

***ANNEX II + III* : TECHNICAL SPECIFICATIONS + TECHNICAL OFFER**

Contract title: Police Education Equipment

p 1 /...

Publication reference: EuropeAid//137331/DH/SUP/BA

Column 1-2 should be completed by the Contracting Authority

Column 3-4 should be completed by the tenderer

Column 5 is reserved for the evaluation committee

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient)
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

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LOT 1 - Distance learning system

Required solution description

The Agency for Education and Professional Training (AEPTM) commenced its work on February 26, 2009. Following the Law on the Directorate for the coordination of police bodies of BiH and the BiH police support agencies, enacted in April 2008, the AEPTM was assigned major role in providing research and education in the field of police education and security in Bosnia and Herzegovina.

Pursuant to Article 19 of the Law, the AEPTM is responsible for:

- Developing, harmonizing and proposing curriculum plans and training programs in accordance with the needs of the BiH police bodies and other security services and agencies;
- Organizing and carrying out the education and professional development and specialist training programmes for members of the BiH police bodies and other security services and agencies (basic, specialist, on-going and other forms of police trainings), including:
 - Education of BiH police members at level I to obtain the rank of police officer;
 - Education of BiH police members at level II to obtain the rank of junior inspector;
 - Training for members of agencies providing the services of protection of people and property;
 - Training for members of detective agencies;
 - Professional training (courses, seminars etc.);
 - Development of research and publishing activities and contribution to the overall improvement and modernization of police work;
 - Library operations;
 - Relevant documentation and record keeping.

The establishment of the AEPTM has been a solution to the issue of education of police officers at the state level, who have been educated in the entity educational institutions until now. The specific quality of tasks performed by members of the Border Police (BP) and Directorate for the coordination of police bodies (DKPT), as well as the complexity of investigations conducted by the SIPA members represent the challenges for the DKPT. They require for the process of education and training of police members at the state level to continue in a high quality manner and be improved, given the changes in the morphology and phenomenology of security challenges and criminality present in the security area of Bosnia and Herzegovina. In addition to domestic institutions AEPTM is in constant communication and coordination with international agencies, institutions. One of the way of organizing and implementing education and training of members of police authorities of Bosnia and Herzegovina is using modern information and communication technologies. Advantages of using those technologies and methods of implementation, will be explained in subsequent chapters.

The following Agencies will be included in this project:

- BP
 - Headquarter Sarajevo
 - Field Office Gradiška

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- Field Office Bijeljina
 - Field Office Bosansko Grahovo
- SIPA
 - Headquarter East Sarajevo
 - Field Office Tuzla
 - Field Office Banja Luka
- DKPT
 - Headquarter Sarajevo
- AEPTM
 - Headquarter Mostar

AEPTM would be central location.

Subject of this procurement are the hardware and software. System is composed of the following items (1-9) which represents one integral system.

- 1. End-Point systems**
 - 1.1. End-Point system Type 1 for AEPTM headquarter Mostar**
 - 1.2. End-Point system Type 2**
 - 1.3. Notebook**
- 2. Videoconference infrastructure for AEPTM headquarter Mostar**
 - 2.1. Multipoint solution / Video Bridge**
 - 2.2. Call control Server solution**
 - 2.3. Telepresence Conference Management System solution**
 - 2.4. Firewall Traversal solution**
 - 2.5. Telepresence recording server**
- 3. Implementation and consulting services for Items 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5**
- 4. ELearning platform for AEPTM headquarter Mostar**
 - 4.1. Learning Management System (LMS)**
 - 4.2. Streaming Delivery System**
 - 4.3. Workstation for production**

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5. Implementation and consulting services for Items 4.1, 4.2, 4.3

6. System infrastructure headquarter Mostar

- 6.1. Servers type 1**
- 6.2. Servers type 2**
- 6.3. Storage**
- 6.4. Rack cabinet**

7. Implementation and consulting services for Items 6.1, 6.2, 6.3, 6.4

8. Training, knowledge transfer for the installation, configuration and administration of the complete solution

Note:

Software Licensing:

Unlimited duration license(s) for every software (sub) system must be provided

Unlimited duration licenses for virtualization environment, OS and database must be provided

The Contractor needs to deliver all specified equipment, install, configure and integrate all new components with the existing infrastructure, test and made operational the whole system.

The Contractor needs to document the implemented system through system, user and technical documents. All documentation should be available in digital format and written in one of the official languages used in Bosnia and Herzegovina. Original technical documentation can be written in English.

The Contractor needs to provide 21 days of official training for the at least one IT (AEPTM employees) administrators and ten end users (AEPT employee) that should include “on site” training in local language for administrators, engaging them during the whole system installation and configuration. Training must include knowledge transfer for the installation, configuration, and administration of the solution. The Contractor needs to provide Solution acceptance test for the complete solution, provide a Go-Live procedure and provide initial NBD (Next Business Day) 3 months support.

Aim of the Project

The project aim is to create unique video conferencing system and E-learning platform that would serve to improve the way and working conditions of AEPTM in accordance with law requirements. The system will use other police agencies (DKPT, SIPA, BP), and on the other hand the system should be actively used for training, seminars, professional training that AEPTM carried out with international partners and institutions.

Typical scenarios of using video conferencing systems are:

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- Weekly meetings
- Distance learning
- Transmission of conferences, seminars
- Telemedicine
- Military and police purposes
- Emergency: firefighters (e.g., the central alert)

Typical scenarios of using E-learning Platform are:

- Weekly meetings
- Distance learning
- Transmission of conferences, seminars
- Telemedicine
- Military and police purposes
- Emergency: firefighters (eg, the central alert)
- Administration of trainings / courses
- Distribution of learning materials
- Administration of educators and learners
- Tracking education progress of each learner

In addition to availability, users of video conferencing technology have following benefits:

- Avoid unnecessary travel
- Reducing the cost of travel (toll allowances, loco rides, overnight ...)
- Reduce time loss (less time spent on the road), i.e., increase employee productivity
- Less exposure to stress (which accompanies each trip)
- Meeting is not dependent on weather conditions or road conditions
- Providing audio, video and content of the computer screen in real-time to remote users

In addition to availability, users of E-learning platform have following benefits:

- Reduction of training costs
- Freedom from constraints of time and place
- Adaptive to learning speed
- Interconnection and availability of information

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- Avoid unnecessary travel
- Reducing the cost of travel (toll allowances, loco rides, overnight ...)
- Reduce time loss (less time spent on the road), i.e., increase employee productivity
- Less exposure to stress (which accompanies each trip)
- Meeting is not dependent on weather conditions or road conditions
- Providing audio, video and content of the computer screen in real-time to remote users

Video conferencing Platform

When someone mentions the concept of learning and education using information and communication technologies the concept of using videoconference systems is automatically imposed. Video conferencing is communication technology in which the sound and moving images (video images) alternate between two or more locations. It is most commonly used for business purposes and distance learning. The audio and video signals that are transmitted are digital and can be sent in different ways. Video conferencing communication is usually performed within a local area network (e.g., LAN) or across a public network (e.g., WANS). Using computer and communications technologies video conferencing allows people in different locations to interact simultaneously, to see, hear and share the content of computer screens. In the context of this document video conferencing system presents the system consisting of video conferencing equipment with possible use of PC computing platform with the corresponding software that would represent one of the end-point devices. Video conferencing equipment includes video conferencing terminals, Multi-Point Control Units (MCUs) – multipoint devices, monitoring, video conferencing device management and call control devices enabling configuration and directory provisioning, devices for recording and a video conference meetings and devices for enabling secure access and authentication of remote users and facilitating communication with other businesses. Video conferencing system must be scalable, secure and resilient to errors in transmission of video, audio and content of the computer screen on networks that do not have guaranteed quality of service. The solution must enable transcoding capabilities between different algorithms to encode audio, video, network protocols, resolutions, frame rate and bit rate.

Having in mind the above mentioned reasons, the starting point and minimal requirements for the development of the respective video conference platform are:

- Using predefined and previously configured video conferencing devices (standalone devices) without the need of additional hardware in order to reduce wear of current IT resources between the participants in the conference
- High quality sound system (speakers), microphone system as well as the equipment for displaying video content
- Simplicity and scalability when adding new participants to the video conferencing system, mobility of video conferencing devices, etc.
- The ability to connect two (point-to-point) or more (multipoint) remote locations in video conference
- The ability to receive incoming calls and establish outgoing calls (dial-in and dial-out)
- The system must be scalable and ensure interoperability with other communication and directory systems
- The ability to record point-to-point and multipoint video conferences with content (with support for visible recording indication)
- Support for transcoding recorded archives into standard formats for storing video data
- Monitoring, device management and call control device, multipoint device, recording devices and video conferencing terminals must include support for IPv4 and IPv6 network protocols
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E-learning Platform

An E-Learning platform consists of several modules:

- **Learning Management System (LMS)**
A LMS is a software application for the administration, documentation, tracking, reporting and delivery of electronic education courses or training programs. LMSs range from systems for managing training and educational records to software for distributing online or blended/hybrid college courses over the Internet with features for online collaboration.
- **Streaming Delivery System (SDS)**
SDS is used to administer to manage and deliver multimedia content Live (webcasts) and On Demand to users in form of streaming to any user device such as PC, Tablet or Mobile over intranet (LAN) or Internet (Wan) networks. SDS is also used to store and provide any kind of multimedia content to an LMS. SDS consists of Assets management, Trans-coding platform and Content Delivery Network Management Modules capable of transmitting content compatible with user's device.
- **Workstation for production**
Workstation for production is used for live editing and post production of multimedia courses and other types of content. It should be able to record, manipulate and mix multiple audio – video and audio feeds from fixed or mobile video cameras, PC's screens, Graphic materials, central end-point. Workstation for production will be used to broadcast meetings and training sessions. Workstation for production will capture Video input from production studio or video conference's end points and perform broadcast over Public Internet or Private intranet. Workstation for production needs to support digital or analog inputs and it's able to perform multicast or unicast streaming at the same time.

Having in mind the above mentioned reasons, the starting point and minimal requirements for the development of the respective E-learning platform are:

- Support for SCORM 2004
- Ability to register and administer users
- Support for Training Event Management (i.e., scheduling, tracking)
- Support for Course Content Delivery on PC and Mobile (iOS and Android) devices
- Support for Curriculum and Certification Management
- Support for Skills and Competencies Management
- Support for Individual Development Plan
- Support for Reporting
- Support for Training Record Management
- Support for up to date streaming protocols for traffic audio / video content transmission. H.264 HLS, Smooth streaming and HTTP support are mandatory.
- The ability to broadcast training and conferences to remote locations over public and private internet
- Support for Adaptive streaming (multi profile) of the video signal quality from QCIF 300 Kbit/s up to Full HD at 3 Mbit/s and at frame rates of 30 and 60 frames per second

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- Support for transcoding recorded archives into standard formats for storing video data such as Window Media (.wmv), H.264 (.mp4), H.265 and MP3 audio
- Streaming Delivery System must be capable of encrypting audio, video and secure communications between all locations using up to date security standards such as AES or IP logging.
- Streaming Delivery System must guaranty interrupted audio – video delivery to a minimum 500 concurrent viewers on any device over Public or Private internet
- Streaming Delivery System must be capable of recording live sessions in real time using adaptive protocol and formats
- Streaming Delivery System must be able to manage Live and VOD streaming contents, related metadata, content permissions, as well as distribution to LMS platform
- Streaming delivery system must support DNS load balancing with real-time health check monitoring and automatic deactivation and activation of servers in pools
- Streaming delivery system must support Real-time replicated and distributed multimaster database cluster
- Streaming delivery system must support Real-time SNMP monitoring service and centralized log aggregation system
- Workstation for production must support up-to-date protocols for encoding video signals such as H.264 (Baseline, Main and High Profile)
- Workstation for production must support up-to-date protocols for audio encoding in the quality of 300Kbit/s up to 14 Mbit/s
- Workstation for production must be able to capture SDI and Analog audio – video feeds from the camera or other sources as well
- Workstation for production must support talkback in order to remotely communicate with other connected rooms
- Workstation for production must be able to transmit audio-video feeds by using UDP Multicast and RTMP Unicast protocols at the same time
- Workstation for production must be able to capture and mix and output at least 6 different video sources the same time.
- Workstation for production must support HDS SDI and HDMI audio-video inputs, Analog or digital audio inputs and outputs
- Workstation for production must support HDMI and HDS SDI embedded audio
- Workstation for production must be able to insert graphics over video screen in real-time
- Workstation for production must support SD, 720p HD and 1080 HD formats
- Workstation for production must be able to show cameras, graphics, preview and final program output all on the separate display at the same time
- Workstation for production must be able to record output program in real-time on pc or external storage by using H.264/Mp4 format
- Workstation for production must be able to mix multiple audio and video sources
- Workstation for production must support virtual sets with Chroma Key
- Workstation for production must be able to record the raw video and audio from capture inputs to separate files
- Included software updates and upgrades during the warranty period.
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System Infrastructure

- System infrastructure is used to host LMS, SDS and other related items.

