on-site to which a LIMS interface must be provided.

2.8 Graphics

Indicate what graphical displays of data are envisaged. Indicate if a computerised graphics package already exists on-site to which a LIMS interface must be provided.

2.9 Communications

In addition to any communication requirement which may have been mentioned in 2.7 and 2.8, indicate what other communication requirements are necessary. Please indicate which requirements can be implemented at a later stage.

2.10 Security

Provide details of the classes of access security envisaged for the proposed LIMS, i.e. what information the different classes of personnel (laboratory, managerial and computer department) should be allowed to access.
2.11 Archiving

Indicate how long it is envisaged sample/test data must be accessible on-line. Detail any classes of sample information which should remain on-line for longer periods. Make sure vendors can indeed archive and retrieve data into the system – this is not always the case and should not be assumed!

2.12 Tables of reference information

If possible, provide details of any tables of reference information which may need to be incorporated into the LIMS. For example, the LIMS will almost certainly be required to hold a reference table of analytical tests, products, suppliers/customers, instruments and users.

Once the requirements document is finalised make it easy for suppliers to respond and make it easy to compare the responses. In addition allow the suppliers sufficient time to respond in a professional manner.
4. CONSULTANTS AND SPECIFICATIONS

Searching for a system is not easy. You can get a consultant to help, but be careful. Only you know how much you are prepared to pay for the niceties. You do not necessarily need a consultant just because you do not know how to write software, in the same way that you should not need to know how to build a house before you buy one. Computer consultants do not spend all their time looking at systems: they spend their time looking at systems for specific organisations and what is right for others might not be right for you. A good consultant should:

- Encourage you to get involved
- Help to thrash out a brief, unambiguous but flexible checklist
- Help to establish potential suppliers
- Not insist on being the sole contact with suppliers
- Work him / herself out of a job, not become indispensable
- Arbitrate and explain at demonstrations where necessary
- Be reasonably pleasant to potential suppliers because you will have to work with one of them later.

Potential pitfalls of using a consultant

Some consultants are attached to LIMS companies e.g. ex-employees. They are typically biased against their ex-employer depending on the circumstances of their departure. Some consultants call themselves independent but most are not. They typically have allegiance to just one or two companies.

A consultant can influence a demonstration to drive a decision in a particular direction. An example of this was when a particular supplier demonstrated the use of configuration tools to generate a completely new design of screen. No programming was used to achieve this but the consultant repeatedly referred to the configuration as the writing of custom code which most people want to avoid. The users knew no better than to accept the views of the consultant and the supplier was marked down for use of custom code. In our view this is an unacceptable face of consultancy which gives the industry a bad name.

Many consultants have limited knowledge of only one or two systems and it may have been a while since they saw the software. They may also not have an inside track on what the next release holds / does not hold.

Some consultants provide implementation services for the system they encouraged you to buy in the first place.

Some consultants are IT oriented with little or no knowledge of the LIMS market or the systems that are available. This is obvious from the style of the requirements document that they will produce. Worse still they may not be familiar with laboratory operations.

Many consultants (particularly the bad ones) love producing colossal requirements documents. It looks as though they have done a mountain of work which they probably have but it is not necessary. They call them RFP’s (Request for Proposal) or ITTs (Invitation to Tender) to make them sound even more impressive. Remember a requirements document that only reflects current needs is just a snapshot in time.

Consultant fees are often a very high percentage of the total project cost. Can they be justified? Do you feel you got value for money if you have been through this process before? Consultants are paid for advice good or bad. Unlike you, their success is not in any way related to the success of your system.

Before hiring a consultant, ask to see what they produced for previous customers. If you do not understand the document, or it is just too huge to get through, or there are loads of standard paragraphs, look elsewhere. A requirements document should be a short clear checklist of what is essential and what is desirable. The most successful suppliers with better products simply don’t need to spend days preparing 200-page tenders for relatively straightforward systems. They have potential customers ringing them up all the time. So if you insist on a huge tender document from potential suppliers, expect to hear from the most desperate or more expensive suppliers, not necessarily from the best.
5. FINDING AND SELECTING A SUPPLIER

Four places to find some potential suppliers:

- Web sites via Google search.
- Via LIMSFinder web site or similar.
- User recommendations.
- Trade exhibitions.

Initial evaluation of suppliers

Ring them up! You can do a fairly rough cut at this first stage. You might reject some suppliers on the basis of size (too small or too big), or the suitability of the software. Be careful about company size as there are a number of LIMS suppliers that are large organisations where the LIMS activity is a minor part of their entire operation e.g. <0.5%. It is very easy to close down such an operation without having an impact on the bottom line unlike companies that rely on their LIMS business for company survival. In addition, it is also difficult to extract the business numbers and the growth figures when they are submerged in the accounts of the entire business.

Look for the companies that seem to be growing fast rather than the so-called market leaders. All business goes in cycles and market leaders can only maintain that position by continually improving their product and services. Typically, however, market leaders become complacent and arrogant.

You might easily conduct a series of telephone interviews – the suppliers should be able to answer promptly, grasp your needs and give ballpark costs. If they sound okay, invite them to visit. If they cannot answer the questions be careful.

