APPENDIX 3P

LOT 16 SPECIFICATION
RADIOTHERAPY IT SOLUTIONS AND ASSOCIATED OPTIONS AND RELATED SERVICES

1. Introduction

1.1. This Lot is for the supply of radiotherapy (RT) IT solutions, including treatment planning systems, simulation systems, recording and verifying systems, oncology information systems, contouring systems, data management systems, peer review systems, audit systems, systems to implement network working and any Radiotherapy related software incorporating the use of artificial intelligence (AI). It will also cover the supply of related software, hardware, licences, cloud based systems, servers, control panels, upgrades, training, turnkey arrangements between the trusts and equipment providers, point of sale maintenance and extended warranties.

1.2. The core product lines within this Lot are as follows:

Line Number	
1	Radiotherapy Treatment Planning System
2	Radiotherapy Simulation Software
3	Radiotherapy Record and Verify System

1.3. All product line(s) must be supplied with a minimum 10 year expected lifecycle under proper use and maintenance.

2. Line 1 – Radiotherapy Treatment Planning System

2.1. This is the core technical specification for a treatment planning system for photon and electron radiotherapy treatments, including 3D conformal radiotherapy, intensity modulated radiation therapy (IMRT), and brachytherapy

2.2. The core components of a radiotherapy treatment planning system:
- 2.2.1. Computing hardware.
- 2.2.2. Beam modelling.
- 2.2.3. Patient data import.
- 2.2.4. Structure definition.
- 2.2.5. Photon beam planning including IMRT.
- 2.2.6. Miscellaneous planning utilities.
- 2.2.7. Hardcopy/Softcopy.
- 2.2.8. Data export.
- 2.2.9. Data storage and archive.

2.3. Computing Hardware:

2.3.1. The hardware provided must be capable of supporting the application software releases for no less than 3 years from the date of installation.
2.3.2. It must be possible to access plans from any workstation for users to develop, check, and review plans. Access to modify and change plans must be controlled by authorisation.
2.3.3. Workstations must have high resolution monitors (at least 1600 x 1200 pixels).
2.3.4. Workstations must have a minimum 1000cm^2 viewable area.
2.3.5. Workstations must have 16bit colour resolution.
2.3.6. Workstations must be equipped with ergonomic user tools (e.g. mouse, tracker balls).
2.3.7. A networked high specification, high load A3/A4 colour printer must be available if required by a customer and/or a PDF output.
2.3.8. It must be possible to review plans via networked terminals.

2.4. Beam modelling:
2.4.1. The system must be capable of accepting beam-data from current commercial beam-data acquisition systems.
2.4.2. The beam-data must be input via a direct link (network) or via portable media, with minimal user interaction and file manipulation.
2.4.3. Beam orientation must be identified within the stored beam-data so that differences in beam characteristics and machine output between each collimator pair can be incorporated into treatment plans and output calculations.
2.4.4. The system must provide the ability for the user to specify multi leaf collimator (MLC) capabilities and as a minimum, machine parameters for gantry angle and collimator rotation scale (this ability must be available independently for each treatment machine).
2.4.5. The system must be capable of modelling currently available MLC devices and must support the accurate input of the parameters related to the user's treatment unit.
2.4.6. A CT number to electron/ or mass density table must be provided for each interfaced CT scanner.
2.4.7. The system must accommodate a minimum of 20 different machine photon data sets. Software is to be supplied which would use the measured machine data to create accurate beam models.

2.5. Patient data import:
2.5.1. Must be able to receive image data in the current DICOM format and structure, plan, image and dose objects in DICOM RT format.
2.5.2. Must be able to accept DICOM data from at least one of the following sources, CT, 4d CT, MR, PET, CBCT and MV CT.
2.5.3. Must be able to accept data with minimal user interaction from the image source.

2.5.4. Must be able to accept CT slice sets with different slice separations within the same set and be able to accurately perform all subsequent actions accurately on such an image set.
2.5.5. Must be able to distinguish between different CT slice sets for the same patient (e.g. full and empty bladder scans) without mixing the sets.
2.5.6. Must be able to accept patient structure data from other devices (e.g. keyboard entry) including as a minimum:
2.5.6.1. Target volumes.
2.5.6.2. Anatomical structures.
2.5.6.3. Inhomogeneity.
2.5.6.4. Markers.
2.5.7. Must be able to define phantoms (e.g. water tank) for dosimetry verification.
2.5.8. Must be able to accept DICOM RT compliant data from various manufacturers' planning systems.

