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FINAL REPORT

**CONSULTANCY TO ASSIST IN THE DESIGN OF MANAGEMENT
SYSTEMS FOR THE GOVERNMENT OF KENYA PUBLIC
PROCUREMENT OVERSIGHT AUTHORITY (PPOA)**

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SECTION 1

Detailed Description of ICT Deliverables

ICT NEEDS ASSESSMENT

This stage will involve evaluation of PPOA's ICT requirements and will be divided into four sections as described below.

ICT Requirements Necessary to Achieve Communication Objectives

- communication infrastructure – LANs, PABX, e-mail and Internet connectivity, fax machines, use of ISDN lines, use of GSM lines
- operating systems for servers and client computers
- computing equipment – desktop computers, UPSs, laptops, printers, photocopiers, scanners, servers, tape drives, air conditioning for the server room, and other peripherals
- personal productivity tools – word processing software, spreadsheet software, simple database software, presentation software
- corporate communication software – e-messaging software, Internet connectivity and management software, basic Web site specifications, Web site server, and database servers
- security hardware and software – firewalls, enterprise-wide antivirus software, anti-spamming software, intrusion detection software, password policy management software, access control systems for the server room and other areas, redundancy for servers, redundancy for LAN components
- performance management and support systems – helpdesk system for IT, LAN management software, automated software distribution systems, remote control systems, space management systems for the server, automated backup for client computers on the LAN

ICT Requirements Necessary to Achieve All Management Objectives

- financial management software – general ledger, chart of accounts, budgeting module, accounts payables, accounts receivables, cash management module, commitment accounting module, and reporting modules
- purchasing module – planning and costing, supplier database, requisitioning, order processing, blanket orders, invoices, credit memos, purchase journals, item journals, item reclassification journals
- stock management software – receipt of consumables, storage of consumables, issue of consumables, stock take module, reports and printing of accountable documents
- payroll – database of employees, tracking of loans and other advances, statutory deductions, overtime, pay slips, statutory deductions
- human resource management – management of recruitment, probation, promotions, training history, succession planning, performance evaluation, leave and absence management, documentation management, e.g. warnings, recommendations
- transport management system – database of fleet of vehicles, tracking of recurrent activities like service, insurance, licenses, accident reports, fuel and spare parts management, mileage management, work schedule for vehicles

- facilities and services management – database of suppliers for hygiene and sanitation services, air conditioning systems, database of contracts, performance indicators, performance evaluation against contract terms module, document management, renewal advice alerts, reports
- records management – workflow planning, scanning of documents, searching and filing, output into optical and other media
- file servers – management of data repository for departments and individuals, rules for storage and access to information, backup of data, archiving of data, security for data
- dashboard – database of key performance indicators per section, definition of various levels of performance (good, average, poor), list of key metrics (financials, training parameters, no. of cases administered by the R&A Board, compliance parameters, Resource Center access parameters), linkage to various data sources (financial module, Web site, review, and Appeals Board system), management reports.
- computer-assisted audit tool – utilities for carrying out queries and analysis of information in various business systems from payroll to the dash board, reporting module, archiving module

ICT Requirements Necessary to Achieve Mandate of PPOA

- Web site – dissemination of information, secure information log-in, subscription page for PPOA publications and reports, online collection of information from procurement entities, online recruitment, statistics section
- monitoring and evaluation – system to manage coordination of procurement by entities, system to manage information gathered from field-visit M&E exercises, annual audit reports for procurement entities
- training and capacity building system – database of procurement professionals in the country, database of institutions certified by the Authority to offer courses, database of courses available to professionals who have been certified by the Authority, analysis of performance of registered institutions, course attendance, frequency of courses, attendance at courses, adherence to curriculum, analysis of procurement professionals' continuous education performance, mailing lists of procurement professionals (making training materials and other updates available, notifying students of relevant courses or seminars)
- review and Appeals Board system – Help Desk system that logs all cases lodged with the R&A board, tracks the status of each case, the team assigned to each case, dates for each case, and rulings of each case, and provides electronic copies of documentation and proceedings
- Resource Center management – library management system for books and other hard copy materials, e-library system for materials that are available electronically

Procurement and Implementation Strategy

- development of hardware specifications – for servers, desktops, printers, scanners, photocopiers, UPSs, and other peripherals
- development of software specifications – for operating systems, personal productivity tools, business automation applications (financial management systems, payroll, procurement systems), and other applications

- development of infrastructure specifications – bandwidth requirement, optimum server capacity, intranet and Internet requirements that can support the system, PABX specifications, routers, switches, firewalls, diverse routing for redundancy requirements
- development of technical evaluation score sheets for hardware, software, and infrastructure – will indicate what parameters are evaluated through proposals, demonstrations, and site visits and which items need to go through the demonstration and, if necessary, the site visit evaluation stage
- development of implementation and configuration parameters for hardware and software – security settings, functional settings, redundancy settings, backup settings, and customizations to suit the Kenyan environment
- development of commissioning checklist for hardware and software implementations – provision of installation CDs, cloning CDs, license and warranty documents, documentation of network, inventory list of equipment, documentation of configuration parameters, basic administrator training for equipment like the PABX and photocopiers, system manuals handed over, documentation of customizations
- development of critical parameters to be captured in service-level agreements for hardware and software maintenance – turn around times, replacement of equipment, escalation matrixes, incident management procedures, reporting parameters, priority equipment, quality of service parameters (for Internet connectivity), denial of service penalties
- development of disaster recovery management parameters for hardware and software – backup plans, off-site backup, disaster recovery management, testing schedules, synchronization between onsite and offsite equipment, synchronization between live and standby equipment

BUSINESS PROCESS DIAGRAMS AND DEVELOPMENT OF ICT FRAMEWORK

The objective of this exercise is to identify business processes required to operationalize an effective PPOA. This phase of the assignment will be undertaken in three phases as described below.

Establish Currently Existing Business Processes

This will be in the form of an interview of existing officers of the PPOA and is intended to:

- obtain a full understanding of which processes are being undertaken
- obtain an appreciation of the volume of work in each process
- understand the complexity, repetitiveness, and routine nature of each process
- identify existing data and information that will need to be catered for in the transition from manual systems to automated business systems

Design of Required Business Process for an Effective PPOA

Based on the first exercise, the consultant will identify the gap between existing business processes and automation of the business processes. The envisaged automated business processes will then be discussed with PPOA to establish a common understanding of the impact

of automation on operations and the general trend of automation, especially in terms of collaboration, security, and linkage with Internet applications.

Once common understanding of the automation of business processes has been achieved, a few business processes will be mapped out in detail.

Development of the Final Business Process Diagrams

Due to time limitations imposed by the project (six weeks), only a few business processes identified in the preceding exercise will be developed into detailed business process diagrams. These selected business process diagrams will indicate the workflow process and the information flow process across business application platforms and interaction with Internet applications.

This will be important to demonstrate benefits to be leveraged from automating systems and will build the foundation for the proposed ICT framework. This will then assist in developing appropriate specifications

Development of ICT Framework

The purpose of the business process diagrams is to analyze requirements of the Authority, evaluate common data requirements across the network, and develop an ICT framework that addresses all concerns and requirements identified by the selected business processes that will be representative of the Authority's operations.

DEVELOPMENT OF ICT STAFF TRAINING FRAMEWORK

The development of the ICT staff training framework will be divided into two sections, as described below. One section will cater to the requirements of the ICT Department and other will look at the requirements of the end users.

ICT Capacity Building for the Advisory Board and Senior Management

Training at this level is targeted at building a common understanding of the ICT strategy at board level and ensuring that appropriate structures and resources are available for executing the ICT strategy.

It is important that at the topmost governance structure of the Authority, directors and managers have a clear vision of ICT projects and initiatives and are able to prioritize the same or phase them out, depending on the requirements of the business.

ICT Staff Training Framework for ICT Department – Administrators

The ICT Department will be the facilitator of business process applications. It will be responsible for managing the implementation of projects. This will require that it has knowledge in the areas of:

- communication of user requirements to successful vendors and service providers
- system testing in conjunction with users

- ensuring system documentation is available and comprehensive
- original licenses are provided
- warranties and other manuals are available
- first level of staff training

Over and above these project-related tasks, the ICT Department will be responsible for daily activities that will necessitate knowledge in the areas of:

- management of change requests (permissions, configuration parameters)
- incident management and resolution (Help Desk)
- backup of systems
- disaster recovery
- updating of system documentation
- application of service packs and other patches

All areas pertaining to the business process systems will be identified and specific ICT Department training needs will be highlighted for consideration during implementation of systems. Training will also consist of refresher courses to keep information current.

ICT Staff Training Framework for End-Users

End-users are owners of business process applications and they will require extensive training on how to best use the systems that will be implemented. This training will be designed to ensure that end-users are not only aware of what they need to do in their respective functions, but also how the information they receive from other functions is generated, and how information they produce is used by the next function in the process.

This ‘more-than-you-do’ knowledge transfer system is recommended for developing a knowledge-oriented organization, where staff engage their minds when undertaking tasks as a result of understanding their role in the bigger picture.

All the business process areas will be identified and the staff who need to receive training in each of the areas will also be stated.

SECTION 2

Business Processes and the ICT Framework

LINKAGE BETWEEN PROCESSES AND ICT FRAMEWORK

The business processes within PPOA can be categorized into two areas: those processes that relate to the administrative side of the business and those that relate to the mandated functions of the Authority.

The diagram on Page 9 summarizes the business processes and systems that have been identified in these two areas. The diagram also includes the subdivisions of these processes from an ICT implementation viewpoint.

The purpose of this section of the document is to analyze the business processes and establish the requirements for:

- integration
- collaboration
- volume of information requirements
- common types of data format
- Internet applications
- extranets that link with the general public
- extranets that link with contractors (due to outsourcing initiatives)
- internal and external security

The ICT framework will be based on the business process automation requirements that will become evident after the analysis of a few key functions.

ROAD MAP OF THE BUSINESS PROCESSES

The next section presents an overview of the business processes at PPOA. These have been broadly classified as administrative processes (finance, human resources, inventory management, procurement, transport management) and core-function business processes (research, monitoring and evaluation, policy and legal, capacity building and training, compliance and enforcement),

Figure 1 on Page 9 represents a summary of the processes and goes further to divide them as follows:

In administrative, there are those functions that:

- need to be integrated in the framework of an ERP
- those that are stand-alone and only need minor interfaces to the ERP

In the business processes of the core function, there are those that:

- need to be deployed using Internet applications

- can be deployed on a non-Internet platform, but require collaboration with the Internet for purpose of posting updates

Some processes, like procurement, are unique and will need to be fully integrated with the ERP, as well as having some modules available as Internet applications.

Administrative Business Processes

The first area deals with administrative business processes. This area will be responsible for:

- workflow process management
- financial management
- basic HR and payroll
- inventory management
- transport management system
- procurement management*
- contract and facilities management
- HR and performance management system
- e-mail and Internet access systems
- document management
- systems audit management
- ICT systems management
- ICT Help Desk system

*The procurement management system will allow for e-procurement, such as advertising, specifications, notifications, status management of various tenders. The e-procurement system will also manage e-recruitment – advertising, forms for filling in details and submitting scanned certificates and letters of application, and undertake the preliminary analysis of submitted applications and short-listing.

The above business process will be governed by an integrated business application system also known as an enterprise resource planning (ERP) system. The rationale for having an ERP to manage most administrative business processes is to ensure there is no duplication of activities; this, in turn, will reduce the incidences of errors and inaccuracies in transactions.

An ERP will also provide for online workflow processes that will ensure effective use of staff resources by automating and tracking all transaction, including authorizations. The system documents will be customized to allow for printing of manual documents where manual signatures are required for audit purposes.

Some business processes do not require integration into the ERP. These will include processes like:

- the HR performance management system
- the automated audit tools for internal audit
- the ICT systems to manage the infrastructure

However, the non-integrated systems may require access to information from the ERP once in a while. This can be facilitated through various interfaces.

Core Mandate Business Processes

The second area is responsible for the core functions of the PPOA and will have business processes that include:

- training and performance management systems
- research management database
- monitoring and evaluation/analysis systems
- Resource Center
- Web site content management
- Internet information and security management services
- capacity building management systems
- Resource Center (hard copies, videos, CDs)
- policy and legal management documentation center
- review board management systems

Business processes in the second area will mostly be managed through Internet applications (I-applications) but even those processes that are primarily PPOA bound will have Internet links for purposes of posting:

- updates in registered training institutions for PPOA-approved courses
- training calendar updates
- reports and results of relevant research
- update on the status of review board cases – logged, coming hearing session, ruling given, link to summarized ruling
- policy documents and their updates

Broad Classification of Business Processes at PPOA

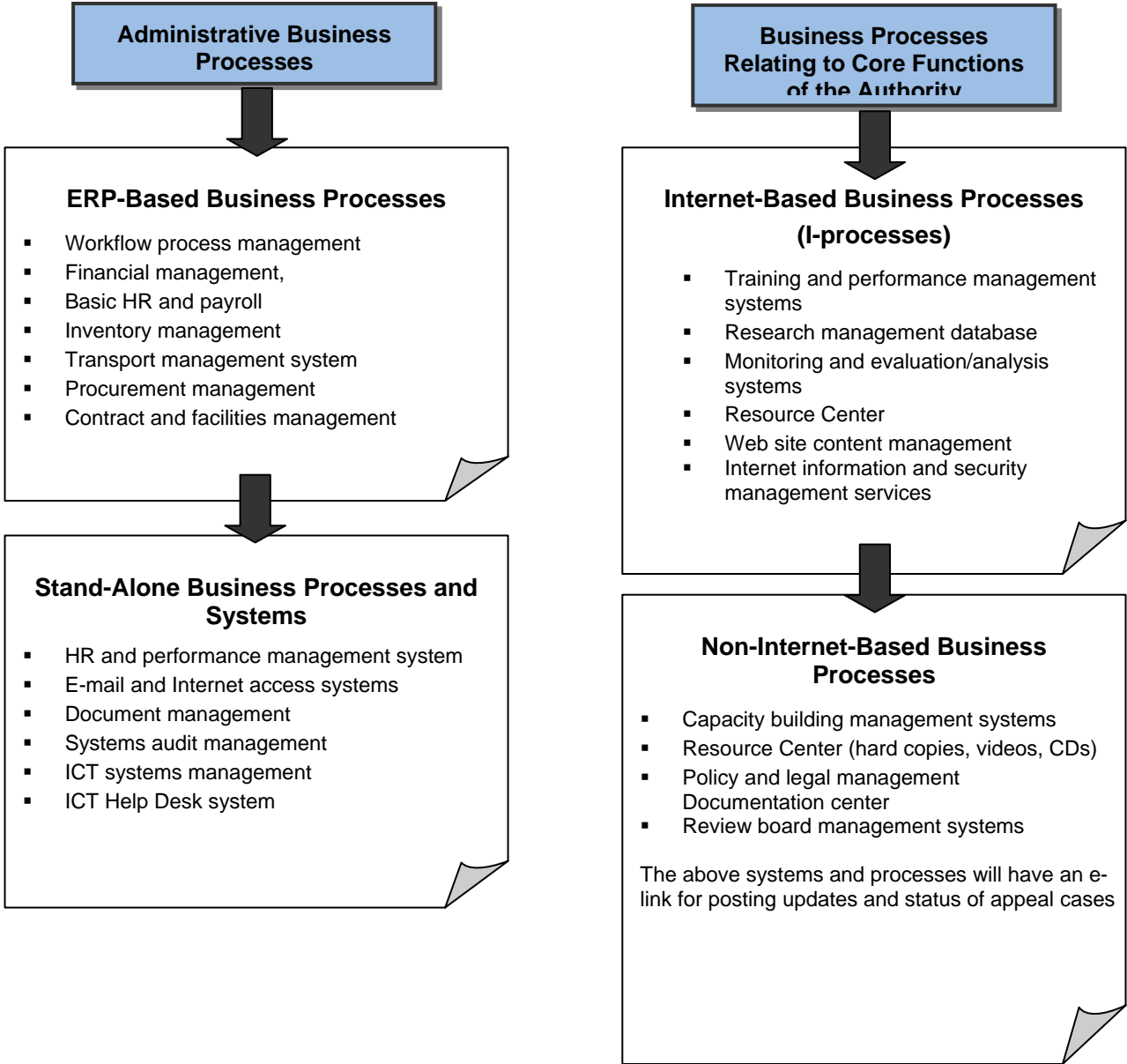


Figure 1: Broad Classification of Business Processes

ICT DEPARTMENT STRUCTURE — SUPPORTING BUSINESS PROCESSES

In view of the identified business processes, it is important that the structure of the ICT Department reflects the information requirements and addresses their concerns in an effective manner. The recommended ICT structure is reflected in the diagram below and divides the department into three sections:

- Business Applications Office
- Internet Applications Office
- Infrastructure and Help Desk Office

The Business Applications Office will handle all applications under the office of the Director, Finance and Administration. These will mostly be ERP applications, as well as stand-alone systems. The Internet Applications Office will handle all applications under the Director, Technical Services. Most systems in this area will be Internet-based, but support will also be provided for the non-I-based systems that run in these sections. The Infrastructure and Help Desk Office will be responsible for managing ICT equipment, communications systems, and other infrastructure.

The diagram below summarizes the structure of the ICT Department, recommended with a view of supporting the broad business processes requirements of PPOA.

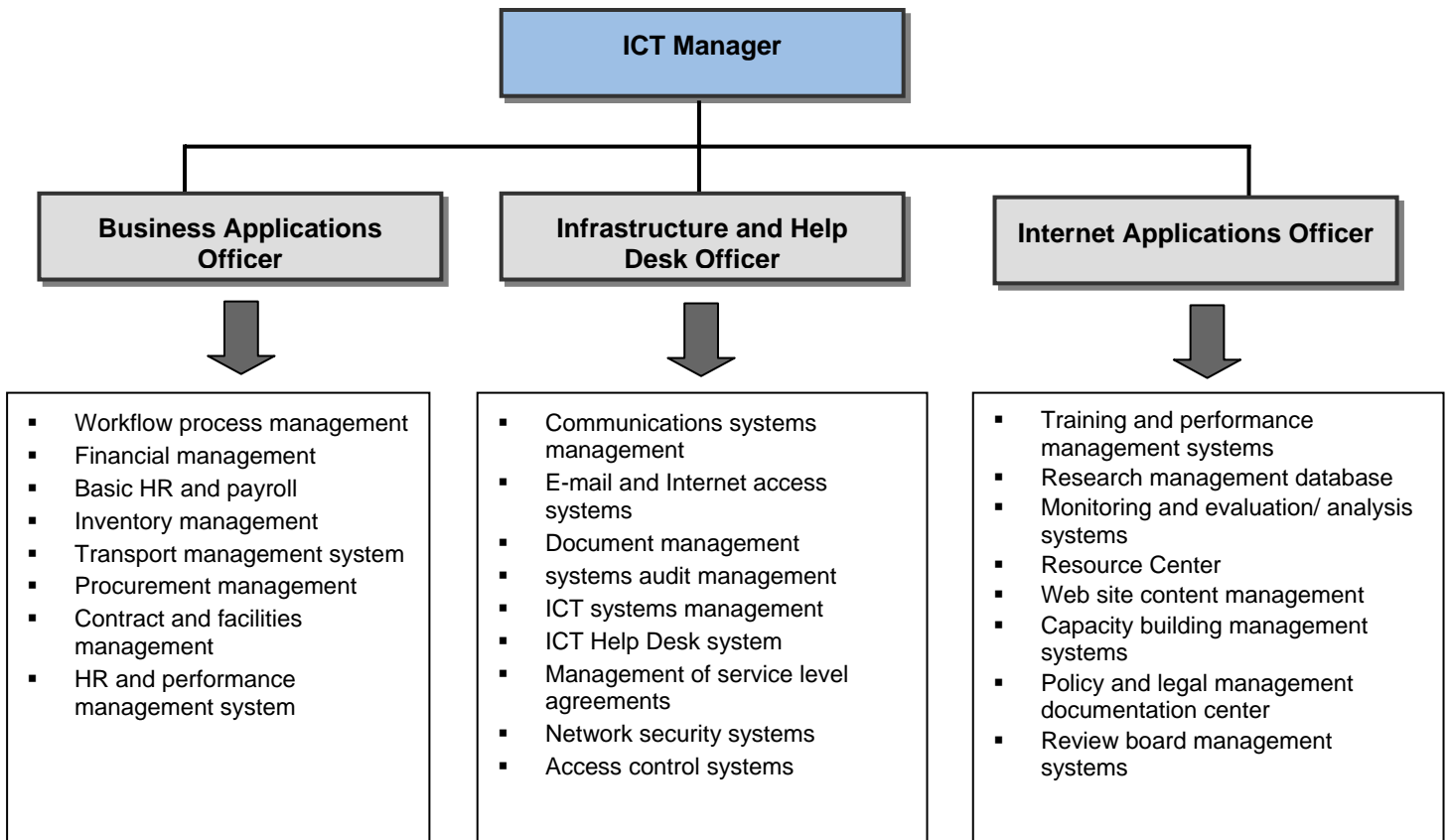


Figure 2: ICT Department Structure to Support Businesses Processes

BUSINESS PROCESSES AND THE ICT FRAMEWORK

The business process diagrams presented in Annex 2 bring to light several issues to be considered when implementing the software applications and hardware platforms within the PPOA working environment.

The purpose of analyzing the business process diagrams is to present a clear justification for design of the ICT framework and architecture, which will then be presented in the final section of this chapter.

The Need for Process Automation

The proposed organogram for PPOA reveals a lean organization of skilled individuals who require automation of the various business processes to be as effective as possible. Other notable advantages of automation of business processes include:

ADVANTAGE	COMMENT
Effective use of Human Resources	<ul style="list-style-type: none"> • Automation will allow a small number of staff to handle a large volume of work. • Repetitive tasks can be automated to free staff to concentrate on core assignments. • Electronic access to documents will reduce time wasted in looking for files. • Integration will allow for information to be available across the organization once it has been keyed in at one entry point. • Automation will allow for tasks to be accomplished faster.
Follow-up	<ul style="list-style-type: none"> • HODs can keep track of departmental activities by querying systems. • E-mail will allow for queries and comments and general communication, even when the member of staff is not in the office. • Internet e-mail will allow staff to keep in touch with issues at the office even while on regional/ international assignments.
Institutionalization of Processes	<ul style="list-style-type: none"> • Automation will force staff to carry out processes as specified in the system. • Mandatory fields will ensure that information will not be accepted by the system unless keyed in completely. • Validation will ensure that important information will be checked by the system before being accepted. • The fact that all transactions will be system-based will mean that delegation and handovers will be more thorough and take a shorter time, since all the information has been captured in the system.
Distributed Access	<ul style="list-style-type: none"> • Internet applications and linkages to the Web site will ensure that staff can work from anywhere in the country by accessing documents • Reports from the field can be updated on-line without staff having to report back to head office.
Participation of Procuring Entities and General Public	<ul style="list-style-type: none"> • Internet applications will allow procuring entities to make information available over the Internet, such as the returns of procuring transactions over 5 million Kenyan shillings, all cancelled tenders, all single-sourced tenders

ADVANTAGE	COMMENT
Enhanced Transparency	<ul style="list-style-type: none"> • By posting the status of tenders on the Web site. • By posting status of appeal board cases on the Web site.
Improved Customer Service	<ul style="list-style-type: none"> • E-mail notifications get the message to the other party quickly and cost effectively. • Access to electronic (scanned) documents means that customers can get a quick response since a file will not need to be requisitioned from registry.
Outsourcing	<ul style="list-style-type: none"> • Several core function processes will be outsourced to allow for the PPOA team to be effective with available resources. • The Internet applications framework will allow for collaboration with “semi-trusted” contractors, to allow them to function as part of PPOA while retaining separation of functions and maintaining integrity of information.
Accuracy	<ul style="list-style-type: none"> • Validation will improve accuracy of information, as the system compares data keyed in with expected data. • Use of drop-down lists and other menus will reduce errors by allowing PPOA staff to select the correct procuring entity, case, file. • Picking information through an interface ensures that errors do not occur in keying in data a second, third, or fourth time.
Accountability	<ul style="list-style-type: none"> • Status fields ensure that staff are accountable for their performance/throughput, because systems will clearly indicate their workload and progress on their workload, such as how many cases in compliance and enforcement are awaiting reports, require follow-up, or have been closed. • Transactions initiated or updated by the user will be tracked through system audit logs. Thus, each individual can be held accountable for his/her actions.
Backup	<ul style="list-style-type: none"> • Automated systems will allow for scanned documents to be attached to transactions, cases, or files. This will provide another backup to the hard copy. • Collaboration means that the same information may exist on two systems and provide redundancy to the hard copy and scanned copy.