The propaganda: Does the sales literature mean anything?

Sales literature is a primary product of the computer industry, or so it seems. Call a few suppliers and you will be knee-deep in brochures by the end of the week.

Some companies spend a fortune on glossy brochures but it is the fact sheets or features lists that are of most use to the customer.

"Best of breed"

This sounds excellent, as though the software has been checked out as "best in class" against all the others. In fact, it means nothing at all: the marketing department in a software company just made it up, and now everyone uses the phrase. No organisation (except Cruft's Dog Show) gives out "Best of Breed" awards.

The software is "approved"

No software provider can or should ever claim this. So keep the following statement firmly in your mind: There are no relevant BS or FDA standards or similar for LIMS software. You can write your own if you want and sell it to anyone.

The first meeting

Some people miss this stage and go straight to demonstrations. However, a sensible approach at the first meeting is to brief the supplier on outline requirements and allow the supplier to present the highlights of their product and explain details of their company and operation. A mini-demonstration could be useful at this stage.

A brief walk round your site will help a supplier to gain some background to your business. A good supplier should welcome this opportunity, or even insist on it.

If a presented system exhibits features that you had not thought about but now seem essential for your implementation, modify the requirements document and/or the demo checklist accordingly.
You could quite reasonably reach a shortlist of one even after a first meeting. You don’t have to pursue a handful of choices until the day before placing an order.

Your place or mine?

Surprisingly, some purchasers never visit a potential supplier. Don't miss out on this. A visit is your chance to meet the team including development people, support people and top management and even conduct an audit or get an overview of their quality management system and support systems. It is also quite fun and illuminating. You can have a good poke round their place and see their facilities. Ask for a tour around if they don't offer. Talk to their support people. Is their support area frantic, or does it look as though they could handle more queries (maybe yours) as well?

Does the facility portray efficiency? Do the people appear motivated? Did you see the number of people that you might have expected? It is much better to view this first hand rather than depend on numbers on a presentation or a proposal document.

The standard spiel

Try not to fall for this, but the supplier has done lots more demonstrations than you have. It is natural that they will want to show the strengths of their products, not the weaknesses. Agree an agenda: their slide show, corporate videos and so on shouldn't occupy all your time. Also make sure you see real live software and not just powerpoint presentations.

Getting the best from a system demonstration

1) Make sure that all attendees have a demo checklist that has been previously discussed and agreed and is based on the requirements document. Assign priorities to the various points on the checklist. Also ensure that all attendees have a notepad for additional comments and that they are not disturbed by interruptions.

2) Agree an agenda with the supplier but allow sufficient time. If the presentation and demo are good there will be more questions and these should definitely not be stifled.

3) If system configuration is an important issue with you, and it should be, then allow time for some exercises for the supplier to do live as part of the presentation. Do not pre-warn the suppliers otherwise the results will be presented as a done deal and what you should really be interested in is how the configuration was achieved and what skills are needed. Even better would be an opportunity for some of your staff to do some configuration under the supervision of the supplier during the meeting. Does this sound fanciful? If it does then you have not seen genuine configuration tools.

4) If you had a first meeting, the presentation should DIRECTLY relate to the points discussed, and NOT be simply a "standard demo". Ideally you should look for a presentation that includes a basic configuration to suit your requirements. This indicates both the capability of the system and the willingness of the company to invest time in trying to meet your needs at their expense. If a supplier just presents a slide-show with no effort made to configure a system and ends with a comment that you should buy their system because it is the market leader then we are into complacency and arrogance. You can do better than the market leader under these circumstances.

5) Deduct points if the demonstration runs too fast or too slow, or if it is too confusing, or if they cut you short when you ask questions, or if they don't understand your questions. Deduct loads of points if they don't actually show a real system: slide shows, diagrams, clever waffle and videos are used if the actual software is poor and slow - or even non-existent. Or if the supplier cannot be bothered to make the effort. If this is true pre-sale then what response will you get post sale?

6) Look at all contending systems in a short time span e.g. one week. Vendors always prefer to be the last to do the demo but this is normally because the attendees of demos simply do not take notes in many cases. How they later come to a conclusion is a mystery unless they had already made their decisions on a system and the demo process was just to show management that due diligence had been taken.
7) Who should attend the meeting?
Make sure that representatives from all of the various laboratories and departments are involved plus an IT person, a quality person and someone from top management who may be the sponsor of the project. Don't leave it entirely to the IT department. Sending a representative from every department avoids a system being the one that "you chose".

8) Precision. Don't be woolly about an important point: an assurance that a system "will handle several different sample types" is useless - it might "handle" them anyhow it likes. Exactly how does it handle them?

9) Be picky. Don't be brushed off with expansive things like "if it is good enough for ABC Limited it is definitely going to do all that you want, isn't it?" Don't feel awkward about being picky. But you shouldn't be awful to a potential supplier and "put them through the mill" for the sake of it - the good ones may decide that they don't need your business.

10) Check the checklist. Keep the checklist running particularly if you have revised what you want since a previous demonstration. If you add to the check list then make sure that the supplier that you subsequently choose actually demonstrates that feature point prior to purchase.

