Antiretroviral Therapy Software Selection and Implementation Process

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1 Overview

Treatment of HIV/AIDS is a complex process that calls for coordination of large numbers of people and resources. High on priority is management of information. Optimal treatment of AIDS requires good information on the current state of the patient as well as their past history of treatment and response to prior treatment. The software to manage Antiretroviral Therapy (ART) is known as an Antiretroviral Therapy Information System (ARTIS).

The "High Level Requirements" document outlines the complexity of the problem and how and the resources to address the issues. This document will outline the process of assessing resources, determining needs, selecting software, and implementation of the information system.

This document set includes tools that will assist the process. This Health Information System Assessment Tool, the High Level Requirements (HLR) Tool, and the ART Software Inventory. The use of these will be described in the context of the process.

The process of selecting an ART Information System (ARTIS) in the GAP/PEPFAR countries consists of the following steps:

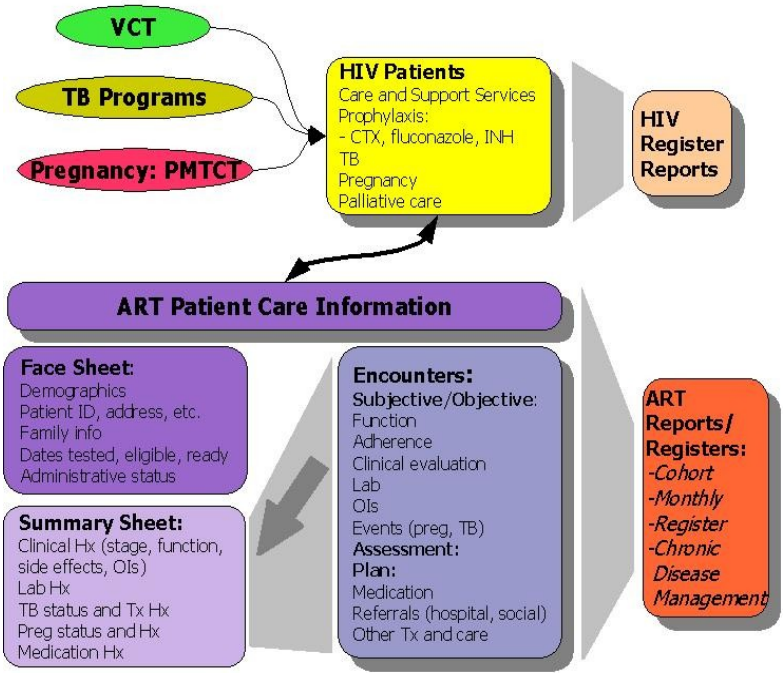
- Evaluate existing health information systems and resources. (HIS Assessment Toolkit)
- Produce a high-level requirements (HLR) document that describes the functional, system and operational requirements for the ARTIS based on interactions between ARTIS experts and country experts. (High Level Requirements Toolkit)
- Host a conference to review the documents with stakeholders and solicit feedback as to its accuracy and relevance to the conditions, resources, and needs.
- Survey and produce a list of systems and/or vendors qualified to provide the needed systems and services using an RFP process. (ART Software Inventory)
- Evaluate the list of potential systems and vendors and select those systems that best meet their specific needs.
- Create and execute a software implementation plan

To place the process in context, it is best to review the information context that we need to address.

1.1 HIV/AIDS Information Overview

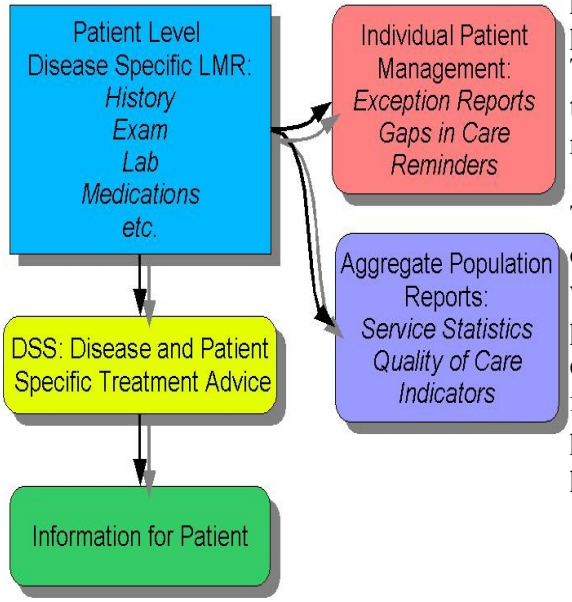
In order to give us a common frame of reference, this diagram shows the major information components of HIV/AIDS patient care.