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1. End-Point systems

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1.1 QTY: 1	End-Point system Type 1 Package includes Codec, automatic camera tracking system from the same manufacturer as codec, all necessary cables (audio, video, power, ethernet), touch screen or remote control device for management of videoconference device, ten videoconference microphones, (four table, two ceiling, two pairs of wireless microphones each pair containing receiver / transmitter, one handheld & one lavalier), six loud speakers system and one mixer/amplifier, additional three PTZ cameras Device type: rack mount type , rack mount options included Video standards and protocols, minimum Minimum H.263, H.264, H.265, firewall traversal, H.323, SIP, H.239 Video input, minimum <ul style="list-style-type: none"> • 3 x HDMI , minimum 2 x physical HDMI ports on codec. • 1 x DVI or 1xVGA • 1 x Composite (In the case that HDMI or DVI is used as video input, adapter to Composite Video should be included) Video out, minimum <ul style="list-style-type: none"> • 2 x HDMI physical ports on codec. • 1 x DVI or 1xVGA (can be used adapter HDMI to DVI or HDMI to VGA) Resolution Video input:			

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	<p>Support for resolution minimum 1920x1080 Video output: Support for resolution minimum 1920x1080 Video resolution: Support for resolution minimum 1920x1080</p> <ul style="list-style-type: none"> • Content Sharing <p>Automatic camera tracking system specification:</p> <ul style="list-style-type: none"> • Automatic tracking of participants, current speaker, direct switching between active speakers • Dual camera system. • Resolution minimum 1920 x 1080 • minimum 10 x optical zoom • Horizontal field of view: min 70° • Range: Pan: min +/- 100°, Tilt range min +/-20° • Interfaces: 1 x RJ-45/100-Mb or HDMI or other camera interface • Wall mount shelf <p>Additional PTZ cameras -three pieces:</p> <ul style="list-style-type: none"> • Effective Pixels: min. 2MP • Zoom: Min. 10x optical zoom, minimum 12xdigital zoom • White balance: Auto / Indoor / Outdoor / • Focus Modes: Auto / Manual • Pan/Tilt Angle: Pan: minimum 175°, Tilt: 90° to -30° • Remote Control Interface: RS-232 or other controlling port • Video Resolutions: minimum 1080p • Video Outputs: 1 x 3G/HD-SDI • Control: Hardware or software camera control • Compatibility: Cameras must be compatible with endpoint and must be able to connect to endpoint. Cameras must be able to connect to workstation for production. 			
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	<p>Touch screen device or remote controller for management of videoconference device</p> <ul style="list-style-type: none"> • minimum 7" touchscreen diagonal in case of touch screen device for management of videoconferencing endpoint type 1 <p>Audio inputs, minimum:</p> <ul style="list-style-type: none"> • support for connecting minimum eight microphones • endpoint must support connecting minimum two external audio sources (such as input from workstation for production) • 2 x physical HDMI ports on codec <p>Audio outputs, minimum:</p> <ul style="list-style-type: none"> • endpoint must support to connect at least two external audio systems (mixer, sound speakers included in this endpoint and connection to workstation for production) • 2 x physical HDMI ports on codec <p>Other interfaces, minimum:</p> <ul style="list-style-type: none"> • 2 x USB 3.0 • 3 x Ethernet (RJ45) or more • 1 x RS232 or other controlling port <p>Audio standards and protocols, minimum:</p> <ul style="list-style-type: none"> • Support for G.711, G.722, G.722.1 <p>Other audio features, minimum:</p> <ul style="list-style-type: none"> • Automatic gain control • Automatic noise reduction <p>Network:</p> <ul style="list-style-type: none"> • IPv4 and IPv6 support • DNS • QoS • IP bandwidth management • DHCP • 802.1x Network authentication • Secure Shell (SSH), HTTP, Secure HTTP 			
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<p>(HTTPS), DNS</p> <ul style="list-style-type: none"> • Standards-based: H.235 and Advanced Encryption Standard (AES) • Bandwidth: minimum 6 Mbps H.323/SIP, point to point <p>Security:</p> <ul style="list-style-type: none"> • Management through HTTP and SSH • IP administration password • Network setting protection • Menu administration password <p>Management:</p> <ul style="list-style-type: none"> • Management via Telnet, SSH • APIs • Local contact directories • Call history (date and time of missed, placed calls) <p>Other options:</p> <ul style="list-style-type: none"> • Optional embeded multipoint - Support for Multipoint conference for mininum 5 sites, H.323/SIP in the same conference <p>Cables:</p> <ul style="list-style-type: none"> • camera cables, power cables, Ethernet cables, HDMI cables, audio cables • system must support dual displays <p>Loud speaker system with amplifier- six pieces:</p> <ul style="list-style-type: none"> • Type: ceiling • Connectors: XLR input or RCA input • Output power: mininum 25 W <p>Mixer/amplifier for connecting six loud speaker system and videoconference endpoint (Hardware or Software):</p> <ul style="list-style-type: none"> • Input Connections for connecting videoconferencing end point • Output Connectors for connecting loud speaker <p>Note: Solution must include all necessary</p>			
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	<p>hardware, software and licenses in order to fulfill above mentioned requirements</p> <p>Warranty :1 year services 8x5 response time Next Business Day, which includes replacement of fault units. All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered (above mentioned conditions are only related to endpoint, for other equipment it is enough to offer standard 1 year warranty).</p>			
<p>1.2 QTY: 2</p>	<p>End-Point system Type 2</p> <p>One Package includes</p> <ul style="list-style-type: none"> • camera compatible with codec, codec, remote control, two videoconference microphones compatible with codec, wall mounting kit to accommodate camera and codec, cables (audio, video, Ethernet, power) <p>Video standards and protocols H.263, H.264, firewall traversal, H.323, SIP, H.239</p> <p>Video input, mininum</p> <ul style="list-style-type: none"> • 1 x HDMI • 1 x DVI-I or 1xVGA <p>Video out, mininum</p> <ul style="list-style-type: none"> • 2 x HDMI <p>Resolution</p> <ul style="list-style-type: none"> • Video input: • Support for resolutions minimum 1920x1080 • Video output: • Support for resolutions minimum 1920x1080 • Content Sharing 			

<ul style="list-style-type: none"> • System must support for dual displays Camera specification: • Resolution minimum 1920 x 1080 pixels @ 30 fps • minimum 12 x optical zoom • Horizontal field of view: min 70°, • Tilt: minimum +15°/-25° • Pan: minimum +/- 90° • Interfaces: 1 x HDMI or other appropriate connector Audio inputs, minimum: • support for connecting two microphones • 1 x mini jack (stereo) • 1 x HDMI Audio outputs, minimum: • 1 x One minijack for line out • 1 x HDMI Other interfaces, minimum: • 1 x RJ-45 10/100/1000 Mbit • 2 x USB Audio standards and protocols: • G.711, G.722, G.722.1, Other audio features: • Automatic gain control • Automatic noise reduction Network: • IPv4 and IPv6 support • DNS • QoS • IP adaptive bandwidth management • DHCP • 802.1x Network authentication • Secure Shell (SSH), HTTP, Secure HTTP (HTTPS), DNS • Standards-based: H.235 and Advanced 			
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	<p>Encryption Standard (AES)</p> <ul style="list-style-type: none"> • Bandwidth: minimum 6Mbps H.323/SIP <p>Security:</p> <ul style="list-style-type: none"> • Management through HTTPS and SSH • IP administration password • Network setting protection • Menu administration password <p>Management:</p> <ul style="list-style-type: none"> • Management via Telnet, SSH • APIs • Software upload using web server, HTTP, HTTPS • Local contact directories • Call history (date and time of missed, placed calls) <p>Other options:</p> <ul style="list-style-type: none"> • Optional embedded multipoint: Support for Multipoint conference for minimum 4 sites, H.323/SIP in the same conference <p>Note: Solution must include all necessary hardware, software and licenses in order to fulfill above mentioned requirements.</p> <p>Warranty : 1 year services 8x5 response time Next Business Day, which includes replacement of fault units.All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p>			
<p>1.3 QTY: 1</p>	<p>Notebook</p> <ul style="list-style-type: none"> • Display: At least 15.6" diagonal • Processor: • PassMark – CPU Mark min. 3.900 			

	<ul style="list-style-type: none"> • Memory: At least 4GB • HDD: At least 500GB SATA • Optical drive: At least DVD RW • Chassis: min. 3 x USB ports, 1 x VGA, audio in/out, 1 x RJ45, HDMI or DisplayPort • Connectivity: 1x Gigabit Ethernet port, , Integrated WLAN • OS: Preinstalled Operating system (Standalone), active directory compliant • Warranty: 1 year 			
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2. Videoconference infrastructure for AEPTM headquarter Mostar

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.1 QTY: 1	Multipoint solution\Video bridge <ul style="list-style-type: none"> • Video Bridge should provide video, audio and content sharing capabilities for multiparty videoconferencing • When in multiparty video conference, Video Bridge should provide full screen view of the primary speakers with an overlay of others in the call • Support for single and multi-screen standard based telepresence video endpoints • Participants should be able to dial in Video Bridge to access specific video meeting and Video Bridge should be able to dial out specific telepresence endpoint • Video resolutions of 360p to 1080p30 or 720p60 frames per second • Support for AES (Advanced Encryption 			

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	<p>Standard) encryption</p> <ul style="list-style-type: none"> • Video Bridge should support transcoding and transrating, i.e. should be able to combine immersive, high definition, standard definition and 360p telepresence endpoints within the same telepresence meeting • Video Bridge should provide automatic audio and video transcoding along with transrating on all calls • Support for standard (4:3) and widescreen (16:9) content and support for Binary Floor Control Protocol (BFCP) for content sharing • Possibility to have video and content composed into the video stream • Support for following video codecs: H.261, H.263 and H.264 • Supported video resolutions: from CIF to 1080p • Support for audio codecs: G.711, G.722, G.722.1, G.729 • Support for Telepresence Interoperability Protocol • Possibility to host telepresence conferences which are PIN protected • Conference locking • Support for Transport Layer Security (TLS) and Secure Real-Time Transport Protocol (SRTP) • Video Bridge should support minimum 11 x FullHD or 21 x HD or 44 x SD or 80 x 360p locations in a telepresence meeting • Video Bridge should have possibility to be upgraded to support, with the same hardware minimum, 14 x FullHD or 28 HD or 55 SD or 110 x 360p locations • Solution must include all necessary hardware, 			
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	<p>software and licenses in order to fulfill above mentioned requirements</p> <p>Warranty : 1 year services 8x5 response time Next Business Day, which includes replacement of fault units. All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p>			
<p>2.2 QTY: 1</p>	<p>Call control Server solution</p> <p>Call control Server General requirements</p> <ul style="list-style-type: none"> • Call Control Server should provide effective IM, Presence, Voice and Video communication • In order to provide highly available solution, Call Control Server must be provided on redundant servers (two physical servers or appliances) • Each server should have software and hardware support for registration of collaboration soft clients and telepresence endpoints • Call Control Server should support following users and devices: • There should be 300 users who could use soft clients for chat and presence • Additional 75 users should be able to use one soft client for chat, presence, voice and video calling 			