Table 1: Detailed Advantages of Automating Business Processes

The above list is not exhaustive, but points to major reasons for investing in the necessary ICT infrastructure and business application systems that will support automation across the board. The cost advantage associated with the above benefits (effective use of staff time, staff working and updating systems even when off site, having backup documents, improving the delegation and handover process) should always be examined against the cost of capital when ICT investment decisions are made.

Some common features that emerged out of the analysis of the business processes have been discussed earlier. These common features are important because they have a significant impact on the type of ICT framework to implement.

Integration

Certain systems must be integrated to be effective within the organization. This means they must provide for:

- common database for storing master data
- one instance of entering primary data
- one instance of entering transactions
- ability to update the one and only existing instance of primary data and transactions
- common presentation format of information – similar screens, similar error messages

Integration is critical for the administrative processes of finance, payroll, procurement, inventory management, and asset management.

Once a user is created in the HR module for purposes of registering him/her into the organization, s/he should be the same user who is reflected in processing of the payroll, the same user who is visible to finance when it is recovering unaccounted for imprests, the same user who is recognized when making a requisition, and the same user who receives stationary from the inventory management module.

Interfaces to Support Collaboration

Other systems within the business environment do not necessarily need to be integrated, by virtue of the fact that the processes they manage are distinct and separate and do not share any information in common.

However collaboration may be necessary to communicate updates, alerts, reduce double-data entry, reliance on individuals as opposed to systems.

Examples of systems that need to collaborate include the registry management software sending an e-mail notification to a user that File xxx has been returned to the registry and is now available; and an e-procurement system sending tender status updates to the Web site page that a tender has been closed, awarded, appealed against, or contracted.

Collaboration interfaces allow information to be exchanged without affecting the base transactions and in a manner that mimics the native presentation format of the destination system. A tender status update will leave the e-procurement system looking like a table and appear on the Web site page looking like a chart.

Use of E-mail

Messaging systems internal and external to PPOA are important to maintain communication across the organization. It also provides for accountability in instances when the application generating the e-mail alert keeps a track of the date and time it sent notices, alerts or updates to a user, supplier, or agency.

E-mail together with other third-party systems is effective in providing non-repudiation when delivery of messages has to be confirmed for other time-bound processes to take place.

Use of Internet Applications

Internet applications will be pervasive across PPOA. Close examination of the final business processes indicates that some will be entirely Web-based, while others will simply have links to Web site pages.

Internet applications are important because they allow for transparency (posting updates on the Web site) as well as collaboration across the procuring entities. This is important when the lean nature of PPOA's organizational structure is taken into consideration. Strategies for covering the large territory of public procuring entities would be to have Web-based forms and/or Internet applications that allow the procuring entities to fill in information required by the Authority.

Internet-based applications also allow for PPOA staff to be effective off-site by providing access to documents they may need to refer to, and allowing them to submit reports and updates over the Internet.

Internet applications are the most cost-effective way to achieve the benefits mentioned above. It is more affordable and hence more practical for a procuring entity to go to a cyber café once a week and key in information and/or download information on procuring events from the PPOA Web site at the rate of 1 to 3 shillings a minute than for the government of Kenya to set up a Wide Area Network (WAN) between PPOA and its procuring entities.

All major towns in Kenya now have access to Internet services, and with the installation of the fiber optic backbone across the country, the reach of the service and the bandwidth available will improve tremendously.

Managing the Large Volume of Data

Analysis of the applications has indicated that a lot of data will be generated from the procuring entities in the normal process of making quarterly returns to the Authority. Within the authority, a lot of data will be captured in the form of scanned documents (e-files). The scanned files will be stored in the form of PDF documents, which have the advantage of providing compressed image sizes.

Despite the compression, the amount of documentation that is generated in the organization is huge, and availing the same electronically means that the ICT framework has to provide for storage that can handle huge amounts of data efficiently and cost effectively, from the beginning.

Security and Backup

All these applications, especially Internet applications, go hand-in-hand with security concerns that must be addressed effectively to ensure the integrity of the data. Backup addresses the availability of the data on a 24 x 7 x 365-basis.

ICT FRAMEWORK AND SYSTEM ARCHITECTURE

Server Architecture

The nature of the business of PPOA is such that it will generate a lot of e-data that needs to be effectively stored, backed up, archived, and restored in the event of a disaster.

The sources of e-data for the PPOA will include:

- user data – documents, e-mail
- business application data from the ERP and any other programs that operationalize functions of the Authority, e.g. data from the review process
- Internet-based data – this will include information from Web applications such as M&E forms and procurement data from e-procurement
- manual data that will be converted into electronic data for storing and archiving, including documentation for the review board

As a result of the data requirements, PPOA needs to have a strategy for data storage, backup, and disaster recovery that is:

- cost-effective
- protects the investment over time
- compatible with data growth and expansion
- flexible in terms of technology mix-match requirements
- comprehensive in terms of redundancy
- effective in terms of space utilization

Introduction to Blade Strategy

The solution recommended in this paper is to setup data storage and disaster recovery devices using blade technology.

Blade servers are self-contained computer servers, designed for high density. Whereas a standard rack-mount server can exist with (at least) a power cord and network cable, blade servers have many components removed for space, power, and other considerations, while still having all the functional components to be considered a computer.

Typically, a blade enclosure will provide services such as the processor, memory, power, cooling, networking, various interconnects and management, although blade providers have differing principles around what should and should not be included in the blade itself (and sometimes in the enclosure altogether). Together, these form the blade system.

The blade enclosures are then mounted using a chassis onto the server rack. The chassis will provide cooling system, power, DVD/CD drives, and floppy drives, as well as redundancy for power, cooling, and networking units.

Due to the fact that the blade is a stripped-down server, densities of 100 computers per rack and more are achievable with the current generation of blade systems.

As a result of using blade technology, PPOA can have a compact computer room that houses all its systems and switches in one 42U rack.

Managing Data Using Blade Technology

The rationale behind the use of blade architecture at PPOA is presented below and will address four areas:

- operating systems and applications
- storage area networks
- backup systems
- disaster recovery planning

Each blade server will be installed with the appropriate operating system as required by the application that will reside on the blade. The blade will then be installed with basic software like antivirus or remote control client. Finally the blade will be installed with the application.

For purposes of data recovery, data for the application will not reside on the blade server, but on the storage area network (SAN).

The diagram below shows the software that will reside on each individual blade server.

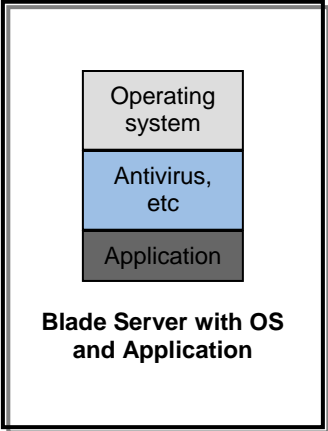


Figure 3: Diagrammatic Representation of Software on Blade Server

The diagram below shows how the blades will sit on the first chassis within the 42U rack. Each blade will host its own application such as the review board system (RBS) and the document management system (DMS). The last two blades within the chassis will be redundant blades that will be used to restore data in the event that any of the blades fail.

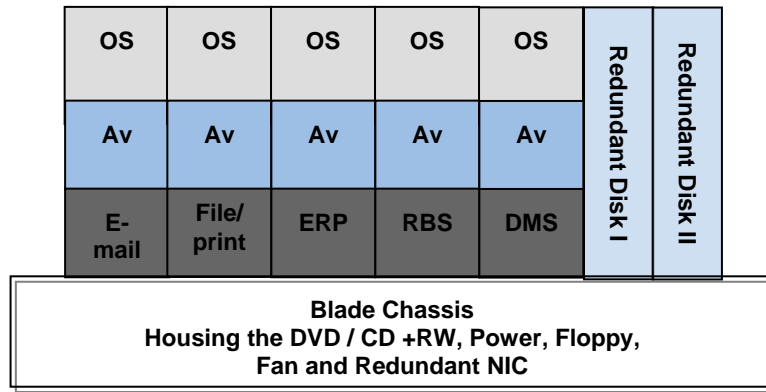


Figure 4: Diagrammatic Representation of Array of Blades within the Chassis

The data for each application will then reside on the storage area network, which will reside on the second chassis as shown below. Just as with the blades, the SAN system has two redundant disks for recovering data from the other disks in the event that they fail completely.

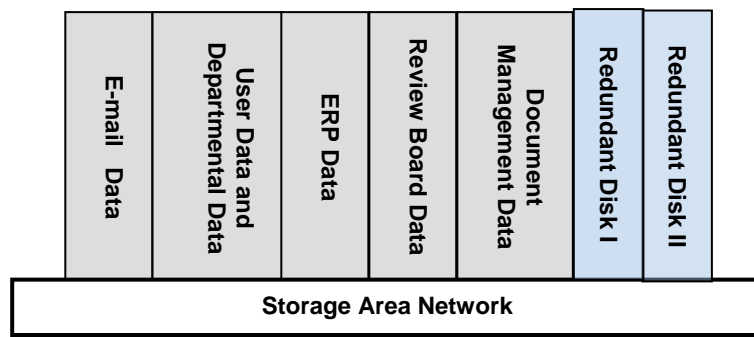


Figure 5: Diagrammatic Representation of the SAN System

Backup and Disaster Recovery Strategy

For purposes of backing up data and disaster recovery, the 42 U rack will also have a disk sub-system for backing up data from all the hard drives in the blade chassis and the SAN chassis.

The backup strategy recommended is one full weekly backup at the start of the week, plus daily incremental backups. This will mean that only one media will be required for a full week’s backup.

At the end of the month, a complete backup will be done in two copies, with one copy being taken off site. The table below summarizes the backup strategy.

Day of the Week	Nature of Backup	Volume of Data Backed Up	Total Volume on Disk	Title of Backup Disk	No. of Copies Made	Storage Location
Day 1	Full Backup	100 GB	100 GB	Disk 1	1	On Site
Day 2	Incremental	20 GB	120 GB		1	On Site
Day 3	Incremental	22 GB	122 GB		1	On Site
Day 4	Incremental	24 GB	124 GB		1	On Site
Day 5	Incremental	26 GB	126 GB		1	On Site
Day 6	Incremental	27 GB	127 GB		1	On Site
Day 7	Incremental	28 GB	128 GB		1	On Site
Day 8	Full Backup	128 GB	128 GB	Disk 2	1	On Site
Day 15	Full Backup	140 GB	140 GB	Disk 3	1	On Site
Day 29	Full Backup	145 GB	145 GB	Disk 4	2	1 On Site 2 Off Site
Total Disks used in a Month = 5						

Table 2: Backup Strategy for On-Site and Off-Site Storage

Monthly disks will be available for overwriting after two months. This means that PPOA needs a media cover sufficient for three months, because the disks of Month 1 will be reused in Month 3. As a result, PPOA will be able to go back two months at any given time. These are general recommendations, which can be customized to suit requirements on the ground.

If funds allow, PPOA should have a final chassis dedicated to disaster recovery. This chassis will be used in the event that an entire chassis fails, but the blade servers or the SAN are still intact. In such a case, all the blades or disks in the SAN will be moved to the DRP chassis.

The table below gives a summary of the components and the disaster recovery strategy recommended.

Equipment Description	In-Built Redundancy	DRP Strategy
Blade Server	<ul style="list-style-type: none"> ▪ Redundant 	<ul style="list-style-type: none"> ▪ Redundant blade server available in the chassis ▪ Restore information from the last backup to the redundant blade
Chassis for Blade Servers	<ul style="list-style-type: none"> ▪ Redundant power supply ▪ Redundant fan ▪ Redundant NIC ▪ Connected to Smart UPS 	<ul style="list-style-type: none"> ▪ DRP chassis available
SAN Hard Disks		<ul style="list-style-type: none"> ▪ Redundant blade server available in the chassis ▪ Restore information from the last backup to the redundant blade
Chassis for SAN System	<ul style="list-style-type: none"> ▪ Redundant power supply ▪ Redundant fan ▪ Redundant NIC ▪ Connected to smart UPS 	<ul style="list-style-type: none"> ▪ DRP chassis available
Disk Sub-system	<ul style="list-style-type: none"> ▪ Redundant power supply ▪ Redundant fan 	<ul style="list-style-type: none"> ▪ Smaller capacity disk sub-system that is compatible with the live system

Equipment Description	In-Built Redundancy	DRP Strategy
	<ul style="list-style-type: none"> ▪ Redundant NIC ▪ Connected to smart UPS ▪ Redundant fiber cable 	

Table 3: Redundancy Matrix for the Blade Configuration

The following figure shows the full configuration for the recommended server layout on a 42 U rack.

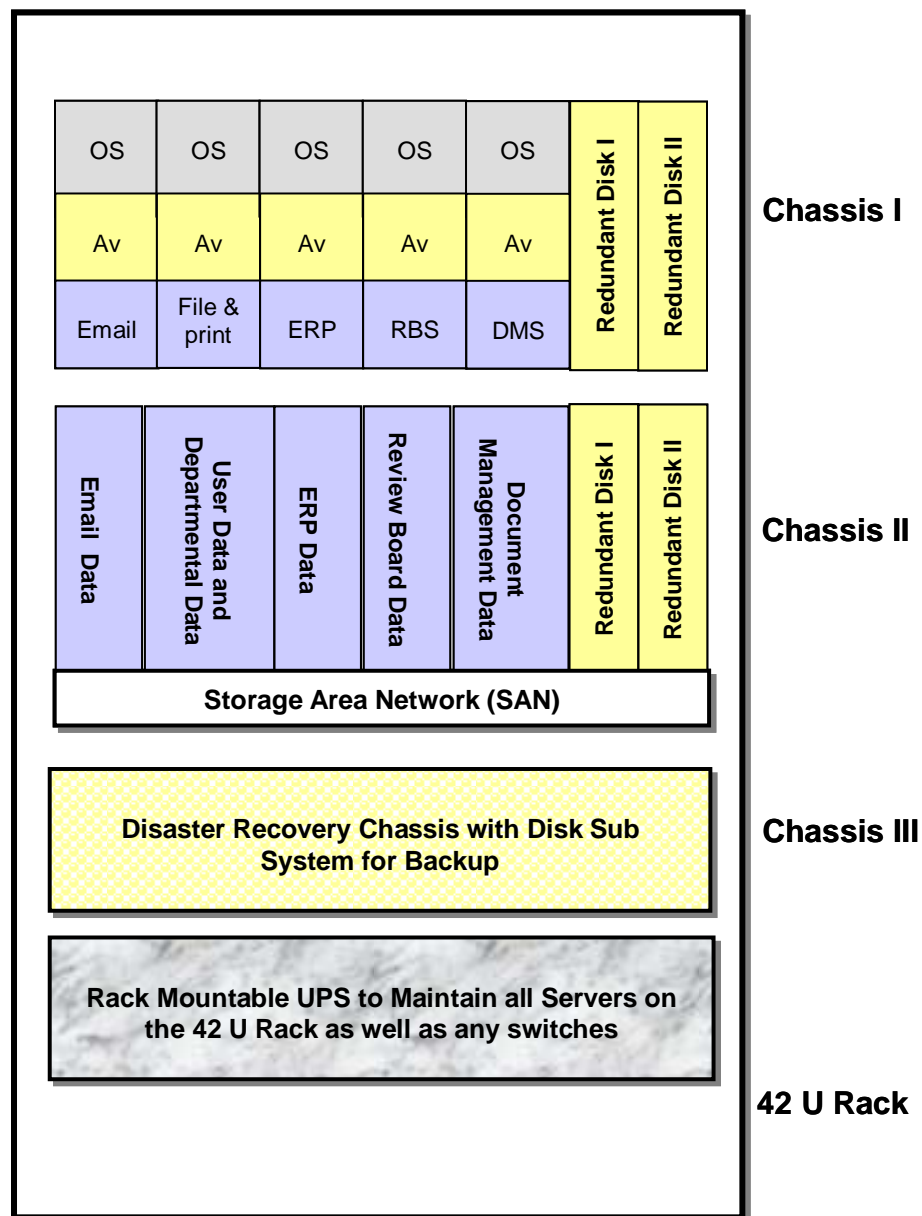
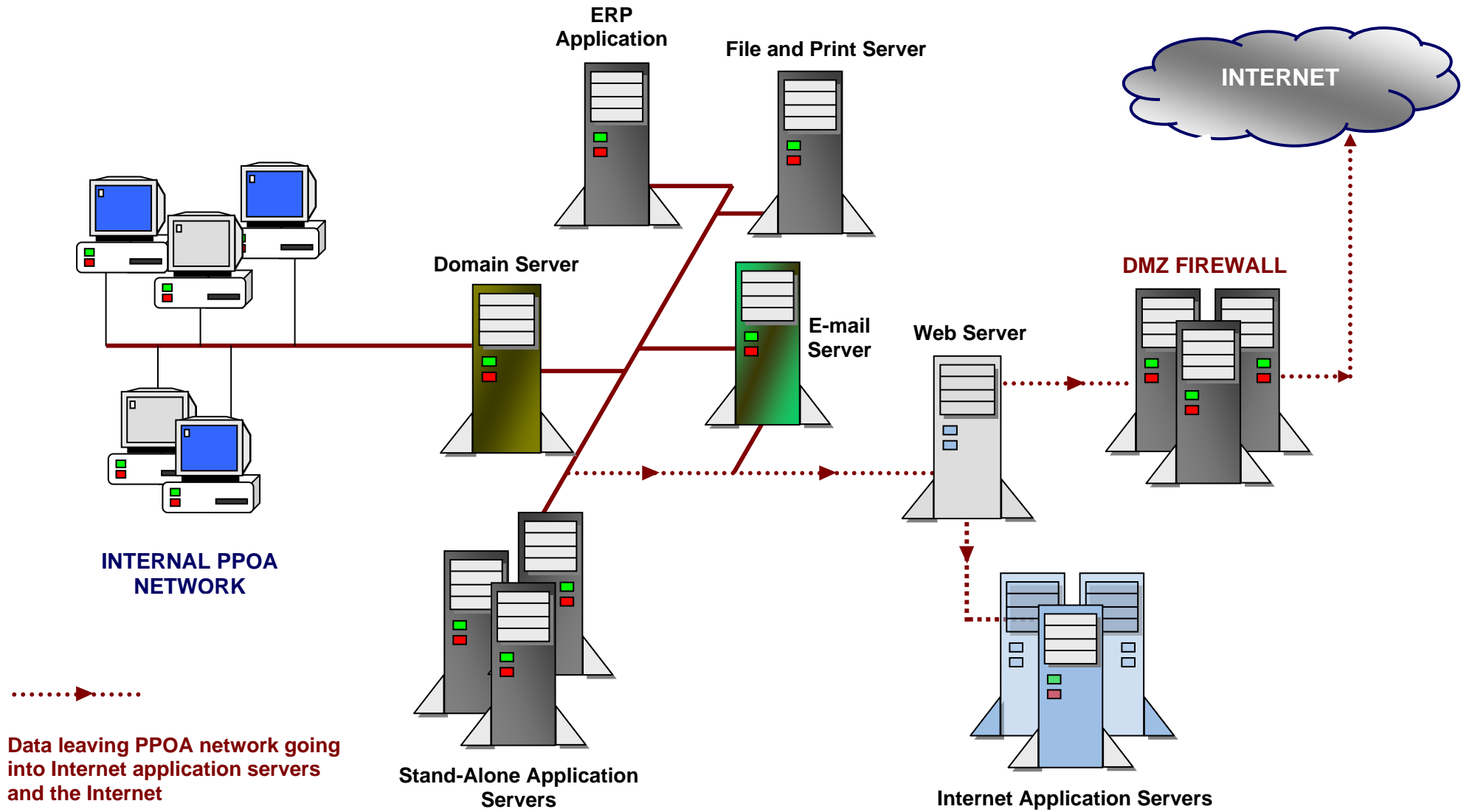
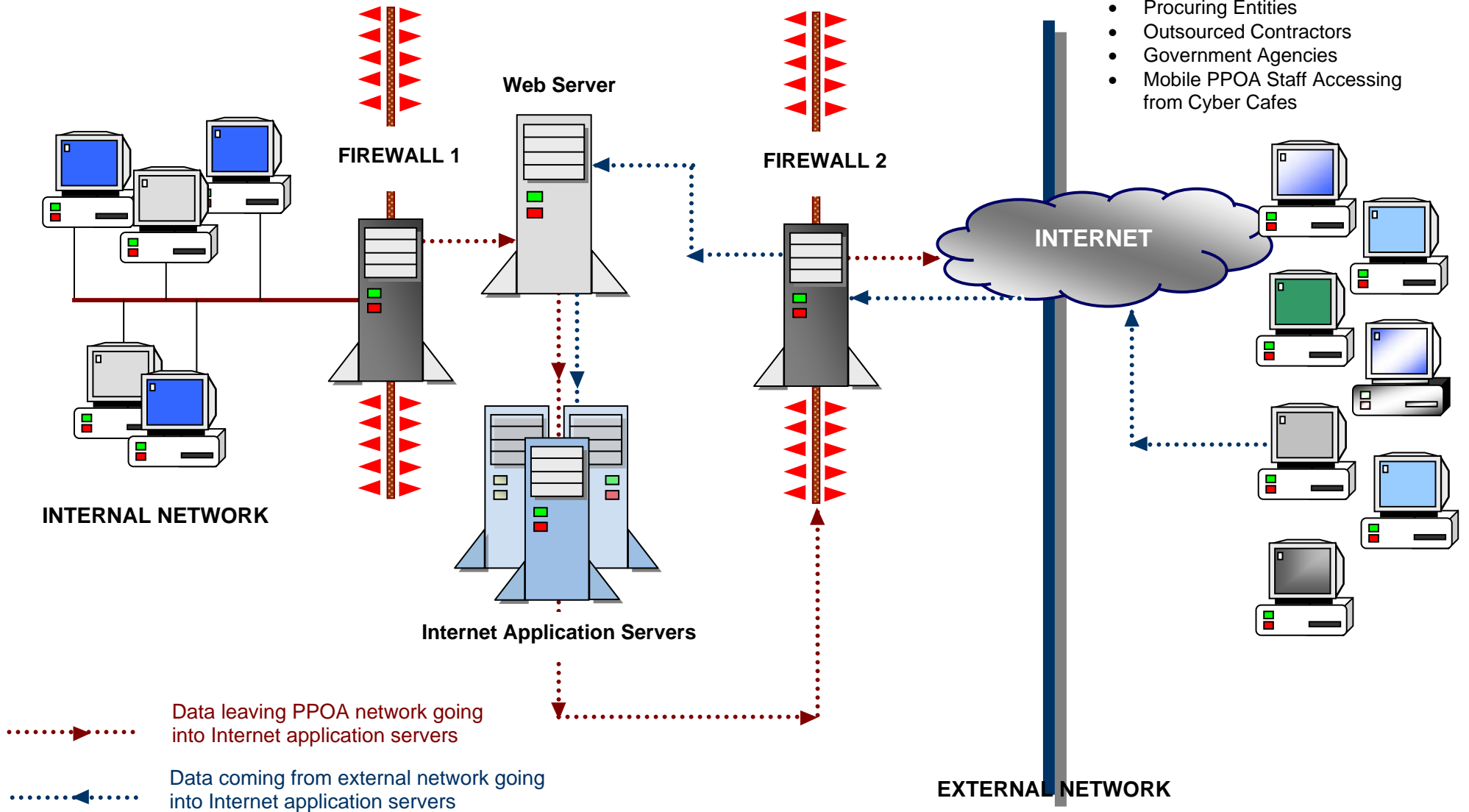