What follows a system demonstration?
One powerful and effective method is to evaluate up to three systems for at least one month on site. This will involve at least a partial configuration of the systems by the supplier and therefore it is appropriate to expect to pay for this work and the support during the month.

I can already hear some concerns being raised such as:

a) We don't have the time to evaluate systems.
b) We don’t want to pay for this service.
c) We need to be trained to use the system and this also takes time.

Answers to these issues are:

a) Make time as a proper evaluation will save time in the long run particularly if an implementation fails.
b) You will get far greater value from a system evaluation than you will from many of the consultants involved in the LIMS business. In addition it is a small price to pay to ensure that you are not making a mistake.
c) This is an excellent test of the configurability of the evaluated system and its ease of use. If it is intuitive then training can be minimised.

Professional and successful
Below are two real stories about two companies in the same industry that had active LIMS projects.

One of them created a requirements document that artificially locked out all the suppliers bar one. All of the others either declined to bid or spent much time submitting a bid that was doomed to failure. This approach is not only unprofessional but it also potentially ignores advantages that other systems might have that were unknown to the customer.

The other company reviewed all bids and selected three systems for one month evaluations paying approximately £5,000 (US$10K) to each of three suppliers. At the end of the three month process a supplier was selected. During the evaluation distinct differences appeared between the systems in areas such as system flexibility/configurability and one of the three required programming to add laboratory calculations. These issues are vital to the success of a project but would not have been detected by reviewing bids and having demonstrations.

Which company acted professionally and which company is most likely to have a successful LIMS implementation?
6. CLASSES OF SOFTWARE

Bespoke / custom software

This is software specifically written to meet your requirements and is typically a one-off programme representing a “snapshot in time” set of requirements.

It is an expensive route to take and potentially fraught with problems not likely to be found with off-the-shelf software. For example these are some of the questions to ask:

a) Are the developers going to be around in a few years time?
b) Who will support the software?
c) How many people know the software well enough to support it?
d) Will there be any enhancements?
e) Was the software developed using standards acceptable to regulated industries?
f) What happens if I want to take advantage of technology advances?
g) Will they commit to fix it if a new Windows service pack or version is released?

Some people won’t have anything to do with specially written or “bespoke” software. Others love the idea, and have actually commissioned their own software where an existing system would do the job. If you can’t find exactly the feature you are looking for, and it is important to you, it will have to be written specially. But you should commission it directly from whoever wrote the rest of the software, so that the supplier can make sure it all works correctly, and continues to do so with incorporating it in their next release.

In-house written software

This is also bespoke / custom software but written by an internal or out-sourced IT department. The most common problem encountered is the under-estimation of the coding task and the peripheral issues such as documentation. This means that the projects overrun the target completion time and consequently cost more direct money as a result.

The justification is often that we can do it faster and cheaper than an off-the-shelf package. Real estimates have been given to prospective customers of one programmer writing a LIMS complete with documentation in less than three months. This is just not going to happen for a full-function LIMS but it would be interesting to discover what is left out in order to meet the proposed delivery date. Perhaps these might be the more difficult features such as audit trailing and configuration tools?

The questions in the previous section are also relevant here and perhaps more so.

Pretend LIMS

For some strange reason some suppliers of ERP/MRP systems claim that their systems can provide the functionality of a LIMS or even replace an existing LIMS. If you want to track samples within the laboratory at a level that would meet audit requirements then this is absolutely not true.

Genuine LIMS

This is the area that includes LIMS suppliers.
7. REASONS WHY LIMS PROJECTS FAIL

Reason 1: "They said it was no problem!"

There can be spectacular misunderstandings at a demonstration of computer software. Usually the confusions arise because of the nature of software: you can't walk round it physically, pick it up, poke it, nor hold it against the light. There isn't much that is immediately "obvious" even to an expert. It is your responsibility to make sure that what you are buying is what you want. If a question is met with the answer that it is "no problem", it can mean that it costs extra. Whereas you might think that it is free. So, treat responses like "no problem" or "certainly, Sir" with caution. "But you said it would be no problem!". Sometimes even more ambiguous phrases can parry your difficult pre-sales queries "Absolutely!" or "It's certainly something worth thinking about!" don't actually mean "No".

Reason 2: I'm sure we talked about this before we placed the order!

You explained what you wanted. You had a good chat about your needs. Later, the supplier provided a quotation for a system. You might reasonably assume that the items offered cover everything you discussed. Wrong. Unless it specifically says so, do not make the assumption that an important feature is there. Send the actual users to see each important part of the software. You are free to express your requirements. A supplier is perfectly at liberty to offer something else. Software must conform to the supplier's specification and proposals. You must make sure that any additional or special requests that you make are unambiguously included, if you want them.

Reason 3: We just assumed it would do it!

Do not make assumptions about features that are important to you. Even a good supplier can't second-guess what you assume. This can trap the unwary, especially if you are moving from one system to another. As soon as you find a system that is better in several areas, the assumption can be made that it is better in every area. Maybe but maybe not.

Reason 4: But the OTHER systems do it the way we want!