Information Design for HIV Patient Care



One can see that HIV+ patients are identified through voluntary counseling and testing, TB programs, and prenatal PMTCT programs and others. From this a register of HIV+ patients is produced. This register is used to organize services for these patients such as TB care, pregnancy care, drug prophylaxis, and other care and support services. When patients become eligible and ready for ART care, they have increased information requirements including expanded medical history and exam information and individual patient encounter information to track detailed diagnosis and treatment activities.

Disease Management System



This rich electronic information environment makes it possible to improve the management of the patient, the program, and to better understand the treatment protocol. This disease management system uses the information in the electronic record to produce patient reports, program reports, and population reports.

The disease management system provides information both on individual patients to manage and improve treatment as well as the ability to aggregate information to measure project effectiveness through service statistics, quality of care, and program indicators. Access to aggregate information which will be used to evaluate treatment protocols and implementation effectiveness as a part of a process of continuous quality improvement.

2 ART Information System Selection Process

2.1 Assess current system and resources

The decision on HIV/ART software must be made in the light of a good understanding of the current state of resources. This includes an assessment of current information systems and infrastructure.

Communications infrastructure will have a large impact on the design and functioning of the ART information system. Most crucial is the human resources available to install, train, and support the ARTIS.

The HMIS Assessment Toolkit (included as part of this tool set) provides a method of conducting a systematic evaluation of the current HIS infrastructure. This should be done as a first step in the process. The ARTIS will build on the existing resources and infrastructure. It is crucial to know the state of the current environment before embarking on this project.

2.2 Determine needs

The High Level Requirements (HLR) document in this tool set provides guidance on the details of ARTIS software functions, platforms, communications environment, and data set. One should be familiar with all of these dimensions in order to make a fully informed decision. The ARTIS will build on the existing infrastructure and must be tailored to this environment as well as the specific needs of the ART program.

2.3 Specify software features

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2.4 Requirements document

After the HMIS assessment and specification of software features necessary in your environment. The HLR document in this toolkit can be used to prepare your own HLR customized to your particular environment.

2.5 ART Software Selection Parameters

Planning is critical to the success of ARTIS. The following sections provide guidelines on planning.

2.5.1 Functional Evaluation

Functionality (ART, PMTCT, TB, DM, Drug order/logistics, care and support services, OI, general medical care)

Features that are important to ART information systems include:

- Disease-specific information (AIDS, TB, malaria, STIs, other opportunistic infections (OIs);
- Family/community specific information (family support, family AIDS status);
- LMR of medical history, exam, lab, medication, OIs;
- Disease management guidance.
- Decision support;
- LAN and WAN support scalable;
- Paper forms support (patient summary, encounter form);
- Unique patient identifier tools;
- Patient information transfer;

- Core data element support

2.6 Project Planning

A good project plan is more than just a list of tasks, completion dates and assigned responsibilities.

There are a few simple but critical criteria for a good plan:

- *Key individuals in all affected departments must understand the approach outlined in the plan and believe it is the best way to make the decision.*
- They must agree to provide the resources required of their unit to conduct the project in the indicated time frame.
- To develop a good plan one should start with example task lists obtained from a variety of sources. From these a set of tasks should be selected that make sense to the users, are in a logical order and covers all the bases.
- You must also understand and document your requirements for the ARTIS. Use the High Level Requirements document and modify it to fit your specific environment.
- Sending out a Request for Proposal (RFP) at the beginning of a project may result in many detailed proposals to review. Screening system providers first based on major criteria and sending RFP's to a few finalists will simplify the evaluation task and result in a better evaluation.