	<ul style="list-style-type: none"> • Additional 25 users should be able to use up to 10 soft clients for chat, presence , voice and video calling • There should be possibility to register at least 14 Telepresence endpoints • Each server should have possibility to expand solution to minimum of 1000 collaboration soft clients and telepresence endpoints • Call Control Server must be possible to work in Active/Standby model • Call Control Server servers must be possible to work in Active/Active • All configuration changes made on Primary Call Control Server must be automatically delivered to Secondary Call Control Server without any need for manual intervention • SIP protocol should be used to register soft clients and video endpoints to Call Control Server • Integration with media gateways should be achieved using SIP protocol • Support for voice codec: G.711, G.722, G.722. • Support for video codec: H.263, H.264, and H.265 • Support for desktop sharing using BFCP standard protocol • Automatic route selection • Forwarding based on internal and external calls • Hunt groups • Secure conferencing 			
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	<ul style="list-style-type: none"> • Device authentication • Support for Secure RTP and TLS • Support for SIP URI Dialling • Software audio conference bridge for minimum 100 audio streams • Support for Far-End Camera Control for registered devices • Calls forwarding <p>User Features</p> <ul style="list-style-type: none"> • Answer and answer release • Auto answer • Call forward: All (off net and on net), busy, no answer, no bandwidth, and not registered • Call hold • Call join • Call status per line (state, duration, and number) • Calling line identification (CLID) • Conference chaining • Dialed-number display • Directory dial from endpoint: Corporate and personal • Directories • Real-time QoS statistics • Directories: Missed, placed, and received calls • Do not disturb (do not ring and call reject) • Speed dial • Calling line identification and calling party name identification • Directory dial from endpoint: Corporate and personal 			
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	<p>Administrator Features</p> <ul style="list-style-type: none"> • Application discovery and registration to SNMP manager • Real-time trace monitoring • Call logs • Device Status - Number of registered soft clients, Telepresence endpoints and trunks per each Call Control Server • Server Status - % of CPU load, % of memory used, % of disk space used per server. • Call detail records (CDRs) • Centralized, replicated configuration database and distributed web-based management reports • Device groups and pools for large-system management • LDAP Version 3 directory interface • LDAP filtering: Ability to create multiple, custom LDAP filters that can be assigned to one or more synchronization agreements • QoS statistics recorded per call • Single-point system and device configuration • Enhanced remote access through serial, console, and Secure Shell (SSH) Protocol • Device mapping tool: IP address to MAC address • LDAP Version integration • Enhanced remote access <p>Soft Client: Soft client should be used by users who are</p>			
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	<p>present inside of the LAN network, working from remote WAN locations or working remotely over Internet. In order to provide easy usage, when working over internet, users should be able to use soft client without any need to establish VPN connection to corporate network. Following platforms should be supported: Windows, Mac, iPhone, iPad and Android</p> <p>Soft client across all platforms should have following capabilities:</p> <p>Instant Messaging and Presence based on standard XMPP protocol. Instant Messaging (IM) should allow users to communicate with individuals and groups using text messages. Following IM features should be supported:</p> <ul style="list-style-type: none"> • User to user chat • Multiparty group chat • IM Encryption <p>Soft client should maintain a list of contacts and display availability through presence indicators. Following features should be supported:</p> <ul style="list-style-type: none"> • Search corporate directory • Search/add local contacts <p>Voice and Video Calling based on standard audio and video codecs. Following features should be supported:</p> <ul style="list-style-type: none"> • Audio calling based on standard audio codecs • Support for wide band audio codecs • Encrypted audio and video calling • In-call features: hold, transfer, conference • Standard based video calling • Support for SIP as signaling protocol • SIP URI dialing • Single Sign-On 			
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	<ul style="list-style-type: none"> • Possibility to use multiple clients simultaneously <p>In addition to above requirements, soft client for Windows and Mac should support:</p> <ul style="list-style-type: none"> • Screen capture • Windows soft client should be supported minimum on Windows 7 and Windows 8 operating systems. • Standard based video calling using H.264 codec with 720p resolution • Call recording • Desktop share while in video call based on standard BFCP protocol for desktop sharing <p>In addition to above requirements, soft client for Windows should support:</p> <ul style="list-style-type: none"> • Desktop screen share while in IM session • Desktop share recipients should be able to request to take control of desktop share initiators <p>Distribution of soft clients to users should be as following:</p> <ul style="list-style-type: none"> • There should be 300 users who could use soft clients for chat and presence. • Additional 75 users should be able to use one soft client for chat, presence, voice and video calling • Additional 25 users should be able to use minimum 10 soft clients for chat, presence , voice and video calling <p>Video calling should be possible between soft clients and Telepresence endpoints which are proposed.</p> <p>Windows and Mac soft client should support desktop share with Telepresence endpoints which</p>			
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	<p>are offered through standard BFCP protocol. Soft clients should be able to participate in video conferences.</p> <p>Warranty : 1 year services 8x5 response time Next Business Day, which includes replacement of fault units. All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p> <p>Note: Solution must include all necessary hardware, software and licenses in order to fulfill above mentioned requirements</p>			
<p>2.3 QTY: 1</p>	<p>Telepresence Conference Management System solution</p> <ul style="list-style-type: none"> • Telepresence Conference Management System should provide support to schedule, control, and manage the video communication solution • Possibility to manage at least 25 telepresence endpoints, with option to upgrade Telepresence Conference Management System in future, so that it can support at least 100 telepresence endpoints • There should be at least 25 users which can schedule conference and their personal telepresence meeting rooms • Ability to monitor all parameters of a video conference on a single screen • Ability to add and disconnect video conference participants • Ability to add and disconnect video 			

	<p>conference participants, manage and monitor parameters of every video conference</p> <ul style="list-style-type: none"> • Ability to upgrade the software version on video devices • Ability to distribute the central address book to video terminals • Ability to discover terminal configurations that are not in line with corporate policy. • Module for reservation and creating video conferences from the Internet browser • Ability to search address book • Support for H.350 standard • Ability to automatically import users from LDAP services • Ability to graphically represent the structure of a video system and the status of calls • Ability to define and manage user's profile • SSO functionality for users of Windows authentication system • Ability to reserve terminals and conference rooms • Ability to add and remove participants to and from conferences (both scheduled and ongoing). • Automatic import of users and creation of their permanent telepresence meeting rooms • Telepresence Conference Management System should allow users to create and configure their personal telepresence meeting rooms • Users should be able to secure their permanent telepresence meeting room with user defined PIN so that meeting attendees must enter this PIN before they can join 			
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	<p>telepresence meeting</p> <ul style="list-style-type: none"> • Users should be able to define layouts that would be used in the conference • System should provide users with simple easy-to-use web interface that allows users to create single and recurring telepresence meetings • System should provide email notification of select system events on a per-event, per-device, and per-user basis <p>Note: Solution must include all necessary hardware, software and licenses in order to fulfill above mentioned requirements</p> <p>Warranty : 1 year services 8x5 response time Next Business Day, which includes replacement of fault units. All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p>			
<p>2.4 QTY: 1</p>	<p>Firewall Traversal solution</p> <ul style="list-style-type: none"> • Firewall Traversal solution should be deployed at central location with one instance in DMZ (Firewall Traversal Server) and one instance in LAN (Firewall Traversal Client) in order to provide firewall traversal service for video communication, i.e. effective and secure video communication through firewall. Both of these instances must be deployed in redundant configuration (two physical servers or appliances). • Firewall Traversal Service should support 			

<p>business-to-business communication, where Telepresence endpoints and soft clients registered to Call Control Server should be able to establish video communication with standard based SIP and H.323 devices on Internet.</p> <ul style="list-style-type: none"> • At least 4 simultaneous video sessions over Internet should be possible with Telepresence endpoints which belong to other companies or organizations. • Firewall Traversal Service should provide VPN-less access to soft clients. When used on Internet, soft clients should have voice, video, XMPP, BFCP for content sharing and Secure RTP without need to establish VPN connection. • There should be possibility to establish at least 100 simultaneous video sessions between soft clients and Telepresence endpoints registered to Call Control Server if this communication is established over Internet, i.e. through Firewall Traversal Service application. • Firewall Traversal Service should support following features: <ul style="list-style-type: none"> - Support for H.460, STUN, SIP and H.323 protocols - Web user management for management - Secure management with HTTPS and SSH - Support for DNS addressing - Support for IPv4 and IPv6 <p>Note: Solution must include all necessary hardware, software and licenses in order to fulfill above mentioned requirements.</p> <p>Warranty : 1 year services 8x5 response time Next Business Day,, which includes replacement of fault units.All applications that are offered should be covered with 1 year services that would</p>			
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	<p>provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p>			
<p>2.5 QTY: 1</p>	<p>Telepresence Recording Server Must provide possibility to record telepresence meeting which will include both video and content shared during telepresence session. It should be possible to record at least one telepresence meeting with telepresence call at 4 Mbps and up to minimum 1080p high-definition resolution. In addition to this, there should be possibility to access live and on-demand meetings from computer. Telepresence Recording Server should support following features:</p> <ul style="list-style-type: none"> • Web based management • Live and on-demand streaming • Ability to record video from H.323 and SIP video device • Telepresence Recording Server should be able to stream live video to at least one video device or one streaming server • Compatibility with all major streaming formats, including Windows Media, Flash, and QuickTime • System should have embedded Native Windows Media Streaming Server or other type of streaming server. In addition to this, it should be possible to integrate following types of streaming servers on a separate server which is not embedded with Telepresence Recording Server: Windows Media streaming 			

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	<p>server, QuickTime streaming server and Wowza Media Server for Flash</p> <ul style="list-style-type: none"> • There should be possibility for at least 100 users to access recorded meetings simultaneously on Telepresence Recording Server • Support for download of content to PC, Mac and portable media devices • Synchronized streaming of video and presentation in live and on-demand modes • Unicast and multicast streaming support • Internal storage capabilities, with at least 400GB dedicated for recorded content • Support for external network storage using network-attached storage (NAS) • There should be possibility to have access-rights management • System should have predefined template based recording options • Users should have option for web based template editor • There should be option to define personal and system recording aliases which could be dialed to start recording • Transcoding of recorded calls into streaming and downloadable file formats, including Windows Media, Flash, and MPEG4 formats • Recording of every call directly to disk for “offline” transcoding after the call completes • Record start countdown should be presented to participants in telepresence meeting • Possibility to record PIN-protected Video Bridge conferences • Support for following video 			
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	<p>standards: H.261, H.263, H.264</p> <ul style="list-style-type: none"> ○ Frame rates up to 60 frames per second <p>Note: Solution must include all necessary hardware, software and licenses in order to fulfill above mentioned requirements</p> <p>Warranty : 1 year services 8x5 response time Next Business Day, which includes replacement of fault units. All applications that are offered should be covered with 1 year services that would provide ability to perform upgrades to future releases that would be available in this period, access to bug fixes and 24x7 access to technical support provided by the vendor who's equipment and solution was offered</p>			
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3. Implementation and consulting services for Items 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
3. QTY: 1	Implementation services, consulting services for Items 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5 <ul style="list-style-type: none"> • Installation, configuration, put into operation and test whole system and all components. • Professional project management methodologies with a single point of contact to help ensure optimum communication • Configuration of devices, system testing and tuning, and user orientation • Preparation, planning, design and implementation 			

	<ul style="list-style-type: none"> • Predictable, consistent implementation and verification of its operation • Cabling • Equipment wiring • Equipment installation and configuration • Software installation • Software customizations • Integration with E-learning platform • Fully integrate all solution components in order to achive functional system. 			
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4. ELearning platform

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
4.1 QTY: 1	<p>Learning Management System (LMS) A LMS is a software application for the administration, documentation, tracking, reporting and delivery of electronic education courses or training programs. LMS is system for managing training and educational records and for distributing online or blended/hybrid college courses over the Internet with features for online collaboration. The system must also be licensed to allow 3 specialized users or educators to create the learning modules. Creation of minimum 5 courses (90 minutes length each) during education period. Support for minimum 500 simultaneous end users.</p> <p>Users and security</p> <ul style="list-style-type: none"> • CMS membership system, centralized administration of system • Active directory support • OAuth 2.0 support • Adjustable security permissions (Ability to create and define customized user roles) • SSL compatibility <p>General</p> <ul style="list-style-type: none"> • Compatibility with major browsers • Sitemap and navigation • Workflow • History/Audit support • Metadata for additional content properties • Configurable items 			

<ul style="list-style-type: none"> • Scheduled publishing • Indexing and search • Localization and globalization • Multilingual content (including Bosnian, Croatian, Serbian language, Latinic and Cyrillic) • WYSIWYG editor E-learning • Curriculums • Quizzes • Online conferences • Development of electronic courses • Create individual courses and manage them by organizing them into multiple level categories • Offline events • Full multimedia and document support • Scheduled publishing • Document conversion • User groups and collaboration • Additional editors • Import courses developed by using well-known authoring tools • SCORM 2004 Compliant • TIN CAN support • Allow users to request to join courses • Online enrollment • Recording of attendance • Possibilities for end users and administrators to print certificates for licenses & certifications • Create custom reports about learner activities, results and responses on questions • Dashboard Views - Graphical Reports • Certificate templates for the course, individual quizzes and learning paths Taxonomy • Tags (Horizontal Classification) 			
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<ul style="list-style-type: none"> • Categories (Vertical Classification) • Filters (Multiple Categorization) Multimedia • Video and playlists • Live streaming • Photos and galleries • Documents and libraries Storages and resources • Local server storage • DropBox integration • Google Drive integration • YouTube integration • Vimeo integration • Scribd integration • Integration with streaming delivery system Content management • Indexing and search • HTML/Text content • News • Events • Blogs • Polls • Votes • Comments Design • Drag and drop layouts • Templates • Themes • Full CSS and additional styles support Communication/Sharing • Real-time messaging system • Notification system • Content sharing • Facebook • Google + 			
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<ul style="list-style-type: none"> • Twitter • RSS and Atom Syndication • Social Sharing Buttons <p>SEO and analytics</p> <ul style="list-style-type: none"> • Built-In Google analytics • Metadata (Title, Description, Keywords) • SEO Friendly, Extension less and Localizable URLs • Create tests, surveys & evaluations, print exams in PDF • Record and view user performance appraisals • Module should be automatically marked “completed” when an online assessment is passed • Quiz and survey tool with different question types and settings • Shared or individual question database with question pools • Customized Learning paths created, managed and evaluated directly in the LMS • Create, deliver, receive and correct learner assignments inside the LMS • Customizable grade book that records grades given in quizzes, assignments, learning path. <p>E-Learning content creation</p> <ul style="list-style-type: none"> • Develop content without programming using built-in template-driven content development • Enable nontechnical subject matter experts to create self-paced, on-demand courses directly from Microsoft PowerPoint • Add voice-over narration and multimedia content to presentations • Use FLASH, simulations, scenarios, and other media to create content that becomes reusable learning objects • Content delivery over multiple channels 			
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	<p>including the Web, instructor guides, classroom materials, offline on the desktop, CDs, mobile, performance support, and printed documents.</p> <ul style="list-style-type: none"> • Deliver content in multiple formats including Microsoft Word, PowerPoint, FrameMaker, SCORM, HTML, PDA, to support online, classroom, and mobile learning. • Assemble courses from all types of content including natively authored, ingested, and third-party materials • Support SME content development through PowerPoint Developer. • Maintain familiar processes for content developers and learners with easy-to-use configuration tools to mirror existing roles, workflow processes, access privileges, terminology, and the look and feel of the delivery • Control access and activities within the repository with ability to assign users and data to secure partitions <p>Support industry standards including SCORM</p> <p>Customization</p> <ul style="list-style-type: none"> • Fully Exposed Native APIs • RESTful Web Services APIs • Security Framework • Support for Multiple Membership Providers • Ready-to-use client widgets • Ready-to-use MVC Helpers <p>Supported devices</p> <ul style="list-style-type: none"> • PC, Android and iOS Smartphones and Tablets <p>Warranty :1 year. Support in the local language for all offered equipment in the regime: weekdays (Monday-Friday) 09: 00-17: 00 during the warranty period.</p>			
4.2	Streaming Delivery System (SDS)			