Imagine buying a television set that couldn't receive BBC1. It just wouldn't happen. But with software, suppliers can define what they mean, and detail it in the small print that nobody reads. They don't need to say what it doesn't do. And just because several systems include a particular feature does not mean that another must provide it free of charge, unless advertised. YOU have to check that it is what you want beforehand. Caveat emptor: Let the buyer beware.

Reason 5: Insufficient resource allocated by the customer

Implementation of a LIMS requires the commitment of the customer as well as the supplier. The following are some of the tasks to be handled by the customer:

- Preparation and clear presentation of user & system requirements.
- Prepare scope for phase 1 of the project.
- Organise well defined decision making process
- Procurement and installation of hardware, operating system, database, network and peripherals.
- Attend system configuration/review meetings.
- Attend familiarisation training
- Attend formal training courses
- Provide clear requirements and supporting information for any system interfaces e.g. instruments, other computer systems and be available to help demonstrate and complete installation of these interfaces.
- Organise schedules for system manager and end-user training
- Develop operating SOP’s.
• Attend acceptance testing
• Data loading e.g. reference data such as test definitions
• System validation (if applicable)
• Roll out logistics

One real-life example is that a person in a customer company was allocated the responsibility of getting a LIMS running within the laboratory. Fine except that she was asked to allocate the last 20 minutes of each day to the task. This must be the worst 20 minutes of any day and hence the implementation did not go smoothly.

Reason 6: Loss of the Champion

Typically there is at least one champion of a LIMS project who sees it as a challenge and possibly a career enhancing responsibility. Again there are real life examples such as the person who took this responsibility in his stride and things moved forward at good speed. Suddenly, the Champion left the company and it was realised that the one thing he did not do was to make sure that there was someone available to follow in his footsteps either permanently or on a temporary basis – nor did he document what he did. The project stalled and valuable time was lost.

Reason 7: Uncontrolled changes

In a LIMS project it is important to make progress in a controlled manner. It is very tempting to suddenly veer off on a tangent realising that the LIMS can provide additional functionality that was not included in the original requirements. This destabilises the project and puts unnecessary pressure on colleagues and the supplier. It is good to keep track of the ideas however and this is best achieved by using a change control procedure.
8. CUSTOMER REFERENCES AND USER GROUPS

References

Asking for customer references is all the rage. Everyone thinks they have done a really thorough evaluation if they talk to a supplier’s existing customers, or even visit them. Some potential customers (or the bad consultants) even send letters to system suppliers saying, “Please list all your customers and their telephone numbers first of all”.

Seriously, it is reasonable to request references as you would with new employees. You would offer a job “subject to references”. In other words you would make your own selection first, then check to make sure. You wouldn’t check all the references from half a dozen candidates knowing that you were only going to offer the job to one. That would be unreasonable.

Most reputable suppliers will ask you to use the same approach. First, select your preferred system. Only then should you ask to speak to some customers to verify your choice. Don’t ask to speak to customers until you have chosen one. You will be wasting a lot of people’s time and using up a precious resource.

Ask references about the overall support they have received. Typical questions are as follows:
- How well does the supplier support the product on a day-to-day basis?
- Does the person answering the support call know the system?
- How does the supplier handle a reported bug?
- How organised are they with respect to shipping product upgrades?

From a supplier’s perspective users aren’t “our” customers - we are “their” supplier. It is an important difference. They are busy people. That is why they needed a system. They are not the supplier’s sales force and, no, they are not usually paid by the supplier.

Good and bad ways to check references

Actually visiting other clients sounds really useful, but often isn’t. You or your staff can easily be influenced by irrelevant issues. You may like/not like the people you meet, or your key issues are not relevant to them, and so on. It is much better to speak to several users by phone rather than making visits. You will get a broader insight by speaking with more users, and can expect more candid discussions that you would ever have face-to-face.

Responsible suppliers conduct customer questionnaires and a copy of this should be requested from the chosen supplier/s. One of the key questions in a questionnaire is “Would you buy this system again if you had the opportunity?”

User groups

The existence of a user group organised by users is a sign of poor support. Users have a need to help each other and lobby an unhelpful supplier or developer.

The existence of a user group organised by the vendor is encouraging as it very often shows that the meetings are more constructive and used to convey and exchange useful information e.g. new product details etc.

One way to get good references is to ask a supplier if you can attend a user meeting. This means that you can meet a lot of customers, ask very specific questions of any of them and/or the supplier, judge the mood of the users and see what new products and features are planned for the future. It also means that in the user meeting you are more likely to get a straight answer compared to a situation where a customer is acting specifically as a reference. This is a very powerful approach. The answer(s) will be automatically vetted for you by the attendees who may also ask important additional questions that you may not have considered.
9. SUPPORT AND MAINTENANCE

What is it?

Of all the innovations in the software industry, the invention of Support and Maintenance is the most galling for newcomers. They charge you for the system, right? Then they charge you the same again (albeit spread over a few years) just to sort things out if it goes wrong. They even charge you just to talk to the support staff and to fix errors (cosily called “bugs”) that they caused in the first place! Why isn't it covered under a guarantee? There are three main reasons:

1) It is an insurance policy to make sure that the customer gets good reliable service from the chosen system.