Table 4: Rack Configuration with Blade Servers, SAN, and Disk Sub-system

Internal PPOA Network Architecture



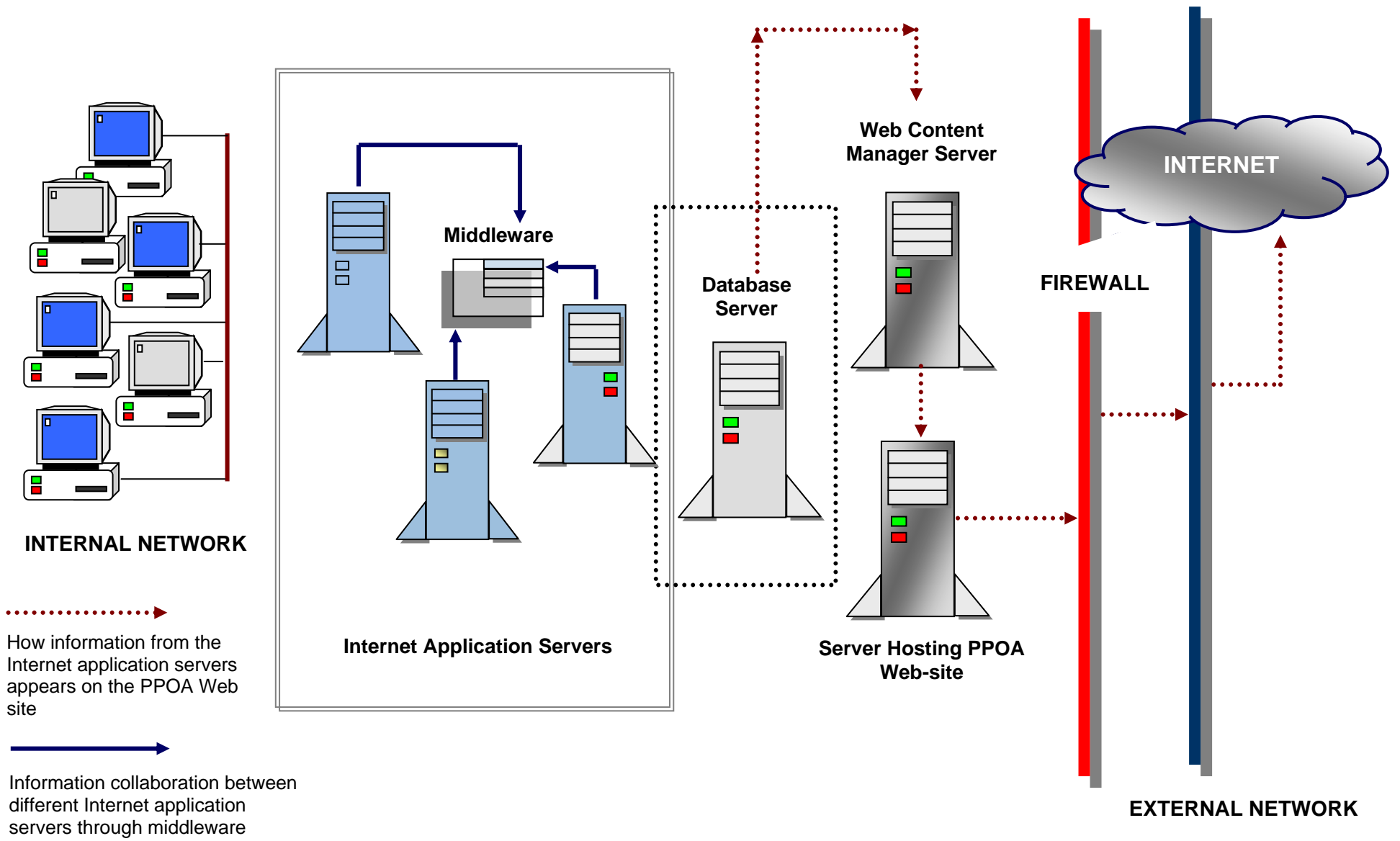
External PPOA Network Architecture



EXTERNAL NETWORK

- Procuring Entities
- Outsourced Contractors
- Government Agencies
- Mobile PPOA Staff Accessing from Cyber Cafes

Internet Applications Architecture



.....>
 How information from the Internet application servers appears on the PPOA Web site

————>
 Information collaboration between different Internet application servers through middleware

SECTION 3

Strategy for Effective ICT Procurement and Implementation

In recognition of the fact that PPOA needs to undertake the procurement and implementation of ICT hardware and software as quickly as possible, a strategy for managing and executing the same has been provided to help manage the coordination and execution of this exercise.

This strategy has several components, which are summarized in the diagram below and discussed in further detail overleaf.

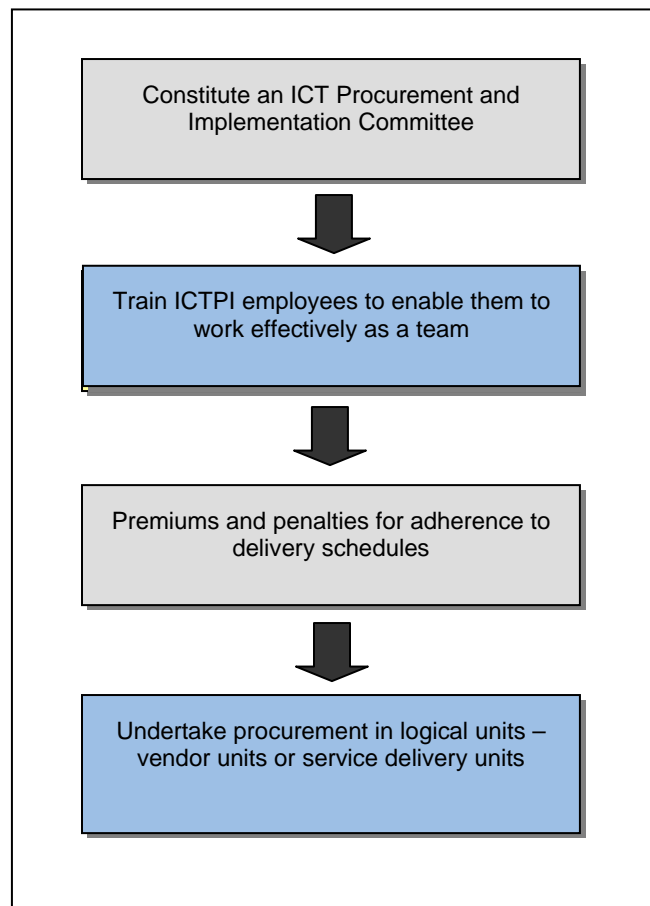


Figure 8: Diagrammatic Representation of the ICTPI Strategy

FORMATION OF AN ICTPI COMMITTEE

- It is recommended that an ICT Procurement and Implementation (ICTPI) Committee be constituted for the purpose of managing the ICT procurement and implementation.
- The ICTPI Committee will be constituted to handle ICT procurement and implementation during the mobilization phase of the organization's transition to its new premises in Westlands. Their tasks will include:
 - advertising tenders
 - holding pre-bid conferences
 - managing pre-proposal surveys
 - managing the bid-opening process
 - conducting evaluations
 - receipt of ICT equipment
 - commissioning of installation
 - setting service-level agreements and maintenance contracts
- The ICTPI Committee should report directly to the Director-General. This will ensure speedy resolution of issues.
- The ICTPI Committee needs to be multi-skilled to benefit from the knowledge of various departments. It should have professionals from ICT, Procurement, Finance, and other departments.
- The ICTPI Committee will be operational for three to four months, after which major ICT procurement will have been completed. Subsequent procurement can be handled under daily operations.
- The ICTPI Committee will be facilitated by an expert in ICT, who will manage technical details and ensure that project timelines are met.
- The ICTPI will be empowered to make decisions and follow through on the same without continuously consulting with other governance structures on its day-to-day business.
- The ICTPI Committee will be equipped for its task by going through a three-day course geared towards equipping it with the skills to undertake technical evaluation quickly and effectively. The areas to be covered have been detailed in Table 1.

PREMIUMS AND PENALTIES FOR DELIVERY SCHEDULES

In recognition of the timelines under consideration, it is important that suppliers are sensitized to the need for speedy delivery and implementation. To achieve the same, PPOA should consider the evaluation of delivery schedules as a key component of the financial evaluation.

However, this needs to be balanced with a monetary penalty for not adhering to the schedule. This will help PPOA guard against unscrupulous contractors/suppliers who will indicate delivery and/or implementation schedules that are not realistic and be unable to deliver against the same.

The practical implementation of the premium would be to incorporate it into the evaluation as follows:

Preliminary evaluation	10%
Technical evaluation	60%
Delivery schedule	10%
Financial evaluation	20%

The supplier with the shortest delivery time would be awarded the full 10 percent of the points for delivery schedule; the other suppliers will be awarded marks in a continuum as a percentage of the shortest delivery time. For example, if the lowest delivery schedule proposal from Firm A is two weeks, and Firm B’s proposal is four weeks, then Firm A receives 10 points and Firm

B receives five points as a result of the formula: $\left(\frac{TimeofFirmA}{TimeofFirmB}\right) \times 10 pts.$

UNDERTAKING PROCUREMENT IN LOGICAL UNITS

Another tactic in expediting ICTPI is to undertake the procurement in logical units that work together as a complete component at the end of the day or a logical unit that vendors are known to specialize in.

For example, one category of ICT vendors in Kenya will be able to supply desktops, laptops, UPSs, and licensed operating system software, and undertake deployment of the equipment with the appropriate software. Another group will be able to undertake supply and implementation of servers, storage area networks, backup systems, and software.

For other types of procurement, vendors will be procured separately, but coordinated as virtual teams by the nature of the final service that is required. In Kenya, this would apply to contractors who undertake structured cabling and installation of PABXs. Although the industry sees these two areas as one – communications infrastructure – in Kenya, the vendors are separate and highly specialized. This means that the best supplier for structured cabling is not the same vendor for installation and maintenance of a PABX system. However, the final service is harmonized; hence these two sets of vendors need to coordinate their installation.

The logical units would be:

- desktops, laptops, UPSs, and operating system software, cloning software, and deployment of the same with standard software configuration
- network printers, color printers, personal printers, scanners
- photocopiers
- LCDs
- racks, servers, storage area networks, backup devices, and software
- Microsoft Office software licenses and media, corporate antivirus software and licenses
- messaging software and licenses, backup software for messaging system
- structured cabling and PABX implementation*
- Integrated business application system (ERP)
- Web-site and content management software that is database-driven

* This is a logical service delivery unit, as opposed to a logical vendor capacity unit.

Topic	Areas to be Covered
Pre-bid Conferences	<ul style="list-style-type: none"> • Organizing the pre-bid • Information to communicate • Experts to invite to answer questions from vendors • Communicating minutes and new information to participants
Surveys	<ul style="list-style-type: none"> • What to prepare in advance • Who to sensitize to answer vendor questions • Coordination between contractors • Access to various offices
Bid Opening	<ul style="list-style-type: none"> • Forming an effective work-flow process • Participants at bid-opening • Communication of minutes of bid-opening
Preliminary Evaluation	<ul style="list-style-type: none"> • Forming an effective work-flow process • Which technical aspects should form part of preliminary evaluation • Confirming technical aspects of preliminary evaluation
Technical Evaluation	<ul style="list-style-type: none"> • Forming an effective workflow process • Roles of committee members • Use of automated scoring tools • Understanding evaluation criteria • Production of minutes
Evaluating Demonstrations	<ul style="list-style-type: none"> • Setting up demonstrations with vendors • Internal communication with end-users of the product/service • Evaluating the demo criteria • Obtaining clarification • Recapping information obtained from demos
Site Visits	<ul style="list-style-type: none"> • Setting up site visits with vendors • Participation of end-users in the site visits • Evaluating the site visit criteria • Obtaining clarification when on the site visit

Topic	Areas to be Covered
Consolidating Technical Evaluation	<ul style="list-style-type: none"> • Combining scores from proposal, demo, and site visit
Financial Evaluation	<ul style="list-style-type: none"> • Ensuring completeness of financial quotations • Understanding the cost implications for categories of products
Receiving ICT Equipment	<ul style="list-style-type: none"> • Coordinating receipt with vendors • What to check for the categories of equipment • Which tests to request before acceptance of equipment (print test, system configuration) • Which documents to take possession of before acceptance of equipment (manuals, warranty documents) • What software to take custody of before acceptance of equipment
Confirming Complete Implementation	<ul style="list-style-type: none"> • What to check for each category of equipment • Use of standard commissioning forms
Service Level Agreements	<ul style="list-style-type: none"> • How to craft them for purposes of effective service delivery • What reports to include for effective management of the supplier
Warranty	<ul style="list-style-type: none"> • What to capture during the receipt process for purposes of warranty management • Full warranty • Warranty on parts • Warranty on labor • Manufacturer's warranty

Table 5: Details of Three-Day ICTPI Training Course

METHODOLOGY FOR DEVELOPING THE P&I STRATEGY – HARDWARE

The P&I strategy for hardware required by PPOA has been developed as a result of interviewing employees in various departments of the Authority. The list and technical criteria for the equipment have been updated as a result of information that has become available from benchmarking visits to other parastatals and regulatory bodies.

This document provided information to the Authority to ensure it can effectively procure and maintain ICT assets required to operationalize business processes. This information includes:

- technical specifications for procurement of ICT equipment
- technical evaluation score sheets for each equipment identified
- evaluation methodology to be employed – proposals, demonstrations, and/or site visits
- configuration parameters for the equipment
- commissioning criteria for the equipment
- issues to be considered when developing service level agreements with the suppliers

For some equipment, specifications have been provided in two versions. The standard version will cater for most user departments and a second version will address requirements of a particular department.

An example is the photocopier, which has two sets of specifications. The standard set of specifications is meant to address departmental requirements, and the second set of specifications is particular to requirements of the review board, which handles a lot of photocopying and has a high need for sorting and stapling.

It is worth mentioning that for some of these systems, installation and annual maintenance services have been included in the P&I. This is because the equipment is unique to the vendor and maintenance can only be supported by the supplier installing the same. This will apply to photocopiers, LCD projectors, PABX, structured cabling, and server systems.

The equipment has been divided into three categories as indicated in the table below.

Client-Based Equipment	Server-Based Equipment	Network-Based Equipment
Desktop computers	Servers	Heavy-duty network printers
Desktop smart UPSs	Server UPSs	Network color printer
Laptop computers	Racks for mounting the servers	Multifunction photocopier
Personal printers	Backup devices and media	Fax machines
	Server room air conditioner	LCD projectors
		PABX
		LAN

Table 6: Summary of ICT Equipment Category

SUMMARY OF EQUIPMENT RECOMMENDED AND EVALUATION CRITERIA

The table below presents a summary of the equipment identified for PPOA, as well as the versions recommended. It also provides a snapshot of the evaluation criteria, which may include demonstrations and site visits.

Demonstrations are recommended as part of the evaluation process when the equipment is not common in the market and there is need to confirm that the equipment quoted performs according to the specifications.

Demonstrations can be done at PPOA premises. This will involve the vendor bringing its equipment over and setting it up so that PPOA staff can attend the demonstration and ask questions. A second option is to have PPOA staff go to the vendor's show room and have a session where the functionality of the equipment is demonstrated, feature by feature.

Sometimes, the equipment is not available with the vendor, but a model exists with one of its clients. In this case, the demonstration session can be arranged by the vendor at the client site.

Site visits are recommended where it is necessary to assess the performance of the equipment under normal working conditions similar to those of PPOA. The site visits will also have evaluation criteria that will seek to assess the capacity of the vendor to service and maintain the equipment to the customer's satisfaction. This is usually important for equipment that has only one vendor, and equipment that has a life span of more than a too be established number of years.

Equipment Recommended	Equipment Versions	Pre-bid Conference Survey Required	Evaluation Methodology		
			Proposal	Demo	Site Visit
Desktop computers	Standard only				
Desktop UPS	Standard only				
Laptop computers	Standard only				
Servers	Standard only	Pre-bid			
Server UPS	Standard only	Pre-bid			
Server racks	Standard only	Pre-bid			
Backup drives and media	Standard only	Pre-bid			
Air conditioner for server room	Standard only	Survey			
Heavy-duty network printers	Standard only				
Personal printers	Standard only				
Heavy-duty color printer	Standard only				

Equipment Recommended	Equipment Versions	Pre-bid Conference Survey Required	Evaluation Methodology		
			Proposal	Demo	Site Visit
Multifunction photocopiers	Standard department photocopiers				
	Review board - greater volume, sorting, and stapling capabilities				
Scanners	Standard departmental scanners				
	Heavy-duty auto-loading scanner for the review board				
Fax machines	Standard fax machine for individual offices				
	Heavy-duty fax machine with intelligent document management and network accessibility for the registry and departments				
LCD projectors	Standard LCD projectors				
	Document scanner LCD projector for the review board				
PABX		Survey			

Table 7: Summary of Evaluation Criteria for ICT Equipment

METHODOLOGY FOR DEVELOPING THE P&I STRATEGY — SOFTWARE

The schedule of software requirements was developed from an analysis of the business processes, as well as from the regular operational requirements of a busy modern office. This document will provide information to the Authority to ensure that it can effectively procure and maintain the ICT software it requires to operationalize its business processes. This information will include:

- technical specifications for the procurement of the ICT software
- technical evaluation score sheets for each software identified
- evaluation methodology to be employed – proposals, demonstrations and/or site visits
- configuration parameters for the software
- commissioning criteria for the software
- issues to be considered when developing service-level agreements with suppliers to maintain the software

Not all the software has technical specifications attached to it. This is because some software is standard in the Kenyan market, and no alternatives exist that can be supported by a wide section of the IT industry and no recognized training is available for the same. An example of such software is Microsoft Office – which has no established competition in Kenya. All ICT training colleges in Kenya offer training in Microsoft Office and there are no alternative courses available for word processing, spreadsheet management, and Power Point presentations.

Other software has been specified in general terms, with the assumption that implementation will include a full analysis of business requirements/customizations. This applies mostly to the ERP, where general specifications for accounts, assets management, transport management, and payroll have been specified. It is expected that a full business requirements analysis will be done by the bidding suppliers and this will address needed customizations.

The software has been divided into three categories for easy organization as indicated in the table below.

Client-Based Equipment	Server-Based Equipment	Server-Based Equipment
Microsoft Office 2007	Domain server application	Remote control software
Acrobat 8.0 Professional	Corporate antivirus software for server and clients	Backup software for file and print server
	Messaging application	Firewall software
	Backup software for messaging application	Backup software for client machines
	Messaging antivirus software	ICT Help Desk system
	Internet management software	ERP system

Table 8: Summary of ICT Software Category

SUMMARY OF SOFTWARE RECOMMENDED AND EVALUATION CRITERIA

Software Recommended	Software Licenses	Pre-bid Conference Survey Required	Evaluation Methodology		
			Proposal	Demo	Site Visit
Microsoft Office 2007	50 – PPOA staff 10 – Resource Center 10 – Training room				
Acrobat 8.0 Professional	50 – PPOA staff				
Client server network management application	1 – Server license				
Corporate antivirus software for server and clients	1 – Server license 60 – Client licenses (50 desktops + 10 servers)				
Messaging application	1 – Server license 60 – Client licenses (50 PPOA staff + 10 Resource Center)				
Backup software for messaging application	1 – Server license				
Messaging antivirus software	1 – Server license 70 – Mailboxes (50 staff and 20 generic addresses e.g. info@ppoa.go.ke)				
Internet access and management software	1 – Server license 60 – Client licenses (50 PPOA staff + 10 Resource Center)				
Remote control software	1 – Server license 70 – Client licenses (50 PPOA staff + 10 Resource Center + 10 servers)				
Backup software for file and print server	1 – Server license 60 – Client licenses (50 PPOA staff + 10 Resource Center)	Survey			
Firewall software	2 – Server licenses	Survey			
Backup software for client machines	1 – Server license 60 – Client licenses (50 PPOA staff + 10 Resource Center)	Survey			
ICT Help Desk system	1 – Server license 70 – Client licenses (50 PPOA staff + 10 servers + 10 Resource Center)	Survey			
ERP system	1 – Server license 50 – PPOA staff	Survey			

Table 9: Summary of Software Recommended and Evaluation Criteria

METHODOLOGY FOR DEVELOPING THE P&I STRATEGY — ICT SERVICES

The schedule of ICT services required by PPOA has been developed based on several considerations including:

- The ICT equipment and software that has been recommended
- The fact that PPOA ICT staff will be few on the ground and hence will need assistance to support the myriad systems in place
- The fact that PPOA will not have ICT capacity on board that can effectively manage and administer most of these systems until competitive recruiting is complete
- The fact that some of these services are specialized and accredited courses are not available for PPOA staff to develop the requisite skills to support the applications and/or equipment

The Different Types of ICT Services

For most of the hardware systems such as photocopiers, LCD projectors, PABX systems, structured cabling solutions, and server systems, annual maintenance services will go hand-in-hand with procurement and installation of the service. This is because the services are unique to the vendor and/or the vendor has exclusivity in the region for that equipment (PABX systems) or the nature of the configuration and/or customization makes it unique to the vendor, hence locking out support from other accredited vendors in the market.

Other ICT services are best provided for as a lot at the end of the procurement and installation for better management of ICT resources. These will include desktops, laptops, printers, and scanners. This equipment can be consolidated for purposes of support and maintenance to one solution provider who is accredited on the majority of the systems.

Another set of ICT services that PPOA will require is those that are not linked to any software or hardware equipment. This includes the provision of e-mail and Internet services by an Internet service provider. However, the Internet service provider may have options for leasing or buying connecting equipment such as data terminal units and routers.

Other ICT services need to be provided over and above the services covered by warranty. For instance, desktops, printers, laptops, UPSs, and routers are covered by a manufacturer's warranty for one to three years, depending on the vendor. However, this notwithstanding, the warranty will not provide services for regular blowing of equipment and offering users on the PPOA site assistance with configuration and setup. These services have to be provided by another vendor.

This document will provide the following information for purposes of procuring and managing the services recommended:

- technical specifications for the procurement of ICT services
- technical evaluation score sheets for each service identified
- evaluation methodology to be employed – proposals, demonstrations and/or site visits
- commissioning criteria for the software

The software has been divided into three categories as indicated in the table below.

SUMMARY OF ICT SERVICES RECOMMENDED

ICT Services	Nature of Annual Support and Maintenance
E-mail and Internet services	Includes management of e-mail firewall before Internet applications and DMZ firewall comes on-line
Hardware maintenance and support services	To cover all the desktops, laptops, UPSs, printers and scanners procured
Design, installation and configuration of a Web server and demilitarized zone (DMZ) firewall solution	Protected network access to the Internet and secured access by external parties to the Internet applications
ICT software maintenance and support services	To manage issues with the domain controller, antivirus update, e-mail and Internet configurations, user support on personal productivity tools
Structure cabling support	Provided with installation
Photocopiers, LCD projectors, fax machines, PABX equipment, air conditioner, server equipment, heavy-duty scanner	Provided with installation
Firewall application, messaging application, Internet management application, backup software application, ICT Help Desk system, antivirus applications	Provided with installation

Table 10: Summary of ICT Services

ROAD MAP TO THE P&I STRATEGY FOR ICT EQUIPMENT AND SOFTWARE

The ICT procurement and implementation will take place in stages, due to the nature of the equipment required and the pre-requisite software that goes with the same.

For example, structured cabling for voice and data, installation of the PABX and the air conditioner for the server room, are best done at the beginning when office partitioning and other renovation works are being carried out.

This is because they involve a significant amount of civil works (cabling, trunking, drilling, tapping into electricity mains) that is more cost-effective at the initial stages, when straight-line routes (shortest distance between two points, hence cheaper cost of materials) can be established and cabled as opposed to after office partitions have been done and routing becomes more complicated.

Other equipments need to be on the ground to provide the foundation layer for a second set of systems. A good example is servers. The domain controller server, e-mail server, file server, and Web server need to be fully configured and running before desktop computers and laptops can be configured with software (through cloning). This is because the client software on the desktops – outlook, antivirus, Internet Explorer, network login scripts, and credentials are set by establishing a connection to the server running the primary service. Without the server, the client software cannot be configured properly.

There is yet another category of equipment that has a long lead time because it needs to be ordered in the customized version that the client desires. This usually involves importing, clearing, installing, and commissioning. As a result, it needs to be procured at the beginning to ensure that it arrive in time to support the other ICT systems that works with it.

Exceptions

Technical specifications for the LAN have not been included in this document, because these are specific to the office space you are working with and the lease for the designated building has not been signed. As a result, an office space with agreed-upon space allocation does not exist to guide the development of the LAN specifications.

