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ADT SYSTEM AT LEZHA REGIONAL HOSPITAL

TECHNICAL REPORT

September 4, 2012

This publication was produced for review by the United States Agency for International Development. It was prepared by Ahmad Hashem, MD, PhD and Ervis N. Bregu for the Enabling Equitable Health Reform Project in Albania.

Recommended Citation: Hashem, Ahmad and E. Bregu, September 4, 2012. *ADT System at Lezha Regional Hospital: Technical Report.* Bethesda, MD. Enabling Equitable Health Reform Project in Albania, Abt Associates Inc.

Contract No.: 182-C-00-10-00104-00

Submitted to: Dr. Zhaneta Shatri
Health Team Leader
EEHR Contracting Officer's Technical Representative
USAID/Albania

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ACRONYMS

ADT	Admissions – Discharge - Transfer
CCTV	Closed Circuit Television
EEHR	Enabling Equitable Health Reform
HII	Health Insurance Institute
HIS	Hospital Information System
HR	Human Resources
ICD	International Classification of Diseases
ID	Identification
IP	Internet Protocol
LRH	Lezha Regional Hospital
MOH	Ministry of Health
NAIS	National Agency of Information Society
OPS	Operationen- und Prozedurenschlüssel (Operations and Procedures Codes)
RFP	Request for Proposals
UoM	Unit of Measurement
UPS	Uninterrupted Power Supply
USAID	United States Agency for International Development
VOIP	Voice Over Internet Protocol

EXECUTIVE SUMMARY

Lezha Regional Hospital (LRH), a162-bed hospital serving 224,000 inhabitants, is looking to implement an Admissions – Discharge - Transfer (ADT) system along with the IT infrastructure associated with it in order to support improved hospital management, health service delivery, and health information. The hospital provides services to the entire Lezha district and to a number of people of Shkodra District and the districts of Lac and Kurbin. Lezha Regional Hospital is made up of three buildings, two of which are situated on the hill over the city, and the maternity building is located in the city center. In this document, we describe the technical requirements of the ADT system and the IT infrastructure.

We describe a set of 16 business processes associated with the ADT functions in the hospital. The ADT system should enable users to register new incoming patients and/or citizens. Some of them become visitors, others become admitted patients. The system should manage transfers to specific hospital wards and beds, patient discharge, and basic patient billing. A unique identifier string for each patient should be created to be used as an identifier. In addition to personal information and a digital photo, key medical information (i.e. blood type, basic medical history and family medical issues) should be captured in the system.

A list of suggested data fields is provided in this report, including fields for person identification, registration, admissions, referrals, visitors, and HR. The system should provide detailed reports on admissions, service activity, emergency, bed occupancy, staff activity, discharges, visitors, and diagnoses. The system should also support the hospital security and access control policies.

Training the staff on using the system is crucial for its success. Therefore, we describe in this report the training requirements in detail. We suggest some training to be in the classroom and other to be on the job. Training should be tailored to each staff position (HR, finance, nursing, medical, statistics, etc.)

The system should adhere to certain standards including the National Agency of Information Society (NAIS) and Ministry of Health standards. The proposed project plan expects the system to be up and running within 125 days from signing the contract with the vendor.

The Network and Computer Hardware specifications are provided in detail for reference, including the server room specs and the NAIS guidelines. Also included are architectural blueprints of hospital floors showing the placement of the different working posts and hardware components.

The attachments at the end of this report include a sample Request for Proposals, a proposed evaluation committee composition, a planned ceiling amount to be subcontracted ($258,000), and the timeframe of the system to be in place (6 months).

1. GENERAL OVERVIEW

1.1 INTRODUCTION

Lezha Regional Hospital (LRH) is looking to implement an Admissions – Discharge - Transfer system along with the IT infrastructure associated with it, in order to support improved hospital management, health service delivery, and health information. We provide here information about the hospital environment and the technical specifications and requirements.

1.2 LEZHA REGIONAL HOSPITAL ENVIRONMENT

Lezha Regional Hospital is a 162-bed hospital serving 224,000 inhabitants. It is the only hospital in the District of Lezha and provides services to the entire district and to a number of people of Shkodra District (the communes of Barbullush, Bushat, Hajmel) and the districts of Lac and Kurbin. Lezha Regional Hospital is made up of three buildings, two of which are situated on the hill over the city, and the maternity building is located in the city center:

- Polyclinic and Administration: This building houses all patients that come in as outpatients and undergo consults and/or specialized planned examinations.
- Main Campus: this is a three story building that houses the emergency service, imaging, bio-chemical and clinical lab, surgery, pediatric, internal medicine, infectious disease and the pharmacy.
- The Maternity: also a three story building, is located in the center of the city and includes the obstetrics, gynecology, surgery and neonatal services.

Some statistical data on the Lezha Regional Hospital are given below:

TABLE 1 – KEY STATISTICS OF LEZHA REGIONAL HOSPITAL

Indicator	No.
Physicians	38
Nurses	138
Administration employees	16
Number of beds	164
Number of outpatient visits daily	54
Number of Emergency visits daily	68
Average number of bed occupancy daily	101

The services offered at the hospital are:

- Consultation Service (Polyclinic)
- Emergency Service
    - Same-day hospitalization

Pediatric Service

    - Same-day hospitalization
    - Ward
- General Surgery Service
    - Surgery
    - Orthopedics
    - ENT

    - Operation block
- Infectious Diseases Service
- ICU Service
- Obstetrics and Gynecology Service
    - Obstetrics
    - Gynecology
    - Neonatology
    - Operation block
- Imaging Service
    - Fluoroscopy
    - Endoscopy
    - CT
    - Ultrasound
- Laboratory Service
    - Biochemical and clinical
- Pharmacy Service

The services with the highest work load are: Emergency, Internal Medicine, Maternity, Surgery, and Internal Diseases Services.

The ADT system that is requested here explicitly excludes the outpatient services.

The bed breakdown at Lezha Regional Hospital is as follows:

TABLE 2 – BED BREAKDOWN AT LEZHA REGIONAL HOSPITAL

Service	Beds
Surgery	36
Internal medicine	32
Pediatrics	27
ICU	4
Infectious diseases	16
Maternity	49
Emergency	6

The staff distribution at the Lezha Regional Hospital is as shown below:

TABLE 3 – STAFF DISTRIBUTION AT LEZHA REGIONAL HOSPITAL

Position	Number of staff
Hospital Director	1
Hospital Deputy Director	2
Head of Administration	1
Head of Medical Service	1
Head of Surgery Service	1
Head of Imaging Service	1
Head of Laboratory Service	1
Medical Doctors	27
Surgeons	4
Laboratory Doctors	1
Imaging Doctors	1
Medical Service Head Nurse	1

Surgery Service Head Nurse	1
General Nurses	135
Technical Imaging Nurses	3
Laboratory Nurse at Blood Bank	1
Assistant/Pharmacist at Central Pharmacy	4
File Room Personnel	2
Bio-Medical Engineering Personnel	1

It should be mentioned that the Lezha Maternity is some 600 meters away from the main hospital campus, with its own reception. The communication method between the two sites solution should be proposed by the bidder (e.g., WiFi antennas or any other reasonable method) based on the bidder's calculation of the needed bandwidth, and the expected cost of setup and operation.

2. BUSINESS PROCESSES DESCRIPTION

The following is a proposed list of business processes concerning the interaction of Lezha Regional Hospital staff and the various components of the ADT system:

Process 1.

The Human Resources personnel inputs all the information regarding hospital staff: Heads of Service, Physicians, Head Nurses and Nurses. Information updates occur in accordance with needs. The information entered concerns name, address, credentials, etc.

Process 2.

The Human Resources personnel inputs information regarding referrals by General Practitioners, Family Physicians, and Reference Structures. Information updates occur in accordance with needs.

Process 3.

Receptions request the ID's of persons coming to the hospital and ensure:

- the completion of the registration information
- the completion of the acceptance information by printing the invoice and internal referral.

Process 4.

The attending physician includes the respective notes in the internal referral for admission, and marks the internal referral at the respective Head of Service.

Process 5.

The Head Nurse delegates a nurse along with a patient family member to the reception with the opened patient medical record where all the data for the opening of the record have been entered.

Process 6.

The receptionist completes the hospital admission information based on the data entered in the internal referral and in the open record, and informs the nurse and the patient family member.

Process 7.

The nurse takes the open record and the other documents to the file room.

Process 8.

The file room controls all the respective documentation. If everything is in order, the record number is marked in the admission module of the ADT system while a note is made in the record. Through the ADT system, the file room prints the hospital accepted admissions form.

Process 9.

The nurse heads back to the ward with the marked record and notifies the head nurse.

Process 10.

Through the system, the head nurse determines the room and the bed of the patient.

Process 11.

On the day of discharge, the head nurse uses the system to capture the diagnosis for each file. This information is reserved and can be entered only one time, and is transmitted by the system at the medical report form ready to be processed by the file room. The information about diagnoses represent information at the day the patient leaves the hospital. The head nurse should stress the physicians to complete the discharge note and update the medical file with the final diagnoses and

interventions performed. This is extremely important to gather the correct data through ICD and OPS codes.

After this step, the discharge form according to the orders of the attending physician and the head of service can be processed via the system. The printed discharge form is given to the patient as he/she leaves.

Process 12.

On the discharge day, the head nurse processes the discharge note via the system.

Process 13.

Within five days from the patient discharge, the attending physician closes the physical medical record and turns it over to the head nurse.

Process 14.

The head nurse gathers all closed medical records from the physicians and goes to the file room to do their administrative closing.

Process 15.

The file room does the final control of the medical records and if they have been closed in accordance with applicable protocols, it completes the respective medical reports in the ADT system and turns them over to the respective service head nurse.

Process 16.

Medical reports are distributed to attending physician who initials them and files them with the head nurse.

3. TECHNICAL FEATURES OF SOFTWARE

3.1 KEY FUNCTIONAL REQUIREMENTS

The required functionalities are divided into multiple categories, such as registration, admissions, transfer, discharge, and visitor control. The system must enable users to register new incoming patients and/or citizens. Some of them become visitors, others become admitted patients. The system should manage transfers to specific hospital wards and beds, patient discharge, and basic patient billing. A unique identifier string for each patient must be created to be used as an identifier. In addition to personal information and a digital photo, key medical information (i.e. blood type, basic medical history and family medical issues should be captured in the system.

This information must be displayed in an easily readable/understandable format on the interfaces and screens of the system (i.e. review and input screens, dialog boxes, etc.). Some screens must be supported with dynamic tool to add extra user-defined fields (if needed). There must the ability to audit and merge previous medical records of the same person (if needed). The system must be able to provide a wide range of reports and support various needed queries, besides providing the ability to build user-defined queries and reports based on special user-defined criteria. The system should be built and customized using modern technical methodologies. Implementation based on open source technologies – if possible – will enable cost-effective continual updates of the system.

DETAILS OF FUNCTIONALITY FEATURES & TECHNICAL CHARACTERISTICS OF THE SYSTEM

The following is a sample list of features that is expected to be offered by the system. We also indicate the priority of each feature. Bidders need to be aware that this is only a sample list, and they are encouraged to provide a description of additional features provided by their system:

TABLE 4 – SOFTWARE FUNCTIONAL FEATURES AND TECHNICAL CHARACTERISTICS

Feature #	Feature Description	Priority Essential: 1; Needed: 2; Optional: 3
1	The serial numbers for patients must be unique and composed of alphabetical and numerical characters	1
2	Ability to incorporate manual numbering without violating number uniqueness	3
3	Ability to create multiple serial numbers	3
4	Serial numbers can be created automatically or manually	3
5	Ability to capture and retain a female maiden name (pre-marriage lastname) in addition to her new family name, and to connect the two names	1
6	A function to enable users to search for patient records using standard or user-defined search criteria	1
7	A function to search for patients using "soundex" or "alike" criteria	3
8	System should support multiple languages (i.e. Albanian, English and Italian)	1
9	A function to capture a digital photo of the patient using a digital camera attached to the computer at the registration office	2
10	A function to capture basic medical information (blood type, allergies, etc..)	1
11	A function to print a sticker with patient name and basic information to attach to the hard copy of the patient file, also to print on wrist band if needed	2
12	A print function to print the registration form and registration card	1

TABLE 4 – SOFTWARE FUNCTIONAL FEATURES AND TECHNICAL CHARACTERISTICS		
Feature #	**Feature Description**	**Priority** **Essential: 1; Needed: 2; Optional: 3**
13	A print function to print various stickers for prescriptions and medications. All prints must have bar-codes.	2
14	Support for verious types of printers including narrow thermal printers for barcode printing and wrist band printing if needed	2
15	Ability to print medical leave certification and attendance sheet (re- human resources)	2
16	A security function to create multiple security levels to control user access to patient records	1
17	Special functionality to indicate VIPs and anonymize them without losing patient information	1
18	Functionality to identify certain patient info as classified, with additional access control	2
19	Ability to connect with civil registry to automatically pick personal information (i.e. father name, mother name, date of birth, …)	3
20	Ability to build up the medical records, from current and previous medical information, in addition to medication/prescription records and other information	2
21	Ability to link the records of patients from the same family, perform comparisons, and identify common patient history items between family members	2
22	Ability to register family members and dependents and next of kin information	2
23	Ability to identify duplicate registrations for the same patient	1
24	A function to merge the medical records of returning patients	1
25	A function to un-merge records that were mistakenly merged	3
26	Ability to record multiple addresses for the patient and to save old addresses	1
27	Flexible search functionality, based on various criteria (fixed or user-defined)	1
28	A function to capture the educational level of the patient in a standarized way	2
29	A function to identify the status of the patient (admitted, in ward, in operating room, being discharged, etc.)	2
30	A function to register referral information and details of referring entity (medical practice, doctor, hospital)	1
31	Ability to create temporary registration numbers	2
32	Referred patients can have their own registration numbers later after admission with indication to the referral temp number	3
33	Ability to manage and list multiple referrals	3
34	Ability to incorporate medical consult (s) resulting from referrals in the patient record	2
35	Ability to create and print a referral note from the hospital to another hospital	3
36	Functionality to configure departments within hospital in a flexible manner	1
37	Functionality to configure doctors list within hospital in a flexible manner	1
38	Functionality to configure doctor report in a flexible manner	2
39	Functionality to configure beds and rooms for admitted patients in a flexible manner	1
40	Functionality to select the department where patient is admitted	1
41	Support for the selection of ward/room/bed for patient	1
42	Functionality to build up list of services attached to patient upon admission (consult, lab tests, drugs..etc.)	2
43	Functionality to build up a list of doctors to refer to	2
44	Support to select departments for the referral process	1
45	Functionality to register the patient discharge information (doctor, medication,	1

TABLE 4 – SOFTWARE FUNCTIONAL FEATURES AND TECHNICAL CHARACTERISTICS		
Feature #	**Feature Description**	**Priority** **Essential: 1; Needed: 2; Optional: 3**
	symptoms, diagnosis, etc.)	
46	Support for standard codes for diagnoses and procedures (ICD, OPS)	1
47	Ability to modify lists of codes (diagnoses, procedures) with proper permission	1
48	Ability to add different coding systems with proper permission	2
49	Ability to connect with the billing system module to calculate fees and print invoices. (More sophisticated billing features will receive extra points)	2
50	Ability to scan documents related to patients (letters, insurance cards, etc) and visitors (driver license, ID card) and load them with the person's information	1
51	Ability to register the death cases and stop age-increase function	1
52	Ability to link to civil records to register death cases	3
53	Emergency registration function with input screens accepting minimal information, and creating special serial number	2
54	Emergency information can be merged with the patient record and the patient can get a special unique number. Emergency number should be indicated somehow	2
55	Emergency information should include emergency treatment information	1
56	The system should be able to register and process basic billing information (i.e insurance type, coverage level, and payment method)	1
57	Ability for users to create user-defined fields on some screens	3
58	The registration module should be the main interface to create the central patient database that will connect to other system modules like billing and medical records management, without duplicating the information	1
59	The system should support all applicable Health Insurance Institute and Ministry of Health standards and requirements for patient admissions and discharge	1
60	The system should interlink with other applications in other hospitals using HL7 standard	3
61	Ability to track any changes happening on the medical record of a patient (i.e update, deletion, modification) and registering the user-log information (who did what, date and time stamp, security level)	1
62	Ability to track the actions done on the patient (transfers, discharge…) in terms of who did what and when and based on what reasons	1
63	Ability to provide information about the physical location of the medical file of the patient as well as the electronic location on the system	2
64	A functionality to register visitors to patients and potentially to communicate with the visitor control hardware units	1
65	The software allows an authorized administrator to configure a hospital policy on visitors: The maximum length of each visit, the times of day a visit is allowed, the maximum number of simultaneous visitors to each patient, etc.	1
66	The software also allows the capture of patient preferences about visitors: Do not allow any visitor, allow only visitors whose last name is x, etc. This will be captured as free text that is displayed for information to the operator (the computer will not enforce it, it will just display the info for the operator)	1
67	The software enforces the hospital policy on visitors as it prints a pass for the visitor. The pass should include information on the visit / the patient to be visited, and the expiration time of the visit. It also prints a bar code containing the basic information, particularly the expiration time	1
68	Functionality to allow pre-registration of visitors using Website of hospital	3
69	Functionality for self registration using kiosks or dedicated terminals upon entry	3
70	Functionality for photo and signature capturing for visitors if needed (e.g., visitors to the Intensive Care Unit)	2

TABLE 4 – SOFTWARE FUNCTIONAL FEATURES AND TECHNICAL CHARACTERISTICS		
Feature #	**Feature Description**	**Priority** **Essential: 1; Needed: 2; Optional: 3**
71	Custom-design visitor badges or from pre-built templates (i.e badges for special departments, or badges for longtime – repetitive visitors)	2
72	Log time of visitor entry and exit	1
73	Allow extended visiting requirements for families that will be visiting on a regular basis.	2
74	The system suports the possibility of a bar code reader reading the bar code on the visitor badge, and the software beeps an alarm sound if the time of the visit has expired	2
75	Reports to be provided on number of visitors during time intervals, by department, visitors who over-stayed their visit, current visitors in the hospital, etc.	1
76	A suite of human resources functions to interlink with the tracking functions of user logins and activities on the system	1
77	Ability to enter free text on some of the system's screens as needed	3
78	A way to identify any invalid/expired identification document, through links with the civil records.	3
79	Forms should be editable to provide for the functionality of adding/creating extra fields	1
80	Forms should have a print-preview functionality	1
81	Translation function to other required languages	2
82	Ability to enforce required fields and reject any inputs on any form that ignores required fields	2
83	Ability to enforce data entry rules and formats, and prevent invalid entries	1
SYSTEM TECHNICAL CHARACTERISTICS		
84	The system is designed according to international standards	2
85	The system should be implemented using open-source technologies	3
86	The system should be implemented using a common database to enable ease of use and data communication	2
87	Te system must be stable and secure against intervention and hacking	1
88	The system must support routine back up (and restore) based on predefined times to recover data in case of crash or temporary halting	1
89	System modules are able to exchange information and communicate effectively	1
90	Data communication should be supported over the local network of the hospital as well as over the internet.	1
91	Data entry to the system should as much as possible mimic the hospital procedures and hospital forms to minimize training	1
92	Data generated by the system (i.e reports and printable forms) should be in readable format like PDF and/or simple internet format HTML	2
93	The system design features high level of human error management to minimize risk of wrong entries.	2
94	System should support the enforcement of password policies (strong passwords, frequency of changing them, etc).	1
95	All actions taking place on the system are logged, and audited as per user, data type and changes occurring on data, and other.	1
96	The system features controls on the access rights and fields completion	1
97	The system feature statistical function to report on: i.e number of logs and actions on the system, wrongful logs, number of access on a certain record per day, types of users of the system..etc.	3
98	The system must have a user friendly graphical interface	1
99	The system must feature a short learning curve with clear straightforward	2

TABLE 4 – SOFTWARE FUNCTIONAL FEATURES AND TECHNICAL CHARACTERISTICS		
Feature #	**Feature Description**	**Priority** **Essential: 1;** **Needed: 2;** **Optional: 3**
	workflow	
100	The system must have effective training materials and user manuals and guides (bi-lingual:: at least Albanian+English)	1
	SYSTEM TEST REQUIREMENT	
101	System must be tested as per the following testing areas: Usability testing Administration testing Security testing Various functionality testing Data communication testing Data reporting testing Data entry and fill up testing Full performance System-on-Equipment testing and up-scaling tests	1

3.2 SUGGESTED DATA FIELDS

The following are lists of suggested data fields grouped in categories as required for the system modules of registration, admission, discharge, transfer, and visitor control. These lists are not necessarily comprehensive.