2.6. Structure definition:
2.6.1. Must be able to adjust the window level/width of all relevant planning image(s) used for outlining, at the time of outlining.
2.6.2. A zoom option must be available to enlarge the CT/MR images while outlining.
2.6.3. Must be able to reconstruct slices in any cardinal plane from the CT data provided and it must be possible to display these at the time of outlining.
2.6.4. Reference lines must be used to indicate the respective reconstruction planes on each image.
2.6.5. Must be able to provide a software screen ruler, available at the time of outlining.
2.6.6. Must be able to outline at least 50 internal structures, and at least 15 internal inhomogeneities per plan.
2.6.7. Must be able to add at least 10 internal and external markers and/or lines to the patient external outline.
2.6.8. Must be able to automatically outline the external surface (with auto-completion) and readily definable internal structures (specifically lung and bone).
2.6.9. The system must be able to cope with artefacts, including density artefacts within the patient external surface, and artefacts external to the main patient structures, including the support couch, treatment shells and external markers.
2.6.10. Editing of structure sets and all parameters and features (other than unique patient identification) must be possible.
2.6.11. Must be able to grow structures in 3-D by dimensions with variable margins in each plane selected by the operator, with the ability to add, subtract and create intersected structures through Boolean operations.
2.6.12. Must be able to inhibit the display of selected internal structures during outlining and planning.

2.6.13. It must be possible to project the dimensions of a structure into composite volume i.e. a new structure encompassing the maximum dimensions of the structure throughout the slice set.
2.6.14. Must be able to copy selected structures from one slice to another and identifying them as copied (by colour for example) to act as a guide for outlining on an adjacent slice.
2.6.15. Must be able to automatically and/or manually add external bolus to a user-definable density and depth.
2.6.16. Automatic image rigid registration between CT/MR, CT/CT, CT/PET and 4D CT scans must be possible.
2.6.17. Must be able to provide a fusion display of registered images and also support the ability to display structures defined on one image set on to the other.

2.7. Photon beam planning including IMRT:
2.7.1. The systems offered must use a variety of calculation algorithms and present a choice of algorithm.
2.7.2. All planning options not specifically using CT data must be available for non-CT and CT information structures.
2.7.3. Real time interactive planning of:
2.7.3.1. beam orientation
2.7.3.2. collimator, gantry and couch rotation
2.7.3.3. beam size
2.7.4. Must offer selection of a coarse dose calculation grid and/or a limited area or volume calculation during planning to speed up calculation
2.7.5. Must have the ability to produce (on-screen and print out) isodose distributions in any plane parallel to the central plane, or any plane at any angle within the volume defined by a set of CT slices.
2.7.6. Must provide simultaneous viewing of multiple transverse planes and simultaneous viewing of orthogonal planes and associated 3D navigation through the data-set.
2.7.7. Must be capable of generation of beams-eye views (BEV) and digitally reconstructed radiographs (DRR) for all defined beams, including the ability to modify image quality of the DRR and view outlined structures.
2.7.8. Must have the ability to modify beams and view isodose distributions while displaying slices other than a transverse CT slice.
2.7.9. Must have the ability to correct the isodose distribution at any off-central plane for the same factors that the central plane can be corrected (e.g. asymmetric collimators, wedges, blocks, inhomogeneity).
2.7.10. Must have the ability to interchange treatment machines for all beams, with the flagging of non-compatible machine change requests.
2.7.11. Must have the ability to move the isocentre of all beams simultaneously by cursor or mouse control or adjusting coordinates on a screen display.
2.7.12. Must have the ability for asymmetric collimation planning in both axes (where specified in the beam-data set).