<p>QTY: 1</p>	<p>SDS is used to administer to manage and deliver multimedia content Live (webcasts) and On Demand to users in form of streaming to any user device such as PC, Tablet or Mobile over intranet (LAN) or Internet (Wan) networks. SDS is also used to store and provide any kind of multimedia content to an LMS. SDS consists of Assets management, Trans-coding platform and Content Delivery Network Management Modules capable of transmitting content compatible with user's device.</p> <p>VOD (Video on Demand) Management</p> <ul style="list-style-type: none"> • Manual and automatic Ingest of VOD content in SD and HD format • Support for FTP watch folders • Metadata import, export, editing • Tags & Keywords management • Video posters management • Subtitles & Audio language management • Video versions management (SD / HD version, etc.) • Geo and IP lock management • Subtitles and Closed captioning management • Supported bitrates for VOD files from 100 Kbit/S up to 14 Mbit/s <p>Live streaming</p> <ul style="list-style-type: none"> • Adaptive HLS, HDS, Smooth Streaming at minimum 5 profiles / bitrates at the same time • RTMP streaming • RTSP Streaming • Support for H.264 and H.265 • Supported bitrates from 100 Kbit/S up to 14 Mbit/s <p>Transcoding</p> <ul style="list-style-type: none"> • Automated transcoding of ingested Live and 			
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<p>Vod contents coming from workstation for production and MCU into different adaptive streaming formats compatible with common user devices such as PC, Android and iOS Smartphones and Tablets</p> <ul style="list-style-type: none"> • Support for H.264 /MP4 • AAC and MP3 audio • Support for incoming Multicast streams • Support for unicast and multicast delivery <p>Security</p> <ul style="list-style-type: none"> • SSL • HTTPS • AES 128 • IP Locking <p>Infrastructure</p> <ul style="list-style-type: none"> • Dynamic Load balancing • Sessions caching • Contents caching • DNS load balancing with real-time health check monitoring and automatic deactivation and activation of servers in pools <p>Management</p> <ul style="list-style-type: none"> • Manage Role-based access controls • DMS (Device management system) <p>Manage mobile devices access permissions . DMS should be able to monitor and view each connected device, manage Mobile video applications, Push personalized and General notifications to the system users.</p> <ul style="list-style-type: none"> • Manage Content Delivery Network / Streaming, Storage, Web, Database servers • Manage CDN / Streaming, Storage, Web, Database servers • Manage Trans-coding servers • Record system user activity 			
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	<ul style="list-style-type: none"> • Monitor system health • Advanced Analytics & Reporting <p>System capacity</p> <ul style="list-style-type: none"> • 500 concurrent Live or Vod streams at 2 Mbit/s each <p>API</p> <ul style="list-style-type: none"> • The system must support API at all levels for integration with 3rd party systems <p>User Video portal</p> <ul style="list-style-type: none"> • The system must provide user portal <ul style="list-style-type: none"> • Audio – video assets browsing by searching and watching by title, description and tags <ul style="list-style-type: none"> • Audio – video assets listening and watching by chapters <ul style="list-style-type: none"> • Live streaming distribution to authorized users. • User access control should be easily managed by the system operator. • User portal must be optimized for usage on PC/Mac, Android and iOS Smartphones and Tablets. <p>Warranty :1 year. Support in the local language for all offered equipment in the regime: weekdays (Monday-Friday) 09: 00-17: 00 during the warranty period.</p>			
<p>4.3 QTY: 1</p>	<p>Workstation for production</p> <p>Workstation for production is used for live editing and post production of multimedia courses and other types of content. It should be able to record, manipulate and mix multiple audio - video feeds from fixed or mobile video cameras, PC's screens, endpoints and other sources of graphic materials,</p>			

	<p>video and audio. It will be used to broadcast meetings and training sessions. It will be used for capture Video input from video conference's end points and perform broadcast over Public Internet or Private intranet. Workstation for production needs to support digital or analog inputs and it's able to perform multicast or unicast streaming at the same time.</p> <ul style="list-style-type: none"> • Form factor: Tower or Minitower chassis • CPU: PassMark – CPU Mark min. 9.500 • Memory: 16GB DDR4 2133 MHz ECC • HDD: SSD 256GB + 2TB SATA 7,2k • Network: 1Gb Ethernet • Optical drive: DVD-RW • Graphics: graphic adapter for 3D application with min. 2GB DDR3 GPU memory, up to quad-display support, 1x Dual Link DVI, 1xDisplayPort • Drive bays: min. 4x3,5 internal bays • Keyboard and mouse: included USB keyboard with BH layout, included optical mouse • Expansion slots: min. 5xPCIe slots • Interfaces: 10x USB ports (min. 4 ports have to be USB 3.0), audio in/out, 1x RJ45 • Safety: intrusion detection switch, smart card reader • Power supply: min. 600W • Operating system: Preinstalled Operating system (Standalone), active directory compliant • Monitors: From the same manufacturer as the workstation, 3x LED monitors min. 24", resolution 1920x1200, brightness 300 cd/m2, viewing angle 178/178, connectors VGA, DVI and DisplayPort, Stand: Lift, Tilt, Swivel, Pivot • Audio monitors (1 PAIR): Professional Audio amplified monitors, minimal power 10 W each. 			
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	<p>Audio Inputs: RCA or XLR</p> <p>Workstation for production must have following functionality:</p> <ul style="list-style-type: none"> • Editing of input/output video • Trimm/Cut video • Import common video SD and HD formats for editing • Import, manage and mix audio tracks /files • Import, manage and mix video files • Supported output format: Mpeg4/h264 SD-HD • Audio :Input/2 Output • 2 Mic Preamps with 48V Phantom Power • Balanced Line Inputs • Built-In Compressor, EQ • Video processing and capture with following functionalities: <ul style="list-style-type: none"> • Video inputs: minimum 4x SDI (10-bit HD/SD switchable) ,1x HDMI 1.4a (10-bit HD/SD) • Audio inputs: 1xAnalog • Cross Convention: SD to 720HD or 1080HD, HD to SD on video capture or video playback. • TBC/Frame Sync: Internal frame synchronizers (all inputs) • Total Outputs: Min. 2 • Format Support: SD Format Support, HD Format Support • Supported resolution: HD format up to 1080p 60 • Video sampling:4:2:2 • Color Precision:10-bit • Color Space: 4:2:2 YUV • Keyers: Min 3x Total, Min 1x Upstream, 			
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	<p>Min 2x Downstream, Min 3x Linear/Luma, Min 1x Chroma</p> <ul style="list-style-type: none"> • Generators: Min 2x Pattern, Min 2x Color • Transition effects: Cut, Fade, Zoom, Wipe, Slide, Fly, CrossZoom, FlyRotate • 3rd Party Capture: Capture audio from Skype, Screen capture from remote desktops running on the network <p>• Functionalities for Video On demand Output</p> <p>Encoding formats:</p> <ul style="list-style-type: none"> • File Containers: .MP4(.M4V) and .MKV • Video Encoders: H.264(x264), H.265(x265) MPEG-4 and MPEG-2 (libav), VP8 (libvpx) and Theora(libtheora) • Audio Encoders: AAC, CoreAudio AAC/HE-AAC (OS X Only), MP3, Flac, AC3, or Vorbis • Audio Pass-thru: AC-3, DTS, DTS-HD, AAC and MP3 tracks <p>• Audio-Video encoding functionalities:</p> <ul style="list-style-type: none"> • Video inputs: SD/HD/3G-SDI input; • Video encoding: H.264 (MPEG-4 AVC Part 10; ISO/IEC 14496-10). Profiles: Baseline, Main, High • Video resolutions: 1920x1080p , 1920x1080p 60/59.94/50Hz 1920x1080i 60/59.94/50Hz, 1280x720p 60/59.94/50Hz, 1280x720i 60/59.94/50Hz, 720x480/576i 60/59.94/50Hz • Audio inputs: 1x stereo, unbalanced • Stream types: transport stream and elementary audio/video stream • Additional features: Logo inserter for SD 			
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	and HD. <ul style="list-style-type: none"> I/O SPECIFICATION: Streaming traffic: Unicast and multicast traffic supported, RJ45 port, streaming protocols: HTTP, TCP/IP, UDP/IP streaming, IGMP, unicast/multicast Warranty: 1 year			
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5. Implementation and consulting services for Items 4.1, 4.2, 4.3

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
5. QTY: 1	Implementation services, consulting services for Items 4.1, 4.2, 4.3 <ul style="list-style-type: none"> Installation, configuration, put into operation and test whole system and all components. Professional project management methodologies with a single point of contact to help ensure optimum communication Configuration of devices, system testing and tuning, and user orientation Preparation, planning, design and implementation Predictable, consistent implementation and verification of its operation Cabling Equipment wiring Equipment installation and configuration Software installation Software customizations Integration with videoconferencing solution on central location-AEPTM Fully integrate all solution components in order 			

	to achive functional system.			
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6. System infrastructure

System infrastructure is used to host LMS, SDS and other related items (it is not allowed to use resource from system infrastructure for video conferencing infrastructure).

Mandatory requirements:

- Virtualization support.
- DNS load balancing
- Virtualization software. If proposed solution is based on virtual platform Bidder must offer appropriate virtualisation platform.
- Database and operating systems . Optimally sized for system

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
6.1 QTY: 6	Servers type 1 <ul style="list-style-type: none"> • Form factor: 19" rack with rack mounting kit, max. 1RU • CPU: min. PassMark – CPU Mark 9.500 • Memory: min. 16GB DDR3 1600 MHz ECC • Optical device: DVD-RW SATA installed • Network: min. 4x 1Gb Ethernet ports, 1Gb dedicated Management Port • HDD: min. 2 x 300GB 10k SAS hot plug • Upgradable up to 8 SFF drives • Storage controller: RAID controller with supported RAID levels 0,1,10,5 • Expansion slots: min. 3x PCIe 2.0/3.0 • Ports: min 4 USB ports • Power supply: min. 2 Hot plug redundant power supply, min. 450W 			

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	<ul style="list-style-type: none"> • Warranty: 1 year warranty – on site Commercial warranty: 3 years 			
6.2 QTY: 2	Servers type 2 <ul style="list-style-type: none"> • Form factor: 19” rack with rack mounting kit, max. 2RU • CPU: 2 processors, each min. PassMark – CPU Mark 4.500, CPU clock min. 1.9 GHz • Memory: min. 32GB DDR3 1600 MHz ECC, min. 12 memory slots • Optical drive: DVD-RW SATA • Network: min. 6x 1Gb Ethernet ports, 1Gb dedicated Management Port • HDD: min. 2 x 600GB 15k 3.5” SAS hot plug configured to RAID 1 • Upgradable up to 8 LFF drives • Storage controller: SAS RAID controller with supported for RAID levels 0, 1 • Expansion slots: min. 6x PCIe slots • Ports: Min 6 USB ports • Power supply: min. 2 hot plug redundant power supply, min. 450W • Warranty: 1 year warranty – on site Commercial warranty: 3 years 			
6.3 QTY: 1	Storage system <ul style="list-style-type: none"> • Controllers: min. two redundant controllers working in active-active mode Installed capacity: <ul style="list-style-type: none"> • min. 2.4 TB installed raw capacity using 10k SAS drives • min. 21TB installed raw capacity using NL SAS 7.2k drives • Cache: min. 8GB cache. • Host interface: min. 4 x 1Gbit iSCSI ports • Supported host interfaces: 8/16Gbit FC, iSCSI 1/10Gbit, FCoE 10Gbit, Ethernet 1/10 Gbit ports 			