2) Your computer system holds vital information. So you could pay, as you need assistance. But a supplier would have no obligation to provide such a service without some prior agreement or "service contract" being in place.

3) Software from a reputable supplier is upgraded on a regular basis with new functionality which prolongs the useful life of the system. In addition, maintenance releases are issued to correct reported bugs. A development team is employed by the supplier to create new products and also to enhance existing products.

A vital issue is the upgradeability of the software. Some suppliers do not have an upgrade path commitment, others charge for upgrades and some introduce new versions which are incompatible with previous versions. Be aware – check the reputation of suppliers in this most important area as it dictates how long a life the system will have in your organisation.

Who is on the support lines?

You or your staff will need to speak to the support help-desk provided by the supplier. It is essential that you speak to someone who is experienced with the LIMS and who understands your application. You do not want to talk to a message taker or, even worse, an answer machine.

Do you get on with them?

Not many people check this. It is important. There will be problems or queries and it won't help to fall out.

How intelligent are they?

Do they "Get it" when you explain complex elements of your business and do they offer useful advice and sensible ideas?

How quickly do staff move on?

Ask about staff loyalty. Support is much better when the supplier staff has knowledge of the history of your system and your staff. The support of your system will suffer if the supplier’s key people move round, move up, or move on every year or so.

How many different types of software do they support?

The more different brands, versions and module combinations that they support the less expertise they can provide on just one of them - yours. After a few months, you and your staff may know the software better than they do, because you use it everyday and they don't.

By contrast, if you can get support from the software author, it should be a higher standard of support. They should have full copies or be able to show you their call logging systems and so on. You will need to visit their offices to do this.

Can you talk to programmers?

You shouldn't need to do this too often, but since your software is a series of instructions that some people (programmers) wrote down, it is quite reasonable and occasionally very useful to
have direct access to those people. Sadly, many programmers hide themselves away from the customers. Or they are in a different country and speak a different language.

**How urgent?**

Your support calls will often be for general non-urgent queries. But occasionally, if not always, you will need rapid action. So test how long it takes to get through to a human who can help (see above).

**Modem/ISDN/internet support**

This allows an authorised user to see and sort a problem without having to "talk you through" some convoluted computer commands by telephone. But if modem support is only an option, be careful in taking it unless it is cheaper. This approach can be very efficient if used in the correct manner and as one part of the total service.

**Disaster Recovery Insurance**

A rip-off, if you have system support and maintenance from the same company. Disaster Recovery is an additional charge in case something goes really wrong and you need support urgently. But unless you want some very special standby services, you shouldn't need it.

You might need a new main server, because the existing one got stolen, or blew up in an electrical storm for example. Maintenance doesn't cover theft, fire, willful damage and so on. Your normal business insurance should cover this.

A supplier should be able to supply a replacement system today or tomorrow morning. You shouldn't have to pay extra for this. They are getting an extra sale of hardware to you via your insurers. Note that you have paid for the software licence even if you lose your master copies. You don't need to buy that again. You will, however, need disaster recovery services to rescue data if you haven't got a useable tape backup of your data. You will also need to have strong words with the IT manager, or outsourced IT Service Supplier, if a back-up does not exist. There are no excuses for this situation.

**Escalation**

You won't need to do so very often, but how easy is it to get up through the supplier organisation armed only with the telephone and the fact that you are a customer? You should be able to get through to a director, or an equivalent who has authority to make something happen above and beyond the strict terms of the small print. (Like your customers can if they have a problem with your products or services.)

**Software upgrades included?**

This is not just a matter of one supplier who gives away the latest release and another charging for it. It should mean that your software supplier is improving the software in order to attract new customers, not as a ploy to arm-twist existing customers to buy upgrades every few years. Five years from now, you should get that current year's software. You shouldn't be forced into buying a complete new system ever again. Check this carefully as it is not true of all LIMS suppliers.

**Do check the costs**

Some suppliers charge 20-25% per year for software support and maintenance. Some charge extra for enhancements and upgrades.
10. THE HARDWARE

The software is important, the hardware less so. But what should you look for?

It is important to make sure that:

- There are alternative sources of supply for the hardware itself
- There are alternative sources of support, spares and service
- That you don't have to write off a large portion of your initial investment if your business expands. So ask how much it would cost to double/treble (whatever your plans are plus a bit) the number of users, the storage capacity, the number of sites or whatever else that just might happen. Test this issue above from a different angle. Supposing you do break all sales targets and have to replace the main system unit? How big a proportion of your initial investment does that represent? Obviously, it should be as small as possible.

Your hardware only really needs to be up-to-date enough such that the system is quick enough, has enough expansion capacity and that the spares are available and are likely to continue to be available. It shouldn't need to be this week's new launch for all this.
11. CHECKING UP ON THE SUPPLIER

Remember, you are buying products. If their products are lousy, it won't be much comfort that the supplier has a strong balance sheet, a high share price, or lots of money, including yours.

Size
Of course, they should not be too small a company. But even from a huge company, support is often dependent upon the abilities and attitudes of only a handful of their people.