2.7.13. Beams must be weighted by dose at central axis Dmax, or Isocentric contribution.
2.7.14. The system must be able to utilise the density information provided by the CT slices to correct photon dose distributions for inhomogeneities on either a pixel by pixel basis or block bulk correction as selected by the user.
2.7.15. It must be possible to edit the CT generated electron densities to remove the effects of artefacts in the CT images.
2.7.16. Inhomogeneity correction of the isodose distribution in a specified plane must be able to take into account the inhomogeneity distribution in 3-dimensions, i.e. a true 3-D algorithm.
2.7.17. The system must be able to include non-coplanar fields in 3-D plans; the off-plane angle must be specified clearly and unambiguously (e.g. caudal/cephalic tilt).
2.7.18. Reconstructions of structures and positioning and modification of beams and isodoses must be possible in any specified plane within the volume encompassed by the patient's slices entered either from CT or manual entry. Clear specification of the plane is necessary.
2.7.19. There must be a colour display of structures, beams, and isodoses over a black and white CT image on the display screen.
2.7.20. The dose distribution must be displayed in a visibly obvious manner such as colour-wash, dose-band or isodose line and must be selectable by the user.
2.7.21. Dose volume histogram (DVH) options must ideally include cumulative and differential with overlay of DVH data from different plans.
2.7.22. The system must have the facility to evaluate and compare 2 or more plans and state the methods provided (e.g. side by side isodose, DVH's and tabulated does statistics)
2.7.23. It must be possible to sum the dose from multiple phase plans and view the composite dose distributions and DVH's.
2.7.24. A plan library must be supported to enable standard treatment arrangements to be stored then applied and modified on new cases including parallel-opposed fields, 4-field box, tangentially opposed fields, mono-isocentric multi-field plans, VMAT or IMRT class solution.
2.7.25. Planning for IMRT treatments must be seamlessly integrated with other photon planning tools.
2.7.26. The system must be capable of determining leaf sequencing for at least the following IMRT deliveries:
    2.7.26.1. Static multi-segment ports (beam off during leaf motion).
    2.7.26.2. Dynamic ports (beam on during leaf motion).
    2.7.26.3. Arc-based dynamic deliveries (volume modulated arc therapy).
2.7.27. MLC sequencers provided in the software must support the MLC system of the linear accelerator (LINAC) provider.
2.7.28. Within the optimisation modules it must be possible to define objectives for the desired plan in terms of:
    2.7.28.1. Maximum target dose.
    2.7.28.2. Minimum target dose.

2.7.28.3. Maximum dose to an organ at risk.
2.7.28.4. Assigning of penalties to overdose and under dose to reflect clinical requirements.
2.7.28.5. Assigning of priority to organs in the case of overlapping volumes of interest (VOI's).
2.7.28.6. Assigning dose volume constraints and/or objectives i.e. no more than X% of an organ must receive more than Y Gy (Gray unit).

2.7.29. The system must include quality assurance software permitting dose calculations using patient-specific delivery plan with arbitrary phantom configurations.

2.7.30. It must be possible to compare the idealised dose distribution (if any) with the deliverable distribution so any compromises can be estimated.

2.7.31. A printout and/or softcopy PDF must be provided giving sufficient details of the dose calculation to permit a quality assurance check to be carried out using an independent calculation system.

2.8. Miscellaneous planning utilities:

2.8.1. Measurements of distances on the screen display of the plan, a grid display and distance/angle measurement.

2.8.2. Computing the dose at specified points and to provide these on hardcopy and/or softcopy PDF.

2.8.3. Constructing a dose profile along a specified line.

2.8.4. Display the mean density correction areas computed from CT or manually entered data where bulk density corrections are used.

2.8.5. Support the process of in-vivo dosimetry by providing dose information at designated points on a patient - Dmax that can be subsequently measured using in-vivo dosimeters.

2.9. Hardcopy/Softcopy PDF:

2.9.1. Features on all hardcopies /softcopies must be produced to an accuracy of +/- 0.5mm.

2.9.2. The position of beams, plus the presence and type of all beam modifiers must be included in the hardcopy/softcopy.

2.9.3. Must be able to reproduce greyscale CT images overlaid with the external outline and structures, target volumes, fields, isodoses, and patient identification all drawn in different colours.

2.9.4. Plotting isodose distributions in any plane parallel to the central plane, and it must also be possible in any plane at any angle within the volume defined by a set of CT slices.

2.9.5. Must be able to support graphical and non-graphical output.

2.9.6. Must be able to plot CT images and colour plots that are clear and legible for both 2-Dimensional and 3-D plans.

2.9.7. Must be able to provide a complete printout of parameters of the plan in a legible, well laid out manner that can be customised by the user.

2.9.8. Must be able to customise hardcopy attributes of dose distributions and beam parameter data including required monitor unit settings for each beam.