Technical specifications and a procurement strategy for core function business applications has not been provided, because this would require a full business process mapping exercise, after the new structure has been put in place.

Below is a table presenting the procurement and implementation phases for ICT hardware and software applications to operationalize PPOA.

No.	Procurement Phase	Implementation Package
1	When office renovations and refurbishments are being undertaken, these are the systems (hardware and software) that should be procured and implemented when walls have not yet been plastered, when drilling can be done and covered up at the cost of refurbishment.	
	<ul style="list-style-type: none"> • Structured cabling for data, voice, and video • Electrical cabling from the generator to key power points for ICT – server room, air conditioner (internal and external units), PABX system • Air conditioner for the server room 	To be implemented at the same time.
2a	Due to the long lead time involved in carrying out surveys, ordering, clearing, assembly, installation, and commissioning of the following equipment, the procurement process needs to begin as early as possible to make sure that these foundation ICT systems are in place on time for PPOA to deploy its desktops and laptops.	
	<ul style="list-style-type: none"> • PABX system • 42 U rack and rack UPS • Domain server • File and print server • E-mail server and Web server • Firewall servers • Storage area network • Backup devices and media 	These systems should be implemented once the structured cabling is complete and wiring of key sockets to the generator has been done. This is because the equipment cannot work without network connectivity.
2	The above equipment will require certain software to be installed for an effective network to be established. The software takes a shorter time to procure and install, but because it must be installed, configured, and tested with the equipment, it is prudent that it is acquired at the same time, and is available as the servers and supporting systems are set up	
	<ul style="list-style-type: none"> • Server operating software • Messaging applications • Firewall software and proxy servers • File and E-mail antivirus software • Web server software • Backup software for workstations • Backup software for e-mail systems • Backup software for file and print servers 	These will be installed and commissioned once all equipment in 2a has been installed.
3a	The next set of equipment and software consists of systems that are necessary for PPOA staff to take advantage of existing ICT infrastructure to communicate and do routine tasks effectively.	
	<ul style="list-style-type: none"> • Desktops, UPSs and laptops – with operating system software 	These systems will be installed and configured after 2b, because they have a short lead time

No.	Procurement Phase	Implementation Package
	<ul style="list-style-type: none"> • Microsoft Office – Word, Excel, PowerPoint, Publisher, Access, Project • Adobe Acrobat Professional 7.0 • LaserJet black-and-white network printers • Fax machines • Scanners • Extension bars and adapters 	<p>and can only be configured once 2b is in place.</p> <p>All software on the desktops and laptops will be configured through cloning software for fast deployment and standardized configurations across the organization.</p>
3b	<p>The next set of software that needs to be procured once users are up and running with an operational office is the ERP for managing administrative tasks. This has a long lead time for procurement and installation and should be done as soon as possible, but after basic systems are in place, so that officers can assist in its implementation.</p> <p>Critical input information like the chart of accounts, inventory list and classifications, payroll processes, and list of employees is easier to generate and amend and provide to the implementers if PPOA staff have been equipped with computers to develop this information. Otherwise, there is a risk of having the ERP ready, when computers and desktops are not even in place for the staff to log onto the ERP.</p>	
	<p>The ERP will be fully integrated and will have the following modules:</p> <ul style="list-style-type: none"> • finance • payroll • asset management • inventory management • procurement management • transport management • contract and facilities management 	<p>All will be implemented simultaneously, with emphasis being put on the payroll, because this is difficult to calculate manually for several grades with all earnings, payments, and statutory deductions.</p>
4	<p>All other support equipment can then be procured after the ERP procurement and implementation. The items in this last lot consist of equipment that adds value to existing infrastructure</p>	
	<ul style="list-style-type: none"> • Color laser jet printers • Personal printers • LCD projectors • Photocopiers 	<p>Simultaneous procurement and deployment</p>

Table 11: Procurement and Implementation Phases for ICT Equipment

SECTION 4

Specifications for ICT Equipment, Software, and Services

This document contains several technical specifications for equipment, software, and services and a road map has been provided to enable the reader to locate information effectively.

For each piece of ICT equipment, software or service that has been identified, information on the same will be provided in sub-headings as follows:

- General comments addressing the type of technology recommended
- Technical specifications
- Technical evaluation score sheet – provided in Excel
- Other evaluation criteria that may refer to services – setup and maintenance
- Parameters necessary for effective service contract

The information has been presented in a way that will make it easier for the final user to print out the necessary pages and begin the procurement process.

The technical specifications and evaluation criteria have been combined into one document in Excel. This ensures that the criteria being circulated to suppliers are identical to the criteria being evaluated by the ICTPI Committee.

All details are in Annexes 1, 2, and 3 of the ICT manual.

SECTION 5

ICT Capacity Building Framework

Capacity building for PPOA can be divided into three broad categories:

ICT CAPACITY BUILDING FOR THE ADVISORY BOARD AND SENIOR MANAGEMENT

Training at this level is targeted at building a common understanding of the ICT strategy at board level and ensuring that the appropriate structures and resources are made available for executing the ICT strategy.

It is important that at the topmost governance structure of the Authority, directors and managers have a clear vision of ICT projects and initiatives and are able to prioritize the same or phase them out depending on the requirements of the business.

Courses in this category would include:

- ICT Governance and ICT Governance Structures
- Aligning the ICT Strategy to the Business Strategy
- E-Government and PPOA's ICT Strategy – Harmonizing and Planning
- Managing the Transition into an Information-Based Organization – Change Management for a Manual Environment
- Harnessing the Power of the Internet in PPOA's Business Strategy
- Software Licensing – Understand the Impact on Business and Planning for It
- Business Continuity and Disaster Recovery – Planning and Budgeting
- Outsourcing ICT Services – Trends in Kenya, Getting Value for Money
- Risks in PPOA's ICT Environment – Identifying and Addressing the Risks

ICT TRAINING FOR END-USERS

This training will include specific end-user training for all applications and ICT equipment that will be installed and deployed at PPOA. However, it will also include courses to up-skill PPOA staff in being more effective in an ICT environment. The nature of courses in this category will include:

- Managing Time and Resources in an ICT Environment – Change Management for Users in a Manual Environment
- Communication Protocols in an ICT Environment
- ICT Security – Roles and Responsibilities of Users
- incident management through the ICT Help Desk
- typing skills
- use of e-mail and Internet applications
- training on the ERP application software
- training on the use of templates and other standard forms that will be centrally managed
- training on all other application software

ICT TRAINING FOR ADMINISTRATORS AND SUPPORT STAFF WITHIN THE ICT DEPARTMENT

The ICT Department requires specialized skills over and above the training that it will jointly undertake with end-users. These will include:

- customer service skills
- ICT security – Roles and Responsibilities of the ICT Department
- incident Management through the ICT Help Desk
- typing skills
- training on the ERP application software
- training on the use of templates and other standard forms that will be centrally managed
- training on all other application software

Ultimately, the above training should allow the Authority to cascade the objectives of the ICT strategy (which is aligned to the business strategy) to all levels of the organization in an effective manner that clearly defines the roles and responsibilities of each member of staff.

SECTION 6

ICT Benchmarking Report

Two benchmarking visits were carried out by the consultant at Capital Markets Authority (CMA) and the Communication Commissions of Kenya (CCK). The organizations gave distinct pictures of ICT at opposite sides of the ICT governance spectrum.

At CMA, ICT is a minor support department under the Director, Human Resources and Administration and has been positioned to primarily give Help Desk support to members of staff on personal productivity tools and e-mail. Current staff are limited to the IT Manager only and the department does not report to any committee of the board.

Systems at CMA for administration are mostly manual, with only accounts and payroll being automated. All other business processes at administrative level and for the core functions are manual.

At CCK, ICT is envisaged as a key unit under the office of the Director-General. It receives prominence in planning and budgeting and the strategic role of ICT is recognized and supported at the top level. The ICT Department has six members of staff and manages the activities of supporting administrative processes, and core function processes, as well as maintaining the ICT infrastructure.

Senior management are actively involved in ICT and have on three occasions invited representatives of Microsoft and Oracle Corp. to discuss how best to manage software licenses for the organization. This is just an example of how engaged senior management are in terms of ICT developing and protecting their ICT investment.

The table below summarizes the findings of the visits.

ICT Benchmarking Report

Area Under Review	Capital Markets Authority	Communications Commission of Kenya
People Interviewed	<ul style="list-style-type: none">• Michael Michumo – HR and Administration Director• ICT Manager	<ul style="list-style-type: none">• Juma Kandie – Director HR and Administration• Kipngetch Rotich – HR Director• Nzano – ICT Manager
Year Established	<ul style="list-style-type: none">• Set up in 1989 through an Act Parliament (Cap 485A, Laws of Kenya).• Constituted in January 1990	<ul style="list-style-type: none">• Set up in 1999 through an Act of Parliament – Kenya Communications Act

Area Under Review	Capital Markets Authority	Communications Commission of Kenya
Establishment	<ul style="list-style-type: none"> • Approved establishment of 46 • 11 positions vacant • Provision for recruitment in line with the growth of the sector 	<ul style="list-style-type: none"> • Made the transition to the Authority with 99 staff, 98 from the original Kenya Posts and Telecommunications • Currently has a staff of 145
Structure of ICT Department	<ul style="list-style-type: none"> • The organogram has provision for: <ul style="list-style-type: none"> • ICT Manager in charge of training • Senior ICT Officer • Systems Analyst • Currently the department has only the ICT Manager who manages the department in totality 	<ul style="list-style-type: none"> • The organogram has provision for: <ul style="list-style-type: none"> — Assistant Manager ICT — Internal ICT function that handles the infrastructure and business administration software — External ICT function that handles the core mandate functions of frequency services management systems (RSMS) and quality of service management systems (QSMS) • Currently, the department has six employees
Governance Structures for ICT	<ul style="list-style-type: none"> • ICT reports to the HR and Admin Director • ICT does not report to any committee of the board 	<ul style="list-style-type: none"> • ICT Department reports directly to the Director-General as a unit • ICT does not report to any committee of the board
ICT Strategy and Policy	<ul style="list-style-type: none"> • ICT Strategy – does not exist • ICT Policy – does not exist formally 	<ul style="list-style-type: none"> • ICT strategy – exists • ICT policy – exists
Role of ICT in the Organization	<ul style="list-style-type: none"> • Primarily Help Desk role – sorting out issues with Word, e-mail, Excel 	<ul style="list-style-type: none"> • Management of ICT infrastructure • Support of core mandate software systems – RSMS, QSMS • Provision of support to administrative software systems – Finance and Payroll • Managing of services from ICT vendors and suppliers • Formatting and publishing monthly e-bulletin
ICT Equipment Status	<ul style="list-style-type: none"> • All employees have computers 	<ul style="list-style-type: none"> • All employees have computers • All managers have laptops

Area Under Review	Capital Markets Authority	Communications Commission of Kenya
	<ul style="list-style-type: none"> • All managers have laptops • One server exists for backing up user data • CMA occupies three floors at Re-insurance Plaza and all are networked 	<ul style="list-style-type: none"> • The ICT Department has a pool of laptops for traveling employees • Several servers exists for: <ul style="list-style-type: none"> — E-mail — extranet — FSMS — QSMS — User data backup — disaster recovery — Finance and HR and payroll system • All senior managers have PDAs for e-mail and related tools like calendars, contacts, and to-do lists • The PABX is fully loaded with ISDN, GSM, VOIP • CCK occupies offices in its own building and all offices are networked
ICT Software	<ul style="list-style-type: none"> • E-mail is stored on user machines • Messaging is provided by MDaemon running on a Unix server • All Microsoft software is licensed 	<ul style="list-style-type: none"> • All systems run on an Oracle database • Messaging services are provided by Microsoft Exchange 2003 • Internet e-mail is available through Outlook Web Access (OWA) – linked to its Web site • All software is licensed • The board has had three meetings with Microsoft and Oracle representatives to discuss the most cost-effective way of managing its licenses, which are critical for communication (Microsoft) and for its key systems (RSMS and QSMS)
Business Administration Software	<ul style="list-style-type: none"> • Finance is using SysPro (ERP) • Asset management – manual • Inventory management – manual 	<ul style="list-style-type: none"> • Finance is SUN Financials (ERP) • Asset management – SUN Systems • Inventory management – manual

Area Under Review	Capital Markets Authority	Communications Commission of Kenya
	<ul style="list-style-type: none"> • Procurement management – manual • Payroll – automated • HR – manual • Document management – traditional registry 	<ul style="list-style-type: none"> • Procurement management – manual • Payroll – Perpay • HR – Perpay • Document management – departmentalized on soft copy and hard copy
Levels of ICT Literacy	<ul style="list-style-type: none"> • Minimal • Recent TNA noted that staff have elementary computer navigation skills and have rudimentary ICT analysis skills • All personnel including drivers and messengers use e-mail 	<ul style="list-style-type: none"> • Above average • All personnel, including drivers and messengers use e-mail • Senior managers and directors are very conversant with the use of PDAs
Planning for ICT Training	<ul style="list-style-type: none"> • There is a budget for training, but this has not been utilized because staff is thin on the ground and this would have a negative impact on operations 	<ul style="list-style-type: none"> • Each department is responsible for identifying its training requirements and forwarding the same to HR for coordination • Policy in place for employees to undertake self study – a refund of 75% is given upon presentation of a recognized certificate. This is usually applicable for accredited courses.
Management of ICT Budget	<ul style="list-style-type: none"> • Sits with the heads of departments 	<ul style="list-style-type: none"> • Divided between ICT for support of business systems and the various departments that utilize the services of the ICT systems in place
Support to Core Mandate Functions	<ul style="list-style-type: none"> • Legal and Enforcement - manual • Compliance and Marketing – manual • Research and Market Development – manual • Support and Administration – manual • Capital Markets Tribunal – manual • Connected to the CDS • Resource Center - manual 	<ul style="list-style-type: none"> • RSMS – automated, running on an oracle database • QSMS - automated, running on an oracle database • Resource Center – new software will handle hard copy and electronic resources
Web site Presence	<ul style="list-style-type: none"> • http://www.cma.or.ke 	<ul style="list-style-type: none"> • http://www.cck.go.ke

Area Under Review	Capital Markets Authority	Communications Commission of Kenya
Backup and Disaster Recovery	<ul style="list-style-type: none"> • Backup done for the file server • No offsite storage • No DRP Strategy 	<ul style="list-style-type: none"> • Backups done daily for RSMS and QSMS • Backups done weekly for other systems like HR and payroll • Backup tapes are stored offsite at a safe deposit box • Replication is done between the live servers and the backup servers for RSMS, QSMS, and Perpay • A disaster recovery program is being established to provide full redundancy for CCK's ICT systems and information

Table 12: Summary of ICT Benchmarking Report

ANNEX 1

Technical Specifications for Hardware, Software, and Services

[PPOA Hardware Specifications 4.xls](#)

ANNEX 2

Business Process Diagrams

E-PROCUREMENT BUSINESS PROCESS DIAGRAMS

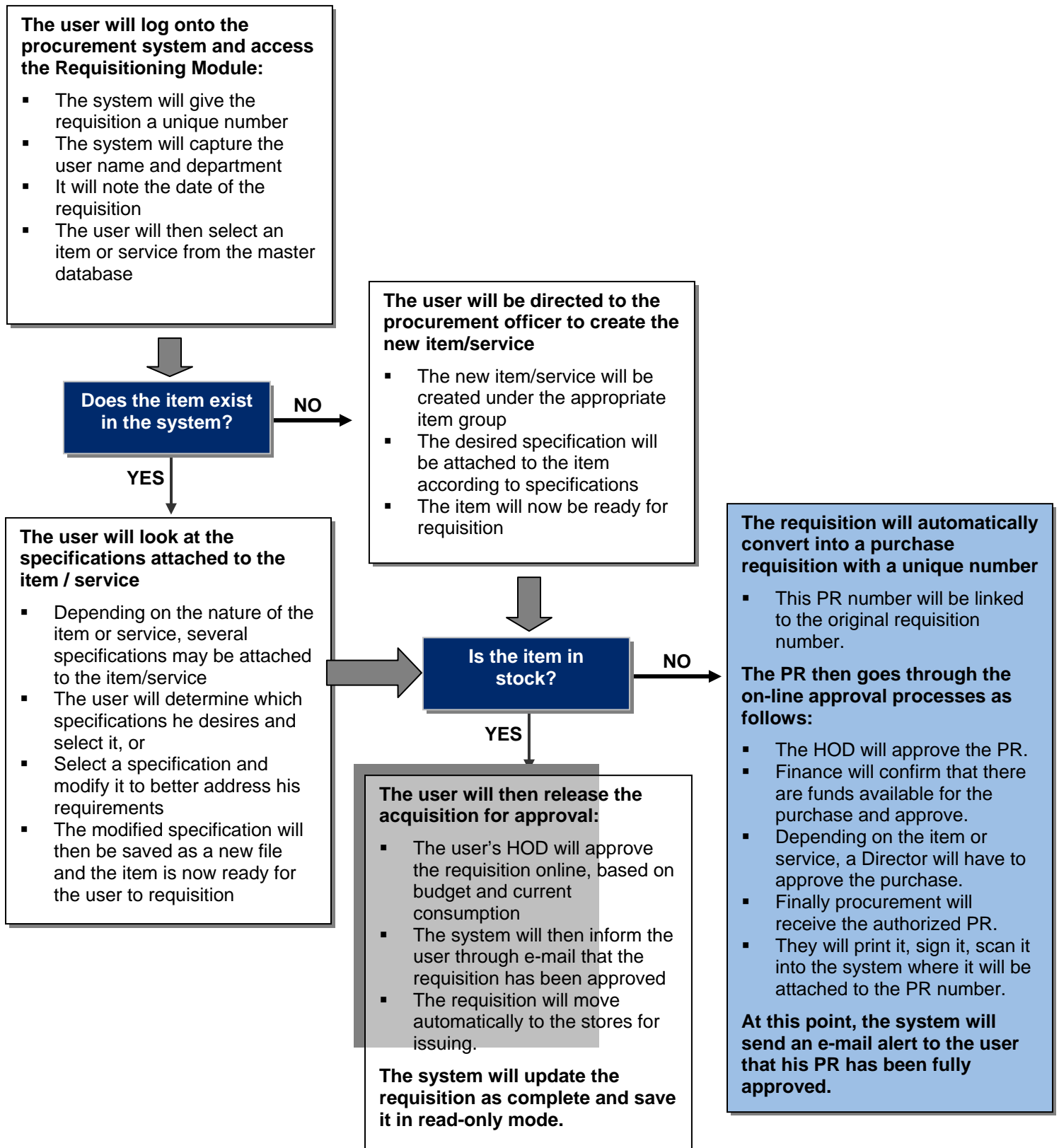
The PPOA will undertake procurement as an entity for goods and services that it will require from time to time.

The procurement processes are envisaged as taking place in an electronic environment (e-procurement), which has linkages to the Internet Content Manager for updating tenders and quotations and the status of the same.

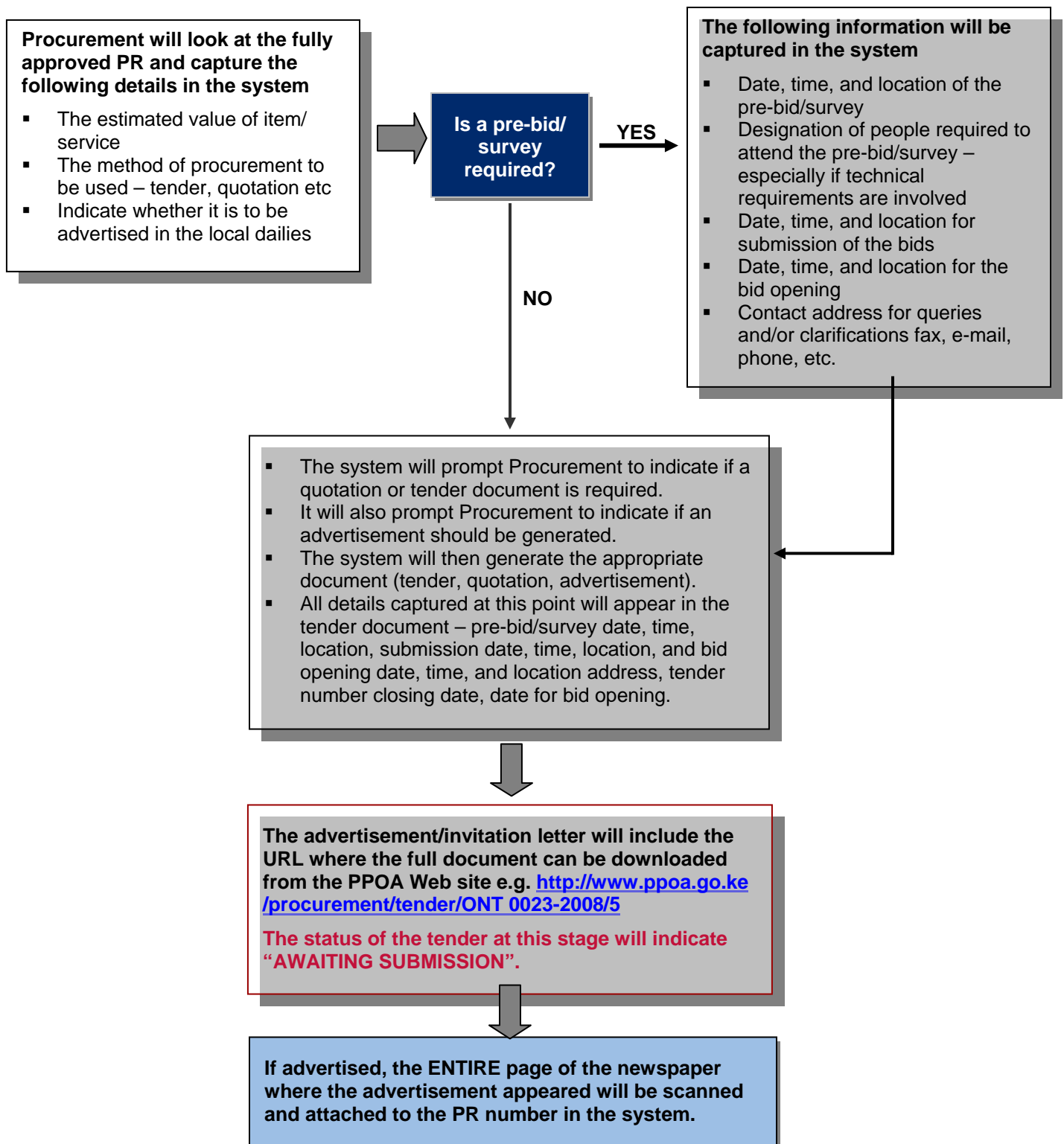
The diagrams below cover the following businesses processes:

- requisitioning, specifications, and on-line approvals
- managing the bidding processes at PPOA
- managing the bidding processes on the Internet
- managing the pre-bid conference/survey
- managing bid opening
- technical and financial evaluation
- managing the processes of the tender committee
- Notification and acceptance of award
- information that will be available against each PR
- electronic documents that will be available for each PR
- interlinkages with other systems

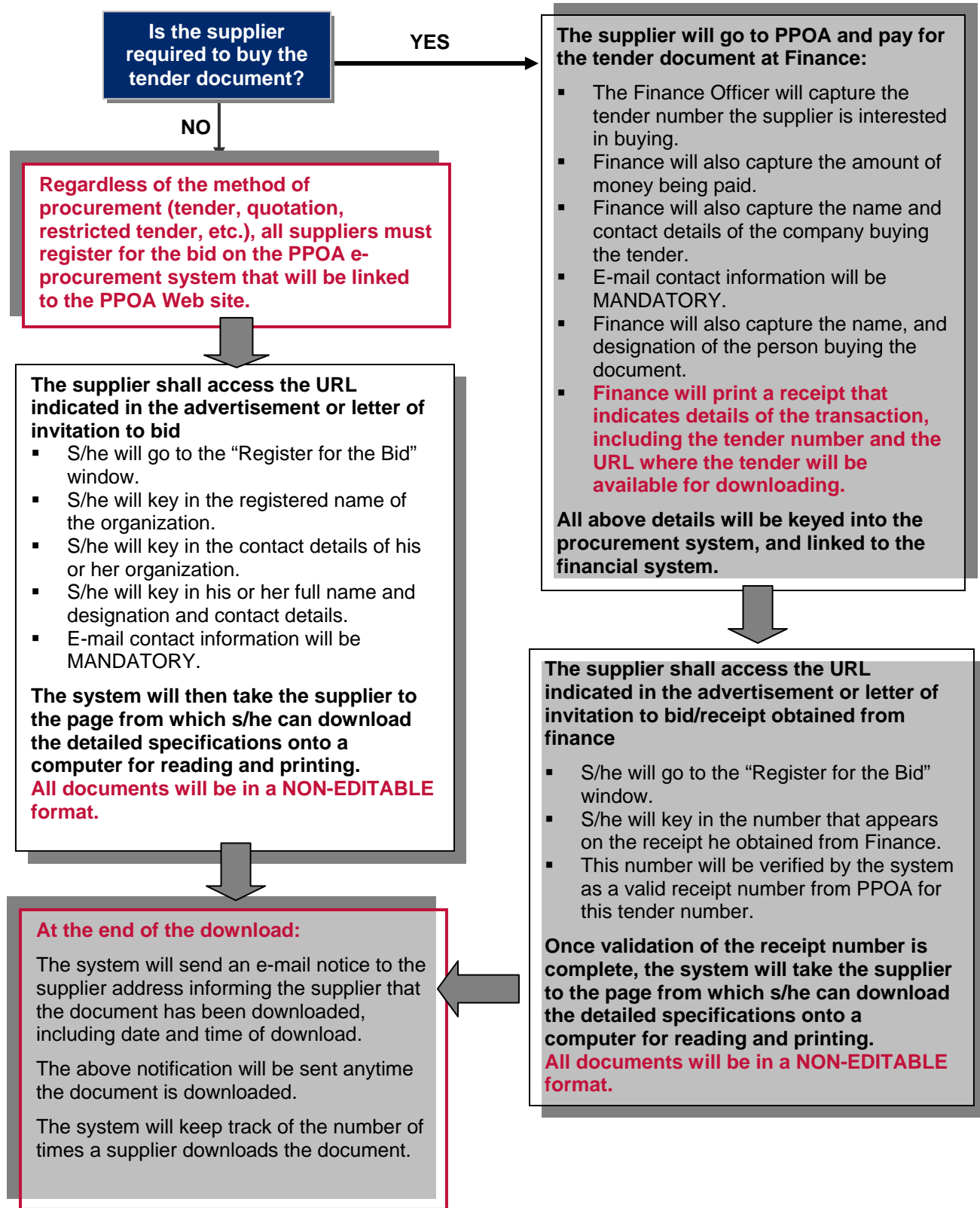
Requisitioning, Specifications, and Online Approvals



Managing the Bidding Processes at PPOA



Managing the Bidding Processes on the Internet



Managing the Pre-Bid Conference/Survey

PRE-BID CONFERENCE/SURVEY

All suppliers attending the pre-bid conference will have to register with the system as follows:

- Name of organization
- Contact details of organization
- E-mail contact details will be MANDATORY
- Indicate name and designation of person attending on behalf of the organization

The system will keep track of the date and time when the person registered into the pre-bid/survey.

