All-India Institute of Medical Sciences Ansari Nagar, New Delhi-29 (RESEARCH SECTION)

Ref. No. 41/Prop/NS/AS/2018-19/RS

Dated: 14.02.2019

Subject: Purchase of Medical Image Segmentation Software on proprietary basis- <u>Inviting comments thereon.</u>

The request has been received from Dr.Ashish Suri, Professor, Neurology, AIIMS to purchase the subject item from M/s Synopsis International Ltd. UK on proprietary basis. The proposal submitted by M/s Synopsis International Ltd. UK and Performa Invoice and Departmental PAC certifications are attached.

The above documents are being uploaded for open information to submit objections, comments, if any, from any manufacturer regarding proprietary nature of the equipment/item within issue of 15 days giving reference No. 41/Prop/NS/AS/2018-19/RS. The comments should be received by office of Stores Officer (RS), Research Section at AIIMS on or before 28/02/2019 upto 12:00 p.m., failing which it will be presumed that any other vendor is having no comment to offer and case will be decided on merits.

STORES OFFICER (RS)

Encl: Related documents enclosed. 1. PAC Certificate enclosed. 2. Performa Invoice

ALL INDIA INSTITUTE OF MEDICAL SCIENCES ANSARI NAGAR, NEW DELHI - 110029 PROPRIETARY/SPECIFIC BRAND GOODS CERTIFICATE 1 Items/type/model No. Required along with - Simpleware ScanIP Software Maintenance specification No 2. Is the item a spare part attachment -Or accessory for an existing equipment 3. Name of the manufactures/supplier - Distributor - Direct Purchase from OEM Of the item proposed by the indenter Manufacturer - M/s Synopsis International Limited, UK YES 4. Are they sole manufactures/ -Sole distributors of the items 5. Is there any other item with similar/equivalent -NO Specification available in the market to meet The job requirement envisaged. If the answer is yes Why the same can't be procured. Demanding officer should bring out comparative Functional advantages/cost effectiveness of the Recommended item from these offered by other **Internet Search** 6. What were the efforts made to locate alternative -Source of supply or use other substitutes **Proprietary Item** 7. Why open/limited tender can't be resorted to, -For locating alternative source. 8. Are the proprietary certify that the rates are -YES Reasonable or not 9. Any other justification for procuring item for single - Segmentation & modelling of CT/MRI data THE BE . ST - 18 10 Acting H.O.D. ertment of Neurosury Countersigned ciences Centre **Officer In-Charge** (HOD, Neurosurgery)AS Neurosurgery Store Purndet Sinh

Specifications for Medical Image Segmentation Software (No=1)

The software should support import of medical images informats including DICOM (version 3.0 and 2D stacks) ACR-NEMA (versions 1 and 2), Interfile, Analyze, Meta-image, Raw image data, 2D image stacks, BMP, GIF, JPEG, PNG etc.

The software should support Export Formats including Segmented image, RAW image, Metalmage, Surface model (triangles), STL, IGES, ACIS (SAT), ANSYS surface, ABAQUS surface, OPEN INVENTOR, POINT CLOUD, MATLAB file surface, Animations, AVI, JPEG, PNG, Postscript (*.eps), BMP, PNM, PDF, 3D PDF and VRML.

Statistical Analysis tools to compute commonly required quantities (volume, surface area, average greyscale, etc.)

Algorithm to register CT and MRI images with high precision and export registered images. Create a report on error in registration of CT and MRI images.

Measurement Tools to Create and save points, distances and angles in 2D/3D, Visualization options to display all at once or selected, Snap to 3D surface option, Profile line, Histogram, Export as comma separated values, Wall thickness analysis tool for masks or surface objects, Shape-based measurement tools, Shape editor: Create, edit, visualize, export and measure shapes, Shape fitting: Fit shapes to geometry, Shape-to-shape measurements: Obtain measurements between shape objects.