3.2.1 PERSON IDENTIFICATION DATA FIELDS

Family name

Given name

Father name

Mother name

Maiden name

Date of birth

Date of death

Sex

Address Line1

Address Line2 (City / Town)

Address Line3 (Country/Citizenship)

Health Security Code (HII)

Personal Identification Number (PID)

Highly Infectious Diseases Indicator

Timestamp

Details last updated

HIS Internal ID number

Postal code

Ethnicity

Religion

3.2.2 REGISTRATION DATA FIELDS

Timestamp
Patient's unique barcode
Highly infectious indicator
Salutation title
Name
Surname
Father's name
Mother's name
Maiden name
Date of birth
Sex
Blood group categorization
Blood group document confirmation
Number of blood group confirmation document
Date of blood group confirmation document
Physician responsible for the blood group confirmation document
Civil status
Personal ID number of the ID card
Address lines
Insurance info
Insurance company
Citizenship
Profession
Ordering Party
Registered by

3.2.3 ADMISSION DATA FIELDS

Admission code (Patient encounter code)
Timestamp
Name of patient
Surname of patient
Date of birth of patient
Blood group data
Sex
Address
Medical chart number
Patient entry
Emergency code
Type of admission
Re-Admission
Allergies

Physician responsible for allergies data
Referring diagnosis
Referred by
Insurance category
Admitting diagnosis
Admitted by
Insurance data
Registered by

3.2.4 VISITORS DATA FIELDS

Time stamp of entry
Expiration time of visit
Name
Surname
Date of birth
Personal ID number of ID card
Address
Phone number
Unique visitor admission code
Patient to be visited

3.2.5 REFERRAL DATA FIELDS

Timestamp
Unique referral Institution code
Type of referring institution
Title of referring institution
Code of referring institution
Address of referring institution
Phone number of referring institution
Referring physician
Code of referring physician
Medical specialty of referring physician

3.2.6 HUMAN RESOURCES DATA FIELDS

Employee code given by the system
Timestamp
Highly infectious indicator
Salutation title
Name
Surname
Father's name
Mothers' name
Maiden name
Date of birth

Sex
Blood group
Civil Status
Personal ID number
Address
Insurance
Salutation job title
Job Position
Education
Date of contract start
Type of contract
Job code
Attached to
Number of HR register
Payroll category
Date of contract close
Reason for closing contract
Registered by

3.3 SUGGESTED DATA FIELD STRUCTURE

The following represents a more detailed description of the data fields, covering the technical specifications of each field that is suggested. It is given here as a guideline only, and bidders are encouraged to explain their own data structure.

3.3.1 IDENTIFICATION DATA FIELDS

1. Family name

Name:	Family name (Mbiemri)			
Other names:	Last name, Surname			
Element type:	Data element			
Definition:	The family name (surname) of a person			
Mandatory				
Data type:	char	Field size:	35	Layout:
Guide for use:	With First name, Sex, and Date of birth, this provides a key for searching for the record.			
Collection method:	May only include upper- and lower-case alphabetic characters, hyphens and apostrophes.			
Related data:	Given name			

2. Given name

Name:	First given name (Emri)			
Element type:	Data element			
Definition:	The first given name of a person.			
Mandatory				
Data type:	char	Field size:	35	Layout:

Guide for use:	With Family name, Sex, and Date of birth, this provides a key for searching for the record.
Collection method:	May only include upper- and lower-case alphabetic characters, hyphens and apostrophes.
Related data:	Father's name
	Family name

3. Father's name

Name:	Father's name (Emri i babait)
Element type:	Data element
Definition:	The name of the known father of a person.
Mandatory	
Data type:	char Field size: 35 Layout:
Guide for use:	With Family name, Sex, and Date of birth, this provides a key for searching for the record.
Collection method:	May only include upper- and lower-case alphabetic characters, hyphens and apostrophes.
Related data:	Given Name
	Family name

4. Mother's name

Name:	Mother's name (Emri i nenes)
Element type:	Data element
Definition:	The name of the known mother of a person.
Mandatory	
Data type:	char Field size: 35 Layout:
Guide for use:	With Family name, Sex, and Date of birth, this provides a key for searching for the record.
Collection method:	May only include upper- and lower-case alphabetic characters, hyphens and apostrophes.
Related data:	Given Name
	Family name

5. Maiden name

Name:	Maiden name (Mbiemri i vajzerise)
Element type:	Data element
Definition:	The family name of a women before marriage.
Context:	Only for women
Mandatory	
Data type:	char Field size: 35 Layout:
Guide for use:	With Family name, Sex, and Date of birth, this provides a key for searching for the record.
Collection method:	May only include upper- and lower-case alphabetic characters, hyphens and apostrophes.
Related data:	Given Name
	Family name

6. Date of birth

Name: Date of birth (datelindja)

Other names: DOB, HCU date of birth, Birth date

Element type: Data element

Definition: The date on which the person was born.

Context: Required to derive age for demographic analyses.

Mandatory

Data type: date time Field size: 8 Layout: DDMMCCYY

Data domain: Valid dates

Partial dates are permissible. At a minimum the century and year must be supplied. If day is provided but month is omitted then the day will not be recorded. Incomplete dates are stored as 'ccyy0101' or 'ccyymm01' and a partial date flag associated with the date is set to the appropriate

Verification rules: Must be later than 1 January 1890.

7. Date of death

Name: Date of death (data e vdekjes)

Other names: DOD, Death date

Element type: Data element

Definition: The date on which the person died.

Data type: date time Field size: Layout: Oracle date time field

Data domain: Valid dates

Collection method: Sourced from the Births, Deaths and Marriages Office.

8. Sex

Name: Sex (Seksi)

Other names: Sex type code

Element type: Data element

Definition: The person's biological sex.

Context: Required for demographic analyses.

Mandatory

Data type: char Field size: 1 Layout: A

Data domain: M Male

F Female

U Unknown

I Indeterminate

Guide for use: Stored as Gender code.

Verification rules: Must be a valid code in the Gender code table.

Collection method: 'I' codes are for use in cases, usually newborns, where it is not possible to determine the sex of the healthcare user. The term sex refers to the biological differences between males and females, while the term gender refers to a person's social role (masculine or feminine). Information collected for transsexuals and transgender people should be treated in the same manner, ie, their biological sex reported.

9. Address line 1

Name: Address line 1 (Rruga)

Element type: Data element

Definition: The first line of the address at which a healthcare user has been, or plans to be, living at for 3 months or more

Data type: varchar Field size: 55 Layout:

Data domain: Free text

Guide for use: For internal use only.

Verification rules: Address line 1 and address line 2 cannot both be blank.

Related data: Address line 2

10. Address line 2 - City/town

Name: City/town (Qyteti, Fshati, Rrehti)

Element type: Data element

Definition: The second line of the address, representing the city, town or region.

Data type: varchar Field size: 30 Layout:

Data domain: Drop-down whith all namens of cities and towns

11. Address line 3 – Country/Citizenship

Name: Country / Citizenship (Nenshtetesia)

Element type: Data element

Definition: The third line of the address, representing the country

Data type: char Field size: 30 Layout:

Data domain: drop-down with all countries of Earth

12. Health Security Code (HII)

Name: Master NHI number (Kodi i sigurimit shendetesor HII)

Other names: Kodi i pacientit

Element type: Data element

Definition: It is a unique 12-character identification number assigned to a healthcare user by the HII database. HII numbers uniquely identify healthcare users, and allow linking between different data

Mandatory

Data type: char Field size: 12 Layout: NNNNNNNNNNNN

Collection method: Assigned during the linking of duplicate registrations.

13. Personal Identification Number (PID)

Name: ID (Numri Personal)

Other names: Numri Personal

Element type: Data element

Definition: It is a unique 10-character identification number of a person found in the electronic identifying card or in the biometric passport and assigned by the Ministry of Internal Affairs.

Data type: char Field size: 10 Layout: ANNNNNNNNA

Data domain: limited text

Verification rules: the number should start and finish with an English Alphabetic letter, the third and fourth number corresponds to the month of birth, the fifth and the sixth number corresponds to the date of the day of birth

14. Highly infectious diseases indicator

Name: HID indicator

Element type: Data element

Definition: An indicator of the existence of medical warnings.

Data type: char Field size: 1 Layout: A

Data domain: P Person who carries highly infectious diseases

J No information

Collection method: as an ICD code is assigned to the person from a list of highly infectious diseases (HIV, HBV, HCV etc.) the character is automatically assigned to the persons' identification data

15. Timestamp

Administrative status

Identifying and defining attributes

Name: timestamp

Element type: Data element

Data type: date time

16. Details last updated

Name: Details last updated

Other names: Date last updated

Element type: Data element

Definition: The date of last update to a healthcare user's information.

Data type: date time Field size: Layout:

Verification rules: System generated

16. HIS internal ID number

Name: ID number

Other names: PID number

Element type: Data element

Definition: An unique ID number which identifies a person in the HIS.

Data type: char Field size: 9 Layout: NNNNNNNNN

Verification rules: System generated

17. Postal Code

Name: Postal Code (Kodi Postar)

Element type: Data element

Definition: The postal code representing a person's usual residential address. Also used for facility addresses.

Context: Required for demographic analyses. Postal codes are key variables for determining the characteristics of the population that are using the health sector.

Mandatory

Data type: drop down text Field size: 4 Layout: NNNN

Data domain: See the Postal code table on the Albanian Post web site at http://postal-codes.net/Albania_Postal_Codes.html

Verification rules: Must be a valid code in the Postal code table.

18. Ethnicity

Name: Ethnic group, Ethnicity (Etnia)

Element type: Data element

Definition: A social group whose members have one or more of the following four characteristics:

- they share a sense of common origins
- they claim a common and distinctive history and destiny
- they possess one or more dimensions of collective cultural individuality
- they feel a sense of unique collective solidarity.

Context: Information on ethnicity is collected for planning and service delivery purposes and for monitoring health status across different ethnic groups. Ethnic group codes are key variables for determining the characteristics of the population that are using the health sector.

Optional

Data type: char Field size: 20 Layout: AAAA

Collection method: Ethnicity should be self-identified wherever possible.

19. Religion

Name: Religion (Feja)

Element type: Data element

Definition: A social group whose members share a sense of common religious beliefs

Context: Information on religion is collected for planning and service delivery purposes.

Optional

Data type: char Field size: 20 Layout: AAAA

3.3.2 REGISTRATION DATA FIELDS

1. Timestamp (refer to the identification data index)

2. Patient's unique barcode – the barcode representing the PID (refer to the identification data index)

3. HID indicator (refer to the identification data index)

4. Salutation title

Name: Titulli pershendetes

Element type: Data element

Definition: The salutation title of a person representing a certain special social status

Context: For salutation purposes

Optional

Data type: char (drop down text) Field size: 10 Layout: AAAAAAAAAA

Data domain:

Options: Mr. (Z.), Mrs. (Znj.), Sir, Father (At), Sister (Moter), Prof., Dr.

5. Name (refer to the identification data index)

6. Surname (refer to the identification data index)

7. Father's name (refer to the identification data index)

8. Mother's Name (refer to the identification data index)

9. Maiden Name (refer to the identification data index)

10. Date of Birth (refer to the identification data index)

11. Sex (refer to the identification data index)

12. Blood Group categorization

Name: Grupi i gjakut

Element type: Data element

Definition: the blood group of a person

Context: For medical purposes

Optional

Data type: char (radiobuttons) Field size: 1 Layout: A or poz/neg

Data domain:

Verification rules: Data can be entered only if the following fields are completed appropriately: confirming document, number, date, Physician

13. Blood group document confirmation

Name: Dokumenti I Konfirmimit te Grupit te gjakut

Element type: Data element

Definition: confirming document of the blood group of a person

Context: For medical purposes

Optional

Data type: char (drop down) Field size: 10 Layout: AAAAAAAAAA

Data domain:

Verification rules: Data are based on driving licence, analysis from laboratory or ad hoc confirmation

Options: Driving Licence (Patente), Analize, Kartela klinike

14. Number of blood group confirmation document

Name: Numri i Dokumentit te Konfirmimit te Grupit te gjakut

Element type: Data element

Definition: number of the confirming document of the blood group of a person

Context: For medical purposes

Optional

Data type: char (free text) Field size: 10 Layout: NNNNNNNNNN

Data domain:

Verification rules: Data are based on driving licence, analysis from laboratory or ad hoc confirmation

15. Date of blood group confirmation document (refer to the identification data index)

16. Physician responsible for the blood group confirming document

Name: Mjeku pergjegjes i Dokumentit te Konfirmimit te Grupit te gjakut

Element type: Data element

Definition: physician responsible of the confirming document of the blood group of a person

Context: For medical purposes

Optional

Data type: char (free text) Field size: 35 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: Data are based on analysis from laboratory or ad hoc confirmation from the medical chart

17. Civil status

Name: Gjendja civile

Element type: Data element

Definition: civil status of a person

Context: For statistical purposes

Optional

Data type: char (radiobuttons) Field size: 9 Layout: AAAAAAAAA

Data domain:

Verification rules:

Options: Single (Beqar), Married (Martuar), Separated (Ndare), Divorced (divorcuar), widow (veje)

18. Personal ID Number of the ID card (refer to the identification data index)

19. Address lines (refer to the identification data index)

20. Insurance info

Name: Siguracioni

Element type: Data element

Definition: Info if the person is insured or not

Context: For statistical purposes

Mandatory

Data type: char (radiobuttons) Field size: 15 Layout: AAAAAAAAA

Data domain:

Verification rules: based on papers presented by the patient

Options: Insured (i siguruar), Not insured (Jo i siguruar)

21. Insurance Company

Name: Kompania e sigurimit

Element type: Data element

Definition: Info about the insurance company

Context: For statistical purposes

Mandatory

Data type: char (drop down) Field size: 15 Layout: AAAAAAAAA

Data domain:
Verification rules: based on papers presented by the patient
Options: Based on data preinputted from the system's administrator

22. Citizenship (refer to the identification data index)
23. Profession
Name: Profesioni
Element type: Data element
Definition: Info about the profession or job of a person
Context: For statistical purposes
Optional
Data type: char (free text) Field size: 20 Layout: AAAAAAAAA
Data domain:
Verification rules: based on papers presented by the patient

24. Employer
Name: Punedhenesi
Element type: Data element
Definition: Info about the employer of a person
Context: For statistical purposes
Optional
Data type: char (free text) Field size: 20 Layout: AAAAAAAAA
Data domain:
Verification rules: based on papers presented by the patient

25. Registered by (refer to the identification data index)

3.3.3 ADMISSION DATA FIELDS

1. Admission Code (Patient's Encounter Code)
Name: Kodi i pranimit
Element type: Data element
Definition: An unique ID number which identifies an encounter (admission) in the HIS.
Data type: char Field size: 10 Layout: NNNNNNNNNN
Verification rules: System generated

2. Timestamp (refer to the identification data index)
3. Name of patient (refer to the identification data index)
4. Surname of patient (refer to the identification data index)
5. Date of birth of patient (refer to the identification data index)
6. Blood group data (refer to the registration data index)
7. Sex (refer to the identification data index)
8. Address (refer to the identification data index)

9. Medical Chart Number

Name: Numri i Karteles

Element type: Data element

Definition: An unique ID number which identifies medical chart in the File Room Register.

Data type: char Field size: 6 Layout: NNNNNN

Verification rules: based on the chart number in the Register of the File Room

10. Patient entry

Name: Menyra e paraqitjes

Element type: Data element

Definition: Info about the status of the patient entrying the hospital

Context: For statistical purposes

Mandatory

Data type: char (drop down) Field size: 20 Layout: AAAAAAAAA

Data domain:

Verification rules: based on referral notes or admission notes

Options: Direct, Emergency, Planned, Referred, Re-admission

11. Emergency Code

Name: Kodi i Urgjences

Element type: Data element

Definition: Info about the triage in emergency

Context: For statistical and medical purposes

Mandatory

Data type: char (radiobuttons) Field size: 20 Layout: AAAAAAAAA

Data domain:

Verification rules: based on triage info in the emergency room

Options: White, Green, Yellow, Red

12. Type of admission

Name: Lloji i shtrimit

Element type: Data element

Definition: Characterizing of the admission: 24 hours or over 24 hours

Context: For statistical and medical purposes

Mandatory

Data type: char (radiobuttons) Field size: 20 Layout: AAAAAAAAA

Data domain:

Verification rules: based on the notes on the internal referral note

Options: daily, over 24 hours

13. Re-admission

Name: Rishtrim

Element type: Data element

Definition: Characterizing of the readmission

Context: For statistical and medical purposes; an index of hospital quality

Mandatory

Data type: char (radiobuttons) Field size: 20 Layout: AAAAAAAAA

Data domain:

Verification rules: If the person is admitted for the first time via HIS, the receptionist has to ask the patient. Otherwise, this field will be processed automatically by system and a note will be created in the admission data.

Options: in 24 hours, in 72 hours, in 30 days, no data

14. Allergies

Name: Alergji

Element type: Data element

Definition: Confirmed Allergies

Context: For medical purposes

Optional

Data type: char (free text) Field size: 60 Layout: AAAAAA

Data domain:

Verification rules: Data are entered as are written in the medical chart

15. Physician responsible for allergies data

Name: Mjeku pergjegjes i konstatimit te Alergjise

Element type: Data element

Definition: physician responsible of the allergies data entry

Context: For medical purposes

Optional

Data type: char (drop-down) Field size: 35 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: in the drop down are listed only the physicians of the hospital

16. Referring Diagnosis

Name: Diagnoze Dergimi

Element type: Data element

Definition: referred diagnosis

Context: For medical purposes

Optional

Data type: char (free text) Field size: 35 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: based on papers presented from the patient

17. Referred by

Name: Referuar nga

Element type: Data element

Definition: The physician and structure which refers the patient to the hospital

Context: For medical purposes

Optional

Data type: char (drop-down) Field size: 35 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: list of HII physicians and primary care structures

18. Insurance category

Name: Kategoria e Siguracionit

Alias: Kategoria e pacientit

Element type: Data element

Definition: The categorization of patients (18 categories) used by HII.

Data type: char (drop-down) Field size: 15 Layout: AAAAAAAAAA

Verification rules: list of cathegories described by HII

19. Admitting Diagnosis

Name: Diagnoza e pranimit

Element type: Data element

Definition: The diagnosis for wich is decided to admit the patient

Context: For medical purposes

Mandatory

Data type: char (link with ICD/OPS module) Field size: 40 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: list of ICD-9 approved by MOH Albania and HII

20. Admitted by

Name: Pranuar nga

Element type: Data element

Definition: The physician and structure wich admitts the patient

Context: For medical purposes

Mandatory

Data type: char (link with HR Module) Field size: 40 Layout: AAAAAAAAAAAAAA

Data domain:

Verification rules: list of services and physicians of the hospital created by Human Resources module

21. Insurance Data (refer to Registration Data Index)

22. Registered by (refer to Identification Data Index)

3.3.4 VISITORS DATA FIELDS

1. Timestamp of entry (refer to the identification data index)
2. Expiration time of visit (time data field)
3. Name (refer to the identification data index)
4. Surname (refer to the identification data index)
5. Date of birth (refer to the identification data index)
6. Personal ID Number on ID Card (refer to the identification data index)
7. Address (refer to the identification data index)
8. Phone Number (refer to the identification data index)
9. Unique Visitors Admission Code (Visitors Admission Code)
10. Patient to be visited

3.3.5 REFERRAL DATA FIELDS

1. Timestamp (refer to the identification data index)

2. Unique Referral Institution Code

Name:	Kodi i institucionit referues ne system
Element type:	Data element
Definition:	An unique ID number which identifies the referring institution in the HIS.
Data type:	char Field size: 10 Layout: NNNNNNNNNN
Verification rules:	System generated

3. Type of referring institution

Name:	Lloji i struktures referuese
Element type:	Data element
Definition:	The type of the referring institution.
Data type:	char (drop-down) Field size: 10 Layout: AAAAAAAAAA
Verification rules:	from a list: clinic, polyclinic, hospital

4. Title of the referring institution

Name:	Emertimi i struktures referuese
Element type:	Data element
Definition:	The title of the referring institution.
Data type:	char (free text) Field size: 10 Layout: AAAAAAAAAA
Verification rules:	

5. Code of the referring institution

Name:	Kodi i struktures referuese
Element type:	Data element
Definition:	code of the referring institution.
Data type:	char (limited text) Field size: 6 Layout: NNNNNN
Verification rules:	from a list of codes for structures from HII

6. Address of referring institution (refer to the identification data index)
7. Phone number of the referring institution (refer to the identification data index)
8. Referring physician

Name:	Emri dhe mbiemri i mjekut referues
Element type:	Data element
Definition:	The name and surname of the referring physician.
Data type:	char Field size: 50 Layout: AAAAAAAAAAA
Verification rules:	from a list of physicians contracted by HII

9. Code of the referring physician

Name:	Kodi i mjekut referues
Element type:	Data element
Definition:	code of the referring physician.
Data type:	char (limited text) Field size: 7 Layout: NNNNNN
Verification rules:	from a list of codes for physicians from HII

10. Medical Specialty of the referring physician

Name:	Specialiteti i mjekut referues
Element type:	Data element
Definition:	Medical Specialty of the referring physician.
Data type:	char (drop-down) Field size: 20 Layout: AAAAAAAAA
Verification rules:	from a list of the medical specialities in Albania

3.3.6 HUMAN RESOURCES DATA FIELDS

1. Employee Code

Name:	Kodi i punonjesit
Element type:	Data element
Definition:	A unique ID number which identifies the employee in the HIS.
Data type:	char Field size: 10 Layout: NNNNNNNNNN
Verification rules:	System generated

2. Timestamp (refer to the identification data index)
3. HID indicator (refer to the identification data index)
4. Salutation title (refer to the identification data index)
5. Name (refer to the identification data index)
6. Surname (refer to the identification data index)
7. Father's name (refer to the identification data index)
8. Mother's Name (refer to the identification data index)
9. Maiden Name (refer to the identification data index)
10. Date of birth (refer to the identification data index)
11. Sex (refer to the identification data index)
12. Blood Group ((refer to the registration data index)
13. Civil Status ((refer to the registration data index)

14. Personal ID Number (refer to the identification data index)
15. Address (refer to the identification data index)
16. Insurance (refer to the registration data index)
17. Salutation Job title (refer to the registration data index)

18. Job position

Name:	Pozicioni i punes
Element type:	Data element
Mandatory	
Data type:	char (drop-down) Field size: 20 Layout: AAAAAAAAA
Verification rules:	from a list of job positions in Albania

19. Education

Name:	Pozicioni i punes
Element type:	Data element
Mandatory	
Data type:	char (drop-down) Field size: 20 Layout: AAAAAAAAA
Verification rules:	from a list of job positions in Albania

20. Date of starting contract

Name:	Date of starting contract
Other names:	Data e fillimit te punes
Element type:	Data element
Definition:	The date on wich the employee started the present job.
Mandatory	
Data type:	date time Field size: DDMMYYYY Layout: Oracle date time field
Data domain:	Valid dates

21. Type of contract

Name:	Lloji i kontrates
Element type:	Data element
Mandatory	
Data type:	char (drop-down) Field size: 20 Layout: AAAAAAAAA
Verification rules:	from a list of job contract in Albania of the Ministry of Labor

22. Job code

Name:	Kodi i sigurimeve shoqerore
Element type:	Data element
Mandatory	
Data type:	char (free text) Field size: 10 Layout: NNNNNNNNNN
Verification rules:	social insurance code present in the social insurance card

23. Attached to

Name: Atashuar prane
Element type: Data element
Mandatory
Data type: char (drop-down) Field size: 20 Layout: AAAAAAAA...
Verification rules: from the list of medical services of the current hospital present in the database

24. Number of HR register
Name: Numri i regjistrit te burimeve njerezore
Element type: Data element
Mandatory
Data type: char (free-text) Field size: 10 Layout: NNNNNNNNNN
Verification rules: from the list of medical services of the current hospital present in the database

25. Payroll category
Name: Kategoria e pages
Element type: Data element
Mandatory
Data type: char (drop-down) Field size: 2 Layout: NN
Verification rules: from a list of job payroll categories in Albania public institutions of the Ministry of Labor

26. Date of closing contract
Name: Data e lenies se punes
Element type: Data element
Definition: The date on wich the employee leaves the present job.
Mandatory
Data type: date time Field size: DDMMYYYY Layout: Oracle date time field
Data domain: Valid dates

27. Reason (for closing contract)
Name: Arsyeja e largimit nga puna
Element type: Data element
Definition: The reason the person closes the contract with the institution.
Mandatory
Data type: char free text Field size: 1000 Layout: AAAAA.....