2.9.9. Must be able to plot plans at a range of magnifications from at least 50% to 200% of life size.
2.9.10. Must be capable of rapid plan print-out with or without CT grey-scale.
2.9.11. Must be capable of multiple slice and multiple dose-plane printouts on single or multiple hardcopy sheets/softcopy sheets.
2.9.12. Must be capable of beams eye view printouts with or without grey scale and with scaling options at a magnification range from at least 50% to 200% of life size.
2.9.13. Must be able to provide unique identification on all aspects of hard copy output.

2.10. Data export:
2.10.1. Image transfer for CT, MRI, PET and secondary capture images must comply with the current DICOM format.
2.10.2. Plan transfer of the structure, plan, dose and image objects in compliance with DICOM RT.
2.10.3. Treatment plan / prescription data must be exportable to a commercial radiotherapy record and verify system.

2.11. Data storage and archiving:
2.11.1. It must be possible to store data for up to at least 500 patients (with typical numbers of CT slices and multiple plans per patient) that is available for immediate retrieval. Given the increasing combination of scans from different modalities, 4D imaging and CBCT, the minimum storage must be:
2.11.1.1. 100GB for a single system.
2.11.1.2. 1TB for a system with a file server.
2.11.2. For a file server based system, this must be at least a mirrored RAID 5 system.
2.11.3. Retrieval of stored patients to a state ready for planning must take less than 5 seconds for an 80 CT slice set including density correction calculation.
2.11.4. Restoring of a single patient from the local archive medium to immediate access must be less than 5 minutes.
2.11.5. Detailed interfaces for backup of beam-data, patient data and software configuration must be available.
2.11.6. If the full system back-up is part of the supplied TPS, benchmarks must be given to illustrate typical times for a full archive.

3. Line 2 – Radiotherapy Simulation Software

3.1. This is the core technical specification for virtual simulation stations which have sophisticated abilities in image handling and structure definition, including multi-modality image matching and fusion, identification of any fiducial markers and necessary co-ordinate transformations plus the ability to position radiotherapy fields, visualise field incidence on the surface of the patient's skin and define blocks and MLC leaf positions.

3.2. The core components of a software virtual radiotherapy simulation system:
- 3.2.1. Computing hardware and image display.
- 3.2.2. Patient data import.
- 3.2.3. 3D virtual simulation.
- 3.2.4. Data export.

3.3. Computing hardware and image display:
- 3.3.1. Hardware provided must be capable of supporting the application software releases for no less than 3 years from the date of installation.
- 3.3.2. Workstations must have high resolution monitors (at least 1600 x 1200 pixels).
- 3.3.3. Workstations must have a 1000cm^2 viewable area (minimum).
- 3.3.4. Workstations must have 16bit colour resolution.
- 3.3.5. Workstations must be equipped with ergonomic user tools (e.g. mouse, tracker balls).

3.4. Patient data import:
- 3.4.1. Must be able to receive image data in the current DICOM format.
- 3.4.2. Must be able to structure, plan, image and dose objects in DICOM_RT format.
- 3.4.3. Must be able to accept DICOM CT slice data from a CT imager.
- 3.4.4. Must be able to accept DICOM MR slice data from an MR imager.
- 3.4.5. Must be able to accept DICOM PET slice data from a PET imager.
- 3.4.6. Must be able to accept data with minimal user interaction from the image source, or from portable media.
- 3.4.7. Must be able to accept CT slice sets with different slice separations within the same set and be able to accurately perform all subsequent actions accurately on such an image set.
- 3.4.8. Must be able to Distinguish between different CT slice sets for the same patient (e.g. full and empty bladder scans) without mixing the sets.
- 3.4.9. Must be able to distinguish between different CT slice sets for the same patient acquired at a different time (e.g. re-treatment or multi-phase treatment).
- 3.4.10. Must be able to accept patient structure data from other outlining devices (e.g. keyboard entry) including:
  - 3.4.10.1. Target volumes.
  - 3.4.10.2. Anatomical structures.
  - 3.4.10.3. Inhomogeneity.
  - 3.4.10.4. Markers.
- 3.4.11. Must be able to define phantoms (e.g. water tank) for dosimetry verification.
- 3.4.12. Must be able to accept DICOM RT compliant data from various manufacturers' planning system.