The software should provide following Image Processing Tools:

- Data processing (Crop,Pad, Rescale,Shrink,Wrap), Resampling using various interpolation techniques: nearest neighbor, linear, majority wins and partial volume effects, Flip, Shear, Align Register background: Align image backgrounds based on sets of landmark points and additional greyscale-based registration.
- · Basic filters (Smoothing: Recursive Gaussian, Noise filtering: mean filter, median filter, Cavity fill, Island removal filter, Fill gaps tool using largest contact surface or mask priority)
- Advanced filters (Histograms slice equalization, CT image stabilizer, Binarization filter, Gradient magnitude filter, Gradient anisotropic diffusion, Curvature anisotropic diffusion, Curvature flow, Discrete Gaussian filter, Min/max curvature flow, Skeletonization, Metal artifact reduction, Level set methods: allow segmentation based on implicit surfaces.
- Morphological filters (Erode, Dilate, Open, Close, 3D Wrap)
- Segmentation tools (Paint/Unpaint, Paint with threshold, Interpolation using Slice interpolation (smooth or linear), Slice propagation - adapts to image or uses direct copy, Confidence connect region growing, Background flood fill, Mask flood fill Thresholding, 3D editing tools forapplication of filters to local regions - option to apply on camera facing surface only, Mask ungroup tool, Automated generation of masks for pre-segmented images, Magnetic lasso and Boolean operations.
- The software should provide Surface Mesh Generation and Surface Mesh Quality Inspection Tools and export of finite element analysis meshes.

The software should provide export to computer aided design packages in IGES and STEP (NURBS models) formats. The patch fitting and quality inspections tools should provide options to create non-overlapping meshes.

Warranty: 5+5 years as per AIIMS store purchase procedure

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डॉ. आशीष सुरी/Dr. ASHISH SURI) आचार्य / Professor

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 The software should support Export Formats including Segmented image. KAW image. Metalmage, Surface model (triangles), STL, IGES, ACIS (SAT), ANSYS surface, ABAQUS surface, OPEN INVENTOR, POINT CLOUD, MATLAB file surface, Animations, AVI, JPEG, PNG, POSTCPT, (eps), BMP, PNM, PDF, 3D PDF and VRML. Statistical Analysis tools to compute commonly required quantities (volume, surface area, average greyscale, etc.). Algorithm to register CT and MRI images with high precision and export registered images. Create a report on error in registration of CT and MRI images. Measurement Tools to Create and save points, distances and angles in 2D/3D, Visualization options to display all at once or selected, Snap to 3D surface option. Profile line, Histogram, Export as comma separated values, Wall thickness analysis tool for masks or surface objects, Shape-based measurement tools, Shape editor: Create, edit, visualize, export and measure shapes, Shape fitting: Fit shapes to geometry, Shape-to-shape measurements: Obtain measurements between shape objects. The software should provide following Image Processing Tools: Data processing (Crop, Pad, Rescale, Shrink, Wrap), Resampling using various interpolation techniques: nearest neighbor, linear, majority wins and partial volume effects. Flip, Shear, Align Register background: Align image backgrounds based on sets of landmark points and additional greyscale-based registration. Basic filters (Histograms slice equalization, CT image stabilizer, Binarization filter, Gradient magnitude filter, Fill gaps tool using largest contact surface or mask priority) Advanced filters (Histograms slice equalization, CT image stabilizer, Binarization filter, Gradient magnitude filter, Gradient anisotropic diffusion, Curvature flow, Skeletonization, Metal artifact reduction, Level set methods: allow segmentation based on implicit surfaces. Morphological filters (Erode, Dilate, Open, Clo		The software should support import of medical images in formats including DICOM (version 3.0 and 2D stacks) ACR-NEMA (versions 1 and 2), Interfile, Analyze, Meta-image, Raw	
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Synopsys International Limited Block 1 Blanchardstown Corporate Park Blanchardstown Dublin 15, Ireland

Date: 10 October 2018

PROPRIETARY NATURE CERTIFICATE

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Orla Murphy, Director

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