28. Registered by (refer to the identification data index)

3.4 TYPES OF EXPECTED REPORTS

The following is a sample list of reports that the system is expected to generate. The bidder is expected to provide details of the reports that can be generated by their software. In addition, the

bidder is expected to commit to build, without additional charges, 20 custom reports that will be specified by the hospital administration after using the system:

- Data table according to staff categories
- Emergency admission table
- Emergency service activity table
- Bed occupancy tables
- Activity table for services offered to patients admitted
- Staff table according to specialties
- Imaging service activity and laboratory activity tables
- Performance and quality indicator annex
- Hospital disease tables: WHO-European Detailed Mortality Database, WHO-European Hospital Morbidity Database
- Visitor reporting tables
- Discharge tables
- Admissions/Discharge diagnosis comparison table

Reports should be online and available in real time, and can be accessed according to the determined hierarchy and access levels.

3.5 SECURTIY AND ACCESS CONTROL POLICIES

The following is a proposed policy for security and access control to the system. The Bidder should comment on whether their system supports this policy.

1. The system administrator creates all structures, working roles, user names and passwords so system is ready to function.

    1.a. The system administrator is responsible for the management of the system.

    1.b. The system administrator is responsible for reporting about logs and data entry policies to be implemented and supervised.

2. The directorate of Lezha Regional Hospital issues an order which covers the following:

    2.a. Every user is responsible for the information given to him/her about password and data entry policies.

    2.b. Every user is trained to change his/her password at any time, and is directly responsible for this.

    2.c. Every user should notify the directorate and/or system administrator if inappropriate data is entered in the system without his/her knowledge.

    2.d. All logins and logouts from the system are stored in the system database.

    2.e. All interventions and data changes are stored in the system database based on user names used to login.

    2.f. The administrator of the system cannot change any data regarding patients.

    2.g. Penalties about the misuse of the system are administrative, but in selected cases can also be penal.

    2.h. Every user should immediately notify the Directorate and/or the system administrator if he/she notes that his/her password has been changed by third parties. All data entered should be checked and controlled by the system administrator in collaboration with the File Room administration.

2.i. If the system administrator and/or supervisor notes incorrect entries of data in the system, they will immediately notify the Directorate and all data will be corrected based on medical charts in the File Room.

2.j. The point of control of all the system will be the File Room where all data entries are controlled and collected on the basis of the medical charts. System administrators and/or supervisors cannot change data without contacting the Directorate and the File Room administration.

2.k. All reports on data changes will be reflected by appropriate protocols with the Directorate.

2.l. The data entry is the direct responsibility of the selected user.

4. TRAINING PROGRAM REQUIREMENTS

4.1 TRAINING REQUIREMENTS DESCRIPTION

The training of human resources is one of the key factors for the success of the new system implementation. The bidder's proposal must describe the training modules, determine participant number and time duration for each module.

Training implemented in the framework of this project must especially include training for the following:

- ☐ Staff according to their roles in the system;
- ☐ Advanced training for "super user" to do system configuration;
- ☐ Technical training for system maintenance including backup and restore;

Training must be accompanied by the respective documentation and direct practical work in the system.

Hospital staff that will be trained on using the system is as follows:

- Physicians –Training on reporting functionalities
- Head Nurses – Training on ward, discharge note and ICD/OPS coding functionalities
- At least two nurses for each ward – Similar to head nurses
- Human Resources staff – Training on HR and referral functionalities
- Statistics and file room staff – Training on filing functionalities
- Finance Department Staff – Training on reporting functionalities
- Reception Staff – Training on registration, visitor control, and admission functionalities

The staff training is proposed to follow three main phases:

- Trainings in classroom – for about 10 days
- Trainings on the job on a test server – for about 10 days
- Full support and additional training on the job with live server – for the first month of work.

4.1.1 CLASSROOM TRAINING SESSIONS FOR STAFF

The classroom training for staff is proposed to follow this schedule, and bidders are requested to provide their own proposed schedule:

TABLE 4 – CLASSROOM TRAINING HOURS PER FUNCTIONALITY AND POSITION

Functional Position	Number of Trainees	Training Hours Per functionality														Required training hours per individual
		General Presentation	Registration functionality	Admissions functionality	Visitors functionality	Billing Functionality	Ward functionality	ICD-OPS	Discharge-Transfers functionality	Human Resources	Referrals functionality	File Room functionality	Labor in pregnancy	Neonates	Reports	
Hospital Director	1	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	4	7.25
Deputy Director Medical Affairs	1	.25													4	4.25
Human Resources	1	.25	2						4	4	4				4	18.25
Deputy Director Financial Affairs	1	.25													4	4.25
Statistics Director	1	.25													4	4.25
Physician in Chief	12	.5													2	2.5
Nurse in Chief Main Campus	4	.5					4	4	4							12.5
Nurse in Chief Maternity	4	.5					4	4	4				4	4		20.5
Physicians	30	.5														0.5
Nurses Main Campus	8	.5					2	2	2							6.5
Nurses Maternity	8	.5					2	2	2				4	4		14.5
Cashiers	4	.5				4										4.5
Receptionists	4	.5	4	4	4	4										16.5
File Room Clerks	1	.5	4	4								4			4	16.5

The above schedule should run in parallel to the works of network infrastructure preparation and computers hardware setup.

4.1.2 ON-THE-JOB TRAINING

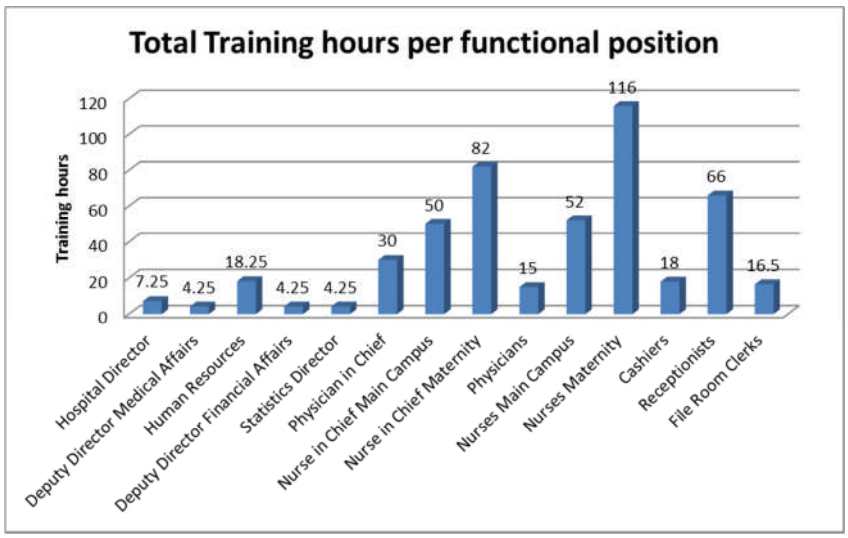
This type of training will be performed after the network infrastructure has been prepared, the computer hardware has been setup and the system has been installed and put in operation. Training is proposed to run on a test server, before moving to the main production server. At the end of this training, it is assumed that staff is ready to use the system properly in running the daily registration, admission and other relevant work at Lezha Regional Hospital.

4.2 STAFF TRAINING REQUIREMENTS EXPLANATIONS:

It is assumed that the functionalities of the software will be mainly utilized by the front-line workers in addition to some medical staff. Senior medical staff and senior executives will only use the software to view reports but not for data entry. Based on this assumption, the training hours per position were distributed. The following sub-table extracted from the above schedule shows this:

TABLE 6 – TOTAL TRAINING HOURS PER FUNCTIONAL POSITION	
Functional Position	**Total Training hours per functional position**
Hospital Director	7.25
Deputy Director Medical Affairs	4.25
Human Resources	18.25
Deputy Director Financial Affairs	4.25
Statistics Director	4.25
Physician in Chief	30.00
Nurse in Chief Main Campus	50.00
Nurse in Chief Maternity	82.00
Physicians	15.00
Nurses Main Campus	52.00
Nurses Maternity	116.00
Cashiers	18.00
Receptionists	66.00
File Room Clerks	16.50

FIGURE 1 – TOTAL TRAINING HOURS PER FUNCTION POSITION

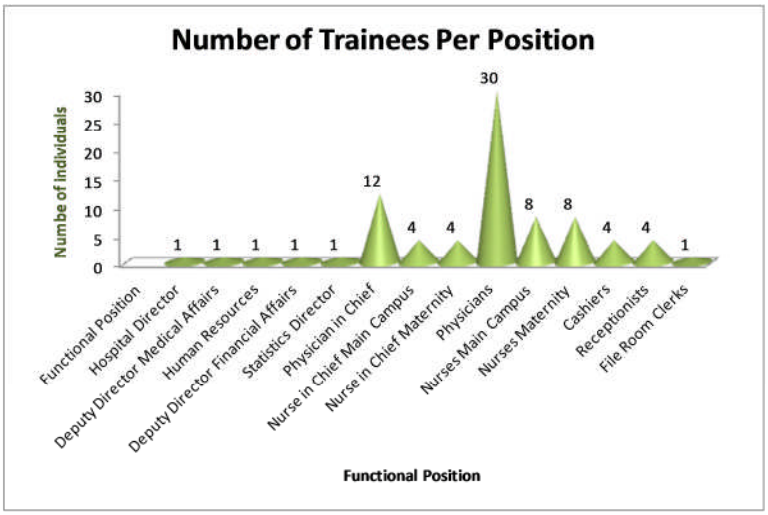


The number of trainees from each functional position has been taken into consideration regarding the usage of the software functionality. It is shown in the following sub-table:

TABLE 7 – NUMBER OF TRAINEES PER FUNCTIONAL POSITION

Functional Position	Number of Trainees
Hospital Director	1
Deputy Director Medical Affairs	1
Human Resources	1
Deputy Director Financial Affairs	1
Statistics Director	1
Physician in Chief	12
Nurse in Chief Main Campus	4
Nurse in Chief Maternity	4
Physicians	30
Nurses Main Campus	8
Nurses Maternity	8
Cashiers	4
Receptionists	4

FIGURE 2 – NUMBER OF TRAINEES PER POSITION

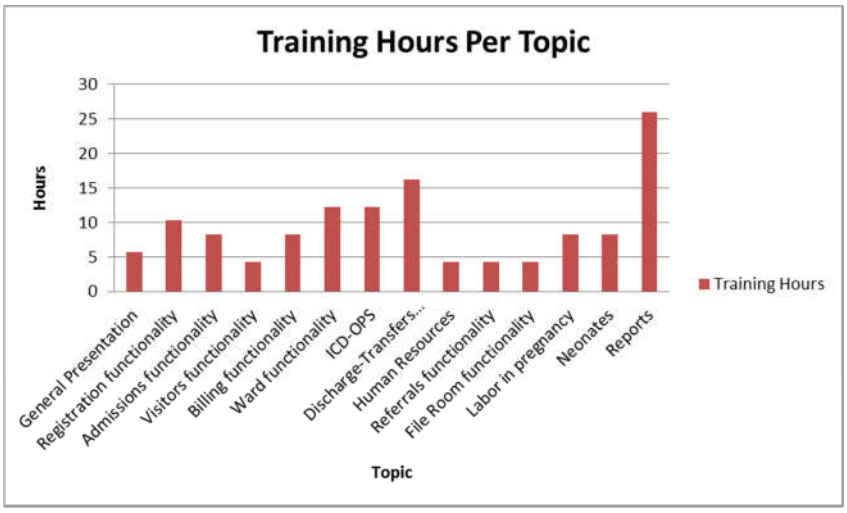


Total number of training hours have been also allocated to the training topics based on the need of usage regarding the relevant functionalities. It is extracted from the above schedule and shown in the following table:

TABLE 8 – TRAINING HOURS PER TOPIC

Topic	General Presentation	Registration functionality	Admissions functionality	Visitors functionality	Billing functionality	Ward functionality	ICD-OPS	Discharge-Transfers functionality	Human Resources	Referrals functionality	File Room functionality	Labor in pregnancy	Neonates	Reports
Training Hours	5.75	10.25	8.25	4.25	8.25	12.25	12.25	16.25	4.25	4.25	4.25	8.25	8.25	26

FIGURE 3 – TRAINING HOURS PER TOPIC



The following mini-graphs show the numbers of hours of training required from staff at each function position in the classroom training session of each topic. In Figures X through X below, the Y axis represents hours of training and the X axis lists the training topics.