You are not necessarily "safe" with a big company: you might be small potatoes. Heads won't roll if your system doesn't go as planned. The software is fine for others, and the supplier may have been supplying systems for years. Who are you to complain?

Your system purchase should ideally make you a significant customer of the supplier, although not the biggest by a mile.

Stability
Not the same as size. Several large multinational suppliers have simply withdrawn from the LIMS market. The smaller specialist companies have not.

If you are really worried about stability, you can have software held in escrow. This means that you get the source code if the supplier goes out of business. If the system is widely used amongst big and small companies the support function will survive even if the company goes out of business. The ex-support staff will form a new business!

Checking their accounts
This doesn't tell you as much as it might. Apparently even Microsoft scored only three out of five in a test of how likely they are to become insolvent. Several major USA Corporate LIMS vendors have either left the business completely in the last five years or have adopted new strategies more in line with their Corporate Strategy i.e. not in line necessarily with your strategy. USA Corporations usually will not or cannot release the actual numbers relating to their LIMS business – all you will see is the Corporate Divisional report at best.
12. PLACE THE ORDER

Hidden bits
Before you go ahead, make sure you know what the costs will be to get the whole system working or "First Year costs". Separately, make sure you know any recurring costs, like support and maintenance.

Be happy
You have to find a deal with which you are happy, but make sure the supplier is happy with it as well - alright, fairly happy. Remember this relationship should work for years. Don't be the one that cares more about the discount than the detail.

Buying on tick
Hordes of banks, leasing companies and brokers are falling over themselves to lend you the money to buy a system. You can usually finance a system over three or five years. Five years is a long time, and you will be fed up paying for "old" equipment four years from now. Make three years your limit.

You may be offered a lease, lease rental, hire purchase or other arrangements. Ask exactly what they mean. There can be tax advantages. But it is not "free money" as some would have you believe. It is essentially unsecured lending, because the system is worth a lot more to you than to anyone else. It is not like financing cars or buildings, which have much lower depreciation.

Compare the rates carefully. Some can seem cheap. But there can be "jargony" things like "three years, 3+35". This means that although it is paid over three years, there are actually 38 (not 36) monthly payments; but it looks like a nice low rate at first glance when compared against a "straight" 36 payments. Ask each finance company to quote the same "payment profile" i.e. the number and timing of payments. Check what happens at the end of the repayment period. With some contracts there can be terms that mean the system reverts to the vendor or finance company. Then they can take it away and make you buy another system, but you should have the automatic right to continue to lease/rent it for a peppercorn rent.

You may be able to "roll in" maintenance and support over the term of the lease. This protects against any price rises, and avoids the situation where you have to pay (in years 2 and 3) for the system and for support. You should get a lower annual support/maintenance price if the supplier is getting paid three years up front.

Installation date
Initial installation will probably be a few weeks from your order date. If you have to make lots of arrangements, you might want the order to stipulate the installation date.

Installation and acceptance
You shouldn't have to make a final payment for the system until it works. You might make specific requests in this regard. Don't be surprised if a supplier won't agree to payment terms based on "satisfaction". The system might do everything it should do without you being "satisfied". Similarly, the condition of "fully live" is not agreeable to a supplier since you might not ever use certain software features and hence never be "fully" live.
13. THE IMPLEMENTATION PROCESS

This section is intended to guide you through a typical system implementation process.

It is summarised below:

- Detailed review of project requirements
- Definition of project scope, deliverables and responsibilities
- Installation of core system
- Preparation of a Functional Specification (optional)
- Configuration, following a prototyping approach.
- Delivery of configured system (may be in several stages)
- Familiarisation training
- Delivery of instrument interfaces (if-any)
- Final review meeting
- Final acceptance testing
- Formal training
- Roll out tasks (various – project specific)

The following paragraphs describe each of these steps in further detail. No two projects can be approached in exactly the same way and the implementation process should be adapted to meet your local requirements. However, it provides a proven framework, to develop clearly defined responsibilities, goals and milestones to ensure joint success.

13.1 Resources, roles & responsibilities

As any project management textbook will testify, it is extremely important for a supplier and a customer to understand each other’s responsibilities and carefully plan sufficient resources for the project.

Table 1 provides a guide to how responsibilities are likely to the divided between a supplier and your organisation.

Table 2, provides a guide to the persons likely to be involved in the project and their roles.

Although many people must be involved in this process, most implementations stay on schedule if there is a single designated person who is the focal point of contact within the customer organisation. He/she should be empowered to make the decisions that must be made during the implementation task.
### Supplier Responsibilities

- Preparation of configuration & installation plan
- Prepare acceptance-testing schedule according to a mutually agreed format.
- Provide advice on roll out logistics
- Provide system configuration advice (hardware, network etc.)
- Deliver and install core software & documentation
- Organise configuration meetings according to a mutually agreeable schedule
- Prepare Functional Specification (if ordered)
- Design, configure and deliver instrument interfaces (if any)
- Design, build and deliver custom software (if any)
- Deliver configured software
- Provide familiarisation training
- Provide formal training (if ordered)