3.5. 3D virtual simulation:

3.5.1. Must be able to grow structures in 3-D by dimensions with variable margins in each cardinal direction selected by the operator. This must include an option for intelligent volume growing of target and structure to prevent grown volumes crossing specified adjacent structures.
3.5.2. Must be able to inhibit the display of selected internal structures during outlining and planning.
3.5.3. Must be able to project the dimensions of a structure into composite volume i.e. a new structure encompassing the maximum dimensions of the structure throughout the slice set.
3.5.4. Must be able to copy selected structures from one slice to another and identifying them as copied (by colour for example) to act as a guide for outlining on an adjacent slice.
3.5.5. Must be able to automatically add external bolus to a user definable density and depth.
3.5.6. Must allow image registration between CT/MR, CT/CT and CT/PET scans, methods to include manual, fiducial mark based, structure based, mutual information algorithm and rigid body or deformable.
3.5.7. Must provide a fusion display of registered images and support the display of structures defined on one image set to be displayed on the other.
3.5.8. Support for IGRT techniques and technology must be specified.
3.5.9. Must be able to handle multiple, 4D-CT image sets with techniques for registering data to positions in the breathing cycle.
3.5.10. Must include support for the use of cone-beam data, acquired on a treatment simulator and/or linear accelerator.
3.5.11. Must be capable of identification and use of internal and/or external fiducial markers (e.g. gold seeds).
3.5.12. Must allow for interaction with tertiary hardware and software during image guided treatment delivery and verification.
3.5.13. Must include support for IGRT (CBCT) images to be imported and related to the treatment centre as imaged and for manual input of rigid body image transformation parameters to simulate patient position as treated.
3.5.14. The system must be capable of simultaneously displaying multiple image planes, e.g. transverse, coronal and sagittal, with reference lines used to indicate the respective reconstruction planes.
3.5.15. It must be possible to enable image registration and/or image fusion of any 3-D data set with a CT data set (CT/MR, CT/CT, CT/PET).
3.5.16. The system must be capable of simultaneously displaying images from different data sets / imaging modalities, with fusion displays supported as appropriate.
3.5.17. It must be possible to adjust the contrast and intensity of all image types using window level/width and to enlarge (zoom) any image.
3.5.18. It must be possible to define external body surfaces and anatomical structures e.g. target volumes, structures, organs-at-risk on any 2-D image. This must either be automatically (by gradient or threshold), semi-automatically or manually.

3.5.19. Automatic outlining must be able to cope with artefacts including density artefacts within the patient external volume and artefacts exterior to the external outline, including the support couch, treatment shells, and external markers.
3.5.20. It must be possible to automatically add external bolus to a user defined density and depth.
3.5.21. It must be possible to identify the position of fiducial marks & laser projections on the patient skin-surface.
3.5.22. It must be possible to copy selected structures to adjacent slices and interpolate for intermediate slices to act as a guide for structure definition.
3.5.23. It must be possible to edit structures and target volumes, including the removal of sections.
3.5.24. It must be possible to define structures and target volumes on a minimum of two slices perpendicular to each other in order to produce a 3D volume from a large 3-D data set.
3.5.25. It must be possible to convert multiple 2-D structures in any plane to 3-D structures including the ability to cope with non-contiguous slices.
3.5.26. The software must be able to display CT values for individual pixels, CT histograms for outlined areas on single slices or for 3D structures, and CT profiles.
3.5.27. It must be possible to edit CT numbers either in one slice or throughout a structure.
3.5.28. It must be possible to assign an average CT value to a structure.
3.5.29. It must be possible to grow structures in 3-D with either uniform or non-uniform margins selected by the operator. This must include an option for intelligent volume growing to prevent crossing specified adjacent structures.
3.5.30. It must be possible to project the dimensions of any structure into a composite volume i.e. a new structure encompassing the maximum dimensions of the structure throughout the slice set.
3.5.31. It must be possible to display an appropriate interpolated outline of any structure on any image slice on which it is present. It must also be possible to inhibit the display of any selected structure.
3.5.32. The software must include measurement devices to measure distances and angles, overlay measurement grids and co-ordinate display for points.
3.5.33. It must be possible to automatically calculate an initial isocentre location, given a defined planning target volume (PTV).
3.5.34. It must be possible to view any structure from any beams eye view (BEV). It must also be possible to inhibit the display of any selected structure.
3.5.35. It must be possible to automatically position symmetric and asymmetric collimators and generate conformal block design or generate multi-leaf collimator positions, with an automatic margin, a variable margin or manually defined margin (a choice of leaf-fitting options must be available for MLCs) in BEV and digital reconstructed radiography (DRR) mode.
3.5.36. It must be possible to generate a simulated surface reconstruction of the patient and, in BEV or observer's eye view mode, to show the position of the virtual light field projection including shaped fields (MLC or block), central ray

and vertical and lateral projections of the isocentre onto the skin together with the position of the simulation laser projections and fiducial marks.