FIGURE 4 – HOSPITAL DIRECTOR TRAINING ATTENDANCE

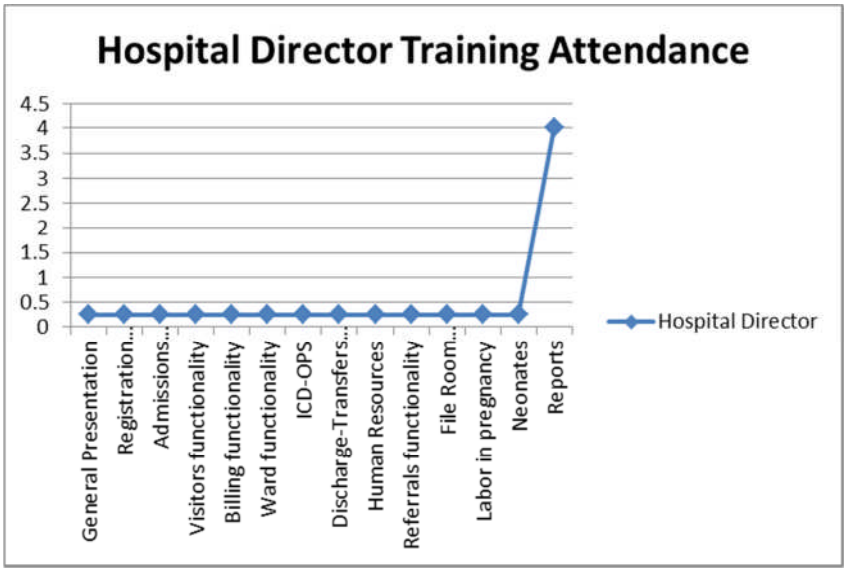


FIGURE 5 – DEPUTY DIRECTOR FINANCIAL AFFAIRS TRAINING ATTENDANCE

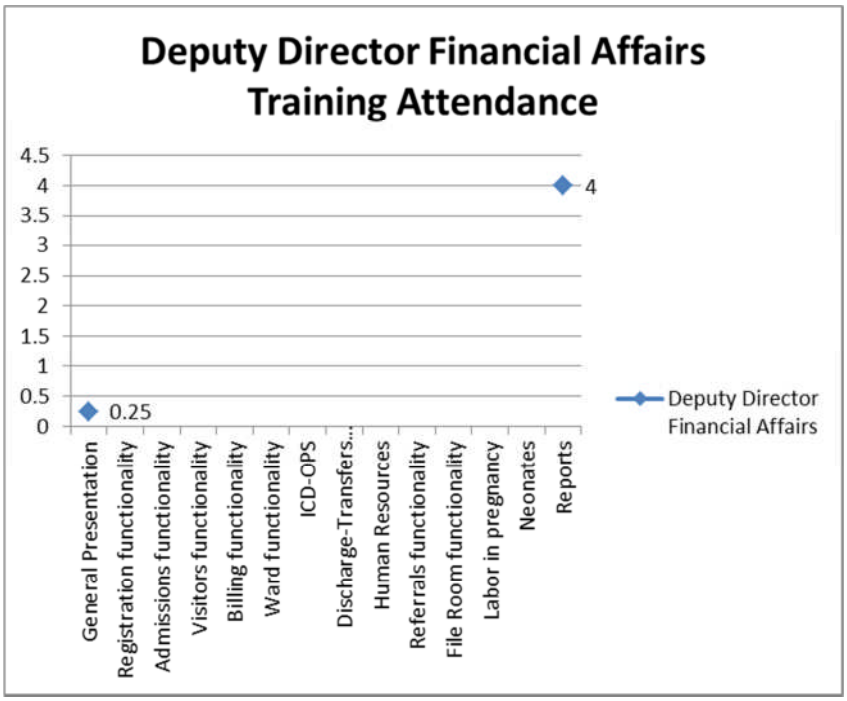


FIGURE 6 – STATISTICS DIRECTOR TRAINING ATTENDANCE

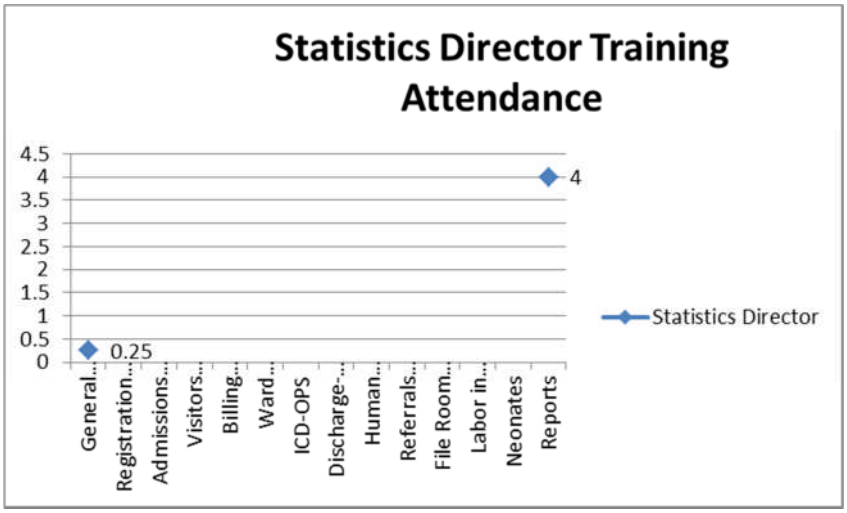


FIGURE 7 – DEPUTY DIRECTOR MEDICAL AFFAIRS TRANING ATTENDANC

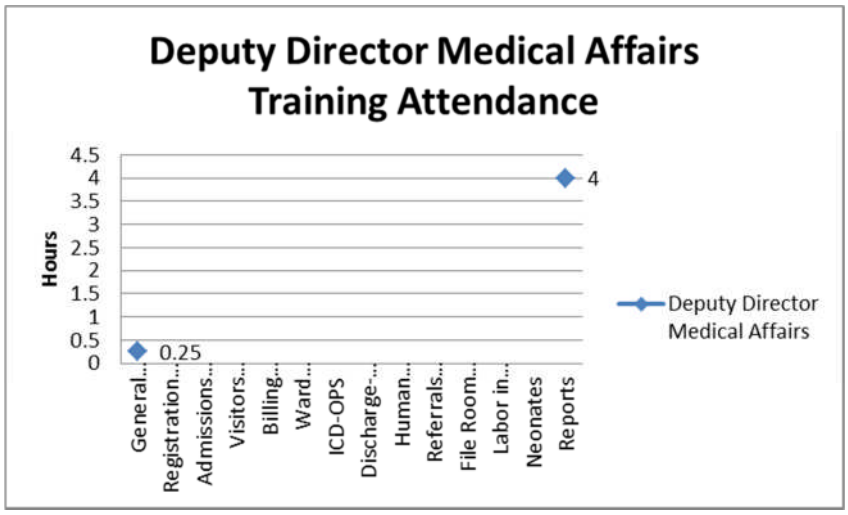


FIGURE 8 – PHYSICIAN IN CHIEF TRAINING ATTENDANCE

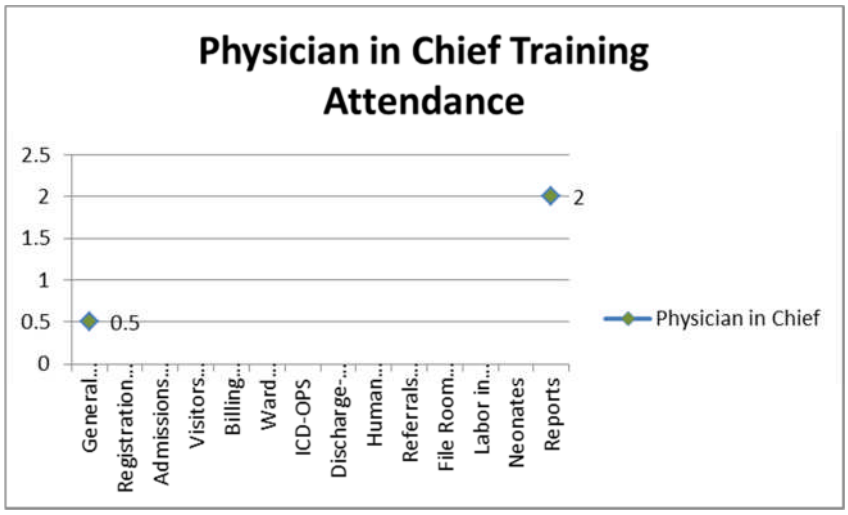


FIGURE 9 – HUMAN RESOURCES TRAINING ATTENDANCE

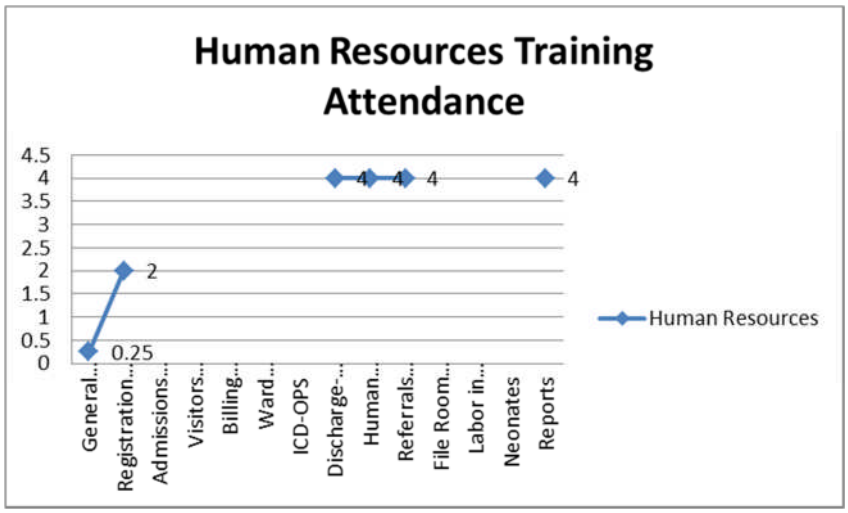


FIGURE 10 – PHYSICIANS TRAINING ATTENDANCE

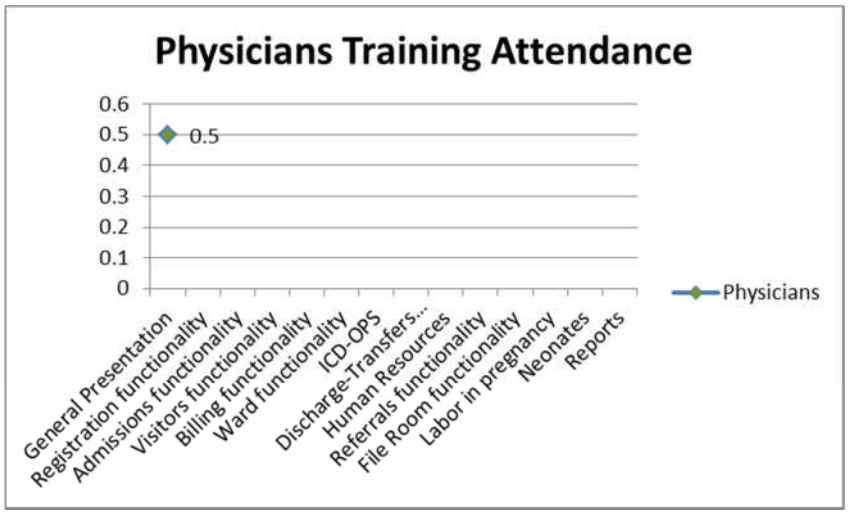


FIGURE 11 – CASHIERS TRAINING ATTENDANCE

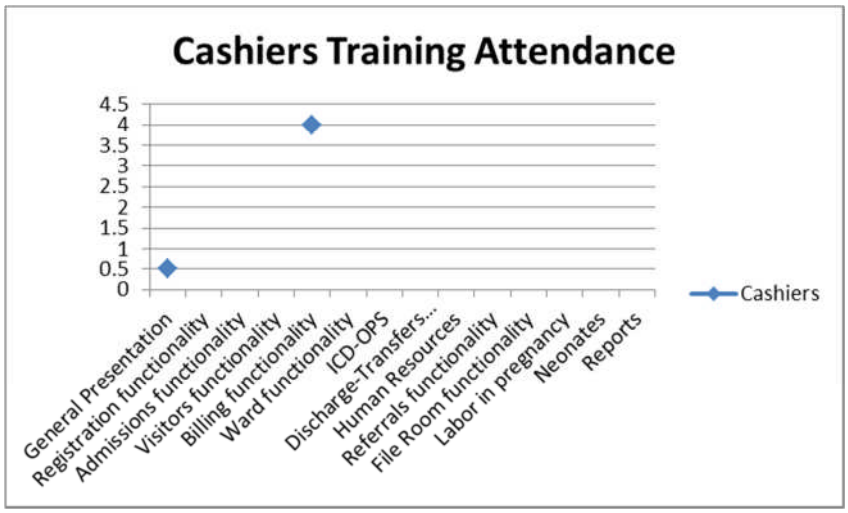


FIGURE 12 – RECEPTIONISTS TRAINING ATTENDANCE

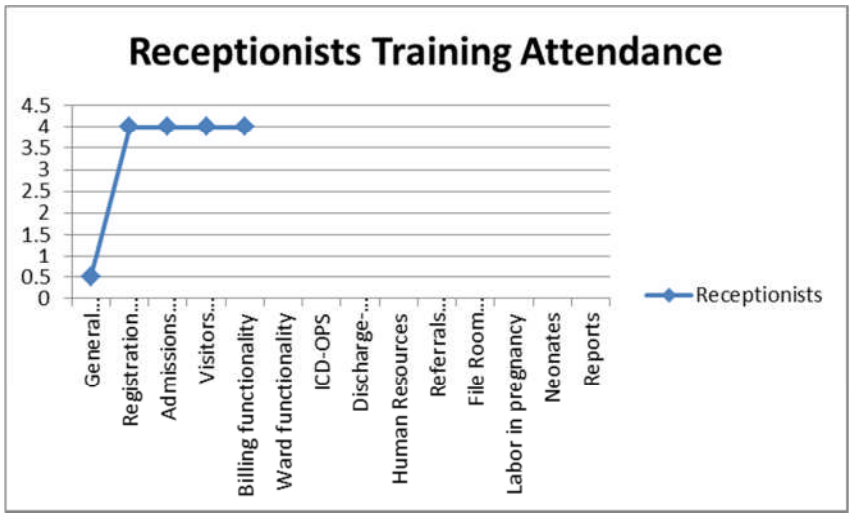


FIGURE 13 – FILE ROOM CLERKS TRAINING ATTENDANCE

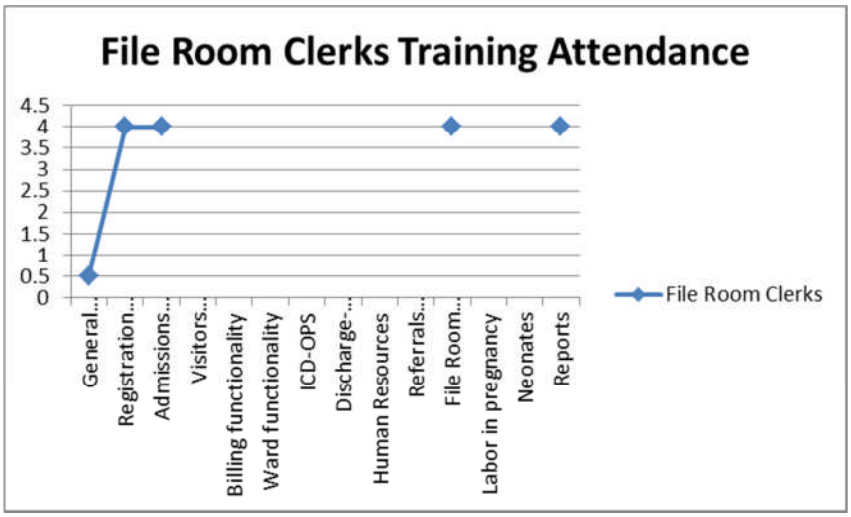


FIGURE 14 – NURSE IN CHIEF MAIN CAMPUS TRAINING ATTENDANCE

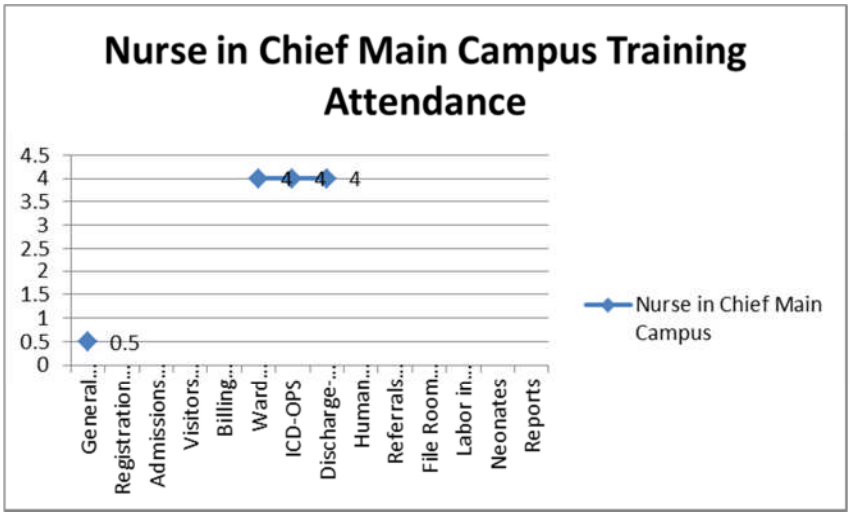


FIGURE 15 – NURSE IN CHIEF MATERNITY TRAINING ATTENDANCE

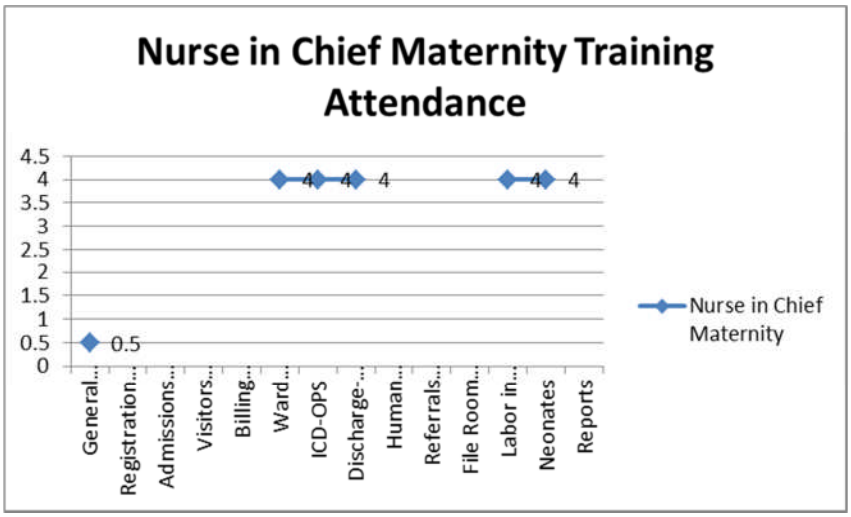
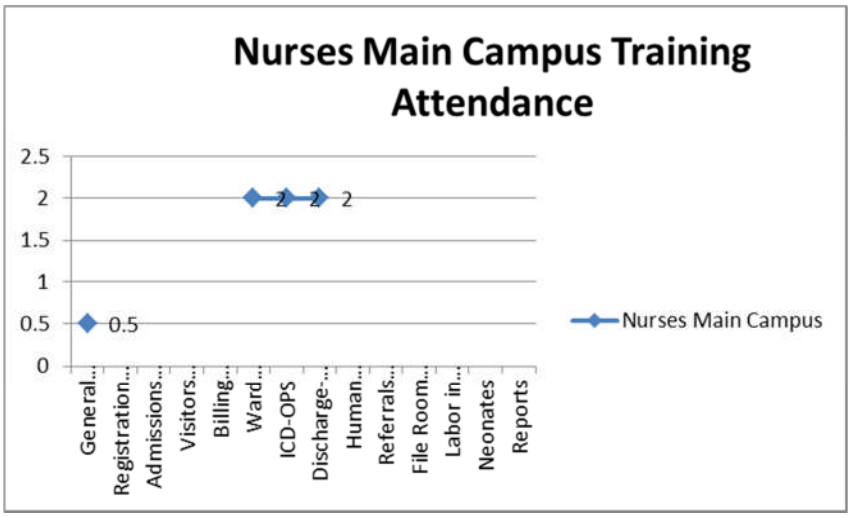


FIGURE 16 – NURSE MAIN CAMPUS TRAINING ATTENDANCE



In addition to the staff training as mentioned above, the bidder is expected to provide adequate training on the following:

- Visitor control training to security officers
- Training to one or two "super users" on the configuration of the system
- Training to a technical system administrator on the technical aspects including backup and restore.

The bidder is expected to provide the details of this training as part of their proposal.

5. SYSTEM STANDARDS

The system must adhere to all applicable standardizations used by Albanian state institutions such as the NAIS, Agency for Research Technology and Information, the Ministry of Health, and any other Albanian standards deemed necessary for the system to operate properly. It also must be able to incorporate international standards such as:

- The International Classification of Disease (ICD), and the version approved by the Ministry of Health regarding diagnosis codes. ICD codes should be reflected in the required fields of the patient medical record and the discharge form and medical report. Updates to ICD, when they are approved (e.g., ICD-10), should be easily incorporated into the system.
- OPS (Operationen- und Prozedurenschlüssel) regarding the codification of surgical and invasive interventions that patients undergo. OPS codes should be reflected in the all the required fields of the medical report form in the system. Updates to OPS, when they are approved, should be easily incorporated into the system.
- The Disease Table, as approved by the World Health Organization, regarding the international report of disease and death rates in hospitals.
- HL7
- XML

6. PROJECT PLAN TEMPLATE

The following project plan is for illustration purposes only to provide guidance to bidders. The bidder is requested to provide a detailed project plan that matches the bidder's specific requirements, expectations, and commitments. The project plan should be composed of the following components:

- Mobilization of staff component: Preparing technical staff, and preparing implementation staff.
- Implementation of the project component: This stage should cover the following tasks:
    - Network infrastructure & equipment installation and testing
    - Classroom training for hospital staff on the system functionalities; running in parallel with the network installation task
    - System customization for Lezha Regional Hospital: the task will start in parallel with tasks 1 and 2, and extends beyond the end of the latter.
    - Computer hardware installation and setup for operation: the task starts after finishing the network equipment installation and testing, and runs in parallel with the system software customization and training in order to have the environment ready for on-the-job training that will start on a test server after the formal training ends.
    - Testing the information system
    - Putting the system at work and monitoring its operation and reporting results on a weekly basis during the first month
    - Preparation of final documents
- Delivering the system to the hospital

The following images are examples of the expected project plan.

FIGURE 17 – PROJECT PLAN TASKS 1 TO 16

ID		Task Name	Duration	Start	Finish
1		**Project Plan, Timeline and Milestones**	**125 days**	Mon 03-09-12	Fri 22-02-13
2		**mobilization**	**10 days**	**Mon 03-09-12**	**Fri 14-09-12**
3		Preparing technical staff	5 days	Mon 03-09-12	Fri 07-09-12
4		Preparing implementation staff	5 days	Mon 10-09-12	Fri 14-09-12
5		**Implementation**	**115 days**	**Mon 17-09-12**	**Fri 22-02-13**
6		**Network installation**	**29 days**	**Mon 17-09-12**	**Fri 26-10-12**
7		Server room construction	10 days	Mon 17-09-12	Fri 28-09-12
8		Polyclinic	5 days	Mon 17-09-12	Fri 21-09-12
9		Main campus	25 days	Mon 17-09-12	Fri 19-10-12
10		Maternity	20 days	Mon 17-09-12	Fri 12-10-12
11		Installing WiFi Antenna	5 days	Mon 17-09-12	Fri 21-09-12
12		Testing of network and correctivity issues	5 days	Mon 24-09-12	Fri 28-09-12
13		Network installed and ready to use	0 days	Fri 26-10-12	Fri 26-10-12
14		**Classroom training**	**22 days**	**Mon 17-09-12**	**Tue 16-10-12**
15		Printing needed documents, user manuals, prepare training room	5 days	Mon 17-09-12	Fri 21-09-12
16		System overview	1 day	Mon 24-09-12	Mon 24-09-12

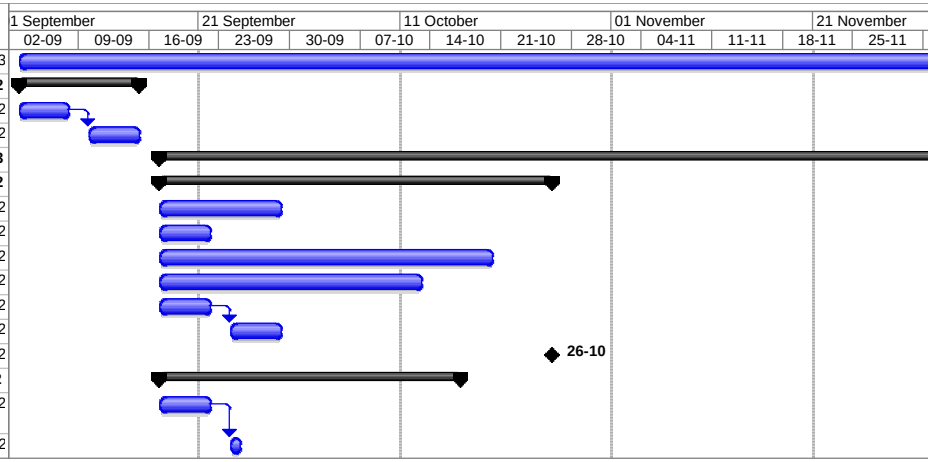


FIGURE 18 – PROJECT PLAN TASKS 16 TO 32

ID		Task Name	Duration	Start	Finish
16		System overview	1 day	Mon 24-09-12	Mon 24-09-12
17		Registration functionality	1 day	Tue 25-09-12	Tue 25-09-12
18		Admissions functionality	1 day	Wed 26-09-12	Wed 26-09-12
19		Billing functionality	1 day	Thu 27-09-12	Thu 27-09-12
20		Visitor control functionality	1 day	Fri 28-09-12	Fri 28-09-12
21		Ward functionality	2 days	Mon 01-10-12	Tue 02-10-12
22		ICD-OPS (diagnosis and interventional coding)	2 days	Wed 03-10-12	Thu 04-10-12
23		Discharge - Transfer functionality	2 days	Fri 05-10-12	Mon 08-10-12
24		Human resource, referreal, file room functionality	1 day	Tue 09-10-12	Tue 09-10-12
25		Labor in pregnancy functionality	1 day	Wed 10-10-12	Wed 10-10-12
26		Neonates functionality	1 day	Thu 11-10-12	Thu 11-10-12
27		Online reporting system	2 days	Fri 12-10-12	Mon 15-10-12
28		**Giving Training Certificates**	1 day	Tue 16-10-12	Tue 16-10-12
29		**Customize System for Lezha Regional Hospita**	**46 days**	**Mon 17-09-12**	**Mon 19-11-12**
30		Modules customization and configuration	10 days	Mon 17-09-12	Fri 28-09-12
31		Reporting functionality	10 days	Mon 01-10-12	Fri 12-10-12
32		Basic data entry	3 days	Mon 15-10-12	Wed 17-10-12