2.7 Selecting Your Team

A small-dedicated project selection team of 4-8 people, where each member is assigned specific tasks should be adequate to conduct most evaluations. It is important to separate technical evaluation from management guidance and approval. The project team will conduct the technical evaluation of the systems and make recommendations to management at every major decision point.

2.8 System Provider Screening

An initial screening should be conducted from the list attached to this toolkit to eliminate system providers that are least appropriate for the organization.

Keep your list of system providers manageable (5 or 6 at most).

2.9 Preparation

Team members should read any material provided by a system provider before the representative comes in for a presentation. This will make each meeting much more productive.

2.10 System Selection Process

2.10.1 Sales Presentations

System provider visits should be scheduled and managed by the MOH/user organization.

Presentation agenda should be prepared by the MOH/user organization so that each system can be compared using the same criteria.

A major part of an introductory presentation is to learn more about the company and their:

- System technology
- Installation and support
- Customer base

2.10.2Preliminary Proposals

Even though a final configuration cannot be determined until later in the project, it is possible to obtain pricing information on a tentative configuration. Most system providers can produce a "budgetary proposal" with a small effort. It is very important that the user ask the same questions including quantities of hardware so that all system providers will propose roughly comparable systems. In guessing at the initial configuration, it is better to err on the high side rather than to under configure

The results of this budgetary proposal should be used to determine whether or not the preliminary justification was on track. If prices are much higher than suggested earlier, it would be legitimate to ask whether the original analysis is still valid.

No decisions should be made at this stage about whether or not a particular module will be used. All modules should be priced and included in the preliminary proposal.

2.10.3Finalists Determined

Sending out Request for Proposal's (RFP) and reading the responses is a time consuming job. As a result, the number of system providers receiving an RFP should be strictly limited. .

Finalists can be chosen through a simple matrix scoring scheme using high level functionality and criteria to judge the strength of the ARTIS provider (see next section). Only system providers that score highest at this level should be considered for detailed evaluation.

2.10.4Evaluation Criteria

Evaluation criteria need to be prepared at the very start of the ARTIS project to ensure that the appropriate questions are addressed in the RFP. See 'Criteria to be used to evaluate system provider responses' in Section 5. Note:Pricing should be excluded from the evaluation until a ranking based on system capability and corporate strength has been completed.

An assignment of weights and scores to various system features is needed to help with an unbiased selection process. These can then be totaled to come up with the final system provider ranking.

2.10.5Request for Proposal

A Request for Proposal is meant to ask the system providers what their system does and how they will handle your requirements. It should not be a System Specification. See sample RFP in Section 3 of this toolkit.

Asking questions allows the system provider to offer suggestions and demonstrate methods of operation that you may not have thought of during earlier stages of the process. The evaluating team has only to compare answers to the RFP and judge which ones they like best.

System providers should not be asked to rush their responses unless there is good cause. One to two months for a detailed response for a complex system is not unreasonable.

2.10.6On-Site Demonstrations

Live demonstrations of the ARTIS system allows users to find out more details about each system.

Demonstrations should be structured so each system provider addresses roughly the same topics. It is possible to expose a significant number of people - not just the project team - to the intricacies of each product. If certain aspects of a system are to be demonstrated at a particular time, individuals who have knowledge in these areas should be brought in to observe. The more exposure key individuals get before a system is installed, lesser confusion in its functioning.

2.10.7Site Visits

A site visit allows the user to see an instance of the application in use and understand the issues of installation and operation. It is valuable to learn how the system works in a comparable environment and talk to other users about their experiences.

2.10.8System Evaluation

At this step the evaluation criteria that were developed before the RFP's were sent out can be used. Very little additional material should be needed because the RFP questions were developed to collect the information the organization would find useful in comparing systems.

At the conclusion of this task, the team should have a tentative ranking of system providers along with a list of reasons why each was ranked as it was. The ranking is a numeric score and the reasons justify each score.

2.10.9Phone Surveys

For gathering further information on the system providers that scored high, the following are suggested:

- Talk to other users about specific details
- Conduct a structured survey of the 5 newest clients for each of the top ranked providers to discuss recent installation experience. Ask similar questions.
- Include open-ended questions that may not be provider specific but will give insight into installation experience and challenges faced.

