

REQUIRED TECHNICAL SPECIFICATION-

BRAND NEW AUTOMATED BALLISTICS IDENTIFICATION SYSTEM

	Purchaser's Requirements	Conformity			Bidder's Offer
		Priority	Yes	No	Remarks
1.0	System Requirements				
	<p>The system should be fully automated. It should facilitate automated 2D and 3D topography image capture, correlation, analysis and automated identification of likely matches of fired bullets and spent cartridge cases</p> <p>The system should use separate scanners for cartridge cases and bullets</p> <p>The system should provide data storage facility for at least 15 years of case work and data backup facility in case of disaster recovery</p>	C			
2.0	Sample acquisition				
2.1	Cartridge case breach face, firing pin impression (centre fire and rimfire), ejector mark, extractor mark, cartridge case marks like magazine lip marks etc....	C			
2.1	Bullets Lands, grooves, microscopic striations etc....	C			
2.2	Damaged and deformed bullets	C			
2.3	Bullet fragments	C			
2.4	Jackets of bullets	C			
2.5	Polygonal rifling marks	C			
2.6	Shot slugs fired from smooth bore firearms	C			
2.7	Fired air gun pellets/darts	C			
2.8	Cartridges and bullets fired from homemade firearms	C			
3.0	Range				
	<p>Full range of bullets with dimensions .22 to .50 (with an effective diameter from 4mm to 20mm) and cartridge cases of rifle bore cartridges with dimensions .22 to .50 (with an effective diameter from 2mm to 27mm smooth bore cartridges from .410 to 8 gauge (for shot shells) air gun pellets .177, .22</p>	C			
4.0	Sample handling				
4.1	Cartridge cases, fired bullets, bullet fragments, slugs, air gun pellets etc. need to be introduced/ loaded to the system directly and no intervention of the user for alignment of cartridge cases, bullets, bullet fragments, slugs and air gun pellets	C			
4.2	Automated alignment and positioning to acquire best quality images for comparisons	C			
5.0	Lighting and focusing				

5.1	No intervention of the user for adjusting light and focusing and the automated system should provide consistent lighting, focus of regions of interest to obtain high quality images for accurate comparisons.	C			
5.2	The system should use orientation-independent ring lighting and as well as oblique light.	C			
5.3	The images should be free of illuminating and shadowing effect of oblique light.	C			
5.4	The system should provide consistent lighting for images captured at different times for comparison	C			
6.0	Image capturing				
6.1	The system should use a separate scanner for cartridge cases	C			
6.2	The system should capture high quality 2D images and high quality 3D topography images of complete cartridge case head, firing pin impression (centre fire and rim fire), cap face marks breech face marks and any other region of interest on the cartridge head automatically	C			
6.3	The system should use a separate scanner for bullets	C			
6.4	The system should capture high quality 2D image of the bullet surface and high-quality 3D topography information of bullet's full circumference and the same for bullet fragments automatically	C			
6.5	The system should be able to produce a 360° wraparound image stripe and the same for sections of bullet fragments	C			
6.6	The system should capture 3D topography information of lands and grooves on the bullet/bullet fragments automatically.	C			
7.0	Resolution				
7.1	Horizontal resolution should be less than 4 micrometers for cartridge cases and bullets	C			
7.2	Depth resolution should be less than 1 micrometers for cartridge cases Depth resolution should be less than 0.5 micrometers for bullets	C			
8.0	Correlation				
8.1	The system must be able to use 2D data and 3D topography information with advance comparison algorithms that consider material composition for comparison of images	C			
8.2	The system should be able to correlate automatically each captured 2D image and 3D topography information of cartridge case	C			