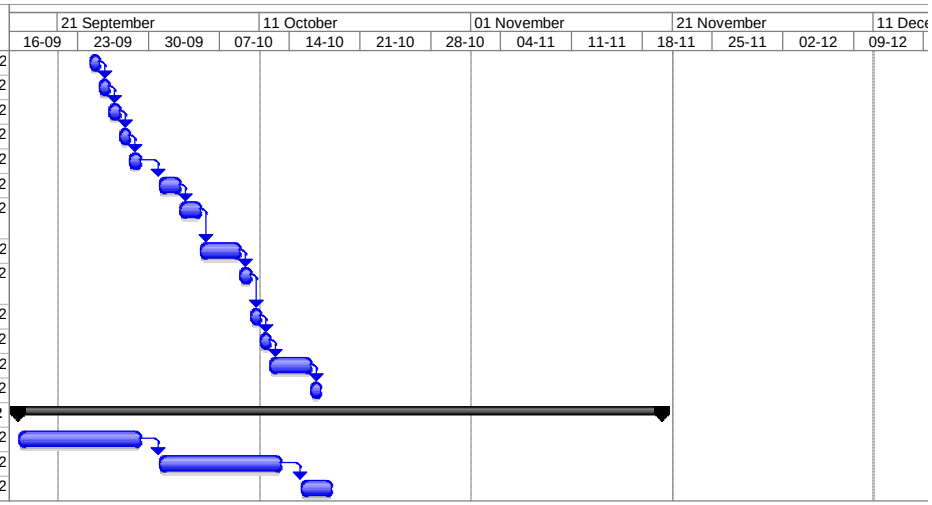


FIGURE 19 – PROJECT PLAN TASKS 32 TO 48

ID		Task Name	Duration	Start	Finish
32		Basic data entry	3 days	Mon 15-10-12	Wed 17-10-12
33		Software modules test	5 days	Thu 18-10-12	Wed 24-10-12
34		Visitor control functions test	3 days	Thu 25-10-12	Mon 29-10-12
35		Reporting functions test	5 days	Tue 30-10-12	Mon 05-11-12
36		Overall system test	10 days	Tue 06-11-12	Mon 19-11-12
37		**Software ready for use at hospital**	0 days	Fri 16-11-12	Fri 16-11-12
38		**Hardware Installation**	**41 days**	**Mon 15-10-12**	**Mon 10-12-12**
39		Server installation	2 days	Mon 15-10-12	Tue 16-10-12
40		Workstations in wards	5 days	Wed 17-10-12	Tue 23-10-12
41		Workstations at receptions	5 days	Wed 24-10-12	Tue 30-10-12
42		Workstations in the file room	1 day	Wed 31-10-12	Wed 31-10-12
43		IP Cameras installation	5 days	Thu 01-11-12	Wed 07-11-12
44		VoIP telephony setup	5 days	Thu 08-11-12	Wed 14-11-12
45		Information monitors setup	5 days	Thu 15-11-12	Wed 21-11-12
46		Visitor control hardware units installation	3 days	Thu 22-11-12	Mon 26-11-12
47		Hardware test on network	10 days	Tue 27-11-12	Mon 10-12-12
48		**Hardware installed and ready for use**	0 days	Mon 10-12-12	Mon 10-12-12

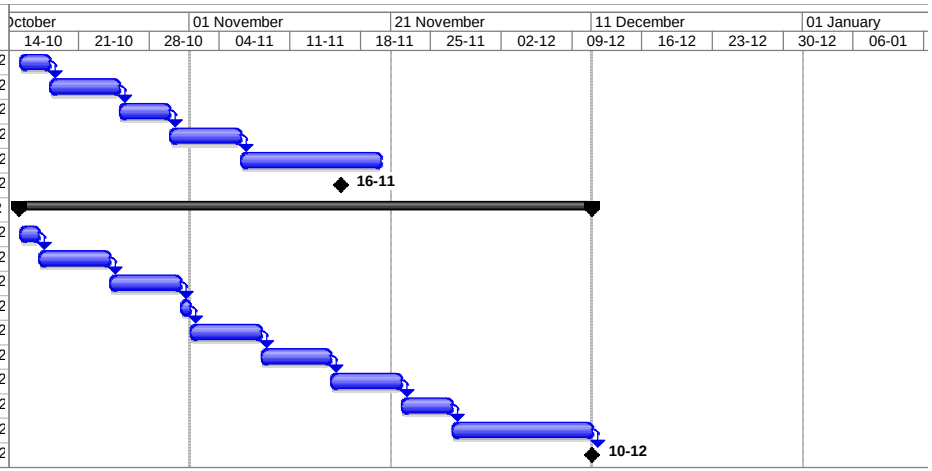


FIGURE 20 – PROJECT PLAN TASKS 48 TO 64

ID		Task Name	Duration	Start	Finish
48		**Hardware installed and ready for use**	0 days	Mon 10-12-12	Mon 10-12-12
49		**Testing of the information system (HW/SW) real time**	**15 days**	**Thu 13-12-12**	**Wed 02-01-13**
50		Offline testing: Vendor test	5 days	Thu 13-12-12	Wed 19-12-12
51		Online testing: user test and on-the job-training	10 days	Thu 20-12-12	Wed 02-01-13
52		**System goes live**	**37 days**	**Thu 03-01-13**	**Fri 22-02-13**
53		System and users ready for work	0 days	Thu 03-01-13	Thu 03-01-13
54		First week operation	7 days	Fri 04-01-13	Mon 14-01-13
55		Reporting on first week operation	0 days	Mon 14-01-13	Mon 14-01-13
56		Meet with EEHR	1 day	Tue 15-01-13	Tue 15-01-13
57		Second week operation	7 days	Wed 16-01-13	Thu 24-01-13
58		Reporting on first two weeks operation	0 days	Thu 24-01-13	Thu 24-01-13
59		Meet with EEHR	1 day	Fri 25-01-13	Fri 25-01-13
60		last two weeks of first month of operation	14 days	Mon 28-01-13	Thu 14-02-13
61		Reporting on first month of work	0 days	Thu 14-02-13	Thu 14-02-13
62		Meet with EEHR	1 day	Fri 15-02-13	Fri 15-02-13
63		Prepare final documents for project delivery	4 days	Mon 18-02-13	Thu 21-02-13
64		**PROJECT DELIVERED**	1 day	Fri 22-02-13	Fri 22-02-13

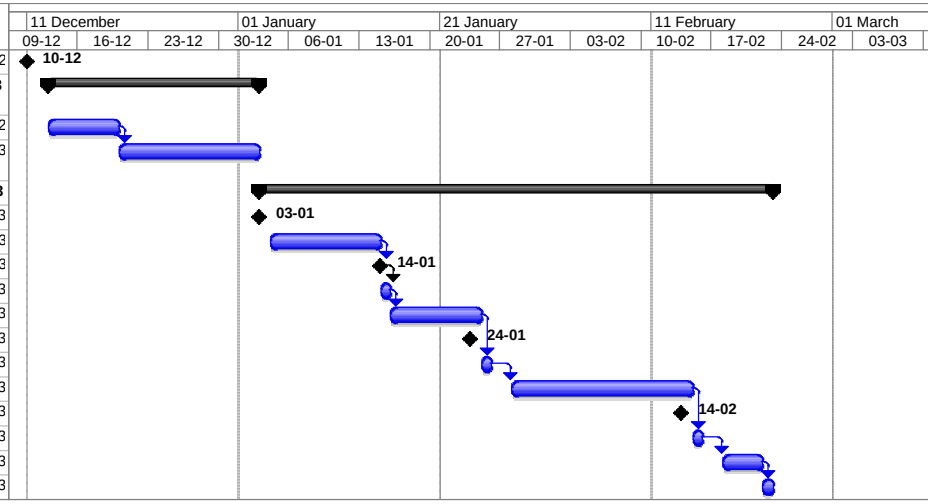
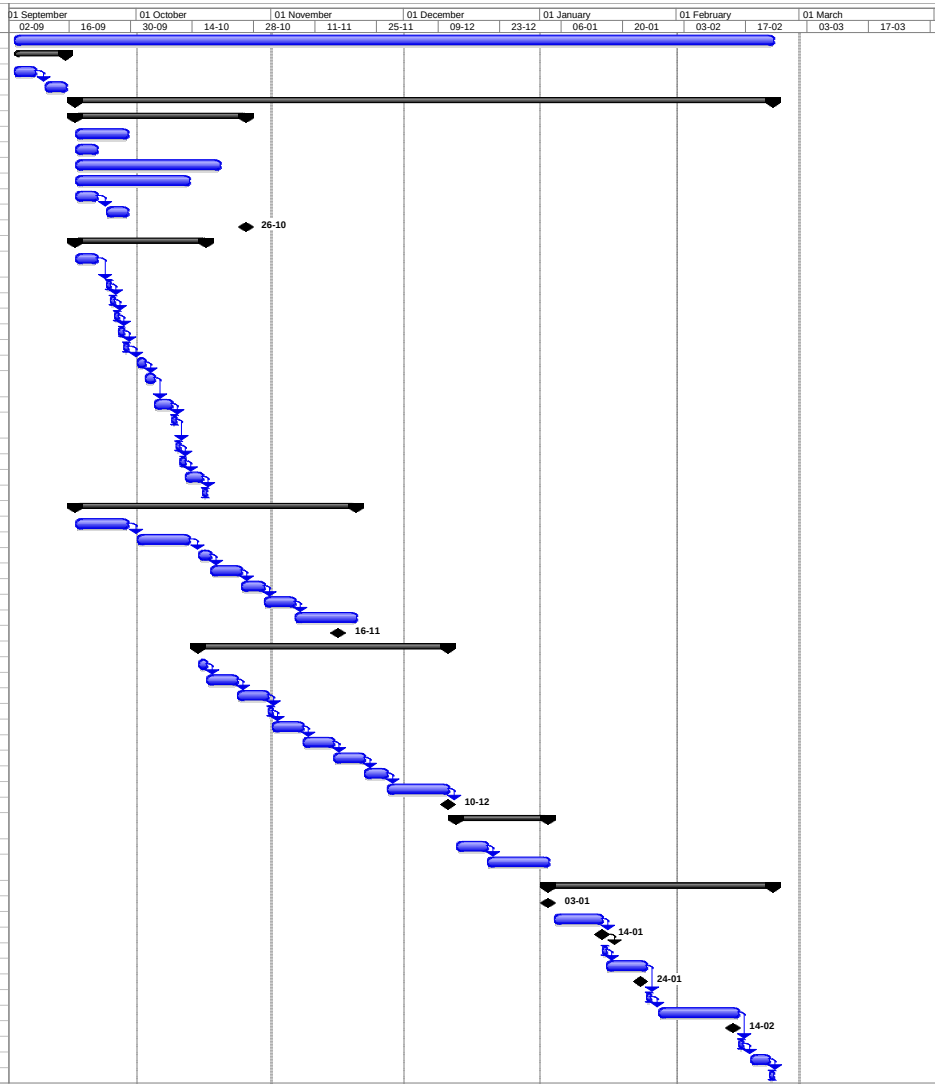


FIGURE 21 – PROJECT PLAN ALL TASKS

ID		Task Name	Duration	Start	Finish
1		**Project Plan, Timeline and Milestones**	**125 days**	Mon 03-09-12	Fri 22-02-13
2		**mobilization**	**10 days**	**Mon 03-09-12**	**Fri 14-09-12**
3		Preparing technical staff	5 days	Mon 03-09-12	Fri 07-09-12
4		Preparing implementation staff	5 days	Mon 10-09-12	Fri 14-09-12
5		**Implementation**	**115 days**	**Mon 17-09-12**	**Fri 22-02-13**
6		**Network installation**	**29 days**	**Mon 17-09-12**	**Fri 26-10-12**
7		Server room construction	10 days	Mon 17-09-12	Fri 28-09-12
8		Polyclinic	5 days	Mon 17-09-12	Fri 21-09-12
9		Main campus	25 days	Mon 17-09-12	Fri 19-10-12
10		Maternity	20 days	Mon 17-09-12	Fri 12-10-12
11		Installing WiFi Antenna	5 days	Mon 17-09-12	Fri 21-09-12
12		Testing of network and correctivity issues	5 days	Mon 24-09-12	Fri 28-09-12
13		Network installed and ready to use	0 days	Fri 26-10-12	Fri 26-10-12
14		**Classroom training**	**22 days**	**Mon 17-09-12**	**Tue 16-10-12**
15		Printing needed documents, user manuals, prepare training room	5 days	Mon 17-09-12	Fri 21-09-12
16		System overview	1 day	Mon 24-09-12	Mon 24-09-12
17		Registration functionality	1 day	Tue 25-09-12	Tue 25-09-12
18		Admissions functionality	1 day	Wed 26-09-12	Wed 26-09-12
19		Billing functionality	1 day	Thu 27-09-12	Thu 27-09-12
20		Visitor control functionality	1 day	Fri 28-09-12	Fri 28-09-12
21		Ward functionality	2 days	Mon 01-10-12	Tue 02-10-12
22		ICD-OPS (diagnosis and interventional coding)	2 days	Wed 03-10-12	Thu 04-10-12
23		Discharge - Transfer functionality	2 days	Fri 05-10-12	Mon 08-10-12
24		Human resource, referreal, file room functionality	1 day	Tue 09-10-12	Tue 09-10-12
25		Labor in pregnancy functionality	1 day	Wed 10-10-12	Wed 10-10-12
26		Neonates functionality	1 day	Thu 11-10-12	Thu 11-10-12
27		Online reporting system	2 days	Fri 12-10-12	Mon 15-10-12
28		**Giving Training Certificates**	1 day	Tue 16-10-12	Tue 16-10-12
29		**Customize System for Lezha Regional Hospital**	**46 days**	**Mon 17-09-12**	**Mon 19-11-12**
30		Modules customization and configuration	10 days	Mon 17-09-12	Fri 28-09-12
31		Reporting functionality	10 days	Mon 01-10-12	Fri 12-10-12
32		Basic data entry	3 days	Mon 15-10-12	Wed 17-10-12
33		Software modules test	5 days	Thu 18-10-12	Wed 24-10-12
34		Visitor control functions test	3 days	Thu 25-10-12	Mon 29-10-12
35		Reporting functions test	5 days	Tue 30-10-12	Mon 05-11-12
36		Overall system test	10 days	Tue 06-11-12	Mon 19-11-12
37		**Software ready for use at hospital**	0 days	Fri 16-11-12	Fri 16-11-12
38		**Hardware Installation**	**41 days**	**Mon 15-10-12**	**Mon 10-12-12**
39		Server installation	2 days	Mon 15-10-12	Tue 16-10-12
40		Workstations in wards	5 days	Wed 17-10-12	Tue 23-10-12
41		Workstations at receptions	5 days	Wed 24-10-12	Tue 30-10-12
42		Workstations in the file room	1 day	Wed 31-10-12	Wed 31-10-12
43		IP Cameras installation	5 days	Thu 01-11-12	Wed 07-11-12
44		VoIP telephony setup	5 days	Thu 08-11-12	Wed 14-11-12
45		Information monitors setup	5 days	Thu 15-11-12	Wed 21-11-12
46		Visitor control hardware units installation	3 days	Thu 22-11-12	Mon 26-11-12
47		Hardware test on network	10 days	Tue 27-11-12	Mon 10-12-12
48		**Hardware installed and ready for use**	0 days	Mon 10-12-12	Mon 10-12-12
49		**Testing of the information system (HW/SW) real time**	**15 days**	**Thu 13-12-12**	**Wed 02-01-13**
50		Offline testing: Vendor test	5 days	Thu 13-12-12	Wed 19-12-12
51		Online testing: user test and on-the job-training	10 days	Thu 20-12-12	Wed 02-01-13
52		**System goes live**	**37 days**	**Thu 03-01-13**	**Fri 22-02-13**
53		System and users ready for work	0 days	Thu 03-01-13	Thu 03-01-13
54		First week operation	7 days	Fri 04-01-13	Mon 14-01-13
55		Reporting on first week operation	0 days	Mon 14-01-13	Mon 14-01-13
56		Meet with EEHR	1 day	Tue 15-01-13	Tue 15-01-13
57		Second week operation	7 days	Wed 16-01-13	Thu 24-01-13
58		Reporting on first two weeks operation	0 days	Thu 24-01-13	Thu 24-01-13
59		Meet with EEHR	1 day	Fri 25-01-13	Fri 25-01-13
60		last two weeks of first month of operation	14 days	Mon 28-01-13	Thu 14-02-13
61		Reporting on first month of work	0 days	Thu 14-02-13	Thu 14-02-13
62		Meet with EEHR	1 day	Fri 15-02-13	Fri 15-02-13
63		Prepare final documents for project delivery	4 days	Mon 18-02-13	Thu 21-02-13
64		**PROJECT DELIVERED**	1 day	Fri 22-02-13	Fri 22-02-13



7. NETWORK AND COMPUTER HARDWARE SPECIFICATIONS

7.1 SUMMARY

The planned Infrastructure can be found in Section 1.10 below Hospital Blueprints and Equipment Positioning. The overall equipment needed is in the the table below. It should be mentioned that items with quantities "0" in the table will be procured separately and are not part of the proposal specified in this document. They are listed below just for informational purposes:

TABLE 9 – BILL OF QUANTITIES

Description of Equipment	UoM	Qty
Monitors 42"	pcs	4
Servers	pcs	3
Router	pcs	1
24 ports switch	pcs	8
48 ports switch	pcs	1
Server Rack 42U	pcs	1
Mini Rack 9U	pcs	7
PCs and monitors	pcs	0
Laser Printer	pcs	0
Multifunction printing devices	pcs	0
Working posts	pcs	0
VoIP phones	pcs	45
VoIP Phone system	pcs	1
UPS 600 W	pcs	0
UPS 3 kW	pcs	1
IP Cameras	pcs	25
Networking cable	~km	5
Air Conditioner	pcs	1
Windows Server Enterprise 2003 + 100 User CAL	set	1

7.2 SERVER ROOM REQUIREMENTS

This section outlines the requirements that the server room should comply to, and describes the services and requirements that Lezha Regional Hospital needs regarding the infrastructure works and equipment.

Server rooms are widely used also in Albania in both public and private sector. The National Authority of Information Society (NAIS) has defined a set of characteristics on which these standards should be developed. The NAIS guidelines are exhibited in Section 7.6 below. The LRH is looking for qualified bidders that meet the technical requirements as defined by NAIS.

As per the above mentioned, the following infrastructure segments need to be constructed:

7.2.1 CIVIL WORKS – SERVER ROOM

- Antistatic floor finishing is recommended for raised floor tiles or sheet vinyl
- Maximum electrical density of computing equipment in a server room should not exceed 500 watts per square foot
- Computer racks should have seismic bracing and proper grounding
- Computer racks should have adequate clearance per manufacturer specifications
- Air cooled based A/C systems are strongly preferred
- There should be sufficient clearance (minimum 4') between the A/C unit and computer racks in order to avoid potential damage from water leaks, as well as to allow for maintenance access
- Building power quality considerations should be taken into account to determine the need for isolation transformers, UPS systems, and other power conditioning equipment
- All entrances to the room should be properly secured

7.2.2 RACK FOR SERVERS - 1 UNIT

- 42U height
- 19" mounting
- The cabinet must include all the necessary PDUs and other accessories necessary for the appropriate electrical power supply
- 6 Cooling Units with thermostat
- Side panels
- Stabilizing accessory
- Grounding accessory

7.2.3 SUPPLY & INSTALLATION OF DATA NETWORK

- A high speed – wide range Structured Cabling network must be installed to serve the voice/data transfers as well as the IT equipment demand for high speed data transmission. The entire system must be designed to comply with the following:
    - Accordance with International Standards
    - Flexibility of connections and extensions (LAN-WAN).
    - Redundancy and future needs provision
    - Length of useful life
    - Centralized administration
    - The manufacturer's facility should be accredited with ISO 9001
    - The cabling system must be an unshielded solution category 6
- The bidder must provide Server Room preparation and Installation of all equipment to be fully functional, including Civil Works, all needed accessories, antistatic ceiling and floor, cables etc., that are needed for the successful installation for all required equipment. The bidder will have the right to inspect the Server Room premises associated from authorized staff of Lezha Regional Hospital, before preparing its technical proposal.

7.2.4 AIR CONDITIONING SYSTEM

Based on NAIS guidelines, the temperature of the server room must be 20 degrees centigrade and the humidity must be 45%. The volume of the planned server room is 30 m3 and the total power consumption of the IT equipment does not exceed 5 kilowatts. The air conditioner must have automatic restarting function in case of a power outage, the cooling system must include a ventilation system to displace the hot air and a condensation tank.

Air Conditioning System	UoM	Qty
Air Conditioner, 5 KW cooling capacity or better	pcs	1
Warranty	**1 year**	

7.2.5 UPS

- In case the power supply is interrupted, the UPS power backup system will provide power to the servers hosting the hospital applications as specified below.
- One UPS system of 3 KVA capacity will be installed, capable to support the Server Room loads. The UPS system should be able to:
    - Effectively respond to voltage drops and power cuts
    - Provide constant and stable voltage supply, filter undesirable interference (noise), and absorb (cut) spikes and overloads.
    - Protect against overcharging, low level or full discharge of batteries.

Apparent power: 3 KVA or more
Input Voltage: 220 V – 240 V 3-phase
Battery runtime with half load: 17 min or more
Battery runtime with full load: 6.3 minutes or more
Warranty 3 years

Uninterruptable Power Supply System	UoM	Qty
UPS System	pcs	1
Warranty	**3 years**	

7.2.6 SERVERS

In total there are 3 servers needed. One server will be used for domain services, one for HIS Application and one for ADT database, as the ADT vendor may need. Additional roles may be added to these servers, as the hospital may need in the future.