This information will be available to the procurement team for compiling the minutes of the pre-bid/survey.



Minutes of the pre-bid/survey will be compiled and attached to the unique PR number.

- Once the minutes are attached in the system, they will be automatically sent to suppliers and participants via e-mail.
- The minutes will also be posted on the PPOA Web site, under the appropriate URL.



An extension to the previously announced closing date will be communicated through newspaper advertisement, e-mail, and the Web site.

- The system will note the date and time the extension notice was e-mailed to the suppliers.
- The newspaper extension notice will be scanned and attached to the PR number in the system.

Managing Bid Opening

All suppliers attending the bid opening will have to register into the system as follows:

- Name of organization
- Contact details of organization
- E-mail contact details will be MANDATORY for the organization
- Names and designations of persons attending on behalf of the organization
- Indicate if attending as an observer or tenderer, by placing a tick in the correct box



If attending as a tenderer:

- The system will prompt the first person to sign in to key in the receipt number for procuring the bid alongside the organization name.
- The receipt number will be validated by the system and an acceptance/rejection message will be immediately flashed on the screen.



If attending as a member of PPOA:

- The system will prompt the person to sign in their user name and designation at PPOA.
- It will also prompt users to indicate if they are playing a role in the bid-opening, e.g. Chairman, Secretariat staff.

All the above information will be availed to the Secretariat for generating information for the bid-opening session and the minutes of the same.

The bid-opening window will be projected using an LCD projector in the designated room and:

- Only suppliers who have logged in will be indicated on the bid-opening sheet.
- The validity status of the receipt number they have keyed in will be displayed – VALID or INVALID.
- Columns with opening criteria like “submitted on time,” “valid bid bond,” “amount of bid,” and “technical certificate” will be visible.
- Procurement will key in the details as they are read out by the Chairman during the bid-opening process.
- Comments will also be captured on the bid-opening sheet.

At the end of the session, the procurement officer will prompt the system to generate bid-opening minutes.



- The system will automatically generate the minutes with tender number, date of bid opening, PPOA members present, and names of all suppliers present.
- The tabularized summary of the status of all bids opened will also be included in these minutes.
- The comments will appear below the summarized status of bids.
- The minutes will be printed, signed by PPOA members and two suppliers.
- The minutes will then be scanned into the system and attached to the PR number.
- This scanned, signed copy will then be printed for each participant to take a copy.

Once the minutes are attached in the system, they will be automatically sent to suppliers and participants via e-mail.

The minutes will also be posted on the PPOA Web site, under the appropriate URL for suppliers to download and print.

The minutes will be in a NON-EDITABLE format.

The status of the Tender will change from “Awaiting Submission” to “CLOSED.”

Technical and Financial Evaluation

Procurement will ensure that the following is indicated in the system in preparation for evaluation:

- The correct evaluation template is posted to the PR based on the specifications that went out.
- The names of the evaluation team members.
- The names of technical experts, if any.
- The date, time, location when the evaluation will be conducted.
- The system will check if the date, time, location, and the members selected have conflicting assignments.

The system will send an e-mail notification informing the members of the date, time, location, and tender number to be evaluated.



To start the evaluation processes, Procurement will log onto the evaluation module.

- The system will provide of a list of tenders that are awaiting evaluating and the Procurement Officer will select the appropriate one.
- The system will confirm that this is the correct tender to be evaluated.
- The system will prompt selected members of the evaluation committee to log in and put in their passwords.
- It will then prompt the expert evaluators on the panel to log in with their IDs and passwords.
- Procurement will confirm that these are the members who are present and the system will then display the evaluation template.

The system will automatically generate the evaluation template, based on the technical specifications generated AND the number of suppliers who were registered during the bid-opening process.

The evaluation process will proceed as follows:

- For each supplier, the score against the criteria will be given.
- The system will automatically total the score for the preliminary section and the technical section.
- The combined score for preliminary and technical will then be calculated as a percentage of 70% or 80%, depending on what the tender stated.
- The financial figures will then be keyed in and calculated appropriately.
- Delivery schedule figures will then be keyed in and calculated appropriately.
- The system will then automatically calculate the total score per supplier.

The system will now present the outcome of the evaluation in a table format from the lowest to the highest.

At this stage, any comments will be noted, as well as the recommendation of the team.



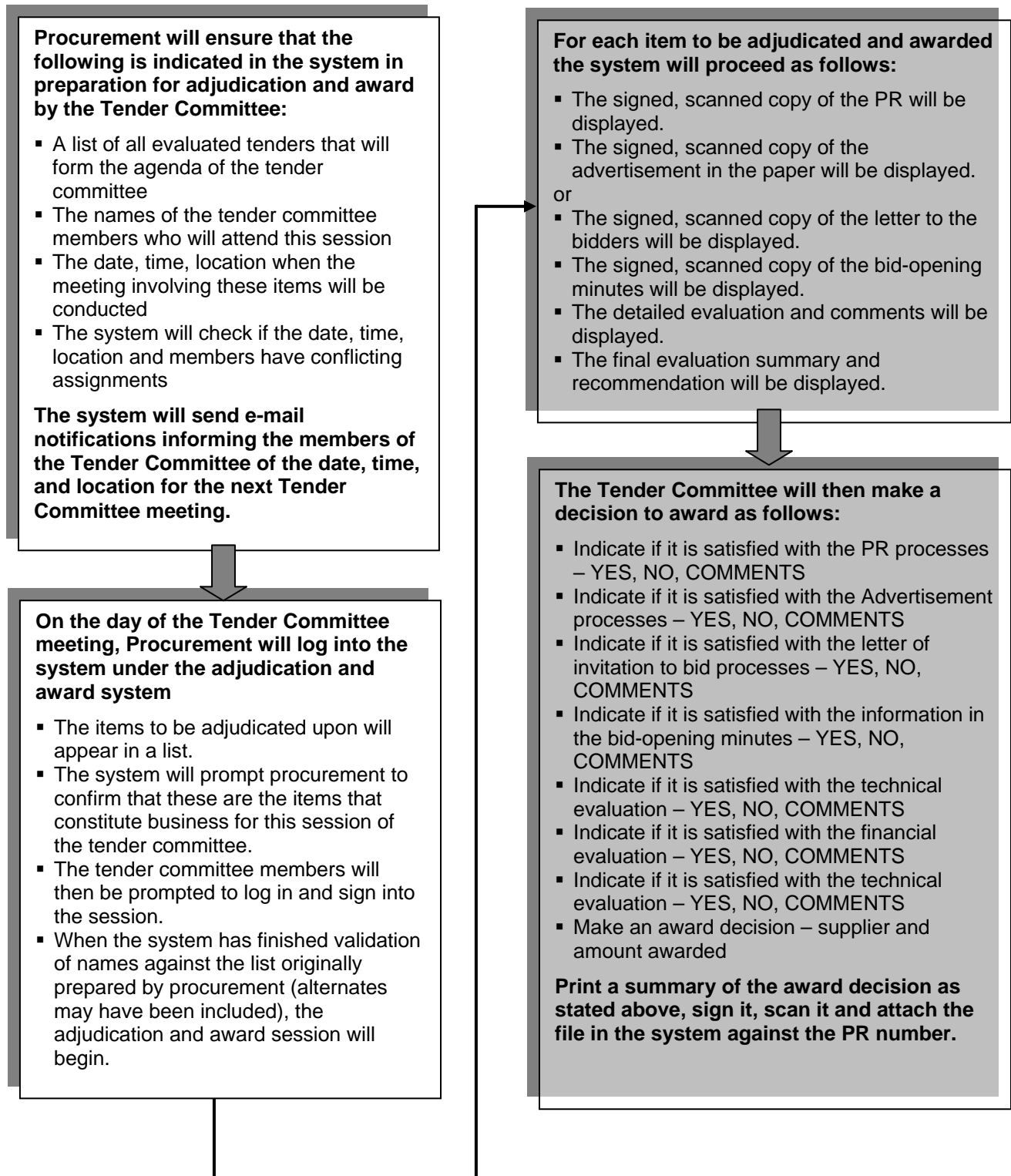
The system will then prompt procurement to generate minutes.

- The minutes will include the date of the evaluation, the names and designations of the evaluation team, and the tender number.
- The minutes will then present the summary of the evaluation.
- The minutes will next present the comments and recommendations of the evaluation team.
- The detailed analysis will then be provided in tabular format.
- The committee will scrutinize the minutes and edit as necessary.

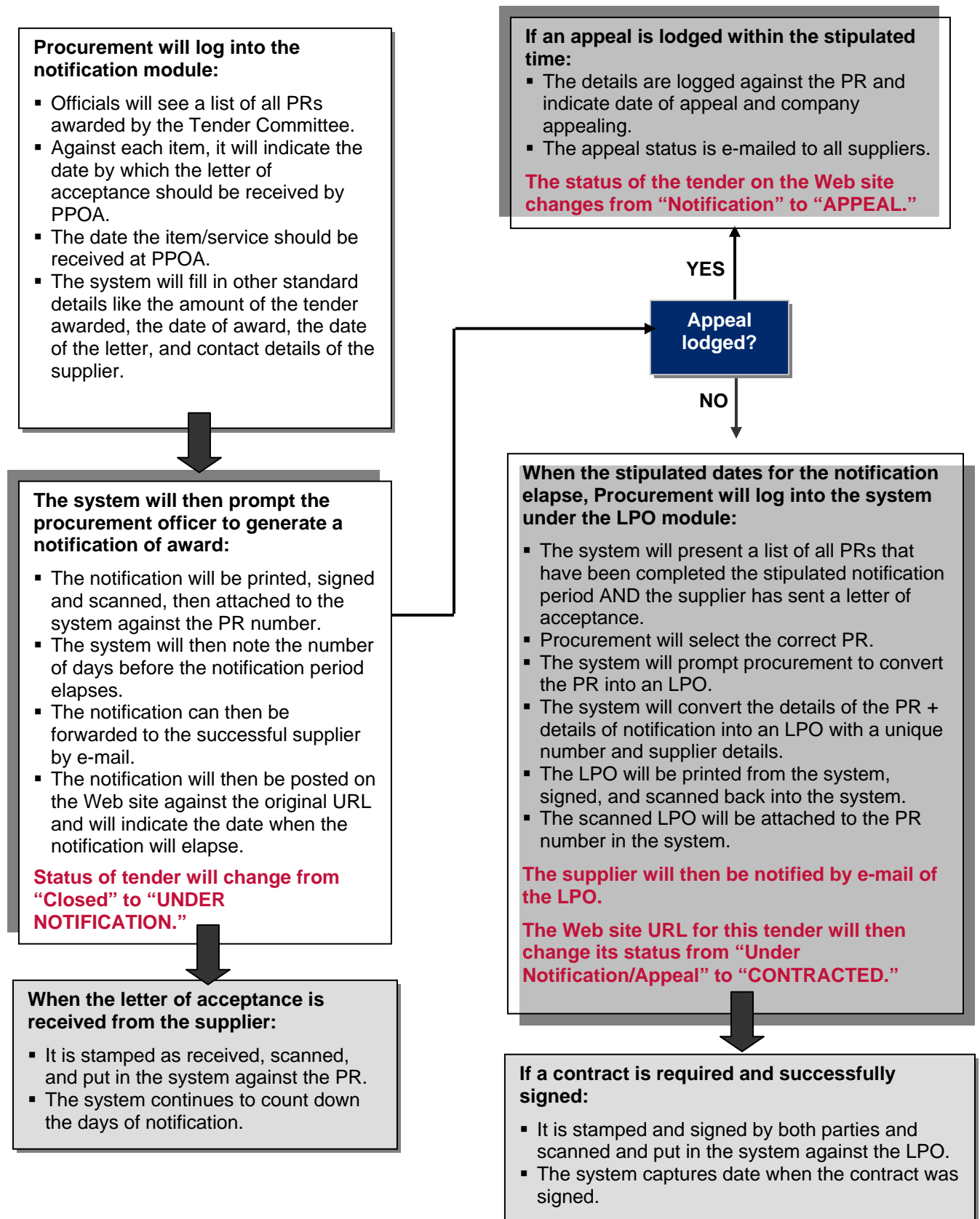
The system will then prompt procurement to print the minutes of the evaluation.

- The minutes will be printed and signed by all the members.
- The signed minutes will then be scanned and attached to the PR number.
- The evaluation session will then be closed and all documents rendered NON-EDITABLE.

Managing the Processes of the Tender Committee



Notification and Acceptance of Award



Information that Will Be Available against Each PR

For purposes of tracking the effectiveness of the procurement processes and for keeping users informed on the status of the items they have requisitioned, the system will be able to provide the following status against a requisition:

- date and time of requisition
- name and department of the person who placed the requisition
- the date and time when the HOD approved the requisition
- whether the item is in stock

If the item is not in stock, the system will be able to provide the following information against the purchase requisition:

- date and time when requisition was converted into a PR
- date and time when the HOD approved
- date and time when Finance approved
- date and time when Director approved
- date and time when Procurement activated the PR

For a fully approved PR, the user will be able to see the following status against the document:

- when the PR tender was advertised/letter of invitation went out
- closing date of the tender
- extension of the closing date, if any
- when evaluation was completed
- when adjudication was completed
- when notification was posted
- when notification will elapse
- when and if an appeal has been lodged
- when the supplier accepts the award
- when the PR is converted to an LPO
- when the contract is signed
- expected date of delivery

On the PPOA Web site/procurement, the status of all tenders will be available and will indicate:

- awaiting submission
- closed
- under notification
- under appeal
- contracted

Electronic Documents that Will Be Available for Each PR

The procurement processes will boast an electronic document trail and will be able to provide scanned, signed copies of the following documents:

- fully approved purchase request
- letter of invitation to tender
- advertisement of tender from the daily newspapers
- letter extending submission date
- advertisement of submission date extension from the daily newspapers
- minutes of the bid opening
- minutes of the evaluation proceedings
- minutes of the tender committee adjudication and award process
- letter of notice of award
- letter of acceptance from the supplier
- purchase order from the system
- contract that is duly stamped, as well as signed

Inter-linkages with other Systems

The e-procurement system will work closely with the following systems:

Software	Comments
E-mail system	<ul style="list-style-type: none">• Sending alerts to suppliers• Sending alerts to internal staff• Updating users on the status of their requisitions
Web site content manager and database system	<ul style="list-style-type: none">• Posting new tenders• Availing details and specifications of tenders• Updating the status of tenders• Communicating extensions to the date of submission
Financial management system	<ul style="list-style-type: none">• Capturing the receipt of money for the procurement of bid documents• Capturing the liability of the Authority against awarded purchase orders
Inventory management system	<ul style="list-style-type: none">• Capturing the specifications and quantities of commodities that are waiting to be received from suppliers
Appeals award system	<ul style="list-style-type: none">• Communication about the registration details of an appeal. This will be linked to the PR – tender that has been appealed against• Communication about the ruling of a tender so as to advise if the process should continue or be re-tendered

Capacity Building Requirements

Following is a list of skills the procurement staff will have to acquire to be effective in an e-procuring environment:

- typing using the QWERTY system
- use of LCD projectors for bid openings, evaluations, and tender meeting sessions
- use of scanners, appropriated nomenclature for the documents to be scanned and attached to each PR
- use of Excel for design of specifications and technical evaluation score sheets based on the criteria
- use of the e-procurement system
- use of e-mail
- use of the Web site content manager to update the status of each tender on the Web site
- use of Acrobat PDF for publishing documents onto the Web site, e.g. specifications, notice of extension

Backup Requirements

The system should allow for the backing up of the following:

- master data, e.g. employee names, supplier database, tender committee members
- transactions and movement of various tenders and quotations
- all scanned files and the linkage to the PRs and POs

REGISTRY AND DOCUMENT MANAGEMENT BUSINESS PROCESS DIAGRAMS

Integrated Document Management System (IDMS)

Functions to Be Served by the IDMS

PPOA is currently managing its documentation through the services of the registry. This department is responsible for receiving and filing all correspondence, managing the movement of files, and managing the update and archiving of files.

This function is necessary for the new PPOA, but needs to be managed in a manner that allows each department to keep track of its documents in an efficient manner.

The use of an integrated document management system will allow the function of the registry to be availed across the organization while using a fraction of the previous resources.

The Resource Center will be responsible for acquiring and managing diverse materials for the organization for purposes of internal and also external capacity building and knowledge transfer. The Resource Center will handle manual materials (magazines, journals, videos, CDs, DVDs) and electronic materials (online material in PDF format, online subscriptions, etc). The IDMS will also provide the function for Resource Center management.

Brief Description of the Document Management System

An IDMS is usually composed of a relational database, software to act on that database, and two graphical user interfaces (one for administrators and one for staff). Most IDMSs separate software functions into modules, which are then integrated into a unified interface. Examples of modules required include:

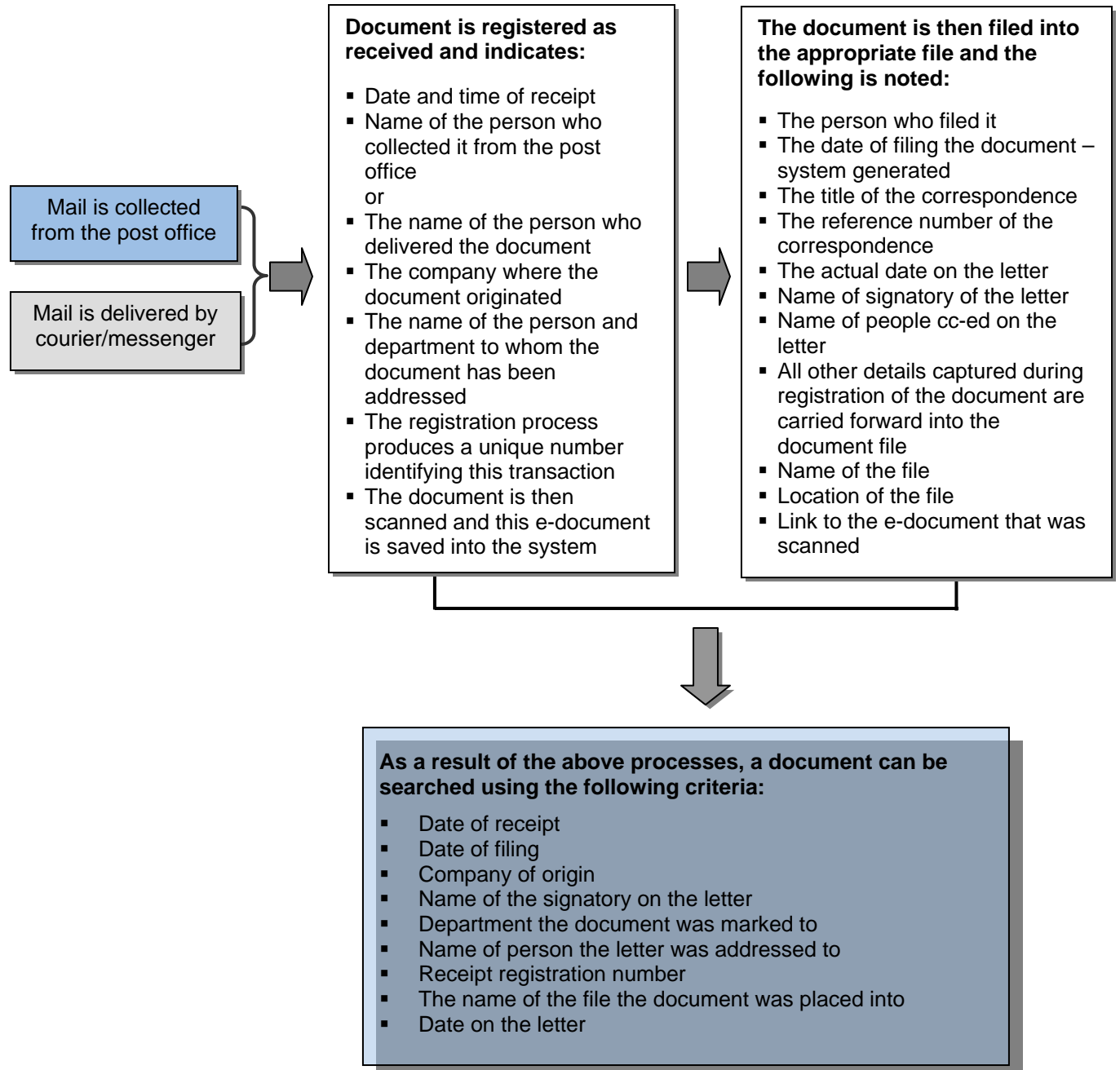
- acquisitions (ordering/subscribing and receiving materials)
- cataloging (classifying and indexing materials)
- circulation (releasing files and documents to staff and receiving them back, or loaning materials to patrons and receiving them back)
- serials (tracking magazine and newspaper holdings)
- OPAC (public interface for users to allow them to log in and request files/materials)
- each staff/patron and each item has a unique ID in the database that allows the IDMS to track its activity
- bar coding module – for easy tracking of files and materials

Business Process Diagrams – Registry Operations

The business processes in this section are:

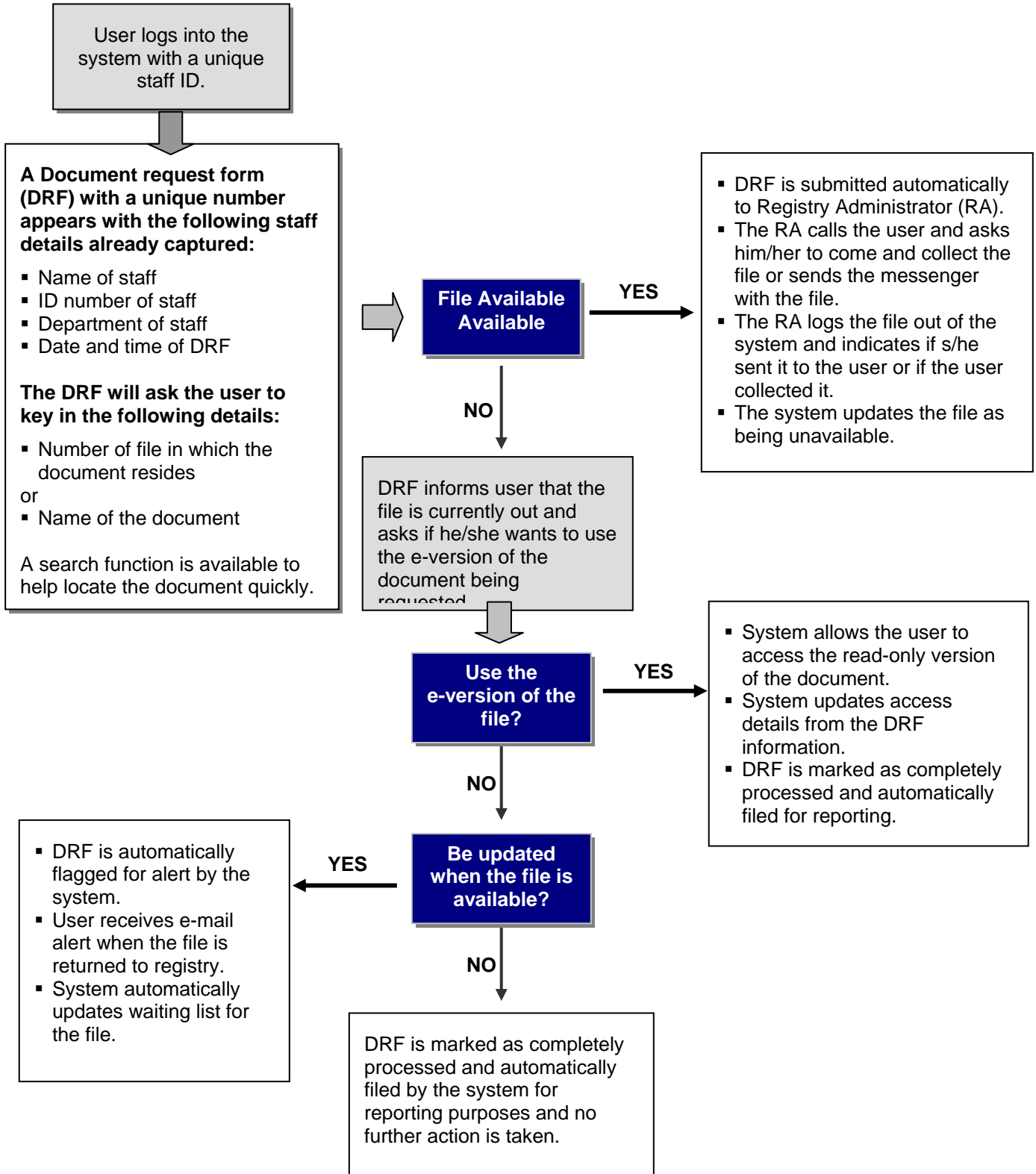
- receipt and filing of correspondence
- requisition of files
- receiving files back from staff
- managing documents in their locations
- backing up information in the IDMS

Receipt and Filing of Correspondence

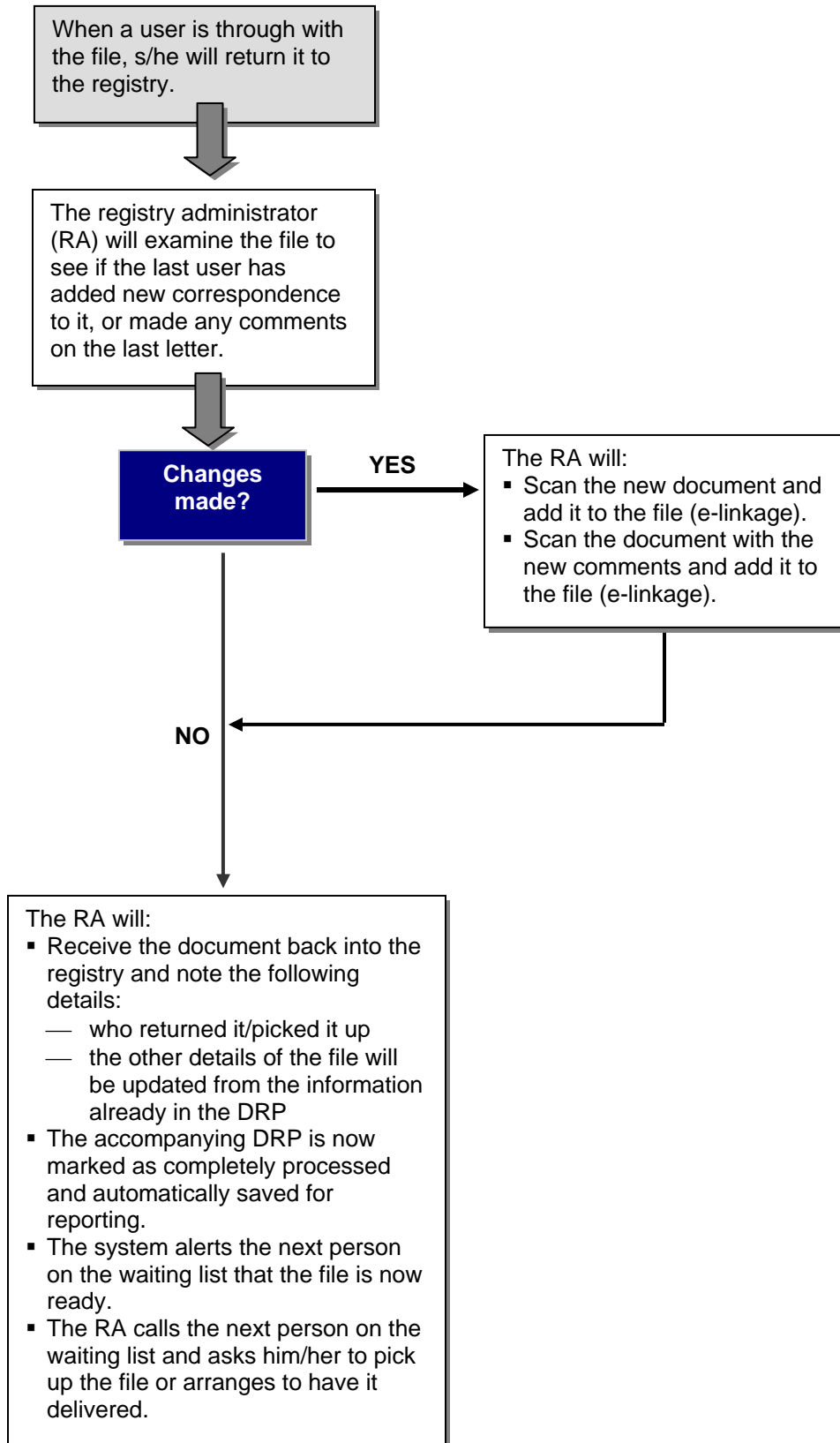


Requisitioning for a File

Only complete files will be logged out of the registry. The individual documents within the file will be accessed using the electronic version.



Returning a File to the Registry



Managing Documents in Their Locations

The IDMS will have the following functionality over and above the processes described above:

- The ability to set up locations for various files. These locations will refer to:
 - the room where the cabinet is to be found
 - the name/number of the cabinet
 - the number of the cabinet shelf (1,2, 3 ... from the bottom)
- The ability to fully describe a file as follows:
 - the department where the file belongs, e.g. finance
 - the subject matter of the file, e.g. supplier invoices
 - any other designations, e.g. the entity/ministry
- The system will also capture the following information concerning a file:
 - the number of documents in the file
 - if the file is Volume II of an existing file
 - whether the file is the current one or an archive version
 - if the file is a dummy file, because the original has been misplaced, hence contains only copies of the original documents
- The system will capture the following information concerning a document upon receipt in the system:
 - whether it is a fax, e-mail, memo, government circular, minutes, invitation
 - whether the document is an original or copy
 - whether the document is confidential or available for general circulation
- The system will also allow the Registry Administrator to indicate the status of the file and manage it as follows:
 - open – available for general circulation
 - departmental – only available to specific members within the department
 - confidential – not visible to the regular users; can only be seen by the Registry Administrator and the Director-General
 - access limited – the e-document may be available for viewing but not available for saving, printing, changing or any other form of access
 - comments can be appended to the file by the RA or the Departmental HOD
- The system will also allow the Registry Administrator to generate the following reports:
 - the list of files with a waiting list

- the list of files that have not been returned at the end of the day, the week, the month
 - the list of files with the highest transaction rates and lowest transaction rates
 - the list of users holding the most files
 - the list of users holding files at the end of the day, the week, or the month
 - the list of files that have been misplaced
 - the list of users who have misplaced files and which files these are
 - a list of departments with missing files in a given period of time
- The system will also allow users to be set up as follows:
 - the full names of the user
 - their employee identification number
 - their department
 - are they permanent or temporary/contract staff
 - the duration of their privileges – set to expire at the end of contract period for non-permanent staff
 - the departmental files they have access to
 - The system will store information in the master database and the electronic documents (the scanned ones) will also be in the document database. All the information in the system will be backed up daily and the tape stored in a location that is not the registry.
 - The information backed up will include:
 - master database with all locations, files, users, and their permissions
 - transaction files that indicate the status of all files and which user has which documents
 - document database with all scanned images of individual documents

The Advantages of the IDMS — Registry Operations

The above business processes describe the functionality of a system that provides for the current operations of the registry but delivers the following benefits:

- All the individual documents in a file are scanned and stored electronically, thus providing a backup of the hard copy file without having to make photocopies of the documents.
- The fact that backup is provided through e-documents means that a lot of space is saved that would otherwise be used storing backup files.
- Backup of the entire registry can be done daily by backing up the e-documents. This ensures that files can never get “lost” because a daily version of the file exists.
- Document management across the organization can be standardized. This means no department will be notorious for losing documents or misplacing files, because filing is done centrally and rules are managed centrally.
- Employees will not waste time looking for files, because they will be informed exactly where the file is and will be able to use the e-document if they are interested in only one document and not the whole file.

- Documents cannot be altered or tampered with in the hard file, because there will always be an e-copy of the document in the system that will indicate the original state of the constituent documents in the file.
- It is easier to enforce rules and regulations on the use of files, because the system will alert the user and the Registry Administrator of files that have not been returned at the end of the day, week, or month.
- It is easier to train people on document management, because the system is automated and not in the mind of an individual.

The Review Board can have its own IDMS to handle information that comes in for appeal cases.

Capacity Building Required for the IDMS — Registry

For effective use of the IDMS, training will need to be done across the organization on the following areas:

- train all staff on the basics of record and document management and the accompanying government regulations on the same
- train all staff on procedures to be followed upon the receipt of documents, correspondence, fax, and memos, especially the front office, which is always receiving documents
- train end-users on how to use the IDMS to requisition and return documents from the registry
- train the Registry Administrator and other staff on managing documents within the IDMS
- train the Registry Administrator and other staff on using the document scanner and its software
- train the ICT team on how to backup, restore, and manage the application

Linkages to the IDMS System

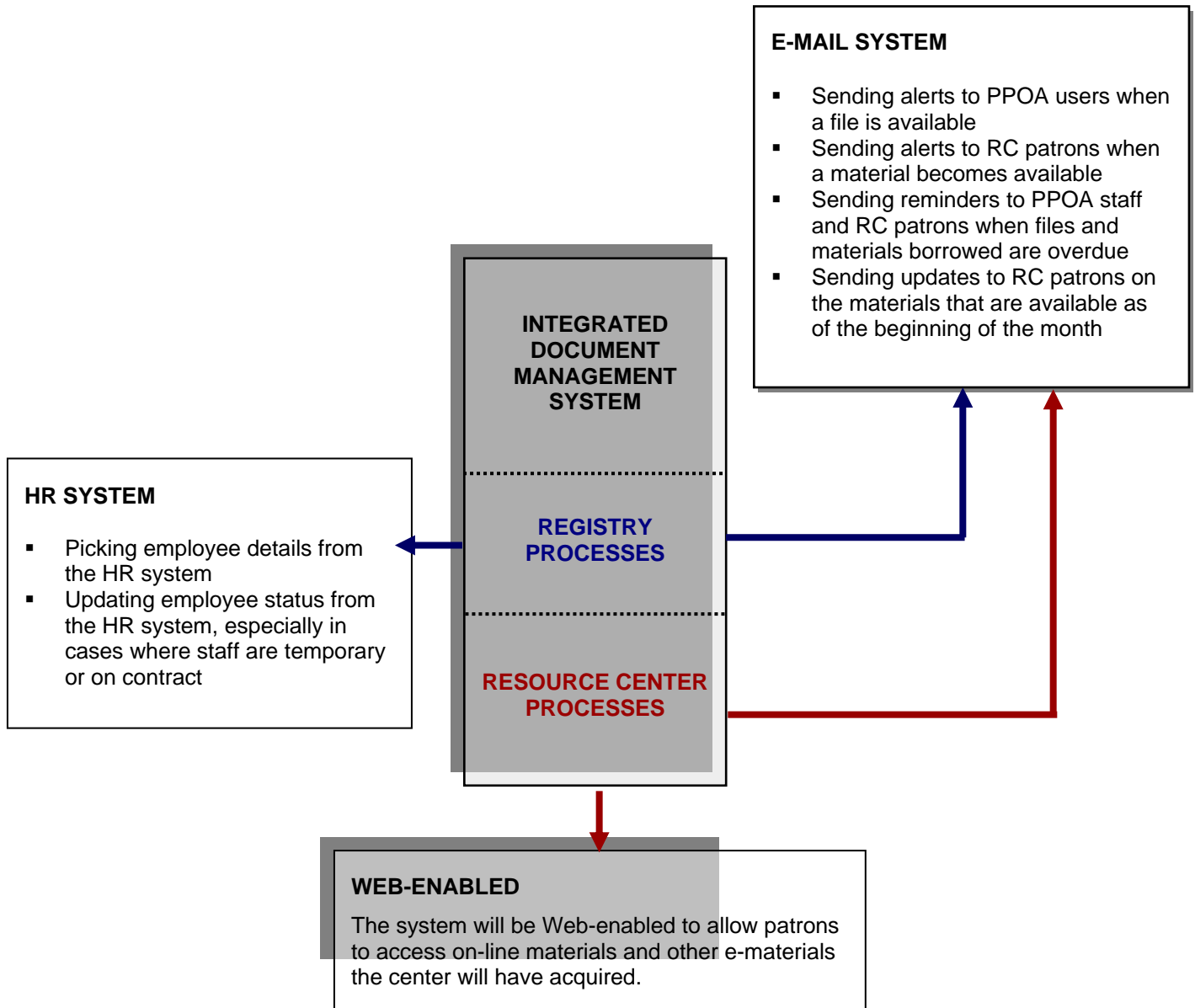
Although the IDMS is a stand-alone system in the sense that it does not need to be integrated to the business application systems/ERP, it requires linkages with some systems to be effective. These linkages include:

- Links to the HR master database for employees. During the setup of an employee on the IDMS – registry processes, the system will prompt the Registry Administrator to pick the name and details of the employee from the HR database. This will ensure that only bona-fide employees in the HR system can ultimately have access to PPOA documents.
- The links to the HR master database will also ensure that employees who have been terminated no longer have access to the system. At the end of each month, the Registry Administrator will run a function that will compare the names of users on the databases with employees in the HR database to ensure that only employees with an “active” status in the HR system have access to the registry system

- The Resource Center component of the IDMS will be Web-enabled to allow patrons to access e-materials over the Internet. The system will also enable patrons to see the full list of materials and reserve them.
- The full IDMS will be integrated to the e-mail system for PPOA to allow the system and administrators to send e-mail alerts for various purposes including, reminders to return materials and updates of new material.

The diagram on the following page summarizes the key links to the IDMS system.

Summary of IDMS System Linkages



RESOURCE CENTER BUSINESS PROCESS DIAGRAMS

Integrated Document Management System

Functions to Be Served by the IDMS

PPOA is currently managing its documentation through the services of the registry. This department is responsible for receiving and filing all correspondence, managing the movement of files, and managing the update and archiving of files.

This function is necessary for the new PPOA, but needs to be managed in a manner that allows each department to keep track of its documents in an efficient manner. The use of an integrated document management system will allow the function of the registry to be availed across the organization while using a fraction of the previous resources.

The Resource Center will be responsible for acquiring and managing diverse materials for the organization for purposes of internal and also external capacity building and knowledge transfer. The Resource Center will handle manual materials (magazines, journals, videos, CDs, DVDs) and as electronic materials (online material in PDF format, online subscriptions, etc). The IDMS will also provide the function for Resource Center management.

Brief Description of the Document Management System

An IDMS is usually composed of a relational database, software to act on that database, and two graphical user interfaces (one for administrators and one for staff). Most IDMSs separate software functions into modules, which are then integrated into a unified interface. Examples of modules required include:

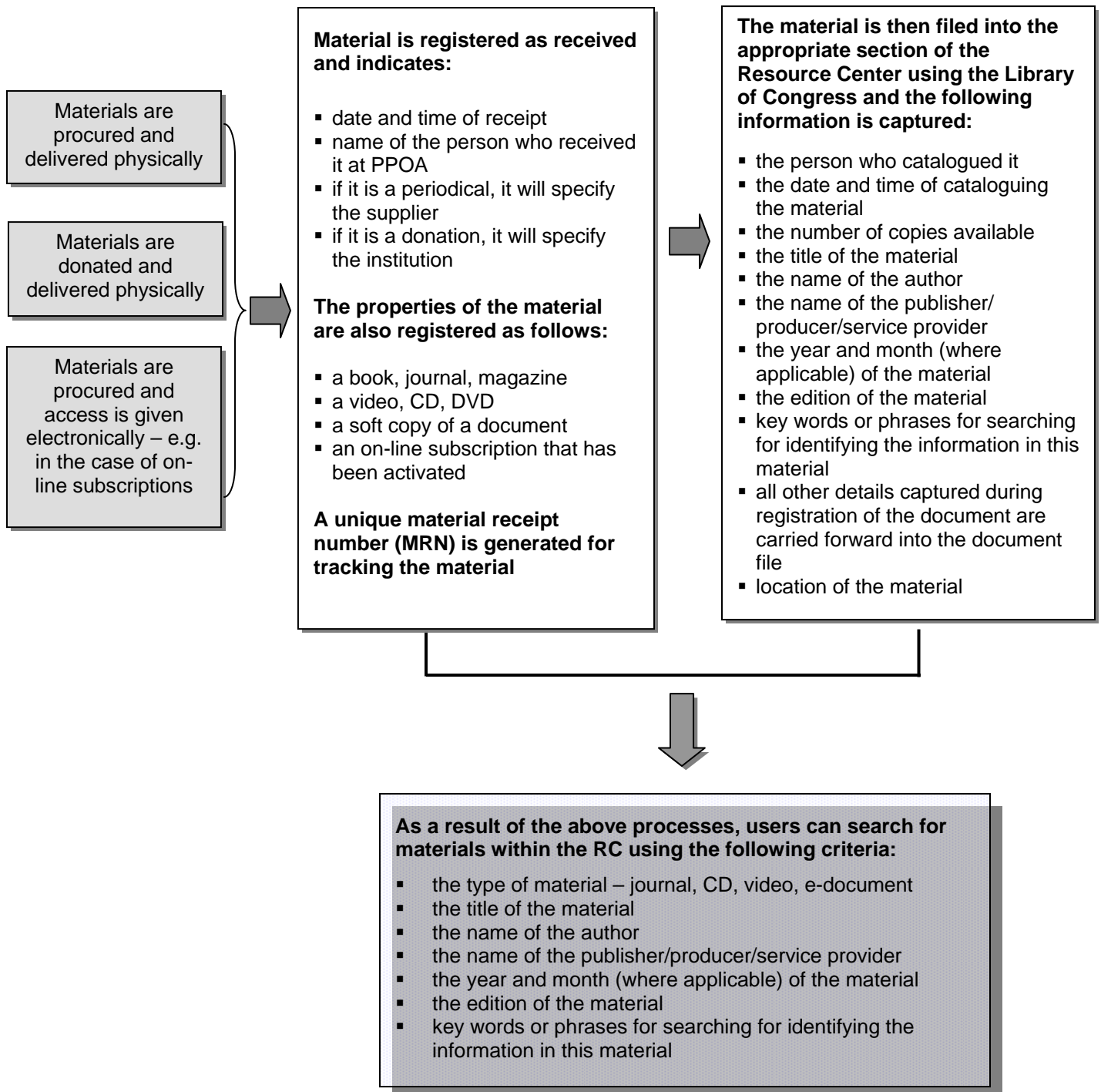
- acquisitions (ordering/subscribing and receiving materials)
- cataloging (classifying and indexing materials)
- circulation (releasing files and documents to staff and receiving them back, or loaning materials to patrons and receiving them back)
- serials (tracking magazine and newspaper holdings)
- OPAC (public interface for users to allow them to log in and request files/materials)
- each staff/patron and each item has a unique ID in the database that allows the IDMS to track its activity
- bar coding module – for easy tracking of files and materials

Business Process Diagrams — Resource Center

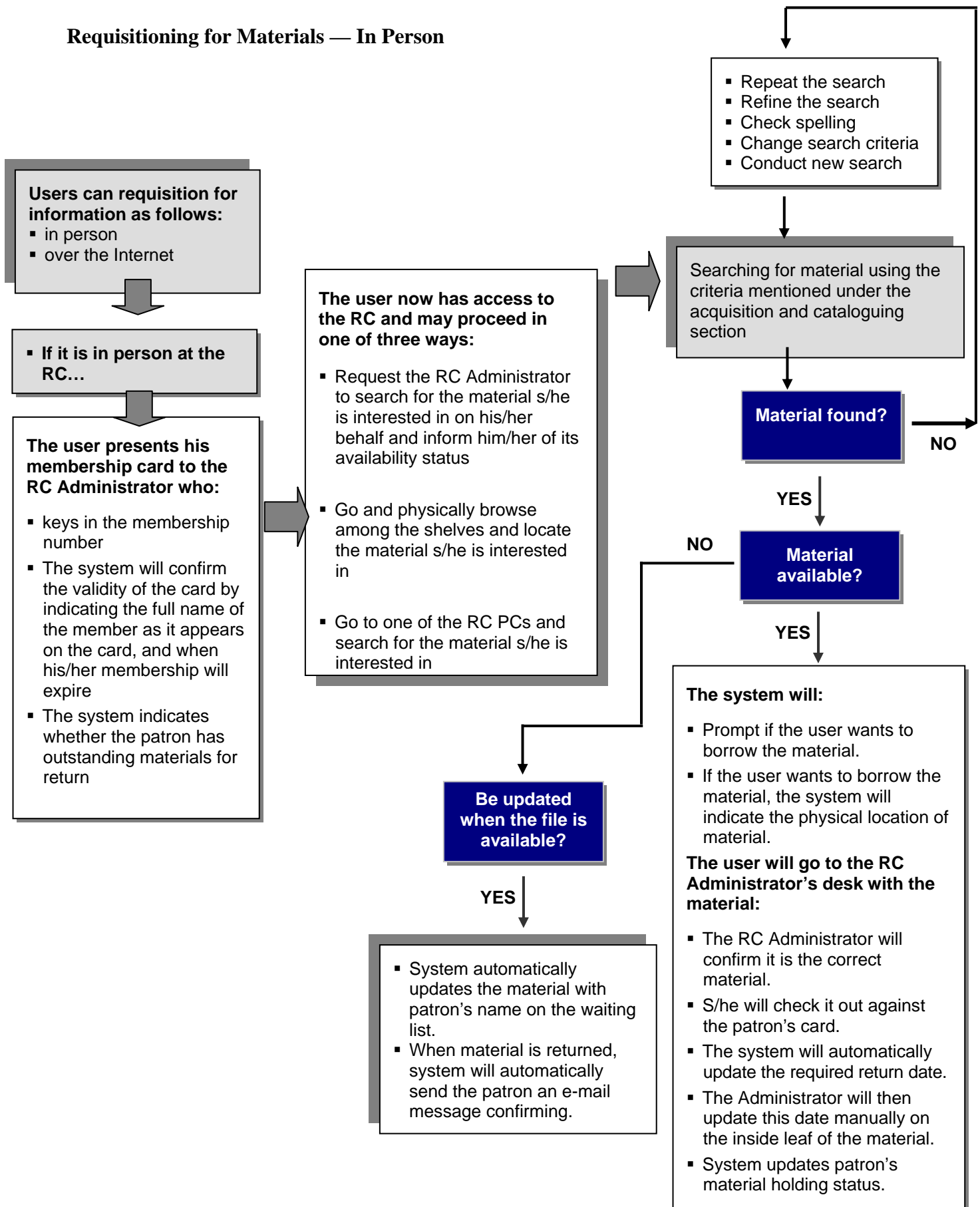
The business processes in the Resource Center are as follows:

- acquisitions and cataloguing of materials
- requisitioning for materials
- receiving materials back from patrons
- managing materials in their locations
- backing up the information in the RC

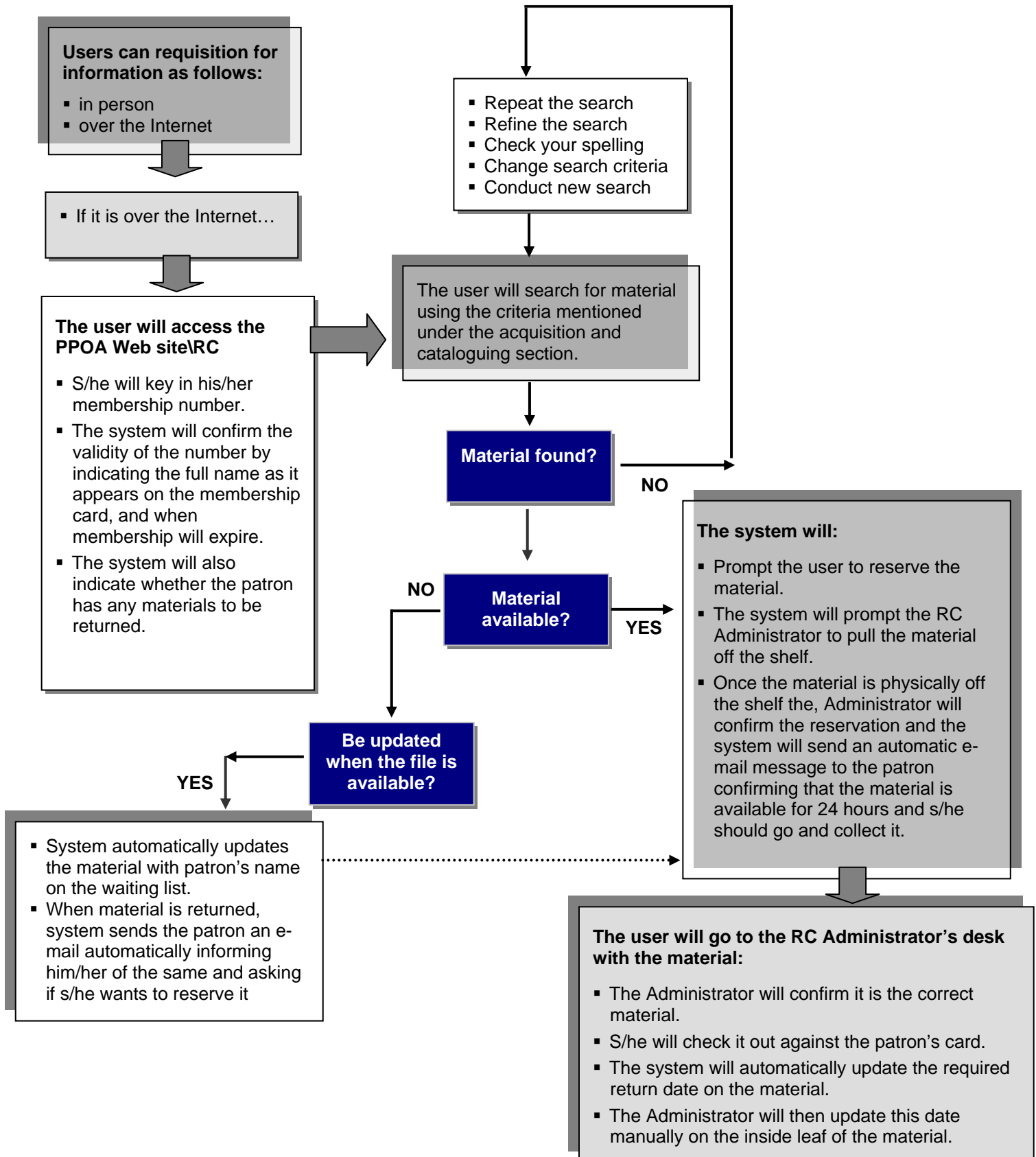
Acquisition and Cataloguing of Materials



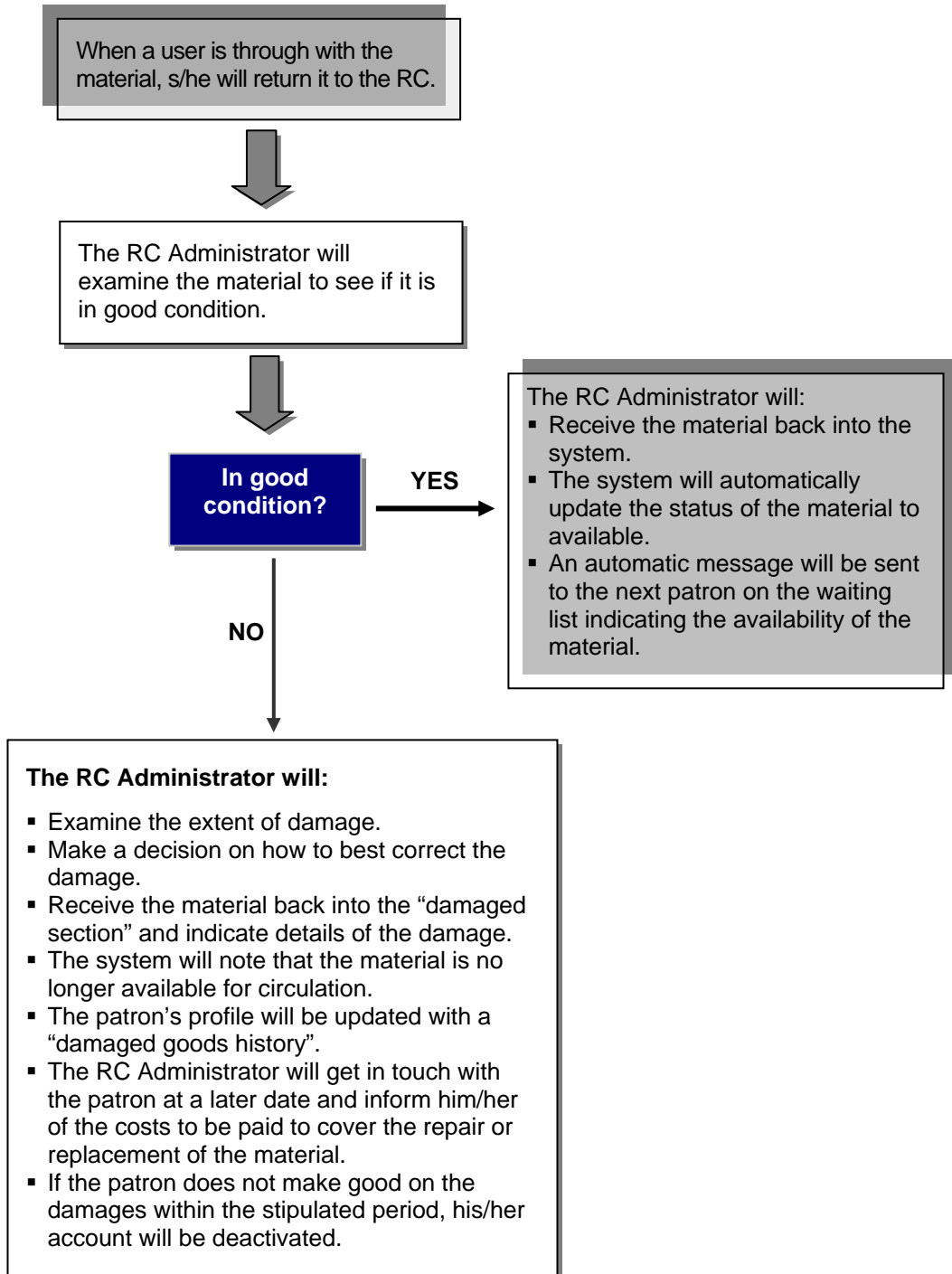
Requisitioning for Materials — In Person



Requisitioning for Materials — Online



Receiving Materials Back from Patrons



Managing Materials in the RC System

The IDMS will have the following functionality over and above the processes described above:

- The ability to set up locations for the various materials. These locations will refer to:
 - the room where the shelf or cabinet is to be found
 - the name/number of the cabinet/shelf
 - the number of the cabinet/shelf (1,2, 3 ... from the bottom)
- The ability to fully describe materials as follows:
 - the type of material e.g. journal, magazine, video, DVD, CD
 - the author(s) of the material
 - the publisher of the material
 - the copyright year of the material – mm-yyyy
 - the edition/volume of the material
 - the subject matter of the material
 - any other designations
- The system will capture the following information upon receipt in the system:
 - source of funds for acquiring the materials – PPOA/GoK/donor
 - the number of copies that exist
- The system will also allow the RC Administrator to indicate the status of the file and manage it as follows:
 - general – available for general circulation
 - restricted – only available to specific members/patrons
 - not for circulation – to be read or viewed in the RC but cannot be taken out of the RC
 - under repair – available in the library but currently being repaired
 - comments can be appended to the material by the RC Administrator
- The system will also allow the RC Administrator to generate the following reports:
 - the list of materials with a waiting list – this will assist him/her in knowing which materials need to be acquired in more than one copy
 - the list of materials that have not been returned within the stipulated time
 - the list of materials with the highest transaction rates and lowest transaction rates – necessary for determining how to store materials
 - the list of patrons who have not returned materials as stipulated at the end of the period.

- the system should have the capability of sending an automatic reminder to the patron via e-mail.
 - the list of materials determined as “lost” after interaction with the patrons concerned
 - the list of all online-resources that are available to the RC
 - the utilization of each patron
 - the demand for each piece of material
 - the list of patrons who have misplaced files and which files these are
 - the list of patrons with outstanding payments for membership
 - the list of patrons with outstanding payments for damaged or lost materials
 - the list of on-line subscriptions that are due for renewal
- The system will also allow patrons to be setup as follows:
 - the full names of the patron
 - their RC identification number
 - their place of work
 - their telephone contact details
 - their e-mail address
 - their post office box
 - their ID number
 - the duration of their membership
- The system will store information in the master database and the electronic-materials will also be in the e-materials database. All information in the system will be backed up on a daily basis and the tape stored in a location that is not the Resource Center.
- The information backed up will include:
 - master database with the locations’ list, materials’ list and members’ list
 - transaction files that indicate the status of all the materials and which member has which documents
 - document database with all e-materials like DVDs, CDs

The Advantages of the IDMS When Used for the Resource Center

The above business processes describe the functionality of a system that provides for the operations of Resource Center that is automated and delivers the following benefits:

- Automation of the processes of the RC will result in more effective use available resources.
- Because the IDMS used for the processes of the registry is the same one used for the processes of the Resource Center, training will be easier across the board for PPOA staff.
- The RC will be able to handle manual and electronic materials.
- Effective tracking of all materials.

Capacity Building Required for the IDMS — Resource Center

For effective use of the IDMS – Resource Center training will need to be done across the organization on the following areas:

- train all staff and patrons on the use of the IDMS to search for materials and access materials
- train the Resource Center Administrator on how to manage materials within the IDMS
- train the Resource Center Administrator on how to assist patrons with common Internet problems they may encounter when using the Internet at the RC
- train the ICT team on how to backup, restore, and manage the application

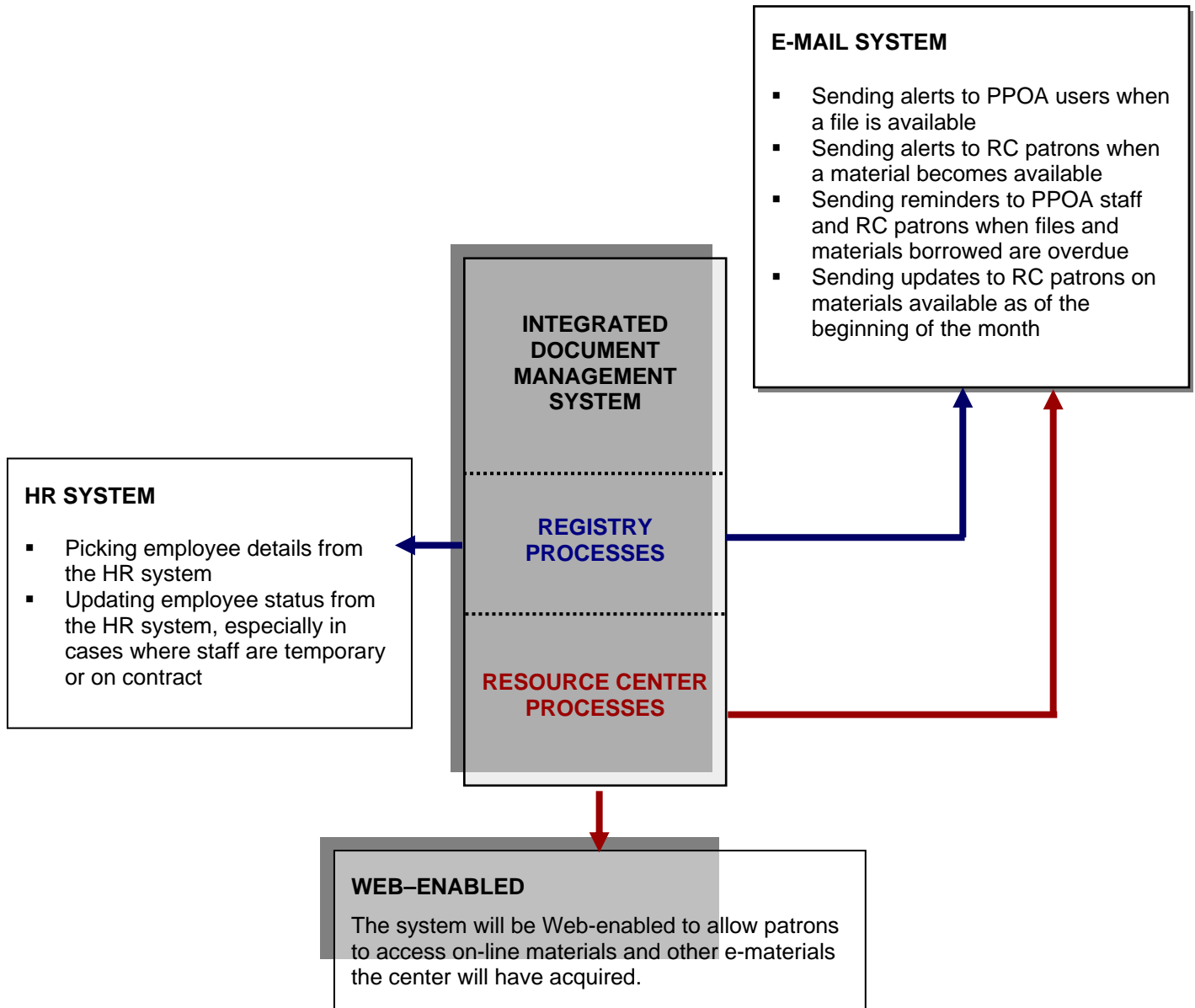
Links to the IDMS System

Although the IDMS is a stand-alone system in the sense that it does not need to be integrated to the business application systems/ERP, it requires certain link with some systems to be effective. These links include:

- Link to the HR master database for employees. During the setup of an employee on the IDMS – registry processes, the system will prompt the Registry Administrator to pick the name and details of the employee from the HR database. This will ensure that only bona-fide employees who exist in the HR system can have access to PPOA documents.
- The link to the HR master database for employees will also ensure that employees who have been terminated no longer have access to the system. At the end of each month, the Registry Administrator will run a function that will compare the names of users on the databases and the employees in the HR database to ensure that only employees with an “active” status in the HR system have access to the registry system.
- The Resource Center component of the IDMS will be Web-enabled to allow patrons to access e-materials over the Internet. The system will also enable patrons to see the full list of materials and reserve them, should they so wish.
- The full IDMS will be integrated to the e-mail system for PPOA to allow for the system as well as the individual administrators to send e-mail alerts for various purposes, including reminders to return materials, and updates of new material.

The diagram on the following page summarizes the key links to the IDMS system.

Summary of IDMS System Links



APPEALS BOARD BUSINESS PROCESS DIAGRAMS

Business Processes for the Appeals Board

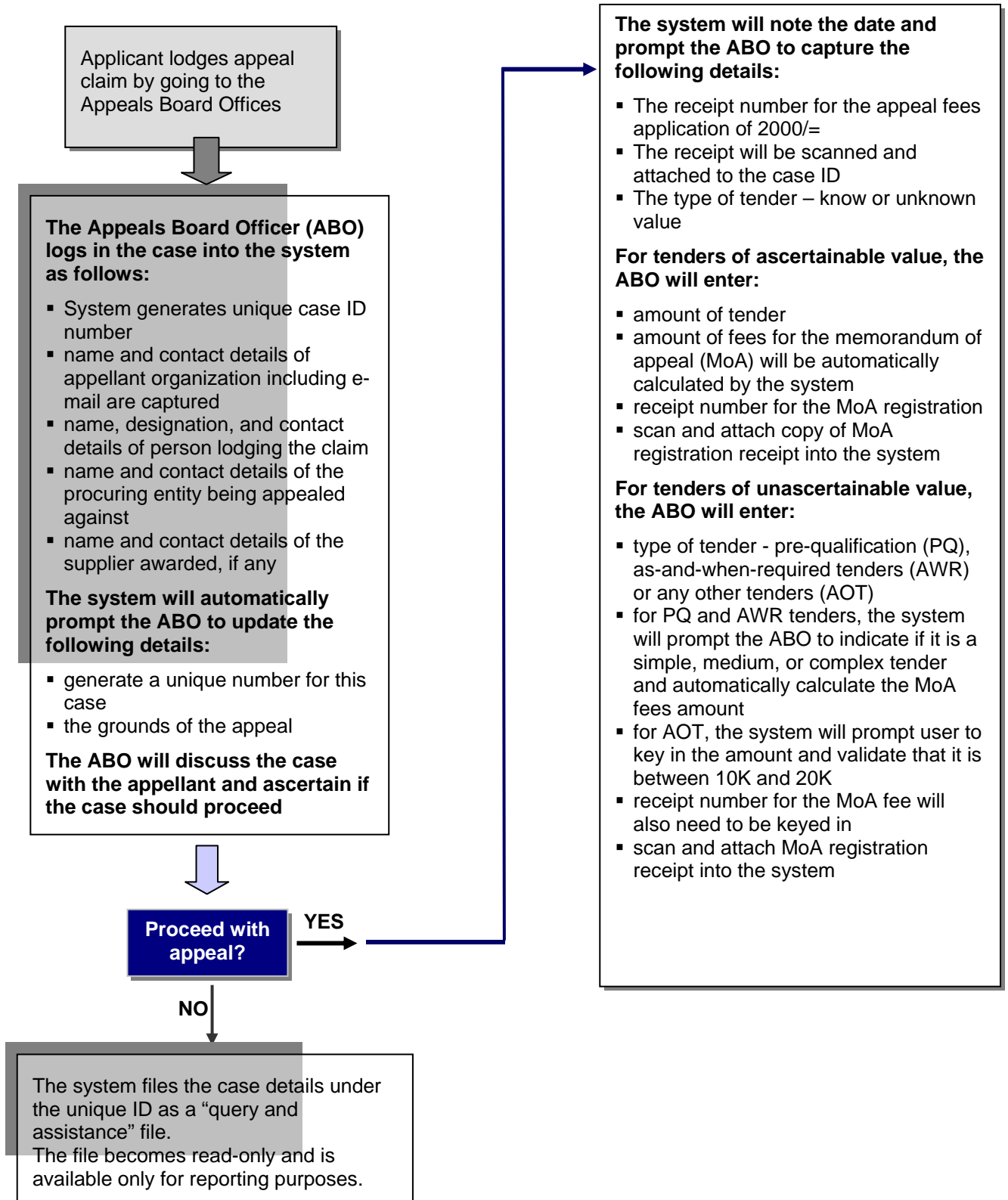
The Appeals Board has several business processes which can be effectively modeled onto a help desk system with a few customizations.

The processes described below are as a result of the interviews with staff at the Appeals Board and have incorporated current procedures, as well as other procedures to ensure accountability and security.

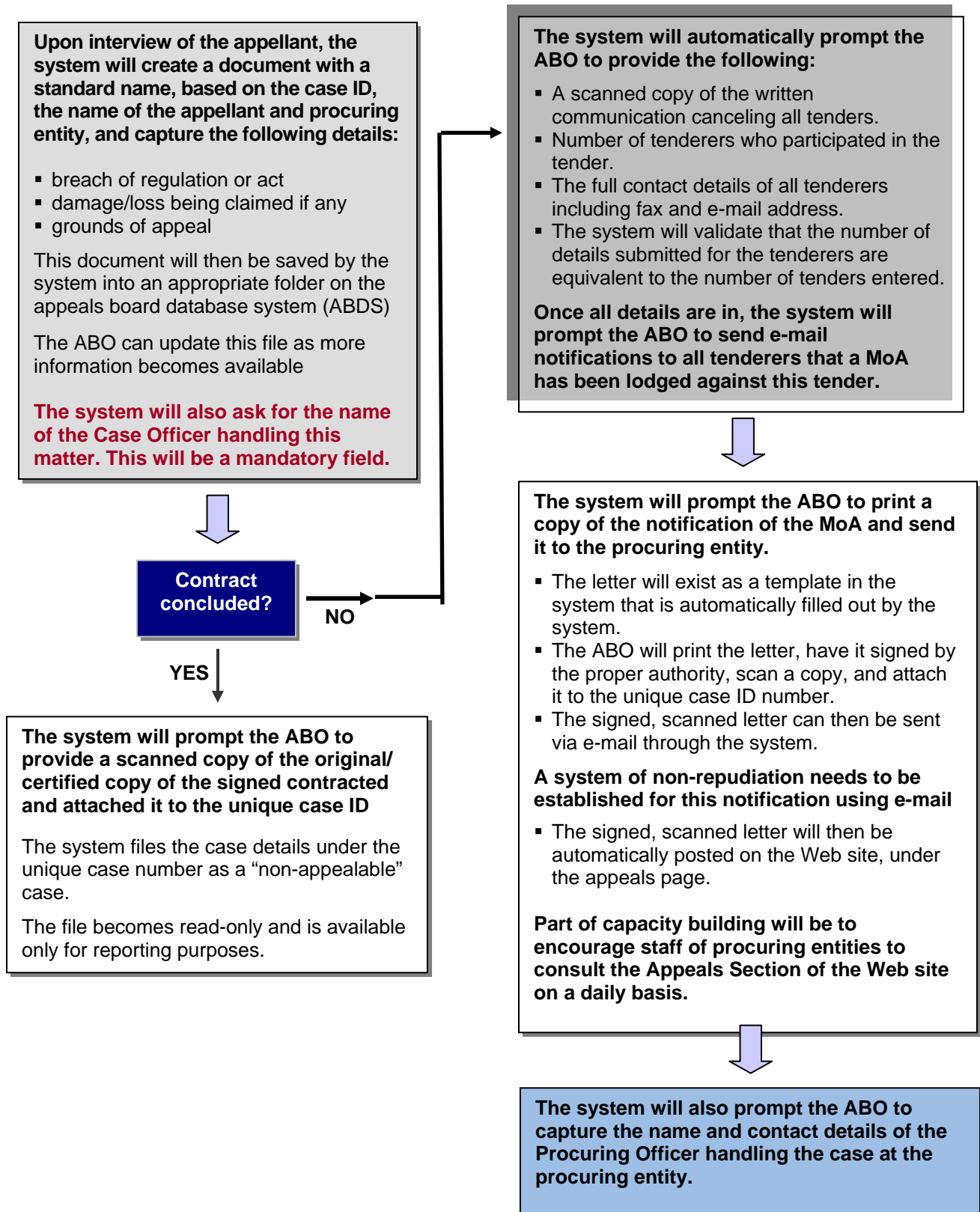
The processes of the appeals board are as follows:

- registering a case
- processing a case
- putting a case together
- managing and preparing for the hearing
- managing case updates in the system
- conducting searches in the system database
- scanned documents attached to the UCFID
- some reports that will be available from the system
- links with other systems

Registering a Case



Processing a Case



Building a Case

1

The system will automatically prompt the ABO to determine the documents required for this case by providing a list of pre-determined documents.