<ul style="list-style-type: none"> • Supported HDD drives: SAS, NL_SAS and SSD drives • Supported mixing of SAS, NL_SAS and SSD drives in a single disk enclosure. • Supported mixing of 2.5 "and 3.5" drive enclosures. • HDD drive interface SAS 6/12 Gbit/s • Back-end connectivity SAS 6/12 Gbit/s • Support min. 140 disk drives • RAID support: 0, 1, 5, 6 • Number of hosts: min. 1024 server hosts • Software licenses: Thin Provisioning enabled <p>The proposed storage system must support advanced features:</p> <ul style="list-style-type: none"> • online RAID migration, online LUN expansion, non-disruptive firmware upgrade, wide striping, notification via email, syslog, SNMP • Redundant power supply • Warranty:3 years (parts, labour and on-site warranty) <p>Optional Features supported:</p> <ul style="list-style-type: none"> • Consolidated block and file storage in a system • Supported file access protocols - NFS, CIFS • Clones and mirrors • Remote replication • Automatic Storage Tiering • Application level snapshots- supported applications: MS Exchange, MS SQL, Oracle DB, MS Hyper-V, VMware. • Plug-in for integration: vCenter, VMware VAAI , VASA, VMware SRM, MS Hyper-V. • Supported OS: MS Windows Server, Hyper-V, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware vSphere, Citrix XenServer, Oracle Linux, Solaris, HP-UX, AIX 			
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6.4 QTY: 1	Rack cabinet <ul style="list-style-type: none"> • Size: 19" server rack, 42 rack units • Dimensions: 600x2000x1000 mm • Dimensions may deviate +/-5% • Doors: Front and back vented (perforated) doors • Load capacity: min. 800 kg static load Accessories: <ul style="list-style-type: none"> • Power distribution: 2x vertical power distribution units with min. 20x IEC320 C13 and 4x IEC320 C19 • Grounding kit • front and rear door lock • 30 pcs patch cable RJ45 Cat 6, length 3m • 30 pcs patch cable RJ45 Cat 6, length 1m • 2 pcs fixed shelf 450 mm • Installation: Rack and rack options installation 			
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7. Implementation and consulting services for Items 6.1, 6.2, 6.3, 6.4

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
7. QTY: 1	Implementation services, consulting services for Items 6.1, 6.2, 6.3, 6.4 <ul style="list-style-type: none"> • Installation, configuration, put into operation and test whole system and all components. • Professional project management methodologies with a single point of contact to help ensure optimum communication • Configuration of devices, system testing and tuning, and user orientation • Preparation, planning, design and implementation • Predictable, consistent implementation and 			

	verification of its operation <ul style="list-style-type: none"> • Cabling • Equipment wiring • Equipment installation and configuration • Software installation • Operating system, database installation • Software customizations • Fully integrate all solution components in order to achive functional system. 			
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8. Training, knowledge transfer for the installation, configuration and administration of the complete solution

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
8. QTY: 1	Training, knowledge transfer for the installation, configuration, and administration of the complete solution The Contractor needs to provide 21 days of official training for the at least one IT (AEPTM employee)administrators and ten end users (AEPT employee) that should include “on site” training in local language for administrators, engaging them during the whole system installation and configuration. Training must include knowledge transfer for the installation, configuration, and administration of the solution. The Contractor needs to provide Solution acceptance test for the complete solution, provide a Go-Live procedure and provide initial NBD (next business day) 3 months support.			

Delivery and installation locations

Institution	Location
Agency for Education and Professional Training	Kralja Petra Krešimira IV 8/a, 88000 Mostar, BiH

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LOT 2 - Procurement of hardware and networking infrastructure, networking services, software and relevant training for implementation of integrated e-Learning system

Terms of Reference

1 Preamble

Background

Information and communication technologies are a prerequisite and a solution for high quality education is a key factor for increasing competitiveness of the country globally, as well as enhanced competitiveness of individual new generations.

Taking into account the trends of introducing e-learning and the approach adopted to improve the performance of employees. Looking at e-learning not as a substitute but as a complement to the training face-to-face, requires investment in e-learning, which will offer a solution to overcome the cultural and living conditions, offering real learning environment accessible to all employees anytime and from anywhere.

In accordance with this, establishing an integrated e-Learning system will cover different facets of knowledge management in the Police academy and provide initial training courses for different police institutions of Bosnia and Herzegovina.

Benefits and features of e-learning system are:

- Provides instant access to courses;
- Easy and simple to use, quick start, and the rates can start at a certain time or be readily available;
- Allows replication of courses in a consistent manner, and the number of listeners is almost unlimited;
- Can adapt to the needs;
- Focus is on the process of acquiring knowledge and skills;
- Expandable in several directions: new users, new courses, new features, additional hardware;
- Multilingual system enables its wider use;
- Allows creation of an organizational base of knowledge with an, where a change of training materials is present, making them always available latest materials;
- Flexibility in learning, i.e. its compliance with the capabilities of the students, their style, dynamics and pace of learning, having full access to the materials;
- And other benefits

Police academy

One of the main mandates of Police academy is to provide and manage police trainings and similar activities. To achieve a more efficient and accessible training platform, the development and implementation of an e-Learning system has been recognized as one of the priority activities. The system is expected to support trainings managed by the Police academy staff but in addition it has to enable the management of training offers by other institutions that provide policy specific training.

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Main objective of Procurement of hardware and networking infrastructure, multimedia equipment and software with integrated e-Learning system

The integrated Police academy e-Learning environment will consist of following major components:

1. a learning management system (LMS) to deliver e-learning content and to provide communication and collaborative learning facilities integrated with a virtual classroom software (VC) to deliver webinars, for at least 1000 users with multiple growth possibility
2. user manuals and extensive documentation for LMS
3. a hardware and networking infrastructure (2 servers, 16 PC stations, WiFi networking equipment)
4. multimedia and videoconferencing equipment, 2 sets
5. authoring tools to produce e-learning content, 5 licenses
6. multimedia e-learning modules / courses, 7 courses up to two hours of multimedia materials

In order to enable the functionality of the above mentioned components this ToR specifies the hardware and networking infrastructure, multimedia equipment and software that needs to be procured to reach the objectives of the project.

2 E-Learning Environment Overview

Components / functionalities which will be developed / implemented for the Police academy e-Learning environment are:

1. Core E-learning system:
 - One learning management system (LMS server) to deliver e-learning content and to provide communication and collaborative learning facilities. An open source Moodle LMS software solution will provide the best “value for money” for PA.
 - Virtual classroom (VC server) to deliver webinars. After short listing of four products: Adobe Connect Meeting from Adobe, Saba Meeting from Saba, WebEx Meeting from Cisco and open source Big Blue Button, and reviewing prices of those services, frontend usability and friendliness, backend usability and friendliness, e-Learning functionality, usability for various e-learning scenarios and methodologies, integration with LMS and many others; BIG blue Button was selected as the most appropriate solution.
2. Hardware and networking infrastructure:
 - LAN is not established in “G” building at the campus. Networking equipment is needed for establishing full LAN connection in main teaching buildings, and this is planned to be done with bidirectional WiFi link.
 - Two servers for LMS and virtual classroom are specified for procurement.
 - 16 personal computers for learning room
3. Multimedia equipment with videoconferencing systems, which will enable teachers to provide trainings simultaneously in different rooms and record trainings for later use. The web conferencing should include:
 - Slide show presentations with tools for demonstrating certain positions on the screen;
 - Live video streaming and video;

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- VoIP audio communication in real-time from the trainer to the participants;
 - Sharing of content displayed on the trainer (desktop share);
 - Recording sessions of training, and their integration course.
4. Authoring tools to produce e-learning content. Considering the initial e-learning situation, no sophisticated tools are necessary yet. To start with e-Learning it is important to identify so-called rapid e-learning tools which are easy to use, allow producing e-Learning content in a fast and easy way and closely working together with Microsoft PowerPoint as the trainers who will produce e-learning content are used to that product.
5. Multimedia training modules
- e- learning content, **7 topics (modules) with minimum 60 minutes per topic (module):**
 1. Learning with Moodle
 2. Authoring tools
 3. Antiterrorism course
 4. Human trafficking,
 5. Organized crime,
 6. Juvenile delinquency
 7. Domestic violence

3 SCOPE OF SERVICES

A contractor company (Contractor) will carry out the task's activities as provided below.

Specific activities

Assessment of current institutional/organizational arrangements

The contractor will prepare an assessment of the current institutional/organizational arrangements related with the implementation of the e-learning system, including the conditions and capabilities that require further development in order to ensure an adequate management of the e-learning system.

These arrangements should comprise: the definition and implementation of foreseen business processes as a pre-condition for the implementation of the e- learning system. On the basis of business processes and business needs, and IT solution has to provide for a technological framework, which will ensure an optimal and efficient flow of those processes.

Establishing performance criteria in accordance with the PA mission and vision statements

The purpose of this activity is to define a strategy aimed to disseminate and communicate to PA stakeholders the content of the vision and mission of the learning strategy as well the characteristics of the e-learning system in order to ensure that all of them have a clear understanding of PA objectives on learning and professional development as well the performance PA will expect from its staff on those areas.

For this purpose the contractor will establish a set of performance indicators aimed to measure PA improvement in the development, dissemination, used and impact of the learning system.

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Developing education policy

The contractor will propose a PA education policy. The policy should address the training and education objectives and should, at a high level, define education from several perspectives:

- WHY? What do we want to achieve with education? Which elements of the strategy will be facilitated by education?
- TO WHOM? Which target groups within the PA are covered with education?
- HOW? How to deliver the educational contents?
- WHEN? What is the frequency of education?
- WHAT? Education for trainees- basic knowledge of general legislation, regulatory and institutional framework; Education for employees with work experience- anticorruption program, special programs, enforcement, etc.

Analysis and definition of education processes

For a successful implementation of the system the contractor will analyze the existing processes pertaining to the exercise of education programmes and to adapt them to the advantages reflected in the application of modern technological solutions. The processes which should be subject to analysis and definition include:

- Development of educational contents – The programmes will be defined and agreed upon with the Consultant.
- Verification and publication of educational contents to the users of the system
- Consumption of educational contents and knowledge testing
- Monitoring employees' compliance in terms of education and performance at exams
- Analysis of education effects and improvements of educational contents

The analysis of the existing business processes, including the necessary changes, will be carried out in the form of workshops with key business users in order to make possible and support e-learning.

Knowledge management processes

The education of the PA target groups is based not only on information and contents available from third parties (other public institutions, EU, external experts) but on their personal expertise as well.

The PA stand point is that a quality education should include a better management of in house knowledge, i.e. promotion and better sharing of already available expertise.

Due to the fact that internal knowledge primarily arises from unstructured processes of common work and exchange of information, the system is expected to introduce and support advanced collaboration processes and consequently the knowledge management processes.

Within this activity it is necessary to develop a knowledge management model for the PA and define at least the following relevant processes:

- Designation of new knowledge
- Knowledge verification and evaluation
- Establishing and structuring a knowledge base
- Knowledge management including the development of educational materials using the existing knowledge base

System implementation plan

Based on predefined processes and policies, it is necessary to plan the system implementation activities. The planning includes both a technical and organizational components.

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The technical component encompasses a detailed specification of the future IT solution, a project and team plan, software development methodology, etc. In addition to the IT solution implementation plan, a change management should be planned as well, as being necessary for a successful implementation and sustainability of the new e-learning system in the organization. Some important change management elements that are to be planned and defined in this phase include:

- Education of management and employees for the use of new solution
- Define e-learning system application performance measures
- Assign education responsibilities to employees and management

3.1.7. Solution development

For the purpose of a better adaptation of the solution to the current and future business needs of the PA, the IT solution is expected to be highly flexible and modular and able to grow at a large scale.

The modular design or a block-building architecture of the solution means the independency of key sub-systems, i.e. its architecture is loosely coupled and not a monolith one. The flexibility means that there are options for solution's support to various business processes of e-learning and knowledge management and the options for changes to those business processes within the solution as such, with no additional programming. The solution should include at least the following functional units:

- E-learning
 1. Development of educational contents
 2. Delivery and management of educational contents
 3. Content analysis and upgrade
- Communication, Collaboration
 1. Ad-hoc communication between participants
 2. Collaboration at the team or course level
 3. Web based Virtual classroom
 4. Videoconferencing
- Knowledge Management
 1. Keeping records of participants activities
 2. Moderated topic-based virtual communities
 3. Knowledge bases

Solution Testing

The testing-related activities and solution implementation should be carried only in collaboration with the company which will provide and install newly procured IT hardware/software infrastructure. The performance of this task should also be timed so they happen after the new IT hardware/software is procured.