TABLE 10 – DOMAIN SERVER REQUIREMENTS

RACKMOUNTED DOMAIN SERVER	
Feature	**Technical Specifications**
Form Factor	1-Socket 1U Rack
Processors	Intel Xeon processor X3400 series
Processor Sockets	1
Cache	(8M Cache, 2.40 GHz)
Memory	16GB 1333MHz ECC
I/O Slots	2 PCIe G2 slots:Slot 1: PCIe x16 (x8 routing), Full Height/Half LengthSlot 2: PCIe x8 (x8 routing), Full Height /Half Length
RAID Controller	Internal Controllers: 6Gb/s SAS HBAPERC H200
Drive Bays	Cabled or hot-swap options available:4 hard drive chassis: 3.5" SAS and SATA or 2.5" SAS and SSD drives
Internal Storage	2 X 1TB
Hard Drives[1]	3.5" cabled Near Line SAS (7.2K RPM): 1000GB

Communications	Intel® Gigabit ET Quad Port Server AdapterIntel® Gigabit ET Dual Port Server Adapter
Power Supply	Two hot-pluggable redundant 400W hot-plug power supplies
Video	Matrox® G200eW w/ 8MB
Remote Management	iDRAC Express
Systems Management	Full OpenManage™ Support:BMC, IPMI2.0 compliant Lifecycle Controller enabled via : iDRAC6 Express
Rack Support	ReadyRails™ static rails for 2-post and 4-post racks
Operating system	Windows Server Enterprise 2003 R2 + 100 User CAL
RACKMOUNTED APPLICATION SERVER	
Feature	**Technical Specifications**
Form Factor	1-Socket 1U Rack
Processors	Intel Xeon processor X3400 series
Processor Sockets	1
Cache	(8M Cache, 2.40 GHz)
Memory	16GB 1333MHz ECC
I/O Slots	2 PCIe G2 slots:Slot 1: PCIe x16 (x8 routing), Full Height/Half LengthSlot 2: PCIe x8 (x8 routing), Full Height /Half Length
RAID Controller	Internal Controllers: 6Gb/s SAS HBAPERC H200
Drive Bays	Cabled or hot-swap options available:4 hard drive chassis: 3.5" SAS and SATA or 2.5" SAS and SSD drives
Internal Storage	2 X 1TB
Hard Drives[1]	3.5" cabled Near Line SAS (7.2K RPM): 1000GB
Communications	Intel® Gigabit ET Quad Port Server AdapterIntel® Gigabit ET Dual Port Server Adapter
Power Supply	Two hot-pluggable redundant 400W hot-plug power supplies
Video	Matrox® G200eW w/ 8MB
Remote Management	iDRAC Express
Systems Management	Full OpenManage™ Support:BMC, IPMI2.0 compliant Lifecycle Controller enabled via : iDRAC6 Express
Rack Support	ReadyRails™ static rails for 2-post and 4-post racks
Operating system	UBUNTU 10.04
RACKMOUNTED DATABASE SERVER	
Feature	**Technical Specifications**
Form Factor	1-Socket 1U Rack
Processors	Intel Xeon processor X3400 series
Processor Sockets	1
Cache	(8M Cache, 2.40 GHz)
Memory	16GB 1333MHz ECC
I/O Slots	2 PCIe G2 slots:Slot 1: PCIe x16 (x8 routing), Full Height/Half LengthSlot 2: PCIe x8 (x8 routing), Full Height /Half Length
RAID Controller	Internal Controllers: 6Gb/s SAS HBAPERC H200
Drive Bays	Cabled or hot-swap options available:4 hard drive chassis: 3.5" SAS and SATA or 2.5" SAS and SSD drives
Internal Storage	2 X 1TB

Hard Drives1	3.5" cabled Near Line SAS (7.2K RPM): 1000GB
Communications	Intel® Gigabit ET Quad Port Server AdapterIntel® Gigabit ET Dual Port Server Adapter
Power Supply	Two hot-pluggable redundant 400W hot-plug power supplies
Video	Matrox® G200eW w/ 8MB
Remote Management	iDRAC Express
Systems Management	Full OpenManage™ Support:BMC, IPMI2.0 compliant Lifecycle Controller enabled via : iDRAC6 Express
Rack Support	ReadyRails™ static rails for 2-post and 4-post racks
Operating system	UBUNTU 10.04

7.3 NETWORK SPECIFICATIONS

7.3.1 NETWORK AND CABLING

- All terminal users must be connected with each other and with the central Server in a network configuration;
- The Server is connected to the LAN network through LAN RJ-45 Cable and a Switch on a panel and all other necessary equipment, cables must be provided by the bidder;
- All necessary devices for the connection (cables and other materials) must be included in the quote;
- Electrical and network cabling must be installed in network pipes;
- Cable class Installation Cable
- Category Cat.6
- Cable shielding U/UTP
- Number of fibers / conductors 8
- Stranding 4P
- Cable jacket material PVC
- Cable jacket characteristics cable, metal-free; flame-retardant

Materials: The Bids must include the full set of passive network equipment and materials necessary for successful network commissioning.

The Bidder is required to assess the need of such equipment and materials and include into the Bid any additional items that he/she deems necessary for network installation & commissioning.

Network pipes – The electrical and LAN cables should be in the network plastic pipes and will be divided through all the length of the pipes. The pipes will be stick on the floor/ceiling level and must be equipped with all the necessary fittings: endings, connectors, offset, inside angles, etc.

7.3.2 NETWORKING EQUIPMENTS

Cabinet Rack

- Wall mounted, 9U
- Secure glass door

TABLE 11 – ROUTER SPECIFICATIONS

Integrated Services Network Router	
Feature	**Technical Specifications**
Device Type	Router
Enclosure Type	Desktop, rack-mountable - modular - 1U
Connectivity Technology	Wired
Data Link Protocol	Ethernet, Fast Ethernet, Gigabit Ethernet
Network / Transport Protocol	IPSec, L2TPv3
Routing Protocol	OSPF, IS-IS, BGP, EIGRP, DVMRP, PIM-SM, static IP routing, IGMPv3, GRE, PIM-SSM, static IPv4 routing, static IPv6 routing, policy-based routing (PBR), MPLS
Remote Management Protocol	SNMP, RMON
Features	Firewall protection, VPN support, MPLS support, VLAN support, Syslog support, IPv6 support, Class-Based Weighted Fair Queuing (CBWFQ), Weighted Random Early Detection (WRED), Quality of Service (QoS), Web Services Management Agent (WSMA), TR-069 Agent, NetFlow
Compliant Standards	IEEE 802.3ah, IEEE 802.1ah, IEEE 802.1ag
RAM	512 MB
Flash Memory	256 MB
Interfaces	2 x 10Base-T/100Base-TX/1000Base-T - RJ-45
	Serial : 1 x console
	Management : 1 x console - mini-USB Type B
	Serial : 1 x auxiliary
	Hi-Speed USB : 1 x 4 pin USB Type A
Power Consumption Operational	60 Watt

TABLE 12 – 24 PORT SWITCH SPECIFICATIONS

RACKMOUNTED Switch - 24 ports - managed	
Feature	**Technical Specifications**
Device Type	Switch - 24 ports - managed
Enclosure Type	Rack-mountable - 1U
Ports	24 x 10/100
Performance	Switching capacity : 16 Gbps
	Forwarding performance (64-byte packet size) : 3.6 Mpps
MAC Address Table Size	8K entries
Remote Management Protocol	SNMP 1, SNMP 2, RMON 1, RMON 2, Telnet, SNMP 3, SNMP 2c, HTTP, HTTPS, TFTP, SSH-2
Encryption Algorithm	SSL
Authentication Method	RADIUS, TACACS+, Secure Shell v.2 (SSH2)

Features	Layer 2 switching, auto-sensing per device, DHCP support, auto-negotiation, VLAN support, auto-uplink (auto MDI/MDI-X), IGMP snooping, Syslog support, DiffServ support, Broadcast Storm Control, Multicast Storm Control, Unicast Storm Control, Rapid Spanning Tree Protocol (RSTP) support, Multiple Spanning Tree Protocol (MSTP) support, Dynamic Trunking Protocol (DTP) support, Port Aggregation Protocol (PAgP) support, Quality of Service (QoS), Link Aggregation Control Protocol (LACP), Port Security, MAC Address Notification
Compliant Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s, IEEE 802.3ah, IEEE 802.1ab (LLDP)
RAM	64 MB
Flash Memory	32 MB flash
Status Indicators	Port status, link activity, port transmission speed, port duplex mode, power, system
Interfaces	24 x 10Base-T/100Base-TX - RJ-45
Power Consumption Operational	22 Watt
Features	Redundant Power System (RPS) connector

TABLE 13 – 48 PORT SWITCH SPECIFICATIONS

RACKMOUNTED Switch - 48 ports - managed	
Feature	**Technical Specifications**
Device Type	Switch - 48 ports - managed
Enclosure Type	Rack-mountable - 1U
Ports	48 x 10/100 + 2 x 10/100/1000
Performance	Switching capacity : 16 Gbps
	Forwarding performance (64-byte packet size) : 10.1 Mpps
MAC Address Table Size	8K entries
Remote Management Protocol	SNMP 1, SNMP 2, RMON 1, RMON 2, Telnet, SNMP 3, SNMP 2c, HTTP, HTTPS, TFTP, SSH-2
Encryption Algorithm	SSL
Authentication Method	RADIUS, TACACS+, Secure Shell v.2 (SSH2)
Features	Layer 2 switching, auto-sensing per device, DHCP support, auto-negotiation, VLAN support, auto-uplink (auto MDI/MDI-X), IGMP snooping, Syslog support, DiffServ support, Broadcast Storm Control, Multicast Storm Control, Unicast Storm Control, Rapid Spanning Tree Protocol (RSTP) support, Multiple Spanning Tree Protocol (MSTP) support, Dynamic Trunking Protocol (DTP) support, Port Aggregation Protocol (PAgP) support, Quality of Service (QoS), Link Aggregation Control Protocol (LACP), Port Security, MAC Address Notification
Compliant Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ab, IEEE 802.1p, IEEE 802.3x, IEEE 802.3ad (LACP), IEEE 802.1w, IEEE 802.1x, IEEE 802.1s, IEEE 802.3ah, IEEE 802.1ab (LLDP)
RAM	64 MB
Flash Memory	32 MB flash

Status Indicators	Port status, link activity, port transmission speed, port duplex mode, power, system
Expansion / Connectivity	
Interfaces	48 x 10Base-T/100Base-TX - RJ-45
	2 x 10Base-T/100Base-TX/1000Base-T - RJ-45
Power Consumption Operational	45 Watt
Features	Redundant Power System (RPS) connector
Compliant Standards	TUV GS, CISPR 22 Class A, GOST, BSMI CNS 13438 Class A, CISPR 24, NOM, EN55024, CB, EMC, MIC, IEC 60950-1, EN 60950-1, UL 60950-1 Second Edition, RoHS, CSA C22.2 No. 60950-1, FCC Part 15 B Class A
Software Included	Cisco IOS LAN Lite

7.3.3 VOIP PHONES AND SYSTEM

A VOIP system needs to be installed and properly configured (turn-key):

TABLE 14 – RACKMOUNTED VOIP - GSM - PHONE SYSTEM

Specification	Features
Users: 100	Blind Transfer
Concurrent Calls: 22	BLF Support
Voicemail: 4000min	Blacklist
Interface:	Callback
Up to 16 Analog Ports (FXO/FXS)	CDR (Call Detail Records)
Up to 8 GSM Ports(Quad-Band GSM/GPRS850/900/1800/1900MHz)	Call Forward
Up to 8 UMTS Ports(UMTS 900/2100MHz or 850/2100MHZ or 850/1900MHZ)	Call Parking
Up to 8 BRI Ports	Call Pickup
Flash: 512 MB Onboard Flash	Call Routing
RAM: 128 MB Onboard RAM	Call Transfer
LAN: 1 (10/100Mbps)	Call Waiting
WAN: 1 (10/100Mbps)	Caller ID
Size: 1U Rack-Mount)	Conference; Define Office Time
SIP Protocol: SIP(RFC3261), IAX2	DDNS
Transport Protocol: UDP,TCP,TLS,SRTP	Dial by Name
Codec: G.711, GSM, SPEEX, G.722, G.726, ADPCM, G.729 A, H261,	DISA (Direct Inward System Access)
H263,H263p, H264 ,MPEG4.	DIDs
DTMF: Inband, RFC2833, SIP INFO	Distinctive Ringtone
LED: Red for FXO/GSM/UMTS, Orange for BRI, Green for FXS	DND (Do Not Disturb)

Network: Static IP, PPPoE, DHCP, Firewall, VLAN, DDNS, QoS,	FAX (T.38)
DHCP Server, OpenVPN	Firewall
Multiple Languages Support:	Follow Me
Albanian, Chinese, English, French, Hebrew, Italian, Portuguese, Russian, Spanish, Turkish	IVR (Interactive Voice Response)
	Intercom/Zone Intercom
Included modules:	Mobility Extension
1 GSM Sim Card Module	Multi-language Prompt
1 S2 module with 2 FXS ports to terminate two analog telephone	Music On Hold
	Music On Transfer
	One touch record
	Open VPN
	Phone Provisioning
	PIN User (PIN Code Control)
	Paging/Zone Paging
	PPPoE
	Queue
	Ring Group
	Route by Caller ID
	Skype Integration (Skype Connect)
	SMS to Mail/Mail to SMS
	Speed Dial
	Static Route
	Three Way Calling
	Voicemail
	Voicemail to Email
	Voicemail Forwarding
	Web Based Control Panel

TABLE 15 – VOIP PHONE

Feature	Technical Specifications
Phone Features	1 VoIP account , Hotline Cal l waiting, Call transfer, Call forward Cal l hold, Mute, Redial , DND 3-way conferencing, Speed dial Direct IP call without SIP proxy Volume control , Ringtone selection Tone scheme, System log export Integrated Voice Response System
IP PBX System Integration	Music on hold Call park, Call pickup Dial plan, Dial now Voicemail Message Waiting Indication (MWI) Distinctive ringtone

Voice Features	Wideband codec : G.722 Narrowband codec : G.711 /A, G.726, G.729AB , G .723.1 VAD, CNG, PLC, AJB , AGC
Network Features	SIP v 1 (RFC2543) , v2 (RFC3261)NAT Traversal : STUN modeDTMF: In-band, out-of band (RFC2833) and SIP INFOPro x y mode and peer- to-peer SIP link model P Assignment : Static /DHCPTFTP/DHCP clientTelnet /HTTP serverDNS client
Management	Built- in HTTP web server Configuration: browser /phone/auto-provision/ IVR Auto provision via TFTP/FTP/HTTP/PnP Auto provision for firmware, configuration, ringtone
Security	QoS: IEEE 802.1p/q tagging (VLAN) , Layer 3ToS Digest authentication using MD5/MD5 Secure configuration file via AES encryption Admin/user configuration mode
Physical Features	20 keys including 2 programmable keys 4 feature keys (Transfer /Hold/Mute/Redial) Phone label 1xdual - color L ED 1xRJ45 10/100M Ethernet port Desktop with foot stand (detachable) , Wall -mountable Power adapter : AC 100~240V input and DC 5V/1.2A Output Power over Ethernet (IEEE 802.3af c las s 1) opt ional Operating humidity : 10~95% Storage temperature: up t o 60 C
Certifications	FCC, CE
Power:	Includes Power Adapter

7.4 HOSPITAL CCTV SYSTEM

For the surveillance and protection of the hospital, a CCTV system must be installed and properly configured (turn-key):

TABLE 16 – CCTV SYSTEMS

CCTV System	UoM	Qty
Box IP Camera	pcs	25
Recording and View License	pcs	3
PC for Recording	pcs	1
Warranty	**3 years**	

TABLE 17 – IP CAMERA TECHNICAL SPECIFICATIONS:

Surveillance/Network Camera	
Feature	**Technical Specifications**
Product Type	Surveillance/Network Camera

Image Sensor Type	CMOS
Illumination	0 Lux
Color Supported	Color
Maximum Video Resolution	1.3 Megapixel CMOS
Video Formats	H.264
	Supports multiple simultaneous H.264, MPEG4, Motion-JPEG and 3GPP video streams
Maximum Image Resolution	1280 x 1024
Focal Length	2.70 mm to 9 mm
Aperture Range	f/1.2
Optical Zoom	3.3x
Network & Communication Connectivity Technology	Cable Integrated e-mail, FTP, DDNS and DHCP client
Ethernet	Yes
Day/Night	18 integrated infrared LEDs (850 nm) with 2 brightness levels provide 15 m (50 ft.) effective range
Protocols	TCP/IP, DHCP, PPPoE, ARP, , ICMP, FTP, SMTP, DNS, HTTP, TCP, UDP

7.5 TVS

TABLE 18 – TVS SPECIFICATIONS

Monitor TV - 42"	
Feature	**Technical Specifications**
Picture/Display	LCD Full HD Diagonal screen size: 42 inch / 107 cm Panel resolution: 1920x1080p Aspect ratio: 16:9 Brightness: 400 cd/m² Dynamic screen contrast: 100.000:1
Sound	Output power (RMS): 20W (2 x 10W)
Connectivity	HDMI connections: X 3, (YPbPr): X 1, (RGB/CVBS): X1, AV connections: X 1, USB: X 1
Video Playback Formats:	H264/MPEG-4 AVC, MPEG-1, MPEG-2, MPEG-4
Computer inputs:	up to 1920x1080 @ 60Hz
Video inputs:	24, 25, 30, 50, 60 Hz, up to 1920x1080p

7.6 NAIS SERVER ROOM GUIDELINES

The server room must meet the requirements of the National Agency for Information System, as mentioned below.

7.6.1 INTRODUCTION

National Agency of Information Society based on Decision No. 248 dated 27.04.2007, pursuant to paragraph 3 letter d) providing for the establishment of standards of ICT for public administration, has drafted this regulation "to build a room servers":

7.6.2 PURPOSE

The purpose of this section is the standardization of technical requirements for construction and administration of the server room in the public administration, considering this environment as a key point of information infrastructure. Use of a common regulation would enable uniformed technical conditions of server room in state institutions.

The server room is a sensitive point with the information system and the concentration of computer equipment, mechanical, electrical and electronics is higher than in other working environments. Eventual damage caused in this environment will bring serious problems in the functioning of the whole system.

The objective of this section is:

- Standardization in construction, management and maintenance of the server room of the state institutions;
- Guarantee the functioning of computer infrastructure in normal and emergency conditions;
- Preparation and awareness for the implementation of international standards related to the field of ICT;
- Ensuring flexibility of physical infrastructure;
- Minimizing the probability of failure of information systems by external factors; and
- Increased information security.

7.6.3 DEFINITIONS:

In terms of this regulation, the following terms shall have the following meanings:

Server - A computer system (Hardware and Software) which offers various services on the network. Example: mail server (mail server), server for file transfer (FTP server), file sharing server (file server, etc.).

Room servers - physical place where stored and remain primarily servers and other auxiliary equipment required for communication services, signaling and other electronic devices.

UPS system (Uninterruptible Power Supply) - Equipment used to provide food source of electricity (battery) when interrupted supply from the network or power level is outside the acceptable range. Depending on circumstances, these devices provide power to several hours.

Rack - physical structure (mainly metal) which serves to arrange electronic and electrical equipment such as server, switch, router, UPS, etc. panels.

VoIP (Voice Over Internet Protocol) - the communication protocol optimized for the transmission of sound through computer networks.

7.6.4 STANDARDS

The server room is the environment where to store all the equipment that enable shared services and ensure computer network connecting all computers of users.

7.6.5 GENERAL CHARACTERISTICS

Room servers must have the technical features of construction the walls of the server room: Should be constructed with material resistant. (No cardboard or gypsum fiber or other related materials that do not guarantee physical security)

House construction materials should be non-combustible or help spread the fire.

Limiting wall thickness of the floor and ceiling must provide space for placement of various insulation layers.

It is preferred that the walls of the room (including ceiling and floor) do not pass the main line water supply system of the building plumbing, central heating system when the water feature, electric system (high voltage 2-12 kV).

Floor and ceiling of the room: Flooring should be antistatic. In cases where the flooring material must be fire.

In cases where technological structure floor area must predict the severity of the rack's and other equipment or devices that can be stored in the server room.

Preferably, the level of the floor construction to be the same as the floor level of the floor where the server room. In cases where it is technically impossible to avoid the passage of cables without protection (kanalina) under the floor.

Leveling the floor should have pendency towards the server room door.

The ceiling of the room where the server is bound to be composed of fire retardant material and avoid supporting electrical cables, transformers and batteries. Walls, ceilings and doors must be isolated from noise, heat and important institutions like ministries and agencies that deal with important information should be placed skermo against emission of electromagnetic waves (Faraday cage). Door size should be 105-120 cm wide and 240 cm long. Chamber should not have windows (for security reasons, the issue of noise).

7.6.6 EQUIPMENT

Rack being of the computers must be protected against earthquakes and have a basement suitable and sustainable.

Rack-being of the computers must have their space forward or sideways according to manufacturer's specifications (but not less than 120 cm in front and 90cm behind);

Rack must have a minimum ceiling distance of 30 cm. The room should have at least one phone.

7.6.7 FIRE PREVENTION

The room should be equipped with an adequate fire

Rooms should be fire resistant if the cables and cooling systems are combined in the same space above the ceiling or under floor.

7.6.8 COOLING SYSTEM

Air distribution system: An air distribution system the floor is preferred, although it may be allowed piping systems (ducted systems). In this case, the floor, the minimum height should be 60 cm and the raised floor should be such as to resist the weight of shelves fully loaded servers, as well as transport equipment used to move the shelves, computer hardware and any other auxiliary system.

Cooling system: Room cooling system and the control of humidity should be placed at 22 ° C and humidity at 45% (± 5%), electrical installation should be under 3.5.

7.6.9 ELECTRICAL SYSTEM

Capacity and Quality: Electrical installation of the server room should be separately overall installation (lighting or the users).

Rooms must have separate electrical connection to computer and network equipment and lighting and air conditioning and ventilation. Power rack-tests should be separated from that of the equipment used to ensure the technical conditions of operation.

Room space can be utilized to the maximum by observing the condition that the maximum density of electricity equipment in a room server should not exceed 300 watts per square meter.

Should consider the quality of electricity of the building to determine the need for insulating transformer, UPS systems and other equipment ventilation / air conditioning. Heat-generating equipment should not be placed in the server room.

Should in the server room or outside and be a box to perform and automate the monitoring of the power of electricity. For each Rack, put UPS. Electrical installations must be dedicated earthing and Null.

Contingency Plan.