- Against each pre-determined document, the ABO will have to indicate if it is necessary or not by placing a tick.
- The system will then prompt the ABO to update the status of these documents each time the case file is opened until all necessary documents are marked as delivered.
- The system will automatically send a reminder to the e-mail address of the procuring entity for documents to be submitted once a day.
- As each document is submitted, the ABO will place a check mark against it.
- When the full set of documents has been delivered, a “document delivery form” (DDF) will be signed by the representative of the procuring entity and the ABO.
- The number of documents submitted will be indicated alongside each document.
- The number of copies submitted for each document will be indicated on the next column.

The scanned copy of the DDF will be attached to the unique case ID in the system.



2

Any time the ABO is following up on the case, s/he should ensure s/he is logged into the system. Under the follow-up window, the system will prompt the ABO to indicate:

- nature of follow-up (phone, fax, e-mail, letter)
 - date and time of the follow-up
 - person you spoke to
- or
- person you e-mailed, faxed, mailed

The system will automatically default to the name of the procuring officer at the entity, but this can be changed to any other person’s name.

- If follow-up is by letter, the system will prompt you to attach a scanned copy of the letter with the appropriate date, signature, and stamp.

3

- When the documents are received from the procuring entity, the names of the tenderers on the opening bid minutes will be compared to the names given by the procuring entity at the start of the exercise.
- The system will prompt the ABO to place a check mark against the names of the tenderers that have been validated.
- If other tenderers appear on the minutes that had not been disclosed before, they will be added to the system files and contacted.

All MoA notifications that are sent to the tenderers, especially the awarded supplier, and are confirmed will be scanned and attached to the case file number (CFN).

- Delivery and read notifications from e-mail will be attached to the CFN.
- Fax positive delivery confirmations will be scanned and attached to the CFN.
- The page of the delivery note book will be scanned and attached to the case file number.
- Any documents that confirm delivery will be scanned and attached to the CFN.

PPOA must acquire a messaging system that allows for the full spectrum of e-mail connectivity mentioned above.

PPOA’s e-mail bandwidth needs to be large enough to allow for e-mailing of MoAs complete with attachments.



4

The hearing notice will be crafted from a system template, printed, signed, and scanned back into the system. It can then be sent via:

- e-mail for all participants with e-mail
- e-mail to all members of the Appeals Board
- courier to all participants

As each confirmation of receipt of the hearing is acknowledged as delivered, this will be updated in the system against each tenderer’s name.

Managing and Preparing for the Hearing

1

Case officer writes the analysis report and prepares for the hearing as follows:

- The analysis report is attached in soft copy format to the case ID in the system.
- The date of submission is captured by the system.
- The analysis report is sent to members of the Appeals Board.
- The system notes the date when the analysis report is sent to board members.

2

On the day of the hearing, participants log into the system through a desktop provided at the entrance as follows:

- The participant will indicate if he is an Appeals Board member, a supplier, the procuring entity representative, the procuring entity's legal representative, the appellant, the appellant's legal representative, Case Officer of PPOA, assistant to the case officer, etc.
- The system will then ask for full names of the participants, the organization they are representing, and pertinent contact details.

These details will be captured by the system for writing the minutes of the hearing. The Case Officer will extract the names from the system registration module.

3

The minutes of the hearing will then be typed in as the case continues.

- They will eventually be edited and a soft copy scanned and put into the system under the Case ID Number.
- When the minutes are approved and signed, they shall be scanned into the system and attached to the particular case number

4

During the hearing, the system will make available to the Appeals Board a soft copy of all laws of Kenya

- These will be available by searching for them using the appropriate name.
- Because they are electronic, they will be projected on the first projector for participants to follow.
- Other documents produced during the hearing will be presented on a second camera projector for participants to follow easily and without the need for photocopying.

5

After the hearing is concluded:

- The Appeals Board will give a date for the ruling.
- The board will deliberate on issues and a ruling is arrived at.
- The interim ruling will be attached to the UCID as it is being written
- The Case Officer can update it until it is in its final version.

6

On the date the ruling is read:

- Participants will register into the system as indicated in Box 2 to the left.
- The ruling will be read aloud to participants.
- The final ruling will be approved by the board at a later date, signed, and initialed.
- A scanned copy will be posted in the system under the UCID.
- The abridged version of the ruling will be posted on the PPOA Web site.
- The Case Officer will then mark the UCID as "closed".
- This will render all details read-only and the case will only be available for reporting and reference.

If the ruling is appealed against, the date and particulars of the appeal will be noted and documents sent to the AG's office.

Managing Case Updates in the System

Against each unique case ID (UCID) the following information and status will be available:

- The contact details of the:
 - appellant company
 - officer representing the appellant’s company
 - procuring entity
 - procuring officer representing the procuring entity
 - Case Officer handling the case

- The number and name of each tenderer and the status of the same against case progress as shown below

Name of Tenderer	E-mail Address	Tenderer Appears on the Tender Minutes	Confirmation of MoA (dd-mm-yyyy)			Confirmation of Notice of Hearing (dd-mm-yyyy)		
			RM	E-M	F	RM	E-M	Fax
Supplier Fulani 1	md@supplier.com	√	11-02-2007			18-02-2007		
			√				√	
Supplier Fulani 2	gm@supplier.com	√	11-02-2007			16-02-2007		
				√				√
Supplier Fulani 3	info@supplier.com	√	11-02-2007			16-02-2007		
				√		√		

Note: RM – regular mail, post office, courier
 E-M – electronic mail
 F – fax

- Against each unique case ID, the status of the case will be given, indicating:
 - date the case was logged in
 - date when appeals application fee of 2000/= was received
 - date when the MoA registration fee was received
 - date when the MoA was sent out to tenderers
 - date when the procuring entity received the MoA
 - date and method for follow-up with the procuring entity to submit documents 1
 - date and method for follow-up with the procuring entity to submit documents 2
 - date and method for follow-up with the procuring entity to submit documents 3

- method and date when the procuring entity received the first reminder to submit documents
- method and date when the procuring entity received the second reminder
- date the awarded supplier received the MoA
- date when all of the relevant documents were received at PPOA
- date the notice of hearing was sent out to tenderers
- date when the notice of hearing went out to Review Board members
- date when analysis report was logged in by the Case Officer
- date of hearing
- date of ruling
- date the ruling was published on the Web site
- date of appeal against ruling, if any

Conducting Searches in the System Database

As a result of all the data that has been captured in the system, PPOA staff can search for the details of a case using the following parameters:

- name of appellant organization
- name of appellant organization representative
- date the 2000/= appeal fee was paid
- receipt number of the appeal fee
- date the MoA registration fee was paid
- receipt number of the registration fee
- name of case officer handling the matter
- hearing date of the case
- ruling date of the case

Scanned Documents Attached to the UCFID

As a result of all the documents that have been scanned, the system will be able to avail an e-version of the following documents:

- receipt for the appeal application fee of 2000/=
 - registration receipt for the MoA
 - concluded and signed contract from the procurement entity
- or
- letter from the procuring entity indicating it has cancelled the tender and communicated the same to all participants
 - signed letter of MoA notification
 - signed notice of hearing to all participants
 - proof of delivery for e-mail, fax, and regular post delivery of notifications of MoA and the hearing
 - analysis report to guide the Appeals Board on its deliberations
 - signed minutes of the hearing

- signed minutes of the ruling
- signed ruling
- abridged ruling that will be posted on the Internet

Some Reports that Will Be Available from the System

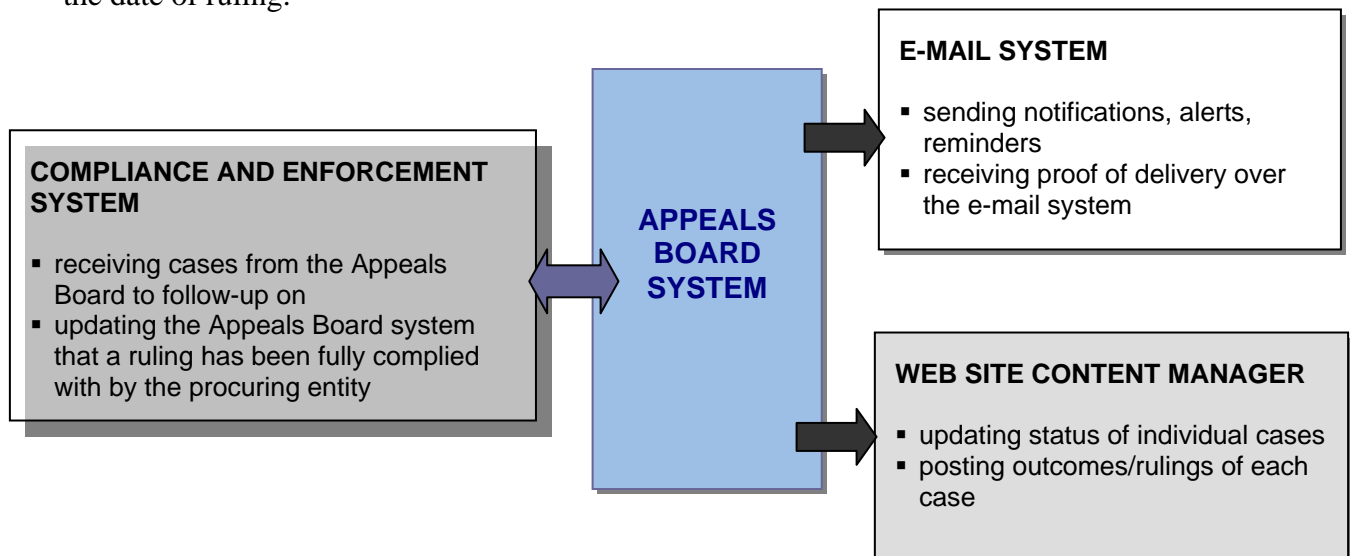
For purposes of managing the work of the Appeals Board a variety of reports will be made available including:

- the number of cases that have ended as “query and assistance” files
- the number of cases that have been withdrawn halfway through the hearing
- the number of cases successfully concluded over a given period
- the number of cases whose rulings have been repealed against over a given period
- the number of cases awaiting documents from the procurement entities
- the number of cases scheduled for hearing in a given period
- the number of cases whose hearings have been concluded but rulings are pending
- the number of cases whose rulings have been given, but the same has not been posted on the PPOA Web site
- the number of cases being handled by a particular Case Officer
- the number of cases registered against a particular procuring entity during a given period of time
- the amount of money raised through appeal application fee in a given period
- the amount of money raised through MOA registration in a given period of time

Linkages with other Systems

The Appeals Board system is essentially a stand-alone system. However, it will have links to the e-mail system and the Web site Content Manager to allow it to send alerts and publish rulings on the appropriate Web page.

The status of a case as given above can be posted on the PPOA Web site to ensure that all interested parties to the case are aware of the status of the case, especially the date of hearing and the date of ruling.



Capacity Building for the Appeals Board System

The following skills will be critical for the Appeals Board Staff to be able to function at an optimal level with the introduction of the automated appeals management system.

- typing
- use of e-mail
- working with PDFs
- working with the Web site content manager
- operating the heavy-duty scanner

COMPLIANCE AND ENFORCEMENT BUSINESS PROCESS DIAGRAMS

Business Processes for Compliance and Enforcement

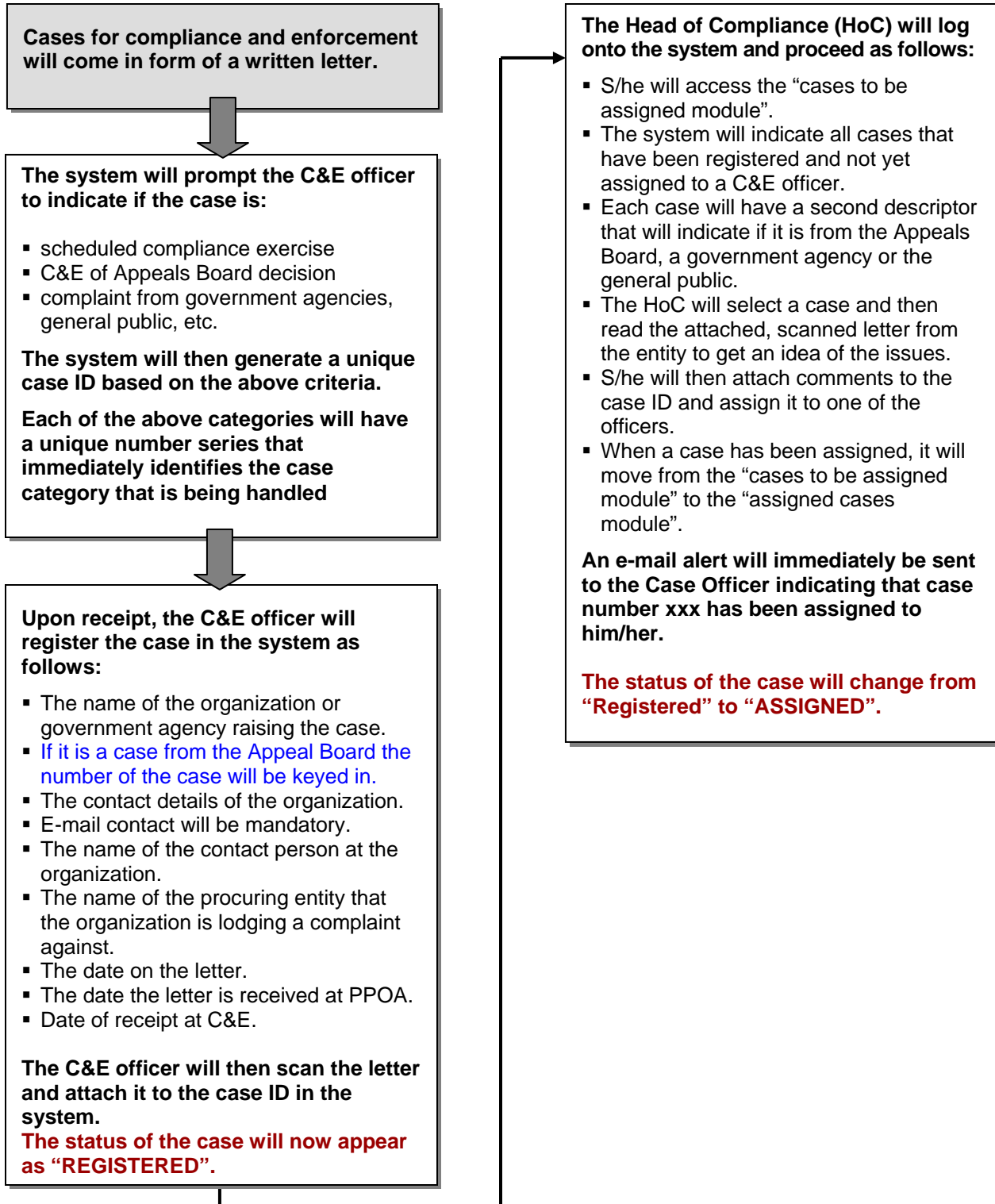
Compliance and enforcement (C&E) involve monitoring procurement processes at the PPOA's constituents to ensure that they are compliant with the law, as well as other policies and regulations that may come into effect from time to time.

This department works with Legal and Policy as well as with the Appeals Board. Links to the former are to ensure that compliance and enforcement officers are aware of the most current rules and regulations and the interpretation of the same in the working environment. Linkage to the Appeals Board is to ensure that rulings are complied with and breaches in procedure identified during the processes are highlighted and addressed.

The processes of compliance and enforcement are:

- receiving and registering a case
- managing a case in the system
- reviewing and closing a case in the system

Receiving and Registering a Case



Managing a Case in the System

The C&E Officer will log onto the system and will be presented with his case load:

- The “case load” is a screen that shows all cases assigned to the officer, date of assignment to the officer, number of days it has been active, and current status.
- This will enable the Case Officer to see at a glance his/her performance on the case load every time s/he logs on.
- The C&E Officer will access the latest case assigned to him.

The status of the case will immediately change from Assigned to ACTIVATED



The C&E Officer will proceed as follows:

- S/he will read the scanned letter/file with the details of the case.
- S/he will read comments from the HoC.
- S/he will then access the work plan section of the case and indicate in bullet points the steps s/he will take on this assignment.

The work plan will assist the HoC to know how thoroughly the C&E Officers are handling assignments.

After the work plan is submitted into the system, the status of the case will change from “Activated” to “PLANNED”.



The C&E system will be accessible over the Internet, so that C&E officers can update case loads even when traveling within the country.

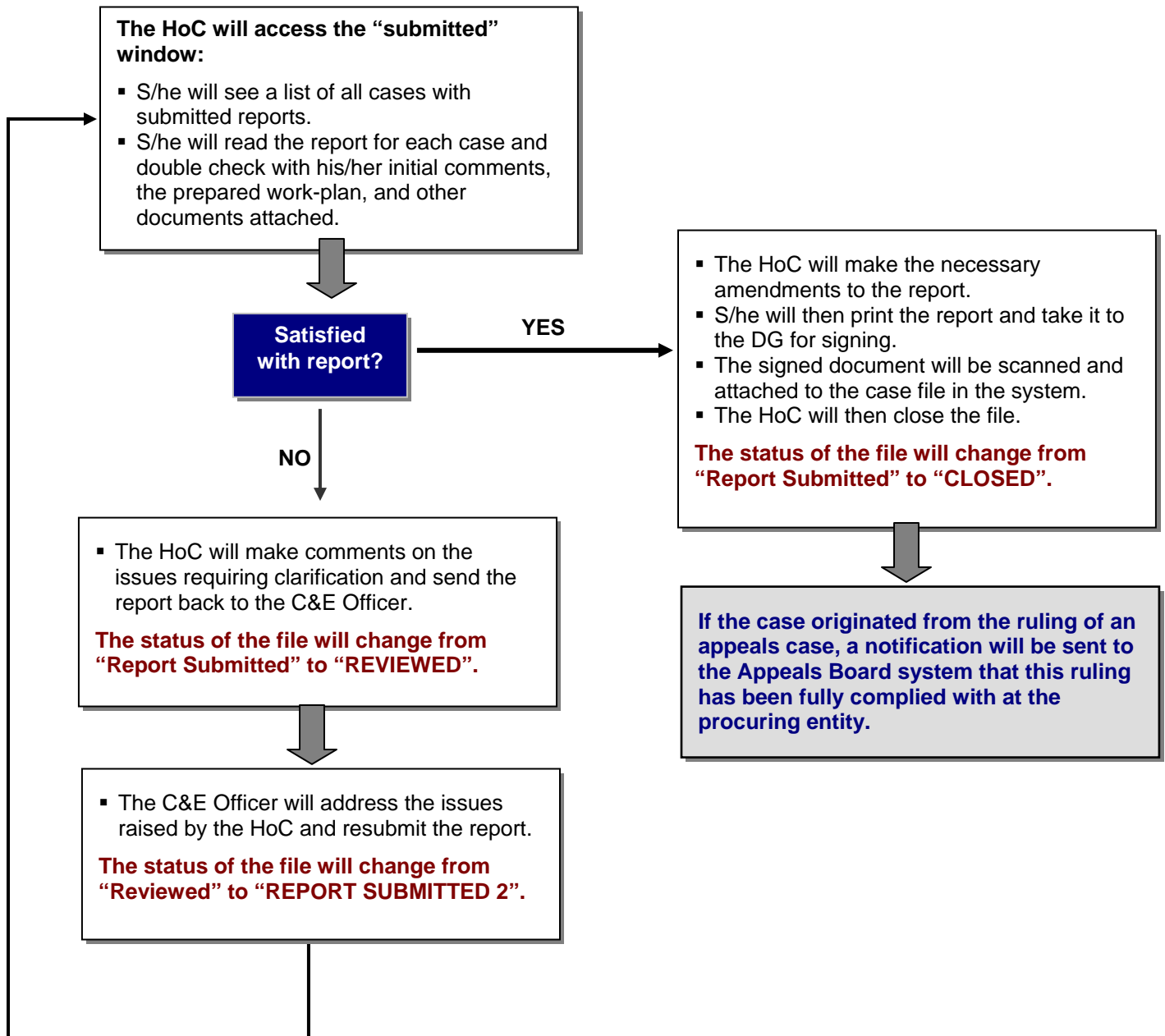
The C&E Officer will log his/her activities pertaining to this case under the “activities” window and will capture:

- Date of activity, nature of activity, e.g. sent letter to accounting officer of the procuring entity; visited the procuring entity and examined documents; received missing documents from entity.
- Pages of the relevant documents collected will be highlighted, notes appended, and scanned into the system against the case number.
- When the exercise is complete, the C&E Officer will write his/her report and submit it in the system.

The system will automatically send an e-mail alert to the HoC that the report for case number xxx has been submitted.

The status of the case will change from “Planned” to “REPORT SUBMITTED”.

Reviewing and Closing a Case in the System



Advantages of Automating Compliance and Enforcement

There are several advantages to automating this particular function as indicated below:

- More effective use of employee time, because tasks like registering cases and availing the needed information can be delegated to junior staff.
- A lot of time is saved by having access to documents online that would otherwise have been spent requesting files from the registry.
- Increased collaboration between the compliance and enforcement staff, because case files can be delegated or handed over with all details intact and available electronically.
- Documents will be backed up through scanning and attaching them to the appropriate case. Should the hard copy file be lost, electronic files will always be available, because they will be backed up daily.
- E-mail alerts and updates will keep all players informed of the status of cases in their docket.
- Currently, cases can remain “OPEN” for a long period of time without staff being aware that action is due, a reminder is needed or follow up is required. Automating the process will ensure the status of each case is known and cases can actually be closed within stipulated time.
- Because the system will be Internet-enabled, staff will be able to submit their reports and consult documents while in the field on assignment, without having to carry bulky documents with them.
- This will also prove cost-effective, because staff can be deployed on compliance and enforcement assignments in a certain area, where they will be able to handle several cases in the area, without needing to go back to headquarters to submit reports and consult documents.

Electronic Forms for Periodic Reporting by Procuring Entities

PPOA is responsible for receiving and analyzing returns from the procuring entities on a quarterly basis on the following issues:

- all contracts awarded above 5 million schillings
- all contracts terminated before award/contracting
- all contracts terminated after award/contracting
- all single-sourcing procuring transactions

These returns can be streamlined by providing electronic forms on the PPOA Web site that allow the procuring entities to fill in details of the above returns online. The hard copies that will be signed and stamped will be delivered later for verification at the PPOA offices.

Searching within the C&E System

Due to the automation, cases being handled by the compliance and enforcement team can be searched/filtered according to the following criteria:

- officer who handled the case
- date the case was registered in the system
- name of organization that initiated the C&E case
- name of procuring entity involved in the C&E case
- category of case – from Appeals Board, scheduled C&E assignment, general public initiated assignment, government agency initiated case
- status of the case – registered, assigned, activated, planned, report submitted, closed, under review, etc.

Reporting within the C&E System

As a result of the automation, these are some of the reports that should be available from an automated system:

- number of cases per status – number of cases that are registered, number of cases that are activated, etc
- number of cases per status per C&E Officer per month, quarter, year
- number of cases per status per procuring entity per period
- number of cases per status per government agency – how many KACC initiated cases are being reviewed

Linkages with other Systems