4 EXPECTED OUTPUTS

Outputs of Specific Activities

1. An assessment of the current PA institutional/organizational arrangements related with the implementation of the e-learning system, including the conditions and capabilities that require further development in order to ensure an adequate management of the e-learning system

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2. Project performance criteria established.
3. Analysis performed, education process defined, e- learning content implemented, 1-2 modules, (e.g. anti-corruption, stress management)
4. E- learning system designed;
5. “G” building connected to the campus LAN implemented
6. Final system deployment plan prepared
7. System implementation (LMS, virtual classroom, Videoconferencing between main building and “G” building, servers installation), solution testing and system deployment

5 TIMING OF ASSIGNMENT AND REPORTING SCHEDULE

5.1. Timing

The duration of assignment shall be six (6) months. The contractor shall perform the assignment’s activities as described below.

5.2. Consultant shall prepare the following reports:

No.	Report	Timetable
1.	Inception Report	1 month after signing the contract
2.	First Monthly Report	2 months after signing the contract
3.	Second Monthly Report	3 months after signing the contract
4.	Third Monthly Report	4 months after signing the contract
5.	Draft Final Report	5 months after signing the contract
6.	Final Report	6 months after signing the contract

All reports shall be prepared in Local languages and English languages.

6 Procurement specifications

Procurement specification is available in Annex 1 in Technical specification word document. Technical specification is divided into five Items:

Item 1: Learning management system and Virtual classroom

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- Item 2: Procurement of hardware and networking infrastructure
- Item 3: Videoconferencing equipment
- Item 4: Authoring tools for development of e-learning content
- Item 5: E-learning modules / trainings courses

1. LEARNING MANAGEMENT SYSTEM AND VIRTUAL CLASSROOM

Item No. 1.1. Software solution for e-learning (LMS - Learning Management System)

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1.1	<p>Software solution for e-learning (LMS - Learning Management System) (1 pcs) Platform characteristics:</p> <ul style="list-style-type: none"> • Centralized administration of entire system • User administration in Active Directory or Form Based Authentication • User authentication and sign on with Active Directory • Ability to create and define customized user roles • Automatic user-loading & self-registration options • RSS Feeds • User interface which includes advanced search (course search, user search, forum post search) • SCORM 1.2 Certified • Adjustable interface language & look-and-feel • Supports multilingual learning environments including Bosnian, Croatian, Serbian Latin and Cyrillic languages 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Available plug-ins for 3rd Party Content Platforms. • Can be custom integrated with HR information systems • Support for multiple, distributed content servers • Support for clustering & failover solutions • Configurable auditing • Data archiving functions • Ability to use a mirrored database • Open Source Server OS Compliant • End User computer software supported: Windows 7, MS Office 2003 or higher, and Internet Explorer 10 or higher. • External database: MS SQL server 2008 or higher or MySQL 5.5.31 or higher • Possibility to develop custom web services for data export from LMS <p>Course creation and administration</p> <ul style="list-style-type: none"> • Customizable course page • Create individual courses and manage them by organizing them into multiple level categories • Multiple organization levels • Design course templates • Import(upload) SCORM format courses • Set course publishing period • Course back-up creation • Course back-up restore • Possibility of creation of users groups 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Allow users to request to join courses • Online enrolment • Enrolment Policy Editor to customize multi-step enrolment procedures • Send announcements to a single or multiple courses from a single location • Online personal training plan review for each user • Complete Roster and Staff feature showing learner and staff information • Track learners' and educators' activities on the course page and check who is the most active, what tools are most used. • Recording of attendance • Possibilities for end users to print certificates for licenses & certifications • Catalogue browsing without logging into the system • Complete Syllabus to show course outline and study plans • Supervisors can see detailed information about their employees education process and information about their courses • Possibility for supervisors and educators to review and update learners transcripts & training plans online • Class Resource Editor (Training centres, bookings, instructor qualifications, holiday planning) 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Office Hours feature that allows reserving time for meetings and tracking user timetables and appointments calendar • Create custom reports about learner activities, results and responses on questions • Certificate templates for the course, individual quizzes and learning paths • Export grade reports to spread sheets • Shared document library to organize resources • Link to documents outside LMS course and multimedia content on external multimedia server • ADL SCORM® player - ADL SCORM® 1.2 compliant <p>Assessment</p> <ul style="list-style-type: none"> • Create tests, surveys & evaluations, export/import questions • Record and view user performance appraisals • Module should be automatically marked “completed” when an online assessment is passed • Quiz and survey tool with different question types and settings • Shared or individual question database with question pools • Customized Learning paths created, managed and evaluated directly in the LMS • Create, deliver, receive and correct learner assignments inside the LMS 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Customizable grade book that records grades given in quizzes, assignments, learning path. <p>Collaboration and communication</p> <ul style="list-style-type: none"> • Enable collaboration between learners • Chat function to communicate instantly at the course site • Possibility to upload, share & manage files • Multi-level discussion board to organize classroom discussions • Use FLASH, simulations, scenarios, and other media to create content that becomes reusable learning objects • Content delivery over multiple channels including the Web, instructor guides, classroom materials, offline on the desktop, CDs, mobile, performance support, and printed documents. • Deliver content in multiple formats including Microsoft Word, PowerPoint, SCORM, AICC, HTML, and PDF to support online, classroom, and mobile learning. • Assemble courses from all types of content including natively authored, ingested, and third-party materials. • Maintain familiar processes for content developers and learners with easy-to-use configuration tools to mirror existing roles, workflow processes, access privileges, terminology, and the look and feel of the 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>delivery</p> <ul style="list-style-type: none"> • Control access and activities within the repository with ability to assign users and data to secure partitions • Support industry standards including SCORM 1.2 content. <p>Scalability The offered system should be designed and developed in a way that with further development will be expanded and upgraded by introducing an unlimited number of new ones:</p> <ul style="list-style-type: none"> • End users, and • Materials and e-content. <p>The offered system should be designed and developed in a way that with further development will be expanded and upgraded by introducing an open architecture for its future expansion with:</p> <ul style="list-style-type: none"> • New tools and products, regardless of their platform development; • Additional functionality, without the need for reorganization of the existing structure • Additional servers, which will provide horizontal scalability • Request for scalability will impact the required levels of security, availability and performance. • The offered solution should support an unlimited number of system users and end users. 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> The Contractor shall in his bid to describe the solution with particular reference to the possibility of its extension, listed in this chapter 			

Item No. 1.2. Web Conferencing System (Virtual Classroom)

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1.2	<p>Web Conferencing System (Virtual Classroom) (1 pcs) Platform characteristics</p> <ul style="list-style-type: none"> Live video streaming and video; VoIP audio communication in real-time from the trainer to the participants; Slide show presentations with tools for demonstrating certain positions on the screen; Sharing of content displayed on the trainer (desktop share); Choose any previously created course from the content library to teach within virtual classroom. Allow invitees to easily attend webinars with no additional downloads Possibility for recording webinar allowing viewing of the attendee list and access to downloadable content 			

Item No. 1.3. Implementation services, consulting services and education services for Items 1.1. and 1.2.

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1.3	<p>Implementation services, consulting services and education services for Items 1.1. and 1.2. (1 pcs)</p> <p>Consulting services</p> <ul style="list-style-type: none"> • Assessment of current institutional/organizational arrangements • Establishing performance criteria in accordance with the PA mission and vision statements • Developing education policy • Analysis and definition of education processes • Knowledge management processes • System implementation plan • Solution development • Integration of LMS and Web Conferencing System (SSO, creation of virtual classroom instance in LMS) • Solution Testing <p>Project management services</p> <ul style="list-style-type: none"> • Professional project management methodologies with a single point of contact to help ensure optimum communication • Preparation, planning, design and implementation 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Project execution when broad range of technology and multiple locations that require a consistent implementation process are present • Predictable, consistent implementation and verification of its operation <p>Education services Topic: Basic principles of e-learning</p> <ul style="list-style-type: none"> • One day (1 day face-to-face) • 20 participants in 3 training sessions • Target Group: Trainers <p>Participants will learn:</p> <ul style="list-style-type: none"> • the specifics of an online learning situation • how to arrange a professional online course with LMS tools • how to use various instructional design concepts for online training • how to combine face-to-face and online learning (blended learning) • the different roles and tasks of an online trainer • the mentoring tasks of an online trainer • how to use the online training tools in a professional way (forum, wiki, chat, etc.) • the characteristics of media communication • the team dynamics in virtual learning teams • how to accompany the learning process in online training 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • and have the competence to apply their new knowledge • <p>Topic: Administration of LMS</p> <ul style="list-style-type: none"> • One day (1 day face-to-face) • 10 participants in 3 training sessions • Target Group: Administrators <p>Participants will learn:</p> <ul style="list-style-type: none"> • Set-up the LMS settings and rules • use the various LMS administration tools • identify global settings that impact on security, privacy and access • identify and manage options and settings with an impact on course design and participants' experience • make changes to the appearance of the site within the agreed range <p>Topic: Development of e-learning courses in LMS</p> <ul style="list-style-type: none"> • Three days (3 days face-to-face) • 20 participants in 9 training sessions • Target Group: Trainers <p>Participants will learn:</p> <ul style="list-style-type: none"> • access their course and get an overview of their course • download course material • organize self-paced learning in LMS • communicate with others in chat rooms, forums, and wikis 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • use glossaries, lessons, quizzes, and surveys • use further learning functions • teach future trainees on the basic use of LMS • set up a course from scratch identifying the key settings that impact on the format and management of the course. • add and manage learning resources and make them available to participants. • create online resources and weblinks and make them available to participants. • add activities for assessment, collaboration and communication • monitor participant activity within a course. • re-use and archive activities and courses. • use web-editing tools to compose web pages • embed and editing graphics with the LMS graphic tool • manage access to your courses using a range of enrolment options • control collaboration • manage access to activities • track progress in a course 			

2. PROCUREMENT OF HARDWARE AND NETWORKING INFRASTRUCURE

Item No. 2.1. Point-to-Point wireless link 20Mbps device set

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.1	Specification Required			
	<p>Point-to-Point wireless link 20Mbps device set (pcs 1):</p> <ul style="list-style-type: none"> • Working frequency: 5 ghz • Channel width: configurable to 10 or 20 mhz • Frequency range: 5 ghz - 5.470 ghz – 5.725 ghz • Ethernet interface: min. 10/100 base t (rj-45) • Network management: http, wireless manager • VLAN: 802.1ad (q-in-q) • Maximum aggregate throughput: min 50 mbps • Latency: 5 to 7 ms round trip • QOS • Antenna gain: integrated - 10 dbi • Maximum transmit power: 19 dbm • Sensitivity: (dbm typical) min -86 dbm • Operating temperature: -30° to +55° c • Encryption: 56-bit des, 128-bit aes <p>Passive networking equipment, min.:</p> <ul style="list-style-type: none"> • UTP cable: 350 m • Antenna pipe carrier: 2m • Euroflex outer casing: 80 m 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • PVC Channel:80 m • PC sockets – surface mounted: 6 pcs • Other finely installation material ... 1set 			

Item No. 2.2. Server

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.2	<p>Server (2pcs) Number of processors: minimum 2</p> <ul style="list-style-type: none"> • Processor: x64 processors with minimum 6 cores, , PassMark: CPU Mark 14000 or higher • Memory: Minimum 4x 8GB RDIMM module, 2133MT/s, Dual Rank, x8 Data Width (minimum 24 sockets, upgradable to 1536GB) • Hard Disc: Minimum six (6) 300GB SAS, 10k rpm hard drives (minimum eight (8) HDD/SSD drive bays, installation of mixed 3,5" and 2,5" drives supported) • I/O slots: minimum PCI-Express 3.0 • RAID controllers: SAS RAID Controller, with at least 2GB flash backed write cache, 2x internal SFF8643, supporting RAID levels 0, 1, 5, 6, 10, 50, 60, Online Capacity Expansion, Online RAID Level Migration, 4K native sector support, SSD supported • Chassis: Rack Server 2U, with 2 physical • procesor sockets 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Network: min. 4 x integrated Gigabit Ethernet 1000BASE-T ports (RJ-45) • Power Supply: Minimum Dual, Hot-plug, Redundant Power Supply (1+1), 750W • Software: Integrated remote management through virtual console, with support for automatic update, performance monitoring, configuration backup and restore, support for AD and LDAP • OS: No OS • Warranty: 1 year • Commercial warranty: as granted by the manufacturer 			