2.10.10Follow-Up Site Visits

These visits are usually conducted on a selected finalist or the final two system providers being considered. Now that you are more aware about the details of each system, these visits allow for specific capabilities of the system to be observed that were missed earlier.

2.10.11Home Office Visit

Before a contract is signed, it maybe helpful if your managers and executives can meet managers in the provider organization to learn more about their organization. A major purchase cannot be made based solely on contact with a sales representative or marketing support analysts.

2.10.12Cost/Benefit Analysis

If necessary, a detailed cost-benefit analysis can be performed at this time. The aspects to be considered are:

- Exact system costs
- Complete descriptions of the systems capability
- The experience of other users - in terms of installation and operational costs.

2.10.13Ranking and Recommendation

With all of the homework accomplished, the team is in a position to recommend the top ranked provider for negotiation. Document the reasons/justification for system selection. Aspects of justification that can be accomplished during each phase of evaluation are shown in the accompanying Figure.

Summarize the work to-date so it can be presented to your business executives and if necessary board members.

2.10.13.1Evaluation Criteria

Systems that are being considered for deployment shall be evaluated according to the following criteria:

- **Functional design/soundness:** This area looks at the overall suitability of the proposed solution with respect to the functional requirements laid out in the RFP. System developer/system providers should be asked to rank the functionality provided by their system against a matrix in the HLR. For each line in the matrix they should be asked to specify if a)the system provides the functionality, b)can be customized to provide it at additional cost c)does not provide the functionality.
- **Software Technology:** This criteria evaluates the suitability of the proposed software packages in terms of meeting the technical requirements and the ability of the platform to meet future needs. The system should be compared against the System requirements for this category.
- **Hardware:** This area considers the hardware requirements of the specific system. The intent is to ensure that the system does not need any specific pieces of hardware that may be difficult to procure in the country.
- **Support:** Support is an important factor and the system provider needs to be able and willing to provide the requisite support both during deployment and once the systems are live. Each country should ensure that the system developer or system provider has a mechanism to provide long term support and that they have resources that are reasonably accessible. The supplier should be prepared to train users (or train the trainers) and train maintenance staff.
- **Security:** The ability to control access to the system functionality and data is a critical capability. The system must be able to provide access to those authorized to receive particular access and to deny access to all others.
- **Cost:** The cost factor is evaluated based upon both the price quoted and our confidence in the respondent's ability to stay within the required limit. We also consider the total cost of ownership including ongoing support costs, both paid directly to the system provider and

incurred internally.

- **Time:** How long would the system provider take to deploy the solution and how soon after getting the go-ahead could they begin work.
- **Process:** This area refers to the development methodology and deployment employed by the respondents.
- **Company Focus:** Here we examine the potential system provider's business from the point of view of determining how committed they are to the public health and clinic environments and how viable they are as a system provider.
- **Clients/Pedigree:** This area looks at the suitability of the system provider from the point of view of the kinds of clients they have been serving, their ability to satisfy the needs of those clients and the similarities between those clients and the MOH countries.

2.10.14Contract Negotiations

- Contract negotiations almost always take longer than anticipated. The only way to make this task go quickly is to accept the standard contract with few changes. Significant changes must be reviewed and agreed on by executives and lawyers from both sides. This process takes time.
- A good contract is the culmination of a sequence of well-planned evaluation and selection tasks. It is the formalization of the understanding between two parties and must describe - in user terms - exactly what the system provider is proposing to install.
- Lower ranked system providers should not be ruled out until an agreement is signed.

2.10.15Board/Senior staff Presentation

The final presentation to the Board of Directors/senior staff includes a simple overview of the selection process and resulting recommendations.

2.10.16Conclusion

Selecting an ARTIS is a complex process that needs to be carefully planned. The list below can be a useful checklist for this process:

- Develop Project plan
- Assemble System selection team
- Short list system providers
- Invite system providers for presentations
- Preliminary proposals
- Finalize 2 or 3 systems
- Detailed proposal from final system providers
- schedule system demos
- select System according to evaluation criteria
- negotiate contract.