3.5.37. All BEVs & DRRs must show the gantry angle, collimator angle, turntable angle, field size, isocentre position, source-axis distance, source-surface distance and magnification or scale.

3.5.38. It must be possible to generate real-time DRRs, from any BEV with overlays of structures. Image generation with change of beam parameters must be interactive (virtual fluoroscopy).

3.5.39. It must be possible to generate full resolution DRRs, from any BEV with overlays of structures in less than 10 seconds.

3.5.40. It must be possible to change the brightness and contrast of DRRs by varying the window level & width and change the CT number of any structure in DRR mode.

3.5.41. It must be possible to view any plane normal to the BEV with fields shown and structures shown or inhibited i.e. to perform 3-D navigation through any structure in the BEV direction.

3.5.42. It must be possible to simultaneously view both structures and fields on DRRs & on all other image formats/imaging modalities.

3.5.43. It must be possible to provide observer's eye view with beam projection and room's eye view of the simulator/treatment machine position.

3.6. Data export:

3.6.1. All data must meet relevant industry standards (e.g. DICOM RT).

3.6.2. It must be possible to integrate the proposed virtual simulation system data with other standards based radiotherapy IT systems, hardware and lasers.

4. Line 3 – Radiotherapy Record and Verify System

4.1. This is the core technical specification for a radiotherapy record and verify system.

4.2. The core components of a Radiotherapy Record and Verify System:

4.2.1. Treatment workstations.

4.2.2. Editing workstations.

4.2.3. Treatment statistical data.

4.2.4. Fileserver.

4.2.5. Interfacing.

4.3. Treatment workstations

4.3.1. A treatment workstation must collect the data from the network fileserver and convey it to the linear accelerator to allow the prescribed treatment to be delivered. This is required for a linear accelerator (LINAC) permitting prescription verification and networking from a central patient record on a network fileserver. Functions must be provided for auto-acquiring and auto-

setting machine parameters. The operator must be able to select those parameters that are auto-acquired and those that are auto-set.

4.3.2. The workstation software must also permit editing of prescriptions and over-riding of individual machine parameters. These functions must be password-protected to restrict unauthorised use and to permit operator identification. The patient prescription must include any multi-leaf collimator data associated with treatment beams.

4.3.3. It must be possible to enter doses to tumour and to identified organs at risk and perform associated dose arithmetic. It must also be possible to enter limiting doses which will either inhibit treatment when reached or warn the operator (which of these functionalities is operational to be decided by the operator).

4.3.4. It must be possible to use the treatment record and verify system to indicate when port films, electronic portal images or cone beam CT must be recorded during treatment schemes and when they were recorded.

4.3.5. It must be possible to use the treatment record and verify system to facilitate IGRT and manage the results of IGRT.

4.3.6. Facilities to customise the operation of the system must be included. This must include options to select, where appropriate, IEC co-ordinate systems and Gray (Gy) or centigray (cGy) dose calculations. It must be possible to customise, in a password-protected module; tolerance tables for auto-set and prescription verification and to select on a network-wide basis which parameters can be auto-set.

4.4. Editing workstations:

4.4.1. Must provide facilities to access and edit all patient records on the system.

4.4.2. Password protection to limit access and allow operator identification must be provided.

4.4.3. It must be possible to schedule and re-schedule appointments for treatment and view these for all accelerators.

4.4.4. It must be possible to access treatment records (histories) of all patients treated on the system.

4.4.5. It must be possible to enter details of non-verified treatments (undertaken either on these accelerators in stand-alone mode or on other accelerators in the department) after they have taken place.

4.5. Treatment statistical data:

4.5.1. The system must support the evaluation of patient statistics and the generation of billing records.

4.6. Fileserver:

4.6.1. The fileserver must have a robust and protected architecture to ensure security and continuity of service. This must include facilities to make regular copies of the databases and transaction logs.

4.6.2. The fileserver must be protected from data corruption or system hang-ups resulting from interruptions to the power supply.

4.7. Interfacing

4.7.1. It must be possible to interface the system with other electronic patient management systems (e.g. demographic data, scheduling, attendance, chemotherapy and PACS).