### Customer Responsibilities

- Preparation and clear presentation of user & system requirements
- Prepare scope for phase 1 of the project.
- Organise well defined decision making process
- Procurement and installation of hardware, operating system, database, network and peripherals
- Attend configuration/review meetings.
- Attend familiarisation training
- Attend formal training courses
- Provide clear requirements and supporting information for any system interfaces (if any) e.g. instruments, other computer systems and be available to help demonstrate and complete installation of these interfaces.
- Organise schedules for system manager and end-user training
- Develop operating S.O.P’s
- Attend acceptance testing
- Data loading
- System validation (if applicable)
- Roll out logistics

#### Table 1: Example distribution of project responsibilities

<table>
<thead>
<tr>
<th>Supplier Resources</th>
<th>Customer Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>Role</td>
</tr>
<tr>
<td>Sales person</td>
<td>• Primary commercial contact</td>
</tr>
<tr>
<td></td>
<td>• Non-technical problem resolution</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>• Primary contact for technical and project related issues</td>
</tr>
<tr>
<td></td>
<td>• Design and configuration</td>
</tr>
<tr>
<td></td>
<td>• Installation</td>
</tr>
<tr>
<td></td>
<td>• Familiarisation training</td>
</tr>
<tr>
<td>Misc. Technical staff</td>
<td>• Instrument interfacing (if any)</td>
</tr>
<tr>
<td></td>
<td>• Custom software</td>
</tr>
<tr>
<td></td>
<td>• Formal training</td>
</tr>
<tr>
<td></td>
<td>• System installation issues</td>
</tr>
</tbody>
</table>

#### Table 2: Example resources & roles

It should be emphasised that on the customer side, the personnel involved and roles listed are for guideline purposes only. For example the system management role may be split between the laboratory and computer department. The project leader may be a laboratory representative and become the future system manager.

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1. During the configuration of the LIMS and its subsequent delivery and roll out, there will be numerous instances where decisions will need to be made quickly and efficiently on behalf of your organisation, e.g. LIMS numbering systems, procedures, dates for training schedules etc.

SelimsV5
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13.2 Post Order

Immediately following an order the following activities should take place:

- You are sent an order acknowledgement
- A project file is opened for your project and you are allocated a project number
- You are sent various commercial documents including the software license agreement and software maintenance contract
- A project manager, who will be fully briefed by the sales person responsible for your order, is allocated to your project
- You are contacted to arrange the “first kick-off meeting”.

13.3 First Kick-off Meeting

The first “kick-off” meeting following the receipt of a purchase order should be attended by your LIMS project team, the supplier salesperson and the supplier project manager.

The meeting objectives are:

- Perform a detailed review of project requirements and scope (see also Functional Specification below)
- Verify the project pricing
- Agree the project deliverables
- Agree roles and responsibilities
- Agree the dependencies, project milestones and target dates
- Agree the basis for the end of project acceptance testing
- Perform a site inspection and install the core LIMS.

It is important that this meeting lays the foundation of our working relationship based on a mutual trust and understanding of each organisation’s expectations. The supplier project manager should summarise the information discussed in the form of a project plan, which should be formally agreed by both parties.

13.4 Functional Specification

Optionally, and usually at additional cost, a Functional Specification document may be prepared relating your user requirements to the proposed configuration of the chosen LIMS. Typically, this is carried out for more complex, perhaps multi-site projects requiring significant configuration effort. Preparation of the document follows an iterative approach involving several meetings with your project team culminating in a formal approval of the specification that becomes a controlled document. A System Acceptance checklist document can subsequently be prepared, cross-referenced to the Functional Specification for use in the final acceptance process.

13.5 Configuration

The supplier project manager will use the system tools provided to configure the system to meet your requirements using the information gathered from previous meetings (or the Functional Specification if ordered – see above).

Periodically, the project manager should invite your project team to review progress of the configuration and encourage you to comment on the "look and feel" of screens, menus, reports etc.
The challenge is to harness any new ideas where possible while keeping a careful eye on delivery times and project scope. The most common cause of projects falling behind schedule is allowing the definition and functionality to change. It is therefore important to allow only the critical new ideas to be incorporated into this phase of the project through change control procedures.

13.6 Interfacing of Laboratory Instruments

If your project requires linking of instruments and interfaces to other computer systems your Project Manager should work with you to develop suitable functional specifications for the work. These “mini” projects will often be handled by other specialists in the supplier team, in parallel with the main system configuration.

It is very important that you reserve time to assist the supplier team by gathering any information they may request concerning instrument operation, data exchange file formats etc. and be available to demonstrate instruments/computer systems as needs dictate.

Depending on the complexity of the work, system interfaces and special applications may be delivered some weeks after the main system. However, your Project Manager should be responsible for coordinating activities and resources to ensure all components are delivered in a timely manner to a mutually agreed schedule.

13.7 Installation of the Configured System

Depending on project requirements preliminary versions of the configured system may be installed on your site prior to release of the completed configuration. This should be discussed at the beginning of the project and your Project Manager can advise whether or not this will be practical in your particular case. This does allow review of prototype stages thus ensuring that the configuration and the supplier understanding are both on the right track.