	region of interest, independently such as breech face mark, firing pin impression mark and ejector mark of cartridge cases and should use specialized cartridge case correlation algorithms adopted for each type of region				
8.3	The system should be able to correlate each captured 2D image and 3D topography information of bullet region of interest independently such as lands and grooves from conventional rifling or the areas of contact from polygonal rifling, automatically	C			
8.4	The system should use specialized bullet correlation algorithms adopted for each type of barrel rifling.	C			
8.5	The system should automatically correlate newly captured 2D images and 3D topography information of samples against a database of similar samples and should display a ranked list of the most likely matches	C			
8.6	The system should provide a numerical score for each captured and correlated mark on cartridge case and bullet enabling the examiners to identify possible matches by means of score ranking method.	C			
8.7	The system should be able to provide selection and filtering facility by means of manual request of the examiner for correlation based on exhibit characteristics	C			
9.0	Analysis				
9.1	The system must allow the automatic alignment of samples (bullets and cartridges) in their best matching position.	C			
9.2	The system must provide the examiner to overlap, rotate, and blend along all movement and rotation axes, measure markings for comparison.	C			
9.3	The system should provide the facility to view the images at several magnification levels	C			
9.4	The system should be able to display side by side view of compared cartridge cases	C			
9.5	The system should be able to display side by side view and top-bottom view of compared bullets	C			
9.6	The system must display the detailed 3D topography image of cartridge case correlated regions and bullet image strip representing the microscopic surface irregularities and macroscopic shapes	C			
9.7	The system should be able to extrapolate the true shape of deformed and fragmented bullets automatically.	C			
9.8	The system should provide various analysis methods of correlation data/results such as sortable score lists, graphs and high quality photographs which can be produced before	C			

	courts.				
10.0	Software				
10.1	Should be compatible with different software and hardware versions with preserving the data integrity	C			
10.2	Should be upgraded to the latest versions	C			
10.3	Should have software license and the vendor should be provided proof of license	C			
11.0	Future upgrades				
11.1	Should be able to upgrade to compare and correlate the images with compatible network regionally and internationally.	C			
12.0	Computer hardware				
12.1	Appropriate computers and high quality color printer	C			
13.0	Installation site				
13.1	Installation site should be surveyed for optimize the suitability	C			
14.0	Benches and cabinets				
14.1	Should be supplied appropriate cabinets and benches	C			
15.0	Electrical cabling and Networking cabling				
15.1	Should be provided including necessary cabling, sockets, outlets and fixtures	C			
15.2	The system should be included an uninterruptible power supply (UPS) system that enables a controlled and secure system shutdown following a power failure	C			
15.3	Power supply and other electrical materials should be compatible to Sri Lanka.	C			
15.4	Safety requirements for electrical equipment for measurement, control and laboratory use. The vendor should be provided proof of certification	C			
16.0	Warranty				
16.1	Comprehensive on-site warranty and maintenance minimum five years for all the parts, labor and for regular upgrades to all software during the entire warranty period from the date of installation.	C			
17.0	Training				
17.1	In house or foreign training to the government analyst's department's staff by qualified trainer in the relevant field and make the system ready to the running condition	C			

17.2	The application support has to be provided by the company	C			
18.0	Technical / Break Down support				
18.1	24 hours support through telephone , internet remote diagnosis and solution in the service	C			
19.0	Vendor profile	C			
19.1	The system should come from a reputable brand in the market.	C			
19.2	The vendor should be certified from a recognize certification body (ISO 9001)	C			
19.3	The vender must have a strong track record in providing personalized and responsive sales support	C			
19.4	The vendor shall be provided reference contact information for at least ten (10) customers who are using the proposed system	C			
19.5	The vendor should provide a complete detailed report for bullet and cartridge case of real-life instance (without exposing the identity information), separately from three customers who are using the proposed system. The report should include full 2D images and 3D topography images (color), matching points, correlation data and analysis information	C			
19.6	Vendor must demonstrate the proposed system usage and applications by means of a presentation done by an expert in the field	C			
20.0	Other				
20.1	All the specifications of the quoted instrument to be demonstrated at the time of installation.	C			
20.2	The system should be assembled and installed in the Government Analyst's Department, No 31, Isuru Mawatha, Pelawatta, Battaramulla, Sri Lanka.	C			

"C" = Compulsory