- With a UPS uninterruptible power supply, it is possible to maintain the stock of equipment in case of a short break 10-15minuta and this gives sufficient time and information for normal shutdown commands to devices (Shutdown). Should:
- Reserve supply system (generators, batteries) of the server room should not be the same as the central reserve feeder system of the building.
- UPS equipment should be manageable by the user who decide when to start counting backwards the shutdown of equipment located in the UPS.
- In the case of VoIP plants, should reserve resources (backup) power, which may be the main generator for the building, or powerful battery, as it is important not to discontinue this service, there must be received no communication remains the telephone.

7.6.10 THE ALARM SYSTEM

Alarm Systems: Must be such as to indicate problems with electricity, the natural environment, water flow sensor, the sensor to prevent physical damage to the structure of the room.

Safety: Entering the room should be provided through an electronic system and of course should have and alarm system in case of its breach.

7.6.11 RISK ANALYSIS

To decide which measures to be taken to ensure the server room should analyze the risks before scenarios can occur.

Fire

Fire in the building could occur as a result of human carelessness (we use the household electrical appliances, coffee machines or electric heater), the use of easily combustible materials such as candles, welding works, but also from accidental causes such as: overload electrical cables, lack of fire in the storage system (archives and repositories with the chancellor).

Water

Flooding of the building or its rooms from water can occur in cases such as for example: the rain, crack pipes or water and sanitation on the room side, defects in the heating system (when it works with water); defect of system of central air conditioning plant on the water, blowing water plant, water used to extinguish fires. The risk is damage and disposal of IT equipment with short circuit or mechanical damage to ventilation systems / air conditioning.

Temperature and Humidity

Each device has set a maximum segment minimum temperature at which normal operation is ensured by its manufacturer. If room temperature is outside these limits in both directions, the result will be discontinued functionality of equipment and its dissolution. In the server room, the equipment located emit heat and warm environment. Likewise, the geographical position of the server room where the sun brings heat captured from the environment. It is not advisable to leave open the door to perform ventilation. In the autumn of this spring will bring changes in humidity or in the summer would bring an immediate change in temperature.

7.6.12 LACK OF ORGANIZATION AND PROCEDURAL RULES

Lack of rules for entry in the server room that often makes unauthorized persons allowed to enter. For various reasons, the institution's employees tend to come in the server room. An unauthorized person who enters this room, carries with it the risk not only from deliberate actions but also negligent and can bring interruptions of work or function of equipment in the server room. Control of entries in this room should be considered the same matter as regulation of passwords.

7.6.13 TECHNICAL FAILURES

Interruption of electricity

With all the assurance on the continuity of electricity, the energy is really going on break. Users do not feel the interruption of less than 1 second but not the case with IT equipment to cut their functionality in case of interruption for more than the 10ms.

Damage to the central systems equipment

In building, there are many devices that serve as the basis of IT processes. Mention the large electrical systems, telephone or central air conditioning. Breakdown of these systems fall brings IT systems.

Tension electricity

Changing the voltage variation of it, too high or too low delivers IT equipment damage and malfunction of their best, which have set the voltage limits of acceptability. High voltage occurs and if induction or thunderstorm. Automatic fuse box located in the server room should have differential circuit.

7.6.14 INTENTIONAL ACTIONS

Destruction of ICT equipment or accessories

Pests, internal or external, for various reasons (revenge, malice, frustration) trying to manipulate or destroy IT equipment, accessories, documentation or similar. If these people were and knowledge in the field of IT, then the damage is greater, ranging from access to sensitive data and to their destruction, and this course would bring the time and block the normal work.

Manipulation of data or programs

Data and programs can be manipulated in various ways, making the data error, change level access rights, modification of financial data or correspondence, changing operating systems. An offender manipulates the data and programs in which there is access. The more rights a person has, the more risk the entire IT system.

Unauthorized access to the institution

Even this is an honor to be assessed risks. Preventive measures should be taken under the rules of each institution to prevent persons entering the building.

Theft

Theft of IT equipment, accessories, software or data not only brings plus expenses to do the replacement and return to operative systems, but the loss, often as a result of the inadequacy of equipment.

Vandalism

Such acts may be performed by damaging internal or external (demonstrators out of control).

7.6.15 THE MANAGEMENT OF SERVER ROOM:

Responsibility for the management of server room belongs to IT staff.
In this room are not allowed to smoke, eating food or consumption of various drinks. The district IT systems or data, where the fire as well as environmental pollution causes serious damage.

Introduction:

Entry into the server room should have established procedures and rules carefully, this to avoid any potential damage intentionally or not, mentioned above.
In the server room, the number of persons eligible to enter should be as minimal. In case of entry of someone else (here it comes to external technical support people) to do the verification and escort them during their stay in this room.

Cleaning

The person in charge of cleaning the institution will also be cleaning up the room. It is mandatory that someone from the IT staff has the right of entry into the room to accompany the person during the performance of his duties.

Copies of Key

To apply a written procedure in case of making use of the room server key signed by IT staff. In case of loss of individual key should be reported immediately. In case of changing the position of staff or his departure should be submitted key to get into use.
A copy should be key in the central vault of the institution, always in an emergency.