When it is time to deliver the completed configured version, your Project Manager should contact you to ensure appropriate arrangements are made to successfully install the system. Typically this involves ensuring system hardware/networking/database components are in place and working prior to the installation. On the day of the installation, it is also strongly advised that someone from your IT department is on hand to assist with any network password/access issues.

13.8 Familiarisation Training

Once installation has been successfully completed, your supplier should train you and your staff on how to use the configured system, explaining the key project specific features. The system project team and perhaps key users should attend this meeting as your supplier will be anxious to clearly explain how and why the system has been configured in the way it has.

It is also important that relevant IT people attend a portion of the familiarisation training in order to learn how to appropriately administer the system including system startup, shutdown and backup. It is likely that the IT group will want to develop documented procedures for these operations and may have to update local network parameters and S.O.P’s to incorporate the new system.

13.9 Review Meetings

At the earlier familiarisation training session discussed above, your Project Manager should have encouraged you to develop a formalised system for harnessing and prioritising feedback from your user community. Your project team and the supplier project manager can subsequently review this information at the review meetings and, depending on project completion deadlines, decisions can be made to:

- Incorporate new requirements using agreed change control procedures.
- Postpone enhancements for a second phase of the project

It is in everyone’s interest to minimise project “scope creep”.
13.10  Data Loading

Once your system has “stabilised” your Project Manager will advise when it is appropriate to begin loading data into the system. This data will include test definitions, product definitions and any other static reference data. It is advisable to load only data that is essential to begin with rather than, for example, all the tests that the laboratory has performed in its history!

It is advisable that, whenever possible, this task is carried out by personnel from your organisation, as nobody understands your data better than you do. It is also an excellent way to achieve an in-depth understanding of how the LIMS works. Remember that ultimately this data has to be approved before use and that members of your staff will be signing off on sample analyses based on the data that is entered.

13.11  Formal Acceptance Testing

Final acceptance testing of the system based on the criteria agreed at the start of the project should be started promptly following delivery of the final system. If the optional Functional Specification route has been followed acceptance testing will follow the System Acceptance Test checklist generated from the Functional Specification.

At the acceptance test meeting, a member of your project team, authorised to accept the system on behalf of your organisation, should be present. Sometimes, it is more practical and agreeable to both parties to complete this stage by accepting the system pending resolution of particular, documented issues. This is a partnership and mutual success will be based on a degree of understanding and flexibility from both sides.

13.12  Going Live!

When the big day arrives to go-live, the supplier should be on-hand to assist with any last minute problems or issues that may arise. This may be via a telephone conversation combined with web access to the system.
ABOUT AUTOSCRIBE

Autoscribe Limited is a world leader in the development and supply of successful LIMS (Laboratory Information Management Systems) and software solutions for the scientific laboratory and business markets. Autoscribe originally pioneered its unique configuration tools for the LIMS market and today Matrix LIMS software is seen as the industry standard LIMS to which others aspire.

Founded in 1981, Autoscribe is a privately owned UK company. Worldwide we are represented by a network of business partners in regions including the USA, Canada, Brazil, South Africa, Kenya, Ireland, India, Pakistan, Malaysia, South East Asia / Indonesia, Pakistan and Australia. Our organisation includes a dedicated team of developers, technical support specialists and sales & marketing professionals.

Autoscribe offers a wide portfolio of standard LIMS and off the shelf, scaleable LIMS, fully configurable LIMS products for Stability Study Management, Training Record Management, Resource Planning, Nuclear Industry LIMS for District Surveys, Chemistry and Liquid Discharge, Water / WasteWater Management LIMS, LIMS for the Food Industry, Environmental Monitoring LIMS, RadioPharmacy and PET LIMS, Instrument Calibration and Maintenance, Sample Tracking, Customer Complaints and Feedback Management. All of these LIMS products can be fully integrated with Autoscribe's Matrix Gemini™ LIMS or may be integrated with home grown or 3rd party LIMS systems allowing customers to grow the system as their business needs change.

Autoscribe’s Matrix Gemini™ LIMS and our Scientific and Business software solutions are:

- Faster to Implement
- Easier to Use and Support
- Better by Design offering Better Returns on Investment
- Designed for Business Change

To request further information please email us at matrix@autoscribe.co.uk.

Our customers include leading analytical, oil, pharmaceutical, biotechnology, chemical, nuclear, water, biotechnology, food and consumer products companies as well as academic research institutes, hospitals and many others.

Autoscribe's Visions and Values

Autoscribe is dedicated to personal service supplied by a team of experienced LIMS software professionals. We have over 90 years experience in the LIMS and data management markets within the management team.

ISO 9001 certification was achieved in May 1997 and since that time ISO9001:2008 certification has been gained.

Our customers are always foremost in our mind whether it is in the context of service, responsiveness, quality or product innovation. We pride ourselves on offering on-time and on-budget delivery of systems designed to meet your precise needs. We are always able to offer fast responses, quick decisions and competitive, fixed-price quotations.

We never assume our markets will remain stable and, through the highest standards of communication and training, our employees and representatives are encouraged to extend the boundaries of excellence in everything they do. Good judgment, personal service, honesty and integrity are all an integral part of our culture.
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