3 Software Implementation Plan

After all of the work to date, the software implementation process is the most important. There are a few things to keep in mind.

Keys to success:

- Manage a project; do not let it manage you.
- Develop a risk /contingency plan for unexpected events.
- Build teamwork, consensus, and ownership;
- Manage change.
- Educate, communicate, and motivate the team at the clinic.

Reasons for marginal or failed implementation:

- Poor planning
- Lack of project management and oversight
- Ineffective management of personnel
- Limited focus on the change process
- Over-reliance on the system provider for support, skills, and resources.

3.1 Project Planning

The following are important aspects of planning for a successful installation:

- Realistic expectations.
- Determining the needs and wants of the customers
- Realizing system provider capabilities
- Forming an appropriate project team
- Understanding the effect of outside parties on the project.

3.1.1 Project Team Skills and Availability

The project team is responsible for developing a detailed project plan, managing the project, and assigning tasks to specific people with completion date lines.

Coordinating efforts:

The person assigned to a task is responsible for completion of the task on schedule, reporting progress, and problems as they occur, informing the project leader so as to stop it does not adversely affect the total project.

Items to consider regarding the makeup of the project team:

- The number of people needed on a project team depends on the size of the institution and the

complexity of the implementation project.

- A few individuals may need more training, mentoring, and assistance to complete their assignments.
- Involve personnel from every section with the ARTIS, including billing, medical records, Information Systems (IS), pathologists, and clinic administrator(s), should either be on the team or used as resources for expert advice.
- Regular team meetings are important tools to share information and develop a spirit of teamwork. The project leader should minute meetings and publish accomplishments and assignments.
- The project leader can be from Information Systems (IS) or the clinic if he/she has the necessary skills and attitude. The project leader should be multifaceted to achieve success. The leader should have:
    - Expertise in the area the system is being installed
    - Leadership skills
    - Interpersonal skills
    - Ability to relate to people at different organizational levels with diverse views of the project, such as administrators, clinicians and social workers.
    - Consideration and respect from other stakeholders
    - The authority to encourage people to work together to complete mutually set goals

3.1.2 Customer Needs and Wants

- Customers include direct users of the ARTIS and those affected by implementation of the system. They include user within the organization, consulting physicians, physicians' office staff, nurses, medical records, billing and finance departments, IS, administration and others.
- Solicit input from customers when possible; all needs cannot be customized, but one or two choices can help them work within the system.
- Keep customers informed about the project, providing periodic updates on progress and changes.
- Provide formal training and follow-up to your customers, and inform people that your customers are involved in the project and process of their involvement.
- Celebrate Early Small Successes
- Arrange for early small successes in your project plan. Celebrate successes as they occur and give credit to those responsible. Ensure that you have identified significant and visible milestones relatively early in the project to allow the project team to enjoy accomplishments.

3.1.3 The Project Plan

Installation is a technical process and implementation is a people process. System providers provide an installation plan, called thus because system providers are installing a system. However, the clinic is implementing a system, which is not just placing the hardware and software and physically installing the computer, but also making it work within the department and fitting and changing workflow to fit the system.

- Start with the system provider's plan, carefully examine it, modify it, and add to it so the plan includes the clinic's needs and objectives.
- Present the mutually acceptable plan to clinic management; concensus has to be reached on the plan, process, and a timeline that is achievable within the ability of all parties to meet their commitments.
- Identify and schedule resources to implement the plan. Typically you will need representation from the clinic and from IT. The team members should include personnel who understand clinic processes as well as those who understand any IT related constraints that exist within the organization. Additionally there should also be some representation from management.
- Involve the stakeholders in the team and inform stakeholders of progress and potential problems and give them opportunities to help or provide support. Confirm Available and Scheduled Resources.
- Confirm your resources. When tasks are assigned, make sure that available resources are adequate to the task. A good project plan will help, but be ready to adjust the plan by adding resources or shifting tasks to prevent delays.
- Do not underestimate the time needed to make decisions. A decision might be clear to the project team, but adequate time must be allotted to go through all departments that may need to be involved.