Item No. 2.3. Personal computers

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.3	<p>Personal computers-brand name (16 pcs)</p> <ul style="list-style-type: none"> • Processor: x64 processors with minimum 4 cores, PassMark: CPU Mark 5500 or higher • Memory: Minimum 2x 4G 1600MHz DDR3 Memory module, minimum 4 physical sockets at least two free for memory upgrades • Hard Disc: Minimum 500GB 3.5" Serial ATA (7,200 Rpm) Hard Drive • Chassis: Mini-Tower Chassis Minimum or equivalent to Chassis Intrusion 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>Switch, Trusted Platform Module (TPM) 1.2, Chassis lock slot support, Setup/BIOS Password, Trusted Execution Technology, Identity Protection Technology, Ant-Theft Technology, BIOS support for optional Computrace</p> <ul style="list-style-type: none"> • Expansions: Minimum 2 full height PCIe x16, 1 full height PCIe x1, 1 full height PCI, minimum 4 external USB 3.0 ports (2 front, 2 rear) and 6 external USB 2.0 ports (2 front, 4 rear) and 1 internal USB 2.0; 1 RJ-45 (Gb Ethernet); 1 Serial; 1 VGA; 2 DisplayPort; 2 PS/2; 2 Line-in (stereo/microphone), 2 Line-out (headphone/speaker) • Optical drive: SATA internal Super Multi DVD writer/reader, • Network: Ethernet10/100/1000Base T • Power Supply: Power supply at least 240W, 85 Percent Efficient PSU (Bronze) • Keyboard: USB, BHS languages support • Mouse: optic, scroll, USB • Monitor: Minimum 21,5" viewable size, widescreen 16:9, Full HD (1920 x 1080), LED backlight, DVI-D, VGA, same manufacturer as for computer • Audio Speaker: Internal Audio Speaker required • Graphics: Integrated Graphics • OS: Preinstalled Operating System (standalone) 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> Warranty: 1 year Commercial warranty: as granted by the manufacturer 			

Item No. 2.4. Mobile multimedia projector

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.4	Mobile multimedia projector (7 pcs) <ul style="list-style-type: none"> Resolution: Native XGA (1024 x 720) Aspect: 4:3 (native) or 16:9 Contrast :3,000:1 (minimum), min. 1.07 Billion Colors Lumens: 2700 ANSI lumens (standard) (minimum) Lamp: Min 180 W user replaceable P-VIP lamp Lamp Life: min. 5000 hours (Standard); 6000 hours (ECO); 10000 hours (ExtremeEco) 			

Item No. 2.5. Presentation laptop

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.5	Presentation laptop-brand name (7 pcs) <ul style="list-style-type: none"> Processor: x64 processors Dual Core, PassMark: CPU Mark 3800 or higher 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Display: min. 15.6" FHD (1920 x 1080) LED, AntiGlare • Memory: Minimum 8G 1600MHz DDR3 Memory module, minimum 2 physical sockets at least one free for memory upgrades • Hard Disc: Minimum 500GB 2.5" Serial ATA (5,400 Rpm) Hard Drive • Expansions:: Universal Audio Jack, SD 4.0 Memory card reader, min. 3 USB 3.0, HDMI, VGA, Network connector (RJ-45) • Network: LAN modul 10/100/1000 MBit/s integrisan, WLAN b/g/n, Bluetooth V4.0 • Power Supply: Power supply at least 90W AC adapter • Audio Speaker: Internal Stereo Speaker • Graphics: Minimum HD Graphics (2GB DD3) • OS: Preinstalled Operating System (standalone) • Warranty: 1 year • Commercial warranty: as granted by the manufacturer 			

Item No. 2.6. Digital SLR

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.6	Digital SLR (3 pcs) <ul style="list-style-type: none"> • Image Sensor: min. CMOS, 16MP, Senosor 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	Cleaning <ul style="list-style-type: none"> • Focusing: min. 9 cross-type AF points • ISO Sensitivity: min. 100-12800 standard, 25600 expanded • White Balance Options Available at least 4 types • LCD Monitor: min. 3 inch • Built-in Flash Available • Continuous Shooting: min 5fps • Video recording: min. 1920x1080 at 30 fps • Interface:USB • Storage SD, SDHC or SDXC supported • Batteries • Power Supply & Battery Chargers: AC Adapter and Battery charger 			

Item No. 2.7. Digital Camcorder

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
2.7	Digital Camcorder (3 pcs) <ul style="list-style-type: none"> • Camera Type: High Definition • Display: min. 2,7" LCD • File Formats: min. AVCHD,MP4 or H.264 • Megapixels: min. 2.07MP 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Memory Card Type: min. SDHC/SD • Power Supply Battery • Video Resolution: min. 1080p • Zoom (digital): min. 20x • Zoom (optical): min. 10x 			

3. VIDEOCONFERENCING EQUIPMENT

Item No. 3.1. Videoconferencing system

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
3.1	<p>Videoconferencing system (2 pcs) Supports Full HD resolution 1080p60</p> <ul style="list-style-type: none"> • H.323 or SIP calls up to 6 Mbps • Possibility to display remote video on one screen and remote shared content on another screen • Remote control • Support for following video standards: H.263, H.263+, H.264 • At least one HDMI and one DVI-I • At least two HDMI ports for video outputs • Support for following audio codecs: G.711, G.722, G.722.1, G.728, G.729 • Support for following audio features, acoustic echo cancellers, Automatic Gain Control (AGC), automatic noise reduction 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Support for following audio inputs: min one microphone, min. one minijack for line-in (stereo) and min. one audio in from camera (HDMI) • Support for following audio outputs: min. one minijack for line out (stereo) and min. one HDMI (digital main audio) • Support for content sharing protocols H.239 (H.323) and BFCP (SIP) with resolution up to 1080p • Advanced Encryption Standard (AES) • Packet loss-based down speeding • Min. one LAN and Ethernet (RJ-45) 10/100 Mbit • Possibility to present corporate directory • Possibility to present received, placed and missed calls with date and time • Camera with min. 10 x optical zoom and possibility to control camera position from far end while in video call • One table microphone with cable length of at least 7 meters • Presentation cable with audio and length at least 6 meters • Warranty: 1 year – parts, 1 years – on site support. 			

Item No. 3.2. TV 47”

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee’s notes
3.2	<p>TV 47” (2 pcs)</p> <ul style="list-style-type: none"> • Display Type: LCD, TFT or LED • Diagonal Length: 47" • Resolution: 1920x1080 • Minimum Video Refresh Rate: 50 Hz • Image Aspect Ratio: 16:9 • TV Tuner: DVB-T • Audio Output Mode: Stereo • Interfaces provided: min: 1xHDMI, Component Video Input, Audio Line-In, USB, Headphones output (3,5mm) • Maximum Input Voltage: 240 V • One Year Warranty 			

4. AUTHORING TOOLS FOR DEVELOPMENT OF E-LEARNING CONTENT

Item No. 4.1. Authoring tool for rapid e-learning development

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee’s notes
4.1	<p>Authoring tool for rapid e-learning development(5 user licences)</p> <p>Easy Authoring</p> <ul style="list-style-type: none"> • Intuitive User Interface 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • Text Editing (easily customize text spacing, alignment, size, and color; insert custom font characters and bullets; and use all the features in fonts, including ligatures) • Multi-languages support • Authoring Templates • Characters base • Customizable Player (customize colors, fonts, and other elements) • Zoom into content • Auto Recovery Option <p>Interactions and Animations</p> <ul style="list-style-type: none"> • Transitions • Scrolling Panels <p>Media and Simulation</p> <ul style="list-style-type: none"> • Software Simulations • Video • Web Objects <p>Assessment</p> <ul style="list-style-type: none"> • Quizzing • Question Import <p>Publishing</p> <ul style="list-style-type: none"> • HTML5, Flash 			

Item No. 4.2. Software for screen recording and video production

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
4.2	<p>Software for screen recording and video production (5 user licences)</p> <p>Recording Tools</p> <ul style="list-style-type: none"> • Streaming Audio Recording • Records from Online Sources • Records from Desktop Sources • Mouse Cursor Capture <p>Editing Tools</p> <ul style="list-style-type: none"> • Resize • Cut • Cropping • Splice • Watermarks and Titles • Zoom in • Cursor Effects • Clean-up Audio • Split Video & Audio Files <p>Help & Support</p> <ul style="list-style-type: none"> • Online Support • User Forums • Available Tutorials • Available Manual 			

Item No. 4.3 Education services for Items 4.1. and 4.2.

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
4.3	<p>Education services for Items 4.1. and 4.2. (1 pcs)</p> <p>Topic: Working with authoring tool for rapid e-learning development</p> <ul style="list-style-type: none"> • Two days (2 days face-to-face) • 20 participants in 6 training sessions • Target Group: Trainers <p>Participants will learn:</p> <ul style="list-style-type: none"> • How to get started with Authoring Tools • How to beginning a New Project • How to insert and customize Slide Content • How to inserting and customize Media • How to insert and customize Interactivity • Applying Animations and Slide Transitions • Customizing Your Project Design • Inserting and Customizing Quiz Slides • Importing Content from Other Sources • Customizing the Player • How to preview and publish project • Helpful Tools and Options <p>Topic: Working with Software for screen recording and video production</p> <ul style="list-style-type: none"> • One day (1 day face-to-face) 			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> • 20 participants in 3 training sessions • Target Group: Trainers Participants will learn: <ul style="list-style-type: none"> • Prepare, Script, Audio • Record Screen • Editing Dimensions and Saving • Explore the Editor • Cut Unwanted Media on the Timeline • Add a Callout to Direct Viewers' Attention • Visual Properties • Produce and Share of Video 			

5. E-LEARNING MODULES / TRAININGS COURSES

Item 5.1. Multimedia training modules development

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
5.1	Multimedia training modules development (1 pcs) <ul style="list-style-type: none"> • E- Learning content of at least 420 min of multimedia content <u>Topic: 7 topics defined by beneficiary authority (at least 60 minutes of multimedia content per topic)</u> <u>Multimedia e-learning training modules</u>			

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1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p><u>development as follows:</u></p> <ul style="list-style-type: none"> - <u>2 online pedagogy and multimedia learning creation topics (modules) in form of e-learning are:</u> <ol style="list-style-type: none"> 1. <u>Learning with Moodle</u> 2. <u>Authoring tools</u> - <u>5 topics (modules) in form of e-learning defined by beneficiary authorities are:</u> <ol style="list-style-type: none"> 1. <u>Antiterrorism course</u> 2. <u>Human trafficking</u> 3. <u>Organized crime</u> 4. <u>Juvenile delinquency</u> 5. <u>Domestic violence</u> <p>Functional Requirements</p> <ul style="list-style-type: none"> • The course must be highly interactive, engaging and incorporate best practices in adult learning as well as designing and developing e-Learning courses. • The users have to complete self-paced modules (including all assignments / exercises). • The course must be organized into modules (chapters) and each will involve presentations including good practices, hints and tips, practical assignments and/or exercises. • Long text needs to be avoided in the screen view of the slides. • Necessary long texts and reference materials should be available in .pdf format. • The course should include links to all websites 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>used in examples and references presented in on-line content.</p> <ul style="list-style-type: none"> • When needed, short explanations of key words will be provided via annotations that are activated when the mouse is pointed at the key word. • All slides will contain one creative, visual and/or multi-media element (i.e. animation, graphic, chart, interactive graphic, textbox, audio file, etc.) to match the text. • At least one of modules should include short video sequences or animated films to aid knowledge transfer. • There will be a didactically created interactive element (i.e. multiple choice exercise, drag-and-drop activities, games or simulations, self-assessments, etc.) • Users should be able to quit learning and be able to start it again at the point of last exit or to restart completely, if required. Users can switch between slides and modules at any time. • Active links will be incorporated in the text and a summary list of all links will be provided at the end of the course. • The course will be developed in the official languages of Bosnia and Herzegovina. • The course will include quizzes/tests at the appropriate points during the course. <p>Quizzes/test will be multiple choice tests with</p>			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>one correct answer.</p> <ul style="list-style-type: none"> • The test at the end of the course will be ‘a simulation of obstacle course’. With each correct answer the user will move forward; each wrong answer will move the user back on the obstacle course. • Users should have the option to “see” or “hide” the table of content at the left side of the slide. • Developed e-Learning course must be compliant with SCORM 1.2. • Contractor must install the course to the LMS of beneficiary • Contractor will provide assistance and support during the delivery of the course to the target users at least 12 months after development 			

Delivery and installation locations

Institution	Location
Police academy – Federal Ministry of the Interior	Dobojska 32, 71000 Sarajevo, BiH

LOT 3 - “DISTANCE LEARNING BY USING MOODLE LEARNING MANAGEMENT SYSTEM (LMS)”

Description of the e-learning project

Aiming the systematic upgrade and development of human resources, the advantages of ICT have been recognized. In accordance with the clear commitment of the MoI RS leadership, initiated by the Bureau for ICT, the activities for implementation of e-learning system have been started.

MOODLE, open source software package – free and open system for management of distance learning has been chosen as optimal solution for implementation of the new technology for the abovementioned purpose

System has been implemented on the existing infrastructure and it is available to all employees which have the access to computers within the MOI RS network. Several courses have been uploaded.

In order to achieve better results in using the LMS, in addition to providing the equipment in the cabinet of the Bureau for police education, centres for public safety and integrated video-conference system, an advanced training of administrators and teachers has been planned.

Based on the Rulebook on professional specialization of police officers (Official gazette of RS no. 61/14) police staff employed at the MoI RS have regular obligatory trainings and tests each 6 months. Knowing of the legal regulations and all changes and providing their implementation is key in performing working tasks. Aiming at the regular knowledge tests, testing is performed in all police stations in RS. The process of testing, grading, keeping records, statistics and reporting consumes a lot of time and it is expensive.