8. ARCHITECTURAL BLUEPRINTS OF HOSPITAL FLOORS

FIGURE 22 – LEZHA REGIONAL HOSPITAL – POLICLINIC GROUND FLOOR

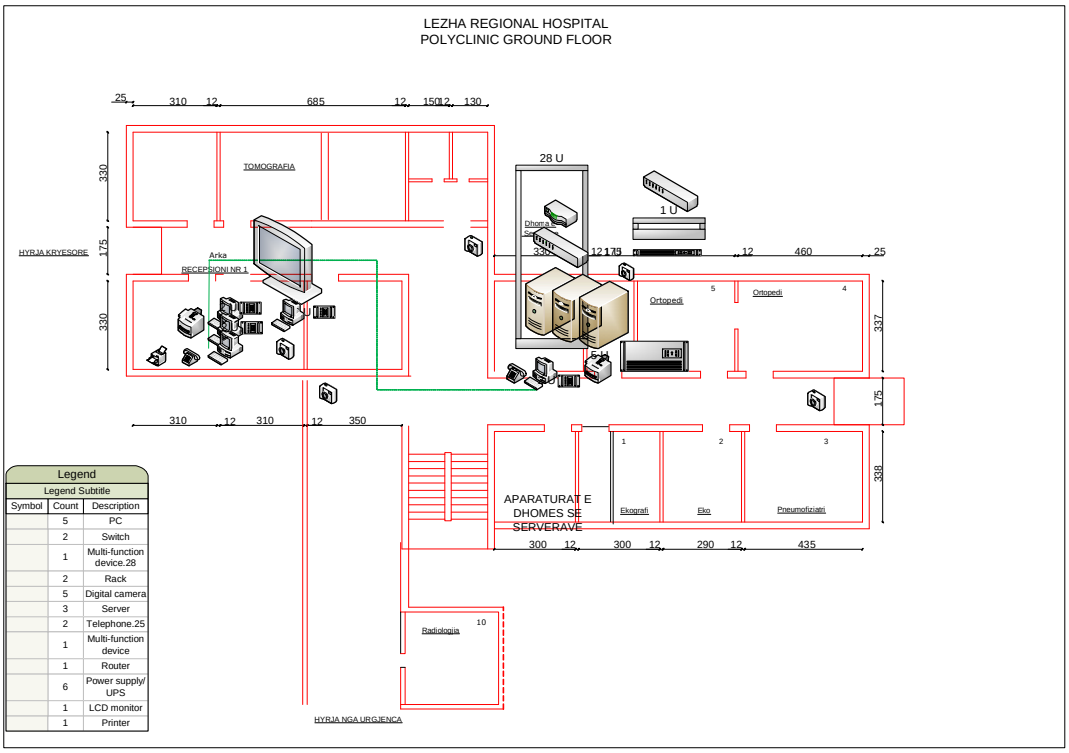


FIGURE 23 – LEZHA REGIONAL HOSPITAL – POLICLINIC FIRST FLOOR

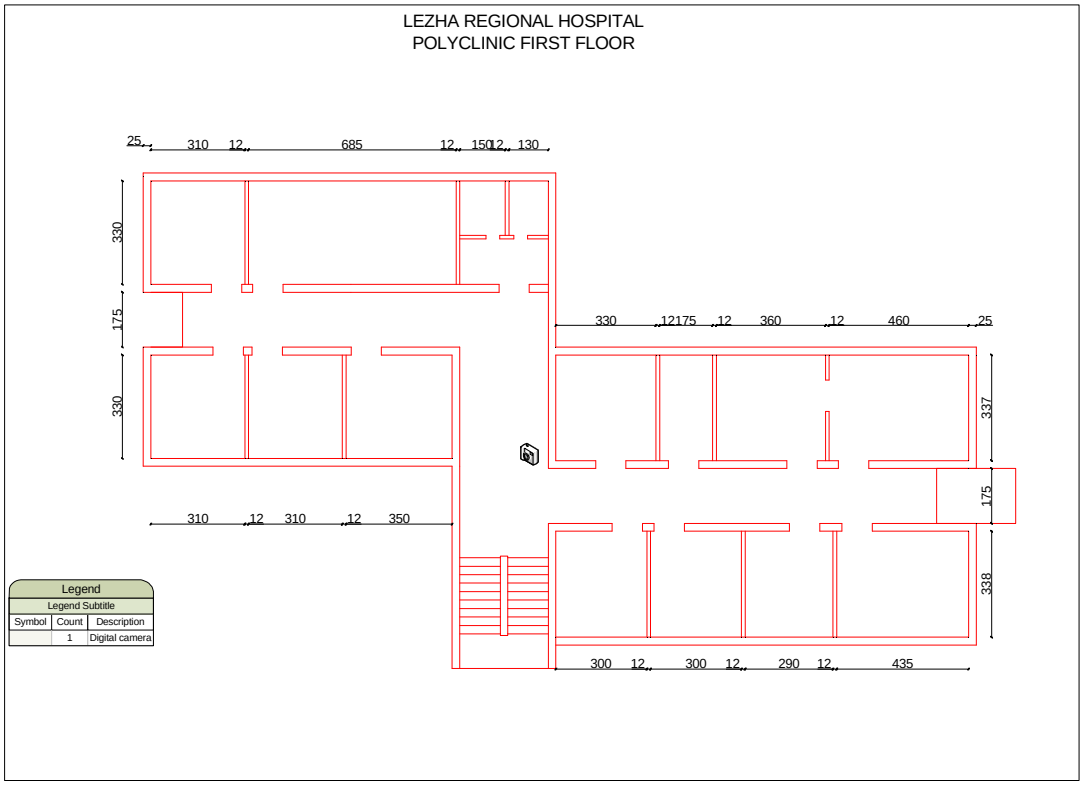


FIGURE 24 – LEZHA REGIONAL HOSPITAL – POLICLINIC SECOND FLOOR

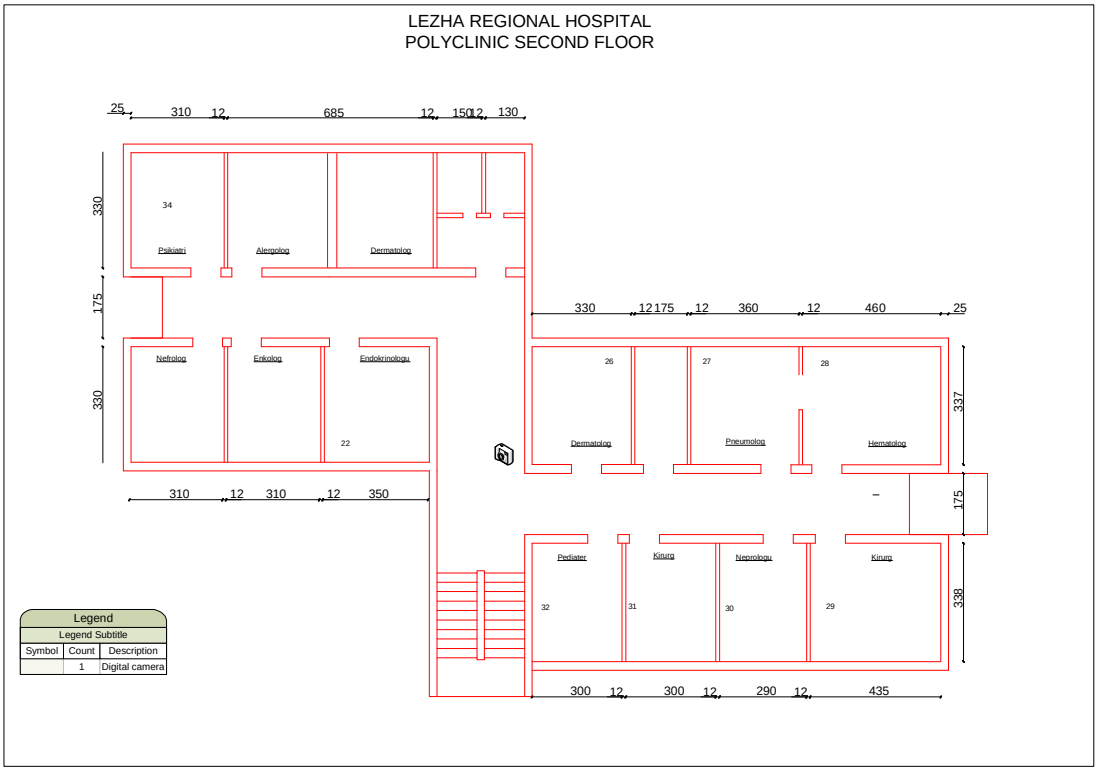


FIGURE 25 – LEZHA REGIONAL HOSPITAL – POLICLINIC THIRD FLOOR

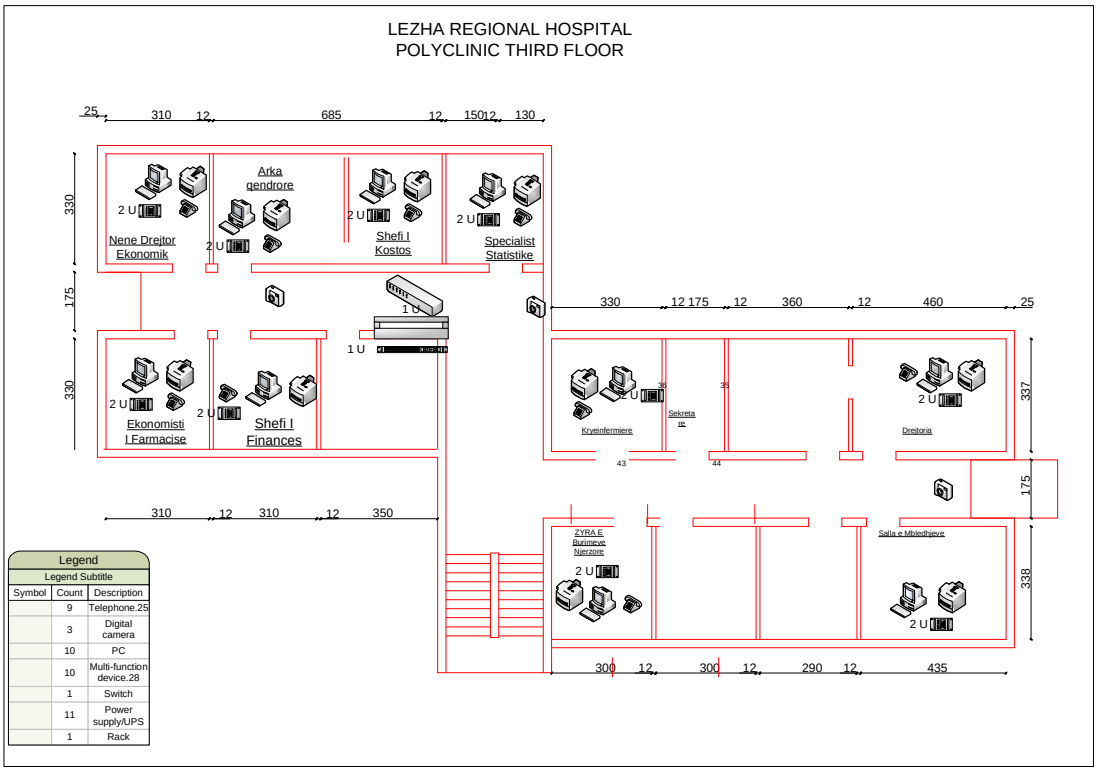


FIGURE 26 – LEZHA REGIONAL HOSPITAL – MAIN CAMPUS – FIRST FLOOR

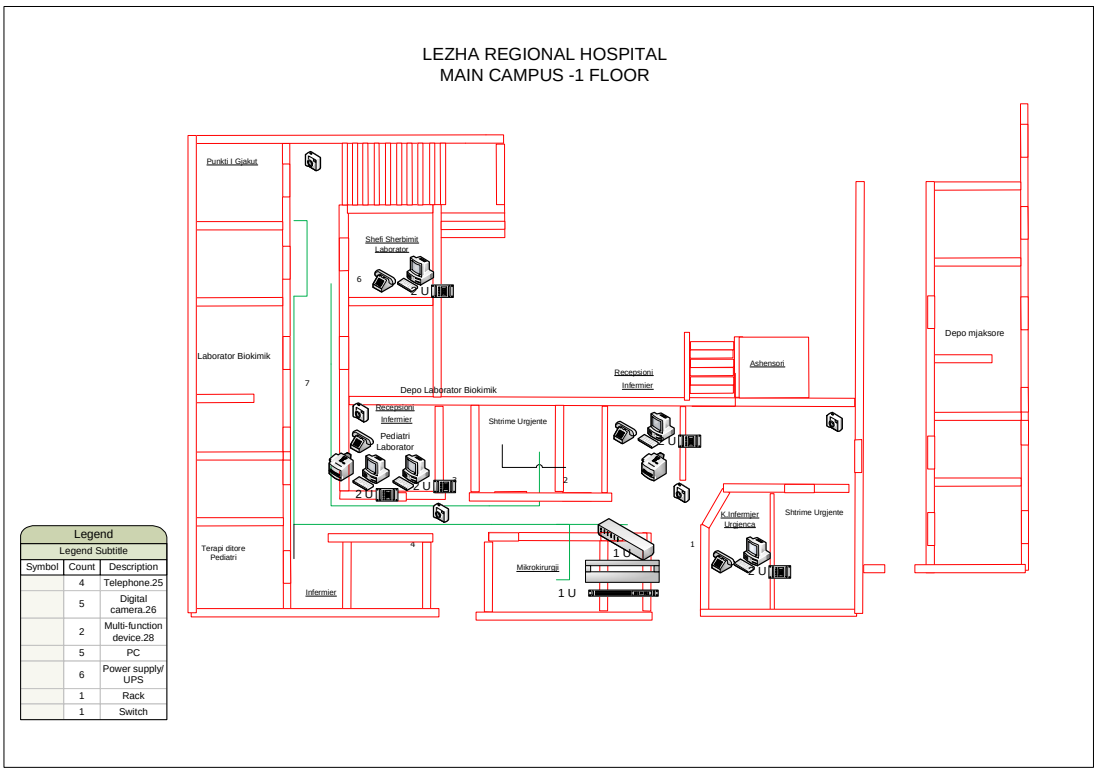


FIGURE 27 – LEZHA REGIONAL HOSPITAL – MAIN CAMPUS – 0.5 FLOOR

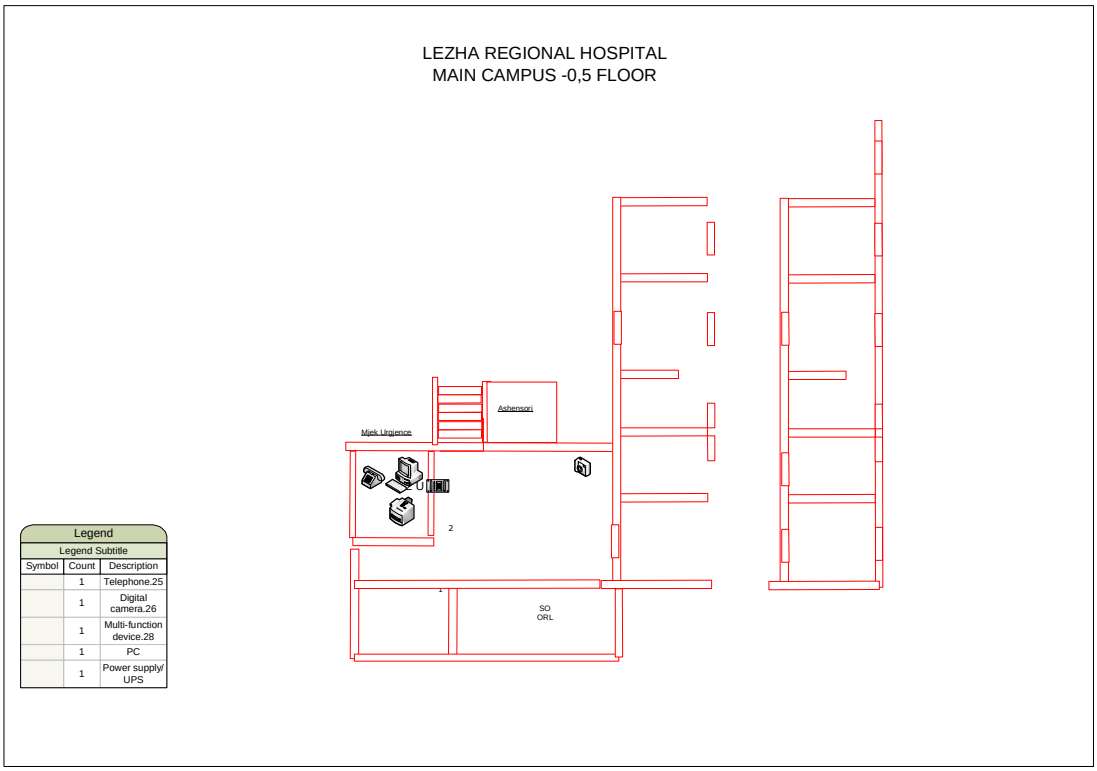


FIGURE 28– LEZHA REGIONAL HOSPITAL – MAIN CAMPUS – GROUND FLOOR

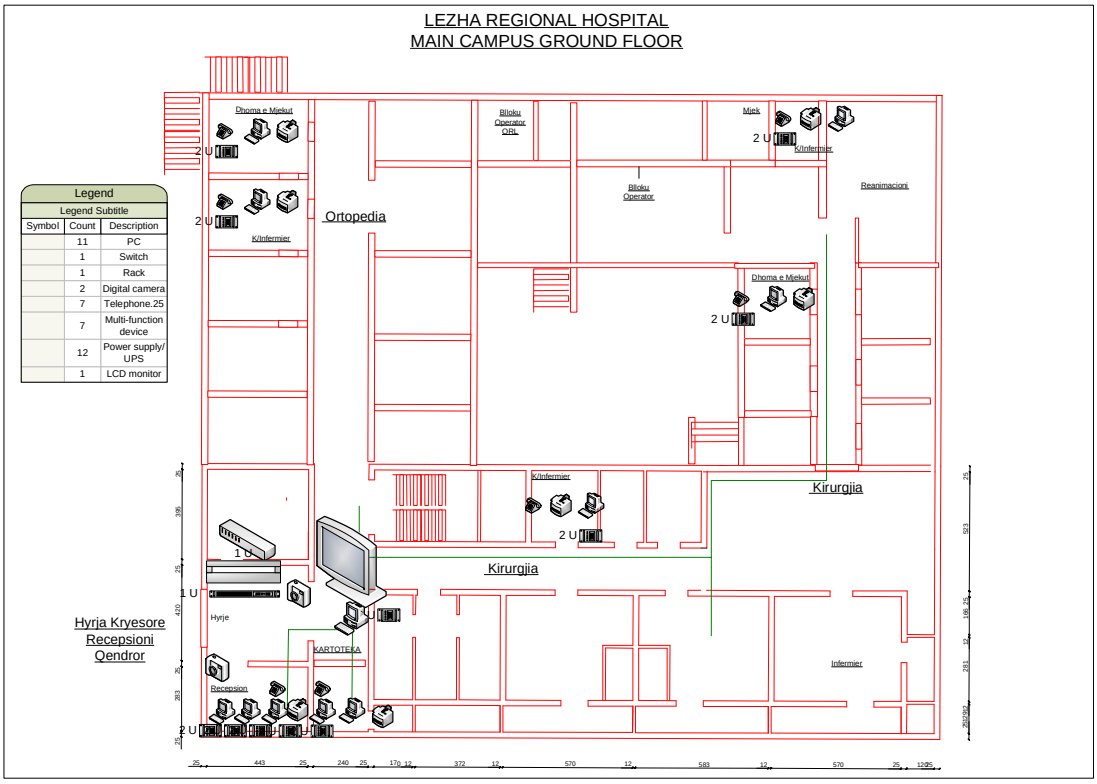


FIGURE 29– LEZHA REGIONAL HOSPITAL – MAIN CAMPUS – FIRST FLOOR

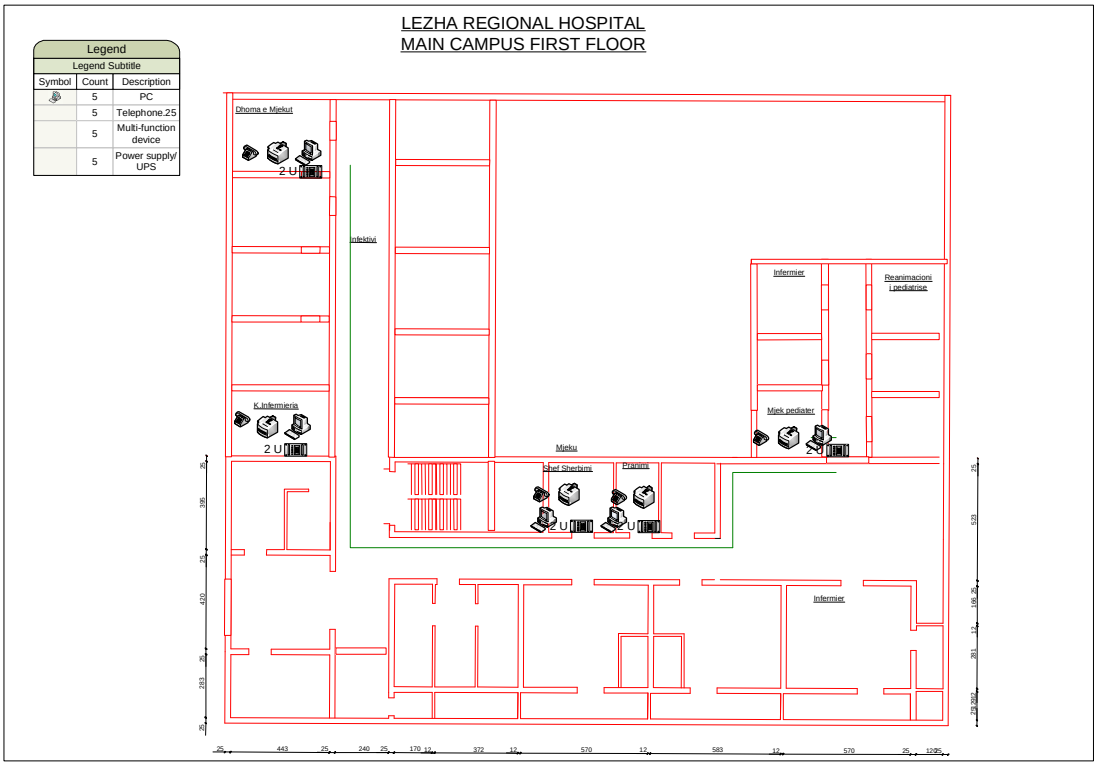


FIGURE 30– LEZHA REGIONAL HOSPITAL – MAIN CAMPUS – SECOND FLOOR

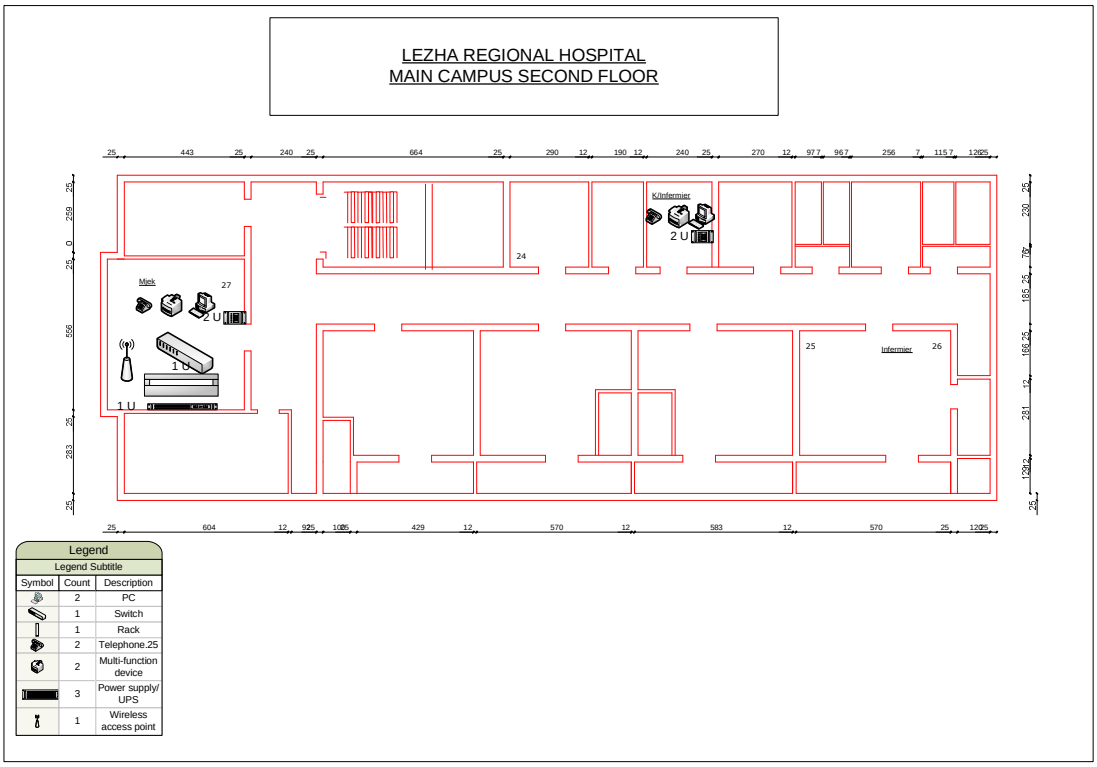


FIGURE 31– LEZHA REGIONAL HOSPITAL – MATERNITY GROUND FLOOR

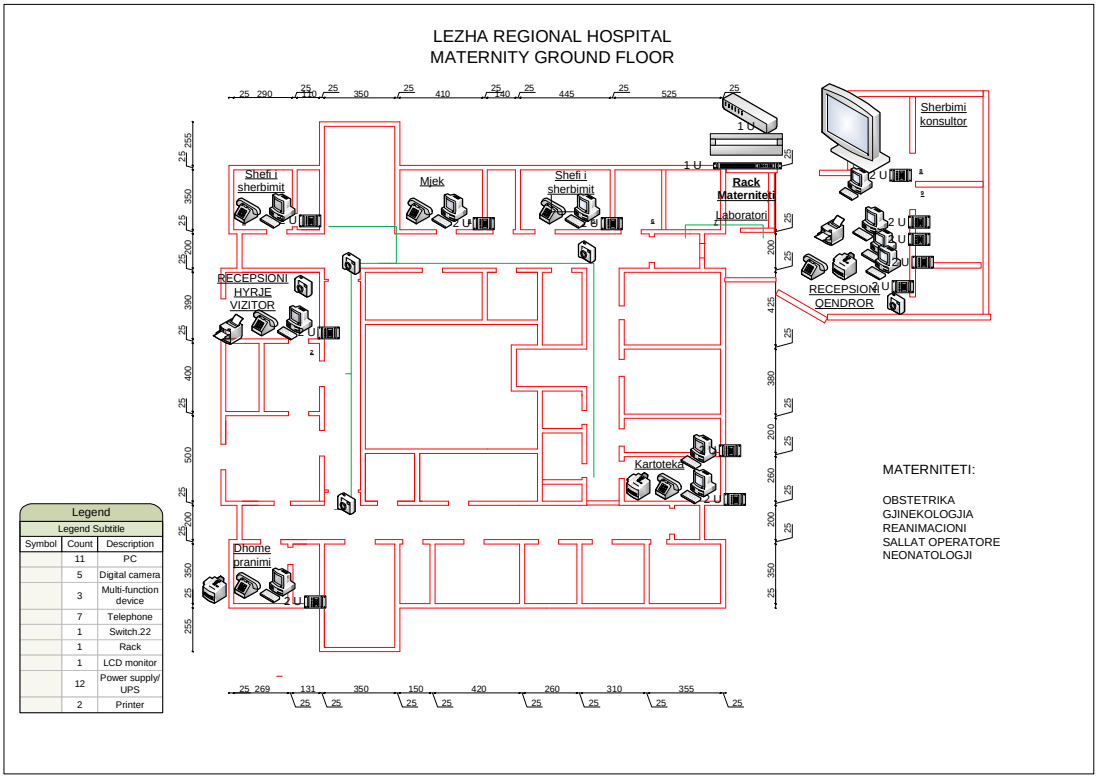


FIGURE 32– LEZHA REGIONAL HOSPITAL – MATERNITY FIRST FLOOR

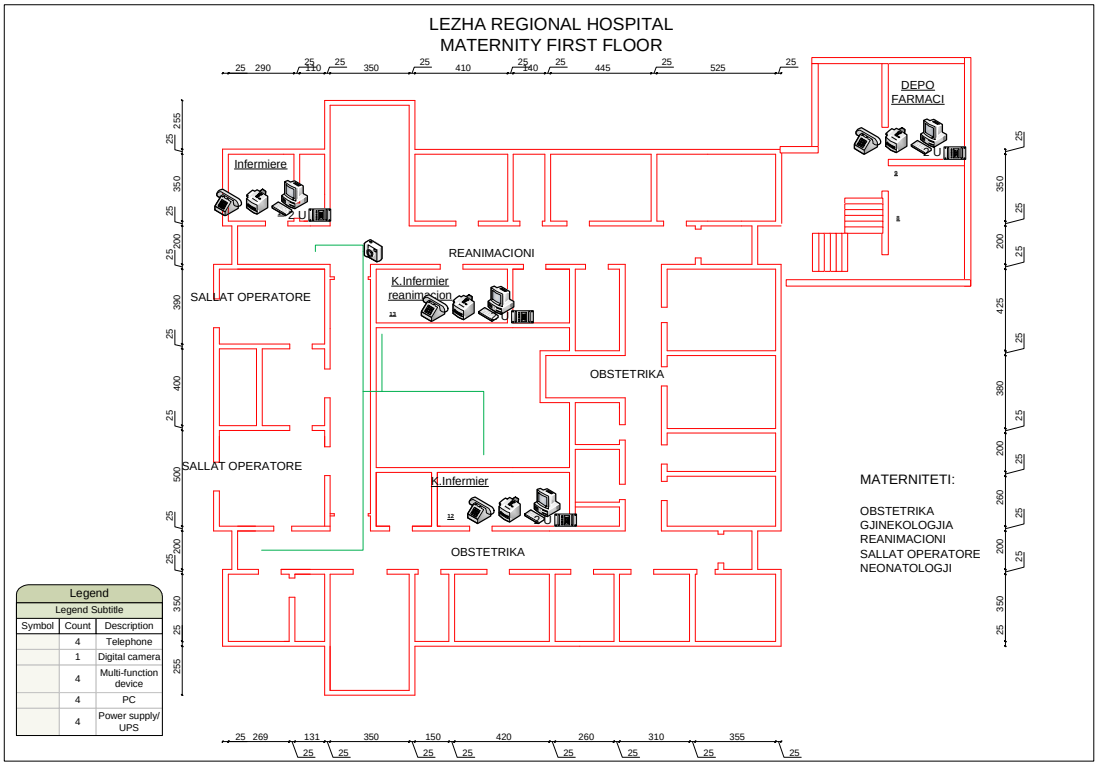
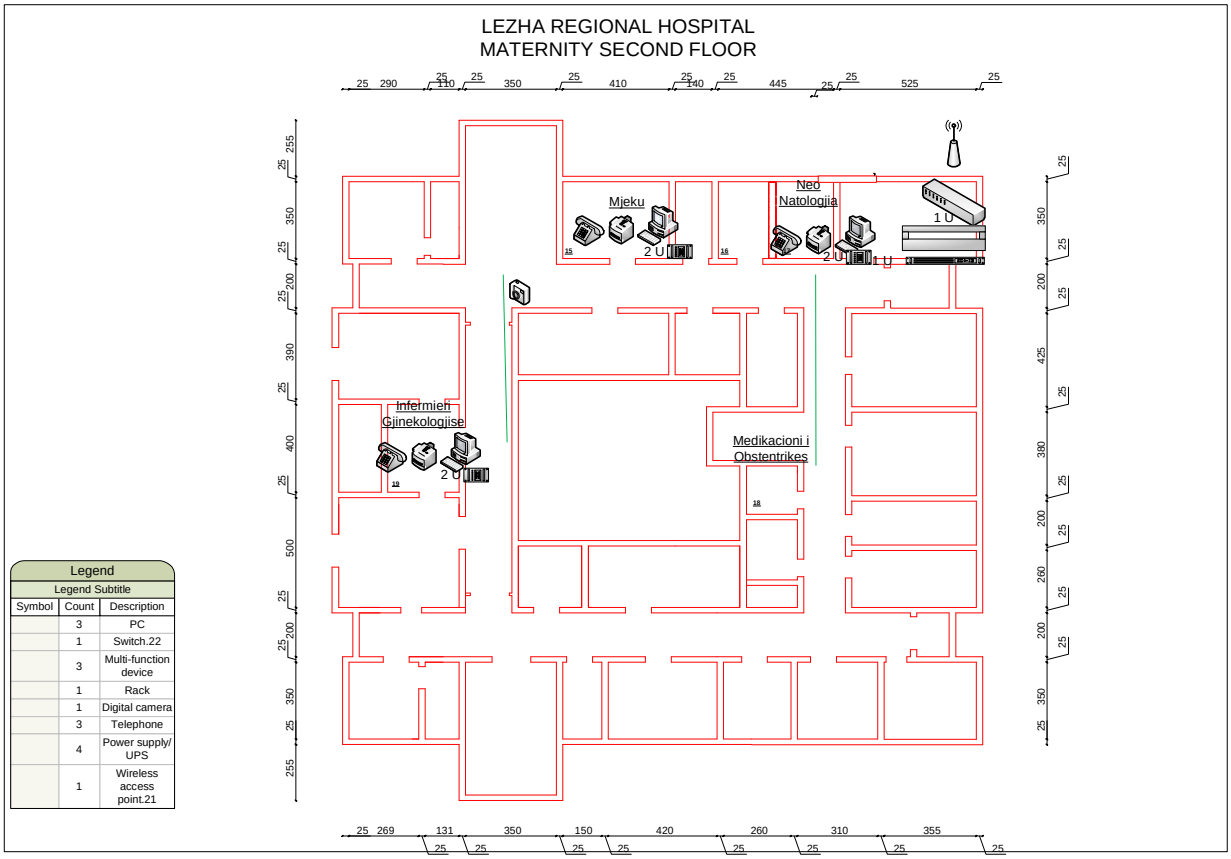


FIGURE 33– LEZHA REGIONAL HOSPITAL – MATERNITY SECOND FLOOR



9. ATTACHMENTS

9.1 SAMPLE REQUEST FOR PROPOSALS

The USAID-funded EEHR Project implemented by Abt Associates Inc., for the benefit of Lezha Regional Hospital, has the pleasure of inviting qualified Albanian or international IT companies to submit a firm fixed price (lump-sum) tender proposal in competition for the provision of IT infrastructure and ADT (Admissions, Discharge, Transfer) modules of Hospital Information System (HIS) to be implemented at Lezha Regional Hospital in accordance with specific requirements.

- Copy of the Tender documents can be obtained from the EEHR office at the following address:

Enabling Equitable Health Reforms in Albania

Rr. Donika Kastrioti

Nr. 14 Suite 13B

Tirana, Albania

- Deadline for obtaining hard copy of the proposal documents shall be no later than October 1, 2012 at 3:00 pm Tirana local time.
- A site visit can be arranged in coordination with interested bidders.
- Closing date for receiving proposals is no later than October 29, 2012 at 3:00 pm Tirana local time.
- All quotes should be provided in English, in 2 copies, plus a CD containing the quote and supporting documents in PDF format.
- All and any correspondence related to this tender should carry the title of (LEZHA HIS/ADT).
- The bidding procedures and the award will be managed by Abt Associates in accordance with USAID regulations.

9.2 PROPOSED EVALUATION COMMITTEE COMPOSITION

We propose the committee that will evaluate the proposals to be composed of the following members:

- EEHR Manager for Hospital Information Systems. Committee Head.
- EEHR International Consultant on HIS. Member.
- Director of Technology and Health Information at Ministry of Health, Member.
- HII IT Director, Member.
- Lezha Hospital Director. Member.

We propose that the committee members should evaluate each proposal received based on giving weights as follows:

- The financial score (how expensive is the product/service): 40% of the weight.
- The technical score (how good is the product/service): 40% of the weight.
- The bidder score (how good is the provider of the product/service): 20% of the weight

Thus the proposal's overall score is:

Bid Score = (Financial Score x 0.40) + (Technical Score x 0.40) + (Bidder Score x 0.20)

9.3 PLANNED CEILING AMOUNT TO BE SUBCONTRACTED

The following is the planned amount to be subcontracted.

TABLE 19 – AMOUNT TO BE SUBCONTRACTED

Item	Planned Ceiling Amount
HIS servers, PCs, printers, screens, VOIP, etc.	$90,000
Server room (basic)	$15,000
Network wiring, patch panels, racks, etc.	$28,000
Software licenses (mostly open source)	$21,000
Configuration, customization, and deployment	$28,000
Visitor management feature programming and testing	$18,000
Training including user manual printing	$7,500
Support for a year	$27,000
Total + 10% margin for incidentals	$257,950

It should be mentioned that the above amount is relatively small by international standards. It took into account informal discussions with local vendors regarding the cost of comparable open-source software implementations, and the EEHR budget constraints.

We should also mention that one assumption we made is that EEHR will provide support for only one year, and others (such as the hospital itself or the ministry) will provide support thereafter. It is important to obtain from the bidder a binding offer for a 3-year Service Level Agreement that starts after the "Support for a year' expires, to bring the total support to 4 years as required by the Republic of Albania's Council of Ministers Decision No. 723 Dated 1.9.2010 on "DESIGN, IMPLEMENTATION AND FUNCTIONING OF INFORMATION SYSTEMS."

9.4 PLANNED TIMEFRAME FOR THE SYSTEM TO BE IN PLACE

As mentioned in an earlier section, the technical work is expected to be finished in 125 days. In addition, we expect the bidding and contracting process to take about 2 months. So the total timeframe for the system to be in place is about 6 months. We should mention that this timeframe is a bit compressed and requires tight management of the project.