Understand Other Projects

Information technology projects can be highly interdependent. Even if the clinic is managing the ARTIS implementation, IS will have significant influence and a direct role in the project. Make IS a part of the key project team and work closely with the project team to understand their priorities and plans.

Staying on Schedule

Although a quality outcome is the number one priority (and typically is stated as the number one measurement of success), success also may be defined in some cases as meeting a predefined schedule. If you are given an opportunity to develop a plan and set your own schedule, it will be much easier to meet that schedule. If you are given a schedule to meet that is not in your control, you will need to manage both the project and the expectations of the stakeholders to be successful.

Stakeholders must be kept abreast of progress and potential problems. Be proactive. Keep everyone informed about the project, especially potential schedule delays and give them the opportunity to help. explain and state the causes of Schedule delay.

The reasons for delays in a schedule are as varied as the tasks necessary to make a project successful. Experience shows that delays usually are a combination of factors; however, inadequate management of the project is a factor in most. Sometimes external factors or other conditions totally outside the control of the project team contribute to delays. When planning the project, identify as many of these factors and outline contingency plans for those possibilities.

3.2 Project Management

Project management is both a discipline and a tool to help plan and manage the work associated with implementation. To manage a project, first have a detailed project plan outlining the tasks necessary for project objective achievement (in this case, implement ARTIS). Tasks are laid out in the sequence in which they must be started or completed. It is this logically organized plan that will guide the team

through the process of implementing ARTIS.

Although specialized tools and terminology are available to help layout and manage the plan, some simple steps are key to successful project management.

These include:

- Task description in terms of the expected outcome (what the task will accomplish) and deliverables (how to show that the task is complete).
- Assign tasks to a responsible person (task leader) to ensure task completion.
- Estimate and document time and effort required.
- Assign completion dates to tasks.
- Task leader should report regularly on the amount of effort expended toward task completion and the percentage completed.
- Expect corrective action by the project manager if a task looks like it may exceed the schedule (more time or effort expended then would be expected based on the percentage completed).
- The project manager ultimately is responsible for working with the team and task leaders , providing skills and knowledge to complete tasks. It also is up to the project manager to keep senior management and the stakeholders informed of tasks that may be delayed or might otherwise affect the schedule or the quality of the project outcome.
- Project plans are dynamic. When a project is started, especially with a new product and new system provider, learning does take time. As you learn, the project plan may need to be altered; tasks added, change plan, modify tasks, move task or reschedule it.

3.3 System Provider Relationships and Management

A number of issues must be considered when working with the system provider:

- The project manager should manage the project and system provider. Keep in mind that the system provider is part of the team, but responsible for overall management of the project and delivery of the end product.
- Assign tasks to the system provider and get them to report back with their progress toward completing those tasks.
- Define in your project plan the tasks the system providers are to complete and the completion date. If possible, this detailed plan should be part of the contract so there will be no chance of misunderstandings about task assignments and completion dates.
- Monitor the system provider's progress to determine whether the escalation protocol needs to be invoked.
- Avoid being confrontational with the system provider.
- Include the provider in the decision process—keep them informed and involved.
- Remember—the clinic is forming a long-term partnership with the system provider.

3.4 Education and Training

Everybody needs training on the ARTIS at some level. The amount and type of training needed depends on the role the person will have in implementation and use in performing job tasks.

3.4.1.1 Training plan suggestions:

Timing of the training is critical.

After the formal training, provide time for staff to acquaint themselves with ARTIS.

Review clinic policies and procedures during training and answer questions about performces that person's job requires of the system.

Review downtime and recovery procedures and make them part of the training curriculum.

Include ongoing ARTIS training after the system goes live.

This includes training for:

- New employees
- People taking different jobs in the clinic
- Refresher training of the staff.
- New ARTIS modules and functions

3.4.1.2 Testing and Certifying the System

When testing or setting up the test to certify the system, emphasize the areas of greatest risk. Concentrate testing on unique areas or functions that differ from other systems, such as custom tables and interfaces.