Project aim

Using this system for training and testing will significantly improve the knowledge and skills of the staff, decrease used working time and testing costs.

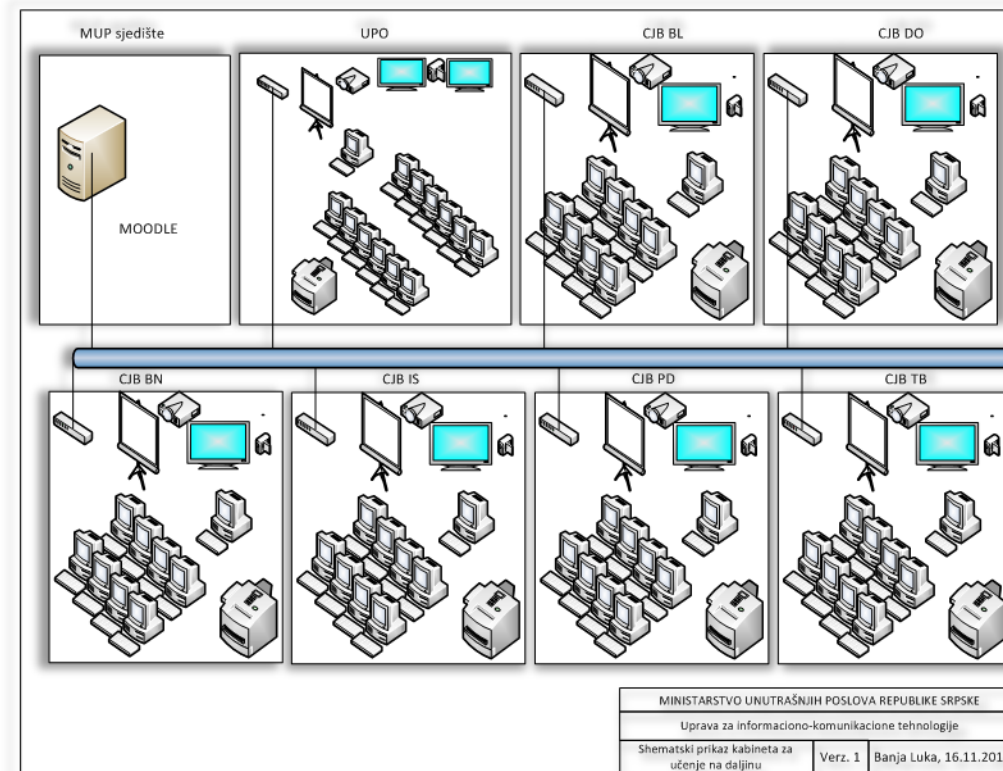
Special advantage of the Moodle system in comparison to the existing system of regular testing are the equal testing conditions for all. Also, quick, correct and transparent results statistics which can be analysed under different criteria, e.g., by testing candidate, police units, centres of public safety, testing areas, individual questions. System enables monitoring of knowledge improvement for each candidate.

Trainings can be created in different forms and as a combination of multimedia presentations, videos, e-books, texts, tables.

Introducing the software package for distance learning by computer and IT infrastructure available to all employees of the MoI which use the computers, and will significantly facilitate the organization, expand opportunities, decrease costs and increase efficiency and effectiveness in work.

Cabinets for e-learning

The proposition of implementation of IPA 2012 funds is given on the scheme bellow.



The scheme of technical equipment of the cabinet in Bureau for police education and Centres for Public Safety for the distance learning system

The specification of distance learning system which should be implemented in MoI RS

Server is connected to the intranet network of the MoI and it is going to be located in MoI's server room. This room has access control systems, video surveillance and air-conditioning system.

Equipment of multimedia classrooms:

1. The computers for training (desktop computers with headphones),
2. The computer (or laptop) for the lecturer
3. The projector and screen,

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4. Network equipment (switches, UTP cables, connectors, sockets, etc.),
5. Software: Presentation programmes (MS Office, web browser),
6. System for video conference with needed devices and TV.

The participation of MoI RS in project implementation

MoI RS contributes to project implementation and realization in following ways:

- Providing the cabinets at 7 locations in RS,
- Software installation,
- Hardware installation,
- Licensed Windows Office packages for computers,
- Active and passive network equipment installation,
- Drafting the manual and training of lecturers on material preparation,
- Adjustment and administration of the system,
- Preparation of course materials,
- Test preparation,
- Training,
- Maintenance and upgrade of the system.

1. Item No	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Projectors (7 pcs) <ul style="list-style-type: none"> • Resolution: 1024 x 768 (minimum) • Projection Ratio: 1.48 (4:3) – 1.77 (16:9) : 1 • Luminance: 2000ANSI lumen (minimum) • Contrast: 10000:1(minimum) • Fan noise: 29 – 30 dBA in eco mode, 37 dBA (maximum) 			

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	<ul style="list-style-type: none"> • Connectors: HDMI, USB, S/Video, VGA • Light source life time: 5000h (minimum) • Remote controller: yes (required) • Weight: 2.8 kg (maximum) • Screen with holder: yes (required) • Commercial Warranty: as granted by the manufacturer • Note mandatory technical support and available spare parts 			
2	<p>Work stations (67 pcs)</p> <ul style="list-style-type: none"> • Processor: x64 processor with minimum 2 cores, PassMark CPU Mark 3200 or higher • Memory: 1 x 4 GB 1333 MHz minimum, DDR3 SDRAM, Upgradeable to minimum 8 GB • Hard Disc: 500 GB minimum, SATA • Chassis: Mini Tower, slots 2 x 5.25", 3 x 3.5" Or AiO touchscreen • Connectivity: 6 x USB 2.0 minimum, full-height PCI, full-height PCIe x 1, full-height PCIe x 16 • Optical driver: SATA Super Multi DVD writer • Network: Ethernet10/100/1000Base T • Keyboard: USB, Serbian language keyboard • Mouse: optic, scroll, USB • Monitor: 19.5" min, widescreen, LED • OS: Preinstalled Operating System (standalone), user documentation • Note: Monitor, mouse and keyboard same brand as computer. • <u>HDMI port (8 pcs, for 8 computers)</u> • <u>HDMI cable, 8m (8 pcs)</u> • Commercial Warranty: as granted by the 			

	manufacturer			
3	<p>Video-conference system (1 system / 7 locations)</p> <p>TurnKey Solution for 7 locations, 1 central and 6 local in different cities in RS.</p> <p>Supported standards and protocols: H.261, H.263++, H.264</p> <p>Audio standards and protocols: Support for stereo G.722, G722.1 G.711, G.728, G.729A Automatic gain control Automatic noise suppression Instant adaption echo cancelation Keyboard noise reduction</p> <p>Camera resolution 1920 x 1080 (7 pcs minimum) 12 optical zoom, min 70o FoV DVI output an input S-video output an input RCA output an input VCR/DVD stereo audio in</p> <p>RS-232 serial control port 2 x RJ45 IP LAN connectors</p> <p>QoS Adjustable mtu size Reconstruction of lost packets</p> <p>Installation, commissioning and testing required.</p>			

4	<p>TV set (8 pcs)</p> <ul style="list-style-type: none"> • LED full HD • Size 48" / 121 cm, (minimum) • Resolution: 1920 x 1080 (minimum) • Image Aspect Ratio: 16:9 adjustable • Interfaces provided: minimum HDMI x2, Component1 • Scart (RGB/CVBS) 1, USB, Audio input (DVI) • TV Tuner: DVB-T/C • MPEG Support: MPEG2, MPEG4 • Video Playback: NTSC, PAL, SECA 			
5	<p>Server (1 pcs)</p> <ul style="list-style-type: none"> • Number of processors: minimum 2 • Processor: x64 processors with minimum 6 cores, • PassMark: CPU Mark 3200 or higher • Memory: 12 GB minimum, DDR3 • Hard Disc: 4 x 600 GB SAS minimum, 10K, 2.5" • Chassis: up to U2 chassis • Network: Ethernet 1000 Base T • Note: Server Virtualization supported • Warranty: 1 year 			
6	<p>Printers multifunctional (7 pcs)</p> <ul style="list-style-type: none"> • Functions: printing, Copying, Scanning (required) Fax (optional) • Printing technology: Laser b/w (required) • Paper size: A4, A5, ISO B5, ISO C5, ISO C5/6, ISO C6, ISO DL • Print speed: 30 ppm (minimum) • Print resolution: 1200 x 1200 dpi (minimum) 			

	<ul style="list-style-type: none"> • Two side printing: yes (required) • Monthly: 2500 pages (minimum) • Scanner type: Flatbed, ADF(required) • Scan resolution: 19200 dpi (minimum) • Copy speed: 30 cpm (minimum) • Copy resolution: 1200 x 600 dpi (minimum) • Connection: Hi-Speed USB 2.0 port 10/100 Base T Ethernet RJ11 phone port • Technical support response 24h on RS territory • Warranty: 1 year 																																				
7	<p>Network equipment and installation material (67 workstations)</p> <p>Installation material for all locations</p> <table> <tr> <td>DLP Trunking</td> <td>50 x 105</td> <td>60 m</td> </tr> <tr> <td>End cap for DLP trunking</td> <td></td> <td>24 pcs</td> </tr> <tr> <td>Internal angle trunking</td> <td></td> <td>5 pcs</td> </tr> <tr> <td>External angle trunking</td> <td></td> <td>5 pcs</td> </tr> <tr> <td>Power cable PPY</td> <td>3 x 2.5</td> <td>160 m</td> </tr> <tr> <td>Power socket with box</td> <td></td> <td>50 pcs</td> </tr> <tr> <td>Connectors</td> <td>RJ45 Cat6</td> <td>160 pcs</td> </tr> <tr> <td>Micro socket</td> <td>RJ45 Cat6</td> <td>60 pcs</td> </tr> <tr> <td>Box for 2 socket RJ45</td> <td></td> <td>30 pcs</td> </tr> <tr> <td>Cable UTP / FTP</td> <td>Cat 6</td> <td>600 m</td> </tr> <tr> <td>Patch cable UTP Cat 6</td> <td>(1, 2, 5 m)*50pcs</td> <td>400 m</td> </tr> </table>	DLP Trunking	50 x 105	60 m	End cap for DLP trunking		24 pcs	Internal angle trunking		5 pcs	External angle trunking		5 pcs	Power cable PPY	3 x 2.5	160 m	Power socket with box		50 pcs	Connectors	RJ45 Cat6	160 pcs	Micro socket	RJ45 Cat6	60 pcs	Box for 2 socket RJ45		30 pcs	Cable UTP / FTP	Cat 6	600 m	Patch cable UTP Cat 6	(1, 2, 5 m)*50pcs	400 m			
DLP Trunking	50 x 105	60 m																																			
End cap for DLP trunking		24 pcs																																			
Internal angle trunking		5 pcs																																			
External angle trunking		5 pcs																																			
Power cable PPY	3 x 2.5	160 m																																			
Power socket with box		50 pcs																																			
Connectors	RJ45 Cat6	160 pcs																																			
Micro socket	RJ45 Cat6	60 pcs																																			
Box for 2 socket RJ45		30 pcs																																			
Cable UTP / FTP	Cat 6	600 m																																			
Patch cable UTP Cat 6	(1, 2, 5 m)*50pcs	400 m																																			
8	<p>Switch L2 16 port (7 pcs)</p> <p>FAST ETHERNET UNMANAGED SWITCH</p> <ul style="list-style-type: none"> • 10/100Mbit/s • UTP (RJ-45) <p>FULL/HALF DUPLEX for each port</p>																																				

9	<p>Furniture – tables (37 pcs)</p> <p>Two (or one) learners table</p> <ul style="list-style-type: none"> • Dimensions (750 x 750 x 1500) or (750 x 750 x 900) • Plywood 25 mm thick, edge banded with ABS band (2mm) 			
10	<p>Furniture – chairs (67 pcs)</p> <p>Typing office chair</p> <ul style="list-style-type: none"> • Dimensions(570 x 620 x 450) • h=1100mm (minimum) • Metal star stand • High backrest • Armrest metal/plastic <p>Adjustable height and backrest</p>			
11	<p>Training for administrators (2 persons)</p> <p>Training for e-Learning</p> <p>Administering e-Learning – basic safety aspects</p> <ul style="list-style-type: none"> Safety aspects of Moodle system Monitoring of system logs, and student activities User account management Course and content management <p>Advanced administering</p> <ul style="list-style-type: none"> Backup procedure (export/import) Structure management /appearance enhancement Plug-ins Adjusting CRON-job <p>Integration LMS-a with external systems</p> <ul style="list-style-type: none"> Integration with third party APIs PHP configuration for enhancement 			

	Infrastructure performance for e-Learning System performances analysis for LMS Hardware infrastructure Sampling Statistical process Finding critical parts (bottleneck) Resolving bottlenecks Reporting			
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Delivery and installation locations

Institution	Location
RS Ministry of the Interior	Bulevar Desanke Maksimović 4, 78000 Banja Luka, BiH