- Test initial patient registration entry.
- Test follow-up visit entry.
- Test drug regimen entry.
- Test laboratory test entry.
- Test normal operations and department procedures and daily, weekly, monthly and annual functions.
- Test failure situations, i.e., whether bringing up the backup automatically restores data, supplies correct information and restores all information.
- Test troubleshooting procedures so people know what to look for, how to fix it, and how to tell when the interfaces are down.
- Also test support procedures.
- When writing a test plan, attempt to create failures, not just validate operation.
- Use stress testing: type in data that should not work and see whether it comes back as an error, brings down the computer, or continues running.
- Perform some level of load testing before accepting the system and going live, is one area of classic failures, and the system will not perform well and be too slow.

- Freeze system changes during testing.
- Do not test while developing or building tables and training people.
- Re-test and re-validate after changes are made.
- Testing is not only for software, but for product quality, setup and tailoring.

The bottom line is that you are validating that the system created and installed can be used in your environment without unacceptable risks to the patients. A plan for testing and validation should be practical and creative. Think of ways to test when multitasking. For example, as part of the training program, have different trainees enter hematology, chemistry and microbiology data at the same time to test the system.

3.4.1.3 Data Conversion

Data file conversion is needed when:

Going between platforms on the same system

Moving data from one system to another.

Data may be taken from manual files and entered into the system. Data can be converted by an automated or manual method.

To determine if all data need be entered into the ARTIS consider a few factors, e.g., how the data will be used in your current system, as well as regulatory agency requirements.

Test the conversion when converting files between platforms on the same system or bringing data from one system to another. Do not convert a large number of files at one time—test sample, validate data, check that the patient's name matches all data and tha all data elements come across in the expected fields, then convert batches of the data.

3.4.1.4 Operational Readiness and Going Live

Evaluate whether the ARTIS is ready to go live, these could be considered as key guidelines:

- Installation and testing are complete.
- Hardware, networks, interface devices, operating system software and application software have been installed and tested.
- The database is completely tested, files are converted and tested and system testing is complete and documented.
- Load testing is completed; backup recovery is tested and documented.
- Procedures are validated and documented: normal user function, file and dictionary maintenance, system operations, report handling and distribution, support, maintenance, manual backup procedures and recovery and validation.
- Training is complete for users, operational staff, support staff and customers.
- Notify everyone of the intention to go live.
- Verify the timetable, exact sequence of events, and potential effects of these events on the user.
- Freeze the system; no more changes

- Publish the timetable and get sign-offs from upper management and all involved departments.
- Develop and publish a detailed activation plan. This plan includes every step from the time you start to bring the system live - steps to turn off the old system, the point at which to change over, the time to stop entering results in the old system and the time to start the system..
- Maintain the ability to go back to current operations. Manual procedures may have to be used during conversion when both systems are down for the switch.
- Set up a place for people to go with problems. For a 24-hour operation, it should be staffed 24 hours a day. The use of "trouble tickets" will document the problem and the time it was fixed. Make sure the decision makers are available from start to system stable; in case of a crisis situation, decision to go manual may need to be made.
- Now your planning could be considered complete and the team confident, rested and ready to go. Months of hard work has finally come to fruition; get the staff excited about the implementation.

3.5 Ongoing Maintenance

After installation, the continuing success of the system depends on continuous monitoring, communication, and training. The project plan should include post-installation responsibilities, e.g., installing subsystems that were on hold, functions and features not yet installed, and dealing with problems in a particular feature that has not been fixed before going live. The result may be a less than optimal system and all the success factors may not be met.

The quality of implementation is forever; it never stops. ARTIS managers continue to:

- Perform file maintenance
- Bring up other functions
- Update hardware
- Audit the system regularly
- Perform customer satisfaction surveys
- Keep maintenance and problem logs
- In-service education.
- Participate in user groups.

Top 10 System Selection Mistakes

- Not using a structured process
- Not defining needs beforehand
- Hiring a consultant with bias
- Paying too much attention to bells and whistles
- Not including key users in selection process
- Buying more than you need
- Allowing system providers to drive the process
- Allowing those outside of the clinic to choose the system

- Confusing the salesperson with the product
- Not using an RFP process